

CARNEGIE BEAM SECTIONS

ADDITIONS TO NEW SERIES



CARNEGIE STEEL COMPANY

A DIVISION OF UNITED STATES STEEL CORPORATION

PITTSBURGH, PA.

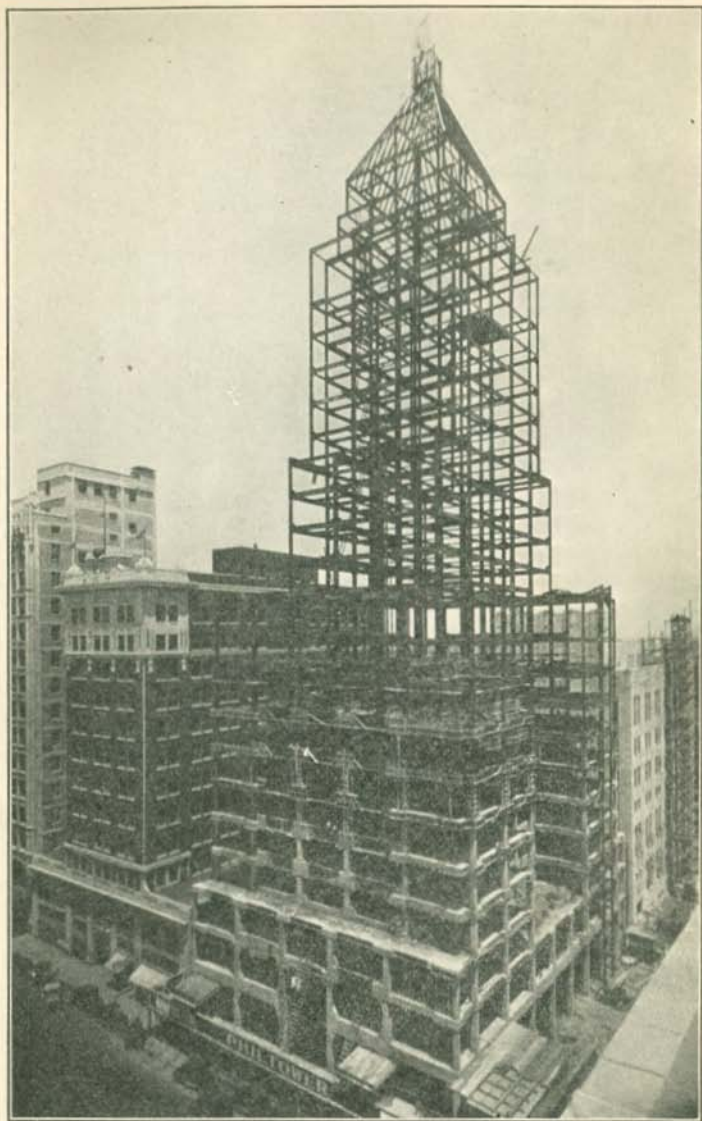
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CARNEGIE BEAM SECTIONS IN STEEL CONSTRUCTION

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CARNEGIE BEAM SECTIONS

PROFILES, PROPERTIES
AND
SAFE LOADS
FOR
ADDITIONS TO NEW SERIES
OF
STRUCTURAL STEEL BEAMS
AND
COLUMN SECTIONS

MANUFACTURED BY
CARNEGIE STEEL COMPANY
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
PITTSBURGH, PA.

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Second Edition, November 1, 1928.

Printed in U. S. A.

1928

THIS pamphlet contains additions and modifications that have been found of advantage to users of Carnegie Beam Sections.

These briefly are as follows:

Additional weights of CB 301, 165 and 151 pounds. Old weights of 135 and 125 pounds have been discontinued and are replaced by new weights of 138 and 126 pounds.

Additional weights of CB 271, 137 and 124 pounds.

Additional heavier weights of CB 146, 14" column section, advancing by 20 pounds increments from 325 to 425 pounds.

Additional lighter weights of CB 146, 106, 96 and 86 pounds.

A new 12" x 12" constant depth column group in weights of 102, 95, 88 and 82 pounds, to be called CB 124 C. CB 124 and CB 124 A have been discontinued.

A new 12" x 12" constant depth column group in weights of 76, 70 and 65 pounds, to be called CB 124 B.

CB 123 A is changed to a variable depth section in weights of 66, 60 and 55 pounds and will be called CB 123 B.

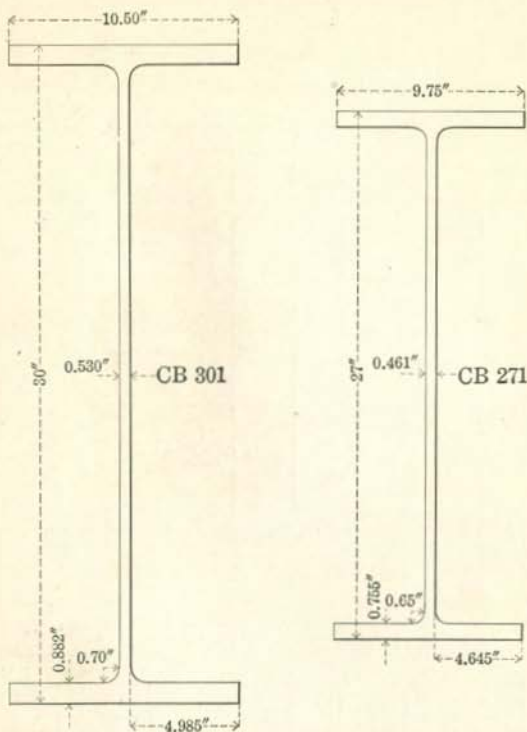
A new 10" x 10" constant depth column group in weights of 64, 59, 54 and 49 pounds, to be called CB 103 A. CB 103 has been discontinued.

New minimum weights of B 40, 20.5 pounds and B 39, 17.5 pounds. Minimum weights as formerly published B 40, 21 pounds and B 39, 18 pounds have been discontinued.

This book cancels and supersedes one bearing the same title and published as 1st edition under date of Oct. 1, 1927.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS

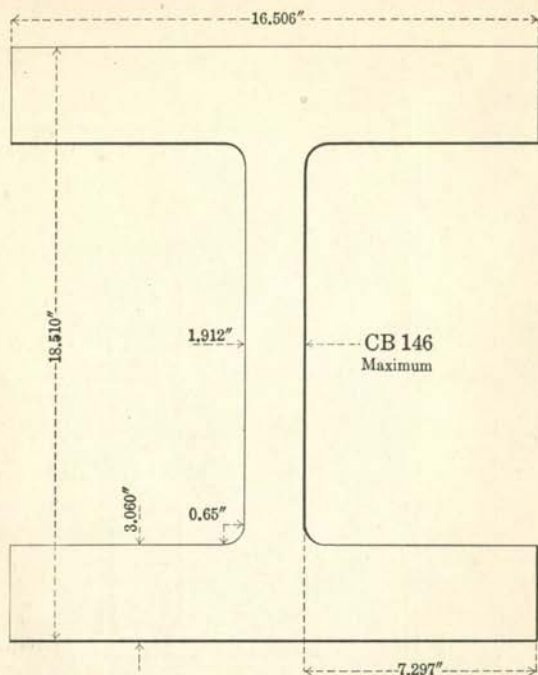


Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
*CB 301	30.742	30 $\frac{3}{4}$	165	10.725	10 $\frac{23}{32}$	1.253	1 $\frac{1}{4}$	0.755	$\frac{3}{4}$
	30.538	30 $\frac{1}{2}$	151	10.662	10 $\frac{21}{32}$	1.151	1 $\frac{1}{8}$	0.692	1 $\frac{1}{16}$
	30.344	30 $\frac{1}{8}$	138	10.604	10 $\frac{39}{64}$	1.054	1 $\frac{3}{16}$	0.634	4 $\frac{1}{8}$
	30.162	30 $\frac{3}{8}$	126	10.551	10 $\frac{35}{64}$	0.963	3 $\frac{1}{8}$	0.581	3 $\frac{1}{8}$
	30.000	30	115	10.500	10 $\frac{1}{2}$	0.882	$\frac{7}{8}$	0.530	1 $\frac{7}{8}$
*CB 271	27.742	27 $\frac{3}{4}$	137	9.977	9 $\frac{63}{64}$	1.126	1 $\frac{1}{8}$	0.688	1 $\frac{1}{16}$
	27.536	27 $\frac{1}{2}$	124	9.913	9 $\frac{29}{32}$	1.023	1 $\frac{1}{8}$	0.624	$\frac{5}{8}$
	27.340	27 $\frac{1}{8}$	112	9.855	9 $\frac{55}{64}$	0.925	5 $\frac{9}{16}$	0.566	9 $\frac{1}{8}$
	27.166	27 $\frac{1}{16}$	101	9.799	9 $\frac{51}{64}$	0.838	2 $\frac{7}{8}$	0.510	2 $\frac{3}{8}$
	27.000	27	91	9.750	9 $\frac{3}{4}$	0.755	$\frac{3}{4}$	0.461	1 $\frac{5}{8}$

*CB 301 and *CB 271. New arrangement of weights.

Revision in weights applies to sections shown on pages 8 and 9, Carnegie Beam Sections, First Edition.

CARNEGIE BEAM SECTIONS—Continued 1920

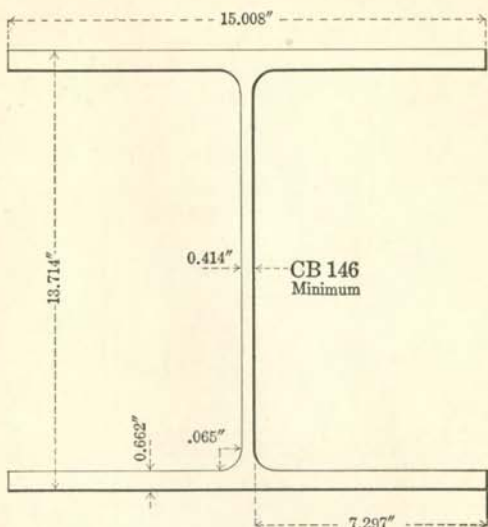


Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
CB 146	18.510	18 ³³ / ₆₄	425	16.506	16 ¹ / ₂	3.060	3 ¹ / ₁₆	1.912	1 ²⁹ / ₃₂
	18.246	18 ¹ / ₄	405	16.423	16 ² / ₃₂	2.928	2 ⁵⁹ / ₆₄	1.829	1 ⁵³ / ₆₄
	17.978	17 ⁶³ / ₆₄	385	16.340	16 ¹ / ₃₂	2.794	2 ⁵ / ₁₆	1.746	1 ³ / ₄
	17.710	17 ⁴⁵ / ₆₄	365	16.255	16 ¹ / ₄	2.660	2 ¹ / ₃₂	1.661	1 ² / ₃₂
	17.438	17 ⁷ / ₁₆	345	16.172	16 ¹ / ₁₆	2.524	2 ¹ / ₃₂	1.578	1 ³ / ₁₆
	17.164	17 ¹ / ₁₆	325	16.087	16 ³ / ₃₂	2.387	2 ² / ₁₆	1.493	1 ¹ / ₂
	16.890	16 ⁵ / ₁₆	305	16.000	16	2.250	2 ¹ / ₄	1.406	1 ¹ / ₃₂
	16.752	16 ³ / ₄	295	15.956	15 ⁶ / ₁₆	2.181	2 ³ / ₁₆	1.362	1 ² / ₁₆
	16.614	16 ³⁹ / ₆₄	285	15.912	15 ²⁹ / ₃₂	2.112	2 ⁷ / ₆₄	1.318	1 ⁵ / ₁₆
	16.472	16 ¹ / ₈	275	15.870	15 ⁷ / ₈	2.041	2 ³ / ₁₆	1.276	1 ⁹ / ₃₂
	16.332	16 ² / ₁₆	265	15.826	15 ⁵ / ₁₆	1.971	1 ³ / ₃₂	1.232	1 ⁵ / ₁₆
	16.192	16 ³ / ₁₆	255	15.781	15 ² / ₃₂	1.901	1 ²⁹ / ₃₂	1.187	1 ³ / ₁₆
	16.050	16 ³ / ₁₆	245	15.738	15 ⁴ / ₁₆	1.830	1 ⁵ / ₁₆	1.144	1 ⁹ / ₁₆
	15.908	15 ²⁹ / ₃₂	235	15.693	15 ¹ / ₁₆	1.759	1 ⁴⁹ / ₆₄	1.099	1 ⁵ / ₃₂
	15.764	15 ⁴⁹ / ₆₄	225	15.650	15 ² / ₃₂	1.687	1 ¹ / ₁₆	1.056	1 ¹ / ₁₆

New weights given are in addition to those shown on page 18, Carnegie Beam Sections, First Edition.

CARNEGIE BEAM SECTIONS

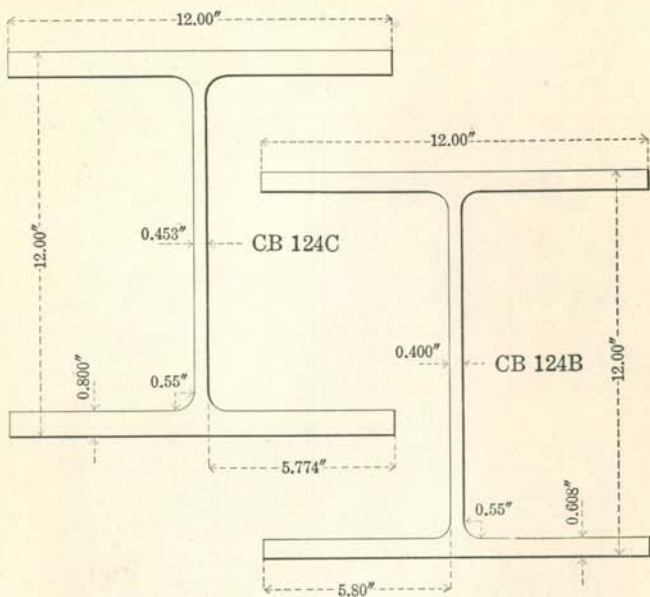
CARNEGIE BEAM SECTIONS—Continued



Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
CB 146	15.622	15 $\frac{5}{8}$	215	15.604	15 $\frac{39}{64}$	1.616	1 $\frac{39}{64}$	1.010	1 $\frac{1}{64}$
	15.478	15 $\frac{31}{64}$	205	15.559	15 $\frac{9}{16}$	1.544	1 $\frac{35}{64}$	0.965	3 $\frac{1}{32}$
	15.334	15 $\frac{23}{64}$	195	15.513	15 $\frac{33}{64}$	1.472	1 $\frac{15}{32}$	0.919	3 $\frac{3}{64}$
	15.188	15 $\frac{11}{16}$	185	15.469	15 $\frac{15}{32}$	1.399	1 $\frac{13}{32}$	0.875	$\frac{3}{8}$
	15.042	15 $\frac{3}{64}$	175	15.424	15 $\frac{27}{64}$	1.326	1 $\frac{21}{64}$	0.830	5 $\frac{3}{64}$
	14.896	14 $\frac{57}{64}$	165	15.377	15 $\frac{3}{8}$	1.253	$\frac{1}{4}$	0.783	2 $\frac{5}{32}$
	14.750	14 $\frac{3}{8}$	155	15.330	15 $\frac{21}{64}$	1.180	1 $\frac{3}{16}$	0.736	4 $\frac{3}{64}$
	14.602	14 $\frac{39}{64}$	145	15.284	15 $\frac{9}{32}$	1.106	1 $\frac{3}{64}$	0.690	1 $\frac{11}{16}$
	14.452	14 $\frac{29}{64}$	135	15.239	15 $\frac{15}{64}$	1.031	1 $\frac{1}{32}$	0.645	4 $\frac{1}{64}$
	*14.162	14 $\frac{5}{32}$	131	15.468	15 $\frac{15}{32}$	0.886	5 $\frac{3}{64}$	0.874	$\frac{3}{8}$
	14.304	14 $\frac{19}{64}$	125	15.191	15 $\frac{3}{16}$	0.957	5 $\frac{3}{64}$	0.597	1 $\frac{9}{32}$
	14.154	14 $\frac{5}{32}$	115	15.145	15 $\frac{9}{64}$	0.882	$\frac{3}{8}$	0.551	3 $\frac{5}{64}$
	14.018	14 $\frac{1}{64}$	106	15.103	15 $\frac{3}{64}$	0.814	1 $\frac{3}{16}$	0.509	3 $\frac{3}{64}$
	13.866	13 $\frac{55}{64}$	96	15.056	15 $\frac{3}{16}$	0.738	4 $\frac{3}{64}$	0.462	1 $\frac{5}{32}$
	13.714	13 $\frac{23}{32}$	86	15.008	15 $\frac{3}{64}$	0.662	2 $\frac{1}{32}$	0.414	2 $\frac{3}{64}$

*Special Section for Column Core.

CARNEGIE BEAM SECTIONS—Continued 1920

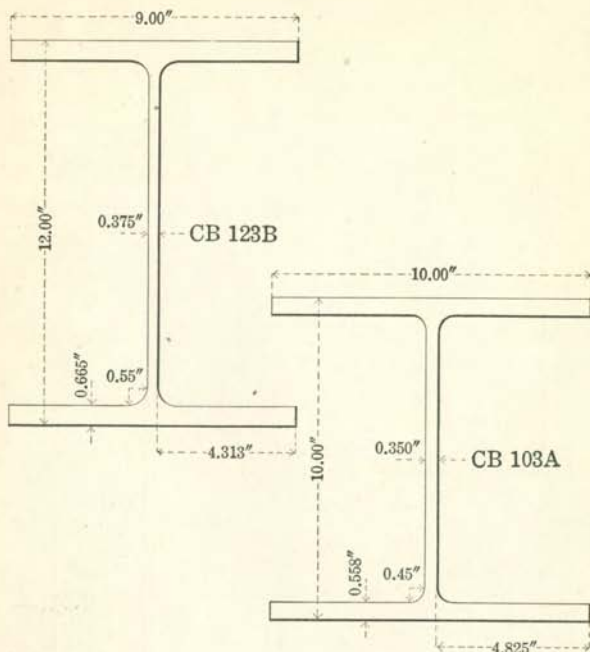


Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
*CB 124C	12	12	102	12.490	12 ³¹ / ₆₄	0.800	51/64	0.943	1 ⁵ / ₁₆
			95	12.318	12 ⁵ / ₁₆			0.771	4 ⁹ / ₆₄
			88	12.147	12 ⁹ / ₆₄			0.600	1 ⁹ / ₃₂
			82	12.000	12			0.453	2 ⁹ / ₆₄
*CB 124B	12	12	76	12.270	12 ¹ / ₃₂	0.608	39/64	0.670	4 ³ / ₆₄
			70	12.123	12 ¹ / ₈			0.523	3 ³ / ₆₄
			65	12.000	12			0.400	1 ³ / ₃₂

*CB 124C and *CB 124B supersede and cancel CB 124 shown on page 22, Carnegie Beam Sections, First Edition, and CB 124A shown on page 3, Carnegie Beam Sections, Additions to New Series, First Edition.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued



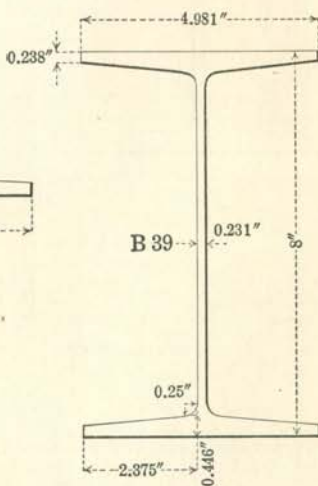
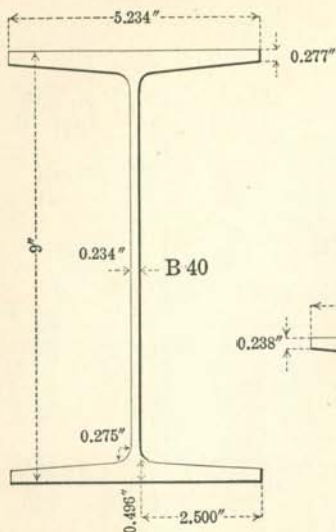
Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
*CB 123B	12.260	12 ¹ / ₁₆	66	9.073	9 ⁵ / ₆₄	0.795	5 ¹ / ₁₆	0.448	2 ⁹ / ₆₄
	12.118	12 ¹ / ₈	60	9.034	9 ¹ / ₃₂	0.724	2 ³ / ₃₂	0.409	1 ³ / ₃₂
	12.000	12	55	9.000	9	0.665	4 ³ / ₆₄	0.375	3 ³ / ₈
†CB 103A	10	10	64	10.441	10 ⁷ / ₁₆	0.558	9/16	0.791	5 ¹ / ₁₆
			59	10.294	10 ¹ / ₁₆			0.644	4 ¹ / ₁₆
			54	10.147	10 ⁹ / ₆₄			0.497	1/2
			49	10.000	10			0.350	1 ¹ / ₃₂

*CB 123B supersedes and cancels CB 123A shown on page 3, Carnegie Beam Sections, Additions to New Series, First Edition.

†CB 103A supersedes and cancels CB 103 shown on page 25, Carnegie Beam Sections, First Edition.

STANDARD MILL SECTIONS

1920



Section Index	Depth of Section, Inches		Weight per Foot, Pounds	Flange Width, Inches		Mean Flange Thickness, Inches		Web Thickness, Inches	
	Decimal	Fraction		Decimal	Fraction	Decimal	Fraction	Decimal	Fraction
B 40	9	9	25.0	5.380	5 $\frac{3}{8}$	0.3865	$\frac{25}{64}$	0.380	$\frac{3}{8}$
			20.5	5.234	5 $\frac{1}{4}$			0.234	$\frac{1}{4}$
B 39	8	8	21.0	5.110	5 $\frac{3}{16}$	0.342	$\frac{11}{32}$	0.360	2 $\frac{3}{16}$
			17.5	4.981	5			0.231	$\frac{1}{4}$

New minimum weights supersede those given on page 29, Carnegie Beam Sections, First Edition.

CARNEGIE BEAM SECTIONS



FISHER BUILDING—DETROIT, MICH.
CARNEGIE BEAM SECTIONS IN STEEL CONSTRUCTION

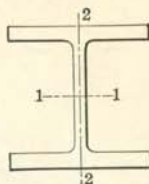
CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

1928



ELEMENTS
OF
SECTIONS
DECIMAL



Section Index and Nominal Depth	Weight per Foot	Area of Section	Depth of Section	Flange Width	Web Thickness	Axis 1-1			Axis 2-2		
						I	S	r	I	S	r
	Lbs.	In. ²	In.	In.	In.	In. ⁴	In. ³	In.	In. ⁴	In. ³	In.
*CB 301 30"	165	48.52	30.742	10.725	.755	7326.7	476.7	12.29	258.7	48.2	2.31
	151	44.41	30.538	10.662	.692	6663.7	436.4	12.25	233.4	43.8	2.29
	138	40.58	30.344	10.604	.634	6049.5	398.7	12.21	210.1	39.6	2.28
	126	37.05	30.162	10.551	.581	5486.7	363.8	12.17	189.0	35.8	2.26
	115	33.81	30.000	10.500	.530	4985.3	332.4	12.14	170.6	32.5	2.25
*CB 271 27"	137	40.29	27.742	9.977	.688	4975.9	358.7	11.11	187.1	37.5	2.16
	124	36.47	27.536	9.913	.624	4472.1	324.8	11.07	166.7	33.6	2.14
	112	32.94	27.340	9.855	.566	4007.6	293.2	11.03	148.0	30.0	2.12
	101	29.70	27.166	9.799	.510	3595.7	264.7	11.00	131.7	26.9	2.11
	91	26.76	27.000	9.750	.461	3217.0	238.3	10.97	116.9	24.0	2.09
CB 146 14"	425	124.99	18.510	16.506	1.912	6420.5	693.7	7.17	2301.0	278.8	4.29
	405	119.12	18.246	16.423	1.829	6010.5	658.8	7.10	2168.2	264.0	4.27
	385	113.22	17.978	16.340	1.746	5609.4	624.0	7.04	2037.4	249.4	4.24
	365	107.34	17.710	16.255	1.661	5221.4	589.7	6.97	1909.1	234.9	4.22
	345	101.47	17.438	16.172	1.578	4843.4	555.5	6.91	1783.5	220.6	4.19
**CB 124C 12"	325	95.58	17.164	16.087	1.493	4475.9	521.6	6.84	1659.9	206.4	4.17
	106	31.18	14.018	15.103	.509	1164.1	166.1	6.11	467.6	61.9	3.87
	96	28.23	13.866	15.056	.462	1042.1	150.3	6.08	419.9	55.8	3.86
	86	25.28	13.714	15.008	.414	923.0	136.6	6.04	373.1	49.7	3.84
	102	29.99	12.000	12.490	.943	721.4	120.2	4.90	260.6	41.7	2.95
†CB 124B 12"	95	27.93	12.000	12.318	.771	696.6	116.1	4.99	249.7	40.5	2.99
	88	25.88	12.000	12.147	.600	672.0	112.0	5.10	239.2	39.4	3.04
	82	24.11	12.000	12.000	.453	650.8	108.5	5.20	230.5	38.4	3.09
††CB 123B 12"	76	22.35	12.000	12.270	.670	560.2	93.4	5.01	187.5	30.6	2.90
	70	20.58	12.000	12.123	.523	539.0	89.8	5.12	180.7	29.8	2.96
	65	19.11	12.000	12.000	.400	521.3	86.9	5.22	175.2	29.2	3.03
§CB 103A 10"	66	19.41	12.260	9.073	.448	525.7	85.8	5.20	99.1	21.8	2.26
	60	17.65	12.118	9.034	.409	472.0	77.9	5.17	89.0	19.7	2.25
	55	16.17	12.000	9.000	.375	428.4	71.4	5.15	80.9	18.0	2.24
§§B 40 9"	64	18.81	10.000	10.441	.791	308.8	61.8	4.05	106.3	20.4	2.38
	59	17.34	10.000	10.294	.644	296.5	59.3	4.13	101.7	19.8	2.42
	54	15.87	10.000	10.147	.497	284.3	56.9	4.23	97.3	19.2	2.48
49	14.40	10.000	10.000	.350	272.0	54.4	4.35	93.0	18.6	2.54	

STANDARD MILL SECTIONS

	Weight per Foot	Area of Section	Depth of Section	Flange Width	Web Thickness	I	S	r	I	S	r
	Lbs.	In. ²	In.	In.	In.	In. ⁴	In. ³	In.	In. ⁴	In. ³	In.
§§B 40 9"	25.0	7.34	9.000	5.380	.380	95.5	21.2	3.61	8.8	3.3	1.09
	20.5	6.02	9.000	5.234	.234	86.6	19.2	3.79	8.0	3.1	1.15
§§B 39 8"	21.0	6.17	8.000	5.110	.360	63.4	15.9	3.21	6.6	2.6	1.03
	17.5	5.14	8.000	4.981	.231	57.4	14.5	3.36	6.0	2.4	1.08

*CB 301 and *CB 271. New arrangement of weights.

**CB 124C. Section supersedes and cancels Sections CB 124 and CB 124A.

†CB 124B. Additional Section.

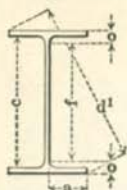
††CB 123B. Section supersedes and cancels Section CB 123A.

§CB 103A. Section supersedes and cancels Section CB 103.

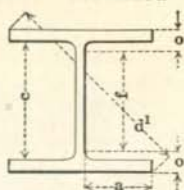
§§Old minimum weights of Sections B40-21 lb. and B 39-18 lb. are now discontinued.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued



DIMENSIONS
OF
SECTIONS
FRACTIONAL



Weight per Foot	Depth of Section	Flange		Web		Distance					Section Index and Nominal Depth
		Width	Thickness	Thickness	Thickness	a	c	f	o	d'	
Lbs.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	
165	30 ³ / ₈	10 ³ / ₈	1 ¹ / ₂	³ / ₈	⁷ / ₁₆	5	28 ³ / ₁₆	26 ³ / ₈	2	32 ³ / ₁₆	*CB 301 30"
151	30 ⁹ / ₁₆	10 ¹ / ₁₆	1 ³ / ₁₆	¹ / ₁₆	³ / ₈	5	28 ³ / ₁₆	26 ³ / ₈	1 ⁷ / ₈	32 ³ / ₈	
138	30 ³ / ₈	10 ³ / ₈	1 ³ / ₁₆	⁵ / ₈	³ / ₈	5	28 ³ / ₁₆	26 ³ / ₈	1 ¹ / ₁₆	32 ³ / ₁₆	
126	30 ⁹ / ₁₆	10 ⁹ / ₁₆	1 ³ / ₁₆	⁹ / ₁₆	⁹ / ₁₆	5	28 ³ / ₁₆	26 ³ / ₈	1 ¹ / ₁₆	32	
115	30	10 ¹ / ₂	⁷ / ₈	¹ / ₂	⁹ / ₁₆	5	28 ³ / ₁₆	26 ³ / ₈	1 ⁵ / ₈	31 ³ / ₁₆	
137	27 ³ / ₈	10	1 ¹ / ₈	1 ¹ / ₁₆	³ / ₈	4 ¹ / ₁₆	25 ⁷ / ₁₆	24 ¹ / ₈	1 ¹ / ₁₆	29 ¹ / ₂	*CB 271 27"
124	27 ⁹ / ₁₆	9 ¹ / ₁₆	1	⁵ / ₈	⁹ / ₁₆	4 ¹ / ₁₆	25 ⁷ / ₁₆	24 ¹ / ₈	1 ¹ / ₁₆	29 ¹ / ₄	
112	27 ³ / ₈	9 ⁷ / ₈	1 ⁹ / ₁₆	⁹ / ₁₆	⁹ / ₁₆	4 ¹ / ₁₆	25 ⁷ / ₁₆	24 ¹ / ₈	1 ⁵ / ₈	29 ¹ / ₁₆	
101	27 ⁹ / ₁₆	9 ¹ / ₁₆	1 ³ / ₁₆	¹ / ₂	⁵ / ₁₆	4 ¹ / ₁₆	25 ⁷ / ₁₆	24 ¹ / ₈	1 ¹ / ₂	28 ⁷ / ₈	
91	27	9 ³ / ₄	³ / ₄	⁷ / ₁₆	¹ / ₄	4 ¹ / ₁₆	25 ⁷ / ₁₆	24 ¹ / ₈	1 ⁷ / ₁₆	28 ¹ / ₁₆	
425	18 ¹ / ₂	16 ¹ / ₂	3 ¹ / ₁₆	1 ¹ / ₁₆	1	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ³ / ₄	24 ¹ / ₁₆	CB 146 14"
405	18 ¹ / ₂	16 ⁷ / ₁₆	2 ¹ / ₁₆	1 ¹ / ₁₆	1 ⁹ / ₁₆	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ⁵ / ₈	24 ⁹ / ₁₆	
385	18	16 ³ / ₈	2 ¹ / ₁₆	1 ³ / ₄	⁷ / ₈	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ¹ / ₂	24 ⁹ / ₁₆	
365	17 ¹ / ₁₆	16 ¹ / ₁₆	2 ¹ / ₁₆	1 ¹ / ₁₆	1 ¹ / ₁₆	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ³ / ₈	24 ¹ / ₁₆	
345	17 ⁷ / ₁₆	16 ⁷ / ₁₆	2 ¹ / ₂	1 ⁵ / ₈	1 ⁹ / ₁₆	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ⁹ / ₁₆	23 ¹ / ₁₆	
325	17 ³ / ₁₆	16 ¹ / ₁₆	2 ⁷ / ₁₆	1 ¹ / ₂	³ / ₄	7 ⁷ / ₁₆	12 ³ / ₈	11	3 ¹ / ₁₆	23 ³ / ₁₆	**CB 124C 12"
106	14	15 ³ / ₈	1 ⁹ / ₁₆	¹ / ₂	⁵ / ₁₆	7 ⁷ / ₁₆	12 ³ / ₈	11	1 ¹ / ₂	20 ⁵ / ₈	
96	13 ⁷ / ₈	15 ¹ / ₁₆	³ / ₄	³ / ₁₆	¹ / ₄	7 ⁷ / ₁₆	12 ³ / ₈	11	1 ⁷ / ₁₆	20 ¹ / ₂	
86	13 ¹ / ₁₆	15	1 ³ / ₁₆	⁷ / ₁₆	¹ / ₄	7 ⁷ / ₁₆	12 ³ / ₈	11	1 ³ / ₈	20 ³ / ₈	
102	12	12 ¹ / ₂	1 ³ / ₁₆	1 ⁹ / ₁₆	¹ / ₂	5 ¹ / ₁₆	10 ³ / ₈	9 ¹ / ₄	1 ³ / ₈	17 ³ / ₈	
95	12	12 ⁹ / ₁₆	1 ³ / ₁₆	³ / ₄	⁷ / ₁₆	5 ¹ / ₁₆	10 ³ / ₈	9 ¹ / ₄	1 ³ / ₈	17 ¹ / ₄	
88	12	12 ³ / ₁₆	1 ³ / ₁₆	⁵ / ₈	⁹ / ₁₆	5 ¹ / ₁₆	10 ³ / ₈	9 ¹ / ₄	1 ³ / ₈	17 ³ / ₈	
82	12	12	1 ³ / ₁₆	¹ / ₂	¹ / ₄	5 ¹ / ₁₆	10 ³ / ₈	9 ¹ / ₄	1 ³ / ₈	17	
76	12	12 ¹ / ₄	⁵ / ₈	1 ¹ / ₁₆	³ / ₈	5 ¹ / ₁₆	10 ³ / ₈	9 ⁵ / ₈	1 ³ / ₁₆	17 ⁵ / ₁₆	†CB 124B 12"
70	12	12 ³ / ₈	⁵ / ₈	⁹ / ₁₆	⁹ / ₁₆	5 ¹ / ₁₆	10 ³ / ₈	9 ⁵ / ₈	1 ³ / ₁₆	17 ³ / ₁₆	
65	12	12	⁵ / ₈	⁷ / ₁₆	¹ / ₄	5 ¹ / ₁₆	10 ³ / ₈	9 ⁵ / ₈	1 ³ / ₁₆	17	
66	12 ¹ / ₄	9 ¹ / ₄	1 ³ / ₁₆	¹ / ₂	¹ / ₄	4 ⁵ / ₁₆	10 ⁵ / ₈	9 ¹ / ₂	1 ³ / ₈	15 ⁵ / ₁₆	††CB 123B 12"
60	12 ³ / ₈	9 ¹ / ₁₆	³ / ₄	⁷ / ₁₆	¹ / ₄	4 ⁵ / ₁₆	10 ⁵ / ₈	9 ¹ / ₂	1 ⁵ / ₁₆	15 ¹ / ₂	
55	12	9	1 ³ / ₁₆	⁵ / ₈	⁷ / ₁₆	4 ⁵ / ₁₆	10 ⁵ / ₈	9 ¹ / ₂	1 ¹ / ₄	15	
64	10	10 ⁷ / ₁₆	⁹ / ₁₆	1 ³ / ₁₆	⁷ / ₁₆	4 ⁷ / ₈	8 ⁷ / ₈	7 ¹ / ₁₆	1 ³ / ₁₆	14 ¹ / ₂	§CB 103A 10"
59	10	10 ⁹ / ₁₆	⁹ / ₁₆	1 ¹ / ₁₆	³ / ₈	4 ⁷ / ₈	8 ⁷ / ₈	7 ¹ / ₁₆	1 ¹ / ₁₆	14 ³ / ₈	
54	10	10 ³ / ₁₆	⁹ / ₁₆	¹ / ₂	¹ / ₄	4 ⁷ / ₈	8 ⁷ / ₈	7 ¹ / ₁₆	1 ¹ / ₁₆	14 ¹ / ₄	
49	10	10	⁹ / ₁₆	³ / ₄	⁷ / ₁₆	4 ⁷ / ₈	8 ⁷ / ₈	7 ¹ / ₁₆	1 ¹ / ₁₆	14 ³ / ₁₆	

STANDARD MILL SECTIONS

25.0	9	5 ⁵ / ₈	³ / ₈	³ / ₈	¹ / ₄	2 ¹ / ₂	.....	7 ¹ / ₂	³ / ₄	10 ¹ / ₂	§§B 40
20.5	9	5 ³ / ₄	³ / ₈	¹ / ₄	¹ / ₈	2 ¹ / ₂	.....	7 ¹ / ₂	³ / ₄	10 ⁷ / ₁₆	9"
21.0	8	5 ¹ / ₂	⁵ / ₁₆	³ / ₈	⁷ / ₁₆	2 ⁵ / ₈	.....	6 ⁵ / ₈	1 ¹ / ₁₆	9 ¹ / ₂	§§B 39
17.5	8	5	⁵ / ₁₆	¹ / ₄	¹ / ₈	2 ³ / ₈	.....	6 ⁵ / ₈	1 ¹ / ₁₆	9 ⁷ / ₁₆	8"

*CB 301 and *CB 271. New arrangement of weights.

**CB 124C. Section supersedes and cancels Sections CB 124 and CB 124A.

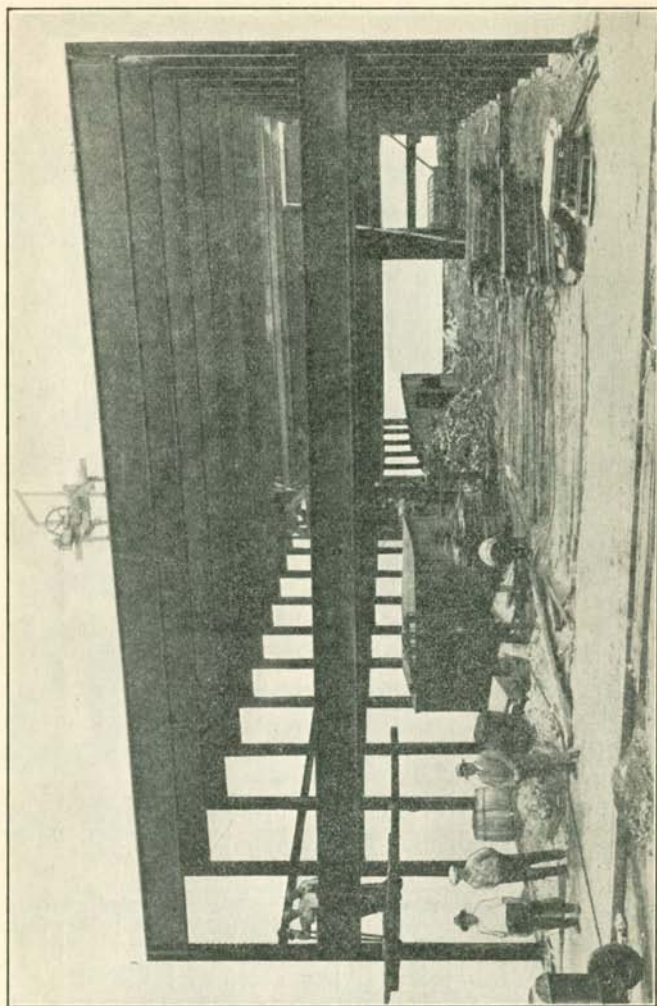
†CB 124B. Additional Section.

††CB 123B. Section supersedes and cancels Section CB 123A.

§CB 103A. Section supersedes and cancels Section CB 103.

§§Old minimum weights of Sections B 40-21 lb. and B 39-18 lb. are now discontinued.

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CARNEGIE BEAM SECTIONS IN GARAGE BUILDING, FOR HEAVY LOADS AND LONG SPANS

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

MAXIMUM BENDING MOMENTS AND WEB RESISTANCES

Bending Stress, 18,000 Pounds—Shearing Stress, 12,000 Pounds

Section Index and Nominal Depth	Depth of Beam	Weight per Foot	Web Thickness	Maximum Bending Moment	Values for End Reaction, V				End Reaction $a=3\frac{1}{2}''$
					Web Shearing		Web Buckling		
					End Reaction	Span Limit	Unit Stress	End Bearing	
					d	t	M max.	Vmax.		L min.	fb	a min.	R max.
Inches	Pounds	Inches	Foot Pounds	Pounds	Feet	Pounds per Sq. In.	Inches	Pounds	
CB 301 30"	30.742	165	.755	715050	278520	10.27	14103	18.47	119110
	30.538	151	.692	654600	253590	10.32	13589	19.33	104710
	30.344	138	.634	598050	230860	10.36	13027	20.37	91560
	30.162	126	.581	545700	210290	10.38	12421	21.60	79680
	30.000	115	.530	498600	190800	10.45	11734	23.18	68410
CB 271 27"	27.742	137	.688	538050	229040	9.40	14162	16.57	101680
	27.536	124	.624	487200	206190	9.45	13590	17.43	88060
	27.340	112	.566	439800	185690	9.47	12960	18.48	75810
	27.166	101	.510	397050	166260	9.55	12221	19.88	64140
	27.000	91	.461	357450	149360	9.57	11453	21.54	54120
CB 124C 12"	12.000	102	.943	180300	135790	5.31	15000	6.60	91940
	12.000	95	.771	174150	111020	6.27	15000	6.60	75170
	12.000	88	.600	168000	86400	7.78	15000	6.60	58500
	12.000	82	.453	162750	65230	9.98	15000	6.60	44170
CB 124B 12"	12.000	76	.670	140100	96480	5.81	15000	6.60	65320
	12.000	70	.523	134700	75310	7.15	15000	6.60	50990
	12.000	65	.400	130350	57600	9.05	15000	6.60	39000
CB 123B 12"	12.260	66	.448	128700	65910	7.81	15000	6.74	44120
	12.118	60	.409	116850	59470	7.86	15000	6.66	40060
	12.000	55	.375	107100	54000	7.93	15000	6.60	36560
CB 103A 10"	10.000	64	.791	92700	94920	3.91	15000	5.50	71190
	10.000	59	.644	88950	77280	4.60	15000	5.50	57960
	10.000	54	.497	85350	59640	5.72	15000	5.50	44730
	10.000	49	.350	81600	42000	7.77	15000	5.50	31500

STANDARD MILL SECTIONS

B 40 9"	9.000	25.0	.380	31800	41040	3.10	15000	4.95	32770
	9.000	20.5	.234	28800	25270	4.56	14440	5.23	19430
B 39 8"	8.000	21.0	.360	23850	34560	2.76	15000	4.40	29700
	8.000	17.5	.231	21450	22180	3.87	15000	4.40	19460

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 301 30"x10½"										
	165 lbs.		151 lbs.		138 lbs.		126 lbs.		115 lbs.		
	Laterally										
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
557	557	507	507	462	462	421	421	382	382		
11	520	520	476	476	435	435	397	397	363	363	2.253
12	477	477	436	436	399	399	364	364	332	332	2.681
13	440	440	403	403	368	368	336	336	307	307	3.147
14	409	404	374	370	342	338	312	307	285	281	3.650
15	381	372	349	339	319	310	291	283	266	257	4.190
16	358	342	327	313	299	286	273	260	249	237	4.767
17	336	317	308	289	281	264	257	241	235	219	5.381
18	318	293	291	268	266	245	243	223	222	203	6.033
19	301	273	276	249	252	227	230	207	210	189	6.722
20	286	254	262	232	239	211	218	193	199	176	7.448
21	272	237	249	216	228	197	208	179	190	164	8.212
22	260	222	238	202	217	184	198	168	181	153	9.012
23	249	208	228	189	208	173	190	157	173	143	9.850
24	238	195	218	178	199	162	182	147	166	134	10.726
25	229	183	209	166	191	152	175	138	160	126	11.638
26	220	172	201	157	184	142	168	130	153	118	12.588
27	212	162	194	147	177	134	162	122	148	111	13.574
28	204	153	187	139	171	126	156	115	142	105	14.599
29	197	143	181	131	165	119	151	108	138	98	15.660
30	191	136	175	124	159	112	145	102	133	93	16.759
31	185	128	169	116	154	106	141	97	129	88	17.894
32	179	121	164	110	150	100	136	91	125	83	19.068
33	173	114	159	104	145	95	132	86	121	78	20.278
34	168	109	154	99	141	90	128	81	117	74	21.526
35	163	103	150	93	137	85	125	77	114	70	22.810
36	159		145		133		121		111		24.132
37	155		142		129		118		108		25.492
38	151		138		126		115		105		26.888
39	147		134		123		112		102		28.322
40	143		131		120		109		100		29.793
41	140		128		117		106		97		31.301
42	136		125		114		104		95		32.847
43	133		122		111		102		93		34.430
44	130		119		109		99		91		36.050
45	127		116		106		97		89		37.707
46	124		114		104		95		87		39.401
47	122		111		102		93		85		41.133
48	119		109		100		91		83		42.902
49	117		107		98		89		81		44.708
50	114		105		96		87		80		46.552
51	112		103		94		86		78		48.432
52	110		101		92		84		77		50.350
53	108		99		90		82		75		52.306
54	106		97		89		81		74		54.298
55	104		95		87		79		73		56.328
56	102		94		85		78		71		58.395
57	100		92		84		77		70		60.499
58	99		90		82		75		69		62.640

Loads above upper horizontal lines will produce maximum allowable shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 271 27"x9 $\frac{3}{4}$ "										
	137 lbs.		124 lbs.		112 lbs.		101 lbs.		91 lbs.		
	Laterally										
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
	458	458	412	412	371	371	333	333	299	299	
10	430	430	390	390	352	352	318	318	286	286	1.862
11	391	391	354	354	320	320	289	289	260	260	2.253
12	359	359	325	325	293	293	265	265	238	238	2.681
13	331	327	300	296	271	268	244	241	220	217	3.147
14	307	300	278	270	251	244	227	219	204	198	3.650
15	287	274	260	247	235	223	212	202	191	181	4.190
16	269	252	244	228	220	206	199	185	179	166	4.767
17	253	232	229	211	207	189	187	171	168	153	5.381
18	239	215	217	197	195	175	176	158	159	141	6.033
19	227	200	205	180	185	162	167	146	151	131	6.722
20	215	186	195	167	176	151	159	136	143	122	7.448
21	205	173	186	156	168	140	151	126	136	114	8.212
22	196	161	177	145	160	131	144	118	130	106	9.012
23	187	150	169	136	153	122	138	110	124	99	9.850
24	179	141	162	127	147	114	132	102	119	92	10.726
25	172	132	156	119	141	107	127	96	114	86	11.638
26	166	124	150	111	135	100	122	90	110	81	12.588
27	159	116	144	104	130	94	118	85	106	76	13.574
28	154	109	139	98	126	88	113	79	102	71	14.599
29	148	102	134	93	121	83	110	75	99	67	15.660
30	143	97	130	87	117	78	106	70	95	63	16.759
31	139	91	126	82	113	74	102	66	92	59	17.894
32	135	86	122	77	110	69	99	62	89	56	19.068
33	130	81	118	73	107		96		87		20.278
34	127		115		103		93		84		21.526
35	123		111		101		91		82		22.810
36	120		108		98		88		79		24.132
37	116		105		95		86		77		25.492
38	113		103		93		84		75		26.888
39	110		100		90		81		73		28.322
40	108		97		88		79		71		29.793
41	105		95		86		77		70		31.301
42	102		93		84		76		68		32.847
43	100		91		82		74		67		34.430
44	98		89		80		72		65		36.050
45	96		87		78		71		64		37.707
46	94		85		76		69		62		39.401
47	92		83		75		68		61		41.133
48	90		81		73		66		60		42.902
49	88		80		72		65		58		44.708
50	86		78		70		64		57		46.552
51	84		76		69		62		56		48.432
52	83		75								50.350

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 124C 12"x12"								
	102 lbs.		95 lbs.		88 lbs.		82 lbs.		
	Laterally								
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
	271.6	271.6							
6	240.4	240.4	222.0	222.0					0.670
7	206.1	206.1	199.0	199.0	172.8	172.8			0.912
8	180.3	180.3	174.2	174.2	168.0	168.0			1.192
9	160.3	160.3	154.8	154.8	149.3	149.3	130.5	130.5	1.508
10	144.2	144.2	139.3	139.3	134.4	134.4	130.2	130.2	1.862
11	131.1	131.1	126.7	126.7	122.2	122.2	118.4	118.4	2.253
12	120.2	120.2	116.1	116.1	112.0	112.0	108.5	108.5	2.681
13	111.0	111.0	107.2	107.2	103.4	103.4	100.2	100.2	3.147
14	103.0	103.0	99.5	99.5	96.0	96.0	93.0	93.0	3.650
15	96.2	96.2	92.9	92.9	89.6	89.6	86.8	86.8	4.190
16	90.2	89.7	87.1	86.4	84.0	83.0	81.4	80.2	4.767
17	84.8	83.3	82.0	80.1	79.1	77.0	76.6	74.4	5.381
18	80.1	77.5	77.4	74.6	74.7	71.7	72.3	69.2	6.033
19	75.9	72.3	73.3	69.6	70.7	66.8	68.5	64.5	6.722
20	72.1	67.6	69.7	65.0	67.2	62.5	65.1	60.3	7.448
21	68.7	63.3	66.3	60.9	64.0	58.5	62.0	56.4	8.212
22	65.6		63.3		61.1		59.2		9.012
23	62.7		60.6		58.4		56.6		9.850
24	60.1		58.1		56.0		54.3		10.726

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot												Coefficient of Deflection	
	CB 124B 12"x12"						CB 123B 12"x9"							
	76 lbs.		70 lbs.		65 lbs.		66 lbs.		60 lbs.		55 lbs.			
	Laterally						Laterally							
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free			
	193.0	193.0												
6	186.8	186.8										0.670		
7	160.1	160.1	150.6	150.6				131.8	131.8	119.0	108.0	108.0	0.912	
8	140.1	140.1	134.7	134.7				128.7	128.7	116.9	116.9	107.1	107.1	1.192
9	124.5	124.5	119.7	119.7	115.2	115.2		114.4	114.4	103.9	103.9	95.2	95.2	1.508
10	112.1	112.1	107.8	107.8	104.3	104.3		103.0	103.0	93.5	93.5	85.7	85.7	1.862
11	101.9	101.9	98.0	98.0	94.8	94.8		93.6	93.6	85.0	85.0	77.9	77.9	2.253
12	93.4	93.4	89.8	89.8	86.9	86.9		85.8	84.8	77.9	76.7	71.4	70.3	2.681
13	86.2	86.2	82.9	82.9	80.2	80.2		79.2	76.6	71.9	69.6	65.9	63.7	3.147
14	80.1	80.1	77.0	77.0	74.5	74.5		73.5	69.8	66.8	63.4	61.2	57.8	3.650
15	74.7	74.7	71.8	71.8	69.5	69.5		68.6	63.8	62.3	57.7	57.1	52.9	4.190
16	70.1	69.2	67.4	66.6	65.2	64.2		64.4	58.3	58.4	53.0	53.6	48.5	4.767
17	65.9	64.2	63.4	61.8	61.3	59.6		60.6	53.7	55.0	48.8	50.4	44.5	5.381
18	62.3	60.0	59.9	57.5	57.9	55.4		57.2	49.6	51.9	44.8	47.6	41.1	6.033
19	59.0	56.0	56.7	53.6	54.9	51.7		54.2	45.7	49.2	41.5	45.1	38.0	6.722
20	56.0	52.3	53.9	50.1	52.1	48.3		51.5	42.3	46.7	38.4	42.8	35.1	7.448
21	53.4	49.0	51.3	46.9	49.7	45.2		49.0	39.3	44.5	35.5	40.8	32.6	8.212
22	50.9		49.0		47.4			46.8		42.5		38.9		9.012
23	48.7		46.9		45.3			44.8		40.6		37.3		9.850
24	46.7		44.9		43.5			42.9		39.0		35.7		10.726

Loads above upper horizontal lines will produce maximum allowable shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 103A 10"x10"								
	64 lbs.		59 lbs.		54 lbs.		49 lbs.		
	Laterally								
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
	189.8	189.8							
4	185.4	185.4							0.298
5	148.3	148.3	154.6	154.6					0.466
					119.3	119.3			
6	123.6	123.6	118.6	118.6	113.8	113.8			0.670
7	105.9	105.9	101.7	101.7	97.5	97.5			0.912
8	92.7	92.7	89.0	89.0	85.4	85.4	84.0	84.0	1.192
9	82.4	82.4	79.1	79.1	75.9	75.9	72.5	72.5	1.508
10	74.2	74.2	71.2	71.2	68.3	68.3	65.3	65.3	1.862
11	67.4	67.4	64.7	64.7	62.1	62.1	59.3	59.3	2.253
12	61.8	61.8	59.3	59.3	56.9	56.9	54.4	54.4	2.681
13	57.0	57.0	54.7	54.5	52.5	52.3	50.2	49.8	3.147
14	53.0	52.2	50.8	49.9	48.8	47.7	46.6	45.4	3.650
15	49.4	47.8	47.4	45.7	45.5	43.7	43.5	41.6	4.190
16	46.4	44.0	44.5	42.0	42.7	40.2	40.8	38.2	4.767
17	43.6	40.7	41.9	38.9	40.2	37.2	38.4	35.3	5.381
18	41.2		39.5		37.9		36.3		6.033
19	39.0		37.5		35.9		34.4		6.722
20	37.1		35.6		34.1		32.6		7.448
21	35.3		33.9		32.5		31.1		8.212
22	33.7		32.3		31.0		29.7		9.012
23	32.2		30.9		29.7		28.4		9.850
24	30.9		29.7		28.5		27.2		10.726

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

STANDARD MILL SECTIONS

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

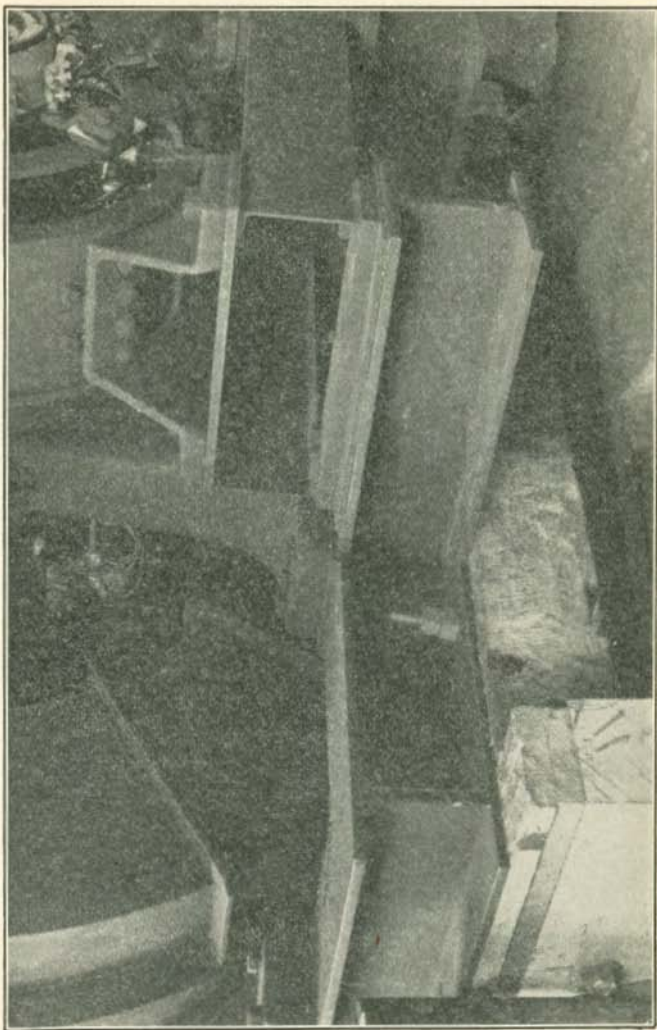
Maximum Bending Stress, 18,000 Pounds per Square Inch

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	B 40 9"				B 39 8"				
	25 lbs.		20.5 lbs.		21 lbs.		17.5 lbs.		
	Laterally				Laterally				
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
3					69.1	69.1			
4	82.1	82.1			63.4	63.4			0.168
5	63.7	63.7	80.5	80.5	47.6	47.6	44.4	44.4	0.298
6	50.9	50.9	46.1	46.1	38.1	38.1	34.3	34.3	0.466
7	42.4	42.4	38.4	38.4	31.7	31.7	28.6	28.6	0.670
8	36.4	36.1	32.9	32.4	27.2	26.6	24.5	23.9	0.912
9	31.8	30.6	28.8	27.4	23.8	22.5	21.5	20.1	1.192
10	28.3	26.2	25.6	23.4	21.1	19.2	19.1	17.1	1.508
11	25.5	22.7	23.0	20.2	19.0	16.6	17.2	14.8	1.862
12	23.1	19.8	20.9	17.6	17.3	14.4	15.6	12.8	2.253
13	21.2	17.4	19.2	15.5	15.9	12.6	14.3	11.2	2.681
14	19.6	15.3	17.7	13.7	14.6	11.1	13.2	9.9	3.147
15	18.2	13.6	16.5	12.1	13.6	9.8	12.3	8.7	3.650
16	17.0	12.1	15.4	10.7	12.7		11.4		4.190
17	15.9	10.8	14.4	9.6	11.9		10.7		4.767
18	15.0		13.6		11.2		10.1		5.381
19	14.1		12.8						6.033
20	13.4		12.1						6.722

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.



CARNEGIE BEAM SECTIONS WELDED TOGETHER AND ADAPTED TO MACHINERY SUPPORT

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS

MAXIMUM BENDING MOMENTS AND WEB RESISTANCES

Bending Stress, 16,000 Pounds—Shearing Stress, 10,000 Pounds

Section Index and Nominal Depth	Depth of Beam	Weight per Foot	Web Thickness	Maximum Bending Moment	Values for End Reaction, V				End Reaction a=3½"
					Web Shearing		Web Buckling		
					End Reaction	Span Limit	Unit Stress	End Bearing	
					d	t	M max.	V max.		L min.	f_{b}	a min.	R max.
Inches	Pounds	Inches	Foot Pounds	Pounds	Feet	Pounds per Sq. In.	Inches	Pounds	
CB 301 30"	30.742	165	.755	635600	232100	10.95	11956	18.02	100970
	30.538	151	.692	581850	211320	11.01	11365	19.24	87570
	30.344	138	.634	531600	192380	11.05	10720	20.72	75340
	30.162	126	.581	485050	175240	11.07	10019	22.56	64270
	30.000	115	.530	443200	159000	11.15	9208	25.08	53680
CB 271 27"	27.742	137	.688	478250	190860	10.02	12024	16.13	86330
	27.536	124	.624	433050	171820	10.08	11366	17.35	73640
	27.340	112	.566	390950	154740	10.11	10643	18.85	62260
	27.166	101	.510	352950	138550	10.19	9785	20.97	51360
	27.000	91	.461	317750	124470	10.21	8868	23.70	41900
CB 124C 12"	12.000	102	.943	160250	113160	5.66	15000	5.00	91940
	12.000	95	.771	154800	92520	6.69	15000	5.00	75170
	12.000	88	.600	149350	72000	8.30	15000	5.00	58500
	12.000	82	.453	144650	54360	10.65	14417	5.32	42450
CB 124B 12"	12.000	76	.670	124550	80400	6.20	15000	5.00	65320
	12.000	70	.523	119750	62760	7.63	15000	5.00	50990
	12.000	65	.400	115850	48000	9.66	13810	5.69	35910
CB 123B 12"	12.260	66	.448	114400	54920	8.33	14266	5.53	41960
	12.118	60	.409	103850	49560	8.38	13874	5.71	37050
	12.000	55	.375	95200	45000	8.46	13464	5.91	32820
CB 103A 10"	10.000	64	.791	82400	79100	4.17	15000	4.17	71190
	10.000	59	.644	79050	64400	4.91	15000	4.17	57960
	10.000	54	.497	75850	49700	6.11	15000	4.17	44730
	10.000	49	.350	72550	35000	8.29	14057	4.61	29520

STANDARD MILL SECTIONS

B 40 9"	9.000	25.0	.380	28250	34200	3.31	14903	3.79	32560
	9.000	20.5	.234	25600	21060	4.86	12346	5.04	16610
B 39 8"	8.000	21.0	.360	21200	28800	2.94	15000	3.33	29700
	8.000	17.5	.231	19050	18480	4.13	13009	4.15	16530

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 301										
	165 lbs.		151 lbs.		138 lbs.		126 lbs.		115 lbs.		
	Laterally										
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
464	464										
11	462	462	423	423	385	385	350	350	318	318	2.003
12	424	424	388	388	354	354	323	323	295	295	2.383
13	391	391	358	358	327	327	299	299	273	273	2.797
14	363	363	332	332	304	304	277	277	253	253	3.244
15	339	339	310	310	284	284	259	259	236	236	3.724
16	318	318	291	291	266	266	243	243	222	222	4.237
17	299	299	274	274	250	250	228	228	209	209	4.783
18	282	281	259	258	236	235	216	214	197	195	5.363
19	268	262	245	239	224	219	204	199	187	181	5.975
20	254	244	233	224	213	203	194	186	177	170	6.621
21	242	229	222	209	203	191	185	173	169	158	7.299
22	231	215	212	196	193	178	176	163	161	148	8.011
23	221	201	202	183	185	168	169	152	154	139	8.756
24	212	190	192	171	177	157	162	143	148	130	9.534
25	203	178	186	162	170	148	155	135	142	123	10.345
26	196	168	179	153	164	139	149	127	136	116	11.189
27	188	158	172	144	158	132	144	120	131	109	12.066
28	182	150	166	136	152	124	139	113	127	103	12.977
29	175	141	161	129	147	117	134	107	122	97	13.920
30	169	134	155	122	142	111	129	101	118	92	14.897
31	164	126	150	115	137	105	125	95	114	87	15.906
32	159	120	145	109	133	99	121	90	111	82	16.949
33	154	113	141	103	129	94	118	85	107	78	18.025
34	150	107	137	98	125	89	114	81	104	74	19.134
35	145	102	133	92	122	84	111	77	101	70	20.276
36	141		129		118		108		98		21.451
37	137		126		115		105		96		22.659
38	134		122		112		102		93		23.901
39	130		119		109		100		91		25.175
40	127		116		106		97		89		26.483
41	124		114		104		95		86		27.823
42	121		111		101		92		84		29.197
43	118		108		99		90		82		30.604
44	116		106		97		88		81		32.044
45	113		103		95		86		79		33.517
46	111		101		92		84		77		35.023
47	108		99		90		83		75		36.563
48	106		96		89		81		74		38.135
49	104		95		87		79		72		39.741
50	102		93		85		78		71		41.379
51	100		91		83		76		70		43.051
52	98		90		82		75		68		44.756
53	96		88		80		73		67		46.494
54	94		86		79		72		66		48.265
55	92		85		77		71		64		50.069
56	91		83		76		69		63		51.906
57	89		82		75		68		62		53.777
58	88		80		73		67		61		55.680
59	86		79		72		66		60		57.617
60	85		78		71		65		59		59.586
61	83		76		70		64		58		61.589
62	82		75		69		63		57		63.625

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued
 ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS
 Maximum Bending Stress, 16,000 Pounds per Square Inch
 City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 271										
	137 lbs.		124 lbs.		112 lbs.		101 lbs.		91 lbs.		
	Laterally										
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
	382	382	344	344	309	309	277	277	249	249	
11	348	348	315	315	284	284	257	257	231	231	2.003
12	319	319	289	289	261	261	235	235	212	212	2.383
13	294	294	267	267	241	241	217	217	196	196	2.797
14	273	273	247	247	223	223	202	202	182	182	3.244
15	255	255	231	231	208	208	188	188	169	169	3.724
16	239	239	217	217	195	195	176	176	159	159	4.237
17	225	223	204	202	184	182	166	164	150	147	4.783
18	213	207	192	187	174	168	157	152	141	136	5.363
19	201	193	182	174	165	156	149	141	134	126	5.975
20	191	179	173	162	156	146	141	131	127	118	6.621
21	182	167	165	151	149	136	134	122	121	110	7.299
22	174	156	157	141	142	127	128	114	116	103	8.011
23	166	146	151	132	136	119	123	107	111	96	8.756
24	159	138	144	124	130	111	118	100	106	90	9.534
25	153	129	139	116	125	105	113	94	102	85	10.345
26	147	121	133	109	120	98	109	89	98	79	11.189
27	142	114	128	103	116	92	105	83	94	75	12.066
28	137	107	124	97	112	87	101	78	91	70	12.977
29	132	101	119	91	108	82	97	74	88	66	13.920
30	128	96	115	86	104	77	94	69	85	62	14.897
31	123	91	112	81	101	73	91	65	82	59	15.906
32	120	85	108	77	98	69	88	62	79	55	16.949
33	116	80	105	72	95		86		77		18.025
34	113		102		92		83		75		19.134
35	109		99		89		81		73		20.276
36	106		96		87		78		71		21.451
37	103		94		85		76		69		22.659
38	101		91		82		74		67		23.901
39	98		89		80		72		65		25.175
40	96		87		78		71		64		26.483
41	93		85		76		69		62		27.823
42	91		82		74		67		61		29.197
43	89		81		73		66		59		30.604
44	87		79		71		64		58		32.044
45	85		77		69		63		56		33.517
46	83		75		68		61		55		35.023
47	81		74		67		60		54		36.563
48	80		72		65		59		53		38.135
49	78		71		64		58		52		39.741
50	77		69		63		56		51		41.379
51	75		68		61		55		50		43.051
52	74		67		60		54		49		44.756
53	72		65		59		53		48		46.494
54	71		64		58		52		47		48.265
55	70		63		57		51		46		50.069
56	68		62		56		50		45		51.906
57	67		61		55		49		45		53.777

Loads above upper horizontal lines will produce maximum allowable shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 124C								
	102 lbs.		95 lbs.		88 lbs.		82 lbs.		
	Laterally								
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
	226.3	226.3							
6	213.7	213.7	185.0	185.0					0.596
7	183.2	183.2	176.9	176.9					0.811
8	160.3	160.3	154.8	154.8	144.0	144.0			1.059
9	142.5	142.5	137.6	137.6	132.7	132.7			1.341
10	128.2	128.2	123.8	123.8	119.5	119.5	108.7	108.7	1.655
11	116.6	116.6	112.6	112.6	108.6	108.6	105.2	105.2	2.003
12	106.8	106.8	103.2	103.2	99.6	99.6	96.4	96.4	2.383
13	98.6	98.6	95.3	95.3	91.9	91.9	89.0	89.0	2.797
14	91.6	91.6	88.5	88.5	85.3	85.3	82.7	82.7	3.244
15	85.5	85.5	82.6	82.6	79.6	79.6	77.2	77.2	3.724
16	80.1	80.1	77.4	77.4	74.7	74.7	72.3	72.3	4.237
17	75.4	75.4	72.8	72.8	70.3	70.3	68.1	68.1	4.783
18	71.2	71.2	68.8	68.8	66.4	66.4	64.3	64.3	5.363
19	67.5	67.5	65.2	65.2	62.9	62.9	60.9	60.9	5.975
20	64.1	64.1	61.9	61.9	59.7	59.7	57.9	57.9	6.621
21	61.1	60.8	59.0	58.5	56.9	56.2	55.1	54.3	7.299
22	58.3	57.1	56.3	55.0	54.3	52.8	52.6	51.0	8.011
23	55.7	54.0	53.8	51.7	51.9	49.7	50.3	48.0	8.756
24	53.4	50.9	51.6	48.8	49.8	46.9	48.2	45.2	9.534
25	51.3		49.5		47.8		46.3		10.345
26	49.3		47.6		45.9		44.5		11.189
27	47.5		45.9		44.2		42.9		12.066

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot												Coefficient of Deflection
	CB 124B						CB 123B						
	76 lbs.		70 lbs.		65 lbs.		66 lbs.		60 lbs.		55 lbs.		
	Laterally						Laterally						
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
7	160.8 142.3	160.8 142.3	125.5	125.5									0.811
8	124.5	124.5	119.7	119.7			109.8	109.8	99.1	99.1	90.0	90.0	1.059
9	110.7	110.7	106.4	106.4	96.0	96.0	101.7	101.7	92.3	92.3	84.6	84.6	1.341
10	99.6	99.6	95.8	95.8	92.7	92.7	91.5	91.5	83.1	83.1	76.2	76.2	1.655
11	90.6	90.6	87.1	87.1	84.3	84.3	83.2	83.2	75.5	75.5	69.2	69.2	2.003
12	83.0	83.0	79.8	79.8	77.2	77.2	76.3	76.3	69.2	69.2	63.5	63.5	2.383
13	76.6	76.6	73.7	73.7	71.3	71.3	70.4	70.4	63.9	63.9	58.6	58.6	2.797
14	71.2	71.2	68.4	68.4	66.2	66.2	65.4	65.4	59.4	59.4	54.4	54.4	3.244
15	66.4	66.4	63.9	63.9	61.8	61.8	61.0	61.0	55.4	55.4	50.8	50.8	3.724
16	62.3	62.3	59.9	59.9	57.9	57.9	57.2	56.1	51.9	50.9	47.6	46.7	4.237
17	58.6	58.6	56.3	56.3	54.5	54.5	53.8	51.7	48.9	47.0	44.8	42.9	4.783
18	55.3	55.3	53.2	53.2	51.5	51.5	50.8	47.9	46.2	43.3	42.3	39.7	5.363
19	52.4	52.4	50.4	50.4	48.8	48.8	48.2	44.2	43.7	40.1	40.1	36.8	5.975
20	49.8	49.8	47.9	47.9	46.3	46.3	45.8	41.1	41.5	37.3	38.1	34.1	6.621
21	47.4	47.1	45.6	45.1	44.1	43.5	43.6	38.3	39.6	34.6	36.3	31.7	7.299
22	45.3	44.2	43.5	42.4	42.1	40.8	41.6	35.8	37.8	32.3	34.6	29.6	8.011
23	43.3	41.6	41.6	39.9	40.3	38.4	39.8	33.3	36.1	30.2	33.1	27.6	8.756
24	41.5	39.2	39.9	37.6	38.6	36.2	38.1	31.1	34.6	28.1	31.7	25.8	9.534
25	39.9		38.3		37.1		36.6		33.2		30.5		10.345
26	38.3		36.8		35.7		35.2		32.0		29.3		11.189
27	36.9		35.5		34.3		33.9		30.8		28.2		12.066

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 103A								
	64 lbs.		59 lbs.		54 lbs.		49 lbs.		
	Laterally								
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
5	158.2	158.2	128.8	128.8					0.414
	131.8	131.8	126.5	126.5					
6	109.9	109.9	105.4	105.4	99.4	99.4			0.596
7	94.2	94.2	90.4	90.4	86.7	86.7			0.811
8	82.4	82.4	79.1	79.1	75.9	75.9	70.0	70.0	1.059
9	73.2	73.2	70.3	70.3	67.4	67.4	64.5	64.5	1.341
10	65.9	65.9	63.3	63.3	60.7	60.7	58.0	58.0	1.655
11	59.9	59.9	57.5	57.5	55.2	55.2	52.8	52.8	2.003
12	54.9	54.9	52.7	52.7	50.6	50.6	48.4	48.4	2.383
13	50.7	50.7	48.7	48.7	46.7	46.7	44.6	44.6	2.797
14	47.1	47.1	45.2	45.2	43.4	43.4	41.4	41.4	3.244
15	43.9	43.9	42.2	42.2	40.5	40.5	38.7	38.7	3.724
16	41.2	41.2	39.5	39.5	37.9	37.9	36.3	36.3	4.237
17	38.8	38.8	37.2	37.2	35.7	35.7	34.1	33.9	4.783
18	36.6	36.2	35.1	34.6	33.7	33.1	32.2	31.5	5.363
19	34.7	33.7	33.3	32.1	31.9	30.7	30.5	29.2	5.975
20	33.0	31.4	31.6	30.0	30.3	28.6	29.0	27.2	6.621
21	31.4		30.1		28.9		27.6		7.299
22	30.0		28.8		27.6		26.4		8.011
23	28.7		27.5		26.4		25.2		8.756

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

STANDARD MILL SECTIONS

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of New York Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	B 40 9"				B 39 8"				
	25 lbs.		20.5 lbs.		21 lbs.		17.5 lbs.		
	Laterally				Laterally				
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
3	68.4	68.4			57.6	57.6			0.149
4	56.6	56.6	42.1	42.1	42.3	42.3			0.265
5	45.3	45.3	41.0	41.0	33.8	33.8	37.0	37.0	0.414
6	37.7	37.7	34.1	34.1	28.2	28.2	25.4	25.4	0.596
7	32.3	32.3	29.3	29.3	24.2	24.2	21.8	21.8	0.811
8	28.3	28.3	25.6	25.6	21.1	21.1	19.1	19.1	1.059
9	25.1	25.1	22.8	22.5	18.8	18.4	16.9	16.5	1.341
10	22.6	21.8	20.5	19.5	16.9	16.0	15.3	14.3	1.655
11	20.6	19.1	18.6	17.1	15.4	14.0	13.9	12.5	2.003
12	18.9	16.9	17.1	15.1	14.1	12.3	12.7	10.9	2.383
13	17.4	15.0	15.8	13.4	13.0	10.9	11.7	9.7	2.797
14	16.2	13.3	14.6	11.9	12.1	9.6	10.9	8.6	3.244
15	15.1	11.9	13.7	10.6	11.3	8.6	10.2	7.6	3.724
16	14.1	10.7	12.8	9.5	10.6	7.7	9.5	6.8	4.237
17	13.3	9.6	12.0	8.5	10.0		9.0		4.783
18	12.6		11.4		9.4		8.5		5.363
19	11.9		10.8		8.1		8.0		5.975
20	11.3		10.2						6.621
21	10.8		9.8						7.299

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For Maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS
 Maximum Bending Stress, 16,000 Pounds per Square Inch
 City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 301										
	165 lbs.		151 lbs.		138 lbs.		126 lbs.		115 lbs.		
	Laterally										
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
11	464	464			385	385	350	350	318	318	2.003
12	424	424	388	388	354	354	323	323	295	295	2.383
13	391	391	358	358	327	327	299	299	273	273	2.797
14	363	363	332	332	304	304	277	277	253	253	3.244
15	339	339	310	310	284	284	259	259	236	236	3.724
16	318	318	291	291	266	266	243	243	222	222	4.237
17	299	299	274	274	250	250	228	228	209	209	4.783
18	282	282	259	259	236	236	216	216	197	197	5.363
19	268	268	245	245	224	224	204	204	187	187	5.975
20	254	254	233	233	213	213	194	194	177	177	6.621
21	242	242	222	222	206	206	185	185	169	169	7.299
22	231	231	212	212	193	193	176	176	161	161	8.011
23	221	219	202	201	185	183	169	167	154	152	8.756
24	212	208	192	188	177	173	162	158	148	144	9.534
25	203	197	186	180	170	165	155	150	142	137	10.345
26	196	188	179	171	164	156	149	142	136	130	11.189
27	188	179	172	163	158	149	144	136	131	124	12.066
28	182	170	166	155	152	142	139	129	127	118	12.977
29	175	162	161	148	147	135	134	123	122	112	13.920
30	169	155	155	142	142	129	129	118	118	107	14.897
31	164	148	150	135	137	123	125	112	114	102	15.906
32	159	142	145	129	133	118	121	107	111	98	16.949
33	154	136	141	124	129	113	118	103	107	94	18.025
34	150	130	137	119	125	108	114	99	104	90	19.134
35	145	125	133	114	122	104	111	94	101	86	20.276
36	141		129		118		108		98		21.451
37	137		126		115		105		96		22.659
38	134		122		112		102		93		23.901
39	130		119		109		100		91		25.175
40	127		116		106		97		89		26.483
41	124		114		104		95		86		27.823
42	121		111		101		92		84		29.197
43	118		108		99		90		82		30.604
44	116		106		97		88		81		32.044
45	113		103		95		86		79		33.517
46	111		101		92		84		77		35.023
47	108		99		90		83		75		36.563
48	106		96		89		81		74		38.135
49	104		95		87		79		72		39.741
50	102		93		85		78		71		41.379
51	100		91		83		76		70		43.051
52	98		90		82		75		68		44.756
53	96		88		80		73		67		46.494
54	94		86		79		72		66		48.265
55	92		85		77		71		64		50.069
56	91		83		76		69		63		51.906
57	89		82		75		68		62		53.777
58	88		80		73		67		61		55.680
59	86		79		72		66		60		57.617
60	85		78		71		65		59		59.586
61	83		76		70		64		58		61.589
62			75		69		63		57		63.625

Loads above upper horizontal lines will produce maximum shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued
 ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS
 Maximum Bending Stress, 16,000 Pounds per Square Inch
 City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot										Coefficient of Deflection
	CB 271										
	137 lbs.		124 lbs.		112 lbs.		101 lbs.		91 lbs.		
	Laterally										
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
	382	382	344	344	309	309	277	277	249	249	
11	348	348	315	315	284	284	257	257	231	231	2.003
12	319	319	289	289	261	261	235	235	212	212	2.383
13	294	294	267	267	241	241	217	217	196	196	2.797
14	273	273	247	247	223	223	202	202	182	182	3.244
15	255	255	231	231	208	208	188	188	169	169	3.724
16	239	239	217	217	195	195	176	176	159	159	4.237
17	225	225	204	204	184	184	166	166	150	150	4.783
18	213	213	192	192	174	174	157	157	141	141	5.363
19	201	201	182	182	165	165	149	149	134	134	5.975
20	191	191	173	173	156	156	141	141	127	127	6.621
21	182	182	165	164	149	148	134	133	121	120	7.299
22	174	171	157	155	142	140	128	126	116	113	8.011
23	166	162	151	146	136	132	123	119	111	107	8.756
24	159	153	144	139	130	125	118	112	106	101	9.534
25	153	145	139	131	125	118	113	107	102	96	10.345
26	147	138	133	125	120	112	109	101	98	91	11.189
27	142	131	128	118	116	107	105	96	94	86	12.066
28	137	125	124	113	112	102	101	91	91	82	12.977
29	132	119	119	107	108	97	97	87	88	78	13.920
30	128	113	115	102	104	92	94	83	85	75	14.897
31	123	108	112	98	101	88	91	79	82	71	15.906
32	120	103	108	93	98	84	88	76	79	68	16.949
33	116	99	105	89	95		86		77		18.025
34	113		102		92		83		75		19.134
35	109		99		89		81		73		20.276
36	106		96		87		78		71		21.451
37	103		94		85		76		69		22.659
38	101		91		82		74		67		23.901
39	98		89		80		72		65		25.175
40	96		87		78		71		64		26.483
41	93		85		76		69		62		27.823
42	91		82		74		67		61		29.197
43	89		81		73		66		59		30.604
44	87		79		71		64		58		32.044
45	85		77		69		63		56		33.517
46	83		75		68		61		55		35.023
47	81		74		67		60		54		36.563
48	80		72		65		59		53		38.135
49	78		71		64		58		52		39.741
50	77		69		63		56		51		41.379
51	75		68		61		55		50		43.051
52	74		67		60		54		49		44.756
53	72		65		59		53		48		46.494
54	71		64		58		52		47		48.265
55	70		63		57		51		46		50.069
56	68		62		56		50		45		51.906
57	67		61		55		49		45		53.777

Loads above upper horizontal lines will produce maximum allowable shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 124C								
	102 lbs.		95 lbs.		88 lbs.		82 lbs.		
	Laterally								
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
	226.3	226.3							
6	213.7	213.7	185.0	185.0					0.596
7	183.2	183.2	176.9	176.9					0.811
8	160.3	160.3	154.8	154.8	144.0	144.0			1.059
9	142.5	142.5	137.6	137.6	132.7	132.7			1.341
10	128.2	128.2	123.8	123.8	119.5	119.5	108.7	108.7	1.655
11	116.6	116.6	112.6	112.6	108.6	108.6	105.2	105.2	2.003
12	106.8	106.8	103.2	103.2	99.6	99.6	96.4	96.4	2.383
13	98.6	98.6	95.3	95.3	91.9	91.9	89.0	89.0	2.797
14	91.6	91.6	88.5	88.5	85.3	85.3	82.7	82.7	3.244
15	85.5	85.5	82.6	82.6	79.6	79.6	77.2	77.2	3.724
16	80.1	80.1	77.4	77.4	74.7	74.7	72.3	72.3	4.237
17	75.4	75.4	72.8	72.8	70.3	70.3	68.1	68.1	4.783
18	71.2	71.2	68.8	68.8	66.4	66.4	64.3	64.3	5.363
19	67.5	67.5	65.2	65.2	62.9	62.9	60.9	60.9	5.975
20	64.1	64.1	61.9	61.9	59.7	59.7	57.9	57.9	6.621
21	61.1	61.1	59.0	59.0	56.9	56.9	55.1	55.1	7.299
22	58.3	58.3	56.3	56.3	54.3	54.3	52.6	52.6	8.011
23	55.7	55.7	53.8	53.8	51.9	51.9	50.3	50.3	8.756
24	53.4	53.4	51.6	51.6	49.8	49.8	48.2	48.2	9.534
25	51.3		49.5		47.8		46.3		10.345
26	49.3		47.6		45.9		44.5		11.189
27	47.5		45.9		44.2		42.9		12.066

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued
 ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS
 Maximum Bending Stress, 16,000 Pounds per Square Inch
 City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot												Coefficient of Deflection
	CB 124B						CB 123B						
	76 lbs.		70 lbs.		65 lbs.		66 lbs.		60 lbs.		55 lbs.		
	Laterally						Laterally						
Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free		
7	142.3	142.3	125.5	125.5									0.811
8	124.5	124.5	119.7	119.7									1.059
9	110.7	110.7	106.4	106.4	96.0	96.0	101.7	101.7	92.3	92.3	84.6	84.6	1.341
10	99.6	99.6	95.8	95.8	92.7	92.7	91.5	91.5	83.1	83.1	76.2	76.2	1.655
11	90.6	90.6	87.1	87.1	84.3	84.3	83.2	83.2	75.5	75.5	69.2	69.2	2.003
12	83.0	83.0	79.8	79.8	77.2	77.2	76.3	76.3	69.2	69.2	63.5	63.5	2.383
13	76.6	76.6	73.7	73.7	71.3	71.3	70.4	70.4	63.9	63.9	58.6	58.6	2.797
14	71.2	71.2	68.4	68.4	66.2	66.2	65.4	65.4	59.4	59.4	54.4	54.4	3.244
15	66.4	66.4	63.9	63.9	61.8	61.8	61.0	61.0	55.4	55.4	50.8	50.8	3.724
16	62.3	62.3	59.9	59.9	57.9	57.9	57.2	57.2	51.9	51.9	47.6	47.6	4.237
17	58.6	58.6	56.3	56.3	54.5	54.5	53.8	53.8	48.9	48.9	44.8	44.8	4.783
18	55.3	55.3	53.2	53.2	51.5	51.5	50.8	50.8	46.2	46.2	42.3	42.3	5.363
19	52.4	52.4	50.4	50.4	48.8	48.8	48.2	48.1	43.7	43.6	40.1	40.0	5.975
20	49.8	49.8	47.9	47.9	46.3	46.3	45.8	45.1	41.5	40.9	38.1	37.4	6.621
21	47.4	47.4	45.6	45.6	44.1	44.1	43.6	42.4	39.6	38.4	36.3	35.2	7.299
22	45.3	45.3	43.5	43.5	42.1	42.1	41.6	39.9	37.8	36.2	34.6	33.1	8.011
23	43.3	43.3	41.6	41.6	40.3	40.3	39.8	37.6	36.1	34.1	33.1	31.2	8.756
24	41.5	41.5	39.9	39.9	38.6	38.6	38.1	35.6	34.6	32.2	31.7	29.5	9.534
25	39.9		38.3		37.1		36.6		33.2		30.5		10.345
26	38.3		36.8		35.7		35.2		32.0		29.3		11.189
27	36.9		35.5		34.3		33.9		30.8		28.2		12.066

Loads above upper horizontal lines will produce maximum allowable shear in webs.
 Loads below lower horizontal lines will produce excessive deflections.
 For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	CB 103A								
	64 lbs.		59 lbs.		54 lbs.		49 lbs.		
	Laterally								
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
5	158.2	158.2	128.8	128.8					0.414
	131.8	131.8	126.5	126.5					
6	109.9	109.9	105.4	105.4	99.4	99.4			0.596
7	94.2	94.2	90.4	90.4	86.7	86.7			0.811
8	82.4	82.4	79.1	79.1	75.9	75.9	70.0	70.0	1.059
9	73.2	73.2	70.3	70.3	67.4	67.4	64.5	64.5	1.341
10	65.9	65.9	63.3	63.3	60.7	60.7	58.0	58.0	1.655
11	59.9	59.9	57.5	57.5	55.2	55.2	52.8	52.8	2.003
12	54.9	54.9	52.7	52.7	50.6	50.6	48.4	48.4	2.383
13	50.7	50.7	48.7	48.7	46.7	46.7	44.6	44.6	2.797
14	47.1	47.1	45.2	45.2	43.4	43.4	41.4	41.4	3.244
15	43.9	43.9	42.2	42.2	40.5	40.5	38.7	38.7	3.724
16	41.2	41.2	39.5	39.5	37.9	37.9	36.3	36.3	4.237
17	38.8	38.8	37.2	37.2	35.7	35.7	34.1	34.1	4.783
18	36.6	36.6	35.1	35.1	33.7	33.7	32.2	32.2	5.363
19	34.7	34.7	33.3	33.3	31.9	31.9	30.5	30.5	5.975
20	33.0	33.0	31.6	31.6	30.3	30.3	29.0	29.0	6.621
21	31.4		30.1		28.9		27.6		7.299
22	30.0		28.8		27.6		26.4		8.011
23	28.7		27.5		26.4		25.2		8.756

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.

CARNEGIE BEAM SECTIONS

STANDARD MILL SECTIONS

ALLOWABLE UNIFORM LOADS IN THOUSANDS OF POUNDS

Maximum Bending Stress, 16,000 Pounds per Square Inch

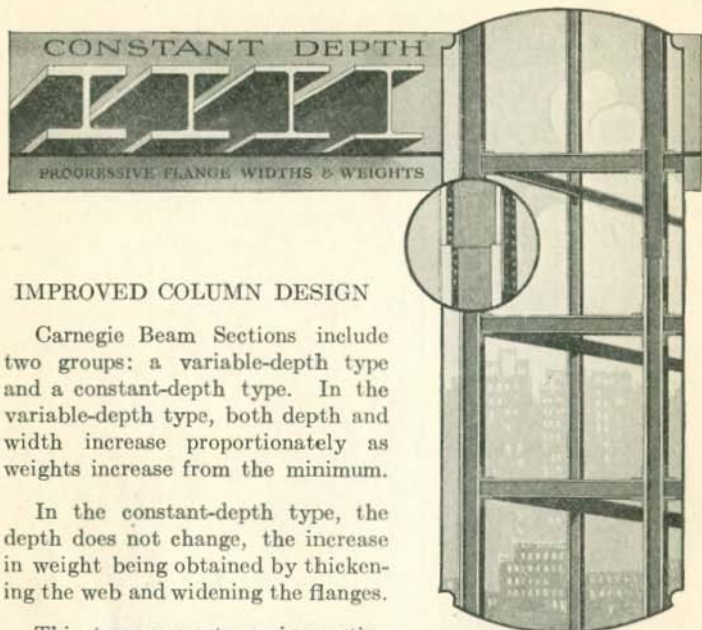
City of Chicago Code

Span in Feet	Nominal Depth and Flange Width—Weight per Foot								Coefficient of Deflection
	B 40 9"				B 39 8"				
	25 lbs.		20.5 lbs.		21 lbs.		17.5 lbs.		
	Laterally				Laterally				
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	
3	68.4	68.4			57.6	57.6			0.149
4	56.6	56.6	42.1	42.1	42.3	42.3			0.265
5	45.3	45.3	41.0	41.0	33.8	33.8	37.0	37.0	0.414
6	37.7	37.7	34.1	34.1	28.2	28.2	25.4	25.4	0.596
7	32.3	32.3	29.3	29.3	24.2	24.2	21.8	21.8	0.811
8	28.3	28.3	25.6	25.6	21.1	21.1	19.1	19.1	1.059
9	25.1	25.1	22.8	22.8	18.8	18.8	16.9	16.9	1.341
10	22.6	22.6	20.5	20.5	16.9	16.9	15.3	15.3	1.655
11	20.6	20.6	18.6	18.6	15.4	15.3	13.9	13.7	2.003
12	18.9	18.5	17.1	16.6	14.1	13.7	12.7	12.2	2.383
13	17.4	16.7	15.8	15.0	13.0	12.3	11.7	11.0	2.797
14	16.2	15.2	14.6	13.6	12.1	11.1	10.9	9.9	3.244
15	15.1	13.8	13.7	12.4	11.3	10.1	10.2	9.0	3.724
16	14.1	12.6	12.8	11.3	10.6	9.2	9.5	8.2	4.237
17	13.3	11.6	12.0	10.4	10.0		9.0		4.783
18	12.6		11.4		9.4		8.5		5.363
19	11.9		10.8		8.1		8.0		5.975
20	11.3		10.2						6.621
21	10.8		9.8						7.299

Loads above upper horizontal lines will produce maximum allowable shear in webs.

Loads below lower horizontal lines will produce excessive deflections.

For maximum safe loads, see tables of Maximum Bending Moments and Web Resistances.



IMPROVED COLUMN DESIGN

Carnegie Beam Sections include two groups: a variable-depth type and a constant-depth type. In the variable-depth type, both depth and width increase proportionately as weights increase from the minimum.

In the constant-depth type, the depth does not change, the increase in weight being obtained by thickening the web and widening the flanges.

This type presents an innovation in rolled steel column sections. The advantages of this feature are reflected in the symmetry of beam and spandrel frame work connecting to the columns at successive floors in a tiered building, thus effecting a substantial saving in the drafting room, fabricating shop and in the field. The avoidance of fillers under splices on the columns themselves is also advantageous. To the architect and contractor, constant-depth is valuable in that it permits a greater uniformity in fireproofing and finish.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS

14-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—American Institute of Steel Construction—1923

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot								
	CB 146 14"x15"								
	425 lbs.	405 lbs.	385 lbs.	365 lbs.	345 lbs.	325 lbs.	106 lbs.	96 lbs.	86 lbs.
11	1875	1787	1698	1610	1522	1434	468	423	379
12	1875	1787	1698	1610	1522	1434	468	423	379
13	1875	1787	1698	1610	1522	1434	468	423	379
14	1875	1787	1698	1610	1522	1434	468	423	379
15	1875	1787	1698	1610	1522	1434	468	423	379
16	1875	1787	1698	1610	1522	1434	468	423	379
17	1875	1787	1698	1610	1522	1434	468	423	379
18	1875	1787	1698	1610	1522	1434	468	423	379
19	1875	1787	1698	1610	1522	1434	468	423	379
20	1875	1787	1698	1610	1522	1434	462	418	374
21	1875	1787	1698	1610	1521	1430	454	411	367
22	1859	1769	1677	1587	1496	1407	446	403	360
23	1829	1740	1650	1561	1472	1384	438	396	354
24	1799	1712	1622	1535	1447	1360	429	388	347
25	1769	1683	1594	1509	1422	1336	421	380	340
26	1739	1654	1567	1482	1396	1312	412	373	333
27	1708	1625	1539	1455	1371	1288	404	365	326
28	1678	1595	1511	1429	1346	1264	396	358	319
29	1647	1566	1483	1402	1320	1240	387	350	312
30	1617	1537	1455	1376	1295	1217	379	343	306
31	1587	1508	1427	1349	1270	1193	371	335	299
32	1557	1479	1400	1323	1245	1170	363	328	293
33	1527	1451	1373	1297	1221	1146	355	321	286
34	1497	1423	1346	1272	1196	1123	347	314	280
35	1468	1395	1319	1246	1172	1100	339	307	273
36	1439	1367	1293	1221	1148	1078	332	300	267
37	1411	1340	1266	1196	1125	1056	324	293	261
38	1382	1313	1241	1172	1102	1034	317	286	255
39	1354	1286	1215	1148	1079	1012	310	280	249
40	1327	1260	1190	1124	1056	991	303	273	244
Area, In.²	124.99	119.12	113.22	107.34	101.47	95.58	31.18	28.23	25.28
I ₁₋₁ , in.⁴	6420.5	6010.5	5609.4	5221.4	4843.4	4475.9	1164.1	1042.1	923.0
r ₁₋₁ , in.	7.17	7.10	7.04	6.97	6.91	6.84	6.11	6.08	6.04
I ₂₋₂ , in.⁴	2301.0	2168.2	2037.4	1909.1	1783.5	1659.9	467.6	419.9	373.1
r ₂₋₂ , in.	4.29	4.27	4.24	4.22	4.19	4.17	3.87	3.86	3.84
Weight Lbs. per Foot	425	405	385	365	345	325	106	96	86

Safe load values above upper zig-zag line are for ratios of l/r not over 60, those between zig-zag lines are for ratios up to 120 l/r and those below lower zig-zag line are for ratios not over 200 l/r.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

12-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—American Institute of Steel Construction—1923

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot									
	CB 124C 12"x12"				CB 124B 12"x12"			CB 123B 12"x9"		
	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.
11	450	419	388	362	335	309	287	291	265	243
12	450	419	388	362	335	309	287	285	259	237
13	450	419	388	362	335	309	287	276	251	229
14	450	419	388	362	335	309	287	267	243	222
15	447	418	388	362	331	307	287	258	234	214
16	437	409	381	357	324	300	281	249	226	207
17	427	399	373	349	316	293	275	241	218	199
18	416	390	364	341	308	286	268	232	210	192
19	405	380	355	333	299	279	262	223	202	185
20	395	370	346	325	291	271	255	215	195	178
21	384	360	337	317	283	264	248	207	187	171
22	374	351	328	309	275	257	242	199	180	164
23	363	341	320	301	268	250	235	191	173	158
24	353	332	311	293	260	243	229	184	166	152
25	343	322	302	285	252	236	223	177	160	146
26	333	313	294	277	245	229	216	170	154	140
27	323	304	286	269	238	222	210	163	148	135
28	314	295	278	262	230	216	204	157	142	129
29	304	287	270	255	224	210	199	151	136	124
30	295	278	262	247	217	203	193	145	131	120
31	287	270	254	240	210	197	187	139	126	115
32	278	262	247	234	204	191	182	134	121	111
33	270	255	240	227	198	186	177	129	117	106
34	262	247	233	220	192	180	171	124	112	102
35	254	240	226	214	186	175	166	120	108	99
36	246	233	220	208	180	170	162	115	104	95
37	239	226	213	202	175	165	157	111	100	91
38	232	219	207	196	169	160	152			
39	225	213	201	191	164	155	148			
40	218	207	195	185	160	151	144			
Area, in. ²	29.99	27.93	25.88	24.11	22.35	20.58	19.11	19.41	17.65	16.17
I ₁₋₁ , in. ⁴	721.4	696.6	672.0	650.8	569.2	539.0	521.3	525.7	472.0	428.4
r ₁₋₁ , in.	4.90	4.99	5.10	5.20	5.01	5.12	5.22	5.20	5.17	5.15
I ₂₋₂ , in. ⁴	260.6	249.7	239.2	230.5	187.5	180.7	175.2	99.1	89.0	80.9
r ₂₋₂ , in.	2.95	2.93	3.04	3.09	2.90	2.96	3.03	2.26	2.25	2.24
Weight Lbs. per Foot	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.

Safe load values above upper zig-zag line are for ratios of l/r not over 60, those between zig-zag lines are for ratios up to 120 l/r and those below lower zig-zag line are for ratios not over 200 l/r.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

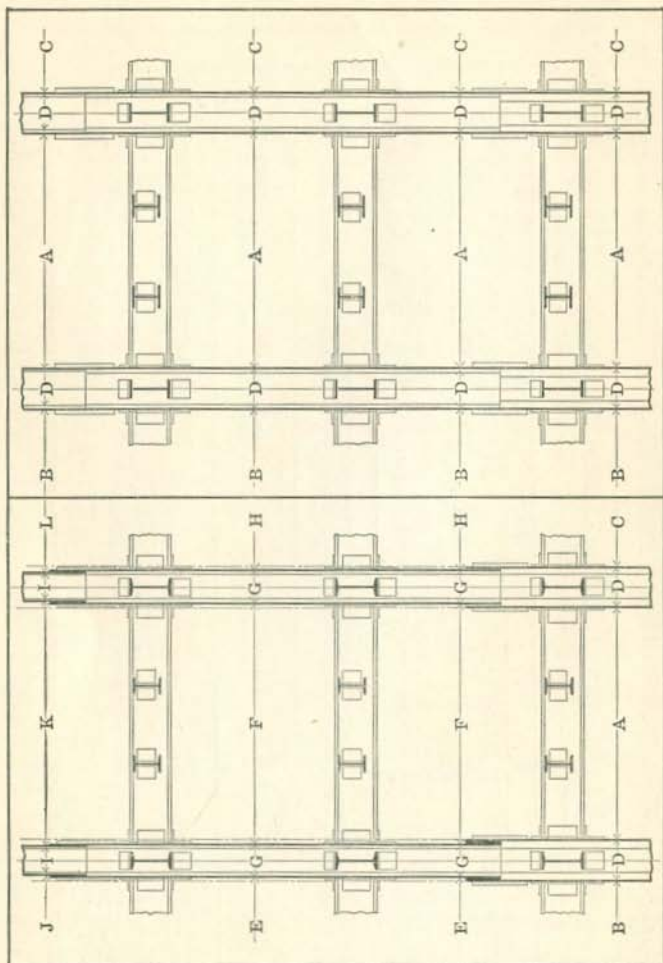
10, 9 AND 8-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—American Institute of Steel Construction—1923

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot							
	CB 103A 10"x10"				B 40 9"		B 39 8"	
	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17.5 lbs.
3	282	260	238	216	110	90.3	93	77.1
4	282	260	238	216	110	90.3	93	77.1
5	282	260	238	216	110	90.3	93	77.1
6	282	260	238	216	106	89.0	87	74.2
7	282	260	238	216	99	83.6	81	69.2
8	282	260	238	216	92	78.1	75	64.3
9	282	260	238	216	85	72.7	69	59.5
10	282	260	238	216	79	67.5	63	54.9
11	282	260	238	216	73	62.6	58	50.6
12	281	260	238	216	67	57.9	53	46.5
13	273	254	234	214	62	53.6	49	42.9
14	265	246	228	209	57	49.6	45	39.5
15	257	239	221	203	53	45.9	41	36.4
16	249	231	214	197	49	42.5	38	33.6
17	240	224	208	191	45	39.4	35	31.0
18	232	216	201	185	42	36.6		28.7
19	224	209	194	179				
20	216	202	188	173				
21	209	195	182	168				
22	201	188	175	162				
23	194	181	169	157				
24	187	175	163	151				
25	180	168	158	146				
26	173	162	152	141				
27	167	156	147	136				
28	161	151	141	131				
29	155	145	136	127				
30	149	140	132	123				
31	144	135	127	118				
32	138	130	123	114				
33	133	125	118	110				
34	129	121	114	107				
35	124	117	110	103				
36	120	113	106	99				
37	115	109	103	96				
38	111	105	99	93				
39	108	101	96	90				
40		98	93	87				
Area, in. ²	18.81	17.34	15.87	14.40	7.34	6.02	6.17	5.14
I ₁₋₁ , in. ⁴	308.8	296.5	284.3	272.0	95.5	86.6	63.4	57.9
I ₁₋₁ , in.	4.05	4.13	4.23	4.35	3.61	3.79	3.21	3.36
I ₂₋₂ , in. ⁴	106.3	101.7	97.3	93.0	8.8	8.0	6.6	6.0
I ₂₋₂ , in.	2.38	2.42	2.48	2.54	1.09	1.15	1.03	1.08
Weight Lbs. per Foot	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17.5 lbs.

Safe load values above upper zig-zag line are for ratios of l/r not over 60, those between zig-zag lines are for ratios up to 120 l/r and those below lower zig-zag line are for ratios not over 200 l/r.



TYPICAL FRAMING OF VARIABLE DEPTH AND CONSTANT DEPTH COLUMNS

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

14-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—City of New York Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot								
	CB 146 14"x15"								
	425 lbs.	405 lbs.	385 lbs.	365 lbs.	345 lbs.	325 lbs.	106 lbs.	96 lbs.	86 lbs.
1	1975	1882	1789	1696	1603	1510	492	446	399
2	1951	1859	1767	1675	1583	1491	485	439	393
3	1926	1836	1744	1653	1562	1472	479	433	388
4	1902	1812	1722	1632	1542	1452	472	427	382
5	1877	1789	1699	1611	1522	1433	465	421	377
6	1853	1765	1677	1589	1501	1414	458	415	371
7	1829	1741	1655	1568	1481	1395	452	409	366
8	1804	1718	1632	1547	1461	1375	445	403	360
9	1780	1695	1610	1525	1440	1356	438	396	355
10	1755	1672	1587	1504	1420	1337	431	390	349
11	1731	1648	1565	1482	1400	1317	424	384	344
12	1706	1625	1542	1461	1379	1298	418	378	338
13	1682	1601	1520	1440	1359	1279	411	372	333
14	1657	1578	1497	1418	1339	1260	404	366	327
15	1633	1554	1475	1397	1318	1240	397	360	322
16	1608	1531	1453	1376	1298	1221	391	353	316
17	1584	1508	1430	1354	1278	1202	384	347	310
18	1559	1484	1408	1333	1257	1183	377	341	305
19	1535	1461	1385	1311	1237	1163	370	335	299
20	1510	1437	1363	1290	1217	1144	364	329	294
22	1461	1390	1318	1247	1176	1106	350	317	283
24	1412	1344	1273	1205	1135	1067	336	304	272
26	1364	1297	1228	1162	1095	1029	323	292	261
28	1315	1250	1183	1119	1054	990	309	280	250
30	1266	1203	1139	1076	1013	952	296	267	239
32	1217	1156	1094	1034	973	913	282	255	228
34	1168	1109	1049	991	932	875	269	243	216
36	1119	1062	1004	948	891	836	255	231	205
38	1070	1015	959	906	851	798	242	218	194
40	1021	969	914	863	810	759			
Area, in. ²	124.99	119.12	113.22	107.34	101.47	95.58	31.18	28.23	25.28
I ₁₋₁ , in. ⁴	6420.5	6010.5	5609.4	5221.4	4843.4	4475.9	1164.1	1042.1	923.0
r ₁₋₁ , in.	7.17	7.10	7.04	6.97	6.91	6.84	6.11	6.08	6.04
I ₂₋₂ , in. ⁴	2301.0	2168.2	2037.4	1909.1	1783.5	1659.9	467.6	419.9	373.1
r ₂₋₂ , in.	4.29	4.27	4.24	4.22	4.19	4.17	3.87	3.86	3.84
Weight Lbs. per Foot	425	405	385	365	345	325	106	96	86

Safe load values above are for ratios of l/r not over 120, for both main and secondary members.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

12-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—City of New York Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot									
	CB 124C 12"x12"				CB 124B 12"x12"			CB 123B 12"x9"		
	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.
1	471	439	407	379	351	323	300	303	276	253
2	463	431	400	373	345	318	295	296	269	247
3	454	423	393	366	338	312	290	289	263	241
4	446	415	385	360	332	306	285	282	256	234
5	437	408	378	353	325	300	279	274	249	228
6	429	400	371	346	319	294	274	267	243	222
7	420	392	364	340	312	288	269	260	236	216
8	412	384	357	333	306	283	263	253	230	210
9	403	376	350	327	299	277	258	246	223	204
10	394	368	343	320	293	271	253	238	217	198
11	386	361	335	314	286	265	247	231	210	192
12	377	353	328	307	280	259	242	224	203	186
13	369	345	321	301	273	253	237	217	197	180
14	360	337	314	294	267	248	232	210	190	174
15	352	329	307	287	260	242	226	202	184	168
16	343	321	300	281	254	236	221	195	177	162
17	335	313	293	274	248	230	216	188	170	156
18	326	306	285	268	241	224	210	181	164	150
19	318	298	278	261	235	219	205	173	157	144
20	309	290	271	255	228	213	200	166	151	137
22	292	274	257	242	215	201	189	152	137	125
24	275	259	242	228	202	189	179			
26	258	243	228	215	189	178	168			
28	241	227	214	202	176	166	157			
30			200	189			147			
Area, in. ²	29.99	27.93	25.88	24.11	22.35	20.58	19.11	19.41	17.65	16.17
I ₁₋₁ , in. ⁴	721.4	696.6	672.0	650.8	560.2	539.0	521.3	525.7	472.0	428.4
r ₁₋₁ , in.	4.90	4.99	5.10	5.20	5.01	5.12	5.22	5.20	5.17	5.15
I ₂₋₂ , in. ⁴	260.6	249.7	239.2	230.5	187.5	180.7	175.2	99.1	89.0	80.9
r ₂₋₂ , in.	2.95	2.99	3.04	3.09	2.90	2.96	3.03	2.26	2.25	2.24
Weight Lbs. per Foot	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.

Safe load values above are for ratios of l/r not over 120, for both main and secondary members.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

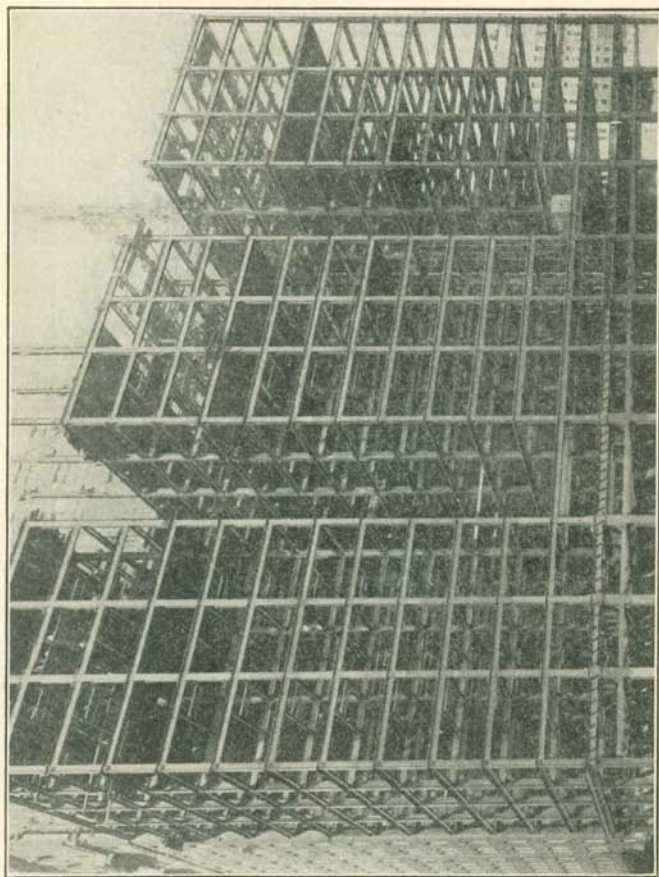
10, 9 AND 8-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—City of New York Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot							
	CB 103A 10"x10"				B 40 9"		B 39 8"	
	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17.5 lbs.
1	294	271	249	226	112	92	94	78
2	288	265	243	221	106	88	89	74
3	281	259	238	216	100	83	84	70
4	274	253	232	211	95	79	79	66
5	268	247	227	207	89	74	74	62
6	261	241	222	202	84	70	69	58
7	254	235	216	197	78	66	63	54
8	248	229	211	192	72	61	58	50
9	241	223	206	188	67	57	53	46
10	235	217	200	183	61	52	48	42
11	228	211	195	178		48		
12	221	205	189	173				
13	215	199	184	168				
14	208	193	179	164				
15	201	187	173	159				
16	195	181	168	154				
17	188	175	163	149				
18	181	169	157	145				
19	175	163	152	140				
20	168	157	146	135				
21	162	151	141	130				21
22	155	145	136	126				22
Area, in. ²	18.81	17.34	15.87	14.40	7.34	6.02	6.17	5.14
I ₁₋₁ , in. ⁴	308.8	296.5	284.3	272.0	95.5	86.6	63.4	57.9
r ₁₋₁ , in.	4.05	4.13	4.23	4.35	3.61	3.79	3.21	3.36
I ₂₋₂ , in. ⁴	106.3	101.7	97.3	93.0	8.8	8.0	6.6	6.0
r ₂₋₂ , in.	2.38	2.42	2.48	2.54	1.09	1.15	1.03	1.08
Weight Lbs. per Foot	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17.5 lbs.

Safe load values above are for ratios of l/r not over 120, for both main and secondary members.



WILLIAM PENN HOTEL, PITTSBURGH, PA.—CARNEGIE BEAM SECTIONS IN STEEL CONSTRUCTION

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Continued

14-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—City of Chicago Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot								
	CB 146 14"x15"								
	425 lbs.	405 lbs.	385 lbs.	365 lbs.	345 lbs.	325 lbs.	106 lbs.	96 lbs.	86 lbs.
6	1750	1668	1587	1503	1421	1338	437	395	354
7	1750	1668	1587	1503	1421	1338	437	395	354
8	1750	1668	1587	1503	1421	1338	437	395	354
9	1750	1668	1587	1503	1421	1338	437	395	354
10	1750	1668	1587	1503	1420	1337	431	390	349
11	1731	1648	1565	1482	1400	1317	424	384	344
12	1706	1625	1542	1461	1379	1298	418	378	338
13	1682	1601	1520	1440	1359	1279	411	372	333
14	1657	1578	1497	1418	1339	1260	404	366	327
15	1633	1554	1475	1397	1318	1240	397	360	322
16	1608	1531	1453	1376	1298	1221	391	353	316
17	1584	1508	1430	1354	1278	1202	384	347	310
18	1559	1484	1408	1333	1257	1183	377	341	305
19	1535	1461	1385	1311	1237	1163	370	335	299
20	1510	1437	1363	1290	1217	1144	364	329	294
22	1461	1390	1318	1247	1176	1106	350	317	283
24	1412	1344	1273	1205	1135	1067	336	304	272
26	1364	1297	1228	1162	1095	1029	323	292	261
28	1315	1250	1183	1119	1054	990	309	280	250
30	1266	1203	1139	1076	1013	952	296	267	239
32	1217	1156	1094	1034	973	913	282	255	228
34	1168	1109	1049	991	932	875	269	243	216
36	1119	1062	1004	948	891	836	255	231	205
38	1070	1015	959	906	851	798	242	218	194
40	1021	969	914	863	810	759	228	206	183
42	972	922	869	820	769	721	215	194	172
44	923	875	825	777	728	682	201	181	161
46	874	828	780	735	688	644	188	169	150
48	825	781	735	692	647	605	174	157	139
50	776	734	690	649	606	567			
Area, in. ²	124.99	119.12	113.22	107.34	101.47	95.58	31.18	28.23	25.28
I-1, in. ⁴	6420.5	6010.5	5609.4	5221.4	4843.4	4475.9	1164.1	1042.1	923.0
r1-1, in.	7.17	7.10	7.04	6.97	6.91	6.84	6.11	6.08	6.04
I2-2, in. ⁴	2301.0	2168.2	2037.4	1909.1	1783.5	1659.9	467.6	419.9	373.1
r2-2, in.	4.29	4.27	4.24	4.22	4.19	4.17	3.87	3.86	3.84
Weight Lbs. per Foot	425	405	385	365	345	325	106	96	86

Safe loads above upper zig-zag line represent values not exceeding 14,000 pounds per square inch.
 Values above lower zig-zag line represent ratios of l/r not exceeding 120.
 Values below lower zig-zag line represent ratios of l/r not exceeding 150.

CARNEGIE STEEL COMPANY

CARNEGIE BEAM SECTIONS—Continued

12-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

Unit Stress—City of Chicago Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot									
	CB 124C 12"x12"				CB 124B 12"x12"			CB 123B 12"x9"		
	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.
5	420	391	362	338	313	288	268	272	247	226
6	420	391	362	338	313	288	268	267	243	222
7	420	391	362	338	312	288	268	260	236	216
8	412	384	357	333	306	283	263	253	230	210
9	403	376	350	327	299	277	258	246	223	204
10	394	368	343	320	293	271	253	238	217	198
11	386	361	335	314	286	265	247	231	210	192
12	377	353	328	307	280	259	242	224	203	186
13	369	345	321	301	273	253	237	217	197	180
14	360	337	314	294	267	248	232	210	190	174
15	352	329	307	287	260	242	226	202	184	168
16	343	321	300	281	254	236	221	195	177	162
17	335	313	293	274	248	230	216	188	170	156
18	326	306	285	268	241	224	210	181	164	150
19	318	298	278	261	235	219	205	173	157	144
20	309	290	271	255	228	213	200	166	151	137
22	292	274	257	242	215	201	189	152	137	125
24	275	259	242	228	202	189	179	137	124	113
26	258	243	228	215	189	178	168	123	111	102
28	241	227	214	202	176	166	157	109	98	89
30	224	211	200	189	163	154	147			
32	207	196	185	176	150	143	136			
34	189	180	171	163	137	131	126			
36	172	164	157	150	125	119	115			
38			142	137						
Area, in.²	29.99	27.93	25.88	24.11	22.35	20.58	19.11	19.41	17.65	16.17
I ₁₋₁ , in.⁴	721.4	696.6	672.0	650.8	560.2	539.0	521.3	525.7	472.0	428.4
r ₁₋₁ , in.	4.90	4.99	5.10	5.20	5.01	5.12	5.22	5.20	5.17	5.15
I ₂₋₂ , in.⁴	260.6	249.7	239.2	230.5	187.5	180.7	175.2	99.1	89.0	80.9
r ₂₋₂ , in.	2.95	2.99	3.04	3.09	2.90	2.96	3.03	2.26	2.25	2.24
Weight Lbs. per Foot	102 lbs.	95 lbs.	88 lbs.	82 lbs.	76 lbs.	70 lbs.	65 lbs.	66 lbs.	60 lbs.	55 lbs.

Safe loads above upper zig-zag line represent values not exceeding 14,000 pounds per square inch.

Values above lower zig-zag line represent ratios of l/r not exceeding 120.

Values below lower zig-zag line represent ratios of l/r not exceeding 150.

CARNEGIE BEAM SECTIONS

CARNEGIE BEAM SECTIONS—Concluded

10, 9 AND 8-INCH COLUMNS

ALLOWABLE CONCENTRIC LOADS IN THOUSANDS OF POUNDS

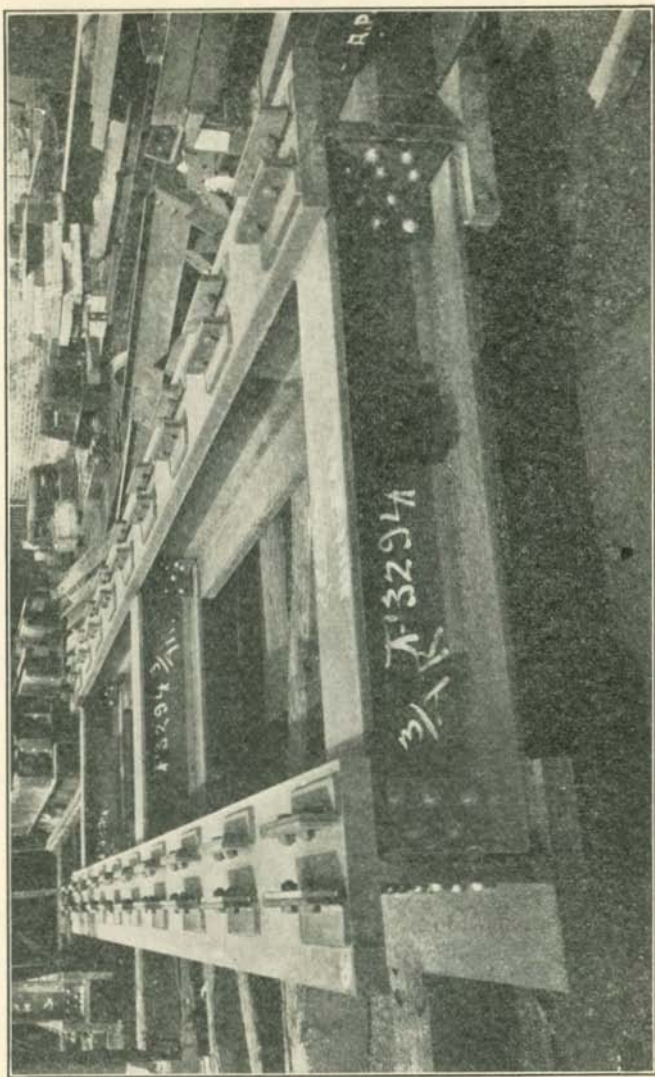
Unit Stress—City of Chicago Code

Effective Length in Feet	Nominal Depth and Flange Width—Weight per Foot							
	CB 103A 10"x10"				B 40 9"		B 39 8"	
	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17.5 lbs.
1	263	243	222	202	103	84	86	72
2	263	243	222	202	103	84	86	72
3	263	243	222	202	100	83	84	70
4	263	243	222	202	95	79	79	66
5	263	243	222	202	89	74	74	62
6	261	241	222	202	84	70	69	58
7	254	235	216	197	78	66	63	54
8	248	229	211	192	72	61	58	50
9	241	223	206	188	67	57	53	46
10	235	217	200	183	61	52	48	42
11	228	211	195	178	55	48	43	38
12	221	205	189	173	50	44	38	34
13	215	199	184	168	44	39		30
14	208	193	179	164		35		
15	201	187	173	159				
16	195	181	168	154				
17	188	175	163	149				
18	181	169	157	145				
19	175	163	152	140				
20	168	157	146	135				
21	162	151	141	130				
22	155	145	136	126				
23	148	139	130	121				
24	142	133	125	116				
25	135	127	120	111				
26	128	121	114	107				
27	122	115	109	102				
28	115	109	103	97				
29		103	98	92				
30		97	93	88				
Area, in. ²	18.81	17.34	15.87	14.40	7.34	6.02	6.17	5.14
I ₁₋₁ , in. ⁴	308.8	296.5	284.3	272.0	95.5	86.6	63.4	57.9
r ₁₋₁ , in.	4.05	4.13	4.23	4.35	3.61	3.79	3.21	3.36
I ₂₋₂ , in. ⁴	106.3	101.7	97.3	93.0	8.8	8.0	6.6	6.0
r ₂₋₂ , in.	2.38	2.42	2.48	2.54	1.09	1.15	1.03	1.08
Weight Lbs. per Foot	64 lbs.	59 lbs.	54 lbs.	49 lbs.	25 lbs.	20.5 lbs.	21 lbs.	17 lbs.

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Values below lower zig-zag line represent ratios of l/r not exceeding 150.



CARNEGIE BEAM SECTIONS ADAPTED TO ASH PIT CONSTRUCTION

CARNEGIE STEEL COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

OFFICES

GENERAL OFFICES:

Pittsburgh, Carnegie Building, 434 Fifth Avenue

DISTRICT OFFICES:

Birmingham, Brown-Marx Building, 2000 First Avenue, North,

Boston, Statler Office Building, 20 Providence Street,

Buffalo, The Marine Trust Co. Building, 233-239 Main Street,

Chicago, 208 South La Salle Street,

Cincinnati, Union Trust Building, Fourth and Walnut Streets,

Cleveland, Rockefeller Building, 614 Superior Avenue, N. W.,

Denver, First National Bank Building, 17th and Stout Streets,

Detroit, 2130 Buhl Building, 535 Griswold Street,

New Orleans, Maison Blanche, 921 Canal Street,

New York, Empire Building, 71 Broadway,

Philadelphia, Widener Building, Chestnut and Juniper Streets,

Pittsburgh, Carnegie Building, 434 Fifth Avenue,

St. Louis, 506 Olive Street,

St. Paul, 1308 Merchants National Bank Building, 4th & Robert Sts.

EXPORT DISTRIBUTORS:

UNITED STATES STEEL PRODUCTS CO.

New York, Hudson Terminal, 30 Church Street.

PACIFIC COAST DISTRIBUTORS:

UNITED STATES STEEL PRODUCTS CO., PACIFIC COAST DEPT.

Los Angeles, 2087 East Slauson Avenue,

Portland, 777 Nicolai Street,

San Francisco, Russ Building, Pine and Montgomery Streets,

Seattle, Fourth Avenue South and Connecticut Street.