Dynaform® Fiberglass Structural Shapes

Design Guide
SI UNITS

Corrosion Resistant

Fire Retardant

Low Maintenance

Light Weight

Long Service Life

Fibergrate
Composite Structures

High Performance Composite Solutions

QUALITY ISO 9001-2000 CERTIFIED

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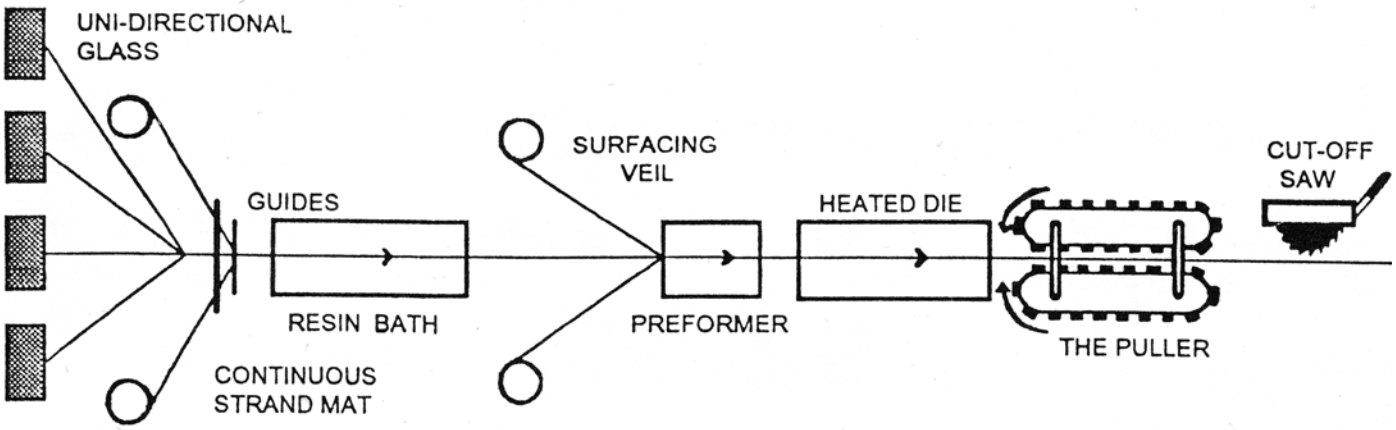
Pultrusion Process



Pultrusion is a continuous process of raw materials, typically resin and reinforcing materials, forming profiles of constant cross section in continuous length.

Pultrusion gets its name from the method by which the profiles are made. Raw materials are literally pulled by what we call "the puller." "The puller" is the machine made up of pulling pads, which grip the product, and a drive system which keeps the product moving. "The puller" is located just before the final cut-off saw.

The process starts with the reinforcements. Typically, unidirectional glass roving is the fiber that runs along the length of the profile. Second, the fiberglass mat is added in, which is multidirectional reinforcement. Third is the resin, typically polyester or vinylester. The glass is "wet-out" with the liquid resin and pulled into a heated die. Just before all the material enters the die, surface veil may be added which enhances the final product's surface.

Now that all the reinforcements have been "wet-out" and pulled into a heated die, the curing takes place. All the resins used in the pultrusion process have a catalyst or hardener added when the resin is mixed. This catalyst activated at about 93°C. Consequently, as the "wet-out" reinforcement pass through the heated die, the product changes from liquid to a solid profile with all the reinforcement laminated within.

The product exiting the die is pulled by "the puller", which upon exiting can be cut to the desired length.

Standard Resin Systems for Structural Shapes

STANDARD POLYESTER (ISO *or* PN) RESIN SYSTEM

The STANDARD POLYESTER RESIN SYSTEM refers to a NON FLAME RETARDANT isophthalic polyester resin system. This resin system is manufactured in olive green and incorporates ultraviolet inhibitors. Polyester resins exhibit good corrosion resistance, good electrical properties, low thermal conductivity and excellent mechanical properties.

FLAME RETARDANT POLYESTER (ISOFR *or* PF) RESIN SYSTEM

This resin system exhibits the same characteristics as the Standard Polyester resin system PLUS a flame spread rating of 25 or less when tested in accordance with ASTM E-84. The FLAME RETARDANT resin system is manufactured in gray and yellow.

FLAME RETARDANT VINYL ESTER (VEFR *or* VF) RESIN SYSTEM

This resin system is manufactured from vinyl ester resin which exhibits higher strength, improved strength and stiffness retention at elevated temperatures, and improved corrosion resistance. This system also meets a maximum flame spread rating of 25 and is produced in beige and yellow.

ELEVATED TEMPERATURE EFFECTS

The approximate retention of mechanical properties at elevated temperatures are:

	TEMPERATURE	ISO(PN)/ISOFR(PF)	VEFR(VF)
Ultimate Stress	37˚ C	85%	90%
	51˚ C	70%	80%
	65˚ C	50%	80%
	79˚ C	Not Recommended	75%
	93˚ C	Not Recommended	50%
Modulus of Elasticity	37˚ C	100%	100%
	51˚ C	90%	95%
	65˚ C	85%	90%
	79˚ C	Not Recommended	88%
	93˚ C	Not Recommended	85%

Chemical Resistance Guide - Structural Shapes

The data in this chemical resistance guide is based on field service performance, laboratory testing and extrapolated values from our resin manufacturers' recommendation. Data shown is intended as a guide only. It is recommended that for a specific application, testing be done in the actual chemical environment.

The following conditions will effect the suitability of a specific resin laminate:

- Periodic changes in temperature
- Temperature spikes
- Changes in chemical concentrations
- Combinations of chemicals
- Exposure to vapors only
- Exposure to frequent splashes and spills
- Exposure to intermittent splashes and spills
- Frequency of maintenance wash down
- Load bearing or non-load bearing requirements

Chemical Environment	Maximum Recommended Service Temperatures, °C		Chemical Environment	Maximum Recommended Service Temperatures, °C	
	VEFR	ISO/ISOFR		VEFR	ISO/ISOFR
Acetic Acid, to 10%	76	26	Butyl Acetate	NR	NR
Acetic Acid, to 50%	81	NR	Butyl Alcohol	26	NR
Acetic Acid, Glacial	NR	NR	Calcium Carbonate	76	49
Acetone	NR	NR	Calcium Hydroxide	60	49
Aluminum Chloride	76	49	Calcium Hypochlorite	49	NR
Aluminum Hydroxide	60	49	Calcium Nitrate	76	49
Aluminum Nitrate	60	49	Calcium Sulfate	76	49
Aluminum Sulfate	76	49	Carbon Disulfide	NR	NR
Ammonium Chloride	76	49	Carbon Monoxide Gas	76	60
Ammonium Hydroxide, 5%	60	NR	Carbon Dioxide Gas	76	60
Ammonium Nitrate, to 50%	76	49	Carbon Tetrachloride	20	NR
Ammonium Nitrate, Saturated	76	NR	Liquid or Vapor	43	NR
Ammonium Persulfate, to 25%	60	32	Chlorine, Dry Gas	76	NR
Ammonium Phosphate	76	49	Chlorine, Wet Gas	76	NR
Ammonium Sulfate	76	49	Chlorine Water	60	NR
Amyl Alcohol	26	NR	Chloroform	NR	NR
Barium Carbonate	76	49	Chromic Acid, to 5%	43	NR
Barium Chloride	76	49	Chromous Sulfate	60	49
Barium Sulfate	76	49	Citric Acid	76	49
Benzene	NR	NR	Copper Chloride	76	76
Benzene Sulfonic Acid 50%	43	NR	Copper Cyanide	76	76
Benzoic Acid	76	49	Copper Nitrate	76	76
Benzyl Alcohol	NR	NR	Crude Oil, Sour	76	76
Borax	76	49	Cyclohexane, Liquid and Vapor	76	NR
Brine (Sodium Chloride Sol.)	76	49	Diesel Fuel	60	32
Bromine, Liquid or Vapor	NR	NR	Ethyl Acetate	NR	NR
Ethyl Alcohol	NR	NR	Phosphoric Acid, Vapor	76	49
Ethylene Glycol	76	49	Potassium Aluminum Sulfate	76	49
Fatty Acids	76	26	Potassium Bicarbonate	43	37
Ferric Chloride	76	43	Potassium Carbonate, to 10%	43	NR
Ferric Sulfate	76	43	Potassium Chloride	76	49
Formaldehyde	43	NR	Potassium Hydroxide	60	NR
Fuel Oil	60	26	Potassium Nitrate	76	49
Gasoline, Aviation and Ethyl	60	26	Potassium Sulfate	76	49

Chemical Resistance Guide - Structural Shapes

Chemical Environment	Maximum Recommended Service Temperatures, °C		Chemical Environment	Maximum Recommended Service Temperatures, °C	
	VEFR	ISO/ISOFR		VEFR	ISO/ISOFR
Glucose	76	37	Propylene Glycol	76	49
Glycerine	76	37	Sodium Acetate	76	49
Hexane	49	32	Sodium Benzoate	60	49
Hydraulic Fluid (Glycol Based)	60	NR	Sodium Bicarbonate	60	49
Hydraulic Fluid Skydraul	60	NR	Sodium Bisulfate	76	49
Hydrobromic Acid	43	NR	Sodium Bisulfite	76	49
Hydrochloric Acid, up to 15%	60	26	Sodium Borate	76	49
Hydrochloric Acid, Concentrated	43	NR	Sodium Bromide	76	49
Hydrogen Bromide, Dry Gas	60	26	Sodium Carbonate, to 10%	60	20
Hydrogen Bromine, Wet Gas	60	NR	Sodium Chloride	76	49
Hydrogen Chloride, Dry Gas	76	26	Sodium Cyanide	76	49
Hydrogen Chloride, Wet Gas	76	26	Sodium Dichromate	76	49
Hydrogen Flouride, Sol or Vapor	60	NR	Sodium Diphosphate	76	49
Hydrogen Peroxide, to 10%	43	NR	Sodium Hydroxide, 10%	60	NR
Hydrogen Sulfide, Dry Gas	60	26	Sodium Hypochlorite, to 5-1/4%	43	20
Hydrogen Sulfide, Wet Gas	60	26	Sodium Monophosphate	76	49
Isopropyl Alcohol	26	NR	Sodium Nitrate	76	49
JP-4	60	26	Sodium Nitrite	76	49
Kerosene	60	43	Sodium Sulfate	76	49
Lactic Acid	76	49	Sodium Tetraborate	60	49
Lead Acetate	76	49	Sodium Thiosulfate	60	49
Linseed Oil	76	37	Soy Oil	76	37
Lithium Chloride	76	49	Stearic Acid	76	49
Magnesium Carbonate	76	49	Styrene	NR	NR
Magnesium Chloride	76	49	Sulfamic Acid	76	49
Magnesium Hydroxide	76	37	Sulfated Detergents	NR	49
Magnesium Nitrate	76	49	Sulfite Liquor	71	37
Magnesium Sulfate	76	49	Sulfur Dioxide, gas-dry	76	49
Mercuric Chloride	76	49	Sulfur Dioxide, gas-wet	76	20
Mercury Metal	76	49	Sulfur Trioxide, gas-wet or dry	76	NR
Methyl Ethyl Ketone	NR	NR	Sulfuric Acid, to 25%	76	26
Mineral Oil	76	49	Tartaric Acid	76	49
Monochlorobenzene	NR	NR	Tetrachloroethylene	NR	NR
Naphtha	60	49	Toluene	NR	NR
Nickel Chloride	76	49	Trichloroethylene vapor	NR	NR
Nitric Acid, to 5%	43	37	Trisodium Phosphate	76	NR
Nitric Acid, Concentrated	NR	NR	Urea, 35%	43	NR
Nitric Acid, Vapor	60	37	Vinegar	76	65
Oleic Acid	76	49	Water, Distilled	81	65
Oxalic Acid	76	49	Water, Tap	81	49
Paper Mill Liquor	37	37	Zinc Chloride	76	49
Phenol Solution or Vapor	NR	NR	Zinc Nitrate	76	49
Phosphoric Acid	76	37	Zinc Sulfate	76	49
Phosphoric Acid, Salts thereof	76	49			

Chemical Resistance Guide - Vinyl Ester Threaded Rods

SOLUTION	MAXIMUM RECOMMENDED TEMPERATURE C°
H_2SO_4 - 25 %	99
HCl - 20%	99
HNO_3 - Gas	38
Acetic Acid - 25%	99
Phosphoric Acid - 100%	99
NaOH - 50%	82
Sodium Carbonate - 35%	82
NaCl - Saturated	82
Ethanol - 10%	49
Sodium Hypochlorate - 10%	49
All AIK $(SO_4)_2$	99
Perochloroethylene - 100%	27
n-Heptane - 100%	99
Kerosene - 100%	82
Toluene - 100%	27
H_2O_2 - 30%	65
Distilled Water	82

NOTE: Threads of threaded rods are cut into specially manufactured pultruded rods. Therefore, after installation of threaded rods and fiberglass nuts in a corrosive environment, the threads are to be sealed with a vinyl ester resin.

S.I. Coupon Properties - Structural Shapes

The values listed below are test results from coupon tests performed in accordance with the noted ASTM Test.

MECHANICAL PROPERTIES	ASTM	UNITS	VALUE
Tensile Stress, LW	D-638	MPa	206.8
Tensile Stress, CW	D-638	MPa	48.2
Tensile Modulus, LW	D-638	GPa	17.2
Tensile Modulus, CW	D-638	GPa	5.5
Compressive Stress, LW	D-695	MPa	206.8
Compressive Stress, CW	D-695	MPa	103.4
Compressive Modulus, LW	D-695	GPa	17.2
Compressive Modulus, CW	D-695	GPa	6.9
Flexural Stress, LW	D-790	MPa	206.8
Flexural Stress, CW	D-790	MPa	68.9
Flexural Modulus, LW	D-790	GPa	12.4
Flexural Modulus, CW	D-790	GPa	5.5
Modulus of Elasticity, E	Full Section	GPa	19.3
Shear Modulus	---	GPa	3.1
Short Beam Shear	D-2344	MPa	31.0
Punch Shear	D-732	MPa	68.9
Bearing Stress, LW	D-953	MPa	206.8
Notched Izod Impact, LW	D-256	J/mm	1.33
Notched Izod Impact, CW	D-256	J/mm	0.21

PHYSICAL PROPERTIES	ASTM	UNITS	VALUE
Barcol Hardness	D-2583	---	45
24 Hour Water Absorption	D-570	% max	0.45
Density	D-792	g/cc	1.72-1.94
Coefficient of Thermal Expansion, LW	D-696	10^{-6} cm/cm/°C	8

ELECTRICAL PROPERTIES	ASTM	UNITS	VALUE
Arc Resistance, LW	D-495	seconds	120
Dielectric Strength, LW	D-149	KV/mm	1.37
Dielectric Strength, PF	D-149	KV/mm	7.9
Dielectric Constant, PF	D-150	@60hz	5

ISOFR and VEFR Fire Retardant Structural Profiles:

FLAMMABILITY PROPERTIES	ASTM	UNITS	VALUE
Tunnel Test	E-84	Flame Spread	25 max
Flammability	D-635	---	Nonburning

LW = Lengthwise CW = Crosswise PF = Perpendicular to Laminate Face

S.I. Coupon Properties - Pultruded Flat Sheets

Below are the test results for typical coupon properties of ISO, ISOFR and VEFR Flat Sheet. Properties are derived per the ASTM test method shown. Synthetic surfacing veil and ultraviolet inhibitors are standard.

MECHANICAL PROPERTIES	ASTM	UNITS	THICKNESS					
			ISO & ISOFR			VEFR		
			3.2 mm	4.8-6.4 mm	9.5-25.4 mm	3.2 mm	4.8-6.4 mm	9.5-25.4 mm
Tensile Stress, LW	D-638	MPa	165.5	165.5	165.5	165.5	165.5	165.5
Tensile Stress, CW	D-638	MPa	51.7	68.9	68.9	51.7	68.9	68.9
Tensile Modulus, LW	D-638	GPa	13.8	13.8	13.8	13.8	13.8	13.8
Tensile Modulus, CW	D-638	GPa	6.9	7.6	9.6	6.9	7.6	9.6
Compressive Stress, LW	D-695	MPa	165.5	165.5	165.5	165.5	165.5	165.5
Compressive Stress, CW	D-695	MPa	106.9	113.8	113.8	113.8	120.7	120.7
Compressive Modulus, LW	D-695	GPa	12.4	12.4	12.4	12.4	12.4	12.4
Compressive Modulus, CW	D-695	GPa	6.9	6.9	6.9	6.9	6.9	6.9
Flexural Stress, LW	D-790	MPa	241.3	241.3	206.8	241.3	241.3	206.8
Flexural Stress, CW	D-790	MPa	103.4	103.4	124.1	103.4	103.4	124.1
Flexural Modulus, LW	D-790	GPa	11.0	13.8	13.8	11.0	13.8	13.8
Flexural Modulus, CW	D-790	GPa	6.2	7.6	9.6	6.2	7.6	9.6
Perpendicular Shear Stress, LW	D-3846	MPa	41.3	41.3	41.3	41.3	41.3	41.3
Perpendicular Shear Stress, CW	D-3846	MPa	41.3	41.3	41.3	41.3	41.3	41.3
Bearing Stress, LW	D-953	MPa	220.6	220.6	220.6	220.6	220.6	220.6
Notched Izod Impact, LW	D-256	J/mm	0.99	1.1	1.1	0.99	1.1	1.1
Notched Izod Impact, CW	D-256	J/mm	0.27	0.27	0.27	0.27	0.27	0.27

PHYSICAL PROPERTIES	ASTM	UNITS	3.2 mm	4.8-6.4 mm	9.5-25.4 mm	3.2 mm	4.8-6.4 mm	9.5-25.4 mm
Barcol Hardness	D-2583	----	40	40	40	40	40	40
24 Hour Water Absorption	D-570	% max	0.6	0.6	0.6	0.6	0.6	0.6
Density	D-792	g/cc	1.72-1.94	1.72-1.94	1.72-1.94	1.72-1.94	1.72-1.94	1.72-1.94
Coefficient Thermal Expansion, LW	D-696	10^{-6} mm/mm/°C	8	8	8	8	8	8

ELECTRICAL PROPERTIES	ASTM	UNITS	3.2 mm	4.8-6.4 mm	9.5-25.4 mm	3.2 mm	4.8-6.4 mm	9.5-25.4 mm
Arc Resistance, LW	D-495	seconds	120	120	120	120	120	120
Dielectric Strength, LW	D-149	kv./mm	1.37	1.37	1.37	1.37	1.37	1.37
Dielectric Strength, PF	D-149	kv/mm	7.9	7.9	7.9	7.9	7.9	7.9

FLAMMABILITY PROPERTIES FOR ISOFR & VEFR FLAT SHEET		
Tunnel Test	E-84	Flame Spread 25 max.
Flammability	D-635	Nonburning
UL	94	VO
NBS Smoke Chamber	E-662	Smoke Density 600-700

LW = Lengthwise CW = Crosswise PF = Perpendicular to Laminate Face

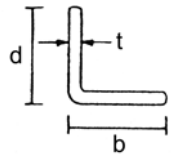
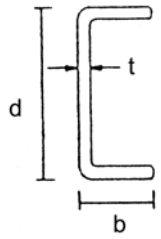
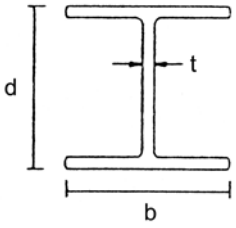
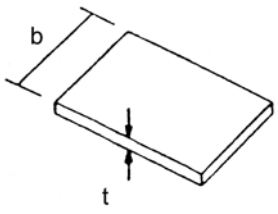
S.I. Coupon Properties - Threaded Rods and Nuts

Threaded rod and nuts are manufactured using premium vinyl ester resin containing UV inhibitors. The properties listed below are the result of the ASTM test method indicated.

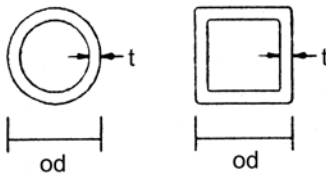
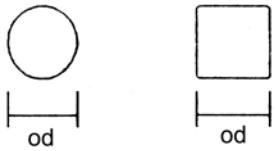
PROPERTIES	ASTM	UNITS	VALUE Diameter- Threads per mm (UNC)				
			9.5mm	12.7mm	15.9mm	19.0mm	25.4mm
Ultimate Transverse Shear (Double Shear)	B-565	Newton	18,680	30,240	44,480	59,600	106,750
Longitudinal Compressive Strength	D-695	MPa	344	344	344	344	344
Flexural Strength	D-790	MPa	482	482	482	482	482
Flexural Modulus	D-790	GPa	17.2	17.2	17.2	17.2	17.2
Flammability	D-635		Self-extinguishing for all				
Fire Retardant	E-84		Class 1 for all				
Water Absorption 24 hr. Immersion	D-570	% max	0.8	0.8	0.8	0.8	0.8
Longitudinal Coefficient of Thermal Expansion	D-696	10^{-6} mm/mm/°C	11	11	11	11	11
Ultimate Thread Shear using fiberglass nut	----	Newton	5,337	10,670	16,010	17,790	36,470
Ultimate Torque Strength fiberglass nut lubricated with SAE 10W30 motor oil	----	NewtonMeter	16	24	47	67	149
Rod Weight	----	kg/m	0.104	0.208	0.297	0.447	0.789
Nut Weight	----	grams	4.5	9.1	18.1	27.2	63.6
Nut Dimensions	----	mm (sq) x mm (thick)	17.2x11.4	21.8x14.2	26.9x17.5	31.5x20.8	41.4x27.9
Color			Gray	Gray	Gray	Gray	Gray

NOTE: Threads of threaded rods are cut into specifically manufactured pultruded rods. Therefore, after installation of threaded rods and fiberglass nuts in a corrosive environment, the threads are to be sealed with a vinyl ester resin.

S.I. Cross Sectional Tolerances

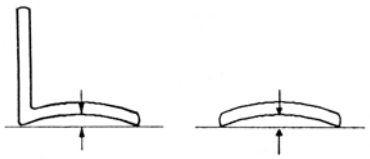
SHAPE	DIMENSION	TOLERANCE	MAXIMUM OR MINIMUM TOLERANCES
ANGLES 	t = thickness	± 10%	± 0.26mm minimum
	b = flange width	± 5%	± 2.4mm maximum
	d = depth	± 5%	± 2.4mm maximum
CHANNELS 	t = thickness	± 10%	± 0.26mm maximum
	b = flange width	± 5%	± 2.4mm maximum
	d = depth	± 5%	± 2.4mm maximum
WIDE FLANGE, I SHAPES 	t = thickness	± 10%	± 0.26mm maximum
	b = flange width	± 5%	± 2.4mm maximum
	d = depth	± 5%	± 2.4mm maximum
FLAT SHEET 	t = thickness	± 10%	± 1.02mm maximum
	b = width	± 3%	+ 2.4mm maximum ± 4.8mm minimum

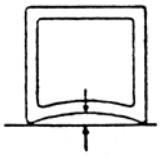
S.I. Cross Sectional Tolerances

SHAPE	DIMENSION	OUTSIDE DIMENSION CONDITION	TOLERANCES
ROUND & SQUARE TUBE 	t = thickness	Under 25.4mm	± 20%
		25.4mm and up	± 15 %
	od = outside dimension	Under 50.8mm	± 0.5mm
		50.8mm and up	± 1.0mm
ROUND ROD & SQUARE BAR 	od = outside dimension	Up to 76.2mm	± 0.26mm

FLATNESS

Flatness is measured in the center with the weight of the profile minimizing the deviation by contact with a flat surface.

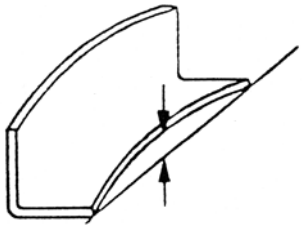
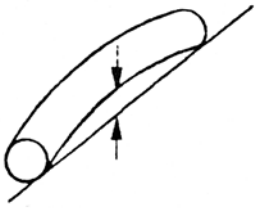
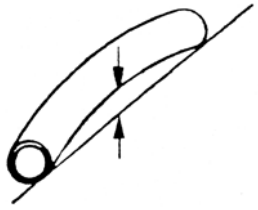
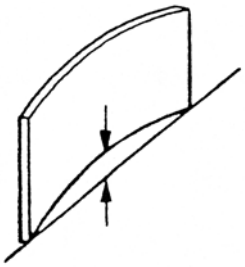
STRUCTURAL SHAPES RODS, BARS, & SHEET 	**Allowable deviation from flat**	
	Width	**All Thicknesses**
	Up to 25.4mm	0.21mm
	Over 25.4mm	0.21mm/mm

HOLLOW SHAPES 	**Allowable deviation from flat**		
	Width	**Thickness 3.18mm to 4.7mm**	**Thickness 4.8mm and over**
	Up to 25.4mm	0.31mm	0.21mm
	Over 25.4mm	0.31mm/mm	0.21mm/mm

S.I. Cross Sectional Tolerances

STRAIGHTNESS

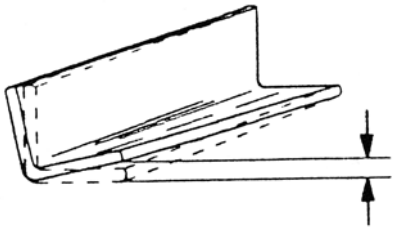
Straightness is measured in the center with the weight of the pultrusion minimizing the deviation by contact with a flat surface.

ANGLE, BEAM AND CHANNEL 	**Allowable deviation from straight**	
	All widths	4.2mm/m
RODS AND BARS 	**Allowable deviation from straight**	
	Diameter/Depth	**Per Meter**
	Up to 25.4mm	1.7mm
	Over 25.4mm	3.4mm
ROUND, SQUARE, AND RECTANGULAR TUBE 	**Allowable deviation from straight**	
	Diameter/Depth	**Per Meter**
	Up to 50.8mm	1.7mm
	Over 50.8mm	2.5mm
SHEET AND PLATE 	**Allowable deviation from straight**	
	All thicknesses and widths	2.1mm/m

S.I. Cross Sectional Tolerances

TWIST

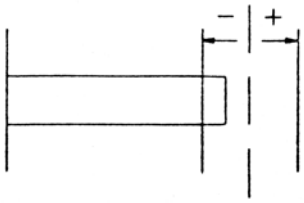
Twist is measured with the weight of the pultrusion minimizing the twist.

ALL PROFILES	Allowable twist		
	**Width/Depth**	**mm Per Meter**	**Per Piece Max mm**
	Up to 38.1mm	tan 1° x width x 3.28	tan 7° x width
	38.1mm to 76.2mm	tan 1/2° x width x 3.28	tan 5° x width
	76.3mm and over	tan 1/3° x width x 3.28	tan 3° x width

ANGULARITY

ALL PROFILES	Allowable deviation from specific angle	
	Thickness up to 19mm	tan 1-1/2° x width of flange in mm

CUT LENGTHS

ALL PROFILES	Allowable deviation from specific length	
	6.1 meters	-0, + 12.7mm/cut length
	Over 6.1m to 15.24m	-0", +25.4mm/cut length

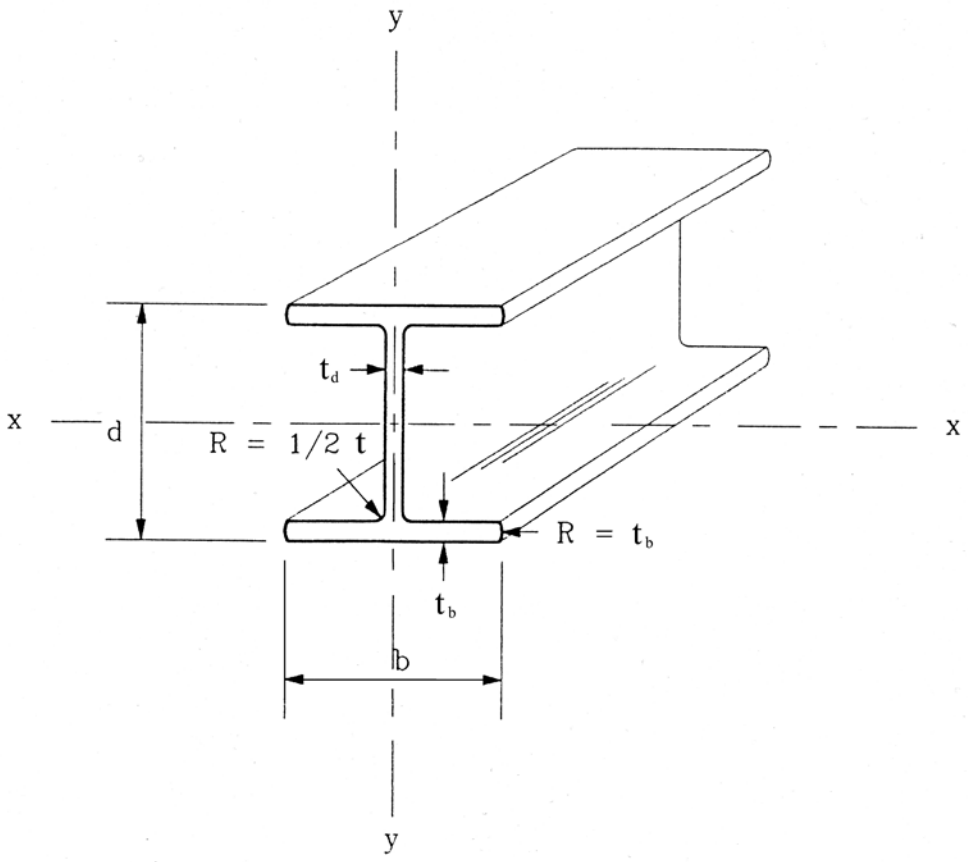
SQUARENESS OF ENDCUT

ALL PROFILES	Allowable deviation from square	
	All thicknesses	tan 1° x width in millimeters

S.I. Section Properties

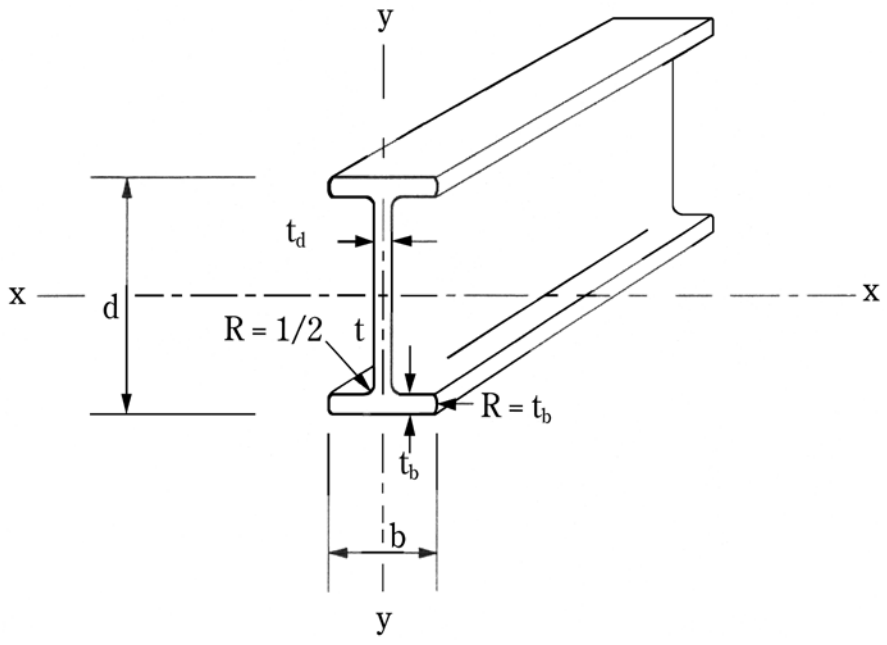
WIDE FLANGE SHAPES

SECTION DIMENSIONS					SECTION PROPERTIES					
					X - X			Y - Y		
d	b	t	A	Wt.	I	S	r	I	S	r
mm	mm	mm	mm^2	kg/m	mm^4	mm^3	mm	mm^4	mm^3	mm
76	76	6	1374	2.44	1319454	34577	31	470342	12290	19
102	102	6	1865	3.20	3304878	65057	42	1111338	21959	24
152	152	6	2832	5.06	11771025	154530	65	3750245	49161	36
152	152	10	4181	7.29	16720016	219423	63	5627449	73906	37
203	203	10	5632	9.66	41285995	406399	86	13331893	131260	49
203	203	13	7426	12.95	52844742	520125	84	17789731	175178	49
254	254	10	7136	13.01	82634425	650730	108	26031113	205002	61
254	254	13	9361	16.22	106638491	839673	107	34722026	273336	61
305	305	13	11297	19.64	188323909	1236404	129	59983111	393617	73



I SHAPES

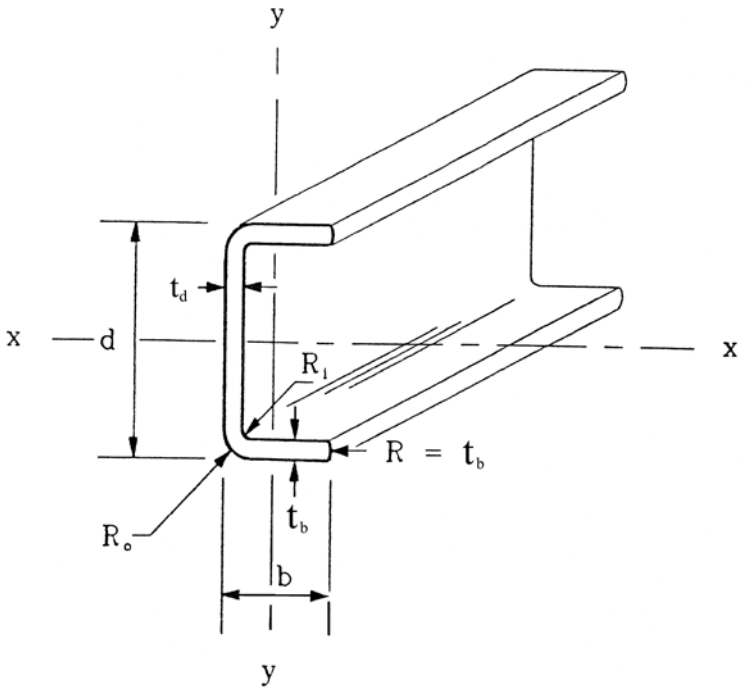
SECTION DIMENSIONS					SECTION PROPERTIES					
					X - X			Y - Y		
d	b	t	A	Wt.	I	S	r	I	S	r
mm	mm	mm	mm^2	kg/m	mm^4	mm^3	mm	mm^4	mm^3	mm
76	38	6	890	1.64	728405	19173	29	58272	3114	8
102	51	6	1213	2.23	1835581	36215	39	141519	5572	11
152	76	6	1858	3.27	7071772	92751	62	470342	12290	16
152	76	10	2729	4.76	9302772	122084	58	711756	18681	16
203	102	10	3697	6.40	23121656	227616	79	1677413	33102	21
203	102	13	4845	8.48	29394263	289396	78	2247650	44245	22
254	127	10	4658	8.6	46463914	365923	100	3267417	51455	26
254	127	13	6136	10.71	59641801	469653	99	4374592	68990	27
305	152	13	7426	12.95	105706133	693664	119	7537951	98978	32
457	114	10-13	7045	12.95	207345685	907024	172	3188333	55716	21
610	191	10-19	12839	22.62	781266386	2563265	248	21989506	230894	42



S.I. Section Properties

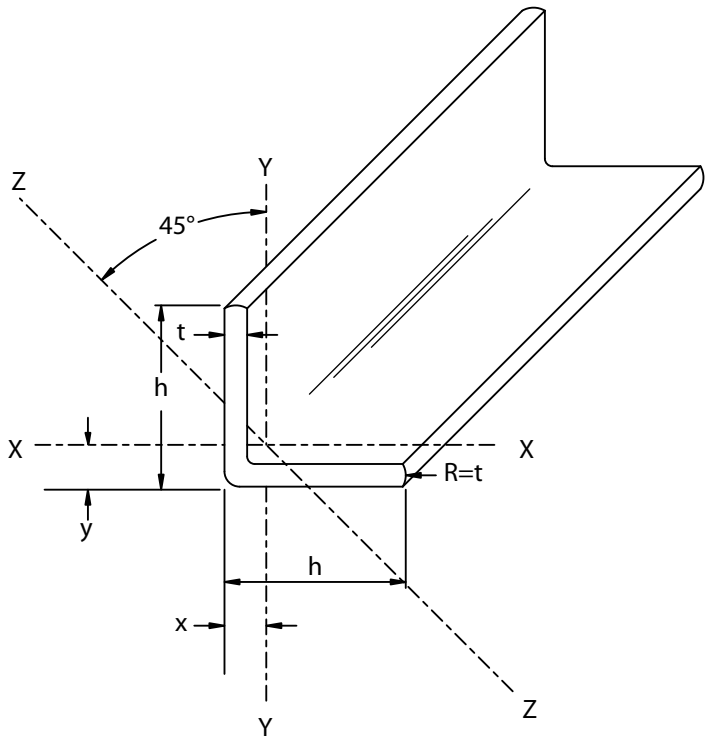
CHANNELS

SECTION DIMENSIONS								SECTION PROPERTIES					
								X - X			Y - Y		
d	b	t_d	t_b	A	Wt.	R_i	R_o	I	S	r	I	S	r
mm	mm	mm	mm	mm^2	kg/m	mm	mm	mm^4	mm^3	mm	mm^4	mm^3	mm
76	20	3	3	355	0.64	5	1	266388	7046	27	12487	655	6
76	25	6	6	697	1.18	3	10	528614	13929	28	24974	1475	6
76	38	6	6	858	1.5	3	10	728405	19009	29	108220	4097	11
89	30	3	5	568	1.0	3	5	640996	14421	34	45785	2130	9
89	38	5	5	716	1.28	3	8	799164	18025	33	91571	3441	11
102	29	6	6	890	1.56	3	10	1194584	23597	37	54110	2622	8
102	35	5	5	748	1.31	3	8	1090526	21467	38	79084	2950	10
140	38	6	6	1258	2.22	3	10	3071788	43917	49	133194	4752	10
152	41	6	6	1374	2.49	3	10	4237236	55552	56	178980	5735	11
152	43	10	10	2084	3.87	3	3	6056167	79477	54	216440	7374	11
203	56	10	10	2729	4.76	5	14	14888598	146500	73	632672	14912	15
254	70	13	13	4529	7.89	6	19	38497245	303161	92	1652439	31463	19
292	70	13	13	5019	9.04	6	19	51862436	355108	102	1689900	31627	18



EQUAL LEG ANGLES

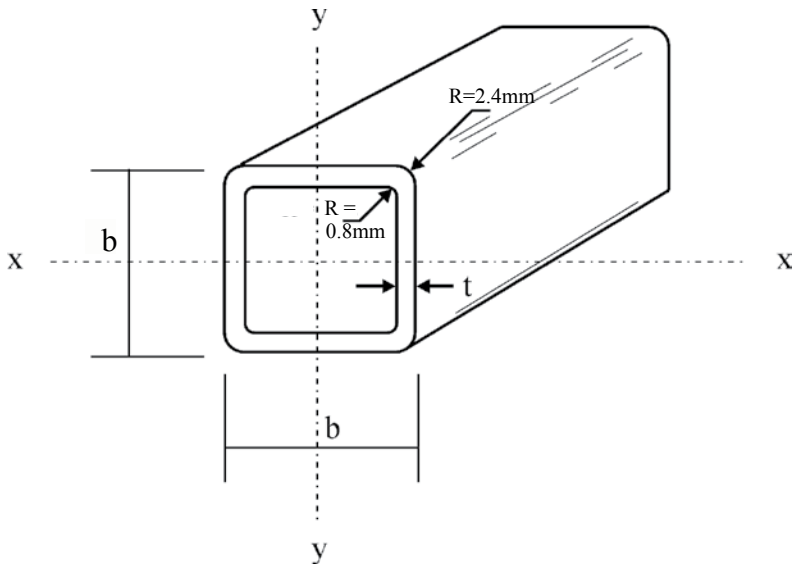
SECTION DIMENSIONS				SECTION PROPERTIES					
DEPTH	WALL			X - X / Y - Y				Z-Z	
h	t	A	Wt.	I	S	r	x or y	I	r
mm	mm	mm^2	kg./m	mm^4	mm^3	mm	mm	mm^4	mm
25	3	148	0.27	8325	819	8	7	4162	5
32	3	187	0.33	16649	819	10	35	8325	6
38	5	336	0.60	45785	1639	12	11	16649	7
38	6	432	0.80	58272	2130	12	12	24974	7
51	6	594	1.04	137356	3769	15	15	58272	10
76	6	916	1.61	516127	9504	24	21	203953	15
76	10	1348	2.40	732567	13601	23	23	291362	15
76	13	1742	3.14	924034	17534	23	24	391258	15
102	6	1226	2.16	1265344	17043	32	28	503640	20
102	10	1832	3.24	1810607	24908	32	29	728405	20
102	13	2387	4.30	2314247	32283	31	30	953170	20
152	10	2800	5.13	6181037	55388	47	41	2526525	30
152	13	3677	6.62	8287168	75380	48	43	3296553	30



S.I. Section Properties

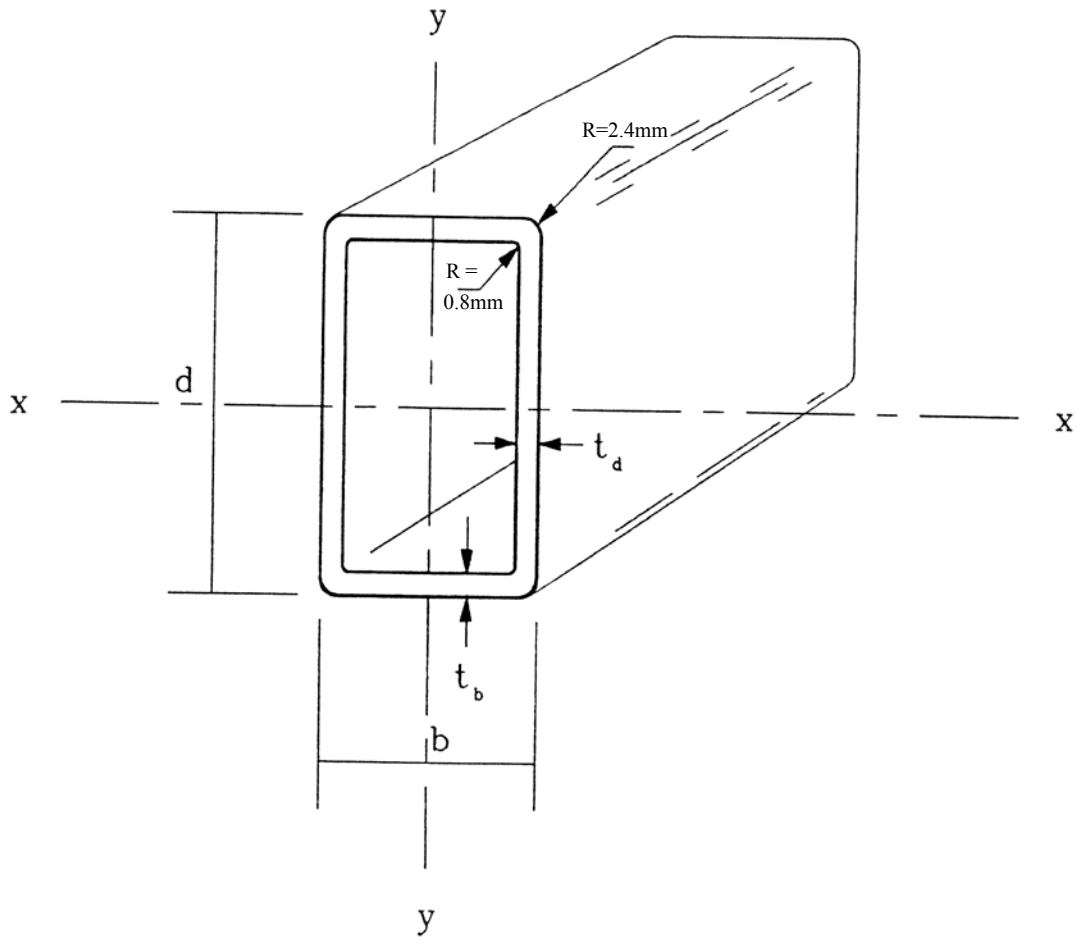
SQUARE TUBES

SECTION DIMENSIONS				SECTION PROPERTIES		
b	t	A	Wt.	I	S	r
mm	mm	mm^2	kg/m	mm^4	mm^3	mm
25	3	277	0.48	24974	1803	9
25	6	477	0.82	33299	2622	8
32	3	361	0.61	49948	3114	12
32	6	639	1.12	74922	4588	11
38	3	439	0.74	91571	4752	14
38	6	800	1.46	141519	7374	13
45	3	523	0.91	149843	6719	17
45	6	961	1.68	241414	10815	16
51	3	600	1.04	228927	9013	20
51	6	1123	1.96	378771	14912	19
51	10	1574	2.75	470342	18517	17
54	5	936	1.64	378771	13929	20
57	3	684	1.21	332985	11635	22
57	6	1284	2.25	561912	19664	21
64	6	1452	2.66	799164	25236	23
76	3	923	1.61	824138	21631	30
76	6	1768	3.08	1456810	38182	29
89	6	2090	3.71	2385006	53586	34
102	6	2413	4.21	3671161	72267	39
102	10	3503	6.32	5007264	98486	38



RECTANGULAR TUBES

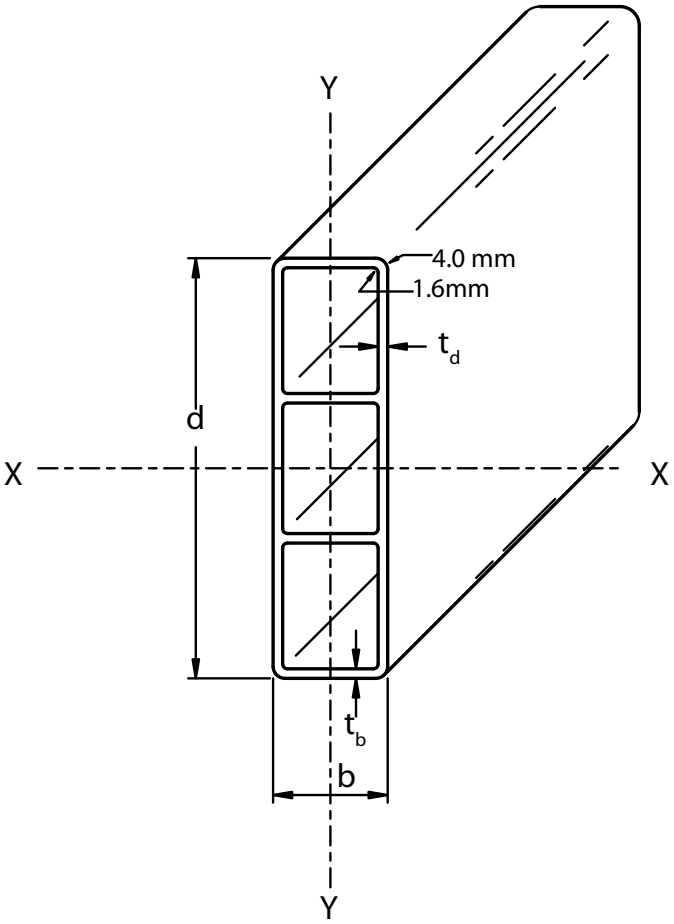
SECTION DIMENSIONS						SECTION PROPERTIES					
						X - X			Y - Y		
d	b	t_d	t_b	A	Wt.	I	S	r	I	S	r
mm	mm	mm	mm	mm^2	kg/m	mm^4	mm^3	mm	mm^4	mm^3	mm
38	19	3	3	323	0.58	54110	2786	13	16649	1803	8
38	25	3	3	361	0.65	66597	3441	14	33299	2622	10
51	13	3	3	361	0.65	91571	3605	16	8325	1147	5
51	25	3	3	445	0.80	137356	5408	18	45795	3441	10
102	25	3	3	768	1.34	849112	16715	33	83246	6555	11
102	51	3	6	1206	2.17	1823094	35888	39	453692	17862	19
111	35	3	5	981	1.76	1498433	26875	39	195629	11307	20
114	45	3	5	1090	1.92	1881366	33921	41	353797	15895	18
127	51	3	3	1090	1.96	2164403	34085	45	503640	19828	22
152	102	6	6	3019	5.66	9527537	125033	56	5032238	98142	41

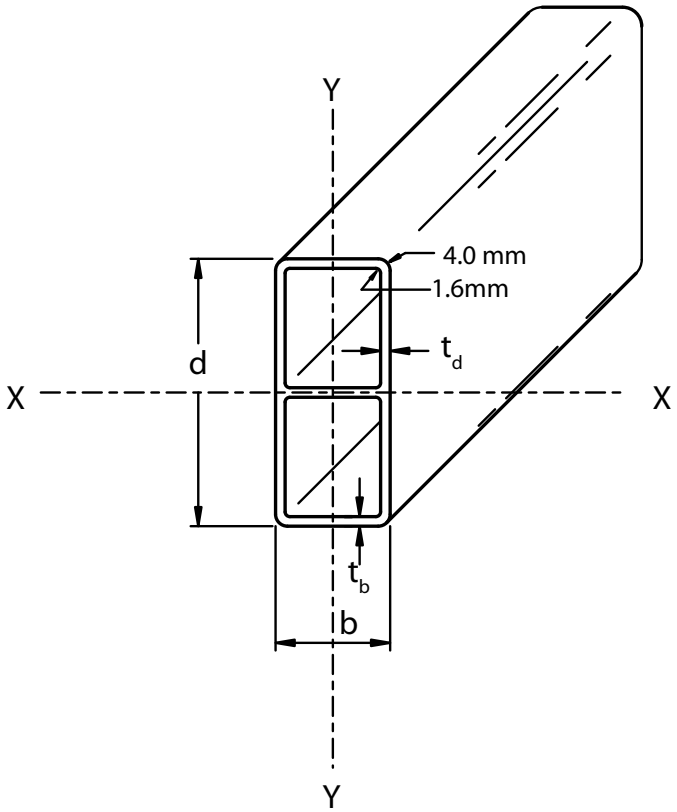


S.I. Section Properties

RECTANGULAR TUBES WITH INTERNAL WEBS

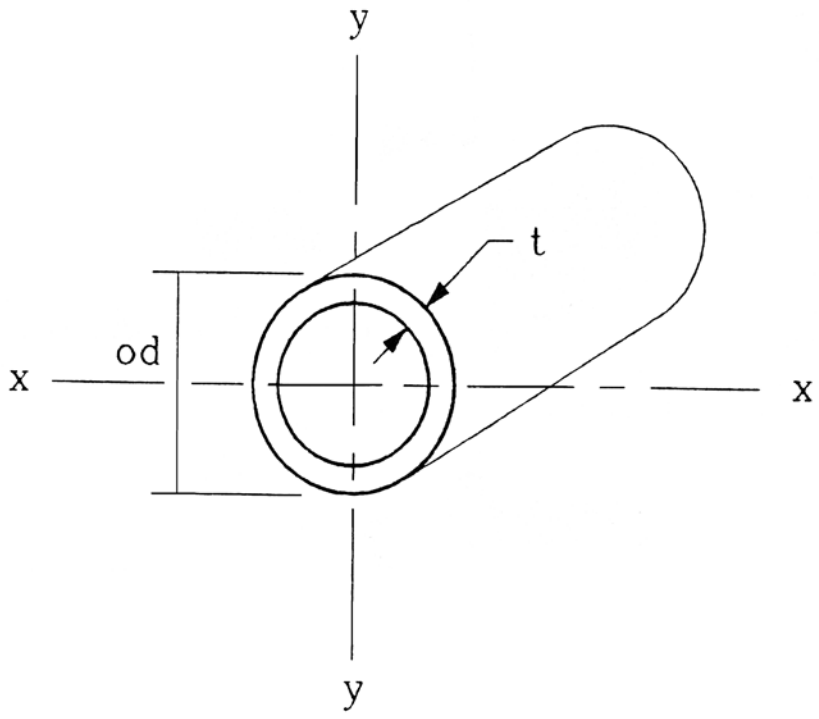
SECTION DIMENSIONS						SECTION PROPERTIES					
						X - X			Y - Y		
d	b	t_d	t_b	A	Wt.	I	S	r	I	S	r
mm	mm	mm	mm	mm^2	kg/m	mm^4	mm^3	mm	mm^4	mm^3	mm
89	38	3	3	34	1.64	720080	16223	29	195629	10160	15
140	38	3	3	51	2.39	2439116	34904	44	303849	15895	15





ROUND TUBES

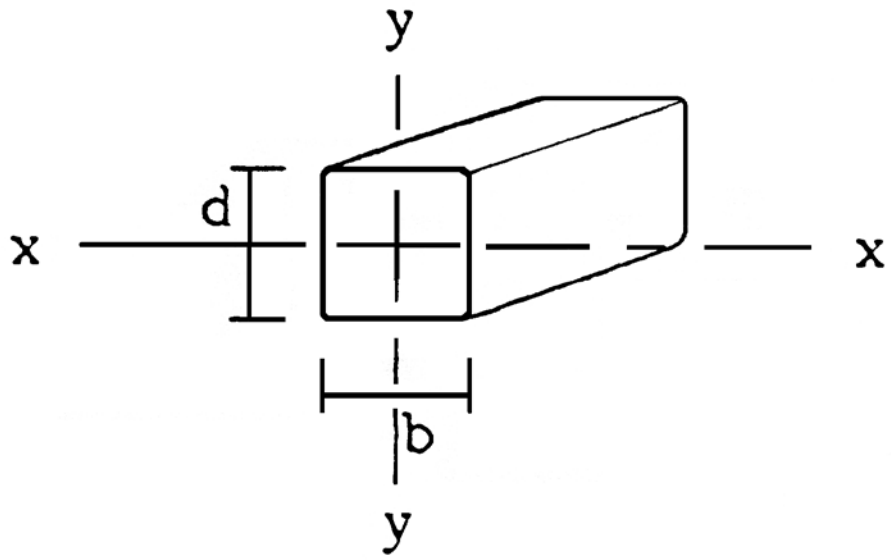
SECTION DIMENSIONS				SECTION PROPERTIES		
od	t	A	Wt.	I	S	r
mm	mm	mm^2	kg/m	mm^4	mm^3	mm
25	2	172	0.33	11527	908	8
25	3	222	0.37	13967	1100	8
29	3	253	0.49	20751	1452	9
32	2	220	0.40	23843	1502	10
32	3	285	0.48	29450	1855	10
32	6	507	0.91	43417	2735	9
38	3	348	0.67	53553	2811	12
38	6	633	1.18	83004	4357	11
45	3	412	0.76	88192	3968	15
45	6	760	1.40	141745	6378	14
48	5	642	1.31	149093	6261	15
51	6	887	1.61	223472	8798	16
76	6	1393	2.53	856855	22450	25
76	13	2534	4.43	1328061	34857	23



S.I. Section Properties

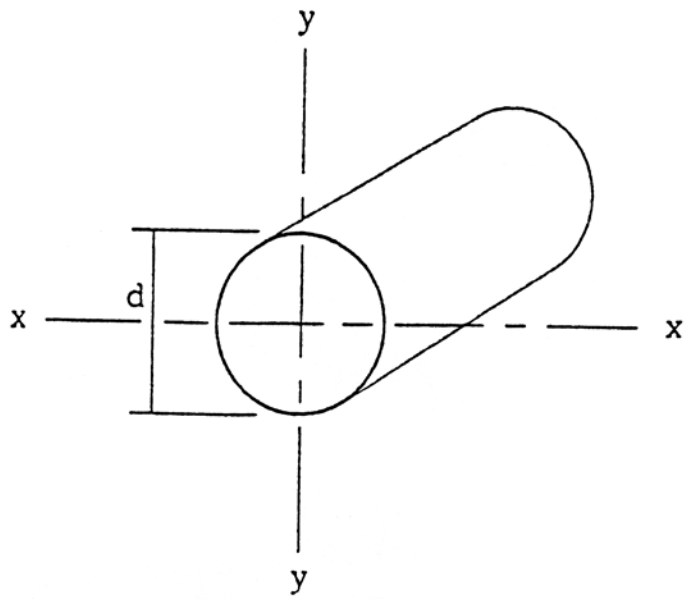
SQUARE BARS

SECTION DIMENSIONS				SECTION PROPERTIES					
				X - X			Y - Y		
d	b	A	Wt.	I	S	r	I	S	r
mm	mm	mm^2	kg/m	mm^4	mm^3	mm	mm^4	mm^3	mm
25	25	645	1.31	34686	2731	7	34686	2731	7
32	32	1008	2.04	84683	5334	9	84683	5334	9
38	38	1452	2.95	175598	9218	11	175598	9218	11



SOLID ROUNDS

SECTION DIMENSIONS			SECTION PROPERTIES		
d	A	Wt.	I	S	r
mm	mm^2	kg/m	mm^4	mm^3	mm
6.4	31	0.07	80	25	2
7.6	46	0.09	165	43	2
7.9	50	0.10	195	49	2
8.9	62	0.12	307	69	2
9.5	71	0.14	404	85	2
11.1	97	0.20	749	135	3
12.0	113	0.22	1014	169	3
12.2	117	0.24	1085	178	3
12.7	127	0.26	1277	201	3
15.9	198	0.40	3118	393	4
19.1	285	0.59	6465	679	5
20.6	335	0.68	8904	863	5
22.2	388	0.79	11977	1078	6
25.4	507	1.04	20432	1609	6
31.8	792	1.63	49882	3142	8
38.1	1140	2.34	103436	5430	10



Beams - Allowable Uniform Load Tables

TABLE NOTATION

A_w - Area of web (mm^2)
Δ - Deflection (mm)
E - Modulus of Elasticity (GPa)
F_b - Maximum Allowable Flexural Stress for Laterally Supported Beam (MPa)
F_v - Maximum Allowable Shear Stress for Laterally Supported Beam (MPa)
G - Shear Modulus (GPa)
I - Moment of Inertia (mm^4)
L - Span Length (mm)*
S - Section Modulus (mm^3)
V - Vertical Shear (N)
w - Uniform Load (N/mm)**
M - Maximum Moment (N-mm)

**Table spans are given in m for convenience.*
*** Table loads are given in N/m for convenience.*

The allowable uniform load tables were generated using the results from tests and the following formulas, properties and assumptions. The deflection formula reflects that the deflection is the result of both flexural and shear stresses.

$$\Delta = \frac{5wL^4}{384EI} + \frac{wL^2}{4A_wG}$$

$$F_v = \frac{V}{A_w}$$

$$F_b = \frac{M}{S}$$

$$E = 19.3\ GPa$$

$$G = 3.1\ GPa$$

$$F_b = 68.9\ MPa$$

$$F_v = 10.3\ MPa$$

Adequate lateral support is provided (full lateral support for channels).

LATERAL SUPPORT REQUIREMENTS - FRP STRUCTURAL SHAPES			
MEMBER	LATERAL SUPPORT SPACING	MEMBER	LATERAL SUPPORT SPACING
C152mm x 6mm	1219 mm	W102mm x 6mm	1524 mm
C203mm x 10mm	1524 mm	W152mm x 6mm	2134 mm
C254mm x 13mm	1524 mm	W152mm x 10mm	2438 mm
I102mm x 6mm	610 mm	W203mm x 10mm	2743 mm
I152mm x 6mm	914 mm	W254mm x 10mm	3962 mm
I203mm x 10mm	1290 mm	W305mm x 13mm	4267 mm
I254mm x 10mm	1527 mm		
I305mm x 13mm	2134 mm		

Load is applied perpendicular to major axis. Beam simply supported at both ends.
The part weight has been deducted in the following tables.

Beams - Allowable Uniform Load Tables (N/m)

76 x 76 x 6 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	8336	F_v	—	—	7795	5840	3885
1.25	6668	F_v	—	5321	4430	3317	2203
1.50	5556	F_v	4918	3271	2722	2035	1349
1.75	4762	F_v	3216	2136	1776	1326	876
2.00	4167	F_v	2205	1462	1214	905	595
2.25	3676	F_b	1571	1039	862	641	419
2.50	2977	F_b	1155	762	631	467	303
2.75	2460	F_b	871	572	473	349	224
3.00	2067	F_b	671	439	362	265	169

The part weight has been deducted in the above table.

102 x 102 x 6 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	11670	F_v	—	—	—	—	7982
1.25	9336	F_v	—	—	—	7194	4785
1.50	7779	F_v	—	7358	6126	4587	3047
1.75	6667	F_v	—	4934	4107	3072	2037
2.00	5834	F_v	5186	3447	2867	2142	1418
2.25	5185	F_v	3751	2490	2070	1544	1019
2.50	4666	F_v	2791	1850	1536	1144	752
2.75	4242	F_v	2127	1407	1167	868	568
3.00	3888	F_v	1654	1092	905	670	436
3.25	3314	F_b	1308	861	713	526	340
3.50	2857	F_b	1050	690	569	419	269
3.75	2488	F_b	854	559	460	337	214
4.00	2187	F_b	702	458	376	274	172

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

152 x 152 x 6 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	12225	F_v	—	—	—	—	8381
1.75	10477	F_v	—	—	—	8896	5914
2.00	9167	F_v	—	—	8636	6464	4293
2.25	8148	F_v	—	7735	6437	4815	3193
2.50	7333	F_v	—	5895	4904	3665	2427
2.75	6666	F_v	—	4579	3807	2843	1879
3.00	6110	F_v	5451	3617	3006	2242	1478
3.25	5639	F_v	4374	2900	2408	1793	1179
3.50	5236	F_v	3557	2355	1954	1453	952
3.75	4887	F_v	2927	1935	1604	1190	777
4.00	4581	F_v	2433	1605	1330	985	640
4.25	4311	F_v	2042	1345	1112	821	531
4.50	4071	F_v	1728	1135	938	691	444

The part weight has been deducted in the above table.

152 x 152 x 10 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	17505	F_v	—	—	—	—	11945
1.75	15004	F_v	—	—	—	12671	8423
2.00	13127	F_v	—	—	12294	9203	6111
2.25	11668	F_v	—	11007	9161	6852	4544
2.50	10500	F_v	—	8386	6976	5214	3452
2.75	9545	F_v	—	6512	5415	4043	2671
3.00	8749	F_v	7751	5143	4274	3187	2101
3.25	8076	F_v	6220	4122	3423	2549	1676
3.50	7498	F_v	5057	3347	2777	2065	1353
3.75	6998	F_v	4160	2749	2279	1691	1103
4.00	6560	F_v	3458	2281	1889	1399	908
4.25	6174	F_v	2902	1910	1580	1167	754
4.50	5828	F_b	2455	1612	1332	981	630

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

203 x 203 x 10 WIDE FLANGE BEAM

Laterally Supported

SPAN- m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	20719	F_v	—	—	—	—	16453
2.00	18128	F_v	—	—	—	—	12393
2.25	16113	F_v	—	—	—	14310	9508
2.50	14500	F_v	—	—	—	11171	7415
2.75	13181	F_v	—	—	11834	8851	5869
3.00	12082	F_v	—	11430	9509	7108	4707
3.25	11152	F_v	—	9301	7735	5777	3820
3.50	10355	F_v	—	7652	6361	4747	3133
3.75	9664	F_v	9587	6359	5284	3939	2594
4.00	9059	F_v	8047	5333	4428	3297	2166
4.25	8526	F_v	6811	4509	3741	2782	1823
4.50	8051	F_v	5809	3841	3185	2365	1545
4.75	7627	F_v	4988	3294	2729	2023	1317
5.00	7245	F_v	4311	2842	2353	1741	1129
5.25	6900	F_v	3747	2466	2039	1506	972
5.50	6586	F_v	3274	2151	1777	1309	841
5.75	6299	F_v	2875	1885	1555	1142	730
6.00	6036	F_v	2536	1659	1366	1001	635
6.25	5593	F_b	2246	1465	1205	880	555
6.50	5171	F_b	1997	1299	1067	776	486
6.75	4794	F_b	1781	1156	947	687	426
7.00	4457	F_b	1594	1031	843	609	374
7.25	4154	F_b	1431	922	753	541	329
7.50	3881	F_b	1288	827	673	481	289
7.75	3634	F_b	1162	743	603	429	254

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

203 x 203 x 13 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	26670	F_v	—	—	—	—	21111
2.00	23334	F_v	—	—	—	—	15894
2.25	20740	F_v	—	—	—	18348	12189
2.50	18665	F_v	—	—	—	14318	9503
2.75	16967	F_v	—	—	15165	11341	7518
3.00	15552	F_v	—	14644	12182	9105	6027
3.25	14355	F_v	—	11914	9907	7398	4889
3.50	13328	F_v	—	9800	8145	6077	4009
3.75	12439	F_v	12277	8142	6764	5041	3318
4.00	11661	F_v	10303	6826	5667	4218	2770
4.25	10974	F_v	8719	5770	4787	3558	2330
4.50	10364	F_v	7435	4914	4074	3023	1973
4.75	9818	F_v	6383	4213	3489	2585	1681
5.00	9326	F_v	5515	3634	3007	2224	1440
5.25	8881	F_v	4793	3153	2606	1923	1239
5.50	8477	F_v	4187	2749	2270	1670	1071
5.75	8108	F_v	3676	2408	1986	1457	929
6.00	7768	F_b	3242	2119	1744	1276	808
6.25	7158	F_b	2870	1871	1538	1121	705
6.50	6617	F_b	2551	1658	1360	988	616
6.75	6135	F_b	2275	1474	1207	873	540
7.00	5704	F_b	2035	1314	1074	774	473
7.25	5316	F_b	1826	1175	958	687	415
7.50	4967	F_b	1643	1053	856	610	364
7.75	4651	F_b	1482	946	767	543	319

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

254 x 254 x 10 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	26433	F_v	—	—	—	—	25902
2.00	23128	F_v	—	—	—	—	20111
2.25	20556	F_v	—	—	—	—	15848
2.50	18499	F_v	—	—	—	—	12648
2.75	16816	F_v	—	—	—	15385	10214
3.00	15414	F_v	—	—	—	12569	8336
3.25	14227	F_v	—	—	13869	10369	6870
3.50	13210	F_v	—	—	11553	8633	5712
3.75	12329	F_v	—	11671	9705	7247	4788
4.00	11557	F_v	—	9884	8215	6129	4044
4.25	10877	F_v	—	8431	7004	5221	3438
4.50	10272	F_v	—	7238	6011	4476	2941
4.75	9730	F_v	9443	6252	5189	3860	2530
5.00	9243	F_v	8211	5431	4504	3346	2188
5.25	8802	F_v	7177	4742	3930	2916	1901
5.50	8402	F_v	6305	4160	3446	2552	1659
5.75	8036	F_v	5563	3666	3034	2243	1453
6.00	7700	F_v	4930	3244	2682	1979	1277
6.25	7392	F_v	4385	2881	2379	1752	1125
6.50	7107	F_v	3915	2567	2118	1556	995
6.75	6843	F_v	3507	2295	1892	1387	882
7.00	6599	F_v	3152	2059	1694	1238	783
7.25	6371	F_v	2841	1851	1521	1109	696
7.50	6158	F_v	2567	1669	1369	995	620
7.75	5822	F_b	2326	1508	1235	894	553

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

254 x 254 x 13 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
2.00	30002	F_v	—	—	—	—	26030
2.25	26666	F_v	—	—	—	—	20504
2.50	23998	F_v	—	—	—	—	16363
2.75	21815	F_v	—	—	—	19898	13212
3.00	19996	F_v	—	—	—	16253	10782
3.25	18456	F_v	—	—	17931	13408	8885
3.50	17137	F_v	—	—	14935	11161	7388
3.75	15993	F_v	—	15086	12545	9369	6193
4.00	14993	F_v	—	12776	10620	7925	5230
4.25	14110	F_v	—	10897	9054	6750	4447
4.50	13325	F_v	—	9355	7770	5787	3805
4.75	12623	F_v	12202	8081	6708	4991	3274
5.00	11991	F_v	10610	7020	5823	4328	2832
5.25	11419	F_v	9275	6130	5081	3771	2461
5.50	10899	F_v	8147	5378	4455	3301	2148
5.75	10425	F_v	7189	4740	3923	2902	1882
6.00	9990	F_v	6371	4194	3468	2561	1654
6.25	9590	F_v	5668	3725	3078	2268	1459
6.50	9220	F_v	5061	3321	2740	2015	1290
6.75	8878	F_v	4534	2969	2448	1796	1144
7.00	8560	F_v	4075	2663	2193	1605	1016
7.25	8265	F_v	3673	2396	1970	1437	905
7.50	7989	F_v	3320	2160	1773	1290	807
7.75	7513	F_b	3009	1952	1600	1160	720
8.00	7049	F_b	2733	1769	1447	1045	644
8.25	6628	F_b	2488	1605	1311	943	576
8.50	6243	F_b	2270	1460	1190	852	515
8.75	5890	F_b	2075	1330	1081	771	461

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

305 x 305 x 13 WIDE FLANGE BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
2.25	32593	F_v	—	—	—	—	30048
2.50	29331	F_v	—	—	—	—	24458
2.75	26663	F_v	—	—	—	—	20103
3.00	24439	F_v	—	—	—	—	16669
3.25	22558	F_v	—	—	—	20997	13934
3.50	20945	F_v	—	—	—	17698	11734
3.75	19548	F_v	—	—	—	15023	9951
4.00	18325	F_v	—	—	17178	12835	8492
4.25	17246	F_v	—	—	14775	11033	7291
4.50	16286	F_v	—	15375	12781	9537	6294
4.75	15428	F_v	—	13376	11115	8288	5461
5.00	14656	F_v	—	11695	9714	7237	4760
5.25	13957	F_v	—	10274	8529	6348	4168
5.50	13322	F_v	—	9064	7521	5593	3664
5.75	12742	F_v	12141	8030	6659	4946	3233
6.00	12210	F_v	10808	7141	5918	4390	2862
6.25	11721	F_v	9655	6372	5278	3910	2542
6.50	11269	F_v	8655	5706	4723	3493	2264
6.75	10851	F_v	7784	5125	4238	3130	2022
7.00	10463	F_v	7021	4616	3815	2813	1811
7.25	10101	F_v	6351	4170	3442	2533	1624
7.50	9764	F_v	5760	3776	3114	2287	1460
7.75	9448	F_v	5238	3427	2824	2069	1315
8.00	9153	F_v	4773	3118	2566	1876	1186
8.25	8875	F_v	4360	2842	2336	1704	1071
8.50	8613	F_v	3990	2596	2131	1550	969
8.75	8366	F_v	3660	2375	1947	1412	877
9.00	8133	F_v	3362	2177	1782	1288	794

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

76 x 38 x 6 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	8337	F_v	—	5910	4923	3688	2453
1.25	6607	F_b	4846	3225	2685	2010	1334
1.50	4588	F_b	2906	1932	1607	1201	795
1.75	3370	F_b	1868	1240	1030	769	507
2.00	2580	F_b	1266	838	696	518	340
2.25	2038	F_b	894	590	489	363	236
2.50	1650	F_b	652	429	355	262	169
2.75	1364	F_b	489	320	264	194	—
3.00	1146	F_b	374	244	201	—	—

The part weight has been deducted in the above table.

102 x 51 x 6 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	11671	F_v	—	—	10875	8151	5426
1.25	9337	F_v	—	7424	6183	4631	3080
1.50	7780	F_v	6860	4566	3801	2845	1889
1.75	6366	F_b	4488	2985	2484	1857	1231
2.00	4874	F_b	3081	2047	1702	1271	840
2.25	3850	F_b	2199	1458	1212	903	595
2.50	3118	F_b	1619	1072	890	662	434
2.75	2577	F_b	1224	808	670	497	324
3.00	2165	F_b	945	622	515	381	246
3.25	1844	F_b	743	488	403	297	190
3.50	1590	F_b	593	388	320	234	—
3.75	1385	F_b	480	313	257	187	—

The part weight has been deducted in the above tables.

Beams - Allowable Uniform Load Tables (N/m)

152 x 76 x 6 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	12226	F_v	—	—	12102	9069	6035
1.75	10479	F_v	—	9924	8265	6190	4116
2.00	9169	F_v	—	7031	5853	4382	2910
2.25	8150	F_v	7722	5137	4275	3198	2121
2.50	7334	F_v	5796	3853	3205	2396	1586
2.75	6602	F_b	4449	2955	2457	1835	1212
3.00	5547	F_b	3483	2311	1920	1432	944
3.25	4726	F_b	2772	1837	1525	1136	746
3.50	4074	F_b	2239	1482	1229	914	598
3.75	3549	F_b	1831	1210	1003	744	485
4.00	3119	F_b	1515	999	827	612	397
4.25	2762	F_b	1266	833	689	508	328
4.50	2463	F_b	1067	701	578	426	273

The part weight has been deducted in the above table.

152 x 76 x 10 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	15006	F_v	—	13309	11083	8300	5518
2.00	13130	F_v	—	9392	7819	5852	3886
2.25	11670	F_v	10287	6842	5694	4259	2823
2.50	10503	F_v	7704	5120	4259	3182	2106
2.75	8689	F_b	5903	3920	3258	2432	1606
3.00	7301	F_b	4613	3060	2542	1895	1247
3.25	6220	F_b	3667	2429	2016	1500	984
3.50	5362	F_b	2958	1956	1622	1205	788
3.75	4671	F_b	2418	1596	1322	980	637
4.00	4105	F_b	1998	1316	1089	805	521
4.25	3635	F_b	1668	1096	906	668	429
4.50	3242	F_b	1405	921	760	558	356
4.75	2909	F_b	1193	780	642	469	297
5.00	2625	F_b	1020	664	546	397	249
5.25	23.81	F_b	878	569	467	338	210
5.50	2169	F_b	759	490	401	289	177

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

203 x 102 x 10 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	20722	F_v	—	—	—	17550	11679
2.00	18131	F_v	—	—	17031	12757	8484
2.25	16116	F_v	—	15253	12700	9509	6318
2.50	14504	F_v	—	11630	9681	7245	4809
2.75	13185	F_v	—	9040	7523	5626	3730
3.00	12085	F_v	10753	7147	5946	4443	2941
3.25	11155	F_v	8636	5736	4769	3561	2353
3.50	10000	F_b	7028	4664	3876	2892	1907
3.75	8711	F_b	5789	3838	3188	2375	1562
4.00	7655	F_b	4818	3191	2649	1971	1293
4.25	6780	F_b	4048	2678	2221	1650	1079
4.50	6047	F_b	3431	2266	1878	1393	907
4.75	5427	F_b	2930	1932	1599	1184	768
5.00	4897	F_b	2519	1658	1371	1013	654
5.25	4441	F_b	2180	1432	1183	871	560
5.50	4046	F_b	1897	1244	1026	754	481
5.75	3701	F_b	1660	1085	984	655	415
6.00	3399	F_b	1459	951	782	571	359

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

203 x 102 x 13 I I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	26674	F_v	—	—	—	22402	14907
2.00	23339	F_v	—	—	21725	16272	10820
2.25	20745	F_v	—	19445	16190	12122	8053
2.50	18669	F_v	—	14819	12335	9230	6125
2.75	16971	F_v	—	11514	9581	7165	4749
3.00	15556	F_v	13692	9100	7569	5656	3743
3.25	14359	F_v	10993	7301	6070	4531	2993
3.50	12714	F_b	8945	5935	4932	3678	2424
3.75	11074	F_b	7365	4882	4054	3020	1985
4.00	9732	F_b	6129	4058	3368	2505	1642
4.25	8620	F_b	5149	3404	2823	2096	1370
4.50	7688	F_b	4362	2880	2386	1769	1151
4.75	6899	F_b	3724	2455	2032	1503	974
5.00	6226	F_b	3202	2107	1742	1285	829
5.25	5646	F_b	2770	1819	1502	1105	709
5.50	5144	F_b	2410	1579	1302	955	609
5.75	4705	F_b	2108	1377	1134	829	525
6.00	4321	F_b	1852	1207	992	723	454

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

254 x 127 x 10 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	26438	F_v	—	—	—	—	19653
2.00	23132	F_v	—	—	—	22076	14589
2.25	20561	F_v	—	—	—	16840	11198
2.50	18504	F_v	—	—	17463	13076	8689
2.75	16821	F_v	—	16558	13784	10317	6849
3.00	15418	F_v	—	13261	11037	8256	5476
3.25	14232	F_v	—	10759	8952	6692	4433
3.50	13215	F_v	—	8831	7345	5488	3630
3.75	12333	F_v	11030	7325	6090	4546	3003
4.00	11562	F_v	9243	6134	5097	3802	2506
4.25	10881	F_v	7813	5180	4303	3206	2109
4.50	9723	F_b	6657	4409	3660	2724	1788
4.75	8726	F_b	5712	3780	3136	2330	1525
5.00	7874	F_b	4934	3261	2703	2006	1309
5.25	7141	F_b	4287	2830	2344	1737	1129
5.50	6506	F_b	3746	2469	2043	1511	979
5.75	5952	F_b	3289	2164	1790	1321	852
6.00	5466	F_b	2902	1906	1574	1159	745
6.25	5036	F_b	2571	1686	1391	1022	653
6.50	4656	F_b	2287	1496	1233	903	574
6.75	4317	F_b	2042	1333	1096	801	506
7.00	4013	F_b	1829	1191	978	712	447
7.25	3741	F_b	1643	1067	875	635	395
7.50	3495	F_b	1481	959	785	567	350
7.75	3272	F_b	1338	863	705	508	310

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

254 x 127 x 13 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	34296	F_v	—	—	—	—	25350
2.00	30007	F_v	—	—	—	28455	18934
2.25	26672	F_v	—	—	—	21694	14428
2.50	24004	F_v	—	—	22487	16839	11190
2.75	21821	F_v	—	21312	17743	13281	8818
3.00	20001	F_v	—	17064	14203	10625	7048
3.25	18462	F_v	—	13841	11517	8611	5706
3.50	17142	F_v	17092	11359	9448	7060	4671
3.75	15999	F_v	14184	9421	7833	5848	3864
4.00	14998	F_v	11885	7888	6556	4890	3225
4.25	13992	F_b	10045	6662	5534	4124	2714
4.50	12480	F_b	8558	5670	4707	3504	2301
4.75	11200	F_b	7343	4860	4032	2998	1963
5.00	10107	F_b	6342	4193	3477	2581	1685
5.25	9166	F_b	5511	3639	3015	2235	1454
5.50	8351	F_b	4815	3175	2628	1945	1261
5.75	7639	F_b	4229	2784	2302	1700	1098
6.00	7015	F_b	3731	2452	2026	1493	960
6.25	6464	F_b	3306	2168	1789	1316	842
6.50	5976	F_b	2941	1925	1587	1164	740
6.75	5541	F_b	2625	1715	1412	1032	653
7.00	5151	F_b	2352	1533	1260	918	577
7.25	4801	F_b	2114	1374	1127	819	511
7.50	4486	F_b	1905	1235	1011	732	453
7.75	4200	F_b	1721	1112	909	655	402

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

305 x 152 x 13 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	41917	F_v	—	—	—	—	37457
2.00	36676	F_v	—	—	—	—	28683
2.25	32599	F_v	—	—	—	—	22327
2.50	29338	F_v	—	—	—	26519	17637
2.75	26670	F_v	—	—	—	21239	14117
3.00	24446	F_v	—	—	22999	17217	11436
3.25	22565	F_v	—	—	18859	14112	9365
3.50	20952	F_v	—	18771	15621	11684	7747
3.75	19554	F_v	—	15697	13060	9763	6466
4.00	18331	F_v	—	13239	11011	8226	5442
4.25	17252	F_v	16943	11253	9356	6985	4614
4.50	16293	F_v	14514	9633	8006	5973	3939
4.75	15435	F_v	12515	8301	6896	5140	3384
5.00	14663	F_v	10858	7196	5976	4450	2924
5.25	13541	F_b	9474	6273	5206	3873	2539
5.50	12337	F_b	8309	5497	4559	3388	2216
5.75	11286	F_b	7322	4839	4011	2976	1942
6.00	10364	F_b	6482	4279	3544	2626	1708
6.25	9551	F_b	5762	3799	3144	2326	1508
6.50	8829	F_b	5141	3385	2799	2068	1336
6.75	8186	F_b	4604	3027	2501	1844	1187
7.00	7611	F_b	4137	2715	2241	1649	1057
7.25	7094	F_b	3728	2443	2014	1479	943
7.50	6628	F_b	3370	2204	1815	1330	844
7.75	6207	F_b	3054	1994	1640	1198	756
8.00	5824	F_b	2775	1807	1485	1082	679
8.25	5476	F_b	2527	1642	1347	979	610
8.50	5158	F_b	2307	1495	1225	887	549
8.75	4866	F_b	2110	1364	1116	805	494
9.00	4599	F_b	1934	1247	1018	731	445

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

457 x 114 x 10-13 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
2.50	34007	F_v	—	—	—	—	27717
2.75	30915	F_v	—	—	—	—	22742
3.00	28337	F_v	—	—	—	28310	18831
3.25	26157	F_v	—	—	—	23651	15725
3.50	24287	F_v	—	—	—	19914	13234
3.75	22667	F_v	—	—	22564	16891	11218
4.00	21250	F_v	—	—	19275	14424	9573
4.25	19999	F_v	—	19910	16570	12396	8221
4.50	18887	F_v	—	17221	14330	10715	7101
4.75	17893	F_v	—	14979	12461	9314	6167
5.00	16997	F_v	—	13096	10892	8137	5382
5.25	16187	F_v	—	11506	9567	7143	4720
5.50	15451	F_v	15296	10155	8441	6299	4157
5.75	14761	F_b	13564	9000	7479	5577	3675
6.00	13556	F_b	12076	8008	6652	4957	3262
6.25	12492	F_b	10792	7152	5939	4422	2906
6.50	11549	F_b	9679	6410	5321	3958	2596
6.75	10708	F_b	8710	5764	4782	3554	2327
7.00	9956	F_b	7862	5199	4311	3201	2092
7.25	9280	F_b	7117	4702	3897	2891	1885
7.50	8671	F_b	6461	4265	3533	2618	1702
7.75	8120	F_b	5881	3878	3210	2376	1541
8.00	7620	F_b	5366	3535	2924	2161	1398
8.25	7164	F_b	4907	3229	2669	1970	1271
8.50	6748	F_b	4498	2956	2442	1799	1157
8.75	6367	F_b	4131	2711	2238	1647	1055
9.00	6018	F_b	3801	2492	2055	1509	964

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

610 x 191 x 10-19 I BEAM

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
10.50	10701	F_v	8445	5556	4593	3389	2185
10.75	10452	F_v	7905	5196	4292	3164	2035
11.00	10214	F_v	7407	4864	4016	2956	1897
11.25	9986	F_v	6949	4558	3762	2765	1769
11.50	9769	F_v	6526	4276	3527	2589	1652
11.75	9560	F_v	6135	4016	3309	2426	1543
12.00	9361	F_v	5773	3775	3108	2276	1443
12.25	9169	F_v	5438	3551	2922	2136	1350
12.50	8812	F_b	5127	3344	2749	2006	1263
12.75	8469	F_b	4838	3151	2589	1886	1183
13.00	8146	F_b	4569	2972	2439	1774	1108
13.25	7840	F_b	4318	2805	2300	1669	1039
13.50	7552	F_b	4085	2649	2170	1572	974
13.75	7279	F_b	3867	2504	2049	1481	913
14.00	7020	F_b	3663	2368	1936	1396	857
14.25	6775	F_b	3472	2241	1830	1317	804
14.50	6543	F_b	3294	2122	1731	1242	754
14.75	6322	F_b	3127	2010	1638	1173	708
15.00	6113	F_b	2970	1905	1551	1107	664
15.25	5913	F_b	2822	1807	1469	1046	623
15.50	5723	F_b	2684	1715	1392	988	585
15.75	5542	F_b	2553	1628	1319	934	548
16.00	5370	F_b	2430	1546	1251	883	514
16.25	5205	F_b	2315	1469	1187	835	482
16.50	5048	F_b	2206	1396	1126	789	452
16.75	4898	F_b	2103	1327	1069	746	423
17.00	4754	F_b	2005	1263	1015	706	396
17.25	4617	F_b	1913	1201	964	667	371
17.50	4485	F_b	1826	1143	915	631	346

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

76 x 30 x 3 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	3794	F_b	3451	2298	1914	1434	954
1.25	2428	F_b	1847	1229	1023	766	508
1.50	1686	F_b	1094	727	605	452	299
1.75	1239	F_b	698	463	385	287	189
2.00	948	F_b	470	311	258	192	—

The part weight has been deducted in the above table.

76 x 25 x 6 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	7500	F_b	6770	4509	3755	2813	1871
1.25	4800	F_b	3638	2421	2015	1508	1001
1.50	3333	F_b	2160	1436	1194	893	591
1.75	2448	F_b	1380	916	761	567	374
2.00	1874	F_b	931	616	511	380	249
2.25	1481	F_b	655	432	358	265	173
2.50	1199	F_b	477	314	259	191	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

76 x 38 x 6 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	8337	F_v	—	5912	4924	3689	2454
1.25	6550	F_b	4848	3227	2686	2011	1336
1.50	4548	F_b	2908	1933	1608	1203	797
1.75	3341	F_b	1869	1241	1032	770	508
2.00	2558	F_b	1267	840	697	519	341
2.25	2021	F_b	895	592	490	364	238
2.50	1636	F_b	654	431	356	263	171
2.75	1352	F_b	490	322	266	195	—
3.00	1136	F_b	376	245	202	—	—

The part weight has been deducted in the above table.

89 x 30 x 3 x 5 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	5416	F_v	—	4896	4078	2056	2034
1.25	4332	F_v	4092	2725	2269	1699	1129
1.50	3451	F_b	2484	1653	1376	1029	683
1.75	2535	F_b	1610	1070	890	665	440
2.00	1941	F_b	1098	728	605	451	298
2.25	1533	F_b	779	516	428	319	209
2.50	1242	F_b	571	377	313	232	151
2.75	1026	F_b	430	283	234	173	—
3.00	862	F_b	331	217	179	—	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

89 x 38 x 5 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	7203	F_v	—	6192	5158	3865	2572
1.25	5762	F_v	5153	3431	2857	2139	1422
1.50	4313	F_b	3120	2075	1727	1292	857
1.75	3169	F_b	2018	1341	1115	833	551
2.00	2426	F_b	1374	912	758	565	372
2.25	1916	F_b	975	645	536	399	261
2.50	1552	F_b	714	472	391	290	189
2.75	1282	F_b	537	354	293	216	—
3.00	1077	F_b	413	271	224	165	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

102 X 29 X 6 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	11672	F_v	---	9417	7845	5880	3915
1.25	8132	F_b	7797	5193	4325	3239	2154
1.50	5647	F_b	4707	3132	2608	1952	1296
1.75	4148	F_b	3040	2021	1682	1257	833
2.00	3176	F_b	2069	1374	1142	853	563
2.25	2509	F_b	1467	972	808	602	396
2.50	2032	F_b	1075	711	590	439	287
2.75	1679	F_b	809	534	442	328	213
3.00	1410	F_b	623	410	339	250	162

The part weight has been deducted in the above table.

102 X 35 X 5 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	10005	F_v	—	8486	7070	5299	3528
1.25	7398	F_b	7055	4699	3913	2932	1950
1.50	5137	F_b	4270	2842	2366	1771	1176
1.75	3774	F_b	2763	1837	1529	1143	758
2.00	2889	F_b	1882	1250	1040	776	513
2.25	2282	F_b	1336	886	736	549	361
2.50	1848	F_b	980	679	538	400	262
2.75	1527	F_b	738	488	404	300	195
3.00	1283	F_b	569	375	310	229	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

140 x 38 x 6 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	17508	F_v	—	—	—	13226	8810
1.25	14006	F_v	—	12158	10128	7590	5053
1.50	10510	F_b	—	7528	6270	4697	3124
1.75	7721	F_b	7429	4945	4117	3083	2048
2.00	5911	F_b	5119	3405	2834	2120	1406
2.25	4670	F_b	3665	2436	2026	1514	1002
2.50	3782	F_b	2706	1797	1494	1115	736
2.75	3125	F_b	2051	1360	1130	842	554
3.00	2626	F_b	1589	1052	873	649	425
3.25	2237	F_b	1254	828	686	509	332
3.50	1929	F_b	1005	662	548	406	263
3.75	1680	F_b	816	537	444	327	211
4.00	1476	F_b	671	440	363	267	170
4.25	1307	F_b	558	364	300	219	—
4.50	1166	F_b	468	304	250	182	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

152 x 41 x 6 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	12227	F_v	---	9882	8231	6167	4103
1.75	9767	F_b	---	6568	5470	4096	2722
2.00	7477	F_b	6854	4561	3797	2841	1886
2.25	5907	F_b	4937	3283	2731	2042	1353
2.50	4784	F_b	3663	2434	2024	1512	1000
2.75	3954	F_b	2787	1850	1537	1147	756
3.00	3322	F_b	2165	1435	1192	888	584
3.25	2830	F_b	1713	1134	941	699	458
3.50	2440	F_b	1377	909	754	559	364
3.75	2125	F_b	1121	739	612	453	293
4.00	1867	F_b	924	608	502	370	239
4.25	1654	F_b	769	505	416	306	196
4.50	1475	F_b	646	423	348	255	162

The part weight has been deducted in the above table.

152 x 43 x 10 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	17509	F_v	---	14127	11766	8815	5864
1.75	13972	F_b	---	9388	7817	5853	3889
2.00	10697	F_b	9796	6518	5425	4059	2693
2.25	8451	F_b	7054	4690	3902	2917	1932
2.50	6845	F_b	5234	3476	2890	2158	1426
2.75	5656	F_b	3981	2641	2194	1636	1078
3.00	4752	F_b	3092	2049	1701	1266	831
3.25	4048	F_b	2446	1618	1342	997	652
3.50	3490	F_b	1965	1297	1074	796	518
3.75	3040	F_b	1600	1054	872	644	417
4.00	2671	F_b	1318	866	715	527	338
4.25	2366	F_b	1097	718	592	434	277
4.50	2110	F_b	921	601	495	361	228

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

203 x 56 x 10 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	24179	F_v	---	---	---	18752	12486
1.75	20724	F_v	---	20598	17157	12856	8555
2.00	18133	F_v	---	14641	12193	9133	6073
2.25	15580	F_b	---	10726	8931	6686	4442
2.50	12619	F_b	12120	8064	6712	5022	3332
2.75	10428	F_b	9321	6198	5157	3856	2555
3.00	8762	F_b	7308	4856	4039	3017	1996
3.25	7465	F_b	5826	3868	3216	2400	1584
3.50	6436	F_b	4713	3126	2597	1936	1275
3.75	5606	F_b	3861	2558	2124	1581	1038
4.00	4926	F_b	3200	2117	1757	1306	855
4.25	4363	F_b	2678	1770	1467	1088	710
4.50	3891	F_b	2262	1492	1236	915	594
4.75	3492	F_b	1926	1268	1049	775	501
5.00	3151	F_b	1652	1085	897	661	425
5.25	2858	F_b	1426	935	771	566	362
5.50	2603	F_b	1238	809	667	488	310
5.75	2382	F_b	1081	705	579	423	266
6.00	2187	F_b	948	616	506	367	229

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

254 x 70 x 13 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	34298	F_v	---	---	---	29188	19433
2.00	30010	F_v	---	---	28336	21232	14129
2.25	26675	F_v	---	25387	21143	15837	10532
2.50	24007	F_v	---	19367	16126	12075	8024
2.75	21581	F_b	---	15063	12540	9385	6231
3.00	18133	F_b	17914	11917	9918	7419	4920
3.25	15449	F_b	14394	9570	7962	5952	3942
3.50	13320	F_b	11722	7788	6477	4838	3200
3.75	11602	F_b	9659	6414	5332	3979	2627
4.00	10196	F_b	8045	5337	4435	3307	2178
4.25	9031	F_b	6765	4484	3724	2773	1823
4.50	8055	F_b	5737	3799	3153	2345	1537
4.75	7228	F_b	4904	3243	2690	1998	1306
5.00	6523	F_b	4221	2788	2310	1713	1116
5.25	5916	F_b	3656	2411	1996	1478	959
5.50	5389	F_b	3185	2098	1735	1282	828
5.75	4930	F_b	2790	1834	1515	1117	719
6.00	4527	F_b	2456	1611	1330	978	626
6.25	4172	F_b	2171	1421	1172	859	547
6.50	3856	F_b	1927	1259	1036	758	479
6.75	3575	F_b	1717	1119	919	670	421
7.00	3324	F_b	1536	998	818	594	370
7.25	3098	F_b	1378	892	731	528	326
7.50	2895	F_b	1239	800	654	471	288
7.75	2710	F_b	1118	719	586	420	254

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

292 x 70 x 13 CHANNEL

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	40015	F_v	---	---	---	37360	24877
2.00	35012	F_v	---	---	---	27411	18244
2.25	31121	F_v	---	---	27481	20588	13696
2.50	28008	F_v	---	25311	21078	15786	10494
2.75	25279	F_b	---	19776	16465	12326	8188
3.00	21240	F_b	---	15704	13072	9781	6491
3.25	18097	F_b	---	12651	10528	7873	5219
3.50	15603	F_b	15530	10323	8588	6419	4249
3.75	13591	F_b	12826	8521	7086	5292	3498
4.00	11944	F_b	10703	7106	5907	4408	2909
4.25	10579	F_b	9015	5980	4969	3704	2440
4.50	9435	F_b	7658	5075	4215	3139	2063
4.75	8467	F_b	6554	4340	3602	2679	1756
5.00	7641	F_b	5649	3736	3098	2302	1505
5.25	6930	F_b	4899	3236	2682	1989	1296
5.50	6313	F_b	4273	2819	2334	1729	1123
5.75	5775	F_b	3747	2469	2042	1509	976
6.00	5303	F_b	3302	2172	1795	1324	853
6.25	4887	F_b	2923	1919	1584	1166	747
6.50	4517	F_b	2597	1702	1403	1030	657
6.75	4188	F_b	2317	1515	1248	913	579
7.00	3894	F_b	2074	1353	1113	812	512
7.25	3629	F_b	1863	1212	995	724	453
7.50	3391	F_b	1678	1089	892	647	402
7.75	3175	F_b	1516	981	802	579	357

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

76 x 76 x 6 SQUARE TUBE

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.25	13157	F_b	9695	6453	5373	4022	2671
1.50	9136	F_b	5815	3866	3217	2405	1593
1.75	6711	F_b	3738	2482	2063	1540	1016
2.00	5138	F_b	2534	1679	1394	1038	682
2.25	4059	F_b	1790	1183	981	728	475
2.50	3287	F_b	1307	861	712	527	341
2.75	2716	F_b	980	643	531	390	250
3.00	2282	F_b	751	491	404	295	186
3.25	1944	F_b	587	381	312	226	---
3.50	1676	F_b	465	300	245	176	---

The part weight has been deducted in the above table.

89 x 89 x 6 SQUARE TUBE

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.25	16006	F_v	15211	10129	8434	6316	4199
1.50	12822	F_b	9237	6146	5115	3827	2539
1.75	9420	F_b	5988	3980	3311	2474	1637
2.00	7211	F_b	4084	2711	2253	1680	1108
2.25	5697	F_b	2900	1921	1595	1187	779
2.50	4614	F_b	2127	1405	1165	865	564
2.75	3812	F_b	1601	1055	873	646	418
3.00	3203	F_b	1233	809	668	492	316
3.25	2728	F_b	966	632	520	381	242
3.50	2352	F_b	769	501	411	299	187
3.75	2048	F_b	621	401	328	237	—
4.00	1800	F_b	506	325	265	189	—
4.25	1594	F_b	417	266	215	152	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

102 x 102 x 6 SQUARE TUBE

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.25	18674	F_v	—	14850	12368	9266	6163
1.50	15561	F_v	13724	9135	7606	5694	3782
1.75	12704	F_b	8980	5973	4970	3717	2464
2.00	9726	F_b	6166	4097	3407	2545	1682
2.25	7684	F_b	4401	2920	2426	1809	1192
2.50	6223	F_b	3241	2147	1782	1326	870
2.75	5142	F_b	2450	1619	1343	996	650
3.00	4320	F_b	1893	1248	1033	764	495
3.25	3680	F_b	1489	979	809	596	383
3.50	3173	F_b	1190	779	642	471	300
3.75	2763	F_b	964	628	517	377	237
4.00	2428	F_b	789	512	420	304	189
4.25	2150	F_b	653	421	344	248	151
4.50	1918	F_b	545	349	284	203	—

The part weight has been deducted in the above table.

102 x 102 x 10 SQUARE TUBE

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.25	26036	F_v	—	20338	16938	12688	8438
1.50	21696	F_v	18774	12495	10402	7786	5170
1.75	17313	F_b	12273	8161	6790	5077	3364
2.00	13254	F_b	8421	5593	4650	3472	2294
2.25	10471	F_b	6006	3983	3309	2466	1623
2.50	8480	F_b	4421	2927	2428	1806	1183
2.75	7007	F_b	3340	2206	1828	1355	883
3.00	5887	F_b	2579	1689	1405	1038	671
3.25	5015	F_b	2027	1331	1098	808	518
3.50	4323	F_b	1619	1058	872	638	405
3.75	3765	F_b	1310	852	700	509	319
4.00	3309	F_b	1072	694	568	410	253
4.25	2930	F_b	886	570	464	333	201
4.50	2613	F_b	738	471	382	271	160
4.75	2344	F_b	619	392	316	222	—
5.00	2115	F_b	523	328	263	182	—
5.25	1918	F_b	444	375	219	—	—
5.50	1747	F_b	379	232	183	—	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

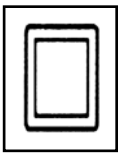
102 x 3 x 51 x 6 RECTANGULAR TUBE MAJOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.50	3911	F_v	---	---	3299	2469	1638
1.75	3352	F_b	---	2669	2221	1660	1099
2.00	2933	F_b	2816	1870	1555	1160	766
2.25	2607	F_b	2041	1353	1124	838	551
2.50	2346	F_b	1520	1006	835	621	407
2.75	2132	F_b	1159	766	634	470	306
3.00	1955	F_b	902	594	491	363	235
3.25	1804	F_b	713	468	386	284	182
3.50	1576	F_b	572	374	308	226	---

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

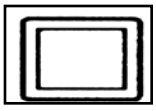


152 x 102 x 6 RECTANGULAR TUBE - MAJOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	18444	F_v	—	14149	11782	8822	5863
2.00	16137	F_v	14893	9910	8249	6173	4096
2.25	13295	F_b	10795	7178	5972	4465	2958
2.50	10768	F_b	8048	5347	4446	3321	2195
2.75	8898	F_b	6145	4078	3389	2528	1667
3.00	7476	F_b	4789	3174	2635	1963	1290
3.25	6369	F_b	3797	2513	2085	1549	1014
3.50	5491	F_b	3057	2019	1673	1241	809
3.75	4783	F_b	2493	1644	1360	1006	652
4.00	4203	F_b	2057	1353	1118	824	531
4.25	3722	F_b	1715	1124	928	682	436
4.50	3320	F_b	1442	943	776	568	360
4.75	2979	F_b	1222	795	654	477	299
5.00	2688	F_b	1043	677	555	402	249

The part weight has been deducted in the above table.



MINOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.75	11735	F_v	11579	7701	6408	4792	3176
2.00	10267	F_b	8052	5350	4449	3322	2196
2.25	9126	F_b	5800	3848	3198	2384	1571
2.50	8213	F_b	4302	2849	2365	1760	1154
2.75	7055	F_b	3269	2161	1791	1329	868
3.00	5927	F_b	2536	1672	1384	1024	664
3.25	5049	F_b	2002	1316	1087	801	561
3.50	4353	F_b	1604	1051	866	636	405
3.75	3791	F_b	1302	849	698	510	321
4.00	3331	F_b	1068	694	569	412	256
4.25	2950	F_b	885	572	467	336	205
4.50	2631	F_b	740	475	386	276	165
4.75	2361	F_b	623	396	321	227	—
5.00	2130	F_b	527	333	268	187	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

89 x 38 x 3 RECTANGULAR TUBE WITH INTERNAL WEBS
MAJOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	8727	F_b	—	6106	5085	3810	2534
1.25	5584	F_b	4937	3286	2735	2047	1359
1.50	3878	F_b	2936	1952	1624	1214	804
1.75	2848	F_b	1877	1246	1035	772	509
2.00	2180	F_b	1267	839	697	518	340
2.25	1722	F_b	893	590	489	362	236
2.50	1395	F_b	650	428	354	261	169

The part weight has been deducted in the above table.

MINOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	5499	F_b	2665	1771	1473	1101	728
1.25	3519	F_b	1393	923	766	571	375
1.50	2443	F_b	811	535	443	328	213
1.75	1795	F_b	509	334	275	202	—

The part weight has been deducted in the above table.

Beams - Allowable Uniform Load Tables (N/m)

140 x 38 x 3 RECTANGULAR TUBE WITH INTERNAL WEBS
MAJOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	17508	F_v	—	—	14936	11196	7456
1.25	12034	F_b	—	10102	8414	6305	4195
1.50	8356	F_b	—	6178	5145	3853	2560
1.75	6139	F_b	6049	4025	3350	2506	1663
2.00	4699	F_b	4143	2754	2291	1712	1134
2.25	3713	F_b	2952	1960	1630	1216	803
2.50	3007	F_b	2172	1440	1196	891	586
2.75	2484	F_b	1641	1086	901	670	439
3.00	2087	F_b	1268	837	694	514	335

The part weight has been deducted in the above table.

MINOR AXIS

Laterally Supported

SPAN - m	MAXIMUM LOAD		DEFLECTION				
			L/100	L/150	L/180	L/240	L/360
1.00	8336	F_v	4093	2721	2263	1691	1120
1.25	5466	F_b	2148	1424	1183	881	579
1.50	3795	F_b	1254	828	686	509	331
1.75	2787	F_b	789	518	428	315	202

The part weight has been deducted in the above table.

BEARING ON FRP

Bolt Allowable for Given FRP Plate Thickness (N)[1]

MATERIAL THICKNESS	BOLT DIAMETER							
(mm)	10	12	14	16	20	24	27	30
3	2189	2627	3065	3503	4378	5254	5911	6567
6	4378	5254	6130	7005	8757	10508	11821	13135
10	6567	7881	9194	10508	13135	15762	17732	19702
13	8757	10508	12259	14011	17513	21016	23643	26270
19	13135	15762	18389	21016	26270	31524	35464	39405
25	17513	21016	24519	28021	35027	42032	47286	52540

(1) BEARING on FRP plate or web controls (Factor of Safety = 3.0; Fp=68.95 MPa)
The designer must confirm that no other component of connection controls.

BOLT SHEAR

Bolt Allowable for Given Bolt Diameter (N) [2]

BOLT TYPE & APPLICATION	BOLT DIAMETER *(mm)*							
	10	12	14	16	20	24	27	30
316SS- single shear [3]	6904	9942	13533	17675	27618	39770	50333	62140
316SS- double shear [3]	13809	19885	27065	35351	55235	79539	100667	124280

BOLT TYPE & APPLICATION	BOLT DIAMETER *inches (mm)*				
	3/8" (10)	1/2" (13)	5/8" (16)	3/4" (19)	1" (25)
FRP Threaded Rod - Single Shear [4]	1334	2669	4003	4448	9119
FRP Threaded Rod - Double Shear [4]	2668	5338	8006	8896	18238

(2) The designer must confirm that no other component of connection controls.

(3) SHEAR of bolt controls. Fv=0.17 x FU = 0.17 x 517.1 MPa = 87.91 MPa

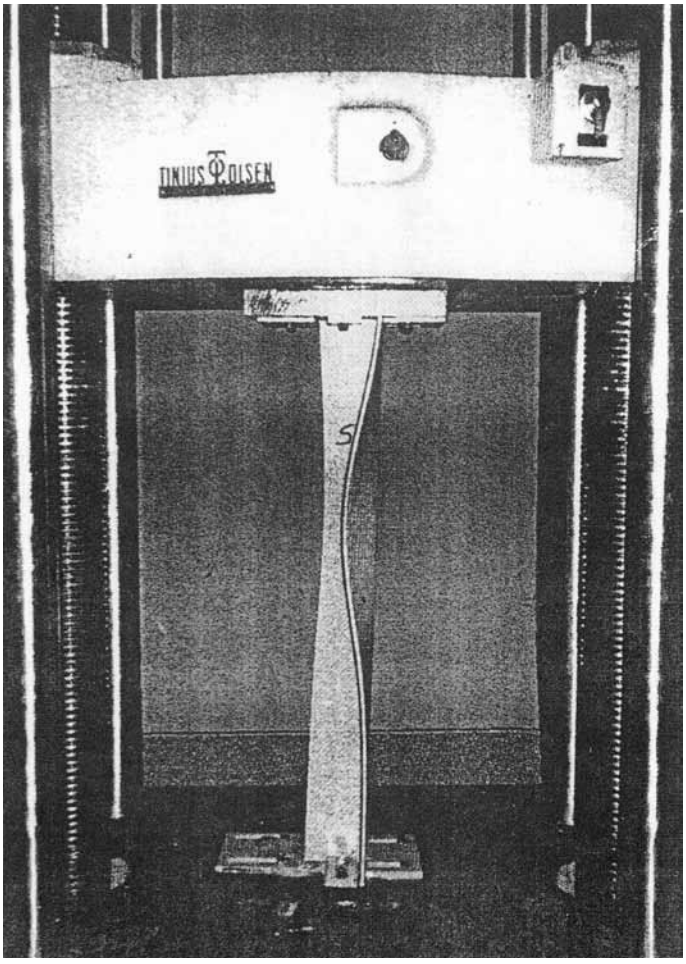
(4) SHEAR of FRP threaded rod controls (Factor of Safety = 4.0). Ultimate values from Dynaform® Design Guide

RATIO OF EDGE DISTANCE TO FASTENER DIAMETER

	RANGE	RECOMMENDED
Edge Distance - cl* bolt to END	2.0-4.0	3.0
Edge Distance - cl* bolt to SIDE	1.5-3.5	2.5
Bolt Pitch - cl* to cl*	4.0-5.0	5.0

** - "cl" is centerline*

Columns - Allowable Axial Load Tables



2.44 meters long - 152mm x 152mm x 13mm angle

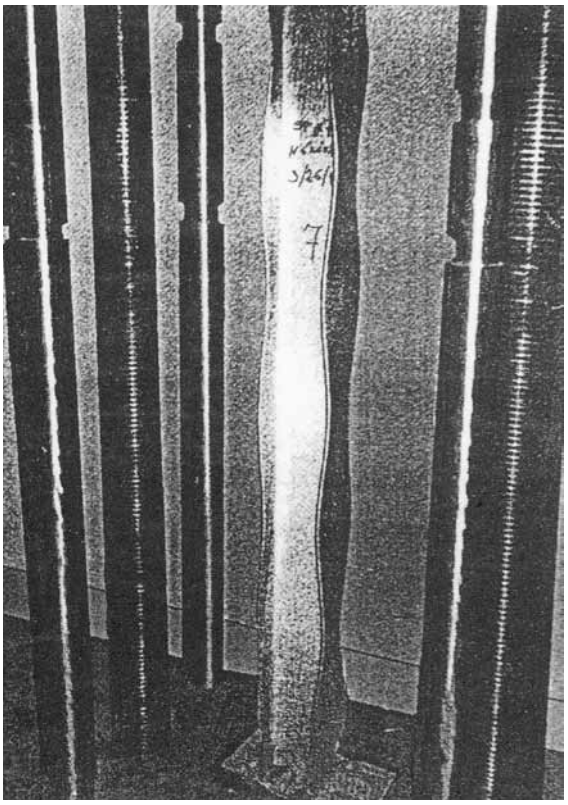
Full section column testing was conducted on equal leg angles, I and Wide Flange Shapes and Square Tubes. Ultimate values were generated through testing of elements with square cut ends placed between the table and the upper, moving platen of a universal testing machine. This test procedure closely simulates how FRP columns will generally be used in practice.

Comparison of test data versus theoretical Euler buckling capacity suggests that the "K" value as tested is approximately 0.70, representing a fixed-pinned condition. The values in the tables represent an FS = 3.0 for the tested condition. Should you feel, however, that your column end conditions closely approximate a pinned-pinned condition ("rounded" column ends are somewhat difficult to achieve in practice) we recommend you multiply the allowable values shown in the tables by the following values:

SHAPE	To Obtain FS = 2.0 multiply by:	To Obtain FS = 3.0 multiply by:
I, W or Angle	0.75	0.50
Square Tube	0.50	0.33

Columns - Allowable Axial Load Tables

Allowable Concentric Axial Stresses and Loads



2.44m long - 152mm x 10mm WIDE FLANGE SHAPE

NOTATION

A	area (mm^2)
b	width of flange/leg/wall (mm)
t	thickness of flange (mm)
r	minimum radius gyration (mm)
l	length (m)
K	effective column length factor
F_a	allowable column concentric axial stress (MPa)
P_a	allowable column centric axial load (KN)

ANGLE

Maximum Allowable Stress:

b/t ≤ 8	33.5 MPa
b/t = 10.7	28.9 MPa
b/t = 12	24.9 MPa
b/t = 16	19.0 MPa

SQUARE TUBE (6mm wall)

Maximum Allowable Stress:

b/t ≤ 10	68.9 MPa
b/t = 12	61.2 MPa
b/t = 16	45.4 MPa

WIDE FLANGE & I SHAPES

Maximum Allowable Stress:

	b/t ≤ 12	68.9 MPa
	b/t = 13.3	60.3 MPa
t = 6mm	b/t = 16	49.7 MPa
t > 6 mm	b/t = 16	42.9 MPa
	b/t = 20	33.9 MPa
	b/t = 21.3	30.9 MPa
t = 6 mm	b/t = 24	28.7 MPa
t > 6 mm	b/t = 24	24.9 MPa
	b/t = 26.7	18.8 MPa

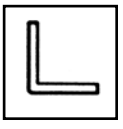
51 x 51 x 6 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 594 mm^2 r = 10 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	24.52	14.55
0.50	13.60	8.07
0.75	9.94	5.90
1.00	7.86	4.67
1.25	6.70	3.97
1.50	5.82	3.45
1.75	4.92	2.92

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

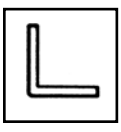
76 x 76 x 6 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 916 mm^2 r = 15 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	25.02	22.92
0.50	19.01	17.41
0.75	13.78	12.62
1.00	11.23	10.29
1.25	9.42	8.63
1.50	8.04	7.36
1.75	7.20	6.59
2.00	6.53	5.98
2.25	5.94	5.44
2.50	5.47	5.01
2.75	4.88	4.47

The effective "K" value is 0.70. *See page 59 for additional information.*



76 x 76 x 10 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 1348 mm^2 r = 15 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	43.64	45.31
0.50	24.67	25.62
0.75	17.88	18.57
1.00	14.58	15.14
1.25	12.23	12.70
1.50	10.43	10.83
1.75	9.34	9.70
2.00	8.48	8.80
2.25	7.70	8.00
2.50	7.10	7.38
2.75	6.34	6.58

The effective "K" value is 0.70. *See page 59 for additional information.*

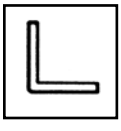
76 x 76 x 13 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 1742 mm^2 r = 15 mm b/t = 6

True Length (m)	F_a (MPa)	P_a (kN)
0.25	43.01	58.53
0.50	24.32	33.10
0.75	17.63	23.99
1.00	14.38	19.57
1.25	12.05	16.41
1.50	10.28	13.99
1.75	9.21	12.54
2.00	8.35	11.37
2.25	7.59	10.34
2.50	7.01	9.53
2.75	6.25	8.51

The effective "K" value is 0.70. *See page 59 for additional information.*



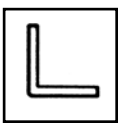
102 X 102 X 6 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 1226 mm^2 r = 20 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	25.25	23.61
0.50	25.25	23.61
0.75	22.18	20.74
1.00	18.40	17.21
1.25	15.82	14.80
1.50	13.74	12.85
1.75	12.20	11.41
2.00	10.80	10.10
2.25	9.87	9.23
2.50	9.19	8.60
2.75	8.52	7.97
3.00	7.95	7.43
3.25	7.54	7.05
3.50	6.96	6.51
3.75	6.47	6.05
4.00	5.91	5.52

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

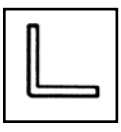
102 x 102 x 10 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 1832 mm^2 r = 20 mm b/t = 10.7

True Length (m)	F_a (MPa)	P_a (kN)
0.25	37.77	53.11
0.50	34.63	48.69
0.75	21.73	30.56
1.00	17.94	25.22
1.25	15.40	21.65
1.50	13.34	18.75
1.75	11.83	16.64
2.00	10.53	14.81
2.25	9.58	13.47
2.50	8.96	12.60
2.75	8.29	11.65
3.00	7.76	10.91
3.25	7.35	10.34
3.50	6.73	9.46
3.75	6.24	8.77
4.00	5.80	8.15

The effective "K" value is 0.70. *See page 59 for additional information.*



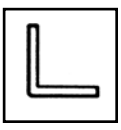
102 x 102 x 13 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 2387 mm^2 r = 20 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	43.03	80.21
0.50	38.18	71.17
0.75	21.19	39.50
1.00	17.51	32.64
1.25	14.99	27.94
1.50	12.97	24.18
1.75	11.46	21.35
2.00	10.25	19.11
2.25	9.29	17.32
2.50	8.73	16.28
2.75	8.06	15.02
3.00	7.57	14.11
3.25	7.14	13.31
3.50	6.52	12.16
3.75	6.08	11.34

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

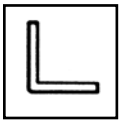
152 x 152 x 10 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 2800 mm^2 r = 30 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	19.07	53.25
0.50	19.07	53.25
0.75	19.07	53.25
1.00	17.79	49.67
1.25	15.18	42.39
1.50	13.38	37.36
1.75	12.07	33.70
2.00	10.89	30.41
2.25	9.93	27.74
2.50	9.18	25.64
2.75	8.36	23.35
3.00	7.84	21.90
3.25	7.38	20.60
3.50	7.02	19.62
3.75	6.69	18.69
4.00	6.32	17.66
4.25	6.05	16.89
4.50	5.82	16.25
4.75	5.59	15.60
5.00	5.24	14.63
5.25	4.97	13.88
5.50	4.69	13.10

The effective "K" value is 0.70. *See page 59 for additional information.*



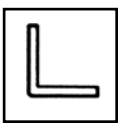
152 x 152 x 13 ANGLE

Allowable Concentric Axial Stresses and Loads

A = 3677 mm^2 r = 30 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	25.03	92.01
0.50	25.03	92.01
0.75	25.03	92.01
1.00	18.73	68.86
1.25	15.60	57.34
1.50	13.87	50.98
1.75	12.43	45.70
2.00	11.27	41.45
2.25	10.29	37.82
2.50	9.49	34.90
2.75	8.74	32.14
3.00	8.09	29.73
3.25	7.63	28.06
3.50	7.15	26.30
3.75	6.91	25.40
4.00	6.57	24.16
4.25	6.21	22.84
4.50	5.97	21.95
4.75	5.78	21.25
5.00	5.53	20.32
5.25	5.20	19.13
5.50	4.95	18.19
5.75	4.70	17.27

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

76x 38 x 6 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 890 mm^2 r = 8 mm b/t = 6

True Length (m)	F_a (MPa)	P_a (kN)
0.25	60.82	54.14
0.50	32.60	29.01
0.75	17.64	15.70
1.00	10.07	8.96
1.25	6.84	6.09
1.50	4.72	4.20

The effective "K" value is 0.70. *See page 58 for additional information.*

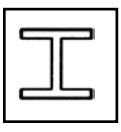
102 x 51 x 6 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 1213 mm^2 r = 11 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	83.83
0.50	45.45	55.12
0.75	28.71	34.81
1.00	17.88	21.68
1.25	11.39	13.82
1.50	8.18	9.92
1.75	6.40	7.76
2.00	4.81	5.83

The effective "K" value is 0.70. *See page 59 for additional information.*



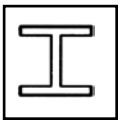
152 x 76 x 6 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 1858 mm^2 r = 16 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	128.42
0.50	65.15	121.03
0.75	43.36	80.55
1.00	31.93	59.32
1.25	23.27	43.23
1.50	17.01	31.60
1.75	12.48	23.19
2.00	9.57	17.78
2.25	7.87	14.62
2.50	6.67	12.39
2.75	5.62	10.44
3.00	4.46	8.29

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

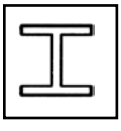
152 x 76 x 10 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 2729 mm^2 r = 16 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	188.62
0.50	64.68	176.47
0.75	38.70	105.58
1.00	26.25	71.61
1.25	18.84	51.42
1.50	13.24	36.13
1.75	10.09	27.52
2.00	7.98	21.78
2.25	6.59	17.98
2.50	5.31	14.49
2.75	4.46	12.16
3.00	3.73	`10.18

The effective "K" value is 0.70. *See page 59 for additional information.*



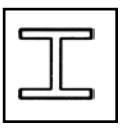
203 x 102 x 10 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 3697 mm^2 r = 21 mm b/t = 10.7

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	255.51
0.50	69.13	255.51
0.75	58.77	217.19
1.00	37.84	139.85
1.25	27.91	103.15
1.50	21.72	80.28
1.75	16.75	61.89
2.00	12.87	47.56
2.25	10.44	38.59
2.50	8.69	32.12
2.75	7.48	27.63
3.00	6.33	23.41
3.25	5.40	19.96
3.50	4.72	17.44
3.75	4.16	15.36
4.00	3.64	13.44
4.25	3.62	13.36

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

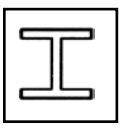
203 x 102 x 13 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 4845 mm^2 r = 22 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	334.88
0.50	69.13	334.88
0.75	60.21	291.65
1.00	38.59	186.94
1.25	28.33	137.22
1.50	22.02	106.68
1.75	17.14	83.00
2.00	13.23	64.08
2.25	10.62	51.43
2.50	8.88	43.00
2.75	7.59	36.79
3.00	6.52	31.59
3.25	5.53	26.81
3.50	4.83	23.42
3.75	4.25	20.60
4.00	3.73	18.07
4.25	3.32	16.08

The effective "K" value is 0.70. *See page 59 for additional information.*



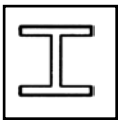
254 x 127 x 10 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 4658 mm^2 r = 26 mm b/t = 10

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	424.06
0.50	69.13	424.06
0.75	69.13	424.06
1.00	54.65	335.23
1.25	37.59	230.56
1.50	29.41	180.41
1.75	23.89	146.53
2.00	19.61	120.28
2.25	15.90	97.55
2.50	12.95	79.44
2.75	10.78	66.10
3.00	9.31	57.10
3.25	8.12	49.80
3.50	7.27	44.60
3.75	6.40	39.24
4.00	5.57	34.14
4.25	5.00	30.65
4.50	4.48	27.51
4.75	4.05	24.85
5.00	3.64	22.34
5.25	3.32	20.37

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

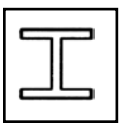
254 x 127 x 13 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 6136 mm^2 r = 27 mm b/t = 10

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	513.24
0.50	69.13	513.24
0.75	69.13	513.24
1.00	68.36	507.49
1.25	50.04	371.48
1.50	37.67	279.69
1.75	30.52	226.59
2.00	25.55	189.68
2.25	21.67	160.91
2.50	18.22	135.24
2.75	15.37	114.09
3.00	12.67	94.09
3.25	11.18	83.03
3.50	9.78	72.63
3.75	8.67	64.39
4.00	7.81	57.97
4.25	7.14	52.97
4.50	6.38	47.35
4.75	5.67	42.10
5.00	5.18	38.43
5.25	4.73	35.10
5.50	4.34	32.20
5.75	3.98	29.55
6.00	3.64	27.00

The effective "K" value is 0.70. *See page 59 for additional information.*



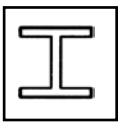
305 x 152 x 13 I SHAPE

Allowable Concentric Axial Stresses and Loads

A = 7426 mm^2 r = 32 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	513.24
0.50	69.13	513.24
0.75	69.13	513.24
1.00	68.36	507.49
1.25	50.04	371.48
1.50	37.67	279.69
1.75	30.52	226.59
2.00	25.55	189.68
2.25	21.67	160.91
2.50	18.22	135.24
2.75	15.37	114.09
3.00	12.67	94.09
3.25	11.18	83.03
3.50	9.78	72.63
3.75	8.67	64.39
4.00	7.81	57.97
4.25	7.14	52.97
4.50	6.38	47.35
4.75	5.67	42.10
5.00	5.18	38.43
5.25	4.73	35.10
5.50	4.34	32.20
5.75	3.98	29.55
6.00	3.64	27.00

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

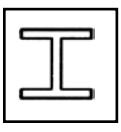
102 x 102 x 6 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 1865 mm^2 r = 24 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	49.83	92.89
0.50	49.83	92.89
0.75	49.83	92.89
1.00	47.85	89.20
1.25	39.42	73.47
1.50	32.54	60.65
1.75	26.45	49.30
2.00	21.56	40.19
2.25	17.57	32.75
2.50	14.24	26.54
2.75	11.59	21.60
3.00	9.79	18.28
3.25	8.60	16.04
3.50	7.59	14.15
3.75	6.84	12.75
4.00	6.14	11.44
4.25	5.43	10.12
4.50	4.71	8.78
4.75	3.96	7.37

The effective "K" value is 0.70. *See page 59 for additional information.*



76 x 76 x 6 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 1374 mm^2 r = 19 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	94.98
0.50	69.13	94.98
0.75	51.78	71.13
1.00	37.53	51.56
1.25	28.95	39.77
1.50	22.09	30.35
1.75	16.84	23.14
2.00	12.93	17.76
2.25	10.07	13.83
2.50	8.45	11.61
2.75	7.22	9.92
3.00	6.28	8.63
3.25	5.36	7.37
3.50	4.40	6.04

The effective "K" value is 0.70. See page 59 for additional information.

Columns - Allowable Axial Load Tables

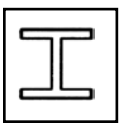
152 x 152 x 6 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 2832 mm^2 r = 36 mm b/t = 24

True Length (m)	F_a (MPa)	P_a (kN)
0.25	28.81	81.57
0.50	28.81	81.57
0.75	28.81	81.57
1.00	28.81	81.57
1.25	28.81	8.157
1.50	28.81	81.57
1.75	28.81	81.57
2.00	28.67	81.17
2.25	25.89	73.32
2.50	22.31	63.18
2.75	19.28	54.60
3.00	16.55	46.87
3.25	14.10	39.92
3.50	12.17	34.46
3.75	10.81	30.61
4.00	9.66	27.37
4.25	8.67	24.56
4.50	7.91	22.38
4.75	7.31	20.70
5.00	6.68	18.91
5.25	5.99	16.95
5.50	5.46	15.45
5.75	5.06	14.32
6.00	4.67	13.22

The effective "K" value is 0.70. *See page 59 for additional information.*



152 x 152 x 10 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 4181 mm^2 r = 37 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	43.09	180.10
0.50	43.09	180.10
0.75	43.09	180.10
1.00	43.09	180.10
1.25	43.09	180.10
1.50	43.09	180.10
1.75	36.40	152.13
2.00	30.40	127.08
2.25	26.11	109.14
2.50	22.51	94.09
2.75	19.51	81.55
3.00	16.70	69.81
3.25	14.29	59.73
3.50	12.31	51.46
3.75	10.95	45.76
4.00	9.78	40.88
4.25	8.78	36.71
4.50	8.06	33.69
4.75	7.38	30.85
5.00	6.78	28.32
5.25	6.08	25.40
5.50	5.51	2303
5.75	5.12	21.40
6.00	4.73	19.76

The effective "K" value is 0.70. *See page 59 for additional information.*

Columns - Allowable Axial Load Tables

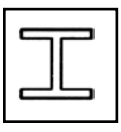
203 x 203 x 10 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 5632 mm^2 r = 49 mm b/t = 21.3

True Length (m)	F_a (MPa)	P_a (kN)
0.25	30.99	174.52
0.50	30.99	174.52
0.75	30.99	174.52
1.00	30.99	174.52
1.25	30.99	174.52
1.50	30.99	174.52
1.75	30.99	174.52
2.00	30.99	174.52
2.25	30.99	174.52
2.50	30.99	174.52
2.75	29.21	164.45
3.00	26.09	146.89
3.25	23.33	131.35
3.50	21.05	118.54
3.75	18.73	105.47
4.00	16.64	93.71
4.25	14.86	83.66
4.50	13.27	74.73
4.75	11.97	67.41
5.00	10.95	61.65
5.25	10.02	56.40
5.50	9.28	52.27
5.75	8.56	48.18
6.00	7.98	44.94

The effective "K" value is 0.70. *See page 59 for additional information.*



203 x 203 x 13 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 7426 mm^2 r = 49 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	43.09	319.90
0.50	43.09	319.90
0.75	43.09	319.90
1.00	43.09	319.90
1.25	43.09	319.90
1.50	43.09	319.90
1.75	43.09	319.90
2.00	42.93	318.70
2.25	38.70	287.34
2.50	33.34	247.49
2.75	29.42	218.45
3.00	26.24	194.81
3.25	23.50	174.49
3.50	21.19	157.32
3.75	18.91	140.41
4.00	16.83	124.94
4.25	15.05	111.76
4.50	13.43	99.69
4.75	12.06	89.54
5.00	11.06	82.11
5.25	10.11	75.03
5.50	9.37	69.54
5.75	8.64	64.11
6.00	8.05	59.73

The effective "K" value is 0.70. *See page 59 for additional information.*

Columns - Allowable Axial Load Tables

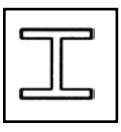
254 x 254 x 10 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 7136 mm^2 r = 61 mm b/t = 26.7

True Length (m)	F_a (MPa)	P_a (kN)
0.25	18.89	134.74
0.50	18.89	134.74
0.75	18.89	134.74
1.00	18.89	134.74
1.25	18.89	134.74
1.50	18.89	134.74
1.75	18.89	134.74
2.00	18.89	134.74
2.25	18.89	134.74
2.50	18.89	134.74
2.75	18.89	134.74
3.00	18.89	134.74
3.25	18.89	134.74
3.50	18.89	134.74
3.75	18.89	134.74
4.00	18.89	134.74
4.25	18.89	134.74
4.50	18.89	134.74
4.75	17.96	128.12
5.00	16.42	117.10
5.25	15.01	107.06
5.50	13.71	97.80
5.75	12.44	88.75
6.00	11.64	83.06

The effective "K" value is 0.70. *See page 59 for additional information.*



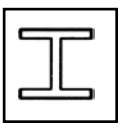
254 x 254 x 13 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 9361 mm^2 r = 61 mm b/t = 20

True Length (m)	F_a (MPa)	P_a (kN)
0.25	34.01	318.33
0.50	34.01	318.33
0.75	34.01	318.33
1.00	34.01	318.33
1.25	34.01	318.33
1.50	34.01	318.33
1.75	34.01	318.33
2.00	34.01	318.33
2.25	34.01	318.33
2.50	34.01	318.33
2.75	34.01	318.33
3.00	34.01	318.33
3.25	31.48	294.61
3.50	28.53	267.02
3.75	26.02	243.52
4.00	23.87	223.41
4.25	21.80	204.04
4.50	20.14	188.45
4.75	18.32	171.44
5.00	16.64	155.71
5.25	15.25	142.75
5.50	13.99	130.89
5.75	12.65	118.42
6.00	11.80	110.42

The effective "K" value is 0.70. *See page 59 for additional information.*



Columns - Allowable Axial Load Tables

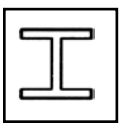
305 x 305 x 13 WIDE FLANGE SHAPE

Allowable Concentric Axial Stresses and Loads

A = 11297 mm^2 r = 73 mm b/t = 24

True Length (m)	F_a (MPa)	P_a (kN)
0.25	24.94	281.71
0.50	24.94	281.71
0.75	24.94	281.71
1.00	24.94	281.71
1.25	24.94	281.71
1.50	24.94	281.71
1.75	24.94	281.71
2.00	24.94	281.71
2.25	24.94	281.71
2.50	24.94	281.71
2.75	24.94	281.71
3.00	24.94	281.71
3.25	24.94	281.71
3.50	24.94	281.71
3.75	24.94	281.71
4.00	24.94	281.71
4.25	24.94	281.71
4.50	24.94	281.71
4.75	24.12	272.44
5.00	22.33	252.18
5.25	20.90	236.07
5.50	19.37	218.76
5.75	17.88	201.90
6.00	16.55	186.96

The effective "K" value is 0.70. *See page 59 for additional information.*



51 x 51 x 6 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 1123 mm^2 r = 19 mm b/t = 8

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	77.59
0.50	68.84	77.26
0.75	60.46	67.86
1.00	47.79	53.64
1.25	38.35	43.04
1.50	30.23	33.92
1.75	23.97	26.90
2.00	18.99	21.31
2.25	15.16	17.02
2.50	12.62	14.16
2.75	10.92	12.26
3.00	10.38	11.65
3.23	8.63	9.68
3.50	7.49	8.40

The effective "K" value is 0.70. See page 59 for additional information.

Columns - Allowable Axial Load Tables

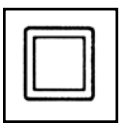
64 x 64 x 6 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 1452 mm^2 r = 23 mm b/t = 10

True Length (m)	F_a (MPa)	P_a (kN)
0.25	69.13	99.88
0.50	69.13	99.88
0.75	68.50	98.96
1.00	57.18	82.61
1.25	47.93	69.25
1.50	40.32	58.25
1.75	34.18	49.38
2.00	28.27	40.84
2.25	23.15	33.45
2.50	19.32	27.91
2.75	16.23	23.44
3.00	13.66	19.73
3.25	12.21	17.64
3.50	10.63	15.36
3.75	9.75	14.09
4.00	8.99	12.99
4.25	8.10	11.71
4.50	7.08	10.24

The effective "K" value is 0.70. See page 59 for additional information.



76 x 76 x 6 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 1768 mm^2 r = 29 mm b/t = 12

True Length (m)	F_a (MPa)	P_a (kN)
0.25	61.39	108.49
0.50	61.39	108.49
0.75	61.39	108.49
1.00	61.39	108.49
1.25	56.23	99.37
1.50	48.89	86.40
1.75	42.39	74.92
2.00	37.08	65.53
2.25	32.25	56.99
2.50	27.46	48.54
2.75	23.39	41.33
3.00	20.00	35.35
3.25	17.51	30.95
3.50	15.02	26.54
3.75	13.30	23.51
4.00	11.91	21.05
4.25	10.88	19.24
4.50	10.00	17.68
4.75	9.39	16.59
5.00	8.71	15.40
5.25	8.03	14.19
5.50	6.69	11.82

The effective "K" value is 0.70. *See page 59 for additional information.*

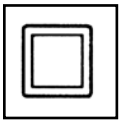
89 x 89 x 6 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 2090 mm^2 r = 34 mm b/t = 15

True Length (m)	F_a (MPa)	P_a (kN)
0.25	52.21	109.44
0.50	52.21	109.44
0.75	52.21	109.44
1.00	52.21	109.44
1.25	52.21	109.44
1.50	50.81	106.50
1.75	44.49	93.26
2.00	40.11	84.09
2.25	35.83	75.11
2.50	31.55	66.13
2.75	27.71	58.09
3.00	24.09	50.49
3.25	20.84	43.68
3.50	18.59	38.97
3.75	16.55	34.69

The effective "K" value is 0.70. *See page 59 for additional information.*



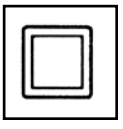
102 x 102 x 6 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 2413 mm^2 r = 39 mm b/t = 16

True Length (m)	F_a (MPa)	P_a (kN)
0.25	45.59	109.98
0.50	45.59	109.98
0.75	45.59	109.98
1.00	45.59	109.98
1.25	45.59	109.98
1.50	45.59	109.98
1.75	45.59	109.98
2.00	45.59	109.98
2.25	44.30	106.87
2.50	40.15	96.86
2.75	36.43	87.89
3.00	32.91	79.40
3.25	29.15	70.31
3.50	25.92	62.53
3.75	23.07	55.65
4.00	20.47	49.37
4.25	18.61	44.89
4.50	16.78	40.48
4.75	15.19	36.65
5.00	10.91	26.32
6.00	10.15	24.49

The effective "K" value is 0.70. *See page 59 for additional information.*



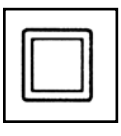
102 x 102 x 10 SQUARE TUBE

Allowable Concentric Axial Stresses and Loads

A = 3503 mm^2 r = 38 mm b/t = 10

True Length (m)	F_a (MPa)	P_a (kN)
0.25	45.59	153.80
0.50	45.59	153.80
0.75	45.59	153.80
1.00	45.59	153.80
1.25	45.59	153.80
1.50	45.59	153.80
1.75	44.67	150.70
2.00	40.42	136.34
2.25	36.30	122.45
2.50	32.87	110.89
2.75	29.62	99.92
3.00	26.21	88.42
3.25	23.18	78.18
3.50	20.54	69.28
3.75	18.16	61.27
4.00	16.43	55.43
4.25	14.74	49.71
4.50	13.04	44.00

The effective "K" value is 0.70. *See page 59 for additional information.*



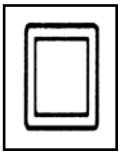
152 x 102 x 6 RECTANGULAR TUBE

Allowable Concentric Axial Stresses and Loads

A = 3019 mm^2 r = 41 mm b/t = 24

True Length (m)	F_a (MPa)	P_a (kN)
0.25	41.03	123.86
0.50	41.03	123.86
0.75	41.03	123.86
1.00	41.03	123.86
1.25	41.03	123.86
1.50	41.03	123.86
1.75	41.03	123.86
2.00	41.03	123.86
2.25	39.38	118.86
2.50	35.84	108.18
2.75	32.49	98.09
3.00	29.66	89.54
3.25	26.47	79.89
3.50	23.68	71.48
3.75	21.25	64.14
4.00	18.80	56.76
4.25	17.03	51.39
4.50	15.56	46.98

The effective "K" value is 0.70. See page 59 for additional information.



Columns - Allowable Axial Load Tables

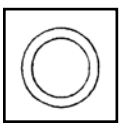
76 x 13 ROUND TUBE

Allowable Concentric Axial Stresses and Loads

A = 2534 mm^2 r = 23 mm

True Length (m)	F_a (MPa)	P_a (kN)
0.25	14.06	35.64
0.50	14.06	35.64
0.75	13.75	34.85
1.00	11.54	29.24
1.25	9.63	24.41
1.50	8.15	20.65
1.75	6.78	17.17
2.00	5.53	14.01
2.25	4.53	11.49
2.50	3.83	9.70

The effective "K" value is 0.70. *See page 59 for additional information.*



Chemical

- Elevated Walkways in Tank Farms
- Access Platforms for Process Vessels and Tanks
- Platforms Over Piping and Equipment
- Chemical Loading/Unloading Platforms
- Walkways, Skids and Platforms for Chemical Storage Areas
- Access Systems for Hazardous Waste Areas

Food & Beverage

- Elevated Crossovers at Machinery
- Support Platforms for Materials Storage
- Wastewater Treatment Areas
- Loading Docks

Water & Wastewater

- Filter Media Support Grids & Structures (Biofilter, Trickling Filters, Etc.)
- Tank & Equipment Access Platforms
- Elevated Platforms & Walkways
- Air Intake Access & Safety
- Ships Ladders

Oil & Gas

- Boat Landings, Splash Zone Areas
- Stairways, Decking, Bridges, Catwalks
- Chemical Injection Skids (Access Platforms)
- Walkways over Mud Pits/Mud Tanks
- Access Platforms for Metering Stations, Valve Operations and Other Areas
- Communications/Radar Platforms
- Support, Protection for Subsea Components
- Drilling Derrick
- Ship's Ladders

Recreation

- Boat Docks, Walkways
- Stairways, Decking, Bridges, Catwalks
- Access Platforms, Ramps
- Aquatic Facility Drainage Areas/Walkways
- Mechanical Rooms
- Storage Areas
- Playground Structures
- Golf Course Bridges and Cart Path Areas
- Nature Trail Bridges, Ramps and Outlooks

Pulp & Paper

- Scrubbers - Media Support, Structures
- Tank Farm Walkways
- Waste Treatment Walkways
- Chemical Unloading Structures
- Wood Yard Conveyor Systems
- Liquor Storage Areas
- Crossovers

Microelectronics

- Plating Line Platforms
- Wastewater Neutralization Platforms and Walkways
- Corrosive Storage
- Raised Access Flooring in Etching Lines
- Bulk Chemical Distribution Platforms and Walkways
- Acid Waste Neutralization (AWN) Platforms and Walkways
- Cooling Tower Basins
- Central Utility Building (CUB) Platforms and Walkways

Transportation

- Loading/Unloading Platforms
- Rail Washdown & Offloading Areas
- Maintenance/Inspection Platforms for Bridges
- Platforms for Mass Transit
- At Grade Crossings
- Platforms at Diesel Refueling Facilities
- Elevated Platforms for Light Rail Car Maintenance
- Pit Covers in Light Rail Maintenance Facilities
- Covers for Electrified Cable Ways

Metals & Mining

- Elevated Walkways in Electrowinning Areas
- Stairways to Chemical Storage Tanks
- Walkway Supports & Stairways in Refineries
- Support for Walkways Around Flotation Cells & Flotation Cell Support
- Walkways and Access Stairways to Thickeners
- Piping Supports, Walkways and Stairways in Sulfuric Acid Plants & Smelters
- Walkways, Stairways and Equipment Supports in High-sulfur Coal Prep Plants

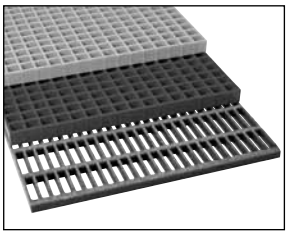
Power

- Platforms/Walkways Around Sumps and Trenches
- Platforms/Accesways Around Tanks & Injection Skids
- Gratings Subject to Coal Dust, Fly Ash, Bottom Ash, Gypsom, Limestone
- FGD Scrubber Environments
- Intake Structures
- Cooling Tower Structures and Walkways

Pharmaceutical

- Tank & Equipment Access Platforms
- Stairways & Landings
- Filter Media Support Grids & Structures (Biofilter, Trickling Filters, Etc.)
- Elevated Platforms & Walkways

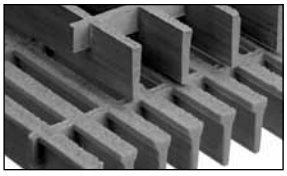
Fibergrate Products & Services



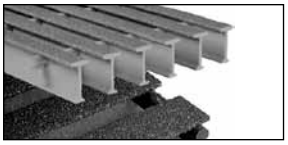
Fibergrate® Molded Grating

Fibergrate molded gratings are designed to provide the ultimate in reliable performance, even in the most demanding conditions. Fibergrate offers the widest selection in the market with more than ten resins including Chemgrate CP-84 and more than twenty grating configurations available in many panel sizes and surfaces.

RIGIDEX® Moltruded® Grating



RIGIDEX Moltruded gratings are the first fiberglass gratings to combine the corrosion resistance of molded grating with the longer span capacity of pultruded grating, all at the low cost of metal gratings.



Safe-T-Span® Pultruded Industrial and Pedestrian Gratings

Combining corrosion resistance, long-life and low-maintenance designs, Safe-T-Span provides unidirectional strength for industrial and pedestrian pultruded grating applications.

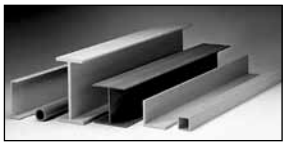
Dynarail® Handrail

Easily assembled from durable prefabricated components or engineered to your specifications, Dynarail handrail meets or exceeds OSHA and strict building code requirements for safety and design.

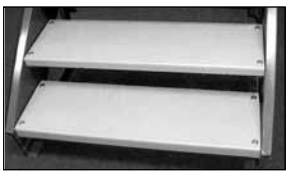
Dynarail® Safety Ladder System

Easily assembled on site, Dynarail safety ladder systems meet or exceed OSHA requirements. Though less costly than prefabricated ladder systems, these safety ladders provide a custom fit to the supporting structure.

Dynaform® Structural Shapes



Fibergrate offers a wide range of pultruded structural components for industrial use, including bars, rods, tubes, beams, channels, leg angles and plates.



Stair Solutions

Fibergrate offers a wide range of slip-resistant products to meet your stair safety needs. These durable products which include treads, tread covers and covered stair treads are a long-term, cost-efficient solution for your facility.

Grating Pedestals

Uniquely designed adjustable single and quad head pedestals for square mesh molded grating are manufactured to provide safe and economical support for elevated flooring.

Engineering and Fabrication Services

Combining engineering expertise with an understanding of fiberglass applications, Fibergrate provides turnkey design and fabrication of fiberglass structures, including platforms, catwalks, stairways and test racks.

Fibergrate Composite Structures Inc.
Phone: 800-527-4043 • Fax: 972-250-1530
www.fibergrate.com • Email: info@fibergrate.com