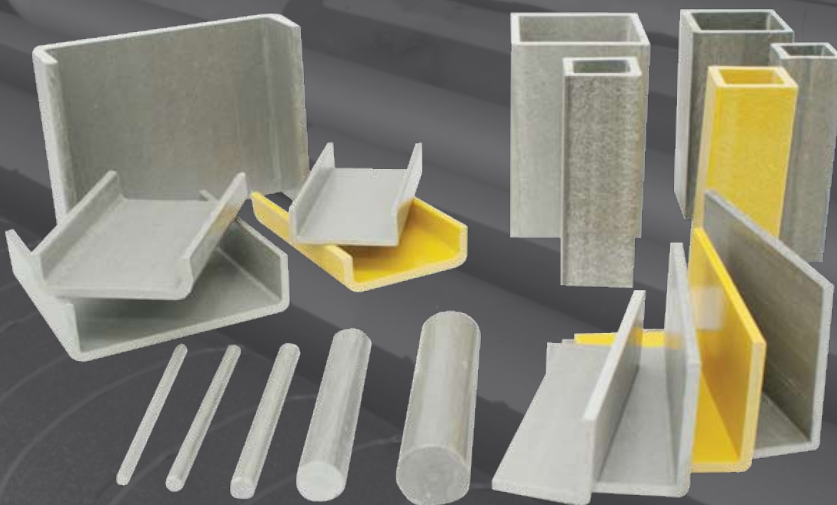


TRUGRID® Corrosion Resistant FRP Handrails, Caged Ladders & Structural Shapes



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Company Introduction

HEXAGON COMPOSITE SDN. BHD.

The Advance Composite Manufacturer

Fibreglass Reinforced Plastic Composite (FRP) Pultrusion started as a division of Polymer Composite Asia (PCA) in 1989 under Hexagon Holdings Berhad, a Malaysian Public Listed Company with diverse business activities including providing engineering and design services, manufacturing & distribution, and trading & services for industrial purposes.

PCA Pultrusion was specialised in the manufacture of FRP gratings, cable support systems, stair treads, handrails, ladders and structural profile systems from advance composite materials under the brand name of TRUGRID®.

PCA FRP products have been widely supplied to various industries worldwide, such as oil & gas, marine & shipping, power & utilities, petrochemical & chemical, renewable energy, building & construction, etc.

In 2008, PCA Pultrusion went through a corporate transformation and thereafter was known as Hexagon Composite Sdn. Bhd., an independent subsidiary of Hexagon which specialises in manufacturing and supplying FRP pultruded products. The brand TRUGRID® was still adopted and used.



Quality Control

The Quality Control Process

Assures consistent production conformity to product specifications by verifying that:

- Raw materials meet or exceed the required standard specification.
- Processing conforms to established parameters in accordance with developed quality plan.
- Products conform to the required specification.



SIRM - BS 4592 : PART 4: 1992



An ISO 9001:2008 certified manufacturer, thus ensuring premium quality and reliable products.



Benefits & Characteristics

a) Corrosion Resistance

- Stands up to harsh environment

b) Non-Conductive

- Greatly reduces the risk of weather related incidents and shock hazard

c) High Strength

- Strength to weight ratios that surpass equivalent steel products

d) Low Maintenance

- Does not require a periodic maintenance program

e) Low Deformation

- Returns to original position without any permanent deflection or distortion with allowable loads.

f) Lightweight

- Extremely lightweight compared to its metal counter parts

g) Fire Retardant

- In accordance with ASTM-E84

h) UV Inhibited

- Contains an ultra violet inhibiting additive in resin and a protective veil

i) Handrail Easily Fabricated in the field

- Use normal metal or wood working tools

j) Low Thermal Conductivity

- Will not transfer heat or cold like metal products

k) Cost Effective

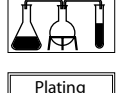
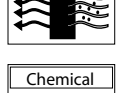
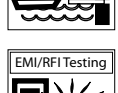
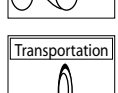
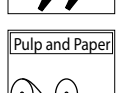
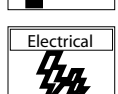
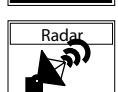
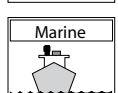
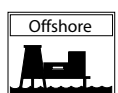
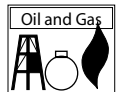
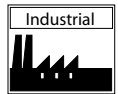
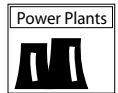
- Extremely long life compared to metal counter parts

l) Non-Skid Surface

- Epoxy surface encapsulating grit or glass beads

m) Non-interfering

- Transparent to radio waves



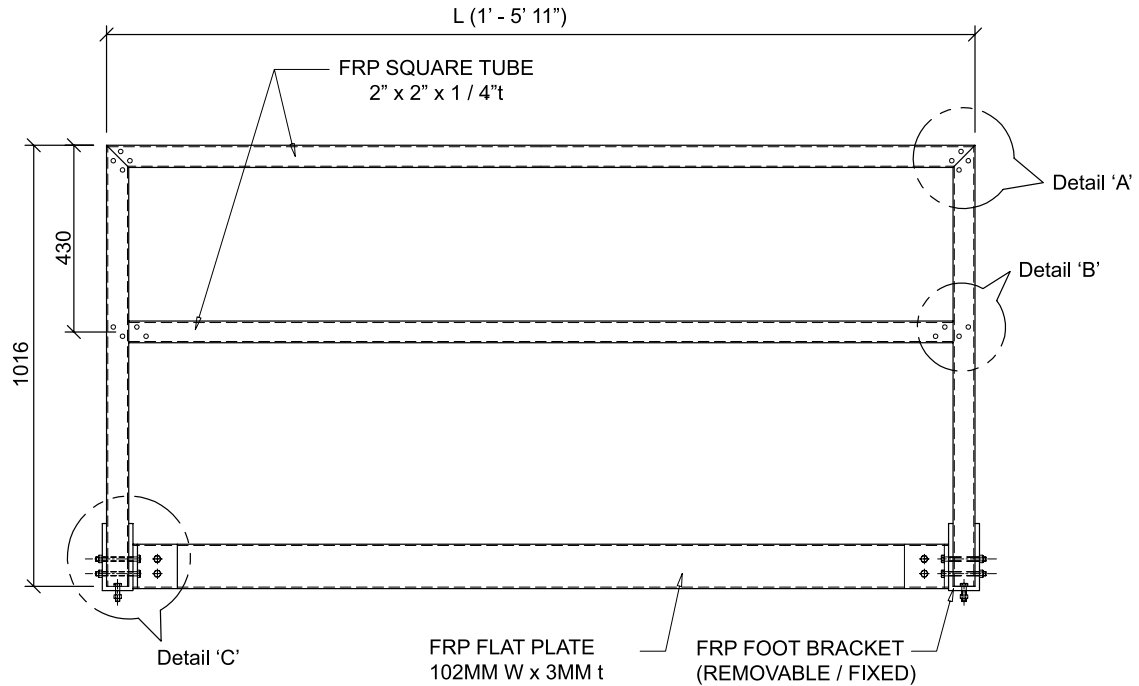
Typical Physical Properties of Pultruded Components

Property	ASTM TEST	Units	Polyester	Vinyl Ester
Mechanical				
Tensile Stress	D638	psi	30,000	30,000
Tensile Modulus	D638	psi x 10 ⁶	2.5	2.6
Compressive Stress, Axial	D695	psi	30,000	30,000
Flexural Stress	D790	psi	30,000	30,000
Flexural Modulus	D790	psi x 10 ⁶	1.6	1.6
Notched Izod Impact	D256	ft-lbs/in	24	25
Short Beam Shear	D3914	psi	4,500	4,500
Physical				
Barcol Hardness	-	-	45	45
24 Hr Water Absorption	D570	% max	0.5	0.5
Density	D792	lbs/in ³	0.060~0.070	0.060~0.070
Coefficient of Thermal	D696	10 ⁻⁶ in/in/°F	4	4
Electrical				
Arc Resistance	D495	seconds	110	110
Dielectric Strength	D149	KV/in	35	35

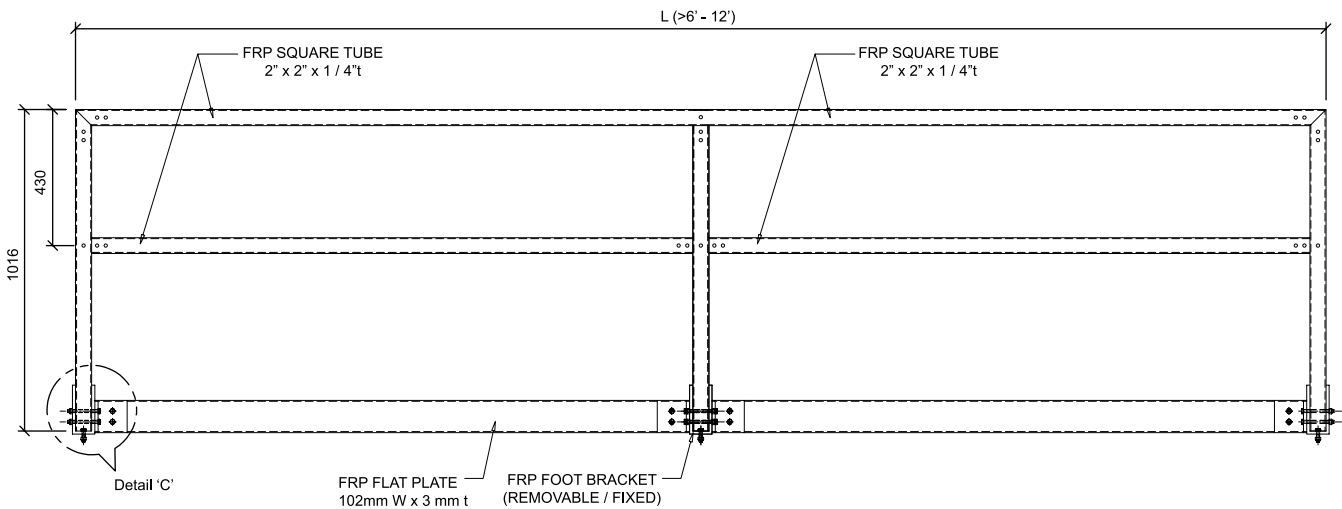
TRUGRID® FRP Handrail System



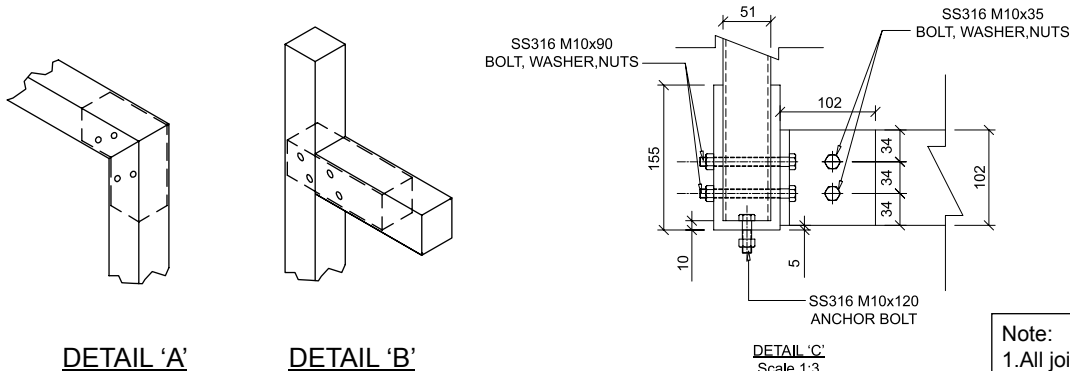
TRUGRID® FRP Handrail System - Product Specification



Above handrail set consists of 2 horizontal rails, 2 vertical posts,
1 kick plate & 2 fixed foot bracket
Standard height of the handrail is 1016mm



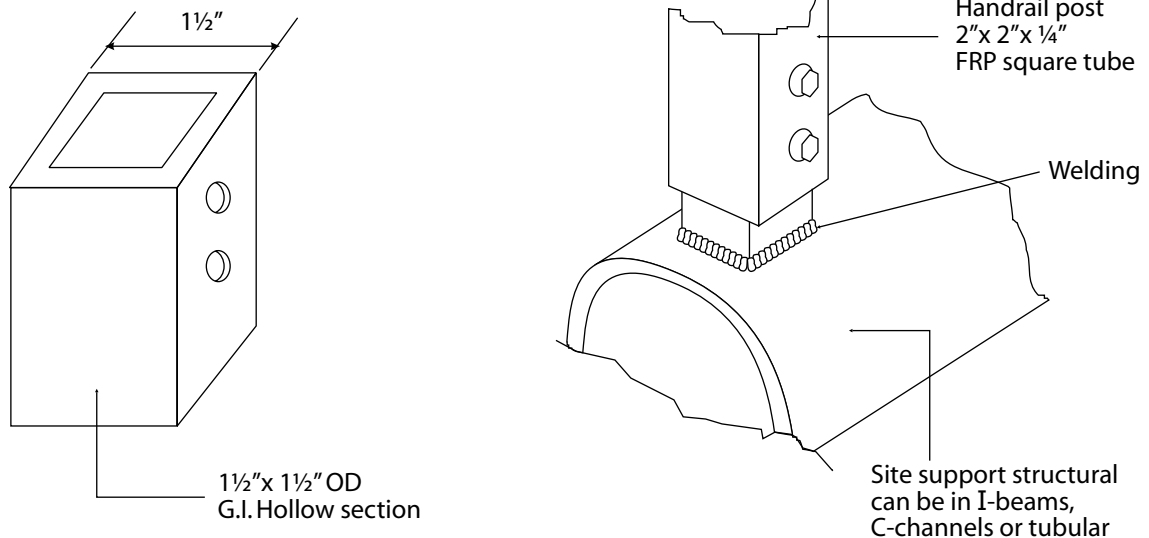
Above handrail set consists of 2 horizontal rails, 3 vertical posts,
1 kick plate & 3 fixed/removable foot bracket



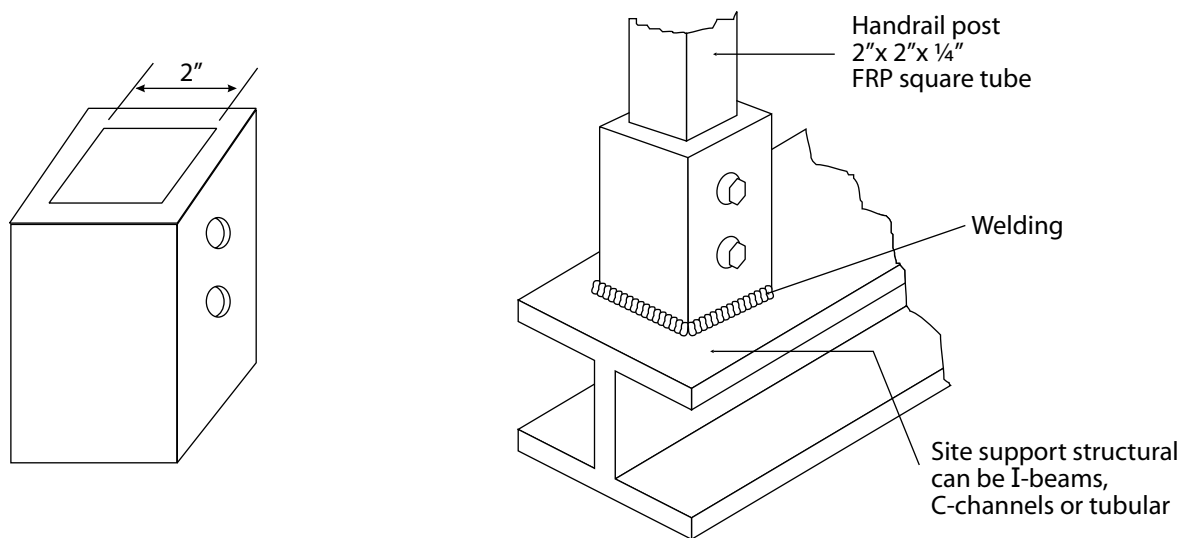
Note:
1. All joints are sealed with epoxy.
2. All cut edges are sealed with resin.

TRUGRID® FRP Handrail System - Installation

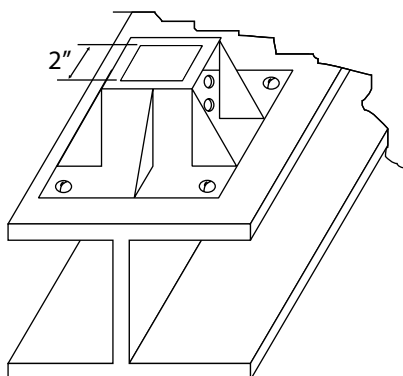
Male Base without Bracket (G.I.)



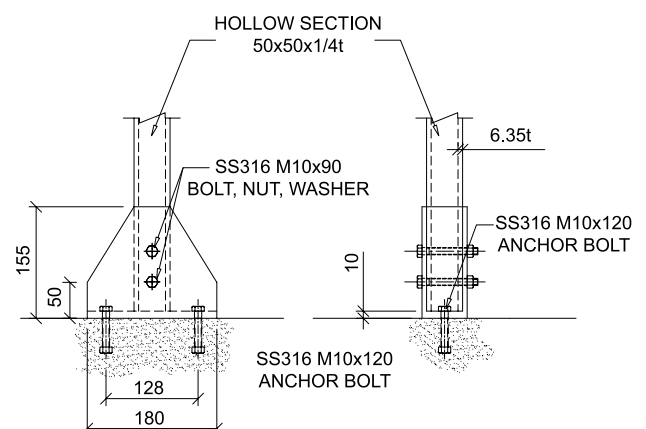
Female Base without Bracket (G.I.)



Female Base with Floor Mounting Bracket (G.I.)



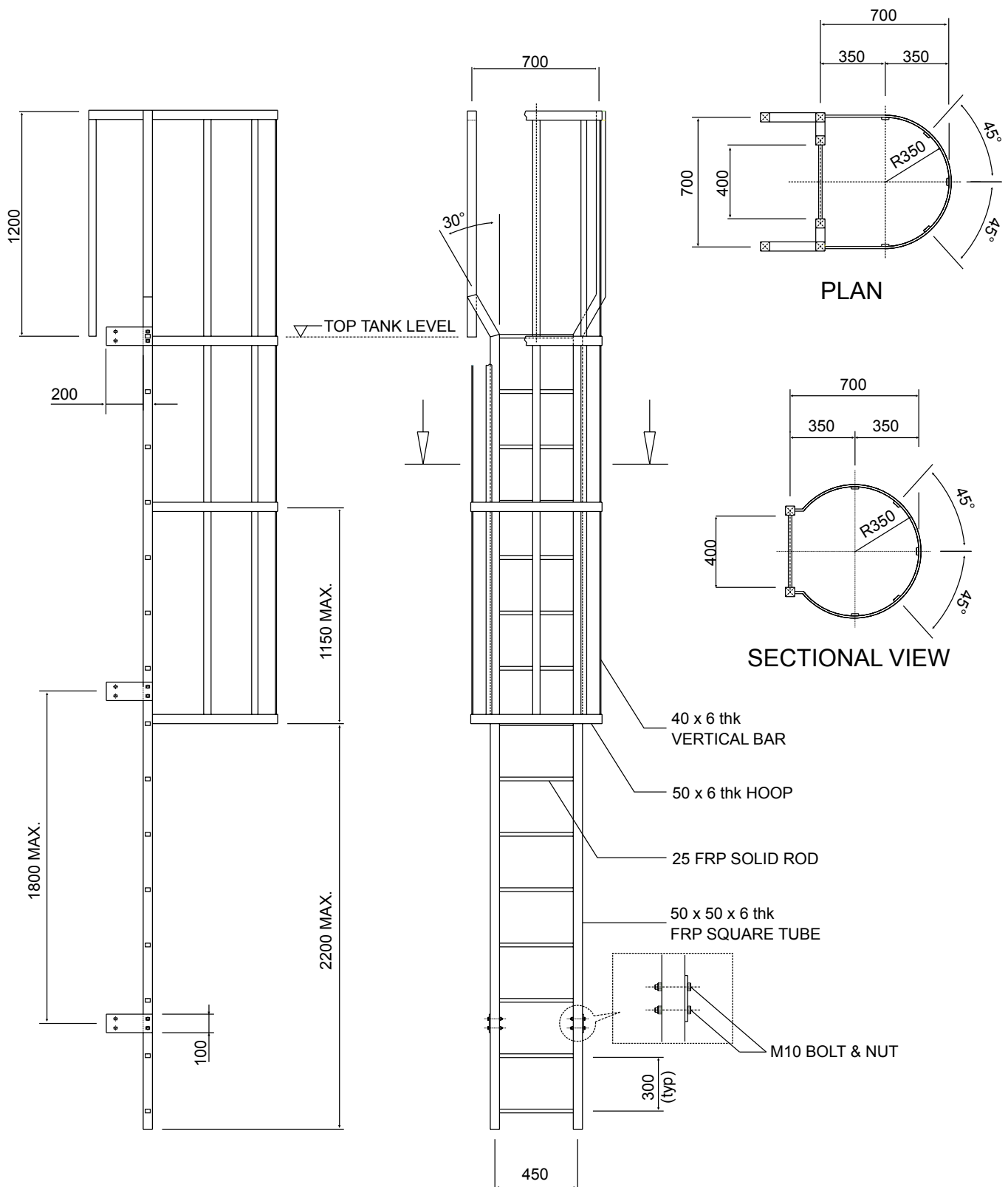
Fixed/Removable Male Base with Floor Mounting Bracket (FRP)



TRUGRID® FRP Ladder System



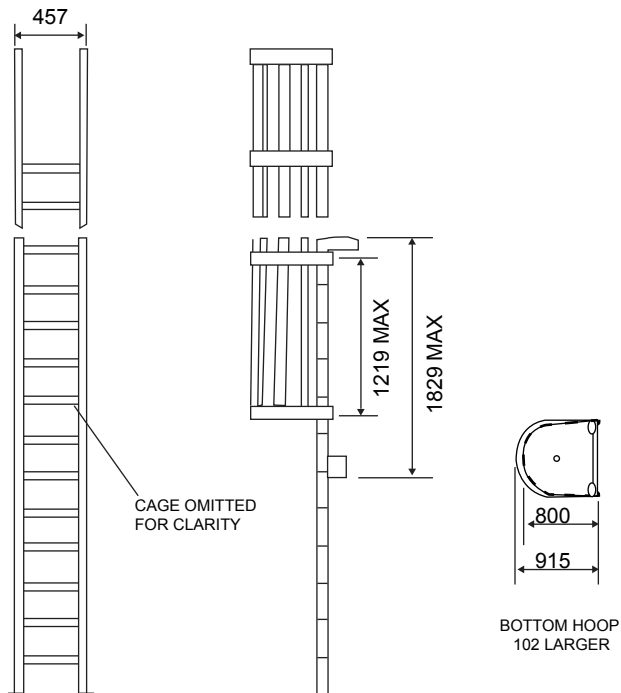
TRUGRID® FRP Ladder System - Product Specification



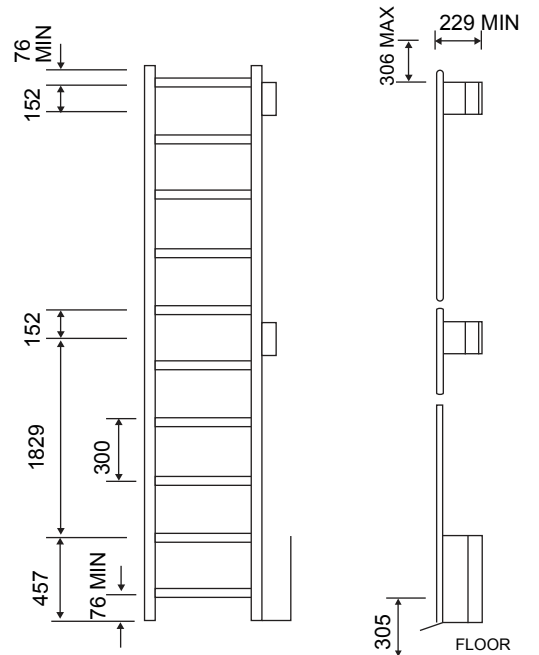
Notes :

1. All joints are sealed with resin.
2. Each rungs receives 1 FRP pin thru side rails.
3. All rungs are with non skid coating on surface.
4. All cut edges are sealed with resin.
5. All fasteners - SS 304 or SS 316.

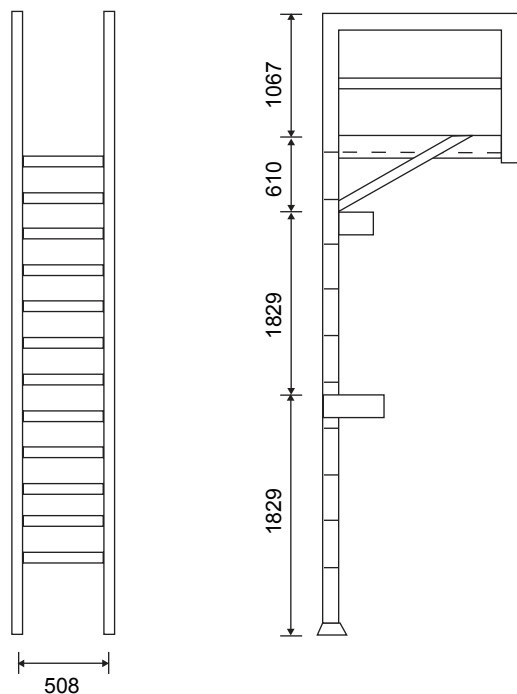
TRUGRID® FRP Ladder System - Product Specification



Std Ladder & Cage



Wet Well Ladder



Tank Platform Ladder Combination

Notes:

1. All joints are sealed with epoxy.
2. Each rung will be rivets secured through inserted to the back of each side rails.
3. All rungs are sealed with resin.
4. All cut edges are sealed with resin.
5. Cages also available in side exit.
6. Ladder returns to handrail or exit level.
7. Wider exits also available.

Installation

- Ladders can be installed to platforms or tanks using brackets and fasteners.

PRODUCT CODE			
NO	PRODUCT CODE	ITEM	MODEL
1	GTSL(G)	GRATING (GRITTED)	SLIM
2	GTSL	GRATING (NON GRITTED/SMOOTH)	SLIM
	GTTW(G)	GRATING (GRITTED)	TW
	GTTW	GRATING (NON GRITTED)	TW
3	BS	BAR SCREEN	SLIM
4	CT	CABLE TRAY	-
5	CJT	CABLE JOINT TRAY	-
6	FDM	FANDECK (MARLY)	-
7	FD	FANDECK	-
8	CC	C-CHANNEL	-
9	SQ	SQ HOLLOW	-
10	AB	ANGLE BAR	-
11	FB	FLAT BAR	-
12	SR	SOLID ROD	-
13	RG	RUNG	-
14	IB	I-BEAM	-
15	PF 01	PROFILE 1	-
16	PF 02	PROFILE 2	-
17	FS	FRP STRUT	-
18	RT	ROUND TUBE	-
19	HDC	Hold Down Clamp	-
20	MC (SL)	M Clips for grating type slim	-
21	MC (TW)	M Clips for grating type TW	-
22	DC	D Clips	-
23	GC	G Clips	-
24	HB	Hex Head for Bolts & Nuts	-
25	SB	Socket Head for Bolts & Nuts	-
	PB	Philips pan Head Bolts	-
26	LNG	Ladder without cage	-
27	LWG	Ladder with cage	-
28	ST	Stairhead	-

MATERIAL CODE		
NO	MATERIAL CODE	MATERIAL
1	GP	GP
2	ISO	ISO
3	VE	VE
4	FR	FR
5	304	Stainless Steel 304
6	316	Stainless Steel 304

COLOUR CODE		
NO	COLOUR CODE	COLOUR
1	GY	GREY
2	GN	GREEN
3	YL	YELLOW
4	BL	BLUE
5	BR	BROWN
6	WH	WHITE

PRODUCT CODE						
NO	CODE	ITEM	MODEL	Size		OPENING
				IMPERIAL (INCH)	MATRIX (MM)	
1	16 (79)	GRATING	SLIM	5/8	15.9	79%
2	25 (67)	GRATING / STAIRTHREAD	SLIM	1.0	25.4	67%
3	38 (67)	GRATING / STAIRTHREAD	SLIM	1.5	38.1	67%
4	51 (67)	GRATING	SLIM	2	50.8	67%
5	25(40)	GRATING / STAIRTHREAD	TW	1.0	25.4	40%
6	25 (50)	GRATING / STAIRTHREAD	TW	1.0	25.4	50%
7	25 (60)	GRATING / STAIRTHREAD	TW	1.0	25.4	60%
8	38 (40)	GRATING / STAIRTHREAD	TW	1.5	38.1	40%
9	38 (50)	GRATING / STAIRTHREAD	TW	1.5	38.1	50%
10	38 (60)	GRATING / STAIRTHREAD	TW	1.5	38.1	60%
11	51 (40)	GRATING	TW	2.0	50.8	40%
12	51 (50)	GRATING	TW	2.0	50.8	50%
13	51 (60)	GRATING	TW	2.0	50.8	60%
14	16 (65)	BAR SCREEN	SLIM	5/8	15.9	65%
15	16 (70)	BAR SCREEN	SLIM	5/8	15.9	70%
16	16 (79)	BAR SCREEN	SLIM	5/8	15.9	79%
17	50	CABLE TRAY	-		50	-
18	100	CABLE TRAY	-		100	-
19	150	CABLE TRAY	-		150	-
20	300	CABLE TRAY	-		300	-
21	305 x 28	CABLE JOINT TRAY	-		400	-
22	305 X 28	FANDECK (MARLY)	-		305(w) x 28(d)	-
23	305 x 28	FANDECK	-		305(w) x 28(d)	-
24	203 x 51 x6	FANDECK	-	8(w)x 2(d) x 1/4(t)	203.2(w) x 50.8(d) x 6.4(t)	-
25	305 x 28 x 3	FANDECK	-		305 (w) x 28 (d) x 3(t)	-
26	500 x 70 x 4	FANDECK	-		500 (w) x 70 (d) X 4 (t)	-
27	50 x 25 x 5	C-CHANNEL	-	2 (d) x 1 (w) x 3/16 (t)	50.8(d) x 25.4(w) x 4.8(t)	-
28	76 x 27 x 5	C-CHANNEL	-	3 (d) x 1 1/16(w) x 3/16 (t)	76.2(d) x 27 (w) x 6.4(t)	-
29	101 x 29 x 6	C-CHANNEL	-	4 (d) x 1 1/8 (w) x 1/4 (t)	101.6(d) x 28.6(w) x 6.4 (t)	-
30	102 x 41 x 5	C-CHANNEL	-	4 (d) x 1 5/8 (w) x 3/16(t)	101.6 (d) x 41.3 (w) x 4.8 (t)	-
31	152 x 41 x 5	C-CHANNEL	-	6 (d) x 1 5/8 (w) x 4.8 (t)	152.4(d) x 41.3 (w) x 4.8(t)	-
32	152 x 41 x 6	C-CHANNEL	-	6 (d) x 1 5/8 (w) x 1/4(t)	152.4(d) x 41.3 (w) x 6.4(t)	-
33	178 x 51 x 6	C-CHANNEL	-	7 (d) x 2 (w) x 1/4 (t)	177.8(d) x 50.8(w) x 6.4(t)	-
34	203 x 56 x 10	C-CHANNEL	-	8(d) x 2 3/16(w) x 1/4 (t)	203.2 (d) x 55.6(w) x 9.5(t)	-
35	64 x 24 x 3 x 5	C-CHANNEL	-		64(d) x 24(w) x 3(t) x 5(t)	-
36	45 x 45 x 6	SQ HOLLOW	-	1 3/4 (d) x 1 3/4(w) x 1/4 (t)	44.5(d) x 44.5 (w) x 6.4 (t)	
37	51 x 51 x 3	SQ HOLLOW	-	2 (w) x 2 (w) x 1/8 (t)	50.8(w) x 50.8 (w) x 6.4 (t)	-
38	51 x 51 x 6	SQ HOLLOW	-	2 (w) x 2 (w) x 1/4 (t)	50.8(w) x 50.8(w) x 6.4(t)	-
39	76 x 76 x 6	SQ HOLLOW	-	3 (w) x 3 (w) x 1/4 (t)	76.2(w) x 76.2(w) x 6.4(t)	-
40	102 x 102 x 6	SQ HOLLOW	-	4 (w) x 4 (w) x 1/4 (t)	101.6 (w) x 101.6(w) x 6.4(t)	-
41	38 x 38 x 6	ANGLE BAR	-	1.5(w) x 1.5(w) x 1/4 (t)	38.1(w) x 38.1 (w) x 6.4 (t)	-
42	51 x 51 x 6	ANGLE BAR	-	2 (w) x 2 (w) x 1/4(t)	50.8 (w) x 50.8 (w) x 6.4 (t)	-
43	76 x 76 x 6	ANGLE BAR	-	3 (w) x 2(w) x 1/4(t)	76.2(w) x 76.2 (w) x 6.4(t)	-
44	102 x 102 x 6	ANGLE BAR	-	4(w) x 2(w) x 1/4(t)	101.6(w) x 101.6(w) x 6.4 (t)	-
45	76 x 6	FLAT BAR	-	3(w) x 1/4(t)	76.2(w) x 6.4(t)	-
46	102 x 6	FLAT BAR	-	4 (w) x 1/4 (t)	101.6 (w) x 6.4(t)	-
47	127 x 6	FLAT BAR	-	5 (w) x 1/4 (t)	127 (w) x 6.4 (t)	-
48	152 x 6	FLAT BAR	-	6(w) x 1/4 (t)	152.4 (w) x 6.4(t)	-
49	76 x 13	FLAT BAR	-	3(w) x 1/2 (t)	76.2 (w) x 12.7(t)	-
50	102 x 13	FLAT BAR	-	4(w) x 1/2(t)	101.6 (w) x 12.7(t)	-

PRODUCT CODE						
NO	CODE	ITEM	MODEL	Size		OPENING
				IMPERIAL (INCH)	MATRIX (MM)	
51	127 x 13	FLAT BAR	-	5 (w) x 1/2 (t)	127 (w) x 12.7 (t)	-
52	760 x 3	FLAT BAR	-		760 (w) x 3 (t)	-
53	3	SOLID ROD	-	1/8 (dia)	3.2	-
54	6	SOLID ROD	-	1/4(dia)	6.4	-
55	10	SOLID ROD	-	3/8 (dia)	9.5	-
56	13	SOLID ROD	-	1/2 (dia)	12.7	-
57	16	SOLID ROD	-	5/8 (dia)	15.9	-
58	25	SOLID ROD	-	1 (dia)	25.4	-
59	38	SOLID ROD	-	1.5 (dia)	38.1	-
60	25 x 25	RUNG	-	1 X 1	25.4 x 25.4	-
61	40 x 25 x 4	RUNG CHANNEL	-		40 x 25 x 4(t)	-
62	30	DOOR FRAME SUCTION	-		30	-
63	30	DOOR PREASSURE SUCTION	-		30	-
64	51 x 102 x 6	I-BEAM	-	2(w) x 4(d) x 1/4 (t)	50.8(w) x 101.6(d) x 6.4(t)	-
65	76 x 152 x 6	I-BEAM	-	3(w) x 6(d) x 1/4(t)	76.2(w) x 152.4(d) x 6.4(t)	-
66	std	PROFILE 1	-			-
67	std	PROFILE 2	-			-
68	41 x 41 x 4	FRP STRUT	-		41 x 41 x 4	-
69	76	ROUND TUBE	-	3 (dia)	76.2 (dia)	-
70	38 x 28 x 5	ROUND TUBE	-		38 (OD) x 28 (ID) x 5.05	-
71	M6 x 25	HEX HEAD BOLT & NUT	-	-	M4 x 20	-
72	M6 x 25	HEX HEAD BOLT & NUT	-	-	M6 x 25	-
73	M6 x 35	HEX HEAD BOLT & NUT	-	-	M6 x 35	-
74	M6 x 50	HEX HEAD BOLT & NUT	-	-	M6 x 50	-
75	M6 x 65	HEX HEAD BOLT & NUT	-	-	M6 x 65	-
76	M10 x 35	HEX HEAD BOLT & NUT	-	-	M10 x 35	-
77	M10 x 30	HEX HEAD BOLT & NUT	-	-	M10 x 30	-
78	M10 x 50	HEX HEAD BOLT & NUT	-	-	M10 x 50	-
79	M12 x 45	HEX HEAD BOLT & NUT	-	-	M12 x 45	-
80	M6 x 20	PHILIPS PAN HEAD BOLTS	-	-	M6 x 20	-
81	M6 x 50	PHILIPS PAN HEAD BOLTS	-	-	M6 x 50	-
82	M8 x 25	PHILIPS PAN HEAD BOLTS	-	-	M8 x 25	-
83	M8 x 30	PHILIPS PAN HEAD BOLTS	-	-	M8 x 25	-
84	M10 x 25	PHILIPS PAN HEAD BOLTS	-	-	M10 x 25	-
85	M10 x 30	PHILIPS PAN HEAD BOLTS	-	-	M10 x 30	-
86	M12 x 25	PHILIPS PAN HEAD BOLTS	-	-	M12 x 25	-
87	M12 x 30	PHILIPS PAN HEAD BOLTS	-	-	M12 x 30	-
88	M6 x 50	SOCKET HEAD SCREW	-	-	M6 x 50	-
89	M8 x 30	SOCKET HEAD SCREW	-	-	M8 x 30	-
90	M8 x 45	SOCKET HEAD SCREW	-	*	M8 x 45	-



Delivering Engineered Solutions Globally.

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