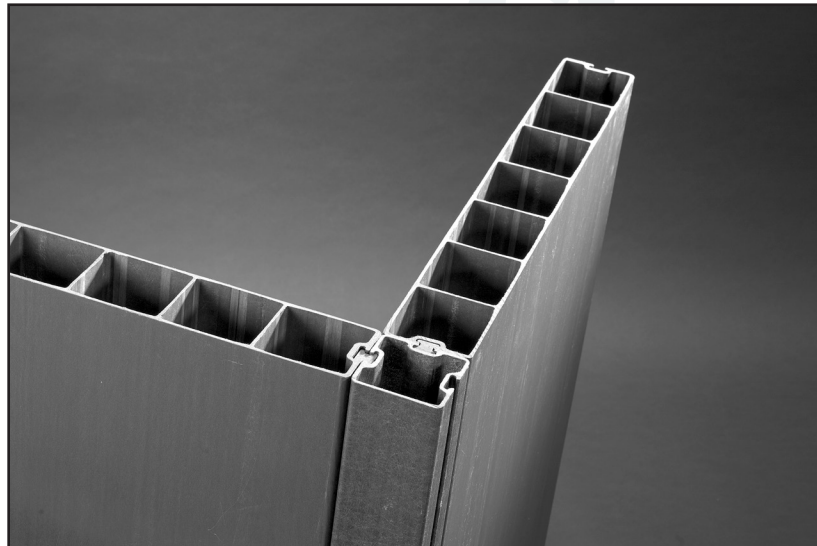


# SECTION 15

## COMPOSOLITE®

### FIBERGLASS BUILDING PANEL SYSTEM



Look for this blue line in the left margin of the Design Manual documents. This line shows you where the latest update has been made.

NOTE: COMPOSOLITE® is a registered trademark of Maunsell Structural Plastics, Ltd. and used by Strongwell Corporation pursuant to license.

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**COMPOSOLITE® FIBERGLASS BUILDING PANEL SYSTEM**

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**INTRODUCTION**

**COMPOSOLITE®** is an advanced composite building panel system suitable for major load bearing structural applications. The modular construction system consists of a small number of interlocking fiber reinforced polymer (FRP) structural components produced by the pultrusion process. The main building panel is an open-ribbed 3" thick x 24" wide nominal size panel. Panels can be connected using the 3-way connectors, 45° connectors, toggles and/or hangers.

This uniquely designed system of interlocking components makes it possible to design fiberglass structures at significantly lower costs for a broad range of construction applications.

**COMPOSOLITE®** structures can be designed in "kit form" and shipped flat to the job site.

**FEATURES**

The **COMPOSOLITE®** fiberglass building panel system is comprised of pultruded FRP components. The system provides these features:

- Corrosion Resistance
- Strong
- Interlocking Joints
- Light Weight
- Non-Conductive
- Easy to Install
- Easy to Maintain
- Cost Effective

**SYSTEM DESIGN**

**COMPOSOLITE®** combines manufacturing simplicity with an almost unlimited number of configurations.

The panels feature integrally molded longitudinal grooves into which a connector or toggle (of the same length or longer) is inserted during assembly. Three-way and 45° connectors allow the system components to turn corners and facilitate the joining of walls or sides. Toggles lock panels and connectors together securely. For added flexibility, the system also includes a hanger and an end cap.

For permanent structures, joints between panels and connectors are bonded during assembly. After the adhesive is applied along the length of the panel and connector, the toggle mechanically secures the components and creates even pressure along the length of the joint until the adhesive cures.

**MATERIALS OF CONSTRUCTION**

**COMPOSOLITE®** is a system of five interlocking components manufactured of pultruded fiberglass reinforced polymer. This construction makes **COMPOSOLITE®** particularly well-suited to outdoor use and/or corrosive environments.

**COMPOSOLITE®** is available in either polyester, polyester fire retardant, or vinyl ester resin systems. It is stocked in the polyester fire retardant resin system in slate gray color. The standard fire retardant resins meet the requirements of Class 1 rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. The resin mixture is UV inhibited and the composite includes a surface veil on all exposed surfaces for enhanced corrosion and UV protection.

Other resins and colors are available upon request.

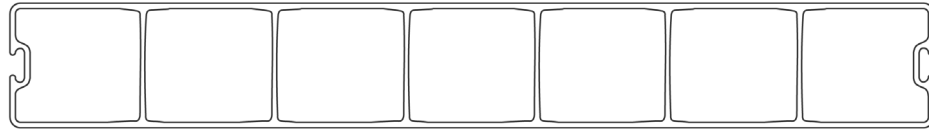
**APPLICATIONS**

**COMPOSOLITE®** panels are designed for major load bearing structural applications. Typical applications are:

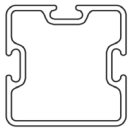
- FRP Buildings
- Bridge Decks
- Platforms & Walkways
- Bridge Enclosure Systems
- Tank Covers
- Cellular Enclosures

**COMPOSOLITE® FIBERGLASS BUILDING PANEL SYSTEM**

**COMPONENTS**



Panel (3" x 24" nominal size - 80mm x 604.7mm actual)  
7.49 lb/ft



3-Way  
Connector  
1.65 lbs/ft



Toggle  
Connector  
.34 lbs/ft



Hanger  
1.55 lbs/ft



45°  
Connector  
1.65 lbs/ft



End Cap  
.57 lbs/ft

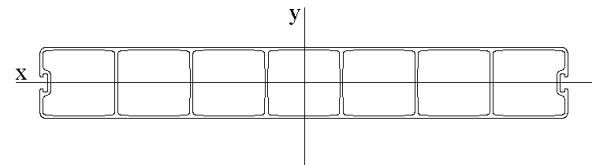
**MECHANICAL PROPERTIES**  
*(minimum coupon)*

Properties	ASTM Test Method	Value
Flexural Strength, LW	D790	24.5 ksi
Flexural Strength, CW	D790	8.2 ksi
Flexural Modulus, LW	D790	885 ksi
Flexural Modulus, CW	D790	646 ksi
Tensile Strength, LW	D638	31.1 ksi
Tensile Modulus, LW	D638	2,486 ksi
Short Beam Shear, LW	D2344	3.19 ksi

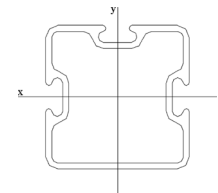
**COMPOSOLITE® ALLOWABLE UNIFORM  
LOAD TABLE (PSF)**

SPAN (ft.)	@ Δ=span/60			@ Δ=span/120			@ Δ=span/180		
	Δ (IN.)	Siding	Roofing	Δ (IN.)	Siding	Roofing	Δ (IN.)	Siding	Roofing
4	.8	*778	*774	.4	*778	*774	.27	*778	*774
5	1.0	*624	*620	.5	*624	*620	.33	490	486
6	1.2	*520	*516	.6	449	445	.40	299	295
7	1.4	*466	*462	.7	303	299	.47	204	200
8	1.6	*390	*386	.8	214	210	.53	142	138
9	1.8	311	308	.9	156	152	.60	104	100
10	2.0	233	229	1.0	116	112	.67	78	74
11	2.2	176	172	1.1	88	84	.73	59	55
12	2.4	140	136	1.2	70	64	.80	47	43
13	2.6	110	106	1.3	56	52	.87	37	33
14	2.8	90	86	1.4	48	44	.93	30	26
15	3.0	74	70	1.5	37	33	1.00	25	21
16	3.2	61	57	1.6	30	26	1.09	21	17
17	3.4	51	47	1.7	25	21	1.13	17	13
18	3.6	43	39	1.8	22	18	1.20	14	10
19	3.8	36	32	1.9	18	14	1.27	12	8
20	4.0	32	28	2.0	15	11	1.33	11	7

**SECTION PROPERTIES**



$I_x = 15.9 \text{ in.}^4$   
 $S_x = 10.2 \text{ in.}^3$   
 $r_x = 1.33 \text{ in.}$   
 $I_y = 422 \text{ in.}^4$   
 $S_y = 39.9 \text{ in.}^3$   
 $r_y = 6.88 \text{ in.}$   
 $A = 8.89 \text{ in.}^2$   
 $Aw_x = 2.78 \text{ in.}^2$   
 $Aw_y = 6.11 \text{ in.}^2$



$I_{xx} = 2.73 \text{ in.}^4$   
 $I_{yy} = 2.69 \text{ in.}^4$   
 $S_{xx} = 1.80 \text{ in.}^3$   
 $S_{yy} = 1.71 \text{ in.}^3$   
 $A = 2.01 \text{ in.}^2$   
 $r_x = 1.17 \text{ in.}$   
 $r_y = 1.17 \text{ in.}$

\*Controlled by strength with a factor of safety of 2.50 for flexural or 3.0 for shear. NOTE: All values are typical.

**COMPOSOLITE® FIBERGLASS BUILDING PANEL SYSTEM**

**LOAD TABLE (METRIC)**

Span (ft) (m)														$E_a I$ (10 <sup>6</sup> lbf.-in. <sup>2</sup> )(10 <sup>9</sup> N-cm <sup>2</sup> )
<b>6</b> <b>(1.83)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)	2000 (8891)	2250 (10002)	2500 (11114)	2750 (12225)	3000 (13336)	--
	Dc	.06" (1.53)	.11" (2.80)	.19" (4.32)	.19" (4.83)	.23" (5.85)	.28" (7.12)	.32" (8.13)	.39" (9.40)	.42" (10.68)	.46" (11.69)	.51" (12.96)	.55" (13.98)	42.7 (1.23)
	u	50 (729)	100 (1459)	150 (2189)	167 (2437)	208 (3035)	250 (3648)	292 (4261)	333 (4859)	375 (5472)	417 (6085)	458 (6684)	500 (7296)	--
	Du	.03" (0.76)	.07" (1.78)	.10" (2.54)	.11" (2.80)	.14" (3.56)	.17" (4.32)	.20" (5.08)	.23" (5.85)	.26" (6.61)	.28" (7.12)	.31" (7.88)	.34" (8.64)	42.7 (1.23)
<b>7</b> <b>(2.13)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)	2000 (8891)	2250 (10002)	2500 (11114)			--
	Dc	.08" (2.03)	.15" (3.81)	.23" (5.85)	.26" (6.61)	.32" (8.13)	.38" (9.66)	.45" (11.44)	.51" (12.96)	.58" (14.74)	.64" (16.27)			48.2 (1.38)
	u	43 (627)	86 (1255)	128 (1868)	143 (2086)	178 (2597)	214 (3123)	250 (3648)	285 (4159)	321 (4684)	357 (5210)			--
	Du	.05" (1.27)	.10" (2.54)	.14" (3.56)	.16" (4.07)	.20" (5.08)	.24" (6.10)	.28" (7.12)	.32" (8.13)	.36" (9.15)	.40" (10.17)			48.2 (1.38)
<b>8</b> <b>(2.44)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)	2000 (8891)	2250 (10002)				--
	Dc	.15" (3.81)	.23" (5.85)	.34" (8.64)	.38" (9.66)	.48" (12.20)	.58" (14.74)	.67" (17.03)	.77" (19.57)	.86" (21.86)				48.6 (1.39)
	u	38 (554)	75 (1094)	112 (1634)	125 (1824)	156 (2276)	188 (2743)	219 (3196)	250 (3648)	281 (4100)				--
	Du	.07" (1.78)	.14" (3.56)	.21" (5.34)	.24" (6.10)	.30" (7.63)	.36" (9.15)	.41" (10.42)	.47" (11.95)	.53" (13.47)				48.6 (1.39)
<b>9</b> <b>(2.74)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)	2000 (8891)					--
	Dc	.16" (4.07)	.32" (8.13)	.47" (11.95)	.53" (13.47)	.66" (16.78)	.79" (20.08)	.92" (23.38)	1.05" (26.69)					50.2 (1.44)
	u	33 (481)	67 (977)	100 (1459)	111 (1619)	129 (1883)	167 (2437)	194 (2831)	222 (3239)					--
	Du	.10" (2.54)	.20" (5.08)	.29" (7.37)	.33" (8.39)	.41" (10.42)	.49" (12.45)	.57" (14.49)	.65" (16.52)					50.2 (1.44)
<b>10</b> <b>(3.04)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)						--
	Dc	.21" (5.34)	.42" (10.68)	.63" (16.01)	.70" (17.79)	.87" (22.11)	1.05" (26.69)	1.22" (31.01)						51.8 (1.49)
	u	30 (437)	60 (875)	90 (1313)	100 (1459)	125 (1824)	150 (2189)	175 (2553)						--
	Du	.13" (3.30)	.26" (6.61)	.39" (9.91)	.44" (11.18)	.54" (13.73)	.65" (16.52)	.76" (19.32)						51.8 (1.49)
<b>11</b> <b>(3.35)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)	1750 (7780)						--
	Dc	.27" (6.86)	.55" (13.98)	.82" (20.84)	.92" (23.38)	1.14" (28.98)	1.4" (35.58)	1.6" (40.67)						52.4 (1.50)
	u	27 (394)	55 (802)	82 (1196)	91 (1328)	114 (1663)	136 (1984)	159 (2320)						--
	Du	.17" (4.32)	.35" (8.89)	.52" (13.21)	.57" (14.48)	.72" (18.29)	.85" (21.59)	1.00" (25.40)						52.4 (1.50)
<b>12</b> <b>(3.66)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)	1500 (6668)							--
	Dc	.35" (8.90)	.70" (17.79)	1.05" (26.69)	1.17" (29.74)	1.46" (37.11)	1.75" (44.48)							53.5 (1.54)
	u	25 (364)	50 (729)	75 (1094)	83 (1211)	104 (1517)	125 (1824)							--
	Du	.22" (5.59)	.44" (11.18)	.65" (16.52)	.72" (18.30)	.91" (23.13)	1.09" (27.70)							53.5 (1.54)
<b>13</b> <b>(3.96)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5559)							--	
	Dc	.44" (11.18)	.77" (22.37)	1.31" (33.30)	1.46" (37.11)	1.82" (46.26)							54.4 (1.56)	
	u	23 (335)	46 (671)	69 (1006)	77 (1123)	96 (1401)							--	
	Du	.28" (7.12)	.57" (14.49)	.85" (21.60)	.95" (24.15)	1.18" (29.99)							54.4 (1.56)	
<b>14</b> <b>(4.27)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)	1250 (5557)							--	
	Dc	.54" (13.73)	1.08" (27.45)	1.63" (41.43)	1.81" (46.00)	2.26" (57.44)							54.7 (1.57)	
	u	21 (306)	43 (627)	64 (934)	71 (1036)	89 (1298)							--	
	Du	.34" (8.64)	.68" (17.28)	1.02" (25.93)	1.13" (28.72)	1.41" (35.84)							54.7 (1.57)	
<b>15</b> <b>(4.57)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)							--		
	Dc	.66" (16.78)	1.33" (33.80)	1.99" (50.58)	2.21" (56.17)							55.1 (1.58)		
	u	20 (291)	40 (583)	60 (875)	67 (977)							--		
	Du	.41" (10.42)	.82" (20.84)	1.24" (31.52)	1.38" (35.08)							55.1 (1.58)		
<b>16</b> <b>(4.87)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)							--		
	Dc	.80" (20.33)	1.60" (40.67)	2.39" (60.75)	2.66" (67.61)							55.4 (1.59)		
	u	19 (277)	37 (539)	56 (817)	62 (904)							--		
	Du	.51" (12.96)	1.0" (25.42)	1.50" (38.13)	1.66" (42.19)							55.4 (1.59)		
<b>17</b> <b>(5.18)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (4445)							--		
	Dc	.96" (24.40)	1.91" (48.55)	2.87" (72.95)	3.19" (81.08)							55.5 (1.59)		
	u	18 (262)	35 (510)	53 (773)	59 (861)							--		
	Du	.61" (15.50)	1.19" (30.25)	1.80" (45.75)	2.0" (50.83)							55.5 (1.59)		
<b>18</b> <b>(5.49)</b>	c	300 (1334)	600 (2667)	900 (4001)	1000 (445)							--		
	Dc	1.13" (28.72)	2.27" (57.70)	3.40" (86.42)	3.78" (96.08)							55.6 (1.60)		
	u	17 (248)	33 (481)	50 (729)	56 (817)							--		
	Du	.70" (17.79)	1.41" (35.84)	2.11" (53.63)	2.36" (59.98)							55.6 (1.60)		
<b>19</b> <b>(5.79)</b>	c	300 (1334)	600 (2667)	900 (4001)							--			
	Dc	1.3" (33.03)	2.70" (68.63)	4.0" (101.67)							56.0 (1.61)			
	u	16 (233)	32 (467)	47 (685)							--			
	Du	.84" (21.35)	1.69" (42.95)	2.48" (63.03)							56.0 (1.61)			
<b>20</b> <b>(6.10)</b>	c	300 (1334)	600 (2667)	900 (4001)							--			
	Dc	1.54" (39.13)	3.07" (78.03)	4.60" (116.92)							56.4 (1.62)			
	u	15 (218)	30 (437)	45 (656)							--			
	Du	.96" (24.40)	1.91" (48.55)	2.87" (72.95)							56.4 (1.62)			

$E_a I$  = The typical apparent stiffness based on deflection testing; the load tables developed based on this stiffness are typical values

U = Uniform load (lbf/ft) (N/m)

C = Concentrated load (lbf) (N)

ΔC = Deflection inches (mm) under concentrated load

ΔU = Deflection inches (mm) under uniform load