

**HIGH FASHION ROOFING,  
WE'LL BRING THE  
How To.**



# **CGI CORRUGATED 16**

**DESIGN GUIDE: ROOFING AND WALLING**

### CLADDING WITH ENDURING STYLE

Clad your roofing and walling project with the one profile that is always in fashion. It complements both contemporary and traditional architecture. CGI Corrugated has the advantage of high strength, adaptability and easy handling and installation. It is a practical and versatile cladding solution for roofing, walling and fencing applications.

CGI Corrugated is made from high tensile steel for strength and impact resistance. It is available in long lengths for added life and enhanced appearance. It has a non-syphoning side lap which reduces the risk of moisture transfer between sheets due to capillary action, thus reducing the risk of roof leakage. CGI Corrugated is available in un-painted Zinc/Al, and in a huge range of pre-painted colours.

### CUSTOM MADE FOR YOUR PROJECT

For lengths longer than 1.2 metres, CGI is rolled to the specific length you require, provided satisfactory transport and handling facilities can be arranged. If lengths longer than ten metres are required, consult your nearest Stratco for advice on handling and transport.

To give your roof a professional finish, painted self-drilling screws are available. Stratco offer a complete range of accessories and flashings for use with CGI, and can provide professional advice on specific flashings. In addition to straight CGI sheeting, pre-curved or bullnosed CGI sheets are available. Technical details are provided in a brochure which deals with this type of application.

### DESIGN CONSIDERATIONS

CGI Corrugated has a 762mm coverage and the minimum recommended roof pitch is five degrees (1 in 12). CGI roofing is subject to thermal expansion. Darker colours are affected more than light, and spring curved sheeting needs additional consideration. The maximum length before an expansion joint is needed is 24 metres for light colours, and 16 metres for dark colours. For spring curved sheeting this distance is 20 metres for light colours and 16 metres for dark colours.

### SPRING CURVING

CGI Corrugated roofing may be spring curved using purlins at a maximum spacing of 800mm for .42mm BMT and 1000mm for .48mm BMT. The curve must have a minimum radius of 12m for .42mm BMT and 10m for .48mm BMT. The maximum radius is 35m to allow for sufficient drainage over a crest. The side laps must be sealed wherever the roof pitch is less than the recommended minimum.

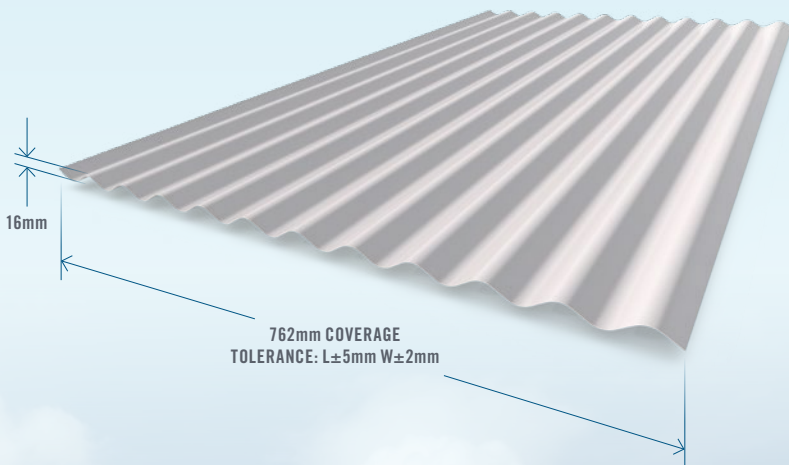


### COMPLIANCE

The Wind Capacity Tables are based on testing in accordance with AS1562.1-1992 and AS4040.0, 1 & 2-1992. Span tables have been developed by determining wind pressures in accordance with AS4055-2012 for domestic applications and AS/NZS 1170.2:2011 for all other applications. Capacity tables are in limit state format.

*"Corrugated steel has a timeless appeal combined with strength and versatility"*

# TIMELESS ROOFING AND WALLING WITH SOFT FLOWING LINES



## MATERIAL SPECIFICATIONS

TABLE 1.0

Material Properties	Finish	0.35 BMT	0.42 BMT	0.48 BMT
Total Coated Thickness (TCT) mm	Zinc/Al	0.40	0.47	0.53
	Colour	0.43	0.50	0.56
Mass (kg/linear metre)	Zinc/Al	2.74	3.26	3.70
	Colour	2.79	3.32	3.76
Mass (kg/square metre)	Zinc/Al	3.60	4.28	4.86
	Colour	3.67	4.35	4.93
Yield (square metre/tonne)	Zinc/Al	277.9	233.8	205.9
	Colour	272.3	229.8	202.8
Tensile Strength (MPa)	Zinc/Al & Colour	G550	G550	G550
Width Coverage (mm)	Zinc/Al & Colour	762	762	762
Sheet Tolerances (mm)	Length & Width	±5 ±2	±5 ±2	±5 ±2
Minimum Roof Pitch	Zinc/Al & Colour	n/a	5°	5°

## WE'VE GOT ROOFING How To.

Talk to our roofing experts to sort out your next project. Everything you need to know is in our heads.

Just tell us what's in yours and we'll help you to make it happen!



## SPANS

Spans are determined by wind speeds for non-cyclonic areas. For domestic applications, the pressures and spans are based on an eaves height not exceeding 6m, a roof pitch no greater than 35° and a total roof height of maximum 8.5m. For commercial and industrial applications, span tables are based on a maximum overall height of ten metres and a 500 year design return period.

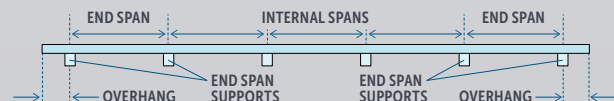
Roofing calculations are based on  $C_{pe} = -0.9$  and  $C_{pi} = 0.2$ , walling is based on  $C_{pe} = -0.65$  and  $C_{pi} = 0.2$ . A local pressure factor,  $K_l = 2.0$  has been used for all roofing and walling spans for both strength and serviceability limit states. Roof spans take into consideration loads incidental to maintenance.

All pressures have been determined assuming wind loading in any direction but which is not affected by topography. The following shielding factors,  $M_s$ , have been used for each of the terrain categories: Category 3 = 0.85, Category 2.5 = 0.95, and Category 2 = 1.

Domestic carport and verandah spans only apply to structures not enclosed by peripheral walls. Spans are based on  $C_{pn} = -0.9$  and  $K_l = 1.5$  applied over the entire span, and are suitable for all span types. Loads on supporting purlins may limit these spans.

Stratco can provide additional engineering advice if any design parameters vary from those above.

## SPAN DEFINITIONS



## TESTING SYSTEMS

Stratco have developed purpose built testing equipment for the testing of cladding systems sufficient to ensure the structural adequacy of the product it produces.

## WIND LOAD CONVERSION

For domestic applications use the appropriate wind classification for the area. To read the span tables for commercial and industrial applications, select the region and category for the area, then convert it to a wind classification using Table 2.0 below.

TABLE 2.0 - WIND LOAD CONVERSION

Wind Classification (Domestic)	Region & Category (Commercial/Industrial)
N1	Reg A, Cat 3
N2	Reg A, Cat 2.5 & Reg B, Cat 3
N3	Reg A, Cat 2 & Reg B, Cat 2.5
N4	Reg B, Cat 2

**TABLE 3.0 - MAXIMUM RECOMMENDED SPANS (mm)**

Span Type	Roofing (BMT)		Walling (BMT)		
	0.42mm	0.48mm	0.35mm	0.42mm	0.48mm
Single Span	800	900	1300	1650	1900
End Span	950	1300	1750	2100	2250
Internal Span	1200	1800	2300	2700	2800
Un-stiffened Overhang	200	250	150	200	250
Stiffened Overhang	300	350	250	300	350

Roofing: Spans are limited based on typical maintenance foot traffic. Walling: Spans are based on N1 wind loading. Spans are based on three fasteners per sheet, per support.

**TABLE 4.0 - DOMESTIC CARPORT / VERANDAH SPANS (mm)**

Wind Classification	Base Metal Thickness	
	0.42mm	0.48mm
N1	1700	2000
N2	1700	2000
N3	1450	1600
N4	1050	1050

**TABLE 5.0 - SPANS (mm) - Determined by wind speeds for non cyclonic areas**

BMT	Application	Span Type	THREE FASTENERS				FIVE FASTENERS			
			N1	N2	N3	N4	N1	N2	N3	N4
0.35mm	Walling	Single	1300	850	600	-	1650	1450	1250	1000
		End	1750	1200	750	-	2050	1750	1450	1000
		Internal	2300	1650	1100	-	2450	2200	1950	1600
0.42mm	Roofing	Single	800	800	600	-	800	800	800	800
		End	950	950	750	-	950	950	950	950
		Internal	1200	1200	1050	-	1200	1200	1200	1200
	Walling	Single	1650	1350	1050	900	1700	1500	1350	1300
		End	2100	1550	1100	1000	2200	1900	1500	1450
		Internal	2700	2200	1700	1450	2700	2300	2050	1950
0.48mm	Roofing	Single	900	900	600	-	900	900	900	900
		End	1300	1300	1000	-	1300	1300	1300	1300
		Internal	1800	1800	1550	-	1800	1800	1800	1750
	Walling	Single	1900	1450	1100	950	2100	1750	1450	1400
		End	2250	1850	1500	1300	2250	1950	1700	1650
		Internal	2800	2200	1950	1800	2800	2300	2100	2000

**TABLE 6.0 - WIND CAPACITIES (kPa)**

BMT	Span Type	Limit State	SPAN (mm) - THREE FASTENERS									SPAN (mm) - FIVE FASTENERS								
			600	900	1200	1500	1800	2100	2400	2700	3000	600	900	1200	1500	1800	2100	2400	2700	3000
0.35mm	Single	Serviceability	1.25	0.88	0.64	0.55	0.45	0.37	0.29	0.21	-	3.22	2.04	1.36	0.91	0.76	0.37	0.29	0.21	-
		Strength	3.12	2.55	2.10	1.80	1.50	1.20	0.90	0.65	-	4.86	3.93	3.03	2.68	2.14	2.04	1.75	1.46	-
	End	Serviceability	1.36	1.15	0.95	0.78	0.60	0.42	0.25	0.18	-	3.96	2.76	1.95	1.18	1.30	0.59	0.29	0.18	-
		Strength	3.34	2.63	2.15	1.82	1.50	1.17	0.85	0.55	-	4.39	3.61	2.98	2.39	2.17	2.09	1.94	1.46	-
	Internal	Serviceability	1.57	1.38	1.19	1.00	0.86	0.71	0.57	0.43	-	4.26	3.15	2.51	1.91	1.33	1.09	0.68	0.45	-
		Strength	4.12	3.38	2.80	2.35	1.95	1.55	1.15	0.94	-	6.09	5.15	4.26	3.56	2.69	2.44	1.88	1.73	-
0.42mm	Single	Serviceability	1.73	1.40	1.09	0.78	0.46	0.40	0.34	0.27	-	4.68	2.82	1.64	1.00	0.94	0.39	0.33	0.27	-
		Strength	5.07	3.60	2.65	2.10	1.80	1.56	1.38	1.11	-	7.41	6.27	5.25	4.26	2.89	2.86	2.46	2.06	-
	End	Serviceability	1.85	1.48	1.17	0.99	0.80	0.62	0.44	0.36	-	5.29	3.52	2.09	1.27	1.41	0.73	0.45	0.36	-
		Strength	5.17	3.66	2.67	2.10	1.86	1.63	1.39	1.15	-	7.14	5.81	4.55	3.50	2.81	2.92	2.63	2.33	-
	Internal	Serviceability	1.94	1.75	1.54	1.36	1.18	1.00	0.81	0.63	-	5.70	3.86	2.67	1.97	1.67	1.20	0.82	0.64	-
		Strength	5.87	4.75	3.80	3.48	3.15	2.83	2.50	1.88	-	7.64	6.37	5.43	5.03	3.19	4.25	3.86	2.33	-
0.48mm	Single	Serviceability	-	1.48	1.13	0.91	0.69	0.50	0.32	0.27	0.22	-	-	1.88	1.18	1.09	0.62	0.35	0.29	0.23
		Strength	-	5.03	4.31	3.87	3.50	3.13	2.64	2.19	2.01	-	-	6.62	5.85	4.17	4.67	4.08	3.35	2.63
	End	Serviceability	-	1.74	1.47	1.23	0.98	0.74	0.50	0.39	0.27	-	-	2.47	1.60	1.57	0.82	0.50	0.40	0.31
		Strength	-	4.90	4.22	3.85	3.50	3.14	2.65	2.22	1.77	-	-	7.11	6.32	3.29	5.01	4.38	3.68	2.98
	Internal	Serviceability	-	2.30	1.99	1.70	1.41	1.09	0.76	0.66	0.55	-	-	3.76	2.53	2.09	1.27	0.83	0.67	0.52
		Strength	-	5.92	4.98	4.30	3.75	3.21	2.66	2.23	1.80	-	-	8.28	6.89	3.79	5.25	4.54	3.78	3.02

The values in all of the above tables are for use with steel supports with a minimum thickness of 0.75mm, G550.

## WATER CARRYING CAPACITY

**TABLE 7.0 - MAXIMUM ROOF RUN FOR DRAINAGE (m)**

Roof Slope (°)	RAINFALL INTENSITY (1:100) mm/hr								
	150	180	200	250	300	350	400	450	
5	31	26	23	19	15	13	11	10	
7.5	36	30	27	22	18	15	13	12	
10	40	34	30	24	20	17	15	13	
15	48	40	36	28	24	20	18	16	
22*	53	44	40	32	26	23	20	17	
30*	53	44	40	32	26	23	20	17	

\*Note: Roof pitch >20 degree requires other means of verification. Hence, values limited to 20 degree roof pitch. The peak rainfall intensities shown represent a 100 year average recurrence interval (ARI) for a five minute rainfall duration. If roof penetrations exist, the total roof run will generally be greater than the distance from ridge to eaves at the location the penetration interferes with the runoff. Contact Stratco if further advice is required.

## WALKING ON CGI

When walking on CGI roofing, it is recommended you walk over the purlins to avoid any damage. Wear flat, rubber soled shoes and walk flat footed, spreading your weight over as many corrugations as possible. For carport and verandah applications, crawl boards should be used to avoid damage during installation and maintenance.

## ORDERING

Sheets are available custom cut, allowing you to minimise waste, and enhance your design options. CGI is available in un-painted Zinc/Al, and in an attractive range of factory pre-painted colours. Subject to the delivery location, quantity and material availability, delivery is usually within 48 hours, or at an agreed time that suits your building schedule. Unless advised differently, a one tonne maximum is usually applied to larger packs. Arrangements for unloading the truck are the responsibility of the customer, and should be arranged before ordering. When unloading you must ensure the load is adequately spread using spreaders and slings to prevent damage. If packs are to be loaded directly above structural members, they must be of sufficient strength, such as over portal frames, or braced roof trusses.

## USING CGI

Stratco CGI will have a long, useful life if used according to Stratco specifications. While roofing materials in outer urban and rural areas may have a life-span in excess of 30 years, this can reduce to only a few years in coastal and industrial environments.

Zinc/Al and pre-painted steel should not be used in very aggressive areas such as near swimming pools and spas. It is important that dirt, soil, compost, paving sand, or other materials which retain moisture are not placed against steel sheeting. Concrete should not be poured against Zinc/Al material. Check with Stratco before using in these severe environments.

## INCOMPATIBLE METALS

The best way of reducing corrosion is to keep incompatible metals apart. Zinc/Al and pre-painted steel cannot be used with lead, copper & monel. Galvanised steel and pure zinc material can be used with Zinc/Al, but you must avoid water run-off from Zinc/Al onto galvanised material. Fixings such as rivets and self-drilling screws must be compatible with the material they are fixing.

## HANDLING AND CUTTING OF CGI

For safety, wear gloves when handling CGI. Ensure your hands or gloves are clean, especially when handling Zinc/Al which can mark. Use a coloured pencil for marking steel, as lead or black pencils contain graphite which promotes rusting. CGI is best cut using tin snips, but for larger cuts it may be necessary to use a power saw with a steel cutting blade or a power nibbler. Avoid using abrasive discs as they can cause burred edges and coating damage. Where possible cut sheets on the ground, and always clean off any swarf and metal filings progressively during the installation. Dispose of off-cuts carefully.

## INSULATION AND SEALANTS

The use of blanket insulation is recommended in domestic roofing to assist in temperature, condensation and sound control. CGI can be used with an insulating blanket up to 55mm thick. Increased thicknesses require longer fasteners and greater care when installing.

When choosing a silicone sealant, ensure it is suitable for roofing and guttering use and of a non-acetic, amine free, neutral cure type. Sealants that smell of ammonia, vinegar or lemons are not usually suitable.



## MAINTENANCE REQUIREMENTS

The performance of CGI Corrugated over time depends on its correct application and maintenance. Maintenance should be performed as often as is required to remove any dirt, salt and pollutants. Where used in severely corrosive environments, cleaning should be performed more often. It is important that screws have the same life expectancy as the CGI cladding you have specified. Packs of CGI should always be kept dry and stored above ground level while on site. If the sheets have become wet, they should be separated, wiped and placed in the open to dry. Refer to the Stratco 'Selection, Use and Maintenance' brochure, for more detailed information about the correct use and maintenance of this product.



## FIXING RECOMMENDATIONS

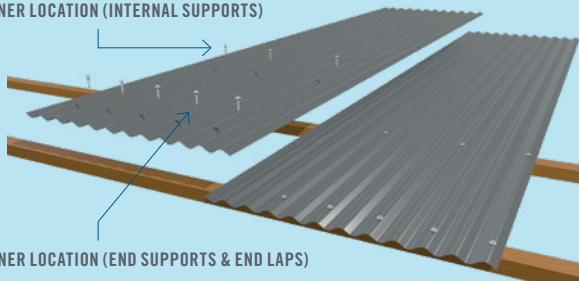
CGI Corrugated sheets should be laid into the prevailing wind and sit neatly on the preceding roof sheet, with a side lap of 1.5 corrugations, as shown in the laying procedure below. They should be fixed within the recommended support spacings. Avoid 'stretching' the width of the sheet when installing, as this could allow wind and rain to enter. Side lap fixing is recommended to maintain a weather proof seal and to secure the overlap especially when the roof is walked on occasionally.

This is best done with either 8 x 12mm self drilling stitching screws or a 3.2mm blind rivet (rivets should be sealed to prevent water penetration). It is recommended side lap fasteners are secured mid-span, when spans exceed 900mm for roofing and 1200mm for walling. On roofing, at the end of the sheets, the valleys of each corrugation should be turned up at crest of the roof and down into the gutter using a turn up/down tool.

### ROOFING LAYING PROCEDURE

» PREVAILING WIND      LAYING DIRECTION «

3 FASTENER LOCATION (INTERNAL SUPPORTS)



5 FASTENER LOCATION (END SUPPORTS & END LAPS)

### ROOFING FASTENER POSITIONS

**ROOFING** - THREE FASTENERS LOCATION



Internal Supports

**ROOFING** - FIVE FASTENERS LOCATION

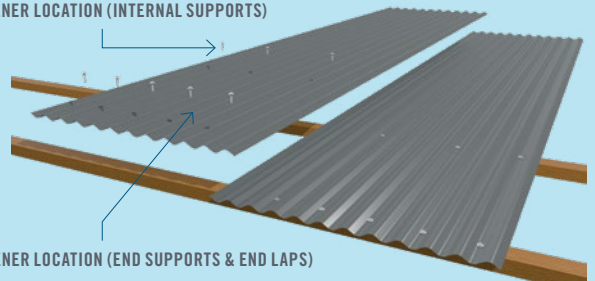


End Supports & End Laps

### WALLING LAYING PROCEDURE

» PREVAILING WIND      LAYING DIRECTION «

3 FASTENER LOCATION (INTERNAL SUPPORTS)



5 FASTENER LOCATION (END SUPPORTS & END LAPS)

### WALLING FASTENER POSITIONS

**WALLING** - THREE FASTENERS LOCATION



Internal Supports

**WALLING** - FIVE FASTENERS LOCATION



End Supports & End Laps

Note: Side lap fixing is recommended to maintain a weather proof seal and secure the overlap, especially when the roof is walked on occasionally. Use either 8x12mm self drilling stitching screws or 3.2mm sealed blind rivets. It is recommended side lap fasteners are secured mid-span when spans exceed 900mm for roofing and 1200mm for walling.

## FASTENER SIZE SELECTION

### ROOFING - Crest Fixing

All screws must have a neoprene washer for a weather tight seal

FIXING TO STEEL



**12 x 35mm**  
Self drilling and tapping screw  
or  
**M6 x 50mm**  
TS self drilling screw  
(For 0.55mm thick battens, crest fix with M6 x 50 TS self drilling screws)

FIXING TO TIMBER

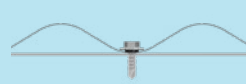


**12 x 50mm**  
Type 17 hex head screw  
or  
**M6 x 50mm**  
TS self drilling screw

### WALLING - Pan Fixing

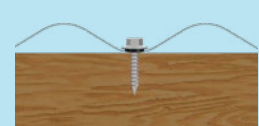
All screws must have a neoprene washer for a weather tight seal

FIXING TO STEEL



**10 x 16mm**  
Self drilling and tapping screw with neoprene washer

FIXING TO TIMBER



**10 x 25mm**  
Type 17 hex head screw with neoprene washer

The above fastener sizes are suitable for fixing over an insulation blanket up to 55mm thick, for thicknesses up to 100mm, the next standard screw length to that indicated is to be used.



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