

### COMPANY NAME AND ADDRESS:

Stratco (N.Z.) Limited, 55 Hands Road, Middleton, Christchurch, 8024— Ph (03) 338 9063—NZBN 9429040814629

Stratco (HB) Limited, 65 Niven Street, Onekawa, Napier, 4110—Ph (06) 843 6159—NZBN 9429036524792

Contour Roofing Nelson Limited, 41 Venice Place, Stoke, Nelson, 7011— Ph (03) 538 0824—NZBN 9429038730085

Contour Blenheim Limited, 35 Kinross Street, Blenheim, 7201— Ph (03) 577 7720—NZBN 9429031587600

**ADDRESS FOR SERVICE:** Nexia Christchurch Limited, Level 4, 123 Victoria Street, Christchurch, 8013

**WEBSITE:** [www.stratco.co.nz](http://www.stratco.co.nz)

**EMAIL:** [technical@stratco.co.nz](mailto:technical@stratco.co.nz)

**PRODUCT:** Stratco CGI Corrugated Roofing and Wall Cladding



### DESCRIPTION

Stratco Corrugated Iron (CGI) is a traditional style metal roofing and wall cladding that has been popular in New Zealand for more than one hundred years. CGI Corrugated has the advantage of high strength, adaptability and easy handling and installation.

It is a practical and versatile solution for roofing and wall cladding applications. Its timeless profile enables it to blend in with contemporary homes, older styled homes, industrial buildings or sheds. In addition, CGI Corrugated is popular in domestic fencing applications.

CGI Corrugated is made from high tensile steel for strength and impact resistance. It is available in long lengths and 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.

### PLACE OF MANUFACTURE

New Zealand

### DESIGN CONSIDERATIONS

- Roof pitch minimum 8°
- Effective cover - 0.40mm 760mm, 0.55mm 750mm
- Rib height 16mm
- Specify material coating to suit building location/environment
- Unpainted metallic coated steel
- COLORSTEEL®, including Matte, and ColorCote standard colour ranges - availability and minimum quantities may apply
- Stratco flashing details for roofing and wall cladding to be used to meet NZ Building Code, E2/AS1 and NZ Metal Roofing Manufacturers Code of Practice
- Allow for thermal expansion of CGI Corrugated, particularly in darker colours. The maximum length before an expansion joint is recommended is 24 metres for lighter colours, and 16 metres for darker colours.
- Purlin spacing not to exceed maximum spans as per CGI Corrugated span tables
- CGI Corrugated wall cladding can be direct fixed vertically but must use drainage cavity batten when fixed horizontally
- Ensure compatibility when using CGI Corrugated roofing/wall cladding with other metal products such as copper to prevent accelerated corrosion
- Available in curved options—Refer Curving section for options and minimum radius

### MATERIAL COMPOSITION & COATINGS

The boundaries of different corrosion zones are difficult to define because many factors determine the corrosivity of a particular location. It is important to choose the appropriate materials for the location to ensure they meet the minimum durability requirements of the NZ Building Code and satisfy customer expectations.

Zinc/alum coated steel conforms with AS 1397:2011.

Pre-painted metals available provide solutions for different environments including various metals, metallic coatings, paint systems and paint thickness. The paint coatings are manufactured in accordance with AS/NZS 2728:2013.

For project specific environment zone product selection contact Stratco for further information.

### BUILDING CODE COMPLIANCE

The product will, if used in accordance with Stratco's installation and maintenance requirements, assist with meeting the following provisions of the building code:

- Clause B1 Structure:** B1.3.1, B1.3.2, B1.3.3 (b, c, f, g, h, j), B1.3.4  
 Span tables are in accordance with AS/NZS 1170.2:2002 and based on a maximum overall building height of ten metres and a 500 year design return period for strength limit state wind load assessment. Roofing spans specified are suitable for snow loading up to 2kPa in accordance with the New Zealand Metal Roof and Wall Cladding Code of Practice.

#### NZS 3604 WIND ZONES

**Roofing:** Spans are limited based on foot traffic incidental to maintenance. Maximum sheet overhang is 150mm. For roof pitches less than 10°, self support underlay will require additional support.

**Aluminium CGI Corrugated:** Testing has proven that 0.70 and 0.90 aluminium have similar results to 0.40 and 0.55 G550 steel respectively. For practical application, spans for aluminium are to be no greater than 80% of G550 steel.

#### MAXIMUM SPANS FOR NZS 3604 WIND ZONES

BMT	Tensile Strength	Wind Zone	Roofing		Wall Cladding	
			End/Double	Internal	End/Double	Internal
0.40mm	G550	Low/Medium	800	1200	1350	1800
		High	800	1200	1150	1500
		Very High	800	1200	1050	1400
		Extra High	800	1200	900	1200
0.55mm	G550	Low/Medium	1150	1600	1600	2100
		High	1150	1600	1350	1800
		Very High	1150	1600	1200	1600
		Extra High	1150	1600	1150	1500

SLS Low wind zone = 0.68kPa, Medium wind zone = 0.93kPa, High wind zone = 1.32kPa, Very high wind zone = 1.72kPa, Extra high wind zone = 2.09kPa  
 ULS Low wind zone = 0.98kPa, Medium wind zone = 1.32kPa, High wind zone = 1.88kPa, Very high wind zone = 2.44kPa, Extra high wind zone = 2.96kPa

#### SED WIND ZONES

##### MAXIMUM LOAD kPa

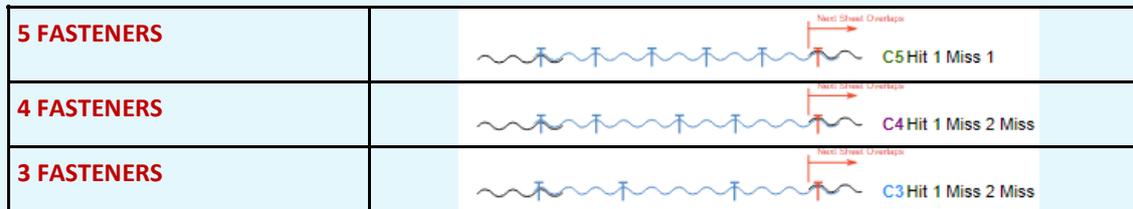
BMT	Span Type	SPAN (mm)				
		0.40mm	End/Double	400	600	900
	Internal	600	900	1200	1500	
	Serviceability	4.0	2.7	2.0	1.4	
0.55mm	End/Double	600	900	1000	1100	1200
	Internal	900	1200	1500	1600	1800
	Serviceability	4.4	3.4	2.8	2.6	2.2

#### SPAN TABLES AND FASTENER PATTERN TO COMPLY WITH E2/AS1

##### MAXIMUM SPANS AND FASTENERS PER SHEET

BMT	Tensile Strength	Purlin Spacing (mm)		Wind Zone		
		End/Double	Internal	Low & Medium	High & Very High	Extra High
0.40mm	G550	400	600	4	4	4
		600	900	4	4	5
		900	1200	4	5	5

BMT	Tensile Strength	Purlin Spacing (mm)		Wind Zone		
		End/Double	Internal	Low & Medium	High & Very High	Extra High
0.55mm	G550	400	600	3	3	3
		600	900	3	3	3
		800	1200	3	3	3
		1150	1600	3	3	4



### FASTENER REQUIREMENTS

Fastener requirements for Wind Zones in accordance with NZS3604:2011, using standard fasteners.

CGI Corrugated roofing is typically fastened through every second rib at top and bottom purlins. Because metal roofing has little transverse stiffness, unfastened ribs will bow between fasteners. Therefore ensure all intermediary fasteners are fixed to purlins through the same rib line as symmetrical fastener patterns provide more effective load capacity. For Specific Engineering Design conditions and applications contact Stratco.

When spans exceed 900mm for roofing or 1200mm for wall cladding, it is recommended the side laps are fixed at midspan to ensure a weatherproof seal and to secure the overlap using 10 x 14mm self drill stitching screws.

Purlin or frame material	Roofing—Crest Fixed	Wall Cladding—Pan Fixed (18 - 25mm cavity batten)	Wall Cladding—Pan Fixed Direct Fixed	Secondary Fasteners	
				Aluminium Rivets	Screws
	<b>Steel sheeting</b>	<b>Steel sheeting</b>	<b>Steel sheeting</b>	<b>Steel sheeting</b>	
<b>Timber</b>	Class 4 Type 17 12-11x50 Roofing Screw with neoprene washer	Class 4 Type 17 12-11x50 Roofing Screw with neoprene washer	Class 4 Type 17 12-11x40 Roofing Screw with neoprene washer	Residential - Blind AS5-3 x 4mm minimum Commercial - Blind AS6-3 x 4.8mm minimum Bulb-tite	Class 4 Type 17 12-11x40 Roofing Screw with neoprene washer
<b>Steel</b>	Class 4 12-14x45 Tek Roofing Screw with neoprene washer	Class 4 12-14x45 Tek Roofing Screw with neoprene washer	Class 4 12-14x20 Tek Roofing Screw with neoprene washer		Class 4 12-14x20 Tek Roofing Screw with neoprene washer
	<b>Aluminium sheeting</b>	<b>Aluminium sheeting</b>	<b>Aluminium sheeting</b>	<b>Aluminium sheeting</b>	
<b>Timber</b>	Alutite Type A 14x55 Roofing Screw with EPDM and ali profile washer	Alutite Type A 14x55 Roofing Screw with bonded washer	Alutite Type A 11x35 Roofing Screw with bonded washer	Residential - Blind AS5-3 x 4mm minimum Commercial - Blind AS6-3 x 4.8mm minimum Bulb-tite	Alutite Type A 11x35 Roofing Screw
<b>Steel</b>	SS304 Steel Tek 14 x 70 Roofing Screw with EPDM and ali profile washer	SS304 Steel Tek 14 x 70 Roofing Screw with bonded washer	SS304 Steel Tek 14 x 25 Roofing Screw with bonded washer		SS304 Steel Tek 14 x 25 Roofing Screw

- Clause B2 Durability: B2.3.1 (b)**

Durability in accordance with Table 20 E2/AS1		
Product	Rain Washed Roofs	Walls and Unwashed Areas
<b>Colorsteel Endura / Colorcote Zinacore</b>	B, C, D	B, C
<b>Colorsteel Maxx / Colorcote Magnaflow</b>	B, C, D, E	B, C, D
<b>Colorsteel Altimate / Colorcote Alumiguard</b>	B, C, D, E	B, C, D, E

- Clause C Fire: C3.5, C3.6, C3.7**

Zinc/alum coated steel, Colorsteel and Colorcote products are rated as a Group 1-S material when tested in accordance with ISO 5660:2002 Part 1 & Part 2

- Clause E1—Surface Water:** E1.3.2

CGI Corrugated carrying capacity

**Capacity Calculation in accordance with NZ Metal Roofing and Wall Cladding Code of Practice calculators**

Minimum Pitch 8°, rainfall intensity 150 mm/hr		
<b>Maximum Run</b>	22m	
<b>Catchment area of spreader</b>	17.65 m <sup>2</sup>	10 m run, 4 holes in spreader
<b>Catchment behind penetration</b>	1.8 m <sup>2</sup>	10m run, discharging each side of penetration

- Clause E2 External Moisture:** E2.3.1, E2.3.2, E2.3.7

The versatility of CGI Corrugated lends itself to a wide range of details for any application.

Standard design details can be accessed from the web:

[www.stratco.co.nz/nz/roofing-and-walling/cgi-corrugated-cladding/](http://www.stratco.co.nz/nz/roofing-and-walling/cgi-corrugated-cladding/)

Alternative details may comply with solutions for corrugated roofing found in E2/AS1, or comply with the 4 “D’s” Deflection, Draining, Drying and Durability.

- Clause E3—Internal moisture:** E3.3.1

When used with an absorbent, permeable underlay, complying with NZS 2295 2006, CGI Corrugated will contribute to compliance with NZBC E3.3.1. Ceiling spaces of sarked roofs, skillion roofs, barrel curved roofs, flat roofs and roofs over moisture laden environments must have provision for adequate ventilation.

- Clause F2 Hazardous building materials:** F2.3.1

CGI Corrugated manufactured from Zinc/alum coated steel, Colorsteel, Colorcote or pre-painted aluminium will meet the performance requirement of F2.3.1.

- Clause G12 Water Supplies:** G12.3.2

Colorsteel and Colorcote tested in accordance with AS/NZS 4020:2005 passed the requirements for products in contact with drinking water.

### TESTING & SUPPORTING EVIDENCE



NZ Metal Roofing Manufacturers Association Inc. (NZMRM Code of Practice) [www.metalroofing.org.nz/cop](http://www.metalroofing.org.nz/cop)



NZ Steel [www.colorsteel.co.nz/resources/downloads-and-brochures/](http://www.colorsteel.co.nz/resources/downloads-and-brochures/)



Pacific Coilcoaters [www.colorcote.co.nz/technical-information/](http://www.colorcote.co.nz/technical-information/)

Supporting evidence provided where requested will apply to the product substrate supplied for the specific project.

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 AS4055-2006 for domestic applications and AS/NZS 1170.2:2002 for all other applications.

### INSTALLATION

Packs of CGI Corrugated sheeting should always be kept dry and stored above ground level on site. If the sheets have become wet, they should be separated, wiped and placed in the open to dry.

Black lead pencils must never be used for marking aluminium/zinc, and unpainted or pre-painted steel products. The carbon in the pencil promotes corrosion which will etch the surface of the material, leaving a permanent mark. Use a pencil of any colour other than black, a marker pen, or crayon.

Cut pre-painted steel material by shear only — use nibblers or hand shears. Friction blades and high-speed saw blades must not be used on metal cladding. These blades will damage both the metallic coating and the pre-painted steel surface by creating excessive heat, and generate hot swarf that will get embedded into the coating surface.

All debris must be swept off the job at the end of each day. Prevention of swarf damage is far easier than its cure.

CGI Corrugated sheets should be laid lapping to sit neatly on the preceding roof sheet. Avoid ‘stretching’ the width of the sheet when installing, as this could allow wind and rain to enter.

CGI Corrugated roofing is typically fastened through every second rib to top and bottom purlins. Intermediary fasteners to be crest fixed as per the fastener requirements and pattern tables below. Load spreading metal profile washers with 30mm EPDM washers to be used when specified. Pan fixing is only suitable for wall cladding applications.

When spans exceed 900mm for roofing or 1200mm for wall cladding, it is recommended the side laps are fixed at midspan to ensure a weatherproof seal and to secure the overlap using self drilling stitching screws.

Eaves flashings must be installed where roof pitch is ≤ 10° and/or soffit width is ≤ 100mm or wind zones are either Very High, Extra High or Specific Engineer Design.

On roofing, at the end of the sheets, the pans should be turned up at crest of the roof and down into the gutter using a turn up/down tool. Wall cladding is to be turned up on both ends of sheets on horizontal cladding and the top of the sheet on vertical wall cladding. Compressible foam seals may also be required where detailed.

When walking on CGI Corrugated 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, use crawl boards to avoid damage during installation and maintenance.

Cavity batten is required to be used under horizontal CGI Corrugated wall cladding. Vertical CGI Corrugated cladding can be either direct fixed or with cavity batten. If cavity batten is used over the roof purlins, the screw length will need to be increased by at least the cavity batten thickness.

Flashings are to be installed as detailed using Stratco design details to comply with NZ Building Code, E2/AS1 and/or NZMRM Code of Practice. Alternative flashing details may be used providing they comply with NZ Building Code, E2/AS1 and/or NZMRM Code of Practice. All flashing turn downs into the pan of CGI Corrugated sheeting are to be notched around the rib, or use soft edge as applicable, to provide maximum weather tightness.

Refer [www.stratco.co.nz/nz/roofing-and-walling/cgi-corrugated-cladding/](http://www.stratco.co.nz/nz/roofing-and-walling/cgi-corrugated-cladding/)

### CURVING

**Machine curving**—CGI Corrugated can be machine curved to 400mm minimum radius. Concave, Convex and Bullnose curving all have maximum sheet lengths of 6.000m and Barrel Vault is 10.000m.

**Drape (Spring) Curving**—0.40—CGI Corrugated will drape curve to a minimum 12 metre radius. 0.55—CGI Corrugated will drape curve to a minimum 10 metre radius. The maximum radius for drape curving is 35 metres.

Where the roof pitch is less than 8°, laps are to be sealed using a self adhesive closed cell lapseal tape.

### TRANSLUCENT ROOFING

Where natural light skylights are required, CGI Corrugated GRP translucent sheets are available in a range of options depending on the requirements of the building design. As examples, these include, but are not limited to:

- Non-trafficable—clear, opal.
- Trafficable—clear, opal, coloured
- Condensation control
- Thermal control

Contact Stratco for further information.

### MAINTENANCE

All roofing and cladding products are subject to the cumulative effects of weather, dust and other deposits so the performance and durability of CGI Corrugated roofing and wall cladding over time depends on its correct maintenance. For roofing, normal rain washing will remove most accumulated atmospheric contaminants from the top side of roofs.

Wall cladding requires manual washing every 3 to 12 months (depending on the local environment and paint system), to prevent build up of dirt, debris or other material that is not otherwise removed by rain washing.

Areas that do not receive adequate rain washing (known as unwashed areas) require more extensive manual washing. These areas include soffits, wall cladding under eaves, undersides of gutters, fascias, sheltered areas of garage doors, unwashed roof areas, and other high risk areas like around flues, under television aerials and solar panels or in sites prone to mould, lichen, bird droppings or debris.

Roofing and cladding products should be manually washed by either water and a sponge or a soft nylon-bristled brush or by water blasting at pressures of no more than 20MPa. Never use abrasive or solvent based cleaners such as turps, petrol or kerosene.

### WEIGHTS & TOLERANCES

Weight		0.40 BMT	0.55 BMT	0.70 Aluminium	0.90 Aluminium
Kg/lineal metre	Painted	3.17	4.26	1.78	2.28
	Unpainted	3.10	4.20		
Kg/square metre	Painted	4.17	5.68	2.34	3.04
	Unpainted	4.08	5.60		

**Tolerances:** Sheet width +/- 2mm Sheet length +/-5mm

### SECTION 26 OF THE BUILDING ACT

CGI Corrugated roofing and wall cladding products are not subject to any warnings or bans under Section 26 of the Building Act.

### ENVIRONMENT

Stratco has Toitu Enviromark Gold Certification. Stratco sites recycle all steel scrap and offcuts which can then be remelted for use in other steel products.

Steel is infinitely recyclable so at the end of its useful life as roofing or wall cladding the product can be recycled and remelted for other steel products.

### Appendix

As reference, this appendix contains the full descriptions of all building performance clauses listed in this document.

#### B1 Structure

##### B1.3.1

*Buildings, building elements and sitework* shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during *construction or alteration* and throughout their lives.

##### B1.3.2

*Buildings, building elements and sitework* shall have a low probability of causing loss of amenity through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during *construction or alteration* when the *building* is in use.

##### B1.3.3

Account shall be taken of all physical conditions likely to affect the stability of *buildings, building elements and sitework*, including:

- (b) imposed gravity loads arising from use
- (c) temperature
- (f) earthquake
- (g) snow
- (h) wind
- (j) Impact

##### B1.3.4

Due allowances shall be made for:

1. the consequences of failure,
2. the intended use of the *building*,
3. effects of uncertainties resulting from *construction* activities, or the sequence in which *construction* activities occur,
4. variation in the properties of materials and the characteristics of the site, and
5. accuracy limitations inherent in the methods used to predict the stability of *buildings*

#### B2 Durability

##### B2.3.1

*Building elements* must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the *specified intended life* of the *building*, if stated, or:

- (b) 15 years if:
  - i. those *building elements* (including the *building* envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or
  - ii. failure of those *building elements* to comply with the *building code* would go undetected during normal use of the *building*, but would be easily detected during normal maintenance.

#### C3 Fire affecting areas beyond the fire source

##### C3.5

*Buildings* must be designed and constructed so that *fire* does not spread more than 3.5 m vertically from the *fire source* over the external cladding of multi-level *buildings*.

##### C3.6

*Buildings* must be designed and constructed so that in the event of *fire* in the *building* the received radiation at the *relevant boundary* of the property does not exceed 30 kW/m<sup>2</sup> and at a distance of 1 m beyond the *relevant boundary* of the property does not exceed 16 kW/m<sup>2</sup>.

## Appendix

### C3.7

External walls of *buildings* that are located closer than 1 m to the *relevant boundary* of the property on which the *building* stands must either:

- a) be constructed from materials which are not *combustible building materials*, or
- b) for *buildings* in importance levels 3 and 4, be constructed from materials that, when subjected to a radiant flux of 30 kW/m<sup>2</sup>, do not ignite for 30 minutes, or
- c) for *buildings* in Importance Levels 1 and 2, be constructed from materials that, when subjected to a radiant flux of 30 kW/m<sup>2</sup>, do not ignite for 15 minutes.

### E1 Internal moisture

#### E1.3.2

*Surface water*, resulting from an event having a 2% probability of occurring annually, shall not enter *buildings*.

Performance E1.3.2 shall apply only to *housing, communal residential and communal non-residential buildings*.

### E2 External moisture

#### E2.3.1

Roofs must shed precipitated moisture. In locations subject to snowfalls, roofs must also shed melted snow.

#### E2.3.2

Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to *building elements*, or both.

#### E2.3.7

*Building elements* must be constructed in a way that makes due allowance for the following:

- a. the consequences of failure:
- b. the effects of uncertainties resulting from *construction* or from the sequence in which different aspects of *construction* occur:
- c. variation in the properties of materials and in the characteristics of the site.

### E3 Internal moisture

#### E3.3.1

An *adequate* combination of *thermal resistance*, ventilation, and space temperature must be provided to all *habitable spaces*, bathrooms, laundries, and other spaces where moisture may be generated or may accumulate.

Performance E3.3.1 does not apply to *communal non-residential, commercial, industrial, outbuildings, or ancillary buildings*.

### F2 Hazardous building materials

#### F2.3.1

The quantities of gas, liquid, radiation or solid particles emitted by materials used in the *construction of buildings*, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space.

### G12 Water Supplies

#### G12.3.2

A potable *water supply system* must be—

1. protected from contamination; and
2. installed in a manner that avoids the likelihood of contamination within the system and the water main; and
3. installed using components that will not contaminate the water.