Fielders FreeForm™

Stay ahead of the Curve.

What is Fielders FreeForm™

The traditional built environment has focused on the "linear" in response to the restrictions of building methodologies, technologies and material properties. Increasingly, design trends seek to better mimic the natural environment with organic flowing shapes to enhance visual and experiential building performance.

Fielders Freeform™ responds to this trend by providing the freedom to form stunning organic structures that provide the durability and security we expect from our modern structures.

Fielders FreeForm™ is part of the 'global standing-seam' family of architectural roof cladding profiles. It is the world's most thoroughly tested and developed structural standing-seam roofing system. Drawing on BlueScope's global capability Fielders have been able to shape that knowledge to align FreeForm™ with Australia's unique climatic conditions be it Wind Loads, Cyclonic Conditions or Thermal requirements.

As a consequence, Fielders FreeForm™ can meet the most demanding architectural requirements through the successful combination of outstanding functionality and stunning aesthetics. Fielders FreeForm™ is engineered for design flexibility in varying construction applications architects require, including; standard purlin construction (single skin roof applications, such as sheeting to purlin with no ceiling), vertical wall, conical tapered roof profile and built up roof system applications.

Available in both pre-painted COLORBOND® steel and aluminium finishes, Fielders has the ability to roll the material onsite to any length or size using the Fielders Mobile Mill roll former.

Fielders FreeForm™ Properties

Fielders FreeForm™ cladding accommodates the most complex roof configurations including curved surfaces allowing smooth transitions between roof planes and between the roof and other building elements. A variety of end panels and ridge covers cap off the most complex roof design.

The tapering ability of Fielders FreeForm™ enables tapering of standard 400mm cover width profiles down to a 220mm cover width. Additionally, FreeForm™ is available in a 480mm cover width sheet capable of tapering down to 220mm. This allows curved buildings like sports stadia to be accommodated with ease.

Profile Particulars

Standard Cover= 400mm

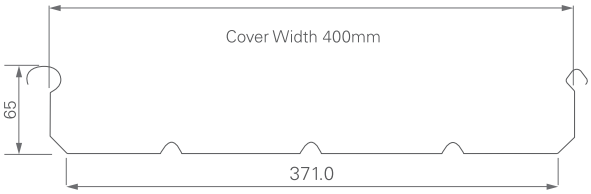
(Note: This is the standard cover width, however there are tapered options of 220mm to 400mm profile widths for general and wider for applications.)

Rib Height= 65mm

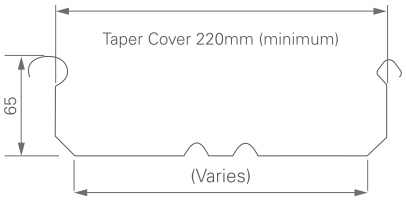
A capillary groove on the male rib prevents siphoning action and, with the addition of the mechanical zipper, the cladding offers an impenetrable weather barrier against rain, wind, snow and ice. Fielders unique and extensive 20 Year Concealed Watertight Installation Guarantee is available for the Fielders FreeForm™ profile*.

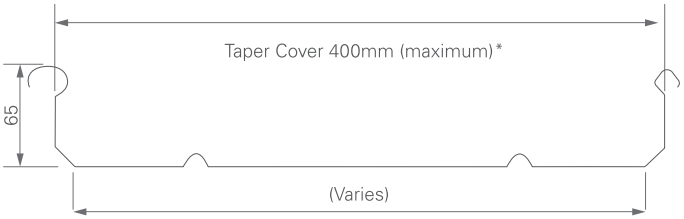
**20 Year Concealed Watertight Installation Guarantee subject to application, terms and conditions.*

Fielders FreeForm™ 400 Profile (2 or 3 Swage)



Fielders FreeForm™ 220-400 Taper Profile (2 Swage)





*480mm wide profile available subject to extended lead time and minimum order quantities.

Australian Standards

Fielders understands Australian conditions, codes,and construction practices. We have an engineering and detailing support team that are at the forefront of light gauge rollformed product design. We are actively involved in the development of Australian Standards. Our collaborative association with Australia's leading engineering universities underpins our commitment to ongoing and robust product assessment and development.

Our products are tested by NATA* registered facilities to AS 4040.1-1992 and are supported by published capacity tables developed from testing… not theory.

Fielders FreeForm™ has cyclonic rating having undertaken low-high-low testing to Australian Standards.

**NATA: National Association of Testing Authorities*

Fielders FreeForm™ is designed based on the criteria of the following Australian standards and industries guides:

- AS 1170.2-2011 Structural design actions Part 2: Wind actions
- AS 1562.1-1992 (R2016) Design and installation of sheet roof and wall cladding Part 1: Metal
- AS4040.0-1992 Methods of testing sheet roof and wall cladding Part 0: Introduction, list of methods and general requirements
- AS4040.1-1992 Methods of testing sheet roof and wall cladding Method 1: Resistance concentrated loads
- AS4040.2-1992 Methods of testing sheet roof and wall cladding Method 2: Resistance to wind pressures for non-cyclone regions
- AS4040.3-1992 Methods of testing sheet roof and wall cladding Method 3: Resistance to wind pressures for cyclone regions LOW-HIGH-LOW
- AS4055-2012 Wind Loads For Housing SA HB 39: 2015 Handbook - Installation code for metal roof and wall cladding

Internationally Inspired, Engineered to Australian Standards.

Fielders FreeForm™ Span Specifications

Maximum Recommended Non - Cyclonic Roof Cladding Span (mm) Fielders FreeForm™								
Wind Region	Material	Base Metal Thickness	Terrain Category 2			Terrain Category 3		
			Single	End	Internal	Single	End	Internal
A	G300 ZINCALUME® or COLORBOND® steel	0.55	1300	900	2000	1300	1600	2100
		0.75	1600	1800	2250	1600	1800	2250
	Pre-painted Marine Grade 5251 H38 Aluminium	0.9	*Project specific design required. Contact Fielders for specialist advise.*					
		1.2						
B	G300 ZINCALUME® or COLORBOND® steel	0.55	920	550	1750	1300	800	2000
		0.75	1600	1400	2250	1600	1800	2250
	Pre-painted Marine Grade 5251 H38 Aluminium	0.9	*Project specific design required. Contact Fielders for specialist advise.*					
		1.2						

Maximum Recommended CYCLONIC Roof Cladding Span (mm) Fielders FreeForm™								
Wind Region	Material	Base Metal Thickness	Terrain Category 2			Terrain Category 3		
			Single	End	Internal	Single	End	Internal
C	G300 ZINCALUME® or COLORBOND® steel	0.55	*Project specific design required.* *Contact Fielders for specialist advise based on Fielders Cyclonic L-H-L Testing conducted at our NATA accredited testing facility.*					
		0.75						
	Pre-painted Marine Grade 5251 H38 Aluminium	0.9						
		1.2						

Minimum Roof Pitch

1.5° for roof sheeting without end-lap and 3° for roof length with end-lap.

Curving like no other.

STRAIGHT

CONVEX CURVED

Rolling Capabilities

Fielders FreeForm™ can be roll-formed on site with a maximum length of 150m depending on site conditions, and in most cases this entails a full-length ridge-to- eave panel which in turn eliminates the need for end laps. The on site roll-former can be set at ground or roof levels.

Fielders FreeForm™ can be factory rolled to standard lengths of up to 30m (subject to transportation limitations).

Curving Capabilities

The exclusive feature of Fielders FreeForm™ is its versatility in curved applications. Fielders FreeForm™ can be convex or concave curved to vertically or horizontally profiled sheets. Fielders FreeForm™ can be curved to radii that no other roofing profile can match.

- Fielders FreeForm™ manufactured in 0.9mm BMT Aluminium can be sprung curved (naturally curved) to a maximum limit of 45m.
- Fielders FreeForm™ manufactured from 0.9mm BMT Aluminum can be mechanically curved via a smooth curve machine to radii of 2m*.
- Fielders FreeForm™ can also be mechanically curved via a crimped/cranked curved machine to radii of 2m* (please note this is limited to a "bullnose" type roof).

Tapered Capability

Fielders FreeForm™ has tapering capability suitable for conical and other roof surfaces.

Roof Pitch Capabilities

- 1.5 degrees for roof sheets without end-lap.
- 3 degrees for roof length with end-lap.

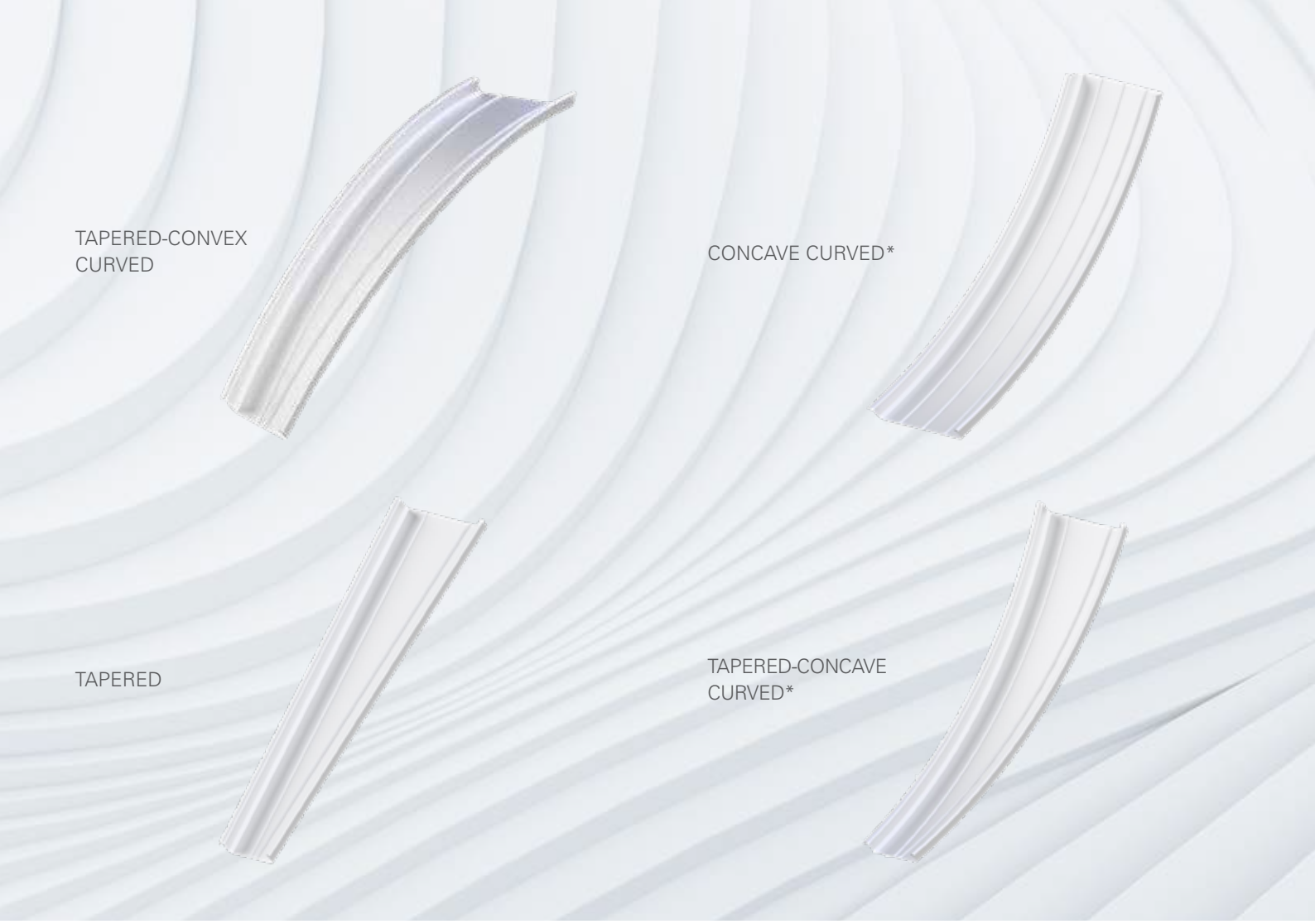
Fielders FreeForm™ Clip

Concealed floating clip attachments, available in a variety of configurations to meet any substrate conditions, allow faster penetration at structural supports and side laps.

The clips allow panels to expand and contract freely in response to temperature variations whilst also remaining resistant to wind uplift forces.

The clips must be fixed to a steel, aluminium or timber structure. The clips are attached to the substructure with building authority-approved connecting elements.

**Please note: Mechanical Curving is only available upon request, lead times also apply - please speak to your local Fielders Representative for further information.*



Minimum Radius for Curving

		Min Radii (m)		
		↶	↷	
Smooth Pre Curve	**BMT**	**Convex**	**Concave**	**Max Support C/C (m)**
G300 ZINCALUME® steel or COLORBOND® steel	0.55	6	8	1.5
	0.75	8	10	1.8
Pre-painted Marine Grade 5251 H38 Aluminium	0.9	2	8	1.5
	1.2	4	12	1.8
Crank Curve	**BMT**	**Convex**	**Concave**	**Max Support C/C (m)**
G300 ZINCALUME® steel or COLORBOND® steel	0.55	2	1	1.5
	0.75	3	2	1.8
Pre-painted Marine Grade 5251 H38 Aluminium	0.9	2	1	1.5
	1.2	3	2	1.8
Spring Curve	**BMT**	**Convex**	**Concave**	**Max Support C/C (m)**
G300 ZINCALUME® steel or COLORBOND® steel	0.55	80	90	1.5
	0.75	90	100	1.8
Pre-painted Marine Grade 5251 H38 Aluminium	0.9	45	50	1.6
	1.2	50	55	1.8

**Please note: crank curving is not recommended in concave applications exposed to weather, as cranks will collect water and debris.

As stylish as it is flexible.

Fielders FreeForm™ Built up Roofing System

The inherent flexibility of Fielders Freeform™ ensures it is readily adaptable to feature in tailored built up roofing systems. These systems combine a range of material elements to meet building structural, thermal and acoustic design requirements. This range of available material elements provides significant opportunity to customise systems to the suit building envelope need.

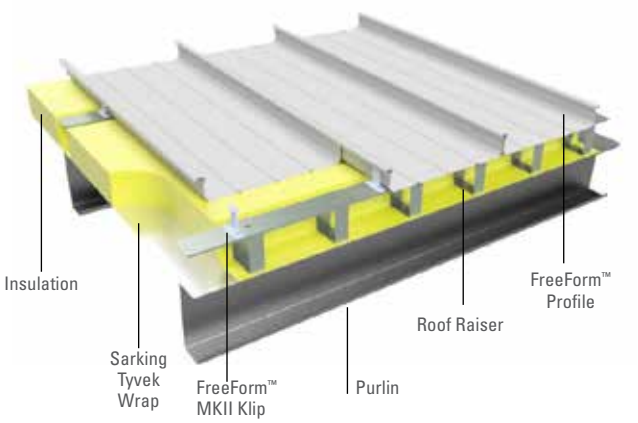
Increasingly the benefits of these systems are being utilised for large public structures such as:

- Passenger Transport Hubs such as rail/bus interchanges
- Sports Stadia and Airport Terminals
- Convention and Performing Arts Centres

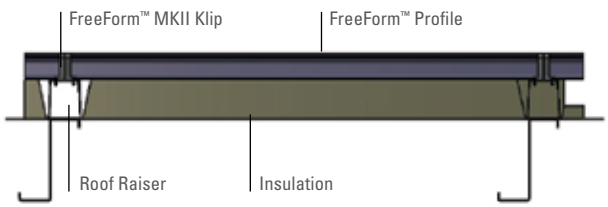
The Fielders Design team has the experience and technical expertise to assist specifiers in design and to maximise the benefits of these built up systems. From simple single skin insulated solutions to combined thermal/acoustic insulated twin skin systems with spanning capacities of up to 10 meters, Fielders Freeform™ has it all covered.

Early engagement of the Fielders Design team at the conceptualisation and design stage of a project will ensure an optimal building design outcome for your roject.

Single Skin Insulation



CONVENTIONAL FREEFORM™ SYSTEM - SECTION VIEW



Twin Skin Acoustic and Thermal insulation

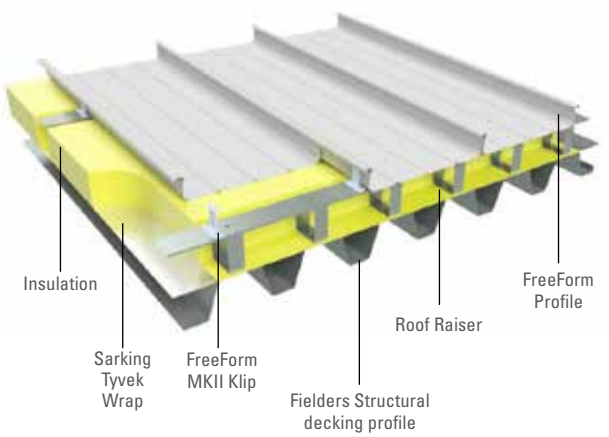
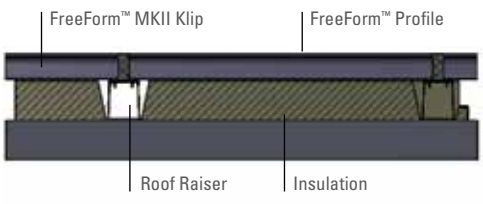


IMAGE 2 - SECTION VIEW



Turn the puzzle into a solution

Individual Project Assistance

Having the ability to form complex shapes is just part of the puzzle. But to turn the puzzle into a solution requires the skills and tools to make the complex simple.

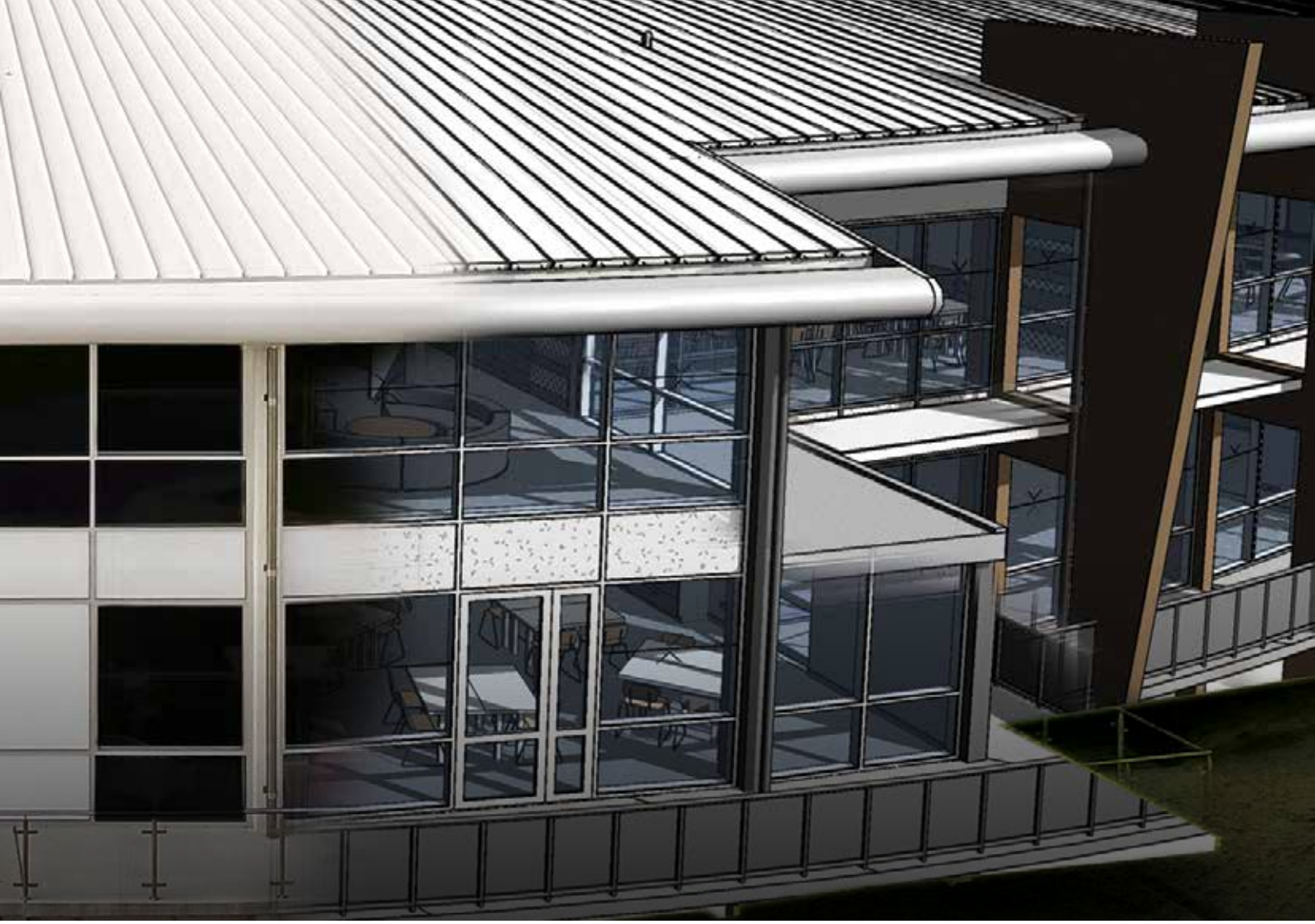
Fielders specialise in doing just that. Utilising the latest in 3D CAD design, we work with consulting architects and engineers to build interactive roof models that can be overlaid with structural designs to remove clash points and ensure full structural alignment. We make the complex simple by providing;

- Full 3D modelling of the roof structure
- Detailed cutting lists and BOQ
- Engineering capacities backed by full scale testing in NATA registered facilities for both Cyclonic and Non Cyclonic.
- Early collaboration with design teams to maximise design efficiencies and eliminate construction issues

The Fielders team has extensive experience in light gauge, cold formed steel design and in particular with individual designs and system designs utilising Fielders Freeform™.

The Fielders team are also able to provide advice on specific warranties applicable to each project, and how the design and environmental parameters impact on product performance and warranties.

Fielders Freeform™ can be manufactured on site with Fielders Mobile Mill, or manufactured at a Fielders facility and transported to the project site.



Material Specifications

- Aluminium finishes are available with various grades and tempers and can be finished in a range of colours.
- ZINCALUME® steel aluminium/zinc/magnesium alloy coated steel. It is compliant to AS 1397:2011 G300, AM125 (300 Mpa minimum yield stress, 125g/m^2 minimum coating mass).
- COLORBOND® steel (G300) is available in a range of prepainted colours in 0.55mm to 0.75mm BMT. It is compliant to AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011. G300 (300 MPa). Minimum coating mass is AM100 (100g/m^2).
- COLORBOND® Metallic steel for superior aesthetic qualities displaying a metallic sheen. It is compliant to AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011. G300 (300 MPa). Minimum coating mass is AM100 (100g/m^2).
- COLORBOND® steel Matt for a more subtle aesthetic. It is compliant to AS/NZS 2728:2013 and the steel base is an aluminium/zinc alloy-coated steel complying with AS 1397:2011. G300 (300 MPa). Minimum coating mass is AM100 (100g/m^2).
- COLORBOND® Ultra steel for severe coastal or industrial environments. It is compliant to AS/NZS 2728:2013 with the aluminium/zinc alloy-coated steel complying with AS 1397:2011. Minimum coating mass is AM150 (150g/m^2).
- 5052 /5251 Marine grade aluminium products for the ultimate protection in Marine environments.

Note: Availability of colours may vary between regions. Where a colour is available, extended lead times may also apply in some regions. Please consult with your supplier or nearest Fielders branch for local availability. The COLORBOND® steel colours shown have been reproduced to represent actual product colours as accurately as possible. We recommend checking your chosen colour against an actual sample of the product before purchasing as varying light conditions and limitations of the printing process affect colour tones.

COLORBOND® steel

Classic Cream™ | Surfmist® | Paperbark® | Evening Haze® | Shale Grey™ | Dune®

Cove™ | Windspray® | Pale Eucalypt® | Gully™ | Mangrove™ | Wallaby®

Jasper® | Manor Red® | Terrain® | Basalt™ | Woodland Grey™ | Monument®

Ironstone® | Cottage Green® | Deep Ocean® | Night Sky®

COLORBOND® steel Matt

Monument® | Basalt® | Dune® | Shale Grey™ | Surfmist®

COLORBOND® Metallic steel

Galactic™ | Cosmic™ | Rhea™ | Astro™ | Aries™ | Celestian™

Ambrose Treacy College

The Project

A Catholic school in the tradition of Roman Catholic missionary and educationalist Edmund Rice, Ambrose Treacy College builds on the rich tradition of 76 years providing quality boys' education through St Joseph's Nudgee Junior College at its stunning 40-hectare campus overlooking the Brisbane River.

With its aim to "have students learning today and leading tomorrow", the College naturally seeks to provide a leading educational environment and since 2014 has been engaged in a 3-stage master plan to enable the transition from Nudgee Junior College (a junior school for years 4-7) to Ambrose Treacy College (a combined junior, middle and senior school for years 4-12).

As part of the master plan, two new learning facilities, comprising one s-shaped building and another fan-shaped building, were constructed. Fielders FreeForm™ was specified for the roofing on each building thanks to the unique tapering capability of the profile, in addition to and Fielders Mobile Mill onsite manufacturing capability.

The Fielders Solution

With the curved nature of both buildings, Fielders FreeForm™ cladding was chosen for its flexibility and ability to be rollformed and tapered on site. Bringing in the Fielders Mobile Mill meant the cladding for the roofs could be rolled, tapered and cut onsite. If the structural steel components of the structure were out of specification,the Fielders Mobile Mill could make adjustments to the sheets immediately, which ensured the job was completed quickly, accurately and efficiently.

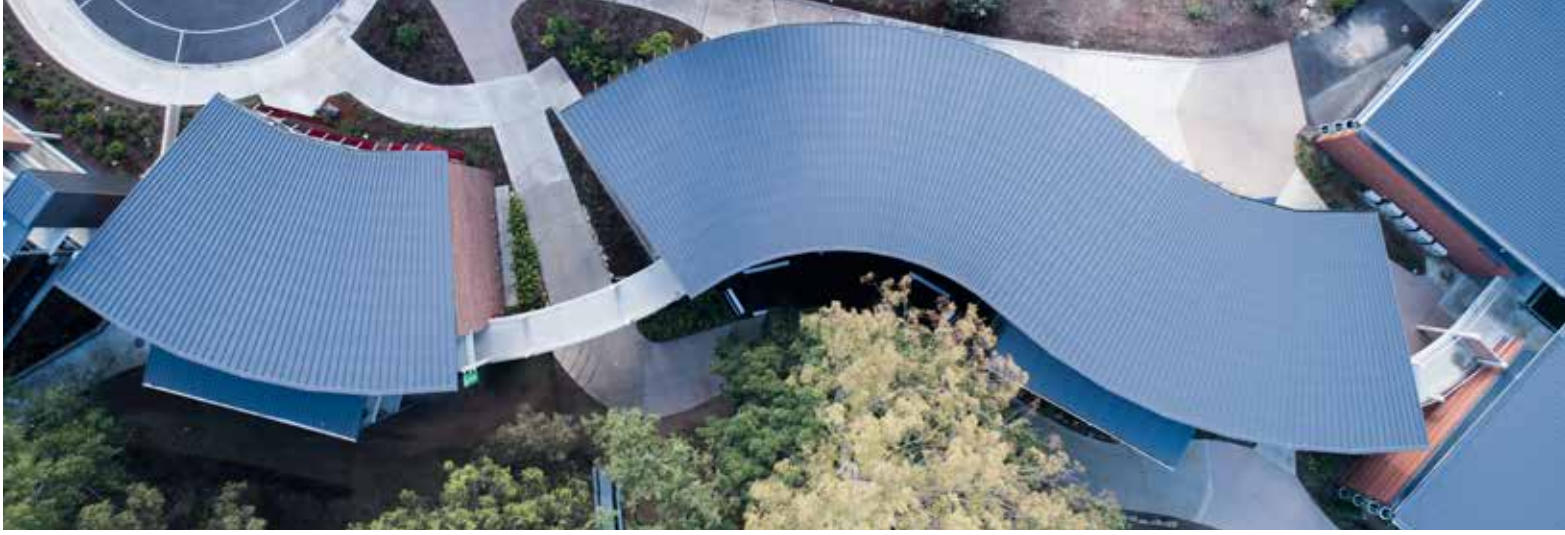
Making sure everything ran smoothly required skilled support and detailed planning, as Fielders' Adelaide-based Carl Bowey – Engineering & Mobile Mill Manager, explained.

"The Mobile Mill is built into a 40 foot container and based in Adelaide, so we arranged road transport for the machine, coordinated with a local contractor to place it on the ground on arrival, and also hired a local generator to power the machine.

"Additionally, the coil needed to be slit specially for that job and cut down from our standard coil width of 1200mm wide to 670mm wide. We arranged that separately with BlueScope stock control, organised transport of the steel coil to site, and also brought in two Fielders operators from Sydney and one from Adelaide to run the machine; basically, we liaise with all parties to get everything on site," Carl said.

"We also went to the College a few weeks prior and met the site personnel, to work out exactly where the machine would be placed and timing for everything to get to site, and also gave technical support. We discussed installation processes such as how we were going to run the sheets, get the sheets to the roof and the builders' installation methods. We also talked about clips, what seaming machine we would use, and also a running program for the project.

"I then developed all the paperwork - detailing the dates and times for everything to arrive on site so it was coordinated in the right time frame - plus all our safety documentation for the site, as safety is always a critical aspect for Fielders and our customers," Carl continued.



"The tapering naturally took a bit of working out, so a lot of work was also done in AutoCAD to lay out the roof and determine what sheet widths we needed. Once on site we ran one sheet and the builder installed it satisfactorily, then we ran another sheet and they installed it - so we were actually adapting our cutting pattern to suit the roof as we went, which is a major advantage with running on site.

"It's fairly unusual for a building to be built perfectly to architectural drawings every time; with the mobile mill we can adapt the sheets we're making to fit the building so that when we reach the end of an arc, the last sheet is lining up perfectly with the end of the steelwork and there are no discrepancies. On this project we were to within 3mm, which was very good.

"A lot of work goes into such a project, but there are big benefits for our customers in terms of accuracy and efficiency in having the Mobile Mill® on site."

Fielders FreeForm™

An innovative roofing profile offering incredible flexibility and design capabilities,Fielders FreeForm™ cladding can meet the most demanding architectural requirements including single skin roof, vertical wall and conical tapered applications.

Adding to its versatility, FreeForm™ cladding can be rolled onsite for extremely long lengths, far beyond transportable size, to suit varying roof configurations. Able to achieve a variety of curves in multiple directions and with an unmatched natural curve limit of 80mm radii, Fielders FreeForm™ cladding leads the way for curved roofing profiles with its effortless ability to adapt to the most complex structural designs.

Fielders Mobile Mill

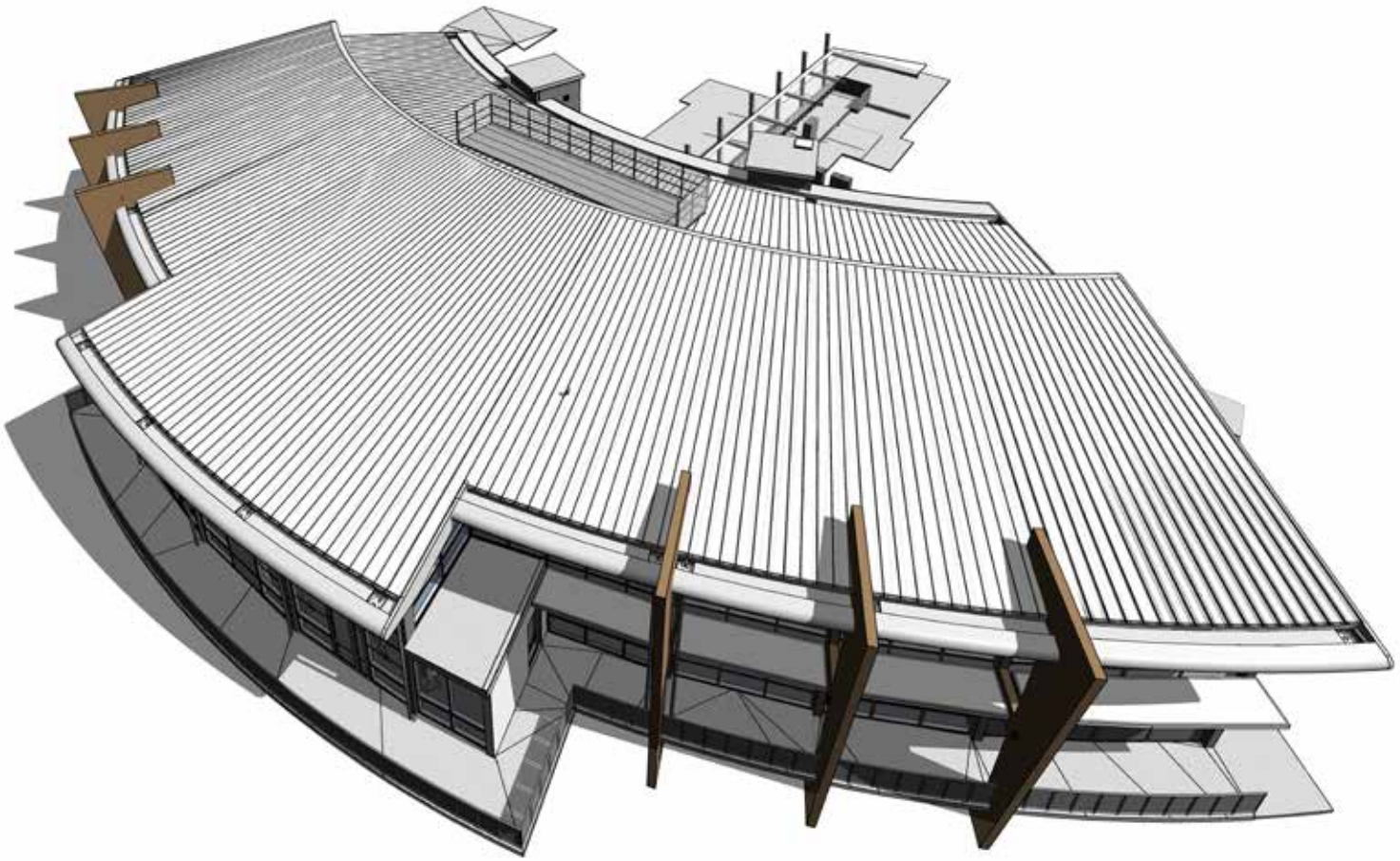
With this innovative, nationally relocatable production capability, extremely long lengths of profiled steel roofing, potentially up to 800m, can be manufactured on site and even delivered directly onto the roofing structure in one continuous operation for structures up to 12m eaves height.

Utilising our mobile, enclosed trailer-mounted, custom engineered rollforming machine, Fielders can manufacture to the exact project requirements on site, synchronising perfectly with the construction timeline to ensure efficient and cost-effective roof construction, a more precise coverage and reduced product wastage.

PROJECT SPECIFICS

- 850SQM (2,465L/M) FREEFORM™ CLADDING 0.55MM BMT IN COLORBOND® STEEL MONUMENT®
- DEPLOYMENT OF FIELDERS MOBILE MILL® ONSITE
- STEEL COIL SLIT TO CUSTOM WIDTH, DELIVERED TO SITE
- DETAILED PLANNING AND TECHNICAL SUPPORT

Emmanuel College



The Project

As part of the Emmanuel Catholic College extension, the brief was to construct a new two story English, Arts and Media Block and refurbishment of the existing Arts block.

Opened in early 2018, the state-of-the-art facility has been designed by EIW Architects led by Tony D'Andrea and his team to deliver a striking and purposeful built building for the staff and students of Emmanuel Catholic College.

The Fielders Solution

During the schematic design stage, Fielders Freeform™ was selected by the architects due to its architectural standing seam appearance and capability to curve and taper to suit the fan like shape and form of the proposed structure. Freeform™ was the most suitable product on the market as it eliminated the need for step joins and additional flashings making the structure watertight with an exclusive 20 year warranty offered by Fielders. COLORBOND® steel Matt in Surfmist® was the preferred finish to minimise any potential oil canning on the roof structure.

The Process

Fielders Mobile Mill® was based on-site at Emmanuel Catholic College to roll the FreeForm™ sheets, delivering a faster turnaround of supply and longer sheet lengths by eliminating the need to transport the profile by road. After being rolled on site, the 15 metre long sheets were lifted to the roof and installed on the engineered clips and seamed preventing any water ingress into the roof. The benefit of site rolling Freeform™ was that Fielders were able to modify and adjust each sheet widths and length to suit the existing structural steel tolerance on-site. This benefited the project by eliminating the tolerances in the steel work as the sheets were able to vary in shape and form.

PROJECT SPECIFICS

PROFILE: FIELDERS FREEFORM™

ARCHITECT: EIW ARCHITECTS

BUILDER: UNIVERSAL CONSTRUCTIONS

ROOFER: NATIONWIDE ROOFING

FreeForm™

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