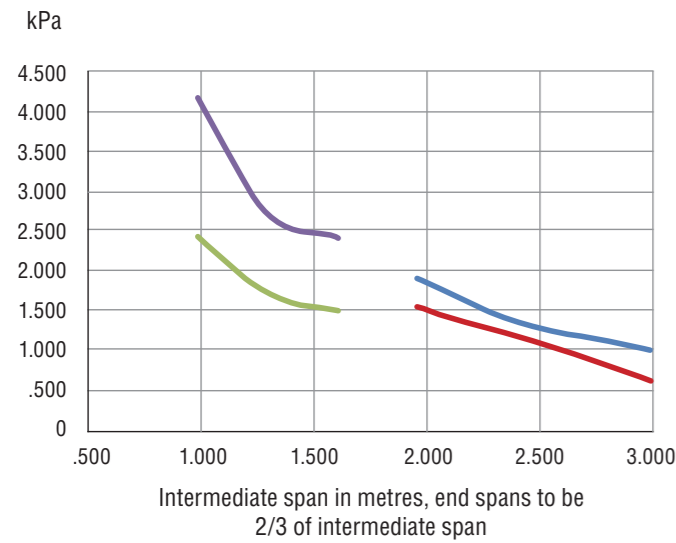


## Wind Load Design Graph

### Roofing

#### Static Load



#### Legend and Fixing Method



Testing confirms that 0.90 BMT Aluminium has similar results to .55 BMT Steel and is adjusted for practical application. For compliance with NZ Metal Roof and Wall Cladding Code of Practice, Aluminium requires load spreading washers and EPDM washers to be used at all times.

In the above graph in part which includes G300 grade steel test results it can be assumed that G550 grade steel will perform to at least the results given for G300 grade steel.



True Oak® Deep Side Lap

#### PRIMARY FIXING METHODS\*

##### Roofing Application

**C2L** Fix side laps and miss 1, hit 1, miss 1 etc; with approved screws and load spreading profiled metal washers and EPDM washers. End purlins and periphery of roof to be fixed every crest.

**C2** Fix side laps and miss 1, hit 1, miss 1 etc; with approved fasteners alone. End purlins and periphery of roof to be fixed every crest.



##### Wall Cladding Application

Fixed in the pan every rib and every girt.



\* Note - Compliance with E2/AS1 is dependent on girt spacing and gauge of cladding. See section on Purlin/Girt Spacing Limitations and recommendations available from the True Oak® Deep Profile Technical Summary at [www.roof.co.nz](http://www.roof.co.nz).

##### Drape Curved Roofing

The first two purlins at each end of the sheet in drape curving situations should, in all cases, be fixed using profile metal washers and EPDM washers with the balance of the roof fixed as above.

#### Purlin/Girt Spacing Limitations and Recommendations (Dimensions in metres)

For Compliance with E2/AS1. E2/AS1 by specific design allow the use of manufacturer's recommendations for fixing spacing. True Oak Deep has been fully tested and the manufacturers' recommendations as per the graph below should be used. However reference should be made to E2/AS1 for purlin spacing

#### Manufacturer's recommendation in accordance with NZ Metal Roof and Wall Cladding Code of Practice and compliance with NZBC E2.

		Steel Based Material		Aluminium H36
		.55 mm BMT G300	.55 mm BMT G550	.90 mm BMT 5052
Unrestricted Access Roof (Type A) (Where walking is permitted anywhere on the roof cladding for normal maintenance)	Intermediate	1.000	1.200	1.000
	End	0.670	0.800	0.670
Restricted access (Type B) (where walking is permitted anywhere on the roof cladding within 300mm of a purlin, otherwise over 2 crests)	Intermediate	1.600	3.000	2.400
	End	1.100	2.000	1.600
Non Accessible Roof and Wall Cladding (Type C)	Intermediate	1.600	3.000	2.700
	End	1.100	2.000	1.800
Maximum Recommended Purlin Spacing for standard roof (see notes below)	Intermediate	1.600	2.000	1.800
	End	1.100	1.350	1.200
Wind Design Load using fixing method C2L as an example at these purlin spacings from the Wind Load Span Design Graphs	Intermediate	2.4kPa	1.8kPa	1.8kPa
	End	3.7kPa	2.7kPa	2.7kPa

Classification Types are from the New Zealand Metal Roof and Wall Cladding Code of Practice. Purlin spacing limitations to be read in conjunction with Wind Load Span Design Graphs. In areas of heavy traffic, purlin spacing should be reduced accordingly. For curved roofing refer to Profile Technical Summary - [www.roof.co.nz](http://www.roof.co.nz). When self supporting paper is preferred to be used (without any support) purlin spacings must be limited to a maximum of 1.200 mtr centres for vertically run underlay and 1.150 mtr centres for horizontally run underlay. This is particularly relevant with aluminium and / or severe marine environments for the reasons designated under Building Design/Performance/Product Selection part of this document.

# TRUE OAK®

## DEEP

A return to the deeper corrugate

#### Roof pitch

The minimum roof pitch for True Oak® Deep is 3 degrees (approx.; 1:20). Any variation from the above should be referred to Roofing Industries.

When a combination of sheets provides a run in excess of 40 metres and up to 60 metres the roof pitch should be increased by 1 degree. Longer lengths require specific design.

Where there is a possibility that rainfall intensity could exceed 100mm/hour, the minimum roof pitch should be increased by a further 1 degree for every 10 metres of run length over 40 metres.

Roof pitch design may need to be greater so as to take into account any cumulative deflections of the frame, purlin, roof sheeting and/or penetrations

For curved roofing, the roof cladding must not terminate at a pitch lower than permitted above

#### Materials

##### (Steel based)

- Zinalume® steel: 0.55 mm BMT G550 or G300 Mpa Yield Stress.
- Galvanised steel: 0.55 mm BMT G300, or G550.
- Pre-painted Colorcote® Zinacore or Colorsteel® Endura 0.55 mm BMT.
- Pre-painted Colorcote® or Colorsteel® over Galvanised steel: 0.55 mm BMT.
- Pre-painted Colorcote® Magnaflow 0.55 mm BMT.
- Pre-painted Colorsteel® MAXX® 0.55 mm BMT.

##### (Aluminium based)

- Pre-painted Colorcote® Alumiguard H36 5052 0.90 mm BMT.

For information on unpainted and pre-painted aluminium variations, stainless steel, pure zinc and copper True Oak® Deep products, contact Roofing Industries.

#### Durability

Selection of the correct grade of material and appropriate surface coating is imperative to ensure True Oak® Deep will perform satisfactorily in the environment it is to be installed, and meets the requirements of the NZ Building Code. Environmental categories and surface coating literature is available from our website [www.roof.co.nz](http://www.roof.co.nz).

#### Accessories

A full range of matching accessories is available, including ridging, ridgecaps, flashings, fasteners, underlays and rainwater systems.

#### Translucent roofing

True Oak® Deep is available as glass reinforced translucent natural roof lighting.

#### Thermal expansion and contraction provisions

All metal roofing/cladding and flashings are subject to expansion and contraction caused by changes in temperature, and their design should allow for this movement. The energy produced should be absorbed without damage to the cladding, fixings or structure and referral should be made to the Profile Technical Summary at [www.roof.co.nz](http://www.roof.co.nz) where recommendations are made around preventing damage, leaks and annoying noise issues

#### Fixings and fasteners

All fixings and fasteners are to be of an approved type, compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with the NZ Metal Roof and Wall Cladding Code of Practice or manufacturer's instructions.

#### Roof application\*

Using the appropriate fixing method from the Wind & Load Design Graph.

Primary fixing methods:

- From the ridge down, for roof sheets up to and including 15 metres - solid fix, (except where a variation may be required by E2/AS1).
- For sheet lengths in excess of the above, refer to Roofing Industries True Oak® Deep Profile Technical Summary available at [www.roof.co.nz](http://www.roof.co.nz).
- Fix every crest to: ridge, hip, valley, gutter and periphery areas.

Standard primary fixings are:

For timber purlins use 14 x 75 Timbertite® class 4/5 screws with neos and with (or in some cases without) appropriate washers as required.

For steel purlins use 12 x 65 Steeltite® class 4/5 screws with neos and with (or in some cases without) appropriate washers as required. For further information, refer to Roofing Industries Profile Technical Summary available at [www.roof.co.nz](http://www.roof.co.nz).

#### Wall cladding application\*

Fix every second pan using 12 gauge class 4/5 Steeltites® or Timbertites® and neos as appropriate, ensuring that when the fastener is into timber it is of sufficient length to penetrate the framing by 30 mm.

\* Note: These recommendations are suitable for steel based materials, for other materials and cavity fixing, refer to our website [www.roof.co.nz](http://www.roof.co.nz). Other fixing methods may be applicable in some circumstances.

#### Ordering

Roofing Industries staff can provide technical assistance to ensure accurate ordering of roofing and accessories thereby avoiding costly errors.

True Oak® Deep is delivered cut to length subject to transport restrictions.

#### Handling and storage

- On delivery, read the pack label and visually inspect sheets for damage.
- Store True Oak® Deep and accessories on evenly spaced and supportive dunnage, clear of the ground and under cover. If packs become wet and the product not used immediately, separate the sheets to allow air circulation and drying.
- Do not drag sheets across each other.
- Long lengths of roofing should be lifted onto the roof using an approved load spreading beam.
- If protected with strippable plastic film, keep under cover and remove as the product is being installed.

#### Installation

Prior to commencing the project, refer to Roofing Industries technical literature and website [www.roof.co.nz](http://www.roof.co.nz). Failure to install True Oak® Deep and accessories to industry requirements will void any warranty.

#### Maintenance

Maintenance Guides are available and should be consulted in order that warranty conditions are fulfilled. [www.roof.co.nz](http://www.roof.co.nz).

#### Warranties

Warranties meet or exceed the statutory requirements of the NZ Building Code, are available on request and reflect our New Zealand owned and operated company, test facilities and local climatic conditions. Available at [www.roof.co.nz](http://www.roof.co.nz).

#### Further technical advice

For full technical information, refer True Oak® Deep Profile Technical Summary available at [www.roof.co.nz](http://www.roof.co.nz).

# TRUE OAK®

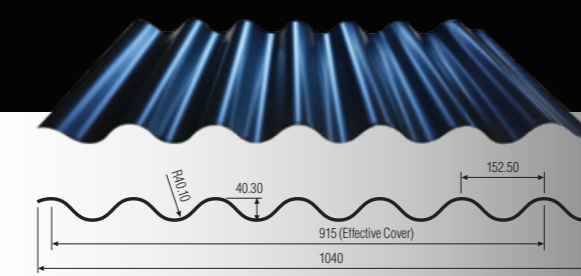
## DEEP

A return to the deeper corrugate



## The good old days are back, better than ever

Replicating the bolder corrugated fibre-cement of yesteryear and formed using innovative design technology, Roofing Industries is pleased to announce the arrival of True Oak® Deep which is ideally suited to complement any reroofing or new project.



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**Ph: (07) 578 2650**

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**Napier**  
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**Ph: (06) 281 2586**

**New Plymouth**  
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**Ph: (06) 758 3003**

**Palmerston North**  
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12 William Lewis Drive, Sockburn, Christchurch 8042.  
**Ph: (03) 934 5901**

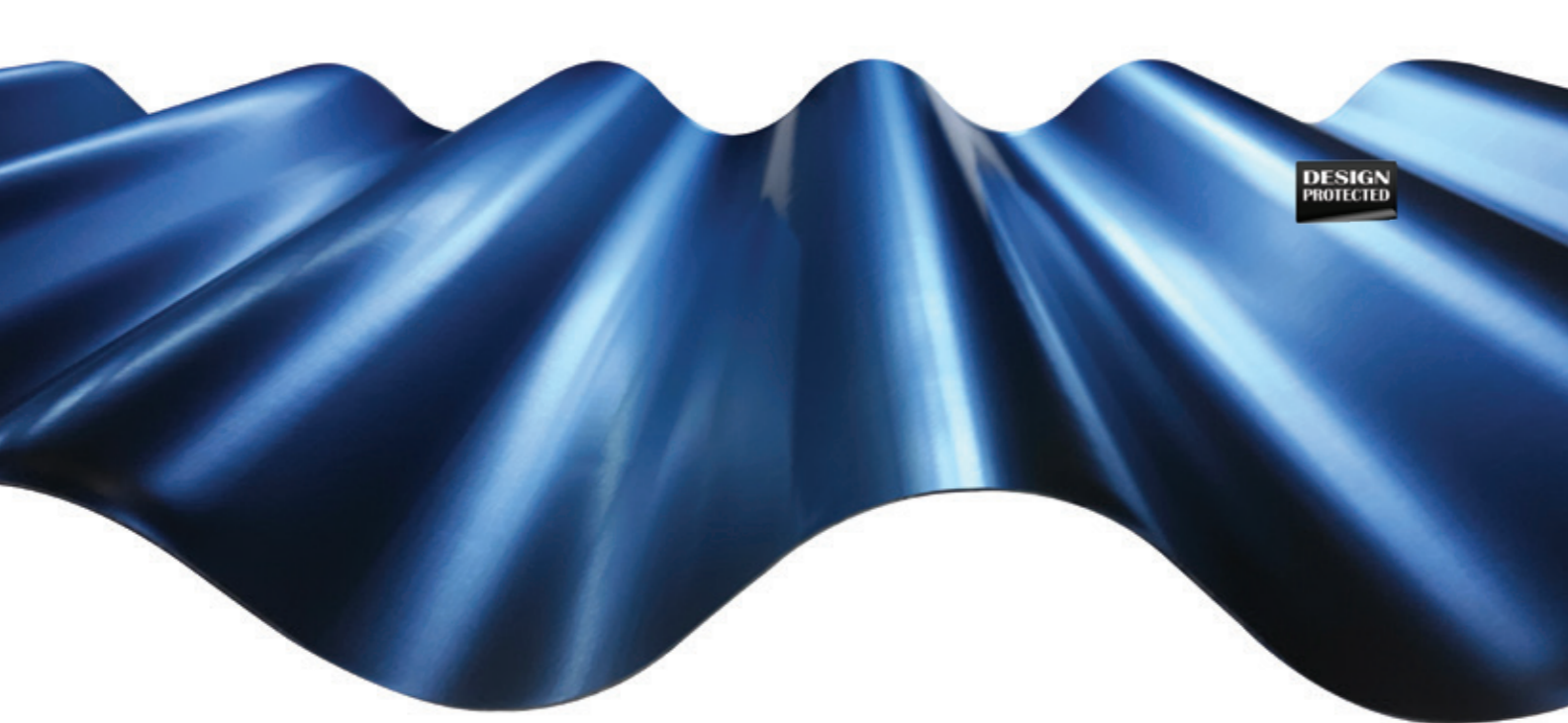
**Christchurch**  
29A McNulty Road, Cromwell 9310.  
**Ph: (03) 339 2324**

**Cromwell**  
**Ph: (03) 928 6869**

Specify True Oak® Deep on your next project  
PHONE 0800 844 822 [www.roof.co.nz](http://www.roof.co.nz)



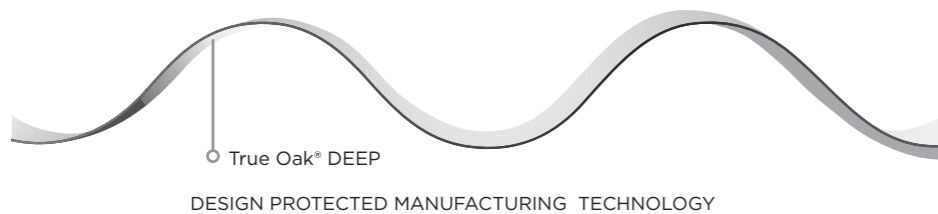
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# TRUE OAK<sup>®</sup>

## DEEP

A return to the deeper corrugate

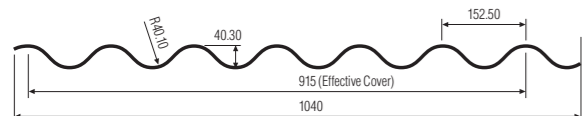


### DEEP AND BOLD

True Oak<sup>®</sup> Deep, a logical extension to the current and very successful True Oak<sup>®</sup> Corrugate roofing and cladding products.

Roofing Industries is pleased to announce the development and manufacture of True Oak<sup>®</sup> Deep, a bolder and high rib metal corrugate which replicates the Fibre Cement bold corrugate product of yester-year.

Manufactured in New Zealand and supplied as a wide cover "long run" roofing and cladding product, True Oak<sup>®</sup> Deep will enable roofing and cladding of both existing and new projects whilst maintaining current aesthetics. The Sinusoidal shape and depth of True Oak<sup>®</sup> Deep provides excellent water shedding capabilities permitting a possible minimum roof pitch of 3 degrees. When coupled with varying metal substrates and/or modern Colorsteel<sup>®</sup> and Colorcote<sup>®</sup> pre painted surface finishes, True Oak<sup>®</sup> Deep will most certainly provide inspiration to architects and designers.



### APPLICATIONS

- Residential roofing and cladding
- Commercial roofing and cladding
- Cladding of historical buildings
- Reroofing of historical buildings
- Low pitch roofs and verandahs
- Wall cladding in both horizontal and vertical applications
- A stronger cladding and walling for farm buildings
- Fencing
- Feature walls
- Curved projects
- Replacement for Asbestos Fibrolite roofing and cladding
- Architectural featured cladding



### FEATURES

- True Oak<sup>®</sup> Deep is a major development in high strength steel sinusoidal corrugate forming.
- Strikingly different to traditional shallow corrugated profiles with no flat areas.
- Smooth rounded and deeper sinusoidal wave profile integrating both form and function thereby creating distinct shadow lines that can be seen from afar.
- Stronger and deeper than traditional corrugated roofing and cladding.
- Much higher strength underfoot and is far less susceptible to denting by foot traffic.
- A replacement product for a similar fibre-cement high rib corrugate and which is manufactured and supplied to any length.
- Wider sheet coverage ensuring rapid installation and less sheet laps reducing construction costs and possibility of water ingress.
- Superior water carrying capacity.
- Where building regulations and designs permit, can be installed at a roof pitch as low as 3 degrees.
- Can be drape curved and with mechanical curving being developed.
- True Oak<sup>®</sup> Deep features an extensive colour and metal substrate selection, offering greater design options and more choices.
- Exclusive design protected manufacturing technology.
- Full product warranty meets the statutory requirements of the NZ Building Code.

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### Building Design/ Performance Criteria/ Product selection

During the design of buildings, it is necessary for the designer to take into account a number of issues to ensure that the most appropriate roofing and cladding product is chosen.

Whilst aesthetics and product availability do play a part, the chosen profile must meet certain performance criteria. These are centred around the profile's ability to shed water from the roof, the ability of the product to span purlin and girt spacings plus meet design criteria. The minimum pitch for this profile is outlined elsewhere within this literature.

In terms of purlin spans and girt spacing it is necessary to follow due process.



If a building is being designed and constructed in full accordance with E2/AS1 and roofing and cladding products as covered by that document are chosen, then it is necessary for the design spans and fixing methodology to comply with those of E2/AS1. However E2/AS1 states that the use of the manufacturer's information may provide a more optimum spacing of fixings, and this is recommended by Roofing Industries.

Further, where a building is outside of the scope of E2/AS1 and the building or parts thereof are of specific design then it is necessary for the roofing and cladding to be suitable for the design and vice versa.

In most cases, to take advantage of the unique characteristics of True Oak<sup>®</sup> Deep the use of same will be outside the prescriptive requirements of



E2/AS1. By designing and installing True Oak<sup>®</sup> Deep in accordance with the Profile Technical Summary True Oak<sup>®</sup> Deep will meet the requirements of NZBC E2.

Loadings referred to in Roofing Industries graphs are the result of testing to a serviceability limit state which is more conservative than an ultimate limit state as quoted by some manufacturers. Ultimate limit state loads will require a factor of 1.8 times the serviceability loadings.

Our Design Graphs are presented in a form to allow the designer to select suitable products and purlin spacings, based on serviceability limit state. True Oak<sup>®</sup> Deep has been tested to comply with this ultimate limit state factor.

For most roof installations the purlin spacings will be limited by the trafficable limitations of the profile or the structural design. It is then necessary for the designer to calculate the design wind load for the roofing and cladding in accordance with generally acceptable practice, by reference to AS/NZS 1170.2:2011 and/or NZS 3604:2011. For a fuller explanation of this refer to the NZ Metal Roof and Wall Cladding Code of Practice. This result should be referenced to the Wind Load Span Design Graphs.

The purlin spacings should be limited to the lower of the trafficable limitations and design wind load with the capacity of the structure being greater than the design load for the application. However for roofs that are not able to be walked on and for wall cladding applications, the trafficable limitations

may be exceeded providing the design wind loading criteria is met. However this should be done with caution as it may require considerable extra secondary fasteners within the laps.

The designer should always take into account in areas of heavy roof traffic, snow loadings, or where the roofing supports such items as air conditioning units, purlin spacing should be reduced accordingly. Consideration also needs to be given to limitations of purlin spacings for any translucent sheeting.

Reference should be made to the notes in the graphs.

True Oak<sup>®</sup> Deep is manufactured from .55mm BMT steel or .90mm BMT Aluminium as both have more resilience to damage.

Underlay as per the project specifications should be used.

With an aluminium substrate, steel netting should not be used where it may be in contact (either directly or through underlay degradation) with the aluminium roofing or cladding. Alternative material such as polypropylene strapping should be used where support is required, or the cladding separated from the underlay by a high density polystyrene batten, or drainage Mat or similar, including the use of an aluminium gutter flashing. This is also applicable to coated metal and pure zinc roofing in severe marine applications. In all the above cases, self supporting underlay should be used including when support is required.



Roofing Industries Technical Helpline 0800 844 822 [WWW.ROOF.CO.NZ](http://WWW.ROOF.CO.NZ)

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