

4311D DIMOND PROFILED METAL ROOFING

1. GENERAL

This section relates to the supply and fixing of **Dimond** profiled roofing and includes:

- Metal roofing
- Duraclad roofing
- accessories

1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for underlays, foils and DPC.

Refer to ~ for ~

1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
MS	Modified silicone

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1	External Moisture
AS/NZS 1170.2	Structural design actions - Wind actions
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
NZS 3604	Timber-framed buildings
ISO 9223	Corrosion of metals and alloys - Corrosivity of atmosphere - Classification determination and estimation
NZMRM CoP	NZ Metal Roof and Wall Cladding - Code of Practice

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

1.4 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

Web only based: **Dimond** Roofing and Cladding Systems Manual

Available from: **Dimond** web site

Web: www.dimond.co.nz

Telephone 0800 346 663 (0800 DIMOND)

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:.

- ~ years: for failure of coating adhesion
- ~ years: for weatherproofing by material penetration

- Provide this warranty on **Dimond** standard form.
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

- 5 years from the date of completion of the roof

- Provide this warranty on Roofing installers standard form.
- Commence the warranty from the date of practical completion of the contract works.

Include a copy of the **Dimond** maintenance requirements with the warranty.
Refer to the general section 1237 WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

Provide all relevant **Dimond** maintenance information on completion of the roofing work, as required by the GENERAL sections.

Requirements

- 1.7 NO SUBSTITUTIONS
Substitutions are not permitted to any specified system, or associated components and products.
- 1.8 QUALIFICATIONS
Roofers to be Dimond Recommended Installer, or experienced, competent roofers familiar with **Dimond** products. And for Restricted Building Work, shall also be an LBP or supervised by an LBP.
Carry out work with experienced, competent installers familiar with the products being used and with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding

Performance - Wind

- 1.9 DESIGN PARAMETERS - NON SPECIFIC DESIGN
Building wind zone:
~ / ~kPa ULS(refer to [NZS 3604](#), table 5.4)
Refer to Dimond for "Wind Load Span Capacity charts".
- 1.10 DESIGN PARAMETERS - SPECIFIC DESIGN
The design wind pressures are to [AS/NZS 1170.2](#)
SLS ~ kPa
ULS ~ kPa
Refer to **Dimond** for "Wind Load Span Capacity charts".
- 1.11 FIXINGS, WIND
Design and use the fixings/fixing pattern appropriate for the wind design parameters. Refer to **Dimond** Technical Information for load span tables and fixing charts for the selected profile. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply. Fixing pattern to also take into account fixing method and purlin spacings.

Performance - General

- 1.12 CO-ORDINATE
Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.
- 1.13 PERFORMANCE
Select installation method of the roof materials and accept responsibility for the weather-tight performance of the completed roofing system including penetrations through the roof and junctions with walls and parapets.

2. PRODUCTS

Materials

- 2.1 GALVANIZED STEEL, UNPAINTED
Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.
- 2.2 HOT-DIPPED ALUMINIUM/ZINC COATED STEEL, UNPAINTED
Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.
- 2.3 PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC COATED STEEL
Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.
- 2.4 PRE-FINISHED HOT-DIPPED ALUMINIUM/ZINC/MAGNESIUM COATED STEEL
Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397.
- 2.5 ALUMINIUM
Aluminium alloy series 5000 temper H34 for flashings or H36 for roll forming to suit application.
- 2.6 PRE-FINISHED ALUMINIUM
Aluminium alloy series 5000 temper H34 for flashings or H36 for roll forming to suit application.
- 2.7 COPPER
Half-hardened commercial finished.
- 2.8 OPAQUE GLASS FIBRE REINFORCED SHEETING
Duraclad is a white, opaque glass fibre reinforced sheeting with a gel coat top surface

Fixings

- 2.9 FASTENERS GENERALLY
Fixings and fasteners are to be compatible with all materials, the environment and meeting the requirements of the NZ Building Code. Installation is to be in accordance with E2/AS1 and/or the NZ Metal Roof and Wall Cladding - Code of Practice and Dimond requirements.
For fixing patterns refer to **Dimond** Fixing Charts for the selected profile.
- 2.10 FIXING CLIPS - DIMONDEK 300 OR DIMONDEK 400
Galvanized steel (nylon coated for aluminium) to suit the material and profile of the rigid sheet and location as required by the roofing manufacturer. Refer to SELECTIONS for fixings.
- 2.11 FIXING CLIPS - DIMONDEK 630
Dimondek 630 Clip Fasteners consist of a Zinalume on steel base strip with fibre reinforced nylon posts to suit the profile. Refer to SELECTIONS for fixings.
- 2.12 FIXING SCREWS
To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by Dimond and with a minimum Class 4 or 5 durability and not less than the material being fixed. Screw into timber to penetrate by minimum 30mm. Screw fasteners to be head stamped identifying the manufacturer and class. Use Alutite or stainless steel with aluminium based sheets. Refer to SELECTIONS.
- 2.13 RIVETS
Sealed aluminium, minimum diameter 4mm, for use with zinc coated, zinc/aluminium coated or aluminium roofing.

Components

- 2.14 FLASHINGS GENERALLY
To [NZBC E2/AS1, 4.0 Flashings](#).
Formable grade 0.55 BMT for galvanized, aluminium/zinc, aluminium/zinc/magnesium - coated and pre-painted steel, and 0.90 for aluminium to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

- 2.15 FLASHINGS TO VERGE, RIDGE AND HIP
Supplied by the roofing manufacturer to match or to suit the roofing in the same material as the roof.
- 2.16 BOOT FLASHINGS
Generally to E2/AS1, 8.4.17 **Roof penetrations**(note; E2/AS1, Figure.54 **Soaker flashing for pipe penetration**, has an error, use as guide only)
EPDM proprietary pipe flashing laid on 45° bias to roofing, with over-flashing (soaker flashing) if required.
A boot flashing should be positioned so that it dams a roofing pan no more than 50%, if this cannot be avoided use an over-flashing back to the ridge and fix the boot flashing to that.
- 2.17 NATURAL LIGHTING
Refer to 4312D DIMOND PROFILED GRP NATURAL LIGHTING.

Accessories

- 2.18 WIRE NETTING AND SAFETY MESH
Refer to 4161 UNDERLAYS, FOIL AND DPC.
- 2.19 UNDERLAY AND REFLECTIVE FOIL
Refer to 4161 UNDERLAYS, FOIL AND DPC
- 2.20 SEALANT
Neutral curing MS sealant or polymer sealant as required by the roofing manufacturer and used as directed.
- 2.21 CLOSURE STRIPS
Non-bituminous compressible, profiled foam strips to fit the sheet profile.
- 2.22 LAP SEALING TAPE
Closed cell self adhesive nitrile tape.

3. EXECUTION

Conditions

- 3.1 INSPECTION
Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.
- 3.2 FRAMING TIMBER MOISTURE
When continuous metal cladding etc. Runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.
- 3.3 STORAGE
Upon delivery, visually inspect all sheets for any damage and accept packs of roofing undamaged on delivery. Reject all damaged material. Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets. If sheet packs become wet, fillet or cross stack to allow air movement between sheets.
- 3.4 HANDLING
Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof. Walk along the purlin line whenever possible.

- 3.5 **SEPARATION**
Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible or inert materials. Place isolators between metals and treated timber, cement based materials, and mixing aluminium sheet and steel mesh. Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or aluminium/zinc coated steel.
- Application**
- 3.6 **FIX INSULATION**
Refer to Thermal Insulation sections.
- 3.7 **SET-OUT**
Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.
- 3.8 **END LAPS**
End laps should be avoided, except where specifically detailed.
- 3.9 **THERMAL MOVEMENT**
For sheet lengths more than 18 metres, make provision for thermal expansion where required
- 3.10 **FIXING GENERALLY**
Install and fix in accordance with the Dimond required fixing patterns and details for each area of the building roofing. Use only screws as required by the roofing manufacturer. Paint colour matched fixings and accessories before installation.
- 3.11 **MARKING AND CUTTING**
Use ink pen, chalk line, Chinagraph pencils or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking Zinalume[®], ZAM[®], Colorsteel[®] and Colorcote[®]. Cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.
- 3.12 **FIX SHEETS**
Fix sheets in place using the fastening system required by Dimond for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.
- 3.13 **STOP ENDS AND DOWNTURNS**
Form stop-ends at the upper end of sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using the required tools.
- 3.14 **FLASHINGS**
Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with moisture content of less than 18%. Where no detail is provided flash to [NZMRM CoP](#) NZ metal roof and wall cladding Code of Practice recommendations and Dimond requirements. Cut accurately and fix using sealant and rivets to detail and to Dimond requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.
- 3.15 **SEPARATION**
Separate metal sheeting from CCA treated timber with an inert isolation material such as flashing tape, underlayment mat or similar. Contact Dimond for other options.
- 3.16 **USE OF SEALANTS**
Select and use sealants only as recommended by Dimond. Remove any swarf and clean down, apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

- 3.17 FLASHING PENETRATIONS
Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

Completion

- 3.18 REPLACE
Replace damaged or marked elements.
- 3.19 LEAVE
Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.
- 3.20 REMOVE
Remove trade rubbish and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spouting, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

4. SELECTIONS

For further details on selections go to www.dimond.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Coating system

- 4.1 COATING SYSTEM - EXPOSURE ZONE B-C (CAT 1-3)
Project Exposure Zone B-C to [NZS 3604](#), C 1-3 to ISO 9223.
Profile/location: ~
Base material: ~
Coating system: ~
Paint colour: ~
- 4.2 COATING SYSTEM - EXPOSURE ZONE D (CAT 4)
Project Exposure Zone D to [NZS 3604](#), C 4 to ISO 9223.
Profile/location: ~
Base material: ~
Coating system: ~
Paint colour: ~
- 4.3 COATING SYSTEM - EXPOSURE ZONE E (CAT 5)
Project Exposure Zone E to [NZBC E2/AS1](#), C 5 (C5I & C5M) to ISO 9223, plus geothermal.
Profile/location: ~
Base material: ~
Coating system: ~
Paint colour: ~

Roofing

- 4.4 DIMOND CORRUGATE ROOFING
BMT/material ~
Purlin material: ~
Fixing: ~
Fixing pattern: Refer to Dimond Corrugated literature for details
- 4.5 DIMOND STEELSPAN 900 ROOFING
BMT/material ~
Purlin material: ~
Fixing: ~
Fixing pattern: Refer to Dimond Steelspan 900 literature for details

- 4.6 DIMOND TOPSPAN ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond Topspan literature for details
- 4.7 DIMOND BB900 ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond BB900 literature for details
- 4.8 DIMOND DP955 ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond DP955 literature for details
- 4.9 DIMOND LT7 ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond LT7 literature for details
- 4.10 DIMOND V-RIB ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond V-Rib literature for details
- 4.11 DIMOND STYLELINE ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond Styleline literature for details
- 4.12 DIMOND VEEDEK ROOFING
 BMT/material ~
 Purlin material: ~
 Fixing: ~
 Fixing pattern: Refer to Dimond Veedek literature for details
- 4.13 DIMOND DIMONDEK 630 TROUGH SECTION ROOFING
 BMT/material ~
 Clips:: Dimondek 630 hidden fixing clips
 Purlin material: ~
 Clip Fixing: ~
- 4.14 DIMOND DIMONDEK 400 TROUGH SECTION ROOFING
 BMT/material ~
 Clips: Dimondek 400 hidden fixing clips.
 Clip material: ~
 Purlin material: ~
 Clip Fixing: ~
- 4.15 DIMOND DIMONDEK 300 TROUGH SECTION ROOFING
 BMT/material ~
 Clips: Dimondek 300 hidden fixing clips.
 Clip material: ~
 Purlin material: ~
 Clip Fixing: ~

Accessories

- 4.16 FLASHINGS - GENERALLY
Profile: ~
BMT/material: ~
Coating system: To match roofing
Paint colour: To match roofing
- 4.17 FLASHINGS - INACCESSIBLE
Material/thickness: ~
- 4.18 CLOSURE STRIPS
Brand: ~