

# 45-47 Norwood Rd

## Project Specification

45-47 Norwood Rd, Bayswater,  
Auckland, New Zealand

Project Ref: 2501

Date: 14 April 2026

PROJECT SPECIFICATION Works, materials and workmanship  
for construction in accordance with the accompanying drawings.



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## 1220 PROJECT

### 1 GENERAL

This general section describes the project including:

- A description of the work
- Design construction safety
- Principal's Health & Safety matters
- Site description, features and restrictions
- Design parameters for design by contractor
- Archaeological discovery

#### 1.1 READ ALL SECTIONS TOGETHER

Read all general sections together with all other sections.

#### 1.2 DESCRIPTION OF THE WORK

Refer drawings

#### 1.3 RESTRICTED BUILDING WORK

This project includes Restricted Building Work.

#### **Design Construction Safety**

#### 1.4 DESIGN CONSTRUCTION SAFETY

The project designers are unaware of unusual or atypical features, which a reasonably experienced contractor may not be aware of, that may present a hazard or risk during a typical construction process. The Contractor is still required to undertake its own assessment, to determine if they consider there are any further safety matters and provide for these in carrying out the construction of the work.

#### **Principal's Health & Safety Matters**

#### 1.5 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

Obtain a copy of the principal's site health and safety plan.

#### **Site**

#### 1.6 LEGAL DESCRIPTION

The site of the works, the street address and the legal description are shown on the drawings.

#### **Site environment - Durability**

#### 1.7 EXPOSURE ZONE

The exposure zone is to [NZS 3604](#), Section 4 Durability, 4.2 Exposure zones and [NZBC E2/AS1](#).

The site zone is: D (High)

#### **Site environment - Wind**

#### 1.8 WIND DESIGN PARAMETERS - NON SPECIFIC DESIGN

The design wind pressures are to [NZS 3604](#), Table 5.4 Determination of wind zone, up to and including Extra High Wind Zone.

Building wind zone High/1.20kPa (refer to [NZS 3604](#), table 5.4)

#### **Site environment - Seismic**

#### 1.9 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to [NZS 3604](#), Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone Zone 1  
is:



## Archaeological discovery

### 1.10 REPORT FINDING ANY ANTIQUITIES AND ITEMS OF VALUE

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the [Heritage New Zealand Pouhere Taonga Act 2014](#). If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site may be classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the Heritage New Zealand for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.



# 1232 INTERPRETATION & DEFINITIONS

## 1 GENERAL

This general section relates to definitions and interpretation that are used in this specification.

### Definitions

#### 1.1 DEFINITIONS

Hold point:	A stage of the construction where the contract administrator and any other nominated person requires notice to be given that particular work is to be carried out. Work may not proceed on that particular part until the contract administrator and any other nominated person has advised that work can continue. A notice period of 2 Working Days is required unless stated otherwise.
Notification point:	A stage of the construction where the contract administrator and any other nominated person requires notice to be given that particular work is to be carried out. Work may continue and the contract administrator and any other nominated person may choose whether or not they wish to witness the particular work being carried out. A notice period of 2 Working Days is required unless stated otherwise.
Product:	A thing or substance produced by natural process or manufacture.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Provide and fix:	"Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.
Required:	Required by the documents, the <a href="#">New Zealand Building Code</a> or by a statutory authority.
Review:	Review by the contract administrator and other consultants is for general compliance only. Review does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.
Working day:	Working day means a calendar day other than any Saturday, Sunday, public holiday or any day falling within the period from 24 December to 5 January, both days inclusive, irrespective of the days on which work is actually carried out.
Workplace:	Workplace means the place where work is being carried out, or is customarily carried out, for a business or undertaking including any place where a worker goes, or is likely to be, while at work (under <a href="#">Health and Safety at Work Act 2015</a> ).

#### 1.2 PERSONNEL

- Principal: The person defined as "Principal" in the conditions of contract.
- Contractor: The person contracted by the principal to carry out the contract.
- Contract administrator: The person appointed by the principal to administer the contract on the principal's behalf. Where no person has been appointed by the principal, it means the principal or the principal's representative.

#### 1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

- AAMA American Architectural Manufacturers Association
- AS Australian Standard
- AS/NZS Joint Australian/New Zealand Standard
- ASTM American Society for Testing and Materials



AWCINZ	Association of Wall and Ceiling Industries of New Zealand Inc.
BCA	Building Consent Authority
BPIR	Building Product Information Requirements
BPIS	Building Product Information Sheet
BPS	Building Product Specifications
BRANZ	Building Research Association of New Zealand
BS	British Standard
COP	Code of practice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
HERA	Heavy Engineering Research Association
LBP	Licensed Building Practitioner
MBIE	Ministry of Business, Innovation and Employment
MPNZA	Master Painters New Zealand Association Inc
NZBC	<a href="#">New Zealand Building Code</a>
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NZTA	New Zealand Transport Agency
NUO	Network Utility Operator
OSH	Occupational Safety and Health
PCBU	Person Conducting a Business or Undertaking (under <a href="#">Health and Safety at Work Act 2015</a> )
RBW	Restricted Building Work
SARNZ	Scaffolding and Rigging New Zealand Inc
SED	Specific Engineering Design
TA	Territorial Authority
TNZ	Transit New Zealand (Transit New Zealand is now New Zealand Transport Agency NZTA - some specifications are still prefixed TNZ)

#### 1.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents, to have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

#### 1.5 WORDS IMPORTING PLURAL AND SINGULAR

Where the context requires, words importing singular only, also include plural and vice versa.



## 1232S1 EXPLANATION OF SCHEDULE SECTIONS

### 1 GENERAL

This general section provides an explanation of schedule sections and their relationship to general sections and work sections. Specific schedule sections contained within this specification are also identified.

#### 1.1 EXPLANATION OF SCHEDULE SECTIONS

A schedule section identifies work sections that contain common requirements, as identified in the title of the schedule section. For example 1235S1 SCHEDULE OF SHOP DRAWINGS identifies work sections that have requirements for shop drawings. Details of the requirements are contained in the identified work sections with additional requirements contained in the general section 1235 SHOP DRAWINGS.

Some schedule sections are identified by the 4 digit CBI (Co-ordinated Building Information) number of the general section that they relate to, followed by the letter "S" followed by a numeral (1-9). The numeral allows for multiple schedule sections to be associated with the same general section.

Other schedule sections that do not share a common CBI number with a general section, have their own unique 4 digit CBI number, followed by the letter "S" followed by a numeral. These schedule sections contain additional subject content relating to the schedules and the identified work sections.

#### 1.2 SCHEDULE SECTIONS

The following Schedule sections are contained within the specification:

1237S1	Schedule of Warranties
1239S1	Schedule of Operation & Maintenance Info



## 1233 REFERENCED DOCUMENTS

### 1 GENERAL

#### 1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various [New Zealand Building Code Compliance Documents \(NZBC \\_\\_\)](#), acceptable solutions ([\\_\\_ AS\\_\\_](#)) and verification methods ([\\_\\_ VM\\_\\_](#)) for criteria and/or methods used to establish compliance with the [New Zealand Building Code](#).

Reference is also made to various standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents.

#### 1.2 DOCUMENTS

Documents referred to in the GENERAL sections are:

<a href="#">NZBC F5/AS1</a>	Construction and demolition hazards
<a href="#">AS/NZS 1170.2:2011</a>	Structural design actions - Wind actions
<a href="#">NZS 1170.5</a>	Structural design actions - Earthquake actions - New Zealand
<a href="#">AS/NZS 3012</a>	Electrical installations - Construction and demolition sites
<a href="#">NZS 3109</a>	Concrete construction
<a href="#">NZS 3114</a>	Specification for concrete surface finishes
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4210</a>	Masonry construction: Materials and workmanship
<a href="#">NZS 4781</a>	Code of Practice for Safety in Welding and Cutting
<a href="#">AS/NZS 5131</a>	Structural steelwork - Fabrication and erection
<a href="#">NZS 6803</a>	Acoustics - Construction Noise
<a href="#">Building Act 2004</a>	
<a href="#">Building Regulations 1992</a>	
<a href="#">Health and Safety at Work Act 2015</a>	
<a href="#">Health and Safety at Work (General Risk and Workplace Management) Regulations 2016</a>	
<a href="#">Health and Safety at Work (Hazardous Substances) Regulations 2017</a>	
<a href="#">Health and Safety in Employment Regulations 1995</a>	
<a href="#">New Zealand Building Code</a>	
<a href="#">Heritage New Zealand Pouhere Taonga Act 2014</a>	
<a href="#">Resource Management Act 1991</a>	
<a href="#">Smoke-free Environments Act 1990</a>	
<a href="#">WorkSafe</a>	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry</a>
<a href="#">WorkSafe</a>	<a href="#">Good Practice Guidelines - Excavation Safety</a>
<a href="#">WorkSafe</a>	<a href="#">Scaffolding in New Zealand - Good Practice Guidelines</a>
<a href="#">WorkSafe</a>	<a href="#">Managing Work Site Traffic - Good Practice Guidelines</a>



## 1237 WARRANTIES

### 1 GENERAL

This general section refers to the requirements for warranties/guarantees, referred to within this specification and referred to within separate specifications/documents relating to this project. It includes:

- Warranties for parts of the work required by the principal in a required form
- Installer/applicator warranties for parts of the work in the installer's/applicator's standard form
- Manufacturer/supplier warranties provided with products, appliances and the like in the manufacturer's/supplier's standard form
- Guarantees provided by contractor in the contractor's standard form

These guarantees/warranties are in addition to any warranties, implied warranties, or guarantees that are required by the Building Act, the Building Regulations, or the building consent.

#### 1.1 SCHEDULE SECTION

Refer to 1237S1 SCHEDULE OF WARRANTIES for work sections contained in this specification that have requirements for warranties.

#### **Warranties**

#### 1.2 PROVIDE WARRANTIES

Provide executed warranties in favour of the principal in respect of, but not limited to, materials, components, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

- Conform to the WARRANTY AGREEMENT form included in the specification/conditions of contract.
- Commence warranties from the date of practical completion of the contract works (unless otherwise stated).
- Maintain their effectiveness for the times stated.
- Provide executed warranties prior to practical completion.

#### 1.3 WARRANTIES - INSTALLER/APPLICATOR

Where installer/applicator warranties are offered covering execution and materials of proprietary products or complete installations, provide such warranties to the contract administrator. These warranties may be provided in lieu of the warranties that are otherwise required provided that these warranties are subject to similar conditions and periods.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

#### 1.4 WARRANTIES - MANUFACTURER/SUPPLIER

Where warranties are offered covering materials, equipment, appliances or proprietary products, provide all such warranties to the contract administrator.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.



## Submission

### 1.5 REVIEW BY CONTRACTOR

Obtain the warranties from the installers, applicators, manufacturers and suppliers at the earliest possible date and review to ensure that they are correctly filled out and executed. Where warranties are executed as a deed, ensure that a duplicate copy is provided for execution by the owner/principal. Keep safe and secure until required for submission.

### 1.6 WARRANTIES - REQUIRED BY BUILDING CONSENT AUTHORITY

Obtain copies of warranties required as a condition of the building consent in the form required for submission to the BCA. Keep safe and secure until required at the time of the BCA final inspection and Code Compliance Certificate.

### 1.7 WARRANTIES - REQUIRED BY CONTRACT

Obtain copies of warranties listed in the contract documents. Provide all warranties at the same time. If the project has an operations and maintenance documentation provision, present the warranties with the operations and maintenance information. If no operations and maintenance documentation provision exists, present the warranties to the contract administrator in a loose-leaf binder with a contents index suitably labelled and including the project name and details. Provide a title on the binder edge "Warranties for (project name)"

### 1.8 WARRANTIES - SUBMISSION NZIA SCC CONTRACT

Refer to the contract conditions for any requirement relating to the time for submission for warranties and guarantees. Submit all warranties to the architect no later than the date of the contractor's advice of achieving practical completion.

## 2 SELECTIONS

### Project warranties / guarantees

#### Weathertightness and watertightness warranty

### 2.1 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

A warranty is required from the contractor for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

Provide this warranty in favour of the principal. The terms and conditions of this warranty in no case negate the minimum remedies available under common law as if no warranty had been offered.

Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

- Conform to the standard form WARRANTY AGREEMENT included in the contract documents.
- Commence the warranty from the date of Practical Completion.
- Maintain its effectiveness for the time stated.



# 1237S1 SCHEDULE OF WARRANTIES

## 1 GENERAL

This schedule section identifies work sections in the specification that have requirements for warranties.

### 1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1237 WARRANTIES
- Identified Work Sections

#### **Warranties**

### 1.2 WARRANTIES

Refer to the following sections:

3114E	Expol Underslab Insulation
4161T	Kingspan Thermakraft Underlays, Foils, DPC, DPM, & Tapes
4221HH	Hempac Horizontal Weatherboard Cladding System
4241MR	MDS Profiled Metal Cladding
4331H	Hardie™ Fibre Cement Decking
4421N	Nuraply 3PM Membrane Roofing & Decking
4521AR	APL Residential Aluminium Windows & Doors
4554AH	Adlux Roof Windows
4610AG	AGP Glazing Residential
4711T	Terra Lana Natural Wool Insulation
4855JG	Juralco Glass Balustrade Systems
6211MW	Mapei Wall Tiling
6221M	Mapei Floor Tiling Solutions
6700R	Resene Painting General
7123R	Rehau Hot & Cold Water System
7421MO	Marley Optim DWV Sanitary System
7701PC	PDL & Clipsal Electrical

### 1.3 PROJECT WARRANTIES

Refer to section 1237 WARRANTIES for project warranties.

### 1.4 WARRANTIES - ADDITIONAL ITEMS

Refer to separate documentation for warranties not contained within this specification.



## 1239 OPERATION & MAINTENANCE

### 1 GENERAL

This general section relates to operation and maintenance (O&M) documentation referred to within this specification and referred to within separate specifications/documents relating to this project.

This documentation is required by the principal so that they can operate and maintain the contract works.

#### 1.1 SCHEDULE SECTION

Refer to 1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO for work sections contained in this specification that have requirements for:

- Information for operation and maintenance
- Operation and maintenance manuals
- Maintenance contract proposals

#### **Operation and maintenance documents**

#### 1.2 OPERATION AND MAINTENANCE INFORMATION - BUILDING ACT

Provide in writing the information and documentation prescribed by regulations made under the Building Act, to the owner/principal and the relevant territorial authority.

#### 1.3 OPERATION AND MAINTENANCE INFORMATION

Provide operation and maintenance documentation necessary to operate and maintain the works. This documentation is to include:

- Contractors name and contact details.
- A complete list of subcontractors' names, addresses and telephone numbers noting which portions of the contract each provided.
- A complete list of equipment and appliances including serial numbers, manufacturers' names and sources of supply.
- Copies of all manufacturers' and suppliers' product literature containing maintenance requirements/instructions, for any products in the building work.
- Information for operation and maintenance as required by work sections.
- Operation and maintenance manuals as required by work sections.
- Maintenance contract proposals as required by work sections.
- Final as built documents.
- Originals of all warranties and guarantees properly executed.
- Other information listed or referred to in this general section.
- Operation and maintenance information required by other project documents.

#### 1.4 MAINTENANCE REQUIREMENTS

Provide details of any maintenance requirements required by the Building Act. In addition provide maintenance requirements for items including:

- Details of suggested building washing programme.
- Details of suggested re-painting programme.
- Location of flushing points for sub soil drainage systems.
- Location of surface water filter systems requiring regular cleaning.
- Overflow relief gully location and means of keeping charged.

#### 1.5 APPLIANCE MANUALS AND OPERATING INSTRUCTIONS

Provide appliance manuals and operating information for all appliances including details of all isolating valves and switches including:

- Water supply isolating valve.
- Location of isolating valves for appliances including dishwasher, clothes washer and fridge with and icemaker connection.
- Gas supply isolating valve.
- Electrical main switch and all sub boards.
- Location of isolating switches for electrical appliances including cooker and cook top, kitchen extract system, electric under floor heating.
- Fire and heating device operating instructions.



## 1.6 SELECTIONS INFORMATION

Provide details of actual selections used in the construction of the works including:

- Tapware type and supplier details.
- Sanitary ware including accessories type and supplier details.
- Light fitting type and supplier details.
- Door hardware type and supplier details.
- Carpet type and colour including underlay and the supplier details.
- Vinyl flooring type and colour including supplier details.
- Overlay timber floor type and supplier details.
- Tile type and supplier details.
- Fire supplier details.
- Aluminium joinery system and finish.
- Paint type and colours used.

Include brochures and other information included with the items supplied.

## 1.7 SELECTIONS INFORMATION - SUBSTITUTIONS

Provide details of any selections used in the construction of the works that are different from what was specified.

### Documentation format

## 1.8 O&M DOCUMENTATION FORMAT

Unless otherwise specified in a work section,

- Provide O&M drawings at scales appropriate to the detail to enable good legibility.
- Provide manufacturers documentation at the original scale.
- Provide written text generally in A4 format using a font not less than 10 point.

Submit O&M documentation in both hard copy and as electronic portable document format (PDF) files.

### Submission and review

## 1.9 O&M DOCUMENTATION SUBMISSION & REVIEW

Unless otherwise specified in a work section, provide draft O&M documentation no later than the date of practical completion or the date on which the principal takes occupation of the works, whichever occurs first.

Submit O&M documentation to the named reviewer for review.

- Where no time is stated in a specific section, allow 10 working days for review by the reviewer. Where a large amount of documentation is involved more time will be necessary.
- Where no person is named in a specific section as the reviewer, submit the O&M documents to the contract administrator.
- Submit a proposed index system (as required for final documentation) to the contract administrator for review.

O&M review indicates only that the reviewer is satisfied that the documents are legible. The review is not a check of the accuracy of the documents, however the reviewer may comment on any aspect of the documentation and require the documents to be revised and resubmitted. Review of operation and maintenance documentation does not relieve the contractor of responsibility for the correctness of the documentation.

The reviewer may advise that:

- The O&M documentation has been reviewed and has been accepted without the need for further modification. The information can be included in the final documentation; or
- The O&M documentation has been reviewed and the information can be included in the final documentation subject to revision required by notes, annotations or comments provided; or
- The O&M documentation has been reviewed and is not acceptable, refer to notes, annotations or comments provided. Resubmit corrected/altered documentation for review.



Amalgamate the reviewed accepted and corrected O&M documentation into the final O&M documentation

## **Final documentation**

### **1.10 SUBMISSION OF FINAL DOCUMENTATION**

Prior to the end of the defects notification/liability period, provide complete O&M documentation in both hardcopy and electronic form.

### **1.11 FINAL O&M DOCUMENTATION - HARDCOPY**

Provide the hard copy version of the O&M documentation in a loose-leaf binder with a contents index identifying operation and maintenance documents, requirements, manuals, operating instructions and selections. In addition include the project name, contractor's name and the date of practical completion on the index page.

Include indexed sections to identify all operation and maintenance manuals that are not contained within the binder. Provide a copy of the front cover or other identifying feature of the manual within the section with a note stating "this manual has been provided separately".

Provide a title on the binder edge "Operation and maintenance instructions for (project name)". If more than one binder is required identify each binder by number and ranking (e.g. Volume 2 of 3) and group information logically between the binders for ease of reference.

Provide operation and maintenance manuals clearly and neatly marked on the spine or front cover so as to identify the project name. Where operation and maintenance manuals are a collection of loose leaf documentation, provide documentation in a loose-leaf binder as described above.

### **1.12 FINAL O&M INFORMATION - ELECTRONIC COPY**

Provide a copy of all hardcopy information in PDF format arranged in logical named folders. In addition provide DWG files of documentation if available.

### **1.13 REVIEW OF FINAL DOCUMENTATION**

The contract administrator may review the final documentation and require alteration and resubmission.

## **2 SELECTIONS**

### **O&M Documentation**

### **2.1 FINAL DOCUMENTATION - INFORMATION FOR OPERATION AND MAINTENANCE**

Provide a complete electronic copy to the contract administrator.

Provide two hardcopy sets of completed O&M documentation to the contract administrator. At least one set is to contain all available original documentation. The contractor is to retain a third hardcopy set for their records.

Provide any documentation (including required original documentation) as required to the relevant territorial authority.

### **2.2 FINAL DOCUMENTATION - OPERATION AND MAINTENANCE MANUALS**

Provide a complete electronic copy to the contract administrator.

Provide two hardcopy sets of completed maintenance manuals to the contract administrator. At least one set is to contain all available original documentation. The contractor is to retain a third hardcopy set for their records.

Provide any documentation (including required original documentation) as required to the relevant territorial authority.



## **Maintenance contract proposals**

### 2.3 MAINTENANCE CONTRACT PROPOSALS

Unless otherwise specified in a work section, provide maintenance contract proposals to the contract administrator no later than the date of Practical Completion. Provide in electronic and hardcopy form.



# 1239S1 SCHEDULE OF OPERATION & MAINTENANCE INFO

## 1 GENERAL

This schedule section identifies work sections in the specification that have requirements for the submission of:

- Information for operation and maintenance
- Operation and maintenance manuals
- Maintenance contract proposals

### 1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1239 OPERATION & MAINTENANCE
- Identified Work Sections

#### Information for operation and maintenance

### 1.2 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the following sections:

4521AR	APL Residential Aluminium Windows & Doors
4554AH	Adlux Roof Windows
4610AG	AGP Glazing Residential
4855JG	Juralco Glass Balustrade Systems
6700R	Resene Painting General
7123R	Rehau Hot & Cold Water System

#### Operation and maintenance manuals

### 1.3 OPERATION AND MAINTENANCE MANUALS

There are no work section requirements.

#### Additional Items

### 1.4 ADDITIONAL ITEMS

Refer to separate documentation for the submission of operation and maintenance requirements not contained within this specification.



## 1270 CONSTRUCTION

### 1 GENERAL

This GENERAL section relates to common requirements for construction issues including:

- Quality control and assurance
- Noise and nuisance
- Set-out and tolerances
- Common execution requirements
- Qualifications
- Common product requirements
- Common requirements for samples and prototypes
- Common requirements for spare and maintenance products
- Cleaning during the works
- Removal of protection
- Completion requirements
- Commissioning
- Practical completion submission
- Defects period submissions
- Completion submissions

#### Quality control and assurance

##### 1.1 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

##### 1.2 NOTICE

Give notice to the contract administrator and any other nominated person of hold points and notification points. Refer to work sections and 1260 PROJECT MANAGEMENT for hold points and notification points required.

##### 1.3 NOTIFIABLE WORK

Lodge notice of the intention to commence any notifiable work and any work that will at any time include any notifiable work, in accordance with [Health and Safety in Employment Regulations 1995](#).

#### Noise and nuisance

##### 1.4 LIMIT CONSTRUCTION NOISE

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of [NZS 6803](#), the requirements of the Resource Management Act sections 326, 327 and 328 and the [Health and Safety in Employment Regulations 1995](#) clause 11.

##### 1.5 ACCEPTABLE NOISE LEVELS

Refer to [NZS 6803](#) Tables 2 and 3 for the upper limits of construction work noise received in residential zones, dwellings in rural areas, industrial areas and commercial areas, note also the allowed adjustments. Do not exceed these limits or any limits imposed by regional councils or territorial authorities.



## 1.6 PROVIDE INFORMATION TO NEIGHBOURS

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in [NZS 6803](#). If the noise level is above the upper limits of [NZS 6803](#), table 2 and table 3, cease the noise generating operation and remedy the problem.

## 1.7 INCONVENIENCE TO OTHERS

When the works are to be carried out in or around occupied premises, ascertain the nature and times of occupation and use. Carry out the works in a manner to minimise inconvenience, nuisance and danger to occupants and users.

## 1.8 ROADWAY AND FOOTPATH

Keep the adjacent footpath and road clear at all times. Where work must be carried out in the roadway or footpath, obtain required consents from the territorial authority. Where temporary use is made of the footpath or roadway for deliveries and the like ensure that public safety is protected and the goods and materials moved as soon as practicable. Sweep, wash and otherwise clean the roadway/footpath and restore it to its previous condition.

## 1.9 VEHICLE CROSSING

Make good damage that has occurred as a result of carrying out the contract works. Where there has been significant damage, contact the territorial authority and obtain instructions for making good. Pay the territorial authority costs associated with making good.

## 1.10 TRAFFIC SAFETY

The management of traffic safety on-site and related traffic off-site, to [WorkSafe Managing Work Site Traffic - Good Practice Guidelines](#). Movement on- and off-site also to territorial authority and/or NZTA requirements.

## 1.11 DIRT AND DROPPINGS

Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.

## 1.12 DAMAGE AND NUISANCE

Take precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.

## 1.13 SMOKE FREE REQUIREMENTS

In accordance with the Smoke Free Environments Act 1990 smoking is not allowed on site.

## 1.14 RESTRICTIONS

Do not:

- light rubbish fires on the site.
- bring dogs on to or near the site.
- bring radios/audio players on to the site.

### **Set-out and tolerances**

## 1.15 SURVEY INFORMATION

Locate and verify survey marks and datum points required to set out the works. Where these do not exist or cannot be located advise the contract administrator who will arrange for the required points to be established.

Record and maintain their position. Re-establish and replace disturbed or obliterated marks.

## 1.16 DATUM

Establish a permanent site datum to confirm the proposed levels and their relationship to all other existing and new levels.



1.17 SET-OUT

Set out the work to conform with the drawings.

1.18 SET-OUT BY LICENSED CADASTRAL SURVEYOR

Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.

During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.

1.19 CONFIRM HEIGHT IN RELATION TO BOUNDARY

Arrange for the licensed cadastral surveyor to provide a certificate certifying that the building has been constructed within the allowed height in relation to boundary. Obtain details from the principal of the person they have engaged to carry out this certification and advise the surveyor when they can carry out the required survey.

Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator.

1.20 USE OF SET-OUT INSTRUMENTS

Permit without charge, the use of instruments already on site for checking, setting out and levels.

1.21 CHECK DIMENSIONS

Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.

1.22 TOLERANCES

All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:

Concrete construction:	To <a href="#">NZS 3109</a> Concrete construction Clause 3.9 Tolerances for reinforcement Table 5.1 Tolerance for precast components Table 5.2 Tolerance for in situ construction To <a href="#">NZS 3114</a> Concrete surface finishes
Masonry construction:	To <a href="#">NZS 4210</a> Masonry construction: Materials and workmanship Clause 2.6.5 Tolerances Table 2.2 Maximum tolerances
Structural steelwork:	To <a href="#">NZS 3404.1</a> Steel structures standard Section 14.4 Tolerances (after fabrication) Section 15.3 Tolerances (erection)
Timber framing:	To <a href="#">NZS 3604</a> Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

**Execution**

1.23 EXAMINE PREVIOUS WORK

Before commencing any part of the work carefully examine the previous work on which it depends, to ensure it is of the required standard.

1.24 REPORT DEFECTIVE PREVIOUS WORK

Refer defects to the contractor to be remedied, if the remedy is outside the scope of the contract documents the contractor shall obtain direction from the contract administrator. Do not carry out work over previous work that is defective and will affect the required standard.



**1.25 EXECUTION GENERALLY**

Construct the work in accordance with the documents issued for construction including any direction that may have been given by the contract administrator that varies the construction document.

**1.26 EXECUTION - NO DETAIL IS PROVIDED**

The documents issued for construction will not include all details relating to every material, junction and interface with other materials.

Where the detail provided is of a general nature, or where no detail is provided, refer to the manufacturer's documents for information relating to installation and execution of that part of the work.

Where there is more than one method or detail appropriate to the part of the work in question, refer the options to the Contract Administrator for direction as to which detail or method to use.

**1.27 EXECUTION - ACCEPTABLE SOLUTION IS REFERRED TO**

Where a NZBC Acceptable Solution is referred to in the specification but not shown on the plans, obtain a copy of that Acceptable Solution and make it available to the workers carrying out that part of the work.

**1.28 MINIMISE DELAYS DUE TO WEATHER**

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

**Defective or damaged work****1.29 DEFECTIVE OR DAMAGED WORK**

Repair defective, damaged and marked elements, or replace them where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Refer to individual work sections for any special requirements.

**Hot work - fire safety****1.30 HOT WORK**

Generally, to [NZS 4781](#) Code of Practice for Safety in Welding and Cutting, includes but not limited to: Welding; flame cutting; disc cutting; grinding; bitumen blowers; blow lamps; brazing; burning off; soldering; use of hot air guns.

Note - where the standard refers to the use of asbestos, alternative fire-resistant materials are to be used.

**1.31 COMBUSTIBLE MATERIAL**

Manage fire risk to adjacent combustible materials by isolating hot work at a safe distance away, or store combustible materials away from fire hazards. Additional precautions may be necessary if combustible material cannot be separated from hot work, refer to [NZS 4781](#), 6.1.4.

**1.32 HOT WORK PERMIT**

A hot work permit, issued by the main contractor, is required when it is not possible to isolate hot work from adjacent fire hazards. Refer to example in [NZS 4781](#), Appendix A.

**1.33 FIRE SYSTEMS**

Fire systems should remain operational where possible while welding or cutting work is performed. Where required, shield fire systems to [NZS 4781](#) clause 6.4.

**1.34 DURING SUSPENDED WORK**

Maintain a fire watch at least 30-minutes after hot works are suspended e.g. during lunch breaks or overnight, to [NZS 4781](#), clause 6.2.7.

For hot works in confined spaces, prevent potential ignition of flammable gases, to [NZS 4781](#) clause 6.5.



## Qualifications

### 1.35 QUALIFICATIONS GENERALLY

The work is to be carried out by workers and / or supervisors who are experienced, competent and familiar with the materials and the techniques specified. Workers must also be familiar with the manufacturers' and suppliers' installation and application instructions and standard details provided by them in relation to the use of the products for this project. If requested provide evidence of qualification / experience.

### 1.36 QUALIFICATIONS WORKERS – RESTRICTED BUILDING WORK

Where restricted building work (RBW) forms part of the contract works, workers, or supervisors of that work must be licensed building practitioners (LBP) holding current licenses for the particular restricted building work.

For rare instances where non-RBW also requires an LBP refer to individual work sections for details.

### 1.37 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Where required by a manufacturer or supplier, workers must be specifically trained /approved / accredited / registered / licensed / certified by them. Refer to individual work sections for details.

### 1.38 QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE

Where workers and / or supervisors of work are required to be licensed, registered or similar under legislation, they must have a current license before they start the work and maintain currency until their part of the work has been completed and all documentation that is required has been provided.

### 1.39 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Where workers and / or supervisors of work are required to be trained / licensed / certified or similar under industry rules or contractual requirements, they must have a current qualification before they start the work and maintain currency until their part of the work has been completed. Refer to individual work sections for details.

### 1.40 QUALIFICATIONS – PRODUCER STATEMENTS

Where producer statements are required for parts of the work, ensure that person is suitably qualified and authorized to issue such producer statements.

### 1.41 REPLACEMENT OF PERSON

Should it be necessary to replace a person, ensure that records of work, producer statements, warranties and the like required for the part of the work they have carried out are obtained.

Ensure that the replacement person takes responsibility for the work they carry out and that they are able to provide such records of work, producer statements, warranties and the like required as a condition of the contract and the building consent.

## Products

### 1.42 NEW PRODUCTS

Products to be new unless stated otherwise, of the specified standard, and complying with all cited documents.

### 1.43 COMPATIBILITY OF PRODUCTS

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

### 1.44 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Protect products during transit and delivery on site and / or off site. Reject and replace goods that are defective or damaged or will not provide the required finish.

Handle products carefully to avoid damage and distortion and in accordance with codes of practice and the manufacturer's or supplier's requirements. Avoid any contact with potentially damaging surfaces or conditions.



Store products to avoid visual damage, environmental damage, mechanical damage and distortion. Store in accordance with codes of practice and the product manufacturer's or supplier's requirements. Maintain the proper condition of any protective packaging, wrapping and support.

Refer to individual work sections for any special requirements.

#### 1.45 SUBSTRATE CONDITIONS

Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.

#### 1.46 INSTALLING PRODUCTS

Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.

#### 1.47 COMPLY WITH STANDARDS

Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.

#### 1.48 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

#### 1.49 INCOMPATIBLE PRODUCTS

Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

### **Samples**

#### 1.50 SAMPLES FOR REVIEW

Where specified in the work sections submit samples and any nominated supporting documentation to the named reviewer and notify the contract administrator of the submission. Where no person is named as the reviewer, submit to the contract administrator.

Samples for review may be described as a portable sample for review, portable control sample, fixed sample for review or fixed control sample. A portable sample refers to a sample that is easily movable, convenient for carrying. A fixed sample refers to a sample that is not portable. If the location of a fixed sample is not defined in the work section, obtain direction from the contract administrator.

For samples that are located on site, or by agreement with the contract administrator are located off site, notify the reviewer and contract administrator of their location and availability for review.

Timing for the provision and review of samples is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review. Allow for such resubmission and further review as may be required. No extension of time will be allowed for resubmission and further review.

Obtain written instructions in relation to the samples from the contract administrator. Do not proceed further with related work items until advised to continue.

Samples may be incorporated in the finished work if confirmed in writing by the contract administrator, otherwise allow to completely remove any fixed samples. Remove from the site any rejected samples.

Refer to SAMPLES clauses in work sections for further detail.

#### 1.51 CONTROL SAMPLES

Samples become control samples if an instruction is given by the contract administrator to that effect. Control samples will be used for comparison purposes throughout the contract. Control samples may be portable or fixed in place, refer to SAMPLES clauses in work sections for further detail.



Control samples that are to remain on site, or otherwise in the care of the contractor, are to be maintained in original condition.

If confirmed by the contract administrator, fixed control samples may be incorporated in the finished work, otherwise allow to remove fixed control samples from site when instructed by the contract administrator.

#### 1.52 OTHER SAMPLE REQUIREMENTS

Where specified in the work sections obtain samples for the purposes described.

##### **Prototypes**

#### 1.53 PROTOTYPES - TESTING

Where specified in the work sections provide and test prototypes. Timing for the provision, testing, disassembling, re-assembling, retesting and review of prototypes and test results is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for each review of test results. Submit test results to the named reviewer and to the contract administrator. Where no person is named as the reviewer submit test results to the contract administrator.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - TESTING clauses in work sections for further detail.

#### 1.54 PROTOTYPES - REVIEW

Where specified in the work sections provide prototypes for review. Timing for the provision, disassembling, re-assembling and review of prototypes is to be included in the contract programme. Where no time is stated in a work section allow 10 working days for review by the named reviewer. Where no person is named as the reviewer notify the contract administrator for direction.

Obtain written instructions in relation to the prototype from the contract administrator. Do not proceed further with related work items until advised to continue.

Refer to PROTOTYPES - REVIEW clauses in work sections for further detail.

#### 1.55 PROTOTYPES - GENERAL

Refer to the PROTOTYPES - TESTING and PROTOTYPES - REVIEW clauses in work section for details on what is to happen after the review and or testing of the prototype is complete. Where no information is provided refer to the contract administrator for direction.

Prototypes may become control samples if an instruction is given by the contract administrator to that effect.

##### **Spares & maintenance products**

#### 1.56 SPARES & MAINTENANCE PRODUCTS

Collect, protect, package, label and store safely all spares and maintenance products specified in the work sections. Give the contract administrator an inventory of all spares and maintenance products.

If no instruction is given within a work section for the location of spares and maintenance products, then deliver to the owner.

If no instruction is given within a work section for timing in relation to the provision of spares and maintenance products, then provide at practical completion.

Refer to SPARES & MAINTENANCE PRODUCTS clauses in work sections for further detail.



## Cleaning during the works

### 1.57 PERIODIC SITE CLEANING

Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site. Keep food waste separate from construction waste.

### 1.58 TRADE CLEANING

Keep the work area clean, remove of all debris, unused and temporary materials and elements from the site as work progresses and on completion. Refer to individual work sections for any specific requirements.

## Remove protection

### 1.59 REMOVE PROTECTION

Remove all temporary markings, labels, packaging and coverings to products unless instructed otherwise, or where they are required for protection.

Maintain temporary protection until removal is required by the manufacturer/supplier, the execution of the work or the requirements of individual work sections. Re-establish protection as necessary.

Remove temporary protection and special protection immediately prior to practical completion or before when there is no further risk of damage.

Refer to individual work sections for any special removal requirements.

## Completion

### 1.60 SPECIAL REQUIREMENTS

Refer to individual work sections for any special completion requirements.

### 1.61 LEAVE WORK

Leave work to the standard required for the following procedures.

### 1.62 COMPLETION - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

### 1.63 REMOVE CONSTRUCTION WASTE

Remove all debris, unused materials and the like from the site. Arrange for material to be recycled to be collected or delivered to the recycler.

### 1.64 COMPLETE ALL SERVICES

Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.

### 1.65 CLEANING BY CONTRACTOR

Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:

- Wipe all surfaces to remove construction dust.
- Clean out service ducts and accessible concealed spaces.
- Clean out all gutters and rainwater heads.
- Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass. Do not use metal scrappers that may damage the glass.
- Remove adhesive residue left by labels and other temporary protection/markings.
- Clean out the interior of all cabinetry.
- Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
- Remove rubbish and building material from the area immediately adjacent to the contract works.



## Commissioning

### 1.66 SPECIAL REQUIREMENTS

Refer to individual work sections for any special commissioning requirements.

### 1.67 MOVING PARTS

Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.

### 1.68 COMMISSIONING - TESTS & CERTIFICATION

Carry out tests as detailed in the work sections. If testing identifies a failure to meet performance requirements, notify the contract administrator and any nominated recipient, identify and correct the cause of failure and repeat the test. Submit test results and certification documentation to the contract administrator and any nominated recipient.

### 1.69 INSTRUCTION AND DEMONSTRATION

Provide instruction and demonstration to the owner/occupier to the extent that is listed below and as required for them to reasonably occupy and use the building. This is to include at least the following:

- Location and isolation of all services connections.
- Operation of all emergency systems.
- Locking and security arrangements.
- Operation of basic building services including lighting, heating, mechanical ventilation, air conditioning and security.
- Special cleaning requirements and procedures.
- Any other features that the owner/occupier needs to know about.

### 1.70 SECURITY AT COMPLETION

Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

## Practical completion submission

### 1.71 ADDITIONAL PRACTICAL COMPLETION INFORMATION

In addition to requirements in the contract and contained elsewhere in the specification provide the following information submissions for practical completion:

- All documents which the contractor has obtained on behalf of the owner/occupier.
- Information required by the owner/occupier to be able to use the building.
- Advice that NUO accounts in the contractor's name have been closed and as appropriate changed to be in the name of the owner/occupier.
- A list of persons to be contacted to carry out any emergency or remedial work including 24 hour/7 day contact details.

### 1.72 ADDITIONAL PRACTICAL COMPLETION REQUIREMENTS

Refer to the conditions of contract for the definition of practical completion and the conditions relating to practical completion.

## Defects period submissions

### 1.73 DEFECTS REMEDIATION - SUBMISSIONS

Provide the following at periods required by the contract administrator, where no period is stated, provide this information monthly:

- A copy of the contractor's check list identifying remaining defects and omissions to be completed recording progress made in completing and correcting the items.
- A copy of lists issued by the principal/employer identifying omissions and defects recording progress made in completing and correcting the items.
- A copy of lists issued by the contract administrator identifying omissions and minor defects recording progress made in completing and correcting the items.



## Completion submissions

### 1.74 FINAL COMPLETION - SUBMISSIONS

In addition to requirements in the contract and contained elsewhere in the specification provide:

- Contractors advice that all defects have been corrected and omissions and deferred work completed.
- All documents which the contractor has obtained on behalf of the owner/occupier.



## 3114E EXPOL UNDERSLAB INSULATION

### 1 GENERAL

This section relates to the supply and installation of Expol insulation foam boards for concrete slabs on ground.

It includes:

- EPS and XPS under slab insulation foam boards
- XPS slab edge insulation foam boards

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

DPM	Damp proof membrane
EPS	Expanded polystyrene
XPS	Extruded polystyrene

#### Documents

#### 1.2 DOCUMENTS

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

<a href="#">NZBC H1/AS1-AS2</a>	Energy efficiency
AS 1366.3	Rigid cellular plastic sheets for thermal insulation - Rigid cellular polystyrene - Moulded (RC/PS - M)
<a href="#">NZS 4246</a>	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/ <a href="#">NZS 4859.1</a>	Thermal insulation materials for buildings - General criteria and technical provisions

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Expol under slab / slab edge insulation brochures  
 Expol technical product guide  
 Expol technical data sheets  
 Expol ThermaSlab edge installation instructions  
 Expol BPIR

Company	Expol Ltd
Web:	<a href="http://www.expol.co.nz">www.expol.co.nz</a>
Email:	tech@expol.co.nz
Telephone:	09 634 3449 / 0800 863373
Facsimile:	09 634 0756

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years	For EPS insulation products
15 years	For XPS insulation products

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation



Refer to the general section 1237 WARRANTIES for additional requirements.

## 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

### Requirements

## 1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

## 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## 2 PRODUCTS

### Materials - under slab insulation

## 2.1 EXPOL SLABX200

Expol SlabX200, a 200kPa rated EPS under slab insulation sheets to AS 1366.3 and [AS/NZS 4859.1](#). Available in 2400mm x 1200mm and in a range of thicknesses. Refer to SELECTIONS.

## 3 EXECUTION

### Conditions

## 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

## 3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

## 3.3 PROTECT

Do not subject the polystyrene to prolonged saturation or exposure to sunlight. Do not allow the polystyrene to come into contact with solvents.

## 3.4 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### Installation/application

## 3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

## 3.6 INSTALLATION - GENERAL

Install under slab insulation to [NZBC H1/AS1-AS2](#) and Expol Ltd installation requirements. Also install to [NZS 4246](#) for all housing and buildings up to 300m<sup>2</sup>.

## 3.7 INSTALL UNDERSLAB INSULATION

Install the polystyrene sheets once the polythene DPM has been laid. Place the polystyrene sheets on top of the polythene DPM and butt together. Do not place the polystyrene under any footings or slab thickenings. Cut holes in the polystyrene with a sharp knife to accommodate any services. Lay reinforcing steel mesh over the polystyrene on mesh chairs



**Completion**

3.8 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.expol.co.nz](http://www.expol.co.nz).  
Substitutions are not permitted to the following, unless stated otherwise.

**Materials - under slab insulation**

4.1 EXPOL SLABX200

Location:	Refer drawings
Brand:	Expol SlabX200
Size:	2400mm x 1200mm
Thickness:	Refer drawings
Compressive resistance at 10%:	200kPa



## 3821M MITEK TIMBER FRAMING

### 1 GENERAL

This section relates to the supply and erection of timber framing:

- as a framed structure
- as a partitioning system
- with **MiTek® LUMBERLOK®** timber connectors
- with **MiTek® BOWMAC®** structural brackets

#### 1.1 RELATED WORK

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

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

SG Structural grade (to [NZS 3604](#), 1.3 **Definitions**)

#### Documents

#### 1.3 DOCUMENTS

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

<a href="#">NZBC B2/AS1</a>	Durability provisions for building elements
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
<a href="#">AS/NZS 2904</a>	Damp-proof courses and flashings
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3603</a>	Timber structures standard
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 3622</a>	Verification of timber properties
<a href="#">NZS 3631</a>	New Zealand timber grading rules
<a href="#">NZS 3640</a>	Chemical preservation of round and sawn timber
AS/NZS 4347	Damp-proof courses and flashings - Methods of test
<a href="#">WorkSafe</a>	<a href="#">Guidelines for the provision of facilities and general safety in the construction industry.</a>
BRANZ BU 673	Cavity battens
CodeMark™	MiTek LUMBERLOK® Timber Connectors
<a href="#">CMNZ70024</a> ver6	
<b>*A copy of <a href="#">NZS 3604</a> Timber-framed building, must be held on site.</b>	

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

MiTek® (GANG-NAIL®) GANGLAM Manual  
 MiTek® (GANG-NAIL®) FLITCH BEAM Manual  
 MiTek® Structural fixings on-site guide for Building Code compliance 2024 edition - references [NZS 3604:2011 B1 & B2 NZBC](#).  
 MiTek® LUMBERLOK® Floor Joist Stiffener

Manufacturer/supplier contact details

Company: **MiTek New Zealand Limited**  
 Web: [www.mitek.nz](http://www.mitek.nz)  
 Email: [design.mitek.nz@mii.com](mailto:design.mitek.nz@mii.com)  
 Telephone: 0800 464 835



## Requirements

### 1.5 QUALIFICATIONS

Workers to be experienced, competent trades people familiar with the materials and techniques specified.

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## Compliance information

### 1.7 COMPLIANCE - CODEMARK CERTIFICATE

MiTek LUMBERLOK timber connectors meet the requirements of the NZBC when used within the conditions and limitations of CodeMark Certificate of Conformity [CMNZ70024](#) ver6.

### 1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the manufacturer / importer / distributor
- Manufacturer's, importer's or distributors warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

## Performance - Wind and Bracing (design by contractor)

### 1.9 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer's requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

### 1.10 DESIGN PARAMETERS - BRACING

Design the system and its anchorages/fixings to the manufacturer's requirements and to resist the loads as appropriate for the projects wind zone and earthquake zone stated in the general section 1220 PROJECT.

## 2 PRODUCTS

### Materials

#### 2.1 DIMENSIONS

All timber sizes except for roof battens and other non-gauged timber are actual minimum dried sizes.

#### 2.2 TIMBER FRAMING, TREATED

Species, grade and in service moisture content to [NZS 3602](#), [NZBC B2/AS1](#) and treatment to [NZS 3640](#), [NZBC B2/AS1](#). Structural grade (SG) to [NZS 3604](#), [NZS 3622](#) with properties to [NZS 3603](#).

#### 2.3 APPEARANCE TIMBERS

Graded to [NZS 3631](#), treated where required by [NZBC B2/AS1](#), [NZS 3602](#), table 1, and treatment to [NZS 3640](#).

#### 2.4 STRAPPING

Treated to [NZBC B2/AS1](#), [NZS 3602](#), table 1 and to [NZS 3640](#), clause 6.3.1.

Species:	Radiata pine
Grade:	SG6
Size:	70mm x 45mm, 45mm x 45mm or 45mm x 19mm



## 2.5 WALL DWANGS, NOGS AND BLOCKING

If dwangs, nogs or blocking are required for exterior insulated walls, ensure they are not full depth of framing. Install flush with face of wall required, leaving a minimum 20mm or 45mm preferable gap to the other face to [NZS 3604](#), 8.8. Dwangs and nogs if required to be at 1350mm centres maximum to [NZS 3604](#), 8.8.

## 2.6 EXTERIOR CAVITY WALL BATTENS - TIMBER - NON-STRUCTURAL

To [NZBC E2/AS1](#). H3.1 Radiata pine battens, 20mm thick, 45mm minimum width, and height to match timber framing studs. To [NZS 3602](#), table 1, reference 1D.10, Requirements for wood-based building components to achieve a 50-year durability performance.

## 2.7 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

### Components

## 2.8 NAILS

Type to [NZS 3604](#), section 4, **Durability**, and of the size and number for each particular types of joint as laid down in the nailing schedules of [NZS 3604](#), sections 6-10.

## 2.9 BOLTS AND SCREWS

Bolts and screws of engineering and/or coach type complete with washers, to the requirements of [NZS 3604](#), section 4, **Durability**, and of the number and form required for each particular junction to [NZS 3604](#), sections 6-10.

## 2.10 CONNECTORS

**MiTek® LUMBERLOK®** timber connectors (timber to timber, timber to concrete, timber to steel) to suit application to [NZS 3604](#). Refer to SELECTIONS for type and size.

## 2.11 BRACING

**MiTek® LUMBERLOK®** bracing connectors, angle bracing or strlp bracing to suit application to [NZS 3604](#); section 8, Walls and section 10, Roof Framing. Refer to SELECTIONS for wall, ceiling, roof truss and rafter bracing types.

## 2.12 HANGERS

**MiTek® LUMBERLOK®** brackets and hanger connectors. Refer to SELECTIONS for type and size.

## 2.13 TIE DOWN, STRAPS AND TIES

**MiTek® LUMBERLOK®** tie downs, straps and ties to suit application to [NZS 3604](#); section 7, Floors and section 10, Roof framing. Refer to SELECTIONS for type and size.

## 2.14 SUBFLOOR FIXINGS

**MiTek® LUMBERLOK®** subfloor fixings and connectors to suit application to [NZS 3604](#); section 6, Foundations and subfloor framing. Refer to SELECTIONS for type and size.

## 2.15 JOIST PENETRATION STRENGTHENING

**MiTek® LUMBERLOK®** Floor Joist Stiffeners for strengthening timber joist penetrations allowing larger holes than [NZS 3604](#). Refer to SELECTIONS.

## 2.16 GENERAL FIXINGS

**MiTek® LUMBERLOK®** general fixings including **MiTek® LUMBERLOK®** Nailon Plates to suit application to [NZS 3604](#). Refer to SELECTIONS for type and size.

## 2.17 THREADED RODS

Use stainless steel threaded rods of the required length, with washers and nuts at both ends, when stainless steel bolts of the required length are not available.

## 2.18 POWDER ACTUATED FASTENERS

To type, size and charge required by the powder actuated tool manufacturer for each particular member and the substrate.



## 2.19 CORROSION RISKS

For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89).

## 3 EXECUTION

### Conditions

#### 3.1 PROTECT TIMBER

Protect all timber against damage and from inclement weather. Ensure that any variation in moisture content is kept to a minimum, before and after erection and before enclosure.

#### 3.2 EXECUTION

Execution to comply with [NZS 3604](#), except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

#### 3.3 SEPARATION

Separate all timber framing timbers from concrete, masonry and brick by: -

- a full length polyethylene damp-proof membrane overlapping timber by at least 6mm; or
- a 12mm minimum free draining air space

#### 3.4 FRAMING MOISTURE CONTENT

Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings, for framing to which linings are attached.

- At erection: 24% EMC maximum
- At enclosure: 20% EMC maximum
- At lining: 16% EMC maximum

#### 3.5 TOLERANCES

Permissible deviations from established lines, grades and dimensions equal to or less than the following. Multiples of given limits are not cumulative.

- Deviation in plan, up to 10 metres, 5mm
- Deviation in plan, over 10 metres, 10mm total
- Deviation from horizontal and vertical, within openings, 3mm.
- Deviation from vertical position per 3 metres, 3mm
- Deviation from horizontal, over 10 metres, 10mm total
- Deviation from horizontal, up to 10 metres, 5mm

### Application

#### 3.6 SET-OUT

Set-out framing generally in accordance with the requirements of [NZS 3604](#), to carry superimposed loads and as required to support sheet linings and claddings. When necessary, provide framing to suit any required cladding/lining control joints and sheet joints.

#### 3.7 SET TIMBERS

Set timbers true to required lines and levels with mitres, butt joints, laps and housings cut accurately to provide full and even contact over the whole of the bearing surface.

#### 3.8 TIMBER CUTTING

Select and cut spanning members to minimise allowable defects and avoiding knots and short grain on edges in the middle third, and shakes, splits and checks at mid-span and close to ends.



### 3.9 TIMBER PLATES AND FURRING

Fix to steelwork with bolts and washers or approved proprietary fastenings at 1 metre maximum spacing and not less than 2 fixings to each member, or to engineering specific design.

### 3.10 HOLES AND NOTCHES

Limit holes and notches, checks and half-housing for the structure to those allowable in [NZS 3604](#). Neatly form holes and notches for services without lessening the structural integrity of the member.

### 3.11 CUTTING

Cutting for straightening to comply with [NZS 3604](#), 8.5.3, **Straightening studs**.

### 3.12 EXPOSED TIMBER CONNECTORS AND FIXINGS

Do not use steel timber connectors and fixings on any structural framing exposed to view unless detailed on the drawings.

### 3.13 POWDER-ACTUATED FASTENING TOOLS

Comply with the requirements of [WorkSafe](#) and the [Health and Safety at Work Act 2015](#). Powder-actuated fastening tool operators to have the appropriate current Certificate and/or Licence and tools to have the appropriate certificate of fitness if necessary.

### 3.14 ADDITIONAL FRAMING

Position and fix all necessary members for the fixing of all services, fittings, fixtures, edges of linings or claddings, and to provide lateral support to load carrying framing.

### 3.15 FORM NAILED JOINTS

Fully drive nails in all structural joints with the number and location for each particular joint, to the requirements of the nailing schedules of [NZS 3604](#). Where splitting could occur, pre-drill to 80% of nail diameter.

### 3.16 FORM BOLTED JOINTS

Drill for and set bolts to ensure full bearing and development of the joint strength, with tension to just set the washers into timber or to engineering specific design.

### 3.17 FIT CONNECTORS AND FIXINGS

Fit connectors and fixings to obtain full bearing over all contact surfaces and full development of the required loading capacity for that particular joint and in accordance with MiTek® requirements or to engineering specific design.

### 3.18 FIT CAVITY BATTENS

Fit and fix 20mm cavity battens over wall underlay or rigid air barrier. Temporary fix battens before being permanently fixed into the framing with the cladding fixings, to the requirements of the manufacturer or to [NZBC E2/AS1](#) and [BRANZ BU 673](#). Make allowances for cladding control joints where required. Fit and fix related flashings. Fit and fix cavity closers to base of walls, open horizontal (or raking) junctions and over openings (windows, meters etc). Use cavity spacers set to 5° fall where fixing is required between cavity battens.

### 3.19 FIT BRACING

Fit and fix subfloor, wall and roof bracing elements to the requirements of MiTek® and to [NZS 3604](#), to develop the full number of bracing units required.

### 3.20 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

## Completion

### 3.21 CLEAN UP

Clean up timber framing as the work proceeds so no offcuts, chips, sawdust or any other matter or items remain behind the claddings or linings.

### 3.22 LEAVE

Leave work to the standard required by following procedures.

### 3.23 REMOVE

Remove debris, unused materials and elements from the site.



## 4 SELECTIONS

### 4.1 SUB-FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Bearers:	Radiata pine	SG8	H1.2
Ground floor joists:	Radiata pine	SG8	H3.2

### 4.2 FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Mid floor joists:	Radiata pine	SG8	H1.2
Boundary joists:	Radiata pine	SG8	H1.2
Cantilevered joists enclosed decks and balconies:	Radiata pine	SG8	H3.2

### 4.3 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H1.2
Nogs	Radiata pine	SG8	H1.2

### 4.4 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H1.2
Purlins:	Radiata pine	SG8	H1.2

### 4.5 INTERIOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H1.2
Structural and braced walls:	Radiata pine	SG8	H1.2

### 4.6 CAVITY BATTENS

Cavity battens	Species	Grade	Treatment
Timber - Non Structural:	Radiata pine	Merch	H3.1
Proprietary - non structural:	Polypropylene	VENT VB20	n/a

### 4.7 SPECIAL FRAMING ELEMENTS

Member	Species	Grade	Treatment
Exposed posts:	Radiata pine	Refer Engineering	H5 - preprimed

### 4.8 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section



## 3827E ECOPLY® PLYWOOD BRACING SYSTEM

### 1 GENERAL

This section relates to the use of Ecoply® sheets for structural wall bracing:

#### 1.1 RELATED WORK

Refer to 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM for plywood used as a rigid air barrier.

Refer to 5113G GIB® PLASTERBOARD LININGS for Gib® Plasterboard bracing used in conjunction with Ecoply® Barrier Bracing System.

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FSC® Forest Stewardship Council®

#### Documents

#### 1.3 DOCUMENTS

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZBC E2/AS1	External moisture
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Part 3: Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

#### 1.4 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Ltd documents relating to work in this section are:

Ecoply® Specifications and Installation Guide  
Ecoply® Technical Notes.

Manufacturer/supplier contact details

Company: Carter Holt Harvey Plywood Limited

Web: [chply.co.nz](http://chply.co.nz)

Email: [info@ecoply.co.nz](mailto:info@ecoply.co.nz)

Telephone: 0800 326 759

#### Requirements

#### 1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

#### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.



**Performance**

1.7 BRACING SYSTEM

The Ecoply® bracing system provides bracing resistance for walls and subfloor foundations for light timber framed buildings under wind and earthquake loading to [NZBC B1 Structure](#), and to [NZS 3604 Timber Framed Buildings](#) or specifically designed to [NZS 3603 Timber Structure Standard](#).

Provide braced wall systems using Ecoply® Bracing Specifications to meet the requirements of [NZS 3604](#) when tested to BRANZ Technical Paper P21. Refer to drawings for location and type.

Refer to table for summary of P21 Ratings for 2.4m high Ecoply® wall element:

Brace No.	Minimum wall length	Lining Requirements	Bus/m Wind	Bus/m Earthquake
EP1	0.4m	7-12mm Ecoply® one side	80	95
EP1	0.6m	7-12mm Ecoply® one side	95	105
EP1	1.2m	7-12mm Ecoply® one side	120	135
EPG	0.4m	7-12mm Ecoply® one side and 10mm Gib® Standard plasterboard other side	100	115
EPG	1.2m	7-12mm Ecoply® one side and 10mm Gib® Standard plasterboard other side	150	150

Note:

- Plywood must be connected to both bottom and top plate for bracing.
- GIB Handibrac hold down connections required each end of bracing elements.
- Maximum 120 Bus/m for any bracing element on timber framed floor ([NZS 3604](#))
- Bracing and other technical information has been specifically tested using Ecoply structural plywood. This information cannot be used with any other plywood brand and bracing data must be sought directly from the specific plywood manufacturer.

**2 PRODUCTS**

**Materials**

2.1 ECOPLY® STRUCTURAL PLYWOOD

Radiata pine veneer ply manufactured to [AS/NZS 2269.0](#), DD face grade or better, 7mm minimum thick, H3.2 CCA treated to [AS/NZS 1604.3](#).

**Components**

2.2 NAILS

Nail fixing for Ecoply® used as a structural bracing

Fixing type	Minimum nail length
Direct Fixed	50 x 2.8mm flat head hot dipped galvanized or stainless steel annular grooved nails

**Accessories**

2.3 TREATMENT OF SHEET CUTS

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear or Green colour product.

**3 EXECUTION**

**Conditions**

3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.



- Ecoply panels must be stored and handled with care to maintain good condition before use and after installation.
- Store protected from sun, rain and wind that would otherwise bring about rapid changes in temperature and humidity.
- Store sheets stacked flat (not on edge) and support for the sheets must be provided at both ends and middle to avoid distortion. Ensure bearers in packs above are aligned over bearers below (to avoid inducing curves in sheets).
- The stack must be kept dry and clear of ground contact, and placed so that it will not be exposed to mechanical damage.
- To avoid staining, fading and surface checking, the sheets must not be exposed to the weather while awaiting installation.
- Store in well-ventilated areas away from sources of heat, flames or sparks.

### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

### 3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

Check work previously carried out and confirm it is of the required standard for this part of the work.

Use Kiln dried framing, e.g. Laserframe, in accordance with timber framing manufacturers specifications and treated in accordance with [NZS 3602](#). All timber frame sizes and set out must comply with [NZS 3604](#) (or be specially designed to [NZS 3603](#)).

Ensure all Ecoply® sheet edges and joints will be fully supported. Studs maximum 600mm centres with the framing width of 45mm at each Ecoply® sheet joint.

## Application

### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

### 3.5 BOTTOM PLATE FIXING

Use Gib HandiBrac® hold-down connections at each end of bracing element. Refer to the installation instructions supplied with connectors for correct bolt types to be used for either concrete or timber floors. Within the length the bracing element, bottom plates are fixed to the requirements of [NZS 3604](#).

### 3.6 NAIL FASTENERS TO BRACING ELEMENT

Place nail fasteners at 150mm centres around perimeter, no less than 7mm or 3 fastening diameters from edge of the Ecoply® sheet and 300mm centres on intermediate supports of each Ecoply® sheet.

### 3.7 FIXING ECOPLY® STRUCTURAL PLYWOOD SHEETS

Fit and fix to Ecoply Bracing Specification and Installation Guide.

Install one layer of 7mm Ecoply plywood fixed directly to framing. If part sheets are used, ensure nailing at required centres is carried out around the perimeter of each sheet or part sheet. Allow 2-3mm expansion gap between sheets.

### 3.8 TREATING CUT EDGES

Treat cut edges and penetration cut outs of Ecoply® sheet with Soudal Metalex to Soudal requirements.

### 3.9 FIXING GIB® PLASTERBOARD SHEETS

Fix Gib® plasterboard sheets to with relevant GIB® literature. Refer to the appropriate Gib® Plasterboard section.

## Completion

### 3.10 PROTECTION

Protect work from the weather until it is covered, coated or sealed.



### 3.11 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS

For further details on selections go to [chply.co.nz](http://chply.co.nz).  
Substitutions are not permitted to the following, unless stated otherwise.

### 4.1 ECOPLY RADIATA PINE CERTIFIED SUSTAINABLE TIMBER

Product: Ecoply® Structural Plywood  
 Certification type: [FSC](#)  
 Timber species: Pinus Radiata  
 Origin: New Zealand  
 Claim: [FSC Mix](#)

### 4.2 ECOPLY® STRUCTURAL PLYWOOD

Location: Refer to drawings and bracing calculations  
 Manufacturer: Carter Holt Harvey Plywood Ltd  
 Brand/grade: Ecoply® DD or better A BOND  
 Stress grade: F8  
 Thickness: 7mm  
 Treatment: H3.2 CCA

### 4.3 BRACING SYSTEMS

Refer to Ecoply® Specification and Installation Guide for specific bracing details, and to relevant GIB® literature for bracing element fixing details. For location refer to drawn documentation and bracing calculations.



# 4161T KINGSPAN THERMAKRAFT UNDERLAYS, FOILS, DPC, DPM, & TAPES

## 1 GENERAL

This section relates to the supply and installation of Kingspan's Thermakraft product range including DPC, DPM, Wall & Roof Underlays, Foils, Flashing Tapes, and accessories.

### 1.1 RELATED WORK

Refer to 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM for rigid air barrier system

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

DPC	Damp proof course
DPM	Damp proof membrane
EPDM	Ethylene propylene diene monomer

The following definitions apply specifically to this section:

Wall underlay	The same meaning as defined in <a href="#">NZBC E2/AS1</a> , covering kraft based and synthetic wall underlays, sometimes called wall wraps, building wraps or building papers.
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### Documents

### 1.3 DOCUMENTS

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

<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
<a href="#">AS/NZS 2904</a>	Damp-proof courses and flashings
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4229</a>	Concrete masonry buildings not requiring specific engineering design
<a href="#">AS/NZS 4347</a>	Damp-proof courses and flashings - Methods of test
<a href="#">AS/NZS 4389</a>	Roof safety mesh
<a href="#">AS/NZS 4534</a>	Zinc and zinc/aluminium-alloy coatings on steel wire
CodeMark <a href="#">CMNZ10002</a> ver04	Watergate Plus Wall Underlay
CodeMark <a href="#">CMNZ30028</a> (Rev J)	Thermakraft Covertex 407 Roof and Wall Underlay
CodeMark <a href="#">CMNZ30030</a> (Rev J)	Thermakraft Covertex 405 Roof and Wall Underlay
CodeMark <a href="#">CMNZ30069</a> (Rev I)	Thermakraft Covertex 403 Roof and Wall Underlay

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Thermakraft's Product Data Sheets

Thermakraft's Installation Guides

[BRANZ Appraisal 329](#) (2022) - Supercourse 500 Damp-Proof Course and Concealed Flashing - Amendment 29.08.2023

[BRANZ Appraisal 651](#) (2024) - Thermakraft Covertex 407 Roof and Wall Underlay - Amended 01.07.2025

[BRANZ Appraisal 695](#) (2023) - Watergate Plus Wall Underlay - Amended 01.07.2025

[BRANZ Appraisal 743](#)(2025) - Thermakraft Covertex 405 Roof and Wall Underlay

[BRANZ Appraisal 878](#) (2025) - Thermakraft Aluband Window Flashing Tape

[BRANZ Appraisal 912](#) (2021) - Thermakraft 220 Synthetic Wall Underlay - Amended 01.07.2025

[BRANZ Appraisal 917](#)(2025) - Thermakraft Covertex 403 Roof and Wall Underlay



[BRANZ Appraisal 942](#) (2022) - OneSeal Multi-fit Pipe and Cable Penetration Seals - Amendment 04.06.2024

[BRANZ Appraisal 943](#) (2021) - Thermakraft Covertek 401 Roof and Wall Underlay - Amended 01.07.2025

[BRANZ Appraisal 1000](#) (2023) - Thermakraft Thermabar 397 Light Diffusing Reflective Underlay - Amended 01.07.2025

[BRANZ Appraisal 1029](#) (2023) - Thermakraft Ausnet Hexagonal Wire Mesh

[BRANZ Appraisal 1104](#) (2020) - Thermathene Orange Concrete Underlay - Amendment 06.09.2024

[BRANZ Appraisal 1122](#) (2020) - Thermaflash Flashing Tape - Amendment 02.09.2024

[BRANZ Appraisal 1229](#) (2023) - Thermakraft Covertek 215 Roof Underlay - Amended 19.06.2025

[BRANZ Appraisal 1277](#) (2025) - Thermakraft RainArmor Self Adhesive Roof Underlay and Wall Underlay

Manufacturer/supplier contact details

Company: Kingspan Insulation NZ Ltd

Web: [www.thermakraft.co.nz](http://www.thermakraft.co.nz)

Email: [technical@kingspaninsulation.co.nz](mailto:technical@kingspaninsulation.co.nz)

Telephone: 0800 806 595

## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years For Kingspan Thermakraft product range.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## Compliance information - BRANZ appraised

### 1.8 BRANZ APPRAISED - THERMAKRAFT SUPERCOURSE 500

Thermakraft Supercourse 500 DPC has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 329](#)

## 2 PRODUCTS

### DPC

#### 2.1 THERMAKRAFT SUPERCOURSE 500

BRANZ appraised, 0.5mm thick embossed black film DPC composed of recycled alloyed polyethylene. Tested to [AS/NZS 4347](#) in accordance with [AS/NZS 2904](#). Available in various width. Refer to SELECTIONS.

#### 2.2 THERMAKRAFT PERIMETER

Sand coated black paper DPC composed of cardboard, bitumen and fine sand. Tested to [AS/NZS 4347](#) in accordance with [AS/NZS 2904](#). Available in various width. Refer to SELECTIONS.



## DPM

- 2.3 THERMAKRAFT THERMATHENE BLACK  
0.25mm x 4000mm wide black DPM composed of recycled alloyed polythene. Membrane has a vapour flow resistance of at least 90MNs/g to [NZS 3604](#) and [NZS 4229](#), Damp-Proof Membranes. Refer to SELECTIONS.

### Components - sealing

- 2.4 THERMAKRAFT WHITE GENERAL PURPOSE TAPE  
60mm wide, white polypropylene general purpose tape with acrylic adhesive. Refer to SELECTIONS.
- 2.5 SUPER-STICK BUILDING TAPE  
SUPER-STICK Building Tape®, a multi-layered silver polyester-faced, copolymer, self-adhesive tape. Utilizes a high tack pressure sensitive adhesive (PSA) combined with a high-performance toughened film. Tape is supplied in 75mm, 150mm and 200mm wide x 22.86m long rolls.

## 3 EXECUTION

### Conditions

- 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS  
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
- 3.2 ROUTINE MATTERS  
Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.
- 3.3 PRE-INSTALLATION REQUIREMENTS  
Check work previously carried out and confirm it is of the required standard for this part of the work.

### Installation/application - generally

- 3.4 STANDARDS AND TOLERANCES  
Refer to the general section 1270 CONSTRUCTION for general requirements.

### Installation - DPC

- 3.5 INSTALL DPC  
Ensure substrate's surface is smooth, flat and free from sharp ridges/projections that may puncture membrane. Install as a single layer with minimum 50mm overlap at joints to the Installation Guide.

### Installation - DPM

- 3.6 INSTALL DPM - CONCRETE FLOOR  
Install DPM over sand blinding below concrete floors, install in a neat fashion with a smooth surface as a single layer with minimum 150mm overlap at joints to the Installation Guide.
- 3.7 INSTALL DPM - SUSPENDED TIMBER FLOOR  
Install DPM on ground below suspended timber floors to [NZS 3604](#), Ground Cover:
  - In a manner draining water to the exterior and preventing water accumulation on membrane
  - Covering the total subfloor area
  - Weighted down and held against air movement by bricks or rocks
  - With minimum 75mm overlap at joints
  - Butted up to surrounding foundation walls, piles and other penetrating elements
- 3.8 APPLY TAPE TO LAPPED DPM JOINTS  
Ensure DPM is free of dust and contaminants, where required clean with a dry cloth. Apply tape to the Installation Guide centred over joint laps by firmly pressing down without stretching or pulling tape.



## Installation - Building Tape

### 3.9 SUPER-STICK BUILDING TAPE

To comply with Marshall Innovations Limited specification for Marshall Weatherization System, [BRANZ Appraisal 621](#) - The Marshall Weatherization System and [BRANZ Appraisal 846](#) - SUPER-STICK Building Tape®.

### 3.10 PREPARATION

Ensure all surfaces are clean, dry and free of any foreign matter that may adversely affect adhesion. Do not install tape below -6°C. When used in conjunction with LOSP treated timber, allow solvent to evaporate for a minimum of 7 days prior to application. Extend building wrap/underlay over opening and cut on a 45° angle away from each corner. Fold flaps into opening and secure to the interior face of framing.

## Completion

### 3.11 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS

For further details on selections go to [www.thermakraft.co.nz](http://www.thermakraft.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

### DPC

#### 4.1 DPC - THERMAKRAFT SUPERCOURSE 500

Location: Refer drawings  
 Manufacturer: Thermakraft  
 Brand: Supercourse 500  
 Type: Damp proof course

#### 4.2 DPC - THERMAKRAFT PERIMETER

Location: Refer drawings  
 Manufacturer: Thermakraft  
 Brand: Perimeter  
 Type: Damp proof course

### DPM

#### 4.3 DPM - THERMAKRAFT THERMATHENE BLACK

Location: Refer drawings  
 Manufacturer: Thermakraft  
 Brand: Thermathene Black  
 Type: Damp proof membrane  
 Width: 4000mm  
 Joint tape: White General Purpose Tape



## 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM

### 1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) Ecoply® Barrier as a rigid wall underlay and air barrier in residential and commercial buildings.

#### 1.1 RELATED WORK

Refer to 3827E ECOPLY® PLYWOOD BRACING SYSTEM for structural bracing.  
Refer to 4161 UNDERLAYS, FOILS AND DPC for underlay and flashing tape.

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FSC® Forest Stewardship Council®

### Documents

#### 1.3 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Part 3:Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber Structures Standard
NZS 3604	Timber-framed buildings
BRANZ Technical Paper P21	BRANZ Technical Paper P21 (2010): A wall bracing test and evaluation procedure

#### 1.4 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Limited documents relating to work in this section are:

Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide  
CHHPly Product Technical Statement – Ecoply® Barrier: Rigid Air Barrier  
Ecoply® Barrier data sheets  
CHHPly Safety Data Sheet - Ecoply® Barrier  
Ecoply® Barrier sITe App  
Ecoply® Barrier CAD drawings  
[BRANZ Appraisal 827](#) (2025) - Ecoply® Barrier Rigid Air Barrier

Manufacturer/supplier contact details

Company: Carter Holt Harvey Plywood Limited  
Web: [chhply.co.nz](http://chhply.co.nz)  
Email: [info@ecoply.co.nz](mailto:info@ecoply.co.nz)  
Telephone: 0800 326 759

### Requirements

#### 1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

#### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.



**Performance**

1.7 BRACING SYSTEM

The Ecoply® Barrier bracing system provides bracing resistance for walls of light timber framed buildings under wind and earthquake loading to [NZBC B1](#) and [NZS 3603](#). Bracing units are derived from BRANZ P21 test method.

- Refer to drawings for brace location, length and type.
- Refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide for bracing details.
- Refer to table for summary of P21 Ratings for 2.4m high Ecoply® Barrier wall bracing elements:

Brace type	Min. wall length	Lining Requirements	Gib HandiBrac® Hold-Downs	Bus/m Wind	Bus/m EQ
EPB1	0.4m	Ecoply® Barrier one side	Required	80	95
EPB1	0.6m	Ecoply® Barrier one side	Required	95	105
EPB1	1.2m	Ecoply® Barrier one side	Required	120	135
EP2	0.6m	Ecoply® Barrier each side	Required	105	115
EPBS	0.4m	Ecoply® Barrier one side	Not required	60	60
EPBS	0.6m	Ecoply® Barrier one side	Not required	60	65
EPBS	1.2m	Ecoply® Barrier one side	Not required	65	70
EPBS	2.4m	Ecoply® Barrier one side	Not required	80	90
EPBG	0.4m	Ecoply® Barrier one side & 10mm Gib® Standard plasterboard other side	Required	100	115
EPBG	1.2m	Ecoply® Barrier one side & 10mm Gib® Standard plasterboard other side	Required	150*	150*

Note\* - Maximum 120 Bus/m for any bracing element on timber framed floor ([NZS 3604](#))

Note:

- Plywood must be connected to both bottom and top plate for bracing.
- GIB Handibrac hold down connections required each end of bracing elements, unless otherwise specified.
- Bracing and other technical information has been specifically tested using Ecoply structural plywood. This information cannot be used with any other plywood brand and bracing data must be sought directly from the specific plywood manufacturer.

**2 PRODUCTS**

**Materials**

2.1 ECOPLY® BARRIER PLYWOOD

Ecoply® Barrier sheet, 7mm thick, 1197mm wide and 2440 and 2745mm long structural plywood. Manufactured from radiata pine to AS/NZS 2269. H3.2 CCA treated to E2/AS1 and [AS/NZS 1604.3](#) requirements. Beige polyester powder coated on front face and four edges. Sheets marked Ecoply® Barrier.

**Components**

2.2 NAILS

Nails to minimum durability requirements of the NZBC. Refer to [NZS 3604](#), section 4, Durability, for requirements for fixing material to be used in relation to the exposure conditions.

Fixing method:	Minimum nail type:	Zone:
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Hand driven	50 x 2.8mm (flat head or round head) hot-dip galvanized or better	B & C zones
Power driven Paslode Pneumatic Cladding Coil Nailer	Paslode Impulse 50 x 2.8mm hot-dip galvanized ring round head drive B20557 or better	B & C zones
Hand driven	50 x 2.8mm (flat head or round head) annular grooved stainless steel	D Zone

### 2.3 SEALING TAPE

Ecoply® Barrier Sealing Tape, 60mm x 30m tape for vertical sheet joints, grey colour. PP fleece carrier paper, siliconized release paper.

### 2.4 SILL TAPE

Ecoply® Barrier Sill Tape, 150mm x 20m and 200mm x 20m, black colour. Butyl rubber (with PE film) carrier paper, siliconized foil release paper.

### 2.5 FRAME SEALING TAPE

Ecoply® Barrier Frame Sealing Tape, 150mm x 30m and 200mm x 30m, grey colour. PP fleece carrier paper, siliconized release paper.

### 2.6 BRACING HOLD-DOWN CONNECTORS

Gib HandiBrac® hold-down brackets manufactured by Mitek™ NZ complete with mechanical fastener with a minimum 15kN uplift capacity for concrete floors and 150 x 12mm dia. galvanized coach screw for timber floors.

### 2.7 BRUSH ON TREATMENT

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear or green colour product.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

Check work previously carried out and confirm it is of the required standard for this part of the work.

Kiln dried verified structural grade timber, minimum SG8. Framing sizes and set outs to [NZS 3604](#) (or be specially designed to [NZS 3603](#)) with studs at 600mm maximum centres, nogs at 1350mm maximum centres. Treatment to [NZBC B2/AS1](#) and [NZS 3602](#).

Ensure all Ecoply® Barrier sheet edges and joints will be fully supported by being fastened to framing. The minimum framing width for fixing Ecoply Barrier is 45mm at each Ecoply® Barrier sheet joint.

### Application

#### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

#### 3.5 APPLICATION - GENERAL

Apply products to Carter Holt Harvey Plywood Limited requirements, refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide.

#### 3.6 TREAT CUTS

Treat cut ends with brush on timber preservative treatment.



### 3.7 FIXING ECOPLY® BARRIER SHEETS

Position Ecoply® Barrier sheets with the water-resistant powder coat film facing outwards with the long side of the sheet orientated vertically to framing members. Allow 2-3mm expansion gap between vertical sheet edges. Place any cut sheet ends at the top with the sealed sheet end at the bottom. Cover all other cuts and penetrations with Ecoply® Barrier Sealing tape. Sheets to overhang the bottom plate, joist or bearer by a minimum of 25mm.

### 3.8 FASTENERS - STANDARD NAILING PATTERN

Nail 7mm minimum from sheet edges at 150mm centres around perimeter of each sheet or part sheet, and 300mm centres within sheet body up to and including Very High wind zone, or 150mm centres within sheet body in Extra High wind zone. Finish fastener heads flush with the panel surface.

### 3.9 FIXING TO RESIST UPLIFT

For 4.7kN fixing of top plate to studs modify standard nailing pattern, nail sheet edge to top plate at 75mm centres, 20mm from the sheet edge and complete the remainder of the sheet fastening as per Ecoply® Barrier Specification.

### 3.10 LINTEL CONNECTION FOR UPLIFT

Nail framing and Ecoply® Barrier sheets to Ecoply® Barrier Specification and Installation Guide, lintel connection detail for uplifts not exceeding 7.5kN.

### 3.11 TAPE- GENERAL

Apply pressure to seal the Ecoply® tapes with minimal wrinkles in accordance with the Ecoply Barrier Specification and Installation Guide.

### 3.12 VERTICAL ECOPLY® BARRIER SHEET JOINTS - WALL PLANE

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over vertical joints in accordance with the Ecoply Barrier Specification and Installation Guide.

### 3.13 VERTICAL ECOPLY® BARRIER SHEET JOINTS - CORNERS

Ensure panels are clean, centre Ecoply® Barrier Sealing Tape over external and internal wall corners in accordance with the Ecoply Barrier Specification and Installation Guide.

### 3.14 HORIZONTAL SHEET JOINT - FACE SEAL

Face seal horizontal joints with Ecoply® Barrier 150mm Sealing Tape in accordance with the Ecoply Barrier Specification and Installation Guide. Provide a 5mm expansion gap between plywood sheets.

### 3.15 TAPE SPLICES & JOINTS

Where tape splices occur at a junction, create an overlapping splice of at least 50mm. Take special care to remove any wrinkles or voids at splice areas.

### 3.16 WINDOW & DOOR OPENINGS

Apply Ecoply® Barrier Sill Tape to cover the bottom of the opening and Ecoply® Barrier Frame Sealing Tape to the vertical trimmer stud and lintel, reinforce corners at each end of the lintel with 100m strip of Ecoply® Barrier 150m Frame Sealing Tape. Apply tapes in accordance with the Ecoply Barrier Specification and Installation Guide.

### 3.17 PENETRATIONS

Apply Ecoply® Barrier Sill Tape to flash to Ecoply® Barrier plywood sheet, provide 100mm minimum cover to sheet. Bandage around pipes with Ecoply® Barrier Frame Sealing Tape with 25mm minimum width of cover to pipe. Apply in accordance with the Ecoply Barrier Specification and Installation Guide.

Service penetrations may also be sealed using Pro Clima® Kaflex Cable sealing Grommets or Roflex Pipe Sealing Grommets. Ensure all Pro Clima® Installation instructions are followed.

### 3.18 BRACING SYSTEM - CONCRETE FLOORS

Use Gib HandiBrac® hold-down connections at each end of bracing element as required. In external walls position Gib HandiBrac® to the internal edge of the bottom plate. Refer to the installation instructions supplied with connectors for correct bolt types to be used for concrete floors. Within the length the bracing element fix bottom plates to the requirements of [NZS 3604](#).



**3.19 BRACING SYSTEM - TIMBER FLOORS**

Use Gib HandiBrac® hold-down connections at each end of bracing element as required. In external walls position Gib HandiBrac® in the centre of the perimeter joist or bearer. Refer to the installation instructions supplied with connectors for correct bolt types to be used for timber floors. Within the length the bracing element fix bottom plate to the requirements of [NZS 3604](#).

**3.20 FLASHINGS**

Apply Ecoply® Barrier Frame Sealing Tape to metal flashings in accordance with the Ecoply Barrier Specification and Installation Guide.

**Completion****3.21 COMPLETION MATTERS**

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [chhply.co.nz](http://chhply.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

**4.1 ECOPLY RADIATA PINE CERTIFIED SUSTAINABLE TIMBER**

Product: Ecoply® Barrier Plywood  
 Certification type: [FSC](#)  
 Timber species: Pinus Radiata  
 Origin: New Zealand  
 Claim: [FSC Mix](#)

**4.2 ECOPLY® BARRIER PLYWOOD**

Location: Timber framed exterior walls  
 Manufacturer: Carter Holt Harvey Plywood Limited  
 Brand: Ecoply® Barrier  
 Width: 1197mm  
 Thickness: 7mm  
 Treatment: H3.2 CCA

**4.3 ECOPLY® BARRIER BRACING**

Refer to Ecoply® Structural Rigid Air Barrier - Barrier Specification & Installation Guide for specific bracing details. For bracing element location refer to drawn documentation.



# 4221HH HERMPAC HORIZONTAL WEATHERBOARD CLADDING SYSTEM

## 1 GENERAL

This section relates to the supply and fixing of Hermpac Horizontal cladding:

- Bevel Back & Rebated Bevel Back weatherboards
- Rusticated weatherboards
- Splaycut & Multi-Splay weatherboards
- Cavity batten systems
- Fascia
- Mouldings
- Proprietary flashing systems

### 1.1 RELATED WORK

Refer to 3821 TIMBER FRAMING for exterior cavity battens & cavity closer

Refer to 4161 UNDERLAYS, FOILS AND DPC for underlay

Refer to 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM for plywood used as a rigid air barrier.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

<a href="#">FSC®</a>	Forest Stewardship Council®
<a href="#">PEFC</a>	Programme for the Endorsement of Forest Certification

### Documents

### 1.3 DOCUMENTS

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

<a href="#">NZBC B2/AS1</a>	Durability provisions for building elements
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">NZS 3602</a>	Timber and wood-based products for use in building
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 3617</a>	Profiles of weatherboards, fascia boards and flooring
BRANZ BU 411	Recommended Timber Cladding Profiles
JAS-ANZ CodeMark Certification <a href="#">CMNZ30037</a>	- Hermpac Rusticated, Splaycut and Multi-Splay Weatherboard Cavity System
JAS-ANZ CodeMark Certification <a href="#">CMNZ30038</a>	- Hermpac Bevelback and Rebated Bevelback Weatherboard Cavity System

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

#### [Hermpac Construction Drawings](#)

Hermpac Bevelback & Rebated Bevelback Weatherboard Cavity System Installation Specifications

Hermpac Bevelback & Rebated Bevelback Weatherboard Direct Fix System Installation Specifications

Hermpac Product Installation Checklist – Bevelback and Rebated Bevelback Weatherboard Cavity System (Aug 2023 V2)

Hermpac Product Technical Statement (PTS) – Bevelback & Rebated Bevelback (July 23)

Hermpac Rusticated, Splaycut & Multi-Splay Weatherboard Cavity System Installation Specifications

Hermpac Rusticated, Splaycut & Multi-Splay Weatherboard Direct Fix System Installation Specifications

Hermpac Product Installation Checklist – Rusticated, Splaycut & Multi-Splay Weatherboard Cavity System (Aug 2023 V2)



## Hermpac Product Technical Statement (PTS) – Rusticated, Splaycut and Multi-Splay (July 25)

[Hermpac Standard and Custom Profiles](#)[Hermpac Profile Portfolio](#)[Hermpac Grade descriptions](#)[Hermpac Nail/Screw fixings](#)[Machinecoat - Flood Coat Inundation versus Spray Application](#)[Maintenance of selected Wood Oil / Oil Based Stain finishes](#)[Hermpac WRC Information Sheet – cuts and characteristics](#)[Hermpac WR & Yellow Cedar cuts and characteristics](#)

Manufacturer/supplier contact details

Company: **Hermpac Ltd**Contacts: Kyle Deans - 021 771 857, [kyle.deans@hermpac.co.nz](mailto:kyle.deans@hermpac.co.nz)  
Carmen Hansen - 027 809 4588, [carmen@hermpac.co.nz](mailto:carmen@hermpac.co.nz)Web: [www.hermpac.co.nz](http://www.hermpac.co.nz)Email: [technical@hermpac.co.nz](mailto:technical@hermpac.co.nz)Telephone: 09 421 9840 Auckland  
04 586 9674 Wellington  
03 341 2163 Christchurch**Warranties**

## 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years For installation of Hermpac horizontal weatherboard cladding systems

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT).
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

**Requirements**

## 1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

**Compliance information**

## 1.7 CODEMARK CERTIFICATE

Hermpac horizontal weatherboard cladding systems meet the requirements of the NZBC when used within the Conditions and Limitations of their Certificates.

## 1.8 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

**Performance**

## 1.9 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by [NZS 3604](#).

## 1.10 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations. To [NZBC B2/AS1](#) Durability provisions for building elements and [NZBC E2/AS1](#).

## 2 PRODUCTS

### Materials

#### 2.1 YELLOW CEDAR

Hermpac Canadian Yellow Cedar (*Chamaecyparis nootkatensis*) supplied from sustainably managed forests of British Columbian coast, through to Alaska and available with [PEFC](#) or [FSC](#) certification.

#### 2.2 HORIZONTAL WEATHERBOARDS

Weatherboards to Hermpac profiles, Lap and Rebate details to BRANZ BU 411 and general design to the [NZS 3617](#), species and grading to [NZS 3602](#), table 2, reference 2A.1, Requirements for wood-based building components to achieve a 15-year durability performance. Weatherboards in lengths relative to profile selection and application, with all unsound and open split knots excluded by cross cut removal prior to fixing into position.

Acceptable Solution is limited to the following types of weatherboards and their derivatives:

- Horizontal Standard Bevel Back and Hermpac Custom Profiles
- Horizontal Standard Rebated Bevel Back and Hermpac Custom Profiles
- Horizontal Standard Rusticated and Hermpac Custom Profiles
- Horizontal Standard Splaycut, Multi-Splay and Hermpac Custom Profiles

A selection of the above profiles are also available in Western Red Cedar and Yellow Cedar finger-joint (CedarOne Evolve and CedarLine Evolve). CedarOne Evolve is quarter-sawn cut Cedar. CedarLine Evolve is primarily flat-sawn cut Cedar. Evolve profiles are available across most standard and custom profiles. The timber is machined with a “combed” finish to the front face and the boards are finished with an oil or stain as per Hermpac literature.

Regular paint finish finger-joint (CedarOne Mantle and CedarLine Mantle) is also available in Western Red Cedar and Yellow Cedar. Profiles are machined with a “dressed” finish to the front face and the exposed corners are machined to paint quality - PQ (ie. rounded edges for paint adherence). Boards are supplied pre-primed and undercoated, sanded and/or de-nibbed/buffed between coats.

#### 2.3 COVER BOARDS, MOULDINGS AND SCRIBERS

To Hermpac profiles as detailed, with species and grading to [NZS 3602](#), but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To [NZS 3602](#), table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

#### 2.4 FASCIA BOARDS

To Hermpac profiles, with species and grading to [NZS 3602](#), but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To [NZS 3602](#), table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

#### 2.5 WALL UNDERLAYS

Refer to 4161 UNDERLAYS, FOILS AND DPC and 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM.

#### 2.6 RADIATA PINE EXTERIOR CAVITY WALL BATTENS - NON STRUCTURALLY FIXED

Radiata Pine H3.1 minimum, merchant grade battens, 20mm x 45mm, 40mm x 45mm and 45mm x 40mm, height to match timber framing studs. Refer to SELECTIONS.

#### 2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Aluminium, PVC or stainless-steel cavity closure strip, punched with 3mm - 5mm holes or slots to provide a minimum ventilation opening area of 1000mm<sup>2</sup> per lineal metre of wall. Length and width to suit cavity. To [NZBC E2/AS1](#), paragraphs 9.1.7.5 - 9.1.7.7, and Figure 9.1.7.4A: Cavity base closer/vermin proofing.



## Components

- 2.8 JOLT HEAD NAILS, STAINLESS STEEL  
Hermpac Jolt Head, Annular Grooved Grade 316 Stainless Steel fixings to [NZBC E2/AS1](#), Table C.3.1.1: Fixing selection for wall claddings. Refer to [Hermpac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.
- 2.9 FLASHINGS  
To [NZBC E2/AS1](#), 4.0 Flashings. Material, grade and colour as detailed and scheduled and to [NZBC E2/AS1](#), Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.
- 2.10 SOAKERS, STAINLESS STEEL / COLORSTEEL / ALUMINIUM / ETCH PRIMED ALUMINIUM  
To [NZBC E2/AS1](#), 4.0 Flashings. Machine folded stainless steel/AM coated steel / aluminium sheet to profile of weatherboard and mitred corner joints. To [NZBC E2/AS1](#), Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure that materials used for soakers are compatible with adjacent materials and fixings, cladding materials and fixings.
- 2.11 SOAKERS, COPPER  
To [NZBC E2/AS1](#), 4.0 Flashings. Machine folded half-hard copper sheet to profile of weatherboard and mitred corner joints. To [NZBC E2/AS1](#), Table C.1.1.1B: Compatibility of materials in contact, and Table C.1.1.1C: Compatibility of materials subject to run-off. Ensure that materials used for Soakers are compatible with adjacent materials and fixings and cladding materials and fixings.

## Finishes

- 2.12 FACTORY PRE-FINISHING - MACHINECOAT (NZ) PAINT  
Factory spray application of premium primer and undercoat. Option also available for first finishing coat on to pre-primed and undercoated timber surface.  
Refer to [www.hermpac.co.nz/our-products/coatings](http://www.hermpac.co.nz/our-products/coatings)  
Primer: Hermpac White or as specified by special contract.  
Undercoat: Hermpac Off White or as specified by special contract.  
Factory applied Finishing: Refer to SELECTIONS.
- 2.13 SITE APPLICATION OF OIL / OIL BASED STAINS & PAINTS  
All Hermpac weatherboard cladding systems will arrive on site with a minimum of one coat factory finish. Additional coat/s will be required to achieve the desired look. Ensure site coating applications are to coating manufacturers specifications. All Hermpac weatherboards and mouldings must be coated with a specified coating system on all bare surfaces and ends must be minimum double sealed prior to installation. Refer to SELECTIONS.

## 3 EXECUTION

### Conditions

- 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS  
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
- 3.2 ROUTINE MATTERS  
Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.
- 3.3 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING  
Check work previously carried out and confirm it is of the required standard for this part of the work. Before fixing commences ensure that the substrate conforms to [NZS 3604](#), section 2, table 2.1, Timber framing tolerances, and the requirements of [NZS 3604](#), section 6, Foundation and subfloor framing, and [NZBC E2/AS1](#), 9.4 Timber weatherboards, governing support for timber board cladding and Hermpac Installation Specifications.



**Application - generally**

## 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

## 3.5 APPLICATION GENERALLY

Execution to [NZBC E2/AS1](#), 3.0 Weathertightness risk factors, 9.0 Wall claddings, 9.1.7 Drained cavities, and 9.4 Timber weatherboards and in accordance with Hermpac Installation Specifications.

**Application - preparation**

## 3.6 SITE PRIMING AND UNDERCOAT - PAINT FINISH

If not pre-primed and/or undercoated before delivery, prepare and coat all faces and edges with one coat of primer and then once dry-to-re-coat, apply one coat of a primer undercoat. Consult with the nominated paint manufacturer for specification on paint system for the timber specified. Open stack each board to dry with the back facing down, ensuring faces remain well finished, untouched and unblemished. Once dry, place boards in fillet stack, laid flat and true, until fixed. Keep dry and undamaged. Allow to re-coat if exposed for more than one month before the final coating is applied.

**Application - horizontal cladding over cavity battens**

## 3.7 RADIATA PINE BATTEN DRAINED CAVITY - NON STRUCTURALLY FIXED

Fit cavity battens over wall underlay vertically, centred over studs and nail tack in place at 600mm maximum centres.

## 3.8 CAVITY CLOSER / VERMIN PROOFING

Refer to Hermpac Cavity System Installation Specification. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Use cavity spacers where fixing is required between cavity battens.

## 3.9 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

[Hermpac Construction Drawings](#) call for a compressible bond breaker closed cell PVC foam seal to [NZBC E2/AS1](#), paragraph 9.1.9.9.

## 3.10 SETOUT

Use a string line, laser or mechanical device to set out all fixing that will be visible in the finished work. Align accurately in straight lines. Refer to relevant Hermpac Installation Specification and Construction Drawings to establish correct angle of fixing and consistent, accurate placement relative to visible edge of board.

**Application - fixing**

## 3.11 FIXING - PAINT FINISH

Install level, true to line and face, to [NZBC E2/AS1](#), 9.4 Timber weatherboards. Double coat all cut ends before fixing. Provide one face fixing per weatherboard at each cavity batten over stud location. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. When using stainless steel jolt head nails, punch all fixings and prime all raw, exposed timber surfaces. Using an appropriate primer and filler, fill all nail holes flush with board surface.



### 3.12 FIXING/FINISH - WIND ZONE

Hermpac Western Red Cedar, Yellow Cedar or DuraLarch™ weatherboards fixed with Hermpac Crown, Rose and Flat Head nails or Hermpac Starcap screws and Kanda weatherboards fixed with Hermpac Starcap screws, are limited to use in [NZS 3604](#) Wind Zones up to and including Extra High when studs are at maximum 600mm centres.

Hermpac Western Red Cedar weatherboards fixed with jolt head nails are limited to use in [NZS 3604](#) Wind Zones up to and including Medium when studs are at maximum 600mm centres, and [NZS 3604](#) Wind Zones up to and including Very High when studs are at maximum 400mm centres.

Hermpac Yellow Cedar and DuraLarch™ weatherboards fixed with jolt head nails are limited to use in [NZS 3604](#) Wind Zones up to and including Extra High when studs are at maximum 600mm centres.

Refer to [Hermpac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

### 3.13 FIXING BEVEL BACK & REBATED BEVEL BACK WEATHERBOARDS

Install level, true to line and face, to [NZBC E2/AS1](#), 9.4 Timber weatherboards. Single face fix weatherboards to every fixing point, clear of the adjacent lapped board. Fixing to be driven in with a slightly upward slope. Line fixings vertically across the boards. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Refer to [Hermpac Construction Drawings](#) for accurate weatherboard fixing information.

Using a Hermpac specialty clinch nail, restrain the top edge of the Rebated Bevel Back by driving the clinch nail positioned hard up against the edge but not into the Rebated Bevel Back weatherboard. Drive the clinch nail into the frame so that the clinch head settles flush into the weatherboard's surface, prior to the next row of boards being fixed above (studs at maximum 600mm centres). The clinch nail head must not sit proud of the timber surface nor prevent the correct separation of each adjacent row of boards.

Refer to [Hermpac Construction Drawings](#) and Installation Specification for suitable face fixings (options include Hermpac Silicon Bronze nails or Grade 316 Stainless Steel nails or Starcap screws. Kanda weatherboards are fixed with Hermpac Starcap screws), correct placement of fixings, size, length and minimum penetration requirements, and for external and internal corner construction and fixing details.

### 3.14 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to [NZBC E2/AS1](#).

### 3.15 COMPLETE

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

## Completion

### 3.16 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise. Contact [technical@hermpac.co.nz](mailto:technical@hermpac.co.nz) for assistance or more information.

### 4.1 HERMPAC WEATHERBOARDS - HORIZONTAL

Location:	Refer drawings
Species:	Yellow Cedar
Profile	Refer drawings
Number/Series:	
Profile type:	Bevelback
Cavity Fixing System:	20mm drained cavity
Surface finish:	DF (Dressed Face)
Moisture content:	≤18% at fixing



4.2 HERMPAC FASCIA

Species: Yellow Cedar  
 Profile standard / custom: Refer drawings  
 Surface finish:+ DF (Dressed Face)

4.3 INTERNAL AND EXTERNAL CORNER BACK FLASHINGS

Type: Dynaflash  
 Size: Refer drawings

4.4 CORNER AND JOINT SOAKERS

Location: External corners / board ends  
 Finish: Painted to match weatherboards

4.5 FACTORY FINISH - PAINT

Brand: Machinecoat (NZ) Ltd  
 Product: Resene  
 Coating process: Machinecoat (NZ) Ltd. Spray Application  
 Primer: HERMPAC White  
 Undercoat: HERMPAC Off White  
 Top coat product and colour: Refer to 6711R RESENE PAINTING EXTERIOR

4.6 SITE FINISH - FINISHING COATS - PAINT

Refer to 6711R RESENE PAINTING EXTERIOR for site applied paint finish.



## 4241MR MDS PROFILED METAL CLADDING

### 1 GENERAL

This section relates to the supply and fixing of Metal Design Solutions Group Euro Wall profiled metal wall cladding complete with associated accessories and components.

It includes:

- Zinc Euro Wall profiles
- Copper Euro Wall profiles
- Aluminium & pre-coated aluminium Euro Wall profiles
- Galvanised steel & pre-coated steel Euro Wall profiles

#### 1.1 RELATED WORK

Refer to 3821 TIMBER FRAMING for exterior cavity battens & cavity closer

Refer to 4161 UNDERLAYS, FOILS AND DPC for underlay

Refer to 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM for plywood used as a rigid air barrier.

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

BMT	Base metal thickness
LBP	Licensed Building Practitioner
NZMRM	New Zealand Metal Roofing Manufacturers Inc

#### Documents

#### 1.3 DOCUMENTS

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

<a href="#">NZBC B2/AS1</a>	Durability provisions for building elements
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1566	Copper & copper alloys, rolled flat products
AS/NZS 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
<a href="#">AS/NZS 1734</a>	Aluminium & aluminium alloys - flat sheets, coiled sheet and plate
<a href="#">AS/NZS 2269.0</a>	Plywood - structural
<a href="#">NZS 2295</a>	Pliable permeable building underlays
<a href="#">AS/NZS 2728</a>	Prefinished / prepainted sheet metal products for interior / exterior building applications
<a href="#">NZS 3604</a>	Timber-framed buildings
ISO 9223	Corrosion of metals and alloys - Corrosivity of atmosphere - Classification determination and estimation
BS EN 988	Zinc & zinc alloys, specification for rolled flat products for building
<a href="#">NZMRM CoP</a>	NZ Metal Roof and Wall Cladding Code of Practice

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Metal Design Solutions Group details

Manufacturer/supplier contact details

Company: Metal Design Solutions Group Limited

Web: [www.mds.net.nz](http://www.mds.net.nz)



Email: info@mds.net.nz  
Telephone: 09 640 0009

## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years for weatherproofing by material penetration

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- 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 for workmanship

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.7 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be trained by and work under the direct supervision of a Licensed Foreman, approved by Metal Design Solutions Group Limited. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

### 1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the Metal Design Solutions Group systems, or associated components and products listed in this section.

## Compliance information

### 1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer's, importer's or distributors warranty
- Installer's warranty
- Producer Statement PS3- Construction from the installer
- Other information required by the BCA in the Building Consent Approval documents.

## Performance - Wind (design by contractor)

### 1.10 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer's requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

### 1.11 FIXINGS, WIND

Design and use the fixings / fixing pattern appropriate for the design loads of this site; refer to general section 1220 PROJECT for details of wind zone, [NZMRM CoP](#) and to Metal Design Solutions Group requirements 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 girt/frame spacing.



## Performance - General

- 1.12 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL  
Metal Design Solutions Group steel & aluminium cladding profiles are manufactured from a non-combustible material with a surface finish no more than 1mm in thickness applied directly to the non-combustible substrate.
- 1.13 PERFORMANCE  
Install wall cladding materials in accordance with the [NZMRM CoP](#), and Metal Design Solutions Group requirements for the selected profile, to form a weather-tight performance for the completed cladding system, including all penetrations through the walls and junctions with roofs and parapets
- 1.14 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 walls. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the cladding to the primary structure.

## 2 PRODUCTS

### Materials

- 2.1 ALUMINIUM  
Aluminium to [AS/NZS 1734](#). Aluminium alloy series 5005 or 5052 marine grade. H34 or H36 temper to suit application.
- 2.2 ALUMINIUM - PREPAINTED  
Aluminium to [AS/NZS 1734](#). Aluminium alloy series 5005 or 5052 marine grade. H34 or H36 temper to suit application, coated to [AS/NZS 2728](#).

### Fixings

- 2.3 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 [NZBC E2/AS1](#) and/or the [NZMRM CoP](#) and Metal Design Solutions Group requirements.
- 2.4 FIXING SCREWS  
To AS 3566. Screws appropriate to the wall cladding material and the supporting structure, as required by Metal Design Solutions Group and with a Class 4 or 5 durability and not less than the material being fixed. Screws into timber to penetrate by minimum 30mm. Refer to SELECTIONS.
- 2.5 RIVETS - ALUMINIUM  
Generally use sealed aluminium rivets, minimum diameter 4mm.

### Components

- 2.6 FLASHINGS GENERALLY  
To [NZBC E2/AS1](#), 4.0, Flashings. Formable grade 0.55mm BMT for galvanized, Type AZ or Type AM - coated and pre-painted steel, 0.90mm BMT for aluminium (or 0.7mm for small aluminium flashings) 0.5mm BMT for Copper & 0.7mm BMT for Titanium Zinc to the same standards as the profiled sheets, notched where across profile or provided with a soft edge. Ensure flashing material matches the cladding material.
- 2.7 WALL AND PARAPET FLASHINGS  
To [NZBC E2/AS1](#), 4.0 Flashings. Supplied by Metal Design Solutions Group to match or to suit the cladding.
- 2.8 CAVIBAT EXTERIOR CAVITY BATTENS  
Cavibat 45x18mm extruded fluted polypropylene cavity batten system.
- 2.9 CASTELLATED EXTERIOR CAVITY BATTENS  
Radiata Pine H3.2 castellated and bevelled 45x20mm cavity batten.



- 2.10 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING  
Proprietary aluminium or PVC cavity closer to [NZBC E2/AS1](#). Width to suit cavity.

### Accessories

- 2.11 SEALANT  
Neutral curing MS sealant or polymer sealant as required by Metal Design Solutions Group and used as directed.
- 2.12 LAP SEALING TAPE  
Closed cell self adhesive nitrile tape.
- 2.13 SEPARATION STRIP TIMBER CAVITY BATTENS  
PVC tape or similar as a separator between the timber battens and metal cladding. Ensure separator is slightly wider than the batten.

## 3 EXECUTION

### Conditions

- 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS  
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Store on a level firm base clear of the ground, 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 circulation and drying between sheets.

Lift each sheet carefully, do not drag or distort and avoid contact with damaging substances, including cement. Protect edges and surface finishes from damage, keep under cover and remove as the product is being installed.

- 3.2 ROUTINE MATTERS  
Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.
- 3.3 INSPECTION - STRUCTURE  
Inspect the wall framing and supporting structure to ensure that it is complete and fully braced ready for cladding. For vertically installed cladding fixed directly to cavity battens, ensure noggings are located to suit horizontal cavity battens at minimum 800mm centres.
- 3.4 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.

### Application - Preparation

- 3.5 SEPARATION  
Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials.
- 3.6 FIX UNDERLAYS  
Refer to 4161 UNDERLAYS, FOIL AND DPC and 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM  
To [NZBC E2/AS1](#), 9.1.6 Wall underlay. Fix to framing, with laps and fixing to underlay manufacturer's requirements. Make good any damage before or during fixing of cladding before fixing continues.



### 3.7 INSTALL DRAINED CAVITY - CAVIBAT BATTEN

Install Cavibat 18mm or Cavibat R 20mm drained cavity to manufacturer's requirements and to Metal Design Solutions Group requirements for selected metal cladding profile. Cavibat horizontal battens to be installed at min 800mm centres on the nog line, they are fixed by the cladding fixings which will penetrate to the wall framing through the wall underlay and/or rigid wall underlay. The top of the cavity must be sealed and cavity closer/vermin-proofing installed at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc).

### 3.8 INSTALL DRAINED CAVITY - CASTELLATED TIMBER BATTEN

Install 20mm minimum thickness drained cavity to [NZBC E2/AS1](#), 9.0 Wall claddings. The castellated battens are fixed horizontally at minimum 800mm centres on the nog line with the bevelled edge at the top sloping down to the outside. They are fixed by the cladding fixings which will penetrate to the wall framing through the wall underlay and/or rigid wall underlay. The top of the cavity must be sealed and cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). If necessary use cavity spacers where fixing is required between cavity battens.

### 3.9 INSTALL SEPARATION STRIP - METAL CLADDING ON TREATED CCA TIMBER

Fix PVC tape or similar to separate metal sheeting from CCA treated timber batten or framing, prior to fixing metal cladding.

#### **Application - General**

### 3.10 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

### 3.11 SET-OUT FOR VERTICAL CLADDING

Set cladding to vertical plumb lines and maintain verticality. Set all exposed fixings with horizontal string lines. Carefully set out sheets with side laps away from the main line of sight, and with the widths of end sheets the same. Check during fixing to eliminate creep or spread and to keep fastenings in line.

### 3.12 AVOID END LAPS

End laps should be avoided, except where specifically detailed or instructed by Metal Design Solutions Group and specifically detailed.

### 3.13 MOVEMENT JOINTS

Wall fixing and jointing to conform with Design Solutions Group requirements and [NZMRM CoP](#) recommendations for thermal movement.

### 3.14 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets prior to cutting. Do not use lead pencil for marking aluminium/zinc or aluminium/zinc/magnesium coating products. Cut only by metal cutting shears and seal all sheared edges of pre-coated steel sheet with edge protection lacquer. Remove all cutting and drilling debris from the roof.

### 3.15 FIXING GENERALLY

Install and fix in accordance with [NZBC E2/AS1](#), the [NZMRM CoP](#), and Metal Design Solutions Group requirements. Use only screws and/or clips as required by Metal Design Solutions Group. Paint colour matched fixings and accessories before installation. For screw fixed claddings, ensure screws are not over tightened especially when using cavibat battens directly behind cladding.

### 3.16 FIX SHEETS

Fix sheets in place using the fastening system required by Metal Design Solutions Group, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.

### 3.17 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings



- installation of flashings (those required to be installed prior to installation of penetrating elements).

**Application - Flashings**

3.18 INSTALL FLASHINGS

Flash to penetrations, corner junctions, parapets and edges in accordance with [NZBC E2/AS1](#) requirements, Metal Design Solutions Group requirements and as detailed. Where no detail is provided flash to [NZMRM CoP](#) recommendations. Flashings to be installed on timber framing with a moisture content of less than 18%.

Pre-form flashing shapes wherever possible. Cut neatly and precisely, notch, scribe, flute or dress down as required and fix using continuous clip / cleats, under-flashings , rivets and sealant to detail to form a weatherproof cover. For visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.19 FLASHING PENETRATIONS

Flash all penetrations through the cladding in accordance with [NZBC E2/AS1](#); Metal Design Solutions Group requirements and as detailed to provide a weathertight seal. Fit pipe flashings with a proprietary collar flashing. Ensure that flashings are set to avoid any ponding of water.

3.20 USE OF SEALANTS

Select and use neutral curing MS sealant or polymer sealant only as recommended by Metal Design Solutions Group. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

Do not use sealant on Copper and Titanium Zinc material, these materials are required to be soldered to complete any joint.

**Completion & Commissioning**

3.21 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.metaldesignsolutions.co.nz](http://www.metaldesignsolutions.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

**Material - Euro Wall profiles**

4.1 MDS EURO WALL - CUSTOMRIB WALL CLADDING

Location: Refer drawings  
 Material/BMT: Lorin anodized aluminum  
 Colour: Medium Bronze  
 Installation: Vertically over horizontal cavity battens

**Components**

4.2 FLASHINGS - GENERALLY

Profile: Refer drawings  
 BMT/material: 0.9mm Aluminium  
 Coating system: Duralloy +PLUS  
 Coating colour: To match cladding



## 4331H HARDIE™ FIBRE CEMENT DECKING

### 1 GENERAL

This section relates to the supply and installation of Hardie™ Panel Compressed Sheet substrate by James Hardie® for:

- over timber floor joists.

#### 1.1 RELATED WORK

Refer to tiling section for tiling.

Refer to waterproofing section for waterproofing.

#### Documents

#### 1.2 DOCUMENTS

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

<a href="#">NZBC E3/AS1</a>	Internal moisture
<a href="#">AS/NZS 2908.2</a>	Cellulose-cement products - Flat sheet
<a href="#">NZS 3602</a>	Timber and wood-based products for use in buildings

#### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Flooring Installation Manual by James Hardie®.

Manufacturer/supplier contact details

Company:	James Hardie New Zealand Limited
Web:	<a href="http://www.jameshardie.co.nz">www.jameshardie.co.nz</a>
Email:	<a href="mailto:info@jameshardie.co.nz">info@jameshardie.co.nz</a>
Telephone:	Ask James Hardie™ on 0800 808 868

#### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Hardie™ Panel Compressed Sheet by James Hardie® (refer to James Hardie® product warranty)
15 year:	For accessories supplied by James Hardie® (refer to James Hardie® product warranty)
From:	Date of purchase

- Provide this warranty on the manufacturer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified James Hardie® system, or associated components and products.

#### 1.6 SAFE WORKING

To James Hardie® requirements for safe working practices with James Hardie® products, particularly with regards to cutting and drilling.

#### 1.7 COMPLIANCE

Fibre cement sheets to [AS/NZS 2908.2](#).



## 2 PRODUCTS

### Materials

#### 2.1 HARDIE™ PANEL COMPRESSED FLOORING

Hardie™ Panel Compressed Sheet by James Hardie®, high density autoclaved sheet, 18mm thick manufactured from treated cellulose fibre, Portland cement, sand and water to [AS/NZS 2908.2](#).

#### Components - Hardie™ Panel Compressed Sheet

#### 2.2 SCREWS FOR TIMBER

Stainless steel 316 50mm x 10g for timber joists.

#### Accessories - Hardie™ Panel Compressed Sheet

#### 2.3 ADHESIVE

Sika Super Grip adhesive. Refer to James Hardie® technical specifications.

#### 2.4 SEALANT

Flexible sealant with compatible PEF rod and primer. Refer to Flooring Installation Manual by James Hardie®.

#### 2.5 BACKING STRIP

Inseal 3259, 50mm x 1.5mm strip. Refer to Flooring Installation Manual by James Hardie®.

## 3 EXECUTION

### Conditions general

#### 3.1 MOISTURE CONTENT

Maximum moisture content of timber framing not to exceed the requirements of [NZS 3602](#).

#### 3.2 STORAGE ON SITE

Take delivery of products dry and undamaged on pallets, and keep on pallet. Protect edges and corners from damage and keep it covered to keep dry until fixed.

#### 3.3 HANDLING

Avoid damage to tongue and groove edges and contact with potentially damaging objects while handling. Carry sheets vertically. Do not drag sheets across each other, or across other materials. Protect edges, corners and surface finish from damage.

#### 3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the relevant manufacturer's technical literature for the specified finish; plumb, level and in true alignment. Maximum moisture content of timber framing to [NZS 3602](#).

#### Application - Hardie™ Panel Compressed Sheet

#### 3.5 SUPPORT FRAMING

Ensure support framing is completed to James Hardie® requirements.

#### 3.6 SUPPORT EDGES AND JOINTS

Fully support edges and joints of sheets.

#### 3.7 FIXINGS

Minimum 50mm one direction only from a corner, 12mm from the edge, 300mm centres along edges and on intermediate supports. Leave heads flush with surface for tiling, or countersink and epoxy filled flush for other surface finishes.

#### 3.8 FIXING SHEETS

Fix Hardie™ Panel Compressed Sheets to James Hardie® requirements. Lay sheets in a non-staggered layout with all joints lined up, long edge of sheet at right-angles to support and with sheets in square, true alignment and plane.



3.9 SEALANT JOINTS

Form sealant joints at every sheet joint to James Hardie® technical specifications. Allow 6mm to 10mm gap between sheets, arrange set out so that gap is a consistent width. Apply Inseal Strip to framing on joint line and pre-prime sheet edges before fixing sheets. Apply silicone sealant over backing rod.

3.10 RIGID JOINTS

Form rigid joints to James Hardie® technical specifications. Apply Aluminium T Socket to framing on joint line and apply adhesive to socket and sheet edges before fixing sheets. Refer to Installation Manual for maximum number of sheets to be rigid bonded.

3.11 FORMING HOLES

Required holes accurately formed and cut to James Hardie® requirements.

**Completion**

3.12 REPLACE

Replace damaged or marked elements.

3.13 CLEAN

Clean adjoining surfaces and fittings of spots, marks, dust and droppings.

3.14 LEAVE

Leave work to the standard required by following procedures.

3.15 REMOVE

Remove debris, unused materials and components from the site.

**4 SELECTIONS**

For further details on selections go to [www.jameshardie.co.nz](http://www.jameshardie.co.nz)  
Substitutions are not permitted to the following, unless stated otherwise.

**Materials**

4.1 JAMES HARDIE® - HARDIE™ PANEL COMPRESSED SHEET DECKING

Location:	Wet area flooring substrate
Brand:	James Hardie®
Type:	Hardie™ Panel Compressed Sheet
Thickness:	18 mm
Jointing method:	Sealant joints
Screws:	Stainless steel 50 x 10g



# 4421N NURAPLY 3PM MEMBRANE ROOFING & DECKING

## 1 GENERAL

This section relates to the application of Nuralite Group Limited Nuraply 3PM as a double layer, fully adhered bituminous membrane system with associated components & accessories.

It includes:

- Nurathem insulated roof system with Nuraply 3PM membrane over Nuratherm insulation installed over concrete, plywood, strandboard (for roofs only), cross laminated timber or metal tray deck substrates.
- Nuraply 3PM membrane installed directly over concrete, plywood, strandboard (for roofs only) or cross laminated timber substrates.

### 1.1 DOCUMENTS

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

NZBC B2/AS1 AS 2122.1	Durability provisions for building elements Combustion characteristics of plastics - Determination of flame propagation - Surface ignition of vertically orientated specimens of cellular plastics
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
BRANZ Good practice guide	Membrane roofing
CodeMark <a href="#">CMNZ70032</a>	Rev 3 – Nuraply 3PM Torch-on Membrane for Roofs, Decks, Gutters and Parapets

### 1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:

Nuralite Waterproofing Limited: CAD drawings  
 Nuraply 3PM Roofing Membrane Installation Manual  
 Nuralite Waterproofing Limited: Substrate Readiness Checklist  
[BRANZ Appraisal 547](#) - Nuraply Roof and Deck Membranes  
[BRANZ Appraisal 732](#) - Nuraply Nuratherm Insulating Roof System

Manufacturer/supplier contact details

Company: Nuralite Group Limited  
 Web: [www.nuralite.co.nz](http://www.nuralite.co.nz)  
 Email: [info@nuralite.co.nz](mailto:info@nuralite.co.nz)  
 Telephone: 09 579 2046 Auckland  
 0800 Nuralite (0800 687 254)

### Warranties

#### 1.3 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

20 years: For Nuraply 3PM membrane roofing & decking system

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.4 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

5 years: For membrane system installation



- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of installation.

Refer to the general section 1237 WARRANTIES for additional requirements.

### Requirements

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

#### 1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be Nuralite Group Limited Authorised Membrane Applicators. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

#### 1.7 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Applicators approval certificate from the distributor
- Distributors warranty
- Installer's / applicator's warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents.

### Performance - general

#### 1.8 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed Nuraply roofing system, including all penetrations through the roof and junctions with walls and parapets. In the event that there are issues relating to any aspect of this work, arrange for a meeting to resolve these issues.

The following should attend:

- Nuraply roofing applicator
- Nuralite representative
- Contractor
- Principal
- Principal's consultant(s)

#### 1.9 AS APPROVED

"As approved" means that the materials are compatible with Nuraply 3PM roofing and are part of the system required by the roofing supplier for each specific location.

#### 1.10 COMPLIANCE CODEMARK CERTIFICATE - NURAPLY 3PM

Nuraply 3PM Roofing Membrane System meets the requirements of the CodeMark® certificate CodeMark [CMNZ70032](#) when used within the conditions and limitations of its Certificate of Conformity.

### Performance - Wind

#### 1.11 WIND ZONE DESIGN PARAMETERS – LOW TO HIGH

According to the wind zone parameters of [NZS 3604](#), table 5.4 this project is rated as high or lower. Ensure that the installation is adequate for this standard or greater.

### Performance - Nuratherm Insulated roof system

#### 1.12 DURABILITY

Nuratherm insulated roof system complies with [NZBC B2/AS1](#) when maintained to Nuralite requirements.

#### 1.13 ENERGY EFFICIENCY

IKO Nuratherm ALU insulation board has an aged thermal resistance (R Value) of the following:

40mm	R1.80
50mm	R2.25
60mm	R2.70



70mm	R3.15
80mm	R3.60
100mm	R4.55

based on an aged thermal conductivity of 0.022 W/mK.

1.14 FIRE SAFETY

IKO Nuratherm PIR insulation board complies with the flame propagation criteria as specified in AS 2122.1.

**2 PRODUCTS**

**Materials - Nuraply 3PM two layer system**

2.1 NURAPLY WATERPROOFING MEMBRANE, FULLY BONDED BASE LAYER

Nuraply 3PB-SA provides a 3mm thick first layer in two layer applications on plywood, timber or Strandboard. Supplied in 1m wide x 10m long rolls.

2.2 NURAPLY WATERPROOFING MEMBRANE, MINERAL FACE TOP LAYER

Nuraply 3PM single layer, 4mm thick reinforced fibre asphalt waterproofing membrane with textured mineral aggregate finish. Top layer over Nuraply 3PB-SA or Nuraply 3PV-SA basesheet. Supplied in 1m x 7.5m long rolls.

**Materials - Nuratherm insulated roof system**

2.3 INSULATION BOARD

IKO Nuratherm ALU insulation board, comprised of a core of hard polyisocyanurate foam coated on both sides with tri-ply gas-tight aluminium.

2.4 TAPERED INSULATION BOARDS

Nuralite Nuratherm tapered insulation materials available to provide a 1:60 slope.

2.5 VAPOUR BARRIER

Nuraply ALU, 0.6mm thick self-adhesive modified bitumen sheet membrane with a top side of polyester reinforced aluminium foil. Used as a vapour barrier between the substrate and insulation board when required. Supplied in 1.08m wide x 25m long rolls.

2.6 NURAPLY WATERPROOFING MEMBRANE, PRESSURE DIFFUSER BASE LAYER

Nuraply 3PV-SA single layer, 3mm thick self-adhesive reinforced fibre asphalt waterproofing membrane with built in vapour pressure diffuser based on a diamond pattern. Used as a base layer for Nuratherm insulated roof system. Supplied in 1m wide x 10m long rolls.

2.7 NURAPLY WATERPROOFING MEMBRANE, MINERAL FACE TOP LAYER

Nuraply 3PM single layer, 4mm thick reinforced fibre asphalt waterproofing membrane with textured mineral aggregate finish. Top layer over Nuraply 3PV-SA basesheet. Supplied in 1m x 7.5m long rolls.

**Components - general**

2.8 MS DETAIL

Liquid waterproofing to provide additional waterproofing protection.

2.9 NURADECK BANDAGE SYSTEM

Liquid applied elastomeric, fibre reinforced waterproofing system.

**Components - Nuratherm insulated roof system**

2.10 FASTENERS AND WASHERS

Nuratherm IKO Fix Screws and Flange system.

Polypropylene telescopic sleeves for fixing membrane and insulation. Screws supplied in lengths to suit both the substrate and installed insulation.



## Accessories

- 2.11 **NURATHERM ADHESIVE**  
Nurabond Hi Foaming & Low Foaming PU adhesive, a permanent elastic high-performance moisture-cured single part polyurethane adhesive with high or low foaming capacity for bonding Nuratherm insulation boards to vapour control layer and with low foaming capacity for bonding Nuratherm insulation boards to each other
- 2.12 **ADHESIVES**  
Nuraflux No. 10, water-based adhesive for bonding NURAPLY roofing systems to plywood substrates, to Nuralite specification.
- 2.13 **PRIMER**  
Nuraflux QD or Nuraflux WB primer for substrate preparation prior to bonding Nuraply roofing systems to concrete and plywood, to Nuralite specification.
- 2.14 **SEALANT**  
IKO Stickall Bitumen - high performance bitumen mastic sealant.  
Soudal Gorilla MS - single component elastomeric MS UV stable sealant.
- 2.15 **EXPANDING FOAM**  
Soudal Gorilla Nailpower fire rated expanding foam.
- 2.16 **ALUMINIUM TAPE**  
3M Aluminium tape in 150mm or 48mm widths.
- 2.17 **BITUMEN FILLET**  
Nuralite Triangular.
- 2.18 **OUTLETS**  
As detailed and rebated into surfaces as required by Nuralite. Refer to SELECTIONS for details.
- 2.19 **EDGE TRIM**  
To Nuralite details and to suit the specific location. Nuratrim aluminium verge trim where detailed.
- 2.20 **DRIP EDGE**  
"L" profile 50mm x 50mm
- 2.21 **ELECTRONIC LEAK DETECTION - CONDUCTIVE TAPE**  
Nuralite Electronic Leak Test Tape, 50mm wide self-adhesive conductive tape.
- 2.22 **ELECTRONIC LEAK DETECTION - EARTHING PLATE**  
Nuralite Electronic Leak Test Earthing Plate with earthing cable.

## Coatings

- 2.23 **COATING OVER NURAPLY 3PM (OPTIONAL)**  
Surface dressing: NURAGLAZE.

## 3 EXECUTION

### Conditions

- 3.1 **DELIVERY, STORAGE & HANDLING OF PRODUCTS**  
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Take delivery of rolls undamaged and include for site handling facilities where required. Stack on end, off the ground on a level surface and with accessories. Store in shade or cover in hot sun. Protect liquid components from freezing.

- 3.2 **ROUTINE MATTERS**  
Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements.



Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

### 3.3 GENERALLY

Work and materials to Nuraply 3PM Installation Manual, BRANZ Good practice guide - Membrane roofing, and to Nuralite installation instructions.

### 3.4 LAYOUT

Refer to drawings for details. Supplement with Nuralite generic details if situation is not covered on drawings. If not detailed on the drawings, confirm the layout to suit site conditions and for the performance of the Nuraply 3PM system. Stagger junctions of Nuraply 3PM rolls to avoid 4 layer membrane build-up at corner lap joints.

### 3.5 INSTALLATION SEQUENCE

Install Nuraply 3PM membrane systems in sections to produce a weather tight at the end of each work period. Ensure that moisture absorbent substrates and insulation panels are covered with Nuraply 3PM membrane on the same day they are laid or ensure that the base is kept covered and dry until Nuraply 3PM membrane is laid. Seal exposed Nuraply 3PM membrane edges at the end of each work period to ensure complete system remains dry.

#### **Installation - preparation**

### 3.6 PRELIMINARY WORK

Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, provision of battens and fillets and outlets rebated to levels, is complete and properly constructed to enable the system to work as intended. This work and the substrate to be smooth, clean and dry.

### 3.7 ACCEPTANCE OF SUBSTRATE

Confirm that the substrate, including fillets, sumps, rebated outlets and projections, will ensure Nuraply work of the required standard. Ensure the substrate is smooth, clean and dry. Complete "Substrate Readiness Checklist" provided by Nuralite. Refer to MANUFACTURER/SUPPLIER DOCUMENTS.

Confirm the moisture content of substrates:

Concrete substrate: Relative humidity of 75% maximum

Plywood/ timber substrate: Moisture Content of 20% maximum

### 3.8 PLYWOOD SUBSTRATE

Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush, edges arrised, upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris. Plywood grain across the line of supports below.

Constructed falls on roofs and decks to be 1 in 80 minimum and 1 in 100 for gutters.

#### **Installation - general**

### 3.9 WELD JOINTS

Heat fuse joints minimum width 80mm side and 100mm end laps using Nuralite self-checking lap welding techniques.

### 3.10 PENETRATIONS

Form mould, weld and flash all upstands, downturns and penetrations to Nuralite details including raised, anti-ponding water deflectors on the upside of penetrations.

### 3.11 MOVEMENT JOINTS

Form and weatherproof movement joints as designed to Nuralite details.

### 3.12 JUNCTIONS

Check that adjoining walls and parapets are prepared ready for the installation of NURAPLY roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof.

Required work includes the following:



- Roofing installation neatly finished to all sides of openings and to all wall and parapet junctions.
- Installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).

### Installation - Nuraply 3PM two layer system

#### 3.13 FIRST LAYER ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD

Lay the first Nuraply 3PB-SA layer into Nuraflux NO.10, Nuraflux WB or Nuraflux QD primer to Nuralite requirements, with joints to be welded lapped a minimum of 80mm down the roll edges and 100mm across the roll ends. Lay in order from low points, sumps, through gutters, valleys, eaves, verges main roof and upstands to cover flashings.

#### 3.14 LAYING AND JOINTING SECOND LAYER - MINERAL FACE

Lay the second Nuraply 3PM layer by heat fusing over the cleaned repaired and Nuraflux QD primed (if necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 100mm wide across roll ends, to the Nuraply 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of Nuraply 3PM at corners. Ensure unobstructed drainage flow at outlets.

### Installation - Nuratherm insulated roof system

#### 3.15 LAY VAPOUR BARRIER

Lay Nuraply ALU self-adhesive vapour barrier onto the Nuraflux QD primed substrate to Nuralite requirements with joints being rolled and well-sealed shut.

#### 3.16 LAY NURATHERM INSULATION

When using tapered boards to create the fall, layout needs to be carefully considered before commencing so that there is positive drainage to all outlets. Ensure that sheets have been stretcher bond laid to falls, are rigid, with joints flush upstands filleted, no lumps or hollows, smooth, clean, dry and free of debris.

For double layered systems, use one fixing to hold the first layer of sheets and then fix down the second sheet using IKOfix thermal break flanges at the prescribed amount.

Seal any gaps in the insulation with expanding foam to produce a continuous insulation blanket with no gaps. Apply a layer of Aluminium Tape to any exposed ends of insulation sheets, fixings and sheet joins to provide a surface for the membrane to adhere to. On the lip of gutters, a Gutter Lip Trim may be installed if the insulation sheet edge requires additional protection from damage.

Secure the sheets to the substrate with Nuratherm fasteners at a rate based in the Installation checklist.

#### 3.17 APPLY ELECTRONIC LEAK DETECTION SYSTEM

Apply 50mm wide strips of Nuralite Electronic Leak Test Tape centred over every Nuratherm insulation board join. Install Nuralite Electronic Leak Test Earthing Plates to the surface of Nuratherm insulation boards at a rate of 1 per 500m<sup>2</sup> roof area. Run and connect earthing cable through a dedicated Goose Neck cable duct in accordance with Nuralite installation details.

#### 3.18 INSTALL BASE LAYER

Install Nuraply 3PV-SA self-adhesive base layer in accordance with Nuralite requirements.

#### 3.19 INSTALL NURAPLY WATERPROOFING MEMBRANE - MINERAL FACE TOP LAYER

Lay the second Nuraply 3PM layer by heat fusing over the cleaned repaired and Nuraflux QD primed (if necessary) surface of the first layer in the same sequence. Joints in the second layer must not correspond with joints in the first layer. Second layer joints to be welded lap-joints, minimum 80mm wide down roll edges and minimum 150mm wide across roll ends, to the Nuraply 3PM supplier's requirements. Roll junctions must be staggered to avoid 4-layer lap-weld build-up of Nuraply 3PM at corners. Ensure unobstructed drainage flow at outlets.



**Testing****3.20 TEST - FLOOD - COLD ROOFS**

Flood test gutters and where practical other low pitch and horizontal areas with a minimum 50mm depth of water for 24 hours. Make good any lack of water tightness when the surface is completely dry. Repeat water test process after making any necessary repairs.

**3.21 TEST - ELECTRONIC LEAK DETECTION - WARM ROOFS**

Carry out leak detection testing on warm roofs using Nuralite Electronic Leak Detection system upon completion of membrane installation and prior to any covering. Make good any lack of water tightness when the surface is completely dry. Depending on conditions, repeat a total or localised test process after making repairs.

**Finishing****3.22 APPLY SURFACE DRESSING TO NURAPLY 3PM (OPTIONAL)**

Thoroughly wash clean NURAPLY 3PM surface before application of the Nuraglaze. Apply Nuraglaze as 2 thin coats to Nuralite details. Ensure the specified Nuraglaze coating system is placed as soon as practical after completing laying the membrane.

**Conditions - completion****3.23 ACCESS BOARDS**

Provide access boards for later operations and remove when no longer needed.

**3.24 FOOT TRAFFIC**

Do not allow construction foot traffic on the Nuraply 3PM installation after laying to avoid dirt and damage to the surface.

**3.25 ACCEPTANCE**

Arrange for an inspection of the completed work. Protect and maintain roofing until completion of the contract works.

**3.26 SUBSEQUENT WORK**

Make good any covering cut or deformed by later work. Making good to take the form of inserting a new whole or part infill sheet to maintain the appearance of the covering as originally laid.

**Completion****3.27 COMPLETION MATTERS**

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.nuralite.co.nz](http://www.nuralite.co.nz).

Substitutions are not permitted to the following, unless stated otherwise.



**Nuratherm insulated roof system****4.1 NURATHERM INSULATED ROOF SYSTEM ON PLYWOOD, CROSS LAMINATED TIMBER AND STRANDBOARD**

Location:	Refer drawings
Supplier:	Nuralite
Substrate:	Plywood
Substrate adhesion:	Nuraflux QD
Vapour barrier:	Nuraply ALU
Insulation layer:	IKO Nuratherm ALU insulation board
Insulation thickness:	Refer drawings
Fixings:	IKO Fix fasteners - fixing pattern to suit wind loading (for fixing insulation board to substrate)
Base layer:	Nuraply 3PV-SA
Top layer:	Nuraply 3PM
Colour:	Slate



# 4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS

## 1 GENERAL

This section relates to the fabrication, supply, and installation of APL Window Solutions residential window and door systems.

### 1.1 RELATED WORK

Refer to 4610AG for AGP Glazing Residential

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

[WGANZ](#) Window & Glass Association NZ  
[PQAS](#) Powder Coating Quality Assurance System

### Documents

### 1.3 DOCUMENTS

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

<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">NZBC F4/AS1</a>	Safety from falling
<a href="#">NZBC G4/AS1</a>	Ventilation of buildings
<a href="#">NZBC H1/AS1</a>	Energy efficiency for all housing and buildings up to 300m <sup>2</sup>
<a href="#">NZBC H1/AS2</a>	Energy efficiency for buildings greater than 300m <sup>2</sup>
<a href="#">NZBC H1/VM1</a>	Energy efficiency for all housing and buildings up to 300m <sup>2</sup>
<a href="#">NZBC H1/VM2</a>	Energy efficiency for buildings greater than 300m <sup>2</sup>
<a href="#">AS/NZS 1734</a>	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
<a href="#">AS/NZS 1866</a>	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
<a href="#">NZS 4211</a>	Specification for performance of windows
<a href="#">NZS 4223.3</a>	Glazing in buildings - Human impact safety requirements
<a href="#">AS/NZS 4680</a>	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
<a href="#">BS EN 673</a>	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
<a href="#">AAMA 2603</a>	Voluntary specification, performance requirements, and test procedures for pigmented organic coatings on aluminium extrusions and panels (with coil coating appendix)
<a href="#">AAMA 2604</a>	Voluntary specification, performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels
<a href="#">AAMA 2605</a>	Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels
<a href="#">ISO 10077-1</a>	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
<a href="#">ISO 10077-2</a>	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames

Window & Glass Association NZ ([WGANZ](#)) documents:

[Window Installation Guide](#) Guide to Window Installation as described in E2/AS1



**SFA 3503-03** Anodic Oxide coatings on wrought aluminium for external architectural application (2005)

US Federal Specification:

**TT-S-001543A** Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)

**TT-S-00230C** Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures)

**CodeMark™ CMNZ10033 ver2** APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors.

**1.4 MANUFACTURER/SUPPLIER DOCUMENTS**

Manufacturer and supplier documents relating to this part of the work:

APL Window Solutions Specifier Guide

APL Window Solutions Metro Series ThermalHEART® with Centrafix™ System Guide (Version 08/23a)

APL Window Solutions Windows and Doors for Residential Purposes BPIR

APL Window Solutions Windows and Doors for Residential Purposes - Thermally Insulated BPIR

[BRANZ Appraisal 1188](#) (2023) - APL Metro Series ThermalHEART® with Centrafix™ Windows and Doors - Amended 2 May 2024

[BRANZ Appraisal 1259](#) (2024) - APL ThermalHEART+® Window and Door Systems - Amended 2 May 2024

Manufacturer/supplier contact details

Company: Architectural Profiles Ltd.

Trading as: APL Window Solutions

Web: [www.altherm.co.nz](http://www.altherm.co.nz)  
[www.firstwindows.co.nz](http://www.firstwindows.co.nz)  
[www.vantage.co.nz](http://www.vantage.co.nz)  
[www.aplnz.co.nz](http://www.aplnz.co.nz)

Email: [apl.techinfo@aplnz.co.nz](mailto:apl.techinfo@aplnz.co.nz)

Telephone:: 07 849 8888

**Warranties**

**1.5 WARRANTY - MANUFACTURER/SUPPLIER**

Provide a material manufacturer/supplier warranty:

5 years: For materials including hardware and componentry

15 years: For Duratec powdercoat finish durability and colour

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- 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: For installation

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.



## Requirements

### 1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### 1.9 DESIGN PARAMETERS - WIND

Design the installation to the manufacturer requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.

### 1.10 SHOP DRAWINGS

Refer to the general section 1235 SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Provide shop drawings to show the general arrangement including, but not be limited to:

Fully dimensioned elevations of all elements

Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including:

- Jointing details and method of fixing between individual elements and between this installation and adjacent work
- Interaction between claddings and linings
- Flashing details
- Sealants and air seals
- Non standard fixing details including bracketing

If requested provide the following additional information:

- Design calculations
- Producer Statement in the form PS1 Producer Statement Design
- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Glazing specification and details
- Information of Professional Indemnity Insurance held by the person providing the calculations and shop drawings

Submit shop drawings for review to Architect and main Contractor.

Complete shop drawing review before commencing fabrication and/or installation.

Refer to 1235 SHOP DRAWINGS for general requirements.

### 1.11 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:

APL Window Solutions Specifier Guide

Provide this information prior to practical completion.

### 1.12 MARKING - EXTERNAL WINDOWS / DOORS

Each window claimed by the manufacturer to be compliant with [NZS 4211](#) to be labelled on the frame to [NZS 4211](#).



## Compliance Information

### 1.13 COMPLIANCE - BRANZ APPRAISAL

APL ThermalHEART+® Window and Door Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 1259](#).

## Performance

### 1.14 EXTERNAL WINDOW PERFORMANCE

APL Window Solutions windows and doors have been tested to [NZS 4211](#) and the requirements of [BPS](#), 4.4.1 Structural and weathertightness provisions.

### 1.15 THERMAL PERFORMANCE - WINDOWS & GLAZED DOORS, HOUSING ONLY

Thermal performance of windows & doors to [NZBC H1/AS1](#). The construction R-Value of windows & doors determined by Appendix E, Table E1.1.1 Construction R-values (R window) of selected generic windows and doors. Refer to SELECTIONS for construction R-values.

## 2 PRODUCTS

### 2.1 WINDOWS

Refer to SELECTIONS.

### 2.2 DOORS

Refer to SELECTIONS.

## Materials

### 2.3 ALUMINIUM EXTRUSIONS

Alloy designation to comply with [AS/NZS 1866](#). Branded and extruded for anodising or powder coating.

### 2.4 ALUMINIUM SHEET AND STRIP

Complying with [AS/NZS 1734](#) of suitable thickness. Rolled for anodising or powder coating.

Alloy designation: 5251 - H16 or 5005 - H16

### 2.5 STAINLESS STEEL SHEET AND STRIP

Type: 316 austenitic steel

Finish grade: 2B (satin lustre)

### 2.6 GLASS

Refer to the glazing section for glass types and installation.

## Reveals

### 2.7 REVEALS - TIMBER PAINTED

Timber reveals for paint finish with all sides primed grooved for wall linings or flush finished for architraves.

### 2.8 REVEALS - ALUMINIUM

Aluminium reveals fitted to frame via thermal break.

## Flashings

### 2.9 FLASHINGS GENERALLY

To [NZBC E2/AS1](#), 9.1.9 Windows and doors. Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.



## Components for installation - cavity systems

### 2.10 STANDARD CAVITY CLOSER

A device constructed from either aluminium or PVC to close the cavity above the window or door unit, between the cladding and head flashing, to provide ventilation in accordance with [NZBC E2/AS1](#) to the spaces above the window or door.

### 2.11 SUPPORT BAR

[WGANZ](#) extruded aluminium support bar with built in drainage and ventilation to [NZBC E2/AS1](#), and support bar location bracket, to provide continuous support to the window unit. Size to suit cladding type.

## Components

### 2.12 GLAZING GASKETS

Thermoplastic rubber. Do not stretch glazing gaskets during installation. Measure and cut gaskets 5-10% over length before installation.

### 2.13 HARDWARE AND FURNITURE

Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Refer to SELECTIONS for type and finish. Key alike all lockable window hardware able to be keyed alike.

### 2.14 SAFETY STAYS

Stainless steel non releasable restrictors to limit window opening to [NZBC F4/AS1](#), Section 2.0, Opening windows.

### 2.15 FIXING BRACKETS

Designed by manufacturer to specific design.

### 2.16 WEATHERING/INSTALLATION SEALANT

Building sealant used in accordance with manufacturer's instructions for weather sealing aluminium frames to the cladding, complying with US Federal Specification TT-S-001543A, or a one-part polyurethane moisture curing, elastic joint sealant of medium modulus ( $\pm 25\%$  movement) to US Federal Specification [TT-S-00230C](#).

## Finishes

### 2.17 DURATEC POWDER COATED ALUMINIUM

High-performance polyester powder coating in accordance with [WGANZ PQAS](#) and AAMA 2604. Refer to SELECTIONS.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### Installation/application

#### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

#### 3.5 INSTALLATION GENERALLY

Install in accordance with manufacturer's shop drawings and installation instructions.



## Fabrication

- 3.6 FABRICATION  
Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.
- 3.7 TIMBER REVEALS  
Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces. Securely fix reveals through aluminium fin.
- 3.8 HARDWARE GENERALLY  
Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.
- 3.9 SAFETY STAYS  
Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with [NZBC F4/AS1 4.0](#), Opening windows.
- 3.10 PASSIVE VENTILATION  
Factory fit all required and scheduled passive ventilation systems to [NZBC G4/AS1](#), paragraph 2.2.2.5, [NZS 4303](#) and manufacturer's requirements.

## Installation - windows and doors

- 3.11 SUPPLY OF FIXINGS  
Use only fixings and fastenings recommended by the manufacturer of the component being fixed.
- 3.12 EXPOSED FIXINGS AND FASTENINGS  
Fixings and fastenings exposed to the weather to be aluminium, or Type 304 stainless steel.
- 3.13 PROTECTED FIXINGS AND FASTENINGS  
Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m<sup>2</sup> complying with [AS/NZS 4680](#).
- 3.14 CORROSION PROTECTION  
Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.
- 3.15 INSTALLATION FIXING  
To [NZBC E2/AS1](#), paragraph 9.1.9.10. Fix windows/doors through reveal to frame with a pair of 75 x 3.15mm minimum galvanised jolt head nails or a pair of 8 gauge x 65mm minimum stainless steel screws. Fix at a maximum of 450 centres along all reveals and a maximum of 150mm from reveal ends. Ensure fixings do not penetrate metal flashings.  
Install packers between reveals and framing at fixing points, except at the head.
- 3.16 INSTALLATION CAVITY CONSTRUCTION  
Install to [WGANZ Window Installation Guide](#) details and drawings including [WGANZ](#) sill support bars.  
For thresholds with support bars fixed through membranes, pre-fill support bar screw holes with silicone sealant to [NZBC E2/AS1](#), Figure 8.5.6.1D: Junctions with walls for membrane.
- 3.17 INSTALL FLASHINGS  
Install flashings to heads, jambs and sills of frames as supplied and required by the window manufacturer and as detailed on the drawings. Finish head flashings to match window finish.

Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.

Except where window/door frames are recessed, ensure that head flashings over-sail unit by 20mm plus any jamb scribe width at each end.



**3.18 COMPLETE AIR SEAL**

To [NZBC E2/AS1](#), 9.1.5 Air seals. Form an air-tight seal by means of proprietary expanding foam or sealants used with PEF backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

**3.19 FIX HARDWARE**

Fix all sash and door hardware and furniture as scheduled.

**Application - jointing and sealing****3.20 SEAL FRAMES ON SITE**

Seal frames to each other and to adjoining structure and finishes, all as required by the window and sealant manufacturer and to make the installation weathertight.. In very high and extra high or greater wind zones, seal between the window head and the head flashing. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.

**3.21 PREPARE JOINTS**

Ensure joints are dry. Remove loose material, dust and grease. Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary. Mask adjoining surfaces which would be difficult to clean if smeared with sealant.

**3.22 BACK UP**

When using back-up materials do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant. Insert polyethylene rod or tape back-up behind joints being pointed with sealant.

**3.23 SEALANT FINISH**

Tool sealant to form a smooth fillet with a profile and dimensions required by the sealant manufacturer. Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

**3.24 IN-SITU TOUCH-UP TO POWDER COATED ALUMINIUM**

In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted to minor surface scratching. Otherwise replace all damaged material.

**3.25 SAFETY**

Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

**Completion & Commissioning****3.26 COMPLETION MATTERS**

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.aplnz.co.nz](http://www.aplnz.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

**4.1 SUPPLY AND INSTALLATION**

Supply and installation of the specified APL aluminium joinery.

Supply: By fabricator  
Installation: To be confirmed

**Finishes - Powder Coating****4.2 DURATEC - POWDER COATING FINISH**

Type: Polyester organic powder coating  
System integrity: Minimum 20 years film integrity  
Colour: TBA



**Glazing**

- 4.3 GLASS  
Type/thickness: Refer to glazing section/s for type and thickness.

**Hardware**

- 4.4 WINDOW & DOOR HARDWARE  
Window fastener: Refer Window & Door Schedule  
Locks & handles: Refer Window & Door Schedule

- 4.5 HARDWARE FINISH  
Finish: Powder coat  
Colour: To match joinery

**Reveals**

- 4.6 TIMBER JAMB REVEALS  
Timber species: Radiata Pine  
Grade/treatment: pre-primed / H3.1  
Thickness: 30mm  
Reveals: Grooved for wall linings
- 4.7 ALUMINIUM REVEALS - ADAPTOR/INFILLS  
Type: Refer drawings  
Finish: Powder coated



# 4554AH ADLUX ROOF WINDOWS

## 1 GENERAL

This section relates to the supply and installation of Adlux Industries Ltd Harmony range of thermally broken fixed and opening roof windows (skylights).

It includes:

- Roof windows
- Components and accessories for completing installation

### 1.1 RELATED WORK

Refer to relevant electrical section(s) for power connections to opening roof windows

Refer to 4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS for general aluminium joinery.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

IGU Insulating glass unit

### 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 provisions for timber-framed buildings up to 10 m in height
NZBC H1/AS1-AS2	Energy efficiency
NZBC H1/VM1-VM2	Energy efficiency
AS/NZS 2208	Safety glazing materials in buildings
NZS 3604	Timber-framed buildings
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
EN 755-9	Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Profiles, tolerances on dimensions and form
ISO 10077-1	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - General
ISO 10077-2	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Numerical method for frames

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Adlux Harmony Roof Window brochure

Adlux Harmony Roof Window Fixed & Electric Opening Installation Guide 2024

Adlux Harmony Roof Window detail drawings

Adlux Harmony Roof Windows BPIR documentation

Manufacturer/supplier contact details

Company name: Adlux Industries Ltd.

Trading as: Adlux

Web: [www.adlux.co.nz](http://www.adlux.co.nz)

Email: [sales@adlux.co.nz](mailto:sales@adlux.co.nz)

Telephone: 0800 500 557



## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years	For Adlux Harmony Roof Window frames
2 years	For electric components
1 year	For glass unknown breakages

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of purchase.

Refer to the general section 1237 WARRANTIES for additional requirements.

### 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For installation workmanship
---------	------------------------------

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### 1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the general operation and maintenance information contained in the Adlux Harmony Roof Windows BPIR documentation as electronic PDF format documents.

Provide this information prior to practical completion.

## Performance

### 1.10 PERFORMANCE - THERMAL, SKYLIGHT

Thermal performance of skylights to [NZBC H1/AS1-AS2](#) & [NZBC H1/VM1-VM2](#). The construction R-value of skylight to be determined by Appendix E, E2 Skylights:

- Determine the thermal transmittance of skylights in accordance with ISO 10077-1.
- Determine the thermal transmittance of framing in accordance with ISO 10077-2.
- Determine the thermal transmittance of glazing using BS EN 673, considering the effects of horizontal or angled glazing on the heat transfer.

Refer to SELECTIONS for Construction R-values.

### 1.11 PERFORMANCE, WIND, DEAD, SNOW, AND LIVE ACTIONS

The design wind pressures, and snow loads to [NZS 3604](#) and [NZS 4223.4](#). Live loads and glazing design, for glass to [NZS 4223.4](#).



## 2 PRODUCTS

### Materials

#### 2.1 FIXED ROOF WINDOWS - HARMONY FIXED

Adlux Harmony Fixed roof windows, comprised of powder coated 6063 T5 extruded aluminium profiles to EN 755-9 with polyamide thermal breaks and argon filled double and triple glazed IGUs to [NZS 4223.2](#) and [AS/NZS 2208](#). Available in a range of sizes, colours and glass options. Refer to SELECTIONS.

#### 2.2 OPENING ROOF WINDOWS - HARMONY OPENING

Adlux Harmony Opening roof windows, comprised of powder coated 6063 T5 extruded aluminium profiles to EN 755-9 with polyamide thermal breaks, concealed electric drive and argon filled double and triple glazed IGUs to [NZS 4223.2](#) and [AS/NZS 2208](#). Available in a range of sizes, colours, glass options and with rain sensor. Refer to SELECTIONS.

### Components

#### 2.3 FIXINGS

6mm x 80mm 304 stainless steel star washer construction screws.

#### 2.4 FOAM TAPE

6.3mm x 12mm self-adhesive PVC Black Foam Tape.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### Installation - generally

#### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

#### 3.5 INSTALLATION GENERALLY

Install in accordance with [NZBC E2/AS1](#) and Adlux Harmony Roof [Window Installation Guide](#).

### Installation

#### 3.6 APPLY FOAM TAPE TO KERB

Apply a continuous strip of foam tape to the inner and outer perimeters of the top face of the kerb.

#### 3.7 POSITION ROOF WINDOW - FIXED ROOF WINDOW

Position roof window centrally onto the kerb with continuous contact to the foam tape on the top face of the kerb and a 10mm gap between the kerb vertical face and roof window perimeter frame.

#### 3.8 POSITION ROOF WINDOW - OPENING ROOF WINDOW

Orient roof window with hinges located on the high side of the kerb. Measure position of drive cable exit from corner of roof window frame. Mark cable position on the top face of the kerb and drill a 12mmØ hole for cable route vertically through the kerb. Position roof window centrally onto the kerb with continuous contact to the foam tape on the top face of the kerb, a 10mm gap between the kerb vertical face and roof window perimeter frame and drive cable free from crushing and folds.



- 3.9 **FIX ROOF WINDOW**  
Pre-drill 3mm pilot holes into vertical face of the kerb through the fixing holes located in the lower part of the roof window perimeter frame and screw fix frame without over tightening.
- 3.10 **REMOVE PROTECTIVE FILM**  
Remove any protective films immediately after installation.

### **Completion & Commissioning**

- 3.11 **COMPLETION MATTERS**  
Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## **4 SELECTIONS**

For further details on selections go to [www.adlux.co.nz](http://www.adlux.co.nz).  
Substitutions are not permitted to the following, unless stated otherwise.

### **Adlux roof windows**

- 4.1 **ADLUX HARMONY ROOF WINDOW - FIXED**
- |                      |                      |
|----------------------|----------------------|
| Type/brand:          | Adlux Harmony Fixed  |
| Size:                | Refer drawings       |
| Kerb pitch:          | 5°                   |
| Frame finish:        | Powder coated        |
| Frame colour:        | TBA                  |
| IGU type:            | Double glazed Low E2 |
| Glass finish/colour: | Clear                |



## 4610AG AGP® GLAZING RESIDENTIAL

### 1 GENERAL

This section relates to the supply and fixing of **AGP®** glass products for use with APL Window Solutions external and internal joinery in residential type buildings and includes:

- Window and door glazing

This **AGP** section is to be read in conjunction with **APL Window Solutions** branded sections

#### 1.1 RELATED WORK

Refer to 4521AR APL RESIDENTIAL ALUMINIUM WINDOWS & DOORS for aluminium joinery.

#### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

IGU	Insulating Glass Units
PVB	Polyvinyl Butyral
uPVC	Unplasticised polyvinyl chloride

#### Documents

#### 1.3 DOCUMENTS

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

<a href="#">NZBC B1/AS1</a>	Structural provisions for buildings
<a href="#">NZBC B2/AS1</a>	Durability provisions for building elements
<a href="#">NZBC F2/AS1</a>	Hazardous building materials
<a href="#">NZBC H1/AS1</a>	Energy Efficiency
<a href="#">NZBC H1/VM1</a>	Energy Efficiency
<a href="#">AS/NZS 1170.2:2011</a>	Structural design actions - Wind actions
<a href="#">AS/NZS 2208</a>	Safety glazing materials in buildings
<a href="#">AS/NZS 4667</a>	Quality requirements for cut and processed glass
<a href="#">NZS 4211</a>	Specification for performance of windows
<a href="#">NZS 4223.1</a>	Glazing in buildings - Glass selection and glazing
<a href="#">NZS 4223.Supp1</a>	Glazing in buildings - Supplement 1 to <a href="#">NZS 4223.1:2008</a> and <a href="#">NZS 4223.4:2008</a>
<a href="#">NZS 4223.2</a>	Glazing in buildings - Insulating glass units
<a href="#">NZS 4223.3</a>	Glazing in buildings - Human impact safety requirements
<a href="#">NZS 4223.4</a>	Glazing in buildings - Wind, dead, snow and live action
<a href="#">BPS</a>	Building Product Specifications

#### 1.4 MANUFACTURER'S DOCUMENTS

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

- Product notes and manufacturing limitations
- Care and maintenance of your AGP glass
- Condensation guide
- AGP Glass handling, storage & transportation guide
- Guide to visual quality of residential glass and insulating glass units (IGUs)
- Insulating glass unit (IGU) warranty

Manufacturer/supplier contact details

Company:	AGP
Web:	<a href="http://www.agpl.co.nz">www.agpl.co.nz</a>
Email:	<a href="mailto:technical@agpl.co.nz">technical@agpl.co.nz</a>
Telephone:	07 849 8880



## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

12 years:	For insulating glass units (IGUs)
12 years:	For float glass
12 years:	For toughened glass
12 years:	For laminated glass

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of supply.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### 1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:

- Care and maintenance of your AGP glass
- Condensation guide

Provide this information prior to practical completion.

## Compliance information

### 1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

## Performance

### 1.10 THERMAL STRESS ANALYSIS

For non-heat treated glass obtain a thermal stress analysis for tinted, reflective and other solar control vision glass including IGU's for review before placing final order.

### 1.11 ENERGY EFFICIENCY

Provide glazing to comply with H1 Energy efficiency requirements of [NZBC H1/AS1](#) or [NZBC H1/VM1](#).

Refer to SELECTIONS and schedules for location and type of glazing.

## Performance – Wind (design by contractor)

### 1.12 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

Design the installation to the manufacturer requirements and as appropriate for the project wind design parameters. Refer to SELECTIONS.



## 2 PRODUCTS

### Materials, windows and doors

#### 2.1 CLEAR FLOAT GLASS

Clear ordinary transparent float glass for general window/door glazing application. Thickness to [NZS 4223.1](#), [NZS 4223.Supp1](#), [NZS 4223.3](#) and [NZS 4223.4](#).

#### 2.2 OBSCURE GLASS

Translucent rolled glass, sand-blasted or acid etched on one surface for a decorative finish.

#### 2.3 LAMINATED GLASS

Grade A safety glass to [AS/NZS 2208](#) with PVB interlayer.

#### 2.4 TOUGHENED GLASS

Grade A safety glass to [NZBC F2/AS1](#) and [AS/NZS 2208](#).

Heat soaked toughened glass to [NZS 4223.1](#), Appendix E for critical areas. Refer to SELECTIONS.

#### 2.5 TINTED FLOAT GLASS

Body tinted float glass. Thickness to [NZS 4223.1](#) and [NZS 4223.Supp 1](#), [NZS 4223.3](#) and [NZS 4223.4](#).

#### 2.6 REFLECTIVE AND COATED FLOAT GLASS

Coated float glass incorporating both solar and thermal insulation properties, or coated float glass with thermal insulation properties only.

#### 2.7 INSULATING GLASS UNITS (IGU'S)

To the performance requirements of [NZS 4223.2](#).

Marking to [NZS 4223.2](#) as modified by [NZBC B2/AS1](#), 3.4.3 Insulating glass units.

Refer to SELECTIONS for specified surfaces of the IGU.

Surface numbering order for glass panes in an IGU are #1, #2, #3, and #4 as follows:

- Surface #1 - outer face of exterior pane
- Surface #2 - cavity face of the exterior pane
- Surface #3 - cavity face of the interior pane
- Surface #4 - outer face of the interior pane

### Components, aluminium and uPVC glazing

#### 2.8 GLAZING TAPE AND GASKETS

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

#### 2.9 SETTING BLOCKS

APL Window and Door Systems setting blocks consisting of PE, PP or PA material selected to suit the frame and panel type.

## 3 EXECUTION

### Conditions

#### 3.1 GENERAL REQUIREMENTS

To [NZS 4223.1](#), [NZS 4223.2](#), [NZS 4223.3](#) as modified by [BPS](#) paragraph 4.4.1.4, and [NZS 4223.4](#). Interface between external glazing and other elements to be wind and watertight on completion.

#### 3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products, and to the AGP Glass handling, storage & transportation guide.

#### 3.3 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.



### 3.4 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### 3.5 GLASS CONDITION

All glass to have undamaged edges and surfaces in accordance with [AS/NZS 4667](#).

### 3.6 GLASS THICKNESS

Whether stated in a glazing schedule or not, confirm glass thicknesses to [NZS 4223.1](#), [NZS 4223.3](#), [NZS 4223.4](#). For windows tested to [NZS 4211](#), ensure glass meets the requirements of the window testing.

Determine the final glass thickness based on whether wind loading, or human impact considerations govern.

### 3.7 REBATE DIMENSIONS

Provide rebates for glazing to the widths and depths necessary for each situation including minimum glass edge cover to [NZS 4223.1](#), Section 4 Glazing.

#### **Conditions - human impact safety requirements**

### 3.8 SAFETY GLAZING, GENERAL REQUIREMENTS

Glazing of doors, side panels, low level and window seat glazing, bathrooms, stairwell landings and similar locations, to [NZS 4223.3](#) as modified by [BPS](#) paragraph 4.4.1.4, for thickness and maximum areas of safety glass.

### 3.9 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in [NZS 4223.3](#), that also comply with the relevant requirements of [AS/NZS 2208](#). Ensure material is permanently marked and if cut by the distributor or installer mark each piece to [NZS 4223.3](#), 2.8 Identification.

### 3.10 CONTAINMENT

Edge cover to comply with [NZS 4223.1](#), Section 4 Glazing, table 5. Otherwise to [NZS 4223.3](#), 2.3 Edge cover.

#### **Assembly**

### 3.11 WORKING OF GLASS

All working of glass as required in [NZS 4223.1](#).

### 3.12 EDGE WORK

Edge work other than a clean cut. Refer to SELECTIONS/drawings for type.

#### **Installation/application**

### 3.13 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements. Refer to [AS/NZS 4667](#) and [NZS 4223.1](#) for glass and glazing.

### 3.14 INSTALL SAFETY GLASS

To [NZS 4223.3](#).

### 3.15 INSTALLING INSULATING GLASS UNITS

Refer to the APL branded window manufacturer's requirements and before glazing ensure that the materials forming the opening are strong enough to accept the weight, the rebates are the correct size and prepared to receive the units to the manufacturers requirements. Fit setting and location blocks and bead glaze units using a compatible sealant.

### 3.16 INSTALLING REFLECTIVE AND COATED GLASS

In addition to the type of glazing specified refer to the requirements of the glass manufacturer and ensure that the rebate dimensions, clearances and edge cover are sufficient to allow for the movement created by the particular solar control glass being used. Check thermal stability for the particular location and ensure any sealant or compound is compatible with the coating.



**Application aluminium**

## 3.17 INSTALL GLASS TO ALUMINIUM FRAMES

Install glass to [NZS 4223.1](#).

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

**Application uPVC**

## 3.18 INSTALL GLASS TO uPVC FRAMES

Install glass to [NZS 4223.1](#).

- Bead glaze to Section 4 Glazing.
- Channel glaze to Section 4 Glazing, and Section 5 for Framed, Unframed, Partly Framed Glass Assemblies.

**Finishing**

## 3.19 SAFETY

Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type.

## 3.20 MANIFESTATIONS

To [NZS 4223.3](#), 2.2 Manifestation (making glass visible).

**Completion & Commissioning**

## 3.21 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 3.22 COMPLETION - TESTS &amp; CERTIFICATION

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

**4 SELECTIONS**

Substitutions are not permitted to the following, unless stated otherwise.

**Performance - wind**

## 4.1 WIND ZONE - NON-SPECIFIC DESIGN

Refer to general section 1220 PROJECT for design wind pressures.



# 4711T TERRA LANA NATURAL WOOL INSULATION

## 1 GENERAL

This section relates to **Terra Lana** wool and polyester fibre blend insulation for new and retrofit residential buildings. Installed, laid, hung or fitted as thermal and acoustic insulation, including:

- ceiling service cavity insulation
- skillion/truss roof insulation
- I-Beam rafter fillet
- wall and service cavity insulation
- wall insulation
- underfloor insulation
- new build drop in floor insulation
- pipe lagging
- acoustic internal walls/mid-floor insulation

### 1.1 RELATED WORK

Refer to 4161 UNDERLAYS, FOIL AND DPC for wall underlay and roofing underlay.

Refer to 4171E ECOPLY® BARRIER RIGID AIR BARRIER SYSTEM for plywood used as a rigid air barrier.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

SCI side clearance to insulation

### Documents

### 1.3 DOCUMENTS

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

<a href="#">NZBC C/AS1</a>	Protection from fire for buildings with sleeping (residential) and outbuildings (risk group SH)
<a href="#">NZBC C/AS2</a>	Protection from fire for buildings other than risk group SH
<a href="#">NZBC C/VM1</a>	Protection from Fire
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">NZBC G9</a>	Electricity
<a href="#">NZBC H1/AS1-AS2</a>	Energy efficiency
<a href="#">AS/NZS 5110</a>	Recessed Luminaire Barriers
<a href="#">AS/NZS 3000</a>	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
<a href="#">AS/NZS 4859.1</a>	Thermal insulation materials for buildings - General criteria and technical provisions
<a href="#">AS/NZS 60598 Part 2.2</a>	Luminaires Particular requirements – Recessed luminaires
<a href="#">NZS 4246</a>	Energy efficiency - Installing bulk thermal insulation in residential buildings
<a href="#">BRANZ Appraisal 682</a>	Terra Lana Wool Insulation
<a href="#">Electricity (Safety) Regulations 2010</a>	
<a href="#">Health and Safety at Work Act 2015.</a>	

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/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

Terra Lana, Technical Datasheet, 1 March 2023



[Branz Appraisal 682](#) - Terra Lana Wool Insulation  
 Terra Lana 50-year product Warranty  
 Terra Lana Drop-In Floor insulation - 14-day product exposure Warranty  
 Terra Lana Wool Insulation, Installation Instructions. Version 1, 5 December 2022  
[Marshall Day Acoustics - report on Terra Lana 90mm insulation](#) - Chatterblock  
[Marshall Day Acoustics - report on Terra Lana 60mm insulation](#) - Chatterblock

Manufacturer/supplier contact details  
 Company: **Terra Lana Products Ltd**  
 Web: [www.terralana.co.nz](http://www.terralana.co.nz)  
 Email: [sales@terralana.co.nz](mailto:sales@terralana.co.nz)  
 Telephone: 0800 485 262 / (03) 982 0211

## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

50 years: For materials (refer Terra Lana for details)

- Provide this warranty on the manufacturer/supplier 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.

## Requirements

### 1.6 QUALIFICATIONS GENERAL

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Terra Lana** systems, or associated components and products.

### 1.8 RETURNING OFFCUTS TO TERRA LANA FACTORY FOR RECYCLING

After completion of works, the installer/contractor contacts Terra Lana manufacturer/supplier to organise return of any offcuts to the factory for recycling.

## Performance - General

### 1.9 COMPLIANCE

Terra Lana Wool Insulation, meets the requirements of [Branz Appraisal 682](#) [2022] when designed, used, installed and maintained within the standards and conditions of this Appraisal.

### 1.10 FIRE PREVENTION

Provide separation or protection from heat sources: fireplaces, heating appliances, flues, chimneys and recessed luminaires to [NZBC C/VM1](#), [NZBC C/AS1-AS2](#) and [NZBC G9/VM1](#).

### 1.11 SOUND RATING REQUIREMENTS

Provide sound rated systems as detailed in SELECTIONS.

## 2 PRODUCTS

### Materials

### 2.1 CEILING SERVICE CAVITY INSULATION

**Terra Lana Ceiling Service Cavity** insulation to [NZBC H1/AS1-AS2](#) and [AS/NZS 4859.1](#), is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.



## 2.2 WALL INSULATION - SEGMENT / BLANKET

**Terra Lana Wall** insulation to [NZBC H1/AS1-AS2](#) and [AS/NZS 4859.1](#), is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

## 2.3 NEW BUILD DROP IN FLOOR INSULATION

**Terra Lana New Build Drop In Floor** insulation to [NZBC H1/AS1-AS2](#) and [AS/NZS 4859.1](#), is manufactured from a minimum of 60% recycled and new, sheep wool fibre, combined with high performance melt bond polyester fibres. Refer to SELECTIONS for options.

## 2.4 TERRA LANA CHATTERBLOCK® ACOUSTIC WALL / MID-FLOOR INSULATION

**Terra Lana Chatterblock®** acoustic insulation to [NZBC H1/AS1-AS2](#) and [AS/NZS 4859.1](#). Recycled Terra Lana insulation offcuts blended with polyester melt bond fibre. It varies in colour from light to dark grey. Chatterblock® is designed to absorb reverberation within walls, to improve the acoustic performance of wall systems. Refer to SELECTIONS for options.

### Components

## 2.5 STAPLES FOR UNDERFLOOR INSULATION

Use 14mm stainless steel staples, edge fix insulation at no greater than 100mm centres.

## 2.6 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

## 2.7 PLASTIC STRAPPING TAPES

Proprietary plastic strapping tape, stapled over framing to retain insulation in unlined wall, ceiling and underfloor locations.

For drained cavities where stud spaces are greater than 450mm and only flexible underlay is used, strapping required to [NZBC E2/AS1](#), paragraph 9.1.1.5.

## 2.8 STAPLES FOR FIXING PLASTIC STRAPPING

Use galvanized staples with 10mm crown and 8 or 10mm leg.

### Accessories

## 2.9 BARRIERS/GUARDS

A proprietary barrier manufactured and tested to AS/NZS 5110. Consisting of a rigid non-combustible, electrically non-conductive material.

## 2.10 INSTALLER/APPLICATOR TOOLS

Terra Lana proprietary set-down joist clips for 100mm thick segments, proprietary stapler, proprietary cutting clamp.

## 3 EXECUTION

### Conditions

## 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

## 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

## 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Identify recessed luminaire manufacturer's:

- recessed luminaires type/mark
- insulation characteristics and
- insulation installation clearances

Follow Table 1, [NZS 4246](#) and Figure 4.9 Default minimum clearances, [AS/NZS 3000](#) where insulation installation clearances are not known.



Moisture content: 20% maximum for timber framing at the time of insulation installation  
 Location and framing Cavities are not interconnected

### 3.4 HAZARD & RISK MANAGEMENT

To [Health and Safety at Work Act 2015](#) and take all safety precautions necessary to reduce potential hazards and risks. Refer also to [NZS 4246](#), Appendix B. - Health and Safety.

#### **Application - general**

### 3.5 INSULATION - GENERAL

Remove insulation from packaging within 3 months for full loft recovery.

### 3.6 INSTALL INSULATION - GENERAL

Lay, install, fit and fix insulation without gaps, tucks, folds and over compaction to [NZBC H1/AS1 H1/AS2, C/AS1, C/AS2, BRANZ Appraisal 682](#) and the recessed light fitting manufacturer's requirements. For housing and buildings up to 300m<sup>2</sup>. Install in accordance to [NZS 4246](#) section 6 Ceilings & Roofs. For buildings greater than 300m<sup>2</sup>. Install insulation in accordance with [AS/NZS 3000](#) as required by [NZBC G9/VM1](#) and the Electricity (Safety) Regulations. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath. For optimum performance, use within 6-months of the date of manufacture (on the pack label).

### 3.7 INSULATION CLEARANCE - ROOFING UNDERLAY

Ensure a minimum 25mm clearance is maintained between the insulation and any non-rigid roofing underlay.

### 3.8 INSULATION CLEARANCES - GENERAL

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts, fireplaces and chimneys. Gaps to be to the [NZS 4246](#) and [AS/NZS 3000](#) or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturer requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings). Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of [NZS 4246](#).
- The insulation is exposed to the source of heat or equipment etc.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with equipment manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to [NZS 4246](#) to maintain gaps.

### 3.9 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to [AS/NZS 60598.2.2](#);

- Existing fittings or retrofit situations, fittings may be unmarked
- New fittings can only be labelled - CA 90, CA 135, IC, & IC-4

Refer to clause INSULATION CLEARANCES TO RECESSED LIGHT FITTINGS.

### 3.10 INSULATION CLEARANCES TO RECESSED LIGHT FITTINGS

Maintain clearances between Terra Lana insulation and recessed luminaires in accordance with luminaires stated clearances. If no clearances are stated then maintain a minimum default clearance of 100mm, [AS/NZS 3000:2007](#) Clause 4.5.2.3.4. For independent control gear, place on top of insulation and 50mm from fitting. If not on top allow 50mm clearance to insulation, do not cover. Includes - transformers, ballasts and drivers etc. Maintain clearance by placing guard around control gear, refer to [NZS 4246](#) figure 15.



3.11 INSULATION CLEARANCES LIGHT FITTINGS (OTHER THAN RECESSED)

Type of fitting	Minimum insulation clearance	Comments
Independent control gear.	Place on top of insulation and 50mm from fitting.	If not on top allow 50mm clearance to insulation, do not cover. Includes - transformers, ballasts and drivers etc. Maintain clearance by placing guard around control gear, refer to <a href="#">NZS 4246</a> figure 15.
Surface fittings not exposed to insulation	Nil	Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings and exposed insulation.	200mm	This is exposed insulation to any part of the exposed fitting and bulb/tube (e.g. exposed light in an unlined basement). Secure insulation.

3.12 INSULATION CLEARANCES TO INBUILT RECESSED HOT APPLIANCES  
Refer to [NZS 4246](#).

3.13 INSULATION CLEARANCES FROM EXTRACTS, VENTS, PIPES & ROOF UNDERLAY

Application	Minimum insulation clearance	Comments
Ducted fan motors	50mm	Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts)
Ducted fan ducts	Abut	Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Passive vents (still in use)	200mm	To prevent debris falling through. Clearance may be able to be reduced, with more cohesive insulation, like some of the rigid plastic types or providing a fixed barrier around the vent.
Plumbing penetrations through floors	100mm	Keep gap between pipe penetration and floor insulation in case of leaks.
Roofing material/underlay	25mm	From underside of roofing or flexible roofing underlay, to prevent wicking

**Application - insulation wall**

3.14 FIT WALL INSULATION

Friction fit **Terra Lana** insulating segments in place to completely fill the whole of the cavities. Tear across the width of the Fold at dwangs/nogs and the bottom plate aiming to slightly oversize by 5 to 10mm on each edge for friction fit to framing and each other. Rip and fit smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulation over the whole of the installation.

Refer to SELECTIONS for options.



**Application - under floor/mid-floor**

3.15 FIT MID-FLOOR ACOUSTIC INSULATION BLANKET - BETWEEN FLOOR JOISTS

Fit **Terra Lana** acoustic insulation blanket to Terra Lana instructions. Tear across the width of the roll at dwangs/nogs and the perimeter joist aiming to slightly oversize by 5 to 10mm on each edge for friction fit to framing and other batting. Rip and fit smaller pieces for smaller spaces and around penetrations. Leave no gaps between and maintain full thickness of the insulation over the whole of the installation. Refer to SELECTIONS for options.

**Application - new build, drop in from above floor joists**

3.16 STAPLE PLASTIC STRAPPING TAPE ON TOP OF JOISTS

Using the proprietary set-down tool supplied by Terra Lana, staple 19mm wide plastic strapping to Terra Lana Installation Guide at 300mm centres maximum, and within 150mm at each end of the insulation segment. For segments less than 500mm in length, a minimum of two straps are required. Maintain the minimum set-down for each joist spacing.

3.17 INSTALL NEW BUILD DROP IN FLOOR INSULATION

Install new build drop in insulation to the Terra Lana Drop In Floor Installation Guide. Install the insulation with the more rigid side facing down. Push each slab of insulation down evenly on both sides until the slab is cradled within the strapping. Allow a 5mm overlap where the insulation abuts another slab or blocking, Do not cover vents.

**Application - components**

3.18 LAY PLASTIC STRAPPING TAPE

Lay at right angles across the framing at a minimum of 300mm centres, staple tape to each framing member with stainless steel staples.

**Completion**

3.19 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.terralana.co.nz](http://www.terralana.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

4.1 TERRA LANA WALL INSULATION - FOR 90MM STUDS

Location: Refer drawings  
 Brand: **Terra Lana Wall Insulation**  
 R-Value: Refer drawings

4.2 TERRA LANA WALL INSULATION - FOR 140MM STUDS

Location: Refer drawings  
 Brand: **Terra Lana Wall Insulation**  
 R-Value: Refer drawings

4.3 TERRA LANA NEW BUILD DROP IN FLOOR

Location: Refer drawings  
 Brand: **Terra Lana New Build Drop In Floor**  
 R-Value: Refer drawings

4.4 TERRA LANA CHATTERBLOCK® ACOUSTIC INSULATION- INTERNAL WALLS/MID-FLOOR INSULATION

Location: Refer drawings  
 Brand: **Terra Lana Chatterblock®**



# 4855JG JURALCO GLASS BALUSTRADE SYSTEMS

## 1 GENERAL

This section relates to the fabrication, supply and installation of Juralco's range of frameless glass balustrade systems.

It includes:

- Balustrade glazing
- Balustrade mounting system
- Associated components to complete the installation

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

PFC	Parallel flange channel
SS	Stainless steel

### Documents

### 1.2 DOCUMENTS

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

NZBC B1/VM1	Structural design of buildings
NZBC B2/AS1	Durability provisions for building elements
NZBC F2/AS1	Hazardous Building Materials
NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
AS/NZS 2208	Safety glazing materials in buildings
NZS 4223.3	Glazing in buildings - Human impact safety requirements

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Juralco's Technical Manuals:

- Juralco Edgetec Mini Post Balustrade and Pool Fencing System - Issue 10-24 v1
- Juralco Edgetec Infinity Balustrade System - Issue 3-22 v1
- Juralco Edgetec JH Clamp Balustrade System - Issue 12-23 v1
- Juralco Edgetec Single Disc Anchor Balustrade System - Issue 5-24 v2
- Juralco Edgetec Double Disc Anchor Balustrade System - Issue 7-24 v1
- Juralco Edgetec Matador® Mini Post Balustrade System - Issue 9-23 v1
- Juralco Edgetec PosiGlaze Balustrade System - Issue 11-23 v1
- Juralco Edgetec MegaGrip Balustrade System - Issue 7-24v1
- Juralco Interlinking Rail Systems - Issue 1-24 v1
- Juralco's BPIR documentation for Edgetec Balustrade Systems

Manufacturer/supplier contact details

Company:	Juralco Aluminium Building Products Ltd
Web:	<a href="http://www.juralco.co.nz">www.juralco.co.nz</a>
Email:	<a href="mailto:specify@juralco.co.nz">specify@juralco.co.nz</a>
Telephone:	09 478 8018

### Warranties

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For Juralco Edgetec frameless glass balustrade systems



Powder coat warranty as offered by the powder coat system supplier.

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

#### 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For installation of Juralco balustrade system

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

#### Requirements

#### 1.6 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Workers to be approved by manufacturer / supplier. If requested provide evidence of qualification / experience prior to commencing work. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

#### 1.7 ACCEPTABLE PRODUCT/MATERIAL SUPPLIERS

Where a product or material supplier is named in SELECTIONS, the product/material must be provided by the named supplier. Where more than one named supplier, any one of the named suppliers will be acceptable.

#### 1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

#### 1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the powder coating care, glass care, stainless steel care and maintenance information as electronic PDF format documents.

Provide this information prior to practical completion.

#### Compliance information

#### 1.10 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Manufacturer / supplier warranty
- Installer / applicator warranty
- Producer Statement - Construction from the applicator / installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

#### Performance - Wind

#### 1.11 DESIGN PARAMETERS WIND

Design to be in accordance with manufacturer requirements and as appropriate for the project wind design stated in the general section 1220 PROJECT.



## 2 PRODUCTS

### Balustrade system

#### 2.1 JURALCO EDGETEC GLASS BALUSTRADE SYSTEM

To [NZBC B1/VM1](#), [NZBC B2/AS1](#), [NZBC F2/AS1](#), [NZBC F4/AS1](#), [NZBC F9/AS1](#), [NZS 4223.3](#).  
Juralco Edgetec Glass Balustrade System comprises frameless glazing secured by proprietary mounting clamps/anchors. Completed with top rails, handrails, stiffener brackets where required or selected. Refer to SELECTIONS.

### Balustrade mounting

#### 2.2 JURALCO EDGETEC JH CLAMP

JH clamps, supplied as kit, comprising 165mm x 50mm powder coated 6060 T5 grade aluminium extrusion two-part clamps, rubber gaskets, aluminium cover panels and fasteners required for the clamp assembly. Refer to SELECTIONS.

### Balustrade glazing

#### 2.3 SENTRYGLAS GLASS

Toughened laminated Grade A Safety glass to [AS/NZS 2208](#) made from layers of SentryGlas glass bonded with SentryGlas ionoplast interlayers.

### Components

#### 2.4 DOUBLE SIDED TAPE

Juralco's double sided adhesive tape used for fastening clamp covers and channels. Available in clear, 8mm x 1.0mm size and in acrylic, 8mm x 0.8mm size. Refer to SELECTIONS.

#### 2.5 INJECTION MORTAR

Fischer FIS V 300 high performance, UV resistant, two component injection mortar in shuttle cartridge, colour grey.

#### 2.6 PVC TAPE / SPACER

General purpose PVC tape made from flexible polyvinyl chloride (PVC) adhesive coated film or similar material spacer for separating powder coated aluminium components from steel and concrete surfaces and interlinking rail fixing brackets from the building structure.

#### 2.7 FIXINGS

Refer to SELECTIONS. Stainless steel fixings to be of type 316.

### Finishes

#### 2.8 FINISHES

Dulux polyester powder coating for aluminium, satin or polished finish for stainless steel. Refer to SELECTIONS.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 GLAZING SUPPLY

Organise for the supply of glazing by nominated glazing supplier. Refer to SELECTIONS.

#### 3.3 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.



3.4 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

**Installation/application**

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 DRILL FIXING HOLES

Mark out clamp/anchor and fixing locations and drill fixing holes to diameter and depth required by Juralco's Technical Manuals for the specified fastener type.

3.7 APPLY INJECTION MORTAR TO CONCRETE

Apply Fischer FIS V 300 injection mortar to drill holes to manufacturer's instructions. Tool off smoothly and remove any excess mortar.

3.8 INSTALL PVC TAPE / SPACER

Install general purpose PVC tape or similar material spacer to manufacturer's instructions between clamps/anchors and steel or concrete surfaces.

3.9 INSTALL CLAMPS/ANCHORS

Assemble and install clamps/anchors to Juralco's Technical Manuals. Install plumb, level and true to line and face.

3.10 INSTALL GLASS

Install glass panels to Juralco's Technical Manuals plumb, level and true to line. Ensure secure fit of glass panels to clamps/anchors.

**Completion**

3.11 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.juralco.co.nz](http://www.juralco.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

4.1 GLAZING SUPPLIER

Company: Viridian Glass  
 Website: [www.viridianglass.co.nz](http://www.viridianglass.co.nz)  
 Installation: By supplier

**Juralco Edgetec JH Clamp balustrade system**

4.2 JURALCO EDGETEC JH CLAMP BALUSTRADE

Location: Refer drawings  
 Supplier: Juralco Aluminium Building Products Ltd  
 Brand/type: Juralco Balustrade System  
 System: Edgetec JH Clamp  
 Glass type: 13.52mm SentryGlas  
 Glass strength: Minimum 100Mpa  
 Glass edges: Polished  
 Cover plate tape: 8mm x 0.8mm acrylic double sided tape (JMF/X02/66)  
 Clamp finish: Duralloy® +PLUS powder coat



# 5113G GIB® PLASTERBOARD LININGS

## 1 GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- superior finish quality systems
- bracing systems
- fire rated garage boundary wall systems
- wet area systems
- GIBFix® Framing systems

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

AWCINZ Association of Wall and Ceiling Industries New Zealand

#### Documents

### 1.2 DOCUMENTS

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

<a href="#">NZBC C/AS2</a>	Protection from fire for buildings other than risk group SH
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">AS/NZS 2588</a>	Gypsum plasterboard
<a href="#">AS/NZS 2589</a>	Gypsum linings - Application and finishing
<a href="#">NZS 3604</a>	Timber-framed buildings
ISO 5660.1	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 1: Heat release rate (cone calorimeter method)
ISO 5660.2	Reaction-to-fire tests - Heat release, smoke production and mass loss rate - Part 2: Smoke production rate (dynamic measurement)
BRANZ Technical Paper P21	BRANZ Technical Paper P21: A wall bracing test and evaluation procedure (2010)

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section:

- GIB® Site Guide (April 2024)
- GIB® Noise Control Systems (September 2017)
- GIB® Fire Rated Systems (September 2024)
- GIB® Wet Area Systems (February 2021)
- GIB Toughline® Aqua (July 2018)
- GIB Ezybrace® Systems (August 2016)
- GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document (December 2016)
- GIB Ezybrace® for Light Steel Frame Systems (March 2017)
- GIBFix® Framing System (August 2016)
- GIB Rondo® Metal Batten System (September 2024)
- GIB-Cove®
- GIB RocTape®
- GIB® Goldline™ Platinum Tape-on Trims
- GIB® UltraFlex high impact corner mould
- GIB® Tough Systems (November 2014)
- [BRANZ Appraisal 289](#) (2024) GIB® Fire Rated Systems
- [BRANZ Appraisal 394](#) (2025) GIB® Noise Control Systems
- [BRANZ Appraisal 427](#) (2021) GIB® Wet Area Systems



**BRANZ Appraisal 928 (2021) GIB EzyBrace® Systems**

Manufacturer/supplier contact details

Company: Winstone Wallboards

Web: [www.gib.co.nz](http://www.gib.co.nz)

Telephone: 0800 100 442

**Requirements****1.4 NO SUBSTITUTIONS**

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

**1.5 QUALIFICATIONS**

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

**1.6 INSPECTIONS AND ACCEPTANCE**

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
- before applying finish coatings or decorative papers,

so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

**1.7 SOUND INSULATION REQUIREMENTS**

Provide the GIB® Noise Control Systems. Refer to SELECTIONS for system/STC. Include for forming and treating of perimeters of openings and penetrations in the elements to ensure the specified performance. Ensure absence of adjoining flanking paths.

**Compliance****1.8 COMPLIANCE - BRANZ APPRAISAL 394**

GIB® Noise Control Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 394](#).

**1.9 COMPLIANCE - BRANZ APPRAISAL 427**

GIB® Wet Area Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 427](#).

**1.10 COMPLIANCE - BRANZ APPRAISAL 928**

GIB EzyBrace® Systems has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 928](#).

**Performance****1.11 BRACING REQUIREMENTS**

Braced wall systems to [NZS 3604](#) when tested to BRANZ Technical Paper P21, using:

- GIB Ezybrace® Systems and/or GIB Ezybrace® Bracing Design Software
- GIB Ezybrace® Bracing Supplement Document
- GIB Ezybrace® for Steel Frame Housing (NASH) Software (to NASH Residential and Low-Rise Steel Framing Part 1 2010 Design Criteria)

Refer to drawings for location and type.

**2 PRODUCTS****Materials****2.1 GIB® PLASTERBOARD**

Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to [AS/NZS 2588](#). Refer to SELECTIONS for location, type, thickness and finish.

GIB® Standard plasterboard

GIB Wideline® plasterboard

GIB Ultraline® high quality surface plasterboard



GIB Fyreline® fire resistant plasterboard  
 GIB Braceline® & GIB® Noiseline® dual purpose wall bracing & noise control plasterboard  
 GIB Aqualine® wet area plasterboard

**Components**

2.2 CEILING BATTENS

GIB® Rondo® metal ceiling battens, batten joiners and perimeter channel.

2.3 GIBFIX® ANGLES

GIBFix® Angles, 45mm x 45mm angles, 2.4m or 2.7m long.

2.4 SCREWS

GIB® Grabber® drywall type screws as follows:

<b>Grabber® type</b>	<b>Used for fixing:</b>
High Thread	GIB Ezybrace® or Standard systems to timber
Self Tapping	Standard systems to light gauge steel or timber
Dual Thread Screws	GIBFix®, GIB Ezybrace®, or Standard systems, to light gauge steel or timber
Wafer Head Needle Tip	Light gauge metal to timber not directly under plasterboard
Pancake Head Drill Tip	Light gauge metal to light gauge metal directly under plasterboard

Refer to GIB® requirements for appropriate details.

2.5 TAPE ON TRIMS AND EDGES

GIB® Goldline™ tape-on trims  
 GIB® UltraFlex® high impact corner mould  
 GIB® Levelline® Tape on Trim

2.6 METAL ANGLE TRIMS

GIB® galvanized steel slim angle trims.

2.7 CONTROL JOINTS

GIB® Goldline™ tape-on trims

**Accessories**

2.8 ADHESIVE

Timber frame and/or steel frame:  
 GIBFix® One ultra low VOC water based wallboard adhesive  
 GIBFix® All-Bond solvent based wallboard adhesive

2.9 JOINTING COMPOUND

Bedding compound:	GIB Tradeset®, GIB Lite Blue®, GIB MaxSet®, GIB ProMix® All Purpose, GIB Plus 4®
Finishing compound:	GIB ProMix® All Purpose, GIB® Trade Finish®, GIB® Trade Finish® Lite, GIB ProMix® Lite, GIB® U-Mix, GIB Plus 4®, GIB Trade Finish® Multi
Cove:	GIB-Cove® Bond

2.10 JOINTING TAPE

GIB® jointing tape.

2.11 FIRE/ACOUSTIC SEALANT

GIB Fire Soundseal® ultra low VOC, multi use acoustic sealant that resists passage of smoke and fire.

2.12 GAP FILLER

GIB® Gap Filler ultra low VOC multi-purpose acrylic flexible filler



### 3 EXECUTION

#### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in [AS/NZS 2589](#).

#### 3.4 PRE-INSTALLATION REQUIREMENTS - TIMBER FRAMING

Check work previously carried out and confirm it is of the required standard for this part of the work.

Framing substrates shall be in accordance to [AS/NZS 2589](#), GIB® Site Guide and GIB X-Block® Radiation Shielding Systems literature.

Check timber framing moisture content is in accordance with requirements of [AS/NZS 2589](#). Refer to [NZBC E2/AS1](#) and GIB® Site Guide.

Timber framing:            18% maximum for fixing plasterboard to timber  
                                       (8-12% recommended for fixing plasterboard to timber framing if air conditioning and/or central heating are to be installed)

If GIB EzyBrace® systems are used in conjunction with GIBFix® Framing System, ensure that the positioning of the GIB HandiBrac® panel hold-down brackets are to the manufacturers recommended placements for the GIBFix® Framing System.

#### 3.5 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

**Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.**

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to [AS/NZS 2589](#).

#### 3.6 PROTECTION

Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide.

#### Application

#### 3.7 INSTALL CEILING BATTENS

Install to GIB® Rondo® Ceiling Batten Systems requirements.

#### 3.8 INSTALL GIBFIX® ANGLES

Install GIBFix® Angles to the wall and ceiling junctions to the GIBFix® Framing System requirements. Install GIBFix® Angles before installation of GIB® plasterboard linings.

Run GIBFix® Angles as continuous lengths between framing members. If joints are necessary for the GIBFix® Angles, overlap the angles by a minimum of 300mm and fix as per manufacturers requirements. When jointing GIBFix® Angles, locate the shorter section at the top of the stud.



3.9 LINING WALLS AND CEILING GENERALLY

Form to GIB® Site Guide. Ensure bulk insulation thickness shall not exceed that of the wall framing.

3.10 BOARD ORIENTATION

Minimise joints by careful sheet layout using the largest sheet sizes possible, and generally fixing horizontally. Where part sheets are required for various stud heights they should be positioned so the cut sheet is as low as possible to keep joints below eye level.

3.11 BOARD INSTALLATION FOR GIBFIX® SYSTEM

Fix the GIB® plasterboard to the GIBFix® Angle side over the stud first and then fix the GIB® plasterboard to the GIBFix® Angle only side (not over the stud). If the GIBFix® Angle only side must be fastened off first, provide additional fixings for the GIBFix® Angle to the stud, to the manufacturers requirements.

3.12 FORM NOISE CONTROL SYSTEMS

Form to GIB® Noise Control Systems requirements.

3.13 FORM WET AREA SYSTEMS

Form to GIB Aqualine® Wet Area Systems requirements.

3.14 FORM BRACING SYSTEMS

Form bracing systems to:

- GIB Ezybrace® Systems

3.15 FORM CONTROL JOINTS

Form control joints to GIB® Site Guide requirements.

3.16 INSTALL TAPE-ON TRIMS

Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

**Finishing**

3.17 FINISHING GENERALLY

To GIB® Site Guide and [AS/NZS 2589](#).

**Completion & Commissioning**

3.18 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

**Plasterboard**

4.1 GIB® STANDARD SYSTEMS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Walls & ceilings	GIB® Standard plasterboard	13mm	Min. level 4

4.2 GIB® WATER RESISTANT SYSTEMS

Location	Plasterboard type / Lining requirements	Thickness	Finish Level
Walls & ceilings (wet areas)	GIB Aqualine® plasterboard	13mm	Level 4

4.3 GIB® SOUND RATED SYSTEMS

Refer to GIB® Noise Control Systems

Location	STC / System specification	Finish Level
Refer drawings	Refer drawings	Min. level 4



#### 4.4 GIB® BRACING SYSTEMS

Refer to:

- GIB Ezybrace® Systems

For bracing element location refer to drawn documentation.

#### **Accessories**

#### 4.5 GIB® RONDO® CEILING BATTENS

Brand/type: GIB® Rondo® Ceiling battens

#### 4.6 GIBFIX® FRAMING SYSTEM COMPONENTS

Brand/type: GIBFix® Angles

Fixings: GIB® Grabber® Dual Head Screws



## 5433E ECOPLY® FLOORING

### 1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) Ecoply® plywood sheets for floors.

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FSC® Forest Stewardship Council®

#### Documents

#### 1.2 DOCUMENTS

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

NZBC C/AS2	Protection from fire
NZBC C/VM2	Protection from fire
NZS 1170.5	Structural design actions - Earthquake actions - New Zealand
AS/NZS 1604.3:2012	Preservative-treated wood-based products - Part 3: Plywood
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3604	Timber-framed buildings

#### 1.3 MANUFACTURER DOCUMENTS

Carter Holt Harvey Plywood Ltd documents relating to work in this section are:

Ecoply® Specification and installation guide December 2023

Ecoply® Plywood Products: Flooring, Product Technical Statement and BPIR.

Manufacturer/supplier contact details

Company Carter Holt Harvey Plywood Limited

Web: [chhply.co.nz](http://chhply.co.nz)

Email: [info@ecoply.co.nz](mailto:info@ecoply.co.nz)

Telephone: 0800 326 759

#### Requirements

#### 1.4 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

#### 1.5 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

## 2 PRODUCTS

### Materials

#### 2.1 ECOPLY® FLOORING (PT)

Radiata pine veneer ply manufactured to [AS/NZS 2269.0](#). F11/F8 stress grade to 19mm thick longspan sheets and F8/F5 stress grade to 21mm & 25mm sheets. CD surface grade, face sanded veneer, machine grooves to long edges with polypropylene plastic tongue in one edge for a tongue-and-groove joint. Veneers bonded together with synthetic phenolic (PF) resin forming a Type A bond. H3.2 CCA treated to [AS/NZS 1604.3](#), when used as a wet area substrate.



## Components

### 2.2 SCREWS IN TIMBER

Stainless steel, counter-sunk to Carter Holt Harvey Plywood Ltd requirements for size and use.

17mm plywood:	10g x 40mm
19 - 21 mm plywood:	10g x 45mm
25mm plywood:	10g x 50mm

### 2.3 ADHESIVE

Refer to SELECTIONS.

### 2.4 BRUSH ON TREATMENT

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear or green colour product.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1250 TEMPORARY WORKS & SERVICES for protection requirements. Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Ensure support framing is completed to Carter Holt Harvey Plywood Ltd stated requirements for laying plywood sheets.

Ensure all Ecoply® square edge sheet edges and joints will be fully supported with framing width of minimum 45mm at each Ecoply® sheet joint.

Ensure moisture content is:

Timber: 18% maximum for framing

### Application

#### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

#### 3.5 TREAT

Treat cuts and holes in sheets with a brush-on timber preservative treatment.

#### 3.6 SHEET LAYOUT

Lay sheets to Ecoply® Specification and Installation Guide (or specific design) stated requirements.

Lay sheets in a staggered layout, face-grain of sheet at right-angles to support and with sheets in square, true alignment and plane. Provide a 2 to 3mm expansion gap between square edges of sheets and a 5mm expansion gap at the perimeter of the floor, unless otherwise specified. Lay sheets continuous over at least two spans. Refer to SELECTIONS for fixing requirements.

#### 3.7 ADHESIVE FIXING

Apply a bead or daubs of adhesive to adhesive manufacturers and Carter Holt Harvey Plywood Ltd requirements and fastener pattern, work from the middle of the sheet outwards to develop glue line pressure.



**3.8 MECHANICAL FIXINGS**

Fixings at least 3 fastener diameters or 7 mm from square edges and 15mm from tongue and groove edges. Fasten edges and ends of sheets at 150 mm centres, and within the panel at no more than 300 mm centres.

**Completion & Commissioning****3.9 COMPLETION MATTERS**

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [chhply.co.nz](http://chhply.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

**Materials****4.1 ECOPLY® FLOORING (PT) - T&G**

Location:	Refer drawings
Manufacturer:	Carter Holt Harvey Plywood Ltd
Brand/grade:	Ecoply® Flooring (pt) / CD
Thickness / Stress grade:	21 mm F8
Sheet width:	1200 mm
Treatment:	Untreated
Fixing:	Screw & Adhesive

**Components****4.2 ADHESIVE**

Type:	Soudal Gorilla Grip
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## 6211MWMapei WALL TILING

### 1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external wall tiling systems.

It includes:

- primers
- waterproofing membranes
- adhesives
- grouts
- sealants

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

#### 1.2 RELATED WORK

Refer to 6221M MAPEI FLOOR TILING SOLUTIONS for floor tiling.

#### Documents

#### 1.3 DOCUMENTS

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

AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
<a href="#">NZS 4121</a>	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)

Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)

Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)

Mapei® product Technical Data Sheets

[BRANZ Appraisal 484](#) (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart, and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022

[BRANZ Appraisal 485](#) (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022

Mapei® product BPIR

Manufacturer/supplier contact details

Company: MBP (NZ) Ltd.

Web: [www.mbpltd.co.nz](http://www.mbpltd.co.nz)

Email: [enquiries@mbpltd.co.nz](mailto:enquiries@mbpltd.co.nz)

Telephone: 09 921 1994



## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years:	For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS
10 years	For other Mapei ceramic tile and stone products (excluding Ultracare products)

- Provide this warranty on the manufacturer/supplier standard form. (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of purchase

Refer to the general section 1237 WARRANTIES for additional requirements.

### 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years:	For installation
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- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.8 QUALIFICATIONS WORKERS - MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

### 1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified Mapei systems, components and associated products listed in this section.

## Compliance information

### 1.10 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 484](#).

### 1.11 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 485](#).

### 1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents

## 2 PRODUCTS

### Levelling mortar

#### 2.1 NIVORAPID

Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.



- 2.2 NIVORAPID & LATEX PLUS  
Cement-based, thixotropic levelling mortar with flexible polymer water dispersion for thicknesses from 3mm to 20mm.
- 2.3 PLANITOP SMOOTH & REPAIR R4 ZERO  
Cement-based, fibre reinforced levelling mortar for thicknesses from 3mm to 40mm.
- 2.4 PLANITOP FAST 330  
Cement-based, fibre-reinforced levelling mortar with synthetic resin additives, for thicknesses from 3 to 30mm.

### Primers

- 2.5 PRIMER 3296  
Acrylic polymer based primer in water dispersion for porous substrates.
- 2.6 ECO PRIM T PLUS  
Acrylic resin primer in water dispersion.
- 2.7 ECO PRIM GRIP PLUS  
One component synthetic resin primer in water dispersion.
- 2.8 PLANISEAL MR  
Two component water based epoxy primer/barrier hydrostatic resistant coating.

### Waterproofing membrane

- 2.9 MAPEGUM WPS  
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.
- 2.10 MAPELASTIC AQUADEFENSE  
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Light blue colour.
- 2.11 MAPELASTIC SMART  
Two component flexible cementitious liquid waterproofing membrane.

### Adhesives

- 2.12 GRANIRAPID  
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.
- 2.13 KERAQUICK MAXI S1  
Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.
- 2.14 KERAQUICK MAXI S1 & LATEX PLUS  
Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.
- 2.15 KERABOND PLUS & ISOLASTIC  
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.
- 2.16 KERALASTIC T  
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.
- 2.17 KERAFLEX MAXI S1 ZERO  
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.
- 2.18 KERAPOXY ADHESIVE  
Two component epoxy adhesive. Classified R2T to ISO 13007.1.



- 2.19 **ULTRAMASTIC III**  
Pre-mixed acrylic resin paste adhesive. Classified D2TE to ISO 13007.1.
- 2.20 **ADESILEX P10 & ISOLASTIC FOR MOSAICS**  
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.
- 2.21 **ULTRALITE S1 FLEX ZERO**  
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.
- 2.22 **ULTRALITE S2 T FLEX**  
One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

### **Grouts**

- 2.23 **ULTRACOLOR PLUS**  
Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.
- 2.24 **KERAPOXY**  
Two-component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.
- 2.25 **KERAPOXY EASY DESIGN**  
Two-component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

### **Components - waterproofing**

- 2.26 **MAPEBAND SA TAPE**  
Alkali resistant butyl self-adhesive waterproofing tape.
- 2.27 **MAPEBAND SA GASKET**  
Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.
- 2.28 **MAPEBAND EASY TAPE**  
Alkali resistant rubber waterproofing tape with a non-woven fabric face and back.
- 2.29 **MAPEBAND EASY GASKET**  
Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.
- 2.30 **MAPENET 150 REINFORCING MESH**  
Alkali-resistant fiberglass reinforcing mesh.
- 2.31 **MAPETEX SEL REINFORCING FABRIC**  
Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

### **Components - cleaning**

- 2.32 **ULTRACARE KERANET EASY**  
Acid-based, pre-mixed general tile and grout cleaner.
- 2.33 **ULTRACARE KERAPOXY CLEANER**  
Concentrated liquid detergent for removing epoxy grout.

### **Accessories**

- 2.34 **TRIMS**  
Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.



- 2.35 **MOVEMENT JOINT - ANGLE**  
Metal or PVC angle. Refer to SELECTIONS.
- 2.36 **MOVEMENT JOINT - INSERT**  
Polyurethane or neoprene insert. Refer to SELECTIONS.
- 2.37 **MOVEMENT JOINT - SILICONE SEALANT**  
One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.
- 2.38 **MOVEMENT JOINT - POLYURETHANE SEALANT**  
Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.
- 2.39 **MOVEMENT JOINT - BACKING ROD**  
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.

### 3 EXECUTION

#### Conditions

- 3.1 **DELIVERY, STORAGE & HANDLING OF PRODUCTS**  
Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.
- 3.2 **ROUTINE MATTERS**  
Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.
- 3.3 **PRE-INSTALLATION REQUIREMENTS**  
Check work previously carried out and confirm it is of the required standard for this part of the work.  
Moisture content      75% maximum relative humidity, minimum 28 day cured concrete:

#### Installation/application

- 3.4 **STANDARDS AND TOLERANCES**  
Refer to the general section 1270 CONSTRUCTION for general requirements.
- 3.5 **APPLICATION GENERALLY**  
To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.
- 3.6 **APPLY PRIMER**  
Brush or roll primer over surface.
- 3.7 **APPLY LEVELLING MORTAR**  
Mix levelling mortar to Mapei instructions. Trowel onto prepared substrate to required thickness and fall, where required:
- 3.8 **APPLY WATERPROOFING MEMBRANE**  
Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.
- 3.9 **SETTING OUT**  
Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Provide joint widths to the tile manufacturer's recommendations.
- 3.10 **MOVEMENT JOINTS GENERAL**  
Provide movement joints to AS 3958.1:  
Depth:                      Movement joints to go right through the tile and bed to the background.



Width:	6mm
Locations:	At junctions with floors, columns, nibs, and similar. Around sanitary fixtures. Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards). At changes in substrate.
Large areas:	Provide vertical joints at not less than 3.5 metres spacing along the length of a wall. Provide horizontal joints at each storey rise in the height of a wall. Provide joints over existing joints in the substrate.

### 3.11 ADHESIVE APPLICATION GENERAL

For general wall tiling, use a 6mm x 6mm x 6mm notched trowel.

For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

### 3.12 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

### 3.13 INSTALL TRIM

Press trim into wet adhesive.

### 3.14 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

### 3.15 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids.

Butter the back of tiles with ribbed or keyed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile. Remove a tile periodically during installation to check for correct adhesive coverage. Do not fix tiles over skinned adhesive. Remove surplus adhesive from tile surfaces before adhesive sets.

### 3.16 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

### 3.17 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

### 3.18 INSTALL MOVEMENT JOINT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

## Completion & Commissioning

### 3.19 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS

For further details on selections go to [www.mbpltd.co.nz](http://www.mbpltd.co.nz).

Substitutions are not permitted to the following, unless stated otherwise.



## Materials

### Tiled Internal Walls

#### 4.1 MAPEI INTERNAL WALL TILING SYSTEM OVER FIBRE CEMENT SHEET - WET AREA

Location:	Refer drawings
Supplier:	MBP (NZ) Ltd.
Substrate:	Fibre cement sheet
Levelling mortar:	Nivorapid & Latex Plus
WPM:	Mapelastic Smart
Grout:	Kerapoxy
Grout colour:	TBA



## 6221M MAPEI FLOOR TILING SOLUTIONS

### 1 GENERAL

This section relates to the supply and installation of MBP (NZ) Ltd internal and external floor tiling systems.

It includes:

- primers
- screed and levelling compounds
- acoustic underlays
- waterproofing membranes
- adhesives
- grouts
- sealants

#### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

CFC	Compressed fibre cement
PVC	Polyvinyl chloride
WMAI	Waterproofing Membrane Association (NZ) Incorporated
WPM	Waterproofing membrane

#### 1.2 RELATED WORK

Refer to 6211MW MAPEI WALL TILING for wall tiling.

#### Documents

#### 1.3 DOCUMENTS

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

<a href="#">NZBC D1/AS1</a>	Access routes
<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">NZBC E3/AS1</a>	Internal moisture
<a href="#">AS/NZS 2908.2</a>	Cellulose-cement products - Flat sheet
AS 3958.1	Ceramic tiles - Guide to the installation of ceramic tiles
ISO 13007.1	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for adhesives
ISO 13007.3	Ceramic tiles - Grouts and adhesives - Terms, definitions and specifications for grouts
<a href="#">NZS 4121</a>	Design for access and mobility - Buildings and associated facilities
WMAI CoP	Code of Practice for Internal Wet Area Membrane Systems

#### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Mapei® Technical Manual - Tile Installer's Manual - Products for Ceramic Tiles (Sept 2016)  
 Mapei® Technical Manual - Cementitious adhesives for installing ceramic tiles and natural stone (Sept 2016)  
 Mapei® Technical Manual - Guide for the Installation of Ceramic Materials (Sept 2018)  
 Mapei® product Technical Data Sheets  
[BRANZ Appraisal 484](#) (2018) - Mapegum WPS, Mapelastic, Mapelastic Smart and Mapelastic AquaDefense Wet Area Membranes - Amended 6 October 2022  
[BRANZ Appraisal 485](#) (2018) - Mapelastic Smart and External Waterproofing Membranes - Amended 6 October 2022  
 Mapei® product BPIR



Manufacturer/supplier contact details  
 Company: MBP (NZ) Ltd.  
 Web: [www.mbpltd.co.nz](http://www.mbpltd.co.nz)  
 Email: [enquiries@mbpltd.co.nz](mailto:enquiries@mbpltd.co.nz)  
 Telephone: 09 921 1994

## Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

- |           |  |
|-----------|--|
| 15 years: | For Mapelastic AquaDefense, Mapelastic Smart and Mapegum WPS         |
| 10 years  | For other Mapei ceramic tile products (excluding Ultracare products) |

- Provide this warranty on the manufacturer/supplier standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of purchase

Refer to the general section 1237 WARRANTIES for additional requirements.

### 1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

- |          |                  |
|----------|------------------|
| 2 years: | For installation |
|----------|------------------|

- Provide this warranty on the installer/applicator standard form (if not available then use the standard form in the general section 1237WA WARRANTY AGREEMENT)
- Commence the warranty from the date of practical completion of the contract works

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.7 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

### 1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS

Waterproofing applicators to be approved by MBP (NZ) Ltd. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

### 1.9 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified Mapei systems, components and associated products listed in this section.

## Compliance information

### 1.10 COMPLIANCE - BRANZ APPRAISAL 484

Mapegum WPS, Mapelastic AquaDefense and Mapelastic Smart internal wet area membranes have been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 484](#).

### 1.11 COMPLIANCE - BRANZ APPRAISAL 485

Mapelastic Smart external wet area membrane has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its [BRANZ Appraisal 485](#).

### 1.12 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicator approval certificate from the manufacturer / importer / distributor
- Producer Statement - Construction from the applicator / installer
- Other information required by the BCA in the Building Consent Approval documents



## 2 PRODUCTS

### Underlay

#### 2.1 FIBRE CEMENT UNDERLAY

Fibre cement board to [AS/NZS 2908.2](#) manufactured from cellulose fibre, Portland cement, sand and water, or glass-mat gypsum board manufactured from gypsum core with coated fiberglass mat facing.

### Levelling compounds

#### 2.2 FIBERPLAN

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 10mm.

#### 2.3 ULTRAPLAN RENOVATION

Cement-based, fibre-reinforced, self-levelling compound for thicknesses from 3mm to 40mm.

#### 2.4 ULTRAPLAN ECO

Cement-based, self-levelling smoothing compound for thicknesses from 1mm to 10mm.

#### 2.5 NIVORAPID

Cement-based, thixotropic levelling mortar for thicknesses from 3mm to 20mm.

#### 2.6 NIVORAPID & LATEX PLUS

Cement-based, thixotropic levelling mortar with flexible polymer water dispersion for thicknesses from 3mm to 20mm.

#### 2.7 UC LEVELLER

Cement-based, self-levelling compound for thicknesses from 3mm to 70mm.

#### 2.8 MAPECEM

Cement-based, rapid setting hydraulic binder for shrinkage-compensated screeds.

#### 2.9 MAPECEM PRONTO

Cement-based, pre-mixed, rapid setting shrinkage compensated screed.

#### 2.10 TOPCEM

Cement-based, hydraulic binder for shrinkage-compensated screeds.

#### 2.11 PLANICRETE

Synthetic-rubber latex additive for use with cement based screeds and adhesives to improve mechanical and adhesive characteristics.

### Primers

#### 2.12 PRIMER 3296

Acrylic polymer based primer in water dispersion for porous substrates.

#### 2.13 ECO PRIM T PLUS

Acrylic resin primer in water dispersion.

#### 2.14 ECO PRIM GRIP PLUS

One component synthetic resin primer in water dispersion.

#### 2.15 PLANISEAL MR

Two component water based epoxy primer/barrier hydrostatic resistant coating.

### Waterproofing membrane

#### 2.16 MAPEGUM WPS

One component synthetic resin-based paste in water dispersion liquid waterproofing membrane. Grey colour.



2.17 MAPELASTIC AQUADEFENSE  
One component synthetic resin-based paste in water dispersion liquid waterproofing membrane.  
Light blue colour.

2.18 MAPELASTIC SMART  
Two component flexible cementitious liquid waterproofing membrane.

### Adhesives

2.19 GRANIRAPID  
Two component, cementitious adhesive with synthetic rubber latex. Classified C2FS1 to ISO 13007.1.

2.20 KERAQUICK MAXI S1  
Cementitious adhesive. Suitable for application in layers up to 15mm thick. Classified C2FTS1 to ISO 13007.1.

2.21 KERAQUICK MAXI S1 & LATEX PLUS  
Cementitious adhesive with flexible polymer water dispersion. Suitable for application in layers up to 15mm thick. Classified C2FS2 to ISO 13007.1.

2.22 KERABOND PLUS & ISOLASTIC  
Cementitious adhesive with elastic polymer water dispersion. Classified C2TS2 to ISO 13007.1.

2.23 KERALASTIC T  
Two component, polyurethane adhesive. Classified R2T to ISO 13007.1.

2.24 KERAFLEX MAXI S1 ZERO  
Cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.25 KERAPOXY ADHESIVE  
Two component epoxy adhesive. Classified R2T to ISO 13007.1.

2.26 ADESILEX P10 & ISOLASTIC FOR MOSAICS  
Two component cementitious adhesive with elastic polymer water dispersion. Classified C2TES1 to ISO 13007.1.

2.27 ULTRALITE S1 FLEX ZERO  
One component cementitious adhesive with synthetic resin. Classified C2TES1 to ISO 13007.1.

2.28 ULTRALITE S2 T FLEX  
One component thixotropic cement and synthetic resin based adhesive. Classified C2ES2 to ISO 13007.1.

### Grouts

2.29 ULTRACOLOR PLUS  
Cement-based, polymer-modified grout for joints from 2mm to 10mm, with water repellent DropEffect and anti-mould with BioBlock technologies.

2.30 KERAPOXY  
Two component, chemical resistant epoxy grout for joints 3mm to 10mm wide. Classified RG to ISO 13007.3.

2.31 KERAPOXY EASY DESIGN  
Two component, chemical resistant epoxy grout with anti-mould BioBlock technology for joints 3mm to 15mm wide. Classified RG to ISO 13007.3.

### Components - waterproofing

2.32 MAPEBAND SA TAPE  
Alkali resistant butyl self-adhesive waterproofing tape, 100mm wide roll.



- 2.33 MAPEBAND SA GASKET  
Alkali resistant butyl self-adhesive waterproofing gasket, 370mm x 370mm square.
- 2.34 MAPEBAND EASY TAPE  
Alkali resistant rubber waterproofing tape with a non-woven fabric face and back, 130mm wide roll.
- 2.35 MAPEBAND EASY GASKET  
Alkali resistant rubber waterproofing gasket with a non-woven fabric face and back, available 200mm x 200mm and 400mm x 400mm square.
- 2.36 MAPENET 150 REINFORCING MESH  
Alkali-resistant fiberglass reinforcing mesh.
- 2.37 MAPETEX SEL REINFORCING FABRIC  
Alkali resistant non-woven polypropylene reinforcing and anti-fracture fabric.

#### **Components - sound control**

- 2.38 MAPESONIC CR SOUND CONTROL MEMBRANE  
Rubber and cork soundproofing membrane, 4mm thick.
- 2.39 MAPESONIC STRIP  
Expanded polyethylene strip roll, 3mm thick x 50mm high.
- 2.40 ULTRABOND ECO V4 EVOLUTION ADHESIVE  
Synthetic polymer-based adhesive.

#### **Components - cleaning**

- 2.41 ULTRACARE KERANET EASY  
Acid-based, pre-mixed general tile and grout cleaner.
- 2.42 ULTRACARE KERAPOXY CLEANER  
Concentrated liquid detergent for removing epoxy grout.

#### **Accessories**

- 2.43 UNDERTILE HEATING  
Proprietary electric undertile heating system complete with thermostat/controller.  
Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for undertile heating.
- 2.44 TRIMS  
Tile trim, edge strips, floor finish divider strips and weather bars. Available in aluminium, brass and stainless steel. Refer to SELECTIONS.
- 2.45 MOVEMENT JOINT - ANGLE  
Metal or PVC angle. Refer to SELECTIONS.
- 2.46 MOVEMENT JOINT - INSERT  
Polyurethane or neoprene insert. Refer to SELECTIONS.
- 2.47 MOVEMENT JOINT - SILICONE SEALANT  
One part, flexible silicone sealant, Mapesil AC for acetic cure or Mapesil LM for neutral cure. Refer to SELECTIONS.
- 2.48 MOVEMENT JOINT - POLYURETHANE SEALANT  
Mapeflex PU40, one part flexible thixotropic polyurethane based sealant. Refer to SELECTIONS.
- 2.49 MOVEMENT JOINT - BACKING ROD  
Polyethylene foam (PEF) backing rod. Refer to SELECTIONS.



### 3 EXECUTION

#### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

Moisture content concrete: 75% maximum relative humidity, minimum 28 day cured

Moisture content plywood: 18% maximum

Moisture content particleboard: 16% maximum

#### Installation/application

#### 3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

#### 3.5 APPLICATION GENERALLY

To AS 3958.1, Mapei technical data sheets, and to WMAI CoP recommendations. Surfaces to be clean, sound and free of dust, oil, grease, curing compounds or release agents.

#### 3.6 APPLY PRIMER

Brush or roll primer over surface.

#### 3.7 APPLY LEVELLING COMPOUND

Mix levelling compound to Mapei instructions. Trowel onto prepared substrate to required thickness and fall, where required:

1:40 minimum	deck acting as a roof to <a href="#">NZBC E2/AS1</a>
1:40 minimum	accessible showers to <a href="#">NZBC G1/AS1</a>
1:50 minimum	shower bases to <a href="#">NZBC E3/AS1</a>
1:50 minimum	shower bases for people with disabilities to <a href="#">NZS 4121</a>
1:50 minimum	food processing areas (e.g. commercial kitchens) to <a href="#">G3/AS1</a>
1:50 minimum	cross fall for outdoor accessways in public areas to <a href="#">NZS 4121</a>

#### 3.8 SOUND CONTROL SYSTEM

Lay self-adhesive Mapesonic Strip along base of wall to entire perimeter of room and around columns. Spread Ultrabond Eco V4 Evolution adhesive to prepared substrate with a trowel. Lay Mapesonic CR with edges butted. Working in rows lengthwise, fold back half of the underlay width and trowel flooring adhesive. Unfold the underlay and press into adhesive.

Trim the Mapesonic Strip flush with the finished tiled surface when installed.

#### 3.9 FIBRE CEMENT UNDERLAY

Lay and fix flooring underlay to the manufacturer's instructions. Fill gaps between sheets and corners with a neutral cure silicone sealant.

#### 3.10 APPLY WATERPROOFING MEMBRANE

Reinforce corners and penetrations with waterproofing tape. Mix waterproofing components to Mapei instructions. Trowel, brush or roll on liquid waterproofing membrane over prepared surface. Apply two coats to achieve required minimum total dry film thickness to Mapei product technical data sheet.

#### 3.11 INSTALL UNDERTILE HEATING

Refer to 7553 UNDERFLOOR HEATING MAT SYSTEM for installation of undertile heating.



### 3.12 SETTING OUT

Confirm tile layout and bond pattern. Cut tiles to tile manufacturer's recommendations. Lay tiles level, maintaining falls to drainage where required (e.g. floor wastes). Provide joint widths to the tile manufacturer's recommendations.

### 3.13 MOVEMENT JOINTS GENERAL

Provide movement joints to AS 3958.1:

- Depth: Movement joints to go right through the tile and bed to the background.
- Width: 6mm
- Locations: At junctions with floors, columns, nibs, and similar.  
Around sanitary fixtures.  
Around fixtures interrupting the tile surface (e.g. at junctions with joinery fixtures, window/door frames, and built in cupboards).  
At changes in substrate.
- Large areas: Provide joints at not less than 4.5 metres spacing in both directions for internal floors.  
Provide joints at not less than 3.5 metres spacing in both directions for external floors.  
Provide joints over existing joints in the substrate.

### 3.14 ADHESIVE APPLICATION GENERAL

For general floor tiling, use a 10mm x 10mm x 10mm notched trowel.

For large format tiles, use a 12mm x 12mm x 12mm notched trowel.

For mosaics, use a 4.5mm x 4.5mm x 4.5mm notched trowel.

### 3.15 APPLY ADHESIVE

Mix adhesive to Mapei instructions. Spread adhesive over prepared surface with a notched trowel to Mapei recommended bed thickness.

### 3.16 INSTALL TRIM

Press trim into wet adhesive.

### 3.17 INSTALL MOVEMENT JOINT ANGLE

Press angle into wet adhesive.

### 3.18 LAY TILES

Firmly press tiles into the adhesive bed for full contact between tile and adhesive with no voids.

Butter the back of tiles with ribbed underside before laying into adhesive bed by spreading a thin layer of adhesive on the back of the tile to AS 3958.1. Remove a tile periodically during installation to check for correct adhesive coverage. Allow for grout joints between laid tiles to tile manufacturer's recommended width. Do not fix tiles over skinned adhesive. Promptly remove surplus adhesive from the tile surface.

### 3.19 APPLY GROUT

Mix grout to Mapei instructions. Work grout into joints with a rubber trowel to AS 3958.1. Allow the grout to firm up in the joint before wiping tile surface with a damp, dense sponge.

### 3.20 INSTALL MOVEMENT JOINT INSERT

Place insert between movement joint angles.

### 3.21 INSTALL MOVEMENT BACKING ROD & SEALANT

Place PEF backing rod into movement gap. Apply a continuous bead of silicone sealant over PEF backing rod.

## Completion & Commissioning

### 3.22 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

## 4 SELECTIONS



For further details on selections go to [www.mbpltd.co.nz](http://www.mbpltd.co.nz).  
 Substitutions are not permitted to the following, unless stated otherwise.

**Materials**

**Tiled internal floors**

**4.1 MAPEI INTERNAL TILING SYSTEM OVER CONCRETE FLOOR - HEATED WET AREA**

Location: Refer drawings  
 Supplier: MBP (NZ) Ltd.  
 Substrate: Concrete  
 Heating system: Refer Undertile Heating section  
 WPM: Mapelastic Smart  
 Grout: Kerapoxy  
 Grout colour: TBA

**4.2 MAPEI INTERNAL TILING SYSTEM OVER CFC SHEET FLOORING - HEATED WET AREA**

Location: Refer drawings  
 Supplier: MBP (NZ) Ltd.  
 Substrate: Compressed fibre cement sheet  
 Heating system: Refer Undertile Heating section  
 WPM: Mapelastic Smart  
 Grout: Kerapoxy  
 Grout colour: TBA

**4.3 MAPEI INTERNAL TILING SYSTEM OVER FIBRE CEMENT UNDERLAY - HEATED WET AREA**

Location: Refer drawings  
 Supplier: MBP (NZ) Ltd.  
 Substrate: Fibre cement underlay  
 Heating system: Refer Undertile Heating section  
 WPM: Mapelastic Smart  
 Grout: Kerapoxy  
 Grout colour: TBA

**Components**

**4.4 MAPEI SOUND CONTROL SYSTEM**

Location: First floor tiled floors  
 Supplier: MBP (NZ) Ltd.  
 Substrate: Concrete  
 Membrane: Mapesonic CR  
 Adhesive: Ultrabond Eco V4 Evolution



# 6700R RESENE PAINTING GENERAL

## 1 GENERAL

This section relates to the general matters related to **Resene** painting work.

### 1.1 RELATED WORK

Refer to 6721R RESENE PAINTING INTERIOR  
 Refer to 6711R RESENE PAINTING EXTERIOR

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

MPNZA                      Master Painters New Zealand Association Inc.  
 SIPDS                      Surface Information & Preparation Data Sheets

### Documents

### 1.3 DOCUMENTS

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

Health and Safety at Work Act  
[AS/NZS 5131](#)              Structural steelwork - Fabrication and erection  
[AS/NZS ISO 9001](#)        Quality management systems - Requirements  
 MPNZA                      Health and Safety Programme

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents related to this section are:

**Resene**                      Surface Information & Preparation Data Sheets (SIPDS)  
 (hard copy or at [www.resene.co.nz](http://www.resene.co.nz))  
**Resene**                      Product Data Sheets  
 (hard copy or at [www.resene.co.nz](http://www.resene.co.nz))  
**Resene**                      Putting your safety first

Copies of the above literature are available from **Resene**  
 Telephone:                0800 RESENE (0800 737 363)

### Warranties

### 1.5 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal conditions of use against failure referring to the **Resene** Promise of Quality in the **Resene** One-Line specifications and product data manual.

### Requirements

This painting specification is written based on information available at the time of writing.

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **Resene** coating system, or associated components and products. Do not combine paints from different manufacturers in a paint system.

If in the applicator's own expertise and judgement an amendment to this specification is required, or where a substrate preparation, or required painting system is not covered in this specification, this shall be brought to the attention of the contract administrator and any amendment agreed before work proceeds any further.



## 1.7 QUALIFICATIONS

Painters to be experienced competent workers, familiar with the materials and the techniques specified and with the **Resene** coating systems and be members of the Master Painters New Zealand Association Inc.

The applicator is to have the necessary skill, experience and equipment to undertake the work. The applicator remains responsible for ensuring proper completion of the work.

Painters to be selected from the **Resene** Eco Decorator programme. The **Resene** Eco Decorator programme is designed to recognise a nationwide network of environmentally responsible, quality focussed painting contractors.

Refer to [www.resene.co.nz/ecodecorator.htm](http://www.resene.co.nz/ecodecorator.htm) for a list of Eco Decorators in your area.

## 1.8 PRIOR TO WORK COMMENCING

Before any work commences painters should verify, with Architects or specifying authority, that their paint matches a previously supplied standard card or panel. Differently coloured paints will vary in price, opacity and durability. **Resene** normally only specify two coats of colour but with certain colours, such as yellows and oranges, three coats may be needed. Refer to SELECTIONS for location and type.

## 1.9 INFORMATION FOR OPERATION AND MAINTENANCE

Refer to the general section 1239 OPERATION & MAINTENANCE for provision of the following general operation and maintenance information as electronic PDF format documents:

Maintenance guide for **Resene** paint finishes [www.resene.co.nz/comn/services/maintenance.htm](http://www.resene.co.nz/comn/services/maintenance.htm).

Provide this information prior to practical completion.

## 1.10 HEALTH AND SAFETY

Refer to and comply with the requirements of the [Health and Safety at Work Act 2015](#) including the obligation to:

- Eliminate hazards and if hazards cannot be eliminated or isolated, then minimise the hazards in this work by using the proper equipment and techniques as required by the MPNZ Health and Safety Programme.
- Supply protective clothing and equipment.
- Inform the contractor as well as the employees and others on site of those hazards and put in place procedures for dealing with emergencies.

## 1.11 SAFETY DATA SHEETS

Obtain from **Resene** (phone 0800 RESENE, or [www.resene.co.nz](http://www.resene.co.nz)) the safety data sheet for each product used and comply with the required safety procedures. Keep sheets on site.

# 2 PRODUCTS

## Materials

### 2.1 MATERIALS GENERALLY

Do not combine paints from different manufacturers in a paint system.

Use only **Resene** products (which are guaranteed for consistency and performance under [AS/NZS ISO 9001](#) and APAS) prepared, mixed and applied as directed in the **Resene** One-Line Specifications and Product Data Manual. This specification has been written using where practical and available both low/no VOC.

### 2.2 DARK COLOURS

Darker colours in areas of high sun exposure place significant stress on the coating and substrate.

**Resene 'CoolColour'** technology reduces heat absorption of a wide range of colours. Contact your local **Resene** Representative or visit [www.resene.co.nz](http://www.resene.co.nz) for more information or visit [www.resene.co.nz/coolcolour](http://www.resene.co.nz/coolcolour). View a list of **Resene** colours that can be made using **Resene CoolColour** technology at [www.resene.co.nz/colourlibrary](http://www.resene.co.nz/colourlibrary).



## 2.3 THINNERS/ADDITIVES

Use only if and when expressly directed by **Resene** for their particular product in a particular application. Always wear gloves when handling any solvents including turpentine as harmful chemicals may be absorbed into the body through the skin.

### Accessories

## 2.4 ACCESSORIES

Contact your local **Resene ColorShop** for a full range of accessories and usage advice.

## 3 EXECUTION

### Conditions

### 3.1 EXECUTION

To conform to required trade practice, which shall be deemed to include those methods, practices and techniques contained in the Master Painters New Zealand Association Inc. Specification manual.

### 3.2 CORROSION PROTECTION SUPERVISION FOR STRUCTURAL STEEL

To [AS/NZS 5131](#), 9.9.20, for corrosion protection of structural steel. Provide an Inspection and Test Plan (ITP) to [AS/NZS 5131](#), 13.9.1, prior to commencement.

Corrosion protection painting to be supervised by a competent person.

### 3.3 TREATED SURFACES

Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.

### 3.4 BACK PAINTING

Co-ordinate with cladding and/or lining installer as to who will do the work and timing.

#### Exterior

For exterior cladding and trim that require on site finishing, paint the back and exposed bottom edges at the base of the cladding (generally, bottom plate overhang and horizontal flashings) to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed.

Refer to appropriate exterior paint sections SELECTION clauses for claddings to be back painted.

#### Interior

For lining and trim that require on site finishing and/or back painting (usually wet areas), paint the back and exposed bottom edges at the base of the lining, to the manufacturer's requirements, but at least to 150mm up from base. Coating to match front finish, generally apply 2 coats or 1 coat if pre-primed, or if no front finish, seal to manufacturer's requirements.

Refer to appropriate interior paint sections SELECTION clauses for linings to be back painted.

### 3.5 ANCILLARY SURFACES

The descriptions of areas in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain written instructions before proceeding.

### 3.6 HARDWARE

Do not paint hinges or hardware that cannot be removed. Before commencing work carefully remove hardware, fixtures and fittings, set aside where they cannot be damaged or misplaced and replace on completion. Refer to SELECTIONS for hardware, fixtures and fittings for removal.

### 3.7 PROTECTION

Supply, lay and fix drop sheets, coverings and masking necessary to protect adjoining, fixtures, fittings and spaces from paint drops, spots, spray and damage.



## Application - preparatory work

### 3.8 SURFACE PREPARATION

Refer to the **Resene** Surface Information & Preparation Data Sheets (SIPDS) and product data manual for surface preparation sheets (or obtain them by phoning 0800 RESENE, or at [www.resene.co.nz](http://www.resene.co.nz)) listed in the materials systems schedule clauses. Carry out the preparatory work required by them for each of the substrates.

### 3.9 SHARP EDGES, CRACKS AND HOLES

Remove and/or repair sharp edges, cracks and holes if present, as outlined in the preamble of the **Resene** One-Line specifications and product data manual.

Elastomeric sealants, if used, should not be painted. The paint film will not match the flexibility of the sealant and may severely limit its effectiveness.

### 3.10 REMEDIAL WORK

If any substrate or surface, that even with the preparation work called for in this section, cannot be brought up to a standard that will allow painting or clear finishing of the required standard then do not proceed until remedial work is carried out.

### 3.11 GAP FILLING

Make good cracks, holes, indented and damaged surfaces. Use suitable gap fillers to match the surface being prepared. Any special priming requirements of the fillers must be satisfied. Allow to dry or set before sanding back level with the surface. Prime or seal timber before using putty.

Exterior and wet areas: Use only Portland cement base or water-insoluble organic base gap fillers.

### 3.12 OFF-SITE WORK

Carry out this work under cover in a suitable environment with suitable lighting. Store items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked and spaced to allow air circulation and to prevent sticking. Specific instructions for transport to site to avoid damage to the factory applied paint system may be required particularly for metallic top coat paints.

### 3.13 PRIMING JOINERY

Pre-treat any cut surfaces of preservative treated timber before priming. Ensure L.O.S.P treated joinery has dried sufficiently to lose solvent odour. Pre-treat bare timber with **Resene TimberLock** (see Data Sheet D48) to improve the durability of subsequent coats.

Liberal coat end grain, allow to soak in and then recoat.

### 3.14 CONCEALED JOINERY SURFACES

Where off-site coatings are specified they must be applied to surfaces including those concealed when incorporated into the building.

### 3.15 CONCEALED METAL SURFACES

Apply primer to suit the coating system to surfaces which will be concealed when incorporated into the building.

### 3.16 EXTERNAL DOORS

Prime or seal and paint bottom edges before hanging.

### 3.17 BEAD GLAZING

Stained, varnished, or painted joinery to have the first two coats of a suitable primer and one undercoat, applied to rebates and beads before glazing.

## Application - generally

### 3.18 PAINTING GENERALLY

Comply with the **Resene** SIPDS Surface Information & Preparation Data Sheets or **Resene** One-Line specifications and product data manual data sheets and the additional requirements of this work section.



Ensure large wall areas that require more than one container of paint per coat, have enough paint boxed (mixed) together to complete the final coat. This will not apply if a single factory batch of paint, rather than shop tinted paint, is applied.

### 3.19 MIXING

Although generally supplied ready to use, all paints must be thoroughly mixed to lift any settled pigment and ensure the paint is homogeneous.

### 3.20 ENVIRONMENT

Defer painting of exterior surfaces until weather conditions are favourable - warm dry days without frost or heavy dews. Avoid painting in direct sunlight any surfaces that absorb heat excessively. As far as possible apply paint in the temperature range 15°C to 25°C. If temperatures fall outside the range of 10°C and 35°C do not paint unless paints with the necessary temperature tolerance have been specified. **Resene Hot Weather Additive** can be added to most **Resene** waterborne top coats to extend open time when application is undertaken at elevated temperatures or conditions that will cause rapid loss of water from the applied wet film. Do not apply solvent borne paint if moisture is present on the surface.

### 3.21 SEQUENCE OF OPERATIONS

Painting work to generally follow the following sequences:

- Back painting and pre-installation painting, then post-installation exposed-face painting
- Complete surface preparation before commencing painting.
- Apply primers, sealers, stains, undercoats, paints and clear coatings in the sequences laid down by **Resene**.
- Allow the full drying time between coats laid down by **Resene**.
- Do not expose primers, undercoats and intermediate coats beyond **Resene** recommendations before applying the next coat.
- Finish broad areas before painting trim.
- Ensure batch numbers of tins are matched for whole areas.
- Internally, paint ceilings before walls and walls before joinery, trim and other items.

### 3.22 APPLICATION

Select brush, roller, or pad and apply coatings to the requirements of **Resene** to obtain a smooth, even coating of the specified thickness, uniform gloss and colour.

### 3.23 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. A more thorough sanding to provide a mechanical key for the new paint system may be required depending upon the condition or age of the existing paint system..

### 3.24 DEFECTIVE WORK

Correct defective work immediately and recoat as required, following precisely the **Resene** system being applied. The same applies to transportation damage to site of factory painted items.

### 3.25 EACH COAT

Each coat of paint and the completed paint system to have the following qualities and properties:

- Uniform finish, colour, texture, sheen and hiding power and the proper number of coats applied.
- No blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, significant brush marks, ladder marks and blistering.
- Proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application.

## Completion

### 3.26 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at the completion of the building works. Clean glass inside and out to a shining finish. Use the **Resene Washwise** on site 'paint equipment clean-up water' reclamation system to minimise the environmental impact of cleaning paint application tools.



**3.27 LEAVE**

Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.

**3.28 REMOVE**

Remove drop sheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

**3.29 REPLACE**

Replace hardware without damage to it or the adjoining surface and leave hardware properly fitted and in working order.

**3.30 DISPOSAL OF PAINTS AND THINNERS**

Note: The use and disposal of paint and thinners represents a significant environmental hazard.

Ensure all paint and thinners are disposed of in the following manner:

- When requested hand over part used paint containers to client for maintenance touch ups.
- Recycle leftover paint at a **Resene ColorShop** as part of the **Resene "Paintwise programme"**. Contact your local **Resene ColorShop** for details or view information online at [www.resene.co.nz/paintwise.htm](http://www.resene.co.nz/paintwise.htm).
- Donate left over paint to local community groups.
- Solvent based paints, paint thinners, turpentine, mineral spirits and solvents require special disposal procedures. Do not pour down sewer or stormwater drains, sinks or into the ground. If they cannot be recycled they must be disposed of in a refuse dump licensed to take toxic waste.

**3.31 MAINTENANCE**

Good maintenance of coating systems involves a routine of regular cleaning as well as regular inspections. Regular inspections of the coating systems are recommended to identify breakdown, accidental damage to or undesirable deterioration of the paint.

Wash down of exterior coatings should be undertaken on an annual basis using **Resene Paint Prep** and **Housewash** (see Data Sheet D812).

Refer the **Resene** Caring for your paint finish brochure and the **Resene** website, [www.resene.co.nz/comn/services/maintenance.htm](http://www.resene.co.nz/comn/services/maintenance.htm).

**4 SELECTIONS****4.1 SELECTIONS**

Refer to 6711R RESENE PAINTING EXTERIOR and 6721R RESENE PAINTING INTERIOR for selections.



# 6711R RESENE PAINTING EXTERIOR

## 1 GENERAL

This section relates to the surface preparation, painting and clear finishing of new and existing exterior substrates using Resene Paints Ltd architectural and decorative coating systems.

### Related work

#### 1.1 RELATED WORK

Refer to 6700R RESENE PAINTING GENERAL for general matters related to painting work.

## 2 PRODUCTS

### Materials

#### 2.1 PRODUCTS

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

## 3 EXECUTION

### Conditions

#### 3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

## 4 SELECTIONS

For further details on selections go to [www.resene.co.nz](http://www.resene.co.nz)  
 Substitutions are not permitted to the following, unless stated otherwise.

#### 4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) to match exposed face coating.

Cladding type:	Timber weatherboard
Extent of back painting:	Paint whole back, bottom & concealed edges

#### 4.2 HARDWARE

Hardware for removal: Remove all hardware

### Resene exterior paint systems

#### Exterior cementitious - new

#### 4.3 RESENE NEW EXTERIOR CONCRETE BLOCK/MASONRY - NON-WEATHERTIGHT

Surface Prep: Resene SIPDS No3 and Spec Sheet 3: 2/1  
 1st coat: Resene Concrete Primer D405, Acrylic Concrete Primer  
 2nd coat: Resene Lumbersider Low Sheen D34, Waterborne Acrylic  
 3rd coat: Resene Lumbersider Low Sheen D34, Waterborne Acrylic

#### Exterior timber - new

#### 4.4 RESENE NEW EXTERIOR TIMBER, WEATHERBOARDS - FACTORY PRIMED

Surface Prep: Resene SIPDS No2 and Spec Sheet 2: 2/1  
 1st coat: Resene Wood Primer D40, Solventborne Primer  
 2nd coat: Resene Sonyx 101 D30, Semi-Gloss Acrylic  
 3rd coat: Resene Sonyx 101 D30, Semi-Gloss Acrylic



**Exterior metal - new**

4.5 RESENE NEW EXTERIOR STEEL - SHOP PRIMED

Surface Prep:	Resene SIPDS No4 and Spec Sheet 4: 2/1
1st coat	Resene Armourcote 220 Epoxy Primer RA34
2nd coat:	Resene Uracryl 404 Low Sheen RA59
3rd coat:	Resene Uracryl 404 Low Sheen RA59



## 6721R RESENE PAINTING INTERIOR

### 1 GENERAL

This section relates to the surface preparation, painting and clear finishing of new and existing interior substrates using Resene Paints Ltd architectural and decorative coating systems.

#### Related work

#### 1.1 RELATED WORK

Refer to 6700R RESENE PAINTING GENERAL for general matters related to painting work.

### 2 PRODUCTS

#### Materials

#### 2.1 PRODUCTS

Refer to 6700R RESENE PAINTING GENERAL for product clauses.

### 3 EXECUTION

#### Conditions

#### 3.1 EXECUTION

Refer to 6700R RESENE PAINTING GENERAL for execution clauses.

### 4 SELECTIONS

For further details on selections go to [www.resene.co.nz](http://www.resene.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

#### 4.1 BACK PAINTING SCHEDULE

Paint 2 coats (including any pre-prime) usually to match exposed face coating. If there is no coating use water resistant clear finish sealer.

Location	Extent of back painting
Wet areas	To lining manufacturer's requirements

#### 4.2 HARDWARE

Hardware for removal: Remove all hardware

#### Resene interior paint systems

##### Plasterboard - new

#### 4.3 RESENE NEW INTERIOR PLASTERBOARD, WALLS - DRY AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1: 1/1
Fire rating:	Group 1-S. Test Report FH4967
1st coat	Resene Broadwall D403, Waterborne Wallboard Sealer
2nd coat:	Resene Zylone Sheen D302, Waterborne Low Sheen Acrylic
3rd coat:	Resene Zylone Sheen D302, Waterborne Low Sheen Acrylic

#### 4.4 RESENE NEW INTERIOR PLASTERBOARD, WALLS - WET AREAS

Surface Prep:	Resene SIPDS No1 and Spec Sheet 1A: 1/1
Fire rating:	Group 1-S. Test Report 7-593235-CO
1st coat:	Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer
2nd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel
3rd coat:	Resene SpaceCote Low Sheen Kitchen & Bathroom D311K Waterborne Enamel



**4.5 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - DRY AREAS**

Surface Prep: Resene SIPDS No1 and Spec Sheet 1: 1/1  
Fire rating: Group 1-S, Test Report FH4967  
1st coat: Resene Broadwall D403, Waterborne Wallboard Sealer  
2nd coat: Resene Ceiling Paint D305, Waterborne Flat Acrylic  
3rd coat: Resene Ceiling Paint D305, Waterborne Flat Acrylic

**4.6 RESENE NEW INTERIOR PLASTERBOARD, CEILINGS - WET AREAS**

Surface Prep: Resene SIPDS No1 and Spec Sheet 1A: 1/1  
Fire rating: Group 1-S, Test Report 7-593235-CO  
1st coat: Resene Waterborne Sureseal D42a, Waterborne Pigmented Sealer  
2nd coat: Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel  
3rd coat: Resene SpaceCote Flat Kitchen & Bathroom D314K, Waterborne Enamel



# 7123R REHAU HOT & COLD WATER SYSTEM

## 1 GENERAL

This section relates to hot and cold water piping systems from **REHAU PTY Limited** (hereafter referred to as REHAU) for domestic, commercial and industrial applications.

It includes REHAU RAUTITAN pipework complete with fittings and accessories for:

- piped cold water distribution from the network utility supply authority water main to designated points and appliances
- the installation of hot water heating appliances, piped hot water distribution to other appliances
- the installation of valves and other items to complete the system.

### Documents

#### 1.1 DOCUMENTS

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

<a href="#">NZBC B2/AS1</a>	Durability provisions for building elements
<a href="#">NZBC G4/AS1</a>	Ventilation of buildings
<a href="#">NZBC G11/AS1</a>	Gas as an energy source
<a href="#">NZBC G12/AS1</a>	Water supplies
<a href="#">NZBC G12/AS3</a>	Water supplies
<a href="#">NZBC H1/AS1-AS2</a>	Energy Efficiency
<a href="#">AS 2345</a>	Dezincification resistance of copper alloys
<a href="#">AS/NZS 2492</a>	Cross-linked polyethylene (PE-X) pipes for pressure applications
<a href="#">AS/NZS 2537.2</a>	Mechanical joining fittings for use with crosslinked Polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Crosslinked Polyethylene (PE-X) - Fittings
<a href="#">AS/NZS 2845.1</a>	Water supply - Backflow prevention devices - Materials, design, and performance requirements
<a href="#">AS 2845.3</a>	Water supply - Backflow prevention devices - Field testing and maintenance
<a href="#">AS/NZS 3500.1</a>	Plumbing and drainage - Water services
<a href="#">AS/NZS 3500.4</a>	Plumbing and drainage - Heated water services
<a href="#">AS/NZS 3500.5</a>	Plumbing and drainage - Housing installations
<a href="#">AS 4032.2</a>	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
<a href="#">AS 4176.2</a>	Multilayer pipes for pressure applications Part 2: Multilayer piping systems for hot and cold water plumbing applications— Pipes
<a href="#">AS 4176.3</a>	Multilayer pipes for pressure applications Part 3: Multilayer piping systems for hot and cold water plumbing applications— Fittings
<a href="#">NZS 4305</a>	Energy efficiency - Domestic type hot water system
<a href="#">NZS 4602</a>	Low pressure copper thermal storage electric water heaters
<a href="#">NZS 4606.1</a>	Storage water heaters. General requirements
<a href="#">NZS 4606.2</a>	Storage water heaters. Specific requirements for water heaters with single shells
<a href="#">NZS 4606.3</a>	Storage water heaters. Specific requirements for water heaters with composite shells
<a href="#">NZS 4607</a>	Installation of thermal storage electric water heaters: valve vented Systems
<a href="#">NZS 4617</a>	Tempering (3-port mixing) valves
<a href="#">AS/NZS 4859.1</a>	Thermal insulation materials for buildings - General criteria and technical provisions
<a href="#">AS/NZS 5601.1</a>	Gas installations - general installations



DIN EN 12164 Copper & copper alloys – rod for free machining purposed  
 DIN EN 12165 Copper & copper alloys – wrought & unwrought forging stock  
 DIN EN 12168 Copper & copper alloys – hollow rod for free machining purposed  
 Gas (Safety and Measurement) Regulations 2010  
[Plumbers, Gasfitters and Drainlayers Act 2006](#)  
[NZ Backflow Testing Standard](#) 2019, Field testing of backflow prevention devices and verification of air gaps

## 1.2 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

RAUTITAN Water, Fire Sprinkler and Gas Technical Information  
 RAUTITAN Water, Gas and Heating Product Book New Zealand  
 REHAU PINC™ Technical Product Book  
[BRANZ Appraisal 434](#) - REHAU RAUTITAN and RAUTHERM Piping Systems

Manufacturer/supplier contact details:

Company: **REHAU (NZ) Ltd**  
 Web: [www.REHAU.co.nz](http://www.REHAU.co.nz)  
[www.myREHAUco.nz](http://www.myREHAUco.nz)  
 Email: [sales.NZ@rehau.com](mailto:sales.NZ@rehau.com)  
 Telephone: 09 272 2264

## Warranties

### 1.3 WARRANTY

Provide warranty for:

25 years Material and installation warranty for REHAU hot and cold water pipework

- Provide this warranty on the REHAU System Warranty Certificate.
- Refer to RAUTITAN System Warranty Certificate for details.
- Commence the warranty from completion of system testing.

Refer to the general section 1237 WARRANTIES for additional requirements.

## Requirements

### 1.4 TRAINING & SITE SUPPORT

Prior to any installation of REHAU piping systems, the appropriate training shall be undertaken, by either a REHAU Trainer or accessed through the [www.myREHAU.co.nz](http://www.myREHAU.co.nz) web site.

### 1.5 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Plumbers to be a member of REHAU Authorised Installer Network, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified REHAU or associated products, components or accessories.

### 1.7 PIPEWORK LAYOUTS

Pipework layouts to be in accordance with the manufacturer's documents and with [AS/NZS 3500.1](#) and [AS/NZS 3500.4](#) as modified by [NZBC G12/AS3](#) or [NZBC G12/AS1](#).

### 1.8 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.



## 1.9 DURABILITY

The work cover by this part of the specification has been designed and installed to achieve a durability of 50 years to comply with [NZBC B2/AS1](#), Table C.1.1.1. Refer to the following: [BRANZ Appraisal 434](#).

## 1.10 HOT WATER TEMPERATURES

To [NZBC G12/AS1](#), 6.14

Storage water heaters to store water at not less than 60°C.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

For personal hygiene fixtures (showers, baths, wash hand basins etc) temperatures to be close to but not to exceed:

- 45°C - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50°C - for personal hygiene fixtures in all other buildings.

For non-personal hygiene fixtures (kitchen sinks and equipment, laundry tubs, cleaners sinks, industrial fixtures etc) temperatures are:

- Unrestricted - direct from water heater, approx. 60°C, must be less than 65°C (for kitchen sinks and equipment, laundry tubs, cleaners sinks etc) - in all buildings.
- Unrestricted - direct from water heater not tempered (for industrial fixtures and specific items etc) - in all buildings.

This clause excludes boiling units.

### Performance

## 1.11 SYSTEM DESIGN

Planning, installation and commissioning to comply with [AS/NZS 3500.1](#) and [AS/NZS 3500.4](#) as modified by [NZBC G12/AS3](#) or [NZBC G12/AS1](#), as required and to REHAU technical information.

Size the pipe branches and straight runs to deliver the acceptable flow rate at each outlet to [NZBC G12/AS1](#), Water Supplies, Table 3: Acceptable flow rates to sanitary fixtures. Allow for expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw off.

## 1.12 TESTING

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Testing method and compliance to [AS/NZS 3500.1](#), section 17, or to the REHAU requirement outlined in Section 9.10, RAUTITAN Water, Fire Sprinkler and Gas Technical Information.

## 2 PRODUCTS

### Materials

## 2.1 RAUTITAN, PE-XA POLYETHYLENE PIPE PN20

To [AS/NZS 2492](#), peroxide-cross-linked polyethylene (PE-Xa) pressure class PN20, with a minimum degree of crosslinking of 70%, homogeneous across the wall thickness of the pipe to reduce the chance of stress concentration during bending and reducing the chance of pipe kinks. Pipe in contact with the water shall be uncoloured virgin material only. Complete with fittings and accessories brand matched to the pipe manufacturer requirements with durability to [NZBC B2/AS1](#), Table C.1.1.1 and [NZBC G12/AS1](#), table1.

RAUTITAN hot and cold water pipes for potable water, for both residential and commercial applications are designed for normal operation of 1MPa at a temperature of 70°C for a period of 49 years; short term maximum temperature of 80°C for a total period of 1 year; short term malfunction temperature of 95°C for a total of 100 hours, giving a total designed life of 50 years.

For REHAU RAUTITAN piping classification refer to SELECTIONS.



## 2.2 FITTINGS - STANDARD

RAUTITAN compression sleeve system comprised of the following:

- RAUTITAN PX, unthreaded fittings made of high durable PPSU, corrosion resistant, colour black, in dimensions 16mm, 20mm, 25mm, 32mm and 40mm.
- RAUTITAN ONE and RAUTITAN MX, threaded and unthreaded fittings, made of special dezincification resistant brass(DZR) to AS 2345, DIN EN 12164, DIN EN 12165, DIN EN 12168 grade A
- RAUTITAN PX compression sleeves with axial "sliding-sleeve" jointing technology, without O-ring, fitting joints to comply with [AS/NZS 2537.2](#) or AS 4176.2. Made of high strength PVDF colour black, in dimensions 16mm, 20mm, 25mm, 32mm, and 40mm.
- RAUTITAN MX brass compression sleeves with axial jointing technology, without O-ring, fitting joints to comply with [AS/NZS 2537.2](#) or AS 4176.2. Made of thermally distressed brass to DIN EN 12164, DIN EN 12165, and DIN EN 12168 in dimensions 50mm and 63mm.

RAUTITAN system transition, both made from stainless steel manufactured to DIN EN 10088, part 3 (material designation 1.4404/1.4571) and DZR brass.

Special fittings that are used exclusively in heating installations are made of brass, copper or stainless steel.

## 2.3 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

## 2.4 FIXINGS AND TOOLS

Brackets, clips, support channels and RAUTOOL battery and manual tools complete with accessories for system installation.

## 2.5 WATER METER

To the requirements of the network utility operator.

## 2.6 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to [NZBC G12/AS1](#).

## 2.7 TEMPERING VALVE

Tempering valve to [NZS 4617](#) or AS 4032.2 and to [NZBC G12/AS1](#).

### Materials - hot water heating appliances

## 2.8 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE

To [NZS 4305](#), [NZS 4606.1](#), [NZS 4606.2](#) and [NZS 4606.3](#), electric, mains pressure thermal storage cylinder, insulated and complete with required fittings.

### Components

## 2.9 INSULATION

Pre-insulated pipe RAUTITAN with concentric insulation (silver) for drinking water applications, dimensions 16mm OD and 20mm OD, insulation thickness 13mm. Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements, [NZBC H1/AS1-AS2](#) and to [NZBC G12/AS1](#).

## 2.10 PROTECTIVE PVC TAPE

REHAU protective tape, colour black, solvent free with rubber backing. For protection of fittings from contact with concrete or plaster when laid in slab or in a wall chase.

## 2.11 SEALANT

BRANZ appraised modified MS neutral cure sealant.



## Accessories

### 2.12 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to [AS/NZS 2845.1](#) where it is possible for water or contaminants to backflow into potable water supply. Refer to [NZBC G12/AS1](#), 3.4 Backflow protection, 3.5 Containment Backflow protection, table 2, Selection of Backflow Prevention and table 2A Containment Backflow Protection.

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover out of direct UV radiation, and stacked to eliminate movement and away from work in progress. Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 CORE HOLES AND SLEEVES

Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

#### 3.4 CONCEALED

Concealed pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

#### 3.5 PIPE PROTECTION

Pipework to be protected by shielding with a suitable protective sleeve, timber or metal, where there is the possibility of penetration by a mechanically driven fixing.

#### 3.6 INGROUND PIPE INSTALLATION

The requirements of [AS/NZS 3500.1](#), [AS/NZS 3500.4](#), [AS/NZS 3500.5](#) for below ground installations to be followed. Fittings must be adequately protected with an inert water proof material. In accordance with Section 7.2, RAUTITAN Water, Fire Sprinkler & Gas Technical Information.

Protect pipe in a suitable protected sleeve of REHAU conduit for 16mm, 20mm, and 25mm pipe sizes. Protect larger sizes in a suitable HDPE or PP conduit. In soil conditions in which chemical attack or permeation is possible, a suitable protective sleeve must be installed.

#### 3.7 UV PROTECTION FOR INSTALLED PIPEWORK

UV radiation (e.g. sunlight or some types of fluorescent lights) may damage the pipes. Pipes installed in areas where they could be exposed to UV radiation must be completely covered in a suitable manner, e.g. by using a protective sleeve.

#### 3.8 CORROSION

Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, taping, or separator strips.



### 3.9 THERMAL MOVEMENT

Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations. For long runs in the hot water service a deflection leg or an expansion joint maybe required, refer to Section 7.6.2, RAUTITAN Water, Fire Sprinkler & Gas Technical Information for calculation details or contact a Rehau representative for details. Where excessive movement or sagging of pipe could be an issue, use the RAUTITAN stabil pipe or Support Channel.

### 3.10 PIPE SIZE

Flow rates to each outlet to be no less than those given in [AS/NZS 3500.1](#) and [AS/NZS 3500.4](#) as modified by [NZBC G12/AS3](#) or [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in [NZBC G12/AS1](#), table 4, Tempering valve and nominal pipe diameters.

#### Application - jointing

### 3.11 JOINTING RAUTITAN PE-XA PIPE

Jointing procedure to be as per Section 6 of RAUTITAN Water, Fire Sprinkler & Gas Technical Information, as follows:

- Cutting the pipe - select appropriate REHAU pipe cutter, and cut at 90° and without burs
- Slide the compression sleeve onto the pipe. For PX in either direction, for MX, with the taped end facing towards the fitting. Allow sufficient space (2 sleeve lengths) to expand.
- Expand the pipe twice, once and then a second time after rotating the expander approximately 30°
- Insert the fitting covering all ribs
- Place tool over sleeve and fitting and compress the joint
- Perform a visual inspection of the joint

Seal ring compression joints to [NZBC G12/AS1](#).

### 3.12 CONNECTION TO OTHER PIPE SYSTEMS

When connecting to other pipe systems use a threaded connection to provide a clear separation between both systems.

#### Application - pipework installation

### 3.13 WATER SUPPLY CONNECTION

Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to [NZBC G12/AS1](#).

### 3.14 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

To [AS/NZS 3500.1](#). From connection point, run pipes complete with all fittings, support and fixing, joins and install to REHAU specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off.

Pipework support spacing to be firmly fixed and buffered to eliminate noise and water hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Pressure test and visually inspect for any leaks before the wall linings are fixed and the pipes concealed.

Do not install PE-Xa or PE-AL-PEX polyethylene pipe in areas exposed to UV radiation (see clause UV PROTECTION FOR INSTALLED PIPEWORK) or in the flow and return piping to any solar water heating system or uncontrolled heat source (e.g. wood fired heaters).

### 3.15 HOT WATER PIPEWORK

To [AS/NZS 3500.4](#). Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to [NZBC G12/AS1](#), table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and water hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.

Lag all pipes with rigid insulation to the manufacturer requirements, [NZBC H1/AS1-AS2](#) and [NZBC G12/AS1](#).



**3.16 EQUIPOTENTIAL BONDING METALLIC WATER SUPPLY PIPES**

If it is an electrical requirement, before enclosing, ensure metallic water supply pipes and metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) to [NZBC G12/AS1](#), 9.0.

**Application - hot water systems****3.17 HOT WATER CYLINDER INSTALLATION GENERALLY**

Install hot water cylinders complete to the manufacturer requirements and to [NZBC G12/AS1](#), 6.11, Water heater installation or [NZS 4607](#) for Valve-vented systems. Fit a minimum of 1 metre of copper piping prior to the installation of the REHAU RAUTITAN piping system using RAUTITAN copper transition fittings.

**3.18 SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES**

Non-gas (electric, wet-back, solar etc) water heating appliances (storage water heaters) to be restrained to manufacturer requirements and [NZBC G12/AS1](#), 6.11, Water Heater Installation or [AS/NZS 3500.4](#), 5.5.4 Seismic restraints.

**3.19 INSTALL STORAGE HOT WATER CYLINDER OVERFLOW TRAY**

Install drained overflow tray to storage hot water cylinder to [NZBC G12/AS1](#).

**3.20 INSTALL TEMPERING VALVE**

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer instructions.

**Installation - tapware****3.21 INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**

Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.

**3.22 INSTALLING TAPWARE**

Install in accordance with the manufacturer requirements.

**3.23 INSTALLING BACKFLOW PREVENTION DEVICE**

Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or [NZ Backflow Testing Standard](#).

**Completion****3.24 COMPLETION MATTERS**

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

**4 SELECTIONS**

For further details on selections go to [www.REHAU.co.nz](http://www.REHAU.co.nz). Substitutions are not permitted to the following, unless stated otherwise.

**Water main****4.1 POLYETHYLENE WATER MAIN**

Size: 25mm outside diameter

**Pipework****4.2 RAUTITAN PE-XA WATER PIPE SYSTEM**

Brand: RAUTITAN Platinum

**4.3 RAUTITAN PE-XA HOT WATER PIPE SYSTEM**

Brand: RAUTITAN Red



- 4.4 RAUTITAN PE-XA UNDER SLAB WATER PIPE SYSTEM  
Brand: RAUTITAN Platinum in Conduit
- 4.5 RAUTITAN PE CONDUIT  
Location: Under slab  
Brand: RAUTITAN Conduit  
Pipe size: 25mm PE-Xa pipe
- 4.6 EXPOSED PIPES  
Location: Refer drawings  
Type: Chrome plated  
Accessories: Chrome plated nuts and fittings
- 4.7 RIGID PIPE INSULATION  
Location: All hot water pipes outside thermal envelope  
Brand: Allproof  
Type: Isopipe  
Wall thickness: 13mm
- 4.8 PROTECTIVE TAPE  
Brand: REHAU protective tape  
Width: 50 mm

### Hot water systems

- 4.9 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE  
Brand: Rheem

### Valves and accessories

- 4.10 MAIN ISOLATING VALVE  
Location: Confirm on site with Architect & Owner
- 4.11 APPLIANCE ISOLATING VALVES - CONCEALED  
Appliance: Washing machines, dishwashers



# 7421MO MARLEY OPTIM DWV SANITARY SYSTEM

## 1 GENERAL

This section relates to the supply and laying of **Marley New Zealand Limited** above ground gravity flow PVC-U sanitary systems for residential and commercial applications.

It includes:

- foul water
- sanitary fixtures to first underground drain connection
- system wastes, floor wastes, floor waste gullies, traps, vents and valves
- associated components and accessories to make the system work.

### 1.1 RELATED WORK

Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.

### 1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

DWV	Drain, Waste and Vent
-----	-----------------------

### Documents

### 1.3 DOCUMENTS

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

- [NZBC G1/AS1](#) Personal hygiene
- [NZBC G13/AS1](#) Foul water - Sanitary plumbing
- [NZBC G13/AS3](#) Foul water - Sanitary plumbing and drainage
- [AS 2887](#) Plastic waste fittings
- [AS/NZS 1260](#) PVC-U pipes and fittings for drain, waste and vent applications
- [AS/NZS 1462.22](#) Methods for test for plastic pipes and fittings - Method 22: Method for determination of pipe stiffness
- [AS/NZS 1462.3](#) Methods for test for plastic pipes and fittings - Method for determining the impact characteristics of pipes
- [AS/NZS 2032](#) Installation of PVC pipe systems
- [AS/NZS 3500.2](#) Plumbing and drainage - Sanitary plumbing and drainage
- [Plumbers, Gasfitters and Drainlayers Act 2006](#)

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents relating to this part of the work:

Marley OPTIM® DWV Technical Design Manual  
 Marley Material Safety Data Sheets

Manufacturer/supplier contact details

Company: **Marley New Zealand Limited**  
 Web: [www.marley.co.nz](http://www.marley.co.nz)  
 Email: [guyy@marley.co.nz](mailto:guyy@marley.co.nz)  
 Telephone: 09 279 2799

### 1.5 WARRANTY - INSTALLER

Provide an installer warranty:

2 years: For installation

- Provide this warranty on the installer 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.

## Requirements

### 1.6 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

### 1.8 AS BUILT DOCUMENTS

Refer to the general section 1238 AS BUILT DOCUMENTATION for the requirements for submission and review of as built documents and records.

Provide the following as built documents and records:

- Provide draft as built information prior to practical completion.
- Provide final as built information prior to the end of the defects liability period.

## Compliance information

### 1.9 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation: -

- Installer's approval certificate from the manufacturer / importer / distributor
- Manufacturer, importer or distributor Certificate of Conformance
- Installer's warranty
- Producer Statement - Construction from the installer
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

## Performance

### 1.10 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC G13/AS1](#), 7.1 Test Methods or [AS/NZS 3500.2](#), section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

## 2 PRODUCTS

### Materials

#### 2.1 PVC-U DWV PIPEWORK - RESIDENTIAL

Marley PVC-U DWV pipework comprised of unplasticised PVC waste pipes, traps and fittings manufactured to [AS/NZS 1260](#), tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with [AS/NZS 3500.2](#). Available in a range of pipe types with nominal size DN20 to DN150 and stiffness class SN4 and SN6. Refer to SELECTIONS for options.

#### 2.2 PVC-U VENT PIPES

Marley PVC-U vent pipes comprised of unplasticised PVC including fittings and accessories manufactured to [AS/NZS 1260](#), tested to AS/NZS 1462.22 and AS/NZS 1462.3, and compliant with [AS/NZS 3500.2](#). Available in a range of pipe types with nominal size DN 40 to DN 100 and stiffness class SN4 to SN10. Refer to SELECTIONS for options.

#### 2.3 EXPOSED PIPES AND TRAPS - CHROME

To [AS/NZS 3500.2](#). Satin chrome plated exposed pipes, traps and wastes including all associated fittings refer to SELECTIONS.



2.4 FLOOR WASTE  
Vinyl Rite Floor Waste System, with solvent joint and standard white PVC grate. Available in a range sizes and grate types, refer to SELECTIONS for options.

2.5 GULLY TRAP  
Refer to 7461 FOUL WATER DRAINAGE for gully traps.

### Components

2.6 PROTECTIVE TAPE  
Plasticised PVC tape system with primer, mastic fixing and outer coating.

## 3 EXECUTION

### Conditions

3.1 EXECUTION GENERALLY - NZBC G13/AS1  
Carry out this work to [NZBC G13/AS1](#) and [NZBC G1/AS1](#) and complete all tests to G13/AS1, 7.1 Test Methods.

3.2 ELECTROLYTIC ACTION  
Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 HANDLE AND STORE  
Handle and store pipes, fittings and accessories to avoid damage. Store on site under cover on a clean level area, stacked to eliminate movement and away from work in progress.

3.4 SETTING OUT  
Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

3.5 CORE HOLES AND SLEEVES  
Fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Sleeve diameter to be 25mm larger than outside diameter of pipe accommodated. Strip core holes and make good after installation of pipework.

3.6 PIPE ACCESS  
Fit and fix stacks, wastes and pipes in ducts independent of all other services so they are easily replaceable for their full length. Wrap or tape pipes buried in concrete.

3.7 FITTINGS ACCESS  
Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.8 CONFIRM LOCATION  
Unless the location and height are clearly delineated on the drawings, confirm installation height and plan locations of sanitary fittings before commencing the piping installation.

3.9 CORROSION  
Separate metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

### Installation - traps and wastes

3.10 TRAPS AND WASTES - CONCEALED  
Conceal traps and wastes in the fabric of the building in accordance with manufacturer requirements.

3.11 TRAPS AND WASTES - EXPOSED CHROME  
Fit and fix satin chrome plated exposed pipes, traps and wastes in accordance with manufacturer requirements.

3.12 INSTALL GULLY TRAPS  
Refer to 7461 FOUL WATER DRAINAGE for installation of gully traps.



**Installation - jointing****3.13 JOINTING PVC-U PIPE - SOLVENT WELDED JOINTS**

Prime and solvent weld joints using spigots and sockets to Marley requirements.

Jointing to be in accordance with Marley OPTIM DWV jointing procedures as shown in the Marley OPTIM technical manual.

**Installation - fixing****3.14 THERMAL MOVEMENT**

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in PVC-U pipes. Install PVC pipes to [AS/NZS 2032](#). Take particular care to allow for movement at horizontal take-off locations from stacks.

**3.15 TRAPS AND FIXTURE DISCHARGE PIPES - NZBC G13/AS1**

Size traps and pipes as required for each fixture or appliance. Establish the developed length of waste pipes. Vent and allow access for cleaning as required. Follow the most direct line with the least number of bends to [NZBC G13/AS1: Foul water sanitary plumbing, table 4, Discharge unit loading for stacks and graded discharge pipes and table 7, Distance between supports](#).

**3.16 DISCHARGE STACKS AND VENTS - NZBC G13/AS1**

Size stacks and vents to [NZBC G13/AS1: Foul water sanitary plumbing, table 2, Fixture discharge pipe sizes and discharge units and table 6, Vent pipe sizes](#). Extend up past the highest branch to form a discharge stack vent terminating to [NZBC G13/AS1: Foul water sanitary plumbing, figure 12](#) and finishing at the base with a 45 degree bend. Support system to [NZBC G13/AS1: Foul water sanitary plumbing, table 7, Distances between supports](#).

**Completion****3.17 ROUTINE CLEANING**

Carry out routine trade cleaning of this part of the work including periodic removal of all debris, unused materials and elements from the site.

**3.18 DEFECTIVE OR DAMAGED WORK**

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable.

**Commissioning****3.19 TESTING**

Pre-test all pipework during construction. On completion of the work and before approval for acceptance of the pipework, carry out a final test to the approval of the engineer and if required witnessed by the representative of the territorial authority.

**4 SELECTIONS**

For further details on selections go to [www.marley.co.nz](http://www.marley.co.nz)

Substitutions are not permitted to the following, unless stated otherwise.

**Materials - sanitary systems****4.1 MARLEY PVC DWV PIPEWORK, RESIDENTIAL**

Location:	Refer drawings
Manufacturer:	Marley New Zealand Limited
Pipe brand/type:	Marley
Jointing:	Solvent

**4.2 MARLEY PVC-U VENT PIPE**

Location:	Refer drawings
Manufacturer:	Marley New Zealand Limited
Pipe brand/type:	Marley
Jointing:	Solvent



## 7430 DRAINAGE

### 1 GENERAL

This section relates to the supply and laying of gravity foul water (sewage), stormwater and groundwater drainage.

#### 1.1 DOCUMENTS

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

<a href="#">NZBC B1/AS1</a>	Structural provisions for buildings
<a href="#">NZBC E1/AS1</a>	Surface water
<a href="#">NZBC E1/AS2</a>	Surface water
<a href="#">NZBC E1/VM1</a>	Surface water
<a href="#">NZBC G1/AS1</a>	Personal hygiene
<a href="#">NZBC G13/AS1</a>	Foul water - sanitary plumbing
<a href="#">NZBC G13/AS2</a>	Foul water - drainage
<a href="#">NZBC G13/AS3</a>	Foul water - sanitary plumbing and drainage
<a href="#">AS/NZS 1254</a>	PVC-U pipes and fittings for Stormwater and Surface Water applications
<a href="#">AS/NZS 1260</a>	PVC-U pipes and fittings for drain, waste and vent applications
<a href="#">AS/NZS 2032</a>	Installation of PVC pipe systems
<a href="#">AS/NZS 2033</a>	Installation of polyethylene pipe systems
<a href="#">AS 2439.1</a>	Perforated Plastics Drainage and Effluent Pipes and Fittings - Perforated drainage pipe and associated fittings
<a href="#">AS/NZS 2566.1</a>	Buried Flexible Pipelines - Structural Design
<a href="#">AS/NZS 2566.2</a>	Buried Flexible Pipelines - Installation
<a href="#">AS/NZS 3500.3</a>	Plumbing and drainage - Stormwater drainage
<a href="#">NZS 3104</a>	Specification for concrete production
<a href="#">NZS 3111</a>	Method of test for water and aggregate for concrete
<a href="#">AS/NZS 3500.2</a>	Plumbing and drainage - sanitary plumbing and drainage
<a href="#">NZS 3604</a>	Timber-framed buildings
<a href="#">NZS 4229</a>	Concrete masonry buildings not requiring specific engineering design
<a href="#">NZS 4402 (set)</a>	Method of testing soils for civil engineering purposes
<a href="#">AS/NZS 4671</a>	Steel reinforcing materials
<a href="#">AS/NZS 5065</a>	Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications
<a href="#">NZCMM</a>	NZ Concrete Masonry Manual section 6.1 Masonry Retaining Walls
<a href="#">NZTA F2</a>	Specification for pipe subsoil drain construction
<a href="#">Plumbers, Gasfitters and Drainlayers Act 2006</a>	

#### 1.2 AS BUILT DOCUMENTS

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

#### 1.3 QUALIFICATIONS

Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

### 2 PRODUCTS

#### 2.1 CONCRETE

17.5 MPa prescribed mix to [NZS 3104](#).

#### 2.2 REINFORCEMENT

Plain round and/or deformed steel bars, Grade 300 to [AS/NZS 4671](#).



**Components**

2.3 PVC-U PIPES

PVC-U pipes bends, junctions, fittings and joints to [AS/NZS 1254](#) and [AS/NZS 1260](#).

Underground PVC-U pipe to be classified as follows:

Classification:	Use:
SN4 - SN6	Domestic & light load areas
SN8 - SN10	Commercial & Industrial medium load areas
SN16	Public roads & high load areas

2.4 PERFORATED PIPE - SUBSOIL DRAINAGE

Perforated corrugated coil high density polyethylene subsoil drainage pipe to AS 2439.1 with polypropylene filter sock over, for groundwater drainage.

2.5 GULLY TRAPS - NZBC G13/AS2

To [NZBC G13/AS2](#): 3.3 Gully traps, complete with grating.

2.6 SURFACE WATER SUMP GRATINGS

Cast iron frame with lift-up grating.

2.7 STRIP DRAIN CHANNEL

Proprietary, modular, variable invert, plastic, steel (various types), or polymer concrete drainage channel sections and drainage sump, embedded in site concrete and fitted with selected metal gratings.

2.8 INSPECTION COVERS

Cast iron frame with screw-down cover.

**Foul water**

2.9 TRENCH BACKFILLING MATERIAL, FOUL WATER - NZBC G13/AS2

Bedding and backfilling material to [NZBC G13/AS2](#), 2.0 Materials, for methods shown in [NZBC G13/AS2](#), figure 7, Bedding and backfilling.

**Surface water**

2.10 TRENCH BACKFILLING MATERIAL, SURFACE WATER - NZBC E1/AS1

Bedding and backfilling material to [NZBC E1/AS1](#), 3.9 Bedding and backfilling, figure 13.

**Subsoil**

2.11 DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Free draining crushed stone, 7 mm to 20 mm in size.

**Concrete masonry retaining walls**

2.12 DRAINAGE MATERIAL - SIMPLE STANDALONE CONCRETE MASONRY RETAINING WALLS

Free draining imported hardfill to the [NZTA F2](#) specification.

Filter material comprised of clean, durable stone having a crushing resistance of not less than 100 kN when tested in accordance with [NZS 3111](#), or a mixture of such material with clean hard sand. The filter material when tested in accordance with [NZS 4402](#), shall comply with the following gradings:

TEST SIEVE APERTURE	PERCENTAGE PASSING
26.5mm	100
13.2mm	85-100
9.5mm	80-95
4.75mm	65-85
2.36mm	50-70
1.18mm	35-55



600µm	18-40
300µm	3-25
150µm	8 maximum
75µm	0

**Accessories**

2.13 FILTER FABRIC

Polymeric fabric formed from a plastic yarn or a long chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, amide, ester or vinylidene chloride. Fibres to be rot proof, chemically stable and have low water absorbency. The filter network, (woven or non-woven) must be dimensionally stable and resistant to delamination.



### 3 EXECUTION

#### 3.1 EXCAVATE

Excavate for drains to a firm even base with correct gradients set in straight runs. Trenches running parallel, below and close to foundations of buildings to [NZS 3604](#) or [NZS 4229](#) to be separated to:

- [NZBC E1/AS1](#), 3.9.7, Proximity of Trench to Building, for stormwater and subsoil drains.
- [AS/NZS 3500.3](#), 6.2.8, Installation near and under buildings, as modified by [NZBC E1/AS2](#).
- [NZBC G13/AS2](#), 5.6, Proximity of Trench to Building, for foul water drains.

#### 3.2 MANUFACTURER'S REQUIREMENTS

All drainage installations to the pipe and fitting manufacturer's requirements.

#### 3.3 FOUL WATER DRAINAGE GENERALLY - NZBC G13/AS2

Carry out foul water drainage work to [NZBC G13/AS2](#) and [NZBC G1/AS1](#) and complete all tests to [NZBC G13/AS1](#), 7.1 Test Methods.

Lay uPVC pipe systems to relevant sections of [AS/NZS 2032](#). Lay polyethylene pipes and fittings to relevant sections of [AS/NZS 2033](#).

#### 3.4 SURFACE WATER DRAINAGE GENERALLY - E1/AS1

Carry out stormwater drainage work to [NZBC E1/AS1](#), and complete all tests to [NZBC E1/VM1](#), 8.0 Drain Leakage Tests.

Lay uPVC pipe systems to relevant sections of [AS/NZS 2032](#), [AS/NZS 2566.1](#) and [AS/NZS 2566.2](#). Lay polyethylene pipes and fittings to relevant sections of [AS/NZS 2033](#) and [AS/NZS 2566.1](#).

#### 3.5 LAY FOUL WATER DRAINS

Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.

#### 3.6 CONSTRUCT GULLY TRAPS - NZBC G13/AS2

Set in a minimum 75mm thick concrete with top surround 25mm above paving and 75mm above other surfaces, to [NZBC G13/AS2](#), 3.3 Gully traps.

#### 3.7 LAY STORMWATER DRAINS

Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.

#### 3.8 INSTALL STRIP DRAIN CHANNEL

Excavate trench and form site concrete base to fall. Set interlocking channel sections, sumps and accessories in place, all in accordance with the channel manufacturer's requirements. Check falls and install gratings and covers.

#### 3.9 INSTALL SURFACE WATER SUMP

To [NZBC E1/AS1](#) or to [AS/NZS 3500.3](#) section 7 as modified by [NZBC E1/AS2](#), complete with ceramic half-siphon pipe and cast iron frame with a lift out grating.

#### 3.10 INSTALL STORMWATER INSPECTION CHAMBERS

Construct as detailed on a poured concrete footing to [NZBC E1/AS1](#), 3.7, Access for maintenance, or to [AS/NZS 3500.3](#), section 7 as modified by [NZBC E1/AS2](#). Provide all necessary haunching to channels. Fit a cast iron cover and frame.

#### 3.11 INSTALL FOUL WATER INSPECTION CHAMBERS - NZBC G13/AS2

Construct as detailed on a poured concrete footing to [NZBC G13/AS2](#), 5.7 Access points. Provide all necessary haunching to channels. Fit a cast iron cover and frame.

#### 3.12 TESTING - FOUL WATER

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC G13/AS1](#), 7.1 Test Methods or [AS/NZS 3500.2](#), section 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations, as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

#### 3.13 TESTING - SURFACE WATER



Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to [NZBC E1/VM1](#), 8.0 Drain Leakage Tests or [AS/NZS 3500.3](#), section 9, as modified by [NZBC E1/AS2](#) as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

### **Backfilling and encasement - Foul water and surface water**

#### 3.14 CONCRETE ENCASEMENT

Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.

#### 3.15 TRENCH BACKFILLING GENERALLY - FOUL WATER

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

Up to 300mm above the pipe, compaction shall be by tamping by hand using a rod with a pad foot (having an area of  $75 \pm 25$  mm by  $75 \pm 25$  mm) over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing the drains.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

#### 3.16 TRENCH BACKFILLING GENERALLY - SURFACE WATER - NZBC E1/AS1

Granular bedding and selected fill shall be placed in layers no greater than 100 mm loose thickness and compacted. Base bedding (beneath the pipe) shall be placed and compacted before pipes are laid. Up to 300mm above the pipe, compaction shall be by tamping by hand tool over the entire surface of each layer to produce a compact layer without obvious voids, without disturbing or distorting the drain. Run marker tape along line of the pipe on top of the bedding.

More than 300 mm above the pipe, compaction shall be by at least four passes of a mechanical tamping foot compactor (whacker type) with a minimum weight of 75 kg. For plastic based pipes, ensure care taken to avoid impact loading of the pipe.

#### 3.17 FOUL WATER TRENCH BACKFILLING - NZBC G13/AS2

Carry out foul water trench backfilling to [NZBC G13/AS2](#), 5.3 to 5.5 and fig 7. PVC-U pipe to [AS/NZS 2032](#) and polyethylene pipes to [AS/NZS 2033](#).

#### 3.18 SURFACE WATER TRENCH BACKFILLING - NZBC E1/AS1

Carry out surface water trench backfilling to [NZBC E1](#), 3.9.6 and fig. 13. PVC-U pipe to [AS/NZS 2032](#) and polyethylene pipes to [AS/NZS 2033](#).

### **Subsoil ground water drainage**

#### 3.19 FILTER FABRIC TO DRAINAGE MATERIAL - SUBSOIL DRAINAGE

Where details require drainage material to be encapsulated in filter fabric to prevent fines from blocking the aggregate. Place fabric and carefully hold in place by pinning and/or by controlled use of aggregate as ballast. After drain installation and required backfilling, complete encapsulation with fabric. Ensure filter fabric is correctly placed, sufficiently overlapped and pinned and/or secured.

#### 3.20 LAY PERFORATED PIPING - SUBSOIL DRAINAGE

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage material screeded to the required gradient. Lay in straight runs to discharge into surface water drainage system. The pipe must not excessively elongate during installation. Carry drainage material up and over the pipes without disturbing them. Extend the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.



**3.21 LAY PERFORATED PIPING TO RETAINING WALLS - SUBSOIL DRAINAGE**

Lay perforated groundwater drainage piping with filter sock, firmly on a bed of drainage metal comprising of filter material to the [NZTA F2](#) specification. Pipe bedding not less than 75mm deep. Backfill not less than 300mm deep. The pipe must not excessively elongate during installation. Lay in straight runs to correct gradients, discharging into surface water drainage system. Carry drainage material up and over the pipes without disturbing them. Place granular fill in layers not exceeding 150 mm thick loose depth, to full height of wall, with an allowance for the thickness of the surface finish. Compact to provide support of not less than that of the adjacent material. Where geocomposite drain is used, the backfill shall follow the manufacturer's recommendations. Carry the high end of all lines up to the surface in capped, solid pipe to provide for flushing out.

**3.22 CLEAN OUT SUBSOIL DRAIN INSTALLATION**

Clean and flush out the whole subsoil drain installation and remove silt and debris before handing over.

**4 SELECTIONS****4.1 PVC-U PIPES**

Brand/type: Marley

**4.2 STRIP DRAIN**

Location: Refer drawings  
Brand/type: Allproof

**4.3 PERFORATED DRAINAGE PIPING - SUBSOIL DRAINAGE**

Pipe brand/type: Refer drawings  
Diameter: 110mm



# 7701PC PDL & CLIPSAL ELECTRICAL

## 1 GENERAL

This section relates to the wiring for **Schneider Electric** domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- Phone / Data / TV Wiring (VDI Systems)
- security system
- complete with componentry
- electrically-powered fittings

### 1.1 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

AFDD	Arc Fault Detection Device
ELV	extra low voltage
GLS	general lighting service
IP	international (ingress) protection classification
NUO	Network Utility Operator
PCB	printed circuit board
PIR	passive infrared
SIA	security integration architecture
TPS	tough plastic sheathed
TCF	Telecommunications Carriers' Forum

### Documents

### 1.2 DOCUMENTS

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

<a href="#">NZBC E2/AS1</a>	External moisture provisions for timber-framed buildings up to 10 m in height
<a href="#">NZBC G4/AS1</a>	Ventilation of buildings
<a href="#">NZBC G9/AS1</a>	Electricity
<a href="#">AS/NZS 1125</a>	Conductors in insulated electric cables and flexible cord
<a href="#">AS/NZS 2201.1</a>	Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance
<a href="#">AS/NZS 3000</a>	Electrical installations (known as the Australian/New Zealand Wiring Rules)
<a href="#">AS/NZS 3008.1.2</a>	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
<a href="#">AS/NZS 3100</a>	Approval and test specification - general requirements for electrical equipment
<a href="#">AS/NZS 3112</a>	Approval and test specification - Plugs and socket-outlets
<a href="#">AS/NZS 3133</a>	Approval and test specification - Air-break switches
<a href="#">AS/NZS 3190</a>	Approval and test specification - Residual current devices (current-operated earth - leakage devices)
<a href="#">AS/NZS 3439.3</a>	Low - voltage switchgear and controlgear assemblies - Particular requirements for low - voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards



NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4961	Electric cables - Polymeric insulated - For distribution and service applications
AS/NZS 5000.2	Electric cables - Polymeric insulated - For working voltages up to and including 450/750 V
AS/NZS 60335.1	Household and similar electrical appliances - Safety - General requirements
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance.
AS/NZS 61008.1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - General rules
AS/NZS 61009.1	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - General rules
AS/NZS 61439.3	AS/NZS 61439.3 Low-voltage switchgear and controlgear assemblies - Part 3: Distribution boards intended to be operated by ordinary persons (DBO).
AS/NZS 11801.1	Information technology - Generic cabling for customer premises - General requirements (ISO/IEC 11801-1:2017, MOD)
PTC 225	Star-wiring boxes and small office/home office (SOHO) cabling installations

[TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services Electricity \(Safety\) Regulations 2010](#) (Reprint as at 21 January 2019).

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.

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer and supplier documents related to this section are:

PDL	PDL Iconic Series
PDL	PDL Iconic Styl Series
PDL	PDL 600 series
PDL	PDL Iconic Essence Series
PDL	PDL Pro Series
PDL	Electrical Solutions Guide
PDL & Clipsal	Catalogue and Price Guide
Clipsal	Solis Series
Clipsal	Solis T Series

Manufacturer/supplier contact details

Company: **Schneider Electric New Zealand Ltd**

Web: [www.pdl.co.nz](http://www.pdl.co.nz)

[www.clipsal.com](http://www.clipsal.com)

[www.schneider-electric.co.nz](http://www.schneider-electric.co.nz)

Email: [sales@nz.schneider-electric.com](mailto:sales@nz.schneider-electric.com)

Telephone: 0800 741 303

### Warranties

#### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

1 year                      Warranty applies to materials under normal environmental and use conditions against failure of materials and execution

Refer to SENZ standard terms and conditions of supply for further details.

- Provide this warranty on the manufacturer/supplier 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.

## Requirements

- 1.5 **COMPLY**  
Comply with the Electricity (Safety) Regulations (2010), [AS/NZS 3000](#), [AS/NZS 3008.1.2](#) and [TCF Premises Wiring Cable Installers Guidelines for Telecommunication Services](#) for listed and prescribed work and with the utility network operator requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.
- 1.6 **QUALIFICATIONS GENERALLY**  
Refer to 1270 CONSTRUCTION for requirements relating to qualifications.  
Carry out work under the supervision of an electrical licensed supervisor.
- 1.7 **QUALIFICATIONS WORKERS – LICENSED UNDER STATUTE**  
Workers and supervisors to be appropriately qualified to applicable legislative requirements.  
Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.
- 1.8 **PDL SELECTIONS - FITTINGS AND HARDWARE**  
Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.
- 1.9 **QUALIFICATIONS - SECURITY SYSTEM**  
Installation by an installer licensed under the Private Investigators and Security Guards Act.  
Installation of security equipment to comply with [AS/NZS 2201.1](#) Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance.
- 1.10 **SAFETY OF INSTALLATION - DESIGN BY ELECTRICIAN**  
Before installation work commences provide a Certified Design. The Certified Design is to comply with the Electricity (Safety) Regulations (2010), regulations 58. It must be signed by the designer of the installation.
- 1.11 **ELECTRICAL CERTIFICATE OF COMPLIANCE**  
Supply a certificate of compliance (CoC) to the owner, and if required the NUO, as required by the Electricity (Safety) Regulations 2010, prior to connection.
  - Arrange for the NUO to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.
  - Arrange for an inspector to inspect high-risk electrical work as required by Regulation 70.
- 1.12 **ELECTRICAL SAFETY CERTIFICATE**  
Provide an Electrical Safety Certificate (ESC), as required by the Electricity (Safety) Regulations 2010, Reg 74A, to the owner and when required the BCA. To be provided no later than 20 working days after connection and prior to Practical Completion.



## 2 PRODUCTS

### 2.1 CABLES

Tough plastic sheathed copper conductors to [AS/NZS 5000.2](#), stranded above 1.0mm<sup>2</sup>, and to [AS/NZS 3008.1.2](#). Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the connected load, or produce an excessive voltage drop.

Lighting circuits:	Domestic: 1.0mm <sup>2</sup> on 10 amp MCBs
Lighting circuits:	Commercial: 1.5mm <sup>2</sup> on 16 amp MCBs
Power circuits:	2.5mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction
	2.5mm <sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6mm <sup>2</sup> high temperature cable on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C (roof spaces above insulation etc).

### 2.2 DISTRIBUTION BOARD

Flush or surface mount boards manufactured to [AS/NZS 3439.3](#), or AS/NZS 61439.3, and installed in accordance with [AS/NZS 3000](#). Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

### 2.3 CIRCUIT PROTECTION

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCDs meet Type A and comply with AS/NZS 61008.1, AS/NZS 61009.1, or [AS/NZS 3190](#). MCB breaking capacity to be determined for each installation. Generally, 4.5kA is used for residential applications.

### 2.4 SWITCH UNITS - PERSON WITH DISABILITIES

In addition to clause SWITCH UNITS above, units shall comply with [NZBC G9/AS1](#), 2.0.1.b) and d).

### 2.5 HOT WATER SYSTEM SWITCH

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

### 2.6 SURGE PROTECTION

Protection for the homes appliances with medium surge protection devices fitted to the switchboard. For variable electronic equipment fit fine surge protection to switched socket outlets.

### 2.7 CEILING ROSES

White plastic mounting base with screwed cover, manufactured to [AS/NZS 3113](#). Terminal type. Suspended fittings to have sheathed round flexible cord to [AS/NZS 3008.1.2](#). Refer to SELECTIONS.

### 2.8 DATA WIRING

To AS/NZS 11801.1.

### 2.9 SUSPENDED FITTING CHORD

Suspended fittings to have sheathed round flexible cord to [AS/NZS 3008.1.2](#). Refer to SELECTIONS.

### 2.10 LIGHT FITTINGS

Install LED fittings – dimmable where desired. Ensure control gear is suitable for dimming if this is required.

### 2.11 RECESSED LIGHT FITTINGS - RESIDENTIAL

Residential recessed light fittings to [AS/NZS 3000](#), 4.5.2.3.5:



- Existing fittings or retrofit situations, fittings maybe unmarked.
- New fittings can only be labelled - CA 80, CA 90, CA 135, IC, IC-F, & IC-4.

Refer to clause INSULATION & GENERAL CLEARANCES for clearances from insulation and other elements.

#### 2.12 BATHROOM FAN HEATERS

Fixed wired compact bathroom fan heater. Automatic step-down thermostat, built-in safety cut-outs, and compliant to [AS/NZS 60335.1](#).

#### 2.13 EXTRACT FANS

Ceiling or Wall mounted extract/exhaust fans for controlled replacement of surrounding air, and compliant with [AS/NZS 60335.1](#), externally ducted.

#### 2.14 HEATED TOWEL RAILS

Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with [AS/NZS 60335.1](#), scratch resistant finish.

#### 2.15 OUTDOOR SWITCHES & SOCKETS

Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches and sockets to IP56 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

#### 2.16 OUTDOOR LIGHT FITTINGS

Using materials with superior UV protection, impact strength, and addition chemical resistance.

Weather protection minimums:

- IP54 for protected areas under eaves or verandahs etc.
- IP55 for exposed areas not subject to pressurised water (hoses).
- IP66 for areas subject to pressurised water or major splashing.
- IP67 for inground lights
- IP68 for submerged pool fittings

### Security System

#### 2.17 CONTROL PANEL

Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.

#### 2.18 DETECTORS

There are two main types of detectors:

- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

#### 2.19 AUDIBLE DEVICES

Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95db.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

#### 2.20 CABLING

Security alarm wiring to [AS/NZS 1125](#) for cables.

Security alarm wiring to be multi stranded cable and not single stranded.

#### 2.21 PERIPHERALS

All detectors, control panels and equipment housings, to be fitted with anti-tamper devices, programmed in such a manner that any attempt to compromise the system will give a tamper indication when the system is unset and a tamper alarm when the system is set.



The standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen. Wherever possible the keypad should match the style of the wiring accessories in; dimensions, colour and aesthetics.

## 2.22 COMMUNICATIONS

All control panels are to have a digital dialler built into the PCB, with the options for both monitoring and remote dial in windows based software. The digital dialler shall have all the industry standard communication formats, they include: contact I.D and SIA, and NZ Telepermit certification.

The remote software shall be able to upload / download programming changes and or history events and change status of the security alarm (this option has to be able to be turned off if required).

## 3 EXECUTION

### Conditions

#### 3.1 DELIVERY, STORAGE & HANDLING OF PRODUCTS

Refer to 1270 CONSTRUCTION for requirements relating to delivery, storage and handling of products.

#### 3.2 ROUTINE MATTERS

Refer to 1270 CONSTRUCTION for requirements relating to defective or damaged work, removal of protection and cleaning.

#### 3.3 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work.

### Installation

#### 3.4 DISTRIBUTION BOARD

Fit to board manufacturer requirements where detailed and to [AS/NZS 3000](#). Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

#### 3.5 CIRCUIT PROTECTION

Install MCBs at distribution board to [AS/NZS 3000](#) to protect each final sub circuit.

#### 3.6 EARTHING CONDUCTIVE STRUCTURE & MATERIALS

Earth all at risk structural metalwork and conductive building materials to [AS/NZS 3000](#), 5.4.6, and the Electricity (Safety) Regulations 2010.

If they form part of the building, this includes:

- Structural steel frames or members
- Light steel framing
- Exposed conductive materials, like metal sink/tub or vanity benches etc, with attached electrical units or equipment

#### 3.7 EQUIPOTENTIAL BONDING

Equipotential Bond extraneous conductive parts together and to the electrical installation earthing system to [AS/NZS 3000](#), 5.6, and the Electricity (Safety) Regulations 2010 and the fitting manufacturer's requirements.

If they form part of the building, this includes:

- Conductive water piping (including tap etc) and exposed related connected conductive surfaces (like metal sink benches or metal cladding etc). Not required where isolated by non-conductors (plastic pipe etc) from the mass of earth.
- Other conductive piping (not earthed by other means) and exposed related connected conductive surfaces.
- Concrete reinforcing - for floor or wall forming part of a room with a shower or bath, or the shell and surround of a swimming/spa pool
- Built-in Swimming pool and spa pool - exposed conductive parts of electrical equipment, as well as exposed conductive, fixtures, fittings and pool structures within 1.25m of pool edge



### 3.8 MAIN EARTH

Provide a plastic toby box or uPVC tube to contain and protect the earth pin. Fix the connecting earth wiring closely and securely against wall surfaces.

### 3.9 ARC FAULT DETECTION DEVICE (AFDD)

To [AS/NZS 3000](#) clause 2.9, AFDD on all final sub-circuits not exceeding 20A.

### 3.10 EARTH LEAKAGE PROTECTION

RCD protection installed to [AS/NZS 3000](#).

### 3.11 RCD - RESIDENTIAL INSTALLATIONS

Install 30mA RCD protection at the switchboard for all final sub circuits to control outlets and lighting except for fixed or stationary cooking equipment, to [AS/NZS 3000](#).

### 3.12 RCD-AFDD COMBINED - RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub circuits not exceeding 20A, to control and protect outlets and lighting to [AS/NZS 3000](#), (2018, 2.6 & 2.9). Protect over 20A to 32A final sub circuits with separate RCD and to [AS/NZS 3000](#).

### 3.13 RCD - NON-RESIDENTIAL INSTALLATIONS

Install 30mA RCD Type II protection at the switchboard to suit location and use, to [AS/NZS 3000](#).

### 3.14 RCD - AFDD COMBINED - NON-RESIDENTIAL INSTALLATIONS

Install a 30mA RCD - AFDD combined device (RCD Type II) at the switchboard for all final sub-circuits not exceeding 20A, to suit location and use, to [AS/NZS 3000](#), (2018, 2.6 & 2.9). Protect over 20A to 32A final sub-circuits with separate RCD and to [AS/NZS 3000](#).

### 3.15 HIGH RISK AREA INSTALLATIONS

Use fixed wired RCD protected socket outlets to 30mA or 10mA in areas that may represent increased risk of electric shock to the user:

- Areas frequented by infants ([AS/NZS 3000](#) recommends 10mA)
- Wet areas: bathrooms, laundries, kitchens
- Near pools and water features
- Where intended for use with cleaning equipment
- Hand held tools subject to movement in use, i.e. workshops, garages

### 3.16 SET-OUT

Unless specifically detailed, the position of outlets and equipment shown on drawings is indicative of requirements. Study documents and site conditions to ensure no conflict with other services or features will arise. Resolve conflicts and discrepancies before proceeding with work affected.

Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

### 3.17 CABLING

Install wiring systems to [AS/NZS 3000](#).

Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:

All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

### 3.18 CABLING CIRCUITS

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

### 3.19 SWITCH AND SOCKET UNITS - FOR PERSON WITH DISABILITIES

Fit all switch units and socket units to the manufacturer requirements with heights (& mounting direction) and location to [NZBC G9/AS1](#) and SELECTIONS.



3.20 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer requirements.

3.21 INSULATION & GENERAL CLEARANCES

Some electrical and mechanical services, and equipment may need to have a gap to insulation and some building elements. The gaps should be to the [NZS 4246](#) based tables below or to the equipment manufacturers requirements if they require larger gaps. Smaller gaps to manufacturers requirements can be used for equipment specifically manufactured with heat shielding or similar (excludes light fittings).

Installed gap not to be more than 50mm bigger than the required gap.

The following tables are subject to:

- The requirements of [NZS 4246](#) for insulation.
- The insulation is exposed to the source of heat or equipment etc.
- Insulation, has passed the needle flame test to [AS/NZS 60695.11.5](#) and/or is non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with equipment manufacturer.
- "Secure insulation" if required means, glue, mechanical fix, or provide fixed barriers at gap edge of insulation to hold in place. Rigid or semi rigid insulation may only need a firm friction fit (secure loose pieces).
- Loose fill insulation will require fixed barriers to [NZS 4246](#) to maintain gaps.

3.22 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To <a href="#">NZS 4246</a> . NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Insulation to be secured.
Recessed, CA 80, CA 90, or CA 135.	Abut fittings	To <a href="#">NZS 4246</a> . Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To <a href="#">NZS 4246</a> . Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To <a href="#">NZS 4246</a> . Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To <a href="#">NZS 4246</a> . If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	To <a href="#">NZS 4246</a> . Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To <a href="#">NZS 4246</a> . This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Insulation to be secured.



3.23 RECESSED LIGHT FITTINGS TO COMBUSTIBLE BUILDING ELEMENTS

Type of recessed fitting	Minimum building element clearance**	Comments
Marked NON-IC, or unmarked, ≤100W	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a>
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a>
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a>
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To <a href="#">AS/NZS 3000:2018</a> To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To <a href="#">AS/NZS 3000:2018</a> . Manufacturer clearances if greater than 100mm

\*\*Combustible building elements exclude metal elements, but include timber framing or other timber based elements, and normal linings etc. Highly flammable materials & those likely to melt will need more clearance.

3.24 INBUILT RECESSED HOT APPLIANCES TO INSULATION

Appliance	Minimum insulation clearance	Comments
Electrical heaters	Manufacturer clearances	To <a href="#">NZS 4246</a> .
Electrical heaters	100mm	Manufacturer clearances not known. To <a href="#">NZS 4246</a> . Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.
Heat producing appliances & equipment	Manufacturer clearances	To <a href="#">NZS 4246</a> .
Heat producing appliances & equipment	50mm	Manufacturers clearances not known. To <a href="#">NZS 4246</a> . Clearance may be able to be reduced with non-combustible insulation. Insulation to be secured.

Note - Appliances and equipment excludes cables, junction boxes, light switches & power sockets etc

3.25 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	Minimum insulation clearance	Comments
Ducted fan motors	50mm	To <a href="#">NZS 4246</a> . Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To <a href="#">NZS 4246</a> . Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	To <a href="#">NZS 4246</a> . Includes unducted, rangehoods, extractors etc, discharging into roof space. To prevent debris falling into motor. Clearance may be able to be reduced, by providing a fixed barrier around the vent.
Roofing material/underlay	25mm	To <a href="#">NZS 4246</a> . Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.



3.26 ELECTRIC HOT WATER SYSTEM

For storage heaters, wire as a separate circuit through a wall-mounted isolating switch, with the cable from switch to element encased in flexible PVC conduit, clamp fixed at each end. Hot water cylinders, thermostats and 3000 watt element supplied and fitted as specified under the hot and cold water system section.

3.27 DATA WIRING

Install data wiring to outlet positions shown on the drawings. Install in conduit for outlets on masonry surface.

3.28 SURGE PROTECTION

Install surge protection devices to manufacturer requirements and in accordance with [AS/NZS 3000](#). When fitting medium protection at the switchboard, protect the device by a dedicated MCB.

3.29 ELECTRIC POWERED FITTINGS AND EQUIPMENT

Install and wire fittings and equipment to individual fittings and equipment manufacturer requirements. Refer to the drawings for required layouts and locations for equipment. Refer to SELECTIONS for schedules of fittings.

3.30 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items:

Heated towel rails:	Install to manufacturers requirements and installed in accordance with <a href="#">AS/NZS 3000</a> and <a href="#">NZBC G9/AS1</a> .
Mirror demisters:	Locate centrally above the wash hand basin(s). Connect wiring to room lighting unless specified otherwise.
Extract fans:	Install exterior ducted fans to manufacturer requirements. Installed in accordance with <a href="#">AS/NZS 3000</a> and <a href="#">NZBC G4/AS1</a> .
Bathroom fan heaters:	Install to manufacturers requirements and installed in accordance with <a href="#">AS/NZS 3000</a> .

3.31 OUTDOOR/EXTERIOR SERVICES

Install all wiring systems in accordance with section 3 of [AS/NZS 3000](#). Adhere to this standard at all times to all requirements.

Basic requirements or recommendations:

Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56. Install to manufacturer specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

Refer to SELECTIONS.

**Security System**

3.32 SECURITY SYSTEM

Install to the system manufacturer requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to [AS/NZS 2201.1](#) Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance.

All 230V mains power connections to the security panel are to be in accordance with [AS/NZS 3100](#). The 230V power is to be switched using a Schneider single gang isolator switch or similar.



## Completion & Commissioning

### 3.33 COMPLETION MATTERS

Refer to 1270 CONSTRUCTION for completion requirements and if required commissioning requirements.

- Leave installation operating correctly, with equipment clean and all lamps operational.

## 4 SELECTIONS

For further details on selections go to [www.pdl.co.nz](http://www.pdl.co.nz), [www.clipsal.com](http://www.clipsal.com), [www.schneider-electric.co.nz](http://www.schneider-electric.co.nz).

Substitutions are not permitted to the following, unless stated otherwise.

### Materials

#### 4.1 PDL DISTRIBUTION BOARD

Location:	Refer to drawings
Brand / type:	PDL Superboard
MCB:	Resi9
RCCB:	Resi9
RCBO:	Resi9
Surge protectors:	Resi9
Modular contactors:	Schneider Electric
Main switch:	Resi9
Timers:	Schneider Electric
AFDD:	Resi9

### Interior outlets - PDL

#### 4.2 PDL INTERIOR OUTLETS

Location:	Refer to drawings
Switch / socket outlets	To be confirmed
Coverplate colour:	White
Switch - Height to centre of unit:	1000mm above FFL
Socket - height to centre of unit:	300mm above FFL, or 150mm above bench top
Orientation:	Horizontal

### Exterior switches and sockets - PDL

#### 4.3 PDL EXTERIOR SWITCHES AND SOCKETS

Weatherproof socket outlets: PDL Iconic Outdoor range

Weatherproof switch: PDL Iconic Outdoor range

