MISE Office

Project Specification

Betio, Tarawa, Tarawa, Kiribati
Project Ref: 26001
Date: 02 November 2026

International Timber Construction Solutions
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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

The MISE Office is a 2-storey timber framed structure on a timber pile concrete footed foundation. The building will be installed with a colorsteel corrugated exterior lining. The roofing is colorsteel styleline roofing. The interior lining for walls and ceilings is plywood, only for the toilet areas to be Hardie Glaze panels.

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 KNOWN SITE HAZARDS

Site hazards known to the principal are:

Refer to attachment if any known site hazards.

1.6 PRINCIPAL'S SITE HEALTH AND SAFETY PLAN

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

Site

1.7 SITE

The site consists of: refer to Site Plan
As shown on drawing: Site Plan

1.8 LEGAL DESCRIPTION

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

1.9 SITE FEATURES

Refer to Site Plan

Site environment - Durability

1.10 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 ~



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Site environment - Wind

1.11 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 VH (refer to NZS 3604, table 5.4)

Site environment - Seismic

1.12 EARTHQUAKE ZONE - NON SPECIFIC DESIGN

The zone is to NZS 3604, Section 5 Bracing design, 5.3 Earthquake bracing demand.

The earthquake zone is: 3 ~

Archaeological discovery

1.13 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.
Known archaeological information relating to this site includes the following: -
Will be addressed when known.



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1222 PROJECT PERSONNEL

1 GENERAL

This general section provides a list of the parties who are involved with the project. Communications to these personnel are to be sent to them at the address as listed. Refer to the construction contract for:

- the roles that they have under the contract; and
- address details for notices being given under the contract.

Contractor

1.1 COMPANY

Name:	TCS International Construction Development Ltd
Postal:	PO Box 87 Pukekohe Auckland
Street:	
Telephone:	027 537 5250
Represented by:	Greg Charteris
Mobile:	027 537 5250
Email:	greg@tcs.net.nz

1.2 CONTRACT MANAGER

Person:	Brent Belami
Mobile:	021 778 994
Telephone:	021 778 994
Email:	brent@tcs.net.nz

1.3 SITE FOREMAN

Person:	
Mobile:	
Telephone:	
Email:	

Consultants

1.4 STRUCTURAL ENGINEER

Practice:	Lignum Structural Ltd
Postal:	11 Obelisk Street, Wanaka 9305
Telephone:	021 258 1903
Represented by:	David Reid
Mobile:	021 259 1903
Email:	david@lignumstructural.co.nz

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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

1.1 SCHEDULE SECTION

Refer to 1270S1 SCHEDULE OF SAMPLES & PROTOTYPES for work sections contained in this specification that have requirements for samples and prototypes.

Refer to 1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS for work sections contained in this specification that have requirements for spares and maintenance products.

Quality control and assurance

1.2 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.

1.3 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.

1.4 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.

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Noise and nuisance

1.5 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.

1.6 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.

1.7 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.

1.8 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.

1.9 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.

1.10 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.

1.11 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.

1.12 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.

1.13 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.

1.14 SMOKE FREE REQUIREMENTS

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

1.15 RESTRICTIONS

Do not:

- light rubbish fires on the site.
- bring dogs on to or near the site.

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- bring radios/audio players on to the site.

Set-out and tolerances

1.16 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.

1.17 DATUM

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

1.18 SET-OUT

Set out the work to conform with the drawings.

1.19 USE OF SET-OUT INSTRUMENTS

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

1.20 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.

1.21 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 NZS 3109 Concrete construction Table 5.2 Tolerance for in situ construction To NZS 3114 Concrete surface finishes
Timber framing:	To NZS 3604 Timber-framed buildings Clause 2.2 Tolerances Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes.

Execution

1.22 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.

1.23 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.

1.24 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.

1.25 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.

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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.

1.26 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.

1.27 MINIMISE DELAYS DUE TO WEATHER

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

Defective or damaged work

1.28 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

1.29 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.

1.30 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.

1.31 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.

1.32 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.

1.33 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

1.34 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.

1.35 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.



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1.36 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.

1.37 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.

1.38 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.

1.39 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.

1.40 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

1.41 NEW PRODUCTS

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

1.42 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.

1.43 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.

1.44 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.

1.45 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.

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1.46 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.

1.47 CONDITION OF PRODUCTS

To be in perfect condition when incorporated into the work.

1.48 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

1.49 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.

1.50 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.

1.51 OTHER SAMPLE REQUIREMENTS

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



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Prototypes

1.52 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.

1.53 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.

1.54 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

1.55 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

1.56 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.

1.57 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.

1.58 SPECIAL SITE CLEANING

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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.

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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.

In addition to the requirements in the contract, the following conditions also apply:

- ~

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.

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1270S1 SCHEDULE OF SAMPLES & PROTOTYPES

1 GENERAL

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

- The submission of samples
- The submission of prototypes for review
- The provision and testing of prototypes

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Samples

1.2 SAMPLES

There are no work section requirements.

1.3 SAMPLES - ADDITIONAL ITEMS

Refer to separate documentation for sample requirements not contained within this specification.

Prototypes

1.4 PROTOTYPES - REVIEW

Refer to the following sections:

4821 Flashings

1.5 PROTOTYPES - TESTING

There are no work section requirements.

1.6 PROTOTYPES - ADDITIONAL ITEMS

Refer to separate documentation for prototype requirements not contained within this specification.



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1270S2 SCHEDULE OF SPARES & MAINTENANCE PRODUCTS

1 GENERAL

This schedule section identifies work sections in the specification that have requirements for spares and maintenance products.

1.1 ASSOCIATED SECTIONS

Read in conjunction with:

- 1232S1 EXPLANATION OF SCHEDULE SECTIONS
- 1270 CONSTRUCTION
- Identified Work Sections

Spares & maintenance products

1.2 SPARES & MAINTENANCE PRODUCTS

There are no work section requirements.

1.3 SPARES & MAINTENANCE PRODUCTS - ADDITIONAL ITEMS

Refer to separate documentation for sample requirements not contained within this specification.



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3821 TIMBER FRAMING

1 GENERAL

This section relates to the supply and erection of timber framing, as a framed structure, or as part of a partitioning system.

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:

FSC®	Forest Stewardship Council®
COC	Chain of Custody
PEFC	Programme for the Endorsement of Forest Certification

The following definitions 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:

NZBC B2/AS1	Durability
AS/NZS 2904	Damp-proof courses and flashings
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3631	New Zealand timber grading rules
NZS 3640	Chemical preservation of round and sawn timber
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry.
BRANZ BU 673	Cavity battens

***A copy of** NZS 3604 **Timber-framed building, must be held on site.**

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

TCS International Construction Development

Manufacturer/supplier contact details

Company:	TCS International Construction Development
Web:	www.tcs.net.nz
Email:	info@tcs.net.nz
Telephone:	+46 275375250

1.5 DIMENSIONS

All timber sizes except for roof battens are actual minimum dried sizes.



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2 PRODUCTS

Materials

2.1 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.

2.2 APPEARANCE TIMBERS

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

2.3 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

2.4 DPC

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Components

2.5 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.

2.6 SCREWS

Wood screws to the requirements of NZS 3604, 2.4 Fastenings and Fabrication, and section 4, Durability, and of the type, number and form required for each screw application to NZS 3604, sections 6 - 10.

2.7 BOLTS AND COACH SCREWS

Bolts and coach screws complete with washers, to the requirements of NZS 3604, clause 2.4.5 Bolts and Coach Screws, and section 4, Durability, and of the type, number and form required for each particular junction to NZS 3604, sections 6 - 10.

2.8 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.

2.9 TIMBER CONNECTORS AND FIXINGS

Supply for each particular joint the connectors and fixings as noted on the drawings. Comply with the requirements of the manufacturer, NZS 3604, section 4, **Durability**, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

2.10 BRACING STRAPS

Nail-on type to the requirements of NZS 3604, section 4, **Durability**, and of the number and form required for each particular application to NZS 3604, sections 6-10.

2.11 POWDER ACTUATED FASTENERS

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

2.12 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).

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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, up to 10 metres, 5mm
- Deviation from horizontal, over 10 metres, 10mm total

- Deviation from vertical position per 3 metres, 3mm

- Deviation from horizontal and vertical, within openings, 3mm.

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 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**.

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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 the manufacturer's requirements or to engineering specific design.

3.18 FIT BRACING

Fit and fix subfloor, wall and roof bracing elements to the requirements of the manufacturer or to NZS 3604, to develop the full number of bracing units required.

3.19 DPC TO LOSP TREATED TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

3.20 DPC TO TIMBER

Refer to 4161 UNDERLAYS, FOIL AND DPC section

Completion

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4 SELECTIONS

4.1 FIRST-FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
First floor joists:	Radiata pine	SG8	H3.2

4.2 FLOOR FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Boundary joists:	Radiata pine	SG8	H3.2

4.3 EXTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Exterior walls:	Radiata pine	SG8	H3.2
Parapets:	Radiata pine	SG8	H3.2
Nogs	Radiata pine	SG8	H3.2
Jamb battens	Radiata pine	Merch	H3.1

4.4 ROOF FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Rafters:	Radiata pine	SG8	H3.2
Purlins:	Radiata pine	SG8	H3.2
Skillion roof framing:	Radiata pine	SG8	H3.2

4.5 INTERIOR WALL FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Non structural walls:	Radiata pine	SG8	H3.2
Structural and braced walls:	Radiata pine	SG8	H3.2

4.6 CEILING FRAMING - RADIATA PINE

Member	Species	Grade	Treatment
Ceiling joists:	Radiata pine	SG8	H3.2
Timber ceiling battens:	Radiata pine	SG8	H3.2

4.7 NAILS

Location	Type	Material	Finish
Refer to Plans		Galvanized Steel	

4.8 SCREWS

Location	Type	Material	Finish
Refer to Plans		Stainless Steel	

4.9 BOLTS AND COACH SCREWS

Location	Type	Material	Finish
Refer to Plans		Galvanized Steel	

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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 5433E for ECOPLY FLOORS

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®
COC	Chain of Custody

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 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
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)

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 DOCUMENTS

CHH Woodproducts documents relating to work in this section are:

Ecoply® Specifications and Installation Guide
Ecoply® Technical Notes.
FSC Certificates on request for W8.1 Plywood FSC Mix
Carter Holt Harvey Tokoroa FSC-C012019 SCS-COC-001316 Controlled Wood SCS-CW-001316 (expires 5 Jun 2023)

Copies of the current product literature are available from Carter Holt Harvey Woodproducts Ltd

Web:	www.chhwoodproducts.co.nz
Telephone:	0800 326 759

1.5 NO SUBSTITUTIONS

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

1.6 FSC CERTIFIED RESPONSIBLY SOURCED TIMBER

Abbreviations and definitions:

FSC 100%

- FSC-certified material originating in FSC-certified forests or plantations that has not been mixed with material from another category throughout the supply chain. FSC 100% products can be used in FSC Mix product group.

FSC Mix % or FSC Mix Credit

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- A mixture of the following - FSC 100%, FSC recycled timber, FSC Controlled Wood - and supplied with a percentage claim or Credit claim.

FSC Controlled Wood

- Forest of origin risk-assessed against FSC Controlled Wood standards and deemed low risk of being: illegally logged, violating traditional/civil/conservation rights, change of use or GM planting. All non-FSC certified timber plantations in NZ have been assessed and deemed low risk by FSC.

FSC Forest Management (FM) Certification

- A forest management unit independently FSC inspected and certified that it complies with the internationally-agreed FSC Principles.

FSC Chain of Custody (COC) Certification

- COC certification applies to those who process, transform or trade forest products, providing a guarantee about the production and source of FSC-certified products and tracking the production and distribution of the products.

Organisation website details
Forest Stewardship Council website:- https://nz.fsc.org/en-nz

Performance

1.7 STRUCTURAL 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 and the wind loads on various wall areas as given by AS/NZS 1170.2.

1.8 STRUCTURAL FIXINGS, EARTHQUAKE

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604 and as required by NZS 1170.5.

1.9 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 3603 Timber Structures Standard. Refer to table for summary of P21 Ratings for 2.4m high **Ecoply®** wall element:

Provide braced wall systems using GIB® Ezybrace Systems to meet the requirements of NZS 3604 when tested to BRANZ Technical Paper P21. Refer to drawings for location and type.

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 at least taken up to within 300mm of top plate.
- Hold down connections required each end of bracing element.
- Maximum 120 Bus/m for any bracing element on timber framed floor (NZS 3604)

2 PRODUCTS

Materials

2.1 FSC CERTIFIED TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.

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Certified responsibly sourced FSC-COC Certified timber from forest to installation. Contractor to obtain timber supplier's FSC-COC certificate, delivery notes and/or invoices showing FSC-COC code and FSC Claim identified against product item(s). Also include signed FSC outsourcing agreements between parties (eg FSC timber broker and non-FSC door joiner) if applicable.

2.2 ECOPLY® STRUCTURAL PLYWOOD

Radiata pine veneer ply to AS/NZS 2269.0, DD face grade or better, 7mm minimum thick, H3.2 CCA treated to AS/NZS 1604.1.

Components

2.3 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

3 EXECUTION

Conditions

3.1 HANDLE

Handle sheets carefully and reject those with damaged faces or edges.

3.2 STORE

Store sheets in stacks clear of the ground, supported without sagging on evenly spaced horizontal bearers. Protect from damage and weather.

3.3 WALL FRAMING

Kiln dried timber framing sizes and set outs to NZS 3604 with stud and nog centres and timber widths to **Ecoply®** Specification and Installation Guide. Treatment to NZS 3602.

Application

3.4 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.

3.5 SUPPORT EDGES AND JOINTS

Fully support edges and joints. Studs maximum 600mm centres and nogs maximum 800mm centres with the framing width of 45mm at each **Ecoply®** sheet joint.

3.6 NAIL FASTENERS TO BRACING ELEMENT

Place nail fasteners at 150mm centres around perimeter, 7mm 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 NZS 3604, NZBC E2/AS1, 9.8 **Plywood sheet** and the manufacturer's bracing requirement with sheets and trim all in plumb, true alignment and face.

Fix **Ecoply®** sheets vertically. Allow 2-3mm expansion gap between sheets. Cut edges of sheet to be placed to the top. For EPGs bracing system the **Ecoply®** may terminate within a maximum of 300mm below the top plate, e.g. at soffit line, where solid nogging must be provided for the full length of the bracing element to provide fixing of the **Ecoply®**.

Completion

3.8 PROTECTION

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

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3.9 REPLACE

Replace damaged or marked elements.

3.10 LEAVE

Leave work to the standard required by following procedures.

3.11 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FSC CERTIFIED TIMBER - SOURCING

The following timber from sourced to installed to be FSC COC Certified. Delivery notes and/or invoices must clearly show the FSC-COC Certificate Code of the company supplying the product, and the FSC Claim against the relevant product description: eg FSC 100%, FSC Mix, FSC Mix Credit or FSC Recycled.

ITEM	
Manuf./supplier	Carter Holt Harvey Woodproducts Ltd
FSC COC Code:.	SCS-COC-001316 (expires 5 Jun 2023)
FSC Cert. No:	FSC-C012019 (expires 5 Jun 2023)
FSC Label:	FSC Mix
FSC Classification:	W8.1 Plywood
Product:	Ecoply Structural Plywood
Species:	Pinus Radiata
Origin country:	New Zealand

4.2 ECOPLY® STRUCTURAL PLYWOOD

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

4.3 FASTENERS

Type/size/material: Direct Fixed 50 x 2.8 flat head hot dipped galvanized

4.4 BRACING SYSTEMS

Refer to Ecoply® Specification and Installation Guide for specific bracing details, and to Gib® Ezybrace system for bracing element fixing details. For location refer to drawn documentation and bracing calculations.



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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 4241 for Colorsteel Wall Cladding

4211 for Colorsteel Roofing

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 NZBC E2/AS1, covering kraft based and synthetic wall underlays, sometimes called wall wraps, building wraps or building papers.

Documents

1.3 DOCUMENTS

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

AS 1530.2	Methods for fire tests on building materials, components and structures - Test for flammability of materials
NZS 2295	Pliable, permeable building underlays
AS/NZS 2904	Damp-proof courses and flashings
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
AS/NZS 4347	Damp-proof courses and flashings - Methods of test
AS/NZS 4389	Roof safety mesh
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire

CodeMark BRANZ-CM-1002 (Rev 2) - Watergate Plus Wall Underlay
CodeMark CMNZ 30028 (Rev H) - Thermakraft Covertek 407 Roof and Wall Underlay
CodeMark CMNZ 30030 (Rev H) - Thermakraft Covertek 405 Roof and Wall Underlay
CodeMark CMNZ 30069 (Rev G) - Thermakraft Covertek 403 Roof and Wall Underlay

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Thermakraft documents relating to work in this section are:

Thermakraft product manual and technical data sheets.
BRANZ Appraisal 329 - Supercourse 500™ Damp-Proof Course and Concealed Flashing
BRANZ Appraisal 611 - James Hardie Rigid Air Barriers
BRANZ Appraisal 651 - Thermakraft Covertek™ 407 Roof and Wall Underlay
BRANZ Appraisal 695 - Watergate Plus™ Wall Underlay
BRANZ Appraisal 743 - Thermakraft Covertek 405™ Roof and Wall Underlay
BRANZ Appraisal 878 - Thermakraft Aluband™ Window Flashing Tape
BRANZ Appraisal 912 - Thermakraft 220™ Synthetic Wall Underlay
BRANZ Appraisal 917 - Thermakraft Covertek 403™ Roof and Wall Underlay
BRANZ Appraisal 942 - OneSeal™ Multi-Fit Pipe and Cable Penetration Seals
BRANZ Appraisal 943 - Thermakraft Covertek 401™ Roof Underlay
BRANZ Appraisal 1000 - Thermakraft Thermabar 397™ Light Diffusing Reflective Underlay

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BRANZ Appraisal 1029 - Thermakraft Ausnet™ Hexagonal Wire Mesh
BRANZ Appraisal 1104 – Thermathene Orange™ Concrete Underlay
BRANZ Appraisal 1122 – Thermaflash™ Flashing Tape

Code Mark Certificate 30069 - Thermakraft Covertek 403™ Absorbent Breathable Roof Underlay
Code Mark Certificate 30030 - Thermakraft Covertek 405™ Absorbent Breathable Roof Underlay
Code Mark Certificate 30028 - Thermakraft Covertek 407™ Absorbent Breathable Roof Underlay
Code Mark Certificate 1002 - Thermakraft Watergate Plus™ Wall Underlay

Manufacturer/supplier contact details

Company:	Thermakraft Ltd
Web:	www.thermakraft.co.nz
Email:	info@thermakraft.co.nz
Telephone:	0800 806 595

Warranties

1.5 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.6 NO SUBSTITUTIONS

Substitutions are not permitted to any specified materials, or associated products, components or accessories.

1.7 CODEMARK CERTIFICATE - THERMAKRAFT COVERTEK 403

Thermakraft Covertek 403 roof and wall underlay meets the requirements of the NZBC when used within the conditions and limitations of its CodeMark Certificate of Conformity CMNZ 30069 (Rev G).

2 PRODUCTS

2.1 BRANZ APPRAISED - THERMAKRAFT COVERTEK 403

Thermakraft Covertek 403 roof and wall underlay has been appraised as meeting provisions of the NZBC when used within the Conditions and Limitations of its BRANZ Appraisal 917 (2020) - Amendment 14.05.2024.

Wall underlays - synthetic, fire-retardant, air barriers

2.2 THERMAKRAFT COVERTEK 403

CodeMark certified and BRANZ appraised synthetic roof and wall underlay, white with green logo print, composed of a water resistant vapour permeable film laminated to two layers of non-woven, spun bonded polyolefin sheet. Fire retardant, tested to AS 1530.2 and assigned a Flammability Index of ≤5. Available in 1350mm width. Refer to SELECTIONS.

Roof underlays - synthetic, self-supporting (non fire-retardant)

Window and joinery flashing tape

2.3 ALUBAND™ BITUMINOUS FLASHING TAPE

Thermakraft Aluband™ window flashing tape consists of synthetic faced reinforced bituminous window sealing tape, in widths of 75mm, 150mm and 200mm. Used to repair damaged bituminous underlays. Bitumen may react to wet sealants, always check compatibility. Thermakraft Corner Moulds must be used. Maximum exposure 42 days. Install from 5°C. Refer to BRANZ Appraisal 878.

Joining tape

2.4 PREMIUM JOINING TAPE™

Thermakraft Premium Joining Tape™, an acrylic, reinforced tape with superior adhesion and tear resistance used to join laps of wall and roof underlays, plywood rigid underlay, OSB board, fibre cement and insulation panels, DPM and vapour control products such as foil underlays. Maximum exposure 180 days, install from -10oC. Compatibility of the substrate with Premium Joining Tape must be checked by the designer or the installer prior to use.

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BRANZ Appraised and approved for use with the James Hardie™ RAB™ Board system, refer to BRANZ Appraisal 611. Not to be used as a flashing tape.

2.5 WHITE GENERAL PURPOSE TAPE™

Thermakraft White General Purpose Tape™ is a medium duty acrylic tape is commonly used on synthetic underlays, damp proof and for sealing edges of vapour control layers. Not to be used as a flashing tape. Suitable for joining and sealing underlays, foils and membranes.

Accessories

2.6 CORNER MOULD™

Thermakraft Corner Mould™, used in conjunction with Thermakraft Aluband™ and the Thermakraft Hand Tool to ensure good adhesion and a tight fit into corners. Refer to Thermakraft Data Sheet for installation details and BRANZ Appraisal 878.

2.7 THERMASTRAP™ MEDIUM DUTY STUD STRAP

Thermastrap™, 19mm wide blue polythene straps.

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 GENERAL REQUIREMENTS

Design application and installation of Thermakraft Building products to NZBC E2/AS1, BRANZ Appraisals, Thermakraft Technical Literature and Industry Codes of Practice.

Application generally

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Application - wall underlay

3.5 WALL UNDERLAY

Fix horizontally to outside face of framing in true alignment, with succeeding sheets overlapping 150mm to NZBC E2/AS1, 9.1.7, Wall underlay, and refer to Thermakraft for requirement for fastenings. Fix to Thermakraft Technical Data specifications. Scribe neatly around penetrations and openings to leave no gaps. Flash all openings and tape all penetrations in accordance with Thermakraft Installation Guides. Keep clean, undamaged and without visible weather deterioration until closed in.

3.6 INSTALL STUD STRAPS

Over underlay, install stud straps horizontally at 300mm centres, draw taut and fix to studs with stainless steel staples.

Application - roof underlay

3.7 ROOF UNDERLAY

Lay vertically over purlins on wire netting with a 150mm side lap. Fix securely to purlins with galvanized fixings. Lay underlay to avoid excessive dishing between purlins. When used vertically, limit individual runs to 10 metres for bituminous underlays. Do not lay vertically on roof pitches under 10° without support.

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Horizontally lay across the rafter/trusses starting at the gutter line with succeeding sheets in true alignment and lapping 150mm. Scribe around and fit neatly to all penetrations and avoid prolonged exposure by installing the roof immediately.

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

Performance

4.1 SURFACE FIRE PROPERTIES

Group Number	Panel/Finish	Location
C	Table C1.2	Refer to Plans

Wall underlays - synthetic, fire-retardant, air barriers

Roof underlays - synthetic, self-supporting (non fire-retardant)

Window and joinery flashing tape

4.2 THERMAKRAFT THERMAFLASH™ FLASHING TAPE

Location:	Refer to Plans
Sill/head tape:	150mm Thermakraft Thermaflash™ (for 90mm framing) 200mm Thermakraft Thermaflash™ (for 140mm or 150mm framing)
Sill second layer:	75mm Thermakraft Thermaflash™ (on top of sill over first layer)
Sill corners:	Thermakraft Thermaflash™
Head corners:	75mm Thermakraft Thermaflash™ butterfly corners
Accessories:	Thermakraft Corner Mould

Joining tape

4.3 THERMAKRAFT WHITE GENERAL PURPOSE TAPE™

Location:	Refer to Plans
Joining tape:	60mm Thermakraft White General Purpose Tape™

Penetration seals

4.4 ROOF & WALL UNDERLAY - THERMAKRAFT COVERTEK 403

Location:	Refer to Plans
Manufacturer:	Thermakraft
Brand:	Covertek 403
Type:	Synthetic roof and wall underlay
Width:	1350mm
Fixings:	Galvanized 6mm-8mm staples

4241NZ COLORSTEEL® WALL CLADDING

1 GENERAL

This section relates to **New Zealand Steel Limited** coated metal in a range of colours and grades for cladding material.

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:

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

Documents

1.3 DOCUMENTS

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

NZBC C/VM2	Protection from fire
NZBC E2/AS1	External Moisture
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - performance requirements
AS 3566	Self-drilling screws for the building and construction industries
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)
NZMRM CoP	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:

- COLORSTEEL® Installers Guide
- COLORSTEEL® Design Guide
- COLORSTEEL Altimate® Installation Guide
- COLORSTEEL Altimate® Design Guide
- COLORSTEEL Dridex® Design Guide
- COLORSTEEL Dridex® Installation Guide
- COLORSTEEL® Matte Design Guide
- New Zealand Steel - Zincalume-Brochure
- COLORSTEEL® Environmental Categories & Warranty Guide
- CodeMark CM70050 (Rev 1) Colorsteel® Endura® Dridex® and Colorsteel® Maxx® Dridex®

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Telephone:	0800 100523
Email:	specifications@colorsteel.co.nz

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For COLORSTEEL® ~ for perforation
15 years	For COLORSTEEL® ~ for paint

Include a copy of the cladding manufacturers' maintenance requirements with the warranty.

- 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 GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®

Workers to be trained and accredited by New Zealand Steel Limited in the installation of COLORSTEEL Dridex® roofing materials. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 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.

Performance - Fire

1.11 EXTERNAL FIRE SPREAD - NON-COMBUSTIBLE MATERIAL

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL® Maxam™ Dridex®, COLORSTEEL Altimate® and COLORSTEEL Altimate® Dridex® are manufactured from a non-combustible material with a surface finish no more than 1mm in thickness applied directly to the non-combustible substrate.

1.12 EXTERNAL FIRE SPREAD - CLADDING MATERIAL, CLASSIFICATION

COLORSTEEL® Maxam™ and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 and to specific requirements of NZBC C/AS1 or NZBC C/AS2 achieving:

Type A classification (peak heat release rate ≤ 100 kW/m², total heat release rate ≤ 25 MJ/m²).

1.13 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with Appendix A, NZBC C/VM2:

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Zincalume®	Group Number 1-S
COLORSTEEL® Maxam™	Group Number 1-S
COLORSTEEL® Maxam™ Dridex®	Group Number 1-S
COLORSTEEL Altimate®	Group Number 1-S

2 PRODUCTS

Materials

2.1 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397, AM150 grade. Pre-finished /pre-painted to AS/NZS 2728 to a Type 6 standard.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials and have a durability no less than the material being fastened.

2.3 FIXING SCREWS

Screws to AS 3566. Screws appropriate to the cladding material and the supporting structure, as required by cladding profile manufacturer (roll-formers) and with a minimum Class 4 durability and not less than the material being fixed. Screw lengths must be sufficient to allow 30mm penetration into structural timber or 3 threads penetration through steel structural members. Screw fasteners to be head stamped identifying the manufacturer and class. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm.

Components

2.5 FLASHINGS GENERALLY

Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

2.6 FLASHINGS

To NZBC E2/AS1, 4.0, Flashings.

Formable grade 0.55mm BMT for galvanized, aluminium/zinc-coated and pre-painted steel, to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

Flashings to framed penetrations to be in accordance with project drawings or to NZMRM CoP recommendations.

2.7 WALL AND PARAPET FLASHINGS

To NZBC E2/AS1, 4.0 Flashings.

Supplied by the cladding manufacturer to match or to suit the cladding.

Accessories

2.8 UNDERLAY

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.9 SEALANT

Neutral Curing silicone or MS polymer sealant as required by the roofing manufacturer and used as directed.

2.10 LAP SEALING TAPE

Closed cell self adhesive nitrile tape.

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3 EXECUTION

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 with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

Do not use sunscreen containing Zinc Oxide or Titanium Dioxide as it may damage the paint coating in contact.

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.

Inspect the wall framing and supporting structure to ensure that it is complete and fully braced ready for cladding and free from any misalignments or protrusions that could damage the cladding.

Ensure moisture content is:
Timber framing: 18% maximum
12-16% maximum under traverse flashings

When continuous metal roofing etc. runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.4 SEPARATION

Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by fitting separator strips of compatible inert materials. Place isolators between metals and treated timber and cement based materials.

Application

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.6 INSTALLATION GENERALLY

Install profiled metal cladding in accordance with NZMRM CoP and roofing profile supplier requirements, to form a weather-tight performance for the completed roofing system, including all junctions, flashing/cappings and penetrations through the roofing.

3.7 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/cladding 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 where appropriate.
- installation of flashings (those required to be installed prior to installation of penetrating elements).

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3.8 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 to achieve uniform flashing widths where possible. Check during fixing to eliminate creep or spread and to keep fastenings in line.

3.9 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets and flashings prior to cutting. Do not use black lead pencils for marking aluminium/zinc coated products. Make all cuts cleanly to a marked straight line, cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris.

3.10 FIX SHEETS

Fix sheets in place using the fastening system required by the cladding profile manufacturer (roll-former) for specified profiles, to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineers requirements. Use only screws as required by manufacturer. Paint colour matched fixings and accessories before installation. Use setting tools that do not unduly damage the head of the fasteners.

3.11 THERMAL MOVEMENT

Fixing and jointing to conform with the cladding profile manufacturer's (roll-formers) requirements for thermal movement.

Over timber framing, transverse flashings (those running along continuous framing members) to have expansion joints at maximum 12m centres.

3.12 END LAPS

End laps are not permitted, except where specifically detailed.

3.13 FIXING GENERALLY

Install and fix in accordance with the NZMRM CoP recommendations and to cladding manufacturer's required fixing patterns and details for each area of the building cladding. Use only screws as required by manufacturer. Paint colour matched fixings and accessories before installation.

3.14 INSTALL FLASHINGS

Flash to penetrations, cap corners and edges, using sealant and rivets to detail Where no detail is provided flash to NZMRM CoP recommendations and the roofing manufacturer's and NZBC E2/AS1 requirements.

3.15 FLASHING PENETRATIONS

Flash all penetrations through the cladding as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

3.16 USE OF SEALANTS

Select and use sealants only as recommended by cladding manufacturer. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.

Completion

3.17 COMPLETION MATTERS

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

4 SELECTIONS

For further details on selections go to www.colorsteel.co.nz and to selected cladding manufacturer's website.
Substitutions are not permitted to the following, unless stated otherwise.

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Cladding

4.1 COLORSTEEL® MAXAM™ PROFILED CLADDING

Location:	Exterior Walls, refer to Plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.55 mm
Colour:	TBD
Profile:	Corrugated

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	Refer to Plans
BMT/material:	0.55 mm
Coating system:	To match roofing
Coating colour:	To match roofing

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4311NZ COLORSTEEL® ROOFING

1 GENERAL

This section relates to **New Zealand Steel Limited** coated metal steel in a range of colours and grades for roofing material.

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:

BMT	Base metal thickness
NZMRM	New Zealand Metal Roofing Manufacturers Inc
CoP	Code of Practice for Metal Roofing
MS	Modified silicone

Documents

1.3 DOCUMENTS

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

NZBC E2/AS1	External Moisture
NZBC C/VM2	Protection from fire
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 3566	Self-drilling screws for the building and construction industries
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)
NZMRM CoP	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:

- COLORSTEEL® Installers Guide
- COLORSTEEL® Design Guide
- COLORSTEEL Altimate® Installers Guide
- COLORSTEEL Altimate® Design Guide
- COLORSTEEL Dridex® Design Guide
- COLORSTEEL Dridex® Installers Guide
- COLORSTEEL® Matte Design Guide
- New Zealand steel - Zincalume® Brochure
- COLORSTEEL® - Environmental Categories & Warranty Guide
- CodeMark CM70050 (Rev 1) Colorsteel® Endura® Dridex® and Colorsteel® Maxx® Dridex®

Manufacturer/supplier contact details

Company:	New Zealand Steel Limited
Web:	www.colorsteel.co.nz
Email:	specifications@colorsteel.co.nz
Telephone:	0800 100523

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Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

15 years	For COLORSTEEL® ~ for perforation
15 years	For COLORSTEEL® ~ for paint

Include a copy of the roofing manufacturers maintenance requirements with the warranty.

- 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.

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 GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

1.8 QUALIFICATIONS WORKERS – MANUFACTURER / SUPPLIER REQUIREMENTS - DRIDEX®

Workers to be trained and accredited by New Zealand Steel Limited in the installation of COLORSTEEL Dridex® roofing materials. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.9 NO SUBSTITUTIONS

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

1.10 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.

Performance - Fire

1.11 INTERIOR SURFACE FIRE PROPERTIES - GROUP NUMBER

Zincalume®, COLORSTEEL® Maxam™, COLORSTEEL Altimate® and COLORSTEEL® Maxam™ Dridex® have been tested to ISO 5660.1 & ISO 5660.2 and have been assigned the following Group Numbers in accordance with Appendix A, NZBC C/VM2:

Zincalume®	Group Number 1-S
COLORSTEEL® Maxam™	Group Number 1-S
COLORSTEEL® Maxam™ Dridex®	Group Number 1-S
COLORSTEEL Altimate®	Group Number 1-S

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2 PRODUCTS

Materials

2.1 COLORSTEEL® MAXAM™ - STEEL, TYPE AM COATING (ALUMINIUM/ZINC/MAGNESIUM ALLOY), PREPAINTED

Formability steel sheet, G550 for roll forming or G300 for flashings, coated to AS 1397, AM150 grade. Pre-finished /pre-painted to AS/NZS 2728 to a Type 6 standard.

Fixings

2.2 FASTENERS GENERALLY

Fixings and fasteners are to be compatible with all materials and have a durability no less than the material being fastened.

2.3 FIXING SCREWS

Screws to AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by roofing profile manufacturer (roll-formers) fixing charts or Specific Engineered Design, and with a minimum Class 4 durability and not less than the material being fixed. Screw lengths must be sufficient to allow 30mm penetration into structural timber or 3 threads penetration through steel structural members. Screw fasteners to be head stamped identifying the manufacturer and class. Refer to SELECTIONS.

2.4 RIVETS

Sealed aluminium, minimum diameter 4.0mm.

Components

2.5 FLASHINGS GENERALLY

To E2/AS1, 4.0, Flashings.

Formable grade 0.55mm BMT for steel and 0.90mm for aluminium coated to the same standards as the profiled sheets, notched where across profile or provided with a soft edge.

2.6 BOOT FLASHINGS

EPDM proprietary boot flashing designed to weatherproof cylindrical penetrations.

Accessories

2.7 UNDERLAY AND REFLECTIVE FOIL

Refer to 4161 UNDERLAYS, FOIL AND DPC.

2.8 SEALANT

Neutral Curing silicone or MS polymer sealant as required by the roofing manufacturer and used as directed.

2.9 LAP SEALING TAPE

Closed cell self-adhesive nitrile tape.



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3 EXECUTION

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 with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets.

Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

Do not use sunscreen containing Zinc Oxide or Titanium Dioxide as it may damage the paint coating in contact.

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.

Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could adversely affect the roofing. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

Ensure moisture content is:
Timber framing: 18% maximum
12-16% maximum under traverse flashings

When continuous metal roofing etc. runs along a long continuous timber member and is directly fixed to it, the timbers equilibrium moisture content (EMC) to be 18% or less. For flashings in this situation (sometimes called transverse flashings) the framing EMC to be maximum 16%, and preferably as low as 12%. Transverse flashings can be temporarily tacked in place and final fixing done when moisture content is acceptable.

3.4 WORK SAFE

All installation to be conducted in accordance with WorkSafe Working at Heights recommendations and any site requirements

3.5 SEPARATION

Isolate dissimilar materials (metals and non-metals) in close proximity as necessary by fitting separator strips of compatible inert materials. Prevent wet contact between metals and treated timber and cement based materials.

Application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 PENETRATIONS AND JUNCTIONS

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

Required work includes the following:

- underlay turned up at wall and parapet lines
- underlay finished and dressed off to all openings, ready for the installation of skylights and other penetrations
- 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).

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3.8 SET-OUT

Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.

3.9 MARKING AND CUTTING

Use ink pen, chalk line or coloured pencil for marking roof sheets prior to cutting. Do not use black lead pencils for marking aluminium/zinc coated products. Make all cuts cleanly to a marked straight line, cut by shear only, using nibblers or hand snips. Remove all cutting and drilling debris from the roof.

3.10 FIX SHEETS

Fix sheets in place using the fastening system required by the roofing profile manufacturer (roll-former) for specified profiles, to suit project wind loadings stated in the general section 1220 PROJECT or in accordance with specific design in accordance with project engineers requirements. Use only screws as required by manufacturer. Paint colour matched fixings and accessories before installation. Use setting tools that do not unduly damage the head of the fasteners.

3.11 THERMAL MOVEMENT

Fixing and jointing to conform with the roofing manufacturer's requirements for thermal movement for selected profile.

3.12 END LAPS

End laps in roofing sheets are not permitted, except where specifically detailed.

3.13 STOP ENDS AND DOWNTURNS

Form stop-ends at the upper end of all sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees using purpose made tools.

3.14 INSTALL FLASHINGS

Flash roof, including to parapets, walls and penetrations to detail. Transverse flashings to be installed on timber framing with a maximum moisture content of 18%. Where no detail is provided flash to NZMRM CoP recommendations and the roofing manufacturer's and NZBC E2/AS1 requirements. Cut accurately and fix using sealant and rivets to detail to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.

3.15 FLASHING PENETRATIONS

Flash all penetrations through the roof according to design details. Fit pipe flashings with a proprietary collar flashing to manufacturer's requirements, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

3.16 INSTALL RIDGING

Install ridging by fastening to the purlins through the leading edge of the roofing to manufacturer's requirements.

3.17 FLASHING TERMINATION

Terminate all visible flashing ends to provide a tidy and weathertight finish.

3.18 USE OF SEALANTS

Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces. Secure joint with rivets at 50mm centres.

Completion

3.19 COMPLETION MATTERS

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

3.20 PROTECT

Protect the completed roof area from mechanical and chemical damage. Provide temporary protection, as required, for material storage, foot traffic and later works such as scaffolding and remove when no longer required.

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4 SELECTIONS

For further details on selections go to www.colorsteel.co.nz and to selected roofing manufacturer's website.
Substitutions are not permitted to the following, unless stated otherwise.

Material - Roofing

4.1 COLORSTEEL® MAXAM™ PROFILED ROOFING

Location:	Refer to Plans
Manufacturer:	New Zealand Steel
Material:	COLORSTEEL® Maxam™
BMT:	0.55mm
Colour:	TBD
Profile:	Styleline
Fixing:	Cyclone fixing

Accessories

4.2 FLASHINGS - GENERALLY

Profile:	Refer to Plans
BMT/material:	0.55 mm
Coating system:	To match roofing
Coating colour:	To match roofing

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4511 EXTERIOR TIMBER WINDOWS & DOORS

1 GENERAL

This section relates to the supply and installation of:

- exterior timber windows
- exterior door frames and doors
- generally unglazed

1.1 RELATED WORK

Refer to glazing sections for glazing

Refer to painting sections for finishes

Documents

1.2 DOCUMENTS

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

NZBC E2/AS1	External moisture
NZBC F4/AS1	Safety from falling
NZBC H1/AS1-AS2	Energy efficiency
NZBC H1/VM1-VM2	Energy efficiency
AS/NZS 1170.2:2011	Structural design actions - Wind actions
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.3	Glazing in buildings - Human impact safety requirements
BS EN 673	Glass in building - Determination of thermal transmittance (U-value) - Calculation method
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

1.3 MANUFACTURER'S DOCUMENTS

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

Clelands Timber

Web:	www.clelandstimber.co.nz
Email:	sales@clalands.co.nz
Telephone:	0064 6 927 3056

1.4 ABBREVIATIONS AND TERMS

SLS	Serviceability limit state
ULS	Ultimate limit state

Warranties

1.5 WARRANTY

Provide warranty for:

5 years for materials

Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Performance

1.6 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

The structural and weather-tight performance of the completed window installation, the glazing and infill panels is the responsibility of the window manufacturer.

1.7 PERFORMANCE - THERMAL, 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.

1.8 PERFORMANCE - THERMAL

Thermal performance of windows & doors to NZBC H1/AS1-AS2 & NZBC H1/VM1-VM2. The construction R-value of windows & doors determined in accordance with Appendix E, E1 Vertical windows and doors:

- Determine the thermal transmittance of window & doors 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.

Refer to SELECTIONS for construction R-values.

Performance to NZS 4211

1.9 CERTIFICATION

Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of NZS 4211.

1.10 PERFORMANCE - WINDOWS AND DOORS

To NZS 4211,including:

- deflection, opening sashes, air infiltration, water penetration, ultimate strength, torsional strength of sashes, marking.

Refer to SELECTIONS.

Performance - Wind (design by contractor)

1.11 WIND - NON SPECIFIC DESIGN

Design the installation to the wind zone parameters of NZS 3604, table 5.4.

Refer to SELECTIONS for wind zone.

1.12 WIND - SPECIFIC DESIGN

Design the installation to the wind pressure parameters of AS/NZS 1170.2. Refer to SELECTIONS for ULS and SLS.

2 PRODUCTS

Materials - general

2.1 CERTIFIED SUSTAINABLE TIMBER

Refer to SELECTIONS for details of amount, type, suppliers.

Certified Sustainable FSC-COC Certified (or similar pre-approved) timber from forest to installation. Contractor to obtain and track all timber FSC-COC certificates and receipts showing FSC-COC numbers, including signed FSC outsourcing agreements between parties (ie FSC timber broker and non-FSC door joiner).
FSC suppliers lists:- https://info.fsc.org/certificate.php#result

2.2 EXTERIOR TIMBER

Solid timber to NZS 3602 to profiles detailed. Moisture content 16% ex factory.

2.3 SASHES

Solid/finger jointed timber to profiles detailed and complete with weather-seals and weather hoods as necessary.

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2.4 EXTERIOR FACINGS AND SCRIBERS
Treated H3.1 unless durable heart wood, to profiles detailed/scheduled.

2.5 GLASS
Refer to glazing sections for glass type and thickness. To NZS 4223.3.

2.6 PANELS
Refer to SELECTIONS for type.

2.7 INTERIOR TIMBER
To NZS 3602. Moisture content 10-14%.

2.8 STANDARD DOORS
Frames to profile as detailed and dimensioned.

Materials - doorsets

2.9 STANDARD DOORSETS, SIDE HUNG DOOR
Frames to profile as detailed and dimensioned.

2.10 STANDARD DOORSETS, SLIDING
Frames to profile as detailed and dimensioned.

2.11 STANDARD DOORSETS, SLIDING-FOLDING
Timber frames to profile as detailed and dimensioned.

Components

2.12 FLASHINGS GENERALLY
Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.

2.13 WINDOW AND DOOR FURNITURE
Refer to 5521 HARDWARE for type.

2.14 METAL FASTENINGS
Galvanized steel or non-corrodible metal.

2.15 SCREWS
Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.16 NAILS
Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.17 SASH STAYS
Aluminium, nylon-bearing friction stays - 2 per sash. Size and gauge to suit sash size and weight.

2.18 SAFETY STAYS
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Section 2.0, **Opening windows**.

2.19 HINGES
Size and gauge to carry door size and weight. Refer to SELECTIONS for type, size and material.

Finish

2.20 PRIMER
Alkyd wood primer coating system.

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3 EXECUTION

Conditions

3.1 GENERALLY

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, and stairs).

3.2 DO NOT DELIVER

Do not deliver any elements which cannot be unloaded immediately into suitable storage conditions.

3.3 HANDLE

Handle, unload and store elements without distortion and avoiding pre-finished surfaces rubbing together, and contact with mud, moisture and other damaging materials.

3.4 PROTECT

Protect all elements against damage to arrises and glazing beads. Store frames and doors flat and away from moisture or direct sunlight.

3.5 FABRICATE DOORSETS

Fabricate doorsets in the factory with doors hung, provision for furniture made, finishes applied and fully operable.

3.6 FABRICATE DOORS

Fabricate doors in the factory, with provision for door furniture.

3.7 CHECK ALL OPENINGS

Check all openings on site for size and standard of execution before installing window or door frames.

3.8 CONFIRM PREPARATION OF EXTERIOR WALL OPENINGS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.

Required preparatory work includes the following:

- wall underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 Wall underlay to wall openings.
- claddings neatly finished off to all sides of openings
- installation of flashings (those which are required to be installed prior to frames).

Assembly

3.9 FABRICATION GENERALLY

Manufacture and fabricate frames, doors and sashes as detailed. Install hinges, stays and running gear as scheduled.

3.10 FABRICATION SASHES

Solid/finger-jointed timber to profiles detailed, complete with weather seals and weather hoods as necessary and as detailed.

3.11 HINGES

Fit hinges to doors to support the door size and weight

3 hinges	Doors up to 2.2 metres
4 hinges	Doors 2.2 - 2.6 metres
5 hinges	Doors 2.6 - 5.0 metres

Fit minimum 2 hinges per window sash

3.12 FACTORY FINISHING

Before delivery to site:

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- Prime assemblies scheduled for paint finish with an alkyd wood primer.
- Prime rebates and concealed faces of beads of assemblies scheduled for clear finish with an alkyd wood primer.
- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

3.13 ON SITE FINISHING

Before installation:

- Prime assemblies scheduled for paint finish not already primed with an alkyd wood primer.
- Prime all rebates and concealed faces of beads of assemblies scheduled for clear finish with an alkyd wood primer.
- Re-prime/seal any subsequently cut edge.
- Refer to painting section/s for finishing.

Installation - frames

3.14 FIXING FRAMES

Fit flashings to frame and framing as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion and with all opening sashes fully and easily operating. Fit facings, scribers, draught-stopping and sealants.

3.15 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.16 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

3.17 EXTERNAL DOOR AND WINDOW FRAMES AND SASHES

Fabricate as detailed. Jamb, head and sill liners as detailed. Wedge and rigidly fix in place without distortion, plumb, and true to line and face, complete with full length sill tray, jamb and cap flashings and with all doors and sashes operating freely. Fit hardware.

3.18 INSTALL FLASHINGS

Install flashings to heads, jambs and sills of frames as 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 jamb facings by 15mm at each end. Refer to 4821 FLASHINGS section for supply and installation.

3.19 COMPLETE AIR SEAL

To NZBC E2/AS1:9.1.6 Air seals. Form an air-tight seal by means of proprietary expanding foam, compressible foam strips, or sealants used with backing rods. Ensure that in combination with the internal linings a complete air seal is created.

3.20 FIX HARDWARE

Fix all sash hardware and furniture as scheduled.

3.21 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.

Installation - doorsets

3.22 PROPRIETARY ELEMENTS

Fix in accordance with the door manufacturer's requirements.

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3.23 INSTALLATION GENERALLY

Frames finished to match the width of lined walls. Wedge frames into opening and nail through into the studs. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.

Installation - standard doorsets

3.24 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.25 BOTTOM CLEARANCE

With inward opening doors, ensure clearance over internal floor coverings by set of sill.

3.26 REMOVE DOORS

Remove doors from the frames if necessary to protect them, or for re-finishing, store safely and near completion refit them, all without any damage.

3.27 INSTALL PANELS

Prime rebates and beads; install sealant backing strips or silicone. Install dry beading to outside of panels as selected. Do not mitre corners of beads.

3.28 MANIFESTATIONS

To NZS 4223.3, 2.2 Manifestation (making glass visible).

3.29 INSTALL FURNITURE

Install latches, locks and door furniture as scheduled.

3.30 CHECK

Check and adjust operation of all doors, hardware and furniture.

Completion

3.31 ROUTINE CLEANING

Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused and temporary materials and elements from the site.

3.32 DEFECTIVE OR DAMAGED WORK

Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Adjust operation of equipment and moving parts not working correctly. Leave work to the standard required for following procedures.



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4 SELECTIONS

4.1 EXTERIOR TIMBER FRAME

Location:	Doors and Louvre Windows
Timber species:	Radiata Pine
Grade:	C2
Treatment:	H3.2
Finish:	PP

4.2 STANDARD DOOR

Manufacturer:	Humes
Door type:	Hinged
Door leaf dimensions:	Per Door Schedule
Edge clashing:	NA
Door finish:	Painted Finish
Hinge type and finish:	SS Ball Bearing

4.3 HINGES, DOORS

Type:	SQ edge / Bearings
Size:	100mm
Pin:	Fixed pin
Material:	Stainless steel

4.4 FLASHINGS

Material/type:	Colorsteel
Pattern:	Formed to suit details provided

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4521EL EBSA ARCHITECTURAL GLASS LOUVRE SYSTEMS

1 GENERAL

This section relates to the design, fabrication, assembly, supply and installation of **EBSA Louvre** systems for multi-unit residential, commercial, education and healthcare buildings.
It includes:

- glass louvres
- all associated accessories as required to complete the installation.

1.1 RELATED WORK

Refer to 4511 for Exterior Windows & Doors

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:

EBSA	EBSA NZ Ltd.
WGANZ	Window & Glass Association NZ

Documents

1.3 DOCUMENTS

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

NZBC B1/VM1	Structure
NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
NZBC H1/AS1-AS2	Energy efficiency
NZBC H1/VM1-VM2	Energy efficiency
NZS 4211	Specification for performance of windows
NZS 4223	Glazing in buildings
AS/NZS 4284	Testing of building facades
AS/NZS 4420.1	Wind and water penetration
AS/NZS 1170.0:2002	Structural design actions - Part 0: General principles
AS/NZS 1170.1:2002	Structural design actions - Part 1: Permanent, imposed and other actions
AS/NZS 1170.2:2011	Structural design actions - Part 2: Wind actions
AS/NZS 1170.5:2004	Structural design actions - Part 5: Earthquake actions
AS//NZS 1734	Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes
AS/NZS 1866	Aluminium and aluminium alloys - flat sheets, coiled sheet and plate
AS/NZS 2208	Safety glazing materials in buildings
AS 3715	Metal finishing - Thermoset powder coatings for architectural applications
EN 12101.2	Smoke and heat control systems - Natural smoke and heat exhaust ventilators
WGANZ PQAS	Endurocolour® Powder Coating Quality Assurance
WGANZ SFA 3503-03	Voluntary specification - Anodic Oxide Coatings On Wrought Aluminium For External Architectural Applications.

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

- EBSA Louvres brochure
- Technical data sheets.

Manufacturer/supplier contact details:

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Company:	EBSA NZ Limited
Web:	www.ebsa.co.nz
Email:	sales@ebsa.co.nz
Telephone:	09 884 0025

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

5 years: For manufacture of louvre windows.

- 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:

2 years: For installation of louvres and control gear.

- 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 and approved by EBSA. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 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.

1.9 NO SUBSTITUTIONS

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

1.10 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:

- Project details - Project number, project name, project address, project type, manufacture date, installation date, Client name.
- Installation contractor - names, addresses and telephone numbers noting which portions of the contract each provided.
- A complete list of louvres and accessories supplied (if possible, include Architects louvre schedule).
- Copies of all manufacturer/supplier product literature containing maintenance requirements/instructions.
- Final as built documents.
- Information for care, maintenance, and cleaning of louvres.
- Originals of all warranties and guarantees properly executed.

Provide this information prior to practical completion.

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Compliance information

1.11 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
- Producer Statement - Construction Review from an acceptable suitably qualified person
- Other information required by the BCA in the Building Consent Approval documents.

Performance

1.12 LOADING CODE REQUIREMENTS

Design loads and actions (permanent (deadload), imposed (live load), wind, snow, and earthquake) to AS/NZS 1170.0, AS/NZS 1170.1, AS/NZS 1170.2:2011, NZS 1170.5, NZBC B1/VM1.

1.13 ENVIRONMENTAL REQUIREMENTS

Durability to NZBC B2/AS1. Refer to SELECTIONS

1.14 PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS

The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window manufacturer.

Performance - Wind (design by contractor)

1.15 DESIGN PARAMETERS WIND - DESIGN BY CONTRACTOR

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

Performance - Seismic (design by contractor)

1.16 DESIGN PARAMETERS SEISMIC - DESIGN BY CONTRACTOR

Design the system and its anchorages/fixings to resist the earthquake loads of the seismic zone in accordance with NZS 1170.5.
Refer to General section 1220 PROJECT for general details.
Refer to SELECTIONS specific design performance requirements.

2 PRODUCTS

Materials

2.1 ALUMINIUM EXTRUSIONS

Alloy designation to comply with AS/NZS 1866. Branded and extruded for anodising or powder coating. Alloy designation: AlMgSi EN-AW6060-T66.
Refer to SELECTIONS.

2.2 ALUMINIUM SHEET AND STRIP

Complying with AS/NZS 1734 of suitable thickness. Rolled for powder coating or anodising. Alloy designation: AlMgSi EN-AW6060-T66.
Refer to SELECTIONS.

Glass louvres - aluminium framed and/or frameless

2.3 ALUMINIUM GLAZED LOUVRE WINDOWS - LF550 LARGE FORMAT FRAMELESS LOUVRE ASSEMBLY

LF550 Louvre assembly mechanism (single glazed). Top pivoting.
Tested to NZS 4211, AS/NZS 2208 Appendix D, AS/NZS 4420.1 and EN 12101.2. Weighted sound reduction index up to Rw37 dependent on glass selection. Glass louvre blades to safety glazing in buildings NZS 4223 and safety glazing materials to AS/NZS 2208. Extruded components manufactured from 6060 T66 grade aluminium and available in powder coated or anodised finish.

Refer to SELECTIONS.

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Accessories

2.4 GLASS AND GLAZING

Refer to the relevant glass and glazing sections for specification of glass infill.

Fixings

2.5 FIXINGS

All fixings to be stainless steel, grade 304 or 316, to NZBC E2/AS1. Size and type to suit location and purpose as required by EBSA.
Refer to SELECTIONS.

Finishes

2.6 POWDER COATED ALUMINIUM

Polyester powder organic coating in accordance with WGANZ PQAS and AS 3715.

2.7 FINISHES - ANODISING

To WGANZ SFA 3503-03. Refer to SELECTIONS for thickness and colour.

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 PRE-INSTALLATION REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for this part of the work. Confirm that all openings have been prepared and ready for the installation of all louvres and consumables. Do not proceed with the louvre installation until required preparatory work has been completed.

3.3 PRE-COATING/FINISHING REQUIREMENTS

Check work previously carried out and confirm it is of the required standard for specified finish. Carry out such additional preparatory work as required to bring the substrate to suitable condition.

Fabrication

3.4 FABRICATION - GENERAL

Fabricate performance louvres to Manufacturer/Supplier requirements and details.

3.5 FABRICATION - ALUMINIUM GLAZED LOUVRE WINDOWS

Ensure cold formed components are free from warping, buckling and fractures. Form bends with a brake press or by cold rolling. Unless specified otherwise, mitre corner junctions of identical sections. Form holes without distortion of surrounding metal. Ensure that all moving parts move freely without binding, when assembled. Draw riveted joints tightly together, with rivets closed to completely fill holes. Ensure mechanical joints are tight with no gaps. Use fixings suited to purpose and as specified by EBSA NZ Ltd.

Installation/application

3.6 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.7 INSTALLATION

Install aluminium performance louvres in accordance with Manufacturer/Supplier details and installation instructions, and to comply with the reviewed shop drawings and installation details including sealant, seals and fixing positions. Install flashings to NZBC E2/AS1, clause 4.0. Carry out the fixing, installation and fitting of performance louvres to finish rigid, plumb, true to line and face and square in accordance with Manufacturer/Supplier requirements.

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3.8 COMPLETE AIR SEAL

Form an air-tight seal by means of proprietary sealants to NZBC E2/AS1, 9.1.6 Air Seals.

3.9 AIR INFILTRACTION

To NZS 4211, table 3 air infiltration non - air conditioned zones (passive ventilation) and conditioned zones.

Completion & Commissioning

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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

Glass louvres - aluminium framed and/or frameless

4.1 ALUMINIUM GLAZED LOUVRE WINDOWS - LF550

Location:	Refer to Plans
Brand/Type:	TBD
Louvre unit width:	600 mm wide
Louvre unit height:	Refer to Plans
Louvre blade height:	152mm
Blade design:	Frameless stainless steel patch fittings and end pivoted
Glazing makeup:	Single Glazed
Operation:	Manual Operation
Aluminium finish:	Powder Coated
Finish colour:	TBD

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4611 GLAZING EXTERIOR

1 GENERAL

This section relates to the supply and fixing of glass products for external joinery in complex residential and commercial buildings, including:

- window and doors

1.1 RELATED WORK

Refer to 4511 for Exterior Windows & Doors

Documents

1.2 DOCUMENTS

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

NZBC F4/AS1	Safety from falling
NZBC F9/AS1	Means of restricting access to residential pools
NZBC H1/AS1-AS2	Energy Efficiency
NZBC H1/VM1-VM2	Energy Efficiency
AS/NZS 1170.2: 2011	Structural design actions - Wind actions
NZS 3604	Timber-framed buildings
NZS 4211	Specification for performance of windows
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live action
NZS 4223.Supp1	Glazing in buildings - Supplement 1 to NZS 4223.1:2008 and NZS 4223.4:2008
AS/NZS 2208	Safety glazing materials in buildings
AS/NZS 4666	Insulating glass units
BRANZ BU 636	Protecting Glass From Damage

Warranties

1.3 WARRANTY - MANUFACTURER/SUPPLIER

Warrant glass under normal environmental and use conditions against failure of materials.

10 years:	for insulating glass units
10 years:	for laminated glass
10 years:	for toughened glass

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

2 PRODUCTS

Materials

2.1 CLEAR FLOAT GLASS

Clear ordinary annealed transparent float glass for general window glazing. Thickness to NZS 4223.1 and NZS 4223. Supp 1.

2.2 TEXTURED, PATTERNED OR OBSCURE GLASS

Translucent, annealed, rolled glass with a decorative pattern on one surface.



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Components, general

2.3 JOINTING, PUTTY AND SEALING MATERIALS

Ensure jointing, putty and sealing materials are compatible with glass substrates. Confirm compatibility with laminated glass, IGU's and coatings.

Components, aluminium glazing

2.4 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.

2.5 SETTING BLOCKS

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

3 EXECUTION

Conditions

3.1 GENERAL REQUIREMENTS

To NZS 4223.1, NZS 4223.2, NZS 4223.3, as modified by NZBC B1/AS1, 7.3.1, and NZS 4223.4. All external glazing to be wind and watertight on completion.

3.2 DELIVERY

Keep glass dry and clean during delivery and bring on to site when ready to glaze directly into place. Comply also with the storage requirements set out in BRANZ BU 636.

3.3 GLASS CONDITION

All glass to have undamaged edges and surfaces.

3.4 GLASS THICKNESS

If not specifically stated in the glazing schedule determine the minimum thickness of glass for each sheet as required by NZS 4223.1, NZS 4223.3, NZS 4223.4, and NZS 4223.4 Supp 1. 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.

3.5 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

3.6 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 for thickness and maximum areas of safety glass.

3.7 SAFETY GLAZING MATERIAL

Use only safety glazing materials defined in NZS 4223.3, as modified by NZBC B1/AS1, 7.3.1, 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.

3.8 CONTAINMENT

Edge cover to comply with NZS 4223.1, Section 4 Glazing, table 5. Otherwise to NZS 4223.3, 2.3 Edge cover.

Assembly

3.9 WORKING OF GLASS

All working of glass as required in NZS 4223.1.

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3.10 EDGE WORK AND BEVELLING
Edgework other than a clean cut. Refer to SELECTIONS/drawings for type.

3.11 SURFACE TREATMENT
Refer to SELECTIONS/drawings for finish.

3.12 SURFACE CUTTING
Refer to SELECTIONS/drawings for finish.

Application aluminium

3.13 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.

3.14 INSTALL SAFETY GLASS
To NZS 4223.3.

Finishing

3.15 SAFETY
Indicate the presence of transparent glass for the remainder of the construction period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface.

Completion

3.16 TRADE CLEAN
Clean off or remove safety indicators at completion of the building.

3.17 REPLACE
Replace damaged, cracked or marked glass.

3.18 LEAVE
Leave work to the standard required by following procedures.

3.19 REMOVE
Remove debris, unused materials and elements from the site.

4 SELECTIONS

Performance - wind

4.1 WIND ZONE - NON-SPECIFIC DESIGN
Building wind zone: VH (as determined from NZS 3604, NZS 4223)

Glass by type

4.2 CLEAR FLOAT GLASS

Location:	Refer to Plans
Thickness:	6mm

4.3 TEXTURED, PATTERNED OR OBSCURE GLASS

Location:	Refer to Plans
Pattern:	Obscure
Thickness:	6mm

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4711P PINK® BATTS® & BIB INSULATION

1 GENERAL

This section relates to Tasman Insulation **Pink® Batts®** insulation materials installed, laid, hung or fitted as thermal insulation:
It includes:

- **Pink® Batts® Wall Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**
- **Pink® Batts® Ceiling Insulation** (**Pink® Batts® Classic** and **Pink® Batts® Ultra®)**
- **Pink® Batts® SnugFloor® Underfloor Insulation**
- **Pink® Batts® Masonry Wall Insulation**
- **Pink® Batts® 140mm Wall Insulation**
- **Pink® Batts® Steel Wall Insulation**
- **Pink® Batts® Narrow Wall Insulation**
- **Pink® Batts® Skillion Roof Insulation**
- **Pink® Batts® Building Insulation Blanket** (BIB)

1.1 RELATED WORK

Refer to 4721P PINK® BATTS® SILENCER® ACOUSTIC INSULATION for acoustic insulation.

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:

BIB	Building Insulation Blanket

Documents

1.3 DOCUMENTS

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

NZBC C/AS1-AS2	Protection from fire
NZBC H1/AS1	Energy efficiency, 2.0 Building thermal envelope
NZS/AS 1530.1	Methods for fire tests on building materials, components and structures - Combustibility test for materials
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4220	Code of practice for energy conservation in non-residential buildings
NZS 4243.1	Energy efficiency - Large buildings - Building thermal envelope
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
AS/NZS 4534	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 60695.11.5	Fire hazard testing - Test flames - Needle-flame test method - Apparatus, conformity test arrangement and guidance

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:

Tasman Insulation New Zealand: Product Data Sheets and installation Instructions
BRANZ Appraisal 238 - Pink® Batts® Insulation
BRANZ Appraisal 632 - Pink® Batts® SnugFloor® Underfloor Insulation
BRANZ Appraisal 767 - Pink® Batts® Skillion Roof Insulation

Manufacturer/supplier contact details

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Company: **Tasman Insulation New Zealand**
Web: www.pinkbatts.co.nz
Telephone: 0800 746 522

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

Lifetime Warranty	For **Pink® Batts®** insulation products

- Provide this Warranty on the **Pink® Batts® Lifetime Warranty Certificate** 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.

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained from the web, by telephone or from the local building supplies merchant.
Web: www.pinkbatts.co.nz
Telephone: Freephone 0800 746 534

1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation **Pink® Batts®** insulation or associated products, components or accessories.

Performance - combustibility

1.8 FIRE PREVENTION

Pink® Batts® insulation materials are considered a non-combustible material to NZS/AS 1530.1 and need not be separated from heat sources such as fire places, heating appliances, flues and chimneys to NZBC C/AS1 to C/AS2, except if used in conjunction with or attached to other heat sensitive materials.

2 PRODUCTS

Materials

2.1 PINK® BATTS® WALL INSULATION

Pink® Batts® Wall Insulation (**Pink® Batts® Classic** and **Pink® Batts® Ultra®**) is a light weight flexible bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

2.2 PINK® BATTS® SKILLION ROOF INSULATION

Pink® Batts® Skillion Roof Insulation is bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular slabs. Refer to SELECTIONS for R-values and thickness options.

NOTE: When insulation abutting or covering recessed downlights is intended to be in contact with IC, CA 80, CA 135 luminaires the insulation must withstand a 30s Needle Flame test to AS/NZS 60695.11.5. Pink® Batts® insulation meets this requirement.

Components

2.3 FASTENERS

Insulation anchors complete with retaining washer.

2.4 WIRE NETTING

Refer to 4161 UNDERLAYS, FOIL AND DPC for wire netting used to support the insulation.

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2.5 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 9.1.8.5 **Wall framing behind cavities**.

2.6 ADHESIVE TAPE

Pressure sensitive adhesive 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 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 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.4 INSPECTION

Before starting installation of **Pink® Batts® Insulation** blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, wall underlays and vapour barriers are in place.

Application

3.5 INSTALL INSULATION - GENERAL

Lay, install, fit and fix to NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope, and to manufacturer's requirements. Install in housing to NZS 4218 and NZS 4246. Install in large buildings to NZS 4243.1 and NZS 4220. Allow insulation to re-loft/relax prior to installation. Do not cover vents. Confirm with fireplace manufacturer for clearances; **Pink® Batts®** insulation need not be separated except if used in conjunction with, or attached to other heat sensitive materials. Lift up electrical wires, lighting transformers/controllers and lay the insulation underneath.

3.6 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 CLEARANCES GENERALLY for clearances.

3.7 INSULATION CLEARANCES GENERALLY

Insulation may need to have a gap to some mechanical and electrical services and equipment, including ducts and chimneys.

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.
- 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

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non-combustible.
- Gaps to hot surfaces may have to be increased with non-compliant insulation and plastic/
- Loose fill insulation will require fixed barriers to NZS 4246 to maintain gaps.

(secure loose pieces).
- "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

equipment manufacturer.
- Gaps to hot surfaces may be able to be reduced with non-combustible insulation, check with polymeric type insulation (EPS, XPS, PIR, etc), check with insulation manufacturer.

LIGHT FITTINGS

Type of fitting	Minimum insulation clearance	Comments
Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	NON-IC fittings and new or old unmarked & unknown fittings, and/or insulation. Secure insulation.
Recessed, CA 80, CA 90 or CA 135	Abut fittings	Do NOT cover the fittings
Recessed, IC, IC-F or IC-4	Abut & cover fittings	Ensure insulation complies
Recessed, marked Do-Not-Cover	Manufacturers clearances	Do not cover the fittings
Independent control gear	Place on top of insulation & 50mm from fitting	If not on top allow 50mm clearance to insulation, do not cover. Includes, transformers, ballasts & drivers etc.
Surface fittings not exposed to insulation	Nil	Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	This is exposed insulation to any part of the exposed fitting & bulb/tube (e.g. exposed light in an unlined basement). Secure insulation.

3.8 CHECK FOILS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.9 CHECK WALL AND ROOF UNDERLAYS

Ensure foils are dry, clean, bright, undamaged and free of debris before installing insulation.

3.10 CHECK VAPOUR BARRIERS

Ensure vapour barriers form a homogeneous sheet vapour barrier before installing insulation.

3.11 INSTALL PINK® BATTS® WALL INSULATION

Ensure the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5-10mm to ensure a friction fit. Fill gaps around windows and doors with off-cuts. Insulate around vents (not over them) to allow unhindered ventilation.

Fit **Pink® Batts® Wall Insulation** behind electrical wiring and plumbing. Ensure there are no gaps, folds or undesirable compression at edges.

Refer to NZS 4246 for installation guidelines and **Pink® Batts®** installation instructions for detailed information.

3.12 FIT PINK® BATTS® SKILLION ROOF INSULATION

Ensure that the product is installed dry; if wet replace before installation. If cutting is required, cut oversize by 5mm-10mm to ensure a friction fit.

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3.13 LAY WIRE NETTING - UNDER JOISTS / PURLINS

Lay at right angles across the rafters/roof joists (under purlins). Pull tight and fix.

3.14 LAY WIRE NETTING - OVER PURLINS

Lay at right angles across the purlins with enough slack to allow insulation to retain its nominal thickness between. Tie edges of netting together with galvanized wire clips.

3.15 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

3.16 COMPLETION MATTERS

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

4 SELECTIONS

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

Thermal insulation

4.1 PINK® BATTS® CLASSIC WALL INSULATION

Location:	Refer to Plans
Brand:	**Pink® Batts® Classic Wall**
R value:	R 2.4
Thickness:	90mm

4.2 PINK® BATTS® SKILLION ROOF INSULATION

Location:	Refer to Plans
Brand:	**Pink® Batts® Skillion Roof**
R-value:	R 3.4
Thickness:	115mm

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4821 FLASHINGS

1 GENERAL

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

1.1 RELATED WORK

Refer to 4241 for Colorsteel Cladding

Documents

1.2 DOCUMENTS

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

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
AS/NZS 2728	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS 3566	Self-drilling screws for the building and construction industries - General requirements and mechanical properties
NZS 3604	Timber-framed buildings
NZMRM CoP	NZ Metal Roof and Wall Cladding Code of Practice

Requirements

1.3 QUALIFICATIONS

Work to be carried out by trades people experienced, competent and familiar with the materials and techniques specified.

1.4 VERIFY DIMENSIONS

Verify dimensions against site measurements prior to fabrication.

Standards of performance

1.5 DURABILITY REQUIREMENTS

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. The Building Code B2, 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to NZBC B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

1.6 COMPATIBILITY REQUIREMENTS

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and NZBC E2/AS1 table 22.

1.7 PROTOTYPES - REVIEW

Refer to the general section 1270 CONSTRUCTION for details of how prototypes will be reviewed and how instructions to proceed will be given. For flashings where there are no specific details or drawings, provide full size prototypes of the flashings to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation. Provide the prototype flashings to the contract administrator for review.

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2 PRODUCTS

2.1 FLASHING MATERIALS

Acceptable materials for flashings are described in NZBC E2/AS1, 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings.

2.2 FLASHING FABRICATION

Fabricate flashings generally to NZBC E2/AS1, 4.0, from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300mm. Provide all hooks, hems, kick outs, bird's beaks, stop ends, soft edges and turn downs etc. to NZBC E2/AS1, 4.0, or as shown on the drawings.

2.3 FIXINGS

Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

2.4 JOINTS - SEALANTS

Neutral Curing silicone or MS polymer sealant as required, with low resistance to compression and be-able to withstand large temperature variations. MS polymer sealant to be used where the sealant is exposed and the surrounding surfaces are to be subsequently painted or coated.

3 EXECUTION

Conditions

3.1 DELIVERY

Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.

3.2 STORAGE

Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.

3.3 HANDLING

Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.

3.4 SUBSTRATE

Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.

3.5 PROTECT

Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.

3.6 CONFIRM LAYOUT

Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.

3.7 CO-ORDINATE INSTALLATION

Co-ordinate installation of flashings with associated trades.

Application

3.8 INSTALLATION

Install flashings in accordance with NZMRM CoP and in compliance with NZBC E2/AS1, 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 15° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.

Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.

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3.9 FIXINGS

Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.

Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0mm. Drill hole 1mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5mm diameter. Width of sealant when compressed should not exceed 25mm. Sealant joints shall be mechanically fixed for strength. Refer to NZMRM CoP for details.

3.11 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

Completion

3.12 PROTECT

Protect new work from damage.

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 FLASHINGS

Type	Material and finish/colour
General flashings:	Colorsteel 0.55mm BMT
Window/doors:	
- Head:	Colorsteel
- Sill:	Colorsteel
Cladding:	
- External corner:	Colorsteel
- Internal corner:	Colorsteel
Soffit:	Colorsteel
Wall/roof junctions:	Colorsteel
Barge:	Colorsteel

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4911 STEEL METALWORK

1 GENERAL

This section relates to the fabrication and installation of steel items, including:

- sheet steel items

1.1 RELATED WORK

Refer to 3821 for Timber Framing

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 1163	Cold-formed structural steel hollow sections
AS 1397	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS/NZS 1554.1	Structural steel welding - Welding of steel structures
AS/NZS 1594	Hot-rolled steel flat products
AS 1627.4	Metal finishing - Preparation and pretreatment of surfaces - Method selection guide - Abrasive blast cleaning
AS 1627.9	Metal finishing - Preparation and pretreatment of surfaces - Method selection guide - Pictorial surface preparation standards for painting steel surfaces
AS/NZS 2312:2002	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS/NZS 3679.1	Structural steel - Hot rolled bars and sections
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 4792	Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or special process
NZS/BS 1387	Screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or for screwing to BS 21 pipe threads
BS 2630	Resistance projection welding of uncoated low carbon steel sheet and strip using embossed projections
BS 6497	Powder organic coatings for application and stoving to hot-dip galvanized hot-rolled steel sections and pre-formed steel sheet
BRANZ BU 567	E2/AS1 Flashing Requirements
GANZ	Galvanizing Association of New Zealand - After-Fabrication Hot Dip Galvanizing. A practical reference for designers, specifiers, engineers, consultants, manufacturers and users

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 DOCUMENTS

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

Mitek

Copies of the above literature are available from

Company:	Mitek New Zealand Ltd
Web:	www.miteknz.co.nz
Email:	
Telephone:	09 274 7109

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Requirements

1.4 QUALIFICATIONS

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

Metalworkers to be qualified as welders and experienced in working with steel and the techniques specified.

1.5 HOT WORK - FIRE SAFETY

Refer to section 1270 CONSTRUCTION

2 PRODUCTS

Materials

2.1 UNPAINTED HOT-DIP ZINC-COATED STEEL

Hot-dip zinc-coated steel coil to AS 1397.

Zinc coating class: ZM 275

Components

2.2 SCREWS

Self-tapping metal with similar composition and mechanical properties to the parent metal and with the type of head, length, gauge and thread to suit the work and its location.

2.3 SCREWS

Hexagonal head, self-drilling, with similar composition and mechanical properties to the parent metal. Select type of head, length, gauge and thread to suit the work and its location.

2.4 BOLTS

Similar composition and mechanical properties to the parent metal, selecting type and size to suit the work and its location.

2.5 NAILS

Spiral rolled flat-head/clout type, with similar composition and mechanical properties to the parent metal. Select length and gauge to suit the work and its location.

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 AVOID DISTORTION

Avoid distortion of elements during transit, storage and handling.

3.4 PREVENT SURFACE DAMAGE

Prevent pre-finished surfaces rubbing together, and any contact with mud, plaster or cement. Keep protective coverings dry.

3.5 PREPARATION

Ensure location and substrate is ready to receive the elements and will allow work of the required standard.



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3.6 FLASHINGS

Select and use sheet metals suited to the element, process or finish specified, jointing them as necessary to allow full development of their expected durability with a minimising of corrosion and to BRANZ BU 567.

Assembly

3.7 PROTECTION

During fabrication protect all surfaces which will be visible in completed work.

3.8 COLD FORMING

Cold formed work to be free from warping, buckling and fractures. Form bends with a brake press or by cold rolling.

3.9 CORNERS

Unless specified otherwise, mitre junctions of identical sections.

3.10 HOLES

Form without distortion of surrounding metal.

3.11 MOVING PARTS

When assembled, all moving parts must move freely and without binding.

3.12 CLEANING

Remove all burrs and sharp arrises which would be visible after fixing, or a hazard to the user.

3.13 RIVETED JOINTS

Draw riveted joints tightly together, with rivets closed to completely fill holes.

3.14 MECHANICAL JOINTS

Ensure mechanical joints are tight with no visible gaps.

3.15 MECHANICAL JOINTS, ELEMENTS

Bed in mastic all mechanical joints of elements which will be located externally, including all mating surfaces, cleats and other fixings.

3.16 MECHANICAL JOINTS, CLEATS

Unless specified otherwise connect cleats to frames with countersunk screws where they will be visible after the component has been fixed and where raised heads would interfere with any moving part.

Application

3.17 INSTALLATION

Locate plugs accurately and use in accordance with the manufacturer's requirements. Fix plumb, level and true to line. Comply with the specified standards, the reviewed shop drawings and installation details, including brackets, bolts, fixings, grout, bedding compounds and sealants.

3.18 LOADING

Elements must not carry any structural load unless designed to do so. Do not use as strutting or support when in place.

Application - sheet steel

3.19 FABRICATE

Fabricate and assemble in a workshop wherever practicable.

3.20 MARK OUT

Mark out the work accurately, square and true to line allowing for correct radius folds and laps to give the dimensions required for neat, close fits when in place. Use marking methods that do not damage, deface or cause future corrosive attack to the sheet metal being worked. Do not use carbon-based pencils with aluminium/zinc alloy coated metals.



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3.21 CUT SHEETS

Cut sheets by mechanical methods leaving edges true to line, square, smooth and free from all burrs. Do not use abrasive cutting blades with aluminium/zinc alloy coated metals.

3.22 FORMING

Use mechanical methods wherever possible and form and fold sheets square and true to line and face free of all deformation and defects. Minimise cold-working and stress build-up and their effects by limiting the amount of working and avoiding sharp radius bends (minimum 1 x sheet thickness).

3.23 PRE-ASSEMBLE

Pre-assemble in the workshop and match mark items for assembly or erection on site. Do not strain, twist, bend or open such items to force them into the correct position while assembling or erecting.

3.24 SEPARATION

Isolate dissimilar materials (metal and non-metal) in close proximity as necessary by painting the surfaces or fitting separator strips. Place isolators between metals and treated timber and cement-based materials. Do not use unpainted lead sheet in contact with or allow water run-off onto zinc-coated and aluminium/zinc alloy coated metals. Refer also to BRANZ BU 567.

3.25 JOINING HOT-DIP ZINC-COATED STEEL

Use self-secured seams, pop rivets, sealant strip, soldering and spot welding or a combination as best suits the form and location of the work.

3.26 INSTALLATION

Locate fixings accurately and use in accordance with the manufacturer's requirements. Fix plumb, level and true to line. Comply with the installation details and complete with bedding compounds and sealants.

3.27 LOADING

Ensure elements are fully supported unless designed to be self-supporting.

Finishing

3.28 PREPARATION FOR COATINGS

Before applying coatings remove all welding slag, weld spatter, anti-splatter compounds, paints, grease, flux, rust, burrs and sharp arrises. Make good all defects which would show after application of coating. Finish surfaces smooth.

3.29 GALVANIZING

After fabrication clean surface and hot-dip galvanize to AS/NZS 4680 and AS/NZS 4792.

3.30 BRUSHING AND POWER TOOL CLEANING

Remove oil and grease by the use of solvents. Scrape and power wire brush to a minimum Class 2 finish to AS 1627.9. Clean to bright metal, but avoid producing a polished surface. Check that no burrs or sharp arrises remain which may prevent full coating thickness being attained.

3.31 ABRASIVE BLASTING

Remove oil and grease by the use of solvents. Abrasive blast clean to a Class 2.5 finish to AS 1627.4. Clean to bright metal, but avoid producing a polished surface. Select grit type and equipment such that the cleaned surface profile between peaks and valleys does not exceed one third of the dry film thickness. Check that no burrs or sharp arrises remain which may prevent the full coating thickness being attained.

3.32 EARTHING OR EQUIPOTENTIAL BONDING METALWORK

If it is a project electrical requirement, ensure that any electrically at-risk metalwork, is earthed or equipotential bonded (or at least conductor cable attached) before enclosure.

Completion

3.33 COMPLETION MATTERS

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

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4 SELECTIONS

Fabricated steel items

4.1 STEEL METALWORK HARDWARE
Brackets and Connectors

Sheet steel items

4.2 UNPAINTED HOT-DIP ZINC-COATED STEEL
BMT: 0.91mm



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5122 PLYWOOD LININGS

1 GENERAL

This section relates to the use of plywood sheets for:

- interior lining
- installed as bracing (as lining or under lining)
- specialist plywood panelling

1.1 RELATED SECTIONS

Refer to ~ for ~.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC B1/AS1	Structure
NZBC E2/AS1	External moisture
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2270	Plywood and blockboard for interior use
NZS 3604	Timber-framed buildings

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'S DOCUMENTS

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

Carter Holt Harvey

Copies of the above literature are available from Carter Holt Harvey

Web:	www.chh.co.nz
Email:	
Telephone:	

Performance

1.4 BRACING REQUIREMENTS

Provide wall/ subfloor/ floor/ ceiling systems to meet the requirements of NZS 3604, section 5, **Bracing design**, and roof systems to meet the requirements of NZS 3604, section 10, **Roof framing**.

Building wind zone	VH (refer to NZS 3604, table 5.4)
Earthquake zone:	A (refer to NZS 3604 figure 5.4)

Requirements

2 PRODUCTS

Materials

2.1 PLYWOOD LINING

To AS/NZS 2270. Refer to SELECTIONS for type.

2.2 PLYWOOD BRACING

Rotary cut, Radiata Pine veneer ply sheet to AS/NZS 2269.0.

Bracing system tested to NZS 3604.5 **Bracing design**, NZS 3604.6.2 **Subfloor systems**, NZS 3604.8.3 **Systems to resist horizontal loads**, to meet NZBC B1/AS1.



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Components

2.3 PANEL PINS

Refer to the plywood manufacturer's requirements and use 30mm, 40mm and 50mm plated panel pins for interior linings.

2.4 NAILS

Refer to the panel manufacturer's requirements. Galvanized or stainless steel for H3 CCA treated sheets. Use annular grooved or twisted shank nails for roof sarking.

2.5 SCREWS

Refer to the manufacturer's requirements for size and use.

Accessories

2.6 ADHESIVE

Use only multi-purpose water or solvent based wallboard adhesives required by the plywood manufacturer.

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 FRAMING

To NZS 3604 and the plywood manufacturer's requirements.

Maximum moisture content: ~ %.

Application - General

3.4 SUPPORT

Fully support all edges and joints, except where tongue and groove is used.

3.5 EXPANSION

Allow a 2-3mm gap at edges of linings for sheet expansion; and

2 - 3mm	at each sheet joint; or
6 - 9mm	at 3.6 metres; or
8 - 12mm	every 4.8 metres

In areas with an expected high level of internal moisture, allow a gap of 4 - 6mm every 1.2 metres.

3.6 FIXING PLYWOOD BRACING

Ensure required hold down, strapping, angles, or bolts are in place, and that framing centres are correct.

Fit and fix to NZS 3604 and the manufacturer's bracing requirement with sheets and trim all in plumb, true alignment and face.

Application - linings

3.7 FIXING GENERALLY

A combination of panel pins and glueing.

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3.8 FIT AND FIX PLYWOOD SHEETS

Fit and fix as detailed to the plywood manufacturer's requirements with sheets and trim in plumb, true alignment, face and grain.

Completion & Commissioning

3.9 COMPLETION MATTERS

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

4 SELECTIONS

4.1 PLYWOOD LINING

Location:	Refer to Plans
Brand/type:	CHH
Thickness:	9 mm
Treatment:	H3 CCA
Face/back grade:	Grade CD
Finish:	Paint

4.2 BRACING PLYWOOD

Location:	Refer to Bracing Plans
Ply Brand/type:	CHH
Thickness:	7 mm
Treatment:	H3 CCA
Face/back grade:	DD

4.3 FIXINGS, BRACING

Lining:	
Fixing type/finish:	Dry in Service - Galvanised
Centres:	as per Plan
Hold down system:	as per Plan

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5151 INTERNAL TRIM

1 GENERAL

This section relates to simple lengths of trim fixed on site as of isolated internal members, with simple end joints.
It includes:

- timber

1.1 RELATED WORK

Refer to 5231 for Interior Doors.

Documents

1.2 DOCUMENTS

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

NZBC C/AS1, C/AS2	Protection from fire
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery

Requirements

2 PRODUCTS

Materials

2.1 TIMBER TRIM

To NZS 3610 and to profiles detailed on the drawings. Timber species, grade and treatment to NZS 3602.

Components

2.2 NAILS

Bright steel to dimension requirements of NZS 3604. Use galvanized where prone to dampness.

2.3 BRADS

Bright steel of a length three times the thickness of the member being fixed. Use cadmium plated where prone to dampness.

2.4 SCREWS, STEEL

Bright steel of a length to penetrate the substrate up to the shank. Use stainless steel in wet areas.

2.5 SCREWS, CHROME PLATED

Chrome plated of a length to penetrate the substrate up to the shank.

3 EXECUTION

Conditions

3.1 GENERALLY

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).

3.2 STORAGE

Take delivery of trims undamaged and unmarked and store on site under cover, away from moisture, heat and direct sunlight in adequately ventilated area and clear of areas where work is in progress, to ensure materials are of the required standard when fixed in place.

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3.3 ACCLIMATISE MATERIALS

Remove materials from packaging, separate and allow to acclimatise in the proposed installation area for 48 hours minimum prior to installation.

3.4 ENSURE

Ensure that the substrate to trims will allow work of the required standard. If it does not, do not proceed until the substrate has been remedied.

Application - Generally

3.5 INSTALL TIMBER TRIM

Use full lengths. Fit with scribed internal joints, mitred external joints and, mitred and returned at stop ends. Fix plumb, level and true to line and face using nails or brads to suit. Leave secure and with no movement possible.

Finishing

3.6 PUNCH

Punch all nail heads below the face of trim ready to receive stopping, as specified under painting preparation.

3.7 COUNTERSINK

Countersink screw heads not less than 2mm below the faces of trim to be painted. Stop and finish off flush with the face, as specified under painting preparation.

3.8 PELLETING

Countersink screw head 6mm below the faces of trim which is to be clear finished. Glue in grain-matched pellets not less than 6mm thick and cut from matching timber. Finish off flush with the face.

Completion

3.9 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.10 PROTECTION

Protect the completed work and make good before any surface finish is applied.

3.11 REPLACE

Replace damaged or marked elements.

3.12 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 INTERNAL TIMBER TRIM

Manufacturer: TBD
Species/grade: Radiata Pine Dressing
Finish: Paint

Member	Reference	Code reference
Architrave	40x10mm single bevel	
Skirting	60x10mm singe bevel	
Cornice	40x10mm single bevel	

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5231SD SUPERIOR DOORS INTERIOR DOORS

1 GENERAL

This section relates to the supply and installation of **Superior Doors** range of hollow and solid core doors for interior use.

1.1 RELATED WORK

Refer to painting sections for finishes
Refer to 5151 INTERNAL TRIM for internal trim
Refer to 5521 HARDWARE for door furniture.

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:

EPS	Expanded polystyrene solid core
MR	Moisture resistant
MDF	Medium density fibreboard

Documents

1.3 DOCUMENTS

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

NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3610	Specification for profiles of mouldings and joinery

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Superior Doors Brochure
Superior Doors Core and Component Specifications
Superior Doors Product Care Guide
Superior Doors Guarantee - Care and handling
BRANZ Appraisal 787 - Superior Doors

Manufacturer/supplier contact details

Company:	Superior Doors Ltd
Web:	www.superiordoors.co.nz
Email:	enquire@superiordoors.co.nz
Telephone:	09 298 5027

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years:	For Superior Doors hollow and solid core doors
10 years:	For Superior Doors steel insert doors
10 years:	For Superior Doors vision panel doors
10 years:	For Superior Doors porch door
10 years:	For Superior Doors oversize and custom doors

Refer to www.superiordoors.co.nz for guarantee terms and conditions.

- 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.

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Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

2 PRODUCTS

Materials - standard doors

2.1 HOLLOW CORE DOOR

Superior Doors RibCore, ribbed polystyrene hollow core door manufactured with timber frame (stiles, rails and lockblocks), door skin material MDF in a range of thicknesses and pattern finishes (flush, grooved or vision panel) and glued under compression to the frame and core to form the door leaf. Refer to SELECTIONS for size and components.

2.2 VISION PANEL DOOR

Superior Doors vision panel door available in MR particle board solid core. Manufactured with timber frame (stiles, rails and lockblocks), door skin material MDF in a range of thicknesses and pattern finishes (flush, grooved or vision panel) and glued under compression to the frame and core to form the door leaf. Refer to SELECTIONS for size and components.

Materials - frames

2.3 TIMBER FRAMES

To NZS 3602. Moisture content approximately 10-14%. To profile as detailed and dimensioned, including stops.

2.4 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed. Pencil radius corners of profiled schedules for paint finish.

Components

2.5 SCREWS

Stainless steel or non-corrodible metal. Length sufficient to penetrate into the background support up to the shank. Screws for fixing hinges, hardware or furniture to match the item being attached.

2.6 NAILS

Length sufficient to penetrate into the background support at least half the nail length, except if into radiata pine then three-fifths their length.

2.7 DOOR HINGES

Size and gauge to carry door size and weight. 3 hinges per door.

Type:	Loose pin
Size:	89mm
Material:	Stainless Steel
Pin:	Loose-pin Stainless Steel

2.8 GLASS - VISION PANEL DOORS

Refer to glazing section/s for glazing to doors.

2.9 DOOR FURNITURE

Refer to SELECTIONS for door furniture.

Finish

2.10 FINISH

Superior door skins are pre-primed using an ultraviolet (UV) primer which is solvent and formaldehyde free, no V.O.C's. Refer to painting section/s for door and frame finish.

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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 GENERALLY

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).

3.4 FABRICATE DOORS

Fabricate doors in the Superior Doors factory, with provision for lock block placement and size.

3.5 CHECK ALL OPENINGS

To NZS 3604. Check all openings on site for size and standard of execution before installing door frames.

Assembly

3.6 FABRICATION GENERALLY

Ensure Superior Doors are manufactured and fabricated as detailed and specified. Provide temporary bracing and protection.

Installation

3.7 FIXING FRAMES

Fit to frame as required. Fix and assemble frames rigidly in place, plumb, level and true to line and face without distortion. Fit facings, scribers, draught-stopping and sealants.

3.8 DISTORTION

Do not distort frames when wedging or other packing, or when tightening fixings. If necessary adjust packing and fixings to eliminate binding. Do not cut, plane or sand frames to remedy distortion.

3.9 FIXINGS

Fix frames so that nail heads are covered by applied stops and beads. Punch all nail heads below timber surfaces which will be visible in completed work. Ensure that at least one frame fixing is adjacent to each hanging point.

Application

3.10 PROPRIETARY ELEMENTS

Fix in accordance with manufacturer's requirements.

3.11 INSTALLATION GENERALLY

Wedge frames into opening and fix through into the wall framing. Locate all wedges and fixing at hinge positions and opposite, with one fixing in the vicinity of the lock. Fixings concealed behind planted stops.

Hang doors on hinges, sliding or bi-fold gear as specified and to operate freely. Fit all hardware and door furniture.
Ensure hinges are set in a straight line to prevent distortion. Set jambs and stops perfectly square and plumb.



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3.12 TIMBER STUD WALLS - TIMBER FRAMES

Wedge into opening and nail through into the studs. All wedges and fixing to be at hinge positions and opposite, with one fixing in the vicinity of the lock.

3.13 BOTTOM CLEARANCE

Provide for specified floor coverings plus 5mm clearance at any point of swing. When floor covering is not specified, allow 25mm total.
For ventilated and/or air conditioned spaces allow 20mm clearance above finished floor coverings for supply/return air.

3.14 HINGES - HOLLOW CORE DOORS

Use 3 hinges on all hollow core doors up to 1980mm.
Use 4 hinges for all oversize hollow core doors.

3.15 HINGES - SOLID CORE DOORS

Use 4 hinges on all MR particle board solid core doors up to 1980mm.

Use 3 hinges on all EPS solid core doors.

3.16 FINISHING AND SANDING

Refer to appropriate PAINTING section(s) for selection of paint and preparation requirements.

Completion

3.17 COMPLETION MATTERS

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

4 SELECTIONS

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

Standard door (1980mm height)

4.1 SUPERIOR DOORS - STANDARD (1980MM HEIGHT), RIBCORE HOLLOW CORE

Location:	Refer to Plans
Type/Brand:	**Superior Doors**
Door type:	Standard (1980mm) hollow core door
Leaf size:	1980mm x 810mm
Core type:	RibCore
Skin material:	MDF
Skin face:	Flush Panel
Styles:	30mm x 30mm finger jointed pine
Rails:	27mm x 30mm finger jointed pine
Lockblock:	398mm x 68mm x 30mm finger jointed pine
Colour/finish:	Refer to painting section
Frame:	Timber
Jamb type/finish:	Timber
Door opening method/finish:	Hinged
Frame:	Timber

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Vision panel door

4.2 SUPERIOR DOORS - VISION PANEL DOOR, MR SOLID CORE

Location:	Refer to Plans
Type/Brand:	**Superior Doors**
Door type:	Vision Panel door
Vision panel type:	Hi Vis
Leaf size:	1980mm x 810mm
Core type:	MR particle board solid core
Skin material:	MDF
Skin face:	Flush Panel
Beading:	Standard Internal Beading
Rails:	82mm x 30mm finger jointed pine
Styles:	30mm finger jointed pine
Colour/finish:	Refer to painting section
Jamb type/finish:	Timber
Door opening method/finish:	Hinged
Frame:	Timber

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5433E ECOPLY® FLOORS

1 GENERAL

This section relates to the use of Carter Holt Harvey Plywood Ltd (CHH PLY) plywood sheets for floors.

1.1 RELATED WORK

Refer to 3821 for Timber Framing

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®
COC	Chain of Custody

Documents

1.3 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 1604.1	Preservative-treated wood-based products - Part 1: Products and treatment
AS/NZS 2269.0	Plywood - structural - specifications
NZS 3604	Timber-framed buildings

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 DOCUMENTS

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

Ecoply® Specification and installation guide September 2015
Product Technical Statement July 2015 Ecoply® Plywood Products: Flooring
Carter Holt Harvey Plywood - Tokoroa Certificate Code: SCS-COC-001316 Trademark License Code: FSC-C012019, Controlled Wood SCS-CW-001316, expires 5 June 2023.

Copies of the above literature are available from Carter Holt Harvey Plywood Ltd

Web:	www.ecoply.co.nz
Telephone:	0800 326 759

1.5 NO SUBSTITUTIONS

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

Requirements

1.6 QUALIFICATIONS GENERALLY

Refer to 1270 CONSTRUCTION for requirements relating to qualifications.

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Performance

2 PRODUCTS

Materials

2.1 ECOPLY® FLOORING (PT)

Radiata pine veneer ply to AS/NZS 2269.0. F8 stress grade with an F11/F8 stress grade combination to 19mm thick longspan 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 1604.1, when used as a wet area substrate.

Components

2.2 NAILS - HOT DIPPED GALVANIZED

Hot dipped galvanized flat head, ring shank or annular grooved nails to Carter Holt Harvey Plywood Ltd requirements for size and use.

15 - 21mm plywood:	60mm x 2.8mm
25mm plywood:	75mm x 3.15mm

2.3 NAILS - STAINLESS STEEL

Stainless steel flat head, annular grooved nails to Carter Holt Harvey Plywood Ltd requirements for size and use.

15 - 21 mm plywood:	60mm x 2.8mm
25mm plywood:	75mm x 3.15mm

2.4 SCREWS IN TIMBER

Stainless steel, counter-sunk to Carter Holt Harvey Plywood Ltd requirements for size and use.

15mm plywood:	8g x 40mm
17 - 21 mm plywood:	10g x 50mm
25mm plywood:	10g x 50mm

2.5 ADHESIVE

Refer to SELECTIONS.

2.6 BRUSH ON TREATMENT

Soudal Metalex Ready to Use or Soudal Metalex Concentrated Timber Preservative. Clear 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.

Moisture content: 18% maximum for framing

3.4 SUPPORT FRAMING

Ensure support framing is completed to Carter Holt Harvey Plywood Ltd stated requirements for laying plywood sheets.

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Application

3.5 TREAT

Treat cuts and holes in sheets with a brush on treatment.

3.6 SHEET LAYOUT

Lay sheets to Carter Holt Harvey Plywood Ltd 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. 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 glueline 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.

3.9 WET AREAS

Ensure plywood is structural grade treated to H3 or H3.2 (CCA treated), to AS/NZS 1604.1. Plywood substrates must have moisture content not more than 18% before installing membrane. With primed/sealed face and edges.

NOTE: Treated plywood must be allowed to breath for a minimum of 7 days before installation of membrane. Fixing must be to manufacturer specifications.
LOSP treated plywood must not be used.

Requirements if used for:
Flooring: Stress grade F8, minimum thickness 18mm with framing at minimum 400mm centres both ways, or min 21mm with framing at 600mm centres both ways. Fixing, glue and stainless steel screws.
Floor Overlay: Stress grade 8, minimum thickness 12mm.

Completion & Commissioning

3.10 COMPLETION MATTERS

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

4 SELECTIONS

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

Materials

4.1 ECOPLY® FLOORING (PT) - T&G

Location:	Refer to Plans
Manufacturer:	Carter Holt Harvey Plywood Ltd
Brand/grade:	Ecoply® Flooring (pt) / CD
Thickness / Stress grade:	19
Sheet width:	1200mm
Sheet length:	2400mm
Treatment:	H3.2 CCA
Fixing:	Nails & Adhesive

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Components

4.2 ADHESIVE

Type: Gorilla PRO foam

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5521 HARDWARE

1 GENERAL

This section covers the supply and installation of door and window hardware and furniture.

1.1 RELATED WORK
Refer to 5231 for Interior Doors

Documents

1.2 MANUFACTURER'S DOCUMENTS
Manufacturer's and supplier's documents relating to work in this section are:
TBD

Requirements

1.3 SUPPLIER
A specialist in the supply of hardware, employing an experienced architectural hardware representative available to assist during the course of the hardware installation.

2 PRODUCTS

2.1 DOOR HARDWARE
Refer to SELECTIONS for product selection.

Components

2.2 FIXINGS
Provide matching fixings, including screws, clips, bolts and brackets for hardware supplied.

3 EXECUTION

Conditions

3.1 RETAIN
Retain hardware in the manufacturer's original packaging. Ensure that units are complete with fixings and installation instructions. Label each unit separately with its hardware number and door/window number to match the submitted and approved schedule.

3.2 PACKAGE
Package required hardware units in clear plastic and label each package with its hardware and door/window number and location to match the drawings and the submitted and approved schedule. Place packages in cartons selected for "level", "location", and/or "sector" and label the packages and the cartons similarly.

3.3 STORE
Store hardware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

Installation

3.4 INSPECTION
Before starting the hardware installation, check frames, doors, sashes and adjacent finishes are ready for the proper installation of the hardware.

3.5 LOCATE
Locate hardware units at heights and/or locations shown on the drawings, or as required to comply with relevant Codes and Standards. Before proceeding, confirm any dimension not shown or known.

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3.6 CUTTING AND FITTING

Carry out cutting and fitting of the substrate necessary for installing any hardware unit before painting or finishing of that surface. Remove hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

3.7 INSTALL HARDWARE

Install each hardware unit in accordance with the hardware manufacturer's requirements using templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with all moving parts and actions freely and easily operating. Do not make any modifications to supplied units.

Completion

3.8 ADJUST

Adjust and check each operating hardware unit for correct and smooth functioning. Replace those units that cannot be adjusted if they do not function correctly. Clean units and adjoining surfaces upon completing their installation. Only use lubricant if and when recommended by the hardware manufacturer/supplier.

3.9 REPLACE

Replace damaged or marked elements.

3.10 LEAVE

Leave work with parts fully and freely working and to the standard required by following procedures.

3.11 REMOVE

Remove debris, unused materials and elements from the site.

3.12 PROTECT

Protect hardware units from damage or marking.

3.13 FINAL ADJUSTMENT

Where hardware is installed more than a month prior to project completion, return and make a final check and adjustment of hardware units to ensure they are operating correctly, fitted properly and are undamaged.

4 SELECTIONS

4.1 DOOR HARDWARE

	Make	Type/model number	Material finish
Hinges complete with matching screws			Stainless Steel
Latch and locksets	Schlage	Regent	Chrome Plated

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6411P POLYFLOR® VINYL SURFACING

1 GENERAL

This section relates to the supply and installation of **Polyflor**® vinyl surfacing complete with skirtings, nosings, trims and edgings and static control sheet to floors.
It includes:

- PVC sheet
- PVC tiles

1.1 RELATED WORK

Refer to 5433E for Ecoply Floors

.

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:

SRV	Slip resistance value
SDV	Slope design value
CoF	Coefficient of friction
BPN	British pendulum number
PVC	Poly-vinyl Chloride (type of vinyl)
PU	Poly-urethane

The following definitions apply specifically to this section:

Thermo-weld	Method of forming a joint in vinyl using a heat gun and colour matched PVC rod melted into the joint.

Documents

1.3 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 D1/AS1	Access routes
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
IEC 61340.4.1	Electrostatics - Part 4.1: Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors
EN 1081	Resilient Floor Coverings - Determination of the Electrical Resistance
ISO 9239.1	Reaction to fire tests for flooring - Determination of the burning behaviour using a radiant heat source

Manual of practices and conditions for the NZ flooring industry: Resilient flooring

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Polyflor® technical information manual

Manufacturer/supplier contact details

Company:	**James Halstead Flooring New Zealand Ltd**
Web:	www.polyflor.co.nz
Telephone:	0-9-269 1110 or 0800 765 935

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Warranties

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

1 year: For work under normal environmental and use conditions against failure.

- Provide this warranty on the installer/applicator standard form (if unavailable, use the standard form in 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 - MANUFACTURER/SUPPLIER - STANDARD

Provide a material manufacturer/supplier warranty:

10 years: For materials

- Provide this warranty on the manufacturer/supplier standard form (if unavailable, use the standard form in 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.

1.7 WARRANTY - MANUFACTURER/SUPPLIER - POLYFLOR TOTAL SYSTEM

Provide a material manufacturer/supplier warranty:

15 years: For materials covered by the **Polyflor®** Total System

- Provide this warranty on the manufacturer/supplier standard form (if unavailable, use the standard form in 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

1.8 NO SUBSTITUTIONS

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

1.9 QUALIFICATIONS

Vinyl laying to be carried out by competent, experienced layers familiar with the **Polyflor®** materials and techniques specified.

1.10 POLYFLOR TOTAL SYSTEM

To the project specific, written **Polyflor®** Total System Specification from **James Halstead Flooring NZ** and this section.

Performance

1.11 SURFACE FIRE PERFORMANCE FLOOR FINISHES

All **Polyflor®** floor finish products have a minimum Critical Radiant Flux of 8kW/m² to EN ISO 9239.1 and meet the requirements of NZBC C/AS2, Table 4.5.

Except for the following products which require test confirmation:

- Static products; **Polyflor® Finess EC** (indent), **Polyflor® EC** (indent), **Polyflor® 2000SD** (indent), **Polyflor® Conductive ROF** (indent).
- Tile product; **VC Tile Deluxe Range**.

Performance - Slip resistance

1.12 SLIP RESISTANCE - SURFACES EXEMPT FROM TESTING

Walking surfaces comply with NZBC D1/AS1, Table 2 for slip resistance requirements and are exempt from testing.

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1.13 SLIP RESISTANCE - PREVIOUSLY TESTED SURFACE

The following walking surfaces have previously been tested for slip resistance, and comply with NZBC D1/AS1 requirements.

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1.14 TEST - SLIP RESISTANCE

Test walking surfaces for slip resistance, refer to SELECTIONS for test condition.

2 PRODUCTS

Materials - flooring

2.1 VINYL SHEET

Polyflor® high performance homogeneous monolayer flexible PVC sheet flooring, and **Polyflor®** heterogeneous vinyl sheet flooring.

2.2 TRIMS AND EDGING

PVC as required to complete the work.

Accessories

2.3 PRIMERS

For general purpose, **Kiesel Okatmos EG20**, solvent free, very low emission primer.

For special areas, **Kiesel Okapox GF**, solvent and water free, very low emission, thin two component epoxy primer.
To the adhesive manufacturer's requirements for the particular substrate and location.

2.4 ADHESIVE

Standard acrylic and waterproof adhesives to suit the material and substrate and to the vinyl manufacturer's requirements.

General purpose:	Kiesel Okatmos Star 100, Kiesel Okatmos Star 100 Plus or Okamul K5 vinyl adhesive
Wet area:	Kiesel Okatmos PU. polyurethane adhesive
VC tile:	Kiesel Okatmos Star 150 Plus
Vinyl/Acoustifoam:	Kiesel Okatmos Star 100 or Kiesel Okatmos Star 100 Plus (for over Acoustifoam when using resilient vinyl)
LVT:	Kiesel Star 100 Plus or Kiesel Star 110 (high sunlight areas)
Conductive Sheet Vinyl:	Kiesel Star 100 Plus L
Polyclad:	Kiesel Okatmos Star 100 or Kiesel Okatmos Star 100 Plus

3 EXECUTION

Conditions

3.1 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.
To manufacturer's requirements and NZS/AS 1884.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCT

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

Accept rolls of sheet, packages of tiles and accessories undamaged and dry. Store rolls upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry. Avoid distortion, stretching, marking and damage to edges while shifting unrolling and handling sheet, tiles and accessories.

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3.3 PREPARATION

Check each individual colour supplied is from the same batch. Follow **Polyflor®** requirements for preparatory conditioning of rolls and working temperatures and conditions before, during and after laying the selected vinyl. Protect work from solar heat gain. Switch off under-floor heating during and for 48 hours either side of the work period.

3.4 DO NOT START

Do not start work before the building is enclosed, all wet work is complete, doors are hung and lockable, finishes and trim complete and good lighting is available.

3.5 INSPECT

Inspect the substrate to ensure it is a suitable finish.

3.6 PROTECTION

Protect adjoining work surfaces and finishes during the vinyl installation.

3.7 LAYING GENERALLY

Carry out the whole of this work to NZS/AS 1884, the' Manual of practices and conditions for the NZ flooring industry: Resilient flooring' and the flooring manufacturer's requirements.

3.8 TECHNIQUE

Before beginning the installation confirm the proposed layout of material, location of seams and other visual considerations of the finished work.

3.9 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Application - substrate preparation

3.10 PREPARING PARTICLEBOARD OR PLYWOOD FLOORS

Clear substrate of debris, clean off surface contamination and carry out surface repairs to particleboard/plywood using a propriety levelling compound. Carefully feather out at all perimeters of repaired areas. Grind or sand smooth, then vacuum to remove dust. Check for moisture content, do not proceed with final sanding or laying until readings for the whole area shows a moisture content of:

8 - 12% for air conditioned buildings
10 - 14% for intermittently heated buildings
12 - 16% for unheated buildings
Prime substrate prior to application of adhesive.

3.11 APPLYING PRIMER FOR VINYL SHEET

Prime porous plaster, concrete and timber substrates to the adhesive manufacturer's requirements.

Application - Laying

3.12 APPLICATION OF ADHESIVE

Apply approved adhesive either by trowel and/or "wetted" roller as required by the vinyl manufacturer and without trowel marks after setting. Follow requirements for open time, taking note of the substrate porosity, ambient temperature and relative humidity. Remove excess adhesive as the work proceeds using required techniques.

3.13 LAYING FLOOR SHEET

Roll out, cut, leave to condition and install sheet vinyl to manufacturer's requirements. Ensure there are no air bubbles or twisting and that the seams are kept clear of adhesive. Immediately sheet is adhered roll with a 45 kg roller.

3.14 CROSS JOINS

Plan and allow cuts to avoid cross joins. Review position before proceeding if cross joins are unavoidable. Cross joins are not acceptable in wet areas.

3.15 FIT VINYL EDGING

Fit tapered vinyl edging to all borders, except where abutting carpet.

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3.16 INSTALLING ACCESSORIES

Scribe fit, adhere or otherwise fix true to line and face to **Polyflor®** requirements for each particular location.

Completion

3.17 REPLACE

Replace damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable.

3.18 CLEAN AND POLISH

Vacuum off, damp mop with a low foam neutral detergent, with a pH level of 7 to 8. Allow to dry and finally buff with a rotary machine using suitable pads at 300 rpm. Use polymer polishes only where approved by **Polyflor®**. Leave vinyl flooring surfaces free of adhesive, dirt and debris and to the standard required by following procedures.

Do not polish or seal vinyl safety flooring.

3.19 REMOVE

Remove debris, unused materials and elements from the site.

3.20 PROTECT

Protect completed work from damage for the period between completion of laying and completion of the contract works.

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.polyflor.co.nz.
Substitutions are not permitted to the following **Polyflor®** product, unless stated otherwise.

4.1 POLYFLOR VINYL SHEET

Manufacturer:	Polyflor®
Type:	~Standard XL
Colour/number:	TBD
Gauge:	2mm
Seams:	Chemical/cold weld
Location:	Refer to Plans

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6700 PAINTING GENERAL

1 GENERAL

This section relates to the general matters related to painting work

1.1 RELATED WORK

Refer to 6711 PAINTING EXTERIOR for exterior paint systems.

Refer to 6721 PAINTING INTERIOR for interior paint systems.

1.2 ABBREVIATIONS

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

APAS	Australian Paint Approval Scheme
MPNZA	Master Painters New Zealand Association Inc.
VOC	Volatile organic compound

Documents

1.3 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
AS/NZS 2311	Guide to the painting of buildings
AS/NZS 2312.1	Guide to the protection of structural steel against exterior atmospheric corrosion by the use of protective coatings - Paint Coatings
AS/NZS 5131	Structural steelwork - Fabrication and erection
AS/NZS ISO 9001	Quality management systems - requirements
SNZ TS 3404	Durability requirements for steel structures and components
WorkSafe	Guidelines for the provision of facilities and general safety in the construction industry
WorkSafe	Guidelines for the management of lead-based paint
MPNZA	Specification manual
MPNZA	Health and Safety Programme

Health and Safety at Work Act 2015

1.4 MANUFACTURER'S DOCUMENTS

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

Aalto Paint Group

Copies of the above literature are available from ~

Web:	aaltopaint.co.nz

Requirements

1.5 NO SUBSTITUTIONS

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

1.6 QUALIFICATIONS

Painters to be a member of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.



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1.7 HEALTH AND SAFETY

Refer to the requirements of the Health and Safety at Work Act 2015 and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Health and Safety Programme. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to WorkSafe: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

1.8 MATERIAL SAFETY DATA SHEET

Obtain from each paint manufacturer the material safety sheet for each product used. Keep sheets on site and comply with the required safety procedures.

Warranties

1.9 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

Refer to the general section 1237WA WARRANTY AGREEMENT for the required format and details of when completed warranty must be submitted.

Performance

1.10 MANUFACTURER'S INSPECTION

Allow the paint manufacturers to inspect the work in progress and to take samples of their products from site if requested.

1.11 INSPECTION OF WORK

Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

2 PRODUCTS

Materials

2.1 PAINT TYPES

Use the manufacturer's complete system and only the products specified.

2.2 MATERIALS GENERALLY

Use only the Manufacturer's products which are guaranteed for their consistency and performance under AS/NZS ISO 9001 and APAS approval, prepared, mixed and applied as directed in the Manufacturer's specification sheets, specification manuals and product data sheets.

2.3 THINNERS AND ADDITIVES

Only use thinners or additives within the stated limits for the particular situations specified.

Accessories

2.4 FILLERS

For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified coating.

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3 EXECUTION

Conditions

3.1 EXECUTION

To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311, the MPNZA Specification manual, and WorkSafe: Guidelines for the provision of facilities and general safety in the construction industry.

3.2 PREPARE

Prepare surfaces to the coating manufacturer's requirements.

3.3 COATED SURFACES

Ensure that substrate surfaces are able to achieve the specified finish.

3.4 PRE-PRIMED SURFACES

Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

3.5 BRUSH DOWN

Brush down surfaces immediately before application, to remove dust, dirt and loose material.

3.6 COMPATIBILITY

Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.

3.7 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.

3.8 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.

3.9 ANCILLARY SURFACES

The coatings listed 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 instructions before proceeding.

3.10 HARDWARE

Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.

3.11 PROTECTION

Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

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Preparation - unpainted and pre-primed timber and wood based products

3.12 MOISTURE CONTENT

Ensure moisture content at the time of application is near to the equilibrium moisture content pertaining to the particular locality in which the timber is used, without any excessive moisture content gradient between core and surface.

3.13 PREPARING DRESSED TIMBER

Ensure dressed timber is smooth, free from raised or woolly grain, planing burrs or other machining defects. Slightly round or ease sharp edges to ensure they can be properly coated. Sand timber to bring up to a smooth finish along the direction of the grain. Sand timber back to new condition timber that has been weathered.

3.14 PREPARING ROUGH SAWN TIMBER

Thoroughly brush along the direction of the grain to remove dust and dirt.

3.15 PREPARING PRE-PRIMED TIMBER

Check pre-prime coat for damage, powdering, weathering or loss of adhesion. Where primer is sound, thoroughly brush along the direction of the grain to remove dust and dirt. If there is doubt, sand back and re-prime.

3.16 TIMBER SPECIES

Check that the preparation and paint system is suitable for the timber species.

3.17 PREPARING DAMAGE AND DEFECTS

Scrape clean loose or soft material holes, depressions, resin or gum pockets, knot holes, surface splits, checks, or any localised decay. Apply primer and/or sealer specified and fill these areas with linseed oil putty or other appropriate filler.

3.18 FIXINGS

Take timber fixings below the painted or clear finished surface. Leave corrosion resistant timber fixings flush with clear finished surfaces.

3.19 CLEANING

Remove grease and oil by wiping down with solvent or water-based degreasing agent. Remove resin by wiping down with solvent or water-based degreasing agent or heating and scraping. Remove sanding dust. Bad staining may be untreatable and require replacement of timber, discuss with paint manufacturer and main contractor.

Preparation - unpainted linings

3.20 PREPARING FIBROUS PLASTER

Check for and remove release agents and other contaminants by washing with clean water or solvent and allow to dry. Fill cracks and surface imperfections with patching plaster and lightly sand smooth. Remove dust.

3.21 PREPARING PLASTERBOARD

Check that joints are prepared to a smooth level surface finish. Fill cracks and surface imperfections with the sheet manufacturer's required stopping compound and lightly sand smooth. Remove dust.

Preparation - painted surfaces generally

3.22 SURFACE PREPARATION

Refer to the Manufacturer's specification sheets and product data sheets. Carry out the preparatory work required by them for each of the substrates.

For interior surfaces such as paper faced plasterboard use the Manufacturer's recommended finishing compound as an aid to achieving a Level 5 finish.



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3.23 MOULD

Sterilise surface mould by washing or sponging the whole surface with a one part sodium hypochlorite household bleach to three parts clean water solution. Allow bleach to act for 30 minutes and wash off with clean water. Wash cloths and sponges regularly in clean water. Reapplication may be necessary. Treat with anti-mould solution to the treatment manufacturer's requirements.

3.24 GAP FILLING

Fill cracks, holes, indented and damaged surfaces with putty, plaster filler, wood filler, or plastic wood, as appropriate and in accordance with the paint manufacturer's requirements. Allow to dry or set before sanding back level with the surface. Prime coat or seal the timber before using putty. Wet cement or gypsum base plasters before applying filler. Use only Portland cement base types, or water-insoluble organic-based gap fillers in exterior or wet areas.

Application - before applying final coatings

3.25 OFF-SITE WORK

Carry out off-site preparation and coating under cover, in a suitable environment and with adequate 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 permit air circulation and to prevent sticking of surfaces.

3.26 PRIMING JOINERY

Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP. treated joinery has dried sufficiently to lose odour.

3.27 CONCEALED JOINERY SURFACES

Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.

3.28 CONCEALED METAL SURFACES

Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.

3.29 DOORS

Prime or seal and paint all six faces of doors before hanging.

3.30 BEAD GLAZING

Before glazing apply the first two coats, or the primer and one undercoat, to rebates of stained, varnished or painted joinery and beads.

3.31 PUTTY GLAZING

Follow putty manufacturers recommendations for application, drying, and painting. Ensure that the putty is fully protected by the coating system as soon as it is sufficiently hard.

Application - generally

3.32 PAINTING GENERALLY

Comply with the paint manufacturer's requirements and any additional requirements in this specification.

3.33 MIXING

Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.

3.34 ENVIRONMENT

Paint exterior surfaces only in favourable weather conditions:

- 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
- do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
- do not apply solvent borne paint if moisture is present on the surface

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3.35 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 paint in the specified sequence using the specified paint
- allow full drying time between coats to the paint manufacturer's requirements
- do not expose primers, undercoats and intermediate coats beyond manufacturers stated instructions 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

3.36 PAINT APPLICATIONS

Select brush, roller, or pad and apply paint to the requirements of the paint manufacturer and to obtain a smooth even coating of correct thickness, uniform gloss and colour.

3.37 DRYING TIME

Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.

3.38 LIGHTLY SAND

Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

3.39 DEFECTIVE WORK

Correct defective work immediately and re-coat as required, following precisely the paint system specified.

3.40 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
- the specified number of coats applied
- no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
- proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application

Completion

3.41 CLEAN

Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.

3.42 CLEAN EQUIPMENT

Use the Manufacturer's environmental wash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal.

3.43 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.

3.44 REMOVE

Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.

3.45 REPLACE HARDWARE

Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

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4 SELECTIONS

4.1 SELECTIONS

Refer to 6711 PAINTING EXTERIOR and 6721 PAINTING INTERIOR for selections.

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6711 PAINTING EXTERIOR

1 GENERAL

This section relates to the preparation of exterior unpainted and pre-painted surfaces, and the application of exterior:

- decorative paint coatings
- protective paint coatings
- sealers
- stains
- clear finishes

Related work

1.1 RELATED SECTIONS

Refer to 6721 PAINTING INTERIOR for interior paint systems.

Documents

1.2 MANUFACTURER'S DOCUMENTS

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

Aalto Paint Group

Copies of the above literature are available from ~

Web: aaltopaint.co.nz

Warranties

1.3 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700 PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

Paint systems

4.1 TIMBER TRIM / DOORS / FRAMES

Brand:	Aalto
Coating type:	Water Based
Preparation:	Refer to paint manufacturers Manual
1st coat:	Sealer Undercoat
2nd coat:	Exterior Premium Top Coat
3rd coat:	Exterior Premium Top Coat

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6721 PAINTING INTERIOR

1 GENERAL

This section relates to the preparation of interior unpainted and pre-painted surfaces, and the application of interior:

- decorative paint coatings
- protective paint coatings
- sealers
- stains
- clear finishes

Related work

1.1 RELATED SECTIONS

Refer to 6700 PAINTING GENERAL for general painting matters.

Refer to 6711 PAINTING EXTERIOR for exterior paint systems.

Documents

1.2 MANUFACTURER'S DOCUMENTS

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

Aalto Paint Group

Copies of the above literature are available from

Web: aaltopaint.co.nz

Warranties

1.3 WARRANTY

Warrant this work under normal environmental and use conditions against failure.

2 years: Warranty period

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

2 PRODUCTS

2.1 PRODUCTS

Refer to 6700 PAINTING GENERAL for product clauses.

3 EXECUTION

3.1 EXECUTION

Refer to 6700 PAINTING GENERAL for execution clauses.

4 SELECTIONS

Paint systems

4.1 TIMBER / PLYWOOD / HARDBOARD / FIBREBOARD - PAINT

Brand:	Aalto Pant
Coating type:	Water Based
Preparation:	Refer to Manufacturers Manual
1st coat:	Interior Sealer Undercoat
2nd coat:	Interior Premium Top Coat
3rd coat:	Interior premium Top Coat

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4.2 TIMBER TRIM / DOORS / FRAMES

Brand:	Aalto Paint
Coating type:	Water Based
Preparation:	Refer to Manufacturers Manual
1st coat:	Interior Sealer Undercoat
2nd coat:	Interior Premium Top Coat
3rd coat:	Interior Premium Top Coat

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7112 WATER STORAGE TANKS

1 GENERAL

This section relates to the installation of water storage tanks for potable or non-potable water.

1.1 RELATED WORK

Refer to 7126RH Rinnai Hot Water System

Documents

1.2 DOCUMENTS

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

NZBC B1/AS1	Structure
NZBC E1/AS2	Surface water
NZBC G1/AS1	Personal hygiene
NZBC G2/AS1	Laundering
NZBC G3/AS1	Food preparation and prevention of contamination
NZBC G12/AS1	Water Supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Foul water
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent application
AS 1445	Hot-dipped zinc-coated, aluminium/zinc-coated or aluminium/zinc /magnesium-coated steel sheet - 76 mm pitch corrugated
AS/NZS 1546.1	On-site domestic wastewater treatment units - septic tanks
AS 2070	Plastic materials for food contact use
AS/NZS 2845.1	Water supply - Mechanical backflow prevention devices - materials, design and performance requirements
AS/NZS 3000	Electrical installations (Known as the Australian/New Zealand Wiring Rules)
AS/NZS 3500.1.2018	Plumbing and drainage - water services
AS/NZS 3500.2.2018	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3500.3.2018	Plumbing and drainage - stormwater drainage
AS/NZS 4020	Testing of products for use in contact with drinking water
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
AS/NZS 4671	Steel for the reinforcement of concrete
AS/NZS 4766	Polyethylene storage tanks for water and chemicals
NZS 3104	Specification for concrete production
NZS 3106	Design of concrete structures for the storage of liquids. - SPONSORED
NZS 3109	Concrete construction
NZS 7601	Specification for polyethylene pipe (Type 3) for cold water services
NZS 7602	Specification for polyethylene pipe (Type 5) for cold water services
NZS 7610	Specification for blue polyethylene pipes up to nominal size 63 for below ground use for potable water
HB 230	MPMSAA Rainwater Tank Design and Installation Handbook (Standards Australia)
HE4602	Household water supplies: The selection, operation, and maintenance of individual household water supplies
HE10148	Water collection tanks and safe household water (Ministry of Health)
SNZ PAS 4509	New Zealand Fire Service Firefighting Water Supplies Code of Practice
Ministry of Health	Guidelines for drinking-water quality management for New Zealand

Electricity (Safety) Regulations 2010 (Reprint as at 21 January 2019).

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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 DOCUMENTS

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

Rotomould Fiji

Copies of the above literature are available from Rotomould Fiji Ltd

Web: www.rototank .com
Email: sales@rotank.com
Telephone:
Facsimile:

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

- 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

Provide an installer/applicator warranty:

- 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.

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 HEALTH REQUIREMENTS

Refer to HE4602 for guidance.

1.9 NO SUBSTITUTIONS

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

1.10 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:

~

Provide this information prior to practical completion.

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Compliance information

1.11 INFORMATION REQUIRED FOR CODE COMPLIANCE

Provide the following compliance documentation:

- Applicators approval certificate from the manufacturer / importer / distributor
- 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.

1.12 INFORMATION REQUIRED FOR POTABLE WATER SAFETY COMPLIANCE

Provide the following compliance documentation:

- Drinking Water Register entry.

Performance

1.13 DESIGN AND INSTALLATION

To HB 230 Rainwater Tank Design and Installation Handbook, to AS/NZS 3500.1.2018, AS/NZS 3500.3.2018 (as modified by NZBC E1/AS2) and to NZBC G1/AS1 and NZBC G12/AS1.

1.14 TESTING OF PRODUCTS

Materials used in the manufacture of rainwater tanks to be tested to AS/NZS 4020.

1.15 TESTING OF POTABLE WATER QUALITY

Submit test results from a Ministry of Health-registered laboratory.

Quality control and assurance

2 PRODUCTS

Materials

Components

2.1 ABOVE GROUND WATER STORAGE TANK

Tank generally to NZBC G12/AS1, AS/NZS 3500.1.2018, section 2 and 8, AS/NZS 4020 and:

- Above ground tank manufactured from polyethylene to AS/NZS 4766 and to AS 2070.
- Above ground tank manufactured from precast concrete to NZS 3104, NZS 3106, NZS 3109 and AS/NZS 4671.
- Above ground tank manufactured from precast ferro-cement or reinforced plaster to AS/NZS 1516 and AS/NZS 4671.
- Above ground tank manufactured from hot dip galvanized corrugated steel sheet to AS 1445. Internal surface coated with food-grade polymer film.

Tanks to be fitted with a secure fitting lid to provide internal access for cleaning or inspection.

Accessories

2.2 TANK FITTINGS

Fittings kit supplied with the tank for complete installation.

2.3 PVC-U PIPES AND FITTINGS

Unplasticised PVC pipe and fittings to AS/NZS 1260.

2.4 POLYETHYLENE PIPES AND FITTINGS

High density polyethylene pipe and fittings to AS/NZS 4130.

2.5 WATER PRESSURE PUMP

Pump designed to pressurise water supply from tank into the building.

2.6 TANK VENT

Vent with insect proof stainless steel mesh fitted on top of the tank.

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2.7 FIRST FLUSH WATER DIVERTER

Wall mounted or underground system specific to installation. To prevent the first flow of water from the roof entering the water storage tank.

2.8 FILTER SYSTEM

Inline cartridge filter housing fitted between the first flush diverter and the inlet, or a 955 micron filter tank screen system fitted within the tank.

2.9 INLET LEAF STRAINER

Inlet leaf strainer manufactured from UV stabilised polypropylene. Built-in stainless steel or anodised aluminium mesh & light diffuser to minimize build-up of algae. Copper or copper alloys must not be used. Overflow diameter to match inflow pipe diameter. Fitted with a PVC-U overflow with appropriately contoured flanges or a stormwater pipe adapter.

2.10 TANK VACUUM SYSTEM

Designed to suck from the bottom of the tank when the tank is full to overflowing. System to include anti siphon device.

2.11 WATER TREATMENT (UV)

Combination filtration and UV disinfection system.

2.12 SEALS

Uniseals for pipe connections to the top of the tank.

2.13 RAIN HEAD

Head piece, forming a screened entry point to the tank. Designed to fit at the top of vertical PVC piping, incorporating a mesh screen to intercept debris and thereby allowing only water to pass through.

2.14 TANK LEVEL INDICATOR

- Floating pole type water level gauge with a large red-orange ball indicator protruding above the tank roof.
- Simple pulley and counterweight system with free hanging indicator beside the tank.

2.15 RAINWATER-TO-MAINS WATER SWITCHING DEVICE

Dual source controller designed to source rainwater for water applications such as toilets and/or laundry, with automatic mains water back-up. Also suitable for exterior taps. Switches between rainwater and mains water supply. Fits on top of the tank. Built-in backflow protection valve (dual check valve) to AS/NZS 3500.1.2018.

3 EXECUTION

Conditions

3.1 SITE ACCESS

Transportation on site to the position of the tank is at the risk and responsibility of the contractor. Make provision for manoeuvring and unloading of tank.

3.2 DELIVERY, STORAGE & HANDLING OF PRODUCTS

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

3.3 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.

3.4 PRE-INSTALLATION REQUIREMENTS

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

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Installation - generally

3.5 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

Installation - site

3.6 SITE EXCAVATION FOR ABOVE GROUND TANK

Select level site, free of sharp protrusions. Form solid pad with a bed of sand or concrete, screeded level to a minimum depth of 50mm. Extend pad minimum 500mm past base of tank. On a sloping site excavate fully into bank and provide minimum 600mm clearance from the tank to the base of the cut. Do not place tank on any fill, over in ground pipes, cables or underground structures.

3.7 INSTALL ABOVE GROUND TANK

Position tank on the prepared compacted level base or level platform. Fit seismic restraint straps as directed by structural engineer.

3.8 LAYING AND JOINTING

Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid.

Installation - fittings

3.9 WATER PUMP INSTALLATION

Install pump on a solid base bolted down through base plate. Place weather tight housing over the pump and secure to base. Connect to water supply and power supply.

3.10 WATER TREATMENT SYSTEM INSTALLATION

Install ultraviolet light radiation treatment unit between pump and house to manufacturer's specifications. Connect to power supply provided.

3.11 BACK FLOW PREVENTION DEVICES

Install to AS/NZS 2845.1, to AS/NZS 3500.1.2018 and to NZBC G12/AS1.

Installation - connections

3.12 FIRST FLUSH WATER DIVERTER

Install either adjacent to the tank or underground, first flush water diverter. Connect downpipes from the roof gutter to the first flush water diverter. Connect the first flush diverter to the top of the tank. Refer to manufacturer's installation details.

3.13 FILTER INSTALLATION

Install proprietary in-line filter before the inlet connection.

3.14 INLET CONNECTION

Install inlet pipe into top of tank at manufacturer's designated mounting area using a Uniseal type connection.

3.15 OUTLET CONNECTION

Install pipe to manufacturer's installation details. To the outlet connect a floating arm draw-off to deliver water from 100mm below the surface. From the base connection run a flexible hose to the pump. Install ball valve in line between base connection and water pump. Support all pipework at outlet.

3.16 OVERFLOW PIPE

Install pipe to manufacturer's installation details and connect to approved discharge point or as detailed.

3.17 PIPE SEALS

Insert Uniseals in clean cut holes of the correct size. Insert Uniseal into hole with widespread facing the pipe to be inserted. Lubricate the pipe with detergent and push through the Uniseal. Use only on top of tank connections.

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3.18 RAIN HEAD

Fit rain head to junction between rainwater downpipe and water storage tank inlet pipe.

3.19 TANK LEVEL INDICATOR

Install tank level indicator into top of above ground water storage tank.

3.20 LINKING MULTIPLE TANKS

Link multiple tanks together by the following method:

- Top link - fills tanks individually in series, via overflow pipes. Connect the outlet (to tap) across all tanks (at the bottom; with isolation valve on each.
- Bottom link - fills all tanks in parallel, via bottom inlet. Only one tapping point needed.

Tanks to be sited level with each other.

3.21 RAINWATER-TO-MAINS WATER SWITCHING DEVICE

Install switching device to water storage tank, to divert outgoing water supply from tank-fed to reticulated water main-fed. Make connections for automatic operation.

3.22 ELECTRICAL CONNECTION

Installation to Electricity (Safety) Regulations 2010, and AS/NZS 3000. Allow to connect up water pump and water treatment unit to the power supply as provided.

Completion & commissioning

3.23 COMPLETION MATTERS

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

3.24 POTABLE WATER - ODOUR & TASTE

Ensure that contaminants are not introduced into the water tank. In the event that any odour or taste is noticed, check the catchment area for contaminants such as lichen or deceased animals. New tanks should be flushed out if slight odour or taste is present. First fill of water in tanks to be discarded prior to use. Flush-out tank if odour or taste is still present.

3.25 POST INSTALLATION TESTING

Test and commission the completed system to manufacturer requirements and AS/NZS 3500.1.2018, section 16.5 Testing and Commissioning a Rainwater System . At the completion and testing of the water service, check all valves and other components to confirm their correct performance.

4 SELECTIONS

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

Products

4.1 ABOVE GROUND WATER STORAGE TANK

Location:	Refer to Plans
Manufacturer:	Rotomould Fiji Ltd
Tank material:	Polyethylene
Capacity:	10000 litres
Filter:	In-line cartridge filter housing
Water pump:	TBD

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7123 HOT & COLD WATER SYSTEM

1 GENERAL

This section relates to piped potable water supply systems from the network utility supply authority water main to designated points and appliances, the installation of hot water heating appliances, distributing piped hot water to other appliances, and the installation of valves.

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures and tapware selections.

Documents

1.2 DOCUMENTS

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

NZBC G4/AS1	Ventilation
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water supplies
NZBC G12/AS3	Water supplies
NZBC H1/AS1-AS2	Energy Efficiency
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS/NZS 1477	PVC pipes and fittings for pressure applications
AS/NZS 2032	Installation of PVC pipe systems
AS/NZS 2033	Installation of polyethylene pipe systems
AS 2345	Dezincification resistance of copper alloys
AS/NZS 2492	Cross Linked Polyethylene (PE-X) pipe for pressure applications
AS/NZS 2537.1	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) General
AS/NZS 2537.2	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
AS/NZS 2537.3	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) fitness for purpose of system
AS/NZS 2537.4	Mechanical jointing fittings for use with cross-linked polyethylene (PE-X) for pressure applications. Plastic piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) Guidance for the assessment of conformity
AS/NZS 2642.1	Polybutylene pipe systems - Polybutylene (PB) pipe extrusion compounds
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
AS/NZS 2642.3	Polybutylene pipe fittings - Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation

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AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 3879	Solvent cements and priming fluids for PVC (PVC-U and PVC-M and ABS and ASA pipes and fittings
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
AS/NZS 4129	Fittings for polyethylene (PE) pipes for pressure applications.
AS/NZS 4130	Polyethylene (PE) pipes for pressure applications
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters
NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells.
NZS 4606.3	Storage water heaters. Specific requirements for water heaters with composite shells.
NZS 4607	Installation of thermal storage electric water heaters: valve vented Systems
NZS 4617	Tempering (3-port mixing) valves
AS 4809	Copper pipe and fittings. Installation and commissioning
AS 5200 part 053	Plumbing and drainage products, Stainless steel pipes and tubes for pressure applications.
AS/NZS 5601.1	Gas installations - general installations
AS/NZS 60335.2.35	Household and similar electrical appliances. Safety - Pat 2.35 Particular requirements for instantaneous water heaters

Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

NZ Backflow Testing Standard:	NZ Backflow Testing Standard 2019, Field testing of backflow prevention devices and verification of air gaps

Warranties

1.3 WARRANTY

Provide warranty for:

2 years:	For the supply and installation of the plumbing system and fixtures

- Provide the warranty in the standard form in the general section 1237WA WARRANTY AGREEMENT.
- Commence the warranty from the date of practical completion of the contract works.

Requirements

1.4 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.

1.5 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.6 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

Hot water piping system, with temperature controls where necessary (tempering valve etc), to provide water at the outlet at the following temperatures:

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For personal hygiene fixtures (showers, baths, wash hand basins etc) temperatures to be close to but not to exceed:

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - 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

1.7 TESTING - TO AS/NZS 3500

Test to AS/NZS 3500.1 as modified by NZBC G12/AS3, Section 17, Testing and commissioning, for cold water.

- Test reticulation system to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.1, 17.3.1 Hydrostatic test. Test storage tanks to AS/NZS 3500.1, 17.3.2 Storage tanks (except rain water tanks).

and
AS/NZS 3500.4 as modified by NZBC G12/AS3, Section 9, Testing and commissioning, for hot water.

- Test reticulation system (excluding tanks, water heaters, and some fixtures, valves etc) to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.4, 9.3 Testing. Test complete system (including valves, pumps, water heaters etc) under normal working conditions for a minimum of 48 hours, then check visually, to AS/NZS 3500.4, 9.3 Testing.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2 PRODUCTS

Materials

2.1 POLYBUTYLENE PIPE

To NZBC G12/AS1, 2 Materials. Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched. Protect from sunlight.

2.2 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENTS

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.3 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.

2.4 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 to NZBC G12/AS1.

Materials - Hot water heating appliances

2.5 ELECTRIC HOT WATER HEATER, INSTANTANEOUS TYPE

Instantaneous flow unit complete with required fittings to AS/NZS 60335.2.35.

Components

2.6 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

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3 EXECUTION

3.1 EXECUTION GENERALLY

Generally carry out the whole of this work and tests to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3.

3.2 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.

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.

3.3 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 CONCEAL

Conceal 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 CORROSION

Separate all 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.

3.6 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.

3.7 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.

3.8 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

3.9 EXCAVATE

Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.

Application - Jointing

3.10 JOINTING POLYBUTYLENE PIPE

Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.

Application - Pipework installation

3.11 POTABLE WATER SUPPLY PIPEWORK INSTALLATION

From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to 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 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 hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.

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3.12 HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and 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's requirements and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1.

3.13 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.

3.14 IN-LINE FILTER

Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.

3.15 PENETRATIONS

Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

Application - Hot water systems

3.16 INSTALL ELECTRIC HOT WATER HEATER, INSTANTANEOUS TYPE

To AS/NZS 3500.4.

Install the unit to the manufacturer's requirements, provide isolating valve on cold water feed.

3.17 INSTALL TEMPERING VALVE

Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

Installation - valves

3.18 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.

Completion

3.19 LABEL

Label all pipework with permanent adhesive markers at 3 metre minimum intervals.

3.20 CLEAN IN-LINE FILTER

Clean all in-line filters on completion of works.

3.21 REPLACE

Replace damaged or marked elements.

3.22 LEAVE

Leave work to the standard required by following procedures.

3.23 REMOVE

Remove debris, unused materials and elements from the site.



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4 SELECTIONS

Hot water systems

4.1 ELECTRIC HOT WATER HEATER, INSTANTANEOUS TYPE

Location:	Refer to Plans
Brand:	Bromic
Model:	Instant wall mounted
Max temp:	50ºC

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7123BP BUTELINE PEX PIPING SYSTEM

1 GENERAL

This section relates to Pexline PE-X Hot and Cold Water Plumbing System from Buteline NZ Ltd for domestic, commercial and industrial applications.
It includes:

- 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

1.1 RELATED WORK

Refer to 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES for tapware supply.

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:

DR Brass	Dezincification resistant brass
PEX	Cross-linked polyethylene
PTFE	Polytetrafluroethylene tape or thread seal tape / plumbers tape

Documents

1.3 DOCUMENTS

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

NZBC B2/AS1	Durability
NZBC G4/AS1	Ventilation
NZBC G11/AS1	Gas as an energy source
NZBC G12/AS1	Water Supplies
NZBC G12/AS3	Water Supplies
NZBC H1/AS1-AS2	Energy Efficiency
AS 1432	Copper tubes for plumbing, gas fittings and drainage applications
AS 2345	Dezincafication resistance of copper alloys
AS/NZS 2492	Cross-linked polyethylene (PE-X) pipes for pressure applications
AS/NZS 2537.2	Mechanical jointing fittings for use with cross linked polyethylene (PE-X) for pressure applications - Plastics piping systems for hot and cold water installations - Cross linked polyethylene (PE-X) - Fittings
AS/NZS 2845.1	Water supply - Backflow prevention devices - Materials, design and performance requirements
AS/NZS 2845.3	Water supply - Backflow prevention devices - Field testing and maintenance
AS/NZS 3500.1	Plumbing and drainage - Water services
AS/NZS 3500.4	Plumbing and drainage - Heated water services
NZS 3501	Specification for copper tubes for water, gas and sanitation
AS 3688	Water supply and gas systems - metallic fittings and end connectors
AS/NZS 4020	Testing of products for use in contact with drinking water
AS 4032.2	Water supply - Valves for the control of heated water supply temperatures - Tempering valves and end-of-line temperature actuated devices
NZS 4305	Energy efficiency domestic type hot water systems
NZS 4602	Low pressure copper thermal storage electric water heaters

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NZS 4606.1	Storage water heaters. General requirements
NZS 4606.2	Storage water heaters. Specific requirements for water heaters with single shells.
NZS 4606.3	Storage water heaters - Specific requirements for water heaters with composite shells
NZS 4607	Installation of thermal storage electric water heaters: valve vented systems
NZS 4617	Tempering (3-port mixing) valves
NZS 4809	Copper pipe and fittings. Installation and commissioning
AS/NZS 5601.1	Gas installations - General installations
AS/NZS 60335.2.35	Household or similar electrical appliances Safety Part 2.35 Particular requirements for instantaneous water heaters

NZ Backflow Testing Standard.
Gas (Safety and Measurement) Regulations 2010
Plumbers, Gasfitters and Drainlayers Act 2006

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

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

Bute-Pexline Plumbing Systems - Plumbers Technical & Installation Manual
Bute-Pexline - Product Wall Chart

Manufacturer/supplier contact details

Company:	Buteline NZ Ltd
Web:	www.buteline.com / www.pexline.com
Email:	paul.carrington@buteline.com
Telephone:	0-9-273 5800 or 0800 BUTELINE

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

25 years	For Pexline PE-X Plumbing System and associated accessories.

- 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 manufacture.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

2 years	For the installation of hot & cold water 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

1.7 QUALIFICATIONS

Workers or supervisors of work are required to be certified or similar under the Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.8 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Pexline Plumbing Systems, components associated products listed in this section.

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1.9 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.

1.10 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

1.11 HOT WATER TEMPERATURES

To NZBC G12/AS1, 6.14

Storage water heaters to store water at not less than 60ºC.

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:

- 45ºC - for early child hood centres, schools, elderly facilities, hospitals, psychiatric or disabled institutions.
- 50ºC - 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

1.12 SYSTEM DESIGN

Planning and installation of Pexline Plumbing System is to comply with NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 and the Pexline Plumbers Technical & Installation Manual.

1.13 TESTING - TO NZBC G12/AS1

Test to NZBC G12/AS1, 7.6, Watertightness, for hot and cold water.

- Test to a pressure of 1500 kpa for period not less than 15 minutes.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

1.14 TESTING - TO AS/NZS 3500

Test to AS/NZS 3500.1 as modified by NZBC G12/AS3, Section 17, Testing and commissioning, for cold water.

- Test reticulation system to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.1, 17.3.1 Hydrostatic test. Test storage tanks to AS/NZS 3500.1, 17.3.2 Storage tanks (except rain water tanks).

and

AS/NZS 3500.4 as modified by NZBC G12/AS3, Section 9, Testing and commissioning, for hot water.

- Test reticulation system (excluding tanks, water heaters, and some fixtures, valves etc) to a pressure of 1500 kpa for period not less than 30 minutes, to AS/NZS 3500.4, 9.3 Testing. Test complete system (including valves, pumps, water heaters etc) under normal working conditions for a minimum of 48 hours, then check visually, to AS/NZS 3500.4, 9.3 Testing.

Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed.

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Slowly fill service pipes with water to exclude air. Test and ensure there is no measurable loss of pressure for the minimum period. Slowly fill distribution pipes with water to exclude air. Ensure that with draw-off taps closed the system must remain water-tight.

2 PRODUCTS

Materials

2.1 PEXLINE - CROSS LINKED POLYETHYLENE PIPE

Pexline PE-X, cross-linked polyethylene tubing to AS/NZS 2492 and fittings to AS/NZS 2537.2 complete with brand matched accessories to the pipe manufacturer's requirements with durability to NZBC B2/AS1, table 1 and to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 . Complies with AS/NZS 4020 Food grade standard.

2.2 PEXLINE - RED CROSS LINKED POLYETHYLENE PIPE FOR HOTWATER

Pexline PE-X, cross-linked polyethylene red tubing to AS/NZS 2492 and fittings to AS/NZS 2537.2 complete with brand matched accessories to the pipe manufacturer's requirements with durability to NZBC B2/AS1, table 1 and to NZBC G12/AS1 or AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 for hot water applications. Complies with AS/NZS 4020 Food grade standard.

2.3 FITTINGS

Pexline range of one-piece fittings to AS/NZS 2537.2. Brass fittings in range are made from solid DZR brass. Refer to Pexline Product Chart for range.

2.4 DE-ZINCIFICATION RESISTANT WATER SUPPLY SYSTEM COMPONENT

All copper alloy components to comply with G12/AS1 clause 2.2.3 and AS 2345.

2.5 FIXINGS AND TOOLS

Brackets, conduit, pipe supports, clips and Pexline ProClamp tools are available for system installation. Refer to Pexline Product Chart for range.

Materials - hot water heating appliances

2.6 ELECTRIC BOILING CYLINDER, WALL MOUNTED

To NZS 4305, wall-mounted boiling water heater in pre-finished cabinet, complete with tap draw off.

Components

2.7 WATER METER

To the requirements of the network utility operator.

2.8 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.

2.9 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845.1 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12 AS/1, 3.4 Backflow protection, 3.5 Containment Backflow protection, table 2, Selection of Backflow Protection and table 2A Containment Backflow Protection.

2.10 TEMPERING VALVE

Tempering valve to NZS 4617 or AS 4032.2 and to NZBC G12/AS1.

2.11 HEADER TANKS

Pre-formed black polyethylene complete with access opening and lid and overflow tray.

2.12 EXPANSION VESSEL

Expansion vessel to NZBC G12/AS, 6.6.7 Expansion Vessels or AS/NZS 3500.4 5.9 Valves and expansion vessels.

2.13 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

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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, stacked to eliminate movement and away from work in progress.

Store fittings and 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 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 CONCEALED

Concealed pipework within the fabric of the building unless detailed otherwise.

3.4 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.

3.5 IN GROUND PIPE INSTALLATION

The requirements of AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, 7.4.2 Pipes below ground level, for below ground installations to be followed.

If jointing underground, wrap the Pexline fittings aluminium rings completely using inert waterproofing insulation tape. In areas of corrosive soils, the aluminium and brass metallic surface of Pexline fittings must be continuously and completely wrapped using inert waterproofing insulation tape.

3.6 CORE HOLES AND SLEEVES

Review location and fit core holes, pipe sleeves or conduit pipe as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Ensure pipe sleeves & conduit pipes are large enough to ensure free movement of piping system. Strip core holes and make good after installation of pipework.

Pexline PE-X installed in concrete slabs and footing must have no joints. For Pexline PE-X installed in concrete/masonry walls, if jointing is necessary wrap the Pexline fittings aluminium rings completely using inert waterproofing insulation tape.

3.7 UV PROTECTION FOR INSTALLED PIPEWORK

Adequately protect Pexline PE-X pipes from direct exposure to UV light where installed on the buildings exterior. Copper tube does not require UV protection.

3.8 CORROSION

Separate all 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.

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.

3.10 PIPE SIZE

Flow rates to each outlet to be no less than those given in AS/NZS 3500.1 section 3 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures and pipe size as determined in table 4, Tempering valve and nominal pipe diameters.

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3.11 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

Application - pipework installation

3.12 PIPEWORK INSTALLATION - GENERALLY

Generally carry out the whole of this work to AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1 as required. Install Pexline PE-X system in accordance with Pexline Plumbers Technical & Installation Manual.

Ensure Pexline PE-X pipework is clean, free from grease, other contaminants, kinks, buckled sections and any deep scores. Pexline PE-X pipework should be installed to allow for a minimum of 10mm per metre expansion and contraction. Pexline PE-X pipework should be installed ensuring any bending radius is at least 10 times the outside diameter of pipe. It is recommended that Pexline Pipe Bend Supports are used for hotwater pipe bends to prevent possible kinks in pipework. For sharp bends use Pexline fittings.

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.water meter.

Install all below ground items such as main isolating valves and water meters in preformed concrete pits or approved equivalent.

3.14 BUILDING ISOLATING VALVE

Install an isolating valve in an accessible position at the point of entry to the building.

3.15 WATER SUPPLY PIPEWORK INSTALLATION

From connection point run Pexline PE-X pipes complete with all Pexline fittings, supports, fixings and necessary valves in accordance with the manufacturer's documents. Size the pipes and branches in straight runs to deliver the acceptable flow rate to 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 at each outlet. Pipework support clip spacing in accordance with manufacturer's requirements to be firmly fixed and buffered to eliminate noise and water hammer. Conceal pipework and pressure test before the wall linings are fixed.

Do not install PE-X cross linked polyethylene pipe for flow and return piping to any solar or split system heat pump water heating systems, or any other uncontrolled heat sources such as between wetbacks & cylinders. Do not install PE-X cross linked polyethylene pipe within 1m of hot water cylinders. Pexline PE-X can be used downstream of a tempering valve.

3.16 PENETRATIONS

Bored holes in timber shall be large enough to allow free movement of Pexline PE-X pipework. Allow minimum 20mm diameter hole form 16mm pipework, 25mm diameter hole form 20mm pipework and 32mm diameter hole form 25mm pipework. Larger holes may be required where pipework is changing direction. Use of silicone sealant is not required but where used ensure natural cure sealant is used.

Ensure pipe sleeves & conduit pipes are large enough to ensure free movement of piping system.

Application - jointing

3.17 JOINTING PEXLINE PE-X PIPES

Use Pexline fittings to join Pexline PE-X pipework installed in accordance with manufacturer's requirements. Position fitting onto pipework, fully insert and ensure full engagement of pipe into fitting. Ensure Pexline clamp is positioned squarely over fitting and close clamp completely for 2 seconds. Check full clamp has been achieved, do not double clamp fittings.

3.18 PEXLINE THREADED CONNECTIONS

Install Pexline treaded connections in accordance with manufacturer's requirements. Use a small amount of PTFE pipe thread tape and wrap correctly onto male thread connection.

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3.19 PEXLINE SWIVEL CONNECTIONS

Install Pexline swivel connections in accordance with manufacturer's requirements. No PTFE pipe thread tape or sealant is required.

3.20 JOINTING PEXLINE PE-X PIPES TO COPPER PIPE

Slide the Pexline fitting brazing tail socket onto copper pipe, ensuring fitting aluminium & polymer clamp ring has been removed. Using suitable flux and SilFos make joint between fitting and pipe. Allow solder to fully cool, then slide the Pexline fitting aluminium clamp assembly onto the fitting and insert Pexline PE-X pipework, fully insert and ensure full engagement of pipe onto fitting. Ensure Pexline clamp is positioned squarely over fitting and close clamp completely for 2 seconds. Check full clamp has been achieved, do not double clamp fittings.

Application - hot water systems

3.21 INSTALL WALL-MOUNTED BOILING CYLINDER

Install to the cylinder manufacturer's stated requirements. Locate where shown.

3.22 INSTALL TEMPERING VALVE

Install in accordance with manufacturer's requirements. Install one metre minimum from outlet of hot water cylinder using copper piping. Pexline PE-X can be used downstream of tempering valve.

3.23 INSTALL HOT WATER PIPEWORK

Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to AS/NZS 3500.4 as modified by NZBC G12/AS3 or NZBC G12/AS1, table 9 Water supply pipework support spacing. Pipework support spacing to be firmly fixed and buffered to eliminate noise and water hammer, complete with all required Pexline fittings and necessary valves.

Insulate all hot water pipes to NZBC H1/AS1-AS2 Energy Efficiency, AS/NZS 3500.4, 8.2 Thermal Insulation, and to the insulation manufacturer's instructions.

3.24 INSTALL EXPANSION VESSEL

Install expansion vessel to NZBC G12/AS, 6.6.7 Expansion Vessels or AS/NZS 3500.4, 5.9 Valves and expansion vessels.

Installation - tapware

3.25 INSTALL ADDITIONAL ISOLATING VALVES - CONCEALED

Install additional isolating valves in an accessible and visually discrete position adjacent to or near by the specific fixture to allow for easy connection and operation. When the building is divided into zones, ensure an isolating valve is installed in each zone.

3.26 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.

3.27 INSTALLING TAPWARE

Install tapware supplied under 7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES. Install in accordance with the manufacturer's requirements.

Completion & Commissioning

3.28 COMPLETION - TESTS TO NZBC G12/AS1

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.

Complete all tests to NZBC G12/AS1, 7.56, Watertightness, for hot and cold water.

3.29 COMPLETION - TESTS TO AS/NZS 3500

Refer to 1270 CONSTRUCTION for general test and certification requirements at completion.



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Complete all tests to AS/NZS 3500.1 as modified by NZBC G12/AS3, Section 17, Testing and commissioning, for cold water, AS/NZS 3500.4 as modified by NZBC G12/AS3, Section 9, Testing and commissioning, for hot water and 9.3 Testing. Test complete system.

4 SELECTIONS

For further details on selections go to www.buteline.com / www.pexline.com.
Substitutions are not permitted to the following, unless stated otherwise.

Water main

4.1 PEXLINE PE-X WATER MAIN

Type:	Pexline PE-X cross linked polyethylene pipe
Size:	20mm

Pipework

4.2 PEXLINE PE-X CROSS LINKED POLYETHYLENE PIPE

Branch off take:	16mm
Branch main:	20mm
Main:	25mm

4.3 PEXLINE PE-X CROSS LINKED RED POLYETHYLENE PIPE FOR HOT WATER

Branch off take:	16mm
Branch main:	20mm

Hot water systems

4.4 ELECTRIC BOILING CYLINDER, WALL MOUNTED

Brand:	Rinnai

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7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES

1 GENERAL

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

1.1 RELATED WORK

Refer to 7120 or 7123 HOT AND COLD WATER SYSTEM for hot water cylinders.

Refer to 7420 or 7421 SANITARY SYSTEMS for the supply and fitting of waste disposal pipework Refer to the electrical section/s for electrical connection of accessories.

Documents

1.2 DOCUMENTS

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

NZBC E3/AS1	Internal moisture
NZBC F2/AS1	Hazardous building materials
NZBC G1/AS1	Personal hygiene
NZBC G12/VM1	Water supplies
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water
NZBC G13/AS3	Plumbing and drainage
AS/NZS 1730	Washbasins
AS/NZS 2023	Baths for ablutionary purposes
AS/NZS 3500.1: 2018	Plumbing and drainage - water services
AS/NZS 3500.2: 2018	Plumbing and drainage - sanitary plumbing and drainage
AS/NZS 3662	Performance of showers for bathing
NZS 4223.3	Glazing in buildings - Human impact safety requirements
Plumbers, Gasfitters and Drainlayers Act 2006	

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.

Warranties

Requirements

1.3 QUALIFICATIONS WORKERS – INDUSTRY QUALIFICATION REQUIREMENTS

Workers or supervisors of work are required to be a Certifying Plumber under the Plumbers, Gasfitters and Drainlayers Act 2006. Refer to 1270 CONSTRUCTION for additional requirements relating to qualifications.

1.4 SUPPLIER

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

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2 PRODUCTS

2.1 SANITARY FIXTURES

Refer to SELECTIONS for product selection.

2.2 TAPWARE

Refer to SELECTIONS for product selection.

3 EXECUTION

Conditions - sanitary fixtures

3.1 DELIVERY

Only deliver to the site fixtures or fittings that can be immediately unloaded into suitable storage or be placed for direct installation.

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 water supply and drainage pipework match the requirements of selected fixtures without force or distortion.

Installation/application

3.4 STANDARDS AND TOLERANCES

Refer to the general section 1270 CONSTRUCTION for general requirements.

3.5 INSTALLATION REQUIREMENTS INCLUDING AS/NZS 3500.2

Install to NZBC G1/AS1, AS/NZS 3500.1 and AS/NZS 3500.4 as modified by NZBC G12/AS3, NZBC G12/AS1, NZBC E3/AS1, AS/NZS 3500.2, as modified by NZBC G13/AS3, and to the fixture manufacturer's installation requirements for each component.

3.6 STORAGE AND HANDLING

Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.

3.7 QUALITY STANDARDS INCLUDING AS/NZS 3500.2

Installation work to comply with NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, AS/NZS 3500.2: 2018, as modified by NZBC G13/AS3, and the fixture manufacturer's requirements.

3.8 SUBSTRATE

Ensure substrate and fixings will allow work of the specified standard.

3.9 CO-ORDINATION

Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.

3.10 INSTALLATION SANITARY FIXTURES

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of all required slurries/bedding and sealants in sequence.

Fit the sanitary fixture in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant.

Seal between all sanitary fixtures and floors, wall linings, fixtures and the tops they are in, the tops and wall linings, to NZBC E3/AS1, 3.2. Fixtures include toilets, urinals, baths, basins, tubs, sinks. Tops include, vanities, bath surrounds, sink benches, etc, and their upstands. Form joint or seal between shower bases or urinals and impervious wall linings to NZBC E3/AS1, 3.3.



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3.11 PROVIDE SUPPORT

Confirm fixing points needed for each unit and provide solid blocking at each fixing bracket location.

3.12 EARTHING OR EQUIPOTENTIAL BONDING METALLIC FIXTURES

If it is an electrical requirement, before installation or enclosing, ensure at-risk metallic sanitary fixtures are earthed or equipotential bonded (or at least conductor cable attached) to NZBC G12/AS1, 9.0.

Conditions - tapware

3.13 RETAIN

Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.

3.14 STORE

Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

Installation - sanitary fixtures

3.15 INSTALLING TOILET PAN

Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries/bedding and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component. Fixings to be corrosive resistant. Fit seat.

3.16 INSTALLING CISTERNS

Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

Installation - Basins

3.17 INSTALLING VANITIES - INTEGRAL BASINS

Install in accordance with the manufacturer's requirements. Connect to supply and drains through trap to the drainage system. Seal top and upstand to wall surface to comply with NZBC E3/AS1.

Installation - Showers

Installation - Sinks

3.18 INSTALLING SINK BENCHES

Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.

Installation - Miscellaneous

3.19 INSTALLING STAINLESS STEEL FIXTURES

Carry out preparatory work and fit elements in position plumb, level, flush and rigid without stressing the attachment points in sequence. Connect to supply and drainage services.

Application - tapware

3.20 GENERAL

To AS/NZS 3500.1: 2018 and in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1.

Completion

3.21 COMPLETION MATTERS

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



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3.22 REPLACE

Replace damaged or marked elements.

3.23 PROTECTIVE COVERINGS

Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coverings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.

3.24 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

4.1 TOILET

Location:	Refer to Plans
Toilet pan:	Raymore back to wall suite
Trap type:	S trap
Flush system:	Close coupled cistern

4.2 URINAL

Location:	Refer to Plans
Urinal make/model:	Carona Urinette

4.3 VANITY UNIT - INTEGRAL BASINS

Location:	Refer to Plans
Vanity:	Raymore project 750mm 1Dr 3 DRW
Colour:	TBD
Taps/mixer:	Basin Mixer Raymore Avon
Waste/plug:	Pop-up
Trap:	P/S trap PVC

4.4 KITCHEN SINK BOWL

Location:	Refer to Plans
Sink bowl model:	Stainless Steel Single Bowl
Mixer:	Kitchen Mixer Raymore Avon
Waste/plug:	Chromed Brass
Trap:	P/S trap PVC

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7411MA MARLEY RAINWATER DISPOSAL SYSTEMS

1 GENERAL

This section relates to **Marley** rainwater disposal systems.
It includes;

- uPVC spouting and downpipes
- Stratus Design Series® spouting and downpipes
- associated accessories necessary to complete the installation

1.1 RELATED WORK

Refer to ~ for ~

Documents

1.2 DOCUMENTS

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

NZBC E1/AS1	Surface water
NZBC E2/AS1	External moisture
AS/NZS 3500.3	Plumbing and Drainage - Stormwater drainage
AS/NZS 4020	Testing of products for use in contact with drinking water

1.3 MANUFACTURER/SUPPLIER DOCUMENTS

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

Marley Rainwater Sales Brochures
Marley Product Catalogue
Marley - Spouting and Downpipe DIY Installation Guide
Marley Stratus Design Series® Sales brochure
Marley Stratus Design Series® - Design and installation guide

Manufacturer/supplier contact details

Company:	**Marley New Zealand Limited**
Web:	www.marley.co.nz
Email:	info@marley.co.nz
Telephone:	0800 MARLEY (0800 627 539)

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier Guarantee:

15 years:	Against defects in material and manufacture

- Commence the guarantee from the date of purchase
- Refer to Marley NZ Guarantee available at www.marley.co.nz

Refer to the general section 1237 WARRANTIES for additional requirements.

1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years:	For installation

- When installed to Marley's published installation instructions at time of installation.
- Provide this warranty on the installer/applicator standard form.
- Workmanship warranty to be issued separately by the installer
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

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Requirements

1.6 QUALIFICATIONS

Installers to be experienced, competent workers familiar with the materials and techniques specified.

1.7 NO SUBSTITUTIONS

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

Performance

1.8 TEST

Test the completed Marley rainwater disposal system with water to ensure, spouting is laid to correct fall, that both spouting and downpipes are unobstructed and that no ponding occurs in spouting.

1.9 DESIGN - NZBC E1/AS1

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with NZBC E1/AS1.

1.10 DESIGN - AS/NZS 3500.3 & NZBC E1/AS2

Layout, falls and capacity of spouting to falls and the size and position of downpipes to comply with AS/NZS 3500.3 as modified by NZBC E1/AS2.

1.11 DRINKING WATER

All Marley spouting and downpipe systems are tested for the collection of rainwater and drinking purposes to AS/NZS 4020. Care should be taken to ensure water is not contaminated by other sources.

2 PRODUCTS

Materials

2.1 UPVC SPOUTING/DOWNPIPES

Marley uPVC spouting and downpipe systems in white and grey uPVC.

Products

2.2 MARLEY SPOUTING

Marley spouting system, complete with Marley fittings including jointers, brackets, expansion outlets, end caps and corners supplied by Marley. Refer to SELECTIONS for type.

Components

2.3 MARLEY MCS SOLVENT WELDING CEMENT

Only Marley MCS® Solvent Welding Cement to be used in conjunction with the spouting and downpipe systems to manufacturer's instructions. Colour match to spouting or downpipes.

2.4 EXPANSION OUTLET/DROPPERS

Marley expansion outlet/droppers, compatible with spouting and downpipe profile.

2.5 SCREW FIXINGS - TIMBER FASCIA

Stainless steel, grade 304 finish, self tapping screws 6g x 20mm pan head or wafer head.

2.6 NAIL FIXINGS - TIMBER FASCIA

Marley galvanised nails (MCNAILS).

2.7 FABRICATION

Special items can be fabricated by Marley to specific dimensions on request including but not limited to angle flats, angle rakes, outlets and adaptors.

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3 EXECUTION

Conditions

3.1 HANDLING AND STORAGE

Handle and store Marley downpipes, spouting 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. Store out of direct sunlight. Refer to Marley installation guides for further details.

3.2 SUBSTRATE

Check that fascias, barges or cladding are level and true to line and face and will allow work of the required standard without distortion to the product alignment. Do not proceed until they are up to standard.

3.3 THERMAL MOVEMENT

Make adequate provision in the jointing of the spouting for thermal movement in the length of the spouting by using Marley expansion joiners and/or expansion outlets. Refer to Marley expansion technical information.

3.4 ENVIRONMENTAL

Marley Spouting and Downpipe systems are suitable for most environmental conditions and will never rust, rot or corrode.

3.5 RECYCLING

All Marley manufactured spouting and downpipe systems are 100% recyclable and Marley operates recycling programs with industry suppliers where uPVC pipes can be returned from site for recycling at Marley.

Application

3.6 INSTALL MARLEY SPOUTING

Install to Marley's current published installation instructions available at www.marley.co.nz. Ensure only Marley MCS® Solvent Welding Cement to be used in conjunction with the spouting systems to manufacturer's instructions. From high points fix brackets true-to-line to give a fall of 5mm every 10 metres to outlets. Set spouting brackets at 500mm centres; reduce to 300mm spacing for high wind zones or areas subject to occasional snowfalls. Make adequate provision for thermal movement.

Completion

3.7 REPLACE

Replace damaged or marked elements.

3.8 LEAVE

Leave the whole of this work discharging completely and freely into the stormwater system and free of all debris. Leave work to the standard required by following procedures.

3.9 REMOVE

Remove debris, unused materials and elements from the site.

4 SELECTIONS

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

uPVC system - spouting

4.1 MARLEY UPVC SPOUTING - MAGNUM®

Manufacturer:	Marley
Profile/type:	Marley Magnum® half-round
Size:	189mm
Cross section:	14,300mm²
Colour:	Grey
Bracket type:	External

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7421 SANITARY SYSTEMS

1 GENERAL

This section relates to above ground gravity flow sanitary systems;

- for foul water
- from sanitary fixtures to first underground drain connection
- including system wastes, floor wastes, floor waste gullies, traps, vents and valves
- with associated components and accessories to make the system work

1.1 RELATED SECTIONS

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for sanitary fixtures.

Refer to 7123 HOT AND COLD WATER SYSTEM for potable water systems.

Documents

1.2 DOCUMENTS REFERRED TO

Documents referred to in this section are:

NZBC G1/AS1	Personal hygiene
NZBC G12/AS1	Water supplies
NZBC G13/AS1	Foul water - Sanitary plumbing
NZBC G13/AS3	Foul water - Sanitary plumbing and drainage
AS 1589	Copper and copper alloy waste fittings
AS 2887	Plastic waste fittings
AS/NZS 1260	PVC-U pipes and fittings for drain, waste and vent applications
AS/NZS 2032	Installation of PVC pipe systems

AS/NZS 3500.2: 2018 Plumbing and drainage - Sanitary plumbing and drainage

Plumbers, Gasfitters and Drainlayers Act 2006

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.

Requirements

1.3 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.

1.4 PIPEWORK LAYOUTS

Refer to Plans

1.5 OPERATION AND MAINTENANCE MANUALS

Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

Performance

1.6 TESTING

Confirm timing before carrying out any tests. Supply potable water and apparatus needed. Test to NZBC G13/AS1 or AS/NZS 3500.2: 2018, 15 as required. Carry out and record a visual inspection that each joint showed no evidence of leaks.

2 PRODUCTS

Materials

2.1 PVC-U WASTE PIPES AND TRAPS

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements, all brand matched.

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2.2 PVC-U VENT PIPE

To AS/NZS 1260, complete with fittings and accessories to the pipe manufacturer's requirements and all brand matched.

Components

2.3 PROTECTIVE TAPE

Plasticised PVC tape system with primer, mastic fixing and outer coating.

3 EXECUTION

Conditions

3.1 EXECUTION GENERALLY - AS/NZS 3500.2: 2018

Carry out this work to AS/NZS 3500.2: 2018, as modified by NZBC G13/AS3, and complete all tests to AS/NZS 3500.2: 2018, 15 Testing of Sanitary Plumbing and Sanitary Drainage Installations.

3.2 ELECTROLYTIC ACTION

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

3.3 EQUIPOTENTIAL BONDING METALLIC WASTE PIPES

If it is an electrical requirement, before enclosing, ensure metallic waste pipes connected to metallic drains and attached metallic sanitary fixtures are equipotential bonded (or at least conductor cable attached) similar to NZBC G12/AS1, 9.0.

3.4 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.

3.5 SETTING OUT

Set out location of all stacks, discharge pipes, fittings and vent pipes and the completeness of their discharge into the drainage system.

3.6 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.

3.7 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.

3.8 FITTINGS ACCESS

Fit and fix traps and wastes to enable access for cleaning and for maintaining the total system.

3.9 CONFIRM LOCATIONS

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.

3.10 TRAPS AND WASTES

Conceal traps and wastes in the fabric of the building unless detailed otherwise. Fit and fix satin chrome plated exposed pipes, traps and wastes unless detailed otherwise.

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for locations and types of traps.

3.11 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.

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Application - jointing

3.12 JOINTING PVC-U PIPE

Prime and solvent weld joints using spigots and sockets, flanged joints and seal ring compression joints to AS/NZS 2032.

Application - fixing

3.13 THERMAL MOVEMENT

Accommodate longitudinal movement in pipes resulting from temperature changes. Incorporate expansion joints in copper and PVC-U pipes. Install PVC pipes to AS/NZS 2032. Take particular care to allow for movement at horizontal take-off locations from stacks.

3.14 TRAPS AND FIXTURE DISCHARGE PIPES - AS/NZS 3500.2: 2018

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 AS/NZS 3500.2: 2018, table 3.3.1, for fixture loading and AS/NZS 3500.2: 2018, table 10.2.1, distance between supports.

3.15 DISCHARGE STACKS AND VENTS - AS/NZS 3500.2: 2018

Size stacks and vents to AS/NZS 3500.2: 2018, table 6.3(A), for fixture discharge pipe sizes and discharge units and AS/NZS 3500.2: 2018, table 3.9.3.1, vent pipe sizes. Extend up past the highest branch to form a discharge stack vent terminating to AS/NZS 3500.2: 2018, section 6.9 **Vents**, and finishing at the base with a 45 degree bend. Support system to AS/NZS 3500.2: 2018, table 10.2.1, for distances between supports.

3.16 FLASH ROOF PENETRATIONS

Flash or arrange for roofer to flash all penetrations to NZBC E2/AS1.

For profiled metal roofs, fit proprietary EPDM pipe collar flashings to NZBC E2/AS1, 8.4.17 Roof Penetrations, and manufacturer's requirements.

Completion

3.17 REPLACE

Replace damaged or marked elements.

3.18 LEAVE

Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following procedures.

3.19 REMOVE

Remove debris, unused materials and elements from site.

4 SELECTIONS

4.1 SANITARY SYSTEMS - PVC-U WASTE PIPES AND TRAPS

Location:	Refer to Plans
Manufacturer/Brand:	Marley

4.2 SANITARY SYSTEMS - PVC-U VENT PIPE

Manufacturer:	Refer to Plans
Brand:	Marley

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7431 DRAINAGE COMMON REQUIREMENTS

1 GENERAL

This section relates to common requirements to do with the supply and laying of gravity subsoil, surface water and foul water drains.

1.1 RELATED WORK

Refer to 7411MA Marley Rainwater Disposal Systems

Documents

1.2 DOCUMENTS

Documents referred to in this and the above sections are:

NZBC E1/AS1	Surface water
NZBC E1/AS2	Surface water
NZBC G13/AS2	Foul water
AS/NZS 3500.3: 2018	Plumbing and drainage - Stormwater drainage
NZS 3604	Timber-framed buildings
NZS 4229	Concrete masonry buildings not requiring specific engineering design
WorkSafe	Good Practice Guidelines - Excavation Safety

Plumbers, Gasfitters and Drainlayers Act 2006
Health and Safety at Work Act 2015
Health and Safety at Work (Hazardous Substances) Regulations 2017

Requirements

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.

1.4 INFORMATION FOR OPERATION AND MAINTENANCE

Supply maintenance manual information to requirements set out in the general section 1239 OPERATION & MAINTENANCE.

1.5 AS BUILT DOCUMENTS

Supply as-built drawings to requirements set out in the general section 1238 AS BUILT DOCUMENTATION.

Performance

1.6 SITE MEETING

Meet with the territorial authority drainage inspector to confirm the drainage layout in relation to site conditions. Confirm changes resulting and seek written site instruction before carrying out any work.

1.7 CHECK LOCATION

Check the location of existing on and off-site, private and public services with the network utility operator. Follow their requirements for safety and protection where laying drainage.

1.8 SITE CONDITIONS

Before starting work check on site the drainage layout, dimensions, levels and invert levels and ensure that line, level, falls and cover are correct.

1.9 ADJOINING PROPERTIES

Take precautions to protect adjoining property from damage or risk of damage arising from excavation and drainage work.

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1.10 SAFETY

To the Health and Safety at Work Act 2015.

Carry out excavation and trenching to WorkSafe, Good Practice Guidelines - Excavation Safety. Prevent material rolling into trenches.

1.11 EXPLOSIVES

Do not use explosives except with the written approval of the territorial authority / WorkSafe. Comply with their safety requirements and use construction blasters holding a current, appropriate Approved Handler Certificate and Controlled Substance Licence issued by WorkSafe, to the Health and Safety at Work (Hazardous Substances) Regulations 2017.

1.12 TESTS

Using the method agreed with the territorial authority inspector, test and inspect pipelines before backfilling to ensure required acceptance levels are achieved. Test again after backfilling to confirm acceptance levels and for final acceptance of the works.

Refer to RELATED WORK sections for specific requirements.

1.13 RECORDS

Records to be kept of all tests.

2 PRODUCTS

2.1 PRODUCTS

Refer to the RELATED WORK sections for products.

3 EXECUTION

Application

3.1 EXCAVATION

Open not more than 120 metres of trench at any one time. Excavated trench to a minimum width of pipe diameter plus 300mm. Do not batter or cut the trench wider above the top of the pipe.

For deep excavation, trench width to be sufficient to provide safe access and to accommodate shoring to WorkSafe, Good Practice Guidelines - Excavation Safety. Width of bottom of trench up to 300mm above top of pipe to be pipe diameter plus 300mm.
Maintain free of water and free of all falling material.

3.2 TEMPORARY BRIDGES

Provide temporary bridges over trenches to prevent heavy construction traffic damaging pipes after backfilling.

3.3 CLEAN

Clean and flush out the whole installation and remove all silt and debris before handing over.

Completion

3.4 REPLACE

Replace damaged or marked elements.

3.5 LEAVE

Leave work to the standard required by following procedures.

3.6 REMOVE

Remove debris, unused materials and elements from the site.

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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:

NZBC F7/AS1	Warning systems
NZBC G9/AS1	Electricity
AS/NZS 1125	Conductors in insulated electric cables and flexible cord
AS/NZS 2201.1	Intruder alarm systems - Client premises - Design, installation, commissioning and maintenance
AS/NZS 3000	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3008.1.2	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions
AS/NZS 3100	Approval and test specification - general requirements for electrical equipment
AS/NZS 3112	Approval and test specification - Plugs and socket-outlets
AS/NZS 3133	Approval and test specification - Air-break switches
AS/NZS 3190	Approval and test specification - Residual current devices (current-operated earth - leakage devices)
AS/NZS 3439.3	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
AS 3786	Smoke alarms using scattered light, transmitted light or ionization
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings

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NZS 4514:2009	Interconnected smoke alarms for houses
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	600 series
PDL	PDL Iconic Essence Series
PDL	Modena 800 series
PDL	PDL Pro Series
PDL	Electrical Solutions Guide
PDL & Clipsal	Catalogue and Price Guide
Clipsal	C2000 Series
Clipsal	Saturn Series
Schneider Electric	C-Bus Home Control

Manufacturer/supplier contact details

Company:	**Schneider Electric New Zealand Ltd**
Web:	www.pdl.co.nz www.clipsal.com www.schneider-electric.co.nz
Email:	sales@nz.schneider-electric.com
Telephone:	0800-652-999

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
2 years	Warranty applies to C-Bus materials under normal environmental and use conditions against failure of materials and execution

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4 years	Warranty applies to C-Bus materials under normal environmental and use conditions against failure of materials and execution, if installer is SENZ approved

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 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.

1.9 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.

1.10 INSPECTIONS

Producer Statements PS1 and PS3 are required	

2 PRODUCTS

2.1 MAINS SUPPLY

Tough plastic sheathed neutral screened cable to AS/NZS 5000.2 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.

2.2 CABLES

Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm², 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: 1.0mm² on 10 amp MCBs
Power circuits:	2.5mm² on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction
	2.5mm² on 16 amp MCBs for domestic insulated construction, or filled cavity
	2.5mm² on 20 amp MCBs for unenclosed or unfilled cavity construction

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	2.5mm² on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres
Range circuits:	Single phase: 6mm² 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).

2.3 METER BOX

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

2.4 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.

2.5 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.

2.6 WALL BOXES

Single grid size or equivalent to be manufactured from either plastic or metal, with 2 or more gang sizes to be manufactured in metal.

2.7 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).

2.8 SWITCH UNITS - ICONIC SERIES / ICONIC STYL / ICONIC ESSENCE

Single pole switches to be 10 Amp minimum rated, double pole or intermediate to be 10 Amp minimum rated. All switches to be 230 Volt AC polycarbonate flush-plate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units, locator units and 2 way units.

2.9 SWITCHED SOCKET UNITS

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3133, AS/NZS 3100, and AS/NZS 3112, single or multi gang as detailed.
For mounting height and orientation, refer to SELECTIONS.

2.10 SMOKE ALARMS

Type 1 domestic smoke alarm to NZBC F7/AS1. 1.2 Descriptions of alarm systems. Alarm to AS 3786. A wired 230 volt ionised smoke detector type.

2.11 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.

2.12 TV CABLING

75 Ohm co-axial TV cable with television socket outlet.

2.13 TV AERIAL

Aerial suitable for both VHF and UHF reception of all local free-to-air broadcast channels.

2.14 SUSPENDED FITTING CHORD

Suspended fittings to have sheathed round flexible cord to AS/NZS 3008.1.2. Refer to SELECTIONS.

2.15 LIGHT FITTINGS

Install LED fittings – dimmable where desired. Ensure control gear is suitable for dimming if this is required.

2.16 RECESSED LIGHT FITTINGS - RESIDENTIAL

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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.

2.17 EXTRACT FANS

Ceiling or Wall mounted extract/exhaust fans for controlled replacement of surrounding air, and compliant with AS/NZS 60335.1, externally ducted.

2.18 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

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.

Installation

3.3 MAIN SUPPLY

Lay underground mains to the network utility operator requirements. Excavate trench, install cable and marker tape and backfill.

3.4 METER BOX

Fit to meter box manufacturer and network utility operator requirements where detailed. Recess into external wall in sheltered area and flashed to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation inspection and connection.

3.5 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.

3.6 CIRCUIT PROTECTION

Install MCBs at distribution board to AS/NZS 3000 to protect each final sub circuit.

3.7 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.

3.8 EARTH LEAKAGE PROTECTION

RCD protection installed to AS/NZS 3000.

3.9 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.

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3.10 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.

3.11 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.

3.12 WALL BOXES

Flush mounted in cavity construction and selected as appropriate to fit products to be mounted. Fix vertically mounted wall boxes to studs. Fix horizontally mounted switched socket outlet wall boxes to solid blocking or nogs. Fix switch panel wall boxes to solid blocking.

3.13 SWITCH AND SOCKET UNITS

Fit all switch units and socket units to the manufacturer requirements with heights and mounting directions as indicated in SELECTIONS.

3.14 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.

3.15 ISOLATING SWITCHES

Locate isolating switches in agreed positions when not specifically shown on the drawings.

3.16 LIGHT FITTINGS

Install light fittings in locations and at heights detailed, and in accordance with the fitting manufacturer requirements.

3.17 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.

3.18 LIGHT FITTINGS TO INSULATION

Type of fitting	Minimum insulation clearance	Comments

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Recessed, marked NON-IC, or unmarked	100mm (increase if over 100W)	To NZS 4246. 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 NZS 4246. Do not cover the fittings.
Recessed, IC, IC-F, or IC-4.	Abut & cover fittings.	To NZS 4246. Ensure insulation complies.
Recessed, marked Do-Not-Cover	Manufacturer clearances	To NZS 4246. Do not cover the fittings.
Independent control gear	Place on top of insulation & 50mm from fittings	To NZS 4246. 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 NZS 4246. Where surface fittings are isolated from insulation by appropriate linings. Excludes high heat fittings.
Surface fittings & exposed insulation	200mm	To NZS 4246. 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.

3.19 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 AS/NZS 3000:2018
Marked NON-IC, or unmarked, >100W	200mm, vertical & horizontal	To AS/NZS 3000:2007
CA 80, CA 90 or CA 135	100mm, vertical & horizontal	To AS/NZS 3000:2018
IC, IC-F or IC-4	100mm, horizontal NA, vertical	To AS/NZS 3000:2018 To be NA vertical, fitting must be covered by insulation. If not covered use 100mm clearance.
Marked Do-Not-Cover	100mm, vertical & horizontal	To AS/NZS 3000:2018. 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.

3.20 EXTRACTS, VENTS & ROOF UNDERLAY TO INSULATION

Appliance	**Minimum insulation clearance**	**Comments**
Ducted fan motors	50mm	To NZS 4246. Includes ducted rangehoods, extractors etc. Applies to the motor unit and electrical enclosures (not the ducts).
Ducted fan ducts	Abut	To NZS 4246. Excludes motor unit and electrical enclosures.
Unducted fan motors usually discharging to ceiling space	200mm	

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		To NZS 4246. 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 NZS 4246. Maintain clearance from underside of roofing or flexible roofing underlay, to prevent wicking.

3.21 TV AERIAL AND CABLING

Fix aerial, run cabling concealed below the roof and fit outlets where shown on the electrical drawings. Ensure the system is suitable for high quality reception of all VHF and UHF channels - Sky TV installation practices minimum. Cable penetrations through the cladding to be weatherproofed to comply with NZBC E2/AS1.

3.22 SMOKE ALARMS

Install smoke alarms to NZBC F7/AS1, and NZS 4514, and to the alarm manufacturer requirements, fitted neatly and without damage to the surrounding finish. Maintain smoke alarms to NZS 4514.

3.23 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.

3.24 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.

3.25 BATHROOM ELECTRICAL FIXTURES

Install electrical fixtures specified in other parts of this specification. Connect the following bathroom and toilet electrical items:

Extract fans:	Install exterior ducted fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.

Completion & Commissioning

3.26 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, www.clipsal.com, www.schneider-electric.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 PDL SELECTIONS - FITTINGS AND HARDWARE

Confirm selections of all outlet fittings and hardware with the owner in writing before ordering.

4.2 METER BOX

Location:	Refer to Plans
Brand / type:	PDL Superboard

4.3 PDL DISTRIBUTION BOARD

Location:	refer to drawings
Brand / type:	PDL Superboard
MCB:	Schneider Electric Domae
RCCB:	Schneider Electric Domae
RCBO:	Schneider Electric Domae
Surge protectors:	Schneider Electric Domae

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Modular contactors:	Schneider Electric
Main switch:	Schneider Electric
Timers:	Schneider Electric
AFDD:	Schneider Electric

Interior outlets - PDL

4.4 PDL INTERIOR OUTLETS - ICONIC SERIES

Location:	refer to drawings
Switch / socket outlets	PDL Iconic Series
Coverplate colour:	TBD
Switch - Height to centre of unit:	1000mm above FFL
Socket - height to centre of unit:	300 mm
Orientation:	Horizonal

Interior outlets - Clipsal

Interior outlets - BSL

Miscellaneous switches & sockets

Exterior switches and sockets - PDL

Light fittings

4.5 PDL EXTERNAL LIGHT FITTINGS

Wall lights:	Refer to Plans
Weather protection rating (IP):	IP55

4.6 INTERNAL LIGHT FITTINGS

LED Downlights:	Clipsal LED Downlight

Miscellaneous electrical items

4.7 PDL MISCELLANEOUS ELECTRICAL ITEMS

Smoke alarms:	Clipsal Fire Tek range
Extractor fans:	Clipsal Airflow

Bathroom electrical fittings

Electrical appliances

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