

0423P COLORBOND® STEEL AND ZINCALUME® STEEL IN ROOFING**Branded worksection**

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Worksection abstract

This branded worksection *Template* is applicable to the provision of roof coverings made from profiled COLORBOND® steel and ZINCALUME® steel and roof plumbing.

Background

The Australian profiled sheet steel industry is organised as follows:

- BlueScope manufactures Colorbond® prepainted steel and Zinalume® steel coils.
- Distributors break down steel coils into smaller coils and onsell. Distributors also slit coils into various widths.
- Rollformers use steel coils and proprietary machinery to shape steel into different profiles and cut sheets to length.
- Installers take off material quantities, order and install often as subcontractors to the contractor.

Guidance text

All text within these boxes is provided as guidance for developing this worksection and should not form part of the final specification. This *Guidance* text may be hidden or deleted from the document using the NATSPEC Toolbar or the hidden text *Hide* and *Delete* functions of your word processing system. For additional information visit FAQs at www.natspec.com.au.

Optional style text

Text in this font (blue with a grey background) covers items specified less frequently. It is provided for incorporation into *Normal* style text where it is applicable to a project.

Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- 0193 *Building access safety systems.*
- 0343 *Tensioned membrane structures* for suspended fabric roofing.
- 0411 *Waterproofing – external and tanking* for membrane roofs.
- 0424 *Roofing – seamed sheet metal.*
- 0425 *Roofing – shingles and shakes.*
- 0426 *Roofing – slate.*
- 0427 *Roofing – tiles.*
- 0436p *COLORBOND steel and ZINCALUME steel in cladding.*
- 0461 *Glazing* for glass roofing and skylights.
- 0471 *Thermal insulation and pliable membranes* for thermal insulation and vapour barriers.
- 0802 *Hydraulic design and install* for stormwater and rainwater storage systems.
- 0821 *Stormwater – buildings.*

Materials not provided by BlueScope

This branded worksection *Template* includes generic material which may not be provided by the Product Partner including:

- Glazed roofing.
- Plastic sheet roofing.
- Skylights.
- Roof hatches.
- Roof windows.
- Roof ventilators.
- Roof plant access.

Documenting this and related work

You may document this and related work as follows:

- Locate the extent of roofing types, accessories, and finishes on drawings to your office documentation policy.

- Show on the drawings the arrangement of the rainwater plumbing system, including the type and size of the main components (gutters, downpipes, sumps, rainheads, etc.) and the size and spacing of supports and fixings. In high wind areas, consider the degree of exposure of gutters and downpipes and the need to provide additional fixings.
- If documenting stormwater disposal, rainwater tanks and related products use *0802 Hydraulic design and install*.
- If documenting electric fan powered roof ventilators, document the necessary electrical connection in *0902 Electrical design and install*.
- Where insulation is required for internal downpipes, document in *0471 Thermal insulation and pliable membranes* or show on drawings

If required, state the minimum added thermal resistance (R-Value) (m² K/W). See NATSPEC TECHnote DES 031 for information on specifying R-Values.

- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to verify availability.
- Document bushfire protection requirements to conform to AS 3959 and the BCA. See NATSPEC TECHnote DES 018 for information on bushfire protection and NASH Bushfire Standard for steel framed construction in bushfire areas.
- For guidelines on the design of roofs in snow areas, see AS/NZS 1170.3 and SAA HB 106.
- For information on air moisture and condensation, see NATSPEC TECHnote DES 004.

The *Normal* style text of this worksection *Template* may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.

Search www.environmentdesignguide.com.au, the Australian Institute of Architect's environmental advisory subscription service for notes on the following:

- Green roofs.
- Birds and buildings.

Specifying ESD

The following may be specified by retaining default text:

- Skylights, roof windows.

The following may be specified using included options:

- Recycled material content.
- Rainwater tanks. See NATSPEC TECHnote DES 011 on rainwater harvesting.

The following may be specified by including additional text:

- High performance roofing systems to extend building service life.
- Recycled plastic roofing materials.

Refer to the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

BlueScope is a leader in the provision of high quality metallic-coated and painted steel products for the building and construction sector in Australia. Our most notable brands are **COLORBOND®** steel and **ZINCALUME®** steel.

BlueScope products are now an integral part of both new housing and alterations and additions, commercial and industrial projects.

1.1 RESPONSIBILITIES

General

Requirement: Provide and install roof cladding made from COLORBOND® steel and ZINCALUME® steel and associated work, as documented.

Documented is defined in *0171 General requirements* as meaning contained in the contract documents.

Ambient climatic conditions

AS/NZS 3500.3 provides the basis for designing storm water installations.

Design rainfall intensity (mm/h) to AS/NZS 3500.3: [complete/delete]

See AS/NZS 3500.3 Table E1 for selected place references or the Hydrometeorological Advisory Services of the Bureau of Meteorology (HASBM) at www.bom.gov.au for rainfall data . SAA/SNZ HB 114 provides worked examples of roof drainage calculations.

Location exposure severity

Exposure severity determines the grade of COLORBOND® steel and ZINCALUME® steel. Refer to BlueScope TB-01A guide on selecting steel roofing products.

Exposure severity category: [complete/delete]

Refer to 0171 *General requirements* for the designation of the Exterior atmospheric corrosivity category of the project.

Roof access

Type: [complete/delete]

e.g. Normal roof maintenance, Access to plant rooms (if by restricted paths show on the drawings).

1.2 COMPANY CONTACTS

BlueScope technical contacts

Website: www.steel.com.au/support

1.3 CROSS REFERENCES

General

Requirement: Conform to the following:

- 0171 *General requirements*.

0171 *General requirements* contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. 0171 *General requirements* references the 018 *Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: www.steel.com.au/library.

1.5 TOLERANCES

Sheet metal roofing

Supporting members: To AS 1562.1 clause 4.2.

1.6 SUBMISSIONS

Edit the **SUBMISSIONS** clause to suit project requirements.

Certification

Design of glazed roofing: Submit an engineer's certificate confirming conformance to AS 1288.

Operation and maintenance manuals

On completion: Submit a manual of recommendations from the roofing manufacturer or supplier for the maintenance of the roofing system including, frequency of inspection and recommended methods of access, inspection, cleaning, repair and replacement.

Products and materials

Type tests: As appropriate for the project, submit evidence of conformance to the following:

- Metal roofing generally: Roof sheeting and fastenings to AS 1562.1 clause 5.4 for resistance to concentrated load and AS 1562.1 clause 5.5 for resistance to wind pressure.
- Metal roofing in cyclonic regions to AS/NZS 1170.2: Roof sheeting and fastenings to AS 1562.1 clause 5.6.
- Plastic sheet roofing: Roofing and fastenings to AS 1562.3 Section 5 for resistance to wind forces and resistance to impact.

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in **SELECTIONS** or **PRODUCTS**, if there are no **SELECTIONS**.

Refer to AS 1562.1 clause 5.6 for resistance of metal roofing to wind pressures for cyclone regions.

Recycled material content: Submit documentation from the roofing material manufacturer showing the following:

- Post-consumer recycled content: [complete/delete]
- Pre-consumer recycled content: [complete/delete]

e.g. BlueScope produces steel that contains, on average, 25% recovered content. Of this, the post-consumer material content is 8.5% and the preconsumer material content is 6.5%.

Samples

Approved samples which define acceptable limits of colour and texture variations are retained on site. If particular or additional samples are required, e.g. samples for testing, list them here.

Requirement: Submit samples of the following:

- Custom profiled flashings and cappings.
- Sheet metal finishes showing the range of variation available.
- Sealants.
- Trims and accessories with a colour finish.

Shop drawings

Shop drawings are necessary if some or all of the system is to be designed by the contractor or a specialist subcontractor to meet the performance criteria specified. If this is not the case, delete **Shop drawings**.

General: Submit shop drawings to a scale that best describes the detail, showing the following:

- [complete/delete]

e.g. Methods of fixing, required end and side laps, acoustic insulation, suppression of impact noise, provisions for thermal movement, birdproofing, flashing, ridge cappings, roof water disposal, thermal insulation, vapour barrier, control joint treatment, isolation of incompatible metals, access for maintenance, provision for traffic.

Tests

0171 *General requirements* covers tests in **Definitions** and calls for an inspection and testing plan under **SUBMISSIONS, Tests**.

Site tests: Submit results as follows:

- Internal downpipe hydrostatic testing: [complete/delete]

Detail the tests required in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

Warranties

Requirement: Submit the following:

- [complete/delete]

Describe the requirements of warranties in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

Roofing materials: Submit the manufacturer's published product warranties.

1.7 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Roof supports.
- Parts of the roofing, sarking, vapour barrier, insulation and roof plumbing installation before covering up or concealing.

Amend to suit the project, adding critical stage inspections required.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to **PRODUCTS, GENERAL, Substitutions** in 0171 *General requirements*.

The 0171 *General requirements* clause sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

Storage and handling

Storage: Store metal roofing materials, as follows:

- Away from uncured concrete and masonry, on a level base and not in contact with other materials that cause staining, denting or other surface damage.

Handling: Handle roofing materials as follows:

- Use gloves when handling precoated metal roofing material.
- Use soft soled shoes when fixing or working on roofs.
- Protect edges and surfaces from damage. Do not drag sheets across each other or over other materials.

See BlueScope TB-07 on care and storage before installation and BlueScope TB-13 on good practice in use of steel roofing products.

Safety mesh

Standard: To AS/NZS 4389.

Coordinate with the 0471 Thermal insulation and pliable membranes worksection. Do not call up welded safety mesh in more than one spot.

2.2 SHEET METAL ROOFING

See SA HB 39 Section 2 and SA HB 39 Section 7 for general advice on material selection for steel sheet roofing.

See also BlueScope TB-01A for advice on selection of steel roofing products.

Standards

Design and materials: To AS 1562.1.

AS 1562.1 requires materials to conform to the following standards:

- Aluminium: AS/NZS 1734.
- Steel: AS 1397 for continuously hot-dipped metallic coated sheet and strip or AS/NZS 2728 for prepainted and organic film/metal laminate products.

Stainless steel: To ASTM A240/A240M.

AS 1449 cited in AS 1562.1 for stainless steel has been withdrawn.

Fasteners

Prefinished exposed fasteners: Finish with an oven baked polymer coating to match the roofing material.

Fastenings to timber battens: Fastenings long enough to penetrate the thickness of the batten without piercing the underside.

Profiled fillers

Type: Purpose-made closed cell polyethylene foam profiled to match the roofing profile.

Location: Provide profiled fillers under flashings to the following:

- Ridges.
- Eaves.
- Lapped joints in roof sheeting.

Add locations as required.

2.3 ROOF PLUMBING**General**

See SA HB 39 Section 5 for the manufacture and fitting of internal and external metal gutters, downpipes, sumps and rainheads, AS/NZS 3500.3 Section 3 for method of sizing gutters and downpipes and SAA/SNZ HB 114 for worked examples, AS/NZS 3500.3 clause 4.9 for support systems of roof drainage systems. Show particular requirements, if any, on the drawings. See NATSPEC TECHnote DES 011 for more information on rainwater harvesting.

Description: Flashings, cappings, gutters, rainheads, outlets, downpipes and accessories necessary to complete the roofing system.

Flashing and capping: Notched to match profile of roof sheeting.

See BlueScope TB-15 on selection and use of steel gutters, downpipes and fascias, BlueScope TB-08 on sealants and BlueScope TB-09 on flashings.

Matching fascia/barge capping: If the selected eaves gutter is a proprietary high front pattern forming part of a combined system of gutter, fascia and barge, provide matching proprietary fascias and barge cappings to roof verges and edges.

Delete if not required.

Standards

Roof drainage: AS/NZS 3500.3.

Metal rainwater goods: To AS/NZS 2179.1.

2.4 GLAZED ROOFING

General

Description: Sloped overhead glazing fixed to glazing bars or directly to the roof framing with the necessary supports, trim, flashings and sealants.

Glass selection: To AS 1288.

- Certification: Required.
- Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

To verify this, search for AS/NZS 2208 in the JAZ-ANZ directory at www.jas-anz.com.au/our-directory/certified-organisations.

2.5 PLASTIC SHEET ROOFING

Materials

Unplasticised polyvinyl chloride (PVC-U) sheet: To AS 4256.2.

Glass fibre reinforced polyester (GRP) sheet: To AS 4256.3.

Polycarbonate: To AS 4256.5.

Select either extruded PVC-U, GRP or document the material required. The BCA cites AS/NZS 4256.2:1994, AS/NZS 4256.3:1994 and AS/NZS 4256.5:1996.

Sealants: Neutral curing silicone or modified silane (MS) polymer based sealant to the roofing manufacturer's recommendations.

2.6 SKYLIGHTS

General

Standard: To AS 4285.

Description: A proprietary skylight system including framing, fixing, trim, seals, accessories and flashings.

2.7 ROOF HATCHES

General

Description: A proprietary roof hatch system including framing, fixing, trim, seals, accessories and flashings.

2.8 ROOF WINDOWS

General

Standard: To AS 4285.

Description: A proprietary window system designed for non-vertical installation in roofs pitched between 15° and 85°, consisting of the following:

- Timber frame and sash, shop clear primed or prefinished.
- External anodised aluminium protective profiles.
- Sealed double glazing.
- Horizontally pivoted sash, 180° reversible, on patent friction hinges.
- Opening and locking by patent control bar.
- Ventilation flap.

2.9 ROOF VENTILATORS

General

Document any particular requirements, material, type (e.g. static, wind driven, electric fan powered), size, etc. if not shown on the drawings. For roof mounted heat exhaust vents, see AS 2427. For design of smoke/heat venting systems, see AS 2665.

Description: A proprietary roof ventilator system including framing, fixing, trim, seals, accessories and flashings.

2.10 ROOF PLANT ACCESS

Walkways

Description: A proprietary roof walkway system including fixings.

3 EXECUTION

3.1 INSTALLATION

Protection

General: Keep the roofing and rainwater system free of debris and loose material during construction.

Thermal movement

Requirement: Allow for thermal movement in the roof installation and the structure, including movement in joints and fastenings.

Metal separation

Make sure of compatibility or detail separation.

See AS 1562.1 Table 3.2 for guidance on the compatibility of metals. See also SA HB 39 Section 2 on material selection. It is primarily a design responsibility that incompatible metals are not documented or shown to be in contact. Preferably show the separation method on the drawings.

Corrosion can result from water run-off between incompatible surfaces. See AS 1562.1 clause 3.7 and AS 1562.1 Table 3.3. There are two conditions to be avoided:

- Run-off from copper and copper alloys onto aluminium, zinc, galvanized, or aluminium/zinc-coated surfaces.
- Run-off from inert catchment surfaces such as glazed terracotta, prepainted steel, aluminium and aluminium/zinc onto galvanized surfaces.

In marine or high humidity environments, separate green hardwood from aluminium and coated steel.

See BlueScope Steel CTB-09 for information on contact with unprotected steel supports, BlueScope Steel CTB-12 for information on dissimilar metals and BlueScope Steel CTB-13 for information on contact with timber.

Requirement: Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by one of the following methods:

- Applying an anti-corrosion, low moisture transmission coating to contact surfaces.
- Inserting a separation layer.

3.2 COLORBOND® STEEL AND ZINCALUME® STEEL SHEET METAL ROOFING

See SA HB 39 for general advice on installation of steel sheet roofing.

Roof sheet installation

Standard: To AS 1562.1.

Set-out point: [complete/delete]

Note the elevation that will allow laying to proceed in a direction from the leeward to the windward side of the prevailing wind.

Fixing: **PROPRIETARY ITEMS** in 0171 *General requirements* requires all products to be fixed to the manufacturer's recommendations.

For clarity, you may repeat the requirement here by changing the following *Optional* style text to *Normal* style text:

Fastener type, size, corrosion resistance class, and spacing: To the sheet metal roofing manufacturer's recommendations.

Swarf: Remove swarf and other debris as soon as it is deposited.

Accessories: Provide accessories with the same finish as roofing sheets to complete the roofing installation.

Expansion joints: [complete/delete]

Provide expansion joints every 35 m in sheet length for roofs with concealed fixings and 24 m in sheet length for roofs with exposed fixings.

3.3 BUILDING ELEMENTS

Ridges and eaves

Sheet ends: Treat as follows, if appropriate:

- Sheet ends: Treat as follows, if appropriate:
- Project sheets 50 mm into gutters.
- Close off ribs at bottom of sheets using mechanical means or with purpose-made fillers or end caps.
- Turn pans of sheets up at tops and down into gutters by mechanical means.
- Pre-cut notched eaves flashing and birdproofing, if required.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene foam.

See SA HB 39 for general advice on installation of steel sheet roofing.

Ridge and barge

Capping: Finish off along ridge and verge lines with purpose-made ridge capping or barge rolls.

Sprung curved ridge

General: Lay the roofing sheets in single lengths from eave to eave by naturally curving the sheets over the ridge.

Ridge: Seal side laps at the ridge and extend the sealant to the point where the roof pitch equals the recommended pitch of the roofing profile.

This is possible only with certain sheeting profiles and roof slopes. Consult the manufacturer about recommended purlin spacings at the ridge to achieve the required curvature. Show the purlin locations on the drawings.

End laps

General: If end laps are unavoidable, and the sheet profile is not suitable for interlocking or contact end laps, construct a stepped type lap.

Length of lap (mm): [complete/delete]

Document the laps required, if applicable.

3.4 ROOF PLUMBING

Jointing sheet metal rainwater goods

See AS/NZS 3500.3 clause 2.7 for information on joint materials and products.

Butt joints: Make joints over a backing strip of the same material.

Soldered joints: Do not solder aluminium or aluminium/zinc-coated steel.

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Jointing system: [complete/delete]

e.g. Blind rivet and seal as follows:

- For COLORBOND® Stainless steel: Stainless steel blind rivets with stainless steel mandrels.
- For ZINCALUME® steel and COLORBOND® steel: Aluminium blind rivets.

Flashings

Installation: Flash roof junctions, upstands, abutments and projections through the roof. Preform to required shapes if possible. Notch, scribe, flute or dress down as necessary to follow the profile of adjacent surfaces. Mitre angles and lap joints 150 mm in running lengths. Provide matching expansion joints at 6 m maximum intervals.

6 m corresponds to the manufacturing length. Movement at these joints would be less than 1 mm so all may not need to be fully-fledged expansion joints.

Upstands: Flash projections above or through the roof with two part flashings, consisting of a base flashing and a cover flashing, with at least 100 mm vertical overlap. Provide for independent movement between the roof and the projection.

Large penetrations in low pitch roofs: Extend the base flashing over the roofing ribs to the ridge to prevent ponding behind the penetrating element.

This situation often occurs with mechanical plant. Consider documenting it on the drawings.

Wall abutments: Where a roof abuts a wall, provide overflashing as follows:

- In masonry walls, planked cladding or concrete: Step in courses to the roof slope. Interleave with damp proof course, if any.
- Raking in masonry: Build into the full width of the outer leaf. Turn up within cavity, slope inward across the cavity and fix to or build into the inner leaf at least 75 mm above the roofing line.
- Raking in concrete: Turn 25 mm into joints or grooves, wedge at 200 mm centres with compatible material and point up.

Fixing to pipes: Solder or seal with neutral cured silicone rubber and secure with either of the following:

- Clamping ring.
- Proprietary flexible clamping shoe with attached metal surround flashing.

Gutters

Document the material, profile and size on the drawings or in a schedule.

Gutter and sump support: Provide framing and lining to support valley gutters, box gutters and sumps. Line the whole area under the gutters and sumps.

Support: [complete/delete]

e.g. Proprietary metallic-coated adjustable strap and channel system.

Lining: [complete/delete]

e.g. Square corrugated profiled metal roof sheeting.

Box gutter: Prefabricate box gutters to the required section and shape. Form stop ends, downpipe nozzles, bends and returns. Dress downpipe nozzles into outlets. Provide overflows to prevent back-flooding.

- Hail guards: Install grating over the whole of the profile.

Valley gutters: Profile to suit the valley boarding. Turn back both edges 180 x 6 mm radius. Nail or screw to the valley boarding at the top end to prevent the gutter creeping downwards.

Expansion joints in guttering longer than 30 m: Provide as follows:

- Type: [complete/delete]

e.g. As detailed or proprietary elastic expanding adhesive fixed type.

Gratings: Install removable gratings over rainheads and sumps.

Leaf screen location: All gutter outlets.

External downpipes

Document the material, profile and size on the drawings or in a schedule.

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Access cover: Provide a removable watertight access cover at the foot of each downpipe stack.

Downpipe support: Provide supports and fixings for downpipes.

Internal downpipes

Jointing method: [complete/delete]

e.g. Sealant joint (or bolted gland joint) to AS 1631, Screwed fittings to AS 1589 (copper), Solvent cement jointing (PVC-U), etc.

Access: Provide access openings as follows:

- At each junction and bend.
- At the foot of each stack.
- At every second floor level.

Modify locations to suit the project.

Type of access opening: [complete/delete]

e.g. Cast iron inspection openings to AS 1631 (or AS/NZS 1260 for PVC-U, AS 1589 for copper).

Acoustic insulation: Mineral fibre pipe insulation 50 mm thick, spirally bound on with 1.5 mm wire at 150 mm pitch.

Delete if not required.

Building in: If pipes are built into masonry or concrete, spiral wrap the pipe (and insulation, if any) with building paper.

Rainwater disposal

System: [complete/delete]

If not shown on the drawings, document method of disposal. Alternatives include connection to stormwater drains, discharge to rainwater tanks or discharge to soakage pits.

3.5 GLAZED ROOFING**Installation**

Standard: To AS 1288.

Fixing: [complete/delete]

Document and detail to the recommendations of the glazing bar manufacturer.

3.6 PLASTIC SHEET ROOFING**Installation**

Standard: To AS 1562.3.

AS 1562.3 covers the installation of plastic cladding materials. See also SA HB 39 Section 9. The BCA cites AS/NZS 1562.3:1996.

Fixing: [complete/delete]

e.g. Roofing screws with neoprene washers in oversized holes. Consult the manufacturer.

Fixing to timber: 30 mm minimum penetration.

3.7 SKYLIGHTS**Installation**

Standard: To AS 4285.

Fixing: [complete/delete]

Specify and detail to the recommendations of the skylight manufacturer.

Fixing to timber: 30 mm minimum penetration.

3.8 ROOF HATCHES**Installation**

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof hatch manufacturer.

3.9 ROOF WINDOWS**Installation**

Standard: To AS 4285.

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof window manufacturer.

3.10 ROOF VENTILATORS**Installation**

Fixing: [complete/delete]

Specify and detail to the recommendations of the roof window manufacturer.

3.11 ROOF PLANT ACCESS**Walkway**

Installation: [complete/delete]

For ladders, platforms and balustrades, cross reference the appropriate worksection, e.g. 0552 Metalwork – fabricated and 0341 Structural steelwork.

3.12 TESTING

0171 General requirements covers tests in **Definitions** and calls for an inspection and testing plan under **SUBMISSIONS, Tests**.

Site tests

Internal downpipes: Test each stack hydrostatically in stages. Run each test over two storeys high for two hours. Remedy defects and retest if necessary.

3.13 COMPLETION

Reinstatement

Extent: Repair or replace damage to the roofing and rainwater system. If the work cannot be repaired satisfactorily, replace the whole area affected.

Cleaning

Roofing and rainwater drainage system: Remove debris, metal swarf, solder, sealants and unused materials.

See BlueScope Steel CTB-17 for information on following trades.

Exposed metal surfaces: Clean surfaces of substances that interfere with uniform weathering or oxidisation.

Roof plumbing: Clean out spoutings, gutters and rainwater pipes after completion of roof installation.

Warranties

Requirement: Cover materials and workmanship in the terms of the warranty in the form of interlocking warranties from the supplier and installer.

- Form: Against failure of materials and execution under normal environment and use conditions.
- Period: As offered by the supplier/manufacturer.

Use only if warranties extending beyond the defects liability period are available for the particular system. Insert the required warranty period and terms, which should be negotiated beforehand. If the warranty is in the form of separate material and installation warranties, the signatures of both manufacturer and installer are required. BlueScope has an internet based system Warranty Estimator and Management System that allows access to warranty advice for BlueScope building products and pre-approved warranties at www.bluescopesteel.com.au/warranties.

The form(s) required should be provided as part of the contract documentation.

4 SELECTIONS

Schedules are a way of documenting a selection of proprietary or generic products or systems by their properties. Indicate their locations here and/or on the drawings. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PRODUCT

Profiled sheet metal roofing schedule

Property	A	B	C
Location			
Product			
Profile			
Material			
Base metal thickness (BMT) (mm)			
Finish			
Colour			
Fasteners			
Insulation spacer			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Select roofing products manufactured from COLORBOND® steel and ZINCALUME® steel by visiting www.steel.com.au/products/building-and-construction/products/roofing and edit the schedule to suit.

Profile: Select from the profiles offered by the nominate Rollformer or Distributor, e.g. Corrugated, Ribbed, Trapezoidal or use the manufacturer's profile code/name.

Material: e.g. Steel, Stainless steel, Aluminium or Copper. Select with reference to the Exposure severity category and the atmospheric corrosivity category nominated for the project in *0171 General requirements*. See BlueScope TB-01A for advice on selection of steel roofing products and BlueScope TB-28 for information on thermal efficiency and reflectivity. . Refer also to NATSPEC TECHnote DES 010.

Base metal thickness (BMT) (mm): Consult the nominated Rollformer or Distributor.

Finish: e.g. Aluminium/zinc/magnesium alloy-coated, Aluminium/zinc alloy-coated, Mill finish or Painted.

Colour: Consult the BlueScope COLORBOND® steel Colour Chart.

Fasteners: e.g. Concealed or Pierced: Crest or Valley.

Insulation spacer: Select a product that is fixed to the purlin and raises the roof sheeting to suit the required insulation thickness.

Flashing and capping schedule

Component	A	B	C
Type			
Product			
Material			
Thickness and grade			
Colour			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Document proprietary profiles as proprietary items and custom profiles on drawings. If sizes are not shown on the drawings document here.

Type: e.g. Ridge capping, Roll top ridge capping, Change of pitch flashing, Apron flashing, Barge capping, Saddle flashing, Custom flashing, Barge roll, Spear point.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material: e.g. Metallic-coated steel, Soft zinc, Lead, Copper, Aluminium annealed sheet, Bitumen (or polyethylene) coated aluminium, Stainless steel, PVC, Butyl rubber and Neoprene rubber. Lead is not compatible with aluminium or aluminium/zinc coated steel. For malleable flashings, consider soft zinc or plastic sheet. Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in *0171 General requirements*. Refer also to NATSPEC TECHnote DES 010.

Thickness and grade: Minimum thickness and grade for commonly used materials are given in AS/NZS 2904. If other thicknesses are required, document them here.

Colour: e.g. Match roofing or consult the nominated Rollformer or Distributor's colour chart.

Roof plumbing schedule

Item	Type	Product	Material	Thickness/Grade	Colour/Shape/Size
Eaves gutter					
Valley gutter					
Box gutter					
Rainhead					
Sump					
Downpipe					
Vent					
Hail guard					
Grate					
Leaf screen					

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings. Document requirements here if not shown on the drawings.

Type:

- Eaves gutter: e.g. Quad, Fascia, Half round, Half round flatback.
- Box gutters: Internal box gutters are usually difficult to clean and replace. Add requirements for siphonic systems separately, as appropriate.
- Rainhead: e.g. Standard, Tapered, Custom made square, Custom made round, Corner ogee, Ogee, Chinaman's hat.
- Downpipe: e.g. Internal or External and Rectangular or Circular. Internal downpipes are mainly for multi-storey applications. Acoustic insulation will not be required where downpipes are built into sound rated ducts. For plastic rainwater goods, use proprietary brand names.
- Hail guard: Nominate type of mesh and fixing method.
- Gratings: e.g. Wire netting ball or Hemispherical wire mesh dome. Document the metal and coating. Check if leaf screens are required.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material:

- Metal rainwater goods: Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in *0171 General requirements*. Refer also to NATSPEC TECHnote DES 010.
- Box gutter: Nominate material and base metal thickness (BMT)(mm). Plain zinc-coated steel is not recommended for internal box gutters, Welded stainless steel is recommended.
- Internal downpipe: e.g. Cast iron to AS 1631 (may be bitumen-coated, epoxy-coated or cement-coated, if required), Copper Type D to AS 1432, Stainless steel type 304, PVC-U to AS/NZS 1260. PVC-U may not be acceptable for fire-resistance rating.
- Leaf screen: e.g. Plastic mesh or proprietary metal guards to match the gutter profile. Plastic leaf guards are not permitted for bushfire-prone areas.

Thickness/Grade: Minimum thickness and grade for commonly used materials are given in AS/NZS 2179. If other thicknesses are required, specify them here. See AS 1397 Appendix D for information and guidance on the selection of steel grades and coating classes.

Colour/Shape/Size:

- Box gutter: Nominate cross-section dimensions (mm) and sump size.
- Downpipe: Nominate colour and size (mm).
- Rainhead and vents: Nominate colour, shape and pattern.

Glazed roofing schedule

Property	A	B	C
Product			
Type of glass			
Glass thickness (mm)			
Surface film			
Supports			
Solar heat gain coefficient (SHGC)			
U-Value (W/m ² .K)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Type of glass: e.g. Toughened: Laminated.

Glass thickness (mm): Nominate thickness for each lamination.

Supports: Proprietary framing or patch fitting system.

Solar heat gain coefficient (SHGC) and U-Value (W/m².K): Add if required in BCA 3.12.1.3 or BCA J1.4.

Plastic sheet roofing schedule

Property	A	B	C
Product			
Material			

Property	A	B	C
Material class or grade			
Material type			
Profile			
Translucency			
Colour			
Impact resistance			
Fire performance			
Solar heat gain coefficient (SHGC)			
U-Value (W/m ² .K)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material: Select either PVC-U, GRP, Polycarbonate.

Material class or grade:

- PVC-U: Class D (domestic) or I (industrial).
- GRP: GP (general purpose), FR (fire retardant) or CR (chemical resistant).
- Polycarbonate, Grade S (sold flat sheet), P (profiled sheet) or M (multi-layered).

Material type:

- PVC-U: ST (surface treated), GP (general purpose).
- GRP: CT (surface tissue present), ST/SX (surface treated).
- Polycarbonate: ST (surface treated), GP (general purpose).

Profile: Describe the profile or, if required to match adjacent roofing, use the proprietary name.

Translucency: Transparent, Translucent, Opaque.

Colour: If applicable, use the manufacturer's name.

Fire performance: If fire-resisting plastic roofing is required, document the Spread-of-Flame Index and Smoke-Developed Index.

Solar heat gain coefficient (SHGC) and U-Value (W/m².K): Add if required in BCA 3.12.1.3 or BCA J1.4.

Skylight schedule

Property	A	B	C
Product			
Type			
Size (mm)			
Light shaft			
Ceiling diffuser			
Total system solar heat gain coefficient (SHGC)			
Total system U-Value (W/m ² .K)			
WERS for Skylights energy rating % heating			
WERS for Skylights energy rating % cooling			
Hail guard			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Type: e.g. Fixed, Opening, Retractable, Tubular, Ventilated.

Light shaft: Used to bring light through the roof structure and help control light distribution. Local solar geometry, surface reflectance (influenced by structural material and colour) and shape are basic considerations (see AS 4285 Appendix C for more information on skylights shaft or lightwell).

Ceiling diffuser: Translucent polymer or glass installed at ceiling level of a lightwell shaft to diffuse or redirect incoming light. Also used to control heat gains (ventilated skylights) or losses (non-ventilated skylights) and glare. Open cell diffusers are also used with ventilated skylights.

Solar heat gain coefficient (SHGC) and U-Value ($W/m^2.K$): Add if required in BCA 3.12.1.3 or BCA J1.4.

WERS for Skylights energy rating %: The % heating and % cooling refers to the percentage improvement in performance of the window compared with using a base-case Generic Window 1 (3 mm clear glazing in a standard aluminium frame).

Contact Window Energy Rating Scheme operated by the Australian Window Association www.wers.net.

Roof hatch schedule

Property	A	B	C
Product			
Size (mm)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Roof windows schedule

Property	A	B	C
Product			
Type			
Size (mm)			
Total system solar heat gain coefficient (SHGC)			
Total system U-Value ($W/m^2.K$)			
WERS for Skylights energy rating % heating			
WERS for Skylights energy rating % cooling			
Hail guard			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Type: e.g. Fixed, Opening.

Solar heat gain coefficient (SHGC) and U-Value ($W/m^2.K$): Add if required in BCA 3.12.1.3 or BCA J1.4.

WERS for Skylights energy rating %: The % heating and % cooling refers to the percentage improvement in performance of the window compared with using a base-case Generic Window 1 (3 mm clear glazing in a standard aluminium frame).

Roof ventilator schedule

Property	A	B	C
Product			
Size (mm)			
Throat diameter (mm)			
Material			
Finish			
Capacity			
Options			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

Material: Select the material recommended by the Rollformer or Distributor with reference to the atmospheric corrosivity category nominated for the project in 0171 *General requirements*. Refer also to NATSPEC TECHnote DES 010.

Finish: e.g. Match roofing.

Roof plant access schedule

Property	A	B	C
Product			
Size (mm)			
Material			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit codes in the **Schedule** to match those on drawings.

Product: Nominate a proprietary system or product and edit schedule to suit.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1170		Structural design actions
AS/NZS 1170.2	2011	Wind actions
AS 1288	2006	Glass in buildings - Selection and installation
AS 1562		Design and installation of sheet roof and wall cladding
AS 1562.1	1992	Metal
AS 1562.3	2006	Plastics
AS/NZS 2179		Specifications for rainwater goods, accessories and fasteners
AS/NZS 2179.1	2014	Metal shape or sheet rainwater goods, and metal accessories and fasteners
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2015	Stormwater drainage
AS 4256		Plastic roof and wall cladding materials
AS 4256.2	2006	Unplasticized polyvinyl chloride (uPVC) building sheets
AS 4256.3	2006	Glass fibre reinforced polyester (GRP)
AS 4256.5	2006	Polycarbonate
AS 4285	2007	Skylights
AS/NZS 4389	2015	Safety mesh
ASTM A240/A240M	2016	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

The following documents are mentioned only in the **Guidance text**:

AS 1170		Structural design actions
AS/NZS 1170.3	2003	Snow and ice actions
AS/NZS 1260	2017	PVC-U pipes and fittings for drain, waste and vent application
AS 1397	2011	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1432	2004	Copper tubes for plumbing, gasfitting and drainage applications
AS 1449	1994	Wrought alloy steels - Stainless and heat-resisting steel plate, sheet and strip
AS 1562		Design and installation of sheet roof and wall cladding
AS/NZS 1562.3	1996	Plastic
AS 1589	2001	Copper and copper alloy waste fittings
AS 1631	1994	Cast grey and ductile iron non-pressure pipes and fittings
AS/NZS 1734	1997	Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate
AS/NZS 2179		Specifications for rainwater goods, accessories and fasteners
AS/NZS 2208	1996	Safety glazing materials in buildings
AS 2427	2004	Smoke/heat release vents
AS 2665	2001	Smoke/heat venting systems- Design, installation and commissioning
AS/NZS 2728	2013	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
AS/NZS 2904	1995	Damp-proof courses and flashings
AS 3959	2009	Construction of buildings in bushfire prone areas
AS 4256		Plastic roof and wall cladding materials
AS/NZS 4256.2	1994	Unplasticized polyvinyl chloride (uPVC) building sheets
AS/NZS 4256.3	1994	Glass fibre reinforced polyester (GRP)
AS/NZS 4256.5	1996	Polycarbonate
SA HB 39	2015	Installation code for metal roof and wall cladding
SAA HB 106	1998	Guidelines for design of structures in snow areas
SAA/SNZ HB 114	1998	Guidelines for design of eaves and box gutters
BCA 3.12.1.3	2016	Acceptable construction - Energy efficiency - Building fabric - Roof lights

BCA J1.4	2016	Energy efficiency - Building fabric - Roof lights
BlueScope TB-01A	2016	Steel roofing products - Selection guide
BlueScope TB-07	2017	Care and Storage of Exterior Bluescope Steel Coated Steel Products Prior to Installation
BlueScope TB-08	2013	Flashing Materials for ZINCALUME® Steel and COLORBOND® Steel Sheet
BlueScope Steel CTB-09	2003	Contact with unprotected steel supports
BlueScope TB-09	2013	Sealants for Exterior Finishes
BlueScope Steel CTB-12	2017	Dissimilar metals
BlueScope Steel CTB-13	2017	Contact with timber
BlueScope TB-13	2017	General Guide to Good Practices in the use of Steel Roofing and Walling Products
BlueScope TB-15	2017	Selection and Use of Steel Gutter Downpipe and Fascia Products
BlueScope Steel CTB-17	2003	Following trades
BlueScope TB-28	2013	Building Materials, Thermal Efficiency and Reflectivity
NASH Bushfire Standard	2014	NASH standard - Steel framed construction in bushfire areas
NATSPEC DES 004	2005	Air, moisture and condensation
NATSPEC DES 010	2009	Atmospheric corrosivity categories for ferrous products
NATSPEC DES 011	2007	Rainwater harvesting
NATSPEC DES 018	2008	Bushfire protection
NATSPEC DES 031	2014	Specifying R-Values
NATSPEC GEN 006	2007	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC TR 01	2016	Specifying ESD