

0424P FIELDERS ROOFING – SPECIALISED SHEET METAL

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to the provision of roof coverings of FIELDERS seamed sheet non-ferrous metal and COLORBOND® steel prepainted steel and roof plumbing. It also covers skylights, roof hatches, roof windows, roof ventilators and roof plant access.

How to use this worksection

Customise this worksection *Template* for each project. See A guide to NATSPEC worksections (www.natspec.com.au) for information on *Template* structure, word styles, and completing a worksection.

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.*
- *0342 Light steel framing.*
- *0343 Tensioned membrane structures* for suspended fabric roofing.
- *0411 Waterproofing – external and tanking* for membrane roofs.
- *0461 Glazing* for glass roofing and skylights.
- *0471 Thermal insulation and pliable membranes.*
- *0472 Acoustic insulation* for bulk, board and flexible insulation.
- *0552 Metalwork - fabricated* for ladders, platforms and balustrades.
- *0802 Hydraulic design and install* for stormwater and rainwater storage systems.

Each of the following worksections contain a single roofing system and may be used where appropriate in addition to this worksection:

- *0423 Roofing – profiled sheet metal.*
- *0425 Roofing – shingles and shakes.*
- *0426 Roofing – slate.*
- *0427 Roofing – tiles.*
- *0428 Roofing – insulated panel systems.*
- *0429 Roofing – glazed.*

Related branded worksections include:

- *0311p FIELDERS KingFlor in concrete formwork.*
- *0341p FIELDERS SlimFlor in structural steelwork.*
- *0423p FIELDERS roofing – profiled sheet metal.*
- *0436p FIELDERS cladding – profiled sheet metal.*
- *0437p FIELDERS wall cladding - specialised panels.*

Material not provided by FIELDERS

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

- Some roof plumbing products.
- Glazed roofing.
- Plastic sheet roofing.
- Skylights.
- Roof hatches.
- Roof windows.
- Roof ventilators.

- Roof 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 tank 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 thermal resistance (R-Value) ($m^2.K/W$). See NATSPEC TECHnote DES 031 for information on specifying R-Values.
- If required, state the minimum thermal transmittance (U-Value) ($W/(m^2.K)$). See NATSPEC TECHnote DES 031 for information on specifying thermal transmittance.
- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to verify availability.
- In bushfire-prone areas, document bushfire protection requirements to AS 3959 (2018) and the NCC. See NATSPEC TECHnote DES 018 for information on bushfire protection.
- For guidelines on the design of roofs in snow areas, see AS/NZS 1170.3 (2003) and SA HB 106 (1998).
- For information on air, moisture and condensation, see NATSPEC TECHnote DES 004.
- For guidelines on green roof design and construction considerations, see NATSPEC TECHnote DES 026. Use *0411 Waterproofing – external and tanking* and *0471 Thermal insulation and pliable membranes* worksections to document roofing membrane requirements.

The *Normal* style text of this worksection 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:

- Birds and buildings.
- Green roofs.
- Guarantees and warranties.
- Site planning and design for bushfire.
- Waterproofing.

Specifying ESD

The following may be specified by retaining default text:

- Skylights, roof windows.

The following may be specified by using included options:

- Recycled material content, g. steel and aluminium roofing has high recycled content and is easily recycled post-use.

The following may be specified by including additional text:

- Green roofs. See NATSPEC TECHnote DES 026.
- High performance roofing systems to extend building service life.
- Recycled plastic roofing materials.
- Rainwater tanks. See NATSPEC TECHnote DES 011 on rainwater harvesting.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Fielders is a leading local manufacturer of a comprehensive range of roll-formed steel products supplied to commercial, industrial and domestic building markets throughout Australia.

Fielders' focus on innovation, breadth of product and extensive customer support offering, make it a preferred supplier for engineers, architects and construction companies around the country.

The Fielders range is supported by 10 branches nationwide, including manufacturing facilities at Novar Gardens, SA and Campbellfield, VIC, which also offer in-house processing capabilities.

1.1 RESPONSIBILITIES

General

Requirement: Provide a FIELDERS specialised sheet metal roofing system and associated work, as documented.

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

Wind pressure

Design wind pressure (Pa): [complete/delete]

Nominate the design wind pressure for the project to AS/NZS 1170.2 (2021) or AS 4055 (2021).

Ambient climatic conditions

Design rainfall intensity (mm/h) to AS/NZS 3500.3 (2021): [complete/delete]

See AS/NZS 3500.3 (2021) Appendix D for selected place references or the Hydrometeorological Advisory Services of the Bureau of Meteorology (HAS) at www.bom.gov.au for rainfall data.

Corrosion resistance

Material: To the manufacturer's recommendations for distance from marine influence.

Distance from marine influence: [complete/delete]

The distance from marine influence can be used as a guide to determine the finish and grade of steel required, however other factors may also need consideration. For information on determining corrosivity categories in relation to environmental influences, see AS 2312.1 (2014) Table 2.1, AS 4312 (2019) Table 2.1 and Table 4.1. Refer to **CORROSION RESISTANCE, Atmospheric corrosivity category** in *0171 General requirements*, for the project corrosivity categories to AS 4312 (2019). Refer also to BlueScope Technical bulletins BlueScope TB-01A (2023) and BlueScope TB-01B (2022), which discuss the selection of steel roofing and walling products, and the correlation of distance to marine influence to the corrosion categories defined in AS 4312 (2019).

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

FIELDERS technical contacts

Website: www.fielders.com.au/aspx/contact.aspx

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 STANDARDS

General

Standard: To AS 1562.1 (2018).

1.5 INTERPRETATION

Definitions

General: For the purposes of this worksection, the definitions given in AS 1562.1 (2018) apply.

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

1.6 MANUFACTURER'S DOCUMENTS

Technical manuals

Website: Visit www.specifying.fielders.com.au/finesse to access comprehensive technical detail.

1.7 TOLERANCES

Sheet metal roofing

Supporting members: To AS 1562.1 (2018) clause 4.2.3.

1.8 SUBMISSIONS

Fire hazard properties

General: Submit evidence of conformity to PRODUCTS, **GENERAL**, **Fire hazard properties**.

Operation and maintenance manuals

Requirement: Submit manual to **COMPLETION**, **Operation and maintenance manuals**.

Products and materials

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

- Metal roofing generally: Roof sheeting and fastenings to AS 1562.1 (2018) clause 5.4 for resistance to concentrated load and to AS 1562.1 (2018) clause 5.5 for resistance to wind pressure.
- Metal roofing in AS/NZS 1170.2 (2021) cyclonic regions: Roof sheeting and fastenings to AS 1562.1 (2018) clause 5.6.
- Plastic sheet roofing: Roofing and fastenings to AS 1562.3 (2006) 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, when there are no SELECTIONS.

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. Sheet steel contains, on average, up to 25% recovered content. Of this, the post-consumer recycled content is up to 8.5% and the pre-consumer recycled content is up to 6.5%.

If a certain percentage of recycled material content is required, consider including this *Optional* style text by changing to *Normal* style text and completing the prompts.

Samples

Approved samples that define the acceptable limits of colour and texture variations are retained on site. If particular or additional samples are required, list them here.

Requirement: Submit samples of the following, showing the range of variation available:

- Trim and accessories with a colour finish.
- Custom profiled flashings and cappings.
- Sealants.
- Sheet metal finishes.

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.

Subcontractors

Installer experience: Submit evidence of accreditation from FIELDERS Steel Roofing.

Check conditions of warranty. If required, nominate in 0171 *General requirements*.

Tests

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

Internal downpipes: Submit test results to **TESTING, Internal downpipe tests.**

Warranties

Requirement: Submit warranties to **COMPLETION, Warranties.**

1.9 INSPECTION**Notice**

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

- Roof supports before covering up or concealing.
- Glazing products before they are installed.
- The 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****Fire hazard properties**

See NATSPEC TECHnote DES 020 on fire behaviour of building materials and assemblies. See also BCA (2022) Table S7C7.

Pliable membranes: Flammability Index tested to AS 1530.2 (1993): ≤ 5.

Flammability Index is determined under AS 1530.2 (1993). There has been some debate about the adequacy of the test procedure in predicting performance of material in real fire situations. Pliable membranes are tested to AS 1530.2 (1993) as they are not suitable for testing to AS/NZS 1530.3 (1999).

Product substitution

Other products: Conform to **SUBSTITUTIONS** in *0171 General requirements*.

SUBSTITUTIONS in *0171 General requirements* 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: To the manufacturer's recommendations and as follows:

- Keep clean, dry and unexposed to weather.
- Store 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.
- Stack flat and off the ground on at least 3 evenly placed bearers.

Handling: Handle metal 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.

Storage area conditions: Allocate a safe and trade free area.

Welded safety mesh

Standard: To AS/NZS 4389 (2015).

Welded safety mesh may be used for fall arrest if required by WHS authorities. Coordinate with *0471 Thermal insulation and pliable membranes*, which also cites AS/NZS 4389 (2015). Mesh support for roof insulation may not be required where fall arrest sarking is used.

2.2 SUBSTRATE**Plywood sheeting**

Standard: To AS/NZS 2269.0 (2012):

- Stress grade: F11.
- Surface grade: CD.

AS/NZS 2269.0 (2012) defines stress grades or structural plywood in clause 1.5.3. It also defines five veneer qualities A, S, B, C and D, the lowest grade.

Plywood formaldehyde emission class to AS/NZS 2269.0 (2012): E₁.

Super E₀ and E₀ class may be available at additional cost and lead time. A formaldehyde emission class E₁ or less can improve indoor air quality.

Compliance with this subclause targets the Engineered Wood Products requirement for structural plywood within the Minimum Expectation level of the Exposure to Toxins credit in Green Star Buildings (2021):

- Structural plywood: 1.0 mg/L, (E₁).

Bond: Type A to AS/NZS 2754.1 (2016).

Thickness: 19 mm.

Identification: Sheets labelled under the authority of a recognised certification scheme to *0185 Timber products, finishes and treatment*.

Nominate the relevant certification schemes in *0185 Timber products, finishes and treatment*.

Steel battens

Standard: To AS/NZS 4600 (2018).

Steel battens are an alternative substrate to plywood sheeting. Delete if plywood sheeting is used.

Pliable membranes

If pliable membranes are specified in *0471 Thermal insulation and pliable membranes*, delete this subclause. Do not repeat requirements here.

Standard: To AS 4200.1 (2017).

- Duty classification: Heavy.
- Emittance classification:
 - . Reflective face: IR Reflective.
 - . Ant-glare face: IR Semi-reflective.

Where optional material classifications are required, AS 4200.1 (2017) Appendix A sets out tests for resistance to UV exposure, surface corrosion of low emittance surface, heat shrinkage, surface water absorbency classification and air control classification. Contact manufacturer's for the availability of these test results.

Vapour control membrane:

AS 4200.1 (2017) Table 4 categorises vapour control membranes (VCMs) as vapour barriers when classified Class 1 or Class 2, and vapour permeable membranes when classified Class 3 or Class 4.

- Vapour barrier:
 - . Vapour control classification: As documented.

AS 4200.1 (2017) defines the classifications for vapour control membranes (VCM) as Class 1, Class 2, Class 3 or Class 4.

Water control (sarking) membrane (other than walls and gables):

- Water control classification: Water barrier.

If the water control membrane (sarking) fails the test documented in or has not been tested to AS/NZS 4201.4 (1994), the classification is Non-water barrier.

2.3 FIELDERS SPECIALISED ROOFING

The Finesse range includes: Shadowline™ 305, Shadowline™ WA, Neo Roman™, Prominence™, Cadence™ and Grandeur™.

General

Requirement: FIELDERS interlocking specialised sheet metal roofing panels.

Selection: To the **FIELDERS specialised roofing schedule**.

Plywood sheeting substrate: Flush finished continuous plywood sheeting, as documented.

Plywood sheeting substrate is required for Neo Roman™, Prominence™, Cadence™ over 265 mm width and Grandeur™ over 325 mm width profiles only. Delete where not required.

Underlayer: Sarking, as documented.

2.4 COMPONENTS

Self-drilling screws

Material: Carbon steel SAE 1022 heat treated to AS 3566.1 (2002).

Structural frame: [complete/delete]

Refer to project details.

Screw fixed fastening clips

Fasteners: Provide starter clips, fixing clips and fastenings, as recommended by FIELDERS.

Screws: [complete/delete]

Refer to <https://specifying.fielders.com.au/finesse/about-finesse/>.

Profiled fillers

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

Locate profiled fillers under flashings to:

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

Add locations as required.

Accessories

Material: Provide accessories with the same finish as roofing sheets, or as documented.

Sealant: 100% neutral cure non-acid based silicone rubber to match roofing.

2.5 ROOF PLUMBING

General

See SA HB 39 (2015) Section 5 for the manufacture and fitting of internal and external metal gutters, downpipes, sumps and rainheads, AS/NZS 3500.3 (2021) Section 3 for method of sizing gutters and downpipes, and AS/NZS 3500.3 (2021) 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.

Products: FIELDERS Steel Roofing.

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

Delete if not required.

Standards

Roof drainage: To AS/NZS 3500.3 (2021).

Metal rainwater goods: To AS/NZS 2179.1 (2014).

Flashings and cappings: To AS/NZS 2904 (1995).

See SA HB 39 (2015) Section 8 for recommended practice for metal flashings and cappings.

See also specifying.fielders.com.au/finesse/.

2.6 SKYLIGHTS

General

Standard: To AS 4285 (2019).

Description: A proprietary skylight system for installation in roofs pitched less than 15°, 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.

Check if your roofing and associated access hatches are required to be fire rated or non-combustible. Refer to BCA (2022) Section C and the *ABCB Fire performance of external walls and cladding advisory note (2020)*.
Contact FIELDERS for their recommended proprietary item.

2.8 ROOF WINDOWS

General

Standard: To AS 4285 (2019).

Description: A proprietary window system designed for non-vertical installation in roofs pitched greater than 15° and less than 90°, 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 (2004). For design of smoke/heat venting systems, see AS 2665 (2001).

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

Finish: Match adjacent roofing.

2.10 ROOF ACCESS

Walkways

Description: A proprietary roof walkway system including fixings.

Product: FIELDERS Expa-tread aluminium concealed fixed walkway system.

3 EXECUTION

3.1 GENERAL

Preparation

Substrates or framing: Before fixing roofing, check the alignment of substrates or framing and adjust if required.

Flexible underlay: Check that the underlay or insulation is restrained.

Roofing: Make sure the roofing is clean and free of dust and loose particles.

3.2 INSTALLATION

Protection

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

Protection: Protect surfaces and finishes, including the retention of protective coatings during installation.

Thermal movement

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

Stainless steel has a thermal expansion coefficient of 2.4 mm per 100°C of temperature variation. Grandeur™ sliding clips have a moving component, which is 0.4 mm thick, and a 70 mm long slot to allow a free movement of the panel under expansion and contraction.

Metal separation

Make sure of compatibility or detail separation.

See AS 1562.1 (2018) Appendix C Table C3 for guidance on the compatibility of metals. See also SA HB 39 (2015) 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 (2018) clause 3.4.3 and AS 1562.1 (2018) Appendix C Table C4. There are four conditions to be avoided:

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

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

Typical methods for metal separation include:

- Applying an anti-corrosion, low moisture transmission coating such as zinc or barium chromate primer or aluminium pigmented bituminous paint to contact surfaces.
- Inserting a separation layer such as polyethylene film, adhesive tape or bituminous felt.

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.

3.3 ACCREDITATION

Seamed and panel roofing installation

Installer: As accredited by FIELDERS Steel Roofing.

3.4 SUBSTRATE

Plywood sheeting

Ensure the detailing allows for 40 mm minimum air gap allowing air movement under the plywood substrate.

This subclause is required for Neo Roman™, Prominence™, Cadence™ over 265 mm width and Grandeur™ over 325 mm width profiles only. Delete if not required.

Installation: Lay the length of the sheets at right angles to the supports.

End joints: Stagger the end joints and locate centrally over framing members.

Edge support: If panels are not tongue and grooved, provide noggings or trimmer joists to support the edges.

Fixing: 300 mm centres to each support:

- Timber: Screw or adhesive and nail.
- Steel: Metallic-coated, self-drilling/tapping screws with the heads finishing below the surface.

Control joints: 12 mm gap at abutting building elements.

Steel battens

Requirement: Provide battens suitable for span, spacing and proposed roofing material, as documented.

Steel battens are an alternative substrate to plywood sheeting. Delete if plywood sheeting is used.

Pliable membranes

Installation: To AS 4200.2 (2017) and to the manufacturer's recommendations.

Refer to AS 4200.2 (2017) Table 2.6 for duty classification and allowable usage for the application and level of support. Refer to the *ABCB Condensation in buildings handbook (2023)* for information on condensation and use of vapour barriers, vapour permeable membranes and sarking.

3.5 FIELDERS SPECIALISED ROOFING

Fabrication

Requirement: Factory fabricate roofing trays.

Grandeur™: Minimum bending radius:

- Steel: 3 m.
- Aluminium: 1.5 m.

Installation

Generally: To the manufacturer's recommendations.

Set out point: [complete/delete]

Note the elevation that will enable laying to proceed from leeward to the windward of prevailing wind.

Expansion joints: [complete/delete]

Expansion laps should be provided every 13 m in sheet length for roofs.

Fixing

Method: Fix pans to the substrate with concealed clips.

Clip spacing: To FIELDER's recommendations.

Contact FIELDERS for guidance on the number of fixing clips per sheet of aluminium with respect to weather and site conditions, and exposure to wind of various parts of the roof.

3.6 ROOF PLUMBING**Jointing sheet metal rainwater goods**

See AS/NZS 3500.3 (2021) 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:

- Prepainted stainless: Stainless steel blind rivets with stainless steel mandrels.
- Prepainted or zinc-aluminium alloy coated 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 for every two lengths of flashing, at a maximum of 12 m centres.

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 and 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 cure 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 as follows:

- Form stop ends, downpipe nozzles, bends and returns.
- Dress downpipe nozzles into outlets.
- Hail guards: Install grating over the whole of the box gutter, over all box gutter sumps and over the edges of roofing sheeting entering box gutters.
- Overflows: Provide overflows to prevent back-flooding. Size to pass 100% of the design rainfall. Discharge overflows in visible locations and so water does not enter the building or cause damage to the building.
- Sumps: Minimum 150 mm deep and the full width of the box gutter.

This is a typical minimum size. Coordinate with hydraulic design.

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 guard 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.

- Size: Not less than the diameter of the downpipe.

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 (1994) (ductile iron), Screwed fittings to AS 1589 (2001) (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 (1994) (or AS/NZS 1260 (2017) for PVC-U, AS 1589 (2001) 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.

3.7 SKYLIGHTS

Installation

Standard: To AS 4285 (2019).

Fixing: [complete/delete]

Specify and detail to the recommendations of the skylight manufacturer.

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 (2019).

Fixing: [complete/delete]

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

3.10 ROOF VENTILATORS

Installation

Fixing: [complete/delete]

AS 2428.1 (2004) covers the testing of smoke and heat release ventilators to determine resistance to leakage during rain.

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

3.11 ROOF ACCESS

Walkway

Installation: [complete/delete]

AS 1657 (2018) covers the design, construction and installation of roof walkways and platforms.

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* defines different tests in **INTERPRETATION, Definitions** and calls for an inspection and testing plan in **TESTING - GENERALLY, Inspection and testing plan**.

Internal downpipe tests

Standard: To AS/NZS 3500.3 (2021) clause 9.3.1.

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

AS/NZS 2033 (2008) clause 7.3 notes test requirements for non-pressure polyethylene (PE) pipelines.

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.

Damage to prepainted finish: Replace panels with scratches in the prepainted finish greater than 2 mm in width visible from the ground.

FIELDERS does not recommend the use of touch-up paint to repair damage or scratches to the painted surface of COLORBOND® or ZINCALUME® steel. See BlueScope TB-02 (2022).

Fasteners: Make sure weathertight and external panel facings are not distorted.

Cleaning

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

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.

Protection: After completion, remove protective coatings using methods to the manufacturer's recommendations.

Protective film will withstand exposure to weather for a limited period of time before losing its peel-off characteristics and causing staining. The gloss coating changes when exposed to plasticisers.

Operation and maintenance manuals

Requirement: Prepare a manual that includes 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.

Refer to specifying.fielders.com.au/

Compliance with this clause targets the Operations and Maintenance requirement within the Minimum Expectation level of the Verification and Handover credit in Green Star Buildings (2021).

Warranties

Warranty period:

- Material warranty: [complete/delete]

Material warranties: Select from:

- Aluminium: Up to 25 years.
- ZINCALUME® steel and COLORBOND® steel range: Up to 20 years.

Use only where 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, require the signatures of both manufacturer and installer. Delete if not applicable.

4 SELECTIONS

Schedules are a tool to specify properties required for products or systems. If the principal permits documentation of the product or system by proprietary name, some of the properties may be unnecessary and can be deleted. Document the product or system's location or application here and/or on the drawings with a matching project code. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PERFORMANCE

Roofing performance schedule

	A	B	C
Solar absorptance			
Light Reflectance Value (LRV)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Solar absorptance: Select from manufacturer's range. Light (< 0.40), Medium (0.40 to 0.60), Dark (> 0.60). See BCA (2022) J3D7 for roofs to a Class 2 building or a Class 4 part of a building.

Light Reflectance Value (LRV): If required, nominate the light reflectance value. Some local government authorities limit the light reflectance value for building exteriors. Refer to the relevant local government authority for any requirements.

4.2 PRODUCT

FIELDERS specialised roofing schedule

	A	B	C
Product			
Panel joint			
Material			
Minimum thickness (mm)			
Roof seam jointing			
Width between seams (mm)			
Colour			
Trim			
Substrate			

	A	B	C
Underlayer			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Product: Select from:

- FIELDERS Neo Roman™.
- FIELDERS Prominence™.
- FIELDERS Shadowline™ 305.
- FIELDERS Shadowline™ WA. (Only available in Western Australia).
- FIELDERS Grandeur™.
- FIELDERS Cadence™.

Material: Select from:

- Aluminium, Zinalume® steel, Colorbond® steel, Colorbond® Matt steel, Colorbond® Ultra steel, Colorbond® Metallic steel, Colorbond® Coolmax steel.

Minimum thickness: Select from:

- Aluminium: 0.90 mm.
- ZINCALUME® steel: 0.55 BMT, 0.70 BMT or 0.75 BMT.
- COLORBOND® steel: 0.55 BMT, 0.70 BMT or 0.75 BMT.
- COLORBOND® Matt steel: 0.55 BMT, 0.70 BMT or 0.75 BMT.
- COLORBOND® Ultra steel: 0.55 BMT, 0.70 BMT or 0.75 BMT.
- COLORBOND® Metallic steel: 0.55 BMT, 0.70 BMT or 0.75 BMT.

Roof seam jointing: For Grandeur™: aluminium panels, select from Double lock standing seam or Single lock standing seam.

Width between seams: Select from:

- Neo-Roman™: 275 mm or 475 mm.
- Prominence™: 265 mm or 465 mm.
- Grandeur™: 325 mm or 525 mm.
- Cadence™: 265 mm or 465 mm.
- Custom widths are also available. Contact FIELDERS for details.

Colour: Select colour. See www.fielders.com.au.

Trim: e.g. Eaves trim, Drip edge, Gable trim.

Substrate: Plywood sheeting or Steel battens.

Underlayer: e.g. Sarking membrane or nominate the product.

4.3 ROOF PLUMBING

FIELDERS flashing and capping schedule

	A	B	C
Type			
Material			
Thickness and grade			
Colour			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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

Type: List here or delete and refer to details. Flashing and capping types are available for all abutments and edge conditions.

- Ridge capping: Select from 350 mm Ridge Cap Roll Top or Low Profile Ridge.
- Barges: Select from Barge Roll, Steel Fascia, Barge Capping, Curved Flashings or Edge Roll.
- Hips: Select from hip profiles available.

- Non-standard cappings: Refer to details. Custom folded flashings, cappings and gutters are available.

Material: e.g. Metallic-coated steel, Soft zinc, 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 (1995). If other thicknesses are required, document them here. See AS 1397 (2021) Appendix D for information and guidance on the selection of steel grades and coating classes.

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

Roof plumbing schedule

	Type	Product	Material	Thickness/ Grade	Colour/Shape/Size
Eaves gutter					
Valley gutter					
Box gutter					
Overflow spouts					
Rainhead					
Sump					
Downpipe					
Gable vents					
Roof vents					
Hail guard					
Grate					
Leaf screen					

Document requirements here if not shown on the drawings.

Type:

- FIELDERS eaves gutters for steel roofing: Select from: 115 HiTen OG, 115 Quad, 125 D Gutter, 150 Half Round, 150 Halfline, 150 Hi Front Quad, Ainsworth O.G, Longline, Wide Bases Ovolo, Urbis, D Gutter, Fascia Gutter, Halfline®, Hi-Front Quad. Check availability in your state.
- Fielder's eaves gutters for aluminium roofing: Select from D Gutter, Hi-Front, Fascia Gutter, Ainsworth O.G., Half Round, Half line.
- Valley gutters: FIELDERS proprietary valley gutter.
- Box gutters: Internal box gutters are usually difficult to clean and replace. Add requirements for siphonic systems separately, as appropriate.
- Rainhead: Select from Ned Kelly, Half cylinder, Conical, Tapered, U-shaped, and Quarter round.
- 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.
- Gable vents: Circular, Half round, Quarter round, Circular louvred, Ornate, Round top rectangular, Rectangular landscape, Rectangular portrait, Triangular.
- Roof vents: Cupola, Commercial ridge vents, Cowles, Flue caps and Vent pipe canopy.
- 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 for steel roofing: Select from Stainless steel, COLORBOND® steel, COLORBOND® Matt steel, COLORBOND® Ultra steel, COLORBOND® Metallic steel.
- Metal rainwater goods for aluminium roofing: Stainless steel Type 316 or Type 304.
- Box gutter: Select from 0.55 mm stainless steel.

- Rainheads: Select from Stainless steel, COLORBOND® steel, COLORBOND® Matt steel, COLORBOND® Ultra steel, COLORBOND® Metallic steel.
- Internal downpipe: e.g. Cast iron to AS 1631 (1994) (may be bitumen-coated, epoxy-coated, or cement-coated if required), Copper Type D to AS 1432 (2004), Stainless steel type 304, PVC-U to AS/NZS 1260 (2017). PVC-U may not be acceptable for fire-resistance rating.
- External downpipe: Select from Stainless steel, COLORBOND® steel, COLORBOND® Matt steel, COLORBOND® Ultra steel, COLORBOND® Metallic steel.
- Vents: Select from Stainless steel, COLORBOND® steel, COLORBOND® Matt steel, COLORBOND® Ultra steel, COLORBOND® Metallic steel.
- Leaf screen: e.g. Plastic mesh or proprietary metal guards to match the gutter profile. Combustible leaf guards are not permitted for bushfire-prone areas.

Thickness/Grade: Minimum thickness and grade for commonly used materials are given in AS/NZS 2179.1 (2014). If other thicknesses are required, specify them here. See AS 1397 (2021) 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.
- Rainhead and vents: Nominate colour, shape and pattern. Match roofing or select from the COLORBOND® roofing colour charts.
- Downpipe: Nominate colour, e.g. Match roofing or select from the COLORBOND® roofing colour charts and size (mm) from www.fielders.com.au.
- Vents: Match roofing or select from the COLORBOND® steel roofing colour charts.

4.4 ROOF ACCESSORIES

Skylight schedule

	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			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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 (2019) 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/m².K): Add if required in BCA (2022) J4D5 or BCA (2022) H6D2(1)(b)(i).

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 Glass and Window Association
 awa.associationonline.com.au.

Roof hatch schedule

	A	B	C
Product			
Size (mm)			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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

Roof window schedule

	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			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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/m².K): Add if required in BCA (2022) J4D5 or BCA (2022) H6D2(1)(b)(i).

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

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

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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 access schedule

	A	B	C
Product			
Size (mm)			
Material			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

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/NZS 1170		Structural design actions
AS/NZS 1170.2	2021	Wind actions
AS 1530		Methods for fire tests on building materials, components and structures
AS 1530.2	1993	Test for flammability of materials
AS 1562		Design and installation of sheet roof and wall cladding
AS 1562.1	2018	Metal
AS 1562.3	2006	Plastic
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 2269		Plywood - Structural
AS/NZS 2269.0	2012	Specifications
AS/NZS 2754		Adhesives for timber and timber products
AS/NZS 2754.1	2016	Adhesives for manufacture of plywood and laminated veneer lumber (LVL)
AS/NZS 2904	1995	Damp-proof courses and flashings
AS/NZS 3500		Plumbing and drainage
AS/NZS 3500.3	2021	Stormwater drainage
AS 3566		Self-drilling screws for the building and construction industries
AS 3566.1	2002	General requirements and mechanical properties
AS 4200		Pliable building membranes and underlays
AS 4200.1	2017	Materials
AS 4200.2	2017	Installation
AS 4285	2019	Rooflights
AS/NZS 4389	2015	Roof safety mesh
AS/NZS 4600	2018	Cold-formed steel structures

The following documents are mentioned only in the Guidance text:

AS/NZS 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 applications
AS 1397	2021	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 1530		Methods for fire tests on building materials, components and structures
AS/NZS 1530.3	1999	Simultaneous determination of ignitability, flame propagation, heat release and smoke release
AS 1589	2001	Copper and copper alloy waste fittings
AS 1631	1994	Cast grey and ductile iron non-pressure pipes and fittings
AS 1657	2018	Fixed platforms, walkways, stairways and ladders - Design, construction and installation
AS/NZS 2033	2008	Installation of polyethylene pipe systems
AS/NZS 2312		Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS 2312.1	2014	Paint coatings
AS 2427	2004	Smoke/heat release vents
AS 2428		Methods of testing smoke/heat release vents
AS 2428.1	2004	Determination of resistance to leakage during rain
AS 2665	2001	Smoke/heat venting systems - Design, installation and commissioning
AS 3959	2018	Construction of buildings in bushfire-prone areas
AS 4055	2021	Wind loads for housing
AS/NZS 4201		Pliable building membranes and underlays - Methods of test
AS/NZS 4201.4	1994	Resistance to water penetration
AS 4312	2019	Atmospheric corrosivity zones in Australia
SA HB 39	2015	Installation code for metal roof and wall cladding
SA HB 106	1998	Guidelines for the design of structures in snow areas
BCA H6D2	2022	Class 1 and 10 buildings - Energy efficiency - Application of Part H6
BCA J3D7	2022	Energy efficiency - Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building - Roofs and ceilings of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building
BCA J4D5	2022	Energy efficiency - Building fabric - Roof lights
BCA Section C	2022	Fire resistance

BCA Table S7C7	2022	Fire resistance - Fire hazard properties - Other materials - Other materials
ABCB Condensation	2023	Condensation in buildings handbook
ABCB Fire performance	2020	Fire performance of external walls and cladding advisory note
BlueScope TB-01A	2023	Steel roofing products - Selection guide
BlueScope TB-01B	2022	Steel walling products - Selection guide
BlueScope TB-02	2022	Overpainting and restoration of exterior BlueScope coated steel products
GBCA Buildings	2021	Green Star Buildings
NATSPEC DES 004		Air, moisture and condensation
NATSPEC DES 010		Atmospheric corrosivity categories for ferrous products
NATSPEC DES 011		Rainwater harvesting
NATSPEC DES 018		Bushfire protection
NATSPEC DES 020		Fire behaviour of building materials and assemblies
NATSPEC DES 026		Living walls and roofs
NATSPEC DES 031		Specifying R-Values
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD