

0531P RONDO IN SUSPENDED CEILINGS – COMBINED**Branded worksection**

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Worksection abstract

This worksection *Template* is applicable to internal ceilings and external soffits comprising sheet linings or proprietary ceiling units suspended with RONDO ceiling support systems fixed to a supporting structure.

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:

- *0342 Light steel framing* for structural ceiling framing.
- *0382 Light timber framing* for structural ceiling framing.
- *0472 Acoustic insulation* for acoustic insulation to walls and ceiling systems.
- *0511 Lining* for screw-up lining to structural ceiling framing and direct fix ceilings.
- *0521 Partitions – demountable* or *0522 Partitions – framed and lined* for plenum baffles.
- *0574 Window coverings* for ceiling mounting or ceiling fixed concealed track for curtains and blinds.

Related branded worksections include:

- *0453p RONDO in doors and access panels.*
- *0522p RONDO in partitions – framed and lined.*

Material not provided by RONDO

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

- Ceiling units.
- Linings.

Documenting this and related work

You may document this and related work as follows:

- Show ceiling types and coordination of combined services on reflected ceiling plans and sections.
- Document requirements for the sheet linings in this worksection, on the drawings or in *0511 Lining*. Do not duplicate.
- Detail bulkheads and curtain recesses on drawings and coordinate with *0574 Window coverings*.
- Provide structural design for suspended soffits required to carry loads from imposed actions, including wind and seismic actions.

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

Specifying ESD

The following may be specified by using included options:

- Demountability, e.g. modular ceiling panel systems that can be disassembled and re-used during tenancy fitouts.

The following may be specified by including additional text:

- Recycled material content, e.g. steel and aluminium for ceiling panels and ceiling suspension systems, recycled paper, synthetic mineral wool manufactured from slag, a waste product of steel production.
- Renewable raw materials, e.g. ceiling panels with corn or wheat starch binders, wood wool panels made from sustainable timber.
- Mineral tiles with post-consumer contents and an off-cut recycling program.
- Ceiling panels with zero or low formaldehyde emission.
- Ceiling panels with high light reflectance to improve the quality and quantity of natural lighting and thus reduce artificial lighting demands.

- Ceiling products manufactured using processes incorporating sustainability measures, e.g. recycling of water and waste. Refer to NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

RONDO is a market leading manufacturer and supplier of wall and ceiling systems, and complementary accessories. RONDO is dedicated to providing the systems needed to realise visions effectively and in the most economical way possible, including systems where specific wind pressure, seismic design or acoustic design is to be accommodated. RONDO's commitment to providing market leading solutions, customer service and high quality products has led it to being behind the best buildings throughout the world.

1.1 RESPONSIBILITIES

General

Requirement: Provide suspended ceilings using RONDO ceiling support system, as documented.

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

The responsibility of the designer is to select a product that is:

- Appropriate for the suspended ceiling type.
- Appropriate for expected environmental conditions, e.g. for external soffits in a corrosive atmosphere and ceilings to indoor swimming pools. See NATSPEC TECHnote DES 010 for information on atmospheric corrosivity categories.

1.2 COMPANY CONTACTS

RONDO technical contacts

Website: www.rondo.com.au/contact-us/

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.

- *0453p RONDO in doors and access panels*.

1.4 STANDARDS

General

Suspended ceilings: To AS/NZS 2785 (2020).

AS/NZS 2785 (2020) provides the minimum requirements for the design, construction, installation, maintenance and testing of internal and external non-trafficable suspended ceiling systems of dry construction with suspension systems fixed to a supporting structure. It is intended for use in commercial and industrial applications. It also applies to domestic structures designed in conformance with AS 1170.4 (2007) in Australia.

AS/NZS 2785 (2020) clause 2.1.2 requires that the ceiling system sustain all reasonably expected design actions.

AS/NZS 2785 (2020) Appendix F (Informative) addresses material selection and performance.

The AS/NZS 2785 (2020) definitions do not include timber systems that form part of the gypsum lining standard AS/NZS 2589 (2017).

1.5 MANUFACTURER'S DOCUMENTS

Technical manuals

Resources: www.rondo.com.au/resources

Product: www.rondo.com.au/products/ceilings/

Product manual: www.rondo.com.au/resources/installation/product-manuals/

1.6 INTERPRETATION

Definitions

General: For the purposes of this worksection, the definitions given in AS/NZS 2785 (2020) and the following apply:

- Ceiling unit: Tile, panel, plank, strip or open grid supported within or to a suspended ceiling system.

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

1.7 TOLERANCES

Suspension system

Flatness, twist, winding and bow: 1.5 mm deviation from a 1.5 m straightedge placed in any position.

Deflection: To AS/NZS 2785 (2020) Table 2.4.5.

Setting out and levelling: To AS/NZS 2785 (2020) Appendix D.

Sheeted or flush ceiling suspension system

Suspension system bearing surface for flush lined ceiling: To AS/NZS 2589 (2017) Table 4.2.2.

If tolerances exceed those in Table 4.2.2 a suitable levelling system can be used, such as adjustable clips.

Deflection: To AS/NZS 2589 (2017) Table 3.5.1.2.

1.8 SUBMISSIONS

Fire performance

Fire hazard properties: Submit evidence of conformity to PRODUCTS, **FIRE PERFORMANCE, Fire hazard properties.**

Fire-resistance level: Submit evidence of conformity to PRODUCTS, **FIRE PERFORMANCE, Fire-resistance of building elements.**

Operation and maintenance manuals

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

Products and materials

Type tests: Submit results as follows:

- Weighted suspended ceiling normalised level difference: To AS/NZS ISO 717.1 (2004).
- Weighted sound absorption coefficient: To AS ISO 11654 (2002), as tested to AS ISO 354 (2006).
- Weighted sound reduction index: To AS/NZS ISO 717.1 (2004).

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.

Prototypes

General: Provide a prototype of the ceiling system, including at least one example of each of the specified components, including services terminals.

Size: At least 10 m².

Location: [complete/delete]

Preferably show the location and extent on the drawings or nominate a room. Delete if a prototype is not required.

Samples

General: Submit samples as follows:

- Suspension system: Sections proposed for the suspension system, including suspension rods, clips and wall angles.
- Accessories including access panels and wall trim.
- Ceiling material: Lining or ceiling units, with insulation, showing the extremes and mean of variation in colour, pattern, or texture of the proposed finish.

If prototypes are specified, separate samples of visible components may not be necessary.

Shop drawings

Set-out drawings: Submit proposed set-out, indicating the grid module, type and ceiling unit layout, before installation. Coordinate with plenum services layouts, building structure and other factors affecting the layout.

The drawings should show the ceiling grid or building grid, or both. When choosing a grid module, consider the availability of ceiling unit sizes, and building access.

Subcontractors

Requirement: Use specialist installers recommended by the ceiling system manufacturer.

Warranties

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

1.9 INSPECTION

Notice

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

- The suspension system before the installation of ceiling units or lining.
- The ceiling assembly before the installation of fittings and site painting, if applicable.
- The completed ceiling.

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 **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

Requirement: Store suspended ceiling components in a dry and secure area, and to the manufacturer's recommendations.

Product identification

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

2.2 FIRE PERFORMANCE

Fire hazard properties

Group number: To AS 5637.1 (2015).

Non-sprinklered buildings: Wall and ceiling linings must either have an *average specific extinction area* less than 250 m²/kg or a *smoke growth rate index* not more than 100 as determined by AS 5637.1 (2015).

Refer to NATSPEC TECHnote DES 020 for information on fire hazard properties.

Fire-resistance of building elements

Fire-resistance level: Tested to AS 1530.4 (2014).

Refer to NATSPEC TECHnote DES 020 for information on fire-resistance levels.

2.3 SUSPENSION SYSTEM

RONDO ceiling systems

General: As documented.

Seismic systems are available for RONDO KEY-LOCK® concealed suspended ceiling system, RONDO DUO® exposed grid ceiling system and RONDO steel stud and track drywall framing system. Contact RONDO's technical representative for help with design and further information.

Ceiling systems:

- RONDO KEY-LOCK® Concealed ceiling system.

Available in direct-fix or suspended applications, RONDO KEY-LOCK® produces a high-quality structure that has the ability to hold multiple layers of board, can be used in both fire-rated and non-fire-rated environments, as well as being suitable for acoustic, bulkhead and seismic designs.

- RONDO DUO® Exposed grid ceiling system.

Expertly engineered for fast assembly on site, RONDO DUO® has cross tees that positively lock into each other through the main tee to create a sturdy exposed grid ceiling system. Seismic designs that have been fully tested are available.

- RONDO Xpress® Drywall grid ceiling system.

RONDO Xpress® is a fast and simple lightweight, concealed grid system suitable for a variety of applications including flush ceilings, bulkheads and boxed soffits. It may be used in direct fix or fully suspended applications.

- RONDO DONN® Exposed grid ceiling system.

RONDO DONN® Exposed Grid Ceiling System provides the framework for a variety of lay-in tiles including acoustic, perforated plasterboard, PVC laminated and metal. The well-known DONN® branded Quick Release Clips (QRC) are located on the ends of RONDO DONN® Cross Tees to enable fast and easy installations without the need for mechanical tools.

- Accessories: To RONDO's recommendations.

Materials

Protective coatings for steel components: To AS/NZS 2785 (2020) Appendix F.

Protection against atmospheric corrosion: To AS 2312.1 (2014) and AS/NZS 2312.2 (2014).

If the ceiling is installed in a corrosive atmosphere such as some external locations, heavy industrial, maritime or indoor swimming pool enclosures, the protection of all steel components, especially hangers and suspension clips needs special consideration.

2.4 CEILING UNITS

General

Ceiling units: As documented.

Document in the **Ceiling units schedule**.

2.5 LININGS

Ceiling linings

General: As documented.

Document in the **Error! Reference source not found..**

Plasterboard

Standard: To AS/NZS 2588 (2018).

Minimum thickness: 10 mm.

Fibre cement

Standard: To AS/NZS 2908.2 (2000).

Internal ceiling linings: Type B Category 2.

External ceiling linings: Type A Category 3.

Minimum thickness: 4.5 mm.

Sealants

Fire-resisting sealant: Non-hardening sealant compatible with the materials to be sealed and having a fire-resistance rating equal to that of the building element it seals.

Acoustic sealant: Non-hardening sealant compatible with the ceiling materials and rated to match the ceiling system's acoustic performance.

Alternatives: Fire-resisting sealants are claimed to satisfy most acoustic properties.

2.6 TRIM

General

Trim: Provide trim consistent with the materials and finishes of the ceiling system.

Accessories

General: Provide accessories as part of the proprietary ceiling system necessary to complete the installation.

3 EXECUTION**3.1 GENERAL****Working environment**

General: Do not start work before the building is enclosed, wet work is complete and dry, and all work above the ceiling, including services, is complete.

Protection

General: Protect existing work from damage during the installation.

Partitions

General: If partitions are attached to the underside of the ceiling systems, include the partition mass in the seismic mass of the ceiling.

Bracing: Brace partitions attached to the ceiling at concentrated load points such as window and door openings and shelving.

Stability

General: Install the ceilings level, to the nominated plane and fix to prevent looseness or rattling of ceiling components under normal conditions.

If the ceiling is subjected to internal pressurisation, refer to the RONDO Professional Manual for details of grid configurations and down-strutting requirements.

Structure-borne sound

General: Provide a ceiling system that does not amplify structure-borne sound. Provide suitable proprietary products or systems for reducing contact vibrations between structure and ceiling.

Control of movement

Abutments: Install the ceiling to allow for differential movement at abutting surfaces.

Exterior ceiling systems are subjected to additional thermal movement, due to the uncontrolled nature of the environment. The spacing of control joints should take into account these additional thermal effects.

Alignment: Align ceiling control joints with structural control joints. Do not bridge structural control joints.

Alternatively show on the drawings. For building movement joints see AS/NZS 2785 (2020) clause 3.12.

Prefinishes

General: Repair damaged prefinishes by recoating.

Curtain recesses

General: Provide curtain recesses, including the following:

- Lining.
- Curtain track support.
- Accommodation for motors and cabling.

Edit and coordinate with drawings.

3.2 SUSPENSION SYSTEM

Show on the drawings the location and extent of the suspended ceiling and where appropriate the basic grid layout. For design see AS/NZS 2785 (2020) Appendix B. For installation see AS/NZS 2785 (2020) Section 3. Delete the installation clauses for materials not required for the project. Consult manufacturers for particular installation requirements for other materials.

Alterations

General: Dismantle and re-use ceiling suspension system members and supplement with compatible new members, as required.

Consider including this *Optional* style text by changing to *Normal* style text if re-using existing ceiling suspension system members.

Installation of RONDO ceiling support systems

Requirement: To the RONDO Professional Design Manual.

Ceiling grid

Set-out: Align ceiling unit joints and centrelines of visible suspension members with documented set-out points. If not documented, set out with equal margins. Maintain a consistent and uniform grid set-out conforming to RONDO's span tables, or as documented.

Clearances: Allow for adequate clearance between ceiling grid and building facade elements.

Suspension system

The suspension system may comprise hangers or struts depending on which direction the load is applied. External ceilings will be subjected to positive and negative loads from wind actions and will therefore require structural bracing and framing. See AS/NZS 2785 (2020) Appendix E for external ceilings.

Internal walls and ceilings need to withstand internal wind pressures. Refer to AS/NZS 1170.2 (2021) clause 5.3.3 for internal pressure requirements.

Give special consideration to ceilings subject to seismic actions as follows:

- If ceiling systems abut glazing, the horizontal seismic forces generated by the ceiling can damage the glazing.
- If large runs of ceilings are terminated at bulkheads, the horizontal seismic forces generated by the ceiling can cause separation between the ceiling and bulkhead if not properly designed.
- If the ceiling is terminated at a partition, design the partition for the seismic force generated by the ceiling.
- If the partition is terminated at the ceiling, design for the seismic force generated by the partition.

Support members: Install support members as follows:

- Space as required by the loads on the system and the type of ceiling.

Refer to the RONDO Professional Manual for details of grid configurations and allowable loads.

- Allow for the installation of services and accessories, including ductwork, light fittings and diffusers.
- Provide additional back support or suspension members for the fixing of access panels or air registers to prevent distortion, overloading or excessive vertical deflection.
- Allow for access for maintenance of services.

Alignment: Align suspension system with ceiling grid members.

- Vertical misalignment: < 5° (9H in 100V) in either direction.

Clearances: Provide minimum clearance between suspension system and services in the plenum space, to RONDO's recommendations.

Height adjustment: Provide height adjustment with a length adjustment device at each suspension point, permitting length variation of at least 50 mm.

If particular height adjustment devices are not permitted, say so here. The use of threaded rod systems does not necessarily constitute a stronger ceiling grid system.

Grid members: If required, notch grid members at the junction with the perimeter trim to make sure the ceiling units lay flat on the perimeter trim.

- Minimum bearing length: 7 mm.

Restriction: Do not attach the suspension system to the lip or flange of purlins.

If flange connections are necessary, they should be specifically designed and as close as possible to the web.

Services

Show on the drawings (e.g. reflected ceiling plans) the location and setout of services on the ceiling surface. See AS/NZS 2785 (2020) clause 4.4 for minimum clearances to services in the ceiling plenum.

Support: Conform to the following:

- Do not fix suspension members to services.

e.g. Ductwork.

- If services obstruct the ceiling supports, provide bridging and suspension on each side of the services.
- Do not support services terminals on ceiling units.
- Clearances: Maintain clearance between services and the suspension system to RONDO's recommendations.

RONDO DUO ceiling grids: If the weight of the service exceeds 7.5 kg, provide independent suspension to the service.

Bracing

General: If the ceiling grid is unable to transfer sufficient load at the perimeter junction, provide plenum bracing to RONDO's recommendations to prevent lateral movement of the ceiling grid and to resist the imposed horizontal seismic force.

The RONDO Seismic Wizard can be used to determine when ceiling plenum bracing will be required.

Consider bracing the ceiling at concentrated load points, such as door openings and window openings, or where partitions are attached to the ceiling.

Consider bracing the ceiling at the perimeter where it abuts glazing to prevent the transfer of horizontal load to the glazing under seismic activity.

Bulkheads

General: Integrate bulkheads with the ceiling structure and brace to prevent lateral movement. If the ceiling is terminated at a bulkhead, provide for the resulting seismic force within the bulkhead bracing.

External suspended soffits

Do not use RONDO DUO and RONDO RAPID systems in external applications.

RONDO KEY-LOCK® ceiling grid system: Provide rigid down-strutting members as documented, at each suspension point to prevent ceiling uplift.

Determine the appropriate grid set out for the design pressure tabulated in the RONDO Professional Manual. Wind loading and load combinations to AS/NZS 1170.2 (2021), as required.

Fasteners

General: Provide concealed fasteners to the manufacturer's recommendations. If material supporting hangers is less than 1.2 mm thick, do not use single screw fasteners in tension.

3.3 CEILING UNITS**Alterations**

General: Re-use existing ceiling units and supplement with matching new ceiling units to suit the suspension system, as required.

Consider including this *Optional* style text by changing to *Normal* style text if re-using existing ceiling units.

Installation

Fitting: Fit ceiling units accurately and neatly, without distortion.

Consult the ceiling system manufacturer if additional support and bracing is required to ceiling units that are required to carry loads from permanent actions other than their own weight.

Tile hold down clips: If ceiling units are required to be restrained for security or to prevent dislodgement of the ceiling tile under seismic actions, insert tile hold down clips at the junction of carrier rails and units.

Pattern and texture: Set out patterned or heavily textured materials with a consistent direction of pattern or texture, or as documented.

Service penetrations

Show on the drawings the location and setout of all services on the ceiling surface. See AS/NZS 2785 (2020) Section 4.

General: Provide openings for all services elements, including light fittings, ventilation outlets, detectors, sprinklers and loudspeakers. If services pass through ceiling grid members, provide additional grid members and support.

Cut ceiling unit edges

General: Conceal, or finish to match prefinished edges, including at openings for services elements.

Generally, only plain ceiling units or units with a non-directional random pattern should be considered for cutting.

3.4 PLASTERBOARD

Delete this clause, if not applicable.

Installation

Gypsum plasterboard and fibre-reinforced gypsum plaster: To AS/NZS 2589 (2017).

This standard is generally adequate for most plasterboard installation not involving fire or acoustic requirements, it does not cover all applications. If referring to more comprehensive manufacturer's recommendations, then delete reference to this standard.

Schedule or show on drawings additional requirements for fire resistance or acoustics. Alternatively, describe the construction required for sheet finish, edge treatments, thickness, type and number of layers and ceiling treatment.

The manufacturers' literature may provide more comprehensive guidance than is provided here.

Level of finish and jointing: To AS/NZS 2589 (2017) clause 3.1.

Schedule the level of finish in the **Sheet lining schedule**.

Suspended flush ceilings: Fix using screws or screws and adhesive to ceiling members or support frame.

Multiple sheet layers

Application: Fire-resisting and acoustic rated ceilings.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before installing following layers. Stagger all sheet joints by minimum 200 mm in both directions.

Joints

Show on the drawings the location of all control and movement joints on the ceiling surface. See AS/NZS 2785 (2020) clause 3.12.

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Butt joints: Make joints over framing members or otherwise provide back blocking.

External corner joints: Make joints over RONDO P01 corner beads.

Control joints and movement joints: Align lining control joints with structural movement joints and as follows:

- Ceilings:
 - . Internal: At maximum 12 m centres.
 - . External: At maximum 6 m centres.
- Control joint beads: RONDO P35 expansion joint.
- Seismic joint: RONDO sliding joint.
- Location: Position joints to intersect light fixtures, vents or air diffusers, as required.

Wet areas: Install additional supports, trim and sealants, as required.

3.5 FIBRE CEMENT

Delete this clause, if not applicable.

Installation

General: Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

Suspended flush ceilings: Fix using screws or screws and adhesive to ceiling members or support frame.

External areas: Close up ceiling grid spacing to the manufacturer's recommendations for fibre cement, as appropriate.

Multiple sheet layers

Application: Fire-resisting and acoustic rated ceilings.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before installing following layers. Stagger all sheet joints by minimum 200 mm in both directions.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

External corner joints: Make joints over RONDO P01 corner beads.

Dry joints: Provide square edged sheet and join with a RONDO Extreme PDM joining section.

Control and movement joints: Align lining control joints with structural control joints and for flush jointing as follows:

- Control joint beads: RONDO P35 expansion joint.
- Seismic joint: RONDO sliding joint.
- Support: Provide framing parallel to the joint on each side. Do not fix the lining to abutting building surfaces.

- Location: Position joints to intersect light fixtures, vents or air diffusers, as required.

Wet areas: Install additional supports, trim and sealants, as required.

3.6 ACCESS PANELS

Provide for ceiling access panels where necessary for access to light fittings, sprinklers control valves and the like.

General

Requirement: Provide RONDO access panels to 0453p RONDO in doors and access panels.

Finish

General: Match the access panels to the ceiling in appearance and performance.

Identification

General: Provide each access panel with an identification mark.

Non-demountable ceilings

General: Provide access panels supported and anchored to permit ready removal and refixing.

Reinforcement

Frames: Frame the ceiling opening on all sides to allow fixing of the access panel. Provide independent suspension to the framing, as required.

3.7 TRIM

General

Trim: Install trim at junctions with other building elements and surfaces, including walls, beams and penetrations, consistent with the materials and finishes of the ceiling system.

Accessories

General: Install accessories as part of the proprietary ceiling system necessary to complete the installation.

Plasterboard cornices

Fixing: Mitre at corners and adhesive fix with cornice cement. Pin in place at cornice edges until adhesive sets, remove pins and fill holes.

Vertical movement: If minor vertical movement of the ceiling is anticipated, use flexible mastic to joints to vertical surfaces.

Plaster cornices and roses

Fixing: Pin or prop in place and fix with wet gypsum plaster and scrim straps over framing members.

Alternative: Nominate fixing by the manufacturer.

Fire-resisting walls

Requirement: Seal to soffit with sealant with an equivalent fire-resistance level before fixing decorative cornices, if any.

3.8 COMPLETION

General

Exposed surfaces: Touch up shop applied finishes and restore damaged or marked areas.

Cleaning: Clean completed surfaces

Debris and unused material: Remove from site.

Spares

Applies mainly to demountable systems where the ceiling units are liable to suffer from handling. Suspension system members should need less replacement. Vary the quantities stated, as required.

General: Provide spare matching ceiling components, as follows, and store the spare materials on site where directed:

- Supporting system: One spare supporting member (hanger or framework member) for every 100 members or part thereof of the same type installed in the ceiling.
- Ceiling units: One spare unit for every 50 units or part thereof installed in the ceiling.
- Accessories: One spare of each type for every 50 units or part thereof installed in the ceiling.

Operation and maintenance manuals

Requirement: Prepare a manual that includes the manufacturer's recommendations for the care and maintenance of the ceiling, and operating instructions for demounting, if applicable.

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

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

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

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.

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 GENERAL

Suspended ceiling performance schedule

The performance values apply to the complete ceiling assembly.

Document sound insulation properties by the appropriate quantities and using the correct terms, symbols and units.

	A	B	C
Additional structural design actions			
Fire hazard properties: Group number			
Fire-resistance level (FRL)			
Weighted suspended ceiling normalised level difference ($D_{n,c,w}$)			
Weighted sound absorption coefficient (α_w)			
Weighted sound reduction index (R_w)			
Impact sound insulation			

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.

Additional structural design actions: See AS/NZS 2785 (2020) clause 2.2. Document only those actions additional to those given in 0171 *General requirements*.

- Suspended ceilings designed in conformance with AS/NZS 2785 (2020) only cover non-trafficable ceiling systems. If the plenum or roof space will be accessible for maintenance personnel on temporary or permanent walkways, make appropriate provision here and, if necessary, on the drawings. Document the imposed loadings for the supporting framework of access panels and loading from access ladders. Document the supporting framework and any structures e.g. catwalks, under the appropriate worksection e.g. 0552 *Metalwork - fabricated*.
- For earthquake mass of the ceiling, see AS/NZS 2785 (2020) clause 2.3.6.2.
- Consider other actions e.g. from ductwork, bulkheads, equipment, not carried independently of the ceiling system.

Fire hazard properties: Group number: Refer to BCA (2022) Spec 7.

Fire-resistance level (FRL): If required, nominate the FRL to AS 1530.4 (2014). See NATSPEC TECHnote DES 020 on fire behaviour of building materials and assemblies. See also AS/NZS 2785 (2020) clause 2.5.

Weighted suspended ceiling normalised level difference ($D_{n,c,w}$): Refer to NATSPEC TECHnote DES 027 for information on impact sound insulation and NATSPEC TECHnote DES 032 for information on airborne sound insulation.

Weighted sound absorption coefficient (α_w): AS ISO 11654 (2002) documents the method to convert sound absorption into a single number. It can be used for routine applications but not appropriate for products in a qualified environment requiring acoustical design by expertise.

Weighted sound reduction index: State the required rating to AS/NZS ISO 717.1 (2004) for either the weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation ($R_w + C_{tr}$). This rating is for the system of which the

building element is only one component. It may be better to provide the rating in the appropriate system schedule. It is advisable to obtain the advice of an acoustic consultant on the selection of an R_w or $R_w + C_{tr}$ rating for airborne sound transmission reduction. Refer to NATSPEC TECHnote DES 032 for information.

Impact sound insulation: State the required rating to AS ISO 717.2 (2004) for the weighted normalised impact sound pressure level ($L_{n,w}$). This rating is for a building system of which the building element is only one component. It may be better to provide the rating in the appropriate system schedule. It is advisable to obtain the advice of an acoustic consultant on the selection of an $L_{n,w}$ rating for impact sound transmission reduction. Refer to NATSPEC TECHnote DES 027 for information.

WHS considerations

For guidance on occupational noise management, refer to the AS/NZS 1269 series.

4.2 SUSPENSION SYSTEM

RONDO ceiling support system schedule

	A	B	C
Product			
Application			
Grid			
Grid finish/colour			
Fixing type			
Wall trim			

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 the product suitable for flush set ceilings or ceiling units. Select from:

- RONDO KEY-LOCK® Concealed ceiling system.
- RONDO DUO® Exposed grid ceiling system.
- RONDO RAPID® Drywall grid system.
- RONDO DONN® Exposed grid ceiling system.

Contact RONDO for the design of seismic ceiling systems and further information.

Application: Internal or External. If external, document wind pressure here or in the **Suspended ceiling performance schedule**.

Grid: Exposed or Concealed.

Grid finish for DUO®: Powder coat with AkzoNobel Interpon MA2889 cool white. Delete if grid is concealed.

Fixing type: Suspended or Direct fix.

Wall trim: Select from the following:

- RONDO KEY-LOCK®: Wall track 140, 142 or 340, Wall angle DUO 5 or DUO 6, or Shadowline combination set bead P51, P52 or P53.
- RONDO DUO®: Wall angle DUO5, DUO6, DUO7 or DUO8.
- RONDO RAPID®: Wall track RAP6, Locking wall trim RAP7 or Wall trim RAP8.

Trim for curved walls and columns: Contact RONDO for options.

4.3 CEILING UNITS

Ceiling units schedule

	A	B	C
Product			
Type			
Material			
Size (mm)			
Thickness (mm)			
Pattern			
Colour			

	A	B	C
Edge type			
Finish			

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.

If the names of firms and proprietary types are quoted here, much of the data required by this schedule may be unnecessary. Edit as required.

Type: e.g. Tile, panel, plank or strip.

Material: e.g. Mineral fibre, plasterboard or fibrous plaster.

Finish: e.g. for plasterboard nominate vinyl faced or paint prefinish.

4.4 LININGS

Sheet lining schedule

	A	B	C
Location			
Material			
Thickness (mm)			
Configuration			
Plasterboard: Grade			
Plasterboard: Level of finish to AS/NZS 2589 (2017)			
Plasterboard cornice			
Plaster cornice			
Plaster rose			
Control joint			
Access panels			

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.

Location: e.g. bulkheads, fire-resisting ceiling, room type or identifier, or use lining designation on drawings or in a finishes schedule.

Material: Plasterboard or Fibre cement.

Thickness (mm): Nominate the thickness.

Configuration: e.g. Single or Double layer. Note thickness of each layer.

Plasterboard: Grade: AS/NZS 2588 (2018) classifies plasterboard by four grades and by performance requirements. Select from:

- Bracing.
- Fire-resistant.
- Standard.
- Water-resistant.

Plasterboard: Level of finish to AS/NZS 2589 (2017):

- Level 3: For concealed surfaces.
- Level 4: Default level for gypsum lining unless specified otherwise.
- Level 5: For surfaces where gloss or semi-gloss paints are used or where critical lighting conditions occur on flat, matt or low sheen paint.

Plasterboard cornice: Nominate size e.g. 55 mm, 75 mm or 90 mm. Select profile.

Plaster cornice: and Plaster rose: Fibrous or solid plaster. Usually heritage revival profiles.

Control joint: Nominate a product.

Access panels: Proprietary item, nominate size and purpose.

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS ISO 354	2006	Acoustics - Measurement of sound absorption in a reverberation room
AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS 1530		Methods for fire tests on building materials, components and structures
AS 1530.4	2014	Fire-resistance tests for elements of construction
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/NZS 2312.2	2014	Hot dip galvanizing
AS/NZS 2588	2018	Gypsum plasterboard
AS/NZS 2589	2017	Gypsum linings - Application and finishing
AS/NZS 2785	2020	Suspended ceilings - Design and installation
AS/NZS 2908		Cellulose-cement products
AS/NZS 2908.2	2000	Flat sheets
AS 5637		Determination of fire hazard properties
AS 5637.1	2015	Wall and ceiling linings
AS ISO 11654	2002	Acoustics - Rating of sound absorption - Materials and systems

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

AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS ISO 717.2	2004	Impact sound insulation
AS/NZS 1170		Structural design actions
AS/NZS 1170.2	2021	Wind actions
AS 1170.4	2007	Earthquake actions in Australia
AS/NZS 1269		Occupational noise management
BCA Spec 7	2022	Fire resistance - Fire hazard properties
GBCA Buildings	2021	Green Star Buildings
NATSPEC DES 010		Atmospheric corrosivity categories for ferrous products
NATSPEC DES 020		Fire behaviour of building materials and assemblies
NATSPEC DES 027		Impact sound insulation
NATSPEC DES 032		Airborne sound insulation
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD