Branded Worksection
This branded worksection Template has been developed by NATSPEC in conjunction with Studform Pty Ltd and may be used whilst the Product Partner is licensed to distribute it. The copyright remains with NATSPEC. As with all NATSPEC worksections, it is the responsibility of the user to make sure it is completed appropriately for the project. The user should also review its applicability for local conditions and regulations. Check www.natspec.com.au for the latest updated version.

Worksection application
This branded worksection Template is applicable to the supply and installation of Studform suspended internal ceilings and external soffits of dry construction with suspension systems attached to a supporting structure. The worksection outlines requirements for materials, workmanship and equipment relating to the preparation and installation of:

- Aluminium ceiling grids.
- Mineral wool acoustical lay-in ceiling tiles.
- Seismic ceilings.

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

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

Related material located elsewhere in NATSPEC
If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.
Related material may be found in other worksections. See for example:

- 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.
- 0524p STUDFORM in partitions – glazed.
- 0525p STUDFORM in cubicle systems.
- 0574 Window coverings for curtains and blinds.

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

- Sheet lining.
- Access panels.

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.
- Show particular requirements for the sheet linings, which can be on the drawings or scheduled either in this worksection or in the 0511 Lining worksection. Do not duplicate.
- Detail bulkheads and curtain recesses on drawings and coordinate with the 0574 Window coverings worksection.

Specifying ESD
The following may be specified using included options:

- Demountability, e.g. modular ceiling panel systems 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 the NATSPEC TECHreport TR 01 on specifying ESD.

1 GENERAL

Studform Pty Ltd originally started as a small ceiling and partition contracting company in Adelaide in the early 1980s. Today, Studform manufactures and distributes doors, access panels, aluminium ceiling systems, and aluminium partitioning systems to the Australian and New Zealand construction markets.

STUDFORM product range includes:

- Studform Kwikloc Suspended aluminium grid system.
- AMF suspended ceiling units.

1.1 RESPONSIBILITIES

General

Requirement: Provide Studform suspended ceiling systems, as documented.

Documented is defined in the 0171 General requirements worksection 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. external soffits in a corrosive atmosphere and ceilings to indoor swimming pools. Refer to NATSPEC TECHnote DES 010 for more information on atmospheric corrosivity.

1.2 COMPANY CONTACTS

Studform inspired solutions website:

www.studform.com.au

1.3 CROSS REFERENCES

General

Requirement: Conform to the following worksection(s):

- 0171 General requirements.

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

- [complete/delete]

List the worksections cross referenced by this worksection. The 0171 General requirements worksection references the 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.

See Related material located elsewhere in NATSPEC in the introduction Guidance.

1.4 STANDARDS

General

Suspended ceilings: To AS/NZS 2785.

AS/NZS 2785 specifies the minimum requirements for the design, construction, installation, maintenance and testing for suspended ceiling systems of dry construction with suspension systems attached to a supporting structure. It is intended for use in commercial, industrial and residential applications. For luminaires incorporated in suspended ceilings, see AS 2946.

AS/NZS 2785 clause 3.1.2 requires that the ceiling system remain structurally sound, without maintenance for a period of 15 years. AS/NZS 2785 Appendix F (Informative) addresses material selection and performance.

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

Services

Luminaire and air diffuser interface: To AS 2946.

Studform seismic ceilings

Suspended ceilings: To AS 1170.4.
1.5 MANUFACTURER’S DOCUMENTS

Technical manuals
Studform Kwikloc Suspended aluminium grid system:
AMF suspended ceiling units: www.amfgrafenau.de/index.php

1.6 INTERPRETATION
Definitions
General: For the purposes of this worksection the definitions given in AS/NZS 2785 and the following apply:
- Ceiling unit: Tile, panel, plank, strip or open grid supported within a ceiling suspension system.

1.7 TOLERANCES
Suspension system
Flatness, twist, winding and bow: 1.5 mm deviation from a 1.5 m straightedge placed in any position.
Sheeted or flush ceiling system
Suspension system bearing surface for flush lined ceiling: To AS/NZS 2589 Table 4.2.2.
Suspended grid system deflection: To AS/NZS 2785 Table 3.4.4.

1.8 SUBMISSIONS
Drawings
Set-out drawings: Submit proposed set-out, indicating cut ceiling units if any, before installation. Coordinate with plenum services layouts, building structure and other factors impacting on 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.

Maintenance manuals
General: On completion, submit manufacturer’s recommendations for the care and maintenance of the ceiling, and operating instructions for demounting, if applicable.

Samples
General: Submit samples as follows:
- Suspension system: Sections proposed for the suspension system, including, wall angles and trim, suspension rods, clips and accessories.
- Suspension system: In addition, provide main and cross tees, bulkhead sections and brackets.
- Ceiling material: Lining and ceiling units, with insulation, showing the extremes and mean of variation in colour, pattern, or texture of the proposed finish.
- Methods: Methods of jointing, fixing, height adjustment, retaining and removing ceiling units.

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

Set out drawings
Set out: Submit proposed set out, indicating cut ceiling units if any, before installation. Coordinate with plenum services layouts, building structure and other factors impacting on 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.

For larger or more complex projects, consider requiring coordinated plenum services drawings superimposed on reflected ceiling plans.

Seismic: Clearly indicate locations of 2-part floating wall angles and standard fixed seismic wall angle, and location of any required bracing struts and their relationship to plenum services installations.

Delete if seismic design is not required.

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

Type tests: Submit results as follows:
Type tests are carried out before the contract. 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**.

- **Fire hazard properties:**
  - Group number: To AS/NZS 3837 and BCA Spec A2.4 or AS ISO 9705.
  - Average specific extinction area (non-sprinklered buildings): $< 250 \text{ m}^2/\text{kg}$ to AS/NZS 3837.
  - Smoke growth rate index (non-sprinklered buildings): $< 100$ to AS ISO 9705 and BCA Spec A2.4.

  **Group number:** Refer to BCA Spec C1.10 Table 3 which has group number requirements for wall and ceiling linings. Materials used as a finish, surface, lining, or attachment to a wall or ceiling must be a Group 1, 2 or 3 material used in conformance with BCA Spec C1.10 Table 3. Materials **group number** may be determined by either of the following:
  - Testing in conformance with AS ISO 9705.
  - Prediction in conformance with BCA Spec A2.4, using data obtained by testing to AS/NZS 3837.

  Non-sprinklered buildings: In these situations, wall and ceiling linings must have an **average specific extinction area** less than 250 $\text{ m}^2/\text{kg}$ when tested to AS/NZS 3837 or a **smoke growth rate index** not more than 100 when tested to AS ISO 9705 and BCA Spec A2.4.

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

- **Fire-resistance level:** To AS 1530.4.

  The BCA cites AS 1530.4:2005.

- **Weighted suspended ceiling normalized level difference:** To AS/NZS ISO 717.1.

  The BCA cites ISO 717-1:1996 and AS/NZS 1276.1 for testing of construction required to have a certain $R_w$ rating.

- **Weighted sound absorption coefficient:** AS ISO 11654, as tested to AS ISO 354.

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.
- Seismic restraint installation.

  Include if seismic restraint to non-structural items has been nominated in **0171 General requirements**.

  Delete if not applicable.

- 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 **PRODUCTS, GENERAL, Substitutions** in the **0171 General requirements** worksection.

The **0171 General requirements** worksection clause sets out the submissions required if the contractor proposes alternative products.

Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

2.2 **MARKING**

**Identification**

General: Deliver materials to the site in Studform’s original sealed containers or packaging, legibly marked to show the following:

- Manufacturer’s identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.
- Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern. Provide technical data sheets if not shown on labels.
- Handling and installation instructions.
- Safety data sheets (SDS).

**2.3 SUSPENSION SYSTEM**

**Proprietary system**

General: As documented in the Proprietary suspension system schedule.

Protective coatings for steel components: To AS/NZS 2785 Table F1.

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

**Studform Kwikloc Suspended aluminium grid system**

General: Studform system consisting of aluminium main tees, cross tees, wall angles, bulkhead sections, suspension rods, hold-down clips and other products and accessories comprising a complete suspension system.

Seismic: Proprietary system used in conjunction with standard suspension grid, and consisting of seismic clips, fixed and floating wall angles, retractable brackets and bracing struts.

Select from the following.

Premium 15 mm: Exposed powder coated aluminium grid system consisting of:
- KL 3600P main tee.
- KL 600P/KL and/or 1200P cross tee.
- AST 3600 reversible standard wall angle.
- ASL 3600 reversible shadowline wall angle.
- KL BH 4000 bulkhead section.
- KL 100 Kwikloc wall angle bracket.
- VF2 suspension rod bracket.

Regal 24 mm: Exposed powder coated aluminium grid system consisting of:
- KL 3600 main tee.
- KL 600 cross tee.
- KL 1200 cross tee.
- AST 3600 reversible standard wall angle.
- ASL 3600 reversible shadowline wall angle.
- KL BH 4000 bulkhead section.
- KL 100 Kwikloc wall angle bracket.
- VF2 suspension rod bracket.

Corporate ceiling system: Aluminium mitred top hat grid system with exposed powder coated main tees and concealed intermediate C or T splines for ceiling panel support. Centre channel of exposed grid to facilitate partition fixing to grid. System to consist of:
- 1200 mm module: 32 mm face x 38 mm high section.
- 1350 or 1500 mm module: 32 mm face x 50 mm high section.
- Concealed intermediate C or T splines.

Optional Seismic ceiling system: System of tested seismic components used in conjunction with standard Kwikloc grid system and consisting of:
- Snap-in seismic clips.
- ASTSA/B3600 Kwikloc seismic two part floating wall angle.
- KLEI150 Kwikloc seismic wall angle bracket.
- ASTS3600 Kwikloc standard seismic fixed side wall angle.
- KLPLSEI3600 Plaster to grid seismic junction tee.

2.4 CEILING UNITS

AMF suspended ceiling units
Ceiling units: As documented in the AMF Ceiling units schedule.

Acoustic surfaces
Description: Acoustic suspended ceiling units with an acoustic fleece face for high sound absorption, attenuation or reflective performance properties.

THERMATEX units: Provide the following acoustic THERMATEX ceiling units, as documented:
- [complete/delete]

<table>
<thead>
<tr>
<th>Select the acoustic units from the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- THERMATEX Acoustic - 0.70 NRC, 38 dB, 19 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Acoustic RL - 0.15 NRC, 38 dB, 19 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Antaris A - 0.85 NRC, 28 dB, 19 mm, Edges - SK, VT-S15/24.</td>
</tr>
<tr>
<td>- THERMATEX dB Acoustic 24 - 0.70 NRC, 41 dB, 24 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX dB Acoustic 30 - 0.70 NRC, 43 dB, 30 mm, Edges - SK.</td>
</tr>
<tr>
<td>- THERMATEX Alpha - 0.90 NRC, 26 dB, 19 mm, Edges - SK, VT15/24, VT-S15/24.</td>
</tr>
<tr>
<td>- THERMATEX Alpha Black - 0.90 NRC, 26 dB, 19 mm, Edges - SK.</td>
</tr>
<tr>
<td>- THERMATEX Alpha Coloured - 0.80 NRC, 26 dB, 19 mm, Edges - SK.</td>
</tr>
<tr>
<td>- THERMATEX Alpha HD - 0.85 NRC, 30 dB, 19 mm, Edges - AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Alpha ONE - 1.0 NRC, 29 dB, 24 mm, Edges - SK, VT15/24, VT-S15/24.</td>
</tr>
<tr>
<td>- THERMATEX dB A Alpha - 0.80 NRC, 40 dB, 22 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Aquatec - 0.90 NRC, 28 dB, 19 mm, Edges - SK, VT-S15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Aquatec dB - 0.70 NRC, 37 dB, 19 mm, Edges - SK, VT-S15/24.</td>
</tr>
<tr>
<td>- THERMATEX SF Acoustic - 0.70 NRC, 38 dB, 24 mm, Edges - SF.</td>
</tr>
<tr>
<td>- THERMATEX Silence - 0.90 NRC, 44 dB, 43 mm, Edges - SK, VT15/24, VT-S15/24.</td>
</tr>
<tr>
<td>- THERMATEX Thermofon - 0.85 NRC, 28 dB, 15 mm, Edges - SK, VT-S15/24.</td>
</tr>
</tbody>
</table>

Insert selected unit name(s) only here. Detailed requirements, such as unit edge detail, to be included in the AMF ceiling unit schedule.

Lead time: [complete/delete]

Standard surfaces
Description: Mineral suspended ceiling units with a smooth, textured or perforated finish.

THERMATEX units: Provide the following THERMATEX ceiling units, as documented:
- [complete/delete]

<table>
<thead>
<tr>
<th>Select the units from the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- THERMATEX Fine Stratos - 0.15 NRC, 34 dB, 15 mm, 19 mm, 40 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Fine Stratos MP - 0.55 NRC, 34 dB, 15 mm, 19 mm, 40 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Fine Stratos MP Complete - 0.70 NRC, 34 dB, 15 mm, 19 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Fine Fresko-Saturn - 0.60 NRC, 34 dB, 15 mm, 19 mm, 40 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Fresko - 0.60 NRC, 34 dB, 15 mm, 19 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Laguna - 0.10 NRC, 34 dB, 15 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Laguna MP - 0.60 NRC, 34 dB, 15 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Mercure - 0.60 NRC, 34 dB, 15 mm, 19 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Mercure Complete - 0.75 NRC, 38 dB, 19 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Pinhole - 0.60 NRC, 34 dB, 15 mm, Edges - SK, VT15/24.</td>
</tr>
<tr>
<td>- THERMATEX Ranura Mercure - 0.60 NRC, 38 dB, 15 mm, 19 mm, Edges - BF II-24/VT24.</td>
</tr>
<tr>
<td>- THERMATEX Ranura Fine Stratos MP - 0.15 NRC, 31 dB, 15 mm, 19 mm, Edges - VT-S15.</td>
</tr>
<tr>
<td>- THERMATEX Star - 0.60 NRC, 34 dB, 15 mm, 19 mm, 40 mm, Edges - SK, VT15/24, AW, GN.</td>
</tr>
<tr>
<td>- THERMATEX Star Complete - 0.70 NRC, 34 dB, 15 mm, 19 mm, Edges - SK, VT15/24.</td>
</tr>
</tbody>
</table>
Lead time: [complete/delete]

Health and hygiene surfaces
Description: Anti-microbial treated suspended ceiling units to resist bacteria and fungi, and prevent contamination.

THERMATEX units: Provide the following health and hygiene THERMATEX ceiling units, as documented:
- [complete/delete]

Select the health and hygiene units from the following:
- THERMATEX Acoustic Medical - 0.70 NRC, 38 dB, 19 mm, Edges - SK, VT15/24, AW, GN.
- THERMATEX Alpha Medical - 0.90 NRC, 26 dB, 19 mm, Edges - SK, VT15/24, VT-S15/24.
- THERMATEX Aquatec Medical - 0.90 NRC, 28 dB, 19 mm, Edges - SK, VT-S15/24, AW, GN.
- THERMATEX Thermaclean S - 34 dB, 15 mm, 19 mm, Edges - SK.
- THERMATEX Thermofon Hygena - 0.85 NRC, 28 dB, 15 mm, Edges - SK, VT-S15/24.

Lead time: [complete/delete]

2.5 LINING
Plasterboard
Standard: To AS/NZS 2588.
Fibre cement
Standard: To AS/NZS 2908.2.
Wall and ceiling linings: Type B category 2.
Minimum thickness: 4.5 mm.

Sealants
Fire-resistance level sealant: Non-hardening sealant compatible with the ceiling materials and documented fire-resistance level.
Acoustic sealant: Non-hardening sealant compatible with the ceiling materials and rated to Rw 65.
Alternatives: Fire-resistance rated sealants are claimed to satisfy most acoustic properties.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY
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.
Stability
General: Install the ceilings level and fix to prevent looseness or rattling of ceiling components under normal conditions.

Structure-borne sound
General: Provide a ceiling system which 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.

Or show on the drawings. See AS/NZS 2785, clause 4.13.

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.

3.2 SUSPENSION SYSTEM

Show on the drawings the location and extent of the suspended ceiling and where appropriate the basic grid layout. See AS/NZS 2785 Appendix C. See also AS/NZS 2785 Section 4 on installation. 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.

Ceiling grid
Set-out: Align ceiling unit joints and centrelines of visible suspension members with documented grid lines. If not documented, set out with equal margins.

Suspension system
The suspension system may comprise hangers or struts depending on which direction the load is applied. External ceilings will be subjected to upward loads from wind actions and will therefore require strutting members, see AS/NZS 2785 Appendix A.

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.
- For suspended grid, lay out wall angles using Studform seismic 2-part floating wall angles on two adjacent sides of each open ceiling area, and fixed seismic wall angles to the opposing adjacent walls. This may be indicated in project documentation or in shop drawings.

Support members: Provide support members as follows:
- Space as required by the loads on the system and the type of ceiling.
- 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 services and accessories to prevent distortion, overloading or excessive vertical deflection.

Failure: Provide a ceiling system where failure of any one suspension point does not cause a progressive failure of the ceiling.
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 lie flat on the perimeter trim.

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
Support: Conform to the following:
- If the service has not been designed to accept the ceiling load, 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.

Bracing
General: Provide bracing to prevent lateral movement.

Seismic bracing
General: Use purpose fabricated 3 way bracing struts as documented and as recommended by Studform for use with the selected suspended grid system.

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

External suspended soffits
General: Support external suspended soffits on rigid members capable of carrying the loads from imposed actions. Install members to minimise any eccentricity, and carry the upward and downward loads from wind actions through to the supporting structure.

Fasteners
General: Provide concealed fasteners. If material supporting hangers is less than 3 mm thick, do not use screw fasteners.

3.3 CEILING UNITS

Consider adding the following Optional text if re-using existing ceiling units.

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

General
Fitting: Fit ceiling units accurately and neatly, without distortion, and free from air leakage and staining.

Lock clips: If ceiling units are exposed to loads from wind actions or if required for security, insert lock 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.

Service penetrations
General: Provide openings for all services elements, including light fittings, ventilation outlets, detectors, sprinklers and loudspeakers.

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 within a random pattern should be considered for cutting.

3.4 PLASTERBOARD LINING

Installation
Gypsum plasterboard and fibre reinforced gypsum plaster: To AS/NZS 2589.
Suspended flush ceilings: Fix using screw or screw and adhesive to ceiling members or support frame.

Multiple sheet layers
Application: Fire-resistance rated and acoustic rated ceilings.
Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200 mm.

Joints
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 metallic-coated steel corner beads.
Control joints: Align lining control joints with structural control joints and as follows:
- Ceilings: At maximum 12 m centres.
- Control joint beads: Purpose-made metallic coated.
- Location: If possible, position joints to intersect light fixtures, vents or air diffusers.

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

3.5 FIBRE CEMENT LINING

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: Screw or screw and adhesive fix to ceiling members or support frame.

Multiple sheet layers
Application: Fire-resistance rated and acoustic rated ceilings.
Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200 mm.

Joints
Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.
Dry joints: Provide square edged sheet and finish with a PVC-U joining section.
External corner joints: Make joints over metallic-coated steel corner beads.
Control joints: Align lining control joints with structural control joints and as follows:
- Ceilings: To divide into bays not larger than 10.8 x 7.2 m.
- Soffit linings: To divide into bays not larger than 4.2 x 4.2 m or 5.6 x 3.6 m.
- Control joint beads: Purpose-made metallic coated.
- Support: Provide framing parallel to the joint on each side. Do not fix the lining to abutting building surfaces.
- Location: If possible, position joints to intersect light fixtures, vents or air diffusers.

Wet areas: Install additional supports, flashings, 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.

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
General: Reinforce the back of the access panel to prevent warping and facilitate handling.

3.7 SMOKE RESERVOIRS

General
Material: [complete/delete]
Frame: [complete/delete]
Depth: [complete/delete]
Location: [complete/delete]

See BCA Spec E2.2b for design requirements for smoke reservoirs.

3.8 TRIM

General
Trim: Provide 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: Provide 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.

Fibrous 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 supplier.

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

3.9 COMPLETION

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 units and accessories of each type. 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.

3.10 WARRANTIES

General
General: Provide warranties for materials and workmanship in the form of interlocking warranties from the supplier and the installer.

Form: Against failure of materials and execution under normal environment and conditions of use.
- Studform Kwikloc suspended aluminium grid systems: 15 year manufacturer’s warranty.
- AMF suspended ceiling units: 30 year manufacturer’s warranty.

Warranty terms: [complete/delete]

Warranty terms: Contact STUDFORM for details of warranty terms.
4 SELECTIONS

4.1 GENERAL

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

**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.

<table>
<thead>
<tr>
<th>Property</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional structural design actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire hazard properties: Group number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire-resistance level (FRL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted suspended ceiling normalized level difference ($D_{n,c,w}$)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted sound absorption coefficient ($\alpha_w$)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A, B, C: These designate each instance or type or location of the item scheduled. Edit to align with the project’s codes or tags. Edit codes in the Schedule to match those on drawings.

Additional structural design actions: See AS/NZS 2785 clause 3.2. Document only those actions additional to those given in the 0171 General requirements worksection.

- Suspended ceilings designed in conformance with AS/NZS 2785 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. 0342 Light steel framing.
- For earthquake mass of the ceiling, see AS/NZS 2785 clause 3.3.4.2. Consider other actions e.g. from ductwork, bulkheads, equipment, not carried independently of the ceiling system.

Group number: Refer to BCA Spec C1.10.

Fire-resistance rating: Refer to AS/NZS 2785 clause 3.5.

Acoustic performance: 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: AS ISO 11654 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.

**WHS considerations**

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

4.2 SUSPENSION SYSTEM

**Studform Kwikloc suspended aluminium grid system schedule**

<table>
<thead>
<tr>
<th>Property</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grid system option</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic grid (l x b) (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall angle trim</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall angle trim option for seismic ceiling system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional splines</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 CEILING UNITS

AMF ceiling units schedule

<table>
<thead>
<tr>
<th>Property</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (l x b) (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edge detail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Edit codes in the Schedule to match those on drawings.

Product: Nominate selected units e.g. THERMATEX Alpha, etc. See CEILING UNITS for full range.

Type: Nominate unit type if variants are available e.g. RG 2.5-10, RG 4-10, etc. for THERMATEX Symetra. Refer to AMF data sheets for available variations.

Edge detail: Nominate selected edge detail, e.g. SK, VT, etc. Refer to AMF data sheets for available edge details, description of terms below:

AMF edge details:
- AW - Shiplap edge.
- AW/SK - Shiplap/square edge.
- GN - Concealed edge.
- GN/SK - Concealed/square edge.
- SF - Semi-concealed edge.
- SK - Square edge.
- VT15 - Rebated edge 15 mm.
- VT24 - Rebated edge 24 mm.
- VT-S15 - Square rebated edge 15 mm.
- VT-S24 - Square rebated edge 24 mm.
### 4.4 LINING

#### Sheet lining schedule

<table>
<thead>
<tr>
<th>Property</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness: Plasterboard (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness: Fibre cement (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade: Plasterboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of finish to AS/NZS 2589: Plasterboard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lining trim: Re-entrant corners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lining trim: Salient angles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasterboard cornice: Size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasterboard cornice: Profile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasterboard cornice: Fire-resistance level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibrous plaster cornice: Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibrous plaster cornice: Profile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibrous plaster rose: Product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibrous plaster rose: Pattern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control joint</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access panels</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A, B, C: These designate each instance or type or location of the item scheduled. Edit to align with the project's codes or tags. Edit codes in the Schedule to match those on drawings.

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

Grade – Plasterboard: AS/NZS 2588 defines four grades by performances requirements:
- Standard.
- Bracing.
- Water resistant.
- Fire resistant.

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

Level of finish to AS/NZS 2589 – Plasterboard:
- Level 3: For concealed surfaces.
- Level 4: Default level for gypsum lining unless specified otherwise.
- Level 5: For gloss or semi-gloss paint finish.

Plasterboard cornice: Size 55 mm, 75 mm or 90 mm. Select profile.
Fibrous plaster cornice and roses: 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
The following documents are mentioned only in the Guidance text:

AS/NZS 1269 2015 General provisions - Fire hazard properties
AS/NZS 1276 2017 Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS 1276.1 1999 Airborne sound insulation
AS 1530.4 2005 Fire-resistance test of elements of construction
BCA Spec C1.10 2015 Fire resistance - Fire hazard properties
BCA Spec E2.2b 2015 Services and equipment - Smoke exhaust systems
NATSPEC DES 010 2009 Atmospheric corrosion categories for ferrous products
NATSPEC DES 020 2011 Fire behaviour of building materials and assemblies
NATSPEC DES 027 2012 Impact sound insulation
NATSPEC DES 032 2014 Airborne sound insulation
NATSPEC GEN 006 2007 Product specifying and substitution
NATSPEC GEN 024 2015 Using NATSPEC selections schedules
NATSPEC TR 01 2015 Specifying ESD
ISO 717 1996 Acoustics - Rating of sound insulation in buildings and of building elements