



0511 Lining

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00 Design Principles

0.01 Main considerations

It is a requirement to undertake the [00 PLANNING AND DESIGN/0001R - DESIGN REFERENCE](#) and [GLOSSARY OF TERMS](#) information into all aspects of design, detailing and delivery when developing the content here within. Clear demonstration of adherence to these requirements is part of the services and will be called upon at key points in the project and during at the discretion of the Department of Education (DoE).

Specification

GUIDE NOTE: Refer to [0001c DESIGN CHECKLIST - FINISH](#)

01 General

As per current NATSPEC except as follows:

1.1 Fire Hazard Properties

General

.Requirement: Comply with BCA Specification C1.10a which sets out requirements in relation to the fire hazard properties of wall and ceiling linings.

Wall and ceiling linings must comply with BCA Specification C1.10a Table 3, Wall and Ceiling Lining Materials (Material Groups Permitted).

02 Products

As per current NATSPEC except as follows:

2.2 Materials and Components

Plasterboard

GUIDE NOTE: Plasterboard to walls must be a minimum of 13mm thick up to door head height.

GUIDE NOTE: Add the following subclause to "Materials and Components" nominated in NATSPEC Building Template/work section.

Impact resistant plasterboard

Location/s:

Description: Purpose designed mesh-reinforced plasterboard to withstand a high degree of "soft body impact". Standards: Generally, to AS /NZS 2588

Thickness: 13mm

Sheet Density (nominal): 10.0 kg/m²

Edge finish: Recessed.

Identification: Coloured face paper or stamped on back to identify that the plasterboard sheets are especially designed to be soft body impact resistant.

Corrugated and perforated metal ceiling lining – standard profile

GUIDE NOTE: Refer to the Educational Facilities Standards and Guidelines for areas which require acoustic ceiling linings. Specify the appropriate acoustic blanket to suit the requirements of the room.

Type: Proprietary perforated and roll-formed corrugated steel zincalume sheet and purpose made accessories forming part of a system to AS 1562.1.

- Furring/fixing system: Proprietary black matt finished universal carrier rails or furring system. Comply with the manufacturer's recommended spacings, spans and fixing requirements.
- Wall trims: Cold rolled steel angles, colour finish to match ceiling panels, fixed to walls at 600 mm centres.

Material: Pre-painted and organic film/laminate products: To AS 2728, Category 3 or 4 as appropriate to all ceiling sheets/panels and metal trims.

Thickness: 0.42 mm (minimum) B.M.T. (Base Metal Thickness)

Corrugation depth: 16 mm (minimum)

Acoustic blanket: Polyester fibre black lined acoustic blanket manufactured from thermally bonded polyester.

- Standard: To AS 3742
- Finish: Black

Corrugated and perforated metal ceiling lining – mini profile

GUIDE NOTE: Refer to the [Educational Facilities Standards and Guidelines](#) (EFSG) for areas which require acoustic ceiling linings. Specify the appropriate acoustic blanket to suit the requirements of the room.

Type: Proprietary perforated and roll-formed corrugated steel zincalume sheet and purpose made accessories forming part of a system to AS 1562.1.

- Furring/fixing system: Proprietary black matt finished universal carrier rails or furring system. Comply with the manufacturer's recommended spacings, spans and fixing requirements.
- Wall trims: Cold rolled steel angles, colour finish to match ceiling panels, fixed to walls at 600 mm centres.

Material: Pre-painted and organic film/laminate products: To AS 2728, Category 3 or 4 as appropriate to all ceiling sheets/panels and metal trims.

Thickness: 0.42 mm (minimum) B.M.T. (Base Metal Thickness)

Corrugation depth: 6 mm (minimum).

Acoustic blanket: Polyester fibre black lined acoustic blanket manufactured from thermally bonded polyester.

- Standard: To AS 3742
- Finish: Black

Perforated plasterboard ceiling

GUIDE NOTE: Refer to the EFSG for areas which require acoustic ceiling linings. Specify the appropriate acoustic blanket to suit the requirements of the room.

Type: 13mm thick perforated plasterboard sheet.

-
- Furring/fixing system: Proprietary black matt finished universal carrier rails or furring system. Comply with the manufacturer's recommended spacings, spans and fixing requirements.

Plasterboard: To AS/NZS 2588

Acoustic blanket: Polyester fibre black lined acoustic blanket manufactured from thermally bonded polyester.

- Standard: To AS 3742
- Finish: Black

MDF

GUIDE NOTE: Standard MDF board must not be used as a wallboard lining or backing/substrate (excluding lining to operable walls).

Fibre cement

GUIDE NOTE: Framed walls in toilets/showers areas to be lined with 9 mm fibre cement sheeting, flush joint finish

Plywood and blockboard

General: Plywood and blockboard wallboard lining must be treated to prevent the attack of termites, to AS 1604.3- H2 and AS 2270.

03 Execution

As per current NATSPEC except as follows:

3.1 Construction Generally

Register (ceiling grille)

GUIDE NOTE: Canteens - Do not provide registers (grilles) in canteen ceilings. Canteen ceilings to be sealed from dust and vermin. To avoid dust problems within canteens roof ventilators should only ventilate the roof space.

Refer to [04 ENCLOSURE /0421 ROOFING - COMBINED](#)

Minimum size: The width and breadth of the register (grille) must be equal to the diameter of the rotary ventilator throat. (e.g. 400 mm diameter rotary ventilator throat requires a 400 x 400 mm register).

- Canteens: Do not provide registers (grilles) in canteen ceilings.

3.3 Fibre Cement Lining

Eaves and soffit lining:

Refer to [04 ENCLOSURE /0431 CLADDING - COMBINED](#)

3.6 Trim and Accessories

Timber trim

GUIDE NOTE: Timber trims must be in a termite resistant timber species or be preservative treated against termite attack. Refer to timber products, finishes and treatment.

Seasoned hardwood: AS 2796.1

Naturally termite resistant timbers: To 3660.1 Appendix C

Grade:

Cypress Pine: AS 1810

Preservative treated timber: AS 1604.1 (class H2 minimum)

MDF: Must not to be used

04 Selections

As per current NATSPEC except as follows:

Performance Criteria

The selection of materials and finishes must be based on a knowledge of the activities to be conducted in the area. Lining selections should be based on the following performance criteria:

- Offer value for money in a Whole of Life framework;
- Offer long life span with high durability and robustness.
- Have low maintenance requirements and costs.
- Visible surfaces should be capable of being easily cleaned and repaired if damaged.
- Provide appropriate functionality for the location and use of the area including:
 - Acoustic suitability to expected background and activity noise levels
 - Appropriate aesthetic appeal when finished
 - Water resistance in wet areas
 - Impact resistance, impact resistant materials should be used in all student accessible zones.
- Support sustainability by having recycling potential at the end of usable life, and/or include recycled content.
- Compliance with BCA Fire Hazard Properties

4.1 Sheet Lining

Linings schedule

GUIDE NOTES: When plasterboard to walls is nominated the plasterboard must be a minimum of 13mm thick up to door head height. (e.g. pin board wall lining up to door head height. 10mm plasterboard above the pinboard wall lining is acceptable.)

Framed walls in toilets/showers areas to be lined with 9 mm fibre cement sheeting

4.3 Ceiling Security

GUIDE NOTE: Include where additional security is required to designated ceilings.

Refer to [0001c DESIGN CHECKLIST - SAFETY](#) and [DESIGN COMPONENTS](#).

Location:

Alternative 1

Description: Proprietary parallel interlocking steel structural panels system

relocate to 053 Ceilings

Profile size: 300 x 50 x 1 mm thick.

Protective finish: Galvanized

Wall fixing angles: 50 x 50 x 3.2 mm thick steel

Installation:

Screw fixing to ceiling structure.

Double screw fix using 2 mm thick large washers at maximum 600 mm centres to ceiling structure. Pop rivet fix to perimeter wall angles.

OR

Alternative 2

Description: Wall security mesh

Open Area: 85%

Nominal Size of Mesh: LWM: 100 mm SWM: 50 mm

Nominal Strand Size: Width: 4.0 mm Thick: 2.0 mm

Weight: 2.5 kg/sqm

4.4 Wall Security

GUIDE NOTE: Include where additional security is required to designated walls. Refer to [0001c DESIGN CHECKLIST - SECURITY](#) and [DESIGN COMPONENTS](#).

Location:

General: Where additional security is required in framed buildings fix one of the alternative linings securely to designated framed walling.

Alternative 1

Wall security mesh

Open Area: 85%

Nominal Size of Mesh: LWM: 100 mm SWM: 50 mm

Nominal Strand Size: Width: 4.0 mm Thick: 2.0 mm

Weight: 2.5 kg/sqm

OR

Alternative 2

Proprietary aluminium zinc coated steel sheet permanently bonded to fibre cement sheeting.

Intruder resistance: To AS 3555.1 - Level 6

Fibre cement sheeting

- Thickness (minimum): 6mm

Aluminium zinc coated steel sheet

- Thickness (minimum): 1mm

Laminating: The bonding of the steel sheet product to the fibre cement must be undertaken by the manufacturer under factory-controlled conditions. Bonding of the materials must not be undertaken on site.

GUIDE NOTE: Add the following subclauses to "Selections" nominated in NATSPEC Building Template/work section

4.5 Pinboard Wall Lining

GUIDE NOTES: For project specific locations refer to the EFSG.

Do not use Organic FIBREBOARD as a pinboard wall lining.

Libraries

GUIDE NOTE: Location - Libraries (PRIMARY in particular)

Bottom edge: Floor height (skirting fixed over face of board).

Top edge: Ceiling springing height 2700 mm maximum.

Extent: Shown on drawings.

GUIDE NOTE: For primary school library, as an alternative, the top edge of the pin board wall lining may be nominated to finish at ceiling or springing height.

GUIDE NOTE: Include list of locations where pin board wall lining is required. Refer to EFSG.

Kitchen – Type 1 and 2

Bottom edge: 900mm from floor or top of splashback

Top edge: 2100 mm (nominally) level with top of door head

Extent: Shown on drawings

Materials Workshop – Type 2

Bottom edge: 900mm from floor

Top edge: 2100 mm (nominally) level with top of door head

Extent: Shown on drawings

Materials Workshop - Type 3

Bottom edge: 900mm from floor

Top edge: Ceiling

Extent: Shown on drawings

Generally

GUIDE NOTE: Location - Generally Secondary (unless otherwise specified).

- Front and rear wall when operable wall is not installed
- Do not install under windows except when sill is 1800mm or more

Bottom edge: Floor level.

Top edge: 2100 mm (nominally) level with top of door head.

Extent: Shown on drawings.

GUIDE NOTE: Include a list of other locations where pin board wall linings are required.

General Learning Space

Bottom edge: Floor height (skirting fixed over face of board)

Top edge: 2100 mm (nominally) level with top of door head

Extent: Shown on drawings. Do not install behind heaters

GUIDE NOTE: As an alternative, the top edge of the pin board wall lining may be nominated to finish at ceiling height.

Type

Commercial wall fabric facing bonded to resilient 100% polyester or resilient multiple foam pinning substrate adhered to a plywood backing.

Facing fabric and pinning substrate and must be able of hold pins/staples firmly and capable of maintaining its pin holding capacity over a prolonged period of constant use.

- Thickness range: 8.5 to 12 mm
- Weight range: 780 to 1500gsm
- Width: 1220 mm
- Facing: 100% non-woven needle punch polyester or blended non-woven nylon/polyester

GUIDE NOTE: Select a standard substrate or an Impact-resistant substrate. Refer to the EFSG.

Substrate

Description: Plywood wall lining which has been treated to prevent attack by termites.

Thickness: 6.5 mm

Ply: 5

Stress grade: F14

Standards: To AS 2270, AS 1604.3, Hazard class H2

Identification: Each sheet of ply to be stamped on the back to identify that it has been treated to prevent the attack of termites to the appropriate Australian Standard.

OR

Substrate, impact-resistant

Description: Plywood wall lining which has been treated to prevent attack by termites.

Thickness: 7.5mm

Ply: 5

Stress grade: F11

Standards: To AS 2270, AS 1604.3, Hazard class H2

Identification: Each sheet of ply to be stamped on the back to identify that it has been treated to prevent the attack of termites to the appropriate Australian Standard.

Fire Resistance – Fire Hazard Properties

Pinboard wall lining composite: The pinboard wall lining composite (i.e. fabric bonded to the resilient pining substrate with plywood backing) must comply with the BCA Fire Hazard Properties Specification C1.10a. The composite must achieve the required Group 1, Group 2 or Group 3 rating

- Report/s: Provide certified test report/s prepared by a NATA (National Association of Testing Authorities, Australia) registered testing authority or recognised independent

accredited NATA testing laboratory confirming that the product is in full compliance with the BCA Fire Hazard Properties Specification C1.10a.

- Submit evidence of such compliance to the Principal's Authorised Person/ Principal's Representative

Manufacture

Requirement: The bonding of the fabric faced resilient backed product to the wallboard lining substrates must be undertaken by the manufacturer prior to delivery, bonding of the materials must not be undertaken on site.

Procedure: The manufacturer using the following method must apply the fabric faced resilient backed material to the wallboard lining substrate.

Water Based Adhesive:

- All dust particles removed by mechanically operated brushes and vacuums.
- Water based adhesive applied to substrate panel under controlled conditions with pressure rollers regulating coverage to the full width of the panel and are to travel for the full length of the panel to ensure even coverage of the adhesive.
- Lay face fabric on substrate, ensure all edges are squared and trimmed.
- Each panel placed in a hydraulic/mechanical cold pressing machine and pressed at controlled pressures and time as prescribed by the adhesive manufacturer.
- All panels to be quality inspected prior to delivery.
- Each panel of pinboard wall lining must be stamped on the back to clearly identify the brand name (if applicable), name of the manufacturer and termite treatment (see Substrate – Identification).

Ordering: Order and confirm delivery instructions with the supplier not less than 6 weeks prior to the date required.

Fixing: Fix the pin board wall lining (includes: fabric, resilient backing and lining substrate) to the wall frame/masonry wall in accordance with the manufacturer's recommendations.

Joints: Butt.

Exposed ends

Finish:

Colour:

Compliance: Provide a certificate of compliance to certify that the pinboard wall lining including the plywood backing complies with the manufacturing procedures detailed in this specification.

Distribution: Hand one copy to the Principal's Authorised Person / Principal's Representative

GUIDE NOTE: The manufacturers listed below (proprietary items) have provided documented evidence that they comply with the requirements of the Specification for pinboard wall lining.

Additional manufacturers must also provide documented evidence that they comply with the requirements of the Specification for pinboard wall lining before their product is deemed to be acceptable for use in schools.

4.6 Fire Resistant Internal Lining

Type: Impact resistant non-combustible lining.

Corrugated Metal Lining

General: Provide perforated/unperforated corrugated metal wall lining from 2143mm above finished floor level.

Type:

- Preformed perforated/unperforated internal wall/ceiling lining.
- Thickness (minimum): 0.42 mm B.M.T. (Base Metal Thickness).

System: Corrugated perforated zincalume sheet and purpose made accessories forming part of a proprietary system.

Material: Protected steel to AS 1397 with a minimum yield stress of 550MPa (Grade 550) and an AZ150 zinc-aluminium coating.

Colour: Off white

Perforations:

- Nominally cover approximately 11% of lining surface.
- 6mm diameter pitched symmetrically across the sheet.

GUIDE NOTE: An improved acoustic performance can be achieved if the panel and insulation are separated by an air gap (e.g. 50 or 75mm gap).

Acoustic blanket: Polyester fibre black lined acoustic blanket manufactured from thermally bonded polyester.

Standard: To AS 3742

Finish: Black

4.7 Removable Panel (Operable Walls)

General: Provide a removable panel to allow access to the adjustable overhead track for each operable wall.

- Size (minimum): Length of operable wall x height of the track system.
- Material:
- Finish:

GUIDE NOTE: Nominate material and finish required, generally to match adjacent wall finishes.