Technical Data

&

Engineering Manual

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FOREWORD

Structural Panels Australia is an Australian owned company, based in Bayswater, Victoria that manufacturers Structural Insulated Panels (SIPS). SIPS can be used for all domestic and commercial wall, floor and roof applications.

BENEFITS

- Pre-fabricated, factory packed, and ready to assemble structural walls for your custom home.
- Manufactured from Oriented Strand Board (OSB) which is an environmentally friendly alternative made up of a mix of plantation and recycled wood, wax and adhesives.
- Composite insulation which provides a tight building envelope effectively reducing heat loss.
- Architecturally flexible with ability to achieve any design plan.
- Quick installation achieving lock up stage within a few days.
- OSB provides high pull out load allowing fixtures to be attached to it directly.
- Big reduction in thermal bridging compared to conventional construction.
- Cyclone resistant.
- Corrosion resistant.
- Reduce the amount of timber used during construction.

STRUCTURAL BENEFITS

Structural Insulated Panels (SIPS) from Structural Panels Australia are a high performance, engineered roof, wall and floor panel for use in residential, commercial, and educational buildings.

In wall applications, Structural Panels provide high strength racking and diaphragm shear capacities, making them suitable as shear walls to resist high winds and earthquakes.

In roof applications designers can specify Structural Panels to create vaulted open spaces as they have long clear span capability. Structural Panels can reduce the need for intermediate structural supports.

In floor applications, the panels can span from bearers to bearers, thus eliminating the need for joists, and reducing installation time. SIPS panels provide excellent insulation rating when used as a floor.
PRODUCT DATA

DESIGN FLEXIBILITY
Structural Panels can be used in a range of different styles, from traditional to ultra-modern. Buildings constructed with Structural Panels Australia, look no different than traditionally constructed homes; however, SIPS construction enables innovative designs with a large choice of finishes that can be fixed to the faces of the panels.

GREEN BUILDING ADVANTAGES
The key environmental advantage of designing and building with Structural Panels is the ability to create a high performance tight building envelope. The rigid insulation core provides continuous insulated properties across the panel’s width and length. This reduces the thermal bridging created by timber and will in turn decrease the amount the building owner spending on heating and cooling.

PRODUCT DESCRIPTION
Structural Panels (SIPS) are an alternative structural building solution, which are designed to be used as an alternative to traditional walls, floors and roofs. SIPS panels consist of an insulated core of Expanded Polystyrene (EPS), or others on request, laminated with Orientated Strand Board (OSB) on either side of it. The panels are manufactured in a factory and hence composite by nature. The thickness of the insulation can vary depending on the thermal requirement of a project. As OSB is an engineered product, it is very strong, and in combination with EPS, makes SIPS a load bearing structural panel.

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ENGINEERING TABLES

Axial Load Chart 1: Allowable Axial Loads (kg/lm) for OSB spline

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Axial Load Chart 2: Allowable Axial Loads (kg/lm) for SPA timber spline

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### Transverse Load Chart (Floor and Roof) OSB Spline

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Max floor span ^  Max roof span ^

### Transverse Load Chart (Floor and Roof) Timber Spline

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Max floor span ^  Max roof span ^
FOUNDATION AND GROUND FLOOR DETAILS
Recessed Sill Plate

STANDARD ELECTRICAL CONDUIT

PLASTERBOARD

BOTTOM PLATE W/ 50MM NAILS @ 300 CRS. U.N.O.

MOISTURE BARRIER

ANCHOR BOLTS AS REQUIRED BY STANDARD

STRUCTURAL PANELS AUSTRALIA
BOTTOM PLATE CONNECTION
FOUNDATION AND GROUND FLOOR DETAILS
Foundation Framing

60MM NAILS @ 150 CRS, OR EQUIVALENT EACH SIDE, U.A.O.

SIPS FLOOR PANEL

SIPS SCREW AS REQUIRED

TREATED SILL PLATE

FLASHING

SIPS PANEL FLOOR

STRUCTURAL PANELS AUSTRALIA
WALL DETAILS
Typical Wall Detail

LINTEL OVER OPENING
USE PANEL OR,
CONVENTIONAL LINTEL
BY ENGINEER

INSTALL SECOND

INSTALL FIRST

INSTALL FIRST TIMBER

INSTALL SECOND TIMBER

SILL PANEL
(WINDOW FILLER)

SIP WALL PANEL

STRUCTURAL PANELS AUSTRALIA
TYPICAL WALL INSTALLATION
WALL DETAILS
Truss Bearing

ROOF MATERIAL
TRUSS

2 X TOP PLATE
SIPS WALL PANEL

STRUCTURAL PANELS AUSTRALIA
TRUSS CONNECTION DETAIL
WALL DETAILS
Standard Electrical Chase

NOTES:
1. FACTORY PROVIDED HORIZONTAL ELECTRICAL CHASES ARE STANDARD 300MM AND 1200MM ABOVE BOTTOM OF PANEL AND 400MM CENTRES VERTICALLY UNLESS PRIOR ARRANGEMENTS HAVE BEEN MADE BEFORE PANEL MANUFACTURING.
2. PANEL INSTALLER SHOULD FIELD DRILL AND MARK EVERY ELECTRICAL CHASE ON SUB-FLOOR.
4. ALL PENETRATIONS ARE REQUIRED TO BE FOAMED IN PLACE AFTER ELECTRICAL ROUGH IN IS DONE.

SITE DRILLED TOP PLATES
SAVE PLUG WITH OSB SKIN TO REINSTALL AFTER WIRING IS COMPLETE

100MM HOLE CUT WITH HOLE SAW

SITE DRILLED BOTTOM PLATES WHERE REQUIRED

WALL PANELS

STRUCTURAL PANELS AUSTRALIA
STANDARD ELECTRICAL CHASES

WALL DETAILS
Electrical Box Installation
WALL DETAILS
Interior Wall Connection

STRUCTURAL PANELS AUSTRALIA

ELECTRICAL BOX INSTALLATION
WALL DETAILS

WALL CORNER DETAIL

OPTIONAL 2-3 STRUCTURAL SCREWS FROM OUTSIDE INTO INTERIOR FRAMING

SIPS WALL PANELS

90MM SCREWS @ 300 CRS STAGGERED

BOTTOM PLATE

STANDARD INTERIOR WALL FRAMING

STRUCTURAL PANELS AUSTRALIA

INTERIOR WALL TO SIPS PANEL

WALL DETAILS
Wall Corner Detail
WALL DETAILS
Wall Corner Detail

SIP STRUCTURAL SCREW
@ 600 CRS

60MM LONG NAILS, 3MM THICK
@ 150MM CRS
OR EQUIVALENT EACH SIDE.

STANDARD ELECTRICAL CONDUIT

STRUCTURAL PANELS AUSTRALIA
WALL PANEL CORNER PLAN VIEW
WALL DETAILS
Window Cut Out Detail

ROUGH CUT OPENING

60MM X 3MM THICK NAILS @ 150MM CRS
EACH SIDE, U.N.O.

ROUGH CUT OPENING

60MM X 3MM THICK NAILS @ 150MM CRS
EACH SIDE, U.N.O.

ROUGH CUT OPENING

INSTALL HORIZONTAL HEADERS FIRST

WALL PANEL

STRUCTURAL PANELS AUSTRALIA
WINDOW DETAIL
ROOF DETAILS
Block Wall/Roof

SIPS ROOF PANEL
SIPS SCREWS @ 300 CRS

2x TOP PLATE

60MM NAILS @ 150 CRS OR EQUIVALENT EACH SIDE

INFILL PIECE TO SUIT

STRUCTURAL PANELS AUSTRALIA
CHAMFERED ROOF DETAIL
ROOF DETAILS
Parapet Detail

PARAPET PANEL

OPTIONAL SIPS SCREW

60MM NAILS @ 150 CRS
OR EQUIVALENT

EXTERIOR CLADDING
AND SARKING
AS REQUIRED BY
STANDARD

SEALING AGENT
AT ALL TIMBER
CONNECTIONS.

SIPS WALL PANEL

60MM NAILS @ 150 CRS
OR EQUIVALENT EACH SIDE.

SIPS ROOF PANEL

INSULATED ROOF SYSTEM

PARAPET CAP

 STRUCTURAL PANELS AUSTRALIA
 TYPICAL PARAPET DETAIL
NOTE:
1. PROTECT EPS CORE BY USE OF STEEL COLLAR FLASHING. INSULATING MATERIAL DESIGNED FOR HIGH TEMPS AS REQUIRED.

STRUCTURAL PANELS AUSTRALIA

ROOF PENETRATIONS
**MATERIAL SPECIFICATION**

**Screw Types**

Light Duty Drill point fastener for drilling into light steel members.

Heavy duty drill point fastener for drilling into heavy steel members.

Timber drill point fastener for drilling into timber members.

Screws are case hardened and tempered for ease of installation.

Large diameter, low profile pancake heads have excellent pull through resistance without the need for a washer.

Black E-coat finish provides excellent corrosion resistance.

Screw lengths range from 75mm – 460mm
UNLOADING PROCEDURE

1. Once truck is in position, the steel tie down beams need to be undone. The tie downs are usually under considerable tension and need to be undone with no one anywhere near the beams as they can jump up when tension is released.

2. Access to the top of the load is done by the use of EWP’s for removing the tie down beams, and hooking the lifting straps to the crane.

3. The steel beams need to be removed from the top of the load this is done by turning them over and sliding them on the styrene packers, off the top of the panel packs onto the EWP being used, and taken to the ground.

4. Using EWP’s, the provided lifting straps need to be hooked to the crane. The crane can take the tension. The position of the hook over the panel packs need to be checked, to avoid the load swinging.

5. At no time is a lift of the panel packs by the crane to occur until personnel in the EWP is well clear of the load.

6. Working under any load is not permitted.

7. Panel packs are then lifted into place on the roof.

8. The unhooking of the load is to occur only using EWP’s, and the straps removed for returning to Structural Panels.

9. The procedure is to be repeated until the load is low enough for personnel to access the panel packs from the truck bed. This is the only time access to the panel packs can occur from the truck deck.

IMPORTANT NOTES

1. Climbing on any panel packs at any time is not permitted, as climbing will create a fall hazard.

2. Panel packs should never be unloaded when conditions are windy.

3. Panel packs should never be unloaded when wet or when it is raining.

4. If site conditions are not suitable for unloading, then panel packs are to be unloaded at a site that is suitable and level.

5. They can then be loaded on to a truck individually, transported to site, and the above procedure implemented, releasing the tie down beams, only after the crane has tension on the panel packs. This procedure will remove the risk of unrestrained panel packs falling off, or slipping off the truck.

6. Care should be taken when working with or moving panels or packs, as edges are sharp and severe injury is possible - gloves should be worn.

Disclaimer: The information and advice contained in this manual is of a general nature only, and has not been prepared with your specific needs in mind. You should always obtain specialist advice to ensure that the materials, approach and techniques referred to in this manual meet your specific requirements.
**SPECIFICATION**

**Description**
To supply and install a complete Wall/Roof system as shown on drawings, including but not limited to the following specification:

**Acceptable Manufacturer**
Structural Panels Australia™, consisting of “SL” ("S") class EPS foam core of desired thickness laminated to outer skins of OSB Board 11mm thick

**Material**
The foam core of Structural Panels Australia panel to be manufactured in accordance with AS1366 class "SL" ("S")
Panel thickness: _____ mm
Panel thermal rating: R_______
OSB Thickness: 11mm

Accessories:
Timber
Mgp10 or greater

Engineered wood products shall be used where required for structural adequacy.

**Performance Requirements**
Structural performance: Provide SIPS capable of withstanding design loads. Design loads shall be in compliance with the requirements of the local building code.

**Submittals**
Product data: Structural Panel manufacturer’s product literature including structural properties and installation instructions.
Shop Drawings: Show fully dimensioned fabrication and installation details for Structural Panels.

**Delivery, storage and handling**
All SIPS panels will be kept dry and protected with waterproof covering during transportation and storage.
Exercise care to prevent crushing of SIP edges with cargo hold down straps during transportation.
Carefully load and unload SIPS from trucks to prevent damage to the panels.
Store SIPS elevated off of the ground on sleepers.
Take care in handling SIPS to prevent delamination. Do not lift panels by the top skin.

**Fasteners**
SIPS panels to be fixed as per according to manufacturer’s details

**Fabrication**
Cut SIPS to accurate lengths, angles and sizes to produce close fitting joints.
Remove foam as required to accommodate wood blocking and splines.
Provide electrical wiring chases in foam core where required.

Builder to approve workshop drawings for approval prior to manufacture.
Delivery: Deliver to site, unload and stack in a location away from potential damage. Delivery loading and strapping as per approved method.