INTRODUCTION

Gyprock™ Shaft Systems are non-loadbearing, fire resistant wall assemblies designed to encase lift shafts, stairwells and service ducting in low and high rise construction.

A comprehensive range of Gyprock™ Shaft Systems is available to accommodate most common applications. Systems include Shaftwall Systems for lifts, stairwells and service shafts, and Laminated Service Systems for service shafts.

Shaftwall Systems comprise 25mm thick Gyprock™ Shaft Liner Panel and 16mm Gyprock Fyrchek™ plasterboard supported by a frame of galvanised steel C-H studs, tracks or angles.

Laminated Service Systems comprise 3 layers of Gyprock Fyrchek™ plasterboard laminated together using screws or screws and glue, and incorporating perimeter steel angle framing.

Gyprock™ Shaft Systems are designed predominantly for erection from one side only. Walls are assembled from outside the shaft at each floor, eliminating the need for access or scaffolding within the shaft.

Gyprock™ Shaft Systems combine lightweight construction, rapid installation and drywall finishing techniques to offer significant cost savings to builders and developers. These benefits are of particular significance when used in conjunction with structural steel construction.
TYPICAL APPLICATIONS FOR GYPROCK™ SHAFT SYSTEMS

FIG 1: TYPICAL BUILDING CORE PLAN

Typical Applications for GYPROCK Shaft Systems
- Shaftwall System
- Laminated Service System
Construction used to bound means of egress, such as walls enclosing lifts, stairwells and fire-isolated passageways, performs an important function should fire occur. Such walls provide protection for the fire brigade entering the building to reach a fire, and to the occupants attempting to leave the building. These walls must offer proven fire resistance for the design fire period, including sufficient structural strength to fulfill these functions.

Service shafts are typically enclosures containing electrical, mechanical or hydraulic services between floor levels. Walls for these enclosures may be required to:
- Protect the services from fire.
- Prevent the spread of fire via the service duct.
- Provide acoustic separation between noisy services and building occupants.

The Building Code of Australia specifies the minimum fire resistance level and structural performance requirements of lightweight construction systems when used to protect building components in the various types of buildings. Gyprock™ Shaft Systems are classified as ‘lightweight construction’ under the Building Code of Australia definition, and have been subjected to appropriate testing as required by the Code.

**Fire Resistance**

Gyprock™ Shaft Systems have been tested in accordance with Australian Standard AS1530 Part 4, and letters of opinion covering minor variations from tested prototypes have been obtained from recognised authorities. The fire resistance levels quoted for Gyprock™ Shaft Systems apply for fire attack from either direction, despite their non-symmetrical nature.

**Acoustic Performance**

Various Gyprock™ Shaft System configurations have been laboratory tested for acoustic performance. Testing has been conducted in accordance with the relevant Australian or Overseas Standard applying at the time of testing.

Where test results are not available, estimates calculated by PKA Acoustic Consulting are provided.

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**The CSR Gyprock™ Acoustic Predictor**

CSR Gyprock™ provides a service which can assist in determining the Rw ratings of stud walls lined with Gyprock™ plasterboard that are not published in this guide. Please telephone the CSR designLINK Service on 1800 621 117 for assistance.

**Structural Performance**

The Building Code of Australia – Specification C1.8 ‘Structural Tests for Lightweight Construction’, details the tests to be applied and criteria to be satisfied by lightweight wall construction. These four tests are as follows –

**Resistance to Static Pressure**

Typical wall sections are subjected to a uniformly distributed load (or its equivalent) of 0.25kPa or 0.35kPa depending on the location of the wall and the class of the building in which it is used.

Gyprock™ Shaft Systems have the proven strength to resist these loads, which are typical of those experienced during the lifetime of the building. Laminated Service Systems are suitable for 0.35kPa. Refer to NATA Test Report N°MT12-90.

**Gyprock™ Shaft Systems are not suitable for certain walls of Class 9B buildings which require 1.0kPa loading.**

**Resistance to Impact**

A series of impacts from a 27.2kg sandbag are imposed on a typical wall section and must not cause permanent damage.

Gyprock™ Shaft Systems combine the structural efficiency of C-H studs or steel angle framing with the strength of plasterboard to satisfy this requirement. Refer to NATA Test Report N°MT2-88.

**Resistance to Surface Indentation**

This test measures the surface hardness of the material. Gyprock Fyrchek™ and Gyprock™ Shaft Liner Panel both satisfy the requirements of this test. Refer to NATA Test Report N°MT8-89 and MT9-89.

**Resistance to Repetitive Loads**

The movement of high speed lift cars within the shaft of a high rise building exerts positive and negative air pressure forces on the walls enclosing the shaft. These forces have been known to damage rigid masonry enclosures over time.

This test simulates these forces by the imposition of one million cycles of a uniformly distributed load (or its equivalent) between 0 and 0.35kPa.

Gyprock™ Shaft Systems using C-H stud framing have been subjected to these dynamic tests and have the ability to flex in response to such loads without sustaining damage. Refer to NATA Test Report NºMT13-90.
ADVANTAGES

Rapid Installation
Gyprock™ Shaft Systems are rapidly installed from one side at each floor, with no need for access within the shaft. Shafts are rapidly closed in, providing safe work areas for following trades.
As no scaffolding is required within shafts, lifts services can be installed early in the construction program, ready to move men and materials to higher floors as needed.
All components are screw or screw and adhesive fixed, and there is no need for welding or bolting.

Light Weight
Gyprock™ Shaft Systems weigh less than 50kg/m², or approximately 25% of the weight of equivalent masonry or concrete enclosures.
Weight reductions of this magnitude can result in significant cost savings through the complete structure, from structural columns and beams to footing and foundations.

Slender Walls
The reduced floor space required by Gyprock™ Shaft Systems means greater net floor areas are available for use/lease.

Easier Materials Handling
Large quantities of metal components and plasterboard sheeting can be transported to site, craned into position and stored on each floor ready for installation with a minimum of disruption to other trades.

Drywall Construction
Drywall construction methods eliminate the delays, mess and inconvenience associated with traditional wet trades, and allow the early decoration of finished walls.

DESIGN CONSIDERATIONS

BCA Requirements
Gyprock™ Shaft Systems are classed as ‘Lightweight Construction’ by the Building Code of Australia. Designers should ensure that selected wall systems satisfy the fire resistance and structural requirement of the Code for the applications proposed.

Air Movement/Pressures
Gyprock™ Shaft Systems used to enclose lift shafts or service ducts must have all perimeters and penetrations effectively sealed with Gyprock™ Fire Mastic to eliminate whistling and sound leakage while maintain the stated fire resistance level.

Service Ducts
Gyprock™ Shaft Systems may be used as unlined return air ducts, providing surface air temperatures and humidities do not allow condensation to occur on the faces of the plasterboard linings or the metal framework. These systems are not recommended for use as unlined HVAC supply ducts/shafts.

Moisture
Exposure to excessive or continuous moisture or humidity should be avoided both during construction and in service. Allowance needs to be made for the capping of shafts during the construction phase to ensure installations are not damaged by excessive rainwater.

Service Penetrations
Gyprock™ Shaft Systems incorporating access panels, fire dampers, plumbing penetrations and the like, must be detailed to ensure both their fire and structural integrity is maintained.

Fire Doors
Proprietary steel door frames as detailed on page 22 and 23 are ordered separately and supplied by the appropriate manufacturer.

Lift Equipment
Lift operating equipment should be mounted independently from the shaftwall system.

Structural
All Gyprock™ Shaft Systems are designed as non-loadbearing partitions. It is acceptable however to include loadbearing elements within the system cavity.
Gyprock™ Shaft Systems are not intended to provide resistance to in-plane loading (bracing).

Perimeter Fasteners
It is important that the project engineer approve the type, size and maximum spacing of perimeter fasteners to meet the design load requirements.
Track fasteners shall be capable of withstanding a minimum of 0.86kN single shear and 0.89kN bearing force.
**GYPROCK™ PLASTERBOARD & ACCESSORIES**

CSR Gyprock™ manufactures a diverse range of plasterboard sheet products for fire rated and non-fire rated applications. Refer to Table 1 for thickness and sheet size availability.

**Fire Rated Plasterboards**

**Gyprock Fyrchek™** can be used in wall and ceiling systems where fire resistance is to be achieved and is also useful where improved acoustic performance is required. Gyprock Fyrchek™ is machine made sheet composed of a specially processed glassfibre reinforced gypsum core encased in a heavy duty liner board.

**Gyprock FyrchekMR™** is primarily intended for walls and ceilings in ‘wet area rooms’ and for soffits and external eaves which must also achieve fire resistance. Gyprock FyrchekMR™ is machine made sheet composed of a specially processed glassfibre reinforced gypsum core encased in a heavy duty liner board. Both the core and the liner board are treated in manufacture to withstand the effects of high humidity and moisture.

**Gyprock™ Shaft Liner Panel** is a 25mm thick machine made sheet composed of a specially processed glass fibre reinforced gypsum core encased in a heavy duty liner board. Gyprock™ Shaft Liner Panel is specifically developed to enclose lift shafts, stairwells and service shafts in multi-storey construction. Gyprock™ Shaft Liner Panel can be used to achieve fire resistance in wall and ceiling systems.

**Gyprock EC08™ Range.** A first in the Australian plasterboard industry, the Gyprock EC08 range was developed to meet the changing needs of the green building market. The range is fully GECA accredited, including the premium EC08™ Complete which is Mould, Impact and Moisture resistant, and Fire and Acoustic rated. EC08™ Impact MR is Impact and Moisture resistant, and Fire and Acoustic rated. EC08™ Impact is a high performance Impact board and is fire and acoustic rated. EC08™ Fire is fire and acoustic rated. EC08™ Aqua is a moisture resistant board for use in green projects and EC08™ Partition is a partition grade board for use in green building.

**Fire Resistance**

Gyprock™ plasterboard products have been tested to AS1530.3, “Simultaneous determination of Ignition, Flame Propagation, Heat Release and Smoke Release. See Table 2 for test results.

### TABLE 1: GYPROCK PLASTERBOARD AVAILABILITY

Gyprock™ plasterboard sheet products have coloured face liners for easy identification. (Approximate colours are shown behind product groups below).

<table>
<thead>
<tr>
<th>Gyprock™ Product</th>
<th>Thickness mm</th>
<th>Width mm</th>
<th>Mass kg/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fyrchek™</td>
<td>13</td>
<td>1200</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1200</td>
<td>12.5</td>
</tr>
<tr>
<td>FyrchekMR™</td>
<td>13</td>
<td>1200</td>
<td>10.7</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1200</td>
<td>13.5</td>
</tr>
<tr>
<td>Shaft Liner Panel</td>
<td>25</td>
<td>600</td>
<td>19.8</td>
</tr>
<tr>
<td>EC08™ Fire</td>
<td>13</td>
<td>1200</td>
<td>10.5</td>
</tr>
<tr>
<td>EC08™ Impact</td>
<td>13</td>
<td>1200</td>
<td>12.1</td>
</tr>
<tr>
<td>EC08™ Complete</td>
<td>13</td>
<td>1200</td>
<td>12.4</td>
</tr>
</tbody>
</table>

Call 13 17 44 to confirm available products and sizes for your region. Custom sizes may be available subject to minimum order. Lead times may apply.

### Handling & Storage

All materials must be kept dry, preferably stored inside. Care should be taken to avoid sagging or damage to ends, edges and surfaces of sheets.

All Gyprock™ plasterboard must be stacked flat, properly supported on a level platform or on support members which extend the full width of the sheets and which are spaced at a maximum of 600mm centres.

If stored outside, sheets must be stored off the ground, stacked as previously detailed and protected from the weather.

**TABLE 2: FIRE HAZARD PROPERTIES**

<table>
<thead>
<tr>
<th>GYPROCK Product</th>
<th>EFHI</th>
<th>ASEA m²/kg</th>
<th>Group Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 – 16mm Fyrchek™</td>
<td>0/0/0/3</td>
<td>&lt;250</td>
<td>1</td>
</tr>
<tr>
<td>13 – 16mm FyrchekMR™</td>
<td>13/0/2/2</td>
<td>&lt;250</td>
<td>1</td>
</tr>
<tr>
<td>25mm Shaft Liner Panel</td>
<td>0/0/0/3</td>
<td>&lt;250</td>
<td>1</td>
</tr>
<tr>
<td>13mm EC08™ Fire</td>
<td>0/0/0/3</td>
<td>&lt;250</td>
<td>1</td>
</tr>
<tr>
<td>13mm EC08™ Impact</td>
<td>0/0/0/3</td>
<td>&lt;250</td>
<td>1</td>
</tr>
<tr>
<td>13mm EC08™ Complete</td>
<td>0/0/0/3</td>
<td>&lt;250</td>
<td>1</td>
</tr>
</tbody>
</table>

NOTES: EFHI = Early Fire Hazard Indices (Ignitability/Spread of Flame/Heat Developed. ASEA = Average Specific Extinction Area

**FIG 2: STACKING AND SUPPORT OF PLASTERBOARD SHEETS**

Support full width of CSR Gyprock™ plasterboard sheets

600mm maximum
Fasteners
CSR Gyprock™ distributes a comprehensive range of screws for use with steel framing to accommodate most installation applications.
- Nº6-18 Type ‘S’ Needle Point Screws (25mm or 40mm) for lightweight steel studs and furring channel up to 0.8mm thickness
- Nº6-18 Type ‘S’ Drill Point Screws (25mm or 40mm) for steel framing 0.8mm to 1.2mm thickness.
- Gyprock™ Plasterboard Laminating Screws. 40mm x Nº10, for laminating layers of plasterboard together at butt joints and control joints (where permitted).

Sealants
Gyprock™ Fire Mastic must be used in fire rated systems where caulking is indicated, and is also recommended for caulking acoustic systems.
Promaseal IBS™ Rod (20mm and 29mm dia.) are to be used where indicated.

Jointing and Finishing
CSR Gyprock™ has a wide range compounds, cements and accessories for finishing plasterboard installations.
This manual does not provide plasterboard jointing and finishing details.
It should be noted that multi-layered systems only require jointing and finishing of the outer layer.
Information relating to the jointing and finishing of Gyprock™ plasterboard can be found in the Gyprock™ Plasterboard Residential Installation Guide, NºGYP547, or visit the CSR Gyprock website: www.gyprock.com.au

GYPROCK™ JOINTING AND FINISHING COMPOUNDS

Keep an eye out for our
NEW LOOK PACKAGING!
Steel Components

CSR Gyprock™ recommends steel building elements manufactured by Rondo Building Services Pty Ltd, for our systems.

Other brands of equivalent or better performance may be used.

It is the responsibility of the manufacturer of the steel component to substantiate equivalent or better performance than the recommended Rondo component.

General information on Rondo steel building components is provided throughout this manual.

Additional information can be obtained from the Rondo Building Services Pty Ltd office in your state, or telephone 1300 367 663.

<table>
<thead>
<tr>
<th>Component Type</th>
<th>Size</th>
<th>Stud BMT (mm)</th>
<th>Stud Depth (mm)</th>
<th>Standard Lengths (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH Stud</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64CH55</td>
<td>0.55</td>
<td>64</td>
<td>3000, 3600</td>
<td></td>
</tr>
<tr>
<td>64CH90</td>
<td>0.90</td>
<td>64</td>
<td>4500</td>
<td></td>
</tr>
<tr>
<td>102CH55</td>
<td>0.55</td>
<td>102</td>
<td>3600, 4300</td>
<td></td>
</tr>
<tr>
<td>102CH90</td>
<td>0.90</td>
<td>102</td>
<td>5500</td>
<td></td>
</tr>
<tr>
<td>E Stud</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64E55</td>
<td>0.55</td>
<td>64</td>
<td>3000, 3600</td>
<td></td>
</tr>
<tr>
<td>102E55</td>
<td>0.55</td>
<td>102</td>
<td>3600, 4300</td>
<td></td>
</tr>
<tr>
<td>J Track</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64J80</td>
<td>0.80</td>
<td>64</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>102J80</td>
<td>0.80</td>
<td>102</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>Deflection Head Track</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64DT80</td>
<td>0.80</td>
<td>64</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>102DT80</td>
<td>0.80</td>
<td>102</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>Jamb Stud</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64JS80</td>
<td>0.80</td>
<td>64</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>102JS80</td>
<td>0.80</td>
<td>102</td>
<td>3600</td>
<td></td>
</tr>
</tbody>
</table>
Framing

Steel framing shall be installed in accordance with brochure NºGYP546, Gyprock™ Shaft Systems.

Shaftwall System framing shall consist of *64mm/102mm x ..........mm BMT C-H Studs, E Studs, J-Tracks, Jamb-Struts and Deflection Tracks.

Studs shall be designed for a maximum span/deflection ratio of *1/240 or 1/360 and shall be installed at *............mm maximum centres OR Laminated Service System framing shall consist of *25mm/50mm x 0.8mm BMT galvanised steel angle.

Track fasteners shall be capable of withstanding 0.86kN single shear and 0.89kN bearing force.

Plasterboard

Plasterboard lining shall comprise:

* One layer of 25mm Gyprock™ Shaft Liner Panel;
PLUS/OR ........... layer(s) of ...........mm Gyprock Fyrchek™ plasterboard applied to one/both side(s) of the framing.

Plasterboard Fixing

Plasterboard shall be installed in accordance with brochure NºGYP546, Gyprock™ Shaft Systems.

Caulking

All gaps and penetrations shall be caulked in accordance with brochure NºGYP546, Gyprock™ Shaft Systems, using Gyprock™ Fire Mastic.

Jointing and Finishing

Where indicated on the drawings and/or as specified, jointing and finishing of the outer layer of Gyprock Fyrchek™ plasterboard shall be in accordance with brochure NºGYP547, Gyprock™ Plasterboard Residential Installation Guide.

* Insert or select appropriate specifications.
NOTE: This information can be downloaded from the CSR Gyprock™ website: www.gyprock.com.au
**SYSTEM SELECTION**

Shaftwall Systems

Gyprock™ Shaftwall Systems constructed with C-H Stud framing can be selected from Table 4. These systems are most appropriate for lift shafts and stairwells, and for service ducts which are outside the dimensional range of the laminated systems detailed below.

<table>
<thead>
<tr>
<th>Component Designation</th>
<th>Stud Spacing mm</th>
<th>Maximum Height of Studs – mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FRL – /120/120 (CSR 971)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.25kPa</td>
</tr>
<tr>
<td>64CH55</td>
<td>600</td>
<td>3600</td>
</tr>
<tr>
<td>64CH90</td>
<td>600</td>
<td>3900</td>
</tr>
<tr>
<td>102CH55</td>
<td>600</td>
<td>4300</td>
</tr>
<tr>
<td>102CH90</td>
<td>600</td>
<td>4800</td>
</tr>
</tbody>
</table>

*A TYPICAL SHAFTWALL SYSTEM DURING CONSTRUCTION FOR A LIFT APPLICATION*
Laminated Service Systems

Laminated service systems consist of three plasterboard leaves laminated together. They rely on support at each end of the wall as well as at the top and the bottom. They are not suitable for lift shafts.

There are three Gyprock™ Laminated Service Systems which can provide Fire Resistance Levels (FRL) of −/90/90 or −/120/120. Two plasterboard fixing methods, (screw only fixing or screw and adhesive fixing) cater for wall heights up to 3.6m and wall widths up to 3.0m.

The appropriate Gyprock™ Laminated Service system can be selected based on the required fire resistance level (FRL) and the required enclosure wall height and width.

Table 5 details the maximum permitted wall dimensions for each system and construction method.

<table>
<thead>
<tr>
<th>System Nº</th>
<th>Wall Height (maximum)</th>
<th>Wall Width (maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSR967-S</td>
<td>1200 1200 1200 N/A</td>
<td></td>
</tr>
<tr>
<td>CSR968-S</td>
<td>1200 1200 1200 1200</td>
<td></td>
</tr>
<tr>
<td>CSR967-SA</td>
<td>2200 2100 2000 N/A</td>
<td></td>
</tr>
<tr>
<td>CSR968-SA</td>
<td>3100 2700 2600 1200</td>
<td></td>
</tr>
<tr>
<td>CSR969-SA</td>
<td>4200 3200 3000 N/A</td>
<td></td>
</tr>
</tbody>
</table>

-S = Screw Only Plasterboard Fixing
-SA = Screw and Adhesive Plasterboard Fixing
N/A = Not Applicable
Steel Frame Internal Wall Systems – Shaft Wall

**SYSTEM SPECIFICATION**

- Lining material as per system table.
- 64 or 102mm C-H Metal Studs at 600mm maximum centres.
- Lining material as per system table.

**NOTE:**
Acoustic performance valid for studs of 0.5mm BMT

<table>
<thead>
<tr>
<th>FRL Report/Opinion</th>
<th>SYSTEM N°</th>
<th>WALL LININGS</th>
<th>TYPICAL LAYOUT (CSR 971 shown)</th>
<th>ACOUSTIC OPINION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CSR 970</td>
<td>BETWEEN STUDS</td>
<td>• 1 x 25mm GYPROCK SHAFT LINER PANEL.</td>
<td>PKA-052</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIDE ONE</td>
<td>• 1 x 16mm GYPROCK FYRCHRK plasterboard.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(a) Nil</td>
<td>38/31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(b) 50 GW Partition 11kg</td>
<td>43/34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(c) 75 GW Partition 14kg</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(d) TSB3/ASB3 Polyester</td>
<td>42/35</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(e) 60 Soundscreen™ 1.6</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WALL THICKNESS mm</td>
<td>80</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>CSR 977</td>
<td>BETWEEN STUDS</td>
<td>• 1 x 25mm GYPROCK SHAFT LINER PANEL.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIDE ONE</td>
<td>• 2 x 13mm GYPROCK FYRCHRK plasterboard.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(a) Nil</td>
<td>41/34</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>(b) 50 GW Partition 11kg</td>
<td>46/37</td>
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<td>(c) 75 GW Partition 14kg</td>
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<td></td>
<td></td>
<td></td>
<td>(d) TSB3/ASB3 Polyester</td>
<td>45/38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(e) 60 Soundscreen™ 1.6</td>
<td>–</td>
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<tr>
<td></td>
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<td>128</td>
</tr>
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<td></td>
<td>CSR 971</td>
<td>BETWEEN STUDS</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>SIDE ONE</td>
<td>• 2 x 16mm GYPROCK FYRCHRK plasterboard.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(a) Nil</td>
<td>41/34</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>(b) 50 GW Partition 11kg</td>
<td>46/37</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(c) 75 GW Partition 14kg</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(d) TSB3/ASB3 Polyester</td>
<td>45/38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(e) 60 Soundscreen™ 1.6</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WALL THICKNESS mm</td>
<td>96</td>
<td>134</td>
</tr>
</tbody>
</table>

**Steel Stud Systems**

(With Alternative Installation Method)
For system specifications, please refer to ‘The Red Book Fire and Acoustic Design Guide’ N°GYP500.
For installation details, please refer to page 27 in this guide.

<table>
<thead>
<tr>
<th>FRL</th>
<th>SYSTEM N°</th>
<th>WALL LININGS</th>
<th>CONSTRUCTION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>– /60/60 and 30/30/30</td>
<td>CSR 050</td>
<td>• 1 + 1 x 13mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
<tr>
<td>– /90/90 and 60/60/60</td>
<td>CSR 055</td>
<td>• 1 + 1 x 16mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
<tr>
<td>– /120/120 and 90/90/90</td>
<td>CSR 075</td>
<td>• 2 + 2 x 13mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
<tr>
<td>– /180/180 and 120/120/120</td>
<td>CSR 080</td>
<td>• 2 + 2 x 16mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
<tr>
<td>– /30/30 and 30/30/30</td>
<td>CSR 090</td>
<td>• 2 x 13mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
<tr>
<td>– /60/60 and 60/60/60</td>
<td>CSR 091</td>
<td>• 2 x 16mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
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<tr>
<td>– /90/90 and 90/90/90</td>
<td>CSR 092</td>
<td>• 3 x 13mm Gyprock Fyrchk™ plasterboard.</td>
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<tr>
<td>– /120/120 and 120/120/120</td>
<td>CSR 093</td>
<td>• 3 x 16mm Gyprock Fyrchk™ plasterboard.</td>
<td></td>
</tr>
</tbody>
</table>
### Steel Frame Internal Wall Systems – Laminated Services

**SYSTEM SPECIFICATION**

- Perimeter framing 25/50 x 50 x 0.7 BMT steel angle.
- 3 x GYPROCK FYRCEK/SHAFT LINER PANEL laminated with screws (S), or screws and full cover adhesive (SA).

<table>
<thead>
<tr>
<th>FRL Report/Opinion</th>
<th>SYSTEM N°</th>
<th>WALL LININGS</th>
<th>CAVITY INFILL</th>
<th>Rw</th>
</tr>
</thead>
<tbody>
<tr>
<td>– /90/90 WFRA 21898</td>
<td>CSR 967S</td>
<td>• 3 x 13mm GYPROCK FYRCEK plasterboard (screw fixing).</td>
<td>(a) Nil</td>
<td>35</td>
</tr>
<tr>
<td>– /90/90 WFRA 21898</td>
<td>CSR 967SA</td>
<td>• 3 x 13mm GYPROCK FYRCEK plasterboard (screw &amp; adhesive fixing).</td>
<td>(a) Nil</td>
<td>35</td>
</tr>
<tr>
<td>– /120/120 WFRA 21898</td>
<td>CSR 968S</td>
<td>• 3 x 16mm GYPROCK FYRCEK plasterboard (screw fixing).</td>
<td>(a) Nil</td>
<td>36</td>
</tr>
<tr>
<td>– /120/120 WFRA 21898</td>
<td>CSR 968SA</td>
<td>• 3 x 16mm GYPROCK FYRCEK plasterboard (screw &amp; adhesive fixing).</td>
<td>(a) Nil</td>
<td>36</td>
</tr>
<tr>
<td>– /120/120 WFRA 21898</td>
<td>CSR 969SA</td>
<td>• 1 x 16mm GYPROCK FYRCEK plasterboard. • 1 x 25mm GYPROCK SHAFT LINER PANEL. • 1 x 16mm GYPROCK FYRCEK plasterboard (screw &amp; adhesive fixing).</td>
<td>(a) Nil</td>
<td>37</td>
</tr>
</tbody>
</table>
SHAFT WALL SYSTEM INSTALLATION

Introduction

Gyprock™ Shaft Walls are most commonly installed from one side only (known as the storey side), progressively installing the 25mm Shaft Line Panels and C-H studs before applying the finishing layer/s of 16mm Gyprock Fyrcheck™ to the storey side.

Some wall systems, such as those used to enclose stairwells, require access to the shaft side of the wall for installation of a finishing layer.

Safety

Where walls are to be erected around open shafts ensure that adequate safety measures are taken.

Framing

- Cut both the floor and soffit J tracks 20mm shorter than the actual length of the wall.
- Cut the narrow flange off both ends of the floor and soffit J tracks for a distance of 60mm maximum. Refer to FIG 3.
- Accurately align the floor and soffit tracks according to the wall layout. Position the tracks with the narrow flange facing the storey side.
- Secure the floor and soffit tracks with fasteners at 100mm maximum from ends and at 600mm maximum centres. Refer to Page 5 for fastener performance requirements.
- Cut the end stud 20mm shorter than the wall height. Position the stud with the 25mm face to the storey side.
- Fix the end stud to the wall with fasteners at 100mm maximum from the ends and at 600mm maximum centres.
- With steel frame construction, tracks and studs should be attached to steel columns and beams before the structural members are independently fire rated.
- C-H studs should be cut 13mm shorter than the wall height to allow a gap at the top of the studs.

Shaft Liner Panel

- Cut the 25mm thick Gyprock™ Shaft Liner panel 25mm shorter than the overall wall height.
- Position the first liner panel vertically between the floor and soffit tracks, pushing the panel hard against the web of the end stud, leaving the 25mm gap at the top.
- When using J track as an end stud, screw fix the liner panels to the wide flange of the J track with 45mm screws at 300mm centres. Alternatively, E stud can be used. Refer to page 18 for details.
- Position the first C-H stud inside the floor and soffit tracks, fitting the ‘H’ section of the stud hard against the trailing edge of the Shaft Liner Panel already in position.
- Insert the next 25mm Shaft Liner Panel inside the floor and soffit tracks, pushing the panel hard against the web of the ‘H’ section of the C-H stud.
- Repeat this process until the last panel is to be installed.
- Fold the narrow flange of the bottom track over to allow for the last liner panel to be installed.
- Fix the J track to the wall with fasteners at 100mm maximum from the ends and at 600mm maximum centres.
- Cut the last Shaft Liner Panel 20mm short of the remaining width, and insert into the C-H stud. Screw fix to the end stud at 300mm centres.
- Pack the 20mm gap between the end stud and the last Shaft Liner Panels with 29mm diameter IBS backing rod. Refer to FIG 8.
- Pack the 25mm gap at the top of the Shaft Liner Panels with 29mm diameter IBS backing rod.
Alternative Installation Method for Last Panel

- Fold the narrow flange of the bottom track over to allow for the last liner panel to be installed.
- Place the end E stud over the vertical edge of the last Shaft Liner Panel and insert the panel at an angle into the ‘H’ section of the last C-H stud. Refer to FIG 9.
- Position the panel against the wide flange of the floor and soffit tracks.
- Attach the end stud to the wall with fasteners at 100mm maximum from ends and at 600mm maximum centres.

Butt Joints

- Where wall heights exceed the maximum available length of Gyprock™ Shaft Liner Panel, butt joints should be positioned within the upper or lower third of the wall. These liner panel joints should be reinforced with horizontal sections of C-H stud and joins in adjacent panels staggered to avoid a continuous horizontal joint. Refer to FIG 19 for details.

FIG 4: EXPLODED VIEW OF INSTALLATION ORDER

FIG 5: GYPROCK™ SHAFT LINER PANEL
Notes on Fixing Fyrcheck Plasterboard

- Offset joints in adjacent layers or layers on opposite sides of the wall by one stud.
- Cut sheets as necessary to provide 6-10mm clearance at the head and ends of the wall, and a 6mm gap at the bottom of the outer layer sheets.
- Do not fix sheets to the top and bottom tracks except for walls enclosing lifts.
- If butt joints are required, they must be staggered by 600mm min. between layers, between adjacent sheets and on opposite sides of the wall. Joints must be either backed by nogging and screw fixed at 200mm max. centres, or fixed with laminating screws at 200mm max. centres.
- Place edge fasteners at 10 to 16mm from sheet edge.

Fixing Procedure

Double Layer Systems

For fastener specifications refer to FIG 6.

First Layer

- Apply sheets vertically with paper bound edges parallel with studs and with recess joints centred on stud flanges.
- Press the sheet firmly against the studs and screw fix at 100mm maximum from top and bottom of sheet, and at 600mm maximum centres along recessed edges, at all angles and around openings.

Second Layer

- Cut the first sheet to half width so that joints in the second layer do not align with joints in the first layer.
- Apply sheets vertically, leaving a 6mm gap between the bottom of the sheet and the floor, at the head and ends of the wall and screw fix at 100mm maximum from top and bottom of sheet, and at 300mm maximum centres to all studs.
- Screw fix at all angles and around openings at 300mm maximum centres.

Single Layer Systems

- Fix single layer systems as per the details for the second layer of double layer systems.

Single Layer Systems Lined Both Sides

- Install the plasterboard to the first side as per the procedure detailed for the second layer. Do not fix sheets to intermediate studs at this time.
- Start the second side with a half width sheet so that joints on opposite sides of the wall are located on different studs.
- Screw fix this and subsequent full width sheets to all studs at 100mm maximum from top and bottom of sheet, and at 300mm maximum centres to all studs.
• Return to the first side and screw fix plasterboard to intermediate studs at 100mm maximum from top and bottom of sheet, but not through tracks, (see notes) and at 300mm maximum centres.

**Sealants**

Fill all perimeter gaps with Gyprock™ Fire Mastic to the depth of one sheet.

**Jointing**

Fire rated shaft systems must be jointed with perforated paper tape and standard Gyprock™ jointing techniques in accordance with brochure N°GYP547, Gyprock™ Plasterboard Residential Installation Guide.

Tape and set face layer joints of Gyprock Fyrchek™ plasterboard only.

Corners formed by Gyprock Fyrchek™ must be taped and set or reinforced with corner beads.

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**WALL JUNCTION DETAILS**

Junctions with Masonry Walls

**FIG 7: J-TRACK DETAIL**

J Track

Shaft Side

25mm GYPROC Shaft Liner Panel

2 Layers 16mm GYPROC FYRCHEK

Gyprock Fire Mastic

6mm

**FIG 8: J-TRACK WITH IBS™ ROD**

J Track

Shaft Side

25mm GYPROC Shaft Liner Panel

IBS Rod 29mm dia.

2 Layers 16mm GYPROC FYRCHEK

Gyprock Fire Mastic

6mm

**FIG 9: E-STUD DETAIL**

E Stud

Shaft Side

25mm GYPROC Shaft Liner Panel

2 Layers 16mm GYPROC FYRCHEK

Gyprock Fire Mastic

6mm

---

Junctions with Stud Walls

**FIG 10: JUNCTION WITH C-H STUD WALL**

J Track

C-H Stud

2 Layers 16mm GYPROC FYRCHEK

STOREY SIDE

**FIG 11: JUNCTION WITH C-H STUD WALL**

GYPROC Shaft Liner Panel

25 x 38mm Steel angle

J Track

GYPROC FYRCHEK plasterboard
**FIG 12: INSIDE CORNER DETAIL**

- C-H Stud
- 25mm GYPROC™ Shaft Liner Panel
- J Track
- 2 Layers 16mm GYPROC™ FYRCHÉK
- STOREY SIDE

**FIG 13: ANGLED CORNER DETAIL**

- Gyprock Fire Mastic (25mm depth min.)
- Shaft Liner to fit tightly or use alternative E stud end detail
- 0.6mm galvanised steel sheet folded to suit (Continuous and screw fixed at ends and at 600mm max. centres to J tracks)

**FIG 14: ENCLOSED STEEL BEAM DETAIL**

- Screw Fix at 300mm Centres
- 50 x 50 x 0.8mm Angle
- IBS Rod 28mm dia.
- GYPROC™ Shaft Liner Panel

**FIG 15: OUTSIDE CORNER DETAIL**

- Locally cut Shaft Liner Panel around beam
- Beam over column
- 25mm GYPROC™ Shaft Liner Panel
- Column if required to support enclosed beam above

**FIG 16: COLUMN FIXING DETAIL**

- L-shaped head plate with concrete anchors
- Tek screws in 50mm slotted holes to allow for movement
- Angle bracket with concrete anchors
- Soffit
- 100mm column stub with neat fit to column
- L-shaped base plate with concrete anchors
- Slab
FIG 17: HEAD & BASE DETAIL

Continuous bead of Gyprock Fire Mastic when acoustic integrity required.

- IBS Rod (29mm dia).
- Stud 15 – 20mm clear of soffit.
- J Track fixed to soffit at 600mm maximum centres.

Continuous fill gap with Gyprock Fire Mastic to depth of 1st layer of plasterboard.

- Fire rated ceiling.
- GYPROCK Shaft Wall System.

Gyprock Fire Mastic

FIG 18: JUNCTION OF – /120/120 SHAFTWALL SYSTEM TO TIMBER FLOOR (WHERE TIMBER FRAMING IS PERMITTED)

- GYPROCK Shaft Liner Panel fixed with 75mm screws at 300mm centres.
- IBS Rod (29mm dia).

Gyprock Fire Mastic

FIG 19: ALTERNATIVE DETAILS FOR HORIZONTAL BUTT JOINTS

Butt joints fixed with laminating screws at 200mm maximum centres.

- Steel track notched and fixed to C-H Stud face.
- Face layers butt jointed over reinforcing track.

Continuous bead of Gyprock Fire Mastic when acoustic integrity required.

- Horizontal butt joint in GYPROCK Shaft Liner Panel.
- GYPROCK Shaft Liner Panel fixed with 75mm screws at 300mm centres.

Gyprock Fire Mastic
Wall Junctions with structural Steel Members

**FIG 20: WALL JUNCTION AT UNIVERSAL COLUMN**
- External Corner Bead and set over
- J Track
- GYPROC® Shaft Liner Panel
- Sprayed Fire Resistant Material

**FIG 21: WALL JUNCTION AT UNIVERSAL COLUMN**
- External Corner Bead and set over
- J Track
- GYPROC® Shaft Liner Panel
- Galvanised Steel Angle fixed to column and J Track
- Sprayed Fire Resistant Material

**FIG 22: WALL JUNCTION AT UNIVERSAL COLUMN**
- GYPROC® FYRCHEK plasterboard
- GYPROC® Shaft Liner Panel
- Sprayed Fire Resistant Material

**FIG 23: WALL BYPASSING UNIVERSAL COLUMN ALTERNATIVE DETAIL**
- GYPROC® FYRCHEK plasterboard
- GYPROC® Shaft Liner Panel
- Galvanised Steel Angle fixed to column and J Track
- Sprayed Fire Resistant Material

**FIG 24: WALL HEAD CONNECTION TO STEEL BEAM**
- Gyprock Fire Mastic 6mm min. / 20mm max. height
- GYPROC® Shaft Liner Panel
- IBS Rod 28mm dia.
- C-H Stud
- STOREY SIDE
- SHAFT SIDE
- Deflection or J Track
- 12mm min.

**FIG 25: WALL HEAD CONNECTION TO STEEL BEAM**
- Gyprock Fire Mastic 6mm min. / 20mm max. height
- GYPROC® Shaft Liner Panel
- IBS Rod 28mm dia.
- C-H Stud
- STOREY SIDE
- SHAFT SIDE
- Deflection or J Track
- 12mm min.
- 50mm min.
- 203mm max.
Systems CSR 970/971/977

Wall with provision for a single-leaf 2100mm high x 1080mm wide x 45mm thick side-hung fire. Refer to door manufacturer for frame filling requirements.

FIG 26: TYPICAL STUD LOCATION AND SHEET LAYOUT

FIG 27: WALL SECTIONS AT DOORWAY
LIFT LANDING DOORWAYS

Wall with provision for side or centre opening lift landing doors.

FIG 28: TYPICAL STUD LOCATION AND SHEET LAYOUT

FIG 29: TYPICAL SECTION B-B

FIG 30: TYPICAL SECTION A-A

NOTE
These are typical lift door details only, as these sections vary depending on the door type and manufacturer. Refer to appropriate lift manufacturers for full details.
ACCESS PANELS & FRAMES

Gyprock™ C-H Stud Shaftwall Systems have been tested for an FRL of –/120/120 incorporating both single and multiple modular access panels and frames.

The moulded access panels and mild steel frames are manufactured by Trafalgar Fire. They are supplied to order in single or multiple modular units and include plywood faced panels.

The mild steel frames are fixed into position by the Shaftwall installer.

<table>
<thead>
<tr>
<th>Panel</th>
<th>Max. Height</th>
<th>Max. Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Unit</td>
<td>980mm</td>
<td>552mm</td>
</tr>
<tr>
<td>Multiple Unit</td>
<td>3020mm</td>
<td>552mm</td>
</tr>
</tbody>
</table>

FIG 33: FIRE DAMPER – CSIRO FCO 2109

Mechanical fire damper tested and approved for AS1530.4

J-Track fixed to studs

Promaseal IBS™ backing rod 30% larger diameter than gap (gap 15-30mm)

10mm dia. MS rod fixed to slab and support angle

Damper seal angles 75mm x 50mm x 1.2mm MS

Support angle 50mm x 50mm x 5mm MS

1 or 2 layers GYPROCK FYRCHEK Plasterboard as per FRL

GYPROCK Shaft Liner Panel
LAMINATED SERVICE SYSTEM INSTALLATION

Framing

Install steel angles over a bead of Gyprock™ Fire Mastic to floor and soffit. Align angle with the sides and ends of the required enclosure area.

Fix angles with power driven fasteners or easy drive masonry fixings at the corners and at 1200mm maximum centres between. Refer to the respective manufacturer’s instructions for edge distances and safety requirements.

Install steel angles vertically at corners with a 15mm gap at the top. Fix both flanges at the top and bottom to horizontal steel angles with aluminium rivets. Where corner angles abut a masonry wall, fit angles as detailed.

Plasterboard Fixing

Screw Only Installation

NOTE: The screw only fixing method is suitable for enclosures up to 1200mm width. Except at corners, no sheet joints are permitted.

Cut first layer sheets 20mm short of frame height. Install the bottom edge on the floor and fix only to the vertical corner angles at 75mm from the top and bottom and at 400mm maximum centres between. Use Gyprock™ Nº6 x 25S screws.

Do not fix sheets along the top and bottom edges to the horizontal steel angles.

Install additional steel angles around the enclosure at the top, bottom and corners, and fix as for the original framing. Refer to installation details.

Fit the second layer sheets resting on the floor, leaving a 20mm gap at the top. Fix sheets to the vertical angles only as for the first layer. Fix the body of the sheet at 400mm max. vertical centres and 600mm max. horizontal centres using 40mm x Nº10 Gyprock™ Laminating Screws.

Fit the third layer sheets with a 10mm gap at the bottom and a 20mm gap at the top. Fix the sheets at 75mm from top and bottom edges and corners, and at 400mm max. vertical centres and 600mm max. horizontal centres between, using 40mm x Nº10 Gyprock™ Laminating Screws.

Caulk all perimeter gaps as detailed. Apply external corner bead and set corners where appropriate.

Plasterboard Fixing

Screw and Adhesive Installation

NOTE: Sheet joints must be offset a minimum or 300mm from joints in the adjacent layers. The minimum width of any sheet is 300mm. Determine the appropriate sheet widths to be installed before installing the first layer.

Install the first layer as detailed for the screw only system. Prop intermediate sheets or temporarily screw to the top and bottom steel angles. Remove temporary screws before fixing the second layer.

Install additional steel angles around the enclosure at the top, bottom and corners, and fix as for the original framing, refer details.

Mix sufficient Gyprock™ Base Coat or Gyprock™ Cornice Cement to cover the wall surface. Cut the second layer sheets 20mm short of the frame height and lay them face down on a flat surface.

Using a 5mm notched trowel, cover the entire back with the chosen adhesive.
Fit the second layer sheets immediately, leaving a 20mm gap at the top. Screw fix as detailed for the second layer of the fastener only system.

Apply adhesive to the back of the third layer sheets as previously detailed and install with a 10mm gap at the bottom and a 20mm gap at the top. Screw fix as detailed for the third layer of the screw only system.

Caulk all perimeter gaps as detailed. Apply external corner bead and set corners and joints where appropriate.
FIG 38: VERTICAL CORNER ABUTTING A MASONRY WALL DETAIL

- 25/50 x 50 x 0.8mm BMT Steel Angle
- Gyprock Fire Mastic
- Gyprock fire rated plasterboard

FIG 39: COPPER PIPE PENETRATION DETAIL

- FRL –/120/–
- 20mm
- Gyprock Fire Mastic
- Gyprock fire rated plasterboard

FIG 40: INSTALLATION DETAIL FOR LORIENT FIRE DAMPER

- Perimeter of fire damper sealed with Lorient Intumescent Mastic
- Lorient LVH44 Intumescent Fire Damper unit (nom. 300 x 300mm)
- Duct breakaway connection in accordance with AS1682.2
- Perimeter of duct sealed with Lorient Intumescent Mastic
- Sheetmetal ductwork
### Fixing Specifications for Vertical Sheeting (shown)

**1st Layer Fixing & Spacing**
- Recessed Edges, Field, Corners & Openings
- #6-18 x 25mm, bugle head screws at 600mm max. centres on studs

**2nd Layer Fixing & Spacing**
- Recessed Edges, Field
- #6-18 x 40mm, bugle head screws at 300mm max. centres on studs
- Butt Joints
- Laminating screws at 200mm max. centres
- Corners & Openings
- #6-18 x 40mm, bugle head screws at 300mm max. centres

**3rd Layer Fixing & Spacing**
- Recessed Edges, Field, Butt Joints, Corners & Openings
- Laminating screws at 400x400mm max. grid

**FIRE RATED**

**Fixing Specifications for Horizontal Sheeting**

**1st Layer Fixing & Spacing**
- Recessed Edges, Field, Butt Joints, Corners & Openings
- #6-18 x 25mm, bugle head screws at 600mm max. centres on studs

**2nd Layer Fixing & Spacing**
- Recessed Edges
- #6-18 x 40mm, bugle head screws at 300mm max. centres on studs
- Field
- #6-18 x 40mm, bugle head screws at 300mm max. centres on studs
- Butt Joints
- #6-18 x 40mm, bugle head screws at 300mm max. centres on studs
- Corners & Openings
- #6-18 x 40mm, bugle head screws at 300mm max. centres

**3rd Layer Fixing & Spacing**
- Recessed Edges, Field, Butt Joints, Corners & Openings
- Laminating screws at 400x400mm max. grid

**NOTE:** Fix single layer systems as shown for 2nd layer
**Health & Safety**

Information on any known health risks of our products and how to handle them safely is on their package and/or the documentation accompanying them.

Additional information is listed in the Material Safety Data sheet. To obtain a copy, telephone 1800 807 668.

**Warranty**

Gyprock™ products are manufactured for life, with all CSR products designed to achieve optimal performance when part of a CSR integrated system.

Gyprock™ continues to lead the market with premium quality products which are the preferred choice of plastering professionals.

Gyprock™ plasterboard products are manufactured to the Australian Standard AS2588 providing confidence in quality of product and support. For details on our product warranty, please log onto www.gyprock.com.au, or contact us on 1300 306 556.

**CSR designLINK™**

For more technical assistance, CSR designLINK™ helps architects, engineers and other design professionals select the right products and systems for their projects. Estimating and design tools such as an acoustic predictor for wall systems can be provided and customised design solutions are available on request.

The dedicated phone number for designLINK™ Technical Support is 1800 621 117.