Shaft Wall

Shaft Wall systems are fire rated non-load bearing walls used for shafts and service ducts.

Shaft Wall systems are ideal when constructing a wall where access is only possible from one side. This side is referred to as the storey side.

Shaft Wall has advantages compared with masonry construction:

- 75% lighter
- Thinner – typically less than 100mm wide using 64mm CH-Studs
- No wet trades required
- Faster installation – no scaffolding is required inside the shaft.
### SHAFT WALL

#### Fire Rated

#### 3.3.1 Systems

**KSHW1**

**WALL LINING:**

- (Side 1) 1 layer of 16mm FireShield
- (Side 2) 1 layer of 25mm ShaftLiner encased in CH-studs

**FRAME:** Shaft Wall CH-steel studs at maximum 600mm centres

[16mm FireShield can be substituted with 16mm TruRock]

<table>
<thead>
<tr>
<th>FRL – /60/60 rated from both sides Fire Report FAR 2863</th>
<th>CH-Stud Size (mm)</th>
<th>Max Height (m)</th>
<th>Width (mm)</th>
<th>Sound Insulation for studs at 600mm centres and thinnest BMT Rw (Rw + Ctr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CH-Stud Depth</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.25kPa</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.35kPa</td>
<td>No Insulation</td>
</tr>
<tr>
<td></td>
<td>64 0.55 0.9</td>
<td>2.95 3.46</td>
<td>2.64 3.09</td>
<td>80 39 (32) 46 (39) 46 (38)</td>
</tr>
<tr>
<td></td>
<td>102 0.55 0.9</td>
<td>3.73 4.98</td>
<td>2.66 4.19</td>
<td>118 42 (33) 48 (41) 48 (41)</td>
</tr>
</tbody>
</table>

**KSHW2**

**WALL LINING:**

- (Side 1) 2 layers of 16mm FireShield
- (Side 2) 1 layer of 25mm ShaftLiner encased in CH-studs

**FRAME:** Shaft Wall CH-steel studs at maximum 600mm centres

[16mm FireShield can be substituted with 16mm TruRock]

<table>
<thead>
<tr>
<th>FRL – /120/120 rated from both sides Fire Report FAR 2863</th>
<th>CH-Stud Size (mm)</th>
<th>Max Height (m)</th>
<th>Width (mm)</th>
<th>Sound Insulation for studs at 600mm centres and thinnest BMT Rw (Rw + Ctr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CH-Stud Depth</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.25kPa</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.35kPa</td>
<td>No Insulation</td>
</tr>
<tr>
<td></td>
<td>64 0.55 0.9</td>
<td>3.73 4.38</td>
<td>2.66 3.89</td>
<td>96 44 (36) 50 (42) 50 (42)</td>
</tr>
<tr>
<td></td>
<td>102 0.55 0.9</td>
<td>3.73 5.51</td>
<td>2.66 4.19</td>
<td>134 46 (37) 52 (46) 52 (46)</td>
</tr>
</tbody>
</table>

**KSHW3**

**WALL LINING:**

- (Side 1) 1 layer of 16mm FireShield
- (Side 2) 1 layer of 25mm ShaftLiner encased in CH-studs and 1 layer of 16mm FireShield

**FRAME:** Shaft Wall CH-steel studs at maximum 600mm centres

[16mm FireShield can be substituted with 16mm TruRock]

<table>
<thead>
<tr>
<th>FRL – /120/120 rated from both sides Fire Report FAR 2863</th>
<th>CH-Stud Size (mm)</th>
<th>Max Height (m)</th>
<th>Width (mm)</th>
<th>Sound Insulation for studs at 600mm centres and thinnest BMT Rw (Rw + Ctr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CH-Stud Depth</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.25kPa</td>
<td>Non-Load Bearing Studs at 600mm UDL 0.35kPa</td>
<td>No Insulation</td>
</tr>
<tr>
<td></td>
<td>64 0.55 0.9</td>
<td>3.73 4.38</td>
<td>2.66 3.89</td>
<td>96 42 (35) 50 (42) 50 (42)</td>
</tr>
<tr>
<td></td>
<td>102 0.55 0.9</td>
<td>3.73 5.51</td>
<td>2.66 4.19</td>
<td>134 45 (36) 52 (45) 52 (45)</td>
</tr>
</tbody>
</table>
### General Requirements

<table>
<thead>
<tr>
<th>Install control joints in plasterboard walls:</th>
<th>Fire Rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>› At 12m maximum intervals</td>
<td>✓</td>
</tr>
<tr>
<td>› At all control joints in the structure</td>
<td></td>
</tr>
<tr>
<td>› At any change in the substrate material.</td>
<td></td>
</tr>
</tbody>
</table>

Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and:

- Two coats of **MastaBase/MastaLongset**, or
- Three coats of **MastaLite**.

Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.

Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.

---

For acceptable modifications or variations to fire rated systems. ([Refer to Section 2.3 Fire Resistance](#))
Framing

| Fix the bottom track and top track or deflection head at 600mm maximum centres and 100mm maximum from each end. | ✓ |
| Use a deflection head if: | ✓ |
| Wall heights are 4800mm or greater | ✓ |
| Ceiling, roof or floor movement is expected. | ✓ |
| Space CH-Studs at 600mm centres maximum. | ✓ |
| Push CH-Studs down completely into bottom track. | ✓ |
| Friction fit all CH-Studs. They must not be screwed to the top and bottom tracks. | ✓ |

Plumbing and electrical services must not protrude beyond the face of the stud.

**FIGURE 1** Shaft Wall CH-Stud Section

**FIGURE 2** Shaft Wall E-Stud Section

**FIGURE 3** Shaft Wall J-Track Section

**FIGURE 4** Shaft Wall Deflection Head J-Track Section
3.3.1 Installation

Plasterboard Layout

FIGURE 5 Shaft Wall Construction Sequence
Perspective

FIGURE 6 ShaftLiner Butt Joint Layout
Perspective

End stud J-track
CH-stud
Deflection head J-track / top J-track
Bottom J-track
E-stud
25mm ShaftLiner

Fold flange of J-track 60mm to install last ShaftLiner

Stagger butt joints in ShaftLiner to upper and lower third of wall. Stagger butt joints between adjoining sheets

Use CH-stud horizontally along butt joint in ShaftLiner
### Plasterboard Layout

<table>
<thead>
<tr>
<th>FireShield Horizontal Layout</th>
<th>Fire Rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stagger butt joints by 600mm minimum on adjoining sheets and between layers.</td>
<td>✓</td>
</tr>
<tr>
<td>Stagger recessed edges by 300mm minimum between layers.</td>
<td>✓</td>
</tr>
<tr>
<td>First layer butt joints must be backed by a CH-stud.</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FireShield Vertical Layout</th>
<th>Fire Rated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stagger butt joints by 600mm minimum on adjoining sheets and between layers.</td>
<td>✓</td>
</tr>
<tr>
<td>Stagger recessed edges by 300mm minimum between layers.</td>
<td>✓</td>
</tr>
<tr>
<td>First layer butt joints must be backed by a nogging.</td>
<td>✓</td>
</tr>
</tbody>
</table>

### ShaftLiner Layout

If the wall height exceeds the length of ShaftLiner, position the ShaftLiner butt joints within the upper and lower third of the wall. [Refer to Figure 6]

Stagger ShaftLiner butt joints for adjacent panels and reinforce with horizontal CH-stud cut to fit between the vertical studs. [Refer to Figure 6]

- `Install FireShield` horizontally when practical to reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

### Plasterboard Fixing

<table>
<thead>
<tr>
<th>Fire Rated</th>
</tr>
</thead>
</table>

Use the ‘Screw Only Method’. Stud adhesive is not permitted. ✓

Drive screws to just below the sheet surface, taking care not to break the paper linerboard. ✓

Laminating screws can be used to fix butt joints in the second layer. ✓

### Screw Type and Minimum Size for the Installation of Plasterboard to Steel

<table>
<thead>
<tr>
<th>Plasterboard Thickness</th>
<th>1st Layer</th>
<th>2nd Layer</th>
<th>3rd Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>16mm FireShield</td>
<td>30mm screw</td>
<td>45mm screw*</td>
<td>65mm screw*</td>
</tr>
<tr>
<td>25mm ShaftLiner</td>
<td>45mm screw*</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

For steel ≤ 0.75mm BMT minimum 6g fine thread needle point screws.
For steel ≥ 0.75mm BMT minimum 6g fine thread drill point screws.
*38mm = 10g Laminating screws may be used as detailed in installation diagrams.
+ Use for securing ShaftLiner to J-track when the J-track is being used as an end stud.
FIGURE 7 Fire Rated 1 Layer – Horizontal
Screw Only Method

- Butt Joints: Fix at 200mm max centres. Stagger by 600mm min on adjoining sheets.
- Sheet Edges: Fix screws 10 - 50mm from sheet edges except at head and base tracks.
- Field: 300mm max
- Corners: 300mm max

Jointing: Only joint the face layer. As a minimum, use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. Alternatively use Knauf Bindex Fire and Acoustic Sealant according to the Tech Data Sheet.

Floating butt joint backed with 51mm min track Fix on each stud 50mm

2nd layer recessed edges on each stud. Stagger recessed edges by 300mm min between layers.

Fix 1st and 2nd layer recessed edges on each stud. Stagger recessed edges by 300mm min between layers.

300mm max

200mm max

10 - 50mm

FIGURE 8 Fire Rated 2 Layers - Horizontal + Horizontal
Screw Only Method

- Butt Joints 1st layer butt joints must be fixed at 600mm max centres and backed by a stud, or alternatively back with 51mm min track.
- Sheet Edges: Fix screws 10 - 50mm from sheet edges except at head and base tracks.
- Field: 2nd layer 300mm max
- Corners: 2nd layer 300mm max

Jointing: Only joint the face layer. As a minimum, use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. Alternatively use Knauf Bindex Fire and Acoustic Sealant according to the Tech Data Sheet.
3.3.1 Installation

**FIGURE 9 Fire Rated 1 Layer – Vertical**

**Screw Only Method**

- **Recessed Edges**
  - Fix at 300mm max centres.
  - Must be backed by a stud.

- **Butt Joints**
  - Fix at 200mm max centres and stagger screws.
  - Must be backed by a nogging.

- **Jointing**
  - Only joint the face layer. As a minimum, use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. Alternatively use Knauf Bindex Fire and Acoustic Sealant according to the Tech Data Sheet.

**FIGURE 10 Fire Rated 2 Layers – Vertical + Vertical**

**Screw Only Method**

- **Recessed Edges**
  - 1st layer: Fix at 600mm max centres. 1st layer recessed edges must be backed by a stud.

- **Butt Joints**
  - 2nd layer: Laminate to 1st layer using laminating screws at 200mm max centres. Alternatively, fix to nogging at 200mm max centres.

- **Jointing**
  - Only joint the face layer. As a minimum, use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaLite. Alternatively use Knauf Bindex Fire and Acoustic Sealant according to the Tech Data Sheet.
FIRE RATED
SHAFT WALL HEAD AND BASE DETAILS

25mm clearance to ShaftLiner and pack with fire resisting mineral wool

Fix J-track to slab at 600mm max centres and 100mm max from ends

Fix bottom J-track to slab at 600mm max centres and 100mm max from ends

10mm clearance to CH-Stud and plasterboard

Fix 50mm from sheet top. Do not fix through track

Fix 50mm from sheet bottom. Do not fix through track

10mm clearance to CH-Stud and plasterboard

Fix 65mm from sheet bottom. Do not fix through track

5-10mm clearance to plasterboard

Push CH-studs down completely into J-track

25mm clearance to CH-Stud and plasterboard

Fix J-track to slab at 600mm max centres and 100mm max from ends

FIGURE 11 Shaft Wall Head to Slab
System KSHW2
Section

FIGURE 12 Shaft Wall Head to Slab
Systems KSHW1 and KSHW3
Section

FIGURE 13 Shaft Wall Head to Base
System KSHW2
Section

FIGURE 14 Shaft Wall Head to Base
Systems KSHW1 and KSHW3
Section
FIRE RATED
SHAFT WALL SECTION DETAILS

FIGURE 15 Shaft Wall Deflection Head to Slab

FIGURE 16 Shaft Wall to Supporting Beam

FIGURE 17 Shaft Wall to Structural Beam

FIGURE 18 Shaft Wall to Structural Beam

FIGURE 19 Butt Joint in ShaftLiner

FIGURE 20 Butt Joint in Fire Rated Plasterboard

[Details of fire rated shaft wall construction, including clearances, materials used, and installation procedures.]
FIRE RATED
SHAFT WALL PLAN DETAILS

Use masonry fixings at 600mm max centres vertically and 100mm max from ends

Optional stopping angle
Fire sealant required to maintain fire and acoustic integrity

FIGURE 21 Shaft Wall Plan

FIGURE 22 Shaft Wall Corner Plan

FIGURE 23 Shaft Wall Corner Plan

FIGURE 24 Shaft Wall Intersecting Wall Plan

FIGURE 25 Shaft Wall Intersecting Wall Plan

For internal and external corners, fill gaps with either Knauf Bindex Fire and Acoustic Sealant or Mastabase jointing compound. Fill any other gaps with Knauf Bindex Sealant to maintain integrity.
FIRE RATED
SHAFT WALL CONTROL JOINT AND OPENING DETAIL FOR ACCESS PANEL OR FIRE DAMPER

FIGURE 26 Shaft Wall Control Joint
Plan

FIGURE 27 Opening Detail For Fire Damper or Access Panel
Fire rated from both directions but built from one side only

Refer to framing manufacturer for the design of the jamb, header and sill. Actual framing members for the opening are dependant on the wall height, size of the opening, lateral wind pressure, and the deflection limit criteria.

Fill any gaps with fire sealant to maintain fire and acoustic integrity.

Refer to access panel / fire damper manufacturer for specific installation detail of the proprietary item. The item installed in the opening must maintain the FRL of the system.

FIRE RATED SHAFT WALL CONTROL JOINT AND OPENING DETAIL FOR ACCESS PANEL OR FIRE DAMPER