

WALLS

- STEEL STUD >
- MAXIFRAME® >
- QUIET STUD® >
- MASONRY WALL >



STEEL STUD DRYWALL FRAMING SYSTEM

SUMMARY

The Judah Steel Stud Drywall Framing System provides a durable, practical and lightweight structure for internal plasterboard walls and for specific external wall systems. The availability of various sizes, complimentary components such as noggin tracks, curved tracks and special cleats ensure Judah Stud and Track wall systems are available to suit almost all situations.

SUITABLE FOR:

- Non-load bearing partition walls
- Load Bearing Walls by design
- Steel Stud Ceiling Systems
- Window and Door Jambs
- Non-Fire Rated Systems
- Fire Rated Systems
- Acoustic Wall Systems by design
- External Wall systems by design
- Light Weight Floor Joists
- Bulkheads

SPECIAL FEATURES

- Available in custom lengths
- Majority of Stud and Track is hemmed for safety and increased strength
- Bell mouthed service holes to mitigate damages to services
- Flexible Track available for curved walls
- Manufactured with a minimum coating of Z275
- Profiles widths range from 2 Inch to 6 Inch, and gauges from 18 GA to 25 GA.
- MAXIframe External Wall Framing System made from 18 GA G500 steel
- Includes unique QUIET STUD® profile for better acoustic performance

IN PRACTICE

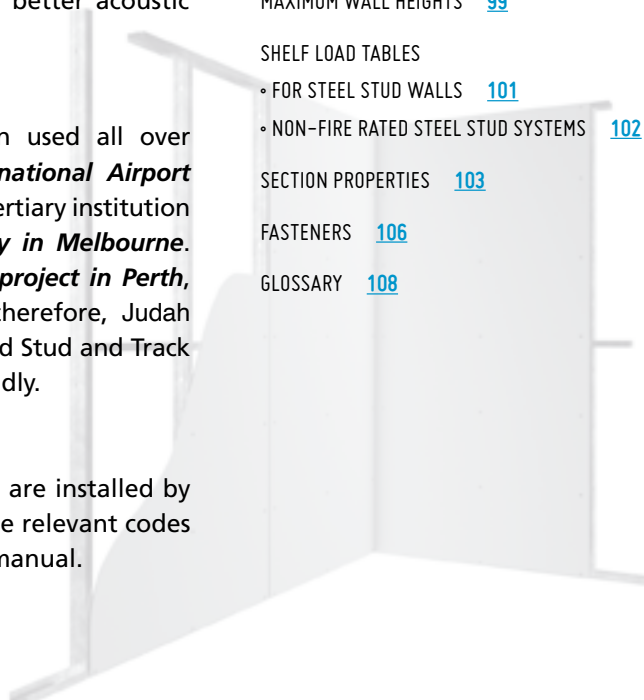
Judah's Stud and Track Systems have been used all over the world, including in the **Mumbai International Airport development in India** and Australia's largest tertiary institution and award-winning project, **RMIT University in Melbourne**. For the high-profile **Fiona Stanley Hospital project in Perth**, its design required special length products – therefore, Judah produced large quantities of the non-standard Stud and Track sizes to ensure the project could progress rapidly.

IMPORTANT NOTE:

Judah recommends its products and systems are installed by a qualified tradesperson and according to the relevant codes and standards outlined on page [256](#) of this manual.

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STEEL STUD & TRACK SECTIONS

LIPPED WALL STUDS

| | |
|-----|------------------------------|
| 401 | 2" x 25 GA Stud with Hem |
| 112 | 2 1/2" x 25 GA Stud with Hem |
| 403 | 3" x 22 GA Stud with Hem |
| 251 | 3 5/8" x 22 GA Stud with Hem |
| 489 | 2" x 20 GA Stud |
| 491 | 2 1/2" x 20 GA Stud |
| 493 | 3" x 20 GA Stud |
| 495 | 3 5/8" x 20 GA Stud |
| 511 | 6" x 20 GA Stud |
| 661 | 2 1/2" x 18 GA Stud |
| 671 | 3" x 18 GA Stud |
| 681 | 3 3/5" x 18 GA Stud |
| 691 | 6" x 18 GA Stud |

QUIET STUD

| | |
|------|----------------|
| RQST | 3 5/8" x 22 GA |
|------|----------------|

FLEXIBLE TRACK

| | |
|-----|---------------------------------------|
| 103 | 2" Flexible Track |
| 104 | 2 1/2" Flexible Track |
| 105 | 3" Flexible Track |
| 106 | 3 5/8" Flexible Track |
| 107 | 2 1/2" Deflection Head Flexible Track |
| 108 | 3" Deflection Head Flexible Track |
| 109 | 3 5/8" Deflection Head Flexible Track |
| 110 | 6" Deflection Head Flexible Track |

WALL TRACKS

| | |
|-----|-------------------------------|
| 400 | 2" x 1" x 25 GA with hem |
| 111 | 2 1/2" x 1" x 25 GA with hem |
| 402 | 3" x 1" x 25 GA with hem |
| 250 | 3 3/5" x 1" x 25 GA with hem |
| 490 | 2" x 1" x 20 GA with hem |
| 492 | 2 1/2" x 1" x 20 GA with hem |
| 494 | 3" x 1" x 20 GA with hem |
| 496 | 3 3/5" x 1" x 20 GA with hem |
| 660 | 2 2/1" x 1 1/4" x 18 GA Track |
| 670 | 3" x 1 1/4" x 18 GA Track |
| 680 | 3 5/8" x 1 1/4" x 18 GA Track |

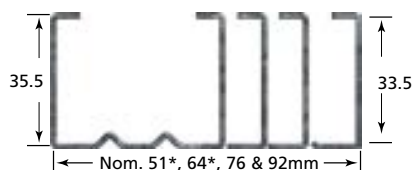
LIPPED WALL STUDS — FIRE TESTED



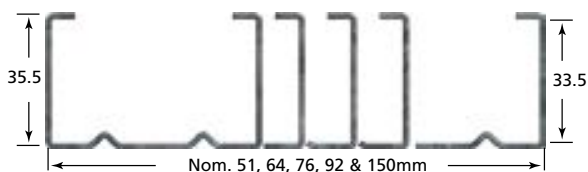
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493/495/511



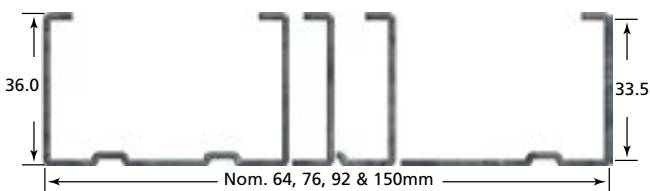
661/671/681/691



0.50/0.55 BMT



0.75 BMT



1.15 BMT

QUIET STUD



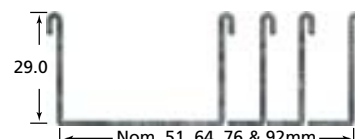
RQST

FLEXIBLE TRACK

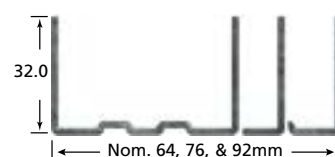


103/104/105/106/
107/108/109/110

WALL TRACKS



0.50/0.70 BMT



1.15 BMT

DEFLECTION HEAD TRACKS

| | |
|-----|---|
| 480 | 2 2/1" x 2" x 25 GA Deflection Head Track |
| 482 | 3" x 25 GA x 25 GA Deflection Head Track |
| 483 | 3 5/8" x 2" x 25 GA Deflection Head Track |
| 488 | 2" x 2" x 20 GA Deflection Head Track |
| 497 | 2 1/2" x 2" x 20 GA Deflection Head Track |
| 498 | 3" x 2" x 20 GA Deflection Head Track |
| 499 | 3 5/8" x 2" x 20 GA Deflection Head Track |
| 510 | 6" x 2" x 20 GA Deflection Head Track |
| 663 | 2 1/2" x 2" x 18GA Deflection Head Track |
| 673 | 3" x 2" x 18 GA Deflection Head Track |
| 683 | 3 5/8" x 2" x 18 GA Deflection Head Track |
| 690 | 6" x 2" x 18 GA Deflection Head Track |

SLOTTED DEFLECTION HEAD TRACK

| | |
|------|--|
| S499 | 3 5/8" x 20 GA Slotted Deflection Head Track |
| S510 | 6" x 20 GA Slotted Deflection Head Track |
| S683 | 3 5/8" x 18 GA Slotted Deflection Head Track |
| S690 | 6" x 18 GA Slotted Deflection Head Track |

NOGGING TRACKS

| | |
|-----|------------------------------|
| 501 | Continuous Nogging Bracket |
| 503 | 2" x 20 GA Nogging Track |
| 504 | 2 1/2" x 20 GA Nogging Track |
| 505 | 3" x 20 GA Nogging Track |
| 506 | 3 5/8 x 20 GA Nogging Track |
| 507 | 6" x 20 GA Nogging Track |

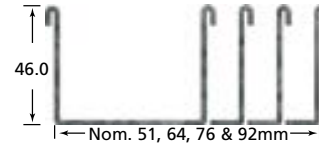
CLIPS

| | |
|-----|--------------------------------|
| 126 | Staggered Stud Clip (Acoustic) |
| 704 | Partition mounting clip |

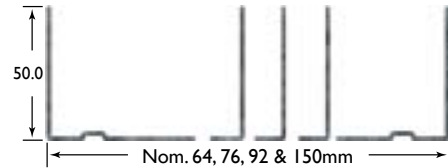
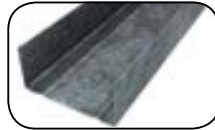
CONTROL JOINT

| | |
|-----|------------------------|
| P35 | Flexible Control Joint |
|-----|------------------------|

DEFLECTION HEAD TRACKS



0.50/0.70 BMT



0.75/1.15 BMT

SLOTTED DEFLECTION HEAD TRACK



MAXITRACK

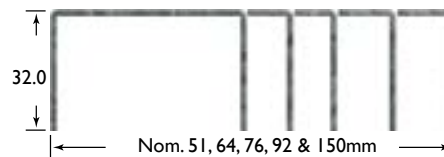
NOGGING TRACKS



NOGGING BRACKET



NOGGING TRACK



CLIPS



126



704

CONTROL JOINT



P35

INSTALLATION INFORMATION: WALLS

Tracks

Track sections provide a friction fit for the studs, which not only holds the studs in position until the lining board is fitted, but also provides a slip joint to allow for movement in the structure. For this reason do not screw the lining board to the track sections unless specifically stated.

Track sections 25 GA and 20 GA have hemmed flanges with nominal heights of 1 1/4" and 2" for standard and deflection head track respectively. 18 GA track sections are not hemmed and have nominal flange heights of 1 1/4" and 2".

In general, where walls are lined both sides, standard tracks are used unless the project engineer has indicated that deflection heads are required; for example, under a concrete slab or where the wall height is 16' or greater. For stud framing unlined or only lined one side, see notes accompanying Nogging Tables within this document.

There is no requirement to isolate the track sections from slabs, unless specifically stated. Track sections are nominally 3000mm long and should be fixed at not more than 600mm centres. Fixings should be placed within 100mm from either end of the track sections.*

FRICTION JOINTS

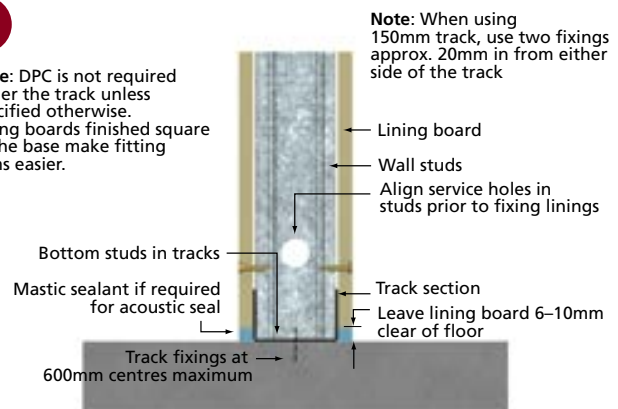
Friction fit and deflection heads require special detailing to achieve their design capacity (refer to Figure 2 for specific details).

The maximum wall height tables have been checked assuming a friction joint between the stud and track*.

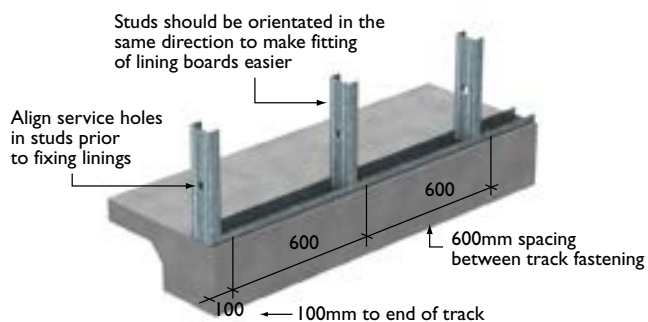
* In some seismic areas these connection details may not be valid. Please check with your nearest Judah Office prior to commencing installation.

1

Note: DPC is not required under the track unless specified otherwise. Lining boards finished square at the base make fitting trims easier.



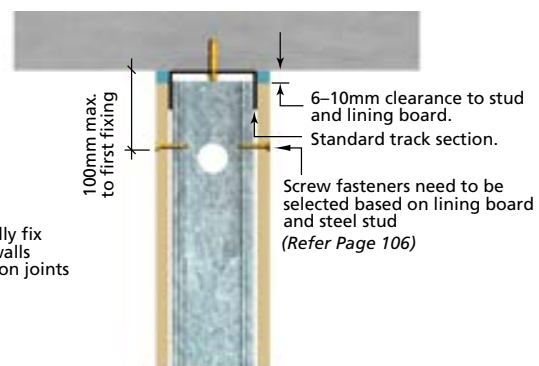
Note: When using 150mm track, use two fixings approx. 20mm in from either side of the track



■ TRACK FIXING DETAILS

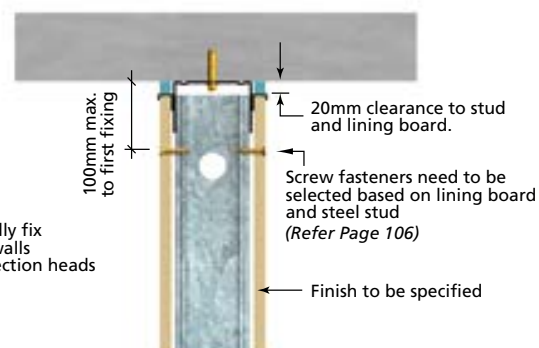
2

Note: Do not rigidly fix cornice to walls where friction joints are used.



FRICTION FIT

Note: Do not rigidly fix cornice to walls where deflection heads are used.



DEFLECTION HEAD

■ FRICTION FIT/DEFLECTION HEAD

Slotted Deflection Head Track (MAXItrack®)

The MAXItrack® is slotted along the flanges to provide a positive connection between the stud and the track as shown in Fig 3 by the use of 2 #10 screws, one each side, to greatly increase the connection capacity of the stud to head track connection.

By using MAXItrack®, it is no longer necessary to install Nogging track 4" below the head track. Currently, MAXItrack® is available in 3 5/8" & 6" sizes.

FIXING TO CONCRETE:

The standard clearance between the top of the stud and the slab soffit is 3/4", which accommodates up to 5/8" incremental slab deflection, with tolerance.

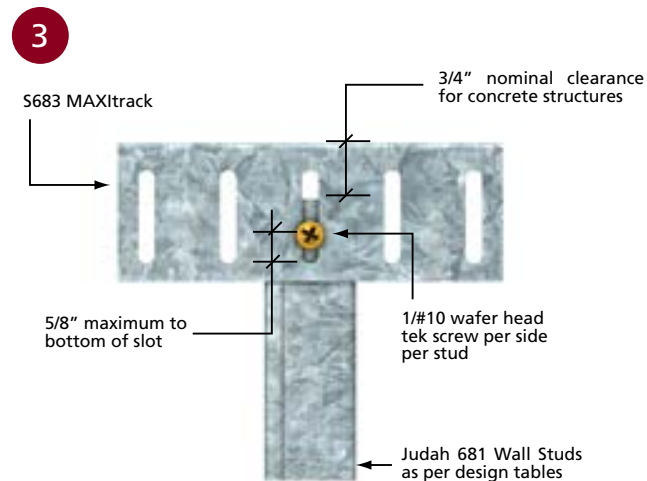
FIXING TO STEELWORK:

Where the steelwork carries roof or floor loads a deflection head will be required. Where the steelwork is in place only as a lateral support to the stud framing a deflection head is not required.

For roof uplift the MAXItrack® can be installed with an initial stud clearance of 1/5" which will give an allowance of up to 5/8" for uplift.

NOTE:

The allowance for structural movement should always be confirmed by the project engineer prior to commencing sitework.



■ TYPICAL MAXITRACK CONNECTION DETAIL

INSTALLATION INFORMATION: WALLS (continued)

Wall Studs

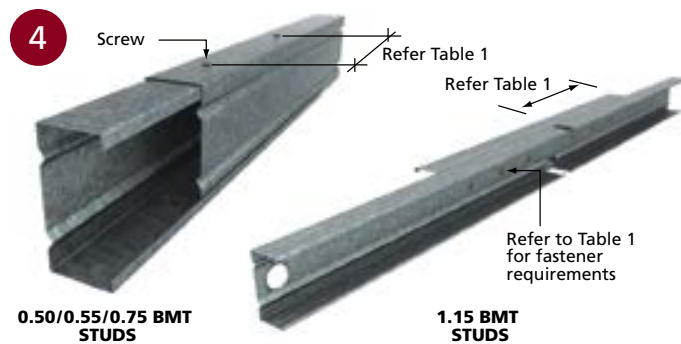
The Judah 25, 22 and 20 GA wall studs have standard 1" bell-mouthed service holes. Being bell-mouthed with no protruding sharp edges eliminates the need for fitting grommets for electrical cabling.

Punched round holes are processed at designated centres along the 18 GA studs.

Mountain knurling along the flanges of the studs are designed to provide the screw point with a positive location during fitting of the lining board.

In situations where the stud length is shorter than that required, the 25, 22 and 20 GA studs may be spliced to extend the overall stud length. Studs of 18 GA or greater may be spliced back to back. Refer to Table 1 for splicing details. Boxing Studs of 25, 22 and 18 GA and fixing Studs of 1.15bmt back to back provides greater rigidity at window and door openings and also at points where extra load carrying capacity is required – such as shelf loads.

The maximum wall height and ceiling span tables have been formulated in accordance with the requirements of the Building Code of USA (IBC) Specification "Structural Tests for Lightweight Construction".

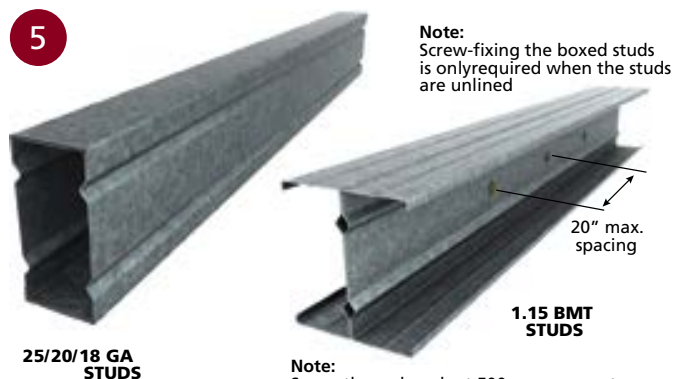


■ SPLICED STUDS

TABLE 1: FIXING GUIDE FOR SPLICED STUDS

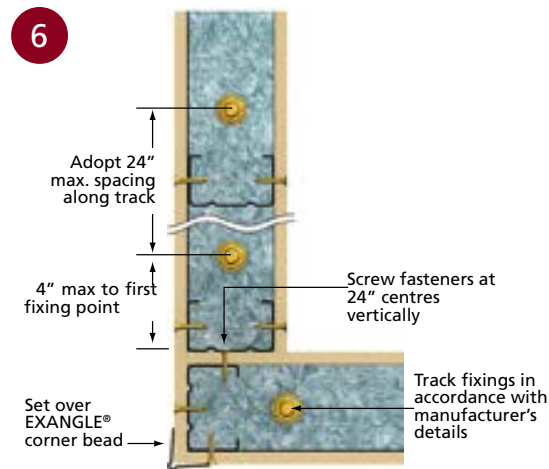
| STUD GAUGE (GA) | WALL HEIGHT (ft) | SPLICE LOCATION (%) | SPLICE LENGTH (Inch) | NO. OF FASTENERS |
|-----------------|------------------|---------------------|----------------------|------------------|
| 25/22 GA | 0 – 13' | 10 | 13" | 2 |
| | | 25 | 27" | 3 |
| | 13' – 20' | 10 | 29" | 3 |
| | | 25 | 60" | 4 |
| 20 GA | 0 – 13' | 10 | 10" | 2 |
| | | 25 | 10" | 2 |
| | 13' – 20' | 10 | 22" | 2 |
| | | 25 | 45" | 3 |
| 18 GA | 0 – 13' | 10 | 12" | 3 |
| | | 25 | 12" | 3 |
| | 13' – 20' | 10 | 18" | 3 |
| | | 25 | 21" | 4 |

- NOTES:
1. Splices to be alternated top and bottom along wall.
 2. Splicing of studs shall not be undertaken for load bearing (axial) walls
 3. Do not splice studs between 25% – 75% of the wall height
 4. All fasteners shall be #8 tek screws, or equivalent.
 5. Walls may be lined both sides or one side.
 6. Maximum stud spacing 600mm centres.

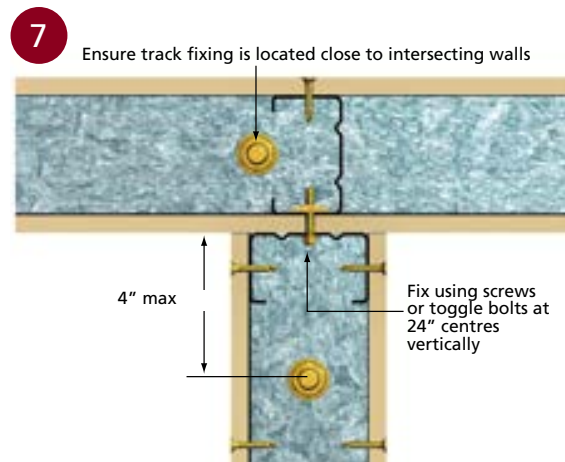


■ BOXED/BACK-TO-BACK STUDS

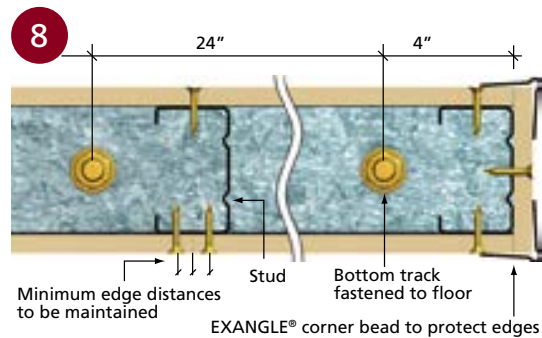
Wall Studs: Typical Applications



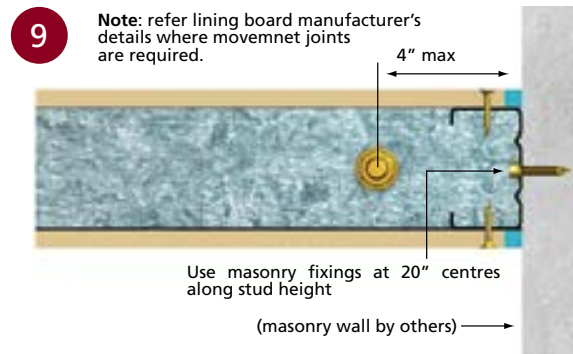
■ CORNER - SINGLE LAYER APPLICATION



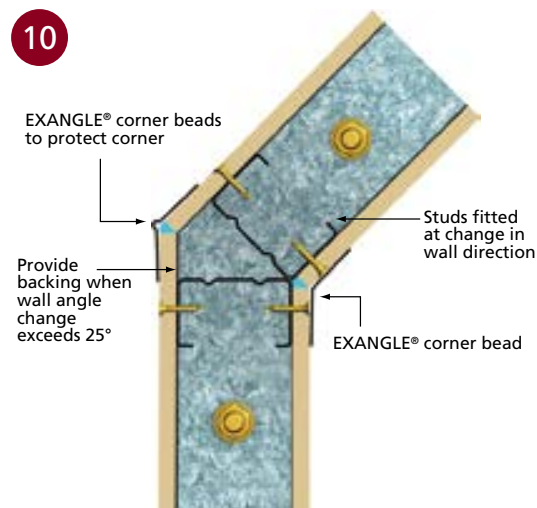
■ INTERSECTION - SINGLE LAYER APPLICATION



■ WALL END



■ INTERSECTION - MASONRY



■ ANGLED WALL

NOTE:

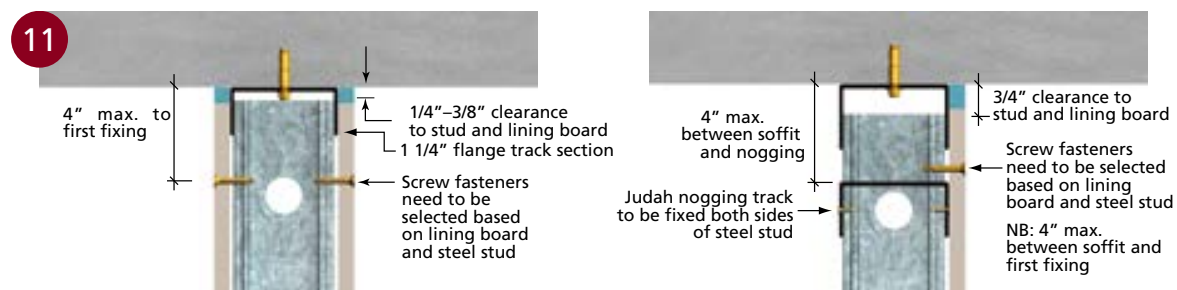
Fixing and finishing of lining boards to be in accordance with manufacturer's recommendations.

INSTALLATION INFORMATION: WALLS (continued)

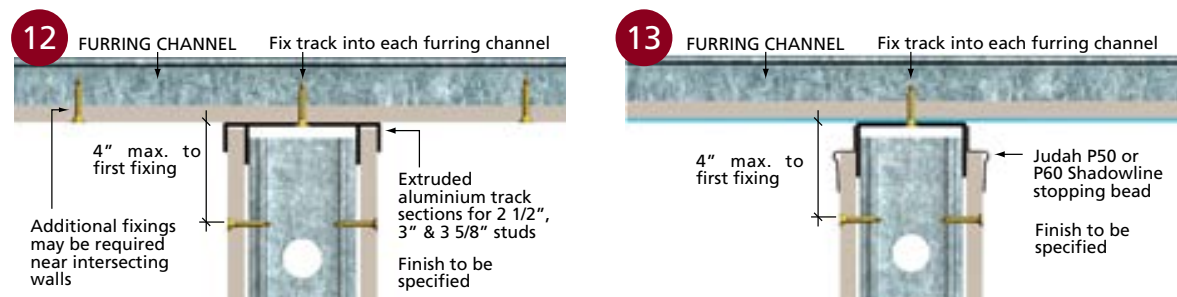
Wall to Ceiling Junctions

NOTE:

- Wall and ceiling intersection details require specific checking under seismic loads. These details should be checked with your nearest Judah branch prior to installation.
- Drill point screws are not recommended for sections less than 20 GA.

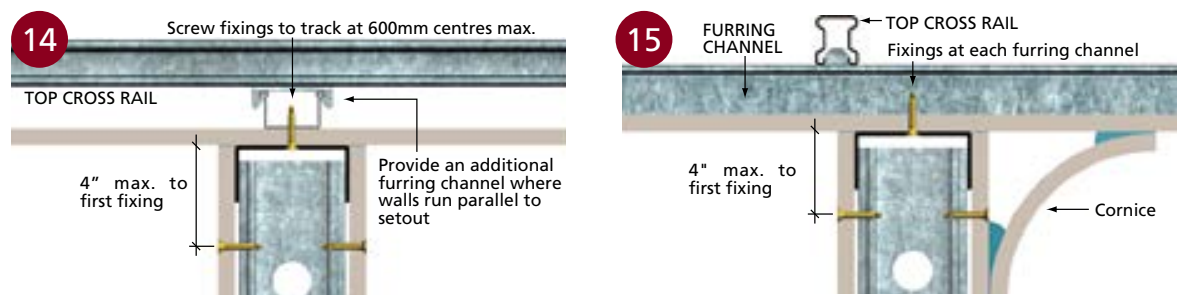


■ A: CONCRETE SLAB – STUD WALL LINED BOTH SIDES B: CONCRETE SLAB (DEFLECTION HEAD) – STUD WALL LINED ONE SIDE ONLY



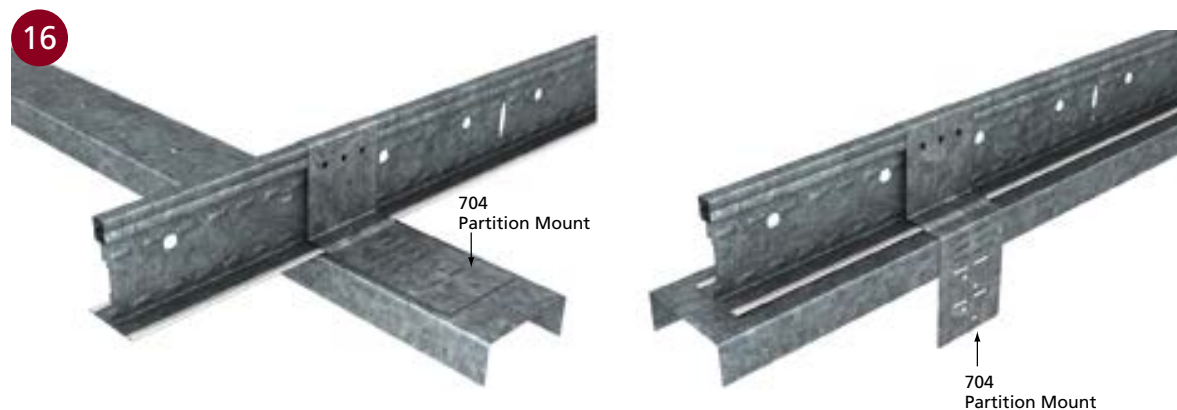
■ KEY-LOCK® CEILING

■ KEY-LOCK® CEILING



■ KEY-LOCK® CEILING

■ KEY-LOCK® CEILING



■ PARTITION MOUNTING DETAILS – DUO® EXPOSED CEILING GRID

Noggings: Steel

Noggings are designed to provide support to the wall studs and prevent twisting of the studs when fitting the lining boards. Noggings should be screwed, or crimped to both flanges of the studs.

Judah produces a continuous Nogging track (see Figure 17), which can be fitted to the stud framing in one length, or individual Noggings may be cut from the track. Nogging track is produced in 20 GA to suit all stud framed wall installations, with the exception of 6" stud framing which is 20 GA.

Noggings of 20 GA have been checked and approved for use with 18 GA studs.

Where services are to be fitted and a recessed Nogging is required this may be cut from stud or track.

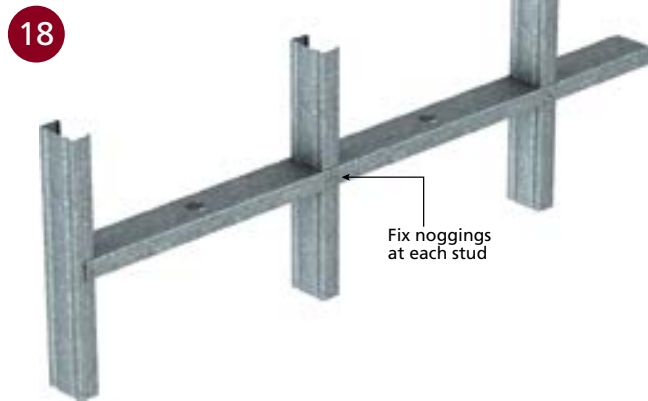
Heavy fixtures may be fitted to the wall framing by fabricating custom Nogging.

The minimum number of Noggings required may be determined from Table 2, however it should be noted that in some instances a more economical design may be achieved using more Noggings. Table 2 is applicable for internal partitioning subjected to 5.22 psf service load.

Additional wall Noggings may be required in walls subject to elevated pressures.



■ CONTINUOUS NOGGING TRACK



■ NOGGING DETAILS

TABLE 2: MINIMUM NUMBER OF NOGGINGS

| WALL HEIGHT (ft) | LINING CONDITION | NUMBER OF NOGGINGS |
|------------------|------------------|--------------------|
| 0 – 14.5' | Both sides | 0 |
| 14.5' – 29' | | 1 |
| 0 – 10' | Lined one side | 1 |
| 10' – 20' | | 2 |
| 20' – 26' | | 3 |
| 26' + | | 4 |

NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 4" down if unlined, or lined one side only. This does not apply if using Judah Slotted Deflection Head Track (MAXItrack), see page 83.

INSTALLATION INFORMATION: WALLS (continued)

Noggings: Timber

Timber or plywood Noggings are often installed in a steel stud wall to provide support for a variety of additional fittings, such as heavy cupboards, hand rails, flat screen television units etc. Judah offers a choice of methods to install these Noggings.

Noggings can be fixed between the stud webs and notched out at one end to fit (see Figure 19 a & b). Either screw fixed through the web of the stud (a), or with the addition of a 1 1/4 x 20 GA Judah steel angle, and similarly, fixed to the stud web if additional support required (b).

Judah 501 Continuous Nogging Bracket can also be used, which removes the need to notch timber Noggings around the stud flange or sourcing already notched out and cut to size Noggings.

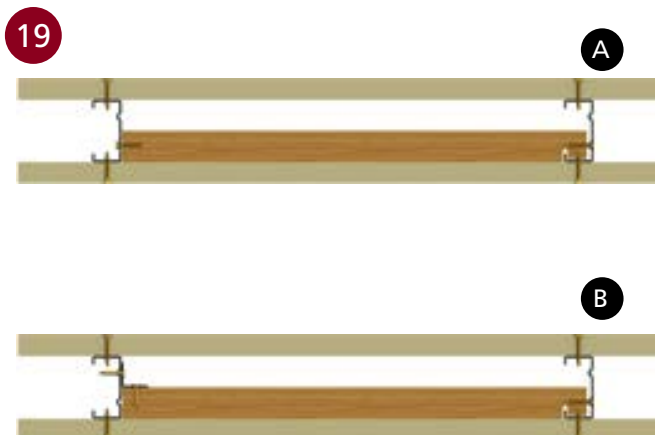
The Nogging bracket is supplied in 8' lengths to accommodate a variety of Nogging widths and can be cut to size on site. To install, the bracket is screw fixed to the face of the stud and then screw fix the Nogging to the bracket (see Figures 20 a & b).

As both the Nogging bracket and continuous Nogging track are 20 GA thick, it is unlikely that there will be "show-through" problems when the wall is sheeted.

The Nogging bracket is sized to suit the use of 5/8" plywood, therefore ensuring a flush finish with the face of the stud. Plywood Noggings can be simply cut on site to suit size requirements.

It should be noted that plywood thickness tolerances can vary depending on the manufacturer. And is important to remember that CCA treated timber should not be used with Judah steel stud systems.

Reference should be made to a Judah representative if unsure of the appropriate Nogging to use due to the weight of the fixtures to be supported.



■ TIMBER NOGGINGS NOTCHED TO FIT BETWEEN STUD WEBS



■ TIMBER NOGGINGS FITTED USING Judah CONTINUOUS NOGGING BRACKET

Lining Board

Unless specifically checked, framing should not exceed 24" centres, and in higher wind loads this should be reduced according to the lining board manufacturers specified data.

Sheets may be installed horizontally or vertically with joints in the lining boards being staggered between sides of the framing.

Internal and external corners may be set using a perforated metal corner bead fixed to the linings at not more than 20" centres. (Refer to the *Finishing Section in this manual for details.*)

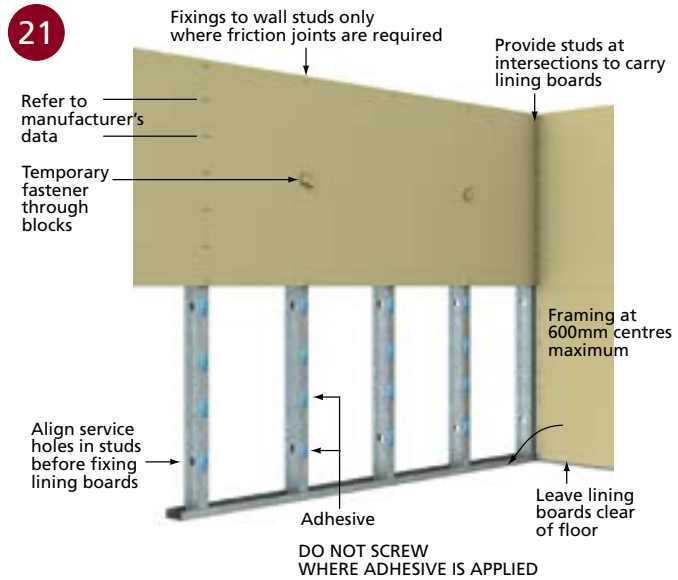
Plasterboard may be fixed to studs using 'bugle' head self drilling needle point screws. Cement based sheeting can be fixed using self drilling self embedding head type screws. (Refer to *fastener details on pages 106–107*).

The lining boards should be fitted to the framing using adjustable automatic clutch and depth control screw guns. Minimum edge distance to fasteners of 3/8" to 5/8" must be maintained.

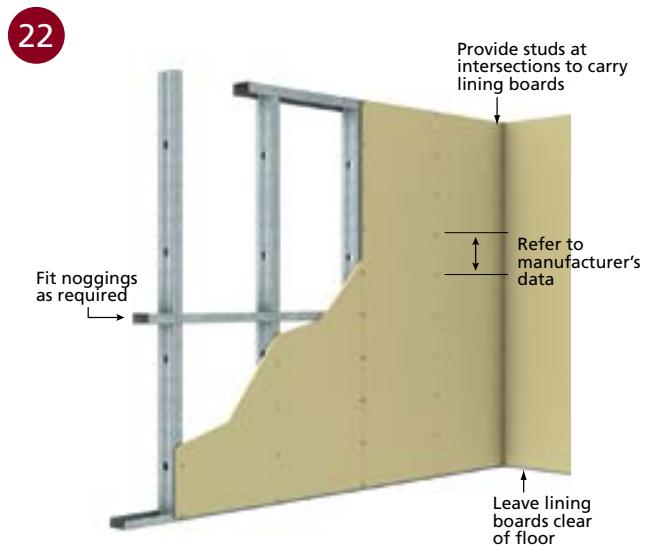
CONTROL JOINTS

Control joints are required in long continuous runs of walling, or where there are articulated or construction joints in the primary structure. Control joints should be spaced at not more than 0.5" centres in continuous plasterboard walls, and 9m in cement based lining material.

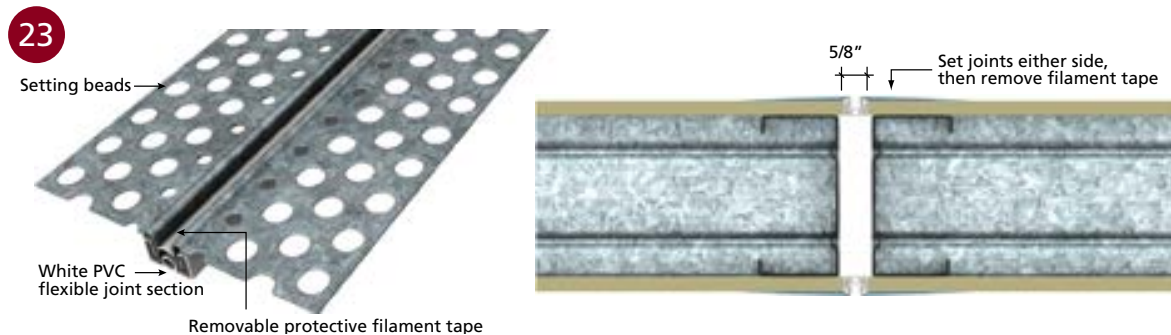
Fit the Judah P35 Control Joint as per Figure 23.



■ HORIZONTAL APPLICATION



■ VERTICAL APPLICATION



■ CONTROL JOINTS

INSTALLATION INFORMATION: WALLS (continued)

Staggered Stud System

Staggered Steel Stud Wall Framing Systems are designed to provide effective resistance to sound transmission and acoustic impact when lining boards are attached in various configurations.

Typically, staggered stud walls are constructed using Judah 2 1/2" x 20 GA studs staggered at 300mm centres inside Judah 3 5/8" x 20 GA track. However, please refer to Table 3 for maximum wall heights of other sections.

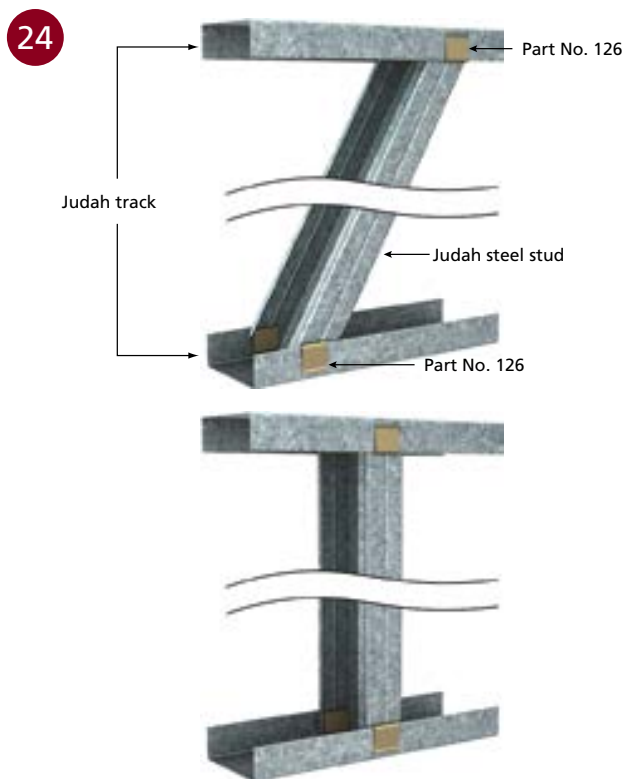
Studs are held in place using Judah 126 stud/track holding clips at top and bottom.

For ease of installation, place holding clips at the top and bottom of each stud then slide the studs and clips onto the tracks (see Figure 24).

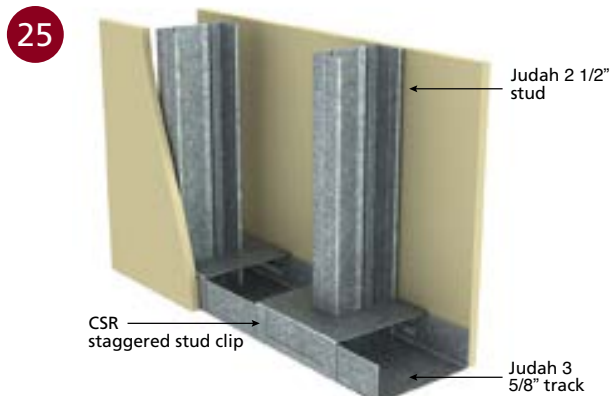
Alternate staggered stud installation methods are shown in Figures 25 & 26.

NOTE:

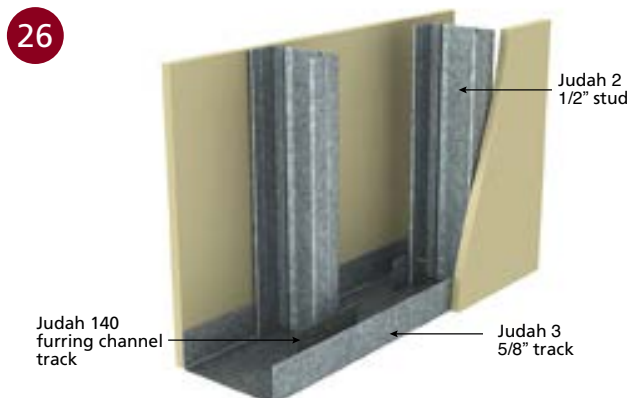
An alternative acoustic solution to staggered stud wall systems is the Judah QUIET STUD®. In some cases, the Judah QUIET STUD® system will achieve similar results to staggered stud wall systems yet is generally much easier to install and will achieve greater wall heights. (Refer to page [99](#).)



■ INSTALLATION OF STUDS



■ CSR GYPROCK STAGGERED STUD METHOD



■ BORAL PLASTERBOARD STAGGERED STUD METHOD

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■ STAGGERED STUD SPACING

TABLE 3: MAXIMUM STAGGERED STUD WALL HEIGHTS – SPAN/240

| STUD WIDTH | 2" | | 2 1/2" | | | 3" | | | 3 5/8" | | | 6" | |
|---------------------------------------|-----------------------------------|-----|--------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|
| GA | 25 | 20 | 25 | 20 | 18 | 22 | 20 | 18 | 22 | 20 | 18 | 20 | 18 |
| PLASTERBOARD LININGS (Inch)/ft | SINGLE STUDS @ 24" CENTRES | | | | | | | | | | | | |
| 3/8" | 8' | 9' | 8' | 9' | 12' | 9' | 10' | 12' | 9' | 10' | 12' | 12' | 14' |
| 1/2" | 8' | 9' | 8' | 9' | 12' | 9' | 10' | 12' | 9' | 10' | 12' | 12' | 14' |
| 5/8" | 8' | 9' | 8' | 9' | 12' | 9' | 10' | 12' | 9' | 10' | 12' | 12' | 14' |
| PLASTERBOARD LININGS (Inch)/ft | SINGLE STUDS @ 18" CENTRES | | | | | | | | | | | | |
| 3/8" | 8' | 9' | 8' | 10' | 13' | 9' | 11' | 14' | 10' | 11' | 14' | 13' | 15' |
| 1/2" | 8' | 9' | 9' | 11' | 13' | 9' | 11' | 14' | 10' | 11' | 14' | 13' | 15' |
| 5/8" | 8' | 9' | 9' | 11' | 13' | 9' | 11' | 14' | 10' | 11' | 14' | 13' | 15' |
| PLASTERBOARD LININGS (Inch)/ft | SINGLE STUDS @ 16" CENTRES | | | | | | | | | | | | |
| 3/8" | 9' | 10' | 9' | 11' | 14' | 9' | 11' | 14' | 10' | 12' | 14' | 14' | 16' |
| 1/2" | 9' | 10' | 9' | 11' | 14' | 9' | 12' | 14' | 10' | 12' | 14' | 14' | 16' |
| 5/8" | 9' | 10' | 10' | 11' | 14' | 10' | 12' | 14' | 10' | 12' | 14' | 14' | 16' |
| PLASTERBOARD LININGS (inch)/ft | SINGLE STUDS @ 12" CENTRES | | | | | | | | | | | | |
| 3/8" | 9' | 11' | 10' | 12' | 15' | 10' | 12' | 15' | 11' | 13' | 15' | 15' | 17' |
| 1/2" | 9' | 11' | 10' | 12' | 15' | 10' | 12' | 15' | 11' | 13' | 16' | 15' | 17' |
| 5/8" | 9' | 11' | 10' | 12' | 15' | 10' | 12' | 16' | 11' | 13' | 16' | 15' | 17' |

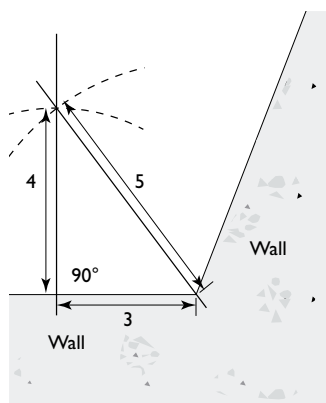
NOTES: 1. Deflection Limit is span/240 to a maximum of 1-1/4" at 5.22 psf.

- Maximum wall heights refer to the structural wall heights only. Maximum wall heights may be reduced from those in the table for fire rated walls, refer to your plasterboard manufacturer for this information.
- The tabulated heights are not for axial loads but do include self weight and lateral pressures.
- Shelf loading is not permitted on the tabulated wall heights.
- Loadings: a. Pultimate = 7.83 psf
b. Pservice = 5.22 psf
- These walls are not for external applications.
- All loading in accordance with AS1170:2002.
- Walls analysed in accordance with AS4600:2005.
- No Noggings are used in staggered stud walls.
- BMT = Base Metal Thickness.
- Where single studs are shown in the above table spaced @24" centres, this means staggering the studs @ every 12" centres. For single studs shown spaced @16" centres, this means staggering the studs @ every 8" centres, etc.
- If proposing to use 126 clips for a staggered stud wall, refer to Judah Technical Services for advice on maximum wall heights.

INSTALLATION GUIDE: WALLS

STEP ONE

Set out the track locations in accordance with the floor plans. Ensure internal walls are perpendicular to the external walls, by using the 3 4 5 triangle method.



STEP TWO

Secure the top and bottom tracks in position using appropriate fasteners, at not more than 600mm centres. The first fastener should be no more than 4" from the start or finish of each track or any opening. Deflection head tracks should be used for walls 4.8m and higher.

STEP THREE

Cut the studs to length - for friction fit this is 1/4" shorter than the wall height and for deflection heads this is 3/4 shorter than the wall height.

STEP FOUR (A)

(Where Noggings are specified)

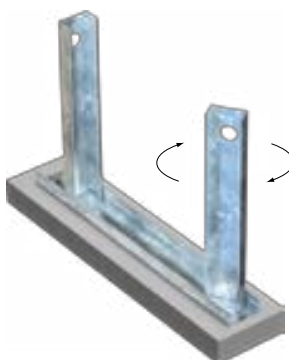
Refer to Noggling tables for number of Noggings required. If Noggings are required, use Judah Noggling track with pre-punched holes at nominated centres. Noggling track should be installed with flanges facing the floor.

Fit studs into the pre-punched holes and into both the top and bottom tracks with the service holes starting from the bottom. Then, with a twisting action, rotate the studs into position. Ideally, the studs should be orientated in the same direction to make fitting the lining board easier. Noggling track section should then be lifted to required height and fixed to each steel stud.

STEP FOUR (B)

(Where Noggings are not required)

Fit the stud into both the top and bottom tracks with the service holes starting from the bottom, then with a twisting action rotate the stud into position. Ideally, the studs should be orientated in the same direction to make fitting the lining board easier.



STEP FIVE

Fit the lining board to one side of the wall first. The lining board should be fitted such that the board is screwed to the open side of the stud first. This will prevent any misalignment of the board along the wall.

STEP SIX

Allow the services to be run in the wall cavity.

STEP SEVEN

Line the second side of the wall, using the same method as the first, except that the joints in the lining board should be staggered. This is achieved by starting with a half sheet.

STEP EIGHT

Fit the EXANGLE® corner beads and set the wall joints.

INSTALLATION DETAILS: WALLS

Judah Web Cleats

There are occasions when it is necessary to allow for higher than standard lateral wall pressures, including both in external wall framing situations and some internal wall systems in high-rise buildings.

In such situations Judah or the Project Engineer may specify the use of special heavy duty cleats (brackets) to transfer loads at the stud/ track connection to meet the higher load requirement.

Judah produces two special cleats, 201 and 203, which are both manufactured from 1/8" G2 steel with a Z275 coating. These cleats are part of the Judah MAXI-frame External Wall Framing System but are suitable for use with standard heavy duty stud/track connections.

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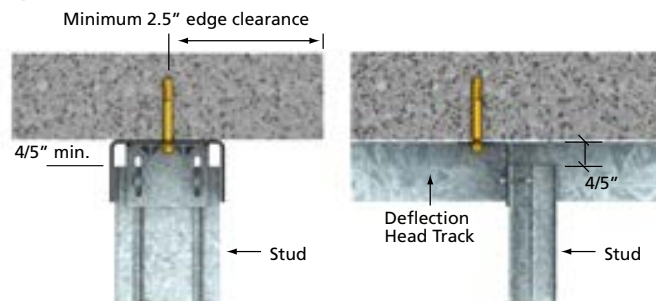


A: 201 3 5/8 x 1/8 BASE BRACKET

Connection A shows an installation with 18 GA 3 5/8" Stud and Track using 2 x #10 hex head tek screws per cleat to the stud and a 3/8" expanding anchor securing the cleat through the Track into the concrete structure. If installing onto structural steel, a M10 Grade 4.6 Bolt and washer is recommended (see Figure 28).

CONNECTION METHOD A

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B: 203 3 5/8" x 1/8" SLOTTED HEAD BRACKET

Connection B shows an illustration with 18 GA 3 5/8" Stud and Deflection Head Track using 2 x #10 hex head tek screws per cleat to the Stud and a 3/8" expanding anchor securing the cleat through the Track into the concrete structure (see Figure 29).

NOTE: If securing into structural steel, a slotted head cleat may not be necessary, check with the Project Engineer on the deflection aspects of the structural steel and consult your Judah Representative.

CONNECTION METHOD B



INSTALLATION DETAILS: WALLS (continued)

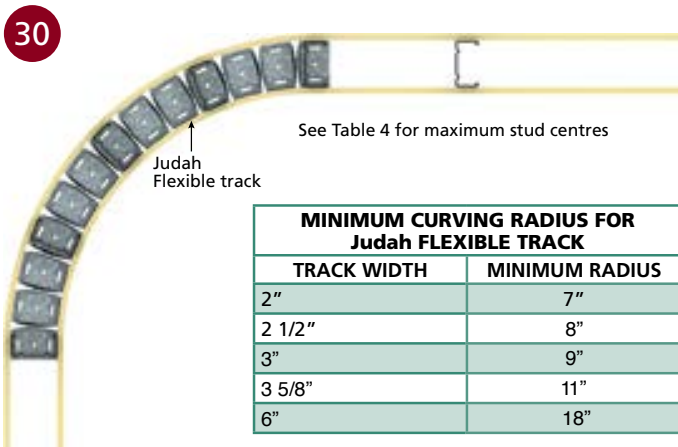
Curved Walls

When constructing curved walls, stud centres should be reduced to suit the lining board manufacturer's recommendations (see Table 4).

Judah Flexible Tracks at top and bottom should be curved to match the specified radius and fastened to the structure through the holes provided in the web. Each fixing should be as near as possible to the stud point.

Studs must be fixed both sides through the holes provided in both flanges (refer to Figure 30).

Care should be taken when tracks span between purlins and in some instances, strengthening may be required.



FRAMING PREPARATION FOR CURVED WALLS

TABLE 4: STUD CENTRES FOR CURVED WALLS

| LINING BOARD THICKNESS (Inch) | RADIUS (ft) | | | | | | |
|-------------------------------|---------------------------|----------|-------|-------|---------|----------|-------|
| | 3' – 3.5' | 3.5' –5' | 5'–7' | 7'–8' | 8' –10' | 10' –13' | 13' + |
| | MAXIMUM STUD CENTRES (mm) | | | | | | |
| 1/4" | 6" | 8" | 10" | 12" | 14" | 18" | 21" |
| 3/8 | 6" | 8" | 10" | 12" | 14" | 16' | 21" |
| 1/2" | – | 6" | 8" | 12" | 14" | 16" | 21" |
| 5/8" | – | – | – | – | – | 8" | 12" |

Bridged Chase Walls

Chase walls are required where it is necessary to accommodate large bore pipes, air conditioning ducts or similar services.

The walls are constructed using two parallel runs of stud and track, which can then be cross braced at regular intervals.

The cross bracing may be either plasterboard, stud or track section (refer to Figure 31 for details).

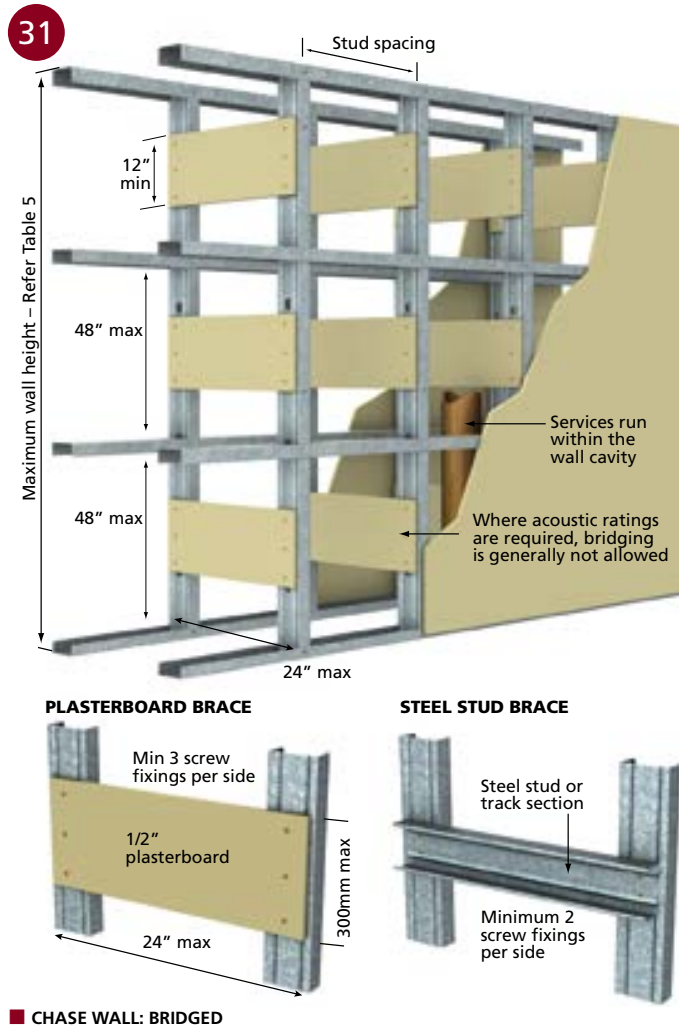


TABLE 5: LIMITING HEIGHT: BRIDGED CHASE WALLS

| STUD WIDTH (Inch) | GAUGE (Inch) | SPACING (Inch) | MAXIMUM WALL HEIGHT | | NO. OF NOGGINGS |
|----------------------|-----------------|-------------------|---------------------|-------|--------------------|
| | | | H/240 | H/360 | |
| 2 1/2" | 25 | 24" | 11' | 10' | 2 |
| | | 18" | 12' | 11' | 2 |
| | | 16" | 13' | 11' | 2 |
| 3" | 22 | 24" | 14' | 12' | 2 |
| | | 18" | 15' | 14' | 2 |
| | | 16" | 16' | 14' | 2 |
| 3 5/8" | 22 | 24" cfi | 15' | 14' | 2 |
| | | 18" | 17' | 15' | 2 |
| | | 16" | 17' | 16' | 2 |

NOTES: 1. Bridging to be installed in accordance with Figure 31.
2. Linings assumed to 1 x 1/2" plasterboard minimum.
3. Noggings to be equally spaced over wall height.
4. Deflection limited to either H / 240 or H / 360 at 5.22 PSF, in accordance with the IBC Specification .
5. Strength (ultimate) checked at 0.0544 Psi static pressure.

INSTALLATION DETAILS: WALLS (continued)

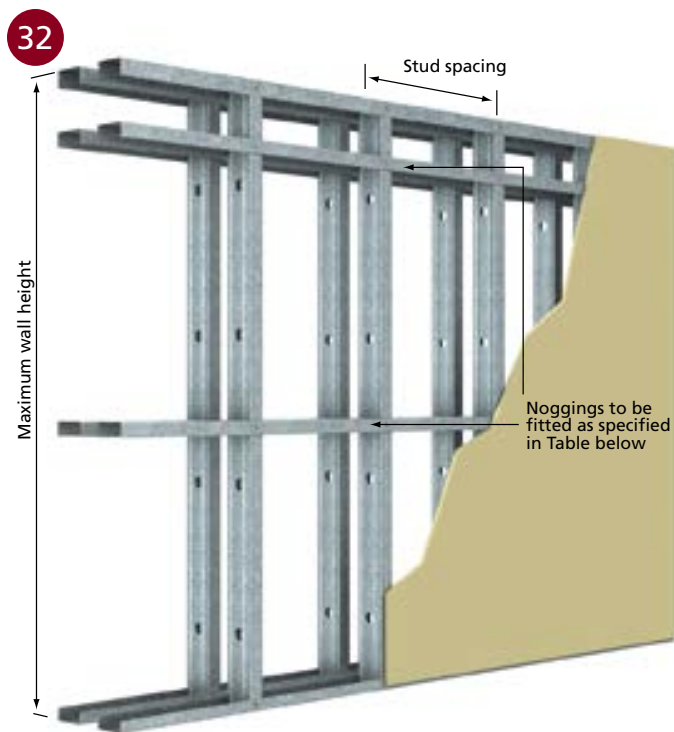
Acoustic Chase Walls

Where chase walls are constructed for acoustic purposes no cross bracing between the walls is permitted. These walls use in-plane Noggings for rigidity, and the wall heights are significantly lower.

The maximum wall heights may be determined from the wall heights given in Tables 6 & 7 (refer walls lined one side only).

The number of Noggings required may be determined from the table shown below.

This type of wall construction is also known as 'discontinuous construction' (see Figure 32).



■ CHASE WALL: UNBRIDGED ACOUSTIC WALL

Minimum Number of Noggings: Acoustic Chase Wall

| WALL HEIGHT (ft) | LINING CONDITION | NO.OF NOGGINGS |
|---------------------|------------------|----------------|
| 0 – 10' | Lined one side | 1 |
| 10' – 20' | | 2 |
| 20' – 26.5' | | 3 |
| 26.5' + | | 4 |

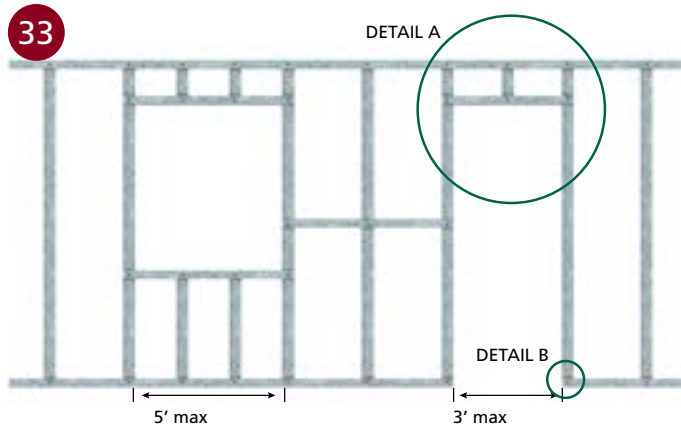
NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 100mm down if unlined, or lined one side only.

Window & Door Framing

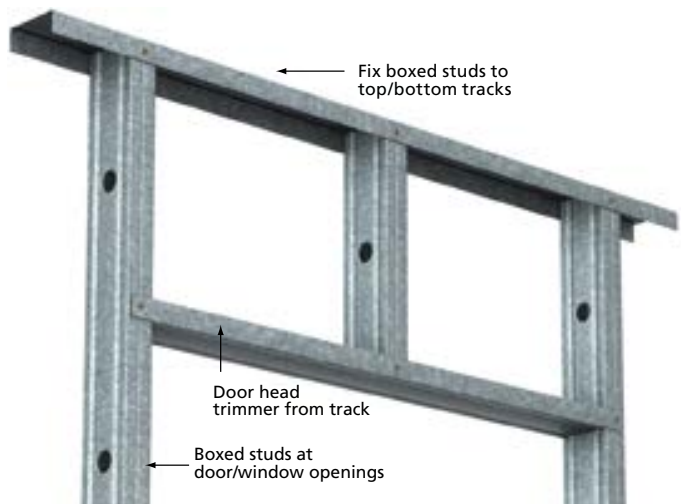
Window and door framing require special detailing to prevent long term serviceability problems. This detailing is in the form of additional fixings and framing members which carry the extra loadings in these areas.

Typically, track sections can be cut and fabricated to frame window and door openings. For internal partitioning, the standard details as shown in Figure 33 would be acceptable for window openings up to 5' and standard door openings. Configurations outside of these limits, and external wall framing, should be checked prior to commencement of work.

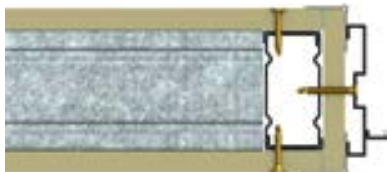
Studs adjacent to window and door openings should be boxed and screw fastened to the wall tracks and should be taken through to the structural soffit. Allow approximately 4" each end of the track to facilitate a suitable connection. Studs, cut to length, should be fitted above and below the window openings and above the door openings. The stud spacing of the short studs should match the standard wall stud spacing.



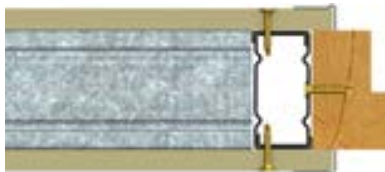
■ INTERNAL WALL FRAMING



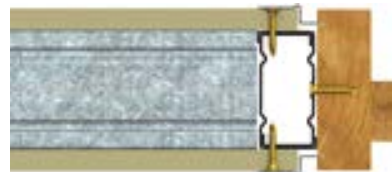
■ DETAIL A: DOOR/WINDOW HEAD DETAIL



■ DETAIL B: EXTRUDED ALUMINIUM DOOR JAMB PROFILE



■ DETAIL B: TIMBER DOOR JAMB WITH STOPPING BEAD TO LINING BOARD



■ DETAIL B: TIMBER DOOR JAMB WITH SHADOWLINE DETAIL

INSTALLATION DETAILS: WALLS (continued)

Plumbing/Electrical Services

Copper or brass piping and fittings should be isolated from direct contact with the steel framing. This can be achieved by insulating the piping with neoprene sheeting or tape, or by lagging the pipe. Where the piping is run through the service holes of the studs, plastic grommets should be used to isolate the pipe, and prevent water hammer.

Similar care, in isolating the framing, should be taken when contact with dissimilar metals is possible – typically where lead flashing is used in the construction.

Electrical services can be run through the service holes of the 25, 22 and 20 GA studs without requiring grommets, due to the unique flaring of the service holes. Grommets should be used for 18 GA studs or greater as service holes are punched and do not have any flaring around the holes.

Generally, services are run through the pre-punched service holes. In brick veneer construction, services may be run through the wall cavity, and fixed to the flanges of the studs, using appropriate saddle clamps.

DRILLING

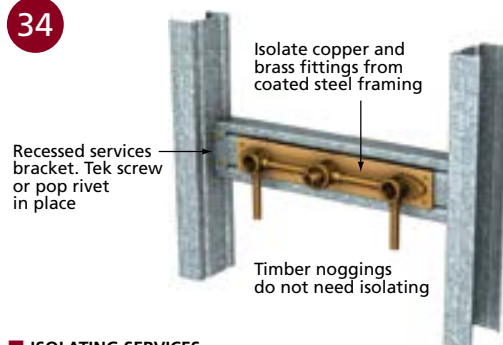
Where extra service holes are required they may be positioned using a hole saw or similar, and grommets should be fitted. Additional service holes should be positioned as close as practical to the centreline of the stud (refer Figure 35). NOTE: The maximum hole diameter should not exceed 2" for a 3 5/8" stud without checking.

NOTCHING

Notching of the studs should not exceed 1 3/8" under any circumstances.

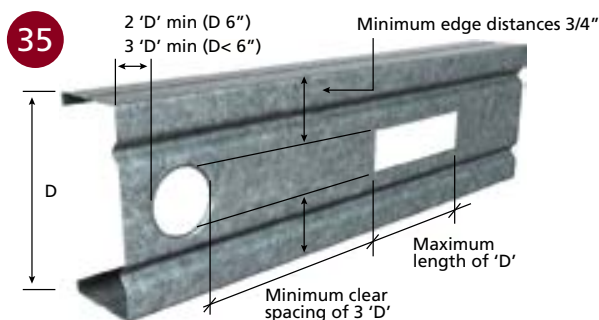
Notching of the studs should be in accordance with the details shown in Figure 36.

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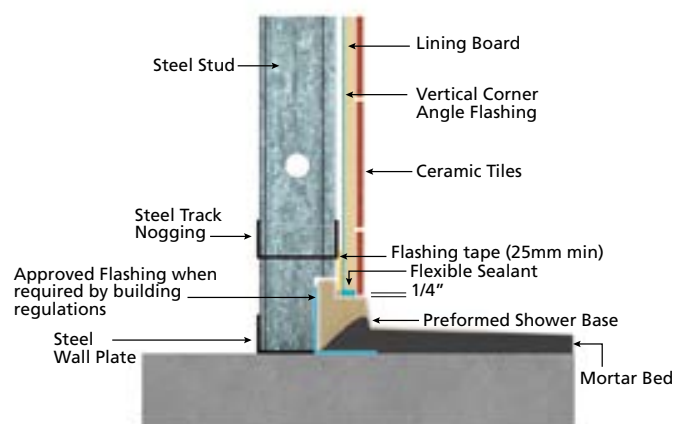
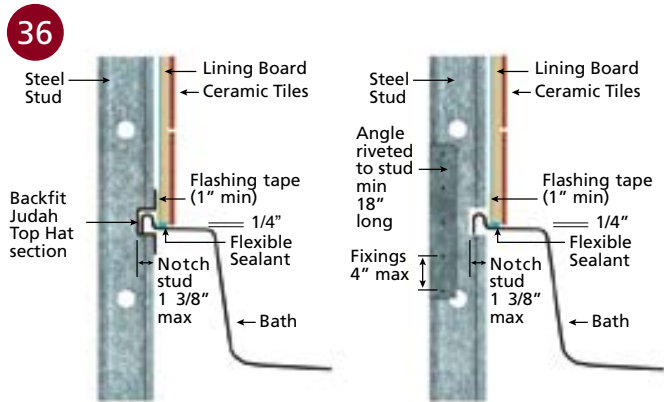
ISOLATING SERVICES

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HOLE DRILLING

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NOTCHING

MAXIMUM WALL HEIGHTS

TABLE 6: INTERNAL NON-LOAD BEARING WALLS – L/240 PLASTERBOARD INCLUDING FIRE RATED

| STUD WIDTH | | 2" | | 2 1/2" | | | 3" | | | 3 5/8" | | | 6" | |
|------------------------------------|---------|-----------------------------------|-----|--------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|
| GA | | 25 | 20 | 25 | 20 | 18 | 22 | 20 | 18 | 22 | 20 | 18 | 20 | 18 |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 24" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 9' | 10' | 11' | 13' | 14' | 12' | 15' | 15' | 15' | 16' | 17' | 21' | 24' |
| | 1x1/2" | 11' | 11' | 12' | 14' | 15' | 14' | 16' | 17' | 16' | 18' | 19' | 23' | 25' |
| | 1x5/8" | 11' | 12' | 13' | 14' | 15' | 14' | 17' | 18' | 17' | 19' | 19' | 24' | 25' |
| LINED ONE SIDE | 1x3/8" | 8' | 9' | 9' | 10' | 12' | 10' | 12' | 13' | 12' | 14' | 15' | 17' | 22' |
| | 1x1/2" | 8' | 9' | 9' | 11' | 12' | 11' | 13' | 13' | 12' | 14' | 15' | 18' | 22' |
| | 1x5/8" | 8' | 9' | 9' | 11' | 12' | 11' | 13' | 13' | 12' | 14' | 15' | 18' | 22' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 18" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 10' | 10' | 12' | 14' | 15' | 13' | 16' | 17' | 16' | 17' | 18' | 23' | 25' |
| | 1x1/2" | 11' | 12' | 13' | 15' | 15' | 14' | 17' | 18' | 17' | 19' | 20' | 25' | 26' |
| | 1x5/8" | 12' | 12' | 14' | 15' | 16' | 15' | 18' | 19' | 18' | 20' | 21' | 25' | 27' |
| LINED ONE SIDE | 1x3/8" | 8' | 9' | 10' | 11' | 13' | 11' | 13' | 15' | 13' | 15' | 17' | 21' | 24' |
| | 1x1/2" | 8' | 9' | 10' | 12' | 13' | 12' | 14' | 15' | 13' | 15' | 17' | 21' | 24' |
| | 1x5/8" | 8' | 9' | 10' | 12' | 13' | 12' | 14' | 15' | 13' | 15' | 17' | 21' | 24' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 16" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 10' | 11' | 12' | 14' | 15' | 14' | 16' | 17' | 16' | 18' | 19' | 24' | 26' |
| | 1x11/2" | 12' | 12' | 13' | 15' | 16' | 15' | 18' | 19' | 17' | 20' | 21' | 25' | 27' |
| | 1x5/8" | 12' | 12' | 14' | 15' | 16' | 15' | 19' | 20' | 18' | 21' | 22' | 25' | 27' |
| LINED ONE SIDE | 1x3/8" | 9' | 10' | 10' | 12' | 13' | 12' | 13' | 15' | 14' | 15' | 18' | 22' | 25' |
| | 1x1/2" | 9' | 10' | 10' | 12' | 13' | 12' | 14' | 15' | 14' | 16' | 18' | 22' | 25' |
| | 1x5/8" | 9' | 10' | 10' | 12' | 13' | 12' | 14' | 15' | 14' | 16' | 18' | 22' | 25' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 12" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 11' | 12' | 13' | 15' | 16' | 15' | 17' | 19' | 18' | 19' | 21' | 26' | 28' |
| | 1x1/2" | 12' | 13' | 14' | 16' | 17' | 16' | 19' | 20' | 18' | 21' | 22' | 27' | 29' |
| | 1x5/8" | 12' | 13' | 15' | 16' | 17' | 16' | 20' | 21' | 19' | 22' | 23' | 27' | 29' |
| LINED ONE SIDE | 1x3/8" | 9' | 11' | 11' | 13' | 15' | 13' | 15' | 17' | 15' | 17' | 19' | 24' | 27' |
| | 1x1/2" | 9' | 11' | 11' | 13' | 15' | 14' | 16' | 17' | 15' | 17' | 19' | 24' | 27' |
| | 1x5/8" | 9' | 11' | 11' | 13' | 15' | 14' | 16' | 17' | 15' | 17' | 19' | 24' | 27' |

NOTES:

- Deflection Limit is span/240 (or span/360 as applicable) to a maximum of 1.18" at 5.22 psi, in accordance with the IBC Specification.
- Maximum wall heights refer to the structural wall heights only. Maximum wall heights may be reduced from those in the table for fire rated walls, refer to your plasterboard manufacturer for this information.
- The tabulated heights are not for axial loads but do include self weight and lateral pressures.
- Shelf loading is not permitted on the tabulated wall heights.
- Loadings:
 - Pultimate = 0.0544 Psi
 - Pservice = 5.22 Psi
- These walls are not for external applications.
- All loading in accordance with AS1170:2002.
- Walls analysed in accordance with AS4600:2005.
- Noggings in accordance with table shown on facing page.
- BMT = Base Metal Thickness.
- The above wall heights are suitable for up to two layers of the nominated thickness.
- See table on Page 100 for Nogging requirement.
- Table assumes the same or like gauge is used for both Stud and Track sections. The above wall heights may change if using dissimilar gauge product

MAXIMUM WALL HEIGHTS (continued)

TABLE 7: INTERNAL NON-LOAD BEARING WALLS – L/360 BRITTLE SUBSTRATES – CFC etc.

| STUD WIDTH | | 2" | | 2 1/2" | | | 3" | | | 3 5/8" | | | 6" | |
|------------------------------------|--------|-----------------------------------|-----|--------|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|
| GA | | 25 | 20 | 25 | 20 | 18 | 22 | 20 | 18 | 22 | 20 | 18 | 20 | 18 |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 24" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 8' | 9' | 10' | 11' | 12' | 11' | 13' | 14' | 13' | 14' | 15' | 19' | 21' |
| | 1x1/2" | 10' | 10' | 10' | 12' | 13' | 12' | 15' | 15' | 14' | 16' | 17' | 20' | 22' |
| | 1x5/8" | 10' | 10' | 11' | 13' | 13' | 13' | 16' | 16' | 15' | 17' | 18' | 21' | 23' |
| LINED ONE SIDE | 1x3/8" | 7' | 7' | 8' | 9' | 10' | 9' | 10' | 12' | 11' | 12' | 13' | 17' | 20' |
| | 1x1/2" | 7' | 7' | 8' | 9' | 10' | 10' | 11' | 12' | 11' | 12' | 14' | 17' | 20' |
| | 1x5/8" | 7' | 7' | 8' | 9' | 10' | 10' | 11' | 12' | 11' | 12' | 14' | 17' | 20' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 18" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 9' | 9' | 10' | 12' | 13' | 12' | 14' | 15' | 14' | 16' | 17' | 21' | 23' |
| | 1x1/2" | 10' | 11' | 11' | 13' | 14' | 13' | 16' | 16' | 15' | 17' | 18' | 22' | 24' |
| | 1x5/8" | 10' | 11' | 12' | 13' | 14' | 13' | 16' | 17' | 16' | 18' | 19' | 22' | 24' |
| LINED ONE SIDE | 1x3/8" | 7' | 8' | 8' | 10' | 11' | 10' | 11' | 13' | 12' | 13' | 15' | 19' | 22' |
| | 1x1/2" | 7' | 8' | 8' | 10' | 11' | 11' | 12' | 13' | 12' | 13' | 15' | 16' | 22' |
| | 1x5/8" | 7' | 8' | 9' | 10' | 11' | 11' | 12' | 13' | 12' | 14' | 15' | 19' | 22' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 16" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 9' | 8' | 11' | 12' | 13' | 12' | 14' | 15' | 13' | 16' | 17' | 21' | 24' |
| | 1x1/2" | 10' | 11' | 12' | 13' | 14' | 13' | 16' | 17' | 15' | 18' | 19' | 22' | 25' |
| | 1x5/8" | 10' | 11' | 12' | 14' | 14' | 14' | 17' | 17' | 16' | 18' | 19' | 23' | 25' |
| LINED ONE SIDE | 1x3/8" | 8' | 9' | 9' | 10' | 12' | 10' | 12' | 13' | 12' | 13' | 15' | 20' | 23' |
| | 1x1/2" | 8' | 9' | 9' | 11' | 12' | 11' | 13' | 13' | 12' | 14' | 16' | 20' | 23' |
| | 1x5/8" | 8' | 9' | 9' | 11' | 12' | 11' | 13' | 13' | 12' | 14' | 16' | 20' | 23' |
| PLASTERBOARD LININGS (Inch) | | SINGLE STUDS @ 12" CENTRES | | | | | | | | | | | | |
| LINED BOTH SIDES | 1x3/8" | 10' | 11' | 12' | 13' | 14' | 13' | 15' | 17' | 15' | 17' | 19' | 23' | 26' |
| | 1x1/2" | 11' | 12' | 12' | 14' | 15' | 14' | 17' | 18' | 16' | 19' | 20' | 24' | 27' |
| | 1x5/8" | 11' | 12' | 13' | 14' | 15' | 15' | 18' | 18' | 17' | 20' | 20' | 25' | 27' |
| LINED ONE SIDE | 1x3/8" | 8' | 9' | 10' | 11' | 13' | 11' | 13' | 15' | 13' | 15' | 17' | 22' | 25' |
| | 1x1/2" | 8' | 9' | 10' | 12' | 13' | 12' | 14' | 15' | 14' | 15' | 17' | 22' | 25' |
| | 1x5/8" | 8' | 9' | 10' | 12' | 13' | 12' | 14' | 15' | 14' | 15' | 17' | 22' | 25' |

MINIMUM NUMBER OF NOGGINGS

| WALL HEIGHT (ft) | LINING CONDITION | NUMBER OF NOGGINGS |
|------------------|------------------|--------------------|
| 0 – 14.5' | Both sides | 0 |
| 14.5' – 29' | | 1 |
| 0 – 10' | Lined one side | 1 |
| 10' – 20' | | 2 |
| 20' – 26.5' | | 3 |
| 26.5' + | | 4 |

NOTE: Walls connected to the underside of a concrete slab must be installed with deflection head track and an additional row of Noggings 4" down if unlined, or lined one side only.

SHELF LOAD TABLES

Permissible Shelf Loadings for Steel Stud Walls

TABLE 6: MAXIMUM ALLOWABLE LOADS

(8' – 12' wall height. Walls lined both sides with 1x1/2" plasterboard)

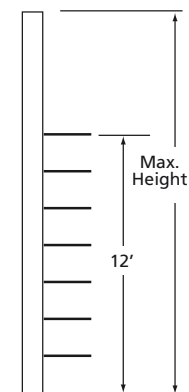
| MAXIMUM ALLOWABLE LOAD IN KG PER METRE RUN OF SHELF (for fasteners designed by structural engineer) | | | | | | | | | | | | | | | | |
|--|---|----------------|------|------|----------------|------|------|------------|------|------|------------|------|------|----------------|------|------|
| WALL HEIGHT (ft) | | 8' | | | 9' | | | 10' | | | 11' | | | 12' | | |
| STUD SIZE | | 2 1/2" x 25 GA | | | 2 1/2" x 25 GA | | | 3" x 22 GA | | | 3" x 22 GA | | | 3 5/8" x 22 GA | | |
| SHELF WIDTH (Inch) | | 8" | 12" | 16" | 8" | 12" | 16" | 8" | 12" | 16" | 8' | 12" | 16" | 8" | 12" | 16" |
| Number of shelves equally spaced over full height | 1 | 127 | 95 | 77 | 58 | 43 | 33 | 140 | 107 | 87 | 62 | 45 | 38 | 73 | 57 | 47 |
| | 2 | 102 | 80 | 65 | 58 | 43 | 33 | 120 | 93 | 77 | 58 | 45 | 38 | 73 | 57 | 47 |
| | 3 | 63 | 47 | 38 | 28 | 22 | 17 | 70 | 53 | 43 | 30 | 23 | 18 | 37 | 28 | 23 |
| | 4 | 53 | 40 | 33 | 27 | 20 | 17 | 60 | 47 | 38 | 30 | 23 | 18 | 35 | 27 | 22 |
| | 5 | 42 | 32 | 25 | 18 | 13 | 12 | 47 | 35 | 28 | 20 | 15 | 12 | 23 | 18 | 15 |
| | 6 | 37 | 27 | 22 | 17 | 13 | 10 | 42 | 32 | 25 | 18 | 15 | 12 | 23 | 18 | 15 |
| LOAD MULTIPLICATION FACTOR FOR ALTERNATIVE STUD SIZES | | | | | | | | | | | | | | | | |
| 2 1/2" x 20 GA | | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.75 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | 1.20 | — | — | — |
| 3" x 22 GA | | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | — | — | — |
| 3" x 20 GA | | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | — | — | — |
| 3 5/8" x 22 GA | | 1.60 | 1.60 | 1.60 | 1.65 | 1.65 | 1.65 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.00 | 1.00 | 1.00 |
| 3 5/8" x 18 GA | | 2.75 | 2.75 | 2.75 | 2.80 | 2.80 | 2.80 | 1.95 | 1.95 | 1.95 | 1.95 | 1.95 | 1.95 | 1.65 | 1.65 | 1.65 |

TABLE 7: MAXIMUM ALLOWABLE LOADS (4200mm – 6000mm wall height)

| MAXIMUM ALLOWABLE LOAD IN KG PER METRE RUN OF SHELF (for fasteners designed by structural engineer) | | | | | | | | | | | | | |
|--|---|------------|-----|-----|------------|-----|-----|------------|-----|-----|------------|-----|-----|
| WALL HEIGHT (ft) | | 14' | | | 16' | | | 18' | | | 20' | | |
| STUD SIZE | | 6" x 20 GA | | | 6" x 20 GA | | | 6" x 20 GA | | | 6" x 18 GA | | |
| SHELF WIDTH (Inch) | | 8" | 12" | 16" | 8" | 12" | 16" | 8" | 12" | 16" | 8" | 12" | 16" |
| Number of shelves equally spaced over bottom 3600mm as shown | 1 | 658 | 550 | 483 | 500 | 433 | 367 | 367 | 300 | 233 | 383 | 283 | 217 |
| | 2 | 375 | 325 | 283 | 267 | 233 | 200 | 183 | 158 | 133 | 200 | 150 | 117 |
| | 3 | 283 | 242 | 217 | 183 | 167 | 150 | 125 | 108 | 92 | 133 | 100 | 82 |
| | 4 | 225 | 200 | 175 | 158 | 133 | 117 | 100 | 83 | 72 | 100 | 78 | 63 |
| | 5 | 192 | 158 | 142 | 125 | 108 | 100 | 82 | 72 | 57 | 83 | 63 | 52 |
| | 6 | 158 | 133 | 123 | 108 | 100 | 83 | 70 | 62 | 47 | 72 | 53 | 43 |

Max. Height

12'

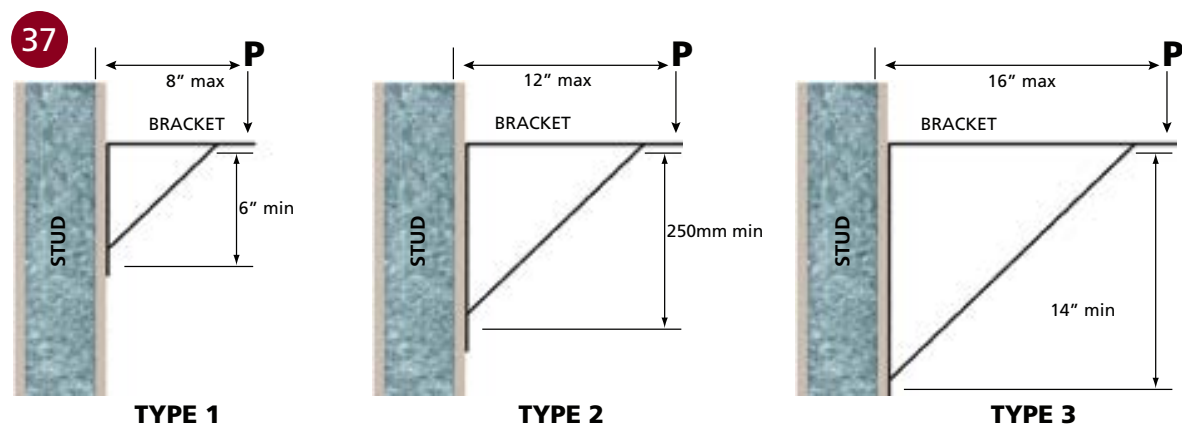


DESIGN ASSUMPTIONS:

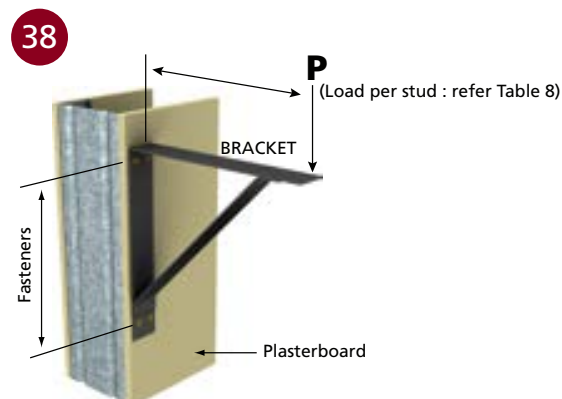
1. Stud spacing = 600mm
2. Deflection checked to the lesser of $H/480$ under shelf loads (G) or $H/360$ under shelf loads with combined internal pressure ($G + W_s$)
3. Internal pressure checked at 0.0543psi (W_u) ultimate and 5.22psi (W_s) service
4. Walls are lined both sides with 13mm plasterboard
5. Studs are continuous in length and no splicing is allowed
6. All calculations are based on Judah sections
7. Shelving is attached to one side of the wall only
8. GA = Gauge Base Metal Thickness
9. To obtain kg per stud per shelf, multiply the values in the above table by 0.6

SHELF LOAD TABLES (continued)

Non-Fire Rated Steel Stud Systems



BRACKETS



FASTENERS

TABLE 8: MAXIMUM LOADINGS FOR BRACKETS

| STUD GAUGE (GA) | MAXIMUM LOADING 'P' PER STUD (KG) (where fasteners consist of 2# 10 gauge fasteners at each location) | | |
|--------------------|--|----------------|----------------|
| | TYPE 1 BRACKET | TYPE 2 BRACKET | TYPE 3 BRACKET |
| 25 | 25 | 30 | 33 |
| 22 | 27 | 33 | 36 |
| 20 | 36 | 44 | 49 |
| 18 | 57 | 70 | 76 |

NOTES:

1. Fixings shown in Figure 3 consist of 2# 10 gauge fasteners at each fixing location
2. Design is for bracket connection only – bracket and shelf design by others
3. Loads greater than those listed above must be independently designed for
4. Fasteners used must be 10 gauge and have the properties listed in Table 15

TABLE 9: FASTENER PROPERTIES (10 GAUGE)

| STUD GAUGE BMT (GA) | PULLOUT FORCE kN (ϕN_{ou}) | SHEAR STRENGTH kN (ϕV_p) |
|------------------------|---------------------------------------|-------------------------------------|
| 25 | 0.34 | 0.54 |
| 22 | 0.37 | 0.62 |
| 20 | 0.50 | 0.99 |
| 18 | 0.77 | 1.87 |

NOTE: Pullout and shear capacity based on Grade 300 steel brackets of minimum thickness 1.50mm

SECTION PROPERTIES

Lipped Studs

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397

Yield Strength: F_y – 39160 PSI

Coating Grade: Z275 – 275g/m ² zinc

Ultimate: F_u = 47862.5 PSI

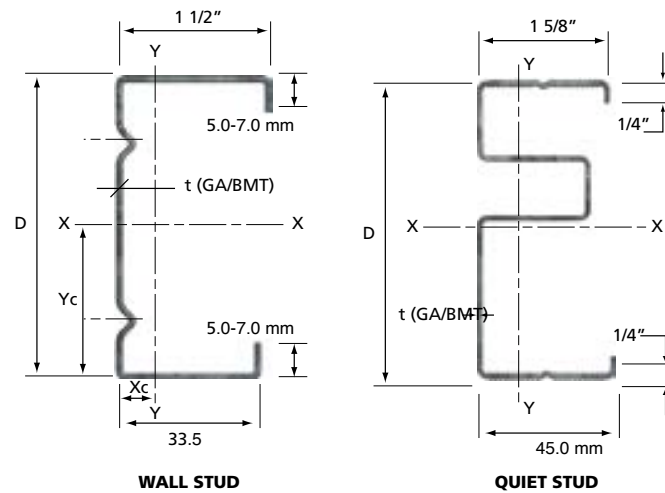


TABLE 12: SECTION PROPERTIES FOR LIPPED STUDS

| GA | PART NO | DIMENSIONS | | | | GROSS AREA mm ² | MOMENT OF AREA | | SECTION MODULUS | | TORSION Constant J mm ⁴ | WARPING Constant I _w mm ⁶ |
|--------------------------|---------|------------|---------|----------------------|----------------------|-------------------------------|--|--|------------------------------------|------------------------------------|--|---|
| | | D Inch | t GA | X _c mm | Y _c mm | | I _{xx} 10 ³ mm ⁴ | I _{yy} 10 ³ mm ⁴ | Z _{xx} mm ³ | Z _{yy} mm ³ | | |
| 25 | 401 | 2" | 25 | 12.0 | 26.3 | 64.1 | 29.1 | 9.88 | 1148 | 428 | 5.35 | 5.23E6 |
| | 112 | 2 1/2" | 25 | 10.3 | 33.1 | 70.5 | 47.6 | 10.3 | 1493 | 422 | 5.96 | 7.78E6 |
| 22 | 403 | 3" | 22 | 9.40 | 39.5 | 84.7 | 79.4 | 12.0 | 2076 | 475 | 8.64 | 12.78E6 |
| | 251 | 3 5/8" | 22 | 8.60 | 47.5 | 93.3 | 123.1 | 12.7 | 2662 | 486 | 9.52 | 19.55E6 |
| 20 | 489 | 2" | 20 | 33.1 | 26.8 | 94.6 | 42.3 | 13.9 | 1659 | 582 | 18.07 | 6.62E6 |
| | 491 | 2 1/2" | 20 | 10.4 | 30.7 | 108.0 | 72.3 | 15.9 | 2281 | 656 | 20.24 | 12.22E6 |
| | 493 | 3" | 20 | 9.50 | 37.2 | 117.0 | 109.0 | 16.5 | 2872 | 650 | 21.93 | 17.75E6 |
| | 495 | 3 5/8" | 20 | 8.60 | 45.1 | 129.0 | 168.9 | 17.5 | 3685 | 667 | 24.18 | 27.26E6 |
| | 511 | 6" | 20 | 6.50 | 74.1 | 167.6 | 533.4 | 19.9 | 7144 | 701 | 32.28 | 82.56E6 |
| 18 | 661 | 2 1/2" | 18 | 10.5 | 31.2 | 154.9 | 102.7 | 23.5 | 3239 | 972 | 70.47 | 16.2E6 |
| | 671 | 3" | 18 | 9.60 | 37.5 | 169.5 | 157.1 | 25.0 | 4121 | 997 | 76.91 | 24.67E6 |
| | 681 | 3 5/8" | 18 | 8.70 | 45.4 | 187.8 | 245.2 | 26.5 | 5315 | 1021 | 84.97 | 38.35E6 |
| | 691 | 6" | 18 | 6.50 | 74.2 | 254.5 | 788.9 | 30.3 | 10490 | 1073 | 114.3 | 120.4E6 |
| Judah QUIET STUD® | | | | | | | | | | | | |
| 22 | RQST | 92.0 | 22 | 16.5 | 48.9 | 139.2 | 149.8 | 30.6 | 3067 | 1097 | 14.1 | 59.8E6 |

NOTE: Section properties are approximate only and may be subject to revision

SECTION PROPERTIES (continued)

Wall Stud Track

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397

Yield Strength: F_y – 270 MPa

Coating Grade: Z275 – 275g/m² zinc

Ultimate: F_u = 330 MPa

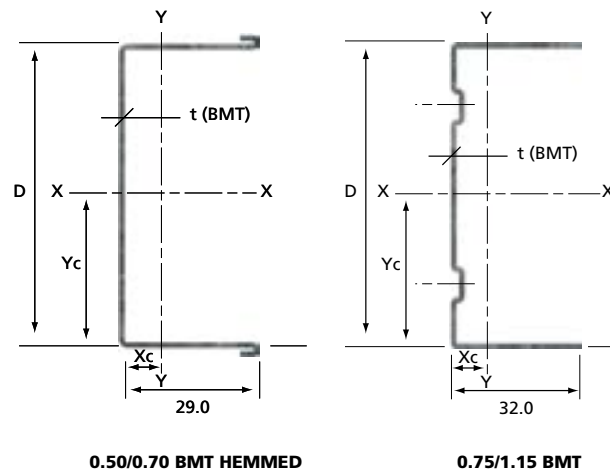


TABLE 13: SECTION PROPERTIES FOR WALL TRACKS

| GA | PART NO | DIMENSIONS | | | | GROSS AREA mm ² | MOMENT OF AREA | | SECTION MODULUS | | TORSION Constant J mm ⁴ | WARPING Constant I _w mm ⁶ |
|----|---------|------------|---------|----------------------|----------------------|-------------------------------|--|--|------------------------------------|------------------------------------|---------------------------------------|--|
| | | D mm | t mm | X _c mm | Y _c mm | | I _{xx} 10 ³ mm ⁴ | I _{yy} 10 ³ mm ⁴ | Z _{xx} mm ³ | Z _{yy} mm ³ | | |
| 25 | 400 | 52.5 | 0.50 | 8.91 | 26.3 | 56.7 | 26.5 | 6.12 | 1020 | 313 | 4.85 | 2.84E6 |
| | 111 | 65.2 | 0.50 | 8.04 | 32.6 | 63.1 | 43.6 | 6.57 | 1348 | 322 | 5.38 | 4.73E6 |
| | 402 | 77.9 | 0.50 | 7.32 | 39.0 | 69.4 | 65.9 | 6.95 | 1703 | 329 | 5.91 | 7.20E6 |
| | 250 | 93.75 | 0.50 | 6.58 | 46.9 | 77.0 | 101.8 | 7.33 | 2185 | 335 | 6.57 | 11.2E6 |
| 20 | 490 | 53.1 | 0.70 | 8.79 | 26.6 | 79.4 | 37.4 | 8.40 | 1430 | 432 | 13.3 | 3.97E6 |
| | 492 | 65.5 | 0.70 | 7.94 | 32.8 | 88.3 | 60.7 | 9.01 | 1876 | 443 | 14.7 | 6.51E6 |
| | 494 | 78.1 | 0.70 | 7.23 | 39.1 | 97.2 | 91.5 | 9.51 | 2367 | 453 | 16.2 | 9.86E6 |
| | 496 | 94.5 | 0.70 | 6.48 | 47.3 | 107.8 | 143.5 | 10.1 | 3061 | 462 | 18.0 | 15.5E6 |
| 18 | 660 | 65.9 | 1.15 | 7.53 | 33.0 | 142.4 | 96.1 | 13.50 | 2973 | 589 | 63.3 | 9.70E6 |
| | 670 | 78.6 | 1.15 | 6.84 | 39.3 | 157.0 | 145.4 | 14.30 | 3757 | 604 | 69.7 | 14.8E6 |
| | 680 | 94.5 | 1.15 | 6.13 | 47.3 | 176.0 | 225.2 | 15.00 | 4826 | 618 | 77.8 | 22.9E6 |

NOTE: Section properties are approximate only and may be subject to revision

Deflection Head Track

MATERIAL SPECIFICATIONS

Steel Grade: G2 Z275 to AS1397

Yield Strength: F_y – 270 MPa

Coating Grade: Z275 – 275g/m² zinc

Ultimate: F_u = 330 MPa

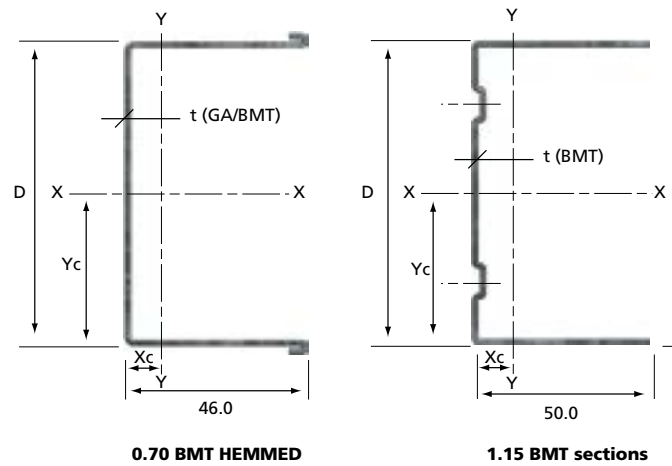








TABLE 14: SECTION PROPERTIES FOR DEFLECTION HEAD TRACK

| BMT (GA) | PART NO | DIMENSIONS | | | | GROSS AREA mm ² | MOMENT OF AREA | | SECTION MODULUS | | TORSION Constant J mm ⁴ | WARPING Constant I _w mm ⁶ |
|---------------------|------------|------------|---------|----------------------|----------------------|----------------------------------|--|--|------------------------------------|------------------------------------|--|---|
| | | D mm | t mm | X _c mm | Y _c mm | | I _{xx} 10 ³ mm ⁴ | I _{yy} 10 ³ mm ⁴ | Z _{xx} mm ³ | Z _{yy} mm ³ | | |
| 0.70 (20) | 488 | 53.1 | 0.70 | 15.9 | 26.6 | 105.7 | 51.0 | 26.7 | 1947 | 920 | 17.1 | 13.5E6 |
| | 497 | 65.5 | 0.70 | 14.7 | 32.8 | 113.7 | 82.1 | 28.7 | 2537 | 950 | 18.5 | 21.7E6 |
| | 498 | 78.1 | 0.70 | 13.6 | 39.1 | 120.4 | 122.7 | 30.4 | 3174 | 974 | 20.0 | 32.5E6 |
| | 499 | 94.5 | 0.70 | 12.4 | 47.3 | 133.4 | 190.2 | 32.4 | 4058 | 999 | 21.8 | 50.4E6 |
| 0.75 (20) | 510 | 152.4 | 0.75 | 9.58 | 76.2 | 175.0 | 627.4 | 40.4 | 8277 | 1034 | 34.9 | 164.7E6 |
| 1.15 (18) | 663 | 65.9 | 1.15 | 14.7 | 33 | 187.8 | 137.7 | 47.2 | 4257 | 1400 | 81.5 | 34.7E6 |
| | 673 | 78.6 | 1.15 | 13.6 | 39.3 | 204.7 | 205.3 | 50.1 | 5304 | 1440 | 88.0 | 52.3E6 |
| | 683 | 94.5 | 1.15 | 12.4 | 47.3 | 220.8 | 312.6 | 53.2 | 6701 | 1480 | 96.0 | 80.5E6 |
| | 690 | 152.4 | 1.15 | 9.53 | 76.2 | 287.5 | 953.4 | 61.1 | 12610 | 1573 | 125.4 | 248.3E6 |

NOTE: Section properties are approximate only and may be subject to revision

FASTENERS

TABLE 15: SCREW FIXING DATA

| APPLICATION | RECOMMENDED SCREW | SIZE |
|---|---|--|
| FLOORING Joists to Bearers Bearers to Posts Bracketing & Cleats FRAMING Tracks to Steel Members Wall Studs to Steel Columns Bracketing & Cleats External Face Connections Plumbing/Electrical Brackets ROOFING Trusses to Top Plates Roof Battens to Trusses Bracketing & Cleats Roof Sheeting to Battens Roof Battens to Trusses | HEXAGON HEAD DRILL POINT  FOR STEEL UP TO 4mm THICK | 8–18 x 12mm 8–18 x 20mm 10–16 x 16mm 10–16 x 22mm 12–14 x 20mm 12–14 x 35mm 14–10 x 20mm 14–10 x 42mm |
| |  FOR STEEL UP TO 6mm THICK | 10–24 x 16mm 10–24 x 25mm 12–24 x 20mm 14–20 x 20mm 14–20 x 22mm 14–20 x 30mm 14–20 x 40mm |
| | BUTTON HEAD NEEDLE POINT  FOR STEEL UP TO 0.8mm THICK | 8 x 14mm 8 x 25mm 8 x 32mm |
| | WAFER HEAD DRILL POINT  FOR STEEL UP TO 4mm THICK | 10–16 x 16mm 10–16 x 22mm 10–24 x 16mm 10–24 x 22mm 10–24 x 30mm 10–24 x 40mm |
| INTERNAL LININGS Plasterboard Wall & Ceilings | BUGLE HEAD S-POINT/NEEDLE POINT  FOR STEEL UP TO 0.8mm THICK | 6–18 x 25mm 6–18 x 30mm 6–18 x 42mm 7–16 x 50mm 8–15 x 60mm 8–15 x 75mm |
| | BUGLE HEAD DRILL POINT  FOR STEEL UP TO 6mm THICK | 6–20 x 25mm 6–20 x 30mm 6–20 x 45mm |

NOTE: Screws should comply with AS/NZS 3566-2 2002 Corrosion Resistance.







| APPLICATION | RECOMMENDED SCREW | SIZE |
|--|--|--|
| INTERNAL LININGS Fibre cement linings in wet areas |  FOR STEEL UP TO 0.8mm THICK | 8-18 x 20mm |
| |  FOR STEEL UP TO 4mm THICK | 8-18 x 25mm |
| Compressed sheeting to steel studs |  MINIMUM STUD GAUGE $\geq 1.0\text{mm}$ | 8-18 x 33mm 8-18 x 38mm 10-24 x 30mm 10-24 x 45mm |

TABLE 16: OTHER FASTENERS

| APPLICATION | RECOMMENDED SCREW | SIZE |
|--|---|---------------------------|
| Stud or track fixing to concrete and masonry |  NOTE: TWO FIXINGS FOR TRACKS $\geq 100\text{MM}$. CHECK BEFORE USING ON FIRE RATED APPLICATIONS | Refer manufacturer's data |
| Stud or track fixing to steel |  NOTE: TWO FIXINGS FOR TRACKS $\geq 100\text{MM}$. CHECK BEFORE USING ON FIRE RATED APPLICATIONS | Refer manufacturer's data |
| Stud or track fixing to concrete and masonry |  | Refer manufacturer's data |

NOTE: Screw fixing information provided by ITW Buildex. Specific details should be checked with the screw manufacturer before commencing work.

GLOSSARY OF TERMS

BCA REQUIREMENTS

The BCA requirements only relate to lightweight fire rated construction, not to partitions in general. There is currently no Australian Standard which covers non-fire rated partition framing specifically. The main presumption is that there is no reason why a fire rated partition should be constructed any differently (in terms of loading and serviceability criteria) than a normal non-fire rated partition.

DEAD LOAD (G)

That part of structure, which is not readily moveable, such as flooring, linings etc. Most dead loads applicable for building materials are detailed in AS1170.1.

As dead loads are present at all times the deflection limits applicable when checking serviceability for dead load only cases are generally more stringent.

DEFLECTION LIMIT

A criterion applied to check the “serviceability” of a partition or ceiling system.

For a non-load bearing partition with “flexible linings” (i.e. plasterboard) the BCA requirements for lightweight partitions H/240 (where H = wall height) provides acceptable serviceability.

Example: if wall height is 2700mm calculation is $2700/240 = 11.25\text{mm}$ max. lateral deflection at mid height of wall.

Normally where brittle finishes (i.e. tiled bathroom) are applied to the partition the deflection limit is increased to H/360. For shelf loaded walls, the deflection limit is generally increased to H/480 to reduce the secondary effects of the shelf load.

Deflection limits can and do vary depending on the use and function of the building, and there are no prescribed limits for non-fire rated partitions.

SINGLE, DOUBLE AND CONTINUOUS SPAN

Single Span:

Where a single member is supported at at each end only.

Double Span:

Where a single member is supported at three points along its length.

Continuous Span:

Where a single member is supported at four or more points along its length i.e. a 6m length of Furring Channel suspended from a Top Cross Rail Grid system.

Where double span and continuous span values are stated, the design assumes that all the spans are equal.

INTERNAL PRESSURE

The design load applied to the soffit of the ceiling, either upward (uplift) or downward.

Sometimes this pressure may be due to the ceiling being used as a pressurised plenum for mechanical services.

The design load may vary in certain parts of buildings depending upon the exposure the ceiling has to the exterior, such as in factories with large roller doors etc. In these situations the contract specification should be consulted or clarification sought from the project coordinators. The direction of the design load is important so the ceiling requirements for “downstrutting” may be determined. Normally the deflection criteria are relaxed for ceilings subjected to wind loads.

LATERAL PRESSURE

The design load applied to the face of the wall.

The BCA requirements for lightweight partitions are sufficient for internal partitions in an effectively sealed building – 0.25kPa.

The design load may vary in certain parts of buildings (i.e. lift shafts, etc.) and for certain building classes (i.e. Class 9B buildings). Also, the design load may vary due to external wind load exposure, such as in factories with large roller doors etc. In these situations the contract specification should be consulted or clarification sought from the project coordinators.

LATERAL PRESSURE TYPE — PERMISSIBLE vs ULTIMATE

As the current design code for Cold-Formed Steel Sections (ASNZS4600) is in Limit State Format it is appropriate that all loads are specified as Ultimate values.

In terms of wind loading the Ultimate wind pressure is 1.5 times higher than the permissible pressure.

LIVE LOAD (Q)

The load resultant from occupancy or use of the building, such as persons walking (floor live loads), storage loads, impact loads etc. Live loads are detailed in AS1170.1, and may vary depending on the use and function of the building.

As live loads are removable or intermittent the deflection limits applicable when checking serviceability for live load cases are generally relaxed, as opposed to dead load.

SERVICEABILITY

A criterion that defines acceptable in-service performance of a partition or ceiling. The criterion is usually specified as a deflection limit, but may also be specified as an acoustic rating.

WIND DOWN (Wd)

The resultant forces from the wind load, which tends to generate compression load in the stud framing. Wind downwards may not occur on every project.

As wind loads are intermittent (i.e. the wind tends to gust) the deflection limits applicable when checking serviceability for wind load cases are generally relaxed, as opposed to dead load.

It is important for the wind up and wind down cases that the wind load is clearly described, and the loading is calculated in accordance with AS1170.2 or AS4055 as applicable.

AS1170.2 Wind Loads is applicable for all normal structures, both low rise and high rise.

AS4055 Wind Loads for Housing is only applicable for buildings with an eaves height of 6.0m and/or a maximum height at any point of 8.5m. In general terms the code applies up to two storey domestic structures or similar.

WIND UP (Wu)

The resultant force from the wind load, particularly on roofs sheeted with metal decking, which tends to generate a tension load in the stud framing. Wind uplift may not occur on every project, such as a tiled roof subjected to an N2 (W33) wind load, under serviceability.

It is important for the wind up and wind down cases that the wind load is clearly described, and the loading is calculated in accordance with AS1170.2 or AS4055 as applicable.

