# INDEX

# Chapter 1 - Introduction – Cold form Steel

## 1.1 Evolution of Cold form Steel Framing or LGSF

1. Began around 1850. In North America, 1946.
2. Some of the countries using the system today: – USA, Canada, Western and Eastern Europe, China, Austria, New Zealand, India, Malaysia, Indonesia, South Africa, Gulf countries, and Algeria.
3. Made from structural quality sheet steel formed into shape either through press-braking blanks sheared from sheets or coils, or more commonly, by roll forming the steel through a series of dies. No heat is required to form the shapes (unlike hot-rolled steel), and thus the name Cold Formed Steel.
4. Cold-formed steel members and other products are thinner, lighter, easier to produce, and typically cost less than their hot-rolled counterparts.
5. A variety of steel thicknesses are available to meet a wide range of structural and

non-structural applications.



## 1.2 Description - Cold form Steel Framing or LGSF

The wall panels, roof trusses and floor joists are all made up of roll-formed cold rolled steel sections of thickness ranging from 0.75mm to 1.6 mm, (Yield strength 500MPa- 550MPa) that comply with ASTM A1003 Structural Grade 33 (NS 33).

The Steel Structure is designed for a Design Life of minimum 50 years. Various Codes & Standards used for Design purpose are:

**IS 875: Part 1 to 5** – Loads on Structure
**IS 800: 2007** – Design of Steel Structures
**IS 801: 1975 & AISI S100** – Design of Cold Formed Steel Structures
**IS 456: 2000** – Design of Concrete
**IS 1893: 2002** – Earthquake Resistant Design

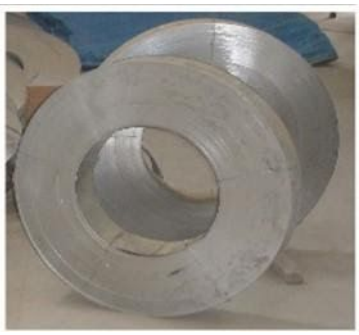


Fig.1 Cold Roll Coils

## 1.3 Corrosion Protection - Cold form Steel Framing

The steel is hot-dipped galvanized with a minimum Z220 coating for load bearing applications and non- load bearing applications. Alternatively, steel hot-dipped in Alum/Zinc coating (known as Galvalume with 55%Aluminium and 45%Zinc) is also used. The applicable codes are ASTM A653 for galvanized and ASTM A792 for galvalume. The light gauge cold-formed steel structural members are designed as per AS/NZS 4600:2005 and AISI S100.

The Results of various Tests and Studies conducted on the material coatings in different atmospheric conditions state that there is a loss of only 1-2% of the coating over a period of 10years even in test locations as close as 10m from the coast.

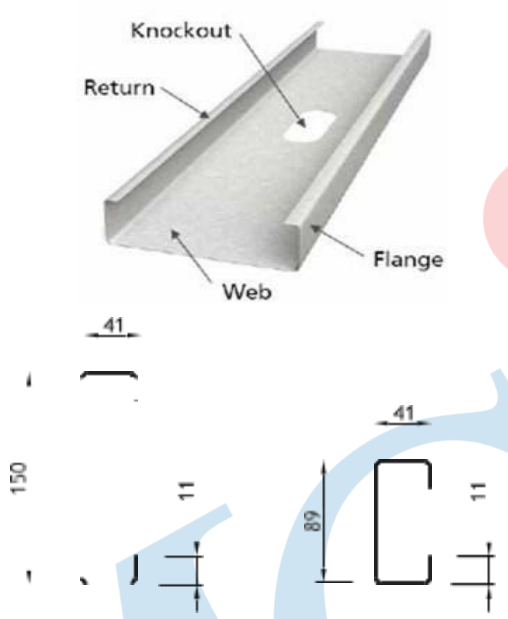



Fig 2. Designed shape

# Chapter 2 - MGI Structural System

## 2.1 MGI Wall Panels

MGI Wall Panels are made up of Cold Formed Steel C-Lipped Sections. The typical members that comprise a Wall panel are listed in the figure below:

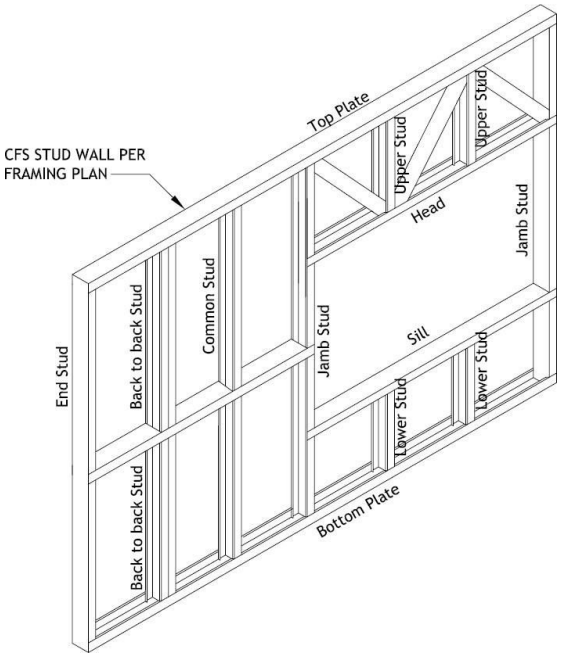



Fig 3. Cold rolled Frame wall

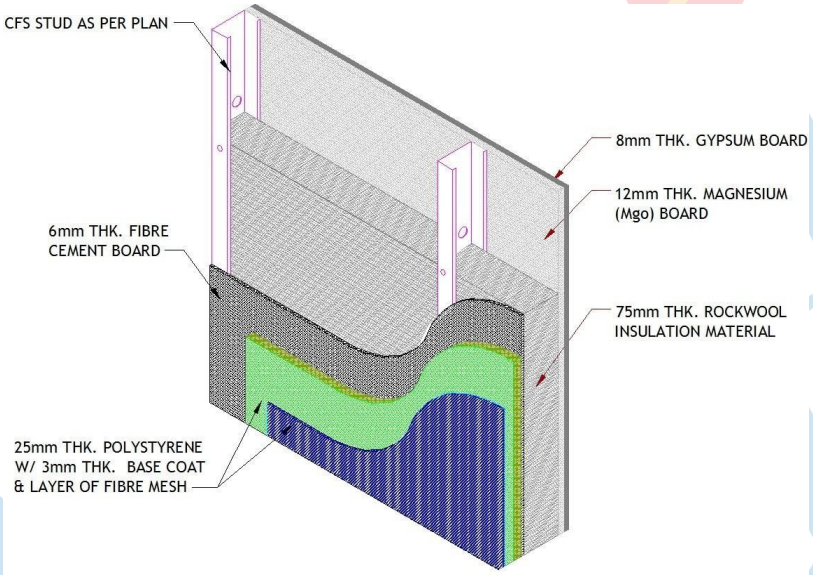



Fig 4. Cold rolled Frame wall system

### 2.1.1 MGI Load Bearing Wall Panels

A load bearing wall is one which carries vertical loads from the construction above and lateral loads resulting from the wind as well as seismic forces. These loads may act separately or in combination. Both internal and external walls may be load bearing. The resultant impact is far better as compared with any conventional structure.

## MGI LSF System recommends the following for the load bearing walls:



All load bearing studs shall be minimum G550 cold formed steel of 0.75mm thick C 89 section. The thickness of section will vary from 0.75 to 1.6mm thick depends on the loading requirement.

A structural top track is used to carry truss loads from the roof to the studs, where the studs are not located directly under the truss load points. Top track shall be G550 cold formed section. The top track shall be secured transversely by incoming trusses or rafters with approved wall support brackets.

The bottom track must be fully supported under every load-bearing stud. This is critical with studs beside openings, or studs carrying major loads for the roof, ceiling or upper floor construction. The support can be provided by a floor joist, blocking piece located directly under the stud.

Lintels are needed for openings greater than 1200mm of load bearing walls. Lintels under sheet metal roofs are principally designed for uplift from wind loading on the roof structure while lintels under tile roofs are designed principally to support downward loads from the roof trusses.

Noggings in the form of a notched plate may be used in load bearing walls to provide

lateral restraint to the wall studs.
Bracing is needed in certain walls to provide racking resistance against wind load & seismic load. It could be in the form of bracing straps or bracing sheets depending on the requirement.
The studs, joists and trusses must be properly aligned in order to transfer the loads to the member below.

### 2.1.2 MGI - Non-Load bearing Wall panel

Internal walls which do not support truss or floor loads are considered non-load bearing.

### MGI system recommends the following for non-load bearing walls:

Studs for internal non-load bearing walls shall be minimum Light gauge steel G550 C89, 0.75mm thick cold formed section.
Top plate shall be fixed to trusses to provide lateral stability for the wall. The connection shall not transmit vertical loads to the wall.
The bottom track shall be minimum G550 cold formed section
Angle lintels are not required for openings in non-load bearing wall frames.
Noggings is generally not needed for internal non-load bearing walls unless noted otherwise.

## 2.2 MGI – Wall Connection Details

MGI LSF system uses Steel bolts, nuts and washers complying with AS 1112:2000 or ISO 4759-1:2000. Self-drilling screws (SDS) complying with AS 3566.1 and AS 3566.2 are used.

## 1) Wall to Foundation Connection Details



The MGI system uses the Hold downs like MGI-CM1, MGI-CM2, Square brackets (MGI-CM3) etc. connectors to connect the light steel frame walls to the foundation with the help of anchor bolts.

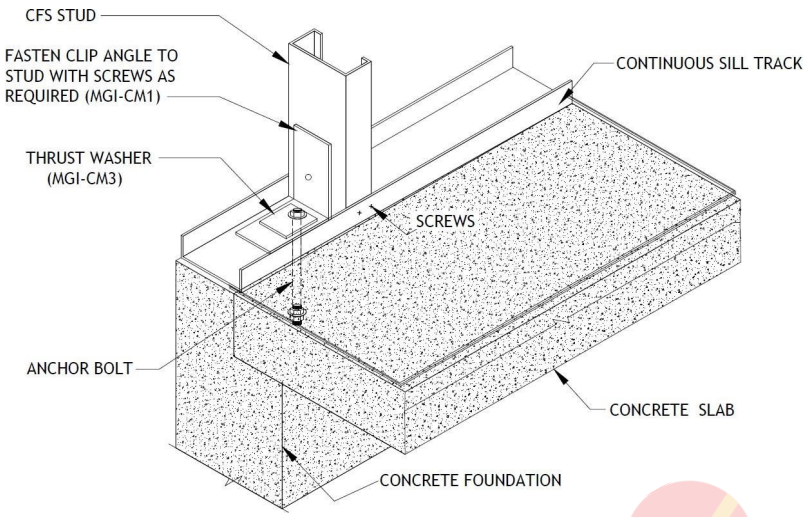



Fig 5. Typical Foundation Connection Detail

## 2) Wall to HR Beam Connection Details

The MGI system uses the SDS screws to connect the light steel frame walls to the top flange of HR beam.

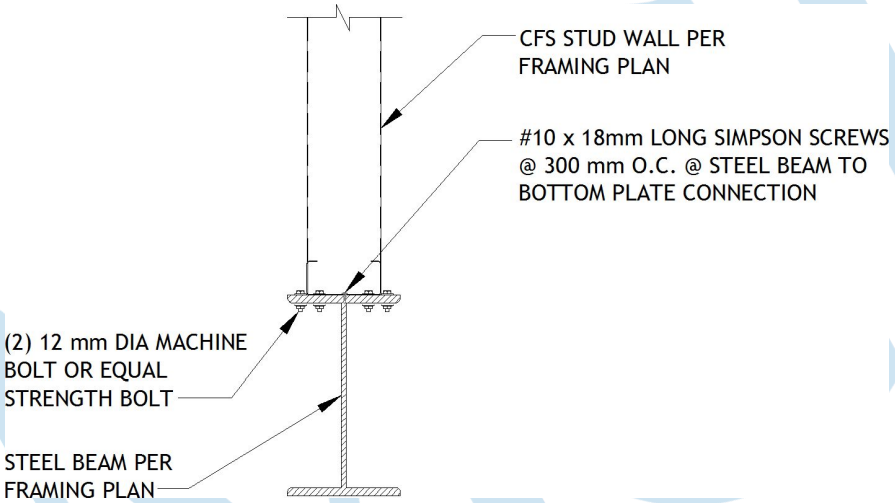
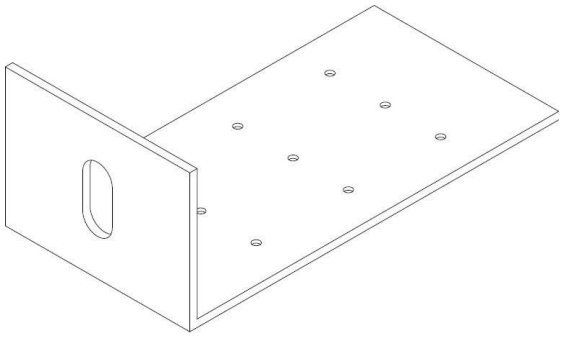



Fig 6. Typical HR beam to CFS Wall Detail

## 3) MGI Connectors

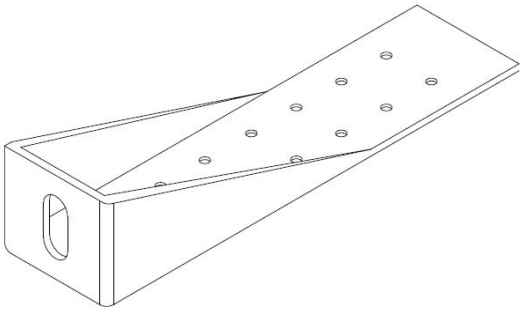
The MGI Connectors are used to connect the different CR member. The application is mentioned below



L - HOLD DOWN

**MGI-CM1**

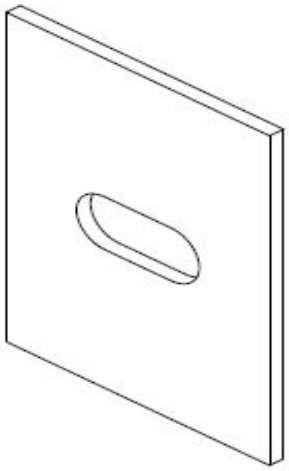
Used to connect the steel sections with concrete foundation, and also for steel to steel connections



HOLD DOWN

**MGI-CM2**

Used to connect the steel sections with concrete foundation, and also for Light gauge steel walls connections at floor levels



SQUARE BRACKET

**MGI-CM3**

Used to connect the Non load bearing walls with concrete foundation, and also for steel to steel connections

Fig 7. MGI Connector

## 4) Mechanical Anchor Bolt

High performing range of steel mechanical expansion and screw anchors like heavy duty anchors, heavy medium duty anchors etc. are used to anchor LSF Frame structure to the foundation.

The required embedment depth is calculated during the structural design.


Fig 8. Mechanical Anchor bolt

## 1) Wall To Wall Connection Details:

L-hold downs are used to connect LSF frame walls at noggin levels. and S.D.S. Phil Modi Truss Type BSD # 3PT of length 19mm are used to connect all light gauge steel members like wall studs, joists, truss members.

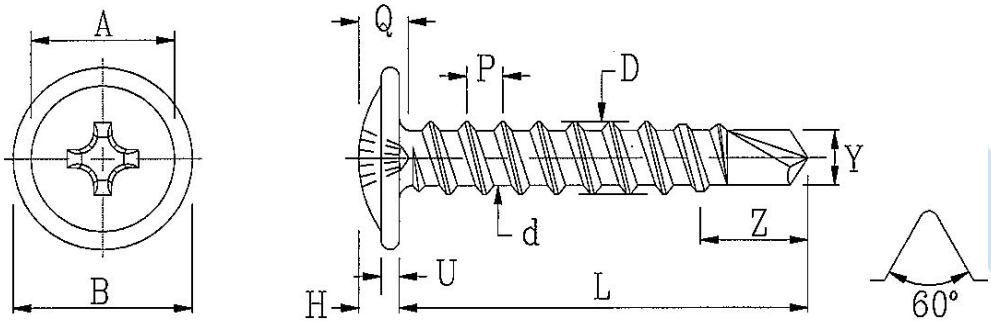



Fig 9. S.D.S. Phil Modi Truss Type BSD # 3PT

Special Screws namely S.D.S Phil Thin Wafer 8 Nibs type BSD #2PT, Size #8X32 are used to connect cement boards, Gypsum boards to wall frames

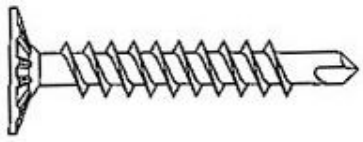


Fig 10. S.D.S Phil Thin Wafer 8 Nibs type BSD #2PT

## 5) Exterior Cladding – Building Wrap

Building Wrap functions as a weather-resistant barrier, preventing rain from getting into the wall assembly while allowing water vapor to pass to the exterior. If moisture from either direction is allowed to build up within stud or cavity walls, mold and rot can set in and fiberglass or cellulose insulation will lose its R-value due to heat-conducting moisture.

Building Wrap is installed over the steel and behind the exterior siding. In all cases, the Building Wrap is the last line of defence in stopping incoming water or exterior water condensation from getting into the stud wall.

## 6) Exterior Cladding – Fibre Cement Board

MGI uses 6mm Fibre Cement Board for external cladding. (Not to be left exposed for prolonged time)

### Description:

Fibre cement is a composite material made of sand, cement and cellulose fibres. The raw materials used to manufacture fibre cement are low in toxicity wood pulp, cement, sand and water meaning a reduced environmental impact.

### Application:

Fibre cement board is a building material used to cover the exterior of a building and for flooring in both commercial and domestic applications.

Exterior wall cladding is done with 6mm thick Regular fibre cement board with 24mm polystyrene for finishing and water proofing. The cement boards are fixed with countersunk self drilling screws with the joints duly filled and finished with putty and plain surface achieved.

It is used not only as cladding but is also commonly used as a soffit / eave lining and as a tile underlay on decks and in bathrooms.

### Benefits:

***Weather Resistant***

Fiber cement is durable in inclement weather such as freezing conditions, strong winds, blistering heat, humidity and salt water exposure.

***Low Maintenance***

Fiber cement will not rot, warp, mildew or grow mold. It is also termite and bug resistant and offers non- combustibility with fire and flame retardant properties.

***Versatility***

A number of designs, textures and colors are available in fiber cement such as horizontal and vertical siding with stucco, wood, smooth and cedar shingle appearances. Trim boards, soffits and fascia boards are additional siding products that can be found in fiber cement.

***Sound Insulation***

Air borne sound reduction varies between 30 and 37 dB for the frequency range 100- 3150 HZ according to thickness of Panel. When used in stud partitioning, a reduction of over 60 dB can be achieved with suitable construction.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | 6 | 8 | 10 | 12 | 16 | 20 | 30 | 40 |
| Reduction (dB) | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |



### Technical Data

| | |
|---|---|
| **Thickness** | 6 mm |
| **Fire Resistance properties** | Non-combustible and qualify for Early Fire Hazard indices as per AS-1530 part 3 and Resistance to Fire as per BS-476, Part 4, 5, 6, 7 & 8 |
| **Standard Weight** | 15.2 kg/m2 for 9 mm |
| **Compressive strength** | 15MPa |
| **Bending Strength** | 9MPa |
| **Moisture Content** | Moisture resistant and are tested as per IS - 14862 |
| **Nail Holding Power** | 205kg |
| **Lamina Bond Strength** | 2.1 MPa |
| **Impact Strength** | 12.0 Kj/m2 for 9 mm |
| **Thermal Conductivity** | 0.21 W/m/K at 500C |
| **Density** | 1650 kg/m3 average |
| **Durability** | Tested for durability as per IS - 14862 |
| **Modulus of Rupture** | 16 MPa in wet condition |

## 7) Exterior Cladding – EIFS

MGI uses 24mm Extruded Polystyrene for External Cladding.



### Description:

The MGI EIFS system consists of Polystyrene (24mm), fibre glass mesh and a layer of weatherproof basecoat on top. Polystyrene is a type of insulation material with fine, closed cells, containing a mixture of air and refrigerant gas. It has a high thermal resistance value, good moisture resistance, and high structural strength compared to other rigid insulation materials. Extruded polystyrene is used extensively as thermal insulation in industrial, commercial, and residential construction.

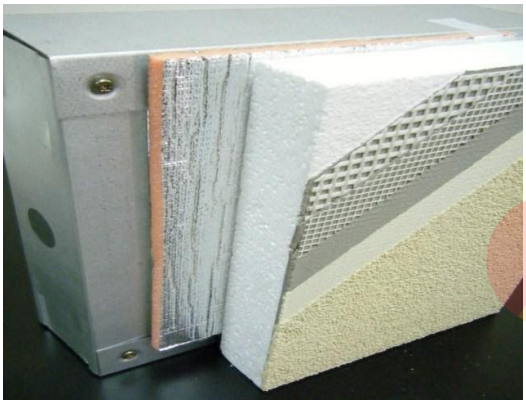


Fig 11. EIFS System

### Application:

The EIFS system is used as external wall insulation and renders material and provides a ready to paint surface.

### Benefits:

***Acoustic Performance:***

Polystyrene is a good Sound absorbent and has a high Noise Reducing Coefficient (NRC).

***Thermal Insulation:***

Polystyrene has exceptional thermal insulation characteristics. The thermal conductivity of extruded polystyrene is 0.027 W/K.m

***Resistance to Moisture:***

The moisture absorption from the atmosphere is less than 1% by volume at 95% relative humidity.

## 8) Internal Cladding – Magnesium (Mgo) Board

MGI INDIA

Magnesium oxide more commonly called magnesia is a versatile mineral that when used as part of a cement mixture and cast into thin cement panels under proper curing procedures and practices can be used in residential and commercial building construction.

## Application:

Magnesia boards are used in place of traditional gypsum drywall as wall and ceiling covering material and sheathing. It is also used in a number of other construction applications such as: fascias, soffit, shaft-liner & area separation, wall sheathing, and as tile backing (backer board) or as substrates for coatings and insulated systems such as Finish Systems, EIFS, and some types of stucco.

## 9) Internal Cladding – Gypsum Board



**Description:**

Gypsum is a very soft sulfate mineral composed of calcium sulfate dihydrate, with the chemical formula $CaSO_4 \cdot 2H_2O$.

**Application:**

Gypsum board is used as a finish for walls and ceilings, and is known in construction as drywall.

## 10)

## 11) Wall Insulation – Rock Wool



MGI uses 75mm (Density 48kg/$m^3$) Rockwool slabs as Wall Insulation.

### Description:

Rock wool, are fibres made from natural or synthetic minerals or metal oxides. The rock wool being used complied with the IS 8183-1993. Their ability to partition air makes them excellent heat insulators and sound absorbers. The fire resistance, of rock wool makes it common building materials where fire resistance is required.

Fig 12. Rockwool

### Application:

External wall insulation systems generally comprise an insulation layer to achieve the requisite standards of thermal performance.

Rock wool is used as insulator for both external as well as internal walls.

### Benefits:

***Acoustic Performance:***

Rock wool is good Sound absorbent. The Noise Reducing Coefficient, (NRC) for Rock wool of 48 kg/cumec density and 100mm thickness is 1.0

***Fire Performance:***

Rock wool has exceptional fire performance characteristics.

The limiting temperature of rock wool is 1000 C, and the continuous service temperature limited to 800 C.

***Resistance to Moisture:***

The moisture absorption from the atmosphere is less than 0.02% by volume at 95% relative humidity. The fibre construction and laying pattern allows natural drying of rock wool in the event of local ingress of water

***Biological:***

Rock wool fibres do not promote the growth of fungi, moulds or bacteria and sustain vermin attack. Rock wool is completely rot proof.

MGI INDIA

## Technical Data

| | |
|---|---|
| **Thickness** | 40, 50, 75, 100 mm |
| **Fire Resistance properties** | Non-combustible Non-combustible and tested as per IS 3144,3346. |
| **Density** | 48,64,96,144 kg/m3 |
| **Thermal Resistance** | 11.8 for 75 mm thick, 48kg/m3 density |
| **Moisture Content** | Below 1% and are tested as per IS - 14862 |
| **Thermal Conductivity** | 0.068 **W**/K. m at 200 °C |

## 2.3 MGI Webbed Floor Joist



MGI Webbed Floor Joists are made up of Cold Formed Steel C-Lipped Sections. The bottom and top cord lip out where the webs are coming. The webs have the swage at the end to put inside the top and bottom cord.

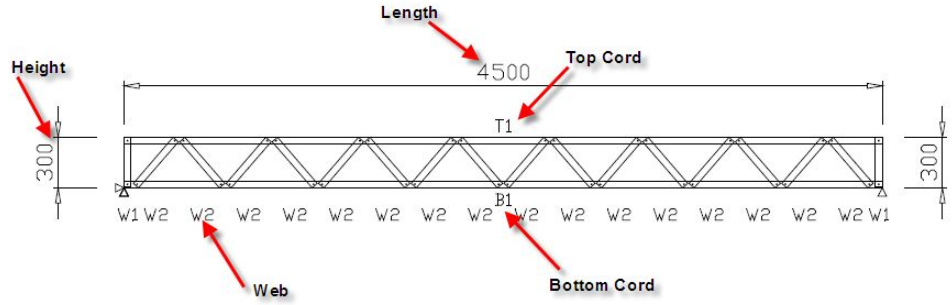
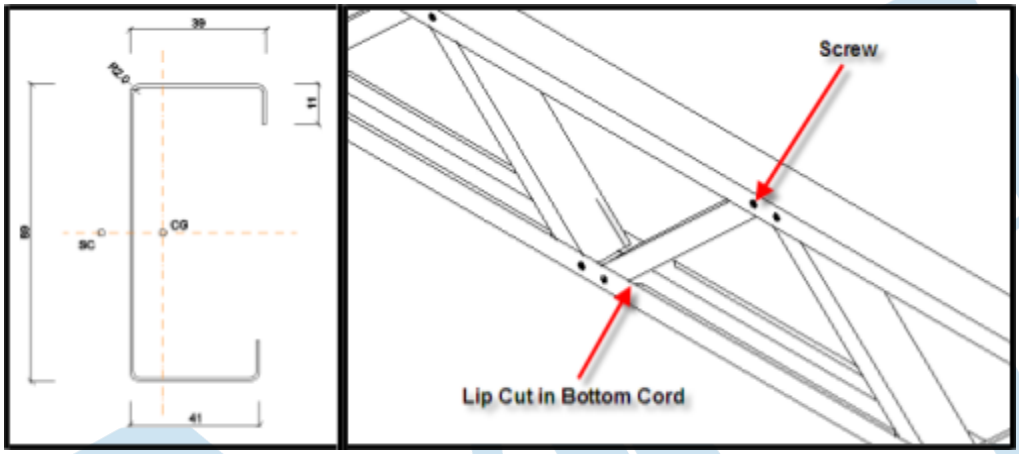



Fig 13 Floor Webbed Joist



## 2.4 MGI ROOF TRUSSES



Whatever the roof, it is generally designed to give you, and the inside of the property, the best protection possible from the weather. Roof design is quite a complex field and involves many calculations regarding the strength of the materials used. A roof has to withstand very high wind speeds and snow loading and each roof is designed to carry the covering, eg tiles, that is put on it.

Light-gauge steel trusses offer many advantages over traditional roof framing components. Because of steel's incredible strength, light-gauge trusses can be designed for larger clear spans. They can eliminate intermediate bearing walls and create large open spaces. Steel trusses not only span farther, they permit wider on-center spacing that results in additional labour and material savings.

The roof of light gauge steel frame structure is of two types:

1) Flat Roof System
2) Inclined Roof System

**1) Flat Roof System:**

The flat roof of light gauge steel frame structure is made up of with Joists. The heavy duty cement board or metal sheet screwed to the joists on which Foam concrete pcc poured over and finally finishing will be done with the tiles.

**2) Inclined Roof system:**

A roof truss is a frame, typically made out of Light gauge steel members. The frame is composed of a series of connected triangles as that particular shape has great structural stability.

Roof trusses serve a pair of critical functions for a building. There are many different types of roof trusses. Which truss design to use depends on a number of factors and that decision is best left to a professional engineer.

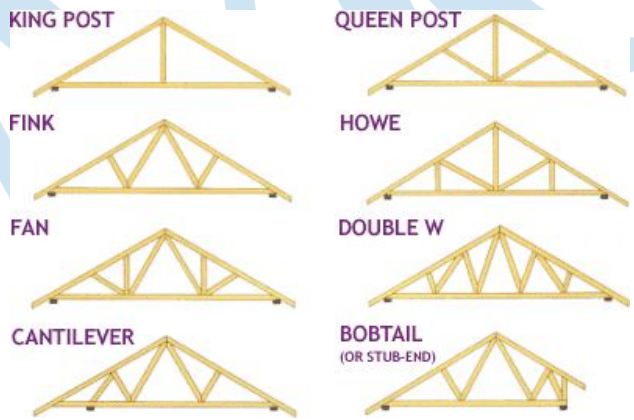
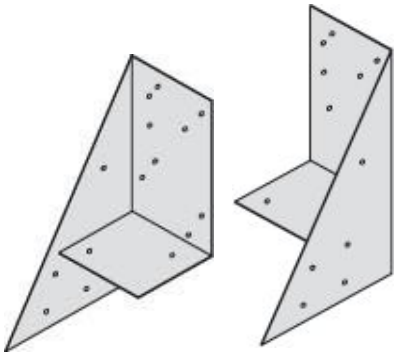


Fig 14. Various roof trusses

## 2.5 MGI Roof Connection Details

MGI INDIA

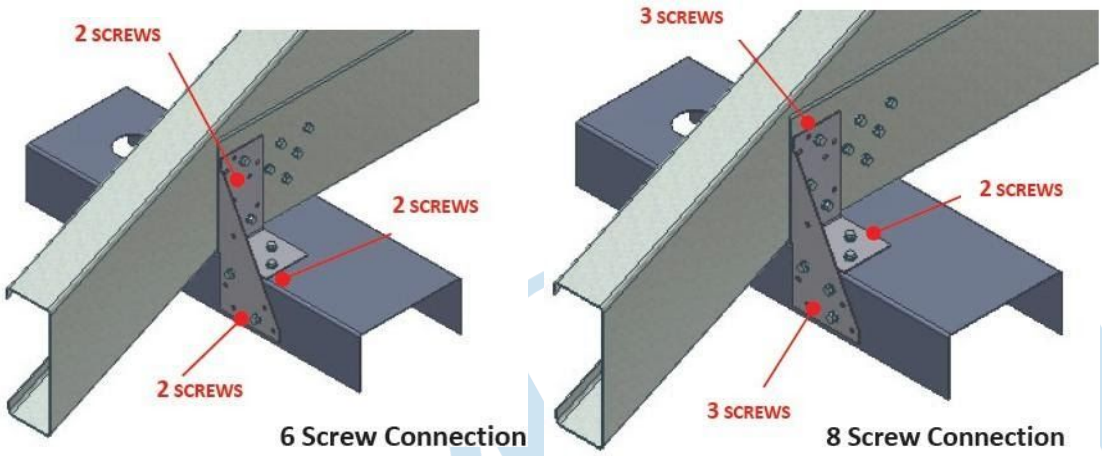
The roof structure is generally a steel truss system which can be designed for metal sheets or tiles. This is a roof truss system which typically consists of C89 and C150 sections as the chord and web members of the truss.
Triple grips (MGI-CM5) are used to connect the roof trusses with the wall frame. Steel roof sheeting or tile and would be screwed directly onto purlin.



**MGI-CM5**

Used to connect the floor Joist s and roof trusses to the wall

**Connection Details of Triple Grips**




S.D.S. Phil Modi Truss Type BSD # 3PT of length 19mm are used to connect the all light gauge steel members like studs, joists, truss members.

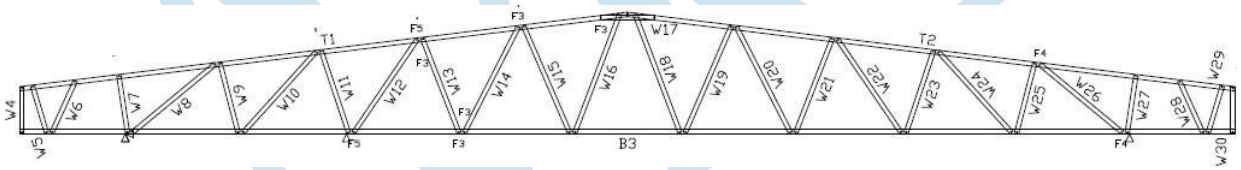


Fig 15. Roof Connection Detail

## 3.1 Wall Assembly

1. All the pre-cut, pre-marked, pre-punched members arrive at site in bundles.
2. Open the bundles marked with the same wall number and align the steel members as per the wall assembly drawing.
3. Join the members using Screws at pre-punched hole locations.

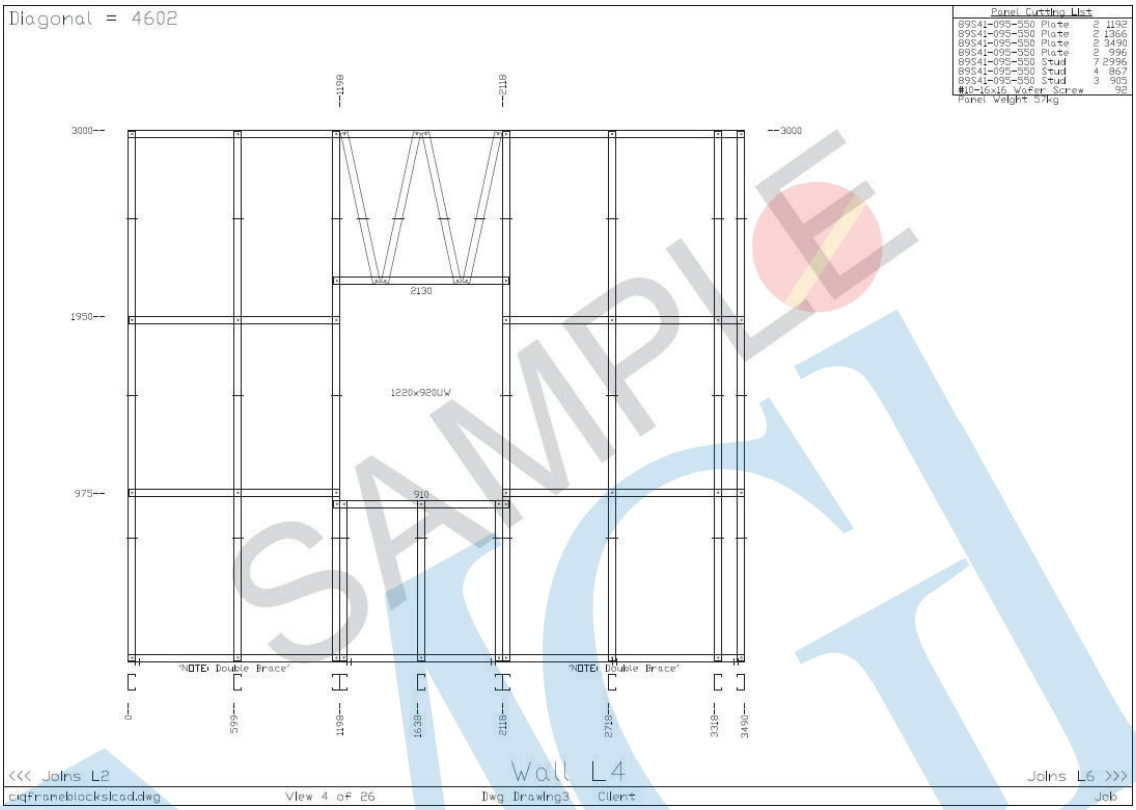



Fig 16. Wall Assembly drawing sample

SAMPLE

## 3.2 Joist Assembly



1 All the pre-cut, pre-marked, pre-punched members arrive at site in bundles.

2 Open the bundles marked with the same Joist number and align the steel members as per the Joist assembly drawing.

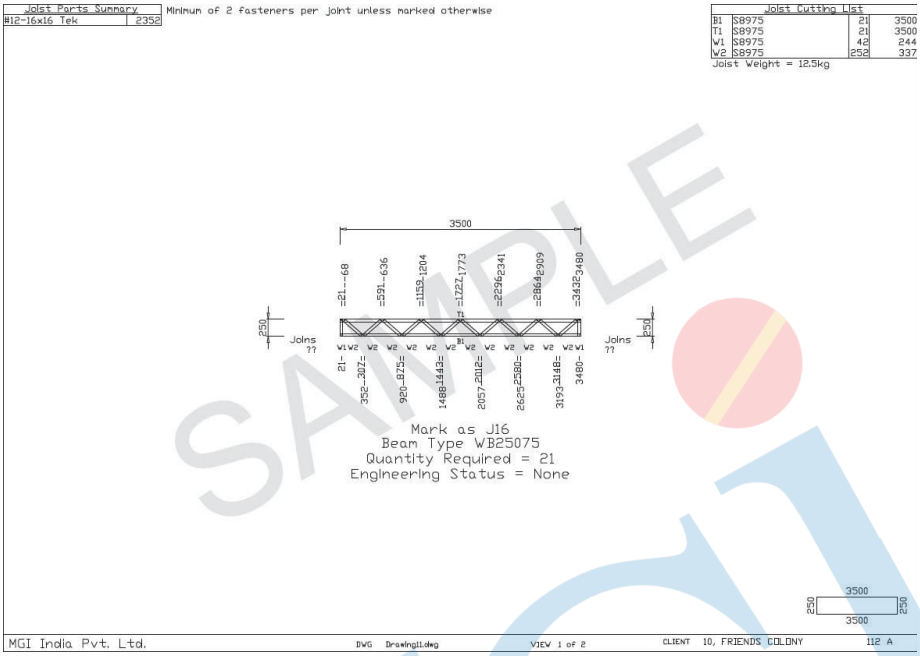



Fig 17. Typical Joist Fabrication detail

3 Join the members using Screws at pre-punched hole locations.

Fig 18. Typical Joist Assembly

SAMPLE

## 3.3 Truss Assembly



1 All the pre-cut, pre-marked, pre-punched members arrive at site in bundles.

2 Open the bundles marked with the same Truss number and align the steel members as per the Truss assembly drawing.

3 Join the members using Screws at pre-punched hole locations only.

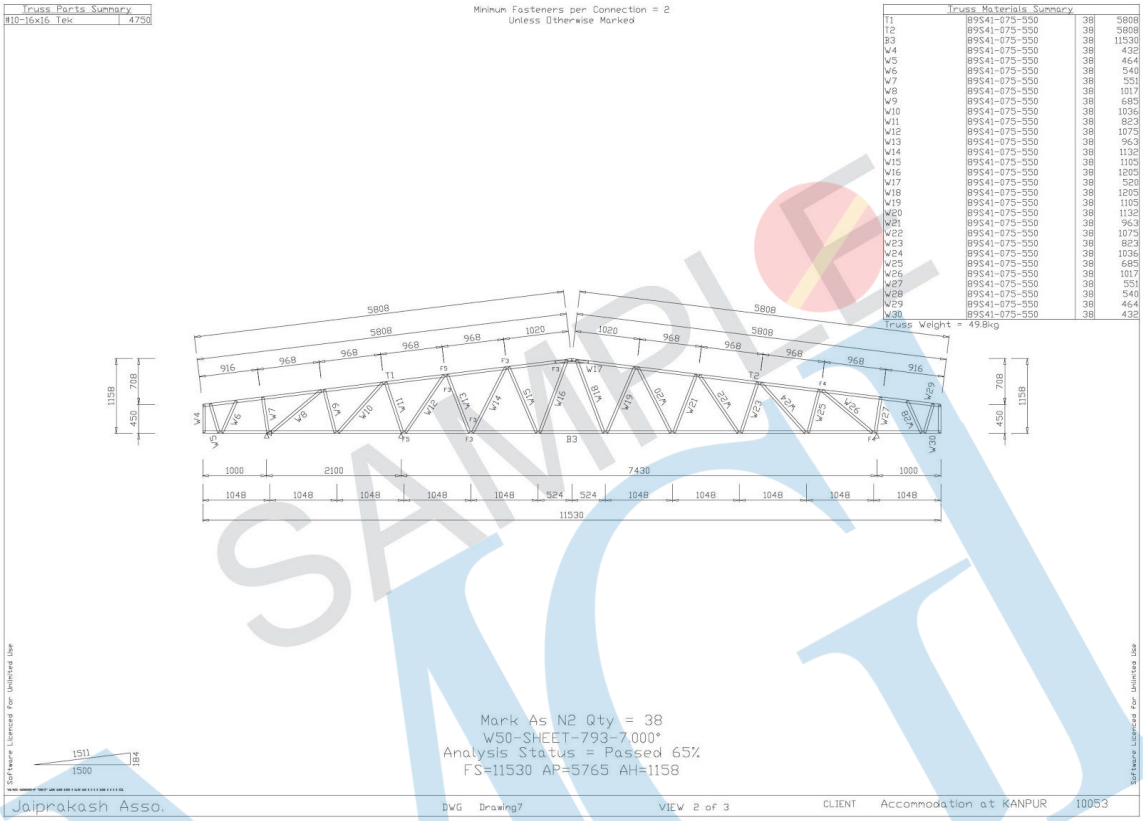



Fig 19. Typical Truss Fabrication detail

# Chapter 4 - General Construction Procedure



## 4.1. Foundation Construction

1. The foundation layout (sample shown in fig. below) is marked on the floor using straight lines.
2. After excavation along the marked lines, the foundation, Plinth Beams and Floor slab is cast as per the detail drawings.
3. Ensure ZERO level for the plinth beams or RCC beam.

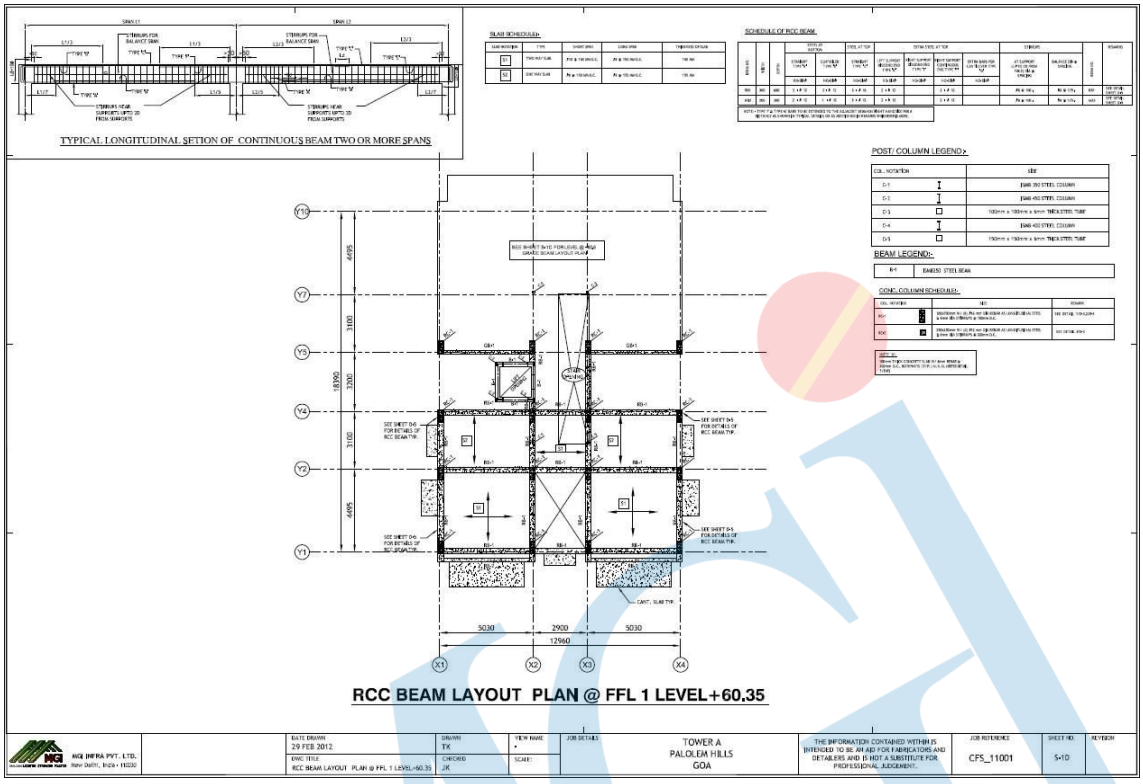



Fig 20. Typical beam layout

## 4.2. Ground Floor Wall Erection



1 The wall layout (sample shown in fig. below) is marked on the floor using straight lines.

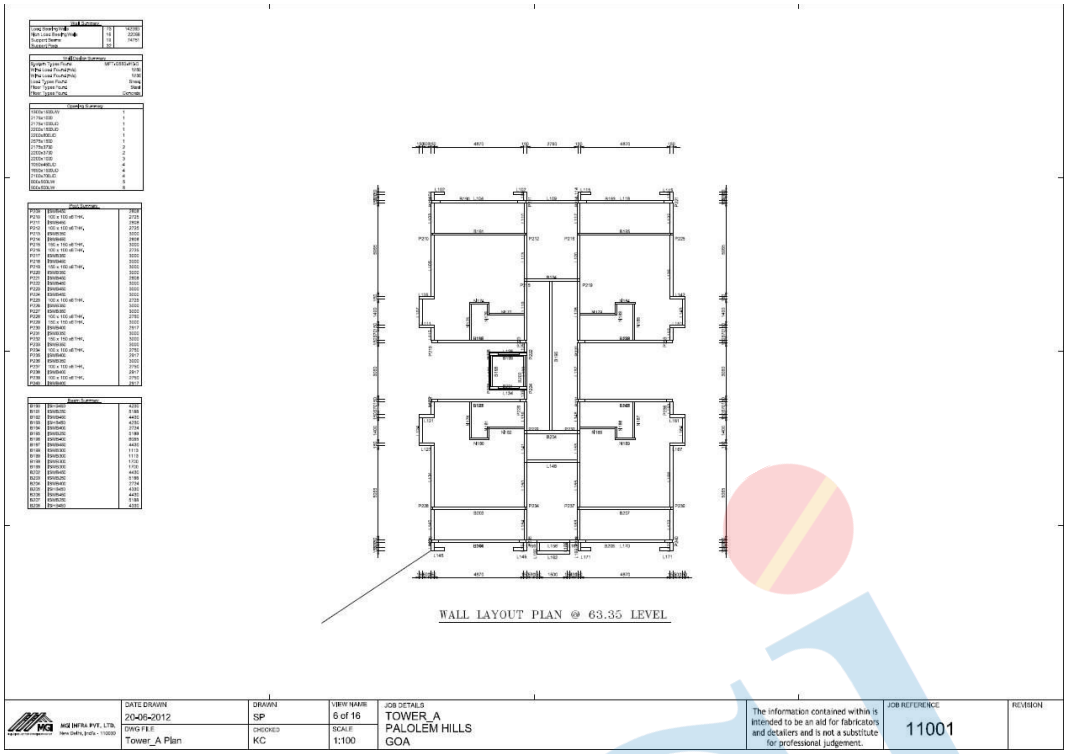



Fig 21. Typical Wall layout diagram

2 Ensure the concrete slab or foundation has been cast to correct dimensions. Mark out the wall layout and wall plan on the concrete slab as shown below.

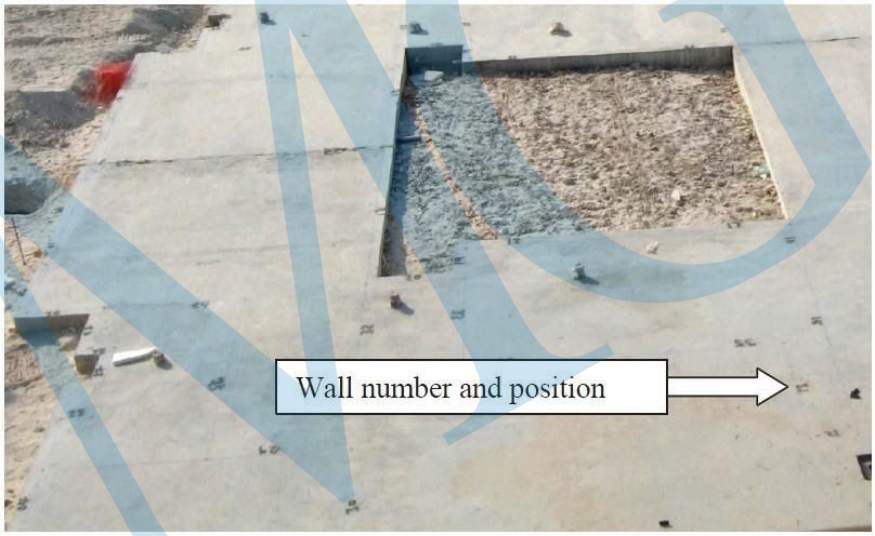



Fig 22. Wall Numbering on Foundation

3 Squareness is checked by accurately measuring diagonals in large areas of the building first, then individual rooms.

4 Add Damp proof course (Neoprene rubber) to the bottom of the frame i.e., bottom track as shown in fig.


Fig 23. Neoprene Rubber Sheet at bottom of Wall Frame

5 Internal wall frames are stacked inside the boundaries and external walls around the foundations, with the first frame on top.

6 External frames are placed around the perimeter with their bottom plates adjacent to their final positions.

7 Starting at any convenient external corner stand and plumb a wall frame panel in its exact position.

8 Stand and plumb the adjoining frame to make a self-supporting corner.

9 Clamp the frames together and check again that both frames are in their exact locations and standing vertical.

10 Connect the frames using screws. Refer figure below for connection of perpendicular walls.

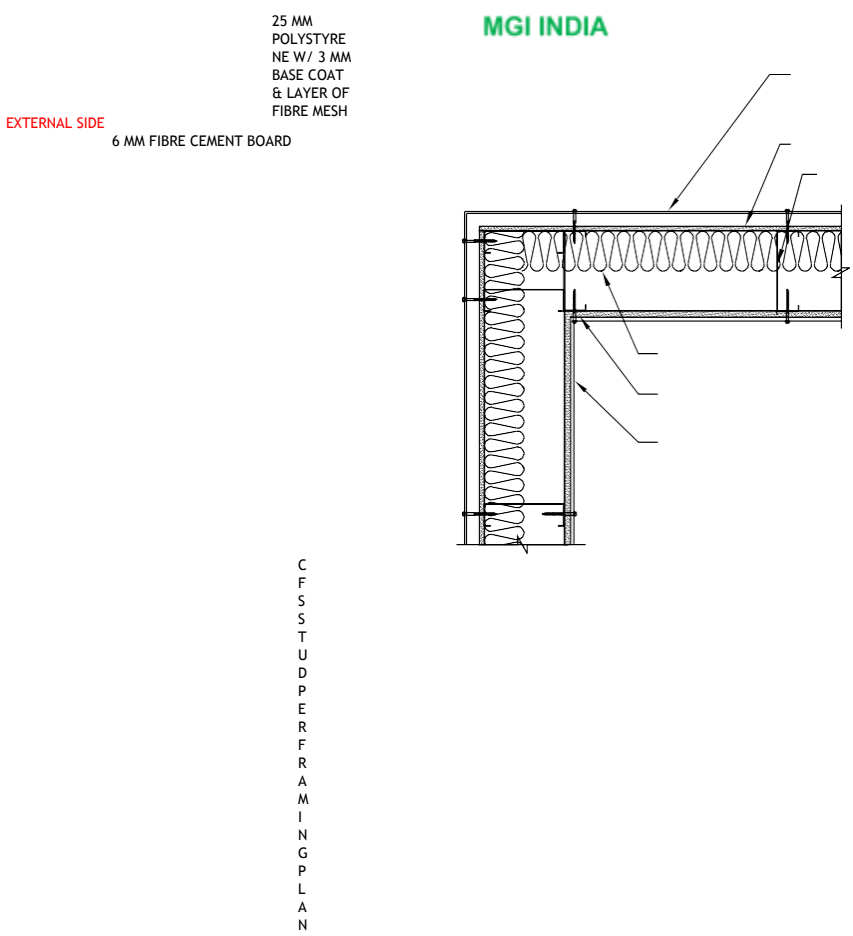



Fig 24. Connection details at perpendicular Wall

11 Proceed with the erection of the frames around the building, standing internal and external frames as they occur.

12 Provide adequate temporary bracing during wall frame erection. The line of top plates in a run of walling should be checked with a string.

13 Use MGI Hold Downs along with Mechanical Expansion bolts to tie down the Load Bearing walls with the foundation (as per figure below)

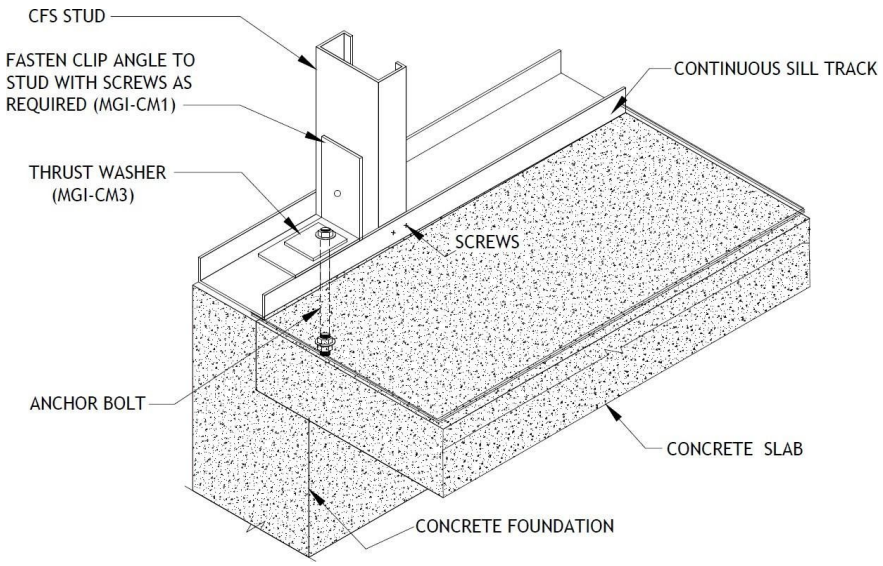



Fig 25. Hold down connection detail

## 4.3. Ground Floor Wall Section



1. Stack the Joists in their respective rooms as per the Joist layout drawing (sample shown in fig. below).

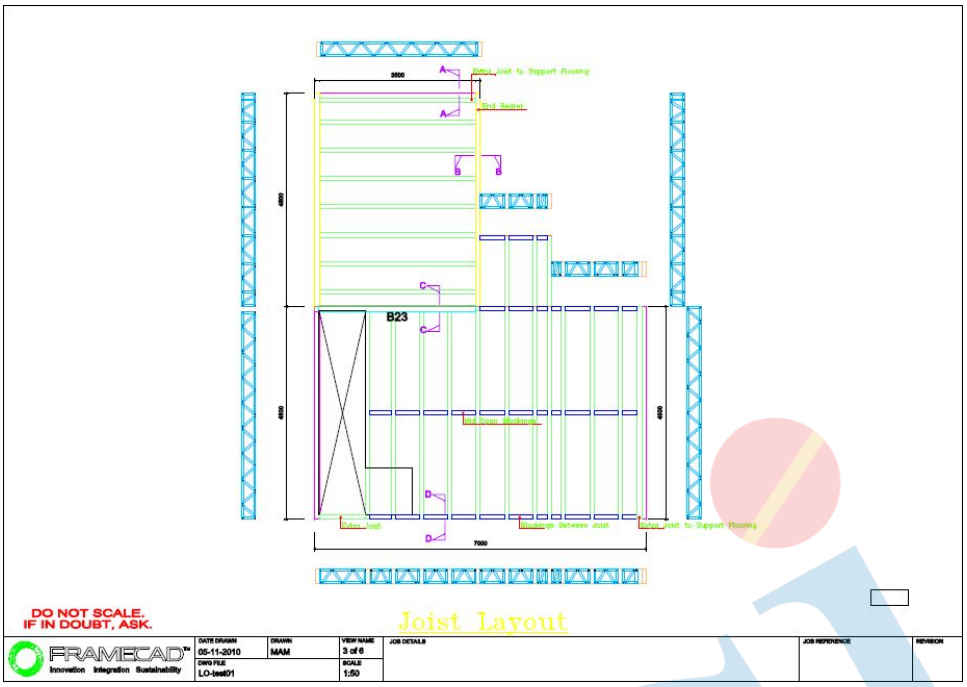



Fig 25. Typical Joist Layout

2. Place the Joists on top of the walls as per the Joist Layout Plan.
3. Ensure that the joists are 'Inline' with the studs of the wall below.

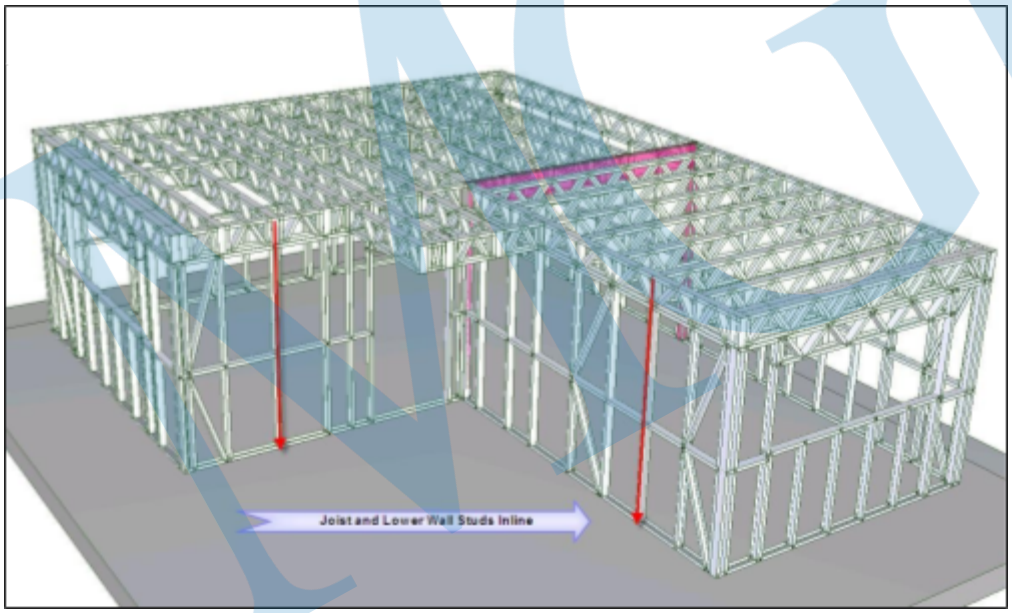



Fig 26. Typical Inline studs assembly

4. Connect the Joists to the Wall below using MGI Triple Grips (as per fig. below).

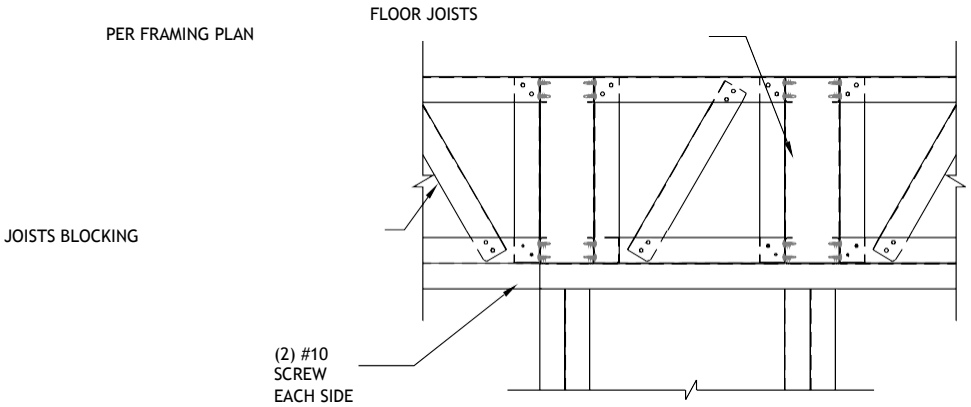
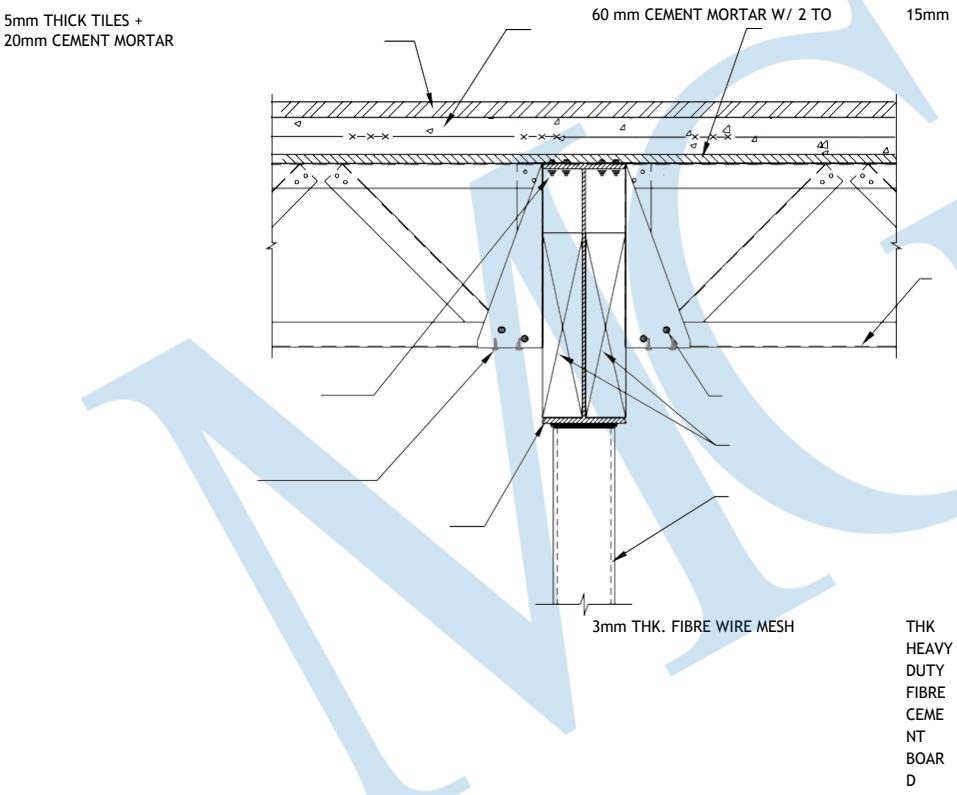



Fig 27. Joist Wall Connection Detail

5. Place the Joist Blocking between the Joists and connect them to the Joists using Screws.
6. If Joists are to be supported on Hot Rolled steel sections, use MGI Z-Brackets as shown in the fig. below.



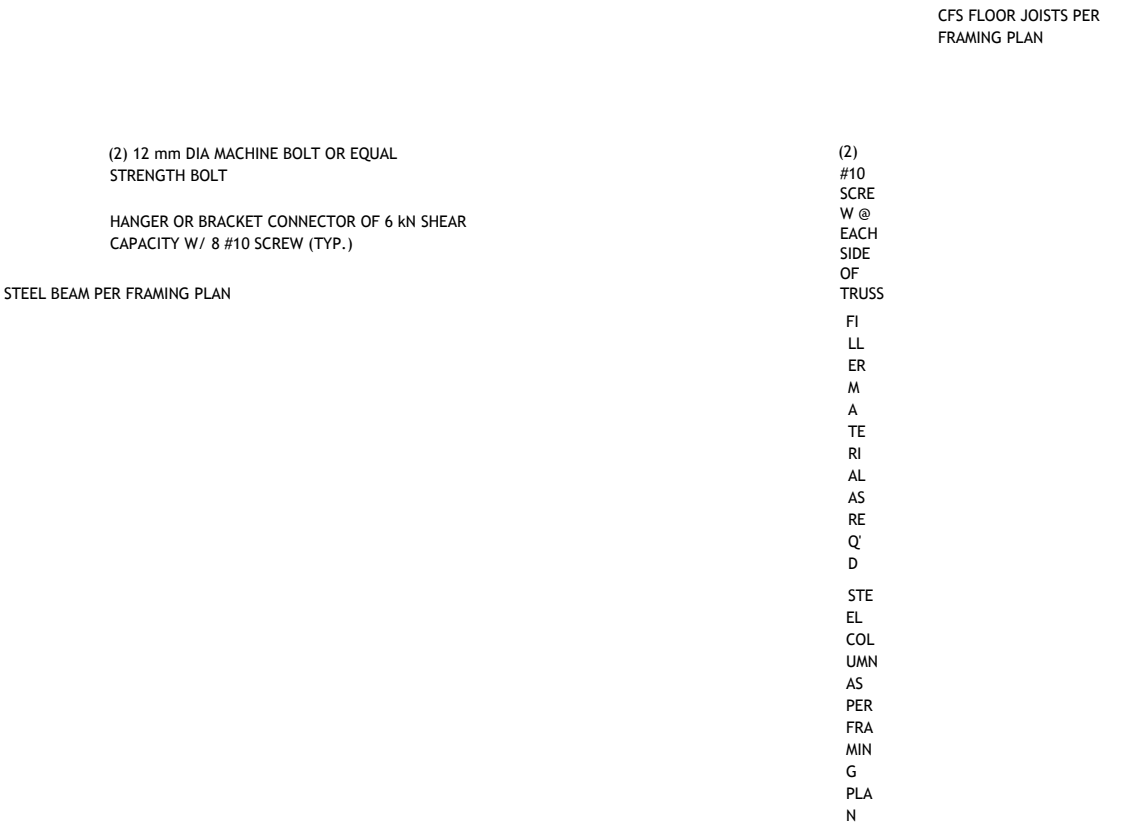



Fig 28. Joist - HR beam Connection Detail

7. If Joists are to be connected to Concrete Walls/Beams, use Hot Rolled Angle sections as shown below.



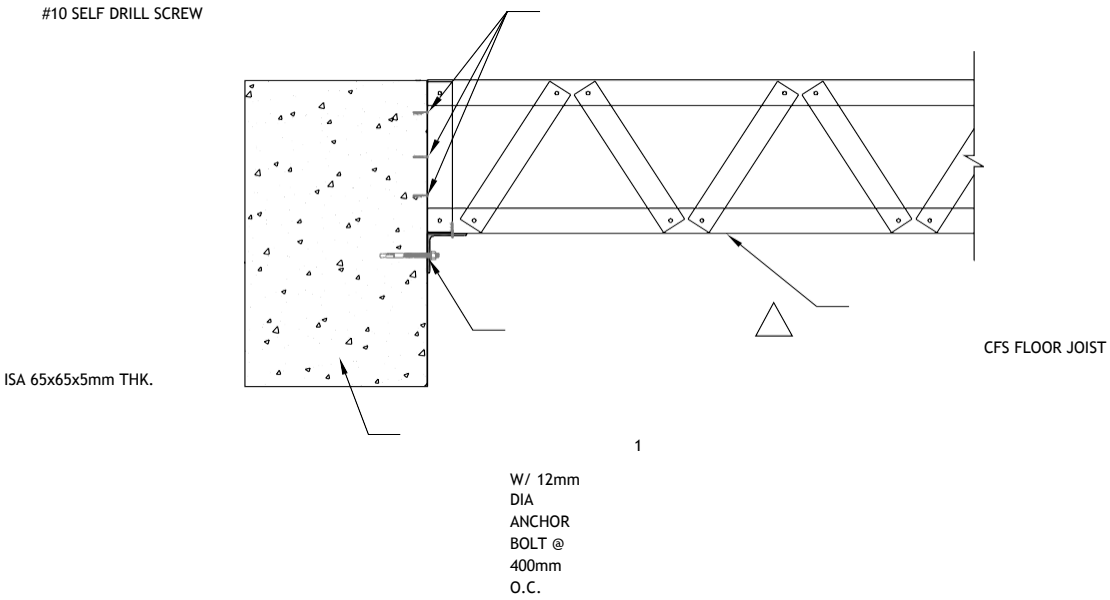



Fig 28. Joist – Concrete Wall Connection Detail

## 4.4. First Floor Wall Erection



1. Follow same procedure as for the Ground Floor Wall Erection.

2. Ensure that the Walls are laid out exactly as per the Floor Wall Layout (sample shown in fig. below)

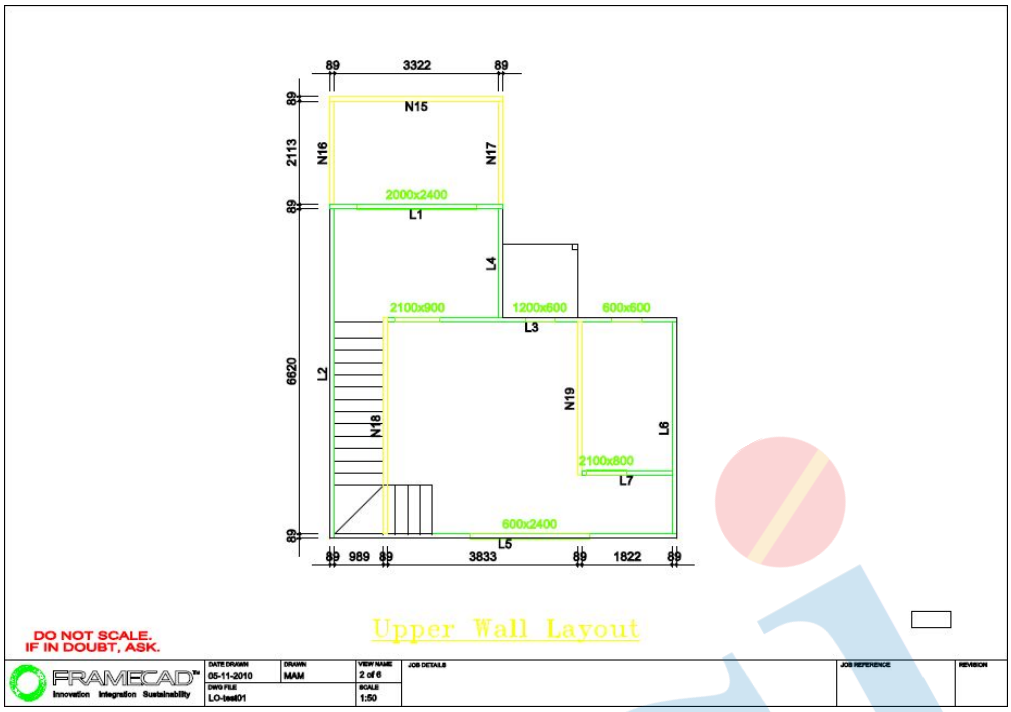



Fig 29. Typical Upper Wall Layout

3. Ensure that Upper Floor Load Bearing Walls align with the Lower Floor Load Bearing Walls.

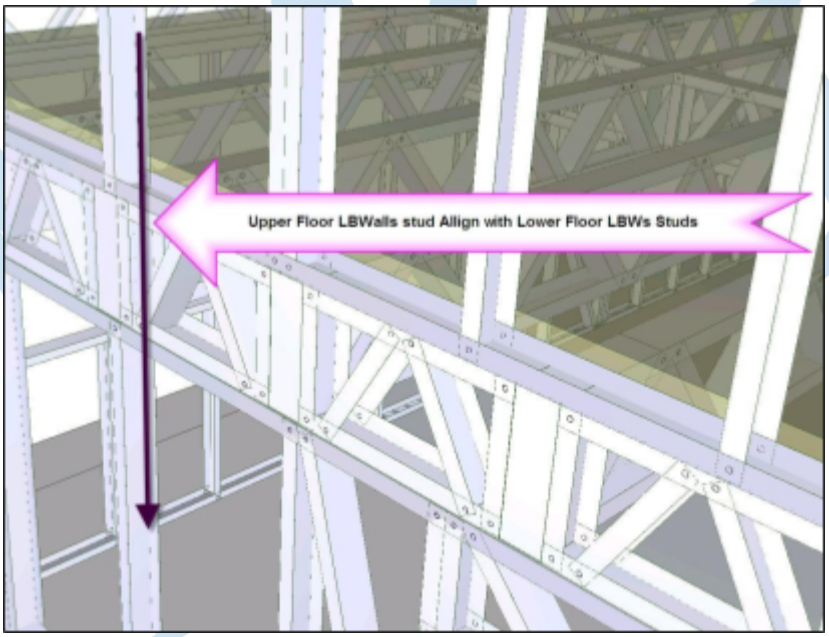


Fig 28. Wall inline detail



Connect the Upper Load Bearing Wall Studs to Lower Load Bearing Wall Studs using MGI Hold Downs and Threaded rod (as shown in fig. below)

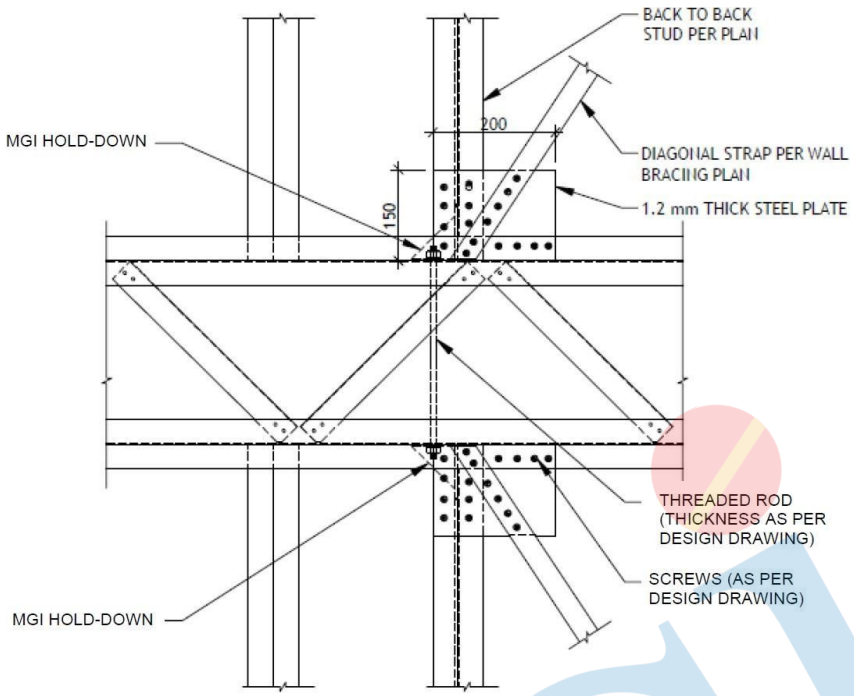



Fig 29. Floor Connection Detail

## 4.5. Roof Truss Erection



1. Lay out the trusses as per the Truss Layout Plan (sample shown in fig. below)

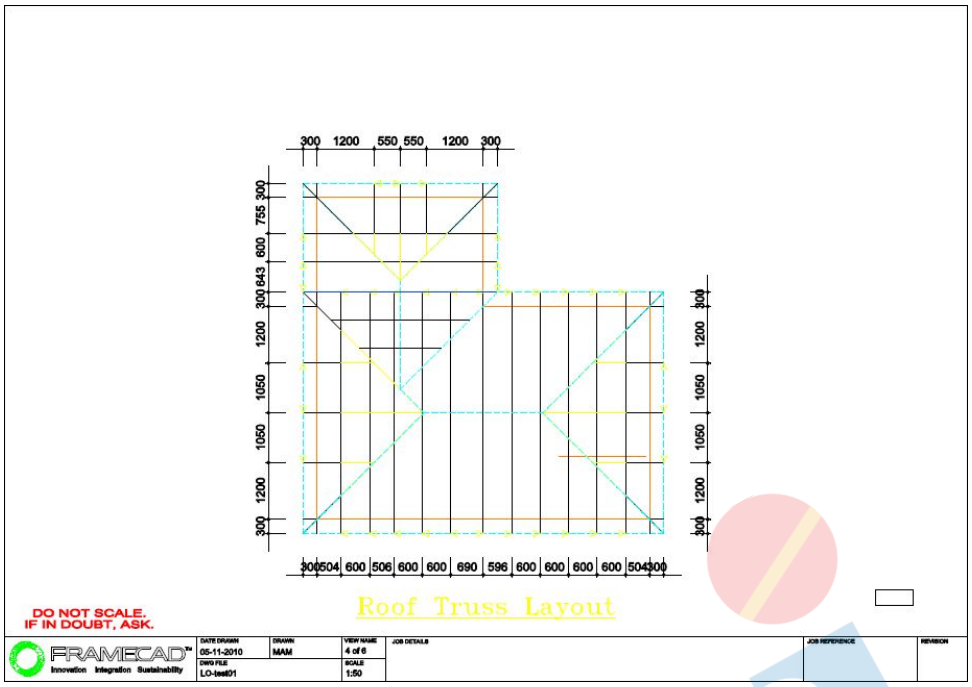



Fig 30. Typical Roof Truss Layout

2. Connect the Trusses to the Wall below using MGI Triple Grips (as per fig. below).

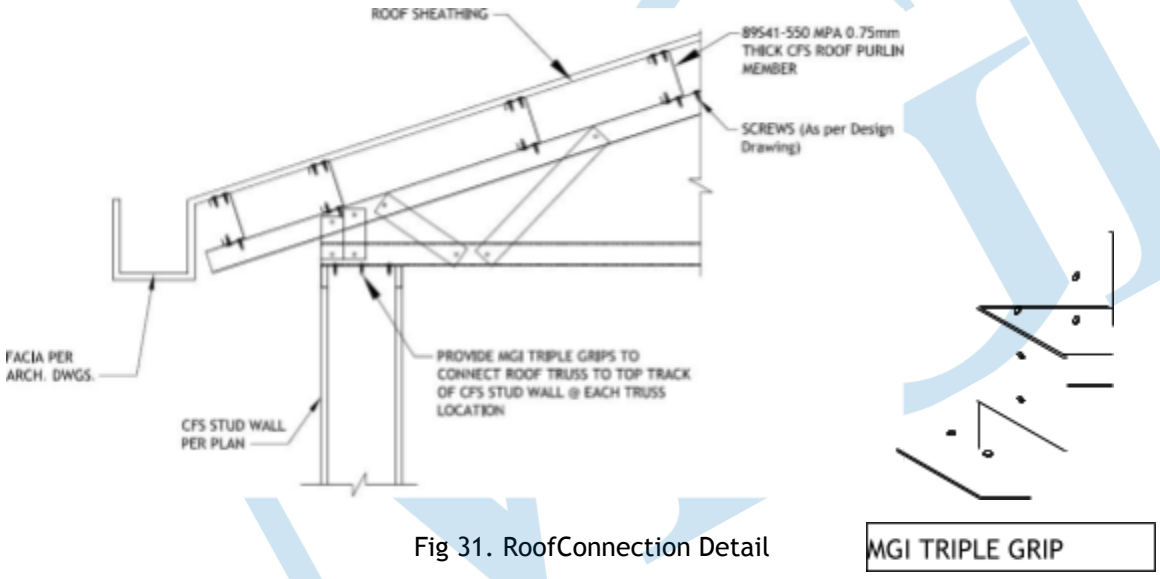



Fig 31. RoofConnection Detail

# Chapter 5 - Service Installation

## 5.1. Electrical and Plumbing Conduits

1. Electrical & Plumbing conduits are run through the service holes already provided in the CFS members (refer figures below).

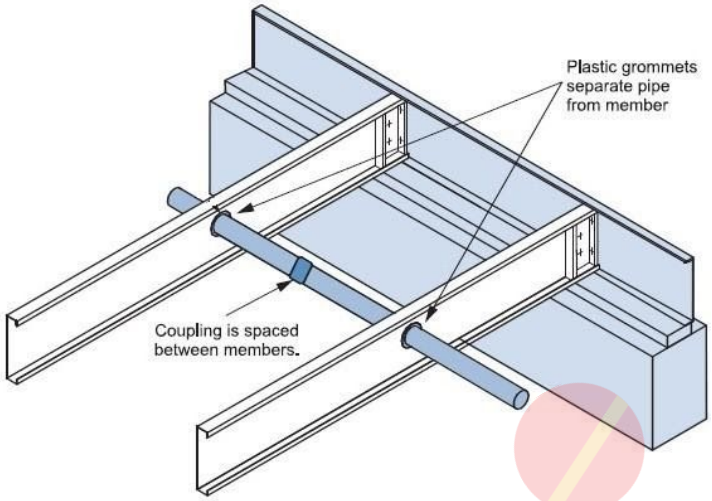



Fig 32. Grommet fixing Detail

2. Where the pre-punched holes are not sufficient, custom holes can be cut using a hole cutter and reinforced using Bridging Channels (refer figure below). It must be ensured that the hole be located near the middle of the web and is not greater than 50mm diameter (holes greater than 50mm diameter should be engineered)

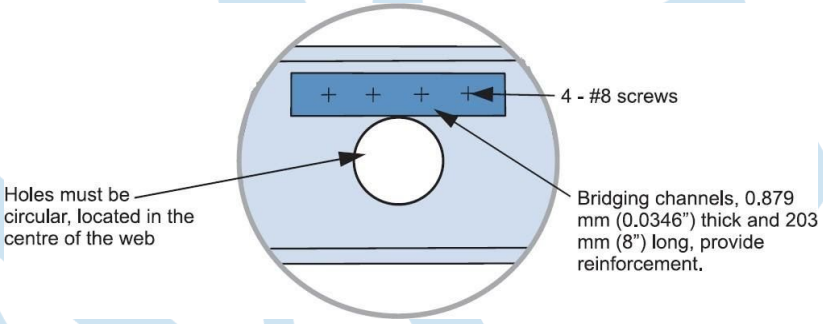



Fig 33. Hole Detail

3. The wire must be protected from contact with the edges of holes by use of a grommet. A Standoff should be placed within 305 mm (12 in) of the electrical box and at 1500 mm (60 in) centre to centre along the stud. (See Figures below)

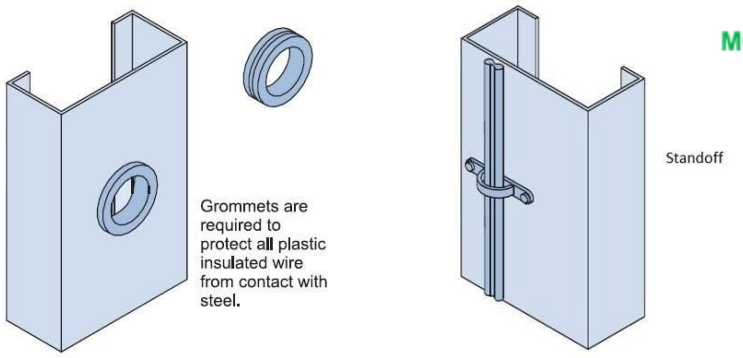
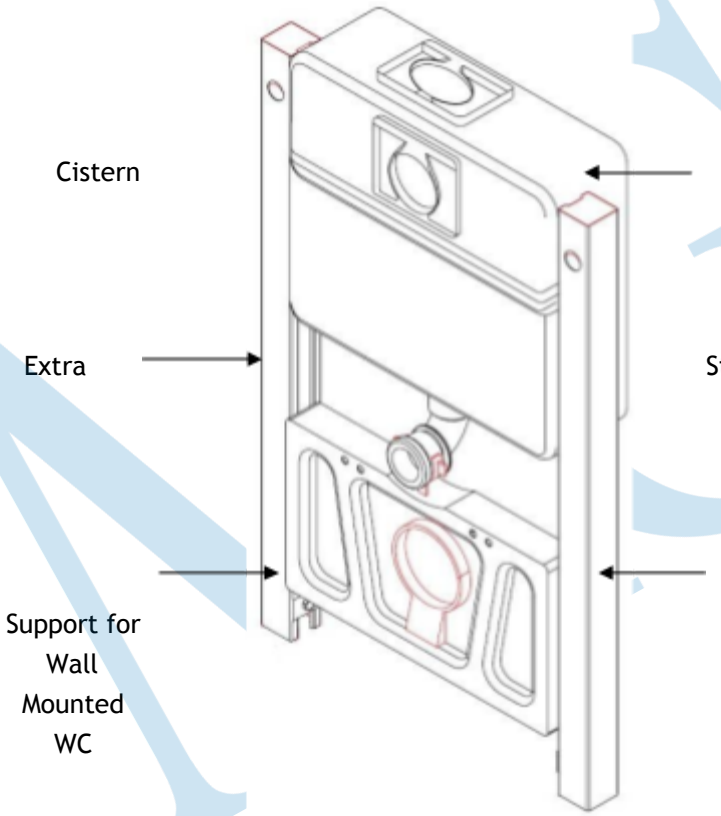



Fig 34. Grommet Detail

4. Electrical boxes must be fastened to the web of studs. It is important that the box have adequate support and be attached to a stud or metal backing.
5. At locations where items (like Split AC, Tube lights, Ceiling Fans, Water Closets, etc.) are to be hung on wall/wall mounted additional metal studs or Steel Plates (Backing) are provided.
6. For fixing water closets with concealed cisterns, additional studs are provided to fix the cistern assembly inside the wall cavity. (Refer figure below)




E
x

Fig 35. Water Closet Connection Detail -1

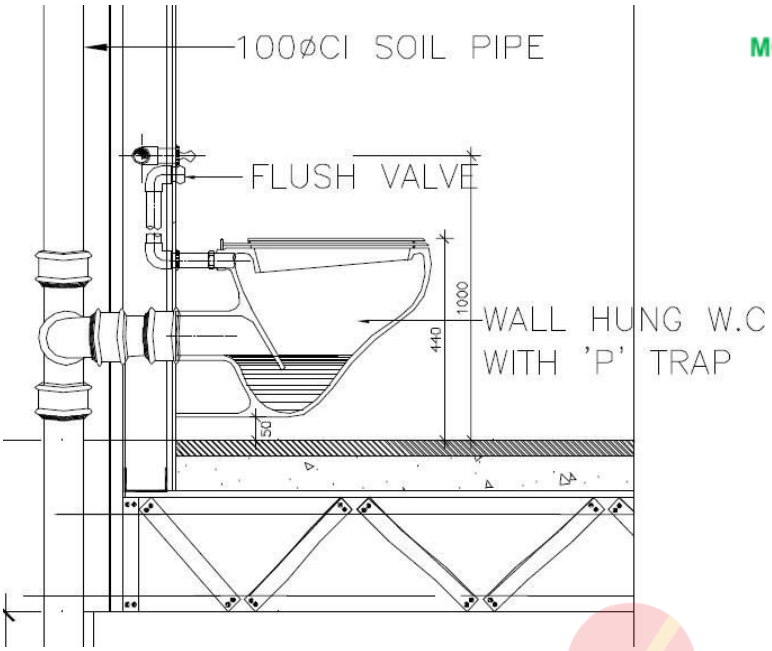
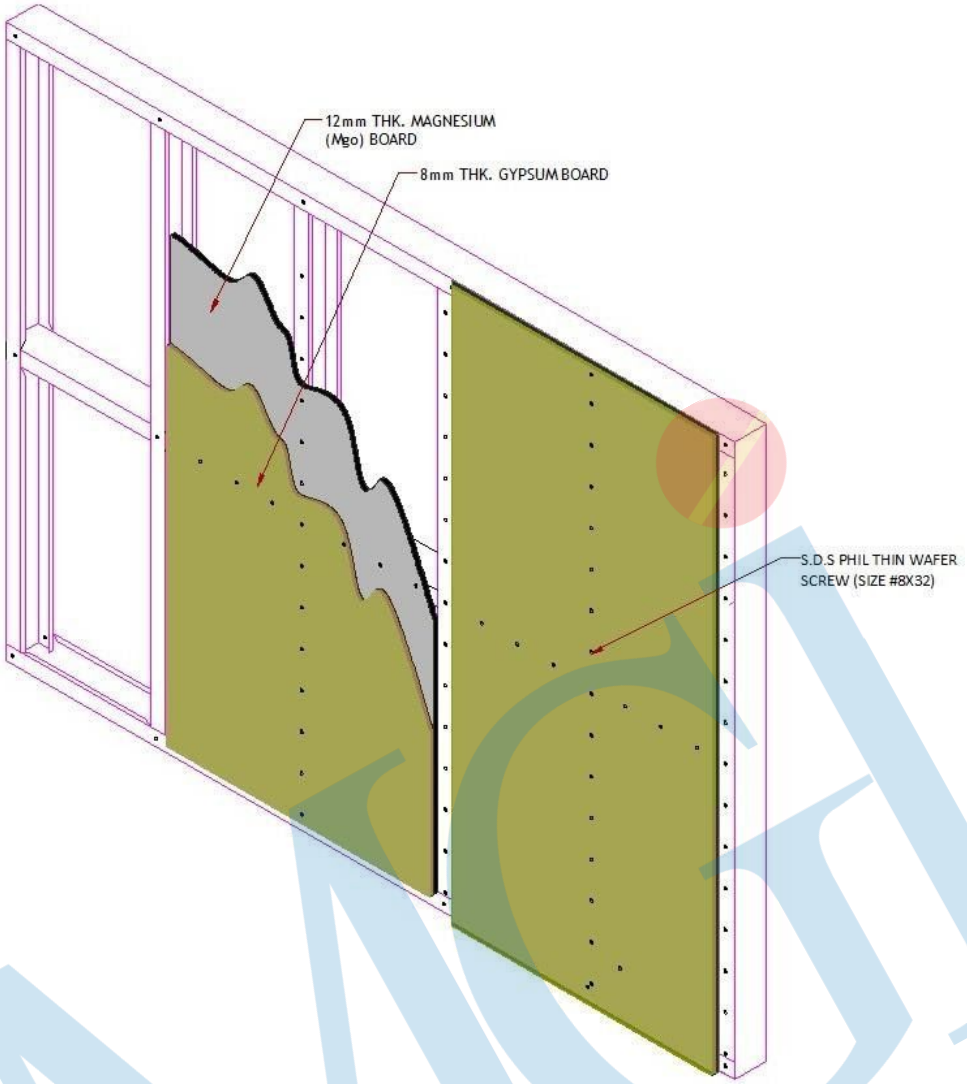



Fig 35. Water Closet Connection Detail -2

MGI

## 6.1 Internal Wall & Ceiling Cladding – Mgo Board + Gypsum Board

1. Gypsum board can be fixed either vertically or horizontally (refer figures below).



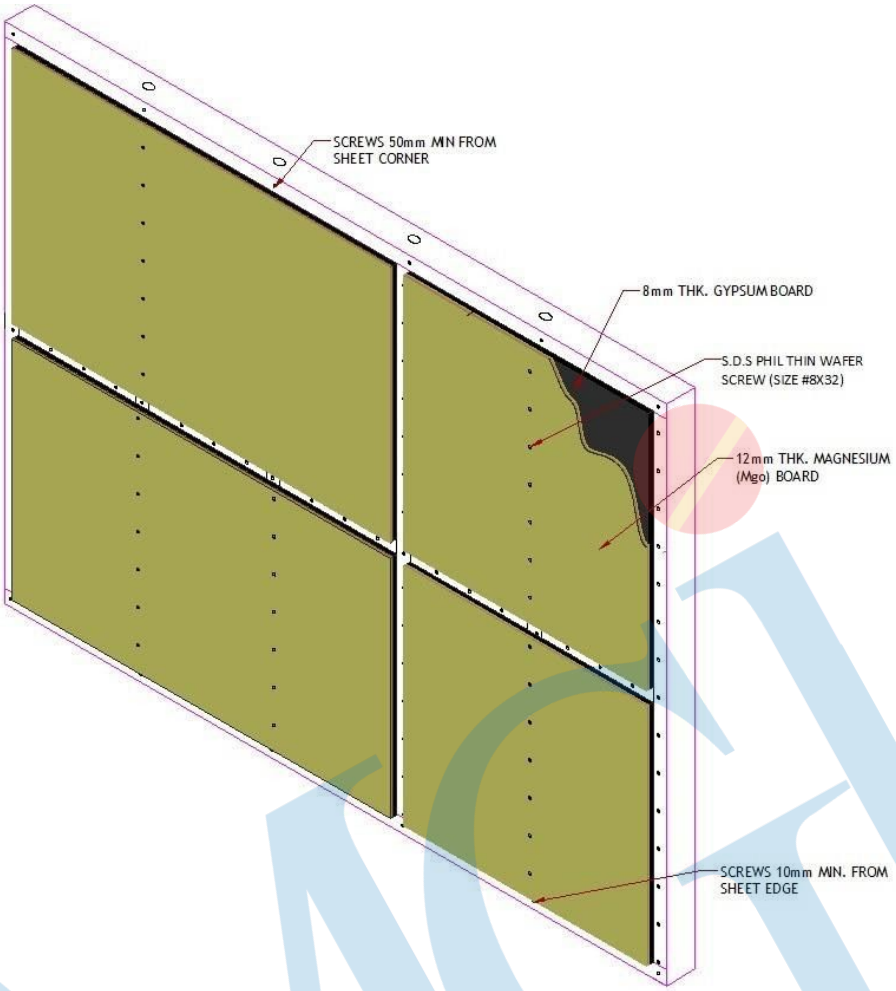



Fig 38. Wall Cladding Detail

2. Refer the following detail to ensure a flush outside surface.

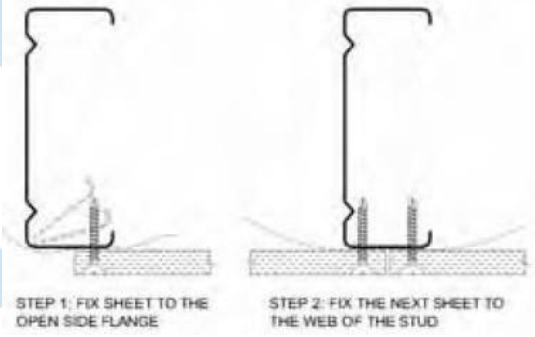



Fig 39. Wall Cladding conection Detail

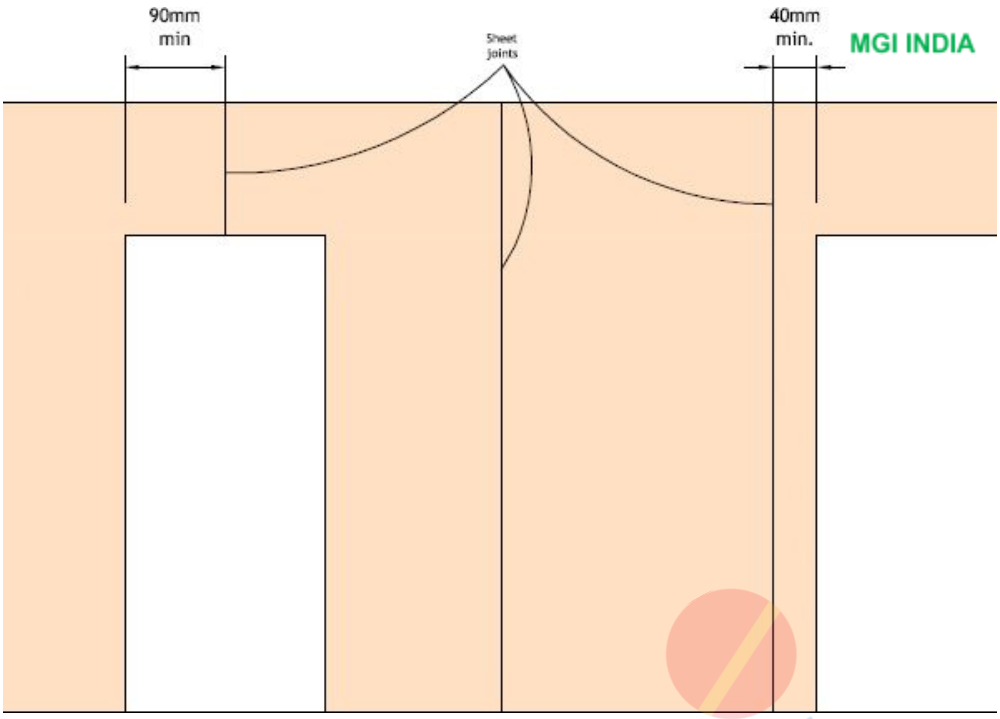



Fig 40. Joint Layout for Vertical or horizontal sheeting

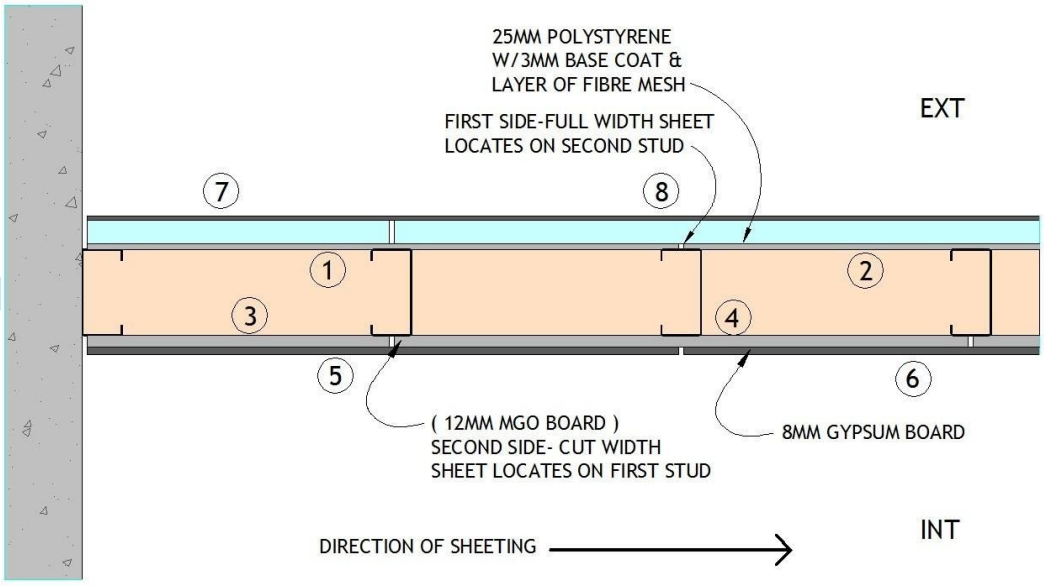



Fig 41. Sheeting direction and access joint location for vertical sheeting

3. Ensure that the following detail is followed for boarding at the corners & junctions.

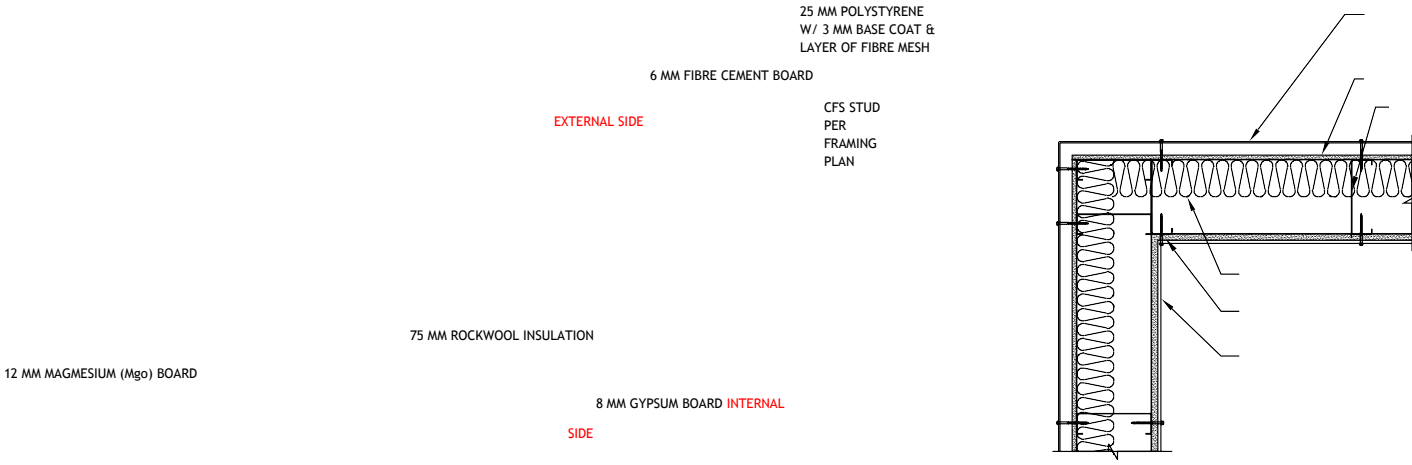



Fig 42. Wall Detail at Corner

4. In Bath and WC areas, tiles are fixed on walls using a special polymer and cement based ready mix.

## 6.2 External Cladding – EIFS

1. Fix the Fibre Cement board using self drilling screws in the same manner as gypsum board.
2. Fix the Polystyrene sheet on top of the cement board using Ready Mix adhesive (supplied by Wacker)
3. Fix the Fibre Mesh sheet on top of the Polystyrene.
4. Use the polymer based Base Coat (Supplied by Wacker) to give a plaster finish to the exteriors. Refer to the figure below for a pictorial representation of EIFS system.

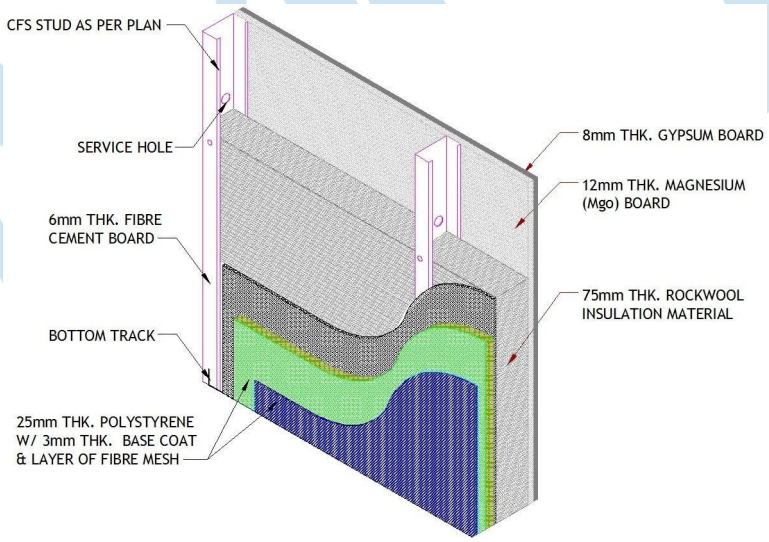


Fig 43. EIFS Connection Detail

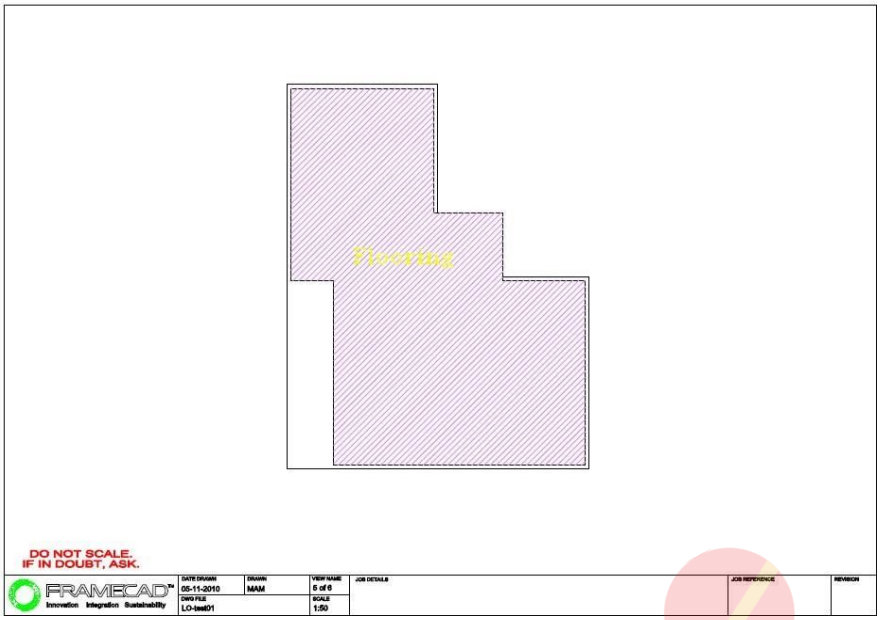
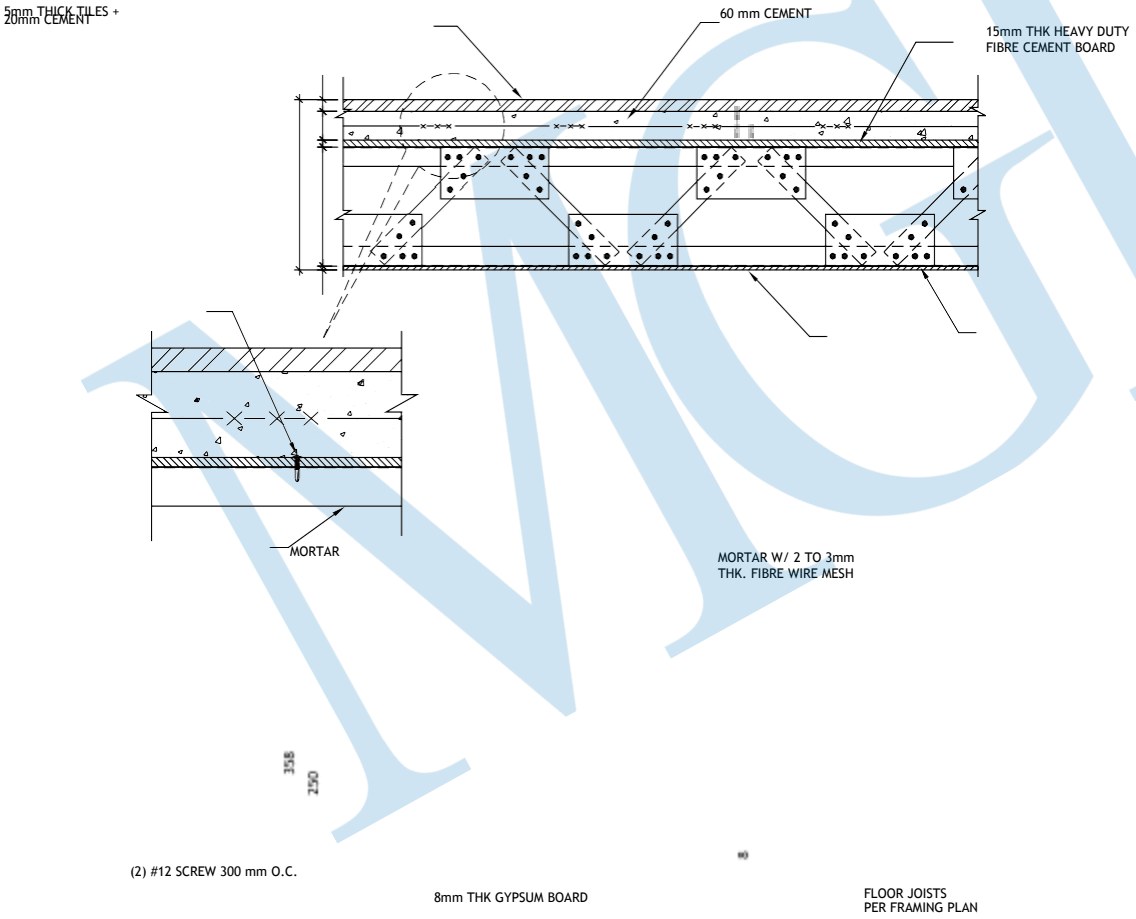



Fig 43. Typical Floor layout

1. Fix the Metal Decking sheet to the Joists using Self Drilling Screws as shown in figure below.



TOP TRACK

Fig 44. Typical Floor Section Detail

2. Fill the trapezoidal sections of the metal decking with foam concrete/PCC up to a thickness of 60mm above the metal deck level.
3. Fix the tiles on top of the foam concrete/PCC layer using cement mortar.

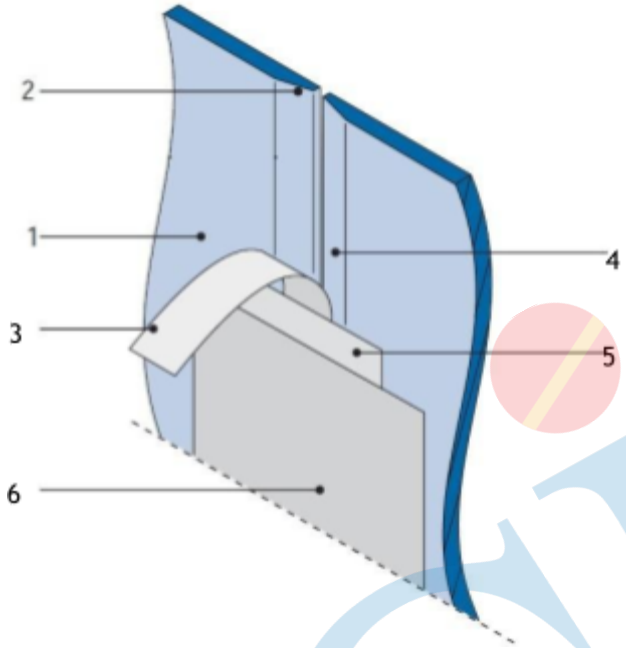
# Chapter 8 - Painting Procedure



## 8.1. External Painting

1. Single Coat of primer & Putty is applied over the base coat (Finished external wall surface).
2. Single Coat of Weatherproof Paint is applied over the primer.

## 8.2. Internal Painting




1. Gypsum Board
2. Edge of board (Chamfered Edge)
3. Fibre Tape (Self Adhesive)
4. Joint between boards
5. Two Coats of Primer
6. Single Coat of Acrylic Emulsion Paint

Fig 46. Typical Painting Detail

1. Verify the rough opening is square by accurately measuring and checking that the diagonals are equal.
2. Make sure that the window opening is clear from debris and obstructions.
3. Prepare door/window openings by fixing fibre cement board on the sill, jamb stud and head using self drilling screws (as shown in figure below).
   If Stone fixing is required at the Sill level, fix the Stone on the Window Sill using Ready Mix Adhesive (Supplied by Weber).

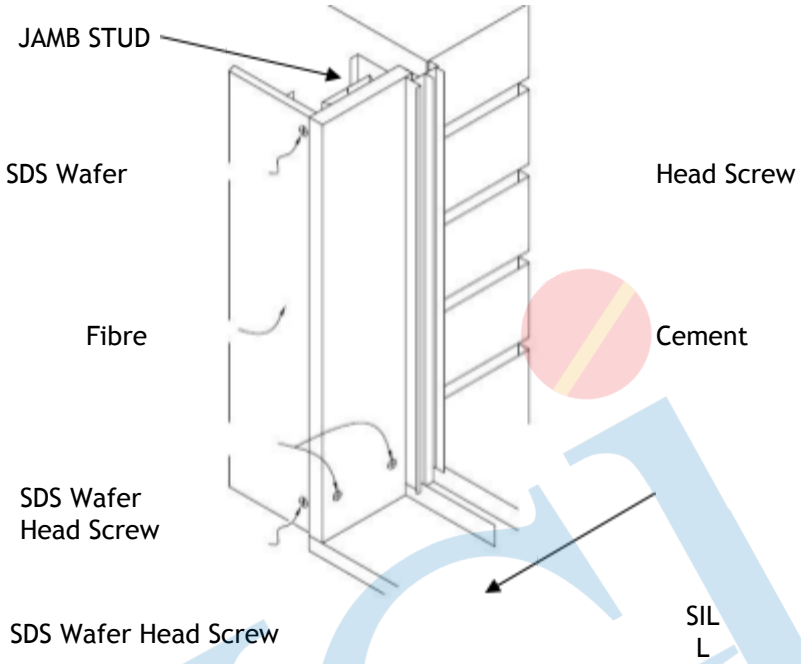



Fig 44. Typical door fixing Detail

4. The door & window frames may now be fastened through the jamb into the studs with “countersunk head” self-drilling screws.
5. Install the door/window shutter.
6. Apply sealant between the door/window frame and the rough opening.

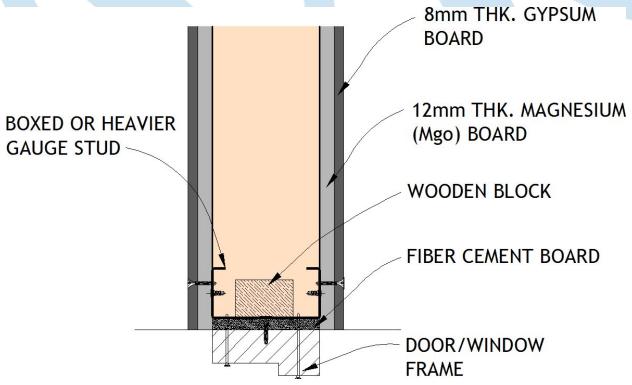


Fig 45. Door Head Section Detail

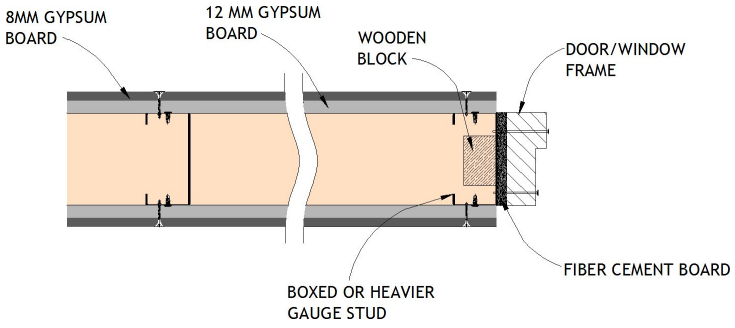



Fig 46. Door Jamb Section Detail

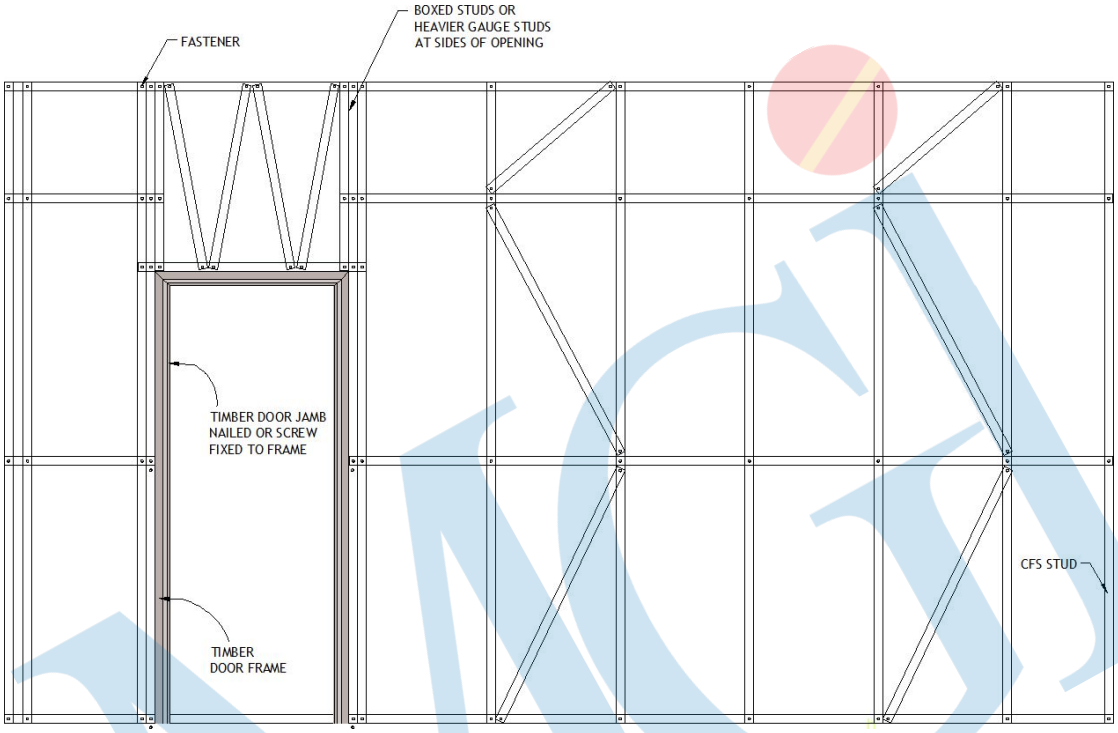



Fig 47. Timber Door Frame Detail

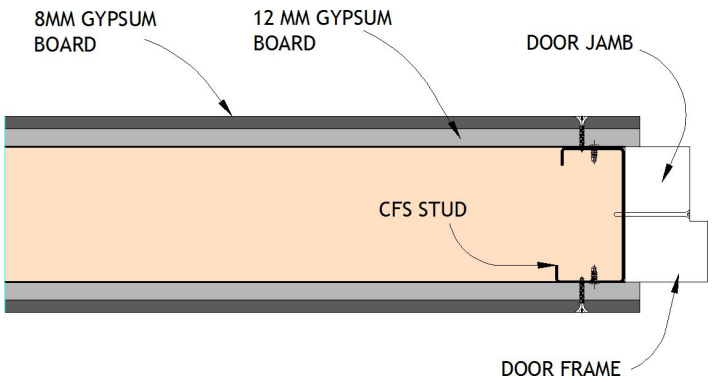



Fig 48.Typical Aluminium extruded Jamb Profile detail

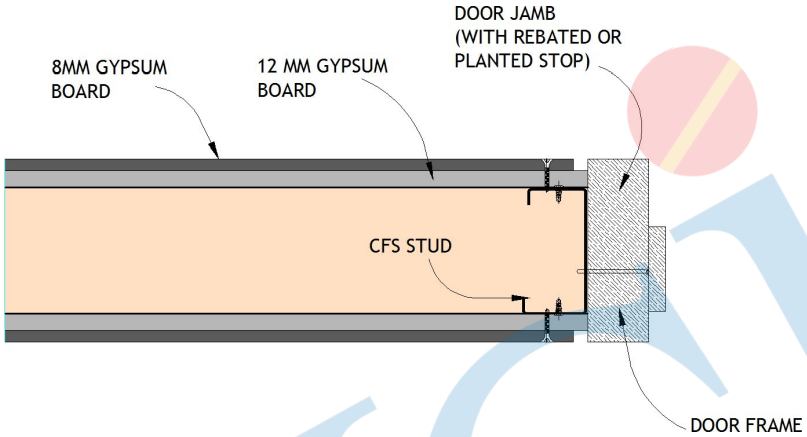



Fig 49.Shadowline door jamb detail

1) Some accessories to connect to the CFS wall as shown below

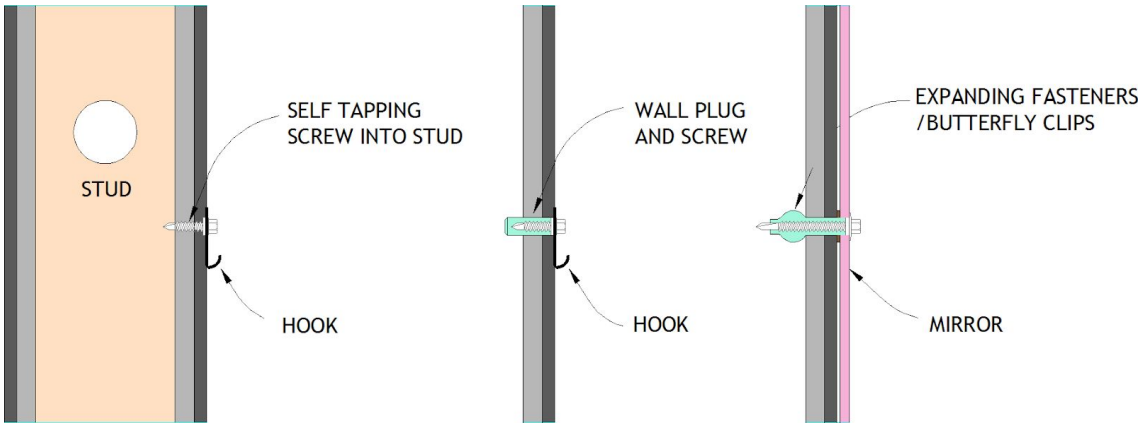



Fig 50.Hook Connection Detail

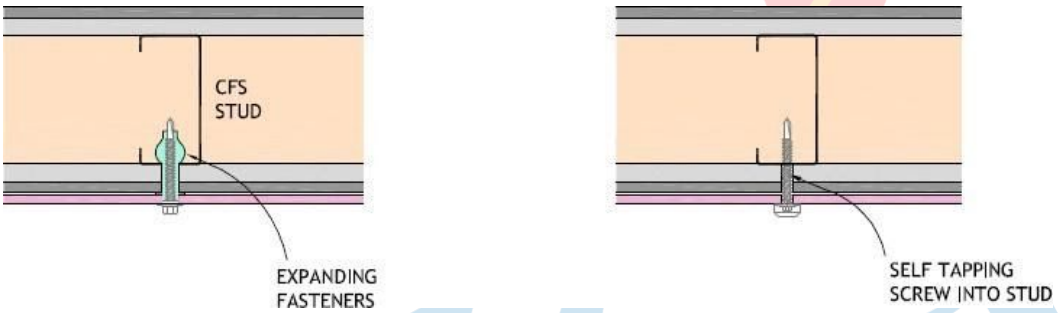
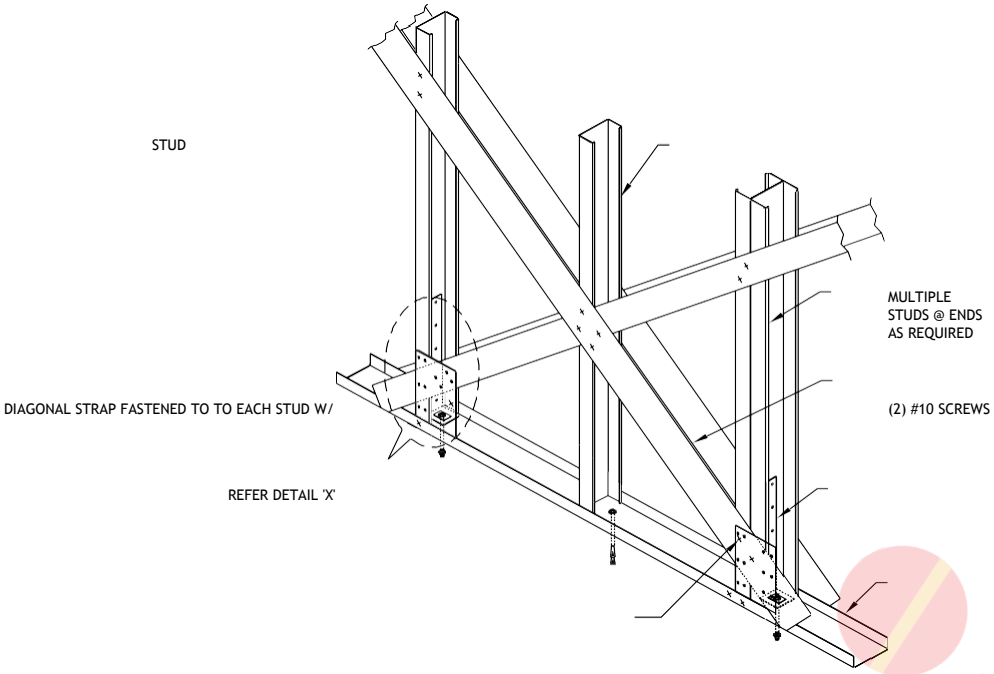


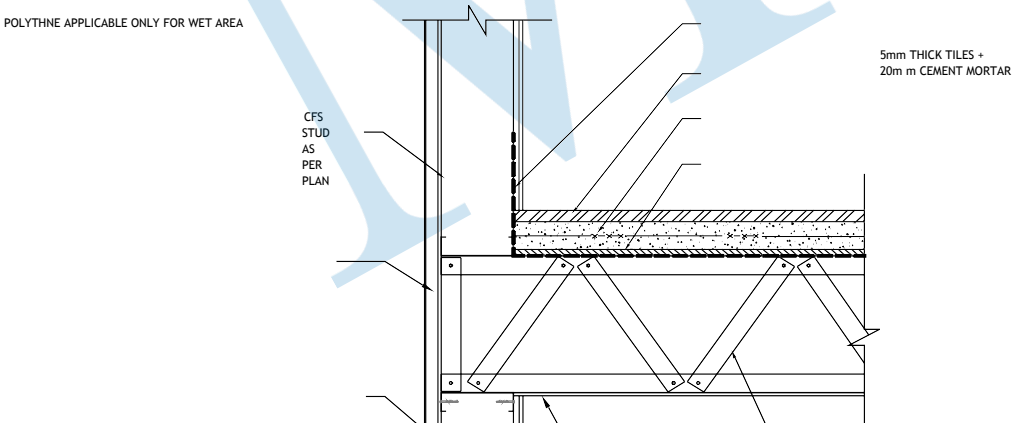

Fig 51.Medium Weight fixtures detail (Eg., Cupboard and Shelves)

## 2) Bracing Connection




CONNECTION OF SCREWS OF DIAGONAL STRAPS TO STUD PER WALL BRACING PLAN (TYP.)

## 3) Wall Corner Connection



MGI INDIA

60mm CEMENT MORTAR W/ 2mm THK. FIBRE MESH

03mm THK. FIBRE REINFORCED CEMENT BOARD

15mm THK. HEAVY DUTY FIBRE CEMENT BOARD

25 MM POLYSTYRENE W/ 3 MM BASE COAT & LAYER OF FIBRE MESH

6mm THK. FIBRE CEMENT BOARD

8mm THK. GYPSUM BOARD

CFS STUD AS PER PLAN

12mm THK. MAGNESIUM (Mgo) BOARD

300m m DEEP WEBBED JOISTS OF 150mmX41mmX1.2mm THK. SPACED 406mm O.C.

8mm THK. GYPSUM BOARD