



Everest Rapicon Panel/ Solid Wall Panel

User should check the validity of the Certificate by contacting Member Secretary, BMBA at BMTPC or the Holder of this Certificate.

Name and Address of Certificate Holder: **M/s Everest Industries Ltd.**
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Performance Appraisal Certificate No.
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PERFORMANCE APPRAISAL CERTIFICATE


FOR

EVEREST RAPICON PANEL/ SOLID WALL PANEL

ISSUED TO

M/S EVEREST INDUSTRIES LTD.

STATUS OF PAC

S. No.	Issue No.	Date of Issue	Date of renewal	Amendment		Valid upto (Date)	Remarks	Signature of Authorized signatory
				No.	Date			
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PART 1: CERTIFICATION

1.1 Certificate Holder M/s Everest Industries Ltd.
Gate no. 152,153 & 173 Lakhmapur
Tal- Dindori, Dist- Nasik, Maharashtra 422 202
Tel: 02557- 250304/462
E-mail: info@everestind.com

1.2 Description of System

1.2.1 Name of the System – Everest Rapicon Panel/ Solid Wall Panel

1.2.2 Brand Name – Rapicon Panel

1.2.3 Brief Description – Rapicon panels are sandwich panels, made of two non asbestos fibre reinforced cement facing sheets of Everest wall boards as per IS 14862, on either sides of a lightweight foam concrete core. The core is made from a mix of Portland cement, fly ash, cellulose, lime, gypsum, synthetic fibre, fillers & water. These panels have a unique tongue and groove jointing system that facilitates rapid construction and maximizes space utilization. The details of these panels are shown in Figs.1 & 2 below;



Fig.1

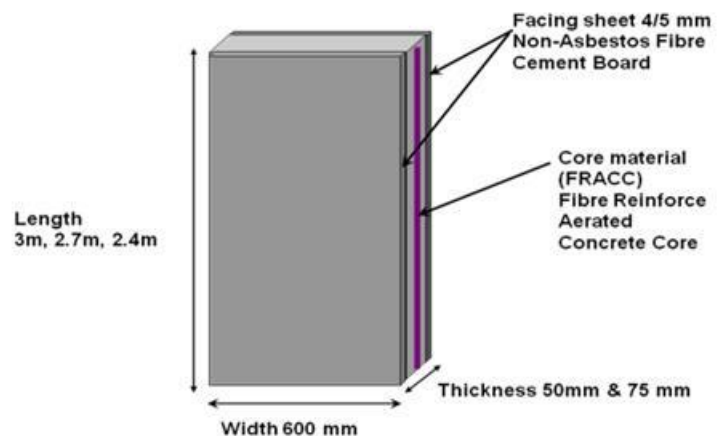


Fig.2

1.2.4 Size and Thickness of Panel

S. No	Sizes	Thickness	Edges
1	2400 mm height x 600 mm width	50 mm & 75 mm	Square edge Panel & Bevelled edge Panel
2	2700 mm height x 600 mm width		
3	3000 mm height x 600 mm width		

Profile of Panel

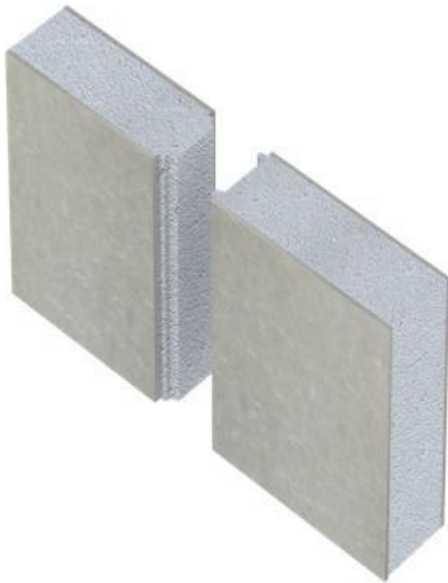


Fig.3
Square Edge Profile



Fig.4
Bevelled Edge Profile

1.3 Uses of the Product

- i. Partitions: Residential, commercial, educational and industrial buildings
- ii. Prefab Structures: Accommodations units, Site offices, security rooms, ware house/godowns, schools, army barracks etc.
- iii. Cladding: Shopping malls/Hospitals/School/college/university, duct covering, site offices & administration offices,
- iv. Boundary Walls: Residential, commercial etc.
- v. Fins/ vertical louvers: Residential & commercial buildings,
- vi. Fire separation walls: Shopping malls.

1.4 Assessment

1.4.1 Scope of Assessment

Scope of assessment included conformance & suitability of manufactured Panels to the specified requirements for use in building construction as prefab structures, partition walls, cladding, fire separation walls etc.

1.4.2 Basis of Assessment

Assessment of the suitability of the Rapicon panels is based on:

- i. Fire Resistance Test: Test report of partition wall panel 75 mm thick as per BS:476 (Part 20 & 22), IS 3614 (Part 2) applicability of test criteria for Stability, Integrity and

- Insulation conducted by CSIR-Central Building Research Institute, Roorkee.
- ii. Fire Resistance Test: Test report of non load bearing Solid wall partition 50 mm and 75 mm thick as per BS 476: Part 22: 1987 for Integrity, Insulation by TUV,SUD PSB Pte.Ltd, Singapore.
 - iii. Compressive Strength: Test report of partition block conducted by Civil Tech, Nashik.
 - iv. Thermal Conductivity: Test report of Rapicon Panel as per ASTM C177 by Central Institute of Plastic Engineering & Technology, Chennai.
 - v. Sound Transmission Loss: Test report of 75 mm thick Everest Solid wall panel as per IS: 9901 (Part III) -1981, DIN 52210 Part IV-1984,ISO: 140 (part III)-1995 conducted by National Physical Laboratory, New Delhi.
 - vi. Sound absorption: Test report of 50 mm thick Everest Rapicon panel as per IS: 8225-1987 conducted by National Physical Laboratory, New Delhi.
 - vii. Non Asbestos product: Test report of Rapicon Panel powder sample tested by Geological and Metallurgical Laboratories, Bangalore.
 - viii. Test report of various physical properties of the panels i.e. Modulus of rupture, modulus of elasticity, water absorption, Screw withdrawal strength etc. as per IS: 2380-1977 conducted by Shriram Institute for Industrial Research, Bangalore.
 - ix. Quality Assurance Plan implemented by the Certificate holder.
 - x. The Virtual Inspection of the factory to review production process, performance and testing facilities at Bhagwanpur, Uttarakhand Plant including competence of technical personnel by TAC members & BMTPC Officials.

1.4.3 Special Aspects of Use/ Limitation

Requires vertical support of Rectangular Hollow Section (RHS) /Square Hollow Section (SHS)/ Builtup Section after every 3.6 mtr and panels to be always put in staggered manner, if height of wall is more than 3 mtr.

1.5 Conditions of Certification

1.5.1 Technical Conditions – Raw materials and the finished product shall conform to the requirements of the prescribed specifications.

1.5.2 Quality Assurance

The Certificate Holder shall implement& maintain a quality assurance system in accordance with Quality Assurance Plan (QAP) given in Annexure-1.

1.6 Certification

On the basis of assessment given in Part 3 of this Certificate & subject to the conditions of certification, use & limitations set out in this Certificate and if selected, installed & maintained as set out in Parts 1 & 2 of this Certificate, the panels covered by this Certificate are fit for use set out in the Scope of Assessment.

PART 2: CERTIFICATE HOLDER'S TECHNICAL SPECIFICATIONS

2.1 General

The PAC holder shall manufacture the panels in accordance with the requirements specified in the relevant Standards (see Part 5). In addition, it shall follow the specific requirements of various materials used in the manufacture of the panels.

2.2 Specifications

2.2.1 Raw Materials

- i. OPC 43 Grade & OPC 53 Grade shall conform to IS:269:2015 & IS 12269:2013 respectively
- ii. Flyash shall conform to IS: 3812(P-1) 2013
- iii. Quick Lime shall conform to IS 712:1984
- iv. Gypsum shall conform to IS 2547 (Part 1):1976
- v. Cellulose (Pulp) shall conform to Manufacturer's Specifications

Rapicon panels shall meet the performance criteria as given below:

Technical & Physical Specifications of Rapicon Panels/Walls					
Sr. No.	Property	Units	Standard/Test Method	Specification Requirements	
1	Length*	mm		3000, 2700, 2400	3000, 2700, 2400
2	Width*	mm		600	600
3	Thickness*	mm		50	75
4	Edge Profile			Square, Beveled	Square, Beveled
5	Standard Weight	kg/m ²		min 35	min 50
6	Apparent Density	kg/m ³	IS:2380 (Part.3) – 1977	min 700	min 700
7	Modulus of Rupture (MOR)	MPa	IS:2380 (Part.5) – 1977	min 3.5	min 2.5
8	Screw Withdrawal Strength	kN	IS:2380 (Part.14) – 1977	min 0.3	min 0.3
9	Axial Compressive Strength	kN/m ²	IS2380 (Part.8) – 1977	min 36	min 54
10	Thermal Conductivity	K.cal/h.m°C	ASTM C177	0.12	0.12
11	Sound Transmission	dB	IS:9901	38	40

	Class		(Part3) - 1981		
12	Fire Rating	minutes	Bs 476 part 20 & 22	108	134
13	Fire Resistance Properties				
a	Surface Spread of Flame		BS 476 Part 7 - 1971	Class I	Class I
b	Fire Propagation Index (I)		BS 476 Part 6 - 1981	< 3	< 3
c	Ignitability		BS 476 Part 5 – 1968	Class 'P' (Not easily ignitable)	Class 'P' (Not easily ignitable)
* Subject to tolerance					

2.3 Manufacturing Process

Rapicon panels are sandwich panels, manufactured with two non-asbestos fibre reinforced cement facing sheets on either sides of a lightweight foam concrete core. The manufacturing process of the panel involves following steps;

- i. Production trolleys are assembled with fibre reinforced cement facing sheets into the profiles in the trolleys, 16 panels can be made in each trolley and the assembled trolley is shifted under the pouring station where the slurry is prepared.
- ii. Slurry mixing process involves mixing of the fixed quantity of raw materials such as Cement, Fly Ash, Lime, Gypsum, Pulp and fresh water/Process water into the primary mixer through Programmable Logic Controller (PLC)
- iii. After proper mixing of raw materials in primary mixer, its spread/viscosity test is carried out to check its consistency before it goes to the final mixer unit where other ingredients are mixed together and thereafter it goes to the pouring hopper. In the pouring hopper there are dividing plates to distribute the final mixed slurry into the each part of pouring hopper, which are connected to the each panel mould with flexible Hose Pipe to pour the slurry. Then plug is fitted on the part from where slurry poured into the mould panel of the production trolley.
- iv. The trolley is shifted for procuring chamber for 16 hours when the production of panels is in summer climatic condition and 22 hours in heating chamber in winter condition. After precuring of 16 hrs/ 22hrs of moulded panels, trolley goes in to the stripping section and the panels are stripped with the help of Crane from trolley. The stripped panels from the trolley are shifted over Pallet with the spacer rods fixed for air passage in between the panels. The panels are kept under shade for self curing for at least 21 days. After curing of 21 days, the panels of every batch are tested for Modulus of Rapture (MOR), Density & Moisture. Subject to conformance with specified requirements of tests, the panels are dispatched for use.

- v. The maximum production capacity of the factory at Bhagwanpur, Uttarakhand is 704 numbers of panels per day and storage capacity is 25,000 panels.

Manufacturing process flow chart is shown in **Annex II**.

2.3.1 Manufacturing Machineries & Equipments

The major machineries/equipment in the factory at Bhagwanpur, Uttarakhand, include;

- i. Cement Shift Hopper with Rotary Feeder 400X400, Capacity 35 Tph
- ii. Cement Screw Conveyor, Dia. 400 mm, Capacity 35 Tph
- iii. Roots Blower
- iv. Lime, Gypsum and Recron feeding Conveyor 400 mm Dia Capacity 35 Tph
- v. Lime feeding Conveyor 1.2X2.0X1.7 mtr
- vi. Recron feeding Conveyor 0.9X1.8X1.35 mtr
- vii. Gypsum feeding Conveyor 1.2X1.8X1.35 mtr
- viii. Ground Mixer Capacity 2.3 Cum
- ix. Slurry Pump and High Pressure Pump
- x. Process Water Pit Pump with Stirrer
- xi. Process Water Storage Tank 12 Cum
- xii. Fly Ash Storage Tank 15 Cum
- xiii. Final Mixer Capacity 1.9 Cum
- xiv. Pouring Hopper
- xv. Air Compressor
- xvi. Curing Chamber
- xvii. EOT Cranes Capacity 01 Tonne with its Lifting Clamp
- xviii. Production Trolley with profiles
- xix. Maturing Pallets with Spacer Rods
- xx. Salvaging Machine

2.4 Inspection and Testing

Inspections & testing shall be done at appropriate stages of manufacturing process of all the elements. The inspected panels shall be stored & packed to ensure that no damage occurs during transportation. As part of quality assurance, regular in process inspections shall be carried out by the trained personnel of the PAC holder.

2.5 Handling & Storage

- Everest Rapicon Walls should be handled vertically by 3-4 peoples.
- During transportation, bottom and corner should be protected with packing material.
- Handle one panel at a time with gloves to avoid patch marks.
- Panels to be stacked vertically and 150–200 mm above the ground level along the length of panel.
- Panels should be positioned using three metal spacers in between the panels, one at the centre of the panel and other two on either side to maintain air gap between panels.

- The panels should not be kept in open/ uncovered areas. If fully covered area is not available, then panels may be kept outdoors provided it is for a maximum of 10 days and covered by a tarpaulin or plastic cover (Minimum 200gsm) from all four sides.
- Panels stacked horizontally should be covered by a tarpaulin or plastic cover (Minimum 200gsm) from all four sides & must be utilized in maximum 7 days. The stack of panel should not exceed 20 Nos. of panels.
- Panels can be kept in a covered room for a maximum period of 30 days provided panels are stacked vertically and 150–200 mm above the ground level along the length and there is air circulation between the panels.

2.6 Product Selection Criteria

Usage of 50 mm & 75 mm Rapicon panel, irrespective of the segment or location, depend upon the type of building structure, managing services & finishes. Refer to the table below for appropriate selection of the panels;

Panel Thickness (mm)	External Wall						Internal wall	
	Prefab Structure			Permanent structures			With exposed Services	With concealed Services
	Ground floor structures	G+1	Multi-floor	Ground floor structures	G+1	Multi-floor		
50	✓			✓			✓	
75	✓	✓	✓	✓	✓	✓	✓	✓

2.7 Materials required for Internal and External wall panels

Location	Wall Type	Wall Components	Wall Component Dimensions
Internal wall & External wall	For wall height up to 3 meters	Ceiling GI track profile	For 50mm panel: 52 x 32 x 15 x 1mm For 75mm panel: 77 x 32 x 15 x 1mm
		Floor GI Track profile	For 50mm panel: 52 x 25 x 15 x 1mm For 75mm panel: 77 x 25 x 15 x 1mm
		MS Tubular section	For 50mm panel: 50 x 50 x 2.6mm For 75mm panel: 75 x 75 x 2.6mm
		MS Angle cleat	For 50mm panel: 50 x 50 x 4mm

Location	Wall Type	Wall Components	Wall Component Dimensions
			For 75mm panel: 75 x 75 x 4mm
		Everest Jointing Compound	Acrylic resin based cementitious compound
		Joint Fiber mesh tape	50mm x 90 meters
		Sodium Silicate and Fly ash combination	Sodium Silicate : Fly ash = 1:1 by volume, Sodium Silicate : Fly ash = 1:3 by weight,
		Metal Anchor Fasteners (Rawl Plug)	45 x 8mm
		Hex head screw	N6x 45 mm
<ul style="list-style-type: none">Internal and External- 50 x 50 x 2.6mm / 75 x 75 x 2.6mm MS SHS profiles shall be used as vertical columns (stiffeners) at every 4.2 meters walls span for 50mm / 75mm Rapicon panel respectively, fixed to the floor and RCC soffit with 50 x 50 x 4mm / 75 x 75 x 4mm cleats and metal anchor fasteners.External- Walls subjected to high wind load shall not be jointed and finished with Everest jointing compound and joint fibre mesh tape on the surface exposed to outside, the joint shall be treated with weather resistant acrylic / silicon sealant with fibre mesh tape.			
Location	Wall Type	Wall Components	Wall Component Dimensions
Internal wall	Wall height above 3 meters till 4.2 and 4.5 meters with 50mm and 75mm panels respectively, through staggering of joints.	Ceiling GI track profile	For 50mm panel: 52 x 32 x 15 x 1mm For 75mm panel: 77 x 32 x 15 x 1mm
		Floor GI Track profile	For 50mm panel: 52 x 25 x 15 x 1mm For 75mm panel: 77 x 25 x 15 x 1mm
		MS Tubular section	For 50mm panel: 50 x 50 x 2.6mm For 75mm panel: 75 x 75 x 2.6mm
		MS Angle cleat	For 50mm panel: 50 x 50 x 4mm For 75mm panel: 75 x 75 x 4mm
		Everest Jointing Compound	Acrylic resin based cementitious compound

Location	Wall Type	Wall Components	Wall Component Dimensions
		Joint Fiber mesh tape	50mm x 90 meters
		Sodium Silicate and Fly ash combination	Sodium Silicate : Fly ash = 1:1 by volume, Sodium Silicate : Fly ash = 1:3 by weight,
		Metal Anchor Fasteners (Rawl Plug)	45 x 8mm
		Hex head screw	N6x 45 mm
<ul style="list-style-type: none">50 x 50 x 2.6mm / 75 x 75 x 2.6mm MS SHS profiles shall be used as vertical columns (stiffeners) at every 4.2 meters walls span for 50mm / 75mm Rapicon panel respectively, fixed to the floor and RCC soffit with 50 x 50 x 4mm / 75 x 75 x 4mm cleats and metal anchor fasteners.			
Location	Wall Type	Wall Components	Wall Component Dimensions
Internal wall & External wall	Internal - Wall height beyond 4.2 and 4.5 meters with 50mm and 75mm panels respectively External- Wall height beyond 3 meters with 50mm and 75mm panels respectively	Ceiling GI track profile	For 50mm panel: 52 x 32 x 15 x 1mm For 75mm panel: 77 x 32 x 15 x 1mm
		Floor GI Track profile	For 50mm panel: 52 x 25 x 15 x 1mm For 75mm panel: 77 x 25 x 15 x 1mm
		MS Tubular section	For 50mm panel: 50 x 50 x 2.6 to 5.7mm For 75mm panel: 75 x 75 x 2.6 to 5.7mm
		MS Angle cleat	For 50mm panel: 50 x 50 x 4 to 6mm For 75mm panel: 75 x 75 x 4 to 8mm
		Everest Jointing Compound	Acrylic resin based cementitious compound
		Joint Fiber mesh tape	50mm x 90 meters
		Sodium Silicate and Fly ash combination	Sodium Silicate : Fly ash = 1:1 by volume, Sodium Silicate : Fly ash = 1:3 by

Location	Wall Type	Wall Components	Wall Component Dimensions
			weight,
		Metal Anchor Fasteners (Rawl Plug)	45 x 8mm
		Hex head screw	N6x 45 mm
<ul style="list-style-type: none">Internal and External -50 x 50 x 2.6 to 5.7mm / 75 x 75 x 2.6 to 5.7mm MS SHS profiles shall be used as vertical columns (stiffeners) and horizontal supports at every 3 meters of walls span and height for 50mm / 75mm Rapicon panel respectively. The vertical column shall be fixed to the floor and RCC soffit with 50 x 50 x 4 to 6mm / 75 x 75 x 4 to 8mm cleats and metal anchor fasteners. The horizontal support shall then be welded to the vertical MS columns.External- Walls subjected to high wind load shall not be jointed and finished with Everest jointing compound and joint fibre mesh tape on the surface exposed to outside, the joint shall be treated with weather resistant acrylic / silicon sealant with fibre mesh tape.			

2.8 Installation Procedure of Rapicon Panels

2.8.1 Internal wall & External wall

2.8.1.1 With 50mm / 75 mm Rapicon Panels for Wall height upto 3 meters

- Step 1:** Check the level of the ground with water tube level.
- Step 2:** Mark the layout of the partitions plan on the floor.
- Step 3:** Cut the floor track profile for 50 & 75 mm panels, respectively to the required lengths and anchor them to the floor using 45 x 8mm metal fasteners @ 600 mm centre to centre, staggered within the web of the profile. The ceiling track profile is similarly fixed to the RCC soffit/ steel structure frame with metal fastener / hex-head screws in plumb to the floor track.



Fig.5

Step 4: The panels are inserted into the track profiles, from the side of the smaller floor track flange by lifting and tilting the same, simultaneously & then pushing it to its position within the track profile.

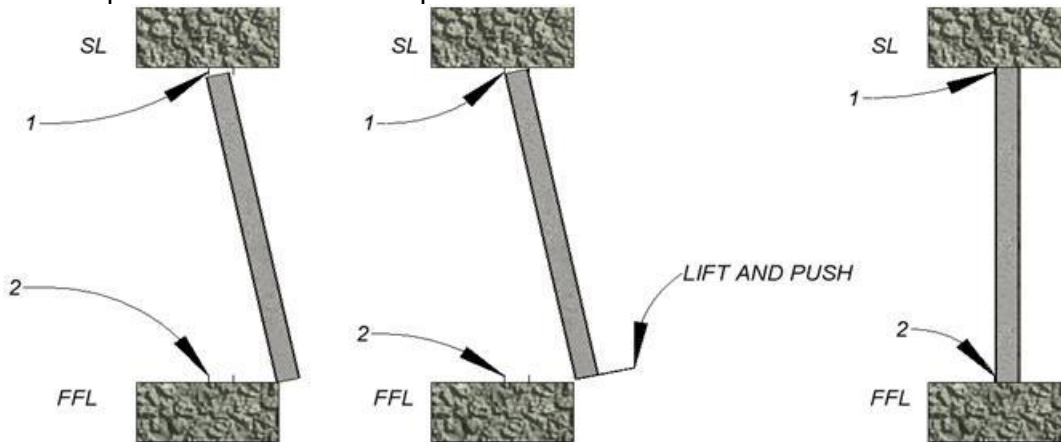


Fig.6

- 1 Ceiling Track Profile
- 2 Floor Track Profile

Step 5: Check the right angle of the panel (using try square tool) and adjust by inserting wooden packing in between floor channel and module, if required, to ensure the panels in right angle.

Step 6: Apply sodium silicate (bonding agent), in between the tongue and groove joints of every single panel for joint rigidity as we slide one panel after another, within the ceiling and floor track profile, during required wall assembly. Thereafter the joints at the surface are jointed and finished with Everest acrylic resin based cementitious jointing compound and joint fibre tape for the required seamless finish.

Step 7: For external walls subjected to high wind loads, the joints to the exterior shall be sealed with weather resistant acrylic / silicon sealant with fibre mesh tape.

2.8.1.2 For wall height above 3 meters till 4.2 and 4.5 meters with 50 mm and 75 mm panels respectively, through staggering of joints.

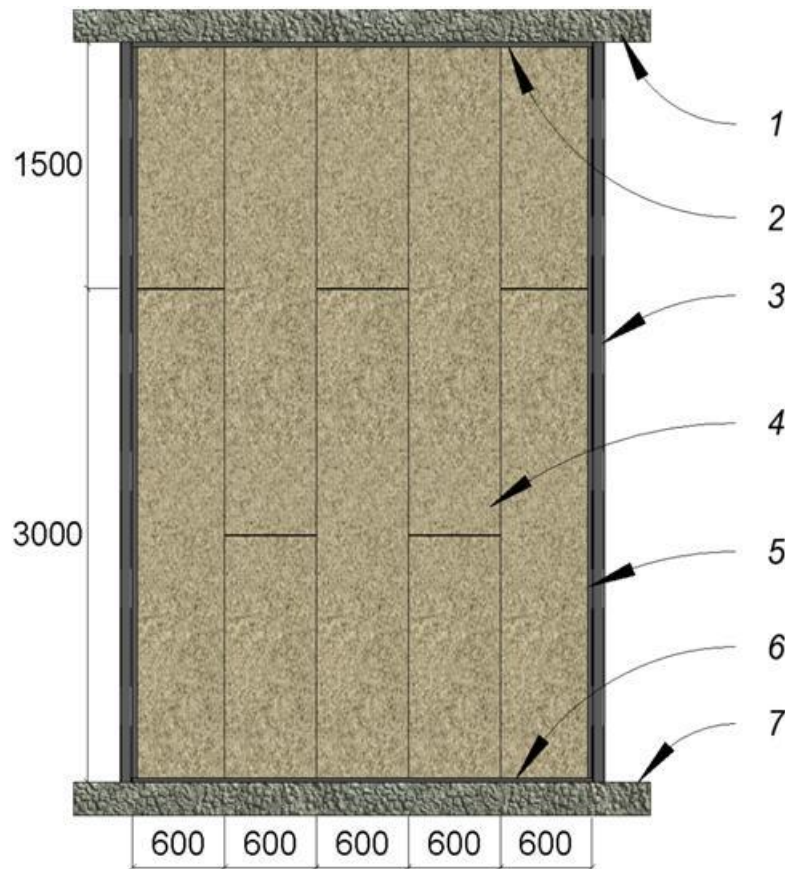


Fig.7

- | | |
|---|--|
| 1 | Ceiling Slab |
| 2 | Ceiling Track Profile |
| 3 | Concrete Column |
| 4 | 75 mm Thick Everest Rapicon Wall Panel |
| 5 | Ceiling Track Profile |
| 6 | Floor Track Profile |
| 7 | Floor Slab |

2.8.1.3

For Wall height beyond 4.2 and 4.5 meters with 50mm and 75mm panels respectively

For Internal wall heights above 4.2 / 4.5meters for 50 / 75mm panels& External walls beyond 3 meters height respectively, MS structural horizontal and vertical supports shall be provided. The 50 x 50mm / 75 x 75mm SHS profile for 50 / 75 mm panels respectively and of thickness 2.6 to 5.7mm (depending on the subjected load onto the wall) shall be provided as horizontal supports at every 3meterscentre to centre. The same profile shall also be used as vertical supports at 3meters or to a greater span depending upon the subjected load onto the wall. The horizontal members shall be either welded or fixed through MS cleats to the vertical structural members. The structure shall be anchored to the floor and RCC soffit with MS cleats or base plates and metal expansion fasteners. (In case

of truss the structural members shall be either welded or anchored with cleats and hex head screws). 50 / 75mm Rapicon walls shall then be used as filler walls within the grid created through the structural members.

2.8.2 Door and Window fixing

2.8.2.1 Door fixing

Case 1: Door Frame 300mm away from Column / Wall

Step1: Fix the floor track to the floor minus the door opening, to the entire length of the wall.

Step 2: For the required lintel the standard 600mm wide panel are to be cut to 300mm width, where by its length will be in accordance to the door width which includes 2x150mm minimum increased length, for the required overlap of the lintel on the vertical wall panels to the either side of the door opening. For resting of the lintel panel on the wall panels to the either side of the door opening, the two wall panels adjacent to door opening are to be cut to required L shape. While the bottom of the L will be cut to a minimum length of 150 mm or more depending upon the required offset of the lintel panel, the height of the L which is to be cut has to coincide with the required door height (Refer Fig.8).

Step 3: To continue beyond the door opening (& window opening, explained later in this section), vertical wall panels are then inserted and fixed into the floor & ceiling track profile to complete the required wall length, following the procedure, as explained above.

Step 4: Post assembly of the wall, the door frame is to be fixed to it position within the created opening and the door installed, thereafter.

Step 5: The partition wall is then ready for the required finishing procedures.

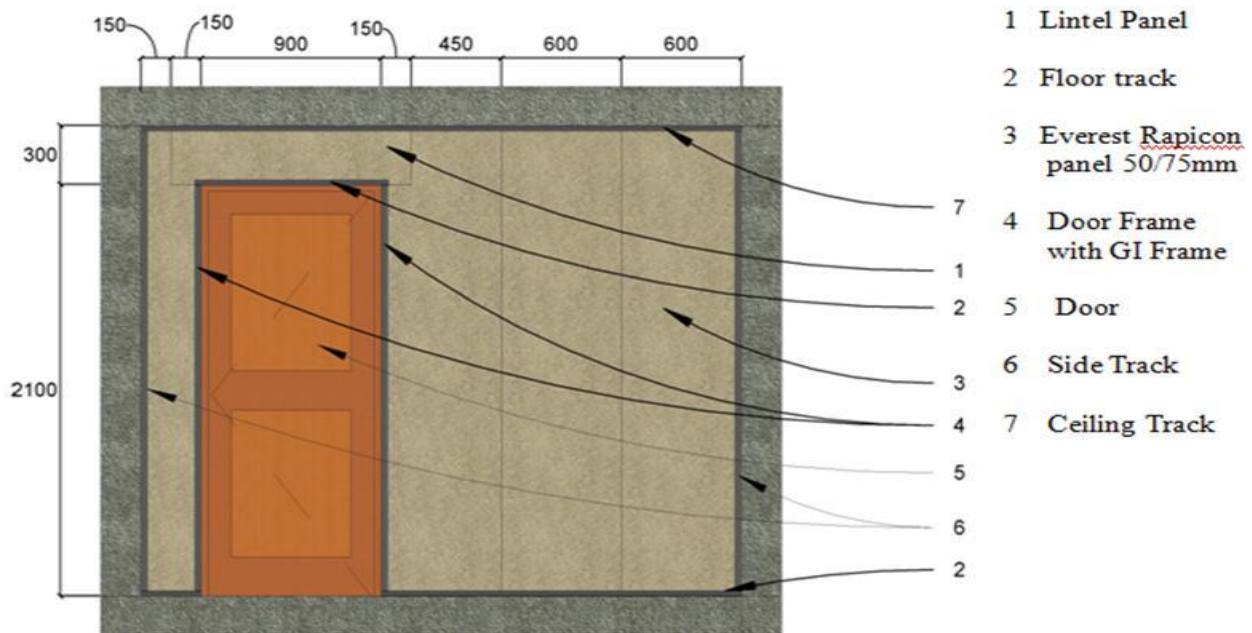


Fig.8

Case 2: When the door is to be fixed from the starting of the partition i.e. Brick Wall / Column

Installation Procedure

- Step 1:** Start assembly of the wall partition with the panels from the side extreme to the door opening.
- Step 2:** Assembly procedure to continue till the door opening.
- Step 3:** The last panel, adjacent to door opening is to be cut to the required L shape (as mentioned in above case; whereby the bottom & height of the L, which is to be cut, will be as per the requirements for resting of the lintel panel).
- Step 4:** To address the fixing of the lintel member (which includes the door frame) to the adjacent brick/ block/ RCC wall or column, M.S. twin rods of dia 8mm are anchored both into the wall/ column & the lintel in combination with chemical fasteners/ cement slurry mix, for the required rigidity and stability.

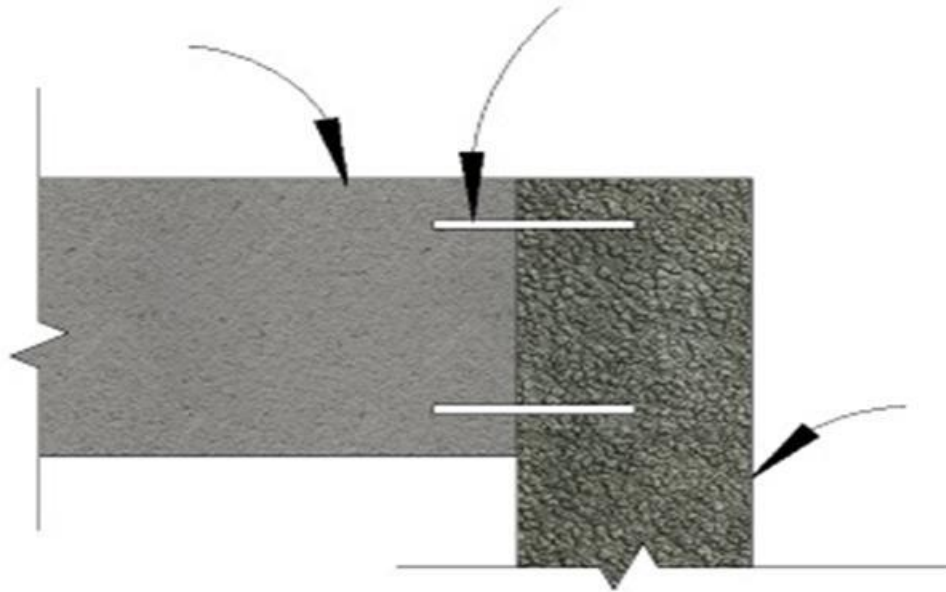


Fig.9

- | | |
|---|--------------------------------------|
| 1 | Reinforcement Steel Rod 8mm Dia. Min |
| 2 | Lintel Panel |
| 3 | Concrete Column |

Step 5: Post assembly of the wall, the door frame is to be fixed to its position within the created opening and the door installed, thereafter.

Step 6: The partition wall is then ready for the required finishing procedures.

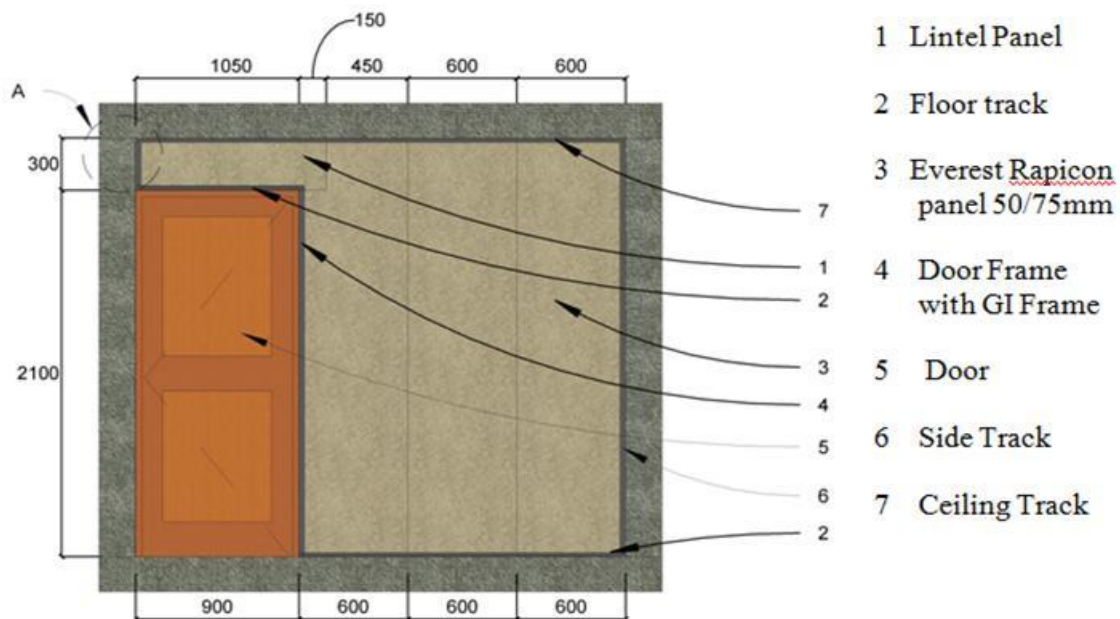


Fig.10

Case 3: When two doors are fixed at one place

Installation procedure

The assembly of all walls without door openings, perpendicular to the wall with the opening has to be completed first. The door position should be at a minimum distance of 600mm (equal to or more than the width of a single panel) from junction of two walls.

A minimum distance of 300mm to be maintained between two adjacent door frames, which is achieved by insert fixing a 300 mm or more width panel. The height of this panel should be equal to the wall height or till the door frame for individual door lintel or a common lintel for both the doors arrangement, respectively.

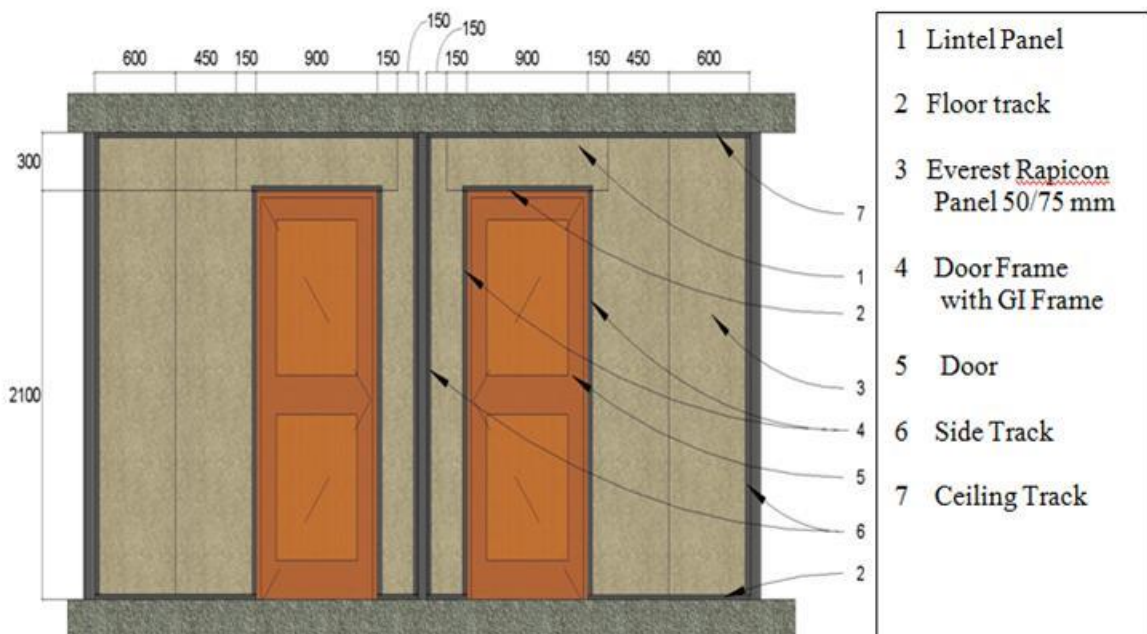


Fig.11

2.8.2.2 Window fixing

Step 1: Partition wall to be constructed as per the above laid procedures.

Step 2: Glass/ grills/ AC units can then be fixed within the opening, using timber/ MDF/ aluminium/ steel frames with machining trims and beadings.

Step 3: At least one panel is required on either side of the glass to support the lintel panel.

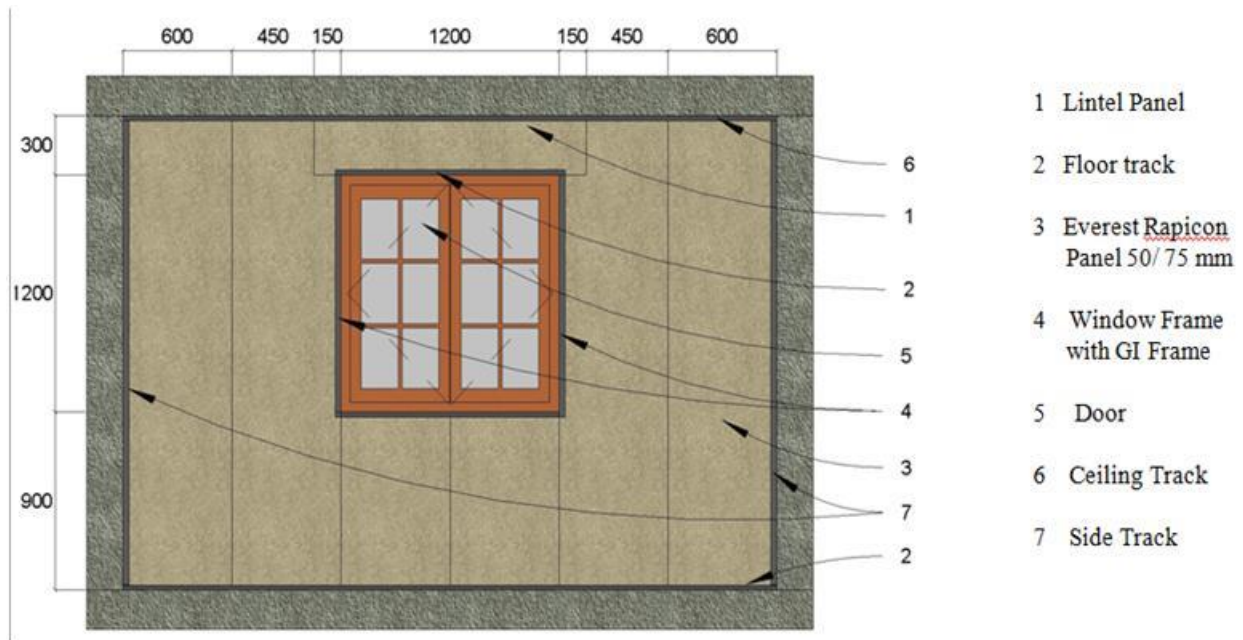
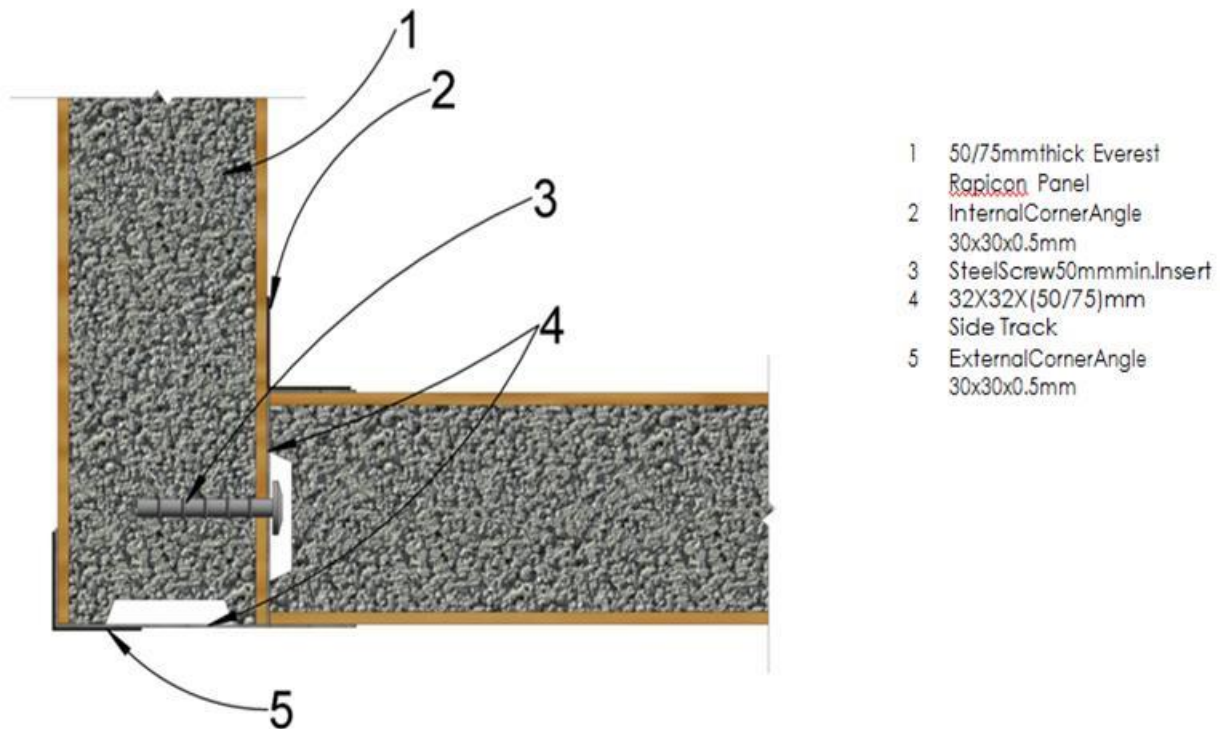


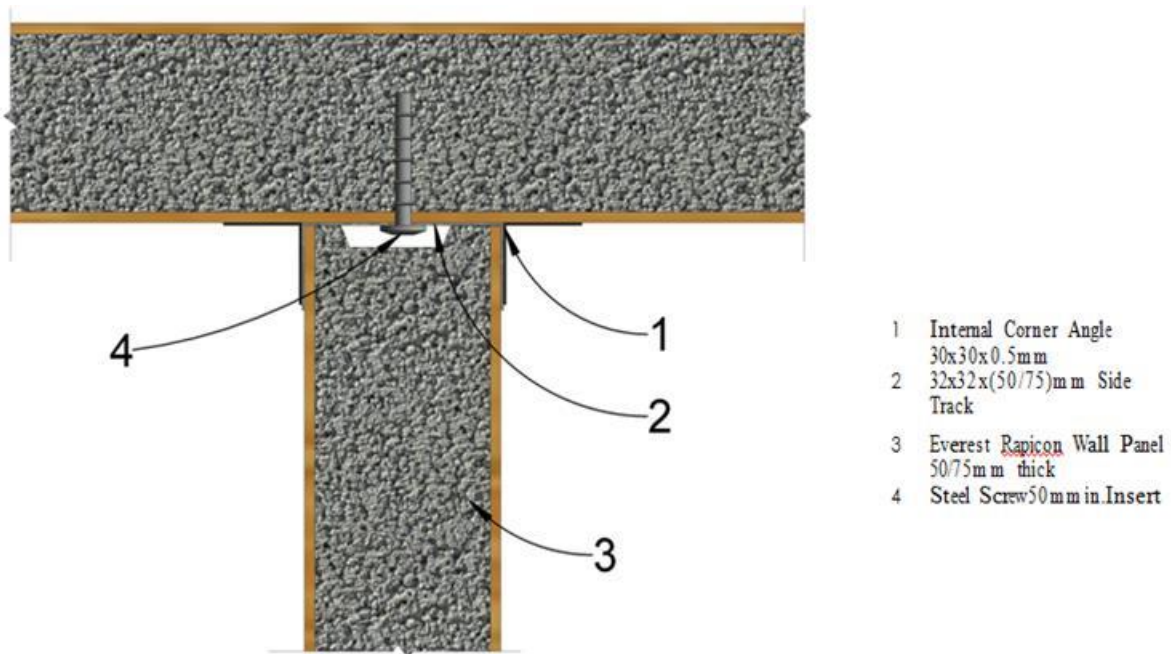
Fig.12

2.8.3 Corner Junction details



Typical L Junction

Fig.13

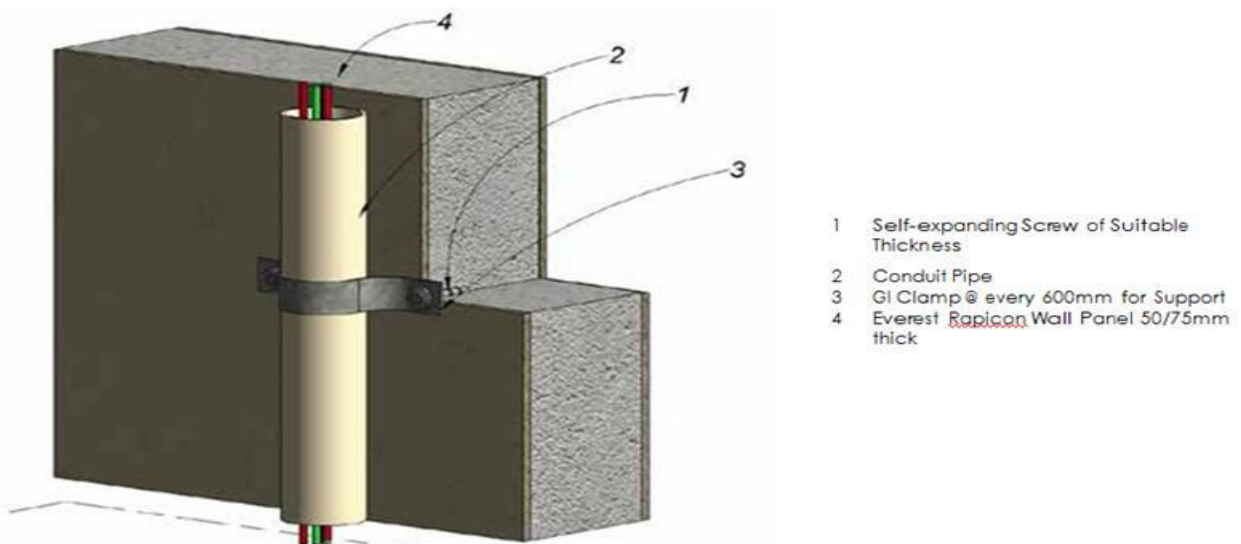


Typical T Junction
Fig.14

2.8.4 Managing wiring (Conduiting)

2.8.4.1 External Wiring for 50 mm thick panel

External wiring on Rapicon shall be done by using PVC casing and capping / pipes, mounted and fixed with screws and clamps, to the surface of the panels, post installation of the wall.



Conduit Wiring in 50mm Rapicon Panel
Fig.15

2.8.4.2 Concealed Wiring for 75 mm thick panel

- Step 1: Concealed wiring can be done in Rapicon Panel by routing (chasing) on the surface of the panel, vertically from top to bottom. Surface routing is done by a routing tool, cutting the face cement sheet & removing the core the required depth. Continuous horizontal routing of successive panels shall be avoided.
- Step 2: Horizontal face routing in non-load bearing walls shall be at a distance of 300mm maximum from the longitudinal edge of the panel.
- Step 3: In 75mm Rapicon Walls chasing is also recommended for switch junction boxes. For 50mm Rapicon walls, the surface mounting of switch junction boxes are only recommended.
- Step 4: Post installation of conduit pipes and fittings, the chased core shall then be filled and finished with sodium silicate & Fly Ash slurry paste. Electrical wires then shall be managed through the concealed PVC pipes after setting of the slurry.
- Step 5: In case of concealed wiring, jointing and finishing of the panels with Everest acrylic resin based cementitious jointing compound and joint fibre mesh tape for a seamless finish, will only be executed after managing the services.

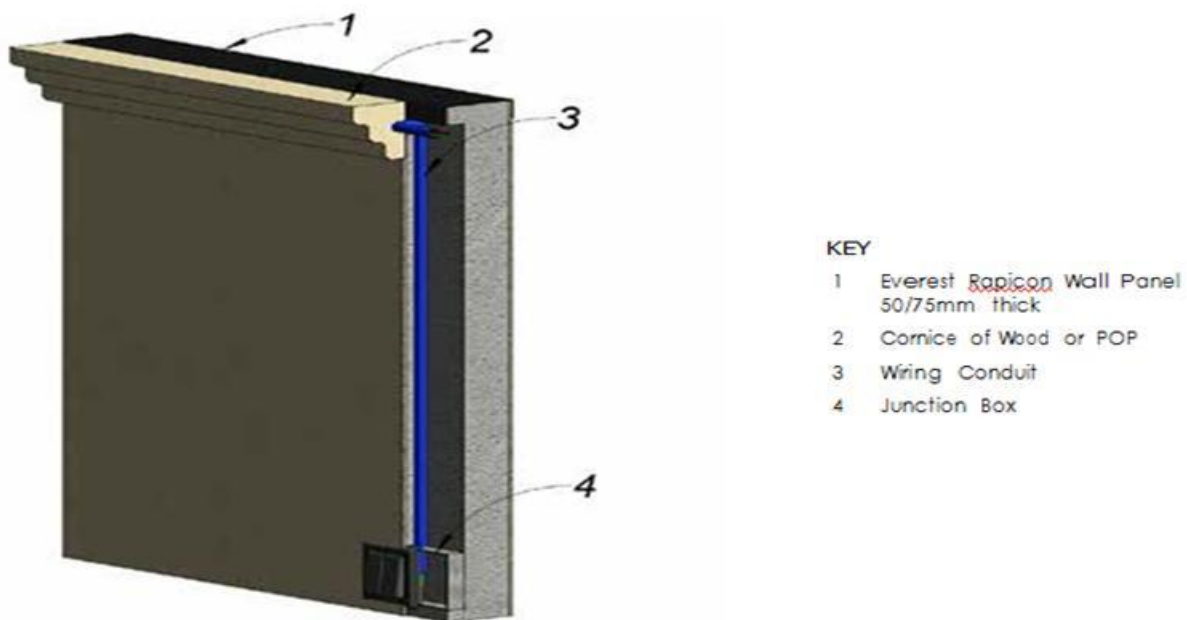


Fig.16

2.8.5 Jointing & Finishing

2.8.5.1 Jointing procedure

Everest acrylic resin based Jointing Compound

Jointing and finishing involves covering and reinforcing the joints of two adjacent Aerated concrete sandwich Rapicon panels. Jointing and finishing provide seamless finishing and also help in delivering required sound insulating and fire resistant properties to a wall application with Rapicon panels.

Everest acrylic resin based jointing compound is an universal two part jointing compound comprising of powder based special cement and liquid based special synthetic acrylic polymer mixed together in proportion of 3:1 by volume. The product has good expansion and contraction properties and used for monolithic and joint less solution, both in exterior & internal application. Everest Jointing Compound is suited for areas subjected to frequent climatic changes conditions. It is durable, flexible, resistance to chemical attacks, atmospheric pollution, fungal effects and UV radiation, and

- It comes in 10 and 20 kg pails,
- Coverage of the jointing compound is 0.55kg per sqm of the board surface area,
- Setting time of Jointing compound is 3 hours in normal climate condition.

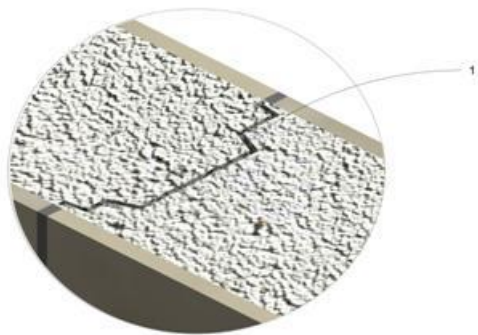
Finishing of joints (Interior / Exterior application)

Factory finish beveled edged panels or panels beveled at site are recommended for monolithic joint finish. For site beveled boards 25mm bevel width and 1.5-2mm bevel depth are recommended along the longitudinal side of the fascia board (while beveling of boards are done at site, the transverse side of the panel also can be beveled for superior finish). Beveling at site can be done using suitable router machine. For seamless finish a gap of 2-3mm between two adjacent joints of the panel is recommended. Finally the joints of panel shall be finished with Everest acrylic resin based cementitious compound and joint fiber tape.

Before jointing and finishing over the surface of the panels, the gap in between the tongue and groove joints shall be sealed with mixture of sodium silicate and fly ash mixed in proportion of 1:1 by volume.

The Square edge panels are only recommended for complete rendering of the panel surface, post treatment of the joints (in case of rendering a gap of 10mm in between the board joints is recommended, which shall be filled with Everest acrylic resin based cementitious compound, prior to the rendering process). The rendering application with polymer based cement mortar and alkaline resistant glass fiber mesh may be with or without an insulation substrate in the form of expanded polystyrene or extruded polystyrene.

The gap in between the tongue and groove joints shall also be sealed with mixture of sodium silicate and fly ash mixed in proportion of 1:1 by volume, prior to the sealing of the joints in between the fascia board of the adjacent panel, with acrylic / silicon based sealant.



GAP IN BETWEEN THE TONGUE AND GROOVE JOINTS TO BE SEALED WITH MIXTURE OF SODIUM SILICATE AND FLY ASH

Mixture of Sodium Silicate and Flyash



Everest Jointing Compound (Pail Size – 10kg and 20kg)

Preparation of Jointing Compound

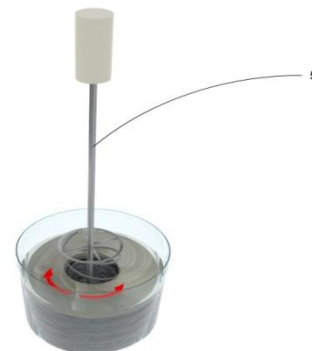
Everest acrylic resin based jointing compound comprising of powder based special cement and liquid based special synthetic acrylic polymer is mixed together in proportion of 3:1 by volume. The mixture has to be thoroughly mixed using manual or power agitator, vigorously, for 5- 10 minutes to achieve the desire homogeneous mixture. The prepared jointing compound shall be used within 45 minutes of preparation. (Compound as required based on site conditions and which can be utilized within 45 minutes of preparation, shall only be prepared to avoid wastages).



JOINTING COMPOUND PREPARATION MIXING RATIO A / B = 3/1

3 Powder Based Special Cement (Part A)

4 Liquid Based Special Synthetic Acrylic Polymer (Part B)



MIXTURE SHOULD BE UNIFORMLY MIXED FOR HOMOGENIOUS MIXTURE WITH THE HELP OF AGITATOR

5 Manual Agitator

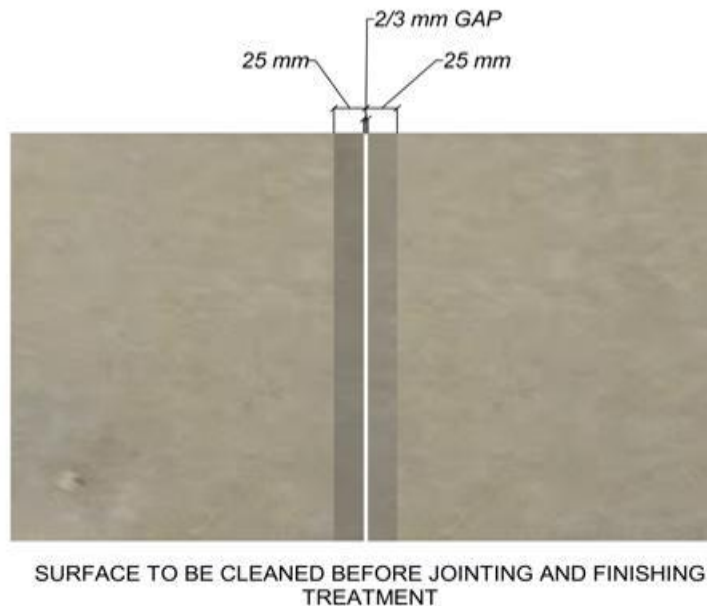
Application

Pre Installation Checks & Actions

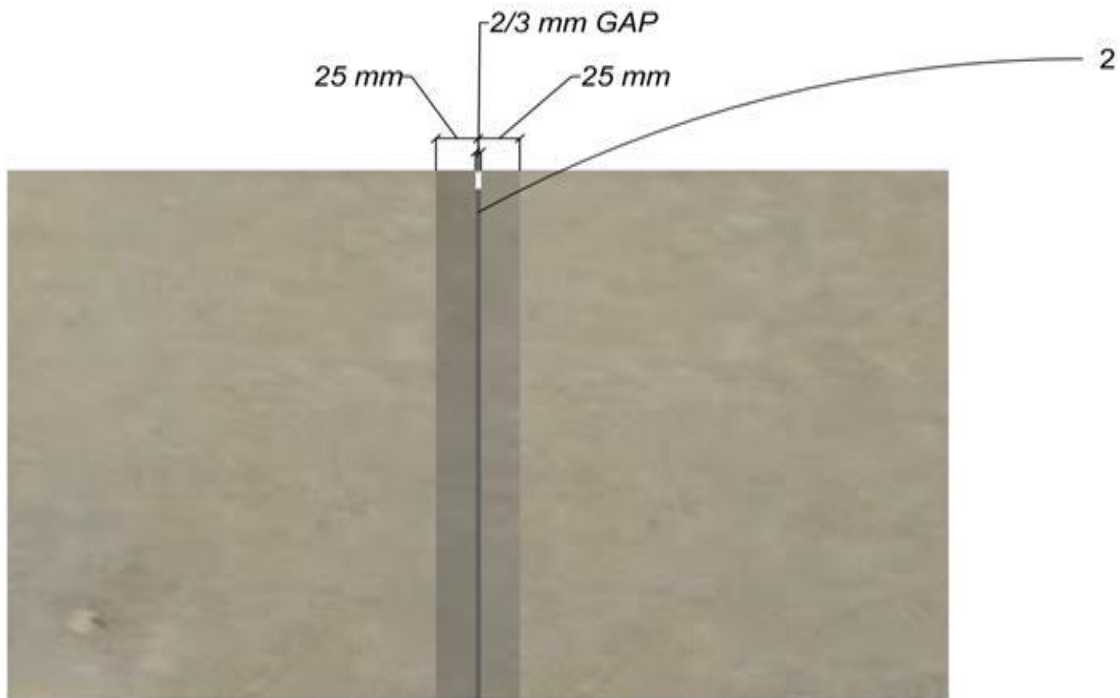
Panels shall be installed properly to ensure the alignment of the fascia board of the panels. Surface shall be free from grease, oil or any other deposition of foreign material at the joint treatment area.

Procedure

Step 1: *Cleaning & Preparation of surface:* Light sand the fascia board surface at the joint location using emery paper to clean the surface and remove all loose dust. For better jointing result maintaining a neat and clean jointing process, whereby masking tape may be used adjacent and parallel to the bevelling edges of the panels.



Step 2: *Gap Filling:* Everest acrylic resin based cementitious compound shall be filled within the 2-3mm maintained gap in between the adjacent joints of the fascia boards. This process shall be repeated in case of any shrinkage found in the first application, post drying. Remove excess material with flexible steel knife to level the joint filled surface.

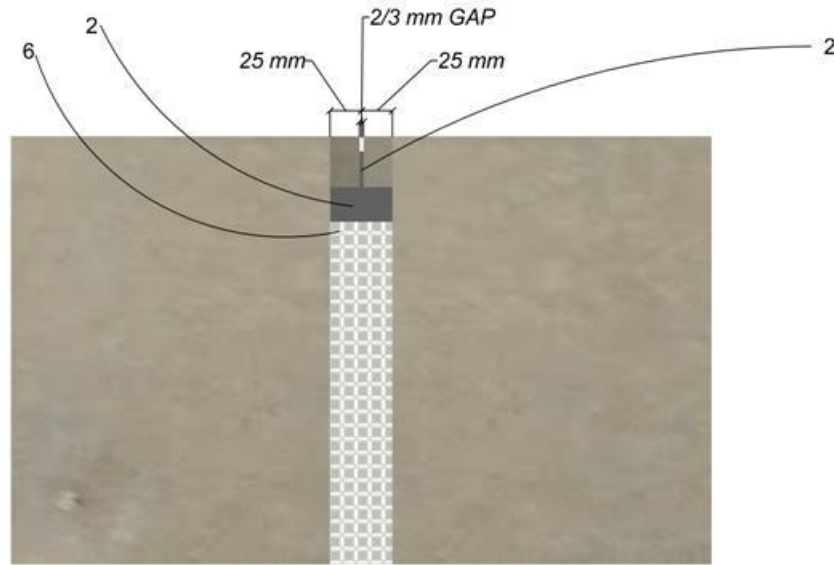


2-3 mm GAP IN BETWEEN THE FACIA BOARD OF TWO ADJACENT PANELS TO BE FILLED WITH EVEREST JOINTING COMPOUND

2

Everest Jointing Compound

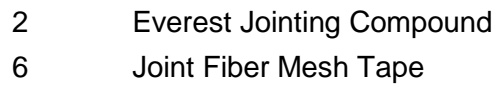
Step 3: *Embedding non-woven synthetic glass fibre joint mesh tape:* Post filling of grooves a coat of Everest resin based cementitious compound shall be applied to a width of 53mm coinciding with the extreme edges of the beveling in two adjacent fascia boards, using a flexible steel knife. 50mm wide non woven synthetic glass fibre mesh tape shall be embedded to the applied wet jointing compound. A minimum drying of 15 minutes shall be allowed before second application of jointing compound.



EMBEDDING NON WOVEN SYNTHETIC GLASS FIBRE JOINT MESH TAPE OVER EVEREST JOINTING COMPOUND WITHIN THE BEVELLED WIDTH OF TWO ADJACENT PANELS

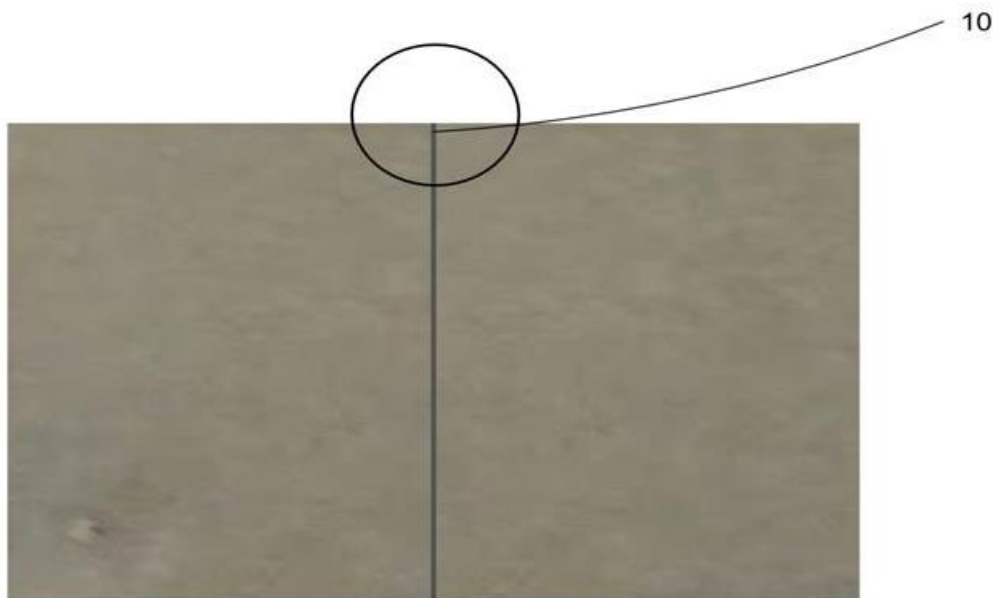
- | | |
|---|---------------------------|
| 2 | Everest Jointing Compound |
| 6 | Joint Fiber Mesh Tape |

Step-4: *Levelling and Finishing:* Apply coat of Everest Jointing compound to level the surface and conceal the embedded fiber mesh tape with flexible steel knife. Allow the application to dry for 3-4 hr and check thoroughly for shrinkage undulation. If found the same shall be covered up with another coat of jointing compound application.



SURFACE TREATED WITH PRIMER, PUTTY FOR SURFACE LEVELING
(WHEREEVER REQUIRED) AND FINAL COAT OF PAINT

2	Everest Jointing Compound
6	Joint Fiber Mesh Tape
7	Acrylic or Cement Based Putty
8	Primer
9	Final Paint



10 2-3 mm Gap In Between the Facia Board of Two adjacent Panels to be filled with Acrylic / Silicon based Sealant/ In case of Fire rating will be replaced by fire cum acoustic sealant

2.8.6 Do's and Don'ts for Rapicon panels

2.8.6.1 Do's:

- At uneven floor surface, provide leveling strips/ packing strips under the bottom track.
- Height of the Everest Rapicon Panel should be approx. 18mm less than the gap between the floor and ceiling.
- Insert the Module by lifting and tilting it into ceiling channel first, and then position the same by pushing from smaller size edge of the floor channel .Position the module and push towards wall.
- Check the right angle of the panel and adjust by inserting wooden packing in between floor channel and Module to ensure right angle.
- Apply sodium silicate and fly-ash paste on entire length of tongue and groove for proper and permanent joining.
- In case of temporary walls which need to be relocated, joining of tongue and

- groove with sodium silicate and flyash should not be done.
- vii. Fix the floor channel leaving the gap for the door as per the size of the door and fix the ceiling channel to the entire length of the partition.
- viii. Maximum window opening of 2700mm can be provided in the Rapicon Wall Panel Partition after which a vertical panel has to be provided.

2.8.6.2 Don'ts

- i. Don't chisel the panel horizontally for conduiting of Electrical and Mechanical Services as it can weaken the wall strength.
- ii. Don't keep the length of the small panel for staggered joint less than 2 feet, as it may weaken the strength of the wall.
- iii. Don't chisel the panels for electrical and mechanical service more than half the thickness of panels for running of electrical and mechanical service as it can weaken the wall. Switch boxes can be installed up to thickness of the Rapicon Wall Panels minus 10mm.
- iv. Height of the panels should be maximum 4.5m. Don't go beyond the height without additional fabrication support for stability.
- v. Don't do any cutting of the service after jointing and finishing as it may lead to hairline cracks at joints. It is always recommended to complete the work of services first and then to do jointing and finishing so as avoiding vibrations which may result in cracks.
- vi. Don't use square edge panels, use beveled edge panels to get smooth level finish after jointing and finishing without any projections at joints.
- vii. Don't keep the installed panels without jointing and finishing for long as they are tight fixed with packing material and wedge. Try to finish the jointing and finishing on the same day of installation as delay may lead to misalignment of the panels. Don't allow any other agency (AC/ duct/ electrical/ plumbing) to cut the panel without the recommended practice of Everest. As cutting is recommended with rotary cutter - other raw method of cutting or breaking panel can weaken the wall and permanent misalignment of the wall.
- viii. Don't install the wall after the flooring. It is recommended to install the wall first and do the flooring later. As the anchoring in the bottom channel will properly hold on the unfinished floor/ slab, flooring done later gives additional strength and support to wall and it hides the bottom channel.

2.9 Good Practices for Installation & Maintenance

Good practice as per requirement of Rapicon panels of the manufacturer shall be followed for installation and maintenance of these panels.

2.10 Skills /Training Needed for Installation

The PAC holder shall provide training for carrying installation of the panels at site through authorized trained franchisees. Alternatively, if the customer wants to execute the installation work of its own, the manufacturer shall provide training to client at different stages of the project, as and when required.

2.11 Guarantees/Warranties Provided by the PAC Holder

- PAC holder shall furnish various performance warranties as required/agreed for project specifications.
- The items covered by these warranties include weather tightness and finish performance. The Weather tightness warranties are subjected to the use of manufacturer's authorized contractors under its technical Engineer's supervision and periodic inspection.
- The manufacturer shall ensure that all specifications and shop drawings are reviewed prior to warranty issuance.
- In addition, warranties are limited to materials supplied by the manufacturer.

2.12 Services Provided by the PAC Holder to the Customer

The PAC holder shall take full care of after sales services such as leakages, repairing etc.

2.13 Manuals

Installation Manual, Quality Control Manual and a Manual for Health & Safety shall be provided for each project incorporating the Prefabricated Fibre Reinforced Sandwich non asbestos Panels.

2.14 Responsibility

- Specific design using Everest Rapicon Wall Panels/ Solid Wall Panels system is the responsibility of the designer with the instructions, supervision and guidance of the PAC holder.
- Quality of installation/construction of the system on site is the responsibility of the trade persons engaged by the building owner under the guidance of the manufacturer.
- Quality of maintenance of the building is the responsibility of the building owner under the guidance of the manufacturer.
- Providing necessary facilities and space for movement of cranes and vehicles is the responsibility of the building owner.

PART 3: BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

3.1 Assessment

The assessment has been done as per provisions of the Standards listed in Part 5 of this Certificate.

3.2 Tests Performed

Assessment of the suitability of the Rapicon panels is based on:

3.2.1 XRD Analysis for Asbestos Content

Name of Laboratory	Geological and Metallurgical Laboratories, Bangalore.
Date of Testing	09.03.2018
Sample particulars	Rapicon Panel powder sample
Test parameter	XRD Analysis's for Asbestos content
Result	Indicated that there was no asbestos phase detected and the sample was non asbestos product.

3.2.2 Fire Resistance Test

Name of Laboratory:	CSIR-Central Building Research Institute, Roorkee
Date of Testing	13.02.2017
Sample particulars	Everest Partition 3000mm X 3000mm X 75 mm
Test parameter	Fire Resistance Test
Principle/ Methodology of test	In accordance with BS 476: (Part 20& 22), IS: 3614(Part2)
Result	The data of evaluation reveals that the wall panel partition specimen has been found to be able to withstand the exposures for 120 minutes with respect to stability, integrity and thermal insulation only.

3.2.3 Compressive strength Test

Name of Laboratory	Civil Tech, Nashik
Date of Testing	12.08.2015
Sample particulars	Everest Rapicon wall sample-100mm X100mm X 75mm
Test parameter	Compressive strength
Result	Compressive strength perpendiculars to

its surface across the grain of board were found as below;

Sl.No.	Cube mark	Nominal size of block in mm	Compressive strength in (N/mm ²)
1.	C4	100 X 75 X 100	3.55
2.	C5	100 X 75 X 100	3.71
3.	C6	100 X 75 X 100	3.76

3.2.4 Sound Transmission Class Test

Name of Laboratory	National Physical Laboratory, New Delhi
Date of Testing	06.07.2010
Sample particulars	75mm thick Everest Solid Wall Panel 930mm X 630mm of density 892 kg/m ³
Test parameter	Sound Transmission Class
Principle/ Methodology of test	As per IS: 9901 (Part III) -1981, DIN 52210 Part IV-1984, ISO: 140 (part III)- 1995
Result	Using the standard reference curve the Sound Transmission Class, STC was found 40;

3.2.5 Thermal Conductivity Test

Name of Laboratory	Central Institute of Plastic Engineering & Technology, Chennai
Date of Testing	25.04.2008
Sample particulars	Rapicon sample (9" Dia)
Test parameter	Thermal Conductivity as per ASTM C 177
Result	Thermal Conductivity was found 0.12 K.cal/h.m°C

3.2.6 Sound absorption coefficient Test

Name of Laboratory	National Physical Laboratory, New Delhi
Date of Testing	18.04.2006
Sample particulars	50 mm thick Rapicon Modules mounted with rigid backing
Test parameter	Sound absorption coefficient
Principle/ Methodology of test	By diffuse field method as per IS 8225- 1987
Result	The material was tested for Sound absorption coefficient by reverberation method as per IS 8225-1987. Using the standard reference curve the Sound

Transmission Class, STC was found 38

The reported uncertainty in measurement was $\pm 5\%$ which is a coverage factor $k=2$ which corresponds to a coverage probability 95% for a normal distribution.

3.2.7 Various Physical Properties Test

Name of Laboratory	Shriram Institute for Industrial Research, Bangalore
Date of Testing	23.01.2007
Sample particulars	E Board Rapicon" (75mm thickness) sandwich panel
Test parameter	As per IS 2380-1977
Result	
Modulus of Rupture, MPa	3.8
Modulus of Elasticity, MPa	100
Density, kg/m ³	892
Axial compressive strength KN/m ²	420
Moisture swelling	
Change in thickness, %	0.08
Change in length, %	0.20
Water absorption, %	
At 2hours	20.7
At 24hours	28.6
Screw withdrawal strength, KN	0.37

3.2.8 Fire resistance test

Name of Laboratory	TUV,SUD PSB Pte. Ltd, Singapore
Date of Testing	26.09.2007
Sample particulars	50mm thick Everest non-load bearing solid wall panel partition
Test parameter	Fire resistance test in accordance with BS 476: Part 22:1987
Result	The specimen satisfied the requirements of BS 476: Part 22:1987 for the period stated below
Integrity	132 minutes
Insulation	108 minutes

3.2.9 Fire resistance test

Name of Laboratory	TUV,SUD PSB Pte. Ltd, Singapore
Date of Testing	12.02.2007
Sample particulars	75mm thick Everest non-load bearing

Test parameter	precast concrete panel partition system
Result	Fire resistance test in accordance with BS 476: Part 22:1987
Integrity	The specimen satisfied the requirements of BS 476: Part 22:1987 for the period stated below
Insulation	134 minutes

3.2.10 Assessment of quality assurance procedures implemented for Quality Assurance Scheme followed by the Certificate holder for process control as per Quality Assurance Plan attached at Annexure- I.

3.3 Site Inspection (Manufacturing Plant Visit)

The manufacturing unit at Bhagwanpur, Uttarakhand was inspected by the members of TAC & Officers of the Council and via video conferencing held on 06th December 2021 in prevailing scenario of Covid-19. The firm has got necessary manufacturing facility to produce the panels as per the required design, specifications & quality. The manpower was found to be conversant with manufacturing process & testing procedures required for the quality control of the system.

3.4 Major supply of the Panels

The manufacturer has supplied the panels as per the details submitted is given below;

S.No.	Name of Project	Location	Applications	Area in square feet	Completion Period
1	NIIT	Sikkim	Dry Wall Partition with 75mm Rapicon Panel.	50000	2015
2	SRM University	Tadong, Sikkim	Dry Wall Partition with 75mm Rapicon Panel.	15000	2019
3	School Project	Dimapur	Dry Wall with 50 mm and 75 mm Rapicon panels	20000	2019-20
4	BSNL	Guwahati	Dry Wall Partition with 75mm Rapicon Panel.	18000	2012
5	UNICEF Health Posts	All Over Nepal	Dry Wall with 50 mm and 75 mm Rapicon panels	500000	2015-2017
6	Mistri Khola Hydel Electric Project	Myagdi	Dry Wall Partition with 50mm Rapicon Panel.	10000	2017
7	Sumeru City Hospital	Kathmandu	Dry Wall with 50 mm and 75 mm Rapicon panels	20000	2019
8	Gilly Academic	Dhangadi	Dry Wall Partition with 50mm Rapicon Panel.	12000	2019
9	Party Palace	Dhangadi	Dry Wall Partition with 50mm Rapicon Panel.	14000	2019

10	CMC Hydro Power Project	Solukhumbhu	Dry Wall Partition with 50mm Rapicon Panel.	22000	2018
11	TATA POWER	Jaipur	Dry Wall Partition with 50mm Rapicon Panel.	12300	2020
12	Panchbadra Refinery	Barmer, Raj	50mm rapicon	30,000	2018-19
13	Mittal Hospital	Jaipur, Raj	50mm rapicon	11000	2019-20
14	Apex Crical Mall	Jaipur, Raj	50mm rapicon	100,000	2015-16
15	Gaur City Mall	Ghaziabad, UP	75mm rapicon	50,000	2019-20
16	Gudawara Bohari saheb	Batala, Panjab	50mm rapicon	20000	2019
17	RCC construction company	Chandigarh	50mm rapicon	13000	2019
18	Musahasi	Bawal, Haryana	75mm rapicon	37103	2018-19
19	Yokohama	Bhadurgarh, HR	75mm rapicon	46379	2018-19
20	Subroj	Manesar, HR	75mm rapicon	55655	2018-19
21	Maruti	Manesar, HR	75mm rapicon	18551	2019-20
22	HMI	Gurgaon, HR	75mm rapicon	74206	2019-20
23	HMI	Gurgaon, HR	50mm rapicon	74206	2019-20
24	Emmar Digital	Gurgaon, HR	75mm rapicon	74206	2019-20
25	The Hive	Gurgaon, HR	75mm rapicon	148413	2019-20
26	Cyber Park DLF	Gurgaon, HR	75mm rapicon	74206	2019-20
27	DLF Down Town	Gurgaon, HR	75mm rapicon	37103	2019-20
28	Alkone Business Park	Faridabad, HR	75mm rapicon	18551	2017-18
29	Allahbad Institute of Medical College	Khaga, UP	75mm rapicon	14000	2019-20
30	Phonomix Plassio Mall	Lucknow, UP	75mm rapicon	120560	2019-20
31	L&T (wipro)	Bangalore	Internal wall(75mm)	17000	2017-18
32	malabar medical college	calicut	50 mm and 75 mm	28000	2015-16
33	Kims Hospital	Trivandrum	75mm	12000	2018-2019
34	Kottayam Medical College	Kottayam	50 mm	26000	2018-2019
35	Mims Hospital	Malappurem	50 mm and 75 mm	16000	2018-2019
36	Wayanadu Gate Hotel	Wayanadu	50 mm and 75 mm	28000	2015-16
37	Amritha College	Ernakulam	50mm rapicon	26000	2015-16
38	Wipro (L & T)	Hyderabad	Internal wall with 75mm	12000	2019-20
39	SKS Hospital	Bhopal	75 mm Rapicon panel	60,000	2015-16
40	City Center Mall	Raipur	75 mm Rapicon panel	15,000	2012-13
41	PGH Group	Jabalpur M.P.	75 mm Rapicon panel	80,000	2013-14
42	Sanitation Project	M.P.	50 mm Rapicon Panel	40000	2014-15

43	C-21 Mall	Indore M.P.	75 mm Rapicon panel	15000	2015-18
44	Naman Mall	Indore M.P.	75 mm Rapicon panel	10000	2016-19
45	Liquore Shop	Bilaspur CG	50 mm Rapicon Panel	15,000	2014-15
46	Star Acadmy	Indore M.P.	50 mm Rapicon Panel	12000	2019
47	NMRCL	Nagpur	75mm Shops Partition	30000	2019-2020
48	Raynolds Hospital	Washim	75mm Partition	13500	2019-2020
49	Tuli College	Nagpur	75mm Partiton	13000	2020

PART 4: STANDARD CONDITIONS

The certificate holder shall satisfy the following conditions:

- 4.1** The certificate holder shall continue to have the product reviewed by BMBA.
- 4.2** The product shall be continued to be manufactured according to and in compliance with the manufacturing specifications and quality assurance measures which applied at the time of issue or revalidation of this certificate. The Scheme of Quality Assurance separately approved shall be followed.
- 4.3** The quality of the product shall be maintained by the certificate holder.
- 4.4** The product user should install, use and maintain the product in accordance with the provisions in this Certificate.
- 4.5** This certificate does not cover uses of the product outside the scope of this appraisal.
- 4.6** The product is appraised against performance provisions contained in the standards listed in Part-5. Provisions of any subsequent revisions or provisions introduced after the date of the certificate do not apply.
- 4.7** Where reference is made in this Certificate to any Act of Parliament of India, Rules and Regulations made there under, statutes, specifications, codes of practice, standards etc. of the Bureau of Indian Standards or any other national standards body and the International Organization for Standardization (ISO), manufacturer's company standards, instruction/manual etc., it shall be construed as reference to such publications in the form in which they were in force on the date of grant of this Certificate (and indicated in Part 5 to this Certificate)
- 4.8** The certificate holder agrees to inform BMBA of their distributors / licensees whenever appointed by him and agrees to provide to BMBA a six monthly updated list thereof.
- 4.9** The certificate holder agrees to provide to BMBA feedback on the complaints received, the redressal provided, and the time taken to provide redressal on complaint to complaint basis as soon as redressal is provided. BMBA agrees to provide the certificate holder the user feedback received by it, if any.
- 4.10** If at any time during the validity period, PACH is unable to fulfil the conditions in his PAC, he should on his own initiative suspend using the PAC and notify Chairman, TAC the date from which he has suspended its use, the reason for suspension and the period by which he will be able to resume. He shall not resume without the prior permission of BMBA. He shall also inform, simultaneously, his agents, licensees, distributors, institutional, government, public sector buyers, other buyers and all those whom he has informed about his holding the PAC. He shall also inform all those who buy his product(s) during the period of suspension. He shall provide to BMBA at the earliest the list of who have been so informed by him.
- 4.11** In granting this certificate, BMBA takes no position as to:

- α) The presence or absence of patent or similar rights relating to the product;
- β) The legal right of the Certificate holder to market, install or maintain the product;
- χ) The nature of individual installations of the product, including methods of workmanship.

- 4.12** BMTPC and the Board of Agreement of BMTPC (BMBA) take no position relating to the holder of the performance appraisal certificate (PACH) and the users of the Performance Appraisal Certificate (PAC) respecting the patent rights/copyrights asserted relating to the product/system/design/method of installation etc. covered by this PAC. Considerations relating to patent/copyrights are beyond the scope of the Performance Appraisal Certification Scheme (PCS) under which this PAC has been issued. PACH and users of this PAC are expressly advised that determination of the Claim/validity of any such patent rights/copyrights and the risk of infringement of such rights is entirely the responsibility of PACH on the one hand and that of the users on the other.
- 4.13** It should be noted that any recommendations relating to the safe use of the product which are contained or referred to in this Certificate are the minimum standards required to be met with when the product is installed, used and maintained. They do not purport in any way to restate or cover all the requirements of related Acts such as the Factory Act, or of any other statutory or Common Law duties of care, or of any duty of care which exist at the date of this Certificate or in the future, nor is conformity with the provisions of this Certificate to be taken as satisfying the requirements of related Acts.
- 4.14** In granting this certificate, BMTPC and BMBA does not accept any responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the use of this product.
- 4.15** The certificate holder indemnifies BMBA, its officers and officials involved in the assessment against any consequences of actions taken in good faith including contents of this certificate. The responsibility fully rests with the certificate holder and user of the product.
- 4.16** The responsibility for conformity to conditions specified in this PAC lies with the manufacturer who is granted this PAC. The Board (BMBA) will only consider requests for modification or withdrawal of the PAC.
- 4.17** The PAC holder shall not use this certificate for legal defence in cases against him or for legal claims he may make from others.



Place: New Delhi
Date of issue: 29/03/2022

Chairman TAC & for and on behalf of Member

Secretary, BMBA

Dr. Sharesh Kr. Agrawal
Chairman, TAC

& Member Secretary, BMBA

Building Materials and Technology Promotion Council
Ministry of Housing and Urban Affairs, Govt. of India
Core 5A, 1st Floor, India Habitat Centre
Lodhi Road, New Delhi-110013

PART 5: LIST OF STANDARDS & CODES USED IN ASSESSMENT

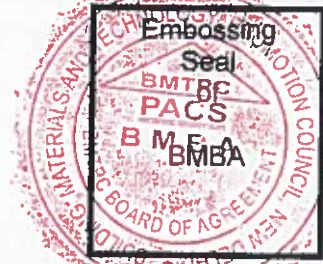
- | | | |
|--------|---------------------------|--|
| 5.1 | Standards | These Standards are referred for carrying out a particular test only and do not specify the requirement for the whole product as such. |
| 5.1.1 | IS 712:1984 | Specification for building lines |
| 5.1.2 | IS 2380 (Part 3):1977 | Method of tests for wood particle boards – Determination of flexural strength |
| 5.1.3 | IS 2380 (Part 4):1977 | Method of tests for wood particle boards – Determination of dimensional stability |
| 5.1.4 | IS 2547 (Part 1): 1976 | Specifications for gypsum building plaster – premixed light weight plaster |
| 5.1.5 | IS 3346:1980 | Method of determination of thermal conductivity of thermal insulation materials |
| 5.1.6 | IS 3614:1979 | Code of practice for Standard heating conditions |
| 5.1.7 | IS 3809:1979 | Fire resistance test for structures |
| 5.1.8 | IS 3812(Part 2):2003 | Specifications for flyash for use as pulverized mixture in cement concrete |
| 5.1.9 | IS 9901:1981 | Measurement of sound insulation in buildings and building elements |
| 5.1.10 | IS 11050 (Part 1): | 1984 – Rating of sound insulation in buildings |
| 5.1.11 | IS 12089:1987 | Specifications for granulated slag for manufacture of Portland slag cement concrete |
| 5.1.12 | IS 12269:2013 | Specifications for 53 grade ordinary Portland cement |
| 5.1.13 | IS 13000:1990 | Specifications for fibre cement flat sheets |
| 5.1.14 | IS 14862:2000 | Specifications for silica- asbestos cement flat cement sheets |
| 5.1.15 | BS 476 (Part 4):1970 | Test method for non-combustibility of building and structures |
| 5.1.16 | BS 476 (Part 5):1979 | Method of tests for ignitability |
| 5.1.17 | BS 476 (Part 6):1989 | Method of tests for fire on building materials and structures |
| 5.1.18 | BS 476 (Part 4):1997 | Method for fire classification of surface spread of flame |
| 5.1.19 | BS 476 (Part 20-22): 1987 | Fire resistance test to building materials and structures |
| 5.1.20 | BS 4370 (Part 2):1993 | Method of tests for rigid cellular materials |
| 5.1.20 | ASTM E 72:2015 | Standard test method for conducting strength test of panels for building construction |
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- 5.2 **Company Standards of the PAC holder** – The branded design & specifications of the raw materials and finished product are as submitted by the manufacturer. The PAC holder has to make available the company standards to the consumers according to which testing have been done.

CERTIFICATION

In the opinion of Building Materials & Technology Promotion Council's Board of Agreement (BMBA), **Everest Rapicon Panel/ Solid Wall Panel** is satisfactory if used as set out above in the text of the Certificate. This Certificate PAC No. 1061-S/2022 is awarded to **M/s Everest Industries Ltd.**

The period of validity of this Certificate is for a period of one year i.e. from **29/03/2022** to **28/03/2023** as shown on Page 1 of this PAC. This Certificate consists of pages 1 to 44.

Udeta Ram



On behalf of BMTPC Board of Agreement, Chairman, Technical Assessment Committee (TAC) of BMBA & Member Secretary, BMTPC Board of Agreement (BMBA) under Ministry of Housing and Urban Affairs, Government of India.

Place: New Delhi, India

Date: 29/03/2022

PART 6: ABBREVIATIONS

BMBA	Board of Agreement of BMTPC
BMTPC	Building Materials and Technology Promotion Council
CPWD	Central Public Works Department
ED	Executive Director of BMTPC
IO	Inspecting Officer
MS	Member Secretary of BMBA
PAC	Performance Appraisal Certificate
PACH	PAC Holder
PACS	Performance Appraisal Certification Scheme
SQA	Scheme of Quality Assurance
TAC	Technical Assessment Committee (of BMBA)

Performance Appraisal Certification Scheme - A Brief

Building Materials & Technology Promotion Council (BMTPC) was set up by the Government of India as a body under the Ministry of Housing & Urban Poverty Alleviation to serve as an apex body to provide inter-disciplinary platform to promote development and use of innovative building materials and technologies laying special emphasis on sustainable growth, environmental friendliness and protection, use of industrial, agricultural, mining and mineral wastes, cost saving, energy saving etc. without diminishing the needs of safety, durability and comfort to the occupants of buildings using newly developed materials and technologies.

During the years government, public and private sector organizations independently or under the aegis of BMTPC have developed several new materials and technologies. With liberalization of the economy several such materials and technologies are being imported. However, benefits of such developments have not been realized in full measure as understandably the ultimate users are reluctant to put them to full use for want of information and data to enable them to make informed choice.

In order to help the user in this regard and derive the envisaged social and economic benefits the Ministry of Housing & Urban Poverty Alleviation has instituted a scheme called Performance Appraisal Certification Scheme (PACS) under which a Performance Appraisal Certificate (PAC) is issued covering new materials and technologies. PAC provides after due investigation, tests and assessments, amongst other things information to the user to make informed choice.

To make the PACS transparent and authentic it is administered through a Technical Assessment Committee (TAC) and the BMTPC Board of Agreement (BMBA) in which scientific, technological, academic, professional organizations and industry interests are represented.

The Government of India has vested the authority for the operation of the Scheme with BMTPC through Gazette Notification No. 1-16011/5/99 H-II in the Gazette of India No.49 dated 4th December, 1999. Builders and construction agencies in the Government, public and private sectors can help serve the economic, development and environmental causes for which the people and Government stand committed by giving preference to materials and technologies which have earned Performance Appraisal Certificates.

Further information on PACS can be obtained from the website: www.bmtpc.org

ANNEXURE- I

QUALITY ASSURANCE PLAN FOR RAPICON PANELS

(Clause 1.5.2)

S. No.	Parameters to be inspected	Requirement Specified	Test Method	Frequency of Testing
I. Raw Materials				
1.	O P Cement 43 Grade	As per IS 8112:2013	Manufacturer's test report	Every batch/lot received
2.	O P Cement 53 Grade	As per IS 12269:2013	Manufacturer's test report	Every batch/lot received
3.	Flyash	As per IS 3812 (Part 1):2003	As per IS 1727:1967	Every batch/lot received
4.	Quick Lime	As per IS 712:1984,	Manufacturer's Test Certificate	Every batch/lot received
5.	GGBS slag	As per IS 12089:1987	As per IS 4031(Part 2)	Every batch/lot received
6.	Fibre cement sheet	As per IS 14862:2000	As per IS 14862:2000	Every batch/lot received
7.	Pulp	As per manufacturer's test report	Manufacturer's test report	Every batch/lot received
II. Finished Panels				
1.	Width (mm)	± 3mm	Manually	5 Panels/Batch
2.	Thickness	± 2	Manually	6/100 panels
3.	Length (mm)	± 3mm	Manually	5 Panels/Batch
4.	Edge straightness	± 2mm/mtr(max)	Manually	5 Panels/Batch
5.	Diagonal difference	± 3mm (max)	Manually	5 Panels/Batch
6.	Tongue & groove joint	5 mm(max)	Visual	2 Panels/Batch
7.	Voids	Should be absent	Visual	2 Panels/Batch
8.	Physical observations	Tongue & groove should be intact. Panels should be free from edge breakage, cracks & delamination	Visual	4/100 panels
9.	Density	700 to 800 kg/m ³	IS 2380 (Part 3):1977	5 Panels/Batch
10.	Moisture	< 15%	IS 2380 (Part 3):1977	5 Panels/Batch
11.	Axial Compressive strength (kN/m ²)	50 mm thick = 47 75 mm thick = 75	ASTM E72:2015	5 Panels/Batch
12.	Bending Strength (MPa)	50 mm thick = 3.8 75 mm thick = 2.8	ASTM E72:2015	5 Panels/Batch
13.	Thermal conductivity (W/m°)	50 mm thick = 0.013 75 mm thick = 0.013	IS 3346:1980/ BS 4370 (Part 2):1993	As & when major design changes are made
14.	Fire resistance (Minutes)	50 mm thick = 108 75 mm thick = 134	IS 3809:1979/ BS 476 (Part 20-22):1987	
15.	Sound Transmission (dB)	50 mm thick = 39 75 mm thick = 39	IS 9901 (Part 3):1981/IS 11050 (Part 1):1984	
16.	Surface spread of flame	Class 1	BS 476 (Part 7):1997	
17.	Fire propagation index (I)	3.7	BS 476 (Part 6):1989	

ANNEXURE- II

PANELS PROCESS FLOW CHART

