



## **Advance Composite Engineering System**

*Imagination into Reality*

**Designing | Engineering | Prototyping | Tooling | Manufacturing**



**COMPOSITE WALL PANEL**

**ADVANCE COMPOSITE ENGINEERING SYSTEM**



- Various chemicals, materials and minerals gelled together to form a collective synergy with high strength and longitivity.
- Composite wall panel of concrete and reinforcing media result in lower weight and ease of handling.
- Lower weight brings in Sea change, resulting in huge financial savings and ease in rapid system of operation.
- Dependability on uncertain manpower reduces drastically.



## **ADVANTAGES:**

- TIME SAVING BY SPEED OF CONSTRUCTION : SAVE INTEREST ON PROJECT COST BY CUTTING DOWN TIME OF CONSTRUCTION SUBSTANTIALLY.
- NO CURING: SAVES ON COST OF WATER AND MANPOWER WITH TIME, OVER ALL SAVING.
- GREEN CONSTRUCTION: CLEAN AND RUBBLE LESS CONSTRUCTION, CONTROLS POLLUTION.
- LESS TRANSPORTATION: COMPARED TO MOVEMENT OF CEMENT AND OTHER AGGREGATES ITS JUST ONE PANEL MOVEMENT TO SITE.
- CONDUIT PANELS: NO SEPARATE CUTTING OF WALL SURFACE FOR INSERTION OF ELECTRICAL PIPE AND LATER CONSEALING IT WITH FNISHING ETC.
- NO ADDITIONAL PLASTER: PANELS HAVE SMOOTH SURFACE FINISH AND HAS STRENGTH OF CONCRETE,SAVING ADDITIONAL COST OF PLASTER MATERIAL AND MANPOWER ALONG WITH TIME.
- TEMPERATURE CONTROL : PANELS HAS HOLLOW SECTIONS WITH BAFFELES,TRANSIENT HEAT IS CONTROLLED ON EXTERIOR SURFACE.



## **ADVANTAGES:**

- **KNOCKING SOUND: NO HOLLOW KNOCKING SOUND, ESTABLISHING CUSTOMER CONFIDENCE.**
- **NO VERTICAL CAPILARY ACTION :CASTED CONCRETE PANELS HAS NO HAIRLINE CRACKS THUS NO CAPIARY ACTION.**
- **NO LEAKAGES :BONDING OF CONCRETE PANELS WITH WEIGHT AND GROUTING, WITHOUT ANY INTERFERANCE OF METALS ETC., ENSURES PERFECT BONDING AND THUS NO LEAKAGES.**
- **NO SURFACE CRACKS : CURED CONCRETE WALL PANELS, THUS NO LATENT HEAT OF HYDERATION AND THEREFORE NO CRACKS.**
- **ADHESION OF PANEL TO PARENT STRUCTURE : ADHESION OF PANELS IS WITH POLYMER GROUTING AND METAL INSERTIONS IN PARENT STRUCTURE WITH MULTIPLE CLITS, FASTENERS.**
- **RESUABLE PANELS : IN CASE OF CHANGE OF WALL PLAN,PANLES CAN BE CUT FROM TOP AND BOTTOM AND CAN BE RESUSED AT OTHER LOCATION UNLIKE BLOCK WORK.**
- **SITE HANDLING OF PANELS: BY WINCH,MINI CRANE AND TROLLEYS**



**For 1 Brass (100Sq.ft) Economics for 100mm thick wall panel**

<b>PARAMETERS</b>	<b>MY ONE/TUNNEL</b>	<b>RED BRICKS</b>	<b>AAC BLOCKS</b>	<b>TUFF WALL (A)</b>
<b>THICKNESS OF WALL</b>	<b>100mm</b>	<b>100mm</b>	<b>100mm</b>	<b>100mm</b>
<b>Masonry</b>	<b>7 days</b>	<b>5 days</b>	<b>3 days</b>	<b>3 Hours</b>
<b>PLASTER</b>	<b>No Need</b>	<b>15mm each side</b>	<b>10 mm each side</b>	<b>No Need</b>
<b>POP/GYPSUM</b>	<b>10mm</b>	<b>10mm</b>	<b>10mm</b>	<b>need only 2-4mm</b>
<b>CURING</b>	<b>14days</b>	<b>14days</b>	<b>7 days</b>	<b>no need</b>
<b>CONDUITS</b>	<b>not possible after casting</b>	<b>possible by chasing</b>	<b>possible by chasing</b>	<b>Inbuilt and also possible after fitment</b>
<b>SITE CLEANING</b>	<b>Required</b>	<b>Required</b>	<b>Required</b>	<b>no need</b>
<b>WATER ABSORBTION</b>	<b>2.5%-3%</b>	<b>12-15%</b>	<b>15%</b>	<b>0</b>
<b>DENSITY</b>	<b>2440 kg/m3</b>	<b>1765 kg/m3</b>	<b>900-950kg/m3</b>	<b>1250 kg/m3</b>

## DIRECT SAVING COMPARISON: NON-TANGIBLE

PARAMETERS	RED BRICK WALL	AAC WALL	TUFF WALL (A)
STRENGTH	M20	M20	M40
ELECTRICAL CONDUITING	REQUIRED POST CONSTRUCTION	REQUIRED POST CONSTRUCTION	NOT REQUIRED, (PRE-CONDUITED PANELS)
PLASTER	REQUIRED	NOT REQUIRED	NO REQUIRED
CAPILLARY ACTION	YES	YES	NO
WALL PANEL BOTTOM FITMENT LEAKAGE	NO	YES	NO
WATER ABSORPTION	YES	YES	NO
KNOCKING SOUND	NO	YES	NO
SOUND RESISTANCE	YES	NO	YES
THERMAL RETARDANCE	NO	NO	YES
STEEL REINFORCEMENT	NO	NO	YES
WEIGHT TAKING CAPACITY AFTER SCREWING/BOLTING	LESS	AVERAGE	HIGH
RELOCATING/REUSABLE WALL	NO	YES	YES

**CONCLUSION: USING TUFF WALL GIVES 30% ADDITIONAL SAVING ON COST OF WALL OVER BRICK WORK AND 20% ADDITIONAL SAVING ON AAC WALLS**

## DIRECT SAVING COMPARISON - TANGIBLE

(In Sq.ft; 100mm wall thickness)

PARAMETERS	RED BRICK WALL (In Rs.)	AAC WALL (In Rs.)	TUFF WALL (In Rs.)
CONCRETE GRADE	M20	M10	M40
WALL PANEL/BRICKS/BLOCKS	32	62	169
PLASTER MATERIAL	82	0	0
CHEMICAL/GROUTING/METAL	32	15	4
COST OF LABOUR FOR PLASTER	40	0	0
COST OF LABOUR FOR MASONARY	18	25	0
POP/GYPSUM COATING	22	44	15
CURING LABOUR AND WATER	5	5	0
CLEANING	2	2	0
TRANSPORT/HANDLING	10	10	0
ELECTRICAL CONDUITING	35	35	0
NO. OF DAYS REQUIRED FOR 100 SQ.FT WALL	DAY 1: MASONARY DAYS 2: CURING DAYS 1: PLASTER DAYS 6: CURING DAYS 2: ELECTRICAL CONDUITING	DAYS 2: MASONARY, DAYS 2 : ELECTRICAL CONDUITING	3 HOURS
<b>TOTAL COST FOR 100mm WALL FOR 1 sq.ft</b>	<b>278</b>	<b>198</b>	<b>188</b>





## Specification:

- Panel Width: 600mm
- Panel Height: 3050mm
- Panel Composition: Engineered Concrete design mix – M40
- Panel Cast Thickness: 20mm on each side (Reinforced with steel and fiber mesh)

TYPE	THICKNESS (mm)	DENSITY (Kg/m <sup>3</sup> )	WEIGHT (Kg)
A	75	1500	206
A	100	1250	230
A	150	960	264
A	200	950	341
B	75	1600	220



- Less thickness, increases carpet space
  - Dry & Clean ,Green construction
  - Enhanced speed of Construction
  - Reusable Walls
  - Saves Time, Money with best factory made precision quality
- Ultimate solution for civil industry***



**APPLICATIONS INCLUDE:**

Houses, apartment buildings, public buildings, warehouses, noise barriers, safety fences

Shelves, cabinets, electronic devices, paintings, etc. can be mounted directly on the wall

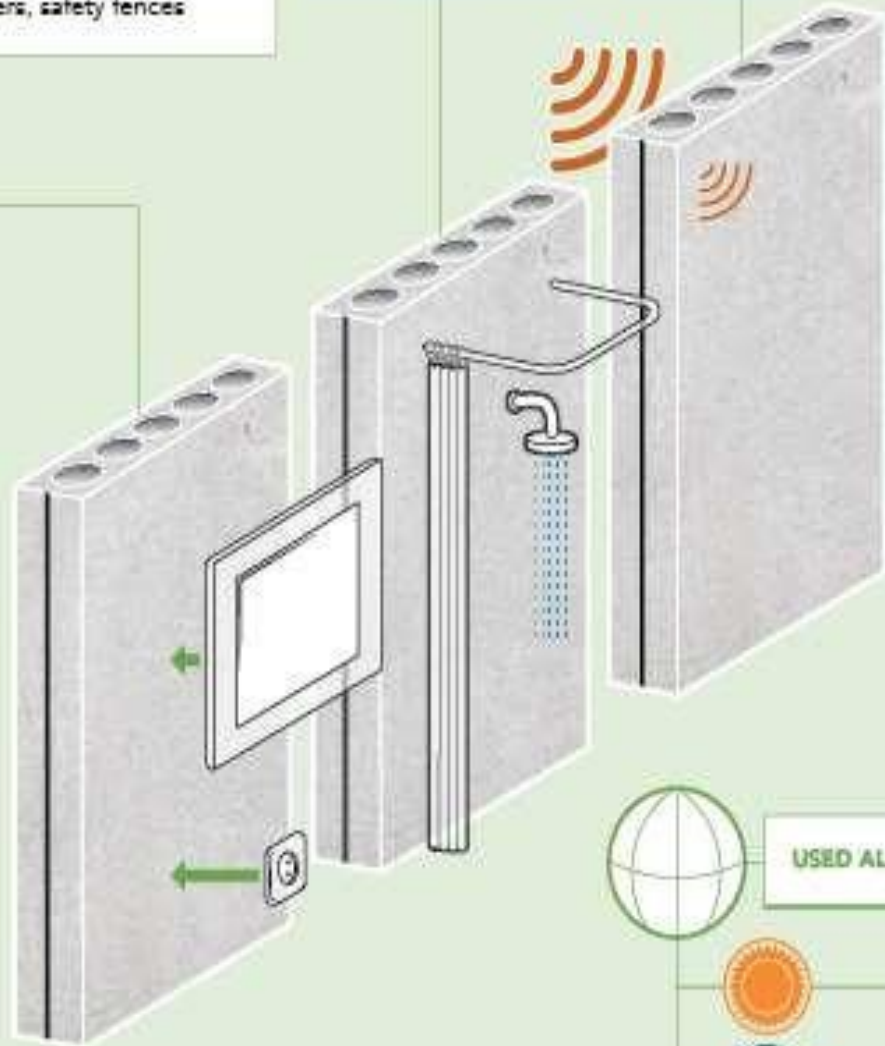
Fire resistant (EI30 to EI120)

Suitable for wet rooms

Noise attenuation (Rw 38, 48 dB)



Suitable for seismic zones – available with safety wire mesh



**USED ALL AROUND THE WORLD**



Suitable for areas with high air humidity

**TUFF WALL**



PANEL SEAMS

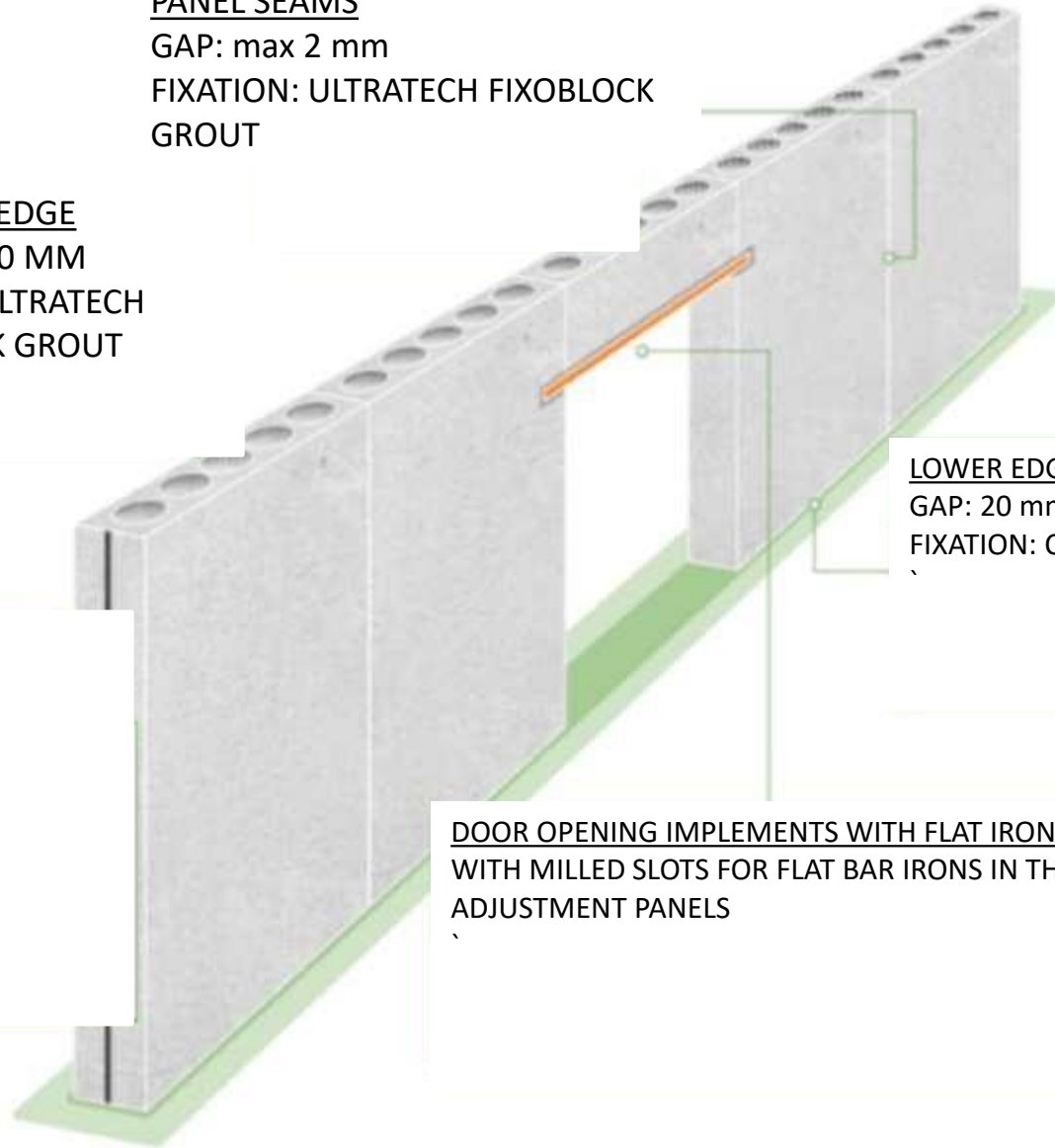
GAP: max 2 mm

FIXATION: ULTRATECH FIXOBLOCK  
GROUT

UPPER EDGE  
GAP 5-10 MM  
FIXATION: ULTRATECH  
FIXOBLOCK GROUT

LOWER EDGE  
GAP: 20 mm  
FIXATION: CEMENT MORTAR

DOOR OPENING IMPLEMENTS WITH FLAT IRON BARS  
WITH MILLED SLOTS FOR FLAT BAR IRONS IN THE  
ADJUSTMENT PANELS

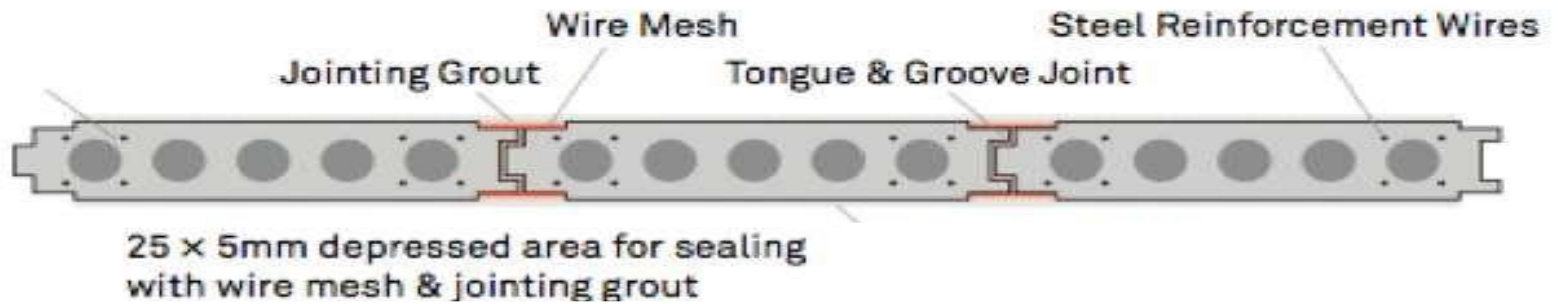




## To build Partition Wall:

11

- Panels are interlocked in the Tongue & Groove.
- Joining panels with cementitious compound.
- Recessed panel's joints are sealed on wall's front & back with the help of Fiberglass mesh
- Top & Bottom of wall panels are filled with concrete mortar.



**TUFF  
WALL**



## Grout Details



PARAMETER	VALUE
FRESH WET DENSITY	2250-2350 KG/M <sup>3</sup>
SETTING TIME (FINAL)	280 MIN
COMPRESSIVE STRENGTH	70-75 N/MM <sup>2</sup>
TENSILE STRENGTH	5.5-6 N/MM <sup>2</sup>
EXPANSION	NIL



PARAMETER	VALUE
FRESH WET DENSITY	1610-1650 KG/M <sup>3</sup>
SETTING TIME (FINAL)	480 MIN
FLEXURAL STRENGTH	13-15 N/MM <sup>2</sup>
TENSILE STRENGTH	2.5-3 N/MM <sup>2</sup>
EXPANSION	NIL



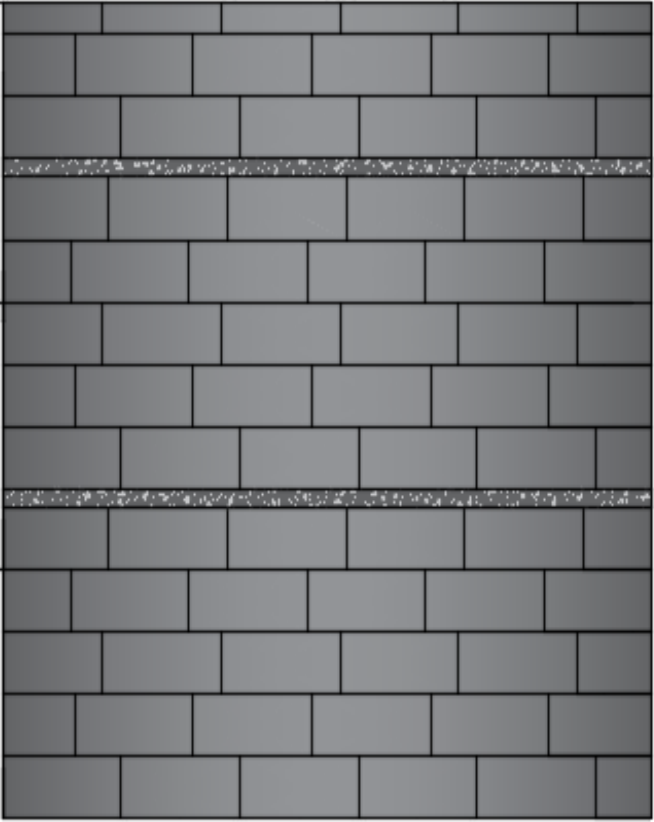
PARAMETER	VALUE
FRESH WET DENSITY	1680-1700 KG/M <sup>3</sup>
SETTING TIME (FINAL)	480 MIN
FLEXURAL STRENGTH	10-15 N/MM <sup>2</sup>
TENSILE STRENGTH	2-2.5 N/MM <sup>2</sup>
EXPANSION	NIL



# ADVANCE COMPOSITE ENGINEERING SYSTEM

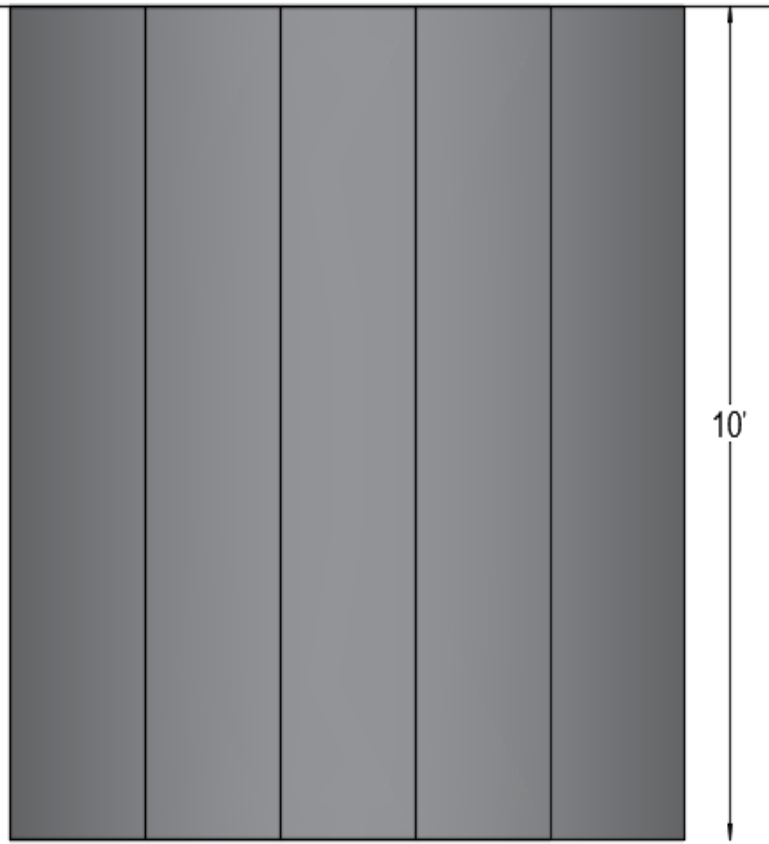
## BLOCK WORK WALL VS PRECAST COMPOSITE TUFF WALL

DAYS 3



10'

FIRST 3 HOURS OF DAY 1



10'

10'

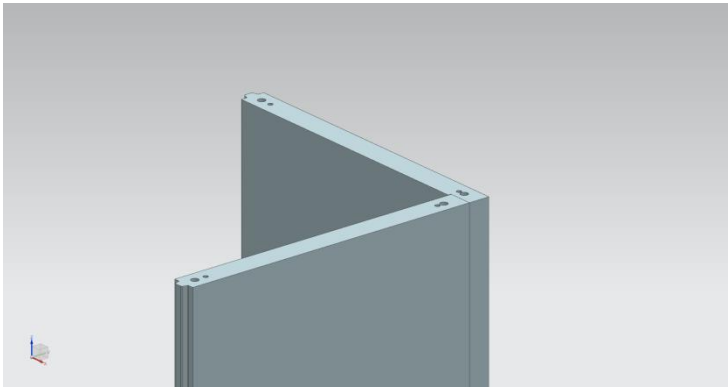
10'



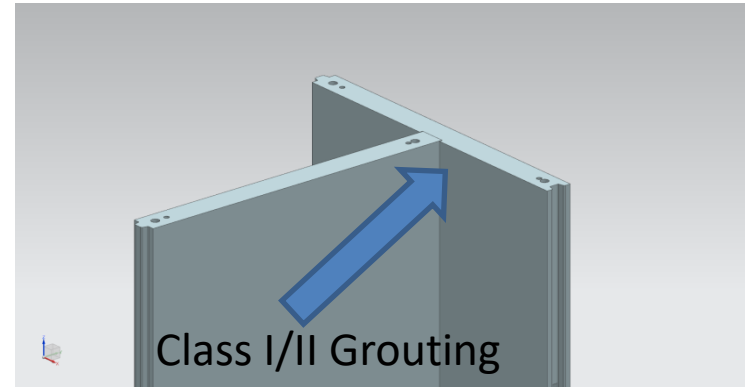
# ADVANCED COMPOSITE ENGINEERING SYSTEM

Pre-cast Composite Walls.

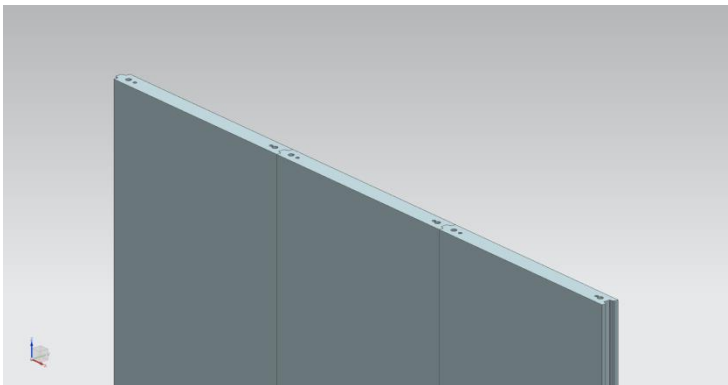
## Joint Details



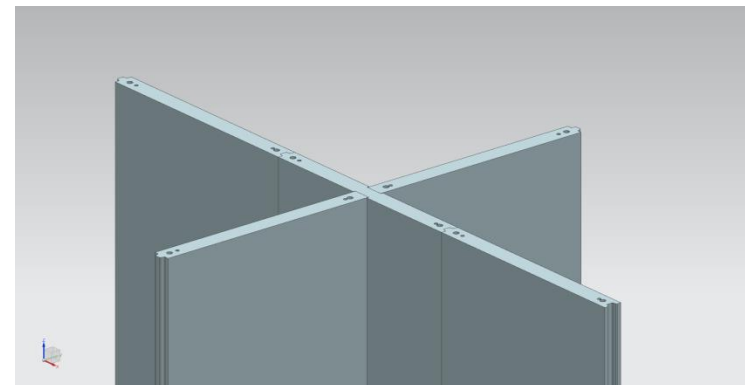
Angular Junction Pre-cast Composite Tuff Walls



T-Junction Pre-cast Composite Tuff Walls



Continuous Pre-cast Composite Tuff Walls



Quadrupole Junction Pre-cast Composite Tuff Walls



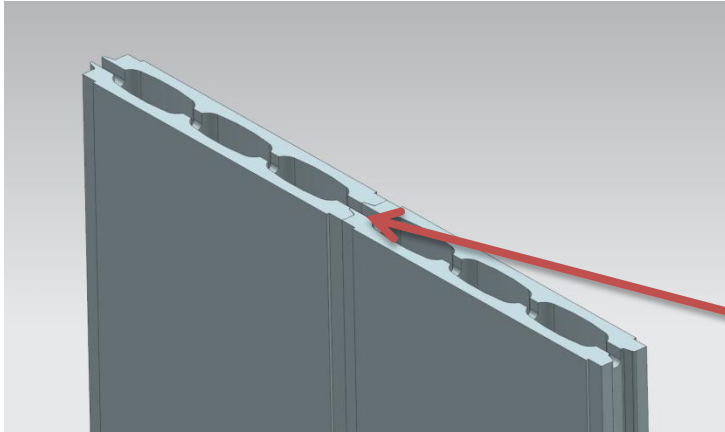


# ADVANCED COMPOSITE ENGINEERING SYSTEM

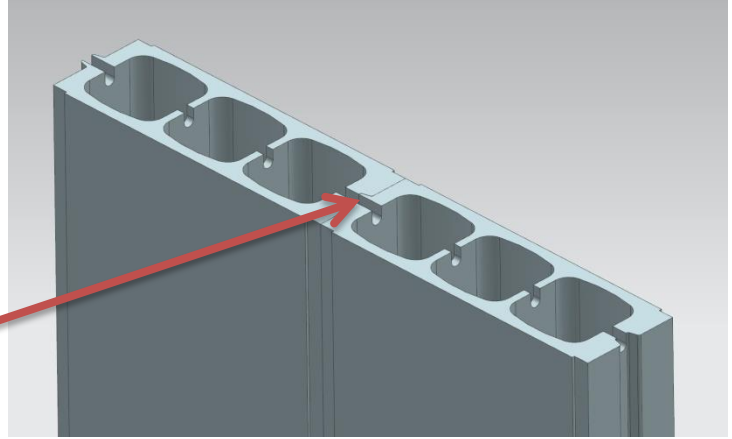
Pre-cast Composite Walls.

## CROSS SECTION

Angular Junction Pre-cast Composite Tuff Wall A

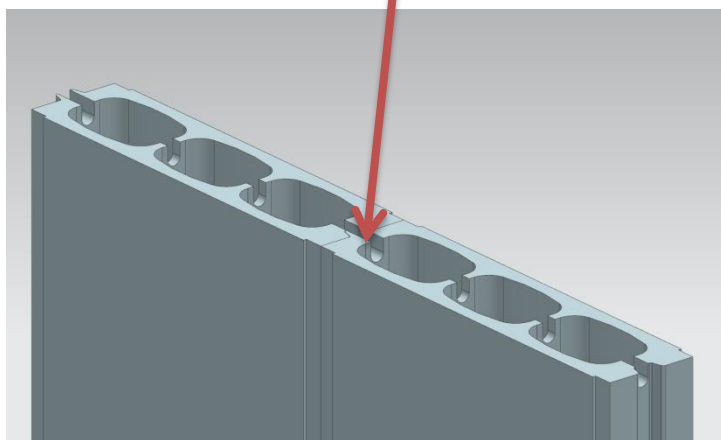


**100mm**



**150mm**

HORIZONTAL PASSAGE  
FOR CONDUIT (TOP AND  
BOTTOM)



**200mm**



**ADVANCE COMPOSITE ENGINEERING SYSTEM**  
**PRECAST COMPOSITE TUFF WALL.**

**Composite Tuff wall used in types of constructions:**

1. With Load Bearing.
2. With Beam and Column.
3. With Tunnel form & Myone.
4. With Floor Slabs & Platforms.
5. With Pre-fabricated Structures.



**BOTTOM ANGLE**



**TOP C CHANNEL**



**FINISHED ROOM**



**FIXTURE FOR FIXING TUFF WALL PANEL IN PLACE**

**VASCON GOODLIFE: FLAT CONSTRUCTION**

# FITMENT OF TUFF WALL



## ADVANCE COMPOSITE ENGINEERING SYSTEM

### Magarpatta Madhuvan 6 Kitchen partition walls



- Leak Proof Bottom Adhesion
- Panel to Panel Joinery, zero deflection or bending



- Lintels
- Adhesion of wall with blocks
- Sharp Edges



# ADVANCE COMPOSITE ENGINEERING SYSTEM

## Load Bearing Structure





## Summary:

- 1) Wall panel are Made from M40 Grade of Concrete duly reinforced with steel wires. Very Strong & Durable, Quick & Easy to Install. Can be Sawn, Cut, Drilled & Bored
- 2) To build Partition Wall, these panels are interlocked in Tongue & Groove & are fixed with Cementations jointing compound, which is being applied between abutting panels. Further the recessed panel's joints are sealed on constructed wall's on front & back with the help of Fiberglass mesh & Cementations jointing compound. These joints are impermeable to water. The Top of wall panels is filled with PU / concrete mortar & Bottom of the panel are filled with Cement Mortar.
- 3) Production process translates into precise panel dimensions with flat & smooth panel surfaces, hence quick and easy to install –Because of its flatness, Plastering is not required, only 2/3mm skim coat of wall putty is sufficient before painting.
- 4) 40% saving in internal plastering cost & less lifting of plaster materials at building site.
- 5) Dry wall, No Curing required at installation site.
- 6) Fix Directly -Tiles, Marble, Granite, FCB board etc. or Apply Texture coat directly on these Wall panels.
- 7) These panels are also used for External walls by applying 12/15mm cement plaster coat from outside.
- 8) Excellent Sound insulation up to 40dB, hence used for Commercial buildings, Hotel rooms, Hospitals, Schools & Apartments
- 9) Excellent Thermal Insulation, fire resistance (2Hrs)





**THANK YOU!**

**Advance Composite Engineering System**

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