يوروب سترونغفورس لشد هياكل الخرسانة ذ.م.م

EUROPE STRONG FORCE POST TENSIONING L.L.C

TSSC BUILDING SYSTEMS

EASYWALL™

The Replacement for Block Walls

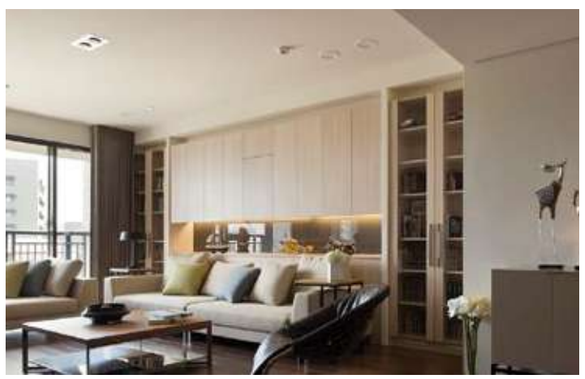
Group HARWAL MANUFACTURING TECHNOLOGIES

EASYWALL™
The Lightweight Concrete Technology

EASYWALL is an innovative and highly efficient construction wall product and system which delivers unbeatable value to the building sector. It has been designed to help developers, builders and consultants meet the needs of today's fast-paced construction requirements.

It accelerates the building assembly schedule and reduces the installation/finishing expenses - a solid product, competitively priced. Simply put, it is the smart engineering and business solution for exterior walls and interior partitions.

- Dubai Civil Defense approved
- Compliant with Local & International Standards

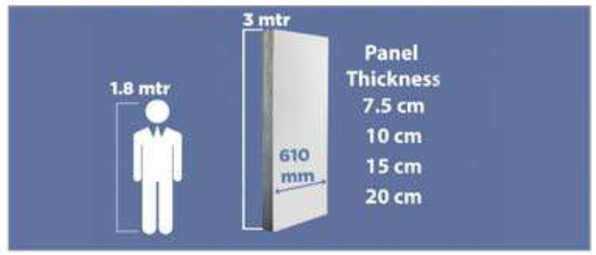


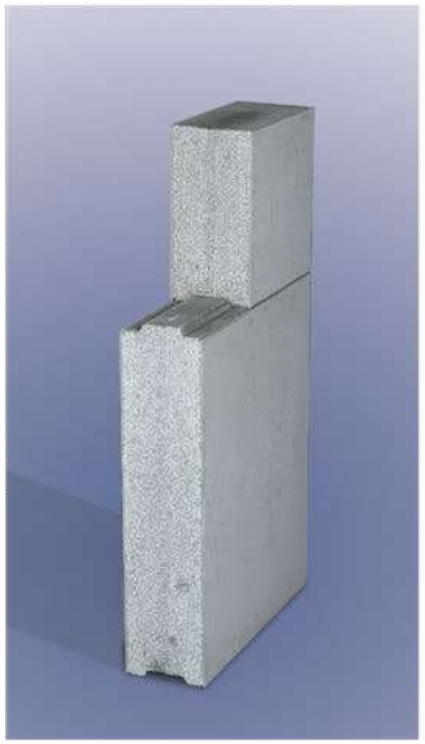
EASYWALL Features

- Consistent High Quality Finish
- Lightweight & Easy to Handle
- Simple Construction and Assembly method
- Flexible Surface Finishing
- Fire Resistant for 2 hours +
- Superior Thermal Insulation
- Superior Noise Reduction
- Ease of cutting and shaping
- Easy installation of electric and sanitary extensions

EASYWALL System

EASYWALL System is a sandwich wall panel made of cement board on the exterior. The interior composite core material is a system of lightweight concrete mix made from ordinary Portland cement, additives, aggregates, admixtures and Expanded Polystyrene. This combination of material delivers rigidity, strength and the insulation factor needed. It also provides flexibility for the customer in the use of the wall to meet many requirements. The presence of lightweight aggregates, air entertainers and EPS acts as an insulator and provides EASYWALL with green building material characteristics.





The panels are available in thicknesses of 75, 100, 150 and 200 mm, and are available in height of 3.0 meters. One side of the panel has a male - tongue profile and the other a female-groove profile. When the panels are erected the tongue and groove fit together to form a precise fit. The result is a high quality wall ready to receive point of the time taken by conventional methods.

The panels are non-load bearing and electrical conduits can be embedded inside the walls. The system offers a practical solution for plumbing and other facility management requirements. Doors and windows can be installed quite easily.

In order to speed the assembly process and reduce manpower requirements the panels are manufactured in 610 mm wide sections to enable easy handling. The reduction of manpower and significantly faster assembly are key elements of the value proposition of the EASYWALL system

Applications

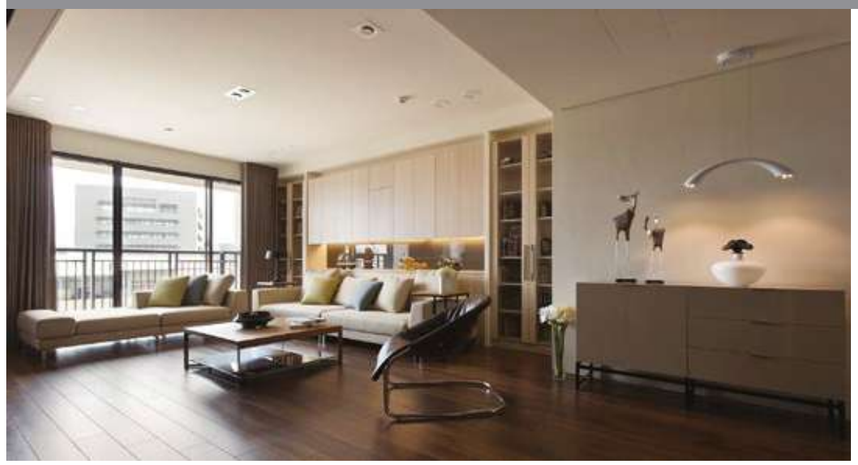
The advanced technology and engineering that has been applied to develop the EASY WALL system makes it suitable for the construction of most types of unit. It is the ideal solution for the assembly of partition walls in single and multi-story buildings. The EASYWALL system offers clear advantages to the client, developer and contractor:

- Fast Assembly (Time Saving)
- Easy Assembly (Less Labor)
- Competitive Pricing (Cost Saving)
- Simple Finishing by Eliminating Plastering (Cost Saving in Finishing Expenses)

The combined savings in the material cost along with the savings in time and labor expenses delivers a clear advantage to the client. An added benefit is the much lighter weight of EASYWALL panel which often results in less structural re-enforcement being required for the building.

EASYWALL is ideal for a wide range of building and construction applications.

- Large-scale residential development projects
- Homes
- Apartment buildings
- Schools
- Offices
- Hotels
- Clinics
- Commercial buildings
- Retail Facilities



EASYWALL

Hospitality Buildings & High - Rise Buildings

Hospitality Buildings / High - Rise Buildings

The EASYWALL systems is ideal for the external walls and interior partitions within hospitality buildings and high-rise buildings. It is applicable for a wide range of building construction. EASYWALL accelerates the building assembly schedule and reduces installation expenses compared to conventional concrete block.

EASYWALL

Single Level & Multi Level Buildings

Single Level & Multi Level Building

EASY WALL is versatile for multiple applications such as walls for single level and low-rise buildings. It is a single panel walling system that serves as both the internal and external wall and eliminates the need for bricks, blocks, timber and plasterboard linings .

EASYWALL

Housing Projects

EASYWALL is manufactured to the highest quality standards and allows the rapid building of custom made single or multi family home communities. It has been developed to solve the need for conventional housing throughout the Middle East and North Africa regions.

EASYWALL

Interior Walls & Partitions

Interior Walls & Partitions

EASYWALL is the ideal solution for the assembly of Interior and partition walls in single or multi-story buildings. Easy to install, EASYWALL sections can be quickly erected and finished to ensure speedy turnaround.

EASYWALL

Warehouses & Industrial Buildings

Warehouses & Industrial Buildings

The EASYWALL system can be used as cladding in certain applications, such as warehouses and industrial buildings. Compared with conventional concrete block or pre-cast wall systems, the EASYWALL offers much quicker assembly of a rigid wall system at a competitive price.

EASYWALL

Commercial Buildings

Commercial Buildings

The EASYWALL system is ideal for a wide range of commercial building construction. It provides a cost competitive alternative to conventional building methods by eliminating block wall work.

System Advantages

Thermal Insulation / Energy Saving

EASYWALL is characterized by its superior thermal insulation. Since the expanded polystyrene (EPS) in the core acts as an air and vapor barrier it allows temperatures to be maintained for longer periods above or below ambient conditions. EASY WALL offers an energy-efficient & air tight building, providing greater comfort and significant savings in heating and cooling costs.

Where higher levels of thermal insulation are required EASYWALL offers a PIR-insulated option. Sandwiched within the core is a thick layer of solid polyisocynurate foam, one of the world's most effective insulating materials.

Robust Construction

Despite their lightweight composition EASYWALL panels are strong and capable of withstanding rough treatment and natural calamities. EASYWALL partition walls can bear heavy attachments such as kitchen cupboards, wash basins and televisions with proper anchoring. Complies with BS 5423/2: 1992

Rapid Installation

Building with the EASYWALL system contributes to rapid installation and a reduction in manpower. Economical large-format panels and a ready-finished surface means the walls do not need to be plastered. This ensures much shorter construction cycles.

EASYWALL Finishing

No Plastering / No Wet Trade

One of the biggest advantages of the EASYWALL is the elimination of the conventional plastering process, which is time consuming and expensive. Plastering is a serious impediment to the acceleration of a project schedule.

EASYWALL has semi-finished surfaces so all that is required post-erection is simple paste and paint. EASYWALL is also flexible enough to allow other finishes, such as stone, wood, ceramics, EIFS system or even plaster.

Direct Cost Savings

The above advantages also translate into direct cost savings over and above the inherent savings that are provided by early project completion:

- Reduction of wet trade, elimination of plastering.
- Reduction of wastage
- Less labor related costs

Light Weight

The standard dimensions of the EASYWALL is 610 mm by 3 meters. Because of its light weight – 70 – 80% lighter than conventional blocks – fewer laborers can handle each panel much more efficiently. The lightness of the EASYWALL may also have a positive effect on the structural design of multi-story buildings by reducing, in some cases, the cost of certain structural elements – for example, grade beams and slab thicknesses.

Average Panel Weights

Panel thickness	75mm	100mm	150mm	200mm
3.0 mm Length +/- 10 kg	87 kg	115 kg	172 kg	229 kg

Acoustic Insulation

EASYWALL Acoustic Walls are specifically engineered to dampen sound between rooms and in corridors. These panels are the ideal solution for residential units, hotels, schools and office partitions. EasyPanel acoustic walls provide high levels of acoustic insulation for serene living, dwelling and working. The sound reduction index value of 100mm standard EasyWall Panel is 44 dB, whereas the EASYWALL Acoustic Walls can achieve upto 63dB, higher than conventional block system.

Fire Resistant

EASYWALL is certified by CCS based on the Qplus scheme as being non-combustible 120 mins - 240 mins fire resistance level.

Electrical & Pipe Installation

The panels can be easily cut and channeled to install electrical or plumbing extensions, and the patching process is simple and quick. The extensions can be factory-embedded , fixed b/w walls, chaste on site or surface mounted.

Easy Door & Window Installation

Installation of doors and windows is easy with EASYWALL . A simple process allows door and window openings to be cut and prepared for assembly without lintel.

Environmental Attributes

- Free from odors
- Does not emit toxic fumes
- No CFC-emitting chemicals
- Does not contain asbestos
- Low carbon footprint

REDUCING OUR carbon FOOTPRINT

Project References


Opus – Zaha Hadid


Aroma – DIAC


MESC Marina


Al Maha Accommodation
Gasco_Habshan, Abu Dhabi


Boulevard Heights Tower,
Emaar Boulevard, Dubai


Dubai Creek Harbor


Al Maryah Central Mall,
AbuDhabi

MV University
Ajman

Park Inn Jubail, KSA

Arab Marine Academy
Khor Fakkan

Comparison Chart

Comparison Chart b/w 200mm Block and 150mm EASYWALL

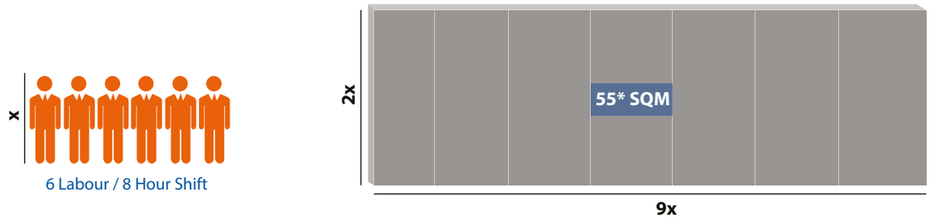
Description	EWP	Hollow Block	AAC Block
Compressive Strength (N/mm^2)	3.33 - 5.17	1.3 - 3.5	3.0 - 4.0
Direct Pullout (kgs)	151.95 - 331.5	Up to 75	Up to 35
Density (kg/m^3)	500 - 650	1400 - 1900	400 - 1000
U-value	0.31 - 1.51	2.3 - 2.8	0.3 - 0.4
Fire Rating	2 - 4 hours	Varies	0 - 4 hours
STC Rating	40.5 - 63.5	Up to 46	Up to 39
Water Penetration	Low	Low	Low
Carbon Footprint	Low	High	High
Energy Efficiency	High	Low	Low
Axial Load Capacity (KN)	30 - 80	N/A	N/A
Flexural Strength (N/mm^2)	1.37 – 1.50	N/A	N/A
Plaster Requirement	Not Required	Required	Required
Wet Area	Acceptable	Acceptable	Acceptable

Average Panel Weigths

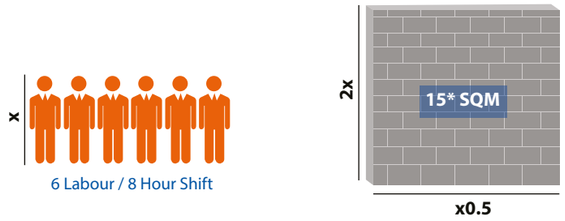
EWP Thickness	75mm	100mm	150mm	200mm
Panel Weight +/- 10 kg	87	115	172	229

Time Comparison Chart

EASYWALL™ Panels



Standard Block (CMU)



EASYWALL Panels 3000 x 610 x 150 (h x l x w) Team of 6 skilled labourers	
Step	Time
Location marking	0.5 hr
Bottom and top track cutting and setting	1.0 hr
Install first panel with dowel bars	0.5 hr
Installation of vertical panels	1.0 hr
Measuring and cutting of horizontal panels	1.0 hr
Installation of horizontal panels	1.0 hr
Closing of head track	0.25 hr
Wind post measurement and fixing	0.5 hr
Closing of joints	1.0 hr
Curing time	24 hrs
Finishing of joints	1.0 hr

Note: Panels only require mobile scaffolding and not restricted by height

Total Time	31.75 hrs

Blocks 200 x 400 x 150 (h x l x w) Team of 5 bricklayers and 2 plasterers	
Step	Time
Mortar mixing and setting out	0.5 hr
Block laying	48 hrs
Steel fixing for column support	2 hrs
Mixing and casting of column	1.5 hrs
Curing time	24 hrs
Manual plastering	5 hrs
Curing time	24 hrs
Wind post measurement and fixing	0.5 hr

Note: Block work walls cannot be built higher than 6 courses without the mortar setting i.e. 24hours

Rigid scaffolding is required to be fixed blockwork at 1.5m height.

EASYWALL panel assumes the scaffolding and the first 6 courses can be done in 24 hours..

Total Time	106 hrs

Technical Specification

Description	U value (W/(m².K))	Acoustic Rating (Rw (db))	Fire Rating (hours)
75mm Single Panel Wall	1.51	40.5	2
100mm Single Panel Wall	1.24	44.0	4
150mm Single Panel Wall	0.92	48.0	4
150mm Twin Panel Wall	1.01	50.0	4
200mm Single Panel Wall	0.73	51.0	4
200mm Twin Panel Wall	0.85	51.0	4
200mm Twin Panel Air Cavity Wall (2 x 75)	0.95	57.5	4
200mm Twin Panel PIR Wall (2 x 75 +Kraft & Al Foil)	0.37	55.0	4
200mm Twin Panel PIR Wall (2 x 75 + Paper Kraft)	0.37	58.0	4
200mm Twin panel Wall (2 x 75 + Mineral Wool)	0.46	63.5	4
250mm Twin Panel Air Cavity Wall (2 x 100)	0.31	58.0	4
200 mm PIR Single Wall Panel (External Wall)	0.269	46	2
250 mm PIR Single Panel Wall (External Wall)	0.24	56	2

EWP Thickness	Description	PULL-OUT (Kgs)	PULL-DOWN (Kgs)
100mm	The load applied on wall with Fix Bolt M8	151.85	331.5
	The load applied on wall with Fix Bolt M6	151.95	231.5
	The load applied on wall with 6mm screw with 10mm Plastic	92.9	216

EASYWALL Dimension Details				
EWP Thickness (mm)	75	100	150	200
Average Core Density (kg/m³)	600	600	600	600
Average Panel Weights (kg/m³)	87	115	172	229
Thermal Conductivity, K (W/m.K)	0.176	0.176	0.176	0.176
Thermal Resistance, R (m²K/W)	0.503	0.645	0.929	1.213
Thermal Resistance, U (W/m²K)	1.51	1.24	0.92	0.73
Width	610	610	610	610
Cement Board Thickness (mm)	4.5	4.5	4.5	4.5

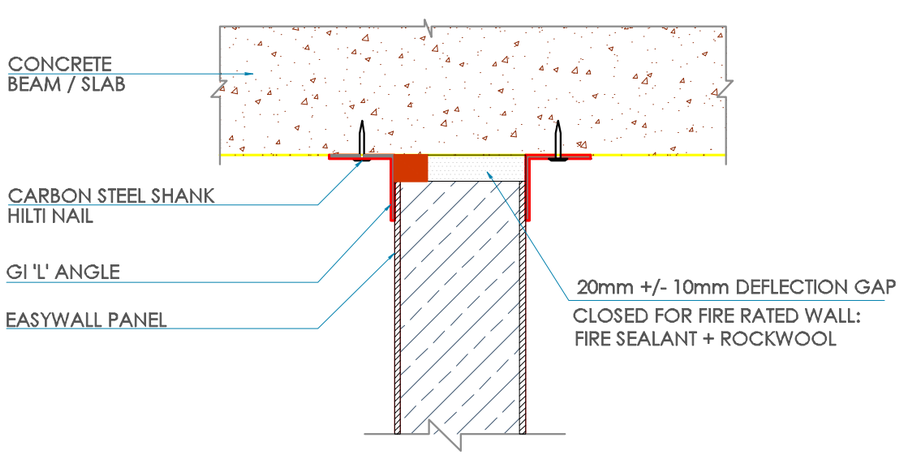
	Robustness & Strength Tested on 100 mm Thick Panel	BS 5234-Part-2 : 1992
A.	Partition Stiffness	Passed - HD
B.	Surface Damage by Hard Body Impact	Tested - MD
C.	Resistance to Damage by Impact from a Large Soft Body Impact straight parition . Right angle junction	Passed - HD
D.	Resistance to Perforation by Small Hard Body Impact straight parition . Right angle junction	Tested - HD
E.	Resistance to strucutral damage by multiple impacts from a large soft body	Passed -HD
F.	Effects of door slamming	Passed -MDLD
G.	Resistance to crowd pressure	Passed - 3 kN/m max
H.	Lightweight anchorage pull-out test	Passed
I.	Lightweight anchorage pull-down test	Passed
J.	Heavyweight anchorage (wash basin) eccentric downward loading test	1,500N
K.	Heavyweight anchorage (high level wall cupboard) eccentric downward loading	3,500N

GRADES: LD - light duty; MD - medium duty; HD - heavy duty; SD - severe duty Note:
1 kg = 10 Newtons (N)

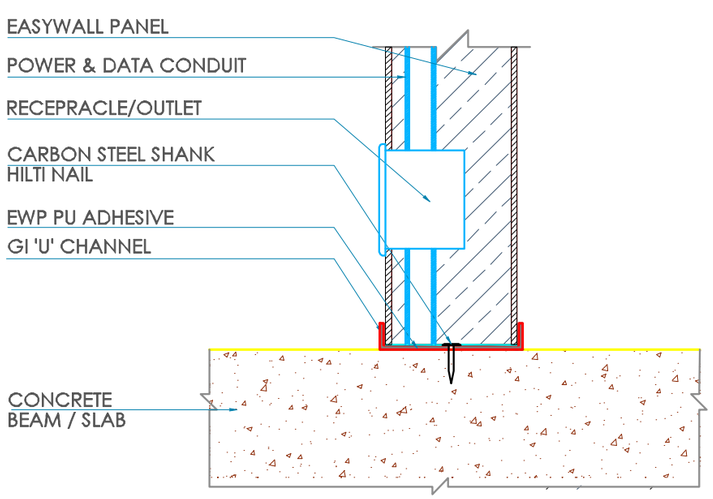
System Section Drawings

EASYWALL Single & Double Panel

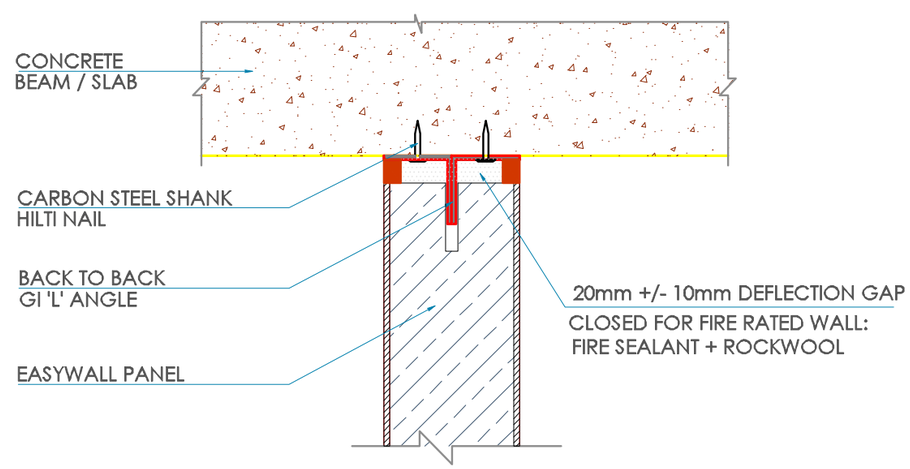
1 TOP FIXING DETAIL (EXPOSED) SINGLE PANEL



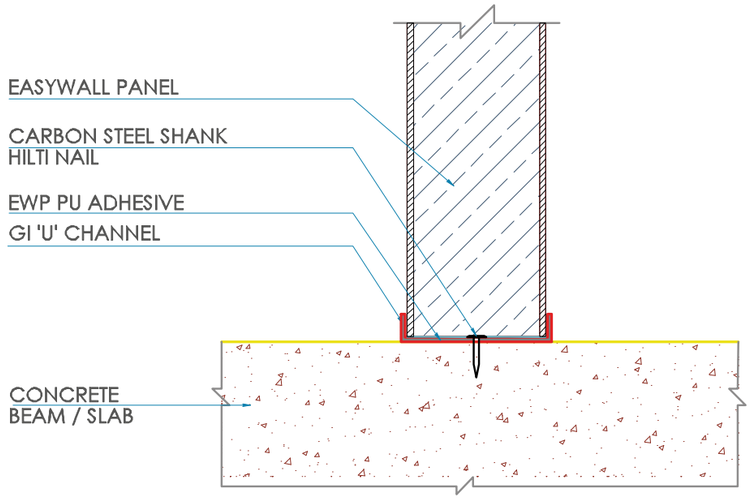
2 BOTTOM FIXING DETAIL (EXPOSED) SINGLE PANEL WITH MEP CONDUIT



3 TOP FIXING DETAIL (CONCEALED) SINGLE PANEL

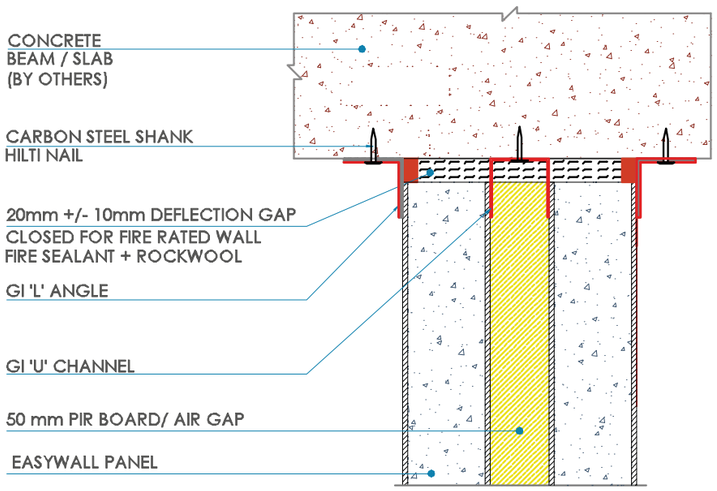


4 BOTTOM FIXING DETAIL (EXPOSED) SINGLE PANEL

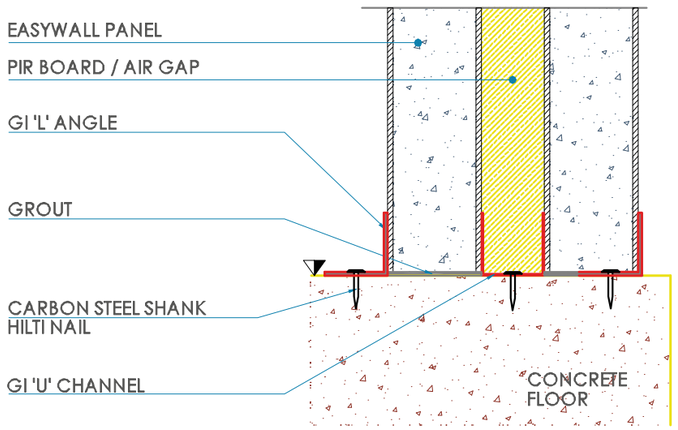


EASYWALL - PIR Cavity Wall System

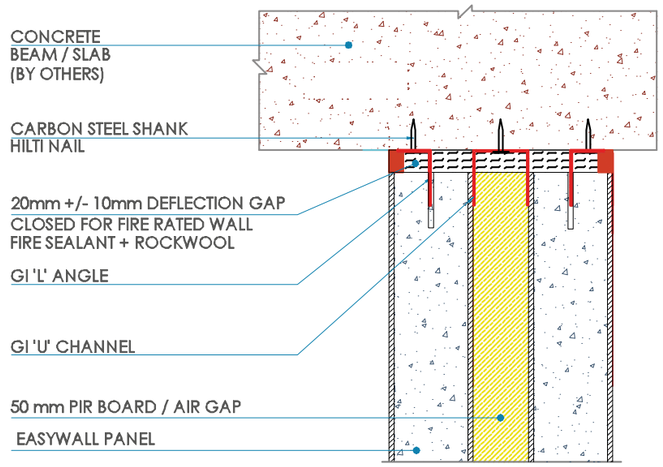
5 TOP FIXING DETAIL (EXPOSED) PIR / CAVITY WALL SYSTEM



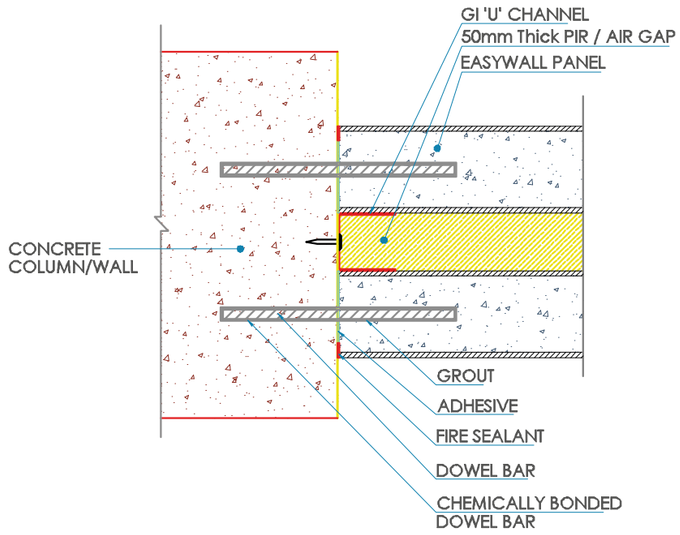
6 BOTTOM FIXING DETAIL (EXPOSED) PIR / CAVITY WALL SYSTEM



7 TOP FIXING DETAIL (CONCEALED) PIR / CAVITY WALL SYSTEM

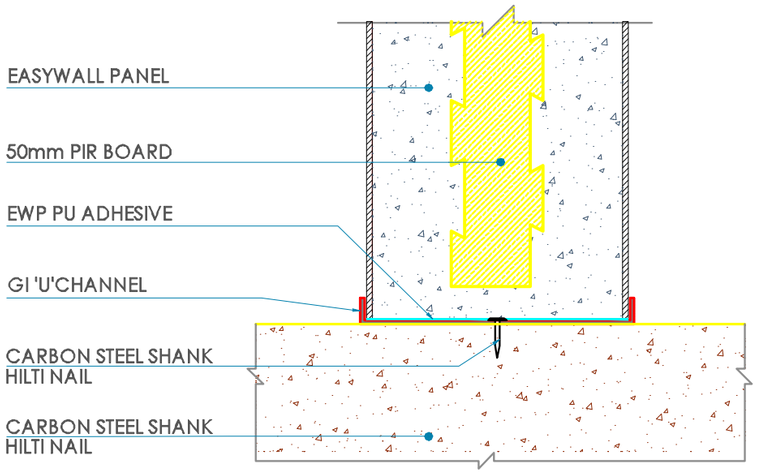


8 TYPICAL PANEL TO CONCRETE CONNECTION DETAIL PIR / CAVITY WALL SYSTEM

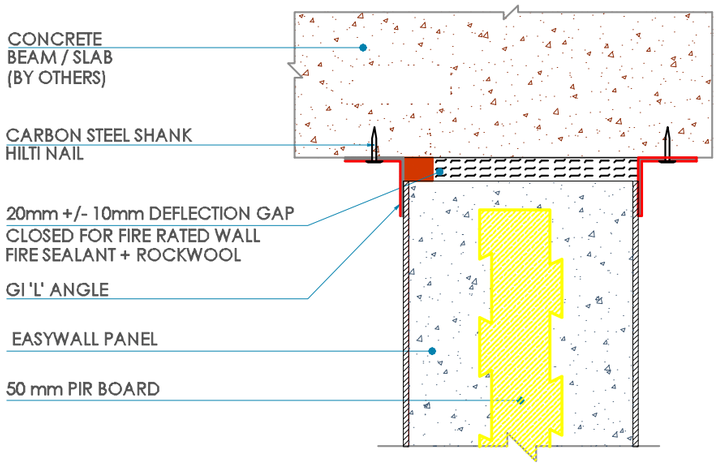


Insulated EASYWALL

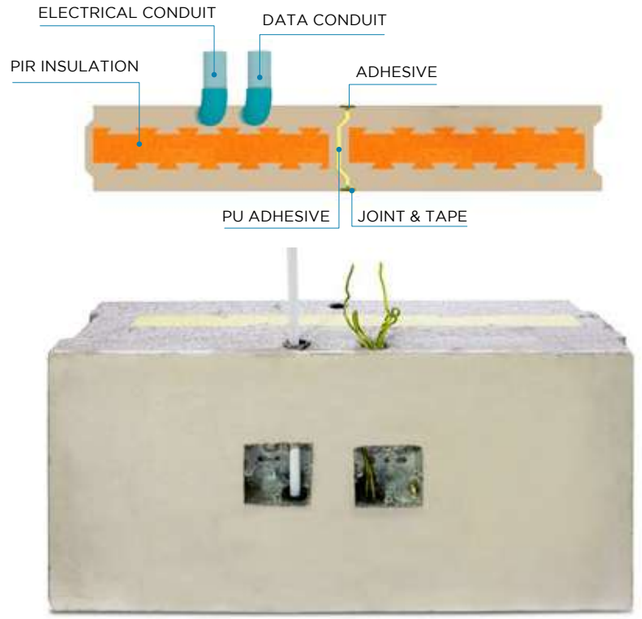
9 BOTTOM FIXING DETAIL (EXPOSED) INSULATED EASYWALL PANEL

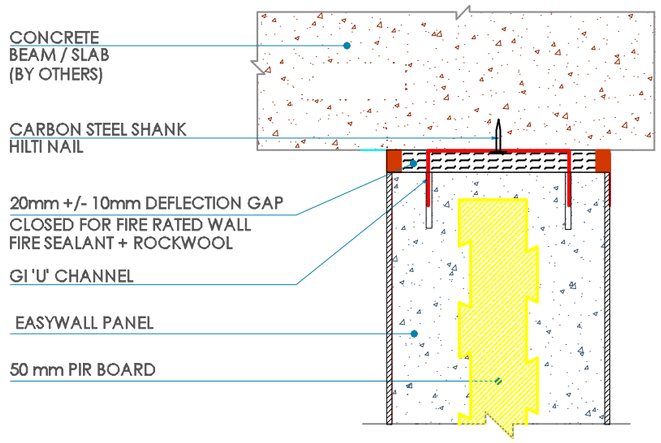


10 TOP FIXING DETAIL (EXPOSED) INSULATED EASYWALL PANEL

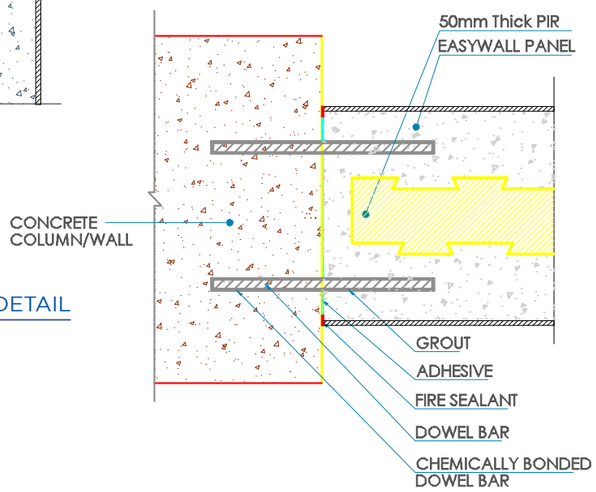


11 INSULATED EASYWALL PANEL WITH MEP CONDUITS





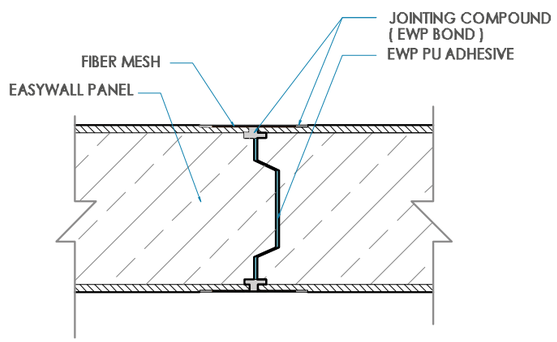
12 TOP FIXING DETAIL (CONCEALED) INSULATED EASYWALL PANEL



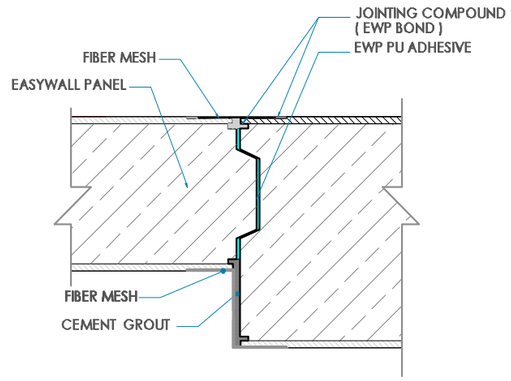
13 TYPICAL PANEL TO CONCRETE CONNECTION DETAIL INSULATED EASYWALL PANEL

Panel Joint Detail

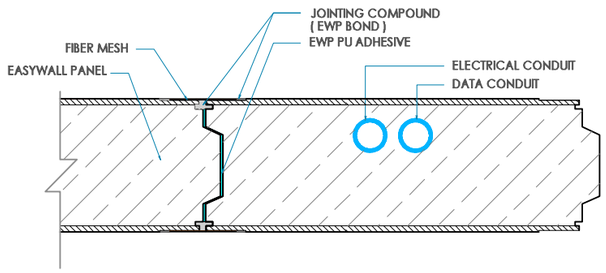
14 TYPICAL PANEL JOINT DETAIL



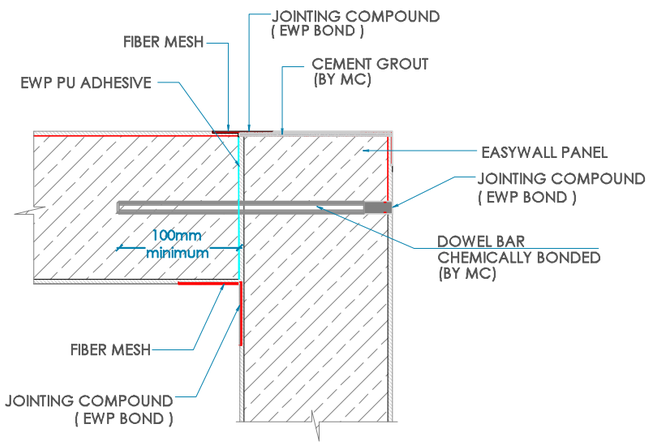
15 TYPICAL PANEL JOINT DETAIL DIFFERENT THICKNESS



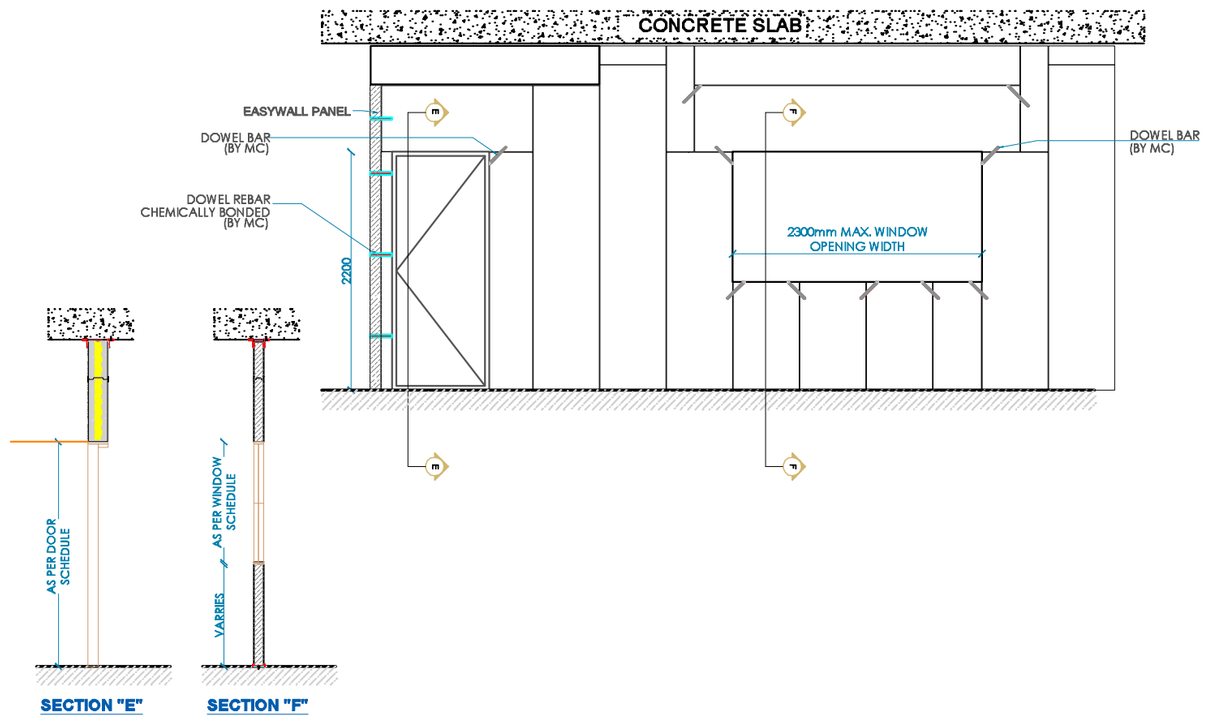
16 TYPICAL PANEL JOINT DETAIL PANEL WITH MEP CONDUIT



17 TYPICAL PANEL JOINT DETAIL DIFFERENT THICKNESS



18 TYPICAL DOOR AND WINDOW OPENING DETAILS



General Installation Method

Panels arrive to site in protected palletts

Minimum labor required

Installation of the base “U” channel

Simple installation of the panels

Application of adhesive prior to fixing of panels on-site

Application of mesh

Simple and quick cutouts for electrical conduits

Finished walls

Certificates


CERTIFICATE

ISO 9001:2015
Quality Management System

VISCOUNT QUALITY CERTIFICATIONS

Technical Supplies & Services Co. L.L.C.
(Easy Panel Wall Division)


CERTIFICATE

ISO 14001:2015
Environmental Management System

VISCOUNT QUALITY CERTIFICATIONS

Technical Supplies & Services Co. L.L.C.


Registration Schedule

Certificate Number PC 108


ترخيص مصنع - بإمارة دبي

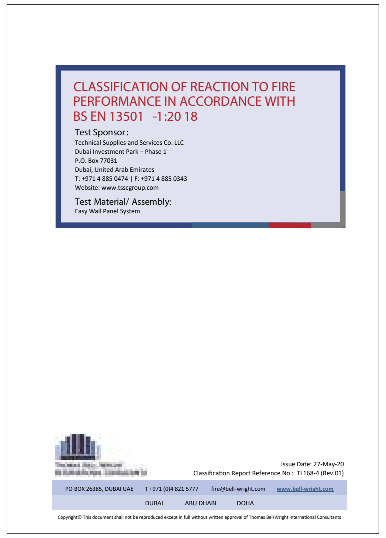
997


997


Intertek


Certificate of Compliance

CE


CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN ACCORDANCE WITH BS EN 13501 -1:2018

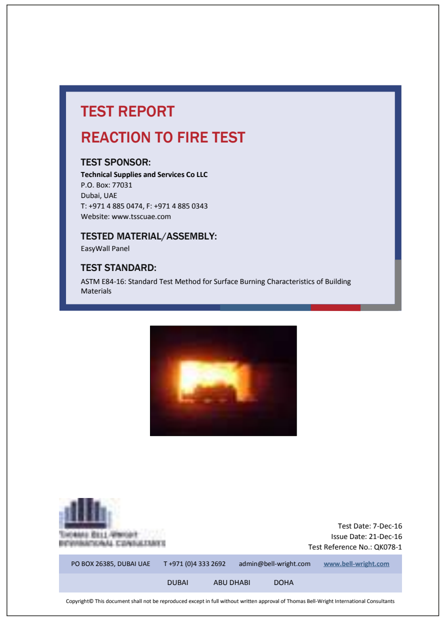

Intertek


Certificate of Compliance

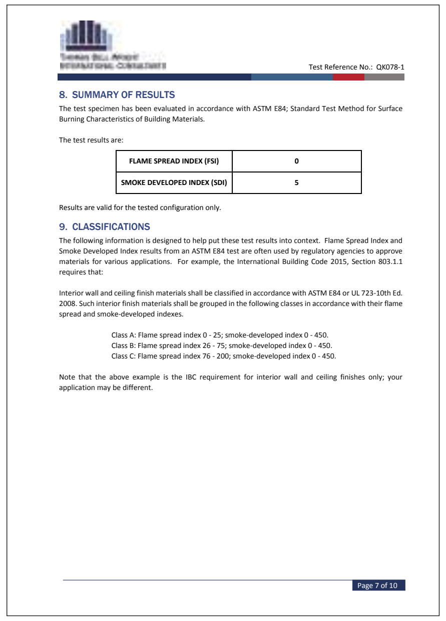
Appendix -I

CE


Reaction to fire classification: A2 – s1, d0


TEST REPORT

REACTION TO FIRE TEST


8. SUMMARY OF RESULTS

9. CLASSIFICATIONS


10. LIMITATIONS

Stronger • Better • Faster

EASYWALL™

...The Replacement For Block Walls

Notes

Since inception in 1961, TSSC, a primary member of Harwal Group has been setting manufacturing benchmarks in the region with its engineering excellence. The ISO 9001:2015 certified company manufactures a diverse range of products and offers a range of services from its facilities spread across UAE, KSA, Russia. TSSC is the largest manufacturer of insulated panels for roofing and cladding in the Middle East. The building materials manufactured by TSSC are fire rated and carry individual product certifications. With over 5 decades of experience, state of the art manufacturing facilities and the largest production capacity in the Middle East, TSSC manufactures products to international quality standards and cater to customer demands by ensuring timely delivery and providing exceptional service.

Range of Products Manufactured by TSSC

Construction Products

- Composite Panels
- Structural Steel Systems
- Profiled Cladding Sheets
- Seamless Roofing System
- Glass & Aluminum Systems
- Doors & Windows

Cold Chain Solutions

- Cold Rooms
- Freezer Rooms
- Refrigerated Vehicles

Housing -Built on Site Systems (BoSS)

- Factory Manufactured Volumetric Homes
- FlatPack Units
- PortaCabins
- Prefab Houses
- Telecom Shelters
- Converted Shipping Container

Metal Storage Solutions

- Racking Systems
- Metal Sheds

Package Building Systems

- Warehouses
- Poultry Farms
- Cold Stores
- Industrial Buildings
- Labor Accommodation Buildings

Refrigerators & Coolers

- Visi coolers & Freezers
- Water Coolers
- SS Refrigerators & Freezers

Stainless Steel Equipments

- Laundry & Kitchen
- Hospital

Services

- Galvanizing
- Electro Mechanical for Refrigeration & Air Conditioning