



 TM **M-SIPs**
GREEN AND FIREPROOF CONSTRUCTION

M - ENERGY PANEL

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THE SINGLE COMPONENT, RAINSCREEN CONCEPT..

M Energy Panel is delivered with an R value 15 (U value 0.36) or R value 28 (U Value 0.20) and has the look and feel of a super smooth and natural rainscreen concept with the advantage of single point installation and excellent thermal performance. The concept meets or exceeds criteria, such as structural, thermal, acoustic and durability performance, offers a sustainable rated solution and, most importantly of all, provides life and property fire safety protection for your family or your employees.

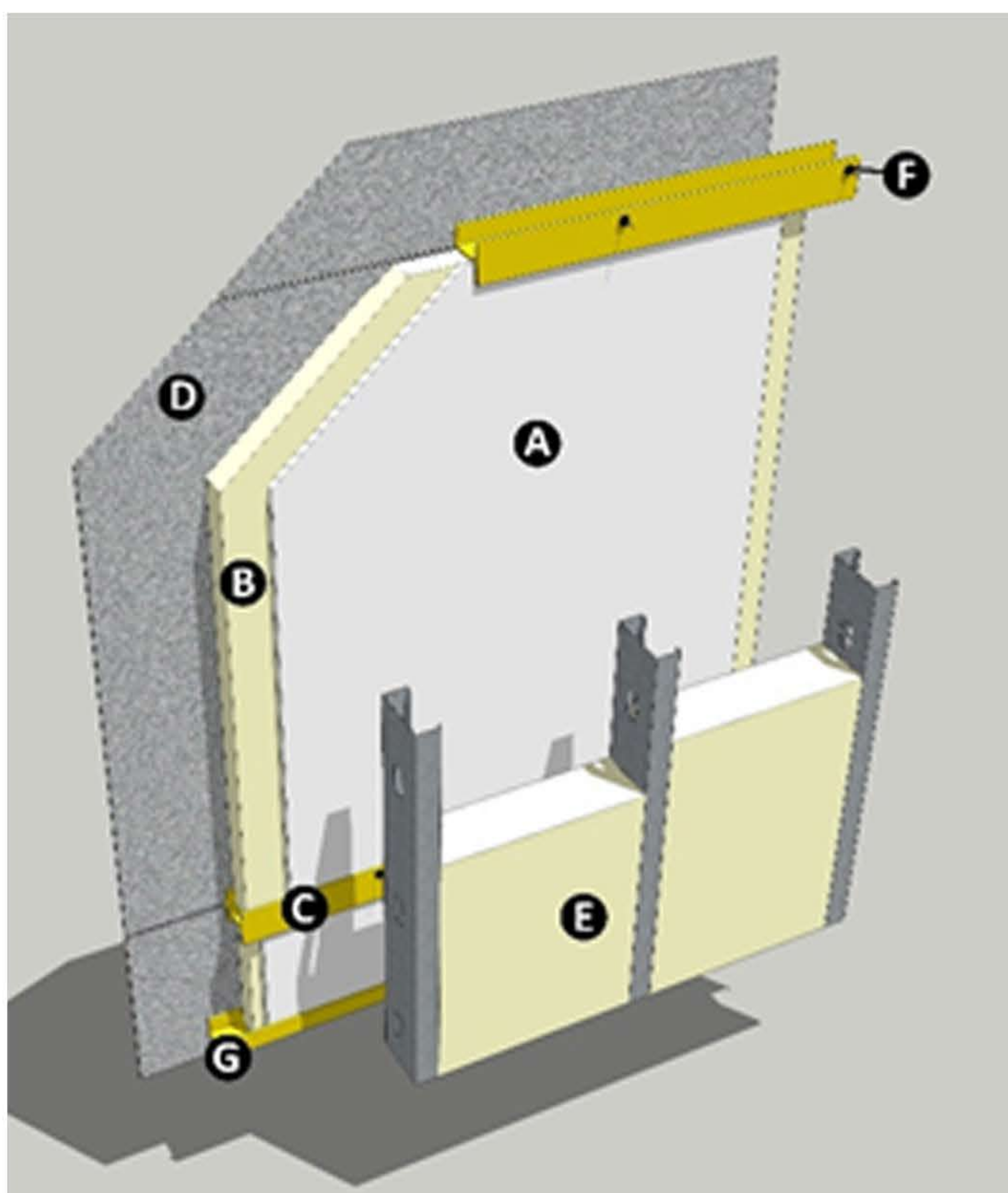
The M Energy Panel is a highly streamlined, sleek unprofiled insulated panel system; the perfect solution if you are looking to achieve a minimalist façade on buildings with large flat surface areas.

Concept – Fire Ratings-Testing

M Energy Panel panels consist of two faces positioned on either side of a core that is a fiber-free rigid PIR insulation core, which is firmly bonded under high pressure to the M4 Sheathing on the Interior surface and to the Fiber cement facing to the outer surface – The M4 ½” thickness has been tested to K1 10 A2-s1,d0 (EN 14135) and CAN/ULC S124-06, Standard Method for the Evaluation of Protective Coverings for Foamed Plastic and M4 has Classification B. Classification range A – D, If the temperature rise at the interface of the protective cover and the foamed plastic at the end of 10 min has not exceeded 140°C average or 180°C at any one of the thermocouples specified in the test standard, the protective cover shall be accorded a classification of B.

The individual interior surface layer of M4 is ICC certified (ESR report 3804) and has both shear, flexural rigidity strength and complying with ICC-ES AC 308, AC308 and AC208.2 further the M4 sheathing has passed a full scale 1 hour fire test on a 4” wall concept according ASTM E119. The outer Fiber Cement surface layer is tested and complying with AC 90 and is ICC certified (ESL report 1116).

Fig 1.



- A : M4 structural Sheathing (ICC Certified ESR 3804)
- B : Fiber-free rigid PIR insulation core
- C-G - F: Fiber Reinforced Plastic (FRP) beams H and U profile
- D: Fiber Cement Siding (ICC Certified ESL 1116)
- E: Stone or Mineral wool insulation

Fig 2.

Fiber Cement Installation to the FRP beams with visible Rivets and also factory bonded to the insulation core

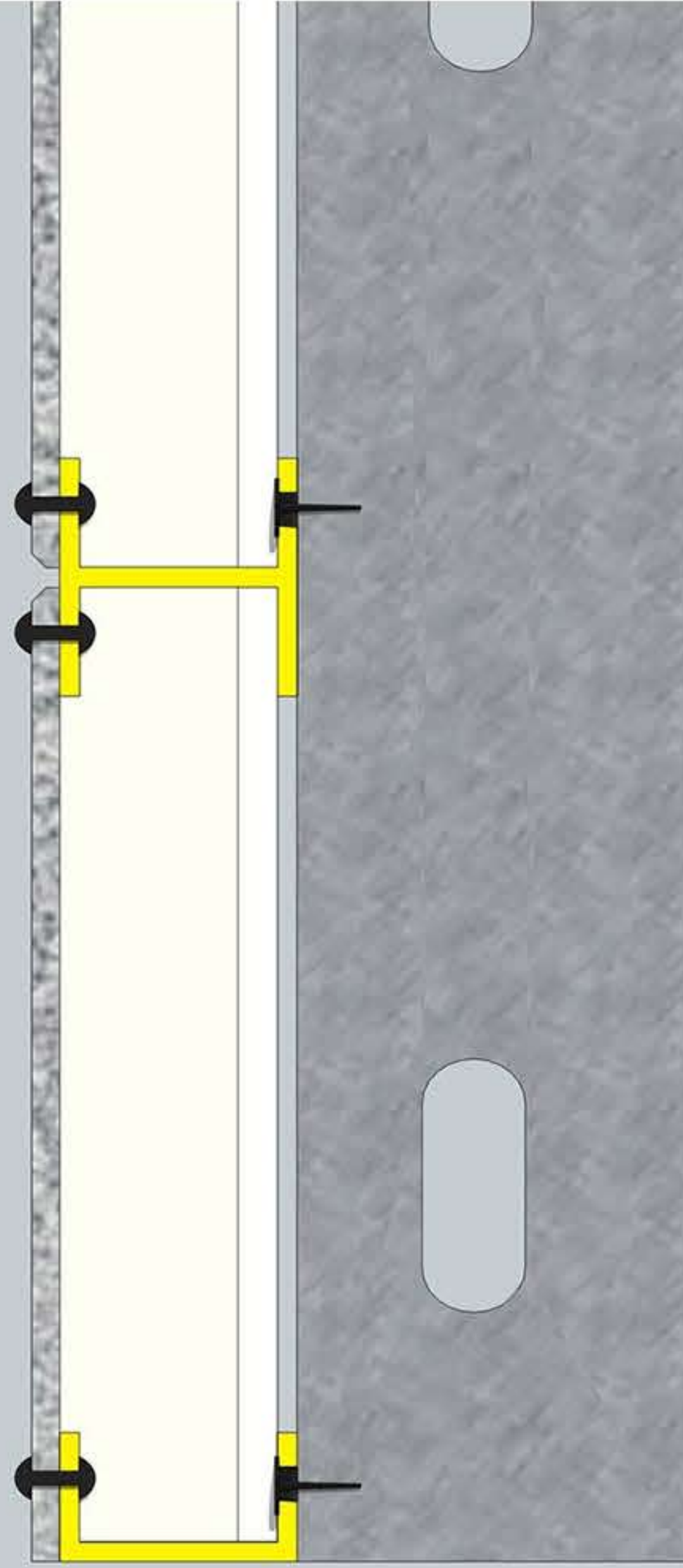
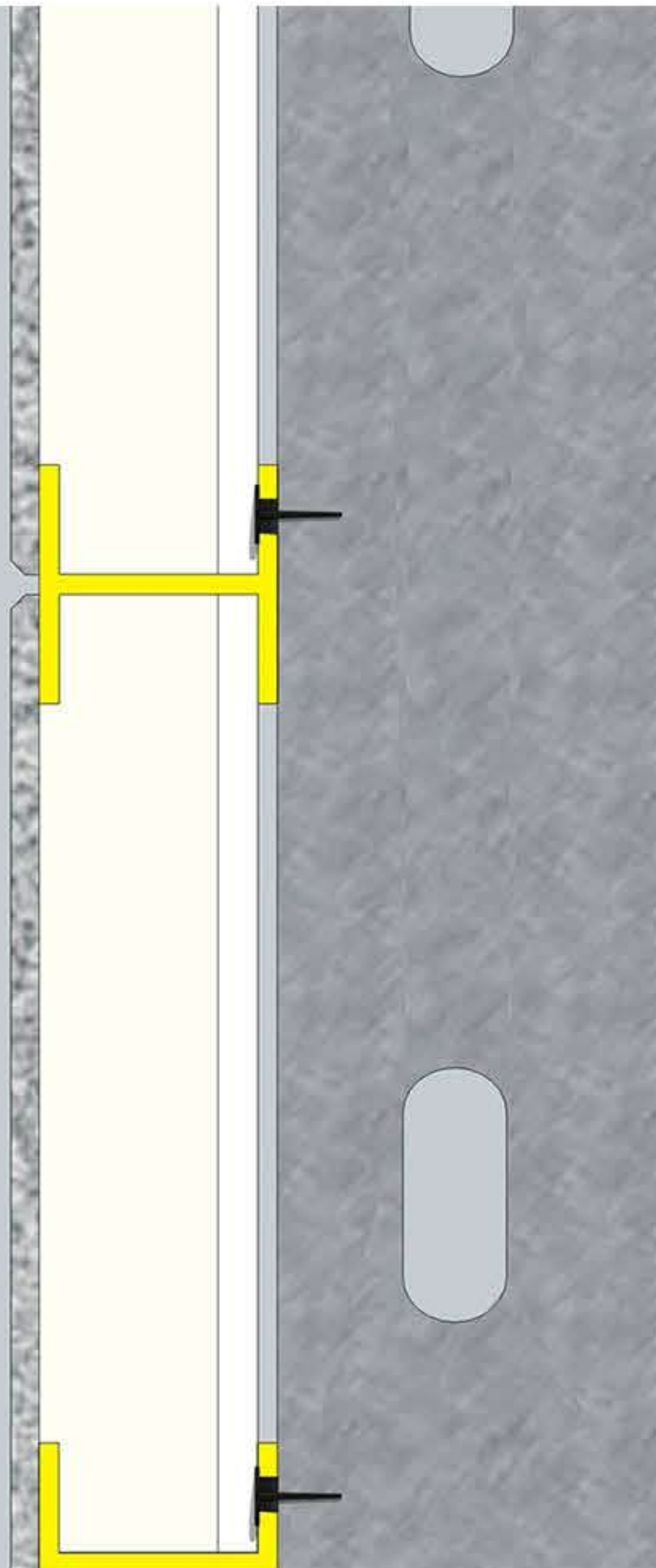


Fig 3.

Invisible Installation, the Fiber Cement panel is factory bonded to the insulation core



M ENERGY PANEL SYSTEM PERFORMANCE

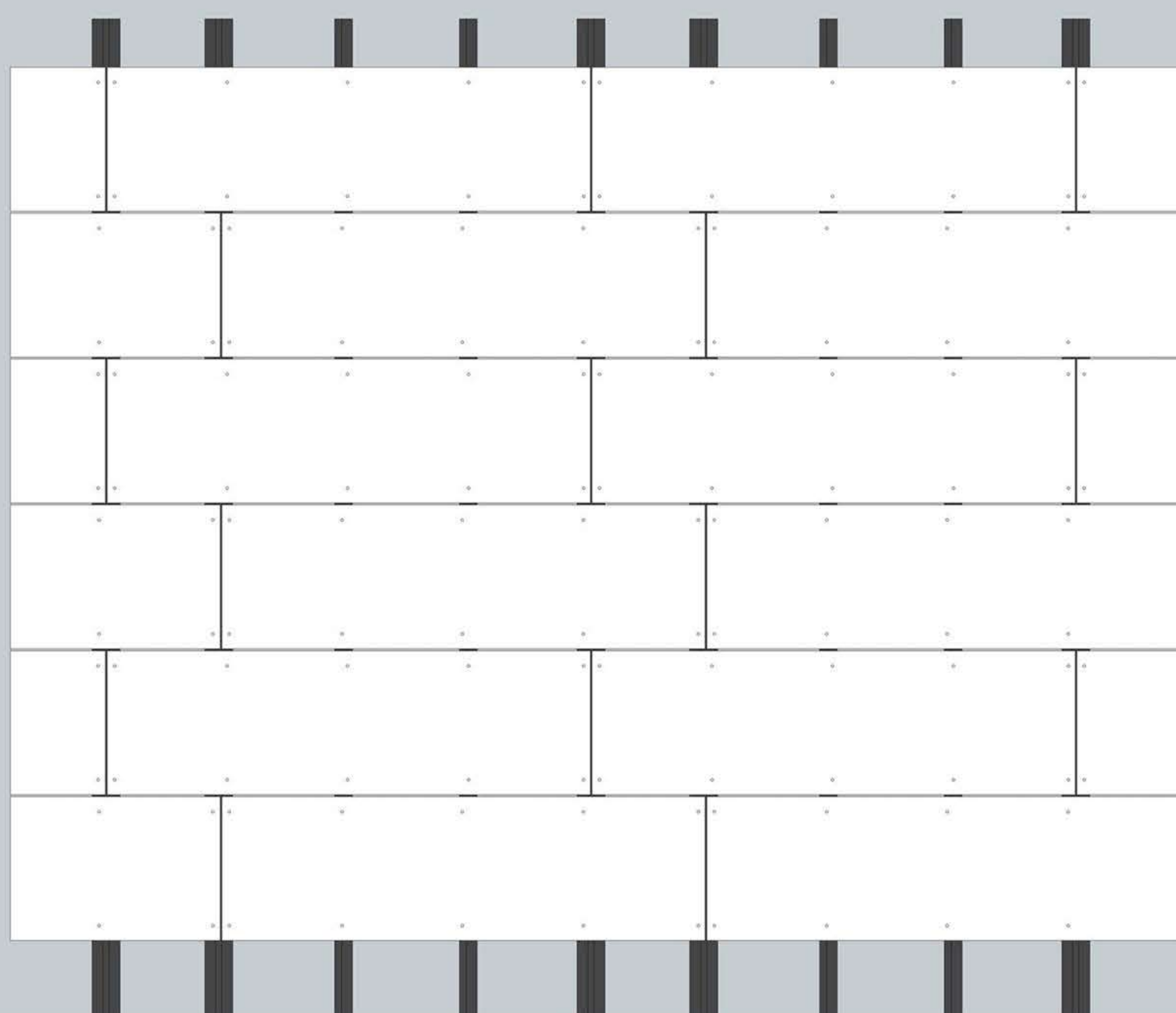
- Design flexibility the standard panel can locally be cut to any size
- Wide range of colors, through core fiber cement in Flat solid and Natural soil colors
- 1 hour fire rated wall concepts according ASTM E 119
- ICC certified structural M4 sheathing (ESR report 3804)
- ICC certified Fiber Cement (ISL report 1116)
- Vertical and horizontal installation
- Lightweight and fast installation
- High thermal performance
- The PIR core is 360 degrees covered with certified Class A or Non Combustible materials

Measurement of the two standard panels:

R 15 (U value 0.36) 8' x 45" x 3.34" – 6.6 lbs/sqft. (2440 mm x 1140mm x 85 mm – 30 kg/m²) or R 28 (U value 0.20) 8' x 45" x 4.88" – 7 lbs/sqft. (2440 mm x 1140 mm x 124 mm – 32 kg/m²).

The Energy Panel recess at the vertical joints work with the insertion of a gasket between the panels, creating a unique 3D effect.

Fig 4.
One Scenario for layout of the recess joints



The FRP mounting system

The unique Fiber Reinforced Plastic (FRP) beams are used due to the following properties.

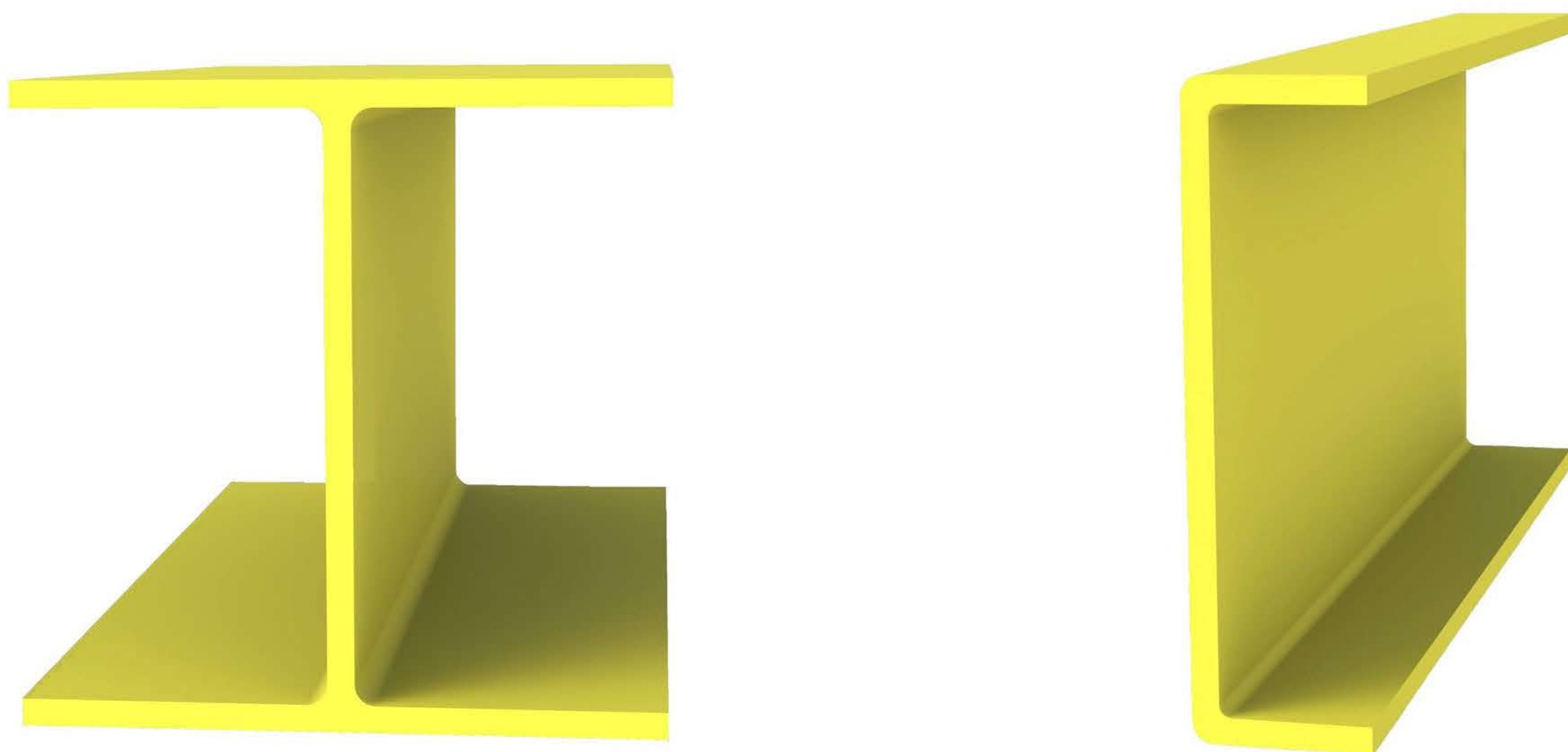
Fire Performance

The FRP beams are Class A fire rated according ASTM E84

Strength

Has much greater flexural strength than timber and pound-for-pound is often stronger than steel and aluminum in the lengthwise (LW) and clockwise direction (CW).

Ultimate flexural strength: (Fu): LW = 30,000 psi (30 ksi) CW = 10,000 psi (10 ksi)



Corrosion and Maintenance

Offering very long time durability as well as reliable resistance to corrosion, FRP is long-lasting and mitigates the need for any ongoing maintenance. The lack of required maintenance and repairs is eliminated.

For example, steel, or wood structures often fall apart 10 to 20 years after initial installation, when installed in humid or aggressive salty environment, requiring extremely expensive repairs or even a whole new investment to rebuild from scratch. FRP, however, is built to last and won't experience any corrosion over time like many other construction materials.

Rot and Insect Resistance

Resists a broad range of chemicals and is unaffected by humid, moisture or immersion in water. Resists insect damage.

Thermal Properties

Good insulator with very low thermal conductivity. Thermal conductivity = 4 (BTU in. / (hr ft² °F) and Low thermal coefficient of expansion. = 7 - 8 (in./in./°F).

Save Installation Time and reduce Quality Issues

Multi-component rainscreen concept vs Single-component concept: The M Energy Panel as a single component allows for up to estimated 50% faster installation time. M Energy Panel Panels are lightweight, easier to handle and can be installed in all weather conditions. The single component nature reduces the need for multiple trades on site and the associated workmanship quality issues.

The M Energy Panel and FRP mounting concept ensure air tightness and weather tightness over the lifecycle of the building. The M Energy Panel insulation cores provide superior thermal performance with tested U-values. Most importantly, the insulation is on the exterior of the building structure to provide the best possible thermal envelope by reducing thermal bridging typical of cavity wall systems. In addition, the panels feature excellent insulation core-to-core contact, which provides an unbroken thermal rainscreen concept.