



## MAX FRANK Non-Combustible Thermal Breaks in Precast Banding

### Case Study: Silverthorne Lane, Plot 6 - Bristol

The Silverthorne Lane development consists of 6 plots, all with planning permission in place. The carbon net zero Silverthorne Lane development for Studio Hive will deliver a significant student accommodation development as part of the Temple Quarter Enterprise Zone regeneration.

The development is being constructed with RC frames, a brickwork façade, and precast concrete banding. The main contractor, HG Construction, are delivering the piling and prefabricated bathroom pods on the scheme via Offsite Solutions.





## FACADE ARTICULATION

A typical bay is composed of a series of regular brick piers that frame window reveals, vertically grouped structural openings, defined horizontally by precast bands that are notched or divided. The horizontal expression helps to define the hierarchy of elements, placing emphasis on the brick piers, therefore enhancing vertically and avoiding a gridded or flat appearance.



Precast concrete lintels serving as spandrel panel to the vertical glazing elements

Traditional cavity brick walls assembled upon the supporting cast-in band

**Full slab perimeter precast concrete band, thermally broken cast-in elements**

Thermally broken composite glazing units with external perforated screens

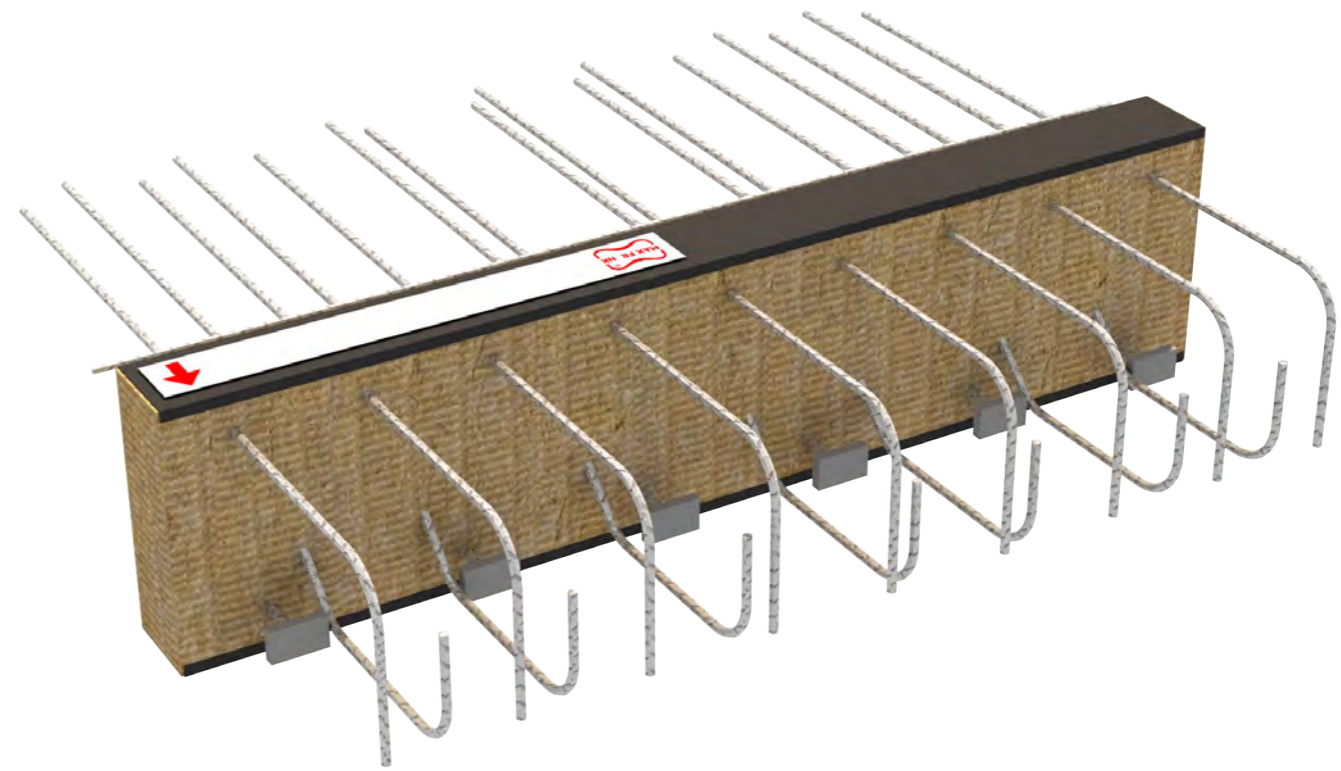
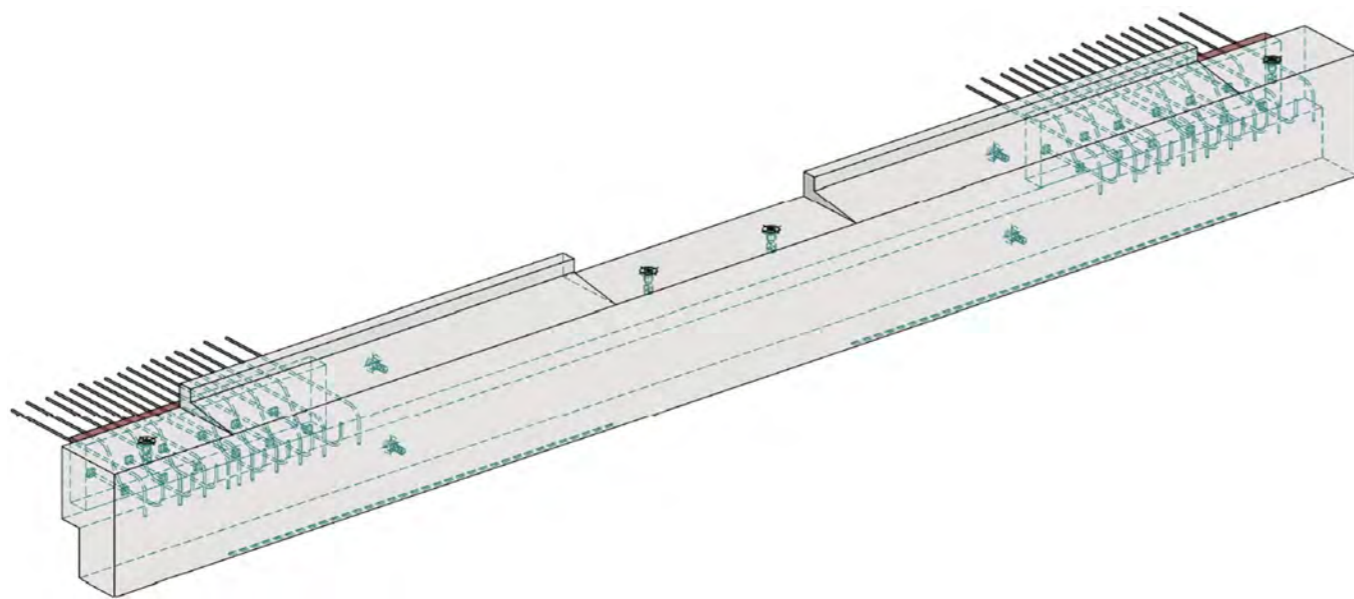
# NON-COMBUSTIBLE THERMALLY BROKEN PRECAST UNITS

## Thermal Break Balcony Connector: Egcobox®

Building users are demanding ever more in terms of savings on heating costs, a healthy room climate and the associated prevention of condensation and mould formation. Therefore, when planning, attention must be paid to minimizing thermal bridges in the area of the building shell.

A designed solution to the thermal separation of reinforced concrete cantilevering slabs. Thermal bridges can be reduced with the heat-insulating Egcobox cantilever connector. Egcobox structural connection units thermally isolate an exterior component and an interior component from each other.

The structural function of Egcobox is provided by a bar framework, made from reinforcing steel, which passes through the thermal insulation and thus connects the component to the building.

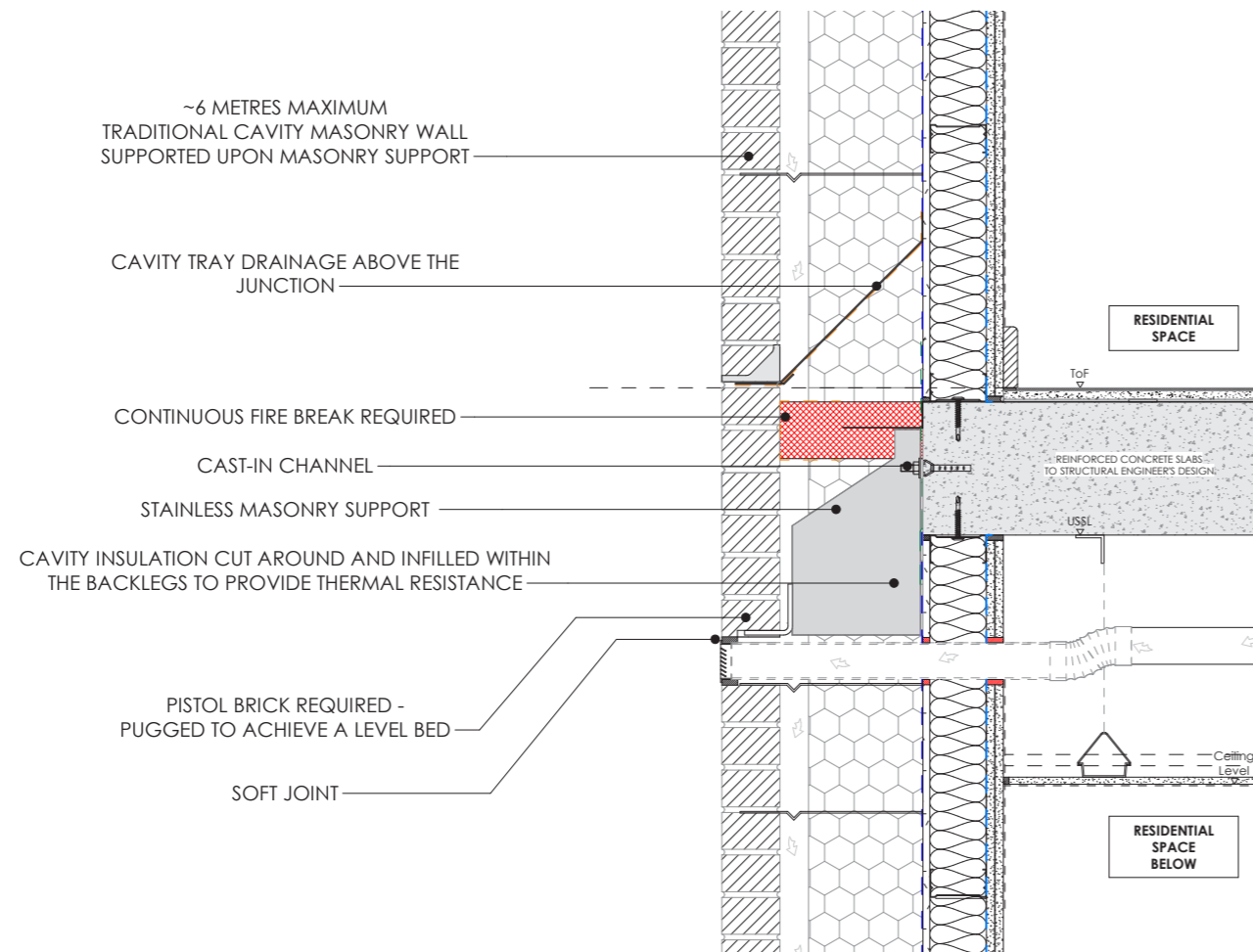


## Advantages:

- ETA-approved system, same type is used EU-wide.
- The BBA Agrément Certificate number 16/5345.
- Each Egcobox unit is manufactured to fire rating REI120 - suitable for buildings 18+ metres.
- Simple installation due to close-fitting compression units.
- All units are individually adapted to geometric specifications.
- Support for your detailed planning with CAD details, BIM files and tender texts.
- Hydrophobic properties of the stone wool.
- Thermal resistance of the units.
- Structural compliance.

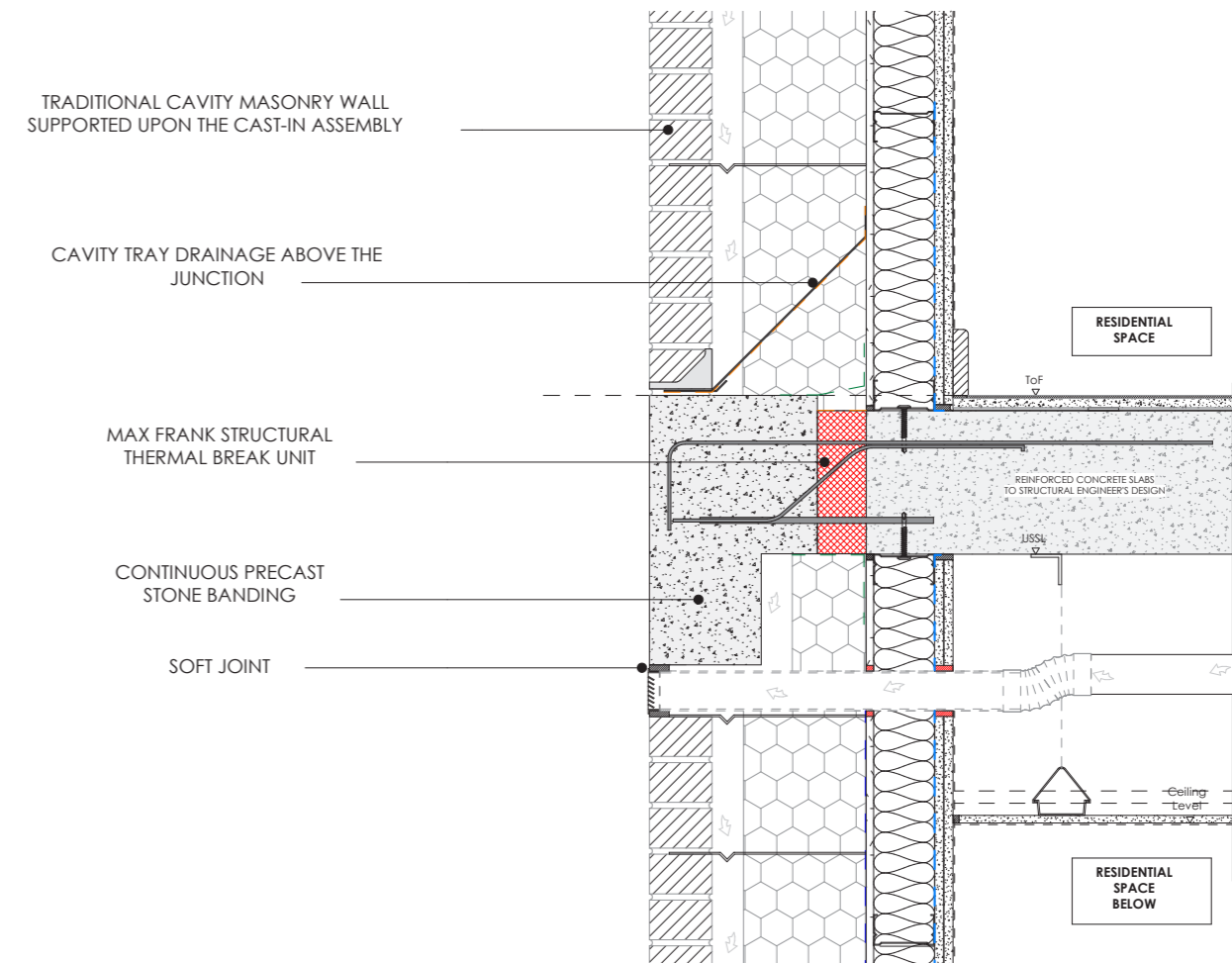
# DETAIL COMPARISON

## OPTION A (Brickwork Supports)



- Attention to the precise edge of slab in-situ casting required here, as tolerances and differing of the edge of slab impacts the achieved masonry support position. Shims would then be required to realign to the outermost proposed brickwork face.
- Masonry support must be stainless due to external weathering and exposure to ranging thermal and moisture conditions.
- Manual processes such as cutting fire barriers to compress between the vertical planes of the masonry support are required. Workmanship on-site must be able to qualify that the fire compartmentation is not compromised through this manual process.
- Insulation is typically manually cut to infill the remaining voids between the masonry support legs.
- Differentiation of facade materiality to be achieved via alternative facade materials, systems or facade depths, therefore requiring additional methods of support / fire barriers / insulation to create uncompromising facade features.

## OPTION B (Precast Banding with Thermal Break)



MAX FRANK thermal break offers the structural capacity to perform as per masonry support;

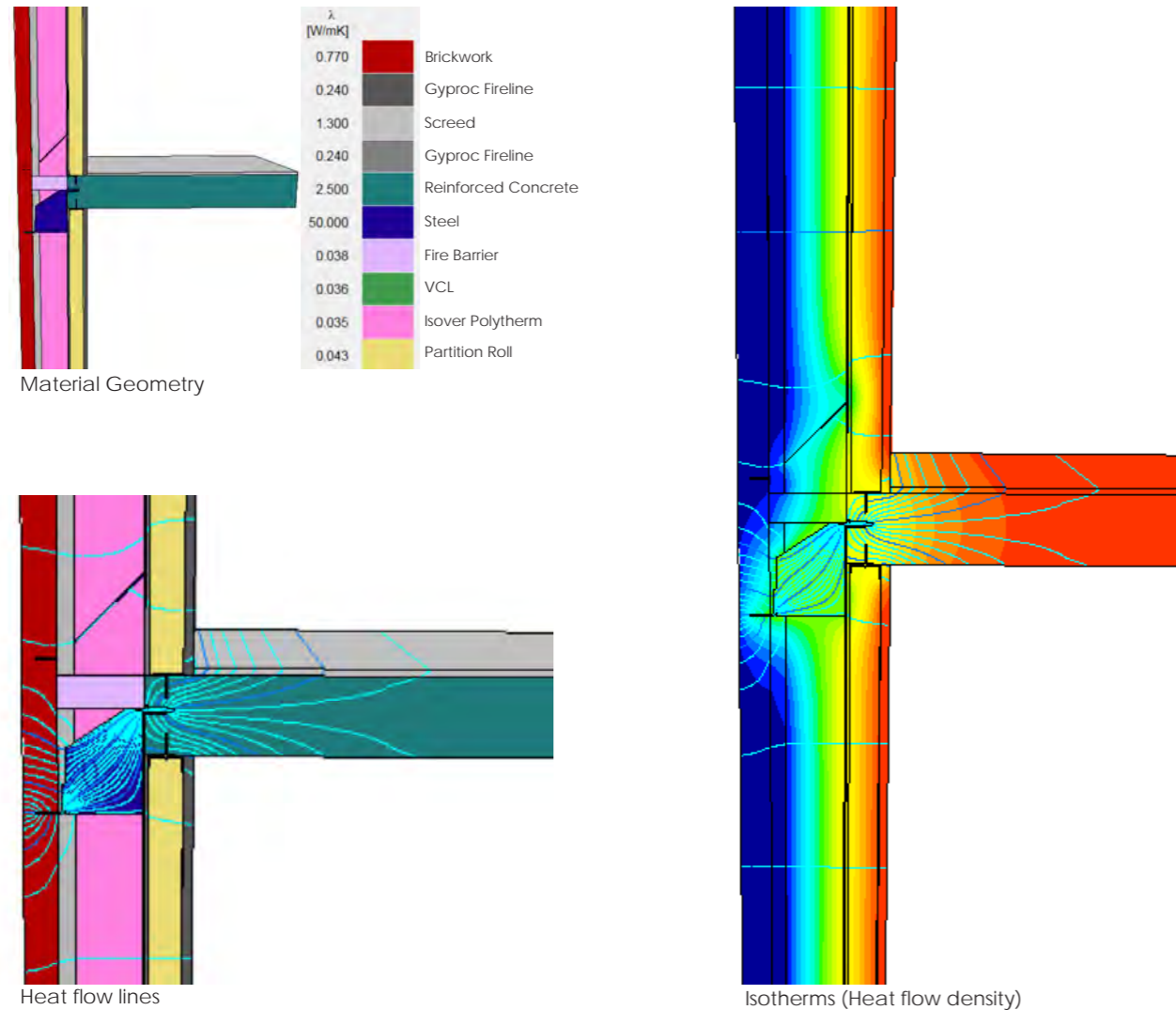
- Supporting the brickwork in conjunction with the feature precast banding.
- MAX FRANK thermal break provides a continuous thermal break and fire barrier providing a compliant fire compartmentation across the slab edge.
- This additional structural feature element performs slab deflection bracing, reinforcing the slab around the outer edge as well as creating a feature facade texture and materiality change.

This thermal break arrangement can perform in conjunction with numerous concrete profiles, surface textures and reliefs beyond the example shown here.

Streamlining construction logistics and tolerance accuracy achieved on-site as a result of the off-site precast production.

# THERMAL MODEL COMPARISON

## OPTION A (Brickwork Supports)



TRISCO MAIN RESULTS:

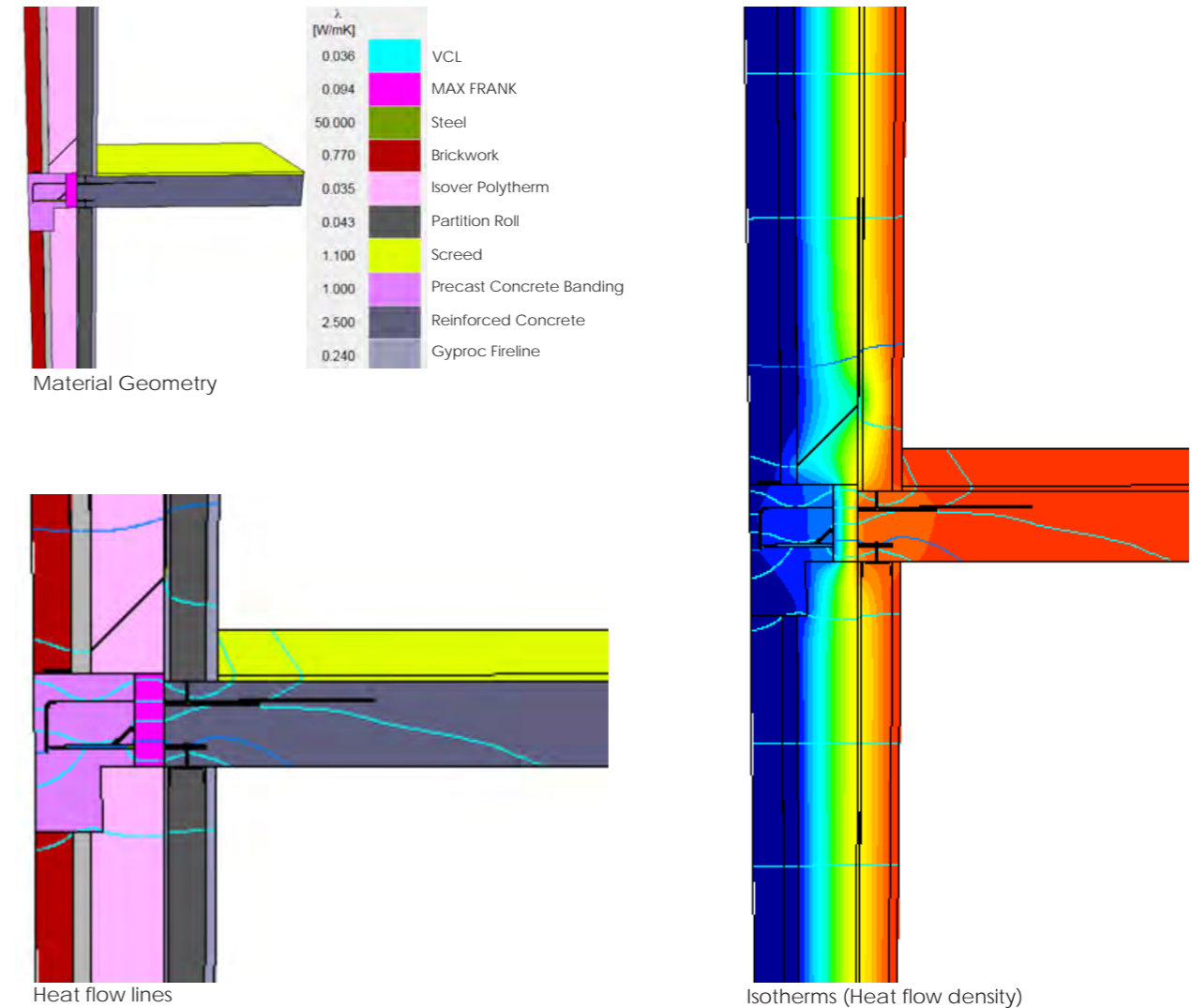
**Temperature factor (EN ISO 10211) = 0.750**

Linear thermal transmittance (EN ISO 10211)  
psi = 0.987 W/(m.K)

Equivalent thermal transmittance  
Ueq = 0.443 W/(m<sup>2</sup>.K)

Surface condensation if RH > 73 % (at 20.0000°C)

## OPTION B (Precast Banding with Thermal Break)



TRISCO MAIN RESULTS:

**Temperature factor (EN ISO 10211) = 0.936**

Linear thermal transmittance (EN ISO 10211)  
psi = 0.281 W/(m.K)

Equivalent thermal transmittance  
Ueq = 0.207 W/(m<sup>2</sup>.K)

Surface condensation if RH > 92 % (at 20.0000°C)

In line with the BRE Critical temperature factor of 'minimum 0.75' to avoid mould growth in buildings, the masonry support option complies to exactly the minimum standard, leaving little to no room for site error or tolerances in thermal performance; whereas the MAX FRANK thermal break solution well exceeds the minimum requirement.



Case study conducted with contributions from MAX FRANK and collaboration from the following parties:

