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Architecture

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Trinity Building

6.2.5

Materials - Drawing inspiration from the existing building

Material Palette

The starting point for the design development of the annexe is the existing Civic Centre. The design team has drawn inspiration from the existing building and the original design intent for the original 1950s master plan.

Key features of the existing facade:

- 1 Use of artificial stone (pre-cast)
- Highlighting the lobby, registrar and council chamber to the High Rd elevation
 - For the attic storey
 - West wing
 - Elements of the west facade

2 Attic to the Civic Centre is setback and submissive to the primary façade,

3 Attic has rational grid of panellised material, vertical windows and fins

4 Sculptural concrete forms to the lift over run and plant room.

* A piece of the pre-cast artificial stone panel from the Civic Centre third story attic knocked off by remedial works. The design team have been reviewing material samples of artificial stone cladding (GRC) , to find a suitable match to the original colouring of the concrete and stone cladding of the Civic Centre.

Embodied Carbon

The façade of a building is a high proportion of the potential embodied carbon within a building. The design team are working reduce any embodied carbon through several ways:

- Where possible, simplify the massing of the building to produce an efficient form factor (ratio of internal floor area to external wall area)
- Develop a low carbon façade build up using low embodied carbon materials and construction techniques

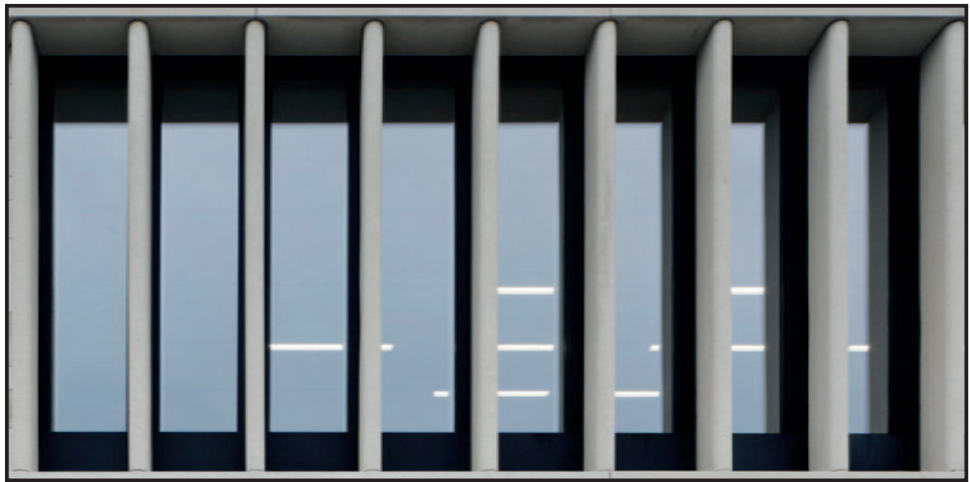
The material selection is vitally important to any building as it forms the first visual impression. The balance between visual appearance and carbon will need to be carefully struck as some materials have higher embodied carbon than others.

To help the design team in these decisions Hawkins Brown have developed a tool (HBERT) for analysing materials to better understand how aesthetics can be achieved using lower carbon materials. The tool is a compendium which can analyse and compare different materials and wall build-ups as well as being able to analyse the BIM model and give an accurate value for embodied carbon within the project as a whole.

A selection of external wall build ups have been analysed using the HBERT tool and are shown right for the Civic Centre. As can be seen from the data, a proposed artificial stone (GRC) build-up offers significant reduction in embodied carbon over options such as aluminium rain-screen.



Existing Material Palette



Proposed Material Palette

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Materials

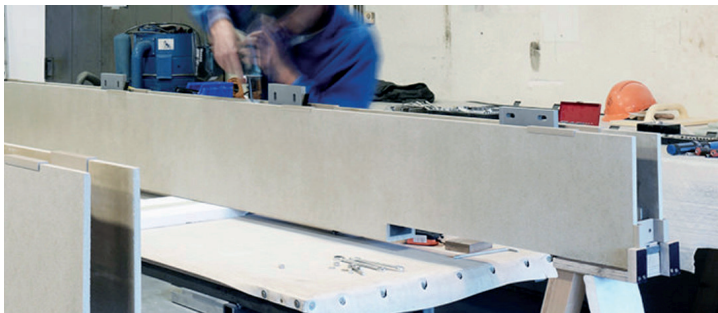
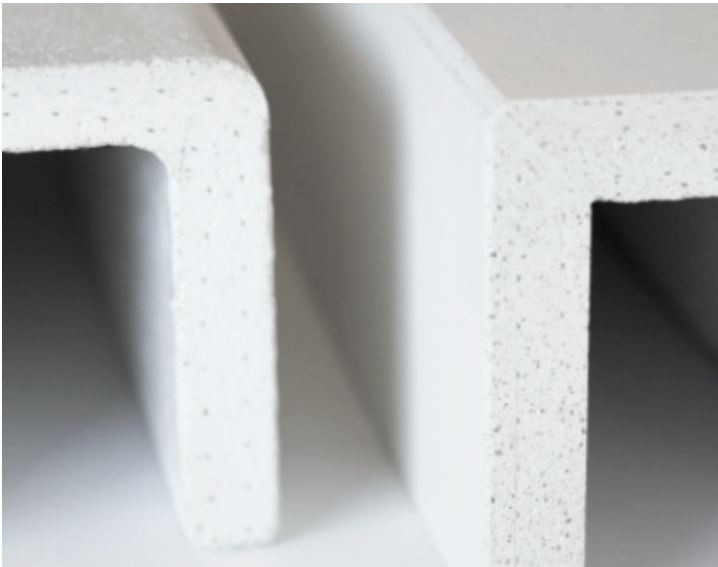
Axonometric Bay Study

The artificial stone (GRC) panels can be formed into a variety of shapes and sizes through a mould. As the panels are formed in this way they can be very thin, reducing the embodied carbon within them and the total weight of the material. This lightweight facade further reduces the need secondary steel supports which again is of benefit to lower embodied carbon.

The image below shows how the material can be formed into elegant thin fins which the design team are proposing for the basis of the solar shading strategy within the Annex.

GRC has been selected because the material:

- can be colour matched to the existing building
- can be formed into highly articulated panels to create the required solar shading fins and stringers (see below)
- is sufficiently robust that the panels can be thin and lightweight.
- has low embodied carbon



1. ARTIFICIAL STONE (GRC)
Rainscreen cladding system as main facade material

2. ROCKWOOL INSULATION
250mm A non-combustible rainscreen installation.

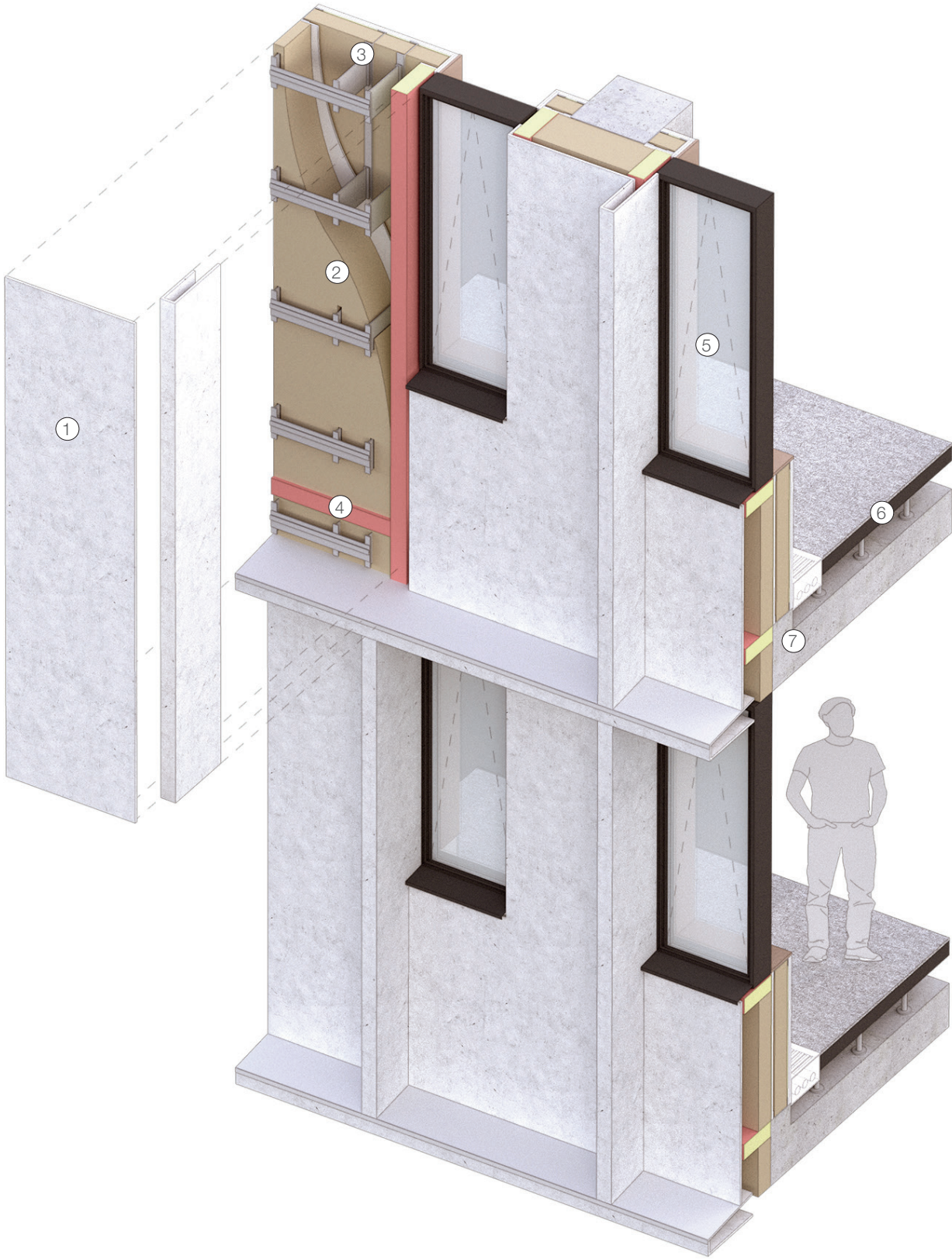
3. SFS FRAME
Lightweight secondary frame fully filled with non-combustible insulation.

4. FIRE-STOP
Fire stops will be installed horizontally and vertically to break the facade into compartments.

5. WINDOW
Smaller windows will be openeable for natural ventilation.

6. RAISED ACCESS FLOOR
Raised access floor with 150mm clear void.

7. PT Slab
For further information on the concrete frame refer to structures report.



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6.2.6 Facade Development

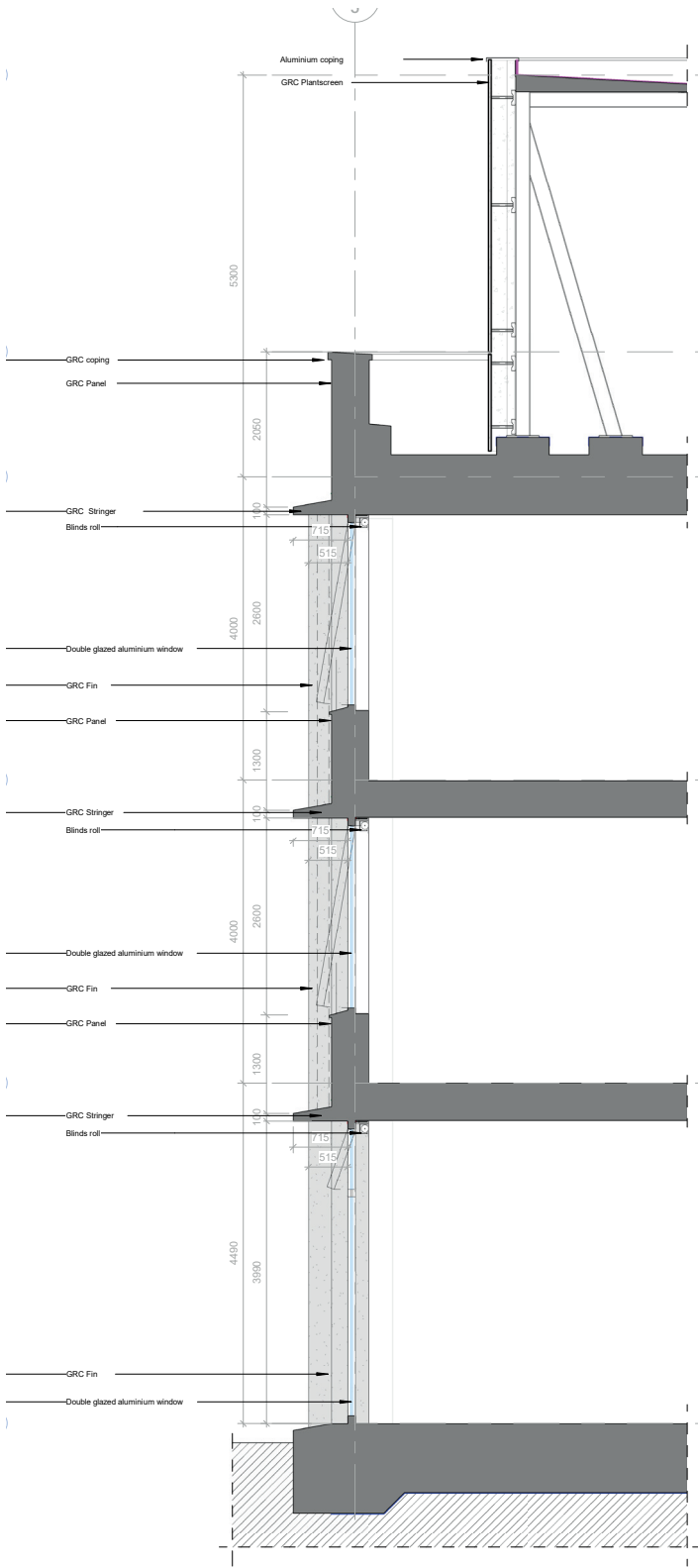
The optimum working module size for the facade grid and is reflected in the rhythm of flat panel framing. Large picture windows punctuate the GRC units, providing framed views out from the internal spaces as well as relief and depth to the facade externally. The materiality and depth of the panels also assist in the building's performance, adding thermal mass for a controlled environment. The grid is further sub-divided to achieve a more human scale, as well as providing multiple external mullions for necessary solar shading.

The rational grid allows for good areas of glazing within the standard bay. These are divided by protruding GRC fins that follow the proportions established. At key spaces, the bay height follows the internal space to allow this to be clearly read from the building approach.

Datums that respond to the immediate context. The datums help relate the building to its context.



Precedents



Physical model

A physical model of the proposed facade has been created as a key design tool, providing an opportunity to review.