TECHNICAL SPECIFICATIONS FOR THE CONSTRUCTION OF CLINKER BRICK SLIP FACADE WITH MECHANICALLY FIXED CHANNELED GRC BOARD PANEL

1. GENERAL

These specifications define the principles of "Brick Cladding Works with Supporting Substructure on the Facade" and include the application details.

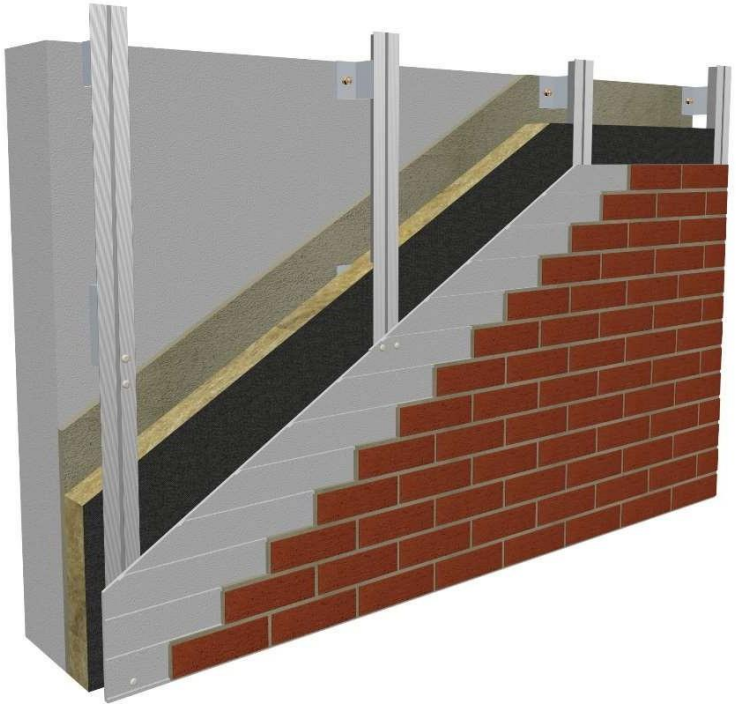


Figure 1. Application Reference Image (for informational purposes only; project-specific details take precedence)

2. SCOPE

The clinker brick slip cladding works specified herein define the complete facade cladding system using clinker brick slips, in accordance with the architectural project and details, this specification, and relevant standards. It includes the production and installation of all related elements and all components within the system, including accessories, as a complete system.

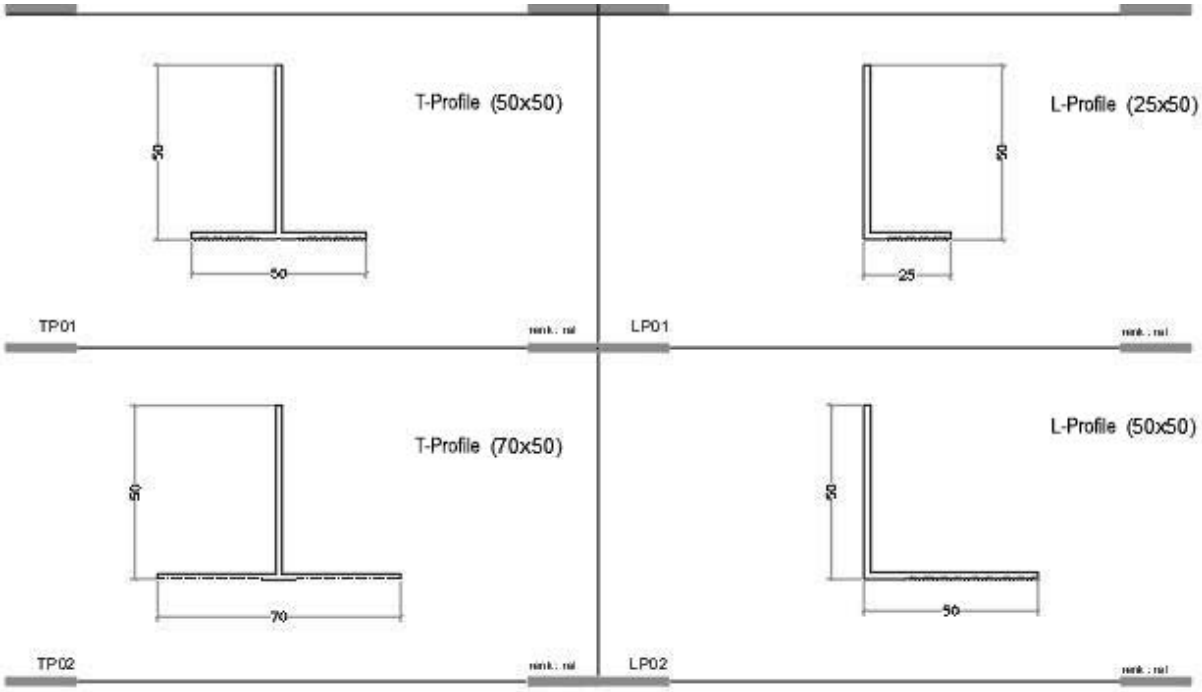
The system includes the following components:

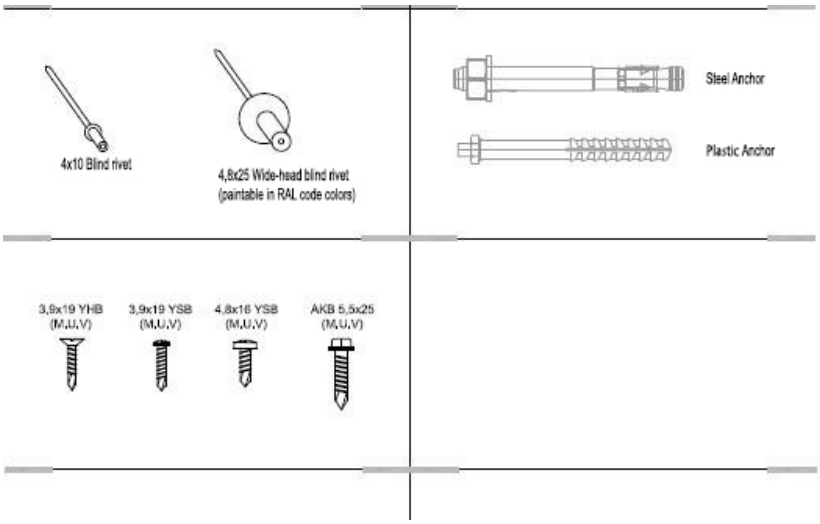
1. Thermal Insulation (Rock Wool, XPS, EPS, etc.)
2. Vapor Barrier and Balancing Membrane
3. Mechanically Fixed Metal Substructure System and Its Connections
4. Channeled GRC Board Panel
5. Flex Adhesive
6. Flex Joint Filler
7. Clinker Brick Slip

3. MATERIALS

3.1 Metal Substructure and Connections

3.1.1 Profiles and Fastening Materials

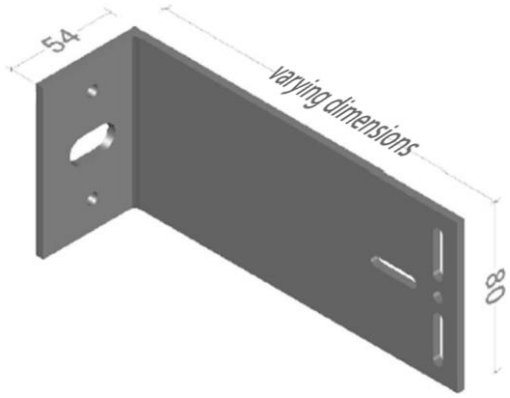




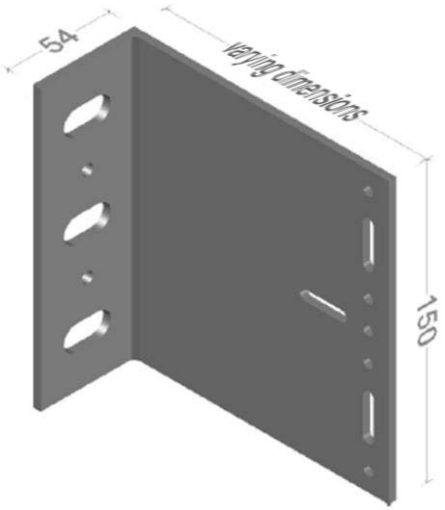
- T and L profiles shall be made of aluminum alloy T5 6063 with a minimum thickness of 2 mm;
- Screws shall comply with DIN 7504 P standard and have galvanized coating;
- Rivets shall comply with DIN 7337 A standard and be made of aluminum or stainless steel;
- Steel anchors shall be clip-type concrete anchors with a minimum diameter of 10 mm, galvanized or stainless steel, in compliance with ETAG standards;
- Plastic anchors shall have a minimum diameter of 10 mm, with galvanized steel screws, suitable for use in aerated concrete and brick walls, and compliant with ETAG standards.

3.1.2 Steel L Brackets

Movable and fixed steel brackets with a thickness of 3–4–5 mm, hot-dip galvanized with 80 microns coating, designed in accordance with the static calculations.



– Movable Bracket –

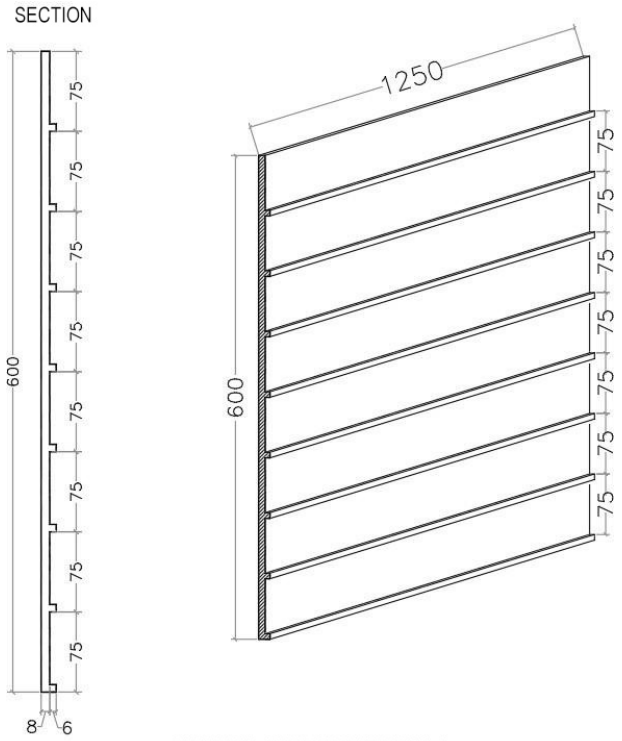


– Fixed Bracket –

3.2 Cladding Materials

A.GRC BOARD PANEL SHEET – 600×1250×8 mm	
1-Compressive Strength	40-70 Mpa
2-Flexural Strength	8-20 Mpa
3-Impact Resistance	5-10 Kj/m2
4-Proportional Limit	8-10 Mpa
5-Density	1,8-2 g/cm3
6-Thermal Conductivity	0.6-1.4W/mk
7-Fire Resistance	A1
8-Water Vapor Diffusion	40-200 U
9-Water Absorption Value:	% 11+-4
B. BRICK SLIP (Declared by certificate: TS EN 1304:2007)	
All characteristics such as color, model, texture, etc., shall be approved by the project designer based on the sample.	
1. DIMENSIONS	215x65x15 mm
2-SAMPLE DEFINITION	Made of clay, flat type, used as vertical wall surface cladding.
3. WATER ABSORPTION TEST (by boiling method)	Average max. %7 (TS EN 771-1, Clause 5.3.7.2)
4. DIMENSIONS AND DIMENSIONAL TOLERANCES	(Length:±4,3 mm. Width:±1,3mm) TSEN 1304 2007, Clause:4.3.2)
5. BENDING COEFFICIENT	Average. %0,49 (TS EN 1304, April 2007, Clause:4.3.2.1)
6-WARPING (LONGITUDINAL AND TRANSVERSE) (TS EN1304, April 2007 Clause:4.3.2.1)	LONGITUDINAL:2,0mm TRANSVERSE:1,0mm (as per Table 3)
7-WATER TIGHTNESS TS EN1304, April 2007, Clause:4.4.1)	TSE N539-1 Method-1 max:0,5 cm3/cm2/day
8. REACTION TO FIRE	(TSEN1304, April 2007, Clause:4.5.2.2)A1 Max.:0,713
9. FREEZE–THAW RESISTANCE	(TSEN539-2) Test Method A:(12 cycles at -15°C , 12 cycles at -5°C)

10.FLEXURAL STRENGTH	For flat tiles: 600 N (TS EN 538)
C. FLEX ADHESIVE	
1. Composition	Polymer-modified
2. Initial Tensile Adhesion Strength EN1348:2007	≥1N/mm²
3. Tensile Adhesion Strength After Water Immersion EN1348:2007	≥1N /mm²
4-Tensile Adhesion Strength After Heat Aging (70°C oven) (EN 1348:2007)	≥1N/mm²
5-Tensile Adhesion Strength After Freeze-Thaw Cycles EN 348:2007	≥1N/mm2
6-Extended Open Time (Minimum 30 min) EN1346	≥0,5 N/mm2
7-Slip EN1308	≤0,5 mm
D. FLEX JOINT FILLER	
1. Composition	Polymer-modified
2. Abrasion Resistance TSEN12808-2	≤1000mm³
3. Flexural Strength After Dry Storage TSEN12808-3	≥2,5 N/mm²
4. Flexural Strength After Freeze–Thaw Cycles TSEN12808-3	≥2,5 N/mm2
5. Compressive Strength After Dry Storage TSEN12808-3	≥15 N/mm2
6. Compressive Strength After Freeze–Thaw Cycles TSEN12808-3	≥15 N/mm2
7. Shrinkage TSEN12808-4	≤3 mm/m
8. Water Absorption After 30 Minutes TSEN12808-5	≤2 gr
9. Water Absorption After 240 Minutes TSEN12808-5	≤5 gr



CHANNELED GRC BOARD PANEL

GRC Panel Product Description:

GRC stands for Glass Fibre Reinforced Concrete, a precast concrete material reinforced with alkali-resistant glass fibers. The brick-channeled GRC panels are cement-based facade elements specially designed for fast and easy brick slip installation.

General Characteristics:

- Cement-based
- Long-lasting
- Maintenance-free
- Environmentally friendly
- Fire-resistant
- Allows fast and easy installation

Dimensions:

- Standard size: 600 × 1250 mm
- Manufactured at a thickness of 8 ± 2 mm

3.3 Vapor Balancing Membrane:

A diffusion-permeable, flame-retardant vapor-balancing membrane accompanied by a special acrylic sealing tape to ensure airtightness.

3.4 Thermal Insulation Fixing Anchor:

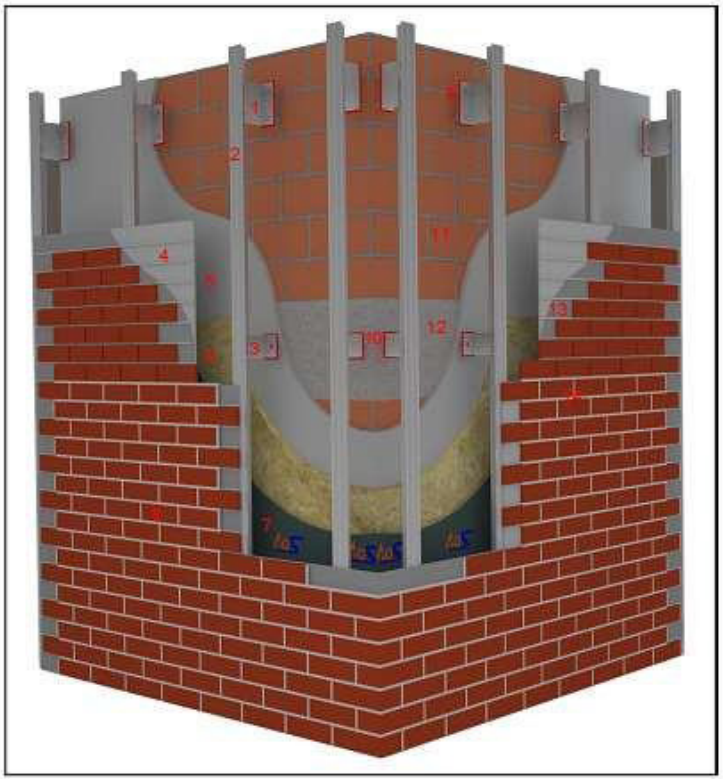
The anchor to be used for securing insulation boards to the facade surface shall be made of hard, non-recycled plastic, with a body free of waste materials, a minimum load-bearing capacity of 0.15 kN, and a length allowing at least 4 cm penetration into the wall; it shall be selected in accordance with the type of insulation board used, feature either plastic or steel nails, and include a wide head with a minimum diameter of 60 mm.

In addition, one metal fire anchor shall be used per panel.

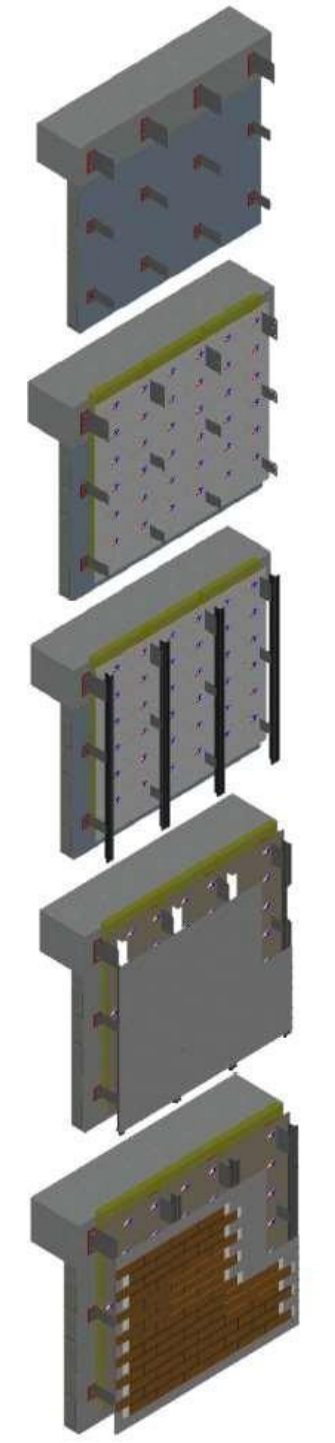
-Metal Fire Anchor -

The anchors must be manufactured by a company certified with the ISO 9001 Quality Management System and must possess a valid ETA certificate.

4. APPLICATION



1. FIXED BRACKET
2. T PROFILE
3. SLIDING BRACKET
4. CHANNELED GRC BOARD PANEL
5. PLASTER
6. HEAT INSULATION
7. WATERPROOFING
8. BRICK SLIP
9. PLASTIC ANCHOR
10. STEEL ANCHOR
11. LOAD-BEARING BRICK WALL
12. LOAD-BEARING REINFORCED CONCRETE BEAM
13. FLEX ADHESIVE
14. FLEX JOINT FILLER



4.1 Application Steps

- According to the project and based on the standard 62.5 cm vertical axis, fixed brackets shall be anchored to reinforced concrete surfaces using steel anchors, while movable brackets shall be fixed to brick wall surfaces using plastic anchors. The vertical spacing between brackets must be arranged in accordance with static calculations. Then, thermal insulation boards shall be applied across the entire facade without gaps, using six plastic or steel nail anchors per square meter. A vapor-balancing membrane shall be laid over the insulation boards with a 10 cm overlap at the joints; at bracket locations, the membrane shall be carefully cut with a utility knife and passed through the slits to fit around the brackets. All joints and bracket penetrations shall be sealed with special tape to ensure water tightness.

- Aluminum T-profiles shall be attached to the brackets fixed to the facade at 62.5 cm intervals. The aluminum T-profiles shall be aligned horizontally and vertically, and fixed to the brackets using self-drilling screws and bolts. At each floor level, a 5 mm thermal expansion gap shall be left between T-profiles, and they shall be fixed to the brackets rigidly at the top and movably at the bottom end.
- Separate additional substructures shall be constructed for other architectural elements to be mounted on the external facade.

- Channeled GRC panels shall be fixed onto the T-profiles using six wide-head blind rivets (pop rivets) per panel.

- Then, flex adhesive, prepared according to the instructions, shall be applied to the back of each clinker brick using a notched trowel, and the bricks shall be placed into the channels on the GRC panel. A vertical joint gap of 8–10 mm shall be left between the bricks, and application shall continue in this manner. Depending on weather conditions, the flex adhesive must be allowed to fully cure within 12 to 24 hours.

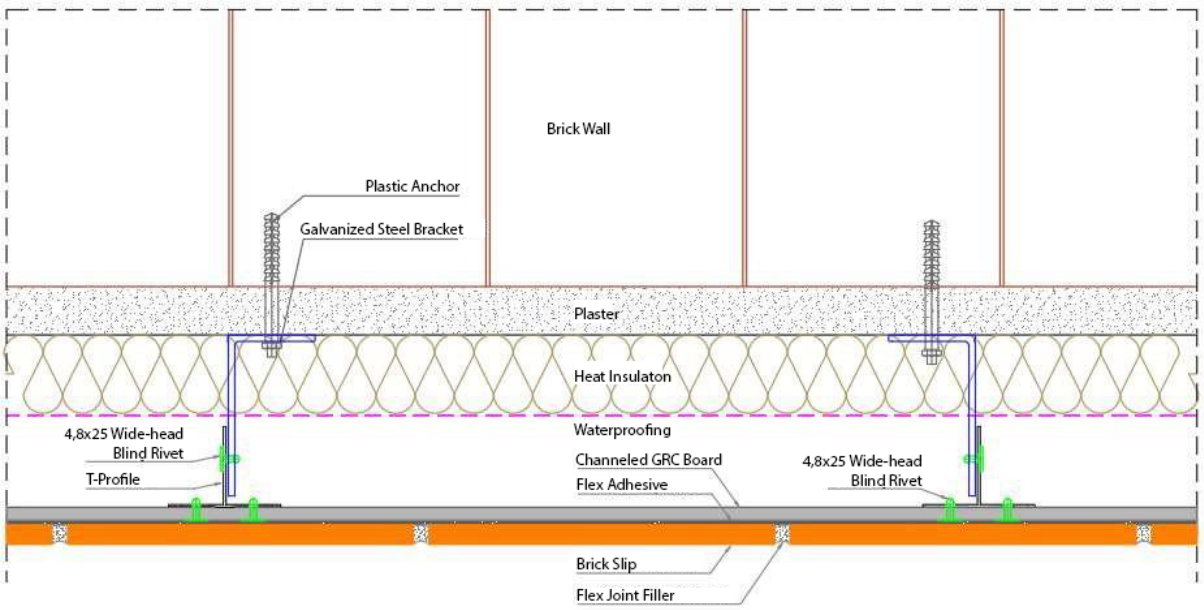
- Once the brick bonding is complete and sufficient curing time has passed, joint filling can begin. Flex joint filler, prepared as instructed, shall be applied between the bricks using a joint gun. When the joint filler reaches a plastic consistency, it shall be tooled with a joint shaping tool to achieve a smooth finish. Then, the surface shall be cleaned of any remaining material using a soft-bristled plastic brush.

- Horizontal control joints must be left at locations specified in the project, and proper detailing must be applied at expansion joints. Control and expansion joints must be filled using polysulfide-based sealants.

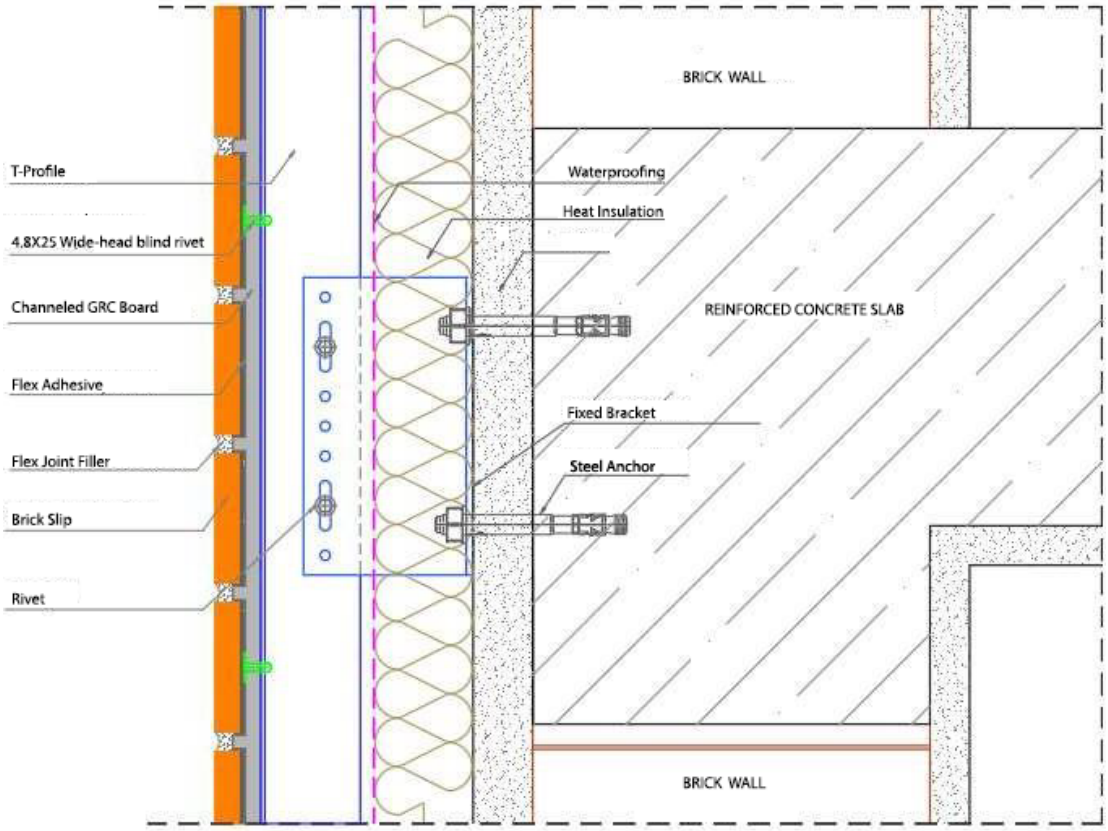
- The finished surface must be protected for the first 24 hours from excessive sun, wind, frost, and rain, especially in exterior applications.

- All works must be carried out in accordance with the specification, the manufacturer’s written instructions, and the detailed production drawings.

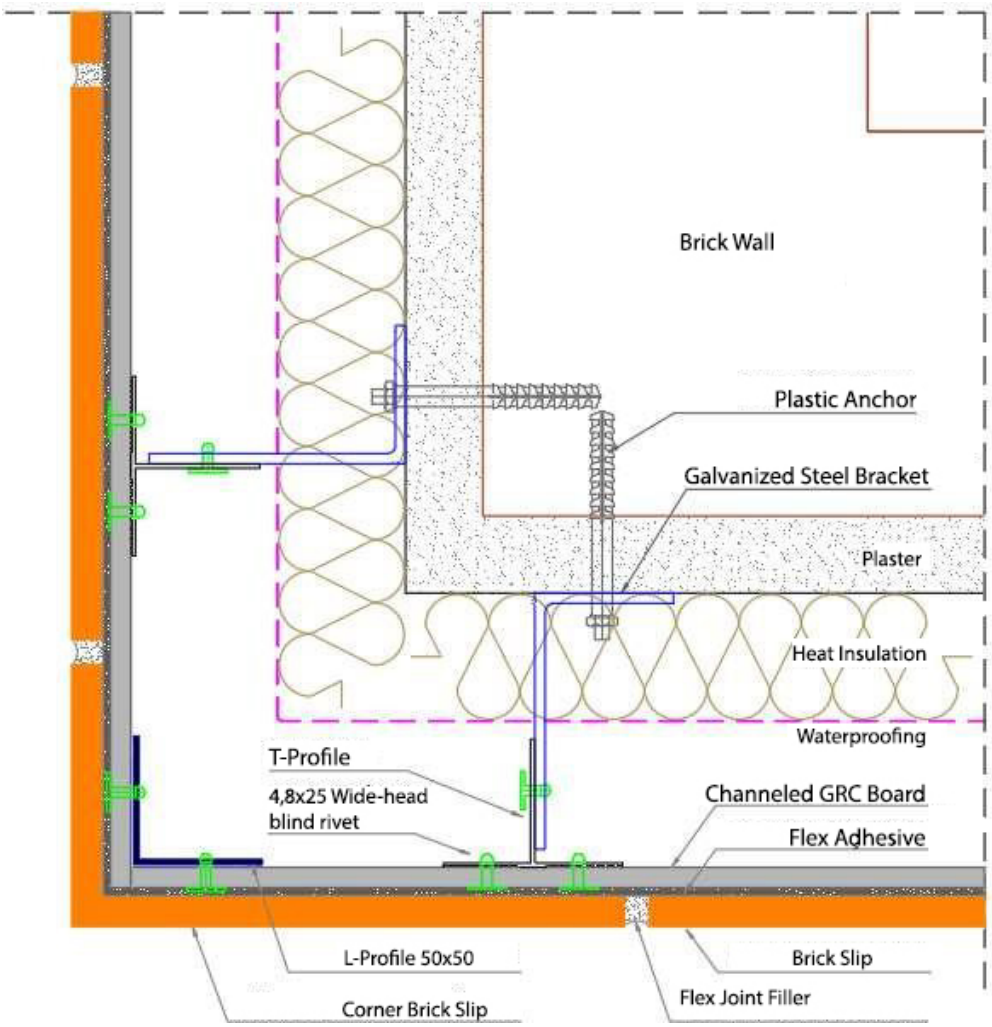
- All materials must be delivered to the site in their original, unopened packaging, clearly labeled with type and quality standards.



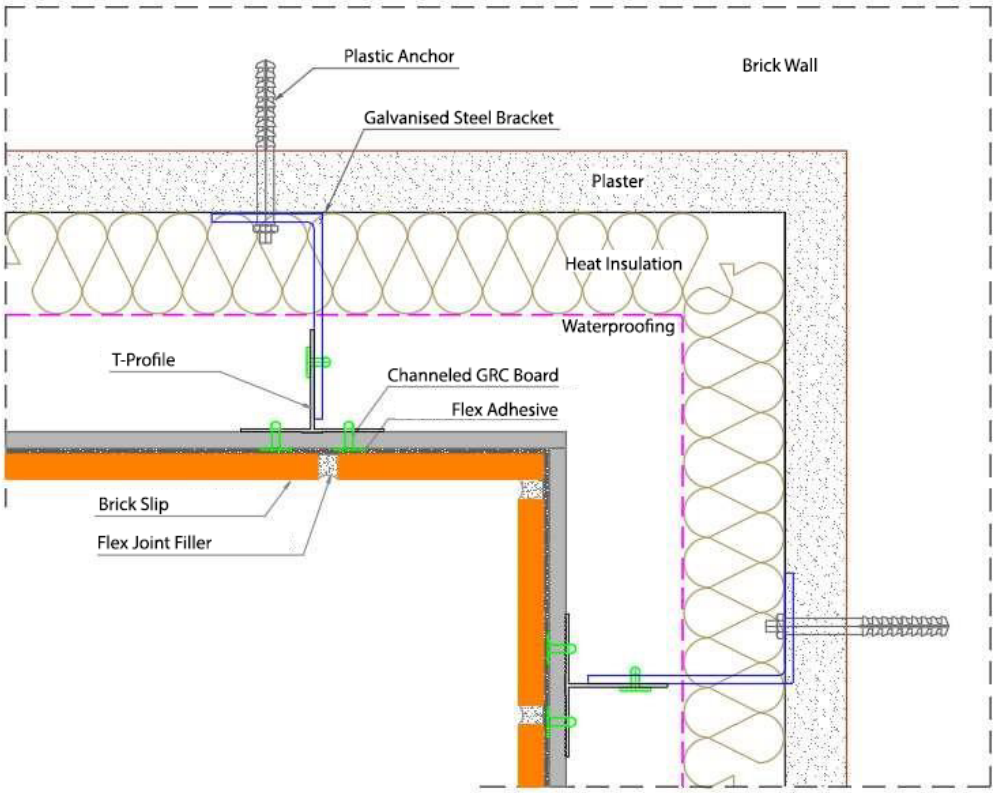
Plan



Section



Outer Corner



Inner Corner

4.2 Quality Assurance

- The application shall be carried out only after the Static Calculation Report for the mechanically fixed supporting substructure system is prepared and approved, in full compliance with the technical specifications and drawings.

- Materials that do not comply with the relevant standards shall not be used. Any materials deemed unsuitable by the Employer's Representative or Project Manager shall be replaced by the Contractor.

- The Contractor shall ensure the timely and proper completion of the works by employing a sufficient number of skilled, experienced, and qualified workers on site. Installers must have a minimum of 5 years of documented experience in similar brick slip cladding applications.

- All applications shall comply with applicable Regulations, Specifications, and Standards. In the event of any contradiction between the Regulations, Specifications, and this Technical Specification, the most stringent requirement shall apply.