

HERITAGE-GRID FRCM INSTALLATION METHODOLOGY FOR THE STRENGTHENING OF URM STRUCTURES.

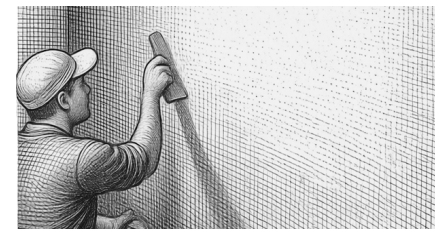
**This is a general methodology; for project-specific methodologies, please contact us.*

STANDARD PROCEDURE:

A practical installation methodology for a standard FRCM strengthening application to unreinforced masonry (URM) using Rockbond 1.18 Heritage Mortar and Rockbond Heritage-Grid AR Glass or Carbon Mesh

Scope and intent

The purpose of the system is to strengthen URM walls using a Fibre-Reinforced Cementitious Matrix (FRCM) build-up, where the mesh is embedded between two layers of fibre-reinforced high-adhesion cementitious mortar.



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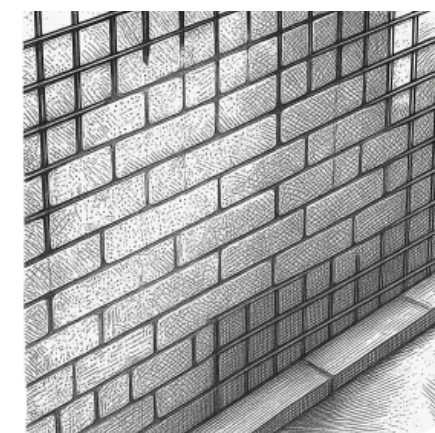
The system is intended to:

- Improve in-plane and/or out-of-plane wall performance,
- Provide distributed tensile reinforcement,
- Maintain compatibility with historic or heritage masonry where required.

Pre-start requirements

Before installation starts:

1. Confirm the locations, zone dimensions, mesh type, lap lengths, anchorage details, and terminations from the structural design.
2. Confirm whether the specified mesh is:
 - AR Glass (single or double layer), or
 - Carbon Mesh
3. Verify substrate suitability:
 - Masonry is stable,
 - Loose units are repaired,
 - Failed joints are repointed where required,
 - Major cracks are stitched or repaired as specified before FRCM application.
4. Confirm environmental conditions are suitable for mortar application.
5. Complete a trial area / sample panel if required by the engineer or specification.
6. Ensure all of the install team are familiar with the product data sheets and safe work method statements.



Materials and equipment

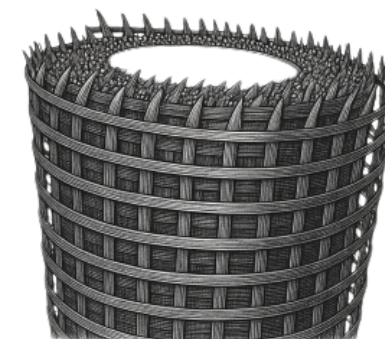
Typical materials:

- Rockbond 1.18 Heritage Mortar
- Rockbond Heritage-Grid AR Glass or Heritage-Grid Carbon Mesh
- Clean potable water
- Repair mortar / repointing mortar where specified
- Pre-wetting provisions.

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Typical equipment:

- Mechanical mortar mixer
- Hawk, trowels, spatulas, floats
- Notched or straight-edge trowels for thickness control
- Scissors/shears suitable for cutting mesh
- Measuring gauge / wet film depth checks / pins
- Brushes, vacuum, compressed air or low-pressure cleaning tools
- Drop sheets and any other materials to protect surrounding substrates
- PPE and access equipment



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Surface preparation

Proper substrate preparation is critical.

1. Remove all loose, friable, de-bonded, or contaminated material from the masonry surface.
2. Remove:
 - Paint,
 - Gypsum,
 - Weak renders,
 - Salts/crusts where necessary,
 - Dust,
 - Oils,
 - Biological growth,
 - Any material that may inhibit bond.
3. Rake out and repoint defective mortar joints where required.
 - 1.18 Heritage Mortar can be used for these pointing repairs prior to FRCM installation.
4. Repair local defects such as:
 - voids,
 - missing mortar,
 - local delamination.
5. Repair significant surface irregularities so the FRCM system can be applied continuously and to consistent thickness.
6. Ensure the substrate is:
 - Sound,
 - Clean,
 - Dust-free,
 - And suitably profiled for bond.

For highly absorbent URM, the wall is typically pre-dampened to a surface-dry condition. Avoid free water on the surface.



Substrate condition checks

Before applying the mortar, inspect and confirm:

- masonry is firm and stable,
- there is no active movement,
- repairs are cured sufficiently,
- joints and cracks have been treated as specified,
- the wall is not excessively wet or contaminated.

Any hollow, unstable, or weak substrate areas should be repaired before proceeding.



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Setting out

1. Mark the strengthening zones on the wall.
2. Set out mesh sheets so that:
 - Mesh overlap of 100-150mm is allowed for at mesh joints.
 - Mesh direction is aligned with the design intent,
 - Laps are positioned away from stress concentrations where possible,
 - Terminations, corners, returns, and openings are treated in accordance with the engineer's details.
3. Pre-cut mesh pieces to required lengths before mortar application.
4. Prepare additional strips or local reinforcement pieces for:
 - Corners,
 - Around openings,
 - Crack zones,
 - Anchorage zones,
 - And transitions if required by the design.



Mixing the Heritage Mortar

1. Mix Rockbond 1.18 Heritage Mortar strictly in accordance with the Rockbond's data sheet.
2. Use only the specified water addition (13.5% water, 3.4lt per 25kg bag)
3. Mechanically mix until a uniform, lump-free consistency is achieved.
4. Stand for 2 mins, then remix.
5. Only mix quantities that can be placed within 20 minutes.
6. Do not add more water to mix once it has begun to stiffen. If you keep the mix agitated at a low speed, you will get a longer working time



Application of first mortar layer

1. Apply the first coat of 1.18 Heritage Mortar directly to the prepared URM substrate.
2. Press the mortar firmly into the masonry surface to ensure full contact and bond.
3. Build the first layer to a uniform thickness of approximately 5-6 mm.
4. Ensure the mortar fills local surface texture, joints, and minor undulations.
5. Strike the surface as needed to provide an even bed for receiving the mesh.

Note: The first coat must remain workable enough to allow the mesh to be fully embedded.



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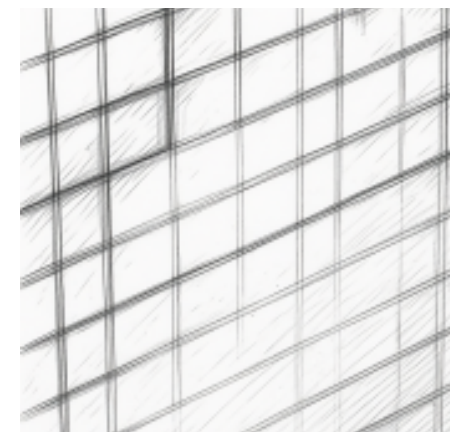
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Placement of the mesh

1. Immediately place the pre-cut Heritage-Grid AR Glass or Carbon Mesh onto the fresh first mortar layer.
2. Align the mesh accurately with the set-out lines and required reinforcement direction.
3. Gently press the mesh into the mortar using a trowel, float, or spatula so it is fully bedded.
4. Ensure the mesh is:
 - Flat,
 - Taut,
 - Free of folds or wrinkles,
 - Fully in contact with the mortar.
5. Avoid leaving voids behind or beneath the mesh.
6. Form all overlaps (100-150mm) in accordance with the design requirements.
7. At corners, returns, and around openings, install mesh continuously or with specified overlap/detail strips as required by the engineering design.



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Application of second mortar layer

1. As soon as you have applied the mesh into the first layer of mortar, immediately apply the second coat of 1.18 Heritage Mortar.
2. Cover the embedded mesh completely with an additional 5–6 mm layer of mortar.
3. Trowel the mortar to achieve full encapsulation of the mesh.
4. Ensure there are no visible mesh strands at the finished face unless specifically permitted at edges pending later finishing.
5. Finish to the specified surface texture:
 - Floated,
 - Sponge finished,
 - Or prepared to receive a compatible final coating/render/facade if specified.

Note: Target total system thickness is typically 10 mm to 12 mm (subject to substrate tolerance and project specification). Also, it is important that the full FRCM system (mortar/mesh/mortar) are applied immediately after the previous step, to ensure that there is no cold joint in the matrix.



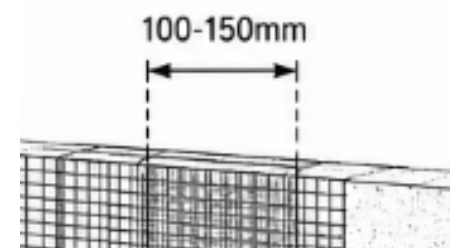
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Joints, laps, corners, terminations & anchors.

These details are often the most important part of a successful FRCM installation.

1. Laps: provide the required mesh overlap length (100-150mm) as shown on the design drawings.
2. Corners and returns: wrap or continue reinforcement where required rather than simply butting at arrises.
3. Openings: provide local reinforcement/anchors around doors, windows, and re-entrant corners as detailed by the engineer.
4. Terminations: stop the system neatly and securely at edges or adjacent construction, in accordance with the design.
5. Discontinuities: avoid abrupt termination in high-stress areas unless specifically detailed.

Note: For CFRP anchor installation, please refer to Heritage-Grid FRCM Embed & Through Anchor Application Methodology.



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Curing and protection

After application:

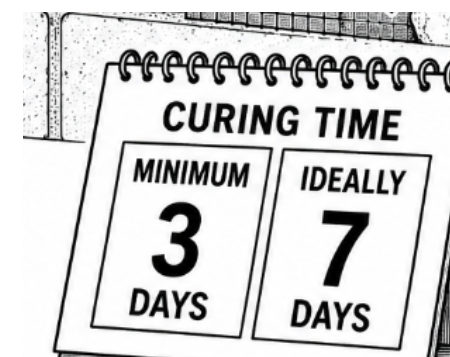
1. Protect the installed FRCM from:

- Rapid drying,
- Wind,
- Direct strong sun,
- Rain,
- Frost,
- Impact,
- Vibration,
- And premature loading.

2. Cure the mortar in accordance with the project requirements and site conditions.

3. Do not apply impermeable coatings or finishes until the mortar has cured sufficiently (Minimum of 3 days, ideally 7 days)

4. Prevent follow-on trades from damaging the fresh system.



Quality control and inspection

Recommended QA checks include:

- Substrate condition accepted before mortar application,
- Mesh type matches specification,
- Mortar batch and product identification recorded,
- First coat thickness checked: 5–6 mm,
- Mesh fully embedded with no wrinkles or de-bonded areas,
- Required overlaps installed,
- Second coat thickness checked: 5–6 mm,
- Mesh fully covered,
- Final finish uniform and free from major voids or cracking,
- Curing/protection measures implemented.

Where specified, include:

- Bond/pull-off testing,
- Photographic records,
- Witness panels,
- Engineer hold point sign-off.



Typical workmanship acceptance criteria

It is important that all installers of Rockbond's Heritage-Grid FRCM System are certified installers with current accreditation.

The completed system should exhibit:

- Full adhesion to the masonry substrate,
- Consistent thickness,
- No exposed mesh,
- No significant voiding,
- No folds, fish-mouths, or mesh distortion,
- Neat edges and terminations,
- No uncontrolled shrinkage cracking beyond acceptable limits.

Note: Any defective sections should be cut back and reinstated in accordance with the project requirements.

