INTRASODAL OR EXTRADOSAL REINFORCEMENT OF VAULTS AND DOMES WITH DIFFUSED FRCM

Reinforcement of arches and vaults

APPLICATION DATA SHEET

Structural reinforcement on masonry structures with FRCM systems consisting of basalt fiber mesh and natural hydraulic lime mortar, through:

1. preparation of the substrate;
2. application of the reinforcement;
3. Drilling holes for connections
4. application of an incorporating layer
5. Skimming

1) PREPARATION OF THE SUBSTRATE:

Demolition of existing plaster and loose parts and scarification of bed joints. Washing and wetting of the soaked surface (minimum masonry humidity equal to 70%). Possible reconstruction of missing or particularly damaged masonry parts. If restoration of the support is needed, such intervention will be performed using mortars from Basic, Tectoria or Limepor range. The thickness necessary to restore the support is not included in the total thickness of FRCM reinforcing system.

2) APPLICATION OF THE REINFORCEMENT

Apply a first rough coat (5 mm) of lime-based mortar Basic MALTA M15/F to the masonry. While the mortar is still fresh, apply de reinforcing baslt-based mesh Kimitech BS ST 200 (for cutting the mesh at the openings use shears and/or construction cutters or angle grinder). Overlap the mesh bands for about 15 - 20 cm in order to guarantee mechanical continuity.

3) DRILLING HOLES FOR CONNECTIONS

Creation of a hole with a minimum diameter of 20 mm and its thorough cleaning with compressed air; insertion of the connector made with the Kimisteel GLV 650 galvanized steel fabric, rolled longitudinally on itself so as to form a sort of rod with improved adhesion and appropriately bent with a Kimisteel BENDER bender or other suitable equipment (in the event that the use of the Kimisteel IC TASSELLO locking dowel is not foreseen).
To make the connector, cut the Kimisteel GLV 650 galvanized steel fiber band to size according to the design specifications using a flexible hose or sheet metal cutting equipment.
Mark the sections of the band where the bending is to be carried out; plan for a length of the part to be unraveled of at least 15 cm. If the connector is a through-type, it will be necessary to make two bends, taking care to measure the length of the hole precisely.
Place the Kimisteel BENDER folder on a stable work surface and fix it to it using clamps or screws; insert the cut fabric strip into the folder and fold the fabric at 90°, applying adequate pressure on the folder lever after positioning the fixing bar.
The fixing bar has two sides: one with a 60° tilt angle and the other with a 40° angle: the first is specific for folding the Kimisteel GLV 650.
Cut the steel threads that make up the weft of the part of the fabric to be unraveled and proceed with rolling up the part that will be inserted into the perforation.
Insert the connector and anchor the elemnt itself using the lime-based slurry Limepor 100 GEL.

4) APPLICATION OF AN INCORPORATING LAYER

Covering with a second layer of lime based mortar Basic MALTA M15/F, respecting the maximum overall thickness of the reinforcement of 1 cm.

5) SKIMMING

Skimming should be carried out upon completion of the plaster curing (wait at least 1 week for each centimeter of thickness, and at least at least 3 weeks) by applying a

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ready-to-use natural hydraulic lime-based white skimming mortar Limepor EDO.

POSSIBLE ALTERNATIVES

- As an alternative to Kimitech BS ST 200 you can use: Kimitech BS ST 400, fiber mesh of basalt of 400 g/m^2

- As an alternative to Kimisteel GLV 650 for connections it is possible to use: Kimisteel INOX 800, stainless steel fiber fabric

- As an alternative to Limepor EDO it is possible to use: Limepor SK, a filler based on natural hydraulic lime and Ecopozzolan or Tectoria FINITURA, totally free of cement