

RESTORATION AND REINFORCEMENT OF PILLARS BY MEANS OF CASTING WITH HIGH PERFORMANCE POURABLE CEMENTITIOUS GROUT WITH METAL FIBERS

Restoration and reinforcement of reinforced concrete elements

APPLICATION DATA SHEET

Restoration and reinforcement of pillars by means of casting with high performance pourable cementitious grout with metal fibers prior:

1. Removal of the damaged concrete;
2. treatment of the existing metal reinforcement;
3. protective treatment of reinforcement bars;
4. placement of connecting dowels and construction of the formwork;
5. pouring of the casting.

1) REMOVAL OF THE DAMAGED CONCRETE

The surfaces to be restored must be prepared by completely removing the damaged concrete by hand or mechanical chipping or by other suitable means such as hydro-scarifying, in order to obtain a solid support, free of loose parts and sufficiently rough.

The concrete in contact with the visible metal reinforcements must be removed from each side of bars using a needle gun; the areas to be skimmed will be preliminarily sanded and / or water sandblasted to eliminate any residue of old paint, dirt, disarming, mosses and / or lichens, dust, friable materials in general that would prevent the perfect adherence of the mortar to the substrate.

2) TREATMENT OF THE EXISTING METAL REINFORCEMENT

Perform the brushing of exposed reinforcing bars or proceed with hydro-sandblasting in order to remove the rust and bring the surface to "white-metal" condition

(hydro-sandblasting is not necessary if the preparation of the surface has been carried out by hydro-scarification, but it is necessary when a long period of time elapses from this operation due to particular organizational requirements of the site, before the treatment of the reinforcing bars).

3) PROTECTIVE TREATMENT OF REINFORCEMENT BARS

Carry out the protective treatment of exposed reinforcement bars by applying single-component re-alkalizing hydraulic mortar Betonfix KIMIFER with a CE mark in conformity with UNI EN 1504-7, applied with a brush, according to the consumption rates in the Technical Data Sheet, on the metal reinforcement to be protected.

4) PLACEMENT OF CONNECTING DOWELS AND CONSTRUCTION OF THE FORMWORK;

To improve the degree of connection between the casting and the existing structure, punctual connection systems will be added by inserting dowels on each face of the pillar, every 50 cm (at staggered heights on the various faces). The presence of punctual connectors allows to redistribute the stresses on the fiber-reinforced casting even in the absence of a subdivision mesh, thanks to the presence of the metal fiber.

5) POURING OF THE CASTING

The mixing of Betonfix HCR EVO can be carried out in a simple cement mixer or preferably with a mechanical mixing unit. Insert half of part A (powder) and start mixing adding half the amount of water shown in the table. Mix

until a homogeneous and fluid mixture is obtained, then insert the remaining part of the powder gradually adding the remaining part of water until the desired mixing ratio is obtained.

Keep of mixing for at least another 5 minutes. Weigh the quantity of fibers required in relation to the volume of the pouring to be made and add them gradually (over a period of about 3 minutes), using special fiber unraveling equipment. Insert all the fibers, mix for at least another 2-3 minutes.

Pour Betonfix HCR EVO. To facilitate the filling of the formworks make a slight mechanical vibration or beating. Where necessary, use bars or rods to facilitate the spreading of the mortar.

After the formwork's removal, it is advisable to wet the surfaces and in the case of high temperatures and excessive ventilation, cover the elements with sheets, to avoid excessive evaporation of the mixing water.

POSSIBLE ALTERNATIVES

- As an alternative to Kimisteel GLV 650 you can use: Kimisteel INOX 800, with stainless steel filaments.

- As an alternative to Limepor PMP it is possible to use: Basic MALTA M15, based on natural hydraulic lime and Ecopozzolan or Tectoria M15, totally free of cement.