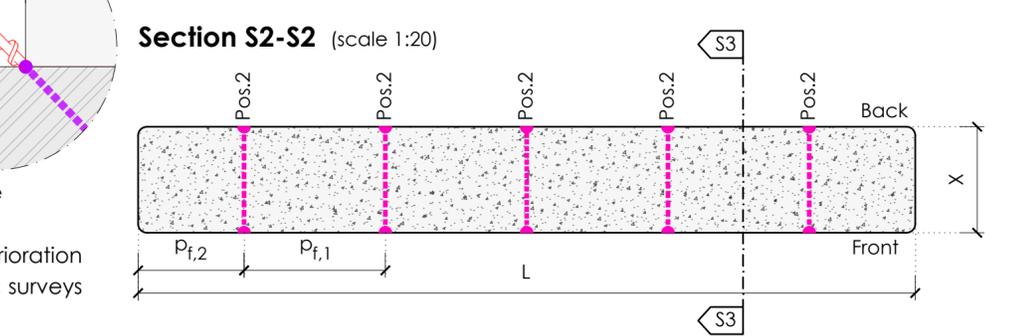
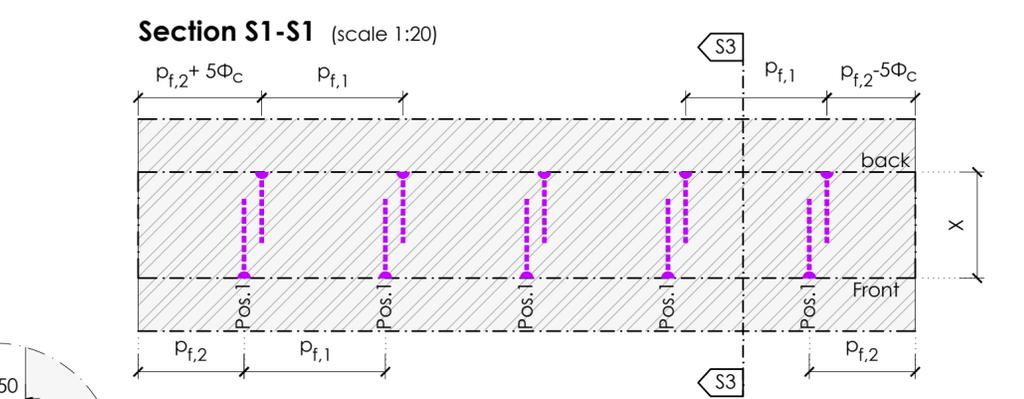
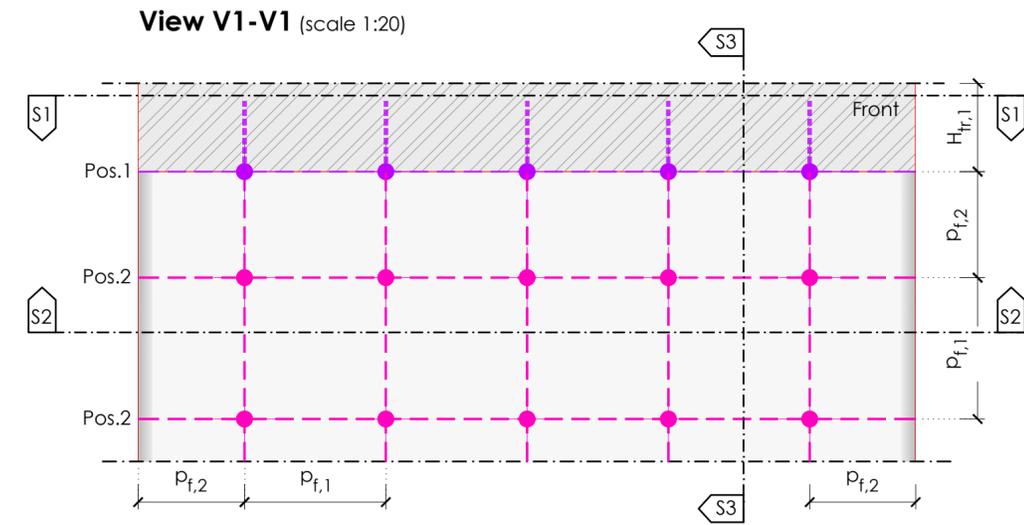
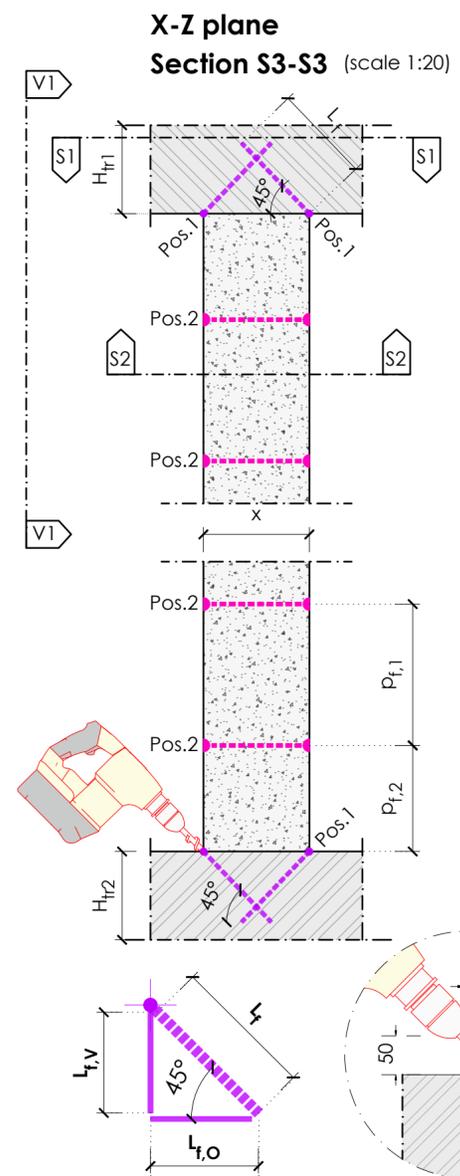
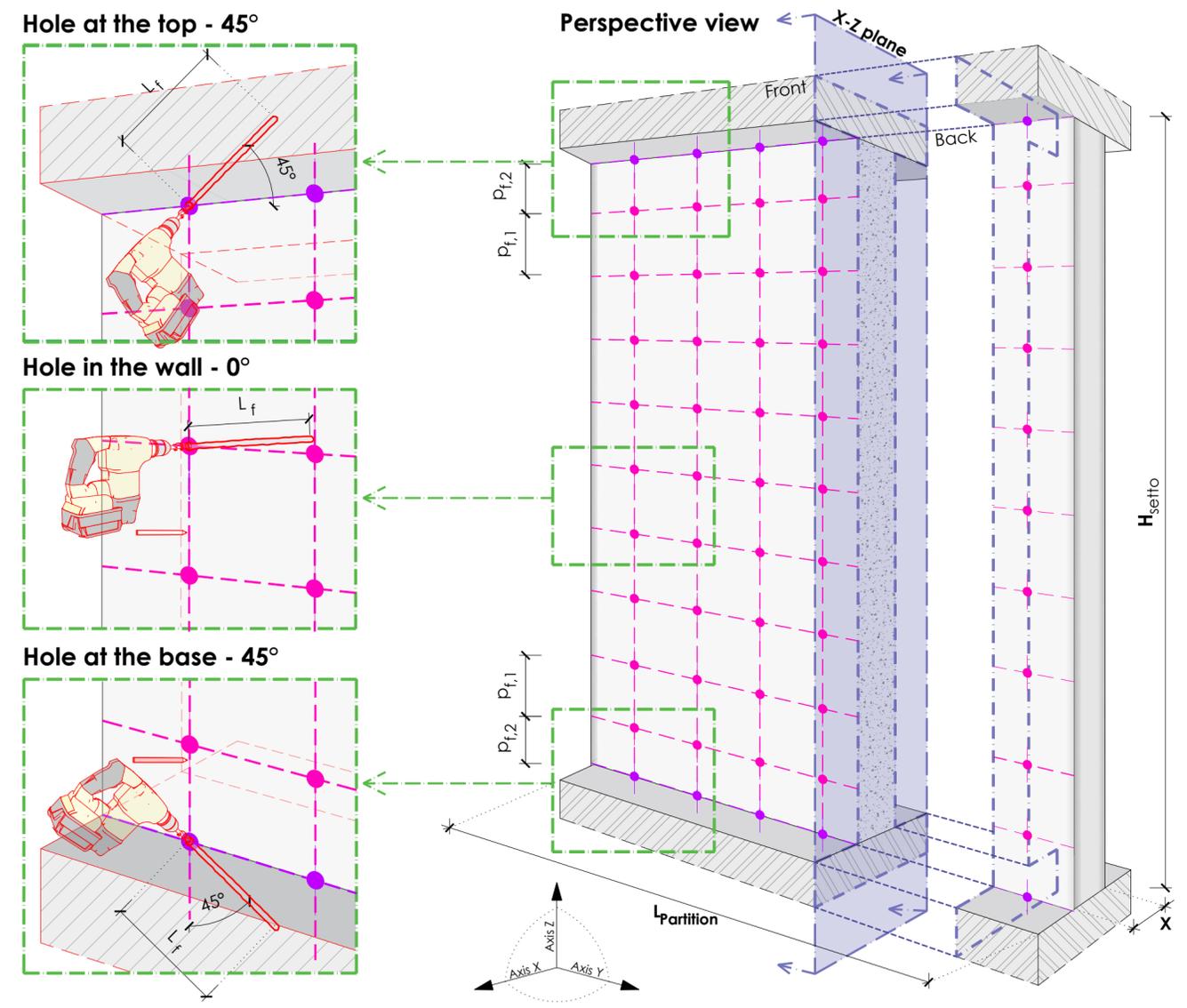


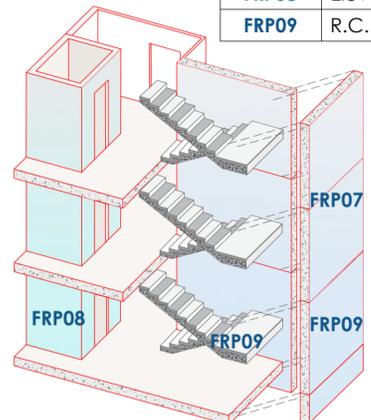


PHASE 0 - Marking and drilling of holes



Axonometric map

Table	description
FRP07-09	R.C. partition
FRP08	Elevator shaft
FRP09	R.C. staircase



DESCRIPTION OF THE WORKS - PHASE 0

Once the arrangement, type, and quantity of reinforcement to be applied have been defined, before proceeding with the installation, follow the below preliminary operational phases:

- 0.1 After the removal of any existing plaster, proceed with mechanical cleaning of the substrate and check for any deterioration of the concrete by performing carbonation depth tests and chloride penetration tests. Additionally, conduct pachometric surveys to limit interference between the existing reinforcement and the new connectors (See Phase 1);
- 0.2 Preparation of the reinforced concrete substrate, including any restoration cycle for damaged concrete. For further details, refer to the reference drawings. Round off the edges with a radius of curvature ≥ 20 mm. The application surface must not be "smooth," but "rough," with a roughness index between 0.3 - 0.5 mm, and it must be free of oils, fats, and/or form-release agents. If surface cleaning is needed, it should be done mechanically, preferably by sandblasting. To verify the suitability of the surface, refer to the guidelines from ICRI - International Concrete Repair Institute for CSP2-CSP3-CSP4 and CSP5 for in-situ laminates, and CSP6 for preformed reinforcements;
- 0.3 Mark the holes to be made according to the graphical scheme represented in this document;
- 0.4 Create holes $\varnothing 12/14$ mm for connector anchoring with countersinking of the hole $\varnothing 16$ mm and a countersink depth > 10 mm. Use a rotary hammer (no percussion) for drilling. If the connectors are non-passing through connectors, the hole depth should be equal to the connector length plus 10 mm;
- 0.5 Clean the holes of any debris by blowing with a compressor or brushing with a brush and simultaneously vacuuming the dust with an appropriate vacuum cleaner.

Legend

- X = wall thickness;
- Φ = hole diameter (12/14 mm);
- L_f = hole length;
- $L_{f,v}$ = projection of the hole relative to the vertical axis;
- $L_{f,o}$ = projection of the hole relative to the horizontal axis;
- $P_{f,1} \cdot P_{f,2}$ = hole spacing

HOLES TABLE

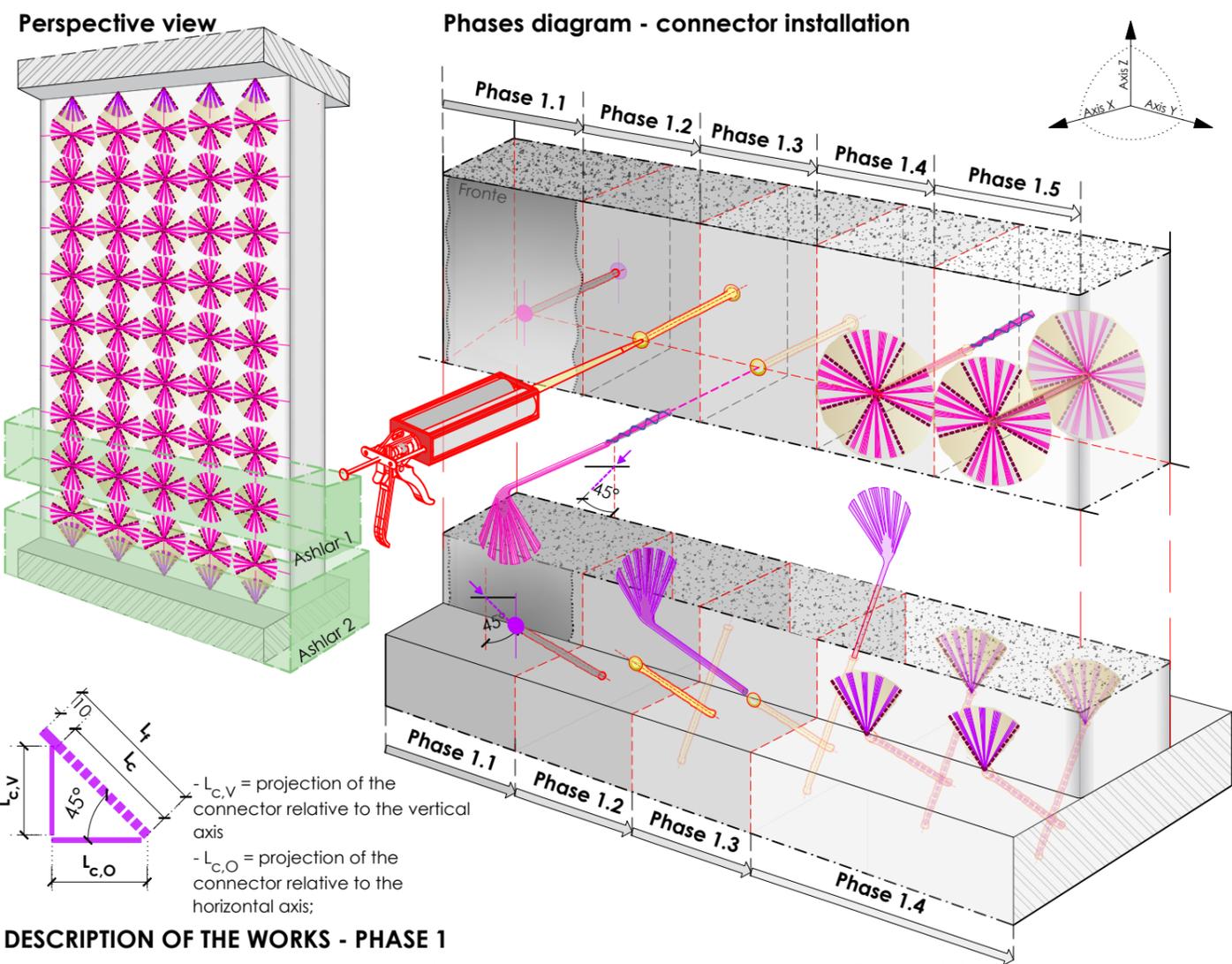
Id.	Characteristics		
Pos.	Spacing	Inclination	L_f
Pos.1 (at the top and at the base)	$P_{f,1} \leq 2 \times X$	45°	$L_{f,v} \leq 3/4 H_{tr1} + 10$ $L_{f,o} \geq 200 + 10$
Pos.2 (in the wall)	$P_{f,2} \leq 0.8 \times X$	0°	X

The measurements are expressed in mm unless otherwise specified.





PHASE 1 - Anchoring of CFRP connectors

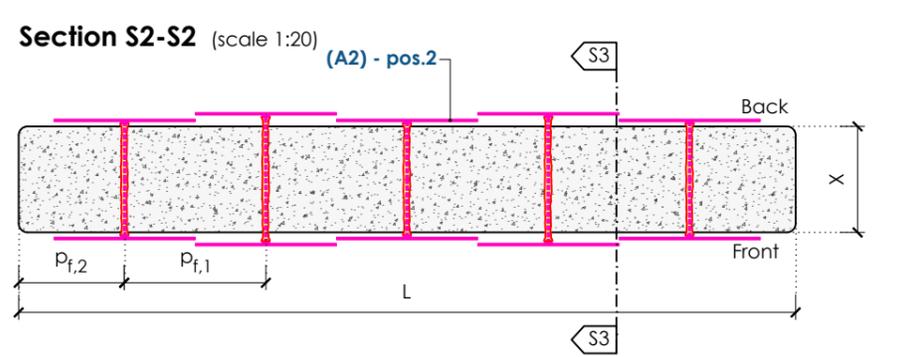
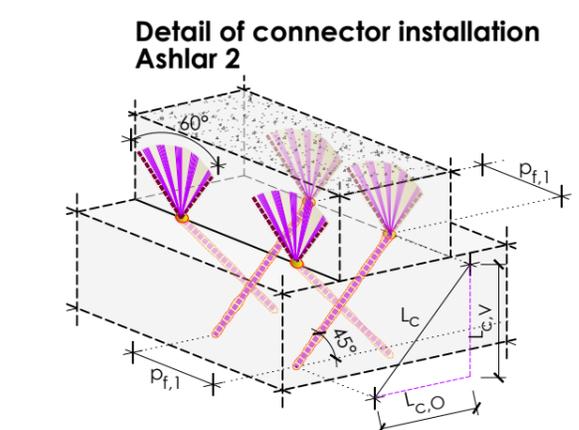
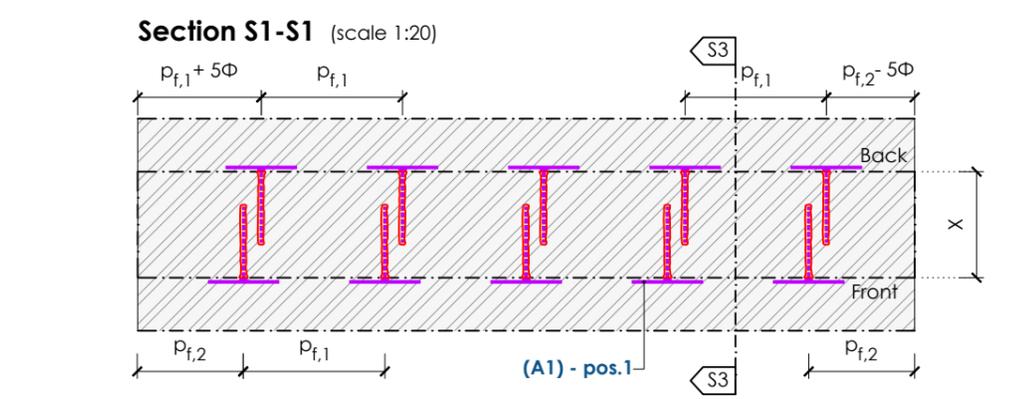
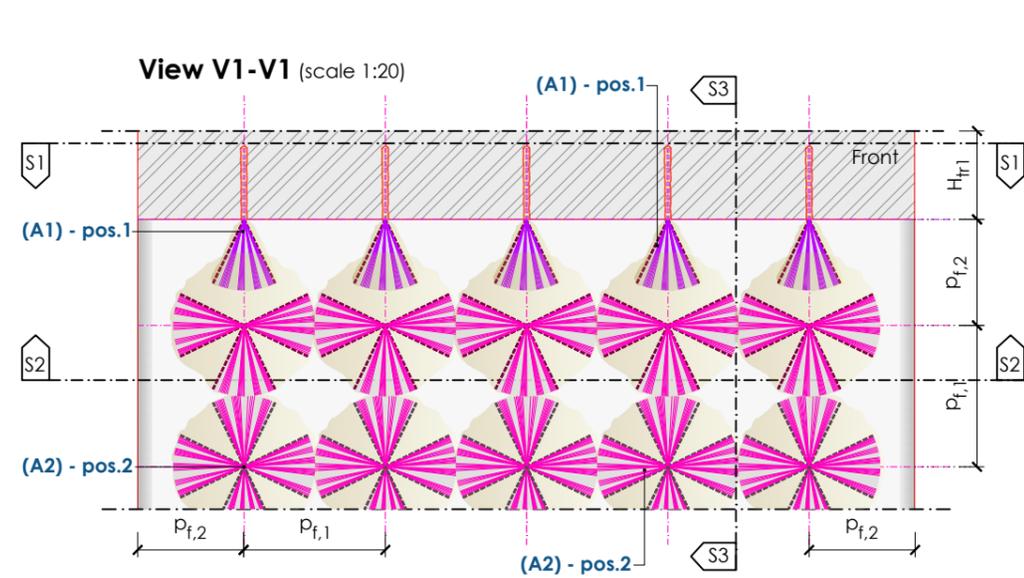
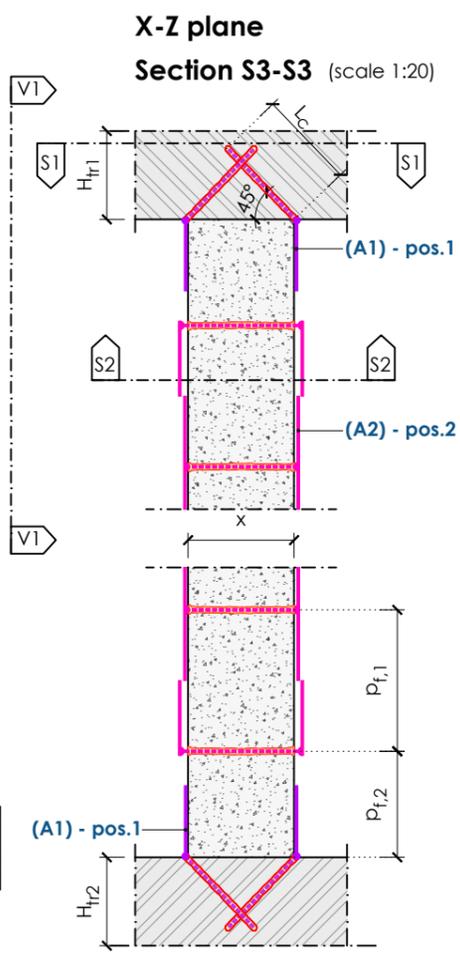


DESCRIPTION OF THE WORKS - PHASE 1

Once the arrangement, type, and quantity of reinforcement to be applied have been defined, wait for the curing of the repair mortar according to the product technical data sheets, and in any case, verify the moisture content of the substrate, which must be < 10%, even by drilling a hole with a depth equal to the thickness of the repair mortar.

The installation of the connectors must be carried out after the preliminary surface preparation and hole creation phases (See Phase 0), following these operational phases:

- 1.1 After thoroughly cleaning the holes (See Phase 0.5) and surfaces, apply the epoxy primer type **FB-RC01** according to the instructions in the corresponding technical data sheet. Wait 1 hour, and do not exceed 3 hours. During this time, proceed with the installation of the connectors as outlined in the following phases, after applying a layer of impregnation resin type **FB-RC02** only at the flare area;
- 1.2 Injection of resin for anchoring bars (connectors) type **FB-RC30/3**;
- 1.3 Anchoring of flared bars on 1 side (non-passing connectors) pos.1 type **FB-TUP10-CHT1A Ø10** inclined at 45° without making the flare. Anchoring of flared bars on 2 sides (passing connectors) pos. 2 type **FB-TUP10-CHT2A Ø10** in the wall partition, ensuring protection of one end of the bar with packaging film and iron wire. The anchoring operation must be performed by rotating the bar to ensure perfect adhesion of the resin both to the bar and to the lateral surface of the hole;
- 1.4 Flaring with a 60° angle on the bars pos.1 installed in phase 1.3 (front and back) and impregnation of the same with resin type **FB-RC02**. Perform the same procedure for the bars pos.2 (flared bars on 2 sides) on the end without the protective film;
- 1.5 Remove the protective film and proceed with the flaring on the back of the bars pos.2 installed in phase 1.3 and impregnation of the same with resin type **FB-RC02**.



Legend

- Φ = connector diameter (10 mm);
- Lc = connector length;
- hole countersink > 16 mm;
- Pf,1 / Pf,2 = connector spacing

TABLE OF CONNECTORS IN C.F.R.P.

Id.	Characteristics		
Pos.	Spacing	Inclination	Lc
Pos.1 (at the top and at the base)	Pf,1 ≤ 2×X	45°	Lc,v ≤ 3/4 Htr1
	Pf,2 ≤ 0.8×X		Lc,v ≥ 200
Pos.2 (in the wall)		0°	X

MATERIAL IDENTIFICATION

(A1) FB-TUP10-CHT1A (Debowed bars in C.F.R.P.)
 (A2) FB-TUP10-CHT2A (Debowed bars in C.F.R.P.)
 (B-C) FB-GV..... (Unidirectional fabric in C.F.R.P.)
 (P1) FB-RC01 (Epoxy resin - Primer)
 (P2) FB-RC02 (Epoxy resin - Impregnating agent)
 (P3) FB-RC30/3 (Epoxy resin - Anchorage resin)

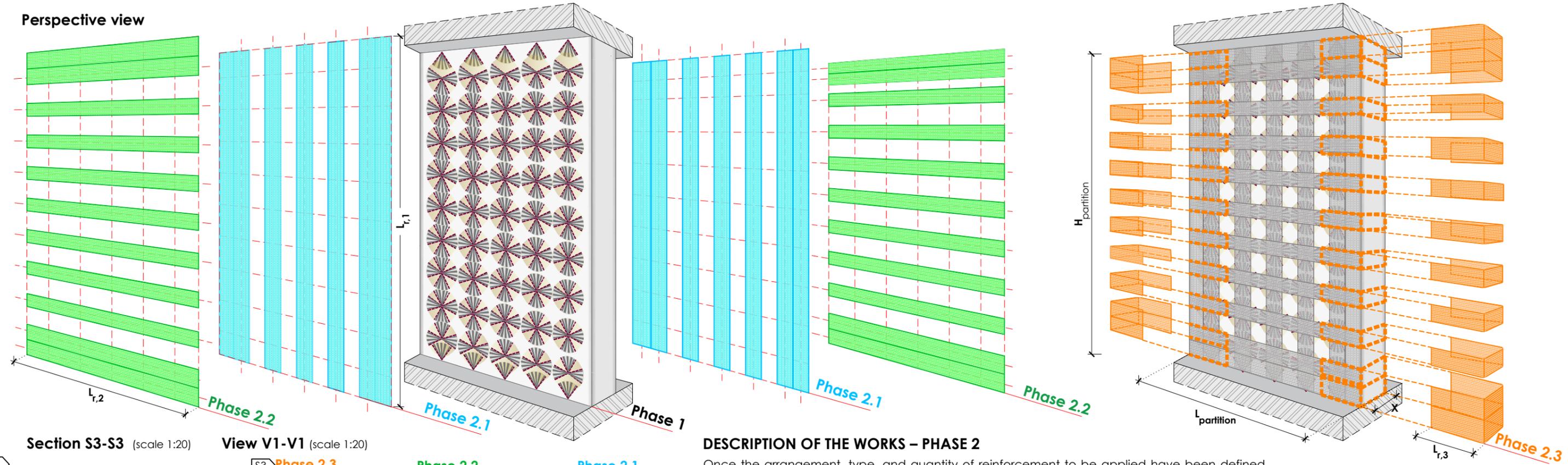
Dimensions are given in mm unless otherwise specified. For the materials table, refer to drawing FRP22.





PHASE 2 - Installation of reinforcement systems (Solution 1)

Perspective view



Section S3-S3 (scale 1:20)

View V1-V1 (scale 1:20)

DESCRIPTION OF THE WORKS – PHASE 2

Once the arrangement, type, and quantity of reinforcement to be applied have been defined, the installation must be carried out according to the following operational phases:

2.1 After applying a layer of impregnating epoxy resin **FB-RC02**, install the CFRP reinforcements, type **FB-GV.....-.....**, vertically (pos.1) on both faces of the partition, ensuring no wrinkles, folds, or air bubbles form. To facilitate this operation, use a bubble-breaker impregnation roller. Then, apply a second layer of impregnating resin **FB-RC02** and continue rolling with the bubble-breaker roller until the fibers are fully impregnated.

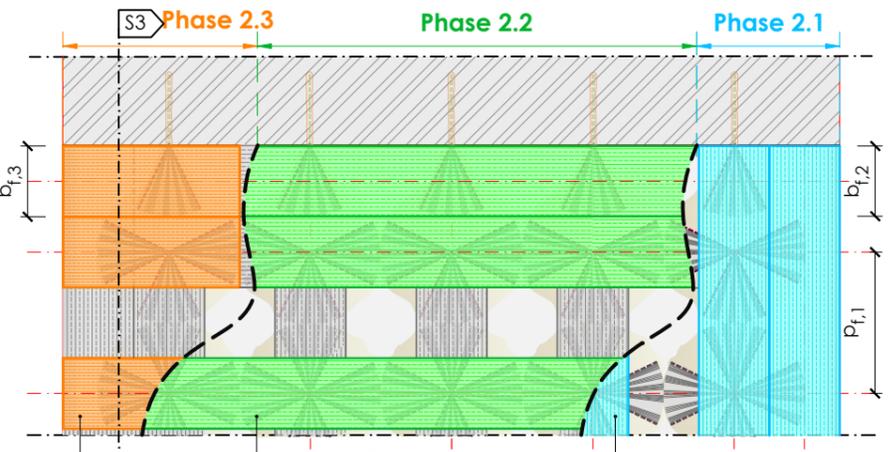
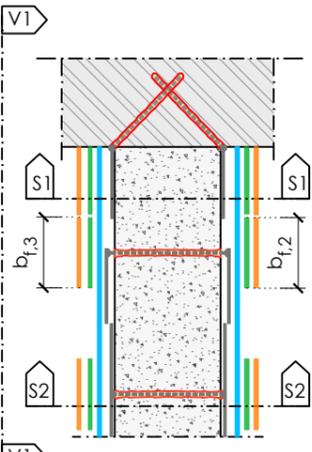
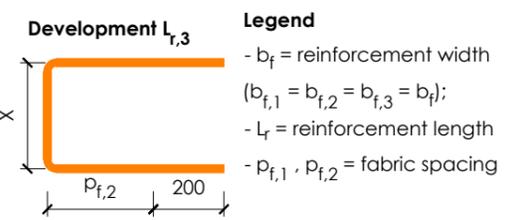
2.2 Follow the same installation procedure for the CFRP reinforcements, type **FB-GV.....-.....**, arranged horizontally (pos.2). If necessary, repeat phases 2.1 and 2.2 for each additional layer specified in the project, to be placed alternately (pos.1, pos.2, pos.1, pos.2, etc.).

2.3 After applying a layer of impregnating epoxy resin **FB-RC02**, install unidirectional CFRP fabrics, type **FB-GV.....-.....**, horizontally (pos.3) to reinforce the ends. Proceed with a second layer of impregnating resin **FB-RC02** and continue rolling with the bubble-breaker roller until the fibers are fully impregnated.

Apply quartz sand evenly on the surface of the composite with fresh resin to allow the finishing plaster to adhere.

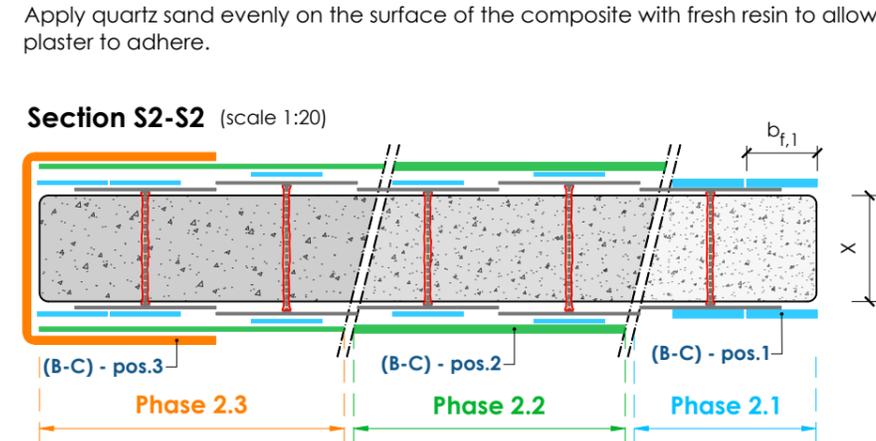
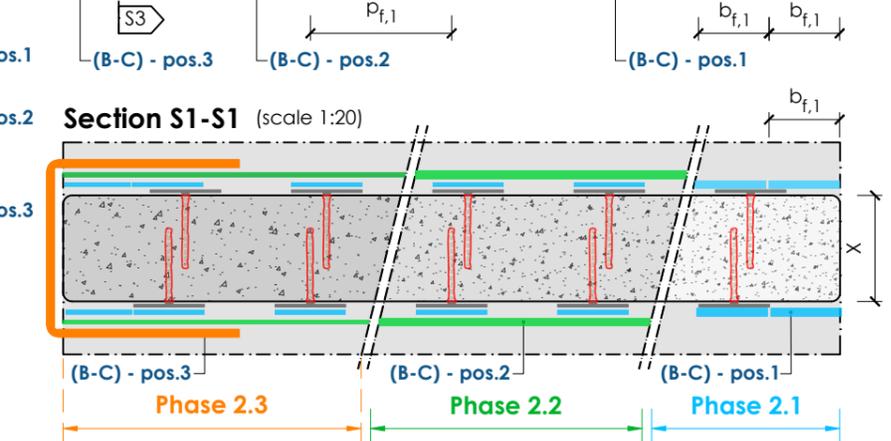
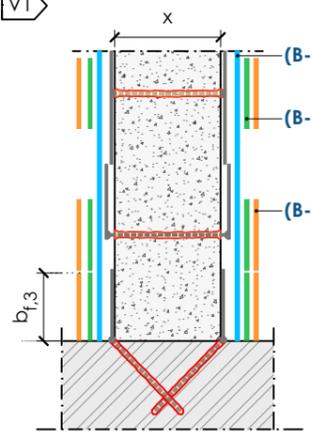
TABLE OF C.F.R.P. FABRICS

Id.	Characteristics
Pos.	L_r
Pos.1 (vertical)	$L_{r,1} = H_{partition}$
Pos.2 (horizontal)	$L_{r,2} = L_{partition}$
Pos.3 (of the ends)	$L_{r,3} = X + 2 \times p_{f,2} + 200 + 200$



Section S1-S1 (scale 1:20)

Section S2-S2 (scale 1:20)



MATERIAL IDENTIFICATION

- (A1) FB-TUP10-CHT1A (Debowed bars in C.F.R.P.)
- (A2) FB-TUP10-CHT2A (Debowed bars in C.F.R.P.)
- (B-C) FB-GV.....-..... (Unidirectional fabric in C.F.R.P.)
- (P1) FB-RC01 (Epoxy resin – Primer)
- (P2) FB-RC02 (Epoxy resin – Impregnating agent)
- (P3) FB-RC30/3 (Epoxy resin – Anchoring resin)

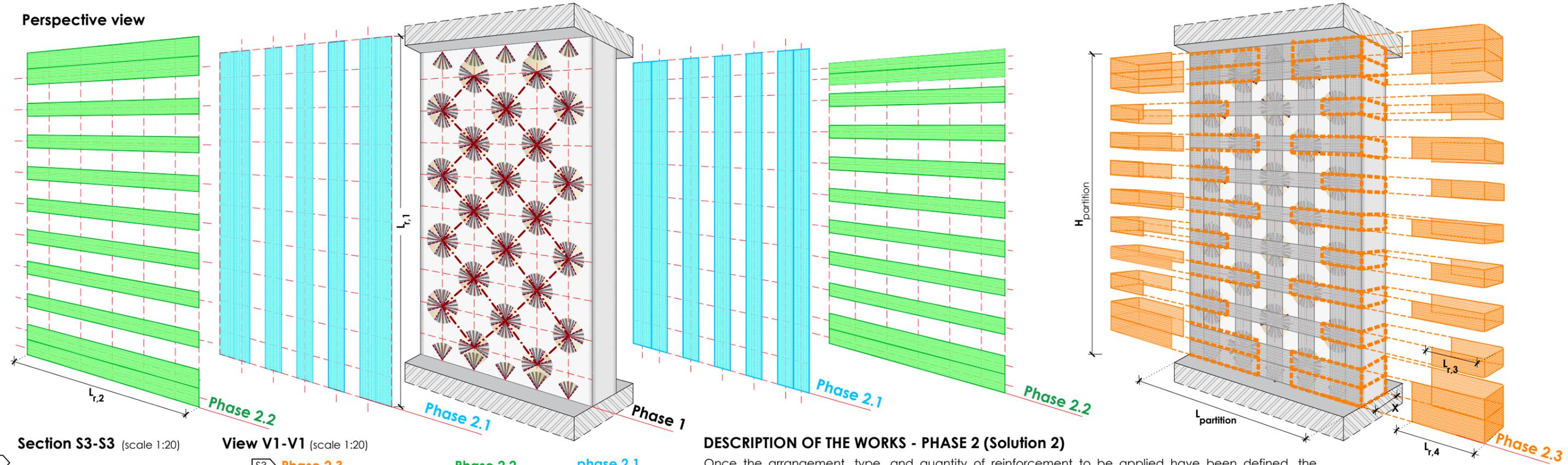
Dimensions are given in mm unless otherwise specified. For the materials table, refer to drawing FRP22.





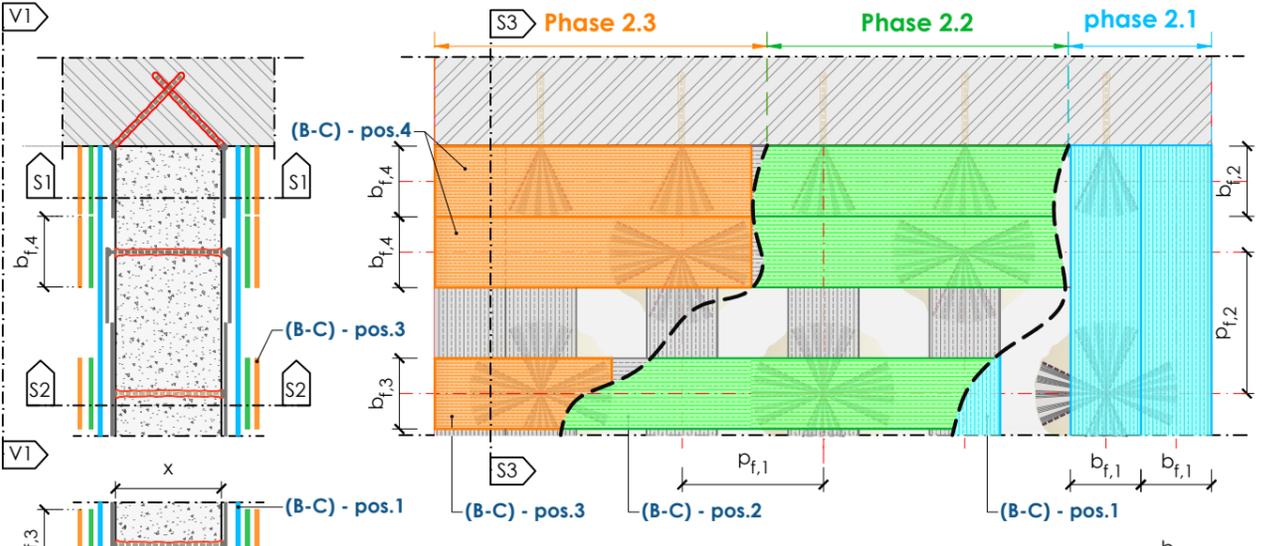
PHASE 2 - Installation of reinforcement systems (Solution 2)

Perspective view

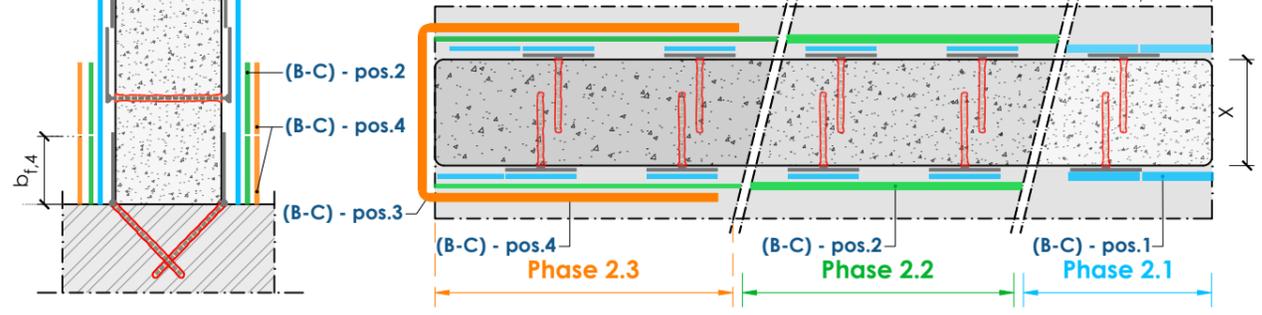


Section S3-S3 (scale 1:20)

View V1-V1 (scale 1:20)



Section S1-S1 (scale 1:20)



DESCRIPTION OF THE WORKS - PHASE 2 (Solution 2)

Once the arrangement, type, and quantity of reinforcement to be applied have been defined, the installation must be carried out according to the following operational phases:

2.1 previa stesura di uno strato di resina epossidica impregnante **FB-RC02**, posa in opera di rinforzi in C.F.R.P. After applying a layer of impregnating epoxy resin **FB-RC02**, install the CFRP reinforcements, type **FB-GV.....**, vertically (pos.1) on both faces of the partition, ensuring no wrinkles, folds, or air bubbles form. To facilitate this operation, use a bubble-breaker impregnation roller. Then, apply a second layer of impregnating resin **FB-RC02** and continue rolling with the bubble-breaker roller until the fibers are fully impregnated.;

2.2 Follow the same installation procedure for the CFRP reinforcements, type **FB-GV.....**, arranged horizontally (pos.2). If necessary, repeat phases 2.1 and 2.2 for each additional layer specified in the project, to be placed alternately (pos.1, pos.2, pos.1, pos.2, etc.);

2.3 After applying a layer of impregnating epoxy resin **FB-RC02**, install unidirectional CFRP fabrics, type **FB-GV.....**, horizontally (pos.3 and pos.4) to reinforce the ends. The length of the fabric should be sufficient to cover the first available connector. Proceed with a second layer of impregnating resin **FB-RC02** and continue rolling with the bubble-breaker roller until the fibers are fully impregnated.

Apply quartz sand evenly on the surface of the composite with fresh resin to allow the finishing plaster to adhere.

Section S2-S2 (scale 1:20)

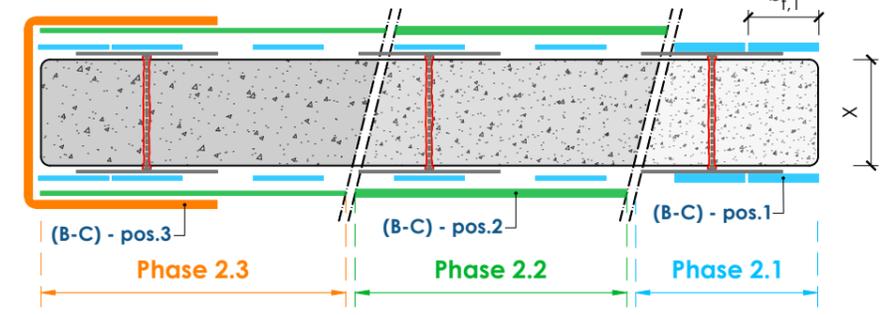
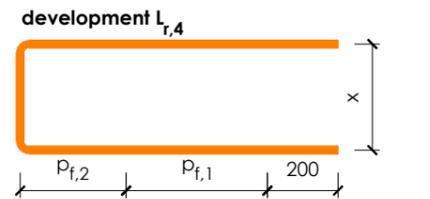


TABLE OF C.F.R.P. FABRICS

Id.	Characteristics
Pos.	L_r
Pos.1 (vertical)	$L_{r,1} = H_{setto}$
Pos.2 (horizontal)	$L_{r,2} = L_{setto}$
Pos.3 (of the ends)	$L_{r,3} = X + 2 \times p_{f,2} + 200 + 200$
	$L_{r,4} = X + 2 \times p_{f,2} + 2 \times p_{f,1} + 200 + 200$



MATERIAL IDENTIFICATION

- (A1) FB-TUP10-CHT1A (Debowed bars in C.F.R.P.)
- (A2) FB-TUP10-CHT2A (Debowed bars in C.F.R.P.)
- (B-C) FB-GV..... (Unidirectional fabric in C.F.R.P.)
- (P1) FB-RC01 (Epoxy resin - Primer)
- (P2) FB-RC02 (Epoxy resin - Impregnating agent)
- (P3) FB-RC30/3 (Epoxy resin - Anchoring resin)

All dimensions are given in mm unless otherwise specified. Refer to drawing FRP22 for the materials table.

