

Special Specification 4159

FRP Jacket Encapsulation



1. DESCRIPTION

Prepare columns, footings, and shear walls and encapsulate with a translucent, Fiberglass Reinforced Polymer (FRP) jacket or panels as shown on the plans. Inject a water insensitive epoxy grout into the space between the jacket and the concrete sections.

2. MATERIALS

Use one of the pre-approved systems listed in Table 1. Furnish the system's materials and equipment including:

- FRP outer jacket of a minimum 1/8 in. thickness and annulus of at least 3/8 in. between the jacket and the concrete surfaces.
- Epoxy grout components compatible with the encapsulation system, and epoxy paste for sealing the outer jacket.
- Equipment expressly designed for proportioning, mixing, and pumping epoxy grout into the jackets.

Table1
Pre-approved Encapsulation Systems

Name	Producer	Contact Information
MasterBrace A-P-E 6000UW	BASF	www.master-builder-solutions.basf.us www.bldgsystechsupport@basf.com 800-243-6739
FX-70 Structural Repair and Protection System	Simpson Strong-Tie Company Inc.	www.strongtie.com/products/rps/fx70 800-999-5099
PileForm F – Fiberglass Reinforced Plastic & Pile Jacket Epoxy Grout	Five Star	www.fivestarproducts.com 800-243-2206
SeaShield Series 500 Pile Encapsulation & SeaShield 550 Epoxy Grout	Denso North America Inc.	www.densona.com 888-821-2300;
MFG Pile Restoration System	Molded Fiber Glass Construction Products Company	www.mfgcwp.com 814-438-3959 or 814-438-1147

3. CONSTRUCTION

3.1. **Submittals.** Before work begins, submit the following for approval:

- The make and model of epoxy grout equipment for use in proportioning, pumping, and mixing. Include the manufacturer's equipment manuals.

- Locations of typical longitudinal and transverse joints in the outer jackets including a description of the joint sealing methods, details of the typical bottom seal, temporary bracing, and support required during placement of the jackets and injection and curing of epoxy grout.
- Details of fixed or adjustable stand-offs and their locations on the outer jackets.
- Details of injection ports and the sequence to be used to place the epoxy grout.
- Details of final finishing of epoxy grout at the top of the encapsulation, permanent closure of the injection ports, and repair method for defects.
- Manufacturer's Material Safety Data Sheets for each material to be used.

- 3.2. **Substrate Surface Preparation.** Thoroughly clean substrate surfaces using mechanical means and compressed air to remove all marine growth, oil, grease, mud, rust, loose concrete, micro-organisms, and any other deleterious material which might inhibit bond between the epoxy grout and the concrete or steel. Repair spalls or delaminations as indicated in other Items.
- 3.3. **Encapsulation.** Prepare and install the jacket using temporary bracing and support following the manufacturer's recommendations. Pump epoxy grout to fill the annulus between the concrete surfaces and the FRP jacket in accordance with approved procedures, the submitted injection sequence, and the manufacturer's recommendations.
- 3.4. **Final Finishing and Inspection of the Completed Encapsulation.** Remove the temporary supports after the grouting process is completed and the grout is sufficiently cured as recommended by the manufacturer. Inspect the completed encapsulation for voids or other defects. Repair voids in the epoxy grout in accordance with the manufacturer's recommended procedures.

4. MEASUREMENT

This Item will be measured by the Lump Sum and includes encapsulation of the indicated concrete surfaces at the bent locations indicated in the Plans.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured under "Measurement" will be paid for at the unit price bid for *FRP Jacket Encapsulation*. This price is full compensation for cleaning and preparing the concrete surfaces, designing the jacket system and preparing submittals, furnishing the materials for the installation and placement, installing the encapsulation system, and for tools, labor, equipment, and incidentals.