

ITEM 551.1502 16 – UNDERWATER CONCRETE REPAIRS

DESCRIPTION

This work will consist of repairing spalled or damaged concrete, underwater, by installing stay-in-place fiberglass reinforced plastic forms and concrete at the locations indicated on the plans and as indicated by the engineer.

MATERIALS

The stay-in-place form shall consist of a translucent fiberglass reinforced plastic meeting the following requirements:

The form shall be constructed of marine grade fiberglass resins, woven roving and mat. Minimum glass content shall be 30%. Minimum wall thickness shall be 3 mm. The form shall be sufficiently clear, to allow visual inspection of the concrete placement, to assure all voids are removed.

The form shall meet the following minimum physical properties:

Ultimate Tensile Strength (ASTM D-638) : 69 MPa

IZOD Impact Strength (ASTM D-256) : 800.7 J/m (Method 'D')

Barcol Hardness (ASTM D-2583) : 30

Water Adsorption (ASTM D-570) : 1% maximum

Manufacturer's Certification of meeting these minimum requirements shall be submitted with the shop drawings to the DCES.

Vertical and/or horizontal joints in the form and the form to concrete interface shall be sealed with an epoxy paste capable of being applied underwater.

The concrete shall be Class "GG" as specified in section 501 of the Standard Specifications.

CONSTRUCTION DETAILS

The repair area shall be cleaned of marine growth and any materials deleterious to the adhesion of the epoxy paste. The limits of cleaning shall be detailed in the contract documents. It shall be the contractor's responsibility to keep the repair area clean until the repair has been effected.

After cleaning, a visual inspection shall be conducted and the results reported to the EIC. Any loose concrete in the area of repair shall be removed to a maximum depth of 125 mm +/- (38 mm min.) and the repair shall be squared-up as detailed in the contract documents. If deteriorated concrete is still present, all work at the subject location shall cease and the DCES shall be notified. No work may proceed at said location until the DCES has provided a response and/or repair procedure.

The form shall be of sufficient strength to withstand the stresses of handling, installation, water

pressures, wave action, concrete placement, plastic concrete pressures and any other stresses encountered during construction.

Vertical and/or horizontal joints in the form shall be lapped joints. The joints shall be sealed with an epoxy paste and non-corrosive fasteners to secure the joint during curing of the epoxy paste.

Additional bracing necessary to install and support the jackets may be required by the fiberglass form manufacturer. The cost of supplying this bracing shall be included in this item.

The concrete shall be placed in the jacket by methods approved by the DCES. The contractor shall submit to the DCES, for approval, the proposed placement method at least 10 working days prior to commencing placement. The submittal shall include the placement procedure, equipment, compaction methods, and a concrete curing schedule for the proposed work.

METHOD OF MEASUREMENT

This work shall be measured as the number of square meters of repair installed in accordance with the contract documents and form manufacturer.

BASIS OF PAYMENT

The unit price bid per square meter of repair shall include the cost of all materials, labor and equipment necessary to install form and concrete. Cleaning of the repair area, inspection, and removal of structural concrete necessary to complete the installation shall be paid for under this item.