SECTION 656 - CONCRETE RETROFIT

656.01 Description. This section is for anchoring rebar and threaded studs into existing concrete and the bonding of fresh plastic concrete to existing hardened concrete.

656.02 Materials.

(A) Epoxy Adhesive Anchors. Epoxy adhesive anchors shall develop 125 percent of the yield strength in tension of the reinforcement bar as conducted in accordance with ASTM E 1512. The epoxy shall conform to ASTM C881, type IV, grade 2 or 3, class C. The adhesive shall be supplied in an injectable, dual cartridge dispenser with a self mixing nozzle. Epoxy supplied in separate containers that require external mixing will not be accepted. The application and use of the adhesive shall be according to the manufacturers specifications and recommendations. The Contractor shall submit copies of the manufacturer's specifications, recommendations, brochures and certified test reports prepared by an independent laboratory to the Engineer for acceptance two weeks before its use.

(B) Bonding Agent. Bonding agent shall be an epoxy material conforming to ASTM C 881, type V, grade 2 or 3, class C. The contractor shall submit copies of the manufacturer's specifications, recommendations and brochures to the Engineer for acceptance two weeks before its use.

(C) Other Materials. Other materials shall conform to the following:

Reinforcing Steel	709.01
Water	712.01
Grout	712.04

656.03 Construction Requirements.

(A) Epoxy Adhesive Anchors. Before starting, the Contractor shall locate all existing rebar in area to be drilled. Dowel the reinforcing bars or threaded studs into the concrete as detailed in the plans and as specified by the adhesive Manufacturer. Use a rotary impact drill to drill the correct hole diameter as specified by the Manufacturer. If a reinforcing bar or obstruction is encountered during drilling, move the hole to a different location. If the obstruction encountered can not be avoided, the Contractor may drill through the obstruction if it is acceptable

to the Engineer. Fill abandoned holes with grout. Unless specified in the plans the minimum depth of embedment shall be a depth specified by the manufacturer to develop 125 percent of the yield strength in tension. Remove all loose dust and concrete particles from the hole and prepare adhesive and install anchors according to the Manufacturer specification. Remove and replace improperly installed embedded anchors at no cost to the State.

(B) Surface preparation. New concrete shall only be placed against clean and sound surfaces of the existing concrete. Prepare with a suitable hand operated pneumatic tool, all surfaces to receive new concrete, without damaging the portion of the structure that is to remain. All chipping / pneumatic tools shall weigh less than 30 pounds. Remove the damaged concrete such as honeycombs, fractures, loose concrete, cracked or disintegrated concrete. Remove a minimum of 1/4 inch thickness of concrete. The Engineer will determine the actual extent of concrete removed.

(C) Mixing and application of epoxy. Apply one coat of epoxy bonding agent to the contact surface to receive new concrete according to the manufacturers specifications. The epoxy shall be thoroughly mixed in a clean container until it is off uniform color. Use of a proper-sized mixer operating at no more than 600 revolutions per minute shall be required. Do not use the contents of damaged or previously opened containers. The concrete shall be dry before applying the epoxy bonding agent. Apply the epoxy to the concrete surface by brush, roller, trowel, squeegee, or spray equipment. Apply epoxy compound at a thickness not less than that recommended by the manufacturer. Apply the epoxy material within the first half of the gel time, as specified on the container. Place fresh plastic concrete while the adhesive is still tacky. If epoxy adhesive cures to the extent of losing its tack before plastic concrete is placed, remove or slightly abrade first coat before placing second coat.

656.04 Method of Measurements. The Engineer will not measure concrete retrofit for payment.

656.05 Basis of Payment. The Engineer will not pay for concrete retrofit separately. The Engineer will consider the cost for concrete retrofit as included in the contract price of the various contract items.

The price includes full compensation for the concrete retrofit; preparing concrete surface, applying bonding agent, placing new concrete against existing concrete; drilling through concrete, steel reinforcement bars and other obstructions; furnishing and installing rebar anchor and threaded stud anchors; and furnishing

equipment, tools, labor, materials, and incidentals necessary to complete the work"

END OF SECTION