

**ITEM SPECIAL - LOW PRESSURE EPOXY INJECTING
DELAMINATED CONCRETE - BRIDGE DECK TOP SURFACE**

THIS WORK SHALL CONSIST OF LOW-PRESSURE EPOXY INJECTION OF DELAMINATED CONCRETE OF BRIDGE DECKS IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND MANUFACTURER'S RECOMMENDATIONS AS DIRECTED BY THE ENGINEER. ALL REMOVAL OPERATIONS ON THE DECK MUST BE COMPLETE BEFORE THE CONCRETE CAN BE INJECTED.

THE CONTRACTOR SHALL HAVE THREE YEARS EXPERIENCE IN INJECTING CONCRETE DELAMINATIONS. THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTS TO THE PROJECT ENGINEER STATING THEIR EXPERIENCE WITH INJECTION ON ODOT PROJECTS.

THE INJECTION RESIN SHALL BE THERMAL-CHEM INJECTION RESIN PRODUCT NO. 2, POLY-CARB MARK-10 INJECTION RESIN, DURAL CRETE LV OR SIKADUR 35 HIGH MOD-LD INJECTION RESIN. BONDER SHALL BE THERMAL-CHEM PRODUCT NO. 4, POLY-CARB MARK 8 NON-SAG EPOXY PIXY BONDER, DURAL CRETE GEL OR SIKADUR DOT SP-3. ALL MATERIALS SHALL BE STORED AND INCORPORATED IN THE WORK AS RECOMMENDED BY THE MANUFACTURER. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT JOB SITE UNTIL SUCH TIME AS HE AND THE ENGINEER ARE SATISFIED THAT THE CONTRACTOR IS QUALIFIED IN ALL ASPECTS OF EPOXY PRESSURE INJECTION.

THE ENGINEER SHALL SOUND THE ENTIRE DECK WEARING SURFACE AND OUTLINE THE AREAS TO BE INJECTED. SOUNDING MAY HAVE TO BE DELAYED UNTIL THE DECK IS SUFFICIENTLY DRY TO PERMIT DETECTION OF ALL AREAS OF DELAMINATION.

PORTS SHALL BE INSTALLED IN CLEAN HOLES VACUUM-DRILLED TO PREVENT FINES FROM BEING IMPACTED INTO THE CRACK. THE HOLES SHALL BE SIX INCHES DEEP FOR TOP SURFACE INJECTION SO THAT THE EPOXY WILL PENETRATE THE HOLLOW PLANE. THE FIRST PORT SHALL BE LOCATED NEAR THE EDGE OF THE OUTLINED UNSOUND AREA. ADDITIONAL PORTS SHALL BE PLACED AT DISTANCES SLIGHTLY GREATER THAN THE DISTANCE FROM THE FIRST PORT TO THE VOID EDGE. PORT PLACEMENT MUST ENSURE THAT THE GROUT FACE REACHES THE EDGE OF THE VOID BEFORE REACHING THE NEXT PORT. PORTS AND UNSEALED CRACKS SHALL BE SEALED WITH BONDER AS NECESSARY TO PREVENT EMISSION OF INJECTION RESIN.

THE RESIN SHALL BE INJECTED ONLY WHEN THE DECK IS DRY AND ITS TEMPERATURE IS ABOVE 50 DEGREES F. THE INJECTION RESIN SHALL BE AT 70 DEGREES F PRIOR TO MIXING COMPONENTS. THE EPOXY INJECTION EQUIPMENT SHALL BE CAPABLE OF INJECTING THE MATERIAL INTO THE PORTS AT LOW PRESSURE OF 14 TO 20 PSI. THE INJECTION EQUIPMENT SHALL BE CAPABLE OF METERING, MIXING, INJECTING AND MEASURING THE FLOW OF THE EPOXY RESIN ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

THE INJECTION SHALL COMMENCE AT THE EDGE OF THE DELAMINATION AND CONTINUE UNTIL THE EPOXY RESIN APPEARS AT THE NEXT PORT MOST INCOMPLETELY FILLED VOIDS ARE CAUSED BY THE OPERATOR STOPPING THE INJECTION PROCESS PREMATURELY; THEREFORE, A STEADY, LOW PRESSURE SHALL BE MAINTAINED ON THE EPOXY UNTIL A STEADY CLEAR FLOW APPEARS AT THE NEXT PORT. THEN THE NOZZLE IS REMOVED, THE PORT CLOSED AND THE INJECTION CONTINUED FROM PORT TO PORT UNTIL THE VOID IS COMPLETELY FILLED. SINCE THE GROUT IS MOVING UNDER VISCOUS FLOW CONDITION WHICH ARE GOVERNED BY FLUID SURFACE FRICTION, THE INJECTION PROCESS IS SLOW. REGARDLESS, INJECTION PRESSURE SHALL BE 20 PSI MAXIMUM SO THAT COVER CONCRETE IS NOT BLOWN OFF. PROGRESS OF THE EPOXY SHALL BE CHECKED WITH A TAPPING HAMMER.

THE OUTLINED INJECTED VOIDS SHALL BE SOUNDED WITH A HAMMER BY THE ENGINEER. ANY REMAINING UNSOUND AREAS SHALL BE PORTED AND REINJECTED AT NO ADDITIONAL COST TO THE STATE. ALL PORTS SHALL BE CUT OFF FLUSH WITH THE SURFACE. ALL EQUIPMENT, LABOR AND MATERIALS REQUIRED BY THE ENGINEER TO ACCOMPLISH THIS WORK SHALL BE SUPPLIED BY THE CONTRACTOR.

THIS SPECIFICATION LIMITS THE INJECTING PRESSURE TO 20 PSI MAX. TO PREVENT BLOWING THE DELAMINATION OFF THE DECK. IF THE CONTRACTOR PREFERS TO UTILIZE A HIGHER PRESSURE INJECTION PROCESS INSTEAD OF THE LOW PRESSURE HEREIN REQUIRED, HE SHALL SUBMIT HIS PROPOSED METHOD OF PREVENTING BLOW-OFF OF THE SURFACE TO THE DIRECTOR FOR APPROVAL. NO HIGH PRESSURE INJECTION WILL BE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE DIRECTOR.

NO VEHICULAR TRAFFIC INCLUDING CONSTRUCTION TRAFFIC WILL BE PERMITTED ON A BRIDGE DECK WHICH HAS RECEIVED TOP SURFACE INJECTION UNTIL THE EPOXY HAS CURED SUFFICIENTLY TO DEVELOP DESIGN STRENGTH. TIME REQUIRED TO CURE WILL DEPEND ON THE EPOXY FORMULATION AND WILL BE DETERMINED BY THE MANUFACTURER. A MINIMUM OF SIX HOURS WILL BE REQUIRED REGARDLESS OF THE MANUFACTURER'S RECOMMENDATION. THIS INFORMATION WILL BE PROVIDED TO THE ENGINEER.

METHOD OF MEASUREMENT: THE FOOTAGE UNDER THIS ITEM SHALL BE THE NUMBER OF SQUARE FEET OF DELAMINATED DECK CONCRETE THAT IS SATISFACTORILY INJECTED AND ACCEPTED.

BASIS OF PAYMENT: THE CONTRACT UNIT PRICE BID SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING AND PLACING ALL MATERIALS, SOUNDING THE INJECTED AREAS, SUPPLYING THE MANUFACTURER'S REPRESENTATIVE AND ALL OTHER MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THIS SPECIFICATION. PAYMENT WILL BE MADE AT CONTRACT PRICES FOR:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQUARE FOOT	LOW PRESSURE EPOXY INJECTING DELAMINATED CONCRETE - BRIDGE DECK TOP SURFACE