1.0 GENERAL

1.1 WORK SEQUENCE

.1 Provide all labour, material, equipment and supervision to:

.1 Epoxy inject cracked structural members as designated by the Departmental Representative (including removal of any existing unacceptable contaminants) to structurally bond the crack together.

.2 After crack injection is complete, grind off all extraneous materials and injection ports and patch with top surface patch material to leave a smooth surface and to match existing concrete surfaces adjacent to cracks. Repaint wall if required.

1.2 PERFORMANCE REQUIREMENTS

.1 The sealed cracks shall not leak.

1.3 SUBMITTALS

.1 The contractor to submit with bid a description of the products and methods to be used, to inject cracks.

.2 Submit three (3) copies of the appropriate safety and technical data sheets 1 week prior to arrival of material on site.

2.0 PRODUCTS

2.1 MATERIALS

.1 Resin shall be a low viscosity, two component modified epoxy that is designed to structurally rebond cracks. Resin shall be capable of bonding to damp concrete.

.2 Product to meet the following requirements when tested under laboratory conditions:

Modulus of Elasticity (to ASTM D695 – 28 days)	**Neat** 2.41 GPa (3.5 x 105 psi)	**Mortar** 5.59 GPa (8.1 x 105 psi)
Tensile Properties (to ASTM D638 - 14 days)		
Tensile Strength	58 MPa (8412 psi)	5.8 MPa (841 psi)
Elongation at break	4.2%	0.3%
Modulus of elasticity	2.8 GPa (4.0 x 105 psi)	5.24 GPa (7.6 x 105 psi)
Flexural Properties (to ASTM D790 - 14 days)		
Modulus of rupture	96 MPa (13 923 psi)	15 MPa (2175 psi)
Tangent modulus of elasticity in bending	2.5 GPa (3.6 x 105 psi)	6.5 GPa (9.4 x 105 psi)
Shear Strength (to ASTM D732 - 14 days)	35 MPa (5076 psi)	16 MPa (2320 psi)
Deflection Temperature (to ASTM D648 - 14 days) Fiber stress loading = 1.8 MPa (264 psi)	53°C (127°F)	54°C (129°F) Construction

Bond Strength (ASTM C882) (Hardened concrete to hardened concrete)

2 days	Dry cure	19 MPa (2755 psi)
14 days	Moist cure	19 MPa (2755 psi)

Water Absorption (ASTM D570)

7 days	2 hrs boil	1.1%

2.2 EQUIPMENT

.1 Injection shall be performed using equipment approved by the resin manufacturer and shall be capable of continuous pumping at constant pressures.

3.0 EXECUTION

3.1 PREPARATION

.1 Departmental Representative to identify cracks to be injected.

.2 Surfaces to be repaired must be clean and sound.

3.2 INSTALLATION

.1 Comply with all manufacturer's recommendations.

.2 Provide a surface seal on all faces of the crack so that liquid resin will not leak out of the crack prior to gelling and curing.

.3 Provide resin injection ports through the surface seal. Space the ports to ensure complete filling of the crack. Drilling of cracks for injection parts must be accomplished with a vacuum attached swivel drill cluck. Entry ports for injection shall be approved by the resin supplier.

.4 Completely fill the crack with resin by successive injection from the lowest port to the highest. Injection must continue through one port until adhesive material is visible in the next ones. Resin shall be well mixed at time of injection to ensure proper cure.

.5 After the injected epoxy has cured, the surface seal shall be removed by grinding or whatever means is necessary to produce a smooth, flush finish matching the adjacent original concrete surface. Fittings and holes at injection ports shall be filled with an epoxy-patching compound.

.6 Ensure all safety precautions required by the manufacturer are carried out.

3.3 WORKMANSHIP

.1 All work shall be performed by trained technicians experienced in the use of injected resins and the related specialized equipment.

3.4 CLEAN UP

.1 Clean wall surfaces affected by work and repaint if required.

.2 Remove all debris and surplus material from the site and leave work area in a condition acceptable to the Departmental Representative.

END OF SECTION