

- G. The materials used shall be designed, manufactured and intended for drainage manhole rehabilitation and the specific application in which they are used. The materials shall be supplied in factory-labelled containers. All materials shall be mixed and applied in accordance with the manufacturers written instructions. Materials used for plugging holes and stopping active hydrostatic infiltration shall be:
- i. A premixed portland cement-based hydraulic cement consisting of portland cement, graded silica aggregates, special plasticising and accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, or gas-forming agents or promote the corrosion of steel it may come in contact with. Set time approximately not exceeding 3 minutes. Ten-minute compressive strength approximately 3.5N/mm².
- H. Patching, filling and repairing non-infiltration holes, cracks, and breaks in manholes shall comprise a premixed portland cement-based hydraulic cement consisting of portland cement, graded silica aggregates, special plasticising and accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, or gas-forming agents or promote the corrosion of steel it may come in contact with. Set time approximately 3 minutes or 20 minutes to suit application. One-hour compressive strength approximately 4.2N/mm².
- i) Coating for waterproofing, corrosion protection, and strengthening of damp manholes:
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- i. A liquid polymer modified hydraulic waterproof coating which shall provide a secure bond. Usually applied with a brush to surfaces without cracks or voids wider than 1.5 mm. Cure time approximately 1.5 hours.
 - ii. A 100% solids, three-component system consisting of a two-component epoxy resin and a special blend of fillers which shall provide a secure bond.
- J. Epoxy resin without fillers may be applied with a brush for waterproofing and corrosion protection. The resin with fillers is applied with a trowel to a thickness of 3mm to 12mm. Initial cure time approximately 4 hours.
- K. Application of all materials shall be in accordance with the material manufacturer's recommendations.
- L. Manhole frame and cover reinstallation or replacement. The Contractor shall, upon receiving an instruction from the Engineer, remove the existing manhole frame and cover. If the frame and cover are to be replaced, the Contractor will dispose of them. The Contractor shall then adjust the elevation of the manhole as required. The