O. All necessary precautions shall be taken to ensure that dust or falling debris does not constitute a hazard to personnel, equipment, the structure and the general public. Effective means of clearing dust and debris away from the working area shall be continuously implemented. Repair work shall not be allowed amidst debris, dust, waste and rubbish.

P. The extent and depth of concrete removal required shall be measured and recorded on drawings by the Contractor and verified by the Engineer as the work proceeds.

9.3.5 Repair of Reinforcement

A. The Contractor and Engineer shall assess the extent and type of deterioration in the affected area. If the structural appraisal indicates that the area requires to be strengthened, the Engineer shall so instruct.

B. Additional reinforcement shall generally be of the same size and type as the reinforcement to be replaced and shall be in accordance with Section 03200 of the specification.

9.3.5.1 Provision for Extra Reinforcement Using Straight Laps

1. Where existing concrete remains bonded to the main bars, no breaking out shall take place to provide lap lengths for supplementary reinforcement unless applied loads are relieved by temporary propping. If propping is not feasible then other methods of strengthening the member should be considered. Lap lengths should be a minimum of 40 times the reinforcement bar diameter and be greater if the repair material does not provide a bond strength equivalent to that of the substrate concrete.

9.3.5.2 Provision for extra reinforcement which is anchored

1. Extra reinforcement may be installed with reduced lap lengths by anchoring the ends at 90o to the concrete face. The ends shall be grouted into holes drilled into the concrete using resin or cementitious mortars. Care must be taken to avoid damaging adjacent areas where the existing reinforcement to concrete bond remains intact, unless the structure or member can be temporarily propped or as agreed by the Engineer. Bond and bearing stresses of the anchors shall be adequate.

9.3.5.3 Provision for Extra Reinforcement Using Connectors

1. This method of supplementing reinforcement may require greater access around the reinforcement in order to make the connection. The finished connections will in some cases significantly reduce the cover to the reinforcement.