

001 - ELEMENTS OF WORK

FIELD OF HONOUR REFURBISHMENT

The scope of the work contained in this bid document forms one element of a major refurbishment project in the Brookside and Transcona Cemeteries Field of Honour's. The refurbishment project consists of five elements of work as follows:

Element One

Trough Ribbon Foundation Sections

The removal of existing military monuments, the exposure and removal of loose trough ribbon foundation concrete and the identification and marking of locations for new piles/piers.

Hollowcore Ribbon Foundation Sections

The removal of existing military monuments and broken lengths of hollowcore ribbon foundation, the identification and marking of locations for new piles/piers

To be completed by the City Cemeteries Branch employees.

Element Two

Trough Ribbon Foundation Sections

The cutting out for and installation of piers or piles through remaining in place trough ribbon foundation concrete, ready to support the concrete ribbon foundations as supplied by others.

Hollowcore Ribbon Foundation Sections

The cutting out for and installation of new additional piers or piles ready, to support the concrete ribbon foundations as supplied by others and the repair of in place piers/pile caps as required, including the supply of new angled steel bar as required.

To be completed by contract awarded under this bid opportunity: 649-2018

Element Three

The manufacture, storage, delivery and installation on site of precast concrete beams.

To be completed by a contract awarded under bid opportunity: 563-2018

Element Four

The collection, storage, cutting, pining, cleaning and return to site of existing military monuments, the manufacture of replacement military monuments and delivery to site.

To be completed by an existing contract.

Element Five

The diamond core drilling of new installed ribbon foundations and installation of Military Monuments.

To be completed by the City Cemeteries Branch employees.

Contractors may want to reference the bids for other elements of work contained in the refurbishment project, to ensure they have a comprehensive understanding of the nature of the project the elements of work involved and how they may affect the work the contractor is bidding.

Contractors are able to obtain full details of the other elements of work outside of this bid document, from the City of Winnipeg website, bid opportunity tab.

002 - EXISTING CONCRETE PILE CAP AND STEEL SUPPORT BRACKET REPAIRS

PART A GENERAL

1.0 GENERAL INFORMATION

- 1.1 The scope of the work contained in the bid document forms one element of a major refurbishment project in both the Brookside and Transcona Cemeteries Military Field of Honour's. The contractor is advised to review the 'Elements of Works' explanations to ensure they are aware of the requirements for work to be completed in the allocated time, at the agreed on site time, set in the pre contract meeting.
- 1.2 Contractors may want to reference the various bid documents for other elements of work contained in the refurbishment project, to ensure they have a comprehensive understanding of the nature of the project the elements of work involved and how they may affect the work the contractor is bidding.
- 1.3 The installation of new Piles/Piers will occur in multiple areas of the two Field of Honour's. The Brookside Cemetery Field of Honour is where the vast majority of work will be completed and involves the installation of piles in two distinctly different ground conditions:
 - a) **Replacement Hollowcore Ribbon Foundations**
at the head of already interred interment sites, locations to be identified by the Contract Administrator, and in line with existing piers/piles along the row of interment sites; ready to support the installation of new solid concrete ribbon foundations.
 - b) **Poured-in-Place Trough Ribbon Foundation Locations**
at the head of already interred interment sites, locations to be identified by the Contract Administrator; ready to support the installation of new solid concrete ribbon foundations. These installations will require cutting through the existing Trough Ribbon Foundations in order they remain in place.
- 1.4 All new Piles/Piers will require the installation of Steel Foundation Supports over the caps and on which the new Ribbon Foundations will be mounted.
- 1.5 The repair of existing in place Pile/Pier Caps will be located in sections containing Hollowcore Ribbon Foundations and at the head of already interred interment sites.
- 1.6 The locations for the Pile/Pier Cap Repair will be as identified by the Contract Administrator during the period of the contract.
- 1.7 The replacement of existing deteriorated Steel Foundation Supports in locations where Pier/Pile Cap repairs are ordered will be decided by the Contract Administrator during the period of the contract.

2.0 REFERENCES

- 2.1 American Society for Testing and Materials (ASTM)
 - a. ASTM C 309-06, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- 2.2 Canadian Standards Association (CSA)
 - a) CSA A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - b) CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - c) CSA G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement

3.0 UNIT PRICES FOR PILE/PIER REPAIRS

3.1 Provide a unit price for the concrete repair identified on the Drawing A-3. Unit prices are to include:

- 1 All work required to complete each repair as indicated on the drawing and in this specification.
- 2 Each repair will be measured separately and in cubic feet regardless of method of repair.
- 3 The measurements will be made after all preparatory work is completed and surface is reviewed by Contract Administrator.
- 4 All measurements will be completed by the Contract Administrator in the presence of the Contractor; with all quantities to be agreed in writing.
- 5 Provide 24 hours' notice prior to required measurements.
- 6 The Following items will be considered incidental to work and will not be measured:
 - a) Curing of concrete.
 - b) Supply and installation of steel reinforcement as per this section.
 - c) All necessary bracing and formwork.

4.0 SUBMITTALS

- 4.1 Submit one (1) copy of manufacturer's printed product literature, recommendations, specifications and data sheet.
- 4.2 Submit one (1) copy of WHMIS MSDS - Material Safety Data Sheets for all products and materials to be used.

5.0 WASTE MANAGEMENT

- 5.1 All waste materials and products to be removed from cemetery grounds and disposed of in accordance with product/material guidelines for disposal.

PART B PRODUCTS

1.0 REINFORCING STEEL

- 1.1 Reinforcing bars: to CSA G30.18.
 - a) Grade: 400
 - b) Finish: Galvanized to CSA G164, minimum zinc coating 610 g/m², or stainless steel type 304.

2.0 BONDING AGENT

- 2.1 Bonding agent shall be a three-component, anti-corrosive, water-based epoxy resin/cement, suited for the proposed application and compatible with the repair mortar product.

3.0 POLYMER MODIFIED REPAIR MORTAR

- 3.1 Structural polymer modified mortar shall be two-component, prepackaged, corrosion inhibiting, cementitious fast-setting mortar.
 - a) Repair mortar to be trowel applied and designed specifically for vertical surfaces.
 - b) Compression strength: 50 MPa at 28 days.

4.0 CURING COMPOUND

- 4.1 Curing compound shall be a resin based, white pigmented (Type 2) curing compound conforming to the requirements of ASTM Standard C309 and CSA A23.1. The compound shall not react deleteriously with Portland cement concrete and it shall be compatible with and not impair the bond of any material to be laid over it. Apply as directed by the manufacturer.

5.0 PROTECTIVE COATINGS FOR EXISTING EMBEDDED STEEL SUPPORT ANGLES

- 5.1 Steel protective coating shall be two-component epoxy to exterior type 5.1F of Architectural Painting Specification Manual.

PART C EXECUTION

1.0 SCHEDULING OF REPAIRS

- 1.1 Schedule repairs to existing piers in accordance to the scheduling requirements of the Contract Administrator. All repairs are to be completed prior to delivery of new precast concrete beams as supplied under separate contract.

2.0 PREPARATION OF SURFACE FOR CONCRETE REPAIRS

- 2.1 Provide 13mm deep straight edge saw-cuts around perimeter of area to be repaired. All loose and deteriorated concrete material shall be removed using hand tools.
- 2.2 Roughen existing remaining concrete surface, then clean all surfaces including existing reinforcing steel. All surfaces are to be cleaned free of dirt, oil, organic material and all other deleterious materials, using oil free compressed air.
- 2.3 Immediately after cleaning is completed, the surface and existing reinforcing steel condition is to be reviewed by the Contract Administrator.
- 2.4 Ensure that all surface preparation procedures are in accordance with repair mortar manufacturer's instructions.

3.0 INSTALLATION OF BONDING AGENT AND POLYMER MODIFIED REPAIR MORTAR FOR CONCRETE REPAIRS

- 3.1 The area to be repaired shall be wetted down for a period of twelve (12) hours and again, one (1) hour before placing bonding agent.
- 3.2 Excess water shall be removed from the surface using oil free compressed air, immediately prior to application of the bonding agent.
- 3.3 Bonding agent shall be brushed onto the wetted, prepared surface, as per manufacturer's instructions. Ensure that the surface receives a thorough even coating and that the rate of progress is sufficient so that the slurry does not dry up before concrete is placed.
- 3.4 Polymer modified mortar shall be applied as soon as possible after application of bonding agent.
- 3.5 Ensure that material installation procedures are in accordance with repair mortar manufacturer's instructions.

4.0 PREPARATION OF EXISTING EMBEDDED STEEL SUPPORT ANGLES

- 4.1 Clean existing embedded steel support angles in-situ, and remove loose mill scale, rust, oil, dirt and other foreign matter.
- 4.2 Review steel condition with the Contract Administrator. Where significant material loss has occurred, as determined by the Contract Administrator, replace steel as directed.
- 4.3 Remaining in place steel; prepare surface to SSPC-SP-6 in accordance with Architectural Painting Specification Manual, and with manufacturer's surface preparation requirements.
- 4.4 Apply the exterior two-component coating system as per manufacturer's requirements, and in accordance with Architectural Painting Specification Manual. Allow coatings to cure between each application, and before placement of new precast beams.

5.0 CURING

- 5.1 Cure and protect concrete repair mortar in accordance with CSA A23.1.

6.0 PROTECTIVE COATINGS FOR EXISTING EMBEDDED STEEL SUPPORT ANGLES

- 6.1 Steel protective coating shall be two-component epoxy to exterior type 5.1F of Architectural Painting Specification Manual.

END OF SECTION