

Part 1 General

1.1 MEASUREMENT PROCEDURES

- .1 Provide Lump sum price for the foundation work in accordance with the structural drawings.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit helical pile manufacturer's printed product literature, specifications and datasheet. Helical pile manufacturer must be CCMC approved.
- .3 Shop Drawings:
 - .1 All helical pile fabricator designed assemblies, components and connections, and drawings to be stamped and signed by a professional engineer registered or licensed in the Province of Saskatchewan.
- .4 Provide an Engineer's Certification letter for the helical piles installed, to be sealed by a professional engineer, registered or licensed in the Province of Saskatchewan.
- .5 Submit schedule of planned sequence of installation for review, not less than 2 weeks prior to commencement of pile installation.
- .6 Equipment:
 - .1 Submit prior to pile installation for review by Consultant, list and details of equipment for use in installation of piles.
 - .2 Non-impact methods; submit characteristics to evaluate performance.
- .7 Quality assurance submittals:
 - .1 Test reports: submit 2 copies of certified test reports for piles from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.
- .2 Replace damaged piles to satisfaction of Consultant.

1.4 EXISTING CONDITIONS

- .1 A Geotechnical Evaluation report has been included as part of this specification. Contractor is to review the report and become familiar with the subsurface conditions.

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- .2 Notify Consultant in writing if subsurface conditions at site differ from those indicated and await further instructions from Consultant. Do not proceed with pile locations / sizes / extensions, etc. where not on drawings without written approval from the Consultant.

1.5 SCHEDULING

- .1 Provide schedule of planned installation to Consultant for review, not less than two weeks prior to commencement of pile installation.

Part 2 Products

2.1 MATERIALS

- .1 Supply or fabricate full length piles as indicated and provide equipment to handle full length piles without cutting and splicing.

2.2 EQUIPMENT

- .1 Non-impact methods of installation such as augering, jacking, vibratory hammers or other means: provide full details of characteristics necessary to evaluate performance.

Part 3 Execution

3.1 PREPARATION

- .1 Protection:
 - .1 Protect adjacent structures, services and work of other sections from hazards due to pile installation operations.
 - .2 Arrange sequencing of pile installation operations and methods to avoid damages to adjacent existing structures.
 - .3 When damages occur, remedy damaged items to restore to original or better condition at own expense.
- .2 Ensure that ground conditions at pile locations are adequate to support pile installation operation and load testing operation.
 - .1 Make provision for access and support of piling equipment during performance of Work.
- .3 Install piles as required by geotechnical engineer and to manufacturer's instructions.
- .4 Install piles within embankments only when embankment has been placed and compacted to at least bottom elevation of pile cap.
- .5 Do not install piles until excavation has been completed.
- .6 In areas requiring fill place and compact fill after piles are installed.

3.2 DESIGN LOAD CAPACITY

- .1 All helical piles to be designed and installed to resist the SLS and ULS loading specified on the Drawings. Refer to the General Notes on the Drawings and the Geotechnical Evaluation report for all design related geotechnical parameters.
- .2 Installation of each pile will be subject to review of Consultant. Pile installation rig shall not be removed from site prior to Consultant's review of final installation of all piles.
- .3 Install each pile in accordance with Geotechnical Report and to manufacturer's instructions.
- .4 Determine required installation requirements using formula approved by Consultant.

3.3 APPLICATION

- .1 Hold piles securely and accurately in position while installing.
- .2 Do not install piles within 8 m of masonry or concrete which has been in place less than 7 days.
- .3 Ensure no contact between pile and structure takes place when installing piles adjacent to existing structures.
- .4 Re install any piles lifted or damaged during installation of adjacent piles.
- .5 Remove loose and displaced material from around piles after installation, and leave clean, solid surfaces to receive foundation concrete.
- .6 Finish piles neatly and squarely at elevations to tolerance of plus or minus 25 mm, and in accordance with manufacturer's instructions.

3.4 INSTALLATION TOLERANCES

- .1 Pile heads to be within 50 mm of locations as indicated.
- .2 Piles not to be more than 2% of length out of vertical alignment.

3.5 OBSTRUCTIONS

- .1 Where obstruction is encountered that causes sudden unexpected change in resistance or deviation from specified tolerances, remove obstruction.

3.6 DAMAGED OR DEFECTIVE PILES

- .1 Leave rejected pile in place, place adjacent pile and modify pile cap as directed in writing by Consultant.
- .2 No extra compensation will be made for additional piles and other costs due to installation of damaged or defective piles.

3.7 PROTECTION

- .1 Protect adjacent structures, services and work of other sections from hazards due to pile installation operations.
- .2 Arrange sequencing of pile installation operations and methods such that no damage occurs to adjacent existing structures. If damaged, remedy damaged items to restore to original or better condition at own expense.

3.8 FIELD QUALITY CONTROL

- .1 Independent review of piling operations shall be done by an independent inspection and testing agency under a cash allowance and retained by the owner.
- .2 Maintain accurate records of installing for each pile, including:
 - .1 Type and make of pile.
 - .2 Installation equipment.
 - .3 Pile size and length, location and designation of pile.
 - .4 Sequence of pile installation.
 - .5 Final elevations.
 - .6 Other pertinent information such as interruption of installation, pile damage.
 - .7 Record elevation taken on adjacent piles before and after installation of each pile.
- .3 Provide Consultant with three copies of records.

END OF SECTION