

Part 1 General

1.1 SECTION INCLUDES

- .1 Subsoil materials for Finish Grading
- .2 Topsoil materials for Finish Grading.

1.2 RELATED SECTIONS

- .1 Section 32 92 23 - Sodding.

1.3 REFERENCES

- .1 AASHTO T180-01(2004) - Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and an 457 mm (18 inch) Drop.
- .2 ASTM D698-07e1 - Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).
- .3 ASTM D1556-07 - Test Method for Density and Weight Unit of Soil in Place by the Sand-Cone Method.
- .4 ASTM D1557-07 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- .5 ASTM D2167-08 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
- .6 ASTM D2487-06e1 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- .7 City of Winnipeg Standard Construction Specification – CW 3110 Sub-grade, Sub-base and Base Course Construction.
- .8 City of Winnipeg Standard Construction Specification – CW 1130 Work Site Requirements.
- .9 City of Winnipeg Standard Construction Specification – CW 3540 Topsoil and Finish Grading for Establishment of Turf Areas.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Materials Source: Submit name of imported materials source.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Procedures.

1.7 QUALITY ASSURANCE

- .1 Perform Work in accordance with City of Winnipeg standards.
- .1 Maintain one (1) copy on Site.

Part 2 Products

2.1 SUBSOIL MATERIALS

- .1 Subsoil Type for Sodded Area: Conforming to Province of Manitoba standards and City of Winnipeg Standard Construction Specification – CW 3110 Sub-grade, Sub-base and Base Course Construction.
- .2 Refer to Drawings.

2.2 TOPSOIL MATERIALS

- .1 Topsoil for Sodded Area: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained Site; free of subsoil, clay, or impurities, plants, weeds and roots.
- .2 Topsoil Type: Conforming to Province of Manitoba standards and to City of Winnipeg Standard Construction Specification – CW 3540 Topsoil and Finish Grading for Establishment of Turf Areas.

2.3 SOURCE QUALITY CONTROL

- .1 Testing and Analysis of Subsoil and Topsoil Material: To City of Winnipeg Standard Construction Specification requirements.
- .2 Provide materials of each type from same source throughout the Work.

Part 3 Execution

3.1 SOIL REMOVAL

- .1 Remove lumped soil, boulders, and rock.
- .2 Stockpile excavated material in area designated on Site and remove excess material not being used, from Site.

3.2 STOCKPILING

- .1 Stockpile materials on Site at locations indicated designated by Contract Administrator.
- .2 Stockpile in sufficient quantities to meet Project schedule and requirements.

- .3 Separate differing materials with dividers or stockpile apart to prevent mixing.
- .4 Prevent intermixing of soil types or contamination.
- .5 Direct surface water away from stockpile Site to prevent erosion or deterioration of materials.

3.3 STOCKPILE CLEANUP

- .1 To City of Winnipeg Construction Standards.
- .2 Remove stockpile, leave area in a clean and neat condition. Grade Site surface to prevent free standing surface water.

3.4 PREPARATION OF SUBSOIL

- .1 City of Winnipeg Standard Construction Specification – CW 3110 Sub-grade, Sub-base and Base Course Construction.
- .2 Prepare subsoil and eliminate uneven areas and low spots.
- .3 Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- .4 Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be sodded.
- .5 If soil contaminated with petroleum products is encountered, notify City of Winnipeg and Contract Administrator immediately before proceeding with any further work.
- .6 Scarify subsoil to a depth of 100 mm (4 inches) where topsoil is to be placed. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.
- .7 Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

3.5 PLACING TOPSOIL

- .1 To City of Winnipeg Standard Construction Specification – CW 3540 Topsoil and Finish Grading for Establishment of Turf Areas.
- .2 Spread topsoil to a minimum depth of 50 mm (2 inches) over area to be sodded.
- .3 Place topsoil during dry weather and on dry unfrozen subgrade.
- .4 Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- .5 Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- .6 Install edging at periphery of sodded areas in straight lines to consistent depth.
- .7 Coordinate with installation of underground sprinkler system piping and watering heads.

3.6 PROTECTION OF FINISHED WORK

- .1 Section 01 78 40: Protecting installed work.
- .2 Protect landscaping and other features remaining as final work.
- .3 Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 31 63 23 – Bored Concrete Piles.
- .2 General Notes on Structural Drawings

1.2 EXISTING CONDITIONS

- .1 Sub-surface investigation report is bound into specification.
- .2 Notify Contract Administrator in writing if subsurface conditions at site differ from those indicated and await further instructions from Contract Administrator.

Part 2 Products

2.1 MATERIALS

- .1 Material requirements for piles are specified on Drawings.

Part 3 Execution

3.1 PREPARATION

- .1 Ensure that ground conditions at pile locations are adequate to support piling operation.
 - .1 Make provision for access and support of piling equipment during performance of Work.

3.2 INSTALLATION

- .1 Installation of each pile will be subject to approval review of the Geotechnical Engineer who prepared the geotechnical report for this project.

3.3 OBSTRUCTIONS

- .1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, proceed as directed by the Contract Administrator.

3.4 REPAIR AND RESTORATION

- .1 Leave rejected pile in place, place adjacent pile and modify pile cap as directed by the Contract Administrator.
- .2 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.

3.5 FIELD QUALITY CONTROL

- .1 Measurement:
 - .1 Maintain accurate records for each pile, including:
 - .1 Pile size and length, location of pile in pile group, location or designation of pile group.

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 03 20 00 – Concrete Reinforcing.
- .2 Section 03 30 00 – Cast-In-Place Concrete.
- .3 Section 31 61 13 – Pile Foundations - General

1.2 MEASUREMENT PROCEDURES

- .1 Measure bored piles in units incorporated into work.
- .2 Amount of bored pile shaft added or deducted in event actual bearings are below or above elevations indicated will be measured in metres.
- .3 Base bid on number and lengths of piles as indicated.
- .4 Actual number and lengths of piles installed: established by Contract Administrator from piling records.

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A36/A36M-[05], Standard Specification for Carbon Structural Steel.
 - .2 ASTM A53/A53M-[05], Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2- Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA-G30.18-M92(2002), Billet Steel Bars for Concrete Reinforcement.

Part 2 Products

2.1 MATERIALS

- .1 Concrete mixes and materials as shown on drawings.
- .2 Reinforcing steel: to CAN/CSA-G30.18 and in accordance with Section 03 20 00 - Concrete Reinforcing.

2.2 SOURCE QUALITY CONTROL

- .1 Concrete tests: to CSA-A23.1/A23.2.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Bore holes to diameters and depths as indicated on Drawings.
- .2 Geotechnical Engineer selected by the Contract Administrator to inspect piling installation.
- .3 Protective steel casing:
 - .1 Where required, use steel protective casing approved by the Contract Administrator.
 - .1 Ensure penetration of casing to required depths either by self mass or driving.
- .4 Check each bored shaft for toxic and explosive gases and provide appropriate protective measures for personnel working in shaft.
- .5 Dispose of excavated materials.
- .6 Geotechnical Engineer appointed by the Contract Administrator to inspect pile excavation prior to placing of concrete.
 - .1 Remove loose material, foreign matter and water as directed by Geotechnical Engineer.
- .7 Install steel reinforcement in accordance with Section 03 20 00 - Concrete Reinforcing.
- .8 Fill pile excavations with concrete to elevations as indicated.
 - .1 Place concrete in one continuous pour in accordance with Section 03 30 00 - Cast-in-Place Concrete.
- .9 Steel protective casing may be removed at option of Contractor, unless otherwise specified.
- .10 Where steel protective casing is to be removed, provide concrete with minimum slump of 125 mm and with retarder to prevent arching or setting of concrete.
 - .1 Withdraw casing in conjunction with concrete placing, keeping bottom of casing 600mm below level of concrete.
 - .2 Do not vibrate concrete internally.
- .11 Where steel protective casing is left in place, fill void space between casing and shaft excavation with concrete.

3.3 DEFECTIVE PILES

- .1 Cased concrete shaft piles rejected where:

- .1 Soil has entered casing.
 - .2 Water has entered casing.
 - .3 Casing is damaged, out of tolerance or alignment.
- .2 Defective pile, as directed by the Contract Administrator to be cut off at elevation and filled with sand.

3.4 FIELD QUALITY CONTROL

- .1 Field Records: maintain driving record for each shell, including elevation of bedrock, driven depth of pile, cut-off elevation of shell and protruding core.

3.5 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION