

APPENDIX C
GEO TECHNICAL REPORT



Stantec Consulting Ltd.
500-311 Portage Avenue, Winnipeg MB R3B 2B9

January 7, 2016
File: 111216000

Attention: Blair Fraser, P. Eng.
Stantec Consulting Ltd.
500 - 311 Portage Avenue
Winnipeg MB
R3B 2B9
Canada

Dear Blair Fraser,

Reference: North End Water Pollution Control Center, Winnipeg, MB – Limit State Design Parameters

As requested, this letter has been prepared to summarize our review of existing geotechnical documentation and to provide appropriate geotechnical design parameters within the Limit States Design Guidelines.

A geotechnical report prepared by Dyregrov Consultants titled "Geotechnical Report North End Water Pollution Control Center Disinfection Facility" dated December, 2004 has been reviewed. As contained within that documentation, allowable pile capacities for cast-in-place concrete friction piles and driven precast concrete end bearing piles were given. The allowable pile capacities were quoted in the Working Stress Design framework.

From the Dyregrov Consultants report, cast-in-place concrete friction piles would have a safe allowable skin friction of the soil/concrete interface of 16.7 kPa for depths greater than 5 ft (1.5 m) below the soil surface at the pile. Based upon an appropriate factor of safety of 3 to obtain the maximum allowable skin friction, and using a resistance factor of 0.4 as contained within the National Building Code of Canada (NBCC) for resistance to axial load, a skin friction value in the same interval at Ultimate Limit States (ULS) of 20 kPa may be used. A skin friction capacity at Serviceability Limits State (SLS) within the same interval of 16.7 kPa may be used.

Allowable capacities for three diameters of driven precast piles end bearing on the underlying till were provided in the Dyregrov Consultants report. Based upon an appropriate factor of safety of 2.5 for the allowable driven pile capacities, and using a resistance factor of 0.4 as contained within the NBCC for resistance to axial load, appropriate driven precast pile capacities at ULS may be used:

300 mm Diameter Pile – 445 kN

350 mm Diameter Pile – 625 kN

400 mm Diameter Pile – 800 kN

Design with community in mind



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Pile capacities at SLS equal to the above values may be used as it is anticipated that these loads would not produce 20 to 25 mm of vertical pile settlement.

Note that the undersigned accepts no liability for the validity of the pile capacities as quoted in the 2004 Dyregrov Consultants report, and are merely converting capacity based upon Working Stress Design to Limits States Design according to the applicable standards. All recommendations contained within the Dyregrov Consultants report should be followed.

Regards,

STANTEC CONSULTING LTD.

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