



13 November 2006

AMEC Project No. WX15309

Number Ten Architectural Group
310 – 115 Bannatyne Avenue
Winnipeg, Manitoba
R3B 0R3

Dear Mr. Henry Bakker, CET
Project Manager

**Re: Supplemental Geotechnical Investigation
East District Police Station
St. Boniface Industrial Park**

INTRODUCTION

As authorized by Mr. Henry Bakker of Number Ten Architectural Group, AMEC Earth and Environmental, a division of AMEC Americas Limited (AMEC), completed additional test hole drilling and geotechnical analysis for the proposed East District Police Station to be located in the St Boniface Industrial Park area of Winnipeg, Manitoba.

The additional work was requested by Crosier Kilgour & Partners Limited, based on requirements set out in the new National Building Code (NBC) which was adopted by the Province of Manitoba subsequent to completion of AMEC's initial geotechnical report. Based on the requirements of the new NBC, classification of the site as per the code was required so that the structural design of the building could be completed. Specifically, AMEC was requested to determine if the soils should be classified as Class D (stiff) or Class E (soft) with respect to response to seismic activity. In order to meet the Class D site classification, it was necessary to show that:

- The average undrained shear strength (S_u) of the clay soils, to a maximum depth of 30 m, lies between 50 and 100 kPa;
- That there was not a soil zone greater than 3 m in thickness having the following attributes:
 - A Plasticity Index (PI) greater than 20%;
 - Moisture contents greater than 40%; and
 - Average undrained S_u less than 25 kPa.

Subsequent to a further review of the NBC by AMEC, it was determined that it was also necessary to verify that the soils were not Class F (Other Soils). Although there are a number of stipulations which can classify a site as having Class F soils, a review of the site conditions

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determined that it was necessary only to verify that there was not a 8 m soil zone containing soils with a PI greater than 75% or shear strengths less than 25 kPa.

FIELD AND LABORATORY INVESTIGATION

A field drilling program was conducted on October 2, 2006. Two test holes (THV1 and THV2) were advanced using a truck mounted drill rig provided by Paddock Drilling Ltd. THV1 was advanced to auger refusal which occurred at 18.0 m below grade. THV2 was advanced to a depth of 11.4 m from grade (with vane shear testing completed to a depth of 12.2 m). The test hole locations are shown on Figure 1 and the test hole logs are provided as Figures 2 and 3.

During drilling, soils were classified according to the modified unified soil classification system. In-situ vane shear testing was completed at 1.5 m intervals, beginning at a depth of 3 m from grade. On completion of drilling, the test holes were backfilled with the auger cuttings.

Two samples, one from 4.5 m and one from 12.2 m, collected during the original geotechnical investigation, were tested to determine Atterberg limit values.

CONCLUSIONS

Based on the in-situ vane shear tests conducted during the test hole drilling program, the average undrained shear strength of the soils was determined to be 75 kPa. Furthermore, there was not a 3 m soil zone having a shear strength of less than 25 kPa and the Atterberg Limit values indicated a PI ranging from 47 to 75% (TH3 @ 4.6 m =75% and TH1 @ 12.2 m = 47%). On this basis, the soils at this site are considered to meet the NBC requirements for classification as a Class D (stiff soil) site.

Further to the above testing, allowable skin friction values, for drilled cast-in-place concrete friction piles can be modified to the values shown in the following Table:

| Depth Interval From Grade | Allowable Skin Friction |
|---------------------------|-------------------------|
| | Compressive Loading |
| 0 – X m | 0 kPa |
| X m – 13.0 m | 18 kPa |

where X = depth of fill; or,
 = 1.5 m for interior heated piles; or
 = 2.4 m for exterior or unheated piles; whichever is deeper



The remaining recommendations for drilled, cast-in-place piles are as outlined in AMEC's geotechnical report, dated 30 June 2006.

CLOSURE

If you have any questions or concerns, please contact the undersigned at your convenience. This report should be read in conjunction with AMEC's geotechnical report for the site, dated 30 June 2006.

Sincerely,
AMEC Earth & Environmental

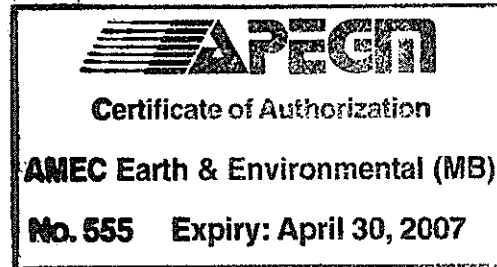


Robert Brown, B.Eng.

Harley Pankratz, P. Eng
Vice President: Manitoba/Saskatchewan

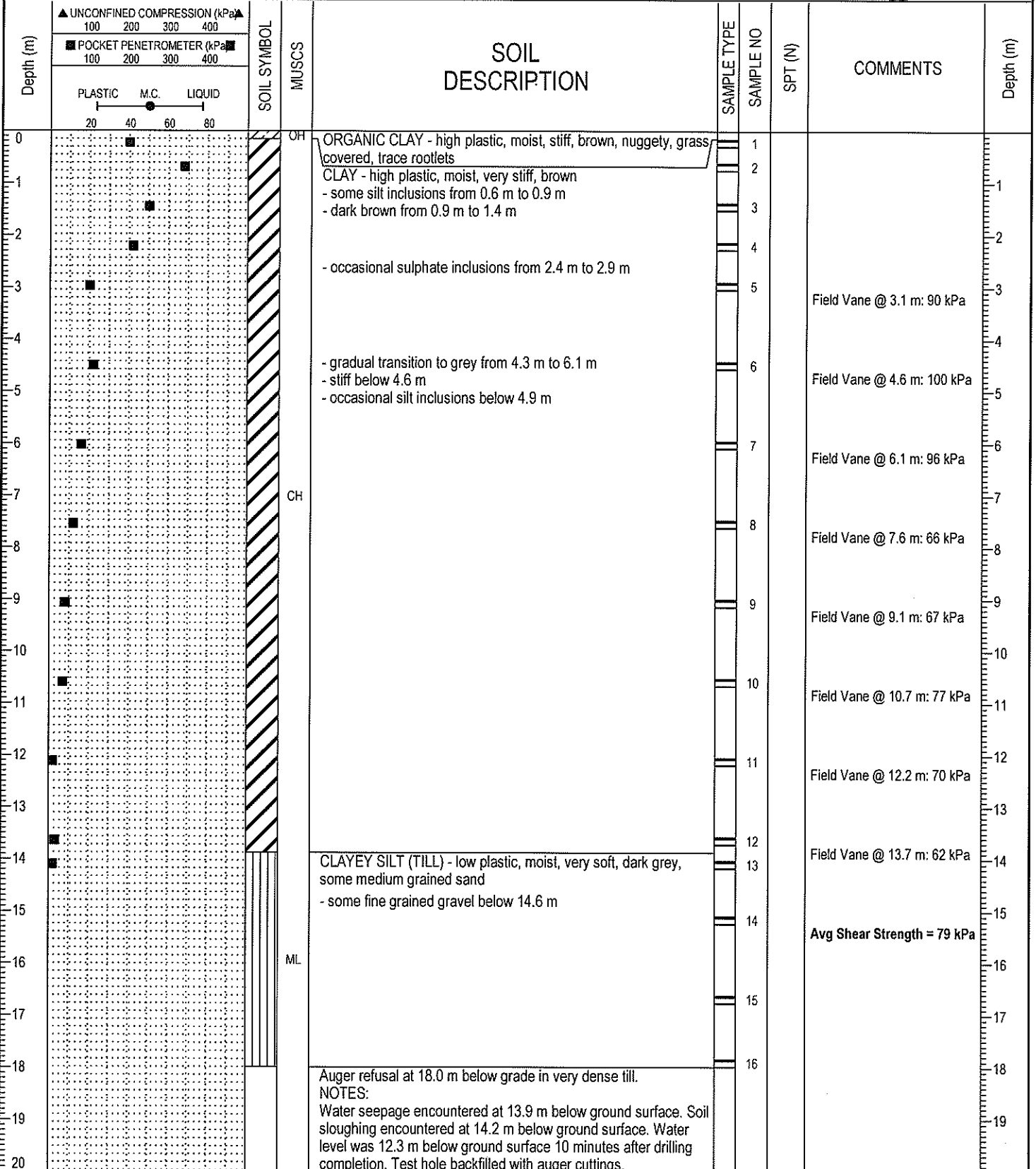
Reviewed By:

Brad Wiebe, M. Sc., P. Eng.



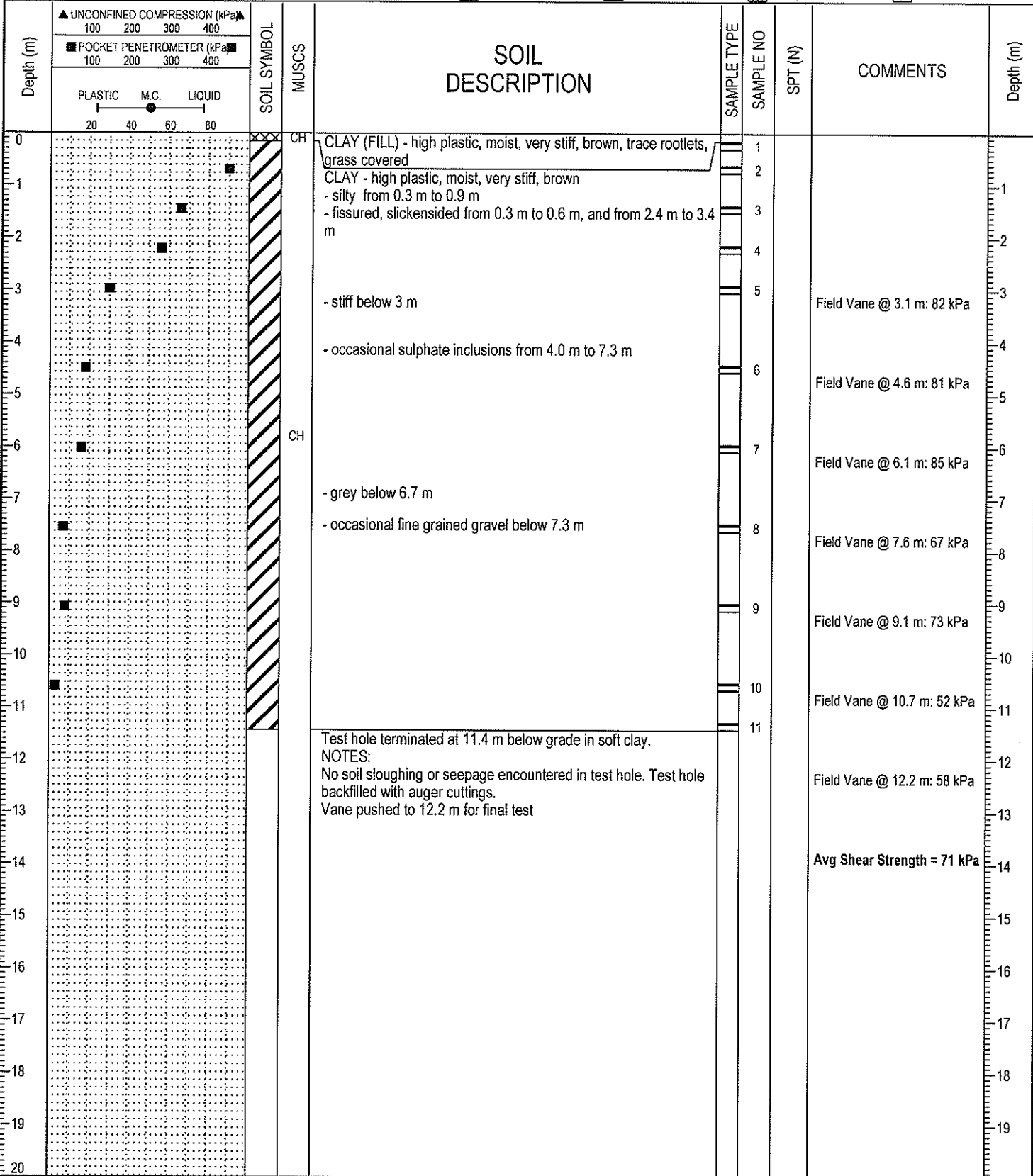
cc: George Graham, CET; Crosier Kilgour & Partners

| | | | | | | |
|---|---|---|---|--------------------------------------|------------------------------------|-------------------------------|
| PROJECT: East District Police Station | DRILLED BY: Paddock Drilling Limited | BORE HOLE NO: THV1 | | | | |
| CLIENT: Number Ten Architectural Group | DRILL TYPE: MP5-T | PROJECT NO: WX15309 | | | | |
| LOCATION: Durand Road, Winnipeg, Manitoba | DRILL METHOD: 125 mm Solid Stem Auger | ELEVATION: | | | | |
| SAMPLE TYPE | <input checked="" type="checkbox"/> Shelby Tube | <input checked="" type="checkbox"/> No Recovery | <input checked="" type="checkbox"/> SPT (N) | <input type="checkbox"/> Grab Sample | <input type="checkbox"/> Split-Pen | <input type="checkbox"/> Core |
| BACKFILL TYPE | <input checked="" type="checkbox"/> Bentonite | <input type="checkbox"/> Pea Gravel | <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Grout | <input type="checkbox"/> Slough | <input type="checkbox"/> Sand |



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|---|---|---------------------|
| PROJECT: East District Police Station | DRILLED BY: Paddock Drilling Limited | BORE HOLE NO: THV2 |
| CLIENT: Number Ten Architectural Group | DRILL TYPE: MP5-T | PROJECT NO: WX15309 |
| LOCATION: Durand Road, Winnipeg, Manitoba | DRILL METHOD: 125 mm Solid Stem Auger | ELEVATION: |
| SAMPLE TYPE | <input checked="" type="checkbox"/> Shelby Tube <input checked="" type="checkbox"/> No Recovery <input checked="" type="checkbox"/> SPT (N) <input type="checkbox"/> Grab Sample <input type="checkbox"/> Split-Pen <input type="checkbox"/> Core | |
| BACKFILL TYPE | <input checked="" type="checkbox"/> Bentonite <input type="checkbox"/> Pea Gravel <input checked="" type="checkbox"/> Drill Cuttings <input type="checkbox"/> Grout <input type="checkbox"/> Slough <input type="checkbox"/> Sand | |



15309 EAST DISTRICT POLICE STATION 061002.GPJ 06/11/07 06:08 PM (GEOTECHNICAL)



AMEC Earth and Environmental
Winnipeg, Manitoba

LOGGED BY: RB
REVIEWED BY: HP
Figure No. 3

COMPLETION DEPTH: 11.5 m
COMPLETION DATE: 2 October 2006