



CLIENT CITY OF WINNIPEG
PROJECT MONTCALM FORCE MAIN REPLACEMENT
SITE MONTCALM FORCE MAIN
LOCATION WEST BANK NEAREST RIVER, 5529461 N 635708.7 E
DRILLING METHOD 150 mm ø Solid Stem Auger, Nodwell and HQ Coring

JOB NO. 03-107-17
GROUND ELEV. 229.10 m
WATER ELEV. 222.73 m (13-Jan-04)
DATE DRILLED 6-Jan-04, 12-13-Jan-04

| ELEVATION m (ft) | DEPTH | | GRAPHICS | DESCRIPTION AND CLASSIFICATION | PIEZ. LOG | DEPTH (m) | SAMPLE TYPE NUMBER | RECOVERY % | SPT (N) blows/0.30 m ▲ | Cu TORVANE (kPa) ◆ | | |
|------------------|-------|------|----------|---|-----------|-----------|--------------------|------------|------------------------|--------------------|----|----|
| | (m) | (ft) | | | | | | | | PL | MC | LL |
| 229 | | | | SAND (ALLUVIUM POINT BAR) (SP) Brown, frozen to moist, compact, low to intermediate plasticity, silty. | | | | | | | | |
| 228 | 1 | | | | | | 1 | | | | | |
| 227 | | 5 | | | | | | | | | | |
| 226 | 2 | | | - Loose, non plastic, poorly graded, some clay at 3.05 m. | | | 2 | | | | | |
| 225 | | 10 | | | | | | | | | | |
| 224 | 3 | | | - Soft, low plasticity, gradual increase in clay content with depth, trace oxidation at 4.57 m. | | | 3 | | | | | |
| 223 | | 15 | | | | | | | | | | |
| 222 | 4 | | | - Water seepage at 6.71 m. | | | 4 | | | | | |
| 221 | | 20 | | | | | | | | | | |
| 220 | 5 | | | - Grey, wet, soft, low plasticity, with clay at 7.62 m. | | | 5 | | | | | |
| | | 25 | | | | | | | | | | |
| | 6 | | | | | | 6 | | | | | |
| | | 30 | | SILT (ML) - Grey, wet, compact, low plasticity, clayey, trace sand, trace shells. | | | | | | | | |



SAMPLE TYPE  Auger Grab  Select Core Barrel

CONTRACTOR **Paddock Drilling Ltd.** INSPECTOR **J. CHING / G.E. HARRISON**

APPROVED _____ DATE 19/01/04

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|------------------|-------|------|----------|--|-----------|-----------|--------------------|------------|------------------------|--------------------|----|----|
| | (m) | (ft) | | | | | | | | PL | MC | LL |
| 219 | | 35 | | | | | | | | | | |
| 218 | 11 | | | | | | | | | | | |
| 217 | 12 | 40 | | | | | | | | | | |
| 216 | 13 | | | - With fine grained angular gravel, trace shells below 13.11 m. | | | | | | | | |
| 215.4 | 45 | | | CLAY (LACUSTRINE) (CH) Grey, soft to firm, high plasticity, trace 5 mm ø silt nodules, trace angular gravel (-). | | | | | | | | |
| 215 | 14 | | | | | | | | | | | |
| 214.9 | 50 | | | SILT (TILL) (ML) - Tan, dense, low plasticity, some fine to coarse grained angular gravel. | | | | | | | | |
| 213 | 16 | | | | | | | | | | | |
| 212 | 17 | 55 | | - Damp, stiff to very stiff, low plasticity, pebbles to 50.8 mm ø (10% granitic) at 16.76 m. - End of solid stem auger hole at 16.8 m on Jan 6/04. Set casing to 17.37 m. - Begin HQ wireline coring from 16.76 m on Jan 12/04. - Poor recovery, good circulation. - Buff limestone cobble at 17.78 m. | | | | | | | | |
| 211 | 18 | 60 | | - Buff limestone cobble at 18.17 m. | | | | | | | | |
| 210 | 19 | | | | | | | | | | | |
| 209 | 20 | 65 | | | | | | | | | | |
| 208 | 21 | 70 | | - Poor recovery, predominantly gravel sizes from 21.34 to 21.77 m. - Fine grained sand recirculating. | | | | | | | | |



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|------------------|----------------|----------|---|-----------|-----------|--------------------|------------|------------------------|--------------------|----|----|--|
| | | | | | | | | | PL | MC | LL | |
| | | | | | | | | 20 40 60 | 20 40 60 80 | | | |
| 207 | 22 | | - Grey granitic cobble at 21.77 m. - Minimal recovery, predominantly pebbles to 76.2 mm ø from 21.95 to 22.40 m. - Fine grained sand recirculating. | | 22.0 | | | | | | | |
| 206 | 23 | | - Light grey, very stiff, pebbles to 50.8 mm ø (20% granitic) at 22.94 m. | | | 4 | | | | | | |
| 205 | 24 | | - Minimal recovery, gravel recovered (20% granitic) from 23.34 to 24.49 m. - Fine grained sand recirculating. | | | | | | | | | |
| 204.5 | 80 | | - Grey granitic cobble at 24.52 m. | | 24.6 | | | | | | | |
| 204 | 25 | | LIMESTONE (BEDROCK) - Buff, solid, vuggy at interface, medium strong. | | 24.9 | | | | | | | |
| 203 | 26 | | - White, massive at 25.96 m. | | | 5 | | | | | | |
| 202.5 | 85 | | | | 26.6 | 6 | | | | | | |
| | | | END OF HOLE AT 26.59 m ON JAN 12/04 | | | | | | | | | |
| 202 | 27 | | Notes: 1. Installed Casagrande standpipe at 24.89 m depth. Pipe consists of 25 mm diameter PVC with response zone from 21.95 to 26.59 m depth. 2. Lockable protective steel casing installed at ground surface. 3. Groundwater depth at 6.37 m below ground surface upon completion on January 13, 2004. Groundwater depth at 6.67 m on January 14/04. | | | | | | | | | |
| 201 | 28 | | | | | | | | | | | |
| 200 | 29 | | | | | | | | | | | |
| 199 | 30 | | | | | | | | | | | |
| 198 | 31 | | | | | | | | | | | |
| 197 | 32 | | | | | | | | | | | |
| 196 | 33 | | | | | | | | | | | |

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