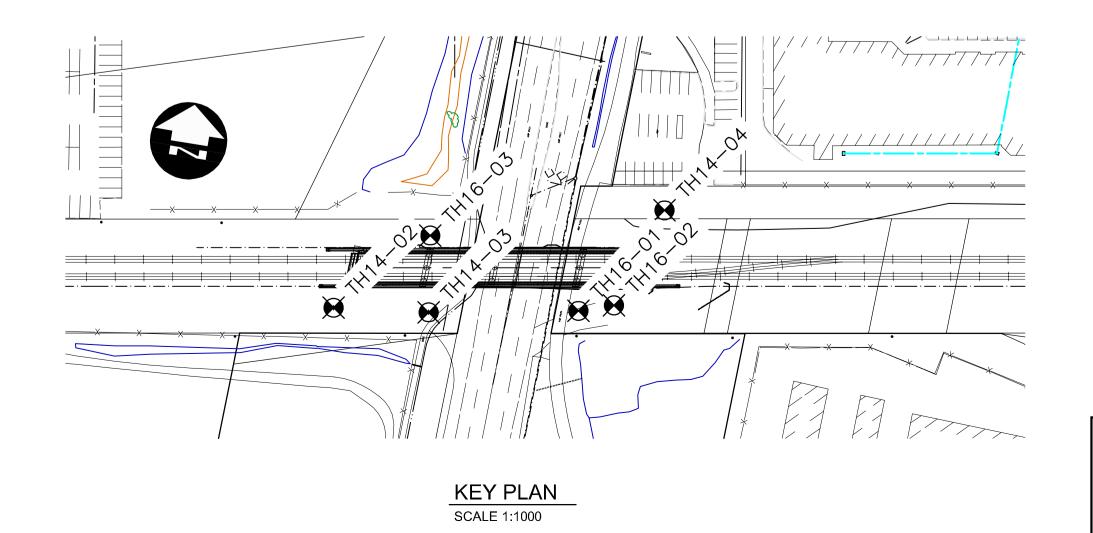


| PROJECT: Waverley Underpass LOCATION: UTM: 14U, 5523599 m N, 630952 m E | | | | | CLIENT: City of Winnipeg | | | | | | | PROJECT N | | | |
|----------------------------------------------------------------------------|-------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------|------------|--------------|----------------------|------|--------------------------------------------------------------------------------------------------|---------|-----------|--------------------------------------------------|---------------|------|
| CONTRACTOR: Maple Leaf Drilling Ltd. SAMPLE TYPE GRAB SHELBY TUBE | | | | | | METHOD: | | 125 mm SSA/ | | HO Coring | | | | V (m): 233.20 | |
| | | | | | | | | | BI | | | NO RECO | | CORE | • |
| BACKFILL TYPE BENTONITE GRAVEL | | | | Ī | SLO | UGH | | GF | | 7 | CUTTING | SS | SAND | | |
| DEPTH (m) | SOIL SYMBOL | SLOTTED PIEZOMETER | SOIL DESCRIPTION | | | SAMPLE# | SP | PENETRATION TESTS UI | | UNDRAINED SHEAR STREM + Torvane + × QU/2 × □ Lab Vane □ 0 △ Pocket Pen. △ ♣ Field Vane ♣ 1 (kPa) | | | MENTS | ELEVATION | |
| 10 -11 | | | - grey below 10.6 m - silty, silt inclusion (<40 mm in | n dia.) below 11.3 m | | G50 | | | | | | | | | 223 |
| -12 | | | - light grey to grey, some to tr intermediate plasticity below f | ace gravel, low to | | | | | | | | | | | 221 |
| -13 | | | Glacial Till (SILT)- some to traclay - light grey, very dense, moist - low plasticity - loose, wet from 13.1 to 13.6 | | × | G52 | 50/ 152mm | | | >> ф | | | SPT Blows | : (50/152) | 220 |
| -14 | | | - some sand, some boulders | some cobbles below 14 m | | C1 | | | | | | | C1 RQD: 0 C1 Recove | % | 219 |
| -16 | | | | | | C2 | | | | | | | C2 RQD: (C2 Recove | | 218 |
| -17 | | | | | | СЗА | | | | | | | C3A RQD: C3A Reco | | 216 |
| -18 | | | LIMESTONE - fine grained - light grey, yellow staining - no foliation - R3- medium strong - closed to moderately closed | , rough undulating fractures, | | C3B | | | | | | | C3B RQD: C3B Record C4 RQD: 2 C4 Recove | ery: 75% | 215 |
| -19 | | | closed to gapped, clean to fill gravel, evidence of water flow oxidized between 19 to 20.6 r | (class 3), red staining, | | 05 | | | | | | | | | 214 |
| 20 | XXX | | | | | C 5 | | LOGGE | D RV | Saba Ibrahi | m | CON | C5 RQD: 2 | | 1 |
| | | | A=CON | ı | | | | - | | Zeyad Sh | | | MPLETION DEF | | 1 |
| | | | 7-5011 | • | | | | | | INEER: Fa | | | | | 2 of |

| LOCATION: UTM: 14U, 5523599 m N, 630952 m E | | | | | | LIEN | IT: Cit | 7 | | | | | | STHOLE NO: TH14 | | |
|--------------------------------------------------------------------|-------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------|---------|---------|--------------------------------|--------------------|------------------------------------------------|------|-----------------------------------------------------------------|-------------------------------------------|-----------------|----------------------------------------------------|-------|
| | | | | | | | | | | | | | | | OJECT NO.: 60321 | |
| CONTRACTOR: Maple Leaf Drilling Ltd. SAMPLE TYPE GRAB SHELBY TUBE | | | | | | | | | n SSA/ I | | ring | | | | EVATION (m): 233.2 | 20 |
| | | | GRAB | SHELBY TUBE | X | _ | T SPO | JN | BU | | | entremon. | IO REC | | - Indiana | |
| BACK | FILL | TYPE | BENTONITE | GRAVEL | Щ | SLO | UGH | | GR | | | Laborated . | UTTIN | | SAND | _ |
| DEPTH (m) | SOIL SYMBOL | SLOTTED PIEZOMETER | SOIL DESC | CRIPTION | SAMPLE TYPE | SAMPLE# | SPT (N) | ◆ SPT (20 16 17 Plas | • | me ⇔ en Test) en Test) mm) 80 Vt ■ 20 Liquid | 100 | AINED SHE. + Torva × QU/ □ Lab Vo △ Pocket ♣ Field V (kPa | ine + 2 × ane □ Pen. △ ″ane ❤ | | COMMENTS | |
| - 20 | 222 | | | | T | | | 20 | 40 60 | 80 | 100 | 50 100 | 150 | 200 | C5 Recovery: 71 % | + |
| 21 | | | SHALE - blue / green - fine grained - no foliation - R1- very weak - close spacing | | ſ | C6 | | | | | | | | | C6 RQD: 0% C6 Recovery: 56 % | 2 |
| | | | LIMESTONE - fine grained - creamish white and grey - no foliation - R3- medium strong - moderately closed too widely features, clean, no evidence of gapped fractures(180 degree undulating, clean between 21 | f water flow (class 2) es to core axis), rough | | C7 | | | | | | | | | C7 RQD: 23% C7 Recovery: 81 % | 2 |
| 23 | | | - gapped fractures(180 degree undulating, clean between 23 | es to core axis), rough | | C8 | | | | | | | | | C8 RQD: 60% C7 Recovery: 100 % | 2 |
| -24 - | | | - gapped fractures(180 degree undulating , clean between 24 | es to core axis), rough .2 to 25 m | | | | | | | | | | | | 2 |
| -25 | | J | - R5- very strong | | | C9 | | | | | | | | | C9 RQD: 26% C7 Recovery: 100 % qu= 114.9 MPa | 20 |
| 26 | *** | | END OF TEST HOLE AT 25.7 NOTES: | | _ | | | | | | | | | | | |
| | | | Power Auger Refusal at 13. HQ coring below 13.8 m. Seepage observed at 3.0 m. Installed 25 mm diameter st (SP14-04) to 23.5 m below gr casagrande tip and flush mout. Test hole backfilled with sline. | upon drilling completion, andpipe piezometer ound surface with 0.3 m nt at ground surface. | | | | | | | | | | | | 20 |
| - - - - - - - - - 28 | | | ground surface, bentonite up tauger cutting to ground surface. Groundwater monitoring: - Aug. 12, 2014 at Elv. 225.2 r - Sep. 03, 2014 at Elv. 225.0 r | o 1 m and plugged with e. n. n. | | | | | | | | | | | | 2 |
| -29 | | | Sep. 19, 2014 at Elv. 225.6 r Oct. 17, 2014 at Elv. 225.5 m Nov. 06, 2014 at Elv. 225.4 r Nov. 20, 2014 at Elv. 225.4 r Dec. 06, 2014 at Elv. 225.2 r Dec. 18, 2014 at Elv. 225.2 r | n. n. n. | | | | | | | | | | | | 20 |
| - 30 | | | | | | | | | | | | | | | | 2 |
| | | | A =CO.44 | 1 | | | | | ED BY: \$ | | | | | | ETION DEPTH: 25.73 r | n |
| | | | A=COM | | | | | - | WED BY: ECT ENG | | | | CO | MPLI | ETION DATE: 7/15/14 | e 3 c |



| | | | | | | LI CON: | ENGINEER'S SEAL R.B. | | | | | | |
|--------------------------------|-----|-------------------|----------|------|----------------|----------|-----------------------|---------|---------------------|----------|---------------------------|--|---------------------------|
| | | | | | DESIGNED BY | RE | CHECKED BY | SSR | ERIC Member 22665 | | | | |
| Certificate of Authorization | | | | | DRAWN BY | CGC | APPROVED BY | DBW | 22665 25 PROFESSION | | | | |
| Dillon Consulting Limited (MB) | | | | | | | | | HOR. SCALE | AS SHOWN | RELEASED FOR CONSTRUCTION | | CONSULTANT PROJECT NUMBER |
| No. 1789 Date: 2017/01/09 | 0 | ISSUED FOR TENDER | 17/01/09 | RE | VERTICAL | AS SHOWN | | | | | | | |
| 101 1100 Dato! | NO. | REVISIONS DATE BY | | DATE | | DATE | | 16-3353 | | | | | |

THE INFORMATION ON THIS DRAWING HAS BEEN EXTRACTED FROM THE PRELIMINARY DESIGN GEOTECHNICAL REPORT PREPARED BY AECOM CANADA LTD, DATED JANUARY 2015 AND THE MEMORANDUM TITLED SUMMARY OF BEDROCK INVESTIGATION IN THE VICINITY OF THE PROPOSED CN BRIDGE- WAVERLEY STREET UNDERPASS PROJECT, PREPARED BY AECOM CANADA LTD, DATED NOVEMBER 23, 2016. IN THE EVENT OF A DISCREPANCY BETWEEN THESE GEOTECHNICAL REPORTS AND THE INFORMATION PROVIDED ON THIS DRAWING, THE ORIGINAL GEOTECHNICAL REPORTS SHALL GOVERN. THE CONTRACTOR IS STRONGLY URGED TO REVIEW ALL AVAILABLE GEOTECHNICAL DATA.

| | THE CITY OF WINNIPEG |
|----------|-------------------------|
| Winnineg | PUBLIC WORKS DEPARTMENT |

| vvnnnpeg | | | | |
|-----------------------------------------------------------------------------------------------------|------------------------------------------|---------------|--|--|
| WAVERLEY STREET UNDERPASS AT CN MILE 3.89 RIVERS SUB CONTRACT 2: UNDERPASS STRUCTURE, RAILWORKS, | CITY DRAWING NUMBER U-239-2016-C2-CS-010 | | | |
| ROADWORKS, LAND DRAINAGE SEWER, PUMPING STATION AND LANDSCAPING WORKS | SHEET 010 | OF 085 | | |
| | CONSULTANT DRAW | VING NUMBER | | |
| BORING LOGS - SHEET 4 | C2-CS-0 | 10 | | |