

APPENDIX A
GEOTECHNICAL REPORT



Stantec Consulting Ltd.
199 Henlow Bay
Winnipeg MB R3Y 1G4

February 14, 2024

Project/File: 123316853

Lucas Stoffel

Dillon Consulting Ltd.
1558 Willson Place
Winnipeg, MB R3T 0Y4

Good day Lucas,

Reference: Grant Avenue and Taylor Avenue Pavement Renewals

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the Grant Avenue and Taylor Avenue Pavement Renewals in Winnipeg, Manitoba. Use of this report is subject to the Statement of General Conditions provided in **Appendix A**.

The subsurface coring and drilling sampling program was conducted from December 12, 2023, to January 29, 2024. Pavement coring was performed by our geotechnical field personnel, and drilling services were provided by Paddock Drilling under the supervision of our personnel. The borehole locations are shown on the attached Borehole Location Plan provided in **Appendix B**. When subsurface drilling was required, the pavement cores were sampled with a 150 mm bit and boreholes were drilled with 125 mm solid stem augers. Geotechnical drilling boreholes were terminated at depths ranging from 1.6 m to 2.5 m below the pavement, which resulted in borehole depths ranging from 1.89 m to 2.81 m below the surface. Soil samples were obtained directly from the auger flights at depths of 0.6 m, 0.9 m, 1.2 m, 1.6 m, 2.0 m, and 2.5 m from the bottom of the existing pavement. Upon completion of drilling, the testholes were examined for evidence of sloughing and groundwater seepage. The borehole records are provided in **Appendix C**. The soil classification used in the borehole records is as per ASTM D2487 – *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)*. Core photographs are provided in **Appendix D**.

Reference: Grant Avenue and Taylor Avenue Pavement Renewals

EXISTING PAVEMENT THICKNESS

The existing pavement thickness is provided in the following table:

Table 1 – Existing Pavement Thickness

Street	Core ID	Asphalt Thickness (mm)	Concrete Thickness (mm)	Total Pavement Thickness (mm)
Taylor Ave	WB BH 1	50	260	310
Taylor Ave	WB BH 2	70	180	250
Taylor Ave	WB BH 3	25	0	25
Taylor Ave	WB BH 4	70	230	300
Taylor Ave	WB BH 5	80	225	305
Taylor Ave	WB BH 6	100	170	270
Taylor Ave	EB BH 1	60	230	290
Taylor Ave	EB BH 2	70	195	265
Taylor Ave	EB BH 3	100	210	310
Taylor Ave	EB BH 4	125	0	125
Grant Ave	EB BH 1	40	255	295
Grant Ave	EB BH 2	60	255	315
Grant Ave	EB BH 3	55	230	285
Grant Ave	EB BH 4	85	220	305
Grant Ave	EB BH 5	105	225	330
Grant Ave	EB BH 6	100	0	100
Grant Ave	EB BH 7	80	225	305
Grant Ave	WB BH 1	45	235	280
Grant Ave	WB BH 2	30	250	280
Grant Ave	WB BH 3	40	250	290

Reference: Grant Avenue and Taylor Avenue Pavement Renewals

LABORATORY TESTING

The following laboratory tests were conducted on select soil samples:

- ASTM D2216 - *Laboratory Determination of Water (Moisture) Content of Soil by Mass*
- ASTM D4318 - *Liquid Limit, Plastic Limit, and Plasticity Index of Soils*
- ASTM D7928 - *Particle-Size Distribution of Fine-Grained Soils Using The Sedimentation Analysis*
- ASTM D698 - *Laboratory Compaction Characteristics of Soil Using Standard Effort*
- ASTM D1883 - *California Bearing Ratio (CBR) of Laboratory-Compacted Soils*
- CSA A23.2-14C – *Obtaining and testing drilled cores for compressive strength testing*

The CBR tests were performed at 95% maximum dry density under soaked conditions. Prior to testing the concrete core samples for compressive strength, the cores were conditioned in water at room temperature for 48 hours. The moisture content results are shown on the borehole records, and the laboratory test reports are provided in **Appendix E**.

CLOSURE

We appreciate the opportunity to assist you on this project. Please contact the undersigned if you have any questions regarding this report.

Regards,

STANTEC CONSULTING LTD.



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Attachment: Appendix A – Statement of General Conditions
Appendix B – Borehole Location Plan
Appendix C – Borehole Records
Appendix D – Core Photographs
Appendix E – Laboratory Test Reports

- Atterberg Limits Test Reports
- Particle-Size Analysis Reports
- Standard Proctor Test Reports
- CBR Test Reports
- Concrete Core Compressive Strength Test Results

APPENDIX A

Statement of General Conditions

STATEMENT OF GENERAL CONDITIONS

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Stantec and the Client. Any use which a third party makes of this report is the responsibility of such third party.

BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Stantec's present understanding of the site-specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site-specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state or province of execution for the specific professional service provided to the Client. No other warranty is made.

INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock, and groundwater conditions as influenced by geological processes, construction activity, and site use.

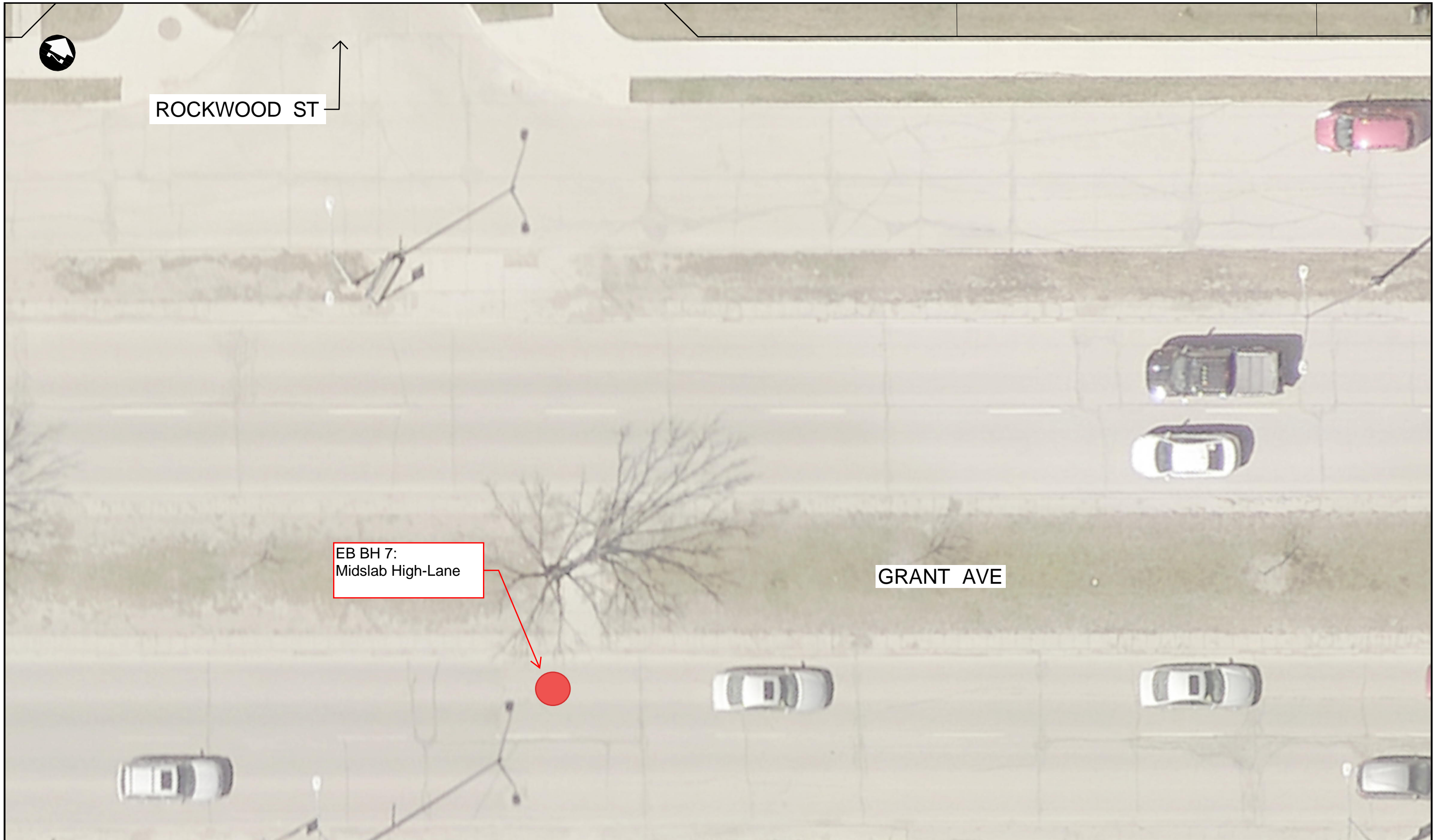
VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec will not be responsible to any party for damages incurred as a result of failing to notify Stantec that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec, sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Stantec cannot be responsible for site work carried out without being present.



APPENDIX B

Borehole Location Plan



ROCKWOOD ST

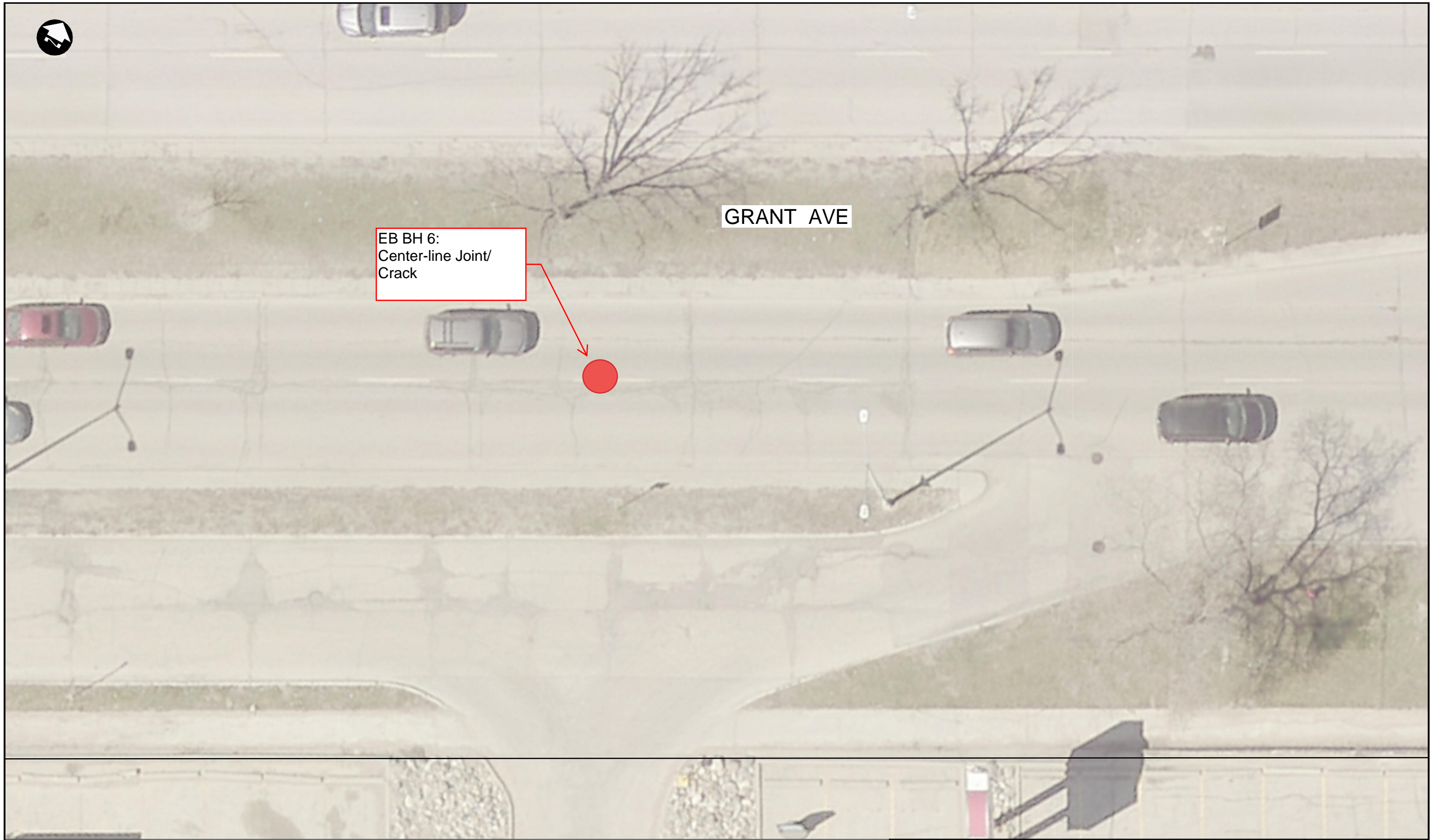
EB BH 7:
Midslab High-Lane

GRANT AVE



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (1 OF 12)


PROJECT NO.
237003
DRAWING NO.
CT-REF-001



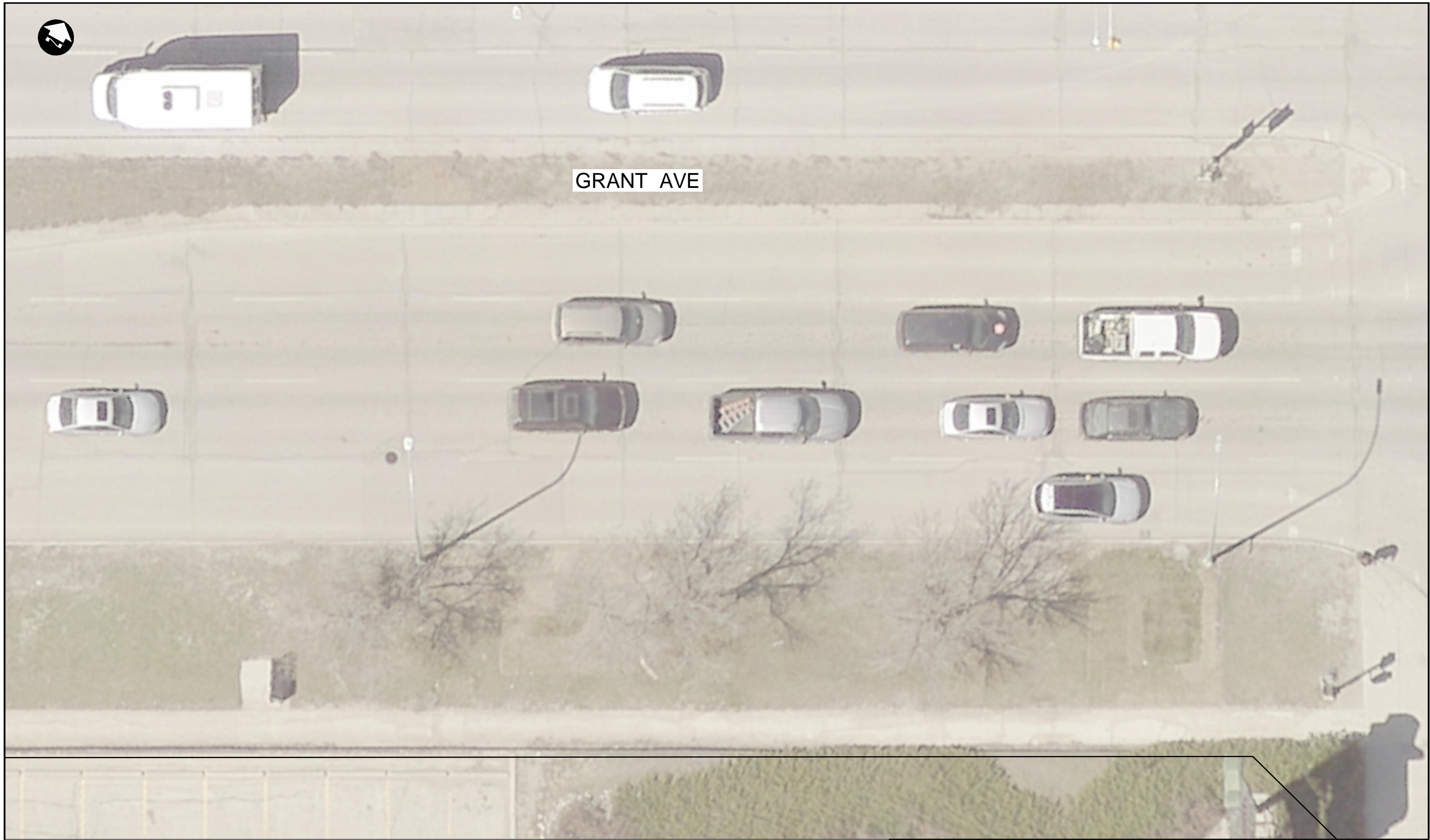
EB BH 6:
Center-line Joint/
Crack

GRANT AVE



 DILLON CONSULTING SCALE: 1:150	TITLE	GRANT AVENUE ROCKWOOD TO STAFFORD (2 OF 12)
	PROJECT NO.	237003
	DRAWING NO.	CT-REF-001

PROJECT NO.	237003
DRAWING NO.	CT-REF-001



GRANT AVE



SCALE: 1:150

TITLE

GRANT AVENUE
ROCKWOOD TO STAFFORD (3 OF 12)

PROJECT NO.

237003

DRAWING NO.

CT-REF-001



↑
WILTON ST

GRANT AVE

EB BH 5:
Midslab Gutter-Lane



↓
WILTON ST

1056



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (4 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001

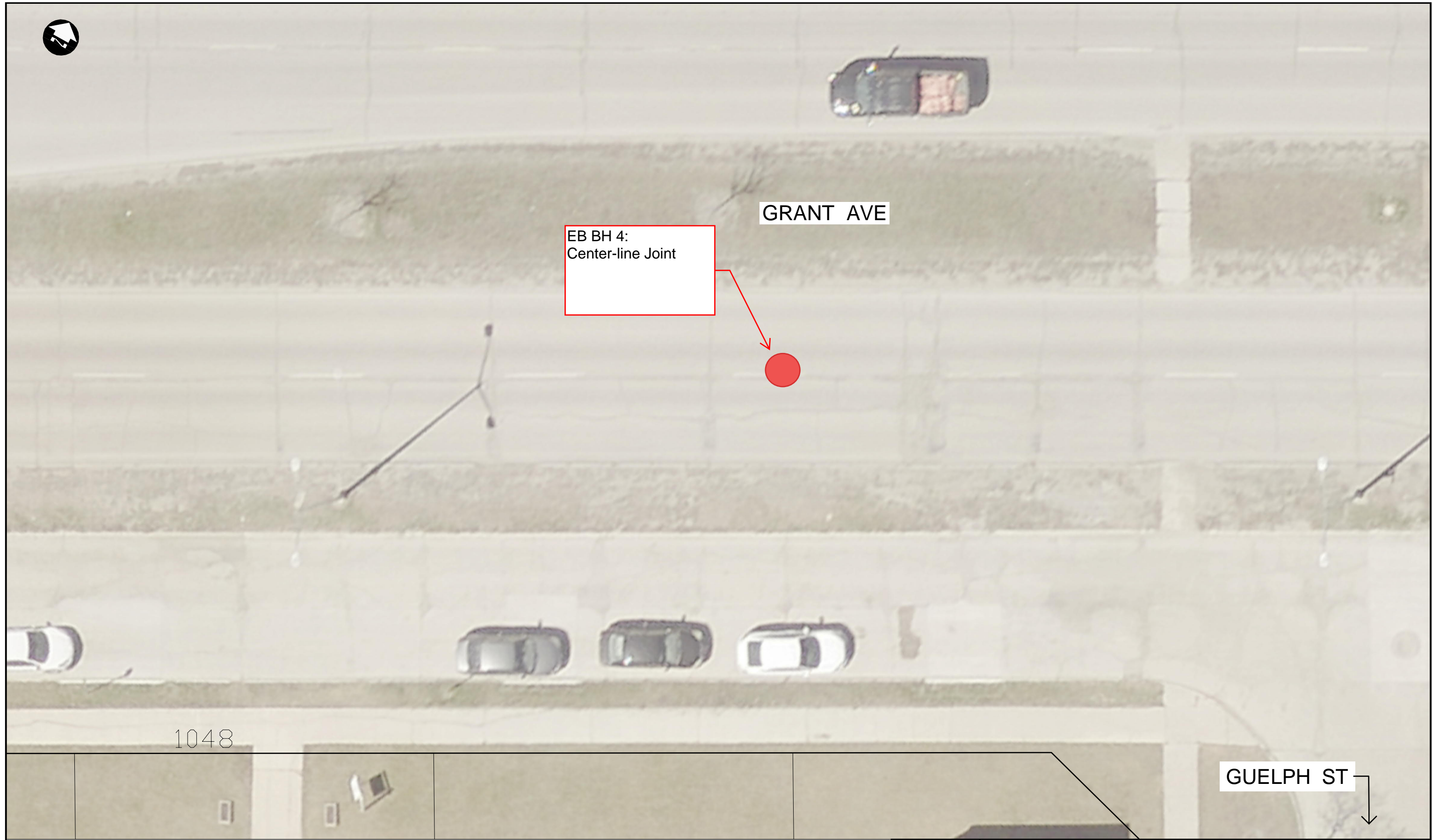


GRANT AVE



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (5 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



GRANT AVE

EB BH 4:
Center-line Joint

GUELPH ST

EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (6 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



GRANT AVE

GUELPH ST

1030

EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



SCALE: 1:150

TITLE

GRANT AVENUE
ROCKWOOD TO STAFFORD (7 OF 12)

PROJECT NO.

237003

DRAWING NO.

CT-REF-001



GRANT AVE

EB BH 3:
Midslab High-Lane



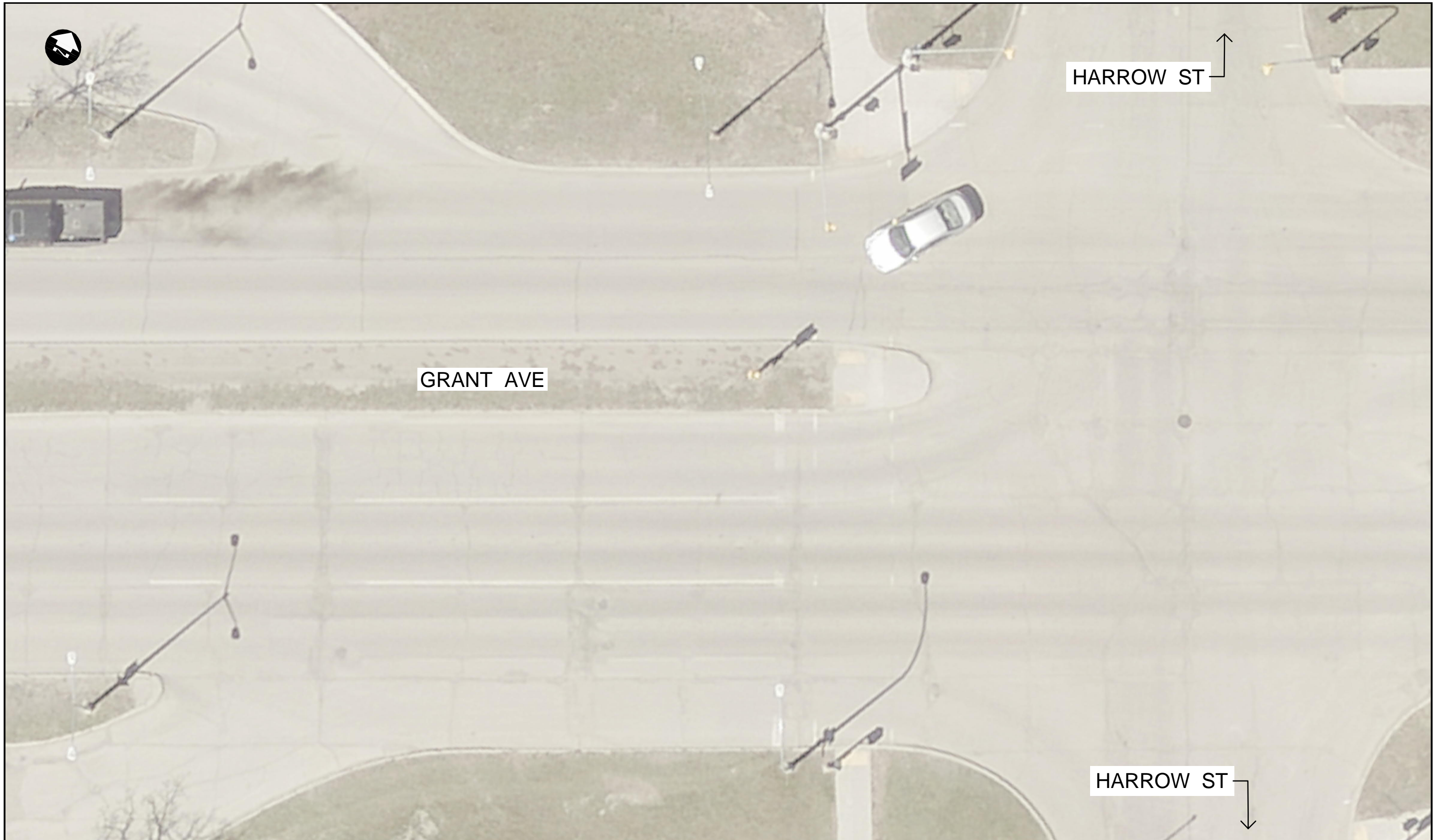
1002

EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (8 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



HARROW ST

GRANT AVE

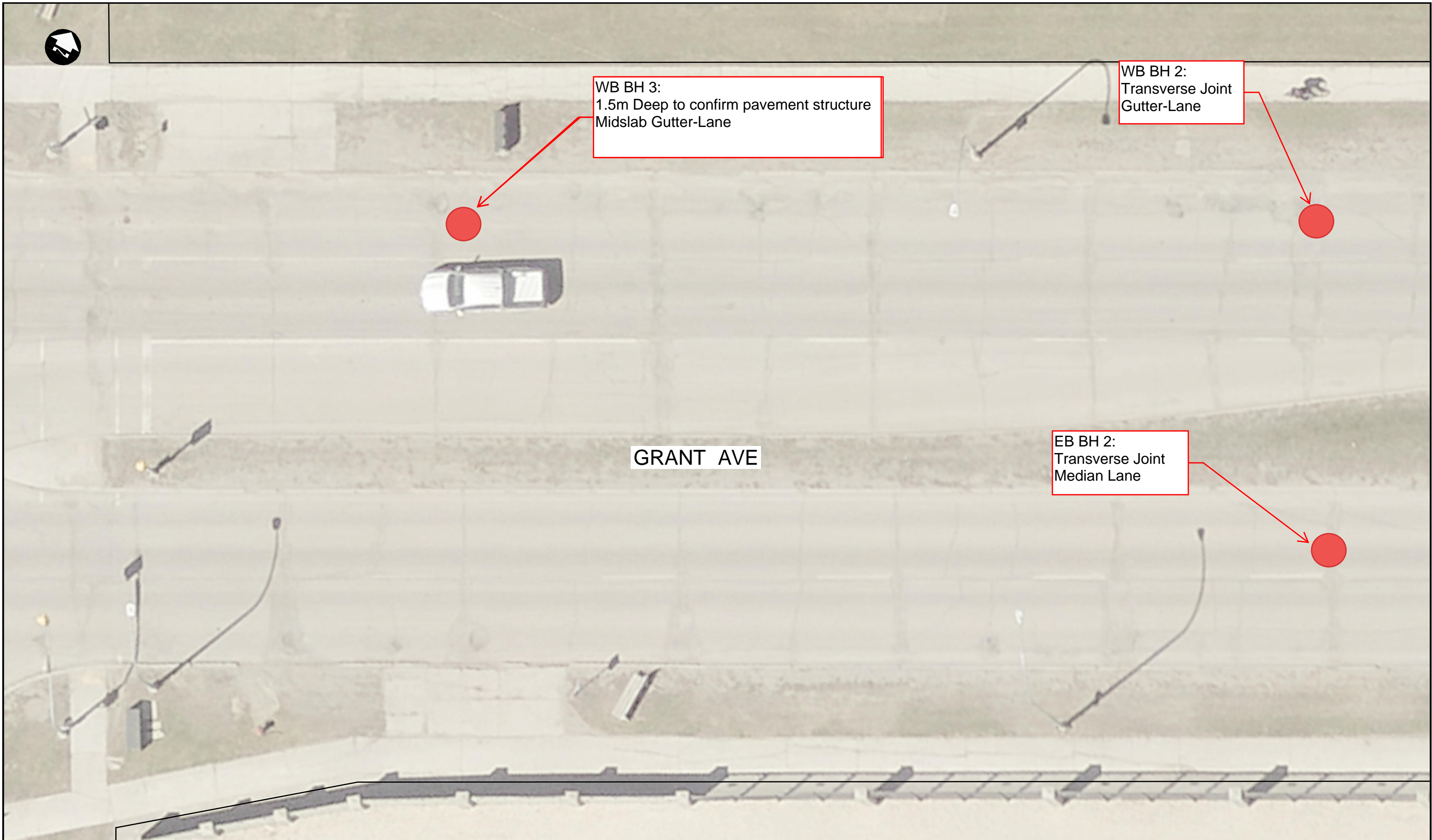
HARROW ST

EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (9 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (10 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



951

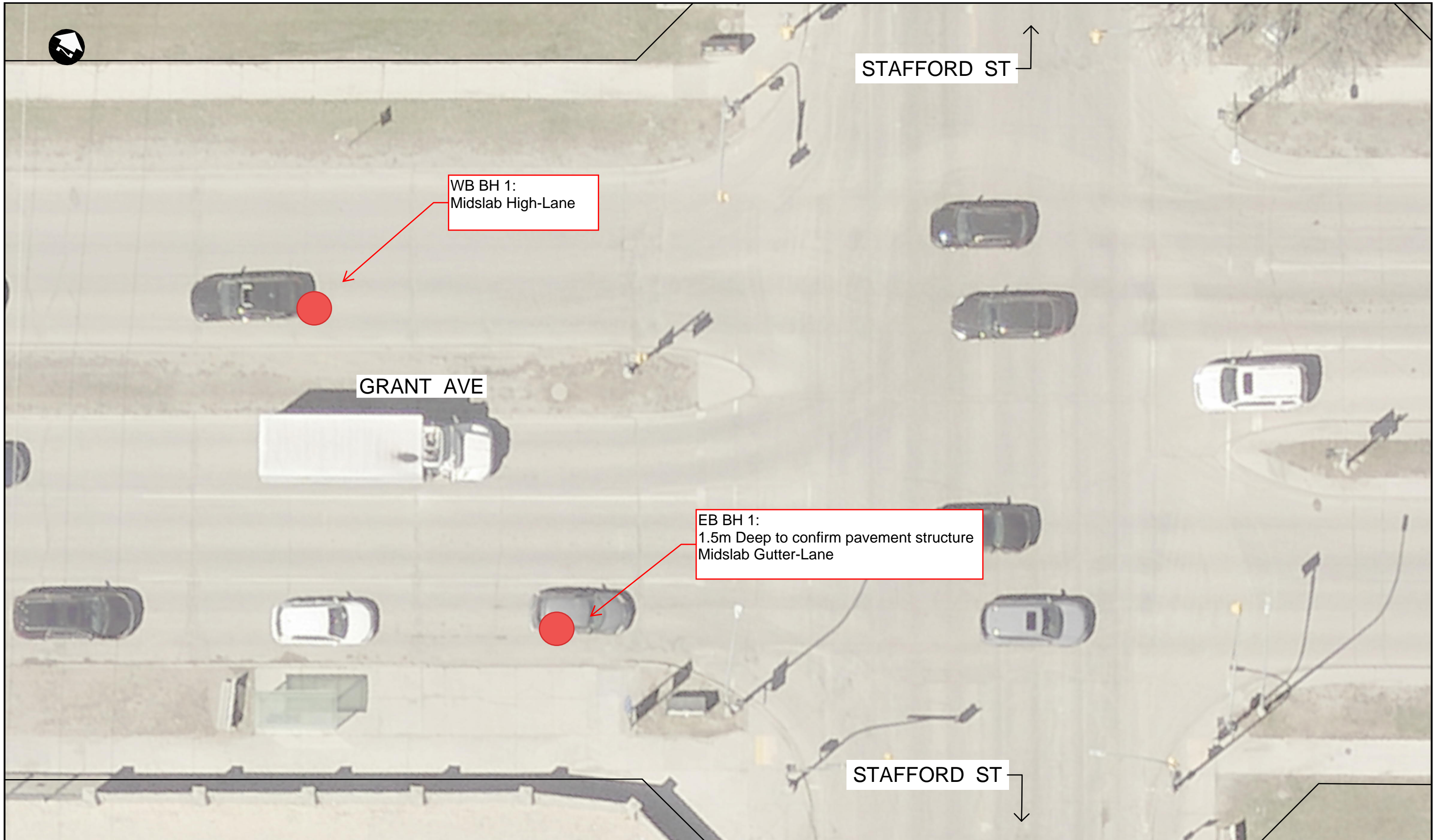
GRANT AVE

EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (11 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001



EB Grant Rehabilitation, Rockwood to Stafford: 7 Boreholes
WB Grant Rehabilitation, Stafford to Harrow: 2 Boreholes



TITLE
GRANT AVENUE
ROCKWOOD TO STAFFORD (12 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-001

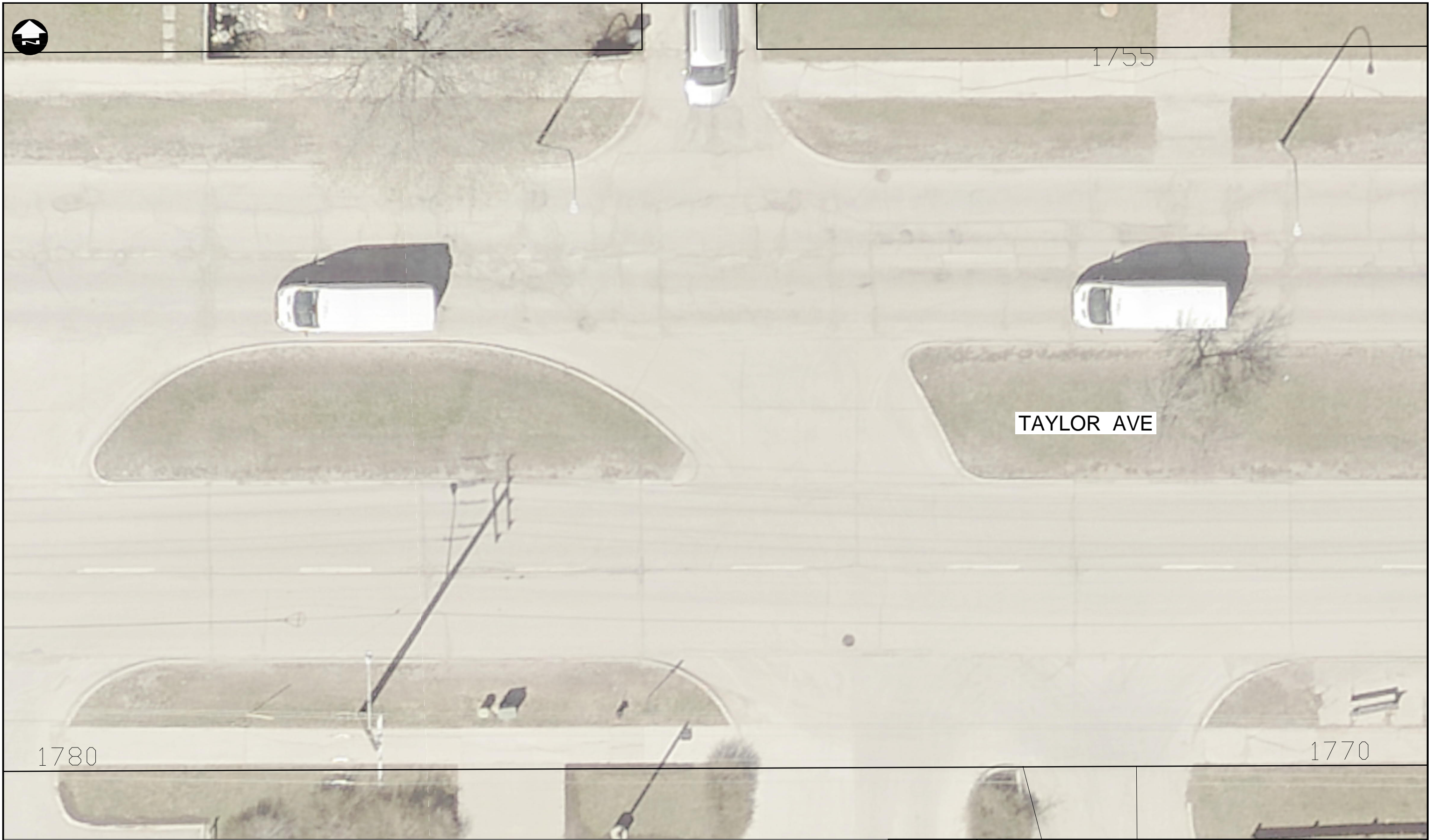


EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (1 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (2 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



BEAVERBROOK ST



WB BH 2:
2.5m Deep,
Midslab Median-Lane



TAYLOR AVE

1760

1750

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (3 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



TAYLOR AVE

1740

1730

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (4 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (5 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



TAYLOR AVE

RENFREW BAY

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (6 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



RENFREW ST



WB BH 4:
2.5m Deep,
Midslab High-Lane



TAYLOR AVE

EB BH 1:,
1.5m Deep to confirm pavement structure
Center-line Joint



EB BH 2:
Midslab High-Lane



RENFREW BAY



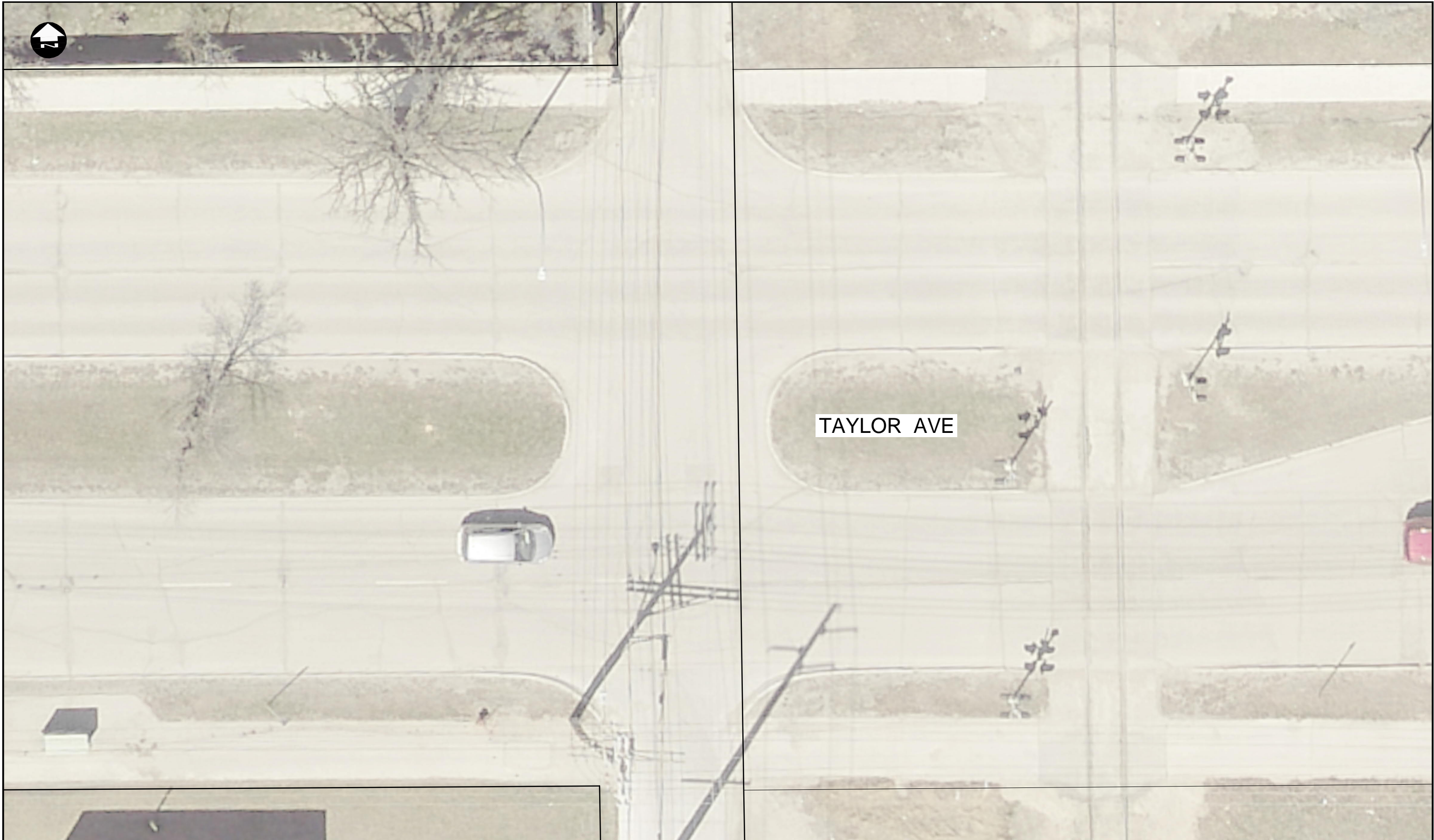
1600

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (7 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (8 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



1585

WB BH 5:
2.5m Deep,
Turn Lane Mid-Slab



EB BH 3:
Gutter Lane Transverse Joint



TAYLOR AVE

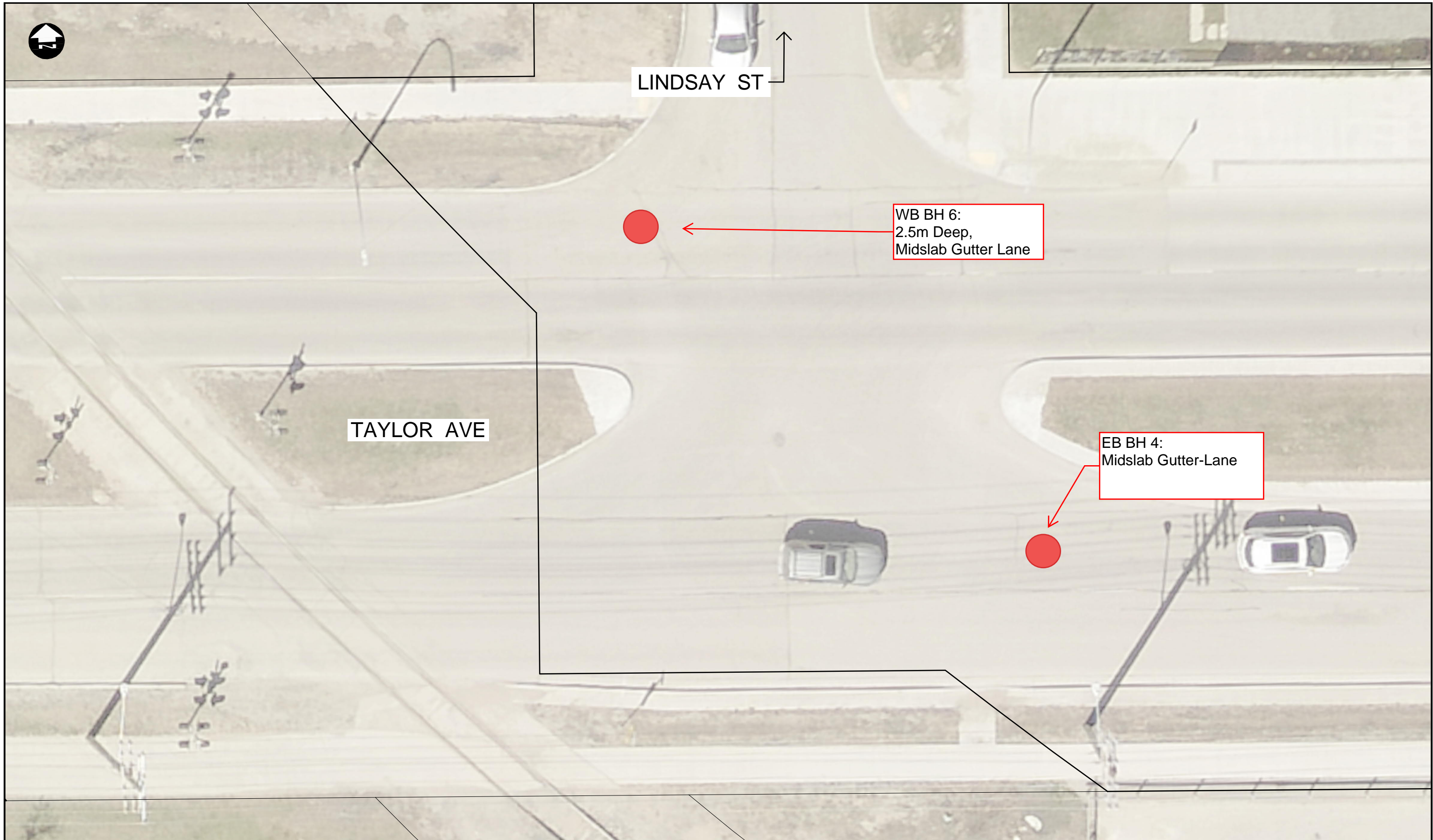
1580

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (9 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (10 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (11 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002



BOREBANK ST

TAYLOR AVE

1552

EB Taylor Rehabilitation, Renfrew to Borebank: 4 Boreholes
WB Taylor Reconstruction, Borebank to Centennial: 6 Boreholes



TITLE
TAYLOR AVENUE
CENTENNIAL TO BOREBANK (12 OF 12)

PROJECT NO.
237003
DRAWING NO.
CT-REF-002

APPENDIX C

Borehole Records

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis:

<i>Rootmat</i>	- vegetation, roots and moss with organic matter and topsoil typically forming a mattress at the ground surface
<i>Topsoil</i>	- mixture of soil and humus capable of supporting vegetative growth
<i>Peat</i>	- mixture of visible and invisible fragments of decayed organic matter
<i>Till</i>	- unstratified glacial deposit which may range from clay to boulders
<i>Fill</i>	- material below the surface identified as placed by humans (excluding buried services)

Terminology describing soil structure:

<i>Desiccated</i>	- having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
<i>Fissured</i>	- having cracks, and hence a blocky structure
<i>Varved</i>	- composed of regular alternating layers of silt and clay
<i>Stratified</i>	- composed of alternating successions of different soil types, e.g. silt and sand
<i>Layer</i>	- > 75 mm in thickness
<i>Seam</i>	- 2 mm to 75 mm in thickness
<i>Parting</i>	- < 2 mm in thickness

Terminology describing soil types:

The classification of soil types are made on the basis of grain size and plasticity in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 or D 2488) which excludes particles larger than 75 mm. For particles larger than 75 mm, and for defining percent clay fraction in hydrometer results, definitions proposed by Canadian Foundation Engineering Manual, 4th Edition are used. The USCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris):

Terminology describing materials outside the USCS, (e.g. particles larger than 75 mm, visible organic matter, and construction debris) is based upon the proportion of these materials present:

<i>Trace, or occasional</i>	Less than 10%
<i>Some</i>	10-20%
<i>Frequent</i>	> 20%

Terminology describing compactness of cohesionless soils:

The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test (SPT) N-Value - also known as N-Index. The SPT N-Value is described further on page 3. A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value
<i>Very Loose</i>	<4
<i>Loose</i>	4-10
<i>Compact</i>	10-30
<i>Dense</i>	30-50
<i>Very Dense</i>	>50

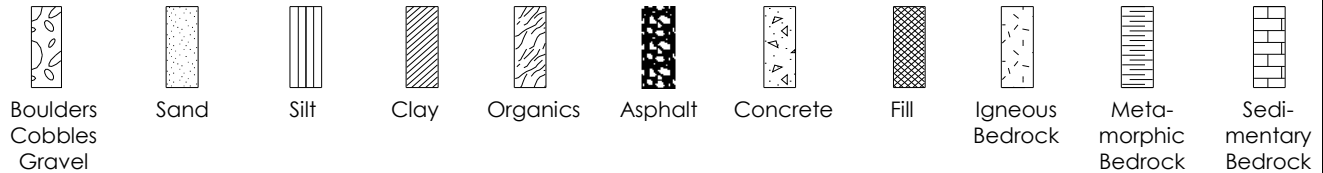
Terminology describing consistency of cohesive soils:

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests. Consistency may be crudely estimated from SPT N-Value based on the correlation shown in the following table (Terzaghi and Peck, 1967). The correlation to SPT N-Value is used with caution as it is only very approximate.

Consistency	Undrained Shear Strength		Approximate SPT N-Value
	kips/sq.ft.	kPa	
<i>Very Soft</i>	<0.25	<12.5	<2
<i>Soft</i>	0.25 - 0.5	12.5 - 25	2-4
<i>Firm</i>	0.5 - 1.0	25 - 50	4-8
<i>Stiff</i>	1.0 - 2.0	50 - 100	8-15
<i>Very Stiff</i>	2.0 - 4.0	100 - 200	15-30
<i>Hard</i>	>4.0	>200	>30

STRATA PLOT

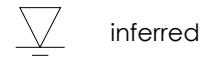
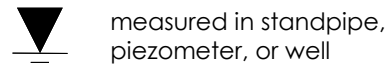
Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc.



SAMPLE TYPE

SS	Split spoon sample (obtained by performing the Standard Penetration Test)
ST	Shelby tube or thin wall tube
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS	Piston sample
BS	Bulk sample
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.

WATER LEVEL MEASUREMENT



RECOVERY

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

N-VALUE

Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals the sum of the number of blows (N) required to drive the sampler over the interval of 6 to 18 in. (150 to 450 mm). However, when a 24 in. (610 mm) sampler is used, the number of blows (N) required to drive the sampler over the interval of 12 to 24 in. (300 to 610 mm) may be reported if this value is lower. For split spoon samples where insufficient penetration was achieved and N-Values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50/75). Some design methods make use of N-values corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests are performed using a standard 60 degree apex cone connected to 'A' size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (300 mm) into the soil. The DCPT is used as a probe to assess soil variability.

OTHER TESTS

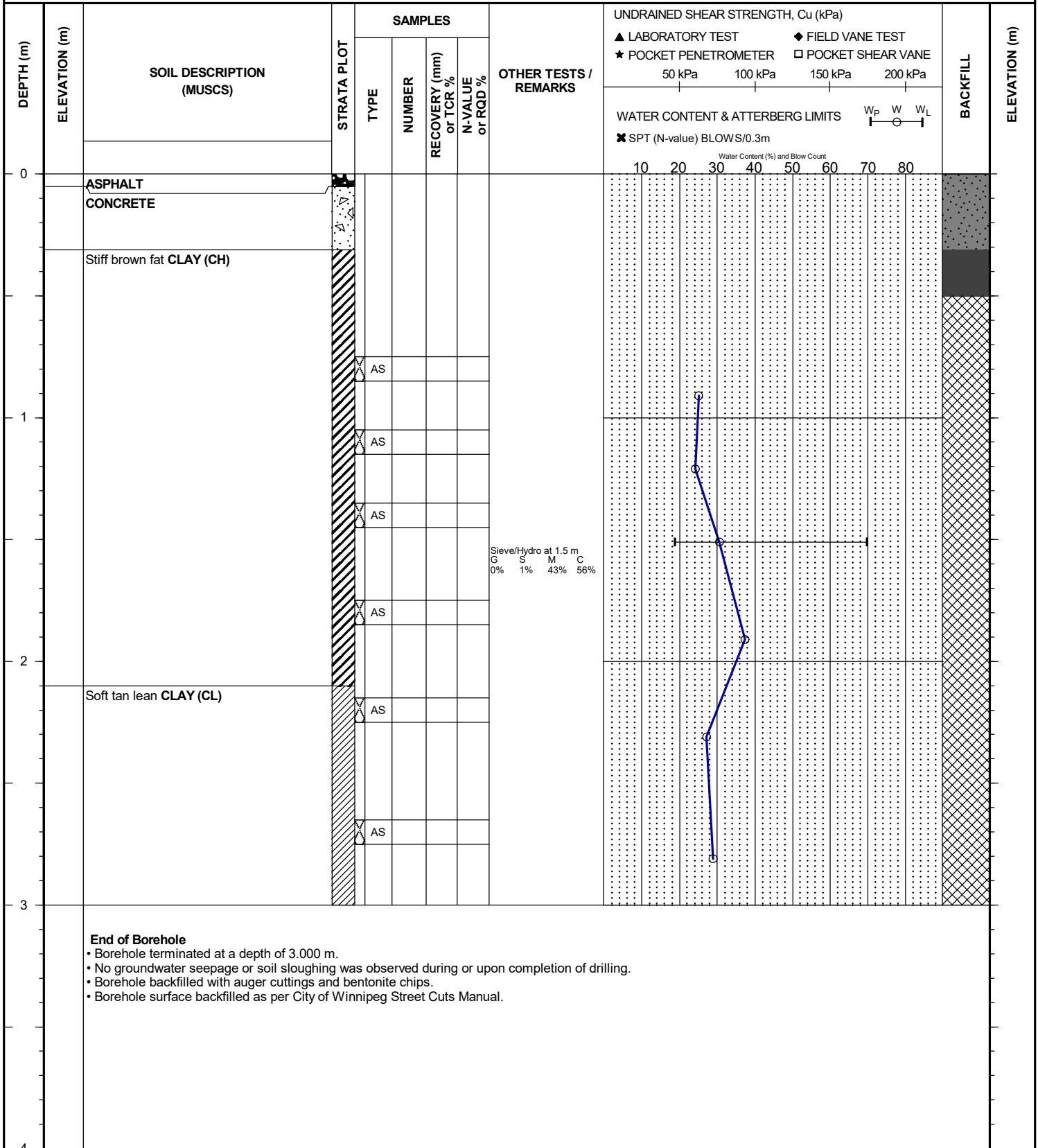
S	Sieve analysis
H	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
G_s	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
C	Consolidation
Q_u	Unconfined compression
I_p	Point Load Index (I_p on Borehole Record equals $I_p(50)$ in which the index is corrected to a reference diameter of 50 mm)

	Single packer permeability test; test interval from depth shown to bottom of borehole
	Double packer permeability test; test interval as indicated
	Falling head permeability test using casing
	Falling head permeability test using well point or piezometer

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 29 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A



End of Borehole

- Borehole terminated at a depth of 3.000 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

BACKFILL SYMBOL ASPHALT GROUT CONCRETE
 BENTONITE DRILL CUTTINGS SAND SLOUGH

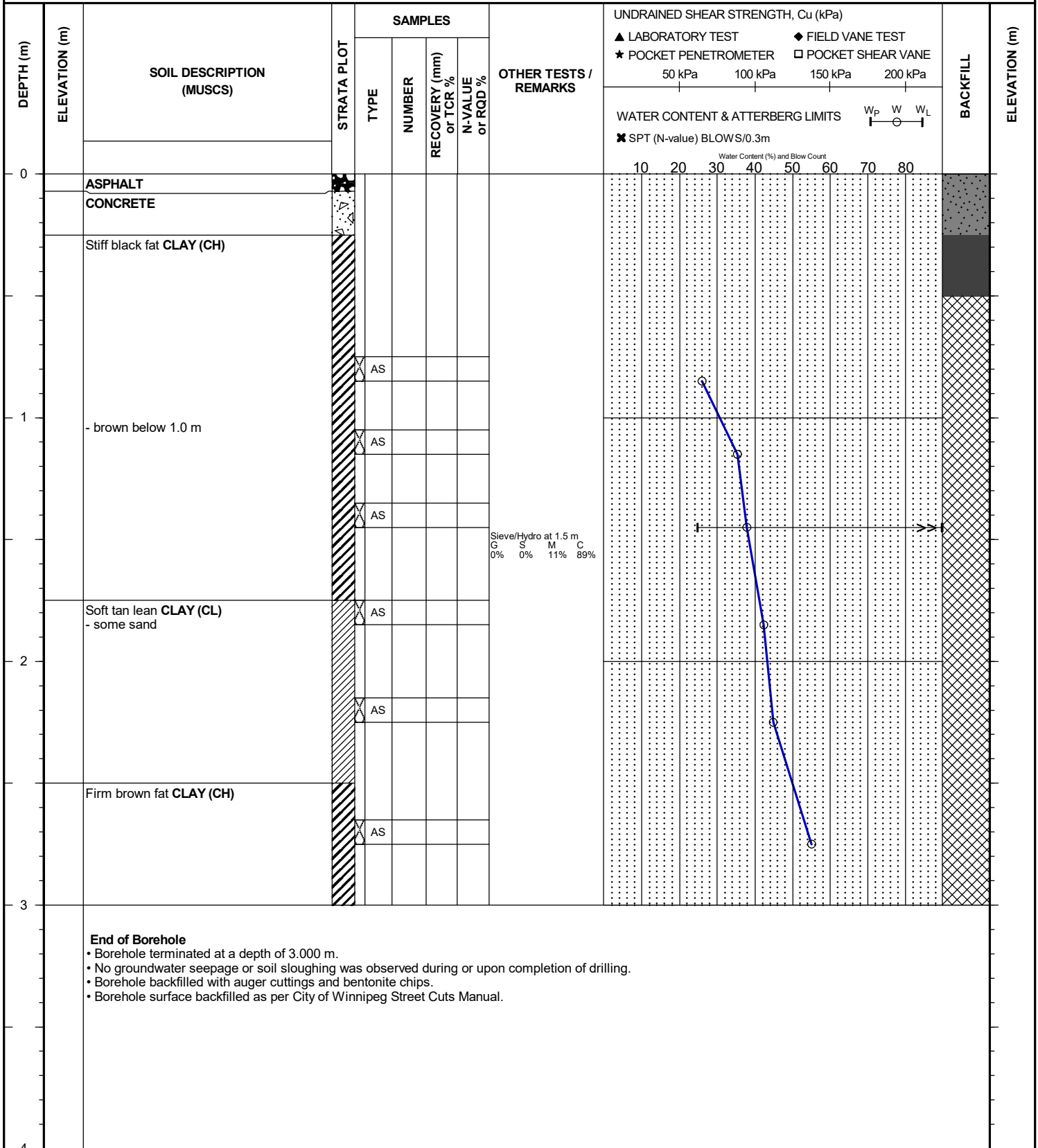
Drilling Contractor: Paddock Drilling Ltd.
 Drilling Method: 125 mm SSA
 Completion Depth: 3 m

Logged By: GP
 Reviewed By: GB
 Page 1 of 1

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A



Printed Feb 9 2024 15:24:01 SOIL_123316861_GRANT_AVE_AND_TAYLOR_GPJ_NEW_TEMPLATE TEST PROJECT.GPJ 2/9/24

BACKFILL SYMBOL ASPHALT GROUT CONCRETE
 BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP
 Drilling Method: 125 mm SSA Reviewed By: GB
 Completion Depth: 3 m Page 1 of 1

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT FILL: granular Stiff brown fat CLAY (CH)												
		Soft tan lean CLAY (CL) - some sand		AS										
		Firm brown fat CLAY (CH)		AS										
				AS										
				AS										
				AS										
				AS										
2.7		End of Borehole • Borehole terminated at a depth of 2.700 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.												

BACKFILL SYMBOL

	ASPHALT		GROUT		CONCRETE
	BENTONITE		DRILL CUTTINGS		SAND
			SLOUGH		

Drilling Contractor: Paddock Drilling Ltd.	Logged By: GP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.7 m	Page 1 of 1

Printed Feb 9 2024 15:24:03 SOIL 123316861_GRANT_AVE_AND_TAYLOR_GPJ_NEW_TEMPLATE TEST PROJECT.GPJ 2/9/24

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A

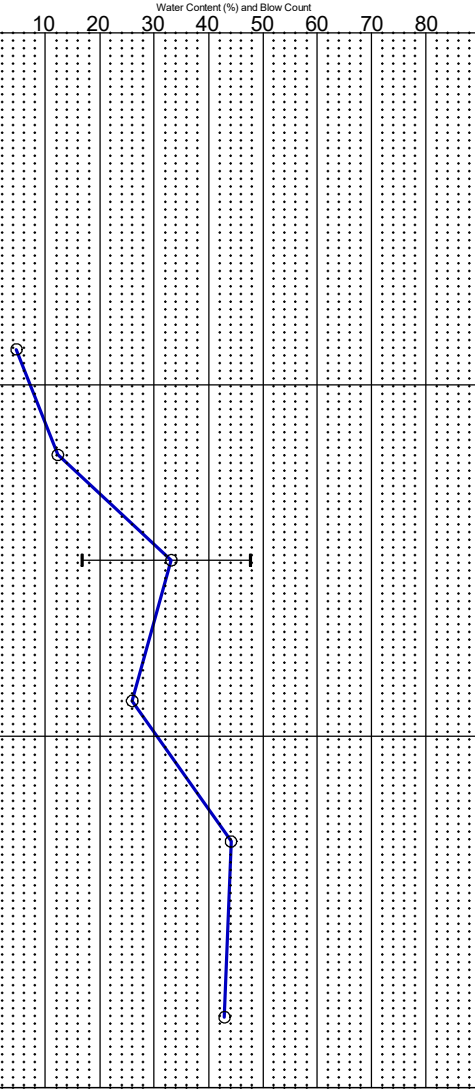
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT CONCRETE												
		FILL: some fine sand, some coarse gravel												
1		Soft tan lean CLAY (CL) with sand - trace gravel		AS										
2		Firm brown fat CLAY (CH)		AS										
3				AS										
4		End of Borehole • Borehole terminated at a depth of 3.000 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.												

Sieve/Hydro at 1.5 m
 G S M C
 2% 14% 36% 48%

UNDRAINED SHEAR STRENGTH, Cu (kPa)
 ▲ LABORATORY TEST ◆ FIELD VANE TEST
 ★ POCKET PENETROMETER □ POCKET SHEAR VANE
 50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_p W W_L
 ✕ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count



Printed Feb 9 2024 15:24:04 SOIL_123316861_GRANT_AVE_AND_TAYLOR_GPJ_NEW_TEMPLATE_TEST_PROJECT_GPJ_2/9/24

BACKFILL SYMBOL ASPHALT GROUT CONCRETE
 BENTONITE DRILL CUTTINGS SAND SLOUGH

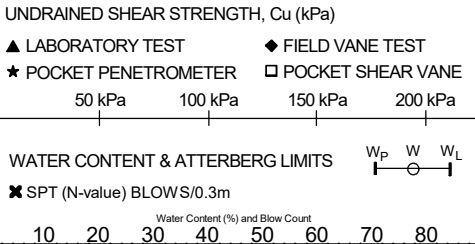
Drilling Contractor: Paddock Drilling Ltd. Logged By: GP
 Drilling Method: 125 mm SSA Reviewed By: GB
 Completion Depth: 3 m Page 1 of 1

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A
 WATER LEVEL: N/A

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT CONCRETE												
		FILL: some fine sand, some coarse gravel												
1		Stiff brown fat CLAY (CH)		AS										
2		Firm below 2.3 m		AS										
3				AS										
4		End of Borehole • Borehole terminated at a depth of 3.000 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.												

Sieve/Hydro at 1.5 m
 G S M C
 0% 4% 26% 70%



Printed Feb 9 2024 15:24:05 SOIL_123316861_GRANT_AVE_AND_TAYLOR_GPJ_NEW_TEMPLATE_TEST_PROJECT_GPJ_2/9/24

- BENTONITE
- ASPHALT
- GROUT
- CONCRETE
- DRILL CUTTINGS
- SAND
- SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP
 Drilling Method: 125 mm SSA Reviewed By: GB
 Completion Depth: 3 m Page 1 of 1

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT												
		CONCRETE												
		Stiff brown fat CLAY (CH)												
		Soft tan lean CLAY (CL) - some sand		AS										
1				AS										
				AS										
		Firm brown fat CLAY (CH)												
				AS										
2				AS										
				AS										
3				AS										
				AS										
4				AS										

End of Borehole

- Borehole terminated at a depth of 3.000 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

Drilling Contractor: Paddock Drilling Ltd.

Logged By: GP

Drilling Method: 125 mm SSA

Reviewed By: GB

Completion Depth: 3 m

Page 1 of 1

BACKFILL SYMBOL	ASPHALT	GROUT	CONCRETE
	BENTONITE	DRILL CUTTINGS	SAND
		SLOUGH	

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 29 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT CONCRETE												
		Soft tan lean CLAY (CL)												
1				AS										
		Stiff black fat CLAY (CH) - silty												
2				AS										
				AS										
3														
4														

End of Borehole

- Borehole terminated at a depth of 2.100 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

Drilling Contractor: Paddock Drilling Ltd.	Logged By: GP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.1 m	Page 1 of 1

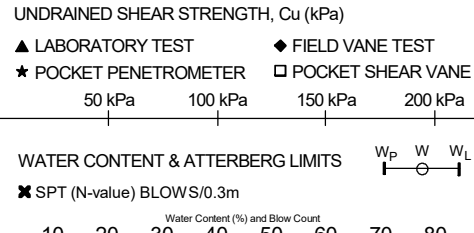
BACKFILL SYMBOL	ASPHALT	GROUT	CONCRETE
BENTONITE	DRILL CUTTINGS	SAND	SLOUGH

CLIENT: Dillon Consulting Ltd.
 PROJECT: Grant Ave. and Taylor Ave. Pavement Renewals
 LOCATION: Taylor Ave, Winnipeg, Manitoba
 DATE BORED: January 12 2024

PROJECT NO.: 123316861
 BH ELEVATION: N/A
 DATUM: N/A

WATER LEVEL: N/A

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES				OTHER TESTS / REMARKS	UNDRAINED SHEAR STRENGTH, Cu (kPa)				BACKFILL	ELEVATION (m)
				TYPE	NUMBER	RECOVERY (mm) or TCR %	N-VALUE or RQD %		50 kPa	100 kPa	150 kPa	200 kPa		
0		ASPHALT CONCRETE												
		Stiff brown fat CLAY (CH)												
		Soft tan lean CLAY (CL) - some sand		AS										
		Firm brown fat CLAY (CH)		AS										
2				AS										
		<p>End of Borehole</p> <ul style="list-style-type: none"> Borehole terminated at a depth of 2.100 m. No groundwater seepage or soil sloughing was observed during or upon completion of drilling. Borehole backfilled with auger cuttings and bentonite chips. Borehole surface backfilled as per City of Winnipeg Street Cuts Manual. 												



Printed Feb 9 2024 15:24:02 SOIL_123316861_GRANT_AVE_AND_TAYLOR_GPJ_NEW_TEMPLATE TEST PROJECT.GPJ 2/9/24

BACKFILL SYMBOL ASPHALT GROUT CONCRETE
 BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP
 Drilling Method: 125 mm SSA Reviewed By: GB
 Completion Depth: 2.1 m Page 1 of 1

APPENDIX D

Core Photographs



Figure 1 – WB BH-01 (Taylor Ave)



Figure 2 – WB BH-02 (Taylor Ave)



Figure 3 – WB BH-03 (Taylor Ave)



Figure 4 – WB BH-04 (Taylor Ave)

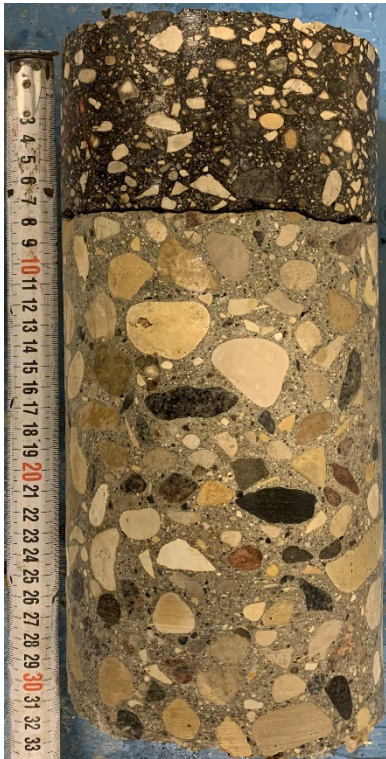


Figure 5 – WB BH-05 (Taylor Ave)



Figure 6 – WB BH-06 (Taylor Ave)



Figure 7 – EB BH-01 (Taylor Ave)



Figure 8 – EB BH-02 (Taylor Ave)



Figure 9 – EB BH-03 (Taylor Ave)



Figure 10 – EB BH-04 (Taylor Ave)



Figure 11 – EB BH-01 (Grant Ave)



Figure 12 – EB BH-02 (Grant Ave)



Figure 23 – EB BH-03 (Grant Ave)



Figure 14 – EB BH-04 (Grant Ave)



Figure 15 – EB BH-05 (Grant Ave)



Figure 16 – EB BH-06 (Grant Ave)



Figure 37 – EB BH-07 (Grant Ave)



Figure 18 – WB BH-01 (Grant Ave)



Figure 19 – WB BH-02 (Grant Ave)



Figure 20 – WB BH-03 (Grant Ave)

APPENDIX E

Laboratory Test Reports

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 1

DATE SAMPLED: 2024.Jan.29

DATE RECEIVED: 2024.Jan.29

DATE TESTED: 2024.Feb.05

SAMPLED BY: Stantec Consulting Ltd.

SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Graeme Patrick

MATERIAL IDENTIFICATION

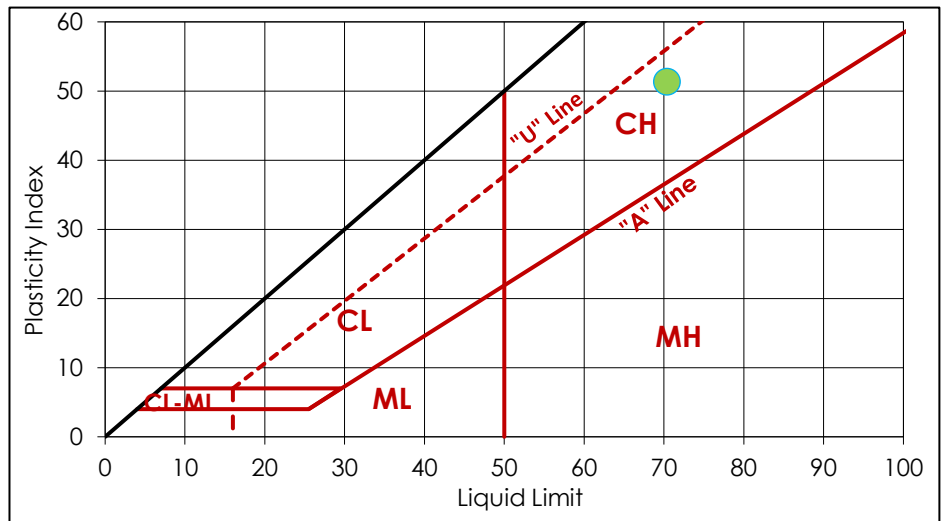
CLIENT FIELD ID Taylor WB BH-01, 1510 mm

STANTEC SAMPLE NO. 4024

	LIQUID LIMIT	
TRIAL	1	2
BLOWS	28	27
MC (%)	69	70


	PLASTIC LIMIT	
TRIAL	1	2
MC (%)	19	19

LIQUID LIMIT, LL	70
PLASTIC LIMIT, PL	19
PLASTICITY INDEX, PI	51
AS REC'D MC (%)	31.10



COMMENTS
 No comments.

REPORT DATE 2024.Feb.06

REVIEWED BY 
 Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 2

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.23

SAMPLED BY: Stantec Consulting Ltd.

SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

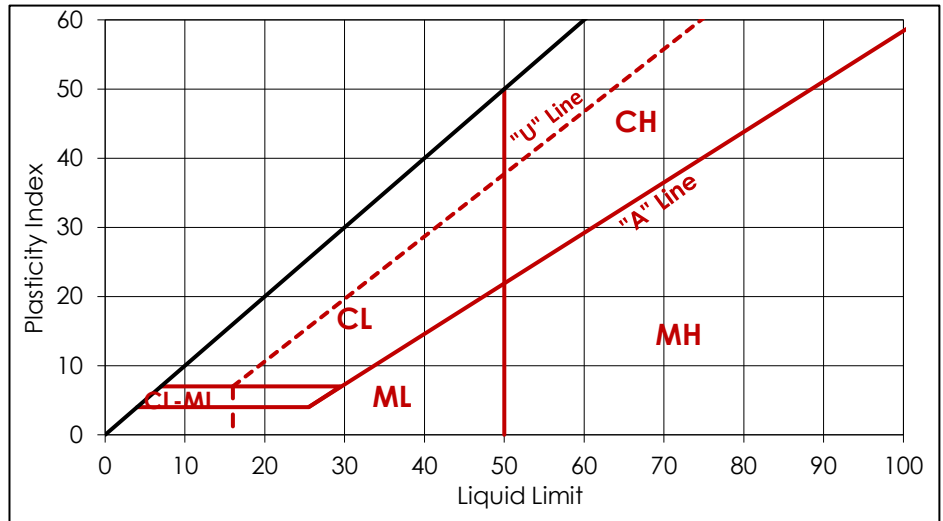
CLIENT FIELD ID Taylor WB BH-02, 1450 mm

STANTEC SAMPLE NO. 2964

TRIAL	LIQUID LIMIT	
	1	2
BLOWS	29	27
MC (%)	94	97


TRIAL	PLASTIC LIMIT	
	1	2
MC (%)	25	25

LIQUID LIMIT, LL	97
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	72
AS REC'D MC (%)	38.40



COMMENTS
 No comments.

REPORT DATE 2024.Jan.25


 REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 3

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.23

SAMPLED BY: Stantec Consulting Ltd.

SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

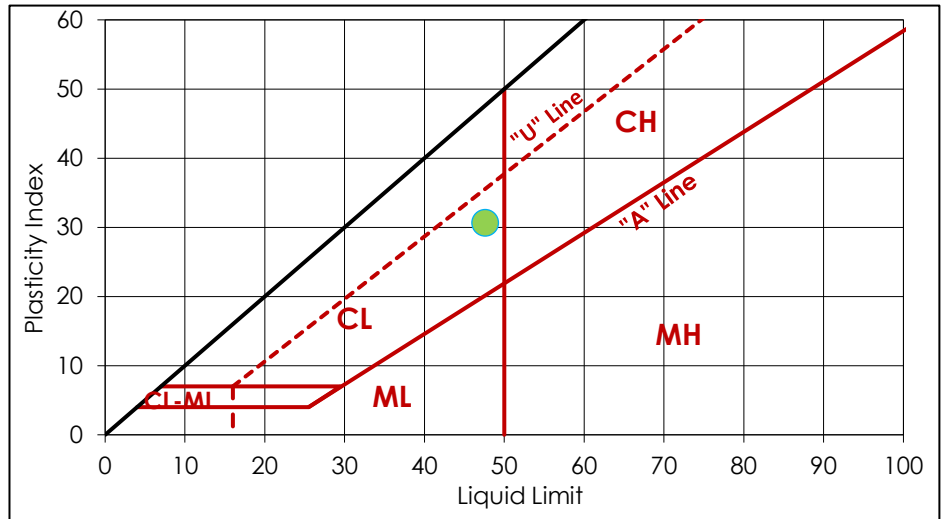
CLIENT FIELD ID Taylor WB BH-04, 1500 mm

STANTEC SAMPLE NO. 2965

	LIQUID LIMIT	
TRIAL	1	2
BLOWS	21	22
MC (%)	49	48


	PLASTIC LIMIT	
TRIAL	1	2
MC (%)	17	17

LIQUID LIMIT, LL	48
PLASTIC LIMIT, PL	17
PLASTICITY INDEX, PI	31
AS REC'D MC (%)	33.70



COMMENTS
 No comments.

REPORT DATE 2024.Jan.25


 REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 4

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.23

SAMPLED BY: Stantec Consulting Ltd.

SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

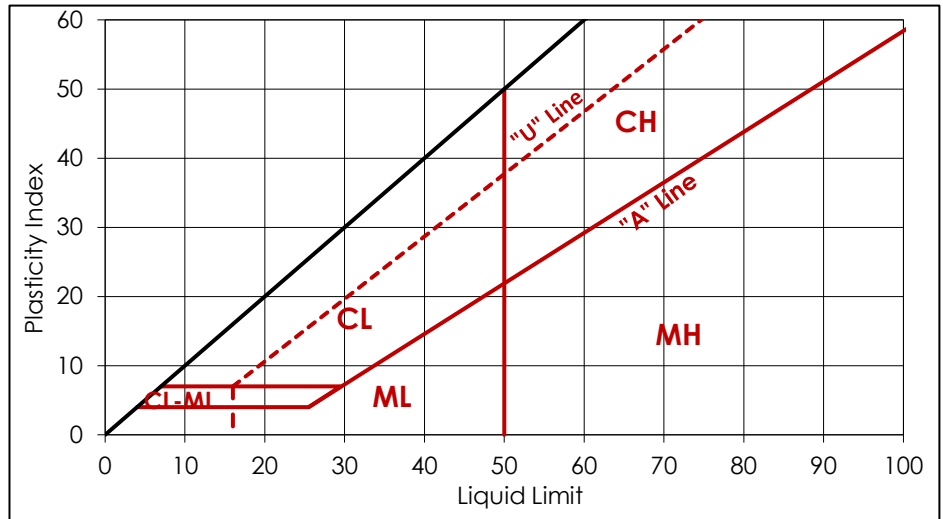
CLIENT FIELD ID Taylor WB BH-05, 1505 mm

STANTEC SAMPLE NO. 2966

	LIQUID LIMIT	
TRIAL	1	2
BLOWS	28	26
MC (%)	86	85


	PLASTIC LIMIT	
TRIAL	1	2
MC (%)	21	22

LIQUID LIMIT, LL	86
PLASTIC LIMIT, PL	22
PLASTICITY INDEX, PI	65
AS REC'D MC (%)	32.90



COMMENTS
 No comments.

REPORT DATE 2024.Jan.25


 REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 1

DATE SAMPLED: 2024.Jan.29

DATE RECEIVED: 2024.Jan.29

DATE TESTED: 2024.Feb.02

SAMPLED BY: Stantec Consulting Ltd.

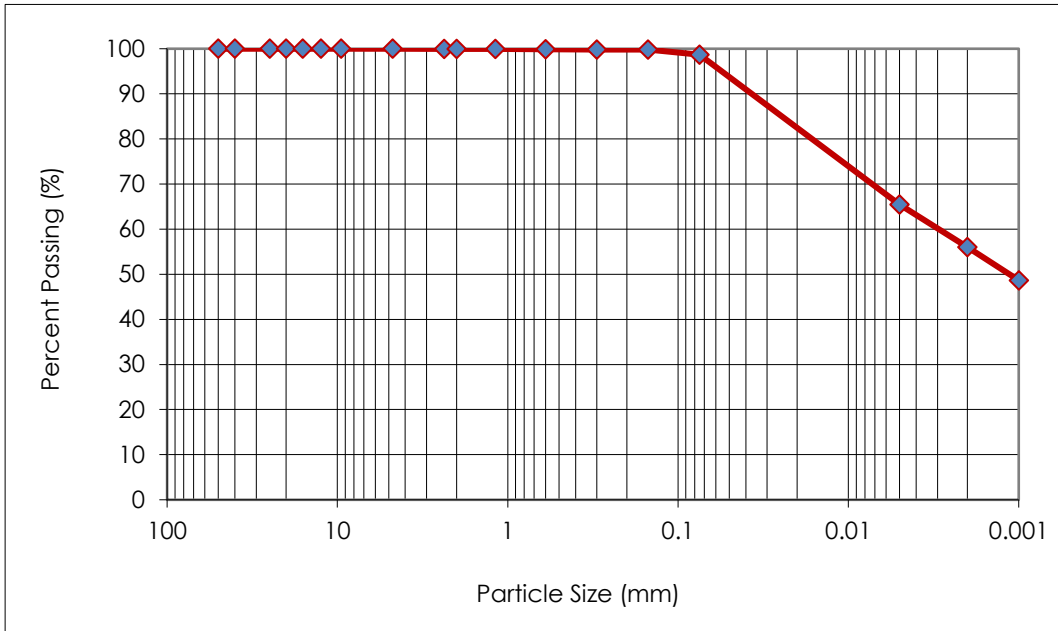
SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID Taylor WB BH-01, 1510 mm

STANTEC SAMPLE NO. 4024



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	99.9
1.18	99.9
0.600	99.9
0.300	99.8
0.150	99.8
0.075	98.7
0.005	65.5
0.002	56.0
0.001	48.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.0	1.2	42.7	56.0	48.7

COMMENTS
 No comments.



REPORT DATE 2024.Feb.05

REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 2

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.17

SAMPLED BY: Stantec Consulting Ltd.

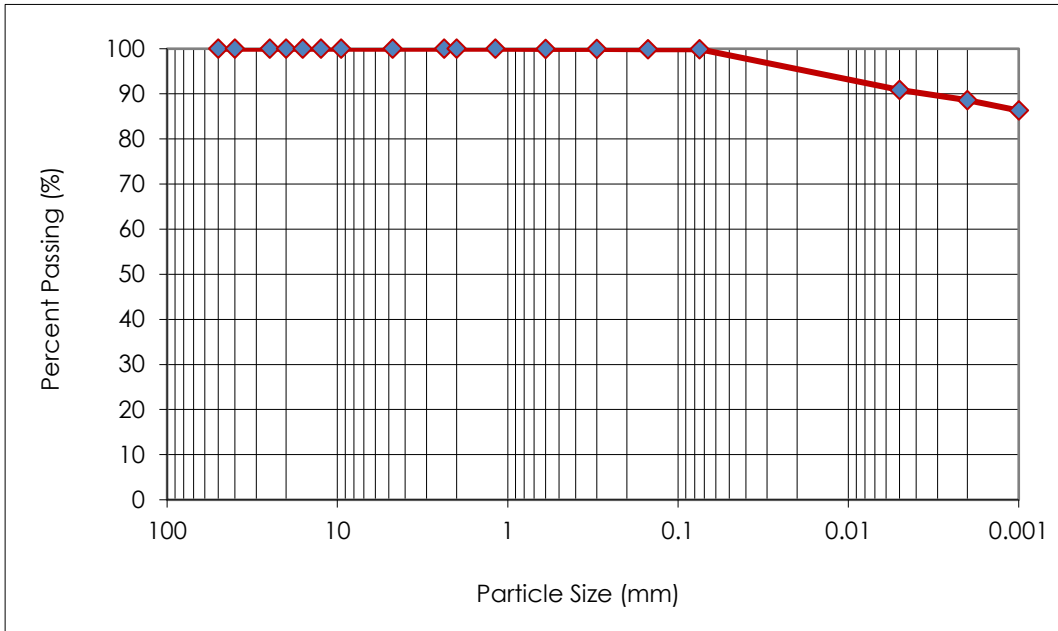
SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID Taylor WB BH-02, 1450 mm

STANTEC SAMPLE NO. 2964



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.9
0.150	99.9
0.075	99.9
0.005	90.9
0.002	88.6
0.001	86.3

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	0.0	11.3	88.6	86.3

COMMENTS
 No comments.



REPORT DATE 2024.Jan.22

REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 3

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.17

SAMPLED BY: Stantec Consulting Ltd.

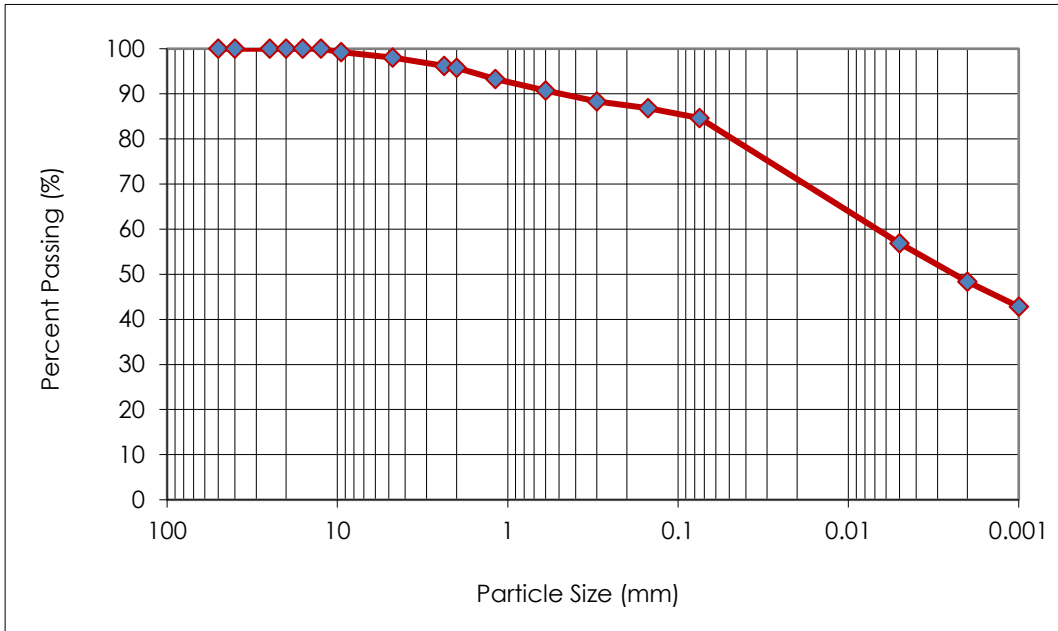
SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID Taylor WB BH-04, 1500 mm

STANTEC SAMPLE NO. 2965



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	99.2
4.75	98.1
2.36	96.2
2.00	95.8
1.18	93.3
0.600	90.7
0.300	88.3
0.150	86.8
0.075	84.6
0.005	56.9
0.002	48.3
0.001	42.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
1.9	2.3	6.5	4.7	36.3	48.3	42.8

COMMENTS
 No comments.



REPORT DATE 2024.Jan.22

REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT 638-2023 Grant Ave. & Taylor Ave. Pavement
 Renewals - Geotechnical Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 4

DATE SAMPLED: 2024.Jan.12

DATE RECEIVED: 2024.Jan.12

DATE TESTED: 2024.Jan.17

SAMPLED BY: Stantec Consulting Ltd.

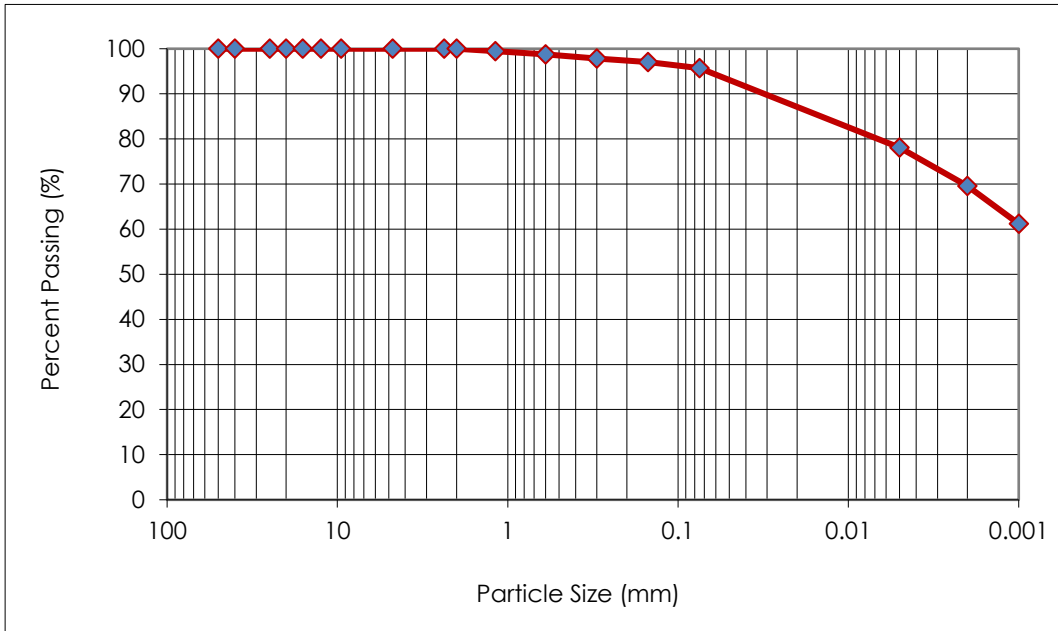
SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID Taylor WB BH-05, 1505 mm

STANTEC SAMPLE NO. 2965



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.5
0.600	98.7
0.300	97.8
0.150	97.0
0.075	95.7
0.005	78.1
0.002	69.6
0.001	61.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	1.8	2.5	26.1	69.6	61.2

COMMENTS
 No comments.



REPORT DATE 2024.Jan.22

REVIEWED BY Guillaume Beauce, P.Eng.
 Geotechnical Engineer - Materials Testing Services

PROCTOR TEST REPORT

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

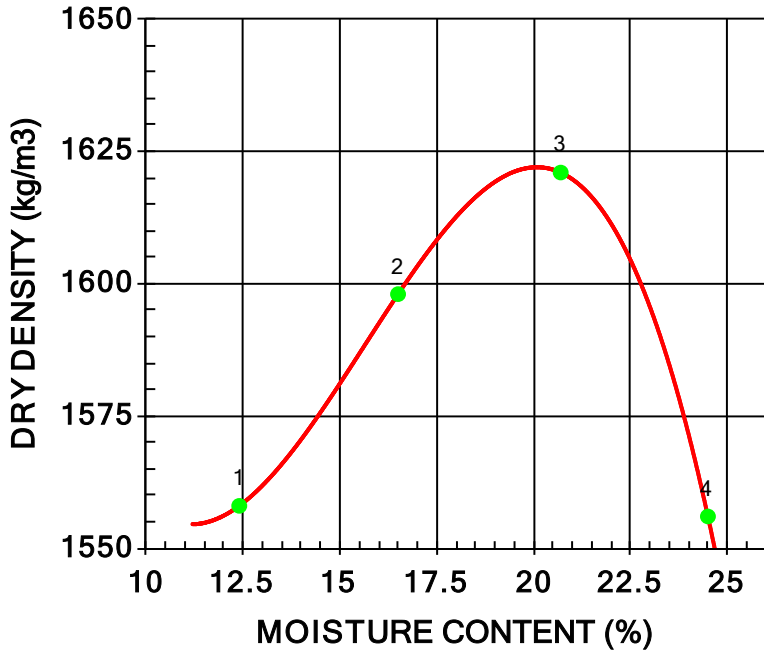
CLIENT Dillon Consulting Ltd.
 C.C.

ATTN: Lucas Stoffel

PROJECT Grant Ave & Taylor Ave Pavement Renewals
 Geotechnical Investigation

PROJECT NO. 123316861
 PROCTOR NO. 1 DATE SAMPLED 2024.Jan.29 DATE RECEIVED 2024.Jan.29 DATE TESTED 2024.Feb.07

INSITU MOISTURE	32.9 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar	COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MATERIAL IDENTIFICATION		RAMMER TYPE	Manual
MAJOR COMPONENT	Subgrade	PREPARATION	Moist
SIZE	Fat Clay (CH)	OVERSIZE CORRECTION METHOD	None
DESCRIPTION		RETAINED 4.75mm SCREEN	N/A %
SUPPLIER	Existing Materials		
SOURCE	Taylor Ave - WB BH-01, 1.510 m		



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1751	1558	12.4
2	1862	1598	16.5
3	1956	1621	20.7
4	1937	1556	24.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1620	20.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 4024.

PROCTOR TEST REPORT

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

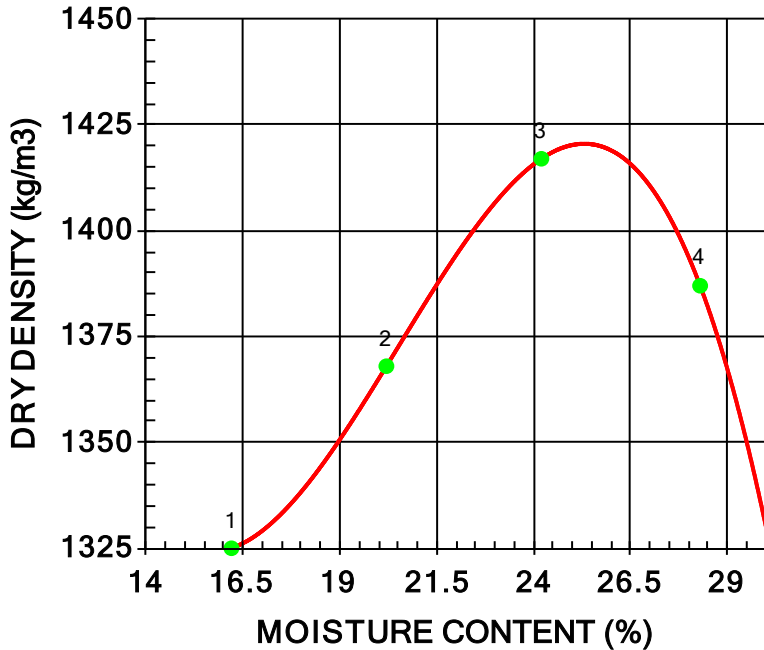
CLIENT Dillon Consulting Ltd.
 C.C.

ATTN: Lucas Stoffel

PROJECT Grant Ave & Taylor Ave Pavement Renewals
 Geotechnical Investigation

PROJECT NO. 123316861
 PROCTOR NO. 2 DATE SAMPLED 2024.Jan.12 DATE RECEIVED 2024.Jan.12 DATE TESTED 2024.Jan.22

INSITU MOISTURE	43.0 %	COMPACTION STANDARD	Standard Proctor, ASTM
TESTED BY	Donald Eliazar		D698
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill	RAMMER TYPE	Manual
SIZE	Fat Clay (CH)	PREPARATION	Moist
DESCRIPTION		OVERSIZE CORRECTION METHOD	None
SUPPLIER	Existing Materials	RETAINED 4.75mm SCREEN	N/A %
SOURCE	Taylor Ave - WB BH-02, 1.450 m		



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1540	1325	16.2
2	1644	1368	20.2
3	1760	1417	24.2
4	1779	1387	28.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1420	25.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2964.

PROCTOR TEST REPORT

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

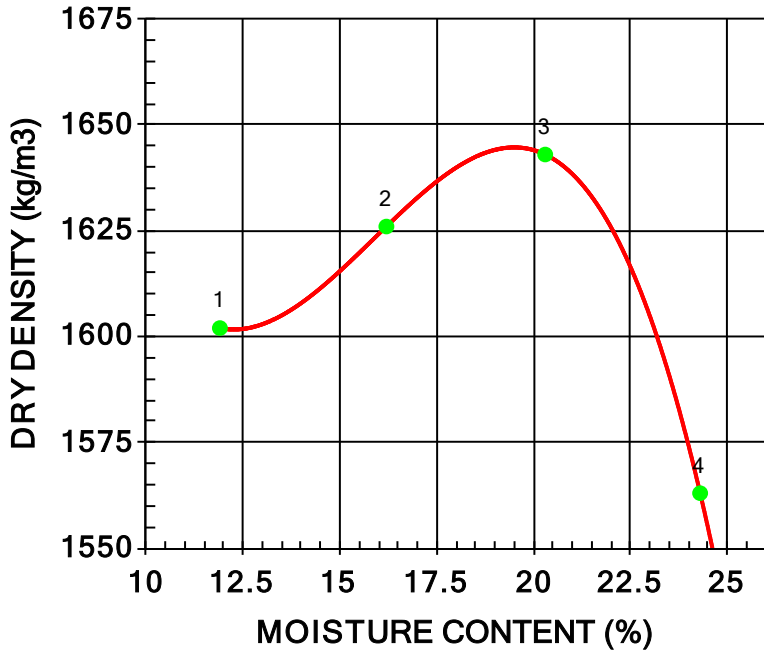
CLIENT Dillon Consulting Ltd.
 C.C.

ATTN: Lucas Stoffel

PROJECT Grant Ave & Taylor Ave Pavement Renewals
 Geotechnical Investigation

PROJECT NO. 123316861
 PROCTOR NO. 3 DATE SAMPLED 2024.Jan.12 DATE RECEIVED 2024.Jan.12 DATE TESTED 2024.Jan.22

INSITU MOISTURE	42.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar	COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MATERIAL IDENTIFICATION		RAMMER TYPE	Manual
MAJOR COMPONENT	Backfill	PREPARATION	Moist
SIZE	Lean Clay with sand (CL)	OVERSIZE CORRECTION METHOD	None
DESCRIPTION		RETAINED 4.75mm SCREEN	N/A %
SUPPLIER	Existing Materials		
SOURCE	Taylor Ave - WB BH-04, 1.500 m		



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1793	1602	11.9
2	1889	1626	16.2
3	1976	1643	20.3
4	1943	1563	24.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1640	19.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2965.

PROCTOR TEST REPORT

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

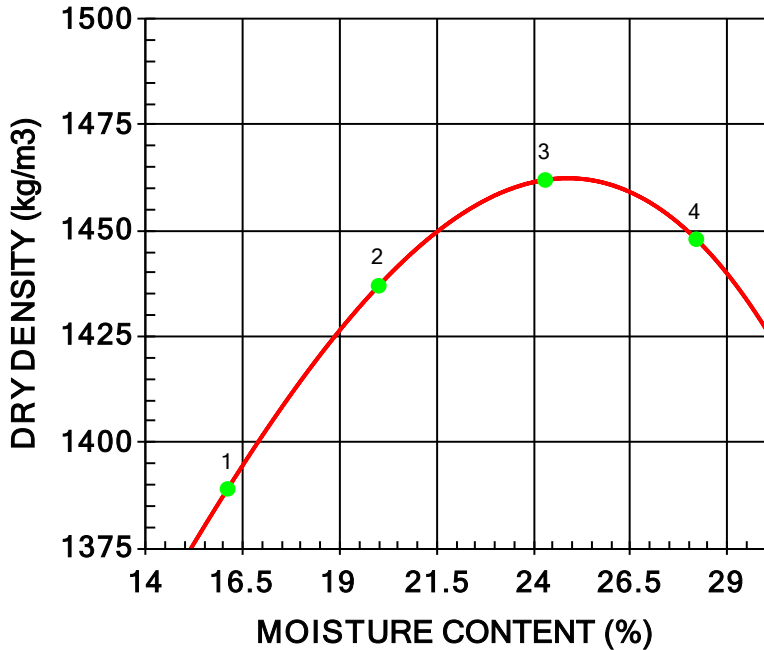
CLIENT Dillon Consulting Ltd.
 C.C.

ATTN: Lucas Stoffel

PROJECT Grant Ave & Taylor Ave Pavement Renewals
 Geotechnical Investigation

PROJECT NO. 123316861
 PROCTOR NO. 4 DATE SAMPLED 2024.Jan.12 DATE RECEIVED 2024.Jan.12 DATE TESTED 2024.Jan.22

INSITU MOISTURE	36.0 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar	COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MATERIAL IDENTIFICATION		RAMMER TYPE	Manual
MAJOR COMPONENT	Backfill	PREPARATION	Moist
SIZE	Fat Clay (CH)	OVERSIZE CORRECTION METHOD	None
DESCRIPTION		RETAINED 4.75mm SCREEN	N/A %
SUPPLIER	Existing Materials		
SOURCE	Taylor Ave - WB BH-05, 1.505 m		



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1613	1389	16.1
2	1724	1437	20.0
3	1817	1462	24.3
4	1856	1448	28.2

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1460	25.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2966.

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Drive
 Winnipeg, Manitoba
 R3T 6A8

PROJECT Grant Ave & Taylor Ave Pavement
 Renewals - Geotechnical
 Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 1

DATE SAMPLED: 2024.Jan.29

DATE RECEIVED: 2024.Jan.29

DATE TESTED: 2024.Feb.09

SAMPLED BY: Stantec Consulting Ltd.

SUBMITTED BY: Stantec Consulting Ltd.

TESTED BY: Donald Eliazar

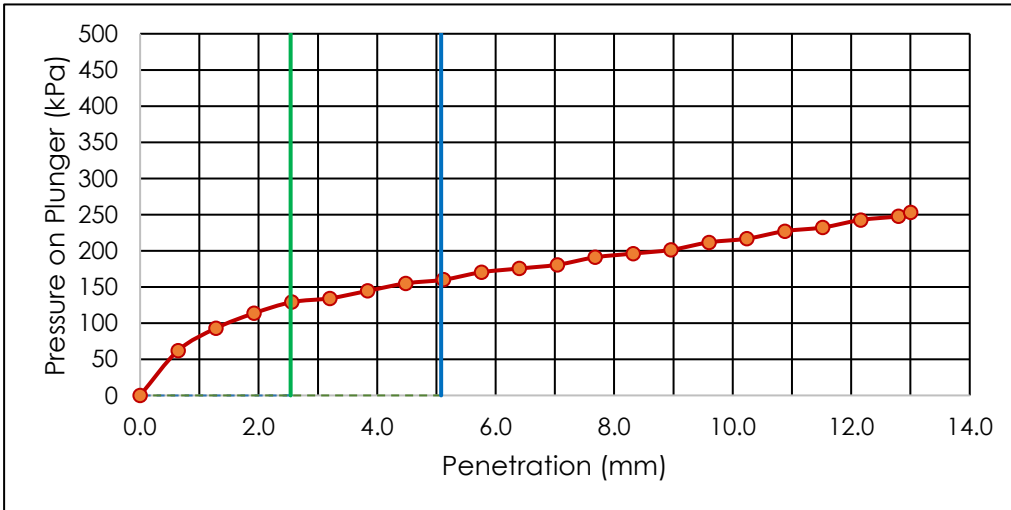
MATERIAL IDENTIFICATION

MATERIAL USE Subgrade
 MAX. NOMINAL SIZE 4.75 mm
 MATERIAL TYPE Fat Clay (CH)
 SPECIFICATION ID Not Applicable

SUPPLIER Existing Material
 SOURCE Existing Material
 SAMPLE LOCATION WB BH-01, 1.510 m
 STANTEC SAMPLE NO. 4024

IMMERSION PERIOD 96 ± 2 hr
 CONDITION OF SAMPLE Soaked
 SURCHARGE MASS 4.54 kg
 +19 mm OVERSIZE 0 %
 SWELL OF SAMPLE 5.30 %
 POST-TEST MOISTURE 35.5 %

TARGET MAX. DRY DENSITY 1620 kg/m³
 TARGET OPTIMUM MOISTURE 20.0 %
 AS-COMPACTED DRY DENSITY 1541 kg/m³
 AS-COMPACTED MOISTURE 19.9 %
 AS-COMPACTED % COMPACTION 95 %



**CBR VALUE AT 2.54 mm
 PENETRATION**
 1.9

**CBR VALUE AT 5.08 mm
 PENETRATION**
 1.6

COMMENTS

Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2024.Feb.13

REVIEWED BY  Jason Thompson, C.E.T.
 Principal - Manager of Materials Testing Services

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

PROJECT Grant Ave & Taylor Ave Pavement
 Renewals - Geotechnical
 Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 2

DATE SAMPLED: 2024.Jan.12
 SAMPLED BY: Graeme Patrick

DATE RECEIVED: 2024.Jan.12
 SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
 TESTED BY: Donald Elizazar

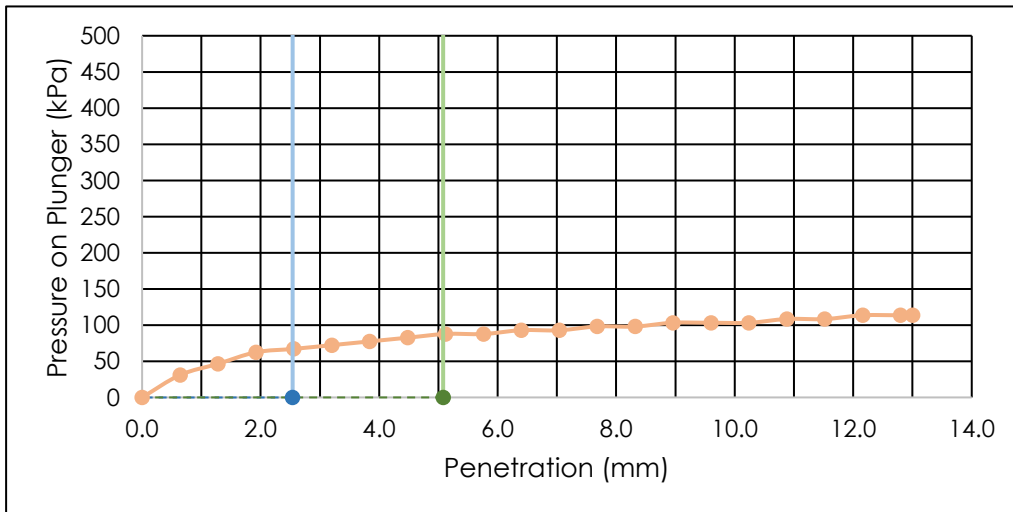
MATERIAL IDENTIFICATION

MATERIAL USE Subgrade
 MAX. NOMINAL SIZE 4.75 mm
 MATERIAL TYPE Fat Clay (CH)
 SPECIFICATION ID Not Applicable

SUPPLIER Existing Material
 SOURCE Existing Material
 SAMPLE LOCATION WB BH-02, 1.450m
 STANTEC SAMPLE NO. 2964

IMMERSION PERIOD 96 ± 2 hr
 CONDITION OF SAMPLE Soaked
 SURCHARGE MASS 4.54 kg
 +19 mm OVERSIZE 0 %
 SWELL OF SAMPLE 0.09 %
 POST-TEST MOISTURE 48.9 %

TARGET MAX. DRY DENSITY 1420 kg/m³
 TARGET OPTIMUM MOISTURE 25.5 %
 AS-COMPACTED DRY DENSITY 1350 kg/m³
 AS-COMPACTED MOISTURE 25.4 %
 AS-COMPACTED % COMPACTION 95 %



**CBR VALUE AT 2.54 mm
 PENETRATION**
 1.0

**CBR VALUE AT 5.08 mm
 PENETRATION**
 0.9

COMMENTS

Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2024.Jan.30

REVIEWED BY  Jason Thompson, C.E.T.
 Principal - Manager of Materials Testing Services

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

PROJECT Grant Ave & Taylor Ave Pavement
 Renewals - Geotechnical
 Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 3

DATE SAMPLED: 2024.Jan.12
 SAMPLED BY: Graeme Patrick

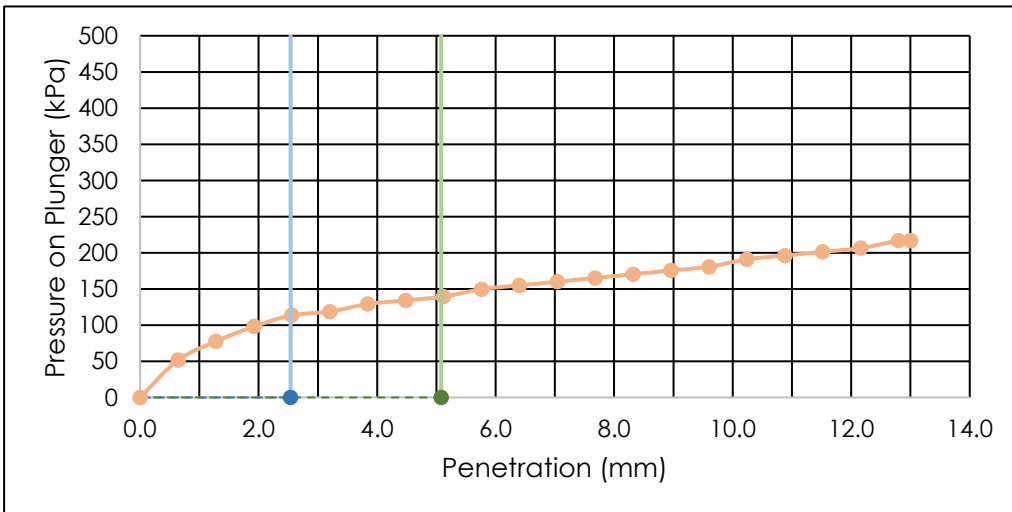
DATE RECEIVED: 2024.Jan.12
 SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
 TESTED BY: Donald Elizazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Lean Clay with sand (CL)	SAMPLE LOCATION	WB BH-04, 1.500m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2965

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1640 kg/m ³
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1556 kg/m ³
SWELL OF SAMPLE	0.05 %	AS-COMPACTED MOISTURE	19.6 %
POST-TEST MOISTURE	34.4 %	AS-COMPACTED % COMPACTION	95 %



**CBR VALUE AT 2.54 mm
PENETRATION**
1.6

**CBR VALUE AT 5.08 mm
PENETRATION**
1.4

COMMENTS

Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2024.Jan.30

REVIEWED BY  Jason Thompson, C.E.T.
 Principal - Manager of Materials Testing Services

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Dillon Consulting Ltd.
 300 - 100 Innovation Dr.
 Winnipeg, MB
 R3T 6A8

PROJECT Grant Ave & Taylor Ave Pavement
 Renewals - Geotechnical
 Investigation

PROJECT NO. 123316861

ATTN Lucas Stoffel

REPORT NO. 4

DATE SAMPLED: 2024.Jan.12
 SAMPLED BY: Graeme Patrick

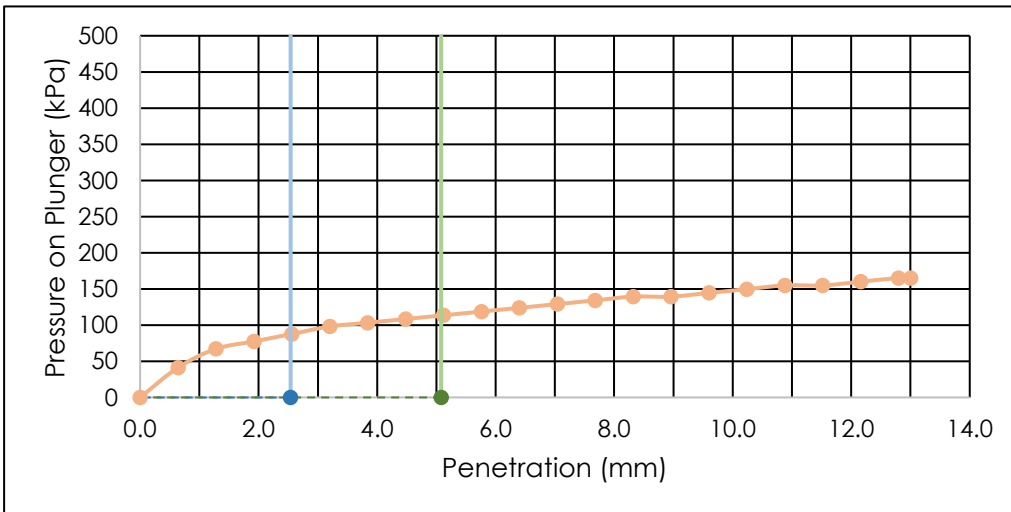
DATE RECEIVED: 2024.Jan.12
 SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
 TESTED BY: Donald Elizazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	WB BH-05, 1.505m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2966

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1460 kg/m ³
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	25.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1389 kg/m ³
SWELL OF SAMPLE	0.06 %	AS-COMPACTED MOISTURE	24.9 %
POST-TEST MOISTURE	44.4 %	AS-COMPACTED % COMPACTION	95 %



**CBR VALUE AT 2.54 mm
 PENETRATION**
 1.3

**CBR VALUE AT 5.08 mm
 PENETRATION**
 1.1

COMMENTS

Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2024.Jan.30

REVIEWED BY  Jason Thompson, C.E.T.
 Principal - Manager of Materials Testing Services

Table 2 - Compressive Strength Test Data

Street	Core ID	Diameter (mm)	Length (mm)	L/D Ratio	Correction Factor	Peak Load (kN)	Compressive Strength (MPa)	
							Measured	Corrected
Taylor Ave	EB BH-02	75.61	128.07	1.694	0.9755	155.95	34.73	33.88
Taylor Ave	EB BH-03	75.80	190.59	> 2.000	1.0000	204.34	45.28	45.28
Grant Ave	EB BH-02	75.57	167.54	> 2.000	1.0000	351.30	78.32	78.32
Grant Ave	EB BH-04	75.52	119.91	1.588	0.9670	279.11	62.31	60.25
Grant Ave	EB BH-07	75.80	171.54	> 2.000	1.0000	198.11	43.90	43.90
Grant Ave	WB BH-01	75.75	154.22	> 2.000	1.0000	326.39	72.42	72.42
Grant Ave	WB BH-03	75.60	160.80	> 2.000	1.0000	181.03	40.33	40.33