APPENDIX ‘A’

GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

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1. **NESS AVENUE PAVEMENT GEOTECHNICAL REPORT**

The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.

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THE NATIONAL TESTING LABORATORIES LIMITED
Established in 1923

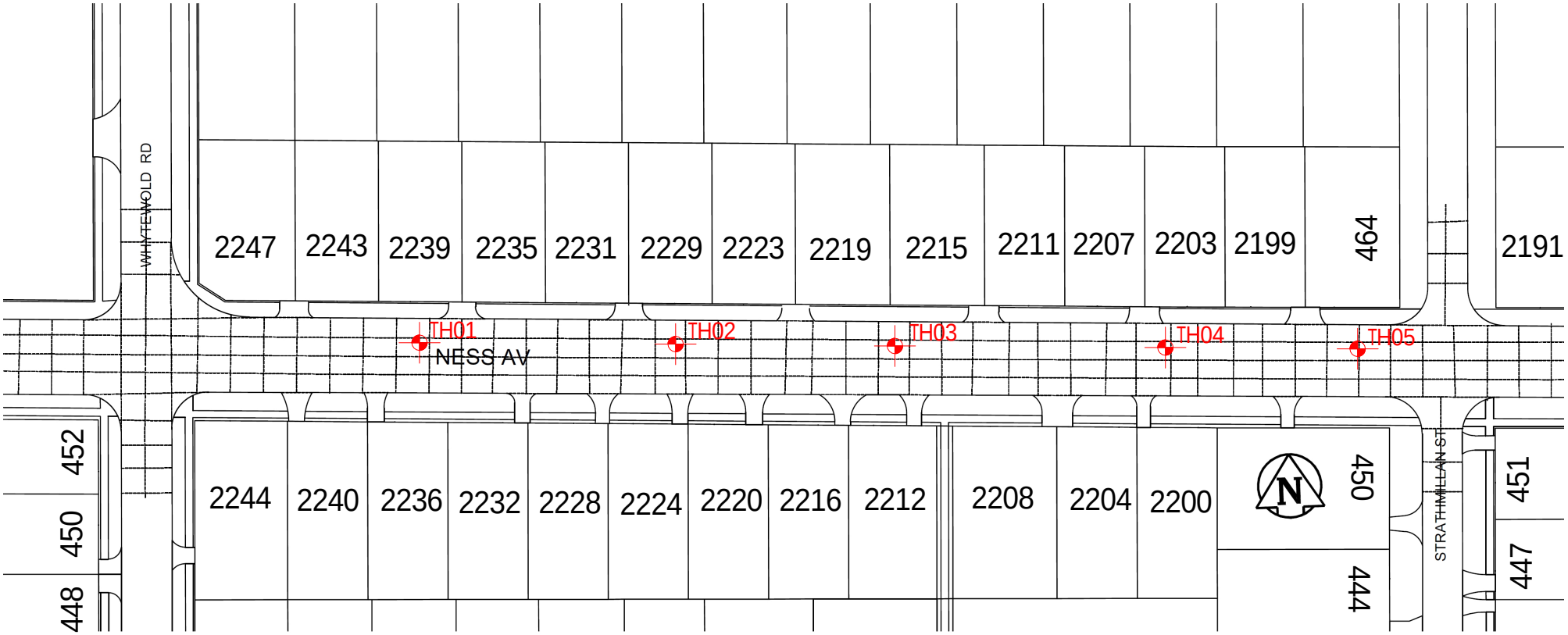
2014 REGIONAL STREET RENEWALS
GEOTECHNICAL INVESTIGATION
NESS AVENUE
WHYTEWOLD ROAD TO MOUNT ROYAL ROAD

Prepared for
CITY OF WINNIPEG
ENGINEERING DIVISION
PUBLIC WORKS DEPARTMENT
106-1155 PACIFIC AVENUE
WINNIPEG, MANITOBA
R3E 3P1

Prepared by
STANTEC CONSULTING LTD.
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4

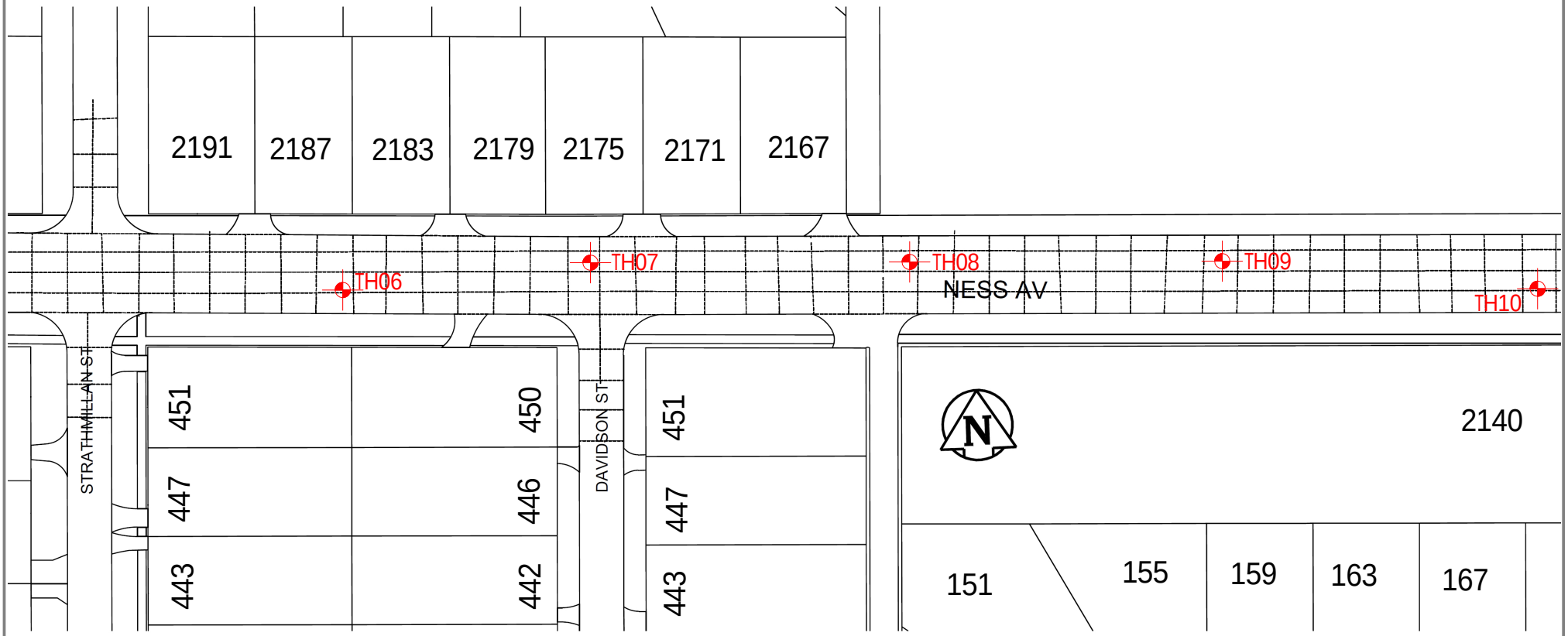
December 20, 2013

Design with community in mind

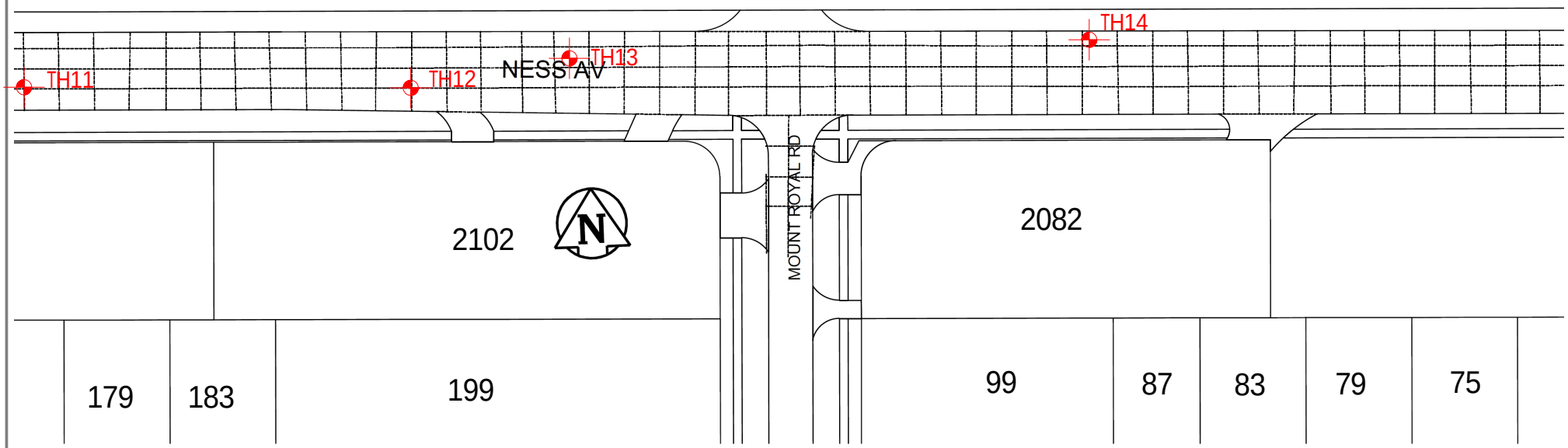


Stantec	Project No.123301054	Drawn by: SB	Figure: 1
	Date: Dec. 19, 2013	Reviewed by: GL	Scale: NTS

Testhole Location Plan
2014 Regional Street Renewals
Ness Avenue
Whytewold Road to Mount Royal Road



Stantec	Project No.123301054	Drawn by: SB	Figure: 2	Testhole Location Plan 2014 Regional Street Renewals Ness Avenue Whytewold Road to Mount Royal Road
	Date: Dec. 19, 2013	Reviewed by: GL	Scale: NTS	



Stantec	Project No.123301054	Drawn by: SB	Figure: 3	Testhole Location Plan 2014 Regional Street Renewals Ness Avenue Whytewold Road to Mount Royal Road
	Date: Dec. 19, 2013	Reviewed by: GL	Scale: NTS	

TABLE 1
2014 REGIONAL STREET RENEWALS
NESS AVENUE, WHYTEWOLD ROAD TO MOUNT ROYAL ROAD
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Ness Avenue 8.0 m West from property 2235 & 2239 Ness Avenue 4.5 m South from North curb	Asphalt	115	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	185												
TH02	Ness Avenue 9.0 m East from property 2229 & 2231 Ness Avenue 4.5 m South from North curb	Asphalt	130	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	190												
TH03	Ness Avenue 1.0 m East from property 2215 & 2219 Ness Avenue 4.5 m South from North curb	Asphalt	150	-	-	Clay	0.9	37	0.0	0.8	3.0	96.2	96	26	70
		Concrete	180												
TH04	Ness Avenue 4.0 m East from property 2203 & 2207 Ness Avenue 4.5 m South from North curb	Asphalt	105	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	185												
TH05	Ness Avenue 12.0 m West from Northwest corner of Strathmillan Road & Ness Avenue 4.5 m South from North curb	Asphalt	90	-	-	Clayey Silt	0.9	20	0.1	16.9	66.7	16.3	20	14	6
		Concrete	185												
TH06	Ness Avenue 38.0 m East from Southeast corner of Strathmillan Road & Ness Avenue 4.0 m North from South curb	Asphalt	100	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	215												
TH07	Ness Avenue 9.0 m West from property 2171 & 2175 Ness Avenue 4.5 m South from North curb	Asphalt	165	-	-	Silty Clay	0.9	20	0.0	15.6	48.4	36.0	35	13	22
		Concrete	180												
TH08	Ness Avenue 47.5 m East from Southeast corner of Davidson Street & Ness Avenue 4.5 m South from North curb	Asphalt	145	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	185												
TH09	Ness Avenue 101.0 m East from Southeast corner of Davidson Street & Ness Avenue 4.5 m South from North curb	Asphalt	110	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	190												
TH10	Ness Avenue 155.0 m East from Southeast corner of Davidson Street & Ness Avenue 4.0 m North from South curb	Asphalt	100	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	205												
TH11	Ness Avenue 125.0 m West from Southwest corner of Mount Royal Road & Ness Avenue 4.0 m North from South curb	Asphalt	45	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	190												
TH12	Ness Avenue 59.0 m West from Southwest corner of Mount Royal Road & Ness Avenue 4.0 m North from South curb	Asphalt	30	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	190												
TH13	Ness Avenue 27.5 m West from Northwest corner of Mount Royal Road & Ness Avenue 4.5 m South from North curb	Asphalt	140	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	200												
TH14	Ness Avenue 43.5 m East from Northeast corner of Mount Royal Road & Ness Avenue 1.5 m South from North curb	Asphalt	90	-	-	Clay Fill	0.9	30	0.0	3.6	9.3	87.1	78	23	55
		Concrete	215												

TESTHOLE TH01

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 8.0 m West from property 2235 & 2239 Ness Avenue, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Water Content (%)
		Asphalt		
		Concrete		
		Clay - black, firm, moist, high plasticity - brown below 0.9 m	BS	35
0.5			BS	32
			BS	32
1.0			BS	34
1.5			BS	34
			BS	39
2.0			BS	40

25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH02

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 9.0 m East from property 2229 & 2231 Ness Avenue, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Water Content (%)
		Asphalt		
		Concrete		
0.5		**Clay Fill** - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS BS	29 32
1.0		**Clay** - brown, firm, moist, high plasticity - some silt below 1.8 m	BS BS	35 35
1.5			BS BS	38 38
2.0			BS	39

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH03

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 1.0 m East from property 2215 & 2219 Ness Avenue, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Water Content (%) PL LL 25 50 75 100
		Asphalt						
		Concrete						
		Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS					39
0.5			BS					33
		Clay - brown, firm, moist, high plasticity	BS	0.0	0.8	3.0	96.2	37
1.0			BS					34
1.5			BS					38
			BS					39
2.0			BS					41

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH04

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 4.0 m East from property 2203 & 2207 Ness Avenue, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Water Content (%)
	Asphalt		
	Concrete		
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	31
0.5		BS	33
	Clay - brown, firm, moist, high plasticity	BS	32
1.0		BS	34
1.5		BS	37
		BS	39
2.0		BS	39

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH05

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 12.0 m West from Northwest corner of Strathmillan Rd & Ness Ave, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Water Content (%)
	Asphalt						
	Concrete						
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS					21
0.5	**Clayey Silt** - tan, soft, moist, low plasticity - some fine to coarse sand	BS					20
		BS	0.1	16.9	66.7	16.3	20
1.0		BS					35
1.5	**Clay** - brown, firm, moist, high plasticity	BS					36
		BS					41
2.0		BS					42

PL LL
25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH06

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 38.0 m East from Southeast corner of Strathmillan Rd & Ness Ave, 4.0 m North from South curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Water Content (%)
		Asphalt		
		Concrete		
		Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	31
0.5			BS	32
			BS	29
1.0		**Clay** - brown, firm, moist, high plasticity	BS	32
1.5			BS	40
			BS	38
2.0			BS	42

25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH07

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 9.0 m West from property 2171 & 2175 Ness Avenue, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Water Content (%)
	Asphalt						
	Concrete						
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS					33
0.5		BS					30
	Silty Clay - grey, soft, moist, medium plasticity - some fine to coarse sand	BS	0.0	15.6	48.4	36.0	20
1.0	**Clay** - brown, firm, moist, high plasticity	BS					34
1.5		BS					37
		BS					39
2.0		BS					43

PL LL
25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH08

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 47.5 m East from Southeast corner of Davidson St & Ness Ave, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Water Content (%)
	Asphalt		
	Concrete		
0.5	**Clay Fill** - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	37
		BS	29
1.0	**Silty Clay** - tan, firm, moist, medium plasticity - some fine to coarse sand	BS	24
		BS	37
1.5	**Clay** - brown, firm, moist, high plasticity	BS	37
		BS	41
2.0		BS	43

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH09

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 101.0 m East from Southeast corner of Davidson St & Ness Ave, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%) 25 50 75 100
		Asphalt		
		Concrete		
		Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to coarse sand - trace fine gravel	BS	●31
0.5			BS	●37
			BS	●35
1.0			BS	●35
		Clay - brown, firm, moist, high plasticity	BS	●38
1.5			BS	●39
			BS	●42
2.0		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • The soil was frozen to a depth of 1.2 m. • Testhole terminated at a depth of 2.0 m.		

TESTHOLE TH10

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 155.0 m East from Southeast corner of Davidson St & Ness Ave, 4.0 m North from South curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Water Content (%)
	Asphalt		
	Concrete		
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	32
0.5		BS	34
		BS	33
1.0	**Clay** - brown, firm, moist, high plasticity - grey below 1.2 m - brown below 1.7 m	BS	33
1.5		BS	42
		BS	44
2.0		BS	44

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH11

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 125.0 m West from Southwest corner of Mt Royal Rd & Ness Ave, 4.0 m North from South curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Water Content (%)
	Asphalt		
	Concrete		
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	22
0.5	**Clayey Silt** - grey, soft, moist, low plasticity - some fine to coarse sand - tan below 1.4 m	BS	19
		BS	19
1.0		BS	21
1.5	**Clay** - brown, firm, moist, high plasticity	BS	42
		BS	46
2.0		BS	49

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH12

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 59.0 m West from Southwest corner of Mt Royal Rd & Ness Ave, 4.0 m North from South curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Water Content (%)
	Asphalt		
	Concrete		
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	34
0.5		BS	33
		BS	33
1.0	**Clay** - brown, firm, moist, high plasticity	BS	35
1.5		BS	45
		BS	49
2.0		BS	48

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH13

Stantec

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 27.5 m West from Northwest corner of Mt Royal Rd & Ness Ave, 4.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Water Content (%)
		Asphalt		
		Concrete		
		Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS	32
0.5			BS	31
		Clay - brown, firm, moist, high plasticity	BS	33
1.0			BS	38
1.5			BS	42
			BS	42
2.0			BS	46

Water Content (%): 25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

TESTHOLE TH14

Project Name: 2014 Regional Street Renewals
Project Location: Ness Avenue, Whytewold Road to Mount Royal Road
Client: City of Winnipeg
Drilling Contractor: Subterranean (Manitoba) Ltd.
Drilling Method: 150 mm Solid Stem Auger
Testhole Location: 43.5 m East from Northeast corner of Mt Royal Rd & Ness Ave, 1.5 m South from North curb

Date Drilled: December 9, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Description	Sample Type	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Water Content (%)
	Asphalt						
	Concrete						
	Clay Fill - black, firm, moist, high plasticity - trace silt - trace fine to medium sand	BS					31
0.5		BS					31
		BS	0.0	3.6	9.3	87.1	30
1.0	**Clay** - grey, firm, moist, high plasticity - brown below 1.5 m	BS					32
1.5		BS					38
		BS					41
2.0		BS					41

PL LL
25 50 75 100

- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- The soil was frozen to a depth of 1.2 m.
- Testhole terminated at a depth of 2.0 m.

Core sample from Testhole TH01

Core sample from Testhole TH02

Core sample from Testhole TH03

Core sample from Testhole TH04

Core sample from Testhole TH05

Core sample from Testhole TH06

Core sample from Testhole TH07

Core sample from Testhole TH08

Core sample from Testhole TH09

Core sample from Testhole TH10

Core sample from Testhole TH11

Core sample from Testhole TH12

Core sample from Testhole TH13

Core sample from Testhole TH14

PARTICLE SIZE ANALYSIS
ASTM D422

City of Winnipeg
Engineering Division, Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

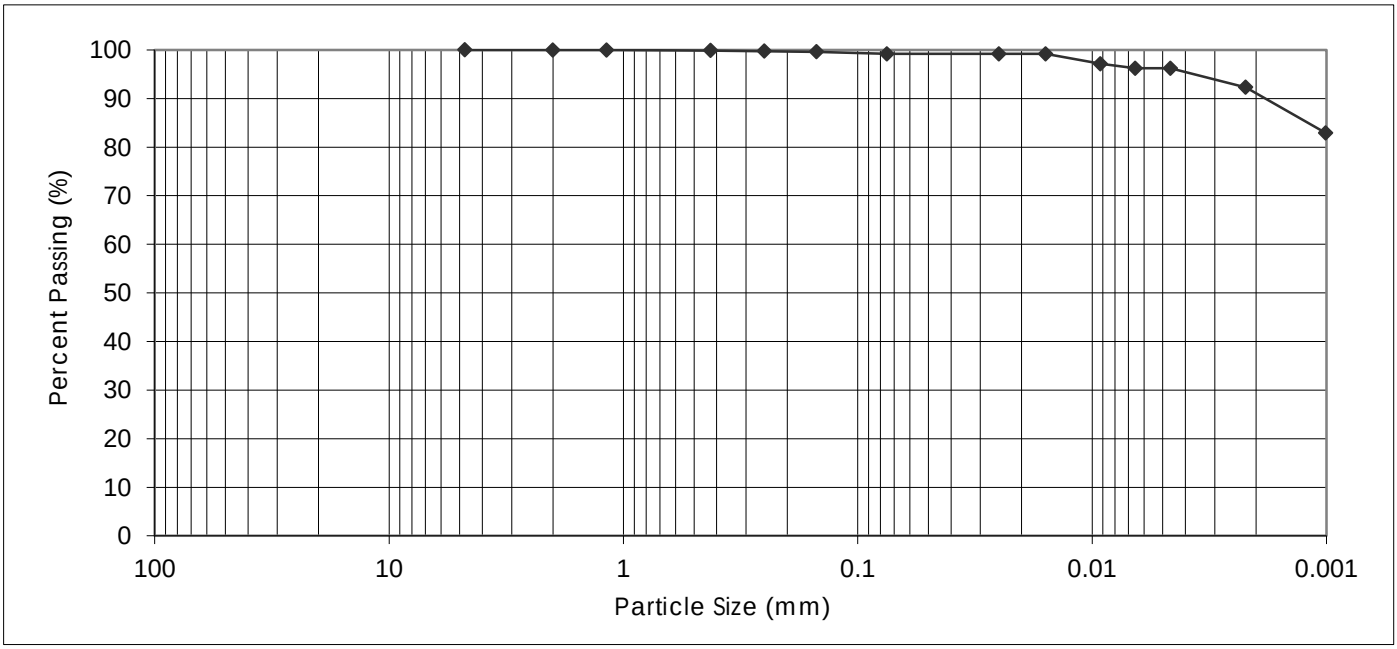
PROJECT: 2014 Regional St. Renewals
Ness Ave. between
Whytewold Rd. and Mount Royal Rd.

Attention: Derek Teperto

PROJECT NO.: 123301054

SAMPLED BY: Sothea Bun
SAMPLE ID: TH03 at 0.9 m

DATE RECEIVED: December 17, 2013
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	100.0
0.425 mm	99.9
0.250 mm	99.8
0.150 mm	99.6
0.075 mm	99.2
0.005 mm	96.2
0.002 mm	90.7
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.1	0.7	3.0	96.2	NT*

NT* Sample not tested for colloids

December 20, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng.

199 Henlow Bay, Winnipeg, Manitoba R3Y 1G4 Phone (204) 488-6999 Fax (204) 488-6915

PARTICLE SIZE ANALYSIS
ASTM D422

City of Winnipeg
Engineering Division, Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

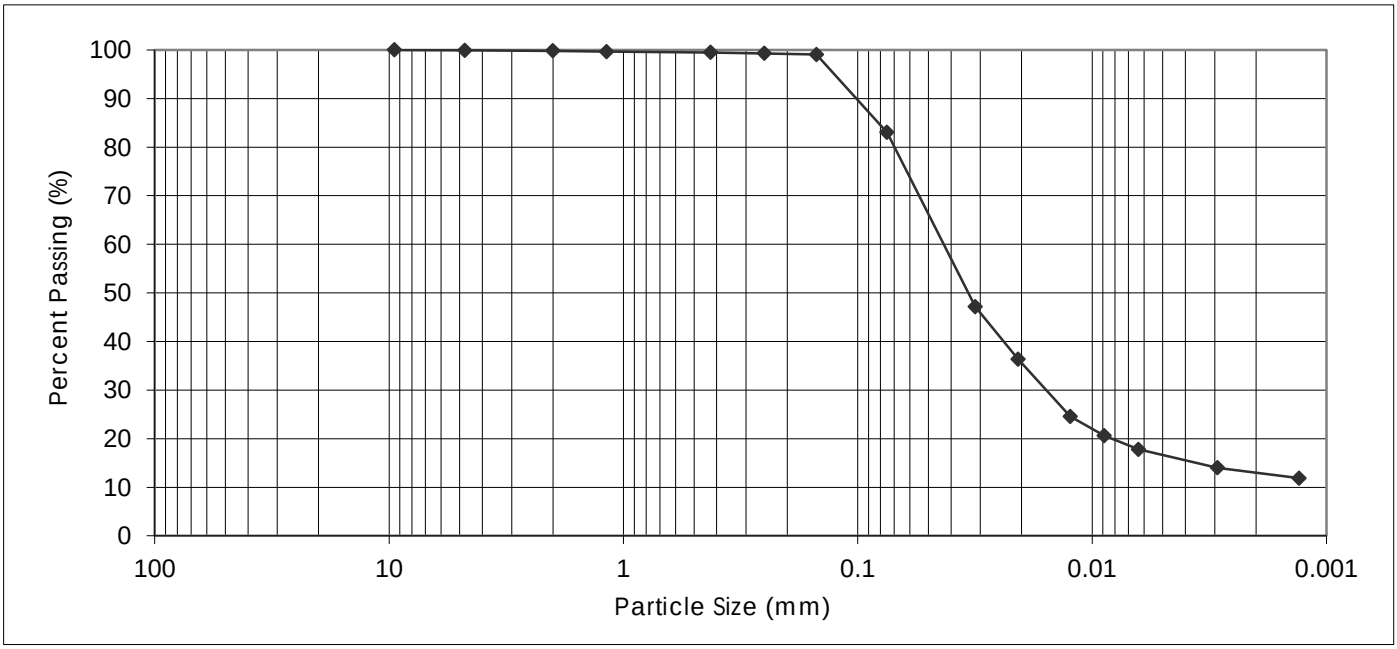
PROJECT: 2014 Regional St. Renewals
Ness Ave. between
Whytewold Rd. and Mount Royal Rd.

Attention: Derek Teperto

PROJECT NO.: 123301054

SAMPLED BY: Sothea Bun
SAMPLE ID: TH05 at 0.9 m

DATE RECEIVED: December 17, 2013
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.9
2.00 mm	99.8

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.7
0.425 mm	99.5
0.250 mm	99.3
0.150 mm	99.0
0.075 mm	83.0
0.005 mm	16.3
0.002 mm	12.8
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.1	0.1	0.3	16.5	66.7	16.3	NT*

NT* Sample not tested for colloids

December 20, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng.

199 Henlow Bay, Winnipeg, Manitoba R3Y 1G4 Phone (204) 488-6999 Fax (204) 488-6915

PARTICLE SIZE ANALYSIS
ASTM D422

City of Winnipeg
Engineering Division, Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

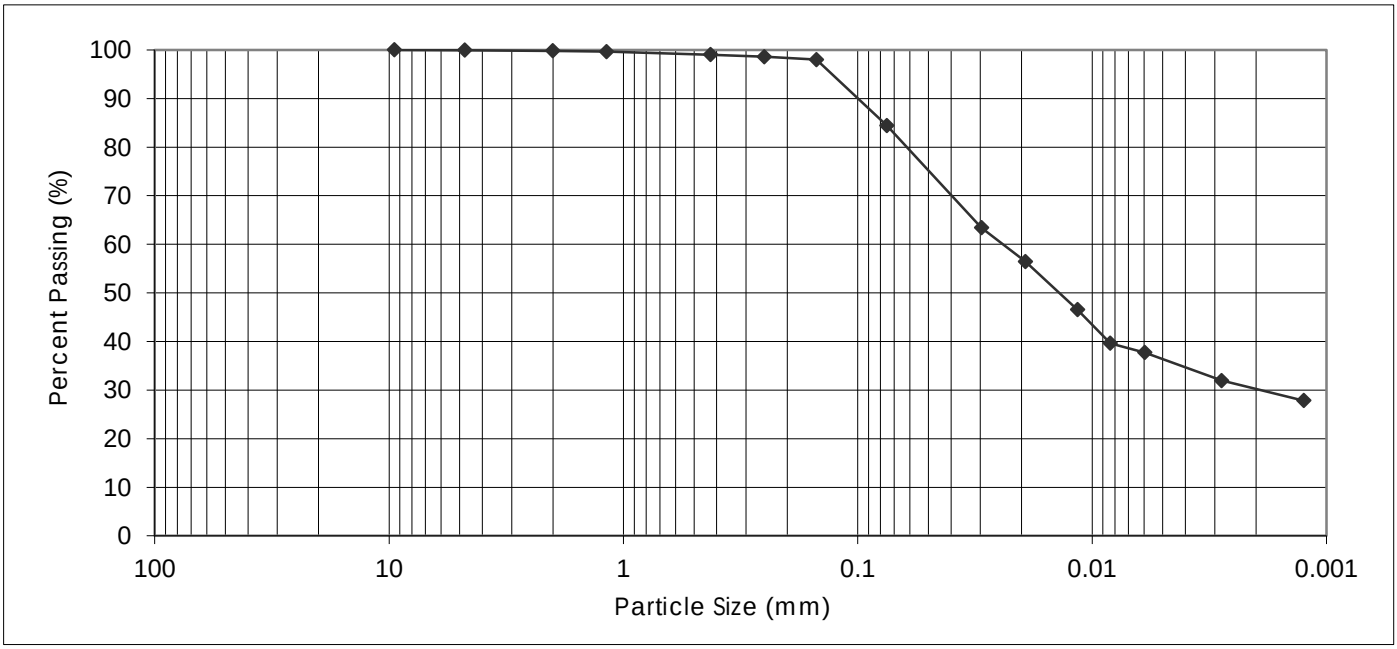
PROJECT: 2014 Regional St. Renewals
Ness Ave. between
Whytewold Rd. and Mount Royal Rd.

Attention: Derek Teperto

PROJECT NO.: 123301054

SAMPLED BY: Sothea Bun
SAMPLE ID: TH07 at 0.9 m

DATE RECEIVED: December 17, 2013
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	99.8

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.7
0.425 mm	99.0
0.250 mm	98.6
0.150 mm	98.0
0.075 mm	84.4
0.005 mm	36.0
0.002 mm	29.8
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.2	0.8	14.6	48.4	36.0	NT*

NT* Sample not tested for colloids

December 20, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng.

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PARTICLE SIZE ANALYSIS
ASTM D422

City of Winnipeg
Engineering Division, Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

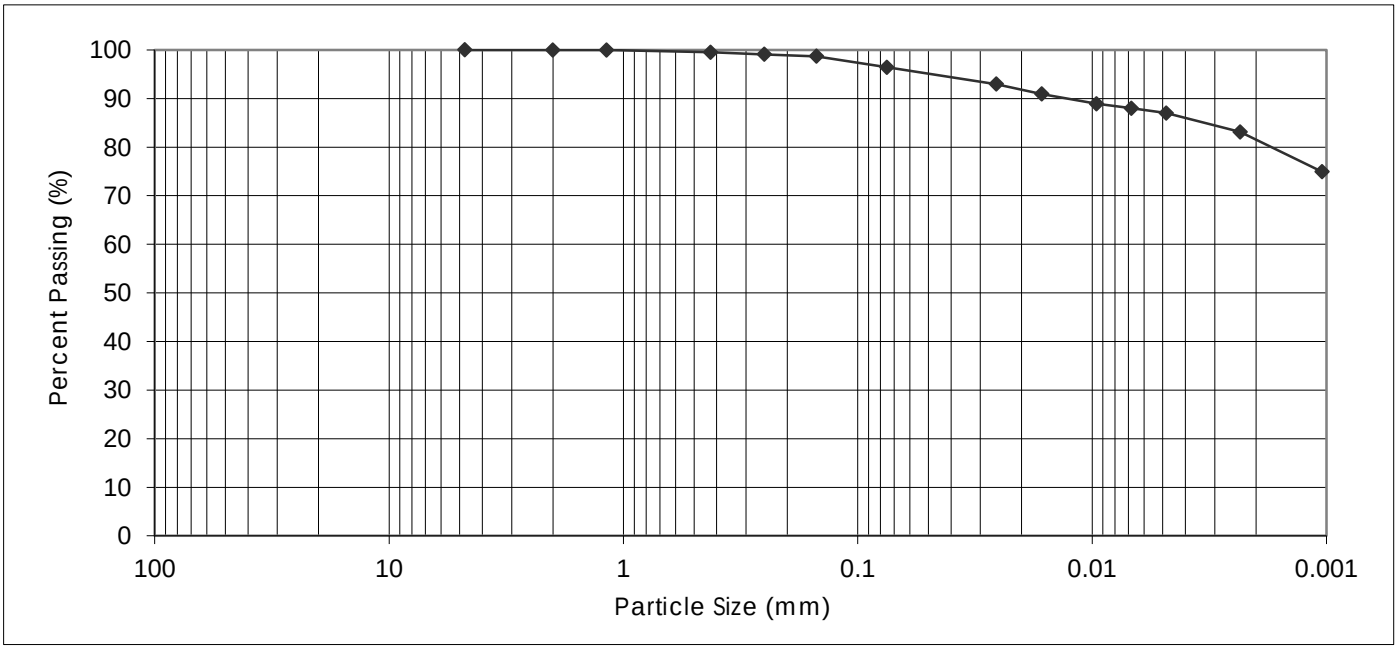
PROJECT: 2014 Regional St. Renewals
Ness Ave. between
Whytewold Rd. and Mount Royal Rd.

Attention: Derek Teperto

PROJECT NO.: 123301054

SAMPLED BY: Sothea Bun
SAMPLE ID: TH14 at 0.9 m

DATE RECEIVED: December 17, 2013
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	100.0
0.425 mm	99.5
0.250 mm	99.1
0.150 mm	98.7
0.075 mm	96.4
0.005 mm	87.1
0.002 mm	81.0
0.001 mm	NT*

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.005 mm	Clay, % <0.005 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.5	3.1	9.3	87.1	NT*

NT* Sample not tested for colloids

December 20, 2013

REVIEWED BY: German E. Leal, B.Sc., P. Eng.

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