Appendix A

Geotechnical Report

THE NATIONAL TESTING LABORATORIES LIMITED

BUFFALO PLACE
WAVERLEY STREET TO OTTER STREET
2008 LOCAL STREET RENEWAL PROGRAM

Prepared
for
UMA Engineering Ltd.
1479 Buffalo Place
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R3T 1L7

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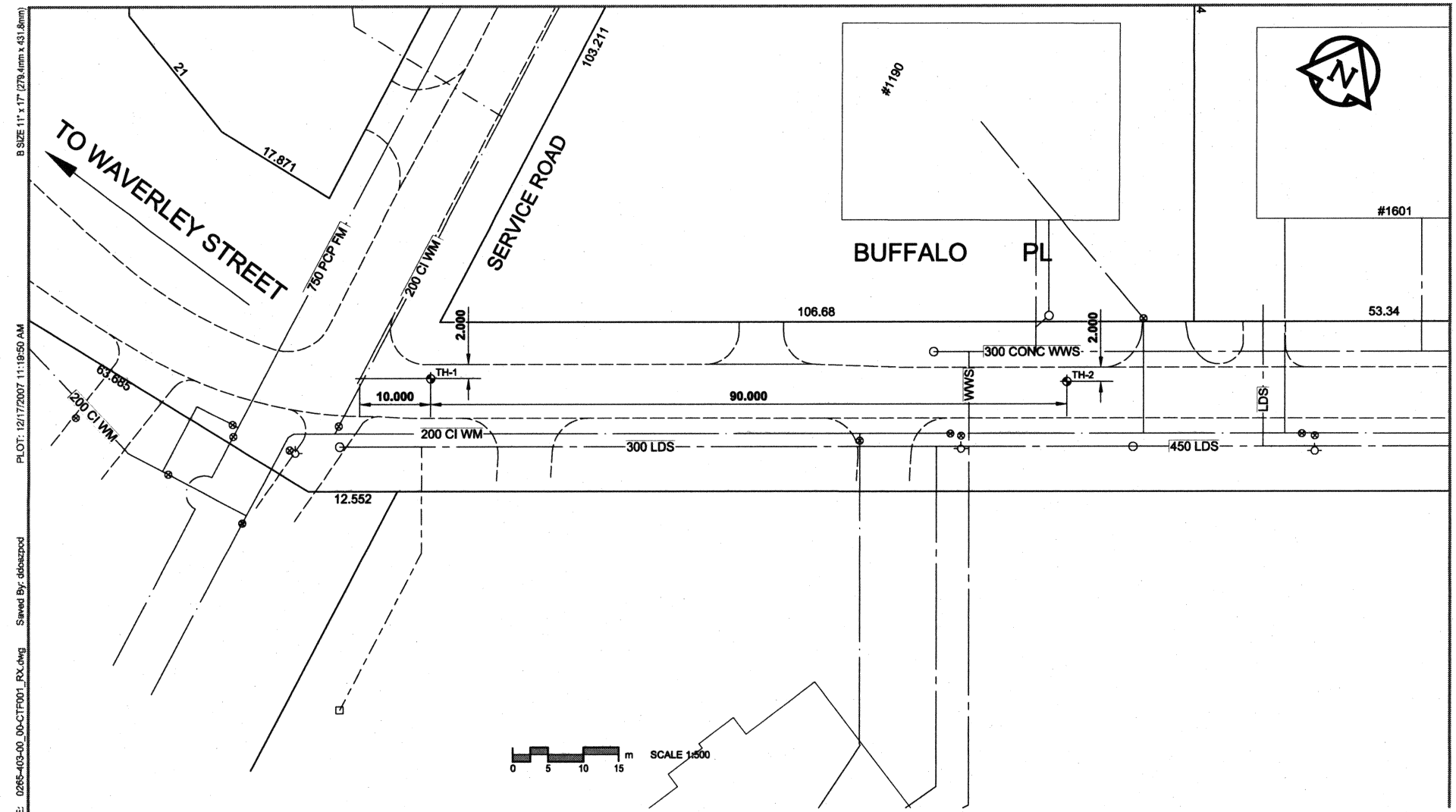
January 23, 2008

Buffalo Place
Waverley Street to Otter Street
2008 Local Street Renewal Program

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
TH1	West bound lane, 10 m East of service road, 1.5 m from north curb	Concrete	180	Granular	120	N/A	N/A	-	-	-	-	-	-	-	-
TH2	West bound lane, 100 m East of service road, 1.5 m from north curb	Concrete	150	Granular	765	N/A	N/A	-	-	-	-	-	-	-	-
TH3	East bound lane, 270 m West of Otter Street, 1.5 m from south curb	Concrete	150	Granular	150	Clay	0.6	38.7	0.0	4.4	6.0	89.6	76	20	56
TH4	East bound lane, 160 m West of Otter Street, 1.5 m from south curb	Concrete	180	Granular	120	N/A	N/A	-	-	-	-	-	-	-	-
TH5	West bound lane, 48 m West of Otter Street, 1.5 m from north curb	Asphalt / Concrete	50/200	Granular	100	Clayey Silt	0.8	24.6	0.0	3.3	53.7	42.9	40	14	26



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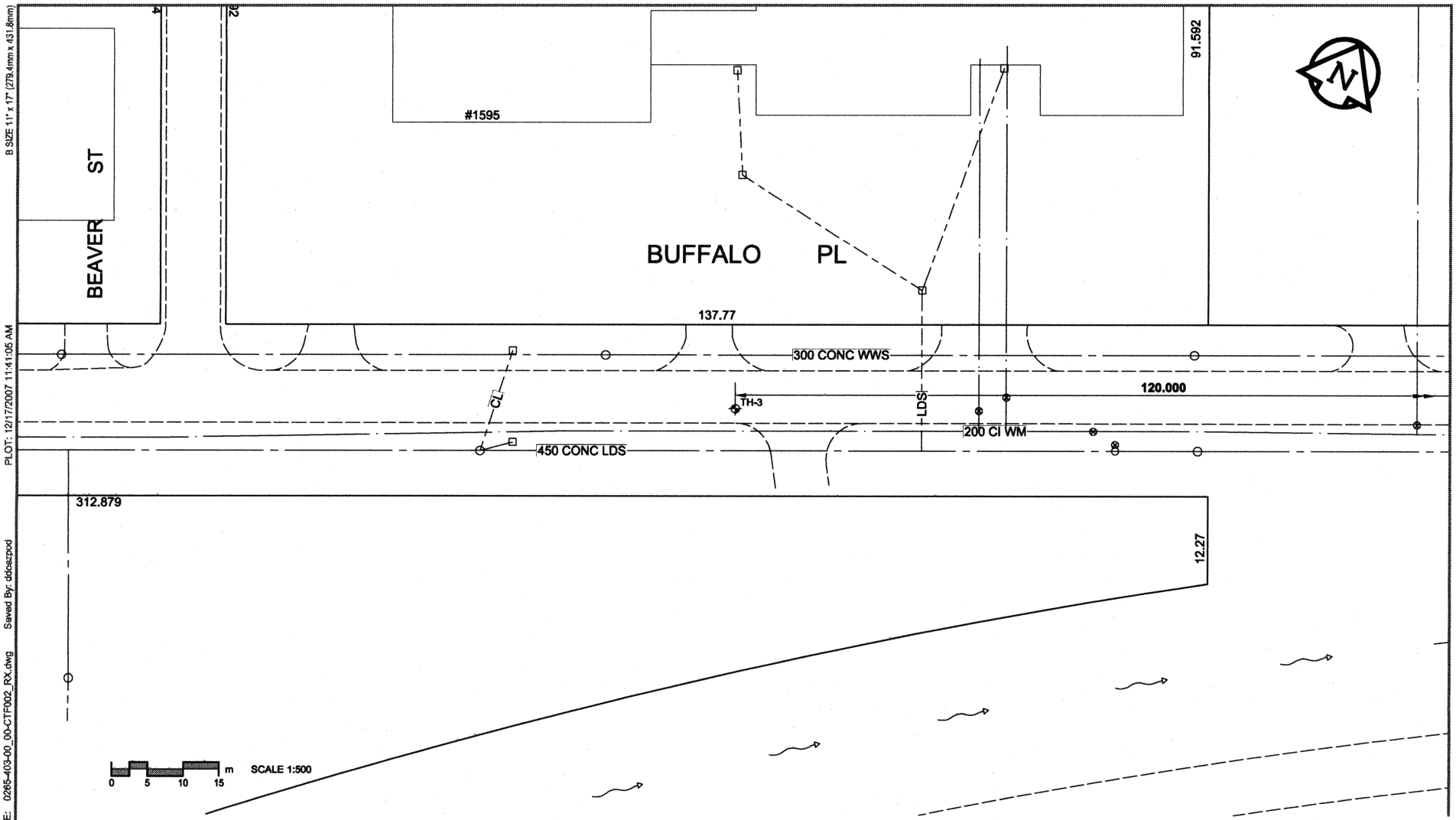
UMA FILE NAME:

The City of Winnipeg
Public Works Department-Transportation Engineering Division
2008 Street Renewal - Buffalo Place

Buffalo Place-Testhole Locations
From Waverley Street to Otter Street
Figure - 1

UMA | AECOM



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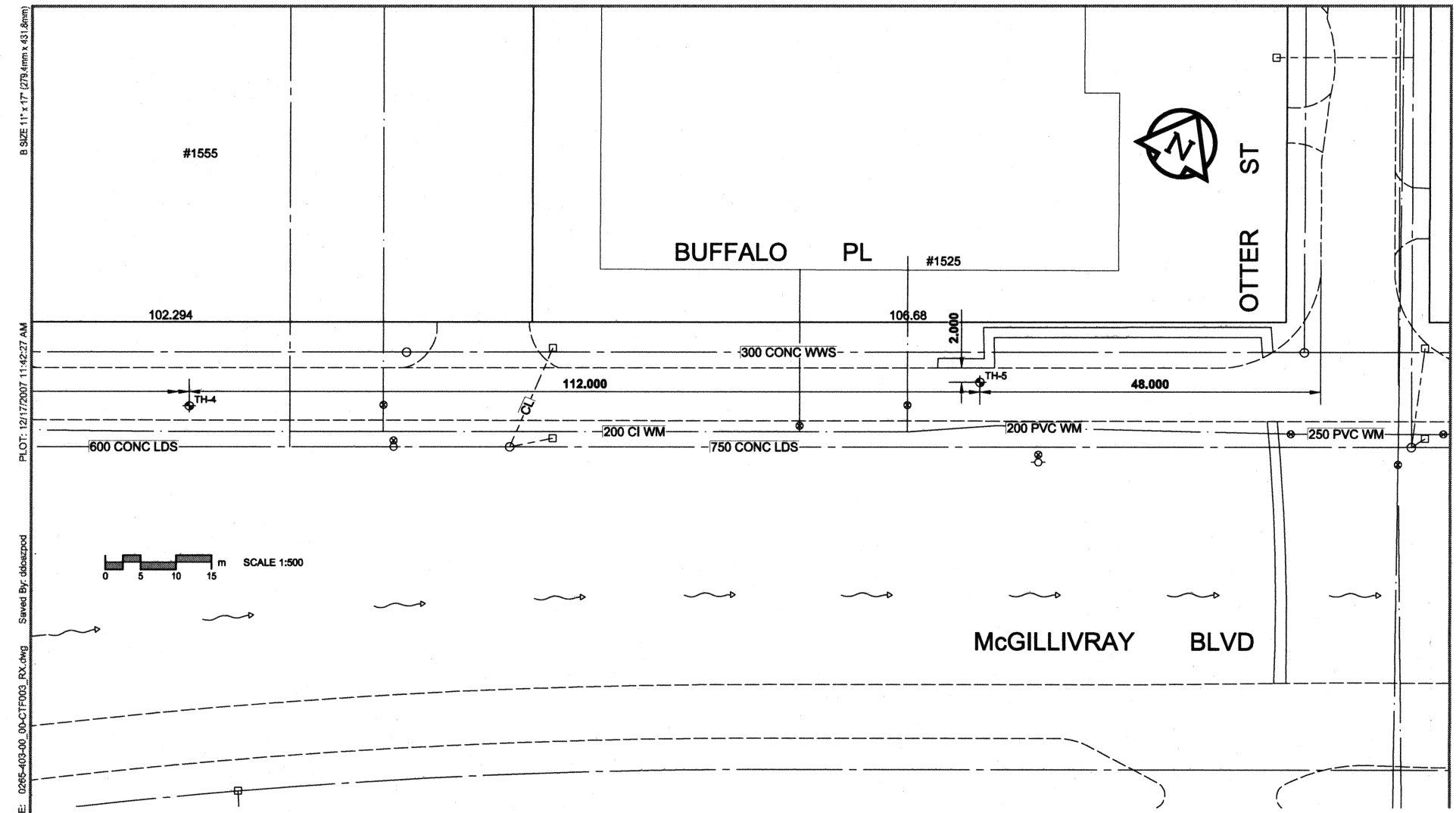
The City of Winnipeg
Public Works Department-Transportation Engineering Division
2008 Street Renewal - Buffalo Place

Buffalo Place-Testhole Locations
From Waverley Street to Otter Street
Figure - 2

UMA | AECOM



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The City of Winnipeg
Public Works Department-Transportation Engineering Division
2008 Street Renewal - Buffalo Place

Buffalo Place-Testhole Locations
From Waverley Street to Otter Street
Figure - 3

UMA | AECOM

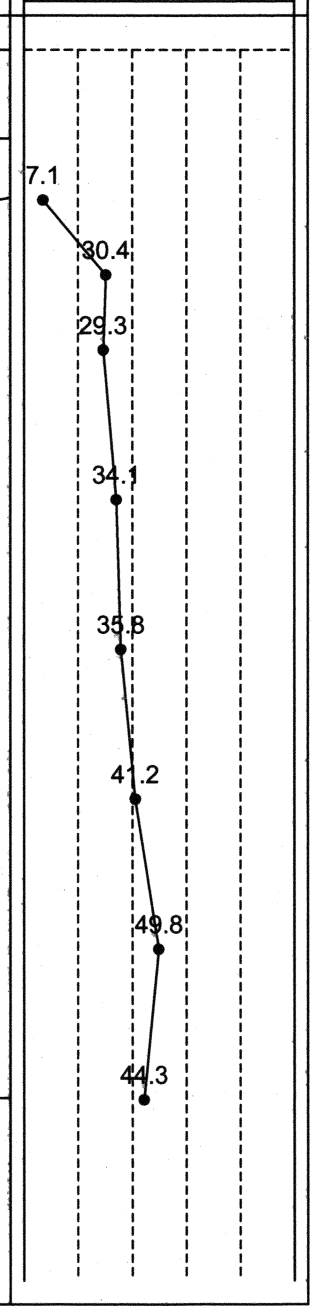
TESTHOLE TH1

Project Name: 2008 City of Winnipeg Local Street Renewals
Client: UMA Engineering Ltd
Site: Buffalo Place between Waverley Street to Otter Street
Testhole Location: West bound lane, 10 m East of service road, 1.5 m from north curb

Date Drilled: Janurary 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Depth (m)	Symbol	Description
		Ground Surface
0.0		**Concrete**
		Granular Base - 20 mm maximum aggregate size
		Clay - black to grey, stiff, moist, high plasticity, - changes to brown at 0.9 m - 0.05 m seam of tan, firm, moist, low plasticity clayey silt observed at 2.0 m
0.5		
1.0		
1.5		
2.0		
		• Frost present to a depth of 1.1 m. • No water seepage or soil sloughing were observed during or after the completion of drilling. • Testhole was terminated at 2.1m.
2.5		

Laboratory Testing



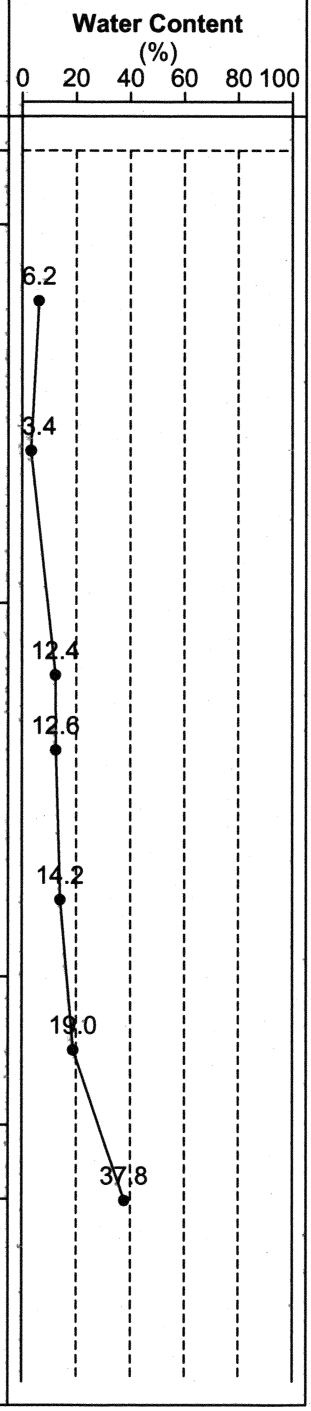
TESTHOLE TH2

Project Name: 2008 City of Winnipeg Local Street Renewals
Client: UMA Engineering Ltd
Site: Buffalo Place between Waverley Street to Otter Street
Testhole Location: West bound lane, 100 m East of service road, 1.5 m from north curb

Date Drilled: Janurary 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Depth (m)	Symbol	Description
0.0		Ground Surface
		Concrete
		Granular Base - 20 mm maximum aggregate size
0.5		
1.0		**Clay Fill** - black to brown, stiff, moist, high plasticity, with some fine gravel
1.5		**Clayey Silt** - grey to tan, firm, moist, low to non plastic
2.0		**Clay** - brown, stiff, moist, high plasticity, with a trace layer of silt
2.5		• Frost present to a depth of 1.1 m. • No water seepage or soil sloughing were observed during or after the completion of drilling. • Testhole was terminated at 2.1m.

Laboratory Testing



TESTHOLE TH3

Project Name: 2008 City of Winnipeg Local Street Renewals
Client: UMA Engineering Ltd
Site: Buffalo Place between Waverley Street to Otter Street
Testhole Location: East bound lane, 270 m West of Otter Street, 1.5 m from south curb

Date Drilled: Janurary 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing				
Depth (m)	Symbol	Description	Water Content (%) PL ---- LL (0 25 50 75 110)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface					
		Concrete					
		Granular Base - 20 mm maximum aggregate size					
0.5		**Clay** - black, stiff, moist, high plasticity, - changes to grey/brown at 0.6 m - trace seams of tan clayey silt were observed between 1.4 to 2.0 m	34.1 38.7 36.4 23.5 37.2 37.8 47.6	0.0	4.4	6.0	89.6
1.0							
1.5							
2.0							
2.5		• Frost present to a depth of 1.1 m. • No water seepage or soil sloughing were observed during or after the completion of drilling. • Testhole was terminated at 2.1 m.					

TESTHOLE TH4

Project Name: 2008 City of Winnipeg Local Street Renewals
Client: UMA Engineering Ltd
Site: Buffalo Place between Waverley Street to Otter Street
Testhole Location: East bound lane, 160 m West of Otter Street, 1.5 m from south curb

Date Drilled: Janurary 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
		Concrete	
		Granular Base - 20 mm maximum aggregate size	6.2
0.5			3.4
		Clay Fill - black to brown, stiff, moist, high plasticity, with some fine gravel	12.4
1.0			12.6
1.5			14.2
		Clayey Silt - grey to tan, firm, moist, low to non plastic	19.0
2.0		**Clay** - brown, stiff, moist, high plasticity, with a trace layer of silt	37.8
		• Frost present to a depth of 1.1 m. • No water seepage or soil sloughing were observed during or after the completion of drilling. • Testhole was terminated at 2.1m.	
2.5			

TESTHOLE TH5

Project Name: 2008 City of Winnipeg Local Street Renewals
Client: UMA Engineering Ltd
Site: Buffalo Place between Waverley Street to Otter Street
Testhole Location: West bound lane, 48 m West of Otter Street, 1.5 m from north curb

Date Drilled: Janurary 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Depth (m)	Symbol	Description	Water Content (%) PL — LL (0 25 50 75 110)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface					
		Asphalt					
		Concrete					
		Granular Base - 20 mm maximum aggregate size					
0.5		**Clay** - black to grey, stiff, moist, high plasticity	29.3 26.4 24.6				
1.0		**Clayey Silt** - grey, stiff, moist, intermediate plasticity, with a trace of gypsum - tan, firm, moist, low plasticity below 2.0 m	31.9 26.0	0.0	3.3	53.7	42.9
1.5			30.9				
2.0			36.2 37.1				
2.5		• Frost present to a depth of 1.2 m. • No water seepage or soil sloughing were observed during or after the completion of drilling. • Testhole was terminated at 2.1m.					

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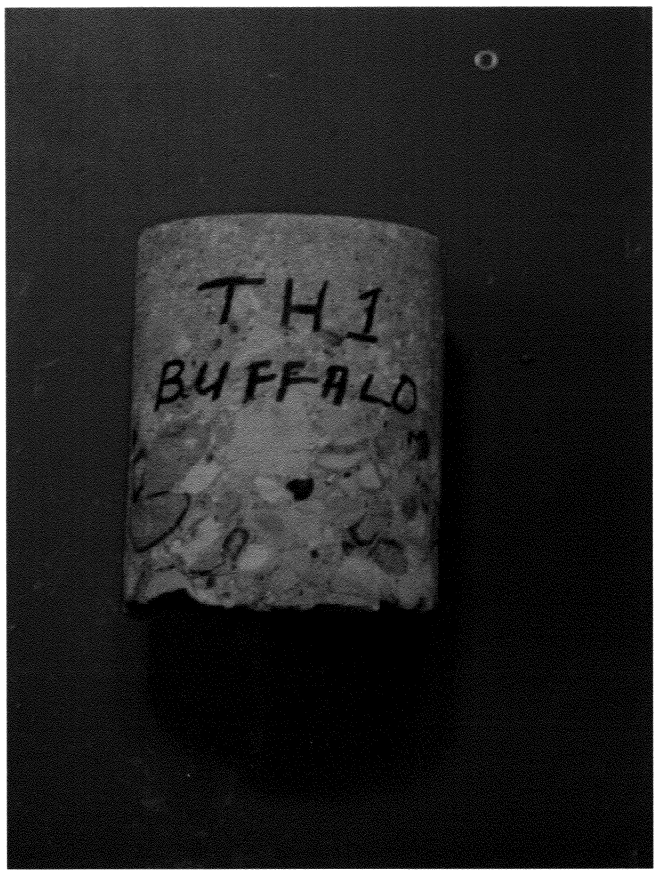

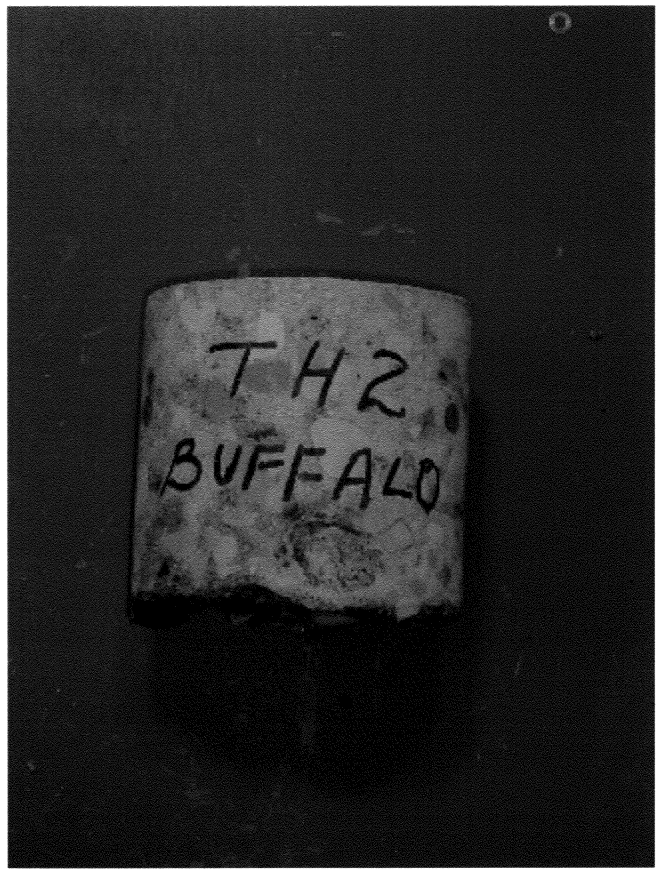

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