

APPENDIX A

Geotechnical Report

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

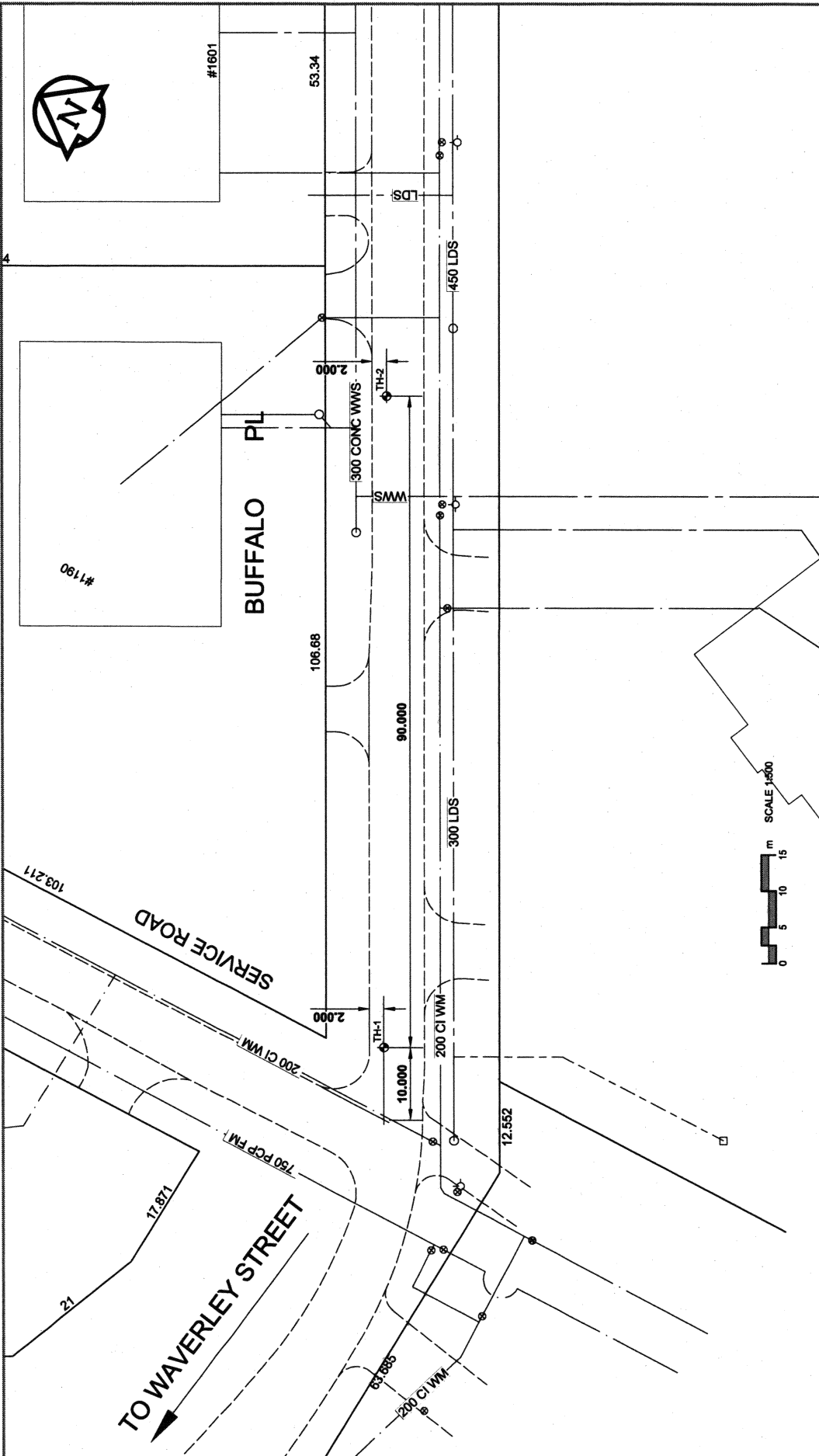
Prepared
for
**UMA Engineering Ltd.
1479 Buffalo Place
Winnipeg, Manitoba
R3T 1L7**

Prepared
by
**The National Testing Laboratories Limited
199 Henlow Bay
Winnipeg, Manitoba
R3Y 1G4**

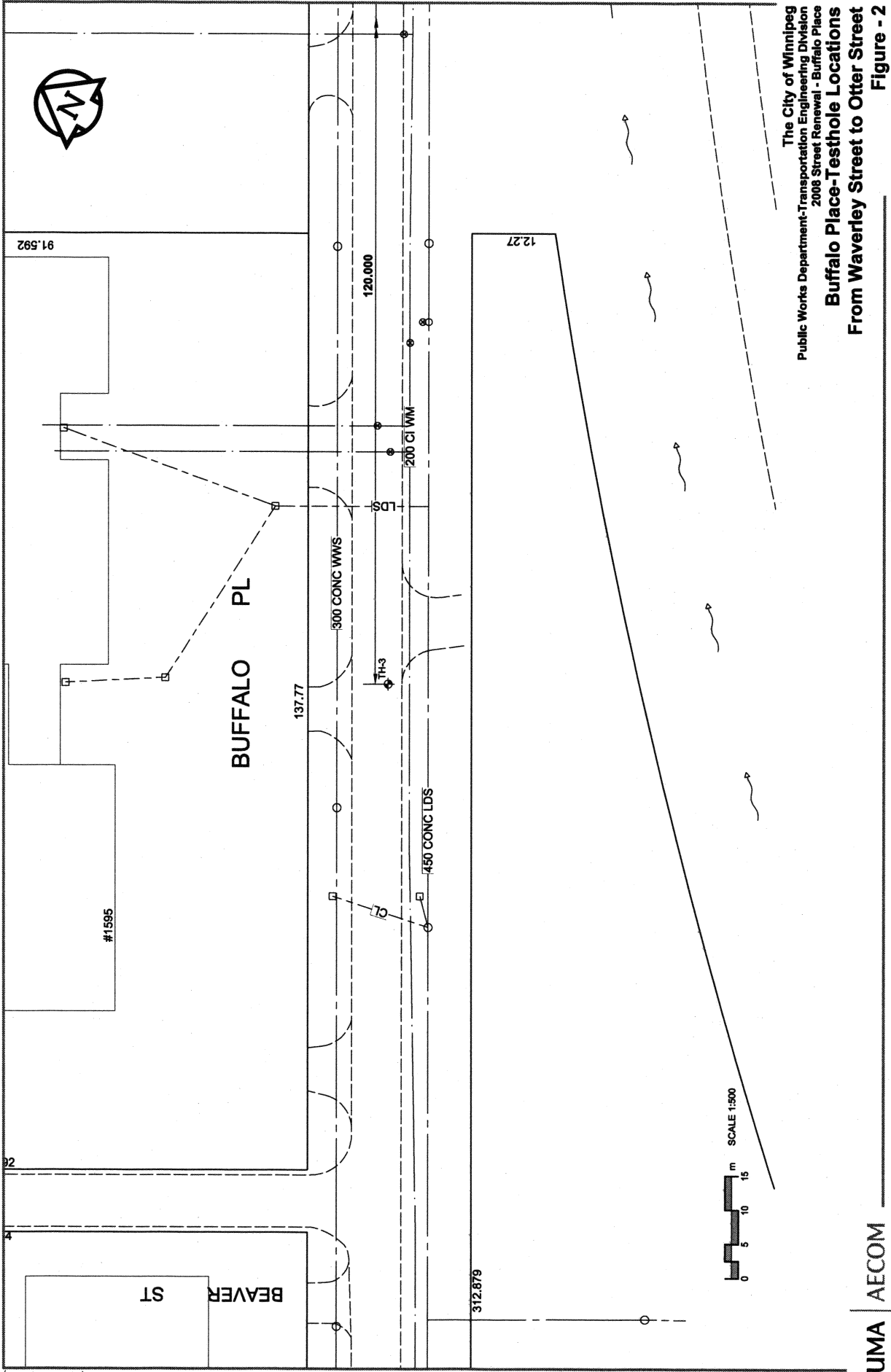
January 23, 2008

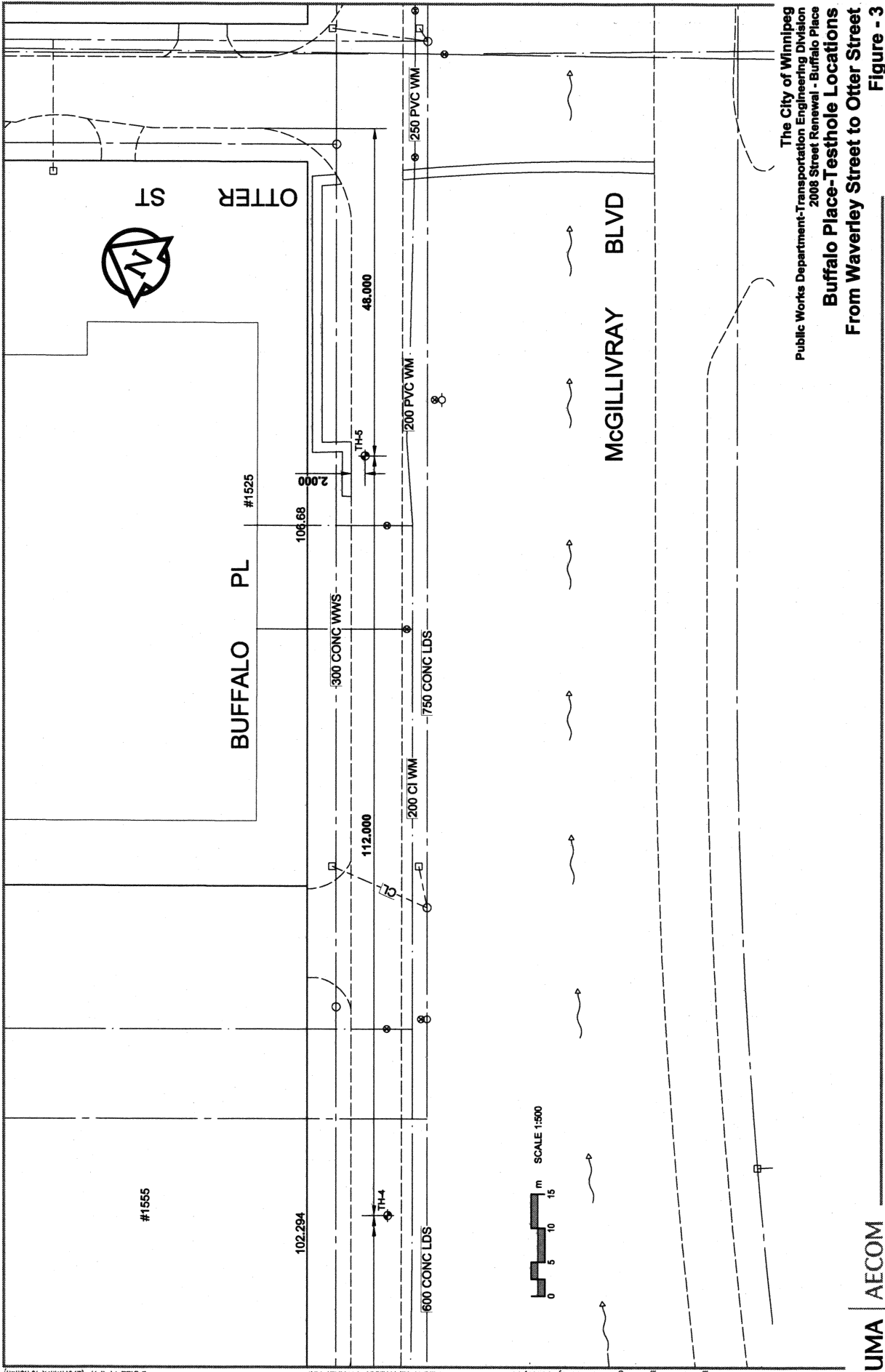
**Buffalo Place
Waverley Street to Otter Street
2008 Local Street Renewal Program**

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample 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	-	-	-	-	-	-	-	-	-
TH2	West bound lane, 100 m East of service road, 1.5 m from north curb	Concrete	150	Granular	765	N/A	-	-	-	-	-	-	-	-	-
TH3	East bound lane, 270 m West of Otter Street, 1.5 m from south curb	Concrete	150	Granular	150	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	-	-	-	-	-	-	-	-	-
TH5	West bound lane, 48 m West of Otter Street, 1.5 m from north curb	Asphalt / Concrete	50/200	Granular	100	0.8	24.6	0.0	3.3	53.7	42.9	40	14	26	



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





ISS/REV: A
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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

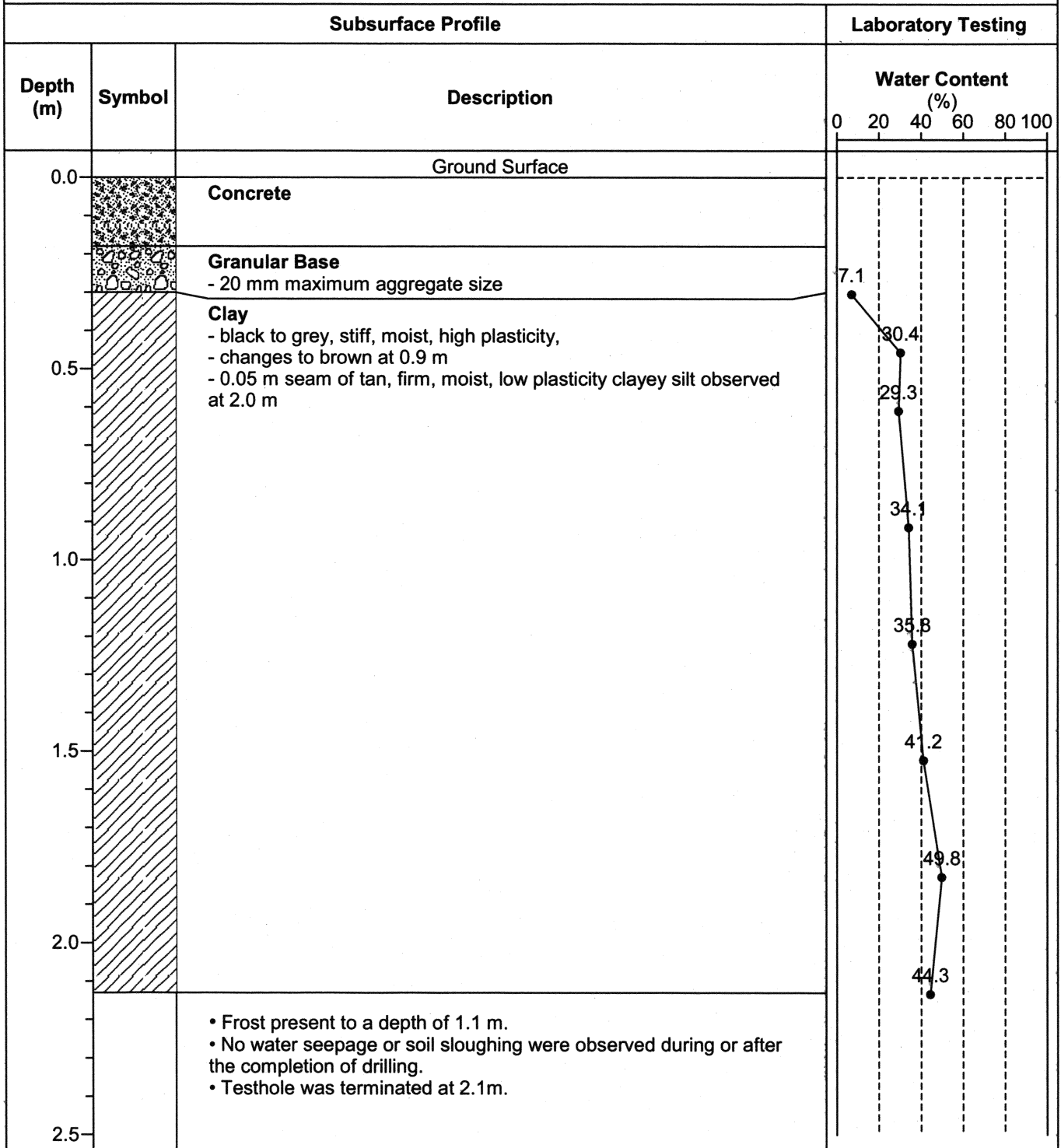
UMA | AECOM

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: January 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

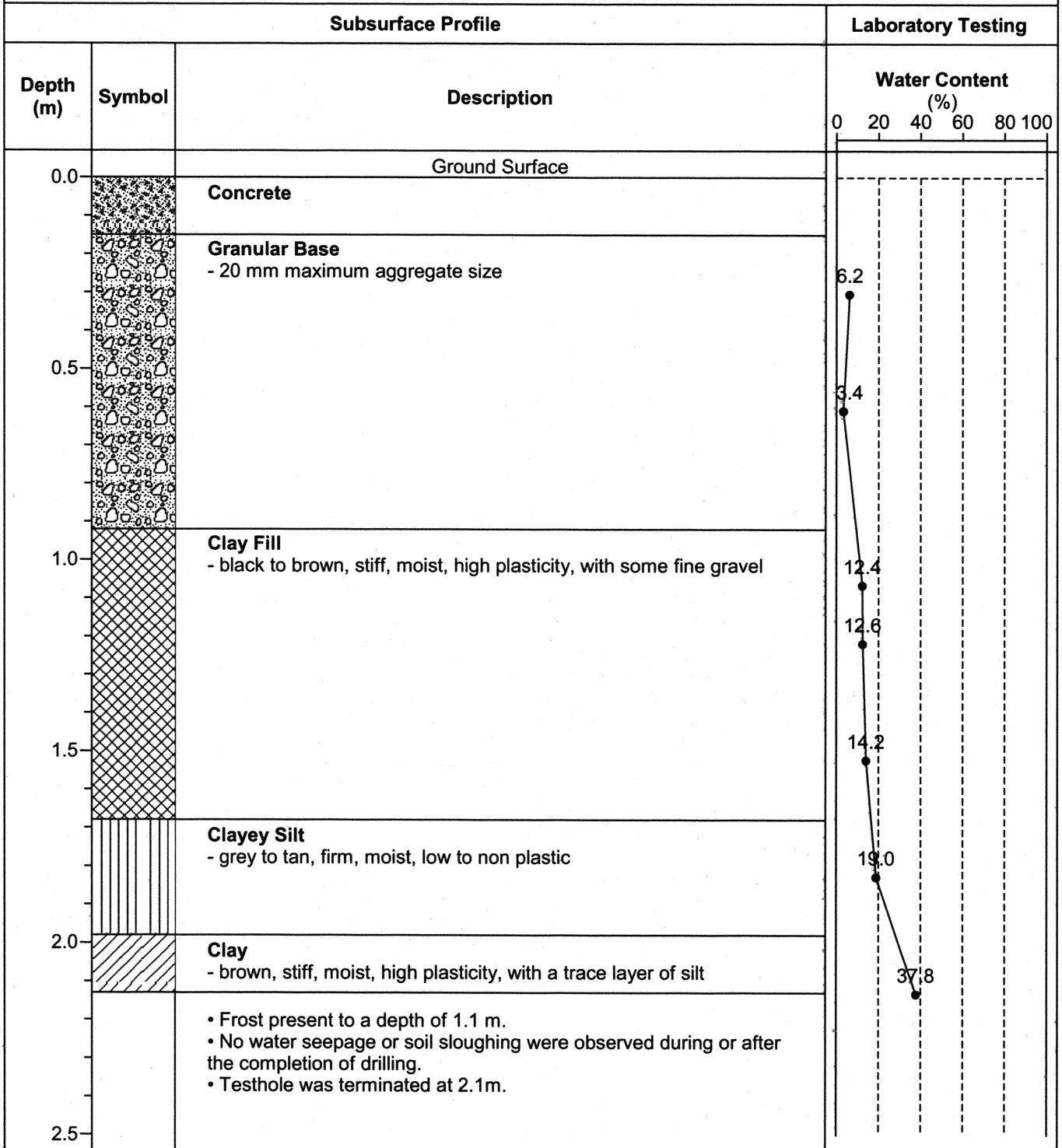


TESTHOLE TH2



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: January 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski



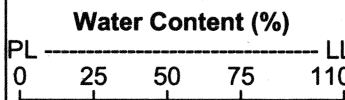
TESTHOLE TH3



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: January 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing					
Depth (m)	Symbol	Description	Water Content (%)		Gravel (%)	Sand (%)	Silt (%)	Clay (%)
			PL	LL				
			0	25	50	75	110	
0.0		Ground Surface						
		Concrete						
		Granular Base - 20 mm maximum aggregate size						
		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						
0.5								
1.0								
1.5								
2.0								
2.5		<ul style="list-style-type: none"> • 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. 						



Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	4.4	6.0	89.6

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: January 15, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%)
0.0		Ground Surface	
0.0 - 0.8		Concrete	
0.8 - 1.1		Granular Base - 20 mm maximum aggregate size	6.2
1.1 - 2.0		Clay Fill - black to brown, stiff, moist, high plasticity, with some fine gravel	3.4
2.0 - 2.1		Clayey Silt - grey to tan, firm, moist, low to non plastic	12.4
2.1		Clay - brown, stiff, moist, high plasticity, with a trace layer of silt	12.6
2.1 - 2.5		<ul style="list-style-type: none"> • 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. 	14.2
2.5			19.0
			37.8

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: January 15, 2008
 Depth of Testhole: 2.1 m
 Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing					
Depth (m)	Symbol	Description	Water Content (%)		Gravel (%)	Sand (%)	Silt (%)	Clay (%)
			PL	LL				
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					
		Clayey Silt - grey, stiff, moist, intermediate plasticity, with a trace of gypsum - tan, firm, moist, low plasticity below 2.0 m	31.9		0.0	3.3	53.7	42.9
1.0			26.0					
1.5			30.9					
2.0			36.2					
			37.1					
2.5		<ul style="list-style-type: none"> 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. 						

