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**GEOTECHNICAL REPORT** 

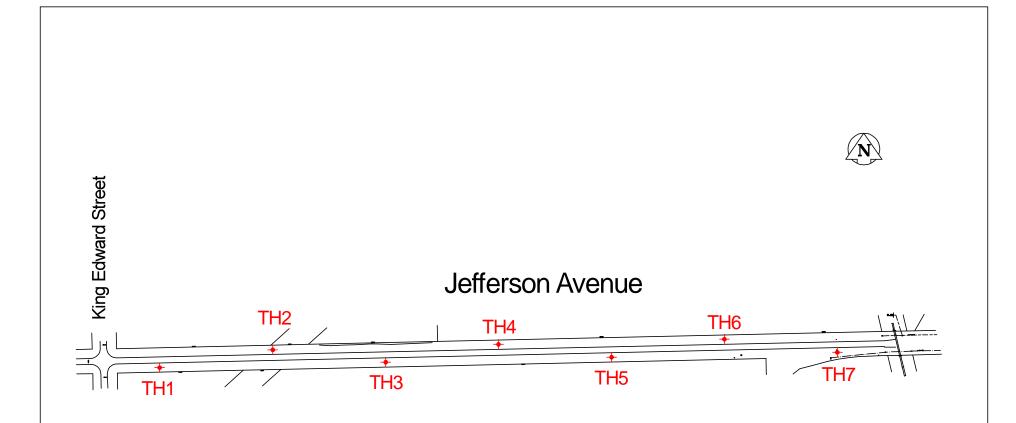


### CITY OF WINNIPEG 2008 STREET RENEWAL

# JEFFERSON AVENUE KING EDWARD STREET TO CPR ARBORG RAILWAY TRACK

Prepared for GENIVAR 200 TACHE AVENUE WINNIPEG, MANITOBA R2H 1A7

Prepared by
THE NATIONAL TESTING LABORATORIES LIMITED
199 HENLOW BAY
WINNIPEG, MANITOBA
R3Y 1G4



Project No.:GEN-816	Drawn by: AG	Figure: 1
Date: July 7, 2008	Reviewed by: DF	Scale: NTS

Testhole Location Plan City of Winnipeg 2008 Street Renewal Jefferson Avenue King Edward Street to CPR Arborg Railway Track

### City of Winnipeg 2008 Street Renewal Jefferson Avenue, King Edward Street to CPR Arborg Railway Track

		Paveme	nt Surface	Pavement	Structure Material		Sample	Moisture	Pai	ticle Size	Analys	sis	A	tterberg L	imits
Testhole ID	Testhole Location	Туре	Type Thickness (mm)		Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	70 m east of King Edward Street, South lane, 1.8 m from the centre line of the road	Traffic Gravel	50	N.A.	N.A.	-	-	-	-	•	-	,	,	ı	-
TH2	210 m east of King Edward Street, North lane, 1.1 m from the centre line of the road	Traffic Gravel	75	N.A.	N.A.	-	-	-	-	-	-	-	-	-	-
TH3	350 m east of King Edward Street, South lane, 1.9 m from the centre line of the road	Traffic Gravel	250	N.A.	N.A.	-	-	-	-	-	-	-	-	-	-
TH4	490 m east of King Edward Street, North lane, 1.7 m from the centre line of the road	Traffic Gravel	50	N.A.	N.A.	-	-	-	-	-	-	-	-	-	-
TH5	630 m east of King Edward Street, South lane, 1.7 m from the centre line of the road	Traffic Gravel	25	N.A.	N.A.	-	-	-	-	-	-	-	-	-	-
T110	770 m east of King Edward Street, North	Traffic	50			Clay	0.9	34.8	0	1.2	17.0	81.8	74	22	52
TH6	lane, 1.8 m from the centre line of the road	Gravel	50	N.A.	N.A.	Silt	1.5	22.0	0	3.7	71.7	24.6	23	18	5
TH7	910 m east of King Edward Street, South lane, 1.7 m from the centre line of the road	Traffic Gravel	50	N.A.	N.A.	-	-	-	-	1	-	-	-	1	-



Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Depth of Testhole: 2.3 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 70 m east of King Edward St., South Lane, 1.8 m from the centre line of the road

		Subsurface Profile		Laboratory Tes	sting
Depth (m)	Symbol	Description	0	Water Conte	ent 80 100
0.0-		Ground Surface			
- U.U - - -	)	Traffic Gravel  Clay Fill - black, stiff, moist, high plasticity, trace silt, sand, and fine gravel		25	
0.5- - -		Clay - black, stiff, moist, high plasticity		35	
- 1.0- - -	-	Silt - tan, soft, saturated, low plasticity		30	
- 1.5- - -	-	Clay - brown, stiff, moist, high plasticity		31	
2.0- - -		- brown, sun, moist, night plasticity		413	
- 2.5-		<ul> <li>Testhole terminated at 2.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>			



Date Drilled: June 18, 2008

Depth of Testhole: 2.3 m

Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Site: King Edward St. to CPR Arborg Railway Track

Logged by: Allan Goodwin

Testhole Location: 210 m east of King Edward St., North Lane, 1.1 m from the centre line of the road

	, ,	Laboratory Testing					
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100				
0.0-		Ground Surface					
0.0-	່ວິເວີ	Traffic Gravel					
-		Clay Fill - black/brown, stiff, moist, high plasticity, trace silt, sand, and fine gravel	44				
0.5- - -		Clay - black, stiff, moist, high plasticity - grey below 0.8 m	30				
1.0- - -	- - - - - - -	Silt - tan, firm/soft, saturated, low plasticity, trace fine sand	29				
1.5- - -	-		22				
2.0- - -	- - - - - - - - - - - - - - - - - - -	Clay	45				
		- brown, stiff, moist, high plasticity					
2.5- -	-	<ul> <li>Testhole terminated at 2.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>					



Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Depth of Testhole: 2.3 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 350 m east of King Edward St., South Lane, 1.9 m from the centre line of the road

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
		Ground Surface	
0.0-	) 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Gravel	25
0.5-		Clay - black, stiff, moist, high plasticity - grey below 0.6 m - brown below 1.2 m	40
1.0- - -			35
1.5-			34
2.0-	-	Silt - tan, soft, saturated, low plasticity	23
2.5-	-	<ul> <li>Testhole terminated at 2.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>	



Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Depth of Testhole: 2.3 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 490 m east of King Edward St., North Lane, 1.7 m from the centre line of the road

		Laboratory Testing					
Depth (m)	Symbol	Description	Q		(%) 40 60		
		Ground Surface					
0.0-	77////	Traffic Gravel		[-	[[-		
- - -		Clay - black, stiff, moist, high plasticity, with trace organic material (rootlets) - grey below 0.8 m			43		
0.5- - -					35		
- - 1.0		Silt			46		
- - 1.5- - -		- tan, firm/soft, saturated, low plasticity		26			
2.0- - -		Clay - brown, stiff, moist, high plasticity			45		
2.5-		<ul> <li>Testhole terminated at 2.3 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>					



Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Depth of Testhole: 2.7 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 630 m east of King Edward St., South Lane, 1.7 m from the centre line of the road

		Laboratory Testing						
Depth (m)	Symbol	Water Content (%) 0 20 40 60 80 100						
0.0		Ground Surface						
0.0- - -		Clay - black, stiff, moist, high plasticity, with sand and fine gravel at the surface	35					
0.5- - -		- brown below 1.0 m	42					
1.0- - - -			38 35					
1.5- - -		Silt - tan, soft, saturated with low plasticity	25					
2.0- - - -	- - - - -		22					
2.5-		Clay - brown, stiff, moist with high plasticity	34					
3.0-	- - -	<ul> <li>Testhole terminated at 2.7 m</li> <li>No water seepage or slouphing were observed during or upon completion of drilling.</li> </ul>						



Project Name: Jefferson Ave., 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Railway Track

Depth of Testhole: 2.3 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 770 m east of King Edward St., North Lane, 1.8 m from the centre line of the road

		Subsurface Profile	Laboratory Testing										
Depth (m)	Nater Content (%   PL								Sand (%)	Silt (%)	Clay (%)		
0.0-		Ground Surface	Ш.										
0.0-	7/////	Traffic Gravel	7[-										
- - -		Clay - black, stiff, moist, high plasticity		35									
0.5- - - -				35				0	1.2	17.0	81.8		
1.0- - - -		Silt - tan, firm/soft, saturated, low plasticity	_	22									
1.5- - -	-			22				0	3.7	71.4	24.6		
2.0-		Clay - brown, stiff, moist, high plasticity, with trace layers of silt		26									
2.5- - -	-	<ul> <li>Testhole terminated at 2.3 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>											



Project Name: Jefferson Avenue, 2008 Street Renewal

Client: GENIVAR
Site: King Edward St. to CPR Arborg Railway Track

Depth of Testhole: 2.3 m Logged by: Allan Goodwin

Date Drilled: June 18, 2008

Testhole Location: 910 m east of King Edward St., South Lane, 1.7 m from the centre line of the road

		Laboratory Testing					
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100				
		Ground Surface					
0.0-		Clay - black, stiff, moist, high plasticity - brown below 0.9 m	35				
0.5-			29				
1.0- - -			31				
1.5- -		Silt	34				
2.0- - - -		- tan, firm/soft, saturated, low plasticity	26				
2.5- -		<ul> <li>Testhole terminated at 2.3 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling.</li> </ul>					

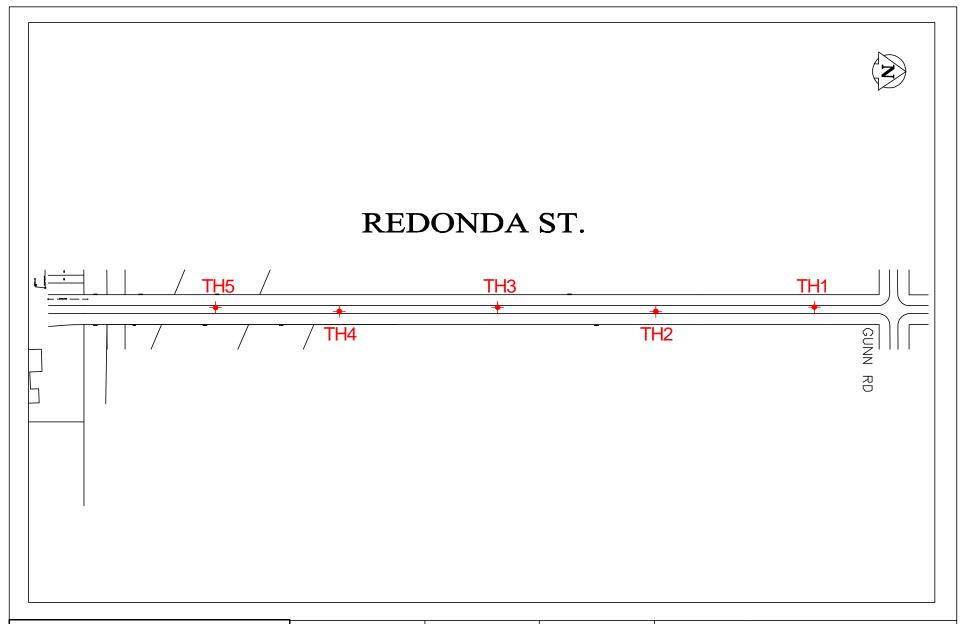


## CITY OF WINNIPEG 2008 STREET RENEWAL

# REDONDA STREET GUNN ROAD TO PAULLEY DRIVE

Prepared for GENIVAR 200 TACHE AVENUE WINNIPEG, MANITOBA R2H 1A7

Prepared by
THE NATIONAL TESTING LABORATORIES LIMITED
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WINNIPEG, MANITOBA
R3Y 1G4





Project No.:GEN-817	Drawn by: KK	Figure: 1
Date: July 6, 2008	Reviewed by: DF	Scale: NTS

Testhole Location Plan City of Winnipeg 2008 Street Renewal Redonda Street Gunn Road to Paulley Drive

## City of Winnipeg 2008 Street Renewal Redonda Street, Gunn Road to Paulley Drive

Testhole		Paveme	nt Surface	Pavement Structure Material		Commis	Sample	Moisture	Par	ticle Size	Analys	sis	Atterberg Limits		
ID	Testhole Location	Type Thickness (mm)		Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	80 m south of intersection of Redonda Street and Gunn Road, West Lane, 1.9 m from the centre line of road	Traffic Gravel	50	N.A.	N.A.	-	-	-	-	-	,		-	-	-
TH2	240 m south of intersection of Redonda Street and Gunn Road, East Lane, 1.1 m from centre line of road	Traffic Gravel	50	N.A.	N.A.	-	-	-	-	-	,	,	-	-	-
	400 m south of intersection of Redonda					Clay	1.2	30.1	0	1.7	16.6	81.7	72	23	49
TH3	Street and Gunn Road, West Lane, 1.4 m from centre line of road	Gravel	50	N.A.	N.A.	Clayey Silt	1.8	24.3	0	1.9	61.4	36.7	32	17	15
TH4	560 m south of intersection of Redonda Street and Gunn Road, East Lane, 1.4 m from centre line of road	Traffic Gravel	300	Granular Fill	400	-	-	-	,	-	,	,	,	-	-
TH5	685 m south of intersection of Redonda Street and Gunn Road, West Lane, 1.3 m from centre line of road	Traffic Gravel	50	Granular Fill	350	-	-	-	-	-	-	-	-	-	-



Project Name: Redonda Street, 2008 Street Renewal

Client: GENIVAR
Site: Redonda Street, Gunn Road to Paulley Drive

Date Drilled: June 19, 2008
Depth of Testhole: 2.1 m
Logged by: Allan Goodwin

Testhole Location: 80 m south of Gunn Rd., West Lane, 1.9 m from centre line of road.

Subsurface Profile				Laboratory Testing					
Depth (m)	Symbol	Description	o_	<b>Water</b> (20 40	<b>Conte</b> %) 60	ent 80 100			
0.0		Ground Surface							
0.0-	9000900	Traffic Gravel							
		Clay - black, stiff, moist, high plasticity, with sand and fine gravel at the surface grey below 0.6 m - brown below 0.9 m - trace layers of silt below 1.5 m		34					
0.5-				34					
1.0-				32					
1.5-				33					
				32					
2.0- - - -		<ul> <li>Testhole terminated at 2.1 m</li> <li>No water seepage or slough were observed during or upon completion of drilling</li> </ul>		32					



**Project Name: Redonda Street, 2008 Street Renewal** 

Client: GENIVAR
Site: Redonda Street, Gunn Road to Paulley Drive

Depth of Testhole: 2.1 m Logged by: Allan Goodwin

Date Drilled: June 19, 2008

Testhole Location: 240 m south of Gunn Rd., East Lane, 1.1 m from centre line of road.

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0-		Ground Surface	
0.0-	900000	Traffic Gravel	
- - -		Clay - black, stiff, moist, high plasticity, with sand and fine gravel at the surface - grey below 0.9 m - brown below 1.2 m - trace silt layers below 1.8 m	25
0.5- - -			28
- - 1.0- -			29
- 1.5- -			30
- - 2.0-			39 42
- -		<ul> <li>Testhole terminated at 2.1 m</li> <li>No water seepage or slough were observed during or upon completion of drilling</li> </ul>	
2.5-			



Project Name: Redonda Street, 2008 Street Renewal

**Client: GENIVAR** 

Date Drilled: June 19, 2008 Depth of Testhole: 2.1 m Logged by: Allan Goodwin

Site: Redonda Street, Gunn Road to Paulley Drive

Testhole Location: 400 m south of Gunn Rd., West Lane, 1.4 m from centre line of road.

Subsurface Profile			Laboratory Testing								
Depth (m)	Symbol	Description	PL 0	<b>Wate</b>	er <b>Con</b>	tent (%) 75	- LL 110	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-	2702.40	Ground Surface  Traffic Gravel  Clay - black, stiff, moist, high plasticity, with sand and fine gravel at the surface - black/grey below 0.6 m - grey/brown below 1.2		32				8	S	· ·	0
1.0- - - - - 1.5-		Clayey Silt - tan, firm, moist, low to intermediate plasticity		30				0	1.7	16.6	81.7
2.0-		Clay - brown, stiff, moist, high plasticity  • Testhole terminated at 2.4 m • No water seepage or slough were observed during or upon completion of drilling		24	9			0	1.9	61.4	36.7



**Project Name: Redonda Street, 2008 Street Renewal** 

Client: GENIVAR
Site: Redonda Street, Gunn Road to Paulley Drive

Date Drilled: June 19, 2008
Depth of Testhole: 2.1 m
Logged by: Allan Goodwin

Testhole Location: 560 m south of Gunn Rd., East Lane, 1.4 m from centre line of road.

Subsurface Profile				Laboratory Testing					
Depth (m)	Symbol	Description	o_	<b>W</b> a	(%) 40 60				
		Ground Surface	$\perp$						
0.0- - -	3000000 3000000 3000000000000000000000	Traffic Gravel	4						
0.5- -		Granular Fill - tan, dense, moist, fine to medium sand and gravel, trace silt and clay		12					
1.0- - -		Clay - brown, stiff/firm, moist, high plasticity, with sand and fine gravel at the surface - layers of silt between 1.2 to 1.7 m - trace layers of silt below 1.8 m		26	7				
1.5- - - -				2	8				
2.0-					41				
-	-	<ul> <li>Testhole terminated at 2.3 m</li> <li>No water seepage observed during or upon completion of drilling.</li> <li>Slough below 0.9 m upon completion of drilling</li> </ul>							



**Project Name: Redonda Street, 2008 Street Renewal** 

Client: GENIVAR
Site: Redonda Street, Gunn Road to Paulley Drive

Depth of Testhole: 2.1 m Logged by: Allan Goodwin

Date Drilled: June 19, 2008

Testhole Location: 685 m south of Gunn Rd., West Lane, 1.3 m from centre line of road.

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
0.0-	300,300	Traffic Gravel	
-		Granular Fill - tan, dense, moist, fine to medium sand and gravel, trace silt and clay	4
0.5-		Clay - black, stiff, moist, high plasticity, with sand and fine gravel at the surface - grey/brown below 0.6 m - brown below 0.9 m - traces layers of silt below 1.2 m	28
1.0- - -			32
- 1.5- - -			31
2.0- -			35
- - 2.5	-	<ul> <li>Testhole terminated at 2.3 m</li> <li>No water seepage or slough were observed during or upon completion of drilling</li> </ul>	