Appendix F

Pavement Report

GENIVAR

TECHNICAL MEMORANDUM

Date: April 13, 2011

To: Bruce Grundon

From: Steve Ash, Raid Khamis

Project No.: 111-53245-00

Subject: Pavement Condition Survey
Mayfield Road between Chinguacousy Road and Heart Lake Road, Peel Region

This memo summarizes the results of a pavement condition survey that was completed as input to a Schedule C Class Environmental Assessment of Mayfield Road, between Chinguacousy Road and Heart Lake Road in Brampton, Ontario.

The pavement condition survey was completed using Ministry of Transportation (MTO) guidelines and included a visual inspection of the pavement section to identify and classify existing distress features, driving the road at the posted speed to assess the Ride Condition Rating (RCR), and assessment of the Pavement Condition Rating (PCR).

Pavement condition survey field forms are provided in Appendix A. The study area was divided to five (5) sections as follows:

1- Section 1: Mayfield Road, from Heart Lake Road to Property # 3742, about 700 m west of Heart Lake Road.

2- Section 2: Mayfield Road, from Property # 3742 to 150 m west of Kennedy Road.

3- Section 3: Mayfield Road, from 150 m west of Kennedy Road to 250 m west of Hurontario Street.

4- Section 4: Mayfield Road, from 250 m west of Hurontario Street to 50 m east of McLaughlin Road.

5- Section 5: Mayfield Road, from 50 m east of McLaughlin Road to Chinguacousy Road.

Photographs are provided in Appendix C.

RCR and PCR were estimated using the procedure described in Appendix B. Results are summarized in the following table:

Section #	Length(Km)	PCR	RCR	Severity of Distress	Density of Distress
1	0.7	85	8.0	Very slight	Few
2	0.9	55	5.5	Moderate	Intermittent to Frequent
3	1.5	90	8.5	Very slight	Few
4	1.1	55	5.5	Moderate	Intermittent to Frequent
5	1.4	90	8.0	Very slight	Few

Based on the results, the weighted averages of PCR and RCR are 77 and 7.2, respectively.

Please contact us if you have any questions.

List of Appendices:

Appendix A: Pavement Condition Rating Forms

Appendix B: Guidelines for the Estimation of Pavement Condition Rating and Ride Condition Rating (MTO Procedure)

Appendix C: Photographs

Appendix A

Pavement Condition Rating Forms

Section_1

Mayfield Rd.

Ministry of Transportation
Ontario

FLEXIBLE PAVEMENT CONDITION EVALUATION FORM

Location From: Heart Lake Road **To:** 700 m West of Heart Lake Rd (Property # 3742)

LHRS BEGINS ____ OFFSET ____ km **Section Length** 0.7 km (700 m) LENGTH **District** ____

Survey Date YEAR 11 MONTH 2 **PCR** 85 **RCR** 8.0 **Traffic Direction** B (B: BOTH DIRECTIONS; N: NORTH BOUND; S: SOUTH BOUND; E: EAST BOUND; W: WEST BOUND) **Highway** 14

Contract No. ____ **WP No.** ____ **Facility** A (A: ALL LANES; C: COLLECTOR; E: EXPRESS; O: OTHERS (Additional Lanes)) **Class** ____ (F: FREEWAY; A: ARTERIAL; C: COLLECTOR; L: LOCAL; S: SECONDARY)

Ride Condition Rating (at 80 km/h)

- 10 EXCELLENT — Smooth and pleasant
- 8 GOOD — Comfortable
- 6 FAIR — Uncomfortable
- 4 POOR — Very rough and bumpy
- 2 VERY POOR — Dangerous at 80 km/h
- 0

Pavement

			SEVERITY OF DISTRESS: Very Slight	Slight	Moderate	Severe	Very Severe	DENSITY OF DISTRESS (Extent of Occurrence, %): Few	Intermittent	Frequent	Extensive	Throughout
								< 10	10-20	20-50	50-80	80-100
			1	2	3	4	5	1	2	3	4	5
SURFACE DEFECTS		Ravelling & C. Agg. Loss	1									
		Flushing	2									
SURFACE DEFORMATIONS		Rippling and Shoving	3									
		Wheel Track Rutting	4	✓				✓				
		Distortion	5									
CRACKING	Longitudinal Wheel Track	Single and Multiple	6									
		Alligator	7									
	Centre Line	Single and Multiple	8	✓								
		Alligator	9									
	Pavement Edge	Single and Multiple	10	✓								
		Alligator	11									
	Transverse	Half, Full and Multiple	12									
		Alligator	13									
	Longitudinal Meander and Midlane		14									
	Random		15	✓								

Shoulders

DOMINANT TYPE	ONE ✓	DISTRESS	SEVERITY OF DISTRESS: RIGHT Mod 1	RIGHT Severe 2	LEFT Mod 1	LEFT Severe 2	DENSITY OF DISTRESS (Extent of Occurrence, %): RIGHT 10-30 1	RIGHT >30 2	LEFT 10-30 1	LEFT >30 2
PAVED FULL		Cracking								
		Pavement Edge/ Curb Separation								
PAVED PARTIAL	✓	Distortion								
SURFACE TREATED		Breakup/Separation								
		Edge Break								
PRIMED		Breakup								
GRAVEL										

Maintenance Treatment

		EXTENT OF OCCURRENCE, %: <10 1	10-20 2	20-50 3	50-80 4	>80 5
PAVEMENT	Manual Patching					
	Machine Patching					
	Spray Patching					
	Rout and Seal Cracks					
	Chip Seal					
SHOULDERS	Manual Patching					
	Machine Patching					
	Rout and Seal Cracks					
	Chip Seal					

Distress Comments (Items not covered above) _____

Other Comments (e.g. subsections, additional contracts) _____

Evaluated by Raid Khamis PEng.

PH-D-584 86-01

Figure A-1 Pavement Condition Rating Form

Section - 2

Mayfield Rd.

Ministry of Transportation
Ontario

FLEXIBLE PAVEMENT CONDITION EVALUATION FORM

Location From: 700m West of Heart Lake Rd (Peel Rd # 3742) **To:** 150 m West of Kennedy Rd.

LHRS BEGINS ____ **OFFSET** ____ km **Section Length** 0.9 km (900 m) LENGTH **District** ____

Survey Date YEAR 11 MONTH 2 **PCR** 55 **RCR** 5.5 **Traffic Direction** B (B: BOTH DIRECTIONS, N: NORTH BOUND, S: SOUTH BOUND, E: EAST BOUND, W: WEST BOUND) **Highway** 14

Contract No. ____ **WP No.** ____ **Facility** A (A: ALL LANES, C: COLLECTOR, E: EXPRESS, O: OTHERS (Additional Lanes)) **Class** ____ (F: FREEWAY, A: ARTERIAL, C: COLLECTOR, L: LOCAL, S: SECONDARY)

Ride Condition Rating (at 80 km/h)

- 10 EXCELLENT — Smooth and pleasant
- 8 GOOD — Comfortable
- 6 FAIR — Uncomfortable
- 4 POOR — Very rough and bumpy
- 2 VERY POOR — Dangerous at 80 km/h
- 0

Pavement			SEVERITY OF DISTRESS: Very Slight	Slight	Moderate	Severe	Very Severe	DENSITY OF DISTRESS (Extent of Occurrence, %): Few (<10)	Intermittent (10-20)	Frequent (20-50)	Extensive (50-80)	Throughout (80-100)
			1	2	3	4	5	1	2	3	4	5
SURFACE DEFECTS		Ravelling & C. Agg. Loss	1		✓					✓			
		Flushing	2		✓								
SURFACE DEFORMATIONS		Rippling and Shoving	3			✓							
		Wheel Track Rutting	4			✓							
		Distortion	5			✓					✓		
CRACKING	Longitudinal Wheel Track	Single and Multiple	6			✓							
		Alligator	7			✓				✓			
	Centre Line	Single and Multiple	8			✓					✓		
		Alligator	9			✓				✓			
	Pavement Edge	Single and Multiple	10			✓							
		Alligator	11			✓				✓			
	Transverse	Half, Full and Multiple	12			✓							
		Alligator	13			✓				✓			
	Longitudinal Meander and Midlane		14			✓				✓			
	Random		15			✓					✓		

Shoulders			SEVERITY OF DISTRESS: RIGHT Mod (1)	RIGHT Severe (2)	LEFT Mod (1)	LEFT Severe (2)	DENSITY OF DISTRESS (Extent of Occurrence, %): RIGHT 10-30 (1)	RIGHT >30 (2)	LEFT 10-30 (1)	LEFT >30 (2)
DOMINANT TYPE	ONE ✓	DISTRESS								
PAVED FULL		Cracking								
PAVED PARTIAL	✓	Pavement Edge/ Curb Separation		✓	✓		✓		✓	
		Distortion								
SURFACE TREATED		Breakup/Separation								
		Edge Break	✓		✓		✓		✓	
PRIMED		Breakup								
GRAVEL										

Maintenance Treatment		EXTENT OF OCCURRENCE, %: <10 (1)	10-20 (2)	20-50 (3)	50-80 (4)	>80 (5)
PAVEMENT	Manual Patching		✓			
	Machine Patching					
	Spray Patching					
	Rout and Seal Cracks		✓			
	Chip Seal					
SHOULDERS	Manual Patching		✓			
	Machine Patching		✓			
	Rout and Seal Cracks					
	Chip Seal					

Distress Comments (Items not covered above) ____

Other Comments (e.g. subsections, additional contracts) ____

Evaluated by Rauf Khamis P Eng.

PH-D-584 86-01

Figure A-1 Pavement Condition Rating Form

Section – 3

Mayfield Rd.

Ministry of Transportation
Ontario

FLEXIBLE PAVEMENT CONDITION EVALUATION FORM

Location From: 150 m West of Kennedy Rd **To:** 250 m West of Hurontario Street

LHRS BEGINS ____ OFFSET ____ km **Section Length** 1.5 km (1500 m) LENGTH **District** ____

Survey Date YEAR 11 MONTH 2 **PCR** 90 **RCR** 8.5 **Traffic Direction** B (B: BOTH DIRECTIONS, N: NORTH BOUND, S: SOUTH BOUND, E: EAST BOUND, W: WEST BOUND) **Highway** 14

Contract No. ____ **WP No.** ____ **Facility** A (A: ALL LANES, C: COLLECTOR, E: EXPRESS, O: OTHERS (Additional Lanes)) **Class** ____ (F: FREEWAY, A: ARTERIAL, C: COLLECTOR, L: LOCAL, S: SECONDARY)

Ride Condition Rating (at 80 km/h)

- 10 EXCELLENT — Smooth and pleasant
- 8 GOOD — Comfortable
- 6 FAIR — Uncomfortable
- 4 POOR — Very rough and bumpy
- 2 VERY POOR — Dangerous at 80 km/h
- 0

Pavement			SEVERITY OF DISTRESS: Very Slight (1)	Slight (2)	Moderate (3)	Severe (4)	Very Severe (5)	DENSITY OF DISTRESS, Extent of Occurrence,%: Few <10 (1)	Intermittent 10-20 (2)	Frequent 20-50 (3)	Extensive 50-80 (4)	Throughout 80-100 (5)
SURFACE DEFECTS		Ravelling & C. Agg. Loss	1	✓								
		Flushing	2									
SURFACE DEFORMATIONS		Rippling and Shoving	3	✓								
		Wheel Track Rutting	4	✓								
		Distortion	5									
CRACKING	Longitudinal Wheel Track	Single and Multiple	6									
		Alligator	7									
	Centre Line	Single and Multiple	8	✓								
		Alligator	9									
	Pavement Edge	Single and Multiple	10	✓								
		Alligator	11									
	Transverse	Half, Full and Multiple	12									
		Alligator	13									
	Longitudinal Meander and Midlane		14									
	Random		15	✓				✓				

Shoulders			SEVERITY OF DISTRESS: RIGHT Mod (1)	RIGHT Severe (2)	LEFT Mod (1)	LEFT Severe (2)	DENSITY OF DISTRESS, Extent of Occurrence,%: RIGHT 10-30 (1)	RIGHT >30 (2)	LEFT 10-30 (1)	LEFT >30 (2)
DOMINANT TYPE	ONE ✓	DISTRESS								
PAVED FULL	✓	Cracking								
		Pavement Edge/ Curb Separation								
PAVED PARTIAL		Distortion								
SURFACE TREATED		Breakup/Separation								
		Edge Break								
PRIMED		Breakup								
GRAVEL										

Maintenance Treatment		EXTENT OF OCCURRENCE, %: <10 (1)	10-20 (2)	20-50 (3)	50-80 (4)	>80 (5)
PAVEMENT	Manual Patching					
	Machine Patching					
	Spray Patching					
	Rout and Seal Cracks					
	Chip Seal					
SHOULDERS	Manual Patching					
	Machine Patching					
	Rout and Seal Cracks					
	Chip Seal					

Distress Comments (Items not covered above)

Ravelling, Rippling, close to the intersections only

Other Comments (e.g. subsections, additional contracts)

Evaluated by Raid Khawis P.Eng

PH-D-584 86-01

Figure A-1 Pavement Condition Rating Form

Section - 4

Mayfield Rd.

Ministry of Transportation
Ontario

FLEXIBLE PAVEMENT CONDITION EVALUATION FORM

Location From: 250 m West of Huvontario St. **To:** 50 m East of McLaghlin Rd.

LHRS BEGINS ____ OFFSET ____ km **Section Length** 1.1 km (1100 m) LENGTH **District** ____

Survey Date YEAR ____ MONTH ____ **PCR** 55 **RCR** 5.5 **Traffic Direction** B (B : BOTH DIRECTIONS, N : NORTH BOUND, S : SOUTH BOUND, E : EAST BOUND, W : WEST BOUND) **Highway** 14

Contract No. ____ – ____ **WP No.** ____ – ____ – ____ **Facility** A (A : ALL LANES, C : COLLECTOR, E : EXPRESS, O : OTHERS (Additional Lanes)) **Class** ____ (F : FREEWAY, A : ARTERIAL, C : COLLECTOR, L : LOCAL, S : SECONDARY)

Ride Condition Rating (at 80 km/h)

- 10 EXCELLENT — Smooth and pleasant
- 8 GOOD — Comfortable
- 6 FAIR — Uncomfortable
- 4 POOR — Very rough and bumpy
- 2 VERY POOR — Dangerous at 80 km/h
- 0

Pavement				SEVERITY OF DISTRESS: Very Slight	Slight	Moderate	Severe	Very Severe	DENSITY OF DISTRESS (Extent of Occurrence, %): Few (<10)	Intermittent (10-20)	Frequent (20-50)	Extensive (50-80)	Throughout (80-100)
				1	2	3	4	5	1	2	3	4	5
SURFACE DEFECTS		Ravelling & C. Agg. Loss	1			✓				✓			
		Flushing	2										
SURFACE DEFORMATIONS		Rippling and Shoving	3			✓				✓			
		Wheel Track Rutting	4										
		Distortion	5		✓					✓			
CRACKING	Longitudinal Wheel Track	Single and Multiple	6			✓					✓		
		Alligator	7			✓				✓			
	Centre Line	Single and Multiple	8			✓				✓			
		Alligator	9										
	Pavement Edge	Single and Multiple	10				✓				✓		
		Alligator	11			✓				✓			
	Transverse	Half, Full and Multiple	12										
		Alligator	13										
	Longitudinal Meander and Midlane		14										
	Random		15			✓				✓			

Shoulders			SEVERITY OF DISTRESS: RIGHT Mod	RIGHT Severe	LEFT Mod	LEFT Severe	DENSITY OF DISTRESS (Extent of Occurrence, %): RIGHT 10-30	RIGHT >30	LEFT 10-30	LEFT >30
			1	2	1	2	1	2	1	2
PAVED FULL		Cracking								
		Pavement Edge/ Curb Separation								
PAVED PARTIAL	✓	Distortion		✓	✓		✓			✓
SURFACE TREATED		Breakup/Separation								
		Edge Break								
PRIMED		Breakup								
GRAVEL										

Maintenance Treatment		EXTENT OF OCCURRENCE, %: <10	10-20	20-50	50-80	>80
		1	2	3	4	5
PAVEMENT	Manual Patching	✓				
	Machine Patching					
	Spray Patching					
	Rout and Seal Cracks					
	Chip Seal					
SHOULDERS	Manual Patching	✓				
	Machine Patching					
	Rout and Seal Cracks					
	Chip Seal					

Distress Comments (Items not covered above) _____

Other Comments (e.g. subsections, additional contracts) _____

Evaluated by Raid Khamis P.Eng

PH-D-564 86-01

Figure A-1 Pavement Condition Rating Form

Section - 5

Mayfield Rd.

Ministry of Transportation
Ontario

FLEXIBLE PAVEMENT CONDITION EVALUATION FORM

Location From: 50 m East of McLaughlin **To:** Chinguacousy Rd.

LHRS ____ BEGINS ____ OFFSET km **Section Length** 1.4 km (1400 km) LENGTH **District** ____

Survey Date 11 YEAR 2 MONTH **PCR** 90 **RCR** 8.0 **Traffic Direction** B (B: BOTH DIRECTIONS, N: NORTH BOUND, S: SOUTH BOUND, E: EAST BOUND, W: WEST BOUND) **Highway** 14

Contract No. ____ – ____ **WP No.** ____ – ____ – ____ **Facility** A (A: ALL LANES, C: COLLECTOR, E: EXPRESS, O: OTHERS (Additional Lanes)) **Class** ____ (F: FREEWAY, A: ARTERIAL, C: COLLECTOR, L: LOCAL, S: SECONDARY)

Ride Condition Rating (at 80 km/h)

- 10 EXCELLENT Smooth and pleasant
- 8 GOOD Comfortable
- 6 FAIR Uncomfortable
- 4
- 2 POOR Very rough and bumpy
- 0 VERY POOR Dangerous at 80 km/h

Pavement			SEVERITY OF DISTRESS: Very Slight (1)	Slight (2)	Moderate (3)	Severe (4)	Very Severe (5)	DENSITY OF DISTRESS Extent of Occurrence,%: Few <10 (1)	Intermittent 10-20 (2)	Frequent 20-50 (3)	Extensive 50-80 (4)	Throughout 80-100 (5)
SURFACE DEFECTS		Ravelling & C. Agg. Loss	1									
		Flushing	2									
SURFACE DEFORMATIONS		Rippling and Shoving	3									
		Wheel Track Rutting	4	✓				✓				
		Distortion	5									
CRACKING	Longitudinal Wheel Track	Single and Multiple	6	✓				✓				
		Alligator	7									
	Centre Line	Single and Multiple	8									
		Alligator	9									
	Pavement Edge	Single and Multiple	10									
		Alligator	11									
	Transverse	Half, Full and Multiple	12									
		Alligator	13									
	Longitudinal Meander and Midlane		14									
	Random		15	✓				✓				

Shoulders			SEVERITY OF DISTRESS RIGHT Mod (1)	RIGHT Severe (2)	LEFT Mod (1)	LEFT Severe (2)	DENSITY OF DISTRESS Extent of Occurrence,% RIGHT 10-30 (1)	RIGHT >30 (2)	LEFT 10-30 (1)	LEFT >30 (2)
DOMINANT TYPE	ONE ✓	DISTRESS								
PAVED FULL		Cracking								
PAVED PARTIAL	✓	Pavement Edge/ Curb Separation								
SURFACE TREATED		Distortion								
PRIMED		Breakup/Separation								
GRAVEL		Edge Break								
		Breakup								

Maintenance Treatment		EXTENT OF OCCURRENCE, % <10 (1)	10-20 (2)	20-50 (3)	50-80 (4)	>80 (5)
PAVEMENT	Manual Patching					
	Machine Patching					
	Spray Patching					
	Rout and Seal Cracks					
	Chip Seal					
SHOULDERS	Manual Patching					
	Machine Patching					
	Rout and Seal Cracks					
	Chip Seal					

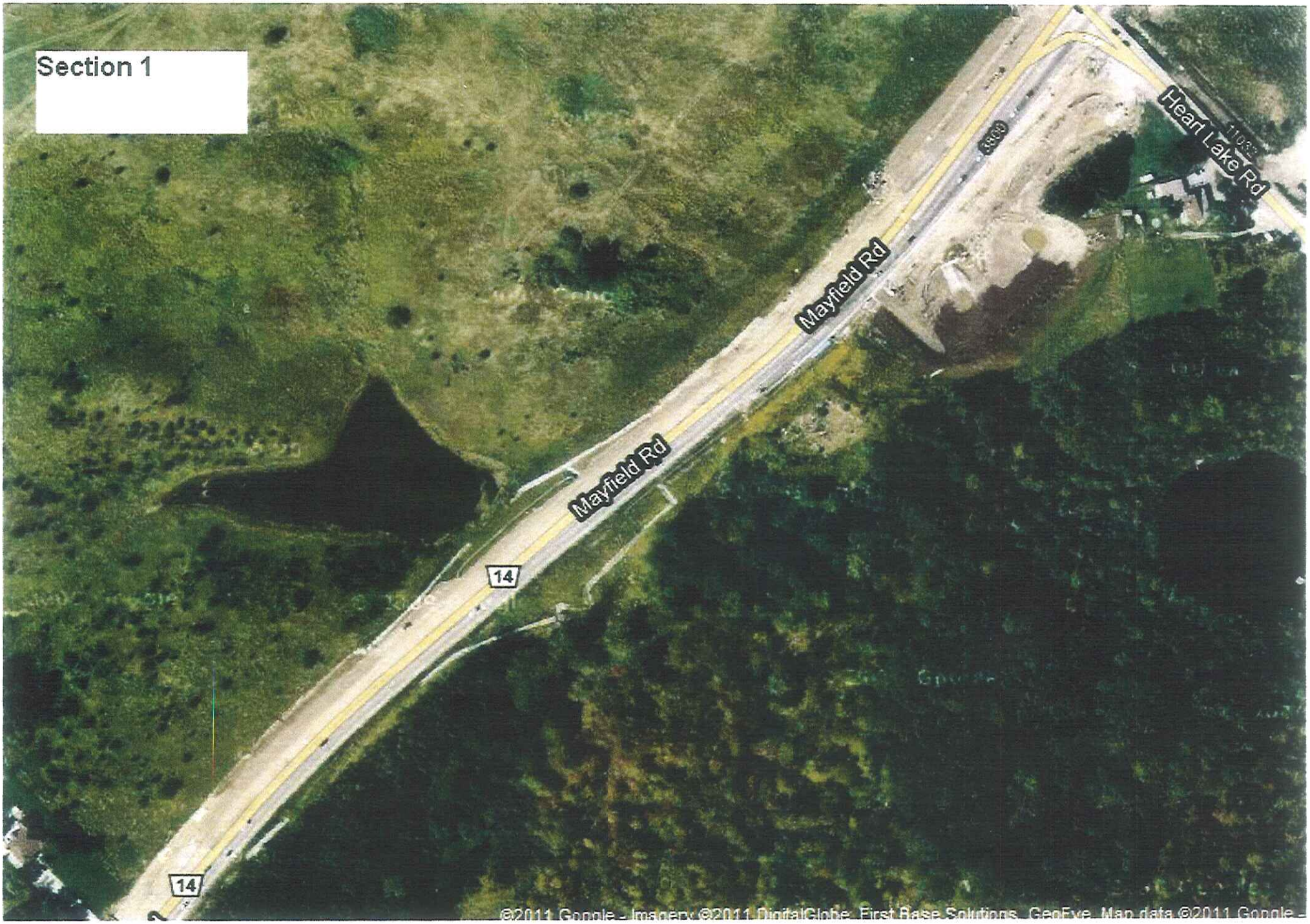
Distress Comments (Items not covered above) ____

Other Comments (e.g. subsections, additional contracts) ____

Evaluated by Raid Khamis P.Eng.

PH-D-584 86-01

Figure A-1 Pavement Condition Rating Form


Section 1
Heart Lake Rd
Mayfield Rd
Mayfield Rd
14
14
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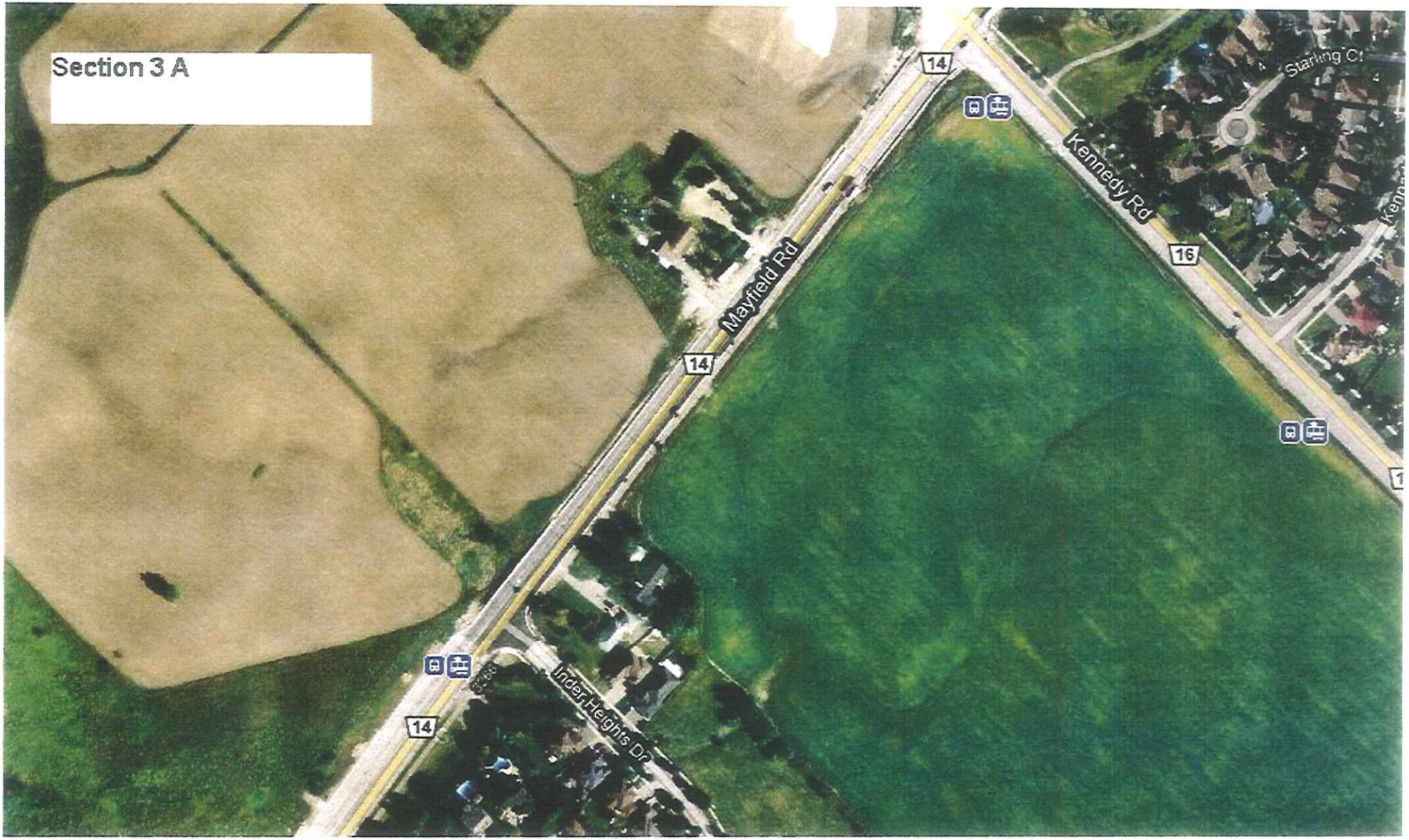
Section 2
Mayfield Rd
14
Stonegate Dr
Chickadee Crescent
Sandpiper Ct
Kenpark Ave
Infranet Usa
Burltree Dr
Kingfisher Ct
Kennedy Rd
©2011 Google - Imagery ©2011 DigitalGlo


Section 3 A
14
Mayfield Rd
14
14
Kennedy Rd
16
Starling Ct
Under Heights Dr


Section 3 B
Elementary School
Summer Valley Dr
Sweet Briar Ln
Mayfield Rd
14
Valley View Rd
Campbell Shawn K
Huron Ontario St
Oldgate Ln
Antica Osteria Italian Eatery Limited
Coptic Orthodox Church of Archangel Michael St Pekla
Huron Ontario St
Mayfield Rd
Viewmount Crescent
Sundridge St
Lawlor Ct
Sobeys
Colonel Bertram Rd
14
Tim Hortons
Viewmount Cres


Section 4
Mayfield Rd
14
Robertson Davies Dr
Sundridge St
Willow Crescent
MiTime Home Day Spa
Southbend Dr
Barnes Ct
Crestwood Dr
Cresthaven Rd
Immanuel Christian Reformed Church
Iceland Poppy Trail
Bannington Crescent
Delphinium Way
Hybrid St
Freesia Rd
Van Kirk Dr
Pyramid Contracting
McLaughlin Rd
Accent Cir


Section 5
14
McLaughlin Rd
14
Mayfield Rd
Peace
Monuments
Chinguacousy Rd
14
Mayfield Rd
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Appendix B

Guidelines for the Estimation of Pavement Condition Rating and Ride Condition Rating (MTO Procedure)

Table B - 1

A Guide for the Estimation of Pavement Condition Rating and Priority for Flexible Pavements	
0-20	Pavement is in poor to very poor condition with extensive severe cracking, alligatoring and dishing. Rideability is poor and the surface is very rough and uneven.
20-30	Pavement is in poor condition with moderate alligatoring and extensive severe cracking and dishing. Rideability is poor and the surface is very rough and uneven.
30-40	Pavement is in poor to fair condition with frequent moderate alligatoring and extensive moderate cracking and dishing. Rideability is poor to fair and surface is moderately rough and uneven.
40-50	Pavement is in poor to fair condition with frequent moderate cracking and dishing, and intermittent moderate alligatoring. Rideability is poor to fair and surface is moderately rough and uneven.
50-65	Pavement is in fair condition with intermittent moderate and frequent slight cracking, and with intermittent slight or moderate alligatoring and dishing. Rideability is fair and surface is slightly rough and uneven.
65-75	Pavement is in fairly good condition with slight cracking, slight or very slight dishing and a few areas of slight alligatoring. Rideability is fairly good with intermittent rough and uneven sections.
75-90	Pavement is in good condition with frequent very slight or slight cracking. Rideability is good with a few slightly rough and uneven sections.
90-100	Pavement is in excellent condition with few cracks. Rideability is excellent with few areas of slight distortion.
	Note: This table is based on Table B-1 in MTO report SP-004

Table 1/ Ride Condition Rating Guide

RCR	Uniform Description of Ride Condition at Posted Speed (RCR)	Guidelines
8-10	Excellent	Very smooth ride.
6-8	Good	Smooth ride with just a few bumps or depressions.
4-6	Fair	Still comfortable ride with intermittent bumps or depressions.
2-4	Poor	Uncomfortable ride with frequent bumps or depressions.
0-2	Very Poor	Uncomfortable ride with constant bumps or depressions resulting in rattle and shake of rating vehicle. Cannot maintain posted speed and must steer constantly to avoid bumps or depressions. Dangerous at 80 km/h.

Appendix C

Photographs

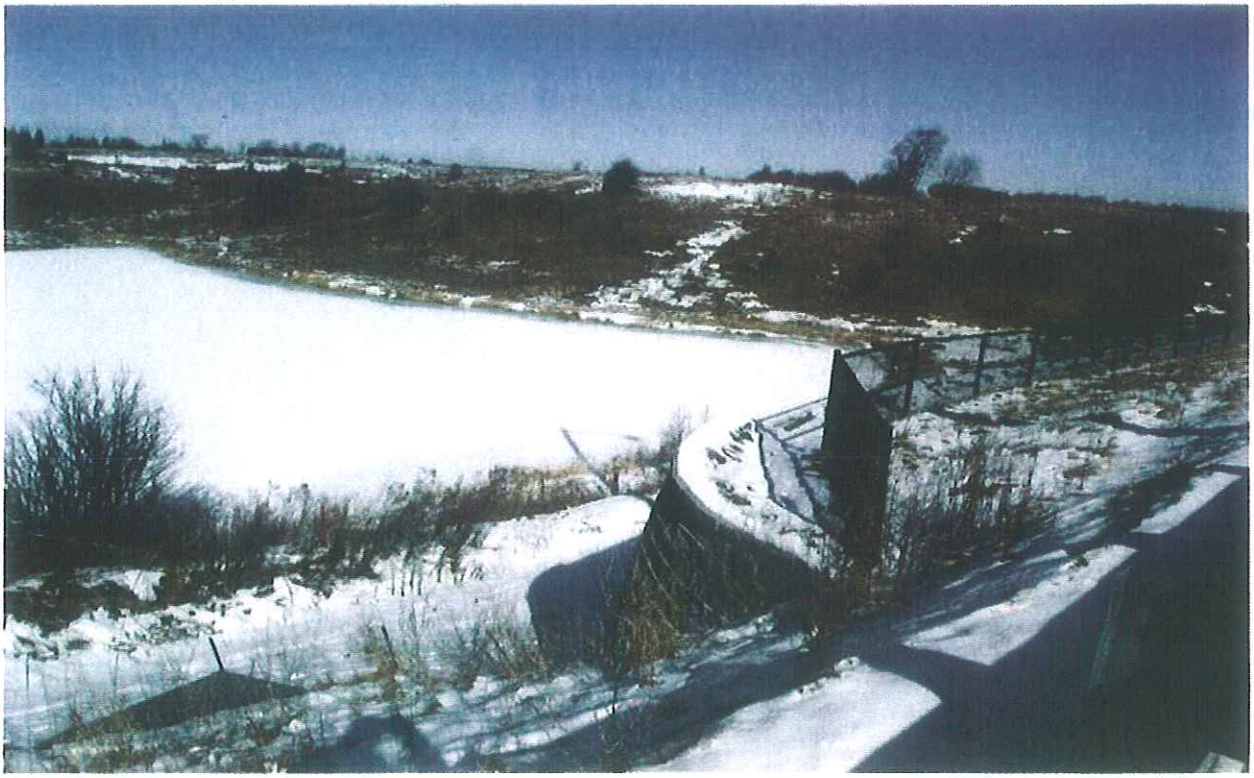
Mayfield Road\Section1\ Looking Towards West

Mayfield Road\Section1\ Looking Towards West

Mayfield Road\Section1\ Small Pond at the southwest corner of Mayfield Rd. and Heart Lake Intersection.

Mayfield Road\Section1\ Looking Towards West\Wetland Area at the North side of Mayfield Rd. , about 400 m West of Heart Lake Rd.

Mayfield Road\Section1\ Looking Towards West\Wetland Area at the North side of Mayfield Rd. , See the Retaining Wall to support the Road Embankment

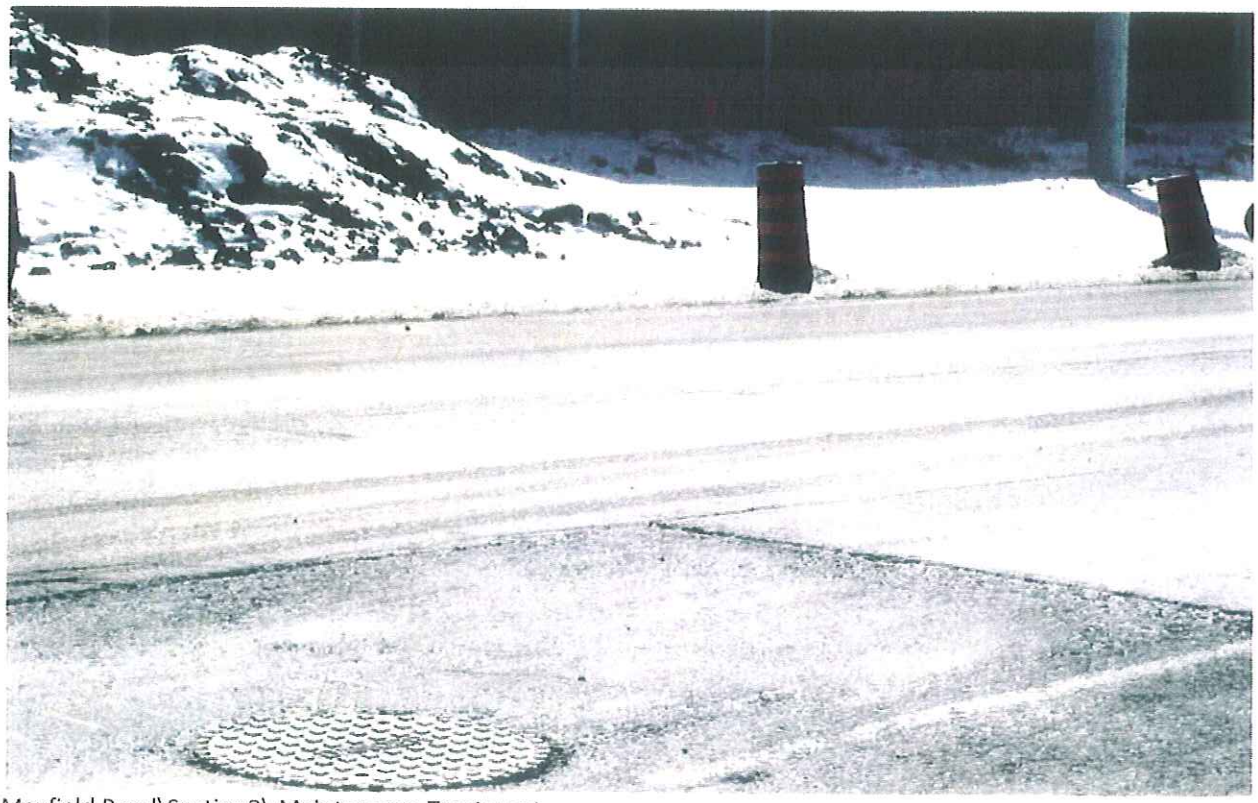


Mayfield Road\Section1\ Wetland Area at the North side of Mayfield Rd. , See the Retaining Wall to support the Road Embankment

Mayfield Road\Section1\ Looking towards West\South side of Mayfield Rd., High Fill Embankment

Mayfield Road\Section2\ Looking towards West\East Bound of Mayfield Rd.

Mayfield Road\Section2\ Looking towards West\West Bound of Mayfield Rd.



Mayfield Road\Section2\ Maintenance Treatment

Mayfield Road\Section2\ Looking towards West\cracks and Distortion Area \See Noise Wall along the South Side of Mayfield Road

Mayfield Road\Section2\ Looking towards East\Steel Sheet Piles at the North Side of Mayfield Rd. as Retaining walls for the road Embankment (Approx. 400 m long)

Mayfield Road\Section2\ Looking towards West\Steel Sheet Piles at the North Side of Mayfield Rd and Wetland Area to the North OF Mayfield Rd and East of Kennedy Rd.

Mayfield Road\Section2\ Looking towards West\ Culverts and wetland at the Northeast Corner of Mayfield and Kennedy Rd. Intersection.

Mayfield Road\Section2\ Concrete culvert and Storm Water Management Pond at the Northeast Corner of Mayfield Rd. and Kennedy Rd. Intersection.

Mayfield Road\Section2\ Looking Towards East\Widening Construction for the Southside of Mayfield ,East of Kennedy Rd.

Mayfield Road\Section2\ Looking towards East \ Mayfield Rd. and Kennedy Rd. Intersection.

Mayfield Road\Section2\ Looking towards West \ from Kennedy Road to 150 m Westerly\see cracks and distortion area\ new Subdivision will be constructed at the North Side of Mayfield Rd. , West of Kennedy Rd.

Mayfield Road\Section2\ Looking towards North\End of Section 2 and Starting of Section 3, about 150 m West of Kennedy Rd.

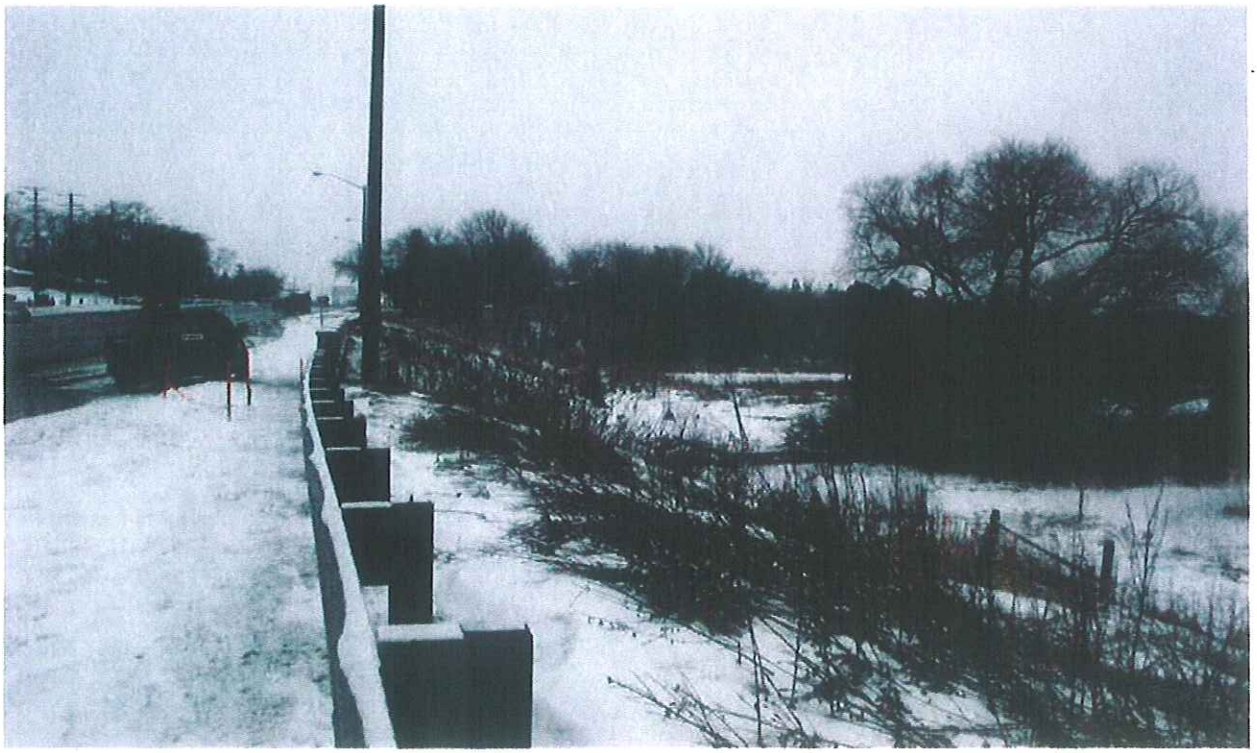
Mayfield Road\Section3\Looking towards West

Mayfield Road\Section3\Looking towards West, 200 m East of Kennedy Rd.

Mayfield Road\Section3\Looking towards West\Farm land to the South and New Subdivision to the North.

Mayfield Road\Section3\Looking towards West, 500 m West of Kennedy Rd.

Mayfield Road\Section3\Looking towards West



Mayfield Road\Section 3\Looking towards West\Embankment Fill for Structural Bridge crossing Tributary\700 m West of Kennedy Road

Mayfield Road\ Looking towards West\Structural Bridge crossing Tributary\700 m West of Kennedy Road

Mayfield Road\ Section 3\Looking towards West\Structural Bridge crossing a Tributary\700 m West of Kennedy Road

Mayfield Road\ Looking towards West\Structural Bridge crossing a Tributary\700 m West of Kennedy Road

Mayfield Road\ Section 3\Looking towards West\Embankment Fill west of the Structural Bridge \ South side of Mayfield, West of the Bridge

Mayfield Road\Section 3\ Looking towards West\900m west of Kennedy Road

Mayfield Road\ Section 3\Looking towards West\1100m west of Kennedy Road

Mayfield Rd\Section 3\Looking towards West, 250 m East of Hurontario Street

Mayfield Road\Section 3\ Looking towards West, 200 m East of Hurontario St.\ Gas Station at the Northeast corner of Mayfield and Hurontario St. Intersection

Mayfield Road\Section 3\ Looking towards West, 100 m East of Hurontario St.\ Gas Station at the Northeast corner of Mayfield and Hurontario St. Intersection

Mayfield Road\Section 3\ Mayfield Rd. and Hurontario St. Intersection

Mayfield Road\Section 3\ Looking towards West\Gas Station at the Southwest corner or Mayfield Road and Hurontario Street Intersection.

Mayfield Road\Section 3\ Looking towards West\200 m West of Hurontario Street

Mayfield Road\Section 4\Looking towards West, 400 m West of Hurontario Street

Mayfield Road\Section 4\Looking towards West, 500 m West of Hurontario Street

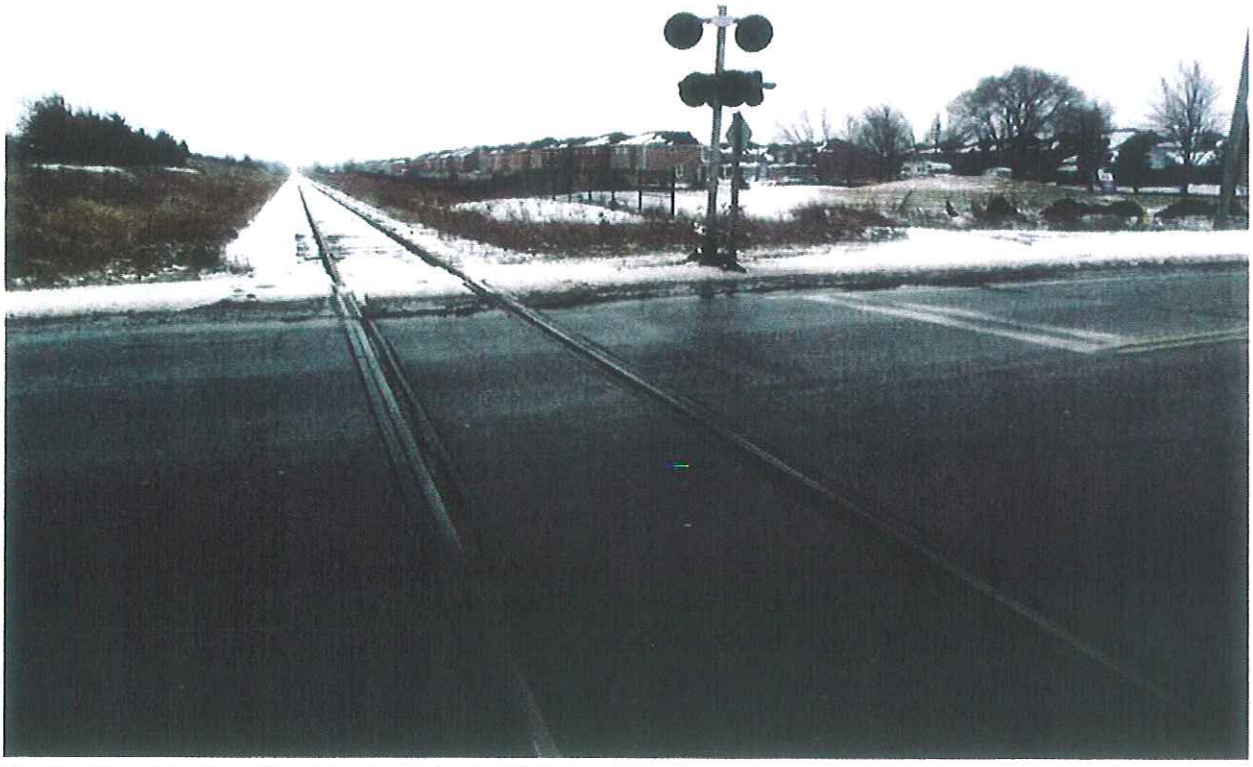
Mayfield Road\Section 4\Looking towards West

Mayfield Road\Section 4\Looking towards West

Mayfield Road\Section 4\Looking towards West\Mayfield Rd. and Robertson Davies Rd. Intersection

Mayfield Road\Section 4\Looking towards South

Mayfield Road\Section 4\Looking towards West\Railway Crossing



Mayfield Road\Section 4\Looking towards North\Railway Crossing

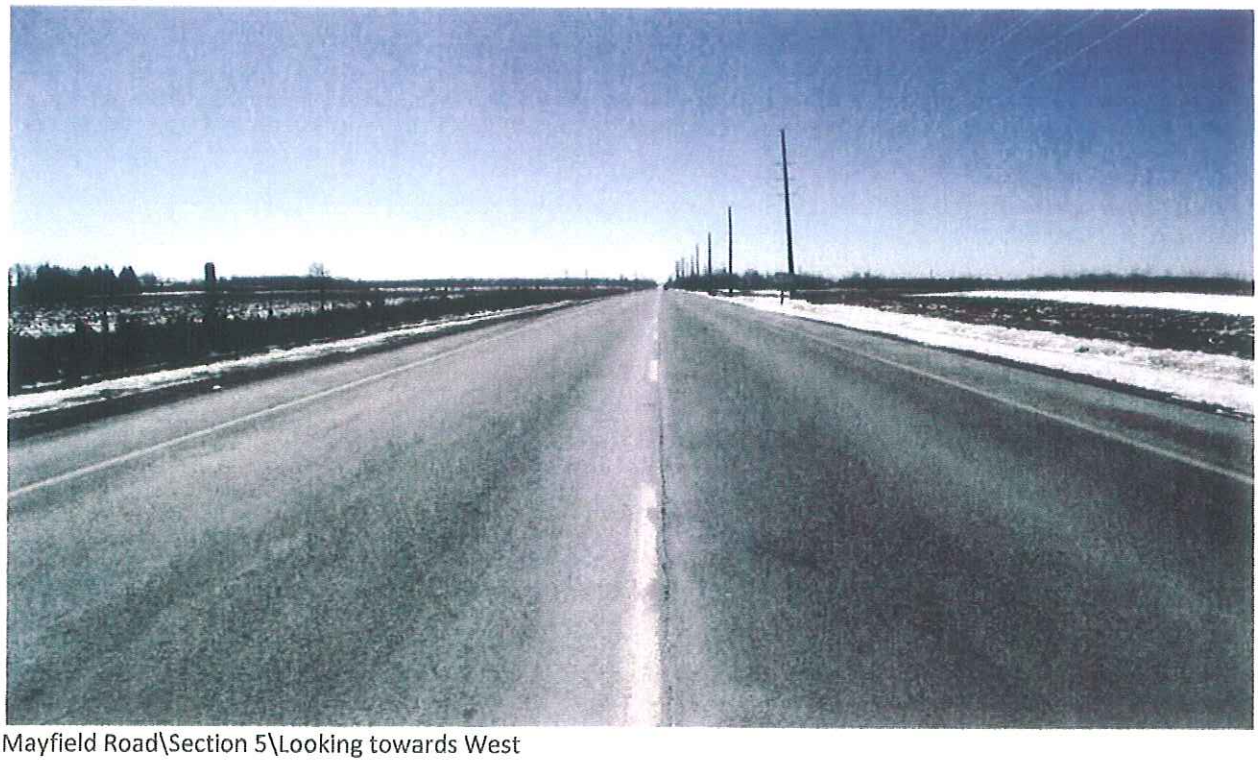
Mayfield Road\Section 4\Looking towards West\400 m East of McLaughlin Rd.

Mayfield Road\Section 4\Looking towards South

Mayfield Road\Section 5\Looking towards East\ Mayfield Road and McLaughlin Road Intersection

Mayfield Road\Section 5\Looking towards West

Mayfield Road\Section 5\Looking towards West



Mayfield Road\Section 5\Looking towards West

Mayfield Road\Section 5\Looking towards West\ Mayfield Rd. and Chinguacousy Rd Intersection

Mayfield Road\Section 5\Looking towards West\ Mayfield Rd. and Chinguacousy Rd Intersection

Soil Report

ATLAS DEWATERING CORPORATION
DEWATERING SOLUTIONS

February 25, 2009

Mr. Robert Bowder
Metric Contracting Services Corporation
34 Bramtree Crt.,
Brampton, Ontario
L6S 5Z7

Dear Mr. Bowder:

Re: Drilling Results-Mayfield Road, Stage II, Region of Peel, Ontario

Atlas Dewatering Corporation (Atlas) is pleased to provide you with our drilling results from the recent investigation completed immediately east of Kennedy Road and along the north side of Mayfield Road in Brampton, Ontario (Figure 1).

Background

Metric Contracting Services Corporation (Metric) retained the services of the Atlas on February 19, 2009 to advance soil borings between two sheet pile walls. It is understood that when Metric initiated excavation alongside the northern sheet pile wall, the sheet pile wall moved approximately 0.3m inwards towards the excavation. The excavation was immediately backfilled.

Scope of Work

Metric retained the services of Atlas for the following scope of work:

1. to determine soil conditions in the immediate area of the northern sheet pile wall;
2. to determine thickness of peat layer; and
3. to determine soil conditions at the base of the northern sheet pile wall.

Methodology

Atlas retained the services of Geo Environmental Drilling who mobilized a CME-75 track mounted drill machine and advanced soil borings on February 20-21, 2009. Metric provided recent utility clearances prior to the commencement of drilling activities along with ground elevation datum.

Solid stem augers were utilized at three of the seven locations with hollow stem augers used at the remaining four locations. Boreholes remained opened at all locations with the exception of BH 6 where solid stem augers were used. Soil samples were collected using a split spoon sampler by dropping a 140 lb (64kg) hammer falling free from a height of 0.762m and pounding the split spoon for a total depth of 0.6m. N-values were collected by our Environmental Technician.

Upon completion of the boreholes, bentonite chips were used to seal the soil borings at the majority of locations with the exception of BH1, 2 and 3.

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T:905-669-6825 F:905-669-4036

In addition to the above, as the material was soft at the base of the sheet pile wall, Atlas advanced two additional test holes to conduct cone penetration tests. These holes were then sealed using bentonite chips.

Study Results

Borehole and cone penetration test locations are provided on Figure 2. Soil conditions in the immediate area of the northern sheet pile wall consisted of peat underlain by clayey silt and in some areas clayey silt to sandy silt till. The peat extended between 5.2m (BH2) to a maximum depth of 8.2m (BH3) alongside the northern sheet pile wall, but wasn't encountered at the furthest western location BH4. The clayey silt material below the peat was very soft.

We understand that the sheet piles were 9m in length with approximately 8m (26') driven below ground surface, as such, the base of the sheet pile walls were founded in soft/loose material.

Further south (6-9m from the northern sheet pile wall), three additional boreholes were advanced. The peat layer thinned out at these locations with the greatest thickness of peat found at BH5 between 2.4-3.6m below grade. Only a thin layer of peat was encountered at BH7 at 3.0m with no peat encountered at BH6.

As the material encountered was predominantly soft/loose at the base of the boreholes advanced in the vicinity of the northern sheet pile wall, two additional test holes were advanced in the vicinity of BH1 and BH3 using a "cone". Blow counts were collected continuously to depth until firmer material was encountered at about 9.1m below grade. Borehole logs are attached.

Closing

We trust this meets with your present requirements, should you have any questions, please contact the undersigned at 647-229-0057.

Yours very truly,
Atlas Dewatering Corporation

Shawn Bonneville, C.E.T., P.Geo
Senior Geoscientist

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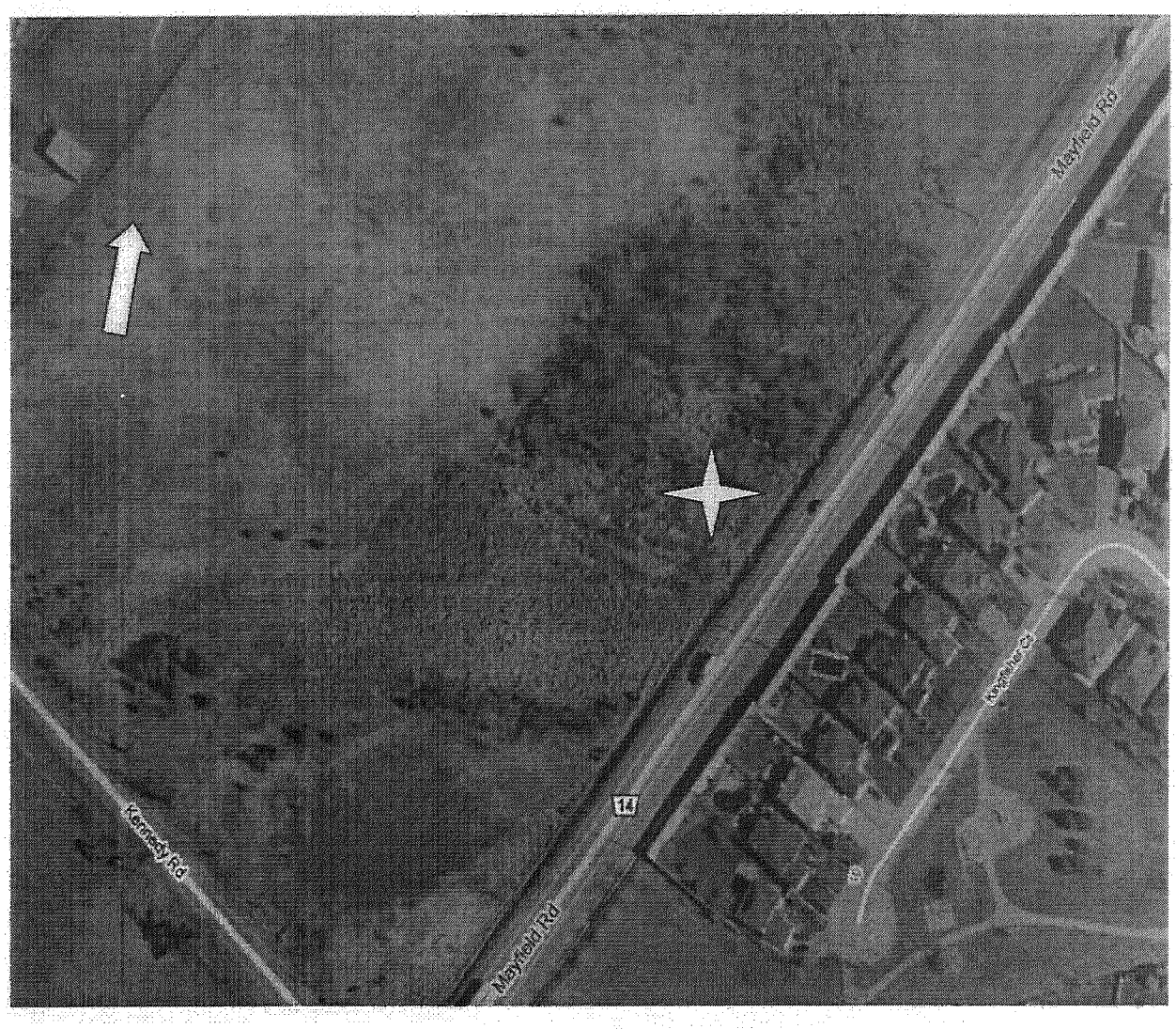
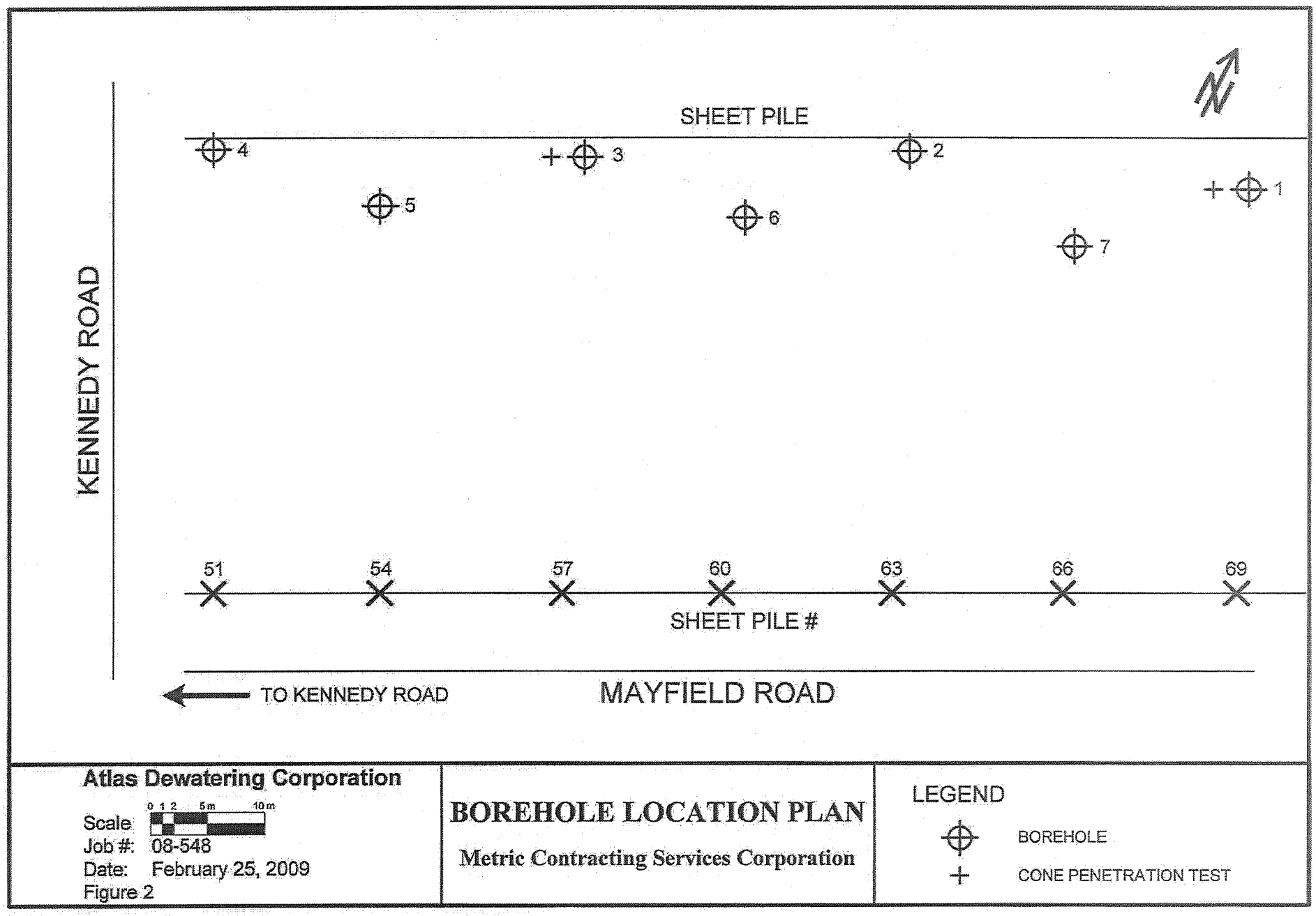
FIGURES



Site Location	**Site Location Plan** **Metric Contracting Services Corporation** *Image by Google*	**Figure 1** Project 08-548 Date: 02/25/09



Atlas Dewatering Corporation

Scale 0 1 2 5m 10m
Job #: 08-548
Date: February 25, 2009
Figure 2

BOREHOLE LOCATION PLAN

Metric Contracting Services Corporation

LEGEND

BOREHOLE

CONE PENETRATION TEST

BOREHOLE LOGS

THE ATLAS CORPORATION
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BORING NUMBER BH-1

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 20/2/09 COMPLETED 20/2/09 GROUND ELEVATION 256.28 m HOLE SIZE 0.108m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES Borehole remained opened AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Peat Medium brown peat, fibrous with silt, very loose, saturated	
2	SS 1	0-2-2-3 (4)			2.13 254.15	
	SS 2	1-0-0-0 (0)			increasing clayey silt content below 2.1m	
	SS 3	1-0-0-0 (0)				
4	SS 4	1-0-0-0 (0)				
	SS 5	1-0-0-0 (0)				
	SS 6	1-1-0-0 (1)			5.94 250.34	
6	SS 7	1-0-0-0 (0)			Clayey Silt Grey clayey silt trace sand and organics, very soft, W.T.P.L. 6.70 249.58	
					Bottom of hole at 6.70 m.	

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BORING NUMBER BH-2

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 20/2/09 COMPLETED 20/2/09 GROUND ELEVATION 255.915 m HOLE SIZE 0.205m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Peat Medium brown peat, fibrous with silt very loose, saturated,	
					1.62 254.30	
2	SS 1	1-0-0-0 (0)			Clayey Silt Grey clayey silt, trace sand, very soft, W.T.P.L.	
	SS 2	1-0-0-0 (0)				
4	SS 3	1-0-0-0 (0)				
					5.18 250.74	
	SS 4	1-0-0-0 (0)			Clayey Silt (till like) Brown clayey silt, trace sand and subangular gravel, very loose, saturated	
6	SS 5	1-0-0-0 (0)				
	SS 6	0-0-0-3 (0)				
8	SS 7	0-2-3-7 (5)			8.23 247.69	
					increasing sand content below 8.2m	
	SS 8	1-2-3-3 (5)			9.75 246.17	
					Bottom of hole at 9.75 m.	

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BORING NUMBER BH-3

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 20/2/09 COMPLETED 20/2/09 GROUND ELEVATION 255.922 m HOLE SIZE 0.108m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES Borehole remained opened AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Peat Light brown peat, fibrous, very loose, saturated	
2	SS 1	1-0-0-0 (0)				
	SS 2	1-0-0-0 (0)				
	SS 3	1-0-0-0 (0)				
4	SS 4	1-0-0-0 (0)				
	SS 5	1-0-0-0 (0)				
	SS 6	1-0-0-0 (0)				
6	SS 7	1-0-0-0 (0)				
	SS 8	1-0-0-0 (0)				
8	SS 9	1-0-0-0 (0)				
	SS 10	1-0-0-0 (0)			8.83 247.09	
	SS 11	1-0-0-0 (0)			Clayey Silt Clayey silt, trace sand, very soft, W.T.P.L.	
					9.75 246.17 Bottom of hole at 9.75 m.	

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BORING NUMBER BH-4

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 21/2/09 COMPLETED 21/2/09 GROUND ELEVATION 256.1 m HOLE SIZE 0.205m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					No recovery	
2	SS 1	1-0-0-0 (0)				
					2.29 253.81	
	SS 2	1-1-1-1 (2)			Clayey Silt Grey/brown, clayey silt, trace sand and sub angular gravel, very soft, W.T.P.L.	
	SS 3	1-1-1-1 (2)				
4	SS 4	2-2-3-4 (5)				
					4.42 251.68	
	SS 5	2-4-5-6 (9)			Clayey Silt/Sandy Silt Till Grey/brown, clayey silt/sandy silt till, trace sub angular gravel, loose, saturated	
	SS 6	3-5-7-8 (12)				
6					6.85 250.25	
	SS 7	4-5-7-8 (12)			Sand Brown medium sand, trace silt, compact, saturated	
8	SS 8	4-7-9-9 (16)				
					8.38 247.72	
					Bottom of hole at 8.38 m.	

ENVIRONMENTAL BH GINT STD CANADA-TEST.GPJ GINT STD CANADA.GDT 25/2/09

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BORING NUMBER BH-5

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 21/2/09 COMPLETED 21/2/09 GROUND ELEVATION 256.15 m HOLE SIZE 0.205m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Fill Brown clay/silt/sand fill, very loose, wet	
2	SS 1	1-1-1-2 (2)				
					2.38 253.77	
	SS 2	1-0-0-0 (0)			Peat Light brown, peat, fibrous, loose, saturated	
	SS 3	0-0-1-2 (1)			3.61 252.54	
4	SS 4	2-2-3-3 (5)			Clayey Silt Till Grey clayey silt till, trace sand and fine subangular gravel, loose, saturated	
	SS 5	1-2-6-7 (8)				
	SS 6	2-4-5-10 (9)				
6					5.94 250.21	
					Clayey Silt to Sandy Silt Till Grey clayey silt to sandy silt till, trace subangular gravel, compact, saturated	
8	SS 7	2-5-6-10 (11)			8.23 247.92	
					Bottom of hole at 8.23 m.	

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BORING NUMBER BH-6

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 20/2/09 COMPLETED 20/2/09 GROUND ELEVATION 255.835 m HOLE SIZE 0.108m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES Borehole caved AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Fill Brown, medium sand with gravel, trace silt, compact,moist,	
2	SS 1	5-6-6-5 (12)				
					3.05 252.79	
	SS 2	1-0-0-0 (0)			Clayey Silt (Till Like) Grey/brown clayey silt, trace sand and fine subangualr gravel, very soft, W.T.P.L.	
4						
	SS 3	0-0-2-3 (2)				
					5.18 250.66	
					Bottom of hole at 5.18 m.	

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BORING NUMBER BH-7

CLIENT ATLAS DEWATERING CORPORATION
PROJECT NAME METRIC Soils Investigation Borehole Log
PROJECT NUMBER 08-548
PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DATE STARTED 21/2/09 COMPLETED 21/2/09 GROUND ELEVATION 256.155 m HOLE SIZE 0.205m
DRILLING CONTRACTOR Geo Environmental Drilling GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING ---
LOGGED BY J. Browne CHECKED BY S. Bonneville AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Fill Brown medium sand and gravel with silt, frozen, moist	
2	SS 1	10-12-13-12 (25)				
	SS 2	8-9-11-18 (20)				
					3.05 253.11	
	SS 3	2-1-1-1 (2)			3.11 Peat 253.05 Light brown peat, loose, saturated	
					3.66 Clayey Silt Till 252.50 Grey/brown clayey silt till, trace sand and fine subangular gravel very loose, wet	
4	SS 4	1-1-1-1 (2)			Clayey Silt to Sandy Silt Till Grey/brown clayey silt to sandy silt, trace fine subangular gravel, very loose, saturated	
	SS 5	1-1-1-1 (2)				
	SS 6	1-1-1-1 (2)				
6	SS 7	1-1-1-1 (2)				
	SS 8	1-1-2-2 (3)				
8	SS 9	0-0-1-2 (1)				
	SS 10	0-0-2-2 (2)				
					8.99 247.17	
	SS 11	0-0-1-2 (1)			Sandy Silt Till Brown sandy silt till with clay, trace fine subangualr gravel, very loose, saturated	
10						

(Continued Next Page)

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BORING NUMBER BH-7

CLIENT ATLAS DEWATERING CORPORATION

PROJECT NAME METRIC Soils Investigation Borehole Log

PROJECT NUMBER 08-548

PROJECT LOCATION Kennedy Rd. & Mayfield Rd., Brampton, ON

DEPTH (m)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	PID (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
					Sandy Silt Till Brown sandy silt till with clay, trace fine subangualr gravel, very loose, saturated *(continued)*	
	SS 12	2-2-3-6 (5)				
11.28					244.88 Bottom of hole at 11.28 m.	

Cone Test in Proximity of BH-1 Conducted Feb.21/09

At Sheet Pile Reference68+6m east of pile #68, Offset from North Wall 4.5m

Elevation 256.28masl (as provided by Metric)

Depth (feet below surface)	Blow Count	N- Value
0-2	1, 1, 2, 1	3
2-4	1, 1, 1, 1	2
4-6	1, 1, 1, 1	2
6-8	1, 1, 1, 1	2
8-10	1, 1, 1, 1	2
10-12	2, 1, 1, 1	2
12-14	1, 1, 1, 2	2
14-16	1, 1, 2, 2	3
16-18	2, 2, 2, 2	4
18-20	1, 2, 1, 2	3
20-22	2, 3, 3, 3	6
22-24	3, 3, 2, 4	5
24-26	4, 3, 5, 6	8
26-28	6, 5, 6, 7	11
28-30	8, 8, 8, 8	16
30-32	9, 10, 9, 9	19
32-34	10, 9, 10, 9	19
34-36	11, 10, 13, 11	23
36-38	11, 10, 11, 12	21
38-40	11, 13, 16, 15	29

Cone Test in Proximity of BH-3 Conducted Feb.21/09

At Sheet Pile Reference 56+5m east of Pile # 56, Offset from North Wall 2.0m

Elevation 255.9masl (as provided by Metric)

Depth (feet below surface)	Blow Count	N- Value
0-2	12, 10, 4, 3	14
2-4	1, 3, 3, 2	6
4-6	2, 2, 1, 1	3
6-8	2, 1, 1, 1	2
8-10	1, 1, 1, 1	2
10-12	1, 1, 2, 1	3
12-14	1, 1, 1, 1	2
14-16	1, 2, 1, 1	3
16-18	2, 1, 1, 1	2
18-20	1, 1, 1, 2	2
20-22	3, 3, 2, 1	5
22-24	2, 1, 2, 2	3
24-26	1, 2, 3, 2	5
26-28	3, 3, 2, 2	5
28-30	3, 5, 4, 6	9
30-32	12, 14, 14, 16	28
32-34	18, 18, 22, 22	40
34-35	26, 25	>50/0.3m

RECORD OF BOREHOLE 09-02

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 102
STARTED : June 5, 2009
COMPLETED : June 5, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.18							
0	Hollow Stem Augers	Unshrinkable FILL, brown to grey Augering without sampling to 13.7m depth		0.00							▽
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13				242.47 13.72							
14					1	SS	57		O		

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) May 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-02

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 102
STARTED : June 5, 2009
COMPLETED : June 5, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS
				240.94				
		SILT, clayey, trace sand, trace gravel, stiff, grey, moist: (TILL)		15.24	2	SS	11	Grain Size Analysis: Gr 1%/ Sa 22%/ Si 52%/ Cl 25%
16								
17					3	SS	13	
18				237.90				
		SILT, sandy, some clay, trace gravel, compact, grey, moist: (TILL)		18.29	4	SS	15	Grain Size Analysis: Gr 3%/ Sa 35%/ Si 46%/ Cl 16%
19								
20					5	SS	17	
21		SILT, clayey, trace to some sand, trace gravel, very stiff, grey, moist: (TILL)		235.31 20.88	6	SS	20	
22								
23		SAND, trace silt, occasional gravel, dense, moist		233.78 22.40	7	SS	37	
24								
25		SAND and SILT, trace clay, dense, grey, moist		231.80 24.38	8	SS	47	Grain Size Analysis: Gr 0%/ Sa 53%/ Si 42%/ Cl 5%
		SILT, sandy, trace to some gravel, very dense, grey, moist: (TILL)		230.73 25.45				
26				229.87	9	SS	80/ 0.250	
		END OF BOREHOLE AT 26.3m. BOREHOLE OPEN TO 25.9m AND WATER LEVEL AT 0.7m UPON COMPLETION OF DRILLING. BOREHOLE GROUTED TO SURFACE.		26.31				
27								
28								
29								

SHEAR STRENGTH: Cu, KPa (nat V - ●, rem V - ●, Q - ✖, Cpen ▲) 40 80 120 160
WATER CONTENT, PERCENT wp w wl 10 20 30 40
DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

GROUNDWATER ELEVATIONS

SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) May 6, 2009

DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-03

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 70
STARTED : June 1, 2009
COMPLETED : June 1, 2009

Project No. 17-308-472
SHEET 1 OF 3
DATUM

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ⊕, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.29							
		ROCK, some sand		0.00 / 255.98							
		Unshrinkable FILL, brown to grey Augering without sampling to 9.1m depth		0.30							▽
1											
2											
3											
4											
5											
6											
7											
8											
9	Hollow Stem Augers			247.15 9.14	1	SS	56		O		
10		SILT, clayey, with sand, trace gravel, very stiff, grey, moist: (TILL)		246.23 10.06	2	SS	23	Grain Size Analysis: Gr 2%/ Sa 40%/ Si 39%/ Cl 19%	O		
11					3	SS	18	Grain Size Analysis: Gr 1%/ Sa 39%/ Si 44%/ Cl 16%	O	>>	
12		SILT, sandy, trace clay, trace gravel, compact, grey, moist		244.10 12.19	4	SS	17		O O O		
13				242.88 13.41							
14		SILT, clayey, trace sand, trace gravel, very stiff, grey, moist: (TILL)			5	SS	21	Grain Size Analysis: Gr 2%/ Sa 40%/ Si 36%/ Cl 22%	O——	>>	
				241.51 14.78							

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) January 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-03

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 70
STARTED : June 1, 2009
COMPLETED : June 1, 2009

Project No. 17-308-472

DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲) / WATER CONTENT, PERCENT (wp, w, wl)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16		**SAND**, trace silt, occasional clay, occasional gravel, compact, grey, moist			6	SS	4	Sand blew back into augers			
				239.98 16.31							
		SAND and **SILT**, trace clay									
17					7	SS	26	Grain Size Analysis: Gr 0%/ Sa 55%/ Si 42%/ Cl 3%			
				238.46 17.83							
18					8	SS	37				
19											
20					9	SS	17				
21											
					10	SS	21	Grain Size Analysis: Gr 0%/ Sa 90%/ Si 7%/ Cl 3%			
22											
				233.89 22.40							
23		**SILT**, sandy, trace to some clay, occasional gravel, compact to dense, grey, moist			11	SS	35				
24											
					12	SS	32				
25											
26					13	SS	12				
27											
					14	SS	20	Grain Size Analysis: Gr 0%/ Sa 33%/ Si 58%/ Cl 9%			
28											
		Very dense		227.79 28.50							
29					15	SS	60				
				226.57 29.72							

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) January 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

RECORD OF BOREHOLE 09-03

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 70
STARTED : June 1, 2009
COMPLETED : June 1, 2009

Project No. 17-308-472
SHEET 3 OF 3
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
31					16	SS	18		O		
32				224.29							
		SAND, silty, trace gravel, dense, grey, moist		32.00	17	SS	45		O		
33		**SILT**, sandy, trace clay, trace gravel, dense, grey, moist: (TILL)		223.68 32.61							
34					18	SS	40	Grain Size Analysis: Gr 7%/ Sa 31%/ Si 53%/ Cl 9%	O		
		END OF BOREHOLE AT 34.1m. BOREHOLE OPEN TO BOTTOM AND WATER LEVEL AT 0.6m UPON COMPLETION OF DRILLING. BOREHOLE GROUTED TO SURFACE.		222.15 34.14							
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) January 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-04

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 119
STARTED : June 3, 2009
COMPLETED : June 3, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.22							
	Hollow Stem Augers	Unshrinkable **FILL**, brown to grey Augering without sampling to 13.4m depth		0.00							▽
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14					1	SS	61				
		SILT, clayey, trace sand, trace gravel, stiff, grey, moist: (TILL)		241.82 14.40	2	SS	14				

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) March 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-04

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 119
STARTED : June 3, 2009
COMPLETED : June 3, 2009

Project No. 17-308-472

SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16					3	SS	15				
17					4	SS	18				>>
18				237.93							
19		SILT, sandy, some clay, trace gravel, compact, grey, moist: (TILL)		18.29	5	SS	24				
20		SAND, some silt, trace clay, dense, grey, moist		236.41 19.81	6	SS	3	Sand blew back into augers			
21											
22					7	SS	39				
23					8	SS	32				
24											
25					9	SS	13				
26		SAND, silty, trace gravel, trace clay, dense, grey, moist: (TILL)		230.65 25.57	10	SS	48				
27											
28					11	SS	44				
29		END OF BOREHOLE AT 28.0m. BOREHOLE OPEN TO 27.4m AND WATER LEVEL AT 0.7m. BOREHOLE GROUTED TO SURFACE.		228.18 28.04							

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) March 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-05

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 91
STARTED : June 11, 2009
COMPLETED : June 11, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.22							
		Unshrinkable FILL, brown to grey Augering without sampling to 7.62m depth		0.00							▽
1											
2											
3											
4											
5											
6											
7											
				248.60							
8				7.62	1	SS	85/0.125		o		
9					2	SS	83		o		
10					3	SS	19		o		
		SILT, clayey, trace to some sand, trace gravel, stiff to very stiff, grey, moist: (TILL)		245.73 10.49					o		
11					4	SS	9		o ▲		
12											
					5	SS	12		o ▲		
13											
14					6	SS	16		o	>>▲	

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) November 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-05

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 91
STARTED : June 11, 2009
COMPLETED : June 11, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16					7	SS	20			>>	
17					8	SS	25			>>	
18				237.93							
19		SILT, sandy, some clay, trace to some gravel, very dense, grey, moist: (TILL)		18.29	9	SS	56				
20		SAND, trace silt, occasional gravel, dense to compact, grey, moist		236.41 19.81	10	SS	34				
21											
22					11	SS	48				
23					12	SS	16				
24				231.84							
25		SILT, sandy, occasional clay, compact, grey, moist		24.38	13	SS	18				
26		SAND, some silt, occasional to trace gravel, compact to dense, grey, moist		230.31 25.91	14	SS	16				
27					15	SS	90/ 0.225				
28		END OF BOREHOLE AT 27.9m. BOREHOLE OPEN TO 27.4m AND WATER LEVEL AT 0.5m. BOREHOLE GROUTED TO SURFACE.		228.33 27.89							
29											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) November 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-06

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 440
STARTED : June 4, 2009
COMPLETED : June 4, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.27							
0		Unshrinkable FILL, brown to grey Augering without sampling to 5.2m depth		0.00							▽
1											
2											
3											
4											
5											
6					1	SS	32				
7		SILT, clayey, trace sand, trace gravel, firm to very stiff, brown, moist: (TILL)		249.47 6.81	2	SS	4				
8					3	SS	4				
9					4	SS	8				
10											
11					5	SS	8				
12					6	SS	17				
13											
14		Becoming grey			7	SS	16				
		SAND, gravelly, trace silt, compact, grey, moist		242.02 14.25							

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) April 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-06

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 440
STARTED : June 4, 2009
COMPLETED : June 4, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16					8	SS	36				
		SAND, trace to some silt, dense to compact, grey, moist		239.97 16.31							
17					9	SS	7	Sand blew back into augers			
18					10	SS	33				
19											
20					11	SS	42				
21											
22					12	SS	26				
23					13	SS	24				
24				231.89							
		SILT, sandy, trace clay, dense, grey, moist		24.38	14	SS	30				
25											
26		SAND, silty, occasional clay, trace gravel, dense to very dense, grey, moist: (TILL)		230.37 25.91	15	SS	34				
27											
				228.41	16	SS	100/ 0.275				
28		END OF BOREHOLE AT 27.9m. BOREHOLE OPEN TO 27.4m AND WATER LEVEL AT 0.7m DEPTH. BOREHOLE GROUTED TO SURFACE.		27.86							
29											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) April 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-07

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 457
STARTED : June 8, 2009
COMPLETED : June 8, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.13							
		Unshrinkable FILL, brown to grey Augering without sampling to 12.2m depth		0.00							▽
12		SILT, clayey, trace sand, trace to some gravel, trace organics, stiff, brown, moist		243.94 12.19	1	SS	10	Grain Size Analysis: Gr 0%/ Sa 35%/ Si 46%/ Cl 19%	▲ ○		
13				242.42							
14		PEAT, very soft, black to brown, moist: (50mm) SILT, sandy, some clay, stiff, brown to grey, moist SAND, trace silt, occasional gravel, compact, grey, moist		241.96 14.17	2	SS	14		○ ○ ○		

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) August 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-07

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 457
STARTED : June 8, 2009
COMPLETED : June 8, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
				240.89							
		SILT, clayey, trace sand, trace gravel, stiff to very stiff, grey, moist: (TILL)		15.24	3	SS	13				
16											
17					4	SS	16				
18											
					5	SS	18				
19											
				236.32							
		SAND, trace silt, trace to some clay, occasional gravel, compact, grey, moist		19.81							
20				235.94	6	SS	18				
				20.19							
21											
				234.80							
		SAND, some silt, compact, grey, moist		21.34	7	SS	10				
22											
23		Becoming dense			8	SS	49	Grain Size Analysis: Gr 0%/ Sa 51%/ Si 45%/ Cl 4%			
24											
					9	SS	35				
25											
				230.22							
26		SILT, clayey, trace sand, trace gravel, stiff, grey, moist		25.91 229.92	10	SS	42				
		SILT, sandy, some to trace clay, trace gravel, dense, grey to reddish brown, moist: (TILL)		26.21 229.64							
				26.49							
27		END OF BOREHOLE AT 26.5m. BOREHOLE OPEN TO 25.9m AND WATER LEVEL AT 0.7m. BOREHOLE GROUTED TO SURFACE.									
28											
29											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) August 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-08

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 471
STARTED : June 9, 2009
COMPLETED : June 9, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ♣, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.10							
		Unshrinkable FILL, brown to grey Augering without sampling to 9.1m depth		0.00							▽
1											
2											
3											
4											
5											
6											
7											
8											
9				246.95 9.14	1	SS	50/ 0.075				
10											
11					2	SS	64				
		SILT, clayey, trace sand, trace gravel, stiff to hard, grey, moist: (TILL)		244.67 11.43	3	SS	13				
12					4	SS	10				
13											
14					5	SS	13				

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) June 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-08

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column 471
STARTED : June 9, 2009
COMPLETED : June 9, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.3m	COMMENTS DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲) (40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16					6	SS	27				
17					7	SS	17				
18					8	SS	32				
19											
20		SAND, trace to some silt, occasional gravel, dense, grey, moist		235.91 20.19	9	SS	60				
21											
22					10	SS	32				
23					11	SS	33				
24				231.71 24.38							
25		SILT, sandy, occasional clay, dense, grey, moist			12	SS	34				
26		SAND, some silt, compact, grey, moist		230.49 25.60	13	SS	24				
27											
28		END OF BOREHOLE AT 28.0m. BOREHOLE OPEN TO 27.4m AND WATER LEVEL AT 0.7m. BOREHOLE GROUTED TO SURFACE.		228.06 28.04	14	SS	4	Sand disturbed by augering			
29											

GROUNDWATER ELEVATIONS

SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) June 6, 2009

DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-09

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column B53
STARTED : June 10, 2009
COMPLETED : June 10, 2009

Project No. 17-308-472
SHEET 1 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		256.22							
0		Unshrinkable FILL, brown to grey Augering without sampling to 5.3m depth		0.00							▽
1											
2											
3											
4											
				251.65							
				4.57	1	SS	32				
5											
				250.89							
		SILT, clayey, trace sand, trace gravel, firm to stiff, grey, moist: (TILL)		5.33	2	SS	6				
6								'N' size vane pushed to 6.55m but could not be turned			
7											
					3	SS	8				
8											
9					4	SS	14				
		Very stiff to hard									
10											
					5	SS	19				
11											
				244.49							
		SILT, sandy, some clay, trace gravel, dense, grey, moist: (TILL)		11.73							
12					6	SS	38				
13											
				242.51							
		SAND, trace silt, compact, brown to grey, moist		13.72	7	SS	24				
14											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) October 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-09

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1, U-Fill Column B53
STARTED : June 10, 2009
COMPLETED : June 10, 2009

Project No. 17-308-472
SHEET 2 OF 2
DATUM

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
16					8	SS	20				
		Dense		239.92 16.31							
17					9	SS	33				
				238.39 17.83							
18					10	SS	28				
19											
				236.41 19.81							
20		SILT, sandy, occasional clay, compact to dense, grey, moist			11	SS	45				
21											
					12	SS	21				
22											
23					13	SS	37				
24											
					14	SS	28				
25											
26					15	SS	13				
27											
				228.79 27.43							
		SILT, sandy, occasional clay, trace to some gravel, very dense, grey, moist: (TILL)			16	SS	54				
28				228.18 28.04							
		END OF BOREHOLE AT 28.0m. BOREHOLE OPEN TO 27.4m AND WATER LEVEL AT 0.6m. BOREHOLE GROUTED TO SURFACE.									
29											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date) October 6, 2009

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10

RECORD OF BOREHOLE 09-10

PROJECT : Mayfield Road and Kennedy Road, Brampton, Ontario
LOCATION : Wetland 1
STARTED : June 15, 2009
COMPLETED : June 15, 2009

Project No. 17-308-472
SHEET 1 OF 1
DATUM

DEPTH SCALE (metres)	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	COMMENTS / DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)	SHEAR STRENGTH: Cu, KPa (nat V - ✤, rem V - ●, Q - ✖, Cpen ▲; 40 80 120 160) / WATER CONTENT, PERCENT (wp, w, wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	HOLLOW STEM AUGERS	**PEAT**, fibrous, trace roots, very loose, dark brown to black, wet		0.00	1	SS		NOTE: THE DFPTHS SHOWN ARE REFERENCED TO THE AXIS OF THE BOREHOLE			
1											
2					2	SS					
3					3	SS					
4					4	SS		No sample recovery			
5					5	SS					
6		**CLAY**, silty, trace to some sand, very soft, brown, moist to wet		6.10	1	TW	PH				
7		Trace organics									
8					6	SS					
		SILT, clayey, trace to some sand, trace gravel, soft to firm, grey, moist: (TILL)		8.23							
9					7	SS					
10		**SILT**, clayey, trace sand, trace to some gravel, soft to firm, grey to brown, moist		9.91	2	TW	PH				
11					8	SS					
12					3	TW	PH				
13		END OF BOREHOLE AT 12.8m. BOREHOLE BACKFILLED WITH GROUT AND CUTTINGS TO SURFACE.		12.80							
14											

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date)

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : JM
CHECKED : SKP

THURBER

THURBER2S 8472.GPJ 12/23/10