



The above pavement sections should be constructed on a prepared clay fill subgrade. The approximate site stripping is 425 to 625mm; depth of pavement structure. The prepared subgrade should be proof rolled with a heavy sheepsfoot roller (min. 20 passes) which translates to at least 95% Std Proctor and inspected by qualified geotechnical engineer prior to the placement of the overlying granular fill.

The granular base course and subbase materials should include organic-free, non-frozen, aggregate conforming to the City of Winnipeg gradation limits . The existing granular fill at the parking lot could be reused as subbase material provided that it is free from organic.

Where soft but dry spots are encountered at the subgrade level, construction traffic should be restricted. Soft but dry spots should be excavated with a large backhoe fitted with a smooth bucket and covered with non-woven geotextile, to at least 300mm below the underside of the subbase and replaced with a 300mm thick layer of 100mm crushed limestone. In this regard, the total granular fill thickness would be 650mm for light-duty traffic.

Any saturated subgrade conditions should be dried off quickly by excavation of sump pit or installation of permanent subdrains (600mm below the subgrade level) connected to positive outlet (catch basin) prior to placing the granular fill structure with geotextile. At these locations, the placing of granular fill should follow the geotextile specifications for soft grounds.

The combined aggregate gradation limits and physical requirements of the asphaltic concrete should be in accordance with the City of Winnipeg specification.

For the hot mix asphaltic concrete, gradation analysis of the aggregates (i.e. stone, fines and additive), compaction testing and sampling of at least one representative hot mix asphalt mixture (during construction) for laboratory Marshall testing should be undertaken. This will provide data to confirm that the asphaltic concrete pavement complies with the project specification. Hot mix asphaltic concrete should not be placed at ambient temperatures lower than +4°C. During placement, the temperature of the paving mix should be in the range of +120°C to +150°C and compaction should not take place at paving mix temperatures lower than +85°C.

Sieve analysis and compaction testing of the granular base and subgrade materials should be conducted by qualified geotechnical personnel to ensure that the materials supplied and percent compactions are in accordance with design specifications.

CONCRETE PAD

For any concrete pad, sidewalk, curbs, the pavement structure should consist of 200mm reinforced concrete followed by 300mm of compacted (98% Standard Proctor Density) base course over the compacted subgrade. If a silt layer was encountered as subgrade, the application of non-woven geotextile over the silt layer is recommended. Exterior, grade supported concrete slabs will be subjected to some seasonal vertical movements related to frost. Exterior concrete slabs should not be tied into rigid structures.

To minimize the movements, consideration should be given to the use of rigid synthetic

insulation, outward laterally (minimum 1.8m length and about 100mm thick) and beneath the structure. In addition, localized subsurface drainage should be provided around the structure.

LIGHT STANDARD

Due to significant presence of FILL layer, the light standard should be supported on cast-in place friction piles. *Seepage and sloughing conditions should be expected from the SILT layer, if encountered, during the pile installation. Depth of temporary sleeve is entirely dependent on the foundation contractor.*

An allowable shaft adhesion values of 15.8 kPa (330 psf) applied to the pile circumference within the native clay was calculated. These numbers may be used for the pile design using a pile length of 7.6m (25 ft); pile length of 7.6m from grade should not be exceeded due to unknown conditions beyond the 7.6m depth. With Limit State Design (LSD), the bearing resistances at Ultimate Limit State (ULS) and Serviceability Limit State (SLS) are 39.5 kPa and 13.2 kPa, respectively. The Resistance Factor is 0.55.

CLOSURE

The findings and recommendations provided in this report were prepared by GENIVAR (the Consultant) in accordance with generally accepted professional engineering principles and practices. The recommendations are based on the results of field and laboratory investigations and are reflective only of the actual testhole(s) and/or excavation(s) examined. If conditions encountered during construction appear to be different than those shown by the testhole(s) and/or excavation(s) at this site, the Consultant should be notified immediately in order that the recommendations can be reviewed and modified as necessary to address actual site conditions.

This report is limited in scope to only those items that are specifically referenced in this report. There may be existing conditions that were not recorded in this report. Such conditions were not apparent to the Consultant due to the limitations imposed by the scope of work. The Consultant, therefore, accepts no liability for any costs incurred by the Client for subsequent discovery, manifestation or rectification of such conditions.

This report is intended solely for the Client named as a general indication of the visible or reported physical condition of the items addressed in the report at the time of the geotechnical investigation. The material in this report reflects the Consultant's best judgment in light of the information available to it at the time of preparation.

This report and the information and data contained herein are to be treated as confidential and may be used only by the Client and its officers and employees in relation to the specific project that it was prepared for. Any use a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The report has been written to be read in its entirety, do not use any part of this report as a separate entity.

All files, notes, source data, test results and master files are retained by the Consultant and remain the property of the Consultant.





Project No: 121-24877-01

TH1

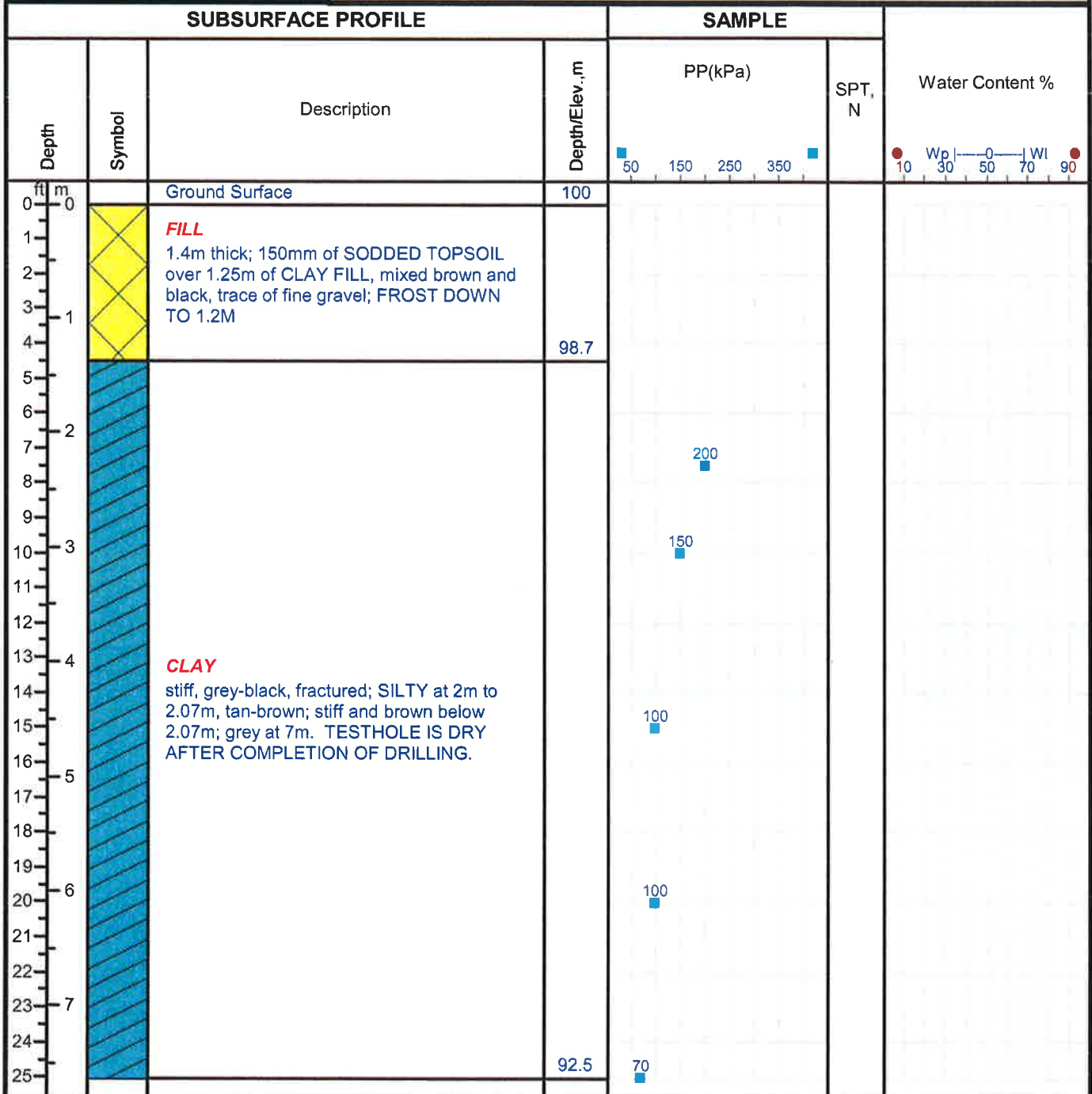
Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU



Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1



Project No: 121-24877-01

TH2

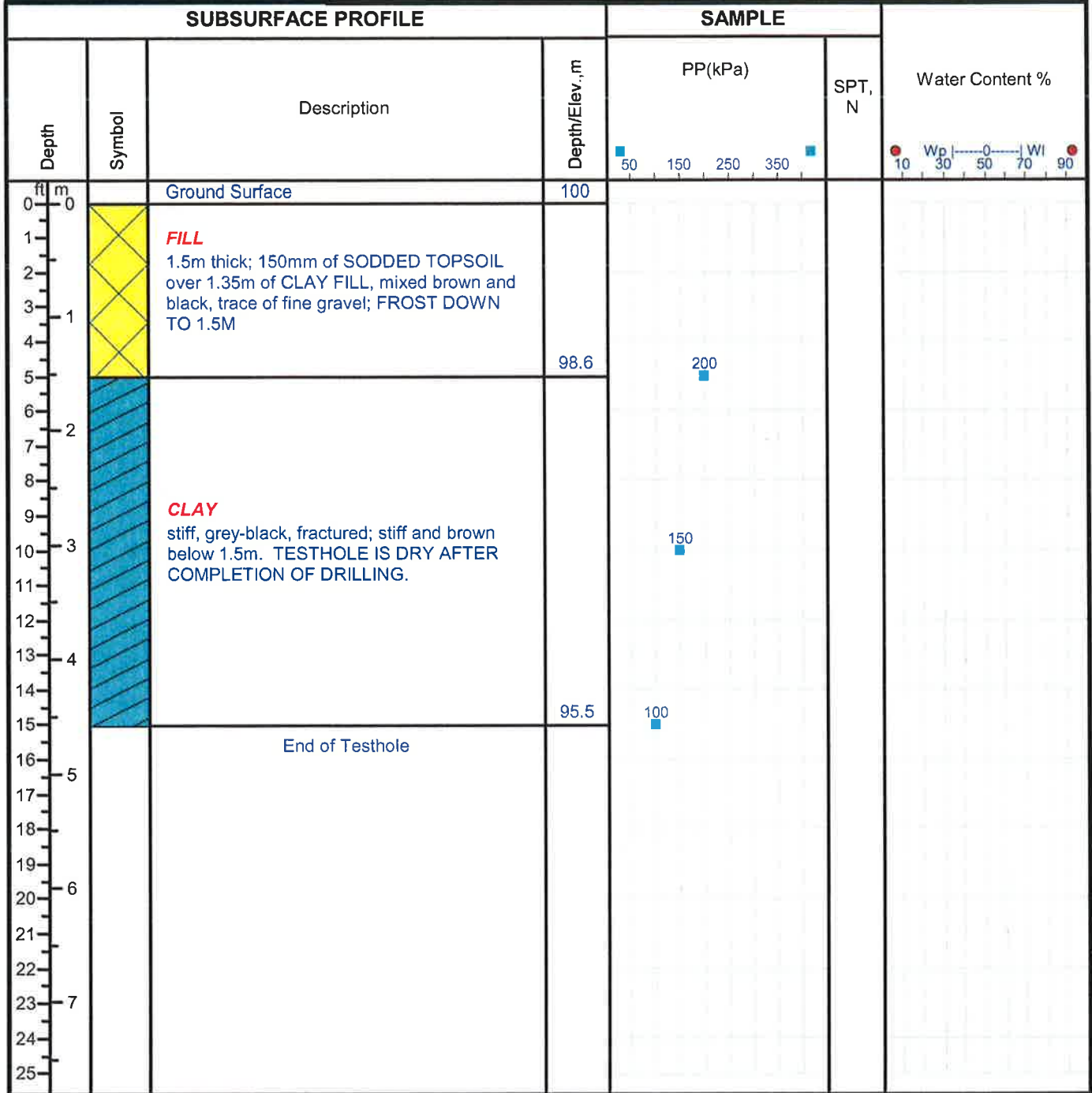
Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU



Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1



Project No: 121-24877-01

TH3

Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Depth/Elev.,m	PP(kPa)	SPT, N	
0		Ground Surface	100			
1		FILL 1.5m thick; 50mm of GRANULAR FILL over 1.45m of CLAY FILL, mixed brown and black, trace of fine gravel; FROST DOWN TO 1.8M				
5			98.6			
6						
7				200		
10				150		
15		CLAY grey-black, fractured; stiff and brown below 2.1m. TESTHOLE IS DRY AFTER COMPLETION OF DRILLING.		100		
20				80		
25			92.5	70		

Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1



Project No: 121-24877-01

TH4

Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Depth/Elev., m	PP(kPa)	SPT, N	
0		Ground Surface	100			
1		FILL 1.65m thick; 150mm of SODDED TOPSOIL FILL over 1.5m of CLAY FILL, mixed brown and black, trace of fine gravel; FROST DOWN TO 1.8M				
2						
3						
4						
5			98.4			
6						
7						
8				150		
9						
10				150		
11						
12						
13						
14						
15			95.5	100		
16		End of Testhole				
17						
18						
19						
20						
21						
22						
23						
24						
25						

Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1



GENIVAR

Project No: 121-24877-01

TH5

Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Depth/Elev., m	PP(kPa)	SPT, N	
0		Ground Surface	100			
1		FILL 1.8m thick; 150mm of SODDED TOPSOIL FILL over 1.65m of CLAY FILL, mixed brown and black, trace of fine gravel; sandy at 1.4m; clayey below 1.5m; FROST DOWN TO 1.8M				
2		CLAY stiff to firm, tan-brown, silty down to 2.3m; stiff and brown below 2.4m. TESTHOLE IS DRY AFTER COMPLETION OF DRILLING.				
3			98.3	75		
4						
5						
6						
7						
8						
9						
10				150		
11						
12						
13						
14						
15			95.5	100		
16		End of Testhole				
17						
18						
19						
20						
21						
22						
23						
24						
25						

Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1



Project No: 121-24877-01

TH6

Project: Pan Am Pool Parking Lot Extension

Client: City of Winnipeg

Enclosure:

Location: 25 Poseidon Bay, Winnipeg

Engineer: SSU

SUBSURFACE PROFILE				SAMPLE		Water Content %
Depth	Symbol	Description	Depth/Elev.,m	PP(kPa)	SPT, N	
0		Ground Surface	100			
0-1		FILL 900MM thick; 50mm of ASPHALT over 200mm of GRANULAR FILL SODDED TOPSOIL FILL over 650mm of CLAY FILL, mixed brown and black, trace of fine gravel; FROST DOWN TO 1.6M	99.2			
1-3		CLAY grey-black, frozen, fissured; brown below 1.05m, trace of silt	98.9			
3-7		SILT frozen, tan-brown, clayey; soft at 1.8m, moist to wet	97.8	75		
7-15		CLAY stiff, brown, fissured. TESTHOLE IS DRY AFTER COMPLETION OF DRILLING.	95.5	150		
15-16		End of Testhole		100		

Drill Method: S/S Auger

GENIVAR
10 Prairie Way
Winnipeg, MB.
R2J 3J8

Elevation:

Drill Date: 03/15/13

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1