KGS GROUP

SUMMARY LOG

HOLE NO. **SP-04**

CLIENT CITY OF WINNIPEG

PROJECT HAWTHORNE FLOOD PUMPING STATION - FINAL DESIGN

SITE Hawthorne Flood Pump Station

LOCATION ~10 m west of existing Flood Pumping Station

DRILLING METHOD Solid Stem Auger to 6.86 m depth, Hollow Stem Auger below with sampling every 5 ft, Truck Mount

JOB NO. **05-107-13**
GROUND ELEV. **229.50 m**
WATER ELEV. **223.71 m (25-Nov-05)**
DATE DRILLED **25-Nov-05**
UTM N
E

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION
229.3				**TOPSOIL** - Black, moist, intermediate plasticity, with mixture of sand, silt and clay, with organic matter, trace gravel, trace rootlets, trace oxidation.
229.0				**FILL** - Mixture of silty clay (brown), sand and gravel, moist, soft, intermediate plasticity, some organic matter, trace rootlets, trace oxidation.
229				
	1			**SILTY CLAY (CI)** - Brown, moist, firm to stiff, intermediate plasticity, trace gravel, trace silt pockets, trace organic matter, trace rootlets, trace oxidation.
228		5		- Damp, stiff below 1.52 m.
	2			
227				
226.9				**SILT** - Tan, saturated, very soft, trace fine grained sand, trace clay, trace oxidation.
	3	10		- No oxidation below 3.05 m.
226				
225.7				**SILT AND CLAY** - Tan (silt) and brown (clay), wet, soft, high plasticity.
	4			
225		15		- Soft to firm below 4.57 m.
	5			
224				
▼				
223.4	6	20		**CLAY (CH)** - Grey, wet, firm, high plasticity, trace silt pockets.
223				
	7			- Switched from Solid Stem Auger to Hollow Stem Auger at 6.86 m.
222		25		
	8			
221				
	9	30		
220				

PIEZ. LOG | DEPTH (m) | SAMPLE TYPE | NUMBER | RECOVERY %

SPT (N) blows/0.30 m ▲ (40 80 120)

Cu TORVANE (kPa) ◆ (20 40 60 80)

PL MC LL

% (20 40 60 80)

SAMPLE TYPE ▯ Auger Grab ☒ Split Spoon

CONTRACTOR **Paddock Drilling Ltd.**

INSPECTOR **R. DOBSON**

APPROVED _____ DATE 15/12/05

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ELEVATION (m)	DEPTH (m)	DEPTH (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE	NUMBER	RECOVERY %	SPT (N) blows/0.30 m ▲ (40 80 120)	Cu TORVANE (kPa) ◆ (20 40 60 80) PL MC LL % (20 40 60 80)
217	11	35						13			
216	12	40		- Increased silt pockets below 12.0 m.				14			
215	13										
214		45		- Soft to firm below 13.56 m.				15			
213	14										
212	15	50		- Soft below 15.09 m.				16			
211	16										
210		55						17			
209	17										
208	18	60		- Very soft to soft, trace coarse grained sand below 18.14 m.				18			
207	19					19.2					
206		65		- Trace gravel, trace sand below 19.66 m.				19			
205	20										
204	21	70				21.0					
203						21.6					
202						21.7					

SAMPLE TYPE ⊟ Auger Grab ⊠ Split Spoon

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SUMMARY LOG

HOLE NO.
SP-04

ELEVATION (m)	DEPTH (m)	DEPTH (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE / NUMBER / RECOVERY %	SPT (N) blows/0.30 m ▲ (40 80 120)	Cu TORVANE (kPa) ◆ (20 40 60 80) / PL MC LL % (20 40 60 80)
205	22	75		**AUGER REFUSAL AT 21.72 m**					
204	23	80		Notes: 1. Performed SPT test at 21.0 m: 46 blows = 6" movement 74 blows = 6" movement (Note: Downward movement was minimal for about the first 50 blows) 122 blows = 6" movement (Note: Approximately 2" of movement occurred with the first 40 blows. No movement from about 40 to 100 blows. The last 4" of movement were from the remaining blows. Small piece of limestone recovered from split spoon. 2. Installed Casagrande standpipe piezometer to 21.64 m, with 0.15 m of sand below piezometer tip and 0.61 m of sand above. (Followed by bentonite and then cuttings.) 3. Flushmount installed and water elevation taken on December 3, 2005. Water level was 5.79 m below ground surface.					
203	24	80							
202	25	85							
201	26	90							
200	27	95							
199	28	100							
198	29	105							
197	30	110							
196	31								
195	32								
	33								

SAMPLE TYPE ⊓ Auger Grab ☒ Split Spoon

CONTRACTOR **Paddock Drilling Ltd.**

INSPECTOR **R. DOBSON**

APPROVED _____ DATE 15/12/05

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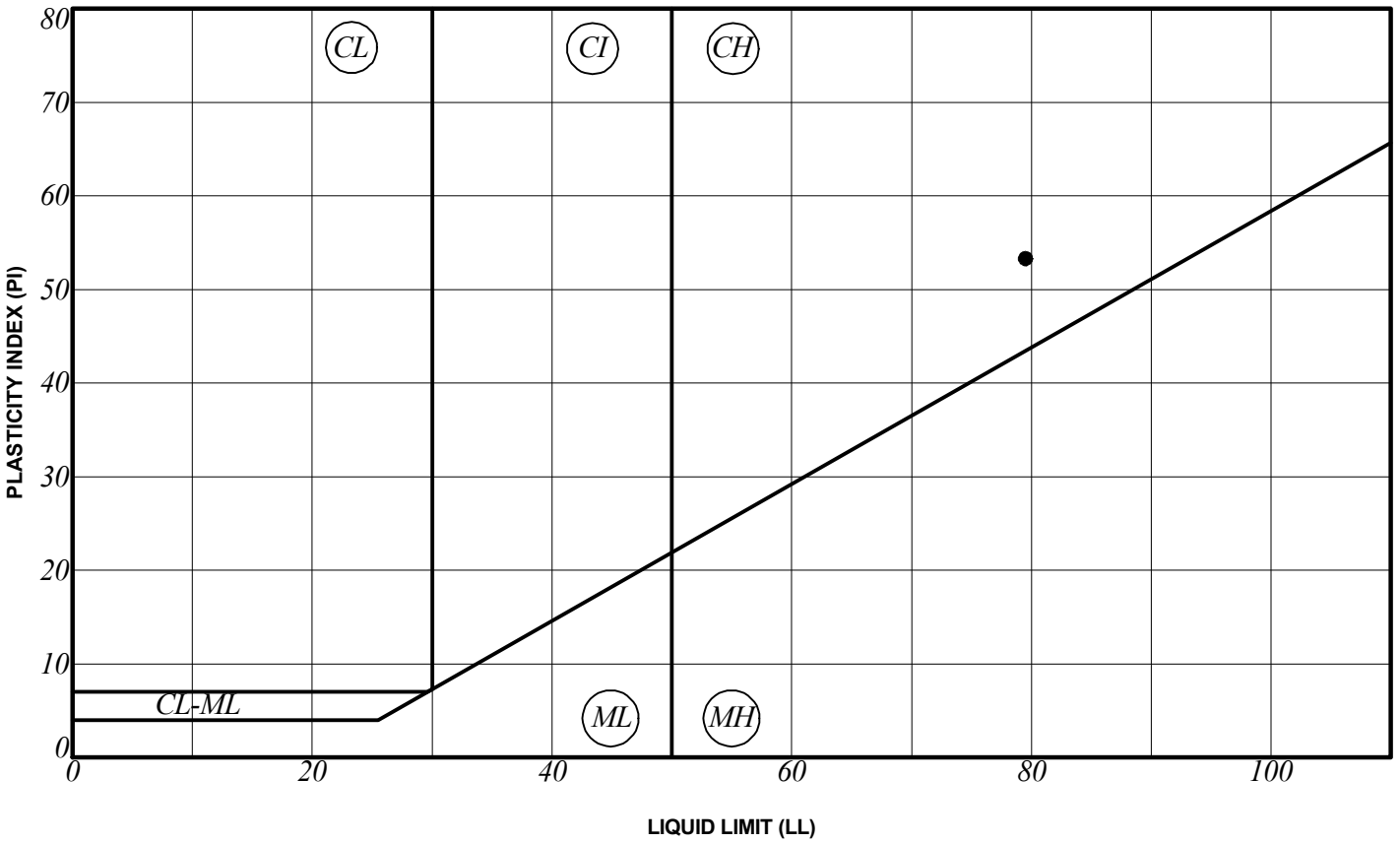

SYMBOL	HOLE	DEPTH (m)	SAMPLE #	LL	PL	PI	% SAND	% SILT	% CLAY	% MC	CLASSIFICATION
●	SP-04	12.0	14	80	26	53				48.4	CH

Notes:
ML - Low Plasticity Silt
MH - High Plasticity Silt
CL-ML - Silty Clay
CL - Low Plasticity Clay
CI - Intermediate Plasticity Clay
CH - High Plasticity Clay
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index
MC - Moisture Content

KGS GROUP

CITY OF WINNIPEG

HAWTHORNE FLOOD PUMPING STATION - FINAL DESIGN

A-LINE PLOT

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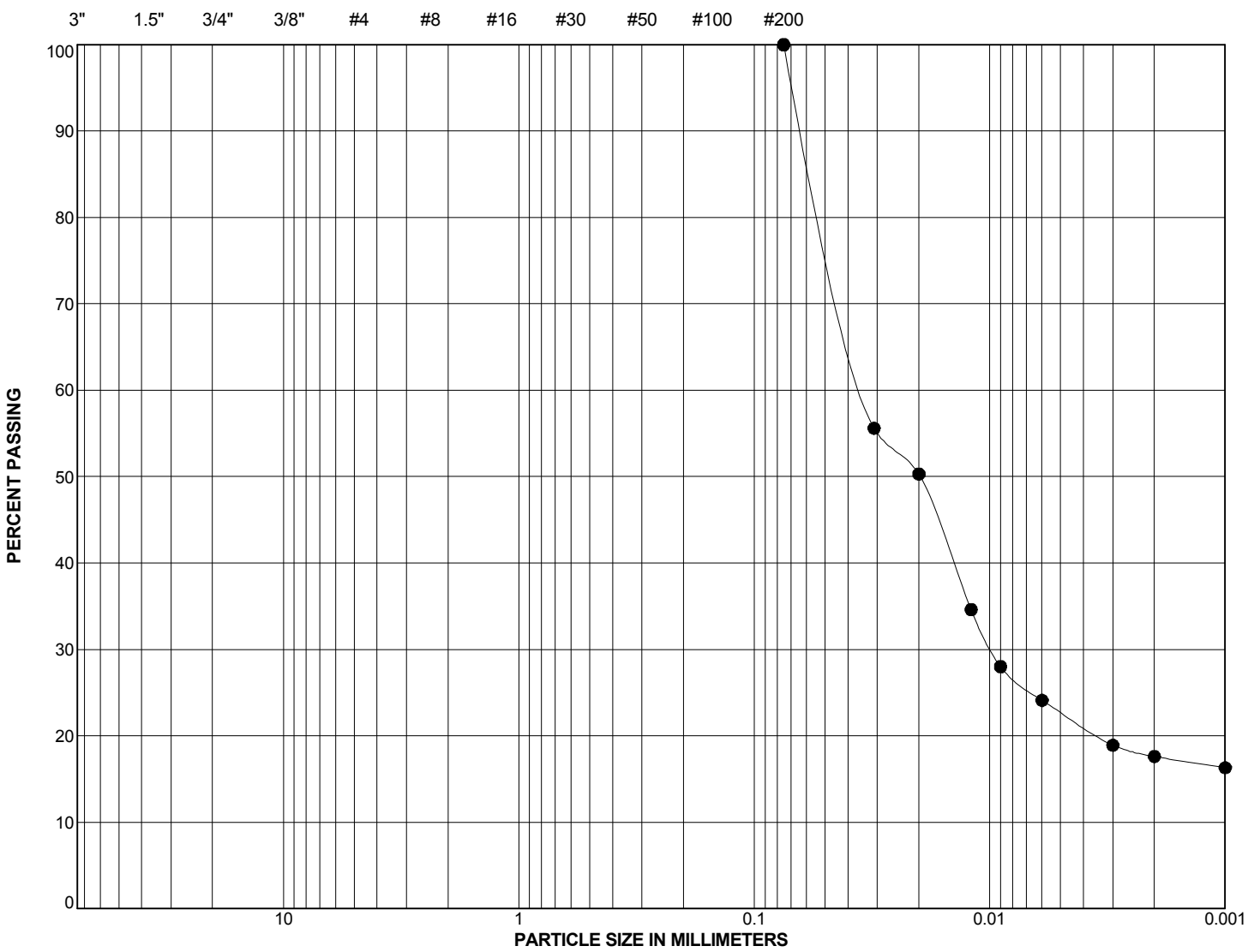

SYMBOL	HOLE	DEPTH (m)	SAMPLE #	% GRAVEL	% SAND	% SILT	% CLAY	% SILT & CLAY	Cu	Cc	CLASSIFICATION
●	*SP-04*	*3.0*	*6*	*0.0*	*0.0*	*82.4*	*17.6*	*100.0*			*CL*

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CITY OF WINNIPEG

HAWTHORNE FLOOD PUMPING STATION - FINAL DESIGN

GRAIN SIZE ANALYSES

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SIEVE ANALYSIS (2004) 05-107-13 LOGS.GPJ 15/12/05