

DATE January 24, 2014

REFERENCE No. 1314260010-061-TM-Rev0-1000

- TO Brad Thompson PWGCS
- CC Dave Colbourne

**FROM** Jared Beloin and David Caughill

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# FIELD INVESTIGATION FOR PASTE PRODUCTION PLANNING AT GIANT MINE, YELLOWKNIFE, NORTHWEST TERRITORIES – OCTOBER 2013

Public Works and Government Services Canada (PWGSC) requested Golder Associates Ltd. (Golder) to undertake a field investigation program to provide information to support future paste production at the Giant Mine Site, NWT. This technical memorandum was prepared to provide a factual field investigation record of the activities undertaken and observations recorded during the field program. The paste evaluation and testing component of this field program is provided under separate cover.

The reader is referred to the Study Limitations section which follows the text and forms an integral part of this technical memorandum.

#### 1.0 INTRODUCTION

Golder completed a field investigation program between October 19, 2013 and October 31, 2013 to provide information on the upper portion of the tailings within the South and Central Ponds. The program included observations on consistency and composition of the tailings and collection of samples, to be used for laboratory testing to evaluate the suitability of the tailings to produce paste. This program, combined with previous investigation programs is intended to provide information to support the planning and design of paste production programs in 2014 and 2015. The overall objective is to use paste produced with the tailings as underground backfill in key stopes at the Giant Mine Site. It is expected that tailings from upper portions of the South Pond, the Central Pond and possibly the North Pond will be used to supply tailings for paste production in 2014 and 2015.

Field supervision of the test pitting program was provided by an Engineer-in-Training from Golder Associates who located the test pits in the field, supervised and logged their excavation. Field support was provided by members of Golder's Paste Group.





#### 2.0 FIELD PROGRAM

A total of 26 test pits were excavated on the South Pond and a total 23 test pits were excavated on the Central Pond between October 19 and 30, 2013. Due to ongoing paste production, the test pitting program was carried out when equipment was available, primarily from October 19 to 23, 2013 then finished on October 29 and 30, 2013. The test pits were excavated by track mounted excavators supplied and operated by RTL Construction (RTL). Test pits excavated from October 19, to October 23, 2013 were excavated with a Komatsu PC400 LC excavator. Test pits excavated on October 29 and 30, 2013 were excavated with a Deere 270D LC.

The test pit locations are shown in Figure 1. The depths of the test pits ranged from 2.0 m to 6.5 m. The target depth for the test pits was generally 4.0 m or deeper. Some test pits encountered native ground/rock, permafrost or soft conditions which limited the depth to less than 4.0 m. Golder field representatives located the test pits in the field, observed and logged their excavation, and directed their backfilling. Observations made during excavation of the test pits included soil visual description, ground water conditions and sloughing conditions. Samples were collected from selected test pits for subsequent laboratory testing.

The visual description of the tailings was determined based on field assessment techniques which were limited to visual inspection and handling with gloved hands.

In general the tailings encountered during the current investigation in the South and Central Ponds can be classified as silty sand, sandy silt or clayey silt, as described below:

- silty sand, fine grained, grey to brown, no cementation, non-cohesive, dry to moist, very loose to loose.
   This unit often contains lenses of blocky/friable sandy silt up to about 0.5 m thick.
- sandy silt, various shades of brown and grey 1 to 10 mm thick interlaminations, very weakly cemented, blocky/friable, dry to moist, soft. This unit often contained lenses of silty sand up to about 0.5 m thick.
- clayey silt, low plasticity, some sand to sandy, light grey to brown, cohesive, wet of plastic limit, very soft.
   This unit retained its water (no seepage/free water observed at time of excavation).

With few variations the material encountered during this investigation can be classified in one of these three categories. For the purposes of this investigation the classification took into consideration the behavior of the material from the standpoint of paste production. The material described as silty sand is generally loose material that crumbles easily with light finger pressure. The material described as sandy silt is generally blocky or friable and requires moderate to strong finger pressure to crumble. The material described as clayey silt is plastic in nature and can be moulded or squeezed rather than crumbled with light to moderate finger pressure.

Observations during the 2013 paste production activities were that each type of material required different processing in order to be used for paste production (using Reimer trucks in this case). Silty sand was generally suitable to be used as excavated, except to possibly screen for debris within the tailings. Sandy silt required screening or mechanical conditioning, to break up the lumps in the tailings. Without conditioning, the tailings tended to cause blockages in the paste production (mixing process) operation. Clayey silt material, due to the plasticity, would need to be blended with coarser material, in order to not cause blockages in the paste piping system.



All test pits were backfilled immediately after completion with selected material left in small piles from select test pits, in order to collect samples for paste production testing at a later date.

Based on field observations made during tailings excavation at the north end of the South Pond for the 2013 paste production trial, it should be noted that water conditions in the tailings can change due to the excavation activity itself. For example repeated passes by heavy equipment made over the same spot can have a "pumping" effect, apparently bringing water closer to the surface than it was during the initial investigation.

#### 2.1 South Pond Test Pits

The approximate locations of the test pits excavated in South Pond are shown in Figure 1. Data and observations pertaining to these test pits are provided in Table 1 and in the Record of Test Pit sheets (Attachment 1). The observations below only apply to the upper portions of the ponds, to the depth of the test pits.

In general coarser material (silty sand) was observed near the former discharge points along the west and south edges of the pond. Finer grained material (clayey silt) was observed in greater quantities closer to the center and along the eastern edge of the pond. More clayey silt was encountered and the surface of the pond became softer towards the open water in the bay in the north east corner of the pond. Test pits SP-TP-38 and SP-TP-41 represent the limit of approach for the excavator during the field program, moving closer to the north east bay was considered unsafe as the track mounted excavator began sinking into the ground.

Moisture conditions in South Pond typically varied from dry to moist at shallower depths to moist at deeper depths in the coarser material. Generally wetter conditions were noted in the finer grained material in the center and eastern edges of the pond, though no seepage or free water was observed at the time of excavation. Test pits SP-TP-50, SP-TP-51 and SP-TP-52 in the center of the pond near the paste trial area showed wetter conditions than most others. It is suspected that this may be due to the heavy equipment traffic from the paste trial pumping the water up.

Sloughing off the side walls of the test pits was noted in many of the test pits containing slayey silt. Notably while excavating test pit SP-TP-41 the test pit collapsed at a depth of 3.0 m.

#### 2.2 Central Pond Test Pits

The approximate locations of the test pits excavated in Central Pond are shown in Figure 1. Data and observations pertaining to these test pits are provided in Table 1 and in the Record of Test Pit sheets (Attachment 1). The observations below only apply to the upper portions of the ponds, to the depth of the test pits.

In general the material in Central Pond was observed to be coarser than that in South Pond at the depths excavated to during this investigation, with most of the material consisting of dry to moist silty sand to sandy silt. Wetter clayey silt material was observed starting at depths ranging from 1.75 to 2.5 m in test pits CP-TP-09, CP-TP-10, CP-TP-11, CP-TP-12 and CP-TP-14 located along the south and south east edges of the pond. Coarser material was observed in the central and northern parts of the pond. Clayey silt was also observed in test pits CP-TP-18, CP-TP-20 and CP-TP-23 starting at depths ranging from 3.75 to 4.0 m.

Moisture conditions observed in Central Pond were typically drier than those observed in South Pond at the depths excavated to in the current test pit program. No seepage was observed in any of the test pits.



Frozen tailings (suspected permafrost) were encountered within the tailings in test pits CP-TP-21 and CP-TP-22 at depths of 3.5 m and 3.0 m respectively. The frozen material contained ice lenses 1 to 2 mm thick. The excavators were unable to dig through the frozen layers.

Location	Test Pit ID	Depth (m)	Sand Content (%)	Silt Content (%)	Clay Content (%)	Visual Description/Comments/Notes
		0-1.25				Silty Sand
	CP-TP-09	1.25-2.5	23	70	7	Sandy Silt
		2.5-4.5				Clayey Silt. Sloughing in Clayey Silt
		0-1.25				Silty Sand
	CP-TP-10	1.25-1.75				Sandy Silt
		1.75-4.5	4	87	9	Clayey Silt. Sloughing in Clayey Silt.
		0-1.0				Silty Sand
	CP-TP-11	1.0-4.0	28	66	6	Sandy Silt (moist to wet). Sloughing in sandy Silt layer, rock (suspected bedrock) at 4.0 m.
	CP-TP-12	0-3.5				Sandy Silt (dry to moist. Clayey Silt lens from 2.0 to 2.5 m.
		0-2.0				Sandy Silt
	CF-1F-13	2.0-5.0				Silty Sand. Clayey Silt lens from 4.0 to 4.5 m.
		0-2.5	42	54	4	Sandy Silt
	01-11-14	2.5-4.5	2	89	9	Clayey Silt
	CP-TP-15	0-4.0	64	33	3	Silty Sand, containing lenses/laminations of blocky and clayey material
		4.0-5.5				Sandy Silt
	CP-TP-16	0-4.5	48	48	4	Silty Sand
		0-1.0				Sandy Silt
Central	CP-TP-17	1.0-4.5				Silty Sand. Dry to moist, containing wet clayey lenses at 3.0 m.
Pond		0-3.75	32	63	5	Sandy Silt
	CF-1F-10	3.75-5.0				Clayey Silt
		0-4.0				Sand and Silt, laminated
	CF-1F-19	4.0-4.5	35	61	4	Sandy Silt
	CP-TP-20	0-4.0				Sandy Silt with sand lenses. Clayey lenses at 2.5 m.
		4.0-4.5	12	81	7	Clayey Silt. Sloughing off side walls observed.
	CP-TP-21	0-3.75				Silty Sand to Sandy Silt. Frozen from 3.5 to 3.75 m. Unable to excavate through the frozen tailings.
	CP-TP-22	0-4.0				Sandy Silt. Frozen, containing ice with 1 to 2 mm ice lenses from 3.0 to 4.0 m. Unable to excavate further.
		0-4.0				Sandy Silt
	CP-1P-23	4.0-5.0				Clayey Silt. Sloughing off side walls observed.
	CP-TP-24	0-2.5				Sandy Silt. Rock below 2.5 m. Topsoil and tree roots encountered from 2.25 to 2.5 m.
	CP-TP-25	0-3.5				Silty Sand with Silt lenses. Rock below 3.5 m. Soft clayey lenses at 2.25 m.
		0-2.25				Sandy Silt
	CP-TP-26	2.25-3.0	12	80	8	Clayey Silt. Rock (suspected bedrock) below 3.0 m. Roots encountered from 2.5 to 3.0 m.

#### Table 1: Central and South Pond Test Pit Summary October 2013



Location	Test Pit ID	Depth (m)	Sand Content (%)	Silt Content (%)	Clay Content (%)	Visual Description/Comments/Notes
	CP-TP-27	0-4.25				Silty Sand. Containing Sandy Silt lenses up to 0.5 m thick. Clayey Silt lenses below 3.5 m.
	CP-TP-28	0-5.0				Silty Sand. Containing Sandy Silt lenses up to 0.5 m thick. Clayey Silt lens from 3.0 to 3.5 m.
		0-2.0				Silty Sand containing Sandy Silt lenses.
	CP-1P-29	2.0-5.0				Sandy Silt. Clayey Silt lenses from 2.5 to 5.0 m.
		0-1.0				Silt and Sand
	CP-TP-30	1.0-4.0				Silty Sand
		4.0-5.5				Sandy Silt. Clayey Silt lenses from 4.0 to 5.5 m.
		0-5.0				Silty Sand
	CP-1P-31	5.0-6.5				Sandy Silt. Wet Clayey Silt lenses at 4.75 m.
		0-0.75				Sandy Silt to Silty Sand
		0.75-2.75				Silty Sand
	35-15-20	2.75-3.75				Clayey Silt
		3.75-4.25				Silty Sand
		0-1.5	24	70	6	Sandy Silt
	5P-1P-27	1.5-4.0				Silty Sand
		0-1.0				Sandy Silt
	57-17-20	1.0-4.0				Silty Sand containing Sandy Silt lenses
		0-0.5				Sandy Silt
	SP-TP-29	0.5-3.75				Silty Sand. Clayey Silt lens from 1.75 to 2.5 m
		3.75-4.0				Clayey Silt
	SP-TP-30	0-4.0				Silty Sand. Sandy Silt lenses from 2.5 to 4.0 m.
	SP-TP-31	0-2.0				Sandy Silt to Silty Sand. Rock (suspected bedrock) below 2.0 m.
	SP-TP-32	0-4.0				Silty Sand. Moist to wet silt lenses from 3.5 to 4.0 m.
South		0-1.25				Sandy Silt
Pond	SP-TP-33	1.25-2.25				Clayey Silt
i ond		2.25-4.0				Silty Sand
		0-3.0				Sandy Silt. Wet Clayey Silt lens at 1.75 m
	01-11-04	3.0-4.0				Clayey Silt.
		0-1.25	38	57	5	Sandy Silt
	SP-TP-35	1.25-2.0				Silty Sand
		2.0-4.0				Clayey Silt
	SD-TD-36	0-3.0				Silty Sand
	51-11-50	3.0-4.0	0	90	10	Clayey Silt
		0-0.75				Silty Sand
	51-11-57	0.75-4.0				Clayey Silt
	SP-TP-38	0-2.5				Sandy Silt to Silty Sand containing Clayey Silt lenses.
		2.5-4.0	0	88	12	Clayey Silt. Sloughing off side walls noted.
		0-2.25				Sandy Silt to Silty Sand
	SP-TP-39	2.25-3.75				Clayey Silt. Rock (suspected bedrock) below 3.75 m. Roots and topsoil encountered from 3.5 to 3.75 m



Location	Test Pit ID	Depth (m)	Sand Content (%)	Silt Content (%)	Clay Content (%)	Visual Description/Comments/Notes
	SP-TP-40	0-0.5				Sandy Silt
	0. 11 10	0.5-3.0				Clayey Silt. Rock (suspected bedrock) below 3.0 m.
	SP-TP-41	0-3.0	0	89	11	Clayey Silt. Possible Silty Clay from 2.0 to 3.0 m. Side walls collapsed.
	SP-TP-44	0-2.75				Silty Sand. Rock (suspected bedrock) below 2.75 m. Tree roots and boulders encountered from 2.5 to 2.75 m.
		0-1.0				Sandy Silt
	SP-TP-45	1.0-3.0				Silty Sand. Rock below 3.0 m (suspected bedrock). A PVC pipe was encountered in this test pit.
		0-1.75				Silty Sand containing Sandy Silt lenses.
	SP-TP-46	1.75-2.75				Clayey Silt. Sloughing noted in Clayey Silt layer.
		2.75-4.0				Silty Sand
		0-1.0				Clayey Silt
	SP-TP-47	1.0-2.0				Sandy Silt
		2.0-4.0				Silty Sand
		0-0.5				Clayey Silt
	SP-TP-48	0.5-3.0				Silty Sand containing Sandy Silt lenses. Rock below 3.0 m (suspected bedrock).
	0D TD 40	0-3.5				Silty Sand containing Sandy Silt lenses
	5P-1P-49	3.5-4.25				Sandy Silt
		0-2.0				Sandy Silt containing Silty Sand.
	SP-TP-50	2.0-4.0				Silty Sand containing Sandy Silt lenses. Moist to wet from 0 to 4.0 m.
		0-1.0				Sandy Silt
		1.0-3.25				Silty Sand containing Sandy Silt
	36-16-31	3.25-4.0				Sandy Silt containing some clay. Moist to wet from 1.5 to 4.0 m
	SP-TP-52	0-3.5	10	83	7	Sandy Silt. Clayey lenses from 1.5 to 3.5 m. Moist to wet from 0 to 3.5 m.
		3.5-4.0				Silty Sand. Moist from 3.5 to 4.0m.
		0-1.25				Sandy Silt
	SP-TP-53	1.25-2.5				Silty Sand
		2.5-4.0				Clayey Silt



#### 3.0 CLOSURE

We trust that the information provided in this technical memorandum meets your present needs. Should you have any questions or require additional information, please feel free to contact the undersigned.

GOLDER ASSOCIATES LTD.

# **ORIGINAL SIGNED**

Jared Beloin, EIT Geotechnical Engineer-in-Training

JJB/DC/rs/km/ja

Attachments: Figure 1 Attachment 1: Record of Test Pits

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**ORIGINAL SIGNED AND SEALED** 

Dave Caughill, M.Sc., P.Eng.

Associate, Senior Geotechnical Engineer





13-1426-0010-1000-1608\_05

ATTACHMENT 1 Record of Test Pits

#### RECORD OF TEST PIT: CP-TP-09

DATA ENTRY: JJB	PR LC	OJEC CATIC	T No.: 13-1426-0010 N: See Location Plan	RE	со	RD	OF TEST EXCAVATION	PIT: CP- DN DATE: October 2	<b>TP-09</b> 9, 2013	Sheet 1 of 1 Datum:
F	ш	7	SOIL PROFILE		SAI	MPLES	DYNAMIC PENE RESISTANCE, B	TRATION	HYDRAULIC CONDUCTIVITY,	T PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT (m) (m)	NUMBER	TYPE BLOWS/0.3m	20 40 SHEAR STRENG Cu, kPa 20 40	60 80 GTH nat V. + Q - ● rem V. ⊕ U - ○ 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>4</sup> 10 <sup>3</sup> WATER CONTENT PERCENT Wp	
	- 0		Ground Surface (SM) SAND, fine grained, silty, containing silt lenses/laminations, light brown, dry to moist.	0.0	0					
	- 2	Deere 270D LC RTL Construction	(ML) SILT, sandy, laminated grey and brown, dry to moist.	1.2	5					
	- 3		(ML) CLAYEY SILT, some sand, containing sandy lenses, grey, moist to wet, very soft.	2.5	0					
010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 5		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed off side walls during excavation.	45	0					
TESTPIT 13-1426-(	- 7 DE 1	: 35	CALE				<b>A</b> GG	older ociates		LOGGED: JJB CHECKED: DC

#### RECORD OF TEST PIT: CP-TP-10

ATA ENTRY: JJB	PF LC	ROJEC DCATIC	T No.: 13-1426-0010 N: See Location Plan	REC	ORD	OF TEST PIT: CP- EXCAVATION DATE: October 2	<b>TP-10</b> 9, 2013	Sheet 1 of 1 Datum:
	Щ.	Z	SOIL PROFILE		SAMPLES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	T PIEZOMETER 이유
	DEPTH SCA METRES	EXCAVATIC METHOD	DESCRIPTION	STRATA PLOT (m) (m)	NUMBER TYPE BLOWS/0.3m	20         40         60         80           SHEAR STRENGTH Cu, kPa         nat V. + Q. • rem V. ⊕ U - ○           20         40         60         80	10 <sup>5</sup> 10 <sup>5</sup> 10 <sup>4</sup> 10 <sup>3</sup> WATER CONTENT PERCENT Wp ├─────── W WI 10 20 30 40	
	- 0		Ground Surface (SM) SAND, fine grained, silty, containing silt lenses/laminations, light brown, dry to moist.					
	- 1		(ML) SILT, sandy, laminated grey and brown, dry to moist.	1.25				
1/4 1   1   1   1   1   1   1   1   1   1	- 2 - 3	Deere 2700 LC RTL Construction	ML) CLAYEY SILT, some sand to sandy, containing sand lenses, larninated, moist to wet, very soft to soft.	4.50				
10 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/1	- 5		NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed off side walls during excavation.					
TESTPIT 13-1426-00	- 7 DE 1	EPTH S : 35	SCALE			Golder		LOGGED: JJB CHECKED: DC

## RECORD OF TEST PIT: CP-TP-11

LOCATION: See Location Plan

EXCAVATION DATE: October 29, 2013

SHEET 1 OF 1

-	Щ	z		SOIL PROFILE			SAM	MPLE	ES	DYNAMIC PEI RESISTANCE	NETRATIO	DN /0.3m	۲	HYDRAUL k,	IC CO cm/s	NDUCT	IVITY,	T	ų P	PIEZOMETER
	TH SCA ETRES	AVATIC	ETHOD	DESCRIPTION	A PLOT	ELEV.	IBER	붠	S/0.3m	20 SHEAR STRE	40 ( NGTH I	60 8 1 nat V. +	Q - ●	10 <sup>-6</sup>	10 <sup>-</sup> ER CO	<sup>5</sup> 10 NTENT	PERCE	0 <sup>-3</sup> ⊥ ⊥ NT	DITIONA TESTIN	STANDPIPE INSTALLATION
	MED	EXC	Σ	DESCRIPTION	STRAT	DEPTH (m)	NUN	2	BLOW	Cu, kPa 20	40 e	em V.⊕ 30 8	U - Ó	Wp ⊢ 10	20		0 4	WI 0	ADI LAB.	
_	- 0			Ground Surface		0.00														
				(SM) SAND, fine grained, slity, brown to grey, dry, loose to compact.		0.00														- - - - - - - - - - - - - - - - - - -
	- 1	Deere 270D LC	RTL Construction	(ML) SILT, sandy, some clay, containing clayey lenses, containing sandy lenses, dark to light grey, moist to wet.		1.00														
3-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4			End of TEST PIT. NOTES: 1) Suspected bedrock at 4.0 m. 2) Test Pit backfilled on completion. 3) No seeping water observed during excavation. 4) Sloughing observed off side walls during excavation.		4.00														
TESTPIT	DE 1 :	EPT : 38	́Н S 5	CALE							olde socia	er ates						(	LOGG	ed: JJB Ed: DC

DATA ENTRY: JJB

PROJECT No.: 13-1426-0010

#### RECORD OF TEST PIT: CP-TP-12

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

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TH SCAL	014 47.14	ETHOD	DECODUCTION	A PLOT	ELEV.	BER		5/0.3m	20 SHEAR	4 STRFN	0 (	30 8 HatV +	B0 · Q - •	10 W/		) <sup>-5</sup> 10		0 <sup>-3</sup> ⊥	TESTIN	STANDPIPE
DEPT ME	C X L	Β	DESCRIPTION	<b>TRATA</b>	DEPTH (m)	NUM	T I	BLOWS	Cu, kPa	UTREN		em V. ⊕	) Ŭ-Ō	Wp				WI	ADD LAB.	
			Ground Surface						20	4	0 6		50	10	J 2	υ 3 		+0		
-			(ML) SILT, sandy, laminated light grey and brown, blocky, dry to moist.		0.00															-
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### RECORD OF TEST PIT: CP-TP-13

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

-			SOIL PROFILE		SAN	/IPLES			HYDRAULIC CON		PIEZOMETER
	SCALE	ATION 10D		LOT		3 3	20 40	60 80	k, cm/s 10 <sup>-6</sup> 10 <sup>-5</sup>	10 <sup>-4</sup> 10 <sup>-3</sup>	OR STANDPIPE
i	METR	(CAV/	DESCRIPTION		MBEF	VPE WS/0.:	SHEAR STRENGTH	nat V. + Q - ● rem V. ⊕ U - ○	WATER CON		
	D	ŵ		(m)	R	BLO	20 40	60 80	Wp	⊖ <sup>W</sup> WI 30 40	
	· 0		Ground Surface	নাহান্য ০০							
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F	2	C400 L	(SM) SAND, fine grained, silty, light	2.0							-
F		RTI 6	grey, containing silt lenses, dry to moist.								-
F		Kom									-
_				날수는 고려하							-
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E			(ML) CLAYEY SILT, grey, moist to wet.	4.0							-
E											-
4			(SM) SAND, fine grained, silty, light	4.5	,						-
1/23/1			grey, containing silt lenses, moist.								-
											-
AN.G	- 5		End of TEST PIT.	5.0							-
DR			NOTES:								-
2			<ol> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during</li> </ol>								-
14.GF			excavation. 3) No sloughing observed during								-
AN20			excavation.								-
S 13J	6										
20RD											-
T RE											-
STPI											-
10 TE											
26-00	- 7										-
13-14											
ТЫТ	DE	PTH	SCALE			(	Gold	er		I	LOGGED: JJB
TES	1	: 35					Associ	ates		c	CHECKED: DC

#### RECORD OF TEST PIT: CP-TP-14

DATA ENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 N: See Location Plan	RI	ECC	DRI	כ (	OF TEST PIT: EXCAVATION DATE	CP-TF : October 29, 2	<b>P-14</b> 2013		SH DA	EET 1 OF 1 TUM:
-	щ	7	SOIL PROFILE		s	AMPLE	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3	Im <b>\</b>	HYDRAULIC CONDUCTIV	Ίτ <del>Υ</del> , Τ	ں. 10	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT ) GD ) GD	NUMBER	TYPE	BLOWS/0.3m	20 40 60 H H H H H H H H H H H H H H H H H H H	80 V. + Q - ● V. ⊕ U - ○ 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> WATER CONTENT P Wp ├──────────── 10 20 30	10 <sup>-3</sup> L ERCENT 1 WI 40	ADDITIONAL LAB. TESTIN	STANDPIPE INSTALLATION
	- 0		Ground Surface (ML) SILT, sandy, containing sand lenses, greyish brown, dry to moist		2.00								- - - - - - - - - - - - - - - - - - -
	- 2	Deere 270D LC RTL Construction	clayey lenses (ML) CLAYEY SILT, sandy, containing sand lenses, moist to wet, very soft to soft.		.50								- - - - - - - - - - - - - - - - - - -
PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4 - 5		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.		.50								- - - - - - - - - - - - - - - - - - -
TESTPIT 13-1426-0010 TEST	- 7 DE	EPTH S	SCALE					Golder	es			-OGGE HECKI	

#### RECORD OF TEST PIT: CP-TP-15

DATA ENTRY: JJB	PF LC	ROJEC DCATIC	T No.: 13-1426-0010 DN: See Location Plan	RE	со	RD	OF TE	EST PIT	E: October 2	<b>TP-15</b> 23, 2013			Sheet 1 of 1 Datum:
	ш	7	SOIL PROFILE		SAM	/PLES	DYNAMIC	PENETRATIC	N ) J.3m	HYDRAULIC k. cm		Τ.,	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT Main (m) (m)	L  .	TYPE BLOWS/0.3m	20 SHEAR S Cu, kPa 20	40 6 STRENGTH n re 40 6	0 80 at V. + Q - € em V. ⊕ U - C	10 <sup>-6</sup> WATER ( Wp I	10 <sup>-5</sup> 10 <sup>-4</sup> 10-5 10 <sup>-4</sup> CONTENT PERCI 		G STANDPIPE INSTALLATION
	- 0 - 1 - 3	Komatsu PC400 LC Excavator RTL Construction	Ground Surface (SM) SAND, fine grained, silty, containing silt lenses/laminations and clayey laminations, moist.		0								
13-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 5 - 6		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.	5.1	0								
TESTPIT 1.	DE 1	EPTH S : 35	SCALE				Ð	Golde	r ites			LOG	gged: Jjb Cked: DC

### RECORD OF TEST PIT: CP-TP-16

LOCATION: See Location Plan

EXCAVATION DATE: October 23, 2013

SHEET 1 OF 1

			SOIL PROFILE			SAN	NPLE	s			TRATIO	ON /0.2m	)	HYDRAU	LIC CO	NDUCT	IVITY,	Т	(7)	PIEZOMETER
SCALE		HOD		LOT		щ		.3m	20	40	6	50 1	80	10-6	, cm/s 10 <sup>-</sup>	<sup>5</sup> 1	0 <sup>-4</sup> 1	0 <sup>-3</sup>	IONAL	OR STANDPIPE
EPTH		METI	DESCRIPTION	ATA P	ELEV. DEPTH	UMBE	HT I	0/S/MC	SHEAR S Cu, kPa	TRENG	ATH r	nat V. ⊣ rem V. €	⊢ Q-● ⊎ U-O	WAT	ER CO		PERCE	NT	ABDIT	INSTALLATION
		ш		STR	(m)	z		BLO	20	40	6	50	80	10	20	) 3	0 4	40	Ľ,	
-	0		Ground Surface (SM) SAND, fine grained, silty, light	नार	0.00		_	_												
-			brown, dry to moist.																	-
-																				-
_																				-
_																				-
-	1																			-
-																				-
-																				-
_																				-
_																				-
-	2	cavator																		_
		LC Exc																		-
		L Cons																		_
_		omatsu																		_
L	1	×																		-
L	3																			-
E	3																			=
E																				-
L																-				
-																				-
F																				-
F	4																			-
_																				
	End of TEST PIT.         4.50																			
107	End of TEST PIT. 4.50														-					
			1) Test Pit backfilled on completion.																	-
	5		2) No seeping water observed during excavation.																	-
			3) No sloughing observed during excavation.																	-
																				-
																				-
																				-
<u>-</u>	6																			
																				-
																				-
															-					
															-					
	7																			
2																				
	DEF	TH	SCALE							Go	olde	r							LOGG	ED: JJB
<u> </u>	1:	35								Asse	<u>ocia</u>	ates							CHECK	(ED: DC

#### RECORD OF TEST PIT: CP-TP-17

TA ENTRY: JJB	PF LC	ROJEC DCATIC	T No.: 13-1426-0010 NN: See Location Plan	RE	со	RD	OF TE	ST PIT:	CP-1 October 23	<b>FP-17</b> 3, 2013		SH	eet 1 of 1 Tum:
DA	ALE	NO	SOIL PROFILE		SA	MPLES	DYNAMIC F RESISTAN	PENETRATION CE, BLOWS/0.3m	$\overline{\chi}$	HYDRAULIC CO k, cm/s	NDUCTIVITY,	AL ING	PIEZOMETER
	DEPTH SC METRE	EXCAVATI METHOI	DESCRIPTION	STRATA PLO BEDEN (m)	NUMBER	TYPE BLOWS/0.3m	20 SHEAR ST Cu, kPa 20	40 60 RENGTH nat V rem V. 0	80 + Q - ● ⊕ U - ○ 80	10 <sup>-6</sup> 10 <sup>-</sup> WATER CO Wp	$\begin{array}{c}                                     $	ADDITION LAB. TEST	STANDPIPE
	- 0		Ground Surface (ML) SILT, some sand to sandy, laminated brown and grey, containing sand lenses, dry to moist.		0								
	- 1	Komatsu PC400 LC Excavator RTL Construction	(SM) SAND, fine grained, silty, containing silt lenses, light brown, dry to moist, loose to compact.		0								
4 	- 4		wet clayey lenses	4.5 	0								-
10 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT - 01/23/14	- 5		NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.										- - - - - - - - - - - - - - - - - - -
TESTPIT 13-1426-00	- 7 DE	EPTH S : 35	SCALE				() ()	Golder				LOGGE	=D: JJB ED: DC

PROJECT No.: 13-1426-0010

### RECORD OF TEST PIT: CP-TP-18

LOCATION: See Location Plan

EXCAVATION DATE: October 29, 2013

SHEET 1 OF 1

	ц	z	SOIL PROFILE			SAN	MPLES	DYNA RESI	AMIC PE	NETRATI	ON /0.3m	1	HYDRA	ULIC CC k, cm/s	NDUCT	IVITY,	T	_ <u>0</u>	PIEZOMETER
0	H SCAL	AVATIO ETHOD		V PLOT	ELEV.	BER	PE	SHEA		40 0	50 8		10 <sup>-</sup>	6 10	) <sup>-5</sup> 10		0 <sup>-3</sup> ⊥ ⊥ NT	TESTIN	STANDPIPE
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	EXC/ ME	DESCRIPTION	STRAT <sup>A</sup>	DEPTH (m)	INUMI	TYF DWS	Cu, kl	Pa		rem V. $\oplus$	Ŭ- Ŏ	Wp				WI	ADD LAB.	
_	0		Ground Surface		0.00				20	40 1					J 3		+0		
-			brown, dry to moist, loose to compact.		0.00														-
E																			-
E																			-
-																			-
-	1																		-
-																			-
-																			-
-																			-
-	2																		-
-		0 LC																	-
-		ere 270E - Constru																	-
-		De																	-
-	3																		_
-																			-
-																			-
-			(ML) CLAYEY SILT, sandy, containing		3.75														-
F	4		sand lenses, moist to wet, very soft to soft.																-
																			-
-																			-
1/23/14																			-
	5			И	5.00														-
CAN.			NOTES:		5.00														-
			1) Test Pit backfilled on completion.																-
14.GP,			2) No seeping water observed during excavation. 3) No single observed during																-
3JAN20			excavation.																-
RDS 1:	o																		-
- RECC																			-
EST PI1																			-
010 TE																			-
-1426-(	7																		
PIT 13	DE	PTH S	SCALE					Â		2014								LOGG	ED: JJB
TEST	1 :	35						V	7 <sub>As</sub>	10106 <u>SOCİ</u>	ates						(	CHECK	ED: DC

## RECORD OF TEST PIT: CP-TP-19

DATA ENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 DN: See Location Plan	REC	CO	RD	<b>OF 1</b> E>	<b>TES</b> (CAVAT	T PIT	<b>. (</b> TE: Oc	CP-1	<b>[P-1</b> ] 3, 2013	9				S⊦ D∕	HEET 1 OF 1 ATUM:	
			SOIL PROFILE			SAN	/IPLES	DYNA			N 0.2m	$\overline{)}$	HYDR/		ONDUCT	IVITY,	т		PIEZOMETER
	DEPTH SCALE METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE BLOWS/0.3m	SHEAI Cu, kP	R STREI	40 6 NGTH r 40 6	0.3m 0 8 atV.+ emV.⊕ 0 8	Q - • U - 0	1 W WI	k, cm/s 0 <sup>-6</sup> 10 ATER C0 0	0 <sup>-5</sup> 1 DNTENT W 0 3	0 <sup>-4</sup> 10 PERCEI	D <sup>3</sup> ⊥ NT WI -0	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
	- 0		Ground Surface	J	0.00														
	- 0	Komatsu PC400 LC Excavator RTL Construction	(ML) SILT, sandy, laminated brown and grey, dry, loose to compact.		0.00														
14	- 4		(ML) SILT, sandy, clayey, grey, moist to wet, soft to firm. End of TEST PIT.		4.00														
N2014.GPJ GLDR_CAN.GDT 01/23/	- 5		NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.																-
T 13-1426-0010 TEST PIT RECORDS 13JAI	- 6																		
TESTP	DE 1	: 35	DUALE					E	<b>G</b> As	olde socia	r ites						c	CHECK	ED: JJB

#### RECORD OF TEST PIT: CP-TP-20

ATA ENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 N: See Location Plan	RE	COI	RD	OF TES	TON DATE: October	- <b>TP-20</b> 23, 2013	Sheet 1 of 1 Datum:
-	щ	z	SOIL PROFILE		SAN	IPLES	DYNAMIC PEN RESISTANCE	IETRATION BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT (m) 	NUMBER	TYPE BLOWS/0.3m	20 SHEAR STRE Cu, kPa 20	40 60 80 NGTH nat V. + Q - Q rem V. ⊕ U - Q 40 60 80	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
	- 0 - 1 - 2	Komatsu PC400 LC Excavator RTL Construction	Ground Surface (ML) SILT, sandy, light grey to brown, containing sand lenses, dry to moist, soft/loose.	0.00						
-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4 - 5 - 6		(ML) CLAYEY SILT, some sand, grey, moist to wet, very soft to soft. End of TEST PIT. NOTES: 1) Test pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed off side walls of test pit during excavation.	4.50	2					
TESTPIT 13-	DE 1	EPTH S : 35	SCALE	I		(	<b>A</b> s	older		Logged: JJB Checked: DC

PROJECT No.: 13-1426-0010

## RECORD OF TEST PIT: CP-TP-21

LOCATION: See Location Plan

EXCAVATION DATE: October 23, 2013

SHEET 1 OF 1

щ	z		SOIL PROFILE			SAN	/IPLES	DYNA RESIS	MIC PEN STANCE,	ETRATIO	DN /0.3m	1	HYDRA	ULIC CO k, cm/s	ONDUCT	IVITY,	T		PIEZOMETER
H SCAL TRES				PLOT	ELEV.	ËR	0.3m			40 E	8 0	30	10	<sup>-6</sup> 10	) <sup>-5</sup> 10	) <sup>-4</sup> 1	0 <sup>-3</sup> ⊥	TESTIN	STANDPIPE
DEPTI	EXCA	DESC	CRIPTION	IRATA	DEPTH (m)	NUME	TYP LOWS	Cu, kF	a siren	NGIH r	iat v. + em V.⊕	Q-● U-○	Wp				WI	ADDI LAB. 7	
		Ground Surface		ST	(,				20 4	ιο e	8 0	30	1	0 2	0 30	0 4	0		
- 0		(SM/ML) SAND ar containing sand le and light grey, loos	Id SILT, fine grained, nses, laminated brown se/soft, dry to moist.		0.00														
- 2	Komatsu PC400 LC Excavator	RTL Construction		등 등 기억 등 가장 등 가															
		(ML) SILT, sandy, platey, dry, hard. (s End of TEST PIT.	light brown, laminated, suspected permafrost)		3.50														
- 4		NOTES: 1) Refusal due to s 2) Test pit backfille 3) No seeping wate excavation. 4) No sloughing ob excavation.	suspected permafrost. d on completion. er observed during eserved during																
- 6																			
	DTL			<b>I</b>	1			Â	E.		I	1	1				1		
1:	35								<b>F</b> G	olde	r ates						(	CHECK	ED: DC

### RECORD OF TEST PIT: CP-TP-22

LOCATION: See Location Plan

EXCAVATION DATE: October 30, 2013

SHEET 1 OF 1

 L J	Z	SOIL PROFILE	. 1	SA	MPLE	s	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	λ	HYDRAULIC CONDUCTIVITY, k, cm/s	T JB	PIEZOMETER OR
METRES	CAVATIO	DESCRIPTION		MBER	YPE	VS/0.3m	20 40 60 8 SHEAR STRENGTH nat V. +	Q - •	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup> I I I I WATER CONTENT PERCENT		STANDPIPE INSTALLATION
	ш–		(m)	<sup>™</sup> ⊋		BLOV	20 40 60 8	30	Wp - W Wi 10 20 30 40	LAI	
0		Ground Surface (ML) SILT, sandy, laminated grey and brown, blocky/friable, dry to moist.		00							
2	Deere 270D LC RTL Construction	sandy/clayey lenses									
3		suspected permafrost below about 3.0 m.									
5		End of TEST PIT. NOTES: 1) Refusal due to suspected permafrost. 2) Test pit backfilled on completion. 3) No seeping water observed during excavation. 4) No sloughing observed during excavation.	4.	00							
6											
DE 1 :	PTH : 35	SCALE	I	-	<u> </u>		Golder		· · · · · · · ·	LOGG	ED: JJB KED: DC

### RECORD OF TEST PIT: CP-TP-23

LOCATION: See Location Plan

EXCAVATION DATE: October 30, 2013

SHEET 1 OF 1

	Щ	z	SOIL PROFILE		SAN	PLES	DYNAMIC PENET RESISTANCE, BL	RATION OWS/0.3m	HYDRAULIC CO k, cm/s		-9	PIEZOMETER
	PTH SCA METRES	CAVATIC	DESCRIPTION	TA PLOT	MBER	YPE VS/0.3m	20 40 SHEAR STRENG	60 80 TH nat V. + Q	10 <sup>-6</sup> 10 Q - ● WATER CO	0 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup> ⊥ ONTENT PERCENT	DDITION	STANDPIPE INSTALLATION
	DE	<u></u>		(m)		BLOV -	20 40	60 80	Wp	<mark>⊖<sup>W</sup>I</mark> WI 20 30 40		
	- 0	Deere 270D LC RTL Construction	Ground Surface (ML) SILT, sandy, blocky, laminated brown and grey, dry to moist, soft to firm.		00							
23/14	- 3		clayey silt lenses (ML) CLAYEY SILT, some sand to sandy, dark brown to grey, moist to wet, very soft to soft.	4.0	0							-
5-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/2	- 5 - 6		End of TEST PIT. NOTES: 1) Test pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed off side walls of test pit during excavation.	5.0	0							- - - - - - - - - - - - - - - - - - -
TESTPIT 13	DE 1 :	PTH S	SCALE		• • •		Go	lder ociates		· · · ·	Logged: . Checked:	UB DC

#### RECORD OF TEST PIT: CP-TP-24

DATA ENTRY: JJB	PR LC	OJEC CATIC	T No.: 13-1426-0010 IN: See Location Plan	RE	COI	RD	OF TES	I PIT: 0	CP-T	<b>P-24</b> , 2013		5	SHEET 1 OF 1 DATUM:
-	ш	7	SOIL PROFILE		SAN	PLES	DYNAMIC PEN RESISTANCE.	ETRATION BLOWS/0.3m	1	HYDRAULIC CC k. cm/s	ONDUCTIVITY,	Τ	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT (m) MATA PLOT (m)	NUMBER	BLOWS/0.3m	20 4 SHEAR STREM Cu, kPa 20 4	40 60 8 I I I I I I I I I I I I I I I I I I I	Q - • U - ○ 80	10 <sup>-6</sup> 10 WATER CC Wp	0 <sup>55</sup> 10 <sup>-4</sup> 1 DNTENT PERCE <u>− ⊖<sup>W</sup> </u> 0 30 4		STANDPIPE INSTALLATION
	- 0 - 1	Deere 270D LC RTL Construction	Ground Surface (ML) SILT, sandy, containing clayey lenses, containing sand lenses laminated grey and brown, dry to moist.	0.0	0								
13-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 3 - 4 - 5 - 7		End of TEST PIT. NOTES: 1) Refusal due to suspected bedrock. 2) Test pit backfilled on completion. 3) No seeping water observed during excavation. 4) No sloughing observed during excavation.	2.5									
TESTPIT 1	DE 1	PTH S	CALE				<b>H</b> ASS	older ociates				LOG	ged: JJB ;Ked: DC

### RECORD OF TEST PIT: CP-TP-25

LOCATION: See Location Plan

EXCAVATION DATE: October 30, 2013

SHEET 1 OF 1

-		<u> </u>			SAME		DYNAMIC PEN	ETRATION	<u>``</u>	HYDRAULIC C	ONDUCTIVITY,			PIEZOMETER
	SALE	NOLO		5	3Aivir	Ε	RESISTANCE,	BLOWS/0.3m	<u> </u>	k, cm/s	0 <sup>-5</sup> 10 <sup>-4</sup>	10-3	NAL	OR
	TH S(	AVA FTHC		JI ELEV.	PE BER	S/0.3	SHEAR STREM	IGTH nat V. +	- Q- ●	WATER C	ONTENT PERC	ENT	DITIO	INSTALLATION
		EX N		DEPTH (m)		BLOW	Cu, kPa	rem V. ∉	€ U- O	Wp 🛏	W	WI	ADI	
			Ground Surface	S			20 4	0 60	80	10 :	20 30	40		
F	- 0		(SM) SAND, silty, containing silt lenses,	0.00										-
E			loose to compact.											-
F														-
F														-
F														-
L	- 1													-
F														-
F														-
F			<b>E</b>											-
E		70D LC	itru ctio											-
E		sere 2	L Cons											-
-	- 2		RI											_
F														-
F			soft clayey silt lens											-
F														-
E														-
F														-
F	- 3													-
F														-
E														
F			End of TEST PTI.	3.50	1									-
E			NOTES:											-
┢	- 4		<ol> <li>1) Refusal due to suspected bedrock.</li> <li>2) Test pit backfilled on completion.</li> </ol>											_
F			3) No seeping water observed during excavation.											_
F			excavation.											-
4-														-
01/23/														-
Ĩ														-
SAN.G	5													-
DR 0														-
ы Г														-
14.GF														-
N201														-
13J/	- 6													-
SRDS														-
REC														-
E														-
TES'														-
0010	-													-
-1426-	- 1													_
T 13									1	•	ı I	1		
ESTP	DE 1	:PIH 35	1 SUALE				G	older				,		ED: JJB
۳L		. 00						ociates						

#### RECORD OF TEST PIT: CP-TP-26

<b>NTRY: JJB</b>	PR	OJEC	T No.: 13-1426-0010	RE	COF	RD		CP-T	<b>P-26</b>	SHEET 1 OF 1
DATA EI	LU	CATIC	ni. See Ludaiuil Pidil				EAGAVATION DATE	L. October 30,	, 2010	
	ALE S	NO	SOIL PROFILE	1 - 1	SAM	PLES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.	.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	
	DEPTH SC. METRES	EXCAVATI METHOE	DESCRIPTION	DEPTH (m)	NUMBER	BLOWS/0.3m	20 40 60 SHEAR STRENGTH nai Cu, kPa rer 20 40 60	80 t V. + Q- ● m V. ⊕ U - ○ 80	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	INSTALLATION
	- 0	Deere 270D LC RTL Construction	Ground Surface (ML) SILT, sandy, laminated brown and grey, friable, dry to moist.	0.00						
-	-		(ML) CLAYEY SILT, sandy, grey, moist to wet, very soft to soft. topsoil encountered	2.25	-					
N2014.GPJ GLDR_CAN.GDT 01/23/14	- 4		<ul> <li>In the function of the second secon</li></ul>	3.04						
13-1426-0010 TEST PIT RECORDS 13JAI	- 6									
TESTPIT	DE 1	: 35	CALE				Golden	tes		Logged: JJB Checked: DC

### RECORD OF TEST PIT: CP-TP-27

LOCATION: See Location Plan

EXCAVATION DATE: October 30, 2013

SHEET 1 OF 1

Е		N	SOIL PROFILE			SAN	//PLES	B D' RI	YNAMIC PEN ESISTANCE,	IETRATIO BLOWS	DN /0.3m	1	HYDRA	ULIC CC k, cm/s	ONDUCT	IVITY,	T	Ş.	PIEZOMETER
DEPTH SCA METRES		METHOD	DESCRIPTION	TRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	D S C	20 HEAR STREI J, kPa	40 6 NGTH r r	80 8 ⊥ nat V. + em V. ⊕	Q - • U - O	10 W <i>4</i> Wp	-6 10 ATER CO	) <sup>-5</sup> 10 DNTENT ⊖W	) <sup>-4</sup> 1 PERCE	0 <sup>-3</sup> ⊥ NT WI	ADDITION	STANDPIPE INSTALLATION
	,	_	Ground Surface	S S	(,			2	20 4	40 <del>(</del>	8 06	30	10	) 2	0 3	0 4	10		
	1	RTL Construction	clayey silt lenses		0.00														
T 13-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLUK CAN.GUI 01/23/14	5		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.		4.25														
	EP	тн s 35	SCALE					G	<b>B</b> AS	olde	er ates							LOGG CHECK	ed: JJB ed: DC

#### RECORD OF TEST PIT: CP-TP-28

DATA ENTRY: JJB	PR LO	OJEC CATIC	F No.: 13-1426-0010 N: See Location Plan		REC	COI	RD	OF TES EXCAVA	<b>T PIT</b> TION DAT	E: Octobe	P-TP-28 er 30, 2013	8			S⊢ DA	ieet 1 of 1 .tum:
-	ш	-7	SOIL PROFILE			SAM	IPLES	DYNAMIC PE RESISTANCE		M N	HYDR		NDUCTIVIT	<i>ч</i> , т	.0	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE BLOWS/0.3m	20 SHEAR STRE Cu, kPa 20	40 60 NGTH na re 40 60	80 t V. + Q m V. ⊕ U 80	- • W - • Wi - 0 Wi	0 <sup>-6</sup> 10 ATER CO	<sup>5</sup> 10 <sup>-4</sup> NTENT PER ⊖W 30	10 <sup>-3</sup> ⊥ CENT 1 WI 40	ADDITIONAL LAB. TESTIN	OR STANDPIPE INSTALLATION
01/23/14	- 0	Deere 270D LC RTL Construction	Ground Surface (SM) SAND, fine grained, silty, containing blocky laminated silt lenses, light grey to brown, dry to moist.		0.00											
13-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT	- 5 		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.		5.00											- - - - - - - - - - - - - - - - - - -
TESTPI	DE 1 :	PTH S 35	CALE						dia la constanta de la constan	r tes					LOGGI	ED: JJB ED: DC

#### RECORD OF TEST PIT: CP-TP-29

LOCATION: See Location Plan

EXCAVATION DATE: October 30, 2013

SHEET 1 OF 1

-			SOIL PROFILE			SAME	PLES	DYNAMIC PE	NETRATIO	ON		HYDRAULI		TIVITY,	т		PIEZOMETER
	SCALE	NOIL		10		2. uvir	5	RESISTANCE	, BLOWS 40 f	/0.3m	∕ ₀	k, c 10⁻ <sup>6</sup>	m/s 10 <sup>-5</sup> 1	10-4 10	D-3 ⊥	STING	OR STANDPIPE
	PTH S METRI	CAVA	DESCRIPTION		<u>EV.</u>	V PE	VS/0.3	SHEAR STRE	NGTH r	nat V. +	Q - ●	WATE	R CONTEN	T PERCEI	NT	DITIC 3. TES	INSTALLATION
	DEP	х² Ш		LTRA (r	n)		BLOW	си, кра	r 40 e	em v.⊕	0-0	Wp	OW	<u>،</u> ا	WI	AD	
	_ 0		Ground Surface					20	40 (		0	10	20	30 4	0		
-	- 0		(SM) SAND, fine grained, silty, containing blocky silt lenses, light grey to		0.00												-
_			brown, dry to moist.														-
																	-
F																	-
																	-
-	- 1																-
-																	-
F				1200													-
_																	-
																	-
	- 2		(ML) CILT condu como elos conteining	1971) 1971) 81948	2.00												-
ŀ			clayey lenses, containing sandy lenses, light brown to grey moist with wet		2.00												-
		D LC	lenses.														-
-		re 270															-
-		RTL															-
-																	-
-	- 3																
																	-
																	-
																	-
																	-
	- 4																
																	-
																	-
3/14																	-
01/2:																	-
.GDT	- 5		End of TEST PIT.	14	5.00	_											-
CAN																	-
GLDR			NUTES:														-
GPJ (			2) No seeping water observed during														-
2014.0			3) No sloughing observed during excavation.														-
3JAN2	- 6																-
SDS 1.																	-
ECOF																	-
PITR																	-
TEST																	-
0101																	-
1426-0	- 7																-
T 13-1			l											1			
STPL	DE	PTH S	SCALE				(	( <b>7</b> A) G	olde	r							ED: JJB
μΓ	1	35						V As	<u>50Cla</u>	<u>ites</u>						-HECK	

#### RECORD OF TEST PIT: CP-TP-30

DATA ENTRY: JJB	PF LC	OJEC CATIC	T No.: 13-1426-0010 DN: See Location Plan	RE	со	RD	OF TEST PIT EXCAVATION DAT	E: October 2	<b>TP-30</b> 3, 2013		Sheet 1 of 1 Datum:
	ш	_	SOIL PROFILE		SAM	/PLES	DYNAMIC PENETRATIC	N )	HYDRAULIC CONDUC	TIVITY, T	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT CM (m) (m)	NUMBER	TYPE BLOWS/0.3m	20 40 6 SHEAR STRENGTH n Cu, kPa re 20 40 6	0 80 at V. + Q - ● em V. ⊕ U - ○ 0 80	10 <sup>-6</sup> 10 <sup>-5</sup> WATER CONTEN Wp I 0 <sup>-0</sup> 10 20	10 <sup>-4</sup> 10 <sup>-3</sup> ⊥ TVOLIOU IT PERCENT ✓ 10 <sup>-1</sup> WI 30 40	STANDPIPE STANDPIPE INSTALLATION
	- 0		Ground Surface (ML/SM) SILT and SAND, light brown and grey, laminations, dry.	0.0	0						
	· 1	Komatsu PC400 LC Excavator RTL Construction	(SM) SAND, silty, fine grained, light brown to grey, dry to moist (ML/SM) Sandy SILT and silty SAND								
3-1426-0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 5 - 6		Interlayers, containing clayey silt lenses. End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.	5.5	D						
TESTPIT 1	DE 1	: 35	SCALE				Golde	r ites		LO CHI	igged: Jjb Ecked: DC

#### RECORD OF TEST PIT: CP-TP-31

A ENTRY: JJB	PR LC	ROJEC	T No.: 13-1426-0010 DN: See Location Plan	RE	CC	RD	) (	OF TEST PIT EXCAVATION DAT	CP-	<b>TP-31</b> 23, 2013			Sł D/	ieet 1 of 2 Atum:
DATA	ш	_	SOIL PROFILE		SA	MPLE	s	DYNAMIC PENETRATIC	N D 3m	HYDRAU		/ITY, T		PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT (m) (m) (m)	H <sup>-</sup> /	TYPE	BLOWS/0.3m	20 40 6 SHEAR STRENGTH n Cu, kPa re 20 40 6	0 80 at V. + Q - € em V. ⊕ U - C	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$ \begin{array}{c} 10^{-5}  10^{-4} \\ \hline \text{ER CONTENT P} \\ \hline 0 \\ \hline 20 \\ 30 \end{array} $	10 <sup>-3</sup>	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
RDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 0 - 1 - 2 - 3 - 5	Komatsu PC400 LC Excavator RTL Construction	Ground Surface (SM) SAND, silty, fine grained, containing blocky silt layers and clayey silt lenses, dry to moist.		00									
1426-0010 TEST PIT REC(	- 7		End of TEST PIT. NOTES: <u>1) Test Pit backfilled on completion.</u> CONTINUED NEXT PAGE	6	50					 				
TESTPIT 13-	DE 1	PTH S : 35	SCALE	<u> </u>		<u> </u>		Golde	r		1	I	LOGG	ed: JJB (ed: DC

#### RECORD OF TEST PIT: CP-TP-31

DATA ENTRY: JJB	PR LC	OJEC CATIC	T No.: 13-1426-0010 N: See Location Plan		REC	co	RD	) (	DF TE	EST avati	<b>PIT</b>	TE: Od	CP-T	<b>ГР-3</b> ′ 3, 2013	1				SH DA	ieet 2 of 2 NTUM:
-			SOIL PROFILE			SAM	<b>NPLE</b>	s	DYNAMIC			N 0.2m	1	HYDR		ONDUCT	TIVITY,	T		PIEZOMETER
_	DEPTH SCALE METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	ТҮРЕ	BLOWS/0.3m	Cu, kPa		0 6 GTH n re 0 6	0.3m 0 8 at V. + em V. ⊕ 0 8	Q - • U - O	10 W W 1	6, cm/s 0 <sup>-6</sup> 10 ATER Co 0 2	0 <sup>-5</sup> 1 DNTENT →W 0 3	0 <sup>-4</sup> 10 PERCE	0 <sup>-3</sup> ⊥ NT WI	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
1T RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 7 - 7 7 7 7 7 7 7 7 		O No seeping water observed during excavation.     So No solution observed during excavation.					BI	20	4		3 0								
PIT 13-1426-0010 TEST	- - - 14 DE	PTH S	CALE																LOGGI	- - - - ED: JJB
TESTF	1	: 35							Ð	F G Ass	olde ocia	r ites						C	CHECK	ED: DC

#### RECORD OF TEST PIT: SP-TP-26

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

-	Щ	z		SOIL PROFILE		•	SAM	PLES	DYNAMIC PENI RESISTANCE, I	TRATION BLOWS/0.3m	$\overline{\chi}$	HYDRAULIC CO k, cm/s	ONDUCTIVITY,	T	4 C	PIEZOMETER
	DEPTH SCA METRES	EXCAVATIO	METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	BLOWS/0.3m	20 4 SHEAR STREN Cu, kPa	0 60 GTH nat V. + rem V. €	80 - Q - ● Ə U - ○ 80	10 <sup>-6</sup> 10 WATER CO Wp I	$\begin{array}{c c} D^{5} & 10^{-4} \\ \hline \\ DNTENT PERCE \\ \hline \\ \hline \\ 0 \\ \end{array}$	10 <sup>-3</sup> ⊥ ENT WI 40	ADDITION <sup>A</sup> LAB. TESTIN	STANDPIPE INSTALLATION
	- 0			Ground Surface												
	- 0			(SM/ML) Sandy SILT to silty SAND, laminated brown and grey, dry to moist.		0.00										
	- 1	Komatsu PC400 LC Excavator	RTL Construction	(SM) SAND, silty, containing wet clayey silt lenses, light grey, dry to moist, loose to compact.		0.75										- - - - - - - - - - - - - - - - - - -
	- 3		-	(ML) CLAYEY SILT, light brown to grey, w>PL, very soft to soft. (SM) SAND, fine grained, silty, light grey,		2.75										-
	- 4			moist.												
0010 TEST PIT RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4			End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.		4.00										
3-1426-	- 1															
TESTPIT 1:	DE 1 :	EPTI : 35	H S(	CALE					<b>H</b> Ass	older ociates				C	LOGG CHECK	ed: Jjb (ed: DC

PROJECT No.: 13-1426-0010

### RECORD OF TEST PIT: SP-TP-27

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

ALE.		N		SOIL PROFILE		1	SAM	MPLE:	B DY RE	NAMIC SISTAN	PENE ICE, B	TRATIO	ON /0.3m	l	HYDR	AULIC C k, cm/s	ONDUC	TIVITY,	T	AL	PIEZOMETER OR
PTH SC/	METRE	<b>CAVATI</b> METHOF		DESCRIPTION	TA PLO	ELEV.	IMBER	LYPE	SH Ci	20 EAR ST	40 RENC	) 6 GTH r	i0 8 ⊥ nat V. + em V ⊕		1 W	0 <sup>-6</sup> 1	0 <sup>-5</sup> 1 ONTENT	0 <sup>-4</sup> 1 PERCE	10 <sup>-3</sup> ⊥ I INT	DDITION B. TESTI	STANDPIPE INSTALLATION
DE		Ώ.			STRA	(m)	Ŋ			20	40	) 6	i0 ε	30	1 W	p	 20   3	30 4	WI 40	LAI	
-	0			Ground Surface (ML) SILT, sandy, containing clayey laminations, laminated brown and grey, dry.		0.00															
	2	Komatsu PC400 LC Excavator	KIL Construction	(SM) SAND, fine grained, silty, light to dark grey, dry to moist.		1.50															-
	3			End of TEST PIT.		4.00															
	5		e	<ol> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during excavation.</li> <li>No sloughing observed during excavation.</li> </ol>																	-
	6																				-
	DE	РТН 35	I SC	ALE	I	I			G	<b>D</b> A	Go	olde ocia	er ates	I	I	I	I	I		LOGG CHECK	ED: JJB (ED: DC

### RECORD OF TEST PIT: SP-TP-28

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

							_													
L	ł	z		SOIL PROFILE		÷	SAI	MPLE	s	DYNAMIC F	PENETRA CE, BLOV	TION VS/0.3m	Ì	HYDR	AULIC C k, cm/s	ONDUCI	FIVITY,	T	L G	PIEZOMETER
100	RES	ATIO	₽		LOT		۲	d	E.	20	40	60	80	1	0 <sup>-6</sup> 1	0 <sup>-5</sup> 1	0 <sup>-4</sup> 1	10 <sup>-3</sup> ⊥	STIN	STANDPIPE
Ē	UE T	CAV	É H	DESCRIPTION	TA P	ELEV.	MBE	YPE S	0/2/	SHEAR ST	RENGTH	nat V.	+ Q-●	w	ATER C	ONTENT	PERCE	INT	B. TE	INSTALLATION
Ĺ	7	Ш	-		TRA	(m)	₽		2 FC	Cu, KFa			• • • •	W	p	OW		WI	LAI	
-			-		S				-	20	40	60	80	1	10 2	20 3	30 4	40		
-	0			(ML) SILT, sandy, some clay, laminated		0.00			-		_									
F				brown and grey, dry to moist.																
F																				
Ľ																				
-																				
F																				
E	1			(SM) SAND, fine grained, silty,		1.00														-
F				moist.																
-																				
_		vator																		
F		Exca	tion			1														
L	2	)0 LC	Instruc			]														-
╞	2	PC40	L Col			1														
È		natsu	8			1														
╞		Kor																		
Ľ				fewer silt lenses																
-																				
						1														
-	3																			-
L																				
-																				
Ľ																				
F																				
F																				
L	4																			
F				End of TEST PIT.		4.00														
Ľ				NOTES:																
-				1) Test Pit backfilled on completion.																
_				2) No seeping water observed during																
-				3) No sloughing observed during																
F				CAUGY CHUIL																
┢	5																			-
F																				
╞																				
F														1						
F																				
F																				
-	-																			
F	6													1						-
F														1						
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F	7													1						-
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			ц <i>с</i>								_								1000	
	DE	:P1	п S -	UALE					(	FAR	Gold	ler	-							
!	1	: 35	2						-	<u>v</u> A	<b>SSOC</b>	1ate	S						CHECK	ED: DC

#### **RECORD OF TEST PIT:** SP-TP-29

NENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 N: See Location Plan	RE	со	RD	OF TEST EXCAVATIO	PIT: SP- N DATE: October	- <b>TP-29</b> 19, 2013	SHE	ET 1 OF 1 UM:
DATA					_						
	Ш	Z	SOIL PROFILE	<u> </u>	SAN	/IPLES	DYNAMIC PENET RESISTANCE, BL	RATION .OWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s		PIEZOMETER OR
	DEPTH SCA METRES	EXCAVATIC METHOD	DESCRIPTION	STRATA PLOT (m) HLATA MATA PLOT	NUMBER	TYPE BLOWS/0.3m	20 40 	60 80 TH nat V. + Q - 0 rem V. ⊕ U - 0 60 80	0 10 <sup>6</sup> 10 <sup>5</sup> 10 <sup>4</sup> 10 WATER CONTENT PERCEN Wp I ↓ W 10 20 30 40	C S → ADDITION/ LAB. TESTII	STANDPIPE INSTALLATION
-	- 0		Ground Surface (ML) SILT, sandy, laminated light brown and grey, dry.	0.0	0						
	- 1	ator	(SM) SAND, fine grained, silty, light grey, dry to moist.	0.5	D						-
-	- 2	Komatsu PC400 LC Excava RTL Construction	(ML) CLAYEY SILT, laminated brown and grey, moist to wet, very soft to soft, sand laminations.	1.7	5						
	- 3		(SM) SAND, fine grained, silty, light grey, dry to moist.	2.5	D						
1/23/14	- 4		(ML) CLAYEY SILT, laminated brown and grey, moist to wet, very soft to soft, sand laminations. End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation	4.0	0						
JAN2014.GPJ GLDR_CAN.GDT 0	- 5		4) Boulders/cobbles on surface.								
-1426-0010 TEST PIT RECORDS 13.	- 6										
TESTPIT 13-	DE 1	EPTH S : 35	SCALE				<b>A</b> Go	lder ociates		LOGGEI	D: JJB D: DC

### RECORD OF TEST PIT: SP-TP-30

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

ц	ļ	z	SOIL PROFILE			SAN	/IPLES	DYNA RESIS	MIC PEI	NETRATI	ON 5/0.3m	1	HYDR	AULIC C k, cm/s	ONDUCT	TIVITY,	T	<u>ں</u> ہے۔	PIEZOMETER
P SCA	ETRES	AVATIC	DECODIDITION	A PLOT	ELEV.	BER	면 \$/0.3m	SHEA		40 J	60 8 		1	0 <sup>-6</sup> 1	0 <sup>-5</sup> 1 L ONTENT	0 <sup>-4</sup> 1	10 <sup>-3</sup> ⊥	TESTIN	STANDPIPE
DEPT	W	EXC/ ME	DESCRIPTION	TRATA	DEPTH (m)	MUM	3LOWS	Cu, kF	a a	Nom	rem V. 🕀	Ŭ- Ŏ	w				WI	ADD LAB.	
	0		Ground Surface	S					20	40	60 8	30	1	0 2	20 3	30 4	40		
-	0		SAND, fine grained, silty, light brown to grey, dry, loose to compact.		0.00														-
																			-
_																			-
-																			-
L	1																		-
F																			-
F																			-
-		ator																	-
-		Excav																	-
_	2	Constru																	
E		RTI P																	-
-		Kor	de filete en de allitere en																-
-			dry, friable sandy slit lenses																-
-																			-
-	3		dry, black, friable sandy silt lenses																-
-																			-
-																			-
																			-
-	4																		-
-					4.00														-
-			NOTES:																-
8/14			2) No seeping water observed during excavation.																-
01/23			3) No sloughing observed during excavation.																-
N.GDT	5																		-
RCAN																			-
																			-
14.GP																			-
AN201																			-
DS 13J	6																		
ECOR																			-
PIT RI																			-
TEST																			-
- 0010	7																		-
3-1426	1																		
PIT 1.	DE	DEPTH SCALE LOGGED: JJE													ED: JJB				
TEST	1 :	35						V	As	50 <u>01</u>	ates							CHECK	ED: DC

#### RECORD OF TEST PIT: SP-TP-31

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

-	Щ	z		SOIL PROFILE	•	•	SA	MPLE	ES	DYNAMIC PE RESISTANCE	NETRATIO	DN /0.3m	1	HYDRA	AULIC CO k, cm/s	ONDUCT	IVITY,	T	Ę Ļ	PIEZOMETER
	TH SCA IETRES	CAVATIC	ETHOD	DESCRIPTION	A PLOT	ELEV.	1BER	Ë	S/0.3m	20 SHEAR STRE	40 6 J NGTH r	80 8 hat V. +	Q - ●	10 W	) <sup>-6</sup> 10 ATER C0	) <sup>-5</sup> 10 DNTENT	PERCE	D-3 ⊥ L NT	DITION <sup>A</sup>	STANDPIPE INSTALLATION
	A D D D D D	EX	2		STRAT	DEPTH (m)	NUN	È	BLOW	Cu, kPa <u>2</u> 0	r 40 6	em V.⊕ 30 <u>8</u>	U - O	Wr 1	0 2	0 3	0 4	WI 0	ADI	
	- 0	_		Ground Surface (ML/SM) Sandy SILT to Silty SAND,		0.00		_												
				laminated grey and brown, dry to moist.																-
	- -																			-
		Excavato	ion																	-
-	1	2400 LC I	Construct																	-
		matsu P(	RTL																	-
	- -	X																		-
				boulders encountered																-
	- 2	_		End of TEST PIT.		2.00		_												-
ł				NOTES:																-
ļ				<ol> <li>Refusal due to suspected bedrock.</li> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during</li> </ol>																-
				4) No sloughing observed during excavation.																-
	- 3																			-
																				-
																				-
																				-
-	- 4																			-
																				-
3/14																				-
T 01/2																				-
CAN.GD	- 5																			
GLDR																				-
4.GPJ																				-
JAN201	-																			-
RDS 13.	- 6																			
RECO																				-
EST PIT																				-
-0010 TI																				-
3-1426	- /																			
STPIT 1	DE	PT	ΉS	CALE					(		olde	r							LOGG	ED: JJB
Ш	1	: 3	5							<b>V</b> As	socia	ates						0	CHECK	ED: DC

PROJECT No.: 13-1426-0010

### RECORD OF TEST PIT: SP-TP-32

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

ΓE		z	SOIL PROFILE			SAM	PLES	DYNAMIC PER RESISTANCE	ETRATION	3m 🔪	HYDRAULIC COND k, cm/s		PIEZOMETER OR
DEPTH SCA	METRES	EXCAVATIO	DESCRIPTION	RATA PLOT	LEV. EPTH	NUMBER	-OWS/0.3m	20 SHEAR STRE Cu, kPa	40 60 NGTH nat rem	80 V. + Q - ● V. ⊕ U - ○	10 <sup>-6</sup> 10 <sup>-5</sup> WATER CONT	$\begin{array}{c} 10^{-4} & 10^{-3} \\ \hline \\ $	STANDPIPE OLL INSTALLATION
	0		Ground Surface	ST	(11)		B	20	40 60	80	10 20	30 40	
	1	avator	(SM) SAND, fine grained, silty, containing silt laminations, light grey, dry to moist.		0.00								
	2	Komatsu PC400 LC Exc	STIT Constrained and a set of the										
_	4		End of TEST PIT.		4.00								
	5		NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.										
	6												
	DE 1 :	PTH 35	TH SCALE 15					<b>A</b> s	older sociat	es		L	ogged: Jjb Hecked: DC

#### RECORD OF TEST PIT: SP-TP-33

DATA ENTRY: JJB	PR LC	ROJEC ICATIC	T No.: 13-1426-0010 N: See Location Plan	RE	CO	RD	OF TEST PIT: EXCAVATION DATE:	<b>SP-TP-33</b> October 20, 2013	SHEET 1 OF 1 DATUM:
	щ	7	SOIL PROFILE		SAN	IPLES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUC	
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT (m) (m)	NUMBER	TYPE BLOWS/0.3m	20 40 60 SHEAR STRENGTH nat V. Cu, kPa rem V 20 40 60	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10 <sup>4</sup> 10 <sup>3</sup> ⊥ TŽI VOS T PERCENT MU 30 40
	- 0		Ground Surface (ML) SILT, sandy, containing clayey silt and sand inter-laminations, laminated brown and light grey, dry to moist.	0.0	0				
	- 2	ttsu PC400 LC Excavator RTL Construction	(ML) CLAYEY SILT, brown, wet, very soft to soft.	1.2	5				
	- 3	Koma	(SM) SAND, fine grained, silty, contains wet silt lenses, laminated, dry to moist.		5				
T RECORDS 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.	4.0	0				
ESTPIT 13-1426-0010 TEST PI	- 7 DE	: 35	CALE				Golder		LOGGED: JJB CHECKED: DC

#### RECORD OF TEST PIT: SP-TP-34

LOCATION: See Location Plan

EXCAVATION DATE: October 22, 2013

SHEET 1 OF 1

щ		z	SOIL PROFILE	•		SA	MPLI	ES	DYNAMIC PEI RESISTANCE	NETRAT	ON 5/0.3m	1	HYDRA	AULIC Co k, cm/s	ONDUCT	TVITY,	T	G	PIEZOMETER
H SCA		THOD		, PLOT	ELEV.	3ER	щ	:/0.3m			60 8		10					ITIONA	STANDPIPE
DEPT ME		Š₩	DESCRIPTION	TRATA	DEPTH (m)	NUME	Ę	SMOJ	Cu, kPa	NGTH	rem V. ∉	0-0-0	Wp				WI	ADD LAB.	
			Ground Surface	ŝ				ш	20	40	60 8	80	1	0 2	0 3	<u>io</u>	40		
- 0			(ML) SILT, sandy, containing sand lenses, light grey, dry to moist.		0.00														
-																			
_																			
-																			
- 1																			-
-																			
F																			
-	ator		wet clayey silt lens																
-	Excave	ction																	
- 2	2400 LC	Construc																	_
	natsu PC	RTL																	
-	Kon																		-
-																			
-																			
— 3 -			(ML) CLAYEY SILT, light grey, wet, very soft to soft.		3.00														-
-																			
-																			
_					1														
- 4				$\mathbb{H}$	1														
-			End of TEST PIT.		4.00														
-			NOTES:																
4			<ol> <li>No seeping water observed during excavation.</li> </ol>																
01/23			3) No sloughing observed during excavation.																
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																			
L CA																			
4.GPJ																			-
AN201																			
13. - 6																			
- 																			
0100																			
-1420-																			_
	EP	THS	CALE						Â.		•		-		-			1066	ED: JJB
	: 3	35								rold soci	er ates							CHECK	ED: DC

#### **RECORD OF TEST PIT:** SP-TP-35

DATA ENTRY: JJB	PR LC	OJEC CATIC	T No.: 13-1426-0010 IN: See Location Plan	RE	COR	RD	OF TEST PIT: SP-1 EXCAVATION DATE: October 20	<b>FP-35</b> 0, 2013	Sheet 1 of 1 Datum:
ŀ	ш	7	SOIL PROFILE		SAMP	LES	DYNAMIC PENETRATION	HYDRAULIC CONDUCTIVITY,	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	ELEV. DEPTH (m)	NUMBER	BLOWS/0.3m	20 40 60 80 SHEAR STRENGTH nat V. + Q ● Cu, kPa rem V. ⊕ U ○ 20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup> WATER CONTENT PERCENT Wp ├──────── W WI 10 20 30 40	
-	- 0		Ground Surface (ML) SILT, sandy, containing clayey laminations, blocky, laminated light and dark brown, yellow staining, dry to moist.	0.00					
-	- 1		sand interlayers (SM) SAND, silty, light grey, dry.	1.25					
-	- 2	400 LC Excavator Construction	(ML) CLAYEY SILT, light to dark grey,	2.00					
	- 3	Komatsu PC RTL C	moist to wet, very soft to soft.						
3DT 01/23/14	- 4		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.	4.00					
RECORDS 13JAN2014.GPJ GLDR_CAN.	- 6								
DIT 13-1426-0010 TEST PIT F	- 7 DF	PTH S	CALE						LOGGED: JJB
TESTF	1	35					Golder		CHECKED: DC

PROJECT No.: 13-1426-0010

#### RECORD OF TEST PIT: SP-TP-36

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

LE	z		SOIL PROFILE			SAM	PLES	DYNAMIC RESISTA	C PENET	TRATIO LOWS/(	N ).3m	1	HYDR	AULIC C k, cm/s	ONDUCT	TVITY,	T	Ų	PIEZOMETER
PTH SCA	CAVATIC	METHOD	DESCRIPTION	TA PLOT	ELEV.	MBER	VS/0.3m	20 SHEAR S	40 I STRENG	60 TH na	) 8 at V. +		10 W	0 <sup>-6</sup> 1	0 <sup>-5</sup> 10 I ONTENT	0 <sup>-4</sup> 1 PERCE	10 <sup>-3</sup>	DITIONA 3. TESTIN	STANDPIPE INSTALLATION
DEI	Ä	ì		STRA	(m)	N I	BLOV	20	40	60	) 8	0-0	Wr 1	0 2	0 3		WI 40	LAE	
- 0			Ground Surface (SM) SAND, fine grained, silty,	न्तः	0.00		_												
	Komatsu PC400 LC Excavator	RTL Construction	(SM) SAND, integrained, sity, containing laminated sandy sitl lenses, light brown to grey, dry to moist																-
- 3 - 3 			(ML) CLAYEY SILT, laminated brown and grey, wet, very soft to soft.		3.00														-
- 4		-	End of TEST PIT.		4.00														
			NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.																
DE	- EPT	нs	CALE			<b></b>  _		Â		.1.1				1			1	LOGG	ED: JJB
1	: 3	5						V	≑ GO Asso	nue ocia	tes							CHECK	ED: DC

#### RECORD OF TEST PIT: SP-TP-37

TRY: JJB	PR	OJEC	T No.: 13-1426-0010	co	RD	OF	TES	t pi	Г: 3	SP-1	[P-37				SF	HEET 1 OF 1		
ATA EN	LC	CATIC	N: See Location Plan					E	XCAVA	FION DA	TE: Oo	tober 20	), 2013				DA	ATUM:
-	ALE S	NO O	SOIL PROFILE		1	SAN	IPLES	DYN/ RESI	MIC PEI	NETRATIO	DN /0.3m	λ	HYDRAULIC k, ci	CONDUC	TIVITY,	T	AL ING	PIEZOMETER
	DEPTH SC. METRES	EXCAVATI METHOD	DESCRIPTION	STRATA PLO	ELEV. DEPTH (m)	NUMBER	TYPE BLOWS/0.3m	SHE/ Cu, k	20 NR STRE Pa 20	40 6 NGTH 1	60 € hat V. + em V. ⊕	Q - • U - ○	10 <sup>-6</sup> WATEF Wp I	10 <sup>-5</sup> 1 CONTENT W 	0 <sup>-4</sup> 1 F PERCE	0 <sup>-3</sup> NT WI	ADDITION LAB. TESTI	STANDPIPE INSTALLATION
	- 0		Ground Surface (SM) SAND silty light grey dry to moist	-11	0.00													
	- 1	Komalsu PC400 LC Excavator RTL Construction	(SM) SAND, silty, light grey, dry to moist. (ML) CLAYEY SILT, containing sandy silt and silty sand lenses, laminated brown and grey with yellow staining, moist to wet, very soft to soft.		0.00													-
	- 4		End of TEST PIT.	111.	4.00		_											
F			NOTES:															
S 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 5		<ol> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during excavation.</li> <li>No sloughing recorded during excavation.</li> </ol>															
RECORDS																		
ST PITF																		
010 TES																		
1426-00	- 7																	_
TESTPIT 13-	DE 1	PTH S	SCALE	I	I			Ć	As	- folde socia	er		ı I		<u> </u>	(	LOGG	ed: JJB (ed: DC

### RECORD OF TEST PIT: SP-TP-38

LOCATION: See Location Plan

EXCAVATION DATE: October 23, 2013

SHEET 1 OF 1

ΓE		Z	SOIL PROFILE			SAN	IPLES	DYNAMIC F RESISTAN	PENETRAT	ON 5/0.3m	1	HYDRAULI k, c	C CONDUC cm/s	TIVITY,	T	<sup>Q</sup> F	PIEZOMETER OR
PTH SC/	VIETRES	CAVATIO	DESCRIPTION	TA PLOT	ELEV.	MBER	YPE VS/0.3m	20 SHEAR ST	40 L RENGTH	60 80 nat V. +	0 Q-•	10 <sup>-6</sup> WATE	10 <sup>-5</sup> 1 I R CONTEN	0 <sup>-4</sup> 1 I I PERCE	0 <sup>-3</sup> ⊥ ⊥ NT	DITION	STANDPIPE INSTALLATION
DEI	_	Ш <sup>-</sup>		STRA	(m)	Ŋ		20	40	60 80	0-0	Wp	OW	30 4	WI 10	LAE	
	1	o	Ground Surface (SM/ML) Sandy SILT to silty SAND, containing clayey silt lenses, light grey, dry to moist.		0.00												
	3	Komatsu PC400 LC Excavat RTL Construction	(ML) CLAYEY SILT, containing sand lenses, light grey, moist to wet, very soft to soft.		2.50												- - - - - - - - - - - - - - - - - - -
PIT RECORDS 13,AN2014.GPJ GLDR_CAN GDT 0123/14	4 5		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed off side walls of excavation during excavation.		4.00												
STPIT 13-1426-0010 TES1	7 DEI	PTH S	SCALE						Gold	er						LOGGI	

#### **RECORD OF TEST PIT:** SP-TP-39

A ENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 DN: See Location Plan	RE	COP	RD	OF TEST PIT EXCAVATION DAT	<b>SP-TP-3</b> E: October 20, 2013	<b>39</b>	Sheet 1 of 1 Datum:
DAT	Ш.	z	SOIL PROFILE		SAM	PLES	DYNAMIC PENETRATIC RESISTANCE, BLOWS/	N HYDF	RAULIC CONDUCTIVITY,	PIEZOMETER 그 일 OR
	DEPTH SCA METRES	EXCAVATIC METHOD	DESCRIPTION	STRATA PLOT (m) (m)	NUMBER	BLOWS/0.3m	20 40 60 SHEAR STRENGTH n. Cu, kPa re	$\begin{array}{c c} 0 & 80 \\ \hline at V. + Q - \bullet \\ m V. \oplus U - O \\ 0 & 80 \end{array}$	$10^{6} 10^{5} 10^{4} 10^{3} \overset{\bot}{\longrightarrow} WATER CONTENT PERCENT$ $Vp \longmapsto WI$ $10 20 30 40$	STANDPIPE ILIT INSTALLATION INSTALLATION
	- 0		Ground Surface (ML) SILT, sandy, clayey laminations, dry to moist.	0.0	)					
	- 1		(SM) SAND, silty, fine grained, grey to brown, loose to compact.	0.5	)					
	- 2	omatsu PC400 LC Excavator RTL Construction	SILT/SAND inter-layers/laminations,light brown to grey, soft/loose, moist.	1.2	5					
	- 3	×	(ML) CLAYEY SILT, grey, black silt lenses, wet, very soft to soft.	2.2	5					
01/23/14	- 4		End of TEST PIT. NOTES: 1) Refusal due to suspected bedrock. 2) Test Pit backfilled on completion. 3) No seeping water observed during excavation. 4) Sloughing observed off side walls during excavation.	3.7	5					
13JAN2014.GPJ GLDR_CAN.GDT	- 5									
3-1426-0010 TEST PIT RECORDS 1	- 7									
TESTPIT 1:	DE 1	EPTH 8 : 35	SCALE				Golde	r tes		Logged: JJB Checked: DC

#### **RECORD OF TEST PIT:** SP-TP-40

RY: JJB	PF	ROJEC	T No.: 13-1426-0010	REC	ORD	OF TEST P	IT: SP-1	ГР-40	SHEET 1 OF 1
ATA ENT	LC	CATIC	DN: See Location Plan			EXCAVATION D	ATE: October 20	0, 2013	DATUM:
<u> </u>	щ	z	SOIL PROFILE	s	AMPLES	; DYNAMIC PENETRAT RESISTANCE, BLOW	FION S/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT () AD HLATA NLIMBER	TYPE BLOWS/0.3m	20 40 SHEAR STRENGTH Cu, kPa	60 80 nat V. + Q - ● rem V. ⊕ U - ○	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	HILS STANDPIPE     INSTALLATION     INSTALLATION
	- 0		Ground Surface (ML) SILT, sandy, laminated grey and brown, dry to moist.	0.00					
	- 1		(ML) CLAYEY SILT, laminated light grey and brown, very soft to soft.	0.50					
	- 2	Komatsu PC400 LC Excavator RTL Construction	brown						
	- 3		encountered boulders, topsoil	200					
			NOTES: 1) Refusal due to suspected bedrock. 2) Test Pit backfilled on completion. 3) No second writer observed during	3.00					
	- 4		<ul><li>accavation.</li><li>4) Sloughing observed off side walls during excavation.</li></ul>						
23/14									
CAN.GDT 01/	- 5								
2014.GPJ GLDF									
CORDS 13JAN	- 6								
0010 TEST PIT RE									
TESTPIT 13-1426-(	- 7 DE 1	EPTH S : 35	SCALE			Gold	er iates		LOGGED: JJB CHECKED: DC

DATA ENTRY: JJB

PROJECT No.: 13-1426-0010

#### RECORD OF TEST PIT: SP-TP-41

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

_	ш	-	SOIL PROFILE			SAM	PLES	DYNAMIC	PENETRA	TION VS/0.3m	1	HYDRAUI	LIC COND	UCTIVITY,	T	.0	PIEZOMETER
	H SCAL TRES	VATIOI THOD		PLOT	EL EV	E L	0.3m	20	40	60	80	10-6	10 <sup>-5</sup>	10-4	10 <sup>-3</sup>	TIONAL	STANDPIPE
	DEPT	EXCA ME	DESCRIPTION	TRATA	DEPTH (m)		LOWS/	SHEAR ST Cu, kPa	TRENGTH	nat V rem V. (	+ Q-● ⊕ U-○	WAT Wp H	ER CONTI	ENT PERC	ENT I WI	ADDI LAB. T	
-			Ground Surface	ی ا	()		8	20	40	60	80	10	20	30	40		
F	- 0		(ML) CLAYEY SILT, containing sand lenses, laminated brown and grey, very		0.00												-
E			soft to soft.														-
-																	-
-																	-
_	- 1																-
-		avator															-
+		LC Exc truction		H													-
-		PC400															-
-		Komatsu R															-
-	- 2		(ML/MH) SILTY CLAY to CLAYEY SILT,		2.00												
-			brown, w>PL, very soft to soft.														-
F																	-
-																	-
-																	-
F	- 3		End of TEST PIT.		3.00												-
F			NOTES:														-
-			<ol> <li>1) Excavation side walls collapsed at 3.0</li> <li>m.</li> <li>2) Test Pit backfilled on completion</li> </ol>														-
-			3) No seeping water observed during excavation.														-
-	- 4																-
-																	-
E																	-
23/14																	-
T 01/																	-
AN.GE	- 5																-
DRC																	-
PJ GI																	-
2014.G																	-
13JAN	- 6																-
RDS 1																	-
RECC																	-
ST PIT																	-
10 TE(																	-
126-00	- 7																-
13-1																	
STPI	DE 1	PTH S	SCALE				(		Gold	ler						LOGG	ED: JJB
۳L		. 55						<u> </u>	<u>1920C</u>	rates	<b>;</b>						

DATA ENTRY: JJB

PROJECT No.: 13-1426-0010

#### RECORD OF TEST PIT: SP-TP-44

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

	ш	-	SOIL PROFILE			SAI	MPLE	s	DYNAM			0 N 0 3m	1	HYDR		ONDUC	TIVITY,	Т	.0	PIEZOMETER
	ESCAL	Б Е С		0T				E	20	40	) F	о. 10 р	10	11	, 511/3 0 <sup>-6</sup> 1	0 <sup>-5</sup> 1	10-4 1	10-3 ⊥	TINC	OR STANDPIPE
	ET R	AVA:	DECODIDITION	A PLO	ELEV.	BER	Ж	\$/0.3	SHEARS	STREN	GTH r	atV +	0 - <b>•</b>	w	ATER C	Ŭ ONTENI		NT NT	TES	INSTALLATION
	ΠŪ	N N N N N N N N N N N N N N N N N N N	DESCRIPTION	RAT/	DEPTH	NUM	2	ŇO	Cu, kPa	5 THE T	r	em V. 🕀	Ũ-Ō	W	> <b>⊢</b>	W		wi	ADC ABC	
				STF	(m)	2	i	В	20	40	) 6	i0 8	80	1	0 2	20 :	30 ·	40		
			Ground Surface																	
F	- 0		(SM) SAND, fine grained, silty, light grey		0.00															-
-			to brown, moist.																	-
Ē																				-
-																				-
-																				-
																				-
-																				-
	- 1	Ivato	dark grey silt lenses																	
-		Ction																		-
-		00 LC																		-
F		L C40																		-
╞		RT		발																-
Ē		Kon																		-
╞																				-
┢	- 2																			-
F																				-
╞																				-
E																				-
-			encountered boulders, tree roots																	-
F					2 75		_	_												-
F					2.10															-
E	- 3		NOTES:																	
F			1) Refusal due to suspected bedrock.																	-
-			2) Test Pit backfilled on completion. 3) No seeping water observed during																	-
			excavation.																	-
-			excavation.																	-
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STPI	DE	PTH	SCALE							GG	olde	r							LOGG	ED: JJB
μ	1 :	: 35							<b>S</b>	Ass	<u>ocia</u>	<u>ites</u>							CHECK	(ED: DC

### RECORD OF TEST PIT: SP-TP-45

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

- -					1			ни			
	а РЕ	No o	SOIL PROFILE		SAMPLES	RESISTANCE	, BLOWS/0.3m	ν["	k, cm/s		
	H SC	VATI THOI			ER ER		40 60 80	~			
	MEPT	EXC/	DESCRIPTION	DEPTH		Cu, kPa	rem V. ⊕	ŭ- O			ADD.
_				S (m)		20	40 60 80		10 20	30 40	
_	- 0		Ground Surface	ার্জনার ০.০০							
			grey, dry to moist, wet clayey lenses.	0.00							-
-											-
Ē											-
											-
-											-
Ē	- 1	to									
-		xcava	(SM) SAND, fine grained, silty, containing friable/blocky silt lenses and	1.00							-
-		0 LC E structi	clayey silt lenses, light brown, moist.								-
Ē		PC40									-
_		natsu RT									-
-		Kor									-
Ē	- 2										
-											-
F											-
F											-
-											-
_			End of TEST PIT.	2.75							-
	- 3		NOTES								-
E			1) Pofusal due to supported bodrook								-
-			<ol> <li>2) Test Pit backfilled on completion.</li> <li>3) No cooping water observed during</li> </ol>								-
-			excavation.								-
E			excavation.								-
-											-
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GDT	- 5										
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N201											
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RDS -											-
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#### **RECORD OF TEST PIT:** SP-TP-46

DATA ENTRY: JJB	PR LC	OJEC CATIC	T No.: 13-1426-0010 IN: See Location Plan	R	EC	OR	D	OF TEST PIT EXCAVATION DAT	E: October 1	<b>TP-46</b> 9, 2013		SHI DA <sup>-</sup>	eet 1 of 1 Tum:
	ш	7	SOIL PROFILE		5	SAMPL	ES	DYNAMIC PENETRATIO RESISTANCE, BLOWS/0	N D.3m	HYDRAULIC CONDUC		, U	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATION METHOD	DESCRIPTION	STRATA PLOT	EV. PTH n)	TYPE	BLOWS/0.3m	20 40 60 HEAR STRENGTH nr Cu, kPa re 20 40 60	0 80 at V. + Q - ● m V. ⊕ U - ○ 0 80	$\begin{array}{c} 10^6 & 10^5 \\ \hline 0 & WATER CONTEN \\ Wp & \bigcirc V \\ 10 & 20 \end{array}$	10 <sup>4</sup> 10 <sup>3</sup> ⊥ IT PERCENT ✓ WI 30 40	ADDITIONAL LAB. TESTIN	OR STANDPIPE INSTALLATION
	- 0		Ground Surface (SM) SAND, fine grained, silty, containing friable/blocky silt lenses, light grey to brown, dry to moist.		0.00								
	- 2	Komatsu PC400 LC Excavator RTL Construction	(ML) CLAYEY SILT, laminated light grey and brown, wet, soft to very soft.		1.75								- - - - - - - - - - - - - - - - - - -
	- 3		(SM) SAND, fine grained, silty, containing friable/blocky silt lenses, light grey to brown, dry to moist.		2.75								
3 13JAN2014.GPJ GLDR_CAN.GDT 01/23/14	- 4		End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) Sloughing observed in clayey silt layer during excavation.	- 63 -	4.00								- - - - - - - - - - - - - - - - - - -
STPIT 13-1426-0010 TEST PIT RECORDS	- 7 DE	PTH S	CALE					Golde	ŗ				

### RECORD OF TEST PIT: SP-TP-47

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

-+		1					0.44		DYN	AMIC PF	NETRAT	ION	<u> </u>	HYDRA			IVITY.			
	SALE	NO	ے ا		۲		SAN	IPLES	RESI	STANCE	BLOW	S/0.3m	$\sim$		k, cm/s			[	ING	OR STANINPIPE
	TH SC ETRE	AVAT	ETHO		A PLC	ELEV.	BER	ЩЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ ЦЦ Ц	SHE	20 AR STRE	40 NGTH	60 nat V. +	sυ · Q - ●	10 W	ATER C		PERCE	U <sup>°</sup> I NT	TEST	INSTALLATION
	Δ Π Δ	EXC	Ī	DESCRIPTION	IRAT/	DEPTH (m)	MUM		Cu, k	Pa		rem V. ∉	θŪ-Õ	Wp		W		WI	ADC LAB.	
╞		-	+	Crowned Conferen	ی ۲	,			, 	20	40	60	80	1	0 2	0 3	0 4	40 	$\left  - \right $	
F	- 0	H	┥	Ground Surface (ML) CLAYEY SILT, laminated reddish		0.00		-											$\left  - \right $	
-				brown and grey, moist to wet, very soft to soft.	ΗL															
-					H.															-
Ľ					И															
-					И															
_																				
_	- 1		ł	(ML) SILT, sandy, laminated light grey		1.00														-
E																				
-																				
F		tor																		
_		Excave	io																	
F	- 2	D LC E	nstruct																	
╞	-	I PC40	TL Col	(SM) SAND, fine grained, silty, containing blocky/friable silt lenses, dry		2.00														
F		omatsu	۳	to moist.																
F		ľ																		- -
_																				
-																				
F	- 3																			-
F																				
E																				
-																				
_																				
-																				
F	- 4	$\vdash$	╡	End of TEST PIT.	리크	4.00			-											 -
E				NOTES:																
F				1) Test Pit backfilled on completion.																-
				2) No seeping water observed during excavation.																
1//22				<ol> <li>No sloughing observed during excavation.</li> </ol>																
<u>s</u> L	- F																			
AN.C	5																			-
4.6																				
LUZN																				
	- 6																			-
																				-
-																				
																				-
0-071	- 7																			-
13-14																				
1	DE	EPTH	H S	CALE					Ø		- Ma	er							LOGG	ED: JJB
LES	1	: 35	5						V	As	soci	ates						(	CHECK	ED: DC

#### RECORD OF TEST PIT: SP-TP-48

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

-	щ	z	SOIL PROFILE		SAM	/IPLES	DYNAMIC PENETR RESISTANCE, BLC	ATION DWS/0.3m	HYDRAULIC CONDUCTIVIT k, cm/s	<sup>Y,</sup> T ס	PIEZOMETER
	TH SCAL ETRES	AVATIO ETHOD		A PLOT	BER	PE 3/0.3m	20 40 SHEAR STRENGT	60 80 H nat V. + Ω - ●	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup>		STANDPIPE
	DEPI	ME ME	DESCRIPTION	(m)		BLOWS	Cu, kPa	rem V. ⊕ Ū - Ŏ	Wp <u>→ → W</u> 10 20 30		
	- 0		Ground Surface								-
			brown and grey, moist to wet, very soft	0.0							-
											-
			(SM) SAND, silty, containing silt lenses, moist, loose to compact.	0.5	D						-
											-
-	- 1										-
-		cavator									-
		0 LC Ex struction									-
		u PC40 RTL Con									-
		Komats									-
	- 2		wet, black clayey silt lenses								
											-
											-
-											-
											-
	- 3		End of TEST PIT.	3.0	D						-
			NOTES:								-
			<ol> <li>Refusal due to suspected bedrock.</li> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during</li> </ol>								-
			excavation. 4) No sloughing observed during								-
	- 4		excavation.								
											-
											-
3/14											-
01/2:											-
N.GDT	- 5										-
R CA											-
											-
14.GP											-
IAN20											-
JS 13J	- 6										
CORL											
FEST +											
-0010	_										-
-1426-	- 7										
оIT 13	DF	PTH	SCALE							LOG	GED: JJB
TESTI	1	: 35					<b>Asso</b>	ger ciates		CHEC	KED: DC

#### PROJECT No.: 13-1426-0010

#### RECORD OF TEST PIT: SP-TP-49

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

TE		z	SOIL PROFILE		S	SAMPLES		DYNAMIC PENETRATIC RESISTANCE, BLOWS	0N 0.3m	HYDRAULIC CONDUCTIV	/ITY, T	PIE	ZOMETER OR
DEPTH SCA	METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT ) dd   g	v. <u>H</u> ) NUMBER	TYPE	BLOWS/0.3m	20 40 6 J J SHEAR STRENGTH r Cu, kPa r	0 80 at V. + Q● em V. ⊕ U ○	$10^{-6}  10^{-5}  10^{-1}$ WATER CONTENT F Wp $\longmapsto 0$ $0  20  30$	PERCENT	ADDITION/ LAB. TESTII	andpipe Fallation
	1		Ground Surface (SM) SAND, fine grained, silty, containing suspected silt lenses, brown to grey, moist, loose to compact.		0.00								
	2	Komatsu PC400 LC Excavator RTL Construction											
4 	4		(ML) SILT, sandy, laminated grey and brown, wet. End of TEST PIT. NOTES:		9.50								- - - - - - - - - - - - - - - - - - -
014.GPJ GLUR CAN.GDI 01/23/1	5		<ol> <li>Test Pit backfilled on completion.</li> <li>No seeping water observed during excavation.</li> <li>No sloughing observed during excavation.</li> </ol>										
26-0010 TEST PIT KECOKUS 13JANZ(	6												
TESTPII 13-14	DE 1 :	PTH : 35	SCALE					Golde	r ites		L C	OGGED: JJB HECKED: DC	

### RECORD OF TEST PIT: SP-TP-50

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

ALE	NO,		SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m					HYDRAULIC CONDUCTIVITY, k, cm/s					PIEZOMETER OR
DEPTH SC	EXCAVATI	METHO	DESCRIPTION	RATA PLO	ELEV.	NUMBER	TYPE	SH Cu,	20 EAR STR kPa	40 ENGTH	60 8 nat V. + rem V. ⊕	B0 • Q - ● • U - ○	10 W	D <sup>-6</sup> 1 ATER C	0 <sup>-5</sup> 1 ONTENT W	0 <sup>-4</sup> 1	IO <sup>-3</sup>	ADDITION AB. TEST	STANDPIPE INSTALLATION
			Ground Surface	STF	(m)	2	ā	8	20	40	<u>60 8</u>	80	1	0 2	20 3	80 4	40		
- 0 - - - - - - - - - - - - - - - - - -			(ML) SILT, sandy, containing sand lenses, grey to brown, moist to wet.		0.00														
- - - - - - - - - - - - - - - - - - -	Komatsu PC400 LC Excavator	RTL Construction	yellow staining (SM) SAND, silty, containing silt lenses, light brown, moist to wet.		2.00														
- 3			(ML) SILT, sandy, light grey, moist to wet.		3.50														
- + + + + + + + + + + + + + + + + + + +			End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation. 3) No sloughing observed during excavation.		4.00														-
- - - - - - - - - - - - - - - - - - -																			
DE 1	L EPTH : 35	 + so	CALE		<u> </u>			G	<b>D</b> A	Gold	er	<u> </u>	<u> </u>	<u> </u>		<u> </u>	<u> </u>	LOGG CHECK	ED: JJB ED: DC

#### RECORD OF TEST PIT: SP-TP-51

ATA ENTRY: JJB	PF LC	ROJEC	T No.: 13-1426-0010 N: See Location Plan	RE	CO	RD	OF TES	ST PIT: S	SHI DA <sup>-</sup>	Sheet 1 of 1 Datum:		
	щ	z	SOIL PROFILE		SAI	MPLES	DYNAMIC PE RESISTANCI	NETRATION E, BLOWS/0.3m	HYDRAULI	C CONDUCTIVITY, cm/s	T_o	PIEZOMETER
	DEPTH SCAL METRES	EXCAVATIO METHOD	DESCRIPTION	STRATA PLOT (m) (m)	L I.	TYPE BLOWS/0.3m	20 SHEAR STRI Cu, kPa 20	40 60 80 ENGTH nat V. + rem V. ⊕ 40 60 80	Q - ● WATE U - ○ Wp ⊢ 10	10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup> R CONTENT PERCENT → W 20 30 40	ADDITIONAI LAB. TESTIN	STANDPIPE INSTALLATION
	- 0		Ground Surface (ML) SILT, sandy, laminated brown and grey, dry to moist.	0.0	10							
	- 1	Komatsu PC400 LC Excavator RTL Construction	(SM) SAND, fine grained, silty, containing silt lenses, grey, moist, loose to compact		0							
3/14	- 4		(ML) SILT, sandy, some clay, grey, moist to wet. End of TEST PIT. NOTES: 1) Test Pit backfilled on completion. 2) No seeping water observed during excavation.	1	10							-
13JAN2014.GPJ GLDR_CAN.GDT 01/2	- 5		excavation.									
- 13-1426-0010 TEST PIT RECORDS	- 7											-
TESTPIT	DE 1	EPTH S : 35	SCALE					Golder sociates			LOGGE	D: JJB ED: DC

### RECORD OF TEST PIT: SP-TP-52

LOCATION: See Location Plan

EXCAVATION DATE: October 19, 2013

SHEET 1 OF 1

			Т	SOIL PROFILE	DYNA		NETRAT	ION	<u>\</u>	HYDRA	ONDUC	PIEZOMETER								
SCALE	R	NOL	╕┝		DT.		~	E E	_ RESIS	20 40 60 80				10	k, cm/s					OR STANDPIPE
PTH S	MEIK	CAVA		DESCRIPTION			HEAR STRENGTH nat V. + Q - ● WATER CC							I PERCE	ENT	DDITIO	INSTALLATION			
DE		Ш			STRA	(m)	N		Сu, кі	20	40	60	80	Wp	0 2		30	WI 40	LAI	
	0	_		Ground Surface	101.17										-					
-	Ŭ		( a	ML) SILT, sandy, laminated light brown and grey, moist to wet.		0.00														
_																				-
-																				-
-																				-
_																				-
	1																			-
-																				-
F																				-
-		Ior	(	ML) SILT, sandy, some clay, containing		1.50														-
_		xcaval	5 C	dark grey, moist to wet, soft to firm.																-
_	2		Istructi																	-
-	-	PC40																		-
-		Comats	2																	-
-		Ť																		-
_																				-
-																				-
-	3																			
-																				-
-																				-
_			() 	SM) SAND, fine grained, silty, grey, noist.		3.50														-
_																				-
È.	4					4.00														-
-						4.00														-
_			N	IOTES:																-
- -			2	<ol> <li>Pit backfilled on completion.</li> <li>No seeping water observed during</li> </ol>																
107			3	xcavation. 3) No sloughing observed during xcavation																
																				-
	5																			-
5 - 5 -																				-
5																				-
																				-
	6																			-
1	7																			_
2									Â	÷.	1	1	1	I			1	1		
0	DEI 1 ·	- IH 35	ISC/	ALE		Ģ	iold	er								ED: JJB				
=∟	• •	55								AS	<b>3UCI</b>	aies								

### RECORD OF TEST PIT: SP-TP-53

LOCATION: See Location Plan

EXCAVATION DATE: October 20, 2013

SHEET 1 OF 1

	ц	z		SOIL PROFILE		SAM	/IPLES	DYNAM RESIST	IC PENE ANCE, E	TRATIO	0N 10.3m	1	HYDRAULIC CONDUCTIVITY, k, cm/s					- y	PIEZOMETER	
00	ITRES				<b>PLOT</b>	ELEV.	BER	PE	20 SHEAR		) (	3 0	30	10 W/	<sup>-6</sup> 10	) <sup>-5</sup> 1(		0 <sup>-3</sup> ⊥	TESTIN	STANDPIPE
	ΞΨ	EXC/	ž	DESCRIPTION	TRATA	DEPTH (m)	NUME	BI OWS	Cu, kPa	STREIN	r	em V. ⊕	Ŭ- Ŏ	Wp				WI	ADD LAB.	
E	0		Grou		ज जन्मजन				20	) 4(	) 6	0 8	30	10	) 2	0 3	0 4	10		
-			and	.) SILT, sandy, laminated light brown grey, blocky, dry.		0.00														-
-																				-
_																				-
_																				-
-	1																			
-			(SN con	I) SAND, fine grained, silty, taining silt lenses, dry to moist.		1.25														-
-		or																		-
-		Excavat	stion																	-
	2	C400 LC	Construc																	-
-		matsu P(	RI																	-
-		8	(ML	) CLAYEY SILT, mottled light brown		2.50														-
			and wet	grey with yellow staining, moist to , very soft to soft.																-
-	3																			-
-																				-
-																				-
_					$\mathbb{X}$															-
-																				-
E	4		End	l of TEST PIT.		4.00														-
-			NOT	ES:																-
3/14			2) N exca	lo seeping water observed during water in the seeping water observed during water observ																-
T 01/2			3) N exca	lo sloughing observed during wation.																-
AN.GD	5																			-
DRC																				-
SPJ GL																				-
12014.0																				-
13JAN	6																			-
CORDS																				-
NT REC																				-
TESTF																				-
-0010	7																			-
3-1426 	,																			
TPIT 1	DE	PTH	I SCALE	E	Â	G	olde	r							LOGGED: JJB					
TES	1 :	: 35							V	Ass	ocia	ites							CHECK	ED: DC