

ENPACK (H.K.) LIMITED
 Civil Engineers & Contractors
 Astoria Building, 6th Floor, 34 Ashley Road
 Kowloon, Hong Kong
 Tel: 23762121 Fax: 23760232



ISO 9002:1994
 Certificate No. PC00021

DRILLHOLE RECORD

HOLE NO. **BH 13**
 SHEET **1** of **3**
 CONTRACT NO. **GE/99/06**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC** CO-ORDINATES **E 846,611.20** W.O. No **GE/99/06.64**

MACHINE & No. **DR 79** **N 814,008.97** DATE: **15/11/2001** to **21/11/2001**

FLUSHING MEDIUM **WATER** ORIENTATION **VERTICAL** GROUND LEVEL **+5.56** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
15.11.01	SX		72					PX		0.00	[Pattern]		Grey (7.5YR 6/1) to dark grey (5R 4/1) and pinkish grey (7.5YR 7/2), angular medium to coarse GRAVEL with much cobble occasional boulder sized moderately strong to strong tuff, granite, concrete and occasional steel bar fragments. (FILL)
1			47				PX		0.60				
2			40				PX		1.80				
15.11.01									3.00				
16.11.01	SX PX	Dry at 08:00	60				HX		3.55				
4			85				T2-101		4.70				
5			95				T2-101		5.00				
16.11.01		2.30m at 18:00	61				T2-101		6.00				
17.11.01		3.10m at 08:00	82				T2-101		6.50				
7			57				T2-101		7.00				
8			55				T2-101		7.60				
			74				T2-101		8.00				
9			52				T2-101		9.00				
			100				1		0.00	-3.44	9.00		White (8N), fine to medium SAND with some fine shell fragment. (MARINE DEPOSIT)
							2		9.45	-3.94	9.50		Grey (7.5YR 6/1), sandy SILT with occasional fine shell fragments. (MARINE DEPOSIT)
							3		9.60				
							4		9.90				

<p>Small Disturbed Sample </p> <p>Piston Sample </p> <p>U76 Undisturbed Sample </p> <p>U100 Undisturbed Sample </p> <p>Mazier Sample </p> <p>SPT Linear Sample </p> <p>Water Sample </p>	<p>Standard Penetration Test </p> <p>In-situ Vane Shear Test </p> <p>Permeability Test </p> <p>Impression Packer Test </p> <p>Packer Test </p> <p>Piezometer Tip </p> <p>Stanchion Tip </p>	<p>LOGGED P. Barry</p> <p>DATE 22/11/2001</p> <p>CHECKED J. Morrison</p> <p>DATE 27/11/2001</p>	<p>REMARKS</p>
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ISO 9002:1994
Certificate No. P000021

DRILLHOLE RECORD

HOLE NO.

BH 13

CONTRACT NO. GE/99/06

SHEET 2

of

3

PROJECT Fill Bank at Tsueng Kwan O Area 137, Ground Investigation

METHOD W+RC

CO-ORDINATES

W.O. No GE/99/06.64

MACHINE & No. DR 79

E 846,611.20

N 814,008.97

DATE: 15/11/2001 to 21/11/2001

FLUSHING MEDIUM WATER

ORIENTATION VERTICAL

GROUND LEVEL +5.56 mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R.(%)	S.C.R.(%)	R.O.D.(%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
11		3.30m at 18:00											As sheet 1 of 3.
17.11.01	PX	4.40m at 18:00							-5.39	10.95			White (8N), fine to medium SAND with some fine shell fragments. (MARINE DEPOSIT)
19.11.01	HX	4.45m at 08:00	95						-5.74	11.30			White (8N), angular medium to coarse GRAVEL sized coral fragments. (MARINE DEPOSIT)
19.11.01		4.30m at 08:00	95						-5.94	11.50			Grey (7.5YR 6/1), angular BOULDER sized strong coarse ash tuff fragments. (ALLUVIUM)
13							(2, 4, 4, 6, 10, 18) N = 38		-6.44	12.00		VIV	Extremely weak to weak, yellowish brown (10YR 5/6) mottled dark brown, completely to highly decomposed lapilli bearing coarse ash TUFF. (Dense, silty angular fine to coarse GRAVEL sized weak rock fragments)
15			95	10	0	NI			-9.34	14.90		IV	Weak, yellowish brown, highly decomposed lapilli bearing fine to coarse ash TUFF, recovered non intact as angular fine to coarse gravel.
16	HX					3.1			-10.44	16.00		II	Strong, grey to dark grey, slightly decomposed lapilli bearing coarse ash TUFF. Joints are medium to widely spaced, rough, planar, extremely narrow, iron and manganese stained, dipping at 5°-15° and subvertical.
17			100	100	92								
18			100	100	95								
19			100	100	100								
20													

	Small Disturbed Sample		Standard Penetration Test
	Piston Sample		In-situ Vane Shear Test
	U76 Undisturbed Sample		Permeability Test
	U100 Undisturbed Sample		Impression Packer Test
	Mazier Sample		Packer Test
	SPT Uner Sample		Piezometer Tip
	Water Sample		Standpipe Tip

LOGGED P. Barry
 DATE 22/11/2001
 CHECKED J. Morrison
 DATE 27/11/2001

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 13**

CONTRACT NO. **GE/99/06**

SHEET **3** of **3**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 79**

E 846,611.20

DATE: **15/11/2001** to **21/11/2001**

N 814,008.97

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+5.56** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
20													
21		4.25m at 12:00	98	98	98			T2-101 20.24 T2-101					As sheet 2 of 3.
20.11.01								21.49	-15.93	21.49			End of Investigation hole at 21.49m.
22													
23													
24													
25													
26													
27													
28													
29													
30													

- | | |
|---------------------------|-----------------------------|
| ↑ Small Disturbed Sample | ↓ Standard Penetration Test |
| ▢ Piston Sample | ∇ In-situ Vane Shear Test |
| ▨ U76 Undisturbed Sample | □ Permeability Test |
| ▩ U100 Undisturbed Sample | ▭ Impression Packer Test |
| ▧ Mazier Sample | ▮ Packer Test |
| ▤ SPT Liner Sample | ▯ Piezometer Tip |
| △ Water Sample | ◻ Standpipe Tip |

LOGGED P. Barry
 DATE 22/11/2001
 CHECKED J. Morrison
 DATE 27/11/2001

REMARKS

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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **1** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD W+RC	CO-ORDINATES	W.O. No GE/99/06.64
MACHINE & No. DR 78	E 846,396.73 N 814,103.58	DATE: 17/12/2001 to 03/01/2002
FLUSHING MEDIUM WATER	ORIENTATION VERTICAL	GROUND LEVEL +26.68 mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R.(%)	S.C.R.(%)	R.Q.D.(%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
17.12.01	SX		32					T6-146		0.00			Light grey (10R 7/1), mottled and spotted grey and pink, angular medium to coarse GRAVEL with much cobble and boulder sized moderately strong to strong granite, tuff and concrete fragments with occasional metal, brick and wood fragments. (FILL)
1			47					T6-146		1.00			
2			40					T6-146		1.60			
		Dry at 18:00	51					T6-146		2.20			
17.12.01		Dry at 08:00	41					T6-146		3.00			
4			50					T6-146		3.70			
5			40					T6-146		4.50			
6			39					T6-146		5.30			
7			37					T6-146		6.00			
8		Dry at 18:00	39					T6-146		6.60			
18.12.01		Dry at 08:00	53					T6-146		7.30			
9			52					T6-146		8.00			
			51					T6-146		8.55			
10								T6-146		9.15			
								T6-146		10.00			

- Small Disturbed Sample
- Piton Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- SPT Liner Sample
- Water Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Impression Packer Test
- Packer Test
- Piezometer Tip
- Standpipe Tip

LOGGED P. Barry
 DATE 04/01/2002
 CHECKED J. Morrison
 DATE 05/01/2002

REMARKS
 1. Vane shear tests were carried out at 47.50m and 51.00m depth.



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **2** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

E 846,396.73

DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R.(%)	S.C.R.(%)	R.Q.D.(%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
10													
11			50					T6-146 10.80	+15.88	10.80			As sheet 1 of 7.
12			72					T6-146 11.80					Light grey (10R 7/1), mottled and spotted grey and pink, angular medium to coarse GRAVEL with some cobble and boulder sized moderately strong to strong tuff, granite and concrete fragments with occasional metal, wood and brick fragments. (FILL)
13		6.93m at 18:00	83					T6-146 12.80					
14		Dry at 08:00	73					T6-146 14.00					
15			75					T6-146 15.50	+11.18	15.50			
16			68					T6-146 16.50					Light grey (10R 7/1) and light yellowish brown (2.5Y 6/4), angular fine to coarse GRAVEL with much cobble sized moderately strong to strong granite, tuff and concrete fragments with a matrix of silty sand. (FILL)
17			56					T6-146 17.50					
18			58					T6-146 18.35					
19		11.40m at 18:00	85					T6-146 19.50	+7.18	19.50			
20	SX	Dry at						T6-146					Light grey (10R 7/1), spotted grey and light yellowish brown, angular medium to coarse GRAVEL with much

- Small Disturbed Sample
- Piston Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- SPT Liner Sample
- Water Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Impression Packer Test
- Packer Test
- Piezometer Tip
- Standpipe Tip

LOGGED P. Barry
DATE 04/01/2002
CHECKED J. Morrison
DATE 05/01/2002

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **3** of **7**

PROJECT **Fill Bank at Tsung Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

E 846,396.73

DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
21	PX	08:00	55					T6-146 20.70					cobble sized moderately strong to strong tuff, granite and concrete fragments with occasional metal and wood fragments. (FILL)
22			56					T6-116 21.50					
23			70					T6-116 22.10					
24		Dry at 18:00	64					T6-116 23.50					
25		Dry at 08:00	62					T6-116 24.00	+2.68	-24.00			
26			68					T6-116 25.00					
27			74					T6-116 25.50					
28		Dry at 18:00	53					T6-116 26.30					
29		Dry at 08:00	49					T6-116 27.30					
30			66					T6-116 28.20					
31			61					T6-116 29.30					
32	PX	18:00						T6-116 30.00					

	Small Disturbed Sample		Standard Penetration Test
	Platon Sample		In-situ Vane Shear Test
	U76 Undisturbed Sample		Permeability Test
	U100 Undisturbed Sample		Impression Packer Test
	Mazier Sample		Packer Test
	SPT Liner Sample		Piezometer Tip
	Water Sample		Standpipe Tip

LOGGED **P. Barry**
 DATE **04/01/2002**
 CHECKED **J. Morrison**
 DATE **05/01/2002**

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **4** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

E 846,396.73

DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
27.12.01	HX	Dry at 08:00	49					T2-101					As sheet 3 of 7.
31			62					T2-101	31.00				
32			61					T2-101	32.00				
33			71					T2-101	33.00				
34			36					T2-101	34.00				
35			53					T2-101	35.00				
36			54					T2-101	36.20				
37		Dry at 18:00						T2-101	37.20				
27.12.01		Dry at 18:00	38					T2-101	38.00				
38			48					T2-101	38.00				
39			53					T2-101	39.00	-12.32	39.00		
40			40					T2-101	39.60	-12.92	39.60		
								T2-101					
								T2-101					Light grey (10R 7/1) and pink (10R 6/3), angular medium to coarse GRAVEL sized moderately strong to strong

Small Disturbed Sample	Standard Penetration Test
Piston Sample	In-situ Vane Shear Test
U76 Undisturbed Sample	Permeability Test
U100 Undisturbed Sample	Impression Packer Test
Mazier Sample	Packer Test
SPT Liner Sample	Piezometer Tip
Water Sample	Standpipe Tip

LOGGED **P. Barry**
DATE **04/01/2002**
CHECKED **J. Morrison**
DATE **05/01/2002**

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **5** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

E 846,396.73

DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
40													
41			100				86blows (3, 3, 3, 4, 5, 9) N = 21	1 40.20 2 40.50 3 41.10 4 41.40					tuff and granite fragments with occasional wood fragments. (FILL) Grey (10YR 5/1) to dark grey (10YR 4/1), slightly silty CLAY with occasional fine shell fragments. (MARINE DEPOSIT)
42													
43		15.03m at 08:00											
44		8.49m at 08:00	100				(1, 2, 4, 4, 4, 7) N = 19	5 42.45 6 43.00 7 43.90 8 44.10 9 44.40					
45													
46			100										
47													
48													
49													
50			100										Peak shear strength 16.4 KPa (Very soft)

- Small Disturbed Sample
- Paton Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- SPT Liner Sample
- Water Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Impression Packer Test
- Packer Test
- Piezometer Tip
- Standpipe Tip

LOGGED P. Barry
 DATE 04/01/2002
 CHECKED J. Morrison
 DATE 05/01/2002

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **6** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

E 846,396.73

DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R.(%)	S.C.R.(%)	R.Q.D.(%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description	
50		9.17m at 18:00					V	17	50.50				As sheet 5 of 7.	
51		8.53m at 08:00				18		51.00						Peak shear strength 12.6 KPa (Very soft)
52						19		52.00						
53			100					20	52.50	-25.82	52.50		Light grey (10YR 7/1), mottled light yellowish brown, silty CLAY. (ESTUARINE DEPOSIT)	
54							(5, 6, 7, 8, 8, 9) N = 32	21	53.40					
55								22	53.60					
56			100					23	53.90				Grey (10YR 5/1), slightly silty CLAY. (MARINE DEPOSIT)	
57							(5, 6, 6, 6, 8, 8) N = 28	24	54.95	-28.27	54.95			
58								25	55.50					
59		5.35m at 18:00						26	56.50					
60		8.71m at 08:00	100					27	56.70					
								28	57.00					
								29	58.05					
								30	58.50					
								31	59.50					
								32	59.70					
								33	60.00					

- Small Disturbed Sample
- Piton Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazer Sample
- SPT Liner Sample
- Water Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Impression Packer Test
- Packer Test
- Piezometer Tip
- Standpipe Tip

LOGGED **P. Barry**
 DATE **04/01/2002**
 CHECKED **J. Morrison**
 DATE **05/01/2002**

REMARKS



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DRILLHOLE RECORD

HOLE NO. **BH 14**

CONTRACT NO. **GE/99/06**

SHEET **7** of **7**

PROJECT **Fill Bank at Tsueng Kwan O Area 137, Ground Investigation**

METHOD **W+RC**

CO-ORDINATES

W.O. No **GE/99/06.64**

MACHINE & No. **DR 78**

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DATE: **17/12/2001** to **03/01/2002**

N 814,103.58

FLUSHING MEDIUM **WATER**

ORIENTATION **VERTICAL**

GROUND LEVEL **+26.68** mPD

Drilling Progress	Casing size	Water level (m) Shift start/end	T.C.R. (%)	S.C.R. (%)	R.Q.D. (%)	F.I.	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
61	HX												As sheet 6 of 7.
62			43	0	0	NA		T2-101	34.62	61.30			Grey (7.5YR 6/1), subangular fine to medium GRAVEL sized rock fragments. (ALLUVIUM)
63		5.40m at 18:00	85	0	0	>20		T2-101	35.12	61.80		III	Moderately weak to moderately strong, yellowish brown, moderately decomposed, lapilli bearing coarse ash TUFF. Joints are extremely closely to very closely spaced, planar, very narrow, iron and manganese infilled, dipping at 5°-15°, 45°-55° and subvertical. From 61.80-62.20m : Non-intact.
64			95	17	0			T2-101	36.52	63.20			End of Investigation hole at 63.20m.
65													
66													
67													
68													
69													
70													

- Small Disturbed Sample
- Piston Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- SPT Liner Sample
- Water Sample
- Standard Penetration Test
- In-situ Vane Shear Test
- Permeability Test
- Impression Packer Test
- Packer Test
- Piezometer Tip
- Standpipe Tip

LOGGED P. Barry
 DATE 04/01/2002
 CHECKED J. Morrison
 DATE 05/01/2002

REMARKS