

Appendix (12)

Geotechnical Investigation Results

The geotechnical investigation conducted in order to establish guidelines for estimating the soil properties design parameters.

Following hereunder is, as requested and agreed with CAC, our visual inspection findings plan related to investigating any possible contamination with fuel and oil:

1. GEOTECHNICAL INVESTIGATION SCOPE OF WORKS:

The site geotechnical investigation covers TB2 site limits, using open test pits and boreholes. The geotechnical investigation aimed mainly to establish guidelines for defining the subsurface conditions and providing guidelines for estimating the soil properties design parameters. However, visual inspection for possible oil/ fuel contamination was investigated as agreed with CAC for the following locations:

- Parking area for TB2 located at the landside.
- Graded areas (islands) located at the airside.
- Taxiways and apron (asphalt pavement).
- Remote stands (concrete pavement).
- Contact stands (concrete pavement).

2. PLAN:

The geotechnical investigation plan considered TB2 operational constraints. The plan consisted of the following tasks:

2.1. Surveying Work:

- Existing benchmarks were used as surveying guiding points to allocate the necessary test pits coordinates within the site boundaries.
- Boreholes and open test pits locations were adjusted to cope with site conditions and to avoid existing infrastructure and utilities.

2.2. Open Test Pits Excavation:

- Suitable equipment for cutting, excavation, chipping, and transportation were used with full compliance with the relevant safety and environmental regulations and standards.
- Manual excavation is used at areas where infrastructure and utilities are expected.
- Pits dimensions are 1x3x3m and of 3m depth.

2.3. Soil Investigation:

- Samples from the excavated soil were subject to visual inspection immediately after excavation and monitored for a duration of two (2) days after excavation for recording any soil decomposition.
- Soil samples from each pit were stored for further investigation as necessary.
- Visual inspection was carried out to recognize any traces of the following:
 - Physical foreign material (including organic, aromatics, oil and fuel traces)
 - Abnormal soil color or inhomogeneous strata for pits sides.
 - Odd smell.

- Altered or decomposed soil affecting physical soil description.

3. RESULTS:

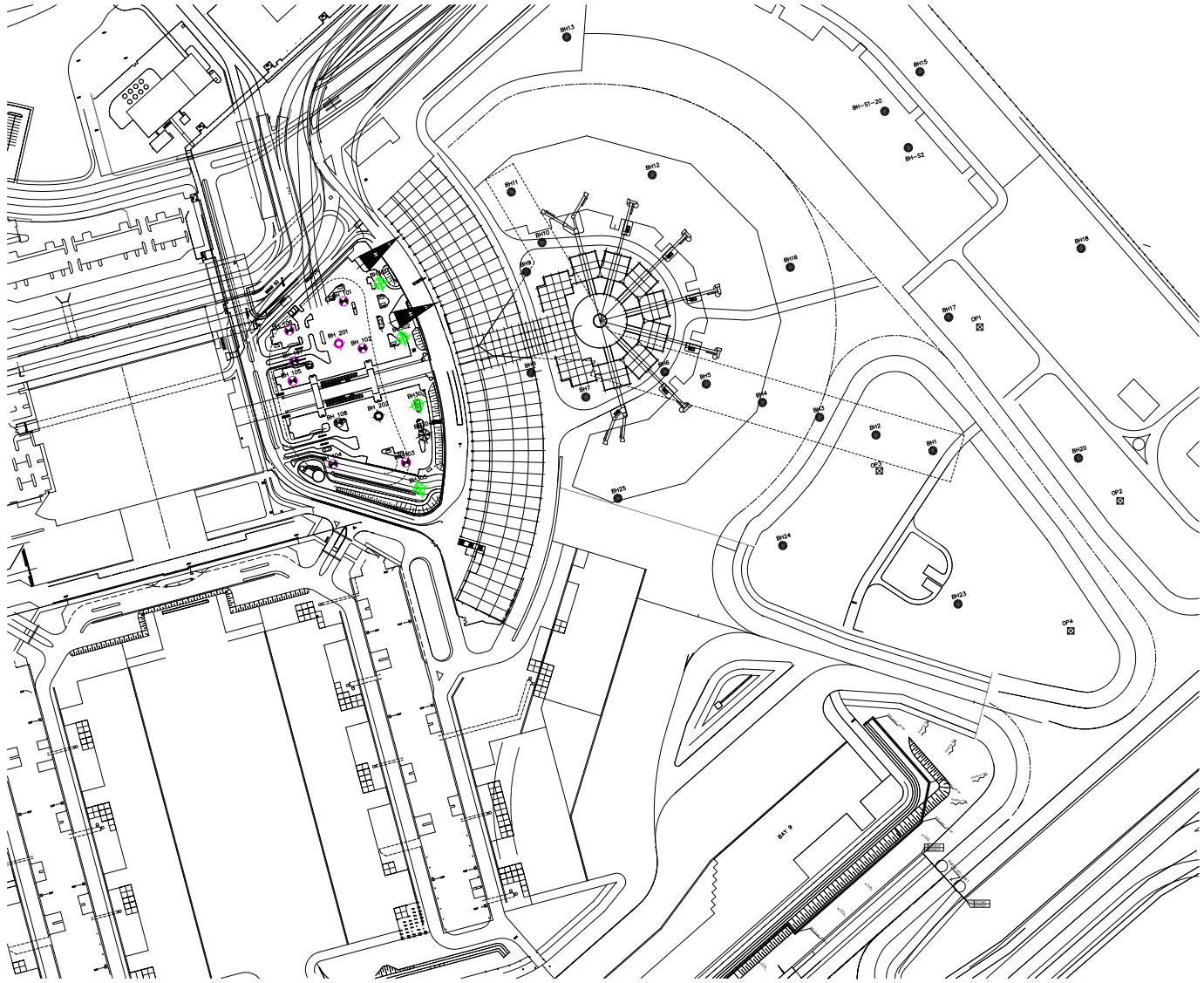
- The results of investigation were presented in Table 1 (attached).
- The result of each test pit is accompanied with contemporary photos demonstrating pits soil strata for airside.
- At the location of all open test pits, a mechanical boring with 15-35 m. depth was drilled by a geotechnical specialist for the purpose of the soil geotechnical study.

4. FINDINGS:

- **No traces for oil or fuel were noticed.**

5. ATTACHMENTS:

- Open test pits locations drawing.
- Open test pits/ boreholes photos (The documents can be accessed via the following web address: <ftp.ecgsa.com>. Please use the username: ecgwb, Password: ecgwb. **Directory:** /wbank/Photos - Soil Investigation/)
- Summary of results table.



SOIL INVESTIGATION RESULTS (AIRSIDE)

PROJECT TITLE: Terminal Building No. 2 (TB2) Renovation Program - Prj. Nr. 1255

NO	BORHOLE ID	LOCATION		STATUS	DEPTH /ML	VISUAL INSPECTION				PHOTOS REF.
		LANDSIDE	AIRSIDE			SOIL DESC.	FOREIGN M.	Smell	COLOR	
1	BH1		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P11,P12
2	BH2		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P13,P14,P15
3	BH3		A	In Progress	20	Gravelly silty SAND	-	-	-	P43,P44,P45
4	BH4		A	In Progress	20	Gravelly silty SAND	-	-	-	P41,P42
5	BH5		C	In Progress	20	Gravelly silty SAND	-	-	-	-
6	BH6		A	In Progress	20	Gravelly silty SAND	-	-	-	-
7	BH7		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P38,P39
8	BH8		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P35
9	BH9		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P40
10	BH10		A	In Progress	20	Gravelly silty SAND	-	-	-	-
11	BH11		C	In Progress	20	Gravelly silty SAND	-	-	-	-
12	BH12		C	In Progress	20	Gravelly silty SAND	-	-	-	-
13	BH13		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P37
14	BH14		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P52
15	BH15		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P36
16	BH16		C	In Progress	20	Gravelly silty SAND	-	-	-	-
17	BH17		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P16,P17
18	BH18		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P18,P19,P20
19	BH19		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P33,P34
20	BH20		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P21,P24,P23

ALL TEST PITS DEPTH = 3M

A = ASPHALT AREA, B = BACKFILL GRADED AREA, C = CONCRETE AREA

SOIL INVESTIGATION RESULTS (AIRSIDE)

PROJECT TITLE: Terminal Building No. 2 (TB2) Renovation Program - Prj. Nr. 1255

NO	BORHOLE ID	LOCATION		STATUS	DEPTH /ML	VISUAL INSPECTION				PHOTOS REF.
		LANDSIDE	AIRSIDE			SOIL DESC.	FOREIGN M.	Smell	COLOR	
21	BH21		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P24,P25,P26
22	BH22		A	In Progress	20	Gravelly silty SAND	-	-	-	-
23	BH23		B	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P27,P28,P29
24	BH24		A	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P30,P31,P32
25	BH25		C	In Progress	20	Gravelly silty SAND	-	-	-	-
26	BHS1		C	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P46,P47,P48
27	BHS2		C	DONE	20	Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P49,P50,P51
28	OP1		B	DONE		Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P1,P2,P3
29	OP2		B	DONE		Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P4,P5
30	OP3		B	DONE		Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P6,P7
31	OP4		B	DONE		Gravelly silty SAND	NIL	No Odour	Brownish Yellow	P1,P2,P3

ALL TEST PITS DEPTH = 3M

A = ASPHALT AREA, B = BACKFILL GRADED AREA, C = CONCRETE AREA

SOIL INVESTIGATION RESULTS (LANDSIDE)

PROJECT TITLE: Terminal Building No. 2 (TB2) Renovation Program - Prj. Nr. 1255

NO	BORHOLE ID	LOCATION		STATUS	DEPTH /ML	VISUAL INSPECTION				PHOTOS REF.
		LANDSIDE	AIRSIDE			SOIL DESC.	FOREIGN M.	Smell	COLOR	
32	BH101	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
33	BH102	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
34	BH103	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
35	BH104	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
36	BH105	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
37	BH106	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
38	BH107	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
39	BH108	A		DONE	15	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
40	BH201	B		DONE	25	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
41	BH202	A		DONE	25	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
42	BH301	A		DONE	35	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
43	BH302	B		DONE	35	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
44	BH303	B		DONE	35	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
45	BH304	A		DONE	35	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	
46	BH305	A		DONE	35	Gravelly silty SAND	Nil	No Odour	Brownish Yellow	

ALL TEST PITS DEPTH = 3M

A = ASPHALT AREA, B = BACKFILL GRADED AREA, C = CONCRETE AREA