

BORING NO. 96.0.001 Fehmarn Belt

Depth (m)

0
+2
1
+1
2
0
3
-1
4
-2
5
-3
6

Level (m)	Soil Profile	Sample No	GEOLOGICAL DESCRIPTION	Geology		Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	Standard penetration test (blows/300mm)				W: Nat. water cont. WP: Plastic limit WL: Liquid limit			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
				Age	Environment					10	20	30	40	WP	W	WL				Type	Enclosure
			DVR90 +2,81 m																		
		1	FILL: SAND, topsoil, silty, w. few gravel, dark brown	Fi	Re																
		2	FILL: SAND, fine, sorted, w. few rounded gravel, w. humus, brown	Fi	Re																
		3	FILL: SAND, fine - medium, sorted, gravelly, lightbrown	Fi	Re																
		4	FILL: SAND, fine, well sorted, light grey	Fi	Re																
		5	FILL: SAND - -	Fi	Re																
		6	FILL: SAND - -	Fi	Re																
		7	SAND, fine, light brown, GYTTJA, finesandy, clayey, dark olive	Fi/ Ma	Re/ Pg																
		8	CLAY, silty, sandy, sl. gravelly, w. decayed roots, greenish grey	Ma/ Wd	Pg/ Lg																
		9	SILT, clayey, finesandy, sl. layered, w. some decayed plant fragments, light greenish grey	Mw/ Wd	Lg																
		10	CLAY TILL, sandy, gravelly, light greenish grey, light brown	Gl	Gc																
		11	CLAY TILL, sandy, gravelly, w. iron oxide stain, light greenish grey, light brown	Gl	Gc																
		12	CLAY TILL, sandy, gravelly, greyish brown	Gl	Gc																

Continues

Coordinates: FCS E: 1002603 (m) N: 6057675 (m)
 Coordinates: UTM32E89 E: 653163 (m) N: 6057839 (m)
 Comments:

Prepared: KS Date: 1996.08.30
 Checked: Date:
 Approved: Date:



Job: 15311451 Fehmarn Belt
 Borehole No.: 96.0.001 Date: 1996.03.25
 Report No.: 2 Encl.No.: F1 P. 1/11

BORING NO. 96.0.001 Fehmarn Belt

Depth (m)

6
7
8
9
10
11
12

Level (m)	Soil Profile	Sample No	GEOLOGICAL DESCRIPTION	Geology		Recovery (%)	Fissures (1-5)	RQD (%)	Induration (1-5)	Standard penetration test (blows/300mm)				W: Nat. water cont. WP: Plastic limit WL: Liquid limit		Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
				Age	Environment					10	20	30	40	100	200				300	400
Continued																				
		12	CLAY TILL, sandy, gravelly, greyish brown	Gl	Gc															
		13	CLAY TILL, very sandy, gravelly, w. sand streaks, greyish brown	Gl	Gc											22,8	0,26			
		14	CLAY TILL, sandy, gravelly, w. iron oxide stain, light brownish grey	Gl	Gc															
		15	CLAY TILL, sandy, gravelly, w. iron oxide, light stain, brownish grey	Gl	Gc															
		16	CLAY TILL, sandy, gravelly, w. few sand streaks, grey	Gl	Gc															
		17	CLAY TILL, sandy, gravelly, grey	Gl	Gc	110														
		18	0 - 88 cm: CLAY TILL, (0, 27 softened), sandy, very gravelly, w. lime grains, grey	Gl	Gc															
		19	0 - 168 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	105														
		20	0 - 155 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	97														
		21				87														

Continues

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 Report No.: 2 Encl.No.: F1 P. 2/11

BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample Type	Sample No	GEOLOGICAL DESCRIPTION	Geology		Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	X In situ vane undist. O UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
						Age	Environment					Endolouse	Type										
Continued																							
12				21	0 - 32 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	87															
					32 - 66 cm: SAND, fine - medium, poorly sorted, w. clay till lumps, grey	Mw	Gc																
13	-10				66 - 85 cm: CLAY TILL, sandy, very gravelly, w. lime grains, w. sand parts, grey	Gl	Gc																
					85 - 135 cm: not described																		
14	-11			22	0 - 160 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	107															
15	-12			23	0 - 148 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	99															
16	-13			24	0 - 145 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	97															
17	-14																						
18	-15			25				100															
Continues																							

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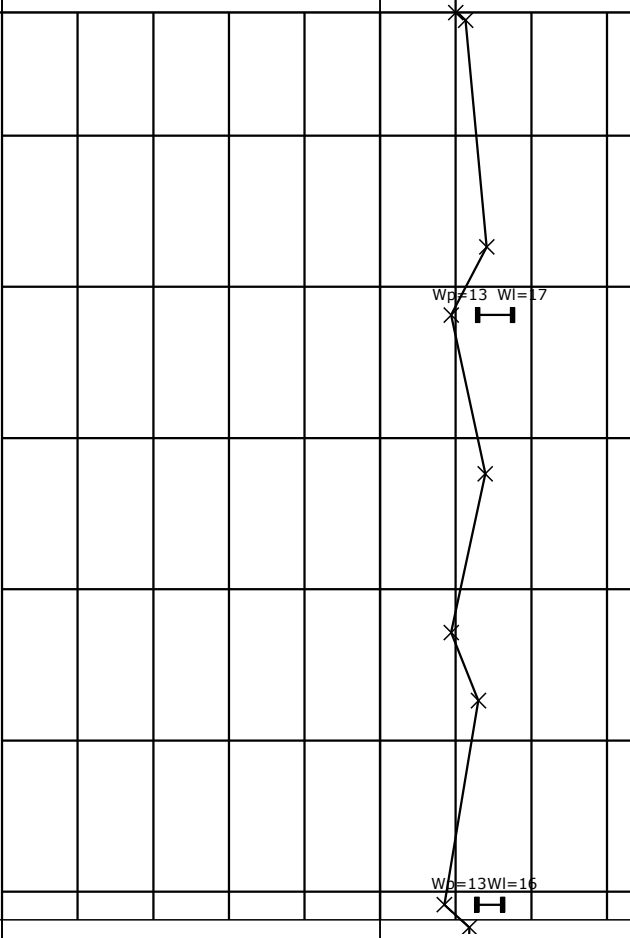
Job: 15311451 Fehmarn Belt
 Borehole No.: 96.0.001 Date: 1996.03.25
 Report No.: 2 Encl.No.: F1 P. 3/11

BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology		Recovery (%)	Fissures (1-5)	RQD (%)	Induration (1-5)	Standard penetration test (blows/300mm)				Water content (%)			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests			
						Age	Environment					10	20	30	40	WP	W	WL				Type	Enclosure		
Continued																									
18	-16		25		0 - 100 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc	100											23,0	0,27					
19					100 - 150 cm: not described																				
20	-17		26		0 - 21 cm: SILT TILL, clayey, very sandy, sl. gravelly, grey 21 - 28 cm: SAND, fine, poorly sorted, silty, grey 28 - 68 cm: SAND TILL, very clayey, silty, gravelly, w. clay till parts, rich in pockets and fissures filled w. poorly sorted fine sand, grey	Gl	Gc	93											23,0	0,26	27,0	D	H1	H1	
21	-18		27		68 - 94 cm: SAND TILL, very clayey, silty, gravelly, w. lime grains, grey 94 - 122 cm: CLAY TILL, sandy, gravelly, w. lime grains, grey 122 - 140 cm: SAND TILL, sl. clayey, silty, gravelly, w. lime grains, grey	Gl	Gc	100																	
22	-19		28		0 - 52 cm: CLAY TILL, sandy, very gravelly, w. lime grains, w. sand parts, grey 52 - 96 cm: SAND TILL, sl. clayey, silty, sl. gravelly, w. lime grains, w. many parts of poorly sorted fine - medium sand, grey 96 - 150 cm: CLAY TILL, sandy, gravelly, w. lime grains, w. parts of poorly sorted sand, grey	Gl	Gc	90												23,1	0,26		G	H1	
23	-20				0 - 15 cm: CLAY TILL, very sandy, very gravelly, grey	Gl	Gc																		
24	-21		29		15 - 133 cm: SAND TILL, silty, very clayey, very gravelly, w. lime grains, w. silty sand layers 92 - 102 and 110 - 116, grey 133 - 135 cm: CLAY TILL, very sandy, very gravelly, w. lime grains, grey	Gl	Gc	93												23,4	0,23	24,0			
Continues																									

X In situ vane undist. O UCT
 + In situ vane remoul. ▲ SPT
 Standard penetration test (blows/300mm)
 10 20 30 40
 Undr. shear strength - Vane (kPa)
 100 200 300 400
 CPT Cone Resistance qt (MPa)
 10 20 30 40

W: Nat. water cont.
 WP: Plastic limit
 WL: Liquid limit
 WP W WL
 Water content (%)
 10 20 30



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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	× In situ vane undist. ○ UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
											Type		Enclosure									
Continued																						
24			29		grains, grey																	
					0 - 90 cm: CLAY TILL, sandy, very gravelly, w. lime grains, grey	Gl	Gc															
					90 - 140 cm: not described																	
25			30																			
					0 - 110 cm: CLAY TILL, sandy, 0 - 25 and 97 - 110 gravelly, 25 - 97 very gravelly, w. lime grains, grey	Gl	Gc															
					110 - 130 cm: SAND, fine - medium, silty, sl. gravelly, grey	Mw	Gc															
26			30A																			
					SAND, fine - medium, well sorted, grey	Mw	Gc															
			31		0 - 26 cm: CLAY TILL, silty, sandy, gravelly, w. lime grains, grey	Gl	Gc															
					SAND, (according to drillers log)																	
27			32		0 - 19 cm: SAND, fine - medium, silty, sl. gravelly, grey	Mw	Gc															
					19 - 143 cm: CLAY TILL, sandy, gravelly, w. lime grains, grey	Gl	Gc															
28																						
29																						
30																						
Continues																						

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 Report No.: 2 Encl.No.: F1 P. 5/11

BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology		Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	X In situ vane undist. ○ UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
						Age	Environment					Type	Enclosure										
Continued																							
30			33		0 - 25 cm: CLAY TILL, sandy, gravelly, olive grey	Gl	Gc																
			34					116															
31	-28				0 - 118 cm: CLAY TILL, sandy, 0 - 100 gravelly, 100 - 118 very gravelly, olive grey	Gl	Gc																
			35		118 - 168 cm: not described 0 - 110 cm: CLAY TILL, sandy, very gravelly, olive grey	Gl	Gc	88															
32	-29																						
			36		0 - 85 cm: CLAY TILL, (70 - 85 crushed and rolled), sandy, very gravelly, 30 - 70 w. sand - filled fissures, olive grey	Gl	Gc	94															
33	-30																						
			37		0 - 40 cm: GRAVEL TILL, (0 - 15 crushed and rolled gravel), sandy, rich in clay of very high plasticity, rich in flint, olive grey 40 - 65 cm: GRAVEL, very sandy, sl. silty, grey	Gl	Gc	106															
34	-31																						
			38		65 - 85 cm: CLAY, very high plasticity, olive brown 0 - 109 cm: CLAY, very high plasticity, (0 - 20 w. quaternary gravel and sand), olive brown	Mw	Gc	87															
35	-32																						
			39					114															
36	-33																						
Continues																							

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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	× In situ vane undist. ○ UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests																		
											Type	Enclosure																											
					Continued																																		
36	-34		39		0 - 115 cm: CLAY, very high plasticity, w. calcareous nodules at 88 and 108, 0 - 103 olive brown, 103 - 115 yellowish brown	Ma Eo	114																																
37	-35		40		115 - 165 cm: not described 0 - 162 cm: CLAY, very high plasticity, w. calcareous nodules 95 - 115 and 135 - 140, 0 - 60 olive brown, 60 - 142 olive brown to olive grey, 142 - 162 olive grey	Ma Eo	101																																
38	-36		41		0 - 150 cm: CLAY, (crushed and rolled 138 - 147), very high plasticity, w. calcareous nodules at 5, 55, 125 and 135, olive grey	Ma Eo	100																																
39	-37		42		0 - 151 cm: CLAY, very high plasticity, w. a few light olive brown calcareous nodules 135 - 140, olive grey	Ma Eo	101																																
40	-38																																						
41	-39																																						
42																																							
					Continues																																		

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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	ROD (%)	Induration (1-5)	× In situ vane undist. ○ UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30		Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
										Type	Enclosure									
				Continued																
42			43	0 - 50 cm: not descibed											19,5	0,86		U	J3	
43	-40		44	50 - 110 cm: CLAY, very high plasticity, w. grey part at 105, olive grey 10 - 158 cm: CLAY, very high plasticity, olive grey	Ma Eo Ma Eo	105 105												D G	H1 H1	
44	-41														18,6	1,04	3,9			
45	-42		45	0 - 125 cm: CLAY, very high plasticity, w. grey band 25 - 27, 0 - 125 olive grey	Ma Eo	93														
46	-43		46	0 - 152 cm: CLAY, very high plasticity, 0 - 110 olive grey, 110 - 152 olive brown	Ma Eo	101														
47	-44		47			101												G	H1	
48	-45			0 - 101 cm: CLAY, very high plasticity, w. a few pyrite	Ma Eo															
				Continues																

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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	RQD (%)	Induration (1-5)	Standard penetration test (blows/300mm)				W: Nat. water cont. WP: Plastic limit WL: Liquid limit	Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests	
											10	20	30	40					Type	Enclosure
Continued																				
48					0 - 101 cm: CLAY, very high plasticity, w. a few pyrite concretions, 0 - 60 olive brown, 60 - 101 yellowish brown	Ma Eo														
					101 - 151 cm: not described															
49	-46		48		0 - 152 cm: CLAY, very high plasticity, olive brown	Ma Eo	98													
50	-47																			
51	-48		49		0 - 160 cm: CLAY, very high plasticity, w. sl. silty and sl. calcareous grey layer 93 - 103, w. pyrite concretions at 140, olive brown 0 - 105, 105 - 160 dark grey	Ma Eo	114													
52	-49		50		0 - 140 cm: CLAY, very high plasticity, w. black silty sl. indurated bands at 60 and 120 - 140, crushed 0 - 110, w. pyrite concretions 20 - 35, dark olive grey	Ma Eo/ PI	88													
53	-50																			
54	-51		51				113													
Continues																				

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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)	Level (m)	Soil Profile	Sample No	Sample Type	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	RQD (%)	Induration (1-5)	× In situ vane undist. ○ UCT + In situ vane remoul. ▲ SPT Standard penetration test (blows/300mm) 10 20 30 40 Undr. shear strength - Vane (kPa) 100 200 300 400 CPT Cone Resistance qt (MPa) 10 20 30 40				W: Nat. water cont. WP: Plastic limit WL: Liquid limit WP W WL Water content (%) 10 20 30			Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests			
											Type		Enclosure											
					Continued																			
54					0 - 120 cm: CLAY, very high plasticity, rich in black silty sl. indurated bands, very fissured to crushed, w. calcite concretions 40 - 50, w. steeply inclined (70), layering 90 - 120, dark olive grey	Ma	Eo/PI											W=57.4	16,7	1,59				
55	-52		52		120 - 170 cm: not described 0 - 127 cm: CLAY, v. high plasticity, w. black silty sl. indurated calcareous bands 14 - 16, 42 - 47, 68 - 80, v. fissured to crushed 0 - 100, w. slickensides at 100, w. calc. concretions 35 - 65, dark olive grey	Ma	Eo/PI	94										W=57.3			C	J1		
56	-53		53		0 - 160 cm: CLAY, very high plasticity, w. black band at 95, w. silty grey layers 100 - 102, 110 - 112 and 134 - 136, w. inclined fissures(50) 145 - 150, 0 - 95 dark olive grey, 95 - 160 olive brown	Ma	Eo/PI	100										Wl=186 Wp=51 W=62.3	16,4	1,03				
57	-54																							
58	-55		54		0 - 170 cm: CLAY, very high plasticity, w. silty incl. d. grey layer 8 - 16, w. incl. fiss. 0 - 50 v. fiss. to crush., w. black bands 0 - 55, 0 - 55 d. olive brown, 55 - 160 d. yell. brown, 160 - 170 d. olive grey	Ma	Eo/PI	97										× ×	18,6	1,03				
59	-56																							
60	-57		55					97										W=35,9	18,5	1,04			G	H1
					Continues																			

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BORING NO. 96.0.001 Fehmarn Belt

Depth (m)

60
-58
61
-59
62
-60
63
-61

Level (m)	Sample No	Sample Type	Soil Profile	GEOLOGICAL DESCRIPTION	Geology Age Environment	Recovery (%)	Fissures (1-5)	RQD (%)	Induration (1-5)	Standard penetration test (blows/300mm)				W: Nat. water cont. WP: Plastic limit WL: Liquid limit		Unit Weight (kN/m³)	Void Ratio	Carbonate (%)	Suppl. Tests Type	Enclousure
										10	20	30	40	WP	W					
				Continued																
				0 - 95 cm: CLAY, very high plasticity, w. green bands at 26, 33, 45, 68, w. inclined fissures(60), dark olive grey	Ma Eo/PI											18,5	1,04	2,3		
				95 - 145 cm: not described																
				Till deposits may contain cobbles and boulders																
				The described bands, layering with shift in colour represents ash layers in the Ølst Formation																

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