Hillerød. Egespurs Alle
Area for Sale
Geotecnical investigations

GEO project no 31373
Report 1, 2008-04-22

Summary

For a 100,000 m^2 area just southwest of Hillerød city GEO has been asked to carry out a geotechnical investigation. A specific project is not yet known to us.

The objective of the investigation – besides to form a general view of the soil and water conditions – is to provide the necessary basis for assessment of the type of foundation.

The field investigations have comprised borings with soil sampling and vane shear tests in shallow borings in a net of app. 100 x 100 m^2.

The thickness of the top soil layer varies on the major part of the area from 0.3 m to 1.2 m. In local areas in the northern and southeastern part of the area represented by borehole log 4 and GB 4 (northern) and borehole log 10 (southeastern) fill has been met to a thickness of 3.5 m (northern) and 1.6 m (southeastern).

The groundwater level is measured to 0.4 m to >3.0 m below ground level.

The highest possible level suited for a shallow foundation (spread foundation) is determined as top of glacial or late glacial deposits just below the top soil and fill and denoted level 2 in the borehole profiles. A first estimate of the strength parameters for the soil has been assessed for the design of the foundation.

When the projects are known, specific soil investigations must be performed to reduce the distance between the borings and to give a more precise estimate of the strength parameters for the soil layers.

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GEO Standard:	Legends and Abbreviations

1 Project and Objective

Hillerød Kommune wants to sell an area of 100,000 m^2 just southwest of the city. The areas are shown on the location plan in Enclosure No 1.1.

The objective of the investigation – besides to form a general view of the soil and groundwater conditions – is to provide the necessary basis for assessment of the type of foundation.

A specific project is not yet known to GEO. So the investigation is based on shallow borings in a net of app. 100 x 100 m^2.

From Hillerød Kommune we have achieved the results from some earlier investigations carried out on the site by COWI. A number of borings from these indvestigation are included in this report.

2 Field Investigations

The field investigations have comprised borings with soil sampling and vane shear tests in the boreholes.

Placed as shown in the location plan, Enclosure No 1.1, geotechnical borings (Nos 1-12) were carried out. The boreholes were carried out as 4 inch cased borings. Remoulded samples were extracted and vane shear tests were carried out in the boreholes.

In all of the boreholes standpipes have been established, and the groundwater tables were registered 2008-04-08 just after the borings were finished. The groundwater levels are shown in Enclosure No 1.1, page 3/3.

The samples were geologically described by an engineering geologist in accordance with “Vejledning i Ingeniørgeologisk prøvebeskrivelse” /1/. Lithological descriptions included an evaluation of depositional environment and age of the sample material.

For selected samples, classification tests were executed to determine the natural moisture content w.

The positioning and levelling of the boreholes were carried out by GEO using GPS navigation system.

The boring logs with all observations and measurements are shown in Enclosure Nos 1.2-1.11. Legends and Abbreviations are shown in the enclosed GEO Standard.

The supplementary logs from borings nos. GB1-GB10 and GB14-GB16 from the earlier investigations are shown in appendix 1.A

3 Soil Conditions

The area is in level +30 m to +36 m lowest in the south-eastern -, the south-western - and the north-western corner of the area.

The areas are dominated by late glacial and glacial deposits covered with top soil deposits. The top soil consists mainly of sand mull.

The top soil layer varying in thickness from 0.3 m to 1.2 m has been encountered. Beneath the topsoil glacial deposits are predominant. The deposits mainly consist of clay till, but sand till and melt water sand have also been encountered. In local places late glacial melt water sand or melt water clay has been found just beneath the fill.

In local areas in the norther and southeastern part of the area represented by borehole log 4 and GB4 (northern) and borehole log 10 (southeastern) fill has been met to a thickness of 3,5 m (northern) and 1,6 m (southeastern).

Locally just south of our borehole no 6 the investigations off COWI shows a local area with fill thicknes up to more than 5 m representing the backfilling in an old gravel pit.

4 Groundwater Conditions

The measurements in the stand pipes 2008-04-08 showed a groundwater table 0.4 m to >3.0 m below ground level.

In periods with heavy rain the firm and dense clay till will form a nearly impervious lower boundary, and the fill and top soil will become saturated for a period of time.

The groundwater level representing the deep layers (limestone) is in approximate level +15 m to +17 m.

5 Foundation Design

5.1 General

The highest possible level suited for shallow foundation (spread foundation) is determined as the top of glacial or late glacial deposits. This level is denoted “Level 2” and shown on the location plan, Enclosure 1.1, page 2/3.

"Level 3" is defined as top of firm soil layer with c_u > 150 kN/m^2. It has only been possible to give this level in a few of the borings, and the level is vere difficult to identify while the borings are not very deep.

Bottom of top soil and fill constitute the proper base level for roads and floors. This level is denoted "Level 1" in the location plan.

"Level 2" is less than 0.9 m (to 1.2 m) below ground level in most of the areas. The foundation type most suitable in these areas will be a shallow foundation (spread foundation). "Level 3" is expected approximately X m below ground level.

In the local areas where fill has been detected to a thickness off 3.5 m (northern part of the area) a pile foundation would be natural if the lowest floor level is in ground level. Where fill has the thickness off 1.6 m a shallow foundation will still be suitable.

5.2 Spread Foundation

The design of the foundations must be in accordance with the European Code of Practice for Foundation engineering (EC 7) with the national Danish Anneks, ref. /2/.

In the actual soils the undrained shear strength c_u is equal to the shear strength c_v measured in the vane shear test.

As a preliminary estimate the following characteristic strength parameters are suggested at the foundation base:

- Undrained failure: $c_{u,k}$ = 50 to 70 kN/m^2 in Level 2
  $c_{u,k}$ > 150 kN/m^2 in Level 3

- Drained failure: $\varphi'_{pl,k} = 37^o$, $c'_{u,k} = 0$ in Level 2,
  $\varphi'_{pl,k} = 38^o$, $c'_{u,k} = 0$ in Level 3

The largest dimensions found by these two analyses shall be chosen.

When the projects are known, supplementary borings have to be performed to give a more precise estimate of the strength parameters.

When founded in accordance with these guidelines, the settlements are expected to be small and without structural significance, provided that the casting of the concrete in the foundations takes place on undisturbed soil (after previous cleaning of loose and softened soil).

On the basis of the ground water levels, it is our estimate that basements down to 2 m to 3 m below surface can be built with normal drain. For deeper basement, supplementary investigations (borings) have to be done.

5.3 Pile Foundation

The pile foundation must be dimensioned as described in EC 7, cf. ref. /2/. New boreholes to the expected pile tip level must be performed.

6 Excavations

Excavation works for foundations (buildings with lowest floor at ground level) and roads are not expected to provide significant groundwater problems on the present basis. Possible groundwater flow and surface water may presumably be removed by simple drains. For deeper excavations specific soil investigations must be performed.

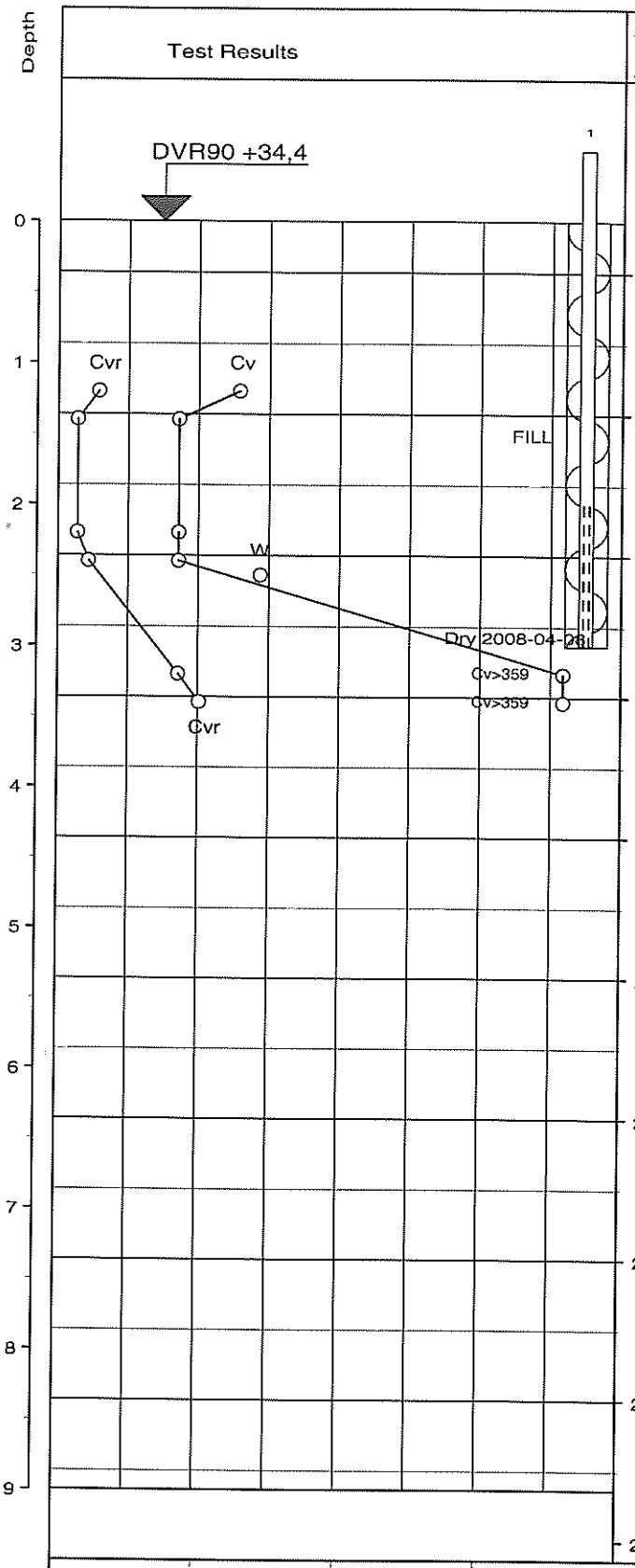
7 Further Investigation

When the projects are known, specific soil investigations must be performed to reduce the distance between the borings and to give a more precise estimate of the strength parameters for the soil layers. The investigations shall cover specific problems as pile foundation and groundwater problems for deep excavations etc.

8 References

/1/ A guide to engineering geological soil description.
DGF-Bulletin 1, Revision 1, May 1995. Danish Geotechnical Society

/2/ Eurocode 7 : Geotecnical design (DS/EN 1997-1) with EN 1997-1 DK NA



Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
			1	SAND: MULL, w. a few clayey parts, non - calcareous, dark brown	Ts	Re
			2	SAND, fine - medium, poorly sorted, w. a few gravel grains, non - calcareous, olive brown	Mw	Lg
			3	CLAY, sandy, w. a few gravel grains, rich in sand parts, non - calcareous, olive brown	Mw/ Gl	Gc
			4	SAND, fine - medium, w. a few gravel grains, rich in sandy clay parts, non - calcareous, olive brown	Mw	Gc
			5	SAND TILL, clayey, w. a few gravel grains, w. sand streaks, non - calcareous, olive brown	Gl	Gc
			6	SAND TILL, very clayey, silty, w. a few gravel grains, non - calcareous, olive brown	Gl	Gc
			7	SAND TILL - " -	Gl	Gc

Borehole dry during drilling

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91977 (m) N : 167908 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-07 Synonym : Boring : 1

Executed by : CUD Checked by : Approved by : VLS Date : 080422 Encl. No.: 1.2 P. 1 / 1

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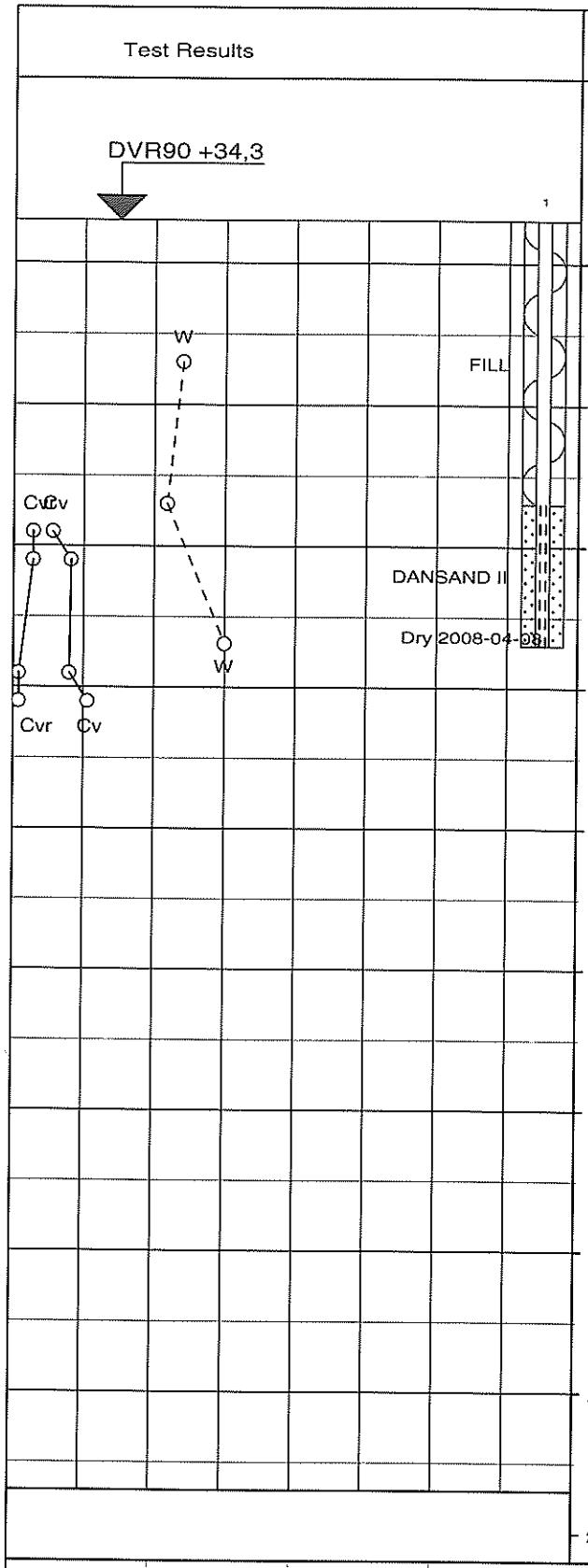

Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
34			1	SAND: MULL, w. a few gravel grains, non - calcareous, dark brown	Ts	Re
			2	SAND, sl. clayey, organic, non - calcareous, brown	Ts	Re
33			3	SAND TILL, clayey, gravelly, non - calcareous, olive brown	Gl	Gc
			4	SAND TILL, very clayey, sl. gravelly, non - calcareous, w. sand parts, olive brown	Gl	Gc
32			5	SAND TILL, clayey, sl. gravelly, non - calcareous, olive grey	Gl	Gc
			6	CLAY TILL, sandy, sl. gravelly, non - calcareous, w. ochre, olive grey	Gl	Gc
31			7	SAND, clayey, sl. gravelly, non - calcareous, greyish brown	Gl/ Mw	Gc
30				Till deposits may contain cobbles and boulders		
29						
28						
27						
26						
25						

O	10	20	30	W (%)
Δ	14	18	22	γ (kN/m³)
O	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91950 (m) N : 167816 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 2

Executed by : CUD Checked by : Approved by : Date : 080422 Encl. No.: 1.3 P. 1 / 1

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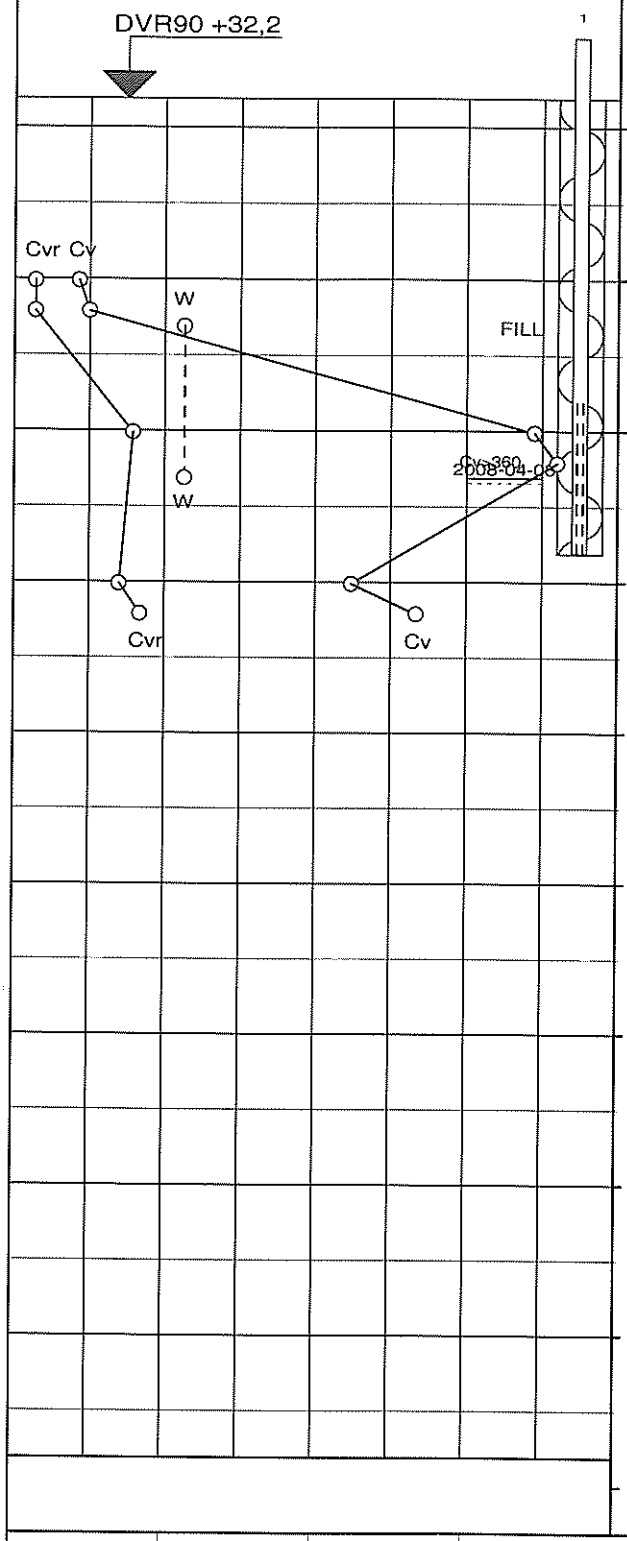

Depth	Level (m)
0	32
1	31
2	30
3	29
4	28
5	27
6	26
7	25
8	24
9	23

No.	Geological Description	Env.	Age
1	SAND: MULL, clayey, w. a few gravel grains, non - calcareous, dark brown	Ts	Re
2	SAND: MULL, sl. clayey, w. a few gravel grains, non - calcareous, dark brown	Ts	Re
3	SAND, clayey, w. a few gravel grains, non - calcareous, w. ochre, olive brown	Mw	Lg
4	SAND, clayey, w. a few gravel grains, non - calcareous, w. clay streaks, w. sand streaks, olive brown	Mw	Lg
5	CLAY TILL, very sandy, w. a few gravel grains, w. sand streaks, non - calcareous, w. ochre, olive brown	Gl	Gc
6	CLAY TILL, very sandy, sl. gravelly, calcareous, w. ochre, olive brown	Gl	Gc
7	CLAY TILL, silty, very sandy, sl. gravelly, calcareous, w. sand streaks, dark grey	Gl	Gc

Till deposits may contain cobbles and boulders

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Test Results

Method : 4 inch

E : 91930 (m) N : 167726 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-08 Synonym : Boring : 3

Executed by : CUD Checked by : Approved by : Date : 080422 Encl. No.: 1.4

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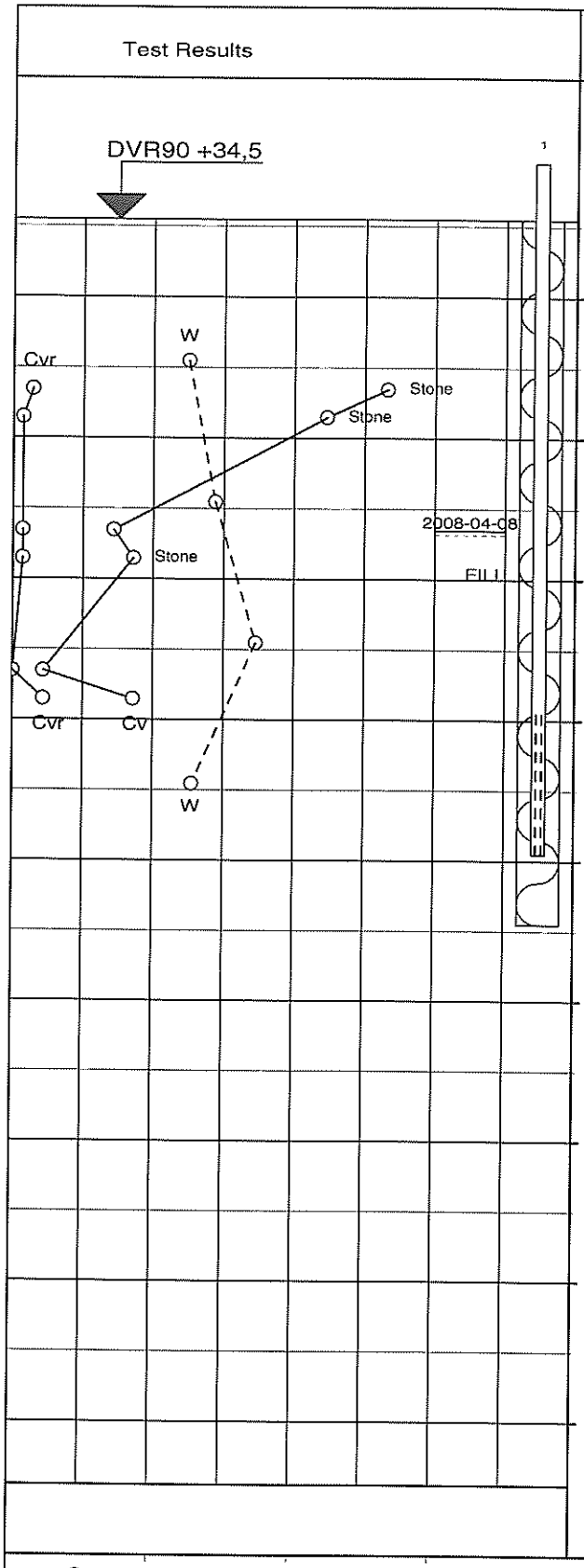

No.	Geological Description	Env.	Age
1	FILL: SAND: MULL, clayey, non - calcareous, dark brown	Fi	Re
2	FILL: CLAY, very sandy, w. a few gravel grains, calcareous, w. mull specks, olive brown	Fi	Re
3	FILL: SAND, very clayey, sl. gravelly, calcareous, w. mull parts, olive brown	Fi	Re
4	FILL: SAND, very clayey, sl. gravelly, organic, w. tiles, brown	Fi	Re
5	FILL: SAND, clayey, gravelly, calcareous, w. mull specks, greyish brown	Fi	Re
6	FILL: SAND, very clayey, sl. gravelly, w. mull specks, w. roots, non - calcareous, w. tiles, greyish brown	Fi	Re
7	FILL: SAND, very clayey, sl. gravelly, calcareous, w. roots, greyish brown	Fi	Re
8	FILL: SAND, clayey, gravelly, calcareous, w. mull parts, dark greyish brown	Fi	Re
9	CLAY, very sandy, w. sand parts, non - calcareous, olive grey	Gl	Gc
10	SAND TILL, clayey, w. a few gravel grains, non - calcareous, olive grey	Gl	Gc
11	SAND, fine - medium, w. clay streaks, w. a few gravel grains, non - calcareous, olive brown	Mw	Gc

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91872 (m) N : 167933 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-07 Synonym : Boring : 4

Executed by : CUD Checked by : Approved by : VCJ Date : 080422 Encl. No.: 1.5 P. 1 / 1

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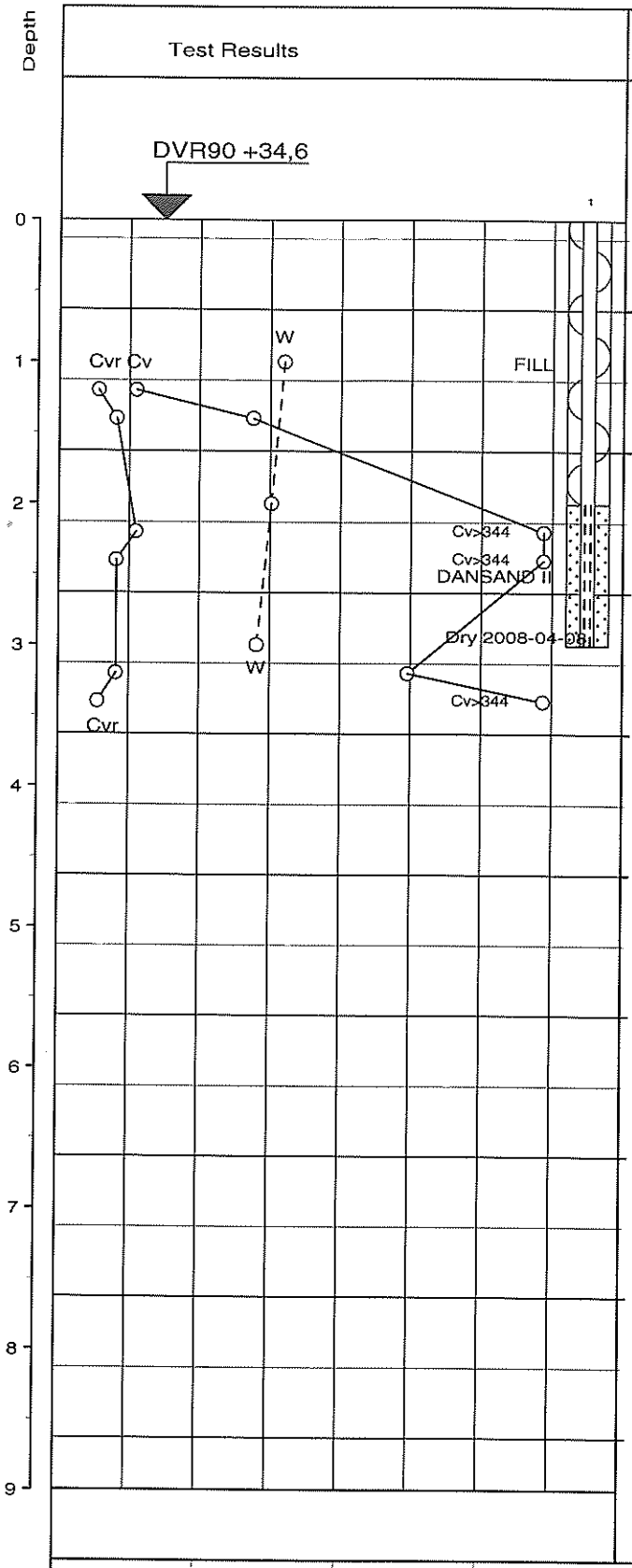

Geology	Sample No.	Geological Description	Env.	Age
	1	SAND: MULL, very clayey, non - calcareous, dark brown	Ts	Re
	2	CLAY, very silty, sandy, w. a few gravel grains, non - calcareous, w. mull specks, w. ochre, w. roots, olive brown	Gl?	Gc?
	3	CLAY TILL, medium plastic, sandy, w. a few gravel grains, non - calcareous, w. ochre, olive brown	Gl	Gc
	4	CLAY TILL, silty, sandy, sl. gravelly, non - calcareous, w. ochre, w. rotten stone, olive brown	Gl	Gc
	5	CLAY TILL, silty, sandy, gravelly, non - calcaroeus, w. rotten stone, w. ochre, yellowish brown	Gl	Gc
	6	CLAY TILL, silty, sandy, sl. gravelly, calcareous, w. ochre, w. manganoxide, olive brown	Gl	Gc
	7	CLAY TILL, in places medium plastic, sandy, gravelly, calcareous, olive brown	Gl	Gc

○	10	20	30 W (%)
△	14	18	22 γ (kN/m³)
○	100	200	300 Cv,Cvr (kN/m²)

Method : 4 inch

E : 91793 (m) N : 167753 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 5

Executed by : CUD Checked by : Approved by : UCS Date : 080422 Encl. No.: 1.6 P. 1 / 1

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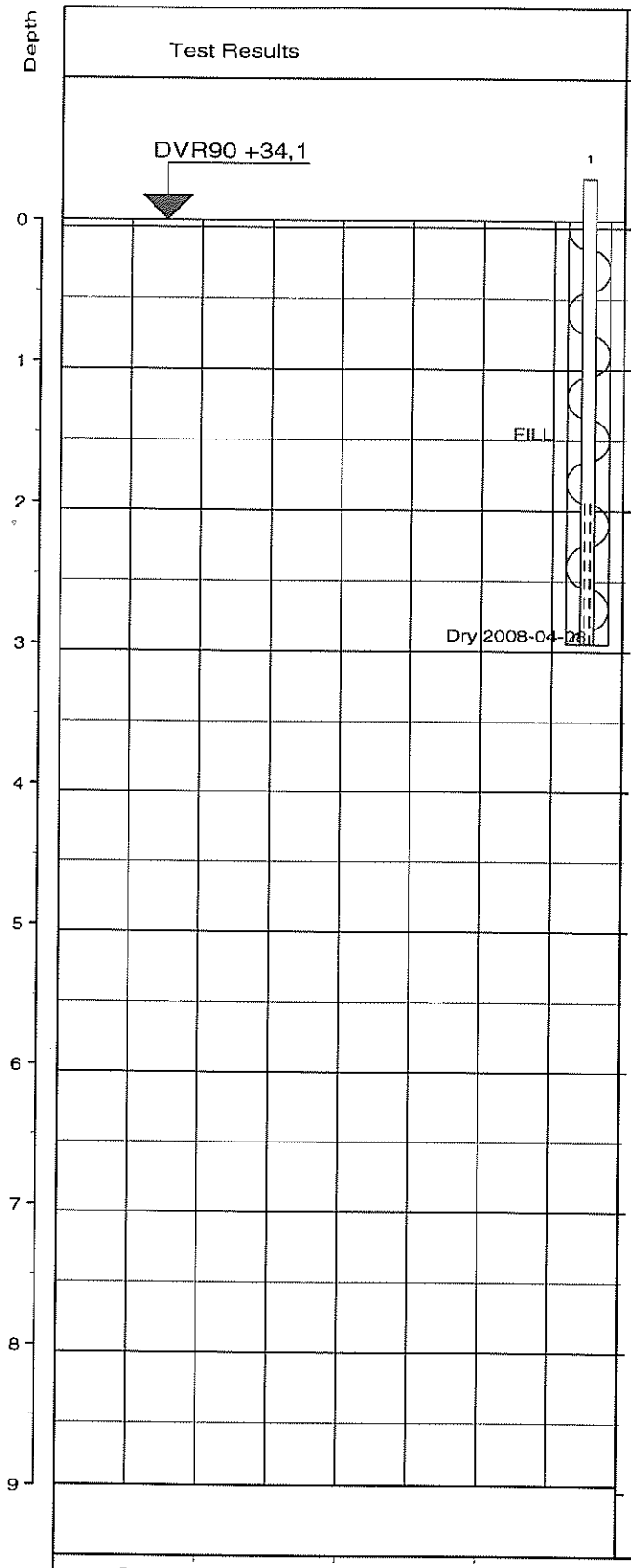

Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
34			1	FILL: CLAY: MULL, sandy, sl. gravelly, calcareous, brown	Fi	Re
			2	SAND, medium, poorly sorted, sl. gravelly, calcareous, yellowish brown	Mw	Lg
33			3	SAND, fine - medium, sorted, calcareous, w. a few, clayey parts, yellowish brown	Mw	Lg
			4	SAND, fine - medium, poorly sorted, w. a few gravel grains, calcareous, yellowish brown	Mw	Lg
32			5	SAND, fine - medium, poorly sorted, gravelly, calcareous, greyish brown	Mw	Lg
			6	SAND - " -	Mw	Lg
31			7	SAND, medium, poorly sorted, gravelly, calcareous, greyish brown	Mw	Lg
				Borehole dry during drilling		
30						
29						
28						
27						
26						
25						

O	10	20	30	W (%)
Δ	14	18	22	γ (kN/m³)
O	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91788 (m) N : 167966 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-07 Synonym : Boring : 6

Executed by : CUD Checked by : RP Approved by : VLS Date : 080422 Encl. No.: 1.7 P. 1 / 1

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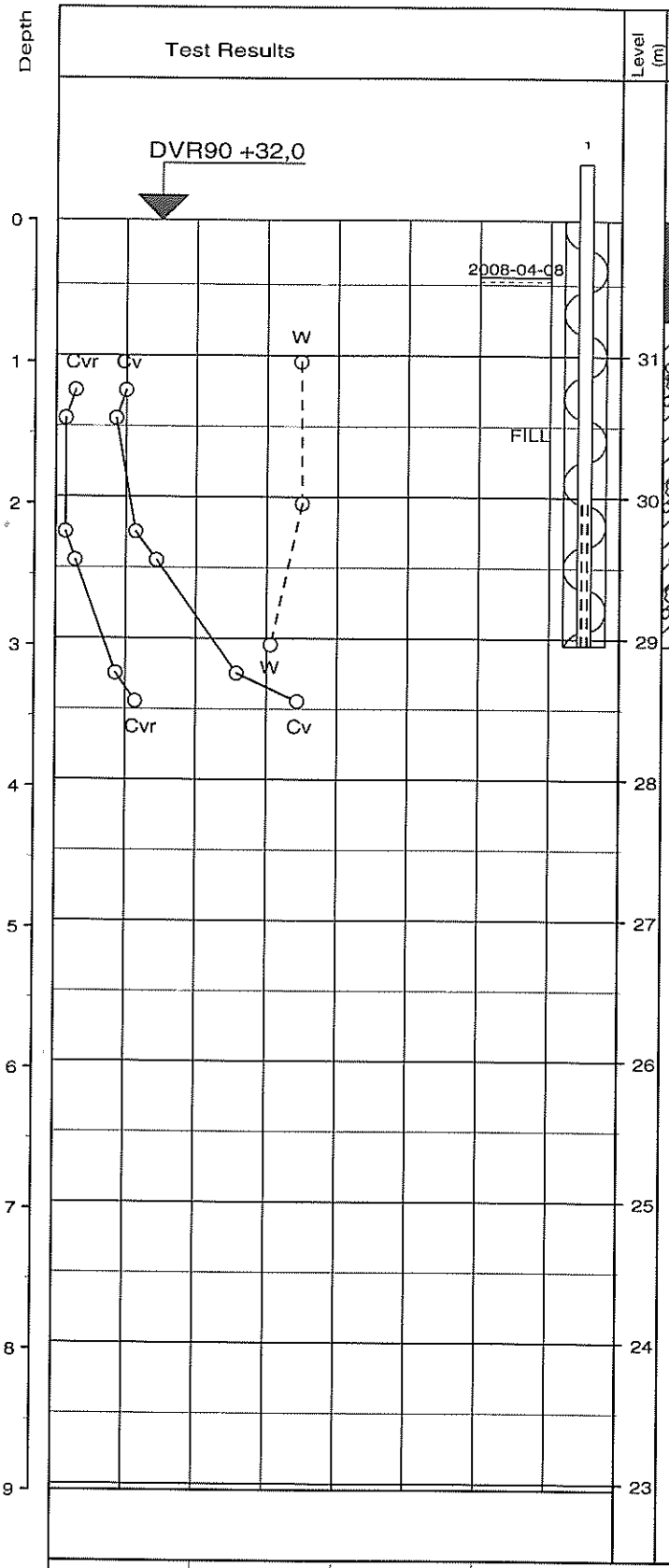

Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
31			1	SAND: MULL, clayey, non - calcareous, dark brown	Ts	Re
			2	SAND: MULL, clayey, w. a few gravel grains, non - calcareous, dark brown	Ts	Re
			3	CLAY, very sandy, w. a few gravel grains, w. mull specks, organic, dark greyish brown	Ts	Re
30			4	CLAY TILL, very sandy, sl. gravelly, non - calcareous, w. moulded roots, w. ochre, greyish brown	Gl	Gc
			5	CLAY TILL, silty, very sandy, gravelly, non - calcareous, w. ochre, olive brown	Gl	Gc
29			6	CLAY TILL, sandy, sl. gravelly, calcareous, w. sand streaks, olive brown	Gl	Gc
			7	CLAY TILL, sandy, sl. gravelly, calcareous, w. ochre, olive brown	Gl	Gc
28				Till deposits may contain cobbles and boulders		
27						
26						
25						
24						
23						

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91707 (m) N : 167984 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-07 Synonym : Boring : 7

Executed by : CUD Checked by : Approved by : VLS Date : 080422 Encl. No.: 1.8

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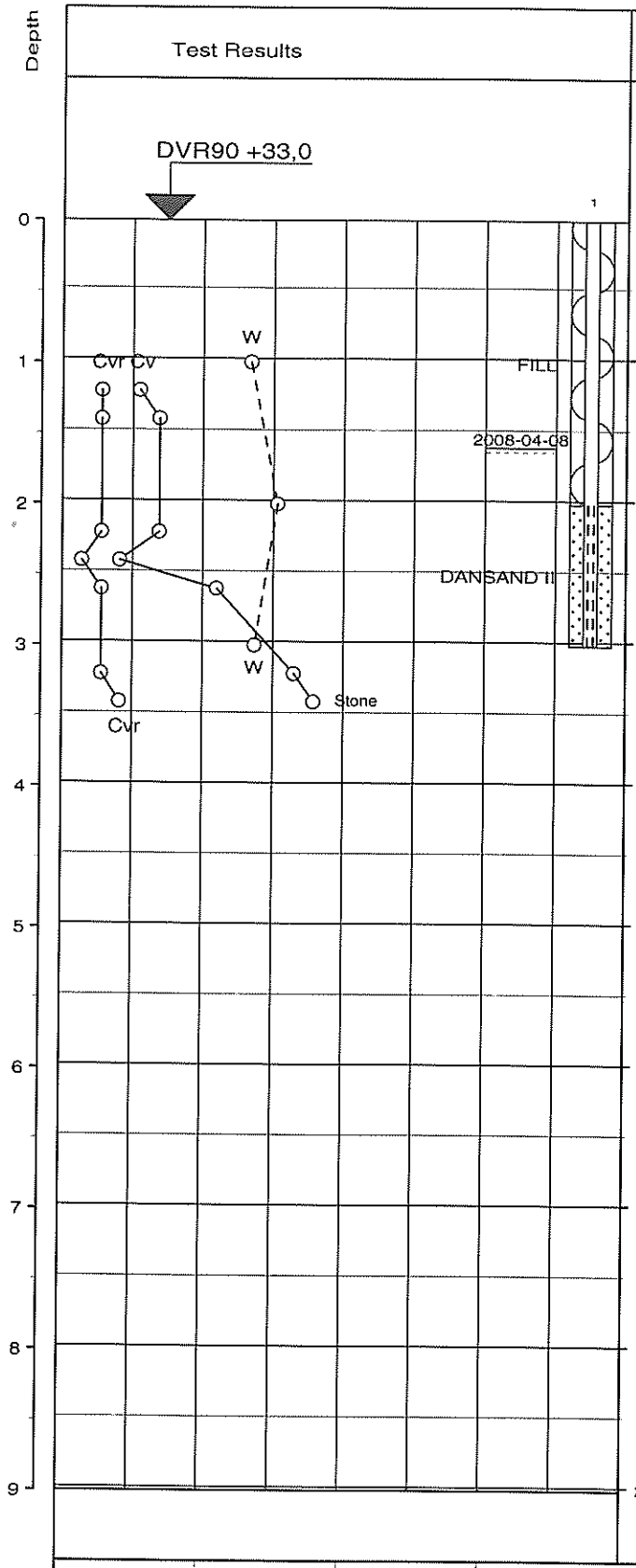

Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
32			1	SAND: MULL, very clayey, non - calcareous, dark brown	Ts	Re
			2	SAND: MULL, very clayey, sl. gravelly, non - calcareous, dark brown	Ts	Re
			3	CLAY TILL, medium plastic, sandy, w. sand streaks, non - calcareous, w. ochre, w. manganese oxide, olive brown	Gl	Gc
			4	CLAY TILL, sandy, sl. gravelly, non - calcareous, brown	Gl	Gc
31			5	CLAY TILL, very sandy, sl. gravelly, non - calcareous, w. ochre, brown	Gl	Gc
			6	CLAY TILL, very sandy, sl. gravelly, non - calcareous, brown	Gl	Gc
30			7	CLAY TILL, in places medium plastic, sandy, sl. gravelly, calcareous, w. rotten stones, brown	Gl	Gc
29				Till deposits may contain cobbles and boulders		
28						
27						
26						
25						
24						

O	10	20	30	W (%)
Δ	14	18	22	γ (kN/m³)
O	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91678 (m) N : 167880 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 8

Executed by : CUD Checked by : Approved by : VLS Date : 080422 Encl. No.: 1.9 P. 1 / 1

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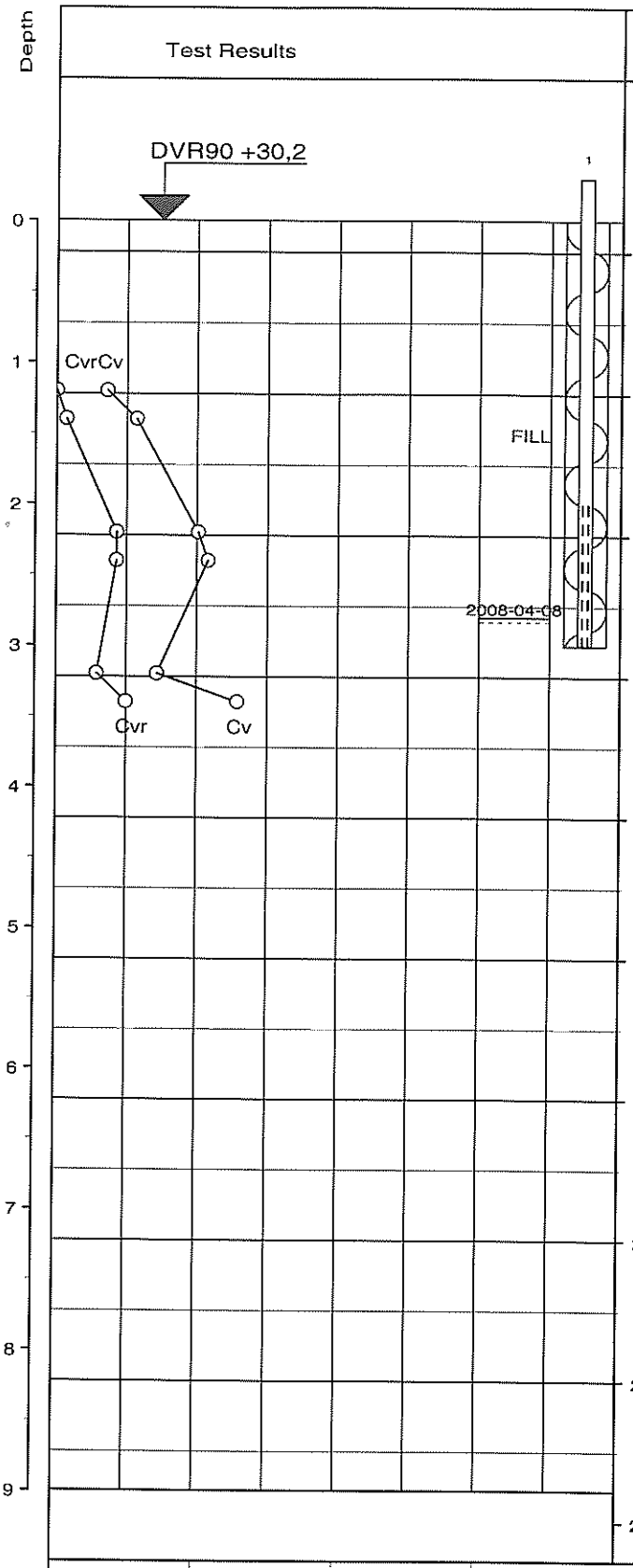

No.	Geological Description	Env.	Age
1	CLAY: MULL, very sandy, non - calcareous, dark brown	Ts	Re
2	CLAY: MULL, sandy, non - calcareous, brown	Ts	Re
3	PEAT: MULL, w. a few gravel grains, non - calcareous, very dark brown	Fw	Pg
4	SAND TILL, clayey, gravelly, w. lime grains, olive grey	Gl	Gc
5	CLAY TILL, sandy, sl. gravelly, calcareous, w. roots, dark grey	Gl	Gc
6	CLAY TILL, sandy, sl. gravelly, calcareous, dark grey	Gl	Gc
7	CLAY TILL - " -	Gl	Gc

Till deposits may contain cobbles and boulders

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91686 (m) N : 167780 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO HEC Date : 2008-04-08 Synonym : Boring : 9

Executed by : CUD Checked by : Approved by : Date : 080422 Encl. No.: 1.10 P. 1 / 1

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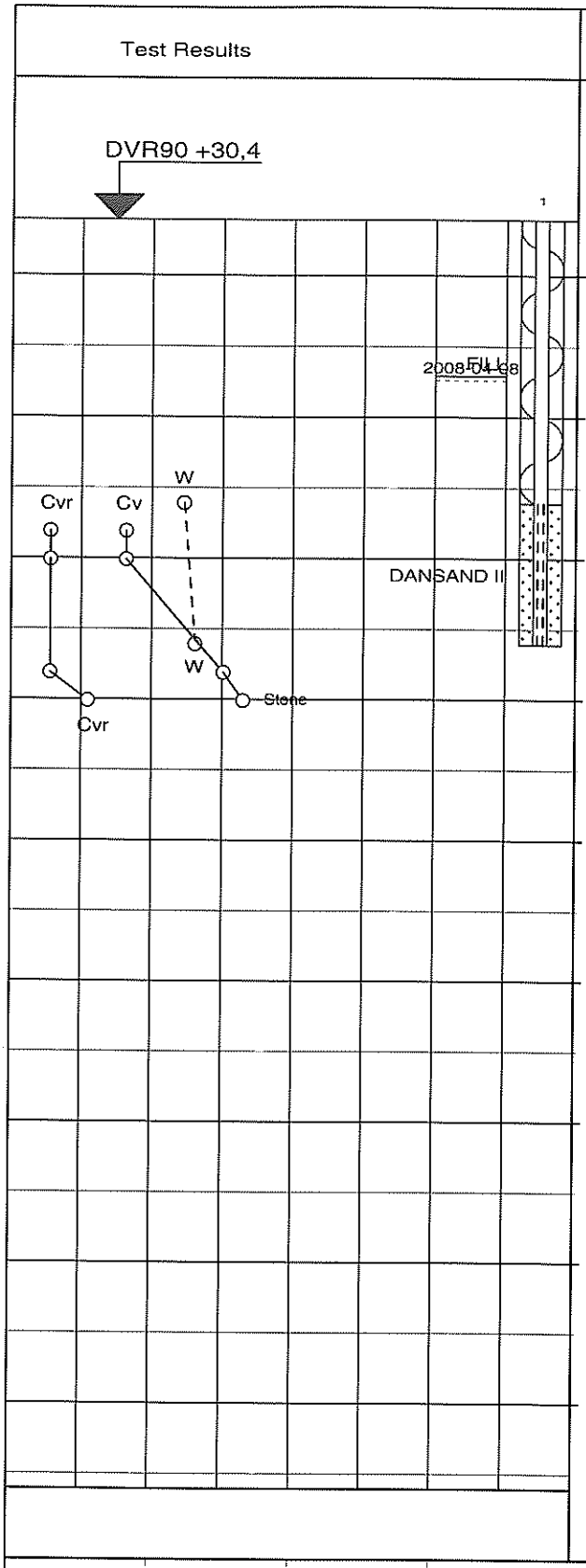


Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
			1	FILL: SAND: MULL, very clayey, sl. gravelly, non - calcareous, very dark brown	Fi	Re
			2	FILL: SAND, very clayey, sl. gravelly, rich in ochre, w. clayey streaks, dark yellowish brown	Fi	Re
			3	FILL: SAND, fine - medium, poorly sorted, w. a few clayey streaks, olive brown	Fi	Re
			4	FILL: SAND, fine - medium, poorly sorted, gravelly, calcareous, greyish brown	Fi	Re
			5	CLAY TILL, very sandy, sl. gravelly, calcareous, olive grey	Gl	Gc
			6	CLAY TILL, sandy, sl. gravelly, calcareous, grey	Gl	Gc
			7	CLAY TILL, very sandy, sl. gravelly, calcareous, grey	Gl	Gc

Till deposits may contain cobbles and boulders

O	10	20	30	W (%)
Δ	14	18	22	γ (kN/m³)
O	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91597 (m) N : 167816 (m) Location plan :

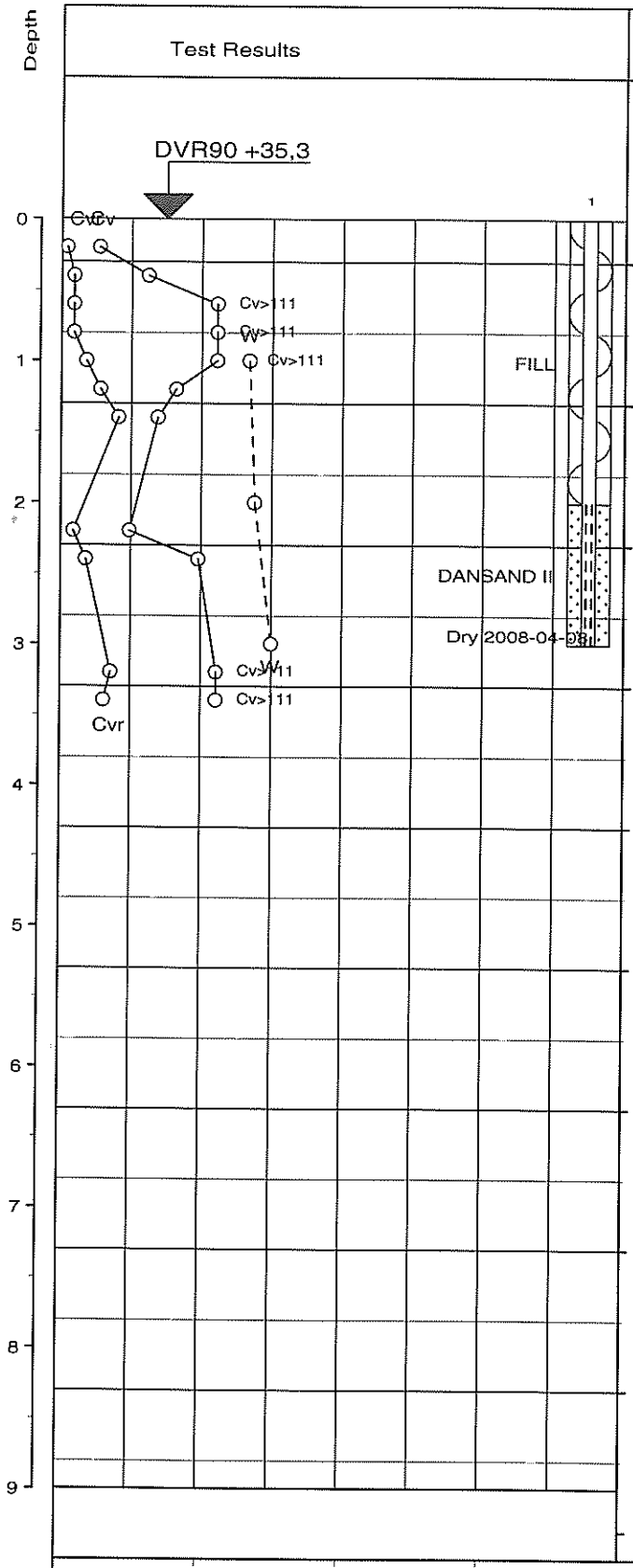
Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 10

Executed by : CUD Checked by : Approved by : VCS Date : 080423 Encl. No.: 1.11 P. 1 / 1

GEO
Maglebjergvej 1, DK2800 Lyngby
tlf.: +45 4588 4444 , fax.: +45 4588 1240

Profile



Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
35			1	FILL ?: SAND: MULL, sl. clayey, sl. gravelly, calcareous, brown	Fi/ Ts	Re
			2	FILL ?: SAND, fine - medium, poorly sorted, w. a few gravel grains, w. clayey parts, non - calcareous, w. plant remains, yellowish brown	Fi/ Gl	Re/ Gc
34			3	CLAY TILL, very sandy, sl. gravelly, non - calcareous, w. sand streaks, w. ochre, olive brown	Gl	Gc
			4	SAND TILL, very clayey, w. a few gravel grains, non - calcareous, brown	Gl	Gc
33			5	CLAY TILL, silty, very sandy, sl. gravelly, non - calcareous, brown	Gl	Gc
			6	SAND TILL, very clayey, silty, sl. gravelly, non - calcareous, brown	Gl	Gc
			7	SAND TILL - " -	Gl	Gc
32				Till deposits may contain cobbles and boulders		
31						
30						
29						
28						
27						
26						

○	10	20	30	W (%)
Δ	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91899 (m) N : 167889 (m) Location plan :

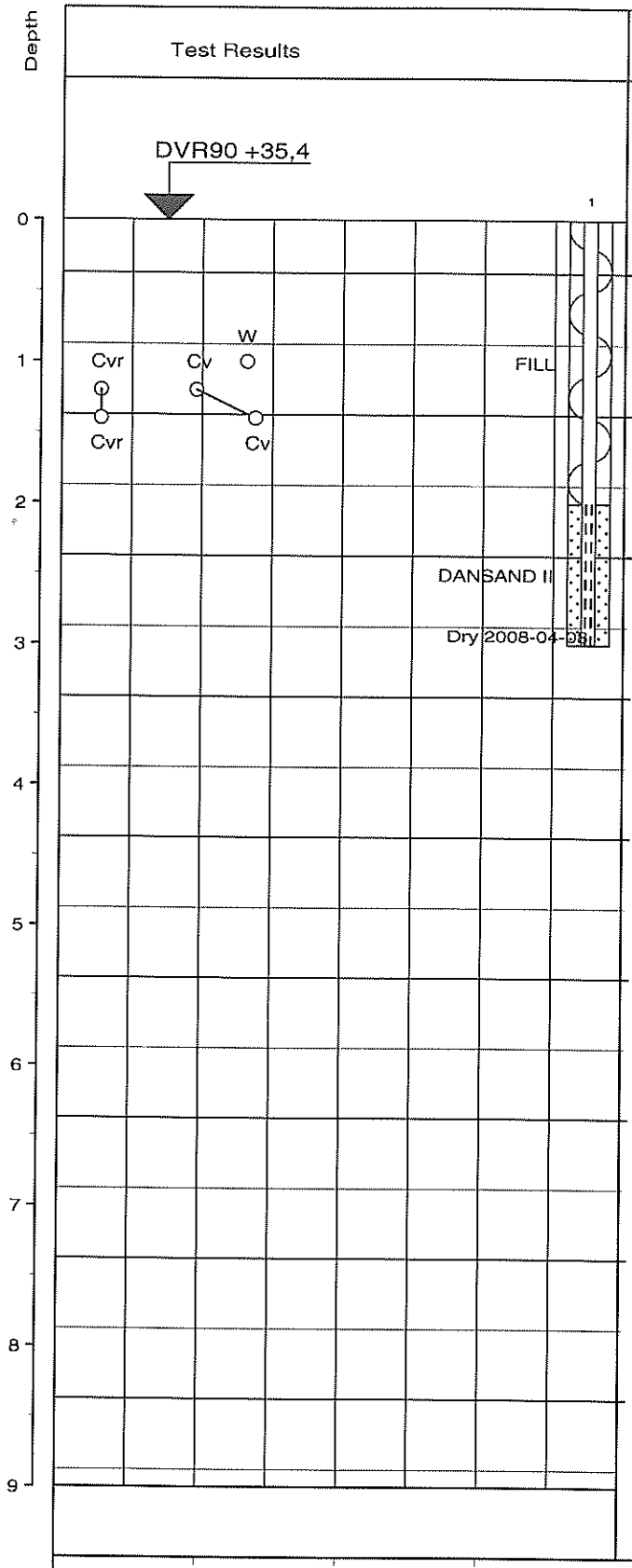
Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 11

Executed by : CUD Checked by : Approved by : UCS Date : 080422 Encl. No.: 1.12 P. 1 / 1

GEO
Maglebjergvej 1, DK2800 Lyngby
tlf.: +45 4588 4444 , fax.: +45 4588 1240

Profile



Level (m)	Geology	Sample	No.	Geological Description	Env.	Age
			1	SAND: MULL, clayey, sl. gravelly, non - calcareous, mørk brunt	Ts	Re
			2	SAND, clayey, w. a few gravel grains, non - calcareous, brown	Mw/ Gl	Gc
			3	CLAY TILL, sandy, sl. gravelly, non - calcareous, brown	Gl	Gc
			4	SAND, fine - medium, sorted, w. clayey parts, non - calcareous, yellowish brown	Mw	Gc
			5	SAND, medium, sorted, w. a few gravel grains, w. clayey parts, non - calcareous, dark yellowish brown	Mw	Gc
			6	SAND, medium, well sorted, non - calcareous, yellowish brown	Mw	Gc
			7	SAND, medium, poorly sorted, sl. gravelly, non - calcareous, yellowish brown	Mw	Gc

Till deposits may contain cobbles and boulders

○	10	20	30	W (%)
△	14	18	22	γ (kN/m³)
○	100	200	300	Cv,Cvr (kN/m²)

Method : 4 inch

E : 91839 (m) N : 167820 (m) Location plan :

Job : 31373 Egespurs Alle. Hillerød

Project : VIJ Drilled by : GEO JEJ Date : 2008-04-07 Synonym : Boring : 12

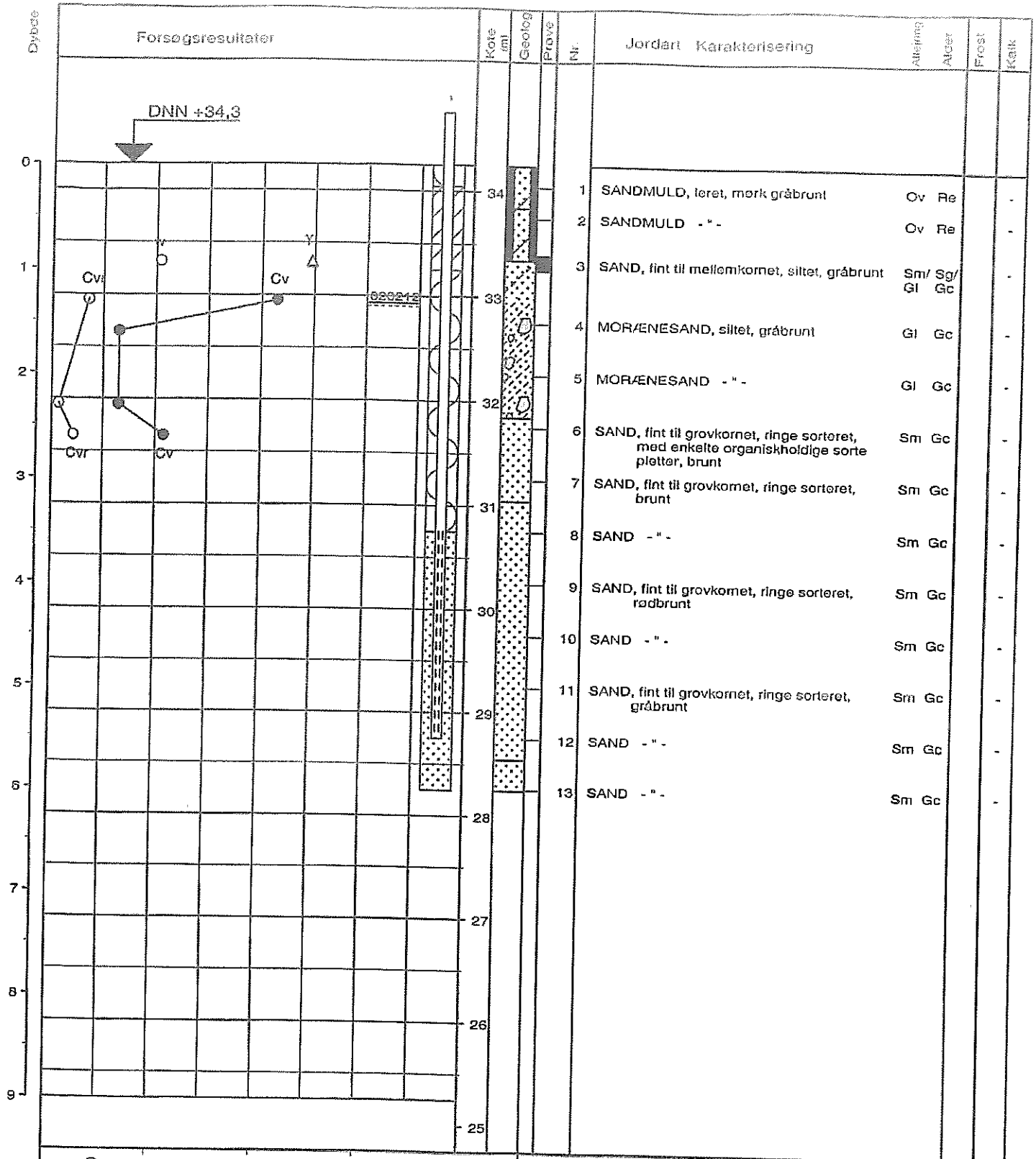
Executed by : CUD Checked by : Approved by : VLS Date : CK 04 22 Encl. No.: 1.13 P. 1 / 1

GEO
Maglebjergvej 1, DK2800 Lyngby
tlf.: +45 4588 4444 , fax.: +45 4588 1240

Profile

Appendix 1.A
GEO Sag no. 31373

Borehole logs GB1-GB10 and GB14-GB16 from COWI investigations
13 pages, size A4



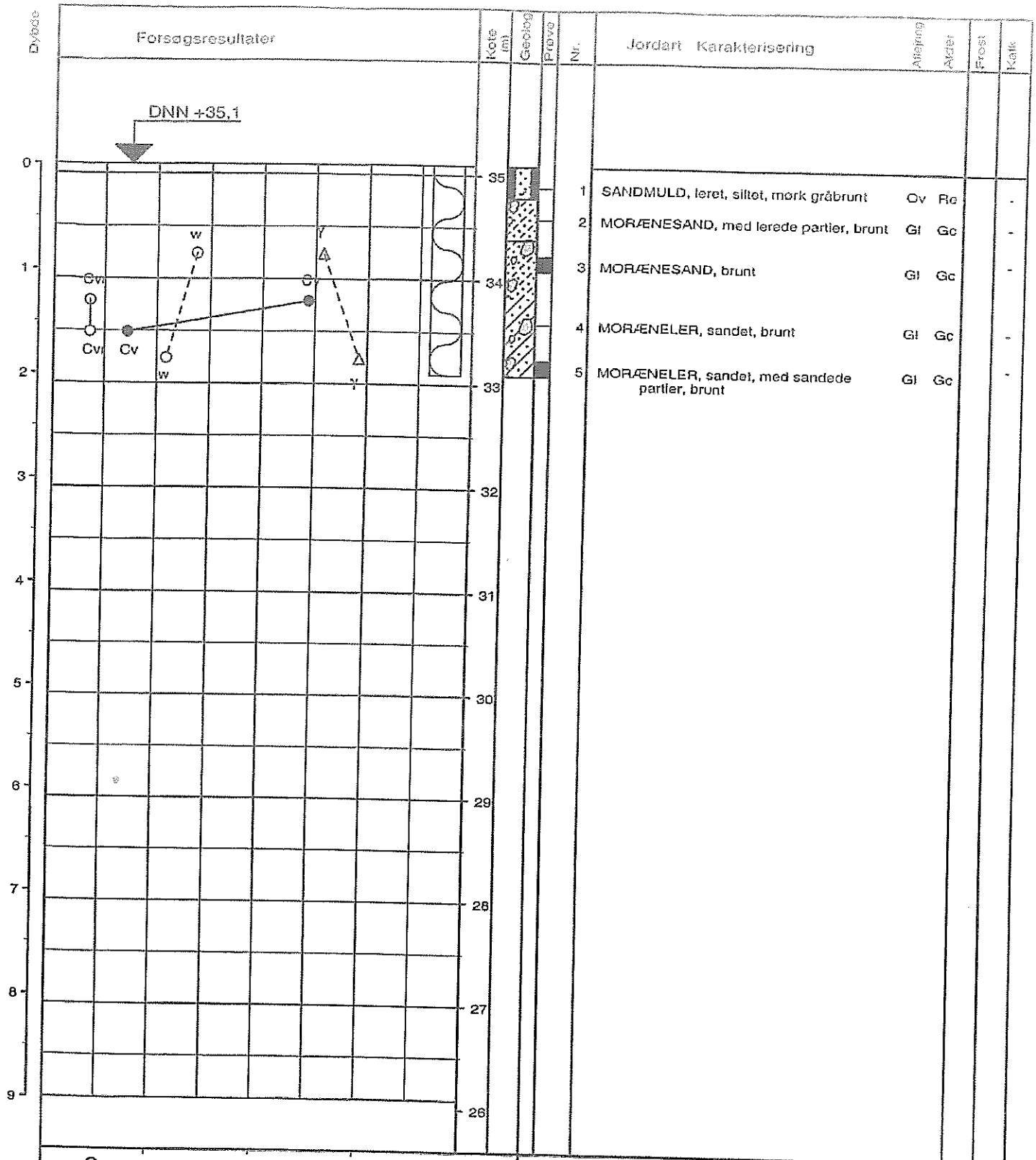
Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020130 DGU-nr.: Boring : GB1

Udarb. af : VKJ Kontrol : Godkendt : Dato : 14.02.2002 Bilag : 3 S. 1 / 1

COWI A/S

Boreprofil



Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020128 DGU-nr.: Boring : GB2

Udarb. af : VKJ Kontrol : Godkendt : JHM Dato : 14.02.2002 Bilag : 4 S. 1 / 1

COWI A/S

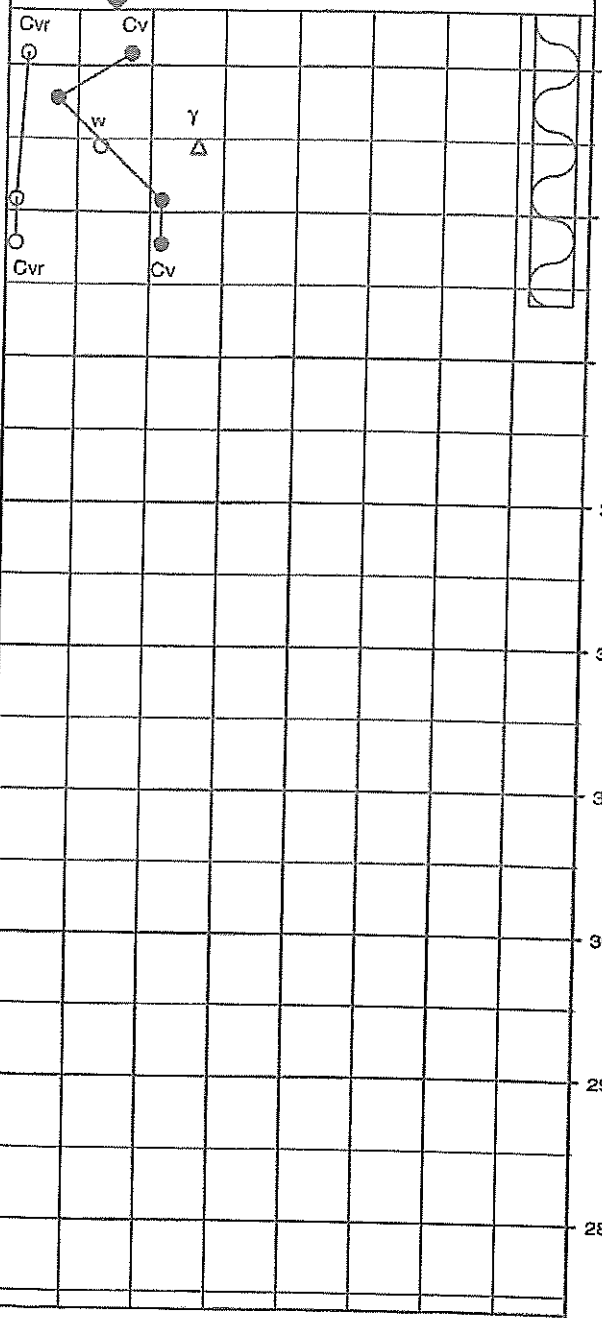
Boreprofil

Bilagsfiler - PSTGFDK 2.0 - 13/02/2002 15:57:50

Dybde

Forsøgsresultater

DNN +36,4



Kote (m)	Geologi	Prøve Nr.	Jordart Karakterisering	Aflejring	Alder	Frost	Kalk
		1	SANDMULD, leret, mørk gråbrunt	Ov	Re		-
		2	SAND, leret, muldet, gruset, mørk gråbrunt	Ov	Re		-
		3	SAND, leret, muldet, mørk gråbrunt	Ov	Re		-
		4	SAND, fint til mellemkornet, svagt gruset, ringe sorteret, brunt	Sm	Sg		-
		5	SAND, fint til grovkornet, ringe sorteret, brunt	Sm	Sg		-

○	10	20	30	w (%)
△	14	18	22	γ (kN/m³)
◎	100	200	300	Cv,Cvr (kN/m²)

Boremetode : Tørboring med foring

X : 91881 (m) Y : 167850 (m) Plan :

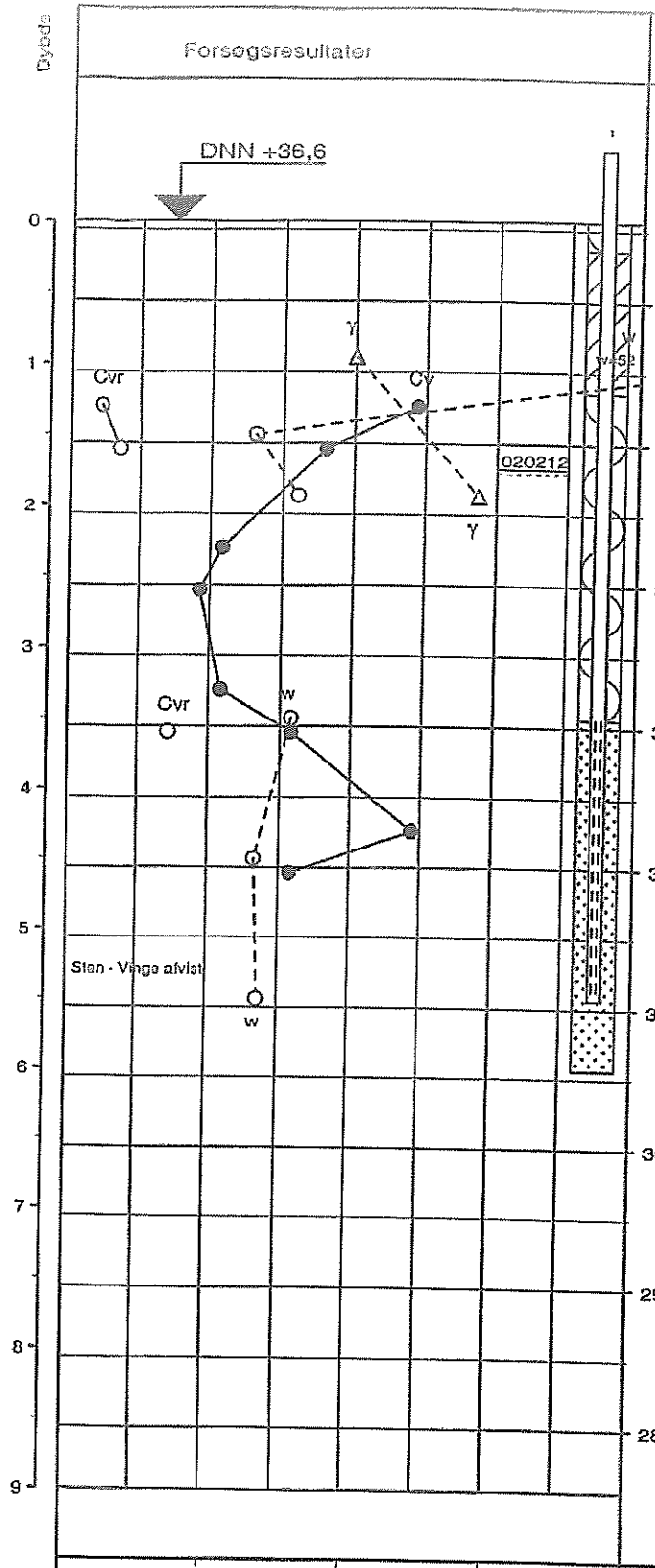
Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020128 DGU-nr.: Boring : GB3

Udarb. af : VKJ Kontrol : Kai Vanc Godkendt : JHM Dato : 14.02.2002 Bilag : 5 S. 1 / 1

COWI A/S

Boreprofil



Kote (m)	Geolog	Prøve	Nr.	Jordart Karakterisering	Aflejring	Alder	Frost	Kalk
36			1	FYLD: SAND, leret, siltet, brunt	Fy	Rø		-
			2	FYLD: SAND - " -	Fy	Re		-
35			3	FYLD: GYTJE, med træstykker, meget mørk gråbrunt	Fy	Rø		-
			4	FYLD: SAND, leret, siltet, svagt muldet, gråbrunt	Fy	Re		-
			5	FYLD: SAND - " -	Fy	Re		-
34			6	FYLD ?: SAND, leret, siltet, muldet, mørk gråbrunt	Fy/ Ov	Re		-
			7	FYLD ?: SAND, leret, siltet, svagt muldet, mørk gråbrunt	Fy/ Ov	Re		-
33			8	LER, siltet, sandet, svagt gruset, olivengrå	Sm/ Gl	Sg/ Gc		+
			9	LER - " -	Sm/ Gl	Sg/ Gc		+
32			10	LER - " -	Sm/ Gl	Sg/ Gc		+
			11	LER, siltet, stærkt sandet, svagt gruset, gråt	Sm/ Gl	Sg/ Gc		+
31			12	LER, sandet, med partier af oxideret sand, olivengrå	Sm/ Gl	Sg/ Gc		+
			13	LER, sandet, med sandstriber, gråt	Sm/ Gl	Sg/ Gc		+
30								
29								
28								

○	10	20	30	w (%)
△	14	18	22	γ (kN/m³)
●	100	200	300	Cv,Cvr (kN/m²)

Pejlerør: ø63 mm

Boremetode : Tørboring med foring

X : 91919 (m) Y : 167922 (m) Plan :

Sag : 54948 Rønnekrogen, Hillerød

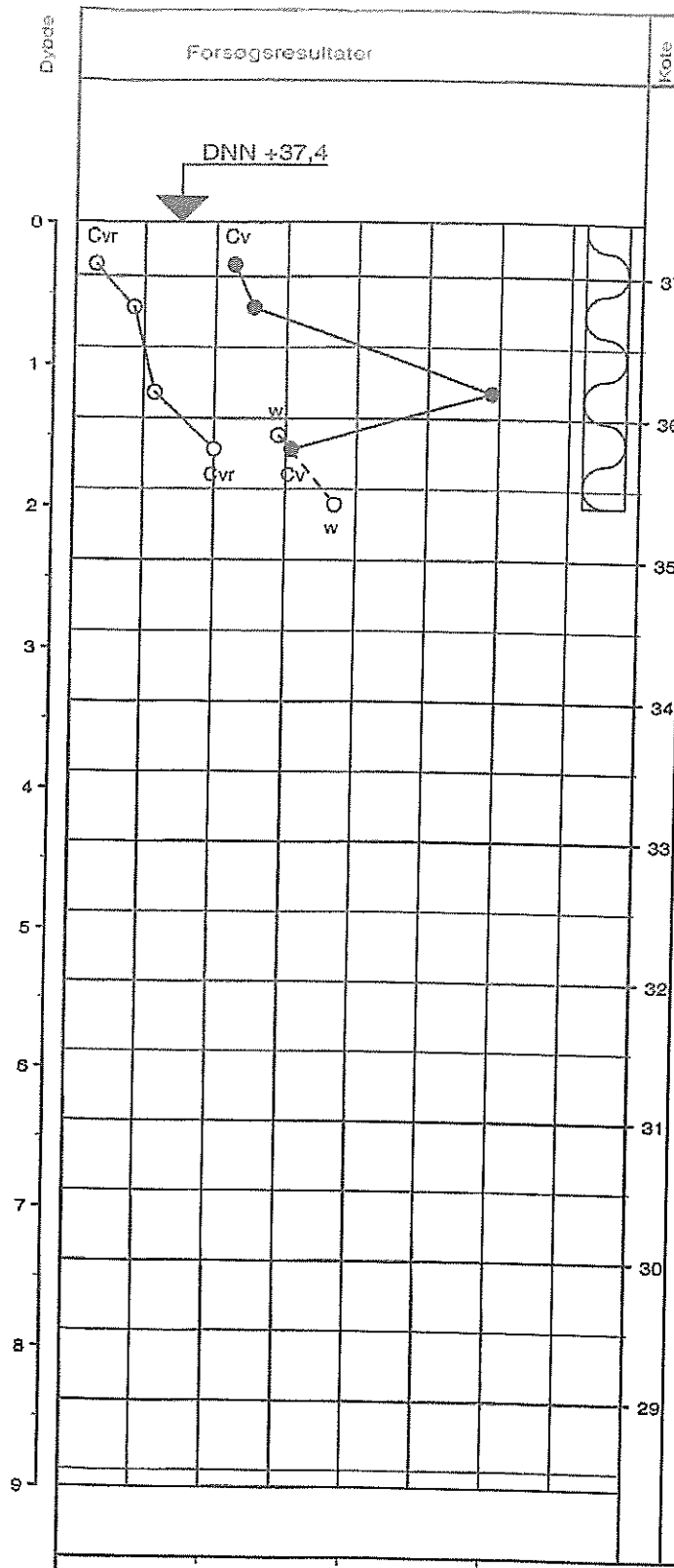
Strækning : Boret af : COWI FIAX Dato : 20020131 DGU-nr.: Boring : GB4

Udarb. af : VKJ Kontrol : 14/2/2002 Godkendt : JHM Dato : 14.02.2002 Bilag : 6 S. 1 / 1

COWI A/S

Boreprofil

SFRegister - PSTGFDK 2.0 - 14/02/2002 12:15:29



Kote (m)	Gruppe	Prøve Nr.	Jordart Karakterisering	Alder	Frost	Kalk
		1	SANDMULD, leret, mørk gråbrunt	Ov Re		-
		2	LER, siltet, sandet, gruset, med formuldede rodgange, gråbrunt	Sm/ Gl Sg/ Gc		-
		3	SAND, leret, siltet, gruset, gråbrunt	Sm/ Gl Sg/ Gc		-
		4	LER, ret fed, brunt	Sm Sg/ Gc		-
		5	LER, siltet, sandet, med svovljern, brunt	Ne/ Sm Sg/ Gc		-

○	10	20	30	w (%)
△	14	18	22	γ (kN/m³)
●	100	200	300	Cv,Cvr (kN/m²)

Boremetode : Håndboring

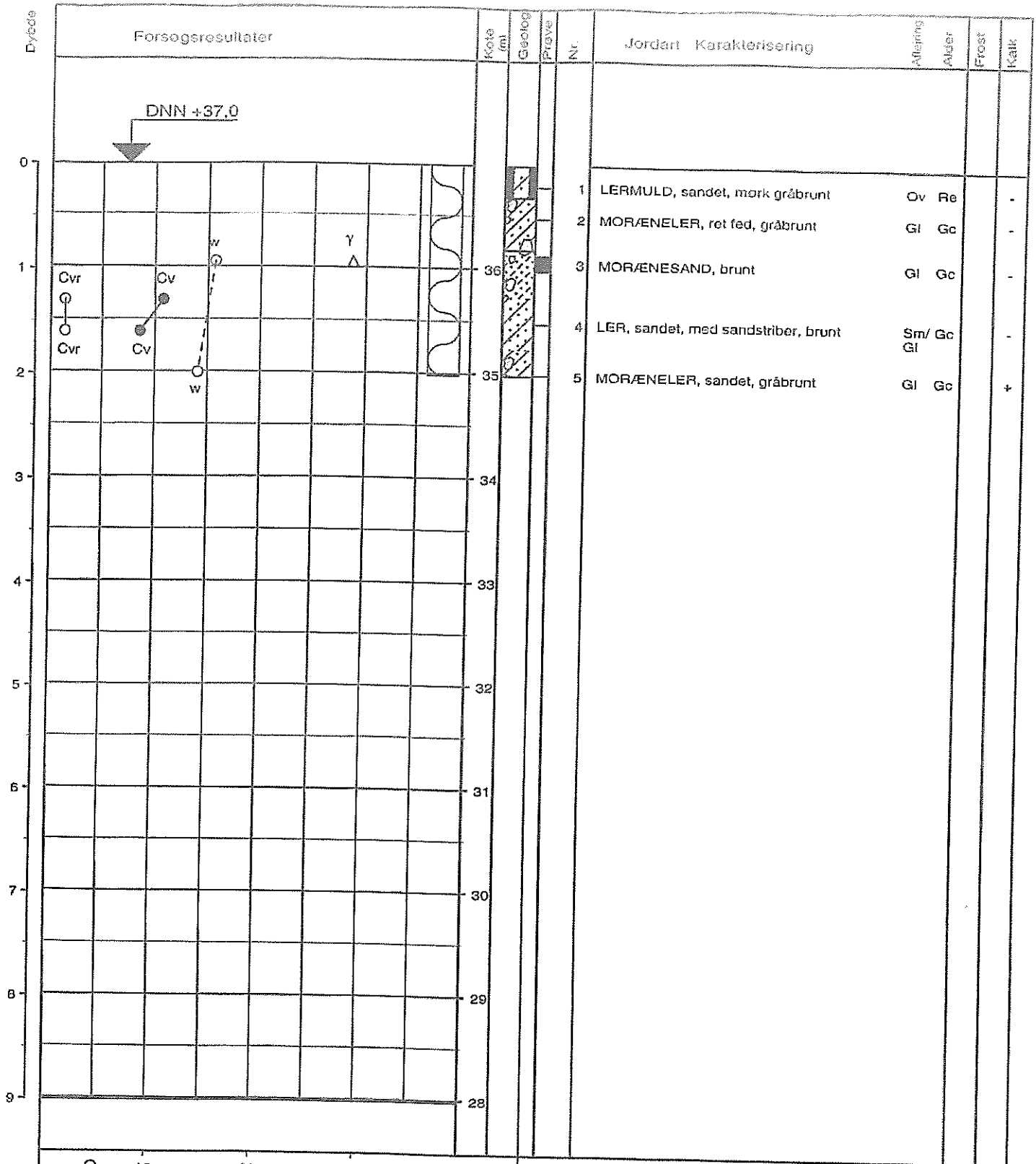
X : 91809 (m) Y : 167803 (m) Plan :

Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020128 DGU-nr.: Boring : GB5

Udarb. af : VKJ Kontrol : Godkendt : JHM Dato : 14.02.2002 Bilag : 7 S. 1 / 1

COWI A/S Boreprofil



Sag : 54948 Rønnekrogen, Hillerød

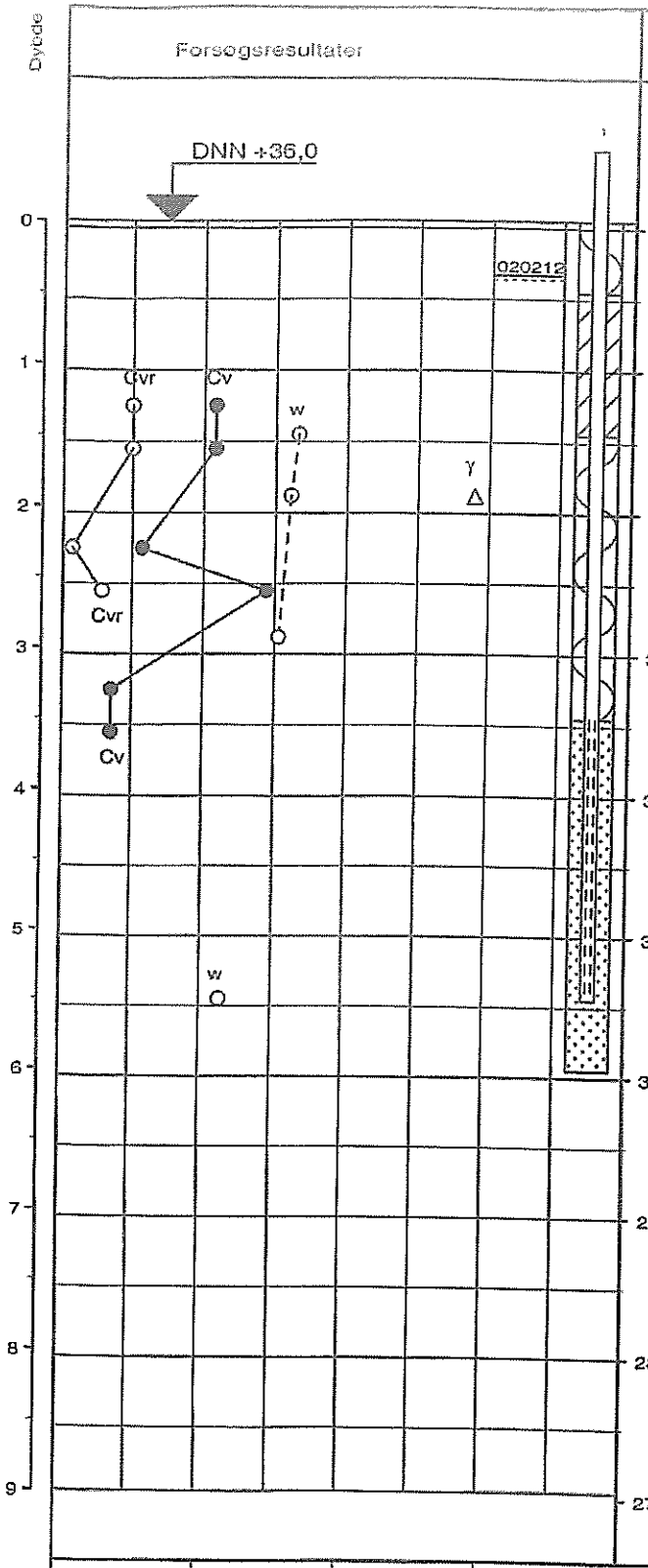
Strækning : Boret af : COWI FIAX Dato : 20020128 DGU-nr.: Boring : GB6

Udarb. af : VKJ Kontrol : kei/soc Godkendt : JHM Dato : 14.02.2002 Bilag : 8 S. 1 / 1

COWI A/S

Boreprofil

BPlogfiler - PSTGFDK 2.0 - 13/02/2002 15:02:04



Kote (m)	Geologi	Prøve Nr.	Jordart Karakterisering	Aflejring	Alder	Frost	Kalk
36		1	SANDMULD, leret, mork gråbrunt	Ov	Re		-
		2	SANDMULD, leret, siltet, mork gråbrunt	Ov	Re		-
35		3	MORÆNESAND, siltet, gulbrunt	Gl	Gc		-
		4	MORÆNELER, sandet, gråbrunt	Gl	Gc		-
34		5	MORÆNELER, stærkt sandet, gråbrunt	Gl	Gc		-
		6	MORÆNELER, sandet, gråbrunt	Gl	Gc		-
33		7	MORÆNESAND, stærkt leret, gråbrunt	Gl	Gc		-
		8	SAND, fint til mellemkornet, svagt siltet, gråbrunt	Sm	Gc		-
32		9	SAND, fint til mellemkornet, leret, siltet, gruset, gråbrunt	Sm	Gc		-
		10	SAND, fint til mellemkornet, stærkt leret, siltet, gråt	Sm	Gc		-
31		11	SAND, fint til mellemkornet, leret, siltet, gråt	Sm	Gc		-
		12	MORÆNELER, sandet, gruset, gråbrunt	Gl	Gc		+
30		13	SAND, fint til mellemkornet, ringe sorteret, mørkebrunt	Sm	Gc		-
29							
28							
27							

○	10	20	30	w (%)
△	14	18	22	γ (kN/m³)
●	100	200	300	Cv,Cvr (kN/m²)

Pejlerør: ø63 mm

Boremetode : Tørboring med foring

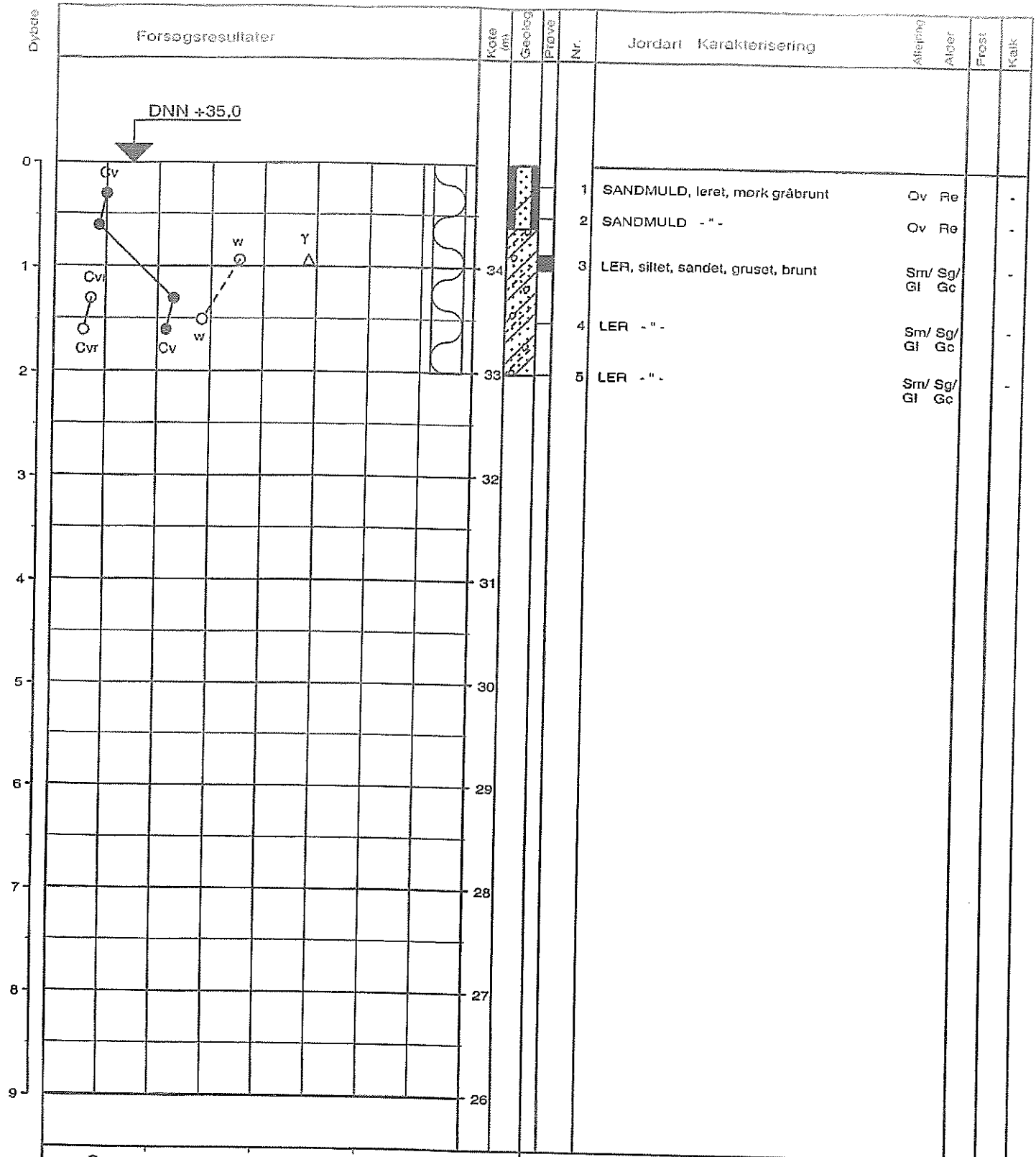
X : 91781 (m) Y : 167862 (m) Plan :

Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020129 DGU-nr.: Boring : GB7

Udarb. af : VKJ Kontrol : Kai Godkendt : JHM Dato : 14.02.2002 Bilag : 9 S. 1 / 1

COWI A/S Boreprofil



Boremetode : Torboring med foring

X : 91738 (m) Y : 167910 (m) Plan :

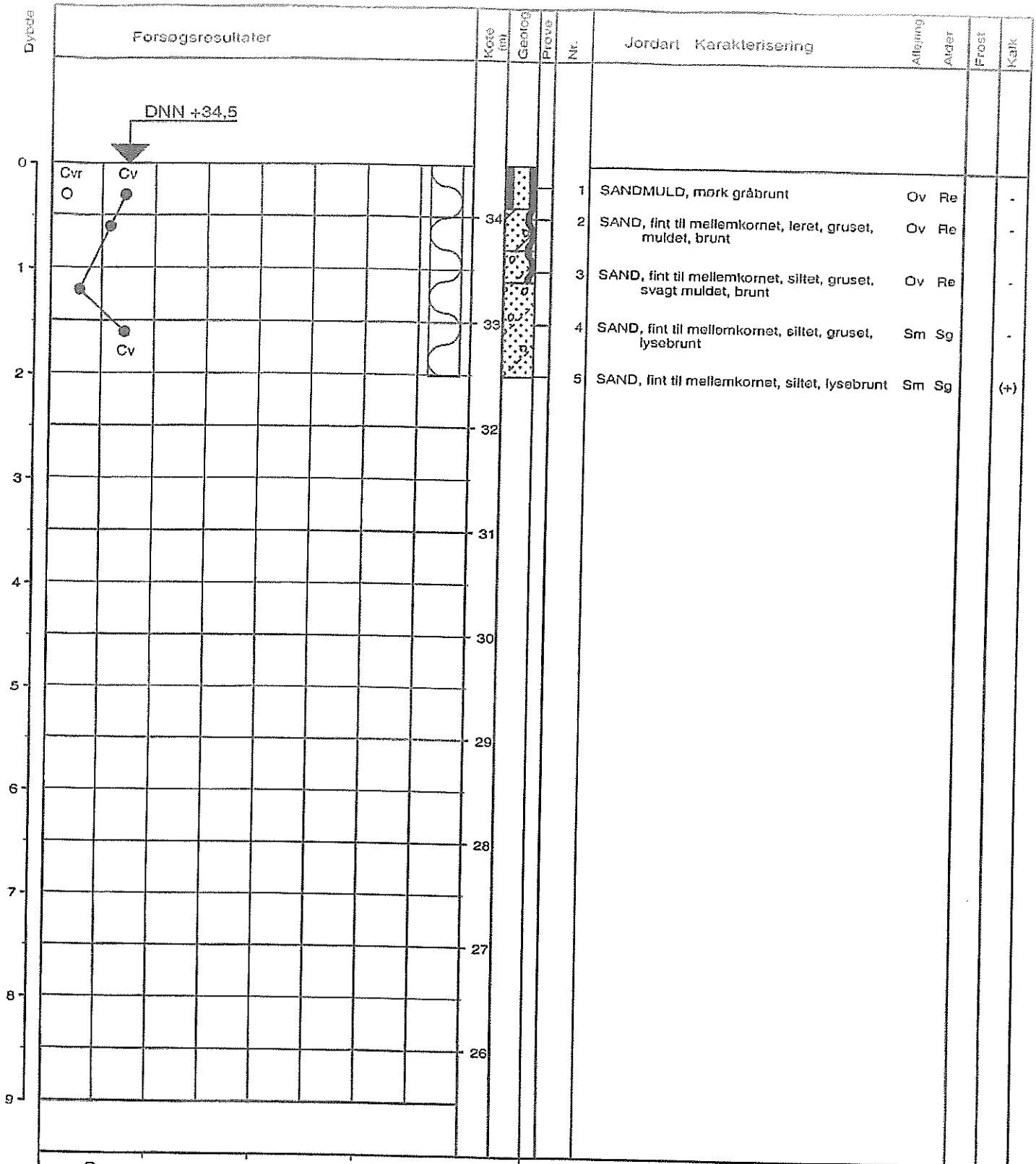
Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020129 DGU-nr.: Boring : GB8

Udarb. af : VKJ Kontrol : Godkendt : JHM Dato : 14.02.2002 Bilag : 10 S. 1 / 1

COWI A/S

Boreprofil



Boremetode : Håndboring

X : 91723 (m) Y : 167821 (m) Plan :

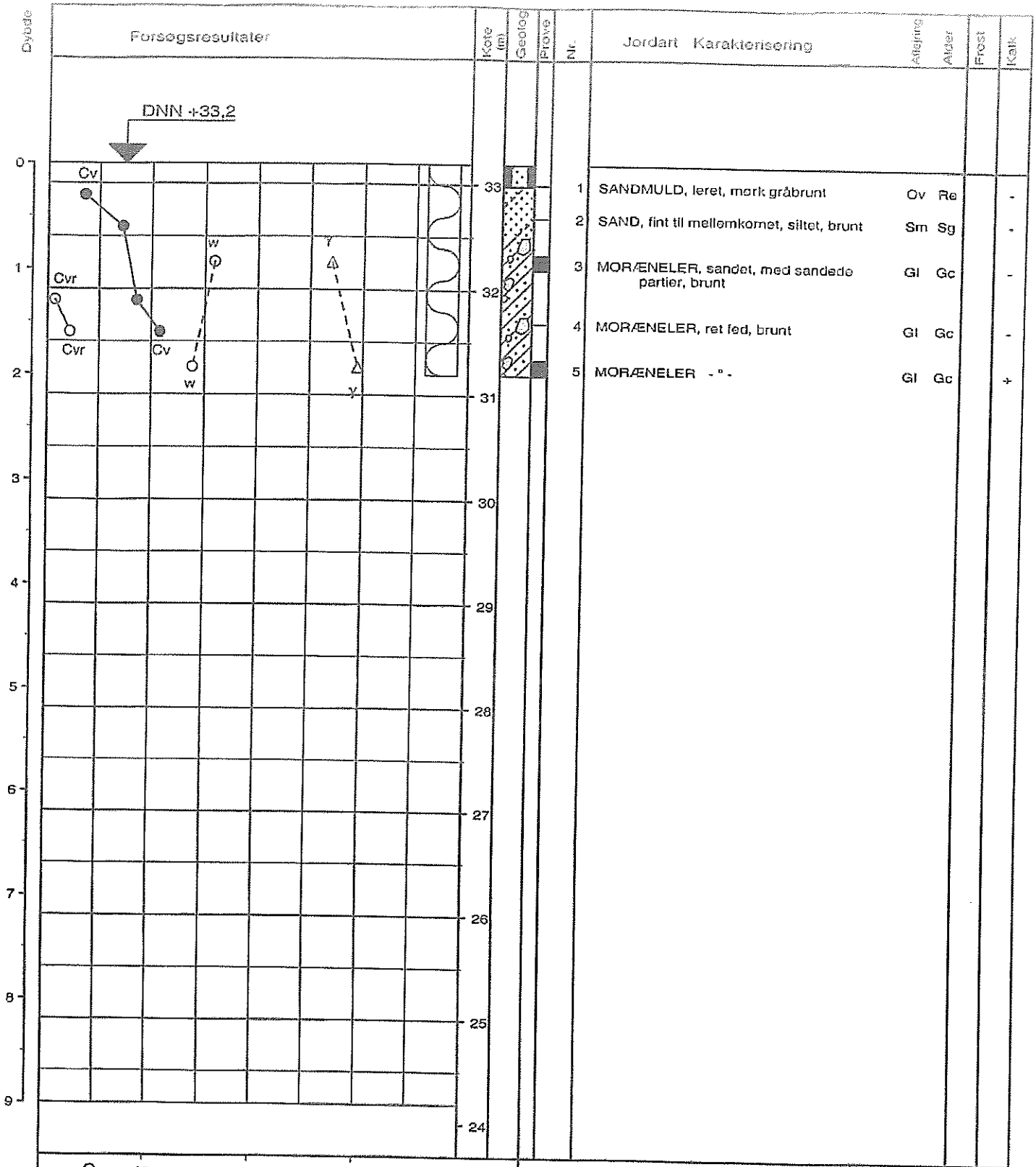
Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020128 DGU-nr.: Boring : GB9

Udarb. af : VKJ Kontrol : Godkendt : JHM Dato : 14.02.2002 Bilag : 11 9 1/1

COWI A/S

Boreprofil



Boremetode : Tørboring med foring

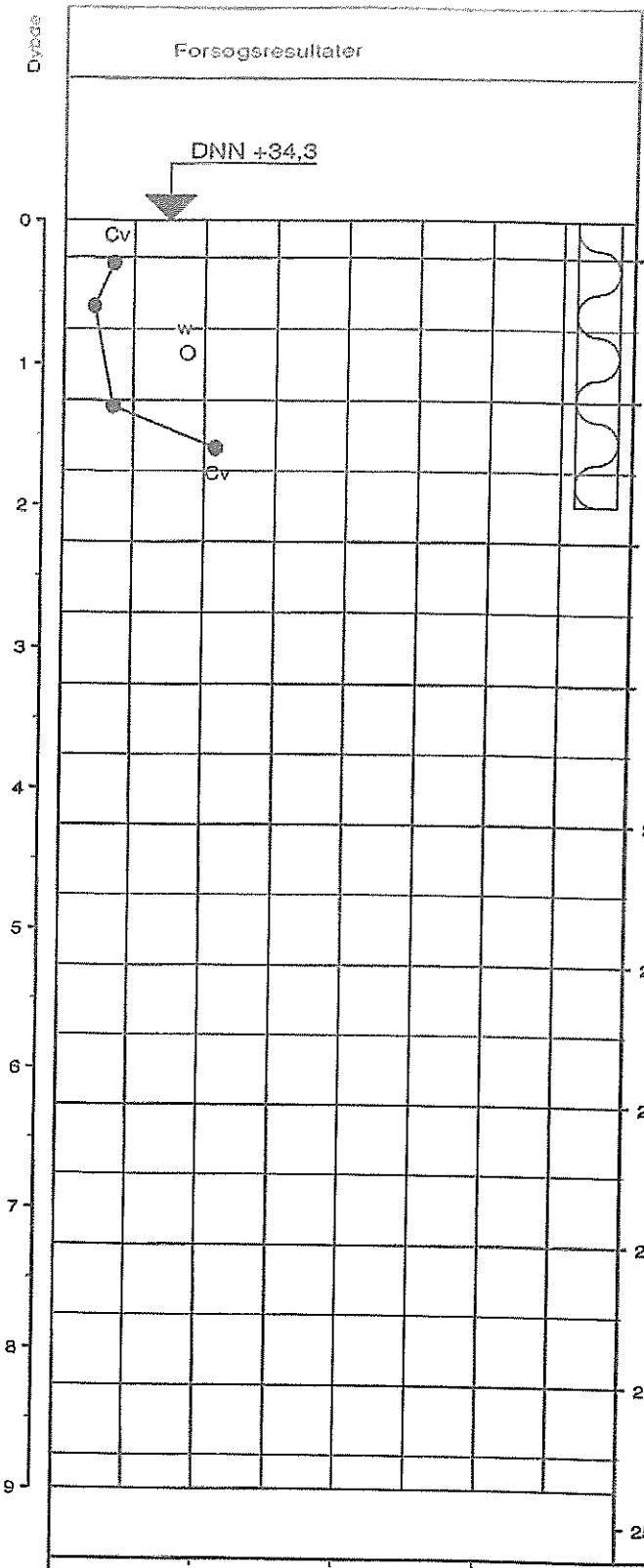
X : 91652 (m) Y : 167825 (m) Plan :

Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020129 DGU-nr.: Boring : GB10

Udarb. af : VKJ Kontrol : Kai Bøe Godkendt : JHM Dato : 14.02.2002 Bilag : 12 s. 1 / 1

COWI A/S Boreprofil



Dybde

Kote (m)

Geologi

Prøve Nr.

Prøve Nr.	Jordart Karakterisering	Alleiring	Ælder	Frost	Kalk
1	SANDMULD, leret, gruset, mørk gråbrunt	Ov	Re		-
2	SAND, svagt leret, siltet, brunt	Sm	Sg		-
3	SAND, leret, siltet, gruset, brunt	Sm/ Gl	Sg/ Gc		-
4	SAND, fint til mellemkornet, siltet, brunt	Sm/ Gl	Sg/ Gc		-
5	SAND, fint til mellemkornet, siltet, svagt gruset, brunt	Sm/ Gl	Sg/ Gc		-

O	10	20	30	w (%)
Δ	14	18	22	γ (kN/m³)
●	100	200	300	Cv,Cvr (kN/m²)

Boremetode : Tørboring med foring

X : 91604 (m) Y : 167909 (m) Plan :

Sag : 54948 Rønnekrogen, Hillerød

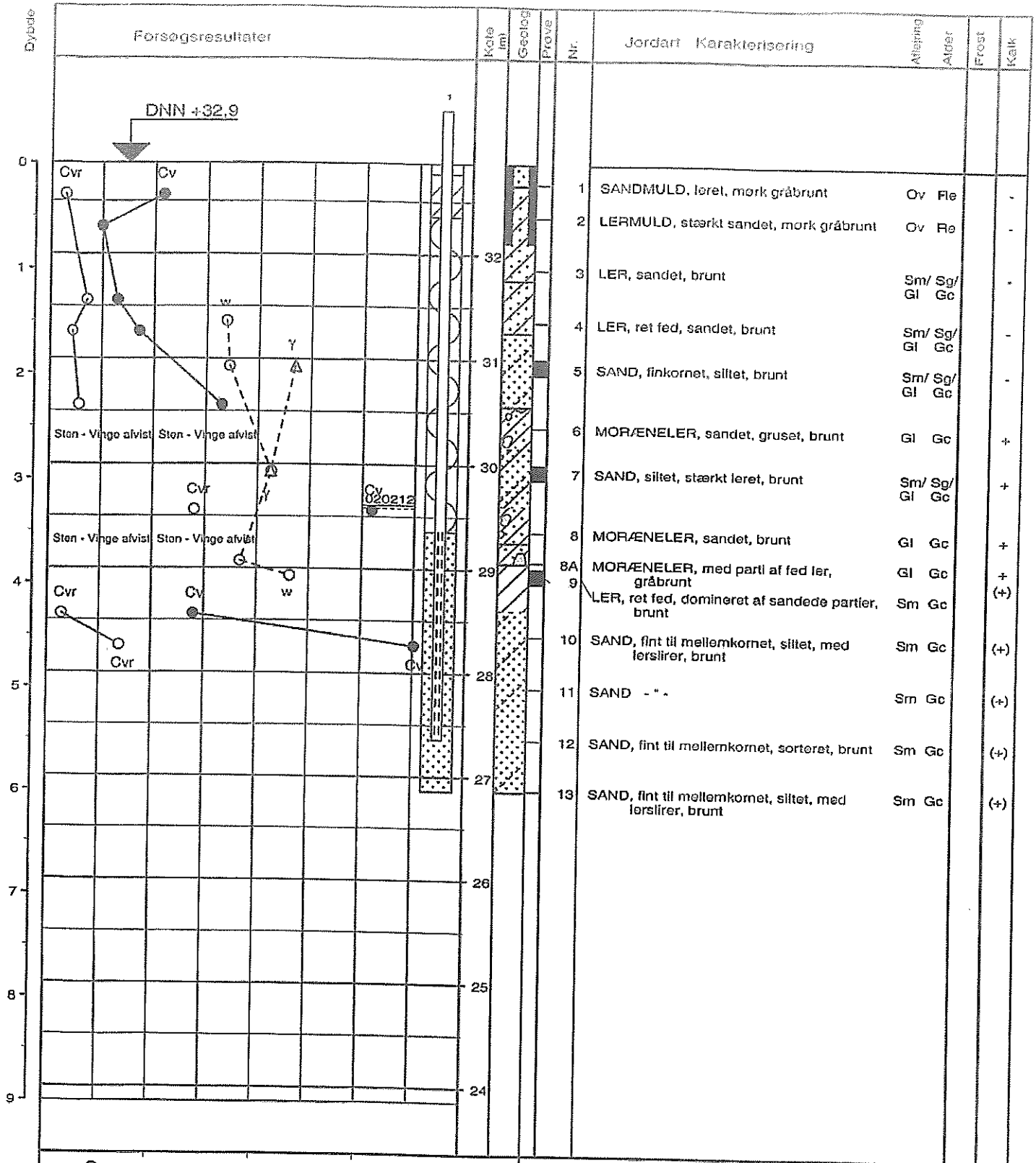
Strækning : Boret af : COWI FIAX Dato : 20020129 DGU-nr.: Boring : GB14

Udarb. af : VKJ Kontrol : Godkendt : Dato : 14.02.2002 Bilag : 16 S. 1 / 1

COWI A/S

Boreprofil

Brøndgister - PSTGFDK 2.0 - 13/02/2002 16:12:47



Sag : 54948 Rønnekrogen, Hillerød

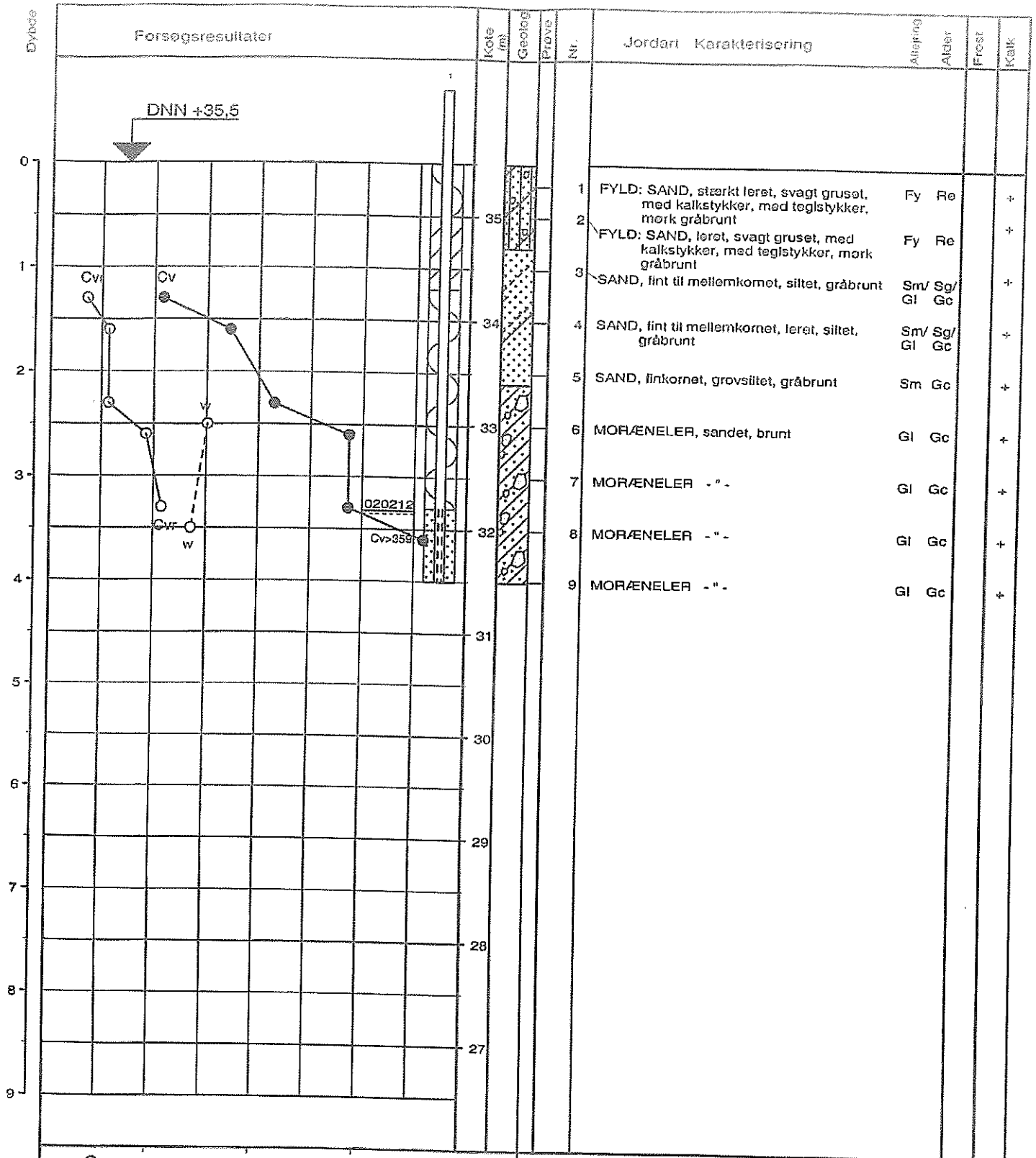
Strækning : Boret af : COWI FIAX Dato : 20020129 DGU-nr.: Boring : GB15

Udarb. af : VKJ Kontrol : Godkendt : HM Dato : 14.02.2002 Bilag : 17 S. 1 / 1

COWI A/S

Boreprofil

BFiegister - PSTGFDK 2.0 - 13/02/2002 16:14:01



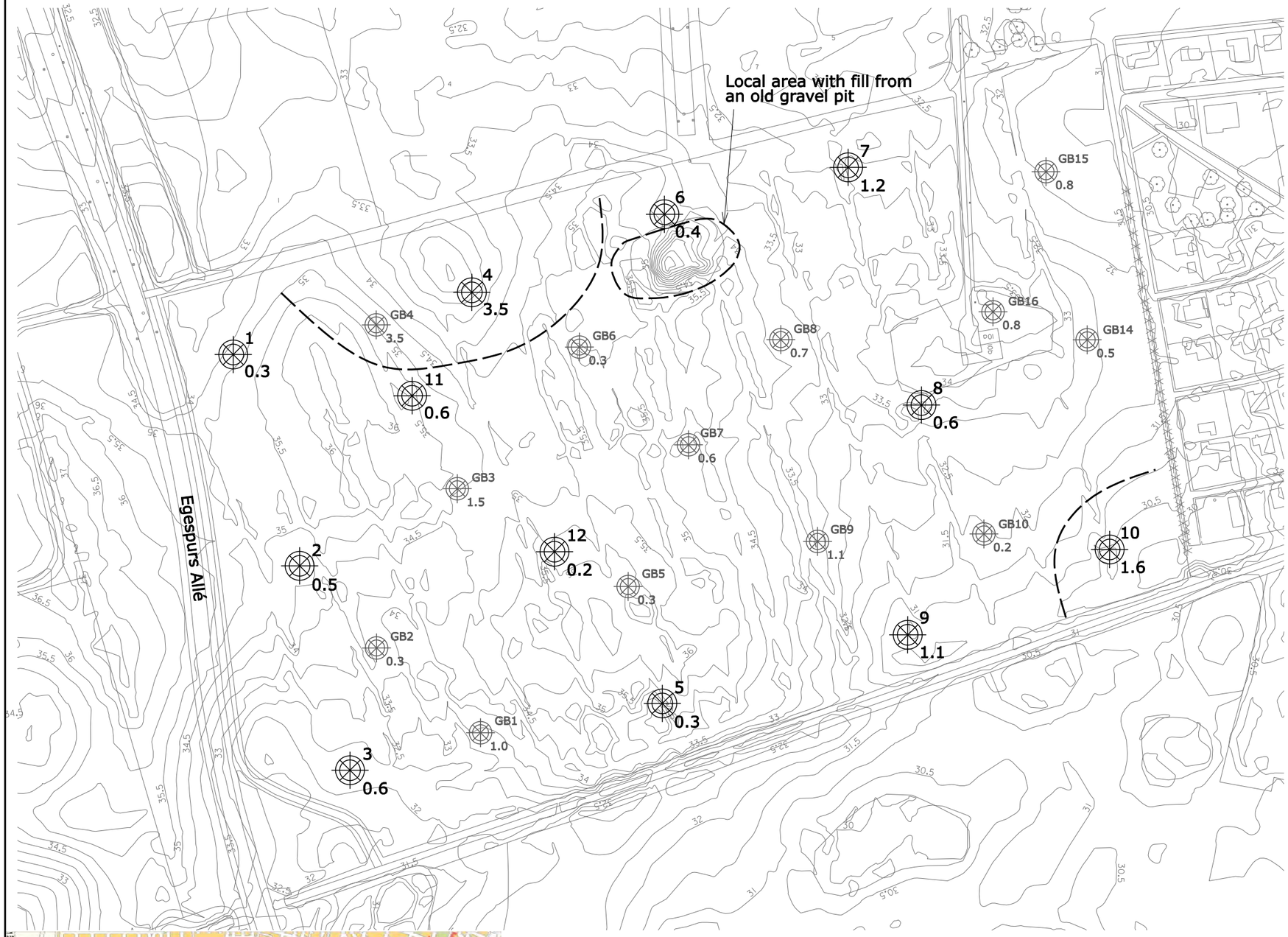
Sag : 54948 Rønnekrogen, Hillerød

Strækning : Boret af : COWI FIAX Dato : 20020131 DGU-nr.: Boring : GB16

Udarb. af : VKJ Kontrol : Kai/Jhe Godkendt : JHm Dato : 14.02.2002 Bilag : 18 S. 1 / 1

COWI A/S

Boreprofil



31373

Signatur:

a
b
Geotechnical boring
a: Borehole no.
b: Level 2 (m below ground level)
Top of glaciale & late glaciale deposits

Local area where fill thickness is more than 1.5 m

GEO
Maglebjergvej 1, 2800 Kgs. Lyngby
Tlf.: +45 4588 4444, www.geoteknisk.dk

Project: 31373 Egespurs Allé. Hillerød

Prepared	: SAM	Date: 2008-04-21	Subject: Site plan. Top gladiale deposits
Controlled	: ULS	Date: 2008-04-22	Scale 1:2000 Page 1 / 3
Approved	: POL	Date: 2008-04-22	Report 1 Enclosure 1.1 Rev. 0

O:\Eksterne projekter\31300-31399\31373.pol Hillerød\Tegninger\Encl1.1_p1.dgn AMR-DELL-PWS370 AMR 2008-04-22 15:19:15

N

Egespurs Allé

32.0 7
30.8
30.8
28.6?

32.9 GB15
32.1
32.1
30.5

34.1 6
33.7
33.7
-

34.5 4
31.0
31.0
31.0?

36.6 GB4
33.1
33.1
33.1

34.4 1
34.1
34.1
-

37.0 GB6
36.7
36.7
-

35.0 GB8
34.3
34.3
-

35.5 GB16
34.7
34.7
34.4

34.3 GB14
33.8
33.8
-

35.3 11
34.7
34.7
33.0?

33.0 8
32.4
32.4
29.8?

36.0 GB7
35.4
35.4
32.8

36.4 GB3
35.1
35.1
-

34.5 GB9
33.4
33.4
-

33.2 GB10
33.0
33.0
-

30.4 10
28.8
28.8
27.2?

34.3 2
33.8
33.8
-

35.4 12
35.2
35.2
34.2

37.4 GB5
37.1
37.1
36.2?

30.2 9
29.1
29.1
-

35.1 GB2
34.8
34.8
-

34.6 5
34.3
34.3
32.4

34.3 GB1
33.3
33.3
33.3

34.4 3
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31.6
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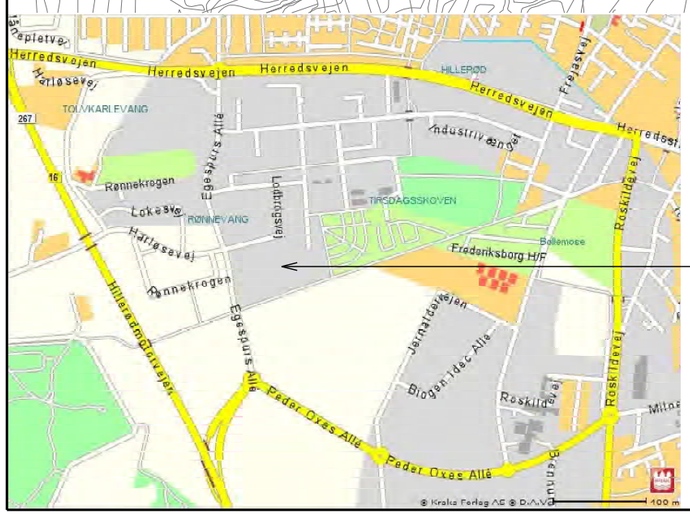

31373

Signatur:

Geotechnical boring
a: Borehole no.
b: Ground level
c: Level 1
d: Level 2
e: Level 3

GEO	Maglebjergvej 1, 2800 Kgs. Lyngby Tlf.: +45 4588 4444, www.geoteknisk.dk		Project: 31373 Egespurs Allé. Hillerød			
Prepared	: SAM	Date: 2008-04-21	Subject: Site plan. Levels			
Controlled	: ULS	Date: 2008-04-22	Scale 1:2000			Page 2 / 3
Approved	: POL	Date: 2008-04-22	Report 1	Enclosure 1.1		Rev. 0

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N

Egespurs Allé

1 >3.0
2 >3.0
3 2.5
4 2.2
5 >3.0
6 >3.0
7 0.4
8 1.6
9 2.8
10 1.1
11 >3.0
12 >3.0

GB1 GB2 GB3 GB4 GB5 GB6 GB7 GB8 GB9 GB10 GB14 GB15 GB16

31373

Signatur:

a Geotechnical boring
b a: Borehole no.
b: Ground water level 2008-04-08 (m below ground level)

GEO	Maglebjergvej 1, 2800 Kgs. Lyngby Tlf.: +45 4588 4444, www.geoteknisk.dk		Project: 31373 Egespurs Allé. Hillerød			
Prepared	: SAM	Date: 2008-04-21	Subject: Site plan. Ground water level			
Controlled	: ULS	Date: 2008-04-22	Scale 1:2000			Page 3 / 3
Approved	: POL	Date: 2008-04-22	Report 1	Enclosure 1.1		Rev. 0

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