THE PROJECT FOR BRIDGE CONSTRUCTION IN RURAL REGION IN NORTHEAST THAILAND

BRIDGE NO.		SHEET NO.
11.01	LAM NAM KHAM B. KHOK KONG A. MUANG C. SAKHONNAKHON	OF

B.M 11.01 A
ON TOP OF BOLT SET IN THE ROOT OF Ø1.00 M. MANGO TREE, 30.50 M. LEFT OF STA. 0+038.50 SURVEY ℄ ELEV. 100.00(ASSUMED)

SURVEY SPUR LINE

RICE PADDY

TO BAN KHOK KONG

LATERITE ROAD

EXISTING BRIDGE

BH-1

BH-2

BH-3

STA. 0+050.00 BEGINNING OF EXISTING BRIDGE

STA 0+114.440 END OF EXISTING BRIDGE

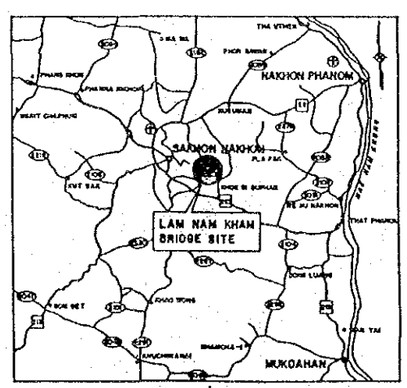
LAM NAM KHAM

WATER SURFACE LINE

FLOW

TO BAN SALA

P L A N
SCALE 1 : 200



VICINITY MAP

THE PROJECT FOR BRIDGE CONSTRUCTION
IN RURAL REGION IN NORTHEAST THAILAND

BRIDGE NO.		SHEET NO
14.02	LAM NAM PHUAI B. THUNG PHO A. SI BUN RUANG C. UDON THANI	OF

N

TO BAN SRI PHO THONG

BH-1

BH-2

BH-3

BASELINE

TO BAN THUNG PRONG

0+040

0+137.800

0+137.500

WATER SURFACE LINE

WATER SURFACE LINE

LAM NAM PHUAI

FLOW

99.00

99.50

100.00

100.50

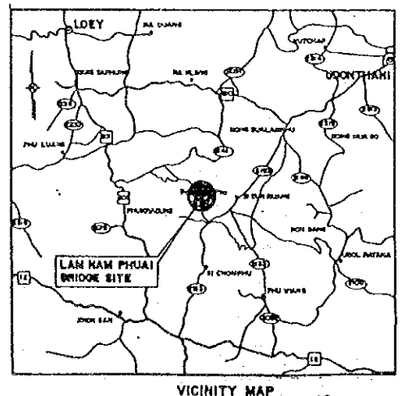
P L A N
SCALE 1 : 200

BM. 14.02/A

ON TOP OF BOLT SET IN ROOT OF Ø 0.40 LAEB TREE 37.00M.
RIGHT OF STA. 0+012 SURVEY ℄ ELEV. 100.00 (ASSUMED)

BM. 14.02/B

ON TOP OF BOLT SET IN ROOT OF Ø 0.40 KHOOM TREE 6.00 M.
RIGHT OF STA. 0+230 SURVEY ℄ ELEV. 99.979.



VICINITY MAP

THE PROJECT FOR BRIDGE CONSTRUCTION IN RURAL REGION IN NORTHEAST THAILAND		
BRIDGE NO.	LAM SOM B. KHANUAN A. DET UDOM C UBON RATCHATHANI	SHEET NO.
15.07		OF

PLAN
SCALE 1 : 500

VICINITY MAP

付属資料 5

・地質調査

1. タイ東北部の地形と地質

(1) 地　　形

タイ東北部は、タイ全土の中では高地に属し、面積はおよそ 155,000㎢である。

タイ東北部は、海抜 900m程度の断層によって生じた崖によって西部および南部と分かれている。

タイ東北部は、構造上、隆起した山脈によって大きく２つの盆地（名づけて、Sakh--on Nakhonおよび Khorat Basin 盆地）分けられる。

タイ東北部の地表は、西部および北部から南東部に向ってPhu Phan山脈を除いて少し傾斜しており、また、侵食残丘、傾斜台地および湿地が点在するほとんど平らな平原として特徴づけられる。

タイ東北部の平均的高さは、約海抜 170mである。Plateau という名称は、この地域（タイ東北部）を名づけるのに使われているが、専門的にはこの言葉は地域の構造に適切な意味はもたない。

Plateau という呼び名は、みたところPlateau とよく似た地域を境界とした前述の西部および南部の断層によって生じた崖のために採用された。

概して、タイ東北部は主要な３河川によって排水される。１つは北部のSakhon -Nakhon盆地のため、残る２河川は南部のKhorat盆地のためである。

Sakon Nakhon盆地のために、Mae Nam Songkhram とその支流が主要な排水系統を構成し、またMae Nam Chi およびMae Nam Mun はコラート盆地の排水に関して主要である。

川の大半は、西端部から東部または南部までの地域を流れ、タイ国境を流れるメコン川に注いでいる。

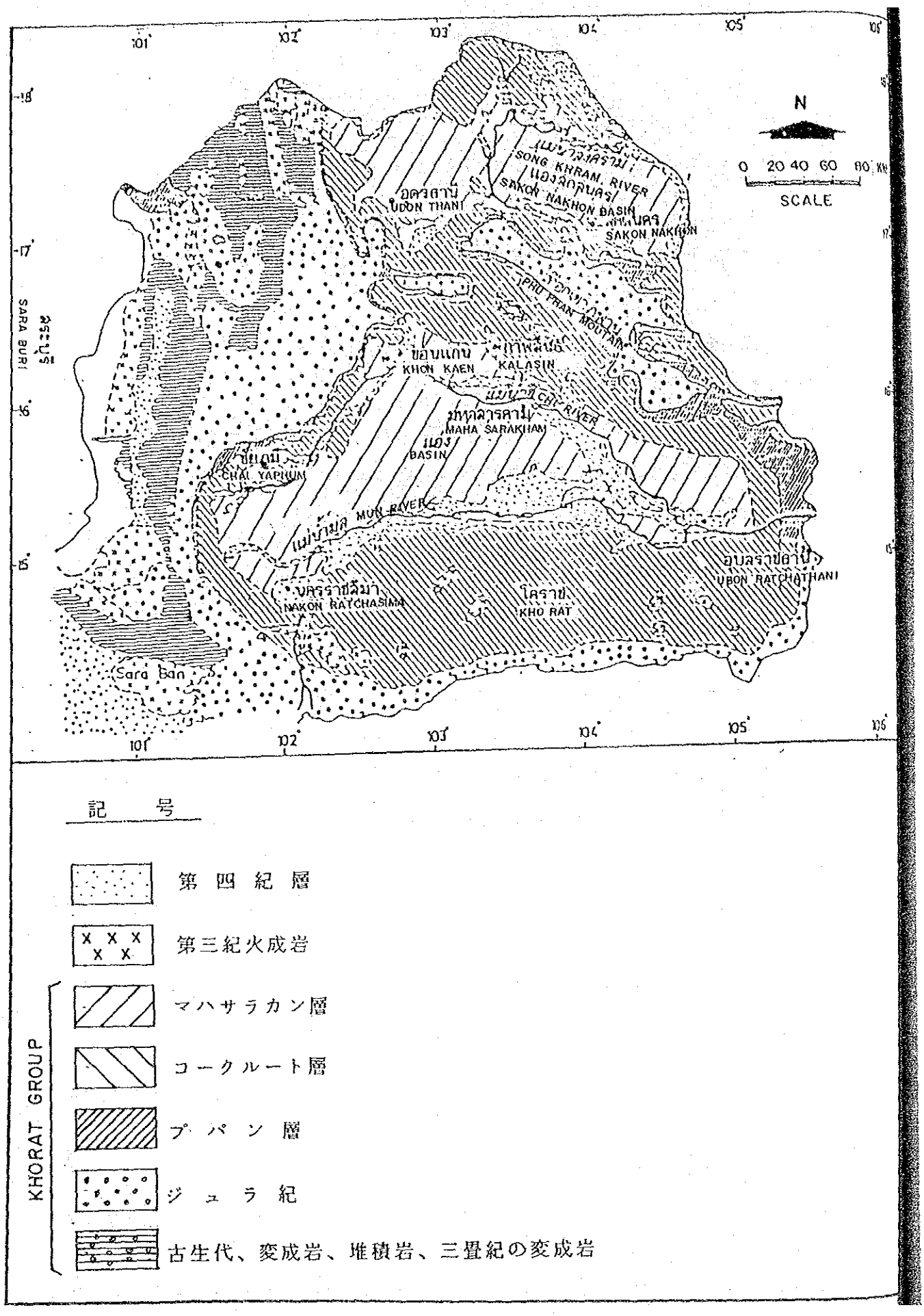

N
0 20 40 60 80 KM
SCALE
SONG KHRAM RIVER
SAKON NAKHON BASIN
SAKON NAKHON
UDON THANI
PHU PHAN MOUTAIN
KHON KAEN
KALASIN
CHI RIVER
MAHA SARAKHAM
BASIN
CHAI YAPHUM
MUN RIVER
UBON RATCHATHANI
NAKON RATCHASIMA
KHO RAT
Sara Buri
SARA BURI
101
102
103
104
105
106
17
16
15
記　号
第四紀層
第三紀火成岩
KHORAT GROUP
マハサラカン層
コークルート層
プパン層
ジュラ紀
古生代、変成岩、堆積岩、三畳紀の変成岩

図　タイ東北部の地質図

(2) 地　　質

図に示すように地質図を基にすると、タイ東北部は大陸性中生代堆積岩、コラートグループ、第４紀層よりなる。

コラートグループは第三紀の後半から氷河期の初めまでに隆起してゆっくりしゅう曲をした、その結果広い向斜構造を形成し丘は南部や西部に連なった。

層位学により、時代の古い地層から若い地層（岩）を要約すると次のようである。

1) Huai Hin Lat層

この層は、灰色から暗灰色をした砂岩、シルト岩、頁岩および石灰岩で形成されている集塊岩を含む。

2) Nam Phong 層

この層は、中に砂岩等をはさむ赤褐色のシルト岩よりなる。

3) Phu Kradung 層

この層の特色は、雲母を含んだ茶赤色および赤灰色のシルト岩およびうすい赤色をした粒度のそろった石灰質の砂岩よりなることである。

4) Phra Wihan層

この層は、よく固った白色からピンク色した砂岩と赤色のうすい層を含むシルト岩よりなる。

5) Sao Khua層

この層は、赤褐色のシルト岩は少しで、主に黄灰色～赤褐色の砂岩よりなる。

6) Phu Phan Formation層

この層は、色のうすいきめのあらいものからよく粒度がそろった小石の多い砂岩よりなり、頁岩、シルト岩および礫岩よりなる。

7) Khok Kruat層

この層は、赤色のシルト岩、白～赤色の砂岩およびカリシェー礫岩よりなる。この層の上部には石こうの結晶をうすくはさむ。

8) Maha Sarakham 層

この層は、岩塩の３つの顕著な層よりなる。つまり、ハライト、カーネライトおよびシルバイトである。これらには硬石こうと石こうと陸成の赤い粘土岩、頁岩、シル

ト岩、砂岩が含まれる。

9) Phu Pok 層

この層は、風化作用による堆積物で大きな粒度の砂岩と小さな粒度の砂岩を含むと考えられていた。

砂岩は、赤色を呈し、粒度は均質で、砕けやすい。

この層の産出は、タイ東北部では最北部に限り見出される。

10) 第四紀層

第四紀層は、一般的に河成および風による堆積物である。河成堆積物は大きい川や古い川の段丘付近に生じ、砂礫、砂、シルトおよび粘土よりなる。

風による運搬堆積物は、一般的に黄色～赤色のシルト質砂およびレス土である。

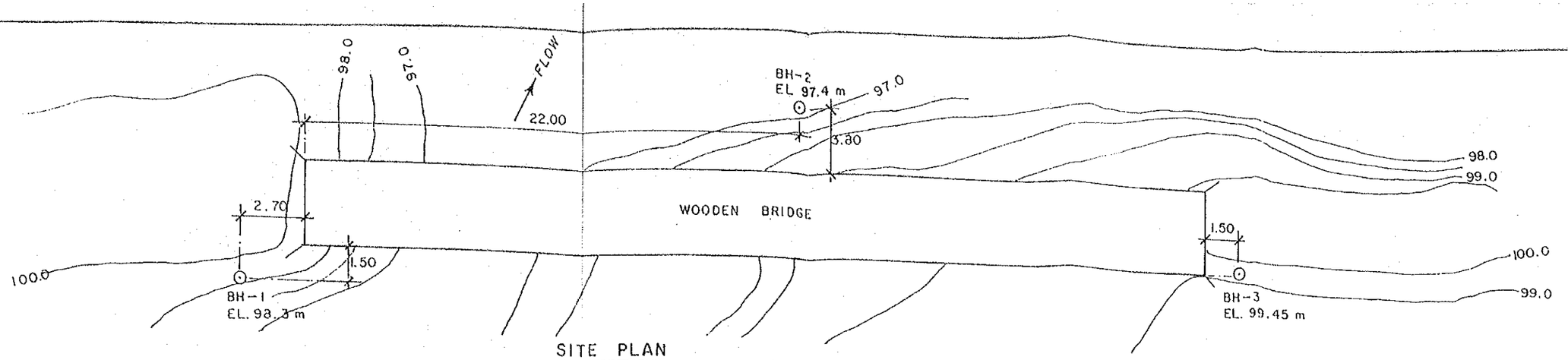
他の第四紀層は、ラテライト、ゆるい層および連続的な皮殻である。この連続的な皮殻は、しばしば段丘や基盤の最上をしめるものである。

11) 火山岩

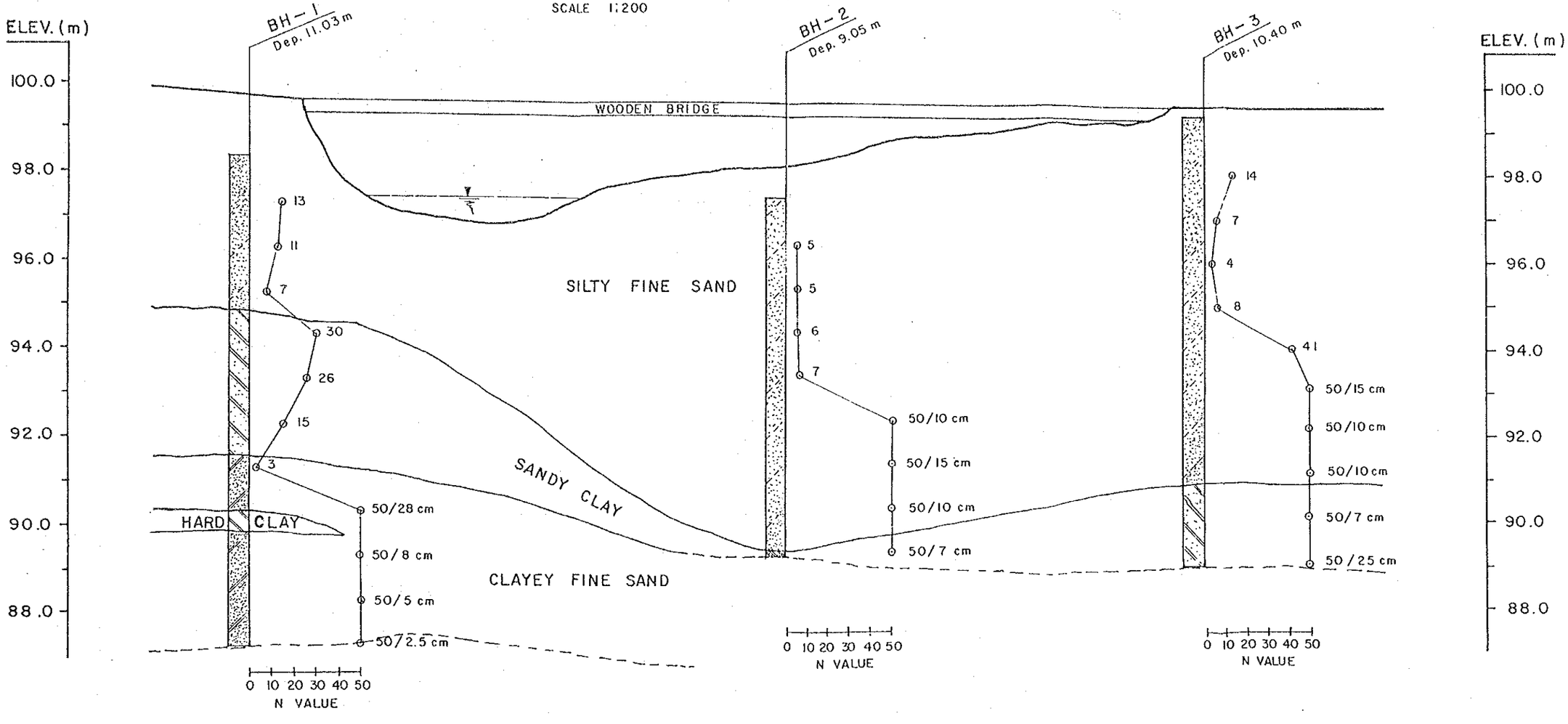
コラート平原の火山岩は平原の南方にあるコラート群の最上を占める第三紀の玄武岩である。

ハワイ型のアルカリ性の玄武岩は、Buri Ram郡のKhao Kradungで発見された火山の噴火により流出したものである。

玄武岩の材令は、 920,000～ 3,800,000年程である。



SITE PLAN
SCALE 1:200



SCALE

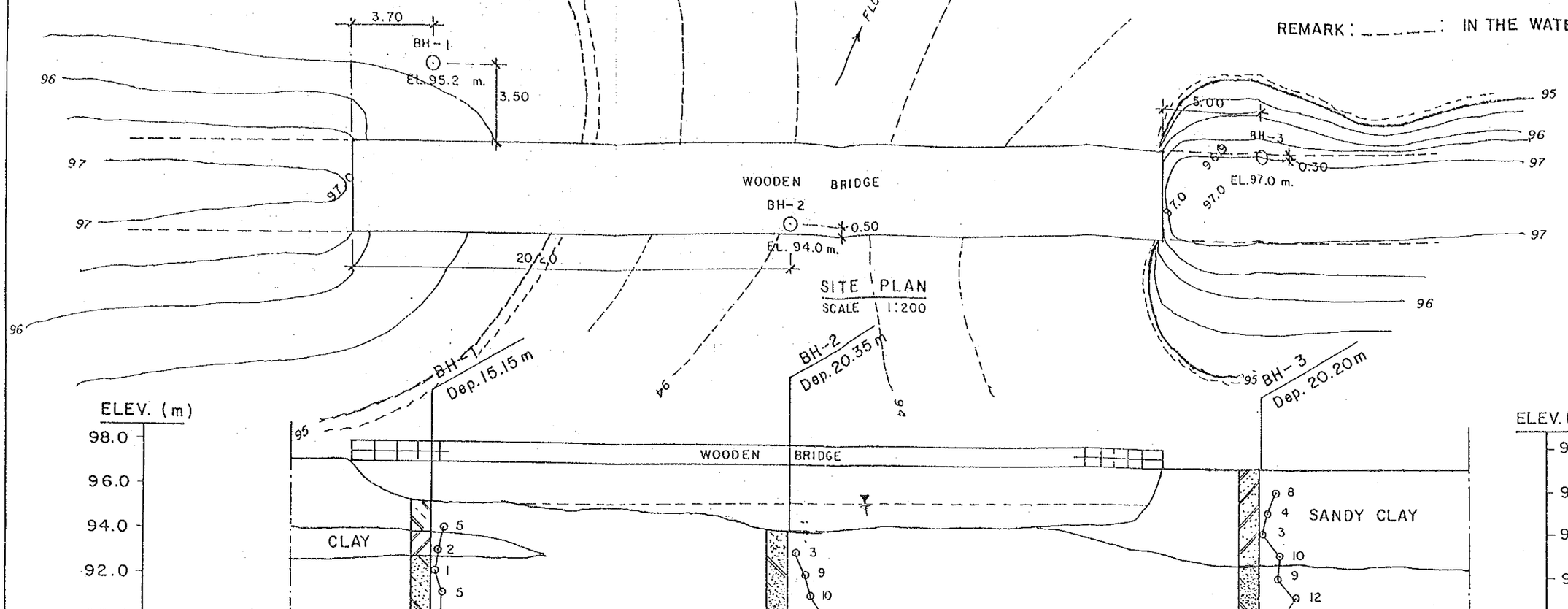
0 1 2 3 4 5 m
H = 1:200

0 1 2 3 4 m
V = 1:100

REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

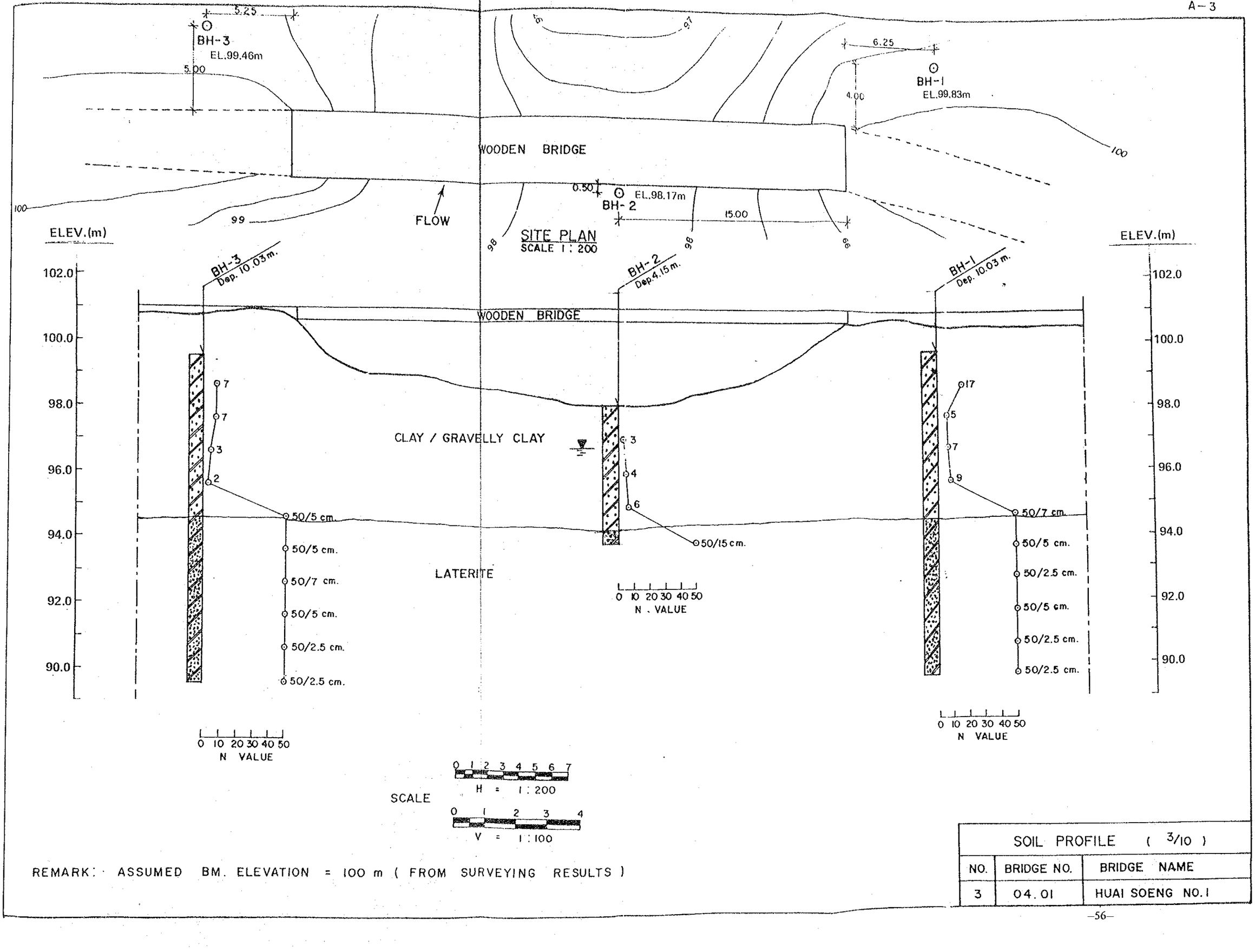
SOIL PROFILE (1/10)		
NO.	BRIDGE NO.	BRIDGE NAME
1	01.01	HUAI KAE

REMARK : _____ : IN THE WATER



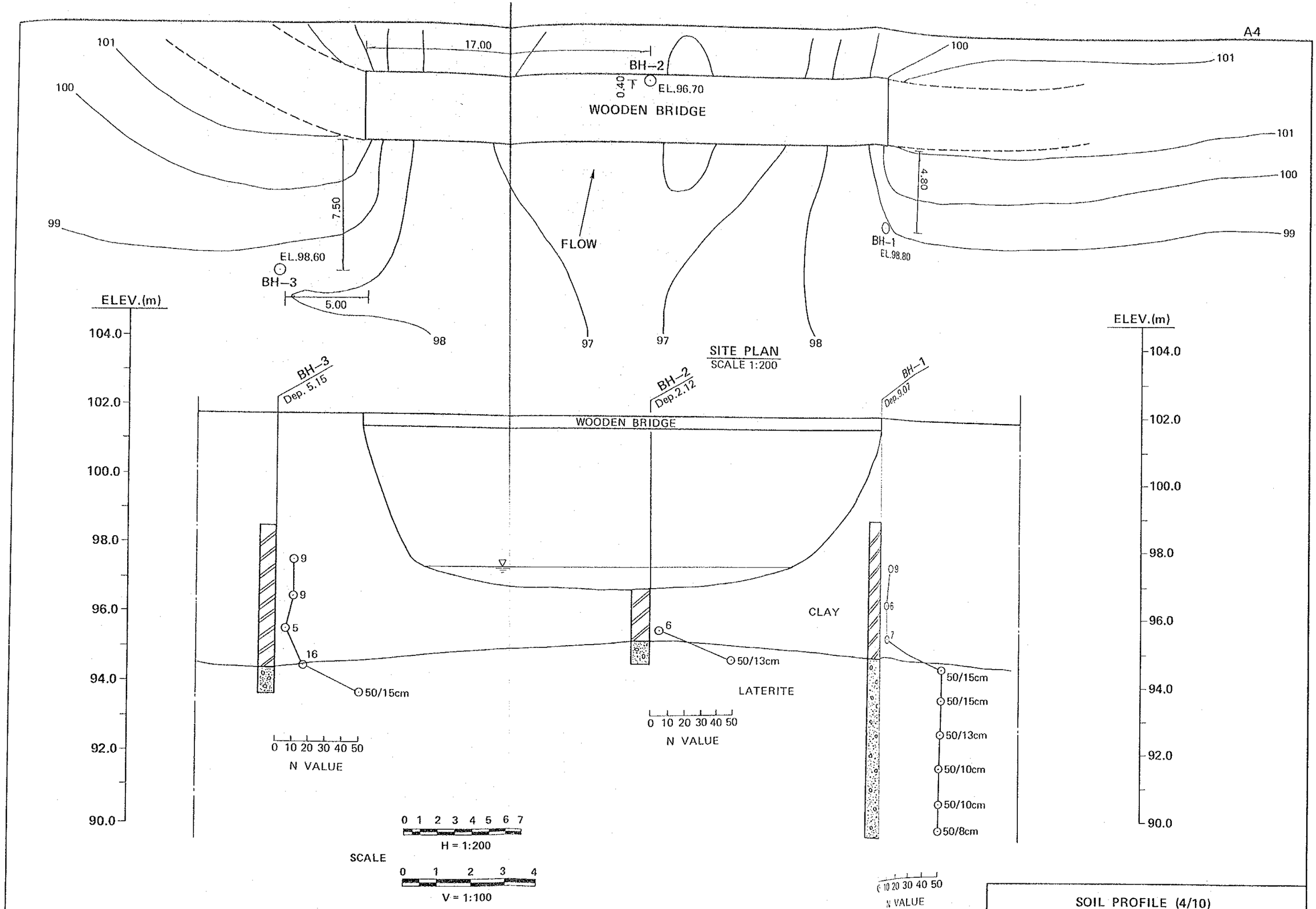
REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (2/10)		
NO.	BRIDGE NO.	BRIDGE NAME
2	02.05	HUAI KHUM MUN



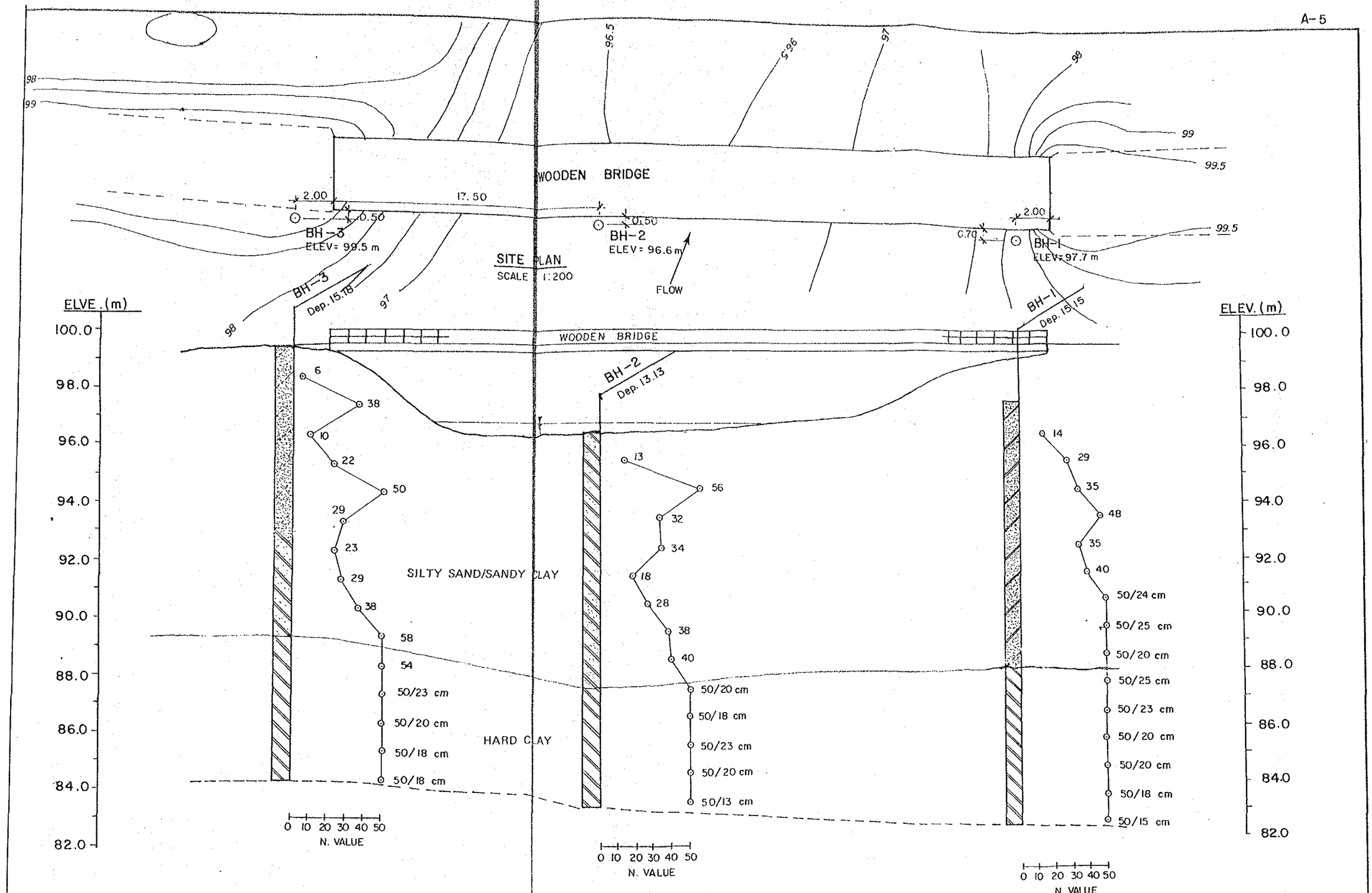
REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (3/10)		
NO.	BRIDGE NO.	BRIDGE NAME
3	04.01	HUAI SOENG NO.1



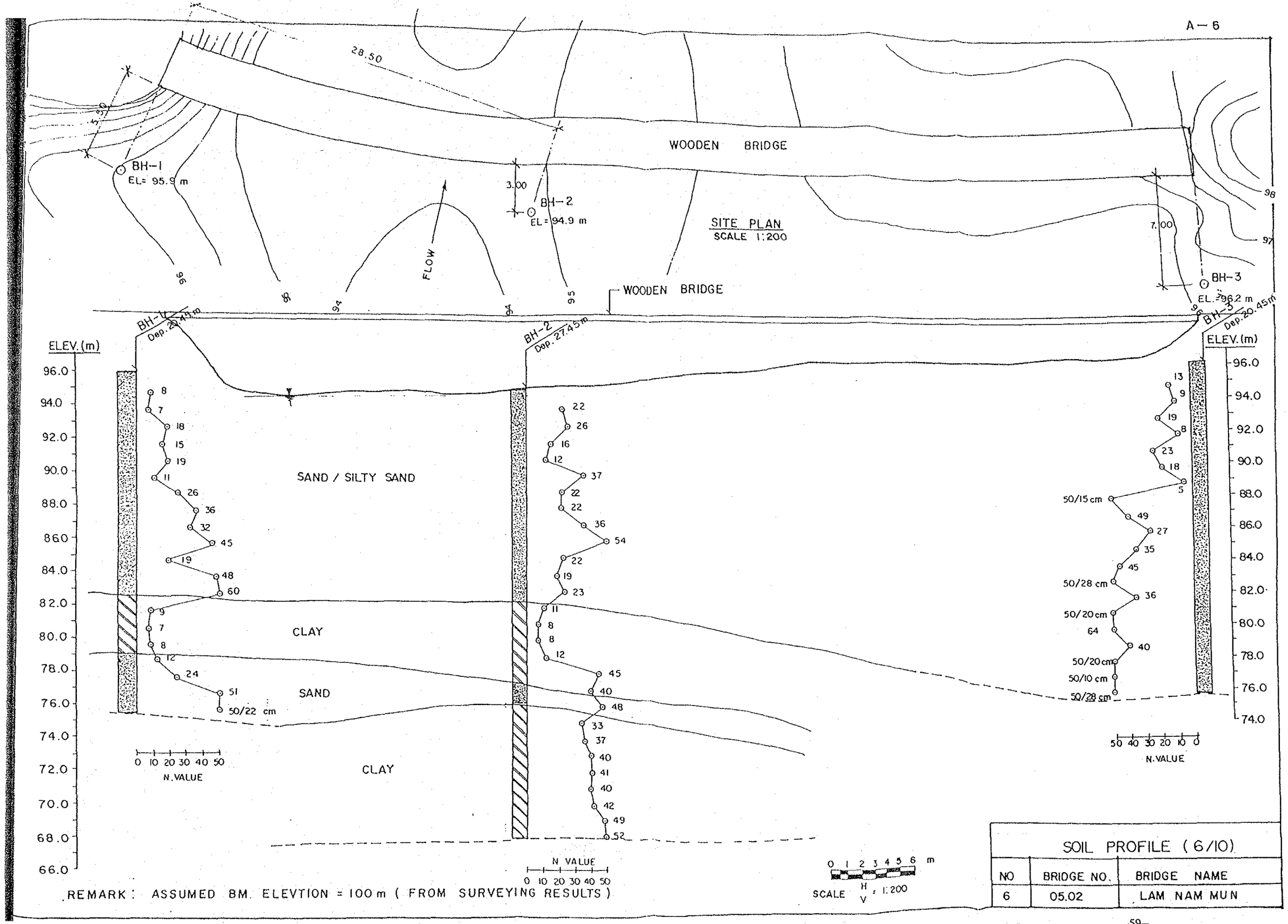
REMARK: ASSUMED BM. ELEVATION = 100m (FROM SURVEYING RESULTS)

SOIL PROFILE (4/10)		
NO	BRIDGE NO	BRIDGE NAME
4	04.02	HUAI SOENG NO. 2



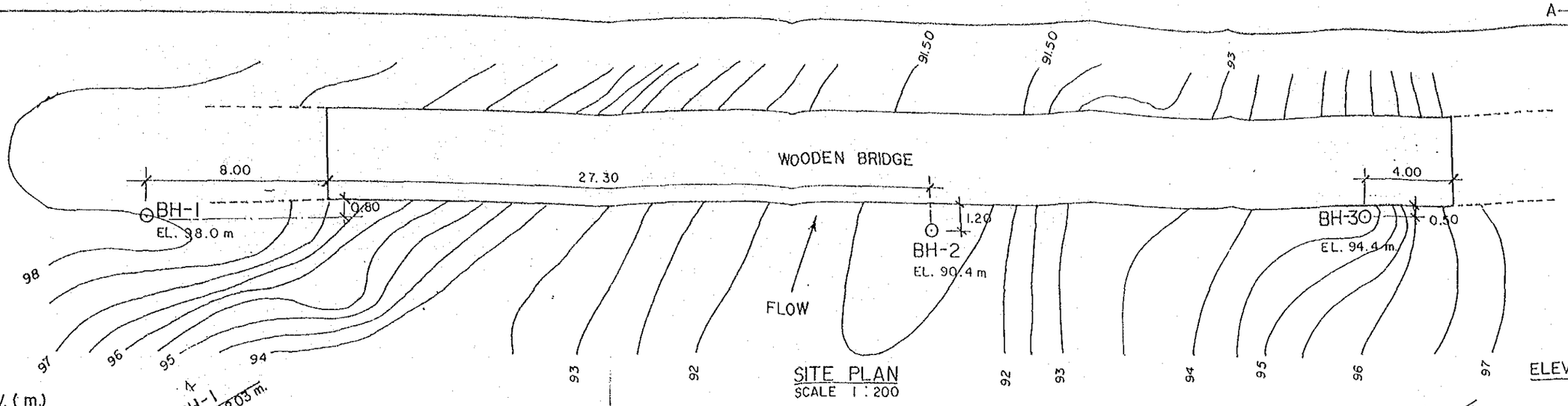
REMARK : ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (5/10)		
NO	BRIDGE NO.	BRIDGE NAME
5	05.01	LAM KLANG

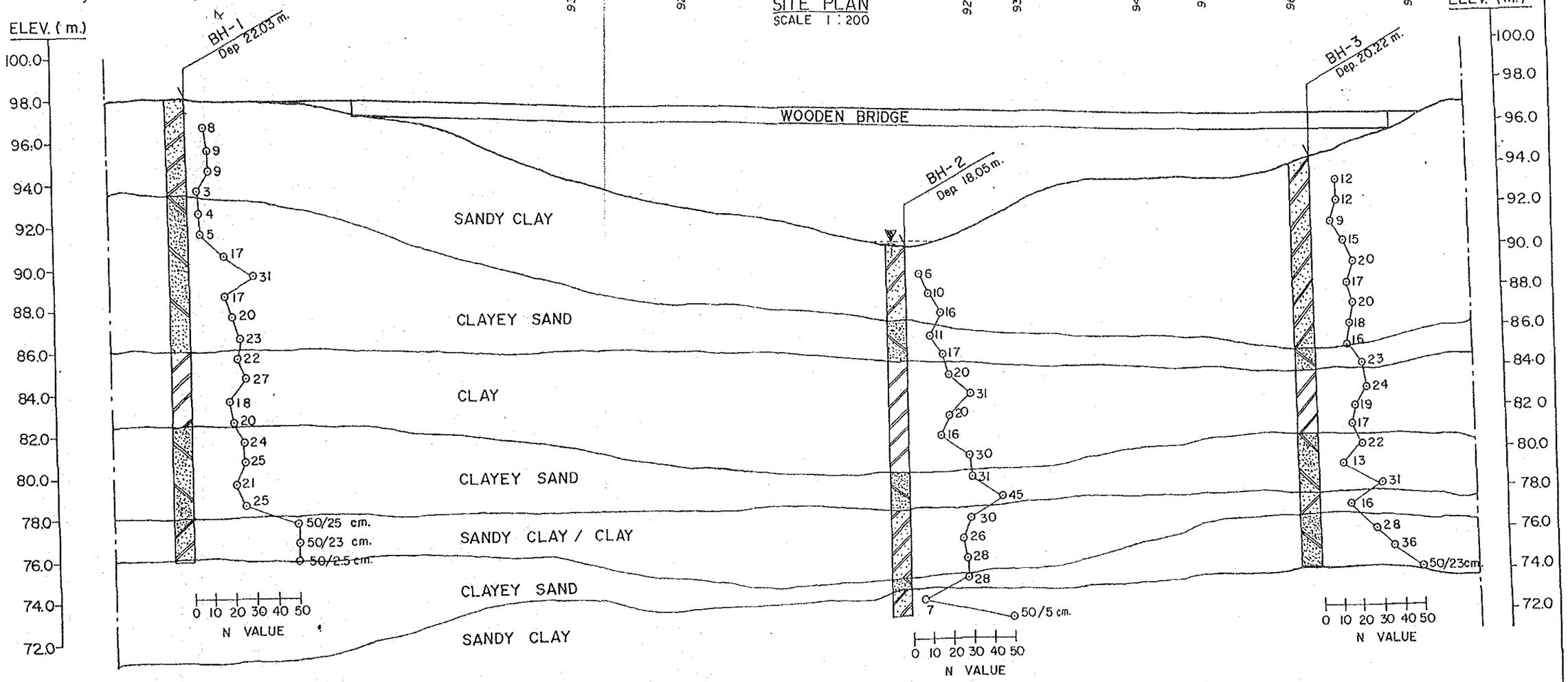


REMARK : ASSUMED BM. ELEVTION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (6/10)		
NO	BRIDGE NO.	BRIDGE NAME
6	05.02	LAM NAM MUN



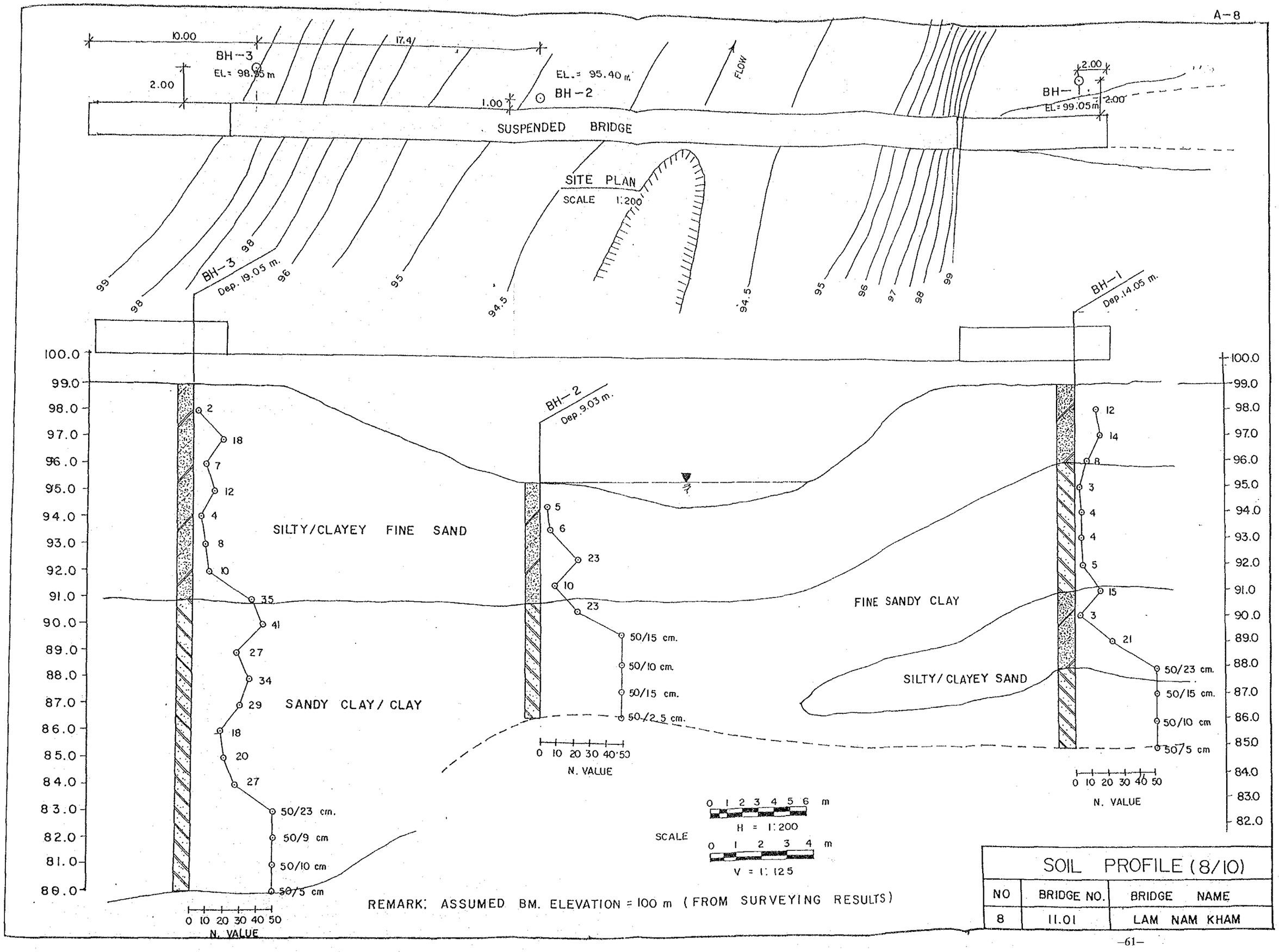
SITE PLAN
SCALE 1 : 200



SCALE
0 1 2 3 4 5 6 7
H
V = 1:200

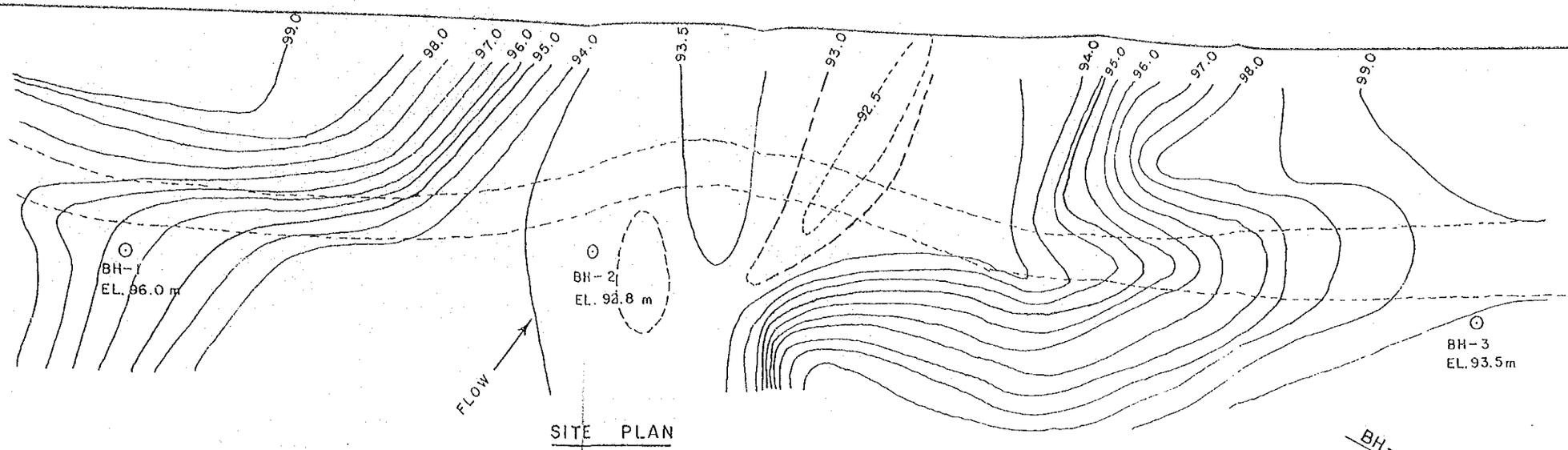
REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (7/10)		
NO.	BRIDGE NO.	BRIDGE NAME
7	05.03	LAM PHRA PLOENG

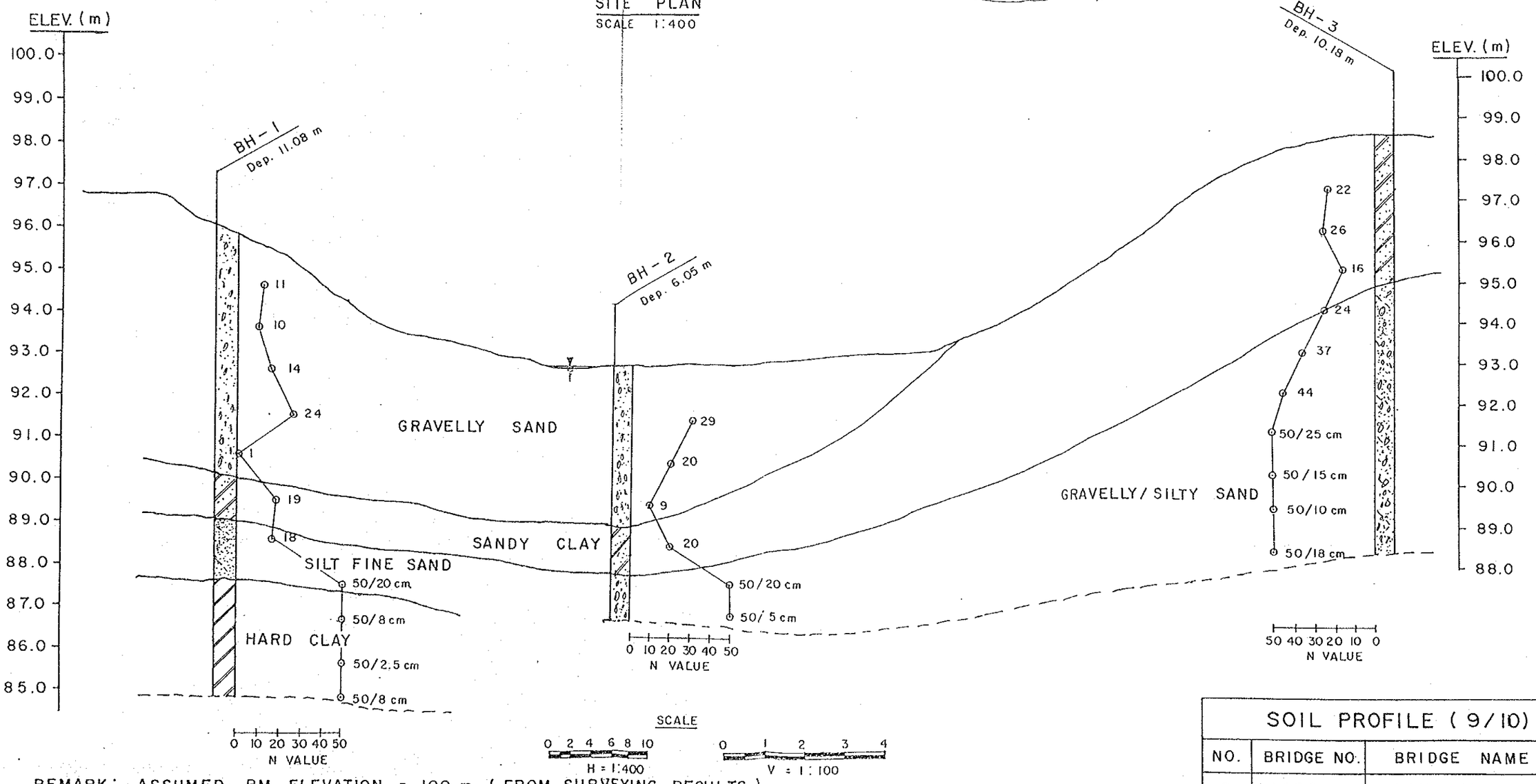


REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (8/10)		
NO	BRIDGE NO.	BRIDGE NAME
8	11.01	LAM NAM KHAM

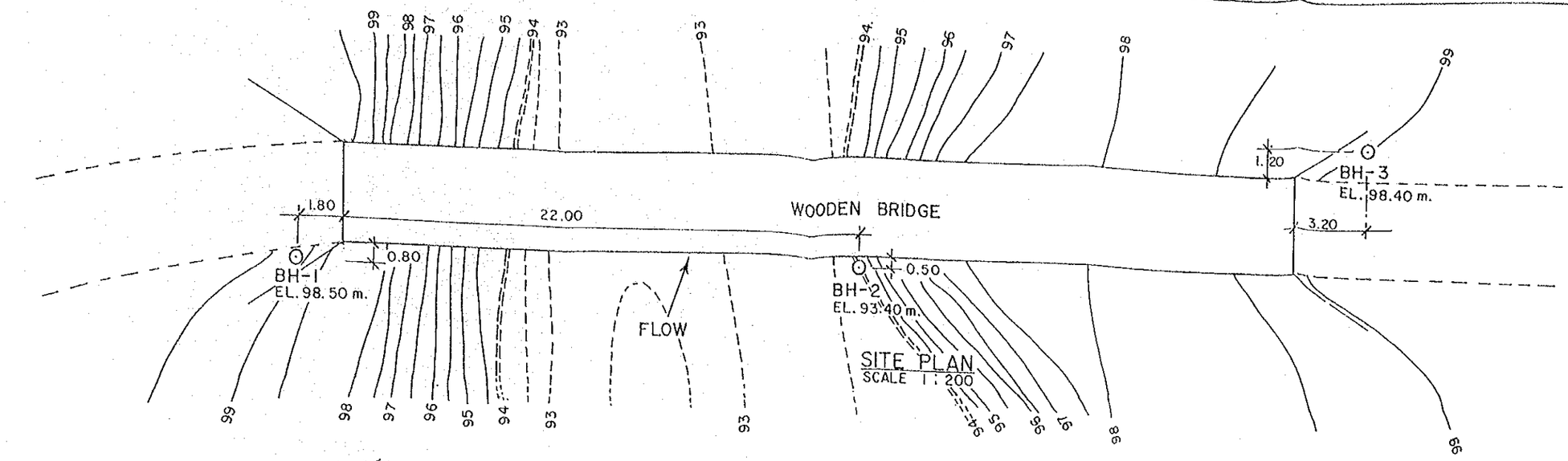


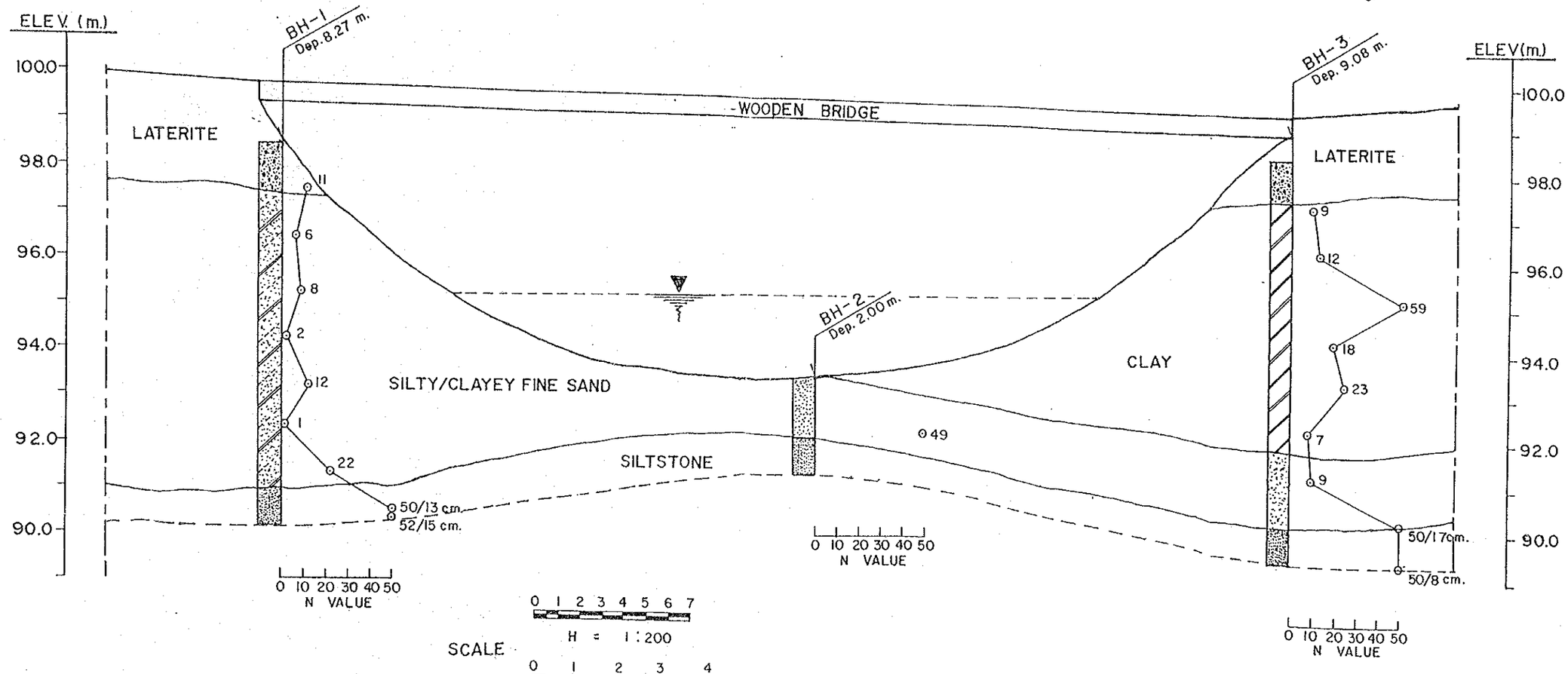
SITE PLAN
SCALE 1:400



REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (9/10)		
NO.	BRIDGE NO.	BRIDGE NAME
9	14.02	LAM NAM PUAI





REMARK: ASSUMED BM. ELEVATION = 100 m (FROM SURVEYING RESULTS)

SOIL PROFILE (10/10)		
NO.	BRIDGE NO.	BRIDGE NAME
10	15.07	LAM SOM NO.1

BORING LOG

PROJECT 01.01 HUAI KAE
LOCATION A. MUANG, KALASIN

BORING NO. BH-1
DEPTH (m.) 11.03
COORD. —

GROUND ELEV.(m.) 98.3
OBSERVED WL (m.) -2.00
DATE STARTED 5/3/89
DATE FINISHED 6/3/89

SOIL DESCRIPTION	DEPTH (m.)
LOOSE TO MEDIUM DENSE SILTY FINE SAND, LI-BROWN AND DARK BROWN (SM) (NO SALTY)	3.60
VERY STIFF FINE SANDY CLAY, GREYISH BROWN AND DARK BROWN (CL) (NO SALTY)	6.80
VERY LOOSE CLAYEY FINE SAND, DARK GREY (NO SALTY) (SC)	8.00
HARD SANDY CLAY, GREY AND DARK BROWN (CL) (NO SALTY)	8.50
VERY DENSE CLAYEY SAND, DARK BROWN AND REDDISH BROWN (NO SALTY) (SC)	11.03
END OF BORING	

METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
PA		
SS	1	13 (6,7)
PA		
SS	2	11 (5,6)
PA		
SS	3	7 (3,4)
PA		
SS	4	30 (14,16)
PA		
SS	5	26 (11,15)
PA		
SS	6	15 (6,10)
PA		
SS	7	3 (1,2)
PA		
SS	8	50/28 CM (18,32/13CM)
PA		
SS	9	50/8 CM
PA		
SS	10	50/5 CM
PA		
SS	11	50/2.5 CM

PL W_n LL (%) — 10 20 30 40

S_u (t/m²) ⊙ UCT △ PP X FVT ⊡ TV — 5 10 15 20

γ_t (t/m³) — 1.6 1.8 2.0

BORING LOG

PROJECT 01.01 HUAI KAE
LOCATION A. MUANG, KALASIN

BORING NO. BH-2
DEPTH (m.) 9.05
COORD. --

GROUND ELEV.(m.) 97.4
OBSERVED WL (m.) 0.00
DATE STARTED 3/3/89
DATE FINISHED 4/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING NO.	RECOVERY	SPT - N (blows/ft)	PL W_n LL (%)	S_u (t/m²) ○ UCT △ PP × FVT ⊡ TV	γ_t (t/m³)
LOOSE SILTY FINE SAND, BROWN AND GREYISH BROWN (SM) (NO SALTY)	1	WO						
		SS	1		5 (2,3)			
	2	WO						
		SS	2		5 (2,3)			
	3	WO						
		SS	3		6 (3,3)			
	4	WO						
4.50		SS	4		7 (3,4)			
VERY DENSE SILTY FINE SAND, GREYISH BROWN AND BROWN (SM) (NO SALTY)	5	WO						
		SS	5		50/10 CM			
	6	WO						
		SS	6		50/15 CM			
	7	WO						
		SS	7		50/10 CM.			
8.00	8	WO						
HARD FINE SAND CLAY, REDDISH BROWN (CL) (NO SALTY) 9.05		SS	8		50/8 CM.			
	9	WO						
		SS	9		50/5 CM.			
END OF BORING								

BORING LOG

PROJECT 01.01 HUAI KAE
LOCATION A. MUANG, KALASIN

BORING NO. BH-3
DEPTH (m.) 10.40
COORD. –

GROUND ELEV.(m.) 99.45
OBSERVED WL (m.) -2.50
DATE STARTED 3/3/89
DATE FINISHED 4/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
LOOSE TO MEDIUM DENSE SILTY FINE SAND, DARK BROWN AND GREYISH BROWN (SM) (NO SALTY)	1	PA		
		SS	1	14 (7,7)
	2	PA		
		SS	2	7 (2,5)
	3	PA		
		SS	3	4 (2,2)
	4	PA		
		SS	4	8 (4,4)
5.00	5	PA		
DENSE TO VERY DENSE SILTY FINE SAND, DARK BROWN AND BROWNISH GREY (SM) (NO SALTY)		SS	5	(17,24) 41
	6	PA		
		SS	6	50/15 CM (24,50/15CM)
	7	PA		
		SS	7	50/10 CM (37,50/10CM)
8.50	8	PA		
		SS	8	50/10 CM (30,50/10CM)
HARD SANDY CLAY, REDDISH BROWN (NO SALTY) (CL) 10.40	9	PA		
		SS	9	50/8 CM (28,50/8CM)
	10	PA		
		SS	10	50/25 CM (30,20/10CM)
END OF BORING				

PL W_n LL (%) 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γ_t (t/m^3) 1.6 1.8 2.0

BORING LOG

PROJECT 02.05 HUAI KHUM MUN
LOCATION A. UBON RATTANA, KHON KAEN

BORING NO. BH-1
DEPTH (m.) 15.15
COORD. –

GROUND ELEV.(m.) 95.2
OBSERVED WL (m.) -0.10
DATE STARTED 23/2/89
DATE FINISHED 25/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
LOOSE SILTY FINE SAND, BROWN (NO SALTY) (SM)	1.50	PA		
SOFT FINE SANDY CLAY, BROWN (CL/SC)	2.50	SS	1	5 (2,3)
VERY LOOSE TO LOOSE SILTY AND CLAYEY FINE SAND, GREY (SM,SC) (NO SALTY)	8.00	PA		
		SS	2	2 (1,1)
		PA		
		SS	3	1 (0,1)
		PA		
		SS	4	5 (3,2)
		WO		
		SS	5	4 (2,2)
		WO		
		SS	6	5 (3,2)
		WO		
		SS	7	1 (0,1)
		WO		
		SS	8	15 (9,6
		WO		
MEDIUM DENSE CLAYEY FINE SAND, GREY (SC) (NO SALTY)	10.00	SS	9	18 (4,4)
		WO		
		SS	10	50/25 CM
DENSE TO VERY DENSE FINE SAND, BROWN AND GREY (SP-SM) (NO SALTY)	15.15	WO		(25,25/10CM)
		SS	11	(20,25) 45
		WO		
		SS	12	50/27 CM
		WO		(25,25/13CM)
		SS	13	(22,28) 50
		WO		
		SS	14	(6,25) 41
		WO		
		SS	15	50/15 CM
END OF BORING				

PL W$_n$ LL (%) 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γ_t (t/m^3) 1.6 1.8 2.0

BORING LOG

PROJECT 02.05 HUAI KHUM MUN
LOCATION A. UBON RATTANA, KHON KAEN

BORING NO. BH-2
DEPTH (m.) 20.35
COORD. —

GROUND ELEV.(m.) 94.0
OBSERVED WL (m.) +1.00
DATE STARTED 26/2/89
DATE FINISHED 28/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING NO.	SPT-N (blows/ft)	PL Wn LL (%)	Su (t/m²) UCT PP FVT TV	γt (t/m³)
LOOSE TO MEDIUM DENSE SILTY FINE SAND, BROWN (SM) (NO SALTY)	1	PA					
		SS	1	3 (2,1)			
		PA					
	2	SS	2	9 (4,5)			
		WO					
	3	SS	3	10 (4,6)			
		WO					
	4	SS	4	18 (10,18)			
		WO					
	5	SS	5	9 (5,4)			
		WO					
6.00	6	SS	6	(20,20) 40			
DENSE TO VERY DENSE SILTY FINE SAND, GREY AND BROWN (SM) (NO SALTY)		WO					
	7	SS	7	50/25 CM (30,20/10)			
		WO					
	8	SS	8	(19,21) 40			
		WO					
	9	SS	9	(25,25) 50			
		WO					
	10	SS	10	(29,21) 50			
		WO					
	11	SS	11	(15,12) 27			
		WO					
	12	SS	12	(24,24) 48			
		WO					
	13	SS	13	(17,20) 37			
13.75		WO					
HARD CLAY, BROWN (CL) (NO SALTY)	14	SS	14	(18,27) 45			
		WO					
	15	SS	15	(12,20) 32			
		WO					
	16	SS	16	50/25 CM (36,14/0 CM)			
		WO					
	17	SS	17	(20,29) 49			
		WO					
	18	SS	18	(21,28) 49			
		WO					
	19	SS	19	50/20 CM (25,25/5 CM)			
		WO					
END OF BORING 20.35	20	SS	20	50/20 CM (35,15/5 CM)			

BORING LOG

PROJECT 02.05 HUAI KHUM MUN
LOCATION A. UBON RATTANA, KHON KAEN

BORING NO. BH-3
DEPTH (m.) 20.20
COORD. —

GROUND ELEV.(m.) 97.0
OBSERVED WL (m.) -1.90
DATE STARTED 1/3/89
DATE FINISHED 3/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
SOFT TO MEDIUM AND STIFF FINE SANDY CLAY, BROWN AND GREY (CL) (NO SALTY)	4.50	PA / SS / PA / SS / PA / SS / WO / SS	1 / 2 / 3 / 4	8 (4,4); 4 (2,2); 2 (1,1); 10 (4,6)
MEDIUM DENSE SILTY SAND, BROWN (SM) (NO SALTY)	7.65	WO / SS / WO / SS / WO / SS	5 / 6 / 7	9 (4,5); 18 (8,10); 10 (2,8)
STIFF CLAY, DARK BROWN (CL) (NO SALTY)	9.70	WO / SS / WO / SS	8 / 9	14 (6,8); 16 (6,10)
MEDIUM DENSE SILTY FINE SAND, BROWN (SM) (NO SALTY)	12.00	WO / SS / WO / SS / WO	10 / 11	13 (8,5); 13 (8,5)
DENSE TO VERY DENSE SILTY FINE SAND BROWN (SM) (NO SALTY)	14.70	WO / SS / WO / SS / WO	12 / 13 / 14	(18,23) 41; 50/20 CM (40/0/5 CM); 50/20 CM (30,20/5 CM)
VERY STIFF SANDY CLAY, DARK GREY (NO SALTY) (CL)	16.30	WO / SS / WO / SS / WO	15 / 16	16 (7,9); (9,32) 41
VERY DENSE CLAYEY-GRAVELLY SAND, GREY (SC,SM) (NO SALTY)		WO / SS / WO / SS / WO / SS	17 / 18 / 19 / 20	50/18 CM (34,16/2.5 CM); 50/10 CM; 50/18 CM (39,11/2.5 CM); 50/5 CM
END OF BORING	20.20			

PL W_n LL (%) 10 20 30 40

S_u (t/m²) ○ UCT △ PP X FVT □ TV 5 10 15 20

γ_t (t/m³) 1.6 1.8 2.0

BORING LOG

PROJECT 04.01 HUAI SOENG NO.1
LOCATION A. NAKAE, NAKHON PHANOM

BORING NO. BH-1
DEPTH (m.) 10.03
COORD. -

GROUND ELEV.(m.) 99.83
OBSERVED WL (m.) -3.60
DATE STARTED 23/2/89
DATE FINISHED 24/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING NO.	RECOVERY	SPT-N (blows/ft)
VERY STIFF CLAY, DARK BROWN AND GREY (NO SALTY) (CL) 1.50	1	PA			
		SS	1		17 (8,9)
	2	PA			
MEDIUM CLAY, BROWN AND GREY (CL) (NO SALTY) 5.00		SS	2		5 (2,3)
	3	PA			
		SS	3		7 (3,4)
	4	PA			
		SS	4		9 (4,5)
	5	PA			
		SS	5		50/8 CM
HARD SANDY-GRAVELLY CLAY, (LATERITE), REDDISH BROWN (CL) (NO SALTY) 10.03	6	WO			
		SS	6		50/5 CM
	7	WO			
		SS	7		50/2.5 CM
	8	WO			
		SS	8		50/5 CM
	9	WO			
		SS	9		50/2.5 CM
	10	WO			
		SS	10		50/2.5 CM
END OF BORING					

PL W_n LL (%) — 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV — 5 10 15 20

γ_t (t/m^3) — 1.6 1.8 2.0

BORING LOG

PROJECT 04.01 HUAI SOENG NO.1

LOCATION A. NAKAE, NAKHON PHANOM

BORING NO. BH-2

DEPTH (m.) 4.15

COORD. --

GROUND ELEV.(m.) 98.17

OBSERVED WL (m.) -0.30

DATE STARTED 23/2/89

DATE FINISHED 23/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)	PL Wn LL (%)	Su (t/m²) UCT PP FVT TV	γt (t/m³)
SOFT TO MEDIUM CLAY, GREY AND BROWN (CL) (NO SALTY)	1	WO					
		SS	1	3 (1,2)			
	2	WO					
		SS	2	4 (2,2)			
	3	WO					
		SS	3	6 (3,3)			
3.80		WO					
VERY DENSE CLAYEY-GRAVELLY SAND (LATERITE), REDDISH BROWN (SC) (NO SALTY) 4.15	4	SS	4	50/15 CM			
END OF BORING							

BORING LOG

PROJECT 04.01 HUAI SOENG NO.1

LOCATION A. NAKAE, NAKHON PHANOM

BORING NO. BH-3

DEPTH (m.) 10.03

COORD. --

GROUND ELEV.(m.) 99.46

OBSERVED WL. (m.) -3.00

DATE STARTED 25/2/89

DATE FINISHED 26/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
SOFT TO MEDIUM CLAY, BROWN AND GREY (CL) (NO SALTY)	1	PA		
		SS	1	7 (3,4)
	2	PA		
		SS	2	7 (3,4)
	3	PA		
		SS	3	3 (1,2)
	4	PA		
		SS	4	2 (1,1)
5.00	5	PA		
HARD SANDY-GRAVELLY CLAY (LATERITE), REDDISH BROWN (CL) (NO SALTY)		SS	5	50/5 CM
	6	WO		
		SS	6	50/5 CM
	7	WO		
		SS	7	50/8 CM
	8	WO		
		SS	8	50/5 CM
	9	WO		
		SS	9	50/2.5 CM
10.03	10	WO		
		SS	10	50/2.5 CM
END OF BORING				

Pl. W_n LL (%) 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γ_t (t/m^3) 1.6 1.8 2.0

BORING LOG

PROJECT 04.02 HUAI SOENG NO.2
LOCATION A.NAKAE, NAKHON PHANOM

BORING NO. BH-1
DEPTH (m.) 9.07
COORD. –

GROUND ELEV.(m.) 98.80
OBSERVED WL (m.) -0.10
DATE STARTED 27/2/89
DATE FINISHED 28/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
MEDIUM TO STIFF CLAY, BROWN AND GREY (CH) (NO SALTY) 3.80	1	WO		
		SS	1	9 (4,5)
	2	WO		
		SS	2	6 (2,4)
	3	WO		
		SS	3	7 (3,4)
VERY DENSE CLAYEY-GRAVELLY SAND (LATERITE), REDDISH BROWN (SC/CL) (NO SALTY) 9.07	4	WO		
		SS	4	50/15 CM
	5	WO		
		SS	5	50/15 CM.
	6	WO		
		SS	6	50/13 CM
	7	WO		
		SS	7	50/10 CM
	8	WO		
		SS	8	50/10 CM.
	9	WO		
		SS	9	50/8 CM.
END OF BORING				

PL W_n LL (%) — 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV — 5 10 15 20

γ_t (t/m^3) — 1.6 1.8 2.0

BORING LOG

PROJECT 04.02 HUAI SOENG NO.2

LOCATION A.NAKAE, NAKHON PHANOM

BORING NO. BH-2

DEPTH (m.) 2.12

COORD. -

GROUND ELEV.(m.) 96.70

OBSERVED WL (m.) +1.50

DATE STARTED 1/3/89

DATE FINISHED 1/3/89

SOIL DESCRIPTION	DEPTH (m.)	GRAPHIC LOG	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft) 10 20 30 40	PL Wn LL (%) 10 20 30 40	S_u (t/m²) ⊙UCT △PP XFVT ⊡TV 5 10 15 20	γ_t (t/m³) 1.6 1.8 2.0
MEDIUM CLAY, TRACE OF SAND, GREY (NO SALTY) (CL) 1.50	1		PA					
			SS	1	⊙ 6 (3,3)	⊙		⊙
HARD SANDY CLAY (LATERITE) REDDISH BROWN (CL) (NO SALTY). 2.12	2		PA					
			SS	2	50/13 CM	⊙		
END OF BORING								

BORING LOG

PROJECT 04.02 HUAI SOENG NO.2

LOCATION A.NAKAE, NAKHON PHANOM

BORING NO. BH-3

DEPTH (m.) 5.15

COORD. -

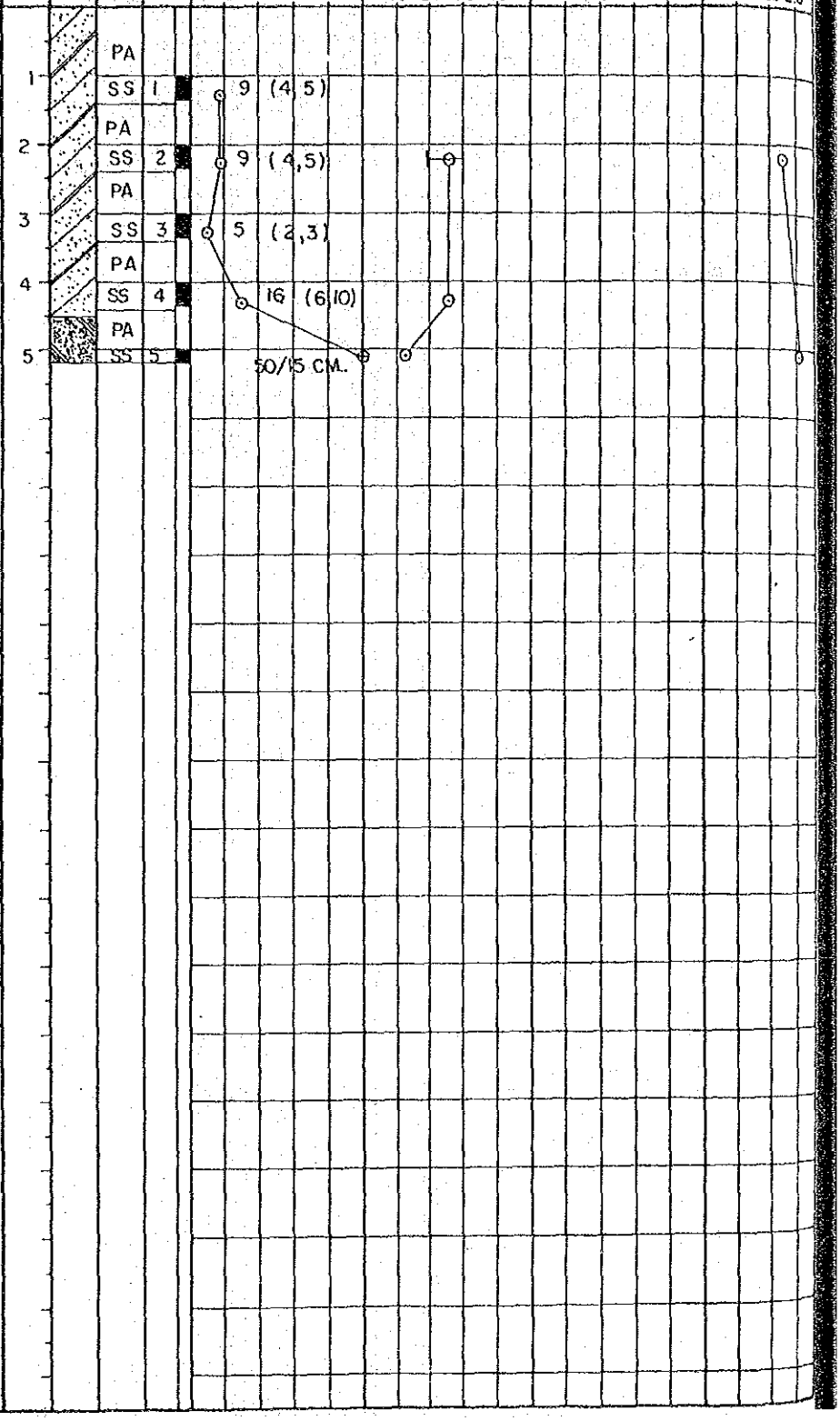
GROUND ELEV.(m.) 98.60

OBSERVED WL (m.) -1.30

DATE STARTED 27/2/89

DATE FINISHED 27/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
MEDIUM TO STIFF CLAY, TRACE OF SAND, GREY AND BROWN (CL)	1	PA		
		SS	1	9 (4,5)
	2	PA		
		SS	2	9 (4,5)
	3	PA		
		SS	3	5 (2,3)
(NO SALTY)	4	PA		
4.50		SS	4	16 (6,10)
VERY DENSE CLAYEY-GRAVELLY SAND (LATERITE), REDDISH BROWN (SC) 5.15	5	PA		
		SS	5	50/15 CM.
END OF BORING				



BORING LOG

PROJECT 05.01 : LAM KLANG

LOCATION A.NON SOONG, NAKHON RATCHASIMA

BORING NO. BH-1

DEPTH (m.) 15.15

COORD. -

GROUND ELEV.(m.) 97.7

OBSERVED WL (m.) -1.20

DATE STARTED 10/2/89

DATE FINISHED 11/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING	RECOVERY	SPT - N (blows/ft)
MEDIUM DENSE CLAYEY FINE SAND, LI-GREY AND LI-BROWN (SC) (NO SALTY)	2.00	PA			
		SS	1		11 (6,8)
		PA			
		SS	2		29 (13,16)
		PA			
DENSE CLAYEY FINE SAND, LI-GREY (SC) (NO SALTY)	5.00	SS	3		(17,18) 35
		PA			
		SS	4		(22,28) 48
		PA			
		SS	5		(16,19) 35
		PA			
INTERMEDIATE SOIL (FINE SANDY CLAY OR CLAYEY FINE SAND), LI-BROWN AND LI-GREY (NO SALTY) (CL/SC)	6.50	SS	6		(13,27) 40
		PA			
VERY DENSE CLAYEY SAND, LI-BROWN AND LI-GREY (SC) (NO SALTY)	9.50	SS	7		50/24 CM (28,22/9 CM)
		WO			
		SS	8		50/25 CM (28,22/10 CM)
		WO			
		SS	9		50/20 CM (32,18/5 CM)
		WO			
HARD CLAY, REDDISH BROWN (CL) (NO SALTY)	15.15	SS	10		50/25 CM (26,24/10 CM)
		WO			
		SS	11		50/23 CM (30,20/8 CM)
		WO			
		SS	12		50/20 CM (32,18/5 CM)
		WO			
		SS	13		50/20 CM (25,25/5 CM)
		WO			
		SS	14		50/18 CM (38,12/2.5 CM)
		WO			
END OF BORING		SS	15		50/15 CM

PL W_n LL (%) 10 20 30 40

S_u (t/m²) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γ_t (t/m³) 1.6 1.8 2.0

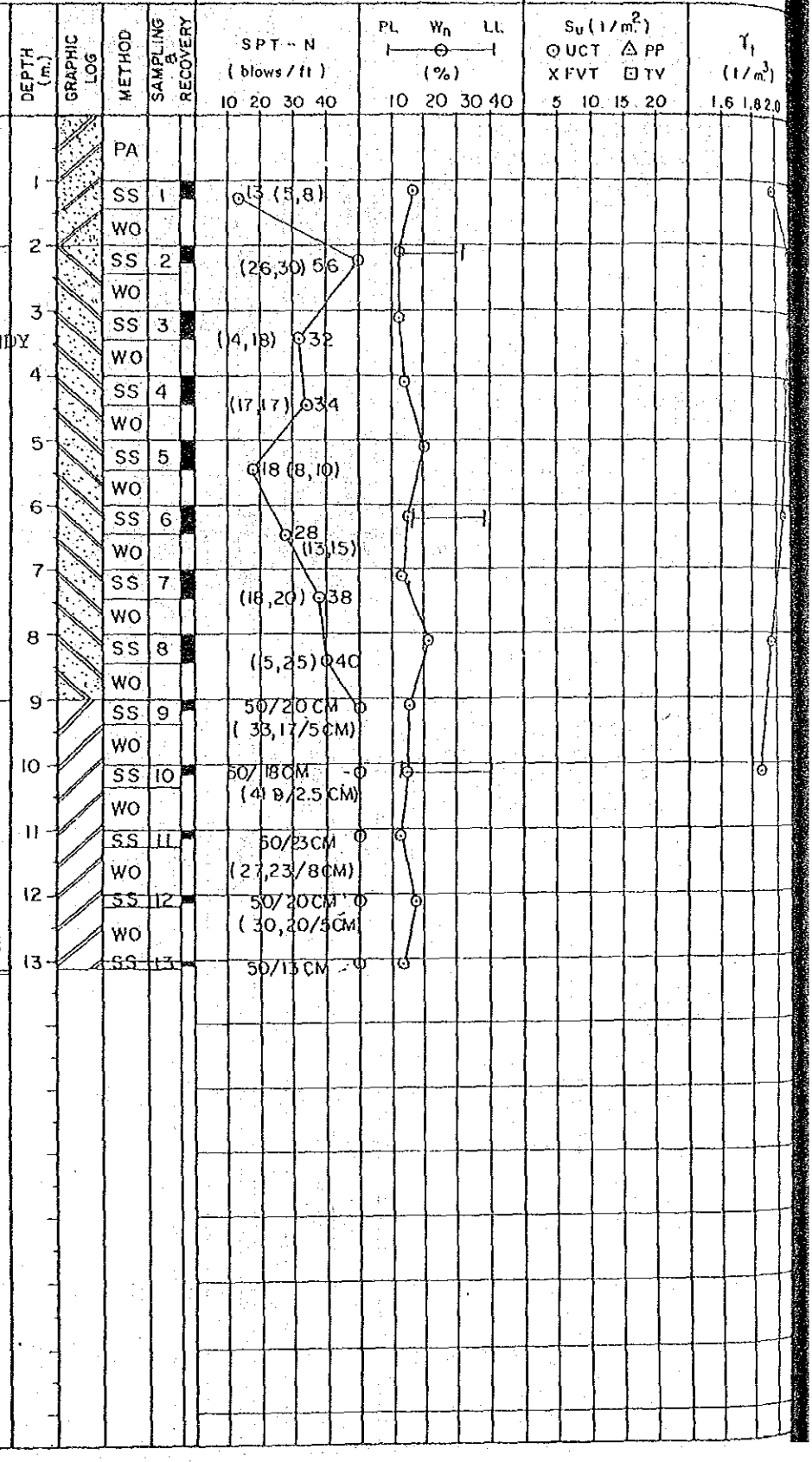
BORING LOG

PROJECT 05.01 - LAM KLANG
LOCATION A.NON SOONG, NAKHON RATCHASIMA

BORING NO. BH-2
DEPTH (m.) 13.13
COORD. -

GROUND ELEV.(m.) 96.6
OBSERVED WL (m.) +0.30(III)
DATE STARTED 14/2/89
DATE FINISHED 15/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows / ft)
STIFF FINE SANDY CLAY, LI-GREY (CL) (NO SALTY) 2.00	1	PA		
		SS	1	13 (5,8)
	2	WO		
		SS	2	(26,30) 56
	3	WO		
		SS	3	(4,18) 32
VERY STIFF TO HARD FINE SANDY CLAY, LI-BROWN AND LI-GREY (CL) (NO SALTY)	4	WO		
		SS	4	(17,17) 34
	5	WO		
		SS	5	18 (8,10)
	6	WO		
		SS	6	28 (13,15)
	7	WO		
		SS	7	(18,20) 38
	8	WO		
9.00		SS	8	(15,25) 40
HARD CLAY, REDDISH BROWN (CL) (NO SALTY)	9	WO		
		SS	9	50/20 CM (33,17/5 CM)
	10	WO		
		SS	10	50/18 CM (49/2.5 CM)
	11	WO		
		SS	11	50/23 CM (27,23/8 CM)
	12	WO		
13.13		SS	12	50/20 CM (30,20/5 CM)
	13	WO		
		SS	13	50/13 CM
END OF BORING				



BORING LOG

PROJECT 05.01 LAM KLANG

LOCATION A.NON SOONG, NAKHON RATCHASIMA

BORING NO. BH-3

DEPTH (m.) 15.18

COORD. -

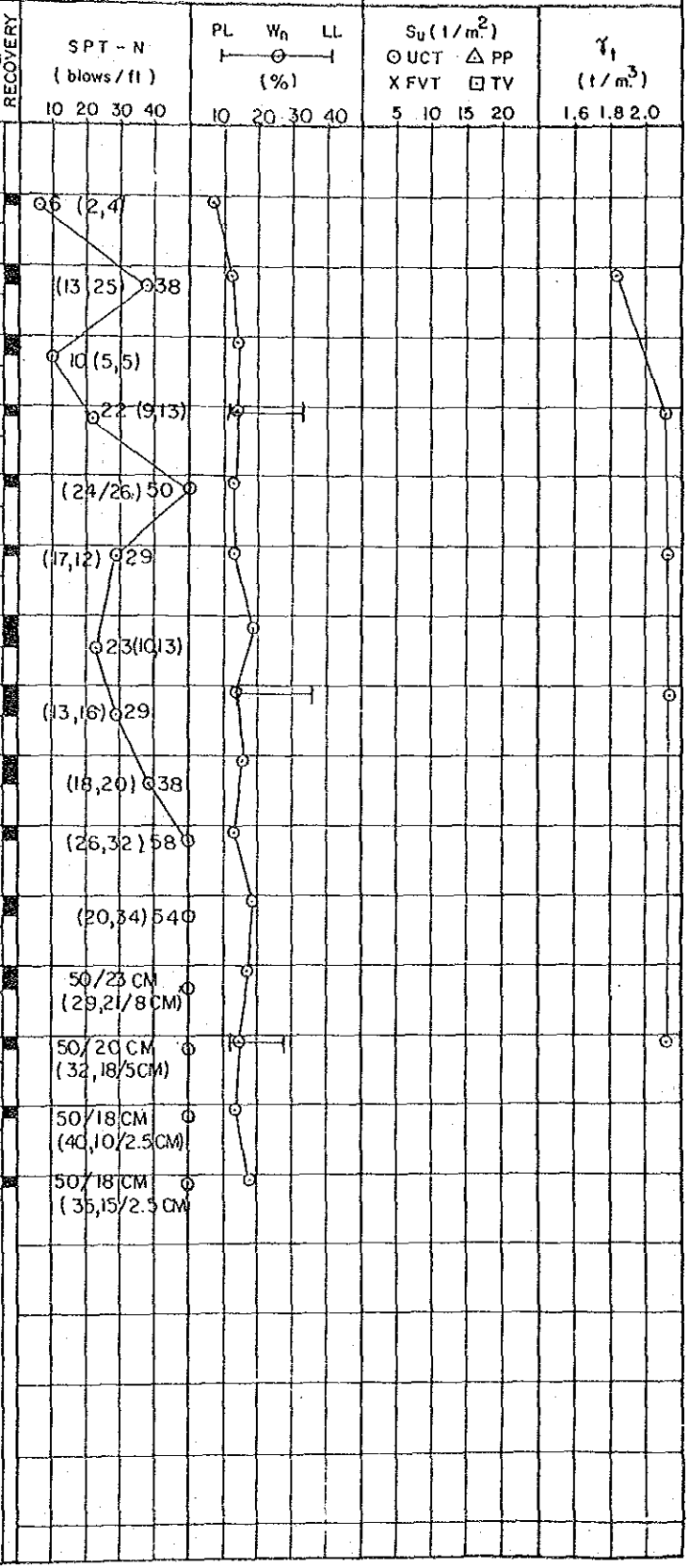
GROUND ELEV.(m.) 99.5

OBSERVED WL (m.) -3.00

DATE STARTED 12/2/89

DATE FINISHED 13/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
LOOSE TO MEDIUM DENSE AND DENSE SILTY FINE SAND, BROWN AND LI-GREY (SC) (NO SALTY)	1	PA		
		SS	1	6 (2,4)
	2	PA		
		SS	2	(13,25) 38
	3	PA		
		SS	3	10 (5,5)
	4	PA		
		SS	4	22 (9,13)
		WO		
	5	SS	5	(24/26) 50
		WO		
6.50	6	SS	6	(17,12) 29
VERY STIFF TO HARD FINE SANDY CLAY, LI-BROWN AND LI-GREY (CL) (NO SALTY)	7	WO		
		SS	7	23 (10,13)
	8	WO		
		SS	8	(13,16) 29
	9	WO		
10.00		SS	9	(18,20) 38
HARD FINE SANDY CLAY, LI-GREY AND REDDISH BROWN (CL) (NO SALTY)	10	WO		
		SS	10	(26,32) 58
	11	WO		
		SS	11	(20,34) 54
	12	WO		
		SS	12	50/23 CM (29,21/8 CM)
	13	WO		
		SS	13	50/20 CM (32,18/5CM)
	14	WO		
		SS	14	50/18 CM (40,10/2.5 CM)
15.18	15	WO		
		SS	15	50/18 CM (35,15/2.5 CM)
END OF BORING				



BORING LOG

PROJECT 05.02 LAM NAM MUN

LOCATION A. PHIMAI, NAKHON RATCHASIMA

BORING NO. BH-1

DEPTH (m.) 20.45

COORD. -

GROUND ELEV.(m.) 95.9

OBSERVED WL (m.) -0.30

DATE STARTED 8/2/89

DATE FINISHED 10/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
LOOSE SILTY FINE SAND, YELLOWISH BROWN (SP-SM) (NO SALTY)	3.00	PA, SS 1, PA, SS 2, PA		8 (4,4); 7 (4,3)
MEDIUM DENSE SILTY FINE SAND, GREY (SM) (NO SALTY)	7.00	SS 3, WO, SS 4, WO, SS 5, WO, SS 6, WO		18 (8,10); 15 (5,10); 19 (9,10); 11 (3,8)
MEDIUM DENSE TO DENSE AND VERY DENSE SILTY FINE SAND, GREY (SM, SP-SM) (NO SALTY)	13.50	SS 7, WO, SS 8, WO, SS 9, WO, SS 10, WO, SS 11, WO, SS 12, WO, SS 13, WO		26 (9,17); (11,25) 36; (15,17) 32; (22,23) 45; 19 (7,12); (22,26) 48; (28,32) 60
STIFF CLAY, LI-GREENISH GREY (CH) (NO SALTY)	17.25	SS 14, WO, SS 15, WO, SS 16, WO, SS 17, WO		9 (4,5); 7 (3,4); 8 (4,4); 12 (6,6)
LOOSE SAND, LI-GREENISH GREY (SM) (NO SALTY)	18.30	SS 18, WO		24 (5,19)
DENSE TO VERY DENSE SAND, LI-GREENISH GREY (SP-SM) (NO SALTY) END OF BORING	20.45	SS 19, WO, SS 20		(25,26) 51; 50/22 CM (35,15/250*)

PL Wn LL (%)

Su (t/m²) ⊙ UCT △ PP X FVT ⊡ TV

γt (t/m³)

BORING LOG

PROJECT 05.02 LAM NAM MUN

LOCATION A. PHIMAI, NAKHON RATCHASIMA

BORING NO. BH-2

DEPTH (m.) 27.45

COORD. –

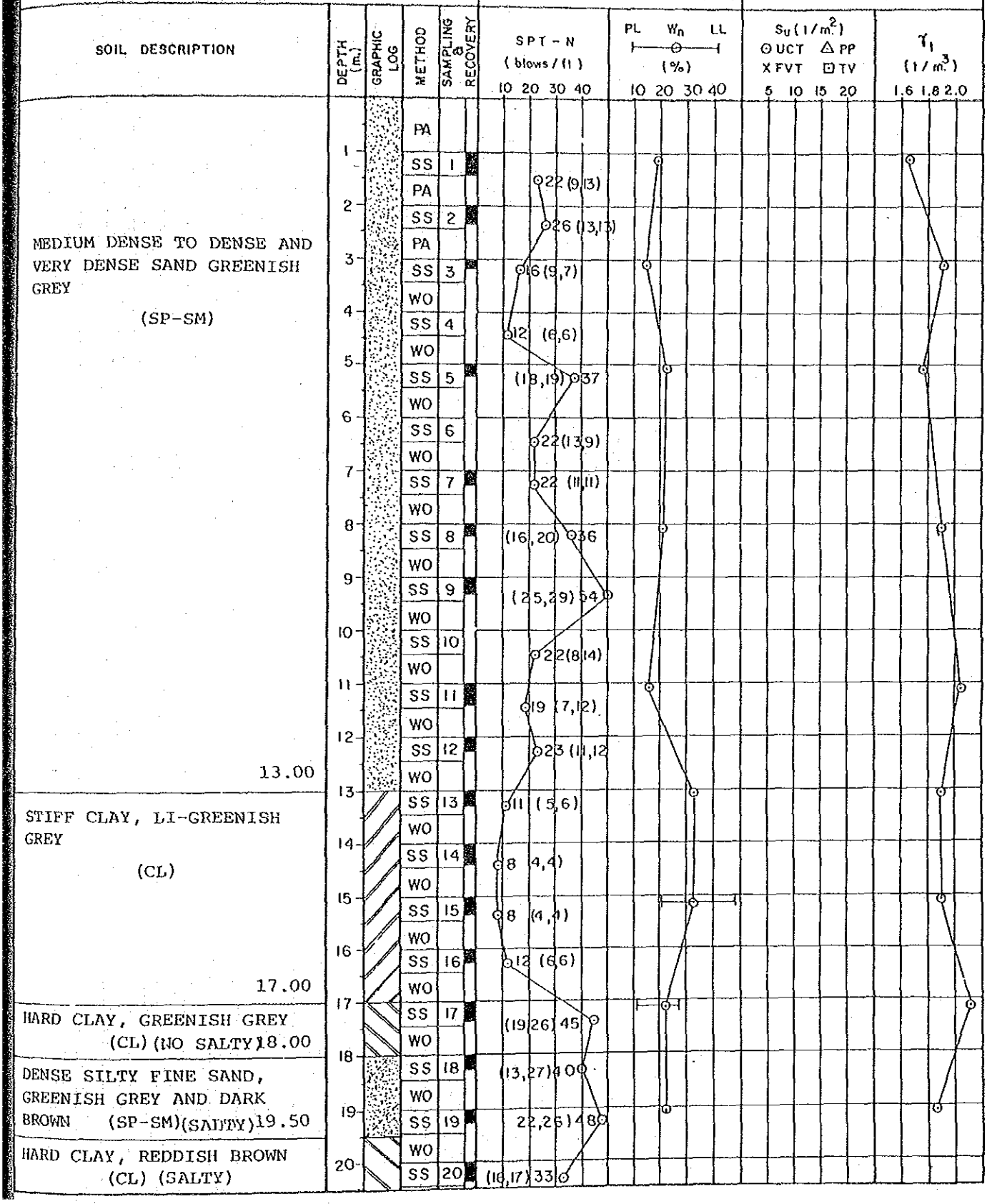
GROUND ELEV.(m.) 94.9

OBSERVED WL (m.) -0.30

DATE STARTED 11/2/89

DATE FINISHED 13/2/89

SOIL DESCRIPTION	DEPTH (m.)
MEDIUM DENSE TO DENSE AND VERY DENSE SAND GREENISH GREY (SP-SM)	
	13.00
STIFF CLAY, LI-GREENISH GREY (CL)	
	17.00
HARD CLAY, GREENISH GREY (CL) (NO SALTY)	18.00
DENSE SILTY FINE SAND, GREENISH GREY AND DARK BROWN (SP-SM)(SALTY)	19.50
HARD CLAY, REDDISH BROWN (CL) (SALTY)	



BORING LOG

PROJECT 05.02 LAM NAM MUN
LOCATION A. PHIMAI, NAKHON RATCHASIMA

BORING NO. BH-2
DEPTH (m.) 27.45
COORD. -

GROUND ELEV.(m.) 94.9
OBSERVED WL (m.) -0.30
DATE STARTED 11/2/89
DATE FINISHED 13/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY
		WO	
HARD CLAY, REDDISH BROWN (CL) (SALTY)	21	SS	21
		WO	
	22	SS	22
		WO	
	23	SS	23
		WO	
	24	SS	24
		WO	
	25	SS	25
		WO	
	26	SS	26
		WO	
27.45	27	SS	27
END OF BORING			

SPT - N (blows/ft) 10 20 30 40
(16,21) 37
(16,24) 40
(18,23) 41
(18,22) 40
(20,22) 42
(23,26) 49
(23,29) 52

PL Wn LL (%) 20 40 60 80

Su (t/m²) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γt (t/m³) 1.6 1.8 2.0

BORING LOG

PROJECT 05.02 LAM NAM MUN

LOCATION A. PHIMAI, NAKHON RATCHASIMA

BORING NO. BH-3

DEPTH (m.) 20.45

COORD. -

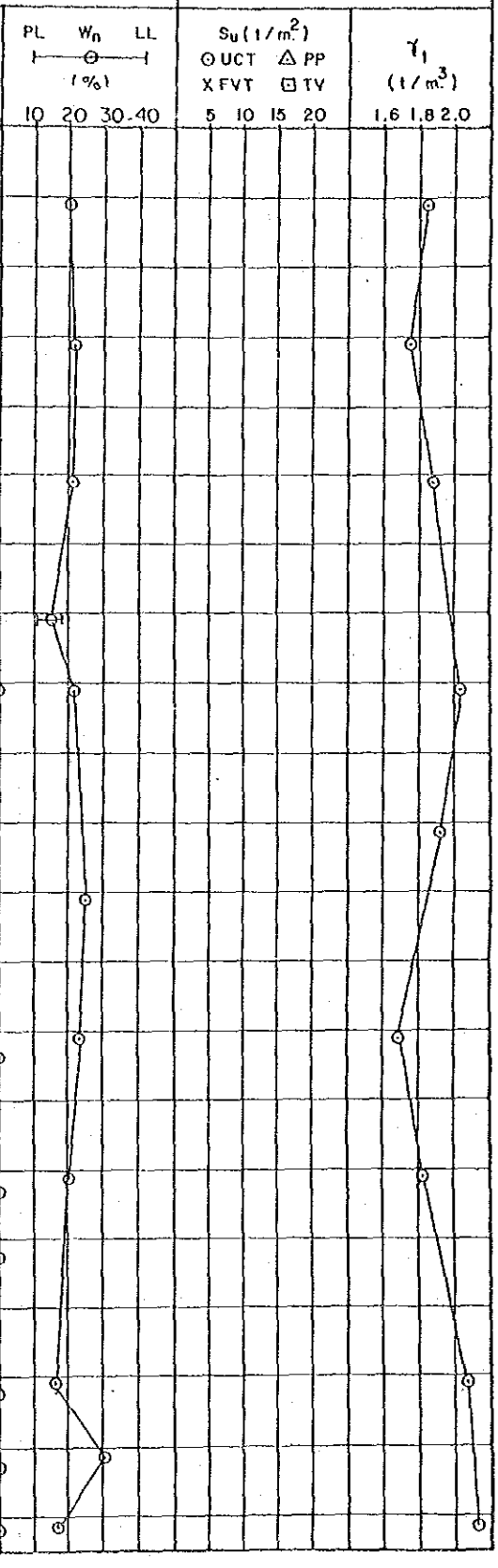
GROUND ELEV.(m.) 96.2

OBSERVED WL (m.) -1.35

DATE STARTED 14/2/89

DATE FINISHED 16/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
LOOSE TO MEDIUM DENSE SAND, LI-BROWN AND GREENISH GREY (SM) (NO SALTY)	0	PA		
	1	SS	1	13 (7,6)
		PA		
	2	SS	2	9 (3,6)
		PA		
	3	SS	3	19 (9,10)
		WO		
	4	SS	4	8 (4,4)
		WO		
	5	SS	5	23 (10,13)
		WO		
	6	SS	6	18 (8,10)
		WO		
	7	SS	7	5 (2,3)
		WO		
8.35	8	SS	8	50/15 CM
PEAT TO LIGNITE, BLACK AND BROWN (PT)(SALTY) 8.50		WO		
	9	SS	9	(17,32) 49
		WO		
	10	SS	10	27 (14,13)
		WO		
DENSE TO VERY DENSE SAND, LI-GREENISH GREY AND GREY, SOME PEAT BETWEEN 19.00-19.45 m DEPTH (SP-SM,SM) (SALTY)	11	SS	11	(16,19) 35
		WO		
	12	SS	12	(11,34) 45
		WO		
	13	SS	13	50/25 CM (26,24/13 CM)
		WO		
	14	SS	14	(16,20) 36
		WO		
	15	SS	15	50/20 CM (35,15/5 CM)
		WO		
	16	SS	16	(29,35) 64
		WO		
	17	SS	17	(14,26) 40
		WO		
	18	SS	18	50/20 CM (30,20/5 CM)
		WO		
	19	SS	19	50/10 CM (14,50/10 CM)
		WO		
END OF BORING 20.45	20	SS	20	50/28 CM (24,26/13 CM)



BORING LOG

PROJECT 05.03 LAM PHRA PHLOENG
LOCATION A. PAK THONG CHAI, NAKHON RATCHASIMA

BORING NO. BH-1
DEPTH (m.) 22.03
COORD. -

GROUND ELEV.(m.) 98.0
OBSERVED WL (m.) -5.50
DATE STARTED 11/2/89
DATE FINISHED 13/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
SOFT TO STIFF FINE SANDY CLAY, DARK BROWN (CL) (NO SALTY)	0	PA		
	1	SS	1	8 (3,5)
		PA		
	2	SS	2	9 (4,5)
		PA		
	3	SS	3	9 (4,5)
		PA		
4.50	4	SS	4	3 (2,1)
LOOSE CLAYEY FINE SAND, DARK BROWN (SC) (NO SALTY)		PA		
	5	SS	5	4 (2,2)
		PA		
7.00	6	SS	6	5 (2,3)
		WO		
MEDIUM DENSE CLAYEY AND SILTY SAND, DARK BROWN AND GREY (SC, SP-SM, SM) (NO SALTY)	7	SS	7	17 (8,9)
		WO		
	8	SS	8	(3,18) 31
		PA		
	9	SS	9	17 (7,10)
		PA		
	10	SS	10	20 (7,13)
		PA		
12.00	11	SS	11	23 (10,13)
		PA		
VERY STIFF CLAY, TRACE OF SAND, DARK BROWN (CL) (NO SALTY)	12	SS	12	22 (9,13)
		PA		
	13	SS	13	27 (12,15)
		PA		
15.50	14	SS	14	18 (8,10)
		PA		
DENSE CLAYEY FINE SAND (INTERMEDIATE SOIL), DARK BROWN (SC/CL) (NO SALTY)	15	SS	15	20 (9,11)
		PA		
	16	SS	16	24 (11,13)
		PA		
	17	SS	17	25 (12,13)
		PA		
20.00	18	SS	18	21 (10,11)
		PA		
HARD SANDY CLAY (CL)	19	SS	19	(12,13) 25
		PA		
	20	SS	20	50/25 CM (23,26/10 CM)

PL Wn LL (%) 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV 5 10 15 20

γ_t (t/m^3) 1.6 1.8 2.0

BORING LOG

PROJECT 05.03 LAM PHRA PHLOENG
LOCATION A. PAK THONG CHAI, NAKHON RATCHASIMA

BORING NO. BH-1
DEPTH (m.) 22.03
COORD. --

GROUND ELEV.(m.) 98.0
OBSERVED WL (m.) -5.50
DATE STARTED 11/2/89
DATE FINISHED 13/2/89

SOIL DESCRIPTION	DEPTH (m.)	GRAPHIC LOG	METHOD	SAMPLING & RECOVERY	SPT - N (blows / ft) 10 20 30 40	PL Wn LL (%) 20 40 60 80	S_u (t/m²) ⊙ UCT △ PP X FVT □ TV 5 10 15 20	γ_t (t/m³) 1.6 1.8 2.0
HARD SANDY CLAY, LI-BROWN AND GREY (CL) (NO SALTY) 22.00	21		SS	20	50/25 CM (23,26/10 CM)			
			WO					
			SS	2L	50/23 CM (30, 20/8 CM)			
			WO					
	22		SS	22	50/2.5 CM			
VERY DENSE SANDSTONE, BROWNISH GREY (NO SALTY) (SM) 22.03								
END OF BORING								

BORING LOG

PROJECT 05.03 LAM PHRA PHLOENG
LOCATION A. PAK THONG CHAI, NAKHON RATCHASIMA

BORING NO. BH-2
DEPTH (m.) 18.05
COORD. -

GROUND ELEV.(m.) 90.4
OBSERVED WL (m.) +0.20
DATE STARTED 13/2/89
DATE FINISHED 15/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
STIFF TO VERY STIFF SANDY CLAY, GREYISH BROWN AND DARK BROWN (CL) (NO SALTY) 3.50	1	WO		
		SS	1	6 (3,3)
	2	WO		
		SS	2	10 (5,5)
	3	WO		
		SS	3	16 (6,10)
MEDIUM DENSE CLAYEY AND SILTY SAND, DARK BROWN AND GREY (NO SALTY) (SC,SM) 5.50	4	WO		
		SS	4	11 (5,6)
	5	WO		
		SS	5	17 (7,10)
VERY STIFF TO HARD CLAY, DARK BROWN (CL) (NO SALTY) 11.00	6	WO		
		SS	6	20 (8,12)
	7	WO		
		SS	7	(14,17) 31
	8	WO		
		SS	8	20 (9,11)
	9	WO		
		SS	9	16 (7,9)
	10	WO		
		SS	10	(13,17) 30
DENSE CLAYEY FINE SAND, DARK BROWN (NO SALTY) (SC) 12.80	11	WO		
		SS	11	(13,18) 31
	12	WO		
		SS	12	(25,20) 45
VERY STIFF CLAY, DARK BROWN (CL) (NO SALTY) 16.00	13	WO		
		SS	13	(13,17) 30
	14	WO		
		SS	14	(12,14) 26
	15	WO		
		SS	15	(12,16) 28
MEDIUM DENSE CLAYEY FINE SAND, DARK GREY (SC/CL) 16.70	16	WO		
		SS	16	(11,17) 28
MEDIUM SANDY CLAY, DARK GREY (NO SALTY) (CL) 18.00	17	WO		
		SS	17	7 (2,5)
VERY DENSE SANDSTONE, GREY (NO SALTY) (SM) 18.05	18	WO		
		SS	18	50/5CM
END OF BORING				

PL — W_n — LL (%): 20 40 60 80

S_u (t/m²) ⊙ UCT △ PP X FVT ⊡ TV: 5 10 15 20

γ_t (t/m³): 1.6 1.8 2.0

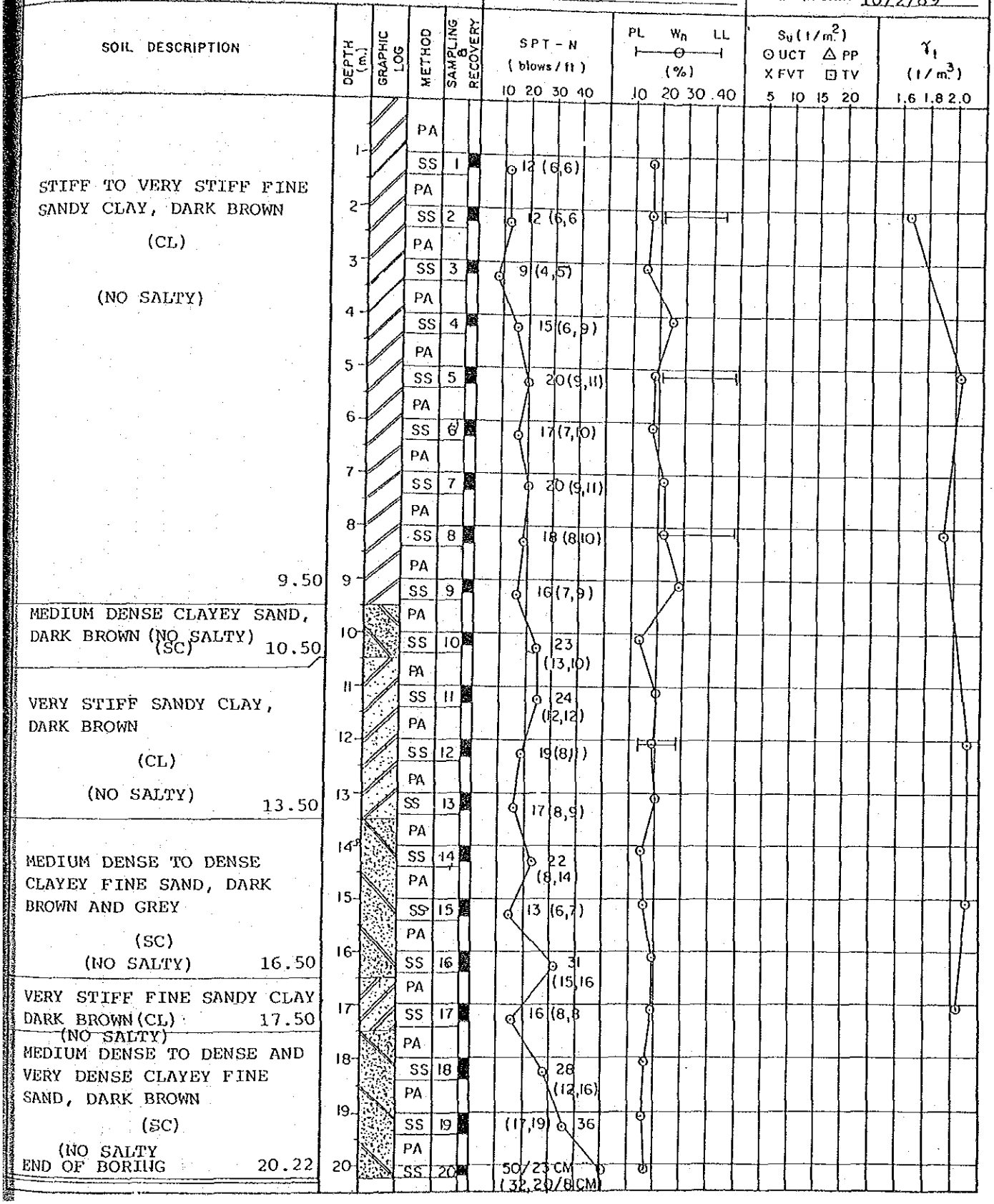
BORING LOG

PROJECT 05.03 LAM PHRA PHLOENG
LOCATION A. PAK THONG CHAI, NAKHON RATCHASIMA

BORING NO. BH-3
DEPTH (m.) 20.22
COORD. -

GROUND ELEV.(m.) 94.4
OBSERVED WL (m.) -5.50
DATE STARTED 8/2/89
DATE FINISHED 10/2/89

SOIL DESCRIPTION	DEPTH (m.)
STIFF TO VERY STIFF FINE SANDY CLAY, DARK BROWN (CL) (NO SALTY)	9.50
MEDIUM DENSE CLAYEY SAND, DARK BROWN (NO SALTY) (SC)	10.50
VERY STIFF SANDY CLAY, DARK BROWN (CL) (NO SALTY)	13.50
MEDIUM DENSE TO DENSE CLAYEY FINE SAND, DARK BROWN AND GREY (SC) (NO SALTY)	16.50
VERY STIFF FINE SANDY CLAY DARK BROWN (CL) (NO SALTY)	17.50
MEDIUM DENSE TO DENSE AND VERY DENSE CLAYEY FINE SAND, DARK BROWN (SC) (NO SALTY)	
END OF BORING	20.22



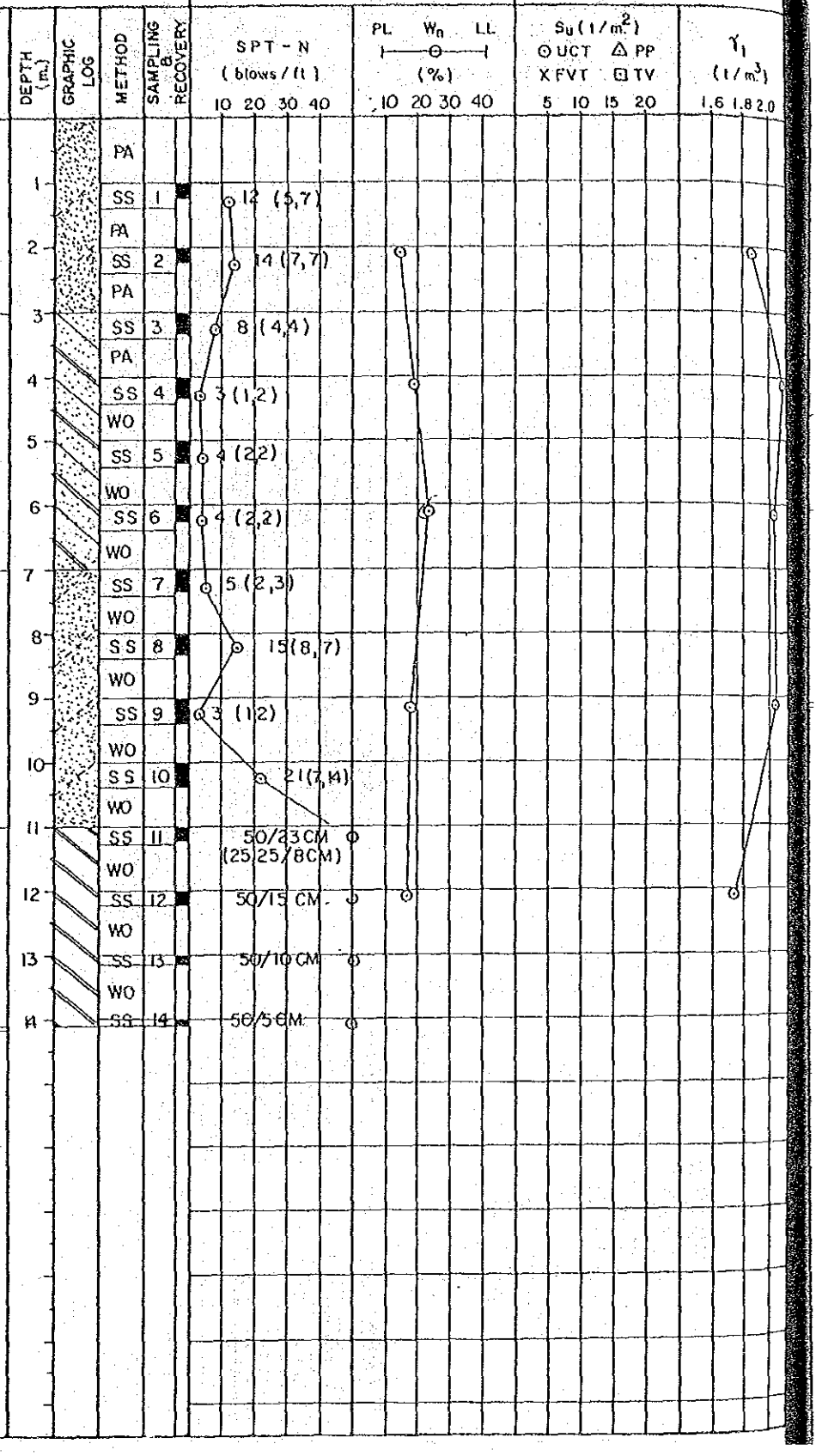
BORING LOG

PROJECT 11.01 LAM NAM KAM
LOCATION A.MUANG, SAKON NAKHON

BORING NO. BH-1
DEPTH (m.) 14.05
COORD. -

GROUND ELEV.(m.) 99.05
OBSERVED WL (m.) -3.20
DATE STARTED 20/2/89
DATE FINISHED 21/2/89

SOIL DESCRIPTION	DEPTH (m.)
MEDIUM DENSE SILTY FINE SAND, BROWN (SM) (NO SALTY)	3.00
SOFT TO MEDIUM FINE SANDY CLAY, (CL) (NO SALTY)	7.00
LOOSE TO MEDIUM DENSE SILTY AND CLAYEY SAND, BROWN (SM,SC) (NO SALTY)	11.00
HARD CLAY, DARK BROWN (CL) (NO SALTY)	14.05
END OF BORING	



K. ENGINEERING CONSULTANTS CO., LTD.

BORING LOG

PROJECT 11.01 LAM NAM KAM
LOCATION A. MUANG, SAKON NAKHON

BORING NO. BH-2
DEPTH (m.) 9.03
COORD. —

GROUND ELEV.(m.) 95.40
OBSERVED WL (m.) 0.00
DATE STARTED 17/2/89
DATE FINISHED 19/2/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING NO.	RECOVERY	SPT - N (blows/ft)
LOOSE TO MEDIUM DENSE CLAYEY SAND, BROWN AND GREYISH BROWN	1	WO			
		SS	1		5 (2, 3)
		WO			
	2	SS	2		6 (4, 2)
		WO			
	3	SS	3		23 (10, 13)
		WO			
	4	SS	4		10 (5, 5)
(SC, SP-SM)		WO			
(NO SALTY)	5	SS	5		23 (11, 12)
4.50		WO			
VERY STIFF SANDY CLAY, REDDISH BROWN AND LI-GREY	6	SS	6		50/15 CM (25, 50/15CM)
(CL) 6.00		WO			
HARD CLAY, DARK BROWN	7	SS	7		50/10 CM (26, 50/10CM)
(CL)		WO			
(NO SALTY)	8	SS	8		50/15 CM (40, 10/2.5CM)
9.03		WO			
	9	SS	9		50/2.5 CM
END OF BORING					

PL — W_n — LL (%) 10 20 30 40

S_u (t/m²) ○ UCT △ PP × FVT ⊡ TV 5 10 15 20

γ_t (t/m³) 1.6 1.8 2.0

BORING LOG

PROJECT 11.01 LAM NAM KAM

LOCATION A.MUANG, SAKON NAKHON

BORING NO. BH-3

DEPTH (m.) 19.05

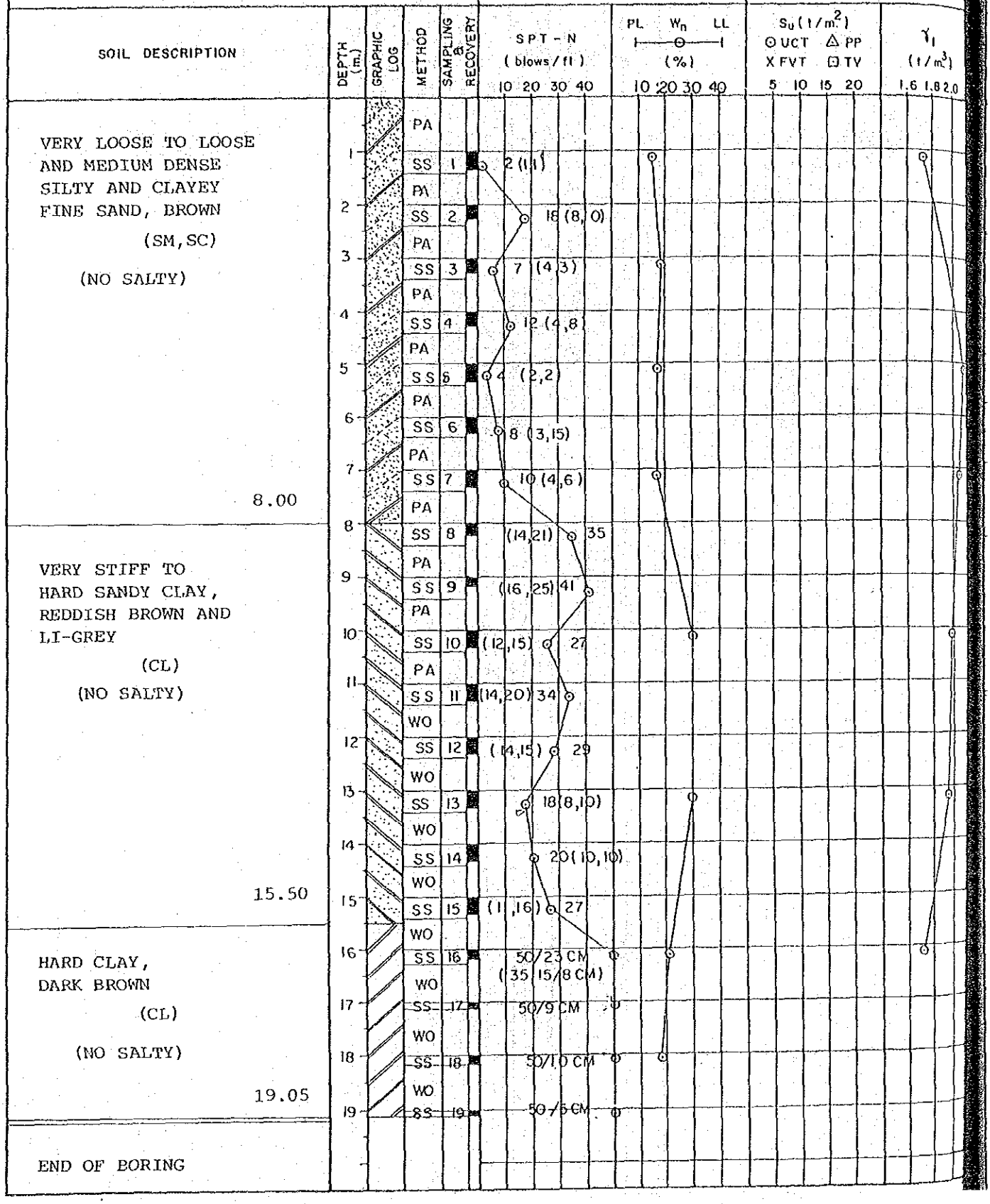
COORD. —

GROUND ELEV.(m.) 98.95

OBSERVED WL (m.) -3.00

DATE STARTED 17/2/89

DATE FINISHED 19/2/89



BORING LOG

PROJECT 3M.02 LAM NAM PHUAI
LOCATION A. SI BUN RUANG, UDON THANI

BORING NO. BH-1
DEPTH (m.) 11.08
COORD. -

GROUND ELEV.(m.) 96.0
OBSERVED WL (m.) -2.95
DATE STARTED 5/3/89
DATE FINISHED 6/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
STIFF SANDY CLAY TO CLAYEY SAND (INTERMEDIATE SOIL), BROWN (SC/CL) (NO SALTY)	2.50	PA / SS 1 / PA / SS 2 / PA / SS 3 / PA / SS 4 / PA / SS 5		11 (5,6); 10 (5,5); 14 (7,7); 24 (14,10); 1 (0,1)
MEDIUM DENSE SAND WITH GRAVEL AND CLAY, BROWN (SM) (NO SALTY)	4.80			
VERY LOOSE SAND WITH GRAVEL, BROWN (SM) (NO SALTY)	5.65			
VERY STIFF SANDY CLAY, BROWN (CL) (NO SALTY)	6.80	WO / SS 6 / WO / SS 7 / WO / SS 8 / WO / SS 9 / WO / SS 10 / WO / SS 11		19 (5,14); 18 (7,11); 50/20 CM (15,35/5CM); 50/8 CM; 50/2.5 CM; 50/8 CM
MEDIUM DENSE SILTY FINE SAND, GREY (NO SALTY) (SM)	8.25			
HARD CLAY, DARK BROWN (CL) (NO SALTY)	11.08			
END OF BORING				

PL Wn LL (%) 10 20 30 40

S_u (t/m²) ○ UCT △ PP × FVT ⊡ TV 5 10 15 20

γ_t (t/m³) 1.6 1.8 2.0

BORING LOG

PROJECT 14.02 LAM NAM PHUAI
LOCATION A.SI BUN RUANG, UDON THANI

BORING NO. BH-2
DEPTH (m.) 6.05
COORD. -

GROUND ELEV.(m.) 92.80
OBSERVED WL (m.) -0.05
DATE STARTED 7/3/89
DATE FINISHED 7/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)
MEDIUM DENSE GRAVELLY SAND BRONW (SP-SM) (NO SALTY) 2.50	1	SS	1	29 (10, 19)
		PA		
	2	SS	2	20 (9,11)
		PA		
LOOSE SAND, WITH GRAVEL, BROWN (SM)(NO SALTY) 3.80	3	SS	3	9 (4,5)
		WO		
VERY STIFF SANDY CLAY, GREY (SC/CL)(NO SALTY) 5.00	4	SS	4	20 (9,11)
		WO		
VERY DENSE GRAVELLY SAND, GREY (SM) (NO SALTY) 6.05	5	SS	5	50/20CM (27,23/5 CM)
		WO		
END OF BORING	6	SS	6	50/5 CM

PL W_n LL (%) — 10 20 30 40

S_u (t/m²) ○ UCT △ PP × FVT ⊡ TV — 5 10 15 20

γ_t (t/m³) — 1.6 1.8 2.0

BORING LOG

PROJECT 14.02 LAM NAM PHUAI
LOCATION A.SI BUN RUANG, UDON THANI

BORING NO. BH-3
DEPTH (m.) 10.18
COORD. -

GROUND ELEV.(m.) 93.50
OBSERVED WL (m.) -3.10
DATE STARTED 8/3/89
DATE FINISHED 9/3/89

SOIL DESCRIPTION	DEPTH (m.)	METHOD	SAMPLING & RECOVERY	SPT-N (blows/ft)
VERY STIFF SANDY CLAY, BROWN (CL) (NO SALTY) 3.70	1	PA		
		SS	1	22 (1,11)
		PA		
	2	SS	2	26 (12,14)
		PA		
	3	SS	3	16 (7,9)
		PA		
	4	SS	4	24 (12,12)
		PA		
MEDIUM DENSE CLAYEY SAND, WITH GRAVEL, BROWN (SM, SM-SC) (NO SALTY) 7.00	5	SS	5	(17,20) 37
		PA		
	6	SS	6	(20,24) 44
		PA		
VERY DENSE GRAVELLY SAND AND SILTY FINE SAND, BROWN AND GREY (SM) (NO SALTY) 10.18	7	SS	7	50/25CM (26,24/10CM)
		PA		
	8	SS	8	50/15 CM (14,50/15CM)
		PA		
	9	SS	9	50/10 CM
		PA		
	10	SS	10	50/12.5CM (40,10/2.5CM)
END OF BORING				

PL W_n LL (%): 10 20 30 40

S_u (t/m^2) ⊙ UCT △ PP X FVT ⊡ TV: 5 10 15 20

γ_t (t/m^3): 1.6 1.8 2.0

BORING LOG

PROJECT 15.07 LAM SOM NO.1

LOCATION A. DET UDOM, UBON RATCHATHANI

BORING NO. BH-1

DEPTH (m.) 8.27

COORD. -

GROUND ELEV.(m.) 98.5

OBSERVED WL (m.) not found

DATE STARTED 20/2/89

DATE FINISHED 21/2/89

SOIL DESCRIPTION	DEPTH (m.)	GRAPHIC LOG	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft)	PL, W_n, LL (%)	S_u (t/m^2) UCT, PP, FVT, TV	γ_t (t/m^3)
LATERITE, REDDISH BROWN (NO SALTY) 1.00			PA					
VERY LOOSE TO LOOSE AND MEDIUM DENSE SILTY AND CLAYEY FINE SAND, LI-BROWN AND YELLOWISH BROWN (SM,SC/CL)	1		SS	1	11 (5,6)			
			PA					
	2		SS	2	6 (3,3)			
			PA					
	3		SS	3	8 (4,4)			
			PA					
	4		SS	4	2 (1,1)			
(NO SALTY)			PA					
	5		SS	5	2 (5,7			
			PA					
	6		SS	6	1			
			PA					
7.50	7		SS	7	(9,13) 22			
VERY DENSE SILTSTONE, REDDISH VIOLET (SM) 8.27			PA					
	8		SS	8	50/3 CM.			
			SS	9	52/5 CM.			
END OF BORING								

BORING LOG

PROJECT 15.07 LAM SOM NO.1

LOCATION A. DET UDOM, UBON RATCHATHANI

BORING NO. BH-2

DEPTH (m.) 2.00

COORD. -

GROUND ELEV.(m.) 93.4

OBSERVED WL (m.) +1.80

DATE STARTED 19/2/89

DATE FINISHED 19/2/89

SOIL DESCRIPTION	DEPTH (m.)	GRAPHIC LOG	METHOD	SAMPLING & RECOVERY	SPT - N (blows/ft) 10 20 30 40	PL — W_n — LL (%) 10 20 30 40	S_u (t/m²) ⊙UCT △PP XFVT ⊡TV 5 10 15 20	γ_t (t/m³) 1.6 1.8 2.0
MEDIUM DENSE SAND, LI-BROWN (NO SALTY) (SM) 1.35	1		PA					
VERY DENSE SILTSTONE, REDDISH VIOLET (NO SALTY) (SM) 2.00			SS	1	(14,35) 49	⊙	⊙	⊙
END OF BORING	2		PA					

BORING LOG

PROJECT 15.07 LAM SOM NO.1

LOCATION A. DET UDOM, UBON RATCHATHANI

BORING NO. BH-3

DEPTH (m.) 9.08

COORD. -

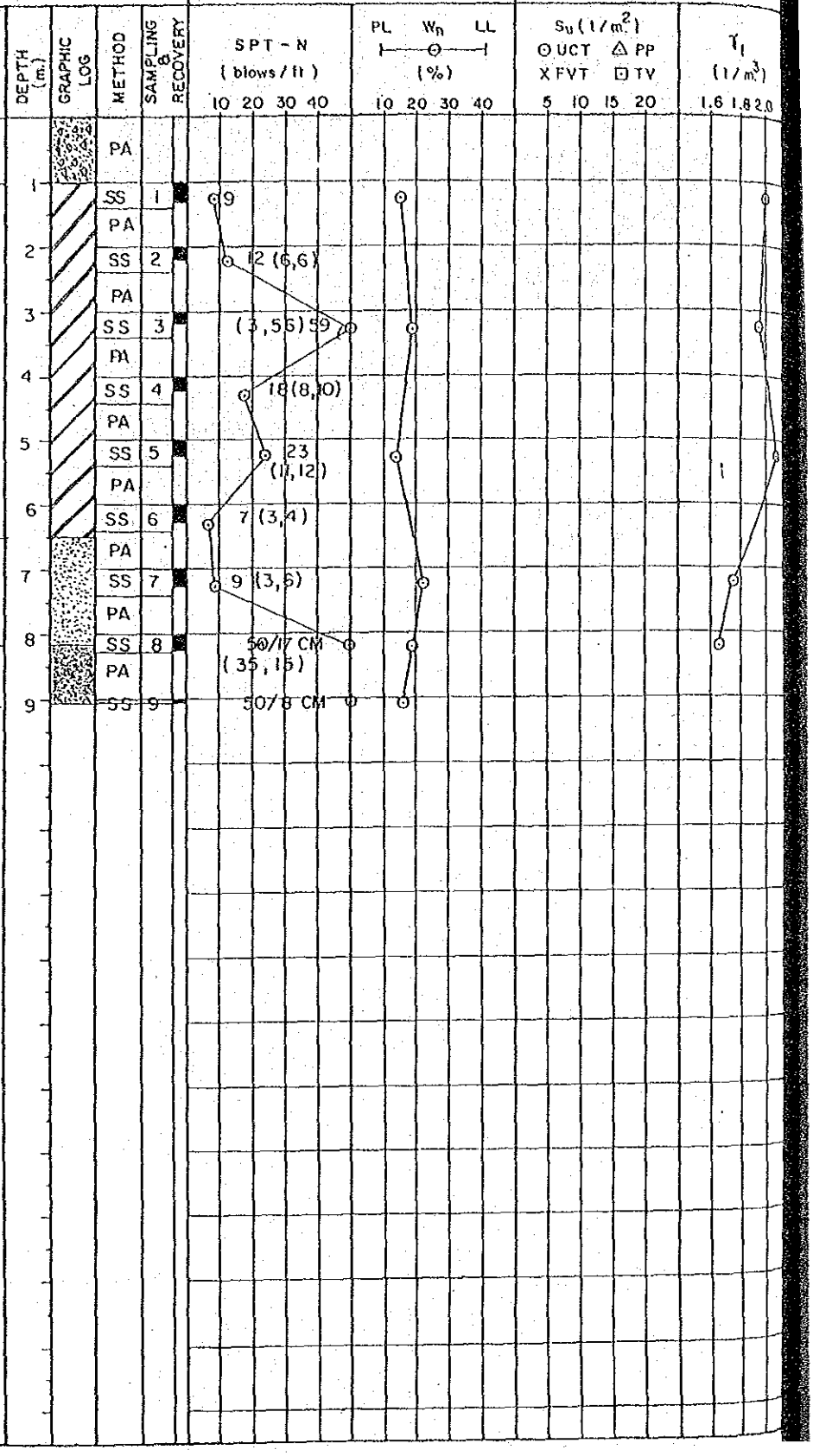
GROUND ELEV.(m.) 98.4

OBSERVED WL (m.) -3.90

DATE STARTED 17/2/89

DATE FINISHED 18/2/89

SOIL DESCRIPTION	DEPTH (m.)
LATERITE, REDDISH BROWN (NO SLATY)	1.00
STIFF TO VERY STIFF AND HARD CLAY, BROWN, LI-BROWN AND LI-GREY (CL) (SALTY)	6.50
LOOSE TO MEDIUM DENSE FINE SAND, LI-GREY (SALTY) (SP-SM)	8.20
VERY DENSE SILTSTONE, REDDISH VIOLET (SM) (NO SALTY)	9.08
END OF BORING	



付属資料 6

・経 済 効 果

付属資料6

費用・便益分析のための基礎データ

車　　種	Car/ Pickup	E-tan	Bus	Truck	計
A．日交通量（51橋の統計の統計）	3,818	2,535	1,521	1,723	9,579
B．対前年増加率	6%	4%	6%	4%	—
C．距離の平均短縮量　　量	3km	3km	3km	3km	3km
D．km当り走行費節約額（ﾊﾞｰﾂ／km）	3.1	2.3	9.3	7.7	—
E．1台当り走行費節約額(ﾊﾞｰﾂ／台)	9.3	6.9	27.9	23.1	—
F．走行速度　　(km／h)	40	20	40	40	—
G．走行時間の節約　　(分)	4.5	9	4.5	4.5	—
H．平均乗車効率　　(人／台)	3	1	21	2	—
I．旅客の時間価値(ﾊﾞｰﾂ／旅客・分)	1.3	1.3	1.3	1.3	—
J．平均積載量　　(トン／台)	0.6	0.2	0	2.5	—
K．車のレンタル料　(バーツ／分)	1.7	0.2	0	7	—
L．旅客の時間費の節約　(ﾊﾞｰﾂ／台)	17.6	11.7	122.9	11.7	—
M．レンタル料の節約　(ﾊﾞｰﾂ／台)	7.7	1.8	0	31.5	—
N．時間費の総節約額　　額	67	36	328	115	—

1988年の日交通量：PWD

出所：他のすべてのデータは関係者へのヒヤリングによる。

注　：車両走行費の節約＝C×D
走行時間の節約＝C×（60÷F）
旅客の時間費の節約＝C×H×I
レンタル料の節約＝G×K
時間費の総節約額＝L＋M
標準変換係数＝0.9
旅客の時間価値の対前年増加率＝0.02

年平均日交通量

年	CAR/PICKUP	E-TAN	BUS	TRUCK	計
1990	4,290	2,742	1,709	1,864	10,604
1991	4,547	2,852	1,812	1,938	11,149
1992	4,820	2,966	1,920	2,016	11,722
1993	5,109	3,084	2,035	2,096	12,325
1994	5,416	3,208	2,158	2,180	12,961
1995	5,741	3,336	2,287	2,267	13,631
1996	6,085	3,469	2,424	3,258	14,337
1997	6,450	3,608	2,570	2,452	15,081
1998	6,837	3,752	2,724	2,550	15,864
1999	7,248	3,903	2,887	2,652	16,690
2000	7,683	4,059	3,061	2,759	17,560
2001	8,144	4,221	3,244	2,869	18,478
2002	8,632	4,390	3,439	2,984	19,444
2003	9,150	4,565	3,645	3,103	20,464
2004	9,699	4,748	3,846	3,227	21,538
2005	10,281	4,938	4,096	3,356	22,671
2006	10,898	5,135	4,341	3,490	23,865
2007	11,552	5,341	4,602	3,630	25,125
2008	12,245	5,554	4,878	3,775	26,453
2009	12,980	5,777	5,171	3,926	27,853
2010	13,758	6,008	5,481	4,083	29,330
2011	14,584	6,248	5,810	4,247	30,888
2012	15,459	6,498	6,158	4,417	32,532
2013	16,386	6,758	6,528	4,593	34,265
2014	17,370	7,028	6,920	4,777	36,094

便　益（1,000バーツ）

	年	日交通量	走行費の節約	旅客の時間節約	車両の時間節約	時間節約合計	便益計
1	1990	10,604	0	0	0	0	0
2	1991	11,149	20,242	53,369	14,472	67,841	88,083
3	1992	11,722	54,342	146,845	38,671	185,516	239,858
4	1993	12,325	57,163	158,308	40,488	198,797	255,959
5	1994	12,961	60,134	170,675	43,295	213,070	273,204
6	1995	13,631	63,266	184,015	44,395	228,410	291,677
7	1996	14,337	66,567	198,407	46,494	244,901	311,468
8	1997	15,081	70,046	213,935	48,696	262,630	332,676
9	1998	15,864	73,713	230,688	51,006	281,694	355,406
10	1999	16,690	77,578	348,763	53,430	302,194	379,772
11	2000	17,560	81,654	268,267	55,975	324,242	405,895
12	2001	18,478	85,950	289,312	58,646	34.7958	433,908
13	2002	19,444	90,480	312,020	61,450	37,3470	463,950
14	2003	20,464	95,257	336,525	64,393	40,0918	496,175
15	2004	21,538	100,295	362,970	67,483	43,0453	530,747
16	2005	22,671	105,608	391,508	70,727	46,2235	567,843
17	2006	23,865	111,211	422,306	74,134	49,6440	607,651
18	2007	25,125	117,121	455,545	777,142	53,3257	650,378
19	2008	26,453	123,355	491,419	81,470	57,2889	696,244
20	2009	27,853	129,932	530,138	84,517	61,5555	745,487
21	2010	29,330	136,870	571,929	89,563	66,1493	798,362
22	2011	30,888	144,190	617,038	93,919	71,0957	855,147
23	2012	32,532	151,913	665,727	98,496	76,4223	916,137
24	2013	34,265	160,063	718,285	103,304	82,1589	981,653
25	2014	36,094	168,664	775,019	108,358	88,3377	1,052,040

経済キャッシュ・フロー（1,000BHAT）

年	投資	維持費	諸経費	走行費の節約	時間の節約	残存価値	便益合計	費用の現在価値	便益の現在価値	NPV
1990	1,090,000	0	1,090,000	0	0	1,090,000	0	1,090,000	0	-1,090,000
1991	1,183,300	9,810	1,193,110	20,242	67,841	2,251,500	88,083	1,039,320	76,729	-2,052,590
1992	0	20,460	20,460	54,342	185,516	2,206,030	239,858	15,525	182,009	-1,886,110
1993	0	20,460	20,460	57,163	198,797	2,160,570	255,959	13,524	169,192	-1,730,440
1994	0	20,460	20,460	60,134	213,070	2,115,100	273,204	11,781	157,313	-1,584,910
1995	0	20,460	20,460	63,266	228,410	2,069,640	291,677	10,262	146,302	-1,448,870
1996	0	20,460	20,460	66,567	244,901	2,024,170	311,468	8,940	136,091	-1,321,720
1997	0	20,460	20,460	70,046	262,630	1,978,700	332,676	7,787	126,622	-1,202,880
1998	0	20,460	20,460	73,713	281,694	1,933,240	355,406	6,784	117,837	-1,091,830
1999	0	20,460	20,460	77,578	302,194	1,887,770	379,772	5,909	109,685	-988,054
2000	0	20,460	20,460	81,654	324,242	1,842,310	405,895	5,147	102,120	-891,081
2001	0	20,460	20,460	85,950	347,958	1,796,840	433,908	4,484	95,096	-800,470
2002	0	20,460	20,460	90,480	373,470	1,751,370	436,950	3,906	88,574	-715,802
2003	0	20,460	20,460	95,257	400,918	1,705,910	496,175	3,403	82,516	-636,688
2004	0	20,460	20,460	100,295	430,453	1,660,440	530,747	2,964	76,888	-562,764
2005	0	20,460	20,460	105,608	462,235	1,614,980	567,843	2 000	71,659	-493,687
2006	0	20,460	20,460	111,211	496,440	1,569,510	607,651	2,249	66,798	-429,137
2007	0	20,460	20,460	117,121	533,257	1,524,040	650,378	1,959	62,280	-368,817
2008	0	20,460	20,460	123,355	572,889	1,478,580	696,244	1,707	58,078	-312,445
2009	0	20,460	20,460	129,932	615,555	1,433,110	745,487	1,487	54,170	-259,762
2010	0	20,460	20,460	136,870	661,493	1,387,650	798,362	1,295	50,535	-210,522
2011	0	20,460	20,460	144,190	710,957	1,342,180	855,147	1,128	47,152	-164,498
2012	0	20,460	20,460	151,913	764,223	1,296,710	916,137	983	44,004	-121,477
2013	0	20,460	20,460	160,063	821,589	1,251,250	981,653	856	41,073	-81,261
2014	0	20,460	20,460	168,664	883,377	1,205,780	2,257,820	746	82,292	286
計								2,244,730	2,245,010	

EB/EC = 1.00013　EIRR = .14797

注：(1) 維持費は建設費の1％である。

(2) 時間節約便益は旅客のそれと車両のそれの合計である。

(3) 評価期間の最後において残存価値は便益につけ加えられる。

年	CAR/PICKUP	E-TAN	BUS	TRUCK	計
1990	4,290	2,742	1,709	1,864	10,604
1991	4,547	2,852	1,812	1,938	11,149
1992	4,820	2,966	1,920	2,016	11,722
1993	5,109	3,084	2,035	2,096	12,325
1994	5,416	3,208	2,158	2,180	12,961
1995	5,741	3,336	2,287	2,267	13,631
1996	6,085	3,469	2,424	3,258	14,337
1997	6,450	3,608	2,570	2,452	15,081
1998	6,837	3,752	2,724	2,550	15,864
1999	7,248	3,903	2,887	2,652	16,690
2000	7,683	4,059	3,061	2,759	17,560
2001	8,144	4,221	3,244	2,869	18,478
2002	8,632	4,390	3,439	2,984	19,444
2003	9,150	4,565	3,645	3,103	20,464
2004	9,699	4,748	3,846	3,227	21,538
2005	10,281	4,938	4,096	3,356	22,671
2006	10,898	5,135	4,341	3,490	23,865
2007	11,552	5,341	4,602	3,630	25,125
2008	12,245	5,554	4,878	3,775	26,453
2009	12,980	5,777	5,171	3,926	27,853
2010	13,758	6,008	5,481	4,083	29,330
2011	14,584	6,248	5,810	4,247	30,888
2012	15,459	6,498	6,158	4,417	32,532
2013	16,386	6,758	6,528	4,593	34,265
2014	17,370	7,028	6,920	4,777	36,094

経済キャッシュ・フロー（1,000BHAT）

年	投資	維持費	諸経費	走行費の節約	時間の節約	残存価値	便益	費用の現在価値	便益の現在価値	NPV
1990	1,090,000	0	1,090,000	0	0	1,090,000	0	1,090,000	0	-1,090,000
1991	1,183,300	9,810	1,193,110	21,582	72,247	2,251,500	93,829	1,032,190	81,174	-2,041,020
1992	0	20,460	20,460	57,941	197,569	2,206,030	255,511	15,313	191,235	-1,865,090
1993	0	20,460	20,460	60,949	211,718	2,160,570	272,667	13,248	176,552	-1,701,790
1994	0	20,460	20,460	64,118	226,923	2,115,100	291,042	11,481	163,033	-1,550,220
1995	0	20,460	20,460	67,458	243,267	2,069,640	310,726	9,915	150,583	-1,409,550
1996	0	20,460	20,460	70,979	260,836	2,024,170	331,815	8,578	139,115	-1,279,010
1997	0	20,460	20,460	74,689	279,726	1,978,700	354,415	7,421	128,549	-1,157,890
1998	0	20,460	20,460	78,600	300,037	1,933,240	378,637	6,420	118,812	-1,045,490
1999	0	20,460	20,460	82,723	321,879	1,887,770	404,603	5,554	109,836	-941,211
2000	0	20,460	20,460	87,070	345,372	1,842,310	432,442	4,805	101,561	-844,456
2001	0	20,460	20,460	91,653	370,642	1,796,840	462,295	4,157	93,928	-754,685
2002	0	20,460	20,460	96,485	397,827	1,751,370	494,312	3,596	86,888	-671,393
2003	0	20,460	20,460	101,580	427,076	1,705,910	528,656	3,111	80,391	-594,113
2004	0	20,460	20,460	106,953	458,549	1,660,440	565,502	2,692	74,396	-522,409
2005	0	20,460	20,460	112,620	492,418	1,614,980	605,038	2,329	68,862	-455,876
2006	0	20,460	20,460	118,597	528,870	1,569,510	647,467	2,015	63,752	-394,138
2007	0	20,460	20,460	124,901	568,107	1,524,040	693,007	1,743	59,033	-336,848
2008	0	20,460	20,460	131,551	610,344	1,478,580	741,895	1,508	54,674	-283,682
2009	0	20,460	20,460	138,566	655,816	1,433,110	794,382	1,304	50,646	-234,341
2010	0	20,460	20,460	145,967	704,776	1,387,650	850,743	1,128	46,924	-188,546
2011	0	20,460	20,460	153,775	757,496	1,342,180	911,271	976	43,483	-146,039
2012	0	20,460	20,460	162,014	814,270	1,296,710	976,284	845	40,302	-106,581
2013	0	20,460	20,460	170,708	875,416	1,251,250	1,046,120	731	37,361	-69,951
2014	0	20,460	20,460	179,882	941,275	1,205,780	2,326,940	632	71,895	1,312
計								2,231,670	2,232,980	

EB/EC = 1.00059　EIRR = .1559

付属資料 7

・上部工設計

断面力の算出手順

(ＧＲＯＵＰⅠ、　支間２０ｍ　を例とする)

1　荷重

1−1 死荷重

(1) 高欄　　0.050 t／m

(2) 歩道　　0.800 ×0.250 ×2.4=0.480 t／m

(3) コンクリート舗装　　0.030 ×2.4=0.072 t／m²
(0.070×2.4=0.168 t／m²　GroupⅡの場合)

(4) コンクリート床版

床版厚　　T_c = (S+3.05) ／30 = (1.75+3.05) ／30
=0.160 m (≧0.170)　⇨　0.170 m

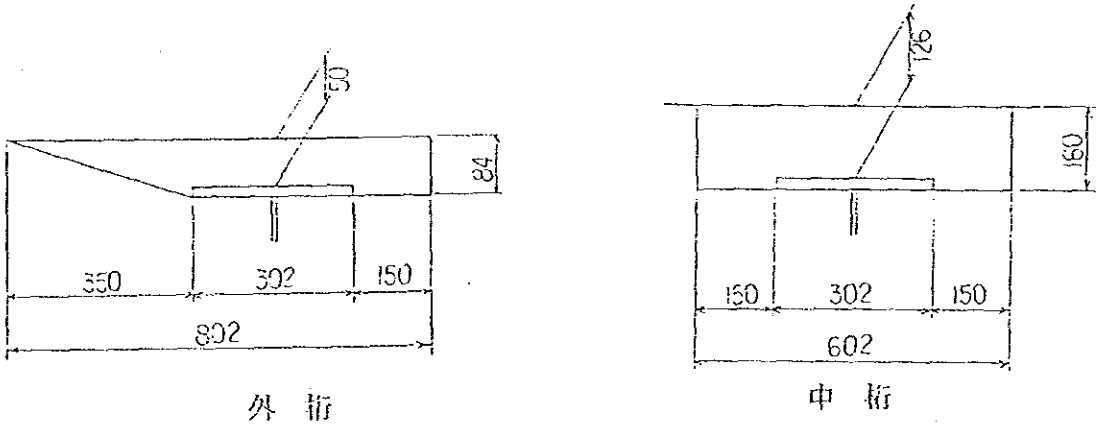
S：　床版支間 (m)

0.170 ×2.4=0.408 t／m²

(5) ハンチ

外桁　　(0.452 +0.802) ×0.084 ×1／2×2.4=0.126 ⇨0.150 t／m

中桁　　0.600 ×0.160 ×2.4=0.230 ⇨0.250 t／m



外　桁　　中　桁

図　1　ハンチ形状

(6) 鋼桁重量　　0.320 t／m　(0.400 t／m：Plate Girder の場合)

1－2 活荷重

（1）トラック荷重　　HS20－44（MS18）

（2）主桁への分配係数　　$f = S_P / 1.68 = 1.90 / 1.68 = 1.131$

S_P ： 主桁間隔（m）

（3）衝撃係数　　$i = 15.24 / (L_s + 38) = 15.24 / (20 + 38)$

$= 0.263$ （$\leqq 0.300$）

L_s ：支間（m）

（4）群集荷重　　$W_q = 0.300$ t／m² × 0.500 m ＝ 0.150 t／m

2 曲げモーメント

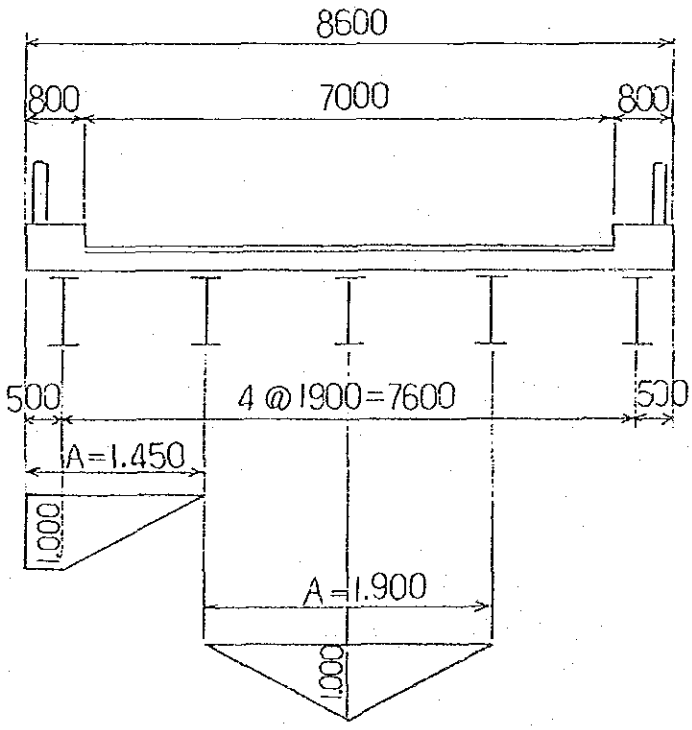


図 2 荷重分布図

2--1 死荷重

高欄	2×0.050	=0.100 t／m
歩道	2×0.480	=0.960 t／m
		1.060 t／m

主桁1本当たり W_{d1}=1.060／5=0.212 t／m

外桁

W_{d1}		=0.212 t／m
コンクリート舗装	0.072×1.450	=0.104 t／m
コンクリート床版	0.408×1.450	=0.592 t／m
ハンチ		=0.150 t／m
鋼重		=0.320 t／m
		W_d =1.378 t／m

中桁

W_{d1}		=0.212 t／m
コンクリート舗装	0.072×1.900	=0.137 t／m
コンクリート床版	0.408×1.900	=0.775 t／m
ハンチ		=0.250 t／m
鋼重		=0.320 t／m
		W_d =1.694 t／m

$M_d = 1／8 \times W_d \times L_s^2$

外桁　M_d =68.9 t・m

中桁　M_d =84.7 t・m

2－2 活荷重

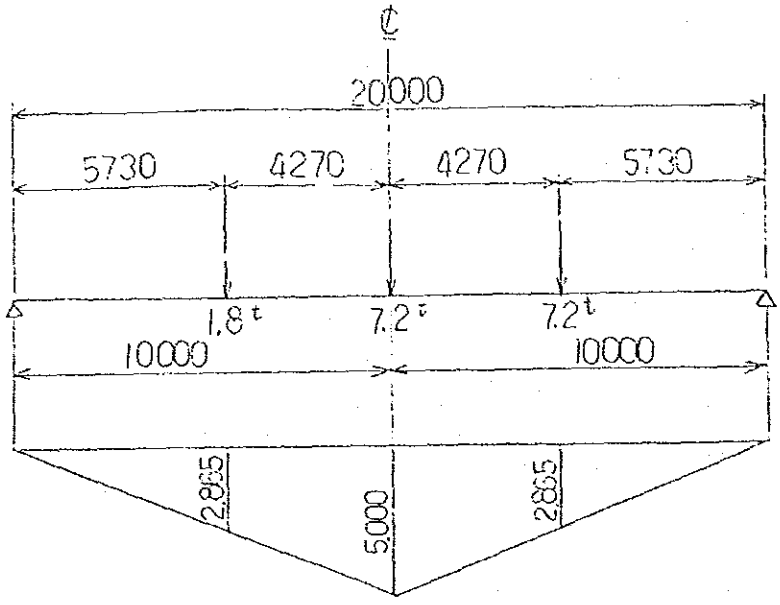


図　3　輪荷重の載荷位置

輪荷重（t）	影響線縦距	曲げモーメント（t・m）
1.800	2.865	5.157
7.200	5.000	36.000
7.200	2.865	20.628
		61.785

輪荷重　　$M_L = 61.785 \times 1.131 = 69.9$　t・m

衝撃　　$M_i = 69.9 \times 0.263 = 18.4$　t・m

群集荷重（外桁）　　$M_q = 1/8 \times 0.150 \times 20^2 = 7.5$　t・m

2−3 曲げモーメント合計

作用荷重

外桁　$M_S = M_d + M_L + M_i + M_q = 164.6$ t・m

中桁　$M_S = M_d + M_L + M_i = 172.9$ t・m

最大設計荷重

外桁　$M_f = 1.3 \times (M_d + 5/3 \times (M_L + M_i + M_q)) = 297.4$ t・m

中桁　$M_f = 1.3 \times (M_d + 5/3 \times (M_L + M_i)) = 301.7$ t・m

3　せん断力

3−1 死荷重

$$R_d = 1/2 \times W_d \times L_s$$

外桁　　$R_d = 13.8$　t
中桁　　$R_d = 16.9$　t

3−2 活荷重

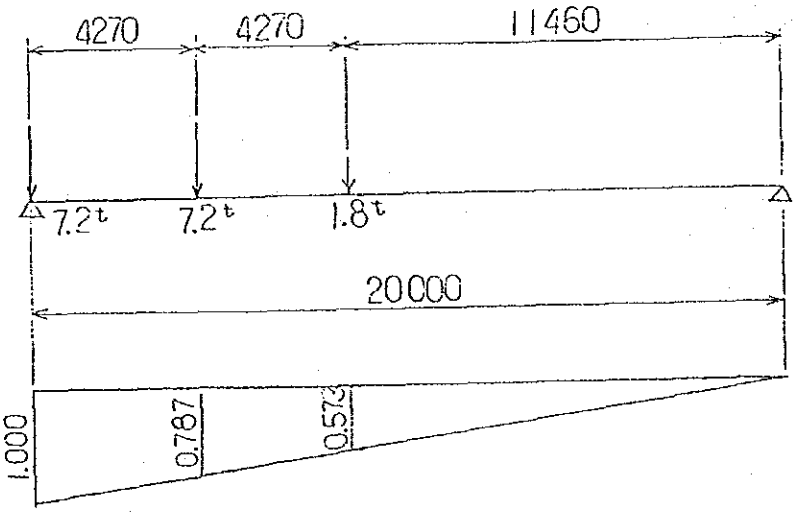


図　4　輪荷重の載荷位置

輪荷重（t）	影響線縦距	せん断力（t）
7.200	1.000	7.200
7.200	0.787	5.666
1.800	0.573	1.031
		13.897

輪荷重　　$R_L = 13.897 \times 1.131 = 15.7$　t

衝撃　　$R_i = 15.7 \times 0.263 = 4.1$　t

群集荷重（外桁）　　$R_q = 1/2 \times 0.150 \times 20 = 1.5$　t