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ภาคผนวก ก.

คู่มือการใช้โปรแกรมสำเร็จรูป " SAPF "

คู่มือการใช้โปรแกรม " SAPF "

พิจารณาในรายละเอียดดังต่อไปนี้

1. บทนำ
2. Hardware และ Software ที่ต้องใช้
3. การเริ่มต้นและสิ้นสุดของการใช้โปรแกรม " SAPF "
4. รายละเอียดของตัวโปรแกรม " SAPF "
5. แนะนำวิธีการเตรียมข้อมูลสำหรับการใช้โปรแกรม " SAPF "

1. บทนำ

โปรแกรม " SAPF " นี้ เป็นโปรแกรมสำเร็จเพื่อคำนวณค่าการทรุดตัวของฐานรากแบบเสาเข็ม โดยใช้กับเครื่อง IBM Personal Computer ที่ใช้ Disk Operation system version ๒.๐ ตามวิธีของ Tomlinson , Terzaghi และ Poulos ดู ในบทที่ ๓.

2. Hardware และ Software ที่ต้องใช้

การใช้โปรแกรม " SAPF " ต้องประกอบด้วย

- IBM Personal Computer มีหน่วยความจำอย่างน้อย ๒๕๖ k-bytes
- ตัวโปรแกรม " SAPF " ๒ แผ่น ชื่อว่า SAPF 1 และ SAPF 2
- Data diskette ๑ แผ่น
- IBM Monochrome Display ๑ เครื่อง
- IBM Color / Graphics Monitor ๑ เครื่อง
- เครื่องพิมพ์ (printer) ๑ เครื่อง

3. การเริ่มต้นและสิ้นสุดการใช้โปรแกรม " SAPF "

1) ใส่ diskette โปรแกรม " SAPF " ในช่อง drive A และ data diskette ใน drive B

2) เปิดเครื่องไมโครคอมพิวเตอร์ IBM pc. , IBM Color / Graphics Monitor และ Printer

3) ตั้งวันที่ แล้วกดปุ่ม < return >

4) เครื่องจะ load GRAPHICS.COM program และ START.EXE แล้วกด < return >

5) เครื่องจะเปิดให้ตั้งชื่อโครงการที่จะทำ กด < return > จะเกิด MENU ให้เลือกสั่งขั้นตอนการทำงานแก่เครื่องซึ่งจะกล่าวต่อไป

ตัวอย่างการคำนวณดูได้จากภาคผนวก ข. เมื่อต้องการหยุดโปรแกรมก็เลือกหัวข้อ 9 (End of program) ในตัว main MENU แล้วกดปุ่ม < return >

4. รายละเอียดของตัวโปรแกรม " SAPF "

ในตัวโปรแกรมจะประกอบด้วยวิธีการวิเคราะห์หาค่าการทรุดตัวของฐานรากแบบเสาเข็มตามวิธี

ก) วิธี Tomlinson

ข) วิธี Terzaghi

ค) วิธี Poulos

ซึ่งในตัวโปรแกรม " SAPF " ได้แยกโปรแกรมย่อยดังนี้

4.1 โปรแกรมการเริ่มต้น

เมื่อเริ่มเปิดเครื่องตัวโปรแกรมจะเปิด " DIRECTORY " file named " STARTFL " ใน data diskette ให้กรอกชื่อโครงการ ชื่อผู้ใช้งาน , วันที่และชนิดของฐานราก

4.2 โปรแกรม MENU

ตัวโปรแกรมส่วนนี้เป็นศูนย์รวมในการสั่งงานให้ทำในขั้นตอนต่าง ๆ เช่น ขั้นป้อนข้อมูล , ทำการคำนวณ , แก้ไขข้อมูล , พิมพ์ผล หรือหยุดการใช้งาน ดังรูป 4.1

4.3 โปรแกรมป้อนข้อมูล (Data Input)

ชั้นดินและพารามิเตอร์ต่าง ๆ ของดินชั้นนั้น ๆ ใส่ตามวิธีการคำนวณต่าง ๆ จะกล่าวรายละเอียดในหัวข้อการเตรียมข้อมูล

4.4 โปรแกรมการใส่ข้อมูลของตำแหน่งฐาน (Footing Layout Input Program)

จะใส่เป็นรูปแบบต่าง ๆ ตามการคำนวณแบบ Multi - footing foundation และ Single - raft pile foundation โดยเฉพาะวิธีของ Poulos จะต้องกำหนดจุดของฐาน (footing) ต่าง ๆ ในฐานราก (foundation) ตามแกน x , y ตามพิกัดที่กำหนดขึ้นโดยรูปแบบของฐาน มีได้ 5 รูปแบบ คือ ○ □ ▭ △ ⬡

4.5 โปรแกรมการจัดกลุ่มเสาเข็มในฐาน (Pile Arrangement Input Program)

จะใช้กับวิธีของ Poulos เท่านั้น โดยบอกตำแหน่งของเสาเข็มภายในฐานแต่ละตัว เป็นพิกัดของจุดตามแกน x , y ที่กำหนดขึ้นภายในฐานรากนั้น

4.6 ตัวโปรแกรมที่คำนวณตามวิธี Tomlinson

การคำนวณค่าการทรุดตัวด้วยวิธีนี้สามารถทำได้กับฐานแบบ Single - pile raft และ Multi - footing โดยแบบแรกจะใช้คำนวณการทรุดตัวของฐานราก (foundation) ส่วนแบบหลังจะคำนวณการทรุดตัวของฐานเป็นตัว ๆ ไป

4.7 ตัวโปรแกรมที่คำนวณตามวิธี Terzaghi

การคำนวณทำได้เช่นเดียวกับวิธีการของ Tomlinson แตกต่างกันที่ข้อสมมุติฐานที่ใช้

4.8 ตัวโปรแกรมที่คำนวณตามวิธีของ Poulos

วิธีนี้ตัวโปรแกรมจะประกอบไปด้วยโปรแกรมย่อย (Subprogram) 3 อย่าง คือ

ก) โปรแกรมย่อยในการคำนวณกลับเพื่อหาโมดูลัสระหว่างดินกับเสาเข็ม

ข) โปรแกรมย่อยในการคำนวณหาค่าการทรุดตัวของดินและเสาเข็มใน founding layer (ρ_{fd})

ค) โปรแกรมย่อยในการคำนวณหาค่าการทรุดตัวของดินใน Underlying layer (ρ_{ud})

ตัวโปรแกรมย่อย ก) นั้น เครื่องจะได้ข้อมูลมาจากการทดสอบเสาเข็ม (Pile load Test) ซึ่งเครื่องจะสมมุติค่า K (pile Stiffness factor) ไปจนกว่าจะสอดคล้องกับค่า K ที่ได้จากความสัมพันธ์กับโมดูลัสของดินตลอดความยาวเสาเข็ม

ตัวโปรแกรมย่อย ข) จะใช้หาค่าการทรุดตัวของดินและเสาเข็มใน founding layer ที่ฐานตัวใดตัวหนึ่งหรือทั้งหมดทุกตัวก็ได้

และตัวโปรแกรมย่อย ค) นั้น จะคำนวณการทรุดตัวของดินใน Underlying layer และยังแสดงผลของค่าการทรุดตัวทั้งหมดสุดท้าย (final settlement) อีกด้วย

4.9 โปรแกรมการกรอกข้อมูล (Data listing Program)

โปรแกรมนี้สามารถแสดงผลการจัดเรียงข้อมูลที่ใส่เข้าไปได้ในจอภาพหรือจะพิมพ์ออกมาก็ได้

4.10 โปรแกรมการแสดงผลการทรุดตัวและผลต่างของการทรุดตัว (Settlement & Differential - Settlement Listing Program)

4.11 โปรแกรมการแก้ไขรูปแบบของฐานราก (Correction of the Foundation - Layout Program)

4.12 ข้อสมมุติฐานและข้อจำกัดของโปรแกรมสำเร็จ " SAPF " (Assumptions & Limitations)

5. แนะนำวิธีการเตรียมข้อมูลสำหรับการใช้โปรแกรม " SAPF "

แยกออกได้เป็น 2 กลุ่ม คือ

5.1 Control Data ใช้ตัวอักษร 6 ตัวแรกสำหรับเป็นชื่อโครงการหลักซึ่งจะบอกชื่อผู้ใช้ , วันที่ใช้งาน , และชนิดของระบบฐานรากพร้อมวิธีการคำนวณที่ใช้

5.2 Calculation Data ข้อมูลสำหรับใช้ในการคำนวณ ซึ่งมีรูปแบบของฐานราก , พิกัดของฐานแต่ละตัว , น้ำหนักบรรทุก , การจัดกลุ่มเสาเข็มในฐาน , ลักษณะชั้นดินและพารามิเตอร์ของชั้นดินนั้น ซึ่งจะอธิบายในรายละเอียดดังนี้

5.2.1 ลักษณะของฐานราก (Foundation Geometry)

แล้วแต่จะพิจารณาให้เป็น Single - raft foundation หรือ Multi - footing foundation ถ้าเลือกอย่างแรกก็ต้องใส่รูปร่าง , ขนาดเป็นต้น ถ้าเลือกอย่างหลังจะกล่าวในรายละเอียดแบบวิธี Poulos ทั้งสองแบบยังต้องบอกความลึกของปลายเสาเข็มระดับของตัวฐานรากต่ำลงมาจากผิวดินเท่าไร

5.2.2 ข้อมูลของน้ำหนักบรรทุกตามแกน (Axial Load data Input)

กรณีที่ฐานรากเป็น pile - raft foundationสามารถเลือกใส่ข้อมูลได้ 2 ลักษณะคือ เป็นน้ำหนักบรรทุกรวมสุทธิที่กระทำ (total net load) หรือเป็นน้ำหนักบรรทุกแผ่สม่ำเสมอที่กระทำ (Uniformly distributed load) กรณีที่เป็น multi - footing foundation ควรใช้เป็นน้ำหนักบรรทุกตามแกน (axial load) กระทำต่อฐานแต่ละตัวตามจุดพิกัดต่าง ๆ

5.2.3 ข้อมูลกำหนดจุดพิกัดของฐาน (Footing Layout data)

แรกเลยต้องดูลักษณะการจัดเรียงของเสาเข็มกลุ่มในฐานแต่ละตัวตามสภาพจริง แล้วกำหนดรูปร่างของฐาน (ฐานหนึ่งตัวจะมีลักษณะการจัดเรียงตัวของเสาเข็มเดียวในกลุ่มหนึ่งแบบ) และน้ำหนักบรรทุกที่กระทำส่วนนี้สามารถเลือกรูปแบบได้มากสุด 30 แบบ ต่อมาก็กำหนดช่วง (panel) ของฐาน (footing) ทั้งหมดในฐานราก (foundation) ให้ชื่อตามพิกัด x , y ซึ่งจำนวนช่วงมีได้ถึง 20 × 20

5.2.4 ข้อมูลการจัดเรียงของเสาเข็มในฐาน (Pile arrangement data)

ข้อมูลอันนี้ต้องการสำหรับการคำนวณตามวิธี Poulos เพียงอย่างเดียว ต้องใส่ขนาดเส้นผ่านศูนย์กลางของเสาเข็ม จำนวนเสาเข็มและระยะระหว่างเสาเข็มในฐานแต่ละตัว กำหนดตำแหน่งเป็นพิกัด x , y เหมือนกัน ในฐานแต่ละชนิด ซึ่งจำนวนเข็มไม่ควรเกิน 10 ต้น สำหรับฐานหนึ่งตัว ควรจัดให้น้อยที่สุดตามขนาดฐาน จะยอมได้ และ Poulos & Davis (1980) แนะว่าสิ่งสำคัญคือจำนวนเสาเข็มในฐานหนึ่งชนิดถ้าเท่ากันก็อาจจัดเป็นแบบเดียวกันได้ทั้ง ๆ ที่มีระยะห่างระหว่างเสาเข็มไม่เท่ากัน และสุดท้ายในการจัดรูปแบบควรให้มีความสมดุลย์ (Symmetrical) ของตำแหน่งเสาเข็มให้มากที่สุด เพื่อง่ายและรวดเร็วในการคำนวณ

5.2.5 ชนิดและคุณสมบัติของชั้นดิน (Soil profile and its properties)

ขึ้นอยู่กับวิธีที่ใช้ในการคำนวณ ซึ่งพารามิเตอร์ที่จำเป็นต้องใช้มีดังนี้

1) วิธี Tomlinson

สำหรับชั้นดินเหนียวมี
- หน่วยน้ำหนักของดิน (unit weight)
- ชนิดของดินเหนียว (soft or stiff)
- ค่ายังโมดูลัสแบบระบายน้ำ (Drained Young's Modulus , E_s')
- ค่ายังโมดูลัสแบบไม่ระบายน้ำ (Undrained Young's Modulus , E_u)
- สัมประสิทธิ์ของการอัดตัวตามปริมาตร (Coeff of Volumetric Comp., m_v)
- Geological Factor (μ_g)

สำหรับชั้นทราย
- หน่วยน้ำหนักของทราย (unit weight)
- ค่ายังโมดูลัสแบบระบายน้ำ (Drained Young's Modulus , E_s')
- สัมประสิทธิ์ของการอัดตัวตามปริมาตร (m_v)
- Geological Factor (μ_g)

2) วิธี Terzaghi

ข้อมูลที่ต้องการมีเพียง หน่วยน้ำหนัก , และสัมประสิทธิ์การอัดตัวตามปริมาตร (m_v) ในกรณีที่เราใส่ข้อมูลตามวิธีของ Tomlinson แล้วเราก็คำนวณด้วยวิธี Terzaghi ได้เลย

3) วิธี Poulos

ข้อมูลที่ต้องใส่มี
- Unit weight
- ค่ายังโมดูลัสแบบระบายน้ำ (Drained Young's Modulus)
- ค่าอัตราส่วนปัวซอง (Poisson's ratio)

5.2.6 ข้อมูลการทดสอบเสาเข็ม (Pile load test data)

ใช้เฉพาะในวิธี Poulos เท่านั้น เพื่อการหาค่าโมดูลัสระหว่างดินกับ

เสาเข็ม และค่า K (pile - stiffness factor)

5.2.7 หน่วยที่ใช้สำหรับโปรแกรมสำเร็จนี้มีดังนี้

น้ำหนักบรรทุกบนระบบฐานราก	หน่วยเป็น	ตัน หรือ ตันต่อตารางเมตร
ขนาดของระบบฐานราก	"	เมตร
โมดูลัส	"	ตันต่อตารางเมตร
หน่วยน้ำหนักของดิน	"	ตันต่อลูกบาศก์เมตร
การทรุดตัว	"	มิลลิเมตร

ตัวอย่างและผลการคำนวณโดยใช้โปรแกรม " SAPF " แสดงรายละเอียดในภาคผนวก ข.

ภาคผนวก ข.

ตัวอย่างการคำนวณค่าการทรุดตัวจากโปรแกรม " SAPF "

ตารางที่ ข.1 สรุปผลการคำนวณเพื่อประมาณค่าการทรุดตัวรวม ตามวิธี Terzaghi

TABLE A1 SETTLEMENT CALCULATION OF PILE FOUNDATION

SETTLEMENT CALCULATION OF PILE FOUNDATION BY TERZAGHI'S METHOD
SINGLE RAFT FOUNDATION

METHOD	SETT. NO.	FOUNDATION DIM.			EQ.RAFT FOUNDATION DIM.			TOTAL CONSOL.SETT.		TOTAL CONSOL.
		B,m	L,m	PILE LENG. m	EQ.B,m	EQ.L,m	EQ.DEPTH, m	CLAY LAYER	SAND LAYER	SETT. cm.
	S2	-	-	-	11.35	12.72	18.88	19.79	13.07	32.86
TB1	S4	-	-	-	12.72	12.72	7.50	184.83	5.07	189.90
	S6	-	-	-	10.22	12.72	2.90	345.25	3.29	348.54
	S8	-	-	-	7.72	12.72	1.43	372.58	2.61	375.19
	S2	19.35	12.72	19.35	-	-	-	21.79	11.54	33.33
TB2	S4	12.72	12.72	11.35	-	-	-	113.64	9.17	122.81
	S6	10.22	12.72	4.45	-	-	-	200.55	5.42	205.97
	S8	7.72	12.72	2.25	-	-	-	250.26	4.02	254.28
	S2	19.35	12.72	19.35	11.35	12.72	18.88	-	-	28.90
TBH	S4	12.72	12.72	11.35	12.72	12.72	7.50	-	-	176.00
	S6	10.22	12.72	4.45	10.22	12.72	2.90	-	-	301.50
	S8	7.72	12.72	2.25	7.72	12.72	1.43	-	-	334.50
	S2	-	-	19.35	-	-	-	24.64	14.97	39.61
TB3	S4	-	-	9.95	-	-	-	148.87	7.17	156.04
	S6	-	-	3.15	-	-	-	243.52	5.40	248.92
	S8	-	-	3.15	-	-	-	265.07	6.66	271.73
	S2	-	-	18.50	-	-	-	23.74	17.59	41.33
	S3	-	-	15.25	-	-	-	40.88	10.56	51.45
	S4	-	-	12.10	-	-	-	118.33	8.45	126.78
TB4	S5	-	-	6.90	-	-	-	174.35	6.45	180.80
	S6	-	-	4.90	-	-	-	186.62	5.91	192.53
	S7	-	-	3.45	-	-	-	212.13	6.87	219.00
	S8	-	-	2.45	-	-	-	309.48	6.58	316.06
	S9	-	-	2.00	-	-	-	303.73	5.20	308.93
	S1	-	-	22.60	-	-	-	14.63	14.53	29.27
	S2	-	-	18.50	-	-	-	9.89	18.67	28.56
	S3	-	-	15.25	-	-	-	34.70	6.72	41.42
	S4	-	-	12.10	-	-	-	121.73	4.03	125.76
TB5	S5	-	-	6.90	-	-	-	148.71	2.14	150.85
	S6	-	-	4.90	-	-	-	144.85	1.76	146.61
	S7	-	-	3.45	-	-	-	140.89	1.54	142.43
	S8	-	-	2.45	-	-	-	249.80	1.41	251.21
	S9	-	-	2.00	-	-	-	267.40	1.36	268.76
	S1	-	-	21.05	-	-	-	22.21	5.49	27.69
	S2	-	-	20.02	-	-	-	15.29	13.83	29.12
	S3	-	-	10.17	-	-	-	149.27	2.42	151.69
	S4	-	-	8.07	-	-	-	144.80	1.75	146.56
TB6	S5	-	-	4.60	-	-	-	307.25	1.13	308.38
	S6	-	-	3.27	-	-	-	308.79	0.98	309.76
	S7	-	-	2.30	-	-	-	302.57	0.88	303.45
	S8	-	-	1.63	-	-	-	355.85	0.83	356.68
	S9	-	-	1.33	-	-	-	365.31	0.80	366.11

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG1 S2

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	20.17	1.29	2.57	1000.0	5.09	13.07
2	clay	22.70	3.82	2.50	1000.0	3.59	8.97
3	clay	26.20	7.32	4.50	1000.0	2.41	10.82

Total consolidation settlement in clay layers = 19.79 mm.
Total consolidation settlement in sand layers = 13.07 mm.

Total consolidation settlement = 32.86 mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG1 S4

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	10.98	3.48	6.95	142.9	3.43	166.86
2	clay	16.20	8.70	3.50	625.0	1.96	10.98
3	sand	19.70	12.20	3.50	1000.0	1.45	5.07
4	clay	22.70	15.20	2.50	1000.0	1.15	2.89
5	clay	26.20	18.70	4.50	1000.0	0.91	4.10

Total consolidation settlement in clay layers = 184.83 mm.
Total consolidation settlement in sand layers = 5.07 mm.

Total consolidation settlement = 189.90 mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG1 S6

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	5.18	2.28	4.55	76.9	4.00	236.81
2	clay	10.95	8.05	7.00	142.9	1.98	96.00
3	clay	16.20	13.30	3.50	625.0	1.23	6.86
4	sand	19.70	16.80	3.50	1000.0	0.94	3.29
5	clay	22.70	19.80	2.50	1000.0	0.77	1.92
6	clay	26.20	23.30	4.50	1000.0	0.62	2.80

Total consolidation settlement in clay layers = 345.25 mm.
Total consolidation settlement in sand layers = 3.29 mm.

Total consolidation settlement = 348.54 mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG1 S8

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	1.94	0.51	1.02	76.9	5.51	73.07
2	clay	4.95	3.52	5.00	76.9	3.29	213.66
3	clay	10.95	9.52	7.00	142.9	1.56	76.68
4	clay	16.20	14.77	3.50	625.0	0.97	5.43
5	sand	19.70	18.27	3.50	1000.0	0.74	2.61
6	clay	22.70	21.27	2.50	1000.0	0.61	1.52
7	clay	26.20	24.77	4.50	1000.0	0.49	2.22

Total consolidation settlement in clay layers = 372.58 mm.
Total consolidation settlement in sand layers = 2.61 mm.

Total consolidation settlement = 375.19 mm.

SETTLEMENT CALCULATION

TG2 S2

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	20.40	1.05	2.10	1000.0	5.50	11.54
2	clay	22.70	3.35	2.50	1000.0	3.97	9.93
3	clay	26.20	6.85	4.50	1000.0	2.63	11.86

Total consolidation settlement in clay layers = 21.79 mm.
Total consolidation settlement in sand layers = 11.54 mm.

Total consolidation settlement = 33.33 mm.

SETTLEMENT CALCULATION

TG2 S4

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	13.42	1.03	2.07	142.9	5.56	80.43
2	clay	16.20	3.82	3.50	625.0	3.85	21.54
3	sand	19.70	7.32	3.50	1000.0	2.62	9.17
4	clay	22.70	10.32	2.50	1000.0	1.98	4.95
5	clay	26.20	13.82	4.50	1000.0	1.49	6.72

Total consolidation settlement in clay layers = 113.64 mm.
Total consolidation settlement in sand layers = 9.17 mm.

Total consolidation settlement = 122.81 mm.

SETTLEMENT CALCULATION

TG2 S6

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	11.12	3.33	6.67	142.9	3.88	181.23
2	clay	16.20	8.42	3.50	625.0	2.15	12.01
3	sand	19.70	11.92	3.50	1000.0	1.55	5.42
4	clay	22.70	14.92	2.50	1000.0	1.22	3.04
5	clay	26.20	18.42	4.50	1000.0	0.95	4.26

Total consolidation settlement in clay layers = 200.55 mm.
Total consolidation settlement in sand layers = 5.42 mm.

Total consolidation settlement = 205.97 mm.

SETTLEMENT CALCULATION

TG2 S8

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	6.83	0.62	1.23	78.9	5.74	92.05
2	clay	10.95	4.73	7.00	142.9	2.94	143.89
3	clay	16.20	9.98	3.50	625.0	1.59	8.89
4	sand	19.70	13.48	3.50	1000.0	1.15	4.02
5	clay	22.70	16.48	2.50	1000.0	0.90	2.26
6	clay	26.20	19.98	4.50	1000.0	0.70	3.17

Total consolidation settlement in clay layers = 250.26 mm.
Total consolidation settlement in sand layers = 4.02 mm.

Total consolidation settlement = 254.28 mm.

SETTLEMENT CALCULATION

Project Name : palat-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (2 , 4)

TG3 S2

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	sand	20.40	1.05	2.10	1000.0	0.14	7.13	14.97
2	clay	22.70	3.35	2.50	1000.0	0.87	3.94	9.85
3	clay	26.20	6.85	4.50	1000.0	1.93	3.29	14.79

Total consolidation settlement in clay layers = 24.64 mm.
Total consolidation settlement in sand layers = 14.97 mm.

Total consolidation settlement = 39.61 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

TG3 S4

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	12.95	1.50	3.00	142.9	0.08	5.85	122.88
2	clay	16.20	4.75	3.50	625.0	0.79	2.91	16.29
3	sand	19.70	8.25	3.50	1000.0	0.99	2.05	7.17
4	clay	22.70	11.25	2.50	1000.0	1.07	1.74	4.36
5	clay	26.20	14.75	4.50	1000.0	0.75	1.19	5.35

Total consolidation settlement in clay layers = 148.87 mm.
Total consolidation settlement in sand layers = 7.17 mm.

Total consolidation settlement = 156.04 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

TG3 S6

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	7.18	0.27	0.53	76.9	0.00	10.29	71.38
2	clay	10.95	4.03	7.00	142.9	0.59	3.13	153.45
3	clay	16.20	9.28	3.50	625.0	1.08	1.97	11.04
4	sand	19.70	12.78	3.50	1000.0	0.99	1.54	5.40
5	clay	22.70	15.78	2.50	1000.0	0.87	1.26	3.15
6	clay	26.20	19.28	4.50	1000.0	0.72	1.00	4.49

Total consolidation settlement in clay layers = 243.52 mm.
Total consolidation settlement in sand layers = 5.40 mm.

Total consolidation settlement = 248.92 mm.

SETTLEMENT CALCULATION

TG3 S8

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 3)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	ez (t/m²)	settlement (mm)
1	clay	7.18	0.27	0.53	76.9	0.00	10.29	71.38
2	clay	10.95	4.03	7.00	142.9	0.95	3.50	171.27
3	clay	16.20	9.28	3.50	625.0	1.53	2.43	13.58
4	sand	19.70	12.78	3.50	1000.0	1.35	1.90	6.66
5	clay	22.70	15.78	2.50	1000.0	1.10	1.49	3.73
6	clay	26.20	19.28	4.50	1000.0	0.85	1.13	5.11

Total consolidation settlement in clay layers = 265.07 mm.
Total consolidation settlement in sand layers = 6.66 mm.

Total consolidation settlement = 271.73 mm.

DATA LISTING

Project Name : PALAT-3
Operator : TINNAKORN R.
Date : 8/27/85
Foundation type : Multi-Footing Foundation

FOUNDATION GEOMETRY

Pile tip depth = 3.15 m.
Level of foundation base = 0.00 m.

FOOTING LAYOUT LISTING

FOOTING NO. (I,J)	LOCATION X (m)	LOCATION Y (m)	FOOTING ID. NO.	FOOTING SHAPE	DIMENSIONS LENGTH (m)	DIMENSIONS WIDTH (m)	DIMENSIONS HEIGHT (m)	AXIAL LOAD (t)	SETTLEMENT (TERZAGHI) (mm)
(1 , 1)	0.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	248.92
(1 , 2)	5.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	259.00
(1 , 3)	10.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	271.73
(1 , 4)	15.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	300.93
(2 , 1)	0.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	248.92
(2 , 2)	5.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	271.73
(2 , 3)	10.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	271.73
(2 , 4)	15.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	248.92

Note : 1) length in case of circular footing is the radius of that circular footing
2) length in case of triangular footing is the side length of footing

SOIL PROPERTY LISTING

LAYER NO.	SOIL TYPE	DEPTH (m)	UNIT WEIGTH (t/m^3)	Es' (t/m^2)	Eu (t/m^2)	POISSON'S RATIO (μs)	1/Mv (t/m^2)	RED. FACTOR (μg)
1	Clay	0.00 - 2.45	1.59	260.0	300.0	0.30	76.4	0.70
2	Clay	2.45 - 7.45	1.54	260.0	300.0	0.30	76.9	0.70
3	Clay	7.45 - 14.45	1.51	433.3	500.0	0.30	142.9	1.00
4	Clay	14.45 - 17.95	1.70	1200.0	1500.0	0.20	625.0	1.00
5	Sand	17.95 - 21.45	1.90	2400.0	0.0	0.20	1000.0	1.00
6	Clay	21.45 - 23.95	1.94	1600.0	2000.0	0.20	1000.0	1.00
7	Clay	23.95 - 26.45	1.90	1600.0	2000.0	0.20	1000.0	1.00

SETTLEMENT CALCULATION

Project Name : palat-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (2 , 4)

TG4 S2

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	sand	19.98	1.48	2.95	1000.0	0.14	5.96	17.59
2	clay	22.70	4.20	2.50	1000.0	1.23	3.67	9.17
3	clay	26.20	7.70	4.50	1000.0	2.08	3.24	14.57

Total consolidation settlement in clay layers = 23.74 mm.
Total consolidation settlement in sand layers = 17.59 mm.

Total consolidation settlement = 41.33 mm.

DATA LISTING

Project Name : palat-1
Operator : TINNAKORN R.
Date : 8/27/85
Foundation type : Multi-Footing Foundation

FOUNDATION GEOMETRY

Pile tip depth = 18.50 m.
Level of foundation base = 0.00 m.

FOOTING LAYOUT LISTING

FOOTING NO. (I,J)	LOCATION X (m)	LOCATION Y (m)	FOOTING ID. NO.	FOOTING SHAPE	DIMENSIONS LENGTH (m)	DIMENSIONS WIDTH (m)	DIMENSIONS HEIGHT (m)	AXIAL LOAD (t)	SETTLEMENT (TERZAGHI) (mm)
(1 , 2)	1.50	0.00	4	rectangular	2.90	1.25	2.50	125.0	17.64
(2 , 1)	0.00	3.00	2	rectangular	1.63	2.00	0.00	100.0	56.34
(2 , 4)	6.75	3.00	1	rectangular	2.50	5.00	0.00	150.0	41.33
(2 , 5)	11.75	3.00	1	rectangular	2.50	5.00	0.00	150.0	51.45
(3 , 3)	5.00	4.25	5	rectangular	0.50	5.00	0.00	50.0	19.93
(4 , 1)	9.00	6.25	5	rectangular	1.63	0.60	0.00	50.0	19.01
(5 , 1)	0.00	9.25	2	rectangular	1.63	2.00	0.00	100.0	19.60
(5 , 3)	5.00	9.25	3	rectangular	0.60	5.00	0.00	50.0	19.76
(6 , 4)	6.75	10.50	1	rectangular	2.50	5.00	0.00	150.0	18.81
(6 , 5)	11.75	10.50	1	rectangular	2.50	5.00	0.00	150.0	14.57
(7 , 2)	1.50	13.50	4	rectangular	2.90	1.25	2.50	125.0	16.57

Note : 1) length in case of circular footing is the radius of that circular footing
2) length in case of triangular footing is the side length of footing

SOIL PROPERTY LISTING

LAYER NO.	SOIL TYPE	DEPTH (m)	UNIT WEIGTH (t/m**3)	Es' (t/m**2)	Eu (t/m**2)	POISSON'S RATIO (ys)	1/Mv (t/m**2)	OED. FACTOR (yg)
1	Clay	0.00 - 2.45	1.59	260.0	300.0	0.30	76.9	0.70
2	Clay	2.45 - 7.45	1.54	260.0	300.0	0.30	76.9	0.70
3	Clay	7.45 - 14.45	1.51	433.3	500.0	0.20	142.9	1.00
4	Clay	14.45 - 17.95	1.79	1200.0	1500.0	0.20	625.0	1.00
5	Sand	17.95 - 21.45	1.90	2400.0	0.0	0.20	1000.0	1.00
6	Clay	21.45 - 22.95	1.74	1600.0	2000.0	0.20	1000.0	1.00
7	Clay	23.95 - 28.45	1.90	1600.0	2000.0	0.20	1000.0	1.00

SETTLEMENT CALCULATION

TG4 S3

Project Name : palat-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (2 , 5)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	16.47	1.48	2.97	625.0	0.08	5.89	27.96
2	sand	19.70	4.72	3.50	1000.0	0.88	3.02	10.56
3	clay	22.70	7.72	2.50	1000.0	1.01	2.17	5.42
4	clay	26.20	11.22	4.50	1000.0	0.99	1.67	7.50

Total consolidation settlement in clay layers = 40.88 mm.
Total consolidation settlement in sand layers = 10.56 mm.

Total consolidation settlement = 51.45 mm.

SETTLEMENT CALCULATION

TG4 S4

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	13.67	0.79	1.57	142.7	0.91	7.91	86.70
2	clay	16.20	3.32	3.50	625.0	0.58	3.68	20.60
3	sand	19.70	6.82	3.50	1000.0	1.05	2.41	8.45
4	clay	22.70	9.82	2.50	1000.0	1.05	1.87	4.68
5	clay	26.20	13.32	4.50	1000.0	0.89	1.41	6.34

Total consolidation settlement in clay layers = 118.33 mm.
Total consolidation settlement in sand layers = 8.45 mm.

Total consolidation settlement = 126.78 mm.

SETTLEMENT CALCULATION

TG4 S5

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 3)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	11.93	2.52	5.03	142.9	0.35	4.32	152.31
2	clay	16.20	6.78	3.50	625.0	1.05	2.42	13.56
3	sand	19.70	10.28	3.50	1000.0	1.07	1.84	6.45
4	clay	22.70	13.28	2.50	1000.0	0.90	1.41	3.54
5	clay	26.20	16.78	4.50	1000.0	0.74	1.10	4.95

Total consolidation settlement in clay layers = 174.35 mm.
Total consolidation settlement in sand layers = 6.45 mm.

Total consolidation settlement = 180.80 mm.

SETTLEMENT CALCULATION

TG4 S6

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	11.27	3.18	6.37	142.9	0.51	3.74	166.67
2	clay	16.20	8.12	3.50	625.0	1.04	2.12	11.85
3	sand	19.70	11.62	3.50	1000.0	1.05	1.69	5.91
4	clay	22.70	14.62	2.50	1000.0	0.82	1.27	3.16
5	clay	26.20	18.12	4.50	1000.0	0.78	1.10	4.94

Total consolidation settlement in clay layers = 186.62 mm.
Total consolidation settlement in sand layers = 5.91 mm.

Total consolidation settlement = 192.53 mm.

SETTLEMENT CALCULATION

TG4 S7

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 2)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	10.78	3.67	7.33	142.9	0.89	3.69	189.54
2	clay	16.20	9.08	3.50	625.0	1.50	2.42	13.57
3	sand	19.70	12.58	3.50	1000.0	1.40	1.96	6.87
4	clay	22.70	15.58	2.50	1000.0	1.15	1.55	3.88
5	clay	26.20	19.08	4.50	1000.0	0.85	1.14	5.14

Total consolidation settlement in clay layers = 212.13 mm.
Total consolidation settlement in sand layers = 6.87 mm.

Total consolidation settlement = 219.00 mm.

SETTLEMENT CALCULATION

TG4 S8

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 3)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	6.95	0.50	1.00	76.9	0.00	9.09	118.19
2	clay	10.95	4.50	7.00	142.9	1.19	3.45	168.04
3	clay	16.20	9.75	3.50	625.0	1.63	2.46	13.79
4	sand	19.70	13.25	3.50	1000.0	1.36	1.88	6.58
5	clay	22.70	16.25	2.50	1000.0	1.04	1.42	3.55
6	clay	26.20	19.75	4.50	1000.0	0.87	1.14	5.12

Total consolidation settlement in clay layers = 309.48 mm.
Total consolidation settlement in sand layers = 6.58 mm.

Total consolidation settlement = 316.06 mm.

SETTLEMENT CALCULATION

TG4 S9

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 4)

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	nearby stress	σz (t/m²)	settlement (mm)
1	clay	6.80	0.65	1.30	76.9	0.00	8.43	142.47
2	clay	10.95	4.80	7.00	142.9	0.82	2.91	142.78
3	clay	16.20	10.05	3.50	625.0	1.20	1.99	11.15
4	sand	19.70	13.55	3.50	1000.0	0.98	1.49	5.20
5	clay	22.70	16.55	2.50	1000.0	0.86	1.23	3.07
6	clay	26.20	20.05	4.50	1000.0	0.68	0.94	4.25

Total consolidation settlement in clay layers = 300.73 mm.
Total consolidation settlement in sand layers = 5.20 mm.

Total consolidation settlement = 308.93 mm.

DATA LISTING

Project Name : PALAT-3
Operator : TINNAKORN R.
Date : 8/27/85
Foundation type : Multi-Footing Foundation

FOUNDATION GEOMETRY

Pile tip depth = 2.00 m.
Level of foundation base = 0.00 m.

FOOTING LAYOUT LISTING

FOOTING NO. (I,J)	LOCATION X (m)	LOCATION Y (m)	FOOTING ID. NO.	FOOTING SHAPE	DIMENSIONS LENGTH (m)	DIMENSIONS WIDTH (m)	DIMENSIONS HEIGHT (m)	AXIAL LOAD (t)	SETTLEMENT (INTERACTIVE) (mm)
(1 , 1)	0.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	192.53
(1 , 2)	5.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	219.00
(1 , 3)	10.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	236.04
(1 , 4)	15.00	0.00	1	rectangular	2.50	5.00	0.00	150.0	308.93
(2 , 1)	0.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	248.92
(2 , 2)	5.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	271.73
(2 , 3)	10.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	271.73
(2 , 4)	15.00	7.50	1	rectangular	2.50	5.00	0.00	150.0	248.92

Note : 1) length in case of circular footing is the radius of that circular footing
2) length in case of triangular footing is the side length of footing

SOIL PROPERTY LISTING

LAYER NO.	SOIL TYPE	DEPTH (m)	UNIT WEIGHT (t/m^3)	Es* (t/m^2)	Es (t/m^2)	POISSON'S RATIO (us)	1/Mv (t/m^2)	OCR. FACTOR (pg)
1	Clay	0.00 - 2.45	1.55	260.0	300.0	0.30	76.4	0.70
2	Clay	2.45 - 7.45	1.54	260.0	300.0	0.30	76.9	0.70
3	Clay	7.45 - 14.45	1.51	433.3	500.0	0.30	142.9	1.00
4	Clay	14.45 - 17.95	1.70	1300.0	1500.0	0.20	625.0	1.00
5	Sand	17.95 - 21.45	1.90	2400.0	0.0	0.20	1000.0	1.00
6	Clay	21.45 - 23.95	1.94	1600.0	2000.0	0.20	1000.0	1.00
7	Clay	23.95 - 26.45	1.90	1600.0	2000.0	0.20	1000.0	1.00

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S1

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	20.67	0.78	1.57	1000.0	9.26	14.53
2	clay	22.70	2.82	2.50	1000.0	3.54	8.84
3	clay	26.20	6.32	4.50	1000.0	1.29	5.79

Total consolidation settlement in clay layers = 14.63 mm.
Total consolidation settlement in sand layers = 14.53 mm.

Total consolidation settlement = 29.17 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S2

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	19.98	1.48	2.95	1000.0	6.33	18.67
2	clay	22.70	4.20	2.50	1000.0	2.23	5.57
3	clay	26.20	7.70	4.50	1000.0	0.96	4.33

Total consolidation settlement in clay layers = 9.89 mm.
Total consolidation settlement in sand layers = 18.67 mm.

Total consolidation settlement = 28.56 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S3

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	16.47	1.48	2.97	625.0	6.30	29.92
2	sand	19.70	4.72	2.50	1000.0	1.92	6.72
3	clay	22.70	7.72	2.50	1000.0	0.96	2.40
4	clay	26.20	11.22	4.50	1000.0	0.55	2.39

Total consolidation settlement in clay layers = 34.70 mm.
Total consolidation settlement in sand layers = 6.72 mm.

Total consolidation settlement = 41.42 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S4

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	13.67	0.78	1.57	142.9	9.28	101.73
2	clay	16.20	3.32	3.50	625.0	2.96	16.55
3	sand	19.70	6.82	3.50	1000.0	1.15	4.03
4	clay	22.70	9.82	2.50	1000.0	0.66	1.65
5	clay	26.20	13.32	4.50	1000.0	0.40	1.80

Total consolidation settlement in clay layers = 121.73 mm.
Total consolidation settlement in sand layers = 4.03 mm.

Total consolidation settlement = 125.76 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	11.93	2.52	5.03	142.9	3.97	140.00
2	clay	16.20	6.78	3.50	625.0	1.16	6.50
3	sand	19.70	10.28	3.50	1000.0	0.61	2.14
4	clay	22.70	13.28	2.50	1000.0	0.40	1.00
5	clay	26.20	16.78	4.50	1000.0	0.27	1.21

Total consolidation settlement in clay layers = 148.71 mm.
Total consolidation settlement in sand layers = 2.14 mm.

Total consolidation settlement = 150.85 mm.

SETTLEMENT CALCULATION

TG5 S6

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	11.27	3.18	6.37	142.9	3.10	137.97
2	clay	16.20	8.12	3.50	625.0	0.89	4.97
3	sand	19.70	11.62	3.50	1000.0	0.50	1.76
4	clay	22.70	14.62	2.50	1000.0	0.34	0.85
5	clay	26.20	18.12	4.50	1000.0	0.24	1.06

Total consolidation settlement in clay layers = 144.85 mm.
Total consolidation settlement in sand layers = 1.76 mm.

Total consolidation settlement = 146.61 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S7

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	10.78	3.67	7.33	142.9	2.63	134.99
2	clay	16.20	9.08	3.50	625.0	0.75	4.17
3	sand	19.70	12.58	3.50	1000.0	0.44	1.54
4	clay	22.70	15.58	2.50	1000.0	0.31	0.76
5	clay	26.20	19.08	4.50	1000.0	0.21	0.97

Total consolidation settlement in clay layers = 140.89 mm.
Total consolidation settlement in sand layers = 1.54 mm.

Total consolidation settlement = 142.43 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S8

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	6.95	0.50	1.00	76.9	11.11	144.45
2	clay	10.95	4.50	7.00	142.9	2.04	100.00
3	clay	16.20	9.75	3.50	625.0	0.67	3.73
4	sand	19.70	13.25	3.50	1000.0	0.40	1.41
5	clay	22.70	16.25	2.50	1000.0	0.28	0.71
6	clay	26.20	19.75	4.50	1000.0	0.20	0.91

Total consolidation settlement in clay layers = 249.80 mm.
Total consolidation settlement in sand layers = 1.41 mm.

Total consolidation settlement = 251.21 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG5 S9

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	6.80	0.65	1.30	76.9	10.08	170.33
2	clay	10.95	4.80	7.00	142.9	1.88	91.95
3	clay	16.20	10.05	3.50	625.0	0.63	3.56
4	sand	19.70	13.55	3.50	1000.0	0.39	1.36
5	clay	22.70	16.55	2.50	1000.0	0.28	0.69
6	clay	26.20	20.05	4.50	1000.0	0.20	0.88

Total consolidation settlement in clay layers = 267.40 mm.
Total consolidation settlement in sand layers = 1.36 mm.

Total consolidation settlement = 268.76 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S1

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	21.25	0.20	0.40	1000.0	13.72	5.49
2	clay	22.70	1.65	2.50	1000.0	5.81	14.52
3	clay	26.20	5.15	4.50	1000.0	1.71	7.69

Total consolidation settlement in clay layers = 22.21 mm.
Total consolidation settlement in sand layers = 5.49 mm.

Total consolidation settlement = 27.69 mm.

SETTLEMENT CALCULATION.

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S2

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	sand	20.74	0.72	1.43	1000.0	9.67	13.82
2	clay	22.70	2.68	2.50	1000.0	3.73	9.32
3	clay	26.20	6.18	4.50	1000.0	1.33	5.97

Total consolidation settlement in clay layers = 15.29 mm.
Total consolidation settlement in sand layers = 13.83 mm.

Total consolidation settlement = 29.12 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S3

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	12.31	2.14	4.28	142.9	4.64	139.15
2	clay	16.20	6.03	2.50	625.0	1.37	7.70
3	sand	19.70	9.53	3.50	1000.0	0.69	2.42
4	clay	22.70	12.53	2.50	1000.0	0.44	1.11
5	clay	26.20	16.03	4.50	1000.0	0.29	1.31

Total consolidation settlement in clay layers = 149.27 mm.
Total consolidation settlement in sand layers = 2.42 mm.

Total consolidation settlement = 151.69 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S4

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	11.26	3.19	6.38	142.9	3.09	137.94
2	clay	16.20	8.13	3.50	625.0	0.88	4.96
3	sand	19.70	11.63	3.50	1000.0	0.50	1.75
4	clay	22.70	14.63	2.50	1000.0	0.34	0.85
5	clay	26.20	18.13	4.50	1000.0	0.23	1.06

Total consolidation settlement in clay layers = 144.80 mm.
Total consolidation settlement in sand layers = 1.75 mm.

Total consolidation settlement = 146.56 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S5

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	6.02	1.42	2.85	76.9	6.49	240.51
2	clay	10.95	6.35	7.00	142.9	1.28	62.56
3	clay	16.20	11.60	3.50	625.0	0.50	2.82
4	sand	19.70	15.10	3.50	1000.0	0.32	1.13
5	clay	22.70	18.10	2.50	1000.0	0.24	0.59
6	clay	26.20	21.60	4.50	1000.0	0.17	0.77

Total consolidation settlement in clay layers = 307.25 mm.
Total consolidation settlement in sand layers = 1.13 mm.

Total consolidation settlement = 308.38 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

TG6 S6

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	5.36	2.09	4.18	76.9	4.75	257.94
2	clay	10.95	7.68	7.00	142.9	0.96	47.28
3	clay	16.20	12.93	3.50	625.0	0.42	2.35
4	sand	19.70	16.43	3.50	1000.0	0.28	0.98
5	clay	22.70	19.43	2.50	1000.0	0.21	0.52
6	clay	26.20	22.93	4.50	1000.0	0.15	0.70

Total consolidation settlement in clay layers = 308.79 mm.
Total consolidation settlement in sand layers = 0.98 mm.

Total consolidation settlement = 309.76 mm.

SETTLEMENT CALCULATION

TG6 S7

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	4.80	2.50	5.15	76.9	3.88	259.95
2	clay	10.95	8.65	7.00	142.9	0.80	39.41
3	clay	16.20	12.90	3.50	625.0	0.37	2.08
4	sand	19.70	17.40	3.50	1000.0	0.25	0.88
5	clay	22.70	20.40	2.50	1000.0	0.19	0.48
6	clay	26.20	23.90	4.50	1000.0	0.14	0.65

Total consolidation settlement in clay layers = 302.57 mm.
Total consolidation settlement in sand layers = 0.88 mm.

Total consolidation settlement = 303.45 mm.

SETTLEMENT CALCULATION

TG6 S8

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	2.04	0.41	0.82	76.9	11.81	125.89
2	clay	4.95	3.32	5.00	76.9	2.95	191.90
3	clay	10.95	9.32	7.00	142.9	0.72	39.07
4	clay	16.20	14.57	3.50	625.0	0.34	1.92
5	sand	19.70	18.07	3.50	1000.0	0.24	0.83
6	clay	22.70	21.07	2.50	1000.0	0.18	0.45
7	clay	26.20	24.57	4.50	1000.0	0.14	0.61

Total consolidation settlement in clay layers = 355.85 mm.
Total consolidation settlement in sand layers = 0.83 mm.

Total consolidation settlement = 356.68 mm.

SETTLEMENT CALCULATION

TG6 S9

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TERZAGHI
Foundation type : Single Raft Foundation

layer no.	soil type	mid.depth (m)	Z (m)	H (m)	1/(Mv) (t/m²)	σz (t/m²)	settlement (mm)
1	clay	1.89	0.56	1.12	76.9	10.68	155.50
2	clay	4.95	3.62	5.00	76.9	2.67	173.55
3	clay	10.95	9.62	7.00	142.9	0.68	33.36
4	clay	16.20	14.87	3.50	625.0	0.33	1.86
5	sand	19.70	18.37	3.50	1000.0	0.23	0.80
6	clay	22.70	21.37	2.50	1000.0	0.18	0.44
7	clay	26.20	24.87	4.50	1000.0	0.13	0.60

Total consolidation settlement in clay layers = 365.31 mm.
Total consolidation settlement in sand layers = 0.80 mm.

Total consolidation settlement = 366.11 mm.

ตารางที่ ข.2 สรุปผลการคำนวณเพื่อประมาณค่าการทรุดตัวรวม ตามวิธี Tomlinson

TABLE A2 SETTLEMENT CALCULATION OF PILE FOUNDATION

SETTLEMENT CALCULATION OF PILE FOUNDATION BY TOMLINSON'S METHOD
SINGLE RAFT FOUNDATION

METHOD	SETT. NO.	FOUNDATION DIM. B,m	L,m	PILE LENG. m	EQ.RAFT FOUNDATION DIM. EQ.B,m	EQ.L,m	EQ.DEPTH. m	SETTLEMENT ρi mm.	ρc mm.	TOTAL SETT. mm.
	S2	-	-	-	11.81	13.18	18.88	7.03	28.17	35.20
TM1	S4	-	-	-	16.48	16.48	7.50	12.47	153.15	165.62
	S6	-	-	-	11.67	14.17	2.90	18.85	303.40	322.25
	S8	-	-	-	8.44	13.44	1.43	20.44	338.41	358.85
	S2	19.35	12.72	19.35	-	-	-	6.98	27.61	34.59
TM2	S4	12.72	12.72	11.35	-	-	-	14.89	129.71	144.61
	S6	10.22	12.72	4.45	-	-	-	23.49	366.39	389.88
	S8	7.72	12.72	2.25	-	-	-	26.76	406.66	433.42
	S2	19.35	12.72	19.35	11.81	13.18	18.88	6.24	21.02	27.26
TMH	S4	12.72	12.72	11.35	16.48	16.48	7.50	30.83	130.97	161.80
	S6	10.22	12.72	4.45	11.67	14.17	2.90	61.69	258.07	319.76
	S8	7.72	12.72	2.25	8.44	13.44	1.43	73.85	298.90	372.80
	S2	-	-	19.35	-	-	19.35	4.14	20.03	24.16
TM3	S4	-	-	9.95	-	-	11.45	12.67	202.82	215.49
	S6	-	-	3.15	-	-	2.10	11.51	402.13	413.64
	S8	-	-	2.10	-	-	2.10	11.51	494.60	506.11
	S1	-	-	22.60	-	-	19.88	2.61	11.56	14.17
	S2	-	-	18.50	-	-	18.50	4.75	24.44	29.19
	S3	-	-	14.45	-	-	14.45	6.05	37.32	43.36
	S4	-	-	12.10	-	-	12.88	8.52	135.73	144.25
TM4	S5	-	-	9.30	-	-	11.02	14.93	232.17	247.10
	S6	-	-	4.90	-	-	3.27	9.09	605.22	614.32
	S7	-	-	3.45	-	-	2.30	11.95	535.11	547.06
	S8	-	-	2.45	-	-	1.63	12.81	498.04	510.85
	S9	-	-	2.00	-	-	1.33	13.76	401.37	415.13
	S1	-	-	-	3.40	3.78	21.05	3.40	12.77	16.17
	S2	-	-	-	2.90	5.96	18.32	4.33	17.28	21.61
	S3	-	-	-	7.80	10.30	10.17	3.13	42.62	45.76
	S4	-	-	-	6.75	9.26	8.07	4.15	64.64	68.79
TM5	S5	-	-	-	5.02	7.52	4.60	6.92	122.31	129.23
	S6	-	-	-	4.35	6.86	3.27	8.69	163.37	172.05
	S7	-	-	-	3.87	6.37	2.30	10.53	194.12	204.64
	S8	-	-	-	3.54	6.04	1.63	12.43	224.52	236.95
	S9	-	-	-	3.39	5.88	1.33	13.06	221.59	234.65
	S1	-	-	-	4.05	4.05	21.05	2.95	11.31	14.26
	S2	-	-	-	2.68	2.68	18.32	4.83	19.19	24.02
	S3	-	-	-	2.77	2.77	14.98	5.19	27.70	32.89
	S4	-	-	-	6.53	6.53	8.07	3.45	39.01	42.45
TM6	S5	-	-	-	4.80	4.80	4.60	5.98	97.08	103.06
	S6	-	-	-	4.13	4.13	3.27	7.78	137.48	145.25
	S7	-	-	-	3.65	3.65	2.30	9.60	165.97	175.57
	S8	-	-	-	3.32	3.32	1.63	11.36	192.04	203.40
	S9	-	-	-	3.17	3.17	1.33	12.35	213.71	226.06

SETTLEMENT CALCULATION

TM1 S2

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2107.419	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.780	t/m²
EQUIVALENT MAT DEPTH	=	18.880	m.
μ1	=	0.409	
μ0	=	0.664	
RIGIDITY FACTOR	=	0.6	
TOTAL IMMEDIATE SETTLEMENT	=	7.030	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	ρg	settlement (mm)
1	20.17	1.29	0.22	0.9855	5.696	1000.0	1.00	14.639
2	22.70	3.82	0.65	0.8651	5.000	1000.0	1.00	12.500
3	26.20	7.32	1.24	0.6000	3.468	1000.0	1.00	15.607

TOTAL CONSOLIDATION SETTLEMENT	=	42.746	mm.
FOX'S CORRECTION FACTOR	=	0.659	
CORRECTED CONSOLIDATION SETTLEMENT	=	28.171	mm.
TOTAL SETTLEMENT	=	35.201	mm.

SETTLEMENT CALCULATION

TM1 S4

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1485.680	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	3.314	t/m²
EQUIVALENT MAT DEPTH	=	7.500	m.
μ1	=	0.489	
μ0	=	0.866	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	12.467	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	ρg	settlement (mm)
1	10.98	3.48	0.42	0.9364	3.103	142.9	1.00	150.964
2	16.20	8.70	1.06	0.6591	2.184	625.0	1.00	12.232
3	19.70	12.20	1.48	0.4886	1.619	1000.0	1.00	5.667
4	22.70	15.20	1.84	0.3739	1.239	1000.0	1.00	3.097
5	26.20	18.70	2.27	0.2741	0.908	1000.0	1.00	4.087

TOTAL CONSOLIDATION SETTLEMENT	=	176.047	mm.
FOX'S CORRECTION FACTOR	=	0.870	
CORRECTED CONSOLIDATION SETTLEMENT	=	153.148	mm.
TOTAL SETTLEMENT	=	165.614	mm.

SETTLEMENT CALCULATION

TM1 S6

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1272.603	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	4.535	t/m²
EQUIVALENT MAT DEPTH	=	2.900	m.
μ1	=	0.603	
μ0	=	0.939	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	18.853	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	5.18	2.28	0.39	0.9520	4.317	76.9	0.70	178.765
2	10.95	8.05	1.38	0.5623	2.550	142.9	1.00	124.938
3	16.20	13.30	2.28	0.2919	1.324	625.0	1.00	7.413
4	19.70	16.80	2.88	0.2140	0.970	1000.0	1.00	3.396
5	22.70	19.80	3.39	0.1654	0.750	1000.0	1.00	1.876
6	26.20	23.30	3.99	0.1277	0.579	1000.0	1.00	2.606

TOTAL CONSOLIDATION SETTLEMENT	=	318.995	mm.
FOX'S CORRECTION FACTOR	=	0.951	
CORRECTED CONSOLIDATION SETTLEMENT	=	303.398	mm.
TOTAL SETTLEMENT	=	322.251	mm.

SETTLEMENT CALCULATION

TM1 S8

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1219.689	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.290	t/m²
EQUIVALENT MAT DEPTH	=	1.430	m.
μ1	=	0.719	
μ0	=	0.970	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	20.441	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	1.94	0.51	0.12	1.0000	5.290	76.9	0.70	49.104
2	4.95	3.52	0.83	0.8301	4.391	76.9	0.70	199.813
3	10.95	9.52	2.26	0.3308	1.750	142.9	1.00	85.736
4	16.20	14.77	3.50	0.1919	1.015	625.0	1.00	5.685
5	19.70	18.27	4.33	0.1351	0.715	1000.0	1.00	2.501
6	22.70	21.27	5.04	0.1058	0.560	1000.0	1.00	1.400
7	26.20	24.77	5.87	0.0831	0.440	1000.0	1.00	1.978

TOTAL CONSOLIDATION SETTLEMENT	=	346.217	mm.
FOX'S CORRECTION FACTOR	=	0.977	
CORRECTED CONSOLIDATION SETTLEMENT	=	338.411	mm.
TOTAL SETTLEMENT	=	358.852	mm.

SETTLEMENT CALCULATION

TM2 S2

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2092.308	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.803	t/m²
EQUIVALENT MAT DEPTH	=	19.350	m.
μ1	=	0.394	
μ0	=	0.663	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	6.980	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	20.40	1.05	0.17	1.0000	5.803	1000.0	1.00	12.186
2	22.70	3.35	0.56	0.8991	5.218	1000.0	1.00	13.044
3	26.20	6.85	1.14	0.6404	3.716	1000.0	1.00	16.722

TOTAL CONSOLIDATION SETTLEMENT	=	41.953	mm.
FOX'S CORRECTION FACTOR	=	0.658	
CORRECTED CONSOLIDATION SETTLEMENT	=	27.613	mm.
TOTAL SETTLEMENT	=	34.593	mm.

SETTLEMENT CALCULATION

TM2 S4

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1785.270	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	7.700	t/m²
EQUIVALENT MAT DEPTH	=	12.383	m.
μ1	=	0.508	
μ0	=	0.726	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	14.894	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	13.42	1.03	0.18	1.0000	7.700	142.9	1.00	111.395
2	16.20	3.82	0.65	0.8531	6.569	625.0	1.00	36.786
3	19.70	7.32	1.25	0.5732	4.414	1000.0	1.00	15.445
4	22.70	10.32	1.77	0.3966	3.054	1000.0	1.00	7.634
5	26.20	13.82	2.36	0.2741	2.110	1000.0	1.00	9.497

TOTAL CONSOLIDATION SETTLEMENT	=	180.761	mm.
FOX'S CORRECTION FACTOR	=	0.718	
CORRECTED CONSOLIDATION SETTLEMENT	=	129.714	mm.
TOTAL SETTLEMENT	=	144.608	mm.

SETTLEMENT CALCULATION

TM2 S6

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1499.194	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	13.072	t/m²
EQUIVALENT MAT DEPTH	=	7.783	m.
μ1	=	0.670	
μ0	=	0.730	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	23.491	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	ez (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	11.12	3.33	0.97	0.7533	9.847	142.9	1.00	459.515
2	16.20	8.42	2.44	0.2967	3.879	625.0	1.00	21.721
3	19.70	11.92	3.46	0.1748	2.285	1000.0	1.00	7.999
4	22.70	14.92	4.33	0.1205	1.575	1000.0	1.00	3.938
5	26.20	18.42	5.35	0.0853	1.115	1000.0	1.00	5.017

TOTAL CONSOLIDATION SETTLEMENT	=	498.190	mm.
FOX'S CORRECTION FACTOR	=	0.735	
CORRECTED CONSOLIDATION SETTLEMENT	=	366.390	mm.
TOTAL SETTLEMENT	=	389.880	mm.

SETTLEMENT CALCULATION

TM2 S8

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1422.741	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	20.190	t/m²
EQUIVALENT MAT DEPTH	=	6.317	m.
μ1	=	0.923	
μ0	=	0.699	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	26.757	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	ez (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	6.88	0.57	0.31	0.9795	19.776	76.9	0.70	203.961
2	10.95	4.63	2.54	0.3461	6.988	142.9	1.00	342.405
3	16.20	9.88	5.41	0.1260	2.544	625.0	1.00	14.244
4	19.70	13.38	7.33	0.0758	1.531	1000.0	1.00	5.356
5	22.70	16.38	8.97	0.0526	1.061	1000.0	1.00	2.653
6	26.20	19.88	10.89	0.0369	0.744	1000.0	1.00	3.348

TOTAL CONSOLIDATION SETTLEMENT	=	571.969	mm.
FOX'S CORRECTION FACTOR	=	0.711	
CORRECTED CONSOLIDATION SETTLEMENT	=	406.659	mm.
TOTAL SETTLEMENT	=	433.416	mm.

SETTLEMENT CALCULATION

TM3 S2

Project Name : palat-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (2 , 4)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2092.308	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	8.224	t/m²
EQUIVALENT MAT DEPTH	=	19.350	m.
μ1	=	0.733	
μ0	=	0.560	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	4.135	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	20.40	1.05	0.074	0.8997	7.473	1000.0	1.00	15.693
2	22.70	3.35	0.507	0.4043	3.832	1000.0	1.00	9.580
3	26.20	6.85	1.116	0.1510	2.358	1000.0	1.00	10.609

TOTAL CONSOLIDATION SETTLEMENT = 35.882 mm.
FOX'S CORRECTION FACTOR = 0.558
CORRECTED CONSOLIDATION SETTLEMENT = 20.027 mm.

TOTAL SETTLEMENT = 24.162 mm.

SETTLEMENT CALCULATION

TM3 S4

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1714.706	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	42.857	t/m²
EQUIVALENT MAT DEPTH	=	11.450	m.
μ1	=	1.164	
μ0	=	0.545	
RIGIDITY FACTOR	=	0.0	
TOTAL IMMEDIATE SETTLEMENT	=	12.671	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	12.95	1.50	0.294	0.3284	14.370	142.9	1.00	301.760
2	16.20	4.75	2.809	0.0642	5.561	625.0	1.00	31.143
3	19.70	8.25	3.553	0.0268	4.700	1000.0	1.00	16.449
4	22.70	11.25	3.824	0.0000	3.824	1000.0	1.00	9.560
5	26.20	14.75	2.671	0.0000	2.671	1000.0	1.00	12.019

TOTAL CONSOLIDATION SETTLEMENT = 370.931 mm.
FOX'S CORRECTION FACTOR = 0.547
CORRECTED CONSOLIDATION SETTLEMENT = 202.823 mm.

TOTAL SETTLEMENT = 215.494 mm.

SETTLEMENT CALCULATION

TM4 S2

Project Name : palat-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (2 , 4)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2118.593	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	10.247	t/m²
EQUIVALENT MAT DEPTH	=	18.500	m.
μ1	=	0.793	
μ0	=	0.557	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	4.746	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	19.98	1.48	0.108	0.7576	7.871	1000.0	1.00	23.220
2	22.70	4.20	0.968	0.2576	3.608	1000.0	1.00	9.019
3	26.20	7.70	1.585	0.1041	2.652	1000.0	1.00	11.933

TOTAL CONSOLIDATION SETTLEMENT	=	44.172	mm.
FOX'S CORRECTION FACTOR	=	0.553	
CORRECTED CONSOLIDATION SETTLEMENT	=	24.444	mm.
TOTAL SETTLEMENT	=	29.190	mm.

SETTLEMENT CALCULATION

TM4 S4

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1826.552	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	20.722	t/m²
EQUIVALENT MAT DEPTH	=	12.883	m.
μ1	=	0.981	
μ0	=	0.557	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	8.522	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	13.67	0.78	0.012	0.8240	17.088	142.9	1.00	187.393
2	16.20	3.32	0.998	0.2123	5.397	625.0	1.00	30.221
3	19.70	6.82	1.815	0.0678	3.219	1000.0	1.00	11.267
4	22.70	9.82	1.817	0.0343	2.527	1000.0	1.00	6.318
5	26.20	13.32	1.540	0.0215	1.985	1000.0	1.00	8.933

TOTAL CONSOLIDATION SETTLEMENT	=	244.133	mm.
FOX'S CORRECTION FACTOR	=	0.556	
CORRECTED CONSOLIDATION SETTLEMENT	=	135.729	mm.
TOTAL SETTLEMENT	=	144.252	mm.

SETTLEMENT CALCULATION

TM4 S6

Project Name : PALAT-3
Date : 8/27/05
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 1)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1286.894	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.480	t/m²
EQUIVALENT MAT DEPTH	=	3.270	m.
μ1	=	0.799	
μ0	=	0.809	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	9.094	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	I (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	5.36	2.09	1.949	0.7621	6.125	76.9	0.70	233.007
2	10.95	7.68	7.658	0.1706	8.593	142.9	1.00	421.041
3	16.20	12.93	6.242	0.0730	6.642	625.0	1.00	37.196
4	19.70	16.43	6.011	0.0446	6.255	1000.0	1.00	21.893
5	22.70	19.43	4.905	0.0317	5.078	1000.0	1.00	12.695
6	26.20	22.93	4.177	0.0225	4.300	1000.0	1.00	19.352

TOTAL CONSOLIDATION SETTLEMENT	=	745.184	mm.
FOX'S CORRECTION FACTOR	=	0.812	
CORRECTED CONSOLIDATION SETTLEMENT	=	605.222	mm.
TOTAL SETTLEMENT	=	614.316	mm.

SETTLEMENT CALCULATION

TM4 S8

Project Name : PALAT-3
Date : 8/27/05
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Multi-Footing Foundation
Considered footing : (1 , 3)

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1226.547	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	7.780	t/m²
EQUIVALENT MAT DEPTH	=	1.630	m.
μ1	=	0.859	
μ0	=	0.885	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	12.807	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	I (m)	nearby stress	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	2.04	0.41	0.000	0.9866	7.676	76.4	0.70	57.656
2	4.95	3.32	2.066	0.4548	5.604	76.9	0.70	254.981
3	10.95	9.32	3.520	0.0902	4.222	142.9	1.00	206.864
4	16.20	14.57	2.521	0.0406	2.837	625.0	1.00	15.887
5	19.70	18.07	2.185	0.0265	2.391	1000.0	1.00	8.369
6	22.70	21.07	1.764	0.0194	1.915	1000.0	1.00	4.788
7	26.20	24.57	1.399	0.0151	1.516	1000.0	1.00	6.824

TOTAL CONSOLIDATION SETTLEMENT	=	555.369	mm.
FOX'S CORRECTION FACTOR	=	0.897	
CORRECTED CONSOLIDATION SETTLEMENT	=	498.043	mm.
TOTAL SETTLEMENT	=	510.850	mm.

SETTLEMENT CALCULATION

TM5 S1

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	= 2000.000	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	= 7.780	t/m²
EQUIVALENT MAT DEPTH	= 21.050	m.
μ1	= 0.589	
μ0	= 0.546	
RIGIDITY FACTOR	= 0.8	
TOTAL IMMEDIATE SETTLEMENT	= 3.403	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	22.50	1.45	0.85	0.7677	5.973	1000.0	1.00	17.321
2	26.20	5.15	3.03	0.1762	1.371	1000.0	1.00	6.168

TOTAL CONSOLIDATION SETTLEMENT	= 23.489	mm.
FOX'S CORRECTION FACTOR	= 0.544	
CORRECTED CONSOLIDATION SETTLEMENT	= 12.770	mm.
TOTAL SETTLEMENT	= 16.173	mm.

SETTLEMENT CALCULATION

TM5 S2

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	= 2123.593	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	= 8.670	t/m²
EQUIVALENT MAT DEPTH	= 18.320	m.
μ1	= 0.811	
μ0	= 0.563	
RIGIDITY FACTOR	= 0.8	
TOTAL IMMEDIATE SETTLEMENT	= 4.325	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	19.89	1.57	1.08	0.7582	6.573	1000.0	1.00	20.575
2	23.70	4.38	3.02	0.2658	2.305	1000.0	1.00	5.761
3	26.20	7.88	5.43	0.1150	0.997	1000.0	1.00	4.487

TOTAL CONSOLIDATION SETTLEMENT	= 30.823	mm.
FOX'S CORRECTION FACTOR	= 0.560	
CORRECTED CONSOLIDATION SETTLEMENT	= 17.276	mm.
TOTAL SETTLEMENT	= 21.600	mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

TM5 S3

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	= 1629.650	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	= 1.870	t/m²
EQUIVALENT MAT DEPTH	= 10.170	m.
μ1	= 0.627	
μ0	= 0.698	
RIGIDITY FACTOR	= 0.8	
TOTAL IMMEDIATE SETTLEMENT	= 3.137	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	12.31	2.14	0.55	0.9127	1.707	142.9	1.00	51.133
2	16.20	6.03	1.55	0.5215	0.975	625.0	1.00	5.461
3	19.70	9.53	2.44	0.2909	0.544	1000.0	1.00	1.904
4	22.70	12.53	3.21	0.1922	0.359	1000.0	1.00	0.898
5	26.20	16.03	4.11	0.1294	0.242	1000.0	1.00	1.089

TOTAL CONSOLIDATION SETTLEMENT	= 60.485	mm.
FOX'S CORRECTION FACTOR	= 0.706	
CORRECTED CONSOLIDATION SETTLEMENT	= 42.691	mm.
TOTAL SETTLEMENT	= 45.829	mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

TM5 S4

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	= 1513.248	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	= 2.400	t/m²
EQUIVALENT MAT DEPTH	= 8.070	m.
μ1	= 0.672	
μ0	= 0.721	
RIGIDITY FACTOR	= 0.8	
TOTAL IMMEDIATE SETTLEMENT	= 4.151	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	11.26	3.19	0.95	0.7642	1.834	142.9	1.00	81.911
2	16.20	8.13	2.41	0.3050	0.732	625.0	1.00	4.100
3	19.70	11.63	3.45	0.1768	0.425	1000.0	1.00	1.486
4	22.70	14.63	4.33	0.1209	0.290	1000.0	1.00	0.725
5	26.20	18.13	5.37	0.0850	0.204	1000.0	1.00	0.918

TOTAL CONSOLIDATION SETTLEMENT	= 89.141	mm.
FOX'S CORRECTION FACTOR	= 0.725	
CORRECTED CONSOLIDATION SETTLEMENT	= 64.639	mm.
TOTAL SETTLEMENT	= 68.790	mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

TM5 S5

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1341.929	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	3.970	t/m²
EQUIVALENT MAT DEPTH	=	4.600	m.
μ1	=	0.752	
μ0	=	0.774	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	6.916	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	6.02	1.42	0.57	0.9225	3.662	76.9	0.70	94.903
2	10.95	6.35	2.53	0.2523	1.161	142.9	1.00	56.863
3	16.20	11.60	4.62	0.1152	0.457	625.0	1.00	2.562
4	19.70	15.10	6.02	0.0737	0.293	1000.0	1.00	1.024
5	22.70	18.10	7.21	0.0517	0.205	1000.0	1.00	0.513
6	26.20	21.60	8.61	0.0348	0.138	1000.0	1.00	0.621

TOTAL CONSOLIDATION SETTLEMENT	=	156.566	mm.
FOX'S CORRECTION FACTOR	=	0.781	
CORRECTED CONSOLIDATION SETTLEMENT	=	122.215	mm.
TOTAL SETTLEMENT	=	129.131	mm.

SETTLEMENT CALCULATION

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

TM5 S6

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1286.894	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.030	t/m²
EQUIVALENT MAT DEPTH	=	3.270	m.
μ1	=	0.787	
μ0	=	0.811	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	8.690	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	5.36	2.09	0.96	0.7796	3.921	76.9	0.70	149.159
2	10.95	7.68	3.53	0.1878	0.945	142.9	1.00	46.287
3	16.20	12.93	5.94	0.0785	0.395	625.0	1.00	2.210
4	19.70	16.43	7.55	0.0494	0.248	1000.0	1.00	0.870
5	22.70	19.43	8.93	0.0345	0.174	1000.0	1.00	0.434
6	26.20	22.93	10.54	0.0242	0.121	1000.0	1.00	0.547

TOTAL CONSOLIDATION SETTLEMENT	=	199.502	mm.
FOX'S CORRECTION FACTOR	=	0.819	
CORRECTED CONSOLIDATION SETTLEMENT	=	163.466	mm.
TOTAL SETTLEMENT	=	172.156	mm.

SETTLEMENT CALCULATION

TM5 S7

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1250.287	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	6.090	t/m²
EQUIVALENT MAT DEPTH	=	2.300	m.
μ1	=	0.818	
μ0	=	0.854	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	10.537	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	4.88	2.58	1.33	0.6427	3.914	76.9	0.70	183.447
2	10.95	8.65	4.47	0.1269	0.773	142.9	1.00	37.872
3	16.20	13.90	7.18	0.0571	0.348	625.0	1.00	1.948
4	19.70	17.40	8.99	0.0359	0.219	1000.0	1.00	0.765
5	22.70	20.40	10.54	0.0257	0.157	1000.0	1.00	0.391
6	26.20	23.90	12.35	0.0185	0.113	1000.0	1.00	0.507

TOTAL CONSOLIDATION SETTLEMENT	=	224.930	mm.
FOX'S CORRECTION FACTOR	=	0.864	
CORRECTED CONSOLIDATION SETTLEMENT	=	194.274	mm.
TOTAL SETTLEMENT	=	204.811	mm.

SETTLEMENT CALCULATION

TM5 S8

Project Name : PALAT P
Date : 8/27/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1226.547	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	7.150	t/m²
EQUIVALENT MAT DEPTH	=	1.650	m.
μ1	=	0.845	
μ0	=	0.893	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	12.432	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	2.04	0.41	0.23	0.9885	7.068	76.9	0.70	52.744
2	4.95	3.32	1.88	0.4781	3.418	76.9	0.70	155.535
3	10.95	9.32	5.27	0.1046	0.748	142.9	1.00	36.629
4	16.20	14.57	8.23	0.0449	0.321	625.0	1.00	1.797
5	19.70	18.07	10.21	0.0289	0.206	1000.0	1.00	0.722
6	22.70	21.07	11.90	0.0208	0.149	1000.0	1.00	0.372
7	26.20	24.57	13.88	0.0152	0.109	1000.0	1.00	0.489

TOTAL CONSOLIDATION SETTLEMENT	=	248.288	mm.
FOX'S CORRECTION FACTOR	=	0.904	
CORRECTED CONSOLIDATION SETTLEMENT	=	224.524	mm.
TOTAL SETTLEMENT	=	236.956	mm.

SETTLEMENT CALCULATION

TM6 S1

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2021.622	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	6.097	t/m²
EQUIVALENT MAT DEPTH	=	21.050	m.
μ1	=	0.545	
μ0	=	0.553	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	2.946	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	21.25	0.20	0.10	1.0000	6.097	1000.0	1.00	2.439
2	22.70	1.65	0.81	0.7778	4.742	1000.0	1.00	11.855
3	26.20	5.15	2.54	0.2300	1.403	1000.0	1.00	6.312

TOTAL CONSOLIDATION SETTLEMENT	=	20.606	mm.
FOX'S CORRECTION FACTOR	=	0.549	
CORRECTED CONSOLIDATION SETTLEMENT	=	11.312	mm.
TOTAL SETTLEMENT	=	14.259	mm.

SETTLEMENT CALCULATION

TM6 S2

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	2123.595	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	13.870	t/m²
EQUIVALENT MAT DEPTH	=	18.320	m.
μ1	=	0.638	
μ0	=	0.539	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	4.825	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	19.89	1.57	1.17	0.6098	8.458	1000.0	1.00	26.473
2	22.70	4.38	3.26	0.1587	2.201	1000.0	1.00	5.503
3	26.20	7.88	5.87	0.0598	0.830	1000.0	1.00	3.735

TOTAL CONSOLIDATION SETTLEMENT	=	35.712	mm.
FOX'S CORRECTION FACTOR	=	0.537	
CORRECTED CONSOLIDATION SETTLEMENT	=	19.191	mm.
TOTAL SETTLEMENT	=	24.016	mm.

SETTLEMENT CALCULATION

TM6 S3

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1993.812	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	13.064	t/m²
EQUIVALENT MAT DEPTH	=	14.983	m.
μ1	=	0.650	
μ0	=	0.551	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	5.190	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	I (m)	I/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	ρg	settlement (mm)
1	16.47	1.48	1.07	0.6514	8.510	625.0	1.00	40.395
2	19.70	4.72	3.41	0.1428	1.866	1000.0	1.00	6.531
3	22.70	7.72	5.58	0.0637	0.832	1000.0	1.00	2.080
4	26.20	11.22	8.11	0.0277	0.362	1000.0	1.00	1.628

TOTAL CONSOLIDATION SETTLEMENT	=	50.634	mm.
FOX'S CORRECTION FACTOR	=	0.547	
CORRECTED CONSOLIDATION SETTLEMENT	=	27.699	mm.
TOTAL SETTLEMENT	=	32.889	mm.

SETTLEMENT CALCULATION

TM6 S4

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1513.248	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	2.343	t/m²
EQUIVALENT MAT DEPTH	=	8.070	m.
μ1	=	0.612	
μ0	=	0.696	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	2.447	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	I (m)	I/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	ρg	settlement (mm)
1	11.26	3.19	0.98	0.6969	1.633	142.9	0.70	51.044
2	16.20	8.13	2.49	0.2361	0.560	625.0	1.00	3.137
3	19.70	11.63	3.56	0.1338	0.314	1000.0	1.00	1.090
4	22.70	14.63	4.48	0.0936	0.219	1000.0	1.00	0.548
5	26.20	18.13	5.55	0.0644	0.151	1000.0	1.00	0.679

TOTAL CONSOLIDATION SETTLEMENT	=	56.505	mm.
FOX'S CORRECTION FACTOR	=	0.690	
CORRECTED CONSOLIDATION SETTLEMENT	=	39.007	mm.
TOTAL SETTLEMENT	=	42.454	mm.

SETTLEMENT CALCULATION

TM6|S5

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1341.929	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	4.340	t/m²
EQUIVALENT MAT DEPTH	=	4.600	m.
μ1	=	0.651	
μ0	=	0.740	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	5.981	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	6.02	1.42	0.59	0.8779	3.810	76.9	0.70	98.817
2	10.95	6.35	2.65	0.1969	0.854	142.9	0.70	29.307
3	16.20	11.60	4.83	0.0841	0.365	625.0	1.00	2.045
4	19.70	15.10	6.29	0.0507	0.220	1000.0	1.00	0.770
5	22.70	18.10	7.54	0.0324	0.140	1000.0	1.00	0.351
6	26.20	21.60	9.00	0.0204	0.088	1000.0	1.00	0.398

TOTAL CONSOLIDATION SETTLEMENT	=	131.687	mm.
FOX'S CORRECTION FACTOR	=	0.737	
CORRECTED CONSOLIDATION SETTLEMENT	=	97.082	mm.
TOTAL SETTLEMENT	=	103.063	mm.

SETTLEMENT CALCULATION

TM6 S6

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1286.894	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	5.854	t/m²
EQUIVALENT MAT DEPTH	=	3.270	m.
μ1	=	0.663	
μ0	=	0.780	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	7.775	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	5.36	2.09	1.01	0.6799	3.980	76.9	0.70	151.408
2	10.95	7.68	3.72	0.1197	0.701	142.9	0.70	24.032
3	16.20	12.93	6.26	0.0513	0.300	625.0	1.00	1.680
4	19.70	16.43	7.95	0.0290	0.170	1000.0	1.00	0.594
5	22.70	19.43	9.40	0.0182	0.107	1000.0	1.00	0.267
6	26.20	22.93	11.10	0.0104	0.061	1000.0	1.00	0.274

TOTAL CONSOLIDATION SETTLEMENT	=	178.255	mm.
FOX'S CORRECTION FACTOR	=	0.771	
CORRECTED CONSOLIDATION SETTLEMENT	=	137.477	mm.
TOTAL SETTLEMENT	=	145.252	mm.

SETTLEMENT CALCULATION

TM6 S7

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1250.287	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	7.506	t/m²
EQUIVALENT MAT DEPTH	=	2.300	m.
μ1	=	0.672	
μ0	=	0.816	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	9.601	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	4.88	2.58	1.41	0.5132	3.852	76.9	0.70	180.518
2	10.95	8.65	4.74	0.0841	0.631	142.9	0.70	21.659
3	16.20	13.90	7.62	0.0317	0.238	625.0	1.00	1.334
4	19.70	17.40	9.53	0.0171	0.129	1000.0	1.00	0.449
5	22.70	20.40	11.18	0.0104	0.078	1000.0	1.00	0.195
6	26.20	23.90	13.10	0.0079	0.059	1000.0	1.00	0.267

TOTAL CONSOLIDATION SETTLEMENT	=	204.423	mm.
FOX'S CORRECTION FACTOR	=	0.812	
CORRECTED CONSOLIDATION SETTLEMENT	=	165.970	mm.
TOTAL SETTLEMENT	=	175.570	mm.

SETTLEMENT CALCULATION

TM6 S8

Project Name : PALAT-P
Date : 9/5/85
Operator : TINNAKORN R.
Method : Conventional Method by TOMLINSON
Foundation type : Single Raft Foundation

IMMEDIATE SETTLEMENT

THE AVERAGE YOUNG'S MODULUS	=	1226.651	t/m²
UNIFORM UNIT LOAD AT EQUIVALENT MAT	=	9.091	t/m²
EQUIVALENT MAT DEPTH	=	1.633	m.
μ1	=	0.676	
μ0	=	0.855	
RIGIDITY FACTOR	=	0.8	
TOTAL IMMEDIATE SETTLEMENT	=	11.361	mm.

CONSOLIDATION SETTLEMENT

layer no.	middle depth	Z (m)	Z/B	stress ratio	σz (t/m²)	1/(Mv) (t/m²)	μg	settlement (mm)
1	2.04	0.41	0.25	0.9771	8.883	76.9	0.70	66.045
2	4.95	3.32	2.00	0.3330	3.028	76.9	0.70	177.766
3	10.95	9.32	5.62	0.0598	0.544	142.9	0.70	18.660
4	16.20	14.57	8.78	0.0221	0.201	625.0	1.00	1.127
5	19.70	18.07	10.89	0.0116	0.105	1000.0	1.00	0.368
6	22.70	21.07	12.70	0.0083	0.076	1000.0	1.00	0.189
7	26.20	24.57	14.81	0.0069	0.063	1000.0	1.00	0.284

TOTAL CONSOLIDATION SETTLEMENT	=	224.440	mm.
FOX'S CORRECTION FACTOR	=	0.856	
CORRECTED CONSOLIDATION SETTLEMENT	=	192.037	mm.
TOTAL SETTLEMENT	=	203.398	mm.

ตารางที่ ข.๓ สรุปผลการคำนวณเพื่อประมาณค่าการทรุดตัวรวม ตามวิธี Poulos

TABLE A3 SETTLEMENT CALCULATION BY MODIFIED THEORY OF ELASTICITY (POULOS'S METHOD)

SETTLEMENT CALCULATION OF PILE FOUNDATION BY POULOS'S METHOD
MULTI-FOOTING FOUNDATION

METHOD	SET. NO.	PILE LENG. m.	SETTLEMENT ρ_{fd} mm.	ρ_{ud} mm.	TOTAL SETTLEMENT ρ_{tf} mm.
PLH1	S2	19.35	2.28	0.54	3.07
	S4	11.35	13.98	7.44	23.80
	S6	4.45	30.30	30.73	69.35
	S8	2.25	43.58	34.93	131.90
PLH2	S2	19.35	14.66	4.27	20.58
	S4	11.35	46.09	7.44	59.48
	S6	4.45	97.28	30.73	145.46
	S8	2.25	141.53	34.93	205.20
PLH3	S2	19.35	16.67	4.80	21.47
	S4	11.35	48.80	7.58	62.64
	S6	4.45	103.84	31.30	153.60
	S8	2.25	147.72	35.00	212.81
PL1	S2	19.35	12.63	6.30	18.92
	S4	9.95	125.53	17.11	132.64
	S6	3.15	223.82	23.45	247.27
	S8	3.15	248.24	29.88	278.12
PL2	S2	19.35	14.66	4.27	20.58
	S4	11.35	75.14	26.58	101.64
	S6	4.45	167.77	37.43	205.20
	S8	2.25	179.01	56.85	235.87
PL3	S2	19.35	7.33	4.11	11.44
	S4	11.35	45.75	24.63	70.39
	S6	4.45	80.46	20.57	101.03
	S8	2.25	101.57	64.05	165.63
PL4	S2	19.35	15.60	4.80	20.40
	S4	11.35	80.96	11.87	92.83
	S6	4.45	135.02	35.44	170.46
	S8	2.25	184.46	25.19	209.65
PL5	S2	19.35	16.67	4.80	21.47
	S4	11.35	76.28	11.19	87.46
	S5	7.45	106.19	39.17	145.36
	S6	4.45	143.68	37.64	181.32
	S7	3.15	193.96	37.27	231.22
	S8	2.25	253.72	34.93	288.65
	S9	1.95	221.88	34.93	256.81
PL6	S2	19.35	16.67	4.80	21.47
	S4	11.35	122.06	21.65	145.72
	S6	4.45	246.33	48.54	294.87
	S8	2.25	310.53	35.00	345.50
PL7	S2	19.35	16.67	4.80	21.47
	S4	11.35	46.57	5.63	52.20
	S6	4.45	75.81	19.38	95.19
	S8	2.25	103.39	65.19	168.58

SETTLEMENT CALCULATION

PL1 S2

Project Name : PALAT-1
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 4)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 4)

footing no.	spacing m.	diameter m.	S/D	αF	αE	Fv	s	footing sett. mm.	add.sett. mm.
(1 , 2)	8.05	0.85	7.05	0.307	0.017	0.231	0.240	5.217	1.252
(2 , 1)	6.75	0.80	8.48	0.282	0.016	0.227	0.222	4.377	0.971
(2 , 5)	5.00	1.26	3.96	0.398	0.019	0.247	0.304	4.641	1.411
(3 , 3)	3.95	0.48	8.31	0.310	0.053	0.215	0.254	2.945	0.748
(5 , 1)	9.20	0.80	11.56	0.227	0.012	0.227	0.178	4.377	0.780
(4 , 4)	7.50	1.26	5.95	0.305	0.012	0.247	0.233	4.641	1.081
(4 , 5)	9.01	1.26	7.03	0.264	0.009	0.247	0.201	4.641	0.933
(7 , 2)	11.74	0.85	13.76	0.192	0.007	0.231	0.150	5.217	0.782

TOTAL ADDITIONAL SETTLEMENT : 7.950 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 12.600 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 4)

layer no	Hi(j) (m)	Hi(j) Ir	Ii(j) center	Ii(j) nearby	Hi(j+1) Ir	Ii(j+1) center	Ii(j+1) nearby	Es(j) (t/m²)	Ii(j)-Ii(j+1)	Ii(j)-Ii(j+1) / Es(j)	settlement (m)
1	15.35	1.10	1.048	4.165	1.22	0.734	3.929	2400	0.522	2.174E-04	1.652
2	21.45	1.22	0.734	3.929	1.34	0.557	3.624	1600	0.448	2.800E-04	2.025
3	28.95	1.34	0.557	3.624	1.61	0.430	3.117	1600	0.598	3.736E-04	2.623

UNDERLYING SETTLEMENT OF THIS FOOTING : 6.300 mm.

TOTAL SETTLEMENT : 18.900 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-2
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (1 , 1)

PL1 S4

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	6	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	9.95	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.052	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.900	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 6.325E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (1 , 1)

footing no.	spacing m.	diameter m.	S/D	αf	αf	Fa	α	footing set. mm.	add.set. mm.
(1 , 2)	5.00	2.75	1.82	0.589	0.000	0.000	0.589	35.999	21.196
(1 , 3)	10.00	2.75	3.64	0.411	0.000	0.000	0.411	35.999	14.809
(2 , 1)	7.50	2.75	2.73	0.483	0.000	0.000	0.483	35.999	17.405
(2 , 2)	9.01	2.75	3.28	0.437	0.000	0.000	0.437	35.999	15.741
(2 , 3)	12.50	2.75	4.55	0.352	0.000	0.000	0.352	35.999	12.686

TOTAL ADDITIONAL SETTLEMENT : 81.838 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 117.037 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (1 , 1)

layer no	H(j) (m)	B(j) Lo	I(j) center	I(j) nearby	H(j+1) Lo	I(j+1) center	I(j+1) nearby	Es(j) (t/m²)	I(j)-I(j+1)/Es(j)	I(j)-I(j+1)/Es(j)	settlement (mm)
1	14.45	1.45	0.485	1.307	1.80	0.362	1.184	1200	0.246	2.050E-04	3.891
2	17.95	1.80	0.362	1.184	2.16	0.283	1.067	2400	0.195	8.140E-05	1.227
3	21.45	2.16	0.283	1.067	2.41	0.254	0.994	1600	0.102	6.374E-05	0.961
4	23.95	2.41	0.254	0.994	2.86	0.202	0.862	1600	0.184	1.147E-04	1.730

UNDERLYING SETTLEMENT OF THIS FOOTING : 7.008 mm.

TOTAL SETTLEMENT : 124.845 mm.

SETTLEMENT CALCULATION

PL1 S6

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (1 , 1)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	6	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	3.15	m.
YOUNG'S MODULUS OF SOIL	364	t/m^2
K VALUE	8125	
Io FACTOR	0.122	
Rk FACTOR	1.000	
Rv FACTOR	1.005	
Rh FACTOR	0.956	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.290E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (1 , 1)

footing no.	spacing m.	diameter m.	S/D	aI	aI	Io	s	footing set. mm.	add.set. mm.
(1 , 2)	5.00	3.17	1.58	0.630	0.000	0.000	0.630	54.372	34.279
(1 , 3)	10.00	3.17	3.15	0.448	0.000	0.000	0.448	54.372	24.357
(1 , 4)	15.00	3.17	4.73	0.342	0.000	0.000	0.342	54.372	18.590
(2 , 1)	7.50	3.17	2.36	0.519	0.000	0.000	0.519	54.372	28.217
(2 , 2)	9.01	3.17	2.84	0.473	0.000	0.000	0.473	54.372	25.732
(2 , 3)	12.50	3.17	3.94	0.391	0.000	0.000	0.391	54.372	21.275
(2 , 4)	16.77	3.17	5.29	0.313	0.000	0.000	0.313	54.372	16.996

TOTAL ADDITIONAL SETTLEMENT : 169.445 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 223.817 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (1 , 1)

layer no	H(j) (m)	H(j) Iz	I(j) center	I(j) nearby	H(j+1) Iz	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	7.45	2.37	0.251	0.502	4.59	0.122	0.508	433	0.392	6.653E-04	22.158
2	14.45	4.59	0.122	0.508	5.70	0.106	0.492	1200	0.033	2.716E-05	1.293
3	17.95	5.70	0.106	0.492	6.81	0.106	0.492	2400	0.000	0.000E+00	0.000
4	21.45	6.81	0.106	0.492	7.60	0.106	0.492	1600	0.000	0.000E+00	0.000
5	23.95	7.60	0.106	0.492	9.03	0.106	0.492	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 23.451 mm.

TOTAL SETTLEMENT : 247.268 mm.

SETTLEMENT CALCULATION

PL1 S8

Project Name : PALAT-3
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (1 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

FILE TYPE	FLOTING PILE	
NO.OF PILES	6	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	3.15	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.122	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.956	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.574E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (1 , 3)

footing no.	spacing m.	diameter m.	B/D	αf	αl	Fs	α	footing set. mm.	add.set. mm.
(1 , 1)	10.00	3.17	3.15	0.448	0.000	0.000	0.448	66.344	29.726
(1 , 2)	5.00	3.17	1.58	0.630	0.000	0.000	0.630	66.344	41.827
(1 , 4)	5.00	3.17	1.58	0.630	0.000	0.000	0.630	66.344	41.827
(2 , 1)	12.50	3.17	3.94	0.391	0.000	0.000	0.391	66.344	25.955
(2 , 2)	9.01	3.17	2.84	0.473	0.000	0.000	0.473	66.344	31.398
(2 , 3)	7.50	3.17	2.36	0.519	0.000	0.000	0.519	66.344	34.430
(2 , 4)	9.01	3.17	2.84	0.473	0.000	0.000	0.473	66.344	31.398

TOTAL ADDITIONAL SETTLEMENT : 236.580 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 302.904 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (1 , 3)

layer no	H(j) (m)	H(j)/Lo	I(j) center	I(j) nearby	H(j+1)/Lo	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	I(j)-I(j+1)/Es(j)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	7.45	2.37	0.251	0.056	4.59	0.122	0.681	433	0.257	5.931E-04	28.193
2	14.45	4.59	0.122	0.681	5.70	0.106	0.647	1200	0.043	3.549E-05	1.690
3	17.95	5.70	0.106	0.647	6.81	0.106	0.647	2400	0.000	0.000E+00	0.000
4	21.45	6.81	0.106	0.647	7.60	0.106	0.647	1600	0.000	0.000E+00	0.000
5	23.95	7.60	0.106	0.647	9.03	0.106	0.647	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 29.883 mm.

TOTAL SETTLEMENT : 332.787 mm.

SETTLEMENT CALCULATION

PL2 S4

Project Name : PALAT-7
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	11.35	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.047	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.891	
PILE CAP EFFECT (Pr)	0.746	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 4.208E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/D	uF	uE	Fe	u	footing set. mm.	add.set. mm.
(1 , 1)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(1 , 2)	3.54	0.80	4.41	0.384	0.000	0.000	0.384	10.521	4.042
(1 , 3)	2.50	0.80	3.12	0.470	0.000	0.000	0.470	10.521	4.943
(1 , 4)	3.54	0.80	4.41	0.384	0.000	0.000	0.384	10.521	4.042
(1 , 5)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(1 , 6)	7.91	0.80	9.85	0.211	0.000	0.000	0.211	10.521	2.216
(2 , 1)	5.00	0.80	6.23	0.307	0.000	0.000	0.307	10.521	3.229
(2 , 2)	2.50	0.80	3.12	0.470	0.000	0.000	0.470	10.521	4.943
(2 , 4)	2.50	0.80	3.12	0.470	0.000	0.000	0.470	10.521	4.943
(2 , 5)	5.00	0.80	6.23	0.307	0.000	0.000	0.307	10.521	3.229
(2 , 6)	7.50	0.80	9.35	0.218	0.000	0.000	0.218	10.521	2.296
(3 , 1)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(3 , 2)	3.54	0.80	4.41	0.384	0.000	0.000	0.384	10.521	4.042
(3 , 3)	2.50	0.80	3.12	0.470	0.000	0.000	0.470	10.521	4.943
(3 , 4)	3.54	0.80	4.41	0.384	0.000	0.000	0.384	10.521	4.042
(3 , 5)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(3 , 6)	7.91	0.80	9.85	0.211	0.000	0.000	0.211	10.521	2.216
(4 , 1)	7.07	0.80	8.81	0.233	0.000	0.000	0.233	10.521	2.451
(4 , 2)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(4 , 3)	5.00	0.80	6.23	0.307	0.000	0.000	0.307	10.521	3.229
(4 , 4)	5.59	0.80	6.97	0.283	0.000	0.000	0.283	10.521	2.975
(4 , 5)	7.07	0.80	8.81	0.233	0.000	0.000	0.233	10.521	2.451
(4 , 6)	9.01	0.80	11.23	0.183	0.000	0.000	0.183	10.521	1.930
(5 , 1)	9.01	0.80	11.23	0.183	0.000	0.000	0.183	10.521	1.930
(5 , 2)	7.91	0.80	9.85	0.211	0.000	0.000	0.211	10.521	2.216
(5 , 3)	7.50	0.80	9.35	0.218	0.000	0.000	0.218	10.521	2.296
(5 , 4)	7.91	0.80	9.85	0.211	0.000	0.000	0.211	10.521	2.216
(5 , 5)	9.01	0.80	11.23	0.183	0.000	0.000	0.183	10.521	1.930
(5 , 6)	10.61	0.80	13.22	0.162	0.000	0.000	0.162	10.521	1.706
(6 , 1)	11.18	0.80	13.94	0.155	0.000	0.000	0.155	10.521	1.628
(6 , 2)	10.31	0.80	12.85	0.166	0.000	0.000	0.166	10.521	1.750
(6 , 3)	10.00	0.80	12.46	0.171	0.000	0.000	0.171	10.521	1.798
(6 , 4)	10.31	0.80	12.85	0.166	0.000	0.000	0.166	10.521	1.750
(6 , 5)	11.18	0.80	13.94	0.155	0.000	0.000	0.155	10.521	1.628

TOTAL ADDITIONAL SETTLEMENT : 98.104 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 108.625 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FUDTING NO. (2 , 3)

layer no	H(j) (m)	H(j) Ir	I(j) center	I(j) nearby	H(j+1) Io	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	Ii(j)-Ii(j+1)	Ii(j)-Ii(j+1) / Es(j)	settlement (mm)
1	14.45	1.27	0.673	13.299	1.58	0.419	11.299	1200	2.072	1.727E-03	3.803
2	17.95	1.58	0.419	11.299	1.89	0.327	9.591	2400	1.721	7.171E-04	1.579
3	21.45	1.89	0.327	9.591	2.11	0.262	8.455	1600	0.946	5.877E-04	1.294
4	23.95	2.11	0.262	8.455	2.51	0.237	7.485	1600	1.172	7.321E-04	1.614

UNDERLYING SETTLEMENT OF THIS FOOTING : 8.291 mm.

TOTAL SETTLEMENT : 116.916 mm.

SETTLEMENT CALCULATION

PL2 S6

Project Name : PALAT-B
Date : 8/28/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING FILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	4.45	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.096	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.943	
PILE CAP EFFECT (Fr)	0.576	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 7.037E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/D	α^2	αI	Fo	R	footing set. mm.	add.set. mm.
(1 , 1)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(1 , 2)	3.54	1.02	3.47	0.421	0.000	0.000	0.421	17.593	7.402
(1 , 3)	2.50	1.02	2.45	0.511	0.000	0.000	0.511	17.593	8.985
(1 , 4)	3.54	1.02	3.47	0.421	0.000	0.000	0.421	17.593	7.402
(1 , 5)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(2 , 1)	5.00	1.02	4.90	0.332	0.000	0.000	0.332	17.593	5.835
(2 , 2)	2.50	1.02	2.45	0.511	0.000	0.000	0.511	17.593	8.985
(2 , 4)	2.50	1.02	2.45	0.511	0.000	0.000	0.511	17.593	8.985
(2 , 5)	5.00	1.02	4.90	0.332	0.000	0.000	0.332	17.593	5.835
(3 , 1)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(3 , 2)	3.54	1.02	3.47	0.421	0.000	0.000	0.421	17.593	7.402
(3 , 3)	2.50	1.02	2.45	0.511	0.000	0.000	0.511	17.593	8.985
(3 , 4)	3.54	1.02	3.47	0.421	0.000	0.000	0.421	17.593	7.402
(3 , 5)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(4 , 1)	7.07	1.02	6.93	0.252	0.000	0.000	0.252	17.593	4.426
(4 , 2)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(4 , 3)	5.00	1.02	4.90	0.332	0.000	0.000	0.332	17.593	5.835
(4 , 4)	5.59	1.02	5.48	0.302	0.000	0.000	0.302	17.593	5.317
(4 , 5)	7.07	1.02	6.93	0.252	0.000	0.000	0.252	17.593	4.426
(5 , 1)	9.01	1.02	8.84	0.200	0.000	0.000	0.200	17.593	3.515
(5 , 2)	7.91	1.02	7.75	0.228	0.000	0.000	0.228	17.593	4.005
(5 , 3)	7.50	1.02	7.35	0.239	0.000	0.000	0.239	17.593	4.201
(5 , 4)	7.91	1.02	7.75	0.228	0.000	0.000	0.228	17.593	4.005
(5 , 5)	9.01	1.02	8.84	0.200	0.000	0.000	0.200	17.593	3.515
(6 , 1)	11.18	1.02	10.96	0.161	0.000	0.000	0.161	17.593	2.829
(6 , 2)	10.31	1.02	10.11	0.174	0.000	0.000	0.174	17.593	3.061
(6 , 3)	10.00	1.02	9.80	0.179	0.000	0.000	0.179	17.593	3.153
(6 , 4)	10.31	1.02	10.11	0.174	0.000	0.000	0.174	17.593	3.061
(6 , 5)	11.18	1.02	10.96	0.161	0.000	0.000	0.161	17.593	2.829

TOTAL ADDITIONAL SETTLEMENT : 157.985 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 175.578 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 3)

layer no	H(j) (m)	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	7.45	1.67	0.404	5.900	3.25	0.176	4.133	433	1.859	4.290E-03	24.103
2	14.45	3.25	0.176	4.133	4.03	0.144	3.565	1200	0.570	4.749E-04	2.668
3	17.95	4.03	0.144	3.565	4.82	0.112	2.998	2400	0.570	2.375E-04	1.334
4	21.45	4.82	0.112	2.998	5.38	0.104	2.869	1600	0.130	8.142E-05	0.457
5	23.95	5.38	0.104	2.869	6.31	0.104	2.869	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 28.563 mm.

TOTAL SETTLEMENT : 204.141 mm.

SETTLEMENT CALCULATION

PL2 S8

Project Name : PLS8
Date : 25/10/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 2)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	2.25	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.151	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.966	
PILE CAP EFFECT (Fr)	0.423	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 8.302E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 2)

footing no.	spacing m.	diameter m.	S/D	aF	aE	Fe	s	footing set. mm.	add.set. mm.
(1 , 1)	3.54	1.20	2.77	0.480	0.000	0.000	0.480	18.597	8.922
(1 , 2)	2.50	1.20	1.96	0.563	0.000	0.000	0.563	18.597	10.477
(1 , 3)	3.54	1.20	2.77	0.480	0.000	0.000	0.480	18.597	8.922
(1 , 4)	5.59	1.20	4.38	0.362	0.000	0.000	0.362	18.597	6.725
(2 , 1)	2.50	1.20	1.96	0.563	0.000	0.000	0.563	18.597	10.477
(2 , 2)	2.55	1.20	1.96	0.563	0.000	0.000	0.563	18.597	10.477
(2 , 4)	5.00	1.20	3.91	0.391	0.000	0.000	0.391	18.597	7.277
(3 , 1)	3.54	1.20	2.77	0.480	0.000	0.000	0.480	18.597	8.922
(3 , 2)	2.50	1.20	1.96	0.563	0.000	0.000	0.563	18.597	10.477
(3 , 3)	3.54	1.20	2.77	0.480	0.000	0.000	0.480	18.597	8.922
(3 , 4)	5.59	1.20	4.38	0.362	0.000	0.000	0.362	18.597	6.725
(4 , 1)	5.59	1.20	4.38	0.362	0.000	0.000	0.362	18.597	6.725
(4 , 2)	5.00	1.20	3.91	0.391	0.000	0.000	0.391	18.597	7.277
(4 , 3)	5.59	1.20	4.38	0.362	0.000	0.000	0.362	18.597	6.725
(4 , 4)	7.07	1.20	5.54	0.301	0.000	0.000	0.301	18.597	5.605
(5 , 1)	7.91	1.20	6.19	0.277	0.000	0.000	0.277	18.597	5.151
(5 , 2)	7.50	1.20	5.87	0.289	0.000	0.000	0.289	18.597	5.366
(5 , 3)	7.91	1.20	6.19	0.277	0.000	0.000	0.277	18.597	5.151
(5 , 4)	9.01	1.20	7.05	0.248	0.000	0.000	0.248	18.597	4.606
(6 , 1)	10.31	1.20	8.07	0.219	0.000	0.000	0.219	18.597	4.071
(6 , 2)	10.00	1.20	7.83	0.226	0.000	0.000	0.226	18.597	4.195
(6 , 3)	10.31	1.20	8.07	0.219	0.000	0.000	0.219	18.597	4.081
(6 , 4)	11.18	1.20	8.75	0.202	0.000	0.000	0.202	18.597	3.755

TOTAL ADDITIONAL SETTLEMENT : 161.080 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 179.677 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 2)

layer no	H(j) (m)	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) ft/m^2	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	2.45	1.09	0.542	2.995	3.31	0.175	2.421	260	0.865	3.325E-03	33.103
2	7.45	3.31	0.175	2.421	6.42	0.105	1.942	433	0.502	1.158E-03	11.525
3	14.45	6.42	0.105	1.942	7.98	0.105	1.942	1200	0.000	0.000E+00	0.000
4	17.95	7.98	0.105	1.942	9.53	0.105	1.942	2400	0.000	0.000E+00	0.000
5	21.45	9.53	0.105	1.942	10.64	0.105	1.942	1600	0.000	0.000E+00	0.000
6	23.95	10.64	0.105	1.942	12.64	0.105	1.942	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 44.628 mm.

TOTAL SETTLEMENT : 224.306 mm.

SETTLEMENT CALCULATION

PL3 S4

Project Name : PALAT-7
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	11.35	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.047	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.891	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 5.643E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/D	aF	aE	Fe	s	footing set. mm.	add.set. mm.
(1 , 2)	3.54	0.30	11.68	0.295	0.000	0.000	0.295	14.100	4.166
(1 , 3)	2.50	0.30	8.26	0.361	0.000	0.000	0.361	14.100	5.091
(1 , 4)	3.54	0.30	11.68	0.295	0.000	0.000	0.295	14.100	4.166
(2 , 2)	2.50	0.30	8.26	0.361	0.000	0.000	0.361	14.100	5.091
(2 , 4)	2.50	0.30	8.26	0.361	0.000	0.000	0.361	14.100	5.091
(3 , 2)	3.54	0.30	11.68	0.295	0.000	0.000	0.295	14.100	4.166
(3 , 3)	2.50	0.30	8.26	0.361	0.000	0.000	0.361	14.100	5.091
(3 , 4)	3.54	0.30	11.68	0.295	0.000	0.000	0.295	14.100	4.166

TOTAL ADDITIONAL SETTLEMENT : 37.028 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 51.136 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 3)

layer no	H(j) (m)	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	14.45	1.27	0.578	4.301	1.58	0.407	3.415	1200	0.948	7.904E-04	1.741
2	17.95	1.58	0.407	3.415	1.89	0.324	2.787	2400	0.637	2.655E-04	0.585
3	21.45	1.89	0.324	2.787	2.11	0.282	2.458	1600	0.333	2.080E-04	0.458
4	23.95	2.11	0.282	2.458	2.51	0.237	2.081	1600	0.379	2.366E-04	0.521

UNDERLYING SETTLEMENT OF THIS FOOTING : 3.305 mm.

TOTAL SETTLEMENT : 54.441 mm.

SETTLEMENT CALCULATION

PL3 S6

Project Name : PALAT-B
Date : 8/28/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE		FLOTING PILE	
NO.OF PILES		1	
DIAMETER OF PILE		0.25	m.
LENGTH OF PILE		4.45	m.
YOUNG'S MODULUS OF SOIL		298	t/m^2
K	VALUE	8125	
Io	FACTOR	0.096	
Rk	FACTOR	1.000	
Rv	FACTOR	1.003	
Rh	FACTOR	0.943	
PILE CAP EFFECT	(Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.222E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/B	aF	aE	Fs	s	footing set. mm.	add.set. mm.
(1 , 2)	3.54	0.20	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(1 , 3)	2.50	0.20	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(1 , 4)	3.54	0.20	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(2 , 2)	2.50	0.20	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(2 , 4)	2.50	0.20	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(3 , 2)	3.54	0.20	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(3 , 3)	2.50	0.20	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(3 , 4)	3.54	0.20	12.50	0.182	0.000	0.000	0.182	30.549	5.548

TOTAL ADDITIONAL SETTLEMENT : 52.111 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 82.660 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 3)

layer no	h(j) (m)	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) (t/m²)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	7.45	1.67	0.391	2.627	3.25	0.173	1.463	433	1.238	2.858E-03	16.057
2	14.45	3.25	0.173	1.463	4.03	0.143	1.219	1200	0.247	2.056E-04	1.155
3	17.95	4.03	0.143	1.219	4.92	0.113	0.974	2400	0.247	1.028E-04	0.578
4	21.45	4.82	0.113	0.974	5.38	0.106	0.918	1600	0.056	3.525E-05	0.198
5	23.75	5.38	0.106	0.918	6.34	0.106	0.918	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 17.988 mm.

TOTAL SETTLEMENT : 100.648 mm.

SETTLEMENT CALCULATION

Project Name : PLSB
Date : 25/10/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 2)

PL3 S8

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 2)

footing no.	spacing m.	diameter m.	S/D	aF	aI	Fe	s	footing set. mm.	add.set. mm.
(1 , 1)	3.54	0.26	13.57	0.130	0.000	0.000	0.130	43.963	5.729
(1 , 2)	2.50	0.26	9.60	0.185	0.000	0.000	0.185	43.963	8.115
(1 , 3)	3.54	0.26	13.57	0.130	0.000	0.000	0.130	43.963	5.729
(2 , 1)	2.50	0.26	9.60	0.185	0.000	0.000	0.185	43.963	8.115
(2 , 3)	2.50	0.26	9.60	0.185	0.000	0.000	0.185	43.963	8.115
(3 , 1)	3.54	0.26	13.57	0.130	0.000	0.000	0.130	43.963	5.729
(3 , 2)	2.50	0.26	9.60	0.185	0.000	0.000	0.185	43.963	8.115
(3 , 3)	3.54	0.26	13.57	0.130	0.000	0.000	0.130	43.963	5.729

TOTAL ADDITIONAL SETTLEMENT : 55.377 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 99.340 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 2)

layer no	H(j) (m)	H(j) Ie	I(j) center	I(j) nearby	H(j+1) Ie	I(j+1) center	I(j+1) nearby	Es(j) (t/m²)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	3.45	1.09	0.977	1.826	3.71	0.170	1.241	200	1.308	6.539E-03	50.074
2	3.45	3.31	0.170	1.241	6.47	0.106	0.856	433	0.491	1.133E-04	1.212
3	14.45	6.42	0.106	0.856	7.99	0.106	0.856	1200	0.000	0.000E+00	0.000
4	17.95	7.98	0.106	0.856	9.53	0.106	0.856	2400	0.000	0.000E+00	0.000
5	21.45	9.53	0.106	0.856	10.64	0.106	0.856	1600	0.000	0.000E+00	0.000
6	23.95	10.64	0.106	0.856	11.64	0.106	0.856	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 59.286 mm.

TOTAL SETTLEMENT : 158.626 mm.

SETTLEMENT CALCULATION

PL4 S4

Project Name : PALAT-7
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	11.35	m.
YOUNG'S MODULUS OF SOIL	296	t/m^2
K VALUE	8125	
Io FACTOR	0.047	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.891	
PILE CAP EFFECT (Fr)	0.873	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 4.526E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/D	aF	aS	Fr	s	footing set. mm.	add.set. mm.
(1 , 1)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(1 , 2)	3.54	0.51	6.99	0.347	0.000	0.000	0.347	12.315	4.275
(1 , 3)	2.50	0.51	4.94	0.411	0.000	0.000	0.411	12.315	5.056
(1 , 4)	3.54	0.51	6.99	0.347	0.000	0.000	0.347	12.315	4.275
(1 , 5)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(2 , 1)	5.00	0.51	9.89	0.274	0.000	0.000	0.274	12.315	3.379
(2 , 2)	2.50	0.51	4.94	0.411	0.000	0.000	0.411	12.315	5.056
(2 , 4)	2.50	0.51	4.94	0.411	0.000	0.000	0.411	12.315	5.056
(2 , 5)	5.00	0.51	9.89	0.274	0.000	0.000	0.274	12.315	3.379
(2 , 6)	7.50	0.51	14.83	0.199	0.000	0.000	0.199	12.315	2.456
(3 , 1)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(3 , 2)	3.54	0.51	6.99	0.347	0.000	0.000	0.347	12.315	4.275
(3 , 3)	2.50	0.51	4.94	0.411	0.000	0.000	0.411	12.315	5.056
(3 , 4)	3.54	0.51	6.99	0.347	0.000	0.000	0.347	12.315	4.275
(3 , 5)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(4 , 1)	7.07	0.51	13.98	0.210	0.000	0.000	0.210	12.315	2.590
(4 , 2)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(4 , 3)	5.00	0.51	9.89	0.274	0.000	0.000	0.274	12.315	3.379
(4 , 4)	5.59	0.51	11.04	0.253	0.000	0.000	0.253	12.315	3.111
(4 , 5)	7.07	0.51	13.98	0.210	0.000	0.000	0.210	12.315	2.590
(5 , 3)	7.50	0.51	14.83	0.199	0.000	0.000	0.199	12.315	2.456

TOTAL ADDITIONAL SETTLEMENT : 76.215 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 68.551 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 3)

layer no	H(j) (m)	H(j) Io	I(j) center	I(j) nearby	H(j+1) Io	I(j+1) center	I(j+1) nearby	Es(j) (t/m^2)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	14.45	1.27	0.603	9.356	1.58	0.417	7.726	1200	1.730	1.442E-03	3.138
2	17.95	1.58	0.417	7.726	1.89	0.330	6.472	2400	1.244	5.183E-04	1.128
3	21.45	1.89	0.330	6.472	2.31	0.266	5.819	1600	0.653	4.234E-04	0.922
4	23.95	2.11	0.266	5.819	2.51	0.240	4.976	1600	0.844	5.277E-04	1.162

UNDERLYING SETTLEMENT OF THIS FOOTING : 6.371 mm.

TOTAL SETTLEMENT : 94.602 mm.

SETTLEMENT CALCULATION

Project Name : PALAP-B
Date : 8/27/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 3)

PL4 S6

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

FILE TYPE	FLOTING FILE	
NO.OF PILES	1	
DIAMETER OF FILE	0.25	m.
LENGTH OF FILE	4.45	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.096	
Rk FACTOR	1.000	
Rv FACTOR .	1.003	
Rh FACTOR	0.943	
PILE CAP EFFECT (Fr)	0.748	

UNIT LOAD SETTLEMENT OF SINGLE FILE : 9.140E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 3)

footing no.	spacing m.	diameter m.	S/D	αf	αI	Fr	α	footing set. mm.	add.set. mm.
(1 , 1)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(1 , 2)	3.54	0.61	5.79	0.292	0.000	0.000	0.292	22.851	6.666
(1 , 3)	2.50	0.61	4.09	0.381	0.000	0.000	0.381	22.851	8.716
(1 , 4)	3.54	0.61	5.79	0.292	0.000	0.000	0.292	22.851	6.666
(1 , 5)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(2 , 1)	5.00	0.61	8.19	0.215	0.000	0.000	0.215	22.851	4.912
(2 , 2)	2.50	0.61	4.09	0.381	0.000	0.000	0.381	22.851	8.716
(2 , 4)	2.50	0.61	4.09	0.381	0.000	0.000	0.381	22.851	8.716
(2 , 5)	5.00	0.61	8.19	0.215	0.000	0.000	0.215	22.851	4.912
(3 , 1)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(3 , 2)	3.54	0.61	5.79	0.292	0.000	0.000	0.292	22.851	6.666
(3 , 3)	2.50	0.61	4.09	0.381	0.000	0.000	0.381	22.851	8.716
(3 , 4)	3.54	0.61	5.79	0.292	0.000	0.000	0.292	22.851	6.666
(3 , 5)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(4 , 1)	7.07	0.61	11.58	0.151	0.000	0.000	0.151	22.851	3.447
(4 , 2)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(4 , 3)	5.00	0.61	8.19	0.215	0.000	0.000	0.215	22.851	4.912
(4 , 4)	5.55	0.61	9.15	0.193	0.000	0.000	0.193	22.851	4.401
(4 , 5)	7.07	0.61	11.58	0.151	0.000	0.000	0.151	22.851	3.447
(5 , 1)	9.01	0.61	14.76	0.120	0.000	0.000	0.120	22.851	2.740
(5 , 2)	7.91	0.61	12.95	0.137	0.000	0.000	0.137	22.851	3.121
(5 , 3)	7.50	0.61	12.28	0.144	0.000	0.000	0.144	22.851	3.289
(5 , 4)	7.91	0.61	12.95	0.137	0.000	0.000	0.137	22.851	3.121
(5 , 5)	9.01	0.61	14.76	0.120	0.000	0.000	0.120	22.851	2.740

TOTAL ADDITIONAL SETTLEMENT : 124.576 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 147.427 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (2 , 3)

layer no	Hi(j) (m)	Hi(j) Le	Ii(j) center	Ii(j) nearby	Hi(j+1) Le	Ii(j+1) center	Ii(j+1) nearby	Es(j) (t/m²)	Ii(j)-Ii(j+1)	Ii(j)-Ii(j+1) / Es(j)	settlement (mm)
1	7.45	1.67	0.399	5.457	3.75	0.174	3.606	433	1.933	4.462E-03	25.665
2	14.45	3.25	0.174	3.606	4.00	0.143	3.076	1200	0.533	4.441E-04	2.495
3	17.95	4.03	0.143	3.076	4.82	0.112	2.565	2400	0.533	2.221E-04	1.248
4	21.45	4.82	0.112	2.565	5.38	0.105	2.424	1600	0.122	7.613E-05	0.428
5	23.95	5.38	0.105	2.424	6.34	0.105	2.424	1600	0.000	0.000E+00	0.000

UNDERLYING SETTLEMENT OF THIS FOOTING : 29.835 mm.

TOTAL SETTLEMENT : 176.662 mm.

SETTLEMENT CALCULATION

Project Name : PLS8
Date : 25/10/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (2 , 2)

PL4 S8

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	2.25	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.151	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.966	
PILE CAP EFFECT (Fr)	0.602	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.181E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (2 , 2)

footing no.	spacing m.	diameter m.	S/D	αf	αl	Fr	ε	footing set. mm.	add.set. mm.
(1, 1)	3.54	0.76	4.62	0.348	0.000	0.000	0.348	26.462	9.216
(1, 2)	2.50	0.76	3.27	0.438	0.000	0.000	0.438	26.462	11.595
(1, 3)	3.54	0.76	4.62	0.348	0.000	0.000	0.348	26.462	9.216
(1, 4)	5.59	0.76	7.31	0.243	0.000	0.000	0.243	26.462	6.423
(2, 1)	2.50	0.76	3.27	0.438	0.000	0.000	0.438	26.462	11.595
(2, 3)	2.50	0.76	3.27	0.438	0.000	0.000	0.438	26.462	11.595
(2, 4)	5.00	0.76	6.54	0.265	0.000	0.000	0.265	26.462	7.013
(3, 1)	3.54	0.76	4.62	0.348	0.000	0.000	0.348	26.462	9.216
(3, 2)	2.50	0.76	3.27	0.438	0.000	0.000	0.438	26.462	11.595
(3, 3)	3.54	0.76	4.62	0.348	0.000	0.000	0.348	26.462	9.216
(3, 4)	5.59	0.76	7.31	0.243	0.000	0.000	0.243	26.462	6.423
(4, 1)	5.59	0.76	7.31	0.243	0.000	0.000	0.243	26.462	6.423
(4, 2)	5.00	0.76	6.54	0.265	0.000	0.000	0.265	26.462	7.013
(4, 3)	5.59	0.76	7.31	0.243	0.000	0.000	0.243	26.462	6.423
(4, 4)	7.07	0.76	9.25	0.191	0.000	0.000	0.191	26.462	5.052
(5, 1)	7.91	0.76	10.34	0.170	0.000	0.000	0.170	26.462	4.505
(5, 2)	7.50	0.76	9.81	0.179	0.000	0.000	0.179	26.462	4.742
(5, 3)	7.91	0.76	10.34	0.170	0.000	0.000	0.170	26.462	4.505
(5, 4)	9.01	0.76	11.79	0.150	0.000	0.000	0.150	26.462	3.966
(6, 1)	10.51	0.76	13.48	0.131	0.000	0.000	0.131	26.462	3.473
(6, 2)	10.00	0.76	13.07	0.135	0.000	0.000	0.135	26.462	3.579
(6, 3)	10.51	0.76	13.48	0.131	0.000	0.000	0.131	26.462	3.473
(8, 4)	11.98	0.76	14.62	0.120	0.000	0.000	0.120	26.462	3.179

TOTAL ADDITIONAL SETTLEMENT : 159.438 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 185.894 mm.

SETTLEMENT CALCULATION

PL5 S4

Project Name : PALAT-E6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 9)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE		FLOTING PILE	
NO.OF PILES		1	
DIAMETER OF PILE		0.25	m.
LENGTH OF PILE		11.35	m.
YOUNG'S MODULUS OF SOIL		298	t/m^2
K VALUE		8125	
Io FACTOR		0.047	
Rk FACTOR		1.000	
Rv FACTOR		1.003	
Rh FACTOR		0.891	
PILE CAP EFFECT	(Fr)	0.873	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 4.926E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 9)

footing no.	spacing m.	diameter m.	B/D	αI	αE	Fr	s	footing set. mm.	add.set. mm.
(2 , 7)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(2 , 8)	3.54	0.50	7.12	0.345	0.000	0.000	0.345	11.232	3.878
(2 , 9)	2.50	0.50	5.03	0.411	0.000	0.000	0.411	11.232	4.612
(2 , 10)	3.54	0.50	7.12	0.345	0.000	0.000	0.345	11.232	3.878
(2 , 11)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(4 , 7)	5.00	0.50	10.06	0.274	0.000	0.000	0.274	11.232	3.074
(4 , 8)	2.50	0.50	5.03	0.411	0.000	0.000	0.411	11.232	4.612
(4 , 10)	2.50	0.50	5.03	0.411	0.000	0.000	0.411	11.232	4.612
(4 , 11)	5.00	0.50	10.06	0.274	0.000	0.000	0.274	11.232	3.074
(6 , 7)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(6 , 8)	3.54	0.50	7.12	0.345	0.000	0.000	0.345	11.232	3.878
(6 , 9)	2.50	0.50	5.03	0.411	0.000	0.000	0.411	11.232	4.612
(6 , 10)	3.54	0.50	7.12	0.345	0.000	0.000	0.345	11.232	3.878
(6 , 11)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(8 , 7)	7.07	0.50	14.23	0.211	0.000	0.000	0.211	11.232	2.374
(8 , 8)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(8 , 9)	5.00	0.50	10.06	0.274	0.000	0.000	0.274	11.232	3.074
(8 , 10)	5.59	0.50	11.25	0.254	0.000	0.000	0.254	11.232	2.852
(8 , 11)	7.07	0.50	14.23	0.211	0.000	0.000	0.211	11.232	2.374

TOTAL ADDITIONAL SETTLEMENT : 65.044 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 76.275 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 9)

layer no	Hi(i) (m)	Hi(i) Le	Ii(i) center	Ii(i) nearby	Hi(i+1) Le	Ii(i+1) center	Ii(i+1) nearby	Es(i) (t/m2)	Ii(i)-Ii(i+1)	Ii(i)-Ii(i+1) / Es(i)	settlement (mm)
1	14.45	1.27	0.602	8.667	1.58	0.417	7.123	1200	1.615	1.346E-03	2.304
2	17.95	1.58	0.417	7.123	1.85	0.330	5.965	2400	1.166	4.860E-04	0.936
3	21.45	1.85	0.330	5.968	2.11	0.264	5.331	1600	0.634	3.963E-04	0.796
4	23.95	2.11	0.264	5.331				1600	5.345	3.340E-03	6.710

UNDERLYING SETTLEMENT OF THIS FOOTING : 11.187 mm.

TOTAL SETTLEMENT : 87.462 mm.

PL5 S6

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 15)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

**** FOOTING ID NO. 1 ****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	4.45	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.096	
Ri FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.943	
PILE CAP EFFECT (Fr)	0.748	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 9.140E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 15)

footing no.	spacing m.	diameter m.	S/D	αF	αE	Fr	s	footing set. mm.	add.set. mm.
(2 , 12)	7.91	0.60	13.27	0.133	0.000	0.000	0.133	20.840	2.777
(2 , 13)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(2 , 14)	3.54	0.60	5.93	0.286	0.000	0.000	0.286	20.840	5.963
(2 , 15)	2.50	0.60	4.20	0.375	0.000	0.000	0.375	20.840	7.830
(2 , 16)	3.54	0.60	5.93	0.286	0.000	0.000	0.286	20.840	5.963
(2 , 17)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(2 , 18)	7.91	0.60	13.27	0.133	0.000	0.000	0.133	20.840	2.777
(4 , 12)	9.50	0.60	12.59	0.140	0.000	0.000	0.140	20.840	2.926
(4 , 13)	5.00	0.60	8.39	0.214	0.000	0.000	0.214	20.840	4.458
(4 , 14)	2.50	0.60	4.20	0.375	0.000	0.000	0.375	20.840	7.830
(4 , 16)	2.50	0.60	4.20	0.375	0.000	0.000	0.375	20.840	7.830
(4 , 17)	5.00	0.60	8.39	0.214	0.000	0.000	0.214	20.840	4.458
(4 , 18)	9.50	0.60	12.59	0.140	0.000	0.000	0.140	20.840	2.926
(6 , 12)	7.91	0.60	13.27	0.133	0.000	0.000	0.133	20.840	2.777
(6 , 13)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(6 , 14)	3.54	0.60	5.93	0.286	0.000	0.000	0.286	20.840	5.963
(6 , 15)	2.50	0.60	4.20	0.375	0.000	0.000	0.375	20.840	7.830
(6 , 16)	3.54	0.60	5.93	0.286	0.000	0.000	0.286	20.840	5.963
(6 , 17)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(6 , 18)	7.91	0.60	13.27	0.133	0.000	0.000	0.133	20.840	2.777
(8 , 13)	7.07	0.60	11.87	0.150	0.000	0.000	0.150	20.840	3.119
(8 , 14)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(8 , 15)	5.00	0.60	8.39	0.214	0.000	0.000	0.214	20.840	4.458
(8 , 16)	5.59	0.60	9.38	0.185	0.000	0.000	0.185	20.840	3.865
(8 , 17)	7.07	0.60	11.87	0.150	0.000	0.000	0.150	20.840	3.119
(10 , 14)	8.38	0.60	14.07	0.126	0.000	0.000	0.126	20.840	2.621
(10 , 15)	8.00	0.60	13.43	0.132	0.000	0.000	0.132	20.840	2.745
(10 , 16)	8.38	0.60	14.07	0.126	0.000	0.000	0.126	20.840	2.621

TOTAL ADDITIONAL SETTLEMENT : 122.839 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 143.679 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 15)

layer no.	Hi(i) (m)	σzi(i) Io	Iij(i) center	Iij(i) nearby	Hi(i+1) Io	Iij(i+1) center	Iij(i+1) nearby	Eo(i) (t/m^2)	Iij-Iij(i)	Iij-Iij(i) / Eo(i)	settlement (mm)
1	3.45	1.67	0.399	6.684	3.25	0.174	6.092	450	2.022	4.282E-03	24.501
2	14.45	3.75	0.174	4.093	4.03	0.143	3.505	1200	0.591	4.923E-04	2.822
3	17.95	4.03	0.143	3.505	4.82	0.113	2.917	2400	0.591	2.462E-04	1.261
4	21.45	4.82	0.113	2.917	5.38	0.106	2.783	1600	0.135	8.439E-05	0.432
5	25.95	5.38	0.106	2.783				1600	2.786	1.741E-03	8.921

UNDERLYING SETTLEMENT OF THIS FOOTING : 37.638 mm.

TOTAL SETTLEMENT : 181.317 mm.

SETTLEMENT CALCULATION

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 19)

PL5 S8

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	2.25	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.151	
Rk FACTOR	1.000	
Rv FACTOR	1.005	
Rh FACTOR	0.966	
PILE CAP EFFECT (Fr)	0.602	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.181E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 19)

footing no.	spacing m.	diameter m.	S/D	αf	αt	Fs	s	footing set. mm.	add.set. mm.
(2 , 15)	10.31	0.76	13.60	0.130	0.000	0.000	0.130	26.935	3.503
(2 , 16)	7.91	0.76	10.43	0.169	0.000	0.000	0.169	26.935	4.545
(2 , 17)	5.59	0.76	7.38	0.238	0.000	0.000	0.238	26.935	6.414
(2 , 18)	3.54	0.76	4.66	0.346	0.000	0.000	0.346	26.935	9.313
(2 , 19)	2.50	0.76	3.30	0.436	0.000	0.000	0.436	26.935	11.752
(2 , 20)	3.54	0.76	4.66	0.346	0.000	0.000	0.346	26.935	9.313
(2 , 21)	5.59	0.76	7.38	0.238	0.000	0.000	0.238	26.935	6.414
(4 , 15)	10.06	0.76	13.19	0.134	0.000	0.000	0.134	26.935	3.610
(4 , 16)	7.50	0.76	9.90	0.178	0.000	0.000	0.178	26.935	4.784
(4 , 17)	5.00	0.76	6.60	0.263	0.000	0.000	0.263	26.935	7.081
(4 , 18)	2.50	0.76	3.30	0.436	0.000	0.000	0.436	26.935	11.752
(4 , 20)	2.50	0.76	3.30	0.436	0.000	0.000	0.436	26.935	11.752
(4 , 21)	5.00	0.76	6.60	0.263	0.000	0.000	0.263	26.935	7.081
(6 , 15)	10.31	0.76	13.60	0.130	0.000	0.000	0.130	26.935	3.503
(6 , 16)	7.91	0.76	10.43	0.169	0.000	0.000	0.169	26.935	4.545
(6 , 17)	5.59	0.76	7.38	0.238	0.000	0.000	0.238	26.935	6.414
(6 , 18)	3.54	0.76	4.66	0.346	0.000	0.000	0.346	26.935	9.313
(6 , 19)	2.50	0.76	3.30	0.436	0.000	0.000	0.436	26.935	11.752
(6 , 20)	3.54	0.76	4.66	0.346	0.000	0.000	0.346	26.935	9.313
(6 , 21)	5.59	0.76	7.38	0.238	0.000	0.000	0.238	26.935	6.414
(8 , 15)	11.18	0.76	14.75	0.120	0.000	0.000	0.120	26.935	3.230
(8 , 16)	9.01	0.76	11.89	0.150	0.000	0.000	0.150	26.935	4.029
(8 , 17)	7.07	0.76	9.33	0.186	0.000	0.000	0.186	26.935	5.001
(8 , 18)	5.55	0.76	7.28	0.238	0.000	0.000	0.238	26.935	6.414
(8 , 19)	5.00	0.76	6.60	0.263	0.000	0.000	0.263	26.935	7.081
(8 , 20)	5.59	0.76	7.38	0.238	0.000	0.000	0.238	26.935	6.414
(8 , 21)	7.07	0.76	9.33	0.186	0.000	0.000	0.186	26.935	5.001
(10 , 16)	10.97	0.76	14.47	0.120	0.000	0.000	0.120	26.935	3.242
(10 , 17)	9.43	0.76	12.45	0.142	0.000	0.000	0.142	26.935	3.825
(10 , 18)	8.08	0.76	11.06	0.159	0.000	0.000	0.159	26.935	4.294
(10 , 19)	8.00	0.76	10.56	0.167	0.000	0.000	0.167	26.935	4.493
(10 , 20)	8.08	0.76	11.06	0.159	0.000	0.000	0.159	26.935	4.294
(10 , 21)	9.43	0.76	12.45	0.142	0.000	0.000	0.142	26.935	3.825
(11 , 17)	11.18	0.76	14.75	0.120	0.000	0.000	0.120	26.935	3.230
(11 , 18)	10.31	0.76	13.60	0.130	0.000	0.000	0.130	26.935	3.503
(11 , 19)	10.00	0.76	13.19	0.134	0.000	0.000	0.134	26.935	3.610
(11 , 20)	10.31	0.76	13.60	0.130	0.000	0.000	0.130	26.935	3.503
(11 , 21)	11.18	0.76	14.75	0.120	0.000	0.000	0.120	26.935	3.230

TOTAL ADDITIONAL SETTLEMENT : 226.782 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 253.717 mm.

SETTLEMENT CALCULATION

PL6 S4

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 9)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE		FLOTING PILE	
NO.OF PILES		1	
DIAMETER OF PILE		0.25	m.
LENGTH OF PILE		11.35	m.
YOUNG'S MODULUS OF SOIL		298	t/m^2
K	VALUE	8125	
Io	FACTOR	0.047	
Rk	FACTOR	1.000	
Rv	FACTOR	1.003	
Rh	FACTOR	0.891	
PILE CAP EFFECT	(Fr)	0.746	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 4.20BE-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 9)

footing no.	spacing m.	diameter m.	S/D	αf	αl	fo	σ	footing sel. mm.	add.sel. mm.
(2 , 5)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(2 , 6)	7.91	0.80	9.53	0.214	0.000	0.000	0.214	9.595	2.050
(2 , 7)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(2 , 8)	3.54	0.80	4.26	0.391	0.000	0.000	0.391	9.595	3.754
(2 , 9)	2.56	0.80	3.01	0.474	0.000	0.000	0.474	9.595	4.548
(2 , 10)	3.54	0.80	4.26	0.391	0.000	0.000	0.391	9.595	3.754
(2 , 11)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(2 , 12)	7.91	0.80	9.53	0.214	0.000	0.000	0.214	9.595	2.050
(2 , 13)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(4 , 5)	10.00	0.80	12.05	0.175	0.000	0.000	0.175	9.595	1.677
(4 , 6)	7.50	0.80	9.04	0.224	0.000	0.000	0.224	9.595	2.147
(4 , 7)	5.00	0.80	6.03	0.310	0.000	0.000	0.310	9.595	2.977
(4 , 8)	2.56	0.80	3.01	0.474	0.000	0.000	0.474	9.595	4.548
(4 , 10)	2.56	0.80	3.01	0.474	0.000	0.000	0.474	9.595	4.548
(4 , 11)	5.00	0.80	6.03	0.310	0.000	0.000	0.310	9.595	2.977
(4 , 12)	7.50	0.80	9.04	0.224	0.000	0.000	0.224	9.595	2.147
(4 , 13)	10.00	0.80	12.05	0.175	0.000	0.000	0.175	9.595	1.677
(6 , 5)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(6 , 6)	7.91	0.80	9.53	0.214	0.000	0.000	0.214	9.595	2.050
(6 , 7)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(6 , 8)	3.54	0.80	4.26	0.391	0.000	0.000	0.391	9.595	3.754
(6 , 9)	2.56	0.80	3.01	0.474	0.000	0.000	0.474	9.595	4.548
(6 , 10)	3.54	0.80	4.26	0.391	0.000	0.000	0.391	9.595	3.754
(6 , 11)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(6 , 12)	7.91	0.80	9.53	0.214	0.000	0.000	0.214	9.595	2.050
(6 , 13)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(8 , 5)	11.18	0.80	13.47	0.156	0.000	0.000	0.156	9.595	1.499
(8 , 6)	9.01	0.80	10.86	0.189	0.000	0.000	0.189	9.595	1.816
(8 , 7)	7.07	0.80	8.52	0.237	0.000	0.000	0.237	9.595	2.270
(8 , 8)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(8 , 9)	5.00	0.80	6.03	0.310	0.000	0.000	0.310	9.595	2.977
(8 , 10)	5.59	0.80	6.74	0.286	0.000	0.000	0.286	9.595	2.744
(8 , 11)	7.07	0.80	8.52	0.237	0.000	0.000	0.237	9.595	2.270
(8 , 12)	9.01	0.80	10.86	0.189	0.000	0.000	0.189	9.595	1.816
(8 , 13)	11.18	0.80	13.47	0.156	0.000	0.000	0.156	9.595	1.499
(10 , 6)	10.97	0.80	13.21	0.159	0.000	0.000	0.159	9.595	1.528
(10 , 7)	9.43	0.80	11.37	0.182	0.000	0.000	0.182	9.595	1.746
(10 , 8)	8.38	0.80	10.10	0.202	0.000	0.000	0.202	9.595	1.942
(10 , 9)	8.00	0.80	9.64	0.213	0.000	0.000	0.213	9.595	2.046
(10 , 10)	8.38	0.80	10.10	0.202	0.000	0.000	0.202	9.595	1.942
(10 , 11)	9.43	0.80	11.37	0.182	0.000	0.000	0.182	9.595	1.746
(10 , 12)	10.97	0.80	13.21	0.159	0.000	0.000	0.159	9.595	1.528
(11 , 7)	11.18	0.80	13.47	0.156	0.000	0.000	0.156	9.595	1.499
(11 , 8)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(11 , 9)	10.00	0.80	12.05	0.175	0.000	0.000	0.175	9.595	1.677
(11 , 10)	10.31	0.80	12.42	0.168	0.000	0.000	0.168	9.595	1.613
(11 , 11)	11.18	0.80	13.47	0.156	0.000	0.000	0.156	9.595	1.499

TOTAL ADDITIONAL SETTLEMENT : 112.467 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 122.062 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 9)

layer no	H(j) m	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) t/m^2	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement mm
1	14.45	1.27	0.424	17.039	1.58	0.419	14.719	1200	2.292	1.9536-03	4.003
2	17.95	1.58	0.419	14.719	1.89	0.327	12.671	2400	2.048	8.5881-04	1.725
3	21.45	1.89	0.327	12.671	2.11	0.262	11.524	1600	1.152	7.1931-04	1.446
4	23.95	2.11	0.262	11.524				1600	11.533	7.2081-03	14.479

UNDERLYING SETTLEMENT OF THIS FOOTING : 21.654 mm.

TOTAL SETTLEMENT : 143.716 mm.

PL6 S6

SETTLEMENT CALCULATION

Project Name : PALAT-S6
Date : 7/20/85
Operator : TIMAWORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 15)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF FILES	1	
DIAMETER OF FILE	0.25	m.
LENGTH OF FILE	4.45	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	0125	
Io FACTOR	0.096	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.943	
PILE CAP EFFECT (Fr)	0.576	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 7.041E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 15)

footing no.	spacing m.	diameter m.	S/B	αf	αl	Fr	s	footing sel. mm.	add.sel. mm.
(2 , 16)	12.75	1.00	12.81	0.138	0.000	0.000	0.138	16.054	2.216
(2 , 17)	10.31	1.00	10.36	0.170	0.000	0.000	0.170	16.054	2.727
(2 , 12)	7.91	1.00	7.95	0.223	0.000	0.000	0.223	16.054	3.573
(2 , 13)	5.59	1.00	5.62	0.299	0.000	0.000	0.299	16.054	4.799
(2 , 14)	3.54	1.00	3.55	0.419	0.000	0.000	0.419	16.054	6.734
(2 , 15)	2.50	1.00	2.51	0.564	0.000	0.000	0.564	16.054	8.690
(2 , 14)	3.54	1.00	3.55	0.419	0.000	0.000	0.419	16.054	6.734
(2 , 13)	5.59	1.00	5.62	0.299	0.000	0.000	0.299	16.054	4.799
(2 , 12)	7.91	1.00	7.95	0.223	0.000	0.000	0.222	16.054	3.573
(2 , 17)	10.31	1.00	10.36	0.170	0.000	0.000	0.170	16.054	2.727
(2 , 16)	12.75	1.00	12.81	0.138	0.000	0.000	0.138	16.054	2.216
(4 , 18)	12.56	1.00	12.56	0.141	0.000	0.000	0.141	16.054	2.259
(4 , 11)	10.06	1.00	10.05	0.175	0.000	0.000	0.175	16.054	2.809
(4 , 12)	7.54	1.00	7.54	0.233	0.000	0.000	0.233	16.054	3.741
(4 , 13)	5.00	1.00	5.03	0.325	0.000	0.000	0.328	16.054	5.221
(4 , 14)	2.54	1.00	2.51	0.564	0.000	0.000	0.564	16.054	8.690
(4 , 15)	2.50	1.00	2.51	0.564	0.000	0.000	0.564	16.054	8.690
(4 , 14)	3.54	1.00	3.55	0.419	0.000	0.000	0.419	16.054	6.734
(4 , 13)	5.59	1.00	5.62	0.299	0.000	0.000	0.299	16.054	4.799
(4 , 12)	7.91	1.00	7.95	0.223	0.000	0.000	0.223	16.054	3.573
(4 , 17)	10.31	1.00	10.36	0.170	0.000	0.000	0.170	16.054	2.727
(4 , 16)	12.75	1.00	12.81	0.138	0.000	0.000	0.138	16.054	2.216
(8 , 16)	13.44	1.00	13.53	0.131	0.000	0.000	0.131	16.054	2.099
(8 , 11)	11.10	1.00	11.24	0.157	0.000	0.000	0.157	16.054	2.512
(8 , 12)	9.01	1.00	9.06	0.194	0.000	0.000	0.194	16.054	3.120
(8 , 13)	7.03	1.00	7.11	0.246	0.000	0.000	0.244	16.054	3.916
(8 , 14)	5.59	1.00	5.62	0.299	0.000	0.000	0.299	16.054	4.799
(8 , 15)	5.00	1.00	5.03	0.325	0.000	0.000	0.325	16.054	5.221
(8 , 14)	5.59	1.00	5.62	0.299	0.000	0.000	0.299	16.054	4.799
(8 , 13)	7.03	1.00	7.11	0.244	0.000	0.000	0.244	16.054	3.916
(8 , 12)	9.01	1.00	9.06	0.194	0.000	0.000	0.194	16.054	3.120
(8 , 11)	11.10	1.00	11.24	0.157	0.000	0.000	0.157	16.054	2.512
(8 , 16)	13.44	1.00	13.53	0.131	0.000	0.000	0.131	16.054	2.099
(16 , 10)	14.84	1.00	14.92	0.120	0.000	0.000	0.120	16.054	1.921
(10 , 11)	12.81	1.00	12.87	0.137	0.000	0.000	0.137	16.054	2.205
(16 , 17)	10.47	1.00	11.02	0.160	0.000	0.000	0.160	16.054	2.568
(10 , 13)	9.43	1.00	9.48	0.185	0.000	0.000	0.185	16.054	2.971
(10 , 14)	8.38	1.00	8.42	0.214	0.000	0.000	0.214	16.054	3.430
(10 , 15)	8.00	1.00	8.04	0.220	0.000	0.000	0.220	16.054	3.534
(10 , 14)	8.38	1.00	8.42	0.214	0.000	0.000	0.214	16.054	3.430
(10 , 13)	9.43	1.00	9.48	0.185	0.000	0.000	0.185	16.054	2.971
(10 , 18)	16.92	1.00	17.02	0.160	0.000	0.000	0.160	16.054	2.568
(10 , 17)	12.81	1.00	12.87	0.137	0.000	0.000	0.137	16.054	2.205
(10 , 20)	14.84	1.00	14.92	0.120	0.000	0.000	0.120	16.054	1.921
(11 , 11)	14.14	1.00	14.21	0.125	0.000	0.000	0.125	16.054	1.999
(11 , 12)	12.56	1.00	12.56	0.141	0.000	0.000	0.141	16.054	2.259
(11 , 13)	11.18	1.00	11.24	0.157	0.000	0.000	0.157	16.054	2.512
(11 , 14)	10.11	1.00	10.16	0.170	0.000	0.000	0.170	16.054	2.723
(11 , 15)	10.00	1.00	10.05	0.175	0.000	0.000	0.175	16.054	2.809
(11 , 16)	10.31	1.00	10.36	0.170	0.000	0.000	0.170	16.054	2.727
(11 , 17)	11.10	1.00	11.24	0.157	0.000	0.000	0.157	16.054	2.512
(11 , 18)	12.56	1.00	12.56	0.141	0.000	0.000	0.141	16.054	2.259
(11 , 19)	14.14	1.00	14.21	0.125	0.000	0.000	0.125	16.054	1.999

TOTAL ADDITIONAL SETTLEMENT : 230.274 mm.

SETTLEMENT IN FOUNDING LAYER OF THIE FOOTING : 246.328 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 15)

layer no	H(j) m	H/B(j) Le	I(j) center	I(j) nearby	H/B(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) t/m^2	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement mm
1	3.45	1.67	0.494	5.450	3.25	0.376	3.470	433	2.080	4.799E-03	29.589
2	14.45	3.75	0.376	3.470	4.83	0.344	4.858	1200	0.815	6.793E-04	3.480
3	17.95	4.83	0.344	4.858	4.83	0.332	5.846	2400	0.815	3.396E-04	1.740
4	21.45	4.83	0.332	5.846	5.38	0.304	5.443	3600	0.384	1.066E-04	0.547
5	22.95	5.38	0.304	5.443				3600	5.443	3.539E-03	18.132

UNDERLYING SETTLEMENT OF THIS FOOTING : 48.538 mm.

TOTAL SETTLEMENT : 294.867 mm.

SETTLEMENT CALCULATION

PL6 S8

Project Name : PALAT-B6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 19)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	2.25	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.151	
Rk FACTOR	1.000	
Rv FACTOR	1.005	
Rh FACTOR	0.966	
PILE CAP EFFECT (Fr)	0.423	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 8.302E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 19)

footing no.	spacing m.	diameter m.	S/D	ai	ai	fo	a	footing set. mm.	add.set. mm.
(2 , 12)	12.68	1.27	13.97	0.127	0.000	0.000	0.127	18.929	2.398
(2 , 13)	15.21	1.27	12.01	0.149	0.000	0.000	0.149	18.929	2.826
(2 , 14)	12.75	1.27	10.07	0.175	0.000	0.000	0.175	18.929	3.305
(2 , 15)	10.31	1.27	8.14	0.215	0.000	0.000	0.215	18.929	4.074
(2 , 16)	7.91	1.27	6.25	0.275	0.000	0.000	0.275	18.929	5.206
(2 , 17)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(2 , 18)	3.54	1.27	2.79	0.478	0.000	0.000	0.478	18.929	9.049
(2 , 19)	2.50	1.27	1.97	0.563	0.000	0.000	0.563	18.929	10.654
(2 , 20)	3.54	1.27	2.79	0.478	0.000	0.000	0.478	18.929	9.049
(2 , 21)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(4 , 12)	17.50	1.27	13.82	0.128	0.000	0.000	0.128	18.929	2.422
(4 , 13)	15.01	1.27	11.85	0.150	0.000	0.000	0.150	18.929	2.834
(4 , 14)	12.50	1.27	9.87	0.178	0.000	0.000	0.178	18.929	3.369
(4 , 15)	10.06	1.27	7.90	0.224	0.000	0.000	0.224	18.929	4.235
(4 , 16)	7.50	1.27	5.92	0.286	0.000	0.000	0.286	18.929	5.423
(4 , 17)	5.00	1.27	3.95	0.391	0.000	0.000	0.391	18.929	7.407
(4 , 18)	2.50	1.27	1.97	0.563	0.000	0.000	0.563	18.929	10.654
(4 , 20)	2.50	1.27	1.97	0.563	0.000	0.000	0.563	18.929	10.654
(4 , 21)	5.00	1.27	3.95	0.391	0.000	0.000	0.391	18.929	7.407
(6 , 12)	17.68	1.27	13.97	0.127	0.000	0.000	0.127	18.929	2.398
(6 , 13)	15.21	1.27	12.01	0.149	0.000	0.000	0.149	18.929	2.826
(6 , 14)	12.75	1.27	10.07	0.175	0.000	0.000	0.175	18.929	3.305
(6 , 15)	10.31	1.27	8.14	0.215	0.000	0.000	0.215	18.929	4.074
(6 , 16)	7.91	1.27	6.25	0.275	0.000	0.000	0.275	18.929	5.206
(6 , 17)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(6 , 18)	3.54	1.27	2.79	0.478	0.000	0.000	0.478	18.929	9.049
(6 , 19)	2.50	1.27	1.97	0.563	0.000	0.000	0.563	18.929	10.654
(6 , 20)	3.54	1.27	2.79	0.478	0.000	0.000	0.478	18.929	9.049
(6 , 21)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(8 , 12)	18.20	1.27	14.38	0.121	0.000	0.000	0.121	18.929	2.281
(8 , 13)	15.81	1.27	12.49	0.142	0.000	0.000	0.142	18.929	2.679
(8 , 14)	13.41	1.27	10.64	0.166	0.000	0.000	0.166	18.929	3.134
(8 , 15)	11.18	1.27	8.83	0.200	0.000	0.000	0.200	18.929	3.785
(8 , 16)	9.01	1.27	7.12	0.244	0.000	0.000	0.244	18.929	4.614
(8 , 17)	7.03	1.27	5.56	0.301	0.000	0.000	0.301	18.929	5.705
(8 , 18)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(8 , 19)	5.00	1.27	3.95	0.391	0.000	0.000	0.391	18.929	7.407
(8 , 20)	5.59	1.27	4.42	0.361	0.000	0.000	0.361	18.929	6.833
(8 , 21)	7.01	1.27	5.56	0.301	0.000	0.000	0.301	18.929	5.705
(10 , 12)	17.90	1.27	13.43	0.132	0.000	0.000	0.132	18.929	2.492
(10 , 13)	15.44	1.27	11.72	0.150	0.000	0.000	0.150	18.929	2.840
(10 , 14)	12.81	1.27	10.12	0.174	0.000	0.000	0.174	18.929	3.291
(10 , 15)	10.37	1.27	8.16	0.204	0.000	0.000	0.204	18.929	3.865
(10 , 16)	9.43	1.27	7.45	0.235	0.000	0.000	0.235	18.929	4.454
(10 , 17)	8.38	1.27	6.62	0.262	0.000	0.000	0.262	18.929	4.960
(10 , 18)	8.00	1.27	6.32	0.272	0.000	0.000	0.272	18.929	5.145
(10 , 20)	8.38	1.27	6.62	0.262	0.000	0.000	0.262	18.929	4.960
(10 , 21)	9.43	1.27	7.45	0.235	0.000	0.000	0.235	18.929	4.454
(11 , 13)	18.03	1.27	14.24	0.124	0.000	0.000	0.124	18.929	2.352
(11 , 14)	16.01	1.27	12.65	0.140	0.000	0.000	0.140	18.929	2.648
(11 , 15)	14.14	1.27	11.17	0.157	0.000	0.000	0.157	18.929	2.974
(11 , 16)	12.56	1.27	9.93	0.178	0.000	0.000	0.178	18.929	3.369
(11 , 17)	11.18	1.27	8.83	0.200	0.000	0.000	0.200	18.929	3.785
(11 , 18)	10.31	1.27	8.14	0.215	0.000	0.000	0.215	18.929	4.074
(11 , 19)	10.06	1.27	7.90	0.224	0.000	0.000	0.224	18.929	4.235
(11 , 20)	10.31	1.27	8.14	0.215	0.000	0.000	0.215	18.929	4.074
(11 , 21)	11.18	1.27	8.83	0.200	0.000	0.000	0.200	18.929	3.785

TOTAL ADDITIONAL SETTLEMENT : 291.598 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 310.527 mm.

SETTLEMENT CALCULATION

PL7 S4

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 9)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

FILE TYPE	FLOTING FILE	
NO.OF FILES	1	
DIAMETER OF FILE	0.25	m.
LENGTH OF FILE	11.35	m.
YOUNG'S MODULUS OF SOIL	200	t/m^2
K VALUE	8125	
Io FACTOR	0.047	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.891	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 5.643E-01 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 9)

footing no.	spacing m.	diameter m.	S/D	αF	αI	Fo	ε	footing set. mm.	add.set. mm.
(2 , 8)	3.54	0.29	11.99	0.294	0.000	0.000	0.294	14.108	4.144
(2 , 9)	2.50	0.29	8.48	0.359	0.000	0.000	0.359	14.108	5.059
(2 , 10)	3.54	0.29	11.99	0.294	0.000	0.000	0.294	14.108	4.144
(4 , 8)	2.50	0.29	8.48	0.359	0.000	0.000	0.359	14.108	5.059
(4 , 10)	2.50	0.29	8.48	0.359	0.000	0.000	0.359	14.108	5.059
(6 , 8)	3.54	0.29	11.99	0.294	0.000	0.000	0.294	14.108	4.144
(6 , 9)	2.50	0.29	8.48	0.359	0.000	0.000	0.359	14.108	5.059
(6 , 10)	3.54	0.29	11.99	0.294	0.000	0.000	0.294	14.108	4.144

TOTAL ADDITIONAL SETTLEMENT : 36.811 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 50.919 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 9)

layer no	H(j) (m)	H(j) Le	I(j) center	I(j) nearby	H(j+1) Le	I(j+1) center	I(j+1) nearby	Es(j) (t/m²)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	14.45	1.27	0.576	4.295	1.58	0.406	3.410	1200	0.948	7.897E-04	1.739
2	17.95	1.58	0.406	3.410	1.89	0.323	2.783	2400	0.626	2.651E-04	0.584
3	21.45	1.89	0.323	2.783	2.11	0.281	2.454	1600	0.332	2.074E-04	0.457
4	23.95	2.11	0.281	2.454				1600	2.460	1.538E-03	3.387

UNDERLYING SETTLEMENT OF THIS FOOTING : 6.168 mm.

TOTAL SETTLEMENT : 57.086 mm.

SETTLEMENT CALCULATION

PL7 S6

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 15)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	4.45	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.096	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.943	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.222E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 15)

footing no.	spacing m.	diameter m.	S/D	αf	αI	Fe	α	footing set. mm.	add.set. mm.
(2 , 14)	3.54	0.28	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(2 , 15)	2.50	0.28	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(2 , 16)	3.54	0.28	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(4 , 14)	2.50	0.28	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(4 , 16)	2.50	0.28	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(6 , 14)	3.54	0.28	12.50	0.182	0.000	0.000	0.182	30.549	5.548
(6 , 15)	2.50	0.28	8.84	0.245	0.000	0.000	0.245	30.549	7.480
(6 , 16)	3.54	0.28	12.50	0.182	0.000	0.000	0.182	30.549	5.548

TOTAL ADDITIONAL SETTLEMENT : 52.110 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 82.660 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 15)

layer no	H(j) (m)	H(j)/B Ie	I(j) center	I(j) nearby	H(j+1)/B Ie	I(j+1) center	I(j+1) nearby	Es(j) (t/m²)	I(j)-I(j+1)	I(j)-I(j+1) / Es(j)	settlement (mm)
1	3.45	1.67	0.391	2.627	3.25	0.173	1.463	433	1.238	2.858E-03	10.056
2	14.45	5.25	0.173	1.463	4.03	0.143	1.219	1200	0.247	2.056E-04	1.155
3	17.95	4.03	0.143	1.219	4.82	0.113	0.974	2400	0.247	1.028E-04	0.578
4	21.45	4.82	0.113	0.974	5.38	0.106	0.918	1600	0.056	3.525E-05	0.198
5	22.95	5.38	0.106	0.918				1600	0.921	5.757E-04	3.234

UNDERLYING SETTLEMENT OF THIS FOOTING : 21.222 mm.

TOTAL SETTLEMENT : 103.882 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

SETTLEMENT CALCULATION

PL7 S8

Project Name : PALAT-S6
Date : 7/20/85
Operator : TINNAKORN R.
Method : Elastic Theory Method by POULOS
Considered footing : (4 , 19)

SETTLEMENT IN THE FOUNDING LAYERS

****** SETTLEMENT OF EACH INDIVIDUAL FOOTING ******

***** FOOTING ID NO. 1 *****

PILE TYPE	FLOTING PILE	
NO.OF PILES	1	
DIAMETER OF PILE	0.25	m.
LENGTH OF PILE	2.25	m.
YOUNG'S MODULUS OF SOIL	298	t/m^2
K VALUE	8125	
Io FACTOR	0.151	
Rk FACTOR	1.000	
Rv FACTOR	1.003	
Rh FACTOR	0.966	
PILE CAP EFFECT (Fr)	1.000	

UNIT LOAD SETTLEMENT OF SINGLE PILE : 1.963E+00 mm/t.

****** SETTLEMENT OF FOOTING DUE TO ADJACENT FOOTING EFFECTS ******

FOOTING NO. (4 , 19)

footing no.	spacing m.	diameter m.	S/D	αT	αL	Fo	σ	footing set. mm.	add.set. mm.
(2 , 18)	3.54	0.27	13.01	0.134	0.000	0.000	0.134	44.749	6.001
(2 , 19)	2.50	0.27	9.20	0.192	0.000	0.000	0.192	44.749	8.579
(2 , 20)	3.54	0.27	13.01	0.134	0.000	0.000	0.134	44.749	6.001
(4 , 18)	2.50	0.27	9.20	0.192	0.000	0.000	0.192	44.749	8.579
(4 , 20)	2.50	0.27	9.20	0.192	0.000	0.000	0.192	44.749	8.579
(6 , 18)	3.54	0.27	13.01	0.134	0.000	0.000	0.134	44.749	6.001
(6 , 19)	2.50	0.27	9.20	0.192	0.000	0.000	0.192	44.749	8.579
(6 , 20)	3.54	0.27	13.01	0.134	0.000	0.000	0.134	44.749	6.001

TOTAL ADDITIONAL SETTLEMENT : 58.639 mm.

SETTLEMENT IN FOUNDING LAYER OF THIS FOOTING : 103.387 mm.

SETTLEMENT IN THE UNDERLYING LAYERS

FOOTING NO. (4 , 19)

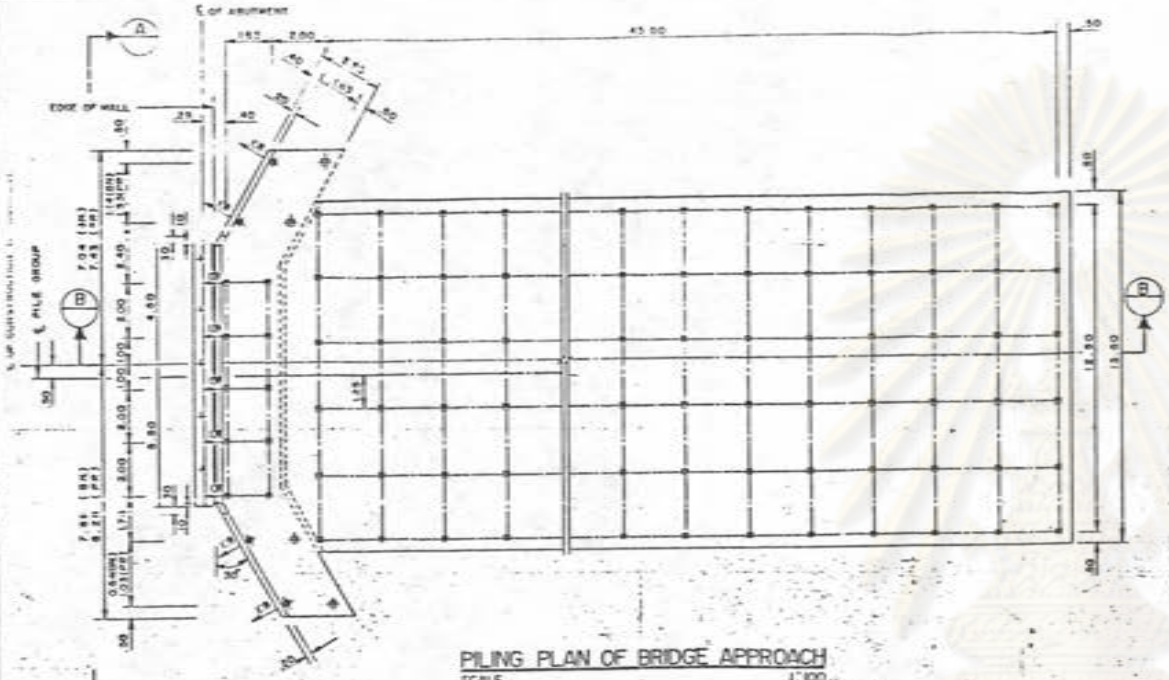
layer no	Hi(i) (m)	Ki(i) Io	Ii(i) center	Ii(i) nearby	Ki(i+1) Io	Ii(i+1) center	Ii(i+1) nearby	Es(i) (t/m^2)	Ii(i)-Ii(i+1)	Ii(i)-Ii(i+1) / Es(i)	settlement (mm)
1	2.45	1.00	0.564	1.823	3.31	0.171	1.241	260	1.292	4.970E-03	50.261
2	3.45	3.31	0.171	1.241	6.42	0.106	0.858	420	0.400	9.227E-04	9.350
3	14.45	6.42	0.106	0.858	7.98	0.106	0.858	1200	0.000	0.000E+00	0.000
4	17.95	7.98	0.106	0.858	9.53	0.106	0.858	2400	0.000	0.000E+00	0.000
5	21.45	9.53	0.106	0.858	10.64	0.106	0.858	1600	0.000	0.000E+00	0.000
6	23.95	10.64	0.106	0.858				1600	0.866	5.413E-04	5.486

UNDERLYING SETTLEMENT OF THIS FOOTING : 65.196 mm.

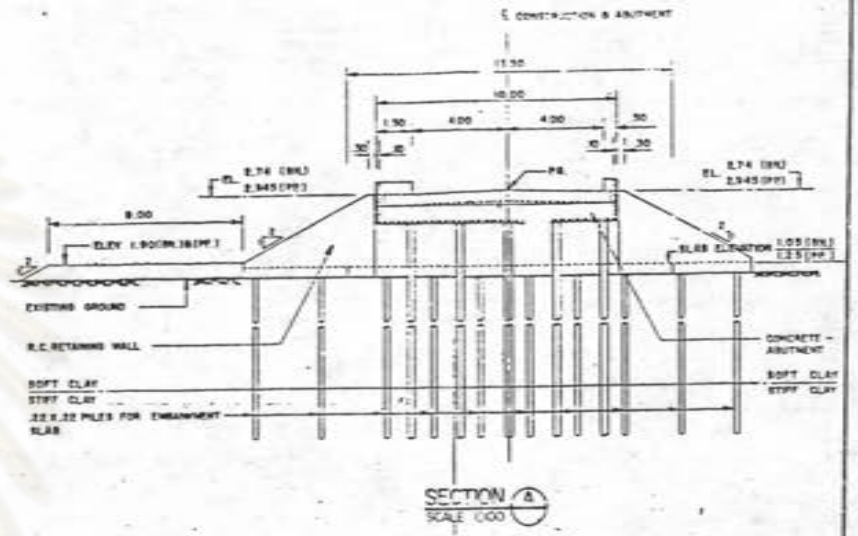
TOTAL SETTLEMENT : 168.583 mm.

ภาคผนวก ค.

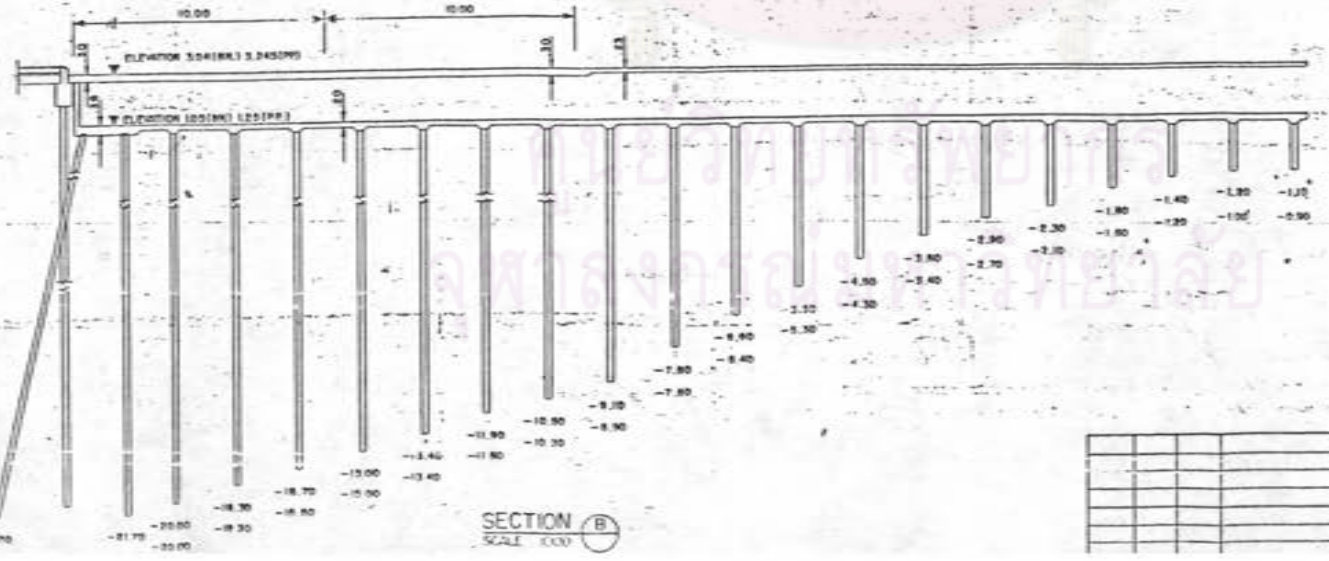
รายละเอียดของหน่วยแบริ่งที่ใช้ในบริเวณคอสะพานปลัดเปรียง



PILING PLAN OF BRIDGE APPROACH
SCALE 1:100



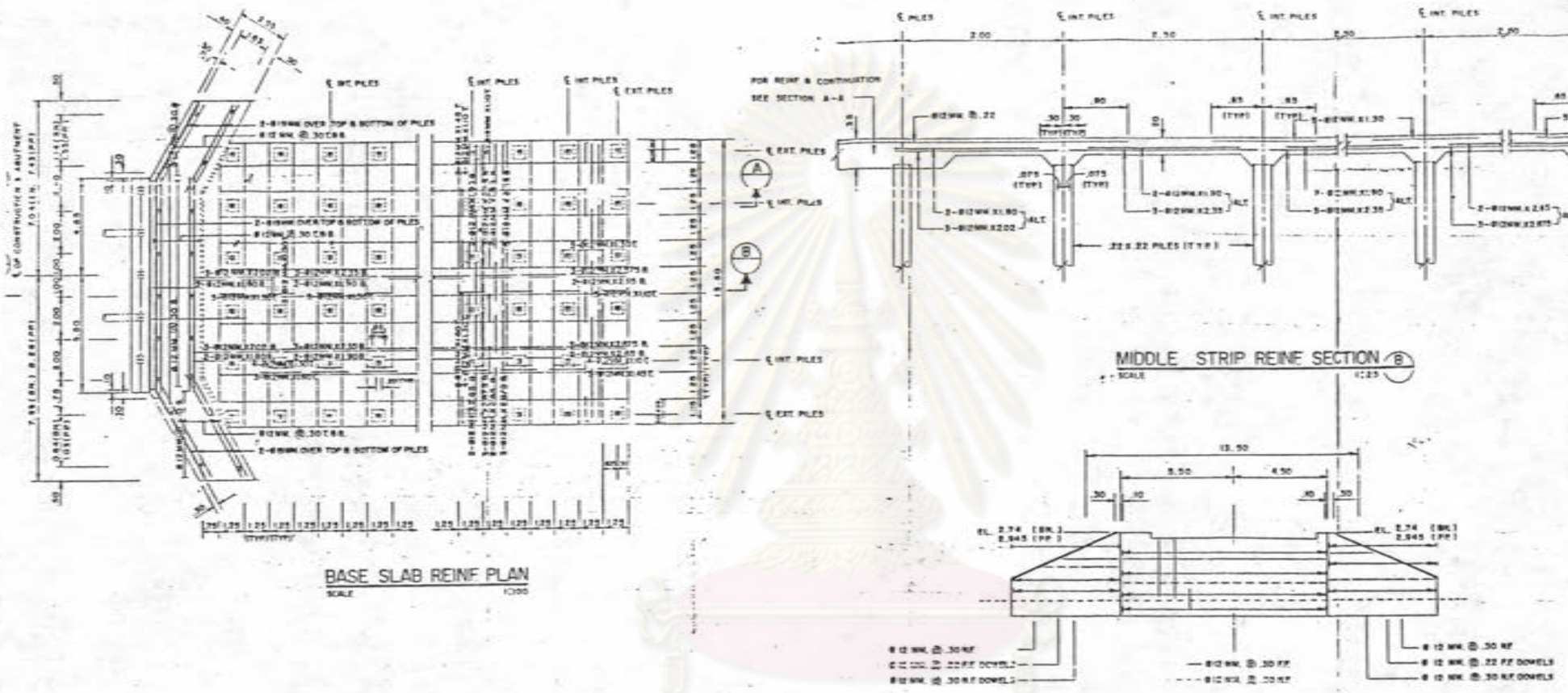
SECTION A
SCALE 1:100



SECTION B
SCALE 1:100

DRAFT

KINGDOM OF THAILAND
MINISTRY OF COMMUNICATIONS DEPARTMENT OF HIGHWAYS
BANG NA - BANG PAKONG HIGHWAY IMPROVEMENT
EMBANKMENT, SLAB AND WALL - PILING PLANS & SECTIONS
0' SKEW
N.D.LEA & ASSOCIATES LTD.
TRANSPORTATION CONSULTANTS
CANADA


BASE SLAB REINF PLAN
MIDDLE STRIP REINF SECTION (B)
ELEVATION OF WALL REINF
COLUMN STRIP REINF SECTION (A)
DRAFT
KINGDOM OF THAILAND
MINISTRY OF COMMUNICATIONS DEPARTMENT OF HIGHWAYS
BANG NA - BANG PAKONG HIGHWAY IMPROVEMENT
EMBANKMENT SLAB AND WALL REINFORCEMENT DETAILS
JUL. 1984

ภาคผนวก ง.

รูปแบบของหน่วยแบริ่งมาตรฐานที่กรมทางหลวงใช้

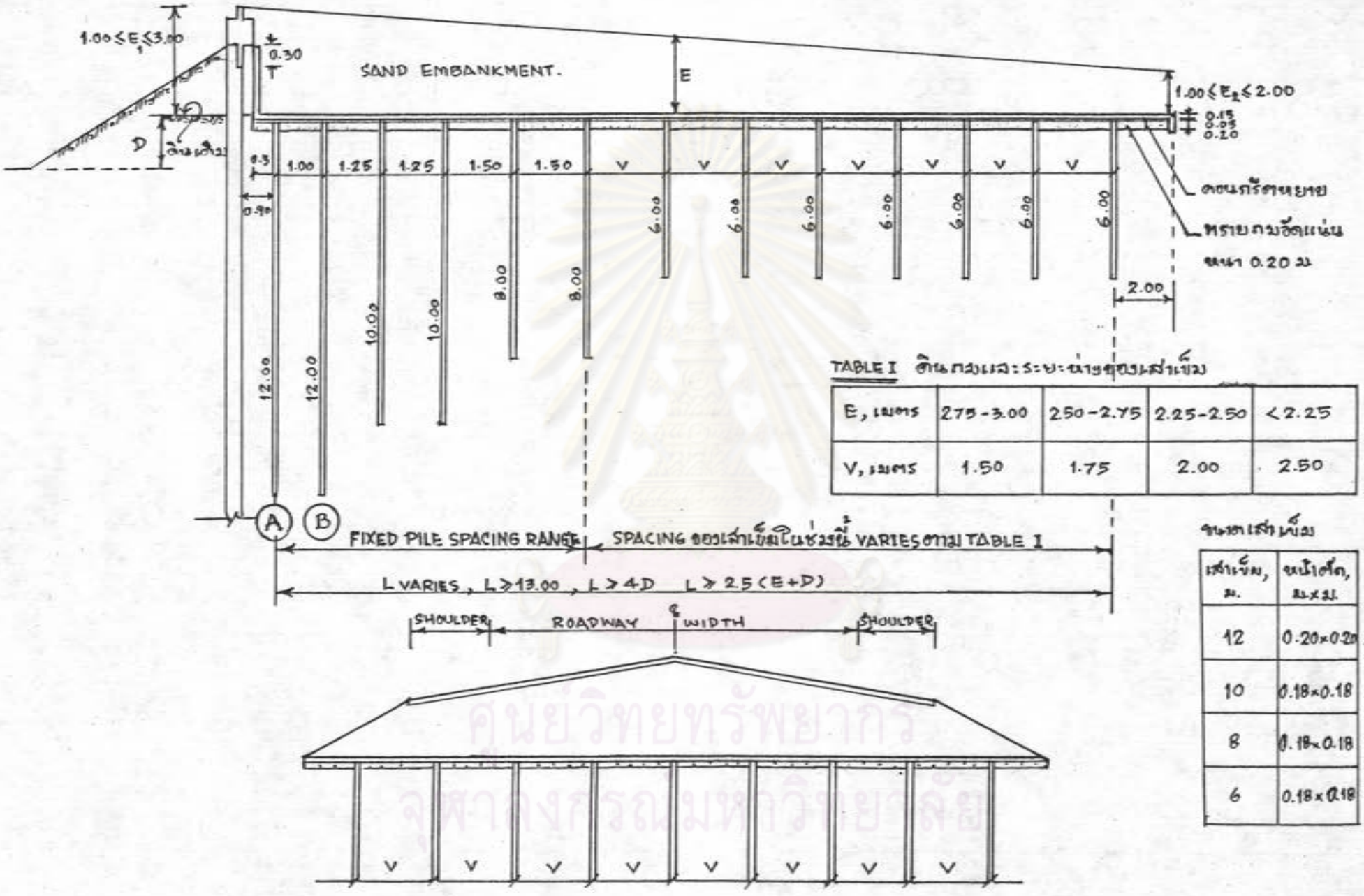


TABLE I ความยาวและระยะห่างของเสาเข็ม

E, เมตร	2.75 - 3.00	2.50 - 2.75	2.25 - 2.50	< 2.25
V, เมตร	1.50	1.75	2.00	2.50

ขนาดเสาเข็ม

เสาเข็ม, ม.	หน้าตัด, ม.x ม.
12	0.20 x 0.20
10	0.18 x 0.18
8	0.18 x 0.18
6	0.18 x 0.18

รูปที่ 3.1 แบบมาตรฐานกรมทางหลวง ที่ 25/22 สำหรับ BEARING UNIT ในบริเวณดินอ่อน

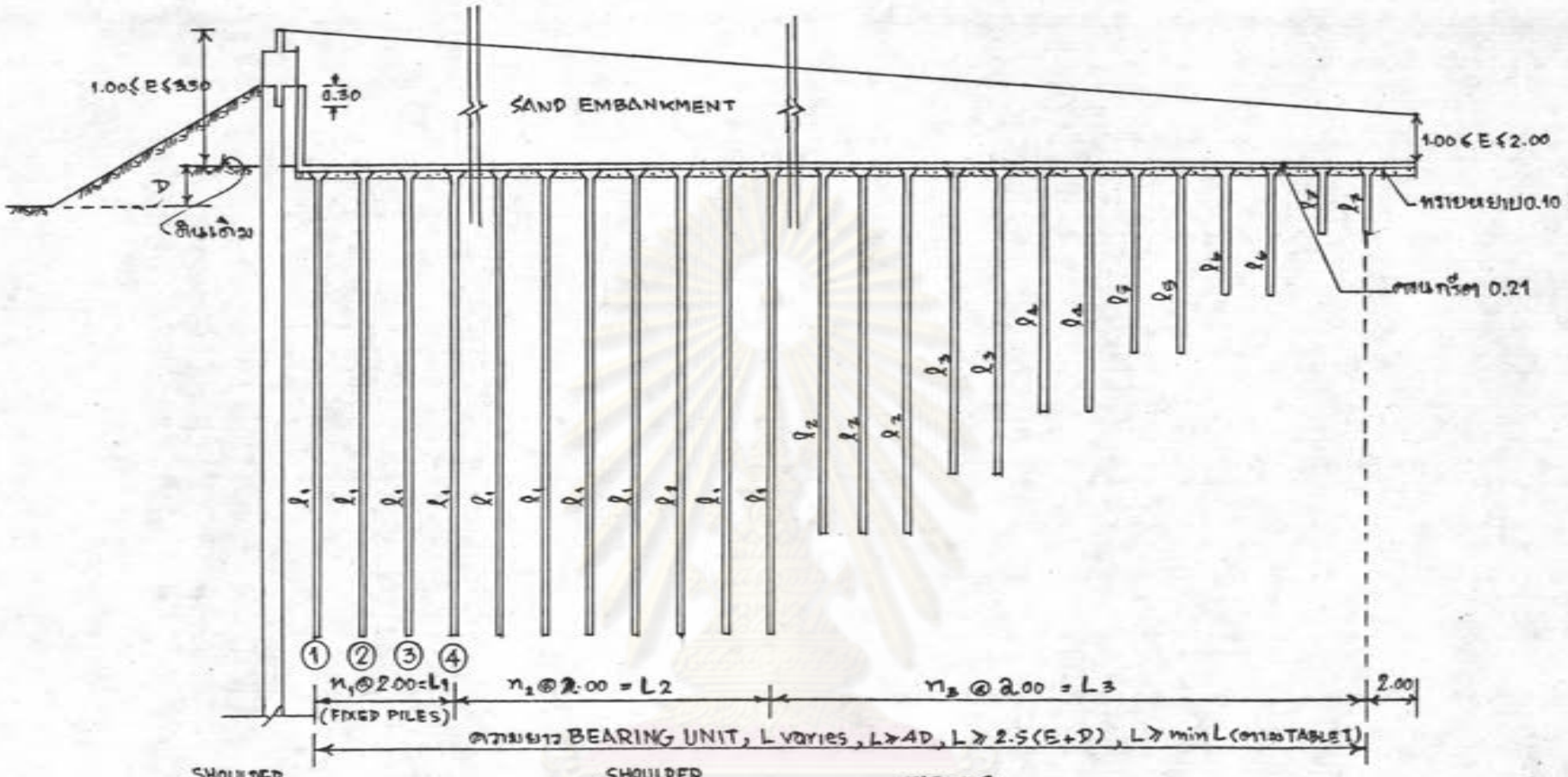


TABLE I

ความสูงถมดิน E, เมตร	l_1 ม.	l_2 ม.	l_3 ม.	l_4 ม.	l_5 ม.	l_6 ม.	l_7 ม.	n_1	L_1 ม.	n_2	L_2 ม.	n_3	L_3 ม.	min L ม.
3.25-3.50	19	17	15	13	11	9	7	3	6	≥1	≥2	12	24	34
<3.25-2.75	18	16	14	12	10	8	6	3	6	≥1	≥2	12	24	34
<2.75-2.25	17	15	13	11	9	7	-	3	6	≥1	≥2	10	20	30
<2.25	16	14	12	10	8	6	-	3	6	≥1	≥2	10	20	30

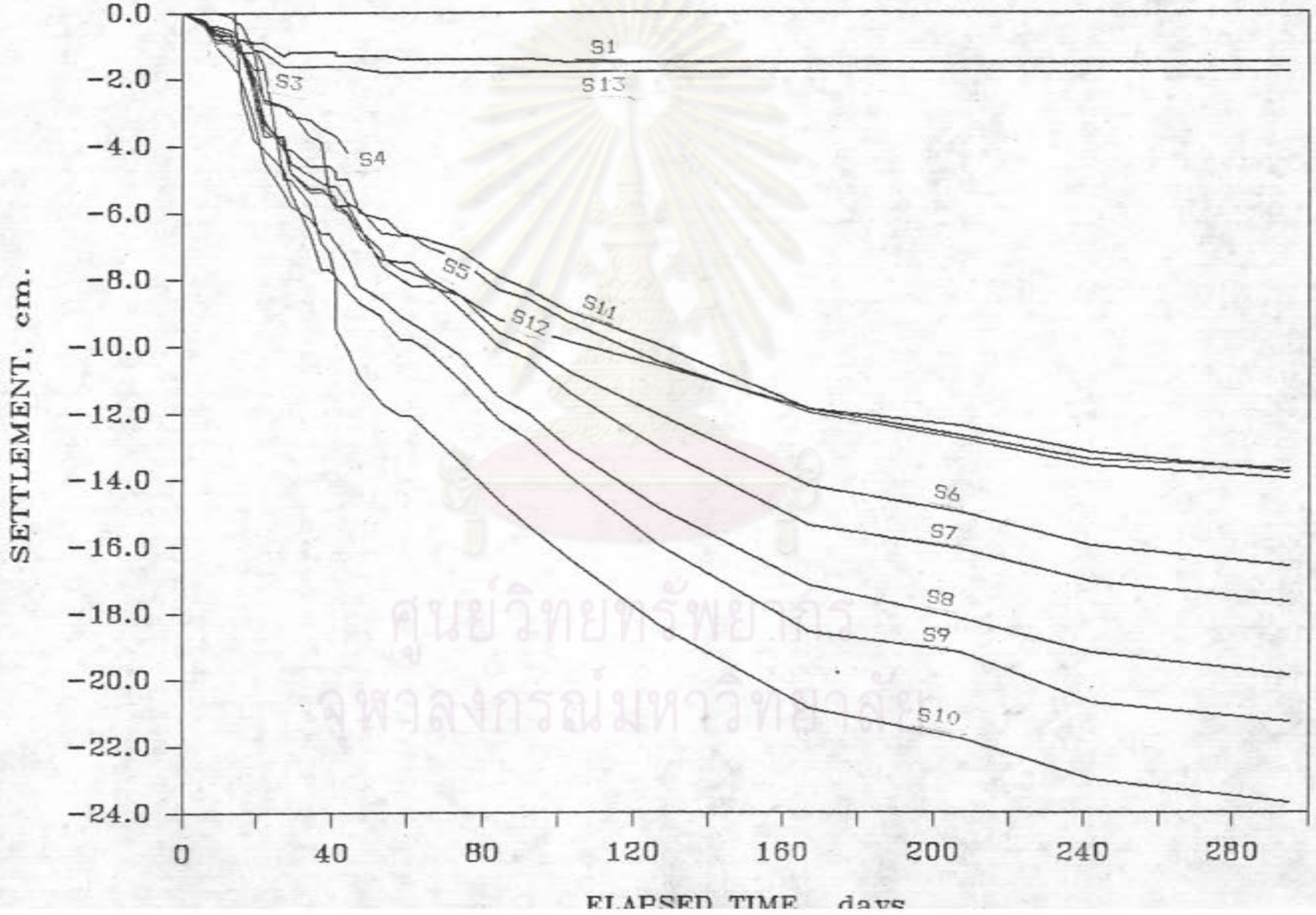
รูปที่ 9.2 แบบมาตรฐานกรมทางหลวงที่ ส2/23 สำหรับ BEARING UNIT ในบริเวณดินอ่อน และเป็น RIGID PAVEMENT

ภาคผนวก จ.

ผลการตรวจสอบค่าการทรุดตัวรวมและแรงดันน้ำในโพรงเพิ่ม บริเวณที่ทำการวิจัย

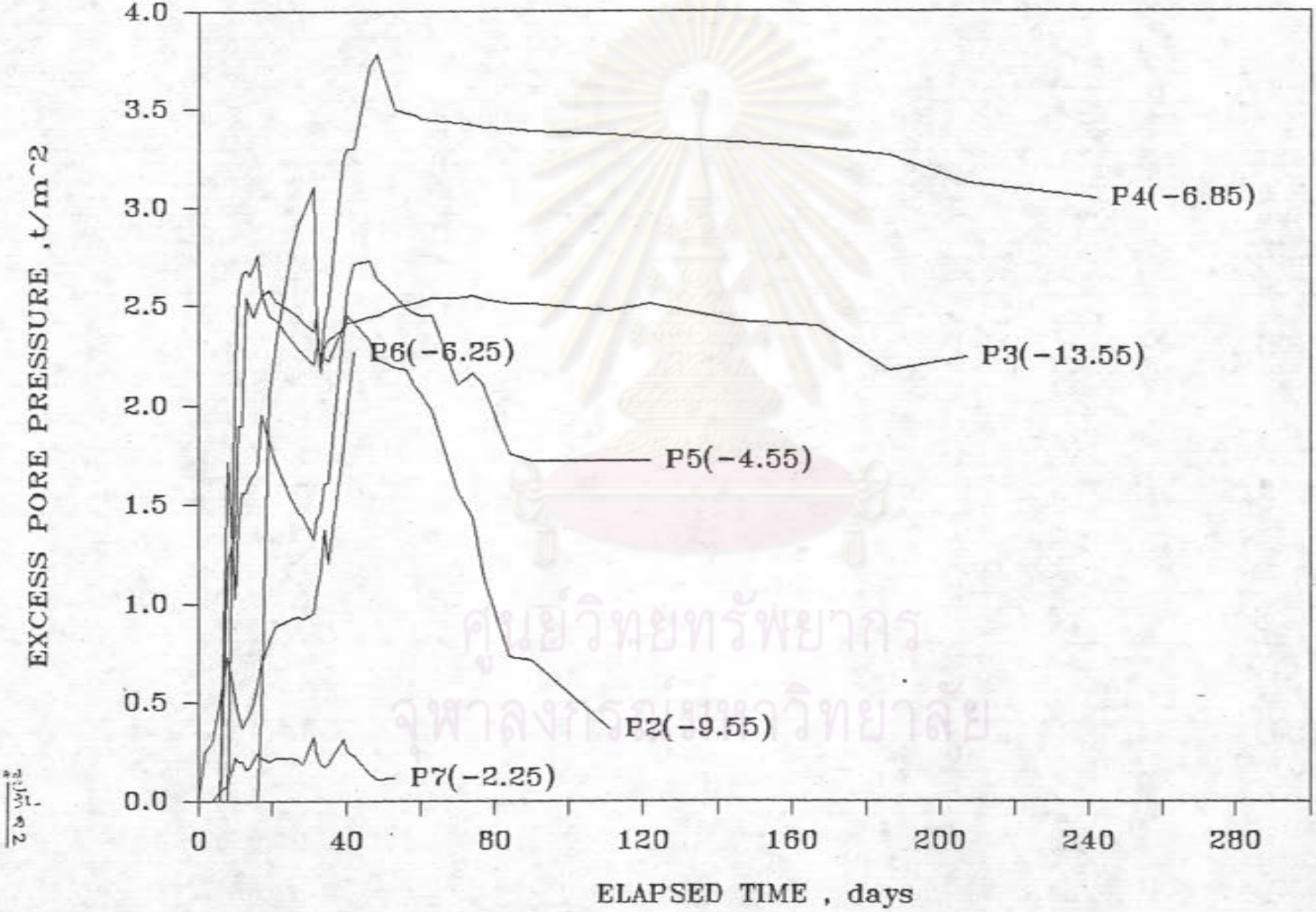
OBSERVED SETTLEMENT

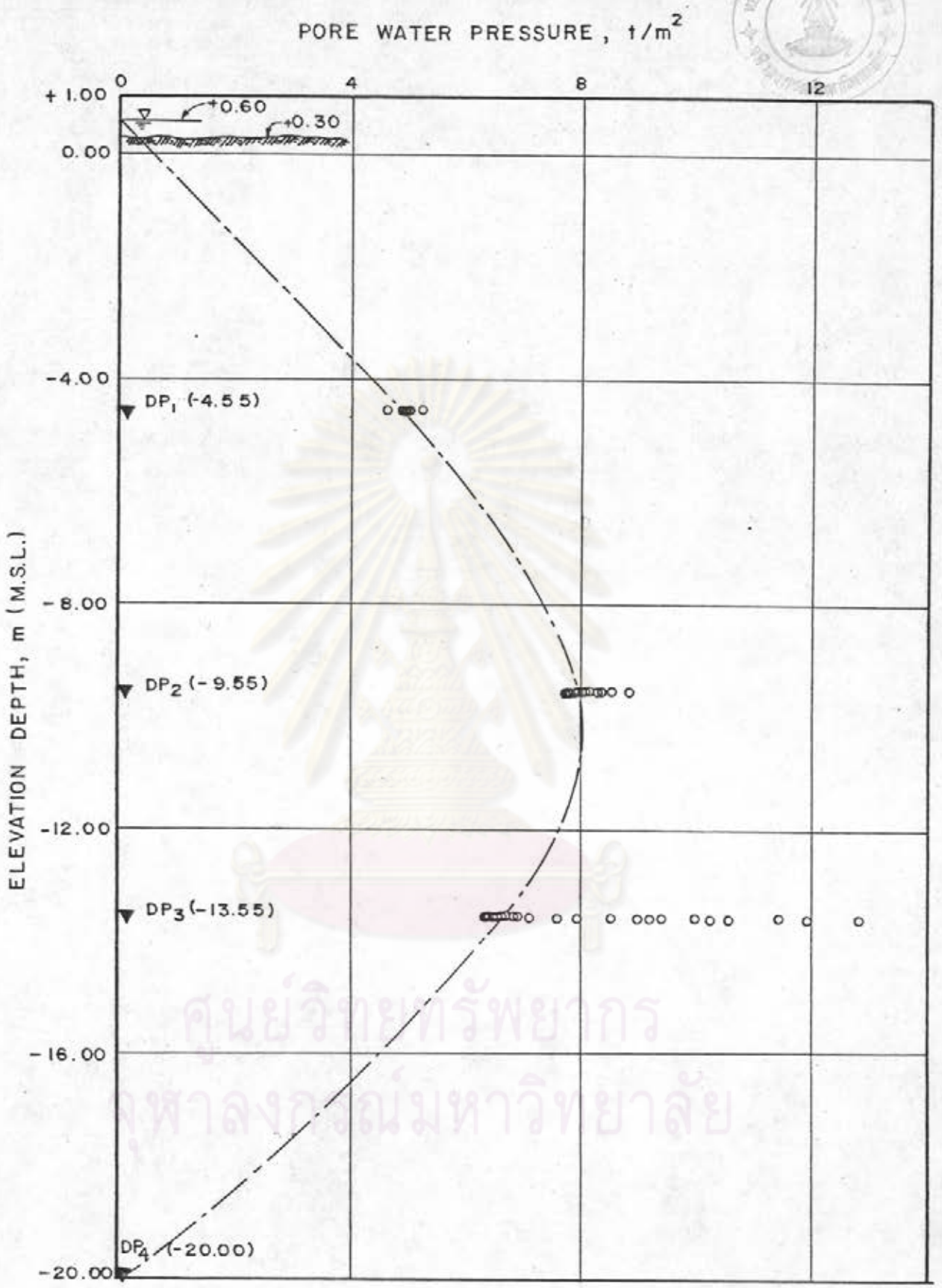
KLONG PALAT PRAING



EXCESS PORE PRESSURE OBSERVATION

PALAT PRAING

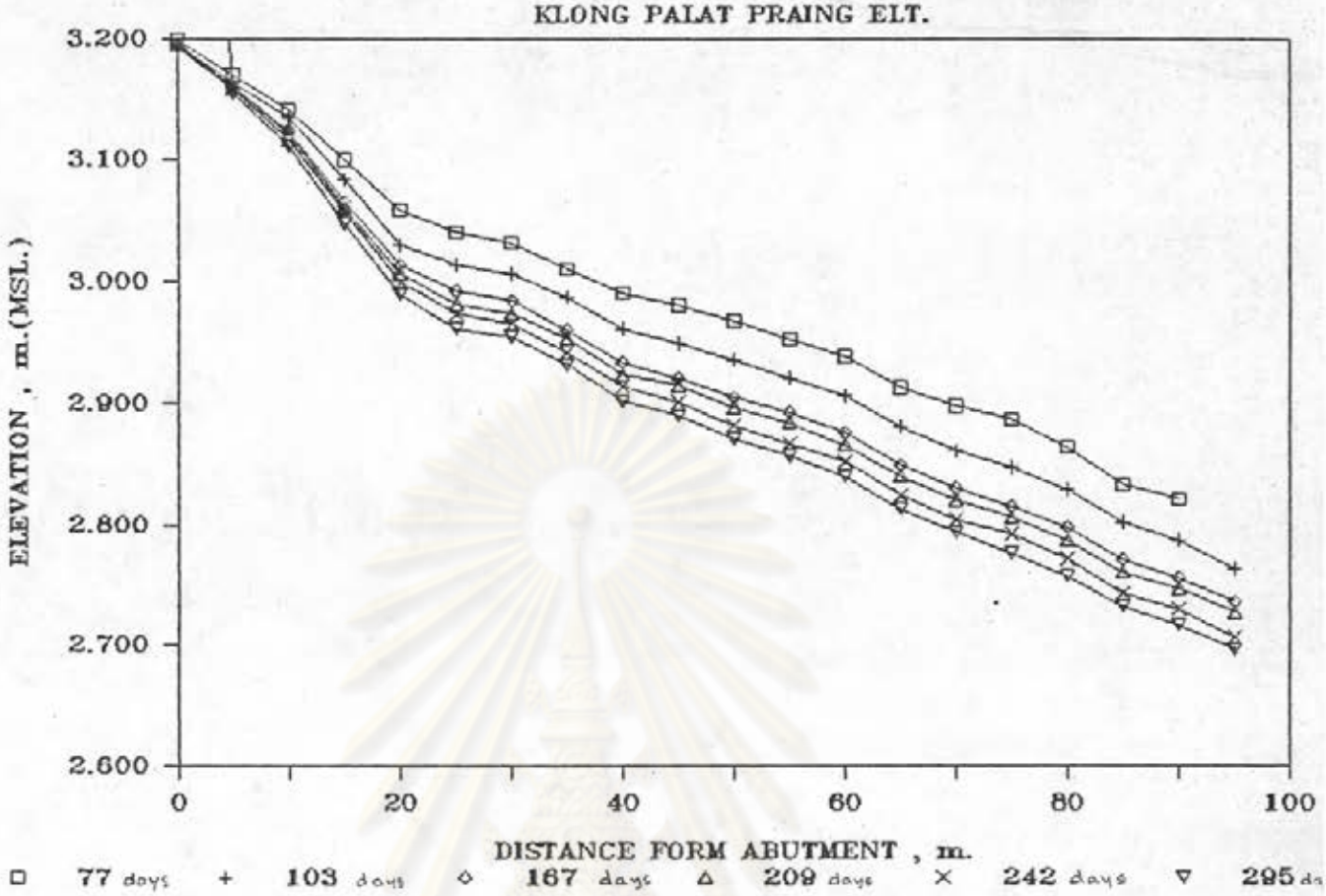




รูปที่ ข.3 ผลการตรวจล่อบแรงดันน้ำใต้ดินบริเวณคอล่ะพานปลัดเปรียง

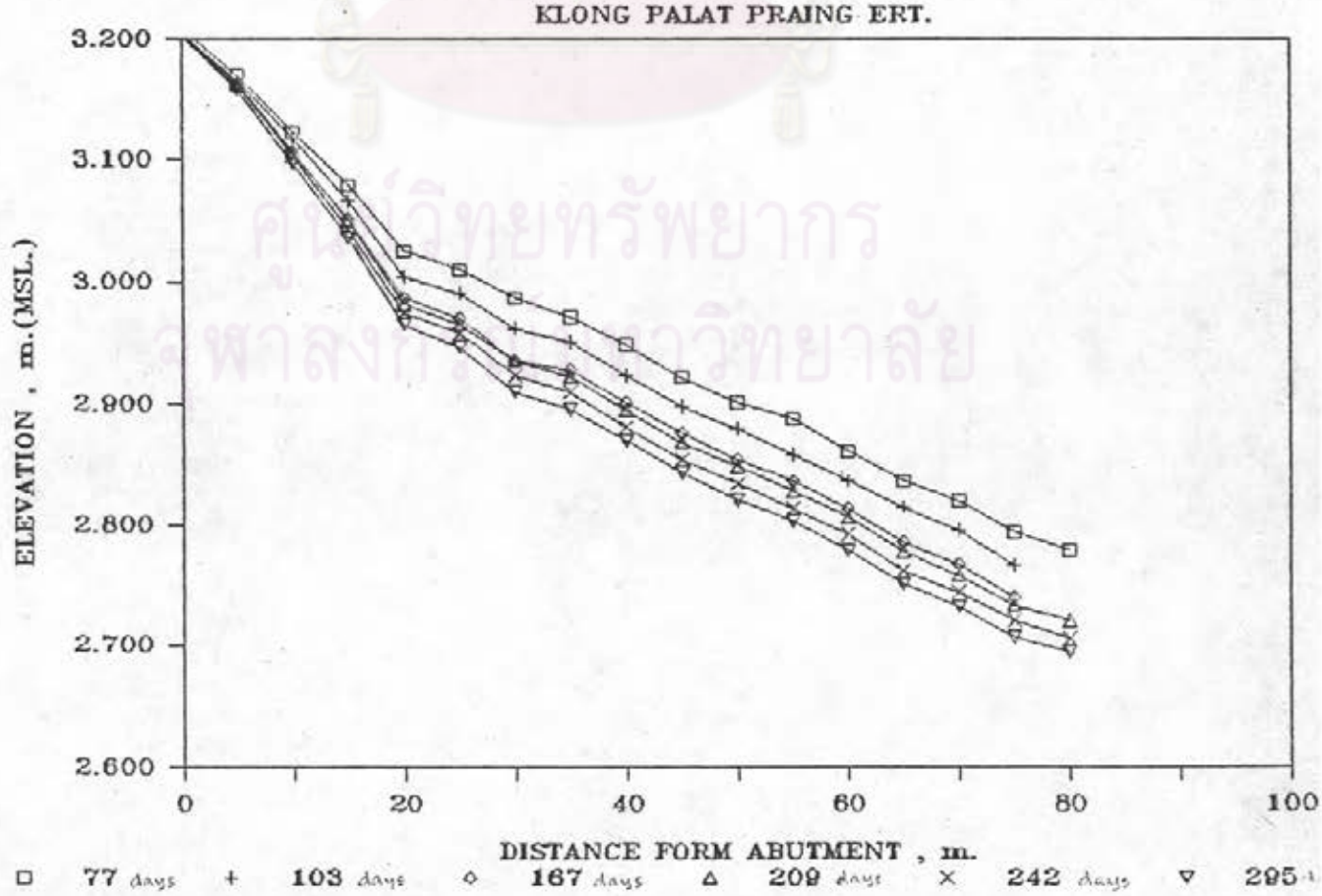
BRIDGE APPROACH PROFILE

KLONG PALAT PRAING ELT.



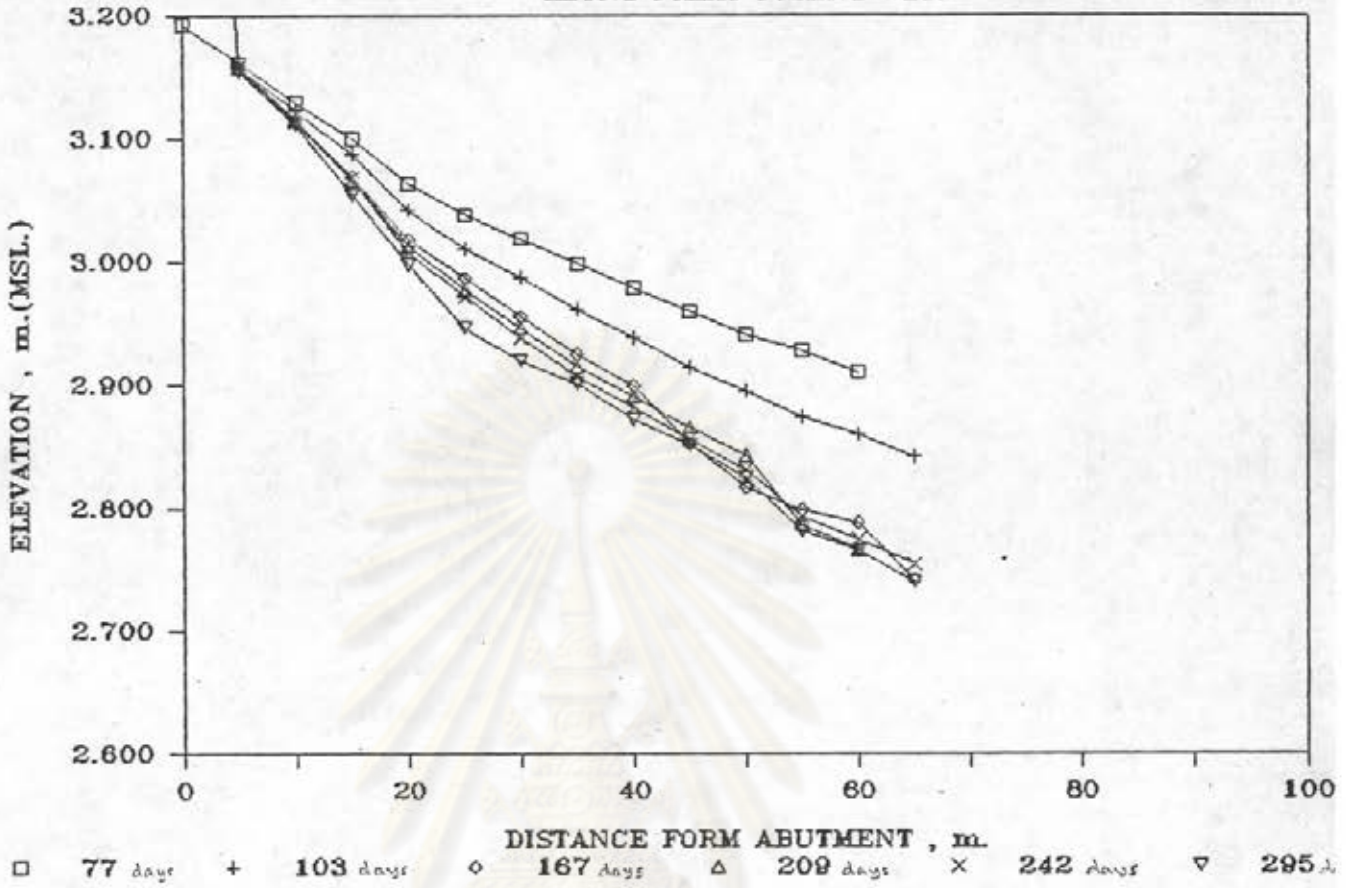
BRIDGE APPROACH PROFILE

KLONG PALAT PRAING ERT.



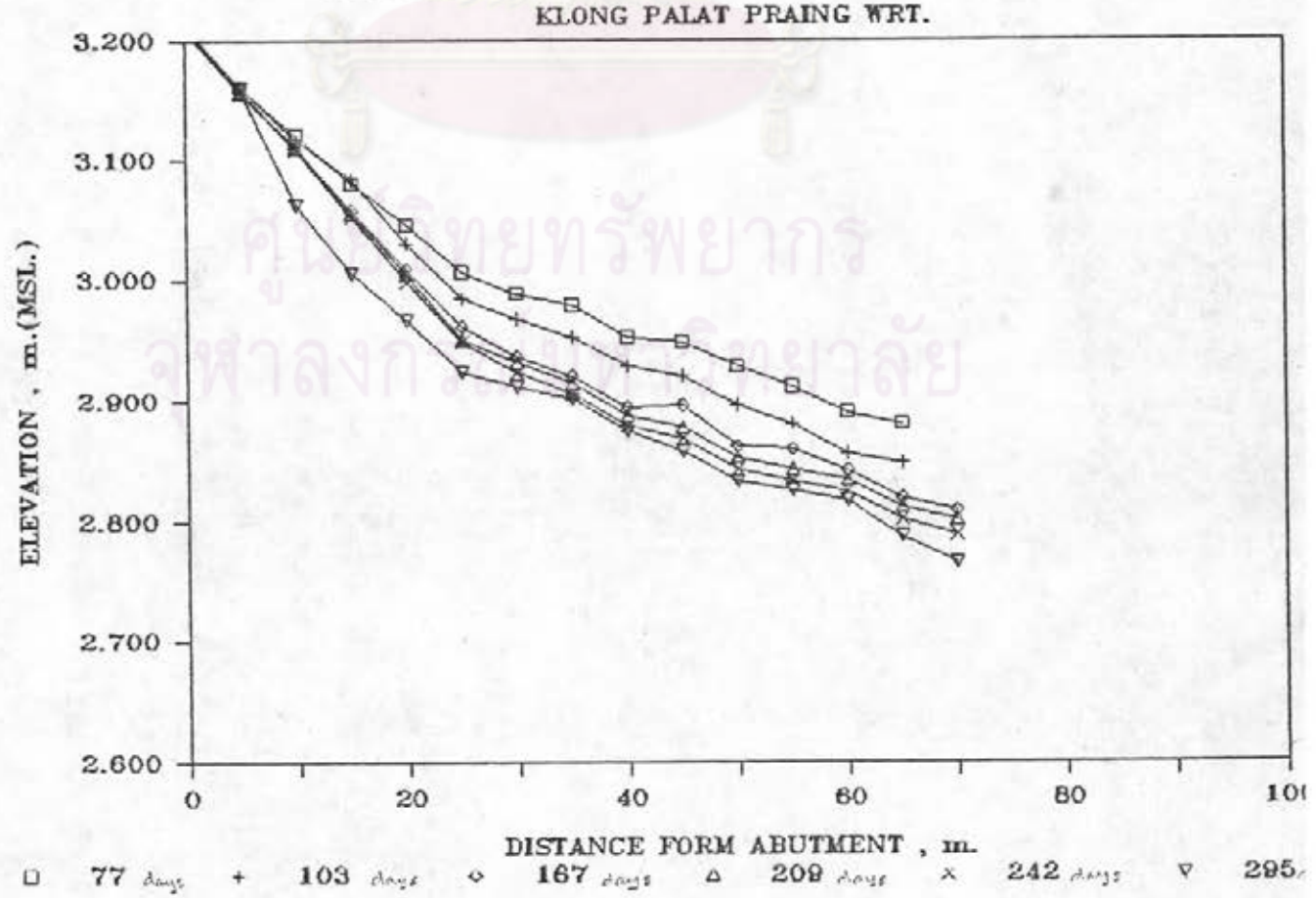
BRIDGE APPROACH PROFILE

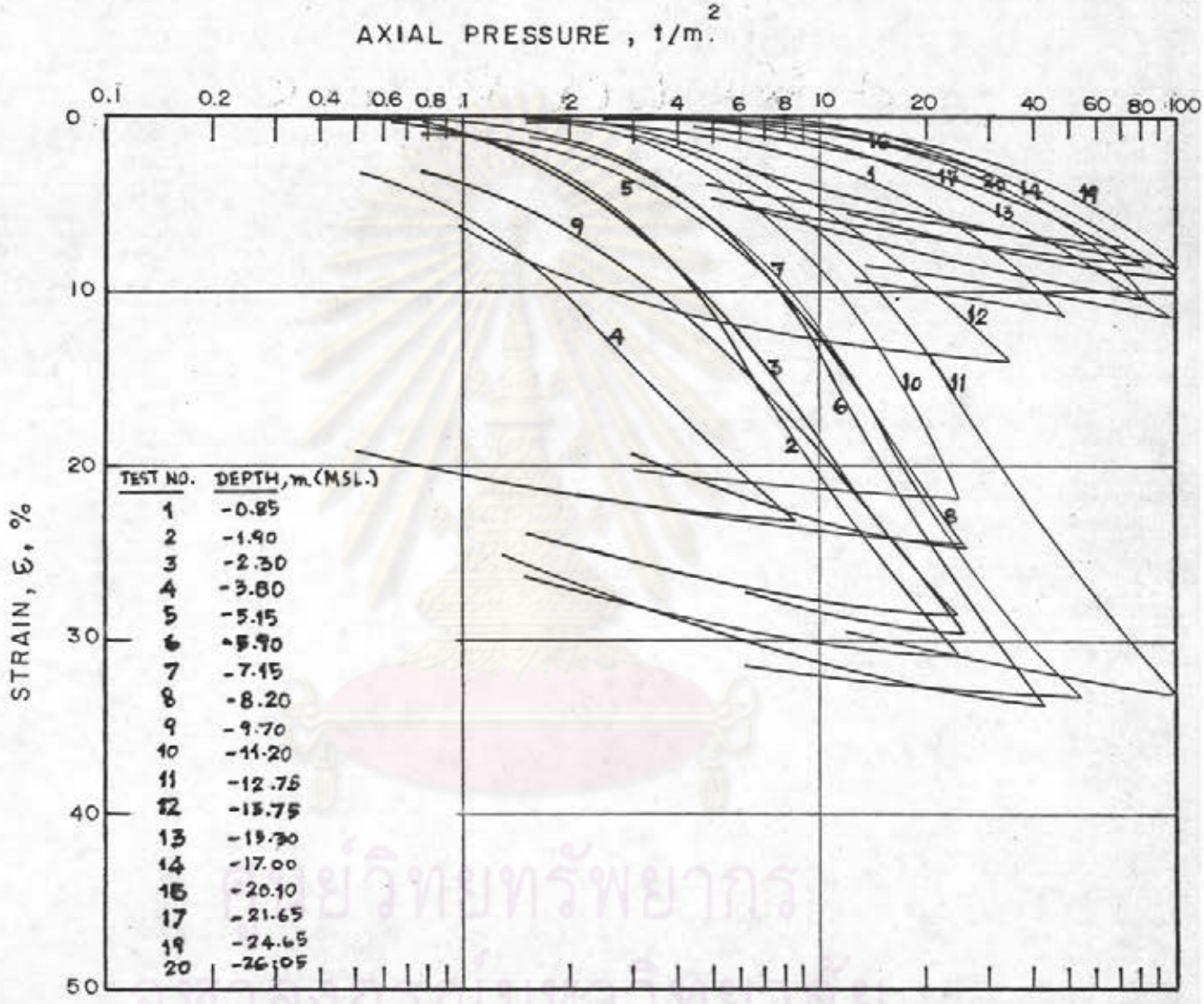
KLONG PALAT PRAING WLT.



BRIDGE APPROACH PROFILE

KLONG PALAT PRAING WRT.





รูปที่ 35. ผลการทดสอบการอัดตัวคลายน้ำแบบ 1 มิติด้วยเครื่อง Oedometer ของหลุมเจาะ BH-1

ตารางที่ จ.1 ข้อมูลการวัดค่าการทรุดตัวรวมบริเวณคอสะพานปลัดเปรียง

SETTLEMENT DATA

PROJECT:KLONG PALAT PRAING

DATE :9-OCT-1985

OPERATOR NAME :TINNAKORN R.

DATE	ELAPSED TIME, days	SETTLEMENT, cm.												
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
6/12/27	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
12/12/27	6	-0.4	-0.3	-0.4	-0.2	-0.4	-0.3	-0.3	-0.4			-0.3	-0.4	-0.4
15/12/27	9	-0.7	-0.4	-0.5	-0.6	-0.6	-0.8	-0.6	-1.0		0.0	-0.9	-0.8	-0.4
19/12/27	13	-0.7	-0.5	-0.6	-0.7	-0.7	-0.8	-1.0	-1.5		-0.1	-0.9	-0.9	-0.5
20/12/27	14	-0.7	-0.5	-1.0	-0.7	-0.9	-1.1	-1.0	-1.7	0.0	-0.3	-1.0	-1.0	-0.6
21/12/27	15	-0.8	-0.7	-1.0	-0.8	-1.0	-1.1	-1.1	-1.8	-1.5	-0.3	-1.2	-1.1	-0.8
22/12/27	16	-0.8	-0.7	-1.2	-1.2	-1.2	-1.3	-1.2	-2.1	-2.6	-0.4	-1.3	-1.2	-0.8
22/12/27	16	-0.8	-0.7	-1.2	-1.2	-1.2	-1.3	-1.2	-2.1	-2.6	-0.4	-1.3	-1.2	-0.8
25/12/27	19	-0.9	-0.8	-1.7	-1.9	-2.1	-2.4	-2.4	-3.2	-3.8	-1.1	-2.2	-1.2	-1.1
26/12/27	20	-0.9	-0.8	-1.7	-2.1	-2.4	-2.9	-2.7	-3.5	-3.9	-1.1	-2.3	-1.5	-1.1
28/12/27	22	-0.9	-1.0	-1.7	-2.6	-3.3	-3.7	-3.5	-4.5	-4.1	-1.6	-3.2	-2.7	-1.2
2/1/28	27	-1.3			-2.8	-3.9	-3.7	-4.0	-5.4	-4.7	-5.0	-4.1	-2.8	-1.6
4/1/28	29	-1.2			-3.1	-4.5	-4.8	-4.8	-5.8	-5.4	-5.0	-4.1	-2.9	-1.6
9/1/28	34	-1.2			-3.2	-4.9	-5.4	-5.3	-6.2	-6.6	-5.7	-4.6	-3.7	-1.6
12/1/28	37	-1.2			-3.5	-5.1	-5.4	-5.3	-6.6	-7.7	-6.9	-4.6	-3.9	-1.6
14/1/28	39	-1.2			-3.6	-5.2	-5.5	-5.5	-6.6	-7.7	-7.2	-4.6	-5.4	-1.6
16/1/28	41	-1.2			-3.7	-5.2	-5.8	-5.9	-6.9	-7.9	-8.0	-4.8	-5.6	-1.6
16/1/28	41	-1.3			-3.7	-5.2	-5.8	-5.9	-6.9	-7.9	-9.5	-5.0	-5.8	-1.6
19/1/28	44	-1.3			-4.2	-5.7	-6.0	-6.1	-7.4	-8.3	-10.1	-5.0	-5.8	-1.6
22/1/28	47	-1.3				-5.9	-6.5	-6.7	-8.2	-8.7	-10.9	-6.0	-6.4	-1.7
28/1/28	53	-1.3				-6.6	-7.1	-7.4	-8.6	-9.1	-11.7	-6.2	-7.6	-1.8
29/1/28	54	-1.3				-6.6	-7.4	-7.4	-8.7	-9.3	-11.8	-6.2	-7.7	-1.8
2/2/28	58	-1.4				-6.7	-7.5	-7.7	-9.1	-9.8	-12.1	-6.6	-8.0	-1.8
5/2/28	61	-1.4				-6.7	-7.5	-7.8	-9.3	-9.8	-12.1	-6.7	-8.2	-1.8
9/2/28	65	-1.4				-7.0	-7.9	-8.0	-9.6	-10.1	-12.5	-6.8	-8.2	-1.8
18/2/28	74	-1.4				-7.4	-8.5	-8.9	-10.3	-11.0	-13.5	-7.1	-8.5	-1.8
28/2/28	84	-1.4				-8.3	-9.6	-10.0	-11.5	-12.2	-14.6	-7.9	-9.2	-1.8
8/3/28	92	-1.4				-8.6	-10.0	-10.4	-12.0	-12.8	-15.4	-8.3	-9.5	-1.8
19/3/28	103	-1.5				-9.3	-10.8	-11.4	-13.1	-13.9	-16.4	-9.0	-9.9	-1.8
12/4/28	127	-1.5				-10.5	-12.1	-13.1	-14.9	-16.0	-18.4	-10.0	-10.6	-1.8
22/5/28	167	-1.5				-12.0	-14.2	-15.4	-17.2	-18.6	-20.9	-11.9	-11.9	-1.8
1/7/28	207	-1.5				-12.8	-15.0	-16.1	-18.2	-19.2	-21.8	-12.4	-12.7	-1.8
5/8/28	242	-1.5				-13.6	-16.0	-17.1	-19.2	-20.7	-23.0	-13.2	-13.4	-1.8
27/9/28	295	-1.5				-14.0	-16.6	-17.7	-19.9	-21.3	-23.7	-13.8	-13.7	-1.8

ตารางที่ จ.2 ข้อมูลการวัดค่าแรงดันน้ำในโพรงเพิ่มบริเวณคอสะพานปลัดเปรียง

TABLE EXCESS PORE PRESSURE

DATE	ELAP. TIME DAYS.	EXCESS PORE PRESSURE, t/m^2						
		P1	P2	P3	P4	P5	P6	P7
17/11/27	0	-	-	-	-	-	-	-
19/11/27	2	-	-	-	-	-	0.25	0.00
21/11/27	4	-	-	-	-	-	0.30	0.00
23/11/27	6	-	-	-	-	-	0.50	0.05
25/11/27	8	-	-	-	1.20	1.71	0.73	0.08
27/11/27	10	-	2.23	-	1.36	1.02	0.51	0.22
28/11/27	11	-	2.55	-	1.90	1.38	0.44	0.20
29/11/27	12	-	2.66	-	1.90	1.56	0.37	0.20
30/11/27	13	-	2.68	-	2.54	1.56	0.41	0.16
01/12/27	14	-	2.65	-	2.48	1.62	0.44	0.17
02/12/27	15	-	2.70	-	2.44	1.65	0.49	0.21
03/12/27	16	-	2.76	0.00	2.50	1.68	0.59	0.24
04/12/27	17	-	2.56	0.44	2.55	1.95	0.69	0.22
06/12/27	19	-	2.45	2.04	2.58	1.82	0.80	0.20
08/12/27	21	-	2.43	2.30	2.52	1.71	0.88	0.22
12/12/27	25	-	2.33	2.76	2.47	1.53	0.92	0.22
14/12/27	27	-	2.28	2.92	2.44	1.46	0.93	0.21
15/12/27	28	-	2.26	2.96	2.42	1.44	0.92	0.18
18/12/27	31	-	2.20	3.10	2.37	1.32	0.95	0.32
19/12/27	32	-	2.29	2.38	2.45	1.43	1.06	0.23
20/12/27	33	-	2.26	2.16	2.16	1.46	1.15	0.19
21/12/27	34	-	2.24	2.30	2.42	1.60	1.37	0.17
22/12/27	35	-	2.22	2.33	2.50	1.61	1.20	0.19
26/12/27	39	-	2.39	2.38	3.26	2.37	1.78	0.31
27/12/27	40	-	2.45	2.41	3.30	2.58	1.98	0.25
29/12/27	42	-	2.41	2.42	3.30	2.71	2.26	0.23
02/1/28	46	-	2.33	2.44	3.71	2.73	-	0.14
04/1/28	48	-	2.23	2.45	3.78	2.64	-	0.11
09/1/28	53	-	2.19	2.49	3.50	2.55	-	0.12
12/1/28	56	-	2.18	2.50	3.48	2.48	-	-
14/1/28	58	-	2.10	2.51	3.47	2.46	-	-
16/1/28	60	-	2.06	2.52	3.45	2.45	-	-
19/1/28	63	-	1.97	2.54	3.44	2.45	-	-
26/1/28	70	-	1.56	2.54	3.43	2.10	-	-
30/1/28	74	-	1.43	2.55	3.42	2.16	-	-
02/2/28	77	-	1.14	2.53	3.41	2.10	-	-
09/2/28	84	-	0.73	2.51	3.40	1.75	-	-
15/2/28	90	-	0.71	2.51	3.39	1.72	-	-
08/3/28	111	-	0.36	2.47	3.37	1.72	-	-
19/3/28	122	-	-	2.51	3.35	1.72	-	-
11/4/28	145	-	-	2.42	3.33	-	-	-
03/5/28	167	-	-	2.39	3.30	-	-	-
22/5/28	186	-	-	2.17	3.26	-	-	-
01/7/28	207	-	-	2.24	3.12	-	-	-
05/8/28	242	-	-	-	3.04	-	-	-
27/9/28	295	-	-	-	-	-	-	-

ตารางที่ จ.3 ข้อมูลการวัดค่าแรงดันน้ำในโพรงดินจาก Dummy Piezometer

TABLE DUMMY PIEZOMETER OBSERVATION

DATE	PIEZOMETRIC HEAD ,t/m^2 DP1	DP2	DP3	DP4
17/11/27	0.00	0.00	0.00	-
21/11/27	4.57	6.75	0.00	-
23/11/27	5.03	8.55	11.94	-
24/11/27	5.00	8.28	0.00	-
25/11/27	4.97	8.17	10.26	-
27/11/27	4.96	7.93	9.20	-
28/11/27	5.24	8.81	12.89	-
29/11/27	5.07	8.35	11.44	-
30/11/27	5.02	8.14	10.58	-
01/12/27	4.99	8.05	9.99	-
02/12/27	4.99	7.99	9.41	-
03/12/27	5.00	7.94	8.98	-
04/12/27	5.01	7.92	8.54	-
06/12/27	5.01	7.90	7.96	-
08/12/27	5.01	7.90	7.58	-
12/12/27	5.01	7.88	7.10	-
14/12/27	5.01	7.89	6.95	-
15/12/27	5.00	7.87	6.90	-
18/12/27	5.00	7.85	6.74	-
19/12/27	4.99	7.85	6.68	-
20/12/27	4.97	7.84	6.66	-
21/12/27	4.97	7.84	6.64	-
22/12/27	4.97	7.83	6.61	-
26/12/27	4.96	7.83	6.55	-
27/12/27	4.96	7.82	6.53	-
29/12/27	4.95	7.83	6.51	-
02/01/28	4.93	7.80	6.49	-
04/01/28	4.91	7.81	6.48	-
09/01/28	4.89	7.79	6.43	-
12/01/28	4.88	7.78	6.42	-
19/01/28	4.82	7.77	6.38	-
26/01/28	5.10	7.75	6.38	-
30/01/28	5.06	7.80	6.36	-
02/02/28	5.07	7.81	6.37	-
09/02/28	5.07	7.79	6.36	-
15/02/28	5.06	7.78	6.35	-
08/03/28	4.96	7.78	6.33	-
19/03/28	4.86	7.76	6.31	-
11/04/28	4.68	7.68	6.29	-
03/05/28		7.67	6.29	-
22/05/28		7.82	6.52	-
01/07/28		7.72	6.41	-
05/08/28		7.76	6.42	-

ประวัติ

นาย ทินกร โรจนธารา เกิดวันที่ 24 ธันวาคม พ.ศ. 2500 ที่กรุงเทพ-มหานคร สำเร็จการศึกษาปริญญาวิศวกรรมศาสตร์บัณฑิต สาขาวิศวกรรมโยธา จาก มหาวิทยาลัยเกษตรศาสตร์ ปีการศึกษา 2522 ได้ทำงานเป็นผู้ช่วยนักวิจัยที่สถาบันเทคโนโลยี แห่งเอเชีย (AIT) ในสาขาปฐพีวิศวกรรมและวิศวกรรมการขนส่ง เป็นเวลาประมาณ 3 ปี และได้เข้าศึกษาต่อในภาควิชาวิศวกรรมโยธา บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย ในปี 2526