

ภาคผนวก ข

การหาคุณสมบัติพื้นฐานของวัสดุพูน



KASETSART UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING,GEOTECHNICAL ENGINEERING LABORATORY

PERMEABILITY TEST (ASTM D 2434-68)

PROJECT

Thesis

OWNER

KU

SOIL DISCRPTION

ทรายเหนียวปนทราย

BORING NO.

2

TESTED BY

สังคราม

SAMPLE DEPTH

-

m.

CHECKED & REPORTED BY

สังคราม

DATE

13/05/05

SAMPLE DATA :

SAMPLE DIAMETER

7.62

cm.

WEIGHT OF MOLD + SOIL

1983.95

gm.

SAME HEIGHT

14.78

cm.

WEIGHT OF MOLD

890.40

gm.

SAMPLE AREA

45.56

cm.²

WEIGHT OF SOIL

1093.55

gm.

SAMPLE VOLUME

673.41

cm.³

DENSITY OF SOIL

1.62

gm/cm.³

TYPE OF SAMPLE

Loose Sand

TESTING HEAD

4.5

cm.

CONSTANT HEAD PERMEABILITY TEST :

TRIAL NO.	TIME (sec)	Q (cc)	T (c)	TRIAL NO.	TIME (sec)	Q (cc)	T (c)
1	30	645.00	27	6			
2	30	645.00	27	7			
3	30	645.00	27	8			
4	30	650.00	27	9			
5	30	650.00	27	10			
Average Values					30	647.00	

SOIL PERMEABILITY

k

=

1.555

cm./sec.

VARIABLE HEAD PERMEABILITY TEST :

AREA OF STANDPIPE

cm.²

TRIAL NO.	h ₁ (sec)	h ₂ (sec)	TIME (sec)	TRIAL NO.	h ₁ (sec)	h ₂ (sec)	TIME (sec)
1				6			
2				7			
3				8			
4				9			
5				10			
Average Values							

SOIL PERMEABILITY

k

=

cm./sec.

RECOMPACTED SAMPLE

STANDARD COMPACTION

-

Blows

MAXIMUM DRY DENSITY

-

t/m2

OPTIMUM MOISTURE CONTENT

-

%

Remarks:

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ภาพผนวกที่ ข1 ผลการทดสอบหาความชื้นน้ำของทรายหยาบสภาพหลวม

 KASETSART UNIVERSITY DEPARTMENT OF CIVIL ENGINEERING, GEOTECHNICAL ENGINEERING LABORATORY PERMEABILITY TEST (ASTM D 2434-68)			
PROJECT	Thesis	OWNER	KU
SOIL DISCRPTION	ทรายหยาบแน่น	LOCATION	2
TESTED BY	สงคราม	BORING NO.	-
CHECKED & REPORTED BY	สงคราม	SAMPLE DEPTH	m.
		DATE	13/05/05
SAMPLE DATA :			
SAMPLE DIAMETER	7.62	cm.	WEIGHT OF MOLD + SOIL
SAME HEIGHT	14.95	cm.	WEIGHT OF MOLD
SAMEPLE AREA	45.56	cm. ²	WEIGHT OF SOIL
SAMPLE VOLUME	681.15	cm. ³	DENSITY OF SOIL
TYPE OF SAMPLE	Dense Sand		TESTING HEAD
CONSTANT HEAD PERMEABILITY TEST :			
TRIAL NO.	TIME (sec)	Q (cc)	T (c)
1	30	630.00	27
2	30	630.00	27
3	30	630.00	27
4	30	630.00	27
5	30	630.00	27
Average Values		30	630.00
SOIL PERMEABILITY k = 1.094 cm./sec.			
VARIABLE HEAD PERMEABILITY TEST : AREA OF STANDPIPE cm. ²			
TRIAL NO.	h ₁ (sec)	h ₂ (sec)	TIME (sec)
1			6
2			7
3			8
4			9
5			10
Average Values			
SOIL PERMEABILITY k = cm./sec.			
RECOMPACTED SAMPLE			
STANDARD COMPACTION	-	Blows	
MAXIMUM DRY DENSITY	-	t/m2	
OPTIMUM MOISTURE CONTENT	-	%	
Remarks: 1) Certification applies to test samples only. 2) Information under "For", "Project", are supplied by client. These are not certified. 3) This certificate is invalid without appropriate signature and seal.			

ภาพผนวกที่ ๒ ผลการทดสอบหาความชื้นน้ำของทรายหยาบสภาพแน่น



KASETSART UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING,GEOTECHNICAL ENGINEERING LABORATORY

PERMEABILITY TEST (ASTM D 2434-68)

PROJECT

Thesis

OWNER

SOIL DIScription

ทรายละเอียดหยาวม

LOCATION

KU

TESTED BY

สงคราม

BORING NO.

2

CHECKED & REPORTED BY

สงคราม

SAMPLE DEPTH

-

m.

DATE

13/05/05

SAMPLE DATA :

SAMPLE DIAMETER

7.62

cm.

WEIGHT OF MOLD + SOIL

1591.95

gm.

SAME HEIGHT

7.73

cm.

WEIGHT OF MOLD

1034.90

gm.

SAMEPLE AREA

45.56

cm.²

WEIGHT OF SOIL

557.05

gm.

SAMPLE VOLUME

352.20

cm.³

DENSITY OF SOIL

1.58

gm/cm.³

TYPE OF SAMPLE

Loose Sand

TESTING HEAD

38.4

cm.

CONSTANT HEAD PERMEABILITY TEST :

TRIAL NO.	TIME (sec)	Q (cc)	T (c)	TRIAL NO.	TIME (sec)	Q (cc)	T (c)
1	60	840.00	27	6			
2	60	840.00	27	7			
3	60	840.00	27	8			
4	60	840.00	27	9			
5	60	840.00	27	10			
Average Values					60	840.00	

SOIL PERMEABILITY

k

=

6.18 x 10⁻²

cm./sec.

VARIABLE HEAD PERMEABILITY TEST :

AREA OF STANDPIPE

cm.²

TRIAL NO.	h ₁ (sec)	h ₂ (sec)	TIME (sec)	TRIAL NO.	h ₁ (sec)	h ₂ (sec)	TIME (sec)
1				6			
2				7			
3				8			
4				9			
5				10			
Average Values							

SOIL PERMEABILITY

k

=

cm./sec.

RECOMPACTED SAMPLE

STANDARD COMPACTION

-

Blows

MAXIMUM DRY DENSITY

-

t/m2

OPTIMUM MOISTURE CONTENT

-

%

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ภาพผนวกที่ 3 ผลการทดสอบหาความเข้มข้นของทรายละเอียดสภาพหลวม



KASETSART UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING,GEOTECHNICAL ENGINEERING LABORATORY

PERMEABILITY TEST (ASTM D 2434-68)

PROJECT

Thesis

OWNER

SOIL DISCRPTION

ทรายละเอียดแน่น

LOCATION

KU

TESTED BY

สงคราม

BORING NO.

2

CHECKED & REPORTED BY

สงคราม

SAMPLE DEPTH

-

m.

DATE

13/05/05

SAMPLE DATA :

SAMPLE DIAMETER

7.62

cm.

WEIGHT OF MOLD + SOIL

1034.90

gm.

SAME HEIGHT

7.73

cm.

WEIGHT OF MOLD

439.86

gm.

SAMPLE AREA

45.56

cm.²

WEIGHT OF SOIL

595.04

gm.

SAMPLE VOLUME

352.20

cm.³

DENSITY OF SOIL

1.69

gm/cm.³

TYPE OF SAMPLE

Dense Sand

TESTING HEAD

53.5

cm.

CONSTANT HEAD PERMEABILITY TEST :

TRIAL NO.	TIME (sec)	Q (cc)	T (c)	TRIAL NO.	TIME (sec)	Q (cc)	T (c)
1	30	340.00	27	6			
2	30	340.00	27	7			
3	30	340.00	27	8			
4	30	340.00	27	9			
5	30	340.00	27	10			
Average Values					30	340.00	

SOIL PERMEABILITY

k

=

3.59 x 10⁻²

cm./sec.

VARIABLE HEAD PERMEABILITY TEST :

AREA OF STANDPIPE

cm.²

TRIAL NO.	h ₁ (sec)	h ₁ (sec)	TIME (sec)	TRIAL NO.	h ₁ (sec)	h ₁ (sec)	TIME (sec)
1				6			
2				7			
3				8			
4				9			
5				10			
Average Values							

SOIL PERMEABILITY

k

=

cm./sec.

RECOMPACTED SAMPLE

STANDARD COMPACTION

-

Blows

MAXIMUM DRY DENSITY

-

t/m2

OPTIMUM MOISTURE CONTENT

-

%

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ภาพผนวกที่ ข4 ผลการทดสอบหาความเข้มข้นของทรายละเอียดสภาพแน่น

ภาพผนวกที่ ๖ ผลการทดสอบการกระจายขนาดผลของทรายละเอียด

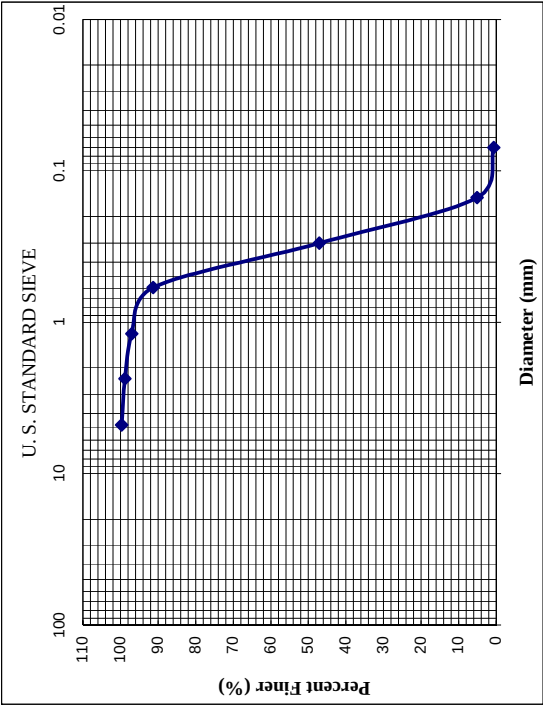


KASETSART UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING, GEOTECHNICAL ENGINEERING LABOLATORY
SIEVE ANALYSIS (ASTM C136)

For:		SAMPLE WEIGHT	
Project:	thesis	Container No.	
Description of Sample	ทรายละเอียด	Weight of Container+Dry Sample	g.
Material Code	Depth	Weight of Container	g.
Test No.	Date	Weight of Dry Sample	g.
Tested by	สงคราม		500.00

Sieve No.	Sieve Opening	Weight of Soil Retained, g	Cumulative Retained, g	Cumulative Retained, %	Percent Finer
#4	4.76	1.50	1.50	0.30	99.70
#8	2.36	4.50	6.00	1.20	98.80
#16	1.19	9.00	15.00	3.00	97.00
#30	0.59	28.50	43.50	8.70	91.30
#50	0.30	221.00	264.50	52.90	47.10
#100	0.15	210.00	474.50	94.90	5.10
#200	0.07	22.00	496.50	99.30	0.70
PAN	PAN	3.50	500.00	100.00	0.00

D10=
D30=
D60=

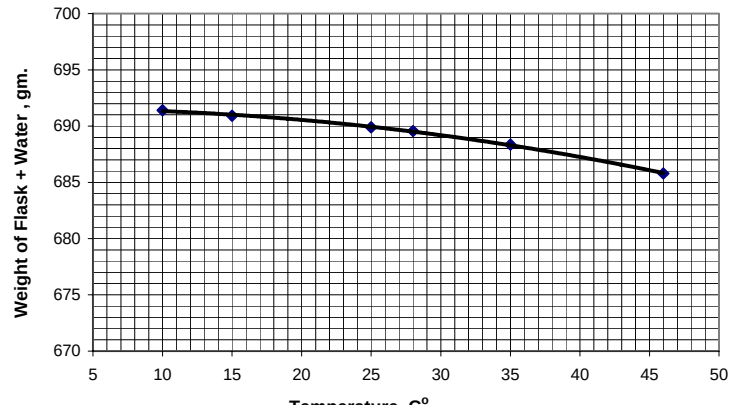


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KASETSART UNIVERSITY DEPARTMENT OF CIVIL ENGINEERING, GEOTECHNICAL ENGINEERING LABORATORY SPECIFIC GRAVITY TEST																					
Project:		thesis		Location		KU															
Borehole No.		-		Sample No.		2															
Soil Description		ทรายเหนียว		Depth		- m.															
Test by		เสกสรร		Date		21/03/50															
Flask Calibration																					
Determination No.		1	2	3	4	5	6														
Temperature		45	39	34	26	20	16														
Wt. Flask+Water		683.53	684.62	685.77	686.99	687.66	688.29														
SPECIFIC GRAVITY DETERMINATION																					
Determination No.			2	3	4	5	6														
Temperature C°		31																			
Flask+Water g.		686.16																			
Flask+Water+Soil g.		717.66																			
Container No.		B																			
Dry Soil+Container g.		335.64																			
Weight of Container g.		284.89																			
Dry Soil g.		50.75																			
Specific Gravity of Water		0.9954																			
Specific Gravity of Soil		2.62																			
Average Specific Gravity of Soil		2.62																			
Calibration of Volumetric Flask																					
<table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <caption>Data points for Calibration of Volumetric Flask</caption> <thead> <tr> <th>Temperature (C°)</th> <th>Weight of Flask + Water (gm.)</th> </tr> </thead> <tbody> <tr><td>16</td><td>688.29</td></tr> <tr><td>20</td><td>687.66</td></tr> <tr><td>26</td><td>685.77</td></tr> <tr><td>34</td><td>686.99</td></tr> <tr><td>39</td><td>684.62</td></tr> <tr><td>45</td><td>683.53</td></tr> </tbody> </table>								Temperature (C°)	Weight of Flask + Water (gm.)	16	688.29	20	687.66	26	685.77	34	686.99	39	684.62	45	683.53
Temperature (C°)	Weight of Flask + Water (gm.)																				
16	688.29																				
20	687.66																				
26	685.77																				
34	686.99																				
39	684.62																				
45	683.53																				
Remarks: 1) Certification applies to test samples only. 2) Information under "For", "Project", are supplied by client. These are not certified. 3) This certificate is invalid without appropriate signature and seal.																					

ภาพผนวกที่ ข7 ผลการทดสอบการหาความถ่วงจำเพาะของทรายเหนียว

 KASETSART UNIVERSITY DEPARTMENT OF CIVIL ENGINEERING, GEOTECHNICAL ENGINEERING LABORATORY SPECIFIC GRAVITY TEST							
Project:		thesis		Location		KU	
Borehole No.		-		Sample No.		1	
Soil Description		ทรายละเอียด		Depth		- m.	
Test by		เสกสรร		Date		21/03/50	
Flask Calibration							
Determination No.		1	2	3	4	5	6
Temperature		46	35	28	25	15	10
Wt. Flask+Water		685.8	688.35	689.56	689.89	690.93	691.4
SPECIFIC GRAVITY DETERMINATION							
Determination No.			2	3	4	5	6
Temperature C°		30					
Flask+Water g.		689.17					
Flask+Water+Soil g.		720.66					
Container No.		a					
Dry Soil+Container g.		514.09					
Weight of Container g.		463.94					
Dry Soil g.		50.15					
Specific Gravity of Water		0.9957					
Specific Gravity of Soil		2.68					
Average Specific Gravity of Soil		2.68					
Calibration of Volumetric Flask 							
Remarks: 1) Certification applies to test samples only. 2) Information under "For", "Project", are supplied by client. These are not certified. 3) This certificate is invalid without appropriate signature and seal.							

ภาพผนวกที่ ข8 ผลการทดสอบการหาความถ่วงจำเพาะของทรายละเอียด