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Consulting Engineering Bureau & Laboratories

Company	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
<b>Delivery Date</b>	: 22/5/2023
Test Date	: 28/5/2023
Location	: st : from 655+850 to 655+920
Report No.	: 01

## RESULTS OF COMPRESSIVE STRENGTH FOR NATURAL ROCK CORES SPECIMENS ES 7325 - 2011

Sample No.	Station	Diam. (cm)	Length Cm	Load (KN)	Compressive strength (Kg/cm²)	Average (Kg/cm²)	Remarks
1	655+860	10	9.8	226.80	236.05		
2	655+890	10	10.3	119.10	117.94	167.84	
3	655+910	10	10.3	151.00	149.53		

Note :- All tests are preformed according to ES 7325-2011

Signature / 13 S of the Art Annual Sheel Carry Jon Contra Constant Contract 257653.90 ACCREDITED

۳۴ نیواله الافسانی ۲ رفیک الترامیزه نامهه داکهی ۲۹۰٬۰۰۱ ز. ۲۰۳۱ محضر اعتماد حصر كميات





التاريخ: ١٥-١٠-٢٠٢٣

اسم المشروع : مشروع القطار الكهربائي السريع (6 أكتوبر -اسوان - أبو سمبل ) القطاع الخامس

قامت شركة برليانت كونسلت للاستشارات المساحية (استشارى الاعمال المساحية لهيئة الطرق والكبارى )

باعتماد الكميات المنفذة الخاصة بشركة الكرم للمقاولات العمومية

الملاحظات	الكمية بالمتر المكعب	التصنيف	الى المحطة رقم	من المحطة رقم	٩
اعمال قطع على ( REO5)	106018.72	اعمال القطع باستخدام البلدوزر	658+840	643+860	1
اعمال قطع على ( REO5)	8260	قطع في تربة ضخرية	658+840	643+860	2
اعمال الردم على ( REO5)	90033.77	اعمال الردم	658+840	643+860	3

المرفقات : 1- استلام ميزانية شبكية

2- قطاعات عرضية

3- شيت اكسيل لتوضيح اعمال الحصر

استشارى المساحة مهندس الشركة المنفذة 0182000 HSR- Blue Line - sec.05 إستنشاري الأشمال المساحمة بالقطاع شركة الكرم للمقاولات العمومية س.ت: ٣١٥٤٣٠ ب.ف: ٥٦٩ - ٥٨١ - ٧٤٧

استشارى الهيئة FEAN 10-2 Iting مشره ع القطار السرية SPECTRUM

Company Name	شرکه الکرم :
Project	
-	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+820 To 651+860
Level	: - 5 M
Report No.	: 141
Co	ompaction test by using Sand – Cone Test Method
	<u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+830	919	2.26	5.5	2.14	98.7%	Comply
2	651+850	1530	2.22	5.5	2.10	96.9%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
   Signature 1
   Signature 1

engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name: شركة الكرم للمقاولات العموميهProject: Electric Express Train – HSR From Qous To ArmantLocation: St: 651+500 E= 488952.1897 N=2853742.8853Type of sample: Soil EmbankmentDelivery Date: 30/9/2023Reporting Date: 4/10/2023Reporting No.: 06-2

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

## Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Jonsulting Eng Signature /. 219 - 991 الرنيس ٣ شارع اللك الأفضل - الزمالك - القاهرة

Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

# RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

Consulting Engineering & Laboratories هلته بستگه Signature /.. مسروعمان ( سوهاج ومندا) که . ک. . رقم التسبیل المریبی: 537 - 991 - 219 رویز الرذیسی ۲ شارع الملک الاقضل - الزمالک - القاهرة

Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

# <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	9.9

Consulting Engineering Bureau & Laboratories Signature /. . . . مشروعات ( س مسروعات ( سموهمي وسيام) رقم التسميل المريبي: 137 - 991 - 219 الدركز الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

<b>Company Compa</b>	شركة الكرم للمقاولات العموميه : any Name
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

# Results of liquid limit and plasticity index

# of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

C Charg & . > الرئيسي ٢ شارع اللك الأقضل - الرمالك - القاهر ٥

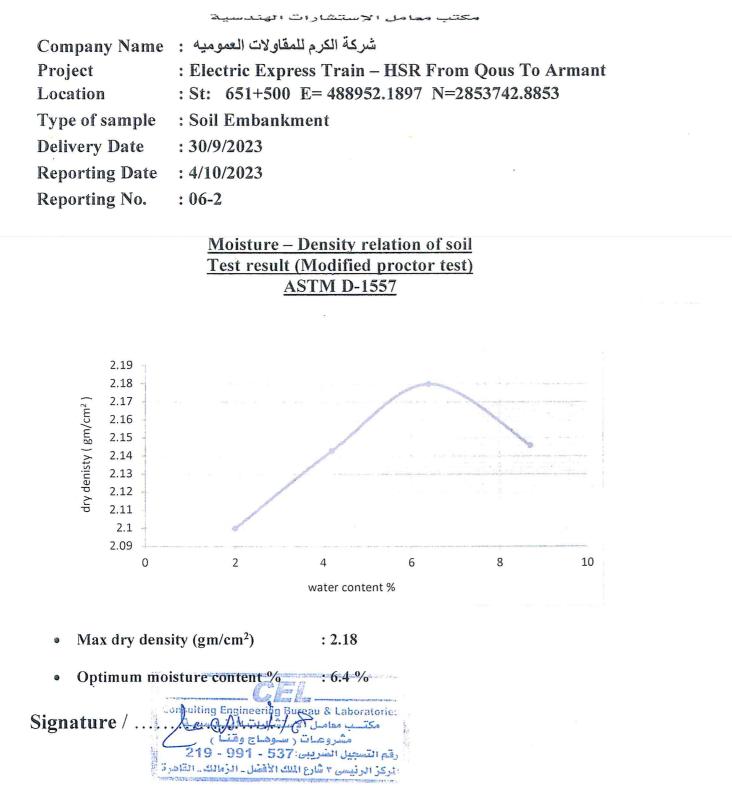
<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

## Soil Classification According To Project Specs :

TEST	Results (%)	Lin F	0	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are (  $\Box$  Comply -  $\Box$  Not Comply ) with specifications limits

Signature / ..... بماصل الاستشارات المناسبة مكتسب معاصل الاستشارات المناسبة مشروعيات (سيوهياج وقنيا)



Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
Delivery Date	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

#### Test Results of California Bearing Ratio on Base Materials -----

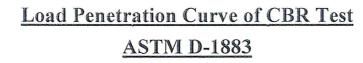
	ASTM	D 1883		
pene	stress o	stress on piston (Mpa)		
mm	Inch			
0.64	0.025		0.43	
1.27	0.050		1.32	
1.91	0.075		2.28	
2.54	0.100		3.17	
3.18	0.125		4.00	
3.81	0.150		4.66	
4.45	0.175		5.12	
5.08	0.200		5.55	
6.35	0.250		6.33	
CBR Result	Sti	ress (Mpa)	CBR %	
At 0.1 inch (2.54 mm) penetration	St. Value 6.90	Sample results 3.17	45.9 %	

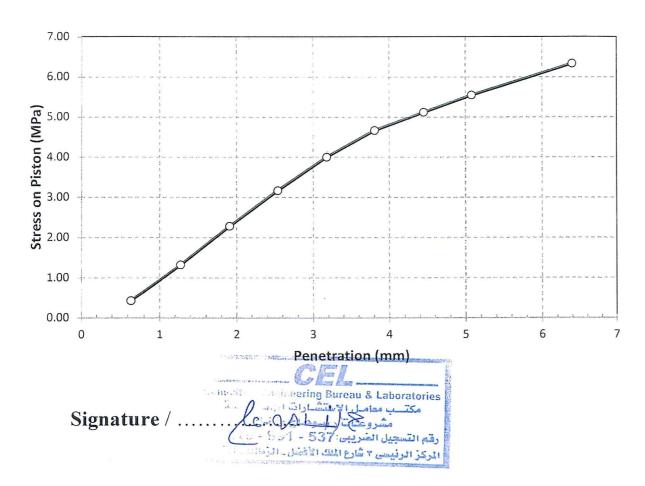
### Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.

- 4- CBR > 10 for middle and lower embankments according project spec page No 36.
   Signature / ...../according project spec page No 36.

Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2







Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+800 To 651+820
Level	: - 4 M
Report No.	: 146 Compaction toot by using Sand Compaction Tool Mark

<u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+810	1583	2.24	6	2.11	97.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature / Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهد مشروعات ( سوهاج وقنا ) رقم التسجيل المنريبي: 537 - 991 - 219 المركز الرنيسي ٣ شارع الملك الأقضل - الزمالك - القاهرة

3 El Malek El Afdal Stree Zamalek, Cairo Tel& Fax: 2736723 - 27363093



۲ ش الملك الاعصل الزمالك - الناهرة تليمون ( هاكس : ۲۷۳۵، ۲۷۳۱ - ۲۷۳۵۲

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Company Name: شركة الكرم للمقاولات العموميهProject: Electric Express Train – HSR From Qous To ArmantLocation: St: 651+500 E= 488952.1897 N=2853742.8853Type of sample: Soil EmbankmentDelivery Date: 30/9/2023Reporting Date: 4/10/2023Reporting No.: 06-2

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

## Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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۲ ش الملك الأفضل الزمالله القاهرة تليمون مماكس : ۲۷۳٦۷۰۲۱ - ۲۷۳۹۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية		
Company Name	شركة الكرم للمقاولات العموميه:	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St: 651+500 E= 488952.1897 N=2853742.8853	
Type of sample	: Soil Embankment	
Delivery Date	: 30/9/2023	
<b>Reporting Date</b>	: 4/10/2023	
<b>Reporting No.</b>	: 06-2	

# RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

Consulting Engineering Rureau & Laboratories مين معاصل الاسترابات المان مسيرة مشروعيات ( مسوهيات والتسالم . م Signature /.. -ito دقم التسجيل المريبي: 537 - 991 - 219 ل كز الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

3 El Malek El Afdal Street Zamalek, Cairo Tel& Fax: 27367231 - 27363093



۲ ش المالك الأفندل الترمالك - القاهرة قليفرن : فاكدى : ۲۷۳٬۲۷۱۲ - ۲۷۳٬۵۲۰۹۲

-	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

# <u>Materials finer than 75 µm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	9.9

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3 El Malek El Afdal Stree! Zamalek, Cairo 19:8 Fax: 27367231 - 27363093

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۲۰ش الملك الأفصل الرمانك - القاهرة تليمون ، طاكس : ۲۷۳٦۷۰۲۱

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C	onsulting Engineering Bureau & Laboratories
	محتب معامل الاستشارات الهندسية
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Company Compa	شركة الكرم للمقاولات العموميه : any Name
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

# Results of liquid limit and plasticity index of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

CEL. Consulting Engineering Bureau & Laboratorie: مكتسب معامليك ستشارات المندسية مشروعات سلماج إقلام دم التسجيل المدريس: 537 - 991 - 219 Signature /... الرئيسى ٢ شارع الملك الأفضل - الرمالك - القاهرة

3 El Malek El Afdal Street Zamalek, Cairo Tel& Fax: 27367231 - 27363093



۲ ش الملك الأفضل الرّصالك القاهرة تليفون • فاكس : ۲۷۳۹٬۷۳۱۱ - ۲۷۳۹٬۳۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المندسية			
Company Name	شركة الكرم للمقاولات العموميه:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
Delivery Date	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 06-2		

# Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs			
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)	
2.00 mm (No.10).	44.1	Max 50 %			
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %		
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %	
Characteristics of fraction passing 0.425 mm (No.40)					
Liquid Limit					
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %	

The test results are ( 
Comply - 
Not Comply ) with specifications limits



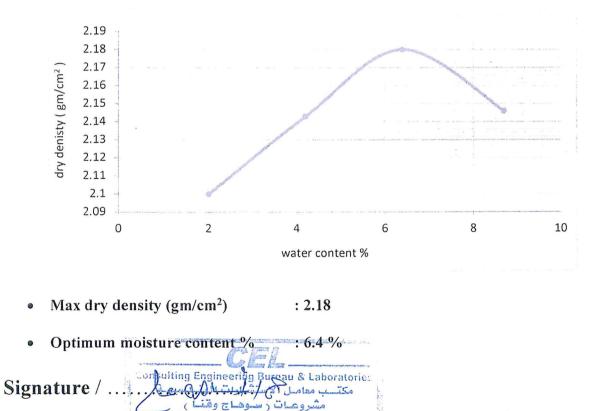
3 Et Malek Et Afdol Street Zamalek, Cairo Te& Fax: 27367231 - 27363093



۲ ش الطلك الأفضل الزمالك القاهرة تلهيون ( فاكس : ۲۲۰٬۰۲۱ ۲۰۲ ۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية			
Company Name	شركة الكرم للمقاولات العموميه:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
Delivery Date	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 06-2		

## <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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رقم التسجيل الضريبي:537 - 991 - 219 الدكر الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

> ۲ ش الملك الأعمىل الزمالك القاهرة فليفون • فاكس • ۲۷۳٦٬۷۲۲ - ۲۷۳٦۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المهندسية				
Company Name	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

## Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

NO. OF DESCRIPTION OF THE OWNER			an a sur	
penetration		stress	on piston (Mpa)	
mm	Inch		on piston (mpa)	
0.64	0.025	5	0.43	
1.27	0.050	)	1.32	
1.91	0.075	5	2.28	
2.54	0.100	)	3.17	
3.18	0.125	5	4.00	
3.81	0.150	)	4.66	
4.45	0.175	5	5.12	
5.08	0.200	)	5.55	
6.35	0.250		6.33	
CBR Result	St	tress (Mpa)	CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results		

CBR Result	Stress (Mpa)		
At 0.1 inch (2.54 mm)	St. Value	Sample results	
penetration	6.90	3.17	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of = 2.18 (gm /cm<sup>3</sup>) At = 6.4 % optimum waterscentent aboratories

3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36. Signature / ..... Signature / ..... عمر التعليم المحالية المحال

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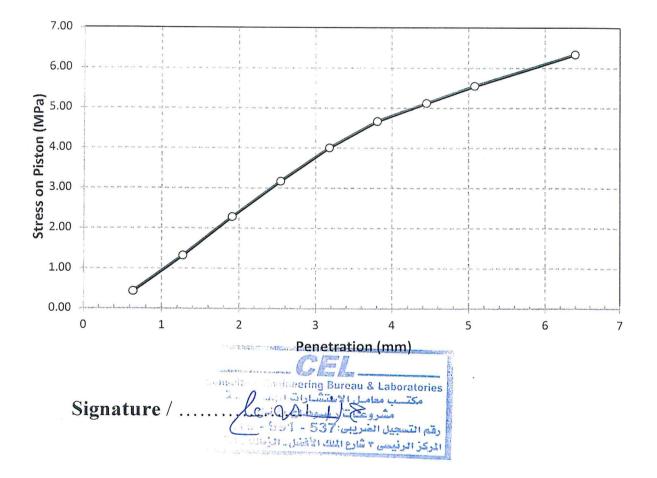


٢ ش الملك الأفضل الزمالك القاهرة ىلېمېر د ماكنې د ۲۱ د ۲۷۳۱ ، ۲۰ ۲۷۳۱۱

45.9 %

CEL			
	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية		
<b>Company Name</b>	شركة الكرم للمقاولات العموميه:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 06-2		

# Load Penetration Curve of CBR Test <u>ASTM D-1883</u>



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۲۵ الملك الأفضل الزمالك التالمرة نليفون • فاكس : ۲۷۳۲۷۲۲۱ ۲۷۳۲۰۹۶



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم : ٦٩
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+780 To 651+800
Level	: - 3.5 M
Report No.	: 145
	Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+790	1857	2.26	6.4	2.12	97.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature Sureau & Laboratories hoineering ب معامل الاستش مكت ارات الهذ 101 مشروعات ( سوهاج وقنا ) جيل الضريبي:537 - 991 - 219 رقم الت المركز الرفيسي ٢ شارع الملك الأفصل - الرفالك - القاط

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485

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name: شركة الكرم للمقاولات العموميهProject: Electric Express Train – HSR From Qous To ArmantLocation: St: 651+500 E= 488952.1897 N=2853742.8853Type of sample: Soil EmbankmentDelivery Date: 30/9/2023Reporting Date: 4/10/2023Reporting No.: 06-2

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

## Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

onsulting Engli Bureau & Laboratories Signature /... مي معامل الاي مشروعات ( سوهاج وقنا ) رقم التسجيل المريبي: 537 - 991 - 219 الدكر الرئيسي ٢ شارع اللك الأفضل - الزمالك - القاهرة

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Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية			
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
<b>Reporting No.</b>	: 06-2		

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

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۲ ش الملك الأفضل الزمالك القاهرة تليفون دفاكس د ۲۷۳۹٬۷۱۲۱

Consulting Engineering Bureau & Laboratories ويكتب معامل الإستشارات المناسبة				
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
<b>Reporting No.</b>	: 06-2			

# <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	9.9

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6	onsulting Engineering Bureau & Laboratories			
	مكتب معامل الاستشارات الهتدسية			
Company Compa	شركة الكرم للمقاولات العموميه : any Name			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
<b>Reporting</b> No.	: 06-2			

# <u>Results of liquid limit and plasticity index</u> <u>of soils according to ASTM D-4318</u>

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
Delivery Date	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

# Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a) (A-1-b)		(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 % Max 15 %		Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits



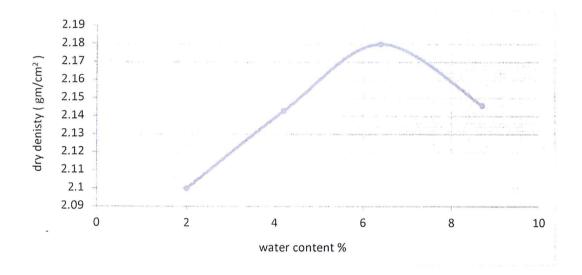
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<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

## <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



• Max dry density (gm/cm<sup>2</sup>) : 2.18

• Optimum moisture content % : 6:4 % on ulting Engineering Bureau & Laboratorie: مكتب معامل اي أشاريلتبال في منع .... / Signature / .... / Signature / .... / مشروعات ( سوهاج وقنا ) مشروعات ( سوهاج وقنا ) درقم التسجيل الضريبي: 537 - 1991 - 219

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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

## Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

the contract of the second	Citzant and and a	1000			
penetration			s on piston (Mpa`		
mm	Inch		is on piston (wipa)		
0.64	0.02:	5	0.43		
1.27	0.050	C	1.32		
1.91	0.07	5	2.28		
2.54	0.100	0	3.17		
3.18	0.12	5	4.00		
3.81	0.150 4.66		4.66		
4.45	0.175	5	5.12		
5.08	0.200	)	5.55		
6.35	0.250		6.33		
CBR Result	S	tress (Mpa)	CBR %		
At 0.1 inch (2.54 mm)	St. Value	Sample results	45.9 %		
penetration	6.90	3.17	43.9 70		

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of = 2.18 (gm /cm<sup>3</sup>) At = 6.4 % optimum watercontent aboratories
 2 Surcharge load 4.50 T/2

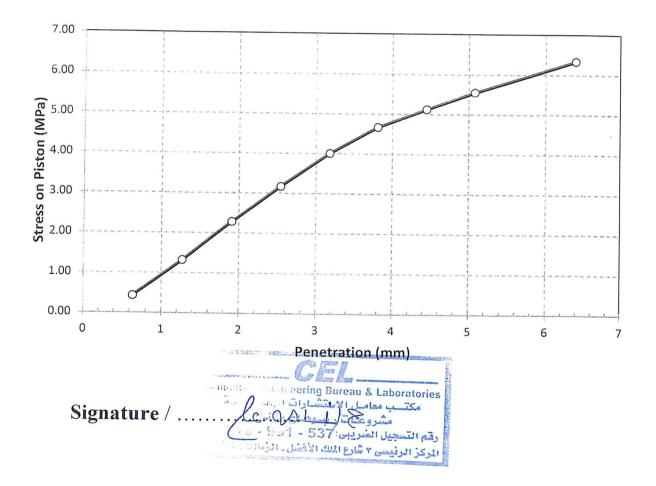
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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

# Load Penetration Curve of CBR Test ASTM D-1883



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
<b>Testing Date</b>	: 19/09/2023
Soil type	: Upper Embankment
Location	: ST from 648+000 to 648+100
Level	: - 1.5 M
Report No.	: 65
Co	ompaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	648+030	1621	2.28	6.4	2.15	98.9%	Comply
2	648+060	1617	2.20	5.4	2.09	96.3%	Comply
3	648+090	1617	2.24	5.6	2.12	97.9%	Comply

• Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

company	شركة الكرم :	
Test Location Station Level Test Date Repot Date	Electric Express Train - Sector (5) - Qous to Arment. Determine the deformation and strength characteristics of soil by the est according specifications DIN 18134:2012-04 and project requiremen Station 648+040 to 648+100 : -1.5 : 19/09/2023 : 21/09/2023 : 0riginal earth	ts

## Dear Gentleman,

Com

According to the above mentioned subject the test performed as follows:-Apparatus

- 1. Loading plates consists of two plates with 300 mm and 300 mm diameter 2. The thickness of plates 30 mm
- Dial gauges with accuracy 0.01 mm to measuring the settlement
- 4. Steel straightedges with magnetic supports to fixed the dial gauges
- 5. Hydraulic jack with pump to transfer reactive loads to the loading plates 6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
- 7. Reaction loading system by roller compactor with weight approximately 15 ton. 8. Calibration certificates are attached.
- Test Procedure:

- 1. Clean the ground on test area to the required level with undisturbed soil
- 2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges Prior to starting the test applied preloading about 30 seconds.
- The strain gauge and the dial gauge shall be set to zero
- 5. For a 300 mm loading plate, the limit values are 5.0 kg/cm  $\,^2$
- 6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal
- 7. Each change in load (from stage to stage) shall be completed within one minute
- 8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.

- 9. Following unloading, a further (2 <sup>nd</sup>) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached). 10. At each stage the load shall be maintained until the rate of settlement of the plate becomes
- 11. Remove the loads

Consulting Eng aboratoric



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
<b>Testing Date</b>	: 19/09/2023
Soil type	: Middle Embankment
Location Level	: ST from 648+000 to 648+100 : - 1.5 M
Report No.	: 57 Compaction test by using Sand – Cone Test Method

<u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test#	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	648+020	1677	2.22	5.8	2.10	96.7%	Comply
2	648+040	1474	2.21	6.4	2.08	95.7%	Comply
3	648+060	1570	2.22	6	2.10	96.7%	Comply
4	648+080	1501	2.19	5.5	2.08	95.8%	Comply

• Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 % Consulting Engineering Sureau & L Signature 1. 219 - 991 -

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C	onsulting Engineering Bureau & Laboratories	
	مكتب معامل الاستشارات الهندسية	
		19
Company Name	شركة الكرم:	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: 648+100 E= 32°54'49.4" N=25°49'23.1"	
Type of sample	: Soil Embankment	

Delivery Date : 20/8/2023

Reporting Date : 24/8/2023

Reporting No. : 07-1

## Dear Gentleman,

Attached here with the delivered on 21 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

## Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature /. 215 40

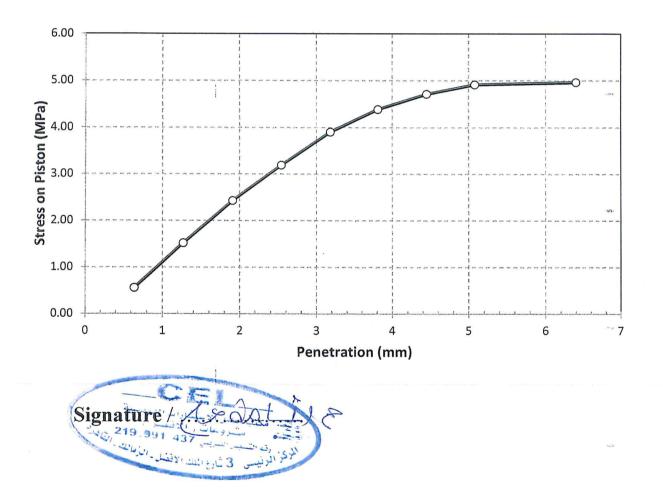
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<b>Company Name</b>	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	.: 20/8/2023	• <u>?</u> •
<b>Reporting Date</b>	: 24/8/2023	
<b>Reporting No.</b>	: 07-1	
	Load Penetration Curve of CBR Test	

ASTM D-1883



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 27/09/2023
Soil type	: Upper Embankment
Location	: ST from 647+840 To 648+000
Level	: - 1 M
Report No.	: 108
	Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	647+880	1703	2.23	5.3	2.12	97.6%	Comply
2	647+910	1634	2.20	5.5	2.08	95.9%	Comply
3	647+940	1608	2.21	5.5	2.10	96.6%	Comply
4	647+980	1604	2.22	5.4	2.10	96.9%	Comply
5	647+980	1322	2.28	6.4	2.14	98.7%	Comply
6	647+980	1360	2.25	6	2.12	97.7%	Comply
7	647+980	1541	2.26	5.5	2.14	98.6%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.17 gm/cm<sup>3</sup> .

At optimum moisture content = 6.4 % . WIP Signature 14 Consulting Engineering Bureau & Laboratories ات ( سوهاج وقنا ) يبى 337 - 1991 - 219 روعات ر س 3E رقم الت جيل اله المركز الرنيسي ٣ شارع الملك الأفضل - الدمالك المقاهرة



۲ ش الملك الأعضل الرمالك القاهرة ىلېلىرى ، ھاكس : ۲۷۳٦، ۲۷۳٦۲ - ۲۷۳۲۲

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Consulting Engineering Bureau & Laboratorios مكتب معامل الإستشارات الهندسية

<b>Company Name</b>	شركة الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 04/09/2023
<b>Reporting Date</b>	: 09/09/2023
Reporting No.	: 08-2

Dear Gentleman,

2

Attached here with the delivered on 04 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

## Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

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n F. Marek E. Afrilai Streen Container Garen Se& Fazz (2017) - 2018-2011



זען לעליי <sup>איז</sup>ייין. לקופר - לעליר בעיין - בייין - בייין - בייין אורי - בייין

Consulting Engineering Bureau & Laboratories مكتب محامل الإستشارات الهندسية			
Company Name	شركة الكرم:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 04/09/2023		
<b>Reporting Date</b>	: 09/09/2023		
<b>Reporting</b> No.	: 08-2		

### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.9
37.5	1.5	92.2
25	1	83.1
19	3/4	71.0
12.50	1/2	62.7
9.50	3/8	54.5
4.75	4	43.9
2.00	10	36.2
0.425	40	17.1

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3 F. Maiek E. Attal Shee Durnalex, Cano Practical 2746227 (2013) 27363(3)3



\* شي الملك الأخت. الرحاط - العشر:

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية			
<b>Company</b> Name	شركة الكرم:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 04/09/2023 -		
<b>Reporting Date</b>	: 09/09/2023		
<b>Reporting</b> No.	: 08-2		

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	2.1

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۳ ش الطلام الأفضل. الرمالك - الماضرة المميز - فالقان - ۱۳۹۳، ۲۰۰ ۲۰۰۲ \*

Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات الهندسية			
Company Name	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 04/09/2023		
<b>Reporting Date</b>	: 09/09/2023		
<b>Reporting</b> No.	: 08-2		

## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Consulting Engineering Enginee الركز الرئيسي ٢ شارع الملك الأفضل - الزمالك - القاهرة

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Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات الهندسية			
Company Name	شركة الكرم:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 04/09/2023		
<b>Reporting Date</b>	: 09/09/2023		
<b>Reporting</b> No.	: 08-2		

#### Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	36.2	Max 50 %		
0.425 mm (No. 40).	17.1	Max 30 %	Max 50 %	
0.075 mm (No. 200).	2.1	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit	-			
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits



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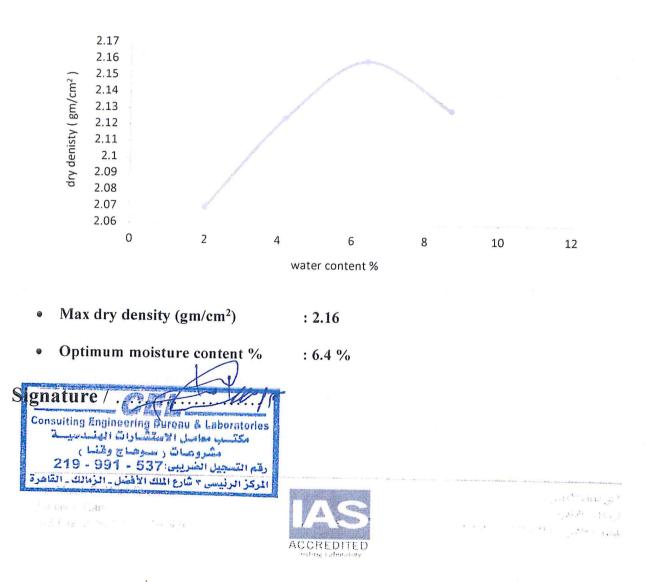
۲ ش الملك الأشصل الرمالة - التأثيرة تلتسور - ماكس - ۲۷۳۹، ۲۷۳۱ - ۲۱ ۲۷۳۹

Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات الهندسية			
Company Name	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ $E= 32^{\circ}54'53.6''$ $N=25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 04/09/2023		
<b>Reporting Date</b>	: 09/09/2023		
<b>Reporting</b> No.	: 08-2		

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<u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 04/09/2023
<b>Reporting Date</b>	: 09/09/2023
Reporting No.	: 08-2

#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	suces on piston (wipa)
0.64	0.025	0.61
- 1.27	0.050	1.82
1.91	0.075	3.04
2.54	0.100	4.15
3.18	0.125	5.12
3.81	0.150	5.82
4.45	0.175	6.33
5.08	0.200	6.63
6.35	0.250	6.74

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	
penetration	6.90	4.15	60.2 %

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of =  $2.17 (\text{gm}/\text{cm}^3)$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

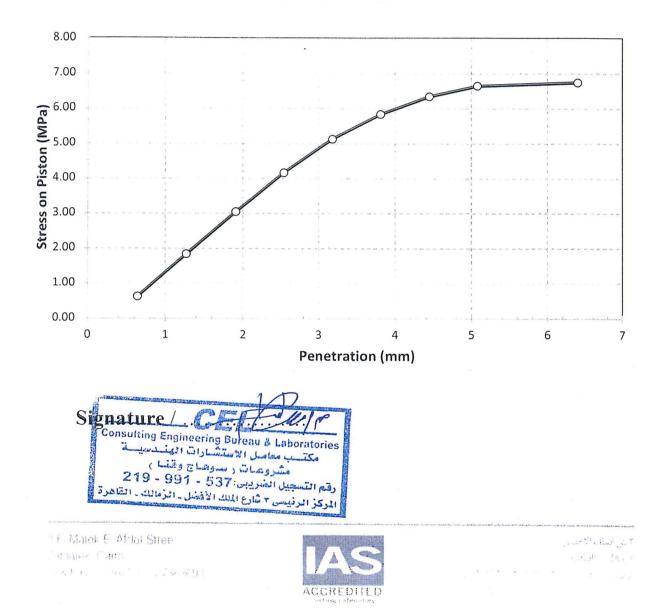




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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية		
Company Name	شىركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 04/09/2023	
<b>Reporting Date</b>	: 09/09/2023	
Reporting No.	: 08-2	
	Load Penetration Curve of CBR Test	

ASTM D-1883





Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 26/09/2023
Soil type	: Upper Embankment
Location	: ST from 647+720 TO647+820
Level	: - 0.75 M
Report No.	: 105
	Compaction test by using Sand – Cone Test Method

<u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	647+740	1355	2.24	6	2.12	97.6%	Comply
2	647+800	1437	2.30	6.4	2.16	99.4%	Comply

• Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

• At optimum moisture content = 6.4 %

Consultin Engineer Signature, در عدم Signature LaBo 219-961 وتم المسجيل الضويس م محمد الرمالك - 11 م المركز الرئيس اشارع المدر and the second second

3 E. Malek E. Afdal Street Zamalek, Garo 148 Fax, 2746725 - 27363093

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ه تهتر مسبية	مل الإستشارات	مكتبب معط

<b>Company Name</b>	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	:-04/09/2023
<b>Reporting Date</b>	: 09/09/2023
<b>Reporting No.</b>	: 08-2

#### Dear Gentleman,

Attached here with the delivered on 04 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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£.,	onsulting Engineering Bureau & Laboratories مکتب معامل الإستشارات الهندسية			
Company Name	شركة الكرم:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 04/09/2023			
<b>Reporting Date</b>	: 09/09/2023			
<b>Reporting</b> No.	: 08-2			

### RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.9
37.5	1.5	92.2
25	1	83.1
19	3/4	71.0
12.50	1/2	62.7
9.50	3/8	54.5
4.75	4	43.9
2.00	10	36.2
0.425	40	17.1

Consulting Engineering Bureau & Daboratories Signature مسلس المسلسل الم درقم التسجيل الضريبي: 219 - 991 - 537 المركز الرابيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

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Consulting Engineering Bureau & Laboratories مكتب محامل الإستشارات المهندسية		
Company Name	شركة الكرم:	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
Delivery Date	: 04/09/2023	
<b>Reporting Date</b>	: 09/09/2023	
<b>Reporting</b> No.	: 08-2	

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	2.1

Consulting Engineering Burgal & Laboratories Signature المستقدار Signature مشروعات (سوصاح (قنا) 219 - 991 - 537: رقم التسجيل المريبي:537 - 991 - 115همر المركز الرئيسي ٢ شارع الثلث الأفضل - الزيالك - القاهرة

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\* في الملك الافتسر. الرمانك القاهرة بليمبو - فاشق - ۲۰۰۱ (۲۰۰۲ - ۲۰۰۱ یک ۲۰

Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات المهندسية		
Company Name	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
Delivery Date	: 04/09/2023	
<b>Reporting Date</b>	: 09/09/2023	
<b>Reporting</b> No.	: 08-2	

# <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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9 E. Matek E. Afriat Stree Zamatek: Сино 198 Fax: 21 юзд. 1 — 2736 ж.90



۲۵ی الملک الأفصلی الرحالات المائمین تلیموں - ۱۹۵۵، ۲۰۰۲ ۲۰۰۰ ۲۰۰۰ ۲۰۰۶

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المندسية					
<b>Company Name</b>	شركة الكرم:				
Project	: Electric Express Train – HSR From Qous To Armant				
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$				
Type of sample	: Soil Embankment				
<b>Delivery Date</b>	: 04/09/2023				
<b>Reporting Date</b>	: 09/09/2023				
<b>Reporting</b> No.	: 08-2				

### Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs				
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)		
2.00 mm (No.10).	36.2	Max 50 %				
0.425 mm (No. 40).	17.1	Max 30 %	Max 50 %			
0.075 mm (No. 200).	2.1	Max 15 %	Max 15 %	Max 15 %		
Characteristics of fraction passing 0.425 mm (No.40)						
Liquid Limit						
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %		

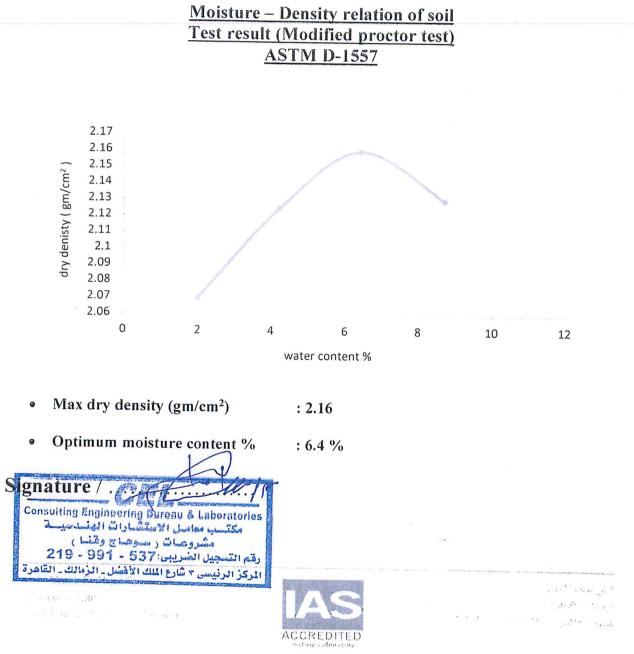
The test results are ( 
Comply - 
Not Comply ) with specifications limits





التي الملك الأعصى الزمانك - المائيرد تابعين - ماكس - ۲۲۳۵٬۳۷۱ - ۲۰۰۵٬۳۷۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المندسية					
Company Name	شركة الكرم :				
Project	: Electric Express Train – HSR From Qous To Armant				
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$				
Type of sample	: Soil Embankment				
<b>Delivery Date</b>	: 04/09/2023				
<b>Reporting Date</b>	: 09/09/2023				
<b>Reporting</b> No.	: 08-2				



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Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهتدسية

شركة الكرم: Company Name

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Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
Delivery Date	: 04/09/2023

Reporting Date : 09/09/2023

Reporting No. : 08-2

#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

	1101101000		
penetration		stress on piston (Mpa)	
mm	Inch	suces on piston (wipa)	
0.64	0.025	0.61	
1.27	0.050	1.82	
1.91	0.075	3.04	
2.54	0.100	4.15	
3.18	0.125	5.12	
3.81	0.150	5.82	
4.45	0.175	6.33	
5.08	0.200	6.63	
6.35	0.250	6.74	

CBR Result	St	CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results	
penetration	6.90	4.15	60.2 %

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =  $2.17 (\text{gm}/\text{cm}^3)$ 

At = 6.4 % optimum water content.

3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.



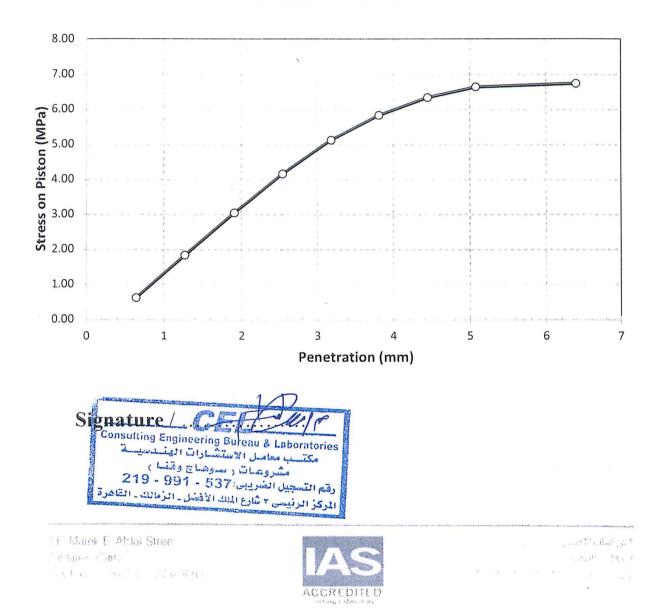


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CEL consulving Engineering Bureau & Laboratories مكتب محامل الإستشارات المندسية				
<b>Company Name</b>	شركة الكرم:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 04/09/2023			
<b>Reporting Date</b>	: 09/09/2023			
<b>Reporting</b> No.	: 08-2			
	Load Penetration Curve of CBR Test			

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ASTM D-1883



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 26/09/2023
Soil type	: Upper Embankment
Location	: ST from 647+620 To 647+720
Level	: - 0.75 M
Report No.	: 107

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	647+650	13 <mark>5</mark> 5	2.24	6	2.12	97.6%	Comply
2	647+690	1437	2.30	6.4	2.16	99.4%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>



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c	onsulting Engineering Burgau & Laboratories	
Company Name Project Location	: Electric Express Train – HSR From Qous To Armant	(gal-
Type of sample	: st: 647+920 E= 32°54′53.6″ N=25°49′23.7″ : Soil Embankment	
Delivery Date Reporting Date	: 22/8/2023 : 26/8/2023	
Reporting No.	• 08	•

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Dear Gentleman,

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Attached here with the delivered on 22 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature /. 1 3

3 El Malek El Afdal Street Zamalek, Cairo. Telå Fax : 27367231 - 27363093



۲ ش الملك الأفضل . الزمالك - القامرة تليمون • فاكس • ۲۷۳٦۷۲۲۱ - ۲۷۳٦۲۰۹۲

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<b>Company Name</b>	شركة الكرم:	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ $E= 32^{\circ}54'53.6''$ $N=25^{\circ}49'23.7''$	613
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	4

### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.3
37.5	1.5	91.6
25	1	80.2
19	3/4	70.8
12.50	1/2	59.8
9.50	3/8	52.2
4.75	4	41.7
2.00	10	34.3
0.425	40	16.3



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۲ ش الملك الأفضل . الزمالك - التامرة تليفون ( فاكس ( ۲۷۳٦/۲۰۱۱ - ۲۷۳٦۲۰۹۲

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c	onsulting Enginee ات الهندسية	ring Bureau & Lai		
<b>Company Name</b>	شركة الكرم:			
Project	: Electric Expres	s Train – HSR Fr	om Qous To Arman	t
Location	: st: 647+920	E= 32°54′53.6″		
Type of sample	: Soil Embankme	ent		
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting No.</b>	: 08			

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	1.5



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6	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسید	
<b>Company Name</b>	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	enji N
<b>Delivery Date</b>	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	

### <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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<b>Company Name</b>	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
Delivery Date	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	

# Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	34.3	Max 50 %		
0.425 mm (No. 40).	16.3	Max 30 %	Max 50 %	
0.075 mm (No. 200).	1.5	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( Comply - Not Comply ) with specifications limits

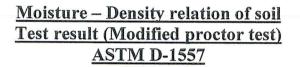
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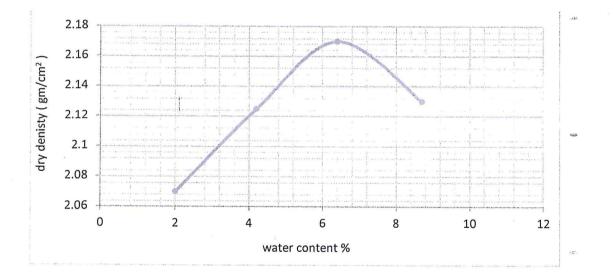
3 El Malek El Afdal Street Zamalek, Cairo. Tei& Fax : 27367231 - 27363093



۲ ش <del>ال</del>الك الأفضلي الزمالك - القامرة تلبفون • فاكس • ۲۷۳٦۷۶۲۱ - ۲۷۳٦۲۰۹۴

c	Consulting Enginee	ring Buroau & Lak		~
Company Name	شركة الكرم :			
Project	: Electric Express	s Train – HSR Fro	om Qous To Armant	
Location	: st: 647+920	E= 32°54′53.6″	N=25°49'23.7"	
Type of sample	: Soil Embankme	nt		1941
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting No.</b>	: 08			





• Max dry density (gm/cm<sup>2</sup>) : 2.17

• Optimum moisture content % : 6.4 %



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۲ ش الماله الأفضل الزمالة - القاهرة تليفرن - فاكس - ۲۷۳٦٬۷۳۲ - ۲۷۳٦۲۰۹۲

6	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسیة
Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 22/8/2023
<b>Reporting Date</b>	: 26/8/2023
<b>Reporting</b> No.	: 08

#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

		D 1005	1
penetration		stres	s on piston (Mpa)
mm	Inch		s on piston (mpa)
0.64	0.025		0.61
1.27	0.050		1.82
1.91	0.075		3.04
2.54	0.100	*	4.15
3.18	0.125 5.12		5.12
3.81	0.150		5.82
4.45	0.175		6.33
5.08	0.200 6.63		6.63
6.35	0.250 6.74	0.250 6.74	
CBR Result	St	ress (Mpa)	CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	<u> </u>

Notes:

τ.,

1- Attached graph shows penetration resistance versus penetration magnitude.

4.15

- 2- The sample was compacted to dry density of =  $2.17 \text{ (gm/cm}^3)$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

6.90

Signature / . 994 53

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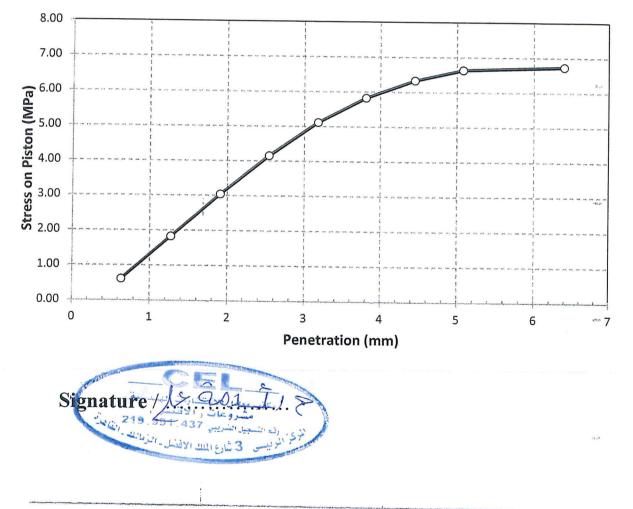
penetration



۲ ش المالته الأفتشل . الزمالك - القاهرة تليفزن + فاكسي : - ۲۷۳٬۱۷۴۴ - ۲۷۳٬۱۳۰۹

60.2 %

c	CEL Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية	
<b>Company Name</b>	شركة الكرم:	( <b>2</b> ~
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 22/8/2023	~45
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	
Load Penetrati	on Curve of CBR Test	
	<u>ASTM D-1883</u>	79.



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۲ في الملك الأفضل . الزمالي الثاهرة تليفون ، فاكدن : ۲۷۳٦۷۲۲۱ - ۲۷۳۲۲۲۲۲ تليفون ، فاكدن : ۲۷۳٦۷۲۲۲۱ r.



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
<b>Testing Date</b>	: 25/09/2023
Soil type	: Upper Embankment
Location	: ST from 647+340 TO 647+400
Level	: - 1 M
Report No.	: 96
C	ompaction test by using Sand Cone Test Method

<u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	647+370	1558	2.26	6.4	2.12	97.9%	Comply
2	647+390	1627	2.23	6.4	2.09	96.4%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 %
 Signature J. Signatu

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۲ ش الملك الأفضل الزمالك - القاهرة تليفون - هلكس : - ۲۷۳٦/۲۲۱ - ۲۶-۲۷۳۱۲ 53 4

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C	onsulting Ensi Aluntian	neering Bu curring C	به معدمهم ما سل ۱ ک	Laboraterios a —Gita	<b>**</b> *
Name	شركة الكرم:				

Project Location	: Electric Express Train – HSR From Qous To Arman : st: 647+920 E= 32°54′53.6″ N=25°49′23.7″	t 🤲
Type of sample	: Soil Embankment	
<b>Delivery</b> Date	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
Reporting No.	: 08	\$

### Dear Gentleman,

Company

Attached here with the delivered on 22 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature / ..... بالم المرابع المرابع

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۲ ش الملك الأفضل . الزمالك - الناصرة تليفرن - فاكس - ۲۷۳٦۷۲۲ - ۲۷۳۴۴

	CEE	( <del>)</del> }
¢	ansulting Engineering Bureau & Laboratorias	
Company Name	شركة الكرم:	
Project	: Electric Express Train - HSR From Qous To Armant	
Location	: st: $647+920$ $E= 32^{\circ}54'53.6''$ $N=25^{\circ}49'23.7''$	<del>с.</del> ,
Type of sample	: Soil Embankment	
Delivery Date	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting</b> No.	: 08	

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422.**

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.3
37.5	1.5	91.6
25	1	80.2
19	3/4	70.8
12.50	1/2	59.8
9.50	3/8	52.2
4.75	4	41.7
2.00	10	34.3
0.425	40	16.3

Signature 1.

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+ش الملك الأفضل . الزمالك - القامرة تليفرز + فلكس + ١٧٣٢٢

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6	ansulting Engineering عثارات الهندسية	Buronu & Lab	Protorios 35-	and a start of the
 Company Name	شركة الكرم :			
Project	: Electric Express Tra	ain – HSR Fro	m Qous To Arm	ant
Location			N=25°49'23.7"	
Type of sample	: Soil Embankment		. к	5445
<b>Delivery</b> Date	: 22/8/2023			· ·
<b>Reporting Date</b>	: 26/8/2023			
Reporting No.	: 08			
ě				

### <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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17:57



۲ ش الملك الأفضل . الزمالك القامرة تليفرن ، فاكس ، ۲۲۳۲۷۲۲۱ - ۲۰۳۲۲۲۲

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e	ionsulting Engines Agustight Ci	aring Burgeu & La. ب معامل الاستشار	bornterie		The second second second
Company Name	شركة الكرم:				
Project	: Electric Expres	s Train – HSR Fr	om Qous	5 To Ari	nant
Location		E= 32°54'53.6"			
Type of sample	: Soil Embankme	ent		- h <sup>-</sup>	164
Delivery Date	: 22/8/2023	<i>F</i>			
<b>Reporting Date</b>	: 26/8/2023				
Reporting No.	: 08	* 2			

C= = 1

# Soil Classification According To Project Specs :

TEST	Results (%)	La deservation of the	nits accordi Projects Specs	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	34.3	Max 50 %		
0.425 mm (No. 40).	16.3	Max 30 %	Max 50 %	
0.075 mm (No. 200).	1.5	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)	1	
Liquid Limit		<u> </u>		
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits

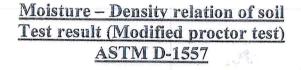
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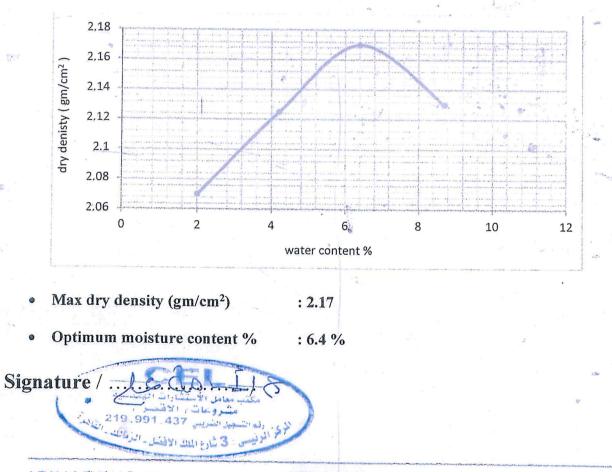
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۲۰ فی الدالافضل الزمالله - التاکرة علیفون دفاکس د ۲۷۳۱۷۲۲۱ -۲۷۳۱۲۰۹۲ ۲۷۳۱۲ - ۲۷۳۱۷۲۲۱ Consulting Engineering Bureau & Laboratories کیتب معامل الاستشارات الهندسید

<b>Company Name</b>	شركة الكرم:	-		
Project	: Electric Expres	s Train – HSR Fr	om Qous To A	rmant
Location	: st: 647+920	E= 32°54'53.6"	N=25°49'23.7	
Type of sample	: Soil Embankme	ent	6	
<b>Delivery Date</b>	: 22/8/2023	<i>R</i>		
<b>Reporting</b> Date	: 26/8/2023			
<b>Reporting</b> No.	: 08			
1				





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۲ش الملك الأفشل . الزمالله - القادرة تليفون ا فاكس - ۲۳۳۱۷۲۳۱ - ۲۹۳۹۲



Consulting Engineering Burbau & Laboratories

Company Name	شركة الكرم :			
Project	: Electric Expres	s Train – HSR Fr	om Qous To Arm	iant
Location	: st: 647+920	E= 32°54'53.6"	N=25°49'23.7"	the second second
Type of sample	: Soil Embankme	ent	· · · · · · · · · · · · · · · · · · ·	
<b>Delivery</b> Date	: 22/8/2023	- F.		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting No.</b>	: 08	199 1		

# Test Results of California Bearing Ratio on Base Materials

	<u>ASTWI D 1885</u>	
	penetration	stress on piston (Mpa)
mm	Inch	suces on piston (mpa)
0.64	0.025	0.61
1.27	0.050	1.82
1.91	0.075	3.04
2.54	0.100	4.15
3.18	0.125	5.12
3.81	0.150	5.82
4.45	0.175	6.33
5.08	0.200	6.63
6.35	0.250	6.74

CBR Result	St	CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results	(0.0.0)
penetration	6.90	4.15	60.2 %

Notes:

Signature / .

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =  $2.17 (\text{gm}/\text{cm}^3)$ 

At = 6.4 % optimum water content.

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3- Surcharge load 4.50 Kg

219 991

4- CBR > 10 for middle and lower embankments according project spec page No 36.

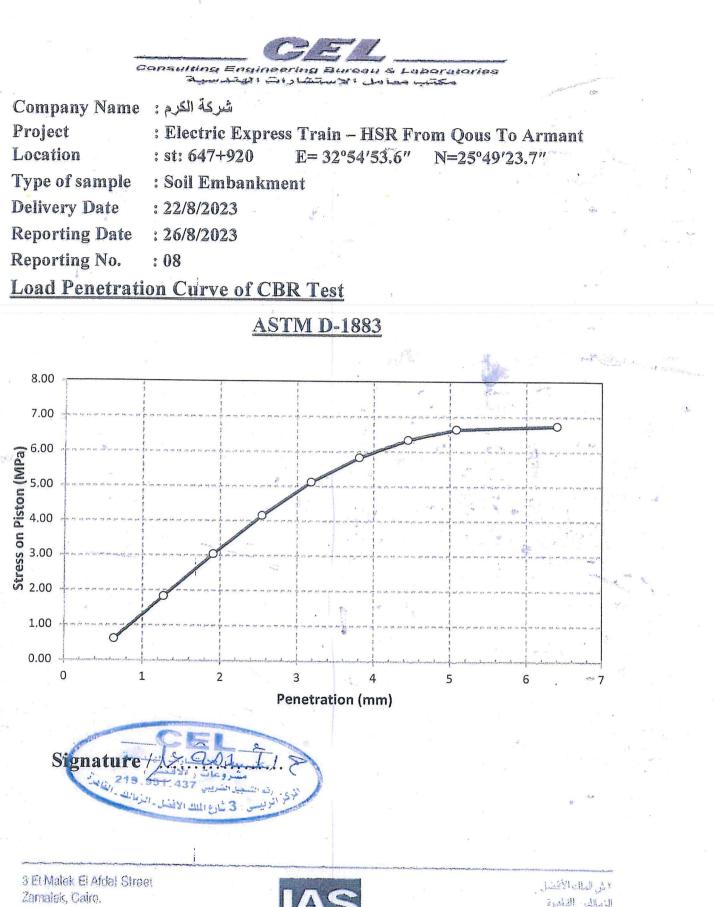
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۲ش الماك الأفنشل . الزمالك القاهرة تلبذون وقائمي : ۲۷۳۱/۲۰۱۰ - ۲۷۳۲۲ ۲۰۶۲ . ۲۷۳۲۲ - ۲۷۳۲ ۲۰۲۱ - ۲۷۳۲۲ . ۲۷۳۲۲ - ۲۷۳۲ ۲۰۲۱ - ۲۷۳۲۲ - ۲۷۳۲۲ - ۲۷۳۲۲ - ۲۷۳۲۲



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ACCREDITED

الزمالك، القامرة تليفين، فاكس : TYPT-TYPT-TP+ TYPT



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 24/09/2023
Soil type	: Uppar Embankment
Location	: ST from 647+840To 648+100
Level	: - 1.25 M
Report No.	: 93 omnaction test by using Sand – Cone Test Method

# <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	647+880	1798	2.21	5.8	2.09	96.8%	Comply
2	647+900	1854	2.19	5.5	2.07	96.0%	Comply
3	647+940	1945	2.20	6.4	2.07	95.8%	Comply
4	647+980	2014	2.23	6	2.11	97.6%	Comply
5	648+000	1949	2.21	6.4	2.07	96.0%	Comply
6	648+040	1433	2.25	5.6	2.13	98.4%	Comply
7	648+080	1570	2.23	5.8	2.11	97.5%	Comply

• Degree of compaction based on proctor test dated At

- Max. dry density = 2.16 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %



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۲ ش الملك الأعضل الزمالك – الذاهرة فليفين + فاكس + ۲۷۳٦٬۲۲۱

	onsulting Engineering Buroau & Laboratories	
Company Name Project Location Type of sample Delivery Date	: شىركة الكرم Electric Express Train – HSR From Qous To Armant st: 647+920 E= 32°54′53.6″ N=25°49′23.7″ Soil Embankment : 22/8/2023	j¢.
Reporting Date Reporting No.	: 26/8/2023 : 08	•

Dear Gentleman,

Attached here with the delivered on 22 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

Signature /..

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

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۲ ش المالك الأفضل . الإسلك - التامرة تليمون • فاكس = ۲۷٬۲۷۲۱ - ۲۰٬۲۳۲

-	onsulting Engineering Bureau & Laboratories	A.
Company Name		
Project	: Electric Express Train – HSR From Qous To Armant	ł
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	4t)
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	-

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.3
37.5	1.5	91.6
25	1	80.2
19	3/4	70.8
12.50	1/2	59.8
9.50	3/8	52.2
4.75	4	41.7
2.00	10	34.3
0.425	40	16.3

Signature %.

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۲ ش الملك الأفضل . الزمالك - التامرة تليفون « فلكري - ۲۷۳٦۷۲۲۱

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Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية				
<b>Company Name</b>	شركة الكرم :			
Project	: Electric Express 7	Гrain – HSR Fro	om Qous To Armant	
Location	: st: 647+920 E	E= 32°54′53.6″	N=25°49'23.7"	-12
Type of sample	: Soil Embankment	t		
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting No.</b>	: 08			

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	1.5



1 <sup>1</sup>

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+ ثى الملك الأفضلي. الرّمالك - القاهرة تليفون + فاكبن : - ٢٧٣٦٧٢٢١ - ٢٧٣٦٢

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية				199
<b>Company Name</b>	شركة الكرم :			
Project	: Electric Express 7	<b>Frain – HSR Fro</b>	m Qous To Armant	
Location		E= 32°54′53.6″		
Type of sample	: Soil Embankment	t		-Key
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting</b> No.	: 08			

## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)	
Liquid Limit	0	
Plastic Limit	0	
Plasticity Index	0	



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۲۰ ش الملك الأفضلي. الزمالك - القامرة تليفون (فاكس : ۲۷۳٦۲۰۲۱ - ۲۷۳٦۲۲۰۶۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية			
<b>Company Name</b>	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 22/8/2023		
<b>Reporting Date</b>	: 26/8/2023		
<b>Reporting No.</b>	: 08		

## Soil Classification According To Project Specs :

TEST	Results (%)		nits accord Projects Spec	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	34.3	Max 50 %		
0.425 mm (No. 40).	16.3	Max 30 %	Max 50 %	
0.075 mm (No. 200).	1.5	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( G Comply - D Not Comply ) with specifications limits

Signature 3 شارع الملك الا

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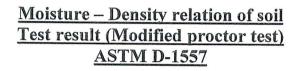
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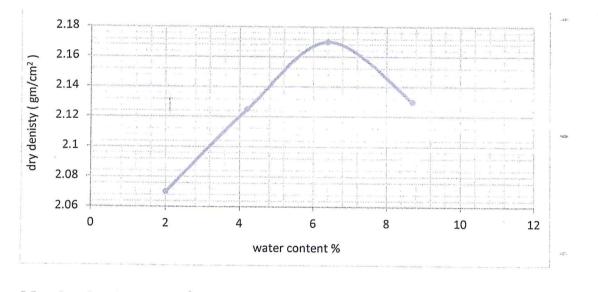
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۲۰ش #ماله الأفضل. الزمالك - القامرة تليفون «فاكس» - ۲۷۳۲۷۴۱

Consulting Engineering Buroau & Laboratories			
Company Name	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ $E= 32^{\circ}54'53.6''$ $N=25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment	78.	
<b>Delivery Date</b>	: 22/8/2023		
<b>Reporting Date</b>	: 26/8/2023		
<b>Reporting No.</b>	: 08		





• Max dry density (gm/cm<sup>2</sup>) : 2.17

• Optimum moisture content % : 6.4 %



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2 1 - 1 2 - 10 2 - 10



٢ ش الملك الأقضل الزمالي - القاهرة تليفون • فاكس : ٢٧٣٦٢٣٣٢ - ٢٧٣٦٢٣٢

C	onsulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية
<b>Company Name</b>	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 22/8/2023
<b>Reporting Date</b>	: 26/8/2023
Reporting No.	: 08

### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

		1/ <sup>2</sup>
penetration		stress on piston (Mpa)
mm	Inch	succes on piston (mpa)
0.64	0.025	0.61
1.27	0.050	1.82
1.91	0.075	3.04
2.54	0.100	4.15
3.18	0.125	5.12
3.81	0.150	5.82
4.45	0.175	6.33 ~
5.08	0.200	6.63
6.35	0.250	6.74

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	
penetration	6.90	4.15	60.2 %

Notes:

Zamalek, Cairo.

Tel& Fax: 27367231 - 27363093

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of =  $2.17 (\text{gm}/\text{cm}^3)$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / 🏅 God to 5 - S (2) 219 991 017 ----3 El Malek El Afdal Street 3 تان المن المناح 5

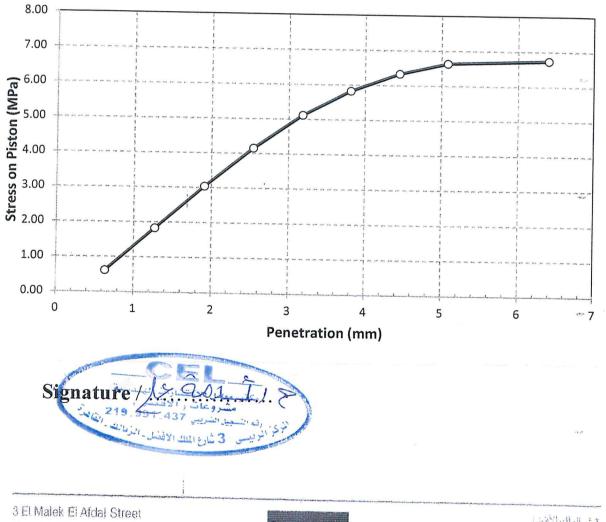
ACCREDITED Testing Laboratory

۲ش الملك الأفضل الزمالك القاهرة تليفزن + فاكس : ۲۷۳٦۷۶۲۰

c.	Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المندسية	
<b>Company Name</b>	شركة الكرم :	(P•
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 22/8/2023	5 L.S.
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	
<u>Load Penetrati</u>	on Curve of CBR Test	

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۲ ش العالما الأقضل . التومالك القاهرة تليفون مظلمين ۱۳۲۰ ۲۷۳۰ ۲۷۳۰



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم : e
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 28/09/2023
Soil type	: Upper Embankment
Location	: ST from 650+700 to 650+800
Level	: - 1.25 M
Report No.	: 113
	Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	650+720	1738	2.20	6.4	2.07	95.2%	Comply
2	650+740	1794	2.21	5.8	2.09	96.2%	Comply
3	650+760	1559	2.22	6	2.09	96.5%	Comply
4	650+780	1561	2.19	5.6	2.07	95.4%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

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۲ ش الملك الأعصل الزمالك - الطفرة الليفير - فلكس - ۲۷۳۱، ۲۲۳۱، ۲۷۳۱

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المتدسية				
Company Name	: شركة الكرم للمقاولات العموميه			
Project	Electric Express Train – HSR From Qous To Armant			
Location	St: 650+800 E= 48947.1891 N=2854194.3005			
Type of sample	Soil Embankment			
Delivery Date	: 06/08/2023			
Reporting Date	: 10/08/2023			
Reporting No.	: 04			

Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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٢ ش الملك الأفدنيل الزمالك القاهرة ىلىدون - «اكس - Types - x - x - x - x - x - x

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Surpau & Laboratories
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

Project Location Type of sample	: Electric Express Train – HSR From Qous 10 minute : St: 650+800 E= 48947.1891 N=2854194.3005 : Soil Embankment
<b>Delivery</b> Date	: 06/08/2023
Reporting Date	: 10/08/2023
Reporting No.	: 04

# RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.5
37.5	1.5	90.8
25	1	78.3
	3/4	72.4
12.50	1/2	58.2
9.50	3/8	51.3
4.75	4	49.3
2.00	10	44.2
0.425	40	21.5

Signature / · w2/4 الملك الأفضا 13 Sundi

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۲ ش الملك الأفضل الزمالك - القاهرة عليتون : قاكس - ۲۷۳۹ (۲۲۱ - ۲۰، ۲۷۳۹۲)

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المهندسية			
Company Name Project Location	: شركة الكرم للمقاولات العموميه Electric Express Train – HSR From Qous To Armant : St: 650+800 E= 48947.1891 N=2854194.3005		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
<b>Reporting No.</b>	: 04		

## <u>Materials finer than 75 µm (no.200) sieve</u> By washing ASTM D-1140.

Test	Results (%)	
Percentage of material finer than Sieve Size 75 μΜ (No.200)	6.8	

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۲ س الطلق الأفندس الزمالة - القاهرة تليفون + فاكس : ۲۷۳۵،۲۷۳۱ - ۲۷۲۱۴

C	مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

Consulting Engineering Bureau & Laboratories

### <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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۲ ش الملك الاقدس الزمالك الدائمرة تليمون ( فاكس : ۲۷۳۹٬۰۹۴ - ۲۷۳۹٬۰۹۴

GEL				
0	onsulting Engineering Bureau & Laboratories مكتب محامل الاستشارات الهندسية			
Commonwy Norma	شركة الكرم للمقاولات العموميه :			
Company Name				
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 650+800 E= 48947.1891 N=2854194.3005			
Type of sample	: Soil Embankment			
<b>Delivery</b> Date	: 06/08/2023			
<b>Reporting Date</b>	: 10/08/2023			
<b>Reporting No.</b>	: 04			

## Soil Classification According To Project Specs :

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1

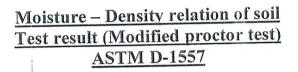
TEST	Results (%)	Limits according Projects Specs		
<ul> <li>Group Classification</li> </ul>	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.2	Max 50 %		
0.425 mm (No. 40).	21.5	Max 30 %	Max 50 %	tan ka na ka ka ka
0.075 mm (No. 200).	6.8	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit		2012 1000000 00000000000000000000000000		
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

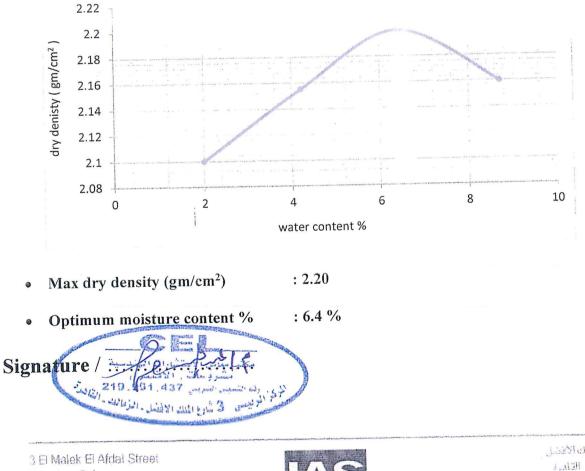
The test results are (  $\square$  Comply -  $\square$  Not Comply ) with specifications limits

الزمائك القاهرة



Consulting Engineering Bureau & Laboratories			
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 650+800 E= 48947.1891 N=2854194.3005		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
Reporting No.	: 04		





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۲ فن الملك الأفضل الزمالك القاهرة تليفون + فاكس + ۲۷۳٦٬۲۲۲۱ - ۲۷۳٦۲۰۹۲ تليفون + فاكس + ۲۷۳٦٬۷۲۲۱

-	onsulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
Reporting No.	: 04

### Test Results of California Bearing Ratio on Base Materials ASTM D 1883

	ASIMI	1005			
pene	penetration				
mm	Inch		n piston (Mpa)		
0.64	0.025		0.43		
1.27	0.050		1.47		
1.91	0.075		2.48		
2.54	0.100		3.49		
3.18	0.125		4.61		
3.81	0.150		5.82		
4.45	0.175		7.04		
5.08	0.200		8.36		
6.35	0.250	11.45			
CBR Result	Stress (Mpa)		CBR %		
At 0.1 inch (2.54 mm) penetration	St. Value 6.90	Sample results 3.49	50.6 %		

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of = 2.20 (gm /cm<sup>3</sup>)

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- At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg

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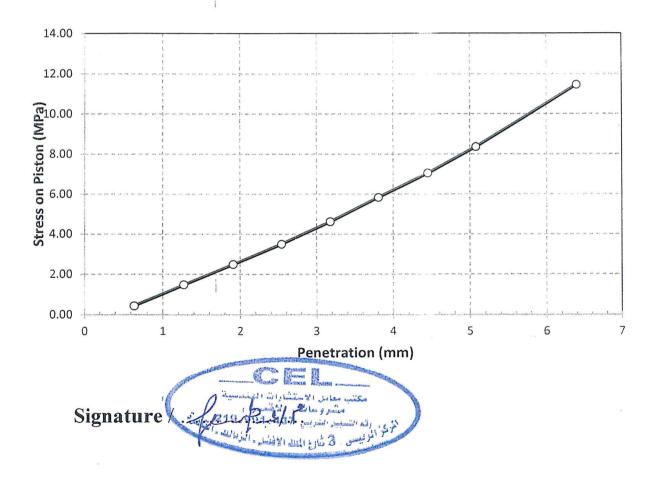
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اش الملك الأفضل الزمائك القاهرة تليفين الألكس : ۲۲۳۶۲۳۲۱ - ۲۶۰ ۲۳۳۲۲

	<u> </u>
C	onsulting Engineering Bureau & Laboratories
	مكتنب معامل الاستشارات الهتدسية
<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 04

## Load Penetration Curve of CBR Test ASTM D-1883



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلى

شركة الكرم: <u>Company</u>

: Electric Express Train - Sector (5) - Qous to Arment. Project : Determine the deformation and strength characteristics of soil by the Subject plate loading test according specifications DIN 18134:2012-04 and project requirements lest Location : Station 651+100 to 651+120 : 651+110 Station Level : -1.5 : 26/09/2023 Test Date **Repot Date** : 01/10/2023 : Original Earth Type of soil :01 Report No.

#### Dear Gentleman,

According to the above mentioned subject the test performed as follows:-

#### Apparatus

- 1. Loading plates consists of two plates with 300 mm and 300 mm diameter
- 2. The thickness of plates 30 mm
- 3. Dial gauges with accuracy 0.01 mm to measuring the settlement
- 4. Steel straightedges with magnetic supports to fixed the dial gauges
- 5. Hydraulic jack with pump to transfer reactive loads to the loading plates
- 6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
- 7. Reaction loading system by roller compactor with weight approximately 15 ton.
- 8. Calibration certificates are attached.

#### Test Procedure:

- 1. Clean the ground on test area to the required level with undisturbed soil
- 2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
- Prior to starting the test applied preloading about 30 seconds.
- The strain gauge and the dial gauge shall be set to zero
- 5. For a 300 mm loading plate, the limit values are 5.0 kg/cm<sup>2</sup>
- 6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal
- stress is reached.
- 7 Fach change in lead (from stage to stage) shall be completed within one minute
- 8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
- 9. Following unloading, a further (2 <sup>nd</sup>) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
- 10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
- 11. Remove the loads





۳ ش الملك الأفضل الزمالك - القاهرة تليفون + فاكس : ۲۷۳٦۷۲۳۱ - ۲۷۳٦۳۰۹۳ www.cel-egypt.com



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

#### Report

- 1. Evaluation and representation of results.
- 2. Load Settlement curve.
- 3. The test report content the following .-
- location of test site Dimension of loading plate.
- Measuring device used Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements Unusual observation made during test.
- Dial gauge reading and corresponding normal stress Loading-settlement curve.
- Description of the soil condition below the plate after testing.

#### Report

- Type of soil : Original Earth
- Job requiremer : Ev2 > 40 MPa

ltem	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
date of measurement	: 26/09/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		n Location Level		First Cycle	Second Cycle	$E_{V2}/E_{V1}$
reative.	From To	THE REAL PROPERTY OF THE PROPERTY OF THE REAL PROPE	(m)	Evi(MPa)	Evz(Mpa)	Ratio	
1	651+100	651+120	: 651+110	: 1.5	86.7	170.6	1.97

Signature for the sureau & Laboratories Consulting Engineering Sureau & Laboratories مكتسب معاصل الاستشارات الهنشانيين ( hild of hangened ) in har go يل الضريبي: 219 - 991 - 537 ب شارع الملك الأفضل الزمالك \_ القاه





Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

Company Name شرکة الکرم : Project : Electric Express Train - Sector (5) – Qous to Arment. Test Date : 26/09/2023 report date : 01/10/2023 Station : 651+110 Test No. : 01

#### Nonrepetitive Static Plate Load Tests of Soils <u>DIN 18134</u>

#### Loading Stage (1)

Loading	Stress		Settlement	Dial 2	Settlement	Average	
Louding	Kg/cm2 Dial 1		mm	Dial 2	mm	Average	
0	0.00	20.00	0.00	20.00	0.00	0.00	
1	0.83	19.78	0.22	19.79	0.21	0.22	
2	1.66	19.57	0.43	19.60	0.40	0.41	
2	2.50	19.35	0.65	19.39	0.61	0.63	
4	3.33	19.13	0.87	19.17	0.83	0.85	
5	4.17	18.95	1.05	19.00	1.00	1.03	
6	5.00	18.73	1.27	18.78	1.22	1.25	

#### Unloading Stage (1)

	Stress	Dial d	Settlement	Dial 2	Settlement	Average	
Loading	oading Kg/cm2		Dial 1 mm		mm	Atorago	
1	2.50	18.82	1.18	18.87	1.13	1.16	
2	1.25	19.15	0.85	19.17	0.83	0.84	
3	0.100	19.48	0.52	19.50	0.50	0.51	

#### Loading Stage (2)

Loading	Stress			Settlement	Average	
Louding	Kg/cm2	Dial 1	mm		mm	, troi age
0	0.83	19.28	0.72	19.30	0.70	0.71
oximately equi	1.66	19.14	0.86	19.25	0.75	0.81
	s is reache	d.				
2	2.50	19.05	0.95	19.13	0.87	0.91
3	3.33	18.95	1.05	19.00	1.00	1.03
4	4.17	18.80	1.20	18.95	1.05	1.13

E **Consulting Engineering Bureau & Laboratories** مكتسب معاصل الاستشادات الهنسديسة مشروعيات (مموهماج والنبا) رقم التسجيل الضريبي: 337 - 991 - 219 المركز الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

3 El Malek El Afdal Street Zamalek, Cairo. Tel.& Fax : 27367231 - 27363093



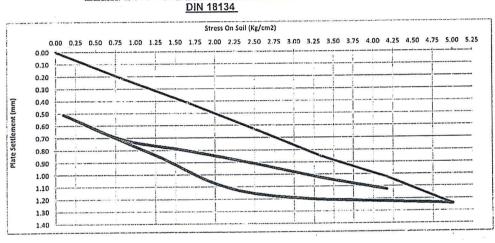
۳ ش الملك الأفضل الزمالك - القاهرة تليفون + فاكس : ۲۷۳٦۷۲۳۱ - ۲۷۳٦۳۰۹۳ www.cel-egypt.com



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلى

Company Name Project Test Date report date Station Test No. : شركة الكـرم Electric Express Train - Sector (5) – Qous to Arment. : 26/09/2023 : 01/10/2023 : 651+110 : 01

#### Nonrepetitive Static Plate Load Tests of Soils



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1765.3	2352.6	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.22	0.41	0.63	0.85	1.03	1.25

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.25	1.16	0.84	0.51

Ev2/Ev1 = 1.97

Loading (2)	0	1	2	3	4	5	
Stage(Kg)	0	586.395	1172.8	1766.3	2352.6	2946.1	
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17	
Settlement (mm)	0.51	0.71	0. <mark>81</mark>	0.91	1.03	1.13	
	-						
D (mm) = 300	1	S1 (mm)=	0.79	S2(Inm)=	1.05	$\Delta S =$	0.2

Ev1 = Modulus of deformation during the loading stage. Ev2 = Modulus of deformation during the Reloading stage.

D = Plate diameter (mm)

Ds = The difference between 0.3 and 0.7 from the maximum loading (smax) (kg/cm²) DS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
<b>Testing Date</b>	: 26/09/2023
Soil type	: Middel Embankment
Location	: ST from 651+100 To 651+120
Level	: - 1.5 M
Report No.	: 99
	Compaction test by using Sand – Cone Test Method
	ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	651+110	1437	2.23	5.5	2.12	97.5%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 % . Signature Laboratories مكتسب معاصل الار ( -روعسات ( مسوعساج والس 219 - 991 - 537: -----رقمالت مصل الم المركز الرنيسى ٣ شارع الملك الأفضل - الزمالك - القاهرة

3 El Maiek El Afdal Stree Zamalek, Garto 148 Fax: 2736723 - 27363003



Consulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسیة				
Company Name	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St (651+800) Zone : From 651+700 To 651+940			
Type of sample	: Original Earth			
Delivery Date	: 6/8/2023			
<b>Reporting Date</b>	: 10/8/2023			
<b>Reporting</b> No.	: 04			

Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature 110 3 شارع الملك الافضار

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۲ ش الملك الأفضلي . الزمالك القاهرة تليفين - ماكس بـ ۲۷۳۵۷۰۲۱ - ۲۰۳۵۲۲۰۲۴



<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
<b>Reporting No.</b>	: 04

### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422.**

Sieve Size (mm)	Sieve Size (IN)	Passing %	
50	2	99.1	
37.5	1.5	93.5	
25	1	87.6	
19	3/4	74.6	
12.50	1/2	62.8	
9.50	3/8	51.0	
4.75	4	36.8	
2.00	10	21.4	
0.425	40	13.6	



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۲ ش الملك الأفضير الزمانك القلمرة تليفون « فاكس : ۲۷۳٦۲۰۹۲ - ۲۷۳٦۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية				
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St (651+800) Zone : From 651+700 To 651+940			
Type of sample	: Original Earth			
<b>Delivery Date</b>	: 6/8/2023			
<b>Reporting Date</b>	: 10/8/2023			
<b>Reporting No.</b>	: 04			

:

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	8.2



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۲ ش الملك الأعصار. الزمالك التاصرة تليفون دقاكمي : ۲۷۳٬۱۷۱۲۱

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
Reporting No.	: 04

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## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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۲ ش الملك الأقضار. الزمالك – القامرة تليفين - الأكس - ۲۷۳۹۷۳۲۱ – ۲۷۳۹۲۰۲۲

	ngineering Bureau & Laboratories
and we have a second and and and and and and a second and a	مكتب معامل الاستشارات اله

<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
<b>Reporting No.</b>	: 04

### Soil Classification According To Project Specs :

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TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	21.4	Max 50 %		
0.425 mm (No. 40).	13.6	Max 30 %	Max 50 %	
0.075 mm (No. 200).	8.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction pas	ssing 0.425 mm (N	0.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are (  $\Box$  Comply -  $\Box$  Not Comply ) with specifications limits

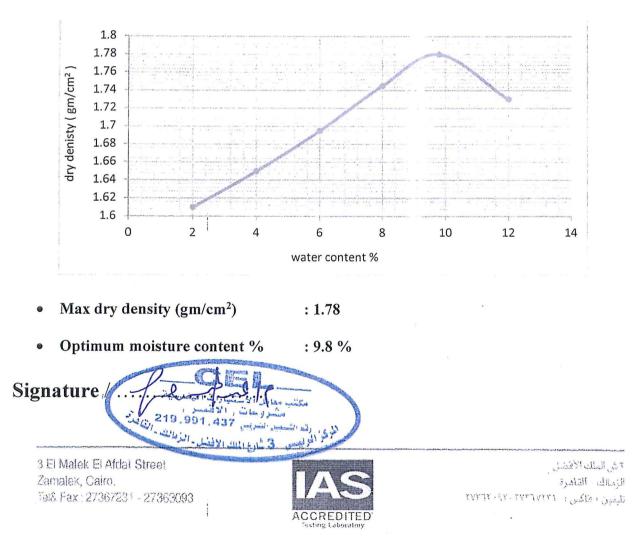
Signature مكتب مكامل الأستكنازات مكتب مكافل الاستعمار . مستروحات رالا المسمر . لاي رفه المسليم السريس 437 ـ 199 ـ 219 ـ رويي . المرابع ليسمى 3 شارع الماك الافتيل - الروانية 3 El Malek El Afdal Stret ٢ شي المثلك الأغضل. Zamalek, Cairo. الزمالك القاهرة Tel& Fax: 27367231 - 27363093 تلينون ، فاكس ، ۲۲۲۲۲۲۱ ، ۲۶۰۲۴۲۷ ACCREDITED

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
Reporting No.	: 04

### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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C	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسید
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023 -
<b>Reporting Date</b>	: 10/8/2023

Reporting No. : 04

### Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.25
1.27	0.050	0.66
1.91	0.075	1.01
2.54	0.100	1.32
3.18	0.125	1.62
3.81	0.150	1.77
4.45	0.175	1.87
5.08	0.200	1.90
6.35	0.250	1.92

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	10.10/
penetration	6.90	1.32	- 19.1%

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ىلىغون ، قاكس : ۲۷۳۱ /۲۰۱۱ - ۲۶، ۲۳۳۲

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of =  $1.78(\text{gm}/\text{cm}^3)$ At = 9.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

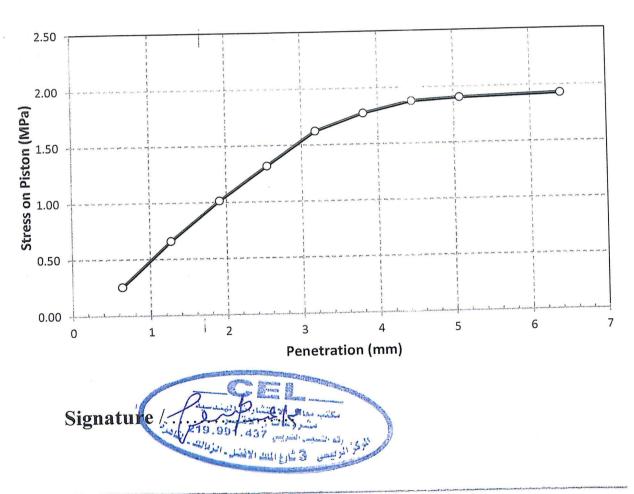
Signature روسات , الاف ز لېسى 3 شارع الملك الافضل - <del>اوزيانك</del> 3 El Malek El Afdal Stre Zamalek, Cairo. Tel& Fax: 27367231 - 27363093 ACCREDITED

	onsulting Engineering Buroau & Laboratories مكتب معامل الإستشارات المهندسية
Company Name Project Location	: شركة الكرم للمقاولات العموميه Electric Express Train – HSR From Qous To Armant : St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth : 6/8/2023
Delivery Date Reporting Date Reporting No.	: 10/8/2023 : 04

## Load Penetration Curve of CBR Test

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ASTM D-1883

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم : пе
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 28/09/2023
Soil type	: Upper Embankment
Location	: ST from 650+700 to 650+800
Level	: - 1.25 M
Report No.	: 113
	Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	650+720	1738	2.20	6.4	2.07	95.2%	Comply
2	650+740	1794	2.21	5.8	2.09	96.2%	Comply
3	650+760	1559	2.22	6	2.09	96.5%	Comply
4	650+780	1561	2.19	5.6	2.07	95.4%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

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۲ ش الملك الأعصل الزمالك - الفاهرة فليفور - فاكس : ۲۷۳۵ ۲۳۲۱ ۲۰۱۲

C	مكتب معامل الإستشارات الهتدسية
Company Name Project	: شركة الكرم للمقاولات العموميه Electric Express Train – HSR From Qous To Armant : St: 650+800 E= 48947.1891 N=2854194.3005
Location Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

GEL-

Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

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Company Name Project Location Type of sample	: شركة الكرم للمقاولات العموميه Electric Express Train – HSR From Qous To Armant St: 650+800 E= 48947.1891 N=2854194.3005 Soil Embankment
Delivery Date	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
Reporting No.	: 04

# RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.5
37.5	1.5	90.8
25	1	78.3
19	3/4	72.4
12.50	1/2	58.2
9.50	3/8	51.3
4.75	4	49.3
2.00	10	44.2
0.425	40	21.5

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۲ ش الملك الأنتشل . الزمالك - القاهرة تليفون + الألكس : - ۲۷۳۹ ۲۰۱۲ (۲۰۰۳)



<b>Company</b> Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	6.8

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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

## <u>Results of liquid limit and plasticity index</u> <u>of soils according to ASTM D-4318</u>

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
Reporting No.	: 04

### Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.2	Max 50 %		
0.425 mm (No. 40).	21.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	6.8	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 mi	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are (  $\Box$  Comply -  $\Box$  Not Comply ) with specifications limits

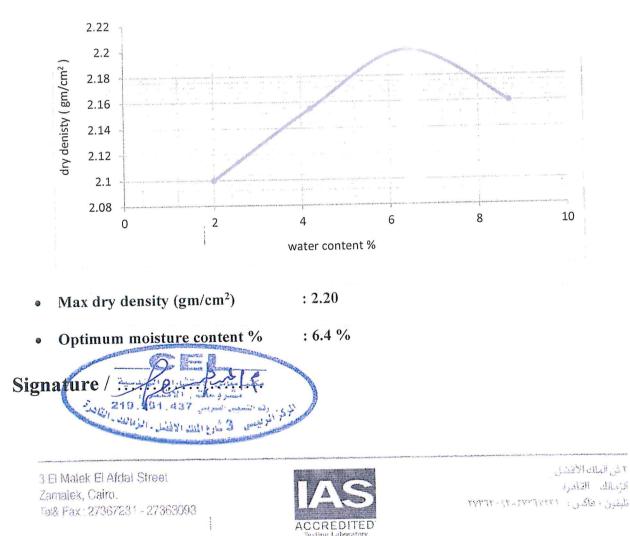
Signature / مر النمريسي 219.991.437 (الماليان). 2. شارع المالي الأفضل - الماليان - الماليان بطبعهم النصر إحس 54 de S 3 El Malek El Afdel Street Zamalek, Cairo. Tei& Fax: 27367231 - 27363093 ACCREDITED

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

<u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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<b>Company</b> Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 04

### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

	ADIVII	71005		
penetration		stress	stress on piston (Mpa)	
mm	Inch			
0.64	0.025	0.43		
1.27	0.050			
1.91	0.075	2.10		
2.54	0.100 3.49		3.49	
3.18	0.125		4.61	
3.81	0.150		5.82	
4.45	0.175 7.04		7.04	
5.08	0.200 8.36		8.36	
6.35	0.250 11.45		11.45	
CBR Result	Stress (Mpa)		CBR %	
At 0.1 inch (2.54 mm) penetration	St. Value 6.90	Sample results 3.49	50.6 %	

#### Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

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- 2- The sample was compacted to dry density of =  $2.20 \text{ (gm / cm^3)}$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم:	
Project	: Electric Express Train – HSR From Qous To Armant	t
Testing Date	: 28/8/2023	in.
Soil type	: Middle Embankment	
Location	: ST from 647+660 To 647+680	
Level	: - 1.5 M	
Report No.	: 04	\$

#### <u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	, Acceptance
1	647+670	1654	2.09	5.3	1.99	96.4	Comply

• Degree of compaction based on proctor test dated At

- Max. dry density = 2.06 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

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Signature / \_\_\_\_\_\_ Signature /

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- c	onsulting Engineering Burgau & Laboratories	*5
Company Name Project Location Type of sample Delivery Date Reporting Date	: شيركة الكرم : Electric Express Train – HSR From Qous To Armant : st: 647+920 E= 32°54′53.6″ N=25°49′23.7″ : Soil Embankment : 22/8/2023 : 26/8/2023	, aast.
Reporting No.	: 08	43

Dear Gentleman,

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Attached here with the delivered on 22 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

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Consulting Engineering Bureau & Laboratories عكتب معامل الإستشارات الهندسية					
<b>Company Name</b>	شركة الكرم :				
Project	: Electric Express Train – HSR From Qous To Armant				
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	4 <u>1</u> 7			
Type of sample	: Soil Embankment				
<b>Delivery Date</b>	: 22/8/2023				
<b>Reporting Date</b>	: 26/8/2023				
<b>Reporting No.</b>	: 08	4			

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.3
37.5	1.5	91.6
25	1	80.2
19	3/4	70.8
12.50	1/2	59.8
9.50	3/8	52.2
4.75	4	41.7
2.00	10	34.3
0.425	<sup>3</sup> 40	16.3

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۲ ش الملك الأفضل . الرُمالك - التاهرة تليفون ( فاكس : ۲۷۳٦٬۲۳۱

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية				
<b>Company</b> Name	شركة الكرم :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	174		
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting</b> No.	: 08			

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	1.5



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۲ ش الملك الأفضل . الزمالك - القاهرة تليفون - فاكمن - ۲۷۳۱۷۲۳۱ - ۲۷۳۷۶۲۰۹۲ تليفون - فاكمن - ۲۷۳۱۷۲۳۱

c	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسید	
<b>Company Name</b>	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	-ver
<b>Delivery Date</b>	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	

# <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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محض الملك الأفتشل . الزمالك - التامرة تليفون و فاكس و ۲۰۲۱ ۲۲۰-۲۳، ۲۷۴۲

•21

-	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$
Type of sample	: Soil Embankment
Del <mark>i</mark> very Date	: 22/8/2023
<b>Reporting Date</b>	: 26/8/2023
Reporting No.	: 08

# Soil Classification According To Project Specs :

TEST	Results (%)		ing s	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	34.3	Max 50 %		
0.425 mm (No. 40).	16.3	Max 30 %	Max 50 %	
0.075 mm (No. 200).	1.5	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( Comply - Not Comply ) with specifications limits

Signature : 3 شارع الملك الأف .

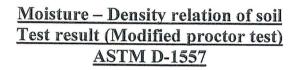
3 El Malek El Afdal Street Zamalek, Cairo. Tel8 Fax: 27367231 - 27363093

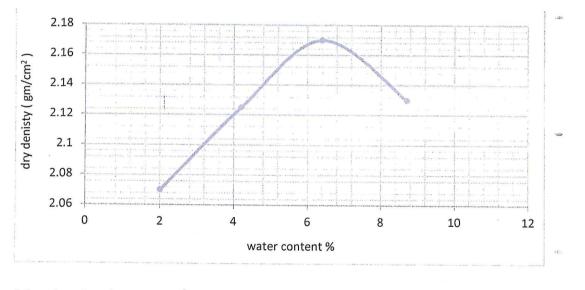
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۲.ش #ماله الأفضلي الزمالك - القامرة تليفون - فاكس - ۲۷۳٦۷۲۱۰۱

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C	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية	ce.
Company Name	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$	
Type of sample	: Soil Embankment	16.0
Delivery Date	: 22/8/2023	
<b>Reporting Date</b>	: 26/8/2023	
<b>Reporting No.</b>	: 08	





• Max dry density (gm/cm<sup>2</sup>) : 2.17

• Optimum moisture content % : 6.4 %



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٢ ش الملك الأفضل الزمالله - القاهرة تليفون • فاكس : ٢٧٣٦٢٣٣٦ - ٢٧٣٦٢٢٢

	onsulting Engineering Bureau & Laboratories				
مكتب معامل الإستشارات الهندسية					
<b>Company Name</b>	شركة الكرم:				
Project	: Electric Express Train – HSR From Qous To Armant				
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$				
Type of sample	: Soil Embankment				
<b>Delivery Date</b>	: 22/8/2023				
<b>Reporting Date</b>	: 26/8/2023				

Reporting No. : 08

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#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

	110 1111 D 1000	
penetration		stress on piston (Mpa)
mm	Inch	suces on piston (wipd)
0.64	0.025	0.61
1.27	0.050	1.82
1.91	0.075	3.04
2.54	0.100	4.15
3.18	0.125	5.12
3.81	0.150	5.82
4.45	0.175	6.33
5.08	0.200	6.63
6.35	0.250	6.74

CBR Result	St	ress (Mpa)	CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results		
penetration	6.90	4.15	60.2 %	

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of =  $2.17 (\text{gm}/\text{cm}^3)$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / . "G AS 1 219 991 037

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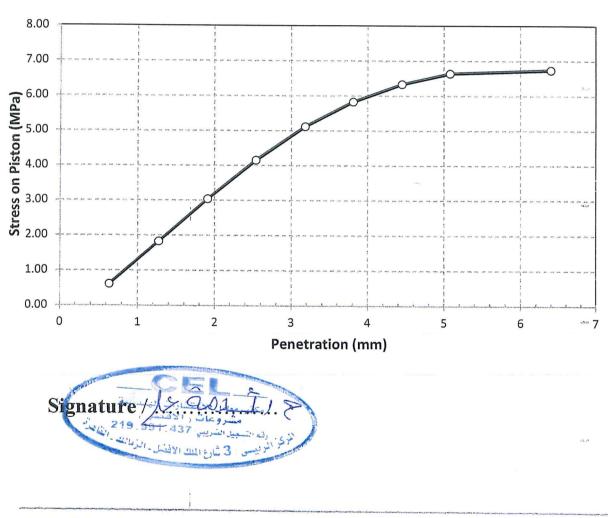


۲ ش الملك الأفضل . الزمالك - القامرة تليفرن + فاكني : - ۲۷۳٦۷۶۲۱ - ۲۷۳٦۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المجتم سيم				
<b>Company Name</b>	شركة الكرم:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ $E= 32^{\circ}54'53.6''$ $N=25^{\circ}49'23.7''$			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 22/8/2023			
<b>Reporting Date</b>	: 26/8/2023			
<b>Reporting</b> No.	: 08			
Load Penetration Curve of CBR Test				

ASTM D-1883

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\*ش الملك الأفضل الزمالي القاهرة تليفون مقادى : ٢٧٣٦٢٢٢١ - ٢٢٠٦٢٢٢٢٦



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 25/09/2023
Soil type	: Upper Embankment
Location	: ST from 649+760TO 649+840
Level	: - 1 M
Report No.	: 95
	Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	649+798	1310	2.29	6	2.16	99.6%	Comply
2	649+830	1352	2.22	6.4	2.09	96.2%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

• At optimum moisture content = 6.4 %

شارع الملك الأفسل

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\* ش الملك الأفضل الزمالك – القاهرة تليفون + فاكس : - ۲۷۳٦٬۲۲۲



Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية

Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: 648+100 E= 32°54'49.4" N=25°49'23.1"
Type of sample	: Soil Embankment
Delivery Date	: 20/8/2023
<b>Reporting</b> Date	: 24/8/2023
<b>Reporting</b> No.	: 07-1

Dear Gentleman,

Attached here with the delivered on 21 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### <u>Materials test</u>

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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۲۵، المالة الأقصل الزمالة - الذاهرة تليس - الألفي ( ۲۳۳۱۲۰۹۱ - ۲۰۳۱۲۴۲۰

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية				
Company Name	شركة الكرم:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: 648+100 E= 32°54'49.4" N=25°49'23.1"			
Type of sample	: Soil Embankment			
Delivery Date	: 20/8/2023			
<b>Reporting Date</b>	: 24/8/2023	44		
Reporting No.	: 07-1			

#### RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	96.4
37.5	1.5	90.4
25	T.	79.6
19	3/4	70.6
12.50	1/2	61.7
9.50	3/8	55.4
4.75	4	45.4
2.00	10	40.3
0.425	40	20.9

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1 El Malek El Afdal Street Camalex, Gairo. 178 Fox: 27367831 - 27863093

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۲ فی الطلع الأفضار الزمالی - النامرد تلیمرز - طاکری د ۲۷۳۲۲۲۱ - ۲۰۰۲۲۳۲۲ - -

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Consulting Engineering Buroau & Laboratories مكتب معامل الإستشارات الهندسية					
Company Name	شركة الكرم :				
Project	: Electric Express Train – HSR From Qous To Armant	74			
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$				
Type of sample	: Soil Embankment				
Delivery Date	: 20/8/2023				
<b>Reporting Date</b>	: 24/8/2023	ġ,			
Reporting No.	: 07-1				

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	2.7

Signature /... س 3 شن الله الافضل - الزمانلة - التيمانية 219 991 437 57

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<sup>- ي</sup>رى الماك الأخسلي الإمالك، الدامرة عليدر، • الكسي، ١ (١٩٣٩ - ٣، ٣، ١٣٩٣ -

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المختدسية					
Company Name	شركة الكرم :				
Project	: Electric Express Train – HSR From Qous To Armant	t,			
Location	: st: 648+100 E= 32°54'49.4" N=25°49'23.1"				
Type of sample	: Soil Embankment				
<b>Delivery Date</b>	: 20/8/2023				
<b>Reporting Date</b>	: 24/8/2023				
<b>Reporting</b> No.	: 07-1	13			

### <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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۲ فی انداله الآکستانی الزمانات الدادره تلود را حالاتی در ۲۰۰۱٬۲۰۱ – ۲۰۰۳٬۳۰۱

Consulting Engineering Buroau & Laboratories مكتب معامل الإستنفارات المتدسية				
Company Name	شركة الكرم :			
Project	: Electric Express	s Train – HSR Fro	om Qous To Armant	
Location	: st: 648+100	E= 32°54′49.4″	N=25°49'23.1"	
Type of sample	: Soil Embankment			
Delivery Date	: 20/8/2023			
<b>Reporting Date</b>	: 24/8/2023			
Reporting No.	: 07-1			

## Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		J
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	40.3	Max 50 %		
0.425 mm (No. 40).	20.9	Max 30 %	Max 50 %	
0.075 mm (No. 200).	2.7	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( GComply - Not Comply ) with specifications limits

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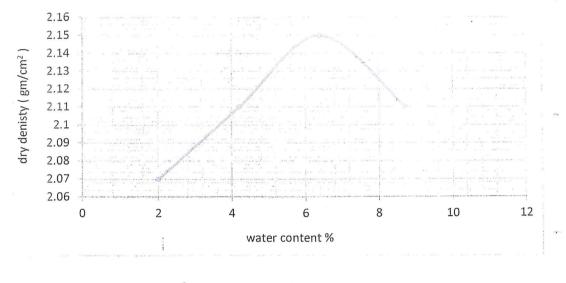


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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهتدسية				
Company Name	شركة الكرم :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$			
Type of sample	: Soil Embankment			
Delivery Date	: 20/8/2023			
<b>Reporting</b> Date	: 24/8/2023			
Reporting No.	: 07-1			

<u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



• Max dry density (gm/cm<sup>2</sup>) : 2.15

• Optimum moisture content % : 6.4 % Signature / ....

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۲ ش قماله الأفشان الرحالة - التأمرة تليدين الآلمي - ۲۶۲۹۲۲۲۱۱ - ۲-۱۳۳۹۳

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية			
Company Name	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$		
Type of sample	: Soil Embankment		

**Delivery** Date : 20/8/2023

**Reporting Date** : 24/8/2023

Reporting No. :07-1

#### Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

	110 1111 0 1000	
penetration		stress on piston (Mpa)
mm	Inch	birebe on pibton (mpa)
0.64	0.025	0.56
1.27	0.050	1.52
1.91	0.075	2.43
2.54	0.100	3.19
3.18	0.125	3.90
3.81	0.150	4.38
4.45	0.175	4.71
5.08	0.200	4.91
6.35	0.250	4.96

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	46.2.0/
penetration	6.90	319	46.2 %

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Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =  $2.15 (\text{gm}/\text{cm}^3)$ 

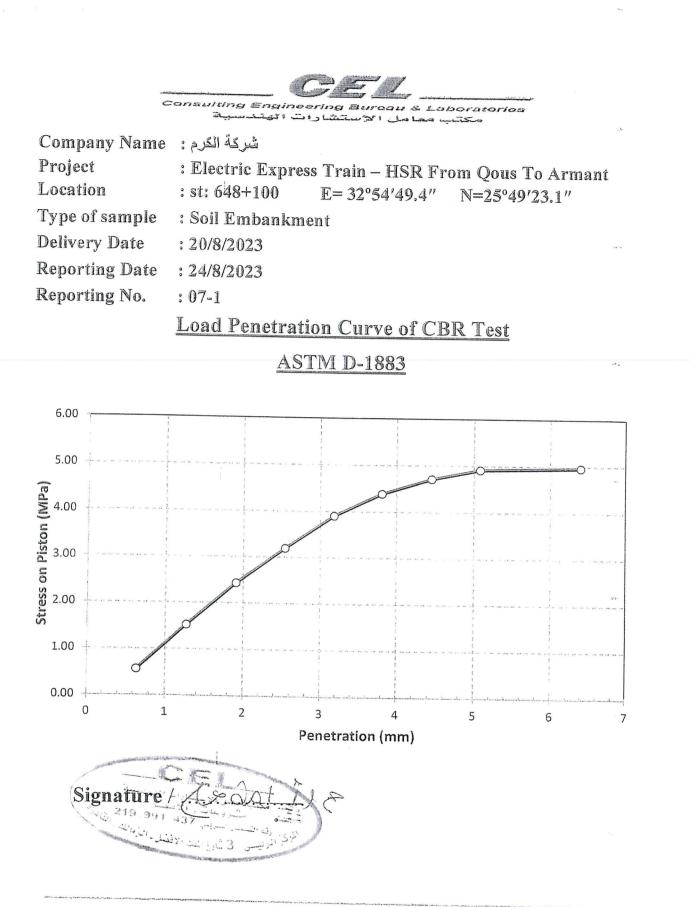
- At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / A.C.A.L.T id ( 219.991.437

الريسي 3 تاريد الا في الله Stratie V المريسي 3 EL Malok El Mital Stratie Zamales, Cairon Telé Pax 77367201 - 27369090

لاش العالية الأفشق الاسالة الدادرا الميزر، 10 م. - 100 م. 1. 17 11



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۴ فی المالد الأقشل الزمانله - ۱۹ لمرة طهیر - ۱۳۰۶ ی - ۱۳۰۲ - ۲۰۰۴ ۲۷۰۳



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
<b>Testing Date</b>	: 20/09/2023
Soil type	: Upper Embankment
Location Level	: ST from 649+820 To 649+840 : - 1.25 M
Report No.	: 76-5
<u>c</u>	Compaction test by using Sand – Cone Test Method <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	649+830	1312	2.29	7.4	2.13	98.7%	Comply

### Degree of compaction based on proctor test dated At

- Max. dry density = 2.16 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

au & Laboratories مكتب معاصل الار 9 2 Lag عبيل الضريبي: 1937 - 537 - 219 رهم المسجين السريسي ، ولا الله المرجالي . الرجالي . القادي المرجع

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Consulting Engineering Burgau & Laboratories مكتب معامل الإستشاريات الهلدسية				
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St (651+800) Zone : From 651+700 To 651+940			
Type of sample	: Original Earth			
<b>Delivery Date</b>	: 6/8/2023			
<b>Reporting Date</b>	: 10/8/2023			
<b>Reporting No.</b>	: 04			

#### Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

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۲ ش الملك الأفضل . الزمالك التامرة تليفين : فاكس : ۲۷۳٦۷۰۲۱ - ۲۷۳٦۲۰۰۲

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	ineering Bureau & L معامل الإستشارات ا	

Company Name: شركة الكرم للمقاولات العموميه :Project: Electric Express Train – HSR From Qous To ArmantLocation: St (651+800)Zone : From 651+700 To 651+940Type of sample: Original EarthDelivery Date: 6/8/2023Reporting Date: 10/8/2023Reporting No.: 04

#### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422.**

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	99.1
37.5	1.5	93.5
25	1	87.6
19	3/4	74.6
12.50	1/2	62.8
9.50	3/8	51.0
4.75	4	36.8
2.00	10	21.4
0.425	40	13.6



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۲ ش الملك الأفضل الزمالك القاهرة تليفون - هاكس : ۲۷۳۹٬۷۰۳۱ - ۲۷۳۹٬۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية			
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St (651+800) Zone : From 651+700 To 651+940		
Type of sample	: Original Earth		
<b>Delivery Date</b>	: 6/8/2023		
<b>Reporting Date</b>	: 10/8/2023		
<b>Reporting No.</b>	: 04		

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)	
Percentage of material finer than Sieve Size 75 μM (No.200)	8.2	



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۲ ش الملك الأعدس. الزمالك القاهرة تليفون • فاكدى : ۲۷۳٦۷۲۲۱ - ۲۷۳٦۲۰۹۲

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ineering Bureau مل الإستشارات ا	

-

<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
<b>Reporting</b> No.	: 04

## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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3 El Malek El Afdal Street Zamalek, Cairo. Tel& Fax: 27367231 - 27363093



۲ ش الملك <sup>الا</sup>لائمند. الزمالك القاهرة تليفون - فلكس : ۲۷۳۹٬۰۹۱–۲۷۳۹٬۲۰۹۲



<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
Reporting No.	: 04

# Soil Classification According To Project Specs :

TEST	Results (%)		mits accord Projects Spec	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	21.4	Max 50 %		
0.425 mm (No. 40).	13.6	Max 30 %	Max 50 %	
0.075 mm (No. 200).	8.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction pas				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

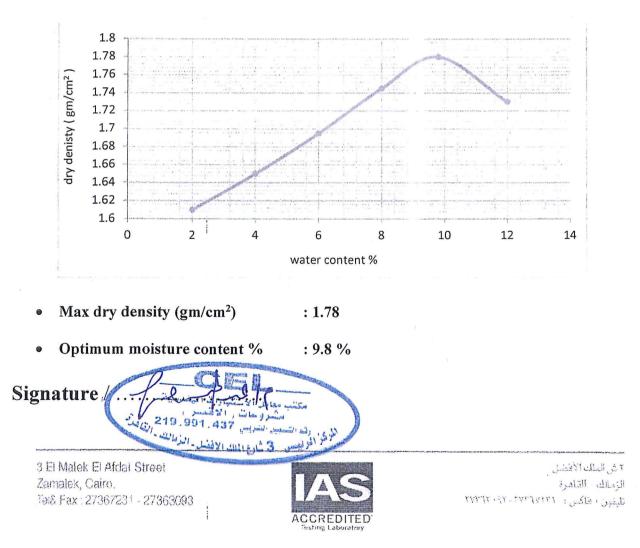
The test results are (  $\Box$  Comply -  $\Box$  Not Comply ) with specifications limits

Signature سر و سامت 219.991.437 13(2) head , bests : a maker 1 5 ليسى 3 شارع الملك الافشل - الروال 3 El Malek El Afdal Sue ٢ شي الملك الأغضل Zamalek, Cairo. الزمالك القامرة Tel& Fax: 27367231 - 27363093 المجنور ، فاكس - ١٣٢٦٢٢٢١ - ٢٠٠ ١٢٦٧٢ ACCREDITED

 CEL	
ineering Bureau مل الاستشارات ا	

<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St (651+800) Zone : From 651+700 To 651+940
Type of sample	: Original Earth
<b>Delivery Date</b>	: 6/8/2023
<b>Reporting Date</b>	: 10/8/2023
<b>Reporting</b> No.	: 04

### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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شركة الكرم للمقاولات العموميه : Company Name

Project	: Electric Express	s Train – HSR From Qous To Armant
Location	: St (651+800)	Zone : From 651+700 To 651+940
Type of sample	: Original Earth	
<b>Delivery Date</b>	: 6/8/2023	
<b>Reporting Date</b>	: 10/8/2023	

Reporting No. : 04

#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.25
1.27	0.050	0.66
1.91	0.075	1.01
2.54	0.100	1.32
3.18	0.125	1.62
3.81	0.150	1.77
4.45	0.175	1.87
5.08	0.200	1.90
6.35	0.250	1.92

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	10.10/
penetration	6.90	1.32	- 19.1%

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of =  $1.78(\text{gm}/\text{cm}^3)$ At = 9.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

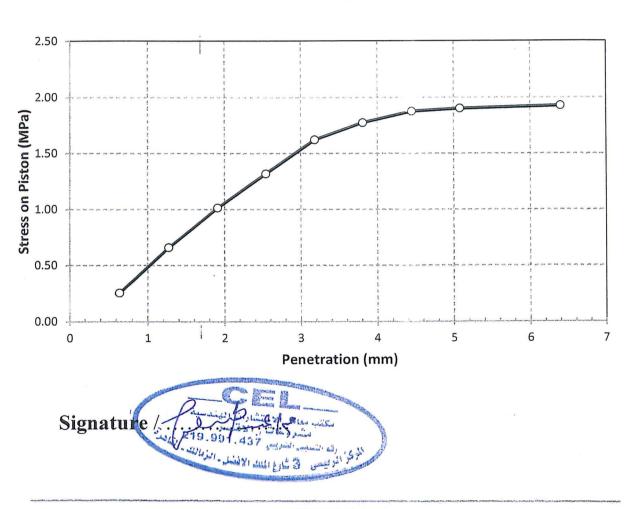
Signature 331 با ت ا 219.991.437 - - -لتع التسجيل النسريسي وليسى 3 شارع الملك الافضل - الت 3 El Malek El Afdal Stre Zamalek, Cairo. Tel& Fax: 27367231 - 27363093 ACCREDITED

۲ ش الملك الأفضلي الزمالك - التلمرة تليفون - فاكس : - ۲۷۳٦٬۷۲۲ - ۲۷۳۲۲۲۰۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المندسية		
<b>Company</b> Name	شركة الكرم للمقاولات العموميه :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St (651+800) Zone : From 651+700 To 651+940	
Type of sample	: Original Earth	
<b>Delivery Date</b>	: 6/8/2023	
<b>Reporting Date</b>	: 10/8/2023	
<b>Reporting No.</b>	: 04	

## Load Penetration Curve of CBR Test

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ASTM D-1883

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+760 To 651+780
Level	: - 4 M
Report No.	: 144

<u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptanc e
1	651+770	943	2.26	5.3	2.15	98.9%	Comply

Degree of compaction based on proctor test dated At

مشروعيات ( سيوهياج وقنيا ) مشروعيات ( سيوهياج وقنيا ) رقم التسجيل الغيريبي:537 - 991 - 219 المركز الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 % Signature figure that the preave & Laboratories

3 Fi Malek Ei Afdal Street Zamalek, Cairo 198 Fax: 2736723 1 - 27369093

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۲ ش الملك الاعضار الزمالي الظهرة طيمين ( هاكس ۲۳۳۱، ۲۳۲ ۲۰، ۲۳۳۱



Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

### Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for  $5.000 \text{ M}^3$ 

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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۲ ش الملك الأقضل الزمالك القاهرة تليمون ماكس - ۲۷۳٦٬۷۳۲۱ - ۲۷۳٦۲۲۶

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المتدسية			
Company Name	شركة الكرم للمقاولات العموميه:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 06-2		

### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	. 2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

Consulting Engineering Bureau & Laboratories Signature /.. قم التسبيبل الضريبي: 537 - 991 - 219 دركز الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

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٣ ش الملك الأفتخين الزمالك القاهرة تليفون • فاكني : ٢٧٣٦٧٠٣١

	onsulting Engineering Bureau & Laboratories مكتب محامل الإستشارات المندسية
Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting</b> No.	: 06-2

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	9.9

Consulting Engineering Bureau & Laboratories مكتب معامل الاستكوارات الهن Signature /... . QU.L. C. روعات ر س رقم التسجيل الضريبي: 537 - 991 - 219 الدكر الرئيسي ٣ شارع الملك الأفضل - الزمالك - القاشرة

3 El Malek El Afdel Street Zamalek, Cairo 19& Fax: 27367231 - 27363093

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c	consulting Engineering Bureau & Laboratories
	مكتب معامل الاستشارات الهندسية
Company Comp	شركة الكرم للمقاولات العموميه : any Name
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

# <u>Results of liquid limit and plasticity index</u> <u>of soils according to ASTM D-4318</u>

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Consulting Engineering Bureau & Laboratorie: مكتب معامل الاستشارات المندسية مشروعات المناجعات المقال . تم التسميل المنريبي: 737 - 991 - 219 الرئيسي ۲ شارع الملك الافضل - الزمادك . القاهره Signature /...

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۲ ش المالك الأفضل الزمالك القاهرة تليفوز • فاكس د ۲۷۳۱/۲۰۹۲ ۲۷۳۱

C	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

### Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits



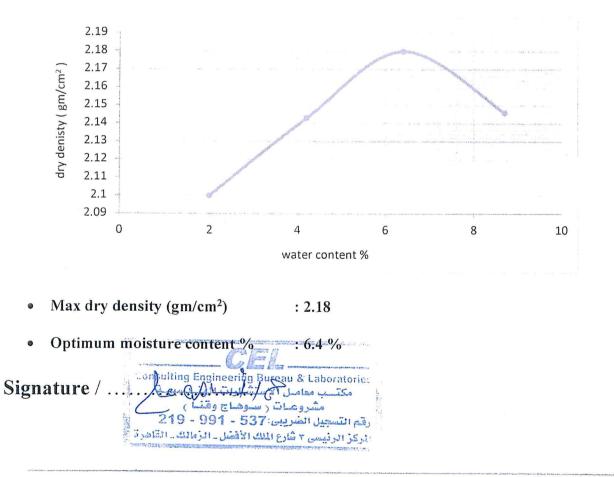
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۲ ش العالة الأفضل الزمالك الذاهرد تليمنون • فاكس : ۲۰۱۹٬۳۰۱ \* ۲۷۳۹٬۳۰۹

Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات المهندسية				
Company Name	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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ACCREDITED Testing Laboratory ۲ ش الملك الأعدس الزمالك التامرة تليفون و فاكس و ۲۷۳٬۱۷۲۴ - ۲۷۳٬۱۲۰۹

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية				
Company Name	شركة الكرم للمقاولات العموميه:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

#### Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

ress on piston (Mpa)	
0.43	
1.32	
2.28	
3.17	
4.00	
4.66	
5.12	
0.200 5.55	
6.33	
CBR %	
lts 45.9 %	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

- 2- The sample was compacted to dry density of =  $2.18 (\text{gm}/\text{cm}^3)$

 At = 6.4 % optimum watersconce aboratories

 3- Surcharge load 4.50 Kg.

 4- CBR > 10 for middle and lower embankments according project spec page No 36.

 (and lower embankments according project spec page No 36.

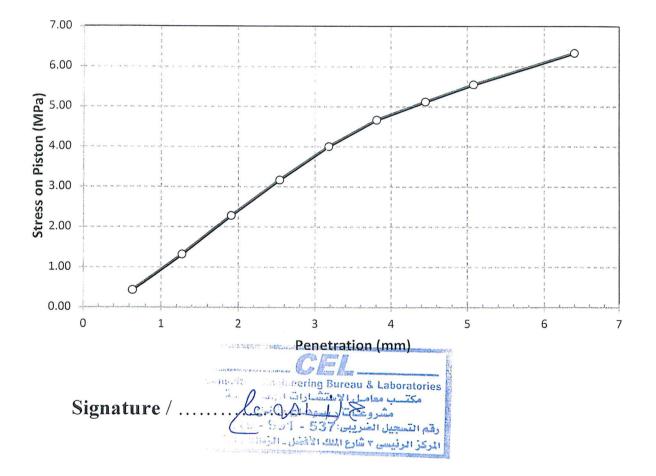
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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية				
Company Name	شركة الكرم للمقاولات العموميه:			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

# Load Penetration Curve of CBR Test ASTM D-1883



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۲۵ الملك الأفضل الزمالك - الداهرة تليفرن • هاكس • ۲۷۳۲۷۲۲۱

-	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسید	
Company Name	شَير كة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: st: 648+100 E= 32°54′49.4″ N=25°49′23.1″	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 20/8/2023	
<b>Reporting Date</b>	: 24/8/2023	*
<b>Reporting</b> No.	: 07-1	

## <u>Materials finer than 75 µm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	2.7

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عرفي فيذلك الأقصلي. الإيرانك الحاكيرة الميذير - الكني - المنافع الاستقالية المنافعة

	<u>CEL</u>	
	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية	
Company Name	شركة الكرم :	
Project	: Electric Express Train – HSR From Qous To Armant	t,
Location	: st: 648+100 E= 32°54'49.4" N=25°49'23.1"	
Type of sample	: Soil Embankment	
<b>Delivery</b> Date	: 20/8/2023	
<b>Reporting Date</b>	: 24/8/2023	
<b>Reporting</b> No.	: 07-1	-19

## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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ا اللي المالة الأقتشار. الإمالك الاقترب الليفيز - الألسي - ١٩٢٩ الإ ١٩٣٦٢

	onsulting Engineering B	uroau & Lak	borgtories Sozatories	8
Company Name	شركة الكرم :			
Project	: Electric Express Train	n – HSR Fr	om Qous To Armant	
Location	: st: 648+100 E= 32	2°54′49.4″	N=25°49′23.1″	•.
Type of sample	: Soil Embankment			
Delivery Date	: 20/8/2023			
<b>Reporting</b> Date	: 24/8/2023			
Reporting No.	: 07-1			

## Soil Classification According To Project Specs :

TEST	Results (%)		nits accordi Projects Spece	U
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	40.3	Max 50 %		
0.425 mm (No. 40).	20.9	Max 30 %	Max 50 %	
0.075 mm (No. 200).	2.7	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( GComply - Not Comply ) with specifications limits

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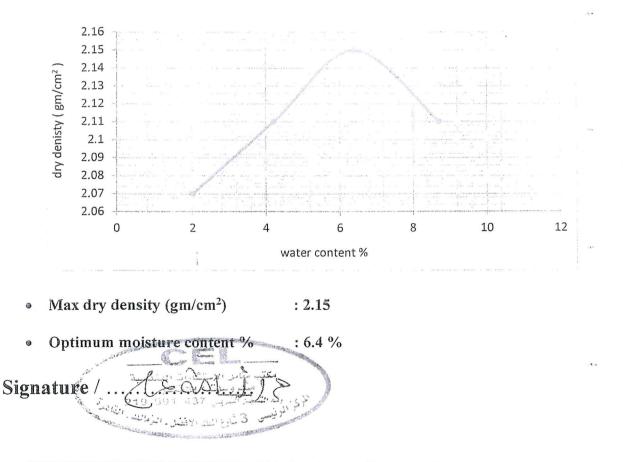


ا فی الطاقات لی الرحالہ الثانی ( الرحالہ الثانی - ۲۳۳۵٬۳۰۱ کہ ۱۳۳۵

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-	onsulting Engineering Bureau & Laboratories
Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$
Type of sample	: Soil Embankment
Delivery Date	: 20/8/2023
<b>Reporting</b> Date	: 24/8/2023
Reporting No.	: 07-1

<u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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۳ ش شماله ا<sup>رو</sup>د در الوسطه – الدادر: بالهسن را «اکس – ۲۳۳۱٬۳۳۱ – ۲۶۰۳٬۳۳۲

c	onsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسیة
Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 20/8/2023
<b>Reporting Date</b>	: 24/8/2023

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Reporting No. : 07-1

#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.56
1.27	0.050	1.52
1.91	0.075	2.43
2.54	0.100	3.19
3.18	0.125	3.90
3.81	0.150	4.38
4.45	0.175	4.71 **
5.08	0.200	4.91
6.35	0.250	4.96

CBR Result	St	tress (Mpa)	CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	16.0.0/
penetration	6.90	319	46.2 %

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Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

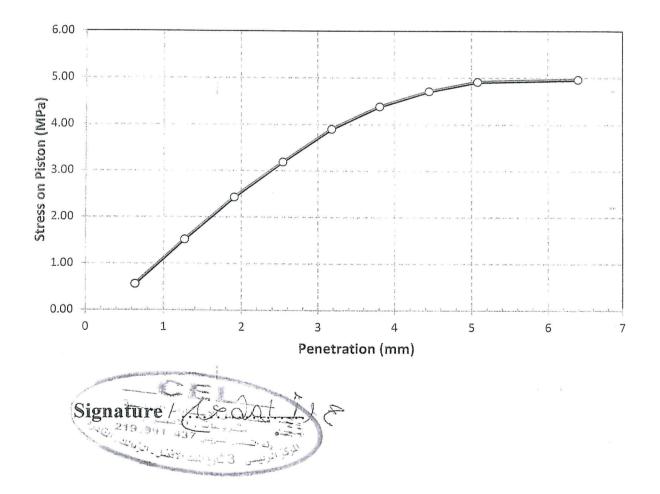
- 2- The sample was compacted to dry density of =  $2.15 (gm / cm^3)$ 
  - At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / A.S. QA.L. 219.991.437 غان سيد ب<sup>وني</sup> المراجع الم المرتيد Zamalek, Gairo: Teś Fax 27367291 - 27363093

التي المالكالانتيل. الإسلام الدامرة اليتين-هذفان، ۲۷٬۱۵۳۱ ۲۰۰۲۲۰۰۲

c	onsulting Engineering Burcau & Laboratories مكتب معامل الإستشارات الهندسيد
Company Name	شركة الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: st: $648+100$ E= $32^{\circ}54'49.4''$ N= $25^{\circ}49'23.1''$
Type of sample	: Soil Embankment
<b>Delivery</b> Date	: 20/8/2023
<b>Reporting Date</b>	: 24/8/2023
Reporting No.	: 07-1
	Load Penetration Curve of CBR Test
	<u>ASTM D-1883</u>



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: e
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+740 To 651+760
Level	: - 5 M
Report No.	: 143
	<u>Compaction test by using Sand – Cone Test Method</u>

ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+750	1700	2.24	6	2.11	97.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
   مكتب معامل الإسترابان المسيط
   Signature / المسيط
   219 991 537
   رقم التسجيل الضريبي 753 199 1914

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Project: Electric Express Train – HSR From Qous To ArmantLocation: St: 651+500 E= 488952.1897 N=2853742.8853Type of sample: Soil EmbankmentDelivery Date: 30/9/2023Reporting Date: 4/10/2023Reporting No.: 06-2

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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-	onsulting Engineering Eureau & Laboratories مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: $651+500 = 488952.1897 N=2853742.8853$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

## **RÉSULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

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Company Name	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
<b>Reporting No.</b>	: 06-2			

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	9.9

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٣٤ الملك الاقتسل الرمانك - القاهرة تليمون - هاكس : - ١٧٣٦/٣٢١ - ٢٢٠٦٢

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Company Compa	شركة الكرم للمقاولات العموميه : any Name
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting</b> No.	: 06-2

## Results of liquid limit and plasticity index of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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٢ ش الملك الأفضل . الزمالك القاهرة تليفون ، فاكس : ٢٧٣٦،٢٠٦٢ - ٢٧٣٦،٢٠٩٢

~	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المندسية
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

## Soil Classification According To Project Specs :

TEST	Results (%)		nits accordi Projects Spec	
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits

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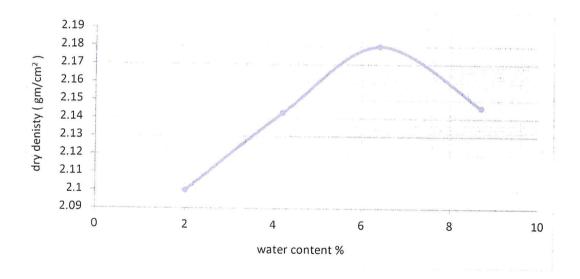
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Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



• Max dry density (gm/cm<sup>2</sup>) : 2.18

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Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

#### Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

pen	stress	stress on piston (Mpa)		
mm	Inch	50055	= sucss on piston (wipa)	
0.64	0.025		0.43	
1.27	0.050		1.32	
1.91	0.075		2.28	
2.54			3.17	
3.18	0.125 4.00		4.00	
3.81	0.150		4.66	
4.45			5.12	
5.08	0.200		5.55	
6.35	0.250		6.33	
CBR Result	Str	ess (Mpa)	CBR %	
		Sample results	45.9 %	
penetration	6.90	3.17	43.9 70	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

- 2- The sample was compacted to dry density of = 2.18 (gm /cm<sup>3</sup>) At = 6.4 % optimum water content aboratories

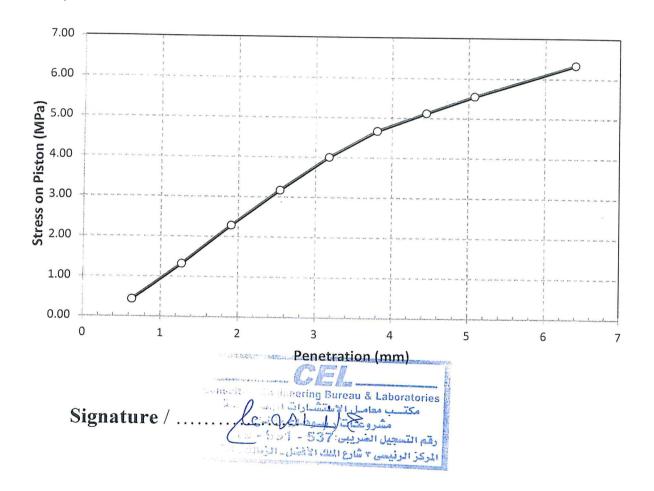
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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery</b> Date	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

## Load Penetration Curve of CBR Test <u>ASTM D-1883</u>



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Company Nam	شركه الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 5/10/2023
Soil type	: Middle Embankment
Location	: ST from 651+720 To 651+740
Level	: - 4 M
Report No.	: 142
•	Compaction test by using Sand – Cone Test Method

<u>Mpaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test#	Station	Test Hole Volume cm³	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+730	1446	2.25	6	2.12	97.8%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 % 4 ----Signature معامل المستسارات المتناسية بالمت مشروعات (سوهاج وقنا) مجيل الضريبي: 537 - 991 - 219 رقتم التس المركز الرنيسي ٢ شارع الملك الأفضل - الزمالك - القاهرة



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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: $651+500 = 488952.1897 N=2853742.8853$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: $651+500 = 488952.1897 = 2853742.8853$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting</b> No.	: 06-2

## **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية				
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
<b>Reporting No.</b>	: 06-2			

## <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	9.9

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Company Compa	شركة الكرم للمقاولات العموميه : any Name
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting</b> No.	: 06-2

## Results of liquid limit and plasticity index of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: St: 651+500 E= 488952.1897 N=2853742.8853			
Type of sample	: Soil Embankment			
<b>Delivery</b> Date	: 30/9/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 06-2			

### Soil Classification According To Project Specs :

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TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits



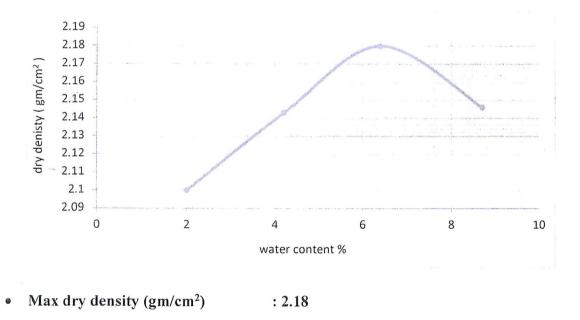
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<b>Company</b> Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery</b> Date	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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<b>Company</b> Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery</b> Date	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
<b>Reporting No.</b>	: 06-2

#### Test Results of California Bearing Ratio on Base Materials ASTM D 1883

pen	penetration				
mm	Inch	54035	on piston (Mpa)		
0.64	0.025		0.43		
1.27	0.050		1.32		
1.91	0.075	0.075 2.28			
2.54	0.100		3.17		
3.18	0.125		4.00		
3.81	0.150		4.66		
4.45	0.175		5.12		
5.08	0.200		5.55		
6.35	0.250		6.33		
CBR Result	Str	ress (Mpa)	CBR %		
At 0.1 inch (2.54 mm) penetration	St. Value 6.90	Sample results 3.17	45.9 %		

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

- 2- The sample was compacted to dry density of = 2.18 (gm/cm<sup>3</sup>) At = 6.4 % optimum waterscentent aboratories At = 6.4 % optimum waters up a value aboratories 3- Surcharge load 4.50 Kg. 4- CBR > 10 for middle and lower embankments according project spec page No 36. Signature / .....

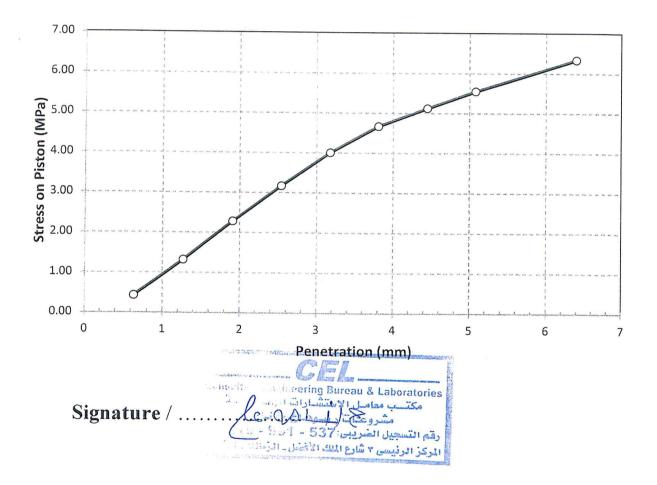
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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

## Load Penetration Curve of CBR Test ASTM D-1883



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-رم: Company

شركة الكـرم :

: Electric Express Train - Sector (5) - Qous to Arment. Project : Determine the deformation and strength characteristics of soil by the Subject plate loading test according specifications DIN 18134:2012-04 and project requirements 650+960 650+940 to Test Location : Station : 650+950 Station Level : -1.5 : 26/09/2023 Test Date : 01/10/2023 **Repot Date** : Original Earth Type of soil Report No. : 01

#### Dear Gentleman,

According to the above mentioned subject the test performed as follows:-

#### Apparatus

- 1. Loading plates consists of two plates with 300 mm and 300 mm diameter
- 2. The thickness of plates 30 mm
- 3. Dial gauges with accuracy 0.01 mm to measuring the settlement
- Steel straightedges with magnetic supports to fixed the dial gauges
- 5. Hydraulic jack with pump to transfer reactive loads to the loading plates
- 6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
- 7. Reaction loading system by roller compactor with weight approximately 15 ton.
- 8. Calibration certificates are atlached.

#### Test Procedure:

- 1. Clean the ground on test area to the required level with undisturbed soil
- 2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
- 3. Prior to starting the test applied preloading about 30 seconds.
- 4. The strain gauge and the dial gauge shall be set to zero
- 5. For a 300 mm loading plate, the limit values are 5.0 kg/cm<sup>2</sup>
- 6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal
- stress is reached.
- 7 Fach change in load (from stage to stage) shall be completed within one minute
- 8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
- 9. Following unloading, a further (2<sup>nd</sup>) loading cycle shall be carried out, in which, however, the load is to be increased

only to the penultimate stage of the first cycle (so that the full load is not reached).

 At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.

11. Remove the loads



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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

#### Report

- 1. Evaluation and representation of results.
- 2. Load Settlement curve.
- 3. The test report content the following:-
- location of test site Dimension of loading plate.
- Measuring device used Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements Unusual observation made during test.
- Dial gauge reading and corresponding normal stress Loading-settlement curve.
- Description of the soil condition below the plate after testing.

#### <u>Report</u>

- Type of soil : Original Earth
- Job requiremer : Ev2 > 40 MPa

ltem	Descriptions		
Type of bedding material below the plate	Natural Soll		
Plate Diameter (mm)	300		
date of measurement	: 26/09/2023		
Unusual observation made during test	NO		
Description of the soil conditions below the plate after testing	No deformation		

Evaluation and representation of results

Tall	Sta	tion	Location	Level	First Cycle	Second Cyclc	E <sub>V2</sub> / E <sub>V1</sub> Ratio
Test No.	To	Eddulon	(m)	Evi(MPa)	E <sub>vz</sub> (Mpa)	22.5.2.1	
1	650+940	650+960	: 650+950	: -1.5	133.0	101.5	0.76

Signature Engineering Bureau & Laboratories Lusta ... ميشر وعسات ( سموهماج والشما ) جيل المندريسي: 537 - 991 - 219 لد كر الدندسي ٢ شارع الملك الأفضل - الزمالك - القاه





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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

Company Name: شركة الكرمProject: Electric Express Train - Sector (5) - Qous to Arment.Test Date: 26/09/2023report date: 01/10/2023Station: 650+950Test No.: 01

#### Nonrepetitive Static Plate Load Tests of Soils DIN 18134

#### Loading Stage (1)

Slage					
Stress	Dial 1	Settlement	Dial 2	Settlement	Average
Ka/cm2	Dial	mm		mm	-
0	20.00	0.00	20.00	0.00	0.00
		0.13	19.81	0.19	0.16
12A 942 (2, 1, 20, 20)		0.27	19.75	0.25	0.26
		0.41	19.63	0.37	0.39
		0.57	19.49	0.51	0.54
		0.71	19.31	0.69	0.70
5.00	19.09	0.91	19.12	0.88	0.90
g Stage (1	)				e
Stress		Settlement	Diel 2	Settlement	Average
Kg/cm2	Dial 1	mm Dial 2		mm	
0	19.17	0.83	19.20	0.80	0.82
		0.62	19.45	0.55	0.59
0.100	19.63	0.37	19.71	0.29	0.33
	Kg/cm2 0.00 0.83 1.66 2.50 3.33 4.17 5.00 g Stage (1 Stress Kg/cm2 2.50 1.25	Stress         Dial 1           Kg/cm2         Dial 1           0.00         20.00           0.83         19.87           1.66         19.73           2.50         19.59           3.33         19.43           4.17         19.29           5.00         19.09           g Stage (1)         Stress           Kg/cm2         Dial 1           2.50         19.17           1.25         19.38	Stress         Dial 1         Settlement           Kg/cm2         mm         mm           0.00         20.00         0.00           0.83         19.87         0.13           1.66         19.73         0.27           2.50         19.59         0.41           3.33         19.43         0.57           4.17         19.29         0.71           5.00         19.09         0.91           g Stage (1)         Stress         Dial 1           Kg/cm2         Dial 1         Settlement           2.50         19.17         0.83           1.25         19.38         0.62	Stress         Dial 1         Settlement         Dial 2           Kg/cm2         mm         Dial 2         mm         Dial 2           0.00         20.00         0.00         20.00         0.00         20.00           0.83         19.87         0.13         19.81         19.81           1.66         19.73         0.27         19.75           2.50         19.59         0.41         19.63           3.33         19.43         0.57         19.49           4.17         19.29         0.71         19.31           5.00         19.09         0.91         19.12           g Stage (1)         Settlement         Dial 2           Kg/cm2         Dial 1         Mm         Dial 2           2.50         19.17         0.83         19.20           1.25         19.38         0.62         19.45	Stress         Dial 1         Settlement         Dial 2         Settlement           0.00         20.00         0.00         20.00         0.00         0.00           0.83         19.87         0.13         19.81         0.19           1.66         19.73         0.27         19.75         0.25           2.50         19.59         0.41         19.63         0.37           3.33         19.43         0.57         19.49         0.51           4.17         19.29         0.71         19.31         0.69           5.00         19.09         0.91         19.12         0.38           g Stage (1)         Settlement         Dial 2         Mm           Z.50         19.17         0.83         19.20         0.80           1.25         19.38         0.62         19.45         0.55

#### Loading Stage (2)

Loading	Stress	Stress Dial 1 Settlement Dial 2		Dial 2	Settlement	Average
Louding	Kg/cm2			Dial 2	mm	
0	0.83	19.51	0.49	19.62	0.38	0.43
oximately equ	1.66	1932	0.68	19 31	0 69	0.69
	s is reache	d.				
2	2.50	19.07	0.93	19.13	0.87	0.90
3	3.33	18.93	1.07	18.97	1.03	1.05
4	4,17	18.86	1.14	18.83	1.17	1.16







### Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية مشروعات محافظات الوجه القبلي

Company Name Project Test Date report date Station Test No. : شركة الكـرم Electric Express Train - Sector (5) – Qous to Arment. : 26/09/2023 : 01/10/2023 : 650+950 : 01

#### Nonrepetitive Static Plate Load Tests of Soils

DIN 18134 Stress On Soil (Kg/cm2) 0.00 0.25 0.50 0.75 1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00 4.25 4.50 4.75 5.00 5.25 0.00 0.10 0.20 0.30 Plate Settlement (mm) 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30

Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.16	0.26	0.39	0.54	0.70	0.90

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	0.90	0.82	0.59	0.33

Loading (2)	0	1	2	3	4	5	
Stage(Kg)	0	586.395	1172.8	1766.3	2352.6	2946.1	
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17	
Settlement (mm)	0.33	0.43	0.69	0.90	1.05	1.16	

Ev1 = Modulus of deformation during the loading stage.

Ev2 = Modulus of deformation during the Reloading stage.

D = Plate diameter (mm)

Ds = The difference between 0.3 and 0.7 from the maximum loading (smax) (kg/cm²) DS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



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Ev2/Ev1 = 0.76

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 26/09/2023
Soil type	: Upper Embankment
Location	: ST from 650+940 To 650+960
Level	: - 1.5 M
Report No.	: 98

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<u>Compaction test by using Sand – Cone Test Method</u> <u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moistur e Content %	Dry Density (gm/ cm³)	Degree of Compacti on (%)	Acceptan ce
1	650+950	1856	2.22	5.8	2.10	96.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature / A.c. astron Consulting Engineering Bureau & Urb vatories مکتبیب عظمل الاستشبارات الهنیدسیدة مشروعیات و سوهاج وقلبا ) رقم التسجيل الشريبي 337 - 991 - 219 المركز الرئيسى ٣ شارع الملك الافضل - الزمالك - القاهرة

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فایل ایمله ۲۹ میل الرمانات العاقرد طلبتین معاکن ۲۰۰۰ مربق ۱۹۳۹ میلاد

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Co	مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه : USP From Oous To Armant من من المعاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery</b> Date	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 04

GEL

#### Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

### Materials test

- 1. Sieve analysis according to ASTM D-422.
- Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature / 19.991.437 الملك الافضا

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۲ ش الملك الأقشل البمالك التامرة نليمون الأكس ۲۰ ۲۷۳۵۳۳۱۱ ۲۰۰۰ ۲۷۳۹۲

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية			
Company Name Project Location Type of sample Delivery Date Reporting Date	: Electric Express Train – HSR From Qous 10 Armane : St: 650+800 E= 48947.1891 N=2854194.3005 : Soil Embankment : 06/08/2023 : 10/08/2023		
<b>Reporting No.</b>	: 04		

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size	Sieve Size (IN)	Passing %	
(mm)	(11.1)		
50	2	97.5	
37.5	1.5	90.8	
25	1	78.3	
19	3/4	72.4	
	1/2	58.2	
12.50	3/8	51.3	
9.50	4	49.3	
4.75	10	44.2	
2.00	40	21.5	
0.425	40		



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۲ ش الملك الأفضل الزمالك القاهرة تليفون ا قاكس ١٠ ٢٧٣٦٢٠٩٢٠ ٢٧٣٦٢٠٩٢

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات الهندسية			
Company Name	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 650+800 E= 48947.1891 N=2854194.3005		
Type of sample	: Soil Embankment		
Delivery Date	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
Reporting No.	: 04		

## <u>Materials finer than 75 µm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	6.8



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	مكتب معامل الإستشارات المهتدسية
	· · · · · · · · · · ·
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 650+800 E= 48947.1891 N=2854194.3005
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
Reporting No.	: 04

Consulting Engineering Bureau & Laboratories

## <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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۲ ش الملك الافضار. الزمالك الذاهرة تليفوز ( فاكس : ۲۷۳۹٬۷۳۲۱

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية			
شركة الكرم للمقاولات العمومية : Company Name			
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 650+800 $E = 48947.1891$ N=2854194.3005		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
Reporting No.	: 04		

## Soil Classification According To Project Specs :

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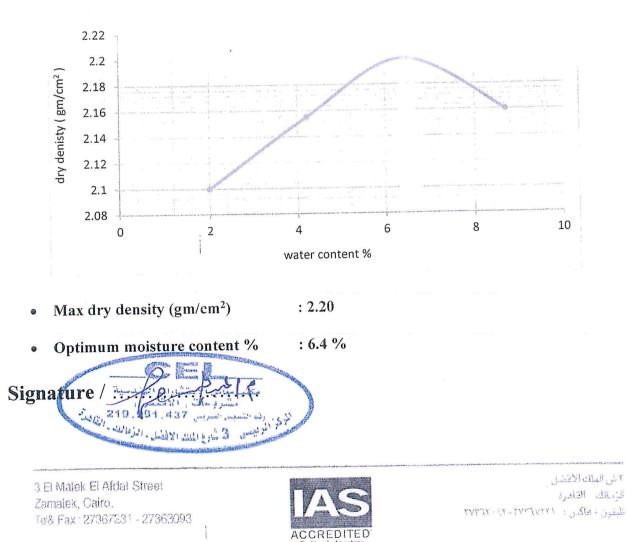
TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.2	Max 50 %		
0.425 mm (No. 40).	21.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	6.8	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are (  $\Box$  Comply -  $\Box$  Not Comply ) with specifications limits

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 650+800 $E = 48947.1891 N = 2854194.3005$		
Type of sample	: Soil Embankment		
<b>Delivery</b> Date	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
<b>Reporting</b> No.	: 04		

<u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية			
Company Name Project Location	: شركة الكرم للمقاولات العموميه : Electric Express Train – HSR From Qous To Armant : St: 650+800 E= 48947.1891 N=2854194.3005		
Type of sample	: Soil Embankment		
<b>Delivery</b> Date	: 06/08/2023		
<b>Reporting Date</b>	: 10/08/2023		
Reporting No.	: 04		

### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

	ADIVIL	1005		
penetration		stress	stress on piston (Mpa)	
mm	Inch			
0.64	0.025		0.43	
1.27	0.050		1.47	
1.91	0.075		2.48	
2.54	0.100		3.49	
3.18	0.125		4.61	
3.81	0.150		5.82	
4.45	0.175		7.04	
5.08	0.200		8.36	
6.35	0.250	0 11.45		
CBR Result	Stress (Mpa)		CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results	ample results 50.6 %	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

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2- The sample was compacted to dry density of =  $2.20 \text{ (gm / cm^3)}$ 

- At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

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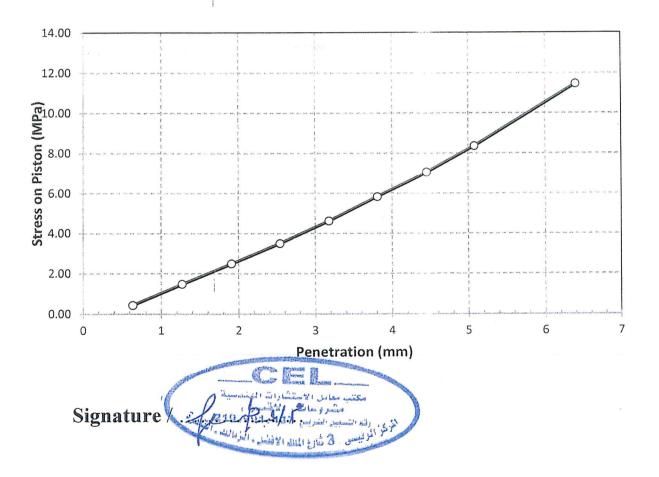
penetration

ندر بيسي 3 ثارع الملك الافتنار التركيمية 2 Zamalek, Cairo. Tel& Fax : 27367231 - 27363093

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	مكتب معامل الإستشارات الهندسية	
Company Name	شركة الكرم للمقاولات العموميه :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St: 650+800 E= 48947.1891 N=2854194.3005	
Type of sample	: Soil Embankment	
<b>Delivery</b> Date	: 06/08/2023	
<b>Reporting Date</b>	: 10/08/2023	
<b>Reporting</b> No.	: 04	

## Load Penetration Curve of CBR Test ASTM D-1883



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٢ ش الملك الأفضل . الزمالك القاهرة تليفون • فاكس : ٢٧٣٦ ٢٠٩٢ - ٢٧٣٦



Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Name	شركه الكرم:
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 2/10/2023
Soil type	: Middel Embankment
Location	: ST from 651+680 To 651+700
Level	: - 2.5 M
Report No.	:128 ompaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	651+695	1497	2.26	5.5	2.14	98.6%	Comply

Degree of compaction based on proctor test dated At

• Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 % Consulting Engineering Bureau & Laboratories Signature 7... 2/ Justas u مكت مشروعيات (سوفساج وقيل جيل الضريبي: 537 - 991 - 219 رقم التر الركز الرنيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

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شركة الكرم للمقاولات العموميه : Company Name : Electric Express Train – HSR From Qous To Armant Project Location : St: 651+500 E= 488952.1897 N=2853742.8853 Type of sample : Soil Embankment **Delivery Date** : 30/9/2023 **Reporting Date** : 4/10/2023**Reporting No.** : 06-2

#### Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883

Signature /...

Consulting Engineering Dureau & Laboratories مكتسب معامل الاس مشروعات ( سوهاج وقنا) رقم التسجيل المنريين: 537 - 991 - 219 الديكة الرفيسي ٢ شارع الملك الأفضل - الزمالك - القاهرة

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٣ ٢ الملك الأفضل الزمالك التأمرة تليمون - هاكس - ۲۷۳۲ ۲۷۲۳ - ۲۶۰ ۲۲۲۷

Consulting Engineering Bureau & Laboratories		
	مكتب معامل الإستشارات الهندسية	
Company Name	شركة الكرم للمقاولات العموميه :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St: 651+500 E= 488952.1897 N=2853742.8853	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 30/9/2023	
<b>Reporting Date</b>	: 4/10/2023	
<b>Reporting No.</b>	: 06-2	

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#### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422.**

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.1
25	1	85.2
19	3/4	71.1
12.50	1/2	62.0
9.50	3/8	59.0
4.75	4	51.2
2.00	10	44.1
0.425	40	12.5

- Ann Consulting Engineering Rureau & Laboratories Signature /.. يقم التسبيل المريبي: 219 - 991 - 537 -6400 مشروعيات رس لركز الرذيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

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٢ في الملك الأفضل الزمالك القاهرة تلينين ، فاكس : ۲۲۲۷۲۳۲۱ - ۲۶۰۲۲۲۲۲۲

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C	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

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### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	9.9

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3 El Malek El Afdel Street Zamalek, Cairo Tel& Fax: 27367231 - 27363093



٢ ش الدلك الاقتصل . الزمانك القاهرة تابعون « هاكس : ٢٧٣٦٧٢٢١ - ٢٧٣٦٢٠٠٢

and the second s		
Consulting Engineering Bureau & Laboratories		
	مكتب معامل الاستشارات الهندسية	
شركة الكرم للمقاولات العموميه : Company Company Name		
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St: 651+500 E= 488952.1897 N=2853742.8853	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 30/9/2023	
<b>Reporting Date</b>	: 4/10/2023	
Reporting No.	: 06-2	

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### <u>Results of liquid limit and plasticity index</u> <u>of soils according to ASTM D-4318</u>

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

and Have Consulting Engineering Bureau & Laboratories مكتب معامل بلاستشارات المندسيسة مشروهات الملهماج (الكرام) . قدم التسجيل المدريين: 537 - 991 - 219 عب معاصل Signature /... ٢ الرديمي ٢ شارع الملك الأقضل - الزمالك - القاهر ٥

3 E- Malek E- Afdal Street Zamalek, Cairo Te& Fax: 27367231 - 27363093



۲ ش المالك الأفضل الزمالك التامرة تليفون • فاكس د ۲۷۳۱ ۷۲۳ ۲۰۹۲ - ۲۷۳۱۲

C	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

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#### Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		0
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	44.1	Max 50 %		
0.425 mm (No. 40).	12.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	9.2	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits

Signature / ... CAnspiting Foldpearing Bureau & Laboratories مكتب معاصل الاستشارات الهن مشروعيات ( سروهاج والنا) رتم انتسميل المريبي: 537 - 991 - 219 حكر الرئيس " شارع المالك الأقضل - الرمالك - القاهرة

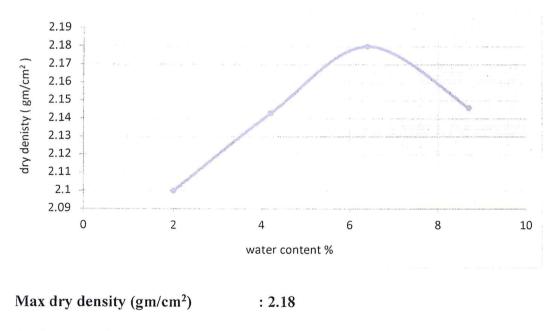
2 El Malek El Afdal Street Zamalek, Cairo Ta& Fax: 27367231 - 27363093



۲۰ الملك الأقصل الزمالك القاهرة تلجزن افاكس : ۲۲۰٬۳۲۱ ۲۴ ۲۰٬۳۲۲

Consulting Engineering Burgau & Laboratories مكتب معامل الإستشارات المندسية		
Company Name	شركة الكرم للمقاولات العموميه :	
Project	: Electric Express Train – HSR From Qous To Armant	
Location	: St: 651+500 E= 488952.1897 N=2853742.8853	
Type of sample	: Soil Embankment	
<b>Delivery Date</b>	: 30/9/2023	
<b>Reporting Date</b>	: 4/10/2023	
<b>Reporting No.</b>	: 06-2	

#### <u>Moisture – Density relation of soil</u> <u>Test result (Modified proctor test)</u> <u>ASTM D-1557</u>



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۲ ش الملك الأفدس الزمالك القاهرة تلينون • فاكس • ۲۷۳٦۷۲۱۱ - ۲۷۳٦۲۰۹

Consulting Engineering Bureau & Laboratories مكتب معامل الاستشارات المهندسية			
<b>Company Name</b>	شركة الكرم للمقاولات العموميه :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: St: 651+500 E= 488952.1897 N=2853742.8853		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/9/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 06-2		

#### Test Results of California Bearing Ratio on Base Materials **ASTM D 1883**

etration	stress	on piston (Mpa)		
Inch				
0.025		0.43		
0.050		1.32		
0.075		2.28		
0.100		3.17		
0.125	3	4.00		
0.150		4.66		
0.175		5.12		
0.200		5.55		
0.250		6.33		
Sti	ess (Mpa)	CBR %		
St. Value	Sample results	45.9 %		
	etration Inch 0.025 0.050 0.075 0.100 0.125 0.150 0.175 0.200 0.250 Str	Inch         stress           0.025         0.050           0.050         0.075           0.100         0.125           0.150         0.150           0.175         0.200           0.250         Stress (Mpa)           St. Value         Sample results		

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

Attached graph shows penetration resistance versus penetration magine
 2- The sample was compacted to dry density of = 2.18 (gm /cm<sup>3</sup>) At = 6.4 % optimum water content aboratories
 3- Surcharge load 4.50 Kg.
 4- CBR > 10 for middle and lower embankments according project spec page No 36. Signature / .....

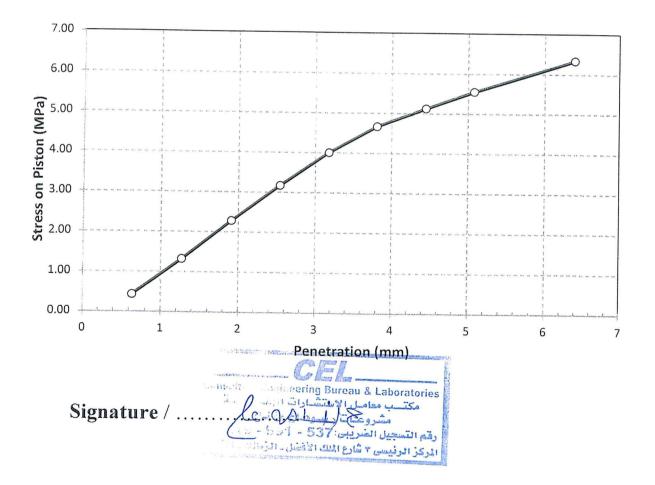
3 El Malek El Afdal Street Zamalek, Cairo. Tel& Fax: 27367231 27363093



٢ ش الملك الأفضل الزمالك القاهرة ىلېمېر د ماكس - ۲۲۰۰، ۲۰۰۳ × ۲۰۰، ۲۷۳۲

~	onsulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية
Company Name	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery</b> Date	: 30/9/2023
<b>Reporting Date</b>	: 4/10/2023
Reporting No.	: 06-2

# Load Penetration Curve of CBR Test ASTM D-1883



3 El Malek El Afdal Street Zamalek, Cairo Tel& Fax: 27367231 - 27363093

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۳ ثن الملك الأقتسلي. الزمالك - التاهرة تليفرن - هاكس : - ۲۷۳٦۷۲۲۱

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية				
Company Name	شركة الكرم :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/09/2023			
<b>Reporting Date</b>	: 4/10/2023			
Reporting No.	: 08-3			

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Dear Gentleman,

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Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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المتحدة . الرحالة - المتقودة للمحد - الأمر - متعامرة محد المحققة

	<i>CEL</i>
Cor	nsulting Engineering Bureau & Laboratories مكتب معامل الاستشار ات الهندسية
Company Compan	y Name : شركة الكرم
Project :	Electric Express Train – HSR From Qous To Armant

E= 32°54′53.6″ N=25°49′23.7″ Location : st: 647+920 Type of sample : Soil Embankment **Delivery Date** : 30/09/2023 **Reporting Date** : 4/10/2023

**Reporting No.** : 08-3

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#### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422.**

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Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	96.0
37.5	1.5	91.3
25	1	82.5
19	3/4	72.1
12.50	1/2	60.3
9.50	3/8	53.0
4.75	4	41.1
2.00	10	35.4
0.425	40	20.2

CEL. Consulting Engineering Bureau & Laboratories مكتوب معاصل الاستسارات المندسية Signature جماع بروم 219 - 991 - 557 المركز الرنيسي ٣ شارع الملك الأفضل - الزمالك - القاهرة

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المندسية			
Company Name	شركة الكرم :		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/09/2023		
<b>Reporting Date</b>	: 4/10/2023		
<b>Reporting No.</b>	: 08-3		

### <u>Materials finer than 75 µm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

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Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	4.1



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Consulting Engineering Bureau & Laboratorios مكتب معامل الإستشارات الهندسية			
<b>Company Name</b>	شركة الكرم:		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/09/2023		
<b>Reporting Date</b>	: 4/10/2023		
<b>Reporting No.</b>	: 08-3		

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### <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0



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11. Minek E. Afrital Stree Zachaliek, Gairo 198 Fex, 2736723 († 27363093)



۲ ش المالية <sup>معر</sup>فيلير. البرطالة - العلموة المبطور - براكس - ۲۹ مر، ۲۹۳ - ۲۰، ۱۷۳۹۵

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية				
<b>Company Name</b>	شركة الكرم :			
Project	: Electric Express Train – HSR From Qous To Armant			
Location	: st: $647+920$ E= $32^{\circ}54'53.6''$ N= $25^{\circ}49'23.7''$			
Type of sample	: Soil Embankment			
<b>Delivery Date</b>	: 30/09/2023			
<b>Reporting Date</b>	: 4/10/2023			
<b>Reporting No.</b>	: 08-3			

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#### Soil Classification According To Project Specs :

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TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	35.4	Max 50 %		
0.425 mm (No. 40).	20.2	Max 30 %	Max 50 %	
0.075 mm (No. 200).	4.1	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)				
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( 
Comply - 
Not Comply ) with specifications limits

Consulting Engineering Bureau & Laboratorie Signature 219 - 991 - 537 - 537 - 537 المركز الرونيسي + شارع الملك الإلافال - الزماليك - القاهرة



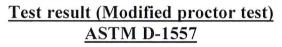
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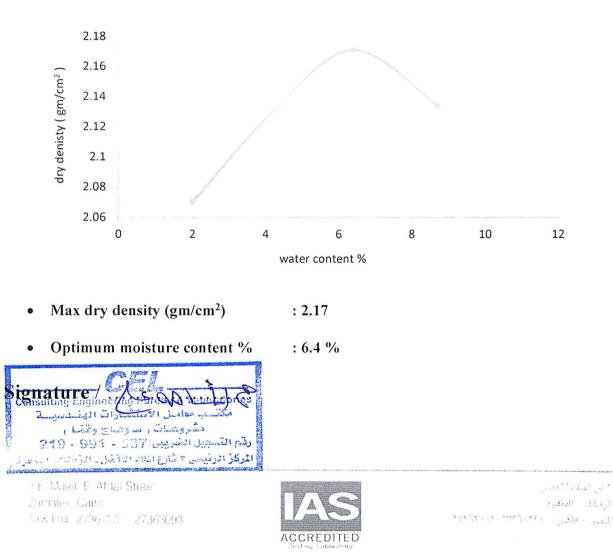


شركة الكرم : Company Company Name			
Project	: Electric Expres	s Train – HSR Fr	om Qous To Armant
Location	: st: 647+920	E= 32°54′53.6″	N=25°49′23.7″
Type of sample	: Soil Embankme	ent	
<b>Delivery Date</b>	: 30/09/2023		
<b>Reporting Date</b>	: 4/10/2023		
<b>Reporting No.</b>	: 08-3		

#### Moisture – Density relation of soil

N.







شركة الكرم : Company Company Name			
Project	: Electric Expres	s Train – HSR Fr	om Qous To Armant
Location	: st: 647+920	E= 32°54′53.6″	N=25°49'23.7"
Type of sample	: Soil Embankme	ent	
<b>Delivery Date</b>	: 30/09/2023		
<b>Reporting Date</b>	: 4/10/2023		
<b>Reporting No.</b>	: 08-3		

### Test Results of California Bearing Ratio on Base Materials

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#### ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	succe on proton (tripu)
0.64	0.025	0.56
1.27	0.050	1.42
1.91	0.075	2.08
2.54	0.100	2.84
3.18	0.125	3.60
3.81	0.150	4.55
4.45	0.175	5.57
5.08	0.200	6.33
6.35	0.250	7.60

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm)	St. Value	Sample results	41.1.0/
penetration	6.90	2.84	41.1 %

Notes:

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1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =  $2.17 \text{ (gm/cm}^3\text{)}$ 

At = 6.4 % optimum water content.

3 Surcharge load 4:50 Kg.

CBR > 10 for middle and lower embankments according project spec page No 36.

Signiantered and Suceau & Laboratories الدرين الدنيسي ٣ شارع الملك الالمشال الذياللا القاهرة

-81 # 206720 - 2367693



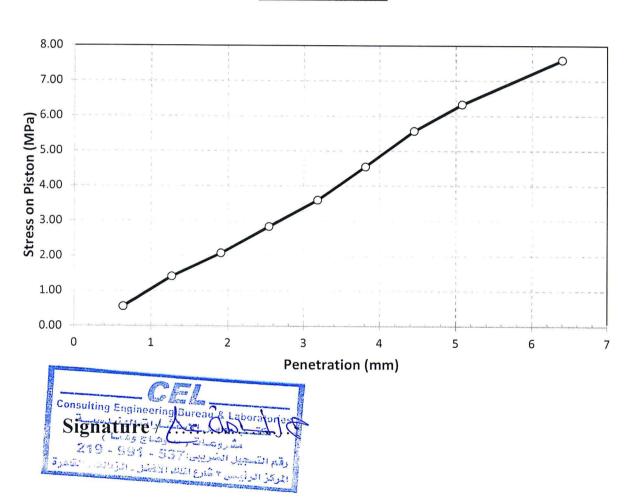
۲ ش الملك الأعصر الزمانات الماهرد علم معاكست (۲۳۱۵ ۲۰۰۰ ۲۰۰۱ ۲۰۰۳

Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات المهندسية			
<b>Company Comp</b>	any Name : شىركة الكرم		
Project	: Electric Express Train – HSR From Qous To Armant		
Location	: st: 647+920 E= 32°54′53.6″ N=25°49′23.7″		
Type of sample	: Soil Embankment		
<b>Delivery Date</b>	: 30/09/2023		
<b>Reporting Date</b>	: 4/10/2023		
Reporting No.	: 08-3		

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# Load Penetration Curve of CBR Test



ASTM D-1883

\*E March E Africa Share Callaber (Same) (REE) (2005) \* Callebra IAS ACCREDITED

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: ا
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 23/09/2023
Soil type	: Middel Embankment
Location	: ST from 647+220 TO 647+300
Level	: - 3.5 M
Report No.	: 92
	<u>Compaction test by using Sand – Cone Test Method</u>

ASTM D- 1556

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	647+840	1430	2.21	6.4	2.07	95.5%	Comply
2	647+876	1469	2.20	5.8	2.08	96.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.17 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature / ٢٠٠٠ ١ ٢٠٠٠ ٢٠٠٠ / Consulting Engineering Bureau & Laboratories مكتب معاصل الاستشارات الهندسينة مشر تمات رسوضاح وقنا ) رقم التسجيل الشريبي: 537 - 994 - 919 التركز الرديسي ٣ شارع الملك الاخضل - الزمالك - القاهرة

31 Mater E Afaci Street

zi di talihan spa**n**tasi Talihan shakirar



\* آن الملك الأحدي الرمائل، "المأفرز الرمائل، "المأفرز الإحرار 200 م. 1979 Consulting Engineering Bureau & Laboratorios

<b>Company Name</b>	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 06

Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



3 Er Malek E. Afdot Street Zamalek, Cairo Tel& Fax: 2736720 - 2736/003



۳ ش الملك الأفدين الرحالة - الذاهيرة طينيس - فاكبر - ۲۳۳، ۲۳۱ - ۱۰۰ ال<sup>س</sup>لا

G==1
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 06

### **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	99.3
37.5	1.5	93.5
25	1	80,5
19	3/4	78.3
12.50	1/2	63.1
9.50	3/8	55.8
4.75	4	50.4
2.00	10	46.4
0.425	40	24.5

التحقيد سامل الاستشادات التهديد المحكمة معاقد التحكيد / Signature رقد السبين الشريبي 437 - 219 - 219 المرتيسي - 3 شارع الملك الأفضل - الزمانية -

3 El Malek El Afriol Street Zamalek, Cairo Tel& Fax: 27367231 - 27363003



۲ یک انعال ۲۶۰ د. الزمالک - القادره قلیمون • فلکس : ۲۷۳۵٬۷۲۴ - ۲۰-۲۷۳۵



<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 06

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μΜ (No.200)	10.3



3 El Malek El Afdal Street Zamalek, Gairo Te& Pax: 27367231 - 27363093



۲ ش الملك الأقدمي الرمالي العلقود تليفون «عاكس» ۲۷۳٦۲۰۰۱

G = 1	
Consulting Engineering Bureau & Laboratories	-
مكتب معامل الإستشارات الهندسية	

Company Name	شركة الكرم للمقاولات العموميه :
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 06

# <u>Results of liquid limit and plasticity index</u> of soils according to ASTM D-4318

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

NI WW ä 1260 ر و سات 219.997.437 Signature / 1.01

3 El Malek El Afdal Street Zamalek, Cairo Te& Fax: 2736723 - 27363093



۲ ش الملك الأقدى الزمالك - التامرة البنون - فاكس - ۲۷۳۲ ۲۰۱۱

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	C	on	nsulting Engineering Bureau & Laboratories مکتب معامل الاستشارات الهندسیة	
am	e	•	شركة الكرم للمقاولات العموميه	

<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 06

## Soil Classification According To Project Specs :

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TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	46.4	Max 50 %		
0.425 mm (No. 40).	24.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	10.3	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction p	assing 0.425 m	n (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( Comply - Not Comply ) with specifications limits

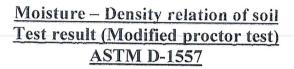
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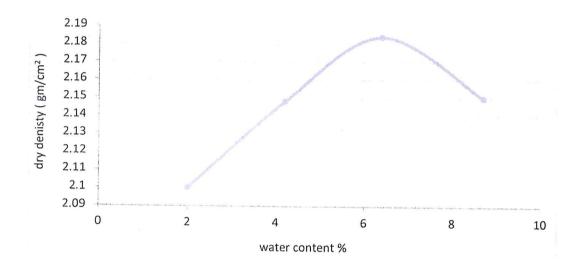
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\* تى العناء الأدنية. الومالك الدنفيرة تليفون ( فلكس : ٢٧٣٦٢٣١٢ - ٢٤٠ ٢٧٣٦٢ تليفون ( فلكس : ٢٧٣٦٢٣٢٢ - ٢٤٠

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Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
Reporting No.	: 06





• Max dry density (gm/cm<sup>2</sup>) : 2.18

• Optimum moisture content % : 6.4 %

En

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Company Name	شركة الكرم للمقاولات العموميه :
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Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 06

#### Test Results of California Bearing Ratio on Base Materials ASTM D 1883

and a second	ASIM	<u>D 1883</u>	
pen	etration	stress	on piston (Mpa)
mm	Inch		on piston (wipa)
0.64	0.025		0.43
1.27	0.050		1.32
1.91	0.075		2.28
2.54	0.100		3.19
3.18	0.125		4.05
3.81	0.150		4.71
4.45	0.175		5.27
5.08	0.200		5.55
6.35	0.250		5.72
CBR Result	Str	ess (Mpa)	CBR %
At 0.1 inch (2.54 mm) penetration	St. Value 6.90	Sample results 3.19	46.2 %

Notes:

4-

1

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =  $2.18 (\text{gm}/\text{cm}^3)$ 

At = 6.4 % optimum water content. 3- Surcharge load 4.50 Kg.

CBR > 10 for middle and lower embankments according project spec page No 36. المحد وقعات

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الإمالك أأفاقتره تا<sub>مدور</sub> ، فائدر ۲۲۰ ، ۲۲۰ ، ۲۲۰ ۲

	GEL	
	Consulting Engineering Bureau & Laboratories	
	مكتب معامل الإستشارات الهندسية	
Nam	شركة الكرم للمقاولات العموميه : e	
	: Electric Express Train – HSR From Qous To Armant	

Location : St: 651+500 E= 488952.1897 N=2853742.8853

Type of sample : Soil Embankment

Delivery Date : 06/08/2023

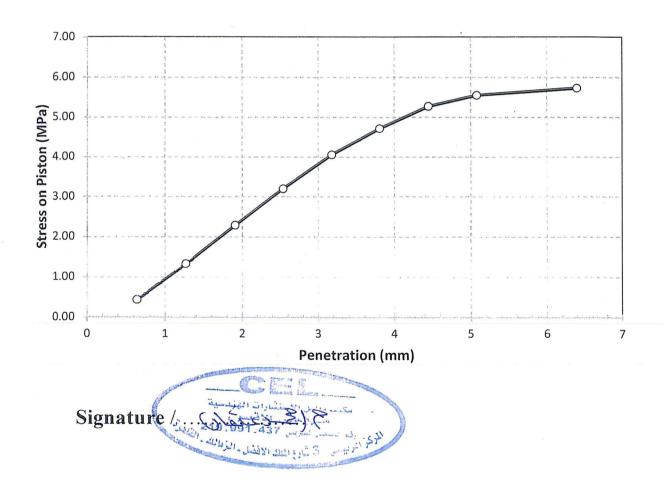
Reporting Date : 10/08/2023

Reporting No. : 06

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Company Project

> Load Penetration Curve of CBR Test ASTM D-1883



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Company Name	شىركە الكرم :
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 20/09/2023
Soil type	: Middle Embankment
Location Level	: ST from 651+100 To 651+120 : - 1.75 M
Report No.	: 76-3
Co	ompaction test by using Sand – Cone Test Method
	<u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptanc e
1	651+110	1501	2.24	6	2.11	96.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.18 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

2 -مشروعات (سروهاج وقنا) رقم التسجيل الضريبي: 337 - 991 - 219 المركز الرئيسي ٣ شارع الملك الأفشل - الزمالك - القاهرة

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Consulting Engineering Bureau & Laboratories مكتب معامل الإستشارات الهندسية

Company Nam	شركه الكرم: ا
Project	: Electric Express Train – HSR From Qous To Armant
Testing Date	: 2/10/2023
Soil type	: Middel Embankment
Location	: ST from 651+580/651+600
Level	: - 3 M
Report No.	: 124
	Compaction test by using Sand – Cone Test Method

<u>ASTM D- 1556</u>

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	651+592	1524	2.30	6.4	2.16	99.6%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.17 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 % Signature in from och siture & Laboratories الرور كيسة مشروعات ( سوهاج وقن رقم التسجيل الضريبي: 537 - 991 - 219 المركز الرنيسى ٣ شارع الملك الأفضل - الزمائلك - القاهرة

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<b>Company Name</b>	شركة الكرم للمقاولات العموميه:
Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: 651+500 E= 488952.1897 N=2853742.8853
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 06

Dear Gentleman,

Attached here with the delivered on 6 / 8 / 2023

This sample is representative for 5.000 M<sup>3</sup>

#### Materials test

- 1. Sieve analysis according to ASTM D-422.
- 2. Material finer than sieve No. 200 according to ASTM D-1140.
- 3. Liquid limits and plasticity index of soil according to ASTM D-4318.
- 4. Soil classification according to Project Specs.
- 5. Proctor Test according to ASTM D-1557
- 6. CBR according to ASTM D-1883



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Project	: Electric Express Train – HSR From Qous To Armant
Location	: St: $651+500 = 488952.1897 = 2853742.8853$
Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	:06

# **RESULTS OF SIEVE ANALYSIS According to ASTM D-422**.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	99.3
37.5	1.5	93.5
25		80.5
19	3/4	78.3
12.50	1/2	63.1
9.50	3/8	55.8
4.75	4	50.4
2.00	10	46.4
0.425	40	24.5



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<b>Delivery Date</b>	: 06/08/2023_
<b>Reporting</b> Date	: 10/08/2023
<b>Reporting</b> No.	: 06

### <u>Materials finer than 75 μm (no.200) sieve</u> <u>By washing ASTM D-1140</u>.

Test	Results (%)
Percentage of material finer than Sieve Size 75 μM (No.200)	10.3

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<b>Reporting Date</b>	: 10/08/2023
<b>Reporting No.</b>	: 06

C> 51

# <u>Results of liquid limit and plasticity index</u> <u>of soils according to ASTM D-4318</u>

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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Type of sample	: Soil Embankment
<b>Delivery Date</b>	: 06/08/2023
<b>Reporting Date</b>	: 10/08/2023
<b>Reporting</b> No.	: 06

## Soil Classification According To Project Specs :

TEST	Results (%)	Limits according Projects Specs		C
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	46.4	Max 50 %		
0.425 mm (No. 40).	24.5	Max 30 %	Max 50 %	
0.075 mm (No. 200).	10.3	Max 15 %	Max 15 %	Max 15 %
Characteristics of fraction	passing 0.425 m	m (No.40)		
Liquid Limit				
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are ( Comply - Not Comply ) with specifications limits

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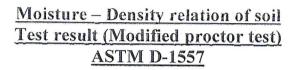
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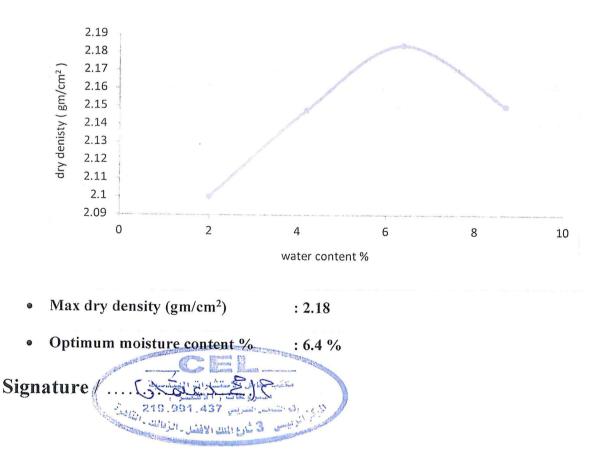


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<b>Reporting</b> No.	: 06





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Company Name	شركة الكرم للمفاولات العمومية
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#### <u>Test Results of California Bearing Ratio on Base Materials</u> ASTM D 1883

		17 1005		
pen	penetration mm Inch		stress on piston (Mpa)	
mm				
0.64	0.025 0.4		0.43	
1.27	0.050 1.32		1.32	
1.91	0.075 2.28		2.28	
2.54	0.100 3.19		3.19	
3.18	0.125		4.05	
3.81	0.150		4.71	
4.45	0.175 5.27		5.27	
5.08	0.200		5.55	
6.35	0.250 5.72		5.72	
CBR Result	St	ress (Mpa)	CBR %	
At 0.1 inch (2.54 mm)	St. Value	Sample results	46.2.0/	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

3.19

- 2- The sample was compacted to dry density of =  $2.18 \text{ (gm / cm^3)}$
- At = 6.4 % optimum water content.
- 3- Surcharge load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

6.90

penetration

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46.2 %

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Project : Electric Express Train – HSR From Qous To Armant
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: St: 651+500 E= 488952.1897 N=2853742.8853

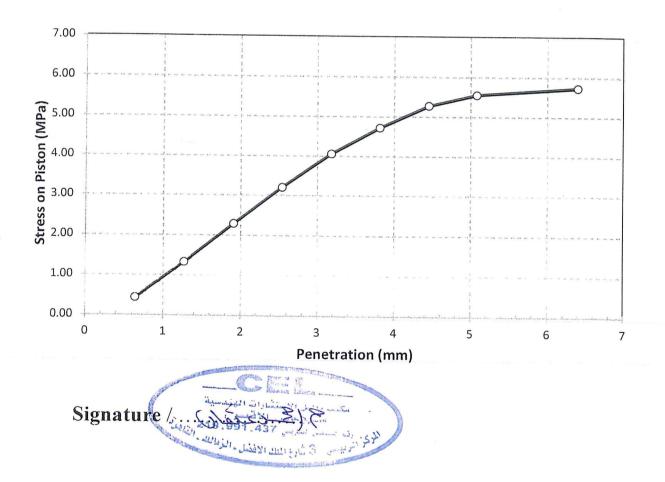
Type of sample : Soil Embankment

**Delivery Date** : 06/08/2023

**Reporting Date** : 10/08/2023

**Reporting No.** :06

## Load Penetration Curve of CBR Test ASTM D-1883



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