وزارة النقل
الهيئة العامة للطرق والكباري

السيد المهندس / رئيس قطاع التنفيذ و المناطق .

تحية طيبة و بعد .....

بالإشارة الى مشروع أعمال الجسر الترابى و الاعمال الصناعية لمشروع القطار الكهربائى السريع (العين السخنة – العاصمة الادارية - العلمين – مطروح) لتنفيذ المسافة من الكم ٤٤١+٦٠٠ الى الكم ٤٤٣+٦٠٠ بطول ٢ كم اتجاه برج العرب (قطاع العلمين – فوكة).

عقد رقم : (٢٠٢٣/٢٠٢٢/١١٨٦) بتاريخ ٢٠٢٣/٠١/١٢ .

نتشرف بأن نرفق لسيادتكم طية المقايسة المعدلة للمشروع المذكور اعلاه .

و تفضلو سيادتكم بقبول وافر الإحترام و التقدير .

رئيس الإدارة المركزية
منطقة غرب الدلتا
الاسكندرية - مرسى مطروح
عميد . مهندس /
"هاني محمد محمود طه"

مركز الإستشارات الهندسية
دكتور سيد الجيوشي

وزارة النقل

اعمال الجسر الترابي والأعمال الصناعية لمشروع القطار الكهربائي فائق السرعة قطاع (العلمين - فوكة)
المقايسة المعدلة لبنود الأعمال تنفيذ شركة ايجيبت ستون الجنا برج العرب
القطاع من المحطة ٦٠٠+٤٤١ الى ٦٠٠+٤٤٣

رقم البند	بيان الأعمال	الوحدة	الكمية	الفئة	الإجمالي
١	اعمال الحفر				
١-١	يقوم المقاول باعمال حفر باستخدام المعدات الميكانيكية لجميع انواع التربة [illegible] حيث تكون مسافة نقل نواتج الحفر عن ٥٠٠ متر من محور الطريق يتم حساب ما يزيد [illegible]	م٣	١٩٩,٠٠٠	٢٠	٣,٩٨٠,٠٠٠
٢	اعمال الازالة و التطهير				
٢-١	يقوم المقاول باعمال تطهير الموقع [illegible]	م٢	١٥٠,٠٠٠	٥,٠٠	٧٥٠,٠٠٠
٢-٢	يقوم المقاول باعمال [illegible]	م٣	٢,٠٠٠	٨٠,٠٠	١٦٠,٠٠٠
٣	اعمال الردم				
٣-١	يقوم المقاول باعمال توريد ونقل تربة صالحة للردم [illegible] - مسافة النقل ٢ كم - [illegible] - السعر يشمل [illegible] - السعر يشمل قيمة [illegible]	م٣	٤٨,٥٢٢,٥١	٨٥	٤,١٢٤,٣٩٠
	علاوة مسافة النقل ١٢٢ كم	م٣	٤٨,٥٢٣,٥١	٢٤٢	١١,٧٤٢,٦٦٩
	علاوة [illegible]	م٣	٤٨,٥٢٣,٥١	١٣	٦٣١,٧٠٤
٣-٢	يقوم المقاول باعمال [illegible] - مسافة النقل حتى ٢ كم - [illegible] - [illegible] - السعر لا يشمل [illegible]	م٣	٣٠,٠٠٠,٠٠	٣١,٥	٩٤٥,٠٠٠
	الإجمالي				١٩,٩٨٩,٨٥٩

([illegible] جنيه فقط لا غير)

مدير المشروع الشركة
م/ محمد [illegible]

مدير المشروع الاستشاري
م/ مصطفى [illegible]

مدير المشروع المالك
م/ [illegible]

مدير عام المشروعات
م/ محمد حسني [illegible]

يعتمد
رئيس الادارة المركزية
منطقة غرب الدلتا
الإسكندرية - مرسى مطروح
عميد مهندس /
" هانى محمد محمود طه "

SYSTRA

SGAC مركز الاستشارات الهندسية للنقل والمطارات والطرق (خوري دوليون) دكتور/ سعد الجيوشي

وزارة النقل الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

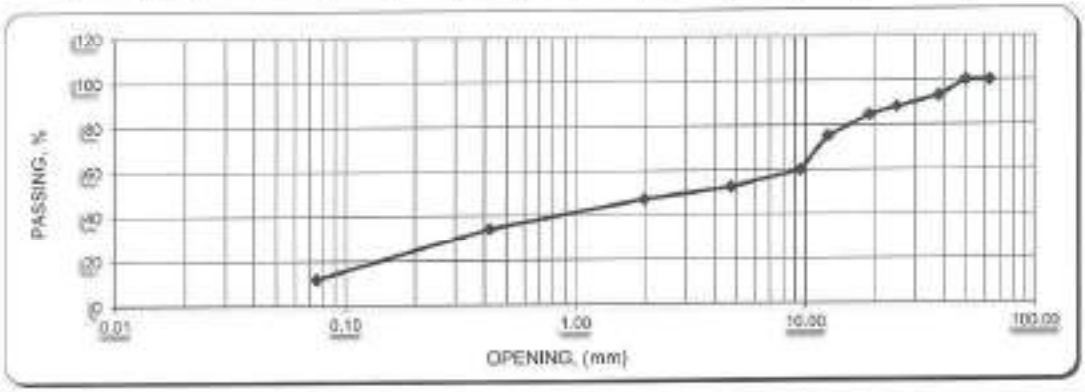
Company:	ايجيبت ستون للتعدين و التوريدات		Sample No:	
description:	تربة ردم المصرية		Sample Date :	04/09/2023
Station Represented :	443+420 to 443+520	(-5)	Report Date:	04/09/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

(ASTM:D-424//AASHTO :T-90-80)

Source of Tested Material	

Sieve No.	2.5 in.	2.0 in.	1.5 in.	1.0 in.	3/4 in	1/2 in.	3/8 in.	No 4	No.10	No.40	No.200
Opening (mm)	63.50	50.00	38.00	25.00	19.00	12.50	9.50	4.75	2.00	0.425	0.075
Passing, %	100.0	100.0	93.1	88.1	84.5	75.1	60.0	52.4	47.3	34.2	11.8



Atterberg Limits	L.L.	0.0	Max. 35	P.I.	0	P.I.	0.0	(Max. 10)

SOIL CLASSIFICATION :	A -1- B

GARP Consultant Engineer's Comments :

EGPC
Lab Contractor Eng.:-
قطاع المقاولات

مركز الاستشارات الهندسية للنقل والمطارات SGAC
SGAC Consultant Eng.:-
مشروع القطار السريع قطاع ٦

SYSTRA

SGAC مركز الإستشارات الهندسية للنقل و المطارات و الطرق (خبراء دوليون)
دكتور/ سعد الجيوشي

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

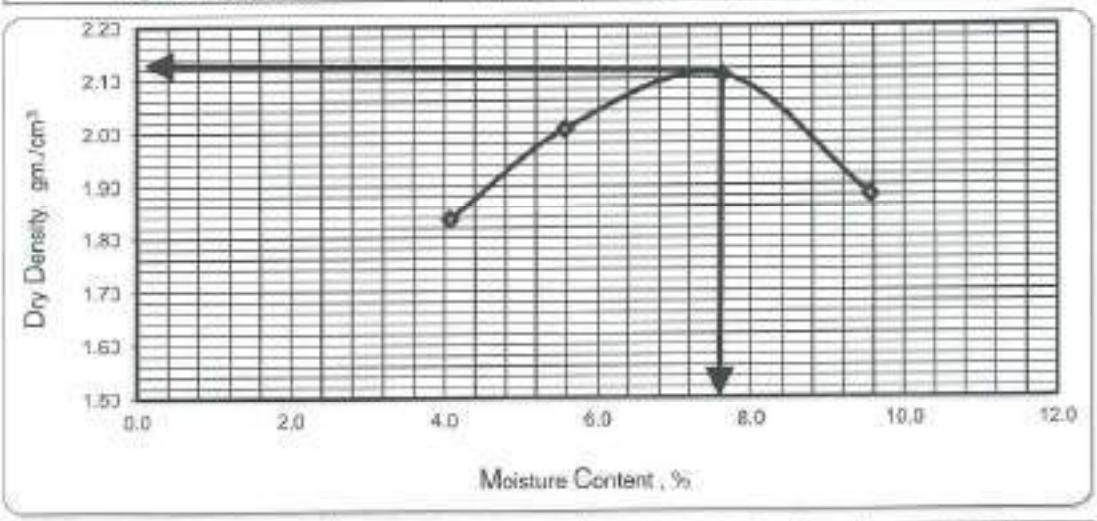
Company:	إيجيبت ستون للتعدين والتوريدات	Sample No:	
Description :	مشون	Sample Date :	04/09/2023
ation Represente	443+420 to 443+520	Report Date:	05/09/2023

Laboratory Compaction Characteristics (Proctor) of Soil Sample

ASTM D 1557 - Method "C" 6 in. mold, 5 equal layers, each compacted by 56 blows
Using 10 lbf. rammer dropped from 18 in. hight, Producing a compactive effort of 56000 ft-lbf/ft³

Weight of PROCTOR Mould, gm	5590	Volume of PROCTOR Mould, cm^3	2120

Point No.	1	2	3	4	5
Weight of Soil + Mould, gm	9640	10080	10400	9960	
Wet Density, gm/cm^3	1.910	2.118	2.269	2.061	
Weight of Wet Soil Portion, gm	176.0	125.0	127.0	149.0	
Weight after Drying, gm	169.1	118.4	118.0	136.0	
Moisture Content, %	4.1	5.6	7.6	9.6	
Dry Density, gm/cm^3	1.835	2.006	2.108	1.881	



Max. Dry Density=	2.108 t/m3	moisture content =	7.6 %

CONSULTANT COMMENTS

Lab Contractor Eng.:-

قطاع المقاولات

مركز الاستشارات الهندسية للنقل والطرق
SGAC
أ.د سعد محمد الجيوشي
مشروع القطار السريع قطاع د

SGAC Consultant Eng.:-

SYSTRA

SGAC مركز الاستشارات الهندسية للنقل و المطارات و الطرق (شراء دوليون) دكتور سعد الجيوشي

وزارة النقل الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجك للاستشارات الهندسيه

Activity : Earth Work	نتائج اختبارات المعمل	Date	07/09/2023

Density and Unit Weight of Soil in Place by the Sanc-Cone Method – ASTM D 1556

Company:	ايجيبت ستون	Layer NO:	
Description :	تربة ردم المصرية	Layer Thickness:	0.5
Station Represented :	443+420 to 443+520	Sample Date :	06/09/2023

Modified Proctor Testing Results

Max. Dry Density, gm/cm^3	Optimum Moisture Content, %	Degree of Compaction Required , %	Bulk Density of Specified Sand, gm/cm^3
2.108	7.6	95%	1.410

Compaction Testing Results & Calculations

Stations	443+470	443+520						
Hole No.	1	2						
Wt. of Sand before Test, gm	11265	11650						
Wt. of Sand After Test, gm	6264	6389						
Wt. of Sand in Cone + hole, gm	5001	5261						
Wt. of Sand in Cone	2072	2072						
Wt. of Sand at hole, gm	2929	3189						
Volume of the Hole, cm^3	2077	2262						
Wt. of Soil from Hole, gm	4490	4920						
Bulk Density of Soil, gm/cm^3	2.161	2.175						
Moisture Content, %	6.6	7.9						
Dry Density, gm/cm^3	2.028	2.016						
Compaction, (%)	96.2%	95.6%						

Acceptance Criteria	Comply	✓	Not Comply	

CONSULTANT COMMENTS

EGYPT FOR VISION & SUPPLIES قطاع المقاولات

Lab Contractor Engr. =

مركز الاستشارات الهندسية للطرق و المطارات SGAC

SGAC Consultant Eng.

شروع القطار السريع قطاع د

Company Name	**: Egypt Stone**
Project	**: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh**
Location	**: St. (441+600) : (444+600)**
Type of sample	**: Soil Embankment**
Delivery Date	**: 28/08/2023**
Reporting Date	**: 04/09/2023**
Reporting No.	**: 205**
Sample No.	**: 01**

Dear Gentleman,

Attached here with the Soil Embankment delivered on 28/08/2023

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

Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken

Signature /

3 El Malek El Afdal Street
Zamalek, Cairo
Tel.& Fax : 27367831 - 27360893

٣ ش الملك الأفضل
الزمالك - القاهرة
تليفون + فاكس : ٢٧٣٦٧٨٣١ - ٢٧٣٦٠٨٩٣
www.cej-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	92.3
25	85.6
19	76.1
12.50	61.8
9.50	48.3
4.75	32.1
2.36	30.7
2.00	28.1
1.18	24.4
0.600	20.8
0.425	18.9
0.300	14.8
0.150	12.9

Signature .....

3 El Malek El Afdal Street
Zamalek, Cairo.
Tel.& Fax : 27361034 - 27363093

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الزمالك - القاهرة
تليفون + فاكس : ٢٧٣٦١٠٣٤ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location	: St. (441+600) : (444+600)
Type of sample	: Soil Embankment
Delivery Date	: 28/08/2023
Reporting Date	: 04/09/2023
Reporting No.	: 205
Sample No.	: 01

Materials finer than 75 µm (no.200) sieve by washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.0

Signature /.....

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Zamalek, Cairo.
Tel.& Fax : 27367231 - 27363093

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www.cel-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

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

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

Signature /.....

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Zamalek, Cairo.
Tel.& Fax : 27367231 - 27363093

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الزمالك - القاهرة
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣
www.eel-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (443÷600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

Soil Classification According to Project Specs (Embankment)

TEST	Results (%)	Limits according Projects Specs	
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)
2.00 mm (No.10).	28.1	Max 50 %	-----
0.425 mm (No. 40).	18.9	Max 30 %	Max 50 %
0.075 mm (No. 200).	9.0	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)			
Liquid Limit	NP	-----	-----
Plasticity index	NP	Max 6 %	Max 6 %

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

Signature / .....

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Zamalek, Cairo.
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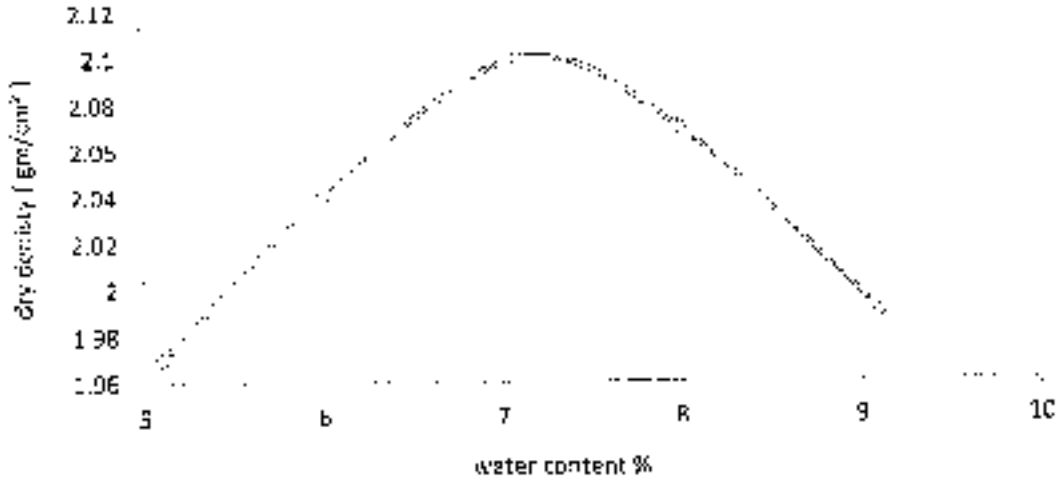
الزمالك - القاهرة
تليفون و فاكس : ٢٧٣٦٧٢٥٣ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location	: St. (441+600) : (444+600)
Type of sample	: Soil Embankment
Delivery Date	: 28/08/2023
Reporting Date	: 04/09/2023
Reporting No.	: 205
Sample No.	: 01

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



- Max dry density (gm/cm^3) : 2.10
- Optimum moisture content % : 7.1

Signature / ..

3 El Malek El Afdal Street
Zamalek, Cairo.
Tel.& Fax : 27367331 - 27363803

٣ ش الملك الأفضل
الزمالك - القاهرة
تليفون + فاكس : ٢٧٣٦٧٣٣١ - ٢٧٣٦٣٨٠٣
www.cel-egypt.com

SYSTRA

SGAC مركز الاستشارات الهندسية للنقل والمطارات والطرق (حواء دولين)

دكتور/ سعد الجيوشي

وزارة النقل
الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

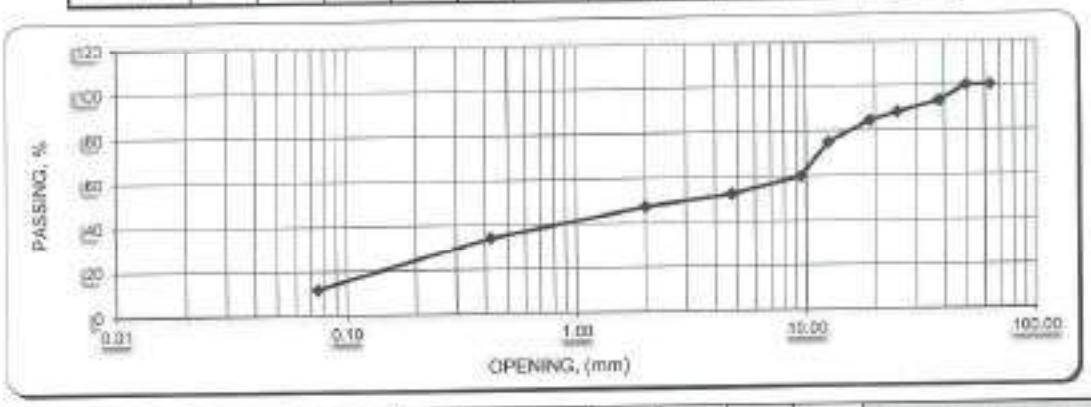
Company:	ايجيبت مكون للتعدين و التوريدات	Sample No:	
description:	تربة ردم المصرية	Sample Date :	03/09/2023
Station Represented :	443+420 to 443+520 (-5.5)	Report Date:	03/09/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

(ASTM:D-424/ / AASHTO :T-90-80)

Source of Tested Material	

Sieve No.	2.5 in.	2.0 in.	1.5 in.	1.0 in.	3/4 in	1/2 in.	3/8 in.	No.4	No.10	No.40	No.200
Opening (mm)	63.50	50.00	38.00	25.00	19.00	12.50	9.50	4.75	2.00	0.425	0.075
Passing, %	100.0	100.0	93.1	88.1	84.5	79.1	60.0	52.4	47.3	34.2	11.8



Atterberg Limits	L.L.	0.0	Max. 35	P.L.	0	P.I.	0.0	(Max. 10)

SOIL CLASSIFICATION :	A-1-B

GARP Consultant Engineer's Comments :

Lab Contractor Eng.:-
قطاع المقاولات

SGAC Consultant Eng.:-
مركز الاستشارات الهندسية
أ.د سعد محمد الجيوشي
مشروع القطار السريع قطاع ٦

SYSTRA

SGAC مركز الإستشارات الهندسية للنقل و المطارات و الطرق (خيراء دوليون) دكتور/ سعد الجيوشي

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

Company:	إيجيبت سنون للتعدين والتوريدات	Sample No:	
Description :	منشون	Sample Date :	03/09/2023
ation Represente	443+420 to 443+520	Report Date:	04/09/2023

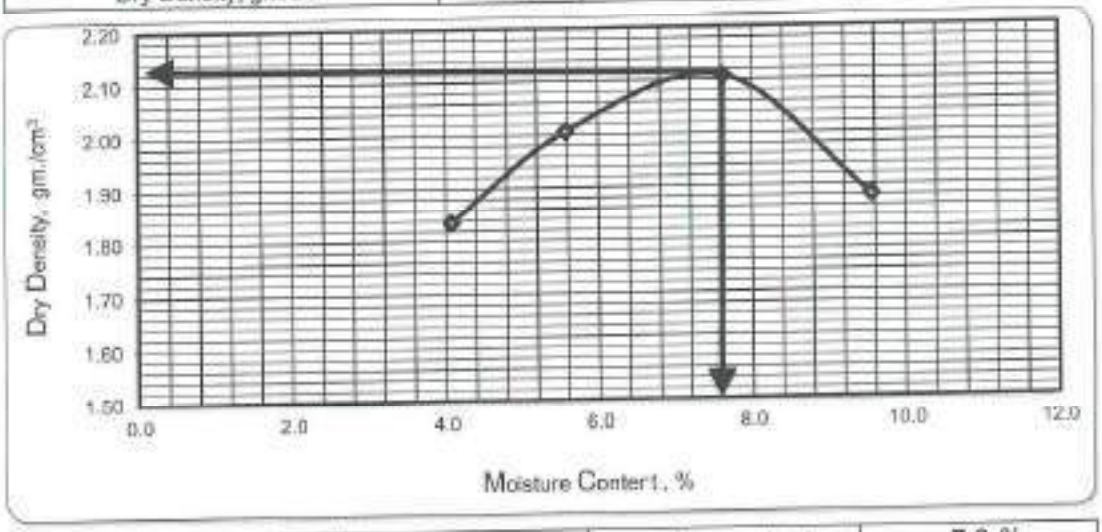
Laboratory Compaction Characteristics (Proctor) of Soil Sample

ASTM D 1557 - Method "C" 6 in. mold, 5 equal layers, each compacted by 56 blows

Using 10 lbf, rammer dropped from 18 in. hight, Producing a compactive effort of 56000 ft-lbf/ft³

Weight of PROCTOR Mould, gm	5590	Volume of PROCTOR Mould, cm³	2120

Point No.	1	2	3	4	5
Weight of Soil + Mould, gm	9640	10080	10400	9960	
Wet Density, gm/cm³	1.910	2.118	2.269	2.061	
Weight of Wet Soil Portion, gm	176.0	125.0	127.0	149.0	
Weight after Drying, gm	169.1	118.4	118.0	136.0	
Moisture Content, %	4.1	5.6	7.6	9.6	
Dry Density, gm/cm³	1.835	2.006	**2.108**	1.881	



Max. Dry Density=	2.108 t/m3	mosture content =	7.6 %

CONSULTANT COMMENTS

Lab Contractor Eng.:-

قطاع المقاولات

SGAC Consultant Eng.:-

مركز الاستشارات الهندسية للنقل والمطارات والطرق
أ.د سعد محمد الجيوشي
مشروع القطار السريع قطاع د

SYSTRA

SGAC مركز الإستشارات الهندسية للنقل و المطارات و الطرق (خ.م.م) دكتور/ سعد الجيوشي

وزارة النقل الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

Activity : Earth Work	نتائج لختبارات المعمل	Date	06/09/2023

Density and Unit Weight of Soil in Place by the Sand-Cone Method – ASTM D 1556

Company:	ايجيبت ستون	Layer NO:	
Description :	تربة ردم المصرية	Layer Thickness:	0.5
Station Represented :	443+420 to 443+520	Sample Date :	05/09/2023

Modified Proctor Testing Results

Max. Dry Density, gm/cm^3	Optimum Moisture Content, %	Degree of Compaction Required , %	Bulk Density of Specified Sand, gm/cm^3
2.108	7%	95%	1.410

Compaction Testing Results & Calculations

Stations	443+470	443+520						
Hole No.	1	2						
Wt. of Sand before Test, gm	11245	11630						
Wt. of Sand After Test, gm	6284	6409						
Wt. of Sand in Cone + hole, gm	4961	5221						
Wt. of Sand in Cone	2072	2072						
Wt. of Sand at hole, gm	2889	3149						
Volume of the Hole, cm^3	2049	2233						
Wt. of Soil from Hole, gm	4490	4865						
Bulk Density of Soil, gm/cm^3	2.191	2.178						
Moisture Content, %	7	6.8						
Dry Density, gm/cm^3	2.048	2.040						
Compaction, (%)	97.2%	96.8%						

Acceptance Criteria	Comply	✓	Not Comply	

CONSULTANT COMMENTS

Lab Contractor Eng.:-

مركز الاستشارات الهندسية للطرق و المطارات
د. سعد الجيوشي
مشروع القطار السريع قطاع د

SGAC Consultant Eng.:-

Company Name	**: Egypt Stone**
Project	**: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh**
Location	**: St. (441+600) : (444+600)**
Type of sample	**: Soil Embankment**
Delivery Date	**: 28/08/2023**
Reporting Date	**: 04/09/2023**
Reporting No.	**: 205**
Sample No.	**: 01**

Dear Gentleman,

Attached here with the Soil Embankment delivered on 28/08/2023

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

Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken

Signature /

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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441÷600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	92.3
25	85.6
19	76.1
12.50	61.8
9.50	48.3
4.75	32.1
2.36	30.7
2.00	28.1
1.18	24.4
0.600	20.8
0.425	18.9
0.300	14.8
0.150	12.9

Signature: .....

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Company Name : Egypt Stone
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Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

Materials finer than 75 µm (no.200) sieve by washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.0

Signature /.....

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Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

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

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

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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

Soil Classification According to Project Specs (Embankment)

TEST	Results (%)	Limits according Projects Specs	
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)
2.00 mm (No.10).	28.1	Max 50 %	------
0.425 mm (No. 40).	18.9	Max 30 %	Max 50 %
0.075 mm (No. 200).	9.0	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)			
Liquid Limit	NP	------	------
Plasticity index	NP	Max 6 %	Max 6 %

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

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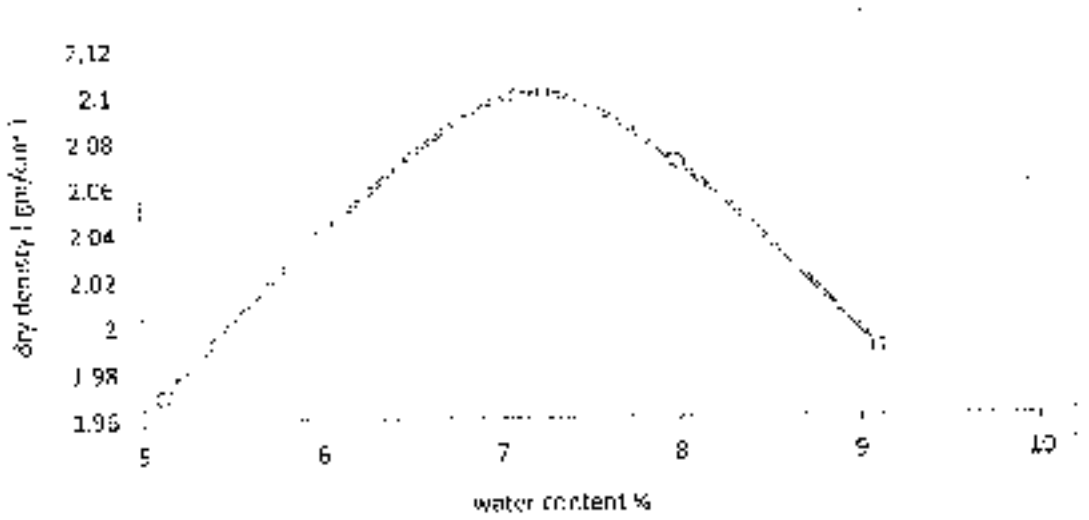
Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 28/08/2023
Reporting Date : 04/09/2023
Reporting No. : 205
Sample No. : 01

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



- Max dry density (gm/cm³) : 2.10
- Optimum moisture content % : 7.1

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www.cel-egypt.com

Company : **Egypt Stone**

Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (6) - Alamein to Foka

Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012 04 and project requirements

Test Location : Station (443+425 to 443+525)

Test Date : 05/09/2023

Repot Date : 05/09/2023

Type of soil : ------

Test level : Lower Embankment.

Report No. . 1215

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with **600 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 **600** 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 600 mm loading plate, the limit values are 2.5 kg/cm^2
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached
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 (2nd) 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

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 layer : lower Embankment**
- **Job requirement : Ev2 > 300 Kg/cm² (30 MPa)**
-

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	600
- date of measurement	05/09/2023
- 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		First Cycle	Second Cycle	Ev_2/Ev_1 Ratio
	From	To	Ev_1 (kg/cm²)	Ev_2 (kg/cm²)	
1	443+425	443+525	992	1517	1.5

Signature /

Company Name : Egypt Stone company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh Priority Sector (6) – Alamein to Foka
Test Date : 05/09/2023
report date : 05/09/2023
Location :Station 443+425 to 443+525
Test No. 1

Nonrepotitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Averag
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.42	19.71	0.29	19.65	0.35	19.67	0.33	0.32
2	0.83	19.46	0.54	19.39	0.61	19.42	0.58	0.58
3	1.25	19.29	0.71	19.20	0.80	19.22	0.78	0.76
4	1.67	19.13	0.87	19.02	0.98	19.05	0.95	0.93
5	2.08	18.87	1.13	18.78	1.22	18.82	1.18	1.18
6	2.50	18.96	1.04	18.60	1.40	18.63	1.37	1.27

Unloading Stage (1)

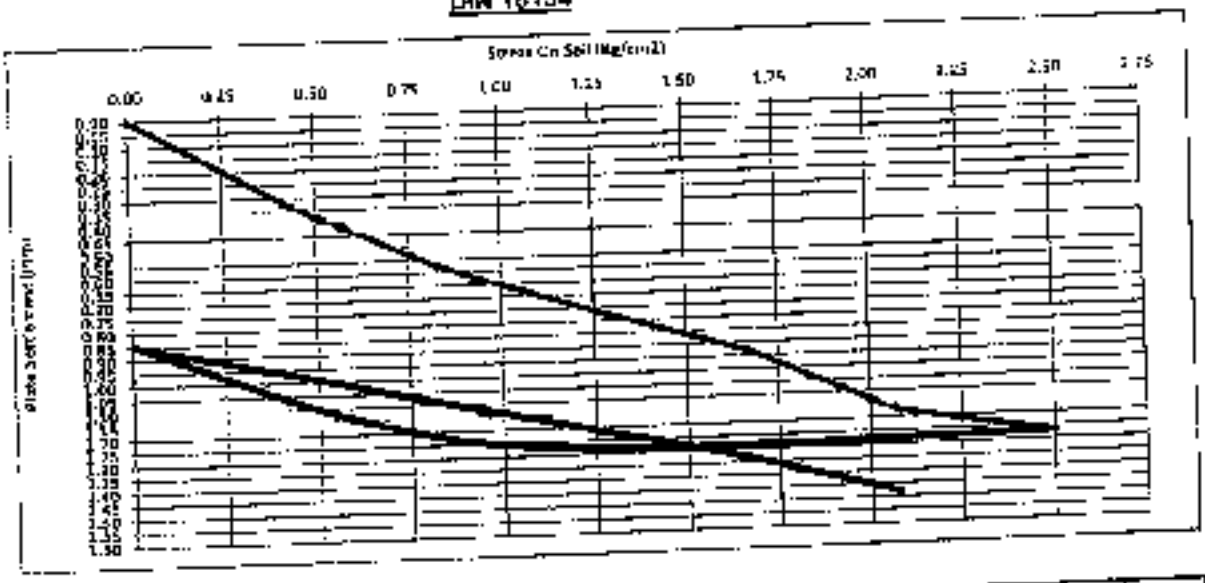
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Averag
1	2.50	18.96	1.04	18.66	1.40	18.63	1.37	1.27
2	1.25	18.78	1.22	18.68	1.32	18.70	1.30	1.28
3	0.625	18.89	1.11	18.82	1.18	18.83	1.17	1.15
4	0.01	19.19	0.81	19.11	0.89	19.15	0.85	0.85

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Averag
0	0.42	19.08	0.92	19.00	1.00	19.02	0.98	0.97
1	0.83	18.95	1.05	18.87	1.13	18.91	1.09	1.09
2	1.25	18.82	1.18	18.76	1.24	18.79	1.21	1.21
3	1.67	18.71	1.29	18.63	1.37	18.66	1.34	1.33
4	2.08	18.58	1.42	18.46	1.54	18.51	1.49	1.48

Company Name : Egypt Stone company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh Priority Sector (6) – Alamein to Fuka
Test Date : 05/09/2023
report date : 05/09/2023
Location :Station 443+425 to 443+525
Test No. 1

Nontrepetitive Static Plate Load Tests of Soi s
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1	7065
Stress (Kg/cm2)	0.00	0.42	0.83	1.25	1.67	2.08	2.50
Settlement (mm)	0.00	0.32	0.58	0.76	0.93	1.16	1.27

UnLoading (1)	1	2	3	4
Stage(Kg)	7065	3533	1768	0
Stress (Kg/cm2)	2.50	1.26	0.625	0.01
Settlement (mm)	1.27	1.28	1.15	0.05

D (mm) =	600	S1 (mm)=	0.57	S2(mm)=	0.86	ΔS =	0.29
Ev1 (kg/cm2) = (0.75*D*Δσ)/ΔS			992				

Ev2/Ev1 = 1.5

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1
Stress (Kg/cm2)	0.01	0.42	0.83	1.26	1.67	2.08
Settlement (mm)	0.86	0.97	1.09	1.21	1.33	1.48

D (mm) =	600	S1 (mm)=	1.01	S2(mm)=	1.36	ΔS =	0.30
Ev2 (kg/cm2) = (0.75*D*Δσ)/ΔS			1517				

Ev1 = Modulus of deformation during the loading stage.
Ev2 = Modulus of deformation during the Reloading stage.
D = Plate diameter (mm)
Δσ = The difference between 0.3 and 0.7 from the maximum loading (smax) (kg/cm²)
ΔS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)

SYSTRA

SGAC مركز الإستشارات الهندسية لنقل و المطارات و الطرق (خواه دوليون) دكتور/ سعد الجيوشي

وزارة النقل الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

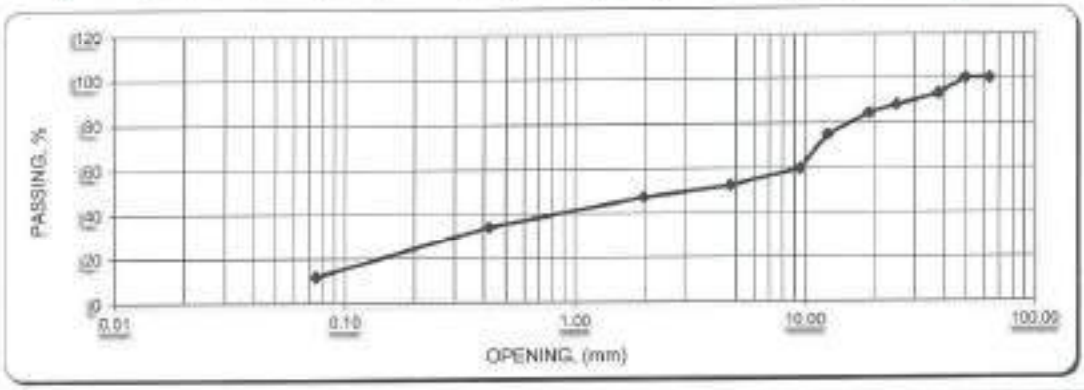
Company:	ايجيبت ستون للتعدين و التوريدات	Sample No:	
description:	تربة ردم المصرية	Sample Date :	02/09/2023
Station Represented :	443+420 to 443+520 (-6)	Report Date:	02/09/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

(ASTM:D-424//AASHTO :T-90-80)

Source of Tested Material	

Sieve No.	2.5 in.	2.0 in.	1.5 in.	1.0 in.	3/4 in	1/2 in.	3/8 in.	No.4	No.10	No.40	No.200
Opening (mm)	63.50	50.00	38.00	25.00	19.00	12.50	9.50	4.75	2.00	0.425	0.075
Passing, %	100.0	100.0	93.1	88.1	84.5	75.1	60.0	52.4	47.3	34.2	11.8



Atterberg Limits	L.L.	0.0	Max. 35	P.L.	0	P.I.	0.0	(Max. 10)

SOIL CLASSIFICATION :	A -1- B

GARP Consultant Engineer's Comments :

Lab Contractor Eng.:-

SGAC Consultant Eng.:-

SYSTRA

SGAC

تركز الإستشارات الهندسية
للنقل و المطارات و الطرق
(خبراء دوليين)
دكتور/ سعد الجيوشي

وزارة النقل
الهيئة العامة للطرق والكباري
والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسيه

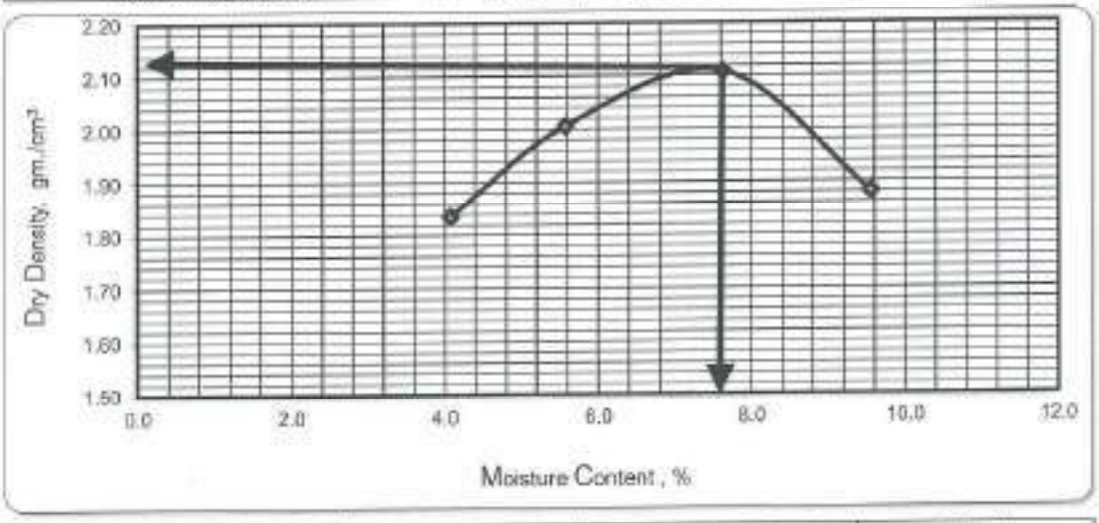
Company:	إيجيبت ستون لتعدين والثوريدات	Sample No:	
Description :	مشون	Sample Date :	02/09/2023
ation Represente	443+420 tc 443+520	Report Date:	03/09/2023

Laboratory Compaction Characteristics (Proctor) of Soil Sample

ASTM D 1557 - Method "C" 6 in. mold, 5 equal layers, each compacted by 56 blows
Using 10 lbf. rammer dropped from 18 in. hight, Producing a compactive effort of 56000 ft-lbf/ft³

Weight of PROCTOR Mould, gm	5590	Volume of PROCTOR Mould, cm³	2120

Point No.	1	2	3	4	5
Weight of Soil + Mould, gm	9640	10080	10400	9960	
Wet Density, gm/cm³	1.910	2.118	2.269	2.061	
Weight of Wet Soil Portion, gm	176.0	125.0	127.0	149.0	
Weight after Drying, gm	169.1	118.4	118.0	136.0	
Moisture Content, %	4.1	5.6	7.6	9.6	
Dry Density, gm/cm³	1.835	2.006	**2.108**	1.881	



Max. Dry Density=	2.108 t/m3	mosture content =	7.6 %

CONSULTANT COMMENTS

Lab Contractor Eng.:-

SGAC Consultant Eng.:-

SYSTRA

SGAC مركز الاستشارات الهندسية للنقل و المطارات و الطرق (خراء ويشون) دكتور سعد الجيوشي

وزارة النقل الهيئة العامة للطرق والكباري والنقل البري

مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للاستشارات الهندسيه

Activity : Earth Work	نتائج اختبارات المعمل	Date	05/09/2023

Density and Unit Weight of Soil in Place by the Sand-Cone Method – ASTM D 1556

Company:	ايجيبت ستون	Layer NO:	
Description :	تربة ردم المصرية	Layer Thickness:	0.5
Station Represented :	443+420 to 443+520	Sample Date :	04/09/2023

Modified Proctor Testing Results

Max. Dry Density, gm/cm^3	Optimum Moisture Content, %	Degree of Compaction Required , %	Bulk Density of Specified Sand, gm/cm^3
2.108	7.6	95%	1.410

Compaction Testing Results & Calculations

Stations	443+470	443+520						
Hole No.	1	2						
Wt. of Sand before Test, gm	11235	11620						
Wt. of Sand After Test, gm	6294	6419						
Wt. of Sand in Cone + hole, gm	4941	5201						
Wt. of Sand in Cone	2072	2072						
Wt. of Sand at hole, gm	2869	3129						
Volume of the Hole, cm^3	2035	2219						
Wt. of Soil from Hole, gm	4435	4810						
Bulk Density of Soil, gm/cm^3	2.180	2.167						
Moisture Content, %	7	6.8						
Dry Density, gm/cm^3	2.037	2.029						
Compaction, (%)	96.6%	96.3%						

Acceptance Criteria	Comply	✓	Not Comply	

CONSULTANT COMMENTS	

Lab Contractor Eng.:-

SGAC Consultant Eng.:-

Company Name	**: Egypt Stone**
Project	**: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh**
Location	**: St. (441+600) : (444+600)**
Type of sample	**: Soil Embankment**
Delivery Date	**: 14/03/2023**
Reporting Date	**: 21/03/2023**
Reporting No.	**: 181**
Sample No.	**: 08**

Dear Gentleman,

Attached here with the Soil Embankment delivered on 14/03/2023

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

Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken

Signature /

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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 14/03/2023
Reporting Date : 21/03/2023
Reporting No. : 181
Sample No. : 08

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	95.6
25	89.4
19	83.6
12.50	71.8
9.50	63.4
4.75	52.6
2.36	50.5
2.00	48.1
1.18	42.3
0.600	38.2
0.425	34.6
0.300	21.9
0.150	11.8

Signature /

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www.ccl-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 14/03/2023
Reporting Date : 21/03/2023
Reporting No. : 181
Sample No. : 08

Materials finer than 75 µm (no.200) sieve by washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.3

Signature

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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 14/03/2023
Reporting Date : 21/03/2023
Reporting No. : 181
Sample No. : 08

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

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

Signature /

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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 14/03/2023
Reporting Date : 21/03/2023
Reporting No. : 181
Sample No. : 08

Soil Classification According to Project Specs (Embankment)

TEST	Results (%)	Limits according Projects Specs	
• Group Classification	(A-1-b)	(A-1-a)	(A-1-b)
2.00 mm (No.10).	48.1	Max 50 %	------
0.425 mm (No. 40).	34.6	Max 30 %	Max 50 %
0.075 mm (No. 200).	9.3	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)			
Liquid Limit	NP	------	------
Plasticity index	NP	Max 6 %	Max 6 %

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

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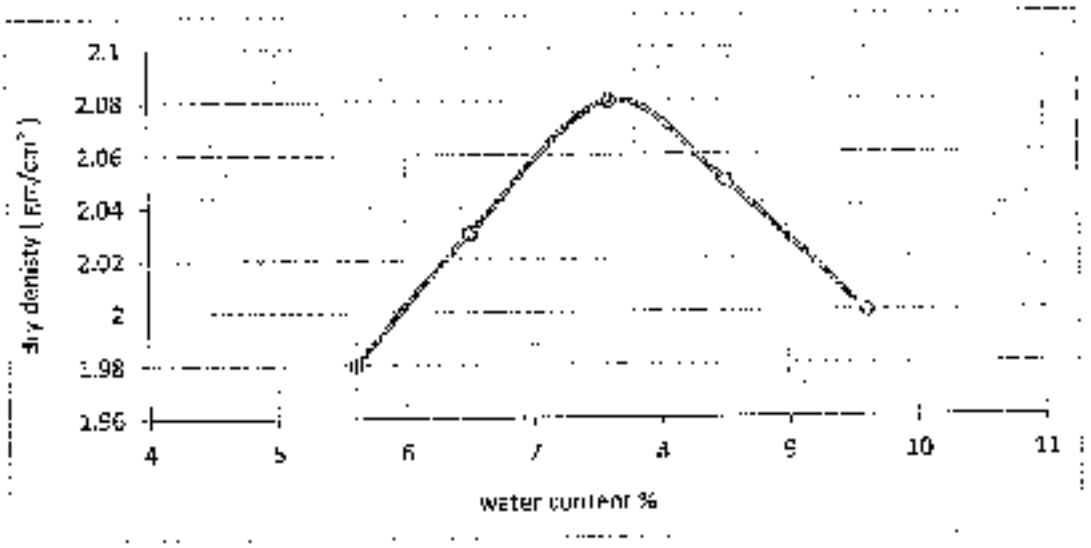
Company Name	**: Egypt Stone**
Project	**: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh**
Location	**: St. (441+600) : (444+ 600)**
Type of sample	**: Soil Embankment**
Delivery Date	**: 14/03/2023**
Reporting Date	**: 21/03/2023**
Reporting No.	**: 181**
Sample No.	**: 08**

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



- **Max dry density (gm/cm³)** : **2.08**
- **Optimum moisture content %** : **7.6**

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Company Name : Egypt Stone
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Location : St. (441+600) : (444+600)
Type of sample : Soil Embankment
Delivery Date : 14/03/2023
Reporting Date : 21/03/2023
Reporting No. : 181
Sample No. : 08

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	1.97
1.27	0.050	2.15
1.91	0.075	2.37
2.54	0.100	2.63
3.18	0.125	2.81
3.81	0.150	3.10
4.45	0.175	3.32
5.08	0.200	3.49
5.71	0.225	3.61
6.35	0.250	3.73

CBR Result	Stress (Mpa)		CBR %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	2.63	38.1

Notes :

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of 2.08 (gm /cm^3) at 7.6 % optimum water content.
3- Surcharge load 4.50 Kg.

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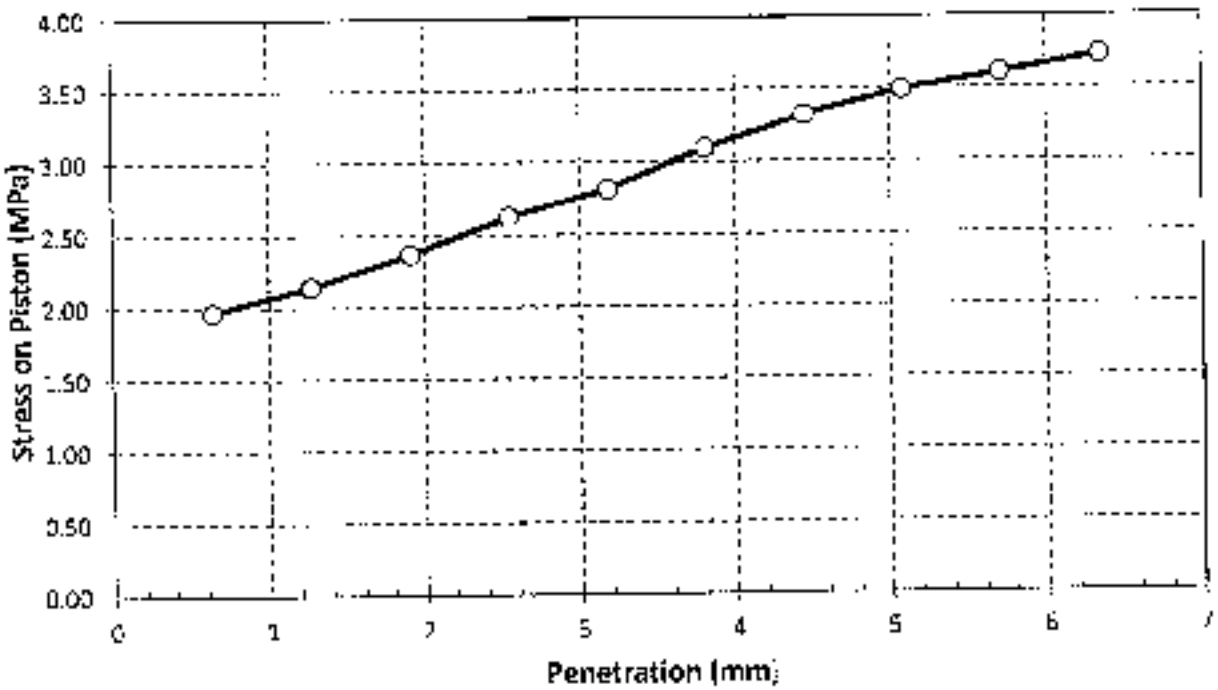
Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location	: St. (441+600) : (444+600)
Type of sample	: Soil Embankment
Delivery Date	: 14/03/2023
Reporting Date	: 21/03/2023
Reporting No.	: 181
Sample No.	: 08

Load Penetration Curve of CBR Test

ASTM D-1883



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