

السيد المهندس / رئيس قطاع التنفيذ و المناطق .

تحية طيبة و بعد

بالإشارة الى مشروع أعمال الجسر الترابي و الاعمال الصناعية لمشروع القطر الكهربائي السريع (العين
المسخة - العاصمة الإدارية - 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 المقايضة المعدلة للمشروع المذكور اعلاه .

و تفضلو سيادتكم بقبول وافر الاحترام و التقدير .

رئيس الإدارة المركزية
منطقة غرب الدلتا
الاسكندرية - مرسى
مطروح

عميد . مهندس /

"هاني محمد محمود طه"



أصل الجسر القرائي والأصل المتنازع لمشروع القطار القوياني، فائق السرعة لخطاد (العشرين - فوكه)
المقاييس المعجلة - خطوط الإصعاف لتفادي شركة إيجيبت ستون لتجارة برج العرب
القطار من المعطاة 111+1.0 إلى 117+1.0

[illegible]

مدير عام المشروع
د/ محمد حسني إبراهيم

مدير المشروع
د. إبراهيم الخليل

مدير المشروع الشراكة
د/ محمد النجار

يعتمد
رئيس الإدارة المركزية
منطقة غرب الدلتا

الاسكندرية - مرسى مطروح

عمید مهندس /

"ہانی"

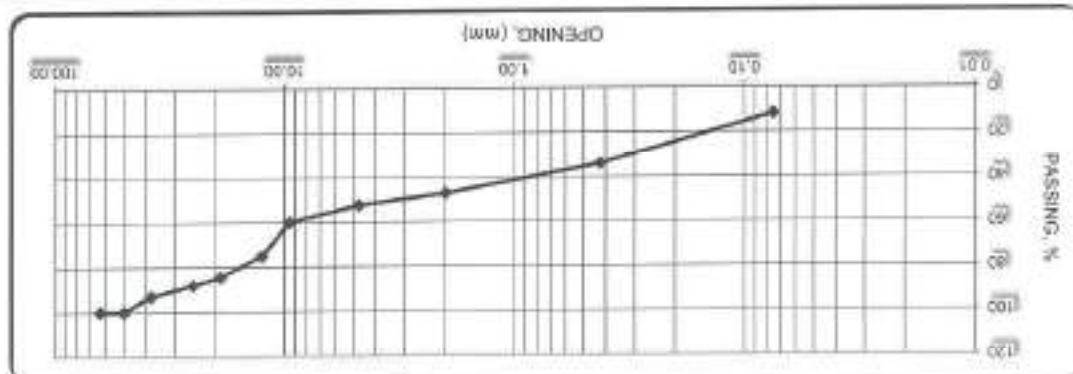
3 EGYPT
STONES
قطاع القاولات

GARP Consultant Engineer's Comments:

: NOILCLASSIFICATION:

W-1-B

Antberg Linné	LT	0.0	Max. 35	P.L.	0	P.L	0.0	(Max. 10)
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Slit No.	Opening (mm)	Passing, %
2.5 in.	50.00	100.0
2.0 in.	38.00	100.0
1.5 in.	25.00	99.1
1.0 in.	19.00	88.1
0.75 in.	12.50	84.5
0.5 in.	9.50	75.1
0.375 in.	4.75	60.0
0.25 in.	2.00	52.4
0.15 in.	0.425	47.3
0.075 in.	0.075	34.2
0.04 in.	0.075	11.8

Source of Tested Material)

(ASTM D-424//ASTM J-90-80)

SOIL CLASSIFICATION / ATTERBERG'S LIMITS

Company:	المشروع لخدمات البترول	Sample No:	
description:	المشروع لخدمات البترول	Sample Date :	04/09/2023
Station Represented :	443+420 to 443+520	Report Date:	04/09/2023

מחיר: 100 ₪ (כולל מע"מ) / 100 ₪ (כולל מע"מ) / 100 ₪ (כולל מע"מ)



ရည်ရွယ်ချက်/ အဓိက ရည်ရွယ်ချက်
(ခုတ်ကောက်)
အခြေခံ အားဖြင့် အားဖြင့်
အခြေခံ အားဖြင့် အားဖြင့်



SYSTEMA

SYSTEMA



مركز الاستشارات الهندسية
للجسور والطرق والمياه
(مركز استشارات)



مشروع الطرق السريع (الطريق - فوس) - 45 كم / 28 ميل

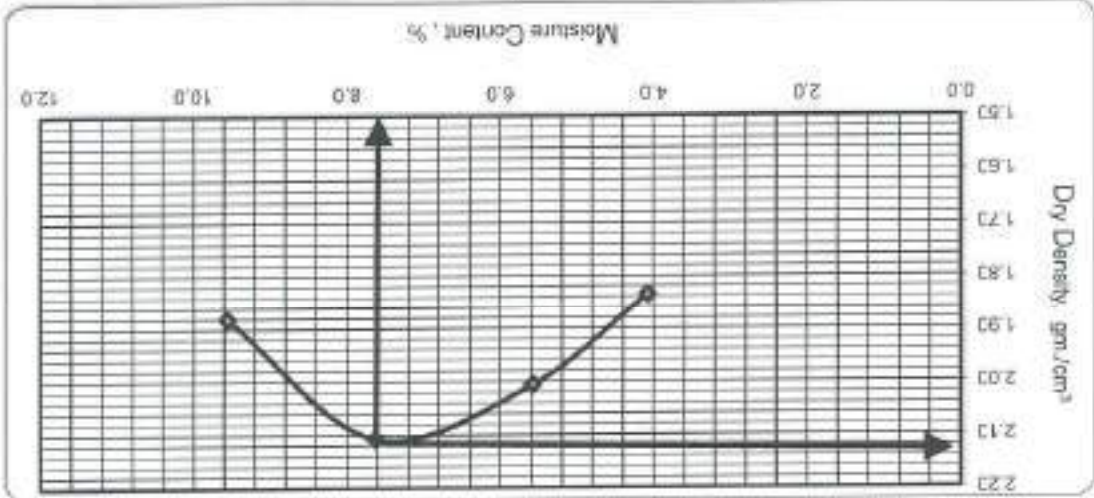
Company:	شركة استشارات الهندسة والبناء
Description:	مشروع
Action Representative:	443+420 to 443+520
Report Date:	05/09/2023
Sample Date:	04/09/2023
Sample No:	

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. height. Producing a compactive effort of 56000 ft-lbf/ft³

Weight of PROCTOR Mould, gm	5590	Volume of PROCTOR Mould, cm ³	2120
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Point No.	Weight of Soil + Mould, gm	Wet Density, gm/cm ³	Weight of Wet Soil Portion, gm	Weight after Drying, gm	Moisture Content, %	Dry Density, gm/cm ³
1	9640	1.910	176.0	169.1	4.1	1.835
2	10080	2.118	125.0	118.4	5.6	2.006
3	10400	2.269	127.0	118.0	7.6	2.108
4	9960	2.061	149.0	136.0	8.6	1.881

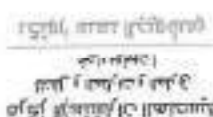
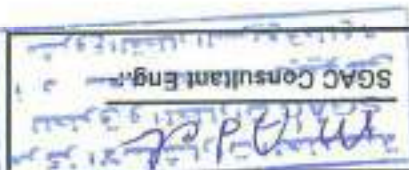


Max. Dry Density=	2.108 t/m ³	moisture content =	7.6 %
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CONSULTANT COMMENTS

Lab. Engineering:-

SGAC Consultant Eng:-

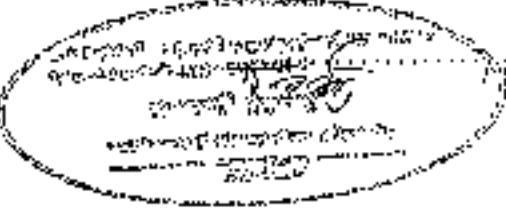
  		SYSTEMA	
مشروع الطرق السريع (الطريق - قنينة - قنينة / معالج الجوفاء) مكتب هندسة الاستشارات الهندسية			
Activity : Earth Work		تاريخ اختبار الحمل	
Date		07/09/2023	
Density and Unit Weight of Soil in Place by the Sand-Cone Method – ASTM D 1556			
Company:		نوع التربة	
Description:		رتبة ردم المخرقة	
Station Represented:		443+420 to 443+520	
Layer NO:		Sample Date:	
0.5		06/09/2023	
Modified Proctor Testing Results			
Max. Dry Density, gm/cm ³		Optimum Moisture Content, %	
2.108		7.6	
Bulk Density of Specified Sand, gm/cm ³		Degree of Compaction Required, %	
1.410		95%	
Compaction Testing Results & Calculations			
Stations		Hole No.	
443+470 443+520		1 2	
Wt. of Sand before Test, gm		11285 11850	
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		2262 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			
 			

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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 %
S0	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



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

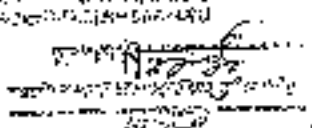
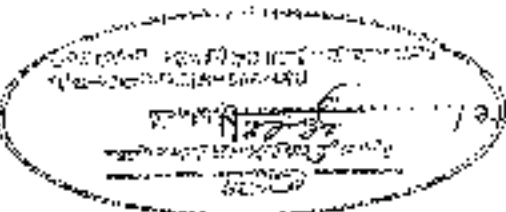
Materials finer than 75 μ m (no.200) sieve
by washing ASTM D-1140.

Signature

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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

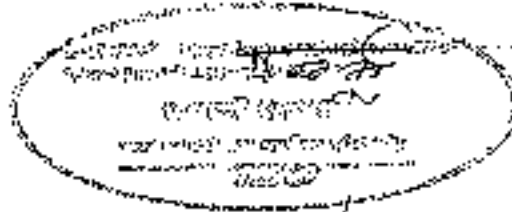
Signature /

 Engineer /


Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sukhna to Marsa Matruh
 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	
		(A-1-a)	(A-1-b)
Group Classification	28.1	Max 50 %	-----
2.00 mm (No.10).	18.9	Max 30 %	Max 50 %
0.425 mm (No.40).	9.8	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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 Zoukati, Giza
 Tel. & Fax : 27367231 - 27361093

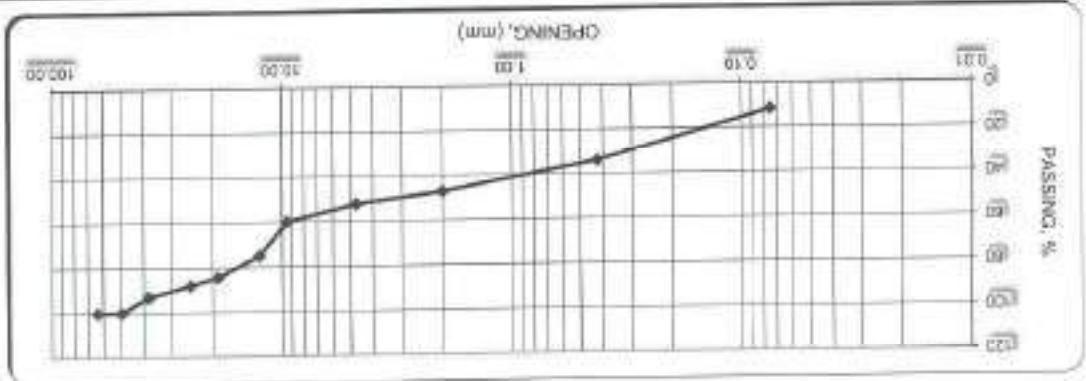
SGAC Consultant Eng.:-
M. Abdelaziz

Lab Contractor Eng.:-
H. Elmaghrabi

CARP Consultant Engineer's Comments :

SOIL CLASSIFICATION : A-1-B

Atterberg Limits	L.L	0.0	Max. 35	P.L	0	P.I	0.0	(Max. 10)
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Sieve No.	Opening (mm)	Passing %
2.5 in	63.50	100.0
2.0 in	50.00	93.1
1.5 in	38.00	88.1
1.0 in	25.00	84.5
3/4 in	19.00	75.1
3/8 in	12.50	60.0
No.4	4.75	52.4
No.10	2.00	47.3
No.40	0.425	34.2
No.200	0.075	11.8

Source of Tested Material

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

SOIL CLASSIFICATION / ATTERBERG LIMITS

Station Represented :	443+410 to 443+520 (-5.5)	Report Date :	03/09/2023
Company :	الهيئة العامة للغمرات والتربة	Sample Date :	03/09/2023
description :	تربة رملية الخشنة	Sample No :	

مختبر ح. القطار السريع (الطريق - قوس 45) قطاع 2 / وسط الجيوب مكنى سجاد للاستشارات الهندسية



الهيئة العامة للغمرات والتربة
(جودة بولندا)
مختبر ح. القطار السريع
الطريق - قوس 45



SYSTRA

SYSTRA



مركز الدراسات والبحوث
للجودة والبيئة
(مركز الأبحاث)



مركز الدراسات والبحوث (البحر - 45) - 45

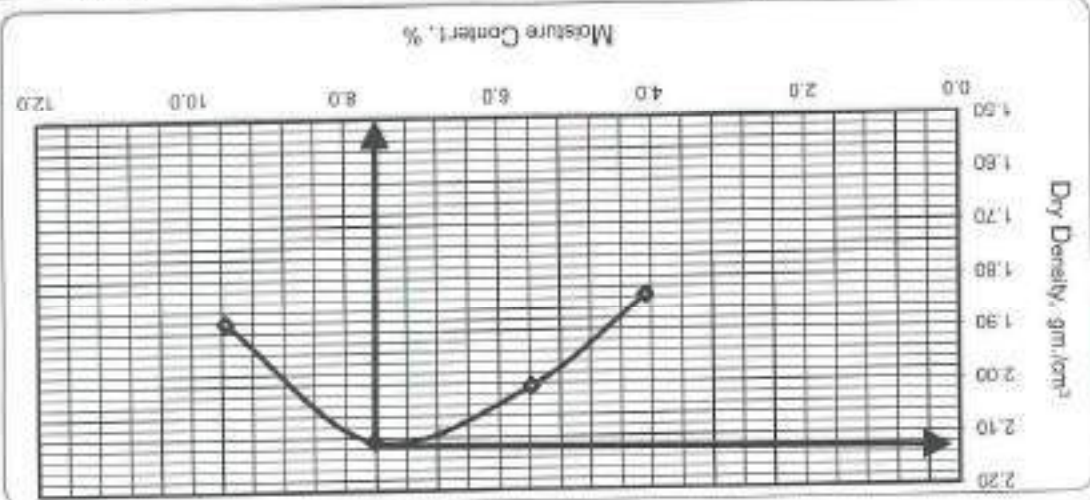
Company:	مركز الدراسات والبحوث
Description:	مركز
Representation:	443+420 to 443+520
Report Date:	04/09/2023
Sample Date:	03/09/2023
Sample No.:	

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 lb. rammer dropped from 18 in. height, Producing a compactive effort of 5600 ft-lb/ft³)

Weight of PROCTOR Mold, gm	5590	Volume of PROCTOR Mold, cm ³	2120
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Point No.	Weight of Soil + Mold, gm	Wet Density, gm/cm ³	Weight of Wet Soil Portion, gm	Moisture Content, %	Dry Density, gm/cm ³
1	9640	1.910	176.0	4.1	1.835
2	10080	2.118	125.0	5.6	2.006
3	10400	2.269	127.0	7.6	2.108
4	8960	2.061	149.0	8.6	1.881



Max. Dry Density =	2.108 gm/cm ³	moisture content =	7.6 %
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CONSULTANT COMMENTS

Lab Contractor Eng.:

SGAC Consultant Eng.:

مشروع الطرق السريع (الطنين - قلاية) - قلاية / من الطريق الرئيسي مخرج مخرج الطريق الرئيسي

Activity : Earth Work

تاريخ العمل

Date

06/09/2023

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

Company:	مصر
Description:	طريق ردم المصري
Station Represented:	443+420 to 443+520
Layer NO:	0.5
Layer Thickness:	0.5
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	7.4	95%	1.410

Compaction Testing Results & Calculations

Stations	Hole No.	Wt. of Sand before Test, gm	Wt. of Sand After Test, gm	Wt. of Sand in Cone + hole, gm	Wt. of Sand in Cone	Wt. of Sand at hole, gm	Volume of the Hole, cm ³	Wt. of Soil from Hole, gm	Bulk Density of Soil, gm/cm ³	Moisture Content, %	Dry Density, gm/cm ³	Compaction, (%)
443+470 443+520	1	11245	6284	4961	2072	2889	2049	4490	2.191	7	2.048	97.2%
	2	11530	6408	5221	2072	3149	2233	4865	2.178	6.8	2.040	96.8%

Acceptance Criteria ☒ Comply ☐ Not Comply

CONSULTANT COMMENTS

Lab Contractor Eng.:-

SGAC Consultant Eng.:-

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sakha to Marsa Matruh
 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 /
 [Signature]
 [Stamp]



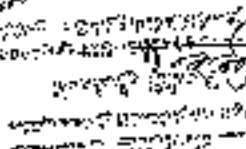
7 El Nakh El Aghal Street
 Zayed, Cairo
 Tel: 011 27363093 - 27363093

www.svi.com
 2023-08-28
 2023-08-28

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 Location : SL (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)	50	37.5	25	19	12.50	9.50	4.75	2.36	2.00	1.18	0.600	0.425	0.300	0.150
Passing %	100	92.3	85.6	76.1	61.8	48.3	32.1	30.7	28.1	24.4	20.8	18.9	14.8	12.9

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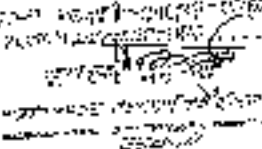


3 El Motah El Ahdal Street
 Zamalek, Cairo
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Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 Location : St. (441+600) : (444+600)
 Type of sample : Soil Embankment
 Delivery Date : 28/08/2023
 Reporting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

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

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

Signature /




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 Zamalek, Cairo
 Tels Fax : 27 367231 - 27367093

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 2023/09/09 10:00:00
 2023/09/09 10:00:00

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 _____



9 Elmhurst El Alford Street
Zimbabwean Cinema
Tel: 06 Fax: 27367331 • 27363093

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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)

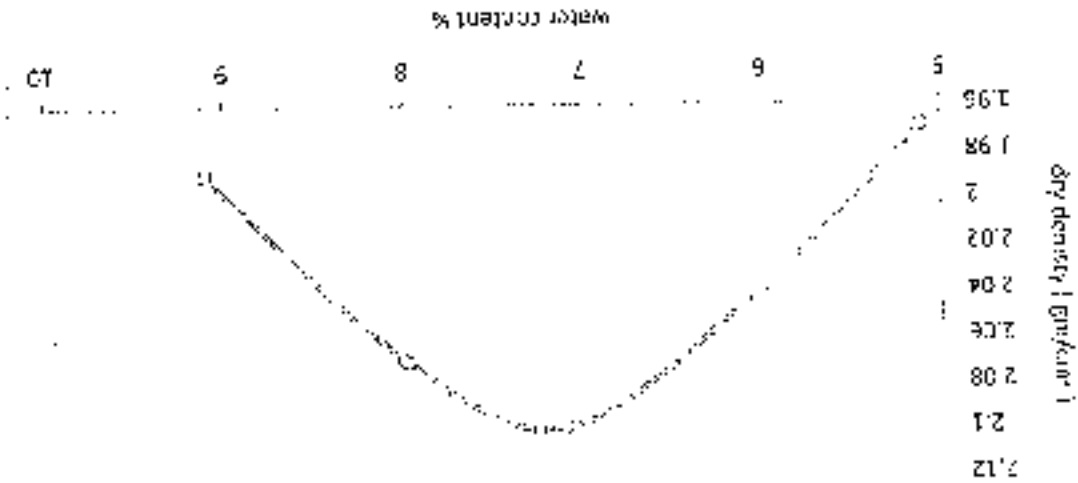
TEST	Results (%)	Limits according Project Specs	
		(A-1-a)	(A-1-b)
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)
		Max 50 %	-----
	2.00 mm (No.10).	28.1	
	0.425 mm (No.40).	18.9	Max 50 %
	0.075 mm (No. 200).	9.0	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)			
Liquid Limit	NP	-----	-----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

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

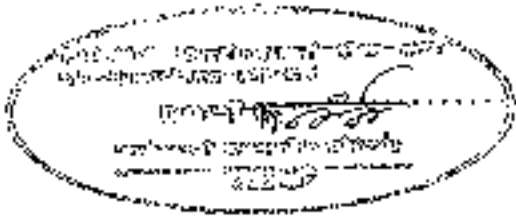
Signature /
 [Signature]
 [Stamp]

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 Location : SL (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/cc) : 2.10
- Optimum moisture content % : 7.1

Signature /




Company : Egypt Stone

Project : Electric Express Train, Al Ain Sokhna to Marsa Matruh 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 (4 and project requirements)

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

Test Date : 05/09/2023

Report 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. Clear 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/cm²

6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached

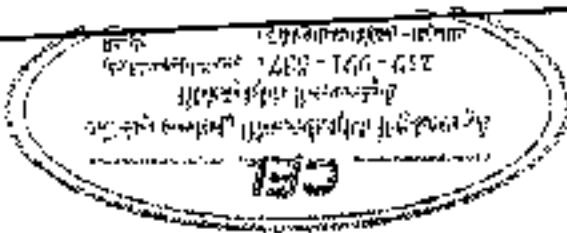
7. Each change in load (from stage to stage) shall be completed within one minute

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

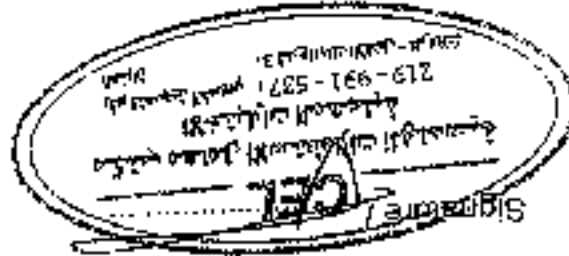
Report

- Type of layer : lower Embankment
- Job requirement : $Ev2 > 300 \text{ Kg/cm}^2$ (30 MPa)

Descriptions	Item	- Type of bedding material below the plate	- Weather condition	- Plate Diameter (mm)	- date of measurement	- Unusual observation made during test	- Description of the soil conditions below the plate after testing
Natural Soil			Sunny	600	05/09/2023		No deformation

Evaluation and representation of results

Test No.	Station	First Cycle	Second Cycle	Ev/Ev Ratio
1	443+425	443+525	992	1517
	From	To	Ev1 (kg/cm ²)	Ev2 (kg/cm ²)



Company Name : Egypt Stone company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh Priority Sector (B) - Alamein to Foka
Test Date : 05/09/2023
report date : 05/09/2023
Location : Station 443+425 to 443+525
Test No. : 4

Nonrepertive Static Plate Load Tests of Soils

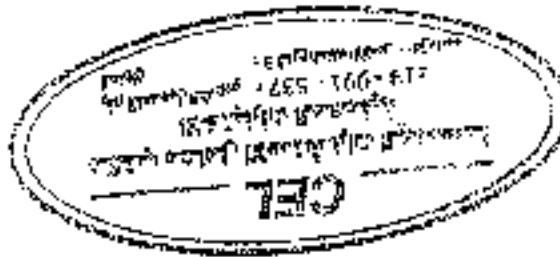
DIN 18134

Data sheet

Loading	Stress	Kg/cm ²	Dial 1		Dial 2		Dial 3		Average
			Settlement	mm	Settlement	mm	Settlement	mm	
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	20.00	0.00
1	0.42	19.71	0.29	19.65	0.35	19.67	0.33	19.42	0.32
2	0.83	19.46	0.54	19.39	0.61	19.42	0.58	19.22	0.56
3	1.25	19.29	0.71	19.20	0.80	19.22	0.78	19.05	0.76
4	1.67	19.13	0.87	19.02	0.98	19.05	0.95	18.82	0.93
5	2.08	18.87	1.13	18.78	1.22	18.82	1.18	18.53	1.16
6	2.50	18.96	1.04	18.60	1.40	18.63	1.37	18.53	1.27

Unloading Stage (1)									
Loading	Stress	Kg/cm ²	Dial 1		Dial 2		Dial 3		Average
			Settlement	mm	Settlement	mm	Settlement	mm	
1	2.50	18.96	1.04	18.60	1.40	18.63	1.37	18.53	1.27
2	1.25	18.78	1.22	18.65	1.32	18.70	1.30	18.70	1.28
3	0.525	18.89	1.11	18.81	1.18	18.83	1.17	18.83	1.15
4	0.01	19.19	0.81	19.11	0.88	19.15	0.85	19.15	0.85

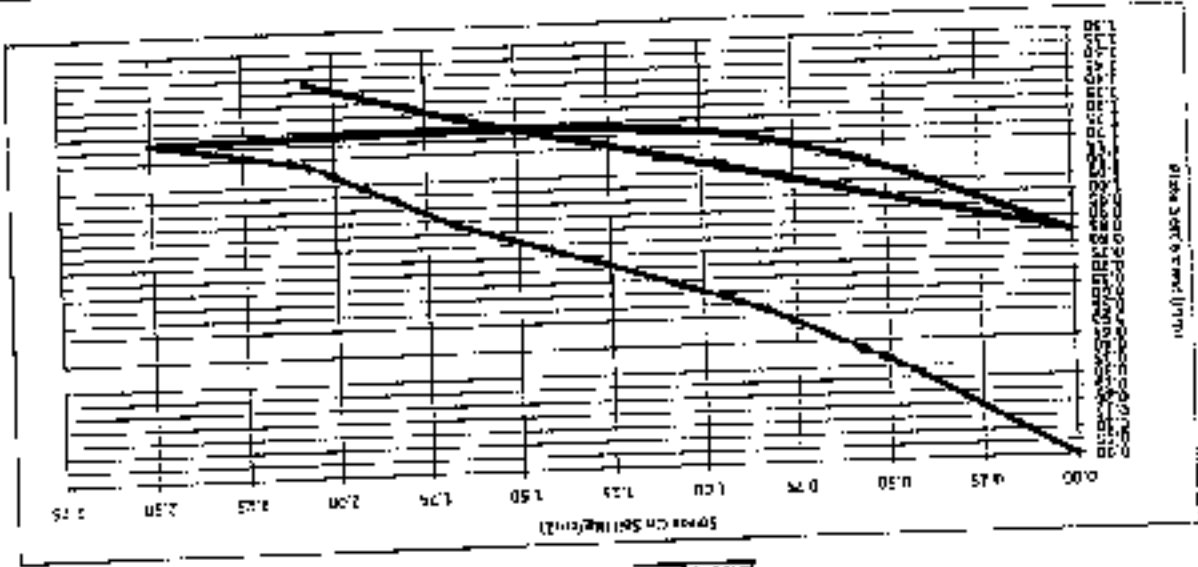
Loading Stage (2)									
Loading	Stress	Kg/cm ²	Dial 1		Dial 2		Dial 3		Average
			Settlement	mm	Settlement	mm	Settlement	mm	
0	0.42	19.08	0.92	19.00	1.00	19.02	0.98	19.02	0.97
1	0.83	18.95	1.05	19.87	1.13	18.91	1.09	18.91	1.09
2	1.25	18.82	1.18	18.76	1.24	18.79	1.21	18.79	1.21
3	1.67	18.71	1.29	18.63	1.37	18.66	1.34	18.66	1.33
4	2.08	18.58	1.42	18.46	1.54	18.51	1.49	18.51	1.48



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

Nonrepulsive Static Plate Load Tests of Soils

DIN 18134



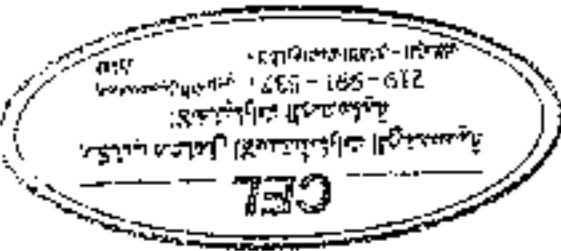
Unloading (1)	1	2	3	4	5	6
Stage (Kg)	0	7065	1768	3533	5298	7065
Stress (kg/cm²)	0.00	0.28	0.70	1.41	2.12	2.83
Settlement (mm)	0.00	0.02	0.04	0.06	0.08	0.10

Loading (2)	0	1	2	3	4	5
Stage (Kg)	0	7065	1768	3533	5298	7065
Stress (kg/cm²)	0.00	0.28	0.70	1.41	2.12	2.83
Settlement (mm)	0.00	0.02	0.04	0.06	0.08	0.10

Unloading (1)	1	2	3	4	5	6
Stage (Kg)	0	7065	1768	3533	5298	7065
Stress (kg/cm²)	0.00	0.28	0.70	1.41	2.12	2.83
Settlement (mm)	0.00	0.02	0.04	0.06	0.08	0.10

Loading (2)	0	1	2	3	4	5
Stage (Kg)	0	7065	1768	3533	5298	7065
Stress (kg/cm²)	0.00	0.28	0.70	1.41	2.12	2.83
Settlement (mm)	0.00	0.02	0.04	0.06	0.08	0.10

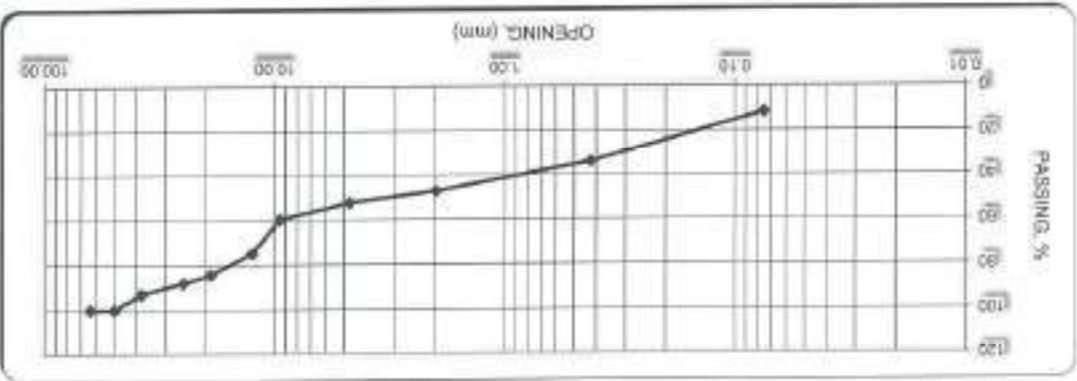
E₁ = Modulus of deformation during the loading stage
E₂ = Modulus of deformation during the unloading stage
D = Plate diameter (mm)
D_s = The difference between D₁ and D₂ from the maximum loading (kg/cm²)
D_s = Difference in settlement corresponding to D₁ and D₂ from the maximum loading (mm)



SGAC Consultant Eng:-
M. Adil

SOIL CLASSIFICATION :	A-1-B
-----------------------	-------

Auerberg Limits	L.L.	0.0	Max. 35	P.L.	0	P.L.	0.0	(Max. 10)
-----------------	------	-----	---------	------	---	------	-----	-----------



Shore No.	Opening (mm)	Passing %
2.5 in.	50.00	100.0
1.5 in.	38.00	99.1
1.0 in.	25.00	88.1
3/4 in.	19.00	84.5
1/2 in.	12.50	75.1
3/8 in.	9.50	60.0
No.4	4.75	52.4
No.10	2.00	47.3
No.40	0.425	34.2
No.200	0.075	11.8

Source of Tested Material

SOIL CLASSIFICATION / ATTERBERG LIMITS

Company:	البحر الأحمر للغازات	Sample No:	
description:	غازية	Sample Date :	02/09/2023
Station Represented :	443+420 to 443+520 (-6)	Report Date:	02/09/2023

מס' תשנ"ח / עמ' 10 - (תשנ"ח) חלוקה



၁၄၆/ ကမာ ပြင်ပကပ်
(ခပ်ကပ်ကပ်)
ကပ် ပြင်ပကပ် ပြင်ပ
၁၄၇/ ကပ်ကပ် ပြင်ပကပ်



SYSTEMA

SYSTRA



مركز الدراسات والبحوث
للبنية التحتية والبيئة
(مركز البحوث)



مشروع الطرق السريع (الرياض - القصيم) - (45 كم) / بعد الجوليبي مكتب سجايا للاستشارات الهندسية

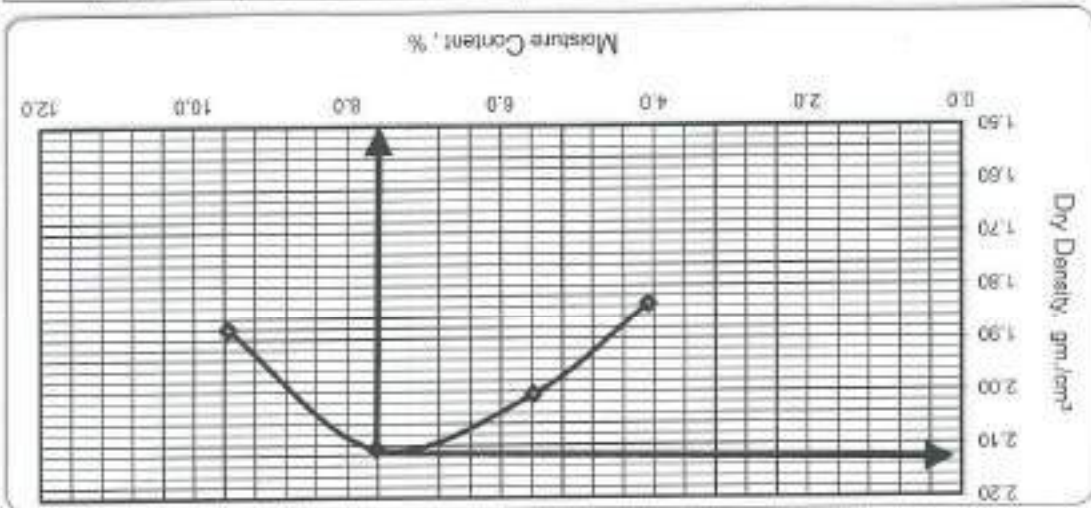
Company:	شركة سجايا للاستشارات الهندسية والبيئية		
Description:	طرق		
Location Representative:	443+420 to 443+520	Report Date:	03/09/2023
		Sample Date:	02/09/2023
		Sample No:	

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 lb hammer dropped from 18 in. height. Producing a compactive effort of 56000 ft-lb/ft³

Weight of PROCTOR Mold, gm	5590	Volume of PROCTOR Mold, cm ³	2120
----------------------------	------	---	------

Point No.	1	2	3	4	5
Weight of Soil + Mold, 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/m ³	moisture content =	7.6 %
-------------------	------------------------	--------------------	-------

CONSULTANT COMMENTS

Lab Contractor Eng.:

SGAC Consultant Eng.:

مكتبة جامعة القاهرة - مكتبة جامعة القاهرة - مكتبة جامعة القاهرة

Activity : Earth Work

1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 26

410

05/09/2023

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

Company:

Figure 2

מְחַיֵּה הַמֵּתִים

Station Represented : 413+420 to 413+520

0224-6460

0.

075

Sample Date :

67071604-0

Max. Dry Density,

2.108

76

*%S6

0161

Modified Proctor Testing Results

Optimum Moisture Content, %

Degree of Compaction Required, %

Bulk Density of
Specified Sand, gm/cm³

Hole No. _____

Wt. of Sand before Test, gm	
Wt. of Sand After Test, gm	

Wt. of Sand in Cone + Boil, gm.

Wt. of Sand in hole, gm

Volume of the Hole, cm³Bulk Density of Soil, gm/cm³

Moisture Content, %

Dry Density, gm/cm³

Combustion (%)

Accepted Article

comply

Not Comply

CONSULTANT COMMENTS

LAB CONTRACT 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

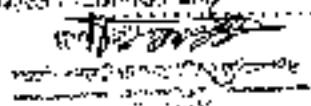
Dear Gentleman,

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 /

 Mohamed El-Afnan
 Laboratory Manager

3 El Mostak El Afnan Street
 Zarmalek, Cairo
 Tel & Fax : 27367231 - 27364093



www.ias-egypt.com
 ٢٧٣٦٧٢٣١ - ٢٧٣٦٤٠٩٣ : هاتف
 ٢٧٣٦٧٢٣١ - ٢٧٣٦٤٠٩٣ : فاكس
 م. محمد العفنان

王

សំណួរ

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

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matruh
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

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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 μ m (no.200) sieve
by washing ASTM D-1140.

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

Signature



2 El Mahrak El Asfal Street
 Zewail City, Cairo.
 Tel. & Fax : 27367331 - 273634093

٢ شارع المراك asphalt
 مدينة زويل - القاهرة
 ٢٧٣٦٧٣٣١ - ٢٧٣٦٣٤٠٩٣
 www.ias-lab.com

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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**

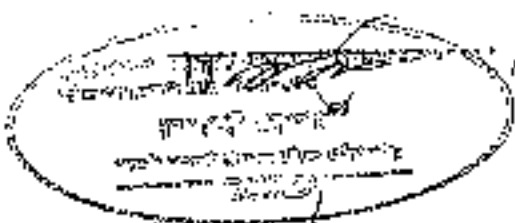
Test	Results (%)
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

Signature /




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 Zayed, Cairo.
 Tel. & Fax : 27367231 - 27363003

٣٠٠٣٦٣٠٠٣ - ٢٧٣٦٧٢٣١
 قايرو، زايده
 شارع االغزال ٣
 www.ias-egypt.com



Signature /
 المهندس محمد المغرabi
 مهندس مياه
 شركة مياه الشرب
 القاهرة - مصر

The test results are (/ Comply - 2 Not Comply) with specifications limits

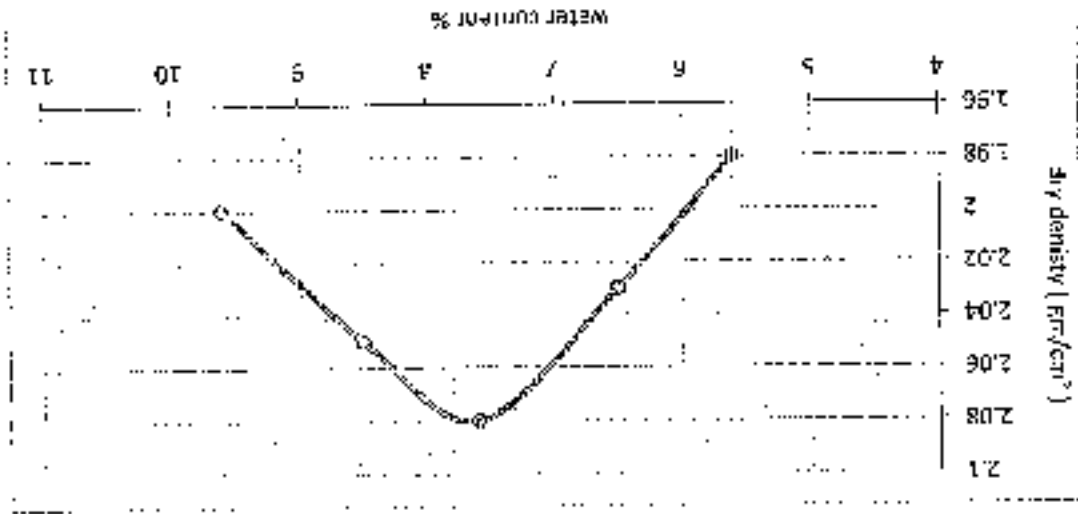
TEST	Results (%)	Limits according Projects Specs	
		(A-1-a)	(A-1-b)
• Group Classification			
	2.00 mm (No.10)	48.1	Max 50 % -----
	0.425 mm (No. 40)	34.6	Max 30 % Max 50 %
	0.075 mm (No. 200)	9.3	Max 15 % Max 15 %
	Characteristics of fraction passing 0.425 mm (No.40)		
Liquid Limit	NP	-----	-----
Plasticity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

Soil Classification According to Project Specs (Embankment)

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

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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 (g/cm³) : 2.08
- Optimum moisture content % : 7.6

Signature



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 Zayed City, Cairo
 Tel. & Fax : 27367231 - 27363093

إدارة الجودة
 307 شارع الملك
 القاهرة - الجيزة
 Telfax : 27367231 - 27363093
 www.ias-egypt.com

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 Location : SL (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	mm	Inch	stress on piston (Mpa)	Stress (Mpa)		CBR %
				SL Value	Sample results	
	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			
At 0.1 inch (2.54 mm) penetration		6.90	2.63	Sample results		38.1

Notes :

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.08 (gm/ccr³) at 7.6 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature /

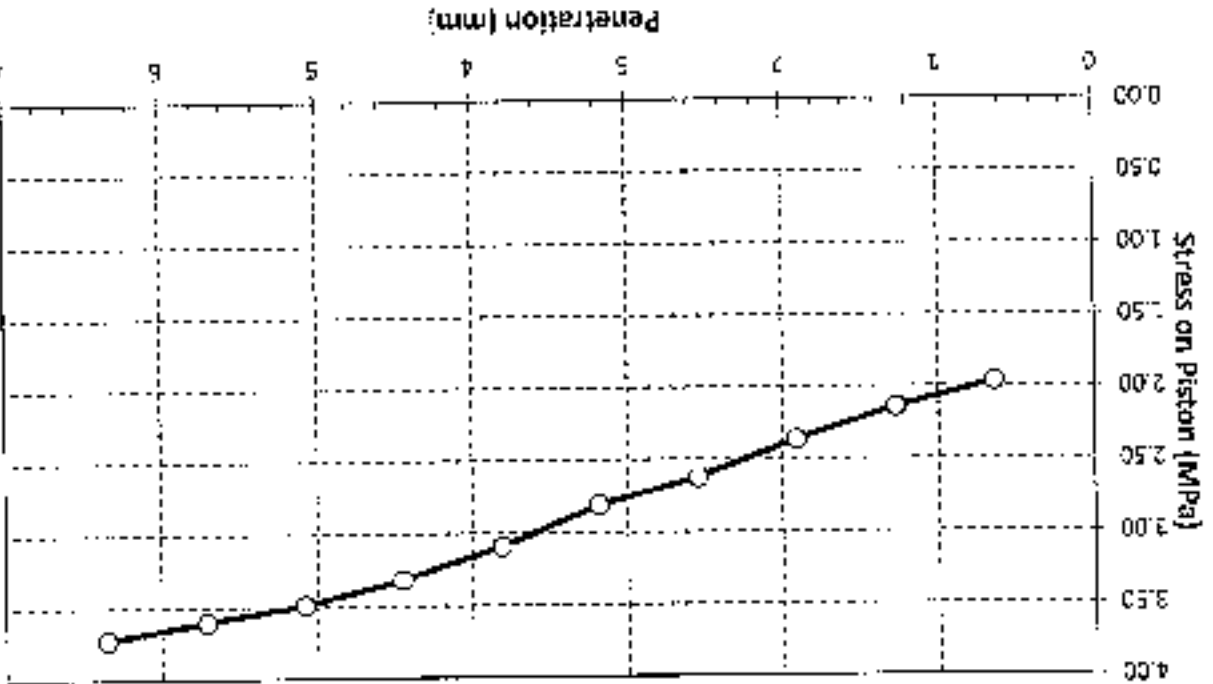


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إدارة الاختبارات - القاهرة
 3 شارع الماهر الأهسي
 تليفون وفاكس : 27367231 - 27363403
 www.ias-egyp.com

Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh
 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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