

SYSTRA



مركز الإستشارات الهندسية
للتنقل والطارات والطرق
(خبراء دوليون)
دكتور / سعد الجيوشي



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

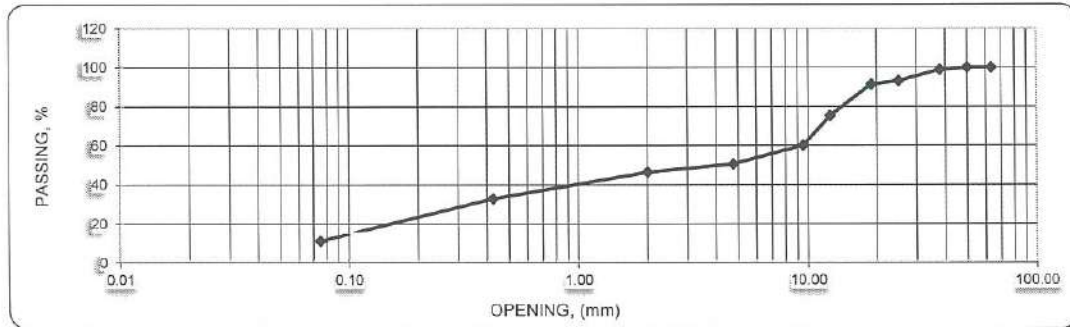
Company:	إيجيبت ستون للتعبدين والتوريدات	Sample No:	
description:	تربة ردم المصرية	Sample Date :	09/01/2023
Station Represented :	410+000 to 410+200 (0)	Report Date:	09/01/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

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

Source of Tested Material	
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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	98.9	93.2	91.4	75.3	60.1	50.6	46.5	32.8	11.3



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

A-1-B

GARP Consultant Engineer's Comments :

كريم رضوان
Lab Contractor Eng.:-

كريم رضوان

SGAC Consultant Eng.:-

SYSTRA



مركز الإستشارات الهندسية
للنقل والطرق والمطارات و الطرق
(خبراء دوليون)
دكتور / سعد الجبوشي



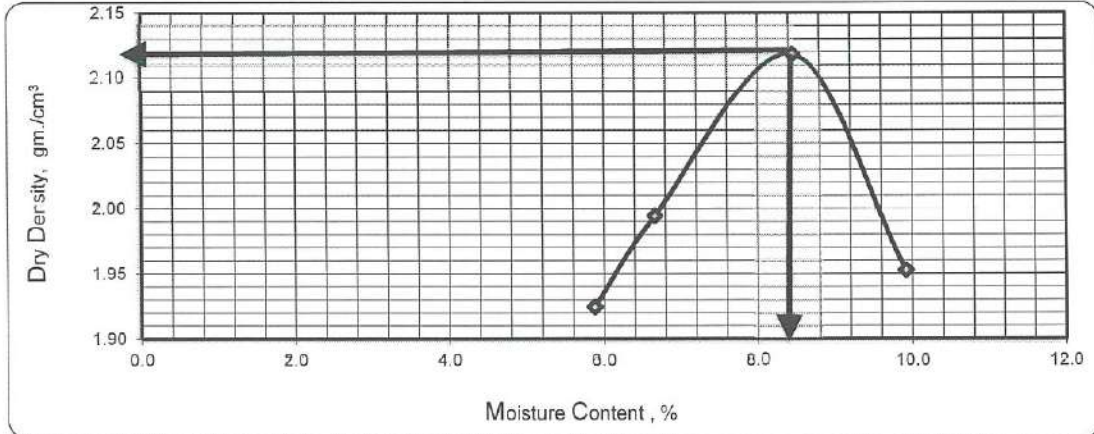
مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجبوشي مكتب سجاك للإستشارات الهندسية

Company:	إيجيبت ستون للتعبدين والتوريدات	Sample No:	
Description :	مشون	Sample Date :	09/01/2023
Station Represen	410+000 to 410+200 (0)	Report Date:	10/01/2023

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. high, 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	9910	10100	10460	10140	
Wet Density, gm/cm ³	2.038	2.127	2.297	2.146	
Weight of Wet Soil Portion, gm	144.0	144.0	154.0	164.0	
Weight after Drying, gm	136.0	135.0	142.0	149.2	
Moisture Content, %	5.9	6.7	8.5	9.9	
Dry Density, gm/cm ³	1.925	1.994	2.118	1.953	



Max. Dry Density=	2.118 t/m ³	8.5
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CONSULTANT COMMENTS

كريم رضوان
Lab Contractor Eng.:-

SGAC Consultant Eng.:-

SYSTRA



مركز الإستشارات الهندسية
للتنقل والطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجبوشي



مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجبوشي مكتب سجاك للاستشارات الهندسية

Activity : Earth Work

نتائج اختبارات المعمل

Date

12/01/2023

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

Company:	ايجيبت ستون	Layer NO:	
Description :	ترية ردم المصرية	Layer Thickness:	0.25
Station Represented :	410+000 to 410+200	Sample Date :	11/01/2023

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
2.118	8.5	95%	1.410

Compaction Testing Results & Calculations

Stations	410+025	410+050	410+075	410+100	410+125	410+150	410+175	410+200
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	11154	11579	10704	11014	10429	11206	9370	10609
Wt. of Sand After Test, gm	6305	6440	6380	6205	5530	6395	5185	6160
Wt. of Sand in Cone + hole, gm	4849	5139	4324	4809	4899	4811	4185	4449
Wt. of Sand in Cone	2072	2072	2072	2072	2072	2072	2072	2072
Wt. of Sand at hole, gm	2777	3067	2252	2737	2827	2739	2113	2377
Volume of the Hole, cm ³	1970	2175	1597	1941	2005	1943	1499	1686
Wt. of Soil from Hole, gm	4381	4806	3594	4281	4481	4319	3359	3716
Bulk Density of Soil, gm/cm ³	2.224	2.209	2.250	2.205	2.235	2.223	2.241	2.204
Moisture Content, %	8.2	8.0	8.3	8.2	8.2	7.2	8.2	7.2
Dry Density, gm/cm ³	2.056	2.046	2.078	2.038	2.066	2.074	2.072	2.056
Compaction, (%)	97.1%	96.6%	98.1%	96.2%	97.5%	97.9%	97.8%	97.1%

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. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 29/12/2022
Reporting Date : 04/01/2023
Reporting No. : 39
Sample No. : 17

Dear Gentleman,

Attached here with the Soil Replacement delivered on 29/12/2022

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 /...



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 29/12/2022
Reporting Date : 04/01/2023
Reporting No. : 39
Sample No. : 17

Results of Sieve Analysis According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	98.9
25	93.3
19	91.5
12.50	75.3
9.50	60.1
4.75	50.7
2.36	58.8
2.00	46.5
1.18	40.9
0.600	35.5
0.425	32.9
0.300	23.7
0.150	15.2

Signature / ...



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 29/12/2022
Reporting Date : 04/01/2023
Reporting No. : 39
Sample No. : 17

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)	11.6

Signature /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 29/12/2022
Reporting Date : 04/01/2023
Reporting No. : 39
Sample No. : 17

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 /



Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
 Location : St. (408+600) : (411+600)
 Type of sample : Soil Replacement (Embankment)
 Delivery Date : 29/12/2022
 Reporting Date : 04/01/2023
 Reporting No. : 39
 Sample No. : 17

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).	46.5	Max 50 %	-----
0.425 mm (No. 40).	32.9	Max 30 %	Max 50 %
0.075 mm (No. 200).	11.6	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 /



3 El Malek El Afdal Street

Zamalek, Cairo.

Tel. & Fax : 27367231 - 27363093



٣ ش الملك الأفضل

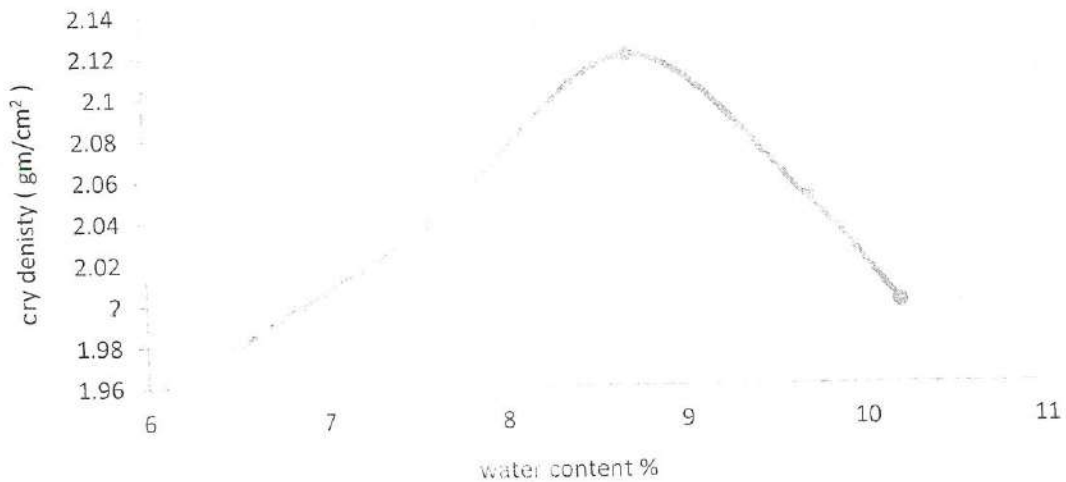
الزمالك - القاهرة

تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

www.cel-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (4.1+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 29/12/2022
Reporting Date : 04/01/2023
Reporting No. : 39
Sample No. : 17

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



- Max dry density (gm/cm²) : 2.12
- Optimum moisture content % : 8.7

CBR ?

Signature /



SYSTRA



مركز الإستشارات الهندسية
للتنقل والطارات والطرق
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دكتور / سعد الجيوشي



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

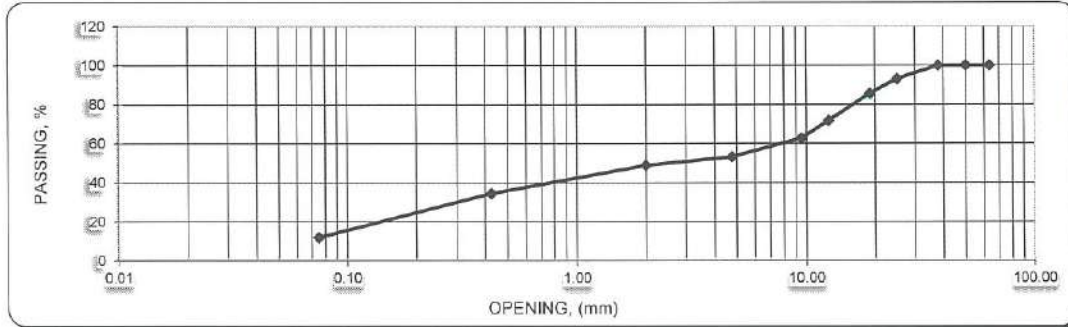
Company:	ايجيبت ستون للتعبدين و التوريدات	Sample No:	
description:	تربة ردم المصرية	Sample Date :	13/01/2023
Station Represented :	410+200 to 410+400 (0)	Report Date:	13/01/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

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

Source of Tested Material	
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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	100.0	93.1	85.6	71.8	62.7	53.2	48.9	34.5	12.0



Atterberg Limits	L.L.	0.0	Max. 35	P.L.	0	P.I.	0.0	(Max. 10)
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SOIL CLASSIFICATION :	A - 1 - B
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GARP Consultant Engineer's Comments :

كريم رضوان Lab Contractor Eng.:- كريم رضوان	SGAC Consultant Eng.:-
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SYSTRA



مركز الإستشارات الهندسية
للنقل والطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجبوشي



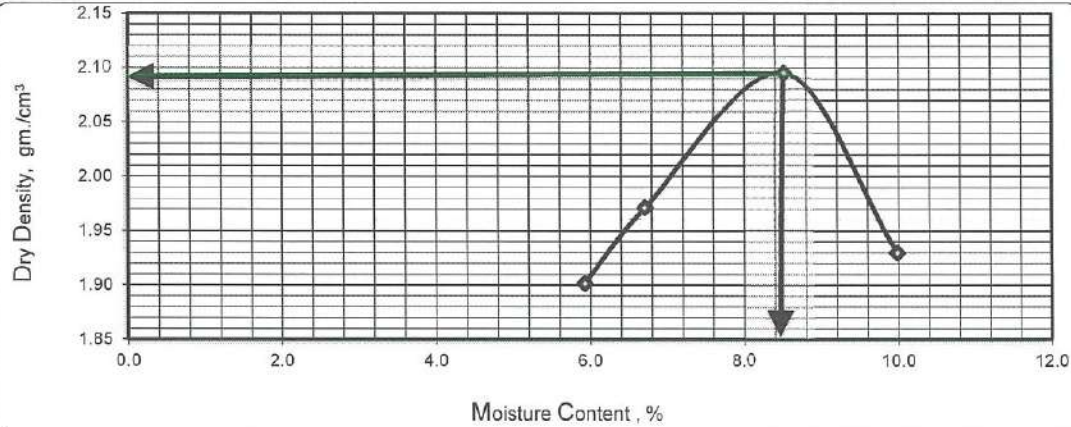
مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجبوشي مكتب سجاك للإستشارات الهندسية

Company:	إيجيبت ستون للتعيين والتوريدات	Sample No:	
Description :	مشون	Sample Date :	13/01/2023
Station Represen	410+200 to 410+400 (0)	Report Date:	14/01/2023

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. high, 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	9860	10050	10410	10090	
Wet Density, gm/cm ³	2.014	2.104	2.274	2.123	
Weight of Wet Soil Portion, gm	143.0	143.0	153.0	163.0	
Weight after Drying, gm	135.0	134.0	141.0	148.2	
Moisture Content, %	5.9	6.7	8.5	10.0	
Dry Density, gm/cm ³	1.901	1.971	2.095	1.930	



Max. Dry Density= 2.095 t/m³

8.5

CONSULTANT COMMENTS

كريم رضوان
Lab Contractor Eng.:-
كريم رضوان

SGAC Consultant Eng.:-

SYSTRA



مركز الإستشارات الهندسية
للنقل والطرق والمطارات
(خبراء دوليين)
دكتور/ سعد الجيوشي



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

Activity : Earth Work

نتائج اختبارات المعمل

Date 16/01/2023

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

Company:	إيجيبت ستون	Layer NO:	
Description :	ترية ردم المصرية	Layer Thickness:	0.25
Station Represented :	410+200 to 410+400	Sample Date :	15/01/2023

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
2.095	8.5	95%	1.410

Compaction Testing Results & Calculations

Stations	410+225	410+250	410+275	410+300	410+325	410+350	410+375	410+400
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	11153	11578	10705	11013	10428	11207	9371	10608
Wt. of Sand After Test, gm	6306	6441	6379	6206	5531	6394	5184	6161
Wt. of Sand in Cone + hole, gm	4847	5137	4326	4807	4897	4813	4187	4447
Wt. of Sand in Cone	2072	2072	2072	2072	2072	2072	2072	2072
Wt. of Sand at hole, gm	2775	3065	2254	2735	2825	2741	2115	2375
Volume of the Hole, cm ³	1968	2174	1599	1940	2004	1944	1500	1684
Wt. of Soil from Hole, gm	4388	4813	3587	4288	4488	4312	3352	3723
Bulk Density of Soil, gm/cm ³	2.230	2.214	2.244	2.211	2.240	2.218	2.235	2.210
Moisture Content, %	8.3	8.1	8.4	8.3	8.3	7.3	8.3	7.3
Dry Density, gm/cm ³	2.059	2.048	2.070	2.041	2.068	2.067	2.063	2.060
Compaction, (%)	98.3%	97.8%	98.8%	97.4%	98.7%	98.7%	98.5%	98.3%

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. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

Dear Gentleman,

Attached here with the Soil Replacement delivered on 01/01/2023

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 /...



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

Results of Sieve Analysis According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	100
25	93.1
19	85.6
12.50	71.7
9.50	62.8
4.75	53.3
2.36	50.1
2.00	48.9
1.18	44.1
0.600	37.7
0.425	34.6
0.300	25.0
0.150	14.9

Signature / ...



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

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)	12.2

Signature / 



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

**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 / ...



Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
 Location : St. (408+600) : (411+600)
 Type of sample : Soil Replacement (Embankment)
 Delivery Date : 01/01/2023
 Reporting Date : 06/01/2023
 Reporting No. : 40
 Sample No. : 18

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).	48.9	Max 50 %	-----
0.425 mm (No. 40).	34.6	Max 30 %	Max 50 %
0.075 mm (No. 200).	12.2	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

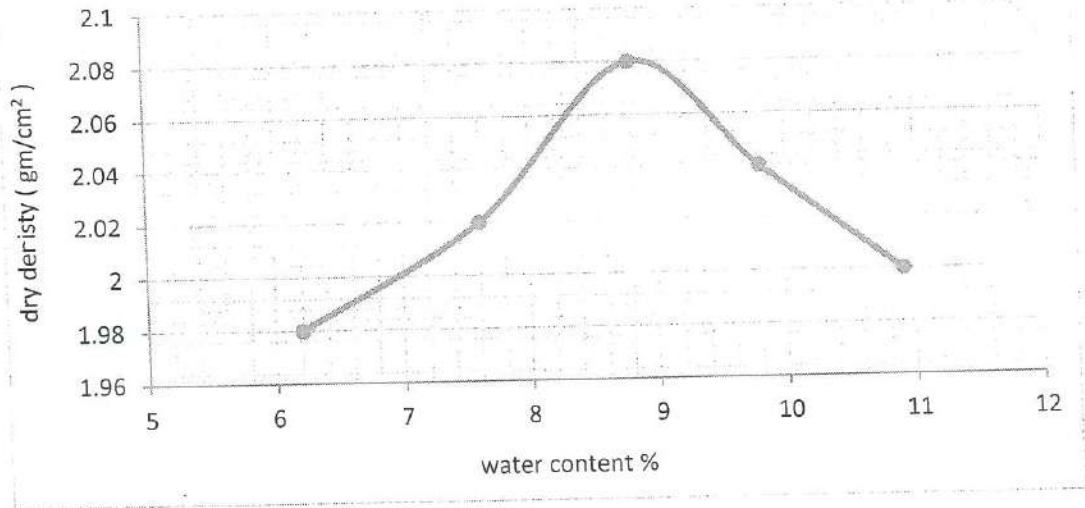
Signature /



5

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

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



- Max dry density (gm/cm³) : 2.08
- Optimum moisture content % : 8.8

Signature /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	2.21
1.27	0.050	2.61
1.91	0.075	2.98
2.54	0.100	3.29
3.18	0.125	3.49
3.81	0.150	3.70
4.45	0.175	3.84
5.08	0.200	4.05
5.71	0.225	4.13
6.35	0.250	4.23

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	47.63
	6.90	3.29	

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.08 (gm /cm³)
At 8.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

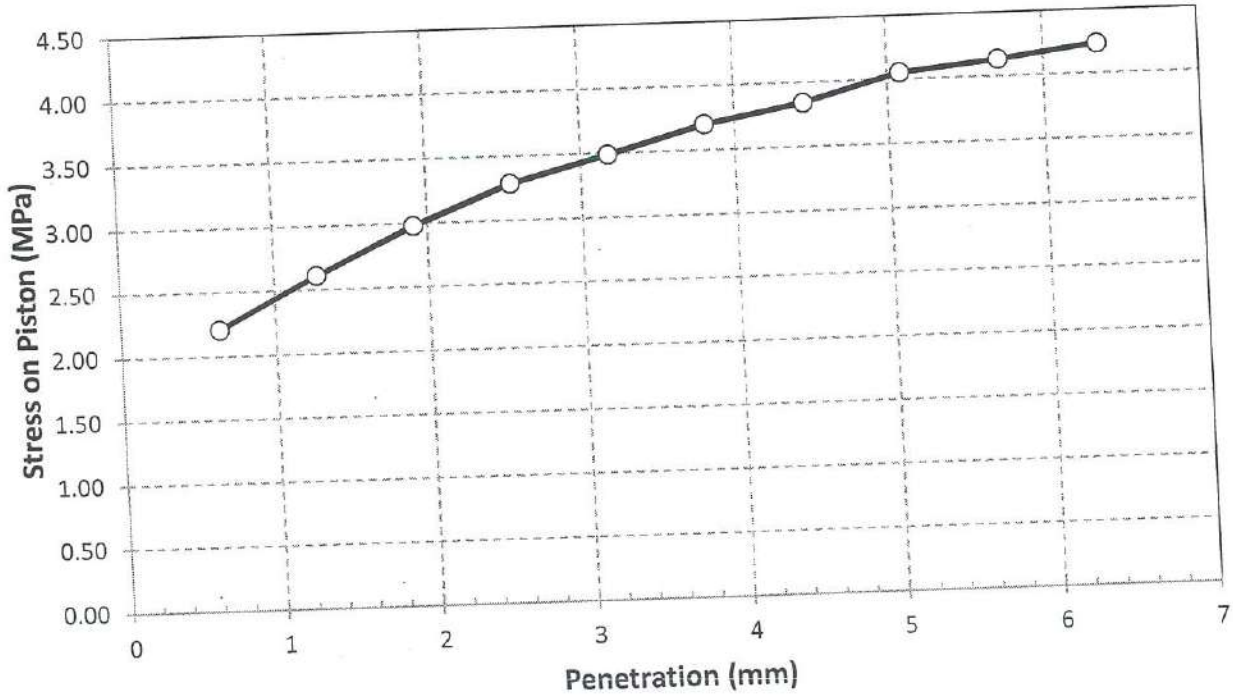
Signature

CEL
مكتب معامل الاستشارات الهندسية
الساحل الشرقي
رقم التسجيل المميز: 537 - 544 - 545
البريد الإلكتروني: info@cel-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 01/01/2023
Reporting Date : 06/01/2023
Reporting No. : 40
Sample No. : 18

Load Penetration Curve of CBR Test

ASTM D-1883



Signature /



SYSTRA



مركز الإستشارات الهندسية
للتقل والمطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجيوشي



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

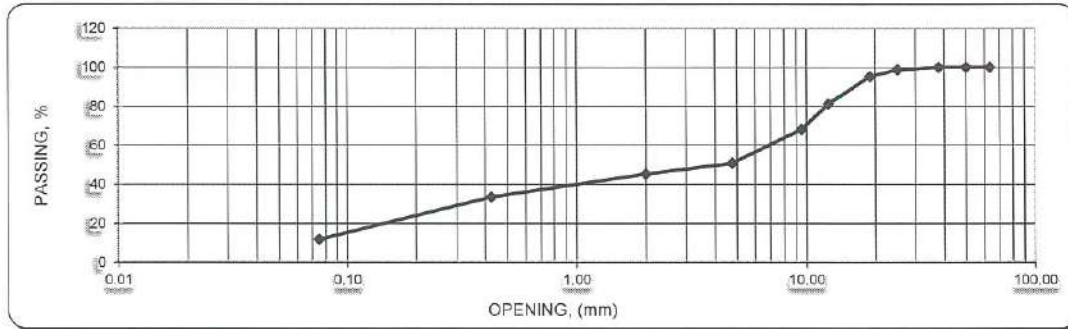
Company:	إيجيبت ستون للتعيين والتوريدات	Sample No:	
description:	تربة ردم المصرية	Sample Date :	01/01/2023
Station Represented :	410+400 to 410+600 (0)	Report Date:	01/01/2023

SOIL CLASSIFICATION / ATTERBERGS LIMITS

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

Source of Tested Material	
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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	100.0	98.8	95.3	81.3	68.3	51.0	45.4	33.6	11.9



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

SOIL CLASSIFICATION :	A - 1 - B
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GARP Consultant Engineer's Comments :

كريم رضوان
Lab Contractor Eng.:-

كريم رضوان

SGAC Consultant Eng.:-

SYSTRA



مركز الإستشارات الهندسية
للنقل والطرق
(خبراء دوليون)
دكتور / سعد الجيوشي



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

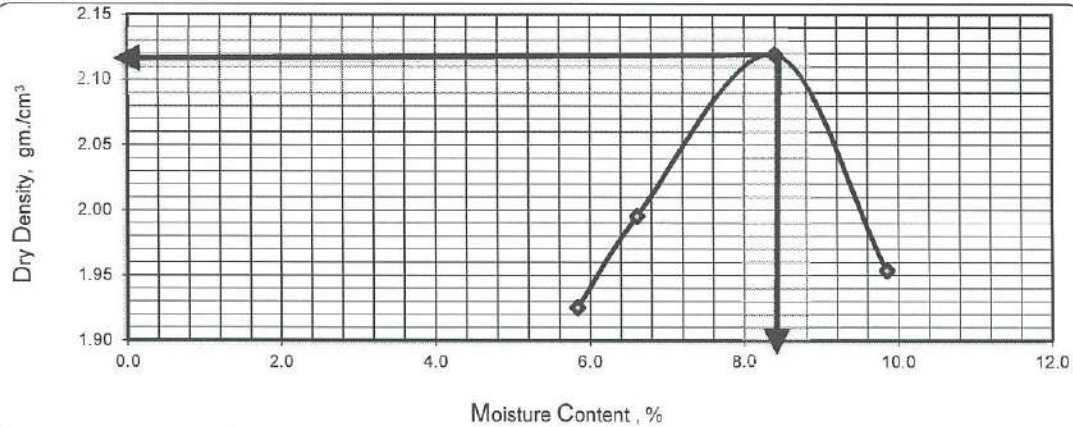
Company:	إيجيبت ستون للتعيين والتوريدات	Sample No:	
Description :	مشنون	Sample Date :	01/01/2023
Station Represen	410+400 to 410+600 (0)	Report Date:	02/01/2023

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. high, 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	9910	10100	10460	10140	
Wet Density, gm/cm ³	2.038	2.127	2.297	2.146	
Weight of Wet Soil Portion, gm	145.0	145.0	155.0	165.0	
Weight after Drying, gm	137.0	136.0	143.0	150.2	
Moisture Content, %	5.8	6.6	8.4	9.9	
Dry Density, gm/cm ³	1.925	1.995	2.119	1.954	



Max. Dry Density= 2.119 t/m³

8.4

CONSULTANT COMMENTS

كريم رضوان
Lab Contractor Eng.:-

SGAC Consultant Eng.:-

SYSTRA



مركز الاستشارات الهندسية
للتنقل والطرق
(خبراء دوليون)
دكتور / سعد الجيوشي



مشروع القطار السريع (العلمين - فوكة) قطاع د / سعد الجيوشي مكتب سجاك للاستشارات الهندسية

Activity : Earth Work

نتائج اختبارات المعمل

Date

04/01/2023

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

Company:	ايجيبت ستون	Layer NO:	
Description :	ترية ردم المصرية	Layer Thickness:	0.25
Station Represented :	410+400 to 410+600	Sample Date :	03/01/2023

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
2.119	8.4	95%	1.410

Compaction Testing Results & Calculations

Stations	410+425	410+450	410+475	410+500	410+525	410+550	410+575	410+600
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	11140	11565	10718	11000	10415	11220	9384	10595
Wt. of Sand After Test, gm	6319	6454	6366	6219	5544	6381	5171	6174
Wt. of Sand in Cone + hole, gm	4821	5111	4352	4781	4871	4839	4213	4421
Wt. of Sand in Cone	2072	2072	2072	2072	2072	2072	2072	2072
Wt. of Sand at hole, gm	2749	3039	2280	2709	2799	2767	2141	2349
Volume of the Hole, cm ³	1950	2155	1617	1921	1985	1962	1518	1666
Wt. of Soil from Hole, gm	4372	4797	3603	4272	4472	4328	3368	3707
Bulk Density of Soil, gm/cm ³	2.242	2.226	2.228	2.224	2.253	2.205	2.218	2.225
Moisture Content, %	8.1	7.9	8.2	8.1	8.1	7.1	8.1	7.1
Dry Density, gm/cm ³	2.074	2.063	2.059	2.057	2.084	2.059	2.052	2.078
Compaction, (%)	97.9%	97.3%	97.2%	97.1%	98.3%	97.2%	96.8%	98.0%

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. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 19/12/2022
Reporting Date : 23/12/2022
Reporting No. : 37
Sample No. : 15

Dear Gentleman,

Attached here with the Soil Replacement delivered on 19/12/2022

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 /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 19/12/2022
Reporting Date : 23/12/2022
Reporting No. : 37
Sample No. : 15

Results of Sieve Analysis According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	100
25	98.9
19	95.3
12.50	81.3
9.50	68.4
4.75	51.0
2.36	48.0
2.00	45.4
1.18	41.2
0.600	35.9
0.425	33.6
0.300	26.5
0.150	14.8

Signature /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 19/12/2022
Reporting Date : 23/12/2022
Reporting No. : 37
Sample No. : 15

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)	12.1

Signature /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 19/12/2022
Reporting Date : 23/12/2022
Reporting No. : 37
Sample No. : 15

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 / ..



Company Name : Egypt Stone
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
 Location : St. (408+600) : (411+600)
 Type of sample : Soil Replacement (Embankment)
 Delivery Date : 19/12/2022
 Reporting Date : 23/12/2022
 Reporting No. : 37
 Sample No. : 15

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).	45.4	Max 50 %	-----
0.425 mm (No. 40).	33.6	Max 30 %	Max 50 %
0.075 mm (No. 200).	12.1	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 /



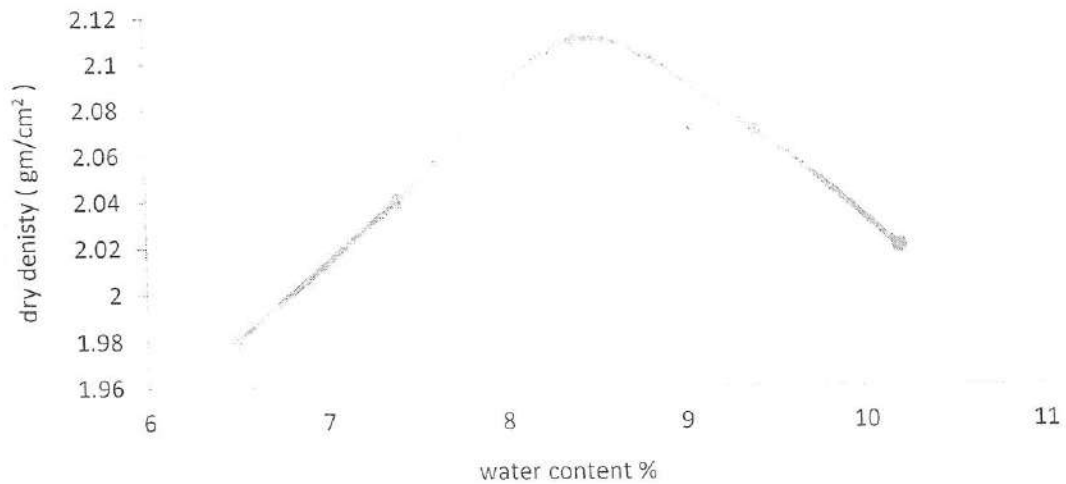
3 El Malek El Afdal Street
 Zamalek, Cairo.
 Tel.& Fax : 27367231 - 27363093



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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. (408+600) : (411+600)
Type of sample : Soil Replacement (Embankment)
Delivery Date : 19/12/2022
Reporting Date : 23/12/2022
Reporting No. : 37
Sample No. : 15

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



- Max dry density (gm/cm³) : 2.11
- Optimum moisture content % : 8.4

Signature /



SYSTRA



مركز الاستشارات الهندسية
للتنقل والطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



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

Company:	ايجيبت استون	Layer NO:	
Description :	sub ballast 1	Layer Thickness:	0.2
Station Represented :	410+100 to 410+400	Sample Date :	16/02/2023

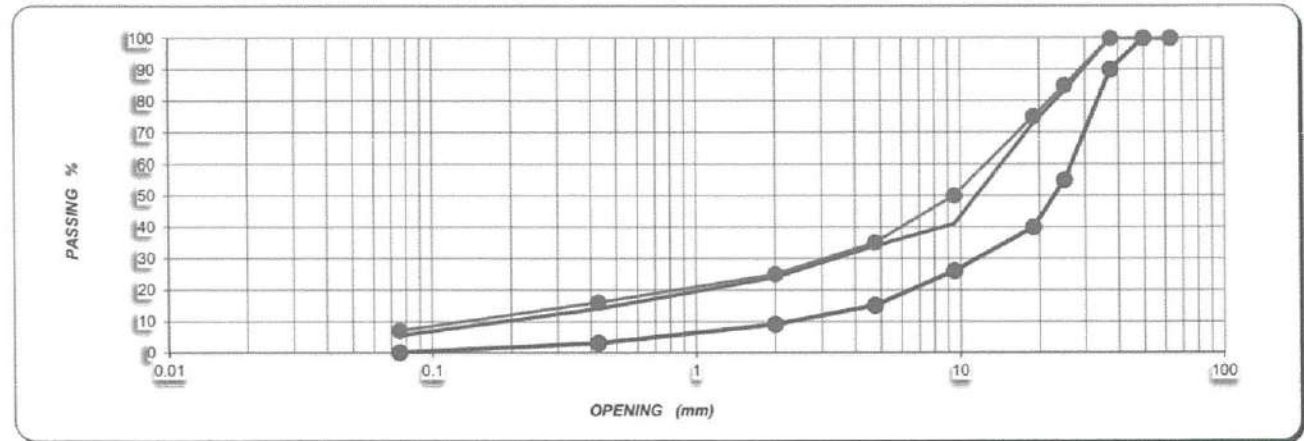
SIEVE ANALYSIS & BLEND of SUB BALLAST MIX

AASHTO T27 & ASTM C-136

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Description of Tested Material	sub ballast
Location of Tested Material	SUB BALLAST

Sieve No.	2.5 in	2.0 in	1.5 in	1.0 in	3/4 in	3/8 in	no. 4	no. 10	no. 40	No. 200
Opening (mm)	63.50	50.00	37.50	25.00	19.00	9.50	4.75	2.00	0.43	0.075
Passing %	100.0	100.0	98.2	81.9	70.0	40.2	30.6	20.7	10.7	5.20
Min. %	100.0	100.0	90.0	55.0	40.0	26.0	15.0	9.0	3.0	0.0
Max. %	100.0	100.0	100.0	85.0	75.0	50.0	35.0	25.0	16.0	7.0



Lab Contractor Eng.:-

Harun

SGAC Consultant Eng.:-

[Signature]

SYSTRA



مركز الاستشارات الهندسية
للتنقل والطرق
(خوراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



مشروع القطر السريع (العلمين - فوكه) قطاع د / سعد الجيوشي مكتب سجاك للإستشارات الهندسية

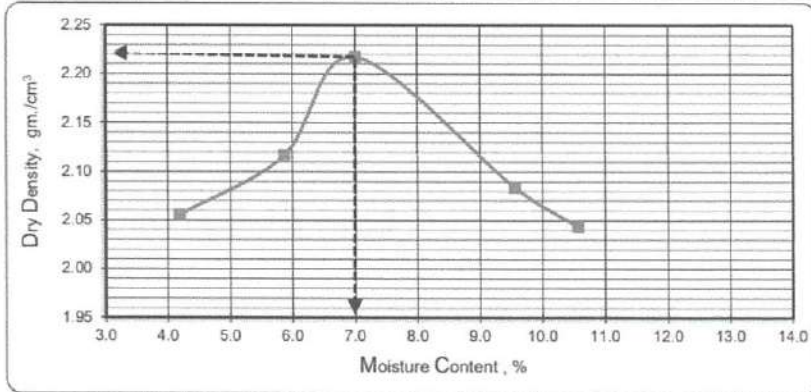
Company:	إيجيبت استون للتعيين والتوريدات			Sample No:	
Description :	sub ballast 1			Sample Date :	16/02/2023
tion Represent	410+400	to	410+400	Report Date:	17/02/2023

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. height, 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	10,130	10,340	10,620	10,430	10,380
Wet Density, gm/cm ³	2.142	2.241	2.373	2.283	2.259
Weight of Wet Soil Portion, gm	154.2	149.8	162.0	173.1	157.0
Weight after Drying, gm	148.0	141.5	151.4	158.0	142.0
Moisture Content, %	4.2	5.9	7.0	9.6	10.6
Dry Density, gm/cm ³	2.055	2.116	2.217	2.084	2.044



Max. Dry Density =	2.217 t/m ³	Optimum Moisture Content =	7.0%
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CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kawkan

SGAC Consultant Eng.:-

[Signature]



مركز الاستشارات الهندسية
للتنقل والطارات والممرات
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



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

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	ايجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+400	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+110	410+120	410+130	410+140	410+150	410+160	410+170	410+180
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	9610	10210	9910	10410	10320	10270	9960	9924
Wt. of Sand After Test, gm	5970	6632	6380	6980	6810	6782	6610	6450
Wt. of Sand in Cone + hole, gm	3640	3578	3530	3430	3510	3488	3350	3474
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2215	2153	2105	2005	2085	2063	1925	2049
Volume of the Hole, cm ³	1571	1527	1493	1422	1479	1463	1365	1453
Wt. of Soil from Hole, gm	3806	3700	3670	3470	3630	3610	3340	3540
Bulk Density of Soil, gm/cm ³	2.423	2.423	2.458	2.440	2.455	2.467	2.446	2.436
Moisture Content, %	7.6	7.0	7.7	7.6	7.6	7.1	7.1	6.6
Dry Density, gm/cm ³	2.252	2.265	2.283	2.268	2.281	2.304	2.284	2.285
Compaction, (%)	101.5%	102.1%	102.9%	102.3%	102.9%	103.9%	103.0%	103.1%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kurman

SGAC Consultant Eng.:-

[Signature]



مركز الإستشارات الهندسية
للتنقل والمطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



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

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	ايجيبت استون للمعدن والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+400	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+190	410+200	410+210	410+220	410+230	410+240	410+250	410+260
Hole No.	9	10	11	12	13	14	15	16
Wt. of Sand before Test, gm	9700	10260	10000	10410	10400	10360	10050	10014
Wt. of Sand After Test, gm	6020	6570	6370	6900	6790	6670	6630	6430
Wt. of Sand in Cone + hole, gm	3680	3690	3630	3510	3610	3690	3420	3584
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2255	2265	2205	2085	2185	2265	1995	2159
Volume of the Hole, cm ³	1599	1606	1564	1479	1550	1606	1415	1531
Wt. of Soil from Hole, gm	3870	3870	3760	3630	3720	3870	3410	3650
Bulk Density of Soil, gm/cm ³	2.420	2.409	2.404	2.455	2.401	2.409	2.410	2.384
Moisture Content, %	7.7	7.1	7.8	7.7	7.7	7.2	7.2	6.7
Dry Density, gm/cm ³	2.247	2.249	2.230	2.279	2.229	2.247	2.248	2.234
Compaction, (%)	101.3%	101.4%	100.6%	102.8%	100.5%	101.4%	101.4%	100.8%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Signature

SGAC Consultant Eng.:-

Signature



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

الهيئة العامة
للطرق والكباري
(GARB)



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

Activity : دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	ايجيبت استون للمعدن والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+400	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+270	410+280	410+290	410+300	410+310	410+320	410+330	410+340
Hole No.	17	18	19	20	21	22	23	24
Wt. of Sand before Test, gm	9700	10260	10000	10410	10400	10360	10050	10014
Wt. of Sand After Test, gm	6030	6580	6380	6910	6800	6680	6640	6440
Wt. of Sand in Cone + hole, gm	3670	3680	3620	3500	3600	3680	3410	3574
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2245	2255	2195	2075	2175	2255	1985	2149
Volume of the Hole, cm ³	1592	1599	1557	1472	1543	1599	1408	1524
Wt. of Soil from Hole, gm	3870	3870	3760	3630	3720	3870	3410	3650
Bulk Density of Soil, gm/cm ³	2.431	2.420	2.415	2.467	2.412	2.420	2.422	2.395
Moisture Content, %	7.7	7.1	7.8	7.7	7.7	7.2	7.2	6.7
Dry Density, gm/cm ³	2.257	2.259	2.241	2.290	2.239	2.257	2.260	2.244
Compaction, (%)	101.8%	101.9%	101.0%	103.3%	101.0%	101.8%	101.9%	101.2%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kathem

SGAC Consultant Eng.:-

[Signature]



مركز الاستشارات الهندسية
للتنقل والمطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



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

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	ايجيبت استون للمتعدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+600	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+350	410+360	410+370	410+380	410+390	410+400		
Hole No.	25	26	27	28	29	30		
Wt. of Sand before Test, gm	9700	10260	10000	10410	10400	10360		
Wt. of Sand After Test, gm	6030	6580	6380	6910	6800	6680		
Wt. of Sand in Cone + hole, gm	3670	3680	3620	3500	3600	3680		
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425		
Wt. of Sand at hole, gm	2245	2255	2195	2075	2175	2255		
Volume of the Hole, cm ³	1592	1599	1557	1472	1543	1599		
Wt. of Soil from Hole, gm	3870	3870	3760	3630	3720	3870		
Bulk Density of Soil, gm/cm ³	2.431	2.420	2.415	2.467	2.412	2.420		
Moisture Content, %	7.7	7.1	7.8	7.7	7.7	7.2		
Dry Density, gm/cm ³	2.257	2.259	2.241	2.290	2.239	2.257		
Compaction, (%)	101.8%	101.9%	101.0%	103.3%	101.0%	101.8%		

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kadup

SGAC Consultant Eng.:-

[Signature]

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

Dear Gentleman,

Attached here with the Sub-Ballast delivered on 11/02/2023

Materials test

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Liquid limits and plasticity index of soil according to ASTM D-4318.
4. Proctor test according to ASTM D-1557.
5. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
6. CBR according to ASTM D-1883
7. Los Anglos according to ASTM C-131.

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 : 27367231 - 27363093

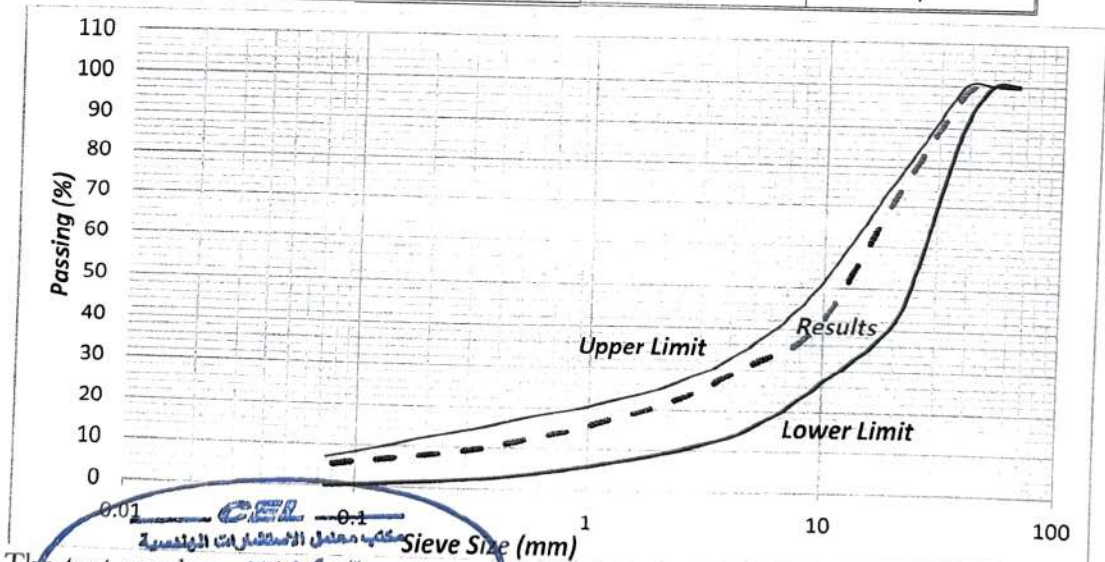


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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
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Results of sieve analysis according to ASTM D-422.

Sieve Size (mm)	Passing %	Job specification limits (ASTM D-422)	
		Min.	Max.
63.5	100	100	100
50	100	100	100
38	98.3	90	100
25	81.9	55	85
19	70.1	40	75
12.5	42.3	--	--
9.5	40.6	26	50
4.75	30.6	15	35
2.00	20.8	9	25
0.425	10.7	3	16
0.075	5.3	0	7



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

Company Name : Egypt Stone
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**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)	5.3

Signature /



Company Name : Egypt Stone
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**Results of liquid limit and plasticity index
of soils according to ASTM D-4318**

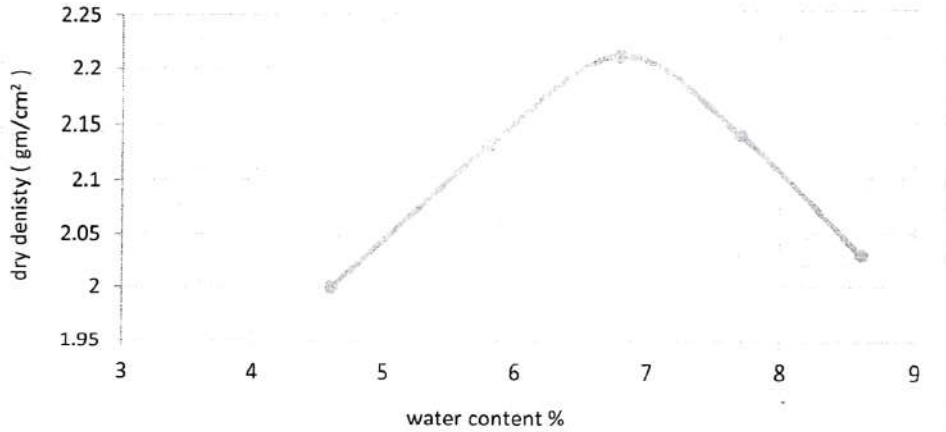
Test	Results (%)
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

Signature

CEL
مكتب معامل الاستشارات الهندسية
الخبير المهندس
د. محمد عبد الحليم
رئيس المكتب
المقر: شارع الملك الفيلسوف - القاهرة - ١١٥١١١١
الهاتف: ٢٧٣٦٢٣١ - ٢٧٣٦٢٣٠
فاكس: ٢٧٣٦٢٣١
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Moisture – Density relation of soil
Test result (Modified proctor test)
ASTM D-1557



- Max dry density (gm/cm²) : 2.21
- Optimum moisture content % : 6.8

Signature / ..



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
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Reporting No. : 168
Sample No. : 02

Results of Specific Gravity and Absorption
of Course Aggregate
ASTM C127 & D 6473

Test	Results
Bulk Specific Gravity (OD)	2.51
Bulk Specific Gravity (SSD)	2.53
Apparent Specific Gravity.	2.61
Absorption %	3.40

Note:

- (OD) Refer to Oven Dry.
- (SSD) Refer to Saturated Surface Dry.

Signature /.....



Company Name : Egypt Stone
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Type of sample : Sub-Ballast
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Delivery Date : 11/02/2023
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Reporting No. : 168
Sample No. : 02

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	4.39
1.27	0.050	4.93
1.91	0.075	5.51
2.54	0.100	6.04
3.18	0.125	6.48
3.81	0.150	6.94
4.45	0.175	7.39
5.08	0.200	7.85
5.71	0.225	8.30
6.35	0.250	8.75

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	87.5
	6.90	6.04	

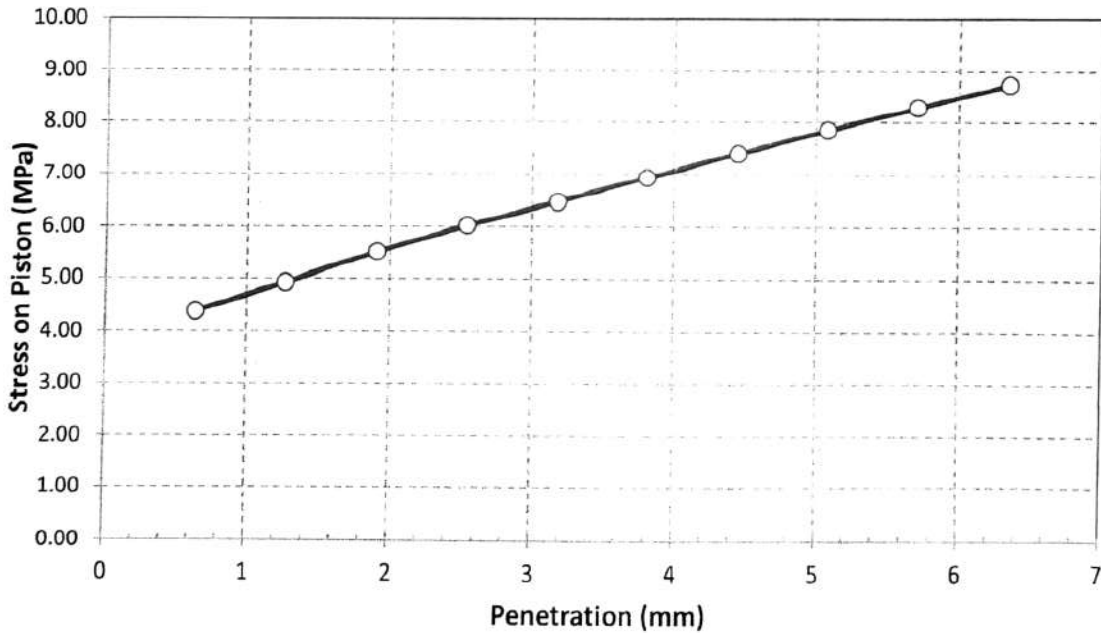
Notes :

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.21 (gm /cm³) at 6.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
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Load Penetration Curve of CBR Test
ASTM D-1883



Signature



CEL

Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company:

EGYPT STONE

Project : Electric express train.
Delivery Date : 08/06/2023
Report Date : 15/06/2023
Sample Id : Sub-ballast sample No.1
Type : Coarse Aggregate
Source : Site
Report No. : 01

**RESISTANCE TO DEGRADATION
OF SMALL SIZE AGGREGATE BY ABRASION
AND IMPACT IN LOS ANGELES MACHINE
ASTM C 131**

Test	Results
Amount of loss by abrasion and impact (%) Coarse Aggregate	26.5

- According to project specs :

The amount of loss by abrasion and impact for moderate weathering:

- Shall not exceed 30 % (when Subjected to 500 revolutions)

The Test Results is ☒ Comply - ☐ Not Comply) with Spec. Limits

Signature

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

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Testing Laboratory

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SYSTRA



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

الهيئة العامة
للطرق و الكباري
(GARB)



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

Company:	ايجيبت استون	Layer NO:	
Description :	sub ballast 1	Layer Thickness:	0.2
Station Represented :	410+400 to 410+600	Sample Date :	16/02/2023

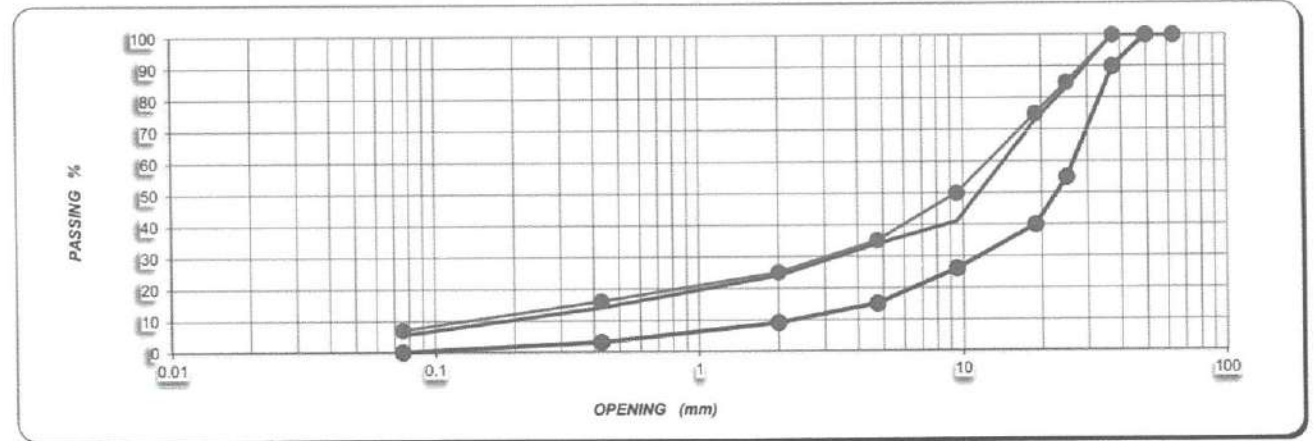
SIEVE ANALYSIS & BLEND of SUB BALLAST MIX

AASHTO T27 & ASTM C-136

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Description of Tested Material	sub ballast
Location of Tested Material	SUB BALLAST

Sieve No.	2.5 in	2.0 in	1.5 in	1.0 in	3/4 in	3/8 in	no. 4	no. 10	no. 40	No. 200
Opening (mm)	63.50	50.00	37.50	25.00	19.00	9.50	4.75	2.00	0.43	0.075
Passing %	100.0	100.0	98.2	81.9	70.0	40.2	30.6	20.7	10.7	5.20
Min. %	100.0	100.0	90.0	55.0	40.0	26.0	15.0	9.0	3.0	0.0
Max. %	100.0	100.0	100.0	85.0	75.0	50.0	35.0	25.0	16.0	7.0



Lab Contractor Eng.:-

Karlem

SGAC Consultant Eng.:-

SYSTRA



مركز الإستشارات الهندسية
للنقل والطرق والمطارات
(خوراء دوليون)
دكتور / سعد الجبوشني

الهيئة العامة
للطرق والكباري
(GARB)



مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجبوشني مكتب سجاك للإستشارات الهندسية

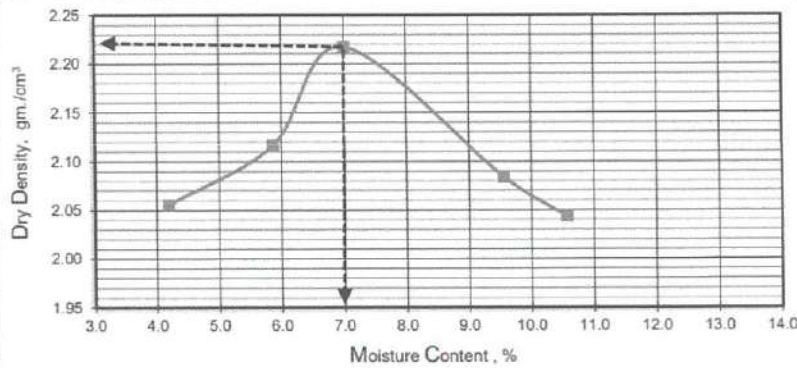
Company:	ايجيبت استون للتعمدين والتوريدات	Sample No:	
Description :	sub ballast 1	Sample Date :	16/02/2023
Location Represent:	410+400 to 410+600	Report Date:	17/02/2023

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. height, 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	10,130	10,340	10,620	10,430	10,380
Wet Density, gm/cm ³	2.142	2.241	2.373	2.283	2.259
Weight of Wet Soil Portion, gm	154.2	149.8	162.0	173.1	157.0
Weight after Drying, gm	148.0	141.5	151.4	158.0	142.0
Moisture Content, %	4.2	5.9	7.0	9.6	10.6
Dry Density, gm/cm ³	2.055	2.116	2.217	2.084	2.044



Max. Dry Density =	2.217 t/m ³	Optimum Moisture Content =	7.0%
--------------------	------------------------	----------------------------	------

CONSULTANT COMMENTS

Lab Contractor Eng.:-

Signature

SGAC Consultant Eng.:-

Signature



مركز الاستشارات الهندسية
للنقل والطرق والمطارات والبحري
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
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(GARB)



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

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	ايجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+600	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

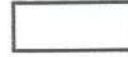
STATION	410+410	410+420	410+430	410+440	410+450	410+460	410+470	410+480
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	9590	10190	9890	10390	10300	10250	9940	9904
Wt. of Sand After Test, gm	5940	6602	6350	6950	6780	6752	6580	6420
Wt. of Sand in Cone + hole, gm	3650	3588	3540	3440	3520	3498	3360	3404
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2225	2163	2115	2015	2095	2073	1935	2059
Volume of the Hole, cm ³	1578	1534	1500	1429	1486	1470	1372	1460
Wt. of Soil from Hole, gm	3796	3690	3660	3460	3620	3600	3330	3530
Bulk Density of Soil, gm/cm ³	2.406	2.405	2.440	2.421	2.436	2.449	2.427	2.417
Moisture Content, %	7.8	7.2	7.9	7.8	7.8	7.3	7.3	6.8
Dry Density, gm/cm ³	2.231	2.244	2.261	2.246	2.260	2.282	2.261	2.263
Compaction, (%)	100.6%	101.2%	102.0%	101.3%	101.9%	102.9%	102.0%	102.1%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kafem

SGAC Consultant Eng.:-



مركز الاستشارات الهندسية
للنقل والطرق والخرق
(خبراء دوليون)
دكتور/ سعد الجبوشي

إمبنة العامة
للطرق والكباري
(GARB)



مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجبوشي مكتب سجاك للاستشارات الهندسية

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

19-Feb-23

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

Company:	إيجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+600	Sample Date :	18/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+490	410+500	410+510	410+520	410+530	410+540	410+550	410+560
Hole No.	9	10	11	12	13	14	15	16
Wt. of Sand before Test, gm	9700	10260	10000	10410	10400	10360	10050	10014
Wt. of Sand After Test, gm	6010	6560	6360	6890	6780	6660	6620	6420
Wt. of Sand in Conc + hole, gm	3690	3700	3640	3520	3620	3700	3430	3594
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2265	2275	2215	2095	2195	2275	2005	2169
Volume of the Hole, cm ³	1606	1613	1571	1486	1557	1613	1422	1538
Wt. of Soil from Hole, gm	3870	3870	3760	3630	3720	3870	3410	3650
Bulk Density of Soil, gm/cm ³	2.409	2.399	2.393	2.443	2.390	2.399	2.398	2.373
Moisture Content, %	7.7	7.1	7.8	7.7	7.7	7.2	7.2	6.7
Dry Density, gm/cm ³	2.237	2.240	2.220	2.268	2.219	2.237	2.237	2.224
Compaction, (%)	100.9%	101.0%	100.1%	102.3%	100.1%	100.9%	100.9%	100.3%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Signature

SGAC Consultant Eng.:-

Signature



مركز الاستشارات الهندسية
للتنقل والطرق والمطارات
(خبراء دوليون)
دكتور/ سعد الجبوشي

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Company:	ايجيبت استون للمعدن والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+400 to 410+600	Sample Date :	18/02/2023

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2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+570	410+580	410+590	410+600				
Hole No.	17	18	19	20				
Wt. of Sand before Test, gm	9670	10230	9970	10380				
Wt. of Sand After Test, gm	5980	6530	6330	6860				
Wt. of Sand in Cone + hole, gm	3090	3700	3640	3520				
Wt. of Sand in Cone	1425	1425	1425	1425				
Wt. of Sand at hole, gm	2265	2275	2215	2095				
Volume of the Hole, cm ³	1606	1613	1571	1486				
Wt. of Soil from Hole, gm	3880	3880	3770	3550				
Bulk Density of Soil, gm/cm ³	2.415	2.405	2.400	2.389				
Moisture Content, %	7.6	7.0	7.7	7.6				
Dry Density, gm/cm ³	2.245	2.247	2.228	2.221				
Compaction, (%)	101.2%	101.4%	100.5%	100.1%				

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Katheno

SGAC Consultant Eng.:-

[Signature]

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
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5. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
6. CBR according to ASTM D-1883
7. Los Anglos according to ASTM C-131.

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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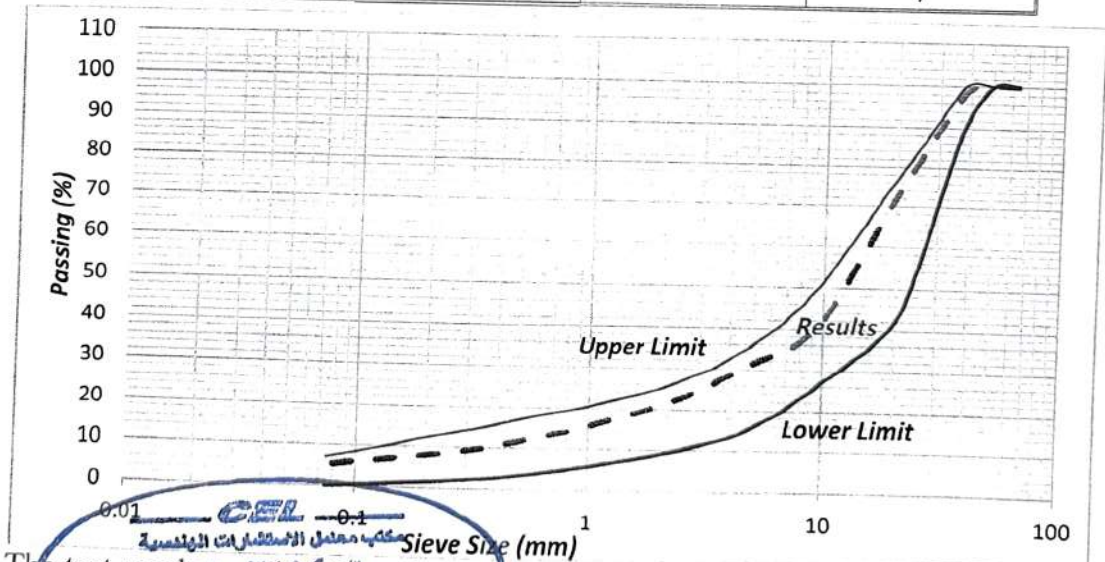


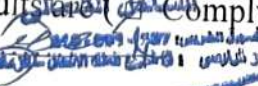
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Results of sieve analysis according to ASTM D-422.

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38	98.3	90	100
25	81.9	55	85
19	70.1	40	75
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9.5	40.6	26	50
4.75	30.6	15	35
2.00	20.8	9	25
0.425	10.7	3	16
0.075	5.3	0	7



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

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

**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)	5.3

Signature /



Company Name : Egypt Stone

Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh

Type of sample : Sub-Ballast

Location : St. (408+600) : (411+600)

Delivery Date : 11/02/2023

Reporting Date : 18/02/2023

Reporting No. : 168

Sample No. : 02

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

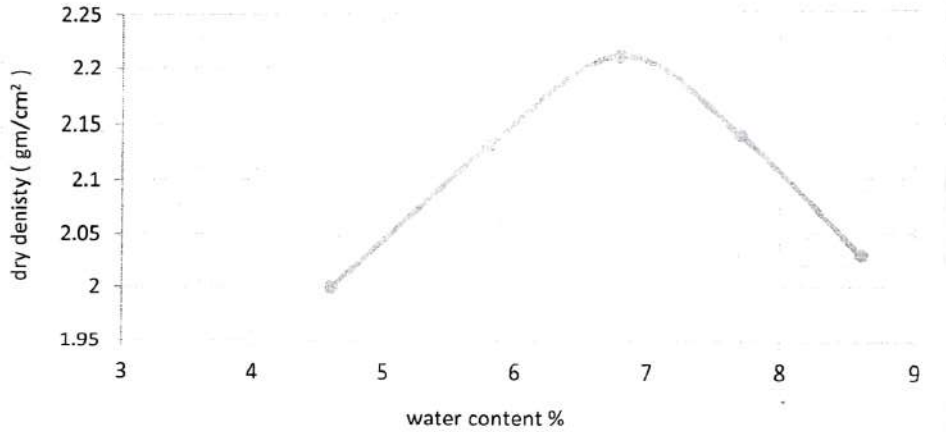
Test	Results (%)
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

Signature



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
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Reporting No. : 168
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Moisture – Density relation of soil
Test result (Modified proctor test)
ASTM D-1557



- Max dry density (gm/cm²) : 2.21
- Optimum moisture content % : 6.8

Signature / ..



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

Results of Specific Gravity and Absorption
of Course Aggregate
ASTM C127 & D 6473

Test	Results
Bulk Specific Gravity (OD)	2.51
Bulk Specific Gravity (SSD)	2.53
Apparent Specific Gravity.	2.61
Absorption %	3.40

Note:

- (OD) Refer to Oven Dry.
- (SSD) Refer to Saturated Surface Dry.

Signature /.....



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	4.39
1.27	0.050	4.93
1.91	0.075	5.51
2.54	0.100	6.04
3.18	0.125	6.48
3.81	0.150	6.94
4.45	0.175	7.39
5.08	0.200	7.85
5.71	0.225	8.30
6.35	0.250	8.75

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	87.5
	6.90	6.04	

Notes :

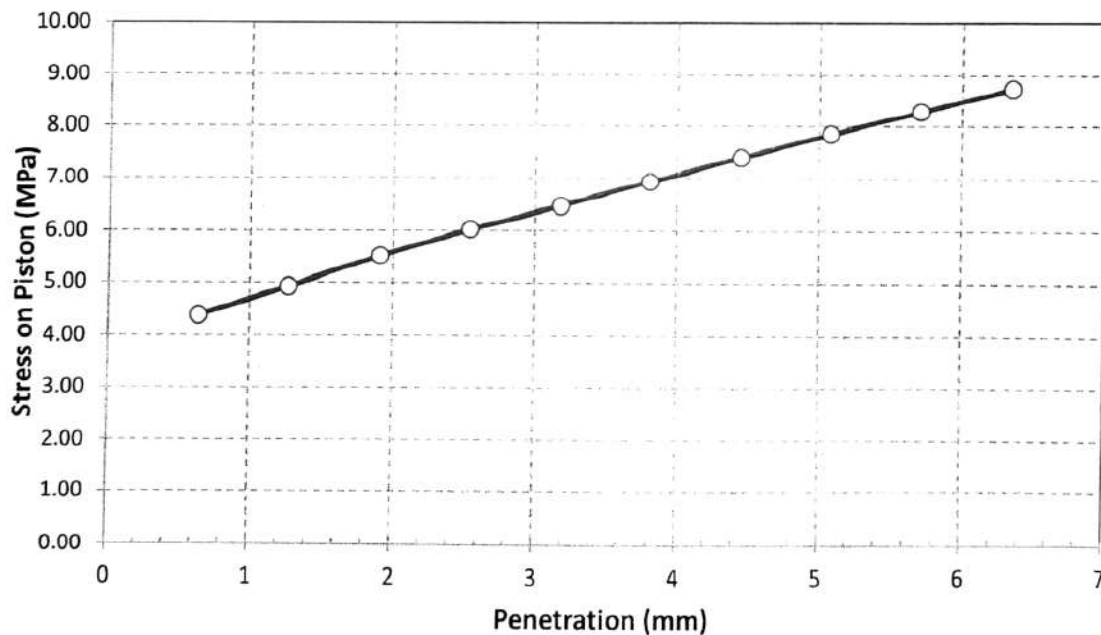
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.21 (gm /cm³) at 6.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature

Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample	: Sub-Ballast
Location	: St. (408+600) : (411+600)
Delivery Date	: 11/02/2023
Reporting Date	: 18/02/2023
Reporting No.	: 168
Sample No.	: 02

Load Penetration Curve of CBR Test

ASTM D-1883



Signature

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الساهل الشوملي
رئيس المصمم / مهندس محمد علي عبد الله
الممثل للمصمم / مهندس أحمد محمد علي

8

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



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مكتب معامل الاستشارات الهندسية

Company:

EGYPT STONE

Project : Electric express train.
Delivery Date : 08/06/2023
Report Date : 15/06/2023
Sample Id : Sub-ballast sample No.1
Type : Coarse Aggregate
Source : Site
Report No. : 01

**RESISTANCE TO DEGRADATION
OF SMALL SIZE AGGREGATE BY ABRASION
AND IMPACT IN LOS ANGELES MACHINE
ASTM C 131**

Test	Results
Amount of loss by abrasion and impact (%) Coarse Aggregate	26.5

- According to project specs :

The amount of loss by abrasion and impact for moderate weathering:

- Shall not exceed 30 % (when Subjected to 500 revolutions)

The Test Results is ☒ Comply - ☐ Not Comply) with Spec. Limits

Signature

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Zamalek, Cairo.
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SYSTRA



مركز الإستشارات الهندسية
للتنقل والطارات والطرق
(خبراء دوليون)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



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

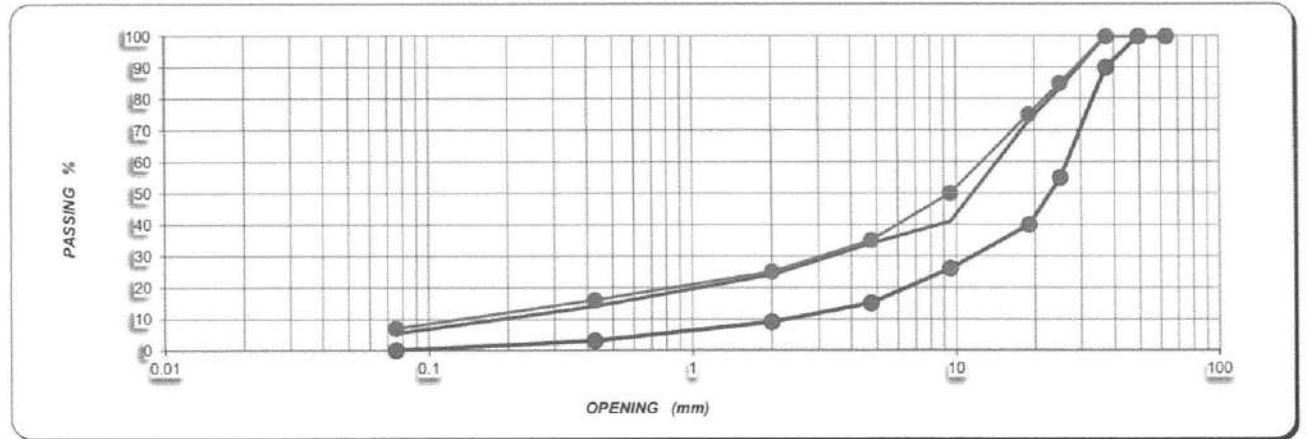
Company:	ايجيبت استون	Layer NO:	
Description :	sub ballast 1	Layer Thickness:	0.2
Station Represented :	410+600 to 410+800	Sample Date :	24/02/2023

SIEVE ANALYSIS & BLEND of SUB BALLAST MIX
AASHTO T27 & ASTM C-136

--	--	--	--

Description of Tested Material	sub ballast
Location of Tested Material	SUB BALLAST

Sieve No.	2.5 in	2.0 in	1.5 in	1.0 in	3/4 in	3/8 in	no. 4	no. 10	no. 40	No. 200
Opening (mm)	63.50	50.00	37.50	25.00	19.00	9.50	4.75	2.00	0.43	0.075
Passing %	100.0	100.0	98.2	81.9	70.0	40.2	30.6	20.7	10.7	5.20
Min. %	100.0	100.0	90.0	55.0	40.0	26.0	15.0	9.0	3.0	0.0
Max. %	100.0	100.0	100.0	85.0	75.0	50.0	35.0	25.0	16.0	7.0



Lab Contractor Eng.:-

Kassem

SGAC Consultant Eng.:-

[Signature]

SYSTRA



مركز الاستشارات الهندسية
للتنقل والطرق والمطارات
(خبراء دوليين)
دكتور/ سعد الجيوشمي

الهيئة العامة
للطرق والكباري
(GARB)



مشروع القطار السريع (العلمين - فوكه) قطاع د / سعد الجيوشمي مكتب سجاك للاستشارات الهندسية

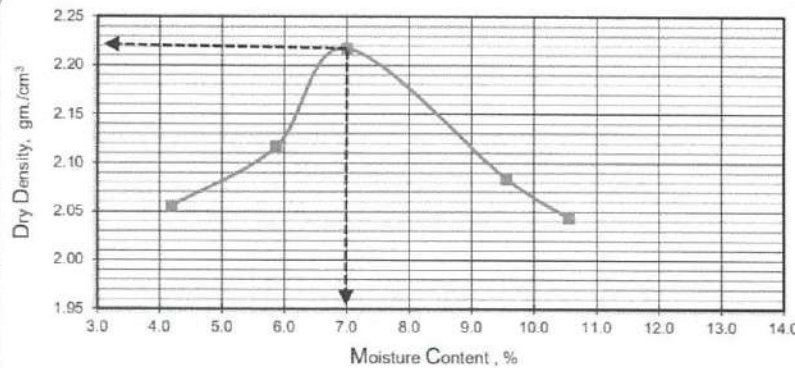
Company:	ايجيبت استون للتعبدين والتوريدات	Sample No:	
Description :	sub ballast 1	Sample Date :	24/02/2023
Location Represent:	410+600 to 410+800	Report Date:	25/02/2023

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. height. 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	10,130	10,340	10,620	10,430	10,380
Wet Density, gm/cm ³	2.142	2.241	2.373	2.283	2.259
Weight of Wet Soil Portion, gm	154.2	149.8	162.0	173.1	157.0
Weight after Drying, gm	148.0	141.5	151.4	158.0	142.0
Moisture Content, %	4.2	5.9	7.0	9.6	10.6
Dry Density, gm/cm ³	2.055	2.116	2.217	2.084	2.044



Max. Dry Density =	2.217 t/m ³	Optimum Moisture Content =	7.0%
--------------------	------------------------	----------------------------	------

CONSULTANT COMMENTS

Lab Contractor Eng.:-

Kaleem

SGAC Consultant Eng.:-

[Signature]



مركز الاستشارات الهندسية
للنقل والطرق والمطارات
(خبراء دوليون)
دكتور/ سعد الجبوشي

الهيئة العامة
للطرق والكباري
(GARF)



مشروع القطر السريع (العلمين - فوكه) قطاع د / سعد الجبوشي مكتب سجاك للاستشارات الهندسية

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

27-Feb-23

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

Company:	إيجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+600 to 410+800	Sample Date :	26/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

STATION	410+610	410+620	410+630	410+640	410+650	410+660	410+670	410+680
Hole No.	1	2	3	4	5	6	7	8
Wt. of Sand before Test, gm	9590	10190	9890	10390	10300	10250	9940	9904
Wt. of Sand After Test, gm	5910	6572	6320	6920	6750	6722	6550	6390
Wt. of Sand in Conc. hole, gm	3080	3018	3570	3470	3550	3528	3390	3514
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2255	2193	2145	2045	2125	2103	1965	2089
Volume of the Hole, cm ³	1599	1555	1521	1450	1507	1491	1394	1482
Wt. of Soil from Hole, gm	3836	3730	3700	3500	3660	3590	3370	3570
Bulk Density of Soil, gm/cm ³	2.399	2.398	2.432	2.413	2.429	2.407	2.418	2.410
Moisture Content, %	7.7	7.1	7.8	7.7	7.7	7.2	7.2	6.7
Dry Density, gm/cm ³	2.227	2.239	2.256	2.241	2.255	2.245	2.256	2.258
Compaction, (%)	100.4%	101.0%	101.7%	101.0%	101.7%	101.3%	101.7%	101.8%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Signature

SGAC Consultant Eng.:-

Signature



مركز الاستشارات الهندسية
للنقل والطرق والمطارات (خوارزمية)
دكتور/ سعد الجيوشي

الهيئة العامة
للطرق والكباري
(GARB)



مشروع القطار السريع (العلمين - فوكة) قطاع د / سعد الجيوشي مكتب سجاك للاستشارات الهندسية

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

27-Feb-23

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

Company:	ايجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+600 to 410+800	Sample Date :	26/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

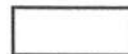
STATION	410+690	410+700	410+710	410+720	410+730	410+740	410+750	410+760
Hole No.	9	10	11	12	13	14	15	16
Wt. of Sand before Test, gm	9690	10250	9990	10400	10390	10350	10040	10004
Wt. of Sand After Test, gm	6030	6580	6380	6910	6800	6680	6640	6440
Wt. of Sand in Cone + hole, gm	3660	3670	3610	3490	3590	3670	3400	3564
Wt. of Sand in Cone	1425	1425	1425	1425	1425	1425	1425	1425
Wt. of Sand at hole, gm	2235	2245	2185	2065	2165	2245	1975	2139
Volume of the Hole, cm ³	1585	1592	1550	1465	1535	1592	1401	1517
Wt. of Soil from Hole, gm	3870	3870	3760	3610	3720	3870	3410	3650
Bulk Density of Soil, gm/cm ³	2.441	2.431	2.426	2.465	2.423	2.431	2.434	2.406
Moisture Content, %	7.6	7.0	7.7	7.6	7.6	7.1	7.1	6.6
Dry Density, gm/cm ³	2.269	2.272	2.253	2.291	2.252	2.269	2.273	2.257
Compaction, (%)	102.3%	102.4%	101.6%	103.3%	101.5%	102.3%	102.5%	101.8%

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Signature

SGAC Consultant Eng.:-

Signature



مركز الاستشارات الهندسية
للنقل والطرق والحرارة
(جوار دوايون)
دكتور/ سعد الجبوشي

الهيئة العامة
للطرق والكباري
(GARF)



مشروع القطار السريع (العلمين - فوكة) قطاع د / سعد الجبوشي مكتب سجاك للاستشارات الهندسية

Activity : اختبار دمك

نتائج اختبارات المعمل

Date

27-Feb-23

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

Company:	ايجيبت استون للتعمدين والتوريدات	Layer NO:	
Description :	اختبار دمك طبقة	Layer level:	0.7
Station Represented :	410+600 to 410+800	Sample Date :	26/02/2023

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
2.217	7.0	100%	1.410

Compaction Testing Results & Calculations

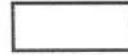
STATION	410+770	410+780	410+790	410+800				
Hole No.	17	18	19	20				
Wt. of Sand before Test, gm	9670	10230	9970	10380				
Wt. of Sand After Test, gm	5980	6530	6330	6860				
Wt. of Sand in Cone + hole, gm	3690	3700	3640	3520				
Wt. of Sand in Cone	1425	1425	1425	1425				
Wt. of Sand at hole, gm	2265	2275	2215	2095				
Volume of the Hole, cm ³	1606	1613	1571	1486				
Wt. of Soil from Hole, gm	3880	3880	3770	3550				
Bulk Density of Soil, gm/cm ³	2.415	2.405	2.400	2.389				
Moisture Content, %	7.6	7.0	7.7	7.6				
Dry Density, gm/cm ³	2.245	2.247	2.228	2.221				
Compaction, (%)	101.2%	101.4%	100.5%	100.1%				

Acceptance Criteria

Comply



Not Comply



CONSULTANT COMMENTS

Lab Contractor Eng.:-

Karwan

SGAC Consultant Eng.:-

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

Dear Gentleman,

Attached here with the Sub-Ballast delivered on 11/02/2023

Materials test

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Liquid limits and plasticity index of soil according to ASTM D-4318.
4. Proctor test according to ASTM D-1557.
5. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
6. CBR according to ASTM D-1883
7. Los Anglos according to ASTM C-131.

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 : 27367231 - 27363093

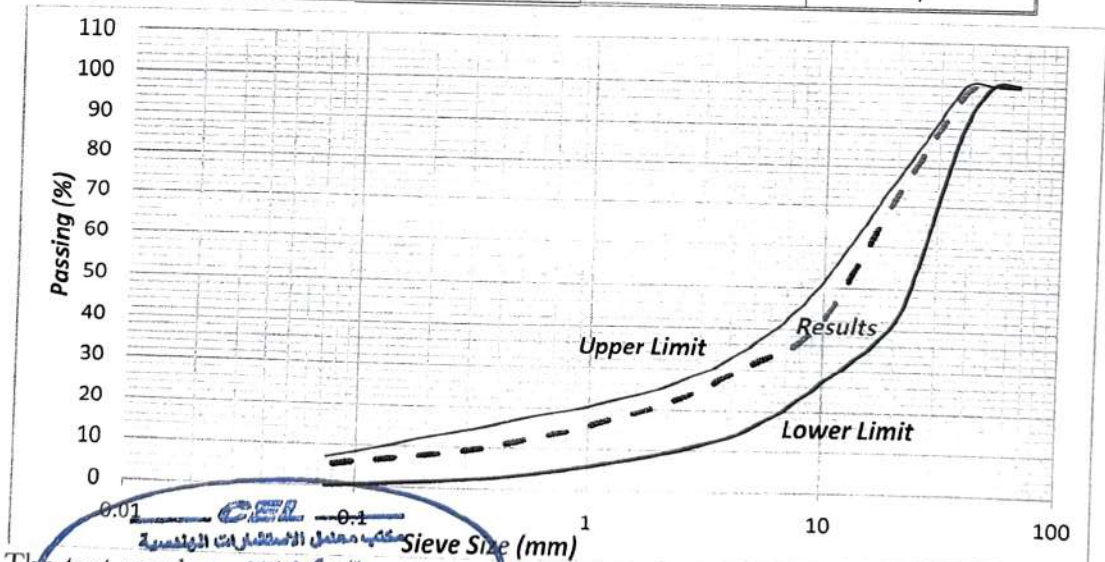


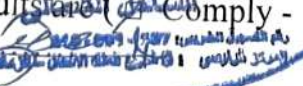
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Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

Results of sieve analysis according to ASTM D-422.

Sieve Size (mm)	Passing %	Job specification limits (ASTM D-422)	
		Min.	Max.
63.5	100	100	100
50	100	100	100
38	98.3	90	100
25	81.9	55	85
19	70.1	40	75
12.5	42.3	--	--
9.5	40.6	26	50
4.75	30.6	15	35
2.00	20.8	9	25
0.425	10.7	3	16
0.075	5.3	0	7



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

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

**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)	5.3

Signature /



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

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

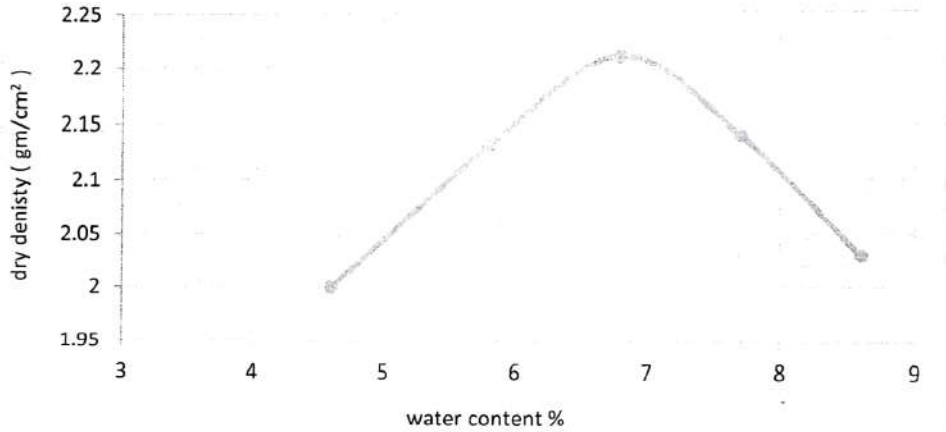
Test	Results (%)
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

Signature

CEL
مكتب معامل الاستشارات الهندسية
الخبير المهندس
د. محمد عبد الحليم
رئيس المكتب
المقر: شارع الملك الفيلسوف - القاهرة - 11511
الهاتف: ٢٧٣٦٢٣١ - ٢٧٣٦٢٣٠
الفاكس: ٢٧٣٦٢٣١
البريد الإلكتروني: cel@cel-egypt.com

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 6.8

Signature / ..



Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

Results of Specific Gravity and Absorption
of Course Aggregate
ASTM C127 & D 6473

Test	Results
Bulk Specific Gravity (OD)	2.51
Bulk Specific Gravity (SSD)	2.53
Apparent Specific Gravity.	2.61
Absorption %	3.40

Note:

- (OD) Refer to Oven Dry.
- (SSD) Refer to Saturated Surface Dry.

Signature /.....

مهندس /.....
مكتب معامل الاستشارات الهندسية
3 El Malek El Afdal Street
Zamalek, Cairo.
Tel. & Fax : 27367231 - 27363093

Company Name : Egypt Stone
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (408+600) : (411+600)
Delivery Date : 11/02/2023
Reporting Date : 18/02/2023
Reporting No. : 168
Sample No. : 02

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	4.39
1.27	0.050	4.93
1.91	0.075	5.51
2.54	0.100	6.04
3.18	0.125	6.48
3.81	0.150	6.94
4.45	0.175	7.39
5.08	0.200	7.85
5.71	0.225	8.30
6.35	0.250	8.75

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	87.5
	6.90	6.04	

Notes :

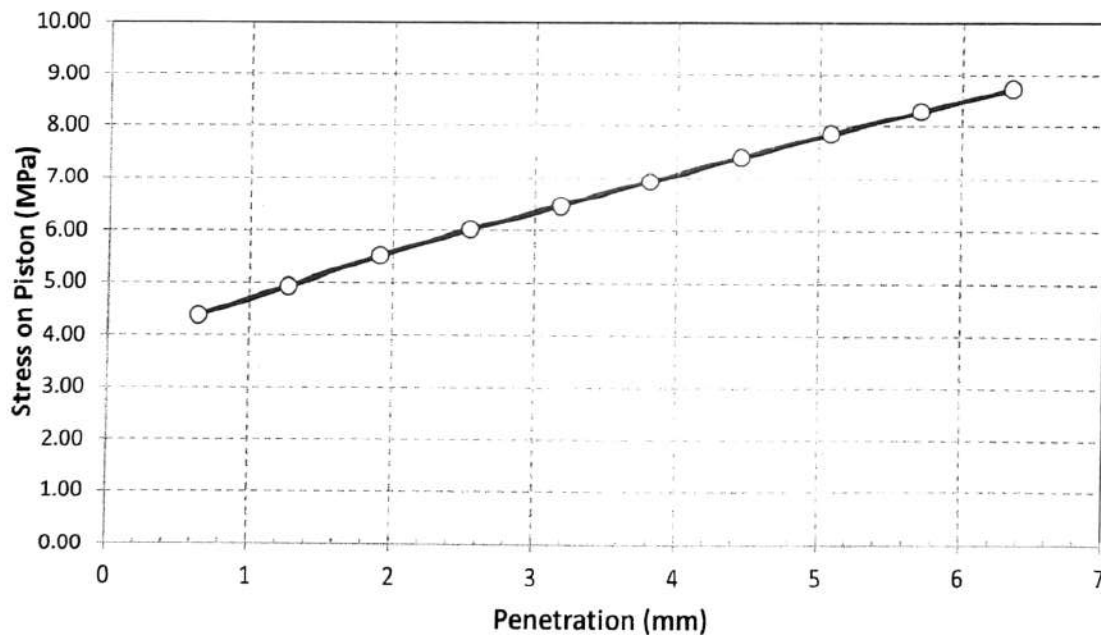
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.21 (gm /cm³) at 6.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature

Company Name	: Egypt Stone
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample	: Sub-Ballast
Location	: St. (408+600) : (411+600)
Delivery Date	: 11/02/2023
Reporting Date	: 18/02/2023
Reporting No.	: 168
Sample No.	: 02

Load Penetration Curve of CBR Test

ASTM D-1883



Signature

CEL

Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company:

EGYPT STONE

Project : Electric express train.
Delivery Date : 08/06/2023
Report Date : 15/06/2023
Sample Id : Sub-ballast sample No.1
Type : Coarse Aggregate
Source : Site
Report No. : 01

**RESISTANCE TO DEGRADATION
OF SMALL SIZE AGGREGATE BY ABRASION
AND IMPACT IN LOS ANGELES MACHINE
ASTM C 131**

Test	Results
Amount of loss by abrasion and impact (%) Coarse Aggregate	26.5

- According to project specs :

The amount of loss by abrasion and impact for moderate weathering:

- Shall not exceed 30 % (when Subjected to 500 revolutions)

The Test Results is ☒ Comply - ☐ Not Comply) with Spec. Limits

Signature

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



٣ ش الملك الأفضل
الزمالك - القاهرة
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

بش وء القطار الكندي في قاعة السبعة قطار العلمين في مكة
 بوحلة الجبل، تشكلا الجسم الذي وحلقات الاساس والتأسيس، والحجرات القوسية
 المتناسقة التي اعطت المبنى الانوار والجمال في قاعة السبعة قطار العلمين
 القوس من المحطة ٤٠٠٠ الى ٤١٠٠

[illegible]

ألف ألف سبعة عشرة مليون وثمان مئة و مئة ألف و مئة و اربعون جنية فقط لا غير)

مدير عام المشروعات
د/ محمد حسني قبانى

مدير المصروفات العامة
د. / أبو الهيثم الحارثي

شیر المشرق الاستثنائي
د. مصطفى نعيم

مدير المشروع الشريفة
د / محمد النجار

جنت

غريب الدلتا

مرکبہ مطروح

محبت محمود ط

10

10

تو ن یکنه یه

سندھ طے : اُسعار اشیاء بنڈریہ تحس افشارکس

