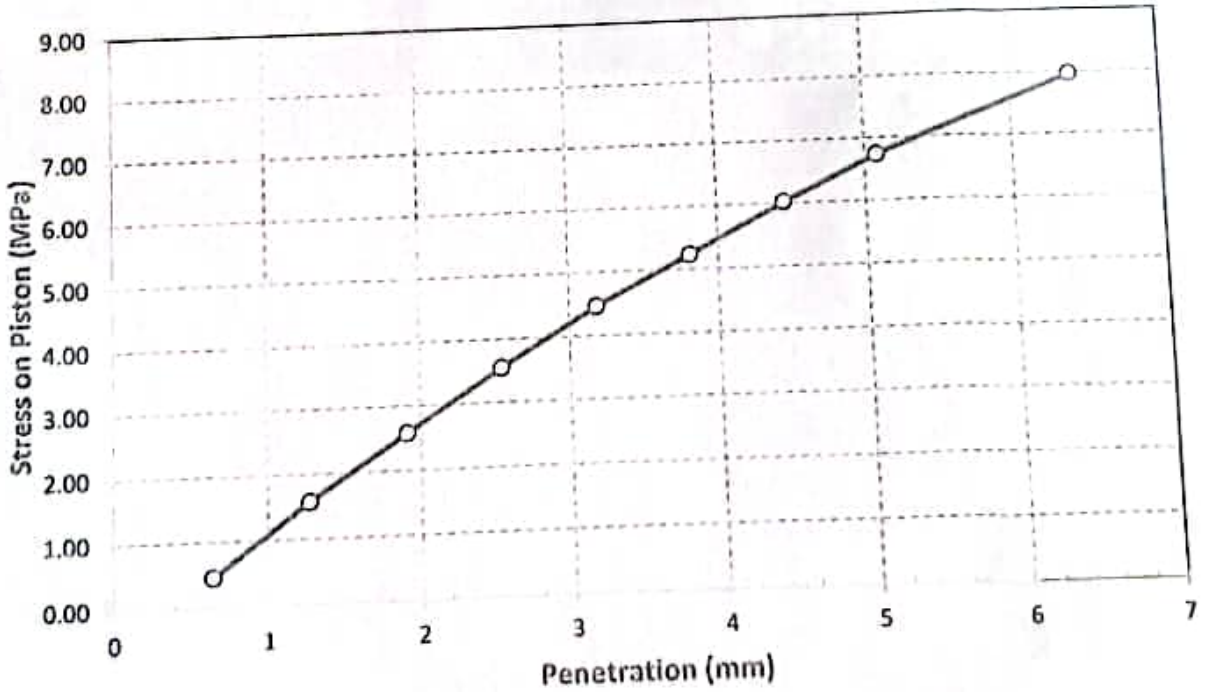
CEL

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 31/12/2023
Reporting Date : 04/1/2024
Reporting No. : 10-19

Load Penetration Curve of CBR Test
ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

Dear Gentleman,

Attached here with the delivered on 26 / 4 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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متروحات ، الاقصر ،
219.991.437
المركز الرئيسي 3 شارع الملك الافضل - الزمالك - القاهرة

Consultant Eng : Abderrahman Ahmed

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	91.0
37.5	1.5	85.3
25	1	80.6
19	¾	74.9
12.50	½	70.1
9.50	3/8	62.3
4.75	4	55.4
2.00	10	39.2
0.425	40	18.6

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رقم التسجيل الضريبي 219 991.437
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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	8.1

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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

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

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	39.2	Max 50 %	------	------
0.425 mm (No. 40).	18.6	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	8.1	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	-----	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبى
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 30 / 04 /2024
Soil type : Middle Embankment
Location : ST From 643+740 To 643+840
Level : - 1.5 M
Report No. : 173

Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	643+760	1489.9	2.27	6.3	2.14	95.5%	Comply
2	643+780	1575.2	2.31	6.8	2.16	96.6%	Comply
3	643+800	1490.6	2.25	6.3	2.12	94.6%	Comply
4	643+820	1348.3	2.33	6.3	2.19	97.9%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.24 gm/cm³

At optimum moisture content = 5.8 %

Signature ..... Consultant Eng : Abderrahman Ahmed

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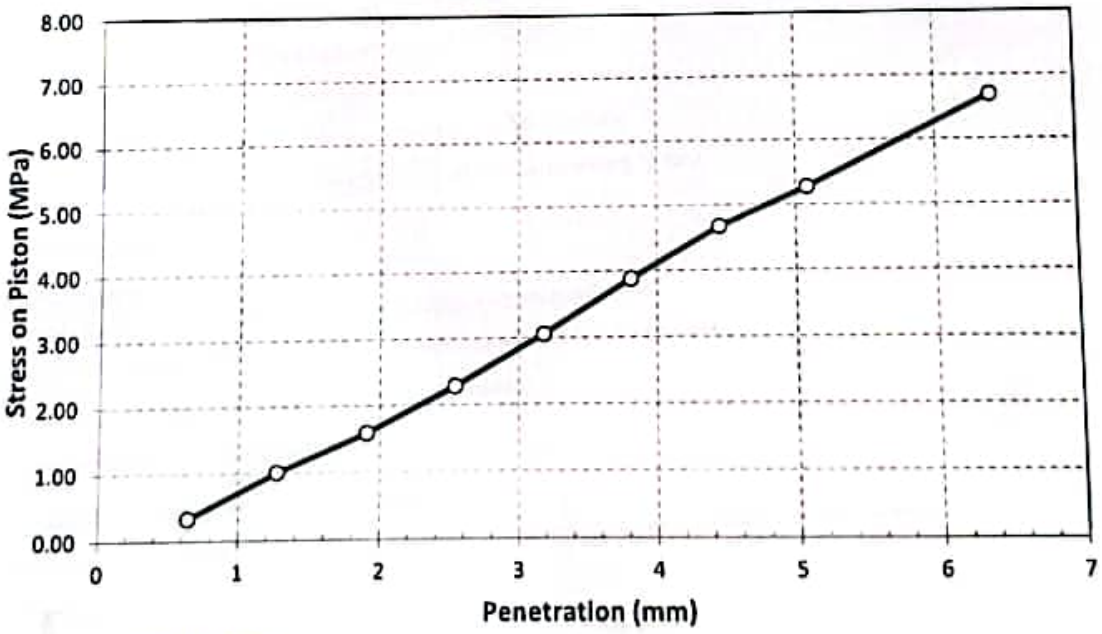
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

Load Penetration Curve of CBR Test
ASTM D-1883



CEL
Signature
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Zamalek, Cairo
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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.33
1.27	0.050	1.01
1.91	0.075	1.60
2.54	0.100	2.28
3.18	0.125	3.06
3.81	0.150	3.88
4.45	0.175	4.68
5.08	0.200	5.27
6.35	0.250	6.69

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.2 inch (5.08 mm) penetration	10.3	5.27	51.2 %

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.24 (gm /cm^3)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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مكتب معامل الاستشارات الهندسية

Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبى
Testing Date	: 08 / 05 /2024
Soil type	: Upeer Embankment
Location	: ST From 643+280 643+400 (120m)
Level	: - 0.75 M
Report No.	: 182

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

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	643+300	1570.5	2.33	5.8	2.20	98.2%	Comply
2	643+325	1777.4	2.28	5.3	2.17	96.7%	Comply
3	643+350	1430.8	2.31	5.3	2.20	98.1%	Comply
4	643+375	1650.0	2.28	6.3	2.14	95.6%	Comply
5	643+397	1423.3	2.28	6.4	2.14	95.7%	Comply

Degree of compaction based on proctor test dated At
Max. dry density = 2.24 gm/cm³
At optimum moisture content = 5.8 %

Consultant Eng .
Name :...
Sign /...

Laboratory Eng.
Name :...
Sign /...

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219-991-437
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مكتب معامل الاستشارات الهندسية

Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبى
Testing Date	: 09 / 05 /2024
Soil type	: Middle Embankment
Location	: ST From 640+460 To 640+760 (300m)
Level	: - 2 M
Report No.	: 186

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

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	640+480	1411.0	2.30	6.3	2.16	96.6%	Comply
2	640+520	1681.5	2.27	6.1	2.14	95.4%	Comply
3	640+570	1578.8	2.31	5.8	2.19	97.7%	Comply
4	640+610	1487.0	2.32	6.3	2.19	97.6%	Comply
5	640+650	1602.7	2.29	6.3	2.16	96.2%	Comply
6	640+700	1466.4	2.29	5.3	2.17	97.0%	Comply
7	640+750	1493.2	2.30	6.4	2.16	96.6%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.24 gm/cm³

At optimum moisture content = 5.8 %

Consultant Eng .

Name :

Sign /

Laboratory Eng.

Name :

Sign /

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Zamalek, Cairo
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مكتب معامل الإستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant

Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)

Company Name : شركة الذهبى

Testing Date : 14 / 05 /2024

Soil type : Middle Embankment

Location : ST From 642+740 To 642+860 (120 m)

Level : - 1.0 M

Report No. : 189

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

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	642+760	1493.2	2.33	5.8	2.20	97.0%	Comply
2	642+780	1547.9	2.33	6.1	2.20	96.9%	Comply
3	642+800	1463.0	2.32	6.3	2.19	96.3%	Comply
4	642+820	1537.0	2.35	6.1	2.21	97.5%	Comply
5	642+840	1469.9	2.35	6.3	2.21	97.4%	Comply
6	642+850	1669.9	2.31	6.4	2.18	95.8%	Comply

Degree of compaction based on proctor test dated At
Max. dry density = 2.27 gm/cm^3
At optimum moisture content = 6 %

Consultant Eng .

Name

Sign /

Laboratory Eng

Name :

Sign /

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Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST:641+400 E= 492410,088 N=2862759,57**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 07/05/2024**
Reporting Date	**: 11/5/2024**
Reporting No.	**: 10-21**

Dear Gentleman,

Attached here with the delivered on 07 / 05 / 2023

This sample is representative for 5.000 M^3

Materials test

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

Consultant Eng .

Name :.....

Sign /.....

Laboratory Eng.

Name :.....

Sign / .....

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Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 07/05/2024
Reporting Date : 11/5/2024
Reporting No. : 10-21

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	92.3
37.5	1.5	88.1
25	1	78.4
19	¾	70.7
12.50	½	68.1
9.50	3/8	63.3
4.75	4	54.1
2.00	10	34.7
0.425	40	14.4

Signature /.....

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رقم السجل التجاري 219 991 437
المركز الرئيسي : 3 شارع الملك الافضل - الزمالك - القاهرة

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Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبي
Location	: ST:641+400 E= 492410,088 N=2862759,57
Type of sample	: Soil Embankment (Upper Embankment 0.0 M)
Delivery Date	: 07/05/2024
Reporting Date	: 11/5/2024
Reporting No.	: 10-21

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	5.5

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رقم التسجيل الضريبي 219 991.437
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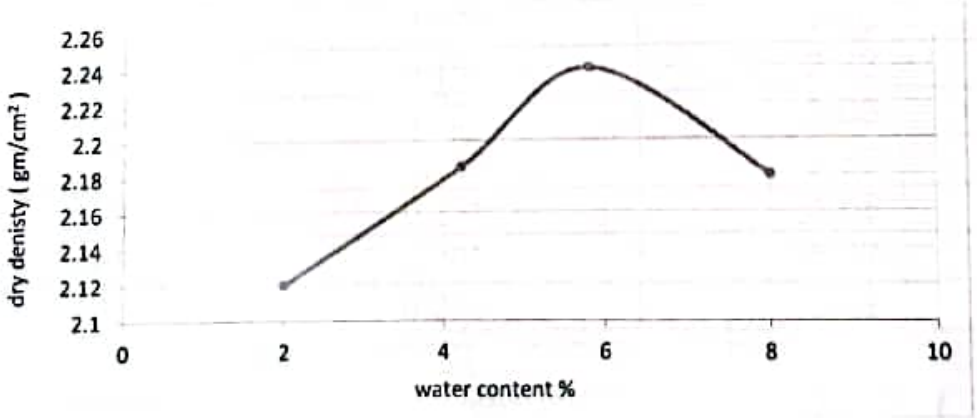
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/4/2024
Reporting No. : 10-20

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



- **Max dry density (gm/cm²)** : 2.24
- **Optimum moisture content %** : 5.8 %

Signature / ....

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مكتب معامل الاستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 07/05/2024
Reporting Date : 11/5/2024
Reporting No. : 10-21

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	34.7	Max 50 %	------	------
0.425 mm (No. 40).	14.4	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	5.5	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	23.74	------	------	------
Plasticity index	3.9	Max 6 %	Max 6 %	Max 10 %

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

Signature / .....

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مكتب معامل الاستشارات الهندسية

Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST:641+400 E= 492410,088 N=2862759,57**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 07/05/2024**
Reporting Date	**: 11/5/2024**
Reporting No.	**: 10-21**

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

Test	Results (%)
Liquid Limit	23.74
Plastic Limit	19.84
Plasticity Index	3.9

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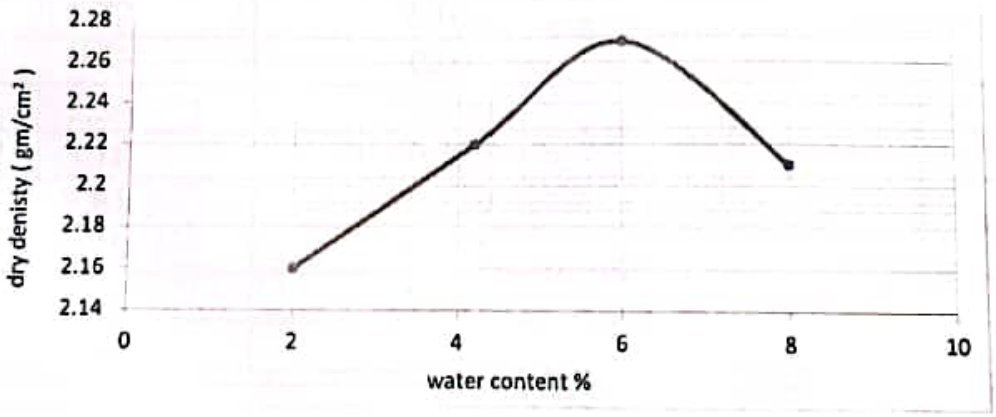
مكتب معامل الإستشارات الهندسية

Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST:641+400 E= 492410,088 N=2862759,57**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 07/05/2024**
Reporting Date	**: 11/5/2024**
Reporting No.	**: 10-21**

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



- **Max dry density (gm/cm²)** **: 2.27**
- **Optimum moisture content %** **: 6 %**

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مكتب معامل الاستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 07/05/2024
Reporting Date : 11/5/2024
Reporting No. : 10-21

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.36
1.27	0.050	1.32
1.91	0.075	2.31
2.54	0.100	3.32
3.18	0.125	4.34
3.81	0.150	5.17
4.45	0.175	5.88
5.08	0.200	6.25
6.35	0.250	6.69

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.2 inch (5.08 mm) penetration	10.3	6.25	60.7 %

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.27 (gm /cm^3)
At = 6 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST:641+400 E= 492410,088 N=2862759,57**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 07/05/2024**
Reporting Date	**: 11/5/2024**
Reporting No.	**: 10-21**

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	5.5

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST:641+400 E= 492410,088 N=2862759,57

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	95.1
37.5	1.5	91.9
25	1	80.7
19	¾	72.2
12.50	½	64.1
9.50	3/8	45.8
4.75	4	34.6
2.00	10	27.5
0.425	40	15.6

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Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Aswan

Location : ST : 641+400 E= 492410,088 N=2862759,57

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

Dear Gentleman,

Attached here with the delivered on 31 / 12 / 2023

This sample is representative for 5.000 M^3

Materials test

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

Signature /..... **Consultant Eng : Abderrahman Ahmed**

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مكتب معامل الإستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبى
Testing Date : 05 / 05 /2024
Soil type : Middle Embankment
Location : ST From 638+620 To 638+720 (100 m)
Level : - 4 M
Report No. : 176

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

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	638+640	1625.3	2.31	5	2.20	98.7%	Comply
2	638+660	1550.7	2.34	5.3	2.22	99.5%	Comply
3	638+680	1546.6	2.27	5.5	2.15	96.5%	Comply
4	638+700	1654.8	2.27	6	2.14	96.0%	Comply

Degree of compaction based on proctor test dated At
Max. dry density = 2.23 gm/cm^3
At optimum moisture content = 5.8 %

Consultant Eng .
Name :
Sign /

Laboratory Eng.
Name :
Sign /

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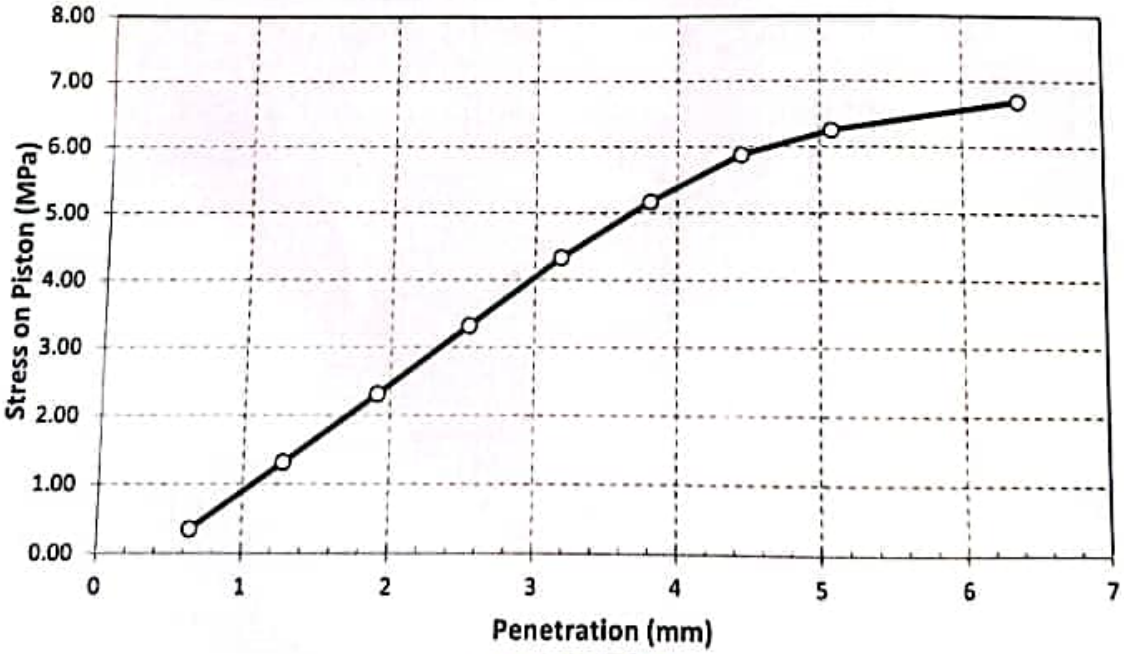
Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبي
Location	: ST:641+400 E= 492410,088 N=2862759,57
Type of sample	: Soil Embankment (Upper Embankment 0.0 M)
Delivery Date	: 07/05/2024
Reporting Date	: 11/5/2024
Reporting No.	: 10-21

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST:641+400 E= 492410,088 N=2862759,57

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	27.5	Max 50 %	------	------
0.425 mm (No. 40).	15.6	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	9.1	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	-----	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الدحيي

Project : Electric Express Train – HSR From Qous To Armuni

Location : ST:641+400 E= 492410,088 N=2862759,57

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

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

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

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Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armani

Location : ST:641+400 E= 492410,088 N=2862759,57

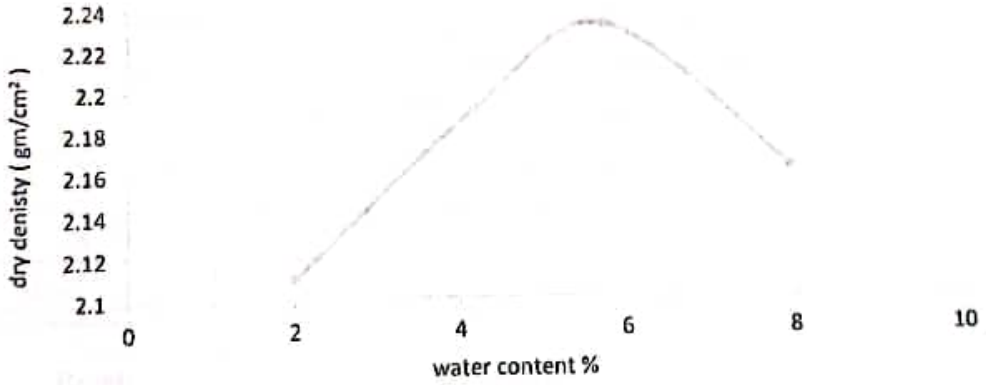
Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

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



- Max dry density (gm/cm²) : 2.23
- Optimum moisture content % : 5.8 %

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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST:641+400 E= 492410,088 N=2862759,57
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 31/12/2023
Reporting Date : 04/1/2024
Reporting No. : 10-19

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.46
1.27	0.050	1.58
1.91	0.075	2.58
2.54	0.100	3.55
3.18	0.125	4.47
3.81	0.150	5.23
4.45	0.175	6.03
5.08	0.200	6.74
6.35	0.250	7.97

CBR Result	Stress (Mpa)		CBR 100 %
At 0.2 inch (5.08 mm) penetration	St. Value	Sample results	65.4 %
	10.3	3.55	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.23 (gm /cm³)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبى
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 19 / 02 /2024
Soil type : Middle Embankment
Location : ST From 642+740 To 642+860
Level : - 1.75 M
Report No. : 167

Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	642+760	1616.7	2.32	6.4	2.18	97.6%	Comply
2	642+800	1591.7	2.26	6.4	2.13	95.4%	Comply
3	642+832	1623.6	2.28	6.4	2.14	96.0%	Comply
4	642+857	1519.4	2.30	6.4	2.16	97.1%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.21 gm/cm^3

At optimum moisture content = 6.4 %

Signature / .....

Consultant Eng : Abderrahman Ahmed

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مكتب معامل الإستشارات الهندسية

Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبى
Testing Date	: 05 / 05 /2024
Soil type	: Upper Embankment
Location	: ST From 642+740 TO 642+840 (100 m)
Level	: - 1.25 M
Report No.	: 175

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

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	642+760	1278.1	2.32	5.5	2.20	99.1%	Comply
2	642+780	1550.7	2.31	5.4	2.19	98.6%	Comply
3	642+800	1626.7	2.27	5	2.17	97.5%	Comply
4	642+820	1628.1	2.26	5.5	2.15	96.7%	Comply

Degree of compaction based on proctor test dated At
Max. dry density = 2.22 gm/cm^3
At optimum moisture content = 5.8 %

Consultant Eng .

Name :

Sign /

Laboratory Eng.

Name :

Sign /

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مكتب معامل الاستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 13/05/2024
Reporting Date : 17/05/2024
Reporting No. : 08-19

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	**0.28**
1.27	0.050	**1.17**
1.91	0.075	**1.94**
2.54	0.100	**2.65**
3.18	0.125	**3.47**
3.81	0.150	**4.11**
4.45	0.175	**4.82**
5.08	0.200	**5.46**
6.35	0.250	**6.42**

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.2 inch (5.08 mm) penetration	10.3	5.46	53.0 %

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.26 (gm /cm³)
At = 6 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / ...

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مكتب معامل الاستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 13/05/2024
Reporting Date : 17/05/2024
Reporting No. : 08-19

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	47.8	Max 50 %	------	------
0.425 mm (No. 40).	18.9	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	12.1	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	0	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature / .....

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مكتب معامل الإستشارات الهندسية

Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 13/05/2024
Reporting Date : 17/05/2024
Reporting No. : 08-19

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

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

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مكتب معامل الإستشارات الهندسية

Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST: 639+000 E=32°54′25.6″ N=25°53′59.1″**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 13/05/2024**
Reporting Date	**: 17/05/2024**
Reporting No.	**: 08-19**

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	12.1

Signature /...

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST:641+400 E= 492410,088 N=2862759,57

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 31/12/2023

Reporting Date : 04/1/2024

Reporting No. : 10-19

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.1

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Project : Electric Express Train – HSR From Qous To Armant
Consultant : Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name : شركة الذهبي
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 13/05/2024
Reporting Date : 17/05/2024
Reporting No. : 08-19

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.9
37.5	1.5	90.5
25	1	80.5
19	¾	73.9
12.50	½	69.9
9.50	3/8	64.2
4.75	4	52.5
2.00	10	47.8
0.425	40	18.9

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Company Name : شركة الذهبى
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 24 / 04 /2024
Soil type : Middle Embankment
Location : ST From 638+620 To 638+700
Level : - 4.5 M
Report No. : 171

Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	638+640	1475.0	2.27	6.4	2.13	96.0%	Comply
2	638+685	1561.1	2.26	6.4	2.12	95.5%	Comply
3	638+685	1719.4	2.31	6.4	2.18	98.0%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.22 gm/cm^3

At optimum moisture content = 6.4 %

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Consultant Eng : Abderrahman Ahmed

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Tel & Fax 27362[illegible] 27363093

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مكتب معامل الاستشارات الهندسية

Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبى
Testing Date	: 22 / 05 /2024
Soil type	: Upper Embankment
Location	: ST From 643+280 To 643+400 (120 m)
Level	: - 0.5 M
Report No.	: 193

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

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	643+300	1677.9	2.33	6.3	2.19	97.0%	Comply
2	643+320	1513.1	2.33	6.4	2.19	96.8%	Comply
3	643+340	1692.4	2.28	6.1	2.15	95.3%	Comply
4	643+360	1665.5	2.34	5.8	2.21	97.8%	Comply
5	643+380	1589.7	2.27	5.8	2.15	95.0%	Comply

Max. dry density = 2.26 gm/cm³

At optimum moisture content = 6.2 %

Consultant Eng .

Name :.....

Sign /.....

Laboratory Eng.

Name :.....

Sign /.....

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Zamalek Cairo
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مكتب معامل الاستشارات الهندسية

Project	**: Electric Express Train – HSR From Qous To Armant**
Consultant	**: Spectrum Engineering Consultants (مكتب د / عماد نبيل)**
Company Name	**: شركة الذهبي**
Location	**: ST: 639+000 E=32°54′25.6″ N=25°53′59.1″**
Type of sample	**: Soil Embankment (Upper Embankment 0.0 M)**
Delivery Date	**: 13/05/2024**
Reporting Date	**: 17/05/2024**
Reporting No.	**: 08-19**

Dear Gentleman,

Attached here with the delivered on 13 / 05 / 2024

This sample is representative for 5.000 M^3

Materials test

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

Consultant Eng .

Name :.....

Sign /

Laboratory Eng.

Name :

Sign /

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شركة سبكترم للاستشارات
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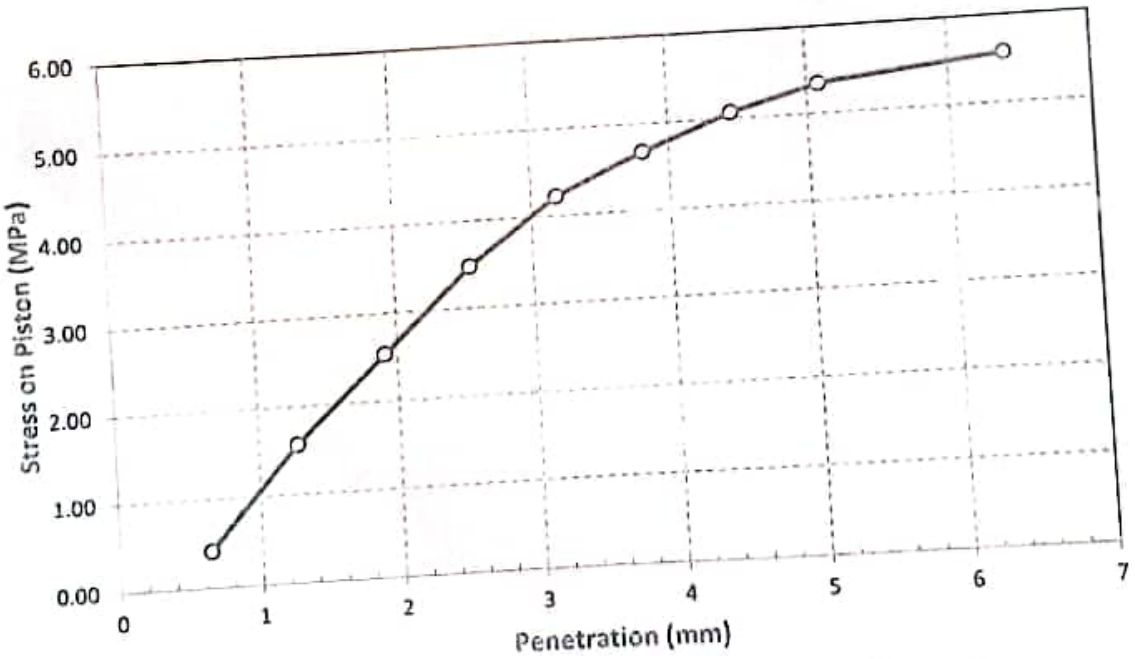
Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 09/12/2023
Reporting Date : 13/12/2023
Reporting No. : 08-15

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 09/12/2023

Reporting Date : 13/12/2023

Reporting No. : 08-15

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.41
1.27	0.050	1.57
1.91	0.075	2.54
2.54	0.100	3.47
3.18	0.125	4.22
3.81	0.150	4.68
4.45	0.175	5.07
5.08	0.200	5.35
6.35	0.250	5.58

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	3.47	50.3%

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.22(gm /cm³)
At = 6.4 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No.36.

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مكتب معادل للاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 09/12/2023

Reporting Date : 13/12/2023

Reporting No. : 08-15

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	47.7	Max 50 %	------	------
0.425 mm (No. 40).	28.8	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	10.0	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	---	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 09/12/2023

Reporting Date : 13/12/2023

Reporting No. : 08-15

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	10.0

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Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 09/12/2023

Reporting Date : 13/12/2023

Reporting No. : 08-15

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.5
37.5	1.5	92.7
25	1	84.2
19	¾	82.8
12.50	½	71.3
9.50	3/8	62.6
4.75	4	47.9
2.00	10	43.0
0.425	40	28.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 09/12/2023
Reporting Date : 13/12/2023
Reporting No. : 08-15

Dear Gentleman,

Attached here with the delivered on 9 / 12 / 2023

This sample is representative for 5.000 M^3

Materials test

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

Signature / **Consultant Eng : Abderrahman Ahmed**

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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/04/2024
Reporting No. : 08-16

Dear Gentleman,

Attached here with the delivered on 26 / 4 / 2024

This sample is representative for 5.000 M^3

Materials test

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

Signature /..... **Consultant Eng : Abderrahman Ahmed**

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مكتب معامل الاستشارات الهندسية

Project	: Electric Express Train – HSR From Qous To Armant
Consultant	: Spectrum Engineering Consultants (مكتب د / عماد نبيل)
Company Name	: شركة الذهبى
Testing Date	: 11 / 05 /2024
Soil type	: Middle Embankment
Location	: ST From 639+580 639+780 (200m)
Level	: - 3.5 M
Report No.	: 180

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

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	639+620	1536.3	2.24	5.3	2.13	95.5%	Comply
2	639+665	1430.1	2.27	5.3	2.15	96.5%	Comply
3	639+700	1588.4	2.30	6.4	2.16	96.8%	Comply
4	639+730	1505.5	2.27	6.4	2.13	95.5%	Comply
5	639+775	1491.8	2.24	5.3	2.13	95.5%	Comply

Degree of compaction based on proctor test dated At
Max. dry density = 2.23 gm/cm^3
At optimum moisture content = 6.4 %

Consultant Eng .

Name: م / عبد الرحمن

Sign /...

Laboratory Eng.

Name :

Sign /...

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مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبى

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 27 / 4 /2024

Soil type : Middle Embankment

Location : ST From 643+460 To 643+560

Level : - 1.75 M

Report No. : 172

Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	643+485	1484.6	2.26	5.8	2.14	96.7%	Comply
2	643+510	1461.7	2.33	5.8	2.20	99.8%	Comply
3	643+530	1489.3	2.34	5.8	2.21	99.9%	Comply
4	643+555	1528.2	2.29	5.8	2.16	98.0%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.21 gm/cm^3

At optimum moisture content = 6.4 %

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تليفون المركز الرئيسي 219 991 437

Signature / ..... Consultant Eng : Abderrahman Ahmed

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/04/2024
Reporting No. : 08-16

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	91.0
37.5	1.5	82.1
25	1	74.5
19	¾	71.6
12.50	½	62.7
9.50	3/8	61.4
4.75	4	57.4
2.00	10	42.6
0.425	40	24.5

Signature /.....

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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/04/2024
Reporting No. : 08-16

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	11.2

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مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 26/4/2024

Reporting Date : 30/04/2024

Reporting No. : 08-16

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	42.6	Max 50 %	------	------
0.425 mm (No. 40).	24.5	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	11.2	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	---	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature / ..

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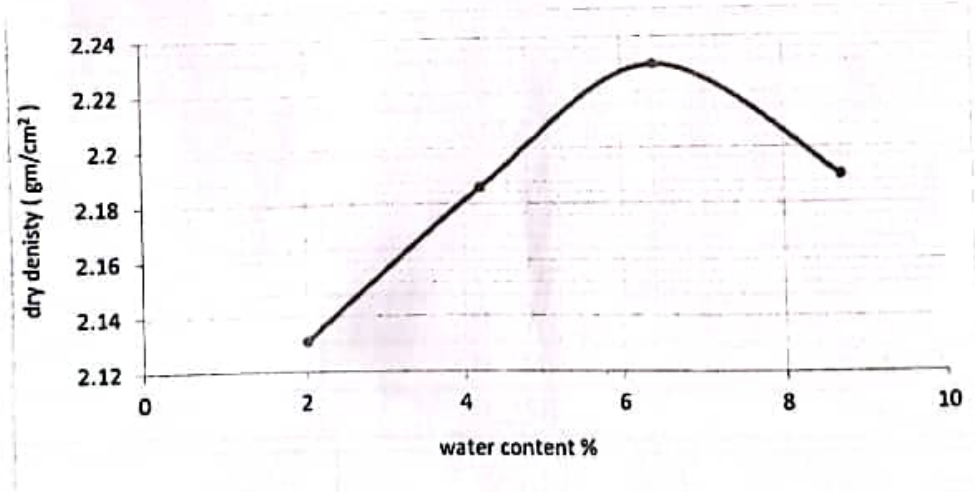
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/04/2024
Reporting No. : 08-16

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



- **Max dry density (gm/cm²)** : 2.23
- **Optimum moisture content %** : 6.4 %

Signature / ...

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مكتب معامل الإستشارات الهندسية

Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 639+000 E=32°54′25.6″ N=25°53′59.1″
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 26/4/2024
Reporting Date : 30/04/2024
Reporting No. : 08-16

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.34
1.27	0.050	0.99
1.91	0.075	1.52
2.54	0.100	2.31
3.18	0.125	2.94
3.81	0.150	3.65
4.45	0.175	4.36
5.08	0.200	4.98
6.35	0.250	5.59

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	48.4%
	10.3	4.98	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.23(gm /cm^3)
At = 6.4 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature /

5 El Malek El Afdal Street
Zamalek, Cairo
Tel & Fax 2736723 - 27363093

IAS ACCREDITED Testing Laboratory

٥ ش الملك الافضل
الزمالك - القاهرة
تليفون وفاكس ٢٧٣٦٧٢٣ - ٢٧٣٦٣٠٩٣

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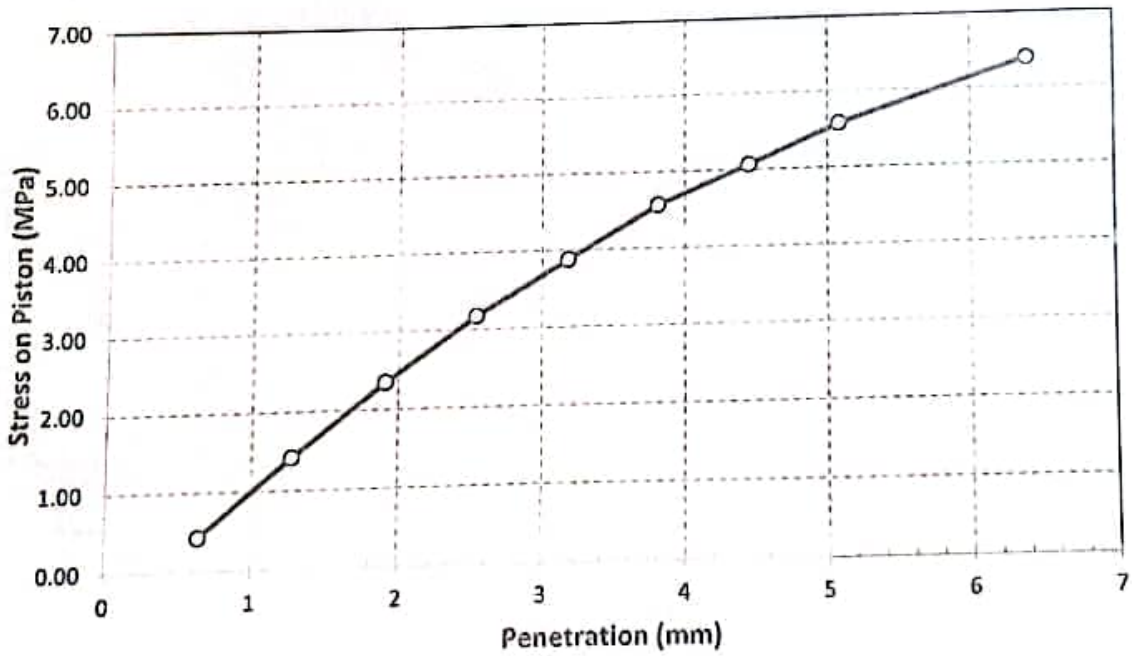
مكتب معامل الاستشارات الهندسية

Company Name	: شركة الذهبي
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 643+000 N= 25.8667200, E= 32.9242360
Type of sample	: Soil Embankment (Upper Embankment 0.0 M)
Delivery Date	: 04/01/2024
Reporting Date	: 08/01/2024
Reporting No.	: 07-3

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

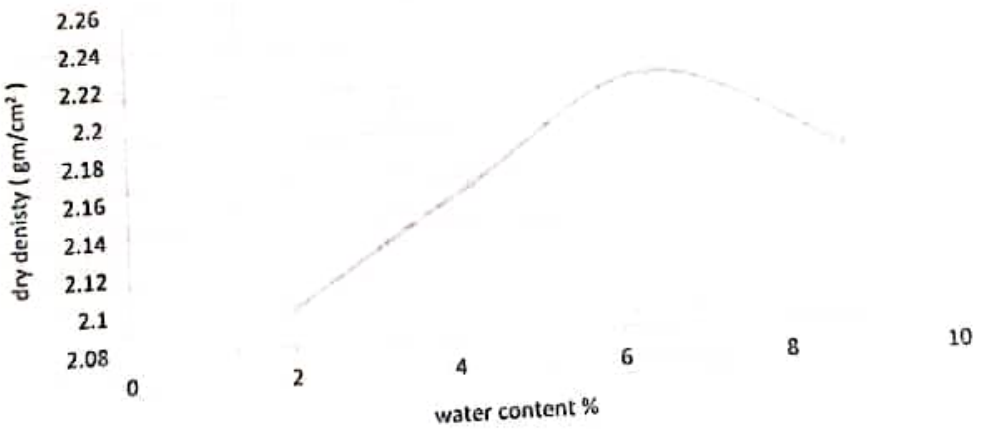
Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

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



- **Max dry density (gm/cm²)** : 2.21
- **Optimum moisture content %** : 6.4 %

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Company Name : شركة الذهبي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 643+000 N= 25.8667200, E= 32.9242360
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 04/01/2024
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Reporting No. : 07-3

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.43
1.27	0.050	1.42
1.91	0.075	2.35
2.54	0.100	3.17
3.18	0.125	3.88
3.81	0.150	4.56
4.45	0.175	5.07
5.08	0.200	5.58
6.35	0.250	6.39

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	3.17	45.9 %

Notes:
1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.21 (gm /cm^3)
At = 6.4 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	93.1
37.5	1.5	85.6
25	1	80.1
19	¾	71.6
12.50	½	51.2
9.50	3/8	46.4
4.75	4	41.2
2.00	10	40.0
0.425	40	20.4

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مكتب معامل CEL للاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	41.3	Max 50 %	-----	-----
0.425 mm (No. 40).	20.4	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	10.4	Max 15 %	Max 15 %	Max 15 %
Liquid Limit	---	------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armani

Location : ST. 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

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

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

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مكتب تعامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

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

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 04/01/2024

Reporting Date : 08/01/2024

Reporting No. : 07-3

Dear Gentleman,

Attached here with the delivered on 04 / 01 / 2024

Materials test

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

Signature /...

Consultant Eng : Abderrahman Ahmed

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي

Project : Electric Express Train -- HSR From Qous To Armant

Location : ST: 643+000 N= 25.8667200, E= 32.9242360

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

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Reporting No. : 07-3

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	10.4

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