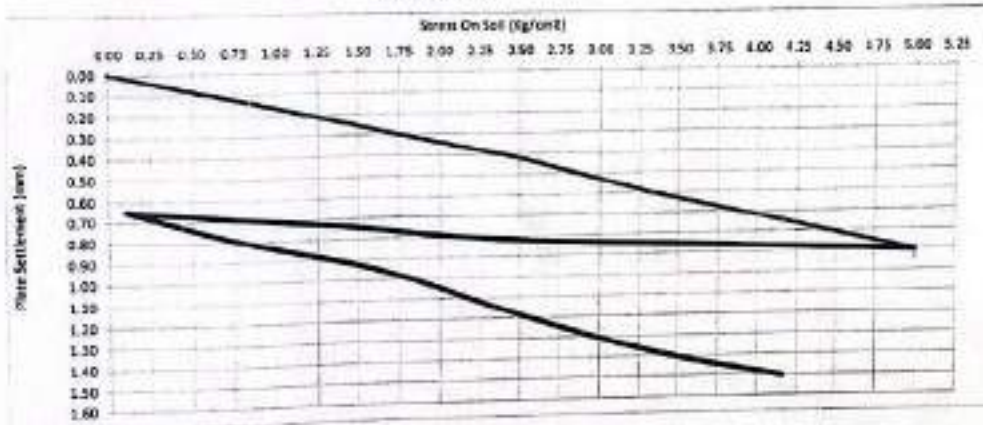


Company Name  
Project  
Test Date  
Report Date  
Location  
Test No.

الذخيرة للمقاولات والتوريدات المعمورة :  
Electric Express Train - Sector (S) - Qous to Arment.  
12/07/2023  
12/07/2023  
Station (641+280)  
02

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



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1759.3	2352.8	2946.1	3532.5
Stress (Kg/cm²)	0.00	0.63	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.14	0.29	0.42	0.60	0.75	0.90

D (mm) =	300	S1 (mm) =	0.26	S2 (mm) =	0.63	ΔS =	0.37
Ev1 (kg/cm²) =	(0.75*D*ΔS)/ΔS						1202

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1172.8	1759.3	2352.8	2946.1
Stress (Kg/cm²)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.85	0.81	0.66	1.19	1.38	1.51

D (mm) =	300	S1 (mm) =	0.93	S2 (mm) =	1.40	ΔS =	0.47
Ev2 (kg/cm²) =	(0.75*D*ΔS)/ΔS						967

UnLoading (%)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm²)	5.60	2.50	1.250	0.10
Settlement (mm)	0.90	0.82	0.73	0.65

Ev2/Ev1 = 0.80

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



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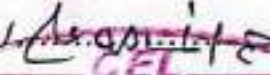


٣ ش الملك الأفصل  
الزمالك - القاهرة  
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
www.cel-egypt.com

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	95.3
25	1	89.4
19	¾	84.4
12.50	½	77.7
9.50	3/8	73.3
4.75	4	58.4
2.00	10	45.9
0.425	40	27.5

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مكتب معامل الاستشارات الهندسية  
شروعات : سواخ و قنا  
رقم الترخيص رقم 219 - 991 - 537  
القاهرة - مصر

14/ Maek E. Abdu Street  
Zohras, Cairo  
Tel& Fax: 27362731 - 27363653



\* شهادة الاعتماد  
الرقم 14/ القاهرة  
تاريخ: 12/09/2023

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	9.9

Signature /.../





Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 25/09/2023  
Soil type : Upper Embankment  
Location : St + From 641+200 To 641+300  
Level : - 1.25 M  
Report No. : 71

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+230	1788.9	2.23	6	2.11	96.2%	Comply
2	641+260	1716.7	2.25	6.4	2.11	96.4%	Comply
3	641+290	1770.8	2.23	6.4	2.09	95.6%	Comply

Degree of compaction based on proctor test dated At

:Max. dry density =2.19 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 %

Signature /

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Tel& Fax : 27367037 - 27363093



1 شارع الملك الادلجى  
الزمالك القاهرة  
الهاتف - الفاكس : 27367037 - 27363093



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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

Dear Gentleman,

Attached here with the delivered on 8 / 9 / 2023

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

**Materials test**

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

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

Signature:   
  
مكتب معامل الاستشارات الهندسية  
شركة الذهبى  
219 - 991 - 537  
القاهرة - مصر

E. Malek E. Afan Street  
Zamalek, Cairo  
Tel & Fax: 27367531 - 27363050

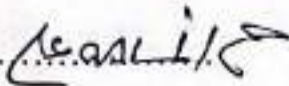


شركة الهندسة الاستشارية  
المرمكة القاهرة  
تلفون - فاكس : 27367531 - 27363050

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**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

Signature /... 



Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	45.9	Max 50 %	-----	-----
0.425 mm (No. 40).	27.5	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.9	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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رقم التسجيل المميز 537 - 979 - 240  
المركز الرئيسى ٢ شارع ٥555 الأقصر - الأقصر

3 El Malek El Ahdal Street  
Zamalek, Cairo  
Tel & Fax: 27367231 - 27369093

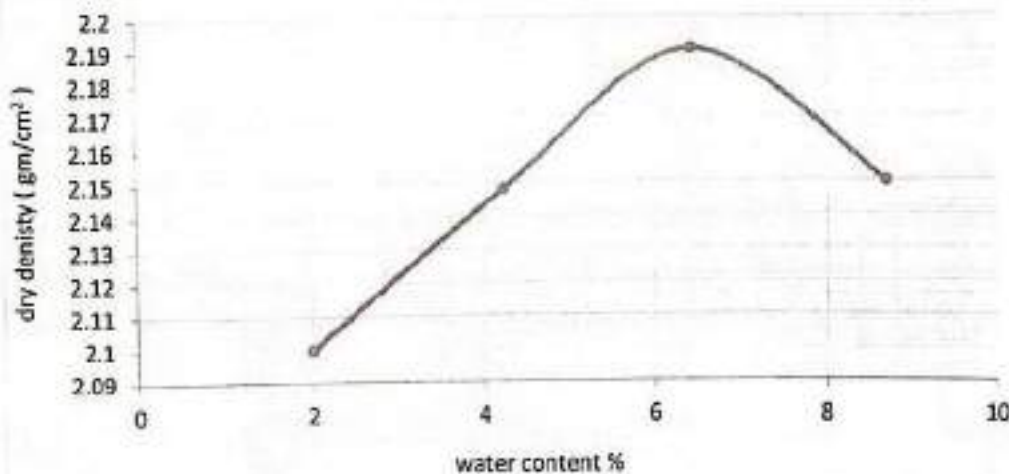


ش.م.م. المعمل الهندسى  
القاهرة - القاهرة  
تليفون - فاكس 27367231 - 27369093



Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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



- Max dry density (gm/cm³) : 2.19
- Optimum moisture content % : 6.4 %

Signature / *[Signature]*



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شركة الجبل الهندسية  
الزمالك، القاهرة  
تليفون - فاكس : 2736723 - 27363093

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**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	1.52
1.91	0.075	2.59
2.54	0.100	3.59
3.18	0.125	4.54
3.81	0.150	5.33
4.45	0.175	6.09
5.08	0.200	6.49
6.35	0.250	6.92

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	52 %
	6.90	3.59	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.19(gm /cm<sup>3</sup>)  
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

3 E-At, 6.4% Opt. Spec.  
Zurab, G. 2796701 2796350



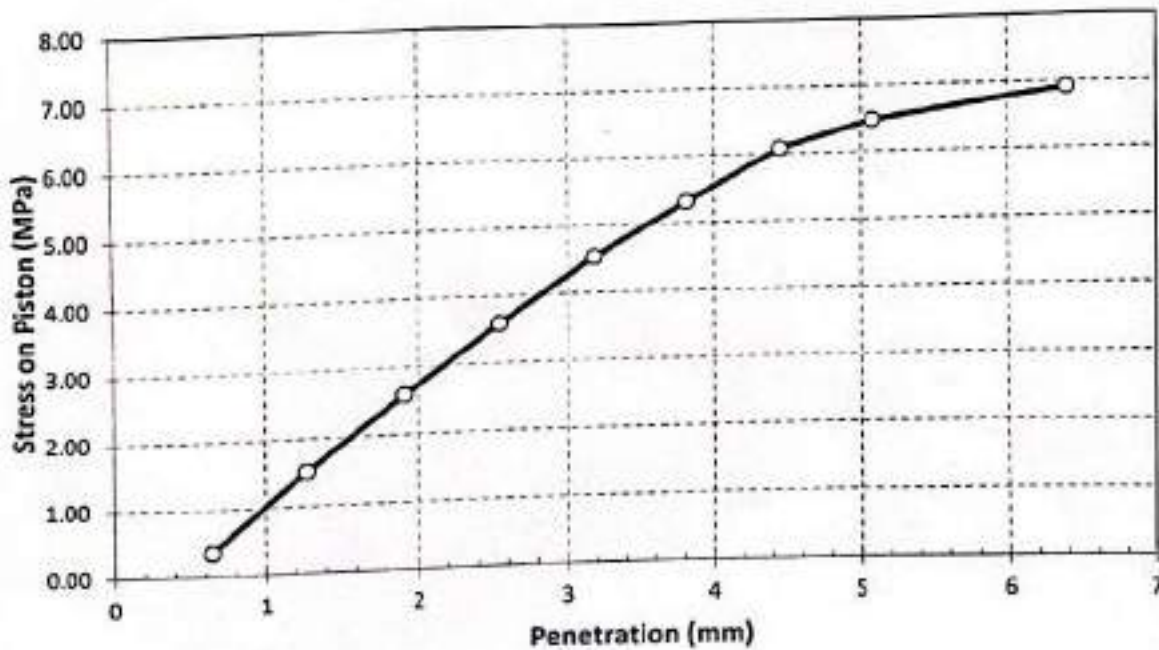
شركة الذهبى  
الرياض، المملكة العربية السعودية  
تلفون : ٢٧٩٦٧٠١ - ٢٧٩٦٣٥٠

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Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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



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مشروعات و خدمات و قضاة  
رقم التسجيل المميز 537 - 991 - 219  
التي في شارع الملكة الامل - الزمالك - القاهرة

3 El Malek El Afdal Street  
Zamalek, Cairo  
Tel & Fax: 27367533 - 27367533

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إلى السيدات والجناب  
الزمالك القاهرة  
شماره ٥٣٧ - ٩٩١ - ٢٧٣٦٧٥٣٣



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 27/09/2023  
Soil type : Lower Embankment  
Location : St + From 641+200 To 641+300  
Level : - 13 M  
Report No. : 74

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+220	2106.9	2.23	6.4	2.09	95.1%	Comply
2	641+240	1763.2	2.26	5.8	2.13	97.0%	Comply
3	641+260	1281.3	2.29	5.6	2.17	98.6%	Comply
4	641+280	1658.3	2.23	6.4	2.10	95.3%	Comply

Degree of compaction based on proctor test dated At

:Max. dry density =2.20 gm/cm<sup>3</sup>

At optimum moisture content = 6.4%

Signature

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الطريق الدائري 3 شارع 257 - الدقي - الجيزة - القاهرة

3 El Malek El Akel Street  
Zamalek, Cairo  
Tel & Fax: 22365231 - 22365083



أش. مالك الأكسل  
الزمالك - القاهرة  
الهاتف : 22365231 - 22365083

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

Dear Gentleman,

Attached here with the delivered on 19 / 9 / 2023

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

**Materials test**

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

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

Signature:   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشاريع و دراسات  
رقم التسجيل التجاري: 537 - 991 - 219  
المركز الرئيس: شارع الملك فيصل - الرياض

3 E Malek E Ahsal Street  
Zorah, Giza  
Tel & Fax: 011 27907511 - 27953993



\* مقر المكتب الرئيسي  
الرياض - القاهرة  
المنصورة - القاهرة

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.4
37.5	1.5	96.5
25	1	90.2
19	¾	85.2
12.50	½	74.9
9.50	3/8	71.2
4.75	4	55.1
2.00	10	41.5
0.425	40	25.2



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إس إس آي إس  
الهيئة العامة  
للمعايير  
والتقنين



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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

**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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رقم التسجيل المزدوج: 219 - 991 - 537  
المركز الرئيسي 3 شارع الملك الأفيل - الزمالك - القاهرة

3 El Maak El Ahdal Street  
Zamalek, Cairo  
Tel & Fax: 27367537 - 27367593



في تلك الأوقات  
التي لا تكون  
التي لا تكون

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	9.1



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\* في الملك الأفندي  
الزمالك - القاهرة  
تلفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٦٠

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.38
1.27	0.050	1.57
1.91	0.075	2.69
2.54	0.100	3.73
3.18	0.125	4.64
3.81	0.150	5.43
4.45	0.175	6.09
5.08	0.200	6.54
6.35	0.250	6.92

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	SL Value	Sample results	54 %
	6.90	3.73	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.20(gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.
- 3- Surrogate load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according to project spec page No 36.

Signature:   
Consulting Engineering Bureau & Laboratories  
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رقم التسجيل: 537 - 991 - 219  
المركز الرئيسى : شارع ...

Zakaria, Cairo  
Tel & Fax: 27367231 - 27363560



شركة الهندسة والاستشارات  
القاهرة - الجيزة  
تليفون : 27367231 - 27363560

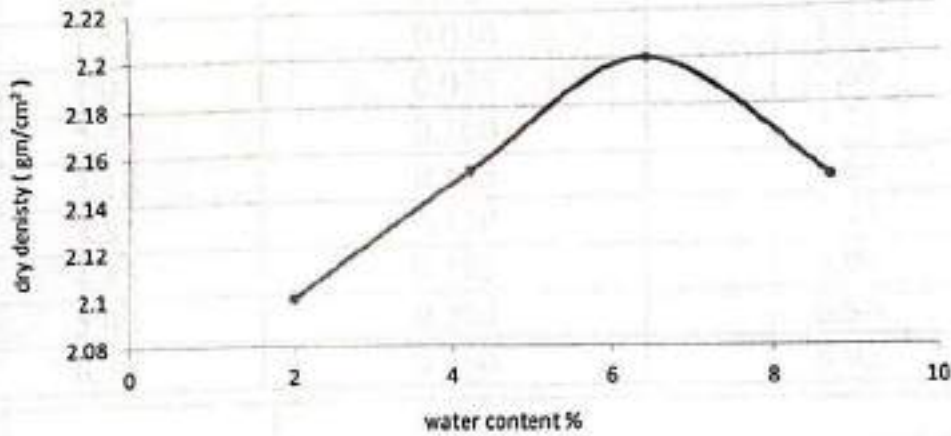


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Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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



- Max dry density (gm/cm³) : 2.20
- Optimum moisture content % : 6.4 %

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Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	41.5	Max 50 %	-----	-----
0.425 mm (No. 40).	25.2	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	.91	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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مشروعات : سوهاج وقنا  
رقم التسجيل المزدوج : 219 - 991 - 537  
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Zaradiyeh, Cairo  
T-5 Fax: 27367221 27363693



أشركه الملك الأفشل  
الزمالك - القاهرة  
القاهرة - الجيزة

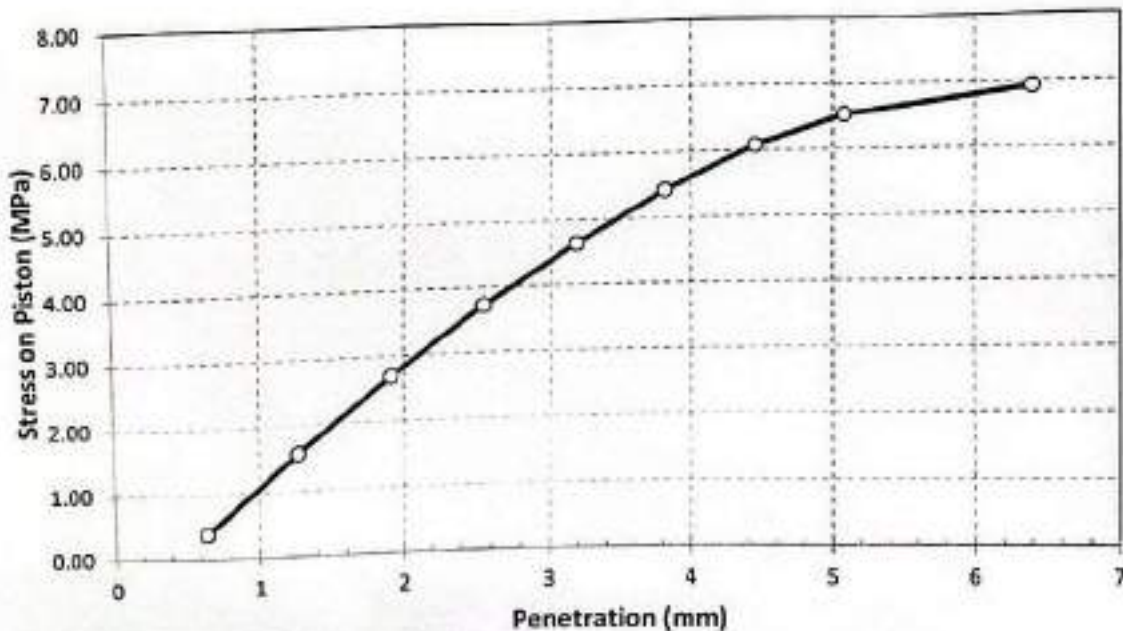
# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

## Load Penetration Curve of CBR Test

ASTM D-1883



Signature: [Signature]  
CEL & Laboratories  
مكتب معامل الاستشارات الهندسية  
219-9000  
رقم التسجيل التجاري: 219-9000  
المركز الرئيسي: شارع ٢ شرق النيل - النيل - الزمالك - القاهرة

El Mahk E Attai Street  
Zamalek, Cairo  
Tel & Fax: 27967211 - 27963093

IAS  
ACCREDITED  
Testing Laboratory

شركة النيل للاستشارات  
الزمالك - القاهرة  
تليفون: 27967211 - 27963093



**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Arman  
Testing Date : 30/09/2023  
Soil type : Upper Embankment  
Location : St From 641+000 TO 641+200  
Level : - 1.25 M  
Report No. : 78

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

Test#	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+025	1575.0	2.29	6.4	2.15	97.7%	Comply
2	641+050	1667.4	2.22	6	2.09	95.1%	Comply
3	641+070	1563.2	2.24	6	2.11	96.0%	Comply
4	641+095	1595.8	2.26	5.8	2.14	97.2%	Comply
5	641+120	1519.4	2.23	5.3	2.12	96.4%	Comply
6	641+145	1588.9	2.33	6.4	2.19	99.8%	Comply
7	641+170	1343.8	2.24	6	2.11	95.9%	Comply
8	641+195	1356.3	2.30	6	2.17	98.5%	Comply

Degree of compaction based on proctor test dated At

:Max. dry density = 2.20 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 %  
Signature /   
219 - 991 - 537  
المركز الرئيسى : شارع تلك الأفضل - الزمالك - القاهرة

1 E-Malek El-Arabi Street  
Zamalek, Cairo  
Tel & Fax : 27366700 - 27366693



ش.م.م. المعاملات الهندسية  
إبراهيم - القاهرة  
تليفون : 27366700 - 27366693

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

Dear Gentleman,

Attached here with the delivered on 19 / 9 / 2023

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

**Materials test**

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

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

Signature   
  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات ( سوهاج وقنا )  
رقم التسجيل الشرعي: 537 - 991 - 219  
المركز الرئيسى ٢ شارع الملك الافضل - الزمالك - القاهرة

**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	(A-1-a)			
2.00 mm (No.10).	41.5	Max 50 %	-----	-----
0.425 mm (No. 40).	25.2	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	.91	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:   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشاريع و دراسات  
رقم التسجيل المهنى: 219 - 991 - 537  
المركز الرئيسى ٣ شارع الملك الأفطى - الزمالك - القاهرة

3 El Malek El Afal Street  
Zamalek, Cairo  
Tel & Fax : 27367231 - 27363633



ش. المعامل الهندسية  
الزمالك - القاهرة  
هاتف : 27367231 - 27363633



**CEL**

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.4
37.5	1.5	96.5
25	1	90.2
19	$\frac{3}{4}$	85.2
12.50	$\frac{1}{2}$	74.9
9.50	$\frac{3}{8}$	71.2
4.75	4	55.1
2.00	10	41.5
0.425	40	25.2

Signature:   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات (سوهاج وقنطرة)  
رقم الترخيص الرئيسي 537 - 991 - 219  
المركز الرئيسى ٢ شارع الملك الافضل - الزمالك - القاهرة

3 E-Malek E-Afadel Street  
Zamalek, Cairo  
Tel & Fax: 27360733 - 27360685

**IAS**  
ACCREDITED  
ISO 9001:2015

٢ شارع الملك الافضل  
الزمالك - القاهرة  
الهاتف - الفاكس : 27360733 - 27360685

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

Materials finer than 75  $\mu\text{m}$  (no.200) sieve  
By washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu\text{m}$ (No.200)	9.1

Signature \_\_\_\_\_



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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

**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

Signature:   
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مكتب معامل الاستشارات الهندسية  
مشروعات (سوهاج وقنا)  
رقم التسجيل الفردي: 219 - 991 - 537  
المركز الرئيسي ٢ شارع الملك الأفضل - الزمالك - القاهرة

3 El Malek El Ahras Street  
Zamalek, Cairo  
Tel & Fax: 27367231 - 27367063

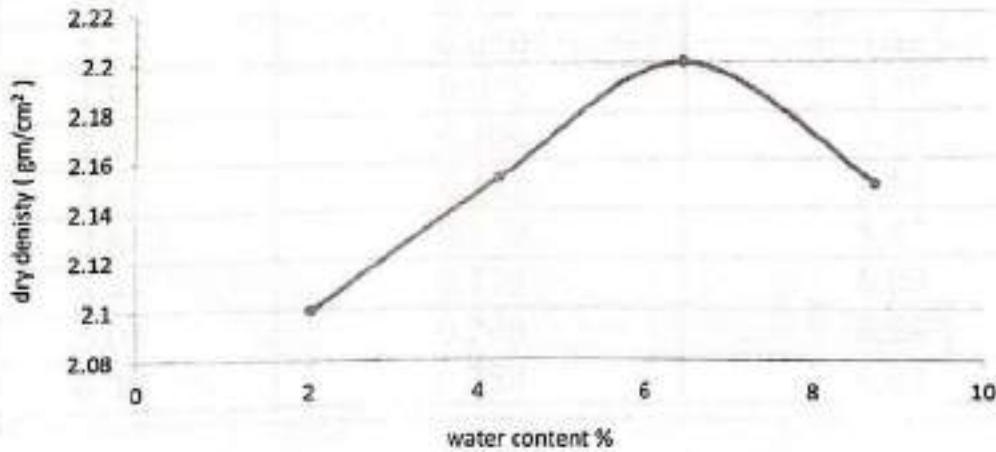


مركز البحث العلمي  
القاهرة - القاهرة  
تلفون : 27367231 - 27367063



Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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



- Max dry density (gm/cm³) : 2.20
- Optimum moisture content % : 6.4 %

Signature



1 El Malek El Akmal Street  
Zarouk, Cairo  
Tel& Fax: 27367231 - 27363003



2 شارع الملك الأكمل  
الزرك - القاهرة  
هاتف : 27367231 - 27363003

Company Name : شركة الذهبى  
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 : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.38
1.27	0.050	1.57
1.91	0.075	2.69
2.54	0.100	3.73
3.18	0.125	4.64
3.81	0.150	5.43
4.45	0.175	6.09
5.08	0.200	6.54
6.35	0.250	6.92

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	54 %
	6.90	3.73	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.20(gm /cm<sup>3</sup>)  
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



1E Main Road  
Zamalek, Cairo  
Tel/Fax 27967231 - 27963683



في مكتب الاستشارات  
القاهرة - القاهرة  
شعبه - القاهرة





Company Name : شركة الذهبى  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

Dear Gentleman ,

Attached here with the delivered on 26 / 9 / 2023

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

**Materials test**

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

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

Signature:   
مكتب معامل الاستشارات الهندسية  
مشاريع ودراسات واستشارات  
219 - 551 - 557  
القاهرة - مصر

15 F. Mark E. Atalla Street  
Zakaria, Giza  
T: 02-33441111 - 27368300



مكتب معامل الاستشارات الهندسية  
القاهرة - مصر  
T: 02-33441111 - 27368300

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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.9
37.5	1.5	95.4
25	1	90.6
19	¾	84.1
12.50	½	73.7
9.50	3/8	72.5
4.75	4	53.8
2.00	10	39.3
0.425	40	22.4

**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات ( سوهاج وقنا )  
رقم التسجيل الضريبي: 537 - 991 - 219  
المركز الرئيسي : شارع الملك الأفضل - الزمالك - القاهرة

Mr. Mostafa El-Masry  
Zamalek, Cairo  
Tel & Fax: 27367523 27367523



مركز الملك الأفضل  
القاهرة - القاهرة  
تليفون - فاكس : 27367523 - 27367523

Company Name : شركة الذهبى  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ m (No.200)	9.9

Signature



Y.E. Mark E. Abdo Sher  
Zakia - Giza  
Tel & Fax : 27367503 27367503



٩ شارع الملك الافضل  
الزمالك - القاهرة  
الهاتف - فاكس : ٢٧٣٦٧٥٠٣ ٢٧٣٦٧٥٠٣



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

**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

Signature:   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات ( سواج و الشا )  
رقم التسجيل الغربى: 219 - 991 - 537  
المركز الرئيسى 3 شارع الملك الأفضل - الزمالك - القاهرة

3 El Mark E. Attia Street  
Zir park, Cairo  
Tel/Fax: 2766702 - 2766703



\* من المعمل المعتمد  
الزمالك - القاهرة  
تليفون: 2766702 - 2766703

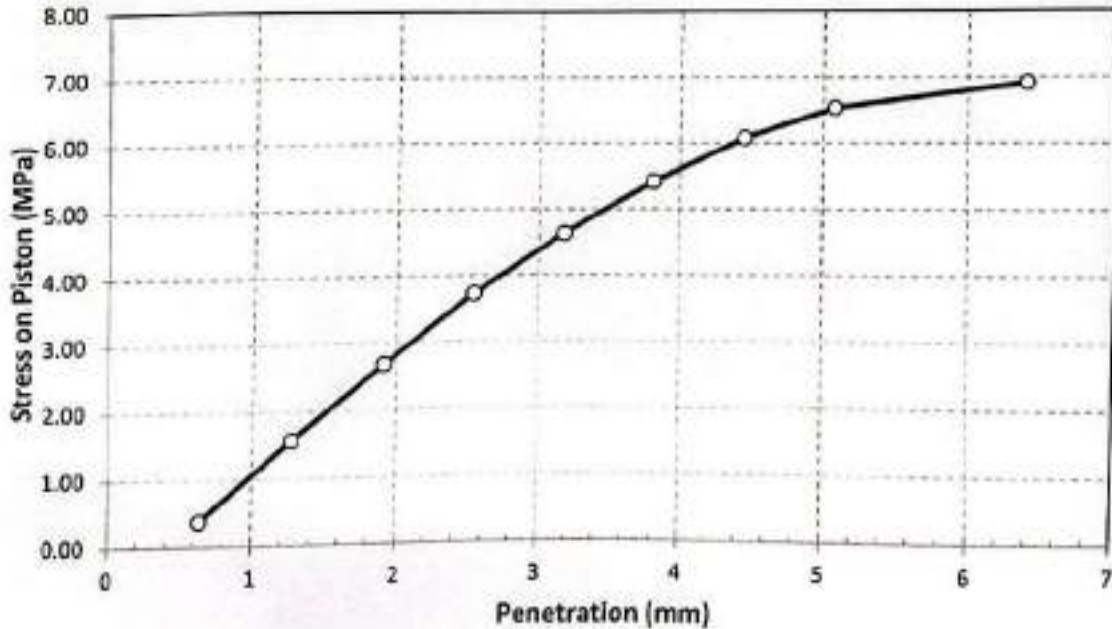
# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train - HSR From Qous To Arment  
Location : ST:641+400 E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 19/09/2023  
Reporting Date : 23/09/2023  
Reporting No. : 10-5

## Load Penetration Curve of CBR Test

ASTM D-1883



Signature



1 El Maadi El Akhdi Street  
Zamalek - Cairo  
Tel & Fax: 22567231 - 22567232



أحمد محمد السيد  
الممثل القانوني  
22567231 - 22567232  
الهاتف - فاكس

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

## Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	39.3	Max 50 %	-----	-----
0.425 mm (No. 40).	22.4	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.9	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



3 E-Mark E Abdel St  
Zamalek, Cairo  
T: 219 - 991 - 537



شركة الذهبى  
المركز الهندسى  
القاهرة

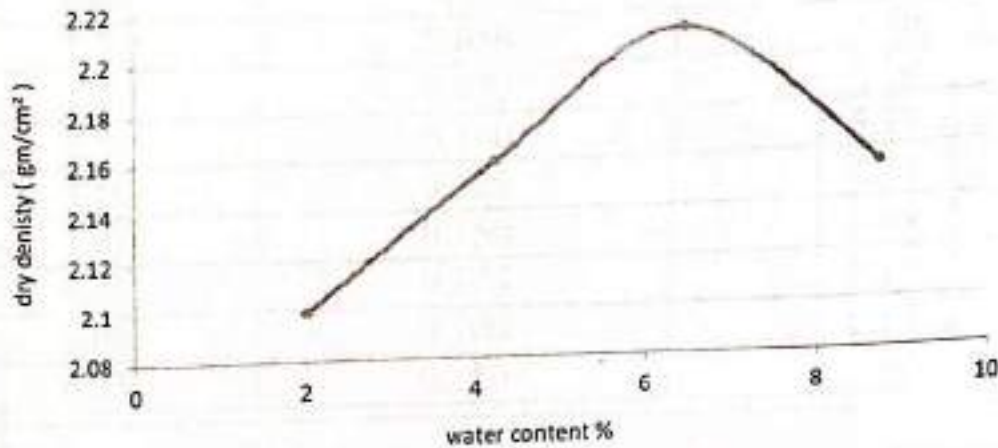


# CEL

Consulting Engineering Bureau & Laboratories  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 6.4 %

Signature



3 El-Malak El-Ahla Street  
Zamalek - Cairo  
Tel/Fax: 2736722 - 2736730



المهندس المهندس  
المهندس المهندس  
المهندس المهندس

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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

**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	1.60
1.91	0.075	2.70
2.54	0.100	3.75
3.18	0.125	4.66
3.81	0.150	5.45
4.45	0.175	6.11
5.08	0.200	6.56
6.35	0.250	6.94

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	54.3 %
	6.90	3.75	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.21(gm /cm<sup>3</sup>)  
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**

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات (سوهاج وقنا)  
رقم التسجيل الخريفي: 637-004-219

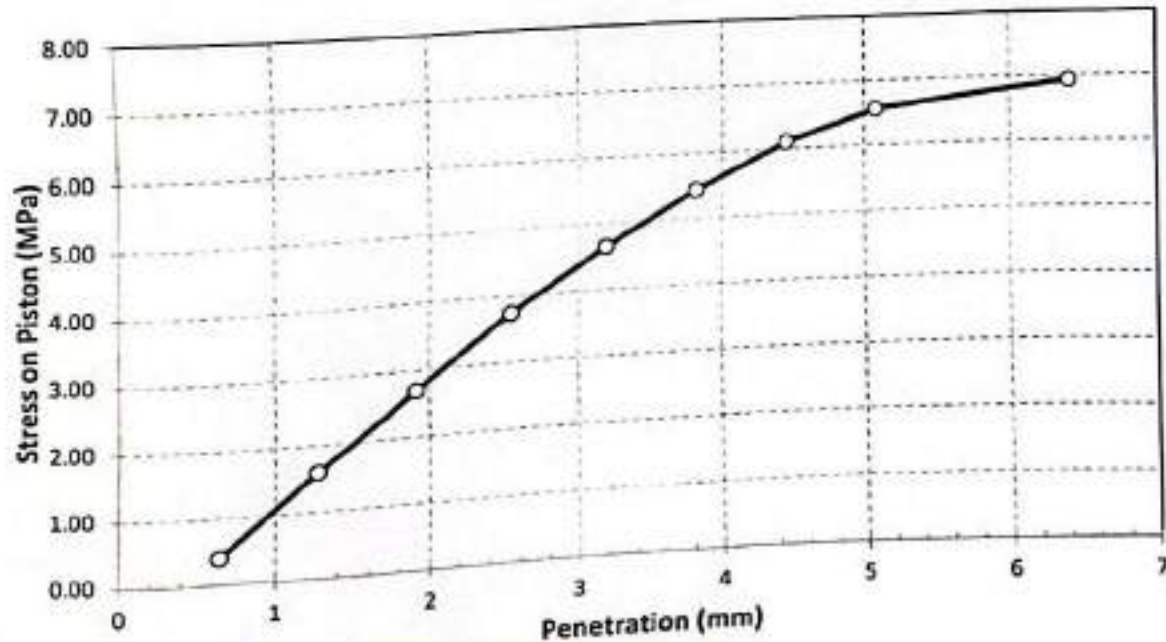
IE: Mark E  
Zamalek, Cairo  
T&F: 2736527 2736528



شركة الهندسة  
الزمالك القاهرة  
تلفون : 2736527 2736528

Company Name : شركة الذهبى  
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 : 26/09/2023  
Reporting Date : 30/09/2023  
Reporting No. : 10-6

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



Signature /   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
مشروعات وسوفاج وبنس  
رقم التسجيل المهنى: 537 - 591 - 219  
المركز الرئيسى ٢ شارع الملك الأفضل - الزمالك - القاهرة

3 E. Mousk E. Attia Street  
Zamalek, Cairo  
Tel: 2266721 27975003



شركة الهندسة  
الزمالك - القاهرة  
تقارير فائقة



Company : شركة الذهبى للمقاولات و التوريدات العمومية

Project : Electric Express Train - Sector (5) – Qous to Arment.  
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements  
Test Location : Station (641+000 to 641+160)  
Test station : Station (641+050) , Station (641+130) - Level : - 4.0 ( m )  
Test Date : 09/07/2023  
Report Date : 10/07/2023  
Type of soil : Original earth.  
Report No. : 2 , 3

Dear Gentleman,

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

### Apparatus

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

### Test Procedure:

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



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## Report

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

## Report

- Type of soil : Original earth
- Job requirement :  $E_{v2} > 400 \text{ Kg/cm}^2$  (40 MPa)

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	09/07/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

## Evaluation and representation of results

Test No.	Station		Location	First Cycle	Second Cycle	$E_{v2}/E_{v1}$ Ratio
	From	To		$E_{v1} \text{ (kg/cm}^2\text{)}$	$E_{v2} \text{ (kg/cm}^2\text{)}$	
1	641+000	641+100	641+050	708	1034	1.46
2	641+100	641+160	641+130	1022	940	0.92

Signature





Company Name : شركة الأهبي للمقاولات والتوريدات العمومية  
Project : Electric Express Train - Sector (B) - Qasr to Arment  
Test Date : 09/07/2023  
report date : 10/07/2023  
Location : Station (641+050 )  
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils

DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.75	0.25	19.80	0.20	0.23
2	1.66	19.55	0.45	19.63	0.37	0.41
3	2.50	19.33	0.67	19.20	0.80	0.74
4	3.33	19.08	0.92	19.00	1.00	0.96
5	4.17	18.77	1.23	18.82	1.18	1.21
6	5.00	18.50	1.50	18.50	1.50	1.50

Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.66	1.34	18.66	1.34	1.34
2	1.25	18.75	1.25	18.80	1.20	1.23
3	0.100	18.90	1.10	19.10	0.90	1.00

Loading Stage (2)

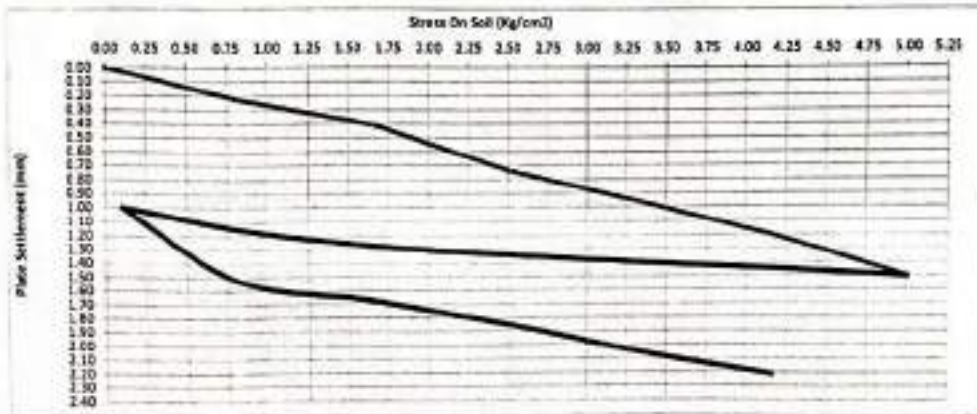
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	18.35	1.65	18.30	1.70	1.53
1	1.66	18.20	1.80	18.10	1.90	1.68
2	2.50	18.00	2.00	17.90	2.10	1.85
3	3.33	17.83	2.17	17.75	2.25	2.05
4	4.17	17.83	2.17	17.75	2.25	2.21





Company Name : الأهرى القنولات و التوريدات المعمارية  
Project : Electric Express Train - Sector (S) - Qous to Arment.  
Test Date : 09/07/2023  
Report Date : 10/07/2023  
Location : Station (541+050)  
Test No. : 02

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



Loading (t)	0	1	2	3	4	5	6
Stage(Kg)	0	686	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm²)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.23	0.41	0.74	0.96	1.21	1.50

UnLoading (t)	1	2	3	4
Stage(Kg)	3533	1766	684	71
Stress (Kg/cm²)	5.00	2.50	1.250	0.10
Settlement (mm)	1.50	1.34	1.23	1.00

D (mm) = 300	S1 (mm) = 0.37	S2 (mm) = 1.01	ΔS = 0.64
Ev1 (kg/cm²) = $(0.75 \cdot D^2 \cdot \Delta\sigma) / \Delta S$	708		

$Ev2/Ev1 = 1.46$

Loading (t)	0	1	2	3	4	5
Stage(Kg)	0	585.395	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm²)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	1.00	1.53	1.68	1.85	2.05	2.21

D (mm) = 300	S1 (mm) = 1.65	S2 (mm) = 2.08	ΔS = 0.44
Ev2 (kg/cm²) = $(0.75 \cdot D^2 \cdot \Delta\sigma) / \Delta S$	1034		

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



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Company Name : شركة الذهبى للمقاولات والتوريدات المعمية  
Project : Electric Express Train - Sector (6) - Gous to Arment.  
Test Date : 09/07/2023  
report date : 10/07/2023  
Location : Station (641+130 )  
Test No. : 03

## Nonrepetitive Static Plate Load Tests of Soils

DIN 18134

### Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.66	0.34	19.77	0.23	0.29
2	1.66	19.50	0.50	19.61	0.39	0.45
3	2.50	19.30	0.70	19.40	0.60	0.65
4	3.33	19.15	0.85	19.22	0.78	0.82
5	4.17	18.90	1.10	19.08	0.92	1.01
6	5.00	18.75	1.25	18.90	1.10	1.18

### Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
1	2.50	18.88	1.12	19.05	0.95	1.04
2	1.25	19.00	1.00	19.15	0.85	0.93
3	0.100	19.35	0.65	19.40	0.60	0.63

### Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
0	0.83	19.09	0.91	19.18	0.82	0.74
1	1.66	18.80	1.20	19.05	0.95	0.87
2	2.50	18.65	1.35	18.80	1.20	1.08
3	3.33	18.40	1.60	18.61	1.39	1.28
4	4.17	18.40	1.60	18.61	1.39	1.50



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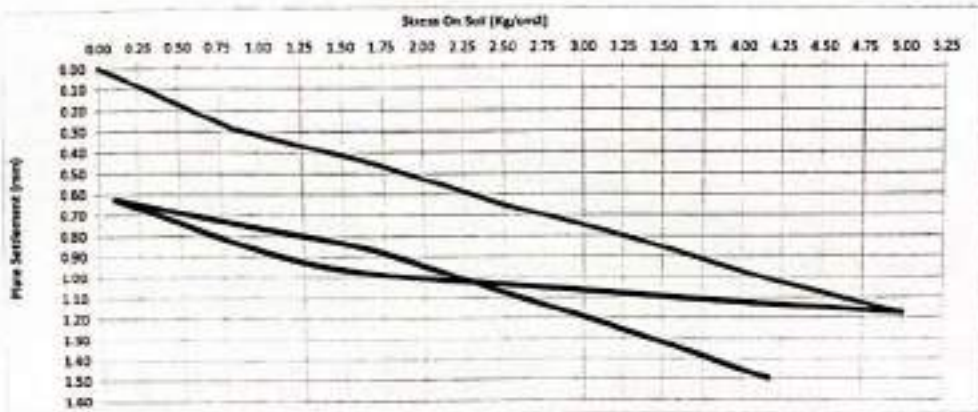
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Company Name  
Project  
Test Date  
Report date  
Location  
Test No.

الذهب للمحولات والتوريدات الموسمية :  
: Electric Express Train - Sector (5) - Qous to Arment.  
: 09/07/2023  
: 10/07/2023  
: Station (641+130 )  
: 03

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



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1765.3	2352.6	2946.1	3532.5
Stress (Kg/cm²)	0.00	0.63	1.68	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.29	0.45	0.65	0.82	1.01	1.18

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm²)	5.00	2.50	1.250	0.10
Settlement (mm)	1.18	1.04	0.93	0.63

D (mm) =	300	S1 (mm) =	0.41	S2 (mm) =	0.85	ΔS =	0.44
Ex1 (kg/cm²) =	$(0.75 \cdot D^2 \cdot \Delta \sigma) / \Delta S$						
	1022						

$Ev2/Ev1 = 0.92$

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1172.8	1765.3	2352.6	2946.1
Stress (Kg/cm²)	0.10	0.63	1.68	2.50	3.33	4.17
Settlement (mm)	0.63	0.74	0.87	1.08	1.25	1.50

D (mm) =	300	S1 (mm) =	0.84	S2 (mm) =	1.32	ΔS =	0.48
Ex2 (kg/cm²) =	$(0.75 \cdot D^2 \cdot \Delta \sigma) / \Delta S$						
	943						

Ev1 = Modulus of deformation during the loading stage.

Ev2 = Modulus of deformation during the Reloading stage.

D = Plate diameter (mm)

Δσ = The difference between 0.3 and 0.7 from the maximum loading (σmax) (kg/cm²)

ΔS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



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Company : شركة الذهبى للمقاولات و التوريدات العمومية

Project : Electric Express Train - Sector (5) – Qous to Arment.  
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements  
Test Location : Station (641+160 to 641+300)  
Test Date : 12/07/2023  
Report Date : 12/07/2023  
Type of soil : Original earth.  
Report No. : 1, 2

Dear Gentleman,

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

### Apparatus

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

### Test Procedure:

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

Report



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

## Report

- Type of soil : Original earth
- Job requirement :  $E_{v2} > 400 \text{ Kg/cm}^2$  (40 MPa)

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	12/07/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

## Evaluation and representation of results

Test No.	Station		Location	Level ( m )	First Cycle	Second Cycle	$E_{v2}/E_{v1}$ Ratio
	From	To			$E_{v1} \text{ (kg/cm}^2\text{)}$	$E_{v2} \text{ (kg/cm}^2\text{)}$	
1	641+160	641+260	641+260	-4.5	721	930	1.29
2	641+260	641+300	641+280	-5.0	1202	957	0.80

Signature /

*Abdoh*





Company Name : شركة الذهبى للمقاولات والتوريدات العمومية  
Project : Electric Express Train - Sector (5) - Gous to Ament  
Test Date : 12/07/2023  
report date : 12/07/2023  
Location : Station (641+250 )  
Test No. : 01

## Nonrepetitive Static Plate Load Tests of Soils

DIN 18134

### Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.75	0.25	19.63	0.37	0.31
2	1.66	19.30	0.70	19.20	0.80	0.75
3	2.50	19.10	0.90	19.05	0.95	0.92
4	3.33	18.81	1.19	18.77	1.23	1.21
5	4.17	18.15	1.65	18.45	1.55	1.60
6	5.00	18.18	1.72	18.21	1.79	1.76

### Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.35	1.65	18.40	1.60	1.63
2	1.25	18.55	1.45	18.53	1.47	1.46
3	0.100	18.68	1.32	18.65	1.35	1.34

### Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	18.33	1.67	18.25	1.75	1.51
1	1.66	18.10	1.90	18.08	1.92	1.71
2	2.50	17.93	2.07	17.80	2.20	1.91
3	3.33	17.85	2.15	17.68	2.32	2.14
4	4.17	17.85	2.15	17.68	2.32	2.24



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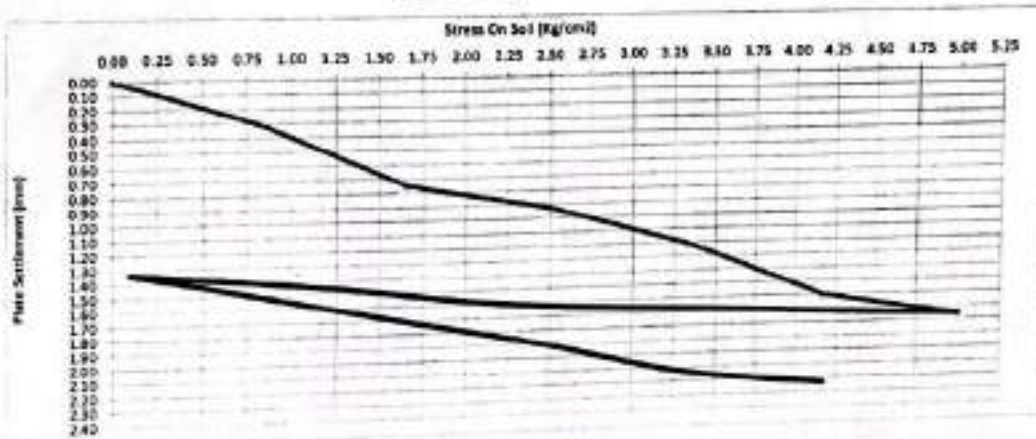
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**Consulting Engineering Bureau & Laboratories**  
مكتب معامل الاستشارات الهندسية

Company Name  
Project  
Test Date  
Report Date  
Location  
Test No.

الذمى للمقاولات والتوريدات الصومية  
: Electric Express Trains - Sector (S) - Qous to Arment.  
: 12/07/2023  
: 12/07/2023  
: Station (641+250 )  
: 01

## Nonrepetitive Static Plate Load Tests of Soils DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm²)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.31	0.75	0.92	1.21	1.60	1.76

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm²)	5.00	2.50	1.250	0.10
Settlement (mm)	1.76	1.63	1.46	1.34

D (mm) = 300	S1 (mm) = 0.87	S2(mm) = 1.29	ΔS = 0.62
Ev1 (kg/cm²) = (0.75*D*Δσ)/ΔS	721		

$$Ev2/Ev1 = 1.29$$

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm²)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	1.34	1.61	1.71	1.91	2.14	2.24

D (mm) = 300	S1 (mm) = 1.67	S2(mm) = 2.16	ΔS = 0.48
Ev2 (kg/cm²) = (0.75*D*Δσ)/ΔS	930		

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



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Company Name : شركة الذهبى للمقاولات و التوريدات العمومية  
Project : Electric Express Train - Sector (5) - Ousa to Arment.  
Test Date : 12/07/2023  
report date : 12/07/2023  
Location : Station (641+280 )  
Test No. : 02

**Nonrepetitive Static Plate Load Tests of Soils**

**DIN 18134**

**Loading Stage (1)**

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.83	0.17	19.90	0.10	0.14
2	1.66	19.65	0.35	19.78	0.22	0.29
3	2.50	19.50	0.50	19.66	0.34	0.42
4	3.33	19.28	0.72	19.52	0.48	0.60
5	4.17	19.10	0.90	19.40	0.60	0.75
6	5.00	18.95	1.05	19.25	0.75	0.90

**Unloading Stage (1)**

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	19.05	0.95	19.31	0.69	0.82
2	1.25	19.15	0.85	19.40	0.60	0.73
3	0.100	19.22	0.78	19.48	0.52	0.65

**Loading Stage (2)**

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	19.08	0.92	19.30	0.70	0.81
1	1.66	18.90	1.10	19.18	0.82	0.96
2	2.50	18.65	1.35	18.98	1.02	1.19
3	3.33	18.50	1.50	18.75	1.25	1.38
4	4.17	18.39	1.61	18.60	1.40	1.51



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Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 16/7/2023  
Soil type : Soil Embankment  
Location : ST From 641+000 To 641+140  
Level : -4.0 M  
Report No. : 03

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+020	1500	2.19	5	2.08	97.8%	Comply
2	641+100	1432	2.19	5.3	2.08	97.5%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.13 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

**CEL**  
Signature  
219.937.437  
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Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

Dear Gentleman,

Attached here with the delivered on 18 / 5 / 2023

**Materials test**

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

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

Signature   
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210/991.437  
القاهرة - شارع الملك الامل - الزمالة - القاهرة

3 El Malek El Afdal Street  
Zerzales, Cairo  
Tel/Fax : 27367501 - 27363550



شركة المعاملات الهندسية  
القاهرة - شارع الملك الامل  
210/991.437 - 27363550

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	100
25	1	98.8
19	¾	96.2
12.50	½	92.2
9.50	3/8	88.8
4.75	4	82.4
2.00	10	74.4
0.425	40	38.5

Signature / .....  
مكتب معامل الاستشارات الهندسية  
مشاريع و خدمات الاعمال  
رقم الترخيص 210.001.437  
الوكيل الرئيسي : 3 شارع الملك الاملال - الزمالة

3 El Malek El Amlal Street  
Zamalek, Cairo  
Tel & Fax: 22367531 - 22363663



شركة المعامل الهندسية  
الزمالك - القاهرة  
تليفون : 22367531 - 22363663



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ m (No.200)	10.7

Signature



3 El Malek El Ahdal Street  
Zakaria, Cairo  
Tel & Fax: 27367231 - 27367232



إلى السيد المهندس  
إلى السيد المهندس  
إلى السيد المهندس



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

**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

Signature:  مكتبة محمد عبد الوهاب  
مشاريع واستشارات الهندسية  
219-891-437  
المركز الرئيسي 3 شارع الملك الأفطى - القاهرة

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

### Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	A-1-b	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	74.4	Max 50 %	-----	-----
0.425 mm (No. 40).	38.5	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	10.7	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

  
مكتب معامل الاستشارات الهندسية  
219-901-437  
3 شارع الملك الافضل - القاهرة

3 El Malek El Aldai Street  
Zamalek, Cairo  
Tel& Fax : 27367211 - 27363093



شركة الهندسة الاستشارية  
مكتب معامل الاستشارات الهندسية  
219-901-437

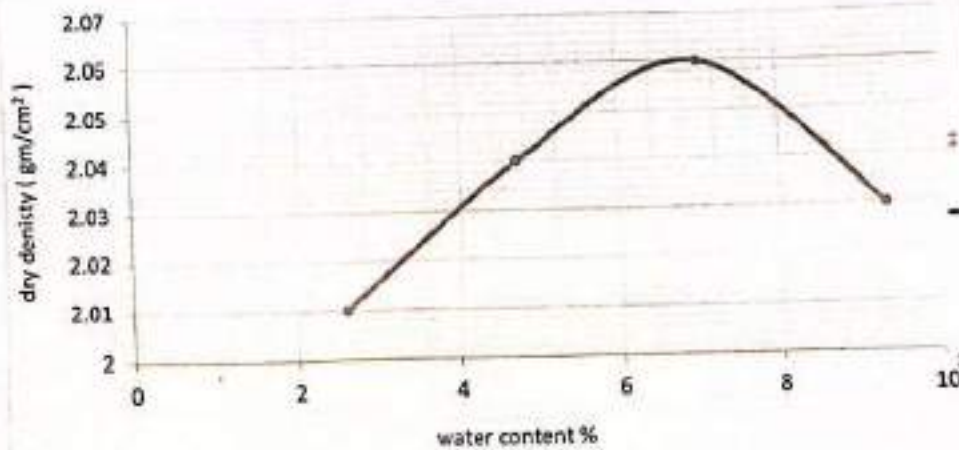


# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Arment  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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



- Max dry density (gm/cm³) : 2.06
- Optimum moisture content % : 7.0 %

Signature

CEL  
مكتب معامل الاستشارات الهندسية  
3 شارع الملك فيصل - الرياض  
تليفون : 339 3391  
فاكس : 339 3391

3 E Malek E Abdel Street  
Zarqa, GAZA  
Tel & Fax 27367231 - 27363000

IAS  
ACCREDITED  
Testing Laboratory

إشراف المهندس  
إبراهيم الخضير  
مهندس



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	100
25	1	98.8
19	¾	96.2
12.50	½	92.2
9.50	3/8	88.8
4.75	4	82.4
2.00	10	74.4
0.425	40	38.5

**CEL**  
مكتب معامل الاستشارات الهندسية  
مشروعات الري والقنوات  
219, 991, 437  
Signature: [Signature]

8 El Malek El Akdat Street  
Zamalek, Cairo  
Tel & Fax: 27397551 - 27397550



شركة الذهبى للاستشارات  
الهندسية  
مكتب معامل الاستشارات الهندسية

# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	10.7

Signature:   
مكتب معامل الاستشارات الهندسية  
3 شارع الملك الافضل - الدقي - القاهرة  
البريد الإلكتروني: info@cel-eg.com  
الهاتف: 0111 433 4333



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.22
1.27	0.050	0.61
1.91	0.075	1.01
2.54	0.100	1.46
3.18	0.125	1.74
3.81	0.150	1.85
4.45	0.175	1.76
5.08	0.200	1.58
6.35	0.250	1.19

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	21.2 %
	6.90	1.46	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.06 (gm /cm<sup>3</sup>)  
At = 7.0 % optimum water content.
- 3- Surcharge Load = 150 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

Dear Gentleman,

Attached here with the delivered on 18 / 5 / 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

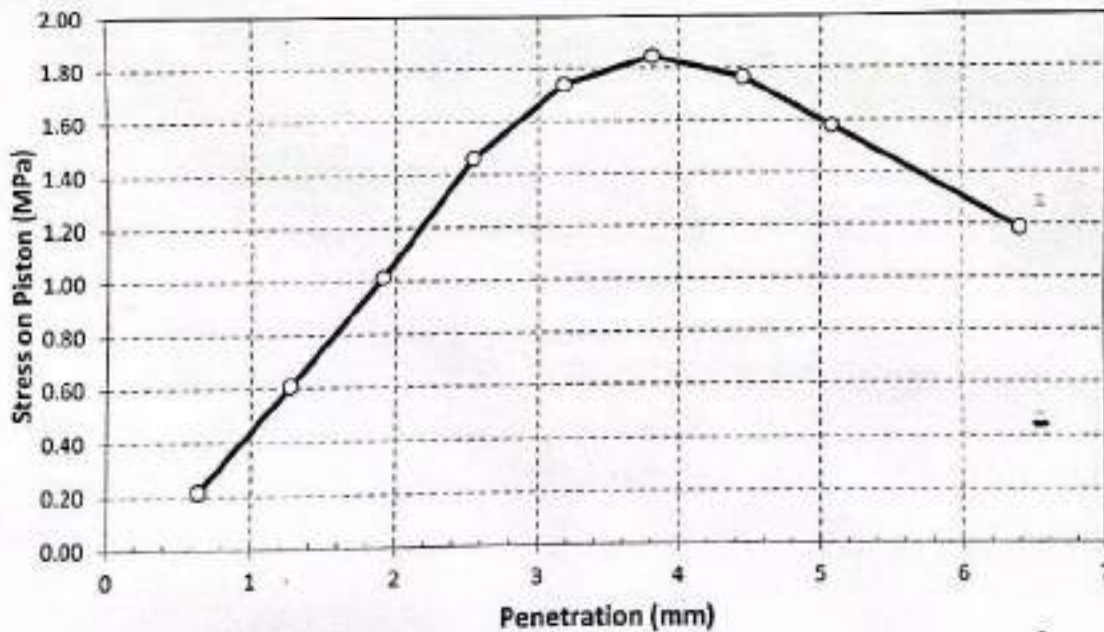
*Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken*

Signature /

**CEL**  
مكتب معامل الاستشارات الهندسية  
شركة الذهبى  
الزكى الرئيس 3 شارع الملك الافضل - الزمالة - القاهرة

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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



Signature



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



الممثل  
الموافق  
الموافق



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 20/7/2023  
Soil type : Middle Embankment  
Location : St From 641+100 To 641+160  
Level : -3.5 M  
Report No. : 08

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+110	1472	2.13	5.3	2.02	98.0%	Comply
2	641+140	1471	2.10	5.8	1.99	96.4%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.06 gm/cm<sup>3</sup>
- At optimum moisture content = 7.0 %

  
Signature: 437

3 El Maak El Ahd Street  
Zamalek, Cairo  
Tel & Fax : 7396720 - 7396920

**IAS**  
ACCREDITED  
Testing Laboratory

إدارة المختبر  
مختبر التربة  
مختبر المياه  
مختبر البترول



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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

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

**CEL**  
مكتب معامل الاستشارات الهندسية  
Signature:   
رقم التسجيل: 19951.437  
المركز الرئيسي: 3 شارع الملكة الأميرة - القاهرة

Location Name	Contractor Company	Designer Company
From 641+000 to 641+100	EL-ZAHABY contraction	(SPECTRUM) Engineering Consulting Office
Name	Sign	Date

**CEL**

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train - HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	A-1-b	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	74.4	Max 50 %	-----	-----
0.425 mm (No. 40).	38.5	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	10.7	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

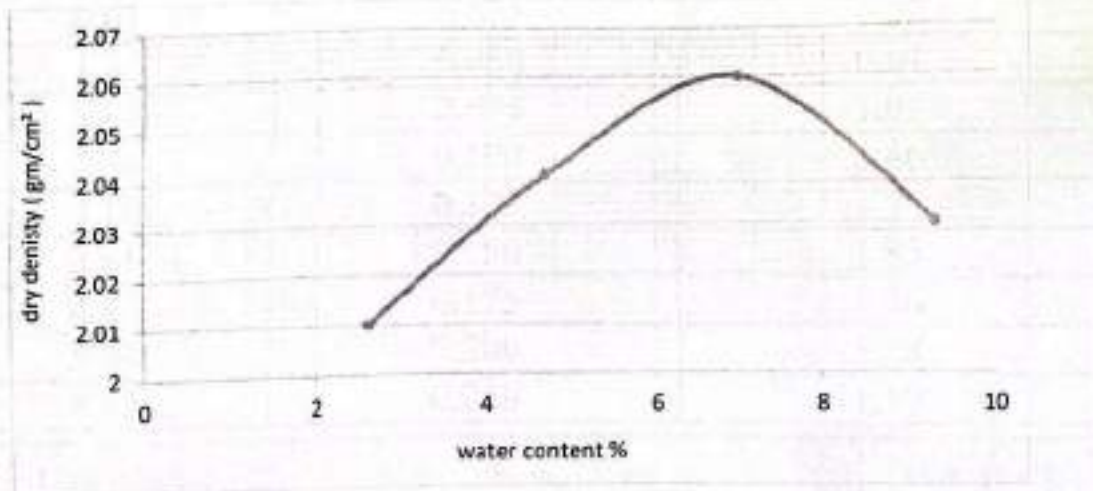
Signature

**CEL**  
مكتب معامل الاستشارات الهندسية  
3 شارع الملك الافضل - الهرم - القاهرة  
2493999



Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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



- Max dry density (gm/cm³) : 2.06
- Optimum moisture content % : 7.0 %

Signature

3 E Malek El Attar Street  
Zamalek, Cairo  
Tel & Fax : 27367631 - 27367693



مكتب الاستشارات الهندسية  
الزهبي  
مكتب معامل الاستشارات الهندسية



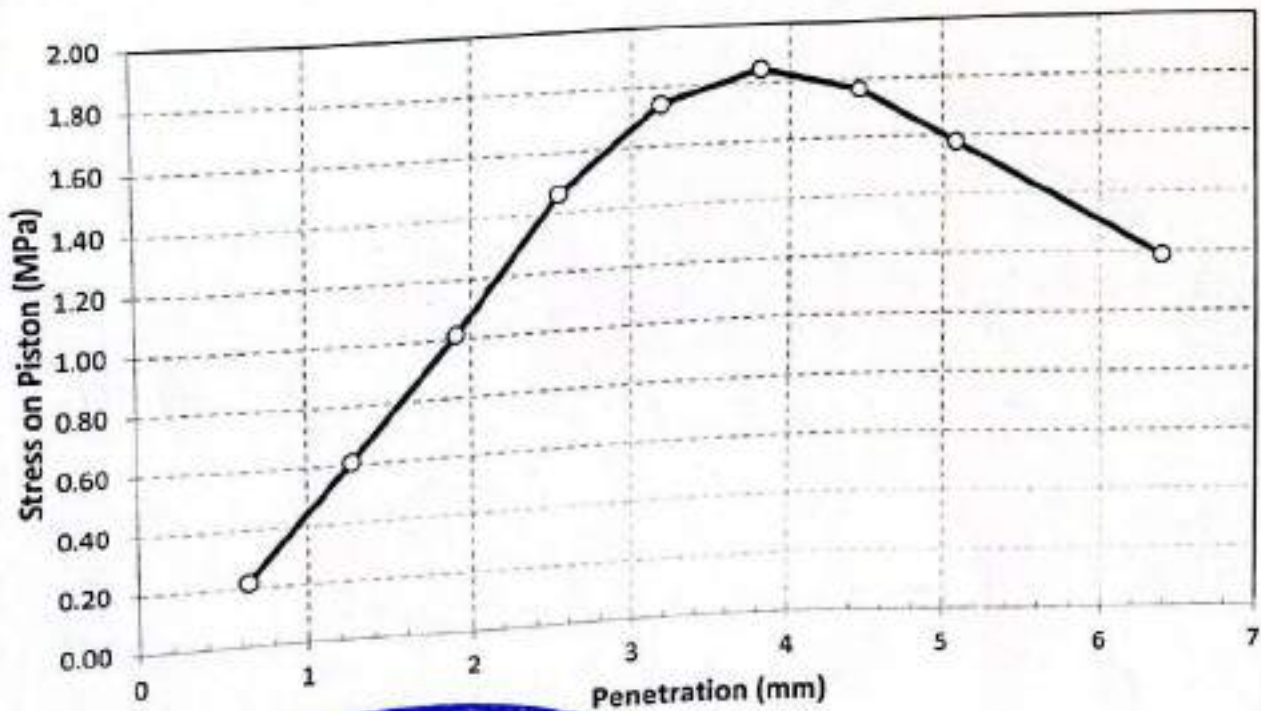
# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 18/5/2023  
Reporting Date : 23/5/2023  
Reporting No. : 05

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



Signature

CEL  
مكتب معامل الاستشارات الهندسية  
0931 001 001  
شارع الملك فيصل - الرياض

IAS

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 19/7/2023  
Soil type : Middle Embankment  
Location : ST From 641+000 To 641+100  
Level : -3.5 M  
Report No. : 07

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+030	1380	2.09	5.8	1.98	96.1%	Comply
2	641+070	1526	2.10	5.3	1.99	96.7%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.06 gm/cm<sup>3</sup>
- At optimum moisture content = 7.0 %

Signature:

*(Handwritten signature and blue circular stamp)*

3 El Malek El Akda Street  
Zamalek, Cairo  
Tel & Fax: 27307251 / 27307243





Company Name : شركة الذهبي  
 Project : Electric Express Train - HSR From Qous To Armant  
 Location : (ST: 641+100) E=32.9226620 N=25.8862030  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 18/5/2023  
 Reporting Date : 23/5/2023  
 Reporting No. : 05

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.22
1.27	0.050	0.61
1.91	0.075	1.01
2.54	0.100	1.46
3.18	0.125	1.74
3.81	0.150	1.85
4.45	0.175	1.76
5.08	0.200	1.58
6.35	0.250	1.19

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	1.46	21.2 %

### Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.06 (gm /cm<sup>3</sup>)
- 3- Surcharge load 4.50 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature

3 E Mylek E Atadol Street  
 Zaria, Cairo  
 Tel: 27307231 - 27307230





Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 25/7/2023  
Soil type : Middle Embankment  
Location : St From 641+220 To 641+300  
Level : -4.5 M  
Report No. : 11

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+240	1557	2.10	5.8	1.99	95.4%	Comply
2	641+280	1767	2.10	5.8	1.98	95.4%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.08 gm/cm<sup>3</sup>
- At optimum moisture content = 7.0 %

Signature /

3 ElMark El-Akhl Stree  
Zamalek, Giza  
Tel, Fax : 27366251 - 27366313



\* في مكتبنا  
 \* في مكتبنا  
 \* في مكتبنا

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

Dear Gentleman,

Attached here with the delivered on 20 / 7 / 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 /

مكتب معامل الاستشارات الهندسية  
التحاليل الكيميائية  
المركز الرئيسي 3 شارع البنك الاهلى - القاهرة  
2023/07/24

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	100
25	1	97.3
19	¾	95.4
12.50	½	91.6
9.50	3/8	87.4
4.75	4	81.5
2.00	10	71.3
0.425	40	36.8

Signature 

3-B Malek El Afifi Street  
Zamalek, Cairo  
Tel & Fax: 27367231 - 27369693



شركة الهندسة والاستشارات  
مكتب معامل الاستشارات الهندسية  
2023/07/24



Company Name : شركة الذهبي  
 Project : Electric Express Train – HSR From Qous To Armant  
 Location : (ST: 641+100) E=32.9226620 N=25.8862030  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 20/7/2023  
 Reporting Date : 24/7/2023  
 Reporting No. : 05-2

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	11.4

  
 مكتبة معامل الاستشارات الهندسية  
 3 شارع النيل - القاهرة  
 تليفون : 27366233 - 27366293  
 Signature / *[Handwritten Signature]*

3 El Malek El Ahlul Street  
 Zorvulus, Cairo  
 Tel&Fax: 27366233 - 27366293



3 شارع النيل - القاهرة  
 تليفون : 27366233 - 27366293  
 فاكس : 27366233 - 27366293

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

**Soil Classification**

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	A-1-b	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	71.3	Max 50 %	-----	-----
0.425 mm (No. 40).	36.8	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	11.4	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

Signature /

3 E. Malek E. Afdal Street  
Zamalek, Cairo  
Tel & Fax: 2/3652211 - 2/3630093



ش.م.ب. الهندسة والاستشارات  
البريد الإلكتروني: cel@cel.com.eg  
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# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

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

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

Signature:   
Mohamed Elmaghrabi  
310-901-437  
3 شارع 1000 الاقصر - الأقصر

3 E Malek El Afou Street  
Zakaria, Cairo  
Tel & Fax: 27362131 - 27362180

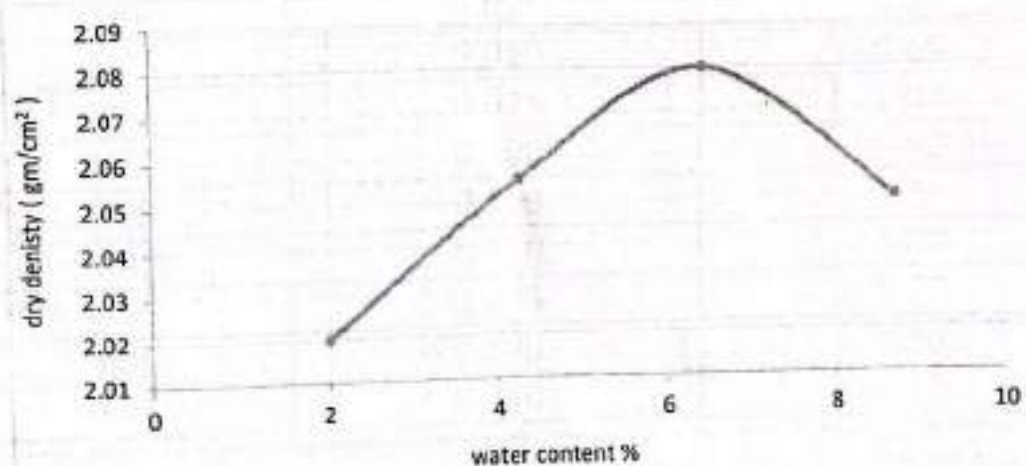


أشرف المهندس الإحصائي  
أحمد محمد  
أحمد محمد  
أحمد محمد



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

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



- Max dry density (gm/cm³) : 2.08
- Optimum moisture content % : 6.4 %

Signature

3 El Maialek El Ahtal Street  
Zamalek, Cairo  
Tel & Fax: 27367237 - 27363093



شركة الهندسة والاستشارات  
المصرية  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.25
1.27	0.050	0.66
1.91	0.075	1.07
2.54	0.100	1.52
3.18	0.125	1.78
3.81	0.150	1.88
4.45	0.175	1.77
5.08	0.200	1.56
6.35	0.250	1.12

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	1.52	22 %

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of  $\approx 2.08 \text{ (gm/cm}^3\text{)}$   
At = 6.4 % optimum water content.
- 3- Surcharge load 450 Kg.
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature : 

3 E. Maged E. Atalla Street  
Zamalek, Cairo  
Tel & Fax: 23367221 - 23365603

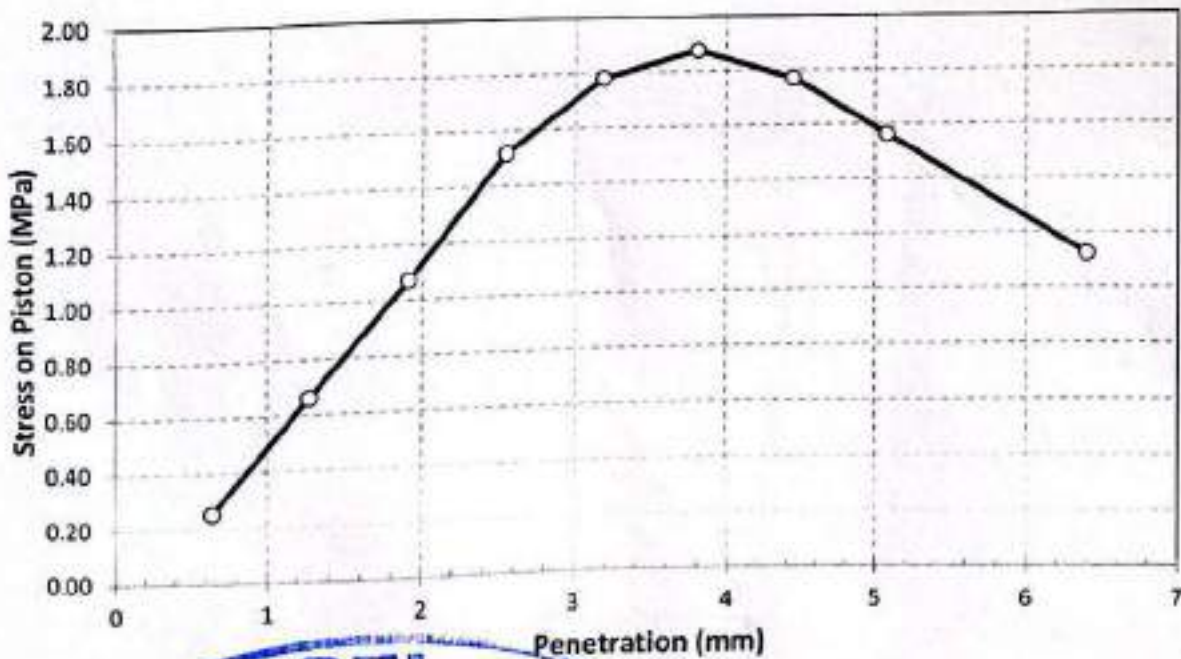


مركز الاختبارات  
البيانات  
البيانات



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 20/7/2023  
Reporting Date : 24/7/2023  
Reporting No. : 05-2

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



**CEL**  
مكتب معامل الاستشارات الهندسية  
شروعات الاعمال  
219 900 000  
Signature: [Handwritten Signature]



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 18/7/2023  
Soil type : Soil Embankment  
Location : ST: From 641+240 To 641+300  
Level : -5.0 M  
Report No. : 05

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+260	1505	2.17	5.8	2.05	99.7%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.06 gm/cm<sup>3</sup>
- At optimum moisture content = 7.0 %

Signature:   
مكتب معامل الاستشارات الهندسية  
219. 991. 437  
شارع الملك الافضل - الهرم - الجيزة  
البريد الإلكتروني: info@cel-eg.com

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Zamalek, Cairo  
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مكتب معامل الاستشارات الهندسية  
الهرم - الجيزة  
Tel: 27366231 - 27366603  
Fax: 27366231

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 26/7/2023  
Soil type : Middle Embankment  
Location : St From 641+000 To 641+100  
Level : -3.0 M  
Report No. : 13

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+040	1923	2.09	5.5	1.98	95.3%	Comply
2	641+080	1298	2.17	5.8	2.05	98.4%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.08 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature / .....

3 E-Malek E. Abd El Shady  
Zorobela, Cairo  
Tel & Fax : (202) 6255111 - 62550900



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 01/08/2023  
Soil type : Middle Embankment  
Location : St From 641+100 To 641-160  
Level : -3 M  
Report No. : 22

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+120	1414	2.13	5.8	2.01	96.8%	Comply
2	641+140	1446	2.14	5.8	2.03	97.4%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.08 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature

مكتب معامل الاستشارات الهندسية  
عبد الرحمن محمد  
إبراهيم  
3 شارع الملك الافندي - الهرم - القاهرة

5 El Malek El Afendi Street  
Zamalek, Cairo  
Tel: 22962701 - 22962700



شركة الاستشارات  
الهندسية



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 05/08/2023  
Soil type : Middle Embankment  
Location : St From 641+220 To 641+300  
Level : -4.0 M  
Report No. : 26

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+250	1574	2.19	6.4	2.06	96.7%	Comply
2	641+280	1581	2.13	5.2	2.03	95.2%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.13 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature /

  
مكتب معامل الاستشارات الهندسية  
ميدان الملك فيصل  
219.991.437  
الرقم التليفونى 3 شارع الملك الافضل - المنطقة - القاهرة

3 El Malak E Afadl Street  
Zamalek, Cairo  
Tel & Fax: 22664722 - 22669693



شركة الاستشارات  
الهندسية  
ميدان الملك فيصل  
القاهرة - مصر

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

Dear Gentleman ,

Attached here with the delivered on 22 / 7 / 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 /



3 El Mark El Afia Street  
Zakaria, Cairo  
Tel& Fax: 27367231 - 27367693



إشراف المهندس  
إ. م. عبد الحليم  
المهندس / م. عبد الحليم  
المهندس / م. عبد الحليم

**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	97.1
25	1	93.1
19	¾	90.0
12.50	½	85.5
9.50	3/8	81.6
4.75	4	77.6
2.00	10	72.9
0.425	40	39.9

**CEL**  
مكتب معامل الاستشارات الهندسية  
Signature:   
رقم الترخيص 3 شارع النيل - القاهرة - الجيزة

3 El Malek El Afrik Street  
Zakaria, Cairo  
Tel/Fax: 22367521 - 22367599



مركز التحليلات  
البيئية  
مركز التحليلات  
البيئية



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

Materials finer than 75  $\mu$ m (no.200) sieve  
By washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ m (No.200)	11.3

  
Signature

3 E Males El Akl Street  
Zarqa, Gao  
Tel & Fax: 2756720 - 2756303

**IAS**  
ACCREDITED  
Testing Laboratory

المعتمد  
الاعتماد  
المعتمد

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

**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

**CEL**  
مكتب معامل الاستشارات الهندسية  
شركة الذهبي  
Signature:   
219 09 432  
تميز القواسم 3 شارع النيل - القاهرة

SE. Moustafa El-Abedi Street  
Zamalek, Cairo  
Toll Free: 177552227 / 177552228



المركز القومى  
للمعايير  
والبحوث  
العلمية



Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train - HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

### Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	A-1-b			
2.00 mm (No.10).	72.91	Max 50 %	-----	-----
0.425 mm (No. 40).	39.87	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	11.3	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

YE HANKE E APKJ EHHG  
Zuradon, G0000  
To A 3-04 2734720 2734720



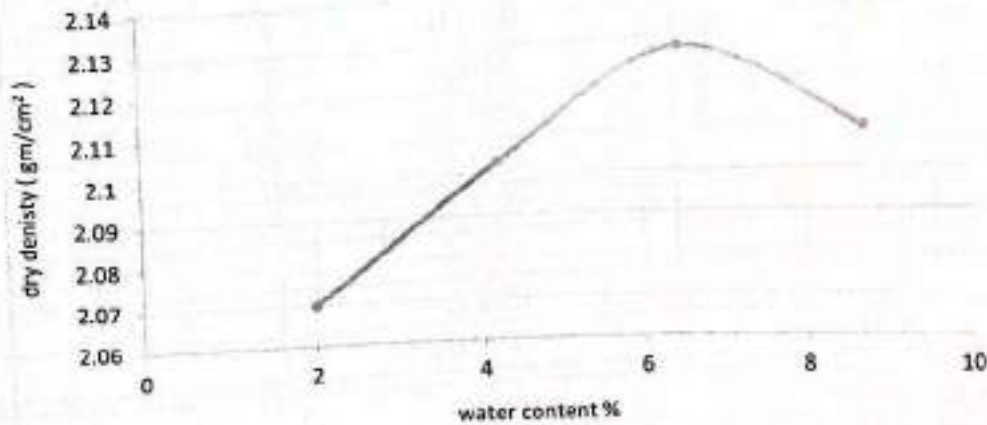


# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

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



- Max dry density (gm/cm³) : 2.13
- Optimum moisture content % : 6.4 %

Signature

3 El Malek El Attou Street  
Zewail, Cairo  
Tel & Fax: 2296750 - 22963293



شركة المعامل الهندسية  
الزمالك - القاهرة  
الهاتف : 22967500 - 22963293

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

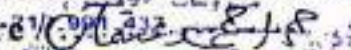
**Test Results of California Bearing Ratio on Base Materials**  
**ASTM D 1883**

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.25
1.27	0.050	1.01
1.91	0.075	1.78
2.54	0.100	2.43
3.18	0.125	3.05
3.81	0.150	3.55
4.45	0.175	3.96
5.08	0.200	4.16
6.35	0.250	4.06

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	35.3 %
	6.90	2.43	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.13 (gm /cm<sup>3</sup>)  
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 : 

1E MCH E 07/01/2007  
Zurab, Cairo  
Tel & Fax: 2736753 - 2736350

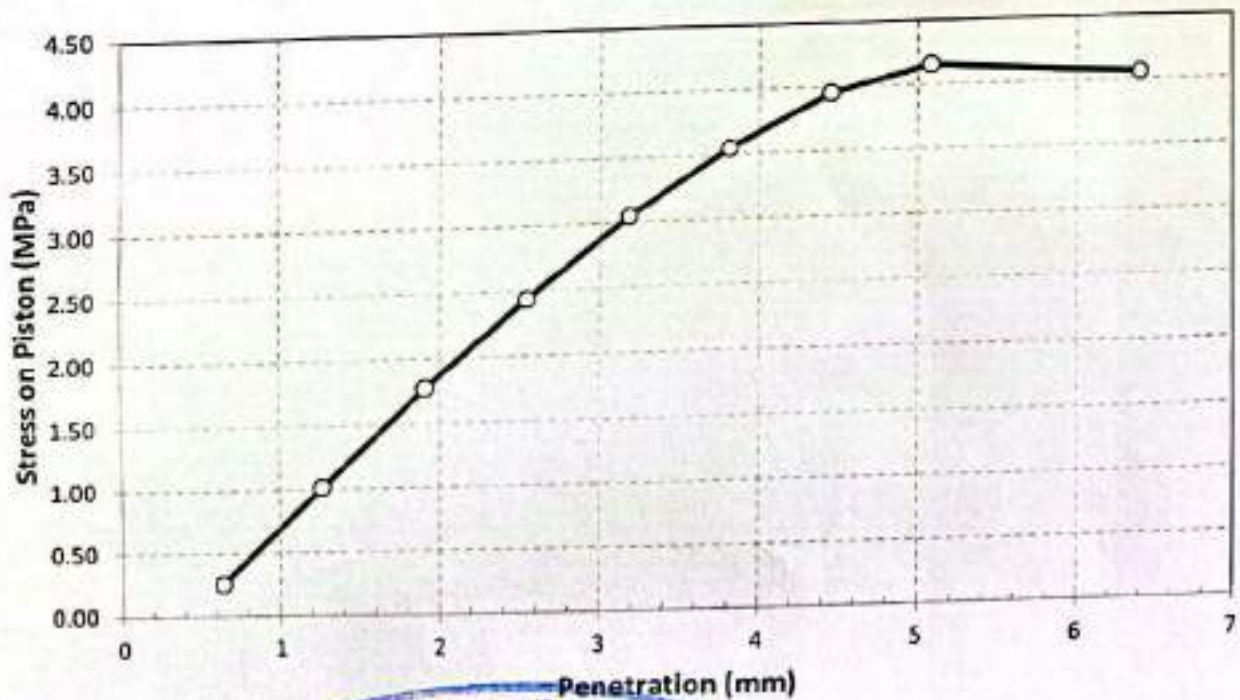


إدارة المختبر  
المعامل الهندسية  
مكتب معامل الاستشارات الهندسية



Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-3

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



Signature

**CEL**  
مكتب معامل الاستشارات الهندسية  
شركة الذهبي  
الرياض - المملكة العربية السعودية  
الهاتف : 011 4613333  
الفاكس : 011 4613333  
البريد الإلكتروني : info@cel-saudi.com




Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 12/08/2023  
Soil type : Middle Embankment  
Location : St From 641+180 To 641+300  
Level : - 3.5 M  
Report No. : 32

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+200	1352	2.17	5.5	2.06	96.1%	Comply
2	641+250	1488	2.20	5.5	2.09	97.6%	Comply
3	641+280	1369	2.20	5.5	2.09	97.5%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.14 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• Signature : 

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



شركة المالك الأخضر  
الرياضة القاهرة  
هاتف : 27367231 - 27363093

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 26/7/2023  
Reporting Date : 30/7/2023  
Reporting No. : 05-4

Dear Gentleman,

Attached here with the delivered on 26 / 7 / 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



S. E. Monek E. Attia Street  
Zamalek, Cairo  
Tel: 219991437 027669050



شركة الاستشارات  
الهندسية  
مكتب معامل الاستشارات  
الهندسية



# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 26/7/2023  
Reporting Date : 30/7/2023  
Reporting No. : 05-4

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.2
37.5	1.5	95.2
25	1	91.5
19	$\frac{3}{4}$	88.2
12.50	$\frac{1}{2}$	84.5
9.50	$\frac{3}{8}$	80.2
4.75	4	73.5
2.00	10	70.1
0.425	40	35.4

Signature /  

IAS



**CEL**  
 Consulting Engineering Bureau & Laboratories  
 مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
 Project : Electric Express Train – HSR From Qous To Armant  
 Location : (ST: 641+100) E=32.9226620 N=25.8862030  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 26/7/2023  
 Reporting Date : 30/7/2023  
 Reporting No. : 05-4

**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

Signature The stamp is a blue oval containing the text 'CEL' at the top, followed by 'مكتب معامل الاستشارات الهندسية' (Consulting Engineering Bureau & Laboratories) and 'شارع الملك فيصل 3' (King Fahd Road 3). There is also a handwritten signature over the stamp.

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 26/7/2023  
Reporting Date : 30/7/2023  
Reporting No. : 05-4

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	A-1-b	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	70.1	Max 50 %	-----	-----
0.425 mm (No. 40).	35.4	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	10.3	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 /



3 El Maadi E 4th St  
Zamalek, Cairo  
Tel & Fax: 27367527 - 27363593



المهندسة /  
المهندس /  
المهندس /

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 26/7/2023  
Reporting Date : 30/7/2023  
Reporting No. : 05-4

Materials finer than 75  $\mu$ m (no.200) sieve  
By washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	10.3

Signature



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El Malek El Aftal, El Giza, Egypt

IAS



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-2

**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	1.09
1.91	0.075	1.83
2.54	0.100	2.49
3.18	0.125	2.94
3.81	0.150	3.30
4.45	0.175	3.55
5.08	0.200	3.65
6.35	0.250	3.55

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	36 %
	6.90	2.49	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.14 (gm /cm<sup>3</sup>)  
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

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Zamalek, Cairo  
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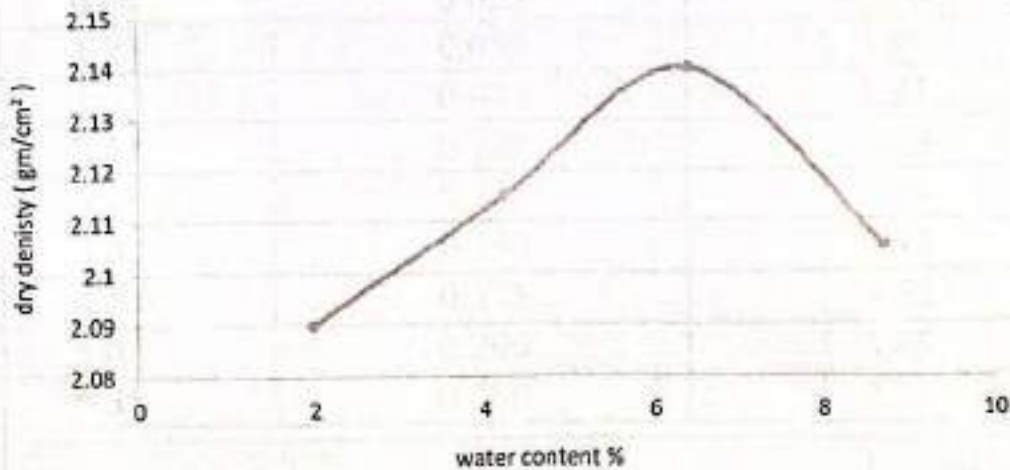
# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 26/7/2023  
Reporting Date : 30/7/2023  
Reporting No. : 05-4

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



- Max dry density (gm/cm³) : 2.14
- Optimum moisture content % : 6.4 %

Signature



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Zaraden, Cairo  
Tel & Fax: 27967231 - 27969098





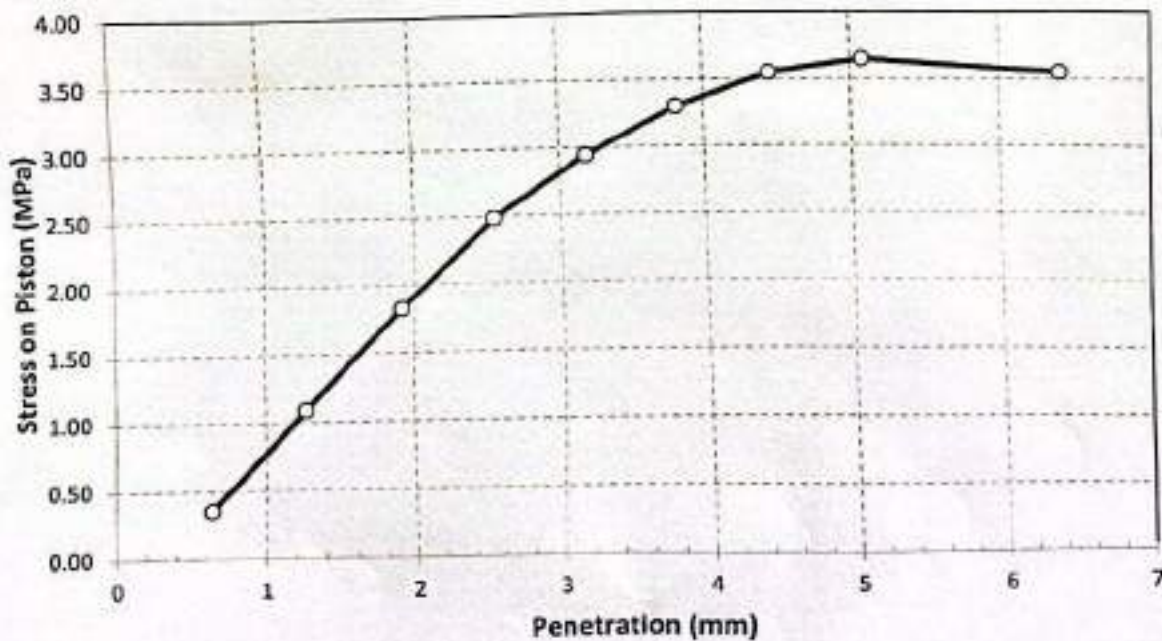
# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+100) E=32.9226620 N=25.8862030  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 22/7/2023  
Reporting Date : 26/7/2023  
Reporting No. : 05-2

## Load Penetration Curve of CBR Test

ASTM D-1883



Signature /



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Zamalek, Cairo  
Tel & Fax: 27367221 - 27363599



شركة الاستشارات  
مكتب معامل الاستشارات  
الهندسية - القاهرة



**CEL**  
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مكتب معامل الاستشارات الهندسية

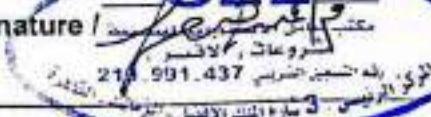
Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 15/08/2023  
Soil type : Middle Embankment  
Location : St From 641+160 To 641+300  
Level : - 3.0 M  
Report No. : 35

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+200	1370	2.19	5.8	2.07	96.7%	Comply
2	641+220	1506	2.18	5.8	2.06	96.2%	Comply
3	641+280	1378	2.23	5.8	2.11	98.4%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.14 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• Signature :    
 210 991 437

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Zamalek, Cairo  
Tel & Fax : 27367231 / 27363093



٢ شارع الملك الادل  
الزمالك القاهرة  
هاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

Dear Gentleman,

Attached here with the delivered on 4 / 8 / 2023

**Materials test**

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

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 27367293



إشعار العميل  
إشعار العميل  
إشعار العميل

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.6
37.5	1.5	89.6
25	1	83.4
19	¾	82.3
12.50	½	81.3
9.50	3/8	80.9
4.75	4	72.6
2.00	10	56.3
0.425	40	31.4

Signature

*[Handwritten Signature]*



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Zamalek, Cairo.  
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ش.م.ك. الذهبى  
الاستشارات الهندسية  
م.م.ك. الذهبى



Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	13.8

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Zamalek, Cairo.  
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شركة الملك فيصل  
الزمامك - القاهرة  
تليفون : 27367231 - 27363093

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M)  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

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

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

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3 شارع الملك الافدال  
زمالك، القاهرة  
الهاتف : 27337201 - 27363093

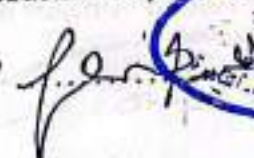
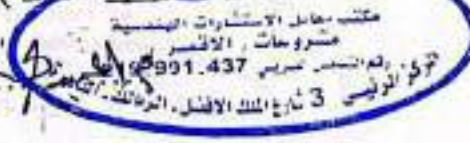
**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	A-1-b			
2.00 mm (No.10).	56.3	Max 50 %	-----	-----
0.425 mm (No. 40).	31.4	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	13.8	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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Tel& Fax : 27367231 - 27369093



شركة معامل الاستشارات  
الهندسية  
القاهرة - مصر  
تليفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٩٠٩٣



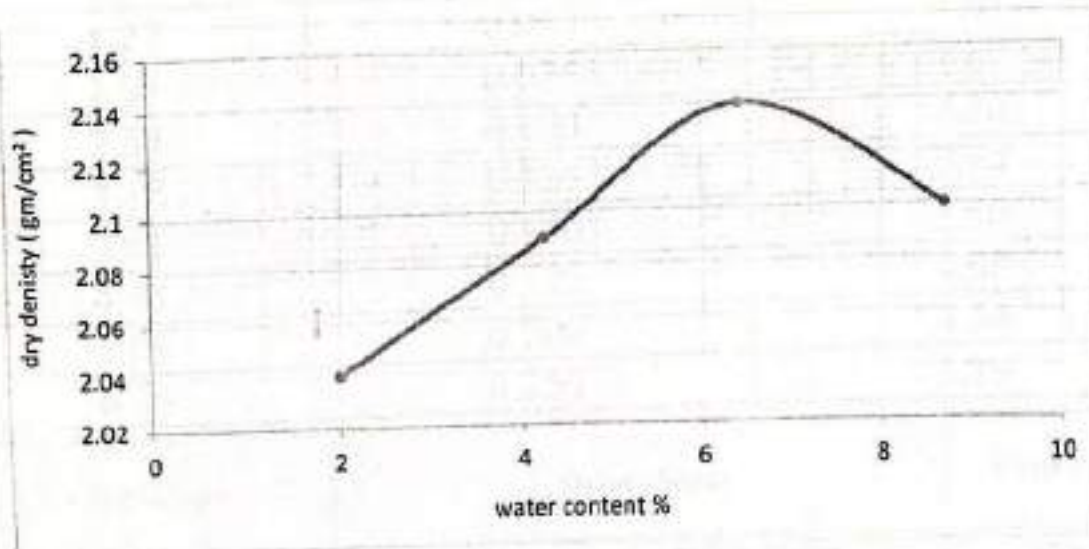
# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

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



- Max dry density (gm/cm³) : 2.14
- Optimum moisture content % : 6.4 %

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Zamalek, Cairo  
Tel & Fax : 219.901.437 - 219.901.437

IAS

ش.م.ب. المصالح العامة  
م.م.ب. القاهرة  
القاهرة - مصر

Company Name : شركة الذهبى  
Project : Electric Express Train - HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.26
1.27	0.050	1.01
1.91	0.075	1.67
2.54	0.100	2.28
3.18	0.125	2.94
3.81	0.150	3.50
4.45	0.175	4.08
5.08	0.200	4.54
6.35	0.250	5.29

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	2.28	33.1 %

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.14 (gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.
- 3- Surcharge load = 50 Kg
- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature

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Zamalek, Cairo.  
Tel & Fax : 27367231 - 27363693

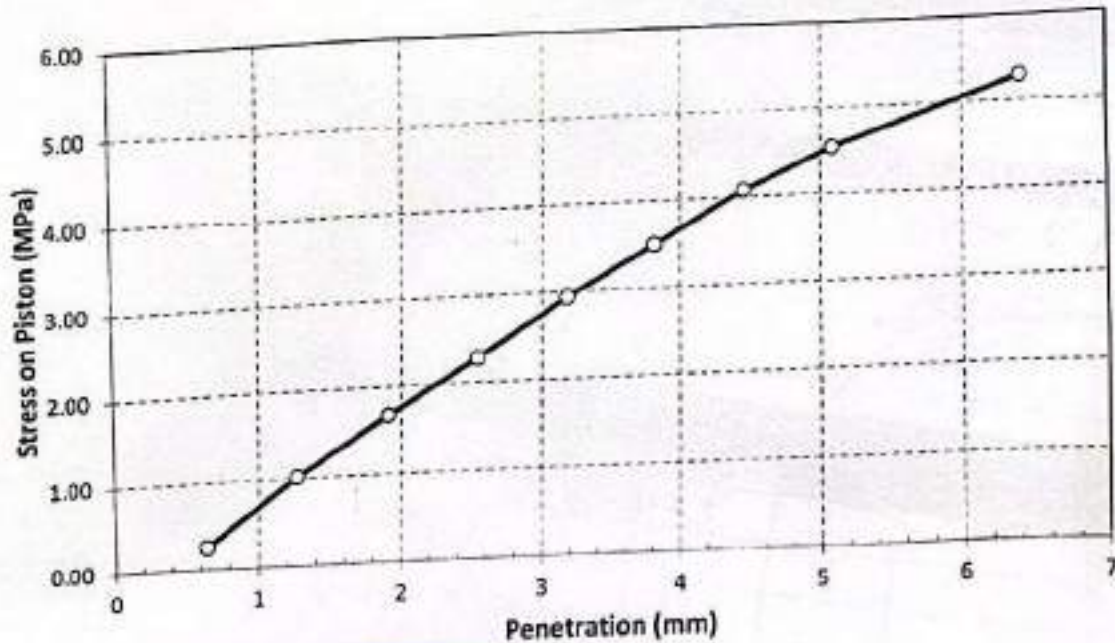


شركة الاستشارات الهندسية  
المعامل  
مكتب معامل الاستشارات الهندسية



Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-2

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



Signature   
مهندس محمد عبد الله الشحات  
الرقم القومي 239.991.437  
شارع 3 شارع الملك فيصل - الهرم

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Zamalek, Cairo  
Tel/Fax : 27367201 - 27363693



شركة الهندسة والاستشارات  
للزراعة والبيئة  
مصر - القاهرة



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 14/08/2023  
Soil type : Middle Embankment  
Location : St From 641+000 To 641+160  
Level : - 2.5 M  
Report No. : 34

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+020	1410	2.21	5.8	2.09	97.8%	Comply
2	641+070	1376	2.20	5.8	2.08	97.2%	Comply
3	641+150	1570	2.26	5.8	2.13	99.6%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.14 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• Signature /

3 El Maek El Akel Street  
Zaralek, Cairo.  
Tel& Fax : 27367231 - 27363090



\* في الملف الاخير  
الرقم القياسي  
للمقايير

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 20/08/2023  
Soil type : Middle Embankment  
Location : St From 641+000 To 641+160  
Level : - 2.0 M  
Report No. : 39

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+030	1344	2.24	5.8	2.12	99.0%	Comply
2	641+080	1438	2.23	5.8	2.11	98.6%	Comply
3	641+120	1408	2.22	5.8	2.09	97.9%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.14 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

Signature /

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Zamalek, Cairo.  
Tel& Fax : 27367231 - 27363093



شركة الملك الأفدال  
الزمالك - القاهرة  
الهاتف : 27367231 - 27363093



**Company Name** : شركة الذهبى  
**Project** : Electric Express Train – HSR From Qous To Armant  
**Location** : (ST: 641+500) E= 492410,088 N=2862759,57  
**Type of sample** : Soil Embankment ( Upper Embankment 0.0 M )  
**Delivery Date** : 4/8/2023  
**Reporting Date** : 8/8/2023  
**Reporting No.** : 04-3

Dear Gentleman,

Attached here with the delivered on 4 / 8 / 2023

### **Materials test**

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

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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Zamalek, Cairo.  
Tel & Fax: 27367211 - 27369093



شركة التأمين  
البحرية العامة  
للعقود - القاهرة  
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Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-3

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	97
25	1	90
19	¾	85.4
12.50	½	77.2
9.50	3/8	73.3
4.75	4	69.6
2.00	10	58.5
0.425	40	40.7

Signature /.....  

 The stamp is an oval shape with the CEL logo at the top. Below the logo, there is Arabic text: "مكتب الاستشارات الهندسية", "219 991 437", and "شارع الملك فيصل - القاهرة".

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ش.م.م. الملك الافضل  
الزمالك - القاهرة  
تليفون - فاكس : 27367231 - 27363093

Company Name : شركة الذهبى  
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Reporting Date : 8/8/2023  
Reporting No. : 04-3

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	14.0

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شركة البنك الافضل  
الزمالة، القاهرة  
تليفون - فاكس : 27367231 - 27363093

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Reporting No. : 04-3

**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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Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-3

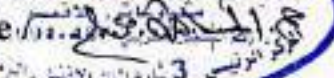
**Test Results of California Bearing Ratio on Base Materials**  
**ASTM D 1883**

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.45
1.27	0.050	1.00
1.91	0.075	1.52
2.54	0.100	2.11
3.18	0.125	2.53
3.81	0.150	2.96
4.45	0.175	3.39
5.08	0.200	3.71
6.35	0.250	4.33

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	30.6%
	6.90	2.11	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.14 (gm /cm<sup>3</sup>)  
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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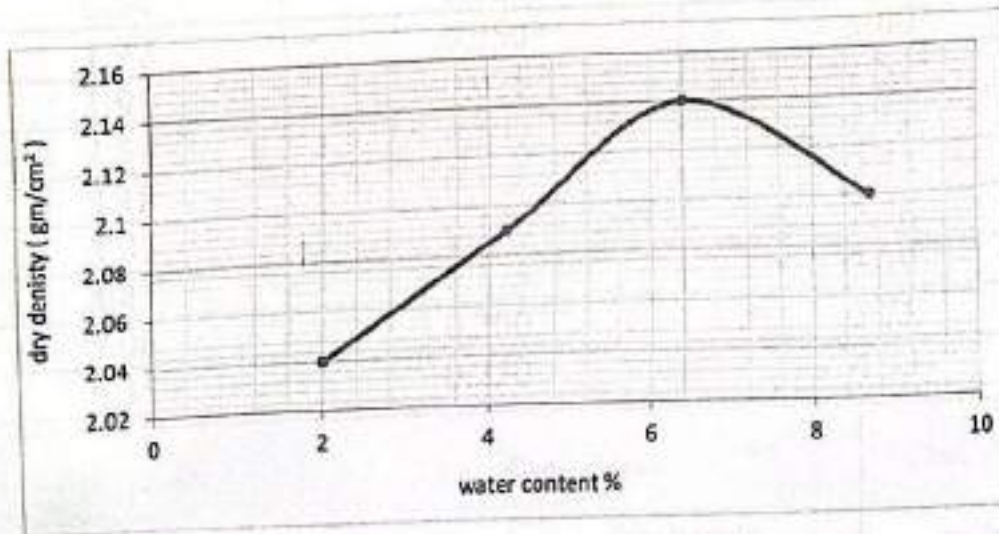
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Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
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Delivery Date : 4/8/2023  
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Reporting No. : 04-3

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



- Max dry density (gm/cm³) : 2.14
- Optimum moisture content % : 6.4 %

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Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-3

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	A-1-b			
2.00 mm (No.10).	58.5	Max 50 %	-----	-----
0.425 mm (No. 40).	40.7	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	14.0	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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الهاتف: 27367631 - 27369693

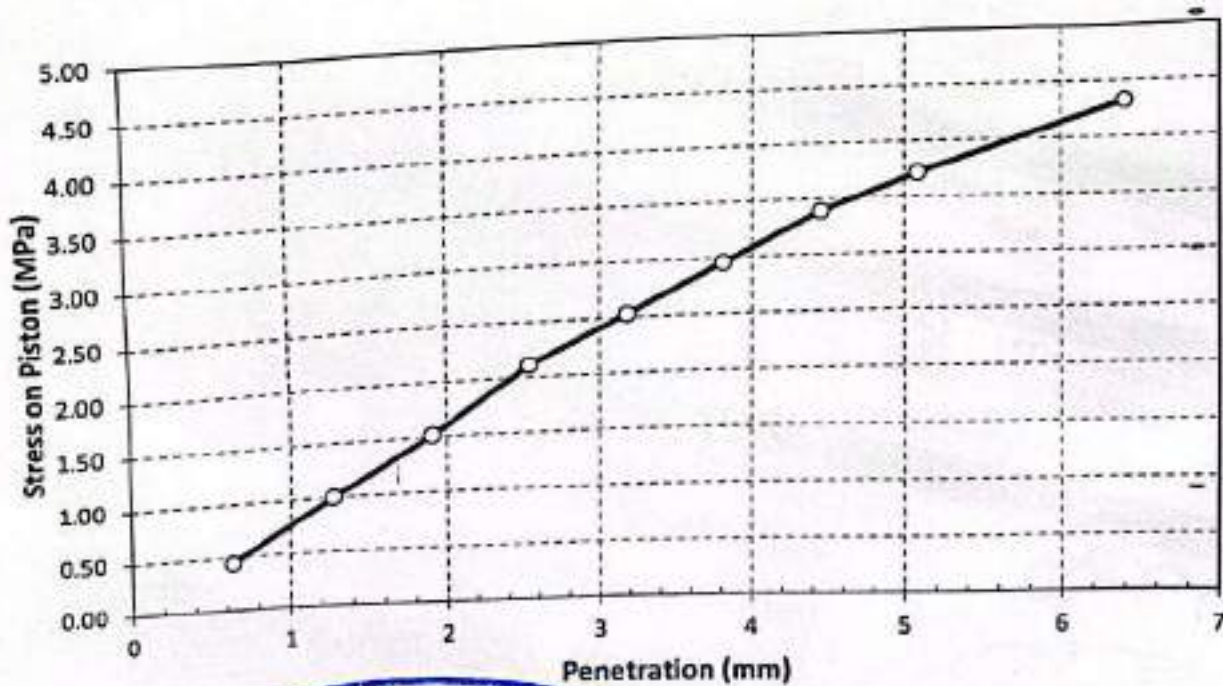


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Project : Electric Express Train - HSR From Qous To Armant  
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Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 4/8/2023  
Reporting Date : 8/8/2023  
Reporting No. : 04-3

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



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القاهرة - القاهرة  
27367231 - 27363093


Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 20/08/2023  
Soil type : Middle Embankment  
Location : St From 641+160 To 641+300  
Level : - 2.5 M  
Report No. : 40

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+190	1497	2.21	5.8	2.08	96.9%	Comply
2	641+240	1486	2.19	5.8	2.07	96.3%	Comply
3	641+280	1508	2.21	5.8	2.09	97.0%	Comply

• Degree of compaction based on proctor test dated At :

- Max. dry density = 2.15 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

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هاتف - فاكس : 27367231 - 27363093



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant -  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

Dear Gentleman,

Attached here with the delivered on 14 / 8 / 2023

**Materials test**

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

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

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Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	98.5
25	1	88.3
19	¾	77.8
12.50	½	70.3
9.50	3/8	66.7
4.75	4	61.6
2.00	10	47.8
0.425	40	28.1

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رقم الترخيص الهندسي 437  
المركز الرئيسي 3 شارع الملك الافضل - الهرم - القاهرة

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Reporting Date : 19/8/2023  
Reporting No. : 04-4

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	13.5

Signature / ..



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# CEL

Consulting Engineering Bureau & Laboratories  
مكتب محامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

## 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

Signature   
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Tel& Fax: 27367231 - 27363063



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الزمالك - القاهرة  
تليفون - فاكس : 27367231 - 27363063



# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

## Soil Classification

TEST	Results (%)	Limits according Projects Specs		
		(A-1-a)	(A-1-b)	(A-2-4)
• Group Classification	A-1-b			
2.00 mm (No.10).	47.8	Max 50 %	-----	-----
0.425 mm (No. 40).	28.1	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	13.5	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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شركة المعامل الاستشارية  
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الهاتف - الفاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

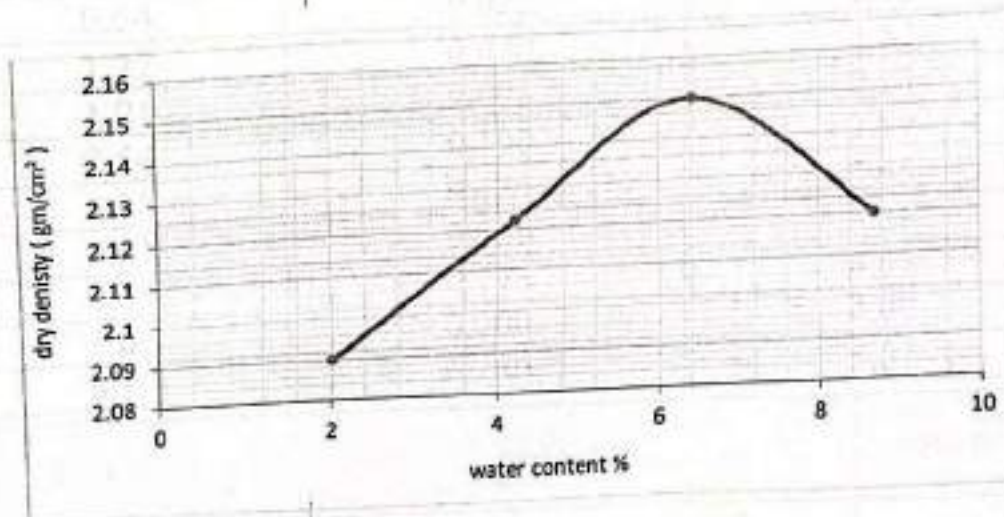
# CEL

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مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train - HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

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



- Max dry density (gm/cm³) : 2.15
- Optimum moisture content % : 6.4 %

Signature /



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تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

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

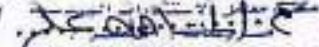
penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.75
1.27	0.050	1.52
1.91	0.075	2.23
2.54	0.100	2.99
3.18	0.125	3.65
3.81	0.150	4.21
4.45	0.175	4.67
5.08	0.200	4.97
6.35	0.250	5.07

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	43.4 %
	6.90	2.99	

**Notes:**

- Attached graph shows penetration resistance versus penetration magnitude.
- The sample was compacted to dry density of = 2.15 (gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.
- Surcharge load 4.50 Kg.
- CBR > 10 for middle and lower embankments according project spec page No 36.

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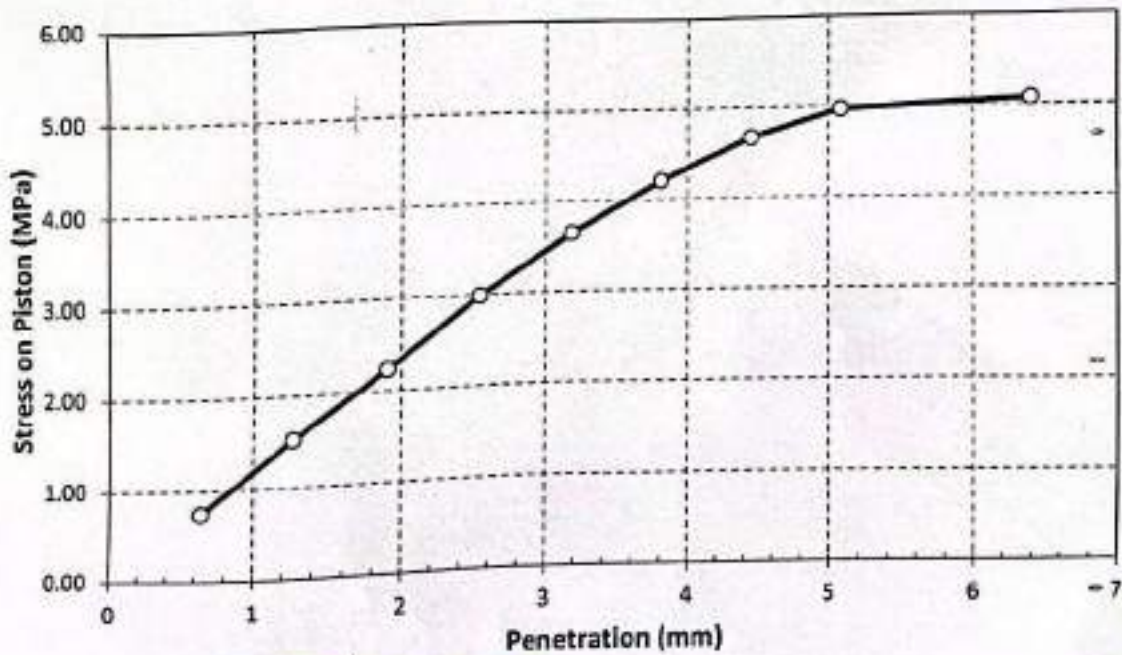


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الهاتف - فاكس : 27367231 - 27363093



Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : (ST: 641+500) E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment  
Delivery Date : 14/8/2023  
Reporting Date : 19/8/2023  
Reporting No. : 04-4

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



**CEL**  
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219 437 191  
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ش.م.ك. المالك الاهلى  
الزمالك - القاهرة  
تليفون : 27367231 - 27363093

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 03/09/2023  
Soil type : Middle Embankment  
Location : St From 641+000 To 641+160  
Level : - 1.75 M  
Report No. : 52

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+030	1644	2.29	5.5	2.17	98.4%	Comply
2	641+060	1058	2.22	5.3	2.11	95.8%	Comply
3	641+090	1065	2.23	5.5	2.12	96.3%	Comply
4	641+120	1404	2.20	5.5	2.09	95.0%	Comply
5	641+150	1647	2.20	5.3	2.09	95.0%	Comply

Degree of compaction based on proctor test dated At :

- Max. dry density = 2.20 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- 

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٢ ش الملك الافضل  
الزمالك - القاهرة  
تليفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٦٩٣



Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

Dear Gentleman,

Attached here with the delivered on 24 / 8 / 2023

**Materials test**

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

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

Signature   
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
رقم التسجيل المهنى: 219 - 594 - 537  
الوحدة الرئيسية: شارع الملك «أحمد» - الزاوية - القاهرة

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٣ شارع الملك الأفدال  
الزمالك - القاهرة  
هاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	100
37.5	1.5	98.4
25	1	92.3
19	¾	89.1
12.50	½	80.6
9.50	3/8	70.6
4.75	4	59.4
2.00	10	40.9
0.425	40	25.1

Signature:   
ممثل المكتب  
مشاريع واستشارات  
رقم التسجيل المميز 537 - 901 - 213  
البريد الإلكتروني: شارع الملكة الأميرة - الزمالك - القاهرة

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٧ شارع الملكة الأميرة  
الزمالك - القاهرة  
تليفون : ٢٧٣٦٧٢٣١ - ٢٧٣٥٣٠٩٣

# CEL

Consulting Engineering Bureau & Laboratories  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	12.5



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الهاتف - الفاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

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Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

**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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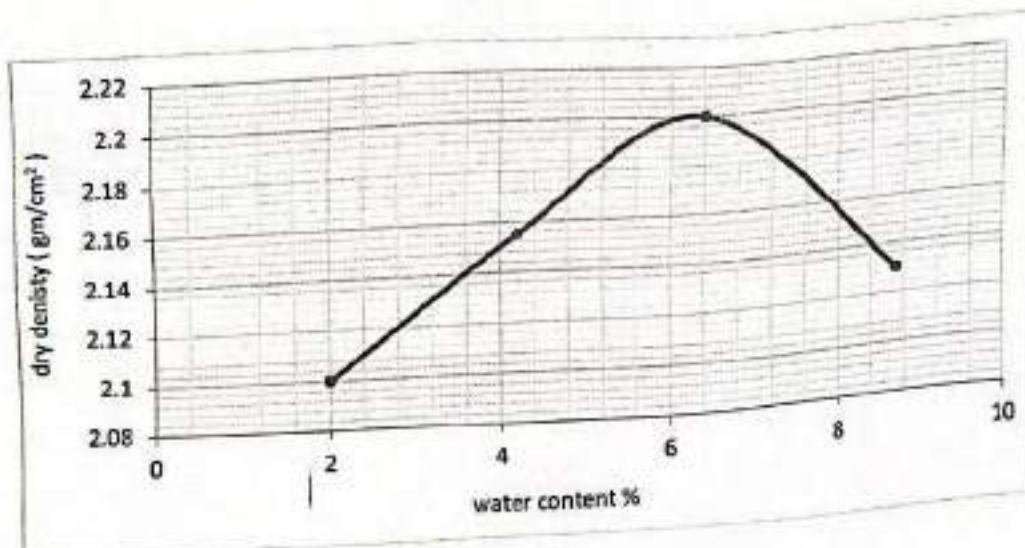


ش. المعامل الهندسية  
القاهرة - القاهرة  
التسجيل : 537 - 981 - 219



Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

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



- Max dry density (gm/cm³) : 2.20
- Optimum moisture content % : 6.4 %

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شارع الملك الأفدال  
الزمالك - القاهرة  
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٨٣

Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

**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).	40.9	Max 50 %	-----	-----
0.425 mm (No. 40).	25.1	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	12.5	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:   
مكتب معامل الاستشارات الهندسية  
مشاريع و خدمات : مصر و ليبيا  
يقوم الاستشاري بالاعتماد على : 237 - 991 - 219  
المرحلة الأولى : 3 شارع الملكة اللفاف - القاهرة - 11511

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Tel& Fax : 27367231 - 27363093



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القاهرة - القاهرة  
تليفون : 27367231 - 27363093



Company Name : شركة الذهبى  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

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

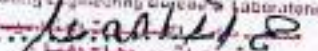
penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.30
1.27	0.050	1.42
1.91	0.075	2.43
2.54	0.100	3.45
3.18	0.125	4.41
3.81	0.150	5.12
4.45	0.175	5.73
5.08	0.200	6.04
6.35	0.250	6.24

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	50 %
	6.90	3.45	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.20 (gm /cm<sup>3</sup>)  
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 / 

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الهاتف : 27367231 - 27363093

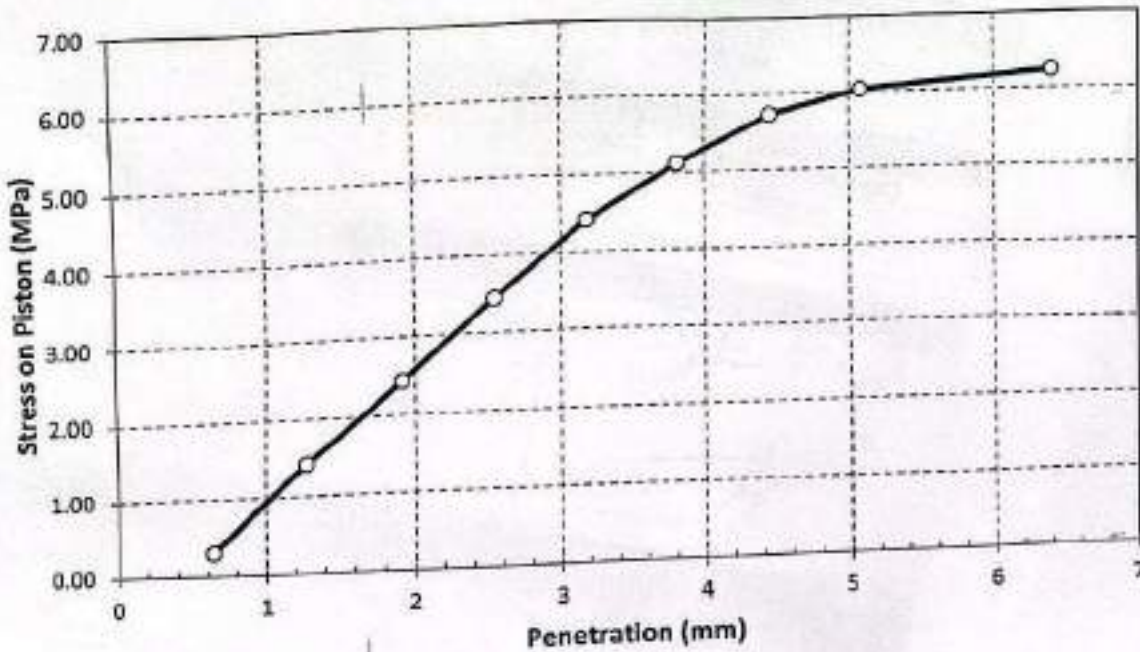


# CEL

Consulting Engineering Bureau & Laboratories  
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 : 24/08/2023  
Reporting Date : 28/08/2023  
Reporting No. : 10

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



Signature



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3 شارع الملك الأفجل - الزمالك  
القاهرة  
تليفون : 27367231 - 27363093  
فاكس : 27363093

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 07/09/2023  
Soil type : Middle Embankment  
Location : St From 641+160 To 641+300  
Level : -2 M  
Report No. : 58

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+180	1792	2.25	5.5	2.13	96.6%	Comply
2	641+230	1698	2.24	5.3	2.13	96.3%	Comply
3	641+260	1374	2.25	5.5	2.14	96.6%	Comply
4	641+290	1058	2.22	5.5	2.10	95.1%	Comply

Degree of compaction based on proctor test dated At :

- Max. dry density = 2.21 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

**CEL**  
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Signature :   
مهندس محمد عبد الحليم  
رقم الترخيص 537 - 991 - 219

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Zamalek, Cairo.  
Tel & Fax : 27367201 - 20365003

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Testing Laboratory

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القاهرة - القاهرة  
تليفون : 27367201 / 20365003







Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.6
37.5	1.5	96.1
25	1	91.3
19	¾	87.2
12.50	½	79.2
9.50	3/8	71.2
4.75	4	56.9
2.00	10	41.2
0.425	40	28.2

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٢ شارع الملك الافدال  
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الهاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	11.9

Signature /



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القاهرة - الجيزة  
شماره تليفون - فاكس : 27367231 - 27363093

Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

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

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

Signature



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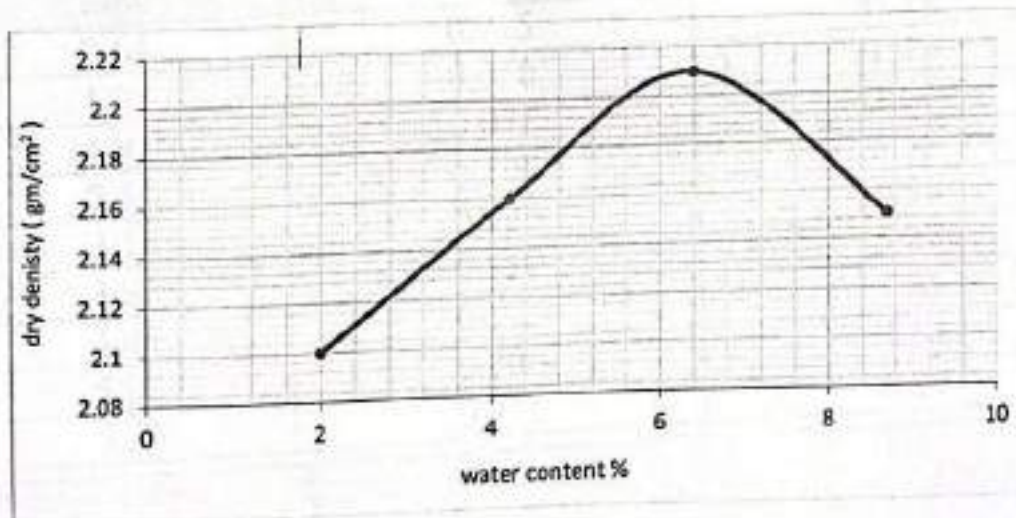


3 شارع الملك الافدال  
الزمالك - القاهرة  
الهاتف - الفاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 6.4 %

Signature / .....



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2 شارع الملك الأفدال  
الزمالك - القاهرة  
الهاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

**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	1.47
1.91	0.075	2.54
2.54	0.100	3.55
3.18	0.125	4.51
3.81	0.150	5.27
4.45	0.175	5.83
5.08	0.200	6.14
6.35	0.250	6.29

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	51.5 %
	6.90	3.55	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.21 (gm /cm<sup>3</sup>)  
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**

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Zamalek, Cairo  
Tel & Fax : 27367231 - 27367232



شركة الذهبى الهندسية  
الزمالك - القاهرة  
الهاتفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٧٢٣٢

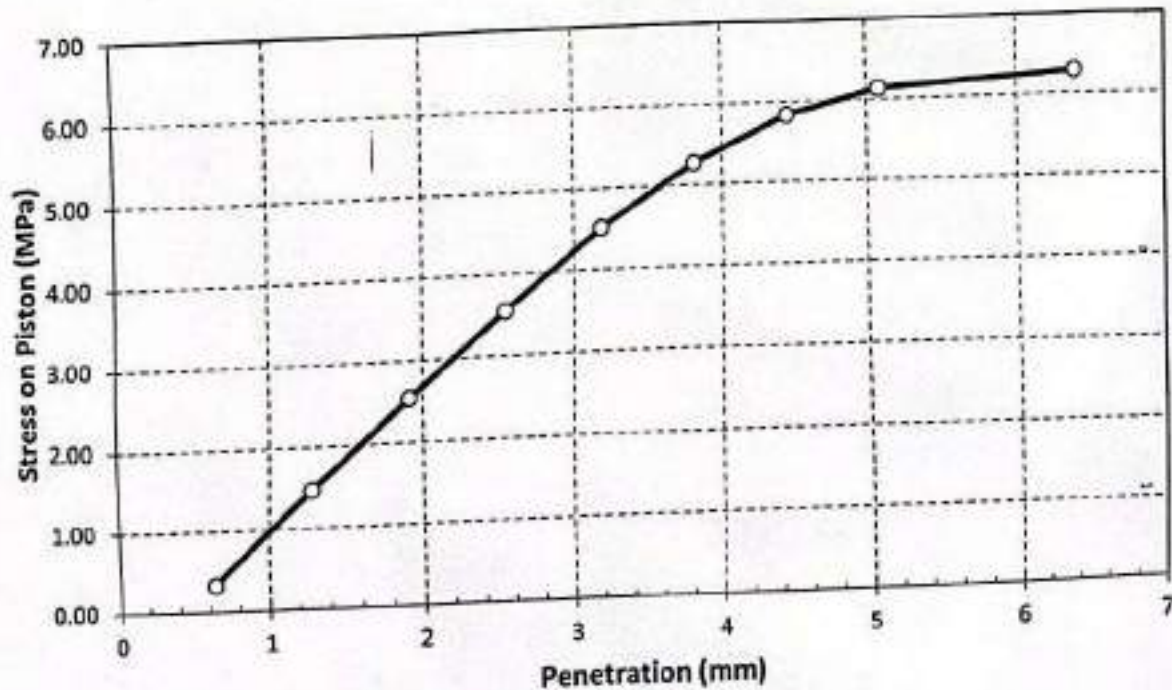


# CEL

Consulting Engineering Bureau & Laboratories  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

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



Signature /



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٢ شارع الملك الأفدال  
الزمالك - القاهرة  
تليفون : فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 12/09/2023  
Soil type : Middle Embankment  
Location : St From 641+160 To 641+300  
Level : -2 M  
Report No. : 58

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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+180	1792	2.25	5.5	2.13	97.0%	Comply
2	641+230	1698	2.24	5.3	2.13	96.8%	Comply
3	641+260	1374	2.25	5.5	2.14	97.1%	Comply
4	641+290	1058	2.22	5.5	2.10	95.6%	Comply

Degree of compaction based on proctor test dated At :

- Max. dry density = 2.20 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• **Signature**   
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Zamalek, Cairo  
Tel & Fax : 27367231 - 27363093



شركة الملك الماسري  
الزمالك القاهرة  
تليفون : 27367231 - 27363093

Company Name : شركة الذهبى  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

Dear Gentleman ,

Attached here with the delivered on 7 / 9 / 2023

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

**Materials test**

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

**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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ش. الملك الافضل  
الزمالك، القاهرة  
تليفون : 27367231 - 27363093

Company Name : شركة الذهبى  
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 : 31/08/2023  
Reporting Date : 04/09/2023  
Reporting No. : 10-2

**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).	41.2	Max 50 %	-----	-----
0.425 mm (No. 40).	28.2	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	11.8	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

  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
شروعات و صيانة و قنلة  
رقم التسجيل المسمى 537 - 991 - 219  
الشارع الرئيسى 3 شارع الملك - بالاس - الزمالة - القاهرة

3 El Malek El Afdal Street  
Zamalek, Cairo.  
Tel & Fax: 27367231 - 27363003



أشرك الملك الأفندل  
الزمالة - القاهرة  
الهاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٠٣



Company Name : شركة الذهبى  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	95.3
25	1	90.1
19	¾	84.2
12.50	½	77.2
9.50	3/8	71.5
4.75	4	59.9
2.00	10	46.3
0.425	40	28.0

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Zamalek, Cairo.  
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شارع الملك الأفندي  
الزمالك القاهرة  
الهاتف : 27367231 - 27363063

# CEL

Consulting Engineering Bureau & Laboratories  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	9.6

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3 شارع الملك الأفدال  
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هاتفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

# CEL

Consulting Engineering Bureau & Laboratories  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

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

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

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زمالك - القاهرة  
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



Company Name : شركة الذهبى  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

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).	46.3	Max 50 %	-----	-----
0.425 mm (No. 40).	28.0	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.6	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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Zamalek, Cairo.  
Tel & Fax : 219551537 - 219551537



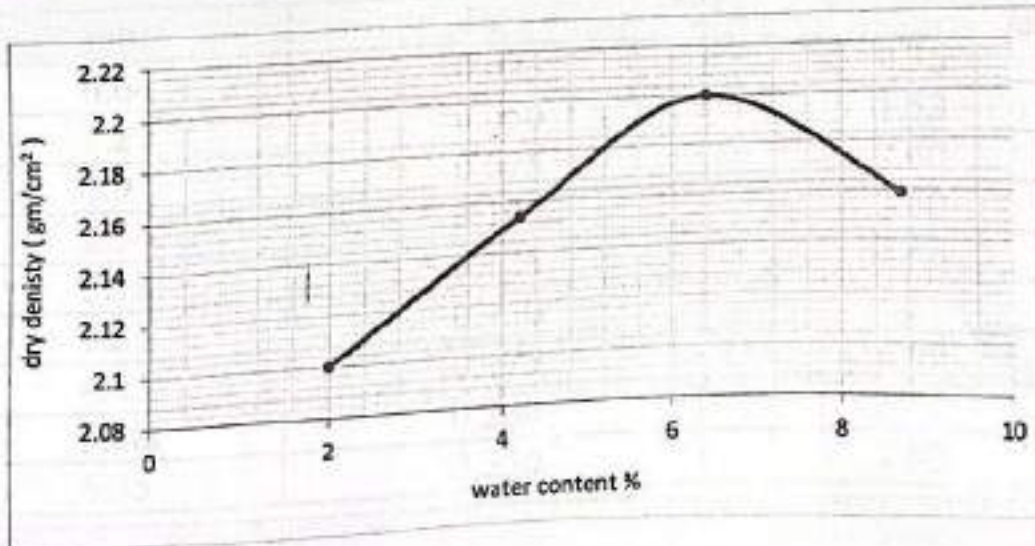
ش. الملك الادل  
الزمالك - القاهرة  
الهاتف - فاكس : 219551537 - 219551537

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

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



- Max dry density (gm/cm³) : 2.20
- Optimum moisture content % : 6.4 %

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ش. الملك الأفجل  
الزمالك - القاهرة  
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



Company Name : شركة الذهبى  
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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

**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	1.52
1.91	0.075	2.60
2.54	0.100	3.60
3.18	0.125	4.56
3.81	0.150	5.31
4.45	0.175	6.09
5.08	0.200	6.56
6.35	0.250	7.02

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	52.1 %
	6.90	3.60	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.20(gm /cm<sup>3</sup>)  
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 /

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Zamalek, Cairo.  
Te & Fax: 27367231 - 27363093



من الملك الافدال  
لزمالة - القاهرة  
الهاتفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 16/09/2023  
Soil type : Middle Embankment  
Location : St From 641+200 to 641+300  
Level : -1.5 M  
Report No. : 63


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

Test #	Station	Test Hole Volume cm <sup>3</sup>	Bulk Density gm/ cm <sup>3</sup>	Moisture Content %	Dry Density (gm/ cm <sup>3</sup> )	Degree of Compaction (%)	Acceptance
1	641+220	1826	2.24	6	2.11	95.9%	Comply
2	641+240	1440	2.23	6.4	2.10	95.2%	Comply
3	641+260	1633	2.23	6	2.11	95.7%	Comply
4	641+280	1042	2.28	5.8	2.16	98.1%	Comply

Degree of compaction based on proctor test dated At

:Max. dry density =2.19 gm/cm<sup>3</sup>

At optimum moisture content = 6.4 %

Signature: 



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ش. الملك الأهلى  
الزمالك القاهرة  
تليفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

Dear Gentleman,

Attached here with the delivered on 12 / 9 / 2023

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

**Materials test**

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

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



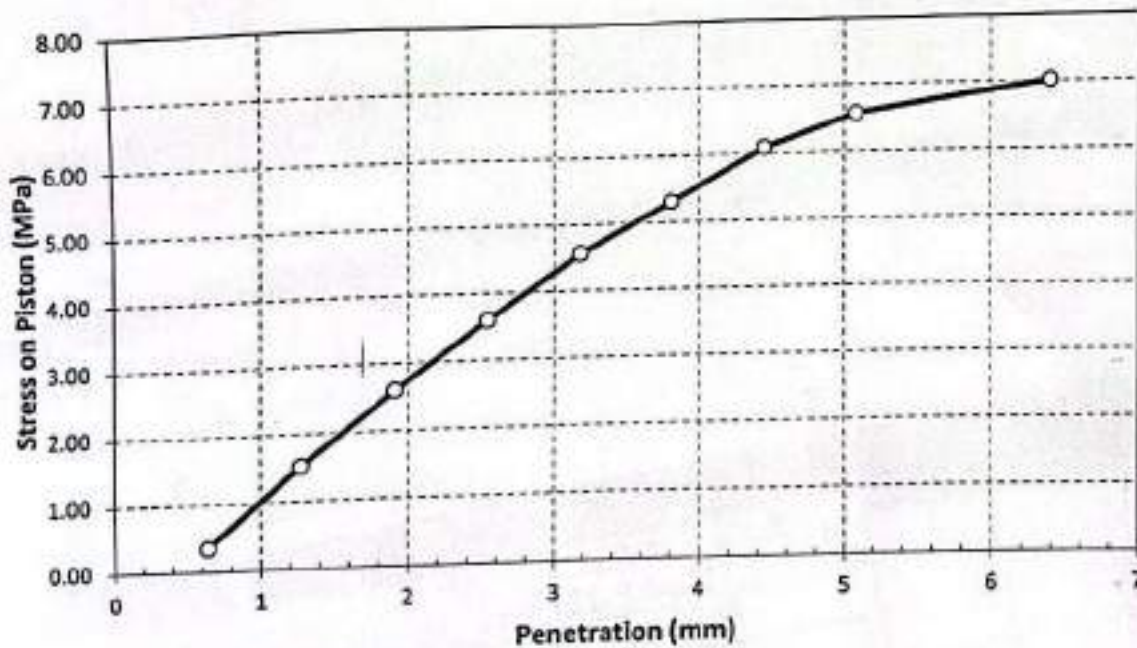
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ش.م.ك. الألفى  
القاهرة - الجيزة  
تليفون : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

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 : 7/09/2023  
Reporting Date : 11/09/2023  
Reporting No. : 10-3-2

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



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Zamalek, Cairo.  
Tel & Fax : 27367231 - 27363093



3 شارع الملك الافضل  
الزمالك - القاهرة  
الهاتف : 27367231 - 27363093



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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**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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في المكتب الرئيسي  
للإملاك - القاهرة  
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٠٩٩١

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	95.3
25	1	89.4
19	¾	84.4
12.50	½	77.7
9.50	3/8	73.3
4.75	4	58.4
2.00	10	45.9
0.425	40	27.5



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شارع الملك الأفندي  
القاهرة - القاهرة  
الهاتف - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**Materials finer than 75  $\mu$ m (no.200) sieve**  
**By washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ m (No.200)	9.9

**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية  
Signature:   
3 شارع الملك الأفديل - الزمالك - القاهرة

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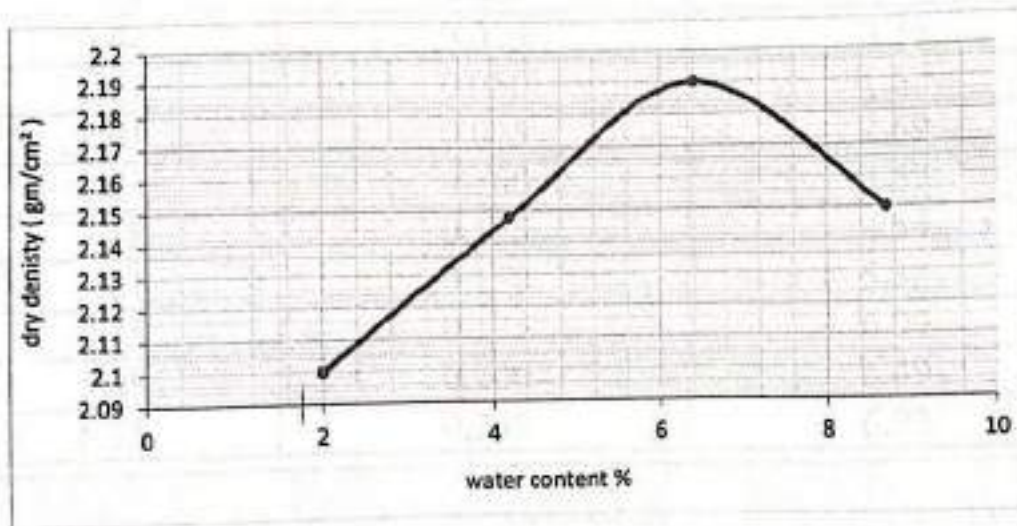


3 شارع الملك الأفديل  
الزمالك - القاهرة  
هاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣



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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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



- Max dry density (gm/cm³) : 2.19
- Optimum moisture content % : 6.4 %

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٢١ شارع الملك الأفندي  
الزمالك - القاهرة  
الهاتف : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣

Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

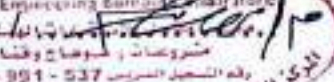
**Test Results of California Bearing Ratio on Base Materials**  
**ASTM D 1883**

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.36
1.27	0.050	1.52
1.91	0.075	2.59
2.54	0.100	3.59
3.18	0.125	4.54
3.81	0.150	5.33
4.45	0.175	6.09
5.08	0.200	6.49
6.35	0.250	6.92

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	52 %
	6.90	3.59	

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.19(gm /cm<sup>3</sup>)  
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:   
مستشار ومهندس استشارات  
رقم التسجيل المهنى 537 - 991 - 219

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Zamalek, Cairo,  
Tel & Fax : 27367231 - 27369063



شركة الملك الافريت  
الزمالك - القاهرة  
تليفون - فاكس : 27367231 - 27369063



Company Name : شركة الذهبى  
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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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).	45.9	Max 50 %	-----	-----
0.425 mm (No. 40).	27.5	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.9	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**   
مكتب معامل الاستشارات الهندسية  
شروعات و سواج وقتة  
رقم الترخيص 219 - 991 - 537  
القرى الرئيس 4 شارع الملك الافضل - الزمالك - القاهرة

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Zamalek, Cairo.  
Tel & Fax: 27367231 - 27363693

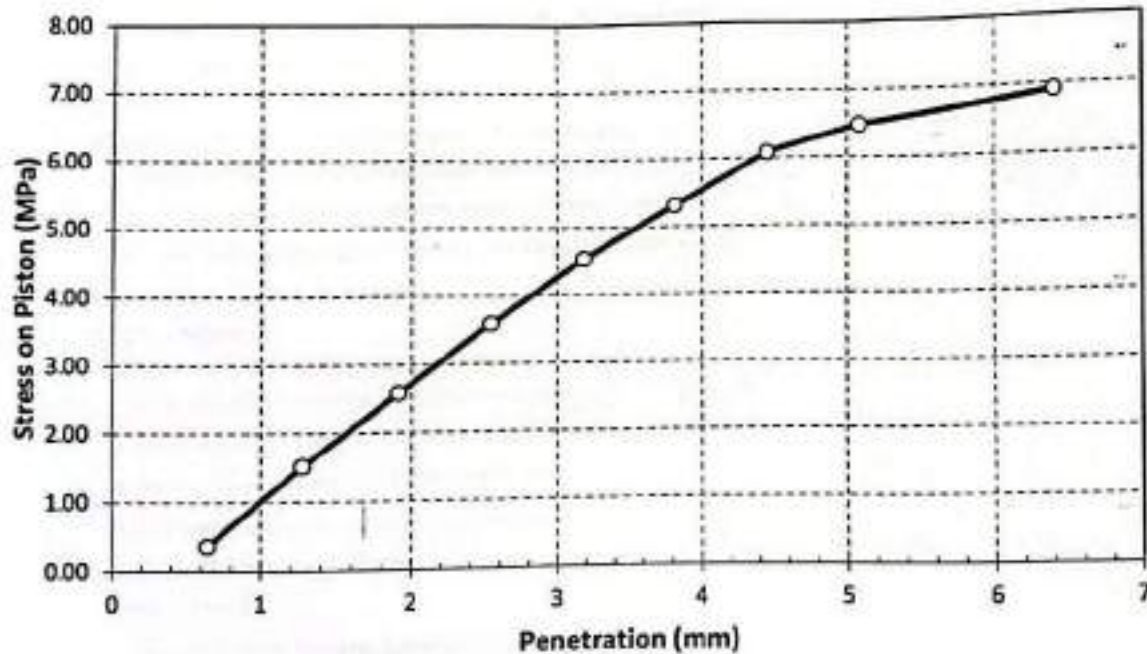


ش الملك الافضل  
الزمالك - القاهرة  
تليفون - فاكس : 27367231 - 27363693



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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

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



**CEL**  
Consulting Engineering Bureau & Laboratories  
Signature: [Handwritten Signature]  
رقم التسجيل الموحّد: 249 - 991 - 537  
المركز الرئيسي: 3 شارع الملك «الأقمل» - الزمالك - القاهرة

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



2 من الملك الأقمل  
الزمالك - القاهرة  
تلفون : ٢٧٣٦٣٠٩١ - ٢٧٣٦٧٢٣١

#### Report

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

#### Report

- Type of soil : Original earth
- Job requiremet :  $E_{v2} > 40 \text{ MPa}$

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
date of measurement	: 16/09/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

#### Evaluation and representation of results

Test No.	Station		Location	Level ( m )	First Cycle	Second Cycle	$E_{v2}/E_{v1}$ Ratio
	From	To			$E_{v1}$ ( MPa )	$E_{v2}$ ( Mpa )	
1	841+200	841+300	841+240	-1.5	33.9	140.7	4.15

Signature / 
  
 215 - 991 - 937

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 الزمالك - القاهرة  
 تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٢  
[www.cel-egypt.com](http://www.cel-egypt.com)

Company : شركة الذهبى للمقاولات والتوريدات المعمورة

Project : Electric Express Train - Sector (5) - Qous to Arment.  
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements  
Test Location : Station 641+200 to 641+300  
Station : 641+240  
Level : +1.5  
Test Date : 10/09/2023  
Report Date : 19/09/2023  
Type of soil : Original earth  
Report No. : 1

Dear Gentlemen,

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

#### Apparatus

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

#### Test Procedures:

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



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# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية  
مشروعات محافظات الوجه القبلي

Company Name : شركة الأهرام للمقاولات و التوريدات المعمورة  
Project : Electric Express Train - Sector (B) - Qous to Asment  
Test Date : 16/09/2023  
report date : 19/09/2023  
Station : 641+240  
Test No. : 1

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

**Loading Stage (1)**

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.30	0.70	19.21	0.79	0.74
2	1.66	18.65	1.35	18.55	1.45	1.40
3	2.50	18.03	1.97	17.86	2.14	2.06
4	3.33	17.65	2.35	17.35	2.65	2.50
5	4.17	17.08	2.92	17.18	2.82	2.87
6	5.00	16.53	3.47	16.20	3.80	3.64

**Unloading Stage (1)**

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
1	2.50	17.63	2.37	16.33	3.67	3.02
2	1.25	17.75	2.25	16.58	3.42	2.84
3	0.100	17.95	2.06	17.08	2.92	2.49

**Loading Stage (2)**

Loading	Stress Kg/cm2	Dial 1	Settlement	Dial 2	Settlement	Average
			mm		mm	
0	0.83	17.82	2.18	16.83	3.17	2.68
1	1.66	17.78	2.22	16.62	3.38	2.80
stress is reached.						
2	2.50	17.64	2.38	16.45	3.55	2.90
3	3.33	17.58	2.42	16.31	3.69	3.06
4	4.17	17.43	2.57	16.12	3.89	3.23



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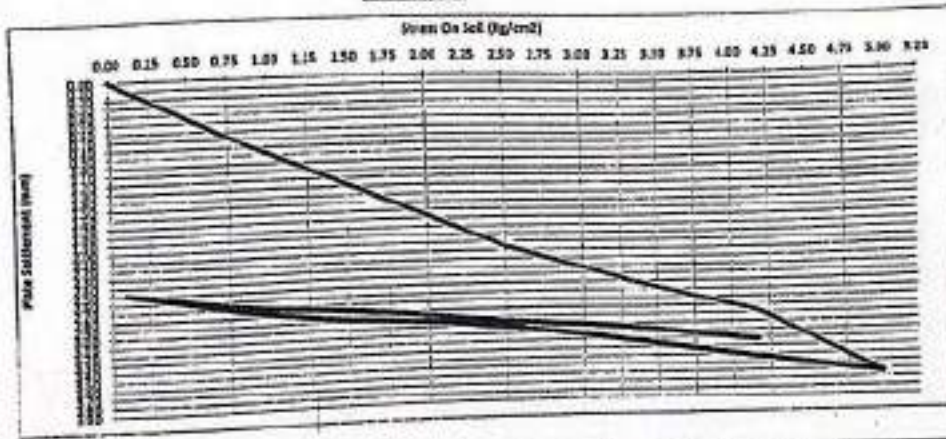


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Company Name  
Project  
Test Date  
report date  
Station  
Test No.

شركة الأجيال للمقاولات والتوريدات العمرية :  
Electric Express Train - Sector (5) - Qous to Arment  
16/09/2023  
19/09/2023  
641+240  
1

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



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm²)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.74	1.40	2.01	2.50	2.87	3.84

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm²)	5.00	2.50	1.250	0.10
Settlement (mm)	3.84	3.02	2.84	2.49

D (mm) = 300	S1 (mm) = 1.27	S2(mm) = 2.67	ΔS = 1.30
Ev1 (MPa) = 18.75 D³ ΔS / JAS	33.9		

Ev2/Ev1 = 4.15

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm²)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	2.49	2.68	2.86	2.96	3.16	3.23

D (mm) = 100	S1 (mm) = 2.71	S2(mm) = 1.09	ΔS = 0.11
Ev2 (MPa) = 18.75 D³ ΔS / JAS	140.7		

Ev1 = Modulus of deformation during the loading stage.  
Ev2 = Modulus of deformation during the Reloading stage.  
D = Plate diameter (mm)  
D1 = The difference between 0.3 and 0.7 from the maximum loading (stress) (kg/cm²)  
ΔS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



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# CEL

Consulting Engineering Bureau & Laboratories

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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

Materials finer than 75  $\mu$ m (no.200) sieve  
By washing ASTM D-1140.

Test	Results (%)
Percentage of material finer than Sieve Size 75 $\mu$ M (No.200)	9.9

Signature /.....



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شركة الهندسة  
الرمال القاهرة  
شعار : ٢٠١٦/٢٠١٧ - ٢٠١٧/٢٠١٨

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Consulting Engineering Bureau & Laboratories

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 : 08/09/2023  
Reporting Date : 12/09/2023  
Reporting No. : 10-4

**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

Signature



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Zaria, Cairo  
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شركة الهندسة والاستشارات  
البريد الإلكتروني: info@cel.com.eg  
الهاتف: 27367531 - 27363063



محضر اعتماد كميات



التاريخ: 15/10/2023  
اسم المشروع: مشروع القطر الكهربائي السريع (6 أكتوبر - أسوان - أبو سمبل) القطاع الخامس

قامت شركة برليات كونفولت للاستشارات الهندسية المساحية (استشاري الأعمال المساحية لهيئة الطرق والكباري)

باعتماد الكميات الملقة الخاصة بشركة الزهبي للمقاولات

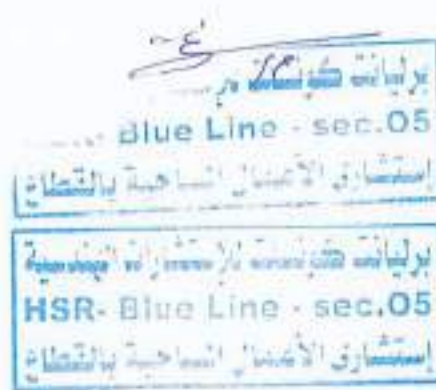
م	من المحطة رقم	إلى المحطة رقم	التصنيف	الكمية بالمتر المكعب	الملاحظات
1	841+000	641+240	أعمال الردم	24219.3	أعمال ردم على (REV05)
إجمالي الكمية				24219.3	

حضر جاري (1)  
المرفقات:  
استلام ميزانية شبكية  
قطاعات عرضية  
شيت اكسيل موضح به الكميات

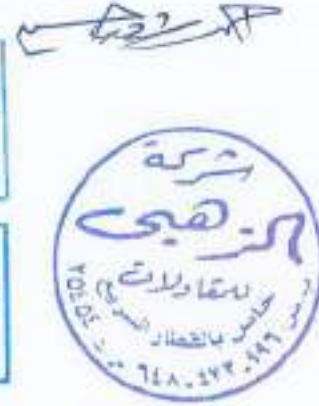
استشاري / مكتب سبكتروم



استشاري المساحة / مكتب برليات



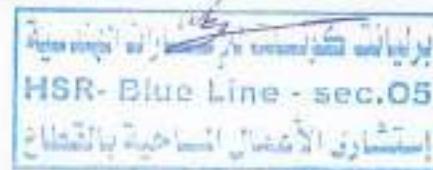
مهندس الشركة المنفذة





حصر كميات الردم مستخلص جاري (1) شركة الذهبى  
(637+952-643+863) مشروع القطار السريع القطاع  
الخامس (قوص / ارمنت)

Station	Fill Area (Sq.M.)	Fill Volume (Cu.M.)	Cum. Fill Vol. (Cu.M.)
641+000.00	94.49	944.87	944.87
641+020.00	95.4	1,898.90	2,843.77
641+040.00	95.55	1,909.51	4,753.27
641+060.00	94.56	1,901.11	6,654.38
641+080.00	94.19	1,887.53	8,541.91
641+100.00	90.48	1,846.67	10,388.58
641+120.00	100.47	1,909.43	12,298.01
641+140.00	92.09	1,925.51	14,223.52
641+160.00	89.85	1,819.36	16,042.88
641+180.00	89.88	1,797.28	17,840.16
641+200.00	92.52	1,824.02	19,664.17
641+220.00	117.16	2,096.84	21,761.01
641+240.00	128.67	2,458.27	24,219.28
اجمالي الكمية بالمتر المكعب		24219.3	







**OWNER**  
Ministry of Transportation  
National Authority for Tunnels (NAT)

**OWNER**  
General Authority for Roads, Bridges and Transport

**Project Name**  
ELECTRIC EXPRESS TRAIN (HIGH-SPEED RAIL)  
SECTION (FROM QUS TO ARMAUT)  
STATION 637+952 - STATION 715+824.88

# KEY PLAN



SECTION (FROM QUS TO ARMAUT)  
STATION 637+952 - STATION 715+824.88

NO	DATE	Drawing Name	Drawn By
1	10/2023	0700-SEC	Abdelhakim

\*All dimensions are in meters

List of cross-sec Expression

Existing Ground Level	
Proposed Sub-ballast level	

Owner consultant



Owner Consultant



Contractor



**Drawing Name**  
Cross-sec for HSR OCTOBER - ASWAN section 5  
EL-ZAHABY COMPANY  
from km 637+952 to 643+863

Drawing scale  
H/L (1:1000)  
V/L (1:100)

Drawing NO  
HSR - SEC 5 - cross-sec- (1)







Owner  
Ministry of Transportation  
National Authority for Tunnels (NAT)

Project Name  
ELECTRIC EXPRESS TRAIN (HIGH-SPEED RAIL)  
SECTION (FROM QUS TO ARMAUT)  
STATION 638+110.13 - STATION 725+624.83

# KEY PLAN



SECTION (FROM QUS TO ARMAUT)  
STATION 638+110.13 - STATION 725+624.83

DATE	Revised Name	Revised Sheet
9/2023	01000-000	Armed Sheet

\*All dimensions are in meters

List of cross-sec Expression

Existing Ground Level	
Proposed sub-ballast level	

OWNER consultant	
GP&B T Consultant	
Contractor	EL-ZAHABY

Drawing Name  
cross-sec for HSR OCTOBRE - ASWAN section 5  
EL-ZAHABY COMPANY  
from km 637+952 to 643+863

Drawing scale  
H2 (1:1000)  
V1 (1:100)

Drawing NO  
HSR - SEC 5 - cross-sec- (1)







<b>Owner</b> Ministry of Transportation National Authority for Tunnels (NAT)	
<b>Owner</b> General Authority for Roads, Bridges and Transport	
<b>Project Name</b> ELECTRIC EXPRESS TRAIN (HSR-SPED KAL) SECTION (FROM QUS TO ARMAN) STATION 629+110.32 - STATION 715+624.63	
<b>KEY PLAN</b> 	
SECTION (FROM QUS TO ARMAN) STATION 629+110.32 - STATION 715+624.63	
NO.	DATE
0001	2023-04-04
*All dimensions are in meters.	
List of cross-section Expression	
Owner Consultant	
GART Consultant	
Contractor	EL-ZAHABY
Drawing Name cross-section for HSR OCTOBRE - ASWAN section 5 EL-ZAHABY COMPANY from km 637+952 to 643+863	
Drawing scale HZ (1:1000) V (1:100)	Drawing NO HSR - SEC 5 - cross-sec- (1)







**OWNER**  
Ministry of Transportation  
National Authority for Tunnels (NAT)

**OWNER**  
General Authority for Roads, Bridges and Transport

**Project Name**  
ELECTRIC EXPRESS TRAIN (HIGH-SPEED RAIL)  
SECTION (FROM QUS TO ARBAMUT)  
STATION 628+130.33 - STATION 710+624.43

**KEY PLAN**



SECTION (FROM QUS TO ARBAMUT)  
STATION 628+130.33 - STATION 710+624.43

NO.	DATE	Drawing Name	Revised Details
5/2023	07/10/2023		

\*All dimensions are in meters

**List of cross-sec Expression**

Existing Ground Level
Proposed sub-ballast level

OWNER consultant



GRABIT Consultant



Contractor

EL-ZAHABY



Drawing Name

cross-sec for HSR OCTOBRE - ASWAN section 5  
EL-ZAHABY COMPANY  
from km 637+952 to 643+863

Drawing scale  
H2 (1:10000)  
V2 (1:1000)

Drawing NO  
HSR - SEC 5 - cross-sec - (1)





## مقايضة معدلة



أعمال إنشاء الجسر الترابي للطريق الكهريائي السريع (أوسمبل)

من محطة 110.13 + 629 حتى محطة 624.63 + 715 بطول 86.5145 كم

تنفيذ شركة / الذهبي يوسف للمقاولات العمومية من محطة 640+578.67 حتى 641+235.34 بطول 656.67 م

رقم البند	بيان الأعمال	الوحدة	الكمية	سعر الوحدة	الإجمالي
1	أعمال الإنشاء والتجهيز				
1-1	بشور السطح أعمال تجهيز الموقع من الإنشاء والعمارة والمطبات في مناطق ذات الطبيعة الزراعية الكثيفة بحجم حتى 30 سم و التخلص منها بالمقالب العمومية وذلك لمسافة حتى 500 متر تمهيدا لأعمال الرفع المسامي لتكامل حدود المشروع طبقا للشروط والمواصفات وتعليمات المهندس المشرف يتم احتساب علاوة 0.30 جنيه لكل 1 كم	2م	8,333	6.00	50,000
1-2	بشور المكعب أعمال تكشير وإزالة المسطحات المنهارة بالأسفل العالي في الأماكن التي يحددها المهندس المشرف ونقل ناتج التكشير خارج الموقع وتوسط مسافة النقل حتى 10 كم وعمل ما يلزم تجهيز العمل طبقا لكراسة الشروط ومواصفات وتعليمات المهندس المشرف وفي حالة زيادة مسافة نقل ناتج التكشير عن 10 كم من محور الطريق يتم حساب 1 جنيه لكل كيلومتر لزيادة في التخلص	3م	89	61.00	5,429
2	أعمال الحفر				
2-1	بشور المكعب أعمال حفر باستخدام المعدات الميكانيكية لتسوية أنواع التربة بما فيها التربة الصخرية وتسوية لسطح باللات التسوية وإرشاد بالبنية الأساسية للوصول إلى سدة الرطوبة المطلوبة ولتأكد الجيد بالمراسم للوصول إلى أقصى كثافة جافة (95% من الكثافة الجافة القصوى) ومعمل على التربة لتسوية ونقل الأتربة الزائدة لمسافة 500 متر من محور الطريق ويتم التنفيذ طبقا للمواصفات التصميمية والمواصفات الفنية المتوسطة والرسومات التفصيلية المعتمدة والتد بجمع مستحاثات طبقا لأصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف -علاوة 1 جنيه لكل مسافة نقل ناتج الحفر وتصبح 1.1 جنيه لكل إنشاء من 4/5/2023 -علاوة زيادة السو لار 0.6 جنيه لكل إنشاء من 4/5/2023	3م	77	23.00	1,778
	علاوة مسافة النقل 1 كم	3م	77	1.10	85
	علاوة زيادة السو لار	3م	77	0.60	46
2-2	بشور المكعب أعمال حفر باستخدام المعدات الميكانيكية في التربة المشايكة جدا التربة الصخرية (بإستخدام البلووزر) وتسوية السطح باللات التسوية وإرشاد بالبنية الأساسية للوصول إلى سدة الرطوبة المطلوبة ولتأكد الجيد بالمراسم للوصول إلى أقصى كثافة جافة (95% من الكثافة الجافة القصوى) ومعمل على التربة لتسوية ونقل الأتربة الزائدة لمسافة 500 متر من محور الطريق ويتم التنفيذ طبقا للمواصفات التصميمية والمواصفات الفنية المتوسطة والرسومات التفصيلية المعتمدة والتد بجمع مستحاثات طبقا لأصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف -علاوة 1 جنيه لكل مسافة نقل ناتج الحفر وتصبح 1.1 جنيه لكل إنشاء من 4/5/2023 -علاوة زيادة السو لار 0.7 جنيه لكل إنشاء من 4/5/2023	3م	7,760	26.00	201,760
	علاوة مسافة النقل 1 كم	3م	7,760	1.10	8,536
	علاوة زيادة السو لار	3م	7,760	0.70	5,432

*Handwritten signature*





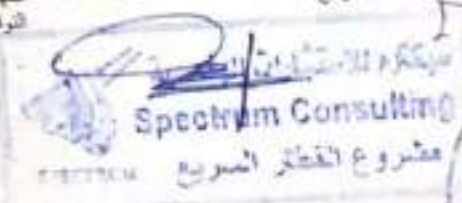
 		 		مقاييس معدلة	
<p>أعمال إنشاء الجسر الثاني للقطار الكهربائي السريع ( أكتوبر / أوسيجيل )</p> <p>من محطة 110+629 حتى محطة 624.63 + 715 بطول 86.5145 كم</p> <p>تتعلق شركة / الذهبى يوسف للمقاولات العمومية من محطة 640+578.67 الى 641+235.34 بطول 656.67 م</p>					
رقم البند	بيان الأعمال	الكمية	سعر الوحدة	الأجمالي	
6	أعمال إنارة الجسور				
1-6	بالمسح سطح نوربه وتركيب طبقة من السطح الصمغى غير متشاكل مسوره الداعل لا يقل عن 10% ويتم تنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والتدعيم جميع مشتعلاته طبقا لمواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف	2م			
1-1-6	نات وزن لا يقل عن 200 م/م	11	31.00	344	
2-1-6	نات وزن لا يقل عن 300 م/م	11	43.00	478	
3-1-6	نات وزن لا يقل عن 400 م/م	96	60.00	3,333	
2-6	بالمسح سطح نوربه وتركيب طبقة من السطح الصمغى غير متشاكل مسوره الداعل لا يقل عن 10% ويتم تنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والتدعيم جميع مشتعلاته طبقا لمواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف	2م			
1-2-6	نات فود شد 20 كاربون في الاتحافين	11	44.00	489	
2-2-6	نات فود شد 30 كاربون في الاتحافين	83	47.00	3,885	
7	الاطلاق الترميمية / الترميم الترميمية				
1-7	بالمسح السطح أصل نوربه وصب خرسانة خالية بسك 15 سم لإرتفاع 10 متر وتسي لمعالجة الإكثاف والعيول الجارية تكون من 0.8 م من دولوميت مشروح 3م 0.4م رمل حرش والإصافات طبقا لتعليمات الإنشائي (غير حسيلا) على أن يكون السطح نظيف ومحمول وأقل من خالي من التوائب والطفلة والألاح والمواد الغريبة مع وضع قود (بالقاسل) بسك 2سم إطلافا لتعليمات الإنشائي والتدعيم يعمل تجهيز واستعمال حاسب القرية لمعالجة أسفل البلاطة للوصول الى التشطيب المناسب على أن تحقق الخرسانة إجهاد لا يقل عن 250 كغم / سم2 وتتطلب السطح وعلى القواسل مقلوب من الرمل والتدعيم طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والتدعيم جميع مشتعلاته طبقا لمواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف	2م	12,573	433.00	5,444,105
2-7	بالمسح السطح أصل نوربه وصب خرسانة خالية لكافة قديمه سطره وطويه للإكثاف والعيول الجارية تكون من 0.8 م من دولوميت مشروح 3م 0.4م رمل حرش والإصافات طبقا لتعليمات الإنشائي (غير حسيلا) على أن يكون السطح نظيف ومحمول وأقل من خالي من التوائب والطفلة والألاح والمواد الغريبة مع وضع قود (بالقاسل) بسك 2سم إطلافا لتعليمات الإنشائي والتدعيم يعمل تجهيز واستعمال حاسب القرية لمعالجة أسفل البلاطة للوصول الى التشطيب المناسب على أن تحقق الخرسانة إجهاد لا يقل عن 250 كغم / سم2 وعلى القواسل مقلوب من الرمل والتدعيم طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والتدعيم جميع مشتعلاته طبقا لمواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف	3م	1,405	2,685.00	3,772,425
				الأجمالي	
				19,959,324	



مهندس هيئة الطرق والكباري  
(المعلقة الثامنة - قنا)  
المهندس /  
التوقيع /

مدير المشروع (الإنشائي)  
المهندس /  
التوقيع /

مهندس الشركة الممولة  
المهندس /  
التوقيع /



تفليد شركة / الذهبي يوسف للمقاولات المعمارية من منطقة 040+578.67 إلى 041+235.34 بطول 656.07 م.

