

## السيد المهندس / رئيس قطاع التنفيذ والمناطق

تحية طيبة وبعد ،،،،

نتشرف أن نرفق لسيادتك عدد ١ مقياسة معدلة ٢ لمشروع اعمال انشاء الجسر الترابي للقطار الكهربائي السريع ٦ أكتوبر  
أبوسمبل (القطاع الخامس) من الكم ٥٧٩ + ٦٤٠ حتى الكم ٢٣٦ + ٦٤١ على ان تراجع الأسعار بمعرفة الإدارة بالقاهرة .  
اعداد المكتب الاستشاري سبكترم للاستشارات الهندسية وعلي مسئوليته .

تنفيذ شركة الذهبى للمقاولات

برجاء التكرم بالعلم والتوجيه باللازم

وتفضلوا بقبول وافر التحية والإحترام ،،،،



رئيس الإدارة المركزية

مهندس / محمد حسن  
عماد حسين

تحريرا فى ٢٠٢٣/١٢/٢٦

المرفقات / عدد ( ١ ) مقياسة



الهيئة العامة للطرق والكبارى

وزارة النقل

مقايصة معدلة 2 ( جزئية لبنود لأعمال )

مشروع : الجسر الترابى للقطار السريع ( أكتوبر / أبو سمبل )

القطاع الخامس من الكم 629 +110.13 إلى الكم 715+624.63 بطول 86.52 كم

من إحداثى E 489929.6671 و N 2874215.5671

إلى إحداثى E 440168.6522 و N 2817778.3175

إستشارى القطاع سيكترم للإستشارات الهندسية د . م . / عماد الدين نبيل

تنفيذ الشركة : / الذهبى للمقاولات فئة : الرابعه بقيمة : مليون

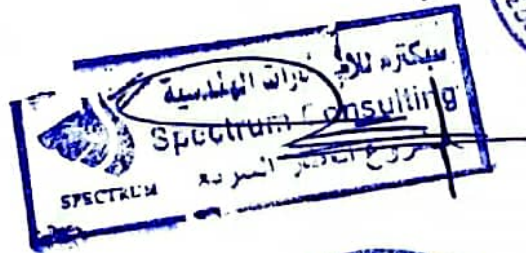
من الكم 640+579 إلى الكم 641+236 بطول 657 م

مليون 19,959,325



المقاول /

الإستشارى /



لم

المنطقة الثامنة بقنا /



من محطة 110.13 + 629 حتى محطة 624.63 + 715 بطول 86.5145 كم  
تنفيذ شركة / الذهبى يوسف المقاولات العمومية من محطة 610.570 + 629 حتى محطة 624.63 + 715 بطول 86.5145 كم

10

الأجمالي

المهندس / عماد حسين  
التوقيع

الموافق /  
التوقيع /

مجلس القضاء  
الاستئنافي  
الدرجة الأولى  
العدد ١٠٠٠

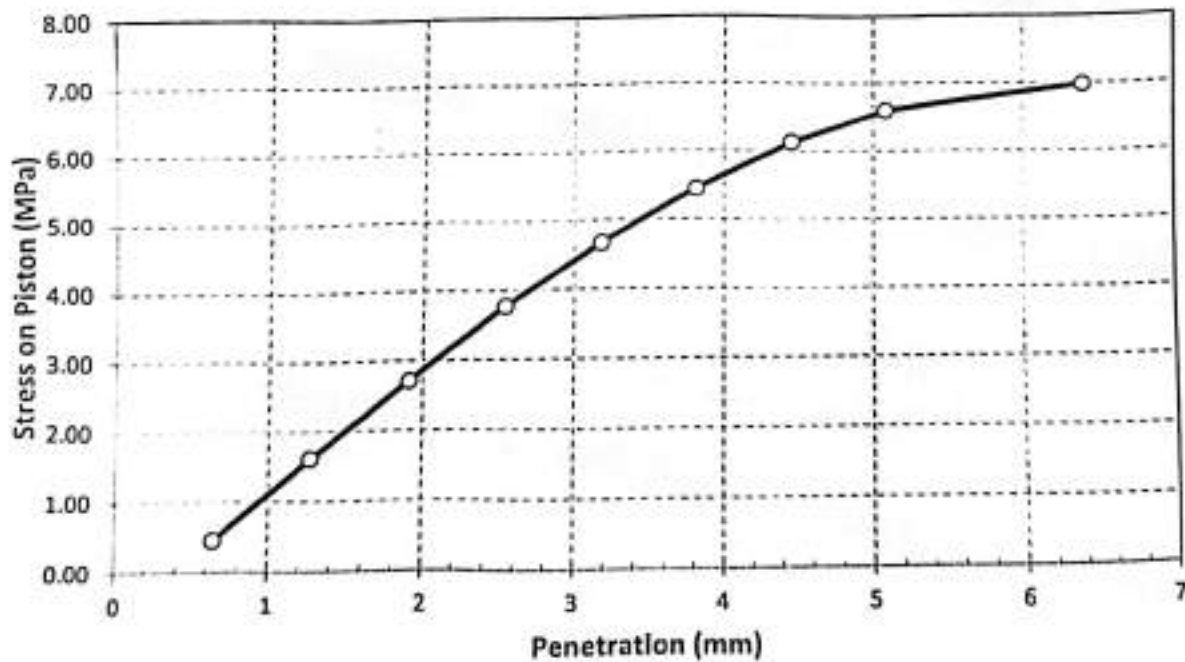
*[Signature]*

# 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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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



Signature / .....



3 El Malek E Afdal Street  
Zamalek, Cairo.  
Tel & Fax: 2190911437 21909609

IAS

شارع الملك الافضل  
الزمالك - القاهرة  
تليفون - فاكس : 2190911437 21909609

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

**Test Results of California Bearing Ratio on Base Materials**

**ASTM D 1883**

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.46                   |
| 1.27        | 0.050 | 1.62                   |
| 1.91        | 0.075 | 2.72                   |
| 2.54        | 0.100 | 3.78                   |
| 3.18        | 0.125 | 4.67                   |
| 3.81        | 0.150 | 5.45                   |
| 4.45        | 0.175 | 6.14                   |
| 5.08        | 0.200 | 6.60                   |
| 6.35        | 0.250 | 6.99                   |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 54.8 %    |
|                                   | 6.90         | 3.78           |           |

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.23(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 /

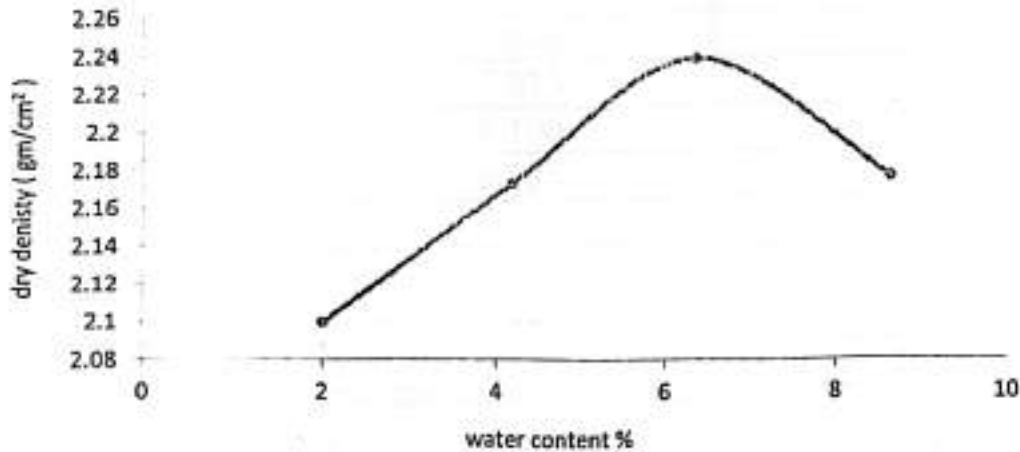
El Mark E Agha Street  
Zamalek, Cairo  
Tel Fax : 27367231 - 27363050



شركة المال للاستشارات  
الرمالك القاهرة  
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٥٠

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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



- Max dry density (gm/cm³) : 2.23
- Optimum moisture content % : 6.4 %

Signature / ...



S E Malek E Abdel Stene  
Zakaria, Cairo  
Tel & Fax: 27365631 - 27365633



شركة المهندسين  
الذين هم  
المهندسين  
المهندسين

**Consulting Engineering Bureau & Laboratories**

مكتب معامل الاستشارات الهندسية

**Company Name : شركة الذهبى**

**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 : 5/10/2023**

Reporting Date : 9/10/2023

Reporting No. : 10-10

**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) | 9.5         |

**Signature**



3 El Malek El Ahdal Street  
Zurabos, Cairo  
Tel: 8144 2205777 2205393



٩ من الملك الامير  
الملك الناصر  
بسم الله الرحمن الرحيم

# 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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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

| Test             | Results<br>(%) |
|------------------|----------------|
| Liquid Limit     | 0              |
| Plastic Limit    | 0              |
| Plasticity Index | 0              |

Signature



F. Makh E Abdel Street  
Cairo, Egypt  
Tel: 27363403 - 27363403

IAS

شركة الملك فيصل  
القاهرة

27363403 - 27363403

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

Soil Classification

| TEST                      | Results<br>(%) | Limits according<br>Projects Specs |          |          |
|---------------------------|----------------|------------------------------------|----------|----------|
| • Group Classification    | (A-1-a)        | (A-1-a)                            | (A-1-b)  | (A-2-4)  |
| 2.00 mm (No.10).          | 39.4           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).        | 26.3           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).       | 9.5            | Max 15 %                           | Max 15 % | Max 15 % |
| Liquid Limit<br>.....     | -----          | -----                              | -----    | -----    |
| Plasticity index<br>..... | 0              | Max 6 %                            | Max 6 %  | Max 10 % |

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

Signature / ...



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3 شارع الملك الافضل  
الزمالك - القاهرة  
تليفون : 27967777 - 27969093

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size (mm) | Sieve Size (IN) | Passing % |
|-----------------|-----------------|-----------|
| 50              | 2               | 99.5      |
| 37.5            | 1.5             | 95.4      |
| 25              | 1               | 91.6      |
| 19              | ¾               | 80.7      |
| 12.50           | ½               | 75.2      |
| 9.50            | 3/8             | 71.9      |
| 4.75            | 4               | 56.0      |
| 2.00            | 10              | 39.4      |
| 0.425           | 40              | 26.3      |

Signature / ..



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ش.م.ك. الملك الافضل  
الزمالك - القاهرة  
تليفون ٢٧٣٦٧٢٣ - ٢٧٣٦٣٦٣

# 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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

Dear Gentleman,

Attached here with the delivered on 5 / 10 / 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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Zamalek, Cairo  
Tel: Fax: 2736733 - 27363693



أشرف عبد الله  
المهندس  
المسؤول

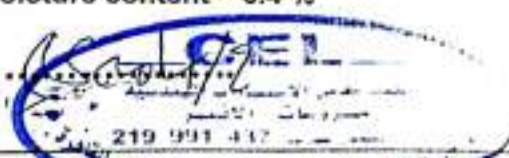
**CEL**  
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 27/11/2023  
Soil type : Upper Embankment  
Location : ST From 641+420 TO 641+660  
Level : - 1 M  
Report No. : 110

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+440 | 1903.5                           | 2.28                             | 5                  | 2.17                               | 97.4%                    | Comply     |
| 2      | 641+460 | 1382.6                           | 2.29                             | 5.3                | 2.18                               | 97.6%                    | Comply     |
| 3      | 641+480 | 1431.3                           | 2.28                             | 5.5                | 2.16                               | 97.0%                    | Comply     |
| 4      | 641+500 | 1398.6                           | 2.30                             | 5.5                | 2.18                               | 97.6%                    | Comply     |
| 5      | 641+520 | 1348.6                           | 2.29                             | 5.3                | 2.17                               | 97.5%                    | Comply     |
| 6      | 641+550 | 1313.2                           | 2.29                             | 5.8                | 2.17                               | 97.2%                    | Comply     |
| 7      | 641+580 | 1325.0                           | 2.30                             | 5.8                | 2.17                               | 97.3%                    | Comply     |
| 8      | 641+600 | 1543.8                           | 2.29                             | 6                  | 2.16                               | 96.8%                    | Comply     |
| 9      | 641+620 | 1377.8                           | 2.27                             | 6                  | 2.14                               | 96.2%                    | Comply     |
| 10     | 641+640 | 1903.5                           | 2.28                             | 5                  | 2.17                               | 97.4%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.23 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature / 

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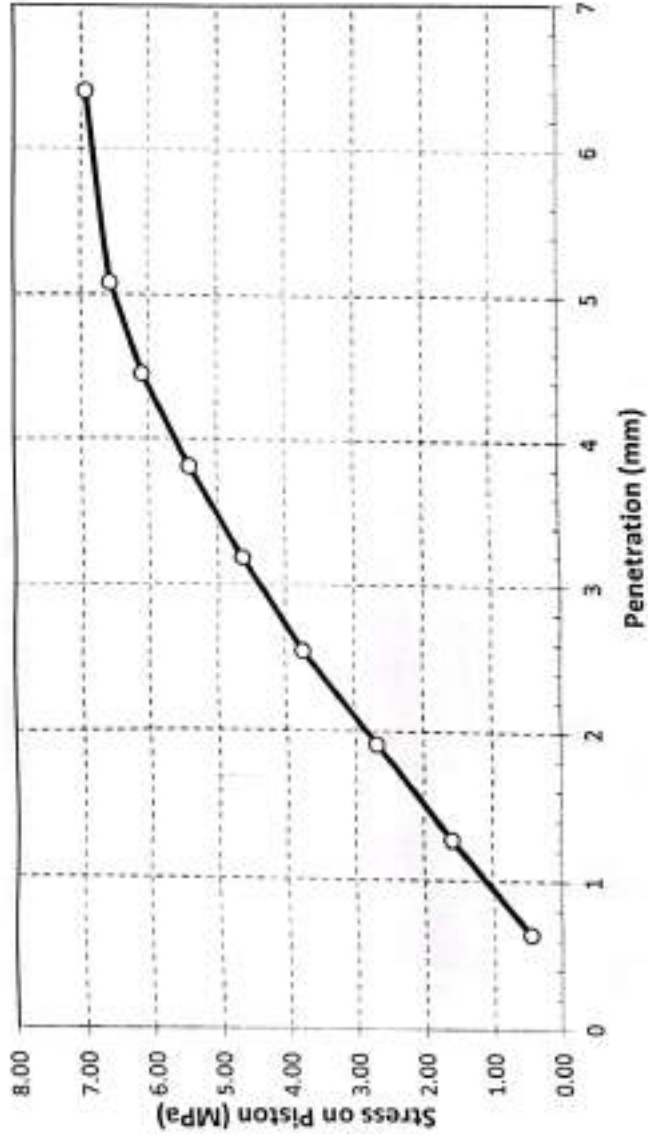


\* من الملتزم بالبيئة  
البيئة - القاهرة  
تليفون : 27367231 - 27363693

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

Load Penetration Curve of CBR Test

ASTM D-1883



**Signature** / **CEL**  
عبد صبور الزهراني  
مستشار هندسي  
219 991 437  
الشارع الثالث، طابق 3، حي الزهراني، القاهرة

3 E Malek El Afdal Street  
Zagazig, Cairo  
Tel & Fax : 27363831 - 27363883

**IAS**  
ACCREDITED  
Testing Laboratory

إشهاد الاعتماد  
الرقم: 100-01-001  
للمختبر: خفاش

Company Name : شركة الأهلي  
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 )  
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Reporting Date : 9/10/2023  
Reporting No. : 10-11

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

| CBR Result                        | penetration  |                | stress on piston (Mpa) |
|-----------------------------------|--------------|----------------|------------------------|
|                                   | mm           | Inch           |                        |
| At 0.1 inch (2.54 mm) penetration | 0.64         | 0.025          | 0.46                   |
|                                   | 1.27         | 0.050          | 1.59                   |
|                                   | 1.91         | 0.075          | 2.69                   |
|                                   | 2.54         | 0.100          | 3.75                   |
|                                   | 3.18         | 0.125          | 4.64                   |
|                                   | 3.81         | 0.150          | 5.41                   |
|                                   | 4.45         | 0.175          | 6.10                   |
|                                   | 5.08         | 0.200          | 6.57                   |
|                                   | 6.35         | 0.250          | 6.95                   |
|                                   | Stress (Mpa) |                | CBR 100 %              |
|                                   | St. Value    | Sample results |                        |
|                                   | 6.90         | 3.75           | 54.3 %                 |

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.23(gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.
- 3- Surcharge load 4.0 kg

- 4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature

شركة الأهلي  
مكتب معامل الاستشارات الهندسية  
شارع دافنة القاهرة - الجيزة

شركة الذهبى : Company Name

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 : 5/10/2023

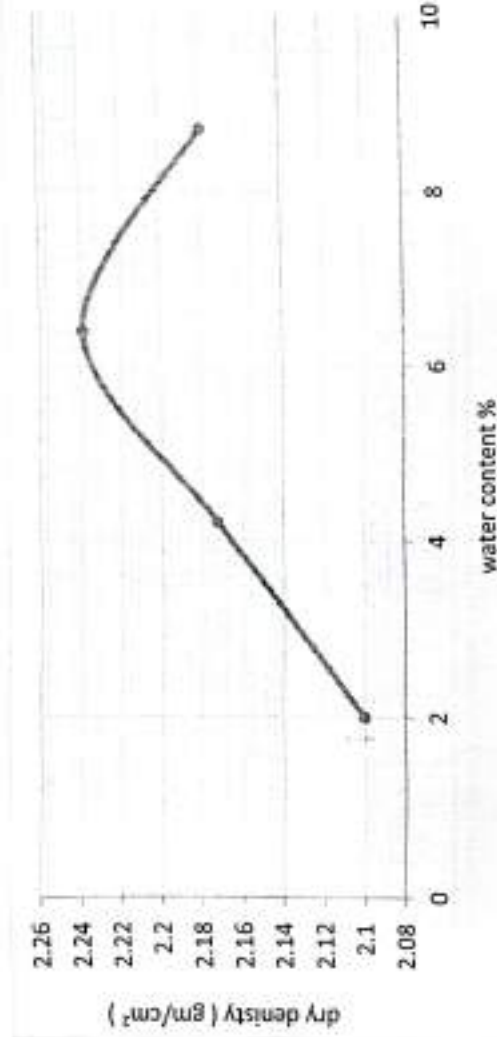
Reporting Date : 9/10/2023

Reporting No. : 10-11

### Moisture – Density relation of soil

**Test result (Modified proctor test)**

ASTM D-1557



- Max dry density (gm/cm<sup>3</sup>) : 2.23
- Optimum moisture content % : 6.4 %

**Signature**

[illegible]

A. E. Malek & Aftab Shere  
Zarqa, Jord.



المجلة الدولية للدراسات القانونية  
البيئية  
العدد 10 - 2014

Company Name : شركة الذهبى  
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Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

Soil Classification

| TEST                      | Results<br>(%) | Limits according<br>Projects Specs |          |          |  |
|---------------------------|----------------|------------------------------------|----------|----------|--|
| • Group Classification    | (A-1-a)        | (A-1-a)                            | (A-1-b)  | (A-2-4)  |  |
| 2.00 mm (No.10).          | 34.0           | Max 50 %                           | -----    | -----    |  |
| 0.425 mm (No. 40).        | 22.1           | Max 30 %                           | Max 50 % | -----    |  |
| 0.075 mm (No. 200).       | 9.1            | Max 15 %                           | Max 15 % | Max 15 % |  |
| Liquid Limit<br>.....     | -----          | -----                              | -----    | -----    |  |
| Plasticity index<br>..... | 0              | Max 6 %                            | Max 6 %  | Max 10 % |  |

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

Signature

  
مكتب الدراسات الهندسية  
مستشاري التربة والصخور  
التركي الدولي 3 شارع الملك فيصل - القاهرة - (مصر)  
التليفون : 27303430

Company Name : شركة الأهلي  
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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

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

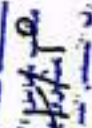
| Test             | Results (%) |
|------------------|-------------|
| Liquid Limit     | 0           |
| Plastic Limit    | 0           |
| Plasticity Index | 0           |

**CEL**  
مكتب الاستشارات الهندسية  
Signature / *[Signature]*  
المهندس / *[Signature]*  
3 شارع النيل الأقصر - الأقصر - مصر

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 : 5/10/2023  
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Reporting No. : 10-11

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         |

**CEL**  
Signature:   
ب.ع. الذهبى 3 شارع النيل - القاهرة - مصر

Company Name : شركة الذهبي  
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Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size (mm) | Sieve Size (IN) | Passing % |
|-----------------|-----------------|-----------|
| 50              | 2               | 98.4      |
| 37.5            | 1.5             | 94.4      |
| 25              | 1               | 90.8      |
| 19              | 3/4             | 78.7      |
| 12.50           | 1/2             | 72.3      |
| 9.50            | 3/8             | 70.9      |
| 4.75            | 4               | 53.9      |
| 2.00            | 10              | 34.0      |
| 0.425           | 40              | 22.1      |

**CEL**  
شركة الاستشارات الهندسية  
Signature:   
Date: 9/10/2023  
3 شارع البنك الأهلي، الزمالة، القاهرة

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Zamalek, Cairo.  
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شركة البنك الأهلي  
الزمالك، القاهرة  
تليفون : 27367231 - 27963893

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Delivery Date : 5/10/2023  
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Reporting No. : 10-11

Dear Gentleman,

Attached here with the delivered on 5 / 10 / 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 : 219 9591 437  
الرقم الترخيص 3 شارع النيل - القاهرة - مصر

3 E Malek El Agha Street,  
Zamalek, Cairo  
Tel. Fax: 27367201 - 27367240



المكتب الهندسي  
المشاريع : 219 9591 437  
الرقم الترخيص 3 شارع النيل - القاهرة - مصر

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 4/12/2023  
Soil type : Upper Embankment  
Location : ST From 641+660 TO 641+780  
Level : - 1 M  
Report No. : 114

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

| Test # | Station | Test Hole<br>Volume cm <sup>3</sup> | Bulk Density<br>gm/ cm <sup>3</sup> | Moisture<br>Content % | Dry Density<br>(gm/ cm <sup>3</sup> ) | Degree of<br>Compaction (%) | Acceptance |
|--------|---------|-------------------------------------|-------------------------------------|-----------------------|---------------------------------------|-----------------------------|------------|
| 1      | 641+685 | 1631.9                              | 2.26                                | 5.8                   | 2.14                                  | 95.8%                       | Comply     |
| 2      | 641+706 | 1602.1                              | 2.30                                | 6                     | 2.17                                  | 97.1%                       | Comply     |
| 3      | 641+726 | 1510.4                              | 2.29                                | 6.4                   | 2.15                                  | 96.5%                       | Comply     |
| 4      | 641+741 | 1304.9                              | 2.30                                | 6                     | 2.17                                  | 97.4%                       | Comply     |
| 5      | 641+756 | 1729.2                              | 2.25                                | 6                     | 2.13                                  | 95.3%                       | Comply     |
| 6      | 641+776 | 1680.6                              | 2.30                                | 6.4                   | 2.17                                  | 97.1%                       | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.23 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• Signature /    
219 991 437  
الشارع الثالث - القاهرة - مصر

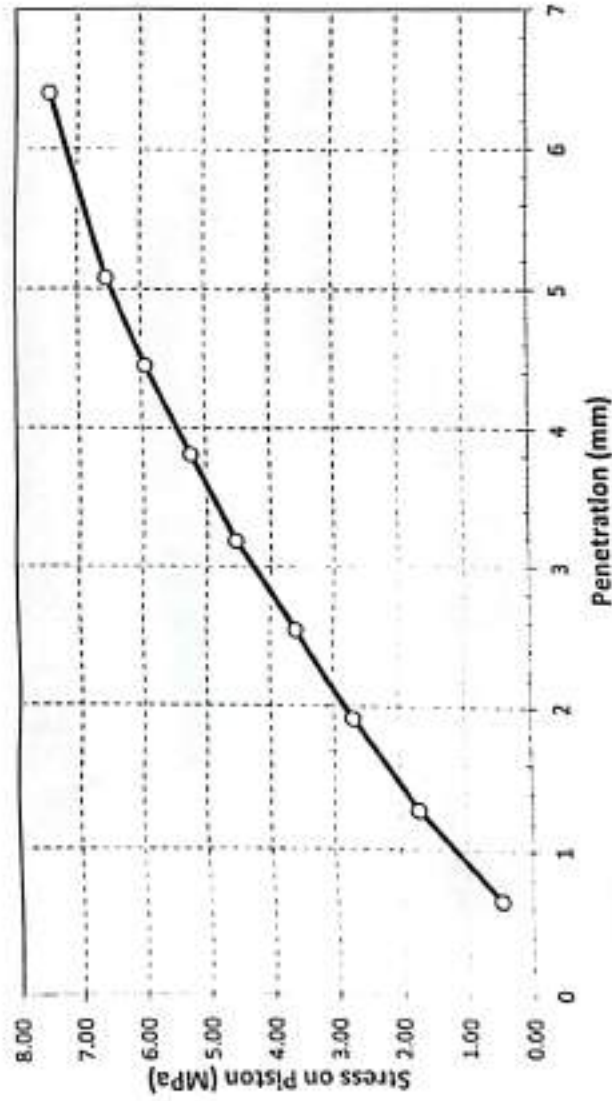
3 El Mulek El Abdel Street  
Zakaria, Cairo  
Toll Free : 2736723 - 27363643



شركة الذهبى للاستشارات  
الهندسية  
القاهرة - مصر  
تلفون : 2736723 - 27363643

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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



**CEL**  
Signature: *[Signature]*  
Date: 21/11/2023  
The Engineer: 3 شارع النيل، القاهرة، جمهورية مصر العربية

Dr. Mohamed El-Morshedy  
Head of Laboratory

**IAS**  
ACCREDITED

Dr. Mohamed El-Morshedy  
Head of Laboratory

Company Name : شركة الذهبى  
Project : Electric Express Train – IHSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.48                   |
| 1.27        | 0.050 | 1.72                   |
| 1.91        | 0.075 | 2.71                   |
| 2.54        | 0.100 | 3.60                   |
| 3.18        | 0.125 | 4.56                   |
| 3.81        | 0.150 | 5.24                   |
| 4.45        | 0.175 | 5.94                   |
| 5.08        | 0.200 | 6.55                   |
| 6.35        | 0.250 | 7.48                   |

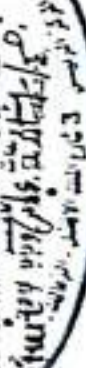
| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
|                                   | St. Value    | Sample results |           |
| A1 0.1 inch (2.54 mm) penetration | 6.90         | 3.60           | 52.1%     |

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.22(gm /cm<sup>3</sup>)  
A1 = 6.4 Maximum water content.

3- Strength = 150 Kg

- 4- CBR > 10 for middle-and-lower embankments according project spec page No 36.

Signature:    
تم التوقيع من قبل المهندس

مكتب معامل الاستشارات الهندسية  
شركة الذهبى

**IAS**  
ACCREDITED  
مكتب معتمد

مكتب معتمد  
مكتب معتمد

Company Name : شركة الذهبية  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

Soil Classification

| TEST                   | Results<br>(%) | Limits according<br>Projects Specs |          |          |
|------------------------|----------------|------------------------------------|----------|----------|
| • Group Classification | (A-1-a)        | (A-1-a)                            | (A-1-b)  | (A-2-4)  |
| 2.00 mm (No.10).       | 43.8           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).     | 29.6           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 10.2           | Max 15 %                           | Max 15 % | Max 15 % |
| Liquid Limit           | ---            | -----                              | -----    | -----    |
| Plasticity index       | 0              | Max 6 %                            | Max 6 %  | Max 10 % |

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

**CEL**  
شركة الذهبية  
مكتب معامل الاستشارات الهندسية  
Signature : 210 991 437  
المرمى رقم 3 شارع الملك فيصل، الرياض، المملكة العربية السعودية

3 E-Malek E. Alkhalaf  
Zurabek, Cairo  
T: +973 779 7777 F: +973 779 4603



المركز الدولي  
للمعايير  
والاعتماد  
ISO 9001:2015  
ISO 17025:2017

Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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**  
Signature:   
مهندس:   
219.991 437  
القاهرة - شارع دلتا النيل - برج دلتا

3 El Mahdi E Adiaa Street  
Zurich, Cairo  
219.991 437

**IAS**  
ACCREDITED  
ISO 9001:2015

مكتب معامل الاستشارات الهندسية  
القاهرة - شارع دلتا النيل - برج دلتا



Company Name : شركة الأهلي  
Project : Electric Express Train – IISR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size (mm) | Sieve Size (IN) | Passing % |
|-----------------|-----------------|-----------|
| 50              | 2               | 99.1      |
| 37.5            | 1.5             | 95.3      |
| 25              | 1               | 87.7      |
| 19              | 3/4             | 82.9      |
| 12.50           | 1/2             | 71.5      |
| 9.50            | 3/8             | 65.2      |
| 4.75            | 4               | 49.4      |
| 2.00            | 10              | 43.8      |
| 0.425           | 40              | 29.6      |

**CEL**  
Signature:   
219.001 437  
توقيع المهندس 3 شارع دلتا، القاهرة، الجيزة، مصر

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

Dear Gentleman,

Attached here with the delivered on 28 / 10 / 2023

→ This sample is representative for 5.000 M³

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  
شعارات والاشعار  
219.904.437  
البريد الإلكتروني: 3 شارع الملك فيصل، الرياض، المملكة العربية السعودية

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 26/12/2023  
Soil type : Middle Embankment  
Location : ST From 639+780 To 639+940  
Level : -4.5M  
Report No. : 121

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

| Test # | Station | Test Hole<br>Volume cm <sup>3</sup> | Bulk Density<br>gm/ cm <sup>3</sup> | Moisture<br>Content % | Dry Density<br>(gm/ cm <sup>3</sup> ) | Degree of<br>Compaction (%) | Acceptance |
|--------|---------|-------------------------------------|-------------------------------------|-----------------------|---------------------------------------|-----------------------------|------------|
| 1      | 639+820 | 1526.4                              | 2.27                                | 6.4                   | 2.13                                  | 96.2%                       | Comply     |
| 2      | 639+860 | 1551.4                              | 2.25                                | 6.4                   | 2.12                                  | 95.4%                       | Comply     |
| 3      | 639+895 | 1488.2                              | 2.26                                | 5.3                   | 2.14                                  | 96.6%                       | Comply     |
| 4      | 639+915 | 1495.8                              | 2.32                                | 5.8                   | 2.19                                  | 98.7%                       | Comply     |
| 5      | 639+935 | 1636.1                              | 2.26                                | 6.4                   | 2.13                                  | 95.8%                       | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %

• Signature

CEL  
مكتب معامل الاستشارات الهندسية  
011 437 437  
الشارع الثالث الألف - الزمالة - القاهرة  
البريد الإلكتروني: info@cel.com.eg

3 F Malek El Ahdal Street  
Zamalek, Cairo  
T: 27363300 F: 27363303

IAS  
ACCREDITED  
Testing Laboratory

مكتب معامل الاستشارات الهندسية  
011 437 437  
الشارع الثالث الألف - الزمالة - القاهرة  
البريد الإلكتروني: info@cel.com.eg



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 : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 10-11

## Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

| penetration                       | stress on piston (Mpa) |                |
|-----------------------------------|------------------------|----------------|
|                                   | mm                     | Inch           |
| 0.64                              | 0.025                  | 0.46           |
| 1.27                              | 0.050                  | 1.59           |
| 1.91                              | 0.075                  | 2.69           |
| 2.54                              | 0.100                  | 3.75           |
| 3.18                              | 0.125                  | 4.64           |
| 3.81                              | 0.150                  | 5.41           |
| 4.45                              | 0.175                  | 6.10           |
| 5.08                              | 0.200                  | 6.57           |
| 6.35                              | 0.250                  | 6.95           |
| CBR Result                        | Stress (Mpa)           |                |
|                                   | St. Value              | Sample results |
| At 0.1 inch (2.54 mm) penetration | 6.90                   | 3.75           |
|                                   |                        | CBR 100 %      |
|                                   |                        | 54.3 %         |

## Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of  $= 2.23(\text{gm}/\text{cm}^3)$   
At = 6.4 % optimum water content.
- 3- Surcharge load **CEL**

CBR > 10 for middle and lower embankments according project spec page No 36.

Signature : **مركز الدراسات والبحوث الهندسية**

3 شارع الملك فيصل، الرياض، المملكة العربية السعودية

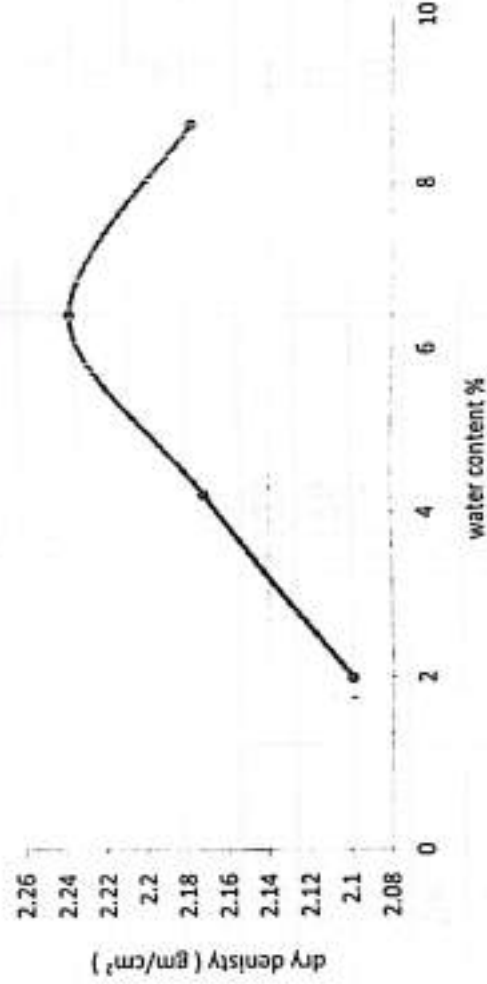
Page No. 10

Page No. 10

Page No. 10

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

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



- Max dry density (gm/cm³) : 2.23
- Optimum moisture content % : 6.4 %

Signature

CEL  
مكتب معامل الاستشارات الهندسية  
شارع النيل، القاهرة  
رقم 3 شارع النيل، القاهرة، الجيزة

E. Mostafa El-Mekki Shou  
Zakaria, Cairo  
12/10/2023

**IAS**  
CONSULTING

رقم الملف : 10-11  
الاسم : المهندس  
الموقع : 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 : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 10-11

### Soil Classification

| TEST                   | Results<br>(%) | Limits according<br>Projects Specs |          |          |
|------------------------|----------------|------------------------------------|----------|----------|
|                        |                | (A-1-a)                            | (A-1-b)  | (A-2-4)  |
| • Group Classification | (A-1-a)        |                                    |          |          |
| 2.00 mm (No.10).       | 34.0           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).     | 22.1           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 9.1            | Max 15 %                           | Max 15 % | Max 15 % |
| Liquid Limit           | -----          | -----                              | -----    | -----    |
| Plasticity index       | 0              | Max 6 %                            | Max 6 %  | Max 10 % |

The test results are ~~Not Comply~~ **CEL** (Not Comply) with specifications limits

Signature

مكتب  
استشارات الذهبى  
للهندسة والبناء  
شركة  
الذهبى  
3 شارع دلتا الانبار - القاهرة - مصر

# 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 : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 10-11

## 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 الاستشارات الهندسية  
Signature / توقيع المهندس / المهندس  
شارع الملك فيصل 3 شارع الملك فيصل، الرياض 11564  
الرياض، المملكة العربية السعودية

3 El Malek E. Abdel Street  
Zamalek, Cairo  
Tel: 27367222 Fax: 27367463

IAS  
ACCREDITED  
Testing Laboratory

مكتب الاستشارات الهندسية  
شارع الملك فيصل 3  
الرياض، المملكة العربية السعودية

# 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 : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 10-11

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         |

CEL  
شركة الاستشارات الهندسية  
مكتب معامل الاستشارات الهندسية  
Signature: [Signature]  
Date: 3/10/2023

3 El Mueh E Ahal Sieep

3/10/2023

IAS  
ACCREDITED  
ISO 9001:2015



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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-11

Dear Gentleman,

Attached here with the delivered on 5 / 10 / 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 معاميل الاستشارات الهندسية  
شركات 437 - القاهرة 219  
الدكتور المهندس 3 شارع النيل - القاهرة - مصر

3 E Maack E Area 5 Street  
Zakaria, Cairo  
T: 011 437 0700 F: 011 437 0700



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 9/12/2023  
Soil type : Upper Embankment  
Location : ST From 641+400 To 641+660  
Level : - 0.75M  
Report No. : 118

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+420 | 1633.3                           | 2.31                             | 5.3                | 2.20                               | 98.6%                    | Comply     |
| 2      | 641+440 | 1606.3                           | 2.27                             | 5.8                | 2.15                               | 96.4%                    | Comply     |
| 3      | 641+460 | 1529.9                           | 2.26                             | 6.4                | 2.12                               | 95.2%                    | Comply     |
| 4      | 641+480 | 1607.6                           | 2.28                             | 5.8                | 2.16                               | 96.8%                    | Comply     |
| 5      | 641+500 | 1438.9                           | 2.33                             | 5                  | 2.22                               | 99.6%                    | Comply     |
| 6      | 641+520 | 1489.6                           | 2.31                             | 5.3                | 2.19                               | 98.3%                    | Comply     |
| 7      | 641+540 | 1637.5                           | 2.25                             | 5.8                | 2.12                               | 95.2%                    | Comply     |
| 8      | 641+560 | 1638.9                           | 2.27                             | 5.8                | 2.15                               | 96.2%                    | Comply     |
| 9      | 641+580 | 1903.5                           | 2.28                             | 6                  | 2.15                               | 96.5%                    | Comply     |
| 10     | 641+600 | 1382.6                           | 2.29                             | 5.8                | 2.17                               | 97.1%                    | Comply     |
| 11     | 641+620 | 1431.3                           | 2.28                             | 5.8                | 2.16                               | 96.8%                    | Comply     |
| 12     | 641+640 | 1398.6                           | 2.30                             | 5.3                | 2.18                               | 97.8%                    | Comply     |
| 13     | 641+655 | 1348.6                           | 2.29                             | 5.3                | 2.17                               | 97.5%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.23 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature : 

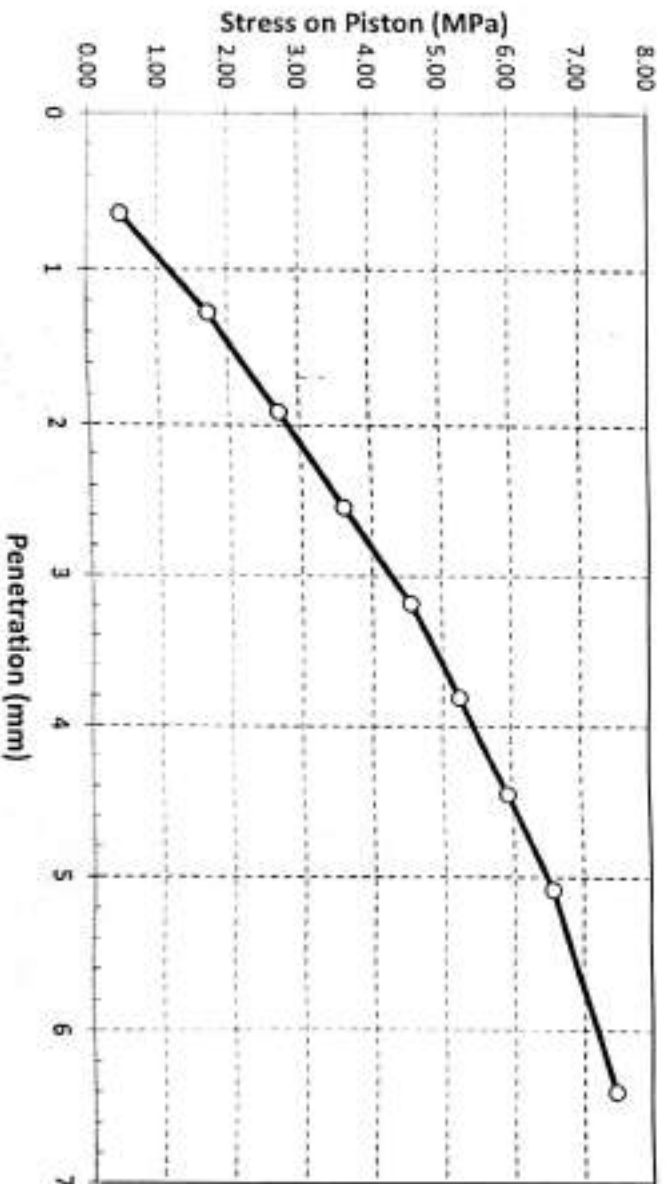
J.E. Mounif F. Attal Street  
Zurubee, Cairo  
Tel & Fax: 27367200 - 27367093



مكتب معامل الاستشارات الهندسية  
الهيئة العامة للغذاء والدواء  
مكتب

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

Load Penetration Curve of CBR Test  
ASTM D-1883



**CEL**  
مكتب محامل الاستشارات الهندسية  
Signature :  
219 904 437  
فريق العمل : 3 شارع الملك فيصل، القاهرة

شركة الذهبية ::

## Electric Express Train – HSR From Qous To Armant

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

: Soil Embankment ( Upper Embankment 0.0 M)

: 28/10/2023

: 01/11/2023

: 08-12

### Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.48                   |
| 1.27        | 0.050 | 1.72                   |
| 1.91        | 0.075 | 2.71                   |
| 2.54        | 0.100 | 3.60                   |
| 3.18        | 0.125 | 4.56                   |
| 3.81        | 0.150 | 5.24                   |
| 4.45        | 0.175 | 5.94                   |
| 5.08        | 0.200 | 6.55                   |
| 6.35        | 0.250 | 7.48                   |

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

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
  - 2- The sample was compacted to dry density of  $= 2.22 (\text{gm}/\text{cm}^3)$
- At  $\approx 6.4\%$  optimum water content.

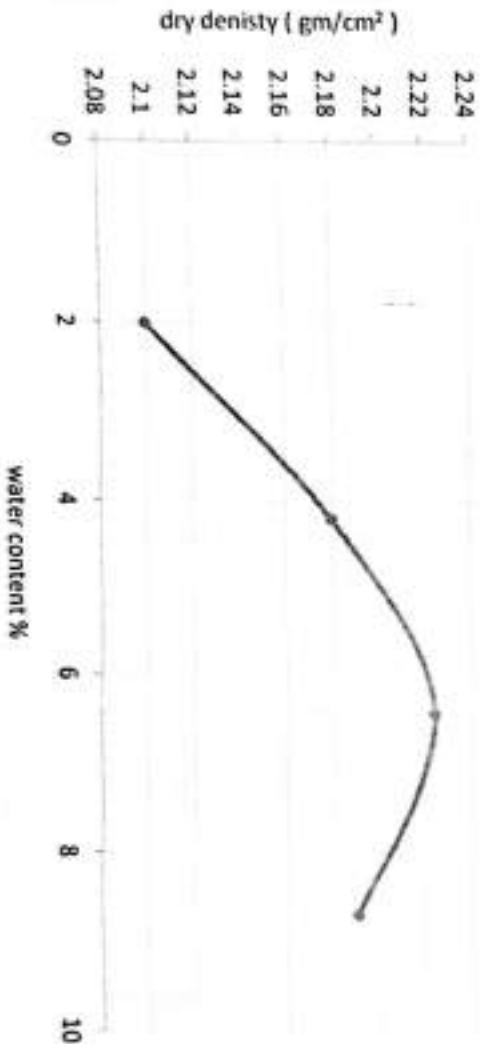
3. **Strengthening Fund** - 50 K<sup>2</sup>.

CBR > 10 for middle and lower embankments according project spec page No 36.

Signature: 99/9/25. Subhiksha

Company Name : شركة الندي  
Project : Electric Express Train – HSR From Qous To Arman  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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



- Max dry density (gm/cm³) : 2.22
- Optimum moisture content % : 6.4 %

Signature  
CEL  
مكتب معامل الاستشارات الهندسية  
شارع الملك فيصل - الرياض  
الرياض - المملكة العربية السعودية

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

Soil Classification

| TEST                   | Results<br>(%) | Limits according<br>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).       | 43.8           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).     | 29.6           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 10.2           | Max 15 %                           | Max 15 % | Max 15 % |
|                        |                |                                    |          |          |
| Liquid Limit           | ---            | -----                              | -----    | -----    |
| Plasticity index       | 0              | Max 6 %                            | Max 6 %  | Max 10 % |

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

**CEL**  
Signature :   
219 904 437  
الرجوع إلى مكتب الاستشارات الهندسية

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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

| Test             | Results<br>(%) |
|------------------|----------------|
| Liquid Limit     | 0              |
| Plastic Limit    | 0              |
| Plasticity Index | 0              |

Signature:   
مهندس:   
210 994 437  
الوكيل الرئيسي 3 شارع الملك الافندي - الهرم - القاهرة

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

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

| Test                                                           | Results<br>(%) |
|----------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 µM (No.200) | 10.2           |



Company Name : شركة الداهي  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 99.1      |
| 37.5               | 1.5                | 95.3      |
| 25                 | 1                  | 87.7      |
| 19                 | $\frac{3}{4}$      | 82.9      |
| 12.50              | $\frac{1}{2}$      | 71.5      |
| 9.50               | $\frac{3}{8}$      | 65.2      |
| 4.75               | 4                  | 49.4      |
| 2.00               | 10                 | 43.8      |
| 0.425              | 40                 | 29.6      |

Signature:   
Dr. E. Maher El-Ahadi  
219, 901 437  
الشارع الثالث رقم 3 شارع الملك فيصل - الرياض

Company Name : شركة الذفني  
Project : Electric Express Train – HSR From Qous To Armanat  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-12

Dear Gentleman,

Attached here with the delivered on 28 / 10 / 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 الذفني  
219.904 437  
الوكيل الممثل

Company Name : شركة الخفي  
Project : Electric Express Train – HSR From Qous To Arman  
Testing Date : 13/12/2023  
Soil type : Middle Embankment  
Location : ST From 638+920 TO 639+100  
Level : - 3M  
Report No. : 119

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      | 638+940 | 1436.8                           | 2.23                             | 5.3                | 2.12                               | 95.6%                    | Comply     |
| 2      | 638+968 | 1486.8                           | 2.25                             | 5.3                | 2.14                               | 96.2%                    | Comply     |
| 3      | 639+025 | 1506.9                           | 2.28                             | 5.3                | 2.16                               | 97.4%                    | Comply     |
| 4      | 639+055 | 1534.0                           | 2.27                             | 5.3                | 2.15                               | 97.0%                    | Comply     |
| 5      | 639+075 | 1405.6                           | 2.31                             | 5.3                | 2.19                               | 98.7%                    | Comply     |
| 6      | 639+095 | 1413.9                           | 2.29                             | 5.3                | 2.18                               | 98.1%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature *[Signature]*

J E Masek El Abdel Street  
Zaafrales, Cairo  
Tels Fax: 27367231 - 27363603

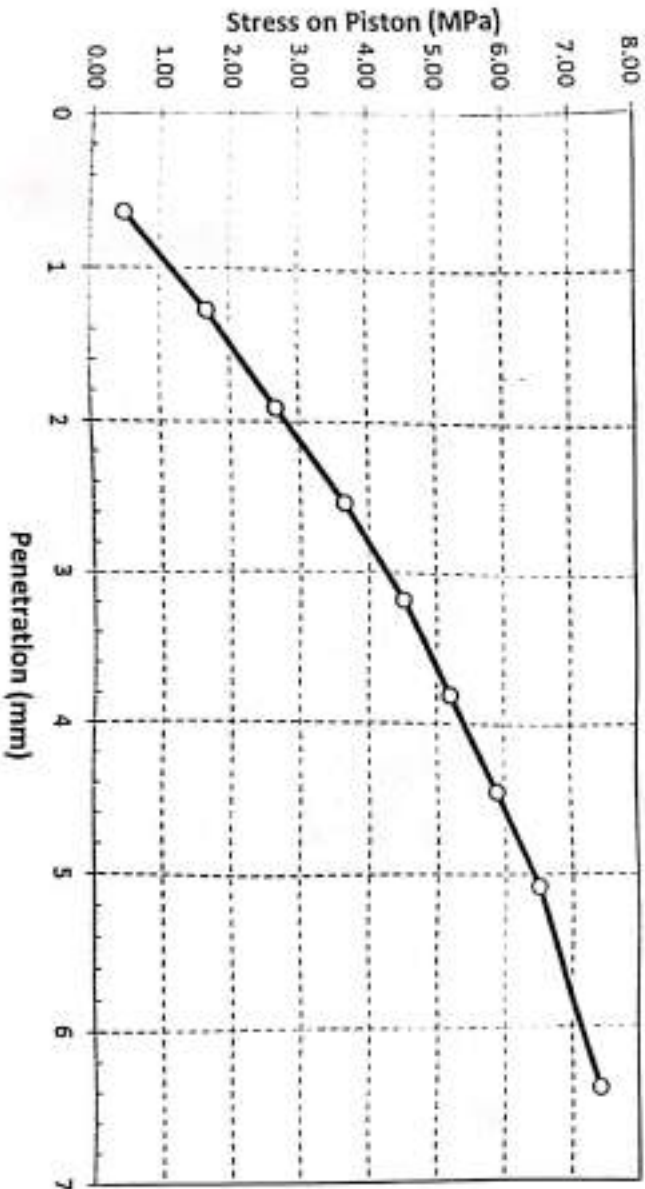


مكتب محامل الاستشارات الهندسية  
219 991 437  
مكتب محامل الاستشارات الهندسية  
219 991 437

Company Name : شركة الذهبى  
 Project : Electric Express Train – HSR From Qous To Armanat  
 Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 28/10/2023  
 Reporting Date : 01/11/2023  
 Reporting No. : 08-13

### Load Penetration Curve of CBR Test

ASTM D-1883



**CEL**  
 Signature: *[Handwritten Signature]*  
 رقم الترخيص: 219.994.437  
 رقم التسجيل: 219.994.437  
 المكتب: 3 شارع الملك فيصل - الرياض

Company Name : شركة الداهي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M)  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.48                   |
| 1.27        | 0.050 | 1.67                   |
| 1.91        | 0.075 | 2.66                   |
| 2.54        | 0.100 | 3.65                   |
| 3.18        | 0.125 | 4.51                   |
| 3.81        | 0.150 | 5.20                   |
| 4.45        | 0.175 | 5.88                   |
| 5.08        | 0.200 | 6.50                   |
| 6.35        | 0.250 | 7.42                   |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
|                                   | St. Value    | Sample results |           |
| At 0.1 inch (2.54 mm) penetration | 6.90         | 3.65           | 52.8%     |

Notes:

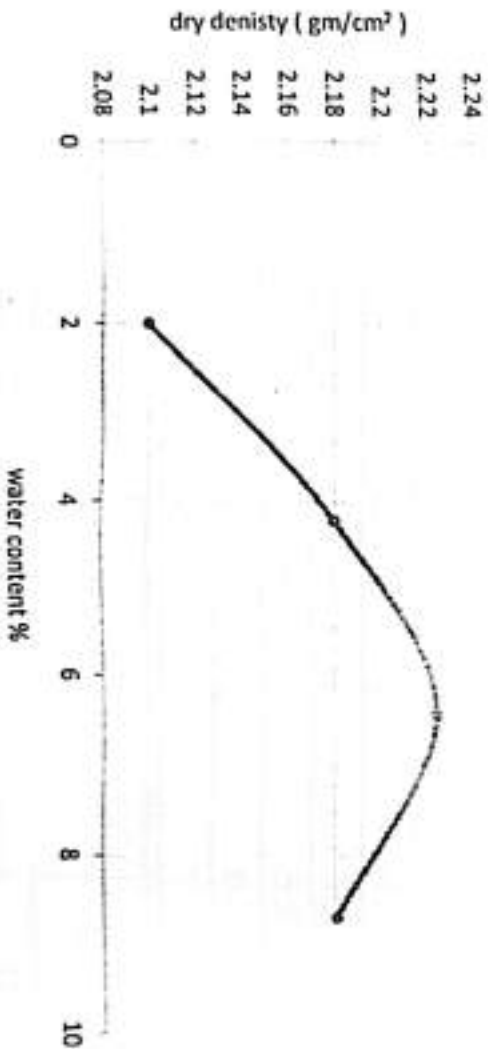
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.22(gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.

4- CBR > 10 for middle, air to top of embankments according project spec page No 36.

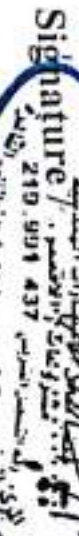
Signature:  3 شارع الملك فيصل - الرياض

Company Name : شركة الاهلي  
 Project : Electric Express Train – HSR From Qous To Armant  
 Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 28/10/2023  
 Reporting Date : 01/11/2023  
 Reporting No. : 08-13

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



- Max dry density (gm/cm³) : 2.22
- Optimum moisture content % : 6.4 %

Signature :   
 210.991 437  
 البرق اليوس 3 شارع الملك فيصل، الخرطوم (السودان)

**CEL**

Company Name : شركة الدقي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

## 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).       | 45.3        | Max 50 %                        | -----    | -----    |
| 0.425 mm (No. 40).     | 30.7        | Max 30 %                        | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 10.9        | 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:   
مهندس محمد عبد الله عبد الله  
219 091 4337  
الكويت - الدقي - شارع الدقي - الدقي - الكويت

Company Name : شركة الدجي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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

| Test             | Results<br>(%) |
|------------------|----------------|
| Liquid Limit     | 0              |
| Plastic Limit    | 0              |
| Plasticity Index | 0              |

Signature / .....





Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة النافعي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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

| Test                                                           | Results<br>(%) |
|----------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 µM (No.200) | 10.9           |

Signature /



Company Name : شركة الناهي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 98.2      |
| 37.5               | 1.5                | 96.8      |
| 25                 | 1                  | 86.6      |
| 19                 | 3/4                | 80.4      |
| 12.50              | 1/2                | 71.1      |
| 9.50               | 3/8                | 64.5      |
| 4.75               | 4                  | 48.9      |
| 2.00               | 10                 | 45.3      |
| 0.425              | 40                 | 30.7      |

Signature /



Company Name : شركة النخعي  
Project : Electric Express Train – HSR From Qous To Armanit  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

Dear Gentleman,

Attached here with the delivered on 28 / 10 / 2023

This sample is representative for 5.000 M³

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 / محمد النخعي



Company Name : شركة الأهلي  
Project : Electric Express Train - HSR From Qous To Armanat  
Testing Date : 30/11/2023  
Soil type : Lower Embankment  
Location : ST From 639+580/639+780-6  
Level : - 6 M  
Report No. : 113

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      | 639+600 | 1556.9                           | 2.26                             | 5.5                | 2.14                               | 96.5%                    | Comply     |
| 2      | 639+615 | 1577.1                           | 2.27                             | 5.5                | 2.15                               | 96.8%                    | Comply     |
| 3      | 639+645 | 1407.6                           | 2.31                             | 5.5                | 2.19                               | 98.4%                    | Comply     |
| 4      | 639+674 | 1541.0                           | 2.23                             | 5.5                | 2.11                               | 95.1%                    | Comply     |
| 5      | 639+690 | 1468.1                           | 2.29                             | 5.5                | 2.17                               | 97.8%                    | Comply     |
| 6      | 639+700 | 1359.0                           | 2.29                             | 5.5                | 2.17                               | 97.7%                    | Comply     |
| 7      | 639+722 | 1424.3                           | 2.28                             | 5.5                | 2.16                               | 97.4%                    | Comply     |
| 8      | 639+742 | 1474.3                           | 2.27                             | 5.5                | 2.15                               | 96.9%                    | Comply     |
| 9      | 639+775 | 1467.4                           | 2.22                             | 5.5                | 2.11                               | 95.0%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature 

J.E. Maher E. Abdel Shaker

Consulting Engineer

TEL: 273677331 / 273677393

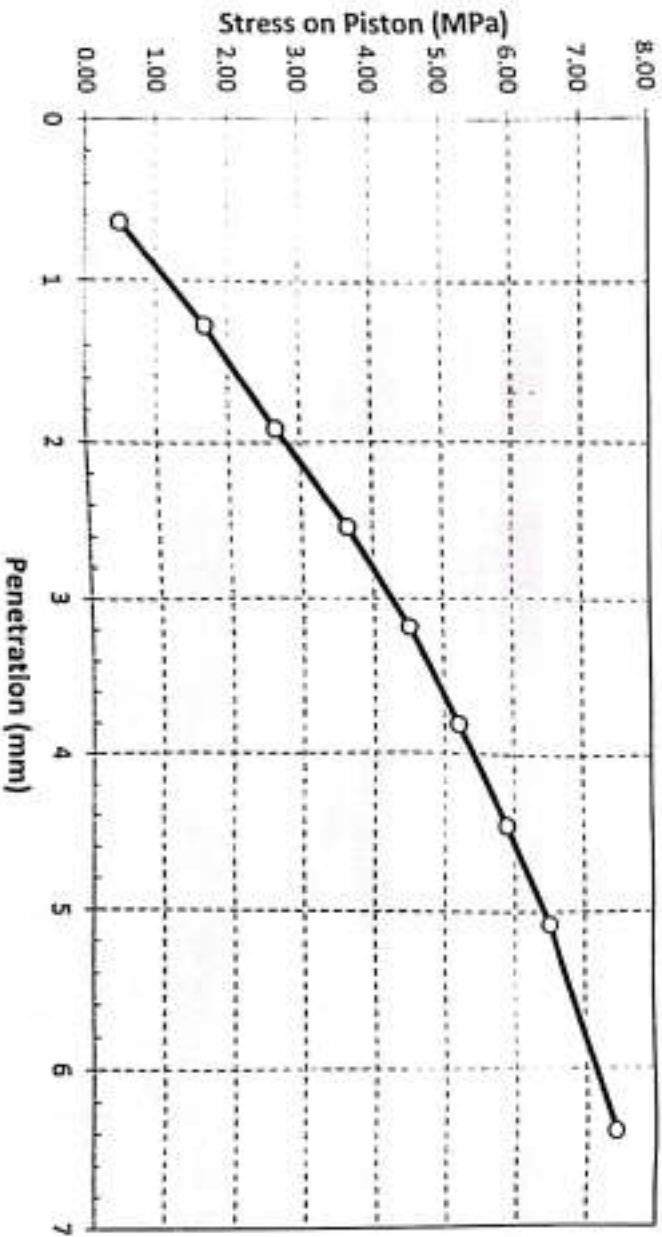


إستشاري  
مهندس  
م. ج. م. عبد الشاكر  
273677331 / 273677393

Company Name : شركة الأهلي  
 Project : Electric Express Train – HSR From Qous To Armant  
 Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
 Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
 Delivery Date : 28/10/2023  
 Reporting Date : 01/11/2023  
 Reporting No. : 08-13

### Load Penetration Curve of CBR Test

ASTM D-1883



**CEL**  
 Signature: *[Handwritten Signature]*  
 رقم الملف: 219.991.437  
 الكو: 3 شارع الملك فيصل - الرياض

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

Test Results of California Bearing Ratio on Base Materials

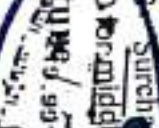
ASTM D 1883

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.48                   |
| 1.27        | 0.050 | 1.67                   |
| 1.91        | 0.075 | 2.66                   |
| 2.54        | 0.100 | 3.65                   |
| 3.18        | 0.125 | 4.51                   |
| 3.81        | 0.150 | 5.20                   |
| 4.45        | 0.175 | 5.88                   |
| 5.08        | 0.200 | 6.50                   |
| 6.35        | 0.250 | 7.42                   |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
|                                   | St. Value    | Sample results |           |
| At 0.1 inch (2.54 mm) penetration | 6.90         | 3.65           | 52.8%     |

Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.22(gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.

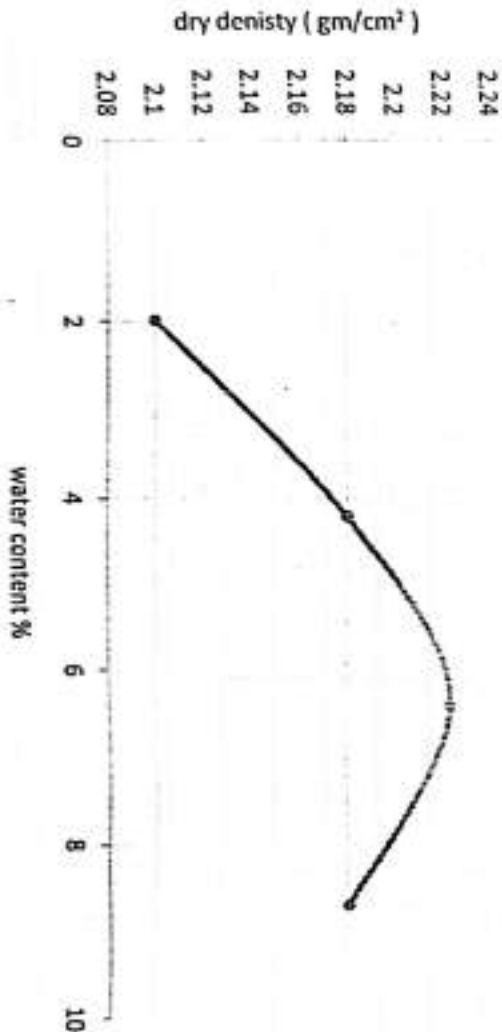
4- CBR > 10 for middle and lower embankments according project spec page No 36.  
Signature:    
E. M. El-Sherpieny  
الرجو التوقيع: 3 شارع الملك فيصل - القاهرة - مصر



Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الأجي  
Project : Electric Express Train – HSR From Qous To Arman  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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



• Max dry density (gm/cm³) : 2.22

• Optimum moisture content % : 6.4 %

**CEL**

Signature

البريد الإلكتروني: 219.994 437  
البريد الإلكتروني: 219.994 437

Company Name : شركة الدقي  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M)  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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).       | 45.3        | Max 50 %                        | -----    | -----    |
| 0.425 mm (No. 40).     | 30.7        | Max 30 %                        | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 10.9        | 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

**CEL**  
Signature:   
مهندس محاسن  
219 991 437  
الكويت - شارع الملك فهد - برج الميراث



*Consulting Engineering Bureau & Laboratories*  
مكتب محامل الاستشارات الهندسية

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

**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 / .....



شركة الذهبية : Company Name :

Project : Electric Express Train – HSR From Qous To Arman

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

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

Delivery Date : 28/10/2023

Reporting Date : 01/11/2023

Reporting No. : 08-13

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) | 10.9        |

Signature / *[Signature]*



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 0167-4544/97/0000-0000  
 0000-0000


$$\begin{aligned} \frac{1}{2} \frac{d}{dt} \left( \frac{1}{2} \frac{d^2}{dt^2} \right) &= \frac{1}{2} \frac{d}{dt} \left( \frac{1}{2} \frac{d^2}{dt^2} \right) \\ &= \frac{1}{2} \frac{d}{dt} \left( \frac{1}{2} \frac{d^2}{dt^2} \right) \end{aligned}$$

Company Name : شركة الأهلي  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 98.2      |
| 37.5               | 1.5                | 96.8      |
| 25                 | 1                  | 86.6      |
| 19                 | $\frac{3}{4}$      | 80.4      |
| 12.50              | $\frac{1}{2}$      | 71.1      |
| 9.50               | $\frac{3}{8}$      | 64.5      |
| 4.75               | 4                  | 48.9      |
| 2.00               | 10                 | 45.3      |
| 0.425              | 40                 | 30.7      |

Signature /



مكتبة معامل الاستشارات الهندسية:

طُرِكَ الذَّهَبِي :

## : Electric Express Train – HSR From Qous To Armant

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

: Soil Embankment ( Upper Embankment 0.0 M )

28/10/2023

: 01/11/2023

: 08-13

Dear Gentleman,

Attached here with the delivered on 28 / 10 / 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 /s/ s. a. b. l. t. /s/



# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 18/12/2023  
Soil type : Middle Embankment  
Location : ST From 638+780 To 638+940  
Level : -5 M  
Report No. : 120

## 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      | 638+825 | 1483.3                           | 2.31                             | 6.4                | 2.17                               | 97.6%                    | Comply     |
| 2      | 638+850 | 1629.9                           | 2.28                             | 6.4                | 2.15                               | 96.6%                    | Comply     |
| 3      | 638+870 | 1591.0                           | 2.30                             | 6.4                | 2.16                               | 97.3%                    | Comply     |
| 4      | 638+895 | 1374.3                           | 2.23                             | 5.8                | 2.11                               | 95.0%                    | Comply     |
| 5      | 638+905 | 1656.3                           | 2.25                             | 6.4                | 2.12                               | 95.3%                    | Comply     |
| 6      | 638+925 | 1463.9                           | 2.32                             | 6.4                | 2.18                               | 98.4%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature

CEL  
مكتب معامل الاستشارات الهندسية  
مصر  
219 999 437  
الشارع رقم 3 شارع النيل - القاهرة - مصر

3 El Mok El Ahdal Street  
Zamalek, Cairo  
Tel: 219 999 437

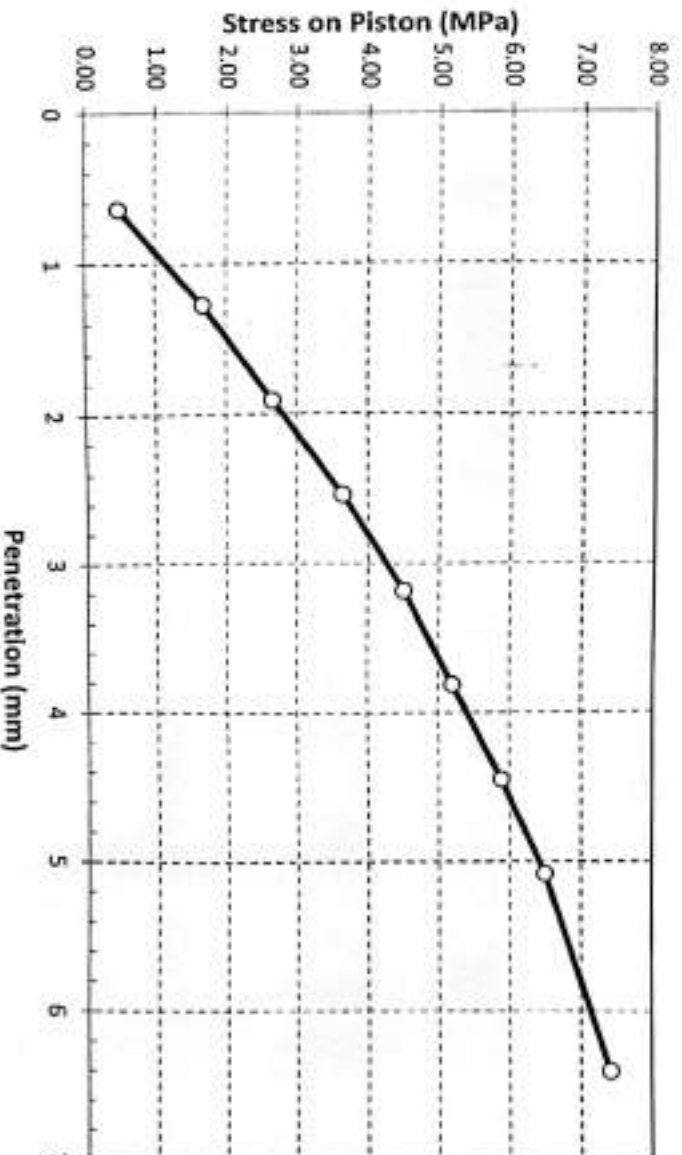
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Testing Laboratory

شركة الأهلي  
مكتب معامل الاستشارات الهندسية  
مصر  
219 999 437

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

Load Penetration Curve of CBR Test

ASTM D-1883



**CEEL**  
Signature: *[Signature]*  
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زيتونة - القاهرة  
تول فرى 27367237 - 27363693

Company Name : شركة الذهبى

Project : Electric Express Train – HSR From Qous To Armant

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

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

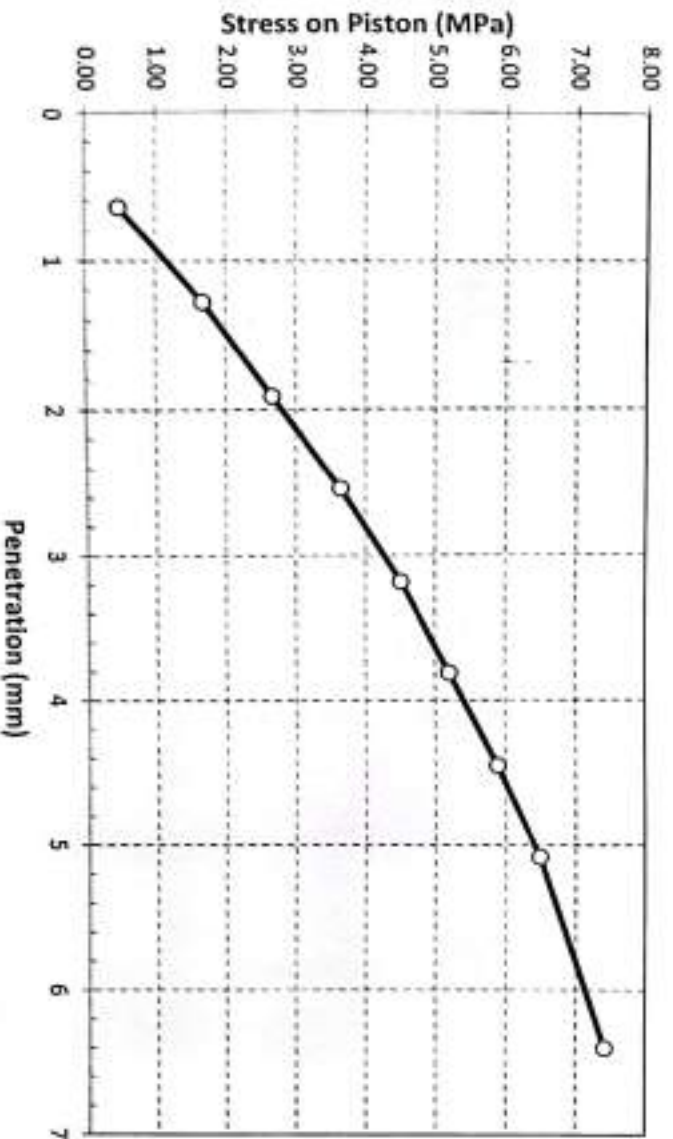
Delivery Date : 28/10/2023

Reporting Date : 01/11/2023

Reporting No. : 08-13

### Load Penetration Curve of CBR Test

ASTM D-1883



**CEL**  
Signature: *[Signature]*  
مدير مكتب الاستشارات الهندسية  
219 991 437  
ت. 011 219 991 437  
ف. 011 219 991 437

3 E Malek El Agha Street  
Zakaria, Cairo  
Tel: Fax: 219991437 - 219991437

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ف. 011 219 991 437  
ت. 011 219 991 437

Company Name : شركة الأهلي  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.48                   |
| 1.27        | 0.050 | 1.67                   |
| 1.91        | 0.075 | 2.66                   |
| 2.54        | 0.100 | 3.65                   |
| 3.18        | 0.125 | 4.51                   |
| 3.81        | 0.150 | 5.20                   |
| 4.45        | 0.175 | 5.88                   |
| 5.08        | 0.200 | 6.50                   |
| 6.35        | 0.250 | 7.42                   |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
|                                   | St. Value    | Sample results |           |
| At 0.1 inch (2.54 mm) penetration | 6.90         | 3.65           | 52.8%     |

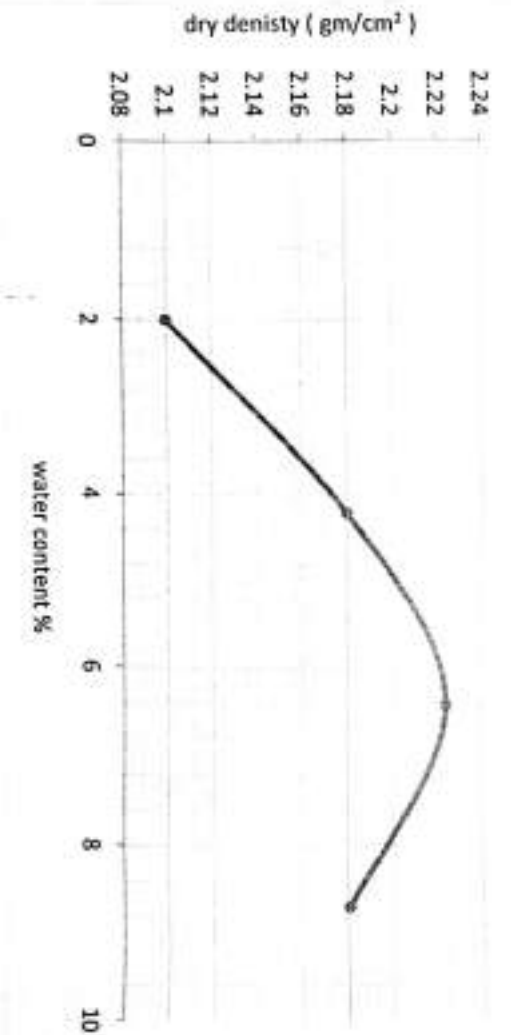
Notes:

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.22(gm /cm<sup>3</sup>)  
At = 6.4 % optimum water content.
- 3- Surcharge load = 30 Kp.
- 4- CBR 10 for middle and lower embankments according project spec page No 36.

**CEL**  
Signature of Engineer /  
المهندس / المهندس  
المرتبطة / المرتبطة  
30 شارع الملك فيصل  
الرياض 11564  
0994437

Company Name : شركة النقي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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



- Max dry density (gm/cm³) : 2.22
- Optimum moisture content % : 6.4 %

**CEL**  
Signature : *[Handwritten Signature]*  
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البريد الإلكتروني: info@cel.com.eg  
الهاتف: 219 904 437

3 El Malek El Attia Street  
Zaafra, Cairo  
Tel & Fax : 27363663 : 27363663

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إلى مكتب الاستشارات  
الهندسية  
مكتب محامل الاستشارات الهندسية

شركة الكهبي :

## : Electric Express Train – HSR From Qous To Arman

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

: Soil Embankment ( Upper Embankment 0.0 M)

: 28/10/2023

: 01/11/2023

: 08-13

### Soil Classification

| TEST                   | Results<br>(%) | Limits according<br>Projects Specs |          |          |
|------------------------|----------------|------------------------------------|----------|----------|
|                        |                | (A-1-a)                            | (A-1-b)  | (A-2-4)  |
| • Group Classification |                |                                    |          |          |
| 2.00 mm (No.10).       | 45.3           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).     | 30.7           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).    | 10.9           | 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**  
مستشار و محاسب  
219 094 437  
الرياض - جدة - مكة المكرمة - الرياض - جدة - مكة المكرمة - الرياض

3 El Malek El Arabi Street  
Zurhafa, Cairo  
Tel/Fax: 27362231 - 27363443


$$\begin{aligned} \mathbb{P}^{(n)}(T) &= \mathbb{P}^{(n)}(T \leq t) = \mathbb{P}^{(n)}(T \leq t) = \mathbb{P}^{(n)}(T \leq t) \\ &= \mathbb{P}^{(n)}(T \leq t) = \mathbb{P}^{(n)}(T \leq t) = \mathbb{P}^{(n)}(T \leq t) \end{aligned}$$

Company Name : شركة الأنبي

Project : Electric Express Train – HSR From Qous To Armant

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

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

Delivery Date : 28/10/2023

Reporting Date : 01/11/2023

Reporting No. : 08-13

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

| Test             | Results<br>(%) |
|------------------|----------------|
| Liquid Limit     | 0              |
| Plastic Limit    | 0              |
| Plasticity Index | 0              |

Signature / .....



Company Name : شركة النجدي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

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) | 10.9        |

Signature /



Company Name : شركة الأهلي  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 28/10/2023  
Reporting Date : 01/11/2023  
Reporting No. : 08-13

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 98.2      |
| 37.5               | 1.5                | 96.8      |
| 25                 | 1                  | 86.6      |
| 19                 | $\frac{3}{4}$      | 80.4      |
| 12.50              | $\frac{1}{2}$      | 71.1      |
| 9.50               | $\frac{3}{8}$      | 64.5      |
| 4.75               | 4                  | 48.9      |
| 2.00               | 10                 | 45.3      |
| 0.425              | 40                 | 30.7      |

Signature /



$\mu_{\text{eff}} = \mu_{\text{eff}}^0 + k_B T \ln \left( \frac{1}{1 + \frac{K_{\text{eff}}}{K_{\text{eff}}^0}} \right)$

# CEL

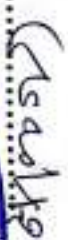
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات والهندسة

Company Name : شركة طافى  
Project : Electric Express Train - HSR From Qous To Armanat  
Testing Date : 6/12/2023  
Soil type : Middle Embankment  
Location : ST From 638+920 / 639+100  
Level : - 3.5M  
Report No. : 117

## 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      | 638+965 | 1763.2                           | 2.26                             | 5.8                | 2.13                               | 96.1%                    | Comply     |
| 2      | 638+996 | 1381.3                           | 2.32                             | 5.8                | 2.20                               | 99.0%                    | Comply     |
| 3      | 639+050 | 1658.3                           | 2.23                             | 5.3                | 2.12                               | 95.4%                    | Comply     |
| 4      | 639+085 | 1450.7                           | 2.24                             | 5.8                | 2.12                               | 95.3%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature / ..... 



3 El Malek El Aftal Street  
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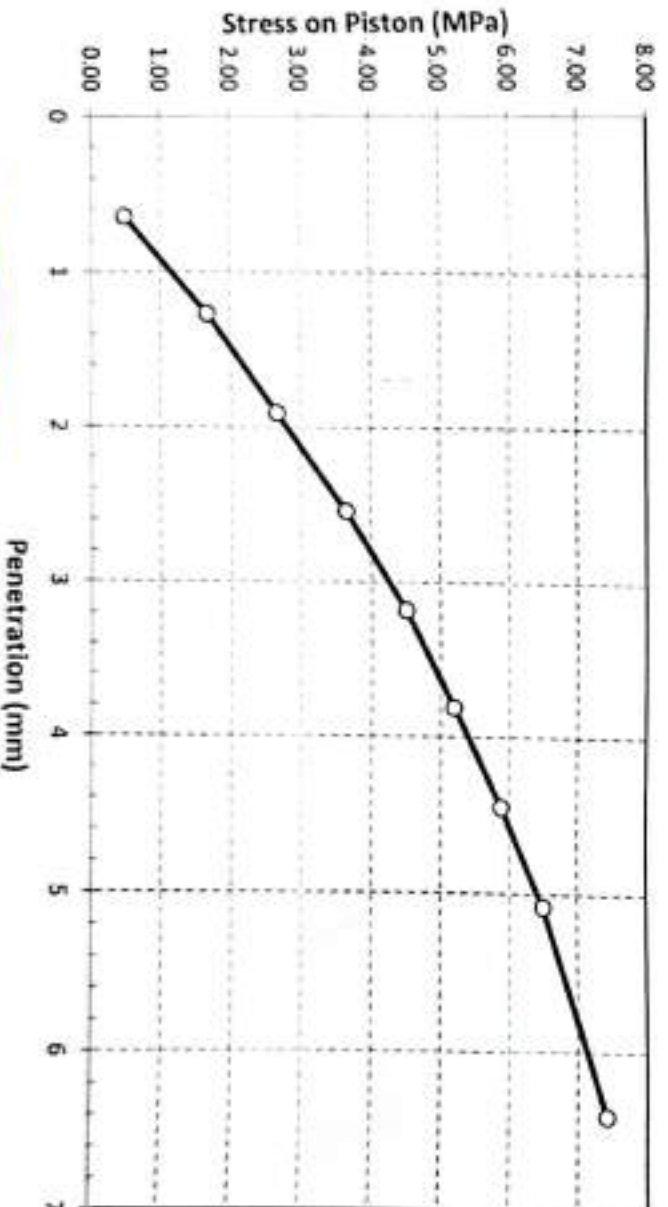


أ.م. فضل الجليل  
مدير عام الشركة  
تلفون : 27367231 - 27363660  
تلفون : 27367231 - 27363660

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Arment  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 08/1/2023  
Reporting Date : 12/1/2023  
Reporting No. : 08-14

Load Penetration Curve of CBR Test

ASTM D-1883



**CEL**  
Signature of Engineer  
مهندس محمد عبد الله محمد  
3 شارع النيل - القاهرة - مصر

Company Name : شركة الأهلي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 08/11/2023  
Reporting Date : 12/11/2023  
Reporting No. : 08-14

Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 |                        |
| 1.27        | 0.050 |                        |
| 1.91        | 0.075 |                        |
| 2.54        | 0.100 |                        |
| 3.18        | 0.125 |                        |
| 3.81        | 0.150 |                        |
| 4.45        | 0.175 |                        |
| 5.08        | 0.200 |                        |
| 6.35        | 0.250 |                        |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
|                                   | St. Value    | Sample results |           |
| At 0.1 inch (2.54 mm) penetration | 6.90         | 3.65           | 52.8%     |

Notes:

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

Signature

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Zarqa, Cairo.  
Tel: Fax: 27367521 - 27367583



شركة الأهلي  
قوة الكفاءة والاعتماد  
للجودة والاعتماد

Company Name : شركة الانجي

Project

: Electric Express Train – HSR From Qous To Armant

Location

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

Type of sample

: Soil Embankment ( Upper Embankment 0.0 M )

Delivery Date

: 08/11/2023

Reporting Date

: 12/11/2023

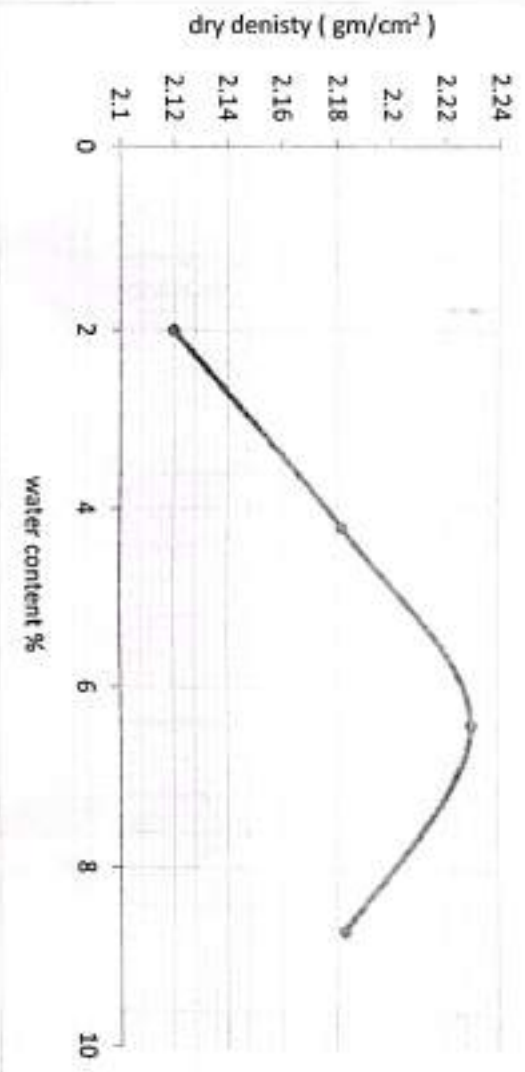
Reporting No.

: 08-14

## Moisture – Density relation of soil

### Test result (Modified proctor test)

#### ASTM D-1557



• Max dry density (gm/cm³)

: 2.23

• Optimum moisture content %

: 6.4 %

Signature

CEL  
مكتب محامل الاستشارات الهندسية  
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Toll Free : 27367231 27363693

E. Maher E. Abdel Sheror

Zatayet, Cairo

Toll Free : 27367231 27363693

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أ. م. محمد عبد الشكور

القاهرة، القاهرة

الهاتف : 27367231 27363693



Company Name : شركة الأهلي

Project : Electric Express Train – HSR From Qous To Arment

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

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

Delivery Date : 08/11/2023

Reporting Date : 12/11/2023

Reporting No. : 08-14

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

| Test             | Results<br>(%) |
|------------------|----------------|
| Liquid Limit     | 0              |
| Plastic Limit    | 0              |
| Plasticity Index | 0              |

CEL  
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Signature: *Abdelhakim*  
أحمد الحكيمة 3 شارع انتال بالفي - الهرم - القاهرة



Consulting Engineering Bureau & Laboratories  
مكتب محامل الاستشارات الهندسية

Company Name : شركة الأنبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 08/11/2023  
Reporting Date : 12/11/2023  
Reporting No. : 08-14

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

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

**CEL**  
Signature:   
المرجع الرئيسي 3 شارع وسط الأنبي، الجيزة، مصر



Consulting Engineering Bureau & Laboratories  
مكتب معامل الاختبارات والاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train - HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 08/11/2023  
Reporting Date : 12/11/2023  
Reporting No. : 08-14

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 96.1      |
| 37.5               | 1.5                | 91.6      |
| 25                 | 1                  | 85.1      |
| 19                 | $\frac{3}{4}$      | 80.7      |
| 12.50              | $\frac{1}{2}$      | 70.0      |
| 9.50               | $\frac{3}{8}$      | 61.8      |
| 4.75               | 4                  | 45.8      |
| 2.00               | 10                 | 43.3      |
| 0.425              | 40                 | 29.2      |

**CEL**  
Signature:   
المرکز الهندسي لمعامل الاختبارات والاستشارات  
3 شارع الملك فيصل - الرياض 11564  
009 437 437 437

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST: 639+000 E=32°54'25.6" N=25°53'59.1"  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 08/11/2023  
Reporting Date : 12/11/2023  
Reporting No. : 08-14

Dear Gentleman,

Attached here with the delivered on 8 / 11 / 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*



Company Name : شركة الأهلي  
 Project : Electric Express Train – HSR From Qous To Armant  
 Testing Date : 29/11/2023  
 Soil type : Middle Embankment  
 Location : ST From 638+720 TO 638+920  
 Level : - 3.5 M  
 Report No. : 112

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

| # | Station | Test Hole<br>Volume cm <sup>3</sup> | Bulk Density<br>gm/ cm <sup>3</sup> | Moisture<br>Content % | Dry Density<br>(gm/ cm <sup>3</sup> ) | Degree of<br>Compaction (%) | Acceptance |
|---|---------|-------------------------------------|-------------------------------------|-----------------------|---------------------------------------|-----------------------------|------------|
| 1 | 638+740 | 1676.4                              | 2.34                                | 6.4                   | 2.20                                  | 98.7%                       | Comply     |
| 2 | 638+785 | 1545.8                              | 2.32                                | 6.4                   | 2.18                                  | 97.6%                       | Comply     |
| 3 | 638+814 | 1402.8                              | 2.32                                | 6                     | 2.19                                  | 98.2%                       | Comply     |
| 4 | 638+840 | 1455.6                              | 2.24                                | 5.8                   | 2.12                                  | 95.1%                       | Comply     |
| 5 | 638+865 | 1295.8                              | 2.33                                | 6.4                   | 2.19                                  | 98.0%                       | Comply     |
| 6 | 638+895 | 1373.6                              | 2.25                                | 5.5                   | 2.13                                  | 95.5%                       | Comply     |
| 7 | 638+918 | 1522.2                              | 2.31                                | 6.4                   | 2.17                                  | 97.3%                       | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.23 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
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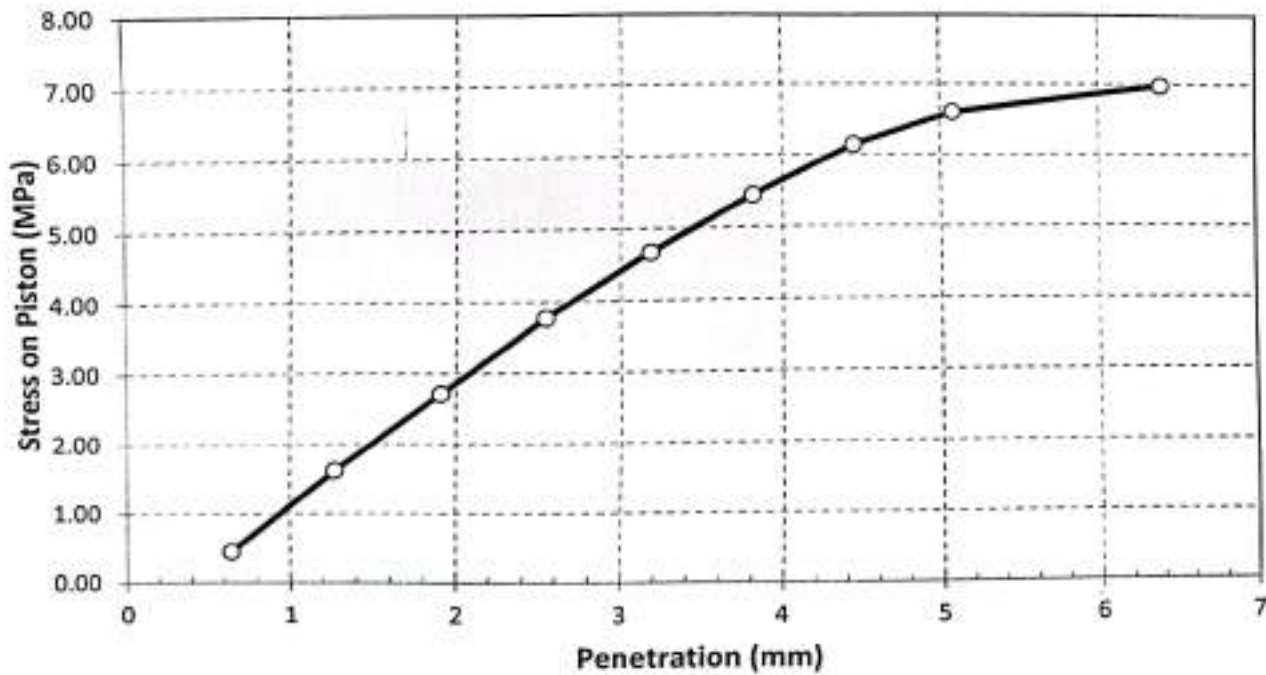
رقم الترخيص: ٢٠١٧  
 الهيئة العامة  
 للمقاييس والمواصفات

# CEL

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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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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



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الزمالك - القاهرة  
القاهرة - فاكس : 27363000 - 27367231

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 : 5/10/2023  
 Reporting Date : 9/10/2023  
 Reporting No. : 10-10

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 0.46                   |
| 1.27        | 0.050 | 1.62                   |
| 1.91        | 0.075 | 2.72                   |
| 2.54        | 0.100 | 3.78                   |
| 3.18        | 0.125 | 4.67                   |
| 3.81        | 0.150 | 5.45                   |
| 4.45        | 0.175 | 6.14                   |
| 5.08        | 0.200 | 6.60                   |
| 6.35        | 0.250 | 6.99                   |

| CBR Result                        | Stress (Mpa) |                | CBR 100 % |
|-----------------------------------|--------------|----------------|-----------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 54.8 %    |
|                                   | 6.90         | 3.78           |           |

**Notes:**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of = 2.23(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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 219 991 437  
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 فرع 1 - القاهرة

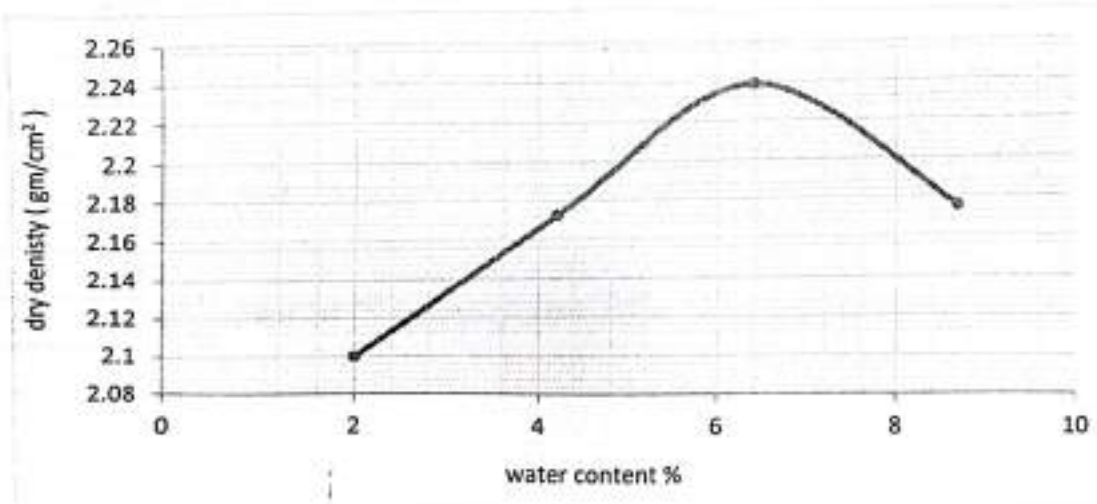
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\* ش.م.م. المحملات  
 الزمالة - القاهرة  
 تليفون : 27367231 - 27363093

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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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



- Max dry density (gm/cm³) : 2.23
- Optimum moisture content % : 6.4 %

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تلفون - 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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

Soil Classification

| TEST                      | Results<br>(%) | Limits according<br>Projects Specs |          |          |
|---------------------------|----------------|------------------------------------|----------|----------|
| • Group Classification    | (A-1-a)        | (A-1-a)                            | (A-1-b)  | (A-2-4)  |
| 2.00 mm (No.10).          | 39.4           | Max 50 %                           | -----    | -----    |
| 0.425 mm (No. 40).        | 26.3           | Max 30 %                           | Max 50 % | -----    |
| 0.075 mm (No. 200).       | 9.5            | Max 15 %                           | Max 15 % | Max 15 % |
| Liquid Limit<br>.....     | -----          | -----                              | -----    | -----    |
| Plasticity index<br>..... | 0              | Max 6 %                            | Max 6 %  | Max 10 % |

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

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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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

**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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التميز والجودة  
3 شارع الملك فيصل - الزمالك - القاهرة

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Consulting Engineering Bureau & Laboratories

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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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

**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) | 9.5         |

Signature / The stamp is an oval shape with a blue border. Inside, the word 'CEL' is written in large, bold, blue letters. Below it, in smaller blue text, is 'مكتب معامل الاستشارات الهندسية'. Further down, there is a signature in black ink. Below the signature, the text 'مستروحات' is written. At the bottom of the stamp, there is a date '21/9/2023' and a phone number '215-9111/437'. To the right of the phone number, there is a line of text: 'البريد الإلكتروني: 3 شارع الملك الافضل - الزمالة - القاهرة'.

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Zamalek, Cairo.  
Tel & Fax : 27367231 - 27363093

**IAS**  
ASSOCIATES

3 شارع الملك الافضل  
الزمالة - القاهرة  
التليفون - فاكس : 27367231 - 27363093

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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 : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

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

| Sieve Size<br>(mm) | Sieve Size<br>(IN) | Passing % |
|--------------------|--------------------|-----------|
| 50                 | 2                  | 99.5      |
| 37.5               | 1.5                | 95.4      |
| 25                 | 1                  | 91.6      |
| 19                 | ¾                  | 80.7      |
| 12.50              | ½                  | 75.2      |
| 9.50               | 3/8                | 71.9      |
| 4.75               | 4                  | 56.0      |
| 2.00               | 10                 | 39.4      |
| 0.425              | 40                 | 26.3      |

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٢ ش الملك الافضل  
الزمالك - القاهرة  
تليفون - فاكس : ٢٧٣٦٧٠٩٣ - ٢٧٣٦٧٢٣١



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Consulting Engineering Bureau & Laboratories  
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Company Name : شركة الذهبي  
Project : Electric Express Train – HSR From Qous To Armant  
Location : ST:641+400 E= 492410,088 N=2862759,57  
Type of sample : Soil Embankment ( Upper Embankment 0.0 M )  
Delivery Date : 5/10/2023  
Reporting Date : 9/10/2023  
Reporting No. : 10-10

Dear Gentleman,

Attached here with the delivered on 5 / 10 / 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  
مستودعات، الأقصر  
رف. التلخيص الرئيسي 219.991.437  
المركز الرئيسي 3 شارع الملك الافضل - الزمالة - القاهرة

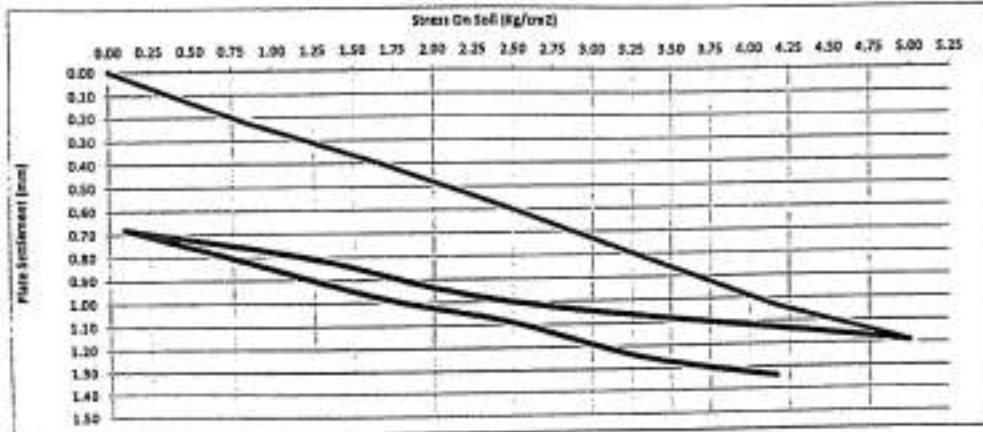
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**IAS**  
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الزمالك - القاهرة  
تليفون : 27367231 - 27363093

Company Name : شركة الذهبى، القمام لى و التوكيدات المعمورة  
Project : Electric Express Train Section (8) Qous to Amman.  
Test Date : 28/11/2023  
Report Date : 24/11/2023  
Station : 641+820  
Test No : 01

Nonrepetitive Static Plate Load Tests of Soils  
DIN 18134



| Loading (t)     | 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 | 1.68   | 2.50   | 3.33   | 4.17   | 5.00   |
| Settlement (mm) | 0.00 | 0.22 | 0.40   | 0.60   | 0.82   | 1.04   | 1.19   |

| UnLoading (t)   | 1    | 2    | 3     | 4    |
|-----------------|------|------|-------|------|
| Stage(Kg)       | 3533 | 1766 | 884   | 71   |
| Stress (Kg/cm2) | 5.00 | 2.50 | 1.250 | 0.10 |
| Settlement (mm) | 1.19 | 1.00 | 0.81  | 0.68 |

|             |                |           |      |          |      |      |      |
|-------------|----------------|-----------|------|----------|------|------|------|
| D (mm) =    | 300            | S1 (mm) = | 0.37 | S2(mm) = | 0.86 | ΔS = | 0.49 |
| Ev1 (MPa) = | (0.75*D*Δσ)/ΔS |           |      |          |      |      |      |
|             | 89.3           |           |      |          |      |      |      |

$$Ev2/Ev1 = 1.55$$

| Loading (t)     | 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    | 1.68   | 2.50   | 3.33   | 4.17   |
| Settlement (mm) | 0.65 | 0.62    | 0.90   | 1.09   | 1.25   | 1.34   |

|             |                |           |      |          |      |      |      |
|-------------|----------------|-----------|------|----------|------|------|------|
| D (mm) =    | 300            | S1 (mm) = | 0.95 | S2(mm) = | 1.27 | ΔS = | 0.32 |
| Ev2 (MPa) = | (0.75*D*Δσ)/ΔS |           |      |          |      |      |      |
|             | 138.3          |           |      |          |      |      |      |

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/cm<sup>2</sup>)

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



Company Name : شركة الذهبى للمقاولات والتوريدات العمومية  
Project : Electric Express Train Sector (B) Gous to Arment.  
Test Date : 28/11/2023  
report date : 29/11/2023  
Station : 641+820  
Test No. : 01

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

**Loading Stage (1)**

| Loading | Stress | Dial 1 | Settlement | Dial 2 | Settlement | Average |
|---------|--------|--------|------------|--------|------------|---------|
|         | Kg/cm2 |        | mm         |        | mm         |         |
| 0       | 0.00   | 20.00  | 0.00       | 20.00  | 0.00       | 0.00    |
| 1       | 0.83   | 19.76  | 0.24       | 19.80  | 0.20       | 0.22    |
| 2       | 1.66   | 19.57  | 0.43       | 19.63  | 0.37       | 0.40    |
| 3       | 2.50   | 19.34  | 0.66       | 19.46  | 0.54       | 0.60    |
| 4       | 3.33   | 19.09  | 0.91       | 19.28  | 0.72       | 0.82    |
| 5       | 4.17   | 18.86  | 1.14       | 19.07  | 0.93       | 1.04    |
| 6       | 5.00   | 18.73  | 1.27       | 18.89  | 1.11       | 1.19    |

**Unloading Stage (1)**

| Loading | Stress | Dial 1 | Settlement | Dial 2 | Settlement | Average |
|---------|--------|--------|------------|--------|------------|---------|
|         | Kg/cm2 |        | mm         |        | mm         |         |
| 1       | 2.50   | 18.95  | 1.05       | 19.05  | 0.95       | 1.00    |
| 2       | 1.25   | 19.17  | 0.83       | 19.21  | 0.79       | 0.81    |
| 3       | 0.100  | 19.31  | 0.69       | 19.33  | 0.67       | 0.68    |

**Loading Stage (2)**

| Loading           | Stress | Dial 1 | Settlement | Dial 2 | Settlement | Average |
|-------------------|--------|--------|------------|--------|------------|---------|
|                   | Kg/cm2 |        | mm         |        | mm         |         |
| 0                 | 0.83   | 19.16  | 0.84       | 19.20  | 0.80       | 0.82    |
| approximately equ | 1.66   | 19.03  | 0.97       | 19.01  | 0.99       | 0.98    |
| stress is reached |        |        |            |        |            |         |
| 2                 | 2.50   | 18.99  | 1.01       | 18.83  | 1.17       | 1.09    |
| 3                 | 3.33   | 18.81  | 1.19       | 18.69  | 1.31       | 1.25    |
| 4                 | 4.17   | 18.76  | 1.24       | 18.56  | 1.44       | 1.34    |



## 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 : Middle Embankment
- Job requiremer :  $E_{v2} > 40 \text{ MPa}$

| Item                                                             | Descriptions   |
|------------------------------------------------------------------|----------------|
| Type of bedding material below the plate                         | Natural Soil   |
| Plate Diameter (mm)                                              | 300            |
| date of measurement                                              | : 28/11/2023   |
| 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<br>( m ) | First Cycle              | Second<br>Cycle          | $E_{v2} / E_{v1}$<br>Ratio |
|----------|---------|---------|----------|----------------|--------------------------|--------------------------|----------------------------|
|          | From    | To      |          |                | $E_{v1} \text{ ( MPa )}$ | $E_{v2} \text{ ( Mpa )}$ |                            |
| 1        | 641+780 | 641+840 | 641+820  | : +1.5         | 89.3                     | 138.3                    | 1.55                       |

Signature /



Company : شركة الذهبى للمقاولات والكهرباء العمومية -

Project : Electric Express Train Sector (b) Gous to Arment.  
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 10134:2012-04 and project requirements  
Test Location : Station 641+780 to 641+840  
Station : 641+820  
Level : -1.5  
Test Date : 28/11/2023  
Report Date : 29/11/2023  
Type of soil : Middle Embankment  
Report No. : 01

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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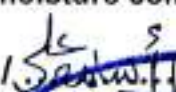
Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company Name : شركة الذهبى  
Project : Electric Express Train – HSR From Qous To Armant  
Testing Date : 28/11/2023  
Soil type : Middle Embankment  
Location : ST From 641+780 TO 641+840  
Level : - 1.5 M  
Report No. : 111-1

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

| Test # | Station | Test Hole Volume<br>cm <sup>3</sup> | Bulk Density<br>gm/ cm <sup>3</sup> | Moisture Content % | Dry Density<br>(gm/ cm <sup>3</sup> ) | Degree of Compaction (%) | Acceptance |
|--------|---------|-------------------------------------|-------------------------------------|--------------------|---------------------------------------|--------------------------|------------|
| 1      | 641+810 | 1550.0                              | 2.29                                | 5.8                | 2.16                                  | 96.9%                    | Comply     |
| 2      | 641+830 | 1513.9                              | 2.34                                | 6.4                | 2.20                                  | 98.7%                    | Comply     |

Degree of compaction based on proctor test dated At

- Max. dry density = 2.23 gm/cm<sup>3</sup>
- At optimum moisture content = 6.4 %
- Signature / 



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Zamalek, Cairo  
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ش.م.م. الملك الأفندي  
الزمالك - القاهرة  
تلفون : 27367231 - 27363093

| مشروع القطار الكهربائي السريع القطاع الخامس           |                       |          |                       |             |
|-------------------------------------------------------|-----------------------|----------|-----------------------|-------------|
| تنفيذ شركة الأهبي للمقاولات                           |                       |          |                       |             |
| من الكم 720 + 638 الى 642+500                         |                       |          |                       |             |
| بيان اصال توضيحي لمستخلص جاري (3) عقد (2024/2023/306) |                       |          |                       |             |
| العدد                                                 | قيمة العقد            | المستخلص | كميات حفر ترربة عادية | كميات الردم |
| (2024/2023/306)                                       | عشرون مليون           | جاري 1   | -                     | 23100.00    |
|                                                       |                       | جاري 2   | 10000.00              | 121500.00   |
|                                                       |                       | جاري 3   | -                     | 34400.00    |
|                                                       | كميات تم حصرها        |          | -                     | 24219.30    |
|                                                       |                       | 14051.66 | 128231.31             |             |
|                                                       |                       | -        | 33745.88              |             |
|                                                       | اجمالي كميات تم حصرها |          | 14051.66              | 186196.49   |
| كميات تم صرفها                                        |                       |          | -                     | 23100.00    |
|                                                       |                       |          | 10000.00              | 121500.00   |
|                                                       |                       |          | -                     | 34400.00    |
|                                                       | اجمالي كميات تم صرفها |          | 10000.00              | 179000.00   |
|                                                       | المبقي من الكمية      |          | 4051.66               | 7196.49     |





محضر اعتماد كميات



التاريخ: 2/1/2024

اسم المشروع: مشروع القطار الكهربائي السريع (6 أكتوبر - اسوان - ابوسمبل) القطاع الخامس

قامت شركة برليانت كونلت للاستشارات الهندسية المساحية (استشارى الاعمال المساحية لهيئة الطرق والكبارى)

باعتماد الكميات المنفذة الخاصة بشركة الذهبي للمقاولات

| م             | من المحطة رقم | الى المحطة رقم | التصنيف     | الكمية بالمتر المكعب | الملاحظات             |
|---------------|---------------|----------------|-------------|----------------------|-----------------------|
| 1             | 638+720       | 639+100        | اعمال الردم | 9174.1               | اعمال ردم على (REV05) |
| 2             | 639+580       | 639+920        | اعمال الردم | 14427.09             | اعمال ردم على (REV05) |
| 3             | 641+000       | 641+840        | اعمال الردم | 10144.69             | اعمال ردم على (REV05) |
| اجمالي الكمية |               |                |             | 33745.88             |                       |

حضر جارى (3)

المرفقات:

استلام ميزانية شبكة

قطاعات عرضية

ثبت اكسيل موضح به الكميات



استشارى المساحة / مكتب برليانت

برليانت كونسلت للاستشارات الهندسية  
HSR. BLUE LINE. Sec.05  
استشارى الاعمال المساحية بالقطاع الخامس

مهندس الشركة المنفذة



حصر كميات الردم مستخلص جاري (3) شركة الذهبي (952+637-  
643+863) مشروع القطار السريع القطاع الخامس (قوص /ارمنت)

| Station    | Fill Area (Sq.M.) | Fill Volume (Cu.M.) | Cum. Fill Vol. (Cu.M.) |
|------------|-------------------|---------------------|------------------------|
| 638+720.00 | 16.61             | 166.1               | 166.1                  |
| 638+740.00 | 16.61             | 332.2               | 498.3                  |
| 638+760.00 | 16.61             | 332.2               | 830.5                  |
| 638+780.00 | 16.61             | 332.2               | 1162.7                 |
| 638+800.00 | 16.61             | 332.2               | 1494.9                 |
| 638+820.00 | 16.61             | 332.2               | 1827.1                 |
| 638+840.00 | 16.61             | 332.2               | 2159.3                 |
| 638+860.00 | 16.61             | 332.2               | 2491.5                 |
| 638+880.00 | 16.61             | 332.2               | 2823.7                 |
| 638+900.00 | 16.61             | 332.2               | 3155.9                 |
| 638+920.00 | 16.61             | 332.2               | 3488.1                 |
| 638+940.00 | 32.47             | 490.8               | 3978.9                 |
| 638+960.00 | 32.47             | 649.4               | 4628.3                 |
| 638+980.00 | 32.47             | 649.4               | 5277.7                 |
| 639+000.00 | 32.47             | 649.4               | 5927.1                 |
| 639+020.00 | 32.47             | 649.4               | 6576.5                 |

برقيات كونسول للإستشارات الهندسية

| Station    | Fill Area (Sq.M.) | Fill Volume (Cu.M.) | Cum. Fill Vol. (Cu.M.) |
|------------|-------------------|---------------------|------------------------|
| 639+040.00 | 32.47             | 649.4               | 7225.9                 |
| 639+060.00 | 32.47             | 649.4               | 7875.3                 |
| 639+080.00 | 32.47             | 649.4               | 8524.7                 |
| 639+100.00 | 32.47             | 649.4               | 9174.1                 |
| 639+580.00 | 45.41             | 454.1               | 9628.2                 |
| 639+600.00 | 45.41             | 908.2               | 10536.4                |
| 639+620.00 | 45.41             | 908.2               | 11444.6                |
| 639+640.00 | 45.41             | 908.2               | 12352.8                |
| 639+660.00 | 45.41             | 908.2               | 13261                  |
| 639+680.00 | 45.41             | 908.2               | 14169.2                |
| 639+700.00 | 45.41             | 908.2               | 15077.4                |
| 639+720.00 | 45.41             | 908.2               | 15985.6                |
| 639+740.00 | 46.77             | 921.76              | 16907.36               |
| 639+760.00 | 32.66             | 794.31              | 17701.67               |
| 639+780.00 | 37.15             | 698.17              | 18399.84               |
| 639+800.00 | 37.15             | 743.05              | 19142.89               |
| 639+820.00 | 37.15             | 743.05              | 19885.94               |
| 639+840.00 | 37.15             | 743.05              | 20628.99               |
| 639+860.00 | 37.15             | 743.05              | 21372.04               |

| Station    | Fill Area (Sq.M.) | Fill Volume (Cu.M.) | Cum. Fill Vol. (Cu.M.) |
|------------|-------------------|---------------------|------------------------|
| 639+880.00 | 37.15             | 743.05              | 22115.09               |
| 639+900.00 | 37.15             | 743.05              | 22858.14               |
| 639+920.00 | 37.15             | 743.05              | 23601.19               |
| 641+000.00 | 9.21              | 92.15               | 23693.34               |
| 641+020.00 | 9.21              | 184.3               | 23877.64               |
| 641+040.00 | 9.21              | 184.3               | 24061.94               |
| 641+060.00 | 9.21              | 184.3               | 24246.24               |
| 641+080.00 | 9.21              | 184.3               | 24430.54               |
| 641+100.00 | 9.21              | 184.3               | 24614.84               |
| 641+120.00 | 9.21              | 184.3               | 24799.14               |
| 641+140.00 | 9.21              | 184.3               | 24983.44               |
| 641+160.00 | 9.21              | 184.3               | 25167.74               |
| 641+180.00 | 9.21              | 184.3               | 25352.04               |
| 641+200.00 | 9.21              | 184.3               | 25536.34               |
| 641+220.00 | 9.21              | 184.3               | 25720.64               |
| 641+240.00 | 9.21              | 184.3               | 25904.94               |
| 641+260.00 | 9.21              | 184.3               | 26089.24               |
| 641+280.00 | 9.21              | 184.3               | 26273.54               |

بريانت كونسلت للدراسات الهندسية  
HSR. BLUE LINE. Sec.05



| Station    | Fill Area (Sq.M.) | Fill Volume (Cu.M.) | Cum. Fill Vol. (Cu.M.) |
|------------|-------------------|---------------------|------------------------|
| 641+300.00 | 9.21              | 184.3               | 26457.84               |
| 641+320.00 | 9.21              | 184.3               | 26642.14               |
| 641+340.00 | 9.21              | 184.3               | 26826.44               |
| 641+360.00 | 9.21              | 184.3               | 27010.74               |
| 641+380.00 | 9.21              | 184.3               | 27195.04               |
| 641+400.00 | 9.21              | 184.3               | 27379.34               |
| 641+420.00 | 9.21              | 184.3               | 27563.64               |
| 641+440.00 | 12.86             | 220.75              | 27784.39               |
| 641+460.00 | 12.86             | 257.2               | 28041.59               |
| 641+480.00 | 12.86             | 257.2               | 28298.79               |
| 641+500.00 | 12.86             | 257.2               | 28555.99               |
| 641+520.00 | 12.86             | 257.2               | 28813.19               |
| 641+540.00 | 12.86             | 257.2               | 29070.39               |
| 641+560.00 | 12.86             | 257.2               | 29327.59               |
| 641+580.00 | 12.86             | 257.2               | 29584.79               |
| 641+600.00 | 12.86             | 257.2               | 29841.99               |

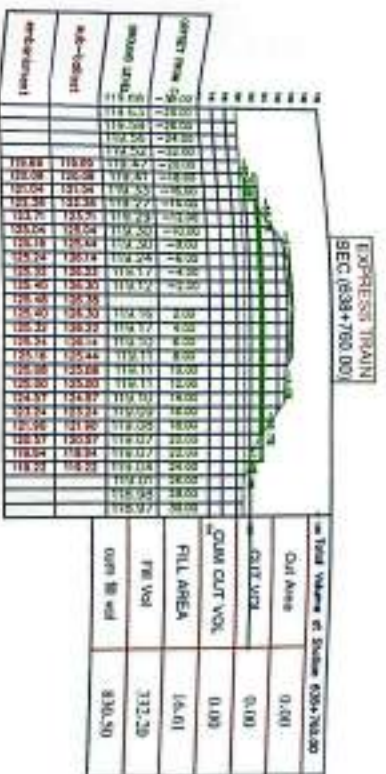
برلیانت کونسلٹنٹس لیمیٹڈ  
HSR BLUE LINE, Sec.05

انجینیر  
محمد بن عبد الله  
1443

| Station                | Fill Area (Sq.M.) | Fill Volume (Cu.M.) | Cum. Fill Vol. (Cu.M.) |
|------------------------|-------------------|---------------------|------------------------|
| 641+620.00             | 12.86             | 257.2               | 30099.19               |
| 641+640.00             | 12.86             | 257.2               | 30356.39               |
| 641+660.00             | 12.86             | 257.2               | 30613.59               |
| 641+680.00             | 12.86             | 257.2               | 30870.79               |
| 641+700.00             | 12.86             | 257.2               | 31127.99               |
| 641+720.00             | 12.86             | 257.2               | 31385.19               |
| 641+740.00             | 12.86             | 257.2               | 31642.39               |
| 641+760.00             | 12.86             | 257.2               | 31899.59               |
| 641+780.00             | 12.86             | 257.2               | 32156.79               |
| 641+800.00             | 31.33             | 441.86              | 32598.65               |
| 641+820.00             | 32.45             | 637.77              | 33236.42               |
| 641+840.00             | 18.49             | 509.46              | 33745.88               |
| اجمالى كمية الردم (م3) |                   |                     | 33745.88               |

بريانت كونسولت للهندسة  
HSR. BLUE LINE. Sec.05  
استشارى الاعمال المساحية بالقطاع الخامس





|        | Learning Objectives                               |
|--------|---------------------------------------------------|
| 1.0000 | Explain the importance of the learning objectives |

|                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| Owner/Consultant    |               |
| Design/Construction |               |
| Contractor          | EL-ZAHEDY<br> |

بريانت كوستلر للإستشارات الهندسية  
HSR. DUELINE. Sec.05  
إستشاري الأعمال الهندسية والتجارة العامة

**مكتب الاستشارات**  
**Spectrum Consultancy**

[illegible]

|                       |                                                                                     |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Contractor            | El-Zahabi                                                                           |  |
| Sub-T Contractor      |  |  |
| Company name and logo |  |  |

**Drawing Name**  
cross-sec for HSB (bottom) - Allium section B

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



إستشاري الأعمال المساعد بالقطاع الحكومي  
NON-PLACEMENT Sec.05  
بريد إلكتروني: [ahmed.ahmed@kaf.gov.kw](mailto:ahmed.ahmed@kaf.gov.kw)





|                                |                                |
|--------------------------------|--------------------------------|
| SECTION (FROM-DUE TO DISTANCE) | SECTION (FROM-DUE TO DISTANCE) |
| SECTION (FROM-DUE TO DISTANCE) | SECTION (FROM-DUE TO DISTANCE) |
| SECTION (FROM-DUE TO DISTANCE) | SECTION (FROM-DUE TO DISTANCE) |



Contractor: EL-ZAHABY  
Drawing No: ...  
Scale: 1:1000  
Date: ...

EXPRESS TRAIN  
SEC. (838+920.00)



EXPRESS TRAIN  
SEC. (838+940.00)



إسنادي الأمانة العامة للتأمين  
ISRA BLUE LINE-SEC.05

EXPRESS TRAIN  
SEC. (838+880.00)



EXPRESS TRAIN  
SEC. (838+900.00)





| EXPRESS TRAIN<br>SE/C (6319+100.00) |        | Total Volume at Station 6319+00.00 |         |
|-------------------------------------|--------|------------------------------------|---------|
|                                     |        | Cut Area                           | 0.00    |
|                                     |        | CUT VOL                            | 0.00    |
|                                     |        | CUM CUT VOL                        | 0.00    |
|                                     |        | FILL AREA                          | 32.47   |
|                                     |        | FILL VOL                           | 649.40  |
|                                     |        | cum fill vol                       | 9174.10 |
| station                             | 25+100 |                                    |         |
| station                             | 25+150 |                                    |         |
| station                             | 25+200 | 25.00                              | 25.00   |
| station                             | 25+250 | 25.00                              | 25.00   |
| station                             | 25+300 | 25.00                              | 25.00   |
| station                             | 25+350 | 25.15                              | 25.15   |
| station                             | 25+400 | 25.22                              | 25.22   |
| station                             | 25+450 | 25.22                              | 25.22   |
| station                             | 25+500 | 25.22                              | 25.22   |
| station                             | 25+550 | 25.22                              | 25.22   |
| station                             | 25+600 | 25.22                              | 25.22   |
| station                             | 25+650 | 25.22                              | 25.22   |
| station                             | 25+700 | 25.22                              | 25.22   |
| station                             | 25+750 | 25.22                              | 25.22   |
| station                             | 25+800 | 25.22                              | 25.22   |
| station                             | 25+850 | 25.22                              | 25.22   |
| station                             | 25+900 | 25.22                              | 25.22   |
| station                             | 25+950 | 25.22                              | 25.22   |
| station                             | 26+000 | 25.22                              | 25.22   |
| station                             | 26+050 | 25.22                              | 25.22   |
| station                             | 26+100 | 25.22                              | 25.22   |
| station                             | 26+150 | 25.22                              | 25.22   |
| station                             | 26+200 | 25.22                              | 25.22   |
| station                             | 26+250 | 25.22                              | 25.22   |
| station                             | 26+300 | 25.22                              | 25.22   |
| station                             | 26+350 | 25.22                              | 25.22   |
| station                             | 26+400 | 25.22                              | 25.22   |
| station                             | 26+450 | 25.22                              | 25.22   |
| station                             | 26+500 | 25.22                              | 25.22   |
| station                             | 26+550 | 25.22                              | 25.22   |
| station                             | 26+600 | 25.22                              | 25.22   |
| station                             | 26+650 | 25.22                              | 25.22   |
| station                             | 26+700 | 25.22                              | 25.22   |
| station                             | 26+750 | 25.22                              | 25.22   |
| station                             | 26+800 | 25.22                              | 25.22   |
| station                             | 26+850 | 25.22                              | 25.22   |
| station                             | 26+900 | 25.22                              | 25.22   |
| station                             | 26+950 | 25.22                              | 25.22   |
| station                             | 27+000 | 25.22                              | 25.22   |
| station                             | 27+050 | 25.22                              | 25.22   |
| station                             | 27+100 | 25.22                              | 25.22   |
| station                             | 27+150 | 25.22                              | 25.22   |
| station                             | 27+200 | 25.22                              | 25.22   |
| station                             | 27+250 | 25.22                              | 25.22   |
| station                             | 27+300 | 25.22                              | 25.22   |
| station                             | 27+350 | 25.22                              | 25.22   |
| station                             | 27+400 | 25.22                              | 25.22   |
| station                             | 27+450 | 25.22                              | 25.22   |
| station                             | 27+500 | 25.22                              | 25.22   |
| station                             | 27+550 | 25.22                              | 25.22   |
| station                             | 27+600 | 25.22                              | 25.22   |
| station                             | 27+650 | 25.22                              | 25.22   |
| station                             | 27+700 | 25.22                              | 25.22   |
| station                             | 27+750 | 25.22                              | 25.22   |
| station                             | 27+800 | 25.22                              | 25.22   |
| station                             | 27+850 | 25.22                              | 25.22   |
| station                             | 27+900 | 25.22                              | 25.22   |
| station                             | 27+950 | 25.22                              | 25.22   |
| station                             | 28+000 | 25.22                              | 25.22   |
| station                             | 28+050 | 25.22                              | 25.22   |
| station                             | 28+100 | 25.22                              | 25.22   |
| station                             | 28+150 | 25.22                              | 25.22   |
| station                             | 28+200 | 25.22                              | 25.22   |
| station                             | 28+250 | 25.22                              | 25.22   |
| station                             | 28+300 | 25.22                              | 25.22   |
| station                             | 28+350 | 25.22                              | 25.22   |
| station                             | 28+400 | 25.22                              | 25.22   |
| station                             | 28+450 | 25.22                              | 25.22   |
| station                             | 28+500 | 25.22                              | 25.22   |
| station                             | 28+550 | 25.22                              | 25.22   |
| station                             | 28+600 | 25.22                              | 25.22   |
| station                             | 28+650 | 25.22                              | 25.22   |
| station                             | 28+700 | 25.22                              | 25.22   |
| station                             | 28+750 | 25.22                              | 25.22   |
| station                             | 28+800 | 25.22                              | 25.22   |
| station                             | 28+850 | 25.22                              | 25.22   |
| station                             | 28+900 | 25.22                              | 25.22   |
| station                             | 28+950 | 25.22                              | 25.22   |
| station                             | 29+000 | 25.22                              | 25.22   |
| station                             | 29+050 | 25.22                              | 25.22   |

| EXPRESS TRAIN<br>SEC (639+060.00) |        | Total Volume at Station 639+060.00 |  |
|-----------------------------------|--------|------------------------------------|--|
|                                   |        | Cut Area                           |  |
|                                   |        | CUT VOL                            |  |
|                                   |        | CUM CUT VOL                        |  |
|                                   |        | FILL AREA                          |  |
|                                   |        | FILL VOL                           |  |
|                                   |        | cum fill vol                       |  |
| 0+00                              | 51.211 |                                    |  |
| 0+05                              | 51.211 |                                    |  |
| 0+10                              | 51.211 |                                    |  |
| 0+15                              | 51.211 |                                    |  |
| 0+20                              | 51.211 |                                    |  |
| 0+25                              | 51.211 |                                    |  |
| 0+30                              | 51.211 |                                    |  |
| 0+35                              | 51.211 |                                    |  |
| 0+40                              | 51.211 |                                    |  |
| 0+45                              | 51.211 |                                    |  |
| 0+50                              | 51.211 |                                    |  |
| 0+55                              | 51.211 |                                    |  |
| 0+60                              | 51.211 |                                    |  |
| 0+65                              | 51.211 |                                    |  |
| 0+70                              | 51.211 |                                    |  |
| 0+75                              | 51.211 |                                    |  |
| 0+80                              | 51.211 |                                    |  |
| 0+85                              | 51.211 |                                    |  |
| 0+90                              | 51.211 |                                    |  |
| 0+95                              | 51.211 |                                    |  |
| 1+00                              | 51.211 |                                    |  |
| 1+05                              | 51.211 |                                    |  |
| 1+10                              | 51.211 |                                    |  |
| 1+15                              | 51.211 |                                    |  |
| 1+20                              | 51.211 |                                    |  |
| 1+25                              | 51.211 |                                    |  |
| 1+30                              | 51.211 |                                    |  |
| 1+35                              | 51.211 |                                    |  |
| 1+40                              | 51.211 |                                    |  |
| 1+45                              | 51.211 |                                    |  |
| 1+50                              | 51.211 |                                    |  |
| 1+55                              | 51.211 |                                    |  |
| 1+60                              | 51.211 |                                    |  |
| 1+65                              | 51.211 |                                    |  |
| 1+70                              | 51.211 |                                    |  |
| 1+75                              | 51.211 |                                    |  |
| 1+80                              | 51.211 |                                    |  |
| 1+85                              | 51.211 |                                    |  |
| 1+90                              | 51.211 |                                    |  |
| 1+95                              | 51.211 |                                    |  |
| 2+00                              | 51.211 |                                    |  |
| 2+05                              | 51.211 |                                    |  |
| 2+10                              | 51.211 |                                    |  |
| 2+15                              | 51.211 |                                    |  |
| 2+20                              | 51.211 |                                    |  |
| 2+25                              | 51.211 |                                    |  |
| 2+30                              | 51.211 |                                    |  |
| 2+35                              | 51.211 |                                    |  |
| 2+40                              | 51.211 |                                    |  |
| 2+45                              | 51.211 |                                    |  |
| 2+50                              | 51.211 |                                    |  |
| 2+55                              | 51.211 |                                    |  |
| 2+60                              | 51.211 |                                    |  |
| 2+65                              | 51.211 |                                    |  |
| 2+70                              | 51.211 |                                    |  |
| 2+75                              | 51.211 |                                    |  |
| 2+80                              | 51.211 |                                    |  |
| 2+85                              | 51.211 |                                    |  |
| 2+90                              | 51.211 |                                    |  |
| 2+95                              | 51.211 |                                    |  |
| 3+00                              | 51.211 |                                    |  |
| 3+05                              | 51.211 |                                    |  |
| 3+10                              | 51.211 |                                    |  |
| 3+15                              | 51.211 |                                    |  |
| 3+20                              | 51.211 |                                    |  |
| 3+25                              | 51.211 |                                    |  |
| 3+30                              | 51.211 |                                    |  |
| 3+35                              | 51.211 |                                    |  |
| 3+40                              | 51.211 |                                    |  |
| 3+45                              | 51.211 |                                    |  |
| 3+50                              | 51.211 |                                    |  |
| 3+55                              | 51.211 |                                    |  |
| 3+60                              | 51.211 |                                    |  |
| 3+65                              | 51.211 |                                    |  |
| 3+70                              | 51.211 |                                    |  |
| 3+75                              | 51.211 |                                    |  |
| 3+80                              | 51.211 |                                    |  |
| 3+85                              | 51.211 |                                    |  |
| 3+90                              | 51.211 |                                    |  |
| 3+95                              | 51.211 |                                    |  |
| 4+00                              | 51.211 |                                    |  |
| 4+05                              | 51.211 |                                    |  |
| 4+10                              | 51.211 |                                    |  |
| 4+15                              | 51.211 |                                    |  |
| 4+20                              | 51.211 |                                    |  |
| 4+25                              | 51.211 |                                    |  |
| 4+30                              | 51.211 |                                    |  |
| 4+35                              | 51.211 |                                    |  |
| 4+40                              | 51.211 |                                    |  |
| 4+45                              | 51.211 |                                    |  |
| 4+50                              | 51.211 |                                    |  |
| 4+55                              | 51.211 |                                    |  |
| 4+60                              | 51.211 |                                    |  |
| 4+65                              | 51.211 |                                    |  |
| 4+70                              | 51.211 |                                    |  |
| 4+75                              | 51.211 |                                    |  |
| 4+80                              | 51.211 |                                    |  |
| 4+85                              | 51.211 |                                    |  |
| 4+90                              | 51.211 |                                    |  |
| 4+95                              | 51.211 |                                    |  |
| 5+00                              | 51.211 |                                    |  |

0+100  
 0+200  
 0+300  
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 4+400  
 4+500  
 4+600  
 4+700  
 4+800  
 4+900  
 5+000

street front  
 ground level  
 sub-basement  
 embankment



برایان کیسٹل انجینئرین لمیٹڈ  
HSR. CLUE LINE, Soc.05  
استغاری انجمن باہر شائع کاغذ

Signature of the person in charge of the laboratory

|          |      |                |             |
|----------|------|----------------|-------------|
| DATE     | UNIT | ISSUING OFFICE | AMOUNT PAID |
| 12-20-11 | 100  | 100            | 100         |

All dimensions are in meters

Unit of cross-sec. Excretion

|  |                        |
|--|------------------------|
|  | <b>Looking forward</b> |
|  |                        |

|                     |                                                                                     |                                                                                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| General Information |  |  |  |
| Project Information |  |  |  |
| Contractor          | EL-ZAHAB                                                                            |                                                                                     |                                                                                     |

Drawing Name:

EL-ZAHABY COMPANY  
from km 637+952 to 643+863

|                                              |                                        |
|----------------------------------------------|----------------------------------------|
| Drawing scale<br>60 : 1 = 2000<br>A1 (1:1mm) | Drawing NO.<br>VEN-SEC 5 - cross-sec-1 |
|----------------------------------------------|----------------------------------------|

| EXPRESS TRAIN<br>SEC (#29+360.00) |      | Total Volume of Section 6.33+500.00 |         |
|-----------------------------------|------|-------------------------------------|---------|
|                                   |      | Cut Area                            | 0.00    |
|                                   |      | CUT VOL                             | 0.00    |
|                                   |      | CLMA CUT VOL                        | 6.00    |
|                                   |      | FILL AREA                           | 45.41   |
|                                   |      | FILL VOL                            | 454.10  |
|                                   |      | cutn fill vol                       | 9957.90 |
| 0+00                              | 0.00 | 0.00                                | 0.00    |
| 0+10                              | 0.00 | 0.00                                | 0.00    |
| 0+20                              | 0.00 | 0.00                                | 0.00    |
| 0+30                              | 0.00 | 0.00                                | 0.00    |
| 0+40                              | 0.00 | 0.00                                | 0.00    |
| 0+50                              | 0.00 | 0.00                                | 0.00    |
| 0+60                              | 0.00 | 0.00                                | 0.00    |
| 0+70                              | 0.00 | 0.00                                | 0.00    |
| 0+80                              | 0.00 | 0.00                                | 0.00    |
| 0+90                              | 0.00 | 0.00                                | 0.00    |
| 1+00                              | 0.00 | 0.00                                | 0.00    |
| 1+10                              | 0.00 | 0.00                                | 0.00    |
| 1+20                              | 0.00 | 0.00                                | 0.00    |
| 1+30                              | 0.00 | 0.00                                | 0.00    |
| 1+40                              | 0.00 | 0.00                                | 0.00    |
| 1+50                              | 0.00 | 0.00                                | 0.00    |
| 1+60                              | 0.00 | 0.00                                | 0.00    |
| 1+70                              | 0.00 | 0.00                                | 0.00    |
| 1+80                              | 0.00 | 0.00                                | 0.00    |
| 1+90                              | 0.00 | 0.00                                | 0.00    |
| 2+00                              | 0.00 | 0.00                                | 0.00    |
| 2+10                              | 0.00 | 0.00                                | 0.00    |
| 2+20                              | 0.00 | 0.00                                | 0.00    |
| 2+30                              | 0.00 | 0.00                                | 0.00    |
| 2+40                              | 0.00 | 0.00                                | 0.00    |
| 2+50                              | 0.00 | 0.00                                | 0.00    |
| 2+60                              | 0.00 | 0.00                                | 0.00    |
| 2+70                              | 0.00 | 0.00                                | 0.00    |
| 2+80                              | 0.00 | 0.00                                | 0.00    |
| 2+90                              | 0.00 | 0.00                                | 0.00    |
| 3+00                              | 0.00 | 0.00                                | 0.00    |
| 3+10                              | 0.00 | 0.00                                | 0.00    |
| 3+20                              | 0.00 | 0.00                                | 0.00    |
| 3+30                              | 0.00 | 0.00                                | 0.00    |
| 3+40                              | 0.00 | 0.00                                | 0.00    |
| 3+50                              | 0.00 | 0.00                                | 0.00    |
| 3+60                              | 0.00 | 0.00                                | 0.00    |
| 3+70                              | 0.00 | 0.00                                | 0.00    |
| 3+80                              | 0.00 | 0.00                                | 0.00    |
| 3+90                              | 0.00 | 0.00                                | 0.00    |
| 4+00                              | 0.00 | 0.00                                | 0.00    |
| 4+10                              | 0.00 | 0.00                                | 0.00    |
| 4+20                              | 0.00 | 0.00                                | 0.00    |
| 4+30                              | 0.00 | 0.00                                | 0.00    |
| 4+40                              | 0.00 | 0.00                                | 0.00    |
| 4+50                              | 0.00 | 0.00                                | 0.00    |
| 4+60                              | 0.00 | 0.00                                | 0.00    |
| 4+70                              | 0.00 | 0.00                                | 0.00    |
| 4+80                              | 0.00 | 0.00                                | 0.00    |
| 4+90                              | 0.00 | 0.00                                | 0.00    |
| 5+00                              | 0.00 | 0.00                                | 0.00    |
| 5+10                              | 0.00 | 0.00                                | 0.00    |
| 5+20                              | 0.00 | 0.00                                | 0.00    |
| 5+30                              | 0.00 | 0.00                                | 0.00    |
| 5+40                              | 0.00 | 0.00                                | 0.00    |
| 5+50                              | 0.00 | 0.00                                | 0.00    |
| 5+60                              | 0.00 | 0.00                                | 0.00    |
| 5+70                              | 0.00 | 0.00                                | 0.00    |
| 5+80                              | 0.00 | 0.00                                | 0.00    |
| 5+90                              | 0.00 | 0.00                                | 0.00    |
| 6+00                              | 0.00 | 0.00                                | 0.00    |
| 6+10                              | 0.00 | 0.00                                | 0.00    |
| 6+20                              | 0.00 | 0.00                                | 0.00    |
| 6+30                              | 0.00 | 0.00                                | 0.00    |
| 6+40                              | 0.00 | 0.00                                | 0.00    |
| 6+50                              | 0.00 | 0.00                                | 0.00    |
| 6+60                              | 0.00 | 0.00                                | 0.00    |
| 6+70                              | 0.00 | 0.00                                | 0.00    |
| 6+80                              | 0.00 | 0.00                                | 0.00    |
| 6+90                              | 0.00 | 0.00                                | 0.00    |
| 7+00                              | 0.00 | 0.00                                | 0.00    |
| 7+10                              | 0.00 | 0.00                                | 0.00    |
| 7+20                              | 0.00 | 0.00                                | 0.00    |
| 7+30                              | 0.00 | 0.00                                | 0.00    |
| 7+40                              | 0.00 | 0.00                                | 0.00    |
| 7+50                              | 0.00 | 0.00                                | 0.00    |
| 7+60                              | 0.00 | 0.00                                | 0.00    |
| 7+70                              | 0.00 | 0.00                                | 0.00    |
| 7+80                              | 0.00 | 0.00                                | 0.00    |
| 7+90                              | 0.00 | 0.00                                | 0.00    |
| 8+00                              | 0.00 | 0.00                                | 0.00    |



استشاري التحقيقات الجنائية والتشخيص الجنائي  
HCR. BLUE LINE. Sec.05  
بدر ليات كوستن للاستشارات الجنائية

سید محمد سعید  
Spectrum Consulting  
0300-3000000

|                                                                                                                                                                                     |                              |                       |                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------|------------------------------|
| <p>901 New Street, Suite 200, Newark, NJ 07102<br/>         Phone: (201) 426-1111 Fax: (201) 426-1112<br/>         E-mail: <a href="mailto:info@newark.com">info@newark.com</a></p> |                              |                       |                              |
| <p>NO. 1075</p>                                                                                                                                                                     | <p>ISSUE DATE 01/01/2001</p> | <p>ISSUE NO. 1075</p> | <p>ISSUE DATE 01/01/2001</p> |

\* All dimensions are in meters

List of common-use pesticides

Copyright Clearance Center, Inc.



Continued on B-2A1182

**El-Zahaby Company**  
from km 637+952 to 643+853

Drinking water  
MSA = MLC 5 - gross-out = (1.1)



| Year | Age | Sex | Height (cm) | Weight (kg) | Body Mass Index (kg/m <sup>2</sup> ) | Waist Circumference (cm) | Hip Circumference (cm) | Waist-Hip Ratio |
|------|-----|-----|-------------|-------------|--------------------------------------|--------------------------|------------------------|-----------------|
| 2000 | 20  | M   | 170         | 65          | 22.0                                 | 85                       | 95                     | 0.89            |
| 2001 | 21  | F   | 160         | 55          | 21.5                                 | 75                       | 85                     | 0.88            |
| 2002 | 22  | M   | 175         | 70          | 22.2                                 | 90                       | 100                    | 0.90            |
| 2003 | 23  | F   | 165         | 60          | 21.8                                 | 80                       | 90                     | 0.89            |
| 2004 | 24  | M   | 180         | 75          | 22.5                                 | 95                       | 105                    | 0.90            |
| 2005 | 25  | F   | 170         | 65          | 22.0                                 | 85                       | 95                     | 0.89            |
| 2006 | 26  | M   | 185         | 80          | 23.0                                 | 100                      | 110                    | 0.91            |
| 2007 | 27  | F   | 175         | 70          | 22.2                                 | 90                       | 100                    | 0.90            |
| 2008 | 28  | M   | 190         | 85          | 23.5                                 | 105                      | 115                    | 0.92            |
| 2009 | 29  | F   | 180         | 75          | 22.5                                 | 95                       | 105                    | 0.90            |
| 2010 | 30  | M   | 195         | 90          | 23.8                                 | 110                      | 120                    | 0.92            |
| 2011 | 31  | F   | 185         | 80          | 23.2                                 | 100                      | 110                    | 0.91            |
| 2012 | 32  | M   | 200         | 95          | 23.8                                 | 115                      | 125                    | 0.93            |
| 2013 | 33  | F   | 190         | 85          | 23.5                                 | 105                      | 115                    | 0.91            |
| 2014 | 34  | M   | 205         | 100         | 23.9                                 | 120                      | 130                    | 0.93            |
| 2015 | 35  | F   | 195         | 90          | 23.2                                 | 110                      | 120                    | 0.92            |
| 2016 | 36  | M   | 210         | 105         | 23.8                                 | 125                      | 135                    | 0.94            |
| 2017 | 37  | F   | 200         | 95          | 23.5                                 | 115                      | 125                    | 0.92            |
| 2018 | 38  | M   | 215         | 110         | 23.9                                 | 130                      | 140                    | 0.94            |
| 2019 | 39  | F   | 205         | 100         | 23.6                                 | 120                      | 130                    | 0.93            |
| 2020 | 40  | M   | 220         | 115         | 24.1                                 | 135                      | 145                    | 0.94            |



| Year | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1996 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |



|       |         |  |    |
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| 00000 | 500 000 |  |    |
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| 00007 | 500 000 |  |    |
| 00008 | 500 000 |  |    |
| 00009 | 500 000 |  |    |
| 00010 | 500 000 |  |    |
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| 00090 | 500 000 |  |    |
| 00091 | 500 000 |  |    |
| 00092 | 500 000 |  |    |
| 00093 | 500 000 |  |    |
| 00094 | 500 000 |  |    |
| 00095 | 500 000 |  |    |
| 00096 | 500 000 |  |    |
| 00097 | 500 000 |  |    |
| 00098 | 500 000 |  |    |
| 00099 | 500 000 |  |    |
| 00100 | 500 000 |  |    |
| 00101 | 500 000 |  |    |
| 00102 | 500 000 |  |    |
| 00103 | 500 000 |  |    |
| 00104 | 500 000 |  |    |
| 00105 | 500 000 |  |    |
| 00106 | 500 000 |  |    |
| 00107 | 500 000 |  |    |
| 00108 | 500 000 |  |    |
| 00109 | 500 000 |  |    |
| 00110 | 500 000 |  |    |
| 00111 | 500 000 |  |    |
| 00112 | 500 000 |  |    |
| 00113 | 500 000 |  |    |
| 00114 | 500 000 |  |    |
| 00115 | 500 000 |  |    |
| 00116 | 500 000 |  | </ |



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |
| 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |

إستشاري الأعمال المتخصصة بالقطاع الخاص  
HSR BLUE LINE Sec.05  
بدر الدين وسميكة الإستشاري

HSR-CLUELINE-SEC.05

المستشار والاعمال العامة بالقطاع الخاص

Spectrum Consulting  
مستشارية الطيف

| EXPRESS TRAIN<br>SEC (639+720.00) |  | Total Volume of Station 639+720.00 |          |
|-----------------------------------|--|------------------------------------|----------|
|                                   |  | Old Area                           | 0.00     |
|                                   |  | CUT VOL                            | 0.00     |
|                                   |  | CUM CUT VOL                        | 0.00     |
|                                   |  | FILL AREA                          | 45.41    |
|                                   |  | FILL VOL                           | 908.20   |
|                                   |  | CUM FILL VOL                       | 16310.30 |

| EXPRESS TROUT<br>SEC. 633+683.00' |          | Total Volume at Station 630+680.00 |          |
|-----------------------------------|----------|------------------------------------|----------|
| Cut Area                          | 0.00     | Cut Area                           | 0.00     |
| CUT VOL                           | 0.00     | CUT VOL                            | 0.00     |
| CLM CUT VOL                       | 0.00     | CLM CUT VOL                        | 0.00     |
| FILL AREA                         | 45.41    | FILL AREA                          | 45.41    |
| FILL VOL                          | 908.20   | FILL VOL                           | 908.20   |
| curb fill vol                     | 14493.90 | curb fill vol                      | 14493.90 |

[illegible]

| Total Volume at Station 820+100.00 |       | Cut Area | Cut Vol. | Cum Cut Vol. | Fill Area | Fill Vol | Cum Fill Vol |
|------------------------------------|-------|----------|----------|--------------|-----------|----------|--------------|
|                                    |       |          |          |              |           |          |              |
| 820+00                             | 10.00 |          |          |              |           |          |              |
| 820+05                             | 10.00 |          |          |              |           |          |              |
| 820+10                             | 10.00 |          |          |              |           |          |              |
| 820+15                             | 10.00 |          |          |              |           |          |              |
| 820+20                             | 10.00 |          |          |              |           |          |              |
| 820+25                             | 10.00 |          |          |              |           |          |              |
| 820+30                             | 10.00 |          |          |              |           |          |              |
| 820+35                             | 10.00 |          |          |              |           |          |              |
| 820+40                             | 10.00 |          |          |              |           |          |              |
| 820+45                             | 10.00 |          |          |              |           |          |              |
| 820+50                             | 10.00 |          |          |              |           |          |              |
| 820+55                             | 10.00 |          |          |              |           |          |              |
| 820+60                             | 10.00 |          |          |              |           |          |              |
| 820+65                             | 10.00 |          |          |              |           |          |              |
| 820+70                             | 10.00 |          |          |              |           |          |              |
| 820+75                             | 10.00 |          |          |              |           |          |              |
| 820+80                             | 10.00 |          |          |              |           |          |              |
| 820+85                             | 10.00 |          |          |              |           |          |              |
| 820+90                             | 10.00 |          |          |              |           |          |              |
| 820+95                             | 10.00 |          |          |              |           |          |              |
| 821+00                             | 10.00 |          |          |              |           |          |              |
| 821+05                             | 10.00 |          |          |              |           |          |              |
| 821+10                             | 10.00 |          |          |              |           |          |              |
| 821+15                             | 10.00 |          |          |              |           |          |              |
| 821+20                             | 10.00 |          |          |              |           |          |              |
| 821+25                             | 10.00 |          |          |              |           |          |              |
| 821+30                             | 10.00 |          |          |              |           |          |              |
| 821+35                             | 10.00 |          |          |              |           |          |              |
| 821+40                             | 10.00 |          |          |              |           |          |              |
| 821+45                             | 10.00 |          |          |              |           |          |              |
| 821+50                             | 10.00 |          |          |              |           |          |              |
| 821+55                             | 10.00 |          |          |              |           |          |              |
| 821+60                             | 10.00 |          |          |              |           |          |              |
| 821+65                             | 10.00 |          |          |              |           |          |              |
| 821+70                             | 10.00 |          |          |              |           |          |              |
| 821+75                             | 10.00 |          |          |              |           |          |              |
| 821+80                             | 10.00 |          |          |              |           |          |              |
| 821+85                             | 10.00 |          |          |              |           |          |              |
| 821+90                             | 10.00 |          |          |              |           |          |              |
| 821+95                             | 10.00 |          |          |              |           |          |              |
| 822+00                             | 10.00 |          |          |              |           |          |              |
| 822+05                             | 10.00 |          |          |              |           |          |              |
| 822+10                             | 10.00 |          |          |              |           |          |              |
| 822+15                             | 10.00 |          |          |              |           |          |              |
| 822+20                             | 10.00 |          |          |              |           |          |              |
| 822+25                             | 10.00 |          |          |              |           |          |              |
| 822+30                             | 10.00 |          |          |              |           |          |              |
| 822+35                             | 10.00 |          |          |              |           |          |              |
| 822+40                             | 10.00 |          |          |              |           |          |              |
| 822+45                             | 10.00 |          |          |              |           |          |              |
| 822+50                             | 10.00 |          |          |              |           |          |              |
| 822+55                             | 10.00 |          |          |              |           |          |              |
| 822+60                             | 10.00 |          |          |              |           |          |              |
| 822+65                             | 10.00 |          |          |              |           |          |              |
| 822+70                             | 10.00 |          |          |              |           |          |              |
| 822+75                             | 10.00 |          |          |              |           |          |              |
| 822+80                             | 10.00 |          |          |              |           |          |              |
| 822+85                             | 10.00 |          |          |              |           |          |              |
| 822+90                             | 10.00 |          |          |              |           |          |              |
| 822+95                             | 10.00 |          |          |              |           |          |              |
| 823+00                             | 10.00 |          |          |              |           |          |              |
| 823+05                             | 10.00 |          |          |              |           |          |              |
| 823+10                             | 10.00 |          |          |              |           |          |              |
| 823+15                             | 10.00 |          |          |              |           |          |              |
| 823+20                             | 10.00 |          |          |              |           |          |              |
| 823+25                             | 10.00 |          |          |              |           |          |              |
| 823+30                             | 10.00 |          |          |              |           |          |              |
| 823+35                             | 10.00 |          |          |              |           |          |              |
| 823+40                             | 10.00 |          |          |              |           |          |              |
| 823+45                             | 10.00 |          |          |              |           |          |              |
| 823+50                             | 10.00 |          |          |              |           |          |              |
| 823+55                             | 10.00 |          |          |              |           |          |              |
| 823+60                             | 10.00 |          |          |              |           |          |              |
| 823+65                             | 10.00 |          |          |              |           |          |              |
| 823+70                             | 10.00 |          |          |              |           |          |              |
| 823+75                             | 10.00 |          |          |              |           |          |              |
| 823+80                             | 10.00 |          |          |              |           |          |              |
| 823+85                             | 10.00 |          |          |              |           |          |              |
| 823+90                             | 10.00 |          |          |              |           |          |              |
| 823+95                             | 1     |          |          |              |           |          |              |

[illegible]

إعلان كوكاكولا المسمى  
H&R. BLUE LINE. Sec.05  
إعلان العمل المسمى



Spectrum Consulting





EXPRESS TRAIN  
SEC (839+800.00)



EXPRESS TRAIN  
SEC (839+900.00)



EXPRESS TRAIN  
SEC (839+840.00)



EXPRESS TRAIN  
SEC (839+880.00)



برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

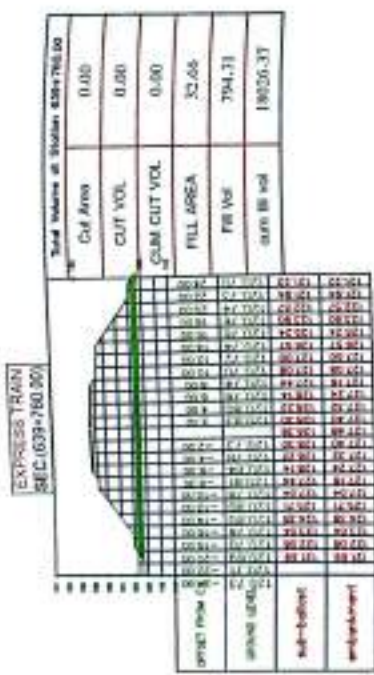
برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

برایان کیونست المهندسان العامة  
HSR. BLUE LINE. Sec.05  
استشاري اعمال المساحه والتضاريس

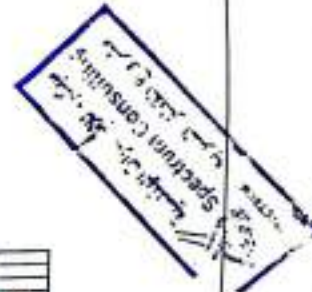


| Station | Station | Station | Station |
|---------|---------|---------|---------|
| 637+000 | 637+100 | 637+200 | 637+300 |

Contractor: EL-ZAHABY  
Drawing No: 637-952 to 643-81  
Scale: 1:500



إستشاري المصالح العامة  
HSR, CLUG, SEC-05  
ناتبات كوستة كركي



Ministry of Transportation  
National Authority for Transport (NAT)  
Project: New Addis Ababa Light Rail  
Section: SEC. (641+000.00) to SEC. (641+080.00)  
Drawing No: SEC-05



SECTION FROM STA TO STA  
SECTION: SEC. (641+000.00) TO SEC. (641+080.00)  
\*All dimensions are in meters  
List of cross-section Expressions



Contractor: EL-ZAHABI  
Drawing No: SEC-05  
Drawing scale: 1:1000  
Drawing date: 11/11/2022  
Drawing by: SEC-05 - cross-section - (1)

EXPRESS TRAIN  
SEC. (641+000.00)



EXPRESS TRAIN  
SEC. (641+080.00)



EXPRESS TRAIN  
SEC. (641+000.00)



EXPRESS TRAIN  
SEC. (641+040.00)



إمكانيات كوسنات الحفظان التوسيع  
HSR, DUB LINE, SEC.05  
استشاري: شركة الهندسة المعمارية والتخطيط

مستودع المواد  
مستودع المواد  
مستودع المواد  
مستودع المواد

\*All dimensions are in meters

\* All dimensions are in meters

List of cross-sec. Expression

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Drawing Name**  
cross-sec for H&B OCTOBER - ASMAN skyline  
**EL-ZAHABY COMPANY**  
from km 637+952 to 643+863

|                          |                              |
|--------------------------|------------------------------|
| -086-0000 - S.2785 - 89M | Int'l L.H.A.<br>booklet / 79 |
| CN Dupont                |                              |



|              |         |
|--------------|---------|
| Cut Area     | 0.00    |
| CUT VOL      | 0.00    |
| TUM CUT VOL  | 0.00    |
| FLL AREA     | 9.21    |
| Fill Vol     | 184.30  |
| cum fill vol | 2531.02 |



| Total Volume at Station 6+100.00 |          |
|----------------------------------|----------|
| Cut Area                         | 0.00     |
| CUT VOL                          | 0.00     |
| FILL VOL                         | 184.50   |
| FILL AREA                        | 9.21     |
| FILL Vol                         | 184.50   |
| clear fill vol                   | 25663.91 |
| 0+00                             | 0.00     |
| 0+05                             | 0.00     |
| 0+10                             | 0.00     |
| 0+15                             | 0.00     |
| 0+20                             | 0.00     |
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| 14+60                            | 0.00     |
| 14+65                            | 0.00     |
| 14+70                            | 0.00     |
| 14+75                            | 0.00     |
| 14+80                            | 0.00     |
| 14+85                            | 0.00     |
| 14+90                            | 0.00     |
| 14+95                            | 0.00     |
| 15+00                            | 0.00     |
| 15+05                            | 0.00     |
| 15+10                            | 0.00     |
| 15+15                            | 0.00     |
| 15+20                            | 0.00     |
| 15+25                            | 0.00     |
| 15+30                            | 0.00     |
| 15+35                            | 0.00     |
| 15+40                            | 0.00     |
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| 15+50                            | 0.00     |
| 15+55                            | 0.00     |
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| 15+80                            | 0.00     |
| 15+85                            | 0.00     |
| 15+90                            | 0.00     |
| 15+95                            | 0.00     |
| 16+00                            | 0.00     |
| 16+05                            | 0.00     |
| 16+10                            | 0.00     |
| 16+15                            | 0.00     |
| 16+20                            | 0.00     |
| 16+25                            | 0.00     |
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| 16+40                            | 0.00     |
| 16+45                            | 0.00     |
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| 16+60                            | 0.00     |
| 16+65                            | 0.00     |
| 16+70                            | 0.00     |
| 16+75                            | 0.00     |
| 16+80                            | 0.00     |
| 16+85                            | 0.00     |
| 16+90                            | 0.00     |
| 16+95                            | 0.00     |
| 17+00                            | 0.00     |
| 17+05                            | 0.00     |
| 17+10                            | 0.00     |
| 17+15                            | 0.00     |
| 17+20                            | 0.00     |
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| 17+30                            | 0.00     |
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| 17+45                            | 0.00     |
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| 17+85                            | 0.00     |
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| 17+95                            | 0.00     |
| 18+00                            | 0.00     |
| 18+05                            | 0.00     |
| 18+10                            | 0.00     |
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| 19+95                            | 0.00     |
| 20+00                            | 0.00     |
| 20+05                            | 0.00     |
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| 21+80                            | 0.00     |
| 21+85                            | 0.00     |
| 21+90                            | 0.00     |
| 21+95                            | 0.00     |
| 22+00                            | 0.00     |
| 22+05                            | 0.00     |
| 22+10                            | 0.00     |
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| 22+95                            | 0.00     |
| 23+00                            | 0.00     |
| 23+05                            | 0.00     |
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| 23+85                            | 0.00     |
| 23+90                            | 0.00     |
| 23+95                            | 0.00     |
| 24+00                            | 0.00     |
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| 24+90                            | 0.00     |
| 24+95                            | 0.00     |
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| 25+05                            | 0.00     |
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| 25+75                            | 0.00     |
| 25+80                            | 0.00     |
| 25+85                            | 0.00     |
| 25+90                            | 0.00     |
| 25+95                            | 0.00     |
| 26+00                            | 0.00     |
| 26+05                            | 0.00     |
| 26+10                            | 0.00     |
| 26+15                            | 0.00     |
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| 26+40                            | 0.00     |
| 26+45                            | 0.00     |
| 26+50                            | 0.00     |
| 26+55                            | 0.00     |
| 26+60                            | 0.00     |
| 26+65                            | 0.00     |
| 26+70                            | 0.00     |
| 26+75                            | 0.00     |
| 26+80                            | 0.00     |
| 26+85                            | 0.00     |
| 26+90                            | 0.00     |
| 26+95                            | 0.00     |
| 27+0                             |          |

|                                    |          |
|------------------------------------|----------|
| Total Volume of Station 641+125.00 |          |
| * Cut Area                         | 0.00     |
| CUT VOL                            | 0.00     |
| CUM CUT VOL                        | 0.00     |
| FILL AREA                          | 9.21     |
| FILL VOL                           | 184.30   |
| cum FILL vol                       | 25495.12 |



إستشاري الأعمال العالمية "إل جي سي"  
HCR. BLUELINE.Sec.05  
إمبيلات كوسماتيكس ك.م.م.م.

مركز  
التحليلات  
Spectrum consulting  
مركز التحليلات  
مركز التحليلات



**NOTES**

Ministry of Transportation  
National Authority for Transport (NAT)

**PROJECT**

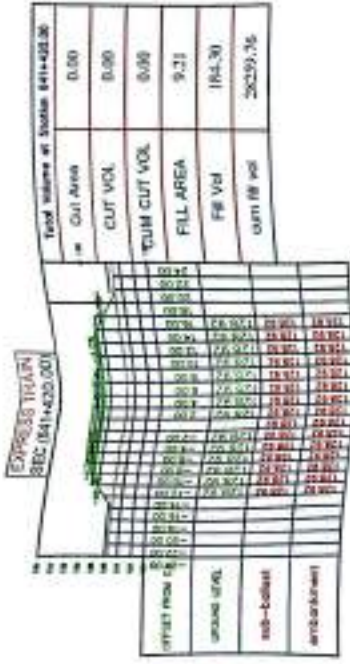
Asiatic Railway for Road - Baghdad (Transport)

**PROJECT LOCATION**

Asiatic Railway for Road - Baghdad (Transport)  
Asiatic Railway for Road - Baghdad (Transport)  
Asiatic Railway for Road - Baghdad (Transport)

**SECTION**

Asiatic Railway for Road - Baghdad (Transport)



**SECTION INFORMATION**

|                |               |
|----------------|---------------|
| SECTION NAME   | EXPRESS TRAIN |
| SECTION NO.    | 041+420.00    |
| SECTION LENGTH | 20.00         |
| SECTION WIDTH  | 10.00         |

**SECTION INFORMATION**

|                |               |
|----------------|---------------|
| SECTION NAME   | EXPRESS TRAIN |
| SECTION NO.    | 041+440.00    |
| SECTION LENGTH | 20.00         |
| SECTION WIDTH  | 10.00         |



إبراهيم كرسن كرسن كرسن  
IICR. BLUE LINE. Sec. 05  
استشاري كرسن كرسن كرسن

استشاري كرسن كرسن كرسن  
IICR. BLUE LINE. Sec. 05  
استشاري كرسن كرسن كرسن

# Client

Ministry of Transportation  
General Authority for Tunnels (GAT)

General Authority for Tunnels - Baghdad Airport Tunnel

SECTION: EXPRESS TRAIN CROSS-SECTION  
SECTION: FROM 641+340.00 TO 641+360.00  
SECTION: CROSS-SECTION

## KEY PLAN



SECTION: FROM 641+340.00 TO 641+360.00  
SECTION: CROSS-SECTION

SECTION: CROSS-SECTION

\*All dimensions are in meters

List of cross-section Express

| Station    | Section       | Section       | Section       |
|------------|---------------|---------------|---------------|
| 641+340.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |
| 641+360.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |



Drawing No: 641+360.00

cross-section for 641+360.00 - AGANN section 5

EL-ZAHABY COMPANY

from km 637+952 to 643+863

Drawing NO

HSR - SEC 5 - cross-section

## EXPRESS TRAIN SEC (641+360.00)

| Station    | Section       | Section       | Section       |
|------------|---------------|---------------|---------------|
| 641+360.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |
| 641+380.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |

## EXPRESS TRAIN SEC (641+400.00)

| Station    | Section       | Section       | Section       |
|------------|---------------|---------------|---------------|
| 641+400.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |
| 641+420.00 | EXPRESS TRAIN | EXPRESS TRAIN | EXPRESS TRAIN |

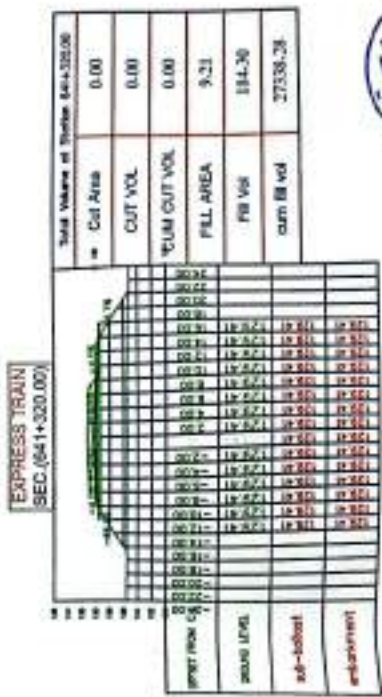


إبراهيم كوسمان المهندس  
HSR, BLUELINE, Sec.05  
استشاري أعمال السكك الحديدية والتشييد

مهندس استشاري  
Spectrum Consulting  
مهندس استشاري

|                  |                                                                                   |                                                                                    |                                                                                     |
|------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Owner/Consultant |  |  |  |
| MEET Consultant  |  |  |  |
| Contractor       |  |  |  |

|                                                                                                             |                                        |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Drawing Name<br>cross-sec for HSB 00100666 - ASAMM sector<br>EL-ZAHAB COMPANY<br>from km 637+952 to 643+863 | Drawing NO<br>HSR - SEC 5 - cross-sec- |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------|



دریافت کورسهای تخصصی  
HSP. BLUELINE.Sec.05  
استطای بعمل آمدن با قطع خاص




**Spectrum Consulting**  
 شركة استشارات  
 Spectrum Consulting



EXPRESS TRAIN  
SEC (641+480.00)

| Total Volume at Station 641+480.00 |          |
|------------------------------------|----------|
| Cut Area                           | 0.00     |
| CUT VOL                            | 0.00     |
| TUM CUT VOL                        | 0.00     |
| FILL AREA                          | 12.86    |
| FILL Vol                           | 237.20   |
| cum fill vol                       | 26944.93 |

EXPRESS TRAIN  
SEC (641+500.00)

| Total Volume at Station 641+500.00 |          |
|------------------------------------|----------|
| Cut Area                           | 0.00     |
| CUT VOL                            | 0.00     |
| TUM CUT VOL                        | 0.00     |
| FILL AREA                          | 12.86    |
| FILL Vol                           | 237.20   |
| cum fill vol                       | 26952.11 |

EXPRESS TRAIN  
SEC (641+480.00)

| Total Volume at Station 641+480.00 |          |
|------------------------------------|----------|
| Cut Area                           | 0.00     |
| CUT VOL                            | 0.00     |
| TUM CUT VOL                        | 0.00     |
| FILL AREA                          | 12.86    |
| FILL Vol                           | 237.20   |
| cum fill vol                       | 26737.71 |

EXPRESS TRAIN  
SEC (641+500.00)

| Total Volume at Station 641+500.00 |          |
|------------------------------------|----------|
| Cut Area                           | 0.00     |
| CUT VOL                            | 0.00     |
| TUM CUT VOL                        | 0.00     |
| FILL AREA                          | 12.86    |
| FILL Vol                           | 237.20   |
| cum fill vol                       | 26952.11 |



إسرائيل كونسول الإنشاءات المدنية  
ISR. BLUE LINE.Sec.05  
إسرائيل كونسول الإنشاءات المدنية

مكتب الدراسات  
CONSULTING  
مكتب الدراسات  
CONSULTING  
مكتب الدراسات  
CONSULTING

|                               |     |     |      |
|-------------------------------|-----|-----|------|
| SECTION FROM 2015 100 ANSWERS |     |     |      |
| PURNIMA-111-2-100000 11-11-11 |     |     |      |
| Q1                            | Q2  | Q3  | Q4   |
| Q5                            | Q6  | Q7  | Q8   |
| Q9                            | Q10 | Q11 | Q12  |
| Q13                           | Q14 | Q15 | Q16  |
| Q17                           | Q18 | Q19 | Q20  |
| Q21                           | Q22 | Q23 | Q24  |
| Q25                           | Q26 | Q27 | Q28  |
| Q29                           | Q30 | Q31 | Q32  |
| Q33                           | Q34 | Q35 | Q36  |
| Q37                           | Q38 | Q39 | Q40  |
| Q41                           | Q42 | Q43 | Q44  |
| Q45                           | Q46 | Q47 | Q48  |
| Q49                           | Q50 | Q51 | Q52  |
| Q53                           | Q54 | Q55 | Q56  |
| Q57                           | Q58 | Q59 | Q60  |
| Q61                           | Q62 | Q63 | Q64  |
| Q65                           | Q66 | Q67 | Q68  |
| Q69                           | Q70 | Q71 | Q72  |
| Q73                           | Q74 | Q75 | Q76  |
| Q77                           | Q78 | Q79 | Q80  |
| Q81                           | Q82 | Q83 | Q84  |
| Q85                           | Q86 | Q87 | Q88  |
| Q89                           | Q90 | Q91 | Q92  |
| Q93                           | Q94 | Q95 | Q96  |
| Q97                           | Q98 | Q99 | Q100 |



|                                                                                                              |                                           |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Drawing Name<br>cross-section for HSR OCTOBER - AGRIUM and<br>EL-ZAHABY COMPANY<br>from km 637+952 to 643+86 | Drawing NO<br>HSR - SEC 5 - cross-section |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|



| Total Volume of Stockpile 444+540.00 |          | Out Area | 0.00 |
|--------------------------------------|----------|----------|------|
| CUT VOL                              | 0.00     |          |      |
| CUM CUT VOL                          | 0.00     |          |      |
| FILL AREA                            | 12.86    |          |      |
| FILL Vol                             | 257.20   |          |      |
| cum fill vol                         | 30260.91 |          |      |

[illegible]

Office of the  
Director of the  
Department of  
Education  
1000  
1000

إيران كمنظمة غير الربحية  
:ISR.HELPERLAW.Org  
المختارون، "مسألة" في برنامج القانون



إشراف  
HSR BLUE LINE-SEC.05  
إشراف أعمال البناء والتشييد الخامس

مستشار  
HSR BLUE LINE-SEC.05  
مستشار أعمال البناء والتشييد الخامس



| EXPENSES (5042) |      | SEC (541+750.00) |      | Total Volume at Station 541+750.00 |          |
|-----------------|------|------------------|------|------------------------------------|----------|
|                 |      |                  |      | Cut Area                           |          |
|                 |      |                  |      | CUT VOL                            | 0.00     |
|                 |      |                  |      | CLAM CUT VOL                       | 0.00     |
|                 |      |                  |      | FILL AREA                          | 12.86    |
|                 |      |                  |      | FILL Vol                           | 257.20   |
|                 |      |                  |      | sum fill vol                       | 32852.91 |
| offset from     | 0.00 | 0.00             | 0.00 |                                    |          |
| ground level    | 0.00 | 0.00             | 0.00 |                                    |          |
| sub-basement    | 0.00 | 0.00             | 0.00 |                                    |          |
| embankment      | 0.00 | 0.00             | 0.00 |                                    |          |

إمبليات كوستال للهندسة المعمارية  
H.S.R. BLUELINE Sec.05  
المستشار المعماري والمصمم

[illegible]

All dimensions are in mm unless stated otherwise.  
 List of cross-sections:  
 1. ☐ 1.5 x 1.5 x 1.5  
 2. ☐ 1.5 x 1.5 x 1.5  
 3. ☐ 1.5 x 1.5 x 1.5  
 4. ☐ 1.5 x 1.5 x 1.5  
 5. ☐ 1.5 x 1.5 x 1.5  
 6. ☐ 1.5 x 1.5 x 1.5  
 7. ☐ 1.5 x 1.5 x 1.5  
 8. ☐ 1.5 x 1.5 x 1.5  
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 58. ☐ 1.5 x 1.5 x 1.5  
 59. ☐ 1.5 x 1.5 x 1.5  
 60. ☐ 1.5 x 1.5 x 1.5  
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| ASISTENTE CONSULTOR |  |  |
| Contratador         | EL ZARAJEN                                                                          |  |

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| <p>  <br/> <b>Ministry of Health and Family Welfare</b><br/> <b>Government of India</b> </p> | <p> <b>Dr. B. S. Puri</b><br/> <b>Secretary</b><br/> <b>Ministry of Health and Family Welfare</b><br/> <b>Government of India</b> </p> |
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!ISR. 0075 1111. Sec. 05  
استفسار کے لیے: 0075 1111. Sec. 05

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