

# MATERIAL INSPECTION REQUEST



الهيئة العامة  
للطرق والكباري  
(GARB)



|                             |                                                            |               |                           |                                    |    |    |    |    |    |    |    |
|-----------------------------|------------------------------------------------------------|---------------|---------------------------|------------------------------------|----|----|----|----|----|----|----|
| Contractor Company          | Orange Company For Import & Export and General Contracting |               | Designer Company          | (KK) Engineering Consulting Office |    |    |    |    |    |    |    |
| Issued by Contractor        | Name                                                       | Sign          | Date/ Serial Number       | Time                               |    |    |    |    |    |    |    |
|                             | Eng: Abdullah Kamal                                        | عبد الله كمال | 17-09-2023<br>M.I.R-001-1 | 11:00 AM                           |    |    |    |    |    |    |    |
| Received by GARB CONSULTANT | Eng. Saied Saif                                            | Khaled Zaki   | MIR                       | C1                                 | C2 | C3 | DD | MM | YY | HH | MM |
|                             |                                                            |               |                           | 346                                | EW | CS | 18 | 09 | 23 | 11 | 00 |

|          |                                |                             |                                                          |
|----------|--------------------------------|-----------------------------|----------------------------------------------------------|
| CODE-1   | S1 to S21<br>Station Reference | D1 to S3<br>Depot Reference | Kp XXX Note<br>For Kilometer point only Start Km is used |
| CODE - 2 | Work Activity                  |                             |                                                          |
| CODE - 3 | Sub Element of Activity        |                             |                                                          |

|                                                                                                |                                     |                                                                                                                                                                           |                                                                                   |              |      |
|------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------|------|
| Description of Materials                                                                       | FILTER LAYER                        |                                                                                                                                                                           |                                                                                   |              |      |
| Location to be Used                                                                            | From St. (346+200) To St. (346+360) |                                                                                                                                                                           |                                                                                   |              |      |
| MAR Approval No                                                                                | MAR (001) , MAR (002)               | Date                                                                                                                                                                      | 30-08-2023                                                                        |              |      |
| UIR Approval No                                                                                | IR (FT-001)                         |                                                                                                                                                                           | 31-08-2023                                                                        |              |      |
| Supplier Name                                                                                  | AL-Salam & AL-Howayeg               |                                                                                                                                                                           |                                                                                   |              |      |
| Test Requirement                                                                               | P.L.T (DIN 18134)                   | Specification                                                                                                                                                             | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP. |              |      |
| Reference Photos                                                                               | No                                  | Other                                                                                                                                                                     |                                                                                   |              |      |
| Item                                                                                           | Description                         | Unit                                                                                                                                                                      | Quantity                                                                          | Arrival Date | Note |
| 1                                                                                              | Plate load test                     | NUMBER                                                                                                                                                                    | 2                                                                                 | 19-09-2023   |      |
| 2                                                                                              |                                     |                                                                                                                                                                           |                                                                                   |              |      |
| 3                                                                                              |                                     |                                                                                                                                                                           |                                                                                   |              |      |
| 4                                                                                              |                                     |                                                                                                                                                                           |                                                                                   |              |      |
| Comments by : Saied Saif (K.K)                                                                 |                                     | Comments by: Eng. Alaa Abd-Allatif (ER)                                                                                                                                   |                                                                                   |              |      |
| 1- تم اختبار القطاع . Plate load test<br>2- تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع . |                                     | 1-P.L.T was carried-out By (E-JUST).<br>2-Results report attached and acceptable with project specifications.<br>3-Final approval is subject to above mentioned comments. |                                                                                   |              |      |

| APPROVAL STATUS          |                       |               |           |         |
|--------------------------|-----------------------|---------------|-----------|---------|
| Organisation             | Name                  | Sign          | Date      | A-AWC-R |
| Contractor               | Eng: Abdullah Kamal   | عبد الله كمال |           | A       |
| QA/QC *                  | Eng. Saied Saif       | Khaled Zaki   |           | A       |
| GARB**                   | Eng. Margret Magdy    |               |           |         |
| Employers Representative | Eng. Alaa Abd-Allatif | for           | 19-9-2023 | Awc     |

\* Designer

\*\* Alignment / Bridges: Culvert Only



# Technical Report

## Plate Loading Tests

KM 346+260 and KM 346+360

Crushed Stone Filter Layer

## Project

Electric Express Train (Sokhna - New capital - 6th  
of October city - New Elalamein city)

Prepared for

Orange Company for General Contracting

(September 18, 2023)



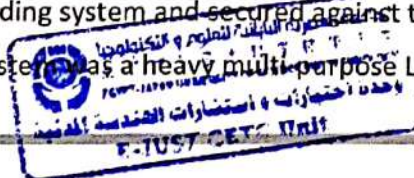


## 1. Introduction

The Civil Engineering Testing & Consulting Unit (CETCU) of the Egypt-Japan University of Science and Technology (EJUST) was retained by Orange Company for General Contracting to conduct two plate loading tests on the Crushed Stone Filter Layer of the Electric Express Train project at two locations (KM 346+260 and KM 346+360) in accordance with the German Standard DIN18134. The mandate was communicated by Eng. Abdullah Kamel Mohamed of Orange Company for General Contracting. Field team members (Sameh Hassan) from the working CETCU team visited the project site on September 18, 2023 and performed the required tests. This report summarizes the plate loading test procedure according to DIN18134, the test results and their interpretations, and the CETCU pertaining recommendations.

## 2. Test Set Up and Instrumentation

- The German standard DIN18134 was applied to define the test setup including the loading system, test conditions, and procedure for the plate loading tests.
- The tests were carried out to determine the Strain Moduli (Ev1 and Ev2) and their ratio (Ev2/Ev1) from a stress – deformation relationship of two consecutive loading from Loading-Unloading-Loading regime.
- The loading plate has a diameter of 600 mm and a thickness of 25 mm and it is provided with equally spaced stiffeners. The upper plate face is parallel to the bottom face of the plate to allow a 300-mm plate to be placed on the 600-mm plate top.
- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 700 bar capacity, which can apply and release the load increments.
- The dial gauge used to measure the plate settlement has a resolution of 0.01 mm and the lever ratio was equal to 1.
- The temperature at the time of the test was  $28 \pm 1^\circ\text{C}$ .
- The plate was carried out on a Crushed Stone Filter Layer (according to the company) at two points (KM 346+260 and KM 346+360). The test surface area was levelled, and the plate was bedded on this surface.
- The hydraulic jack was placed on the middle of, and normal to, the loading plate beneath the reaction loading system and secured against tilting.
- The reaction loading system was a heavy multi-purpose Loader Kawasaki 70Z.





### 3. Test Procedure and Results

The plate load test was conducted in accordance with the DIN18134. Loading, unloading, and reloading regimes were considered to estimate the resilient modulus of the tested soil. Prior to the test, the force transducer and dial gauge were reset to zero, and then a load corresponding to a stress of 0.01 MN/m<sup>2</sup> was applied. The load was increased in the first loading cycle until a normal stress of 0.25 MN/m<sup>2</sup> was reached, and the loading increment was 0.025 MN/m<sup>2</sup>. The load was gradually released in four stages. Following unloading, a second loading cycle was performed, but the load was only increased to the penultimate stage of the first cycle. Two plate loading tests on the Crushed Stone Filter Layer of the Electric Express Train project were conducted at two locations (KM 346+260 and KM 346+360) and the data collected at the two test points is included in Appendix A.

Table 1 presents the load-settlement data obtained at the first loading and unloading stages of the plate loading test performed at the location (KM 346+260), while Table 2 shows the data obtained at the second loading stage.

**Table 1: Load-settlement data obtained at the first loading and unloading stages of the plate loading test performed at the location (KM 346+260)**

| Loading stage | Load (F) | Normal stress ( $\sigma_0$ ) | Settlement (S) |
|---------------|----------|------------------------------|----------------|
|               | kN       | MN/m <sup>2</sup>            | mm             |
| 0             | 1.414    | 0.005                        | 0.00           |
| 1             | 7.07     | 0.025                        | 0.26           |
| 2             | 14.14    | 0.050                        | 0.32           |
| 3             | 21.21    | 0.075                        | 0.44           |
| 4             | 28.28    | 0.100                        | 0.59           |
| 5             | 35.35    | 0.125                        | 0.75           |
| 6             | 42.42    | 0.150                        | 0.89           |
| 7             | 49.49    | 0.175                        | 1.08           |
| 8             | 56.56    | 0.200                        | 1.25           |
| 9             | 63.63    | 0.225                        | 1.39           |
| 10            | 70.7     | 0.250                        | 1.46           |
| 11            | 56.56    | 0.200                        | 1.46           |
| 12            | 49.49    | 0.175                        | 1.29           |
| 13            | 35.35    | 0.125                        | 1.09           |
| 14            | 21.21    | 0.075                        | 0.90           |
| 15            | 1.414    | 0.005                        | 0.53           |





**Table 2: Load-settlement data obtained at the second loading and unloading stages of the plate loading test performed at the location (KM 346+260)**

| Loading stage | Load (F) | Normal stress ( $\sigma_0$ ) | Settlement (S) |
|---------------|----------|------------------------------|----------------|
|               | kN       | MN/m <sup>2</sup>            | mm             |
| 0             | 1.414    | 0.005                        | 0.53           |
| 1             | 7.07     | 0.025                        | 0.76           |
| 2             | 14.14    | 0.050                        | 0.91           |
| 3             | 21.21    | 0.075                        | 1.02           |
| 4             | 28.28    | 0.100                        | 1.14           |
| 5             | 35.35    | 0.125                        | 1.26           |
| 6             | 42.42    | 0.150                        | 1.33           |
| 7             | 49.49    | 0.175                        | 1.41           |
| 8             | 56.56    | 0.200                        | 1.49           |
| 9             | 63.63    | 0.225                        | 1.51           |

The load-settlement data obtained in all loading and unloading stages for the test performed at the first location (KM 346+260) are shown in Figure 1. Table 3 shows the calculations of the resilient modulus of the tested soil according to DIN18134. The testing data corresponding to the second testing point (KM 346+360) is provided in Tables 4-6 and Figure 2.

**Table 3: Calculations of the resilient modulus of the tested soil according to DIN18134: (KM 346+260)**

| Parameters                                    | 1st loading cycle | 2nd loading cycle |
|-----------------------------------------------|-------------------|-------------------|
| ( $s_{0,max}$ ) MN/m <sup>2</sup>             | 0.25              | 0.25              |
| $a_0$ (mm)                                    | 0.08              | 0.54              |
| $a_1$ (mm/(MN/m <sup>2</sup> ))               | 5.01              | 7.61              |
| $a_2$ (mm/(MN <sup>2</sup> /m <sup>4</sup> )) | 2.91              | -14.65            |
| $E_v = 1.5 r / (a_1 + a_2 \cdot s_{0,max})$   | 78.47             | 113.92            |
| $E_{v2}/E_{v1}$                               | 1.45              |                   |



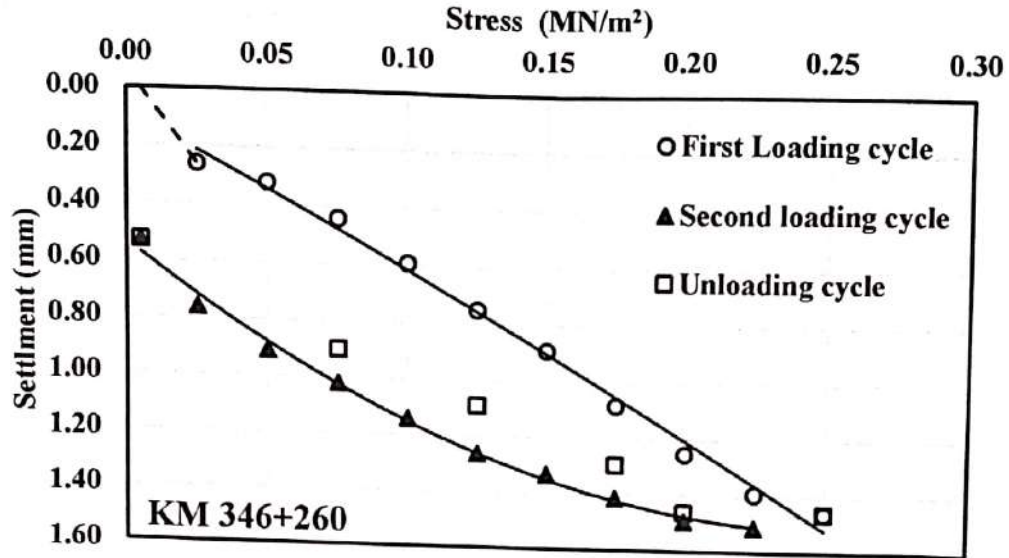


Figure 1: Load-settlement data: plate loading test performed at (KM 346+260)

Table 4: Load-settlement data obtained at the first loading and unloading stages of the plate loading test performed at the location (KM 346+360)

| Loading stage | Load (F)<br>kN | Normal stress ( $\sigma_0$ )<br>MN/m <sup>2</sup> | Settlement (S)<br>mm |
|---------------|----------------|---------------------------------------------------|----------------------|
| 0             | 1.414          | 0.005                                             | 0.00                 |
| 1             | 7.07           | 0.025                                             | 0.20                 |
| 2             | 14.14          | 0.050                                             | 0.29                 |
| 3             | 21.21          | 0.075                                             | 0.40                 |
| 4             | 28.28          | 0.100                                             | 0.58                 |
| 5             | 35.35          | 0.125                                             | 0.78                 |
| 6             | 42.42          | 0.150                                             | 1.00                 |
| 7             | 49.49          | 0.175                                             | 1.23                 |
| 8             | 56.56          | 0.200                                             | 1.43                 |
| 9             | 63.63          | 0.225                                             | 1.58                 |
| 10            | 70.7           | 0.250                                             | 1.68                 |
| 11            | 56.56          | 0.200                                             | 1.68                 |
| 12            | 49.49          | 0.175                                             | 1.68                 |
| 13            | 35.35          | 0.125                                             | 1.61                 |
| 14            | 21.21          | 0.075                                             | 1.48                 |
| 15            | 1.414          | 0.005                                             | 0.82                 |

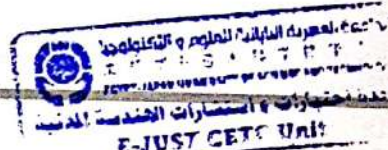




Table 5: Load-settlement data obtained at the second loading and unloading stages of the plate loading test performed at the location (KM 346+360)

| Loading stage | Load (F) | Normal stress ( $\sigma_0$ ) | Settlement (S) |
|---------------|----------|------------------------------|----------------|
|               | kN       | MN/m <sup>2</sup>            | mm             |
| 0             | 1.414    | 0.005                        | 0.82           |
| 1             | 7.07     | 0.025                        | 1.05           |
| 2             | 14.14    | 0.050                        | 1.14           |
| 3             | 21.21    | 0.075                        | 1.24           |
| 4             | 28.28    | 0.100                        | 1.32           |
| 5             | 35.35    | 0.125                        | 1.39           |
| 6             | 42.42    | 0.150                        | 1.52           |
| 7             | 49.49    | 0.175                        | 1.63           |
| 8             | 56.56    | 0.200                        | 1.66           |
| 9             | 63.63    | 0.225                        | 1.68           |

Table 6: Calculations of the resilient modulus of the tested soil according to DIN18134: (KM 346+360)

| Parameters                                    | 1st loading cycle | 2nd loading cycle |
|-----------------------------------------------|-------------------|-------------------|
| ( $s_{0,max}$ ) MN/m <sup>2</sup>             | 0.25              | 0.25              |
| $a_0$ (mm)                                    | -0.02             | 0.84              |
| $a_1$ (mm/(MN/m <sup>2</sup> ))               | 6.13              | 5.97              |
| $a_2$ (mm/(MN <sup>2</sup> /m <sup>4</sup> )) | 3.88              | -9.71             |
| $Ev = 1.5 r / (a_1 + a_2 \cdot s_{0,MAX})$    | 63.41             | 126.99            |
| $Ev_2/Ev_1$                                   | 2.00              |                   |

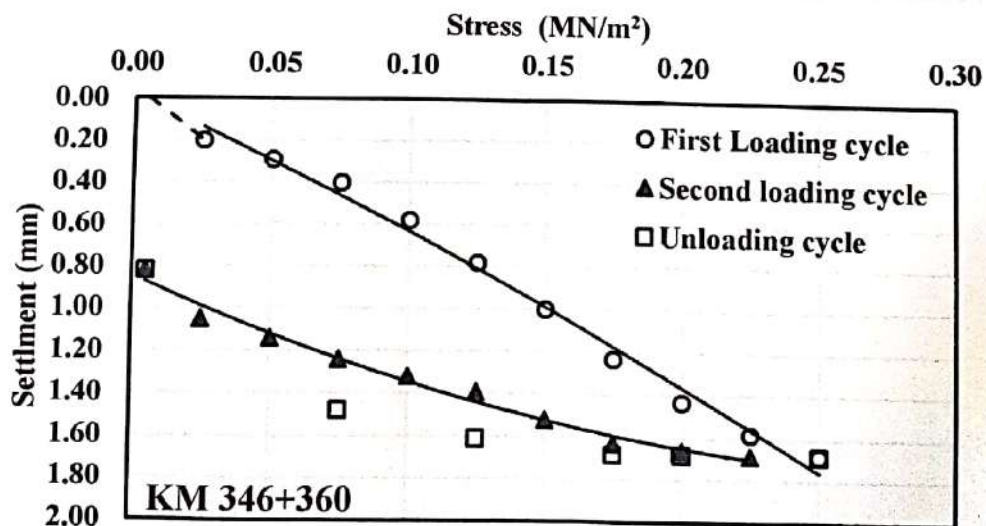


Figure 2: Load-settlement data: plate loading test performed at (KM 346+360)



#### 4. Closure

Test results presented herein report the load-settlement data obtained from two plate loading tests conducted on the Crushed Stone Filter Layer of the Electric Express train project at two locations (KM 346+260 and KM 346+360) in accordance with German Standard, DIN18134.

| Location   | $E_{v1}$<br>MN/m <sup>2</sup> | $E_{v2}$<br>MN/m <sup>2</sup> | $E_{v2}/E_{v1}$ ratio |
|------------|-------------------------------|-------------------------------|-----------------------|
| KM 346+260 | 78.47                         | 113.92                        | 1.45                  |
| KM 346+360 | 63.41                         | 126.99                        | 2.00                  |

- Note: Before interpreting these test results for future applications, the Crushed Stone Filter Layer in-situ variability between the testing locations should be considered.

#### Technical committee

Prof. Dr. Mohamed F. M. Fahmy

#### Lab Engineer

Eng. Mohamed A. Al-Najjar

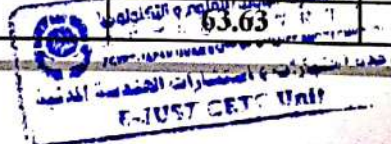


# Appendix A





|                           |                                                                         |           |                         |                            |
|---------------------------|-------------------------------------------------------------------------|-----------|-------------------------|----------------------------|
| Location of test site:    | KM 346+260                                                              |           | Field team              | Samch Hassan               |
| Project title:            | Electric Express Train Project - Orange Company for General Contracting |           | Date:                   | 18/9/2023                  |
| Diameter of loading plate | 600                                                                     |           | Time                    | 10:00:00 AM<br>10:27:00 AM |
| Lever ratio               | 1                                                                       |           | Note:<br>Kawsaki 70Z    |                            |
| Type of Soil              | Crushed Stone Filter Layer                                              |           |                         |                            |
| Bedding material          | ---                                                                     |           |                         |                            |
| Temperature               | 28°C                                                                    |           |                         |                            |
| Test regime               | Loading Stage No.                                                       | Load (kN) | Dial Gauge Reading (mm) |                            |
| Loading Stage             | 0                                                                       | 1.414     | 10.00                   |                            |
|                           | 1                                                                       | 7.07      | 9.74                    |                            |
|                           | 2                                                                       | 14.14     | 9.68                    |                            |
|                           | 3                                                                       | 21.21     | 9.56                    |                            |
|                           | 4                                                                       | 28.28     | 9.41                    |                            |
|                           | 5                                                                       | 35.35     | 9.25                    |                            |
|                           | 6                                                                       | 42.42     | 9.11                    |                            |
|                           | 7                                                                       | 49.49     | 8.92                    |                            |
|                           | 8                                                                       | 56.56     | 8.75                    |                            |
|                           | 9                                                                       | 63.63     | 8.61                    |                            |
|                           | 10                                                                      | 70.7      | 8.54                    |                            |
| Unloading Stage           | 11                                                                      | 56.56     | 8.54                    |                            |
|                           | 12                                                                      | 49.49     | 8.71                    |                            |
|                           | 13                                                                      | 35.35     | 8.91                    |                            |
|                           | 14                                                                      | 21.21     | 9.10                    |                            |
|                           | 15                                                                      | 1.414     | 9.47                    |                            |
| Test regime               | Loading Stage No.                                                       | Load (kN) | Dial Gauge Reading (mm) |                            |
| Reloading Stage           | 0                                                                       | 1.414     | 9.47                    |                            |
|                           | 1                                                                       | 7.07      | 9.24                    |                            |
|                           | 2                                                                       | 14.14     | 9.09                    |                            |
|                           | 3                                                                       | 21.21     | 8.98                    |                            |
|                           | 4                                                                       | 28.28     | 8.86                    |                            |
|                           | 5                                                                       | 35.35     | 8.74                    |                            |
|                           | 6                                                                       | 42.42     | 8.67                    |                            |
|                           | 7                                                                       | 49.49     | 8.59                    |                            |
|                           | 8                                                                       | 56.56     | 8.51                    |                            |
|                           | 9                                                                       | 63.63     | 8.49                    |                            |



|                           |                                                                         |           |                         |                            |
|---------------------------|-------------------------------------------------------------------------|-----------|-------------------------|----------------------------|
| Location of test site:    | KM 346+360                                                              |           | Field team              | Sameh Hassan               |
| Project title:            | Electric Express Train Project - Orange Company for General Contracting |           | Date:                   | 18/9/2023                  |
| Diameter of loading plate | 600                                                                     |           | Time                    | 10:32:00 AM<br>10:59:00 AM |
| Lever ratio               | 1                                                                       |           | Note:<br>Kawsaki 70Z    |                            |
| Type of Soil              | Crushed Stone Filter Layer                                              |           |                         |                            |
| Bedding material          | ---                                                                     |           |                         |                            |
| Temperature               | 28°C                                                                    |           |                         |                            |
| Test regime               | Loading Stage No.                                                       | Load (kN) | Dial Gauge Reading (mm) |                            |
| Loading Stage             | 0                                                                       | 1.414     | 10.00                   |                            |
|                           | 1                                                                       | 7.07      | 9.80                    |                            |
|                           | 2                                                                       | 14.14     | 9.71                    |                            |
|                           | 3                                                                       | 21.21     | 9.60                    |                            |
|                           | 4                                                                       | 28.28     | 9.42                    |                            |
|                           | 5                                                                       | 35.35     | 9.22                    |                            |
|                           | 6                                                                       | 42.42     | 9.00                    |                            |
|                           | 7                                                                       | 49.49     | 8.77                    |                            |
|                           | 8                                                                       | 56.56     | 8.57                    |                            |
|                           | 9                                                                       | 63.63     | 8.42                    |                            |
|                           | 10                                                                      | 70.7      | 8.32                    |                            |
| Unloading Stage           | 11                                                                      | 56.56     | 8.32                    |                            |
|                           | 12                                                                      | 49.49     | 8.32                    |                            |
|                           | 13                                                                      | 35.35     | 8.39                    |                            |
|                           | 14                                                                      | 21.21     | 8.52                    |                            |
|                           | 15                                                                      | 1.414     | 9.18                    |                            |
| Test regime               | Loading Stage No.                                                       | Load (kN) | Dial Gauge Reading (mm) |                            |
| Reloading Stage           | 0                                                                       | 1.414     | 9.18                    |                            |
|                           | 1                                                                       | 7.07      | 8.95                    |                            |
|                           | 2                                                                       | 14.14     | 8.86                    |                            |
|                           | 3                                                                       | 21.21     | 8.76                    |                            |
|                           | 4                                                                       | 28.28     | 8.68                    |                            |
|                           | 5                                                                       | 35.35     | 8.61                    |                            |
|                           | 6                                                                       | 42.42     | 8.48                    |                            |
|                           | 7                                                                       | 49.49     | 8.37                    |                            |
|                           | 8                                                                       | 56.56     | 8.34                    |                            |
|                           | 9                                                                       | 63.63     | 8.32                    |                            |

# MATERIAL INSPECTION REQUEST



|                             |                                                            |              |                           |                                    |    |    |    |
|-----------------------------|------------------------------------------------------------|--------------|---------------------------|------------------------------------|----|----|----|
| Contractor Company          | Orange Company For Import & Export and General Contracting |              | Designer Company          | (KK) Engineering Consulting Office |    |    |    |
| Issued by Contractor        | Name                                                       | Sign         | Date/ Serial Number       | Time                               |    |    |    |
|                             | Eng: Abdullah Kamal                                        | عبدالله كمال | 01-11-2023<br>M.I.R-002-1 | 11:00 AM                           |    |    |    |
| Received by GARB CONSULTANT | Eng. Saied Saif                                            | MIR          | C1                        | C2                                 | C3 | DD | MM |
|                             |                                                            |              | 347                       | EW                                 | CS | 02 | 11 |
|                             |                                                            |              |                           |                                    |    |    | YY |
|                             |                                                            |              |                           |                                    |    |    | HH |
|                             |                                                            |              |                           |                                    |    |    | MM |

|        |                                |                             |                                                          |
|--------|--------------------------------|-----------------------------|----------------------------------------------------------|
| CODE-1 | S1 to S21<br>Station Reference | D1 to S3<br>Depot Reference | Kp XXX Note<br>For Kilometer point only Start Km is used |
| CODE-2 | Work Activity                  |                             |                                                          |
| CODE-3 | Sub Element of Activity        |                             |                                                          |

|                                                       |                 |                                     |                                                                       |                                                                                   |            |
|-------------------------------------------------------|-----------------|-------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------|
| Description of Materials                              |                 | FILTER LAYER                        |                                                                       |                                                                                   |            |
| Location to be Used                                   |                 | From St. (347+260) To St. (347+460) |                                                                       |                                                                                   |            |
| MAR Approval No                                       |                 | MAR (002) , MAR (003) , MAR (004)   |                                                                       | Date                                                                              | 30-08-2023 |
| UIR Approval No                                       |                 | IR (FT-002)                         |                                                                       |                                                                                   | 30-08-2023 |
| Supplier Name                                         |                 | AL-Salam & AL-Howayeg               |                                                                       |                                                                                   | 13-09-2023 |
| Test Requirement                                      |                 | P.L.T (DIN 18134)                   | Specification                                                         | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP. |            |
| Reference Photos                                      |                 | No                                  | Other                                                                 |                                                                                   |            |
| Item                                                  | Description     | Unit                                | Quantity                                                              | Arrival Date                                                                      | Note       |
| 1                                                     | Plate load test | NUMBER                              | 2                                                                     | 02-11-2023                                                                        |            |
| 2                                                     |                 |                                     |                                                                       |                                                                                   |            |
| 3                                                     |                 |                                     |                                                                       |                                                                                   |            |
| 4                                                     |                 |                                     |                                                                       |                                                                                   |            |
| Comments by : Saied Saif (K.K)                        |                 |                                     | Comments by: Eng. Alaa Abd-Allatif (ER)                               |                                                                                   |            |
| -1 تم اختبار القطاع . Plate load test                 |                 |                                     | 1-P.L.T was carried-out By (CEL).                                     |                                                                                   |            |
| -2 تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع . |                 |                                     | 2-Results report attached and acceptable with project specifications. |                                                                                   |            |
|                                                       |                 |                                     | 3-Final approval is subject to above mentioned comments.              |                                                                                   |            |

| APPROVAL STATUS          |                       |              |           |         |
|--------------------------|-----------------------|--------------|-----------|---------|
| Organisation             | Name                  | Sign         | Date      | A-AWC-R |
| Contractor               | Eng: Abdullah Kamal   | عبدالله كمال |           | A       |
| QA/QC *                  | Eng. Saied Saif       | khaleel/9ki  |           | A       |
| GARB**                   | Eng. Margret Magdy    |              |           |         |
| Employers Representative | Eng. Alaa Abd-Allatif | Alaa         | 3-11-2023 | AWC     |

\* Designer

\*\* Alignment / Bridges: Culvert Only

**Company** : Orange contraction.

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

**Sector (5) - Borg Al Arab to El Hamam.**

**Subject** : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements

**Test Location** : Station (347+260 to 347+460)

**Test Date** : 02/11/2023

**Repot Date** : 02/11/2023

**Type of soil** : fill filter

**Test level** : ----

**Report No.** : 008:009

Dear Gentleman,

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

**Apparatus**

1. Loading plates consists of plate 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 plate 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 5 kg/cm<sup>2</sup>
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 % , and approximately 2 % of the maximum load.
9. Following unloading, a further (2<sup>nd</sup>) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min
11. Remove the loads



## Report

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

## Report

- Type of Soil : fill filter

| Item                                                               | Descriptions   |
|--------------------------------------------------------------------|----------------|
| - Type of bedding material below the plate                         | Natural Soil   |
| - Weather condition                                                | Partly Sunny   |
| - Plate Diameter (mm)                                              | 300            |
| - date of measurement                                              | 02/11/2023     |
| - 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 | First Cycle    | Second Cycle   | $E_{v2} / E_{v1}$ Ratio |
|----------|---------|----------------|----------------|-------------------------|
|          |         | $E_{v1}$ (MPa) | $E_{v2}$ (MPa) |                         |
| 1        | 347+320 | 61             | 144            | 2.4                     |
| 2        | 347+420 | 66             | 194            | 2.9                     |

Signature /  مكتب معامل الاستشارات الهندسية  
الساحل الشمالي 02  
المركز الرئيسي : شارع الملك الأفضل - الزمالة - القاهرة

Company Name : Orange contraction.  
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (5) - Borg Al Arab to El Hamam.  
Test Date : 02/11/2023  
report date : 02/11/2023  
Location : Station 347+320  
Test No. : 01

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

**Data sheet**

**Loading Stage (1)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 0       | 0.00             | 20.00  | 0.00             | 20.00  | 0.00             | 20.00  | 0.00             | 0.00    |
| 1       | 0.83             | 19.81  | 0.19             | 19.75  | 0.25             | 19.73  | 0.27             | 0.24    |
| 2       | 1.67             | 19.73  | 0.27             | 19.59  | 0.41             | 19.48  | 0.52             | 0.40    |
| 3       | 2.50             | 19.60  | 0.40             | 19.33  | 0.67             | 19.08  | 0.92             | 0.66    |
| 4       | 3.33             | 19.42  | 0.58             | 18.92  | 1.08             | 18.65  | 1.35             | 1.00    |
| 5       | 4.14             | 19.05  | 0.95             | 18.40  | 1.60             | 18.15  | 1.85             | 1.47    |
| 6       | 5.00             | 18.72  | 1.28             | 17.83  | 2.17             | 17.62  | 2.38             | 1.94    |

**Unloading Stage (1)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 1       | 5.00             | 18.72  | 1.28             | 17.83  | 2.17             | 17.62  | 2.38             | 1.94    |
| 2       | 2.50             | 18.81  | 1.19             | 17.88  | 2.12             | 17.67  | 2.33             | 1.88    |
| 3       | 1.250            | 18.96  | 1.04             | 18.00  | 2.00             | 17.85  | 2.15             | 1.73    |
| 4       | 0.05             | 19.30  | 0.70             | 18.32  | 1.68             | 18.25  | 1.75             | 1.38    |

**Loading Stage (2)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 0       | 0.83             | 19.18  | 0.82             | 18.19  | 1.81             | 18.15  | 1.85             | 1.49    |
| 1       | 1.67             | 19.10  | 0.90             | 18.06  | 1.94             | 17.95  | 2.05             | 1.63    |
| 2       | 2.50             | 18.95  | 1.05             | 17.94  | 2.06             | 17.78  | 2.22             | 1.78    |
| 3       | 3.33             | 18.83  | 1.17             | 17.85  | 2.15             | 17.65  | 2.35             | 1.89    |
| 4       | 4.17             | 18.74  | 1.26             | 17.75  | 2.25             | 17.53  | 2.47             | 1.99    |



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# CEL

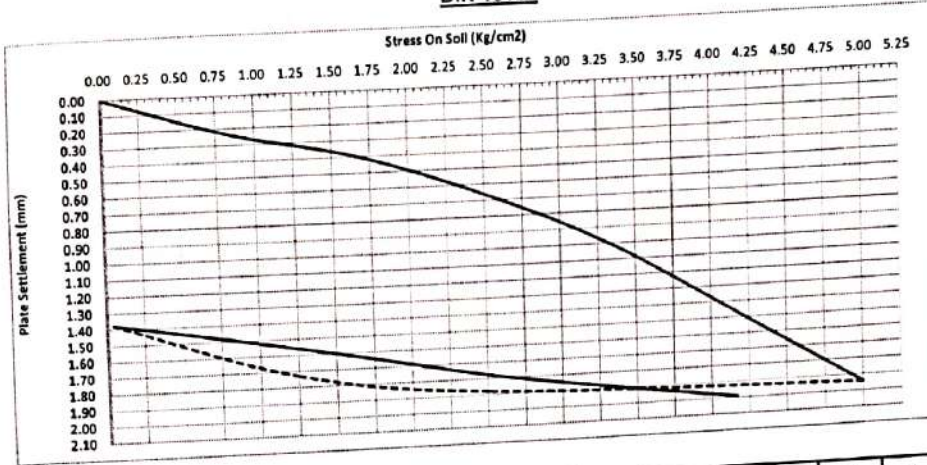
## Consulting Engineering Bureau & Laboratories

### مكتب معامل الإستشارات الهندسية

Company Name  
Project  
Test Date  
report date  
Location  
Test No.

: Orange contraction.  
: Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (5) - Borg Al Arab to El Hamam.  
: 02/11/2023  
: 02/11/2023  
: Station 347+320  
: 01

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



| Loading (1)     | 0    | 1    | 2    | 3    | 4    | 5    | 6    |
|-----------------|------|------|------|------|------|------|------|
| Stage(Kg)       | 0    | 589  | 1178 | 1767 | 2357 | 2967 | 3535 |
| Stress (Kg/cm2) | 0.00 | 0.83 | 1.67 | 2.50 | 3.33 | 4.17 | 5.00 |
| Settlement (mm) | 0.00 | 0.24 | 0.40 | 0.66 | 1.00 | 1.47 | 1.94 |

| UnLoading (1)   | 1    | 2    | 3     | 4    |
|-----------------|------|------|-------|------|
| Stage(Kg)       | 3535 | 1767 | 883   | 0    |
| Stress (Kg/cm2) | 5.00 | 2.50 | 1.250 | 0.05 |
| Settlement (mm) | 1.94 | 1.88 | 1.73  | 1.38 |

|             |                |          |      |         |      |      |      |
|-------------|----------------|----------|------|---------|------|------|------|
| D (mm) =    | 300            | S1 (mm)= | 0.37 | S2(mm)= | 1.09 | ΔS = | 0.73 |
| Ev1 (MPa) = | (0.75*D*Δσ)/ΔS |          | 61   |         |      |      |      |

Ev2/Ev1 = 2.4

| Loading (2)     | 0    | 1    | 2    | 3    | 4    | 5    |
|-----------------|------|------|------|------|------|------|
| Stage(Kg)       | 0    | 589  | 1178 | 1767 | 2357 | 2967 |
| Stress (Kg/cm2) | 0.05 | 0.83 | 1.67 | 2.50 | 3.33 | 4.17 |
| Settlement (mm) | 1.38 | 1.49 | 1.63 | 1.78 | 1.89 | 1.99 |

|             |                |          |      |         |      |      |      |
|-------------|----------------|----------|------|---------|------|------|------|
| D (mm) =    | 300            | S1 (mm)= | 1.60 | S2(mm)= | 1.91 | ΔS = | 0.31 |
| Ev2 (MPa) = | (0.75*D*Δσ)/ΔS |          | 143  |         |      |      |      |

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 (smax) (kg/cm2)  
Δs = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



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www.cel-egvnt.com

Company Name : Orange contraction.  
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (5) - Borg Al Arab to El Hamam.  
Test Date : 02/11/2023  
report date : 02/11/2023  
Location : Station 347+420  
Test No. : 02

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

Data sheet

**Loading Stage (1)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 0       | 0.00             | 20.00  | 0.00             | 20.00  | 0.00             | 20.00  | 0.00             | 0.00    |
| 1       | 0.83             | 19.72  | 0.28             | 19.67  | 0.33             | 19.76  | 0.24             | 0.28    |
| 2       | 1.67             | 19.32  | 0.68             | 19.36  | 0.64             | 19.29  | 0.71             | 0.68    |
| 3       | 2.50             | 19.09  | 0.91             | 19.11  | 0.89             | 18.98  | 1.02             | 0.94    |
| 4       | 3.33             | 18.85  | 1.15             | 18.89  | 1.11             | 18.65  | 1.35             | 1.20    |
| 5       | 4.14             | 18.52  | 1.48             | 18.60  | 1.40             | 18.32  | 1.68             | 1.52    |
| 6       | 5.00             | 18.23  | 1.77             | 18.29  | 1.71             | 17.97  | 2.03             | 1.84    |

**Unloading Stage (1)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 1       | 5.00             | 18.23  | 1.77             | 18.29  | 1.71             | 17.97  | 2.03             | 1.84    |
| 2       | 2.50             | 18.30  | 1.70             | 18.36  | 1.64             | 18.07  | 1.93             | 1.76    |
| 3       | 1.250            | 18.42  | 1.58             | 18.46  | 1.54             | 18.13  | 1.87             | 1.66    |
| 4       | 0.05             | 18.77  | 1.23             | 18.82  | 1.18             | 18.65  | 1.35             | 1.25    |

**Loading Stage (2)**

| Loading | Stress<br>Kg/cm2 | Dial 1 | Settlement<br>mm | Dial 2 | Settlement<br>mm | Dial 3 | Settlement<br>mm | Average |
|---------|------------------|--------|------------------|--------|------------------|--------|------------------|---------|
| 0       | 0.83             | 18.68  | 1.32             | 18.73  | 1.27             | 18.55  | 1.45             | 1.35    |
| 1       | 1.67             | 18.60  | 1.40             | 18.64  | 1.36             | 18.46  | 1.54             | 1.43    |
| 2       | 2.50             | 18.47  | 1.53             | 18.57  | 1.43             | 18.37  | 1.63             | 1.53    |
| 3       | 3.33             | 18.35  | 1.65             | 18.50  | 1.50             | 18.28  | 1.72             | 1.62    |
| 4       | 4.17             | 18.24  | 1.76             | 18.41  | 1.59             | 18.17  | 1.83             | 1.73    |



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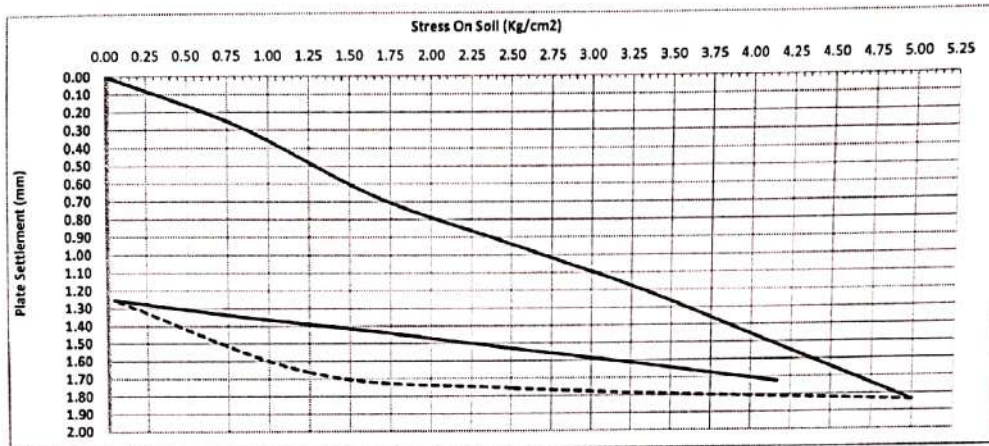


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Company Name  
Project  
Test Date  
report date  
Location  
Test No.

: Orange contraction.  
: Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (5) - Borg Al Arab to El Hamam.  
: 02/11/2023  
: 02/11/2023  
: Station 347+420  
: 02

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



| Loading (1)     | 0    | 1    | 2    | 3    | 4    | 5    | 6    |
|-----------------|------|------|------|------|------|------|------|
| Stage(Kg)       | 0    | 589  | 1178 | 1767 | 2357 | 2967 | 3535 |
| Stress (Kg/cm2) | 0.00 | 0.83 | 1.67 | 2.50 | 3.33 | 4.17 | 5.00 |
| Settlement (mm) | 0.00 | 0.28 | 0.68 | 0.94 | 1.20 | 1.52 | 1.84 |

| UnLoading (1)   | 1    | 2    | 3     | 4    |
|-----------------|------|------|-------|------|
| Stage(Kg)       | 3535 | 1767 | 883   | 0    |
| Stress (Kg/cm2) | 5.00 | 2.50 | 1.250 | 0.05 |
| Settlement (mm) | 1.84 | 1.76 | 1.66  | 1.25 |

|                                                            |               |              |           |
|------------------------------------------------------------|---------------|--------------|-----------|
| D (mm) = 300                                               | S1 (mm)= 0.60 | S2(mm)= 1.27 | ΔS = 0.67 |
| Ev1 (MPa) = $(0.75 \cdot D \cdot \Delta\sigma) / \Delta S$ | 66            |              |           |

|               |
|---------------|
| Ev2/Ev1 = 2.9 |
|---------------|

| Loading (2)     | 0    | 1    | 2    | 3    | 4    | 5    |
|-----------------|------|------|------|------|------|------|
| Stage(Kg)       | 0    | 589  | 1178 | 1767 | 2357 | 2967 |
| Stress (Kg/cm2) | 0.05 | 0.83 | 1.67 | 2.50 | 3.33 | 4.17 |
| Settlement (mm) | 1.25 | 1.35 | 1.43 | 1.53 | 1.62 | 1.73 |

|                                                            |               |              |           |
|------------------------------------------------------------|---------------|--------------|-----------|
| D (mm) = 300                                               | S1 (mm)= 1.42 | S2(mm)= 1.64 | ΔS = 0.23 |
| Ev2 (MPa) = $(0.75 \cdot D \cdot \Delta\sigma) / \Delta S$ | 194           |              |           |

Ev1 = Modulus of deformation during the loading stage.

Ev2 = Modulus of deformation during the Reloading stage.

D = Plate diameter (mm)

$\Delta\sigma$  = The difference between 0.3 and 0.7 from the maximum loading (smax) (kg/cm<sup>2</sup>)

$\Delta s$  = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)



|                             |                                                    |              |                            |                  |                                    |     |    |    |    |    |    |
|-----------------------------|----------------------------------------------------|--------------|----------------------------|------------------|------------------------------------|-----|----|----|----|----|----|
| Contractor Company          | Orange For Import & Export and General Contracting |              |                            | Designer Company | (KK) Engineering Consulting Office |     |    |    |    |    |    |
| Issued by Contractor        | Name                                               | Sign         | Date/Serial Number         | Time             |                                    |     |    |    |    |    |    |
|                             | Eng. Abdullah Kamal                                | عبدالله كمال | 8/29/2023<br>(M.A.R-001-1) | 10:00            |                                    |     |    |    |    |    |    |
| Received by GARB CONSULTANT | Name                                               | Sign         | Date/Serial Number         | C1               | C2                                 | C3  | DD | MM | YY | HH | MM |
|                             |                                                    |              |                            | Eng. Saied Saif  | إسحاق عاكف                         | 345 | EW | CS | 30 | 8  | 23 |

|          |                         |                 |                                           |
|----------|-------------------------|-----------------|-------------------------------------------|
| CODE - 1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
| CODE - 2 | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE - 3 | Work Activity           |                 |                                           |
|          | Sub Element of Activity |                 |                                           |

|                                                                                                                                                                                                                        |                                               |                                                                                                                                                                                                                                                                                                          |                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                                                                                                                                                                               | Crushed Dolomitic Aggregates For Filter Layer |                                                                                                                                                                                                                                                                                                          |                                                                                  |
| Location to be Used                                                                                                                                                                                                    | From Station (345+960) to Station (347+460)   |                                                                                                                                                                                                                                                                                                          |                                                                                  |
| Sample only                                                                                                                                                                                                            | Yes                                           | Materials Type                                                                                                                                                                                                                                                                                           | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                                                                                                                                                                          | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                                                                                                                                                                                                                                      | Yes attached                                                                     |
| Reference in BoQ                                                                                                                                                                                                       |                                               | Specification                                                                                                                                                                                                                                                                                            | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                                                                                                                                                                             |                                               | Test Samples Results                                                                                                                                                                                                                                                                                     |                                                                                  |
| Reference Photos                                                                                                                                                                                                       | No                                            | Other                                                                                                                                                                                                                                                                                                    |                                                                                  |
| <b>Comments by: Eng. Saied Saif (K.K)</b><br><br>1-Quality test Result By Third Party Laboratory Is Approved.<br><br>2-This Sample Representative ( 5000 m3 ) only.<br><br>3-تم الاعتماد على الصلاحية الداخلية للمشون. |                                               | <b>Comments by: Eng. Alaa Abd-Allatif (ER)</b><br><br>1-All tests were carried-out by Third Party Lab (Faculty of Engineering - ALEXANDRIA UNIVERSITY).<br><br>2-Results report attached and acceptable with the project specifications.<br><br>3-Final approval is subject to above mentioned comments. |                                                                                  |

| APPROVAL STATUS          |                       |              |            |         |
|--------------------------|-----------------------|--------------|------------|---------|
| Organisation             | Name                  | Sign         | Date       | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبدالله كمال |            | A       |
| QA/QC *                  | Eng. Saied Saif       | إسحاق عاكف   |            | Awe     |
| GARB**                   | Eng. Margret Magdy    |              |            |         |
| Employers Representative | Eng. Alaa Abd-Allatif | إسحاق عاكف   | 16-11-2023 | Awe     |

\* Designer

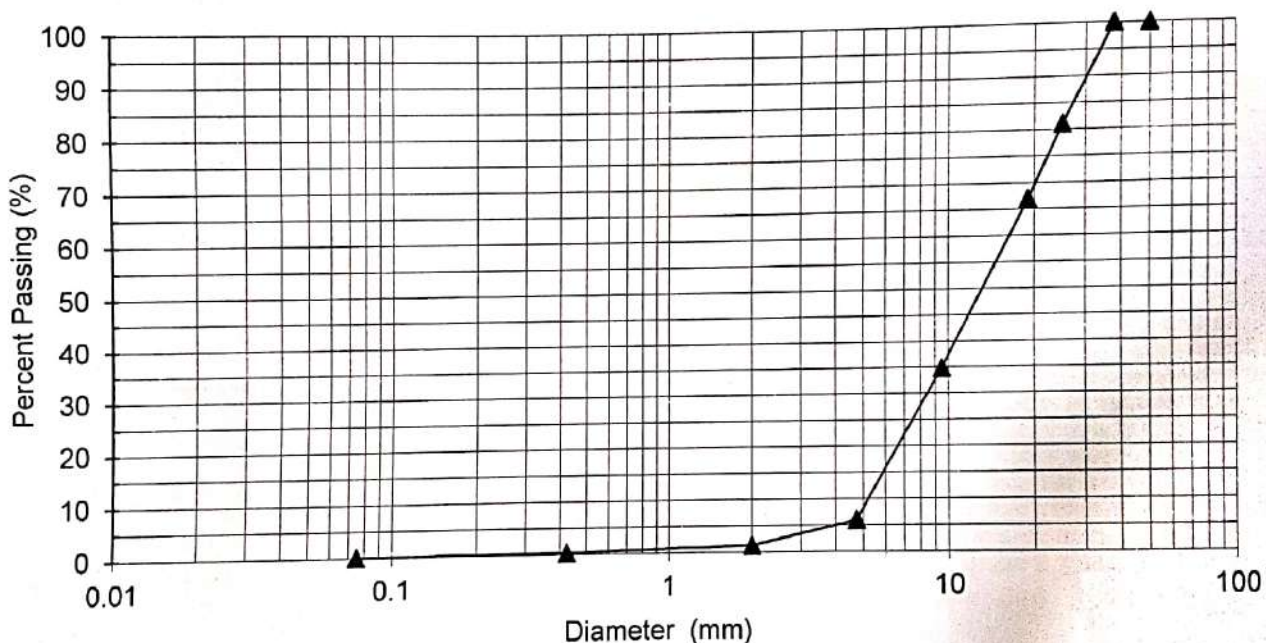
\*\* Alignment/Bridges: Culvert only

الممسوحة ضوئيا بـ CamScanner

**Grain Size Distribution Curve**

|            |                                                   |
|------------|---------------------------------------------------|
| CLIENT     | شركة أورنج للاستيراد والتصدير والمقاولات العمومية |
| PROJECT    | القطار الكهربائي السريع                           |
| LOCATION   | القطاع من ٣٤٥ + ٩٦٠ الى ٣٤٧ + ٩٦٠                 |
| LAYER TYPE | سن فلتر عينة ٣ / ١                                |

|                |            |
|----------------|------------|
| Receiving Date | 29/08/2023 |
| Cheque Date    | 30/08/2023 |
| Reciept Number | 112979     |
| Report Date    | 11/09/2023 |
| Lab. Ref.      | G 48/09    |

**GRAIN SIZE DISTRIBUTION CURVE**

| PERCENT PASSING |         |        |        |       |      |      |      |        |       |
|-----------------|---------|--------|--------|-------|------|------|------|--------|-------|
| Sieve No.       | No. 200 | No. 40 | No. 10 | No. 4 | 3/8" | 3/4" | 1"   | 1 1/2" | 2"    |
| Test Results    | 0.0     | 0.2    | 1.2    | 5.9   | 34.8 | 66.9 | 81.1 | 100.0  | 100.0 |



وردت العينة التي اجري عليها الاختبار الى المعمل بمعرفة مندوب الاستشاري ا.د/ خالد فاضل

Laboratory Director

Dr. Wael Bekheet

The laboratory is only responsible for the test results and its correctness. The laboratory is not responsible for the interpretation of the test results.

المعمل مسئول فقط عن نتائج الاختبارات وصحتها. المعمل غير مسئول عن كيفية استخدام نتائج الاختبارات او اي نتائج مبنية على ذلك

رقم بريد ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣) +

P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203



### نتائج تجارب لوس أنجلوس و الامتصاص

|             |                    |                                                   |            |
|-------------|--------------------|---------------------------------------------------|------------|
| ٢٠٢٣/٠٨/٢٩  | تاريخ توريد العينة | ل.أ. ٣١/٠٩                                        | تقرير رقم  |
| ٢٠٢٣/٠٨/٣٠  | أمر دفع            | لوس أنجلوس و الامتصاص                             | الاختبارات |
| ١١٢٩٧٩      | أمر دفع            | شركة اورنج للاستيراد والتصدير والمقاولات العمومية | المقاول    |
| ٢٠٢٣/٠٩/١١  | تاريخ التقرير      | القطار الكهربائي السريع                           | المشروع    |
| سن فلتر (١) | العينة             | القطاع من ٣٤٥ + ٩٦٠ الى ٣٤٧ + ٩٦٠                 | الموقع     |

### نتائج اختبار لوس أنجلوس و الامتصاص

|              |                               |
|--------------|-------------------------------|
| ٥٠٠ لفة      | لوس أنجلوس                    |
| ١٢ كورة      | عدد كرات الاختبار             |
| ٥٠٠٠ جم      | وزن العينة قبل التجربة        |
| ٤٠٠٩ جم      | وزن العينة بعد التجربة        |
| %١٩,٨٢       | نسبة التآكل                   |
| %١,٠٤        | نسبة الامتصاص بعد ٢٤ ساعة غمر |
| %٠,٢٧        | نسبة التفتت في الماء          |
| ٢,٦٠ جم/سم ٣ | الوزن النوعي                  |

تم توريد العينة بمعرفة مندوب الاستشاري د.أ / خالد قنديل

مدير المعمل



فني المعمل

أحمد عادل

The laboratory is only responsible for the test results and its correctness. The laboratory is not responsible for the interpretation of the test results.

المعمل مسئول فقط عن نتائج الاختبارات وصحتها. المعمل غير مسئول عن كيفية استخدام نتائج الاختبارات أو أي نتائج مبنية على ذلك

رقم بريد ٢١٥٤٤ الإسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)

P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203

# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الإستشارات الهندسية

**Company** : Orange company.  
**Project** : Electric express train.  
**Delivery Date** : 08/11/2023  
**Report Date** : 16/11/2023  
**Sample Id** : Mixed Aggregate  
**Report No.** : 01

**ORGANIC OF SOIL ASTM D 2974**  
**METHOD TYPE D**

| Test                        | Results |
|-----------------------------|---------|
| Amount of organic Content % | Nil     |

Signature /   
مكتب معامل الإستشارات الهندسية  
الأختصاصات الهندسية  
إدارة التسجيل الهندسي : 537 - 291 - 216  
القاهرة - الجيزة - الأقصر - الزمالة

  
مكتب معامل الإستشارات الهندسية  
الساحل الشمالي 02  
الزمر الرئيسي : ٥ شارع الملك الأفضل - الزمالة - القاهرة

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

**IAS**  
ACCREDITED  
Testing Laboratory

٣ ش الملك الأفضل  
الزمالة - القاهرة  
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
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**MATERIAL  
APPROVAL  
REQUEST**



المكتب العامة  
للطرق والكباري  
(GARB)



|                                |                                                    |               |                    |    |    |    |                                    |    |    |    |
|--------------------------------|----------------------------------------------------|---------------|--------------------|----|----|----|------------------------------------|----|----|----|
| Contractor Company             | Orange For Import & Export and General Contracting |               | Designer Company   |    |    |    | (KK) Engineering Consulting Office |    |    |    |
| Issued by Contractor           | Name                                               | Sign          | Date/Serial Number |    |    |    | Time                               |    |    |    |
|                                | Eng. Abdullah Kamal                                | عبدالله كمال  | 8/29/2023          |    |    |    | 10:00                              |    |    |    |
|                                |                                                    |               | (M.A.R-002-1)      |    |    |    |                                    |    |    |    |
| Received by GARB<br>CONSULTANT | Eng. Saied Saif                                    | Khaled Gk MAR | C1                 | C2 | C3 | DD | MM                                 | YY | HH | MM |
|                                |                                                    |               | 345                | EW | CS | 30 | 8                                  | 23 | 10 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
| CODE-2 | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-3 | Work Activity           |                 |                                           |
|        | Sub Element of Activity |                 |                                           |

|                                                              |                                               |                                                                                                   |                                                                                  |
|--------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                     | Crushed Dolomitic Aggregates For Filter Layer |                                                                                                   |                                                                                  |
| Location to be Used                                          | From Station (345+960) to Station (347+460)   |                                                                                                   |                                                                                  |
| Sample only                                                  | Yes                                           | Materials Type                                                                                    | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                               | Yes attached                                                                     |
| Reference in BoQ                                             |                                               | Specification                                                                                     | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                   |                                               | Test Samples Results                                                                              |                                                                                  |
| Reference Photos                                             | No                                            | Other                                                                                             |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                           |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                           |                                                                                  |
| 1-Quality test Result By Third Party Laboratory is Approved. |                                               | 1-All tests were carried-out by Third Party Lab (Faculty of Engineering - ALEXANDRIA UNIVERSITY). |                                                                                  |
| 2-This Sample Representative ( 5000 m3 ) only.               |                                               | 2-Results report attached and acceptable with the project specifications.                         |                                                                                  |
| 3- تم الاعتماد على الصلاحية الداخلية للمشور.                 |                                               | 3-Final approval is subject to above mentioned comments.                                          |                                                                                  |

| APPROVAL STATUS          |                       |                 |            |         |
|--------------------------|-----------------------|-----------------|------------|---------|
| Organisation             | Name                  | Sign            | Date       | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبدالله كمال    |            | A       |
| QA/QC *                  | Eng. Saied Saif       | Eng. Saied Saif |            | AWC     |
| GARB**                   | Eng. Margret Magdy    |                 |            |         |
| Employers Representative | Eng. Alaa Abd-Allatif | for             | 16-11-2023 | AWC     |

\* Designer

\*\* Alignment/Bridges; Culvert only

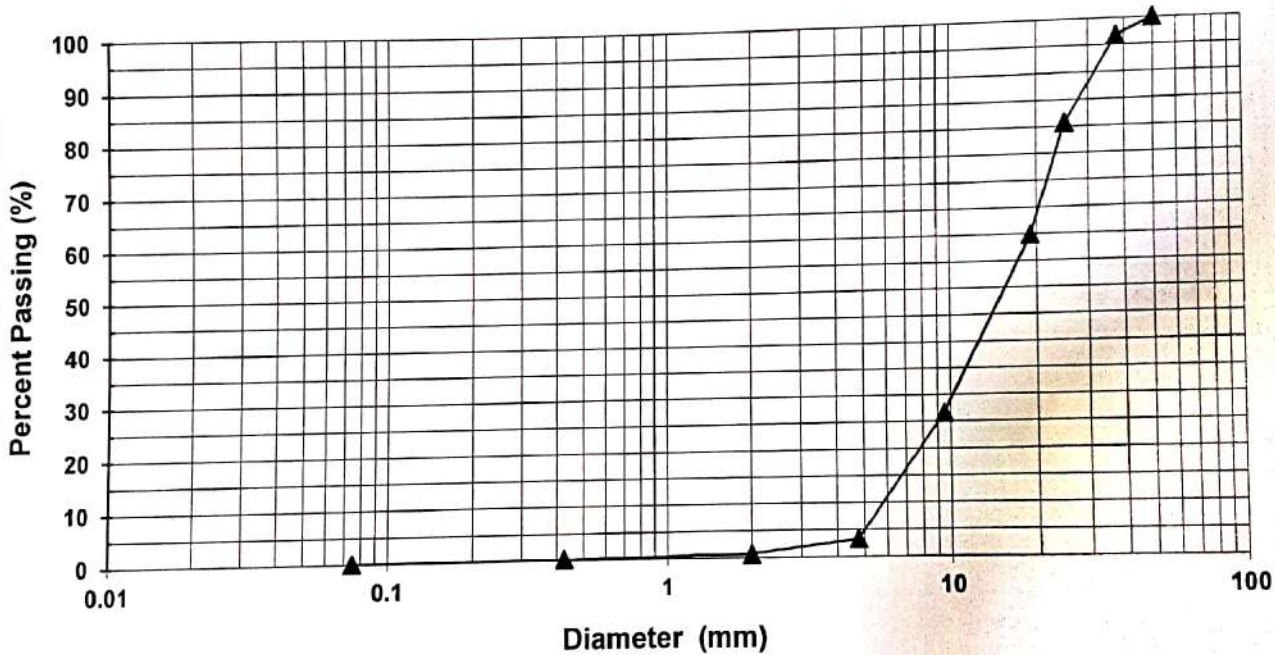


### Grain Size Distribution Curve

|            |                                                   |
|------------|---------------------------------------------------|
| CLIENT     | شركة أورنج للاستيراد والتصدير والمقاولات العمومية |
| PROJECT    | القطار الكهربائي السريع                           |
| LOCATION   | القطاع من ٣٤٥ + ٩٦٠ الى ٣٤٧ + ٩٦٠                 |
| LAYER TYPE | سن فلتر عينة ٣ / ٢                                |

|                |            |
|----------------|------------|
| Receiving Date | 29/08/2023 |
| Cheque Date    | 30/08/2023 |
| Receipt Number | 112979     |
| Report Date    | 11/09/2023 |
| Lab. Ref.      | G 49/09    |

### GRAIN SIZE DISTRIBUTION CURVE



| Sieve No.    | PERCENT PASSING |        |        |       |      |      |      |        |       |
|--------------|-----------------|--------|--------|-------|------|------|------|--------|-------|
|              | No. 200         | No. 40 | No. 10 | No. 4 | 3/8" | 3/4" | 1"   | 1 1/2" | 2"    |
| Test Results | 0.0             | 0.2    | 0.6    | 3.3   | 26.6 | 59.8 | 80.6 | 96.8   | 100.0 |



وردت العينة التي اجري عليها الاختبار الى المعمل بمعرفة مندوب الاستشاري (احمد فهد)

Laboratory Director

Dr. Wael Bakheet

The laboratory is only responsible for the test results and its correctness. The laboratory is not responsible for the interpretation of the test results.

المعمل مسئول فقط عن نتائج الاختبارات و صحتها. المعمل غير مسئول عن كيفية استخدام نتائج الاختبارات او اي نتائج مبنية على ذلك

رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)

P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203



## نتائج تجارب لوس أنجلوس و الامتصاص

|                                    |                    |                                                    |            |
|------------------------------------|--------------------|----------------------------------------------------|------------|
| ٢٠٢٣/٠٨/٢٩                         | تاريخ توريد العينة | ل. ٣٢.١/٠٩                                         | تقرير رقم  |
| ٢٠٢٣/٠٨/٣٠                         | أمر دفع            | لوس أنجلوس و الامتصاص                              | الاختبارات |
| ١١٢٩٧٩                             | أمر دفع            | شركة اورنج للاستيراد و التصدير والمقاولات العمومية | المقاول    |
| ٢٠٢٣/٠٩/١١                         | تاريخ التقرير      | القطار الكهربائي السريع                            | المشروع    |
| سن فلتر (٢)                        | العينة             | القطاع من ٣٤٥ + ٩٦٠ الى ٣٤٧ + ٩٦٠                  | الموقع     |
| نتائج اختبار لوس أنجلوس و الامتصاص |                    |                                                    |            |

|              |                               |
|--------------|-------------------------------|
| ٥٠٠ لفة      | لوس أنجلوس                    |
| ١٢ كورة      | عدد كرات الاختبار             |
| ٥٠٠٠ جم      | وزن العينة قبل التجربة        |
| ٣٩٩٧ جم      | وزن العينة بعد التجربة        |
| %٢٠,٠٦       | نسبة التآكل                   |
| %١,٠٦        | نسبة الامتصاص بعد ٢٤ ساعة غمر |
| %٠,٤٢        | نسبة النفتت في الماء          |
| ٢,٦٣ جم/سم ٣ | الوزن النوعي                  |

تم توريد العينة بمعرفة مندوب الاستشاري ا.د / خالد قنديل



فني المعمل  
 أحمد عادل

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المعمل مسئول فقط عن نتائج الاختبارات و صحتها. المعمل غير مسئول عن كيفية استخدام نتائج الاختبارات أو أي نتائج مبنية على ذلك

رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)  
 P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203

# CEL

Consulting Engineering Bureau & Laboratories  
مكتب معامل الاستشارات الهندسية

Company : Orange company.  
Project : Electric express train.  
Delivery Date : 08/11/2023  
Report Date : 16/11/2023  
Sample Id : Mixed Aggregate  
Report No. : 02

**ORGANIC OF SOIL ASTM D 2974  
METHOD TYPE D**

| Test                        | Results |
|-----------------------------|---------|
| Amount of organic Content % | Nil     |

Signature  
مكتب معامل الاستشارات الهندسية  
الاختبارات المعملية  
رقم التسجيل ٥٣٧ - ٩٩١ - ٢١٩  
٣ شارع الملك الافضل - الزمالة

مكتب معامل الاستشارات الهندسية  
الساحل الشمالي 02  
البر الرئيسي: ٢ شارع الملك الافضل - الزمالة - القاهرة

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

**IAS**  
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Testing Laboratory

٣ ش الملك الافضل  
الزمالة - القاهرة  
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
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# MATERIAL APPROVAL REQUEST



المكتب الاستشاري الهندسي  
للطرق و الكباري  
(GARB)



|                                |                                                    |               |     |                    |    |    |                                    |    |    |    |    |
|--------------------------------|----------------------------------------------------|---------------|-----|--------------------|----|----|------------------------------------|----|----|----|----|
| Contractor Company             | Orange For Import & Export and General Contracting |               |     | Designer Company   |    |    | (KK) Engineering Consulting Office |    |    |    |    |
| Issued by Contractor           | Name                                               | Sign          |     | Date/Serial Number |    |    | Time                               |    |    |    |    |
|                                | Eng. Abdullah Kamal                                | عبد الله كمال |     | 8/29/2023          |    |    | 10:00                              |    |    |    |    |
|                                |                                                    |               |     | (M.A.R-003-1)      |    |    |                                    |    |    |    |    |
| Received by GARB<br>CONSULTANT | Eng. Saied Saif                                    | Khaled Zaki   | MAR | C1                 | C2 | C3 | DD                                 | MM | YY | HH | MM |
|                                |                                                    |               |     | 345                | EW | CS | 30                                 | 8  | 23 | 10 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
|        | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-2 | Work Activity           |                 |                                           |
| CODE-3 | Sub Element of Activity |                 |                                           |

|                                                              |                                               |                                                                                                   |                                                                                  |
|--------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                     | Crushed Dolomitic Aggregates For Filter Layer |                                                                                                   |                                                                                  |
| Location to be Used                                          | From Station (345+960) to Station (347+460)   |                                                                                                   |                                                                                  |
| Sample only                                                  | Yes                                           | Materials Type                                                                                    | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                               | Yes attached                                                                     |
| Reference in BoQ                                             |                                               | Specification                                                                                     | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                   |                                               | Test Samples Results                                                                              |                                                                                  |
| Reference Photos                                             | No                                            | Other                                                                                             |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                           |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                           |                                                                                  |
| 1-Quality test Result By Third Party Laboratory is Approved. |                                               | 1-All tests were carried-out by Third Party Lab (Faculty of Engineering - ALEXANDRIA UNIVERSITY). |                                                                                  |
| 2-This Sample Representative ( 5000 m3 ) only.               |                                               | 2-Results report attached and acceptable with the project specifications.                         |                                                                                  |
| 3-تم الاعتماد على الصلاحية الداخلية للمشور.                  |                                               | 3-Final approval is subject to above mentioned comments.                                          |                                                                                  |

## APPROVAL STATUS

| Organisation             | Name                  | Sign          | Date       | A-AWC-R |
|--------------------------|-----------------------|---------------|------------|---------|
| Contractor               | Eng. Abdullah Kamal   | عبد الله كمال |            | A       |
| QA/QC *                  | Eng. Saied Saif       | Khaled Zaki   |            | Awc     |
| GARB**                   | Eng. Margret Magdy    |               |            |         |
| Employers Representative | Eng. Alaa Abd-Allatif | For           | 16-11-2023 | Awc     |

\* Designer

\*\* Alignment/Bridges: Culvert only

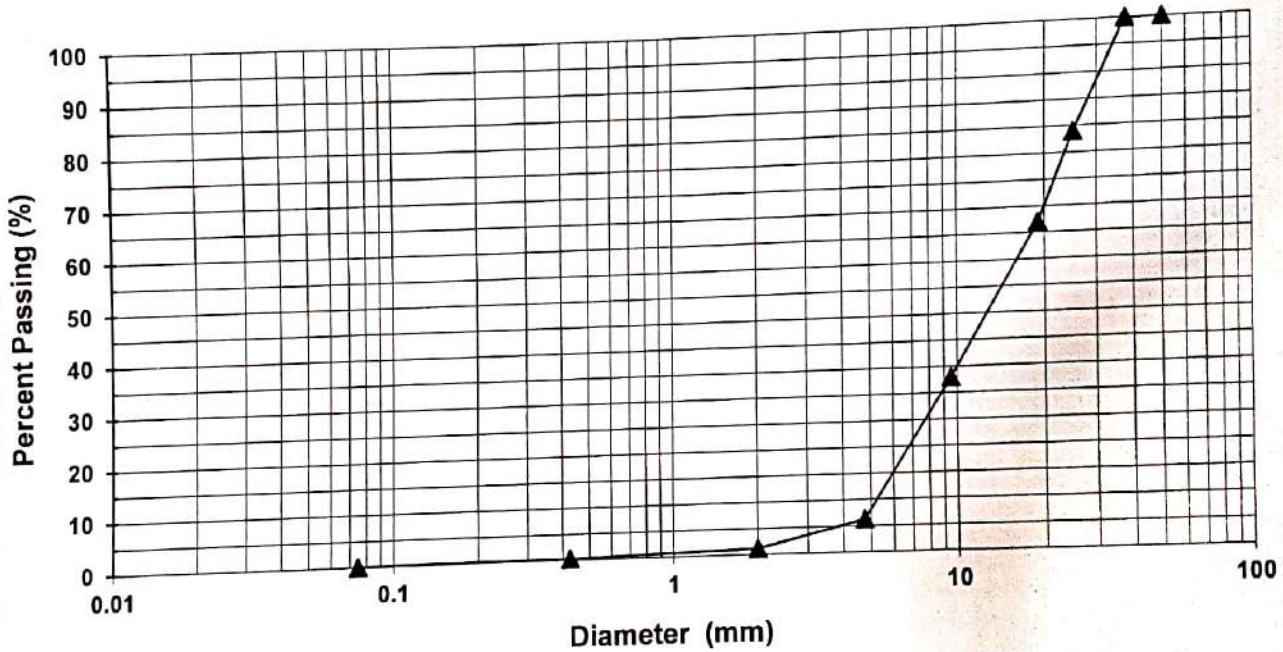


### Grain Size Distribution Curve

|            |                                                    |
|------------|----------------------------------------------------|
| CLIENT     | شركة اورنج للاستيراد و التصدير والمقاولات العمومية |
| PROJECT    | القطار الكهربائي السريع                            |
| LOCATION   | القطاع من ٣٤٥ + ٩٦٠ الى ٣٤٧ + ٩٦٠                  |
| LAYER TYPE | سن فلتر عينة ٣ / ٣                                 |

|                |            |
|----------------|------------|
| Receiving Date | 29/08/2023 |
| Cheque Date    | 30/08/2023 |
| Reciept Number | 112979     |
| Report Date    | 11/09/2023 |
| Lab. Ref.      | G 50/09    |

### GRAIN SIZE DISTRIBUTION CURVE



| Sieve No.    | PERCENT PASSING |        |        |       |      |      |      |        |
|--------------|-----------------|--------|--------|-------|------|------|------|--------|
|              | No. 200         | No. 40 | No. 10 | No. 4 | 3/8" | 3/4" | 1"   | 1 1/2" |
| Test Results | 0.0             | 0.3    | 1.1    | 6.2   | 32.9 | 62.0 | 78.9 | 100.0  |



وردت العينة التي اجري عليها الاختبار الى المعمل بمعرفة مندوب الاستشارى ا.د / خالد قنديل

Laboratory Director

Dr. Wael Bekheet

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المعمل مسئول فقط عن نتائج الاختبارات و صحتها. المعمل غير مسئول عن كونه استخدام نتائج الاختبارات او اى نتائج مبنية على ذلك

رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)  
P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203



## نتائج تجارب لوس أنجلوس و الامتصاص

|                                    |                    |                                                    |            |
|------------------------------------|--------------------|----------------------------------------------------|------------|
| ٢٠٢٣/٠٨/٢٩                         | تاريخ توريد العينة | ل. ٣٣.١/ ٠٩                                        | تقرير رقم  |
| ٢٠٢٣/٠٨/٣٠                         | أمر دفع            | لوس أنجلوس و الامتصاص                              | الاختبارات |
| ١١٢٩٧٩                             | أمر دفع            | شركة اورنج للاستيراد و التصدير والمقاولات العمومية | المقاول    |
| ٢٠٢٣/٠٩/١١                         | تاريخ التقرير      | القطار الكهربائي السريع                            | المشروع    |
| سن فلت (٣)                         | العينة             | القطاع من ٩٦٠ + ٣٤٥ الى ٩٦٠ + ٣٤٧                  | الموقع     |
| نتائج اختبار لوس أنجلوس و الامتصاص |                    |                                                    |            |

| لوس أنجلوس                    |              |
|-------------------------------|--------------|
| عدد كرات الاختبار             | ٥٠٠ لفة      |
| وزن العينة قبل التجربة        | ١٢ كورة      |
| وزن العينة بعد التجربة        | ٥٠٠٠ جم      |
| نسبة التآكل                   | ٤٠١٢ جم      |
| نسبة الامتصاص بعد ٢٤ ساعة غمر | % ١٩,٧٦      |
| نسبة التفتت في الماء          | % ١,٢٦       |
| الوزن النوعي                  | % ٠,٢٣       |
|                               | ٢,٦٥ جم/سم ٣ |

تم توريد العينة بمعرفة مندوب الاستشاري د. ا / خالد قنديل



فنى المعمل  
أحمد عادل / ا

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رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)  
P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203

# CEL

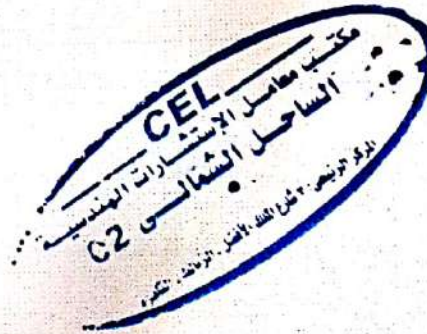
Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company : Orange company.  
Project : Electric express train.  
Delivery Date : 08/11/2023  
Report Date : 16/11/2023  
Sample Id : Mixed Aggregate  
Report No. : 03

**ORGANIC OF SOIL ASTM D 2974  
METHOD TYPE D**

| Test                        | Results |
|-----------------------------|---------|
| Amount of organic Content % | Nil     |



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



3 ش الملك الأفضل  
الزمالك - القاهرة  
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www.cel-egypt.com

|                                 |                                                                                   |                                                                                   |                                           |                                                                                    |                                                                                     |                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MATERIAL<br>APPROVAL<br>REQUEST |  |  | الهيئة العامة<br>للطرق والكباري<br>(GARB) |  |  |  |
|                                 | ORANGE COMPANY                                                                    | ENGINEERING CONSULTING OFFICE<br>المكتب الاستشاري الهندسي<br>أ.د. خالد فكري       |                                           | وزارة النقل                                                                        | مركز البحوث<br>للجسور والكباري                                                      | SHAKER                                                                              |

|                                |                                                    |               |                            |                                    |    |    |    |    |    |    |    |
|--------------------------------|----------------------------------------------------|---------------|----------------------------|------------------------------------|----|----|----|----|----|----|----|
| Contractor Company             | Orange For Import & Export and General Contracting |               | Designer Company           | (KK) Engineering Consulting Office |    |    |    |    |    |    |    |
| Issued by Contractor           | Name                                               | Sign          | Date/Serial Number         | Time                               |    |    |    |    |    |    |    |
|                                | Eng. Abdullah Kamal                                | عبد الله كمال | 9/12/2023<br>(M.A.R-004-1) | 10:00                              |    |    |    |    |    |    |    |
| Received by GARB<br>CONSULTANT | Eng. Saied Saif                                    | Khaled Fekri  | MAR                        | C1                                 | C2 | C3 | DD | MM | YY | HH | MM |
|                                |                                                    |               |                            | 345                                | EW | CS | 13 | 9  | 23 | 10 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
| CODE-2 | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-3 | Work Activity           |                 |                                           |
|        | Sub Element of Activity |                 |                                           |

|                                                              |                                               |                                                                                                   |                                                                                  |
|--------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                     | Crushed Dolomitic Aggregates For Filter Layer |                                                                                                   |                                                                                  |
| Location to be Used                                          | From Station (345+960) to Station (347+460)   |                                                                                                   |                                                                                  |
| Sample only                                                  | Yes                                           | Materials Type                                                                                    | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                               | Yes attached                                                                     |
| Reference in BoQ                                             |                                               | Specification                                                                                     | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                   |                                               | Test Samples Results                                                                              |                                                                                  |
| Reference Photos                                             | No                                            | Other                                                                                             |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                           |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                           |                                                                                  |
| 1-Quality test Result By Third Party Laboratory is Approved. |                                               | 1-All tests were carried-out by Third Party Lab (Faculty of Engineering - ALEXANDRIA UNIVERSITY). |                                                                                  |
| 2-This Sample Representative ( 5000 m3 ) only.               |                                               | 2-Results report attached and acceptable with the project specifications.                         |                                                                                  |
| 3- تم الاعتماد على الصلاحية الداخلية للمشون.                 |                                               | 3-Final approval is subject to above mentioned comments.                                          |                                                                                  |

| APPROVAL STATUS          |                       |               |            |         |
|--------------------------|-----------------------|---------------|------------|---------|
| Organisation             | Name                  | Sign          | Date       | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبد الله كمال |            | A       |
| QA/QC *                  | Eng. Saied Saif       | Khaled Fekri  |            | AUC     |
| GARB**                   | Eng. Margret Magdy    |               |            |         |
| Employers Representative | Eng. Alaa Abd-Allatif | For           | 16-11-2023 | AWC     |

\* Designer  
\*\* Alignment/Bridges: Culvert only

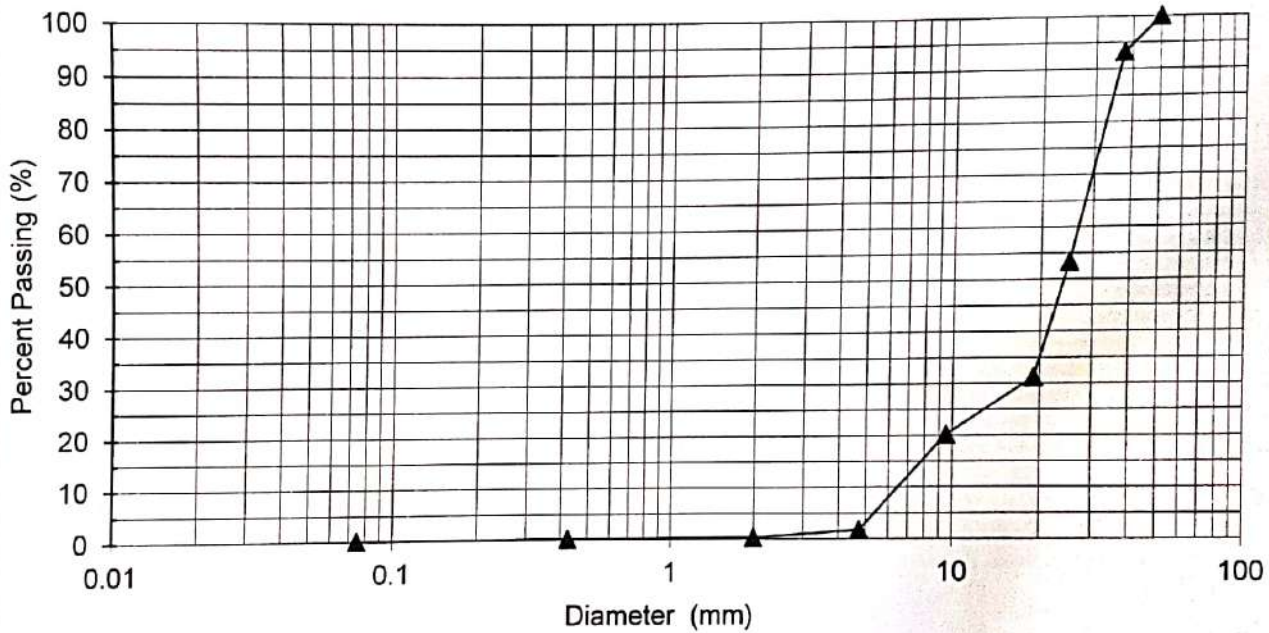


### Grain Size Distribution Curve

|            |                                                   |
|------------|---------------------------------------------------|
| CLIENT     | شركة اورنج للاستيراد والتصدير والمقاولات العمومية |
| PROJECT    | القطار الكهربائي السريع                           |
| LOCATION   | قطاع من ٣٤٥+٩٦٠ الى ٣٤٧+٩٦٠                       |
| LAYER TYPE | سن فلتر عينة ٢ / ١                                |

|                |            |
|----------------|------------|
| Receiving Date | 12/09/2023 |
| Cheque Date    | 12/09/2023 |
| Receipt Number | 116441     |
| Report Date    | 30/09/2023 |
| Lab. Ref.      | G 124/09   |

#### GRAIN SIZE DISTRIBUTION CURVE



| Sieve No.    | PERCENT PASSING |        |        |       |      |      |      |        |
|--------------|-----------------|--------|--------|-------|------|------|------|--------|
|              | No. 200         | No. 40 | No. 10 | No. 4 | 3/8" | 3/4" | 1"   | 1 1/2" |
| Test Results | 0.0             | 0.2    | 0.2    | 1.7   | 20.1 | 31.2 | 53.3 | 93.2   |

وردت العينة التي اجري عليها الاختبار الى المعمل بمعرفة مندوب الاستشارى ا.د / خالد قنديل



Laboratory Director

Dr. Wael Bekheet

The laboratory is only responsible for the test results and its correctness. The laboratory is not responsible for the interpretation of the test results.

رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)

P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203



## نتائج تجارب لوس أنجلوس و الامتصاص

|            |                    |                                                   |            |
|------------|--------------------|---------------------------------------------------|------------|
| ٢٠٢٣/٠٩/١٢ | تاريخ توريد العينة | ل. ٥٦.١/ ٠٩                                       | تقرير رقم  |
| ٢٠٢٣/٠٩/١٢ | أمر دفع            | لوس أنجلوس و الامتصاص                             | الاختبارات |
| ١١٦٤٤١     | أمر دفع            | شركة اورنج للاستيراد والتصدير والمقاولات العمومية | المقاول    |
| ٢٠٢٣/٠٩/٣٠ | تاريخ التقرير      | القطار الكهربائي السريع                           | المشروع    |
| سن فلت (١) | العينة             | قطاع من ٣٤٥+٩٦٠ الى ٣٤٧+٩٦٠                       | الموقع     |

## نتائج اختبار لوس أنجلوس و الامتصاص

| لوس أنجلوس                    | ٥٠٠ لفة                 |
|-------------------------------|-------------------------|
| عدد كرات الاختبار             | ١٢ كورة                 |
| وزن العينة قبل التجربة        | ٥٠٠٠ جم                 |
| وزن العينة بعد التجربة        | ٤٠١٧ جم                 |
| نسبة التآكل                   | ١٩,٦٦ %                 |
| نسبة الامتصاص بعد ٢٤ ساعة غمر | ١,٠٨ %                  |
| نسبة التفتت في الماء          | ٠,١٧ %                  |
| الوزن النوعي                  | ٢,٥٨ جم/سم <sup>٣</sup> |

تم توريد العينة بمعرفة مندوب الاستشاري د.أ / خالد قنديل

مدير المعمل

د. / وائل بخيت



فني المعمل

أ. / احمد عادل

The laboratory is **only responsible** for the test results and its correctness. The laboratory is **not responsible** for the interpretation of the test results.

المعمل مسئول فقط عن نتائج الاختبارات و صحتها. المعمل غير مسئول عن كيفية استخدام نتائج الاختبارات او اى نتائج مبنيه على ذلك

رقم بريدى ٢١٥٤٤ الاسكندرية - تليفاكس ٥٩١٧٢٠٣ (٢٠٣)

P.O. Box 21544, Alexandria, Egypt. Tele-Fax +(203) 5917203

# CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الإستشارات الهندسية

**Company** : Orange company.  
**Project** : Electric express train.  
**Delivery Date** : 08/11/2023  
**Report Date** : 16/11/2023  
**Sample Id** : Mixed Aggregate  
**Report No.** : 04

**ORGANIC OF SOIL ASTM D 2974  
METHOD TYPE D**

| Test                        | Results |
|-----------------------------|---------|
| Amount of organic Content % | Nil     |



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



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

|                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|---------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MATERIAL<br>APPROVAL<br>REQUEST |  |  |  |  |  |
|                                 | ORANGE COMPANY<br>For Import & Export and General Contracting                     | ENGINEERING CONSULTING OFFICE<br>المكتب الاستشاري الهندسي<br>أ. خالد عزالدين      | المدينة العامة<br>للمطرق والكباري<br>(GARB)                                        | المصروف المصروف للمصروف                                                             | المصروف المصروف للمصروف                                                             |

|                             |                                                            |              |     |                           |                                    |    |    |    |    |    |    |
|-----------------------------|------------------------------------------------------------|--------------|-----|---------------------------|------------------------------------|----|----|----|----|----|----|
| Contractor Company          | Orange Company For Import & Export and General Contracting |              |     | Designer Company          | (KK) Engineering Consulting Office |    |    |    |    |    |    |
| Issued by Contractor        | Name                                                       | Sign         |     | Date/Serial Number        | Time                               |    |    |    |    |    |    |
|                             | Eng. Abdullah Kamal                                        | عبدالله كمال |     | 28/08/2023<br>(M.A.R-001) | 12:00                              |    |    |    |    |    |    |
| Received by GARB CONSULTANT | Eng. Saied Saif                                            | Khaled Zaki  | MAR | C1                        | C2                                 | C3 | DD | MM | YY | HH | MM |
|                             |                                                            |              |     | 345                       | EW                                 | CS | 29 | 8  | 23 | 12 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
|        | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-2 | Work Activity           |                 |                                           |
| CODE-3 | Sub Element of Activity |                 |                                           |

|                                                       |                                               |                                                                                            |                                                                                  |
|-------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                              | Crushed Dolomitic Aggregates For Filter Layer |                                                                                            |                                                                                  |
| Location to be Used                                   | المشون                                        |                                                                                            |                                                                                  |
| Sample only                                           | Yes                                           | Materials Type                                                                             | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                         | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                        | Yes attached                                                                     |
| Reference in BoQ                                      |                                               | Specification                                                                              | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                            |                                               | Test Samples Results                                                                       |                                                                                  |
| Reference Photos                                      | No                                            | Other                                                                                      |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                    |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                    |                                                                                  |
| 1-Quality test Result By Site Laboratory is Approved. |                                               | 1-All tests were carried-out by material engineer for both contractor and GARB Consultant. |                                                                                  |
| 2-This Sample Representative (5000 m3) Only.          |                                               | 2-Results report attached and acceptable with the project specifications.                  |                                                                                  |
|                                                       |                                               | 3-Final approval is subject to above mentioned comments.                                   |                                                                                  |
|                                                       |                                               | 4- For Information on ly and another samples should be checked in                          |                                                                                  |
| Third Party Lab                                       |                                               |                                                                                            |                                                                                  |

| APPROVAL STATUS          |                       |              |      |         |
|--------------------------|-----------------------|--------------|------|---------|
| Organisation             | Name                  | Sign         | Date | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبدالله كمال |      | A       |
| QA/QC *                  | Eng. Saied Saif       | Khaled Zaki  |      | A       |
| GARB**                   | Eng. Margret Magdy    | 2023         |      |         |
| Employers Representative | Eng. Alaa Abd-Allatif | Alaa         | 30/8 | Awc     |

\* Designer  
\*\* Alignment/Bridges: Culvert only



Electric Express Train - HSR  
From El Ain El Sokhna City To El Alamein  
Section - 5 From Borg Elarab To El Alamein "  
From Station 345+960 To Station 347+460

Selve Analysis of Fine and Coarse Aggregats (T-27)

| Date :            | 29/08/2023      | Station:      | عينة من المشون          |     |     |
|-------------------|-----------------|---------------|-------------------------|-----|-----|
| From / To :       | 345+960/347+460 | Sample type : | خليط من سن ١# & ٢# & ٣# |     |     |
|                   |                 |               |                         |     |     |
| Sieve size ( mm ) | Retained        | Passing       | Passing %               |     |     |
|                   |                 |               |                         | MIN | MAX |
| 75                | 0               | 17592         | 100.0                   | 100 | 100 |
| 50                | 0               | 17592         | 100.0                   | 75  | 90  |
| 10                | 14607           | 2985          | 17.0                    | 15  | 25  |
| 4.75              | 2374            | 611           | 3.47                    | 0   | 10  |
| 0.075             | 558             | 53            | 0.3                     | 0   | 5   |
| Passing           | 53              |               |                         |     |     |
| Total             | 17592           |               |                         |     |     |

مهندس الجودة الاستشاري  
Khaled Zaki

مهندس الشركة  
عبدالله كمال

# MATERIAL APPROVAL REQUEST



الهيئة العامة  
للمسح و الكباري  
(GARB)



|                             |                                                            |                 |                           |                                    |    |    |    |    |    |    |
|-----------------------------|------------------------------------------------------------|-----------------|---------------------------|------------------------------------|----|----|----|----|----|----|
| Contractor Company          | Orange Company For Import & Export and General Contracting |                 | Designer Company          | (KK) Engineering Consulting Office |    |    |    |    |    |    |
| Issued by Contractor        | Name                                                       | Sign            | Date/Serial Number        | Time                               |    |    |    |    |    |    |
|                             | Eng. Abdullah Kamal                                        | عبدالله كمال    | 28/08/2023<br>(M.A.R-002) | 12:00                              |    |    |    |    |    |    |
| Received by GARB CONSULTANT | Eng. Saied Saif                                            | Eng. Saied Saif | C1                        | C2                                 | C3 | DD | MM | YY | HH | MM |
|                             |                                                            |                 | 345                       | EW                                 | CS | 29 | 8  | 23 | 12 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
| CODE-2 | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-3 | Work Activity           |                 |                                           |
|        | Sub Element of Activity |                 |                                           |

|                                                                      |                                               |                                                                                            |                                                                                  |
|----------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                             | Crushed Dolomitic Aggregates For Filter Layer |                                                                                            |                                                                                  |
| Location to be Used                                                  | المشون                                        |                                                                                            |                                                                                  |
| Sample only                                                          | Yes                                           | Materials Type                                                                             | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                        | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                        | Yes attached                                                                     |
| Reference in BoQ                                                     |                                               | Specification                                                                              | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                           |                                               | Test Samples Results                                                                       |                                                                                  |
| Reference Photos                                                     | No                                            | Other                                                                                      |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                                   |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                    |                                                                                  |
| 1-Quality test Result By Site Laboratory is Approved.                |                                               | 1-All tests were carried-out by material engineer for both contractor and GARB Consultant. |                                                                                  |
| 2-This Sample Representative (5000 m3) Only.                         |                                               | 2-Results report attached and acceptable with the project specifications.                  |                                                                                  |
| 4- for Information only and Contractor'll work on his Responsibility |                                               | 3-Final approval is subject to above mentioned comment                                     |                                                                                  |

| APPROVAL STATUS          |                       |                 |      |         |
|--------------------------|-----------------------|-----------------|------|---------|
| Organisation             | Name                  | Sign            | Date | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبدالله كمال    |      | A       |
| QA/QC *                  | Eng. Saied Saif       | Eng. Saied Saif |      | A       |
| GARB**                   | Eng. Margret Magdy    |                 |      |         |
| Employers Representative | Eng. Alaa Abd-Allatif | 2023 Alaa/Ch    | 30/8 | AWC     |

\* Designer

\*\* Alignment/Bridges: Culvert only



Electric Express Train - HSR  
From El Ain El Sokhna City To El Alamein  
Section - 5 From Borg Elarab To El Alamein "  
From Station 345+960 To Station 347+460

Seive Analysis of Fine and Coarse Aggregats (T-27)

Date : 29/08/2023  
From / To : 345+960/347+460

Station: عينة من المشون  
Sample type : خليط من سن ١# & ٢# & ٣#

| Sieve size ( mm ) | Retained | Passing | Passing % |     |     |
|-------------------|----------|---------|-----------|-----|-----|
|                   |          |         |           | MIN | MAX |
| 75                | 0        | 13925   | 100       | 100 | 100 |
| 50                | 0        | 13925   | 100       | 75  | 90  |
| 10                | 11560    | 2365    | 16.98     | 15  | 25  |
| 4.75              | 1835     | 530     | 3.81      | 0   | 10  |
| 0.075             | 420      | 110     | 0.8       | 0   | 5   |
| Passing           | 110      |         |           |     |     |
| Total             | 13925    |         |           |     |     |

مهندس الجودة الاستشاري  
Chaleed Bakr

مهندس الشركة  
عبد الله كمال

# MATERIAL APPROVAL REQUEST



الهيئة العامة  
للطرق والكباري  
(GARB)



|                             |                                                            |               |     |                    |    |    |    |                                    |    |    |    |
|-----------------------------|------------------------------------------------------------|---------------|-----|--------------------|----|----|----|------------------------------------|----|----|----|
| Contractor Company          | Orange Company For Import & Export and General Contracting |               |     | Designer Company   |    |    |    | (KK) Engineering Consulting Office |    |    |    |
| Issued by Contractor        | Name                                                       | Sign          |     | Date/Serial Number |    |    |    | Time                               |    |    |    |
|                             | Eng. Abdullah Kamal                                        | عبد الله كمال |     | 28/08/2023         |    |    |    | 12:00                              |    |    |    |
|                             | (M.A.R-003)                                                |               |     |                    |    |    |    |                                    |    |    |    |
| Received by GARB CONSULTANT | Eng. Saied Saif                                            | Khalid Saif   | MAR | C1                 | C2 | C3 | DD | MM                                 | YY | HH | MM |
|                             |                                                            |               |     | 345                | EW | CS | 29 | 8                                  | 23 | 12 | 0  |
|                             |                                                            |               |     |                    |    |    |    |                                    |    |    |    |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
| CODE-2 | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-3 | Work Activity           |                 |                                           |
|        | Sub Element of Activity |                 |                                           |

|                                                       |                                               |                                                                                            |                                                                                  |
|-------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                              | Crushed Dolomitic Aggregates For Filter Layer |                                                                                            |                                                                                  |
| Location to be Used                                   | المشون                                        |                                                                                            |                                                                                  |
| Sample only                                           | Yes                                           | Materials Type                                                                             | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                         | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                        | Yes attached                                                                     |
| Reference in BoQ                                      |                                               | Specification                                                                              | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                            |                                               | Test Samples Results                                                                       |                                                                                  |
| Reference Photos                                      | No                                            | Other                                                                                      |                                                                                  |
| Comments by: Eng. Saied Saif (K.K)                    |                                               | Comments by: Eng. Alaa Abd-Allatif (ER)                                                    |                                                                                  |
| 1-Quality test Result By Site Laboratory is Approved. |                                               | 1-All tests were carried-out by material engineer for both contractor and GARB Consultant. |                                                                                  |
| 2-This Sample Representative (5000 m3) Only.          |                                               | 2-Results report attached and acceptable with the project specifications.                  |                                                                                  |
| 4- For Information only on his Responsibility         |                                               | 3-Final approval is subject to above mentioned comments.                                   |                                                                                  |
|                                                       |                                               | and Contractor's work                                                                      |                                                                                  |

| APPROVAL STATUS          |                       |                  |      |         |
|--------------------------|-----------------------|------------------|------|---------|
| Organisation             | Name                  | Sign             | Date | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   | عبد الله كمال    |      | A       |
| QA/QC +                  | Eng. Saied Saif       | Khalid Saif      |      | A       |
| GARB**                   | Eng. Margret Magdy    |                  |      |         |
| Employers Representative | Eng. Alaa Abd-Allatif | Alaa Abd-Allatif | 29/8 | AWC     |

\* Designer

\*\* Alignment/Bridges: Culvert only



Electric Express Train - HSR  
From El Ain El Sokhna City To El Alamein  
Section - 5 From Borg Elarab To El Alamein "  
From Station 345+960 To Station 347+460

Seive Analysis of Fine and Coarse Aggregats (T-27)

|             |                 |               |                         |  |
|-------------|-----------------|---------------|-------------------------|--|
| Date :      | 29/08/2023      | Station:      | عينة من المشون          |  |
| From / To : | 345+960/347+460 | Sample type : | خليط من سن ١# & ٢# & ٣# |  |

| Sieve size ( mm ) | Retained | Passing | Passing % |     |     |
|-------------------|----------|---------|-----------|-----|-----|
|                   |          |         |           | MIN | MAX |
| 75                | 0        | 16594   | 100       | 100 | 100 |
| 50                | 0        | 16594   | 100       | 75  | 90  |
| 10                | 13703    | 2891    | 17.42     | 15  | 25  |
| 4.75              | 2171     | 720     | 4.34      | 0   | 10  |
| 0.075             | 574      | 146     | 0.9       | 0   | 5   |
| Passing           | 146      |         |           |     |     |
| Total             | 16594    |         |           |     |     |

مهندس الجودة الاستشاري  
Chalealaki

مهندس الشركة

|                                |                                                            |      |     |                           |                                    |    |    |    |    |    |    |
|--------------------------------|------------------------------------------------------------|------|-----|---------------------------|------------------------------------|----|----|----|----|----|----|
| Contractor Company             | Orange Company For Import & Export and General Contracting |      |     | Designer Company          | (KK) Engineering Consulting Office |    |    |    |    |    |    |
| Issued by Contractor           | Name                                                       | Sign |     | Date/Serial Number        | Time                               |    |    |    |    |    |    |
|                                | Eng. Abdullah Kamal                                        |      |     | 13/09/2023<br>(M.A.R-004) | 22:00                              |    |    |    |    |    |    |
| Received by GARB<br>CONSULTANT | Eng. Saied Saif                                            |      | MAR | C1                        | C2                                 | C3 | DD | MM | YY | HH | MM |
|                                |                                                            |      |     | 345                       | EW                                 | CS | 14 | 9  | 23 | 10 | 0  |

|        |                         |                 |                                           |
|--------|-------------------------|-----------------|-------------------------------------------|
| CODE-1 | S1 to S21               | D1 to S3        | Kp XXX Note                               |
|        | Station Reference       | Depot Reference | For Kilometer point only Start Km is used |
| CODE-2 | Work Activity           |                 |                                           |
| CODE-3 | Sub Element of Activity |                 |                                           |

|                                                                                                                                                                    |                                               |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Description of Materials                                                                                                                                           | Crushed Dolomitic Aggregates For Filter Layer |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |
| Location to be Used                                                                                                                                                | المشون                                        |                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                  |
| Sample only                                                                                                                                                        | Yes                                           | Materials Type                                                                                                                                                                                                                                                                                                                                                                   | Crushed Dolomitic Aggregates For Filter Layer                                    |
| Supplier Name                                                                                                                                                      | AL-Salam & AL-Howayeg                         | Data Sheet provided                                                                                                                                                                                                                                                                                                                                                              | Yes attached                                                                     |
| Reference in BoQ                                                                                                                                                   |                                               | Specification                                                                                                                                                                                                                                                                                                                                                                    | EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP |
| Prequalification reference                                                                                                                                         |                                               | Test Samples Results                                                                                                                                                                                                                                                                                                                                                             |                                                                                  |
| Reference Photos                                                                                                                                                   | No                                            | Other                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |
| <b>Comments by: Eng. Saied Saif (K.K)</b><br><br>1-Quality test Result By Site Laboratory is Approved.<br><br>2-This Sample Representative (5000 m3) Only.<br><br> |                                               | <b>Comments by: Eng. Alaa Abd-Allatif (ER)</b><br><br>1-All tests were carried-out by material engineer for both contractor and GARB Consultant.<br><br>2-Results report attached and acceptable with the project specifications.<br><br>3-Final approval is subject to above mentioned comments.<br><br>4- For Information only and Contractor is working on his Responsibility |                                                                                  |

| APPROVAL STATUS          |                       |      |           |         |
|--------------------------|-----------------------|------|-----------|---------|
| Organisation             | Name                  | Sign | Date      | A-AWC-R |
| Contractor               | Eng. Abdullah Kamal   |      |           | A       |
| QA/QC *                  | Eng. Saied Saif       |      |           | A       |
| GARB**                   | Eng. Margret Magdy    |      |           |         |
| Employers Representative | Eng. Alaa Abd-Allatif |      | 2023 15/9 | Awc     |

\* Designer  
 \*\* Alignment/Bridges: Culvert only



الهيئة العامة  
للطرق والكباري  
(GARB)



Electric Express Train - HSR  
From El Ain El Sokhna City To El Alamein  
Section - 5 From Borg Elarab To El Alamein "  
From Station 345+960 To Station 347+460

Seive Analysis of Fine and Coarse Aggregats (T-27)

|                   |                 |               |                         |       |     |
|-------------------|-----------------|---------------|-------------------------|-------|-----|
| Date :            | 14/09/2023      | Station:      | عينة من المشون          |       |     |
| From / To :       | 345+960/347+460 | Sample type : | خليط من سن ١# & ٢# & ٣# |       |     |
| Sieve size ( mm ) | Retained        | Passing       | Passing %               |       |     |
|                   |                 |               |                         | MIN   | MAX |
|                   | 75              | 0             | 13743                   | 100.0 | 100 |
|                   | 50              | 0             | 13743                   | 100.0 | 75  |
|                   | 10              | 11295         | 2448                    | 17.8  | 15  |
|                   | 4.75            | 1336          | 1112                    | 8.09  | 0   |
|                   | 0.075           | 977           | 135                     | 1.0   | 0   |
|                   | Passing         | 135           |                         |       |     |
|                   | Total           | 13743         |                         |       |     |

مهندس الجودة الاستشاري

Mohammed AL

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مهندس الشركة

عبد الله كمال