

السيد المهندس / رئيس قطاع التنفيذ و المناطق

تحية طيبة وبعد ،،،

بالإحالة إلي مشروع القطار الكهربائي السريع القطاع الرابع (قطاع وادي النطرون/برج العرب/الاسكندرية).

نتشرف بأن نرسل لسيادتكم المقايضة المعدلة لبنود أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح) (قطاع وادي النطرون / برج العرب) أعمال سن الفلتر

لتنفيذ المسافة من الكم ٣١٠,٣٠٠ إلى الكم ٣١٠,٦٤٠ بطول ٠,٣٤٠ كم (بالأمر المباشر).

عقد رقم (٢٠٢٤/٢٠٢٣/٩٤٨)

تنفيذ : "شركة أورانج للاستيراد والتصدير" .

وذلك طبقاً للأسعار بعد المفاوضة.

برجاء من سيادتكم التفضل بالموافقة والتوجيه بالازم.

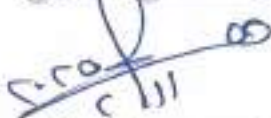
و تفضلوا بقبول فائق الاحترام ،،،

أصح

رئيس الإدارة المركزية

منطقة غرب الدلتا

الاسكندرية - مرسى مطروح



عبد مهندس /

"هاني محمد محمود طه"

المقايمة المعلقة لبنود الأعمال لعملية
استاد أعمال الجسر الترابي للخط الأول لمشروع القطر الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح) (قطاع وادي النطرون / برج العرب) أعمال من القنتر
لتتفيذ المسافة من الكم 310,300 إلى الكم 310,640 بطول 0.340 كم (بالأمر المباشر).
عقد رقم (2024/2023/948)
تنفيذ "شركة أورنج للتصدير والتصدير"

رقم البند	بيان الأعمال	الوحدة	الكمية	الغلة	الإجمالي
1	أعمال الردم				
1-1	بالمتر المكعب أعمال توريد وغرس طبقة فلت من الأحجار الصلبة المترجعة ناتج تكسير كسرات والمطابقة للمواصفات وأقصى حجم حبيبي ما بين 20 مم إلى 75 مم ولا يزيد نسبة المار من منخل 200 عن 5% والتدرج الوارد بالاشتراطات الخاصة بالمسحوق وهي أحجار مقاس 1 سم 2 سم 4 سم 6 سم بنسبة 1:1:1 والايقل معامل المرونة EV2 من تجربة لوح التحميل عن 50 ميغاباسكال ولا يزيد نسبة التفكك بجهاز لوس اتجلوس عن 45% والغلة تشمل أعمال التجارب المعملية واليبدأ بشمل اجراء التجارب المعملية والحقلية طبقا لاصول الصناعة المعملة وتقدير الاستشاري وتضمنت المهندس المشرف . - لمسافة نقل 20 كم . - الغلة شاملة قيمة المادة المحجيرة. - يتم احتساب 1.3 جنية لكل 1 كم بالزيادة أو النقصان .				
	السعر خلال شهر مايو 2023 طبقا للمفاوضة بتاريخ 2023-12-18	م3	19835.0	347.20	6,886,712
	علاوة مسافة النقل 162 كم $184.6 = 1.3 * (162 - 20)$	م3	19835.0	184.60	3,661,541
	علاوة تحصيل رسوم الكارثة والموازن طبقا للاتحة الشركة الوطنية	م3	19835.0	25.00	495,875
	الإجمالي				11,044,128
أحد عشر مليوناً وأربعة وأربعين ألفاً ومائة وثمانية وعشرون جنيهاً مصرياً فقط لا غير.					
* يرجى العلم بان الغلات المذكورة طبقا للمفاوضة الخاصة بالقطاع الرابع بتاريخ 2023-12-18					

الهيئة العامة للطرق والكباري
مدير عام المشروعات
د/ محمد حسني قياض

الهيئة العامة للطرق والكباري
مدير المشروع
د/ احمد جلال عبد السلام
محمد جلال

المكتب الاستشاري الهندسي ايد خالد قنديل
مدير المشروع
د/ هشام محمد صبري

الشركة المنفذة
مدير المشروع
د/ محمد فتحى الطاهر

رئيس الإدارة المركزية
منطقة غرب الدلتا
الإسكندرية - مرسى مطروح
عميد مهندس /
هاني محمد محمود طه

القطاع الرابع (الإسكندرية)
مدير المشروع
د/ هشام محمد صبري
محمد جلال

الشركة المنفذة
مدير المشروع
د/ محمد فتحى الطاهر
ORANGE CO
EXPORT & IMPORT
٢٠١٩/١١/١٣

قائمة الكميات الواردة بالمستخلص جاري (2)

اسناد اعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
(قطاع وادي النطرون / برج العرب) أعمال سن الفلتر
لتنفيذ المسافة من الكم 310.300 إلى الكم 310.640 بطول 0.340 كم (بالأمر المباشر).

بند (1-1):

بالمتر المكعب أعمال توريد وفرش طبقة فلتر من الأحجار الصلبة المتدرجة ناتج تكسير كسارات والمطابقة للمواصفات وأقصى حجم حبيبي ما بين 20 مم إلى 75 مم وألا يزيد نسبة المار من منخل 200 عن 5% والتدرج الوارد بالاشتراطات الخاصة بالمشروع وهي أحجار مقاس سن 1: سن 2: سن 4 أو سن 6 بنسبة 1:1:1 وألا يقل معامل المرونة EV2 من تجرية لوح التحميل عن 50 ميجا بسكال وألا يزيد نسبة النفاذ بجهاز لوس أنجلوس عن 45% والفئة تشمل أعمال التجارب المعملية والبند يشمل اجراء التجارب المعملية والحقلية طبقاً لأصول الصناعة الممتازة وتقرير الاستشاري وتعليمات المهندس المشرف.

- لمسافة نقل 20 كم.

- الفئة شاملة قيمة المادة المحجيرة.

- يتم احتساب 1.3 جنية للكم بالزيادة أو النقصان

تنفيذ : "شركة أورانج للاستيراد والتصدير"

السعر ابتداء من شهر مايو 2023 طبقاً للمفاوضة الخاصة بالقطاع الرابع بتاريخ 2023-12-18

عقد رقم (2024/2023/948)

مقدار العمل السابق :		0.00	3م
مسلسل	الموقع الكيلوميتري		الكمية (م3)
	من الكم	الى الكم	
1	310+300	310+395	3614.78
2	310+450	310+630	6845.46
3	310+435 {بربخ}		214.91
اجمالي الكمية الهندسي (م3)			10675.15
اجمالي الكمية بعد احتساب نسبة غرز 25% (م3)			13343.93
الاجمالي خلال فترة المستخلص الحالية (م3)			13343.93

مهندس الهيئة
م / أحمد جلال عبد السلام
أحمد جلال

مهندس الاستشاري
مكتب أ.د/ خالد قنديل
م / هشام محمد صبري



قائمة الكميات الواردة بالمستخلص جاري (2)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
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(قطاع وادي النطرون / برج العرب) أعمال سن الفلتر
لتنفيذ المسافة من الكم 310.300 إلى الكم 310.640 بطول 0.340 كم (بالأمر المباشر).

علاوة بند (1-1) علاوة مسافة النقل 162 كم .

تنفيذ : "شركة أورانج للاستيراد والتصدير"

ابتداء من شهر مايو 2023 طبقا للمفاوضة الخاصة بالقطاع الرابع بتاريخ 2023-12-18
عقد رقم (2024/2023/948)

مقدار العمل السابق :		0.00	3م
مسلسل	الموقع الكيلومتری		الكمية (م3)
	من الكم	الى الكم	
1	310+300	310+395	95
2	310+450	310+630	180
3	310+435 (برسخ)		48
اجمالي الكمية الهندسي (م3)			10675.15
اجمالي الكمية بعد احتساب نسبة غرز 25% (م3)			13343.93
الاجمالي خلال فترة المستخلص الحالية (م3)			13343.93

مهندس الهيئة
م / أحمد جلال عبد السلام
أحمد جلال

مهندس الاستشاري
مكتب أ.د/ خالد فنديل
م / هشام محمد صبري

مهندس الاستشاري
مكتب XYZ
م / محمد خليل
م / هشام محمد صبري

مهندس الشركة
م / محمد فتحي الغول

مهندس الشركة
م / محمد فتحي الغول
ORANGE CO.
EXPORT & IMPORT
م / محمد فتحي الغول

مهندسين الشراكة
م. محمد فتحي (الاول)
ORANGE CO
EXPORT & IMPORT
10/11/2019

BADRY CONSULTING

logy Engineering and Quality Control
MOHAMED MOSTAFA BADRY
ne.tel: 01090665097/01100214107

**مكتب البدرى للاستشارات**

الجيولوجية والهندسية وضبط الجودة
دكتور استشاري/محمد مصطفى بدرى
ت: ٠١١٠٠٢١٤١٠٧ / ٠١٠٩٠٦٦٥٠٩٧

TECHNICAL REPORT OF CRUSHED AGGREGATE

Contractor : شركة اورانج للمقاولات العمومية
Date of report: 21/11/2024
R-Code : 259

ALBADRY CONSULTING

Geology Engineering and Quality Control
 Dr. MOHAMED MOSTAFA BADRY
 Phone.tel: 01090665097/01100214107

**مكتب البدرى للاستشارات**

الجيولوجية والهندسية وضبط الجودة
 دكتور استشاري / محمد مصطفى بدرى
 ت: ٠١١٠٠٢١٤١٠٧ / ٠١٠٩٠٦٦٥٠٩٧

I. Introduction

- 1-Project : ELERICAL EXPRESS TRAIN
 2-General consultant : SYSTRA
 3-Contractor : شركة اورانج للمقاولات العمومية
 4-Sample : Crushed aggregate filter
 5-Station : St(307+800)
 6-Location : From stored material
 7-Date : 19/11/2024
 8-R-Code : 259

**II. Sample description:**

Course Aggregate mix

III. Required tests and Results:

Table (1): Physical properties for materials of course aggregates

1- Grain size analysis	Grain size analysis	As showed in appendix
2- Los Anglos test	Abrasion ratio	24.8%
3- Specific gravity (SG), absorption and degradation	S S D	2.568
	Absorption	1.57%
	Degradation	0.4%
4- Percentage of natural aggregates	Total Percentage of natural aggregate	3.04%

IV. Notes:

- Samples were bought by: Contractor.
- Samples are responsible from the person who brought it.
- The results are applying only for the present repo

Geotechnical Consultant

Dr. MB
 Dr. Mohamed Mostafa badry

ALBADRY CONSULTING

Geology Engineering and Quality Control
Dr. MOHAMED MOSTAFA BADRY
Phone.tel: 01090665097/01100214107



مكتب البدرى للاستشارات

الجيولوجية والهندسية وضبط الجودة
دكتور استشاري/محمد مصطفى بدرى
ت: ٠١١٠٠٢١٤١٠٧ / ٠١٠٩٠٦٦٥٠٩٧

APPENDIX

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 Phone.tel: 01090665097/01100214107



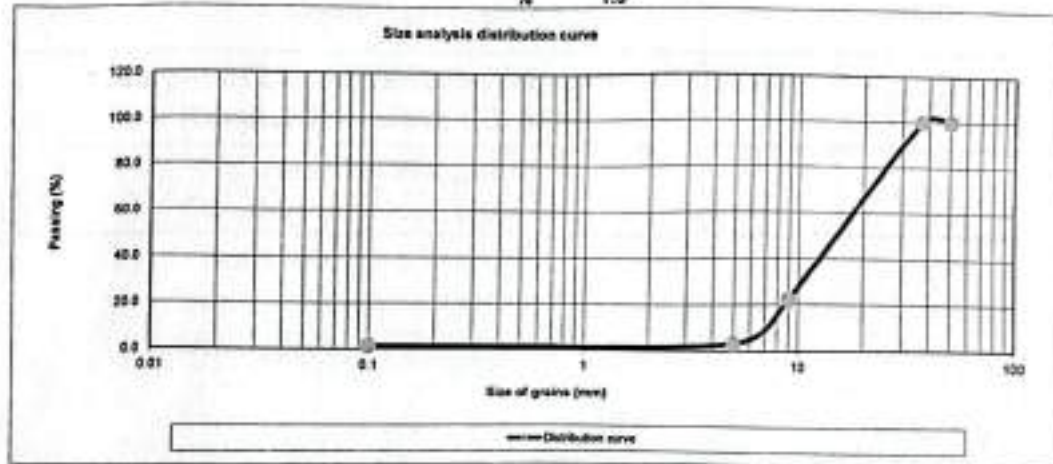
كتب البدرى للاستشارات

يولوجية والهندسية وضبط الجودة
 ور استشاري/محمد مصطفى بدرى
 ٠١١٠٠٢١٤١٠٧/٠١٠٩٠٦٦٥٠٩٧

**PARTICLE SIZE DISTRIBUTION
 ANALYSIS
 ASTM C-136 / AASHTO T27**

Sieve size (mm)	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE	CUMULATIVE PERCENTAGE	STANDARD SPECIFICATION LIMITS	
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)		
75	0.00	0.00	0.00	100.0	100	100
50	0.00	0.00	0.00	100.0	75	90
10	7800.00	7800.00	78.00	22.0	15	25
No.4	1885.00	9685.00	96.85	3.15	0	10
No.200	185.00	9870.00	98.70	1.30	0	5

Total sample weight = 10000.00 pass No.200= 130.0
 % 1.3



Coarse Agg.



LBADRY CONSULTING

Technology Engineering and Quality Control

Mr. MOHAMED MOSTAFA BADRY

Phone: tel: 01090665097/01100214107

**مكتب البدرى للاستشارات**

تكنولوجيا وهندسية وضبط الجودة

مور استشاري / محمد مصطفى بدرى

:٠١١٠٠٢١٤١٠٧ / ٠١٠٩٠٦٦٥٠٩٧

ABRASION AND IMPACT " LOS ANGELES " TEST**(For small size coarse aggregate)****ASTM- C 131-96 / AASHTO-T-96****Results**

Speed	Rotate at 30 to 33 Rpm For 500 Revolution
Trial Grading	A
Intitial Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3760
% Wear By Weight Passing on Sieve No.12	24.8%



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 Phone.tel: 01090665097/01100214107



مكتب البدرى للاستشارات

جیولوجیة والهندسیة وضبط الجودة
 کتور استشاري/محمد مصطفى بدری
 ت: ٠١١٠٠٢١٤١٠٧/٠١٠٩٠٦٦٥٠٩٧

Absorption and specific gravity for
Coarse Aggregate
ASTM C 127 - AASHTO T 85

Weight of sample	2500
Weight of saturated - dry surface sample (B)	2529
Weight of saturated sample in water (C)	1544
Weight of dry sample after heating (A)	2490

Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.568
Bulk specific gravity = $A / (B-C)$	2.53
Apparent specific gravity = $A / (A-C)$	2.63
Absorbtion of water = $(B-A)/A*100$	1.57
Degradation of aggregate = $(2500-A)/ A*100$	0.4



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 Dr. MOHAMED MOSTAFA BADRY
 Phone.tel: 01090665097/01100214107



مكتب البدرى للاستشارات

الجيولوجية والهندسية وضبط الجودة
 دكتور استشاري/محمد مصطفى بدرى
 ت: ٠١١٠٠٢١٤١٠٧ / ٠١٠٩٠٦٦٥٠٩٧

Percentage of crushed aggregate

Crushed Determination

Sieve size "inch"		Mass test portion (gm)	Mass natural (gm)	Percentage of crushed portion %
Passing	Retained			
1	3/4	1680	47	97.20
3/4	1/2	790	28	96.46
1/2	3/8	500	12	97.60
3/8	no. 4	185	9	95.14
Total		3155.00	96	96.96

Percentage of cruched =	96.96	%
Percentage of natural =	3.04	%
Standard specification	≤ 8	%



Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 309+500
Type of sample : fill filter
Delivery Date : 26/11/2024
Reporting Date : 30/11/2024
Reporting No. : 009
Sample No. : 01

Dear Gentleman,

Attached here with the fill filter delivered on 26/11/2024

Materials test

1. Sieve analysis according to ASTM C-136.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
4. Los Anglos according to ASTM C-131.

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

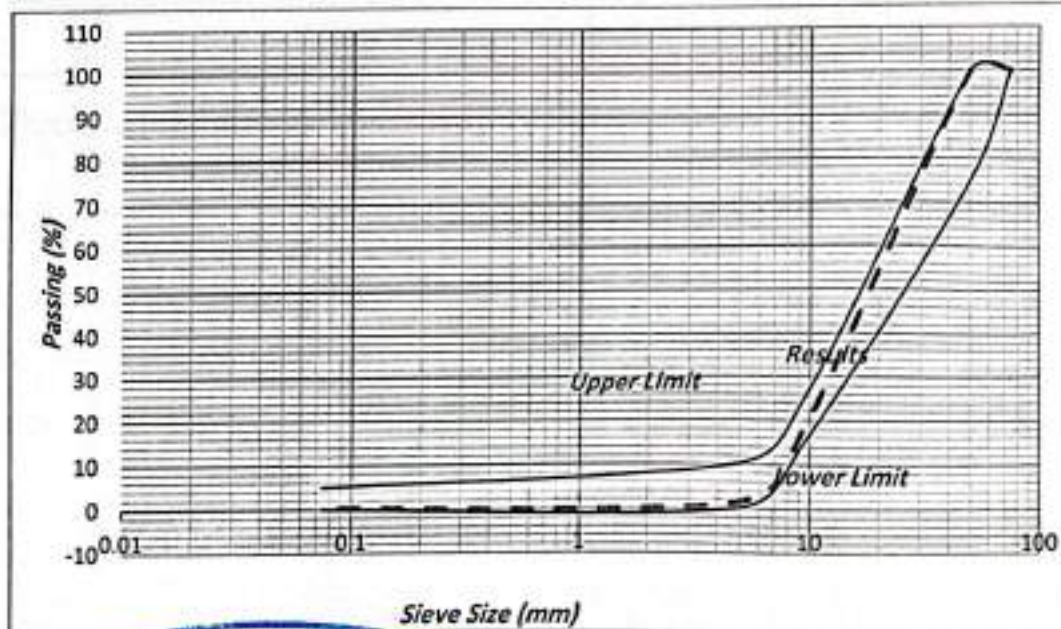
Signature



Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 309+500
Type of sample : fill filter
Delivery Date : 26/11/2024
Reporting Date : 30/11/2024
Reporting No. : 009
Sample No. : 01

Results of sieve analysis according to ASTM C-136.

Sieve Size (mm)	Passing %	Job specification limits (ASTM C-136)	
		Min.	Max.
75.0	100	100	100
50.0	100	75	100
37.5	100	---	---
25.0	61.3	---	---
19.0	38.8	---	---
12.5	29.5	---	---
9.5	18.2	15	25
4.75	1.3	0	10
0.075	0.3	0	5



The test results are **CEL** Comply - ☒ Not Comply) with specifications limits.

Signature / **مكتب معامل الاستشارات الهندسية**
مشروعات الإسكندرية وبراينها

Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 309+500
Type of sample : fill filter
Delivery Date : 26/11/2024
Reporting Date : 30/11/2024
Reporting No. : 009
Sample No. : 01

**Materials finer than 75 μ m (no.200) sieve
by washing ASTM D-1140.**

Test	Results (%)
Percentage of material finer than Sieve Size 75 μ m (No.200)	0.3

CEL
مكتب معامل الاستشارات الهندسية
مشاريع الإسكندرية والبحر المتوسط
Signature

Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 309+500
Type of sample : fill filter
Delivery Date : 26/11/2024
Reporting Date : 30/11/2024
Reporting No. : 009
Sample No. : 01

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

Test	Results
Bulk Specific Gravity (OD)	2.53
Bulk Specific Gravity (SSD)	2.58
Apparent Specific Gravity.	2.66
Absorption %	1.82

Note:

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

CEL
مكتب معامل الاستشارات الهندسية
مشروعات الإسكندرية والبحر المتوسط
Signature

Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 309+500
Type of sample : fill filter
Delivery Date : 26/11/2024
Reporting Date : 30/11/2024
Reporting No. : 009
Sample No. : 01

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

Test	Results
Amount of loss by abrasion and impact (%) Coarse aggregate	25.3

- According to Project Specs:
The amount of loss by abrasion and impact for moderate weathering
- Shall not exceed 45% (when Subjected to 500 revolutions)

The test results is (☒ Comply ☐ Not Comply) with specifications limits.

Signature 
مكتب معامِل الاستشارات الهندسية
مشاريع الإسكندرية و برج العرب

Company : Orange Construction.**Project** : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4)
– Wadi El Natroun to Borg Al Arab.**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 from st.310+180 To st.310+205.**Test Date** : 18/12/2024**Report Date** : 19/12/2024**Type of soil** : Fill Filter .**Report No.** : 59**Dear Gentleman,**

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

Apparatus

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

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm²
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 (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

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

Report

- Type of Soil : Fill Filter.

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Partly Sunny
- Plate Diameter (mm)	300
- date of measurement	18/12/2024
- 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	310+190	74	103	1.4

Signature /



Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg El Arab.
Test Date : 18/12/2024
report date : 19/12/2024
Location : 310+190 .
Test No. : 004

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.73	0.27	19.60	0.40	19.58	0.42	0.36
2	1.67	19.50	0.50	19.27	0.73	19.20	0.80	0.68
3	2.50	19.38	0.62	19.03	0.97	18.85	1.15	0.91
4	3.33	19.25	0.75	18.70	1.30	18.50	1.50	1.18
5	4.17	19.18	0.82	18.50	1.50	18.33	1.67	1.33
6	5.00	19.10	0.90	18.30	1.70	18.20	1.80	1.47

Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
1	5.00	19.10	0.90	18.30	1.70	18.20	1.80	1.47
2	2.50	19.22	0.78	18.48	1.52	18.38	1.62	1.31
3	1.250	19.36	0.64	18.69	1.31	18.61	1.39	1.11
4	0.05	19.57	0.43	19.08	0.92	18.99	1.01	0.79

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
0	0.83	19.41	0.59	18.92	1.08	18.84	1.16	0.94
1	1.67	19.20	0.80	18.71	1.29	18.67	1.33	1.14
2	2.50	19.06	0.94	18.52	1.48	18.50	1.50	1.31
3	3.33	18.95	1.05	18.24	1.76	18.31	1.69	1.50
4	4.17	18.81	1.19	18.07	1.93	18.14	1.86	1.66



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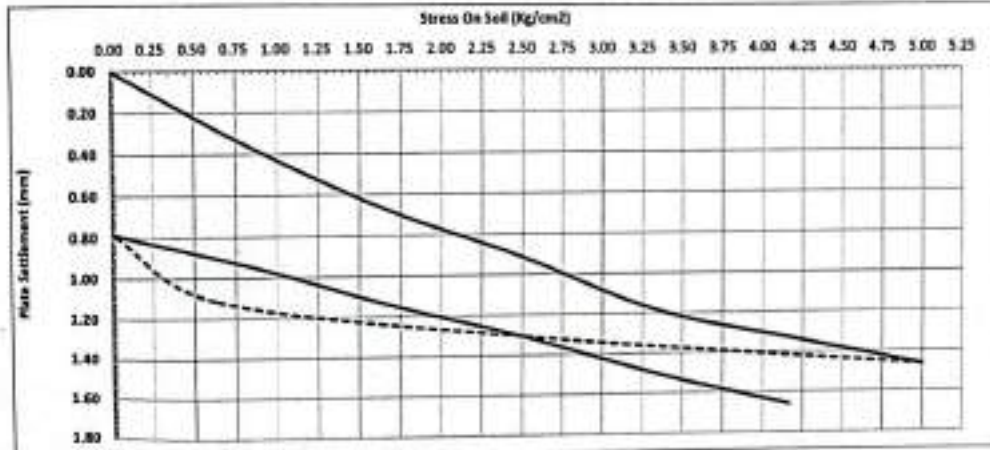
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مكتب معامل الاستشارات الهندسية

Company Name
Project
Test Date
Report Date
Location
Test No.

: Orange Construction.
: Electric Express Train, Al Ain Sokhna to Mansa Matrouh Priority Sector (4) - Ward El Matrouh to Borg El Arab.
: 18/12/2024
: 19/12/2024
: 310+190 .
: 004

Nonrepetitive Static Plate Load Tests of Soils DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586.395	1179.9	1766.3	2352.6	2946.1	3533
Stress (Kg/cm ²)	0.00	0.83	1.67	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.36	0.68	0.91	1.18	1.33	1.47

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	1179.9	0
Stress (Kg/cm ²)	5.00	2.50	1.67	0.01
Settlement (mm)	1.47	1.31	1.11	0.79

D (mm) =	300	S1 (mm) =	0.62	S2 (mm) =	1.21	ΔS =	0.60
Ev1 (MPa) =	(0.75 * D * Δσ) / ΔS						74

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1179.9	1766.3	2352.6	2946.1
Stress (Kg/cm ²)	0.01	0.83	1.67	2.50	3.33	4.17
Settlement (mm)	0.79	0.94	1.14	1.31	1.50	1.66

Ev2/Ev1 = 1.4

D (mm) =	300	S1 (mm) =	1.10	S2 (mm) =	1.53	ΔS =	0.43
Ev2 (MPa) =	(0.75 * D * Δσ) / ΔS						103

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



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Company : Orange Construction.**Project** : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4)
– Wadi El Natroun to Borg Al Arab.**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 from st.310+215 To st.310+240.**Test Date** : 18/12/2024**Report Date** : 19/12/2024**Type of soil** : Fill Filter .**Report No.** : 60**Dear Gentleman,**

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

Apparatus

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

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm²
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 (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads



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Report

1. Evaluation and representation of results
2. Load Settlement curve
3. The test report content the following:-
 - location of test site - Dimension of loading plate
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 - 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	18/12/2024
- 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	310+230	67	99	1.5

Signature /



Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg El Arab.
Test Date : 18/12/2024
report date : 19/12/2024
Location : 310+230 .
Test No. : 005

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.75	0.25	19.60	0.40	19.69	0.31	0.32
2	1.67	19.47	0.53	19.38	0.62	19.30	0.70	0.62
3	2.50	19.25	0.75	19.10	0.90	19.05	0.95	0.87
4	3.33	18.96	1.04	18.80	1.20	18.73	1.27	1.17
5	4.17	18.68	1.32	18.57	1.43	18.55	1.45	1.40
6	5.00	18.40	1.60	18.25	1.75	18.19	1.81	1.72

Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
1	5.00	18.40	1.60	18.25	1.75	18.19	1.81	1.72
2	2.50	18.54	1.46	18.60	1.40	18.30	1.70	1.52
3	1.250	18.74	1.26	18.75	1.25	18.65	1.35	1.29
4	0.05	18.98	1.02	19.05	0.95	18.90	1.10	1.02

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Dial 3	Settlement mm	Average
0	0.83	18.81	1.19	18.85	1.15	18.76	1.24	1.19
1	1.67	18.68	1.32	18.66	1.34	18.58	1.42	1.36
2	2.50	18.51	1.49	18.45	1.55	18.35	1.65	1.56
3	3.33	18.32	1.68	18.27	1.73	18.18	1.82	1.74
4	4.17	18.18	1.82	18.11	1.89	18.00	2.00	1.90



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; 18/12/2024

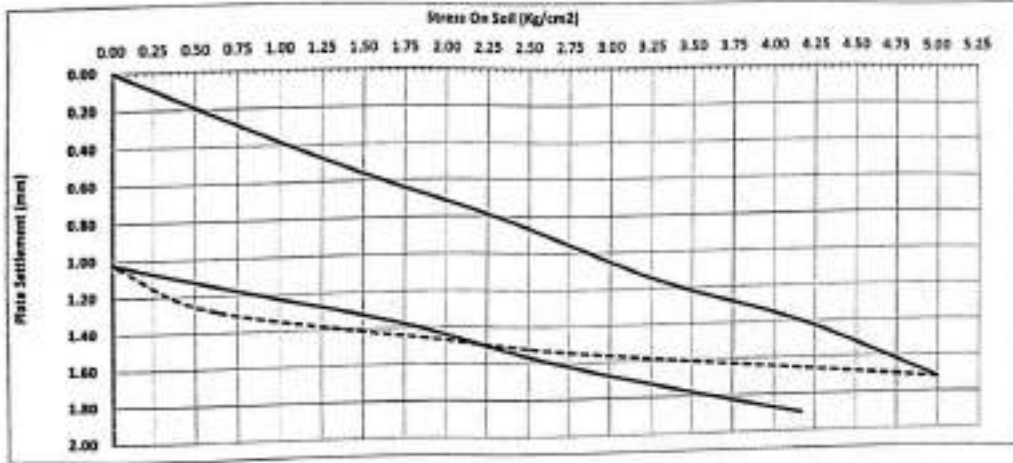
; 19/12/2024

; 310+230 .

; 005

Nonrepetitive Static Plate Load Tests of Soils

DIN 18134



Loading (1)	0	1	2	3	4	5	8
Stage(Kg)	0	586.395	1179.9	1766.3	2352.6	2946.1	3533
Stress (Kg/cm2)	0.00	0.83	1.67	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.32	0.62	0.87	1.17	1.40	1.72

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	1766	0
Stress (Kg/cm2)	5.00	2.50	0.825	0.01
Settlement (mm)	1.72	1.52	1.29	1.02

D (mm) =	300	S1 (mm) =	0.56	S2(mm) =	1.21	ΔS =	0.66
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS						
	67						

Ev2/Ev1 = 1.5

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.395	1179.9	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.01	0.83	1.67	2.50	3.33	4.17
Settlement (mm)	1.02	1.19	1.36	1.56	1.74	1.90

D (mm) =	300	S1 (mm) =	1.33	S2(mm) =	1.77	ΔS =	0.45
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS						
	99						

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 (kmax) (kg/cm²)

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



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محضر استلام موقع عملية

العملية:

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح) (قطاع وادي النظرون / برج العرب) أعمال سن الفلتر لتنفيذ المسافة من الكم ٣١٠,٣٠٠ إلى الكم ٣١٠,٦٤٠ بطول ٣٤٠,٣ كم (بالأمر المباشر).

تنفيذ: شركة "أورانج للاستيراد والتصدير"

استشاري المشروع: المكتب الاستشاري الهندسي (أ.د/خالد قنديل)

إشراف: المنطقة الخامسة - منطقة غرب الدلتا

طبقاً للعقد رقم (٩٤٨-٢٠٢٣-٢٠٢٤) بتاريخ (٢٠٢٤/٠١/٠٨)

أنه في يوم الاثنين الموافق ٢٠٢٤/٠١/٢٢ أجمع كل من:

- | | |
|---|---|
| ١- السيد المهندس / محمد حسني فياض | مدير عام المشروعات - الهيئة العامة للطرق والكباري |
| ٢- السيد المهندس / أحمد جلال عبد السلام | مهندس العملية - الهيئة العامة للطرق والكباري |
| ٣- السيد المهندس / هشام محمد صبري | استشاري المشروع (أ.د خالد قنديل) |
| ٤- السيد المهندس / محمد فتحي الغول | مدير مشروع - شركة أورانج للاستيراد والتصدير |

وذلك للمرور على مسار العملية المذكورة عالية لاستلام الموقع.

وقد تبين أن الموقع خالي من العوائق الظاهرية ويسمح بالبدء في التنفيذ وبناء عليه يعتبر تاريخ ٢٠٢٤/٠١/٢٢ هو تاريخ استلام الموقع وبدء أعمال الإشراف بالعملية.

واقفل المحضر علي ذلك ووقع الحضور

التوقيعات:

٤-

٣-

٢-

١-

رئيس الإدارة المركزية

منطقة غرب الدلتا

الاسكندرية - مرسى مطروح

عميد مهندس /

"هاني محمد محمود طه"

قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الشرايبي للخط الأول لمشروع القطار الكهربائي المربيع
(العين السفلى - العاصمة الإدارية - العلمين - مطروح)
(قطاع وادي النظرون / برج العرب) أعمال سن الفلتر
لتنفيذ العملاقة من الكم ٣١٠,٣٠٠ إلى الكم ٣١٠,٦٤٠ بطول ٠,٣٤٠ كم (بالأمر المباشر).

بند (١-١):

بالمتر المكعب أعمال توريد وفرش طبقة فلتر من الأحجار الصلبة المترجدة ناتج تكسير كسارات والمطابقة للمواصفات وأقصى حجم حبيبي ما بين ٢٠ مم إلى ٧٥ مم ولا يزيد نسبة العار من منخل ٢٠٠ عن ٥% والتدرج الوارد بالاشتراطات الخاصة بالمشروع وهي أحجار مقاس سن ١ من ٢ من ٤ أو سن ٦ بنسبة ١:١:١ ولا يقل معامل المرونة EV2 من تجربة لوح التحميل عن ٥٠ ميجا بسكال ولا يزيد نسبة الغالد بجهاز لوس انجلوس عن ٤٥% والغلة تشمل أعمال التجارب المعملية والبند يشمل اجراء التجارب المعملية والحقلية طبقاً لأصول الصناعة الممتازة وتقرير الاستشاري وتعليمات المهندس المشرف.

- لمسافة نقل ٢٠ كم.

- الغلة شاملة قيمة المادة الحجرية.

- يتم احتساب ١,٢ جنية للكم بالزيادة أو النقصان

تنفيذ: "شركة أورانج للاستيراد والتصدير"

عقد رقم (٢٠٢٤/٢٠٢٣/٩٤٨)

مقدار العمل السابق :		٠,٠	٣م
مسلسل	الموقع الكيلومتری		الكمية (م٣)
	من الكم	إلى الكم	
١	٣١٠+٣٠٠	٣١٠+٣٩٠	٢٥٨٤,٩٧
٢	٣١٠+٤٥٠	٣١٠+٤٧٠	١٤٧,٢٧
٣	٣١٠+٤٧٠	٣١٠+٦٢٠	٤٧٨٣,٣٦
٤	٣١٠+٦٢٠	٣١٠+٦٣٠	١٩٩,٣١
اجمالي الكمية الهندسي (م٣)			
٧٧١٤,٨٧			
اجمالي الكمية بعد احتساب نسبة غرز ٢٥% (م٣)			
٩٦٤٣,٥٩			
الاجمالي خلال فترة المستخلص الحالية (م٣)			
٩٦٤٣,٥٩			

مهندس الهيئة

م / احمد جلال عبد السلام

أحمد جلال

مهندس الاستشاري

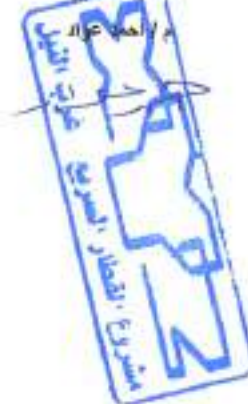
مكتب أ.د/ خالد قنديل

م / هشام محمد صبري



مهندس الاستشاري

مكتب XYZ



مهندس الشركة

م / محمد فتحي القون



قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العظمين - مطروح)
(قطاع وادي النطرون / برج العرب) أعمال سن القنتر
لتنفيذ المسافة من الكم ٣١٠,٣٠٠ إلى الكم ٣١٠,٦٤٠ بطول ٠,٣٤٠ كم (بالأمر المباشر).

علاوة بند (١-١) علاوة مسافة النقل ١٦٢ كم .

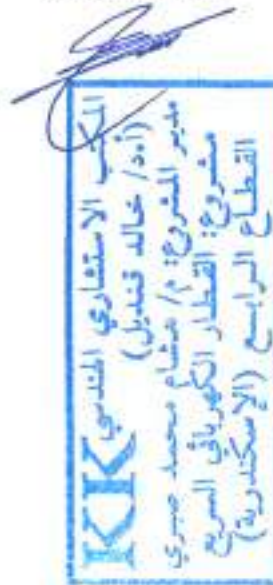
تنفيذ : "شركة أورانج للاستيراد والتصدير"

عقد رقم (٢٠٢٤/٢٠٢٣/٩٤٨)

مقدار العمل السابق :		٠,٠	٣م
متسلسل	الموقع الكيلومتری		الكمية (م٣)
	من الكم	إلى الكم	
١	٣١٠+٣٠٠	٣١٠+٣٩٠	٢٥٨٤,٩٧
٢	٣١٠+٤٥٠	٣١٠+٤٧٠	١٤٧,٢٧
٣	٣١٠+٤٧٠	٣١٠+٦٢٠	٤٧٨٣,٢٢
٤	٣١٠+٦٢٠	٣١٠+٦٣٠	١٩٩,٣١
اجمالي الكمية الهندسي (م٣)			
اجمالي الكمية بعد احتساب نسبة غرز ٢٥% (م٣)			
الاجمالي خلال فترة المستخلص الحالية (م٣)			
٩٦٤٣,٥٩			

مهندس الهيئة
م / احمد جلال عبد السلام
أحمد جلال

مهندس الاستشاري
مكتب أ.د/ خالد قنديل
م / هشام محمد صبري



مهندس الاستشاري
مكتب XYZ



مهندس الشركة
م / محمد فتحى القنبر



قائمة الكميات الواردة بالمستخلص جاري (١)

استناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
(قطاع وادي النظرون / برج العرب) أعمال سن الفلتر
لتنفيذ المسافة من الكم ٣١٠,٣٠٠ إلى الكم ٣١٠,٦٤٠ بطول ٠,٣٤٠ كم (بالأمر المباشر).

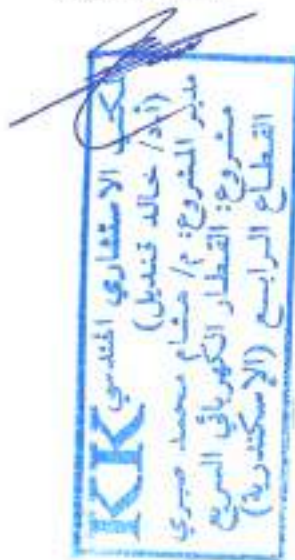
علاوة بند (١-١) علاوة تحصيل رسوم الكارثة والموازن طبقا للاتحة الشركة الوطنية.

تنفيذ : "شركة أورنج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/٩٤٨)

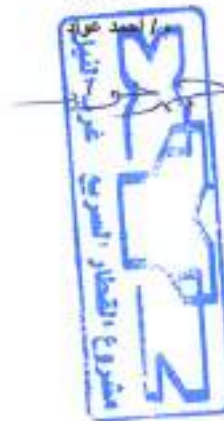
مقدار العمل السابق :		٠,٠	٣م
مستسل	الموقع الكيلومترى		الكمية (م٣)
	من الكم	إلى الكم	الطول (متر)
١	٣١٠+٣٠٠	٣١٠+٣٩٠	٩٠
٢	٣١٠+٤٥٠	٣١٠+٤٧٠	٢٠
٣	٣١٠+٤٧٠	٣١٠+٦٢٠	١٥٠
٤	٣١٠+٦٢٠	٣١٠+٦٣٠	١٠
إجمالي الكمية الهندسي (م٣)			٧٧١٤,٨٧
إجمالي الكمية بعد احتساب نسبة خرز ٢٥% (م٣)			٩٦٤٣,٥٩
الإجمالي خلال فترة المستخلص الحالية (م٣)			٩٦٤٣,٥٩

مهندس الهيئة
م / أحمد جلال عبد السلام
أحمد جلال

مهندس الاستشاري
مكتب إد/ خالد قنديل
م / هشام محمد صبري



مهندس الاستشاري
مكتب XYZ



مهندس الشركة
م / محمد فتحي الكول



Contractor Company	Orange for Import & Export and General Contracting Company			Designer Company		(KK) Engineering Consulting Office					
Issued by Contractor	Name	Sign		Date/Serial Number		Time					
	Eng: Mohamed Fathy	محمد قدّس الفول		28-08-2023 (OR-M.A 051)		09:30 AM					
Received by ER	Eng: Gaber Ibrahim		MAR	C1	C2	C3	DD	MM	YY	HH	MM
				310	EW	CS	28	08	23	09	30

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

Description of Materials	Stockpile of Dolomitic Crushed Aggregates. (Filter Layer)		
Location to be Used	Station 310+450 to 310+960		
Sample only	Yes	Materials Type	Filter layers
Supplier Name	Rateb	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	Approved
Reference Photos	No	Other	
Comments by: Eng. Hesham Sabry (KK)		Comments by: Eng. Gaber Ibrahim (ER)	
تم إجراء الاختبارات المعملة وتم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.		1- All tests were carried-out by material engineer for both contractor and GARB Consultant. 2-Results report attached and acceptable with the project specifications. 3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng: Mohamed Fathy	محمد قدس الفول	28-08-2023	A
QA/QC *	Eng: Hesham Sabry		28/8/2023	A
GARB**	Eng: Ahmed Galal			
Employers Representative	Eng: Gaber Ibrahim			A.W.C

* Designer

** Alignment/Bridges: Culvert only

28-08-1073



Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

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

Date :	28-Aug-23	Station:	310+500
From / To :	310+450 TO 310+960	Sample type :	خليط من سن 1# & 2# & 3#

Sieve size (mm)	Retained	Passing	Passing %		
				MIN	MAX
75	0	15565	100.0	100	100
50	0	15565	100.0	75	90
10	12980	2585	16.6	15	25
4.75	1874	711	4.57	0	10
0.075	580	131	0.8	0	5
Passing	131				
Total	15565				

مهندس الجودة الاستشاري

مهندس الشركة

مهندس الشركة



الهيئة العامة
للطرق والكباري
(GARB)



Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

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

Date :	28-Aug-23	Station:	310+500
From / To :	310+450 TO 310+960	Sample type :	خليط من سن 3# & 2# & 1#

Sieve size (mm)	Retained	Passing	Passing %		
				MIN	MAX
75	0	18277	100.0	100	100
50	128	18149	99.3	75	90
10	14389	3760	20.6	15	25
4.75	2891	869	4.75	0	10
0.075	781	88	0.5	0	5
Passing	88				
Total	18277				

مهندس الجودة الاستشاري

مهندس الشركة
محمود أبو شنب

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

APRASION OF AGGREGATE BASE COARSE ASTM C-131

Date :	28-Aug-23	Station:	310+500		
From / To :	310+450 TO 310+960	Sample type :	خليط من سن 3# & 2# & 1#		
رتبة تدرج الاختبار		A	B	C	D
عدد الكرات لكل رتبة		12	11	8	6
مار من	محجوز على	وزن العينات (جم)			
37.5 mm (1½ in.)	25 mm (1 in.)	1250			
25 mm (1 in.)	19 mm (¾ in.)	1250			
19 mm (¾ in.)	12.5 mm (½ in.)	1250	2500		
12.5 mm (½ in.)	9.5 mm (⅜ in.)	1250	2500		
9.5 mm (⅜ in.)	6.35 mm (¼ in.)			2500	
6.35 mm (¼ in.)	4.75 mm (No. 4)			2500	
4.75 mm (No. 4)	2.36 mm (No. 8)				5000
المجموع		5000	5000	5000	5000
حساب نسبة الفاقد بجهاز لوس انجلوس:					
وزن العينة قبل الاختبار		5000			
وزن العينة المحجوزه على مهزه رقم 12		3751			
نسبة الفاقد بجهاز لوس انجلوس		25.0%			

مهندس الجودة الاستشاري

مهندس الشركة
محمد أبو شنب

خالد

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

Water Absorption of Coarse Aggregate (ASTM-C127)

Date :	28-Aug-23
From / To :	310+450/310+960

Station:	310+500
Sample type :	خليط من سن 1 - سن 2 - سن 3

Item	Weigh (gm)
Wt. in Air Dry Before Test (gm.)	5000
Wt. in air SSD (gm.)	5145
Wt. in Air Dry After Test (gm.)	4939
Percentage of Absorption	4.17%
Percentage of Disintegration piece	1.22%

Elongated and Flat Aggregate ASTM D-4791

Weigh of Total Sample (gm.)	5000
Weigh Elongated (gm.)	171
Weigh Flat (gm.)	356
Percentage of Elongated	3.42%
Percentage of Flat	7.12%

Natural Soft Aggregate

Weigh of Total Sample (gm.)	18277
Weigh Natural (gm.)	1201
Percentage of Natural Aggregate	6.57%

المهندس الاستشاري (K.K)



مهندس المواد (الشركة)

محمود بوشني

MATERIAL APPROVAL REQUEST



Contractor Company	Orange for Import & Export and General Contracting Company			Designer Company		(KK) Engineering Consulting Office					
Issued by Contractor	Name	Sign		Date/Serial Number		Time					
	Eng: Mohamed Fathy	محمد قدس الغول		29-08-2023 (OR-M.A 052)		09:30 AM					
Received by ER	Eng: Gaber Ibrahim		MAR	C1	C2	C3	DO	MM	YY	HH	MM
				310	EW	CS	29	08	23	09	30

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

Description of Materials	Stockpile of Dolomitic Crushed Aggregates. (Filter Layer)		
Location to be Used	Station 310+450 to 310+960		
Sample only	Yes	Materials Type	Filter layers
Supplier Name	Rateb	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	Approved
Reference Photos	No	Other	
Comments by: Eng. Hesham Sabry (KK)		Comments by: Eng. Gaber Ibrahim (ER)	
تم إجراء الاختبارات المعملية وتم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.		1- All tests were carried-out by material engineer for both contractor and GARB Consultant. 2-Results report attached and acceptable with the project specifications. 3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng: Mohamed Fathy	محمد قدس الغول	29-08-2023	A
QA/QC *	Eng: Hesham Sabry		29/8/2023	A
GARB**	Eng: Ahmed Galal			
Employers Representative	Eng: Gaber Ibrahim			A.W.C

* Designer
** Alignment/Bridges: Culvert only

29-08-2023



Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

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

Date : 29-Aug-23

From / To : 310+450 TO 310+960

Station:

310+600

Sample type :

خليط من سن 1# & 2# & 3#

Sieve size (mm)	Retained	Passing	Passing %		
				MIN	MAX
75	0	10862	100.0	100	100
50	0	10862	100.0	75	90
10	8751	2111	19.4	15	25
4.75	1523	588	5.41	0	10
0.075	491	97	0.9	0	5
Passing	97				
Total	10862				

مهندس الجودة الاستشاري

مهندس الشركة
 محمود أبو سب



Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

APRASION OF AGGREGATE BASE COARSE ASTM C-131

Date :	29-Aug-23	Station:	310+600		
From / To :	310+450 TO 310+960	Sample type :	خليط من سن 3# & 2# & 1#		
رتبة تدرج الاختبار		A	B	C	D
عدد الكرات لكل رتبة		12	11	8	6
مار من	محجوز على	وزن العينات (جم)			
37.5 mm (1½ in.)	25 mm (1 in.)	1250			
25 mm (1 in.)	19 mm (¾ in.)	1250			
19 mm (¾ in.)	12.5 mm (½ in.)	1250	2500		
12.5 mm (½ in.)	9.5 mm (¾ in.)	1250	2500		
9.5 mm (¾ in.)	6.35 mm (¼ in.)			2500	
6.35 mm (¼ in.)	4.75 mm (No. 4)			2500	
4.75 mm (No. 4)	2.36 mm (No. 8)				5000
المجموع		5000	5000	5000	5000

حساب نسبة الفاقد بجهاز لوس انجلوس:

وزن العينة قبل الاختبار	5000
وزن العينة المحجوزة على مهزة رقم 12	3798
نسبة الفاقد بجهاز لوس انجلوس	24.0%

مهندس الجودة الاستشاري

مهندس الشركة

محمد أبو شنب

خالد

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

Water Absorption of Coarse Aggregate (ASTM-C127)

Date :	29-Aug-23
From / To :	310+450/310+960

Station:	310+600
Sample type :	خليط من سن 1 - سن 2 - سن 3

Item	Weigh (gm)
Wt. in Air Dry Before Test (gm.)	5000
Wt. in air SSD (gm.)	5145
Wt. in Air Dry After Test (gm.)	4939
Percentage of Absorption	4.17%
Percentage of Disintegration piece	1.22%

Elongated and Flat Aggregate ASTM D-4791

Weigh of Total Sample (gm.)	5000
Weigh Elongated (gm.)	191
Weigh Flat (gm.)	361
Percentage of Elongated	3.82%
Percentage of Flat	7.22%

Natural Soft Aggregate

Weigh of Total Sample (gm.)	10862
Weigh Natural (gm.)	721
Percentage of Natural Aggregate	6.64%

المهندس الاستشاري (K.K)

مهندس المواد (الشركة)

محمد أبو شنب

Handwritten signature

MATERIAL APPROVAL REQUEST



CHALANCE COMPANY



ENGINEERING CONSULTING OFFICE
المكتب الهندسي الاستشاري
أ. م. خالد فؤاد



GARB



SUSTRA



SUSTRA



الهيئة القومية للإسفلت



الهيئة القومية للإسفلت

Contractor Company	Orange for Import & Export and General Contracting Company			Designer Company				(KK) Engineering Consulting Office				
Issued by Contractor	Name		Sign		Date/Serial Number				Time			
	Eng: Mohamed Fathy		محمد فathy النول		04-09-2023 (OR-M.A 053)				09:30 AM			
Received by ER	Eng: Gaber Ibrahim			MAR	C1	C2	C3	DD	MM	YY	HH	MM
					309	EW	C5	04	09	23	09	30

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

Description of Materials	Stockpile of Dolomitic Crushed Aggregates. (Filter Layer)		
Location to be Used	Station 309+840 to 310+390		
Sample only	Yes	Materials Type	Filter layers
Supplier Name	Rateb	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	Approved
Reference Photos	No	Other	
Comments by: Eng. Hesham Sabry (KK)		Comments by: Eng. Gaber Ibrahim (ER)	
تم إجراء الاختبارات المعملية وتم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.		1- All tests were carried-out by material engineer for both contractor and GARB Consultant. 2-Results report attached and acceptable with the project specifications. 3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng: Mohamed Fathy	محمد فathy النول	04-09-2023	A
QA/QC *	Eng: Hesham Sabry		4/9/2023	A
GARB**	Eng: Ahmed Galal			
Employers Representative	Eng: Gaber Ibrahim			A.W.C

* Designer

** Alignment/Bridges: Culvert only

04-09-2023

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

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

Date :	04-Sep-23	Station:	309+800
From / To :	309+840 TO 310+390	Sample type :	خليط من سن 1# & 2# & 3#

Sieve size (mm)	Retained	Passing	Passing %		
				MIN	MAX
75	0	8548	100.0	100	100
50	0	8548	100.0	75	90
10	6985	1563	18.3	15	25
4.75	1100	463	5.42	0	10
0.075	412	51	0.6	0	5
Passing	51				
Total	8548				

مهندس الجودة الاستشاري

مهندس الشركة

محمد أبو كسب

طارق

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

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

Date :	04-Sep-23	Station:	309+800
From / To :	309+840 TO 310+390	Sample type :	خليط من سن 3# & 2# & 1#

Sieve size (mm)	Retained	Passing	Passing %		
				MIN	MAX
75	0	13921	100.0	100	100
50	0	13921	100.0	75	90
10	11298	2623	18.8	15	25
4.75	1755	868	6.24	0	10
0.075	772	96	0.7	0	5
Passing	96				
Total	13921				

مهندس الجودة الاستشاري

مهندس الشركة

محمود عيسى

خالد شديبل

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

APRASION OF AGGREGATE BASE COARSE ASTM C-131

Date :	04-Sep-23	Station:	309+800		
From / To :	309+840 TO 310+390	Sample type :	خليط من سن 3# & 2# & 1#		
رتبة تدرج الاختبار		A	B	C	D
عدد الكرات لكل رتبة		12	11	8	6
مار من	محجوز على	وزن العينات (جم)			
37.5 mm (1½ in.)	25 mm (1 in.)	1250			
25 mm (1 in.)	19 mm (¾ in.)	1250			
19 mm (¾ in.)	12.5 mm (½ in.)	1250	2500		
12.5 mm (½ in.)	9.5 mm (⅜ in.)	1250	2500		
9.5 mm (⅜ in.)	6.35 mm (¼ in.)			2500	
6.35 mm (¼ in.)	4.75 mm (No. 4)			2500	
4.75 mm (No. 4)	2.36 mm (No. 8)				5000
المجموع		5000	5000	5000	5000

حساب نسبة الفاقد بجهاز لوس انجلوس:

وزن العينه قبل الاختبار	5000
وزن العينه المحجوزه على مهزه رقم 12	3761
نسبة الفاقد بجهاز لوس انجلوس	24.8%

مهندس الجودة الاستشاري

مهندس الشركة

محمود أبو شنب

خالد غنديل

Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El Nnatroun To Borg Elarab "
From Station 305+500 To Station 311+000

Water Absorption of Coarse Aggregate (ASTM-C127)

Date :	04-Sep-23
From / To :	309+840 TO 310+390

Station:	309+800
Sample type :	خليط من سن 1 - سن 2 - سن 3

Item	Weigh (gm)
Wt. in Air Dry Before Test (gm.)	5000
Wt. in air SSD (gm.)	5122
Wt. in Air Dry After Test (gm.)	4933
Percentage of Absorption	3.83%
Percentage of Disintegration piece	1.34%

Elongated and Flat Aggregate ASTM D-4791

Weigh of Total Sample (gm.)	6000
Weigh Elongated (gm.)	193
Weigh Flat (gm.)	402
Percentage of Elongated	3.22%
Percentage of Flat	6.70%

Natural Soft Aggregate

Weigh of Total Sample (gm.)	13921
Weigh Natural (gm.)	935
Percentage of Natural Aggregate	6.72%

المهندس الاستشاري (K.K.)

مهندس المواد (الشركة)

محمد أبو شنب

خالد فتوح



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Technical report

of Plate Loading Test (DIN 18134)

General	:	SYSTRA
Consultant	:	Dr/ Khaled Kandil
Contractor	:	شركة أورنج للإستيراد والتصدير والمقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Coarse agg. Filter layer
Station	:	ST(310+510) TO ST(310+940)
Date of Test	:	24/6/2023
QC	:	1485

Kilo 23 Alexandria - Cairo Desert Road - Merghem
Tel: 002 03-4704595 - 002 034701191
Email : clvdept@comibassal.com
WebSite : www.comibassal.com



49 El Horria Ave. Alex, Egypt
Tel: 002 033920176 - 002 033931482
Fax : 002 033900476
Email : internal-inspection@comibassal.com



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypton General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypton Accreditation council (EGAC) under No. 031706/1A

Introduction:

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by assessing the force and amount of penetration with time when a rigid plate is made to penetrate the soil.

The test to be carried out on the native soil according to German specifications DIN 18134.

Test methods :

1- The German standard DIN 18134 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.

2- Loading plates with a diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners with even upper faces parallel to the plate bottom face to allow 300 mm plate to be placed on top of it.

3- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 700 bar capacity, which is capable of applying and releasing the load stages.

4- The dial gauge used to measure the plate settlement has a resolution of 0.01mm and the lever ratio was equal to 1.

5- The temperature at the time of the test was 25°.

6- The plate was carried out on a native soil (sand-gravel). The test surface area was levelled and the plate was bedded on this surface.

7- The hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.

8- The reaction loading system was a heavy multi-purpose excavator (more than 20 ton).

Description of experiment:

1- Loading, unloading and reloading regims were applied according to DIN 18134 for the plate load test to estimate the resilient modulus

2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding to a stress of 0.01 MN/m².

3- In the first loading cycle, the load was increased until a normal stress of 0.25 MN/m² was reached, and the loading increment was 0.025 MN/m². The load was released in four stages.

4- Following unloading, a further second loading cycle was carried out, in which, the load was increased only to the penultimate stage of the first cycle.



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310+510

600

Table 1: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.12
2	14.14	0.050	0.23
3	21.21	0.075	0.32
4	28.28	0.100	0.44
5	35.35	0.125	0.58
6	42.42	0.150	0.69
7	49.49	0.175	0.90
8	56.56	0.200	1.08
9	63.63	0.225	1.30
10	70.7	0.250	1.52
11	56.56	0.200	1.50
12	49.49	0.175	1.43
13	35.35	0.125	1.31
14	21.21	0.075	1.23
15	1.414	0.005	1.01

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	1.01
16	7.07	0.025	1.07
17	14.14	0.050	1.12
18	21.21	0.075	1.22
19	28.28	0.100	1.30
20	35.35	0.125	1.40
21	42.42	0.150	1.49
22	49.49	0.175	1.53
23	56.56	0.200	1.57
24	63.63	0.225	1.61

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{0,max})$ MN/m ²	0.250	0.250
a_0 (mm)	0.076	0.972
a_1 (mm/(MN/m ²))	2.061	3.864
a_2 (mm/(MN ² /m ⁴))	14.915	-4.215
$E_v = 1.5 \cdot \sigma_0 / (a_1 + a_2 \cdot \sigma_{0,max})$	77.73	160.12
E_v2/E_v1	2.06	



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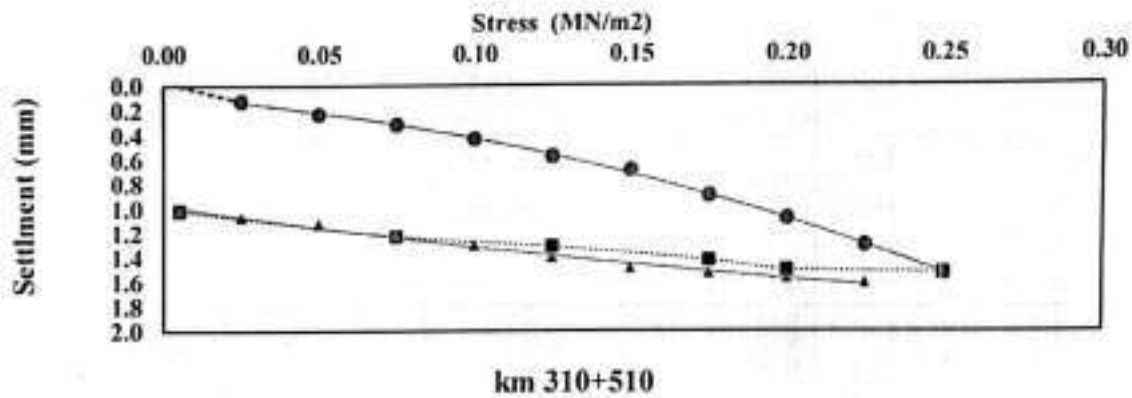


Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_s Normal stress MN/m²





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310+570

600

Table 4: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_n) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.09
2	14.14	0.050	0.17
3	21.21	0.075	0.25
4	28.28	0.100	0.45
5	35.35	0.125	0.66
6	42.42	0.150	0.79
7	49.49	0.175	1.01
8	56.56	0.200	1.14
9	63.63	0.225	1.24
10	70.7	0.250	1.34
11	56.56	0.200	1.31
12	49.49	0.175	1.27
13	35.35	0.125	1.07
14	21.21	0.075	0.93
15	1.414	0.005	0.63

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_n) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.63
16	7.07	0.025	0.71
17	14.14	0.050	0.78
18	21.21	0.075	0.88
19	28.28	0.100	0.96
20	35.35	0.125	1.04
21	42.42	0.150	1.12
22	49.49	0.175	1.17
23	56.56	0.200	1.25
24	63.63	0.225	1.32

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{n, max})$ MN/m ²	0.250	0.250
s_0 (mm)	-0.130	0.612
a_1 (mm/(MN/m ²))	6.379	3.707
a_2 (mm/(MN ² /m ⁴))	-1.273	-2.531
$E_v = 1.5 \pi / (a_1 + a_2 \cdot \sigma_{n, max})$	74.25	146.38
E_v2/E_v1	1.97	



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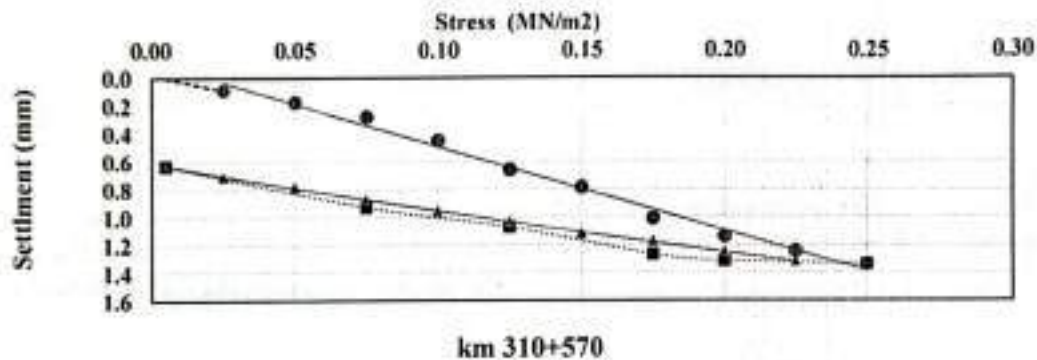


Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_s Normal stress MN/m²



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Conclusions:

The present test results which obtained from the plate loading tests of the native soil on Coarse agg. filter layer of the electric express train project at location (from km 310+510) to km (310+940) in accordance to the German standard , DIN 18134 are illustrated in table 16 .

Table 16 :Test results

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
310+510	77.73	160.12	2.06
310+570	74.25	146.38	1.97
310+740	69.58	176.94	2.54
310+800	90.22	145.89	1.62
310+940	68.45	176.27	2.58

Lab Director

Eng / Eman Kandil

Geotechnical Consultant

For Dr. M.
Dr / Mohamed Mostafa Badry



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Technical report
of Plate Loading Test (DIN 18134)

General	:	SYSTRA
Consultant	:	Dr/Khaled Kandil
Contractor	:	شركة أورنج للإستيراد والتصدير والمقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Aggregate Filter
Station	:	ST(310+470) TO ST(310+620)
Date of Test	:	04/09/2023
QC	:	1868

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Introduction:

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by assessing the force and amount of penetration with time when a rigid plate is made to penetrate the soil.

The test to be carried out on the native soil according to German specifications DIN 18134.

Test methods :

- 1- The German standard DIN 18134 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.
- 2- Loading plates with a diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners with even upper faces parallel to the plate bottom face to allow 300 mm plate to be placed on top of it.
- 3- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 700 bar capacity, which is capable of applying and releasing the load stages.
- 4- The dial gauge used to measure the plate settlement has a resolution of 0.01mm and the lever ratio was equal to 1.
- 5- The temperature at the time of the test was 25°.
- 6- The plate was carried out on a native soil (sand-gravel). The test surface area was levelled and the plate was bedded on this surface.
- 7- The hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.
- 8- The reaction loading system was a heavy multi-purpose excavator (more than 20 ton).

Description of experiment:

- 1- Loading, unloading and reloading regims were applied according to DIN 18134 for the plate load test to estimate the resilient modulus
- 2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding to a stress of 0.01 MN/m².
- 3- In the first loading cycle, the load was increased until a normal stress of 0.25 MN/m² was reached, and the loading increment was 0.025 MN/m². The load was released in four stages.
- 4- Following unloading, a further second loading cycle was carried out, in which, the load was increased only to the penultimate stage of the first cycle.



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Sec (310+470) to (310+620)

St (310+500)

600

Table 1: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.08
2	14.14	0.050	0.22
3	21.21	0.075	0.37
4	28.28	0.100	0.56
5	35.35	0.125	0.77
6	42.42	0.150	1.06
7	49.49	0.175	1.19
8	56.56	0.200	1.38
9	63.63	0.225	1.63
10	70.7	0.250	1.92
11	56.56	0.200	1.90
12	49.49	0.175	1.89
13	35.35	0.125	1.74
14	21.21	0.075	1.60
15	1.414	0.005	1.18

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	1.18
16	7.07	0.025	1.30
17	14.14	0.050	1.44
18	21.21	0.075	1.55
19	28.28	0.100	1.73
20	35.35	0.125	1.79
21	42.42	0.150	1.85
22	49.49	0.175	1.90
23	56.56	0.200	1.93
24	63.63	0.225	1.96

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{0,max}$) MN/m ²	0.250	0.250
s_0 (mm)	-0.087	1.134
a_1 (mm/(MN/m ²))	5.815	7.088
a_2 (mm/(MN ² /m ⁴))	8.529	-15.357
$E_v = 1.5 \pi' (s_0 + a_1 \sigma_{0,max})$	56.63	138.50
E_v2/E_v1	2.45	



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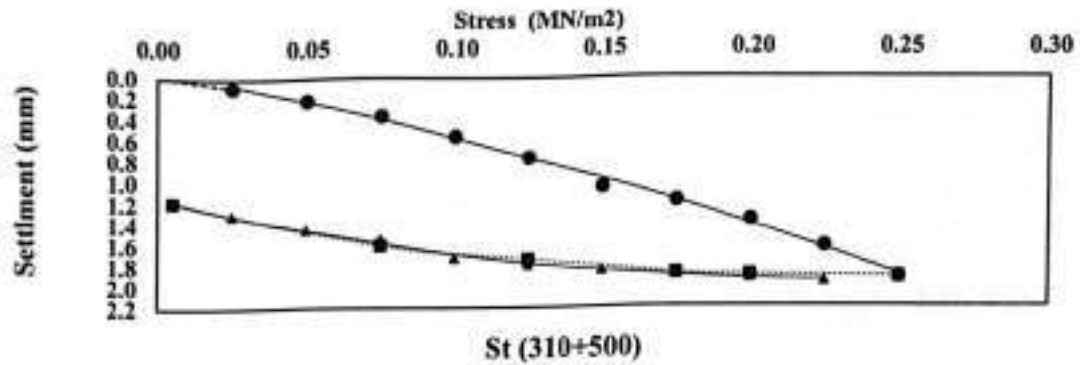


Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²



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Sec (310+470) to (310+620)

St (310+550)

600

Table 4: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.08
2	14.14	0.050	0.19
3	21.21	0.075	0.32
4	28.28	0.100	0.44
5	35.35	0.125	0.56
6	42.42	0.150	0.78
7	49.49	0.175	0.96
8	56.56	0.200	1.13
9	63.63	0.225	1.35
10	70.7	0.250	1.52
11	56.56	0.200	1.50
12	49.49	0.175	1.48
13	35.35	0.125	1.36
14	21.21	0.075	1.26
15	1.414	0.005	0.97

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.97
16	7.07	0.025	1.09
17	14.14	0.050	1.20
18	21.21	0.075	1.29
19	28.28	0.100	1.36
20	35.35	0.125	1.44
21	42.42	0.150	1.52
22	49.49	0.175	1.62
23	56.56	0.200	1.69
24	63.63	0.225	1.79

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{k,max})$ MN/m ²	0.250	0.250
s_0 (mm)	-0.031	0.975
a_1 (mm/(MN/m ²))	3.851	4.153
a_2 (mm/(MN ² /m ⁴))	9.721	-2.718
$Ev = 1.5 \sigma / (a_1 + a_2 \cdot \sigma_{k,max})$	71.64	129.55
$Ev2/Ev1$	1.81	



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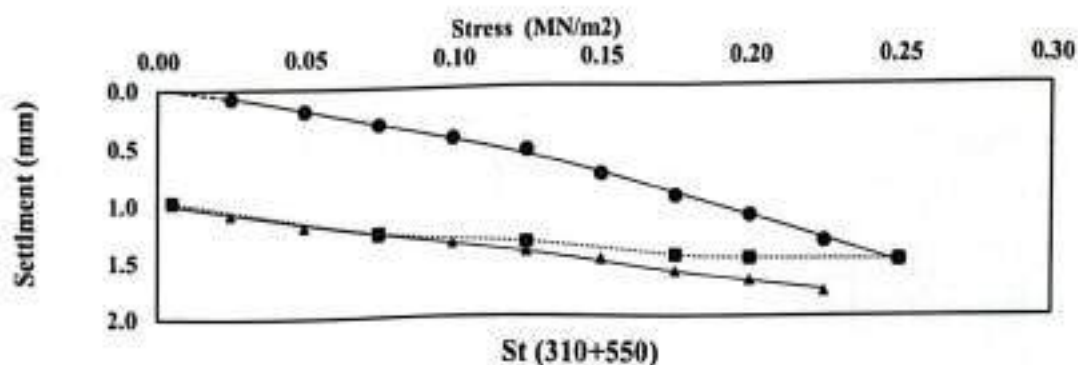


Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²



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Sec (310+470) to (310+620)

St (310+600)

600

Table 7: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.19
2	14.14	0.050	0.30
3	21.21	0.075	0.39
4	28.28	0.100	0.51
5	35.35	0.125	0.66
6	42.42	0.150	0.85
7	49.49	0.175	1.07
8	56.56	0.200	1.18
9	63.63	0.225	1.32
10	70.7	0.250	1.42
11	56.56	0.200	1.40
12	49.49	0.175	1.37
13	35.35	0.125	1.26
14	21.21	0.075	1.13
15	1.414	0.005	0.74

Table 8: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.74
16	7.07	0.025	0.79
17	14.14	0.050	0.88
18	21.21	0.075	0.97
19	28.28	0.100	1.08
20	35.35	0.125	1.15
21	42.42	0.150	1.24
22	49.49	0.175	1.29
23	56.56	0.200	1.38
24	63.63	0.225	1.46

Table 9: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{0, \max})$ MN/m ²	0.250	0.250
σ_0 (mm)	0.030	0.708
a_1 (mm/(MN/m ²))	4.982	3.789
a_2 (mm/(MN ² /m ⁴))	3.072	-1.994
$E_v = 1.5 \pi / (a_1 + a_2 \cdot \sigma_{0, \max})$	78.26	136.74
E_{v2}/E_{v1}	1.75	



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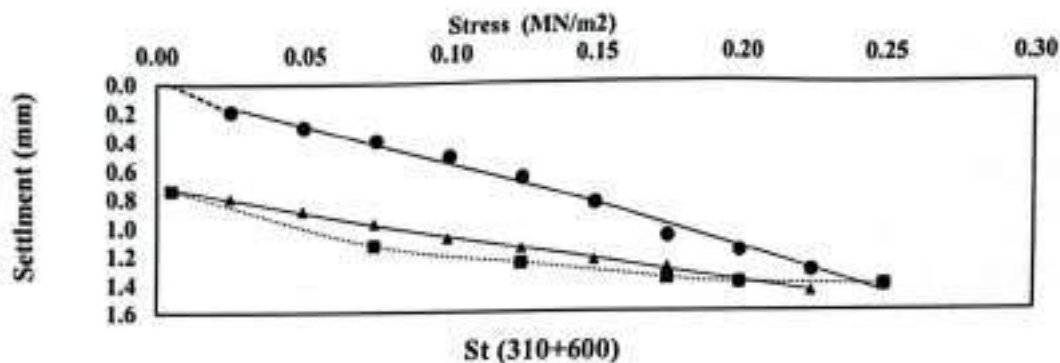


Fig. 3: Load-settlement curve, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_s Normal stress MN/m²



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Conclusions:

The present test results which obtained from the plate loading tests of the native soil on aggregate filter layer of the electric express train project at location from St (310+500) to (310+600) km in accordance to the German standard , DIN 18134 are illustrated in table 10 .

Table 10 :Test results

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
St (310+500)	56.63	138.50	2.45
St (310+550)	71.64	129.55	1.81
St (310+600)	78.26	136.74	1.75

Lab Director *Eman*
Eng / Eman Kandil



Geotechnical Consultant
For. Dr. M.
Dr / Mohamed Mostafa Badry

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Technical report

of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	Dr/ Khaled Kandil
Contractor	:	شركة اورنج للإستيراد والتصدير و المقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Coarse Agg. Filter
Station	:	ST(310+020) TO ST(310+190)
Date of Test	:	28/9/2023
QC	:	2023





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Internal inspection and laboratories sector

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Introduction:

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by assessing the force and amount of penetration with time when a rigid plate is made to penetrate the soil.

The test to be carried out on the native soil according to German specifications DIN 18134.

Test methods :

- 1- The German standard DIN 18134 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.
- 2- Loading plates with a diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners with even upper faces parallel to the plate bottom face to allow 300 mm plate to be placed on top of it.
- 3- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 700 bar capacity, which is capable of applying and releasing the load stages.
- 4- The dial gauge used to measure the plate settlement has a resolution of 0.01mm and the lever ratio was equal to 1.
- 5- The temperature at the time of the test was 25°.
- 6- The plate was carried out on a native soil (sand-gravel). The test surface area was levelled and the plate was bedded on this surface.
- 7- The hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.
- 8- The reaction loading system was a heavy multi-purpose excavator (more than 20 ton).

Description of experiment:

- 1- Loading, unloading and reloading regims were applied according to DIN 18134 for the plate load test to estimate the resilient modulus
- 2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding to a stress of 0.01 MN/m².
- 3- In the first loading cycle, the load was increased until a normal stress of 0.25 MN/m² was reached, and the loading increment was 0.025 MN/m². The load was released in four stages.
- 4- Following unloading, a further second loading cycle was carried out, in which, the load was increased only to the penultimate stage of the first cycle.



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310+060

600

Table 1: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.14
2	14.14	0.050	0.24
3	21.21	0.075	0.38
4	28.28	0.100	0.50
5	35.35	0.125	0.74
6	42.42	0.150	0.93
7	49.49	0.175	1.16
8	56.56	0.200	1.28
9	63.63	0.225	1.40
10	70.7	0.250	1.59
11	56.56	0.200	1.54
12	49.49	0.175	1.50
13	35.35	0.125	1.34
14	21.21	0.075	1.18
15	1.414	0.005	1.05

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	1.05
16	7.07	0.025	1.14
17	14.14	0.050	1.24
18	21.21	0.075	1.36
19	28.28	0.100	1.42
20	35.35	0.125	1.47
21	42.42	0.150	1.52
22	49.49	0.175	1.57
23	56.56	0.200	1.61
24	63.63	0.225	1.66

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{a, max})$ MN/m ²	0.250	0.250
a_0 (mm)	-0.064	1.036
a_1 (mm/(MN/m ²))	6.179	4.582
a_2 (mm/(MN ² /m ⁴))	2.041	-8.377
$Ey = 1.5 \cdot a_1 / (a_0 + a_2 \cdot \sigma_{a, max})$	67.28	180.85
$Ev2/Ev1$	2.69	





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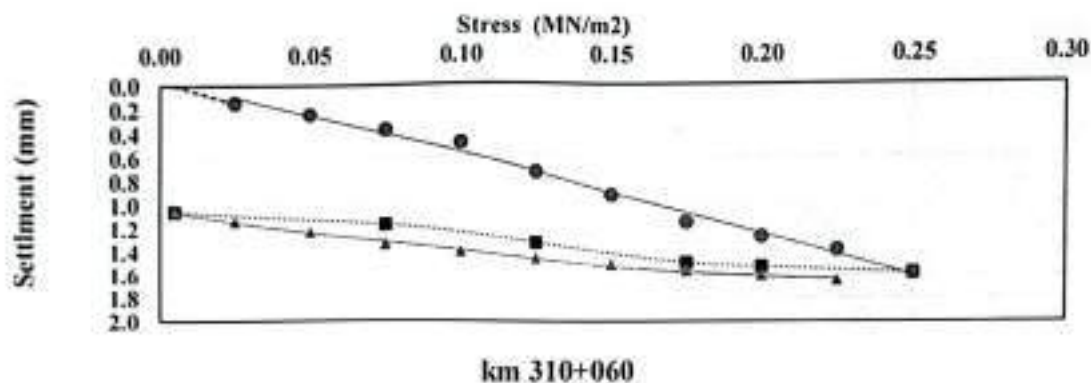


Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ_s Normal stress MN/m²



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310+110

600

Table 4: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.09
2	14.14	0.050	0.21
3	21.21	0.075	0.32
4	28.28	0.100	0.48
5	35.35	0.125	0.59
6	42.42	0.150	0.80
7	49.49	0.175	0.92
8	56.56	0.200	1.20
9	63.63	0.225	1.35
10	70.7	0.250	1.47
11	56.56	0.200	1.44
12	49.49	0.175	1.42
13	35.35	0.125	1.27
14	21.21	0.075	1.10
15	1.414	0.005	0.90

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.90
16	7.07	0.025	0.97
17	14.14	0.050	1.03
18	21.21	0.075	1.12
19	28.28	0.100	1.20
20	35.35	0.125	1.32
21	42.42	0.150	1.40
22	49.49	0.175	1.46
23	56.56	0.200	1.52
24	63.63	0.225	1.58

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$\{\sigma_{0,max}\}$ MN/m ²	0.250	0.250
s_0 (mm)	-0.039	0.867
a_1 (mm/(MN/m ²))	4.428	3.760
a_2 (mm/(MN ² /m ⁴))	7.175	-2.398
$E_v = 1.5 \pi / (a_1 + a_2 \cdot \sigma_{0,max})$	72.33	142.37
E_v2/E_v1	1.97	



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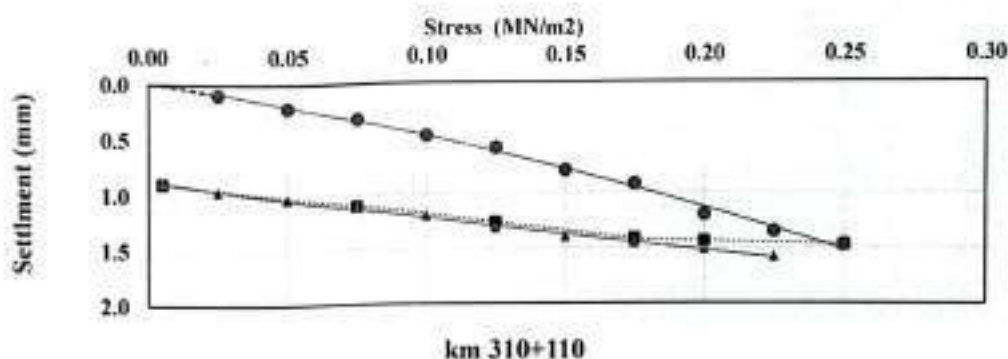


Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²



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310+170

600

Table 7: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.14
2	14.14	0.050	0.30
3	21.21	0.075	0.42
4	28.28	0.100	0.61
5	35.35	0.125	0.77
6	42.42	0.150	0.91
7	49.49	0.175	1.05
8	56.56	0.200	1.27
9	63.63	0.225	1.42
10	70.7	0.250	1.59
11	56.56	0.200	1.57
12	49.49	0.175	1.54
13	35.35	0.125	1.40
14	21.21	0.075	1.22
15	1.414	0.005	0.71

Table 8: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.91
16	7.07	0.025	0.98
17	14.14	0.050	1.07
18	21.21	0.075	1.14
19	28.28	0.100	1.21
20	35.35	0.125	1.30
21	42.42	0.150	1.37
22	49.49	0.175	1.43
23	56.56	0.200	1.53
24	63.63	0.225	1.61

Table 9: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{0, max})$ MN/m ²	0.250	0.250
a_0 (mm)	0.000	0.903
a_1 (mm/(MN/m ²))	5.691	3.113
a_2 (mm/(MN ² /m ⁴))	2.749	0.026
$E_v = 1.5 \cdot (a_1 + a_2 \cdot \sigma_{0, max})$	70.56	144.25
E_v/E_v1	2.04	



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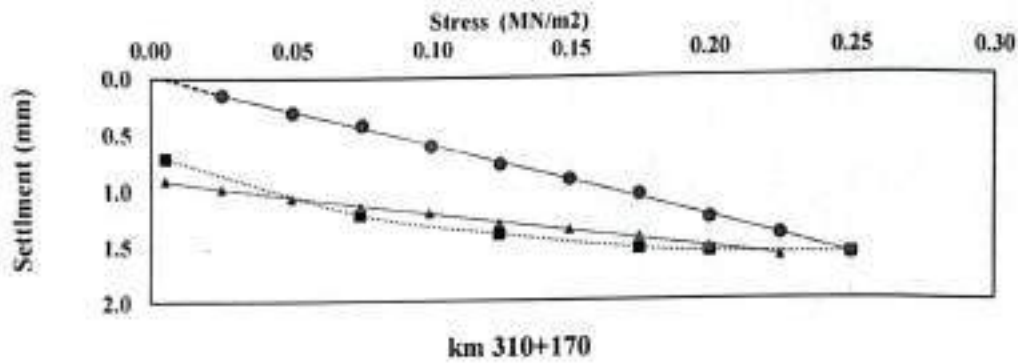


Fig. 3: Load-settlement curve, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_g Normal stress MN/m²



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Conclusions:

The present test results which obtained from the plate loading tests of the native soil on Coarse Agg. Filter layer of the electric express train project at location (from km 310+020 to km 310+190) in accordance to the German standard, DIN 18134 are illustrated in table 10.

Table 10 : Test results

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
310+060	67.28	180.85	2.69
310+110	72.33	142.37	1.97
310+170	70.56	144.25	2.04

Lab Director

Eng / Eman Kandil

Eman



Geotechnical Consultant

For Dr. H. -

Dr / Mohamed Mostafa Badry

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Technical report

of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	Dr/ Khaled Kandil
Contractor	:	شركة اورنج للإستيراد والتصدير و المقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Coarse Agg. Filter
Station	:	ST(310+280) TO ST(310+390)
Date of Test	:	28/9/2023
QC	:	2023

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Introduction:

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by assessing the force and amount of penetration with time when a rigid plate is made to penetrate the soil.

The test to be carried out on the native soil according to German specifications DIN 18134.

Test methods :

- 1- The German standard DIN 18134 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.
- 2- Loading plates with a diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners with even upper faces parallel to the plate bottom face to allow 300 mm plate to be placed on top of it.
- 3- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 700 bar capacity, which is capable of applying and releasing the load stages.
- 4- The dial gauge used to measure the plate settlement has a resolution of 0.01mm and the lever ratio was equal to 1.
- 5- The temperature at the time of the test was 25°.
- 6- The plate was carried out on a native soil (sand-gravel). The test surface area was levelled and the plate was bedded on this surface.
- 7- The hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.
- 8- The reaction loading system was a heavy multi-purpose excavator (more than 20 ton).

Description of experiment:

- 1- Loading, unloading and reloading regims were applied according to DIN 18134 for the plate load test to estimate the resilient modulus
- 2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding to a stress of 0.01 MN/m².
- 3- In the first loading cycle, the load was increased until a normal stress of 0.25 MN/m² was reached, and the loading increment was 0.025 MN/m². The load was released in four stages.
- 4- Following unloading, a further second loading cycle was carried out, in which, the load was increased only to the penultimate stage of the first cycle.



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310+280

600

Table 1: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.11
2	14.14	0.050	0.19
3	21.21	0.075	0.33
4	28.28	0.100	0.54
5	35.35	0.125	0.64
6	42.42	0.150	0.76
7	49.49	0.175	0.96
8	56.56	0.200	1.12
9	63.63	0.225	1.30
10	70.7	0.250	1.44
11	56.56	0.200	1.42
12	49.49	0.175	1.39
13	35.35	0.125	1.23
14	21.21	0.075	1.05
15	1.414	0.005	0.86

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.86
16	7.07	0.025	0.92
17	14.14	0.050	0.99
18	21.21	0.075	1.08
19	28.28	0.100	1.14
20	35.35	0.125	1.21
21	42.42	0.150	1.29
22	49.49	0.175	1.37
23	56.56	0.200	1.47
24	63.63	0.225	1.55

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$\{\sigma_{0, max}\}$ MN/m ²	0.250	0.250
a_2 (mm)	-0.037	0.851
a_1 (mm/(N/m ²))	4.928	2.741
a_2 (mm/(MN ² /m ⁴))	4.123	1.562
$Ev = 1.5 \pi / (a_1 + a_2 \cdot \sigma_{0, max})$	75.53	143.70
$Ev2/Ev1$	1.90	



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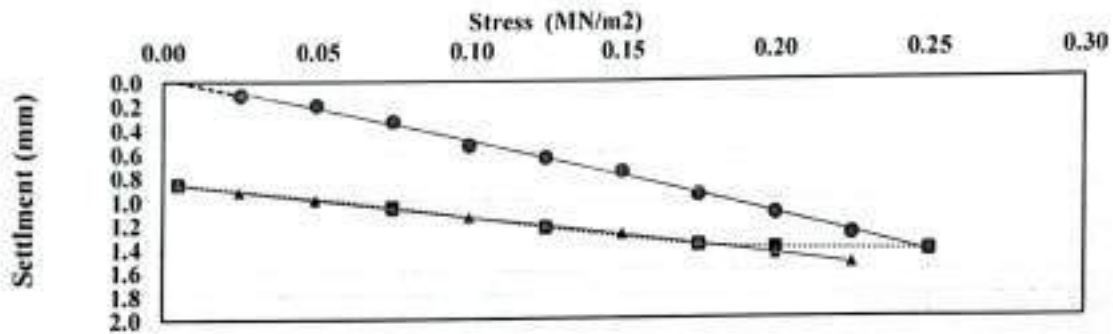


Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²





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310+330

600

Table 4: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.11
2	14.14	0.050	0.29
3	21.21	0.075	0.40
4	28.28	0.100	0.50
5	35.35	0.125	0.62
6	42.42	0.150	0.77
7	49.49	0.175	0.98
8	56.56	0.200	1.28
9	63.63	0.225	1.43
10	70.7	0.250	1.58
11	56.56	0.200	1.56
12	49.49	0.175	1.53
13	35.35	0.125	1.38
14	21.21	0.075	1.23
15	1.414	0.005	1.07

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	1.07
16	7.07	0.025	1.17
17	14.14	0.050	1.25
18	21.21	0.075	1.32
19	28.28	0.100	1.44
20	35.35	0.125	1.52
21	42.42	0.150	1.58
22	49.49	0.175	1.63
23	56.56	0.200	1.67
24	63.63	0.225	1.73

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{0, \max})$ MN/m ²	0.250	0.250
s_0 (mm)	0.049	1.051
a_1 (mm/(MN/m ²))	3.421	4.432
a_2 (mm/(MN ² /m ⁴))	11.580	-6.322
$E_s = 1.5 \pi / (a_1 + a_2 \cdot \sigma_{0, \max})$	71.25	157.81
$E_v 2/E_v 1$	2.21	



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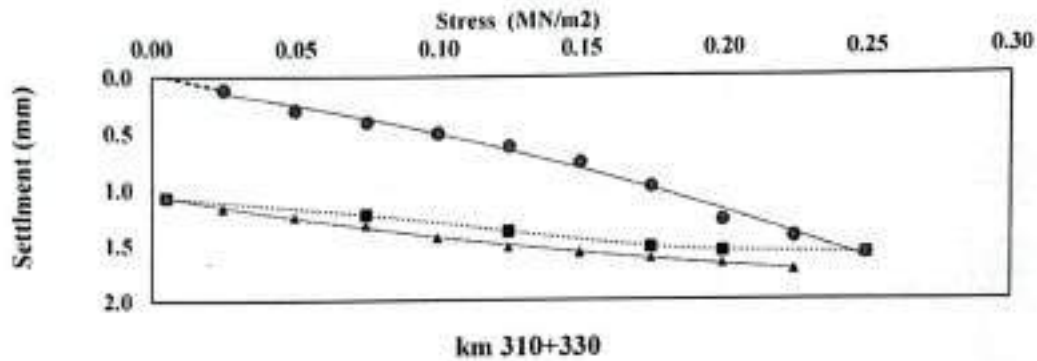


Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²



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310+370

600

Table 7: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.12
2	14.14	0.050	0.22
3	21.21	0.075	0.32
4	28.28	0.100	0.42
5	35.35	0.125	0.48
6	42.42	0.150	0.58
7	49.49	0.175	0.73
8	56.56	0.200	0.91
9	63.63	0.225	1.15
10	70.7	0.250	1.35
11	56.56	0.200	1.33
12	49.49	0.175	1.30
13	35.35	0.125	1.19
14	21.21	0.075	1.09
15	1.414	0.005	0.84

Table 8: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m ²	Settlement of loading plate S (mm)
15	1.414	0.005	0.84
16	7.07	0.025	0.93
17	14.14	0.050	1.00
18	21.21	0.075	1.06
19	28.28	0.100	1.12
20	35.35	0.125	1.18
21	42.42	0.150	1.25
22	49.49	0.175	1.28
23	56.56	0.200	1.38
24	63.63	0.225	1.45

Table 9: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{a_{max}}$) MN/m ²	0.250	0.250
a_0 (mm)	0.132	0.845
a_1 (mm/(MN/m ²))	0.789	2.810
a_2 (mm/(MN ² /m ⁴))	16.108	-0.874
$E_s = 1.5 \cdot (a_1 + a_2 \cdot \sigma_{a_{max}})$	93.45	173.62
E_{v2}/E_{v1}	1.86	



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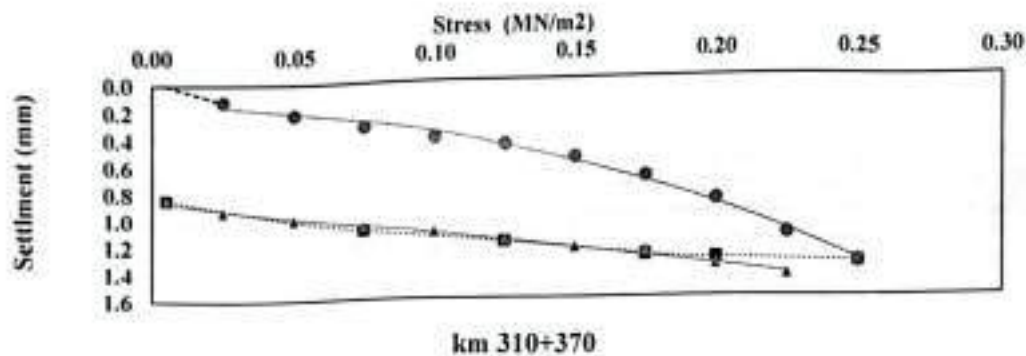


Fig. 3: Load-settlement curve, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ_g Normal stress MN/m²



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Conclusions:

The present test results which obtained from the plate loading tests of the native soil on Coarse Agg. Filter layer of the electric express train project at location (from km 310+280 to km 310+390) in accordance to the German standard, DIN 18134 are illustrated in table 10.

Table 10 : Test results

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
310+280	75.53	143.70	1.90
310+330	71.25	157.81	2.21
310+370	93.45	173.62	1.86

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