الهيئة العامة
للطرق و الكباري
(GARB)

المنطقة الخامسة – غرب الدلتا

(الإسكندرية – مرسى مطروح)

القطار الكهربائي السريع

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 المقايسة المعدلة لبنود أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح) قطاع (وادي النطرون / برج العرب) أعمال الردم لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر).

تنفيذ : "شركة أورانج للاستيراد والتصدير" .

وذلك طبقاً للأسعار بعد المفاوضة.

برجاء من سيادتكم التفضل بالموافقة والتوجيه بالازم.

و تفضلوا بقبول فائق الاحترام ،،،

أ/ه

رئيس الإدارة المركزية

منطقة غرب الدلتا

الاسكندرية - مرسى مطروح

عميد مهندس /

"هاني محمد محمود طه"

المقايسة المعدلة لبنود الاعمال لعملية
اسناد اعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي النطرون / برج العرب) اعمال الردم لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)
تنفيذ "شركة أورانج للاستيراد والتصدير"

رقم البند	بيان الأعمال	الوحدة	الكمية	الفئة	الاجمالي
١	أعمال الردم				
١-١	بالمتر المكعب اعمال تحميل وتوريد ونقل اتربة مطابقة للمواصفات وتشغيلها باستخدام الات التسوية بسمك لا يزيد عن ٥٠ سم حتي منسوب -٢ متر وبسمك لا يزيد عن ٢٥ سم لاستكمال المنسوب التصميمي لتشكيل الجسر والاكتاف (تسبه تحمل كاليفورنيا لا تقل عن ١٥%) ورشها بالمياه الأصولية للوصول إلى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول إلى اقصى كثافة جافة (٩٥% من الكثافة الجافة القصوى) ويتم التنفيذ طبقا للمناسيب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتملاته طبقا لأصول الصناعة ومواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف. - في حالة طلب جهاز الاشراف زيادة نسبة الدمك عن ٩٥% يحسب زيادة ١ جنيه على زيادة نسبة الدمك لكل ١%. - مسافة النقل حتى ٢ كم ويتم حساب علاوه ١,٤ جنيه لكل ١ كم بالزيادة او النقصان. - السعر يشمل عمل تشوينات وتخليط واختبارات ونقل لموقع العمل حتي مسافة ٢ كم . - السعر يشمل قيمة المادة المحجرية				
	السعر خلال شهر مايو طبقاً للمفاوضة بتاريخ ١٨-١٢-٢٠٢٣	م٣	٣٣١٠٠,٠	١١٧,٥٠	٣,٨٨٩,٢٥٠
	علاوة مسافة النقل ١٤١ كم	م٣	٢٦٤٨٠,٠	١٩٤,٦٠	٥,١٥٣,٠٠٨
	علاوة مسافة النقل ١٣٩ كم	م٣	٥٨٤٥,٠	١٩١,٨٠	١,١٢١,٠٧١
	علاوة مسافة النقل ١٠٦ كم	م٣	٧٧٥,٠	١٤٥,٦٠	١١٢,٨٤٠
	علاوة تحصيل رسوم الكارتة والموازين طبقا للائحه الشركة الوطنية	م٣	٣٣١٠٠,٠	١٣,٠٠	٤٣٠,٣٠٠
	الاجمالي				١٠,٧٠٦,٤٦٩
	عشرة ملايين وسبعمائة وستة الفا واربعمائة وتسعة وستون جنيها فقط لا غير.				
	* يرجى العلم بان الفئات المذكورة طبقا للمفاوضة الخاصة بالقطاع الرابع بتاريخ ١٨-١٢-٢٠٢٣				

الشركة المنفذة
مدير المشروع
م/ محمد فتحي القوالي

المكتب الاستشاري الهندسي أ.د خالد قنديل
مدير المشروع
م/ هشام محمد صبري

الهيئة العامة للطرق و الكباري
مدير المشروع
م/ أحمد جلال عبد السلام

الهيئة العامة للطرق و الكباري
مدير عام المشروعات
م/ محمد حسني فياض

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

الهيئة العامة
للطرق و الكباري
(GARB)

محضر استلام موقع عملية

العملية:

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين – مطروح) قطاع (وادي النطرون / برج العرب) أعمال الردم لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر).

تنفيذ: شركة "أورانج للاستيراد والتصدير"

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

إشراف: المنطقة الخامسة – منطقة غرب الدلتا

طبقا للعقد رقم (١٧١٩-٢٠٢٣-٢٠٢٤) بتاريخ (٢٠٢٤/٠٦/٢٦)

أنه في يوم السبت الموافق ٢٠٢٤/٠٧/٢٠ اجتمع 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 علية يعتبر تاريخ ٢٠٢٤/٠٧/٢٠ هو تاريخ استلام الموقع وبدء أعمال الاشراف بالعملية.

واقفل المحضر علي ذلك ووقع الحضور.

التوقيعات:

٤-

٣-

٢- أحمد جلال

١-

رئيس الإدارة المركزية
منطقة غرب الدلتا
الاسكندرية - مرســـــى مطروح
عميد مهندس /
"هاني محمد محمود طه"

الهيئة العامة
للطرق و الكباري
(GARB)

قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي النطرون / برج العرب) أعمال الردم
لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)

بند (١-١):

بالمتر المكعب اعمال تحميل وتوريد ونقل اتربة مطابقة للمواصفات وتشغيلها باستخدام الات التسوية بسمك لا يزيد عن ٥٠ سم حتي منسوب -٢ متر وبسمك لا يزيد عن ٢٥ سم لاستكمال المنسوب التصميمي لتشكيل الجسر والاكتاف (تسبه تحمل كالیفورنیا لا تقل عن ١٥%) ورشها بالمياه الأصولية للوصول إلى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول إلى أقصى كثافة جافة (95% من الكثافة الجافة القصوى) ويتم التنفيذ طبقا للمناسيب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتملاته طبقا لأصول الصناعة ومواصفات الهيئة العامة للطرق والكباري وتعليمات المهندس المشرف.

- في حالة طلب جهاز الاشراف زيادة نسبة الدمك عن ٩٥% يحسب زيادة ١ جنيه على زيادة نسبة الدمك لكل ١%.
- مسافة النقل حتي ٢ كم ويتم حساب علاوه ١,٤ جنيه لكل ١ كم بالزيادة او النقصان.
- السعر يشمل عمل تشوينات وتخليط واختبارات ونقل لموقع العمل حتي مسافة ٢ كم .
- السعر يشمل قيمة المادة المحجرية.

تنفيذ : "شركة أورانج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)

مقدار العمل السابق :	٠,٠	م٣

مسلسل	الموقع الكيلومتري		الطول (متر)	الكمية (م٣)
	من الكم	الى الكم		
١	٣٠٩+٨٠٠	٣٠٩+٩٥٠	١٥٠	٨٨٤٣,٧٨
٢	٣١٠+٠١٠	٣١٠+١٨٠	١٧٠	١٣٠٨٧,٢٢
الاجمالـــــي خلال فترة المستخلص الحالية (م٣)				٢١٩٣١,٠٠

الاجمالـــــي الكلي (م٣)	٢١٩٣١,٠٠

مهندس الشركة
م / محمد فتحي الفول

مهندس الاستشاري
مكتب XYZ
م / محمد خليل

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

مهندس الهيئة
م / أحمد جلال عبد السلام
أحمد جلال

أورانج للاستيراد و التصدير
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المكتب الاستشاري الهندسي
(أ.د/ خالد قنديل)
مدير المشروع: م/ هشام محمد صبري
مشروع: القطار الكهربائي السريع
القطاع الرابع (الإسكندرية)

الهيئة العامة
للطرق و الكباري
(GARB)

قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي النطرون / برج العرب) أعمال الردم
لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)

علاوة بند (١-١) علاوة مسافة النقل ١٤١ كم .

تنفيذ : "شركة أورانج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)

مقدار العمل السابق :	٠,٠	م٣

مسلسل	الموقع الكيلومتري		الطول (متر)	الكمية (م٣)
	من الكم	الى الكم		
١	٣٠٩+٨٠٠	٣٠٩+٩٥٠	١٥٠	٧٠٧٥,٠٢
٢	٣١٠+٠١٠	٣١٠+١٨٠	١٧٠	١٠٤٦٩,٧٨
الاجمالـــــــي خلال فترة المستخلص الحالية (م٣)				١٧٥٤٤,٨٠

الاجمالـــــــي الكلي (م٣)	١٧٥٤٤,٨٠

مهندس الشركة
م / محمد فتحي الفول

مهندس الاستشاري
مكتب KYZ
م / محمد خليل

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

مهندس الهيئة
م / أحمد جلال عبد السلام

أورانج للاستيراد و التصدير
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مكتب الاستشاري الهندسي
أ.م/ خالد قنديل
مدير المشروع: م/ هشام محمد صبري
مشروع: القطار الكهربائي السريع
القطاع الرابع (الإسكندرية)

الهيئة العامة
للطرق و الكباري
(GARB)

قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي النطرون / برج العرب) أعمال الردم
لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)

علاوة بند (١-١) علاوة مسافة النقل ١٠٦ كم .

تنفيذ : "شركة أورانج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)

مقدار العمل السابق :	٠,٠	م٣

مسلسل	الموقع الكيلومتري		الطول (متر)	الكمية (م٣)
	من الكم	الى الكم		
١	٣١٠+٠١٠	٣١٠+١٨٠	١٧٠	٧٧٠,٨٢
الاجمالـــــــي خلال فترة المستخلص الحالية (م٣)				٧٧٠,٨٢

الاجمالـــــــي الكلي (م٣)	٧٧٠,٨٢

مهندس الشركة
م / محمد فتحي الفول

مهندس الاستشاري
مكتب XYZ
م / محمد خليل

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

مهندس الهيئة
م / أحمد جلال عبد السلام

أورانج للاستيراد و التصدير
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الاستشاري الهندسي
(أ.د/ خالد قنديل)
مدير المشروع: م/ هشام محمد صبري
مشروع: القطار الكهربائي السريع
القطاع الرابع (الإسكندرية)

الهيئة العامة
للطرق و الكباري
(GARB)

قائمة الكميات الواردة بالمستخلص جاري (١)

اسناد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي النطرون / برج العرب) أعمال الردم
لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)

علاوة بند (١-١) علاوة مسافة النقل ١٣٩ كم .

تنفيذ : "شركة أورانج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)

مقدار العمل السابق :	٠,٠	م٣

مسلسل	الموقع الكيلومترى		الطول (متر)	الكمية (م٣)
	من الكم	الى الكم		
١	٣٠٩+٨٠٠	٣٠٩+٩٥٠	١٥٠	١٧٦٨,٧٦
٢	٣١٠+٠١٠	٣١٠+١٧٠	١٦٠	١٨٤٦,٦٢
الاجمالـــــــى خلال فترة المستخلص الحالية (م٣)				٣٦١٥,٣٨

الاجمالـــــــى الكلى (م٣)	٣٦١٥,٣٨

مهندس الشركة
م / محمد فتحي الفول

مهندس الاستشاري
مكتب XYZ
م/ محمد خليل

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

مهندس الهيئة
م / أحمد جلال عبد السلام

مكتب الاستشاري الهندسي KK
أ.د/ خالد قنديل
مدير المشروع م/ هشام محمد صبري
مشروع: القطار الكهربائي السريع
القطاع الرابع (الإسكندرية)

أورانج للاستيراد و التصدير
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الهيئة العامة
للطرق و الكباري
(GARB)

قائمة الكميات الواردة بالمستخلص جاري (١)

استاد أعمال الجسر الترابي للخط الأول لمشروع القطار الكهربائي السريع
(العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع (وادي التطرون / برج العرب) أعمال الردم
لتنفيذ المسافة من الكم ٣٠٩,٨٠٠ إلى الكم ٣١٠,٢٢٠ بطول ٠,٤٢٠ كم (بالأمر المباشر)

علاوة بند (١-١) علاوة تحصيل رسوم الكارتة والموازين طبقا للائحه الشركة الوطنية.

تنفيذ : "شركة أورانج للاستيراد والتصدير"
عقد رقم (٢٠٢٤/٢٠٢٣/١٧١٩)

مقدار العمل السابق :	٠,٠	م٣

مسلسل	الموقع الكيلومترى		الطول (متر)	الكمية (م٣)
	من الكم	الى الكم		
١	٣٠٩+٨٠٠	٣٠٩+٩٥٠	١٥٠	٨٨٤٣,٧٨
٢	٣١٠+٠١٠	٣١٠+١٨٠	١٧٠	١٣٠٨٧,٢٢
الاجمالـــــــى خلال فترة المستخلص الحالية (م٣)				٢١٩٣١,٠٠

الاجمالـــــــى الكلي (م٣)	٢١٩٣١,٠٠

مهندس الشركة
م / محمد فتحي القول

مهندس الاستشاري
مكتب XYZ
م / محمد كامل

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

مهندس الهيئة
م / أحمد جلال عبد السلام
أحمد جلال

أورانج للاستيراد و التصدير
ORANGECO
EXPORT&IMPORT

KK
الاستشاري الهندسي
(أ.د/ خالد قنديل)
مدير المشروع: م/ هشام محمد صبري
القطار الكهربائي السريع
القطاع الرابع (الإسكندرية)

SOIL REPORTS FOR
ELECTRIC EXPRESS TRAIN PROJECT

Contractor : شركة أورنج للإستيراد والتصدير والمقاولات العامة

Date : 25/09/2023

QC : 1987-2

Kilo 23 Alexandria - Cairo Desert Road - Meighem
Tel: 002 03 4704595 - 002 034701191
Email : civdept@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

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Internal inspection and laboratories sector
Accredited by : Egyption General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyption Accreditation council (EGAC) under No. 031706/1A

I- Introduction

General Consultant	:	SYSTRA
Consultant	:	DR/Khaled Kandil
Contractor	:	شركة أورنج للإستيراد والتصدير والمقاولات العامة
Sample	:	FERMA
Station	:	St(308+700)
Date of Test	:	19/09/2023
QC	:	1987-2

II- Sample description:

Gravel and sand

III- Required tests and Results

Required Tests		Results
1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction (Proctor test)	MDD	2.049
	OMC	9.5%
3- Liquid limit, plastic limit and plasticity index	LL	NP
	PL	NP
	PI	NP
4- California bearing ratio (CBR)	CBR ratio	47%

IV- Notes

1- Samples were brought by : Consultant.
2- Samples are responsible from the Person who brought it.
3- The results are applying only for the present report.

LAB DIRECTOR
Eng / Eman kandil

Geotechnical consultant
Dr. Mohamed Mostafa Badry

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APPENDIX

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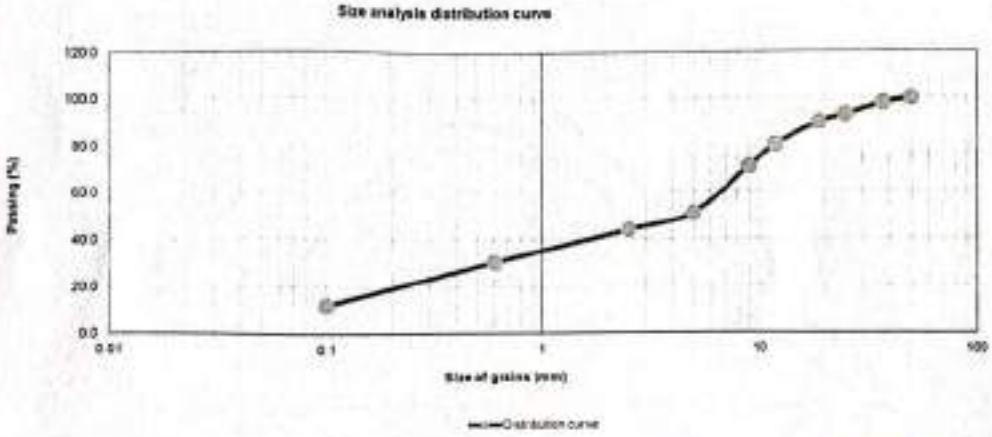
PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED (gm)	CUMULATIVE WEIGHT RETAINED (gm)	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDURD SPECIFICATION LIMITS	
2	0.00	0.00	0.00	100.0		
1 1/2	108.00	108.00	2.16	97.8		
1	235.00	343.00	6.87	93.1		
3/4	165.00	508.00	10.17	89.8		
1/2	475.00	983.00	19.68	80.3		
3/8	467.00	1450.00	29.03	71.0		
No.4	984.00	2434.00	48.74	51.3		
No.10	141.00	141.00	14.10	44.0		
No.40	410.00	410.00	41.00	30.2		
No.200	761.00	761.00	76.10	12.3		

Total sample weight = 4994.00 pass No.4= 2560.0 % 51.3 **Total fine aggregates weight = 1000 gm**



Soil classification: A - 1 - a Sample is non plastic

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Modified Proctor Test Report
ASTM - D 1557

Mould Number :- 2
Volume of mould = 2180 cm^3
Weight of mould = 5895 g
G.S = 2.68 g/cm3

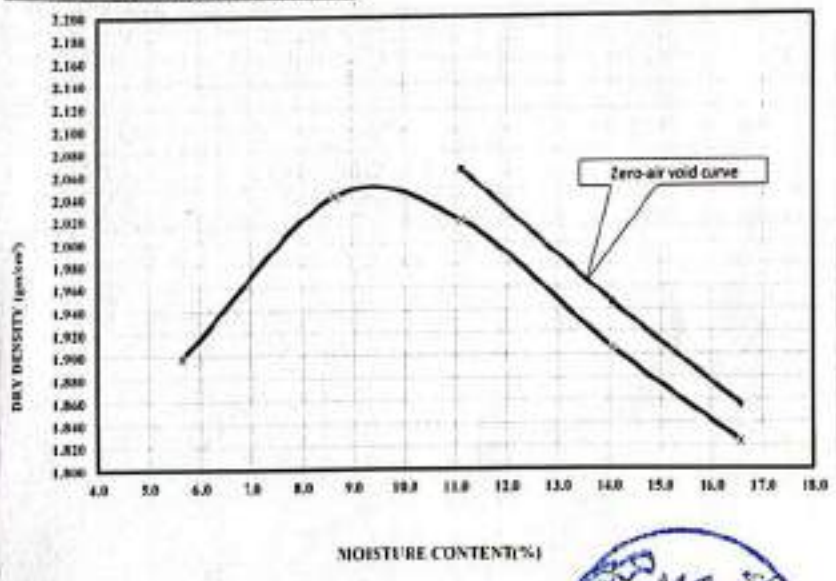
A- Density Calculations :-

	1	2	3	4	5
Weight.of wet soil+mould (g)	10266	10730	10787	10635	10530
Weight.of mould (g)	5895	5895	5895	5895	5895
Weight.of wet soil (g)	4371	4835	4892	4740	4635
Volume of mould (cm^3)	2180	2180	2180	2180	2180
Wet density (g/cm^3)	2.005	2.218	2.244	2.174	2.126
Dry density (g/cm^3)	1.898	2.041	2.020	1.906	1.824
Zero-air Void curve			2.065	1.946	1.856

B- Moisture Calculations :-

Weight.of wet soil+container (g)	250.0	250.0	250.0	250.0	250.0
Weight.of dry soil+container (g)	240.0	235.0	228.0	223.0	219.0
Weight.of container (g)	63.0	62.0	30.0	31.0	32.0
moisture content(%)	5.6	8.7	11.1	14.1	16.6

C - Dry density-Moisture relationship:-



M.D.D=	2.049	gm/cm^3
O.M.C=	9.5	%

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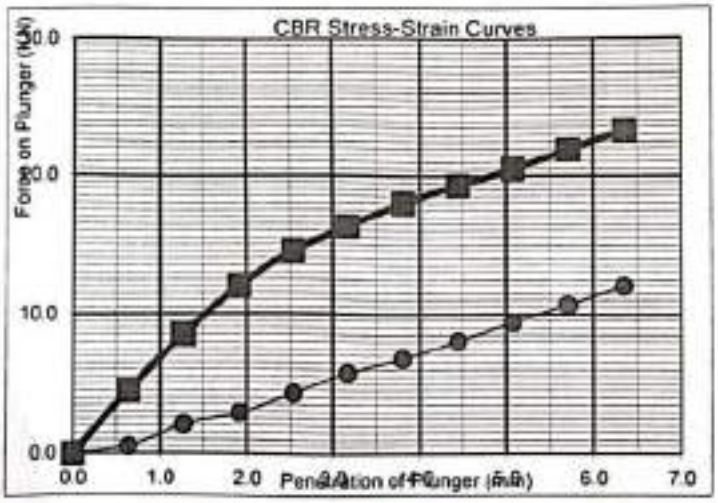
Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56						
MOULD NO	2						
WT OFMOULD+SOIL	10101						
WT OF MOULD	5207						
WT OF SOIL	4894						
VOLUME OF MOULD	2180						
WET DENSITY	2.245						
	MC before soaking			Weight of Rammer		4.54Kg	
TIN NO	1				MDD	Kg/m3	2.049
WT OF WET SOIL+TIN	227.70						
WT OF DRY SOIL+TIN	210				OMC	%	9.500
WT OF WATER	17.70						
WT OF TIN	23						
WT OF DRY SOIL	187						
MOISTURE CONTENT	9.5						
DRY DENSITY	2.051				Capacity (KN)		50

Pen	Reading (Div)			Bearing (KN)			CBR		
mm	56			56			standar	56	
0.00	0			0.0			0.0		
0.64	53			0.5			4.5		
1.27	210			2.1			8.5		
1.91	295			2.9			12.0		
2.54	440			4.3			14.5	33	
3.17	590			5.8			16.3		
3.81	695			6.8			18.0		
4.45	820			8.0			19.3		
5.08	960			9.4			20.5	47	
5.71	1090			10.7			21.9		
6.35	1230			12.1			23.3		



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Report	:	738 - 2 - Center
Date	:	25/09/2023

CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	DR/ Khaled Kandil
Contractor	:	شركة اوراتج للاستيراد والتصدير والمقاولات العامة
Project	:	Electric express train
Sample	:	FERMA
Station	:	ST (308 + 700)
Date of Test	:	19/09/2023

Temperature : 28 °C Humidity : 45%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIG MATTER	NEGATIVE	ASTM D 2974

LAB DIRECTOR
CH/ Mostafa Asker
Por Amany Amin

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Email : internal-inspection@comibassal.com

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			03-01-2024 (OR-M.A 080)		09:00 AM			
Received by ER	Eng: Gaber Ibrahim		MAR	C1	C2	C3	DD	MM	YY	HH	MM
				306	EW	C5	03	01	24	09	00

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 For Soil (Fill Layer).		
Location to be Used	Station 306+000		
Sample only	Yes	Materials Type	Fill layers
Supplier Name	EL-Sewy - EL-Wafa (Eslam)	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)	
1. تم إجراء الاختبارات المعملية بمكتب معامل الإستشارات الهندسية (CEL) . 2. وتم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.		1- All tests were carried-out by by (Consulting Engineer Bureau &Laboratories), Depended on samples submitted by material engineer for both contractor and 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		10-01-2024	A
QA/QC *	Eng: Hesham Sabry			
GARB**	Eng: Ahmed Galal			
Employers Representative	Eng: Gaber Ibrahim			

* Designer

** Alignment/Bridges: Culvert only

80

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

Company Name	**: Orange Company**
Project	**: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh**
Location	**: St. 306+000**
Type of sample	**: Soil Embankment**
Delivery Date	**: 03-01-2024**
Reporting Date	**: 10-01-2024**
Reporting No.	**: 009**
Sample No.	**: 03**

Dear Gentleman,

Attached here with the Soil Embankment delivered on 03/01/2024

Materials test

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according to ASTM D-1140.
3. Liquid limits and plasticity index of soil according to ASTM D-4318.
4. Soil classification according to Project Specs.
5. Proctor Test according to ASTM D-1557
6. CBR according to ASTM D-1883
7. Organic Content ASTM D-2974

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

Signature

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Zamalek, Cairo.
Tel.& Fax : 27367231 - 27363093

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تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 306+000
Type of sample : Soil Embankment
Delivery Date : 03-01-2024
Reporting Date : 10-01-2024
Reporting No. : 009
Sample No. : 03

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Passing %
50	100
37.5	97.8
25	92.7
19	86.3
12.50	75.2
9.50	65.9
4.75	56.4
2.36	48.6
2.00	39.6
1.18	34.1
0.600	26.8
0.425	23.7
0.300	19.6
0.150	16.7

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Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 306+000
Type of sample : Soil Embankment
Delivery Date : 03-01-2024
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Reporting No. : 009
Sample No. : 03

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	12.7

Signature /.....

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Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 306+000
Type of sample : Soil Embankment
Delivery Date : 03-01-2024
Reporting Date : 10-01-2024
Reporting No. : 009
Sample No. : 03

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

Test	Results (%)
Liquid Limit	24.3
Plastic Limit	19.5
Plasticity Index	4.8

Signature:

CEL
مكتب معامل الإستشارات الهندسية
الساحل الشمالي

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Company Name : Orange Company
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 306+000
Type of sample : Soil Embankment
Delivery Date : 03-01-2024
Reporting Date : 10-01-2024
Reporting No. : 009
Sample No. : 03

Soil Classification According to Project Specs (Embankment)

TEST	Results (%)	Limits according Projects Specs	
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)
2.00 mm (No.10).	39.6	Max 50 %	------
0.425 mm (No. 40).	23.7	Max 30 %	Max 50 %
0.075 mm (No. 200).	12.7	Max 15 %	Max 15 %
Characteristics of fraction passing 0.425 mm (No.40)			
Liquid Limit	24.3	------	------
Plasticity index	4.8	Max 6 %	Max 6 %

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

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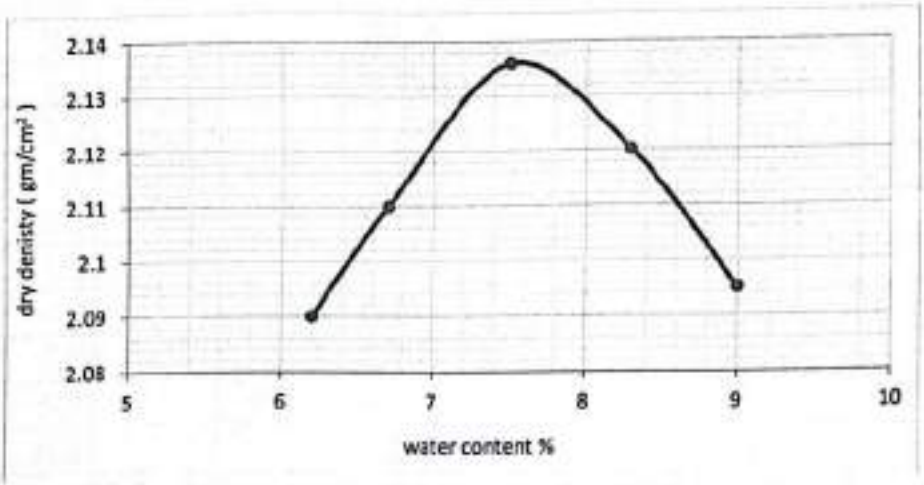
Company Name	: Orange Company
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location	: St. 306+000
Type of sample	: Soil Embankment
Delivery Date	: 03-01-2024
Reporting Date	: 10-01-2024
Reporting No.	: 009
Sample No.	: 03

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



- Max dry density (gm/cm³) : 2.143
- Optimum moisture content % : 7.7

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Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location : St. 306+000
Type of sample : Soil Embankment
Delivery Date : 03-01-2024
Reporting Date : 10-01-2024
Reporting No. : 009
Sample No. : 03

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

Penetration		Stress on piston (MPa)
mm	Inch	
0.64	0.025	0.99
1.27	0.050	1.34
1.91	0.075	1.68
2.54	0.100	2.08
3.18	0.125	2.41
3.81	0.150	2.81
4.45	0.175	3.16
5.08	0.200	3.55
5.71	0.225	3.83
6.35	0.250	4.03

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	30.2
	6.90	2.08	

Notes :

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of 2.143 (gm /cm³) at 7.2 % optimum water content.
3- Surcharge load 4.50 Kg.

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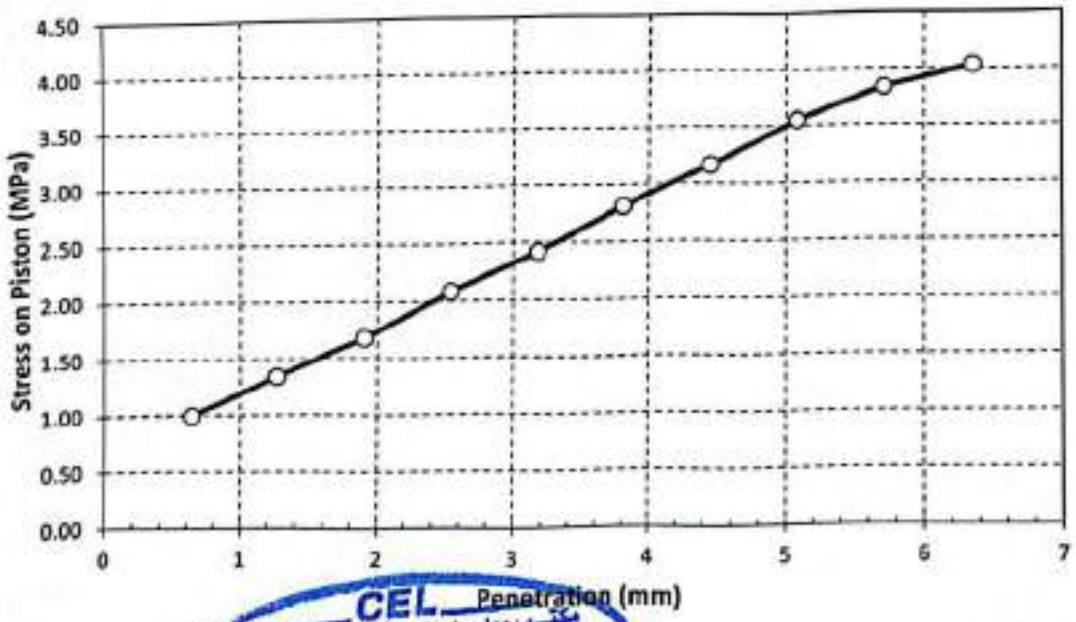
Company Name	: Orange Company
Project	: Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Location	: St. 306+000
Type of sample	: Soil Embankment
Delivery Date	: 03-01-2024
Reporting Date	: 10-01-2024
Reporting No.	: 009
Sample No.	: 03

Load Penetration Curve of CBR Test

ASTM D-1883



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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			10-01-2024 (OR-M.A 081)				09:00 AM	
Received by ER	Eng: Gaber Ibrahim		MAR	C1	C2	C3	DD	MM	YY	HH	MM
				306	EW	CS	10	01	24	09	00

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 For Soil (Fill Layer).		
Location to be Used	Station 306+500		
Sample only	Yes	Materials Type	Fill layers
Supplier Name	EL-Sewy – EL-Moassa	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)
1. تم إجراء الاختبارات المعملية 2. 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		15-01-2024	A
QA/QC *	Eng: Hesham Sabry		15/1/2024	A
GARB**	Eng: Ahmed Galal			
Employers Representative	Eng: Gaber Ibrahim			

* Designer

** Alignment/Bridges: Culvert only

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

Selve Analysis of Fine and Coarse Aggregates (ASHTO T-27)

Date :	10-Jan-2024
From / To :	

Station:	306+500
Sample type :	عينة أتربة من المشون

Classification	A-1-b

Sieve size	Return	Passing	%
2"	0	10527	100.0
1.5"	716	9811	93.2
1"	934	8877	84.3
3/4"	522	8355	79.4
1/2"	1059	7296	69.3
3/8"	658	6638	63.1
NO. 4	1834	4804	45.6
Passing	4804		
Total	10527		

500 gm			
NO.10	38.4	461.6	42.1
NO.40	160	340	31.0
NO.200	380	120	11.0

المهندس الاستشاري

مهندس المواد (الشركة)

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

(Determining the Plastic Limit & Plasticity Index of soil (AASHTO (T 90
(Determining the Liquid Limit of soil (AASHTO (T-89

Date :	10-Jan-2024
From / To :	

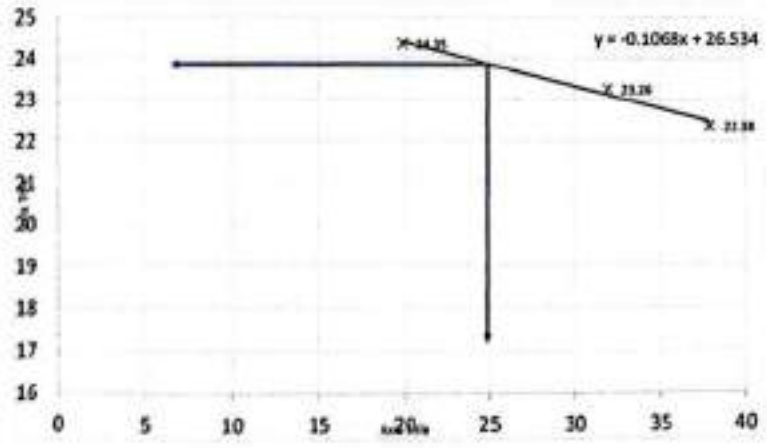
Station:	306+500
Sample type :	عينة أتربة من المشون

LIQUID LIMIT

Container No	B	C	f
Number of Blows	20	32	38
Mass of Wet Soil + Can	76.00	80.90	76.80
Mass of Dry Soil + Can	67.60	72.20	68.70
Mass of Water	8.40	8.70	8.10
Mass of Can	33.1	34.8	32.5
Mass of Dry Soil	34.5	37.4	36.2
Moisture Content	24.35	23.26	22.38

PLASTIC LIMIT

Container No	E	A
Mass of Wet Soil + Can	38.10	40.40
Mass of Dry Soil + Can	34.8	36.40
Mass of Water	3.30	4.00
Mass of Can	18.80	16.90
Mass of Dry Soil	16.0	19.5
Moisture Content	20.63	20.51



RESULTS

PASSING No. 10	42.1
PASSING No. 40	29.1
PASSING No. 200	11.0
LIQUID LIMIT	23.8
PLASTIC LIMIT	20.57
PLASTICITY INDEX	3.23

المهندس الاستشاري

مهندس المواد (الشركة)
محمود ابوشنب

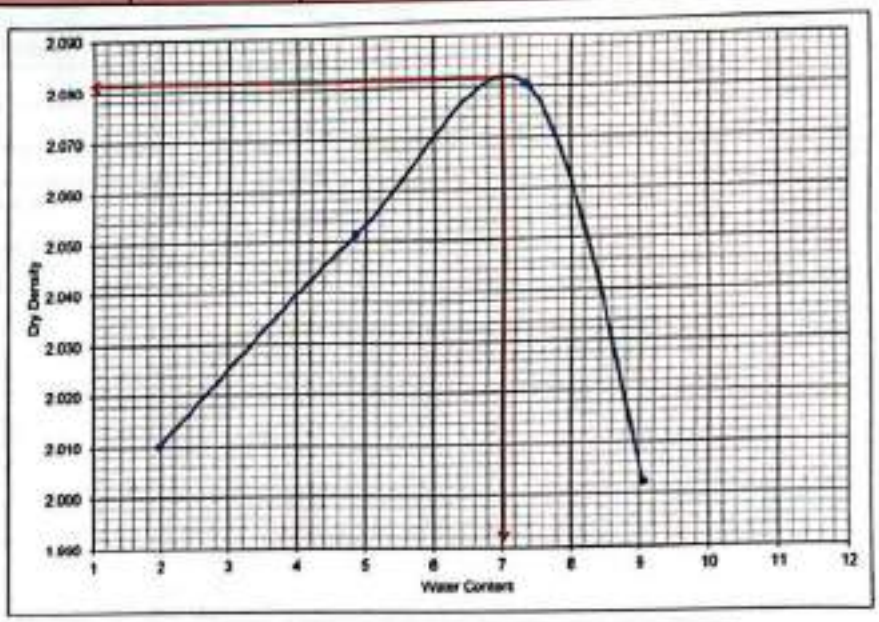
Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein
Section - 4 From Wadi El NnatrounTo Borg Elarab "
From Station 305+500 To Station 311+000

The Moisture - Density Relations of Soils using (ASTM D1557)

Date :	10-Jan-2024
From / To	

Station:	306+500
Sample type :	عينة أتربة من المشون

	1	2	3	4	5
Mold + Wet Sample Weight	9980	10194	10379	10264	
Mold Weight	5630	5630	5630	5630	
Wet Sample Weight	4350	4564	4740	4634	
Mold Volume	2122	2122	2122	2122	
Wet Density	2.05	2.15	2.23	2.18	
Container NO.	2	5	4	1	
Mass of Can	33.2	34.2	33.1	33.4	
Wet soil Weight + Mass of Can	239	487.8	537.3	400.5	
Dry soil Weight + Mass of Can	235	466.8	502.7	370	
Dry soil Weight	201.8	432.6	469.6	336.6	
Water Weight	4	21	34.6	30.5	
Percentage of Moisture	1.98	4.85	7.37	9.06	
Dry Density	2.010	2.051	2.080	2.002	



Max.Dry Density	2.082
Optimum Water Content	7.00%

المهندس الاستشاري

مهندس المواد (الشركة)

محمود ابو شنب

ENGINEERING CONSULTING OFFICE
المكتب الاستشاري الهندسي
أ.د. خالد قنديل

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

CALIFORNIA BEARING RATIO (ASTM D1883)

Date :	15-Jan-2024
From / To :	

Station:	305+500
Sample type :	عينة أتربة من المشون

Mold No		6
Mold	g	5073
Volume of Mold	cm³	2140
Sample + Mold	g	9812
Sample	g	4739
Wet unit weight	g/cc	2.21
Dry unit weight	g/cc	2.07
Compaction	%	99.4%

Maximum Dry Density	g/c	2.082
Optimum Moisture Content		7.00
Can No		3
MASS WET SOIL + CAN		226.0
MASS DRY SOIL + CAN		212.0
Mass of Moisture	g	14.0
Mass of Can	g	12.5
Mass DRY SOIL	g	199.5
Moisture		7.02%

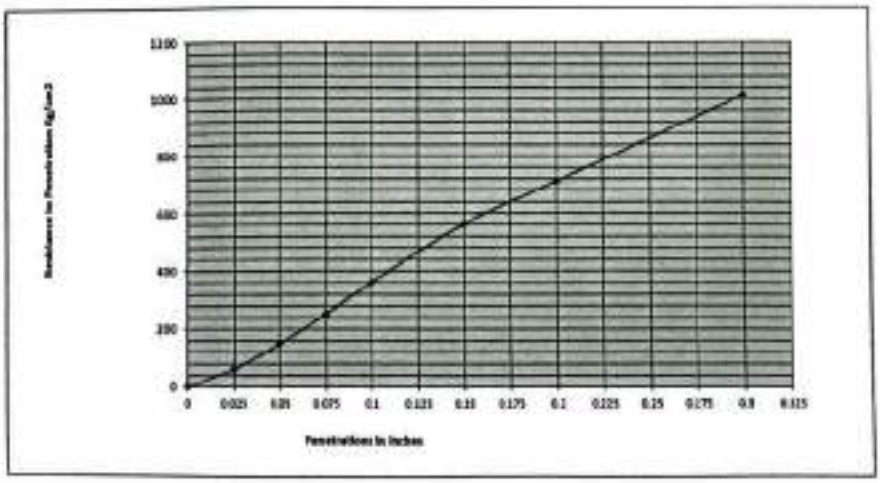
Initial Reading	0.0
Final Reading	0.22

Date Molded	10-Jan-2024
Swell %	0.19

Penetration mm.	0.635	1.27	1.95	2.54	3.81	5.08	7.62
Penetration in"	0.025	0.05	0.075	0.1	0.15	0.2	0.3
Loading Ring Reading							
Load kN	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Load kg	60	148	250	360	561	710	1012

CBR % at 0.1" =	26.5%
CBR % at 0.2" =	34.8%

C.B.R	35%



المهندس الاستشاري

مهندس المواد (الشركة)

محمود البوشب

MATERIAL INSPECTION 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			17-01-2024 OR-M.I.215				10:00 AM		
Received by ER	Eng. Gaber Ibrahim		MIR	C1	C2	C3	DD	MM	YY	HH	MM
				310	EW	CS	17	01	24	10	00

CODE-1	S1 to S21 Station Reference	D1 to D3 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	FILL LAYER			
Location to be Used	From St. (310+010) To St. (310+170) (-1.50m From Ferma).			
MAR Approval No	(OR-M.A 077)		Date	07-01-2024
Supplier Name	EL-SEWY – ELWAFA (ESLAM)			
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 Loading Test	NUMBER	2	17-01-2024	
2					
3					
4					

Comments by : Eng. Hesham Sabry (KK)	Comments by: Eng. Gaber Ibrahim (ER)
1- تم اختبار القطاع (Plate Loading Test) من قبل مكتب معامل الإستشارات الهندسية (CEL) . 2- تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.	1- P.L.T was carried- out by (Consulting Engineer Bureau &Laboratories), attendance of material engineer for both contractor and GARB Consultant. 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: Mohamed Fathy		18-01-2024	A
QA/QC *	Eng. Hesham Sabry			
GARB**	Eng. Ahmed Galal			
Employers Representative	Eng. Gaber Ibrahim			

* Designer

** Alignment / Bridges: Culvert Only

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

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 (310+010 to 310+170)

Test Date : **17/01/2024**

Repot Date : **18/01/2024**

Type of soil : **-----**

Test level : **Middle Embankment (-1.5)**

Report No. : **21:22**

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with **600 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 : Middle Embankment**
- **Job Requirement : Ev2 > (40 MPa)**

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Partly Sunny
- Plate Diameter (mm)	600
- date of measurement	17/01/2024
- 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+100	103	186	1.8
2	310+106	145	187	1.3

Signature / ...Khaled...

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مكتب معامل الإستشارات الهندسية

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 3104+100
Test No. : 001

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.42	19.83	0.17	19.80	0.20	19.69	0.31	0.23
2	0.83	19.68	0.32	19.71	0.29	19.50	0.50	0.37
3	1.25	19.57	0.43	19.25	0.75	19.29	0.71	0.63
4	1.67	19.39	0.61	19.21	0.79	19.15	0.85	0.75
5	2.08	19.25	0.75	19.16	0.84	19.04	0.96	0.85
6	2.50	19.14	0.86	19.10	0.90	18.98	1.02	0.93

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
1	2.50	19.14	0.86	19.10	0.90	18.98	1.02	0.93
2	1.25	19.30	0.70	19.15	0.85	19.03	0.97	0.84
3	0.625	19.41	0.59	19.30	0.70	19.14	0.86	0.72
4	0.01	19.50	0.50	19.41	0.59	19.30	0.70	0.60

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.42	19.41	0.59	19.30	0.70	19.21	0.79	0.69
1	0.83	19.29	0.71	19.21	0.79	19.10	0.90	0.80
2	1.25	19.18	0.82	19.09	0.91	19.02	0.98	0.90
3	1.67	19.06	0.94	19.00	1.00	18.95	1.05	1.00
4	2.08	18.97	1.03	18.91	1.09	18.82	1.18	1.10

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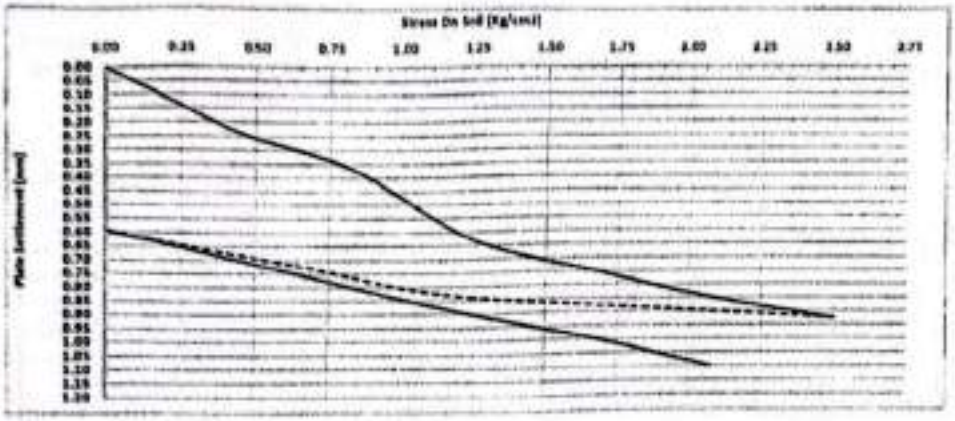
مكتب معامل الإستشارات الهندسية

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 310+100
Test No. : 001

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1	7065
Stress (Kg/cm2)	0.00	0.42	0.83	1.25	1.67	2.08	2.50
Settlement (mm)	0.00	0.23	0.37	0.63	0.75	0.85	0.93

UnLoading (1)	1	2	3	4
Stage(Kg)	7065	3533	1768	0
Stress (Kg/cm2)	2.50	1.25	0.625	0.01
Settlement (mm)	0.93	0.84	0.72	0.60

D (mm) = 600	S1 (mm)= 0.34	S2(mm)= 0.77	ΔS = 0.43
Ev1 (MPa) = (0.75*D*Δσ)/ΔS	103		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1
Stress (Kg/cm2)	0.01	0.42	0.83	1.25	1.67	2.08
Settlement (mm)	0.60	0.69	0.80	0.90	1.00	1.10

Ev2/Ev1 =	1.8

D (mm) = 600	S1 (mm)= 0.78	S2(mm)= 1.02	ΔS = 0.24
Ev2 (MPa) = (0.75*D*Δσ)/ΔS	186		

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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Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 310+106
Test No. : 002

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.42	19.79	0.21	19.70	0.30	19.65	0.35	0.29
2	0.83	19.64	0.36	19.59	0.41	19.50	0.50	0.42
3	1.25	19.52	0.48	19.43	0.57	19.39	0.61	0.55
4	1.67	19.40	0.60	19.32	0.68	19.25	0.75	0.68
5	2.08	19.27	0.73	19.20	0.80	19.13	0.87	0.80
6	2.50	19.15	0.85	19.09	0.91	19.01	0.99	0.92

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
1	2.50	19.15	0.85	19.09	0.91	19.01	0.99	0.92
2	1.25	19.33	0.67	19.18	0.82	19.07	0.93	0.81
3	0.625	19.43	0.57	19.27	0.73	19.14	0.86	0.72
4	0.01	19.55	0.45	19.39	0.61	19.30	0.70	0.59

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.42	19.41	0.59	19.25	0.75	19.19	0.81	0.72
1	0.83	19.29	0.71	19.14	0.86	19.08	0.92	0.83
2	1.25	19.18	0.82	19.04	0.96	18.94	1.06	0.95
3	1.67	19.07	0.93	18.95	1.05	18.89	1.11	1.03
4	2.08	18.98	1.02	18.90	1.10	18.81	1.19	1.10

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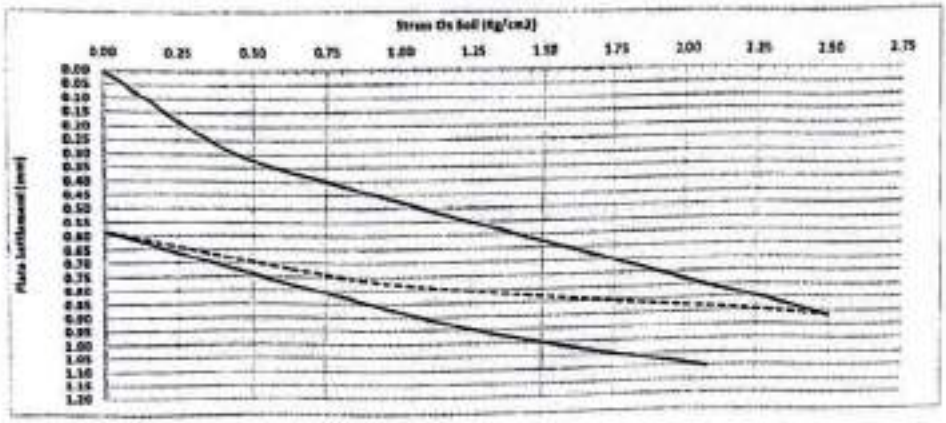
مكتب معامل الإستشارات الهندسية

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 310+106
Test No. : 002

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	1166.92	2345.6	3532.5	4719.4	5878.1	7065
Stress (Kg/cm2)	0.00	0.42	0.83	1.25	1.67	2.08	2.50
Settlement (mm)	0.00	0.29	0.42	0.55	0.66	0.80	0.92

UnLoading (1)	1	2	3	4
Stage(Kg)	7065	3533	1768	0
Stress (Kg/cm2)	2.50	1.25	0.625	0.01
Settlement (mm)	0.92	0.81	0.72	0.59

D (mm) = 600	S1 (mm)= 0.40	S2(mm)= 0.79	ΔS = 0.30
Ev1 (MPa) = (0.75*D*Δσ)/ΔS	145		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	1166.92	2345.6	3532.5	4719.4	5878.1
Stress (Kg/cm2)	0.01	0.42	0.83	1.25	1.67	2.08
Settlement (mm)	0.59	0.72	0.83	0.96	1.00	1.10

Ev2/Ev1 =	1.3

D (mm) = 600	S1 (mm)= 0.81	S2(mm)= 1.04	ΔS = 0.24
Ev2 (MPa) = (0.75*D*Δσ)/ΔS	187		

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
Δs = Difference in settlements corresponding to 0.3 and 0.7 from the

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Zamalek, Cairo.
Tel.& Fax : 27367231 - 27363093

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MATERIAL INSPECTION 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 فتحي		17-01-2024 OR-M.I.216		10:00 AM			
Received by ER	Eng. Gaber Ibrahim		MIR	C1	C2	C3	DD	MM	YY	HH	MM
				309	EW	C5	17	01	24	10	00

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	FILL LAYER		
Location to be Used	From St. (309+810) To St. (309+950) (-1.50m From Ferma).		
MAR Approval No	(OR-M.A 077)	Date	07-01-2024
Supplier Name	EL-SEWY – ELWAFA (ESLAM)		
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 Loading Test	NUMBER	2	17-01-2024	
2					
3					
4					

Comments by : Eng. Hesham Sabry (KK)	Comments by: Eng. Gaber Ibrahim (ER)
1- تم اختبار القطاع (Plate Loading Test) من قبل مكتب معامل الإستشارات الهندسية (CEL) . 2- تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.	1- P.L.T was carried- out by **(Consulting Engineer Bureau &Laboratories)**, attendance of material engineer for both contractor and GARB Consultant. 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: Mohamed Fathy	محمد فتحي	18-01-2024	A
QA/QC *	Eng. Hesham Sabry			
GARB**	Eng. Ahmed Galal			
Employers Representative	Eng. Gaber Ibrahim			

* Designer

** Alignment / Bridges: Culvert Only

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

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 (309+810 to 309+950)

Test Date : **17/01/2024**

Repot Date :**18/01/2024**

Type of soil : **-----**

Test level : **Middle Embankment (-1.5)**

Report No. : **17:18**

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with **600 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 : Middle Embankment**
- **Job Requirement : Ev2 > (40 MPa)**

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Partly Sunny
- Plate Diameter (mm)	600
- date of measurement	17/01/2024
- 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	Ev_2/Ev_1 Ratio
		Ev_1 (MPa)	Ev_2 (MPa)	
1	309+900	133	204	1.5
2	309+940	123	186	1.5

Signature / Khaled

مكتب معامل الاستشارات الهندسية
الاختبارات الحقلية
219-991-537

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 309+900
Test No. : 001

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.42	19.95	0.05	19.80	0.20	19.75	0.25	0.17
2	0.83	19.81	0.19	19.73	0.27	19.68	0.32	0.26
3	1.25	19.69	0.31	19.60	0.40	19.51	0.49	0.40
4	1.67	19.53	0.47	19.44	0.56	19.38	0.62	0.55
5	2.08	19.40	0.60	19.33	0.67	19.25	0.75	0.67
6	2.50	19.28	0.72	19.21	0.79	19.13	0.87	0.79

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
1	2.50	19.28	0.72	19.21	0.79	19.13	0.87	0.79
2	1.25	19.36	0.64	19.30	0.70	19.19	0.81	0.72
3	0.625	19.49	0.51	19.41	0.59	19.21	0.79	0.63
4	0.01	19.63	0.37	19.50	0.50	19.35	0.65	0.51

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.42	19.51	0.49	19.43	0.57	19.21	0.79	0.62
1	0.83	19.39	0.61	19.31	0.69	19.10	0.90	0.73
2	1.25	19.28	0.72	19.20	0.80	19.13	0.87	0.80
3	1.67	19.16	0.84	19.10	0.90	19.04	0.96	0.90
4	2.08	19.03	0.97	18.95	1.04	18.90	1.10	1.04

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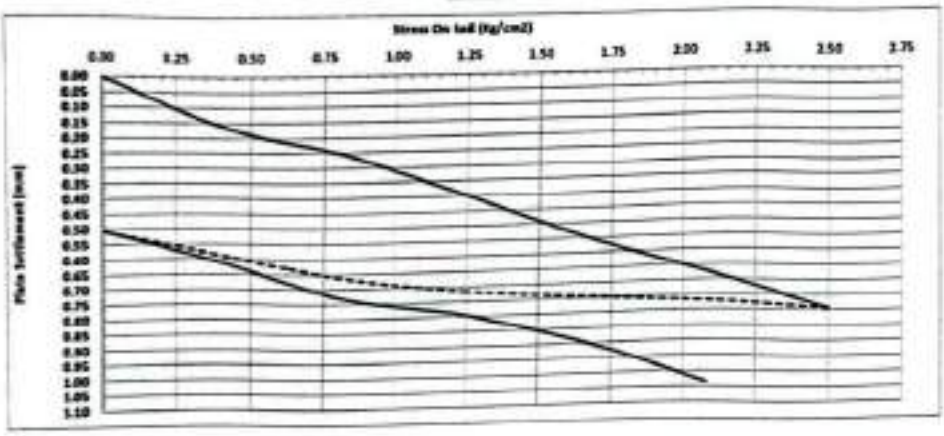
مكتب معامل الإستشارات الهندسية

Company Name	: Orange Construction.
Project	: Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date	: 17/01/2024
report date	: 18/01/2024
Location	: Station 309+900
Test No.	: 001

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1	7065
Stress (Kg/cm2)	0.00	0.42	0.83	1.25	1.67	2.08	2.50
Settlement (mm)	0.00	0.17	0.26	0.40	0.55	0.67	0.79

UnLoading (1)	1	2	3	4
Stage(Kg)	7065	3533	1768	0
Stress (Kg/cm2)	2.50	1.25	0.625	0.01
Settlement (mm)	0.79	0.72	0.63	0.51

D (mm) =	600	S1 (mm)=	0.24	S2(mm)=	0.57	ΔS =	0.33
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS		133				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1
Stress (Kg/cm2)	0.01	0.42	0.83	1.25	1.67	2.08
Settlement (mm)	0.51	0.62	0.73	0.80	0.90	1.04

Ev2/Ev1 =	1.5

D (mm) =	600	S1 (mm)=	0.71	S2(mm)=	0.93	ΔS =	0.22
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS		204				

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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الاختبارات المعملية
219-991-537 : رقم السجل الضريبي
٣ شارع الملك الأفضل - الزمالك

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 309+940
Test No. : 002

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	20.00	0.00	0.00
1	0.42	19.83	0.17	19.75	0.25	19.70	0.30	0.24
2	0.83	19.71	0.29	19.62	0.38	19.50	0.50	0.39
3	1.25	19.59	0.41	19.51	0.49	19.44	0.56	0.49
4	1.67	19.38	0.62	19.30	0.70	19.24	0.76	0.69
5	2.08	19.25	0.75	19.18	0.82	19.10	0.90	0.82
6	2.50	19.14	0.86	19.07	0.93	19.00	1.00	0.93

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
1	2.50	19.14	0.86	19.07	0.93	19.00	1.00	0.93
2	1.25	19.30	0.70	19.16	0.84	19.07	0.93	0.82
3	0.625	19.47	0.53	19.32	0.68	19.15	0.85	0.69
4	0.01	19.60	0.40	19.45	0.55	19.34	0.66	0.54

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Dial 3	Settlement	Average
	Kg/cm2		mm		mm		mm	
0	0.42	19.47	0.53	19.32	0.68	19.22	0.78	0.66
1	0.83	19.35	0.65	19.21	0.79	19.10	0.90	0.78
2	1.25	19.23	0.77	19.09	0.91	19.02	0.98	0.89
3	1.67	19.10	0.90	19.01	0.99	18.95	1.05	0.98
4	2.08	19.04	0.96	18.94	1.06	18.86	1.14	1.05

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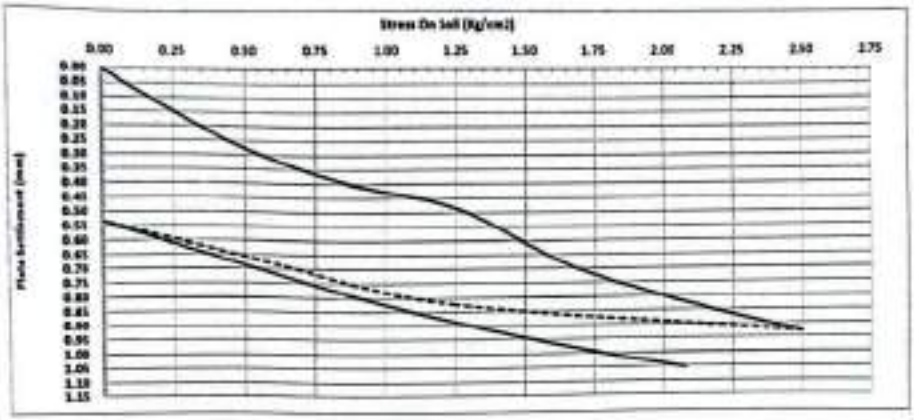
الاختبارات المعملية
219-901-537

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الإستشارات الهندسية

Company Name : Orange Construction.
Project : Electric Express Train, Al Ain Sokhna to Marsa Matrouh Priority Sector (4) - Wadi El Natroun to Borg Al Arab.
Test Date : 17/01/2024
report date : 18/01/2024
Location : Station 309+940
Test No. : 002

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1	7065
Stress (Kg/cm2)	0.00	0.42	0.83	1.25	1.67	2.08	2.50
Settlement (mm)	0.00	0.24	0.38	0.49	0.69	0.82	0.93

UnLoading (1)	1	2	3	4
Stage(Kg)	7065	3533	1768	0
Stress (Kg/cm2)	2.50	1.25	0.625	0.01
Settlement (mm)	0.93	0.82	0.69	0.54

D (mm) = 600	S1 (mm)= 0.36	S2(mm)= 0.72	ΔS = 0.36
Ev1 (MPa) = (0.75*D*Δσ)/ΔS	123		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	1186.92	2345.6	3532.5	4719.4	5878.1
Stress (Kg/cm2)	0.01	0.42	0.83	1.25	1.67	2.08
Settlement (mm)	0.54	0.66	0.78	0.89	0.98	1.05

Ev2/Ev1 =	1.5

D (mm) = 600	S1 (mm)= 0.78	S2(mm)= 0.99	ΔS = 0.24
Ev2 (MPa) = (0.75*D*Δσ)/ΔS	186		

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

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MATERIAL INSPECTION 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 فتحي		01-05-2024 OR-M.I.289		10:30 AM			
Received by ER	Eng. Gaber Ibrahim		MIR	C1	C2	C3	DD	MM	YY	HH	MM
				310	EW	CS	01	05	24	10	30

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

Description of Materials	Fill Layer		
Location to be Used	From St. (310+020) To St. (310+170) (Ferma).		
MAR Approval No	(OR-M.A 087)	Date	15-04-2024
Supplier Name	EL-Sewy – EL-Moassa		
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 by Comibassal Lab	NUMBER	3	01-05-2024	
2					
3					
4					

Comments by : Eng. Hesham Sabry	Comments by: Eng. Hesham Sabry
1. تم اختبار القطاع (Plate Loading Test) من قبل المعمل الهندسي (كومبيصل). 2. تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.	1- P.L.T was carried- out by Comibassal Lab, Attendances of material engineer for both contractor and GARB Consultant. 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: Mohamed Fathy	محمد فتحي	01-05-2024	A
QA/QC *	Eng. Hesham Sabry			
GARB**	Eng. Ahmed Galal			
Employers Representative	Eng. Gaber Ibrahim			

* Designer
** Alignment / Bridges: Culvert Only

Technical report

of Plate Loading Test (DIN 18134)

General	:	SYSTRA
Consultant	:	Dr/ Khaled Kandil
Contractor	:	شركة اورنج للإستيراد والتصدير و المقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Upper Embankment
Station	:	ST(310+020) TO ST(310+170)
Date of Test	:	1/5/2024
QC	:	746 -2

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Tel: 002 03 4704595 - 002 034701191
Email : civdept@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

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 diamter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffners 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 hydrulic pump connected to a hydrulic 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 hyrulic jack was placed on the middle of, and at normal to, the loading plate beneth the reaction loading system and secured against tiliting.
8- The reaction loading system was a heavey multi-purpose excavator (more than 20 ton).

Description of exprement:

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 transeducer and dial guage were set to zero, after which a load was applied corressponding 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 increaement 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.

St(310+050)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.17
2	14.14	0.050	0.43
3	21.21	0.075	0.54
4	28.28	0.100	0.70
5	35.35	0.125	0.88
6	42.42	0.150	1.15
7	49.49	0.175	1.33
8	56.56	0.200	1.24
9	63.63	0.225	1.34
10	70.7	0.250	1.77
11	56.56	0.200	1.76
12	49.49	0.175	1.75
13	35.35	0.125	1.70
14	21.21	0.075	1.63
15	1.414	0.005	1.17

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	1.17
16	7.07	0.025	1.29
17	14.14	0.050	1.36
18	21.21	0.075	1.42
19	28.28	0.100	1.48
20	35.35	0.125	1.54
21	42.42	0.150	1.60
22	49.49	0.175	1.66
23	56.56	0.200	1.74
24	63.63	0.225	1.80

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{s,max}$) MN/m^2	0.250	0.250
a_0 (mm)	0.009	1.187
a_1 (mm/(MN/m^2))	7.704	3.147
a_2 (mm/(MN^2/m^2))	-4.689	-2.110
Ev= 1.5 r/ (a_1+a_2 $\sigma_{s,MAX}$)	68.89	171.76
Ev2/Ev1	2.49	

Kilo 23 Alexandria - Cairo Desert Road - Merghem
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Email : civdept@comibassal.com
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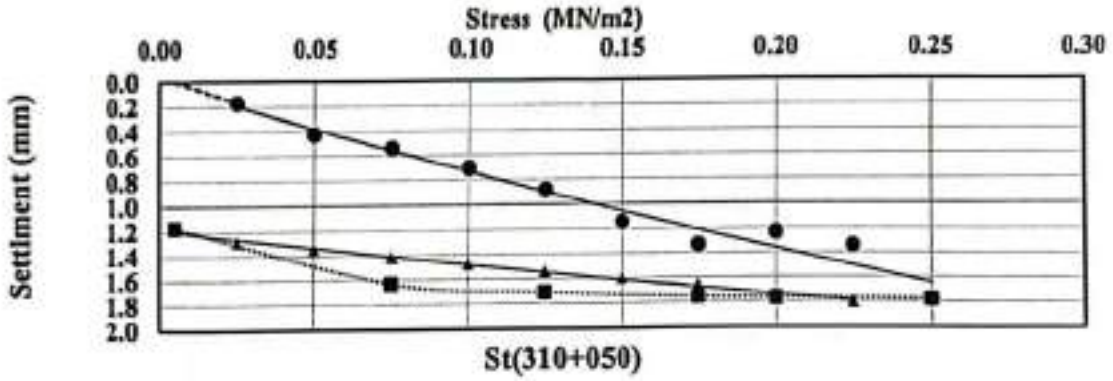

Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- ● Measurment points from the first loading cycle
- ■ Measurment points from the unloading cycle
- ▲ Measurment points from the second loading cycle

S Settlement in mm

σ_0 Normal stress MN/m^2

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St(310+100)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.10
2	14.14	0.050	0.19
3	21.21	0.075	0.31
4	28.28	0.100	0.45
5	35.35	0.125	0.65
6	42.42	0.150	0.78
7	49.49	0.175	0.91
8	56.56	0.200	1.03
9	63.63	0.225	1.13
10	70.7	0.250	1.24
11	56.56	0.200	1.23
12	49.49	0.175	1.22
13	35.35	0.125	1.17
14	21.21	0.075	1.05
15	1.414	0.005	0.47

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.47
16	7.07	0.025	0.63
17	14.14	0.050	0.71
18	21.21	0.075	0.79
19	28.28	0.100	0.89
20	35.35	0.125	0.99
21	42.42	0.150	1.03
22	49.49	0.175	1.10
23	56.56	0.200	1.16
24	63.63	0.225	1.23

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{0,max}$) MN/m^2	0.250	0.250
a_0 (mm)	-0.098	0.475
a_1 (mm/(MN/m^2))	6.183	4.853
a_2 (mm/(MN^2/m^4))	-3.092	-6.964
Ev= 1.5 r/ (a_1+a_2. $\sigma_{0,MAX}$)	83.18	144.57
Ev2/Ev1	1.74	

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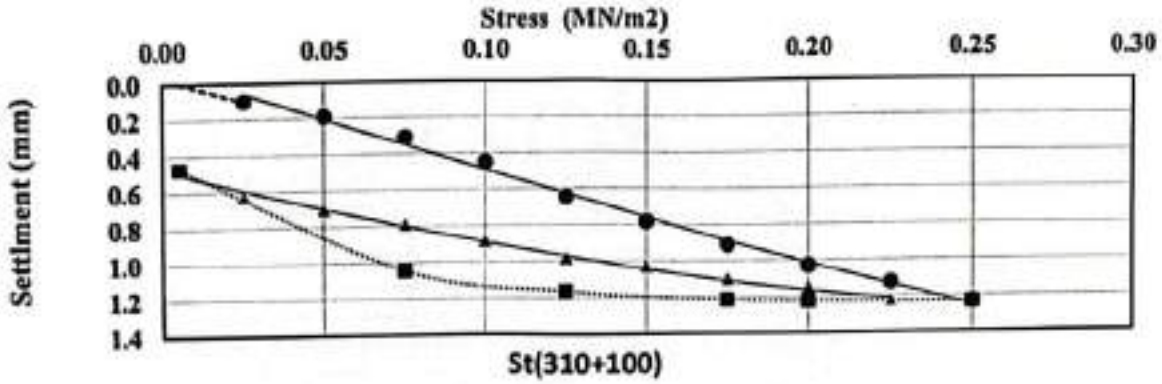

Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- ● Measurment points from the first loading cycle
- ■ Measurment points from the unloading cycle
- ▲ Measurment points from the second loading cycle

S Settlement in mm

σ_0 Normal stress MN/m²

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St(310+150)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.09
1	7.07	0.025	0.10
2	14.14	0.050	0.23
3	21.21	0.075	0.39
4	28.28	0.100	0.58
5	35.35	0.125	0.72
6	42.42	0.150	0.86
7	49.49	0.175	0.97
8	56.56	0.200	1.06
9	63.63	0.225	1.15
10	70.7	0.250	1.26
11	56.56	0.200	1.25
12	49.49	0.175	1.24
13	35.35	0.125	1.20
14	21.21	0.075	1.10
15	1.414	0.005	0.58

Table 8: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN\m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.58
16	7.07	0.025	0.67
17	14.14	0.050	0.74
18	21.21	0.075	0.83
19	28.28	0.100	0.90
20	35.35	0.125	0.96
21	42.42	0.150	1.03
22	49.49	0.175	1.10
23	56.56	0.200	1.16
24	63.63	0.225	1.23

Table 9: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{s,max}$) MN/m^2	0.250	0.250
a_0 (mm)	-0.110	0.571
a_1 (mm/(MN/m^2))	7.722	3.553
a_2 (mm/(MN^2/m^4))	-9.115	-2.964
Ev= 1.5 r/ (a_1+a_2. $\sigma_{s\ max}$)	82.67	160,00
Ev2/Ev1	1.94	

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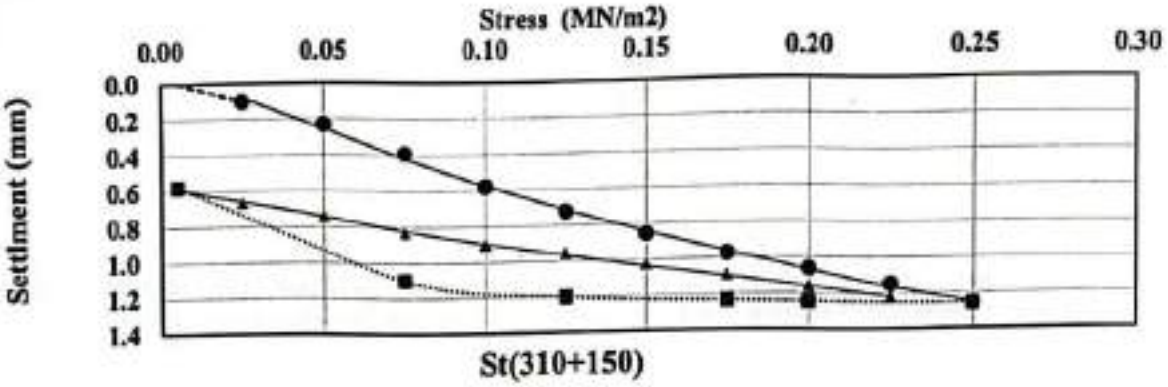

Fig. 3: Load-settlement curve, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

- ● Measurment points from the first loading cycle
- ■ Measurment points from the unloading cycle
- △ Measurment points from the second loading cycle

S Settlement in mm

σ_z Normal stress MN/m²

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Conclusions:

The present test results which were obtained via the plate loading tests of the native soil on upper embankment layer of the electric express train project at location from St(310+020) to St(310+170) in accourdance 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+050)	68.89	171.76	2.49
St(310+100)	83.18	144.57	1.74
St(310+150)	82.67	160.00	1.94

Lab Director
Eng / Eman Kandil

Geotechnical Consultant
Dr / Mohamed Mostafa Badry

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MATERIAL INSPECTION 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 فتحي		01-05-2024 OR-M.I.290				10:00 AM	
Received by ER	Eng. Gaber Ibrahim		MIR	C1	C2	C3	DD	MM	YY	HH	MM
				309	EW	CS	01	05	24	10	00

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

Description of Materials	Fill Layer				
Location to be Used	From St. (309+820) To St. (309+950) (Ferma).				
MAR Approval No	(OR-M.A 087)			Date	15-04-2024
Supplier Name	EL-Sewy – EL-Moassa				
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 by Comibassal Lab	NUMBER	3	01-05-2024	
2					
3					
4					

Comments by : Eng. Hesham Sabry	Comments by: Eng. Hesham Sabry
1. تم اختبار القطاع (Plate Loading Test) من قبل المعمل الهندسي (كوميبصل). 2. تم تحقيق النتائج المطلوبة طبقاً لمواصفات المشروع.	1- P.L.T was carried- out by Comibassal Lab, Attendances of material engineer for both contractor and GARB Consultant. 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: Mohamed Fathy	محمد فتحي	01-05-2024	A
QA/QC *	Eng. Hesham Sabry			
GARB**	Eng. Ahmed Galal			
Employers Representative	Eng. Gaber Ibrahim			

* Designer

** Alignment / Bridges: Culvert Only

Technical report

of Plate Loading Test (DIN 18134)

General	:	SYSTRA
Consultant	:	Dr/ Khaled Kandil
Contractor	:	شركة اورنج للإستيراد والتصدير و المقاولات العامة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Upper Embankment
Station	:	ST(309+820) TO ST(309+950)
Date of Test	:	1/5/2024
QC	:	746 -1

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 diamter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffners 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 hydrulic pump connected to a hydrulic 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 hyrulic jack was placed on the middle of, and at normal to, the loading plate beneth the reaction loading system and secured against tiliting.
8- The reaction loading system was a heavey multi-purpose excavator (more than 20 ton).

Description of exprement:

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 transeducer and dial guage were set to zero, after which a load was applied corressponding 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 increaement 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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St(309+840)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_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	0.34
4	28.28	0.100	0.50
5	35.35	0.125	0.71
6	42.42	0.150	0.83
7	49.49	0.175	0.96
8	56.56	0.200	1.06
9	63.63	0.225	1.17
10	70.7	0.250	1.29
11	56.56	0.200	1.28
12	49.49	0.175	1.27
13	35.35	0.125	1.25
14	21.21	0.075	1.13
15	1.414	0.005	0.75

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.75
16	7.07	0.025	0.79
17	14.14	0.050	0.85
18	21.21	0.075	0.94
19	28.28	0.100	1.02
20	35.35	0.125	1.11
21	42.42	0.150	1.17
22	49.49	0.175	1.22
23	56.56	0.200	1.28
24	63.63	0.225	1.33

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)	-0.103	0.710
a_1 (mm/(MN/m^2))	6.828	3.399
a_2 (mm/(MN^2/m^4))	-4.992	-2.701
Ev= 1.5 r/ (a_1+a_2. $\sigma_{0,MAX}$)	80.64	165.19
Ev2/Ev1	2.05	

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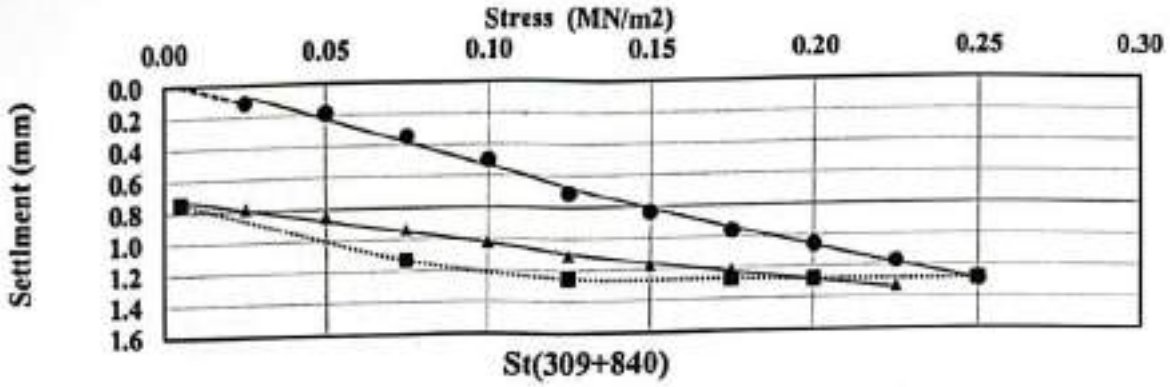

Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

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

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St(309+890)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.09
1	7.07	0.025	0.11
2	14.14	0.050	0.28
3	21.21	0.075	0.45
4	28.28	0.100	0.64
5	35.35	0.125	0.83
6	42.42	0.150	0.98
7	49.49	0.175	1.10
8	56.56	0.200	1.21
9	63.63	0.225	1.31
10	70.7	0.250	1.40
11	56.56	0.200	1.39
12	49.49	0.175	1.38
13	35.35	0.125	1.35
14	21.21	0.075	1.20
15	1.414	0.005	0.70

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.70
16	7.07	0.025	0.84
17	14.14	0.050	0.97
18	21.21	0.075	1.04
19	28.28	0.100	1.15
20	35.35	0.125	1.23
21	42.42	0.150	1.30
22	49.49	0.175	1.36
23	56.56	0.200	1.43
24	63.63	0.225	1.48

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{0,max}$) MN/m^2	0.250	0.250
a_0 (mm)	-0.129	0.697
a_1 (mm/(MN/m^2))	8.990	5.324
a_2 (mm/(MN^2/m^4))	-11.439	-8.410
$E_V = 1.5\ r'/(a_1+a_2\cdot\sigma_{0,MAX})$	73.41	139.69
Ev2/Ev1	1.90	

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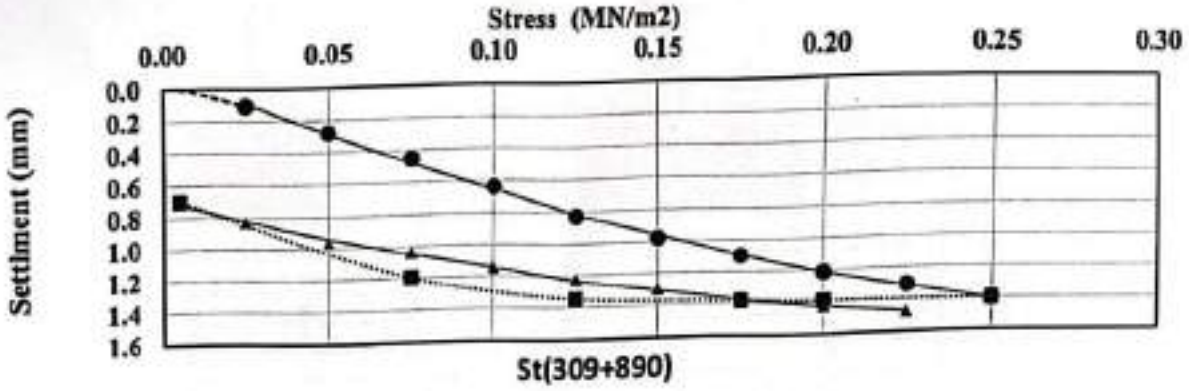

Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- ● Measurment points from the first loading cycle
- ■ Measurment points from the unloading cycle
- ▲ Measurment points from the second loading cycle

S Settlement in mm

σ_0 Normal stress MN/m²

St(309+940)

600

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

Loading stage no.	Load (F) kN	Normal stress (s_0) MN/m²	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.15
2	14.14	0.050	0.35
3	21.21	0.075	0.51
4	28.28	0.100	0.75
5	35.35	0.125	0.89
6	42.42	0.150	1.02
7	49.49	0.175	1.14
8	56.56	0.200	1.25
9	63.63	0.225	1.35
10	70.7	0.250	1.44
11	56.56	0.200	1.43
12	49.49	0.175	1.42
13	35.35	0.125	1.39
14	21.21	0.075	1.27
15	1.414	0.005	0.75

Table 8: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (s0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.75
16	7.07	0.025	0.85
17	14.14	0.050	0.97
18	21.21	0.075	1.07
19	28.28	0.100	1.18
20	35.35	0.125	1.25
21	42.42	0.150	1.30
22	49.49	0.175	1.36
23	56.56	0.200	1.40
24	63.63	0.225	1.46

Table 9: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$(\sigma_{0,max})$ MN/m²	0.250	0.250
a_0 (mm)	-0.082	0.726
a_1 (mm/(MN/m²))	9.321	5.288
a_2 (mm/(MN²/m⁴))	-13.076	-9.270
$E_V = 1.5\ r/(a_1+a_2\cdot\sigma_{0,max})$	74.35	151.46
Ev2/Ev1	2.04	

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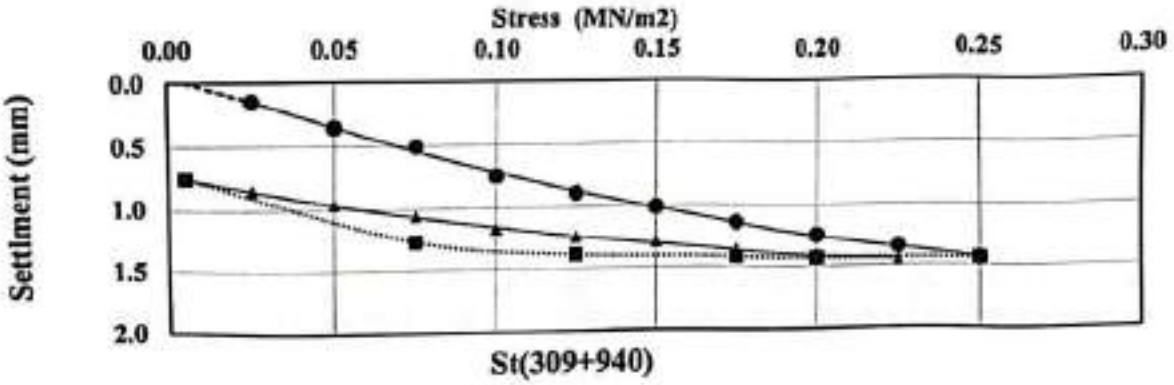

Fig. 3: Load-settlement curve, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

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

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Conclusions:

The present test results which were obtained via the plate loading tests of the native soil on upper embankment layer of the electric express train project at location from St(309+820) to St(309+950) in accourdance 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(309+840)	80.64	165.19	2.05
St(309+890)	73.41	139.69	1.90
St(309+940)	74.35	151.46	2.04

Lab Director
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Geotechnical Consultant
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