



المنطقة الخامسة - ( غرب الدلتا )

السيد المهندس / رئيس قطاع التنفيذ والمناطق

تحية طيبة .. وبعد،،

بالإحالة إلى مشروع القطار الكهربائي فائق السرعة ( العلمين - فوكة ) ( القطاع السادس )  
نتشرف بأن نرفق لسيادتكم طيه المقايسة المعدلة بعد المفاوضة لبندود الاعمال بتاريخ  
١٨-١٢-٢٠٢٣ للقطاع الآتي:

| مسلسل | اسم الشركة              | بداية القطاع<br>( كم ) | نهاية<br>القطاع<br>( كم ) | اتجاه     |
|-------|-------------------------|------------------------|---------------------------|-----------|
| ١     | دعائم للاستثمار العقاري | ٤٣٩+٦٠٠                | ٤٤١+٦٠٠                   | سیدی حنیش |

برجاء من سيادتكم التفضل بالأحاطه والتوجيه بالازم

وتفضلوا بقبول فائق الاحترام والتقدير،،

رئيس الإدارة المركزية

المنطقة الخامسة- غرب الدلتا

عميد مهندس/

"هاني محمد محمود طه"

| <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>مركز الاستشارات الهندسية<br/>للنقل والطرق والممرات<br/>( خبراء دوليون )<br/>دكتور/ محمد الجيوشى</p> </div> <div style="text-align: center;">  <p>SVSTRA ENGINEERING &amp; CONSULTING</p> </div> <div style="text-align: center;">  <p>المجلس الأعلى<br/>للطرق والكباري<br/>(GARB)</p> </div> <div style="text-align: center;">  <p>وزارة النقل<br/>Ministry of Transport</p> </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |           |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|------------|
| <p style="text-align: center;"><b>مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العدين - فوكة )</b><br/> <b>المقايضة المعدلة بعد المفاوضات لتبني الأعمال بتاريخ ١٨-١٢-٢٠٢٣ للقطاع السادس ( العدين - فوكة ) - شركة دعائم للاستثمار العقاري</b><br/> <b>القطاع من المحطة ٤٢٩+٦٠٠ إلى ٤٤١+٦٠٠ اتجاه سيدى حنشل</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |           |            |
| رقم البند                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | بيان الأصل                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | الوحدة         | الكمية    | القيمة     |
| ١                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | أصل الحفر                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |           |            |
| ١٠١                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | بالمتر المكعب أصل حفر باستخدام المعدات الميكانيكية لجميع أنواع التربة عدا التربة الصخرية و تسوية السطح بالأت التسوية والرش بالمياه الاصولية للوصول الى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول الى أقصى كثافة جافة (٩٥%) من الكثافة الجافة القصوى) ومعمل على البند تحميل ونقل الاتربة الزائدة لمسافة ٥٠٠ متر من محور الطريق ويتم التنفيذ طبقا للمناسيب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكباري وتعليمات المهندسين المشرفين..... في حدة زيادة مساحة نقل لنج الحفر عن ٥٠٠متر يتم احتساب ٠.٨٠ جنيهة لكلومتر الزيادة                                                                                                                                                                                                                                                                                                                                           | م <sup>٣</sup> | ٦٧,٢٣٩,٦٦ | ٢٥         |
| ١٠٢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | أصل الردم                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |           |            |
| ٢٠٣                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | بالمتر المكعب أصل تحميل ونقل تربة صالحة للردم من المحاجر المعتمدة والمطابقة للمواصفات وتشغيلها باستخدام الات التسوية بسمك لا يزيد عن ٢٥ سم لاستكمال المنسوب التصميمي لتشكيل الجسر والاكتاف (نسبة تحميل كاليفورنيا لا تقل عن ١٠٠%) ورشها بالمياه الاصولية للوصول الى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول الى أقصى كثافة جافة (٩٥%) من الكثافة الجافة القصوى ( ويتم التنفيذ طبقا للمناسيب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكباري وتعليمات المهندسين المشرفين .<br>- مسافة النقل حتى ٢ كم<br>- يتم احتساب علاوة ١.٤ جنيهة لكل ١ كم زيادة وذلك حتى مسافة نقل ١٠٠ كم و ١.٢٠ جنيهة لكل ١ كم زيادة على مسافة نقل ١٠٠ كم<br>- يتم زيادة ٤.٥ جنيهة في حدة استخدام بلدوزر في التحجير للأرض المتمسكة وذلك طبقا لتحليل التربة<br>- السعر ليشمل قيمة المادة المحجورة مع قيام الشركة المنفذة بتقديم مايلزم من الجهات الرسمية المعتمدة المشرفة على المحاجر           | م <sup>٣</sup> | ٦٧,٢٣٩,٦٦ | ٣١.٥٠      |
| ٤                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | طبقات الأساس                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |           |            |
| ١٠٤                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | بالمتر المكعب أصل توريد وفرش طبقة اساس ( prepared Subgrade ) من الاحجار الصلبة المنكسرة ناتج تكسير الكسارات والمطابقة للمواصفات وأقصى حجم للبيبتات ١٠٠ مم والا تزيد نسبة الماء من مثل ٢٠٠ عن ١٢% و التدرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة تحمل كاليفورنيا عن ٢٥% والا تزيد نسبة الفلاد بجهز لوس الجلولس عن ٣٠% والا يزيد الامتصاص عن ١٥% والا يقل معامل المرونة (EV2) من تجربة لوج التحميل عن ٨٠ ميجاباسكال و يتم فردها على طبقتين باستخدام الات التسوية الحديثة على ان لا يزيد سمك الطبقة بعد تمام الدمك عن ٢٥ سم ورشها بالمياه الاصولية للوصول الى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول الى أقصى كثافة جافة قصوى ( لا تقل عن ٩٥% ) من الكثافة المعملية والقلعة تشمل اجراء التجارب المعملية والحقلية ويتم التنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا للمواصفات الفنية للمشروع وتقرير الاستشاري وتعليمات المهندسين المشرفين مسافة النقل ٢٠ كم<br>- يتم احتساب علاوة ١.٣ جنيهة لكل ١ كم بالزيادة او النقصان | م <sup>٣</sup> | ٣,٦٦٢,٠٣  | ١٣٦,٨٠     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | قيمة المادة المحجورة                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | م <sup>٣</sup> | ٣,٦٦٢,٠٣  | ١٦١,٠٠     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | علاوة مسافة النقل ١٧١ كم                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | م <sup>٣</sup> | ٣,٦٦٢,٠٣  | ١٩٦,٣٠     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | علاوة تحميل رسوم الكثرة والموازين طبقا للاتحة الشركة الوطنية                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | م <sup>٣</sup> | ٣,٦٦٢,٠٣  | ٢٥,٠٠      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | الإجمالي                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |           | ٥٠٠,٩٦٥,٤٣ |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | (خمسة مائون وسبعة مائة ألف فقط لا غير )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |           |            |

مدير مشروع الهيئة  
د/ محمد حسني قياض

مدير مشروع الهيئة  
د/ محمد حسني قياض

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

مدير المشروع استشاري  
د/ مصطفى نجم

مدير المشروع استشاري  
د/ مصطفى نجم

مدير المشروع المقاول  
د/ حسن خليفة

مدير المشروع المقاول  
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د/ حسن خليفة

مدير المشروع المقاول  
د/ حسن خليفة

قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة ) المسافة من الكم ٤٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاه سيدي حنيش

رقم البند و بيانه : ( ١-١ ) اعمال حفر باستخدام المعدات الميكانيكية لجميع انواع التربة عدا التربة الصخرية

تنفيذ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٠,٠ م ٣

| الكمية   | الابعاد ( متر )                                             |     | الموقع الكيلومتری |         | بيان الاعمال بالمقايسة |
|----------|-------------------------------------------------------------|-----|-------------------|---------|------------------------|
|          | مساحة المقطع                                                | طول | الى               | من      |                        |
| ١١١٩٣,٩٠ | ٢٧,٩٨٥                                                      | ٤٠٠ | ٤٤٠+٠٠٠           | ٤٣٩+٦٠٠ | القطاع الأول           |
| ١٣٩٣٨,٨٥ | ٢٣,٢٣١                                                      | ٦٠٠ | ٤٤٠+٦٠٠           | ٤٤٠+٠٠٠ | القطاع الثاني          |
| ٢٠١٥٩,٥١ | ٥٠,٣٩٩                                                      | ٤٠٠ | ٤٤١+٠٠٠           | ٤٤٠+٦٠٠ | القطاع الثالث          |
| ٢١٩٤٧,٤٠ | ٣٦,٥٧٩                                                      | ٦٠٠ | ٤٤١+٦٠٠           | ٤٤١+٠٠٠ | القطاع الرابع          |
| ٦٧٢٣٩,٦٦ | اجمالي الكميات خلال فترة المستخلص الحالية (م <sup>٢</sup> ) |     |                   |         |                        |
| ٦٧٢٣٩,٦٦ | الاجمالي الكلي (م <sup>٢</sup> )                            |     |                   |         |                        |

مهندس الهيئة  
م / إبراهيم الحضورى

مهندس الاستشاري  
مكتب د/سعد الجيوشى  
م/مصطفى نجم

الشريع

مهندس الاستشاري  
مكتب XYZ  
م/محمد خليل

مهندس الشركة  
م / حسن مصطفى

قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة) المسافة من الكم ٤٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاه سيدي حنيش

رقم البند و بيانه : (٣-٢) اعمال تحميل ونقل اترية صالحة للردم مطابقة للمواصفات وتشغيلها

تنفيذ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٦٧٢٣٩,٦٦ م٣

| الكمية   | الابعاد ( متر )                |     | الموقع الكيلومتری |         | بيان الاعمال بالمقايضة         |
|----------|--------------------------------|-----|-------------------|---------|--------------------------------|
|          | مساحة المقطع                   | طول | الى               | من      |                                |
| ٢٢٠٠,٠٠  | ٣,٦٦٧                          | ٦٠٠ | ٤٤١+٦٠٠           | ٤٤١+٠٠٠ | كميات لم تدرج في مستخلص جاري ١ |
| ٢٢٠٠,٠٠  | كميات لم تدرج في مستخلص جاري ١ |     |                   |         |                                |
| ٦٧٢٣٩,٦٦ | الاجمالي الكلي (م٣)            |     |                   |         |                                |

مهندس الهيئة  
م / إبراهيم الخناوي

مهندس الاستشاري  
مكتب د/سعد الجيوشي  
م/مصطفى نجم

مهندس الاستشاري  
مكتب XYZ  
م / محمد خليل

مهندس الشركة  
م / حسن مصطفى



قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة ) المسافة من الكم ٤٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاة سيدى حنيش

رقم البند و بيانه : (١-٤) علاوة تحصيل رسوم الكارثة والموازين طبقا للائحة الشركة الوطنية

تنفيذ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٠,٠ م ٣

| الكمية  | الابعاد ( متر )                                             |     | الموقع الكيلومترى |         | بيان الاعمال بالمقايضة |
|---------|-------------------------------------------------------------|-----|-------------------|---------|------------------------|
|         | مساحة المقطع                                                | طول | الى               | من      |                        |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٠٠٠           | ٤٣٩+٦٠٠ | القطاع الأول           |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٤٠٠           | ٤٤٠+٠٠٠ | القطاع الثاني          |
| ٣٦٧,٦٣  | ٤,١١٨                                                       | ٨٩  | ٤٤٠+٤٨٩           | ٤٤٠+٤٠٠ | القطاع الثالث          |
| ٣٦٦٢,٠٣ | اجمالي الكميات خلال فترة المستخلص الحالية (م <sup>٢</sup> ) |     |                   |         |                        |
| ٣٦٦٢,٠٣ | الاجمالي الكلى (م <sup>٢</sup> )                            |     |                   |         |                        |

مهندس الاستشاري

مهندس الاستشاري

مهندس الهيئة

مكتب د/سعد الجبوشي  
م/مصطفى نجم

مكتب XYZ  
م / محمد خليل

مهندس الشركة  
م / حسن مصطفى

م / إبراهيم الحناوى

السيد



قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة ) المسافة من الكم ٤٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاه سيدي حنيش

رقم البند و بياطة : ( ١-٤ ) اعمال توريد وفرش طبقة اساس ( prepared Subgrade )

تـنـفـيـذ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٠,٠ م ٣

| الكمية  | الابعاد ( متر )                                |     | الموقع الكيلومتری |         | بيان الاعمال بالمقايضة |
|---------|------------------------------------------------|-----|-------------------|---------|------------------------|
|         | مساحة المقطع                                   | طول | الى               | من      |                        |
| ١٦٤٧,٢٠ | ٤,١١٨                                          | ٤٠٠ | ٤٤٠+٠٠٠           | ٤٣٩+٦٠٠ | القطاع الأول           |
| ١٦٤٧,٢٠ | ٤,١١٨                                          | ٤٠٠ | ٤٤٠+٤٠٠           | ٤٤٠+٠٠٠ | القطاع الثاني          |
| ٣٦٧,٦٣  | ٤,١١٨                                          | ٨٩  | ٤٤٠+٤٨٩           | ٤٤٠+٤٠٠ | القطاع الثالث          |
| ٣٦٦٢,٠٣ | اجمالي الكميات خلال فترة المستخلص الحالية (م') |     |                   |         |                        |
| ٣٦٦٢,٠٣ | الاجمالي الكلي (م')                            |     |                   |         |                        |

مهندس الهيئة  
م / إبراهيم العنوي

مهندس الاستشاري

مكتب د/سعد الجيوشي  
م/مصطفى نجم

مهندس الاستشاري

مكتب XYZ  
م / محمد خليل

مهندس الشركة  
م / حسن مصطفى

قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة) المسافة من الكم ٤٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاة سيدي حنيش

رقم البند و بيانه : ( ١-٤ ) قيمة المادة المحجزة

تنفيذ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٠,٠ م ٣

| الكمية  | الابعاد ( متر )                                             |     | الموقع الكيلومتری |         | بيان الاعمال بالمقايضة |
|---------|-------------------------------------------------------------|-----|-------------------|---------|------------------------|
|         | مساحة المقطع                                                | طول | الى               | من      |                        |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٠٠٠           | ٤٣٩+٦٠٠ | القطاع الأول           |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٤٠٠           | ٤٤٠+٠٠٠ | القطاع الثاني          |
| ٣٦٧,٦٣  | ٤,١١٨                                                       | ٨٩  | ٤٤٠+٤٨٩           | ٤٤٠+٤٠٠ | القطاع الثالث          |
| ٣٦٦٢,٠٣ | اجمالي الكميات خلال فترة المستخلص الحالية (م <sup>٣</sup> ) |     |                   |         |                        |
| ٣٦٦٢,٠٣ | الاجمالي الكلي (م <sup>٣</sup> )                            |     |                   |         |                        |

مهندس الهيئة

م / ابراهيم الحناوى

مهندس الاستشاري

مكتب د/سعد الجيوشي  
م/مصطفى نجم

مهندس الاستشاري

مكتب XYZ  
م / محمد خليل

مهندس الشركة  
م / حسن مصطفى



قائمة الكميات الواردة بالمستخلص جاري (٢)

مشروع : اعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع (العين السخنة - مطروح) لتنفيذ اعمال الجسر الترابي ( قطاع العلمين - فوكة) المسافة من الكم ٣٩,٦٠٠ الى الكم ٤٤١,٦٠٠ بطول ٢ كم اتجاه سيدي حنيش

رقم البند وبيانه : (١-٤) علاوة مسافة النقل ١٧١ كم

تفريغ : شركة دعائم للاستثمار العقاري

مقدار العمل السابق : ٠,٠ ٣م

| الكمية  | الابعاد ( متر )                                             |     | الموقع الكيلومتری |         | بيان الاعمال بالمقايضة |
|---------|-------------------------------------------------------------|-----|-------------------|---------|------------------------|
|         | مساحة المقطع                                                | طول | الى               | من      |                        |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٠٠٠           | ٤٣٩+٦٠٠ | القطاع الأول           |
| ١٦٤٧,٢٠ | ٤,١١٨                                                       | ٤٠٠ | ٤٤٠+٤٠٠           | ٤٤٠+٠٠٠ | القطاع الثاني          |
| ٣٦٧,٦٣  | ٤,١١٨                                                       | ٨٩  | ٤٤٠+٤٨٩           | ٤٤٠+٤٠٠ | القطاع الثالث          |
| ٣٦٦٢,٠٣ | اجمالي الكميات خلال فترة المستخلص الحالية (م <sup>٢</sup> ) |     |                   |         |                        |
| ٣٦٦٢,٠٣ | الاجمالي الكلي (م <sup>٢</sup> )                            |     |                   |         |                        |

مهندس الاستشاري

مهندس الاستشاري

مهندس الهيئة

مكتب د/سعد الجبوشي  
م/مصطفى نجم

مكتب XYZ  
م/محمد خليل

مهندس الشركة  
م / حسن مصطفى

م / إبراهيم العناني

م / مصطفى نجم

السيد

م / محمد خليل

م / حسن مصطفى

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 30  
Sample No. : 06

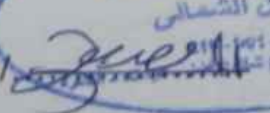
Dear Gentleman,

Attached here with the Soil Embankment delivered on 22/ 12 / 2022

**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

*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 : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 30  
Sample No. : 06

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 98.4      |
| 25                 | 91.2      |
| 19                 | 85.4      |
| 12.50              | 72.1      |
| 9.50               | 61.7      |
| 4.75               | 52.9      |
| 2.36               | 49.3      |
| 2.00               | 48.1      |
| 1.18               | 42.1      |
| 0.600              | 37.3      |
| 0.425              | 32.7      |
| 0.300              | 27.2      |
| 0.150              | 17.9      |

Signature / ..

**CEL**  
مكتب معامل الاستشارات الهندسية  
الاسم: السيد / محمد  
219 - 905 - 037  
2 شارع الملك فيصل - القاهرة

Company Name : دعائم للاستثمار

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

Type of sample : Soil Embankment

Delivery Date : 22-12-2022

Reporting Date : 27-12-2022

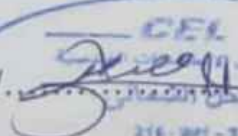
Reporting No. : 30

Sample No. : 06

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

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

Signature /

  
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315 - 3091 - 327  
شماره 31 شارع الملك ابي بكر - الزمالة - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 30  
Sample No. : 06

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

| Test               | Results<br>(%) |
|--------------------|----------------|
| Liquid Limit       | 22.7           |
| Plastic Limit      | 18.3           |
| Plasticity Index % | 4.4            |

Signature /...

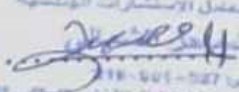


Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 30  
Sample No. : 06

Soil Classification According to Project Specs (Embankment)

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 48.1           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 32.7           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 13.5           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | 22.7           | -----                              | -----    |
| Plasticity index .....                               | 4.4            | Max 6 %                            | Max 6 %  |

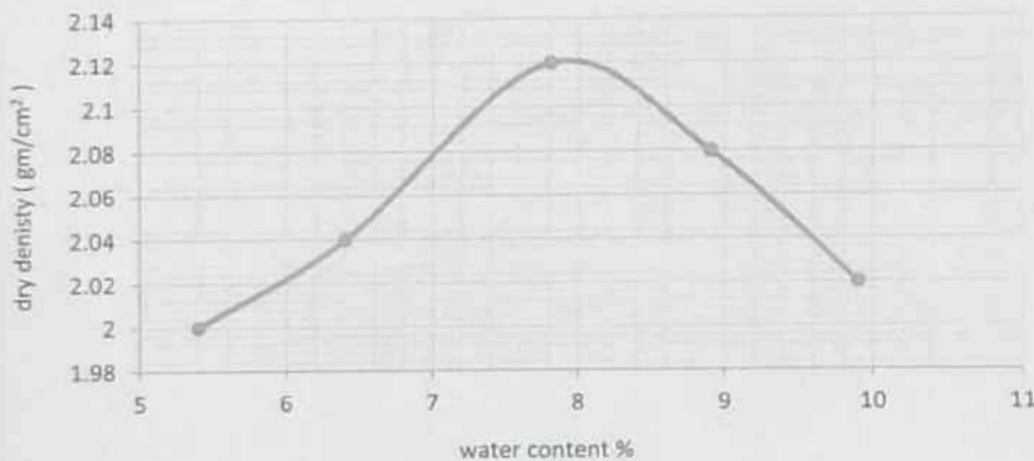
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature / .....   
  
 مكتب معامل الاستشارات الهندسية  
 3 شارع الملك الأفضل - القاهرة  
 رقم الترخيص: 27363093 - 27367231  
 إلكترونية الترخيص: 27367231 - 27363093

5

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 30  
Sample No. : 06

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



- Max dry density (gm/cm³) : 2.12
- Optimum moisture content % : 7.8

Signature /

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التوقيع  
214 - 501 - 537  
214 - 501 - 537  
214 - 501 - 537

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

Dear Gentleman,

Attached here with the Soil Embankment delivered on 22/ 12 / 2022

### Materials test

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

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

Signature



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 96.5      |
| 25                 | 87.1      |
| 19                 | 77.9      |
| 12.50              | 65.3      |
| 9.50               | 56.4      |
| 4.75               | 45.2      |
| 2.36               | 43.8      |
| 2.00               | 41.4      |
| 1.18               | 35.9      |
| 0.600              | 31.1      |
| 0.425              | 28.7      |
| 0.300              | 20.8      |
| 0.150              | 15.8      |

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

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

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

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

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

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

Signature / ...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

Soil Classification According to Project Specs (Embankment)

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
| • Group Classification                               | (A-1-a)        | (A-1-a)                            | (A-1-b)  |
| 2.00 mm (No.10).                                     | 41.4           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 28.7           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 13.5           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

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

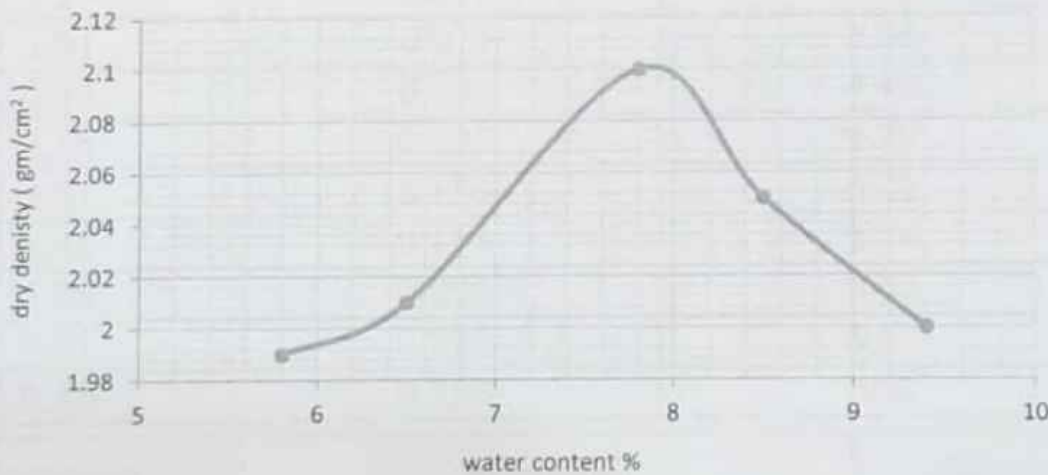
Signature / .....



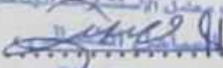
5

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 31  
Sample No. : 07

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



- Max dry density (gm/cm³) : 2.10
- Optimum moisture content % : 7.8

Signature / .....  
  
مكتب معامل الاستشارات الهندسية  
رئيس قسم الاختبارات : ٥٥١ - ٥٥٢ - ٥٥٣  
مركز القاهرة : ٣ شارع الماء العذب - ترمك - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 29-12-2022  
Reporting No. : 31  
Sample No. : 07

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 2.60                   |
| 1.27        | 0.050 | 3.40                   |
| 1.91        | 0.075 | 3.96                   |
| 2.54        | 0.100 | 4.44                   |
| 3.18        | 0.125 | 4.79                   |
| 3.81        | 0.150 | 5.00                   |
| 4.45        | 0.175 | 5.14                   |
| 5.08        | 0.200 | 5.35                   |
| 5.71        | 0.225 | 5.55                   |
| 6.35        | 0.250 | 5.62                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 64.39 |
|                                   | 6.90         | 4.44           |       |

**Notes :**

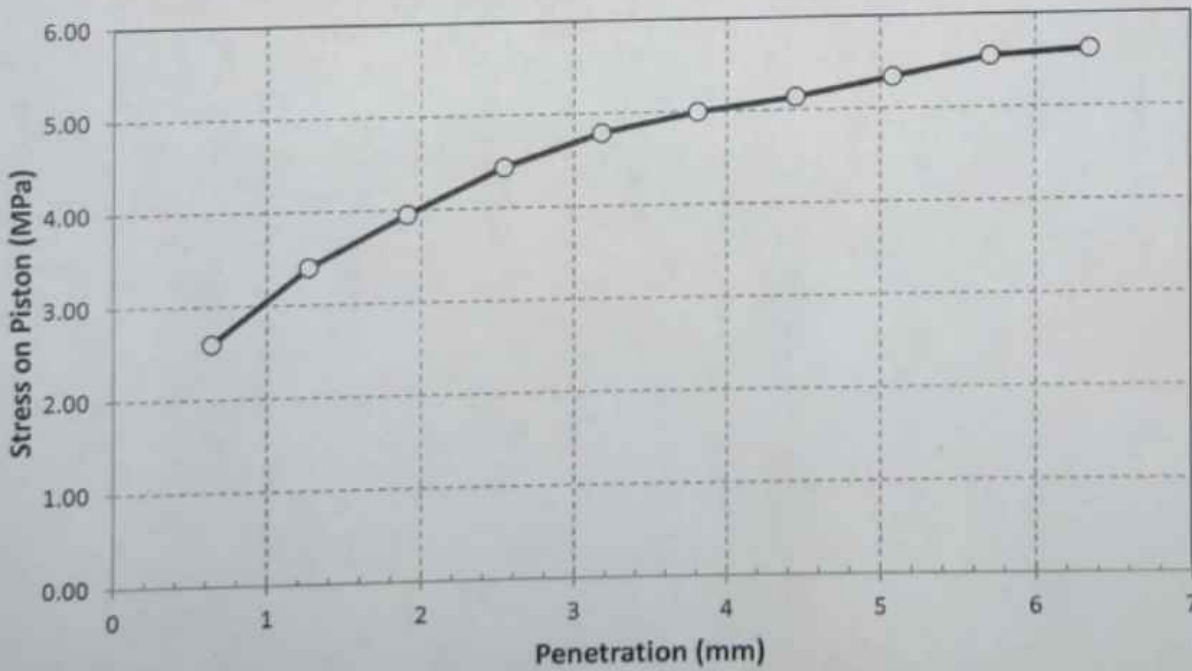
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.10 (gm /cm<sup>3</sup>) at 7.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature / .....

مكتب معامل الاستشارات الهندسية  
البريد الإلكتروني: cel@cel-egypt.com  
رقم التسجيل رقم 237 - 2019 - 219  
التمويل رقم 1 : 23 شراح شركة الاستشارات الهندسية - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 29-12-2022  
Reporting No. : 31  
Sample No. : 07

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



Signature

CEL  
السيد الشامي  
ر.د. المهندس الشامي  
310 - 901 - 827  
شمارات التليفون : 3 شوارع الملك الناصر - القاهرة - الجيزة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 32  
Sample No. : 08

Dear Gentleman,

Attached here with the Soil Embankment delivered on 22/ 12 / 2022

**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

*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 : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 32  
Sample No. : 08

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 97.5      |
| 25                 | 90.1      |
| 19                 | 82.4      |
| 12.50              | 73.1      |
| 9.50               | 62.7      |
| 4.75               | 51.2      |
| 2.36               | 49.0      |
| 2.00               | 48.2      |
| 1.18               | 40.8      |
| 0.600              | 37.5      |
| 0.425              | 35.7      |
| 0.300              | 28.9      |
| 0.150              | 17.2      |

Signature / ...



Company Name : دعائم للاستثمار

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

Type of sample : Soil Embankment

Delivery Date : 22-12-2022

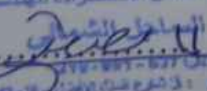
Reporting Date : 27-12-2022

Reporting No. : 32

Sample No. : 08

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 14.2           |

Signature / ...    
مكتب معامل الاستشارات الهندسية  
رئيس المكتب  
3 El Malek El Afdal Street  
Zamalek, Cairo.  
Tel. & Fax : 27367231 - 27363093

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 32  
Sample No. : 08

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

| Test               | Results (%) |
|--------------------|-------------|
| Liquid Limit       | 22.3        |
| Plastic Limit      | 18.5        |
| Plasticity Index % | 3.8         |

**CEL**  
مكتب معامل الاستشارات الهندسية  
الاسم: السيد / ...  
الترقية: ...  
التوقيع: ...  
التاريخ: ...

Signature / ...

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 32  
Sample No. : 08

Soil Classification According to Project Specs (Embankment)

| TEST                                                 | Results (%) | Limits according Projects Specs |          |
|------------------------------------------------------|-------------|---------------------------------|----------|
| • Group Classification                               | (A-1-b)     | (A-1-a)                         | (A-1-b)  |
| 2.00 mm (No.10).                                     | 48.2        | Max 50 %                        | -----    |
| 0.425 mm (No. 40).                                   | 35.7        | Max 30 %                        | Max 50 % |
| 0.075 mm (No. 200).                                  | 14.2        | Max 15 %                        | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |             |                                 |          |
| Liquid Limit .....                                   | 22.3        | -----                           | -----    |
| Plasticity index .....                               | 3.8         | Max 6 %                         | Max 6 %  |

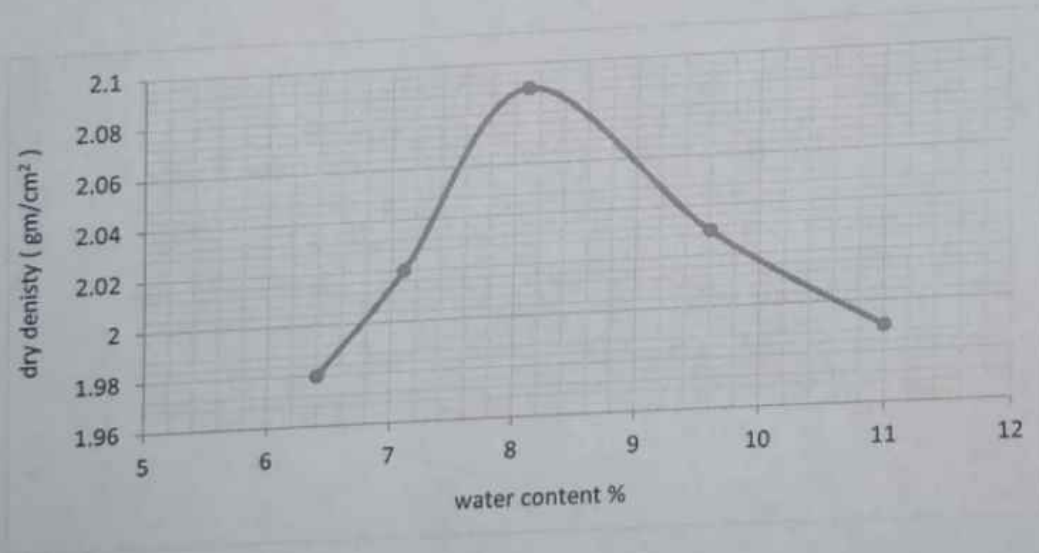
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 32  
Sample No. : 08

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



- Max dry density (gm/cm³) : 2.09
- Optimum moisture content % : 8.1

Signature / .....



Company Name : دعائم للاستثمار

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

Type of sample : Soil Embankment

Delivery Date : 22-12-2022

Reporting Date : 27-12-2022

Reporting No. : 33

Sample No. : 09

Dear Gentleman,

Attached here with the Soil Embankment delivered on 22/ 12 / 2022

### Materials test

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

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

Signature /



Company Name : دعائم للاستثمار

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

Type of sample : Soil Embankment

Delivery Date : 22-12-2022

Reporting Date : 27-12-2022

Reporting No. : 33

Sample No. : 09

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 97.4      |
| 25                 | 89.5      |
| 19                 | 81.8      |
| 12.50              | 71.7      |
| 9.50               | 63.4      |
| 4.75               | 51.2      |
| 2.36               | 48.9      |
| 2.00               | 46.5      |
| 1.18               | 43.3      |
| 0.600              | 36.9      |
| 0.425              | 32.4      |
| 0.300              | 21.8      |
| 0.150              | 15.0      |

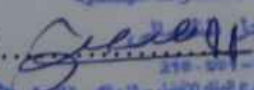
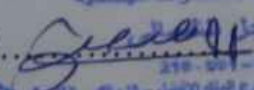
Signature

CEL  
مكتب معامل الاستشارات الهندسية  
الصالح الشحات  
رئيس قسم التحليلات  
2022-12-27  
مشاريع الطرق - الزمالة - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 33  
Sample No. : 09

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ m (No.200) | 13.3           |

Signature /   
  
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الاسم: المهندس /   
رقم الترخيص: 218 - 501 - 537  
المقر الرئيسي: 3 شارع الملك الأفدال - الزمالك - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 33  
Sample No. : 09

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 33  
Sample No. : 09

Soil Classification According to Project Specs (Embankment)

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 46.5           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 32.4           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 13.3           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

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

Signature / .....



Sample No. : 09

Scanned with CamScanner

Company Name : دعائم للاستثمار  
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
 Type of sample : Soil Embankment  
 Delivery Date : 22-12-2022  
 Reporting Date : 29-12-2022  
 Reporting No. : 33  
 Sample No. : 09

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 2.81                   |
| 1.27        | 0.050 | 3.52                   |
| 1.91        | 0.075 | 4.06                   |
| 2.54        | 0.100 | 4.72                   |
| 3.18        | 0.125 | 5.02                   |
| 3.81        | 0.150 | 5.27                   |
| 4.45        | 0.175 | 5.41                   |
| 5.08        | 0.200 | 5.51                   |
| 5.71        | 0.225 | 5.55                   |
| 6.35        | 0.250 | 5.62                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 68.36 |
|                                   | 6.90         | 4.72           |       |

### Notes :

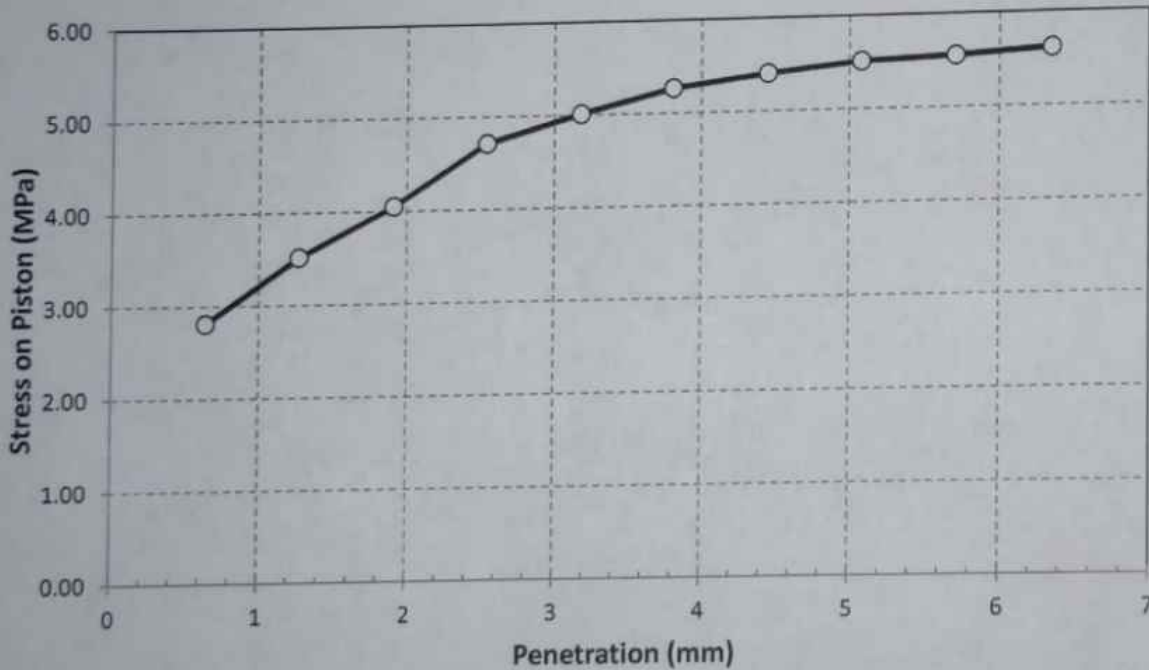
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.11 (gm /cm<sup>3</sup>) at 7.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature / ...

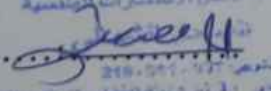
*(Handwritten signature and blue circular stamp)*

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 29-12-2022  
Reporting No. : 33  
Sample No. : 09

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



Signature /

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

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 34  
Sample No. : 10

Dear Gentleman,

Attached here with the Soil Embankment delivered on 22/ 12 / 2022

### 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

*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 : دعائم للاستثمار

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

Type of sample : Soil Embankment

Delivery Date : 22-12-2022

Reporting Date : 27-12-2022

Reporting No. : 34

Sample No. : 10

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 98.4      |
| 25                 | 87.4      |
| 19                 | 80.5      |
| 12.50              | 68.5      |
| 9.50               | 59.8      |
| 4.75               | 47.9      |
| 2.36               | 45.0      |
| 2.00               | 42.4      |
| 1.18               | 37.7      |
| 0.600              | 30.0      |
| 0.425              | 27.8      |
| 0.300              | 23.8      |
| 0.150              | 14.9      |

Signature /...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 34  
Sample No. : 10

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 34  
Sample No. : 10

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

| Test               | Results<br>(%) |
|--------------------|----------------|
| Liquid Limit       | 24.5           |
| Plastic Limit      | 18.7           |
| Plasticity Index % | 5.8            |

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 34  
Sample No. : 10

**Soil Classification According to Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
| • Group Classification                               | (A-1-a)        | (A-1-a)                            | (A-1-b)  |
| 2.00 mm (No.10).                                     | 42.4           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 27.8           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 10.7           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | 24.5           | -----                              | -----    |
| Plasticity index .....                               | 5.8            | Max 6 %                            | Max 6 %  |

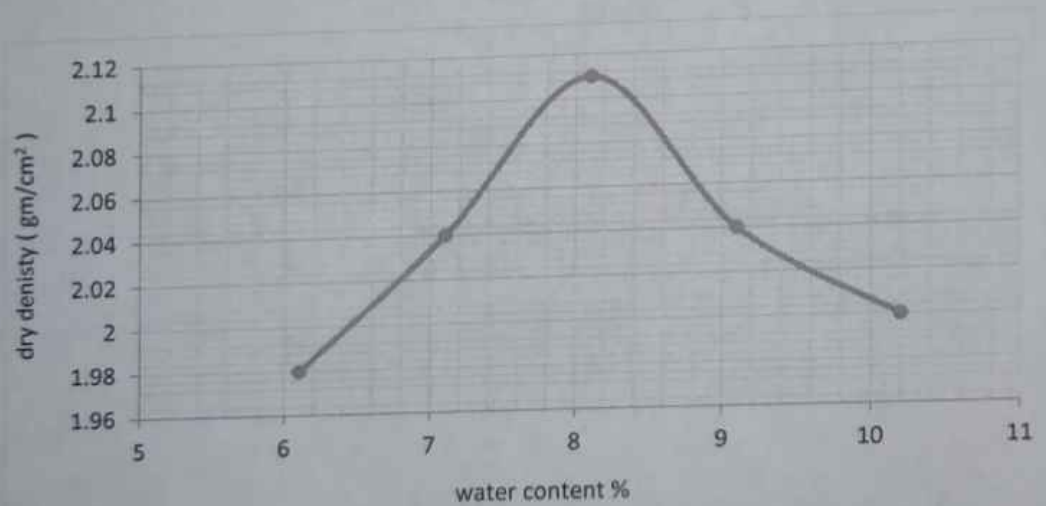
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature / .....

  
مكتب معامل الاستشارات الهندسية  
دعائم للاستثمار  
البريد الإلكتروني: info@cel-egypt.com  
رقب التماسك: 011-4371111 - 011-4371112  
مركز: 011-4371113 - 011-4371114

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Soil Embankment  
Delivery Date : 22-12-2022  
Reporting Date : 27-12-2022  
Reporting No. : 34  
Sample No. : 10

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



- Max dry density (gm/cm<sup>2</sup>) : 2.11
- Optimum moisture content % : 8.1

Signature / .....

**CEL**  
مكتب معامل الاستشارات الهندسية  
أحمد يونس  
رئيس المختبر  
27367231 - 27363093  
مصر - القاهرة - شارع الملك الأفندي - 3

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 12

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

**Materials test**

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 12

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 92.1      |
| 25                 | 88.1      |
| 19                 | 84.3      |
| 12.50              | 79.1      |
| 9.50               | 75.3      |
| 4.75               | 66.7      |
| 2.36               | 65.3      |
| 2.00               | 64.6      |
| 1.18               | 57.9      |
| 0.600              | 44.4      |
| 0.425              | 38.9      |
| 0.300              | 21.9      |
| 0.150              | 13.5      |

Signature / ...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 12

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 11.7           |

Signature / ...



Company Name : دعائم للاستثمار

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

Type of sample : Middle & Upper Embankment

Delivery Date : 21-11-2022

Reporting Date : 30-11-2022

Reporting No. : 12

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 12

**Soil Classification According To Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
| • Group Classification                               | (A-1-b)        | (A-1-a)                            | (A-1-b)  |
| 2.00 mm (No.10).                                     | 64.6           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 38.9           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 11.7           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

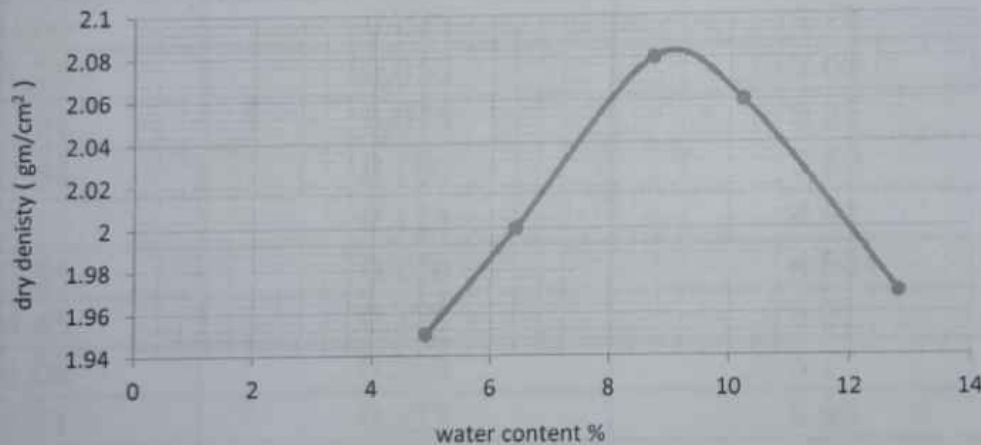
The test results is (☒ Comply - ☐ Not Comply) with specifications limits

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 12

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



- Max dry density (gm/cm³) : 2.08
- Optimum moisture content % : 8.7

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 03-12-2022  
Reporting No. : 12

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

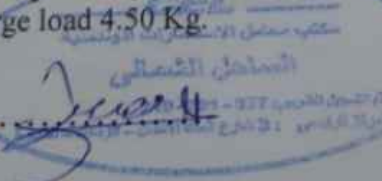
| Penetration |       | Stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 1.78                   |
| 1.27        | 0.050 | 2.49                   |
| 1.91        | 0.075 | 3.25                   |
| 2.54        | 0.100 | 3.80                   |
| 3.18        | 0.125 | 4.41                   |
| 3.81        | 0.150 | 4.88                   |
| 4.45        | 0.175 | 5.33                   |
| 5.08        | 0.200 | 5.73                   |
| 5.71        | 0.225 | 5.98                   |
| 6.35        | 0.250 | 6.09                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 55.13 |
|                                   | 6.90         | 3.80           |       |

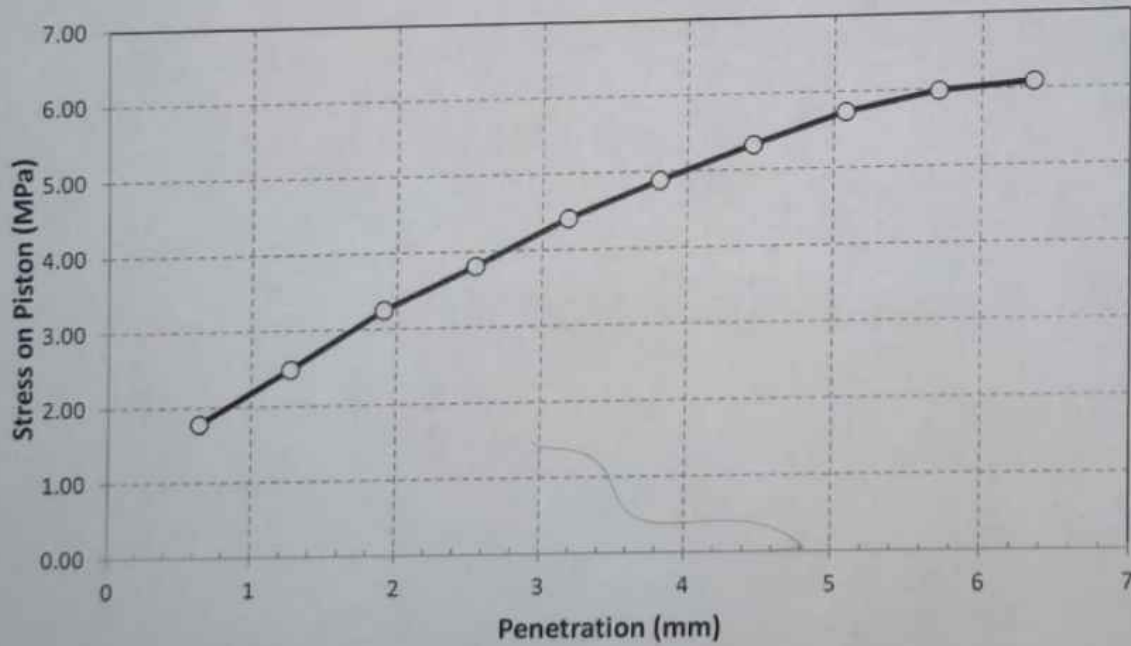
**Notes :**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.08 (gm /cm<sup>3</sup>) at 8.7 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature / 

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 03-12-2022  
Reporting No. : 12

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



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3 شارع محمد علي - القاهرة - 11511  
تليفون + فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
www.cel-egypt.com

Company Name : دعاءم للاستشارات  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 13

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

**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.

*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 : دعائم للاستشارات  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 13

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 96.3      |
| 25                 | 90.2      |
| 19                 | 86.4      |
| 12.50              | 80.4      |
| 9.50               | 75.8      |
| 4.75               | 65.8      |
| 2.36               | 64.1      |
| 2.00               | 63.6      |
| 1.18               | 50.1      |
| 0.600              | 42.7      |
| 0.425              | 39.1      |
| 0.300              | 20.8      |
| 0.150              | 16.6      |

Signature /.....



Company Name : د. عالم للاستشارات

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

Type of sample : Middle & Upper Embankment

Delivery Date : 21-11-2022

Reporting Date : 30-11-2022

Reporting No. : 13

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

| Test                                                             | Results (%) |
|------------------------------------------------------------------|-------------|
| Percentage of material finer than Sieve Size 75 $\mu$ m (No.200) | 12.1        |

Signature /.....



Company Name : د.عالم للاستشارات  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 13

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

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

Signature / .....

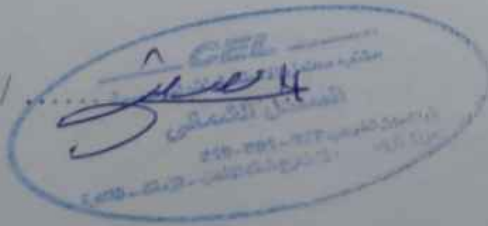
Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 13

**Soil Classification According To Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 63.6           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 39.1           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 12.1           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

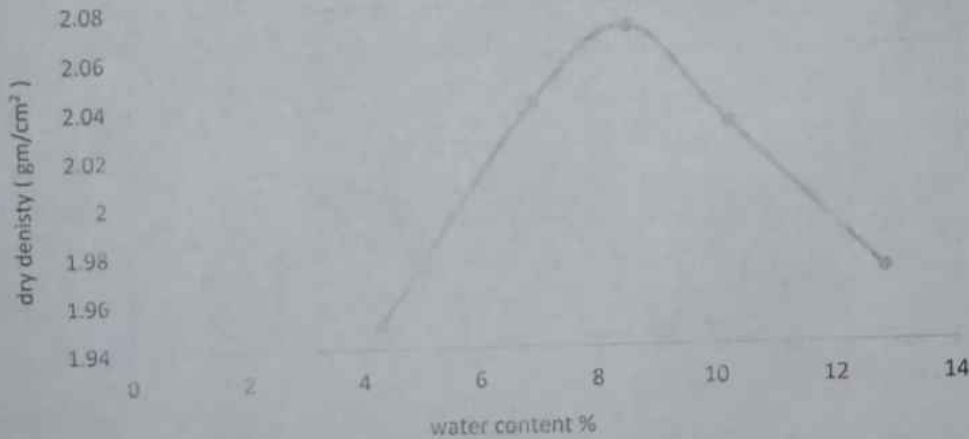
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 13

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



- Max dry density (gm/cm³) : 2.07
- Optimum moisture content % : 8.5

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

### Materials test

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

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

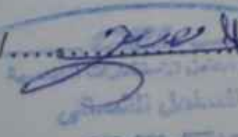
Signature /...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 100       |
| 25                 | 96.6      |
| 19                 | 92.5      |
| 12.50              | 85.4      |
| 9.50               | 76.4      |
| 4.75               | 69.7      |
| 2.36               | 65.5      |
| 2.00               | 62.1      |
| 1.18               | 59.3      |
| 0.600              | 43.7      |
| 0.425              | 41.1      |
| 0.300              | 36.9      |
| 0.150              | 20.5      |

Signature / 



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 12.3           |

Signature /.....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

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

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

Signature / ...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

**Soil Classification According To Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 62.1           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 41.1           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 12.3           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

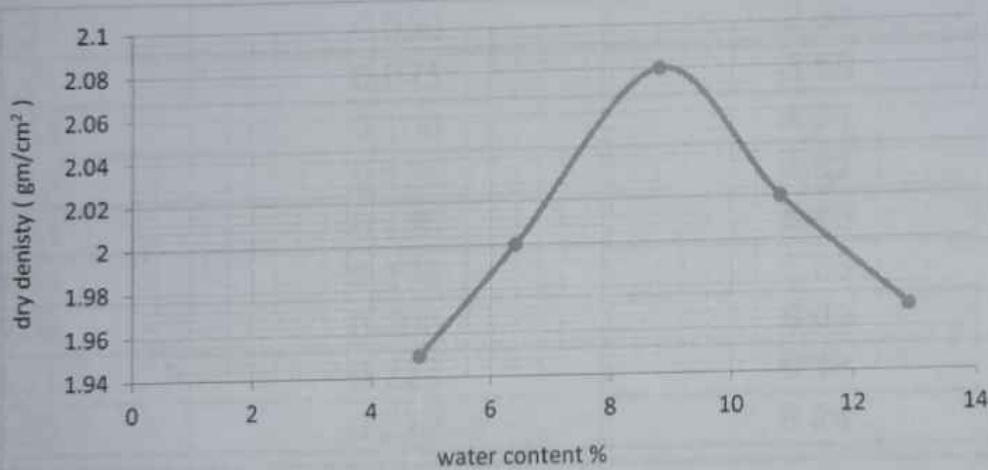
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 14

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



- Max dry density (gm/cm²) : 2.08
- Optimum moisture content % : 8.8

Signature / .....

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 03-12-2022  
Reporting No. : 14

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

| Penetration |       | Stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 2.13                   |
| 1.27        | 0.050 | 2.94                   |
| 1.91        | 0.075 | 3.68                   |
| 2.54        | 0.100 | 4.21                   |
| 3.18        | 0.125 | 4.82                   |
| 3.81        | 0.150 | 5.45                   |
| 4.45        | 0.175 | 5.83                   |
| 5.08        | 0.200 | 6.09                   |
| 5.71        | 0.225 | 6.18                   |
| 6.35        | 0.250 | 6.24                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 61.01 |
|                                   | 6.90         | 4.21           |       |

**Notes :**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.08 (gm /cm<sup>3</sup>) at 8.8 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature /

Company Name : دعائم للاستثمار

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

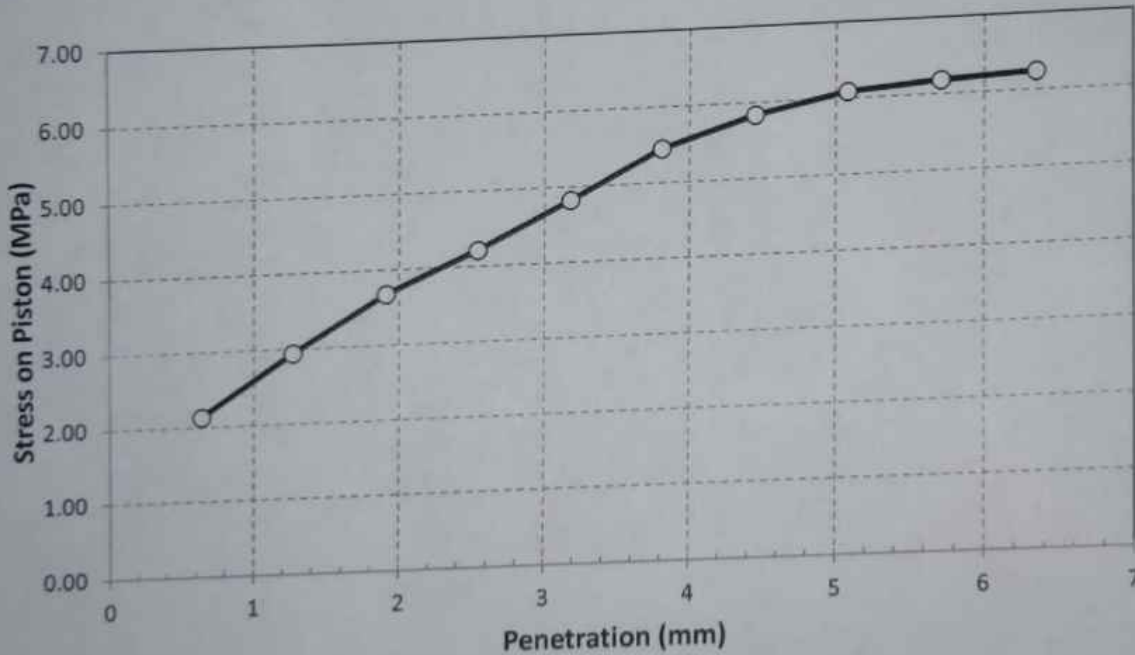
Type of sample : Middle & Upper Embankment

Delivery Date : 21-11-2022

Reporting Date : 03-12-2022

Reporting No. : 14

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



Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

**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

*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 : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 98.8      |
| 25                 | 95.3      |
| 19                 | 90.4      |
| 12.50              | 86.7      |
| 9.50               | 78.8      |
| 4.75               | 68.9      |
| 2.36               | 67.1      |
| 2.00               | 66.4      |
| 1.18               | 60.5      |
| 0.600              | 54.3      |
| 0.425              | 49.1      |
| 0.300              | 30.8      |
| 0.150              | 21.9      |

Signature / .....

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 12.9           |

Signature /.....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

Soil Classification According To Project Specs (Embankment)

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 66.4           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 49.1           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 12.9           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

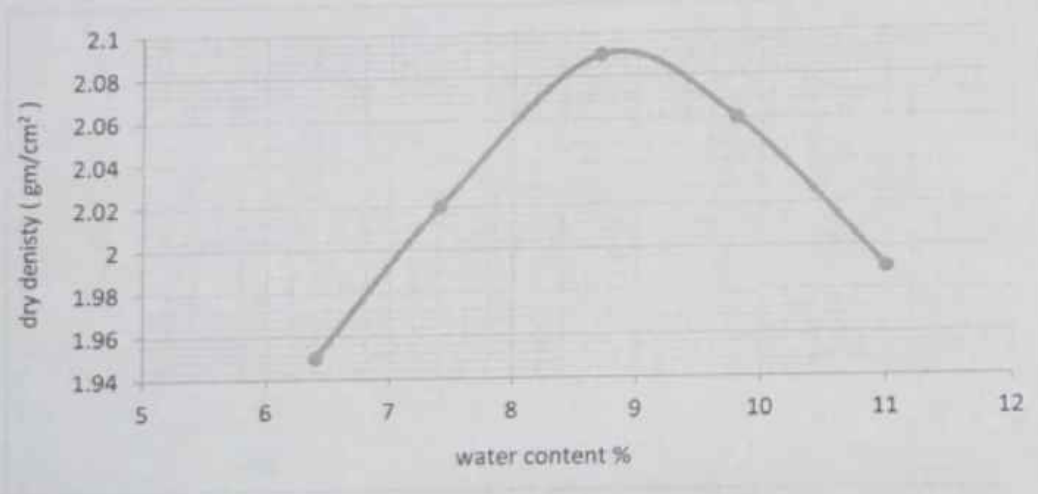
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 15

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



- Max dry density (gm/cm³) : 2.09
- Optimum moisture content % : 8.7

Signature /

*[Handwritten signature]*

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

### Materials test

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

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

Signature /.....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 96.2      |
| 25                 | 89.4      |
| 19                 | 88.3      |
| 12.50              | 81.7      |
| 9.50               | 75.4      |
| 4.75               | 64.8      |
| 2.36               | 60.9      |
| 2.00               | 59.1      |
| 1.18               | 52.3      |
| 0.600              | 45.1      |
| 0.425              | 34.1      |
| 0.300              | 23.1      |
| 0.150              | 17.7      |

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 12.1           |

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

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

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

Signature / .....

CEL  
مكتب معامل الاستشارات الهندسية  
المهندس / محمد الشحات  
رئيس قسم التربة والصخور  
البريد الإلكتروني: info@cel-egypt.com  
الهاتف: 27367231 - 27363093

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

**Soil Classification According To Project Specs (Embankment)**

| TEST                                                 | Results (%) | Limits according Projects Specs |          |
|------------------------------------------------------|-------------|---------------------------------|----------|
| • Group Classification                               | (A-1-b)     | (A-1-a)                         | (A-1-b)  |
| 2.00 mm (No.10).                                     | 59.1        | Max 50 %                        | -----    |
| 0.425 mm (No. 40).                                   | 34.1        | Max 30 %                        | Max 50 % |
| 0.075 mm (No. 200).                                  | 12.1        | Max 15 %                        | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |             |                                 |          |
| Liquid Limit .....                                   | NP          | -----                           | -----    |
| Plasticity index .....                               | NP          | Max 6 %                         | Max 6 %  |

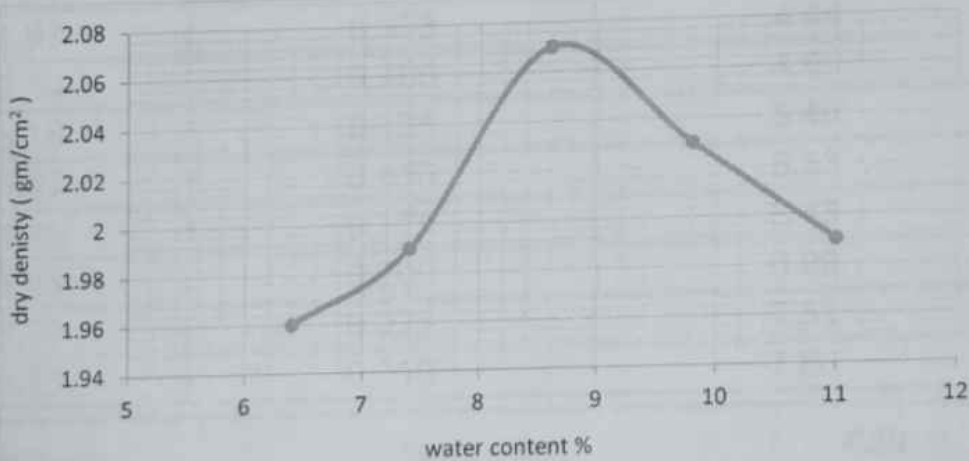
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature /

  
مكتب معامل الاستشارات الهندسية  
التسجيل رقم ١١٠٠٠٠٠٠٠٠٠٠٠٠  
رقم الترخيص ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
شارع الملك الأفضل - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 16

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



- Max dry density (gm/cm³) : 2.07
- Optimum moisture content % : 8.6

Signature / .....



Company Name : دعائم للاستثمار  
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
 Type of sample : Middle & Upper Embankment  
 Delivery Date : 21-11-2022  
 Reporting Date : 03-12-2022  
 Reporting No. : 16

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

| Penetration |       | Stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 3.25                   |
| 1.27        | 0.050 | 3.79                   |
| 1.91        | 0.075 | 4.44                   |
| 2.54        | 0.100 | 4.90                   |
| 3.18        | 0.125 | 5.46                   |
| 3.81        | 0.150 | 5.83                   |
| 4.45        | 0.175 | 6.43                   |
| 5.08        | 0.200 | 6.99                   |
| 5.71        | 0.225 | 7.51                   |
| 6.35        | 0.250 | 7.86                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 71.0  |
|                                   | 6.90         | 4.90           |       |

**Notes :**

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.07 (gm /cm<sup>3</sup>) at 8.6 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature /

Company Name : دعائم للاستثمار

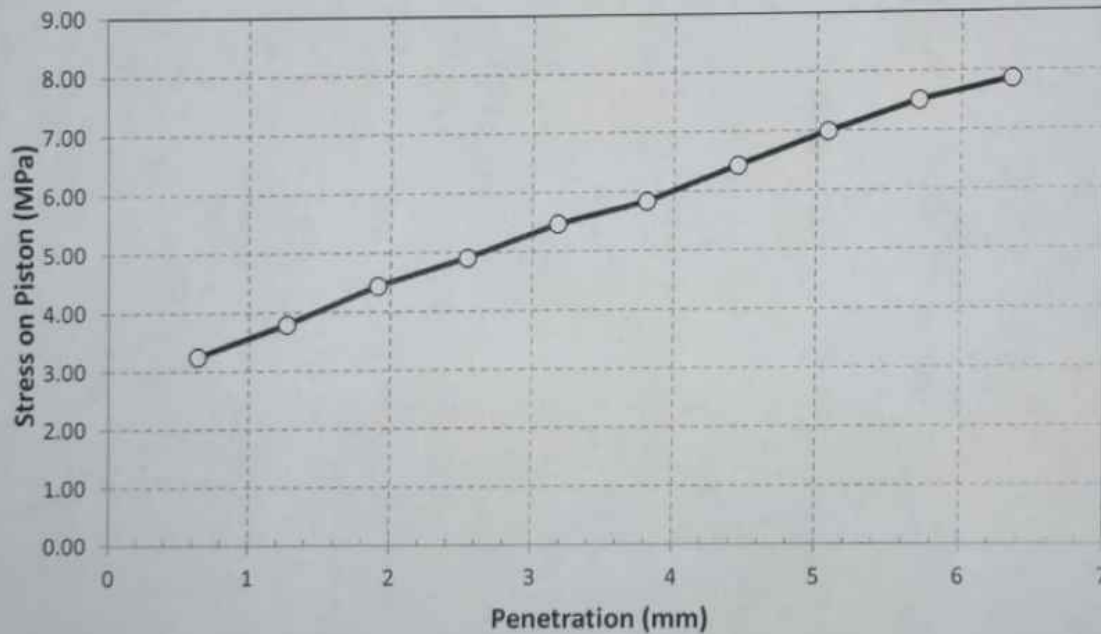
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh

Type of sample : Middle &amp; Upper Embankment

Delivery Date : 21-11-2022

Reporting Date : 03-12-2022

Reporting No. : 16

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

Signature

Company Name : د.عالم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

Dear Gentleman,

Attached here with the Middle & Upper Embankment delivered on 21 / 11 / 2022

**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

*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 : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 97.1      |
| 25                 | 90.3      |
| 19                 | 86.7      |
| 12.50              | 79.2      |
| 9.50               | 75.4      |
| 4.75               | 61.8      |
| 2.36               | 59.3      |
| 2.00               | 57.6      |
| 1.18               | 50.8      |
| 0.600              | 44.4      |
| 0.425              | 42.8      |
| 0.300              | 34.8      |
| 0.150              | 21.2      |

Signature / .....

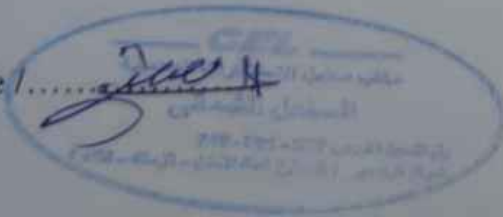
  
الممثل  
27367231 - 27363093  
مكتب معامل الاستشارات الهندسية

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 11.6           |

Signature / .....



Company Name : د.عالم للاستعمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

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

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

Signature / .....

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

**Soil Classification According To Project Specs (Embankment)**

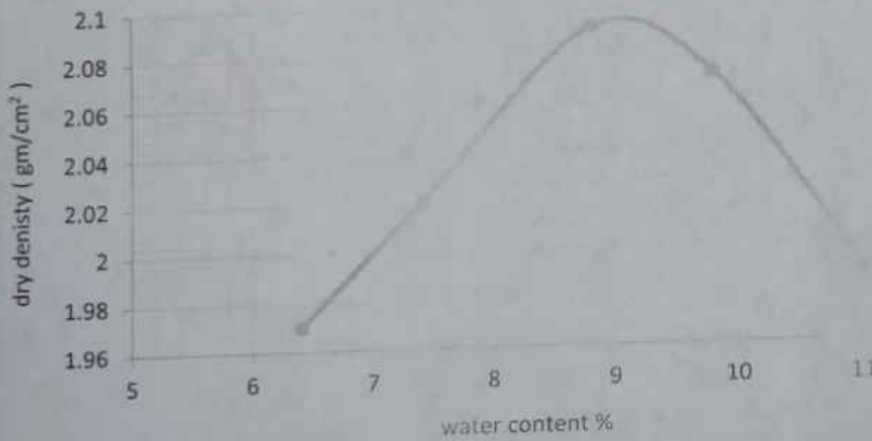
| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 57.6           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 42.8           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 11.6           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

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

Signature / ..... 

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matruh  
Type of sample : Middle & Upper Embankment  
Delivery Date : 21-11-2022  
Reporting Date : 30-11-2022  
Reporting No. : 17

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



- Max dry density (gm/cm³) : 2.09
- Optimum moisture content % : 8.8

Signature / .....

*[Handwritten Signature]*  
مكتب معامل الاستشارات الهندسية  
الاستشاري  
رقم التسجيل ٢٢٢٢ - ٢٢٢٢  
الاستشاري  
الاستشاري

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 19

Dear Gentleman,

Attached here with Embankment the delivered on 30/ 11 / 2022

**Materials test**

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

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

Signature

  
مكتب معامل الاستشارات الهندسية  
المصاحف، الشبراخية  
رقم الترخيص: ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣  
إدارة الجودة: شارع النيل - قريّة - القاهرة

Company Name : دعائم للاستثمار

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

Type of sample : Embankment

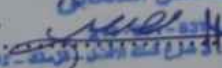
Delivery Date : 30-11-2022

Reporting Date : 4-12-2022

Reporting No. : 19

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 100       |
| 25                 | 96.2      |
| 19                 | 94.3      |
| 12.50              | 82.4      |
| 9.50               | 79.1      |
| 4.75               | 71.2      |
| 2.36               | 68.8      |
| 2.00               | 67.9      |
| 1.18               | 60.5      |
| 0.600              | 54.3      |
| 0.425              | 38.3      |
| 0.300              | 28.6      |
| 0.150              | 18.8      |

Signature /   
مكتب معامل الاستشارات الهندسية  
الساحل الشمالي  
رام الله - فلسطين  
شركة المالك - القاهرة

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 19

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 13.2           |

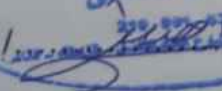
Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 19

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

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

Signature /   


Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 19

**Soil Classification According to Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
| • Group Classification                               | (A-1-b)        | (A-1-a)                            | (A-1-b)  |
| 2.00 mm (No.10).                                     | 67.9           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 38.3           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 13.2           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

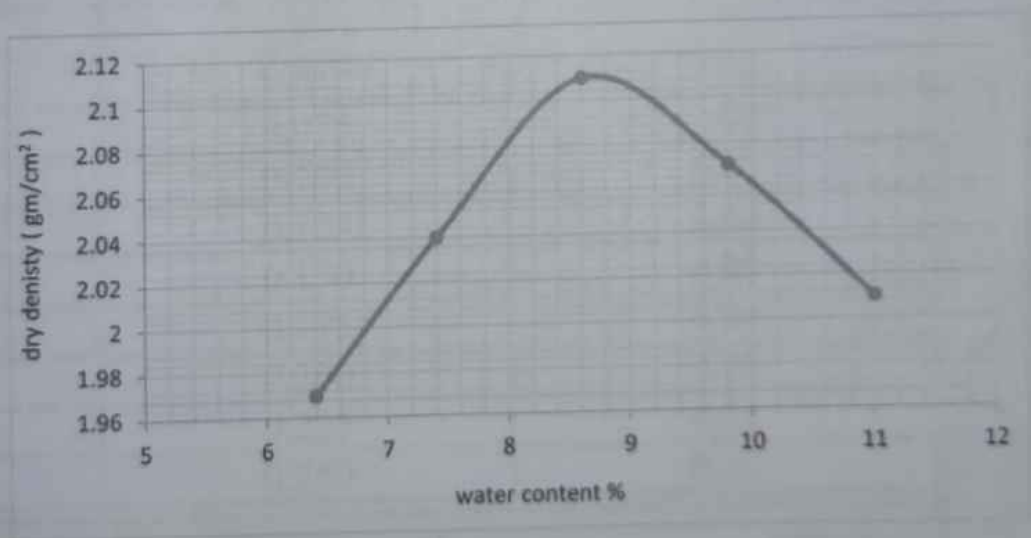
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

**CEL**  
مكتب معمل الاستشارات الهندسية  
الساحل الشمالي  
رقم تسجيله ٢٧٣٦٧٢٣١  
شركة المساحة والهندسة المدنية والبيئية

Signature /

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 19

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



- Max dry density (gm/cm³) : 2.11
- Optimum moisture content % : 8.6

Signature /

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 08-12-2022  
Reporting No. : 19

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 1.92                   |
| 1.27        | 0.050 | 2.46                   |
| 1.91        | 0.075 | 2.88                   |
| 2.54        | 0.100 | 3.21                   |
| 3.18        | 0.125 | 3.60                   |
| 3.81        | 0.150 | 4.00                   |
| 4.45        | 0.175 | 4.24                   |
| 5.08        | 0.200 | 4.50                   |
| 5.71        | 0.225 | 4.75                   |
| 6.35        | 0.250 | 5.20                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 46.53 |
|                                   | 6.90         | 3.21           |       |

**Notes :**

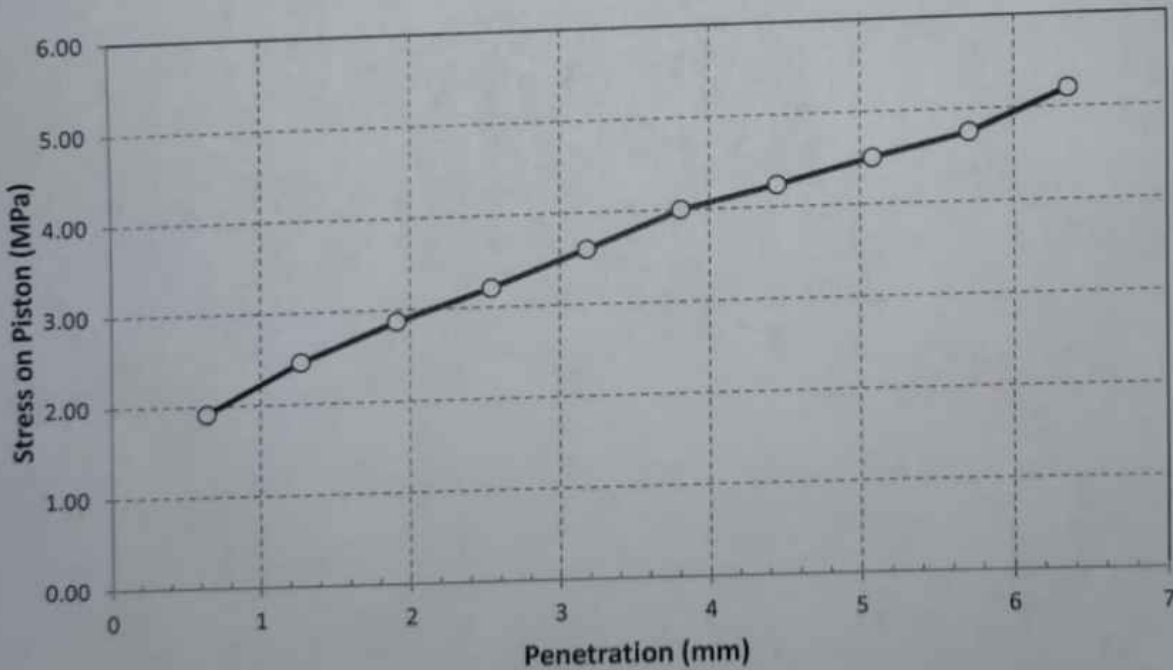
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.11 (gm /cm<sup>3</sup>) at 8.6 % optimum water content.
- 3- Surcharge load 4.50 Kg.

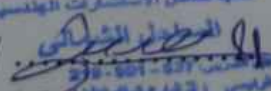
Signature /

المهندس/المختبر  
إبراهيم محمد  
مهندس  
مختبر  
مختبر

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 08-12-2022  
Reporting No. : 19

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



Signature /   
مكتب معامل الاستشارات الهندسية  
الفرع الرئيسي - القاهرة  
رقم هاتف: ٢٧٣٦٣٠٩٣ - ٢٧٣٦٧٢٣١  
فاكس: ٢٧٣٦٣٠٩٣  
البريد الإلكتروني: cel@cel-egypt.com

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

Dear Gentleman,

Attached here with the Embankment delivered on 30/ 11 / 2022

**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

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

Signature /



22

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 100       |
| 25                 | 95.2      |
| 19                 | 92.1      |
| 12.50              | 83.4      |
| 9.50               | 78.1      |
| 4.75               | 70.2      |
| 2.36               | 66.3      |
| 2.00               | 65.6      |
| 1.18               | 53.7      |
| 0.600              | 42.8      |
| 0.425              | 37.2      |
| 0.300              | 29.9      |
| 0.150              | 15.5      |

**CEL**  
مكتب معامل الاستشارات الهندسية  
المسجل في السجل التجاري  
رقم التسجيل: ٢٧٣٦٧٢٣١  
عنوان: ٣ شارع الملك الأفضل - الزمالك - القاهرة

Signature / 

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 13.7           |

Signature /

مكتب معامل الاستشارات الهندسية  
السيد / السيد /  
رقم الترخيص /  
شماره الترخيص /

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

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

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

Signature /.....

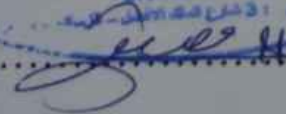
CEL  
مكتب معامل الاستشارات الهندسية  
السياسة  
رقم التسجيل ٢٠٠٩  
مركز التأسيس ٢٠٠٩

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

**Soil Classification According to Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        | (A-1-a)                            | (A-1-b)  |
| 2.00 mm (No.10).                                     | 65.6           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 37.2           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 13.7           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

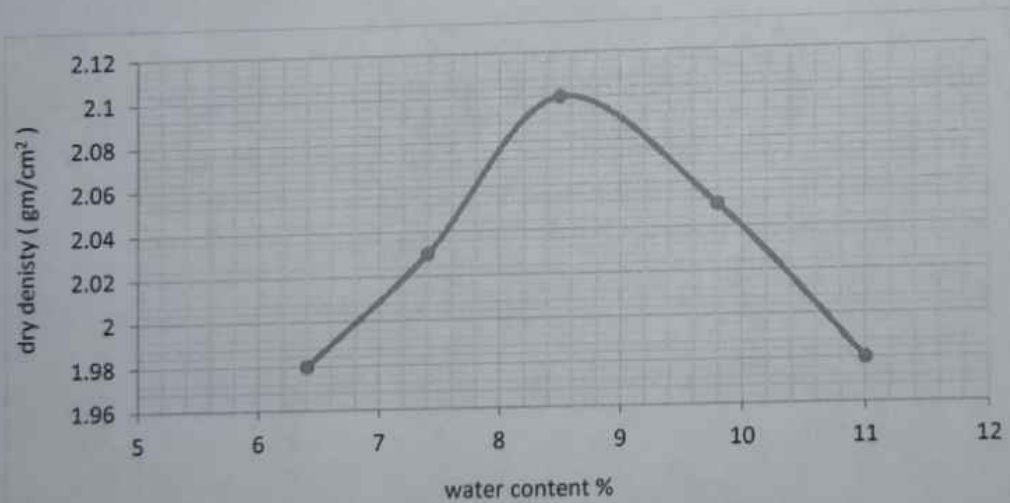
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature / 



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 4-12-2022  
Reporting No. : 20

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



- Max dry density (gm/cm³) : 2.10
- Optimum moisture content % : 8.5

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 05-12-2022  
Reporting No. : 21

Dear Gentleman,

Attached here with the Embankment delivered on 30/ 11 / 2022

**Materials test**

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

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

Signature / .....



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 05-12-2022  
Reporting No. : 21

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

| Sieve Size<br>(mm) | Passing % |
|--------------------|-----------|
| 50                 | 100       |
| 37.5               | 100       |
| 25                 | 96.3      |
| 19                 | 93.9      |
| 12.50              | 85.5      |
| 9.50               | 82.5      |
| 4.75               | 73.3      |
| 2.36               | 70.0      |
| 2.00               | 69.3      |
| 1.18               | 61.2      |
| 0.600              | 53.7      |
| 0.425              | 41.7      |
| 0.300              | 38.2      |
| 0.150              | 20.5      |

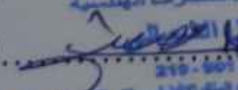
Signature / ...



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 05-12-2022  
Reporting No. : 21

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

| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ m (No.200) | 14.5           |

Signature /   
  
مكتب معامل الاستشارات الهندسية  
التمثيل  
رئيس قسم هندسة الطرق  
219 - 901 - 007  
قصر الجيزة : شارع الملك الأفندي - القاهرة

مكتب معامل الاستشارات الهندسية

**Company Name :** دعائم للاستثمار

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

Type of sample : Embankment

**Delivery Date : 30-11-2022**

Reporting Date : 05-12-2022

Reporting No. : 21

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

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

Signature \_\_\_\_\_

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 05-12-2022  
Reporting No. : 21

**Soil Classification According to Project Specs (Embankment)**

| TEST                                                 | Results<br>(%) | Limits according<br>Projects Specs |          |
|------------------------------------------------------|----------------|------------------------------------|----------|
|                                                      |                | (A-1-a)                            | (A-1-b)  |
| • Group Classification                               | (A-1-b)        |                                    |          |
| 2.00 mm (No.10).                                     | 69.3           | Max 50 %                           | -----    |
| 0.425 mm (No. 40).                                   | 41.7           | Max 30 %                           | Max 50 % |
| 0.075 mm (No. 200).                                  | 14.5           | Max 15 %                           | Max 15 % |
| Characteristics of fraction passing 0.425 mm (No.40) |                |                                    |          |
| Liquid Limit .....                                   | NP             | -----                              | -----    |
| Plasticity index .....                               | NP             | Max 6 %                            | Max 6 %  |

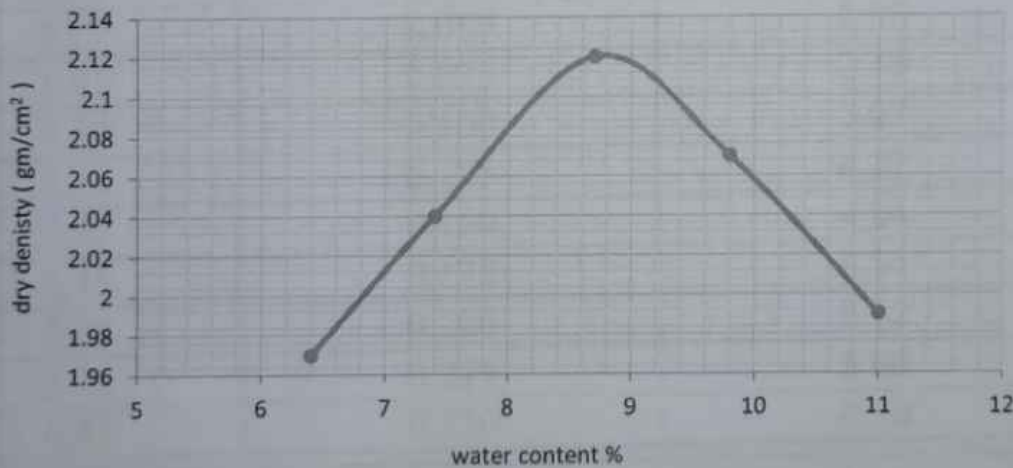
The test results are (☒ Comply - ☐ Not Comply) with specifications limits

Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Embankment  
Delivery Date : 30-11-2022  
Reporting Date : 05-12-2022  
Reporting No. : 21

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



- Max dry density (gm/cm³) : 2.12
- Optimum moisture content % : 8.7

Signature / .....

  
مكتب معامل الاستشارات الهندسية  
الاسماء: .....  
رقم التسجيل: 273 - 274 - 275  
القاهرة - الجيزة - المنيا - الفيوم - الدقهية - البحيرة - شبراخيت - دمياط - بورسعيد - العريش - رفح - غزة

Company Name : دعائم للاستثمار

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

Type of sample : Embankment

Delivery Date : 30-11-2022

Reporting Date : 08-12-2022

Reporting No. : 21

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

| penetration |       | stress on piston (Mpa) |
|-------------|-------|------------------------|
| mm          | Inch  |                        |
| 0.64        | 0.025 | 2.18                   |
| 1.27        | 0.050 | 2.88                   |
| 1.91        | 0.075 | 3.49                   |
| 2.54        | 0.100 | 3.97                   |
| 3.18        | 0.125 | 4.37                   |
| 3.81        | 0.150 | 4.84                   |
| 4.45        | 0.175 | 5.38                   |
| 5.08        | 0.200 | 5.72                   |
| 5.71        | 0.225 | 5.96                   |
| 6.35        | 0.250 | 6.18                   |

| CBR Result                        | Stress (Mpa) |                | CBR % |
|-----------------------------------|--------------|----------------|-------|
| At 0.1 inch (2.54 mm) penetration | St. Value    | Sample results | 57.48 |
|                                   | 6.90         | 3.97           |       |

### Notes :

- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.12 (gm /cm<sup>3</sup>) at 8.7 % optimum water content.
- 3- Surcharge load 4.50 Kg.

Signature /

*[Handwritten Signature]*

Company Name : دعائم للاستثمار

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

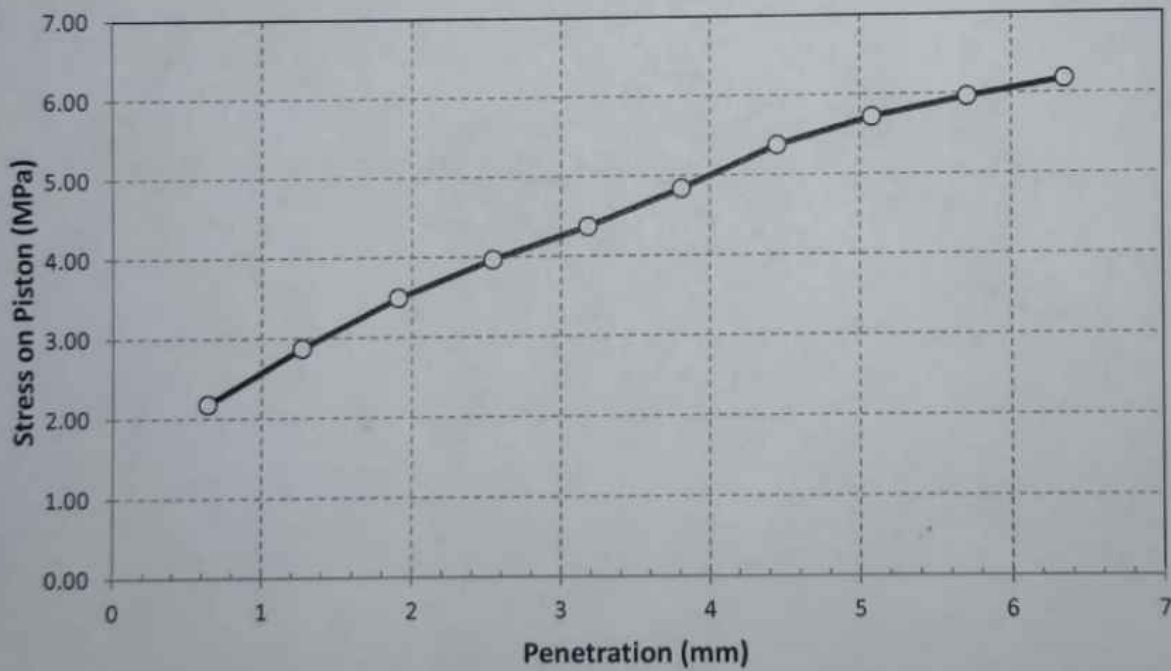
Type of sample : Embankment

Delivery Date : 30-11-2022

Reporting Date : 08-12-2022

Reporting No. : 21

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



Signature /



Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Prepared Subgrade.  
Delivery Date : 03/04/2023  
Reporting Date : 09/04/2023  
Reporting No. : 46  
Sample No. : 01

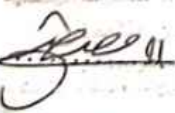
Dear Gentleman,

Attached here with the Prepared Subgrade delivered on 03/04/2023

**Materials test**

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Liquid limits and plasticity index of soil according to D-4318.
4. Proctor Test according to D-1557
5. CBR according to ASTM D-1883
6. Los Anglos according to ASTM C-535.

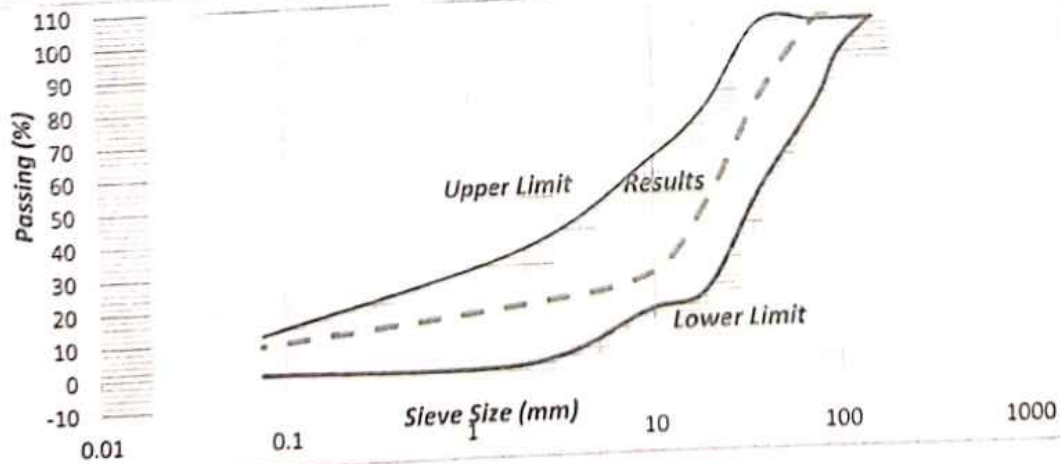
*Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken*

Signature /..... 

Company Name : د.عالم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Prepared Subgrade.  
Delivery Date : 03/04/2023  
Reporting Date : 09/04/2023  
Reporting No. : 46  
Sample No. : 01

## Results of sieve analysis according to ASTM D-422.

| Sieve Size (mm) | Passing % | Job specification limits (ASTM D-422) |      |
|-----------------|-----------|---------------------------------------|------|
|                 |           | Min.                                  | Max. |
|                 | 100       | 100                                   | 100  |
| 125             | 100       | 90                                    | 100  |
| 100             | 100       | 75                                    | 100  |
| 75              | 100       | --                                    | --   |
| 50              | 98.9      | 50                                    | 100  |
| 37.5            | 77.7      | --                                    | 100  |
| 25              | 54.0      | 20                                    | 75   |
| 19              | 46.0      | --                                    | --   |
| 12.5            | 30.6      | 15                                    | 60   |
| 9.5             | 25.9      | --                                    | --   |
| 4.75            | 20.3      | 0                                     | 35   |
| 2.00            | 18.1      | 0                                     | --   |
| 0.425           | 14.1      | 0                                     | 12   |
| 0.075           | 8.9       | 0                                     | --   |



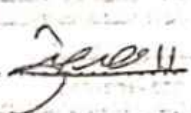
The test results are ( ☒ Comply - ☐ Not Comply ) with specifications limits.

Signature /.....

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Prepared Subgrade.  
Delivery Date : 03/04/2023  
Reporting Date : 09/04/2023  
Reporting No. : 46  
Sample No. : 01

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

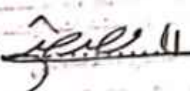
| Test                                                                | Results<br>(%) |
|---------------------------------------------------------------------|----------------|
| Percentage of material finer than<br>Sieve Size 75 $\mu$ M (No.200) | 8.9            |

Signature /.... 

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Prepared Subgrade.  
Delivery Date : 03/04/2023  
Reporting Date : 09/04/2023  
Reporting No. : 46  
Sample No. : 01

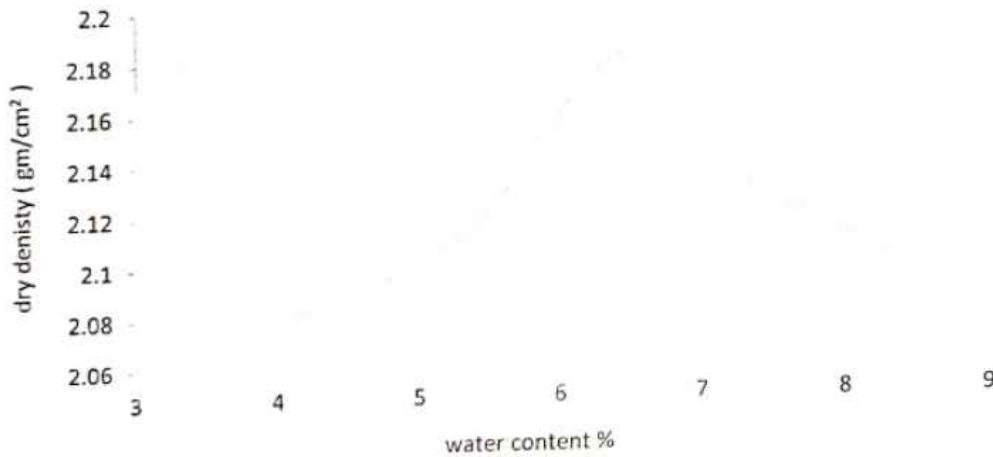
**Results of liquid limit and plasticity index  
of soils according to ASTM D-4318**

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

Signature /.... 

Company Name : دعائم للاستثمار  
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh  
Type of sample : Prepared Subgrade.  
Delivery Date : 03/04/2023  
Reporting Date : 09/04/2023  
Reporting No. : 46  
Sample No. : 01

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



- Max dry density (gm/cm³) : 2.18
- Optimum moisture content % : 6.4

Signature / .....