



المنطقة الخامسة - ( غرب الدلتا )

## السيد المهندس / رئيس قطاع التنفيذ والمناطق

تحية طيبة.. وبعد،،

بالإحالة إلى مشروع القطار السريع فائق السرعة ( فوكة - مطروح ) (القطاع السابع )  
نتشرف بأن نرفق لسيادتكم طيه المقاييس المعدلة بعد المفاوضة للقطاع من المحطة  
524+500 إلي المحطة 524+880 مرحلة الحفر وتشكيل الجسور والتأسيس و الأساس  
والخرسانة.

| م | المسافة              |                      | الشركة                 |
|---|----------------------|----------------------|------------------------|
|   | بداية القطاع<br>(كم) | نهاية القطاع<br>(كم) |                        |
| 1 | 524+500              | 524+880              | شركة المصطفى للمقاولات |

برجاء من سيادتكم التفضل بالاحاطه والتوجيه بالازم

وتفضلوا بقبول فائق الاحترام والتقدير،،

رئيس الإدارة المركزية

(المنطقة الخامسة - غرب الدلتا)

مهندس /

"هاني محمد محمود طه"



الاسكندرية - هرسى مطروح  
عميد مهندس /  
" هانى محمد محمود طه



## محضر استلام موقع

مشروع: أعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع ( العين السخنة - العاصمة الإدارية - العلمين - مطروح ) قطاع فوكة مطروح (مرحلة الحفر وتشكيل الجسور والتأسيس والأساس والخرسانة) لتنفيذ المسافة من الكم 524+500 الى الكم 524+880 بطول 0.38 كم

تنفيذ: شركة المصطفى للمقاولات "أحمد مصطفى عبدالمحسن"

إشراف: المنطقة الخامسة - منطقة غرب الدلتا

طبقاً للعقد رقم ( 2024/2023/336 ) بتاريخ: 7/9/2023

إنه في يوم الخميس الموافق 7/9/2023 اجتمع كل من:-

- |                                            |                                                   |
|--------------------------------------------|---------------------------------------------------|
| 1- السيد المهندس / محمد حسني فياض          | مدير عام المشروعات - الهيئة العامة للطرق والكباري |
| 2- السيد المهندس /إبراهيم عبد الله الحناوي | مهندس العملية - الهيئة العامة للطرق والكباري      |
| 3- السيد المهندس / مصطفى محمد ثابت         | مدير مشروع - شركة المصطفى للمقاولات               |

وذلك للمرور على مسار العملية المذكورة عاليه لاستلام الموقع :-

وقد تبين أن الموقع خالياً من العوائق الظاهرية ويسمح بالبدء في التنفيذ وبناء عليه يعتبر تاريخ 7/9/2023 هو تاريخ استلام الموقع وبدء الأعمال بالعملية.

واقفل المحضر على ذلك ووقع الحضور

التوقيعات

3- السيد ثابت

2- السيد

1- السيد

رئيس الإدارة المركزية

منطقة غرب الدلتا

الاسكندرية - مرسى مطروح

عميد . مهندس /

"هاني محمد محمود طه"



Owner Consultant



Contractor Consultant



Contractor



Owner

## Compressive Strength For Stone Sample

|              |                    |
|--------------|--------------------|
| Testing date | 13-04-2023         |
| Company Name | AL MUSTAFA         |
| Location     | 524+500 To 524+800 |

| Sample No. | Station            | Weight (gm) | Volume (Cm3) | Density (gm/cm3) | Average Density (gm/cm3) | Load (KN) | Strength (Kg/Cm2) | Average Strength (Kg/Cm2) |
|------------|--------------------|-------------|--------------|------------------|--------------------------|-----------|-------------------|---------------------------|
| 1          | 524+500 To 524+560 | 999         | 421.88       | 2.37             | 2.31                     | 249       | 450.69            | 463.4                     |
| 2          |                    | 915         | 421.88       | 2.17             |                          | 132       | 238.92            |                           |
| 3          |                    | 1007        | 421.88       | 2.39             |                          | 387       | 700.47            |                           |
| 4          | 524+560 To 524+620 | 1042        | 421.88       | 2.47             | 2.22                     | 395       | 466.495           | 318.5                     |
| 5          |                    | 948         | 421.88       | 2.25             |                          | 299       | 353.119           |                           |
| 6          |                    | 823.5       | 421.88       | 1.95             |                          | 115       | 135.815           |                           |
| 7          | 524+620 To 524+680 | 714         | 343.00       | 2.08             | 2.17                     | 117       | 243.36            | 251.8                     |
| 8          |                    | 726.8       | 343.00       | 2.12             |                          | 166       | 345.28            |                           |
| 9          |                    | 853         | 367.50       | 2.32             |                          | 86        | 166.84            |                           |
| 10         | 524+680 To 524+740 | 841         | 421.88       | 1.99             | 1.97                     | 75        | 135.75            | 152.0                     |
| 11         |                    | 866.6       | 421.88       | 2.05             |                          | 86        | 155.66            |                           |
| 12         |                    | 789         | 421.88       | 1.87             |                          | 91        | 164.71            |                           |
| 13         | 524+740 To 524+800 | 850         | 421.88       | 2.48             | 2.53                     | 80        | 144.8             | 131.5                     |
| 14         |                    | 802         | 343.00       | 2.35             |                          | 80        | 124.8             |                           |
| 15         |                    | 879         | 421.88       | 2.56             |                          | 69        | 124.89            |                           |

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

Hassan

|                                                                                                                                                               |                                                                                                                                                                                |  |                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>جمهورية مصر العربية<br>وزارة النقل والبنى التحتية<br>الهيئة العامة للنقل | <b>Electric Express Train - NSR</b><br>From El Ain El Sokhna City To El Alamein - MATROUH<br>Section - 7 From FOHA TO MARSA MATROUH<br>From Station 524+000 To Station 524+750 |  | <br>جمهورية مصر العربية<br>وزارة التخطيط والتنمية الاقتصادية<br>الهيئة العامة للاستثمار |
|                                                                                                                                                               |                                                                                                                                                                                |  |                                                                                                                                                                           |
|                                                                                                                                                               |                                                                                                                                                                                |  |                                                                                                                                                                           |
|                                                                                                                                                               |                                                                                                                                                                                |  |                                                                                                                                                                           |

### Compressive Strength of stone sample

|              |               |  |          |                    |
|--------------|---------------|--|----------|--------------------|
| Testing Date | 25-2-2023     |  | Station  | 524+500 To 524+750 |
| Location     | K.P (524+500) |  | Material | Rock               |
| Company Name | المصطفى       |  |          |                    |

|                  |                     |
|------------------|---------------------|
| Upstream Station | AL Nuby Central Lab |
|------------------|---------------------|

| Sample No. | Station            | wieght (gm) | density (gm/cm3) | Average Density | load (KN) | Strength (Kg/cm2) | Average Strength (Kg/cm2) |
|------------|--------------------|-------------|------------------|-----------------|-----------|-------------------|---------------------------|
| 1          | 524+500 To 524+550 | 910         | 2.65             | 2.50            | 384       | 798.7             | 641.3                     |
| 2          |                    | 898         | 2.62             |                 | 409       | 880.7             |                           |
| 3          |                    | 766         | 2.23             |                 | 132       | 278.6             |                           |
| 4          | 524+550 To 524+600 | 866.5       | 2.43             | 2.54            | 602       | 1252.2            | 1107.9                    |
| 5          |                    | 828         | 2.41             |                 | 398       | 827.8             |                           |
| 6          |                    | 921         | 2.69             |                 | 598       | 1243.8            |                           |
| 7          | 524+600 To 524+650 | 980.9       | 2.86             | 2.69            | 510       | 1060.8            | 857.7                     |
| 8          |                    | 947.8       | 2.76             |                 | 586       | 1218.9            |                           |
| 9          |                    | 776         | 2.16             |                 | 141       | 293.3             |                           |
| 10         | 524+650 To 524+700 | 943.4       | 2.75             | 2.73            | 699       | 1453.9            | 1248.4                    |
| 11         |                    | 938         | 2.73             |                 | 513.6     | 1068.3            |                           |
| 12         |                    | 931         | 2.71             |                 | 588       | 1229.0            |                           |
| 13         | 524+700 To 524+750 | 850.4       | 2.48             | 2.58            | 634       | 1318.7            | 1218.2                    |
| 14         |                    | 889.4       | 2.59             |                 | 645       | 1341.8            |                           |
| 15         |                    | 912         | 2.66             |                 | 478       | 996.2             |                           |

Lab. Engineer

Name :

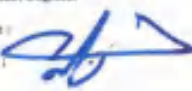
Sign :



Consultant Engineer

Name :

Sign :





## اختبار الضغط على عينات حجر

- الجهة : وزارة النقل - الهيئة العامة للطرق والكبارى والنقل البرى - المنطقة الخامسة - غرب الدلتا الاسكندرية - مطروح
- الشركة المنفذة: المصطفى للمقاولات
- الاشراف: المنطقة الخامسة - غرب الدلتا (اسكندرية - مطروح)
- المشروع: القطار الكهربائى السريع القطاع السابع فوكه - مطروح
- توريد العينات: 2023-2-6

### عينة رقم (2)

(من المحطة 524+540 الى المحطة 524 + 580)

### نتائج الاختبار :-

| رقم | أبعاد العينة<br>(سم) |     |     | مساحة<br>المقطع<br>(سم <sup>2</sup> ) | وزن<br>العينة<br>(جم) | حمل<br>الكسر<br>(kN) | إجهاد<br>الكسر<br>(كجم/سم <sup>2</sup> ) | ملاحظات |
|-----|----------------------|-----|-----|---------------------------------------|-----------------------|----------------------|------------------------------------------|---------|
|     | ارتفاع               | عرض | طول |                                       |                       |                      |                                          |         |
| 1   | 6.8                  | 7.0 | 7.0 | 49.0                                  | 850                   | 265                  | 551.3                                    | -----   |
| 2   | 7.0                  | 6.8 | 7.0 | 47.6                                  | 772                   | 105                  | 224.9                                    |         |
| 3   | 7.0                  | 6.9 | 7.0 | 48.3                                  | 805                   | 283                  | 597.3                                    |         |

### ملحوظة هامة:-

- تم تحديد عدد العينات (3) بمعرفة العميل ، مع العلم أن هذا العدد غير مطابق للمواصفات القياسية لهذا الاختبار
- تم توريد العينات بمعرفة العميل وكذلك المعلومات الخاصة بها .

مدير المعمل

د. عبد اللطيف السيد أبوسن

المشرف على الاختبار

د. إسماعيل أحمد محمد محروس

تحريرا فى : 2023/2/9

رقم التقرير:-

٢٠٤/٩٦٤







### اختبار الضغط على عينات حجر

- الجهة : وزارة النقل - الهيئة العامة للطرق والكبارى والنقل البرى - المنطقة الخامسة - غرب الدلتا الاسكندرية - مطروح
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- توريد العينات: 2023-2-6

#### عينة رقم (3)

(من المحطة 524+580 الى المحطة 524 + 620)

#### نتائج الاختبار :-

| رقم | أبعاد العينة (سم) |     |        | مساحة المقطع (سم <sup>2</sup> ) | وزن العينة (جم) | حمل الكسر (kN) | إجهاد الكسر (كجم/سم <sup>2</sup> ) | ملاحظات |
|-----|-------------------|-----|--------|---------------------------------|-----------------|----------------|------------------------------------|---------|
|     | طول               | عرض | ارتفاع |                                 |                 |                |                                    |         |
| 1   | 7.0               | 7.0 | 7.1    | 49.0                            | 873             | 293            | 609.5                              | -----   |
| 2   | 7.0               | 7.0 | 7.0    | 49.0                            | 870             | 209            | 434.8                              |         |
| 3   | 7.0               | 7.0 | 7.1    | 49.0                            | 845             | 257            | 534.6                              |         |

#### ملحوظة هامة:-

- تم تحديد عدد العينات (3) بمعرفة العميل ، مع العلم أن هذا العدد غير مطابق للمواصفات القياسية لهذا الاختبار .
- تم توريد العينات بمعرفة العميل وكذلك المعلومات الخاصة بها .

مدير المعمل

د. عبد اللطيف السيد أبوسن

المشرف على الاختبار

د. إسماعيل أحمد محمد محروس

تحريرا فى : 2023/2/9

رقم التقرير :-

٩٧١ / ٢٢٢





## اختبار الضغط على عينات حجر

- الجهة : وزارة النقل - الهيئة العامة للطرق والكبارى والنقل البرى - المنطقة الخامسة -  
غرب الدلتا الاسكندرية - مطروح  
الشركة المنفذة: المصطفى للمقاولات  
الإشراف: المنطقة الخامسة - غرب الدلتا (اسكندرية - مطروح)  
المشروع: القطار الكهربائى السريع القطاع السابع فوكه - مطروح  
توريد العينات: 2023-2-6

### عينة رقم (4)

(من المحطة 620 + 524 الى المحطة 660 + 524)

### نتائج الاختبار :-

| رقم | أبعاد العينة (سم) |     |        | مساحة المقطع (سم <sup>2</sup> ) | وزن العينة (جم) | حمل الكسر (kN) | إجهاد الكسر (كجم/سم <sup>2</sup> ) | ملاحظات |
|-----|-------------------|-----|--------|---------------------------------|-----------------|----------------|------------------------------------|---------|
|     | طول               | عرض | ارتفاع |                                 |                 |                |                                    |         |
| 1   | 7.0               | 7.0 | 7.0    | 49.0                            | 786             | 153            | 318.3                              | -----   |
| 2   | 7.0               | 7.0 | 6.9    | 49.0                            | 816             | 296            | 615.8                              |         |
| 3   | 7.0               | 7.0 | 7.1    | 49.0                            | 855             | 249            | 518.0                              |         |

### - ملحوظة هامة:

- تم تحديد عدد العينات (3) بمعرفة العميل ، مع العلم أن هذا العدد غير مطابق للمواصفات القياسية لهذا الاختبار .  
- تم توريد العينات بمعرفة العميل وكذلك المعلومات الخاصة بها .

مدير المعمل

د. عبد اللطيف السيد أبوسن

المشرف على الاختبار

د. إسماعيل أحمد محمد محروس

تحريرا فى : 2023/2/9

رقم التقرير:

٩٣٢/٩٣٢







## اختبار الضغط على عينات حجر

- الجهة : وزارة النقل - الهيئة العامة للطرق والكبارى والنقل البرى - المنطقة الخامسة - غرب الدلتا الاسكندرية - مطروح
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- توريد العينات: 2023-2-6

عينة رقم (5)

(من المحطة 660 + 524 الى المحطة 700 + 524)

### نتائج الاختبار:-

| ملاحظات | إجهاد الكسر<br>(كجم/سم <sup>2</sup> ) | حمل الكسر<br>(kN) | وزن العينة<br>(جم) | مساحة المقطع<br>(سم <sup>2</sup> ) | أبعاد العينة (سم) |     |     | رقم |
|---------|---------------------------------------|-------------------|--------------------|------------------------------------|-------------------|-----|-----|-----|
|         |                                       |                   |                    |                                    | ارتفاع            | عرض | طول |     |
| -----   | 507.6                                 | 244               | 877                | 49.0                               | 6.9               | 7.0 | 7.0 | 1   |
|         | 470.2                                 | 226               | 868                | 49.0                               | 7.0               | 7.0 | 7.0 | 2   |
|         | 654.3                                 | 319               | 825                | 49.7                               | 6.9               | 7.0 | 7.1 | 3   |

### ملحوظة هامة:

- تم تحديد عدد العينات (3) بمعرفة العميل ، مع العلم أن هذا العدد غير مطابق للمواصفات القياسية لهذا الاختبار
- تم توريد العينات بمعرفة العميل وكذلك المعلومات الخاصة بها .

مدير المعمل

د. عبد اللطيف السيد أبومن

المشرف على الاختبار

د. إسماعيل أحمد محمد محروس

تحريرا فى : 2023/2/9

رقم التقرير:

٩٦٣/٢٠٢٣





## اختبار الضغط على عينات حجر

- الجهة : وزارة النقل - الهيئة العامة للطرق والكبارى والنقل البرى - المنطقة الخامسة - غرب الدلتا الاسكندرية - مطروح
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- الاشراف: المنطقة الخامسة - غرب الدلتا (اسكندرية - مطروح)
- المشروع: القطر الكهربائى السريع القطاع السابع فوكه - مطروح
- توريد العينات: 2023-2-6

### عينة رقم (1)

(من المحطة 524+500 الى المحطة 524 + 540)

### نتائج الاختبار :-

| رقم | أبعاد العينة (سم) |     |        | مساحة المقطع (سم <sup>2</sup> ) | وزن العينة (جم) | حمل الكسر (kN) | إجهاد الكسر (كجم/سم <sup>2</sup> ) | ملاحظات |
|-----|-------------------|-----|--------|---------------------------------|-----------------|----------------|------------------------------------|---------|
|     | طول               | عرض | ارتفاع |                                 |                 |                |                                    |         |
| 1   | 7.0               | 6.8 | 7.0    | 47.60                           | 793             | 196            | 419.7                              | -----   |
| 2   | 7.0               | 6.5 | 7.0    | 45.50                           | 767             | 196            | 439.1                              |         |
| 3   | 6.9               | 6.9 | 7.0    | 47.61                           | 765             | 135            | 289.0                              |         |

- ملحوظة هامة:

- تم تحديد عدد العينات (3) بمعرفة العميل ، مع العلم أن هذا العدد غير مطابق للمواصفات القياسية لهذا الاختبار .
- تم توريد العينات بمعرفة العميل وكذلك المعلومات الخاصة بها .

مدير المعمل

د. عبد اللطيف السيد أبوسن



المشرف على الاختبار

د. إسماعيل أحمد محمد محروس

تحريرا فى : 2023/2/9

رقم التقرير :-

٩٥٩ / ٢٠٢٣



|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| MATERIAL<br>INSPECTION<br>REQUEST |      |  |  |  |  |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |

|                      |                    |                       |                  |                                                                                                                                                                                                                                                 |      |    |    |    |    |    |    |    |     |     |     |    |    |      |  |  |
|----------------------|--------------------|-----------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|----|----|----|----|----|----|-----|-----|-----|----|----|------|--|--|
| Contractor Company   | AL-MOSTAFA COMPANY |                       | Designer Company | K.K                                                                                                                                                                                                                                             |      |    |    |    |    |    |    |    |     |     |     |    |    |      |  |  |
| Issued by Contractor | Name               | Sign                  | Date             | Time                                                                                                                                                                                                                                            |      |    |    |    |    |    |    |    |     |     |     |    |    |      |  |  |
|                      | MOSTAFA THABET     | <i>Mostafa Thabet</i> | 26-02-2023       |                                                                                                                                                                                                                                                 |      |    |    |    |    |    |    |    |     |     |     |    |    |      |  |  |
| Received by ER       |                    |                       | MIR              | <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>DO</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td>K.P</td> <td>E.M</td> <td>D.T</td> <td>26</td> <td>02</td> <td>2023</td> <td></td> <td></td> </tr> </table> | 1    | 2  | 3  | DO | MM | YY | HH | MM | K.P | E.M | D.T | 26 | 02 | 2023 |  |  |
| 1                    | 2                  | 3                     | DO               | MM                                                                                                                                                                                                                                              | YY   | HH | MM |    |    |    |    |    |     |     |     |    |    |      |  |  |
| K.P                  | E.M                | D.T                   | 26               | 02                                                                                                                                                                                                                                              | 2023 |    |    |    |    |    |    |    |     |     |     |    |    |      |  |  |

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

|                                                                                                                                            |                                   |                       |                |              |      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------|----------------|--------------|------|--|
| Description of Materials                                                                                                                   | REPLACEMENT FILL MATERIAL RESULTS |                       |                |              |      |  |
| Location to be Used:                                                                                                                       | From                              | To                    |                |              |      |  |
|                                                                                                                                            | 524+900                           | 524+920               | FILL (-3.00 m) |              |      |  |
|                                                                                                                                            | 524+880                           | 524+920               | FILL (-2.50 m) |              |      |  |
|                                                                                                                                            | 524+880                           | 524+920               | FILL (-2.00 m) |              |      |  |
|                                                                                                                                            | 524+820                           | 524+920               | FILL (-1.75 m) |              |      |  |
|                                                                                                                                            | 524+820                           | 524+920               | FILL (-1.50 m) |              |      |  |
|                                                                                                                                            | 524+820                           | 524+920               | FILL (-1.25 m) |              |      |  |
|                                                                                                                                            | 524+800                           | 524+920               | FILL (-1.00 m) |              |      |  |
|                                                                                                                                            | 524+800                           | 524+920               | FILL (-0.75 m) |              |      |  |
|                                                                                                                                            | 524+800                           | 524+920               | FILL (-0.50 m) |              |      |  |
| MAR Approval No                                                                                                                            |                                   |                       |                | Date         |      |  |
| Supplier Name                                                                                                                              |                                   |                       |                |              |      |  |
| Test Requirement                                                                                                                           | Specification                     |                       |                | Clause       |      |  |
| Reference Photos                                                                                                                           | Yes attached / No                 |                       |                | Other        |      |  |
| Item                                                                                                                                       | Description                       | Unit                  | Quantity       | Arrival Date | Note |  |
| 1                                                                                                                                          | Sieve analysis                    | M3                    | 5000           | 26-02-2023   |      |  |
| 2                                                                                                                                          | Classification                    | M3                    | 5000           | 26-02-2023   |      |  |
| 3                                                                                                                                          | Proctor & O.M.C                   | M3                    | 5000           | 26-02-2023   |      |  |
| 4                                                                                                                                          | L.L & P.L & PI                    | M3                    | 5000           | 26-02-2023   |      |  |
| 5                                                                                                                                          | C.B.R                             | M3                    | 10000          | 26-02-2023   |      |  |
| Comments by:                                                                                                                               |                                   |                       | Comments by:   |              |      |  |
| A sample has been taken from fill material by K.K office to (GOUMA BADR LAB) and the results founded meet the specifications and accepted. |                                   |                       |                |              |      |  |
| APPROVAL STATUS                                                                                                                            |                                   |                       |                |              |      |  |
| Organisation                                                                                                                               | Name                              | Sign                  | Date           | A-AWC-R      |      |  |
| Contractor                                                                                                                                 | <i>Mostafa Thabet</i>             | <i>Mostafa Thabet</i> |                |              |      |  |
| QA/QC *                                                                                                                                    | <i>Abdullah SANY</i>              | <i>Abdullah</i>       |                |              |      |  |
| GARB**                                                                                                                                     |                                   |                       |                |              |      |  |
| Employers Representative                                                                                                                   |                                   |                       |                |              |      |  |

# SUBMISSION of TEST RESULTS

الهيئة العامة للإستثمار



|                      |                    |                       |                  |                                                                                                                                                                                                                                                       |      |    |    |    |    |    |   |    |         |     |     |    |    |      |  |  |
|----------------------|--------------------|-----------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|----|----|----|----|---|----|---------|-----|-----|----|----|------|--|--|
| Contractor Company   | AL-MOSTAFA COMPANY |                       | Designer Company | K.K                                                                                                                                                                                                                                                   |      |    |    |    |    |    |   |    |         |     |     |    |    |      |  |  |
| Issued by Contractor | Name               | Sign                  | Date             | Time                                                                                                                                                                                                                                                  |      |    |    |    |    |    |   |    |         |     |     |    |    |      |  |  |
|                      | Mostafa Thabet     | <i>Mostafa Thabet</i> | 28-02-2023       |                                                                                                                                                                                                                                                       |      |    |    |    |    |    |   |    |         |     |     |    |    |      |  |  |
| Received by ER       |                    |                       | STR              | <table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>D0</td> <td>MM</td> <td>YY</td> <td>H</td> <td>MM</td> </tr> <tr> <td>K.P 524</td> <td>E.W</td> <td>Q.T</td> <td>28</td> <td>02</td> <td>2023</td> <td></td> <td></td> </tr> </table> | C1   | C2 | C3 | D0 | MM | YY | H | MM | K.P 524 | E.W | Q.T | 28 | 02 | 2023 |  |  |
| C1                   | C2                 | C3                    | D0               | MM                                                                                                                                                                                                                                                    | YY   | H  | MM |    |    |    |   |    |         |     |     |    |    |      |  |  |
| K.P 524              | E.W                | Q.T                   | 28               | 02                                                                                                                                                                                                                                                    | 2023 |    |    |    |    |    |   |    |         |     |     |    |    |      |  |  |

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

|                                                    |               |                    |                            |         |
|----------------------------------------------------|---------------|--------------------|----------------------------|---------|
| NB: Package 1 Only (Package 2 via Aconex)          |               |                    |                            |         |
| THE FOLLOWING TEST RESULTS ARE ATTACHED FOR REVIEW |               |                    |                            |         |
| Description of Test Materials                      | Soil (A-1-b)  |                    |                            |         |
| Location of Test                                   | K.P (524)     |                    |                            |         |
| Item                                               | Specification | Test Requirement   | Test Result Attachment     | Remarks |
| 1                                                  | ASTM D 75     | Aggregate sampling | According to specification |         |
| 2                                                  | ASTM C 136    | Sieve Analysis     | According to specification |         |
| 3                                                  | ASTM D 1440   | Passing sieve #200 | 13.2                       |         |
| 4                                                  | ASTM D 4318   | Atterberg limit    | N.P                        |         |
| 5                                                  | ASTM D 2974   | Moisture content   | 6.3                        |         |
| 6                                                  | ASTM D 1557   | Modified proctor   | 2.16                       |         |
| 7                                                  | ASTM D 1883   | C.B.R              | 53.0                       |         |

|              |              |
|--------------|--------------|
| Comments by: | Comments by: |
|              |              |

| APPROVAL STATUS          |                       |                    |      |         |
|--------------------------|-----------------------|--------------------|------|---------|
| Organisation             | Name                  | Sign               | Date | A-AWC-R |
| Contractor               | <i>Mostafa Thabet</i> |                    |      | A       |
| Designer                 | <i>Hassan</i>         | <i>[Signature]</i> |      | A       |
| GARB *                   |                       |                    |      |         |
| Employers Representative |                       |                    |      |         |

\* Alignment / Bridges: Culvert Only



California Bearing Ratio TEST

|              |               |        |          |        |         |
|--------------|---------------|--------|----------|--------|---------|
| Testing Date | 1/3/2023      | Code   | FROM STA | Sample | 525+000 |
| Location     | K.P (524+800) | MO (2) |          |        |         |
| Company Name | AL Mustafa    |        |          |        |         |

Test Results

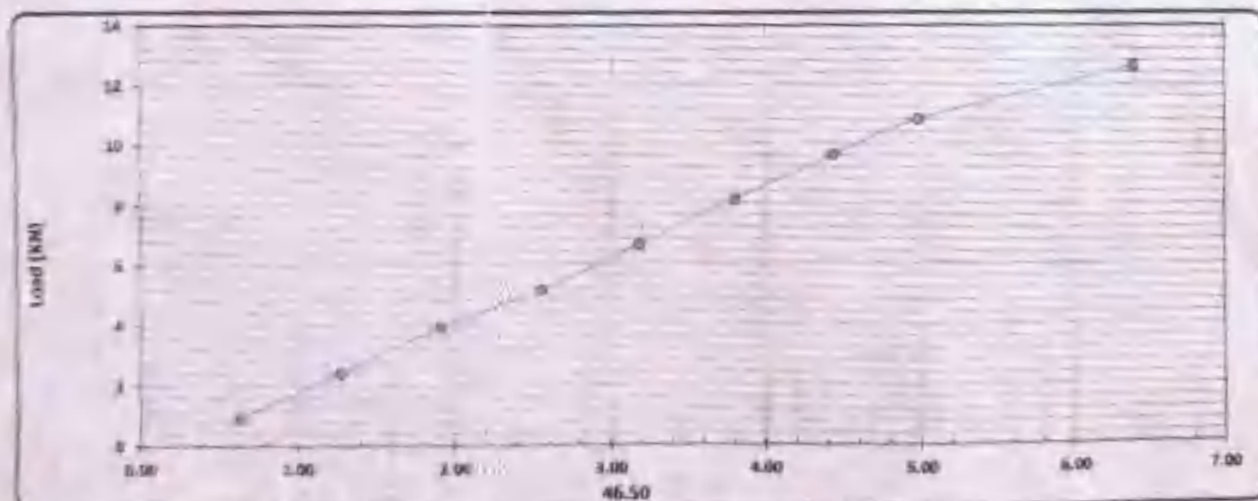
| Compaction % for Mold                |       |
|--------------------------------------|-------|
| Mold No.                             | 1     |
| Mold Vol. (cm <sup>3</sup> )         | 2158  |
| Mold WT. (gm)                        | 8890  |
| Mold WT. + Wet WT. (gm)              | 9811  |
| Wet WT. (gm)                         | 4921  |
| Wet Density (g/cm <sup>3</sup> )     | 2.280 |
| Dry Density (g/cm <sup>3</sup> )     | 2.154 |
| Proctor Density (g/cm <sup>3</sup> ) | 2.140 |
| Compaction %                         | 99.7  |

| Moisture Ratio After Compacted Mold |       |
|-------------------------------------|-------|
| Tare No.                            | 10    |
| Tare WT. (gm)                       | 43.7  |
| Tare WT. + Wet WT. (gm)             | 130   |
| Tare WT. + Dry WT. (gm)             | 144.1 |
| Wet WT. (gm)                        | 5.9   |
| Dry WT. (gm)                        | 108.4 |
| Moisture Content %                  | 5.9   |

| Swelling            |          |
|---------------------|----------|
| Mold No.            | 1        |
| Date                | 1/3/2023 |
| Initial Height (mm) | 5.00     |
| Final Height (mm)   | 5.15     |
| Difference          | 0        |
| Sample Height (mm)  | 120.00   |
| Swelling Ratio %    | 0.1%     |

Loading Reading :

|                   |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|
| 46.50             | 0.64 | 1.27 | 1.91 | 2.54 | 3.18 | 3.80 | 4.45 | 5.00 | 5.60 |
| Load Reading (mm) | 0.03 | 0.08 | 0.13 | 0.17 | 0.22 | 0.27 | 0.32 | 0.36 | 0.42 |
| Load (KN)         | 0.9  | 2.4  | 3.9  | 5.1  | 6.6  | 8.1  | 9.6  | 10.8 | 12.8 |



Calculations :-

| Penetration (mm) | Load (KN) | Standard Load (lb) | CBR (%) | Mold - Compaction (%) | Compaction (%) | CBR (%) |
|------------------|-----------|--------------------|---------|-----------------------|----------------|---------|
| 2.50             | 0.10      | 13.4               | 0.25%   | 100                   | 99             | 37.5%   |
| 5.00             | 1.00      | 20.0               | 0.25%   | 100                   | 99             | 53.0%   |

Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign :

California Bearing Ratio TEST

|                |               |        |           |         |         |
|----------------|---------------|--------|-----------|---------|---------|
| Testing Date : | 1/3/2023      | Code   | 180015151 | 124-000 | 525-000 |
| Location :     | K.P (524+800) | MO (2) |           |         |         |
| Company Name : | AL Mustafa    |        |           |         |         |

Test Results

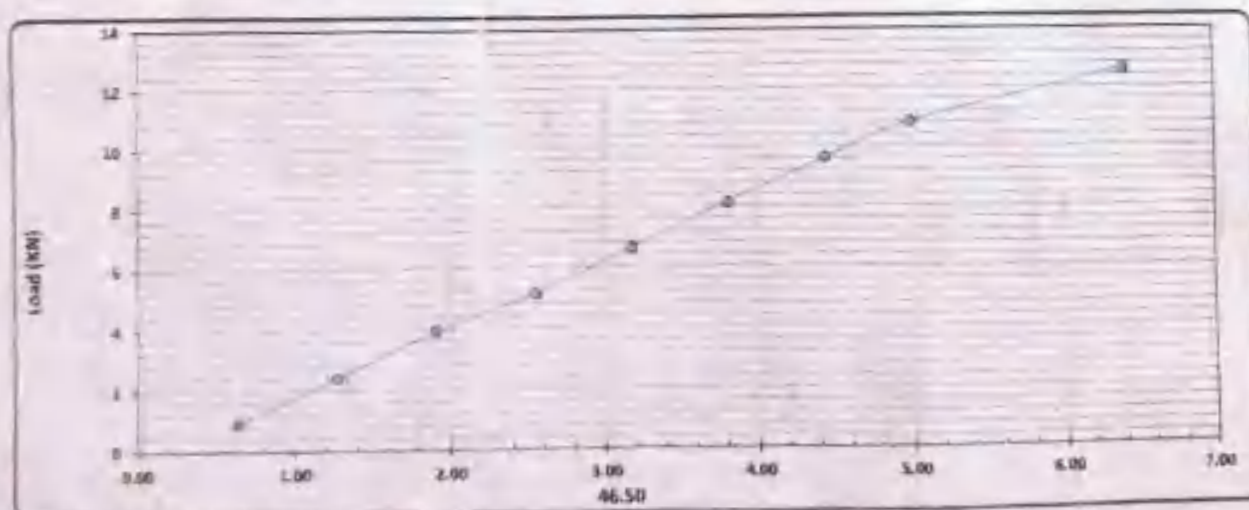
| Compaction % for Mold                    |       |
|------------------------------------------|-------|
| Mold No.                                 | 1     |
| Mold Vol. (cm <sup>3</sup> )             | 1150  |
| Mold WT. (gm)                            | 4890  |
| Mold WT. - Wat WT. (gm)                  | 981   |
| Wat WT. (gm)                             | 4921  |
| Wat Density (g/cm <sup>3</sup> )         | 1.286 |
| Dry Density (g/cm <sup>3</sup> )         | 2.154 |
| Theoretical Density (g/cm <sup>3</sup> ) | 2.180 |
| Compaction %                             | 98.7  |

| Moisture Ratio After Compacted Mold |       |
|-------------------------------------|-------|
| Tare Pail                           | 18    |
| Tare WT. (gm)                       | 43.7  |
| Tare WT. - Wat WT. (gm)             | 150   |
| Tare WT. - Dry WT. (gm)             | 144.1 |
| Moisture                            | 5.9   |
| Dry WT. (gm)                        | 106.4 |
| Moisture Content %                  | 5.9   |

| Swelling            |          |
|---------------------|----------|
| Mold No.            | 1        |
| Date                | 1/3/2023 |
| Initial Height (mm) | 5.00     |
| Final Height (mm)   | 5.13     |
| Difference          | 0        |
| Sample Height (mm)  | 120.00   |
| Swelling Ratio %    | 0.1%     |

Loading Reading :

|                   |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|
| 46.50             | 0.64 | 1.27 | 1.91 | 2.54 | 3.18 | 3.80 | 4.45 | 5.00 | 6.40 |
| Load Reading (mm) | 0.02 | 0.06 | 0.12 | 0.17 | 0.22 | 0.27 | 0.32 | 0.36 | 0.42 |
| Load (KN)         | 0.9  | 1.4  | 1.9  | 2.5  | 3.1  | 3.8  | 4.6  | 5.0  | 12.0 |



Calculations :

| Penetration (mm) | Load (KN) | Standard Load (lb) | CBR (%) | Mold - Compaction (%) | Compaction (%) | CBR (%) |
|------------------|-----------|--------------------|---------|-----------------------|----------------|---------|
| 2.50             | 1.00      | 13.4               | 18.1%   | 100                   | 98             | 37.5%   |
| 5.00             | 1.00      | 28.0               | 33.4%   |                       |                | 53.0%   |

Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign :



|                                                                                                                                                                     |                                                                                                          |                                                                                                                                                                                |                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>K.K. KONSULTING<br>شركة الاستشارات الهندسية<br>ك. ك. كونسولت<br>Engineering Lab | <br>AL Naby Central Lab | <b>Electric Express Train - HSR</b><br>From El Ain El Sokhna City To El Mansala - MATROUH<br>Section - 7 From FOKA To MARSA MATROUH<br>From Station 504+000 To Station 505+177 | <br>وزارة النقل والاقتصاد<br>Ministry of Transport and Economic Affairs |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|

### PARTICLE SIZE DISTRIBUTION OF SOIL

|               |               |        |      |         |         |
|---------------|---------------|--------|------|---------|---------|
| TESTING DATE: | 26-2-2023     | Code   | zone | 524+500 | 525+000 |
| LOCATION      | K.P (524+800) | NO (2) |      |         |         |
| NAME COMPANY  | AL Mustafa    |        |      |         |         |

1-visual inspection test

2-Gradient test

| A-gradation of bulk materials |       |        |        | SAMPLE WEIGHT (g) |        | 25245.00 |         | gm   | table classify |      |
|-------------------------------|-------|--------|--------|-------------------|--------|----------|---------|------|----------------|------|
| sieve size                    | 2     | 1.5    | 1      | 4/3               | 2/1    | 8/3      | # 4     | PASS | soil classify  |      |
| Mass retained (g)             | 0.0   | 2215.0 | 2143.0 | 1987.0            | 2104.0 | 2201.0   | 2141.0  |      | A-1-b          |      |
| Cumulative Retained (g)       | 0.0   | 2215.0 | 4357.0 | 6344.0            | 8448.0 | 10649.0  | 12790.0 |      | PRO            | 2.15 |
| Cumulative Retained %         | 0.0   | 8.8    | 17.3   | 25.1              | 33.5   | 42.2     | 50.7    |      | WC             | 6.30 |
| Cumulative Passing %          | 100.0 | 91.2   | 82.7   | 74.9              | 66.5   | 57.8     | 49.3    |      | CBR            | 53%  |

| B-soft material gradation |       |        |        | WT.OF sample |  | 500.00 |  | gm |
|---------------------------|-------|--------|--------|--------------|--|--------|--|----|
| sieve size                | 10    | 40     | 200    |              |  |        |  |    |
| Cumulative Retained (g)   | 25.60 | 160.00 | 346.70 |              |  |        |  |    |
| Cumulative Retained %     | 5.12  | 32.00  | 73.34  |              |  |        |  |    |
| Cumulative Passing %      | 94.88 | 68.00  | 26.66  |              |  |        |  |    |

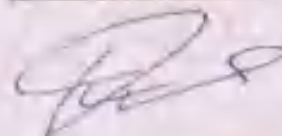
| C-General gradient   |       |      |      |      |      |      |      |      |       |       |
|----------------------|-------|------|------|------|------|------|------|------|-------|-------|
| sieve size(in)       | 2     | 1.5  | 1    | 3/4  | 1/2  | 3/8  | # 4  | # 10 | # 40  | # 200 |
| sieve size(mm)       | 50.0  | 37.5 | 25.0 | 19.0 | 12.5 | 9.5  | 4.75 | 2.00 | 0.425 | 0.075 |
| Cumulative Passing % | 100.0 | 91.2 | 82.7 | 74.9 | 66.5 | 57.8 | 49.3 | 38.7 | 20.8  | 13.2  |
|                      |       |      |      |      |      |      |      |      |       |       |
|                      |       |      |      |      |      |      |      |      |       |       |
|                      |       |      |      |      |      |      |      |      |       |       |

| ATTENDING<br>LIMITS | LIQUID LIMIT (LL) | PLASTIC LIMIT (PL) | PLASTIC INDEX (PI) |
|---------------------|-------------------|--------------------|--------------------|
|                     | N.P               | N.P                | N.P                |

Contractor



Consultant







Electric Express Train - HSR  
From El Ain El Sokhna City To El Alamein - MATROUH  
Section - 7 From FOKA TO MAREA MATROUH  
From Station 524+000 To Station 525+000



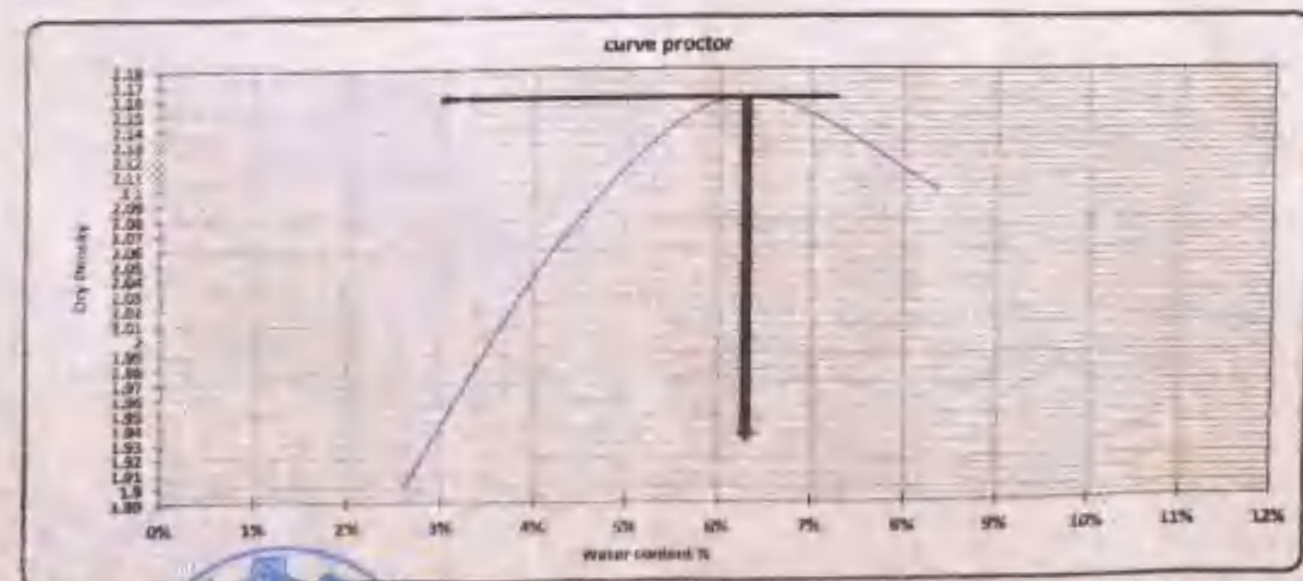
## PROCTOR TEST

|               |               |        |      |         |         |
|---------------|---------------|--------|------|---------|---------|
| TESTING DATE: | 26-2-2023     | Code   |      |         |         |
| LOCATION      | K.P (524+800) |        | zone | 524+500 | 525+000 |
| NAME COMPANY  | AL Mustafa    | MO (7) |      |         |         |

|                        |         |                 |      |
|------------------------|---------|-----------------|------|
| Weight of empty mold : | 6037.0  | MAX Dry Density | 2.16 |
| Mold Volume:           | 2.033.0 | Water content % | 8.3  |

|                       |         |         |         |        |  |
|-----------------------|---------|---------|---------|--------|--|
| Trial no :            | 1       | 2       | 3       | 4      |  |
| Wt. Of Mold+ wet soil | 10145.0 | 10575.0 | 10865.0 | 10821  |  |
| WT. WET SOIL          | 4108.0  | 4538.0  | 4828.0  | 4784.0 |  |
| Wt. Density           | 1.953   | 2.158   | 2.296   | 2.275  |  |

|                        |       |       |       |       |       |       |       |       |  |  |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| Tare No.               | 20    | 18    | 73    | 7     | 10    | 8     | 11    | 20    |  |  |
| Tare wt.               | 60.0  | 77.7  | 42.5  | 42.6  | 43.3  | 46.7  | 46.3  | 60.3  |  |  |
| Wt. Of wet soil & tare | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 |  |  |
| Wt. Of dry soil & tare | 146.7 | 143.1 | 145.5 | 145.6 | 143.7 | 144.0 | 141.9 | 143.2 |  |  |
| Wt. Of water           | 3.3   | 6.9   | 4.5   | 4.4   | 6.3   | 6.0   | 8.1   | 6.8   |  |  |
| Wt. Of dry soil        | 123.0 | 127.8 | 101.0 | 103.0 | 100.4 | 97.3  | 95.6  | 82.9  |  |  |
| Water content %        | 2.7%  | 5.4%  | 4.4%  | 4.3%  | 6.3%  | 6.2%  | 8.5%  | 8.2%  |  |  |
| AV. Water content %    | 2.6%  |       | 4.3%  |       | 6.2%  |       | 8.3%  |       |  |  |
| Dry Density            | 1.903 |       | 2.069 |       | 2.161 |       | 2.100 |       |  |  |



Consultant

Hassan

# MATERIAL INSPECTION REQUEST

الهيئة العامة للإستشارة  
General Engineering Consultancy



|                      |                    |                       |            |                  |           |           |          |          |            |    |    |
|----------------------|--------------------|-----------------------|------------|------------------|-----------|-----------|----------|----------|------------|----|----|
| Contractor Company   | AL-MOSTAFA COMPANY |                       |            | Designer Company | K.K       |           |          |          |            |    |    |
| Issued by Contractor | Name               | Sign                  | Date       | Time             |           |           |          |          |            |    |    |
|                      | MOSTAFA THABET     | <i>Mostafa Thabet</i> | 26-03-2023 |                  |           |           |          |          |            |    |    |
| Received by ER       |                    |                       | MIR        | C1<br>K.P<br>324 | C2<br>C.W | C3<br>O.T | DD<br>26 | MM<br>03 | YY<br>2023 | HH | MM |

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

|                                                                                                                                            |                       |                                   |                |              |      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------|----------------|--------------|------|--|
| Description of Materials                                                                                                                   |                       | REPLACEMENT FILL MATERIAL RESULTS |                |              |      |  |
| Location to be Used                                                                                                                        | From                  | TO                                |                |              |      |  |
|                                                                                                                                            | 524+900               | 524+920                           | FILL (-0.25 m) |              |      |  |
|                                                                                                                                            | 524+880               | 524+920                           | FERMA          |              |      |  |
|                                                                                                                                            | 524+920               | 525+000                           | FILL (-3.00 m) |              |      |  |
|                                                                                                                                            | 524+920               | 525+000                           | FILL (-2.50 m) |              |      |  |
|                                                                                                                                            | 524+920               | 525+000                           | FILL (-2.00 m) |              |      |  |
| MAR Approval No                                                                                                                            |                       |                                   |                |              | Date |  |
| Supplier Name                                                                                                                              |                       |                                   |                |              |      |  |
| Test Requirement                                                                                                                           |                       | Specification                     |                | Clause       |      |  |
| Reference Photos                                                                                                                           |                       | Yes attached / No                 |                | Other        |      |  |
| Item                                                                                                                                       | Description           | Unit                              | Quantity       | Arrival Date | Note |  |
| 1                                                                                                                                          | Sieve analysis        | M3                                | 5000           | 26-03-2023   |      |  |
| 2                                                                                                                                          | Classification        | M3                                | 5000           | 26-03-2023   |      |  |
| 3                                                                                                                                          | Proctor & O.M.C       | M3                                | 5000           | 26-03-2023   |      |  |
| 4                                                                                                                                          | L.L & P.I & PI        | M3                                | 5000           | 26-03-2023   |      |  |
| 5                                                                                                                                          | C.B.R                 | M3                                | 10000          | 26-03-2023   |      |  |
| Comments by:                                                                                                                               |                       |                                   | Comments by:   |              |      |  |
| A sample has been taken from fill material by K.K office to (GOUMA BADR LAB) and the results founded meet the specifications and accepted. |                       |                                   |                |              |      |  |
| APPROVAL STATUS                                                                                                                            |                       |                                   |                |              |      |  |
| Organisation                                                                                                                               | Name                  | Sign                              | Date           | A-AWC-R      |      |  |
| Contractor                                                                                                                                 | <i>Mostafa Thabet</i> | <i>Mostafa Thabet</i>             |                |              |      |  |
| QA/QC *                                                                                                                                    | <i>Abdallah SAMY</i>  | <i>Abdallah</i>                   |                |              |      |  |
| GARB**                                                                                                                                     |                       |                                   |                |              |      |  |
| Employers Representative                                                                                                                   |                       |                                   |                |              |      |  |



# SUBMISSION of TEST RESULTS

الهيئة العامة للإسكان

General Housing Authority



|                      |                    |                       |                  |                                                                                                                                                                                                                                                         |      |    |    |    |    |    |    |    |          |     |     |    |    |      |  |  |
|----------------------|--------------------|-----------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----|----|----|----|----|----|----|----------|-----|-----|----|----|------|--|--|
| Contractor Company   | AL-MOSTAFA COMPANY |                       | Designer Company | K.K                                                                                                                                                                                                                                                     |      |    |    |    |    |    |    |    |          |     |     |    |    |      |  |  |
| Issued by Contractor | Name               | Sign                  | Date             | Time                                                                                                                                                                                                                                                    |      |    |    |    |    |    |    |    |          |     |     |    |    |      |  |  |
|                      | Mostafa Thabet     | <i>Mostafa Thabet</i> | 28-03-2023       |                                                                                                                                                                                                                                                         |      |    |    |    |    |    |    |    |          |     |     |    |    |      |  |  |
| Received by ER       |                    |                       | STR              | <table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>OD</td> <td>MM</td> <td>YY</td> <td>FF</td> <td>MM</td> </tr> <tr> <td>K.P. 524</td> <td>E.W</td> <td>O.T</td> <td>28</td> <td>03</td> <td>2023</td> <td></td> <td></td> </tr> </table> | C1   | C2 | C3 | OD | MM | YY | FF | MM | K.P. 524 | E.W | O.T | 28 | 03 | 2023 |  |  |
| C1                   | C2                 | C3                    | OD               | MM                                                                                                                                                                                                                                                      | YY   | FF | MM |    |    |    |    |    |          |     |     |    |    |      |  |  |
| K.P. 524             | E.W                | O.T                   | 28               | 03                                                                                                                                                                                                                                                      | 2023 |    |    |    |    |    |    |    |          |     |     |    |    |      |  |  |

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

| NB: Package 1 Only (Package 2 via Aconex)          |               |                    |                            |         |
|----------------------------------------------------|---------------|--------------------|----------------------------|---------|
| THE FOLLOWING TEST RESULTS ARE ATTACHED FOR REVIEW |               |                    |                            |         |
| Description of Test Materials                      | Soil (A-1-a)  |                    |                            |         |
| Location of Test                                   | K.P (524)     |                    |                            |         |
| Item                                               | Specification | Test Requirement   | Test Result Attachment     | Remarks |
| 1                                                  | ASTM D 75     | Aggregate sampling | According to specification |         |
| 2                                                  | ASTM C 136    | Sieve Analysis     | According to specification |         |
| 3                                                  | ASTM D 1440   | Passing sieve #200 | 12.8                       |         |
| 4                                                  | ASTM D 4318   | Atterberg limit    | N.P                        |         |
| 5                                                  | ASTM D 2974   | Moisture content   | 6.4                        |         |
| 6                                                  | ASTM D 1557   | Modified proctor   | 2.16                       |         |
| 7                                                  | ASTM D 1883   | C.B.R              | 56.0                       |         |

|              |              |
|--------------|--------------|
| Comments by: | Comments by: |
|              |              |

| APPROVAL STATUS          |                       |                    |      |         |
|--------------------------|-----------------------|--------------------|------|---------|
| Organisation             | Name                  | Sign               | Date | A-AWC-R |
| Contractor               | <i>Mostafa Thabet</i> |                    |      | A       |
| Designer                 | <i>Hassan</i>         | <i>[Signature]</i> |      | A       |
| GARB *                   |                       |                    |      |         |
| Employers Representative |                       |                    |      |         |

\* Alignment / Bridges; Culvert Only



# Electric Express Train - HSR

## California Bearing Ratio TEST

|              |             |       |      |         |         |
|--------------|-------------|-------|------|---------|---------|
| TESTING DATE | 28/3/2023   | 75x75 | ZONE | 524+500 | 525+000 |
| Location     | K.P524+500  |       |      |         |         |
| NAME COMPANY | AL Moustafa |       |      |         |         |

### Test Results

operate by QOMAA BADER LAB

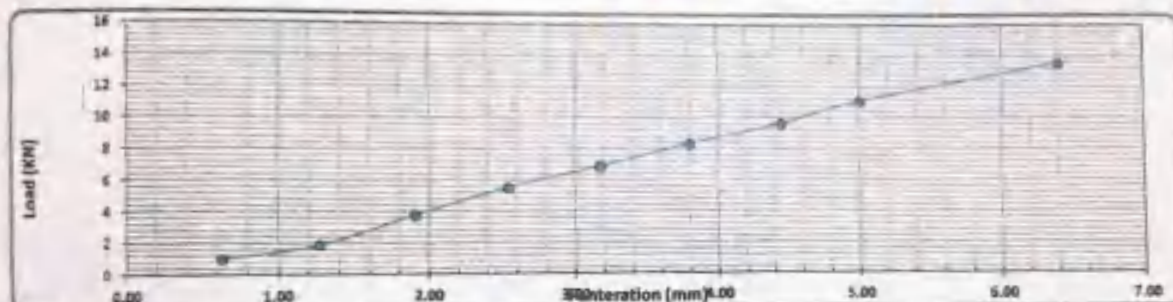
| Compaction % for Mold                |        |
|--------------------------------------|--------|
| Initial No.                          | 2      |
| Mold Vol. (cm <sup>3</sup> )         | 2172.6 |
| Wet WT. (gm)                         | 10540  |
| Wet WT. - Wet WT. (gm)               | 21240  |
| Wet WT. (gm)                         | 4902   |
| Wet Density (g/cm <sup>3</sup> )     | 2.251  |
| Dry Density (g/cm <sup>3</sup> )     | 2.121  |
| Proctor Density (g/cm <sup>3</sup> ) | 2.161  |
| Compaction %                         | 98     |

| Moisture Ratio After Compacted Mold |        |
|-------------------------------------|--------|
| Tare No.                            | 4      |
| Tare WT. (gm)                       | 24.61  |
| Tare WT. + Wet WT. (gm)             | 195.45 |
| Tare WT. + Dry WT. (gm)             | 188.85 |
| Wt. Of water                        | 7.6    |
| Dry WT. (gm)                        | 124.3  |
| Moisture Content %                  | 6.1    |

| Swelling            |   |
|---------------------|---|
| Mold No.            | 2 |
| Date                |   |
| Initial Height (mm) |   |
| Final Height (mm)   |   |
| Difference          | 0 |
| Sample Height (mm)  |   |
| Swelling Ratio %    |   |

### Loading Reading :

|                   |       |        |        |        |        |        |        |         |         |
|-------------------|-------|--------|--------|--------|--------|--------|--------|---------|---------|
| penetration       | 0.64  | 1.27   | 1.91   | 2.54   | 3.18   | 3.80   | 4.45   | 5.00    | 6.40    |
| Load Reading (kg) | 97.00 | 187.00 | 279.00 | 363.00 | 497.00 | 545.00 | 978.00 | 1114.00 | 1376.00 |
| Load (KN)         | 1.0   | 1.8    | 3.7    | 4.2    | 6.8    | 8.3    | 9.6    | 11.0    | 13.5    |



### Calculations :-

| Penetration (mm) | Load (KN) | Standard Load (lb) | CBR (%) | Mold - Compaction (%) | Compaction (%) | CBR   |
|------------------|-----------|--------------------|---------|-----------------------|----------------|-------|
| 2.50             | 1.47      | 13.4               | 41.8%   | 98                    | 100            | 41.7% |
| 5.00             | 11.02     | 28.0               | 55.8%   |                       |                | 56.9% |

Lab. Specialist

Consultant Engineer

Name :

Name :

Sign :

Sign :

المعمل المركزي  
شركة جمعة بدر نوح



|                                                                                  |                                                                                                                                                                                  |  |                                                                                       |  |                                                        |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|--------------------------------------------------------|
|  | <b>Electric Express Train - HSR</b><br>From El Axa El Bahigia City To El Narmel - MATHROUH<br>Section - 1 From FORA TO MARSA MATHROUH<br>From Station 518+000 To Station 568+177 |  | وزارة النقل<br>جمهورية مصر العربية<br>(Ministry of Transport, Arab Republic of Egypt) |  | الهيئة العامة للقنوات<br>(General Authority of Canals) |
|                                                                                  |                                                                                                                                                                                  |  |                                                                                       |  |                                                        |
|                                                                                  |                                                                                                                                                                                  |  |                                                                                       |  |                                                        |
|                                                                                  |                                                                                                                                                                                  |  |                                                                                       |  |                                                        |

## PROCTOR TEST

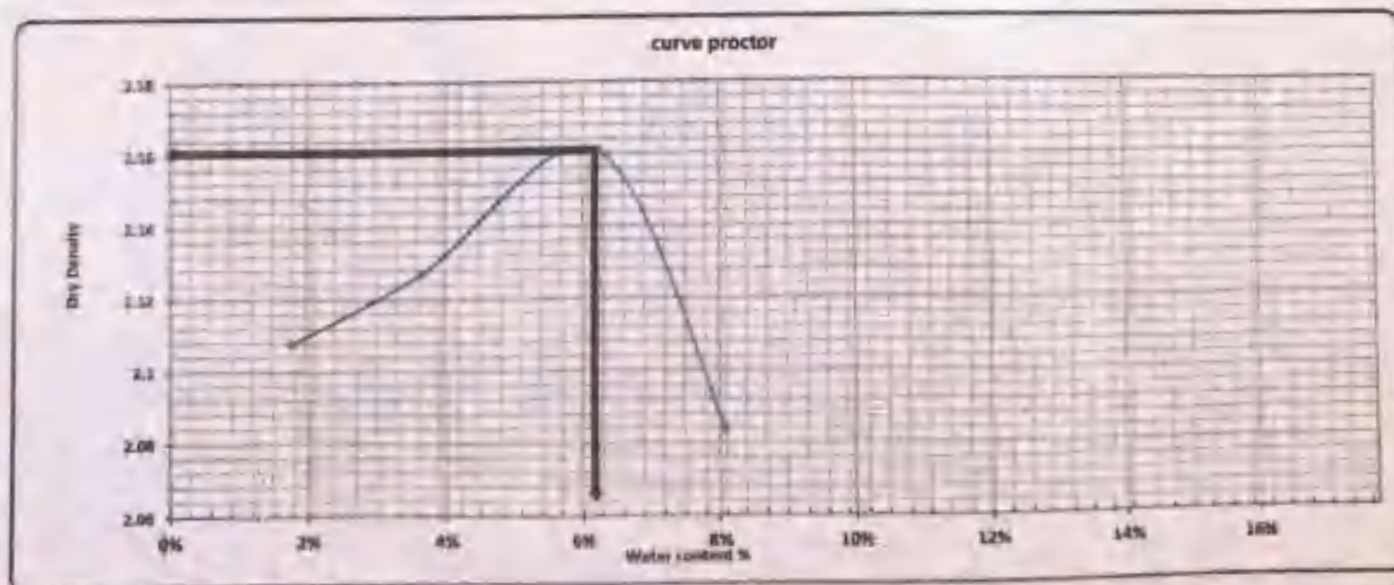
|              |             |  |      |         |         |
|--------------|-------------|--|------|---------|---------|
| TESTING DATE | 27/3/2023   |  |      |         |         |
| Location     | K.P524+800  |  | ZONE | 524+500 | 525+000 |
| NAME COMPANY | AL Moustafa |  |      |         |         |

operate by **GOMAA BADER LAB**

|                         |        |                 |       |
|-------------------------|--------|-----------------|-------|
| Weight of empty mold :- | 8536.8 | MAX Dry Density | 6.408 |
| Mold Volume:-           | 2104.9 | Water content % | 2.16  |

|                       |         |         |         |        |  |  |
|-----------------------|---------|---------|---------|--------|--|--|
| trial no :            | 1       | 2       | 3       | 4      |  |  |
| Wt. Of Mold+ wet soil | 11868.6 | 11186.8 | 11376.8 | 11286  |  |  |
| WT. WET SOIL          | 4524.8  | 4658.8  | 4848.8  | 4758.8 |  |  |
| Wt. Density           | 2.149   | 2.209   | 2.299   | 2.257  |  |  |

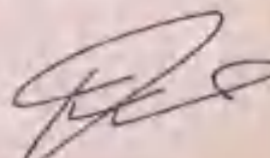
|                        |        |        |        |        |        |        |        |        |  |  |  |  |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|--|
| Tare No.               | 3      | 3      | 3      | 1      | 2      | 2      | 14     | 14     |  |  |  |  |
| Tare wt.               | 25.34  | 35.14  | 26.92  | 26.92  | 23.84  | 22.84  | 27     | 27     |  |  |  |  |
| Wt. Of wet soil & tare | 146.35 | 146.35 | 158.66 | 158.66 | 149.34 | 149.34 | 121.85 | 121.85 |  |  |  |  |
| Wt. Of dry soil & tare | 144    | 144    | 153.76 | 153.76 | 133.25 | 133.25 | 114.57 | 114.57 |  |  |  |  |
| Wt. Of water           | 2.3    | 2.3    | 4.9    | 4.9    | 7.1    | 7.1    | 7.3    | 7.3    |  |  |  |  |
| Wt. Of dry soil        | 118.9  | 118.9  | 126.8  | 126.8  | 118.4  | 110.4  | 87.6   | 87.6   |  |  |  |  |
| Water content %        | 2.0%   | 2.0%   | 3.9%   | 3.9%   | 6.4%   | 6.4%   | 8.3%   | 8.3%   |  |  |  |  |
| AV. Water content %    | 2.0%   |        | 3.9%   |        | 6.4%   |        | 8.3%   |        |  |  |  |  |
| Dry Density            | 2.108  |        | 2.127  |        | 2.161  |        | 2.084  |        |  |  |  |  |



Contractor

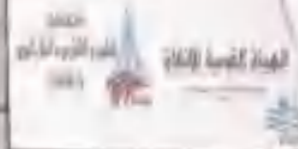
Consultant

  
**المعمل المركزي**  
**شركة جمعة بدر نوح**





**Electric Express Train - HSR**  
 From El Ain El Sokhna City To El Alamein - MATROUH  
 Section - 7 From FORA To MARSA MATROUH  
 From Station 544+090 To Station 545+177



### PARTICLE SIZE DISTRIBUTION OF SOIL

|                          |             |            |                 |         |         |
|--------------------------|-------------|------------|-----------------|---------|---------|
| TESTING DATE             | 26/3/2023   | code       | ZONE            | 524+500 | 525+000 |
| location                 | K.P524+800  | site 3     |                 |         |         |
| NAME COMPANY             | AL Moustafa |            |                 |         |         |
| 1-visual inspection test |             | operate by | GOMAA BADER LAB |         |         |

#### 2-Gradient test

| A-gradation of bulk materials |       |        |        | SAMPLE WEIGHT (g) |         | 33045.00 | gm      | table classify | soil classify |
|-------------------------------|-------|--------|--------|-------------------|---------|----------|---------|----------------|---------------|
| sieve size                    | 2     | 1.5    | 1      | 4/3               | 2/1     | 8/3      | # 4     |                |               |
| Mass retained (g)             | 320.0 | 1890.0 | 3300.0 | 2000.0            | 5590.0  | 2520.0   | 4450.0  |                |               |
| Cumulative Retained (g)       | 320.0 | 2160.0 | 5500.0 | 7600.0            | 13190.0 | 15710.0  | 20270.0 | PRO            | 2.151         |
| Cumulative Retained %         | 0.7   | 6.4    | 16.9   | 23.8              | 38.9    | 47.8     | 61.3    | WC             | 5.4           |
| Cumulative Passing %          | 99.3  | 93.6   | 83.1   | 77.0              | 61.1    | 52.2     | 38.7    | CBR            | 55.0%         |

| B-soft material gradation |       |        | WT.OF sample |  | 600.00 | gm |
|---------------------------|-------|--------|--------------|--|--------|----|
| sieve size                | 10    | 40     | 200          |  |        |    |
| Cumulative Retained (g)   | 89.00 | 170.00 | 355.00       |  |        |    |
| Cumulative Retained %     | 13.90 | 34.00  | 67.00        |  |        |    |
| Cumulative Passing %      | 86.10 | 66.00  | 33.00        |  |        |    |

| C-General gradient   |      |      |      |      |      |      |      |      |       |       |
|----------------------|------|------|------|------|------|------|------|------|-------|-------|
| sieve size(in)       | 2    | 1.5  | 1    | 3/4  | 1/2  | 3/8  | # 4  | # 10 | # 40  | # 200 |
| sieve size(mm)       | 50.0 | 37.5 | 25.0 | 19.0 | 12.5 | 9.5  | 4.75 | 2.00 | 0.425 | 0.075 |
| Cumulative Passing % | 99.3 | 93.6 | 83.1 | 77.0 | 60.1 | 52.2 | 38.7 | 33.3 | 26.5  | 17.9  |
|                      |      |      |      |      |      |      |      |      |       |       |
|                      |      |      |      |      |      |      |      |      |       |       |
|                      |      |      |      |      |      |      |      |      |       |       |

| ملاحظات | ملاحظات | ملاحظات |
|---------|---------|---------|
| N.P     | N.P     | N.P     |

Contractor

Consultant

*Reem Tawfik*  
**المعمل المركزي**  
**شركة جمعة بدر نوح**

*Hassan*  
*[Signature]*



# MATERIAL INSPECTION REQUEST

الهيئة العامة للإتقان  
General Authority for Quality



|                      |                    |                       |                  |                                                                                                                                                                                                                                                                          |    |      |    |    |   |    |    |    |    |     |     |     |     |     |    |      |  |  |
|----------------------|--------------------|-----------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------|----|----|---|----|----|----|----|-----|-----|-----|-----|-----|----|------|--|--|
| Contractor Company   | AL-MOSTAFA COMPANY |                       | Designer Company | K.K                                                                                                                                                                                                                                                                      |    |      |    |    |   |    |    |    |    |     |     |     |     |     |    |      |  |  |
| Issued by Contractor | Name               | Sign                  | Date             | Time                                                                                                                                                                                                                                                                     |    |      |    |    |   |    |    |    |    |     |     |     |     |     |    |      |  |  |
|                      | MOSTAFA THABET     | <i>Mostafa Thabet</i> | 11-04-2023       |                                                                                                                                                                                                                                                                          |    |      |    |    |   |    |    |    |    |     |     |     |     |     |    |      |  |  |
| Received by ER       |                    |                       | MIR              | <table border="1"> <tr> <td>CT</td> <td>□</td> <td>□</td> <td>□</td> <td>□</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td>5.2</td> <td>5.4</td> <td>5.6</td> <td>5.8</td> <td>6.0</td> <td>04</td> <td>2023</td> <td></td> <td></td> </tr> </table> | CT | □    | □  | □  | □ | MM | YY | HH | MM | 5.2 | 5.4 | 5.6 | 5.8 | 6.0 | 04 | 2023 |  |  |
| CT                   | □                  | □                     | □                | □                                                                                                                                                                                                                                                                        | MM | YY   | HH | MM |   |    |    |    |    |     |     |     |     |     |    |      |  |  |
| 5.2                  | 5.4                | 5.6                   | 5.8              | 6.0                                                                                                                                                                                                                                                                      | 04 | 2023 |    |    |   |    |    |    |    |     |     |     |     |     |    |      |  |  |

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

|                          |                                           |         |                 |              |      |
|--------------------------|-------------------------------------------|---------|-----------------|--------------|------|
| Description of Materials | <b>PREPARED SUBGRADE MATERIAL RESULTS</b> |         |                 |              |      |
| Location to be Used      | From                                      | To      |                 |              |      |
|                          | 524+780                                   | 525+000 | P.SUB 1 (+0.25) |              |      |
|                          | 524+500                                   | 525+000 | P.SUB 2 (+0.50) |              |      |
| MAR Approval No          |                                           |         |                 | Date         |      |
| Supplier Name            |                                           |         |                 |              |      |
| Test Requirement         | Specification                             |         |                 | Clause       |      |
| Reference Photos         | Yes attached / No                         |         |                 | Other        |      |
| Item                     | Description                               | Unit    | Quantity        | Arrival Date | Note |
| 1                        | Sieve analysis                            | M3      | 5000            | 11-04-2023   |      |
| 2                        | Classification                            | M3      | 5000            | 11-04-2023   |      |
| 3                        | Proctor & O.M.C                           | M3      | 5000            | 11-04-2023   |      |
| 4                        | LL & P.L & PI                             | M3      | 5000            | 11-04-2023   |      |
| 5                        | C.B.R                                     | M3      | 10000           | 11-04-2023   |      |

|                                                                                                                                          |              |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Comments by:                                                                                                                             | Comments by: |
| A sample has been taken from fill material by K.K office to (AI NOUBI LAB) and the results founded meet the specifications and accepted. |              |

| APPROVAL STATUS          |                        |                       |      |         |
|--------------------------|------------------------|-----------------------|------|---------|
| Organisation             | Name                   | Sign                  | Date | A-AWC-R |
| Contractor               | <i>Mostafa Thabet</i>  | <i>Mostafa Thabet</i> |      |         |
| QA/QC *                  | <i>Abdullah S.A.M.</i> | <i>Abdullah</i>       |      |         |
| GARB**                   |                        |                       |      |         |
| Employers Representative |                        |                       |      |         |

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

# SUBMISSION of TEST RESULTS

الهيئة القومية للإسكان

General Authority for Housing



|                      |                    |                       |            |                  |           |           |          |          |            |          |
|----------------------|--------------------|-----------------------|------------|------------------|-----------|-----------|----------|----------|------------|----------|
| Contractor Company   | AL-MOSTAFA COMPANY |                       |            | Designer Company | K.K       |           |          |          |            |          |
| Issued by Contractor | Name               | Sign                  | Date       | Time             |           |           |          |          |            |          |
|                      | Mostafa Thabet     | <i>Mostafa Thabet</i> | 11-04-2023 |                  |           |           |          |          |            |          |
| Received by ER       |                    |                       | MAR        | C1<br>K.P<br>524 | C2<br>E.W | C3<br>O.T | DD<br>11 | MM<br>04 | YY<br>2023 | HH<br>MM |

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

| NB: Package 1 Only (Package 2 via Aconex)          |               |                    |                            |         |
|----------------------------------------------------|---------------|--------------------|----------------------------|---------|
| THE FOLLOWING TEST RESULTS ARE ATTACHED FOR REVIEW |               |                    |                            |         |
| Description of Test Materials                      | Soil (A-1-a)  |                    |                            |         |
| Location of Test                                   | K.P (524)     |                    |                            |         |
| Item                                               | Specification | Test Requirement   | Test Result Attachment     | Remarks |
| 1                                                  | ASTM D 75     | Aggregate sampling | According to specification |         |
| 2                                                  | ASTM C 136    | Sieve Analysis     | According to specification |         |
| 3                                                  | ASTM D 1440   | Passing sieve #200 | 8.30                       |         |
| 4                                                  | ASTM D 4318   | Atterberg limit    | N.P                        |         |
| 5                                                  | ASTM D 2974   | Moisture content   | 6.50                       |         |
| 6                                                  | ASTM D 1557   | Modified proctor   | 2.175                      |         |
| 7                                                  | ASTM D 1883   | C.B.R              | 89.90                      |         |

|              |              |
|--------------|--------------|
| Comments by: | Comments by: |
|              |              |

| APPROVAL STATUS          |                       |                      |      |         |
|--------------------------|-----------------------|----------------------|------|---------|
| Organisation             | Name                  | Sign                 | Date | A-AWC-R |
| Contractor               | <i>Mostafa Thabet</i> |                      |      | A       |
| Designer                 | <i>Youssef Ragab</i>  | <i>Youssef Ragab</i> |      | A       |
| GARB *                   |                       |                      |      |         |
| Employers Representative |                       |                      |      |         |

\* Alignment / Bridges: Culvert Only



|                                                                    |                                                                                                                                                                                |                                                                                        |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <br>K.K. KUTUBIYAH & SONS<br>GENERAL CONTRACTORS<br>(Private) Ltd. | <b>Electric Express Train - HSR</b><br>From El Ain El Soghna City To El Alamein - MATROUH<br>Section - 7 From FOKA To MARSA MATROUH<br>From Station 594+000 To Station 599+177 | الهيئة العامة للإستشارات<br>العامة<br>General Authority for<br>Engineering Consultancy |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|

|               |                     |
|---------------|---------------------|
| Operating Lab | AL Nuby Central Lab |
|---------------|---------------------|

### PARTICLE SIZE DISTRIBUTION OF SOIL

|               |               |          |      |         |         |
|---------------|---------------|----------|------|---------|---------|
| TESTING DATE: | 11-4-2023     | Code     | Zone | 524+500 | 525+000 |
| LOCATION      | K.P (524+800) | NO (P-1) |      |         |         |
| NAME COMPANY  | Al Mustafa    |          |      |         |         |

1-visual inspection test

2-Gradient test

| A-gradation of bulk materials |       |        |        | SAMPLE WEIGHT (g) |        | 17419.00 |         | gm   | Table classify |       |
|-------------------------------|-------|--------|--------|-------------------|--------|----------|---------|------|----------------|-------|
| sieve size                    | 2     | 1.5    | 1      | 4/3               | 2/1    | 8/3      | # 4     | PASS | Soil Classify  | A-1-a |
| Mass retained (g)             | 122.0 | 1856.0 | 2489.0 | 812.0             | 981.0  | 1098.0   | 4079.0  |      | PRO            | 2.175 |
| Cumulative Retained (g)       | 122.0 | 1956.0 | 4457.0 | 5069.0            | 6030.0 | 7128.0   | 11207.0 |      | WC             | 6.50  |
| Cumulative Retained %         | 0.7   | 11.2   | 25.6   | 29.1              | 34.6   | 40.9     | 64.3    |      | CBR            |       |
| Cumulative Passing %          | 99.3  | 88.8   | 74.4   | 70.9              | 65.4   | 59.1     | 35.7    |      | Los Angeles    | 30.96 |

| B-soft material gradation |        |        | WT.OF sample |  | 800.00 |  | gm |
|---------------------------|--------|--------|--------------|--|--------|--|----|
| sieve size                | 10     | 40     | 200          |  |        |  |    |
| Cumulative Retained (g)   | 133.00 | 258.00 | 383.00       |  |        |  |    |
| Cumulative Retained %     | 26.60  | 51.60  | 76.60        |  |        |  |    |
| Cumulative Passing %      | 73.40  | 48.40  | 23.40        |  |        |  |    |

| C-General gradient   |      |      |      |      |      |      |      |      |       |       |
|----------------------|------|------|------|------|------|------|------|------|-------|-------|
| sieve size(in)       | 2    | 1.5  | 1    | 3/4  | 1/2  | 3/8  | # 4  | # 10 | # 40  | # 200 |
| sieve size(mm)       | 50.0 | 37.5 | 25.0 | 19.0 | 12.5 | 9.5  | 4.75 | 2.00 | 0.425 | 0.075 |
| Cumulative Passing % | 99.3 | 88.8 | 74.4 | 70.9 | 65.4 | 59.1 | 35.7 | 26.2 | 17.3  | 8.3   |
|                      |      |      |      |      |      |      |      |      |       |       |
|                      |      |      |      |      |      |      |      |      |       |       |
|                      |      |      |      |      |      |      |      |      |       |       |

| ATTERBERG LIMITS | LIQUID LIMIT (L.L.) | PLASTIC LIMIT (P.L.) | PLASTIC INDEX (P.I.) |
|------------------|---------------------|----------------------|----------------------|
|                  | N.P                 | N.P                  | N.P                  |

Contractor

Consultant

Youssef Ragab



**Electric Express Train - HSR**  
 From El Ain El Sokhna City To El Alamein - MATROUH  
 Section - 7 From FOKA TO MARSA MATROUH  
 From Station 504+000 To Station 509+177



## PROCTOR TEST

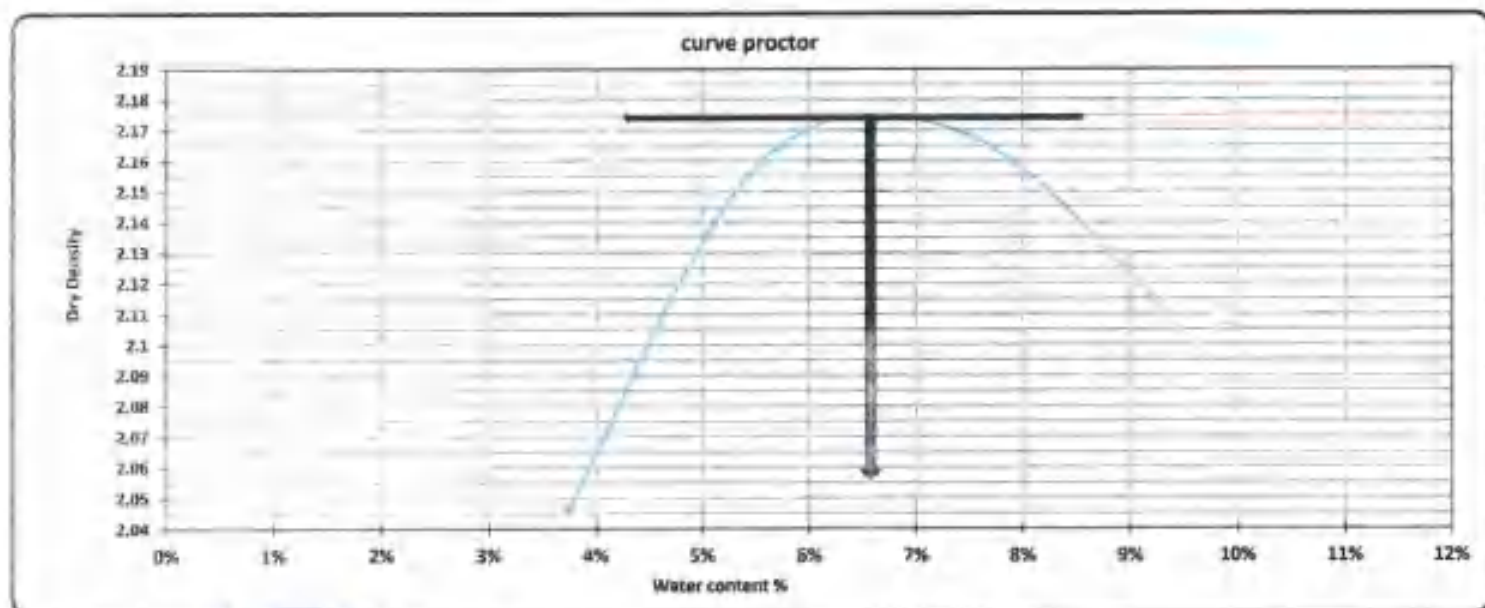
|               |               |          |      |          |         |
|---------------|---------------|----------|------|----------|---------|
| TESTING DATE: | 11-4-2023     | Code     | zone | 524++500 | 525+000 |
| LOCATION      | K.P (524+800) | MO (P-1) |      |          |         |
| NAME COMPANY  | Al Mustafa    |          |      |          |         |

|                        |        |
|------------------------|--------|
| Weight of empty mold : | 6037.0 |
| Mold Volume:           | 2113.0 |

|                 |       |
|-----------------|-------|
| MAX Dry Density | 2.175 |
| Water content % | 6.5   |

|                       |         |         |         |        |  |
|-----------------------|---------|---------|---------|--------|--|
| trial no :            | 1       | 2       | 3       | 4      |  |
| Wt. Of Mold+ wet soil | 10523.0 | 10854.0 | 10962.0 | 10899  |  |
| WT. WET SOIL          | 4486.0  | 4817.0  | 4925.0  | 4862.0 |  |
| Wt. Density           | 2.123   | 2.280   | 2.331   | 2.301  |  |

|                        |       |       |       |       |       |       |       |       |  |  |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| Tare No.               | 75    | 16    | 22    | 40    | 8     | 15    | 26    | 19    |  |  |
| Tare wt.               | 88    | 33.9  | 54.1  | 46.4  | 46.8  | 31.5  | 55    | 44.4  |  |  |
| Wt. Of wet soil & tare | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 | 150.0 |  |  |
| Wt. Of dry soil & tare | 146.5 | 145.9 | 145.0 | 144.5 | 142.7 | 141.8 | 141.7 | 140.7 |  |  |
| Wt. Of water           | 3.5   | 4.1   | 5.0   | 5.5   | 7.3   | 8.2   | 8.3   | 9.3   |  |  |
| Wt. Of dry soil        | 91.5  | 112.0 | 90.9  | 98.1  | 95.9  | 109.9 | 86.7  | 96.3  |  |  |
| Water content %        | 3.8%  | 3.7%  | 5.5%  | 5.6%  | 7.6%  | 7.5%  | 9.6%  | 9.7%  |  |  |
| AV. Water content %    | 3.7%  |       | 5.6%  |       | 7.5%  |       | 9.6%  |       |  |  |
| Dry Density            | 2.046 |       | 2.160 |       | 2.167 |       | 2.099 |       |  |  |



**Consultant**  
 Youssef Ragab



|                                                                                                                                                                   |                                                                                                       |                                                                                                                                         |                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <br>ENGINEERING CONSULTING OFFICE<br>المكتب الاستشاري الهندسي<br>أ.م. خالد شندوب | <br>سلطة قناة السويس | Electric Express Train - HSR                                                                                                            | <br>سلطة قناة السويس |
|                                                                                                                                                                   |                                                                                                       | From El Ain El Bahria City To El Alamein - MATROUH<br>Section - 7 From FOKA To MARSA MATROUH<br>From Station 504+000 To Station 525+177 |                                                                                                         |

|               |                                |          |      |         |         |
|---------------|--------------------------------|----------|------|---------|---------|
| TESTING DATE: | 11-4-2023                      | code     | zone | 524+500 | 525+000 |
| LOCATION      | K.P (524+800+)                 | MO (P-1) |      |         |         |
| NAME COMPANY  | Al Mustafa                     |          |      |         |         |
|               | Los Anglos abrasion AASHTO-T96 |          |      |         |         |

**Results:-**

| Weight of sample before test (gm) | Weight of sample after test (gm) | Abrasion ratio (%) |
|-----------------------------------|----------------------------------|--------------------|
| 5000                              | 3452                             | 30.96              |

Lab. Specialist

Name :

Sign :

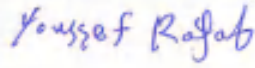
Lab. Engineer

Name : 

Sign :



Consultant Engineer

Name : 

Sign :

### California Bearing Ratio TEST

|               |               |          |            |         |         |
|---------------|---------------|----------|------------|---------|---------|
| Testing Date: | 13-4-2023     | Code:    | FROM STA : | 524+500 | 525+000 |
| Location:     | K.P (524+800) | MO (P-1) |            |         |         |
| Company Name: | Al Mustafa    |          |            |         |         |

#### Test Results

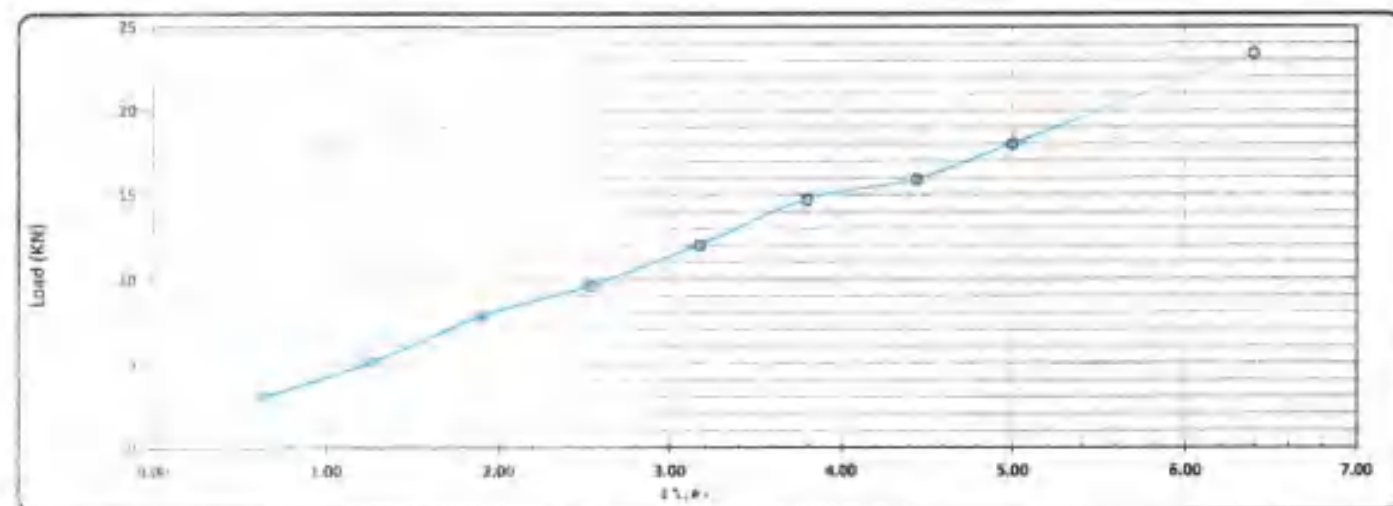
| Compaction % for Mold                |       |
|--------------------------------------|-------|
| Mold No.                             | 3     |
| Mold Vol. (cm <sup>3</sup> )         | 2025  |
| Mold Wt. (gm)                        | 5034  |
| Mold Wt. + Wat Wt. (gm)              | 9725  |
| Wat Wt. (gm)                         | 4691  |
| Wat Density (g/cm <sup>3</sup> )     | 2.317 |
| Dry Density (g/cm <sup>3</sup> )     | 2.175 |
| Proctor Density (g/cm <sup>3</sup> ) | 2.175 |
| Compaction %                         | 100.0 |

| Moisture Ratio After Compacted Mold |       |
|-------------------------------------|-------|
| Tare No.                            | 15    |
| Tare WT. (gm)                       | 31.9  |
| Tare WT. + Wat WT. (gm)             | 150   |
| Tare WT. + Dry WT. (gm)             | 142.8 |
| Water WT. (gm)                      | 7.2   |
| Dry WT. (gm)                        | 110.9 |
| Moisture Content %                  | 6.5   |

| Swelling            |           |
|---------------------|-----------|
| Mold No.            | 3         |
| Date                | 13-4-2023 |
| Initial Height (mm) | 0.00      |
| Final Height (mm)   | 0.00      |
| Difference          | 0         |
| Sample Height (mm)  | 120.00    |
| Swelling Ratio %    | 0.0%      |

#### Loading Reading

|                   |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|
| 46.50             | 0.60 | 1.27 | 1.91 | 2.54 | 3.18 | 3.80 | 4.45 | 5.00 | 6.40 |
| Load Reading (mm) | 0.10 | 0.17 | 0.26 | 0.32 | 0.40 | 0.49 | 0.53 | 0.60 | 0.78 |
| Load (KN)         | 3.0  | 5.1  | 7.8  | 9.6  | 12.0 | 14.7 | 15.9 | 18.0 | 23.4 |



#### Calculations

| Proctor Density      | Load  | Standard Load | CBR   | Mold - Compaction | Compaction | CBR           |
|----------------------|-------|---------------|-------|-------------------|------------|---------------|
| (g/cm <sup>3</sup> ) | (KN)  | (lb)          | (%)   | (%)               | (%)        | % على نسبة 1A |
| 2.50                 | 9.60  | 13.4          | 71.9% | 100               | 98         | 70.5%         |
| 4.00                 | 18.00 | 20.0          | 89.9% |                   |            | 88.1%         |

Lab. Supervisor

Name:

Sign:

Lab. Engineer

Name:

Sign:



Consultant Engineer

Name:

Sign:

Youssef Rafab



# MATERIAL INSPECTION REQUEST

الهيئة العامة للإعتماد  
والتقنين



|                      |                    |                   |            |                  |      |     |    |    |      |    |    |
|----------------------|--------------------|-------------------|------------|------------------|------|-----|----|----|------|----|----|
| Contractor Company   | AL-MOSTAFA COMPANY |                   |            | Designer Company | K.K. |     |    |    |      |    |    |
| Issued by Contractor | Name               | Sign              | Date       | Time             |      |     |    |    |      |    |    |
|                      | MOSTAFA THABET     | <i>مصطفى ثابت</i> | 10-09-2023 |                  |      |     |    |    |      |    |    |
| Received by ER       |                    |                   | MIR        | C1               | C2   | C3  | DD | MM | YY   | HH | MM |
|                      |                    |                   |            | 0.8              | 0.6  | 0.7 | 10 | 09 | 2023 |    |    |

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

|                                                                                                                                            |                              |         |                       |              |      |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------|-----------------------|--------------|------|
| Description of Materials                                                                                                                   | SUB-BALLAST MATERIAL RESULTS |         |                       |              |      |
| Location to be Used                                                                                                                        | From                         | TO      |                       |              |      |
|                                                                                                                                            | 524+500                      | 525+000 | SUB BALLAST 1 (+0.70) |              |      |
|                                                                                                                                            | 524+500                      | 525+000 | SUB BALLAST 2 (+0.90) |              |      |
| MAR Approval No                                                                                                                            |                              |         |                       | Date         |      |
| Supplier Name                                                                                                                              |                              |         |                       |              |      |
| Test Requirement                                                                                                                           | Specification                |         |                       | Clause       |      |
| Reference Photos                                                                                                                           | Yes attached / No            |         |                       | Other        |      |
| Item                                                                                                                                       | Description                  | Unit    | Quantity              | Arrival Date | Note |
| 1                                                                                                                                          | Sieve analysis               | M3      | 5000                  | 10-09-2023   |      |
| 2                                                                                                                                          | Classification               | M3      | 5000                  | 10-09-2023   |      |
| 3                                                                                                                                          | Proctor & O.M.C              | M3      | 5000                  | 10-09-2023   |      |
| 4                                                                                                                                          | L.L & P.L & PI               | M3      | 5000                  | 10-09-2023   |      |
| 5                                                                                                                                          | C.B.R                        | M3      | 10000                 | 10-09-2023   |      |
| Comments by:                                                                                                                               |                              |         | Comments by:          |              |      |
| A sample has been taken from fill material by K.K office to (Al TAWAKOL LAB) and the results founded meet the specifications and accepted. |                              |         |                       |              |      |

| APPROVAL STATUS          |                   |                   |      |         |
|--------------------------|-------------------|-------------------|------|---------|
| Organisation             | Name              | Sign              | Date | A-AWC-R |
| Contractor               | <i>مصطفى ثابت</i> | <i>مصطفى ثابت</i> |      |         |
| QA/QC *                  | Hassan            | <i>hassan</i>     |      |         |
| GARB **                  |                   |                   |      |         |
| Employers Representative |                   |                   |      |         |

\* Designer

\*\* Alignment / Bridges: Culvert Only

# SUBMISSION of TEST RESULTS

الهيئة العامة للإنتاج  
البناء



|                      |                    |            |                  |      |
|----------------------|--------------------|------------|------------------|------|
| Contractor Company   | AL-MOSTAFA COMPANY |            | Designer Company | K.K  |
| Issued by Contractor | Name               | Sign       | Date             | Time |
|                      | Mostafa Thabet     | مصطفى ثابت | 12-09-2023       |      |
| Received by ER       |                    |            | MAR              |      |
|                      |                    |            |                  |      |

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

|                                                    |               |                    |                            |         |
|----------------------------------------------------|---------------|--------------------|----------------------------|---------|
| NB: Package 1 Only (Package 2 via Aconex)          |               |                    |                            |         |
| THE FOLLOWING TEST RESULTS ARE ATTACHED FOR REVIEW |               |                    |                            |         |
| Description of Test Materials                      | Soil (A-1-a)  |                    |                            |         |
| Location of Test                                   | K.P (524)     |                    |                            |         |
| Item                                               | Specification | Test Requirement   | Test Result Attachment     | Remarks |
| 1                                                  | ASTM D 75     | Aggregate sampling | According to specification |         |
| 2                                                  | ASTM C 136    | Sieve Analysis     | According to specification |         |
| 3                                                  | ASTM D 1440   | Passing sieve #200 | 4.65                       |         |
| 4                                                  | ASTM D 4318   | Atterberg limit    | N.P                        |         |
| 5                                                  | ASTM D 2974   | Moisture content   | 7.10                       |         |
| 6                                                  | ASTM D 1557   | Modified proctor   | 2.23                       |         |
| 7                                                  | ASTM D 1883   | C.B.R              | 93.4                       |         |

|              |              |
|--------------|--------------|
| Comments by: | Comments by: |
|              |              |

| APPROVAL STATUS          |            |            |      |         |
|--------------------------|------------|------------|------|---------|
| Organisation             | Name       | Sign       | Date | A-AWC-R |
| Contractor               | مصطفى ثابت | مصطفى ثابت |      | A       |
| Designer                 | Hassan     | 10/9/2023  |      | A       |
| GARB *                   |            |            |      |         |
| Employers Representative |            |            |      |         |

\* Alignment / Bridges: Culvert Only





|                                                                                                                                                                         |                                                                                                                                                                                                                                                                     |                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>ENGINEERING CONSULTING OFFICE</b><br>المكتب الاستشاري الهندسي<br>ا.م. خالد فاضل | <br><b>Electric Express Train - HSR</b><br>From El Ain El Sokhna City To El Alamein - MATROUH<br>Section - 7 From FOKA To MARSA MATROUH<br>From Station 504+000 To Station 568+177 | <br>جمهورية مصر العربية<br>الهيئة العامة للغازات<br>شركة سكك الحديد |
|                                                                                                                                                                         |                                                                                                                                                                                                                                                                     |                                                                                                                                                        |
| <b>Absorbition &amp; Aggregate specific gravity AASHTO-T85</b>                                                                                                          |                                                                                                                                                                                                                                                                     |                                                                                                                                                        |

|               |               |                       |          |             |         |
|---------------|---------------|-----------------------|----------|-------------|---------|
| TESTING DATE: | 10/09/2023    | code                  | Station  | 524+500     | 525+000 |
| LOCATION      | K.P (524+750) | (mos) SUB BALLAST (1) | Material | SUB BALLAST |         |
| NAME COMPANY  | Al Mostafa    |                       | QUANTITY | 5000 M      |         |

|                                            |      |    |
|--------------------------------------------|------|----|
| Weight of sample                           | 2500 | gm |
| Weight of saturated surface dry sample (B) | 2540 | gm |
| Weight of saturated sample in water (C)    | 1553 | gm |
| Weight of dry sample after heating (A)     | 2490 | gm |

**Results:-**

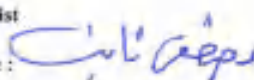
|                                           |       |   |
|-------------------------------------------|-------|---|
| Bulk specific gravity = A / (B-C)         | 2.523 |   |
| Bulk specific gravity (S.S.D) = B / (B-C) | 2.573 |   |
| Apparent specific gravity = A / (A-C)     | 2.657 |   |
| Absorbation = ( B-A)/A                    | 2.008 | % |

|                                       |
|---------------------------------------|
| <b>Los Anglos Abrasion AASHTO-T96</b> |
|---------------------------------------|

**Results:-**

|                                   |                                  |                    |
|-----------------------------------|----------------------------------|--------------------|
| Weight of sample before test (gm) | Weight of sample after test (gm) | Abrasion ratio (%) |
| 5000                              | 3730                             | 25.40              |

Lab. Specialist

Name : 

Sign : 

Lab. Engineer

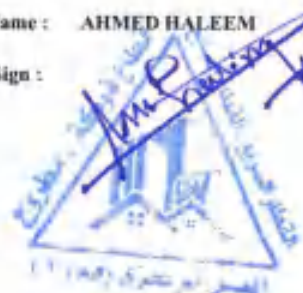
Name : AHMED HALEEM

Sign : 

Consultant Engineer

Name : Hassan

Sign : 





**Electric Express Train - HSR**  
**From El Ain El Sokhna City To El Alamein - MATROUH**  
**Section - 7 From FOKA TO MARSA MATROUH**  
**From Station 504+000 To Station 546+177**



**MODIFIED PROCTOR TEST ASTM D-1557**

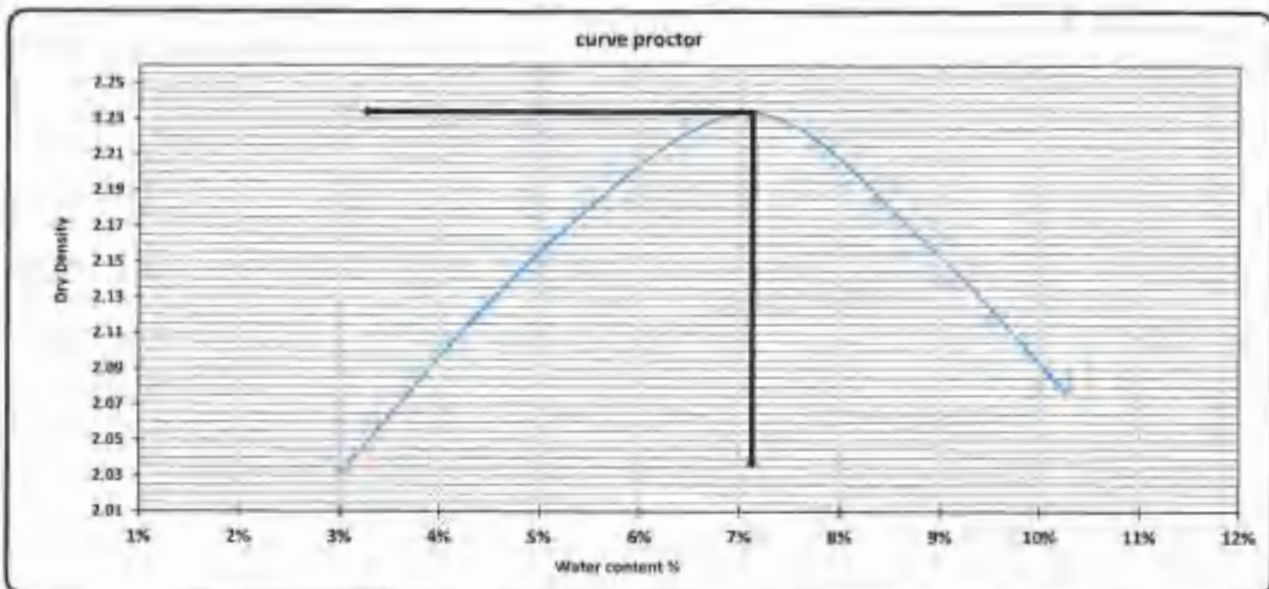
|               |               |                      |          |             |         |
|---------------|---------------|----------------------|----------|-------------|---------|
| TESTING DATE: | 11-08-2023    | code:                | ZONE     | 524+500     | 525+000 |
| LOCATION      | K.P (524+750) | (mm) SUB (DALLA57/1) | Material | SUB BALLAST |         |
| NAME COMPANY  | Al Mostafa:   |                      | QUANTITY | 5000 M      |         |

|                        |        |
|------------------------|--------|
| Weight of empty mold : | 5620.0 |
| Mold Volume:           | 2124.0 |

|                 |       |
|-----------------|-------|
| MAX Dry Density | 2.233 |
| Water content % | 7.1%  |

|                       |         |         |         |        |        |
|-----------------------|---------|---------|---------|--------|--------|
| trial no :            | 1       | 2       | 3       | 4      | 5      |
| Wt. Of Mold+ wet soil | 10070.0 | 10430.0 | 10700.0 | 10615  | 10485  |
| WT. WET SOIL          | 4450.0  | 4810.0  | 5080.0  | 4995.0 | 4865.0 |
| Wt. Density           | 2.095   | 2.265   | 2.392   | 2.352  | 2.299  |

|                        |       |       |       |       |        |        |       |       |       |       |
|------------------------|-------|-------|-------|-------|--------|--------|-------|-------|-------|-------|
| Tare No.               | 10    | 11    | 1     | 2     | 3      | 4      | 5     | 6     | 7     | 8     |
| Tare wt.               | 53.3  | 53.1  | 56.4  | 53.2  | 55.2   | 53.6   | 53.2  | 56.1  | 55.3  | 53.2  |
| Wt. Of wet soil & tare | 150.0 | 150.0 | 150.0 | 150.0 | 150.0  | 150.0  | 150.0 | 150.0 | 150.0 | 150.0 |
| Wt. Of dry soil & tare | 147.2 | 147.1 | 145.5 | 145.4 | 143.65 | 143.70 | 142.0 | 142.5 | 141.8 | 141.2 |
| Wt. Of water           | 2.8   | 2.9   | 4.5   | 4.6   | 6.3    | 6.3    | 8.0   | 7.5   | 8.0   | 8.8   |
| Wt. Of dry soil        | 93.9  | 94.0  | 89.1  | 92.2  | 88.5   | 90.1   | 88.8  | 86.4  | 85.7  | 85.0  |
| Water content %        | 3.0%  | 3.1%  | 5.1%  | 5.0%  | 7.2%   | 7.0%   | 9.0%  | 8.7%  | 10.5% | 10.0% |
| AV. Water content %    | 3.0%  |       | 5.0%  |       | 7.1%   |        | 8.9%  |       | 10.3% |       |
| Dry Density            | 2.033 |       | 2.156 |       | 2.233  |        | 2.160 |       | 2.078 |       |



**Contractor**

*(Signature and Stamp of Contractor)*

**Consultant**

*(Signature and Stamp of Consultant)*



## California Bearing Ratio TEST

|                |               |                      |                   |             |         |
|----------------|---------------|----------------------|-------------------|-------------|---------|
| Testing Date : | 12/9/2023     | Code                 | FROM STA :        | 524+500     | 525+000 |
| Location :     | K.P (524+750) | (mos) SUB BALLAST(1) | : Material        | SUB BALLAST |         |
| Company Name   | Al Mostafa    |                      | : Layer Thickness | 500MM       |         |

### -: Test Results

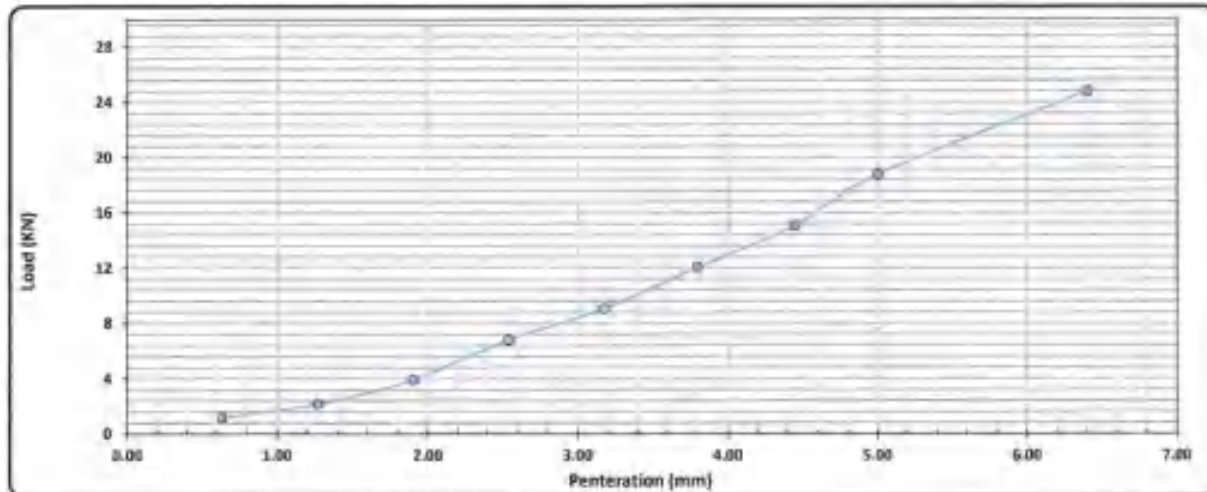
| Compaction % for Mold                |       |
|--------------------------------------|-------|
| Mold No.                             | 1     |
| Mold Vol.(cm <sup>3</sup> )          | 2128  |
| Mold WT. (gm)                        | 5318  |
| Mold WT. + Wet WT. (gm)              | 10385 |
| Wet WT. (gm)                         | 5075  |
| Wet Density (g/cm <sup>3</sup> )     | 2.394 |
| Dry Density (g/cm <sup>3</sup> )     | 2.238 |
| Proctor Density (g/cm <sup>3</sup> ) | 2.231 |
| Compaction %                         | 100.3 |

| Moisture Ratio After Compacted Mold |       |
|-------------------------------------|-------|
| Tare No.                            | 15    |
| Tare WT. (gm)                       | 55    |
| Tare WT. + Wet WT. (gm)             | 150   |
| Tare WT. + Dry WT. (gm)             | 143.8 |
| Water WT. (gm)                      | 6.2   |
| Dry WT. (gm)                        | 88.8  |
| Moisture Content %                  | 7.0   |

| Swelling            |           |
|---------------------|-----------|
| Mold No.            | 1         |
| Date:               | 12/9/2023 |
| Initial Height (mm) | 8.80      |
| Final Height (mm)   | 8.80      |
| Difference          | 0.00      |
| Sample Height (mm)  | 120       |
| Swelling Ratio %    | 0.00%     |

### Loading Reading :

|                   |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|
| Penetration (mm)  | 0.64 | 1.27 | 1.91 | 2.54 | 3.18 | 3.80 | 4.43 | 5.00 | 6.40 |
| Load Reading (Kg) | 130  | 240  | 435  | 785  | 1005 | 1340 | 1675 | 2085 | 2788 |
| Load (KN)         | 1.2  | 2.2  | 3.9  | 6.8  | 9.0  | 12.1 | 15.1 | 19.8 | 24.8 |



### Calculations :-

| Penetration | Load  | Standard Load | CBR   | Mold - Compaction | Compaction | CBR           |
|-------------|-------|---------------|-------|-------------------|------------|---------------|
| (mm)        | (Kc)  | (lb)          | (%)   | (%)               | (%)        | 100 Load at % |
| 2.50        | 6.80  | 13.4          | 50.9% | 100.3             | 100        | 50.7%         |
| 5.00        | 19.77 | 20.0          | 93.7% |                   |            | 93.4%         |

Lab. Specialist:

Name:   
Sign: 

Lab. Engineer

Name: AHMED HALEEM  
Sign:   


Consultant Engineer

Name: Hassan  
Sign: 

## Plate Load Test Results

Company Name

Al Mustafa

Location

524+820

To

524+920

Station

524+900

Test Date

21/3/2023

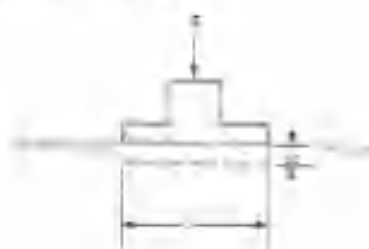
Layer level

-1.5

### EQUIPMENT AND TEST PROCEDURE

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable and ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 14.92  | 13.45  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.4   | 0.707  | 0.01              | 14.80  | 13.40  |        | 0.120   | 0.050   |         | 0.085      |
| 2.000     | 18.8  | 5.652  | 0.08              | 14.40  | 13.15  |        | 0.520   | 0.300   |         | 0.410      |
| 3.000     | 37.7  | 11.304 | 0.16              | 14.02  | 12.95  |        | 0.900   | 0.500   |         | 0.700      |
| 4.000     | 58.9  | 17.663 | 0.25              | 13.80  | 12.85  |        | 1.120   | 0.600   |         | 0.860      |
| 5.000     | 77.7  | 23.315 | 0.33              | 13.55  | 12.70  |        | 1.370   | 0.750   |         | 1.060      |
| 6.000     | 98.9  | 29.673 | 0.42              | 13.35  | 12.60  |        | 1.570   | 0.850   |         | 1.210      |
| 7.000     | 117.8 | 35.325 | 0.50              | 13.10  | 12.50  |        | 1.820   | 0.950   |         | 1.385      |
| 8.000     | 58.9  | 17.663 | 0.25              | 13.15  | 12.58  |        | 1.770   | 0.870   |         | 1.320      |
| 9.000     | 29.4  | 8.831  | 0.12              | 13.25  | 12.65  |        | 1.670   | 0.800   |         | 1.235      |
| 9.000     | 2.4   | 0.707  | 0.01              | 13.85  | 13.02  |        | 1.070   | 0.430   |         | 0.750      |
| 10.000    | 2.4   | 0.707  | 0.01              | 13.85  | 13.02  |        | 1.070   | 0.430   |         | 0.750      |
| 11.000    | 18.8  | 5.652  | 0.08              | 13.60  | 12.85  |        | 1.320   | 0.600   |         | 0.960      |
| 12.000    | 37.7  | 11.304 | 0.16              | 13.40  | 12.75  |        | 1.520   | 0.700   |         | 1.110      |
| 13.000    | 58.9  | 17.663 | 0.25              | 13.30  | 12.70  |        | 1.620   | 0.750   |         | 1.185      |
| 14.000    | 77.7  | 23.315 | 0.33              | 13.15  | 12.65  |        | 1.770   | 0.800   |         | 1.285      |
| 15.000    | 98.9  | 29.673 | 0.42              | 13.00  | 12.55  |        | 1.920   | 0.900   |         | 1.410      |

|                           |        | $\sigma$ | $\Delta s$ | $\Delta \sigma$ |
|---------------------------|--------|----------|------------|-----------------|
| 0.7 $\sigma_1$            | 0.35   | 1.05688  | 0.39313    | 0.2             |
| 0.3 $\sigma_1$            | 0.15   | 0.66375  |            |                 |
| 0.7 $\sigma_2$            | 0.35   | 1.31278  | 0.14776    | 0.2             |
| 0.3 $\sigma_2$            | 0.15   | 1.17002  |            |                 |
| D (mm)                    | 300    |          |            |                 |
| $E_{v1}$                  | 114.47 |          |            |                 |
| $E_{v2}$                  | 315.22 |          |            |                 |
| Area (kg/m <sup>2</sup> ) | 0.0706 |          |            |                 |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{v2}/E_{v1}$ | 2.75 |  |  |
|-----------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta \sigma / \Delta s$$

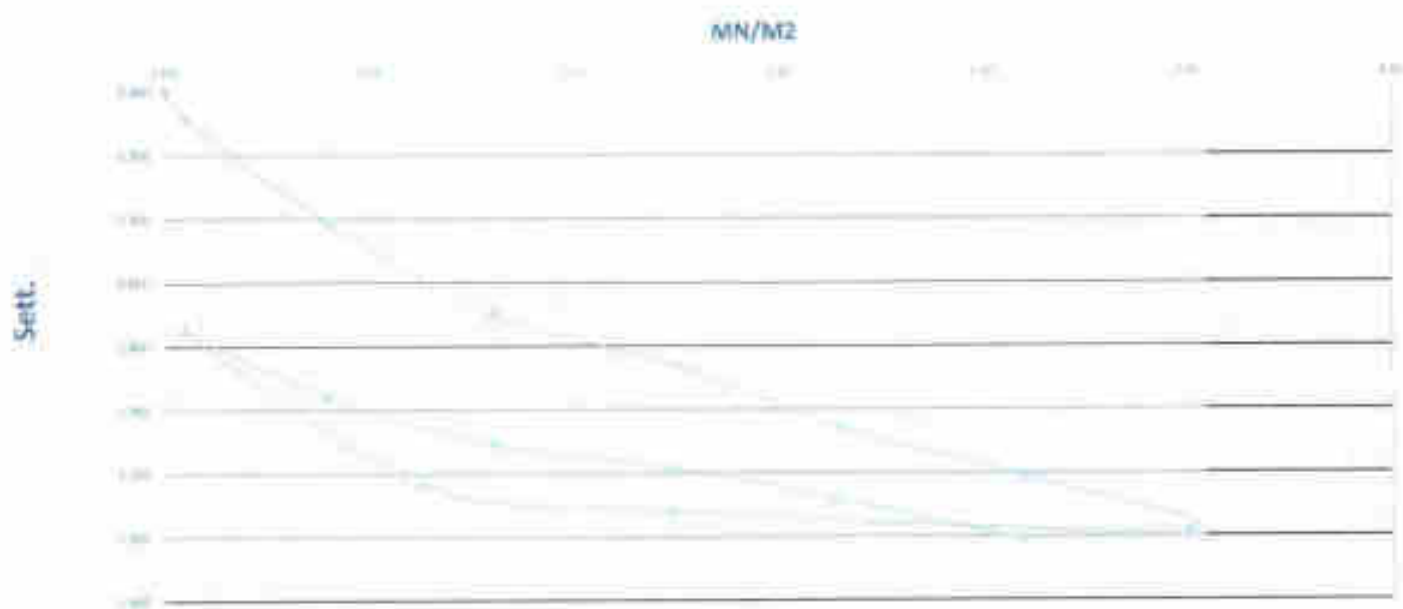
$E_v$  = deformation modulus

$\Delta \sigma$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\mu_{tr}$  and  $\mu_s$  are usually taken from the load span between 0.2  $\sigma_{max}$  and 0.7  $\sigma_{max}$



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

Hassan



## Plate Load Test Results

Company Name

المصطفى

Location

524+800

To

524+920

Station

524+880

Test Date

11-04-2023

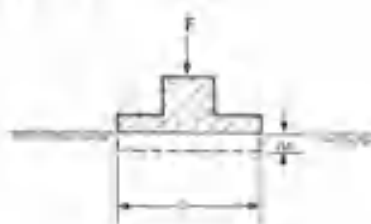
Layer level

ferma

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | kN/M <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.94  | 19.90  |        | 0.060   | 0.100   |         | 0.080      |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.82  | 19.80  |        | 0.180   | 0.200   |         | 0.190      |
| 3.000     | 34.2  | 11.304 | 0.16              | 19.55  | 19.72  |        | 0.450   | 0.280   |         | 0.365      |
| 4.000     | 53.3  | 17.663 | 0.25              | 19.36  | 19.61  |        | 0.640   | 0.390   |         | 0.515      |
| 5.000     | 70.5  | 23.315 | 0.33              | 19.19  | 19.52  |        | 0.810   | 0.480   |         | 0.645      |
| 6.000     | 89.8  | 29.673 | 0.42              | 18.96  | 19.40  |        | 1.040   | 0.600   |         | 0.820      |
| 7.000     | 106.8 | 35.325 | 0.50              | 18.76  | 19.31  |        | 1.240   | 0.690   |         | 0.965      |
| 8.000     | 53.4  | 17.663 | 0.25              | 18.84  | 19.38  |        | 1.160   | 0.620   |         | 0.890      |
| 9.000     | 26.7  | 8.831  | 0.12              | 18.94  | 19.49  |        | 1.060   | 0.510   |         | 0.785      |
| 9.000     | 2.1   | 0.707  | 0.01              | 19.18  | 19.60  |        | 0.820   | 0.400   |         | 0.610      |
| 10.000    | 2.1   | 0.707  | 0.01              | 19.18  | 19.60  |        | 0.820   | 0.400   |         | 0.610      |
| 11.000    | 17.1  | 5.652  | 0.08              | 19.14  | 19.56  |        | 0.860   | 0.440   |         | 0.650      |
| 12.000    | 34.2  | 11.304 | 0.16              | 19.05  | 19.50  |        | 0.950   | 0.500   |         | 0.725      |
| 13.000    | 53.3  | 17.663 | 0.25              | 18.95  | 19.46  |        | 1.050   | 0.540   |         | 0.795      |
| 14.000    | 70.5  | 23.315 | 0.33              | 18.88  | 19.41  |        | 1.120   | 0.590   |         | 0.855      |
| 15.000    | 89.8  | 29.673 | 0.42              | 18.78  | 19.36  |        | 1.220   | 0.640   |         | 0.930      |

|                |         | $\nu$   | AS      | $\Delta s$ |
|----------------|---------|---------|---------|------------|
| 0.7 $\sigma_1$ | 0.35    | 0.69313 | 0.35    | 0.2        |
| 0.3 $\sigma_1$ | 0.15    | 0.34313 |         |            |
| 0.7 $\sigma_2$ | 0.35    | 0.87167 |         |            |
| 0.3 $\sigma_2$ | 0.15    | 0.69    | 0.18166 | 0.2        |
| D (mm)         | 300     |         |         |            |
| $E_{11}$       | 128.57  |         |         |            |
| $E_{22}$       | 247.71  |         |         |            |
| Area (sqm)     | 0.07065 |         |         |            |

|           |      |  |  |
|-----------|------|--|--|
| $E_1/E_2$ | 1.93 |  |  |
|-----------|------|--|--|

$$E_1 = 0.79 \cdot D \cdot \Delta s / \Delta s$$

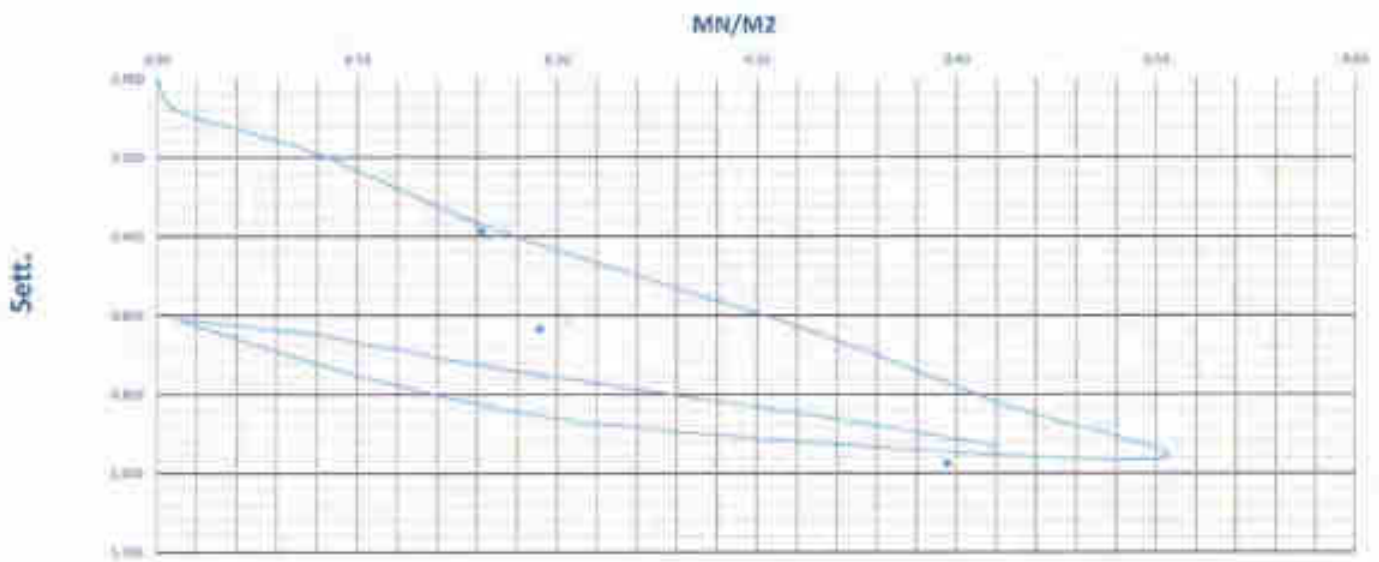
$E_1$  = deformation modulus

$\Delta s$  = load increment

$D$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\delta_p$  and  $\delta_s$  are usually taken from the load span between 0.1  $l_{max}$  and 0.7  $l_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

Youssef R. Gab

## Plate Load Test Results

Company Name

المصطفى

Location

524+800

To

524+920

Test Date

11-04-2023

Layer level

ferma

Station

524+840

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\leq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | MPa    | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.94  | 19.96  |        | 0.060   | 0.040   |         | 0.050      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.81  | 19.88  |        | 0.190   | 0.120   |         | 0.155      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.61  | 19.81  |        | 0.390   | 0.190   |         | 0.290      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.35  | 19.72  |        | 0.650   | 0.280   |         | 0.465      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.20  | 19.68  |        | 0.800   | 0.320   |         | 0.560      |
| 6.000     | 89.8  | 29.673 | 0.42   | 19.05  | 19.62  |        | 0.950   | 0.380   |         | 0.665      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.90  | 19.58  |        | 1.100   | 0.420   |         | 0.760      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.95  | 19.63  |        | 1.050   | 0.370   |         | 0.710      |
| 9.000     | 26.7  | 8.831  | 0.12   | 19.06  | 19.69  |        | 0.940   | 0.310   |         | 0.625      |
| 9.000     | 2.1   | 0.707  | 0.01   | 19.28  | 19.79  |        | 0.720   | 0.210   |         | 0.465      |
| 10.000    | 2.1   | 0.707  | 0.01   | 19.28  | 19.79  |        | 0.720   | 0.210   |         | 0.465      |
| 11.000    | 17.1  | 5.652  | 0.08   | 19.24  | 19.77  |        | 0.760   | 0.230   |         | 0.493      |
| 12.000    | 34.2  | 11.304 | 0.16   | 19.16  | 19.76  |        | 0.840   | 0.240   |         | 0.540      |
| 13.000    | 53.3  | 17.663 | 0.25   | 19.10  | 19.72  |        | 0.900   | 0.280   |         | 0.590      |
| 14.000    | 70.5  | 23.315 | 0.33   | 19.05  | 19.66  |        | 0.950   | 0.340   |         | 0.645      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.98  | 19.60  |        | 1.020   | 0.400   |         | 0.710      |

| $\sigma$       | $\Delta S$ | $\Delta \sigma$ |
|----------------|------------|-----------------|
| 0.7 $\sigma_1$ | 0.35       | 0.58187         |
| 0.5 $\sigma_1$ | 0.15       | 0.27313         |
| 0.7 $\sigma_2$ | 0.35       | 0.65944         |
| 0.5 $\sigma_2$ | 0.15       | 0.525           |
| D (mm)         | 300        |                 |
| $E_s$          | 145.75     |                 |
| $E_{s1}$       | 334.72     |                 |
| Area (sq.m)    | 0.07065    |                 |

|                 |      |  |
|-----------------|------|--|
| $E_{s2}/E_{s1}$ | 2.30 |  |
|-----------------|------|--|

$$E_s = 0.75 \cdot D \cdot (\sigma_1 + \sigma_2) / \Delta s$$

$E_s$  = deformation modulus

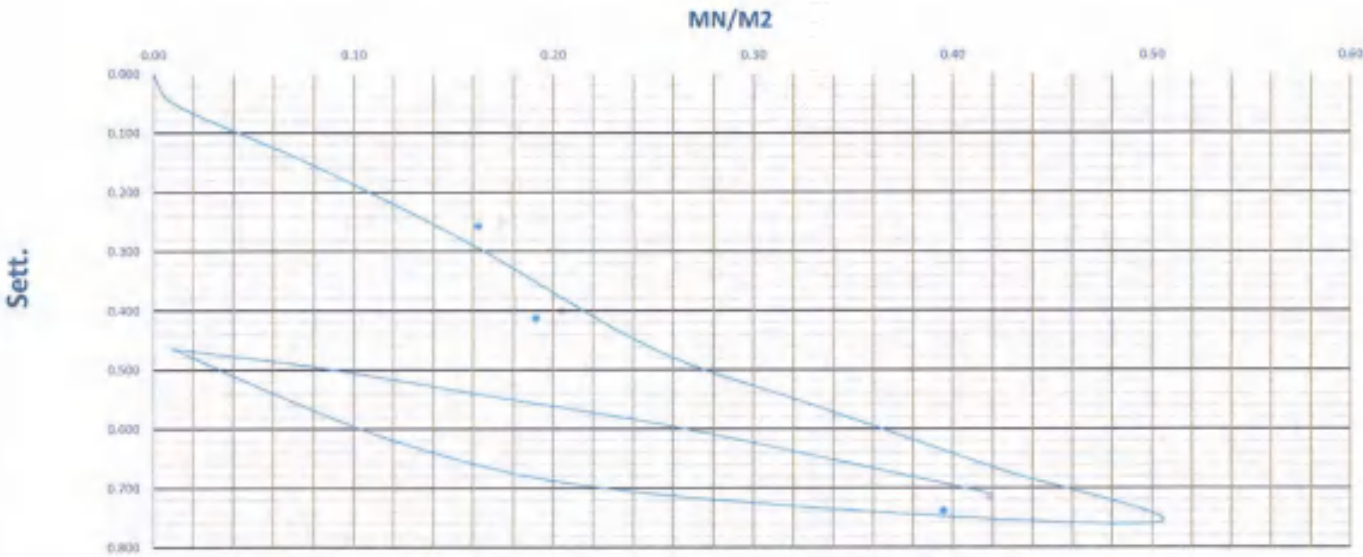
$\Delta \sigma$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign :





## Plate Load Test Results

Company Name

المصطفى

Location

524+820

To

524+900

Station

524+880

Test Date

16-04-2023

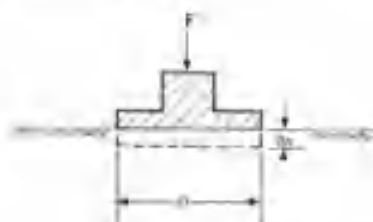
Layer level

P.S.G + 0.5

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loadmg    | Load  | Load   | Stress   | Dist.1 | Dist.2 | Dist.3 | Sett.1 | Sett.2 | Sett.3 | Log. Sett. |
|-----------|-------|--------|----------|--------|--------|--------|--------|--------|--------|------------|
| Gauge No. | Bar   | kg     | N/50/102 | mm     | mm     | mm     | mm     | mm     | mm     | mm         |
| 0.000     | 0.0   | 0.000  | 0.00     | 20.00  | 20.00  |        | 0.000  | 0.000  |        | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01     | 19.95  | 19.87  |        | 0.050  | 0.130  |        | 0.090      |
| 2.000     | 17.1  | 5.652  | 0.08     | 19.55  | 19.61  |        | 0.450  | 0.390  |        | 0.420      |
| 0.080     | 34.2  | 11.304 | 0.16     | 19.10  | 19.40  |        | 0.900  | 0.600  |        | 0.750      |
| 4.000     | 53.3  | 17.663 | 0.25     | 18.85  | 19.10  |        | 1.150  | 0.900  |        | 1.025      |
| 5.000     | 70.5  | 23.315 | 0.33     | 18.66  | 18.90  |        | 1.340  | 1.020  |        | 1.180      |
| 6.000     | 89.8  | 29.673 | 0.42     | 18.46  | 18.82  |        | 1.540  | 1.180  |        | 1.360      |
| 7.000     | 106.8 | 35.325 | 0.50     | 18.25  | 18.66  |        | 1.750  | 1.340  |        | 1.545      |
| 8.000     | 53.4  | 17.663 | 0.25     | 18.33  | 18.74  |        | 1.670  | 1.260  |        | 1.465      |
| 9.000     | 26.7  | 8.831  | 0.12     | 18.42  | 18.82  |        | 1.580  | 1.180  |        | 1.380      |
| 9.000     | 2.1   | 0.707  | 0.01     | 18.69  | 19.03  |        | 1.310  | 0.970  |        | 1.140      |
| 10.000    | 2.1   | 0.707  | 0.01     | 18.69  | 19.03  |        | 1.310  | 0.970  |        | 1.140      |
| 11.000    | 17.1  | 5.652  | 0.08     | 18.64  | 19.00  |        | 1.360  | 1.000  |        | 1.180      |
| 12.000    | 34.2  | 11.304 | 0.16     | 18.58  | 18.93  |        | 1.450  | 1.070  |        | 1.260      |
| 13.000    | 53.3  | 17.663 | 0.25     | 18.44  | 18.85  |        | 1.560  | 1.150  |        | 1.355      |
| 14.000    | 70.5  | 23.315 | 0.33     | 18.36  | 18.77  |        | 1.640  | 1.230  |        | 1.435      |
| 15.000    | 89.8  | 29.673 | 0.42     | 18.26  | 18.70  |        | 1.740  | 1.300  |        | 1.520      |

|                |         | $\Delta$ | AS      | $\Delta s$ |
|----------------|---------|----------|---------|------------|
| 0.7 $\sigma_0$ | 0.25    | 1.19813  | 0.48937 | 0.2        |
| 0.3 $\sigma_0$ | 0.15    | 0.79875  |         |            |
| 0.7 $\sigma_0$ | 0.35    | 1.45389  | 0.23388 | 0.2        |
| 0.3 $\sigma_0$ | 0.15    | 1.22     |         |            |
| D (mm)         | 300     |          |         |            |
| $E_{s1}$       | 91.92   |          |         |            |
| $E_{s2}$       | 192.40  |          |         |            |
| Area (Sqmm)    | 0.07065 |          |         |            |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{s2}/E_{s1}$ | 2.09 |  |  |
|-----------------|------|--|--|

$$E_s = 0.75 \cdot D \cdot \Delta s / A_s$$

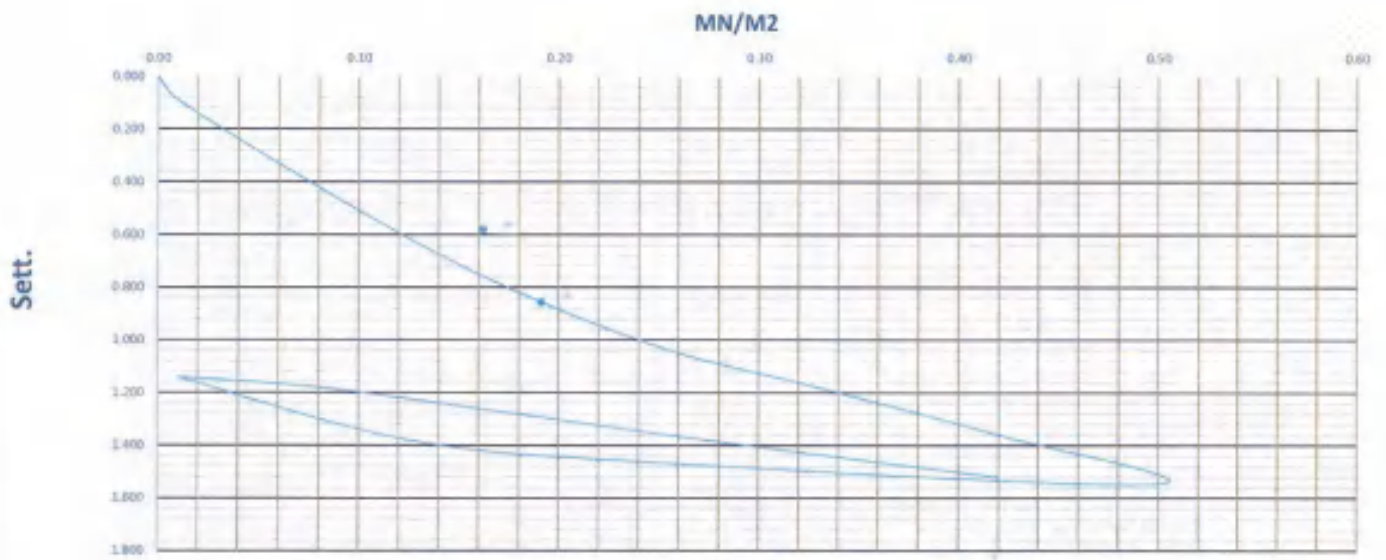
$E_s$  = deformation modulus

$D_s$  = load increment

$D_s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign :

17/7/2020



## Plate Load Test Results

Company Name

المصطفى

Location

524+820

To

524+900

Status

524/838

Test Date

16-04-2023

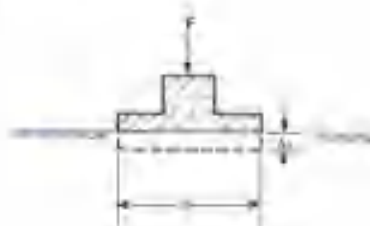
Layer level

P.S.G + 0.5

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F = \text{Load}$

$\Delta s = \text{settlement}$

$D = \text{diameter of the plate}$

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a noticeable and  $< 0.02$  mm/minute. After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | App. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | KN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.75  | 19.95  |        | 0.250   | 0.050   |         | 0.150      |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.15  | 19.65  |        | 0.850   | 0.350   |         | 0.600      |
| 3.000     | 34.2  | 11.304 | 0.16              | 18.75  | 19.40  |        | 1.250   | 0.600   |         | 0.925      |
| 4.000     | 53.3  | 17.663 | 0.25              | 18.42  | 19.15  |        | 1.580   | 0.850   |         | 1.215      |
| 5.000     | 70.5  | 23.315 | 0.33              | 18.15  | 19.03  |        | 1.850   | 0.970   |         | 1.410      |
| 6.000     | 89.8  | 29.673 | 0.42              | 17.92  | 18.85  |        | 2.080   | 1.150   |         | 1.615      |
| 7.000     | 106.8 | 35.325 | 0.50              | 17.68  | 18.71  |        | 2.320   | 1.290   |         | 1.805      |
| 8.000     | 53.4  | 17.663 | 0.25              | 17.75  | 18.80  |        | 2.250   | 1.200   |         | 1.725      |
| 9.000     | 26.7  | 8.831  | 0.12              | 17.85  | 18.90  |        | 2.150   | 1.100   |         | 1.625      |
| 9.000     | 2.1   | 0.707  | 0.01              | 18.15  | 19.12  |        | 1.850   | 0.880   |         | 1.365      |
| 10.000    | 2.1   | 0.707  | 0.01              | 18.15  | 19.12  |        | 1.850   | 0.880   |         | 1.365      |
| 11.000    | 17.1  | 5.652  | 0.08              | 18.07  | 19.06  |        | 1.930   | 0.940   |         | 1.435      |
| 12.000    | 34.2  | 11.304 | 0.16              | 18.02  | 19.00  |        | 1.980   | 1.000   |         | 1.490      |
| 13.000    | 53.3  | 17.663 | 0.25              | 17.87  | 18.91  |        | 2.130   | 1.090   |         | 1.610      |
| 14.000    | 70.5  | 23.315 | 0.33              | 17.77  | 18.85  |        | 2.230   | 1.150   |         | 1.690      |
| 15.000    | 89.8  | 29.673 | 0.42              | 17.65  | 18.78  |        | 2.350   | 1.220   |         | 1.785      |

|                |         | $\alpha$ | $\Delta S$ | $\Delta s$ |
|----------------|---------|----------|------------|------------|
| $0.7 \sigma_1$ | 0.35    | 1.44875  | 0.56437    | 0.2        |
| $0.3 \sigma_1$ | 0.15    | 0.38438  |            |            |
| $0.7 \sigma_2$ | 0.35    | 1.71111  | 0.2061     | 0.2        |
| $0.3 \sigma_2$ | 0.15    | 1.50261  |            |            |
| D (mm)         | 300     |          |            |            |
| $E_{s1}$       | 79.73   |          |            |            |
| $E_{s2}$       | 218.34  |          |            |            |
| Area / Sq.m    | 0.07065 |          |            |            |

|              |      |  |  |
|--------------|------|--|--|
| $E_s/E_{s1}$ | 2.74 |  |  |
|--------------|------|--|--|

$$E_s = 0.75 - D \cdot \Delta s / \Delta s$$

$E_s$  = deformation modulus

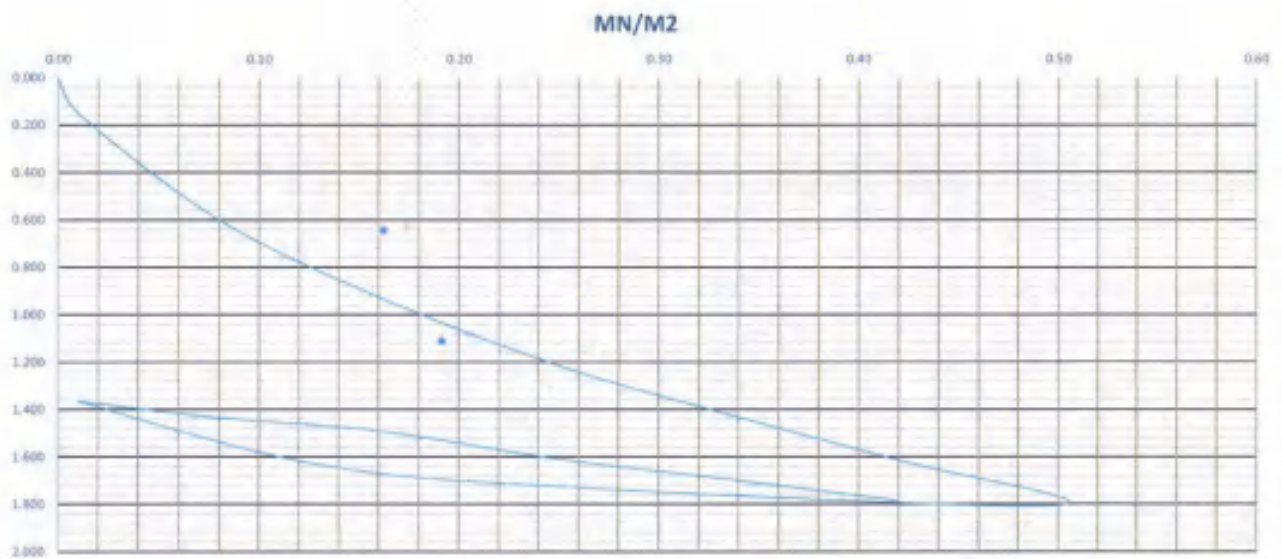
$D_s$  = load increment

$D_s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

Name :

Sign :

Lab. Engineer

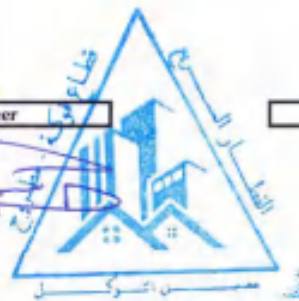
Name :

Sign :

Consultant Engineer

Name :

Sign :



17/7/2023

## Plate Load Test Results

Company Name

المصطفى

Location

524+820

To

524+900

Station

524+860

Test Date

16-04-2023

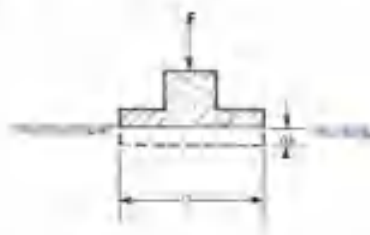
Layer level

P.S.G + 0.5

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\leq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | N/K/M2 | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.88  | 19.90  |        | 0.120   | 0.100   |         | 0.110      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.40  | 19.65  |        | 0.600   | 0.350   |         | 0.475      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.15  | 19.30  |        | 0.850   | 0.700   |         | 0.775      |
| 4.000     | 53.3  | 17.663 | 0.25   | 18.82  | 19.12  |        | 1.180   | 0.880   |         | 1.030      |
| 5.000     | 70.5  | 23.315 | 0.33   | 18.70  | 18.90  |        | 1.300   | 1.100   |         | 1.200      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.42  | 18.70  |        | 1.580   | 1.300   |         | 1.440      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.30  | 18.60  |        | 1.700   | 1.400   |         | 1.550      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.40  | 18.70  |        | 1.600   | 1.300   |         | 1.450      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.60  | 18.80  |        | 1.400   | 1.200   |         | 1.300      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.70  | 19.00  |        | 1.300   | 1.000   |         | 1.150      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.70  | 19.00  |        | 1.300   | 1.000   |         | 1.150      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.65  | 18.95  |        | 1.350   | 1.050   |         | 1.200      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.60  | 18.90  |        | 1.400   | 1.100   |         | 1.250      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.45  | 18.80  |        | 1.550   | 1.200   |         | 1.375      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.40  | 18.75  |        | 1.600   | 1.250   |         | 1.425      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.32  | 18.62  |        | 1.680   | 1.380   |         | 1.530      |

|                |         | $\alpha$ | AS      | IS  |
|----------------|---------|----------|---------|-----|
| 0.7 $\sigma_1$ | 0.35    | 1.34375  | 0.60625 | 0.2 |
| 0.3 $\sigma_1$ | 0.15    | 0.7375   |         |     |
| 0.7 $\sigma_2$ | 0.35    | 1.44833  | 0.19833 | 0.2 |
| 0.3 $\sigma_2$ | 0.15    | 1.25000  |         |     |
| D (mm)         | 300     |          |         |     |
| $E_{s1}$       | 74.21   |          |         |     |
| $E_{s2}$       | 226.90  |          |         |     |
| Area (sq.m)    | 0.07065 |          |         |     |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{s1}/E_{s2}$ | 3.96 |  |  |
|-----------------|------|--|--|

$$E_s = 8.73 \cdot D \cdot \Delta \sigma / \Delta s$$

$E_s$  = deformation modulus

$\Delta \sigma$  = load increment

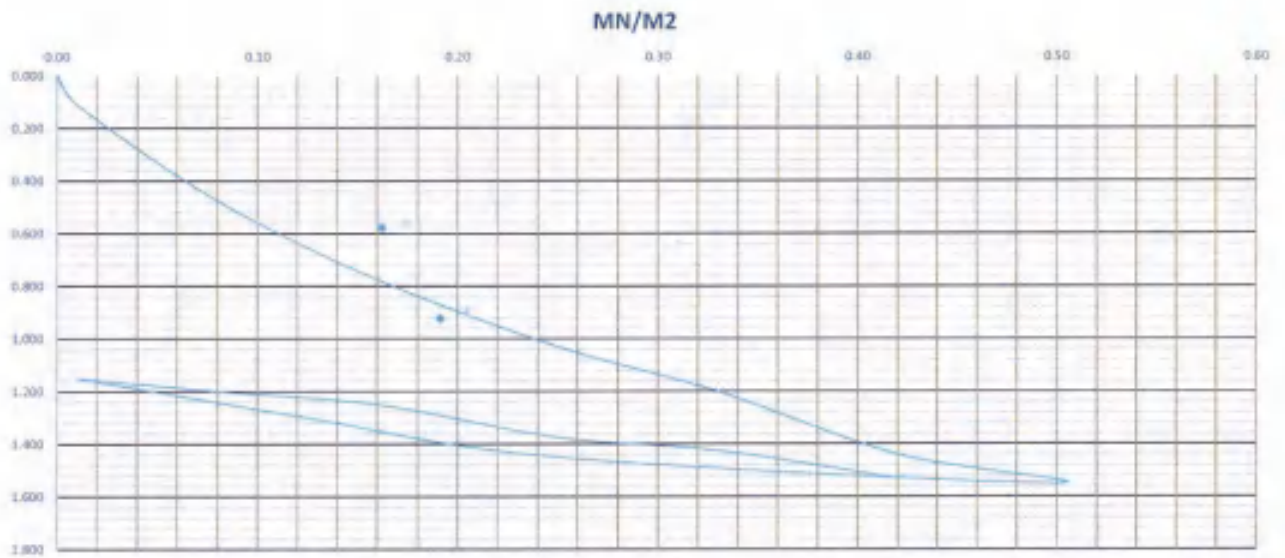
$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

Name :

Sign :

Lab. Engineer

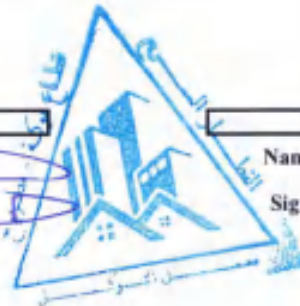
Name :

Sign :

Consultant Engineer

Name :

Sign :



Handwritten signature and date: 11/7/2020



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+500

To

524+580

Station

524+520

Test Date

9-09-2023

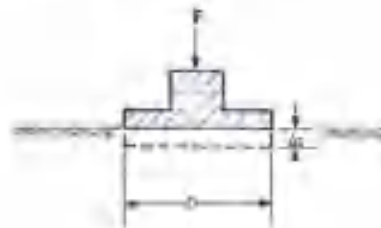
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta_s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Test No.  | Load  | Load   | Stress | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | MPa    | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.80  | 19.75  |        | 0.200   | 0.250   |         | 0.225      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.60  | 19.55  |        | 0.400   | 0.450   |         | 0.425      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.25  | 19.26  |        | 0.750   | 0.740   |         | 0.745      |
| 4.000     | 53.3  | 17.663 | 0.25   | 18.80  | 19.05  |        | 1.200   | 0.950   |         | 1.075      |
| 5.000     | 70.5  | 23.315 | 0.33   | 18.55  | 18.95  |        | 1.450   | 1.050   |         | 1.250      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.40  | 18.80  |        | 1.600   | 1.200   |         | 1.400      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.05  | 18.72  |        | 1.950   | 1.280   |         | 1.615      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.10  | 18.76  |        | 1.900   | 1.240   |         | 1.570      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.18  | 18.89  |        | 1.820   | 1.110   |         | 1.465      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.31  | 19.00  |        | 1.690   | 1.000   |         | 1.345      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.31  | 19.00  |        | 1.690   | 1.000   |         | 1.345      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.50  | 18.99  |        | 1.700   | 1.010   |         | 1.355      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.22  | 18.95  |        | 1.780   | 1.050   |         | 1.415      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.16  | 18.86  |        | 1.840   | 1.140   |         | 1.490      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.14  | 18.80  |        | 1.860   | 1.200   |         | 1.530      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.06  | 18.71  |        | 1.940   | 1.290   |         | 1.615      |

|                |         | $\alpha$ | AS      | $\Delta s$ |
|----------------|---------|----------|---------|------------|
| $0.7 \sigma_1$ | 0.35    | 1.21168  | 0.50688 | 0.2        |
| $0.3 \sigma_2$ | 0.15    | 0.705    |         |            |
| $0.7 \sigma_2$ | 0.35    | 1.54889  | 0.18389 | 0.2        |
| $0.3 \sigma_3$ | 0.15    | 1.365    |         |            |
| $D$ (mm)       | 300     |          |         |            |
| $E_{v1}$       | 89.78   |          |         |            |
| $E_{v2}$       | 144.71  |          |         |            |
| Area (Sq.m)    | 0.07065 |          |         |            |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{v2}/E_{v1}$ | 1.60 |  |  |
|-----------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta s / \Delta s$$

$E_v$  = deformation modulus

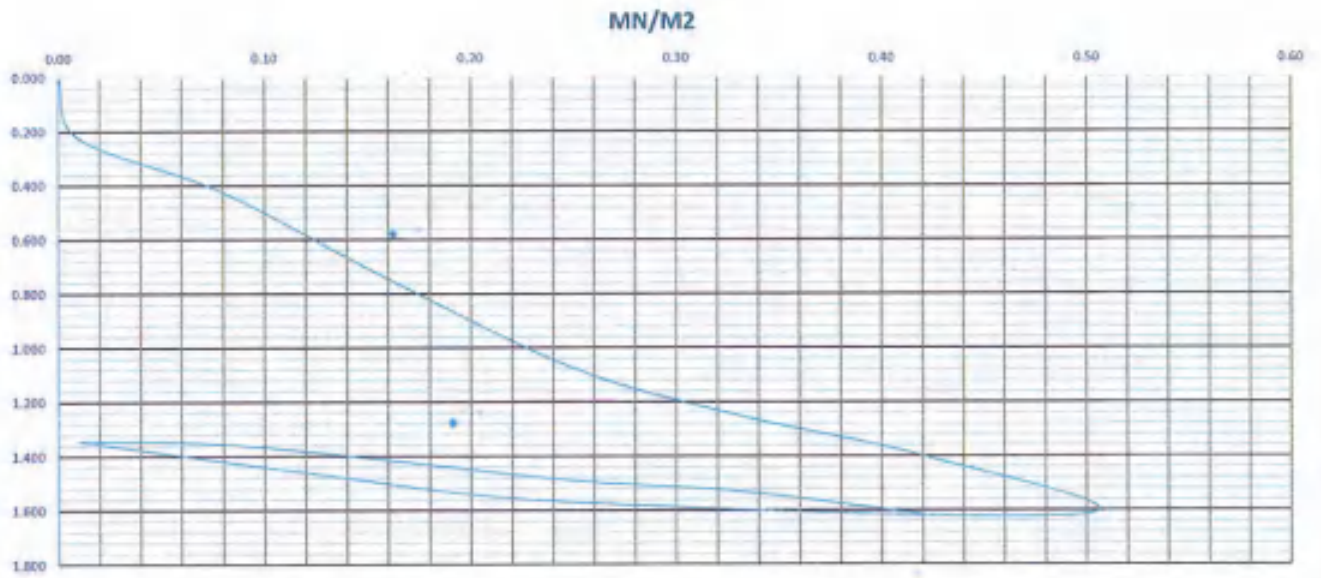
$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :





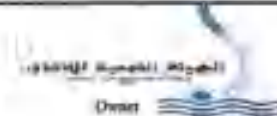
Owner Consultant



Contractor Consultant



Contractor



Owner

## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+500

To

524+580

Station

524+540

Test Date

9-09-2023

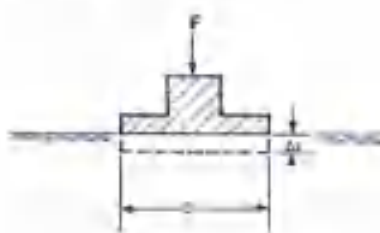
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta s$  = settlement

$D$  = diameter of test plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D \approx 0.60$  m and  $D \approx 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Settle | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | MM/M2  | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.85  | 19.79  |        | 0.150   | 0.210   |         | 0.180      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.63  | 19.57  |        | 0.370   | 0.430   |         | 0.400      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.27  | 19.28  |        | 0.730   | 0.720   |         | 0.725      |
| 4.000     | 53.3  | 17.663 | 0.25   | 18.85  | 19.06  |        | 1.150   | 0.940   |         | 1.045      |
| 5.000     | 70.5  | 23.315 | 0.33   | 18.50  | 18.99  |        | 1.500   | 1.010   |         | 1.255      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.35  | 18.85  |        | 1.650   | 1.150   |         | 1.400      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.07  | 18.70  |        | 1.930   | 1.300   |         | 1.615      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.12  | 18.76  |        | 1.880   | 1.240   |         | 1.560      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.17  | 18.90  |        | 1.830   | 1.100   |         | 1.465      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.33  | 19.02  |        | 1.670   | 0.980   |         | 1.325      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.33  | 19.02  |        | 1.670   | 0.980   |         | 1.325      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.32  | 18.09  |        | 1.680   | 1.010   |         | 1.345      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.25  | 18.93  |        | 1.750   | 1.070   |         | 1.410      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.17  | 18.84  |        | 1.830   | 1.160   |         | 1.495      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.10  | 18.80  |        | 1.900   | 1.200   |         | 1.550      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.05  | 18.70  |        | 1.950   | 1.300   |         | 1.625      |

|                |         | $\sigma$ | $\Delta S$ | $\Delta \sigma$ |
|----------------|---------|----------|------------|-----------------|
| 0.7 $\sigma_1$ | 0.35    | 1.23188  | 0.5275     | 0.1             |
| 0.5 $\sigma_1$ | 0.15    | 0.68438  |            |                 |
| 0.7 $\sigma_2$ | 0.35    | 1.56667  | 0.20166    | 0.2             |
| 0.5 $\sigma_2$ | 0.15    | 1.365    |            |                 |
| D (mm)         | 300     |          |            |                 |
| $E_{s1}$       | 85.21   |          |            |                 |
| $E_{s2}$       | 222.34  |          |            |                 |
| Area (Sq.m)    | 0.07065 |          |            |                 |

|           |      |  |  |
|-----------|------|--|--|
| $F_1/F_2$ | 1.61 |  |  |
|-----------|------|--|--|

$$E_s = 0.75 \cdot D \cdot \Delta \sigma / \Delta s$$

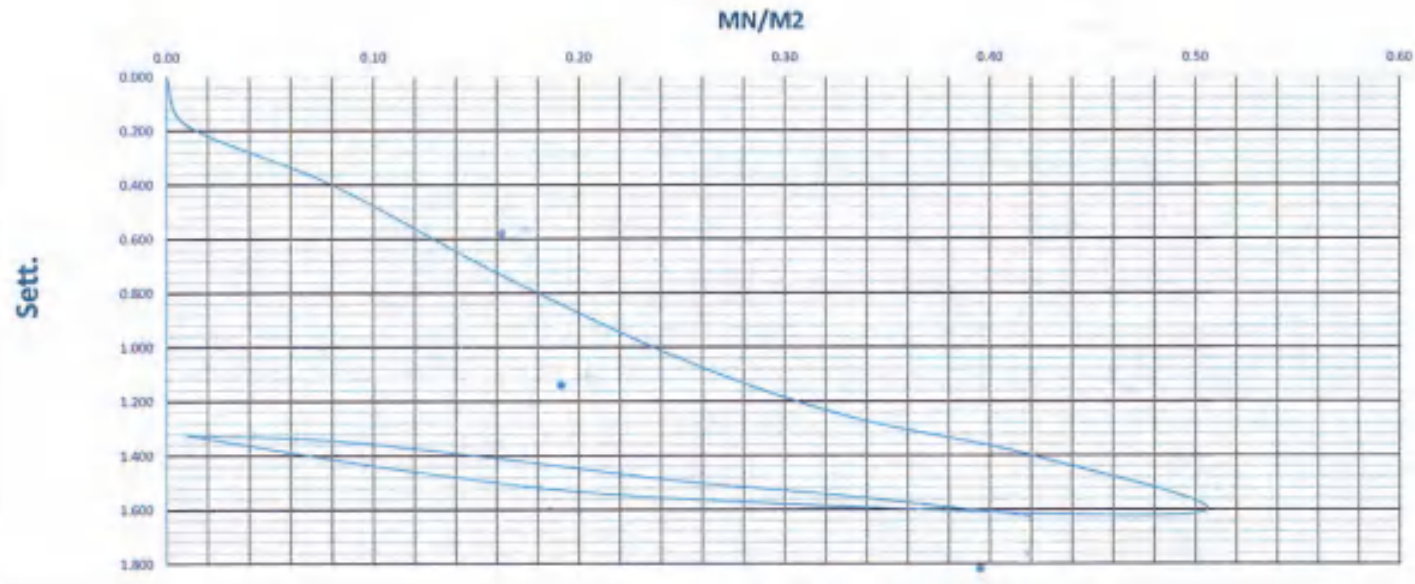
$E_s$  = deformation modulus

$\Delta \sigma$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign : *Abdullah*



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+500

To

524+580

Station

524+560

Test Date

9-09-2023

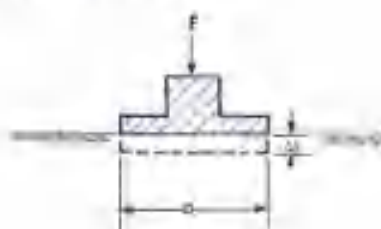
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = Load

$s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a nilivable and ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.87  | 19.80  |        | 0.130   | 0.200   |         | 0.165      |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.50  | 19.59  |        | 0.500   | 0.410   |         | 0.455      |
| 3.000     | 34.2  | 11.304 | 0.16              | 19.20  | 19.32  |        | 0.800   | 0.680   |         | 0.740      |
| 4.000     | 53.3  | 17.663 | 0.25              | 18.80  | 19.08  |        | 1.200   | 0.920   |         | 1.060      |
| 5.000     | 70.5  | 23.315 | 0.33              | 18.51  | 18.93  |        | 1.490   | 1.070   |         | 1.280      |
| 6.000     | 89.8  | 29.673 | 0.42              | 18.25  | 18.87  |        | 1.750   | 1.130   |         | 1.440      |
| 7.000     | 106.8 | 35.325 | 0.50              | 18.04  | 18.62  |        | 1.960   | 1.380   |         | 1.670      |
| 8.000     | 53.4  | 17.663 | 0.25              | 18.12  | 18.77  |        | 1.800   | 1.230   |         | 1.555      |
| 9.000     | 26.7  | 8.831  | 0.12              | 18.17  | 18.93  |        | 1.830   | 1.070   |         | 1.450      |
| 9.000     | 2.1   | 0.707  | 0.01              | 18.35  | 19.05  |        | 1.650   | 0.950   |         | 1.300      |
| 10.000    | 2.1   | 0.707  | 0.01              | 18.35  | 19.05  |        | 1.650   | 0.950   |         | 1.300      |
| 11.000    | 17.1  | 5.652  | 0.08              | 18.33  | 18.99  |        | 1.670   | 1.010   |         | 1.340      |
| 12.000    | 34.2  | 11.304 | 0.16              | 18.22  | 18.95  |        | 1.780   | 1.050   |         | 1.415      |
| 13.000    | 53.3  | 17.663 | 0.25              | 18.18  | 18.83  |        | 1.820   | 1.170   |         | 1.495      |
| 14.000    | 70.5  | 23.315 | 0.33              | 18.13  | 18.78  |        | 1.870   | 1.220   |         | 1.545      |
| 15.000    | 89.8  | 29.673 | 0.42              | 18.08  | 18.70  |        | 1.920   | 1.300   |         | 1.610      |

|                |         | $k$     | AS      | AS  |
|----------------|---------|---------|---------|-----|
| 0.7 $\sigma_1$ | 0.35    | 1.23875 | 0.51457 | 0.2 |
| 0.3 $\sigma_1$ | 0.15    | 0.70438 |         |     |
| 0.7 $\sigma_2$ | 0.35    | 1.55944 | 0.17944 | 0.2 |
| 0.3 $\sigma_2$ | 0.15    | 1.38    |         |     |
| D (mm)         | 300     |         |         |     |
| $E_{v1}$       | 84.21   |         |         |     |
| $E_{v2}$       | 250.78  |         |         |     |
| Area (Sq.m)    | 0.07065 |         |         |     |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{v2}/E_{v1}$ | 2.98 |  |  |
|-----------------|------|--|--|

$$E_v = 0.78 \cdot D \cdot \Delta \sigma / \Delta s$$

$E_v$  = deformation modulus

$\Delta \sigma$  = load increment

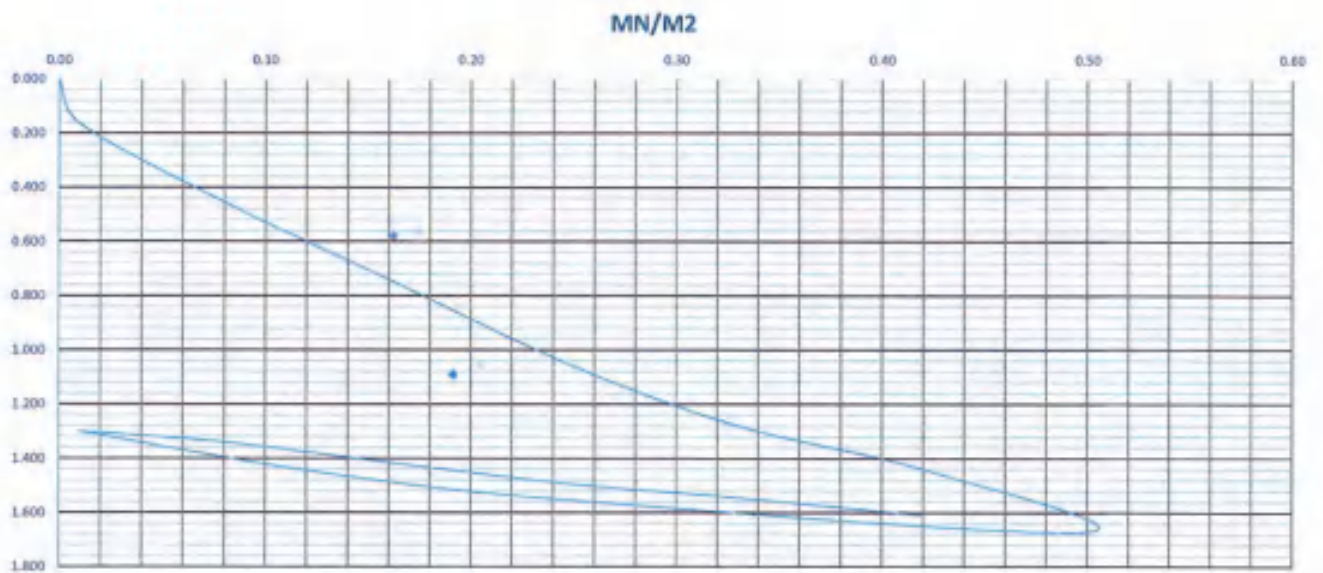
$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

## Plate Load Test Results

Company Name AL MOSTAFA

Location 524+580 To 524+660

Station 524+585

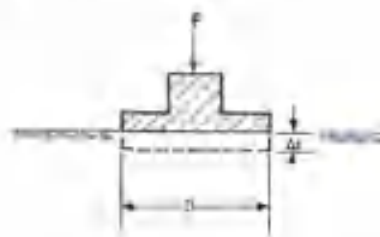
Test Date 9-09-2023

Layer level P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | KN/M2  | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.85  | 19.76  |        | 0.150   | 0.240   |         | 0.195      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.62  | 19.52  |        | 0.380   | 0.480   |         | 0.430      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.34  | 19.29  |        | 0.660   | 0.710   |         | 0.685      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.00  | 19.09  |        | 1.000   | 0.910   |         | 0.955      |
| 5.000     | 70.5  | 23.315 | 0.33   | 18.89  | 18.93  |        | 1.110   | 1.070   |         | 1.090      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.55  | 18.86  |        | 1.450   | 1.140   |         | 1.295      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.44  | 18.70  |        | 1.560   | 1.390   |         | 1.430      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.49  | 18.82  |        | 1.510   | 1.180   |         | 1.345      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.56  | 18.92  |        | 1.440   | 1.080   |         | 1.260      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.69  | 19.09  |        | 1.310   | 0.910   |         | 1.110      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.69  | 19.09  |        | 1.310   | 0.910   |         | 1.110      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.67  | 19.05  |        | 1.330   | 0.950   |         | 1.140      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.62  | 19.01  |        | 1.380   | 0.990   |         | 1.185      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.55  | 18.92  |        | 1.450   | 1.080   |         | 1.265      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.51  | 18.84  |        | 1.490   | 1.160   |         | 1.325      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.48  | 18.72  |        | 1.520   | 1.280   |         | 1.400      |

|                |         | s       | AS      | $\Delta s$ |
|----------------|---------|---------|---------|------------|
| 0.7 $\sigma_1$ | 0.35    | 1.17688 | 0.52375 | 0.2        |
| 0.3 $\sigma_1$ | 0.15    | 0.65313 |         |            |
| 0.7 $\sigma_2$ | 0.35    | 1.34167 | 0.17168 | 0.2        |
| 0.3 $\sigma_2$ | 0.15    | 1.17    |         |            |
| D (mm)         | 300     |         |         |            |
| $E_{s1}$       | 45.92   |         |         |            |
| $E_{s2}$       | 362.14  |         |         |            |
| Area (sq.m)    | 0.07065 |         |         |            |

|                |      |  |  |
|----------------|------|--|--|
| $E = 2E_s / 1$ | 3.65 |  |  |
|----------------|------|--|--|

$$E_s = 0.7P / D \cdot \Delta s / \Delta s$$

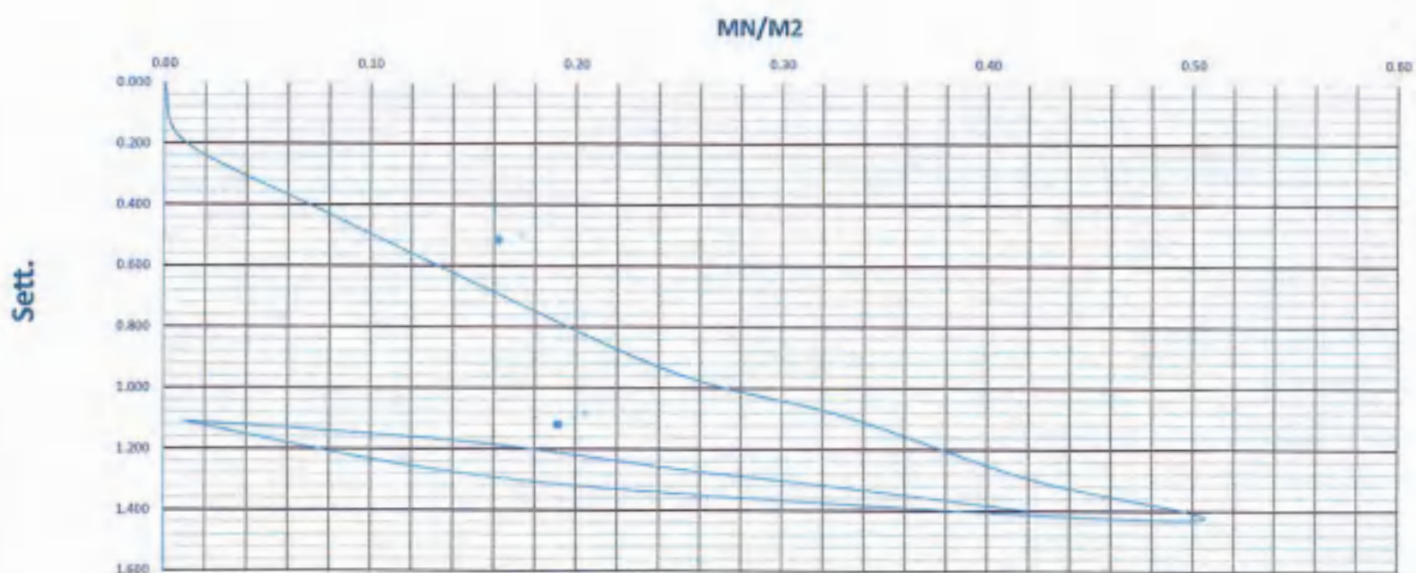
$E_s$  = deformation modulus

$\Delta s$  = load increment

$D_s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name AL MOSTAFA

Location

524+580

To

524+660

Station

524+600

Test Date

9-09-2023

Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$$F = \text{Load}$$

$$\Delta s = \text{settlement}$$

$$D = \text{diameter of the plate}$$

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dial 1 | Dial 2 | Dial 3 | Sett 1 | Sett 2 | Sett 3 | Acc. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|--------|--------|--------|------------|
| Stage No. | Bar   | kN     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm     | mm     | mm     | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000  | 0.000  |        | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.85  | 19.78  |        | 0.150  | 0.220  |        | 0.185      |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.61  | 19.55  |        | 0.390  | 0.450  |        | 0.420      |
| 3.000     | 34.2  | 11.304 | 0.16              | 19.33  | 19.32  |        | 0.670  | 0.680  |        | 0.675      |
| 4.000     | 51.3  | 17.663 | 0.25              | 19.02  | 19.12  |        | 0.980  | 0.880  |        | 0.930      |
| 5.000     | 70.5  | 23.315 | 0.33              | 18.92  | 18.95  |        | 1.080  | 1.050  |        | 1.065      |
| 6.000     | 89.8  | 29.673 | 0.42              | 18.57  | 18.87  |        | 1.430  | 1.130  |        | 1.280      |
| 7.000     | 106.8 | 35.325 | 0.50              | 18.45  | 18.71  |        | 1.550  | 1.290  |        | 1.420      |
| 8.000     | 53.4  | 17.663 | 0.25              | 18.49  | 18.83  |        | 1.510  | 1.170  |        | 1.340      |
| 9.000     | 26.7  | 8.831  | 0.12              | 18.57  | 18.95  |        | 1.430  | 1.050  |        | 1.240      |
| 9.000     | 2.1   | 0.707  | 0.01              | 18.70  | 19.12  |        | 1.300  | 0.880  |        | 1.090      |
| 10.000    | 2.1   | 0.707  | 0.01              | 18.70  | 19.12  |        | 1.300  | 0.880  |        | 1.090      |
| 11.000    | 17.1  | 5.652  | 0.08              | 18.67  | 19.07  |        | 1.330  | 0.930  |        | 1.130      |
| 12.000    | 34.2  | 11.304 | 0.16              | 18.63  | 19.00  |        | 1.370  | 1.000  |        | 1.185      |
| 13.000    | 51.3  | 17.663 | 0.25              | 18.50  | 18.93  |        | 1.500  | 1.070  |        | 1.285      |
| 14.000    | 70.5  | 23.315 | 0.33              | 18.47  | 18.85  |        | 1.530  | 1.150  |        | 1.340      |
| 15.000    | 89.8  | 29.673 | 0.42              | 18.42  | 18.77  |        | 1.580  | 1.230  |        | 1.405      |

|                |         | $\sigma$ | $\Delta s$ | $\Delta \sigma$ |
|----------------|---------|----------|------------|-----------------|
| 0.7 $\sigma_1$ | 0.35    | 1.1575   | 0.51437    | 0.2             |
| 0.3 $\sigma_2$ | 0.15    | 0.64313  |            |                 |
| 0.7 $\sigma_2$ | 0.35    | 1.35444  | 0.18444    | 0.2             |
| 0.3 $\sigma_2$ | 0.15    | 1.17     |            |                 |
| D (mm)         | 300     |          |            |                 |
| $E_{v1}$       | 87.48   |          |            |                 |
| $E_{v2}$       | 243.88  |          |            |                 |
| Area (sq.m)    | 0.07065 |          |            |                 |

|                            |      |  |  |
|----------------------------|------|--|--|
| $\Delta \sigma / \Delta s$ | 1.75 |  |  |
|----------------------------|------|--|--|

$$E_v = \frac{F}{A} \cdot \frac{D}{\Delta s}$$

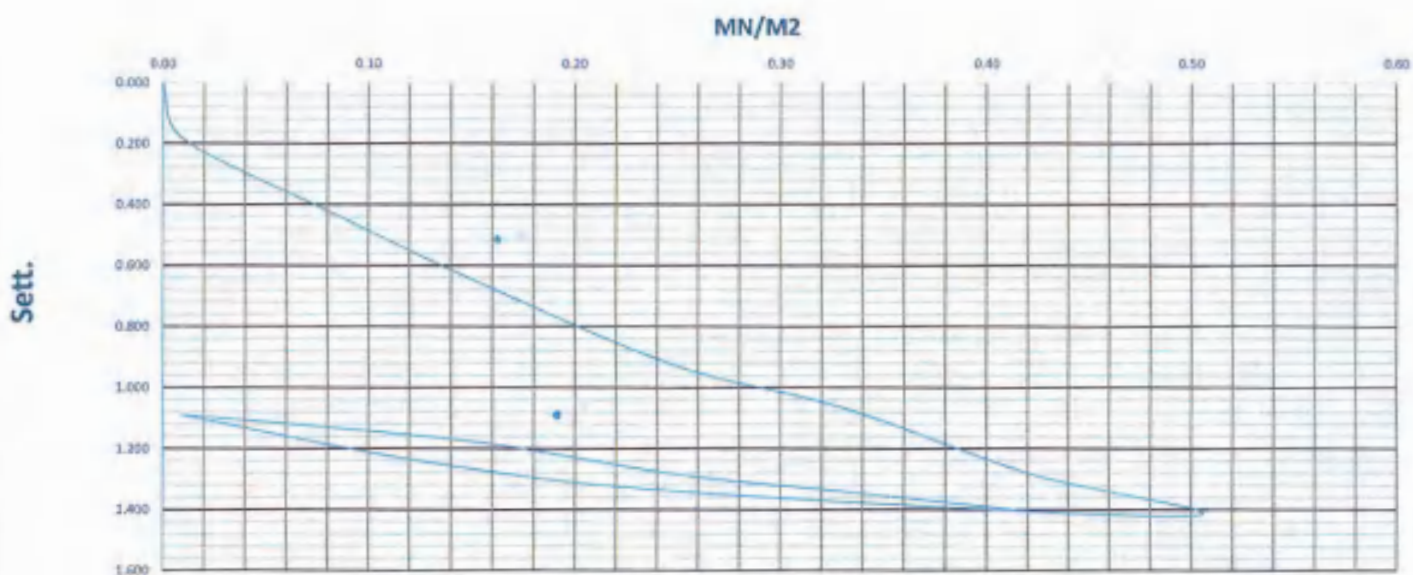
$E_v$  = deformation modulus

$\Delta \sigma$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m.

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

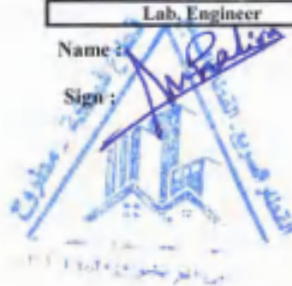
Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+580

To

524+620

Station

524+620

Test Date

9-09-2023

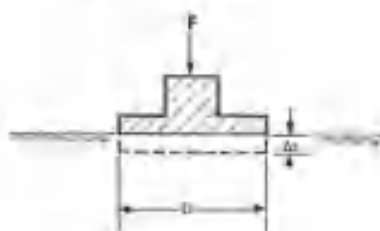
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.00$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Sett. 4 |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|---------|
| Stage No. | Bar   | kN     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm      |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000   |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.90  | 19.80  |        | 0.100   | 0.200   |         | 0.150   |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.65  | 19.58  |        | 0.350   | 0.420   |         | 0.385   |
| 3.000     | 34.2  | 11.304 | 0.16              | 19.38  | 19.38  |        | 0.620   | 0.620   |         | 0.620   |
| 4.000     | 51.3  | 17.663 | 0.25              | 19.07  | 19.18  |        | 0.930   | 0.820   |         | 0.875   |
| 5.000     | 70.5  | 23.315 | 0.33              | 18.94  | 18.99  |        | 1.060   | 1.010   |         | 1.035   |
| 6.000     | 89.8  | 29.673 | 0.42              | 18.65  | 18.90  |        | 1.350   | 1.100   |         | 1.225   |
| 7.000     | 106.8 | 35.325 | 0.50              | 18.47  | 18.78  |        | 1.530   | 1.220   |         | 1.375   |
| 8.000     | 53.4  | 17.663 | 0.25              | 18.52  | 18.83  |        | 1.480   | 1.170   |         | 1.325   |
| 9.000     | 26.7  | 8.831  | 0.12              | 18.59  | 18.96  |        | 1.410   | 1.040   |         | 1.225   |
| 9.000     | 2.1   | 0.707  | 0.01              | 18.75  | 19.16  |        | 1.250   | 0.840   |         | 1.045   |
| 10.000    | 2.1   | 0.707  | 0.01              | 18.75  | 19.16  |        | 1.250   | 0.840   |         | 1.045   |
| 11.000    | 17.1  | 5.652  | 0.08              | 18.70  | 19.10  |        | 1.300   | 0.900   |         | 1.100   |
| 12.000    | 34.2  | 11.304 | 0.16              | 18.65  | 19.04  |        | 1.350   | 0.960   |         | 1.155   |
| 13.000    | 51.3  | 17.663 | 0.25              | 18.55  | 18.93  |        | 1.450   | 1.070   |         | 1.260   |
| 14.000    | 70.5  | 23.315 | 0.33              | 18.48  | 18.85  |        | 1.520   | 1.150   |         | 1.335   |
| 15.000    | 89.8  | 29.673 | 0.42              | 18.43  | 18.79  |        | 1.570   | 1.210   |         | 1.390   |

|                |         | $\sigma$ | $\Delta s$ | $\Delta s$ |
|----------------|---------|----------|------------|------------|
| 0.7 $\sigma_0$ | 0.35    | 1.09375  | 0.50313    | 0.2        |
| 0.3 $\sigma_0$ | 0.15    | 0.59063  |            |            |
| 0.7 $\sigma_0$ | 0.35    | 1.34722  | 0.19222    | 0.2        |
| 0.3 $\sigma_0$ | 0.15    | 1.15501  |            |            |
| D (mm)         | 300     |          |            |            |
| $E_v$          | 89.44   |          |            |            |
| $E_v$          | 234.11  |          |            |            |
| Area (Sq.m)    | 0.07065 |          |            |            |

|               |      |  |  |
|---------------|------|--|--|
| $F(\Delta s)$ | 2.62 |  |  |
|---------------|------|--|--|

$$F_p = 0.75 \cdot R \cdot \Delta s / \Delta s$$

$E_v$  = deformation modulus

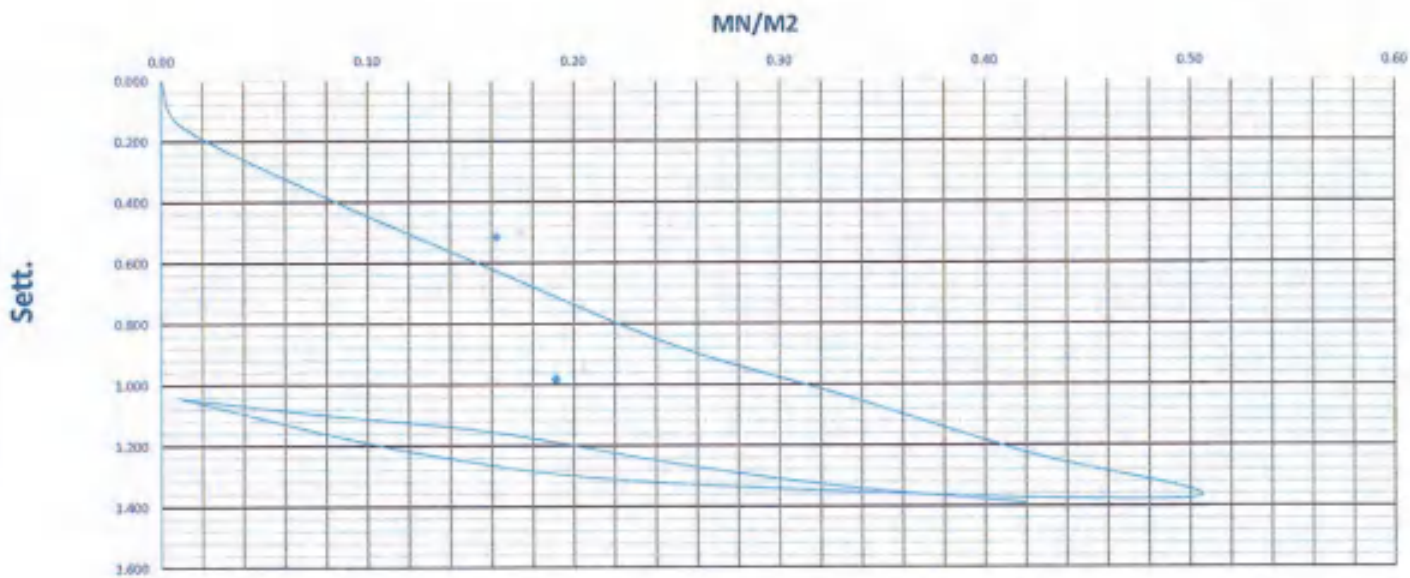
$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+580

To

524+660

Station

524+640

Test Date

9-09-2023

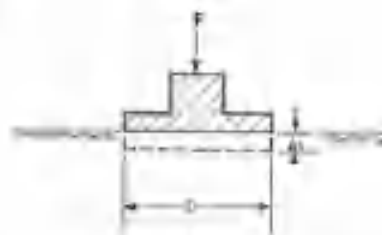
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a noticeable and ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | MPa/M2 | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.85  | 19.83  |        | 0.150   | 0.170   |         | 0.160      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.63  | 19.61  |        | 0.370   | 0.390   |         | 0.380      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.35  | 19.34  |        | 0.650   | 0.660   |         | 0.655      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.17  | 19.12  |        | 0.830   | 0.880   |         | 0.855      |
| 5.000     | 70.5  | 23.315 | 0.33   | 18.98  | 18.94  |        | 1.020   | 1.060   |         | 1.040      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.68  | 18.66  |        | 1.320   | 1.140   |         | 1.230      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.46  | 18.78  |        | 1.540   | 1.220   |         | 1.380      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.52  | 18.84  |        | 1.480   | 1.160   |         | 1.320      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.61  | 18.99  |        | 1.390   | 1.010   |         | 1.200      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.72  | 19.12  |        | 1.280   | 0.880   |         | 1.080      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.72  | 19.12  |        | 1.280   | 0.880   |         | 1.080      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.68  | 19.08  |        | 1.320   | 0.920   |         | 1.120      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.62  | 19.04  |        | 1.380   | 0.960   |         | 1.170      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.55  | 18.94  |        | 1.450   | 1.060   |         | 1.255      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.49  | 18.86  |        | 1.510   | 1.140   |         | 1.325      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.45  | 18.80  |        | 1.550   | 1.200   |         | 1.375      |

|                |         | $s$     | $\Delta s$ | $\Delta s$ |
|----------------|---------|---------|------------|------------|
| $0.7 \sigma_1$ | 0.15    | 1.09875 | 0.47813    | 0.3        |
| $0.3 \sigma_1$ | 0.15    | 0.62063 |            |            |
| $0.7 \sigma_2$ | 0.35    | 1.33611 | 0.17611    | 0.2        |
| $0.3 \sigma_2$ | 0.15    | 1.10    |            |            |
| $D$ (mm)       | 300     |         |            |            |
| $E_{s1}$       | 94.22   |         |            |            |
| $E_{s2}$       | 255.53  |         |            |            |
| Area (sq. m)   | 0.07065 |         |            |            |

|              |      |  |  |
|--------------|------|--|--|
| $E_s/E_{s1}$ | 2.71 |  |  |
|--------------|------|--|--|

$$E_s = 0.71 \cdot D \cdot \Delta s / \Delta s$$

$E_s$  = deformation modulus

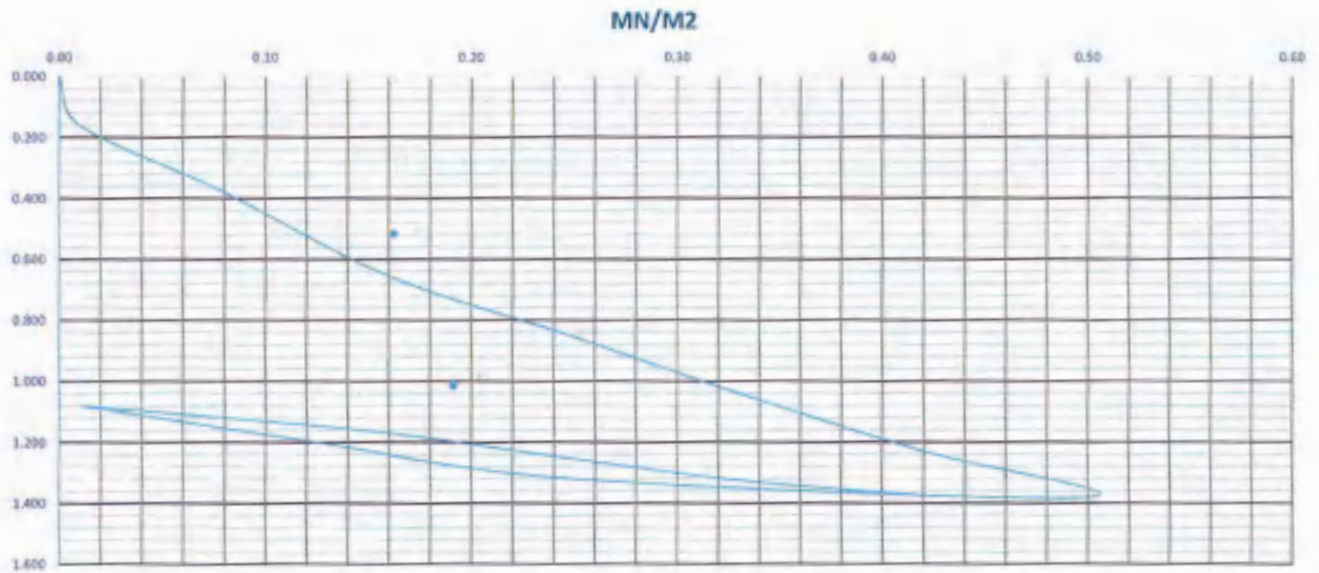
$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+660

To

524+740

Station

524+665

Test Date

8-09-2023

Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$s_p$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Level | Load   | Stress | Dial 1 | Dial 2 | Dial 1 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | mm    | kN     | MPa    | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.86  | 19.85  |        | 0.140   | 0.150   |         | 0.145      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.71  | 19.60  |        | 0.290   | 0.400   |         | 0.345      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.47  | 19.30  |        | 0.530   | 0.700   |         | 0.615      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.30  | 19.10  |        | 0.700   | 0.900   |         | 0.800      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.10  | 18.93  |        | 0.900   | 1.070   |         | 0.985      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.95  | 18.80  |        | 1.050   | 1.200   |         | 1.125      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.81  | 18.73  |        | 1.190   | 1.270   |         | 1.230      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.83  | 18.75  |        | 1.170   | 1.250   |         | 1.210      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.90  | 18.81  |        | 1.100   | 1.190   |         | 1.145      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.98  | 18.93  |        | 1.020   | 1.070   |         | 1.045      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.98  | 18.93  |        | 1.020   | 1.070   |         | 1.045      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.97  | 18.92  |        | 1.030   | 1.080   |         | 1.055      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.93  | 18.86  |        | 1.070   | 1.140   |         | 1.105      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.90  | 18.80  |        | 1.100   | 1.200   |         | 1.150      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.88  | 18.76  |        | 1.120   | 1.240   |         | 1.180      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.84  | 18.72  |        | 1.160   | 1.280   |         | 1.220      |

|                | $s$     | AS      | AS      |
|----------------|---------|---------|---------|
| 0.7 $\sigma_1$ | 0.35    | 1.03313 | 0.45188 |
| 0.3 $\sigma_1$ | 0.15    | 0.58125 |         |
| 0.7 $\sigma_2$ | 0.35    | 1.18889 | 0.12389 |
| 0.3 $\sigma_2$ | 0.15    | 1.005   |         |
| D (mm)         | 300     |         |         |
| $E_{v1}$       | 99.50   |         |         |
| $E_{v2}$       | 763.23  |         |         |
| Area (Sq.m)    | 0.07065 |         |         |

|                 |      |  |
|-----------------|------|--|
| $E_{v2}/E_{v1}$ | 7.65 |  |
|-----------------|------|--|

$$E_v = 0.75 \cdot D \cdot \Delta s$$

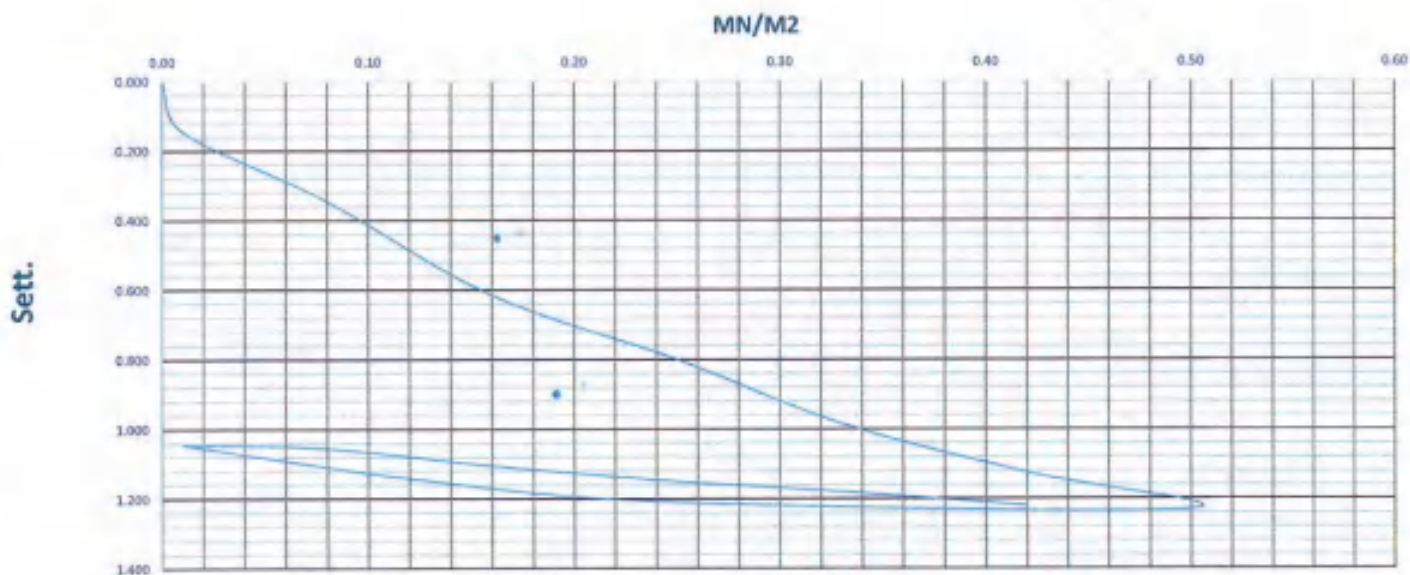
$E_v$  = deformation modulus

$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

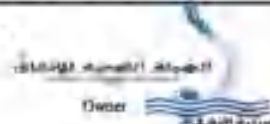
Sign :



Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+660

To

524+740

Station

524+690

Test Date

8-09-2023

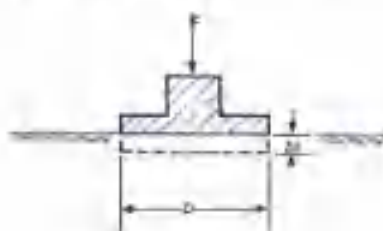
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$L$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Def 1 | Def 2 | Def 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|-------|-------|-------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | MPa    | mm    | mm    | mm    | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00 | 20.00 |       | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.89 | 19.92 |       | 0.110   | 0.080   |         | 0.095      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.73 | 19.63 |       | 0.270   | 0.370   |         | 0.320      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.45 | 19.36 |       | 0.550   | 0.640   |         | 0.595      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.32 | 19.14 |       | 0.680   | 0.860   |         | 0.770      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.13 | 18.95 |       | 0.870   | 1.050   |         | 0.960      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.97 | 18.84 |       | 1.030   | 1.160   |         | 1.095      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.89 | 18.70 |       | 1.200   | 1.300   |         | 1.250      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.85 | 18.77 |       | 1.150   | 1.230   |         | 1.190      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.92 | 18.83 |       | 1.080   | 1.170   |         | 1.125      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.97 | 18.94 |       | 1.030   | 1.060   |         | 1.045      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.97 | 18.94 |       | 1.030   | 1.060   |         | 1.045      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.95 | 18.93 |       | 1.050   | 1.070   |         | 1.060      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.92 | 18.87 |       | 1.080   | 1.130   |         | 1.105      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.90 | 18.82 |       | 1.100   | 1.180   |         | 1.140      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.87 | 18.75 |       | 1.130   | 1.250   |         | 1.190      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.81 | 18.70 |       | 1.190   | 1.300   |         | 1.245      |

|                |         | $\nu$   | $\Delta s$ | $\Delta s$ |
|----------------|---------|---------|------------|------------|
| 0.7 $\sigma_1$ | 0.35    | 0.95938 | 0.39875    | 0.2        |
| 0.3 $\sigma_1$ | 0.15    | 0.56863 |            |            |
| 0.7 $\sigma_2$ | 0.35    | 1.20222 | 0.12722    | 0.2        |
| 0.3 $\sigma_2$ | 0.15    | 1.075   |            |            |
| D (mm)         | 300     |         |            |            |
| $E_{v1}$       | 112.85  |         |            |            |
| $E_{v2}$       | 453.72  |         |            |            |
| Area (sq.m)    | 0.07065 |         |            |            |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{s1}/E_{v1}$ | 1.13 |  |  |
|-----------------|------|--|--|

$$E_s = 0.75 \times D \times \Delta s / \Delta s$$

$E_s$  = deformation modulus

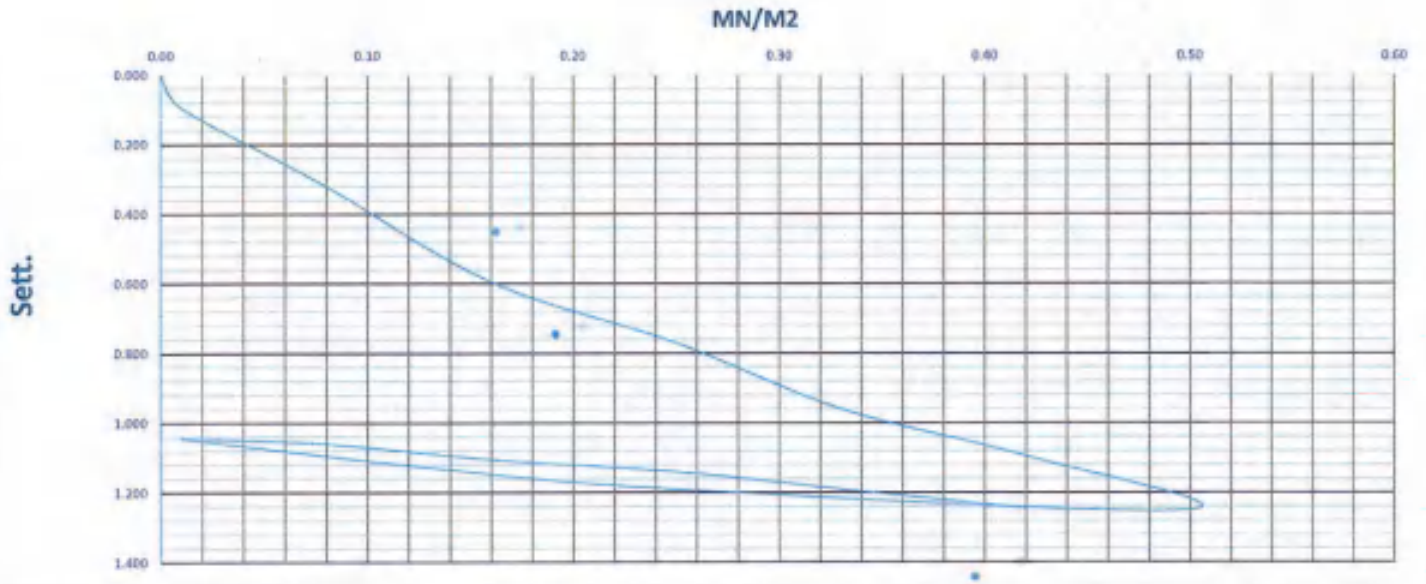
$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :



Design Consultant



Contractor Consultant



Contractor



Director

## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+660

To

524+740

Station

524+720

Test Date

8-09-2023

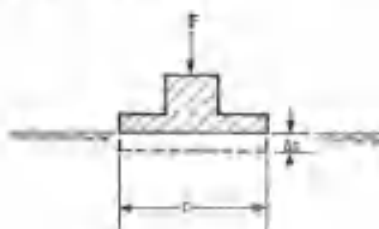
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied in a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F = \text{load}$

$\Delta s = \text{settlement}$

$D = \text{diameter of the plate}$

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable and ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | MPa    | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.92  | 19.90  |        | 0.080   | 0.100   |         | 0.090      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.74  | 19.59  |        | 0.260   | 0.410   |         | 0.335      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.50  | 19.28  |        | 0.500   | 0.720   |         | 0.610      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.25  | 19.16  |        | 0.750   | 0.840   |         | 0.795      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.17  | 18.91  |        | 0.830   | 1.090   |         | 0.960      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.94  | 18.81  |        | 1.060   | 1.190   |         | 1.125      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.70  | 18.68  |        | 1.300   | 1.320   |         | 1.310      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.80  | 18.75  |        | 1.200   | 1.250   |         | 1.225      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.90  | 18.80  |        | 1.100   | 1.200   |         | 1.150      |
| 9.000     | 2.1   | 0.707  | 0.01   | 19.05  | 18.94  |        | 0.950   | 1.060   |         | 1.005      |
| 10.000    | 2.1   | 0.707  | 0.01   | 19.05  | 18.94  |        | 0.950   | 1.060   |         | 1.005      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.98  | 18.90  |        | 1.020   | 1.100   |         | 1.060      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.90  | 18.85  |        | 1.100   | 1.150   |         | 1.125      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.81  | 18.82  |        | 1.190   | 1.180   |         | 1.185      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.82  | 18.73  |        | 1.180   | 1.270   |         | 1.225      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.74  | 18.70  |        | 1.260   | 1.300   |         | 1.280      |

|                | $\sigma$ | $\Delta s$ | $\Delta s$ |
|----------------|----------|------------|------------|
| 0.7 $\sigma_1$ | 0.35     | 0.96313    | 0.3875     |
| 0.3 $\sigma_1$ | 0.15     | 0.57563    |            |
| 0.7 $\sigma_2$ | 0.35     | 1.23722    | 0.12222    |
| 0.3 $\sigma_2$ | 0.15     | 1.11501    |            |
| D (mm)         | 300      |            |            |
| $E_{v1}$       | 116.13   |            |            |
| $E_{v2}$       | 360.20   |            |            |
| Area (Sq.m)    | 0.07065  |            |            |

|                   |      |  |  |
|-------------------|------|--|--|
| $E_{v2}/\sigma_2$ | 3.17 |  |  |
|-------------------|------|--|--|

$$E_v = 0.73 \times D \times \Delta s / \Delta s$$

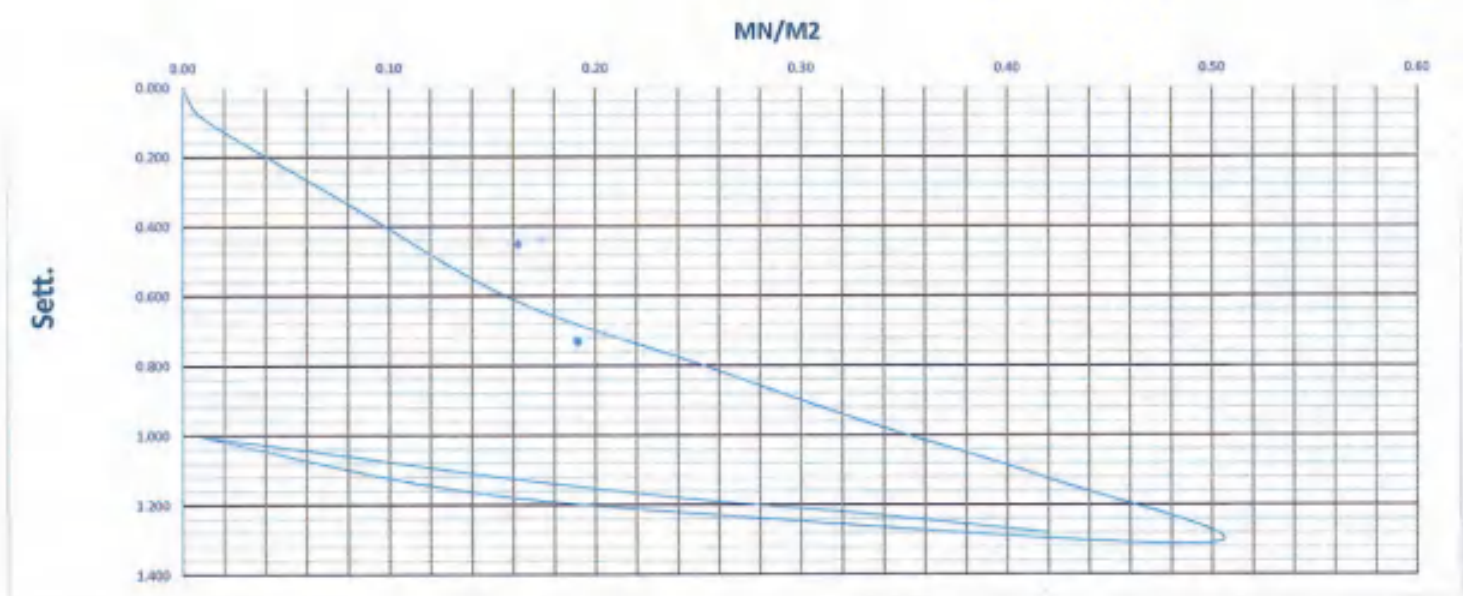
$E_v$  = deformation modulus

$\Delta s$  = load increment

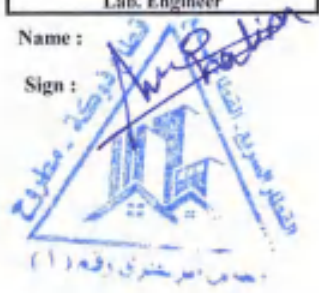
$\Delta s$  = settlement increment

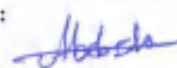
$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist  
Name :  
Sign :

Lab. Engineer  
Name :  
Sign :  


Consultant Engineer  
Name :  
Sign : 



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+740

To

524+820

Station

524+760

Test Date

7-09-2023

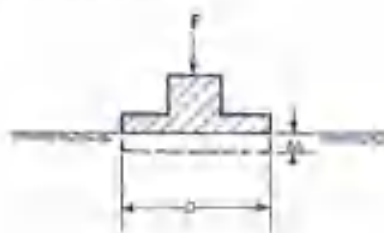
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$S$  = settlement

$D$  = diameter of the plate (mm)

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Series | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | kN    | kN     | 30/002 | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.92  | 19.95  |        | 0.080   | 0.050   |         | 0.065      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.80  | 19.87  |        | 0.200   | 0.130   |         | 0.165      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.60  | 19.80  |        | 0.400   | 0.200   |         | 0.300      |
| 4.000     | 51.3  | 17.663 | 0.25   | 19.32  | 19.70  |        | 0.680   | 0.300   |         | 0.490      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.20  | 19.65  |        | 0.800   | 0.350   |         | 0.575      |
| 6.000     | 89.8  | 29.673 | 0.42   | 19.05  | 19.60  |        | 0.950   | 0.400   |         | 0.675      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.91  | 19.59  |        | 1.090   | 0.410   |         | 0.750      |
| 8.000     | 123.8 | 41.677 | 0.58   | 18.96  | 19.65  |        | 1.040   | 0.350   |         | 0.695      |
| 9.000     | 140.8 | 48.029 | 0.67   | 18.97  | 19.70  |        | 0.930   | 0.300   |         | 0.615      |
| 10.000    | 157.8 | 54.381 | 0.75   | 19.28  | 19.79  |        | 0.720   | 0.210   |         | 0.465      |
| 11.000    | 174.8 | 60.733 | 0.84   | 19.28  | 19.79  |        | 0.720   | 0.210   |         | 0.465      |
| 12.000    | 191.8 | 67.085 | 0.92   | 19.26  | 19.78  |        | 0.740   | 0.220   |         | 0.480      |
| 13.000    | 208.8 | 73.437 | 1.00   | 19.15  | 19.75  |        | 0.850   | 0.250   |         | 0.550      |
| 14.000    | 225.8 | 79.789 | 1.08   | 19.10  | 19.70  |        | 0.900   | 0.300   |         | 0.600      |
| 15.000    | 242.8 | 86.141 | 1.16   | 19.04  | 19.65  |        | 0.960   | 0.350   |         | 0.655      |
| 16.000    | 259.8 | 92.493 | 1.25   | 18.96  | 19.58  |        | 1.040   | 0.420   |         | 0.730      |

| $P$            | $S$     | $P/S$   | $P/S$   | $S$ |
|----------------|---------|---------|---------|-----|
| 0.7 $\sigma_1$ | 0.35    | 0.60937 | 0.32625 | 0.1 |
| 0.3 $\sigma_1$ | 0.15    | 0.28312 |         |     |
| 0.7 $\sigma_2$ | 0.35    | 0.67167 | 0.17967 | 0.1 |
| 0.3 $\sigma_2$ | 0.15    | 0.495   |         |     |
| $D$ (mm)       | 300     |         |         |     |
| $E_{v1}$       | 137.03  |         |         |     |
| $E_{v2}$       | 154.72  |         |         |     |
| Area (Sq.m)    | 0.07065 |         |         |     |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{v2}/E_{v1}$ | 1.05 |  |  |
|-----------------|------|--|--|

$$E_v = \frac{P}{S} \cdot D \cdot \frac{d\sigma}{d\delta}$$

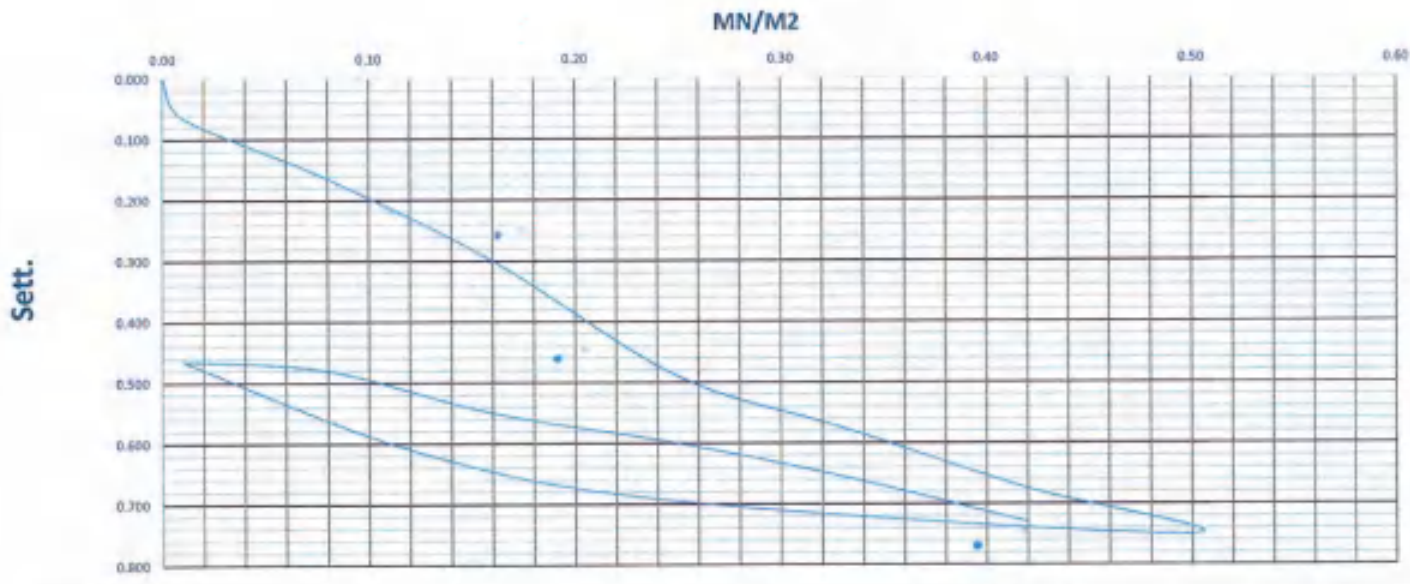
$E_v$  = deformation modulus

$d\sigma$  = load increment

$d\delta$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :

Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name AL MOSTAFA

Location

524+740

To

524+820

Station

524+780

Test Date

7-09-2023

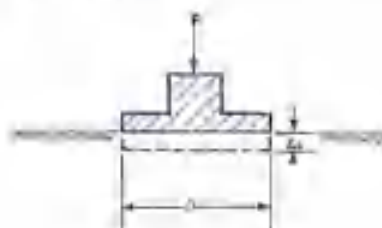
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$s$  = settlement

$D$  = diameter of test plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | kN     | MS/M2  | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.90  | 19.92  |        | 0.100   | 0.080   |         | 0.090      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.70  | 19.85  |        | 0.300   | 0.150   |         | 0.225      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.52  | 19.78  |        | 0.480   | 0.220   |         | 0.350      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.32  | 19.68  |        | 0.680   | 0.320   |         | 0.500      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.16  | 19.64  |        | 0.820   | 0.360   |         | 0.590      |
| 6.000     | 89.8  | 29.673 | 0.42   | 19.02  | 19.60  |        | 0.980   | 0.400   |         | 0.690      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.88  | 19.55  |        | 1.120   | 0.450   |         | 0.785      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.97  | 19.65  |        | 1.030   | 0.350   |         | 0.690      |
| 9.000     | 26.7  | 8.831  | 0.12   | 19.10  | 19.72  |        | 0.900   | 0.280   |         | 0.590      |
| 9.000     | 2.1   | 0.707  | 0.01   | 19.30  | 19.80  |        | 0.700   | 0.200   |         | 0.450      |
| 10.000    | 2.1   | 0.707  | 0.01   | 19.30  | 19.80  |        | 0.700   | 0.200   |         | 0.450      |
| 11.000    | 17.1  | 5.652  | 0.08   | 19.25  | 19.77  |        | 0.750   | 0.230   |         | 0.490      |
| 12.000    | 34.2  | 11.304 | 0.16   | 19.16  | 19.74  |        | 0.840   | 0.260   |         | 0.550      |
| 13.000    | 53.3  | 17.663 | 0.25   | 19.06  | 19.70  |        | 0.940   | 0.300   |         | 0.620      |
| 14.000    | 70.5  | 23.315 | 0.33   | 19.00  | 19.66  |        | 1.000   | 0.340   |         | 0.670      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.92  | 19.59  |        | 1.080   | 0.410   |         | 0.745      |

|                |         | $s$     | AS      | AS  |
|----------------|---------|---------|---------|-----|
| 0.7 $\sigma_1$ | 0.35    | 0.60687 | 0.2725  | 0.2 |
| 0.3 $\sigma_1$ | 0.15    | 0.33438 |         |     |
| 0.7 $\sigma_2$ | 0.35    | 0.88667 | 0.15666 | 0.2 |
| 0.3 $\sigma_2$ | 0.15    | 0.53    |         |     |
| D (mm)         | 300     |         |         |     |
| $E_{v1}$       | 105.14  |         |         |     |
| $E_{v2}$       | 287.24  |         |         |     |
| Area (sq.m)    | 0.07065 |         |         |     |

|                 |      |  |  |
|-----------------|------|--|--|
| $E_{v2}/E_{v1}$ | 1.74 |  |  |
|-----------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta s / \Delta s$$

$E_v$  = deformation modulus

$\Delta s$  = load increment

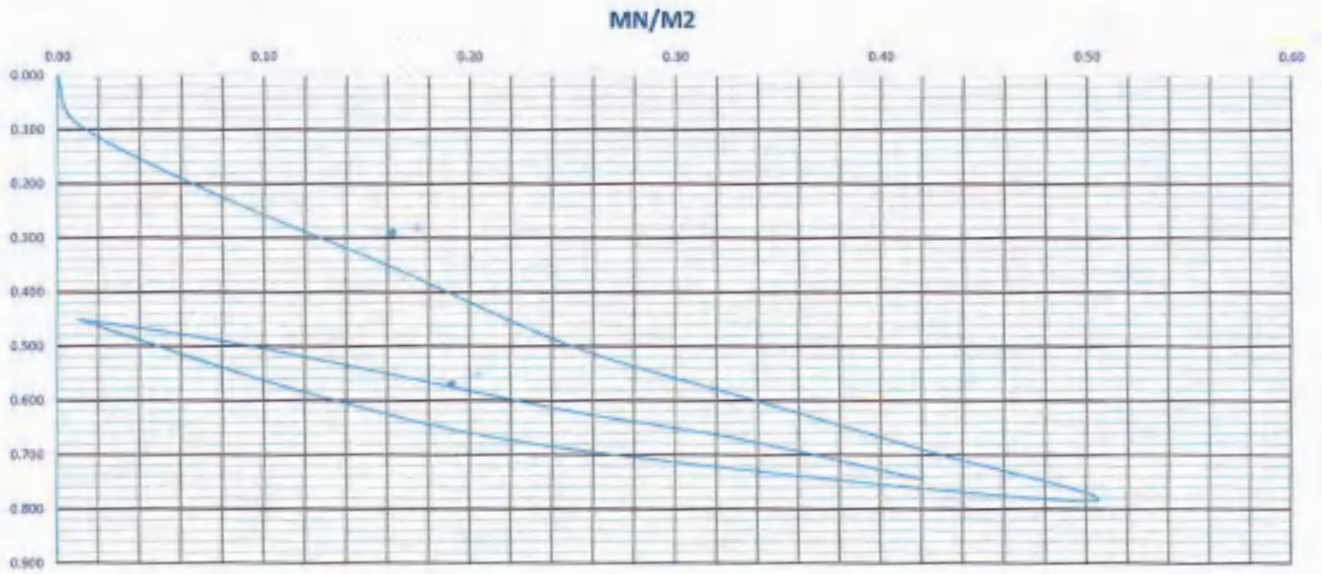
$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m



For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .

Sett.



Lab. Specialist

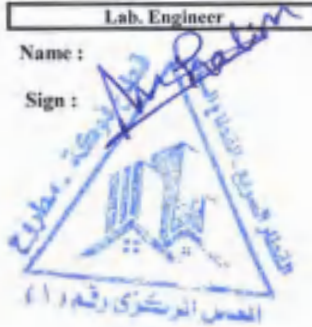
Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

*[Signature]*



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+740

To

524+820

Station

524+800

Test Date

7-09-2023

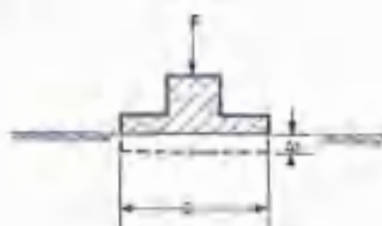
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$P$  = load

$s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Stress            | Def 1 | Def 2 | Def 3 | Sett. 1 | Sett. 2 | Sett. 3 | Av. Sett. |
|-----------|-------|--------|-------------------|-------|-------|-------|---------|---------|---------|-----------|
| Stage No. | ton   | KN     | MN/m <sup>2</sup> | mm    | mm    | mm    | mm      | mm      | mm      | mm        |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00 | 20.00 |       | 0.000   | 0.000   |         | 0.000     |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.97 | 19.98 |       | 0.030   | 0.020   |         | 0.025     |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.03 | 19.88 |       | 0.170   | 0.120   |         | 0.145     |
| 3.000     | 34.2  | 11.304 | 0.16              | 19.50 | 19.75 |       | 0.500   | 0.250   |         | 0.375     |
| 4.000     | 51.3  | 17.663 | 0.25              | 19.30 | 19.67 |       | 0.700   | 0.330   |         | 0.515     |
| 5.000     | 70.5  | 23.315 | 0.33              | 19.15 | 19.64 |       | 0.850   | 0.360   |         | 0.605     |
| 6.000     | 89.8  | 29.673 | 0.42              | 19.00 | 19.58 |       | 1.000   | 0.420   |         | 0.710     |
| 7.000     | 106.8 | 35.325 | 0.50              | 18.85 | 19.52 |       | 1.150   | 0.480   |         | 0.815     |
| 8.000     | 123.8 | 41.000 | 0.58              | 18.90 | 19.60 |       | 1.300   | 0.480   |         | 0.750     |
| 9.000     | 140.8 | 46.675 | 0.66              | 19.00 | 19.72 |       | 1.000   | 0.280   |         | 0.640     |
| 10.000    | 157.8 | 52.350 | 0.74              | 19.20 | 19.80 |       | 0.800   | 0.200   |         | 0.500     |
| 11.000    | 174.8 | 58.025 | 0.82              | 19.20 | 19.80 |       | 0.800   | 0.200   |         | 0.500     |
| 12.000    | 191.8 | 63.700 | 0.90              | 19.18 | 19.70 |       | 0.820   | 0.300   |         | 0.560     |
| 13.000    | 208.8 | 69.375 | 0.98              | 19.10 | 19.65 |       | 0.900   | 0.350   |         | 0.625     |
| 14.000    | 225.8 | 75.050 | 1.06              | 19.06 | 19.57 |       | 0.940   | 0.430   |         | 0.685     |
| 15.000    | 242.8 | 80.725 | 1.14              | 19.00 | 19.52 |       | 1.000   | 0.480   |         | 0.740     |
| 16.000    | 259.8 | 86.400 | 1.22              | 18.92 | 19.45 |       | 1.080   | 0.550   |         | 0.815     |

|             |         | $s$     | $\Delta s$ | $\Delta s$ |
|-------------|---------|---------|------------|------------|
| 0.7 $n_1$   | 0.35    | 0.61813 | 0.17188    | 0.2        |
| 0.5 $n_2$   | 0.15    | 0.34625 |            |            |
| 0.7 $n_3$   | 0.35    | 0.75607 |            |            |
| 0.5 $n_4$   | 0.15    | 0.62001 | 0.13666    | 0.2        |
| $D$ (mm)    | 300     |         |            |            |
| $E_{av}$    | 165.52  |         |            |            |
| $E_{av}$    | 329.28  |         |            |            |
| Area (sq.m) | 0.07067 |         |            |            |

|          |      |  |  |
|----------|------|--|--|
| $E_{av}$ | 1.91 |  |  |
|----------|------|--|--|

|          |      |     |            |            |
|----------|------|-----|------------|------------|
| $E_{av}$ | 0.75 | $D$ | $\Delta s$ | $\Delta s$ |
|----------|------|-----|------------|------------|

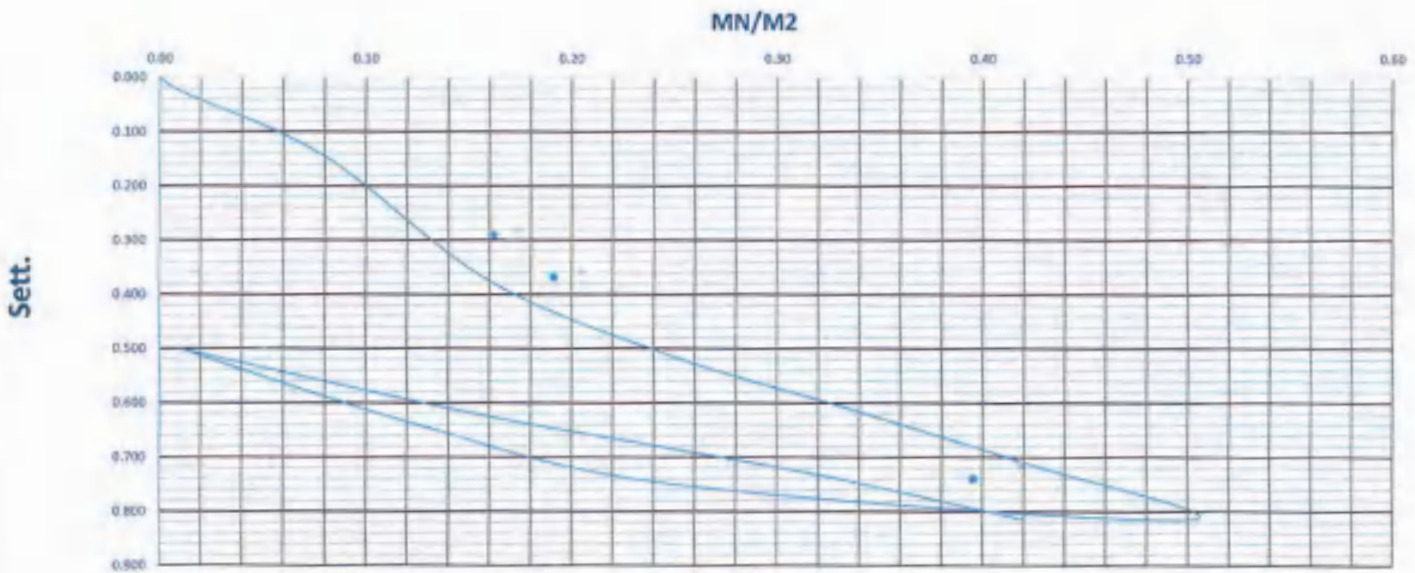
$E_s$  = deformation modulus

$\Delta s$  = load increment

$D_s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :



## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524+740

To

524+820

Station

524+815

Test Date

7-09-2023

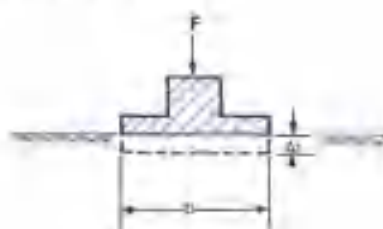
Layer level

P.S.G +0.50

### EQUIPMENT AND TEST PROCEDURE :-

The basis of the given equation is Boussinesq's theory of the relationship between the modulus of elasticity and the settlement of a circular rigid plate with the diameter  $D$ .

The load is applied to a circular rigid steel bearing plate by a hydraulic jack in several steps. The settlement under each load step is recorded. The following sketch shows the principle of the test.



$F$  = load

$\Delta s$  = settlement

$D$  = diameter of the plate

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Load  | Load   | Strain | Dial 1 | Dial 2 | Dial 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|--------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | Bar   | KN     | MM/MM  | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.97  | 19.96  |        | 0.030   | 0.040   |         | 0.035      |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.80  | 19.80  |        | 0.200   | 0.200   |         | 0.200      |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.50  | 19.55  |        | 0.500   | 0.450   |         | 0.475      |
| 4.000     | 53.3  | 17.663 | 0.25   | 19.25  | 19.31  |        | 0.750   | 0.690   |         | 0.720      |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.05  | 19.12  |        | 0.950   | 0.880   |         | 0.915      |
| 6.000     | 89.8  | 29.673 | 0.42   | 18.84  | 18.93  |        | 1.160   | 1.070   |         | 1.115      |
| 7.000     | 106.8 | 35.325 | 0.50   | 18.62  | 18.60  |        | 1.380   | 1.400   |         | 1.390      |
| 8.000     | 53.4  | 17.663 | 0.25   | 18.72  | 18.68  |        | 1.280   | 1.320   |         | 1.300      |
| 9.000     | 26.7  | 8.831  | 0.12   | 18.80  | 18.90  |        | 1.200   | 1.100   |         | 1.150      |
| 9.000     | 2.1   | 0.707  | 0.01   | 18.93  | 19.07  |        | 1.070   | 0.930   |         | 1.000      |
| 10.000    | 2.1   | 0.707  | 0.01   | 18.93  | 19.07  |        | 1.070   | 0.930   |         | 1.000      |
| 11.000    | 17.1  | 5.652  | 0.08   | 18.92  | 19.04  |        | 1.080   | 0.960   |         | 1.020      |
| 12.000    | 34.2  | 11.304 | 0.16   | 18.88  | 18.90  |        | 1.120   | 1.100   |         | 1.110      |
| 13.000    | 53.3  | 17.663 | 0.25   | 18.82  | 18.82  |        | 1.180   | 1.180   |         | 1.180      |
| 14.000    | 70.5  | 23.315 | 0.33   | 18.75  | 18.74  |        | 1.250   | 1.260   |         | 1.255      |
| 15.000    | 89.8  | 29.673 | 0.42   | 18.70  | 18.66  |        | 1.300   | 1.340   |         | 1.320      |

|                |         | $\sigma$ | AS      | AS  |
|----------------|---------|----------|---------|-----|
| 0.7 $\sigma_1$ | 0.35    | 0.87438  | 0.43375 | 0.2 |
| 0.3 $\sigma_1$ | 0.15    | 0.44063  |         |     |
| 0.7 $\sigma_2$ | 0.35    | 1.26944  | 0.22944 | 0.2 |
| 0.3 $\sigma_2$ | 0.15    | 1.04     |         |     |
| D (mm)         | 300     |          |         |     |
| $E_{v1}$       | 103.25  |          |         |     |
| $E_{v2}$       | 196.13  |          |         |     |
| Area (sq m)    | 0.07065 |          |         |     |

|           |      |  |  |
|-----------|------|--|--|
| $K(2E_v)$ | 1.09 |  |  |
|-----------|------|--|--|

|                                                |  |
|------------------------------------------------|--|
| $E_s = 0.75 \cdot R \cdot \Delta s / \Delta s$ |  |
|------------------------------------------------|--|

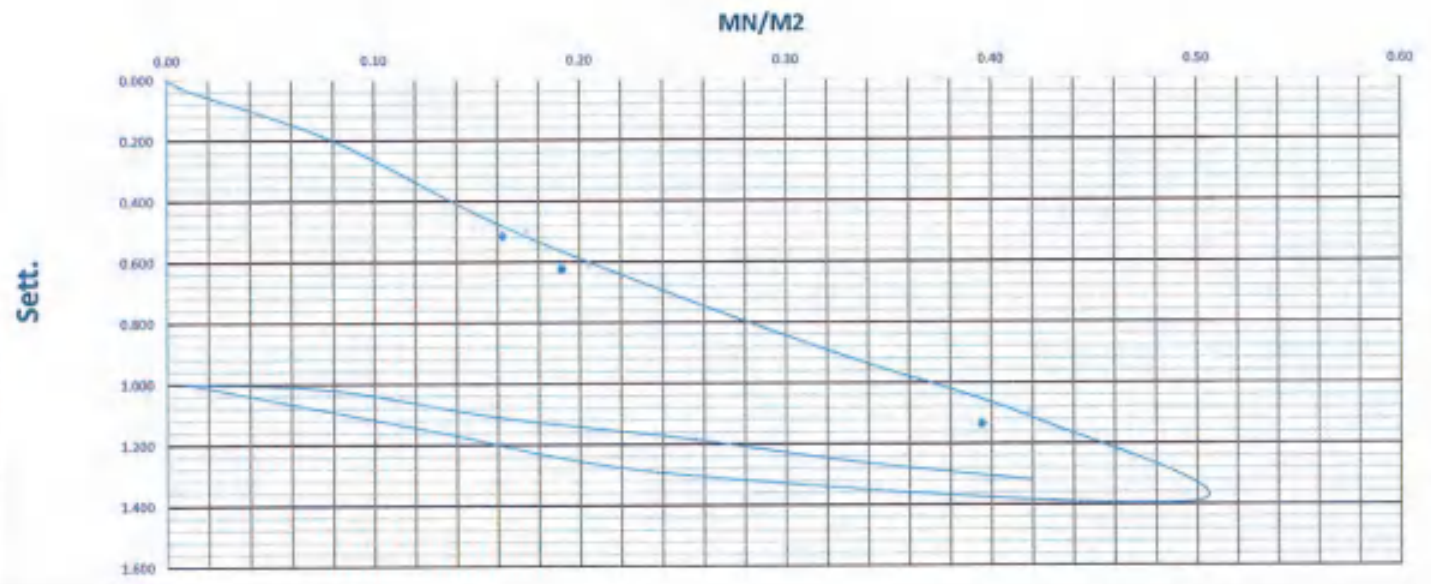
$E_s$  = deformation modulus

$\Delta s$  = load increment

$D_s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta\sigma$  and  $\Delta s$  are usually taken from the load span between  $0.3 \sigma_{max}$  and  $0.7 \sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

Sign :



Consultant Engineer

Name :

Sign :

*Abdullah*

☐ **Answer:**

www.elsevier.com/locate/jmb

|         |         |
|---------|---------|
| Station | 520-005 |
|---------|---------|

#### EQUIPMENT AND TEST PROCEDURE:

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\leq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

|                           | $t$     | $\Delta E$ | $\sigma_{\text{rel}}$ |
|---------------------------|---------|------------|-----------------------|
| $0.5 \sigma_1$            | 0.35    | 0.43625    | 0.33647               |
| $0.5 \sigma_2$            | 0.15    | 0.47938    |                       |
| $0.7 \sigma_1$            | 0.35    | 1.2        |                       |
| $0.3 \sigma_2$            | 0.15    | 1.025      | 0.173                 |
| $U(\text{eV})$            | 300     |            |                       |
| $E_{v_1}$                 | 120.80  |            |                       |
| $E_{v_2}$                 | 257.14  |            |                       |
| Area (10 <sup>4</sup> cm) | 0.07045 |            |                       |

|           |     |  |  |
|-----------|-----|--|--|
| 11-4/12-1 | 204 |  |  |
|-----------|-----|--|--|

$$W_1 = 0.75 \times D = 4.5 \text{ m} \times 1.5 \text{ m}$$

**Figure 1** = Information module

Q. What information?

**D4**  $\rightarrow$  **bestimmungsgemäß** (gemessen)

$D$  — diameter of the plate, generally 0.30 m;

\* In this table,  $d_{\text{max}}$  is the largest value from the data span (column  $F \geq d_{\text{max}}$  and  $n \geq d_{\text{max}}$ ).

WY/MT

Soft

Consultant Engineer

Name: James F. Robinson

Sign: *L. ussuriensis*





المجلس التشريعي  
السلطة الفلسطينية

|                                |                        |             |               |         |
|--------------------------------|------------------------|-------------|---------------|---------|
| Client/Customer                | Contracting Consultant | CENTRAL LAB | Collaboration | Order   |
| <b>Plate Load Test Results</b> |                        |             |               |         |
| Company Name                   | AL.MOSTAFA             |             |               |         |
| Location                       | 524 + 760              | To          | 524 + 900     | Station |
| Test Date                      | 1-10-2023              |             |               |         |
| Layer level                    | SUB BALLAST +0.90      |             |               |         |

**EQUIPMENT AND TEST PROCEDURE :-**

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/min). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 8 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Load     | Load  | Force  | Load               | Load  | Load  | Sett  | Sett  | Sett | Sett  |
|----------|-------|--------|--------------------|-------|-------|-------|-------|------|-------|
| Step No. | Size  | kN     | kN/cm <sup>2</sup> | mm    | mm    | mm    | mm    | mm   | mm    |
| 0.000    | 0.0   | 0.000  | 0.00               | 20.00 | 20.00 | 0.000 | 0.000 |      | 0.000 |
| 1.000    | 2.1   | 0.707  | 0.01               | 18.96 | 18.97 | 0.040 | 0.030 |      | 0.015 |
| 2.000    | 17.1  | 5.852  | 0.08               | 19.78 | 19.88 | 0.220 | 0.120 |      | 0.170 |
| 3.000    | 34.2  | 11.704 | 0.16               | 19.39 | 19.78 | 0.410 | 0.220 |      | 0.315 |
| 4.000    | 51.3  | 17.556 | 0.25               | 19.40 | 19.62 | 0.600 | 0.380 |      | 0.490 |
| 5.000    | 78.3  | 23.315 | 0.35               | 19.21 | 19.50 | 0.770 | 0.540 |      | 0.635 |
| 6.000    | 105.8 | 29.673 | 0.42               | 19.12 | 19.88 | 0.860 | 0.560 |      | 0.720 |
| 7.000    | 136.8 | 35.925 | 0.50               | 19.02 | 19.37 | 0.980 | 0.630 |      | 0.805 |
| 8.000    | 153.4 | 41.443 | 0.55               | 19.06 | 19.81 | 0.840 | 0.590 |      | 0.765 |
| 9.000    | 26.7  | 8.821  | 0.12               | 19.14 | 19.88 | 0.860 | 0.520 |      | 0.690 |
| 10.000   | 2.1   | 0.707  | 0.01               | 19.34 | 19.61 | 0.660 | 0.390 |      | 0.525 |
| 11.000   | 2.1   | 0.707  | 0.01               | 19.34 | 19.61 | 0.660 | 0.390 |      | 0.525 |
| 12.000   | 17.1  | 5.852  | 0.08               | 19.37 | 19.55 | 0.880 | 0.420 |      | 0.585 |
| 13.000   | 34.2  | 11.704 | 0.16               | 19.21 | 19.52 | 0.750 | 0.480 |      | 0.615 |
| 14.000   | 51.3  | 17.556 | 0.25               | 19.14 | 19.87 | 0.860 | 0.530 |      | 0.695 |
| 15.000   | 78.3  | 23.315 | 0.35               | 19.06 | 19.81 | 0.940 | 0.580 |      | 0.795 |
| 16.000   | 105.8 | 29.673 | 0.42               | 19.02 | 19.38 | 0.880 | 0.620 |      | 0.800 |

|                | $\sigma$ | $\Delta S$ | $\Delta \sigma$ |
|----------------|----------|------------|-----------------|
| $0.7 \sigma_1$ | 0.35     | 0.64582    | 0.34415         |
| $0.3 \sigma_1$ | 0.15     | 0.28688    |                 |
| $R_{T0.1}$     | 0.35     | 0.77279    | 0.16777         |
| $R_{T0.2}$     | 0.15     | 0.805      |                 |
| $D$ (mm)       | 300      |            |                 |
| $E_s$          | 129.03   |            |                 |
| $E_v$          | 258.25   |            |                 |
| Area (sqm)     | 0.07065  |            |                 |

|           |      |  |  |
|-----------|------|--|--|
| $E_s/E_v$ | 0.49 |  |  |
|-----------|------|--|--|

$$E_s = 0.75 \cdot D \cdot \Delta \sigma / \Delta S$$

- $E_s$  = deformation modulus
- $D$  = load increment
- $\Delta \sigma$  = settlement increment
- $D$  = diameter of the plate, generally 0.30 m

Fig. 10.10. Plate Load Test Results. (From: The Road Engineering Handbook, 4th ed., 1994, p. 10.10)

10/10/23

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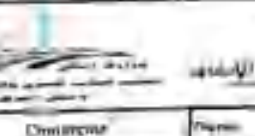
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|                |                    |                      |
|----------------|--------------------|----------------------|
| Lab Specialist | Lab Engineer       | Consultant Engineer  |
| Name: _____    | Name: AHMED HALEEM | Name: Youssef Rashed |
| Sign: _____    | Sign:              | Sign:                |




|                                |                       |             |           |        |
|--------------------------------|-----------------------|-------------|-----------|--------|
| Client Organization            | Contractor Consultant | CENTRAL LAB | District  | Region |
| <b>Plate Load Test Results</b> |                       |             |           |        |
| Company Name                   | AL MOSTAFA            |             |           |        |
| Location                       | 524 + 760             | To          | 524 + 900 |        |
| Test Date                      | 28-09-2023            |             |           |        |
| Layer level                    | SUB BALLAST +0.90     |             |           |        |

Station

524+845

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m, for very coarse grained material also plates with diameter  $D = 0.50$  m and  $D = 0.70$  m are used.

The load is applied in 5 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\approx 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading  | Load  | Load   | Sett. | Dist. 1 | Dist. 2 | Dist. 3 | Dist. 4 | Dist. 5 | Dist. 6 | Dist. 7 | Dist. 8 | Dist. 9 | Dist. 10 |
|----------|-------|--------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Stage No | Dist  | KN     | mm    | mm      | mm      | mm      | mm      | mm      | mm      | mm      | mm      | mm      | mm       |
| 0.000    | 0.0   | 0.000  | 0.00  | 20.00   | 20.00   |         |         |         |         |         |         |         | 0.000    |
| 1.000    | 2.1   | 0.702  | 0.01  | 19.97   | 18.93   |         |         |         |         |         |         |         | 0.050    |
| 2.000    | 17.1  | 5.652  | 0.08  | 19.53   | 19.51   |         |         |         |         |         |         |         | 0.478    |
| 3.000    | 24.2  | 11.304 | 0.16  | 19.41   | 19.24   |         |         |         |         |         |         |         | 0.673    |
| 4.000    | 55.2  | 17.603 | 0.25  | 19.76   | 18.95   |         |         |         |         |         |         |         | 0.835    |
| 5.000    | 70.5  | 23.315 | 0.31  | 19.36   | 18.76   |         |         |         |         |         |         |         | 0.940    |
| 6.000    | 89.8  | 29.673 | 0.42  | 19.26   | 18.51   |         |         |         |         |         |         |         | 1.115    |
| 7.000    | 106.4 | 35.325 | 0.50  | 19.21   | 18.32   |         |         |         |         |         |         |         | 1.235    |
| 8.000    | 53.4  | 17.603 | 0.25  | 19.22   | 18.37   |         |         |         |         |         |         |         | 1.205    |
| 9.000    | 26.7  | 8.831  | 0.12  | 19.74   | 18.39   |         |         |         |         |         |         |         | 1.185    |
| 10.000   | 2.1   | 0.707  | 0.01  | 19.36   | 18.57   |         |         |         |         |         |         |         | 1.035    |
| 11.000   | 2.1   | 0.707  | 0.01  | 19.34   | 18.57   |         |         |         |         |         |         |         | 1.035    |
| 12.000   | 17.1  | 5.652  | 0.08  | 19.35   | 18.56   |         |         |         |         |         |         |         | 1.045    |
| 13.000   | 34.2  | 11.304 | 0.16  | 19.34   | 18.52   |         |         |         |         |         |         |         | 1.070    |
| 14.000   | 53.3  | 17.603 | 0.25  | 19.21   | 18.42   |         |         |         |         |         |         |         | 1.135    |
| 15.000   | 70.5  | 23.315 | 0.31  | 19.26   | 18.30   |         |         |         |         |         |         |         | 1.210    |
| 16.000   | 89.8  | 29.673 | 0.42  | 19.21   | 18.25   |         |         |         |         |         |         |         | 1.270    |

|            |         | $E_1$  | $E_2$ | $E_3$ |
|------------|---------|--------|-------|-------|
| 0.7 m      | 0.35    | 1.01   |       |       |
| 0.5 m      | 0.15    | 0.05   |       |       |
| 0.7 m      | 0.25    | 1.2233 |       |       |
| 0.5 m      | 0.15    | 1.055  |       |       |
| $D$ (mm)   | 300     |        |       |       |
| $E_1$      | 123.00  |        |       |       |
| $E_2$      | 287.33  |        |       |       |
| Area (sqm) | 0.07065 |        |       |       |

|         |       |  |  |
|---------|-------|--|--|
| Dist. 1 | 20.00 |  |  |
|---------|-------|--|--|

$$E_1 = \frac{P}{\Delta S} \cdot \frac{D}{4}$$

$E_1$  = deformation modulus

$\Delta S$  = load increment

$D$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta S$  and  $D$  are usually taken from the load steps between 0.5 KN and 0.7 KN.

mm/mm

Sett.

Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : AHMED HALEEM

Sign :

Consultant Engineer

Name : Farouk Ragab

Sign :





المملكة العربية السعودية

|                                |                   |    |             |        |
|--------------------------------|-------------------|----|-------------|--------|
| Contract Classification        | CENTRAL LAB       |    | Contracting | Client |
| <b>Plate Load Test Results</b> |                   |    |             |        |
| Company Name                   | AL MOSTAFA        |    |             |        |
| Location                       | 524 + 760         | To | 524 + 900   |        |
| Test Date                      | 28-09-2023        |    |             |        |
| Layer level                    | SUB BALLAST +0.90 |    |             |        |

**EQUIPMENT AND TEST PROCEDURE :**

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.182$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweights for the hydraulic jack.

**Diameter = 300mm**

| Loading   | Load  | Settle | Stress            | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|-----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No. | kN    | mm     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.80  | 20.80  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.90  | 19.91  |        | -0.100  | 0.048   |         | 0.070      |
| 2.000     | 17.1  | 5.652  | 0.08              | 18.78  | 18.80  |        | 0.300   | 0.200   |         | 0.250      |
| 3.000     | 34.2  | 11.304 | 0.16              | 18.30  | 18.70  |        | 0.700   | 0.300   |         | 0.500      |
| 4.000     | 51.3  | 17.663 | 0.25              | 18.03  | 18.58  |        | 0.970   | 0.480   |         | 0.895      |
| 5.000     | 70.5  | 23.315 | 0.33              | 18.61  | 19.40  |        | 1.190   | 0.600   |         | 0.895      |
| 6.000     | 89.8  | 28.873 | 0.42              | 18.45  | 19.22  |        | 1.350   | 0.780   |         | 1.065      |
| 7.000     | 108.8 | 35.329 | 0.50              | 18.41  | 18.05  |        | 1.590   | 0.950   |         | 1.270      |
| 8.000     | 127.8 | 41.785 | 0.58              | 18.43  | 19.08  |        | 1.550   | 0.920   |         | 1.235      |
| 9.000     | 146.7 | 48.241 | 0.67              | 18.54  | 18.13  |        | 1.480   | 0.870   |         | 1.165      |
| 10.000    | 165.7 | 54.697 | 0.76              | 18.71  | 18.22  |        | 1.290   | 0.780   |         | 1.035      |
| 11.000    | 184.7 | 61.153 | 0.85              | 18.71  | 18.22  |        | 1.290   | 0.780   |         | 1.035      |
| 12.000    | 203.7 | 67.609 | 0.94              | 18.70  | 18.21  |        | 1.300   | 0.790   |         | 1.045      |
| 13.000    | 222.7 | 74.065 | 1.03              | 18.62  | 19.18  |        | 1.280   | 0.840   |         | 1.110      |
| 14.000    | 241.7 | 80.521 | 1.12              | 18.50  | 19.11  |        | 1.500   | 0.890   |         | 1.195      |
| 15.000    | 260.7 | 86.977 | 1.21              | 18.43  | 19.08  |        | 1.570   | 0.920   |         | 1.245      |
| 16.000    | 279.7 | 93.433 | 1.30              | 18.38  | 19.03  |        | 1.620   | 0.970   |         | 1.295      |

|                | $\sigma$ | $\Delta \sigma$ | $\Delta \sigma$ |
|----------------|----------|-----------------|-----------------|
| $0.7 \sigma_1$ | 8.35     | 0.00343         | 0.11688         |
| $0.3 \sigma_1$ | 8.15     | 0.40875         |                 |
| $0.7 \sigma_2$ | 8.35     | 1.25611         | 0.29111         |
| $0.3 \sigma_2$ | 8.15     | 1.033           |                 |
| D (mm)         | 300      |                 |                 |
| $E_s$          | 107.85   |                 |                 |
| $E_s$          | 223.78   |                 |                 |
| Area (sq.m)    | 0.0706   |                 |                 |

|          |      |  |  |
|----------|------|--|--|
| End Test | 4.01 |  |  |
|----------|------|--|--|

$$E_s = 0.75 - D \cdot \sigma_{1s} / \Delta s$$

 $E_s$  = deformation modulus $\sigma_{1s}$  = load increment $\Delta s$  = settlement increment $D$  = diameter of the plate, generally 0.30 m

For this calculation  $\sigma_{1s}$  and  $\Delta s$  are usually taken from the load span between 0.3  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

MN/M<sup>2</sup>

Sett.

Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : AHMED HALEEM

Sign :

Committee Engineer

Name : Youssef R. S. G.

Sign :



### Plate Load Test Results

|              |                   |    |           |
|--------------|-------------------|----|-----------|
| Company Name | AL MOSTAFA        |    |           |
| Location     | 524 + 760         | To | 524 + 900 |
| Test Date    | 28-09-2023        |    |           |
| Layer level  | SUB BALLAST +0.90 |    |           |

Station

524+800

EQUIPMENT AND TEST PROCEDURE :

The diameter D of the plate is generally 0.30 m. For very coarse grained material also plates with diameter D = 0.60 m and D = 0.762 m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\geq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading  | Load  | Load   | Temp.  | Dist 1 | Dist 2 | Dist 3 | Sett 1 | Sett 2 | Sett 3 | Sett  |
|----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Stage No | Bar   | PS     | MM/100 | mm     | mm     | mm     | mm     | mm     | mm     | mm    |
| 0.000    | 0.0   | 0.000  | 0.00   | 20.90  | 20.00  |        | 0.000  | 0.000  |        | 0.000 |
| 1.000    | 2.1   | 0.207  | 0.01   | 19.87  | 19.83  |        | 0.030  | 0.170  |        | 0.100 |
| 2.000    | 17.1  | 3.652  | 0.08   | 19.70  | 19.54  |        | 0.300  | 0.420  |        | 0.360 |
| 3.000    | 34.2  | 11.304 | 0.16   | 19.61  | 19.38  |        | 0.390  | 0.610  |        | 0.500 |
| 4.000    | 51.3  | 17.663 | 0.25   | 19.50  | 19.08  |        | 0.500  | 0.920  |        | 0.710 |
| 5.000    | 70.5  | 23.315 | 0.31   | 19.40  | 18.87  |        | 0.600  | 1.130  |        | 0.865 |
| 6.000    | 89.8  | 29.673 | 0.42   | 18.27  | 18.75  |        | 0.730  | 1.230  |        | 0.990 |
| 7.000    | 108.8 | 33.323 | 0.50   | 18.12  | 18.52  |        | 0.880  | 1.460  |        | 1.180 |
| 8.000    | 53.4  | 17.663 | 0.25   | 19.14  | 18.54  |        | 0.840  | 1.460  |        | 1.150 |
| 8.000    | 26.7  | 8.831  | 0.12   | 18.19  | 18.64  |        | 0.910  | 1.360  |        | 1.085 |
| 9.000    | 2.1   | 0.207  | 0.01   | 18.30  | 18.80  |        | 0.700  | 1.200  |        | 0.950 |
| 10.000   | 2.1   | 0.207  | 0.01   | 19.30  | 18.80  |        | 0.700  | 1.200  |        | 0.950 |
| 11.000   | 17.1  | 3.652  | 0.08   | 19.28  | 18.75  |        | 0.720  | 1.210  |        | 0.965 |
| 12.000   | 34.2  | 11.304 | 0.16   | 19.24  | 18.70  |        | 0.760  | 1.300  |        | 1.030 |
| 13.000   | 51.3  | 17.663 | 0.25   | 18.22  | 18.60  |        | 0.780  | 1.400  |        | 1.090 |
| 14.000   | 70.5  | 23.315 | 0.31   | 18.20  | 18.50  |        | 0.800  | 1.500  |        | 1.150 |
| 15.000   | 89.8  | 29.673 | 0.42   | 18.12  | 18.43  |        | 0.880  | 1.570  |        | 1.225 |

|                |         | AS      | AS      |
|----------------|---------|---------|---------|
| 0.7 $\sigma_1$ | 6.35    | 0.82373 | 0.38125 |
| 0.3 $\sigma_1$ | 6.15    | 0.4825  |         |
| 0.3 $\sigma_2$ | 6.25    | 1.16087 | 0.18667 |
| 0.3 $\sigma_3$ | 6.15    | 0.38    |         |
| D (mm)         | 300     |         |         |
| $E_v$          | 131.87  |         |         |
| $E_{v2}$       | 241.97  |         |         |
| Area (sq.m)    | 0.07065 |         |         |

|                     |      |  |  |
|---------------------|------|--|--|
| $\sigma_1/\sigma_2$ | 1.01 |  |  |
|---------------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta \sigma / \Delta s$$

- $E_v$  = deformation modulus
- $D_s$  = load increments
- $D_s$  = settlement increments
- $D$  = diameter of the plate, generally 0.30 m

For this calculation, the settlement is usually taken from the load step between  $D_s = 1$  and 0.7 m.

Settlement

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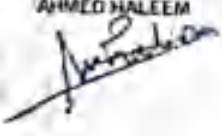
Lab. Specialist

Name :

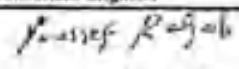
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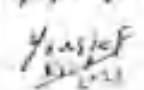
Lab. Engineer

Name : AHMED HALEEM

Sign : 

Consultant Engineer

Name : 

Sign : 






|                                |                       |             |             |         |
|--------------------------------|-----------------------|-------------|-------------|---------|
| Owner/Consultant               | Contractor/Consultant | CENTRAL LAB | Station No. | Remarks |
| <b>Plate Load Test Results</b> |                       |             |             |         |
| Company Name                   | AL MOSTAFA            |             |             |         |
| Location                       | 524 + 760             | To          | 524 + 900   |         |
| Test Date                      | 1-10-2023             |             |             |         |
| Layer level                    | SUB BALLAST +0.00     |             |             |         |

Name

Signature

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.362$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable rest ( $\geq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is refilled in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Load      | Load  | Settle | Dist 1 | Dist 2 | Dist 3 | Sett 1 | Sett 2 | Sett 3 | Sett  |
|-----------|-------|--------|--------|--------|--------|--------|--------|--------|-------|
| Stage No. | KN    | mm     | mm     | mm     | mm     | mm     | mm     | mm     | mm    |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  | 0.000  | 0.000  |        | 0.000 |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.87  | 19.87  | 0.130  | 0.130  |        | 0.130 |
| 2.000     | 17.1  | 5.652  | 0.08   | 19.63  | 19.72  | 0.270  | 0.280  |        | 0.325 |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.46  | 19.57  | 0.540  | 0.430  |        | 0.485 |
| 4.000     | 51.3  | 17.663 | 0.25   | 19.30  | 19.42  | 0.700  | 0.560  |        | 0.640 |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.14  | 19.25  | 0.860  | 0.750  |        | 0.805 |
| 6.000     | 89.6  | 29.673 | 0.42   | 19.02  | 19.14  | 0.980  | 0.860  |        | 0.920 |
| 7.000     | 108.8 | 35.325 | 0.50   | 18.90  | 19.01  | 1.100  | 0.990  |        | 1.045 |
| 8.000     | 127.9 | 41.663 | 0.58   | 18.72  | 19.05  | 1.080  | 0.950  |        | 1.015 |
| 9.000     | 147.0 | 48.021 | 0.67   | 18.50  | 19.18  | 1.000  | 0.920  |        | 0.910 |
| 10.000    | 166.1 | 54.379 | 0.75   | 18.30  | 19.30  | 0.900  | 0.700  |        | 0.800 |
| 11.000    | 185.2 | 60.737 | 0.83   | 18.09  | 19.29  | 0.910  | 0.710  |        | 0.810 |
| 12.000    | 204.3 | 67.095 | 0.92   | 17.89  | 19.22  | 0.950  | 0.780  |        | 0.865 |
| 13.000    | 223.4 | 73.453 | 0.99   | 17.60  | 19.15  | 1.000  | 0.850  |        | 0.925 |
| 14.000    | 242.5 | 79.811 | 1.08   | 17.36  | 19.09  | 1.040  | 0.910  |        | 0.975 |
| 15.000    | 261.6 | 86.169 | 1.16   | 17.10  | 19.03  | 1.100  | 0.970  |        | 1.035 |

| Load           | Load    | Settle  | Dist 1  | Dist 2 |
|----------------|---------|---------|---------|--------|
| 0.1 $\sigma_1$ | 0.35    | 0.01003 | 0.00003 | 0.2    |
| 0.3 $\sigma_1$ | 0.15    | 0.001   | 0.00003 | 0.2    |
| 0.7 $\sigma_1$ | 0.35    | 0.00032 | 0.00003 | 0.2    |
| 0.3 $\sigma_2$ | 0.15    | 0.002   |         |        |
| $D$ (mm)       | 300     |         |         |        |
| $E_v$          | 139125  |         |         |        |
| $E_v$          | 787.33  |         |         |        |
| Area (sq.m)    | 0.07068 |         |         |        |

|            |      |  |  |
|------------|------|--|--|
| Settlement | 2.46 |  |  |
|------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta \sigma / \Delta s$$

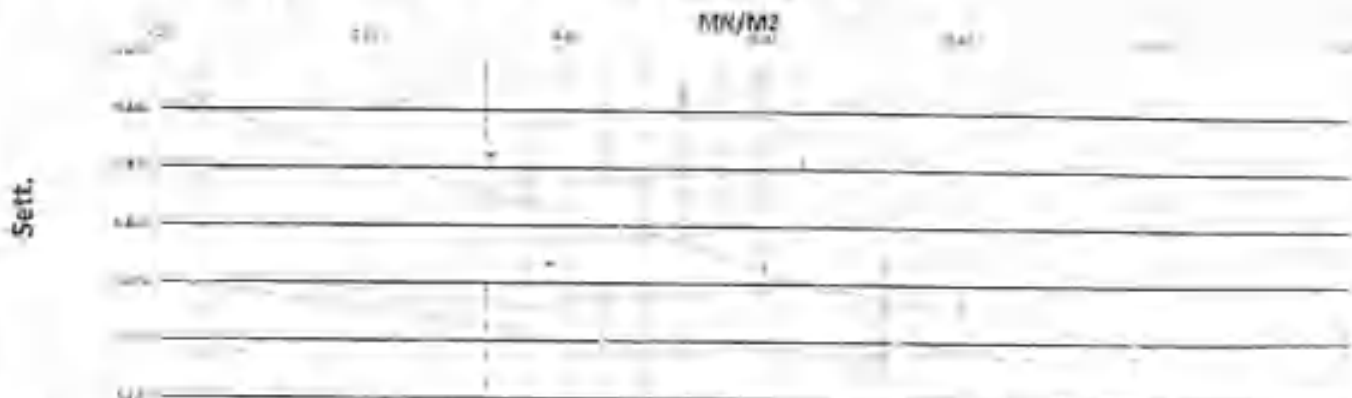
$E_v$  = deformation modulus

$\Delta \sigma$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta \sigma$  and  $\Delta s$  are usually taken from the load span between 0.3  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name :

AHMED HALEEM

Sign :

Consultant Engineer

Name :

Youssef Rashed

Sign :

Youssef Rashed

Sign :





|                                |                       |             |            |      |
|--------------------------------|-----------------------|-------------|------------|------|
| Contractor                     | Contractor Consultant | CENTRAL LAB | Completion | Date |
| <b>Plate Load Test Results</b> |                       |             |            |      |
| Company Name                   | AL MOSTAFA            |             |            |      |
| Location                       | 524 + 640             | To          | 524 + 760  |      |
| Test Date                      | 1-10-2023             |             |            |      |
| Layer level                    | SUB BALLAST +0.90     |             |            |      |

**EQUIPMENT AND TEST PROCEDURE :-**

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a perceptible end ( $< 0.02$  mm/min). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Load Step | Load  | Load   | Settlement | Settlement | Settlement | Settlement | Settlement | Settlement | Settlement | Settlement |
|-----------|-------|--------|------------|------------|------------|------------|------------|------------|------------|------------|
| Step No.  | Bar   | kN     | mm         | mm         | mm         | mm         | mm         | mm         | mm         | mm         |
| 0.000     | 0.0   | 0.000  | 0.00       | 20.00      | 20.00      |            | 0.000      | 0.000      |            | 0.000      |
| 1.000     | 2.1   | 0.797  | 0.01       | 19.93      | 19.95      |            | 0.050      | 0.050      |            | 0.050      |
| 2.000     | 17.1  | 5.652  | 0.08       | 19.70      | 19.80      |            | 0.300      | 0.340      |            | 0.220      |
| 3.000     | 34.2  | 11.304 | 0.16       | 19.60      | 19.57      |            | 0.400      | 0.480      |            | 0.440      |
| 4.000     | 51.3  | 17.663 | 0.25       | 19.57      | 19.30      |            | 0.430      | 0.700      |            | 0.565      |
| 5.000     | 70.5  | 23.315 | 0.33       | 19.35      | 19.20      |            | 0.650      | 0.800      |            | 0.725      |
| 6.000     | 89.8  | 29.673 | 0.42       | 19.25      | 19.07      |            | 0.750      | 0.930      |            | 0.840      |
| 7.000     | 106.8 | 35.325 | 0.50       | 19.15      | 18.93      |            | 0.850      | 1.070      |            | 0.960      |
| 8.000     | 124.4 | 41.663 | 0.55       | 19.18      | 18.88      |            | 0.820      | 1.020      |            | 0.920      |
| 9.000     | 142.7 | 48.931 | 0.52       | 19.23      | 19.04      |            | 0.750      | 0.960      |            | 0.875      |
| 10.000    | 161.0 | 56.200 | 0.41       | 19.33      | 19.15      |            | 0.870      | 0.850      |            | 0.760      |
| 11.000    | 179.3 | 63.468 | 0.38       | 19.32      | 19.14      |            | 0.880      | 0.800      |            | 0.770      |
| 12.000    | 197.6 | 70.736 | 0.36       | 19.26      | 19.07      |            | 0.740      | 0.930      |            | 0.835      |
| 13.000    | 215.9 | 78.004 | 0.28       | 19.21      | 19.01      |            | 0.790      | 0.900      |            | 0.890      |
| 14.000    | 234.2 | 85.272 | 0.23       | 19.18      | 18.95      |            | 0.820      | 1.050      |            | 0.935      |
| 15.000    | 252.5 | 92.540 | 0.22       | 19.15      | 18.91      |            | 0.850      | 1.080      |            | 0.974      |

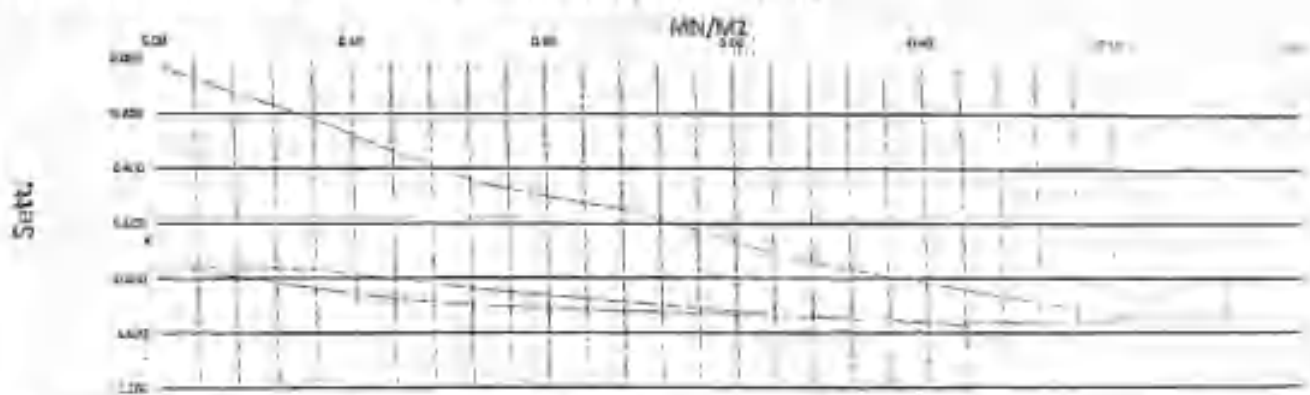
| Load Step | Load  | Settlement | Settlement | Settlement |
|-----------|-------|------------|------------|------------|
| 0.000     | 0.0   | 0.000      | 0.000      | 0.000      |
| 1.000     | 2.1   | 0.001      | 0.001      | 0.001      |
| 2.000     | 17.1  | 0.008      | 0.008      | 0.008      |
| 3.000     | 34.2  | 0.016      | 0.016      | 0.016      |
| 4.000     | 51.3  | 0.025      | 0.025      | 0.025      |
| 5.000     | 70.5  | 0.033      | 0.033      | 0.033      |
| 6.000     | 89.8  | 0.042      | 0.042      | 0.042      |
| 7.000     | 106.8 | 0.050      | 0.050      | 0.050      |
| 8.000     | 124.4 | 0.055      | 0.055      | 0.055      |
| 9.000     | 142.7 | 0.052      | 0.052      | 0.052      |
| 10.000    | 161.0 | 0.041      | 0.041      | 0.041      |
| 11.000    | 179.3 | 0.038      | 0.038      | 0.038      |
| 12.000    | 197.6 | 0.036      | 0.036      | 0.036      |
| 13.000    | 215.9 | 0.028      | 0.028      | 0.028      |
| 14.000    | 234.2 | 0.023      | 0.023      | 0.023      |
| 15.000    | 252.5 | 0.022      | 0.022      | 0.022      |

|            |      |  |  |
|------------|------|--|--|
| Settlement | 1.00 |  |  |
|------------|------|--|--|

$E_s = 0.73 \cdot D \cdot \ln \left( \frac{L}{D} \right)$

- $E_s$  = deformation modulus
- $D$  = load increment
- $D_s$  = settlement increment
- $D$  = diameter of the plate, generally 0.30 m

For this calculation  $E_s$  and  $D_s$  are usually taken from the load split between 0.3 m and 0.7 m.



|                 |                    |                      |
|-----------------|--------------------|----------------------|
| Lab. Specialist | Lab. Engineer      | Consultant Engineer  |
| Name:           | NAME: AHMED HALEEM | Name: Youssef Rashed |
| Sign:           | Sign: [Signature]  | Sign: [Signature]    |





MINISTRY OF TRANSPORT AND PUBLIC WORKS  
GENERAL LABORATORY



GENERAL LABORATORY



GENERAL LABORATORY

GENERAL LABORATORY

Consultant Consultant

CENTRAL LAB

Engineering

Project

General

## Plate Load Test Results

Company Name

AL MOSTAFA

Location

524 + 500

To

524 + 640

Test Date

28-09-2023

Layer level

SUB BALLAST +0.00

Station

374+871

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.75$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\approx 0.02$  mm/min). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serves as counterweight for the hydraulic jack.

Diameter = 300mm

| Loadings  | Load  | Sett.  | Rate              | Load  | Sett. | Rate | Load  | Sett. | Rate | Load  | Sett. | Rate |
|-----------|-------|--------|-------------------|-------|-------|------|-------|-------|------|-------|-------|------|
| Stage No. | Size  | kN     | kN/m <sup>2</sup> | mm    | mm    | mm   | mm    | mm    | mm   | mm    | mm    | mm   |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00 | 20.00 |      | 0.000 | 0.000 |      | 0.000 |       |      |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.04 | 19.07 |      | 0.020 | 0.030 |      | 0.025 |       |      |
| 2.000     | 17.1  | 5.652  | 0.04              | 19.04 | 19.75 |      | 0.120 | 0.250 |      | 0.185 |       |      |
| 3.000     | 34.2  | 11.304 | 0.10              | 19.75 | 19.56 |      | 0.250 | 0.440 |      | 0.345 |       |      |
| 4.000     | 51.3  | 17.663 | 0.25              | 19.64 | 19.34 |      | 0.300 | 0.600 |      | 0.570 |       |      |
| 5.000     | 70.5  | 23.315 | 0.33              | 19.44 | 19.24 |      | 0.540 | 0.760 |      | 0.660 |       |      |
| 6.000     | 88.8  | 28.673 | 0.42              | 19.34 | 19.07 |      | 0.660 | 0.930 |      | 0.795 |       |      |
| 7.000     | 108.8 | 35.325 | 0.50              | 19.20 | 18.80 |      | 0.800 | 1.100 |      | 0.950 |       |      |
| 8.000     | 134.4 | 43.663 | 0.62              | 19.20 | 19.03 |      | 0.740 | 0.970 |      | 0.855 |       |      |
| 9.000     | 167.1 | 54.315 | 0.71              | 19.31 | 19.10 |      | 0.800 | 0.900 |      | 0.795 |       |      |
| 10.000    | 2.1   | 0.707  | 0.01              | 19.46 | 19.30 |      | 0.520 | 0.700 |      | 0.610 |       |      |
| 11.000    | 2.1   | 0.707  | 0.01              | 19.18 | 19.30 |      | 0.520 | 0.700 |      | 0.610 |       |      |
| 12.000    | 17.1  | 5.652  | 0.04              | 19.44 | 19.28 |      | 0.540 | 0.740 |      | 0.630 |       |      |
| 13.000    | 34.2  | 11.304 | 0.10              | 19.33 | 19.29 |      | 0.670 | 0.800 |      | 0.735 |       |      |
| 14.000    | 51.3  | 17.663 | 0.25              | 19.28 | 19.13 |      | 0.720 | 0.870 |      | 0.795 |       |      |
| 15.000    | 70.5  | 23.315 | 0.33              | 19.24 | 19.05 |      | 0.780 | 0.950 |      | 0.855 |       |      |
| 16.000    | 88.8  | 28.673 | 0.42              | 19.18 | 19.00 |      | 0.820 | 1.000 |      | 0.910 |       |      |

|                      | $\alpha$ | $\beta$ | $\gamma$ |
|----------------------|----------|---------|----------|
| 0.2 $\sigma_1$       | 0.35     | 0.4073  | 0.4437   |
| 0.3 $\sigma_1$       | 0.44     | 0.511   |          |
| 0.7 $\sigma_1$       | 0.55     | 0.6032  | 0.6732   |
| 0.3 $\sigma_2$       | 0.15     | 0.60    |          |
| $D$ (mm)             | 300      |         |          |
| $E_v$                | 114.58   |         |          |
| $E_v$                | 253.82   |         |          |
| $\sigma_{max}$ (kPa) | 0.8700   |         |          |

|        |      |  |  |
|--------|------|--|--|
| Excess | 1.00 |  |  |
|--------|------|--|--|

$$E_v = 0.71 - D \cdot \ln \frac{1}{0.4}$$

$E_v$  = deformation modulus

$\Delta \sigma$  = load increment

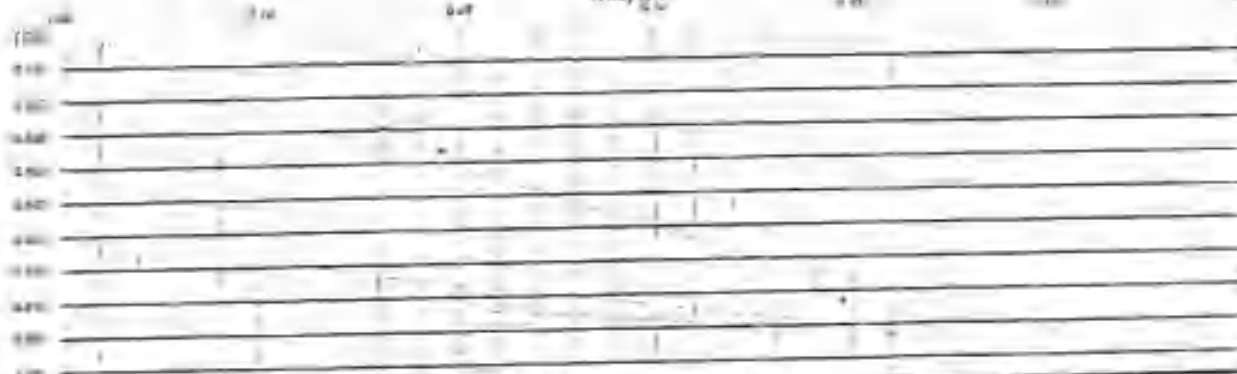
$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta \sigma$  and  $\Delta s$  are usually taken from the load step between 0.7  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

MM/M2

Sett.



Lab. Specialist

Name:

Sign:

Lab. Engineer

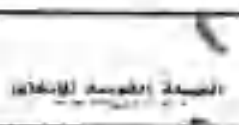
Name: AHMED HALEEM

Sign:

Consultant Engineer

Name: Youssef Rashed

Sign:



|                                |                       |             |            |       |
|--------------------------------|-----------------------|-------------|------------|-------|
| Owner/Consultant               | Contractor/Consultant | CENTRAL LAB | Contractor | Owner |
| <b>Plate Load Test Results</b> |                       |             |            |       |
| Company Name                   |                       | AL MOSTAFA  |            |       |
| Location                       | 524 + 500             | To          | 524 + 640  |       |
| Test Date                      | 28-09-2023            |             |            |       |
| Layer level                    | SUB BALLAST +0.90     |             |            |       |

|         |         |
|---------|---------|
| Station | 524+505 |
|---------|---------|

### EQUIPMENT AND TEST PROCEDURE

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading   | Test  | Load   | Area            | Rate 1 | Rate 2 | Rate 3 | Rate 4 | Rate 5 | Rate 6 | Rate 7 | Rate 8 |
|-----------|-------|--------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Stage No. | No.   | kN     | mm <sup>2</sup> | mm     | mm     | mm     | mm     | mm     | mm     | mm     | mm     |
| 0.000     | 0.0   | 0.000  | 0.00            | 20.00  | 20.00  |        | 0.000  | 0.000  |        | 0.000  |        |
| 1.000     | 2.1   | 0.707  | 0.01            | 19.92  | 19.91  |        | 0.080  | 0.030  |        | 0.055  |        |
| 2.000     | 17.1  | 5.652  | 0.08            | 19.60  | 19.70  |        | 0.400  | 0.300  |        | 0.350  |        |
| 3.000     | 34.2  | 11.304 | 0.16            | 19.25  | 19.43  |        | 0.750  | 0.570  |        | 0.690  |        |
| 4.000     | 51.3  | 17.463 | 0.25            | 18.90  | 19.45  |        | 1.100  | 0.350  |        | 0.825  |        |
| 5.000     | 70.5  | 23.315 | 0.33            | 18.70  | 19.27  |        | 1.390  | 0.730  |        | 1.015  |        |
| 6.000     | 89.8  | 29.673 | 0.42            | 18.50  | 19.13  |        | 1.500  | 0.870  |        | 1.185  |        |
| 7.000     | 108.8 | 35.325 | 0.50            | 18.25  | 18.90  |        | 1.750  | 1.100  |        | 1.425  |        |
| 8.000     | 127.8 | 41.363 | 0.58            | 18.30  | 19.03  |        | 1.700  | 0.970  |        | 1.335  |        |
| 9.000     | 146.7 | 47.811 | 0.67            | 18.43  | 19.06  |        | 1.570  | 0.960  |        | 1.255  |        |
| 10.000    | 165.6 | 54.659 | 0.76            | 18.62  | 19.11  |        | 1.380  | 0.890  |        | 1.135  |        |
| 11.000    | 184.5 | 61.507 | 0.85            | 18.63  | 19.10  |        | 1.290  | 0.900  |        | 1.145  |        |
| 12.000    | 203.4 | 68.355 | 0.94            | 18.50  | 19.08  |        | 1.500  | 0.920  |        | 1.210  |        |
| 13.000    | 222.3 | 75.203 | 1.03            | 18.40  | 19.05  |        | 1.600  | 0.930  |        | 1.275  |        |
| 14.000    | 241.2 | 82.051 | 1.12            | 18.30  | 19.03  |        | 1.700  | 0.970  |        | 1.335  |        |
| 15.000    | 260.1 | 88.899 | 1.21            | 18.25  | 19.00  |        | 1.750  | 1.000  |        | 1.375  |        |

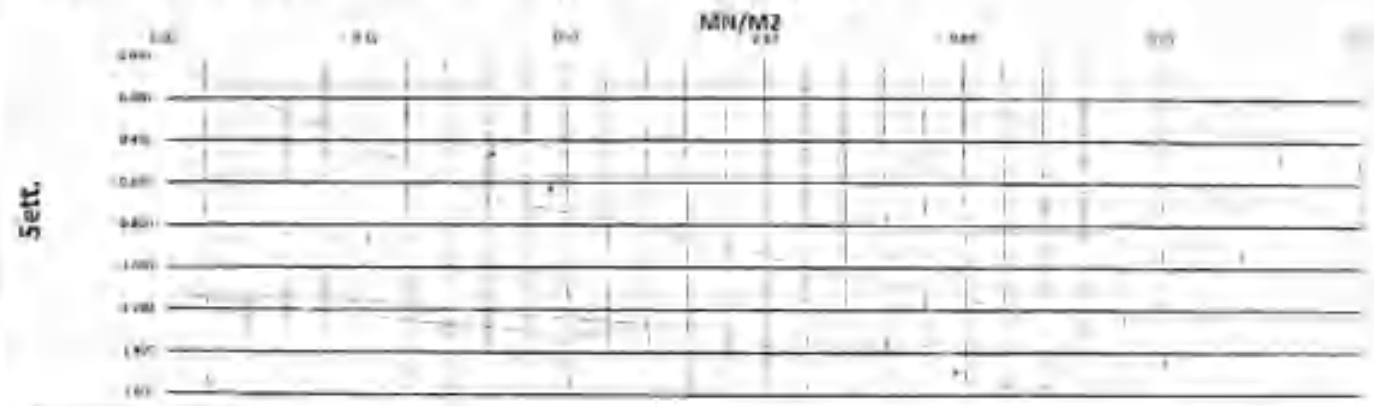
|                | $\alpha$ | $\beta$ | $\gamma$ |
|----------------|----------|---------|----------|
| 0.7 $\alpha_1$ | 0.35     | 0.975   | 0.35375  |
| 0.3 $\alpha_2$ | 0.15     | 0.82125 |          |
| 0.7 $\alpha_3$ | 0.35     | 1.34389 | 0.18895  |
| 0.3 $\alpha_4$ | 0.15     | 1.133   |          |
| D (mm)         | 300      |         |          |
| $E_{v1}$       | 127.21   |         |          |
| $E_{v2}$       | 238.24   |         |          |
| Area (sq.m)    | 0.07065  |         |          |

|     |      |  |  |
|-----|------|--|--|
| EV1 | 1.01 |  |  |
|-----|------|--|--|

$$E_v = \frac{d \cdot D}{D - d} \cdot \frac{d \cdot r}{d \cdot r}$$

- $E_v$  = deformation modulus
- $D$  = load increment
- $d$  = settlement increment
- $D$  = diameter of the plate, generally 0.30 m

For this calculation  $d$  and  $\alpha$  are usually taken from the load span between 0.3  $\alpha_{max}$  and 0.7  $\alpha_{max}$ .



|                |                    |                     |
|----------------|--------------------|---------------------|
| Lab Specialist | Lab Engineer       | Consultant Engineer |
| Name:          | Name: AHMED HALEEM | Name: F. ALI RASHID |
| Sign:          | Sign: [Signature]  | Sign: [Signature]   |





|                    |                       |             |         |      |
|--------------------|-----------------------|-------------|---------|------|
| Project Consultant | Contractor Consultant | CENTRAL LAB | Company | Name |
|--------------------|-----------------------|-------------|---------|------|

|                         |                   |    |           |
|-------------------------|-------------------|----|-----------|
| Plate Load Test Results |                   |    |           |
| Company Name            | AL MOSTAFA        |    |           |
| Location                | 524 + 500         | To | 524 + 640 |
| Test Date               | 1-10-2023         |    |           |
| Layer level             | SUB BALLAST +0.90 |    |           |

|         |         |
|---------|---------|
| Station | 524+575 |
|---------|---------|

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end i.e. 0.02 mm/minute. After the maximum load is reached the unloading procedure can begin. After this, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweights for the hydraulic jack.

Diameter = 300mm

| Load Step | Load (kN) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) |
|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.000     | 0.0       | 0.000           | 0.00            | 20.00           | 20.00           |                 | 0.000           | 0.000           |                 | 0.000           |                 |
| 1.000     | 2.1       | 0.707           | 0.01            | 19.80           | 19.87           |                 | 0.200           | 0.130           |                 | 0.165           |                 |
| 2.000     | 17.1      | 3.652           | 0.08            | 19.43           | 19.52           |                 | 0.570           | 0.480           |                 | 0.525           |                 |
| 3.000     | 34.2      | 11.304          | 0.16            | 19.21           | 19.31           |                 | 0.790           | 0.690           |                 | 0.740           |                 |
| 4.000     | 51.3      | 17.663          | 0.25            | 19.07           | 19.21           |                 | 0.930           | 0.790           |                 | 0.860           |                 |
| 5.000     | 70.5      | 23.315          | 0.33            | 18.98           | 19.08           |                 | 1.100           | 0.920           |                 | 1.010           |                 |
| 6.000     | 89.8      | 29.673          | 0.42            | 18.81           | 18.99           |                 | 1.190           | 1.010           |                 | 1.100           |                 |
| 7.000     | 106.8     | 35.323          | 0.50            | 18.62           | 18.80           |                 | 1.400           | 1.200           |                 | 1.360           |                 |
| 8.000     | 121.4     | 42.663          | 0.55            | 18.65           | 18.83           |                 | 1.350           | 1.170           |                 | 1.280           |                 |
| 9.000     | 126.7     | 48.831          | 0.62            | 18.81           | 18.89           |                 | 1.090           | 1.110           |                 | 1.130           |                 |
| 10.000    | 121.4     | 42.663          | 0.55            | 18.83           | 18.97           |                 | 1.050           | 1.030           |                 | 1.040           |                 |
| 11.000    | 106.8     | 35.323          | 0.50            | 18.91           | 18.94           |                 | 1.090           | 1.060           |                 | 1.075           |                 |
| 12.000    | 91.4      | 27.663          | 0.45            | 18.83           | 18.92           |                 | 1.170           | 1.080           |                 | 1.123           |                 |
| 13.000    | 76.5      | 23.315          | 0.33            | 18.68           | 18.85           |                 | 1.320           | 1.150           |                 | 1.300           |                 |
| 14.000    | 61.3      | 17.663          | 0.25            | 18.62           | 18.82           |                 | 1.380           | 1.180           |                 | 1.280           |                 |

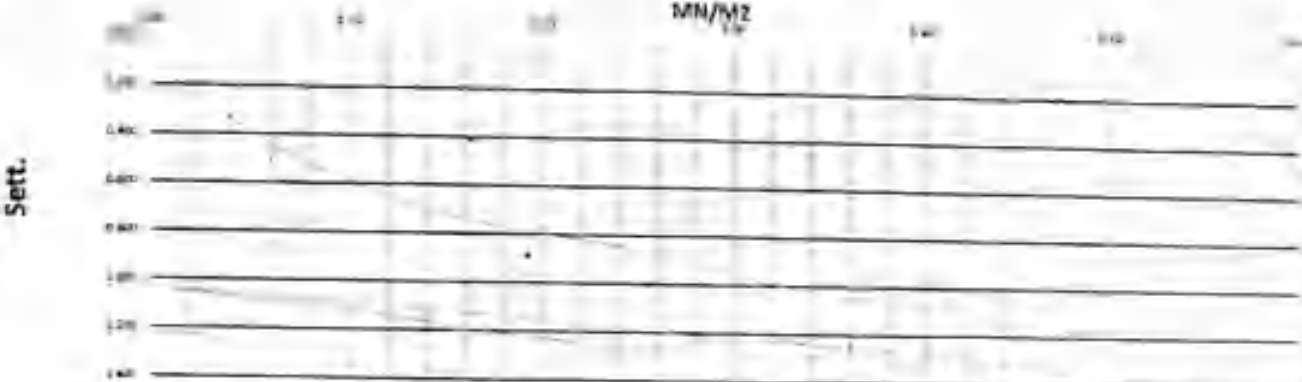
| Load Step   | Load (kN) | Settlement (mm) | Settlement (mm) | Settlement (mm) | Settlement (mm) |
|-------------|-----------|-----------------|-----------------|-----------------|-----------------|
| 0.7         | 0.35      | 0.025           | 0.23186         | 0.2             |                 |
| 0.3         | 0.15      | 0.01313         | 0.135           | 0.2             |                 |
| 0.7         | 0.35      | 0.025           | 0.135           | 0.2             |                 |
| 0.3         | 0.15      | 0.013           | 0.135           | 0.2             |                 |
| D (mm)      | 300       |                 |                 |                 |                 |
| $E_v$       | 211.35    |                 |                 |                 |                 |
| $E_v$       | 333.34    |                 |                 |                 |                 |
| Area (sq.m) | 0.07068   |                 |                 |                 |                 |

|        |      |  |  |
|--------|------|--|--|
| Factor | 1.07 |  |  |
|--------|------|--|--|

$$E_v = 0.13 \cdot D \cdot \ln \left( \frac{D}{d} \right)$$

- $E_v$  = deformation modulus
- $D_v$  = load increment
- $D_s$  = settlement increment
- $D$  = diameter of the plate, generally 0.30 m

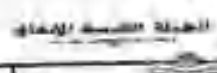
For this calculation  $d$  and  $d_v$  are usually taken from the load step between 0.3 m and 0.7 m.



|                 |                    |                     |
|-----------------|--------------------|---------------------|
| Lab. Specialist | Lab. Engineer      | Consultant Engineer |
| Name: _____     | Name: AHMED HALEEM | Name: JAMIL RASHID  |
| Sign: _____     | Sign: _____        | Sign: _____         |







|                                |                       |             |            |       |
|--------------------------------|-----------------------|-------------|------------|-------|
| Client Organization            | Contract Organization | CENTRAL LAB | Contractor | Open  |
| <b>Plate Load Test Results</b> |                       |             |            |       |
| Company Name                   | AL MOSTAFA            |             |            |       |
| Location                       | 524 + 500             | To          | 524 + 840  | Scale |
| Test Date                      | 1-10-2023             |             |            |       |
| Layer level                    | SUB BALLAST +0.90     |             |            |       |

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\approx 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Load     | Load  | Load   | Load   | Load   | Load   | Load   | Load   | Load   | Load   | Load   | Load   |
|----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Step No. | Bar   | Stress | Strain | Stress | Strain | Stress | Strain | Stress | Strain | Stress | Strain |
| 0.000    | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  | 0.000  |
| 1.000    | 2.1   | 0.707  | 0.01   | 19.89  | 19.89  | 0.010  | 0.010  | 0.010  | 0.010  | 0.010  | 0.010  |
| 2.000    | 17.1  | 5.652  | 0.08   | 19.72  | 19.75  | 0.280  | 0.250  | 0.285  | 0.285  | 0.285  | 0.285  |
| 3.000    | 34.2  | 11.304 | 0.16   | 19.57  | 19.27  | 0.630  | 0.730  | 0.680  | 0.680  | 0.680  | 0.680  |
| 4.000    | 51.3  | 17.663 | 0.25   | 19.35  | 19.11  | 0.850  | 0.890  | 0.870  | 0.870  | 0.870  | 0.870  |
| 5.000    | 70.5  | 23.313 | 0.33   | 19.03  | 18.83  | 0.970  | 1.150  | 1.060  | 1.060  | 1.060  | 1.060  |
| 6.000    | 89.8  | 29.673 | 0.42   | 18.85  | 18.65  | 1.150  | 1.350  | 1.250  | 1.250  | 1.250  | 1.250  |
| 7.000    | 109.8 | 35.325 | 0.50   | 18.60  | 18.50  | 1.400  | 1.500  | 1.450  | 1.450  | 1.450  | 1.450  |
| 8.000    | 129.8 | 41.663 | 0.58   | 18.72  | 18.53  | 1.280  | 1.450  | 1.265  | 1.265  | 1.265  | 1.265  |
| 9.000    | 149.8 | 48.013 | 0.66   | 18.78  | 18.60  | 1.210  | 1.400  | 1.305  | 1.305  | 1.305  | 1.305  |
| 10.000   | 169.8 | 54.363 | 0.74   | 18.90  | 18.75  | 1.100  | 1.250  | 1.175  | 1.175  | 1.175  | 1.175  |
| 11.000   | 189.8 | 60.713 | 0.82   | 18.89  | 18.74  | 1.110  | 1.260  | 1.185  | 1.185  | 1.185  | 1.185  |
| 12.000   | 209.8 | 67.063 | 0.90   | 18.85  | 18.69  | 1.150  | 1.310  | 1.230  | 1.230  | 1.230  | 1.230  |
| 13.000   | 229.8 | 73.413 | 0.98   | 18.79  | 18.60  | 1.210  | 1.400  | 1.305  | 1.305  | 1.305  | 1.305  |
| 14.000   | 249.8 | 79.763 | 0.98   | 18.72  | 18.52  | 1.290  | 1.480  | 1.380  | 1.380  | 1.380  | 1.380  |
| 15.000   | 269.8 | 86.113 | 0.98   | 18.60  | 18.40  | 1.400  | 1.600  | 1.500  | 1.500  | 1.500  | 1.500  |

| Load               | Load   | Load    | Load   | Load   | Load   | Load   | Load   | Load   | Load   | Load   | Load   |
|--------------------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Step No.           | Bar    | Stress  | Strain | Stress | Strain | Stress | Strain | Stress | Strain | Stress | Strain |
| 0.7 $\sigma_{max}$ | 0.35   | 1.075   | 0.0000 | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    |
| 0.5 $\sigma_{max}$ | 0.15   | 0.42833 | 0.0000 | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    |
| 0.7 $\sigma_{max}$ | 0.35   | 1.40067 | 0.0000 | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    |
| 0.5 $\sigma_{max}$ | 0.15   | 0.42833 | 0.0000 | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    | 0.2    |
| D (mm)             | 300    |         |        |        |        |        |        |        |        |        |        |
| $E_s$              | 100.70 |         |        |        |        |        |        |        |        |        |        |
| $E_y$              | 212.80 |         |        |        |        |        |        |        |        |        |        |
| Area (sq. mm)      | 0.0000 |         |        |        |        |        |        |        |        |        |        |

|      |      |  |  |
|------|------|--|--|
| Load | 2.51 |  |  |
|------|------|--|--|

$$E_s = 0.75 \cdot D \cdot \sigma_{max} / \epsilon_s$$

$E_s$  = deformation modulus

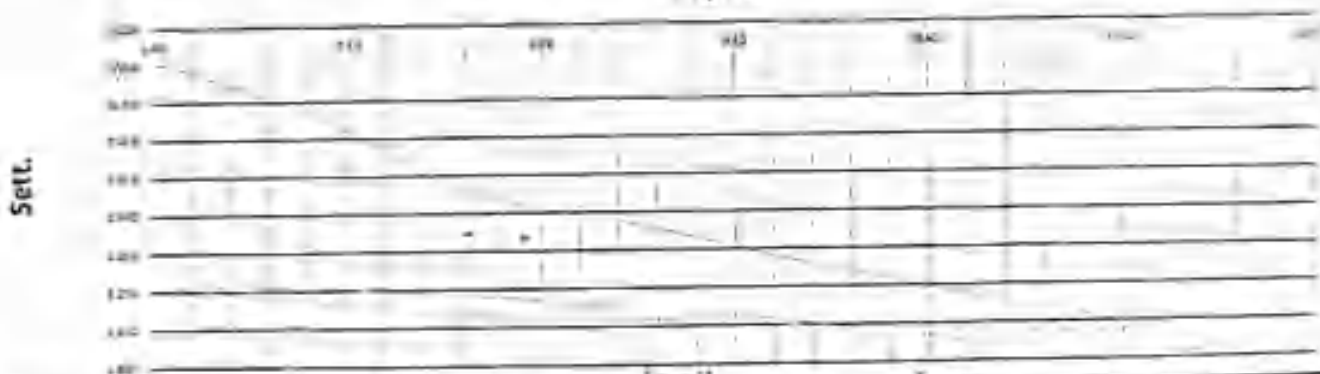
$\Delta\sigma$  = load increment

$\Delta\epsilon$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\sigma_{max}$  and  $\epsilon_s$  are usually taken from the load span between 0.1  $\sigma_{max}$  and 0.7  $\sigma_{max}$

MN/M2



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : AHMED NALEEM

Sign :

Consultant Engineer

Name : Fawaz Khatib

Sign :

Sign :



|                                                                                   |                                                                                  |                                                                                  |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| (Project Consultant)                                                              | Contractor (Licensed)                                                            | CENTRAL LAB                                                                      | Contractor                                                                          | Name                                                                                |
| <b>Plate Load Test Results</b>                                                    |                                                                                  |                                                                                  |                                                                                     |                                                                                     |
| Company Name                                                                      |                                                                                  | AL MOSTAFA                                                                       |                                                                                     |                                                                                     |
| Location                                                                          | 524 + 610                                                                        | To                                                                               | 524 + 700                                                                           |                                                                                     |
| Test Date                                                                         | 28-09-2023                                                                       |                                                                                  |                                                                                     |                                                                                     |
| Layer level                                                                       | SUB BALLAST +0.90                                                                |                                                                                  |                                                                                     |                                                                                     |
| <b>EQUIPMENT AND TEST PROCEDURE :</b>                                             |                                                                                  |                                                                                  |                                                                                     |                                                                                     |

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.40$  m and  $D = 0.75$  m are used

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable and ( $\geq 0.02$  mm/second). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack

Diameter = 300mm

| Loading  | Load  | Load   | Stress            | Dist 1 | Dist 2 | Dist 3 | Sett. 1 | Sett. 2 | Sett. 3 | Avg. Sett. |
|----------|-------|--------|-------------------|--------|--------|--------|---------|---------|---------|------------|
| Stage No | Bar   | KN     | kN/m <sup>2</sup> | mm     | mm     | mm     | mm      | mm      | mm      | mm         |
| 0.000    | 0.0   | 0.000  | 0.00              | 20.00  | 20.00  |        | 0.000   | 0.000   |         | 0.000      |
| 1.000    | 2.1   | 0.707  | 0.01              | 19.96  | 19.95  |        | 0.040   | 0.050   |         | 0.045      |
| 2.000    | 17.1  | 5.652  | 0.08              | 19.90  | 19.64  |        | 0.100   | 0.360   |         | 0.230      |
| 3.000    | 34.2  | 11.304 | 0.16              | 19.80  | 19.32  |        | 0.200   | 0.680   |         | 0.440      |
| 4.000    | 51.3  | 17.663 | 0.25              | 19.75  | 19.07  |        | 0.250   | 0.930   |         | 0.590      |
| 5.000    | 70.5  | 23.315 | 0.33              | 19.70  | 18.80  |        | 0.300   | 1.200   |         | 0.750      |
| 6.000    | 89.8  | 29.673 | 0.42              | 19.61  | 18.60  |        | 0.390   | 1.400   |         | 0.895      |
| 7.000    | 109.8 | 35.325 | 0.50              | 19.50  | 18.43  |        | 0.500   | 1.570   |         | 1.035      |
| 8.000    | 129.4 | 41.663 | 0.55              | 19.03  | 18.58  |        | 0.570   | 1.420   |         | 0.895      |
| 9.000    | 149.7 | 48.831 | 0.62              | 19.68  | 18.73  |        | 0.320   | 1.290   |         | 0.805      |
| 10.000   | 169.7 | 55.867 | 0.69              | 19.72  | 18.96  |        | 0.280   | 1.020   |         | 0.650      |
| 11.000   | 189.7 | 62.767 | 0.75              | 19.72  | 18.98  |        | 0.280   | 1.020   |         | 0.650      |
| 12.000   | 209.7 | 69.631 | 0.81              | 19.69  | 18.93  |        | 0.310   | 1.070   |         | 0.690      |
| 13.000   | 229.7 | 76.467 | 0.87              | 19.64  | 18.81  |        | 0.360   | 1.190   |         | 0.775      |
| 14.000   | 249.7 | 83.267 | 0.92              | 19.60  | 18.73  |        | 0.400   | 1.270   |         | 0.835      |
| 15.000   | 269.7 | 89.931 | 0.97              | 19.57  | 18.59  |        | 0.430   | 1.410   |         | 0.920      |
| 16.000   | 289.7 | 96.567 | 1.02              | 19.53  | 18.45  |        | 0.470   | 1.550   |         | 1.010      |

|                | $\sigma$ | $\Delta s$ | $\Delta s$ | $\Delta s$ |
|----------------|----------|------------|------------|------------|
| 0.7 $\sigma_1$ | 0.25     | 0.7753     | 0.51873    | 0.2        |
| 0.3 $\sigma_2$ | 0.15     | 0.9373     |            |            |
| 0.7 $\sigma_3$ | 0.25     | 0.94       | 0.21       | 0.2        |
| 0.3 $\sigma_4$ | 0.15     | 0.73       |            |            |
| D (mm)         | 300      |            |            |            |
| $E_{av}$       | 125.44   |            |            |            |
| $E_{av}$       | 214.28   |            |            |            |
| Area (Sq.m)    | 0.07068  |            |            |            |

|         |     |  |  |
|---------|-----|--|--|
| Modulus | (%) |  |  |
|---------|-----|--|--|

$$E_{av} = 0.71 \cdot D \cdot \Delta s / \Delta s$$

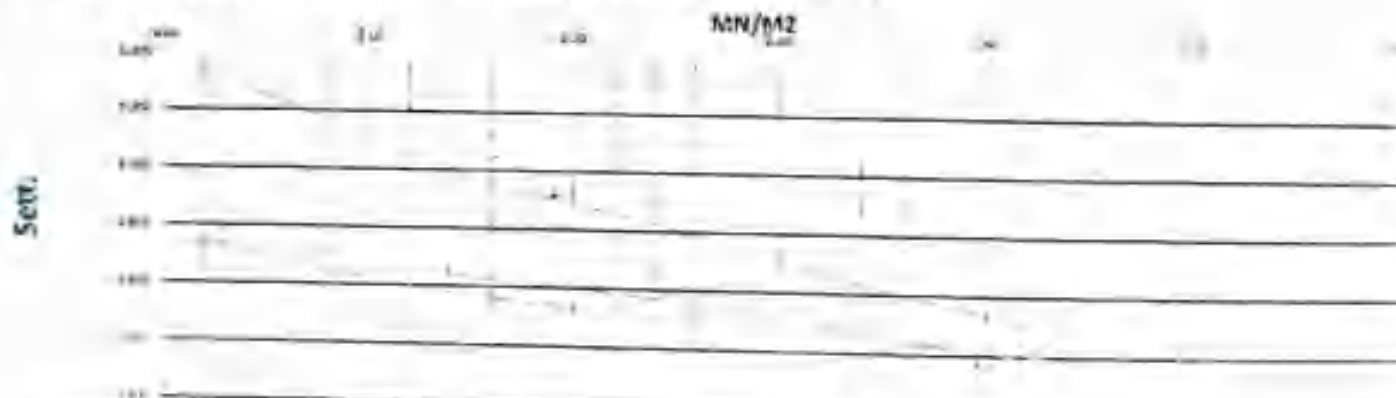
$E_{av}$  = deformation modulus

$\Delta s$  = load increment

$\Delta s$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\Delta s_1$  and  $\Delta s_2$  are usually taken from the load span between 0.3  $\sigma_{avg}$  and 0.7  $\sigma_{avg}$



|                |                         |                                  |
|----------------|-------------------------|----------------------------------|
| Lab Specialist | Lab Engineer            | Consultant Engineer              |
| Name :         | Name : AHMED HALEEM     | Name : <i>Youssef R. Al-Hadi</i> |
| Sign :         | Sign : <i>A. Haleem</i> | Sign : <i>Y. Al-Hadi</i>         |





Owner Committee

Contractor Committee

CENTRAL LAB

Contractor

Inspector

## Plate Load Test Results

|              |                   |    |           |
|--------------|-------------------|----|-----------|
| Company Name | AL MOSTAFA        |    |           |
| Location     | 524 + 640         | To | 524 + 760 |
| Test Date    | 1-10-2023         |    |           |
| Layer level  | SUB BALLAST +0.90 |    |           |

|         |         |
|---------|---------|
| Station | 524+733 |
|---------|---------|

## EQUIPMENT AND TEST PROCEDURE

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a trailer usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Loading Stage No. | Load kN | Load kN | Stress kN/m <sup>2</sup> | Sett. mm | Sett. mm | Sett. mm | Sett. 1 mm | Sett. 2 mm | Sett. 3 mm | Avg Sett. mm |
|-------------------|---------|---------|--------------------------|----------|----------|----------|------------|------------|------------|--------------|
| 0.000             | 0.0     | 0.000   | 0.00                     | 20.00    | 20.00    |          | 0.000      | 0.000      |            | 0.000        |
| 1.000             | 2.1     | 0.707   | 0.01                     | 19.99    | 19.97    |          | 0.010      | 0.030      |            | 0.020        |
| 2.000             | 17.1    | 5.652   | 0.08                     | 19.97    | 19.94    |          | 0.030      | 0.060      |            | 0.045        |
| 3.000             | 34.2    | 11.303  | 0.16                     | 19.88    | 19.80    |          | 0.120      | 0.120      |            | 0.120        |
| 4.000             | 51.3    | 17.061  | 0.25                     | 19.80    | 19.82    |          | 0.200      | 0.180      |            | 0.190        |
| 5.000             | 70.5    | 23.115  | 0.33                     | 19.72    | 19.74    |          | 0.260      | 0.260      |            | 0.270        |
| 6.000             | 89.8    | 29.673  | 0.42                     | 19.58    | 19.68    |          | 0.410      | 0.320      |            | 0.365        |
| 7.000             | 106.8   | 35.315  | 0.50                     | 19.51    | 19.60    |          | 0.490      | 0.400      |            | 0.445        |
| 8.000             | 123.8   | 41.063  | 0.59                     | 19.56    | 19.64    |          | 0.440      | 0.360      |            | 0.400        |
| 9.000             | 140.8   | 46.811  | 0.67                     | 19.68    | 19.71    |          | 0.360      | 0.280      |            | 0.325        |
| 10.000            | 157.8   | 52.559  | 0.76                     | 19.78    | 19.85    |          | 0.220      | 0.150      |            | 0.185        |
| 11.000            | 174.8   | 58.307  | 0.84                     | 19.79    | 19.85    |          | 0.220      | 0.150      |            | 0.185        |
| 12.000            | 191.8   | 64.055  | 0.93                     | 19.70    | 19.83    |          | 0.300      | 0.170      |            | 0.235        |
| 13.000            | 208.8   | 69.803  | 1.01                     | 19.65    | 19.81    |          | 0.350      | 0.190      |            | 0.270        |
| 14.000            | 225.8   | 75.551  | 1.10                     | 19.60    | 19.76    |          | 0.400      | 0.240      |            | 0.320        |
| 15.000            | 242.8   | 81.299  | 1.18                     | 19.50    | 19.71    |          | 0.500      | 0.290      |            | 0.395        |
| 16.000            | 259.8   | 87.047  | 1.27                     | 19.45    | 19.61    |          | 0.550      | 0.390      |            | 0.470        |

|                        | $\sigma$ | $\Delta$ | $\Delta/\sigma$ |
|------------------------|----------|----------|-----------------|
| 0.7 $\sigma_1$         | 0.33     | 0.211    | 0.18438         |
| 0.5 $\sigma_1$         | 0.15     | 0.1061   |                 |
| 0.3 $\sigma_1$         | 0.08     | 0.04187  |                 |
| 0.1 $\sigma_1$         | 0.03     | 0.02501  | 0.12505         |
| $D$ (mm)               | 300      |          |                 |
| $E_v$                  | 244.87   |          |                 |
| $E_v$                  | 121.28   |          |                 |
| Area / mm <sup>2</sup> | 94248    |          |                 |

|            |      |  |  |
|------------|------|--|--|
| Sett. (mm) | 1.00 |  |  |
|------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \Delta / \sigma \cdot A$$

$E_v$  = deformation modulus

$\sigma_1$  = load increment

$\Delta$  = settlement increment

$D$  = diameter of the plate, generally 0.30 m

For this calculation  $\sigma_1$  and  $\Delta$  are usually taken from the load span between 0.3  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

MN/M<sup>2</sup>

Sett.

Lab. Specialist

Name:

Sign:

Lab. Engineer

Name:

AHMED HALEEM

Sign:

Consultant Engineer

Name:

Y. ALI F. R. 2023

Sign:

Y. ALI F. R. 2023

|                         |                   |            |           |
|-------------------------|-------------------|------------|-----------|
| Plate Load Test Results |                   |            |           |
| Company Name            |                   | AL MOSTAFA |           |
| Location                | 524 + 640         | To         | 524 + 760 |
| Test Date               | 28-09-2023        |            |           |
| Layer level             | SUB BALLAST +0.00 |            |           |

Project
524-715

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.60$  m and  $D = 0.762$  m are used.

The load is applied in 6 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\leq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serves as counterweight for the hydraulic jack.

Diameter = 300mm

| Load Step | Load  | Load   | Stress            | Total | Total | Total | Sett  | Sett  | Sett | Sett  |
|-----------|-------|--------|-------------------|-------|-------|-------|-------|-------|------|-------|
| Step No   | No    | kN     | N/mm <sup>2</sup> | mm    | mm    | mm    | mm    | mm    | mm   | mm    |
| 0.000     | 0.0   | 0.000  | 0.00              | 20.00 | 20.00 |       | 0.000 | 0.000 |      | 0.000 |
| 1.000     | 2.1   | 0.707  | 0.01              | 19.98 | 19.97 |       | 0.020 | 0.020 |      | 0.023 |
| 2.000     | 17.1  | 5.652  | 0.08              | 19.75 | 19.50 |       | 0.250 | 0.500 |      | 0.375 |
| 3.000     | 24.2  | 11.301 | 0.16              | 19.62 | 19.15 |       | 0.380 | 0.850 |      | 0.615 |
| 4.000     | 53.3  | 17.603 | 0.25              | 19.32 | 18.92 |       | 0.480 | 1.080 |      | 0.780 |
| 5.000     | 70.5  | 23.315 | 0.33              | 19.43 | 18.60 |       | 0.550 | 1.400 |      | 0.875 |
| 6.000     | 89.8  | 29.623 | 0.42              | 19.37 | 18.46 |       | 0.630 | 1.560 |      | 1.083 |
| 7.000     | 106.8 | 35.325 | 0.50              | 19.20 | 18.38 |       | 0.800 | 1.760 |      | 1.250 |
| 8.000     | 53.3  | 17.603 | 0.25              | 19.28 | 18.33 |       | 0.710 | 1.670 |      | 1.190 |
| 9.000     | 26.7  | 8.811  | 0.12              | 19.43 | 18.37 |       | 0.570 | 1.630 |      | 1.100 |
| 9.000     | 2.1   | 0.707  | 0.01              | 19.51 | 18.38 |       | 0.470 | 1.410 |      | 0.940 |
| 10.000    | 2.1   | 0.707  | 0.01              | 19.53 | 18.59 |       | 0.470 | 1.410 |      | 0.940 |
| 11.000    | 17.1  | 5.652  | 0.08              | 19.32 | 19.52 |       | 0.480 | 1.470 |      | 0.975 |
| 12.000    | 34.2  | 11.304 | 0.16              | 19.48 | 18.46 |       | 0.520 | 1.540 |      | 1.050 |
| 13.000    | 53.3  | 17.603 | 0.25              | 19.44 | 18.32 |       | 0.560 | 1.680 |      | 1.120 |
| 14.000    | 70.5  | 23.315 | 0.33              | 19.40 | 18.25 |       | 0.600 | 1.750 |      | 1.175 |
| 15.000    | 89.8  | 29.623 | 0.42              | 19.32 | 18.18 |       | 0.680 | 1.820 |      | 1.250 |

| 0.7 $\sigma_1$ | 0.35   | 0.94002 | 0.35502 | 0.2 |
|----------------|--------|---------|---------|-----|
| 0.3 $\sigma_1$ | 0.15   | 0.380   |         |     |
| 0.7 $\sigma_2$ | 0.35   | 1.19187 | 0.16180 | 0.2 |
| 0.3 $\sigma_2$ | 0.15   | 1.01    |         |     |
| $D$ (mm)       | 300    |         |         |     |
| $E_{vj}$       | 125.54 |         |         |     |
| $E_{vj}$       | 247.71 |         |         |     |
| Area (Sq.m)    | 0.0900 |         |         |     |

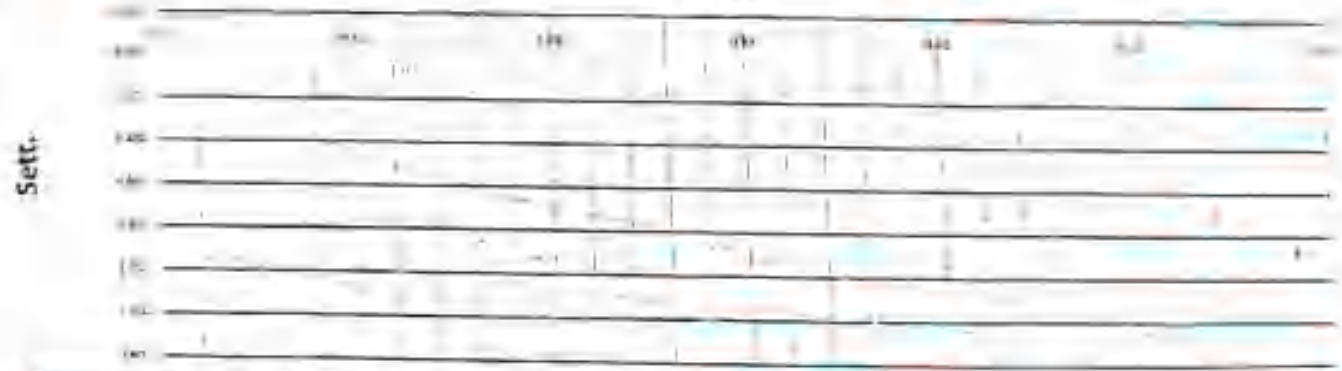
Settlement
1.88

$E_p = 0.75 \cdot D \cdot \sigma_1 / \delta_1$

- $E_p$  = deformation modulus
- $\sigma_1$  = load increment
- $\delta_1$  = settlement increment
- $D$  = diameter of the plate; generally 0.30 m

For this calculation  $\sigma_1$  and  $\delta_1$  are usually taken from the load span between 0.3  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

kN/m<sup>2</sup>



Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : AHMED HALEEM

Sign : *[Signature]*

Consultant Engineer

Name : *[Signature]*

Sign : *[Signature]*



|                                |                      |             |            |       |
|--------------------------------|----------------------|-------------|------------|-------|
| Owner Committee                | Contractor Committee | CENTRAL LAB | Contractor | Times |
| <b>Plate Load Test Results</b> |                      |             |            |       |
| Company Name                   |                      | AL MOSTAFA  |            |       |
| Location                       | 524 + 640            | To          | 524 + 760  |       |
| Test Date                      | 1-10-2023            |             |            |       |
| Layer level                    | SUB BALLAST +0.90    |             |            |       |

Station: 524+895

**EQUIPMENT AND TEST PROCEDURE :-**

The diameter,  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.80$  m and  $D = 0.762$  m are used

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $\leq 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack

Diameter = 300mm

| Load               | Load | Load   | Stress | Final | Final | Final | Sett. 1 | Sett. 2 | Sett. 3 | Avg Sett |
|--------------------|------|--------|--------|-------|-------|-------|---------|---------|---------|----------|
| kg/cm <sup>2</sup> | Bar  | kN     | MPa    | mm    | mm    | mm    | mm      | mm      | mm      | mm       |
| 0.000              | 0.0  | 0.000  | 0.00   | 20.90 | 20.00 |       | 0.000   | 0.000   |         | 0.000    |
| 1.000              | 2.1  | 0.707  | 0.01   | 19.85 | 19.90 |       | 0.150   | 0.100   |         | 0.125    |
| 2.000              | 4.1  | 1.414  | 0.02   | 19.63 | 19.60 |       | 0.370   | 0.400   |         | 0.385    |
| 3.000              | 6.2  | 2.121  | 0.03   | 19.41 | 19.40 |       | 0.590   | 0.600   |         | 0.595    |
| 4.000              | 8.3  | 2.828  | 0.04   | 19.22 | 19.21 |       | 0.780   | 0.790   |         | 0.785    |
| 5.000              | 10.3 | 3.535  | 0.05   | 19.10 | 19.04 |       | 0.900   | 0.900   |         | 0.930    |
| 6.000              | 12.4 | 4.242  | 0.06   | 19.01 | 18.94 |       | 0.990   | 1.000   |         | 1.025    |
| 7.000              | 14.5 | 4.949  | 0.07   | 18.90 | 18.80 |       | 1.100   | 1.200   |         | 1.150    |
| 8.000              | 16.6 | 5.656  | 0.08   | 18.94 | 18.85 |       | 1.060   | 1.150   |         | 1.105    |
| 9.000              | 18.7 | 6.363  | 0.09   | 18.94 | 18.90 |       | 0.960   | 1.100   |         | 1.030    |
| 10.000             | 20.8 | 7.070  | 0.10   | 18.97 | 18.91 |       | 0.830   | 0.890   |         | 0.860    |
| 11.000             | 22.9 | 7.777  | 0.11   | 18.97 | 18.91 |       | 0.830   | 0.890   |         | 0.860    |
| 12.000             | 25.0 | 8.484  | 0.12   | 18.94 | 18.97 |       | 0.870   | 1.030   |         | 0.950    |
| 13.000             | 27.1 | 9.191  | 0.13   | 18.98 | 18.95 |       | 0.920   | 1.070   |         | 0.995    |
| 14.000             | 29.2 | 9.898  | 0.14   | 18.90 | 18.87 |       | 1.000   | 1.130   |         | 1.065    |
| 15.000             | 31.3 | 10.605 | 0.15   | 18.92 | 18.81 |       | 1.080   | 1.190   |         | 1.135    |

|                | $\sigma$ | $\delta S$ | $\delta \sigma$ |
|----------------|----------|------------|-----------------|
| 0.7 $\sigma_1$ | 0.15     | 0.81582    | 0.34667         |
| 0.3 $\sigma_1$ | 0.15     | 0.58875    |                 |
| 0.7 $\sigma_2$ | 0.25     | 1.08056    | 0.16855         |
| 0.3 $\sigma_2$ | 0.15     | 0.82       |                 |
| D (mm)         | 300      |            |                 |
| $E_v$          | 129.72   |            |                 |
| $E_v$          | 280.28   |            |                 |
| Area (sq. cm)  | 0.07065  |            |                 |

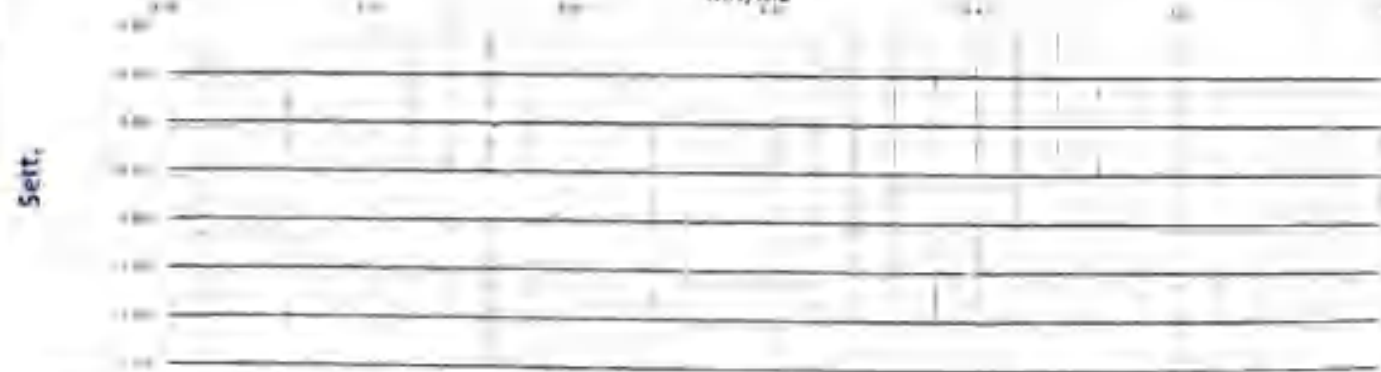
$E_v = 0.75 - D - \delta \sigma / \delta S$

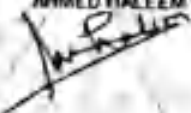
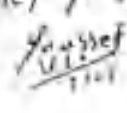
$$E_v = 0.75 - D - \delta \sigma / \delta S$$

- $E_v$  = deformation modulus
- $D$  = load increment
- $\delta \sigma$  = settlement increment
- $D$  = diameter of the plate, generally 0.30 m

For this calculation  $\delta \sigma$  and  $\delta S$  are security values from the load steps between 0.3  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

MN/M<sup>2</sup>



|                                                     |                                                                                                                                        |                                                                                                                                                  |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lab Specialist</b><br>Name: _____<br>Sign: _____ | <b>Lab Engineer</b><br>Name: AHMED HALEEM<br>Sign:  | <b>Consultant Engineer</b><br>Name: Youssef Rajab<br>Sign:  |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|





ENGINEERING CONSULTANCY OFFICE  
Ministry of Transport, Government of Egypt



CENTRAL LAB



CONSULTANT



CLIENT

|                                |                      |             |           |                                                                                                   |       |
|--------------------------------|----------------------|-------------|-----------|---------------------------------------------------------------------------------------------------|-------|
| Order Conditions               | Customer Description | CENTRAL LAB |           | Contractor                                                                                        | Order |
| <b>Plate Load Test Results</b> |                      |             |           |                                                                                                   |       |
| Company Name                   | AL MOSTAFA           |             |           |                                                                                                   |       |
| Location                       | 524 + 640            | To          | 524 + 760 | <div style="border: 1px solid black; padding: 2px;">             Station 524+685           </div> |       |
| Test Date                      | 1-10-2023            |             |           |                                                                                                   |       |
| Layer level                    | SUB BALLAST +0.90    |             |           |                                                                                                   |       |

### EQUIPMENT AND TEST PROCEDURE :-

The diameter  $D$  of the plate is generally 0.30 m. For very coarse grained material also plates with diameter  $D = 0.80$  m and  $D = 0.753$  m are used.

The load is applied in 8 load increments of equal size. Under each load step the settlement must come to a noticeable end ( $< 0.02$  mm/minute). After the maximum load is reached the unloading procedure can begin. After that, the plate is reloaded in 5 steps. A loaded truck, an excavator or a roller usually serve as counterweight for the hydraulic jack.

Diameter = 300mm

| Load      | Load  | Load   | Settle | Dist 1 | Dist 2 | Dist 3 | Sett 1 | Sett 2 | Sett 3 | Avg Sett |
|-----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| Stage No. | Bar   | KN     | mm/min | mm     | mm     | mm     | mm     | mm     | mm     | mm       |
| 0.000     | 0.0   | 0.000  | 0.00   | 20.00  | 20.00  |        | 0.000  | 0.000  |        | 0.000    |
| 1.000     | 2.1   | 0.707  | 0.01   | 19.85  | 19.95  |        | 0.050  | 0.050  |        | 0.050    |
| 2.000     | 17.1  | 5.652  | 0.08   | 18.70  | 19.86  |        | 0.300  | 0.140  |        | 0.220    |
| 3.000     | 34.2  | 11.304 | 0.16   | 19.40  | 19.52  |        | 0.400  | 0.480  |        | 0.440    |
| 4.000     | 51.3  | 17.863 | 0.25   | 19.57  | 19.30  |        | 0.430  | 0.700  |        | 0.565    |
| 5.000     | 70.5  | 23.315 | 0.33   | 19.15  | 19.70  |        | 0.650  | 0.800  |        | 0.725    |
| 6.000     | 89.8  | 29.873 | 0.42   | 19.25  | 19.07  |        | 0.750  | 0.970  |        | 0.840    |
| 7.000     | 108.8 | 35.325 | 0.50   | 19.15  | 18.93  |        | 0.850  | 1.070  |        | 0.950    |
| 8.000     | 127.8 | 41.883 | 0.58   | 19.16  | 18.90  |        | 0.920  | 1.020  |        | 0.920    |
| 9.000     | 146.7 | 48.441 | 0.67   | 19.21  | 18.84  |        | 0.790  | 0.960  |        | 0.875    |
| 10.000    | 165.7 | 54.999 | 0.76   | 19.33  | 19.15  |        | 0.670  | 0.850  |        | 0.760    |
| 11.000    | 184.7 | 61.557 | 0.85   | 19.35  | 19.15  |        | 0.670  | 0.850  |        | 0.760    |
| 12.000    | 203.7 | 68.115 | 0.94   | 19.32  | 19.14  |        | 0.680  | 0.860  |        | 0.770    |
| 13.000    | 222.7 | 74.673 | 1.03   | 19.26  | 19.07  |        | 0.740  | 0.930  |        | 0.835    |
| 14.000    | 241.7 | 81.231 | 1.12   | 19.21  | 19.01  |        | 0.790  | 0.890  |        | 0.800    |
| 15.000    | 260.7 | 87.789 | 1.21   | 19.18  | 18.95  |        | 0.820  | 1.050  |        | 0.935    |
| 16.000    | 279.7 | 94.347 | 1.30   | 19.15  | 18.91  |        | 0.850  | 1.090  |        | 0.970    |

| Load           | Load   | Load   | Settle  | Dist 1 | Dist 2 | Dist 3 | Sett 1 | Sett 2 | Sett 3 | Avg Sett |
|----------------|--------|--------|---------|--------|--------|--------|--------|--------|--------|----------|
| 0.7 $\sigma_1$ | 0.25   | 0.735  | 0.3335  |        |        |        |        |        |        | 0.2      |
| 0.3 $\sigma_2$ | 0.15   | 0.4125 |         |        |        |        |        |        |        |          |
| 0.7 $\sigma_3$ | 0.35   | 0.9475 | 0.16275 |        |        |        |        |        |        | 0.2      |
| 0.3 $\sigma_4$ | 0.15   | 0.79   |         |        |        |        |        |        |        |          |
| D (mm)         | 300    |        |         |        |        |        |        |        |        |          |
| $E_v$          | 128.27 |        |         |        |        |        |        |        |        |          |
| $E_v$          | 276.45 |        |         |        |        |        |        |        |        |          |
| Area (sq.m)    | 0.0706 |        |         |        |        |        |        |        |        |          |

|                     |      |  |  |
|---------------------|------|--|--|
| $\sigma_1/\sigma_2$ | 1.66 |  |  |
|---------------------|------|--|--|

$$E_v = 0.75 \cdot D \cdot \sigma_1 / \sigma_2$$

$E_v$  = deformation modulus

$D$  = load increment

$\sigma_1$  = settlement increment

$\sigma_2$  = diameter of the plate, generally 0.30 m

For this calculation  $\sigma_1$  and  $\sigma_2$  are usually taken from the load step between 0.2  $\sigma_{max}$  and 0.7  $\sigma_{max}$ .

MM/MPa

Sett.

Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : AHMED HALEEM

Sign :

Consultant Engineer

Name : F. A. A. R. A. A. A.

Sign :



مشروع: أعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع  
( العين السخنة - العاصمة الادارية - العلمين - مطروح ) قطاع فوكة مطروح

محضر تحديد مسافة نقل (الأتربة)

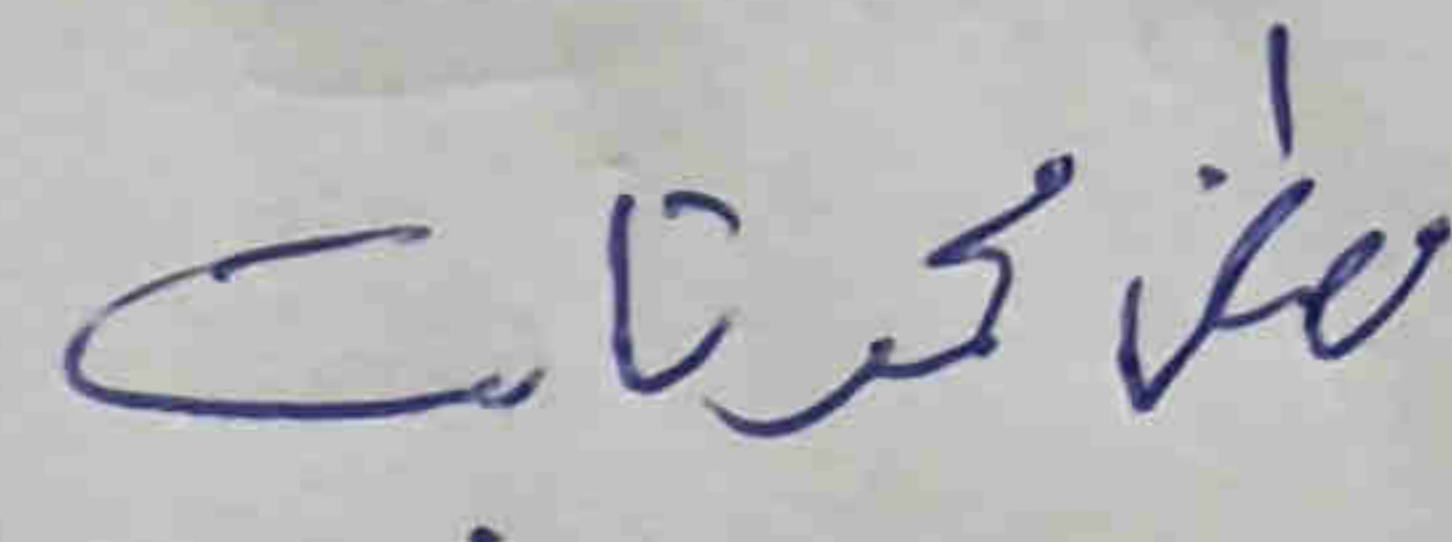
أنه في يوم الأحد الموافق 2023/9/10 وبناءً على طلب شركة المصطفى للمقاولات لتحديد مسافة نقل الأتربة من محجر (المصرية) على طريق وادي النطرون العلمين للمشروع المذكور أعلاه تم زيارة المحجر من قبل :

1. المهندس / حسن عبدالسلام سليمان مهندس جيولوجي مكتب د. خالد قنديل
2. المهندس / مصطفى محمد ثابت مدير مشروع شركة المصطفى للمقاولات

وتبين أن المحجر على مسافة 302.5 كم من منتصف قطاع شركة المصطفى للمقاولات

إحداثي المحجر : E 29° 45' 06.7" N 30° 33' 19.7"

وعلى ذلك تم التوقيع,,,

2. 

1. حسن عبد السلام حسن



مشروع: أعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع  
( العين السخنة - العاصمة الادارية - العلمين - مطروح ) قطاع فوكة مطروح

محضر تحديد مسافة نقل (طبقة التأسيس)

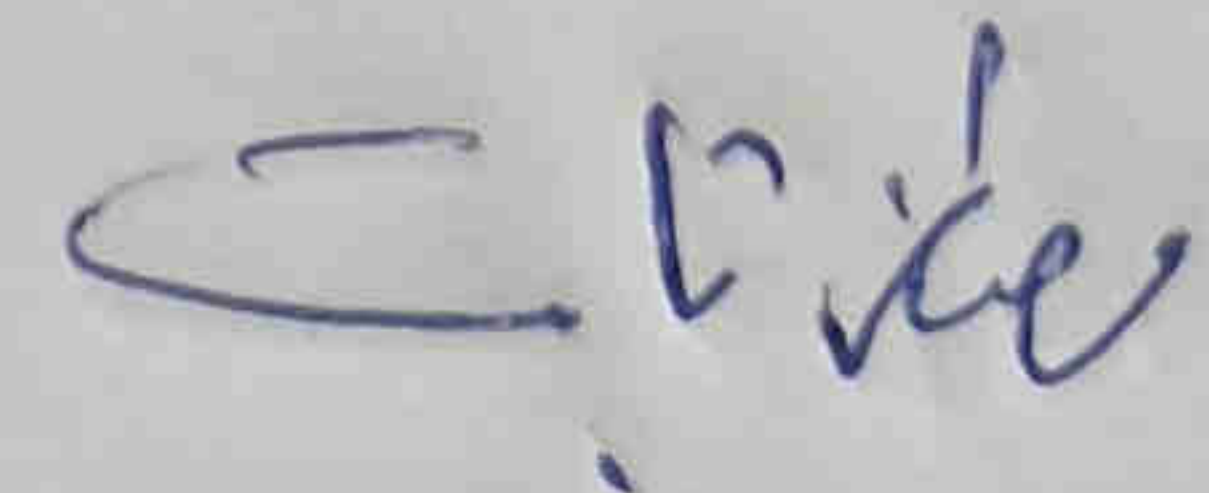
انه في يوم الأحد الموافق 2023/9/10 وبناءً على طلب شركة المصطفى للمقاولات لتحديد مسافة نقل  
طبقة التأسيس للمشروع المذكور أعلاه تم زيارة الكسارة من قبل :

1. المهندس / أحمد أبوزيد مهندس جيولوجي مكتب د. خالد قنديل
2. المهندس / مصطفى محمد ثابت مدير مشروع شركة المصطفى للمقاولات

وتبين أن الكسارة على مسافة 83 كم من منتصف قطاع شركة المصطفى للمقاولات

إحداثي الكسارة : E 29° 42' 28" N 36° 38' 33"

وعلى ذلك تم التوقيع,,,

2. 

1. أحمد أبوزيد



مشروع: أعمال الجسر الترابي والاعمال الصناعية لمشروع القطار الكهربائي السريع  
( العين السخنة - العاصمة الادارية - العلمين - مطروح ) قطاع فوكة مطروح

محضر تحديد مسافة نقل (طبقة الأساس)

أنه في يوم الأحد الموافق 2023/9/10 وبناءً على طلب شركة المصطفى للمقاولات لتحديد مسافة نقل  
طبقة الأساس للمشروع المذكور أعلاه تم زيارة الكسارة من قبل :

1. المهندس / عبدالله سامي
2. المهندس / مصطفى محمد ثابت
- مهندس جيولوجي مكتب د. خالد قنديل
- مدير مشروع شركة المصطفى للمقاولات

وتبين أن الكسارة على مسافة 233 كم من منتصف قطاع شركة المصطفى للمقاولات

إحداثي الكسارة : N 36° 38' 33" E 29° 42' 28"

وعلى ذلك تم التوقيع,,,

2. م. محمد ثابت

1. عبدالله سامي