محضر اعتماد حصر كميات

التاريخ :١٤/١١/٢٠٢٣
اسم المشروع :مشروع القطار الكهربائى السريع (٦اكتوبر -اسوان -ابوسمبل)القطاع الخامس

قامت شركة سبكترم كونلت للاستشارات الهندسية المساحية (استشارى الاعمال المساحية لهيئة الطرق والكبارى)

باعتماد الكميات المنفذة الخاصة بشركة عبد الرحمن للتنمية الزراعية والعقارية والمقاولات
القطاع الذى تم الحصر فيه من الكم ٦٧١+٧٨٠ الى ٦٧٢+٧٨٠ بطول ١ كم

عقد (٢٠٢٣/٤٠٨/٢٠٢٤) بتاريخ ١/١٠/٢٠٢٣

م	من المحطة رقم	الى المحطة رقم	التصنيف	الكمية بالمتر المكعب	الملاحظات
1	671+780	672+190	ردم ترية	58440.19	ردم على REV05
2	672+640	672+780	ردم ترية	15209.34	ردم على REV05
اجمالى الكمية				73649.53	

حصر جارى (٢)
المرفقات :
استلام ميزانية شهرية
قطاعات عرضية
شيت اكسيل موضح به الكميات

مكتب استشارى اسبكترم

استشارى المساحة

مهندس الشركة المنفذة

توضيح اعمال الحصر

شركة عبد الرحمن للتنمية الزراعية والعقارية والمقاولات

جدول توضيح اعمال الحصر				
الرقم	من المحطة	الى المحطة	الكمية	REV
1	671+780	672+190	58440.19	REV 05
2	672+630	672+780	15209.34	REV 05
الاجمالي			73649.53	

مهندس الشركة المنفذة

شركة عبدالرحمن
للتنمية الزراعية و العقارية و المقاولات

استشارى المساحة

مكتب استشارى اسبكترم

سبكترم للاستشارات الهندسية
Spectrum Consulting
مشروع القنطرة الشرقية

توضيح اعمال الحفر (صفحة ١)

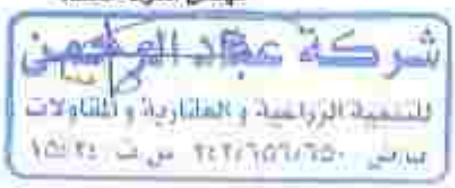
شركة عبد الرحمن للتنمية الزراعية والعقارية والمقاولات

شيت موضح به الكميات				
الرقم	المحطة	Fill area	Fill volume	cum.Fill vol.
1	671+780.00	94.92	474.59	474.59
2	671+790.00	166.24	1305.78	1780.37
3	671+800.00	166.16	1661.99	3442.36
4	671+810.00	166.75	1664.54	5106.9
5	671+820.00	166.1	1664.25	6771.15
6	671+830.00	164.39	1652.46	8423.61
7	671+840.00	162.36	1633.74	10057.35
8	671+850.00	160.18	1612.69	11670.04
9	671+860.00	158.51	1593.48	13263.52
10	671+870.00	157.09	1578.03	14841.55
11	671+880.00	155.91	1565	16406.55
12	671+890.00	155.07	1554.91	17961.46
13	671+900.00	154.96	1550.16	19511.62
14	671+910.00	155.57	1552.67	21064.29
15	671+920.00	157.19	1563.81	22628.1
16	671+930.00	159.73	1584.61	24212.71
17	671+940.00	160.38	1600.56	25813.27
18	671+950.00	159.63	1600.06	27413.33
19	671+960.00	152.18	1559.07	28972.4
20	671+970.00	141.41	1467.97	30440.37
21	671+980.00	130.73	1360.72	31801.09

مهندس الشركة المنفذة

مستشارى المصلحة

مكتب استشارى اسبكترم



توضيح أعمال الحصر (صفحة ٢)

شركة عباد الرحمن للتنمية الزراعية والعقارية والمقاولات

لميث موضح به الكميات				
الرقم	المحطة	Fill area	Fill volume	cum.Fill vol.
22	671+990.00	124.05	1273.9	33074.99
23	672+000.00	123.28	1236.66	34311.65
24	672+010.00	123.68	1234.82	35546.47
25	672+020.00	124.62	1241.5	36787.97
26	672+030.00	121.96	1232.92	38020.89
27	672+040.00	119.14	1205.53	39226.42
28	672+050.00	117.79	1184.66	40411.08
29	672+060.00	123.03	1204.12	41615.2
30	672+070.00	127.97	1255.01	42870.21
31	672+080.00	130.99	1294.77	44164.98
32	672+090.00	127.25	1291.16	45456.14
33	672+100.00	124.52	1258.82	46714.96
34	672+110.00	128.68	1266	47980.96
35	672+120.00	135.48	1320.82	49301.78
36	672+130.00	137.21	1363.47	50665.25
37	672+140.00	133.45	1353.3	52018.55
38	672+150.00	129.83	1316.41	53334.96
39	672+160.00	129	1294.15	54629.11
40	672+170.00	128.91	1289.51	55918.62
41	672+180.00	127.7	1283.02	57201.64
42	672+190.00	120.01	1238.55	58440.19
الاجمالي			58440.19	

مكتب استشارى اسبكترم

استشارى المساحة

مهندس الشركة المنفذة

شركة عباد الرحمن
للتنمية الزراعية والعقارية والمقاولات

Spectrum Consulting

توضيح اعمال الحصر (صفحة ٣)

شركة عبد الرحمن للتنمية الزراعية والطارية والمقاولات

شيت موضح به الكميات				
الرقم	المحطة	Fill area	Fill volume	cum.Fill vol.
1	672+640.00	117.2	1126.3	1126.3
2	672+650.00	117.86	1175.29	2301.59
3	672+660.00	112.62	1152.41	3454
4	672+670.00	103.84	1082.31	4536.31
5	672+680.00	96.54	1001.88	5538.19
6	672+690.00	90.92	937.3	6475.49
7	672+700.00	90.35	906.38	7381.87
8	672+710.00	91.94	911.46	8293.33
9	672+720.00	94.42	931.77	9226.1
10	672+730.00	97.76	960.88	10186.98
11	672+740.00	99.22	984.91	11170.89
12	672+750.00	102.36	1007.89	12178.78
13	672+760.00	107.93	1051.41	13230.19
14	672+770.00	112.27	1100.98	14331.17
15	672+780.00	63.36	878.17	15209.34
الجملى			15209.34	
الاجمالى الكلى			73649.53	

مهندس الشركة المنفذة

استشارى المساحة

مكتب استشارى امبكترم

مشروع القطار الكهربائي السريع القطاع الخامس

تكلفة شركة عبدالرحمن للتنمية الزراعية والعقارية والمقاولات

من الكم ٣٧٥٨٧٧٨٠ الى ٣٧٣٤٥٧٨٠ بطول ١ كيلو

بيان اصناف توطيني لمستخلص جاري ٢ حظ (٢٠٢١/٢٠٢٣-١٣٨٥/٢)

	الحظ	قيمة الحظ	المستخلص	عينات حفر في تربة عادية	عينات الحفر في تربة مشتركة	عينات الحفر في تربة صخرية للتعامل	كميات الحفر في تربة صخرية	عينات زلم
1	(52/2023/2024)	19.966.900	جاري ١	0	0	0	29406.83	0
3	(457/2023/2024)	19.990.855	جاري ١	21778.092	43556.184	43556.184	9656.86	0
			جاري ٢	4544.5	7240.658	7240.658	33768.025	0
4	(458/2023/2024)	19.990.855	جاري ١	13548.27	27690.54	27690.54	0	0
			جاري ٢	0	0	0	0	73649.53
اجمالي كميات تم حفرها			حظ ٥٢	0	0	0	29406.83	0
			حظ ٤٥٧	26422.592	50796.842	50796.842	43343.885	0
			حظ ٤٥٨	13548.27	27690.54	27690.54	0	73649.53
اجمالي كميات تم صرفها			حظ ٥٢	0	0	0	29406.83	0
			حظ ٤٥٧	23780.3328	45717.1578	45717.1578	39009.4965	0
			حظ ٤٥٨	12460.743	24921.486	24921.486	0	69967.0535
المتبقي من الكمية			حظ ٥٢	0	0	0	2940.683	0
			حظ ٤٥٧	2642.2592	5079.6842	5079.6842	4334.3885	0
			حظ ٤٥٨	1384.527	2769.054	2769.054	0	3682.4765

استشاري مكتب سيكاترم

م/

استشاري المساحة

م/

مهندس الشركة المنفذة

شركة عبدالرحمن للتنمية الزراعية والعقارية والمقاولات

شركة عباد الرحمن

السيد المهندس / رئيس الادارة المركزية للمنطقة الثامنة – قنا

تحية طيبة وبعد .....

بالإحالة الى اعمال انشاء الجسر الترابي للقطار السريع (أكتوبر – اوسيم) القطاع الخامس والى الاعمال المسندة الى شركة عباد الرحمن للتنمية الزراعية والعقارية والمقاولات

نتشرف ان نحيط علم سيادتكم ان الشركة مسند اليها اعمال في القطاع من 783+691الى 783+693بطول ٢ كم ومن ٧٨٠+٦٧١الى 780+672 بطول ١ كم ولذلك تم صدور أوامر اسناد الثلاث عقود هم

١-عقد من المسافة 783+692الى 133+693بطول ٠,٣٥٠ كم (٢٠٢٤/٢٠٢٣/٥٢) بتاريخ ٢٠٢٣/٧/١٢

٢- عقد من المسافة 283+693الى 533+693بطول ٠,٢٥٠ كم (٢٠٢٤/٢٠٢٣/٤٥٧) بتاريخ ٢٠٢٣/١٠/١

٣- عقد من المسافة 533+693 الى 783+693بطول ٠,٢٥٠ كم (٢٠٢٤/٢٠٢٣/٤٥٨) بتاريخ ٢٠٢٣/١٠/١

وحيث ان هذه العقود ضمن المسافة من 783+691الى 783+693والشركة قامت بالأعمال في المسافة من 780+671الى 780+672ولم يصدر لها امر اسناد

لذا نرجو من سيادتكم الموافقة على صرف الاعمال في المسافة 780+671الى 780+672 على أحد العقود الصادرة لنا حيث انها في نفس القطاع الخامس ولها نفس الاستشاري وذلك طبقا للمذكرة المعروضة على السيد اللواء رئيس الهيئة من السيد المهندس مدير عام تنفيذ الطرق والتي تم الموافقة عليها (مرفق)

الرجاء من سيادتكم لحو التكرم بالإحاطة والتنبيه باللازم.

وتفضلوا بقبول فائق التحية والتقدير .....

رئيس مجلس إدارة شركة عباد الرحمن

Type of sample : Soil Embankment
Delivery Date : 25/09/2018
Reporting Date : 27/09/2018
Reporting No. : 03

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

- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

Signature /

IAS
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Location : ST. 570+100 E=37.77-352 N= 55.659575

Type of sample : Soil Embankment

Delivery Date : 03/05/2023

Reporting Date : 07/05/2023

Reporting No :

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.52
1.27	0.050	1.57
1.91	0.075	2.64
2.54	0.100	3.61
3.18	0.125	4.51
3.81	0.150	5.17
4.45	0.175	5.68
5.08	0.200	5.98
6.35	0.250	6.09

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	52.3 %
	6.90	3.61	

Notes:

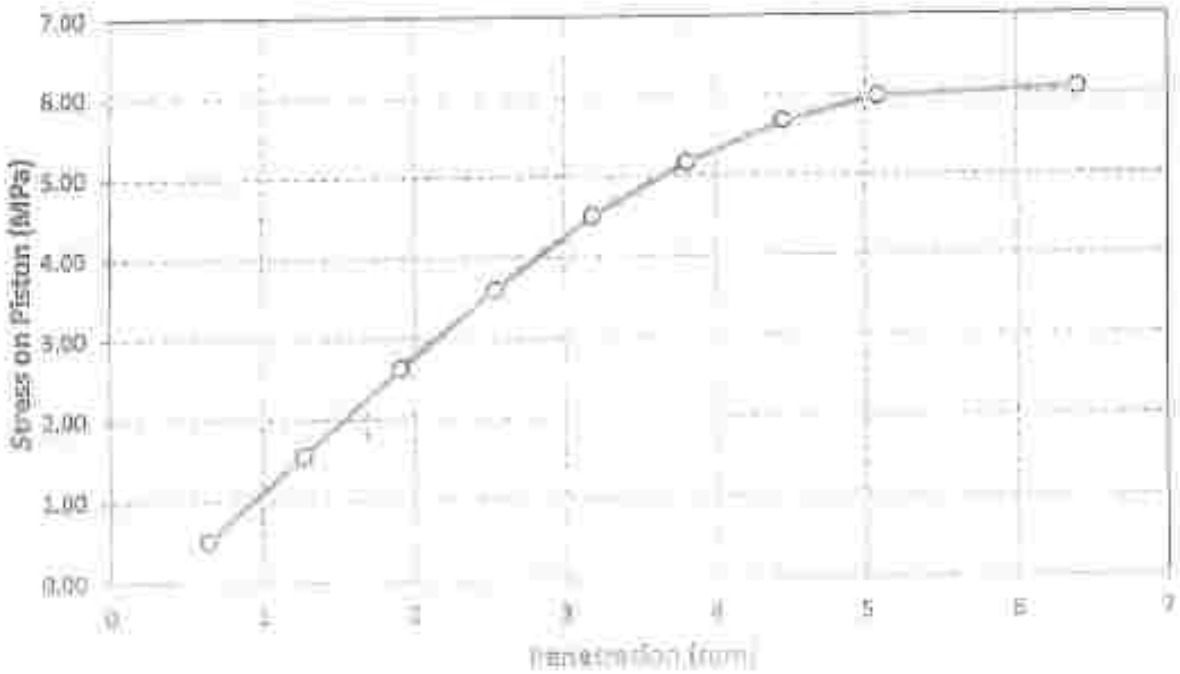
1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.21 (gm/cm³)
   At = 5.8 % optimum water content
3- Surcharge load 4.50 Kg
4- CBR ≥ 10 for middle and lower embankments according project spec page No 56.

Signature /

Project :
Location :
Type of Sample :
Delivery Date :
Reporting Date :
Reporting No. :

Load Penetration Curve of CBR Test

ASTM D-1883



Signature /

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 13/09/2023

Soil type : Middle Embankment - المستعدل

Location : ST From 672+640 to 672+680

Level : - 4.5 M

Report No. : 17

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+660	1601	2.24	5.8	2.12	95.9%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature :

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Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 18/09/2023
Soil type : Middle Embankment استعدال
Location : ST From 671+780 to 671+880
Level : - 5 M
Report No. : 18

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+820	1350	2.29	6.8	2.15	97.2%	Comply
2	671+860	1821	2.27	6.4	2.13	96.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature / .....

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 19/09/2023
Soil type : Middle Embankment
Location : ST From 671+900 to 671+980
Level : - 5 M
Report No. : 19

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671-930	1821	2.27	6.4	2.13	96.6%	Comply
2	671-960	1717	2.30	5.8	2.17	98.2%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature

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Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 20/09/2023
Soil type : Middle Embankment
Location : ST From 672+080 to 672+180
Level : - 3.5 M
Report No. : 20

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672-130	1924	2.28	6.8	2.13	96.5%	Comply
2	672-160	1683	2.28	6.4	2.15	97.1%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature /

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CEL

Consulting Engineering Bureau & Laboratories

مكتب هندسي للاستشارات والمختبرات

Company Name	: شركة جبة الرحمن
Project	: Electric Express Train – HSR From Qoss To Armant
Location	: ST: 672+180 E=32.77#5621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 14/9/2023
Reporting Date	: 19/9/2023
Reporting No.	: 01-4

Dear Gentleman ,

Attached here with the deilvered on 14 / 9 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

Signature /.....

IAS ACCREDITED

Project :
Location :
Type of sample :
Delivery Date :
Reporting Date :
Reporting #:

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.5
37.5	1.5	96.1
25	1	92.5
19	¾	84.1
12.50	½	77.7
9.50	3/8	69.8
4.75	4	60.0
2.00	10	46.9
0.425	40	28.6

Signature /.....

Company Name : شركة جهاد الرشيد
Project : Electric Express Train – HSR From Qouz To Amuant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 14/9/2023
Reporting Date : 19/9/2023
Reporting No. : 01-4

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.0

Signature /...

Location

Type of sample

Delivery Date

Reporting Date

Reporting No

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Signature /...

Location :

Type of Sample : Soil Sample

Delivery Date :

Reporting Date :

Reporting No. :

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	46.9	Max 50 %	----	----
0.425 mm (No. 40).	28.6	Max 30 %	Max 50 %	----
0.075 mm (No. 200).	9.0	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	----	----
Plastiolty index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature /

Location : [illegible]

Type of sample : [illegible]

Delivery Date : [illegible]

Reporting Date : [illegible]

Reporting No. : [illegible]

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

- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

Signature / [illegible]

Location

Type of sample

Delivery Date

Reporting Date

Reporting No

Test results of California Bearing Ratio on Base Materials

ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.63
1.91	0.075	2.72
2.54	0.100	3.65
3.18	0.125	4.57
3.81	0.150	5.25
4.45	0.175	5.77
5.08	0.200	6.04
6.35	0.250	6.35

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 Inch (2.54 mm) penetration	6.90	3.65	52.9 %

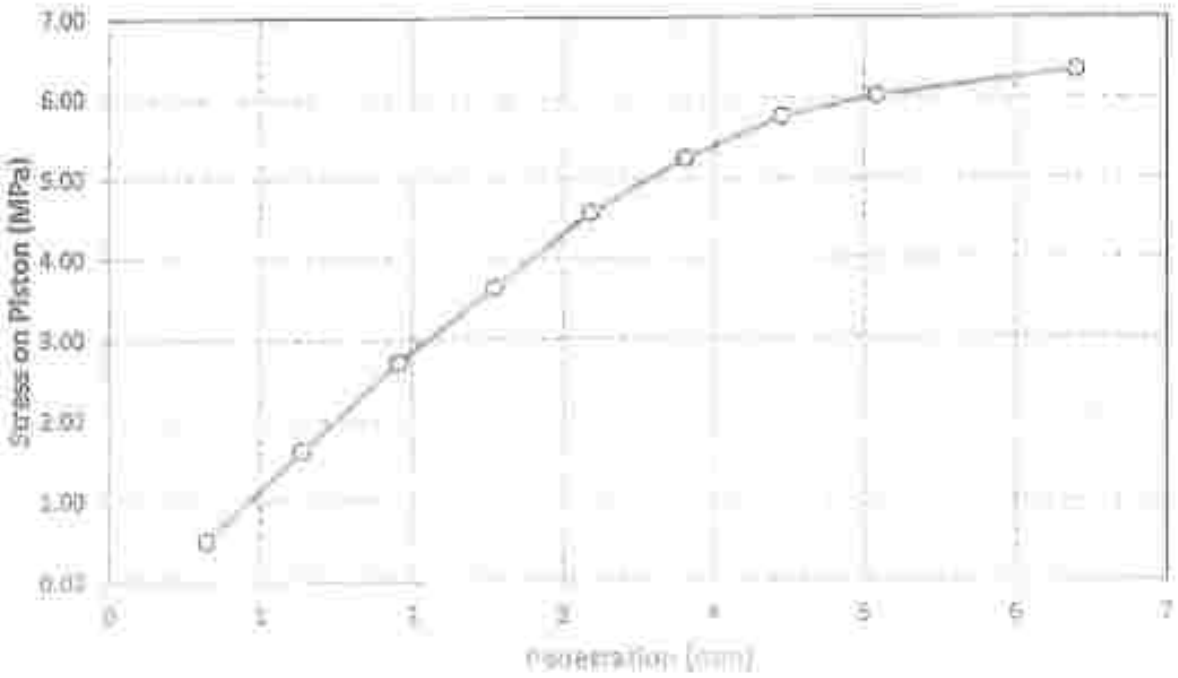
Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.21 (gm /cm^3)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec. page no 36.

Signature /

Project
Location
Type of Sample
Delivery Date
Reporting Date
Reporting No.

Load Penetration Curve of CBR Test
ASTM D-1883



Signature /

ACCREDITED

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 23/09/2023

Soil type : Middle Embankment

Location : ST From 672+020 TO 672+060

Level : - 3.5 M

Report No. : 21

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+030	1568	2.30	6.4	2.16	97.7%	Comply
2	672+056	1526	2.30	6	2.17	98.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature /.....

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Trnin – HSR From Qous To Armant
Testing Date : 23/09/2023
Soil type : Middle Embankment
Location : ST From 672+760 To 672+780
Level : - 4.5 M
Report No. : 21-2

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+770	1396	2.26	6.8	2.12	95.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 24/09/2023
Soil type : Middle Embankment
Location : ST From 672+640 TO 672+700
Level : - 4 M
Report No. : 22

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+670	1527	2.30	6.4	2.16	97.8%	Comply
2	672+695	1494	2.31	5.8	2.18	98.7%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 26/09/2023

Soil type : Middle Embankment

Location : ST From 672+700 To 672+780

Level : - 4 M

Report No. : 24

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+730	1624	2.30	6.4	2.16	97.9%	Comply
2	671+760	1771	2.24	6.4	2.11	95.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب هندسي للاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 2/10/2023

Soil type : Middle Embankment

Location : ST From 672+640 To 672+780

Level : - 3.5 M

Report No. : 27

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+660	2038	2.29	6.4	2.15	97.3%	Comply
2	672+700	2018	2.24	5.8	2.12	95.9%	Comply
3	672+740	1714	2.26	5.5	2.14	96.7%	Comply
4	672+760	1759	2.22	5.6	2.11	95.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب هندسي واختبارات

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 27/09/2023

Soil type : Middle Embankment

Location : ST From 672+020 TO 672+180

Level : - 3 M

Report No. : 25

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+060	1679	2.22	5.8	2.10	95.1%	Comply
2	672+100	1508	2.33	6.4	2.19	99.3%	Comply
3	672+135	1370	2.31	5.5	2.19	99.2%	Comply
4	672+175	1403	2.33	5.6	2.20	99.7%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 30/09/2023
Soil type : Middle Embankment
Location : ST From 671+900 To 671+980
Level : - 4.5M
Report No. : 26

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+925	1679	2.28	6.4	2.14	96.8%	Comply
2	671+941	1499	2.28	6	2.15	97.1%	Comply
3	671+975	1506	2.34	6.4	2.20	99.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب هندسي للاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 25/09/2023
Soil type : Middle Embankment
Location : ST From 671+780 TO 671+880
Level : - 4.5 M
Report No. : 23

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+820	1862	2.24	5.8	2.12	95.8%	Comply
2	671+865	1841	2.28	5.8	2.16	97.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Aroiani
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 21/9/2023
Reporting Date	: 26/9/2023
Reporting No.	: 01-5

Dear Gentleman,

Attached here with the delivered on 21 / 9 / 2023

This sample is representative for 5,000 M^3

Materials test

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

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

Signature /.....

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RESULTS OF SIEVE ANALYSIS ASTM D-422

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	96.8
37.5	1.5	90.2
25	1	84.3
19	¾	78.2
12.50	½	70.6
9.50	3/8	60.8
4.75	4	53.6
2.00	10	41.5
0.425	40	26.4

Signature /

CEL

Company Name : شركة جيه ال جي
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 6726180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 21/9/2023
Reporting Date : 26/9/2023
Reporting No. : 01-5

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	8.4

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

ACCREDITED

Type of Sample: [illegible]
Delivery Date: [illegible]
Reporting Date: [illegible]
Reporting No: [illegible]

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
- Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	41.5	Max 50 %	----	----
0.425 mm (No. 40).	28.4	Max 30 %	Max 50 %	----
0.075 mm (No. 200).	8.4	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	----	----
Plasticity Index	8	Max 6 %	Max 6 %	Max 10 %

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

Signature: [illegible]

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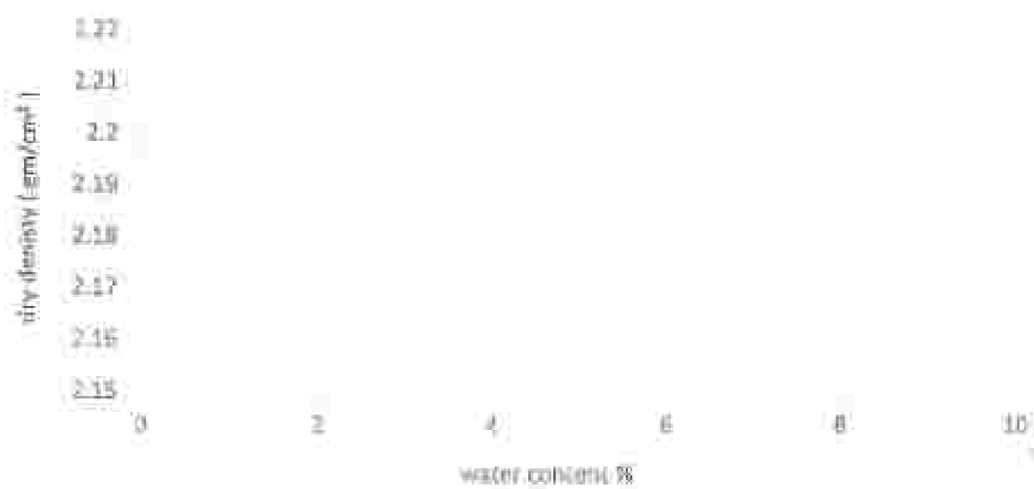
Type of sample : Soil Sample [illegible]

Delivery Date : [illegible]

Reporting Date : [illegible]

Reporting No. : [illegible]

<u>Moisture - Density relation of soil</u>
<u>Test result (Modified proctor test)</u>
<u>ASTM D 1557</u>



- Max dry density (gm/cm³) : [illegible]
- Optimum moisture content % : [illegible]

Signature / [illegible]

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Type of sample : Soil
Delivery Date :
Reporting Date :
Sampling By :

Test Results of California Bearing Ratio for Laboratory
ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.41
1.27	0.050	1.52
1.91	0.075	2.54
2.54	0.100	3.38
3.18	0.125	4.44
3.81	0.150	5.07
4.45	0.175	5.58
5.08	0.200	5.93
6.35	0.250	6.24

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 Inch (2.54 mm) penetration	St. Value	Sample results	49.0 %
	6.90	3.32	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.21 (gm /cm^3)
at = 5.8 % optimum water content.
3- Surcharge load =4.30 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 81.

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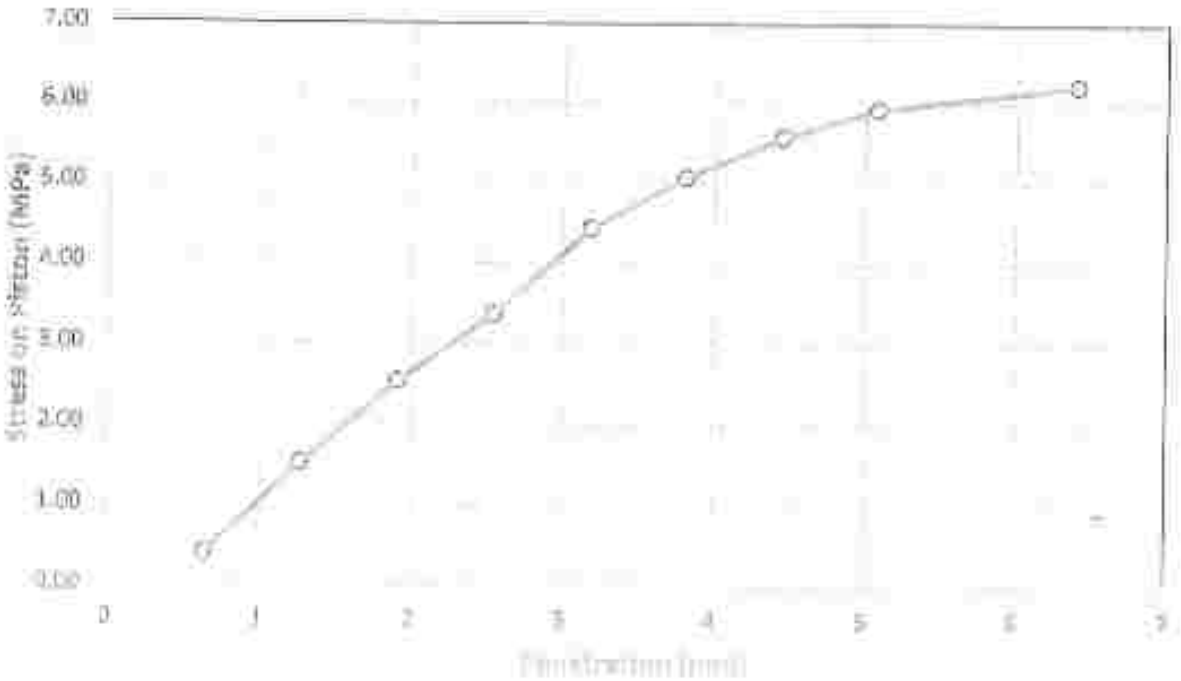
Load Penetration Curve of CBR Test

ASTM D-1883



Signature/

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 3/10/2023
Soil type : Middle Embankment
Location : ST From 671+780 To 672+020
Level : - 4 M
Report No. : 28

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+820	1510	2.28	5.5	2.16	98.3%	Comply
2	671+870	1568	2.22	5.8	2.10	95.2%	Comply
3	671+920	1622	2.23	5.5	2.12	96.2%	Comply
4	671+960	1329	2.30	5.5	2.18	99.1%	Comply
5	672+010	1783	2.26	5.3	2.14	97.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 27/9/2023
Reporting Date	: 1/10/2023
Reporting No.	: 01-6

Dear Gentleman,

Attached here with the delivered on 27 / 9 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

Signature /

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 27/9/2023
Reporting Date : 1/10/2023
Reporting No. : 01-6

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	90.7
25	1	84.3
19	¾	78.4
12.50	½	74.3
9.50	3/8	60.5
4.75	4	52.4
2.00	10	39.3
0.425	40	24.2

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	8.6

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مكتب تعامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب معامل الإستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	39.3	Max 50 %	-----	-----
0.425 mm (No. 40).	24.2	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	8.6	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		-----	-----	-----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

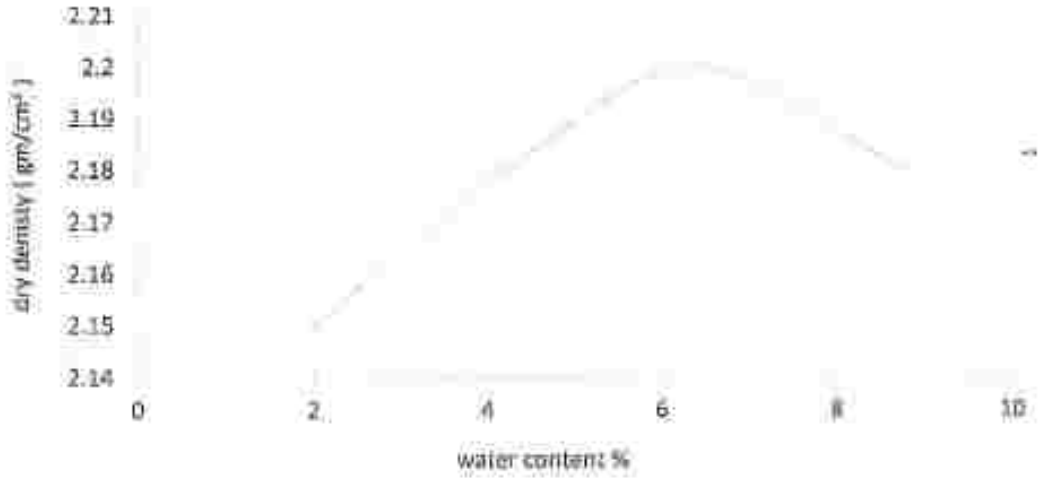
Type of sample : Soil Embankment

Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

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



- Max dry density (gm/cm³) : 2.20
- Optimum moisture content % : 5.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.56
1.27	0.050	1.69
1.91	0.075	2.76
2.54	0.100	3.75
3.18	0.125	4.62
3.81	0.150	5.33
4.45	0.175	5.68
5.08	0.200	5.98
6.35	0.250	6.09

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	54.4 %
	6.90	3.75	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.20 (gm /cm³)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armani

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

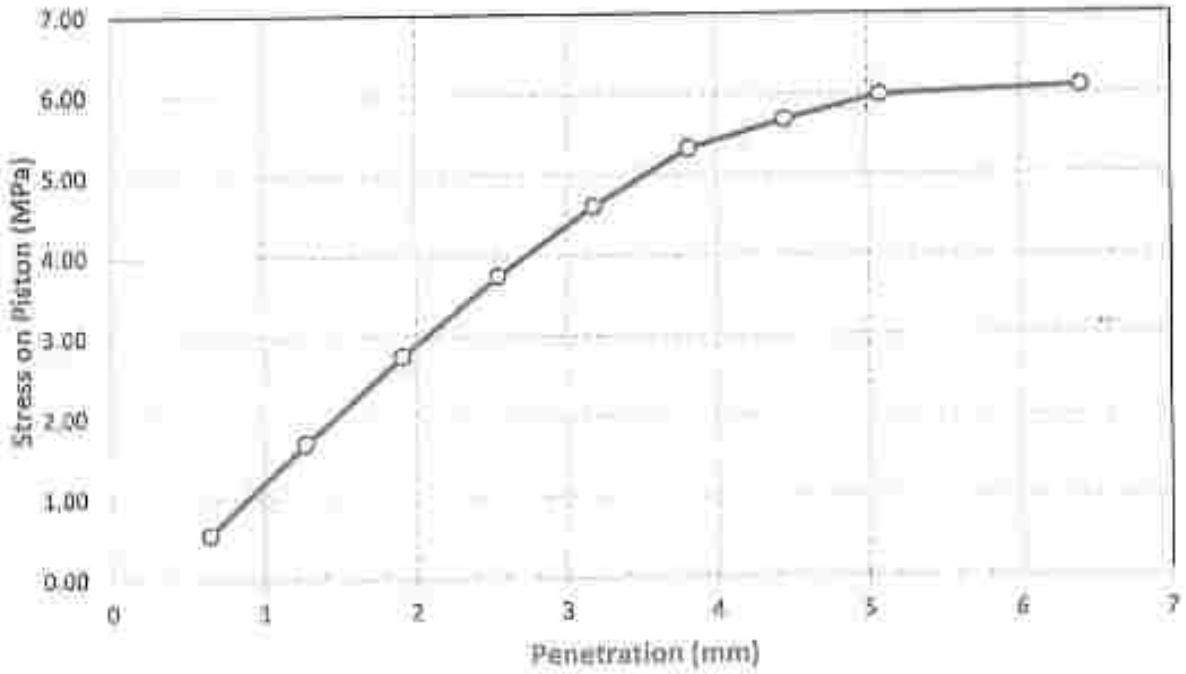
Delivery Date : 27/9/2023

Reporting Date : 1/10/2023

Reporting No. : 01-6

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 9/10/2023

Soil type : Middle Embankment

Location : ST From 672+640 To 672+780

Level : - 3 M

Report No. : 23

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+660	1779	2.29	6.4	2.15	97.7%	Comply
2	672+690	1799	2.31	6	2.18	99.0%	Comply
3	672+730	1814	2.28	6.4	2.14	97.4%	Comply
4	672+760	1923	2.21	5.8	2.09	95.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 8/10/2023

Soil type : Middle Embankment

Location : ST From 672+120 To 672+180

Level : -2.5 M

Report No. : 25

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+150	1483	2.23	6	2.11	95.7%	Comply
2	672+175	1532	2.25	5.8	2.13	96.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 30/9/2023
Reporting Date	: 3/10/2023
Reporting No.	: 01-7

Dear Gentleman,

Attached here with the delivered on 30 / 9 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.2
37.5	1.5	91.2
25	1	85.2
19	¾	78.2
12.50	½	71.6
9.50	3/8	64.1
4.75	4	57.0
2.00	10	42.3
0.425	40	26.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	8.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد للرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	42.3	Max 50 %	----	----
0.425 mm (No. 40).	26.8	Max 30 %	Max 50 %	----
0.075 mm (No. 200).	8.8	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	----	----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

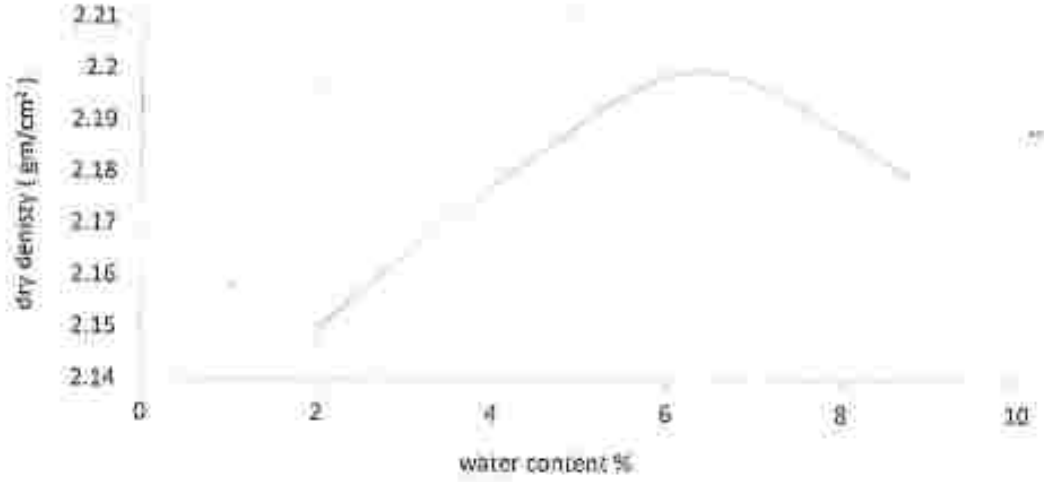
Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

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



- Max dry density (gm/cm²) : 2.20
- Optimum moisture content % : 5.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.57
1.91	0.075	2.69
2.54	0.100	3.65
3.18	0.125	4.54
3.81	0.150	5.22
4.45	0.175	5.58
5.08	0.200	5.83
6.35	0.250	5.98

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	52.9 %
	6.90	3.65	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =2.20 (gm /cm^3)
At = 5.8 % optimum water content.

3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

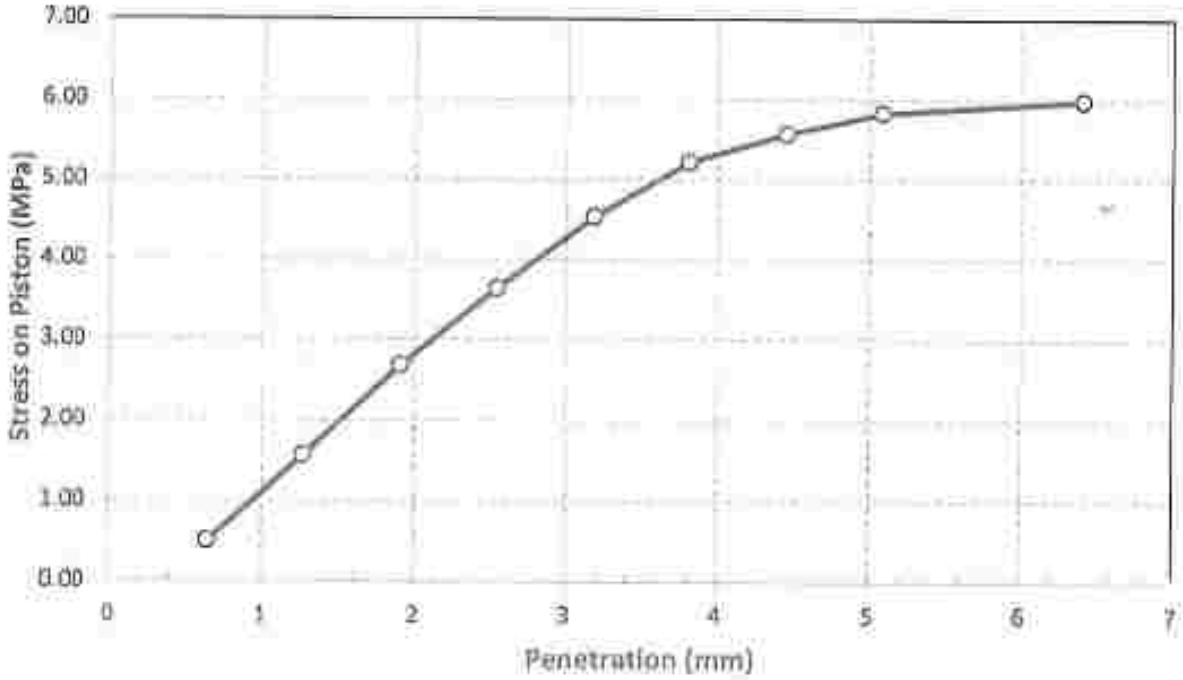
Delivery Date : 30/9/2023

Reporting Date : 3/10/2023

Reporting No. : 01-7

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armani
Testing Date : 9/10/2023
Soil type : Middle Embankment
Location : ST From 672+020 To 672+120
Level : -2.5 M
Report No. : 24

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+050	1411	2.24	6.4	2.11	95.8%	Comply
2	672+080	1464	2.21	5.5	2.09	95.2%	Comply
3	672+110	1470	2.22	5.8	2.10	95.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 10/10/2023
Soil type : Middle Embankment
Location : ST From 671+780 To 671+900
Level : -3.5 M
Report No. : 28-2

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+800	1423	2.28	6	2.15	97.6%	Comply
2	671+830	1652	2.23	6.4	2.10	95.5%	Comply
3	671+860	1465	2.29	6.4	2.15	97.9%	Comply
4	671+880	1654	2.27	6	2.14	97.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 10/10/2023
Soil type : Middle Embankment
Location : ST From 671+900 To 672+020
Level : -3.5 M
Report No. : 27

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+930	1421	2.25	6.4	2.12	96.2%	Comply
2	671+960	1386	2.24	6	2.11	95.9%	Comply
3	671+990	1366	2.26	5.5	2.14	97.5%	Comply
4	671+010	1292	2.32	6.4	2.18	99.2%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 14/10/2023

Soil type : Middle Embankment

Location : ST From 672+640 To 672+780

Level : -2.5 M

Report No. : 33

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+680	1801	2.27	5.6	2.15	97.7%	Comply
2	672+700	1784	2.26	5.5	2.14	97.4%	Comply
3	672+740	1675	2.32	6.4	2.18	99.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+140 Zone: From 671+783 To 672+180
Type of sample	: Original Earth
Delivery Date	: 25/07/2023
Reporting Date	: 29/07/2023
Reporting No.	: 01

Dear Gentleman,

Attached here with the delivered on 22 / 7 / 2023

Materials test

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

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

Signature:

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Original Earth

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	82.10
37.5	1.5	73.60
25	1	66.00
19	¾	61.82
12.50	½	51.32
9.50	3/8	46.02
4.75	4	31.72
2.00	10	29.82
0.425	40	18.02

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Signature:.....

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armani
Location : ST: 672+140 Zone: From 671+783 To 672+180
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 25/07/2023
Reporting Date : 29/07/2023
Reporting No. : 01

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	6.5 %

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مكتب عامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Original Earth

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب عامل للاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+140 Zone: From 671+783 To 672+180
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 25/07/2023
Reporting Date : 29/07/2023
Reporting No. : 01

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	29.82	Max 50 %	-----	-----
0.425 mm (No. 40).	18.02	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	6.5	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		-----	-----	-----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature .....

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+140 Zone: From 671+783 To 672+180
Type of sample : Original Earth
Delivery Date : 25/07/2023
Reporting Date : 29/07/2023
Reporting No. : 01

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

- Max dry density (gm/cm³) : 2.24
- Optimum moisture content % : 5.3 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.56
1.27	0.050	1.72
1.91	0.075	2.94
2.54	0.100	4.10
3.18	0.125	5.33
3.81	0.150	6.03
4.45	0.175	6.39
5.08	0.200	6.57
6.35	0.250	6.64

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	59.4 %
	6.90	4.1	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of = 2.24 (gm /cm^3)
At = 5.3 % optimum water content.

3- Surcharge load = 9.50 Kg

4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature /

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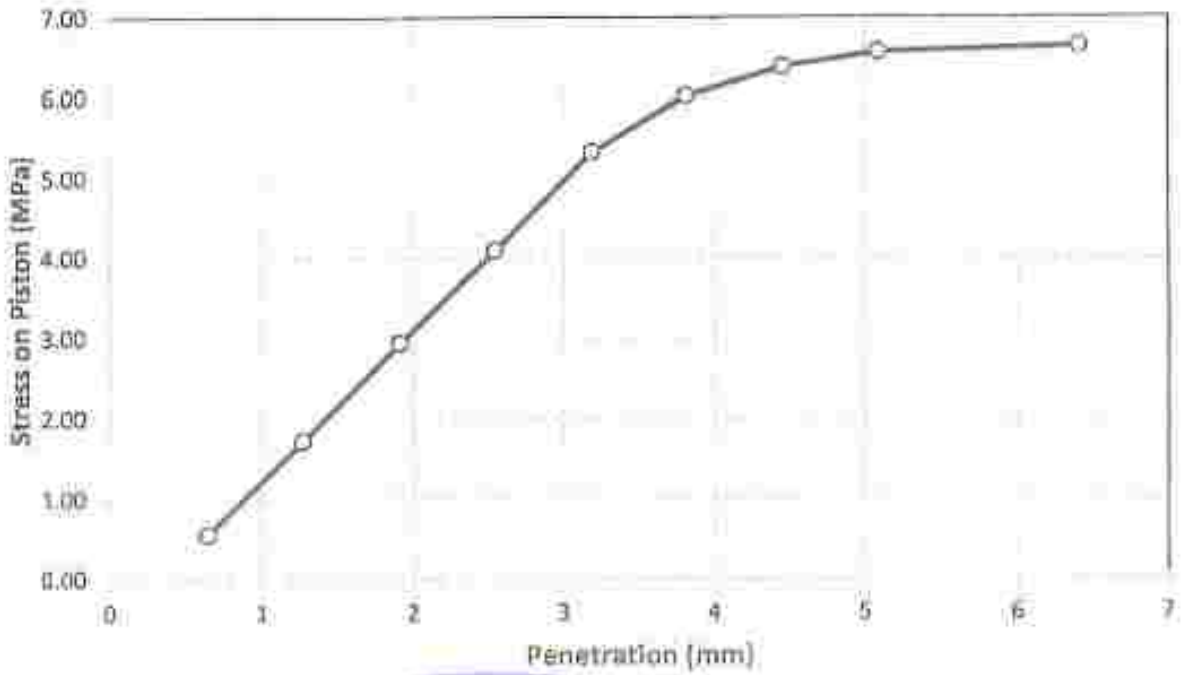
Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+140 Zone: From 671+783 To 672+180
Type of sample	: Original Earth
Delivery Date	: 25/07/2023
Reporting Date	: 29/07/2023
Reporting No.	: 01

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+140 Zone: From 671+783 To 672+180
Type of sample	: Original Earth
Delivery Date	: 25/07/2023
Reporting Date	: 29/07/2023
Reporting No.	: 01

Dear Gentleman,

Attached here with the delivered on 25 / 7 / 2023

Materials test

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

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

Signature /

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Original Earth

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	82.10
37.5	1.5	73.60
25	1	66.00
19	¾	61.82
12.50	½	51.32
9.50	3/8	46.02
4.75	4	31.72
2.00	10	29.82
0.425	40	16.02

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Soil Embankment (Upper Embankment 0.0 M)

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	6.5 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Original Earth

Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train -- HSR From Qous To Armant
Location : ST: 672+140 Zone: From 671+783 To 672+180
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 25/07/2023
Reporting Date : 29/07/2023
Reporting No. : 01

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	29.82	Max 50 %	------	------
0.425 mm (No. 40).	18.02	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	6.5	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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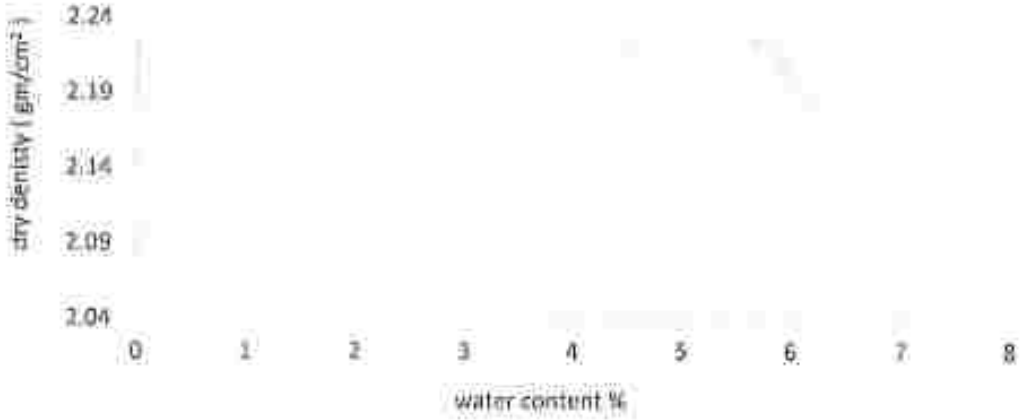
مكتب معامل الاستشارات الهندسية

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+140 Zone: From 671+783 To 672+180
Type of sample	: Original Earth
Delivery Date	: 25/07/2023
Reporting Date	: 29/07/2023
Reporting No.	: 01

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



- Max dry density (gm/cm³) : 2.24
- Optimum moisture content % : 5.3 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+140 Zone: From 671+783 To 672+180
Type of sample : Soil Embankment (Upper Embankment 0.0 M)
Delivery Date : 25/07/2023
Reporting Date : 29/07/2023
Reporting No. : 01

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.56
1.27	0.050	1.72
1.91	0.075	2.94
2.54	0.100	4.10
3.18	0.125	5.33
3.81	0.150	6.03
4.45	0.175	6.39
5.08	0.200	6.57
6.35	0.250	6.64

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	59.4 %
	6.90	4.1	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of = 2.24 (gm /cm^3)
At = 5.3 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train -- HSR From Qous To Armant

Location : ST: 672+140 Zone: From 671+783 To 672+180

Type of sample : Original Earth

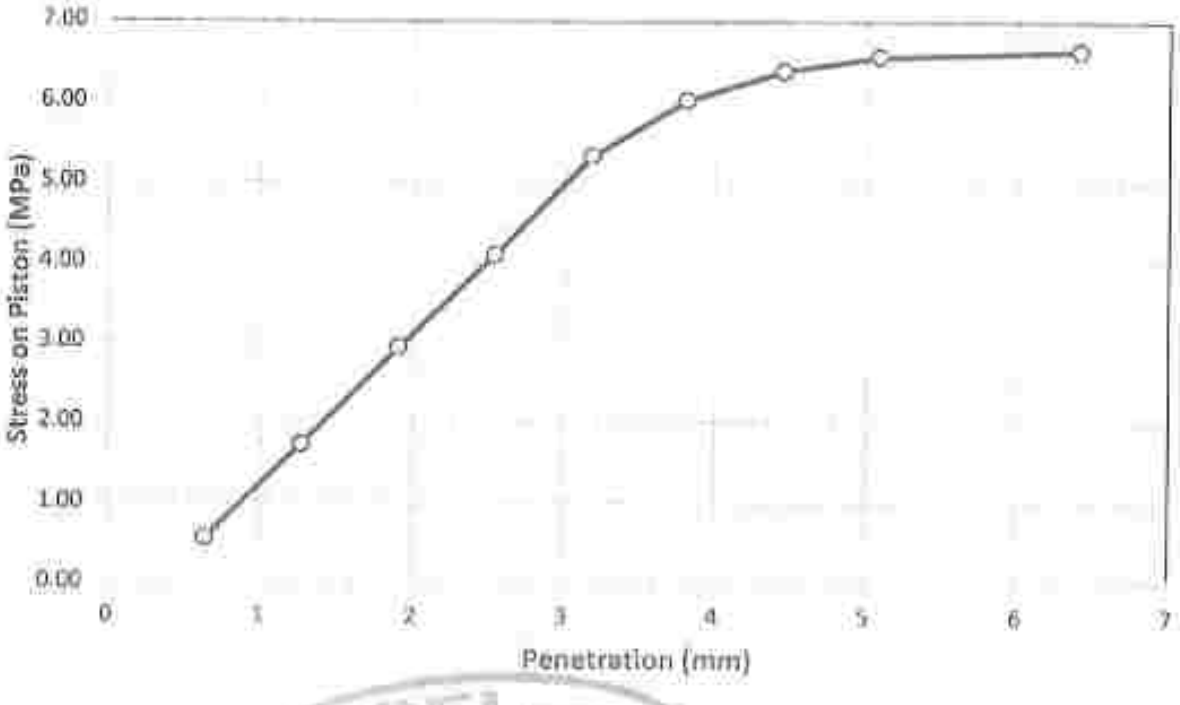
Delivery Date : 25/07/2023

Reporting Date : 29/07/2023

Reporting No. : 01

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الإستشارات الهندسية
مشروعات محافظات الوجه القبلي

Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Arment.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station (672+160 to 672+080)
Test Date : 30/07/2023
Repot Date : 31/07/2023
Type of soil : Original earth.
Report No. : 1

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the limit values are 5.0 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages to 50 % , 25 % and approximately 2 % of the maximum load.
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

1. Evaluation and representation of results
2. Load Settlement curve.
3. The test report content the following: -

- location of test site - Dimension of loading plate
- Measuring device used - Type of soil
- Type of Bedding material below the plate -Weathering condition
- Time and date of measurements - Unusual observation made during test :
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing

Report

- Type of soil : Original earth
- Job requirement : Ev2 > 40 MPa

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	30/07/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level (m)	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To			E_{v1} (MPa)	E_{v2} (MPa)	
1	672+160	672+080	672+120	-5.0	48.9	123.8	2.53

Signature :

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Railway Line - Sector (B) – Qena to Aswan
Test Date : 30/07/2023
report date : 31/07/2023
Location : Station (672+120)
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.30	0.70	19.61	0.39	0.55
2	1.66	18.91	1.09	19.10	0.90	0.99
3	2.50	18.55	1.45	18.73	1.27	1.36
4	3.33	18.20	1.80	18.33	1.67	1.74
5	4.17	17.80	2.20	17.99	2.01	2.11
6	5.00	17.35	2.65	17.60	2.40	2.53

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	17.43	2.57	17.69	2.31	2.44
2	1.25	17.60	2.40	17.78	2.22	2.31
3	0.100	17.83	2.17	17.93	2.07	2.12

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	17.59	2.41	17.81	2.19	2.30
1	1.66	17.43	2.57	17.69	2.31	2.44
2	2.50	17.30	2.70	17.45	2.55	2.63
3	3.33	17.21	2.79	17.32	2.68	2.74
4	4.17	17.09	2.91	17.10	2.90	2.91

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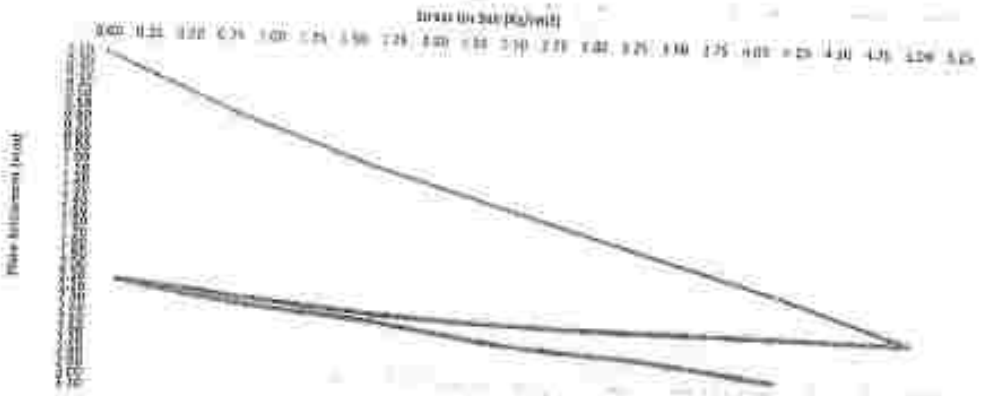
Company name : عبد الرحمن للتنمية والتصنيع
Project : Electric Express Train - Sector (B) – Qena to Aswan.
Test Date : 30/07/2022
report date : 31/07/2022
Location : Station (672+126)
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.6	1758.3	2352.6	2940.1	3532.6
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.00	0.05	1.36	1.74	2.11	2.53

D (mm) =	300	S1 (mm)=	0.11	S2(mm)=	1.01	ΔS =	0.90
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS		48.9				

Unt.Loading (1)	1	2	3	4
Stage(Kg)	3532	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	2.53	2.44	2.31	2.12

Ev2/Ev1 = 2.55

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.300	1172.6	1758.3	2352.6	2940.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	2.12	2.30	2.44	2.63	2.74	2.91

D (mm) =	300	S1 (mm)=	2.41	S2(mm)=	2.77	ΔS =	0.36
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS		122.8				

Ev1 = Modulus of deformation during the loading stage.
Ev2 = Modulus of deformation during the Reloading stage.
D = Plate diameter (mm).
Δs = The difference between S1 and S2 from the maximum loading (second degree).
Δσ = Difference in pressures corresponding to S1 and S2 from the maximum loading (kPa).

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Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station (871+987 to 872+087)
Test Date : 02/08/2023
Repot Date : 03/08/2023
Type of soil : Original earth.
Report No. : 1

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the limit values are 5.0 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2ⁿᵈ) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report contant the following :-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test.
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Original earth
- Job requirement : Ev2 > 40 MPa

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	02/08/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level (m)	First Cycle	Second Cycle	E_{v2}/ E_{v1} Ratio
	From	To			E_{v1} (MPa)	E_{v2} (MPa)	
1	671+987	672+087	672+020	-4.0	155.1	151.4	0.98

Signature

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Rhodes Express Train - Section (1) - Qena to Aswan
Test Date : 02/08/2023
report date : 03/08/2023
Location : Station (672+020)
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	18.81	1.19	18.93	1.07	1.13
2	1.66	18.61	1.39	18.80	1.20	1.30
3	2.50	18.52	1.48	18.69	1.31	1.40
4	3.33	18.41	1.59	18.59	1.41	1.50
5	4.17	18.20	1.80	18.33	1.67	1.74
6	5.00	17.95	2.05	18.09	1.91	1.98

Unloading Stage (1)

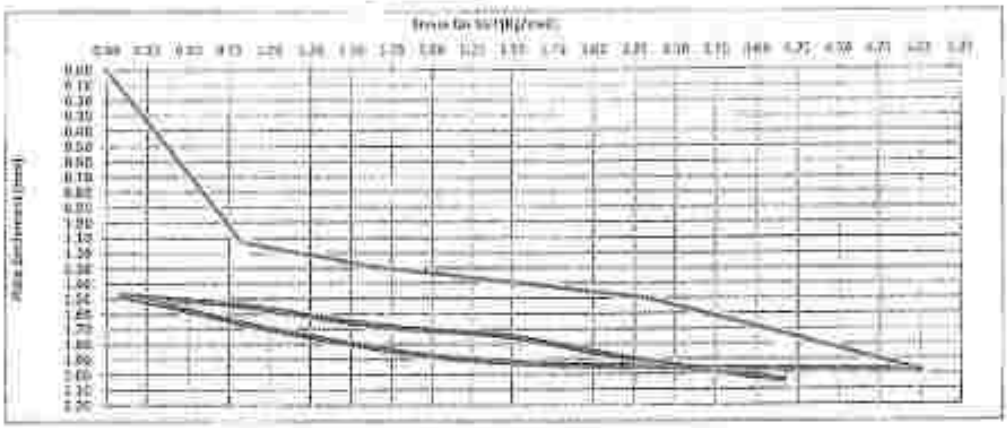
Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.06	1.94	18.09	1.91	1.93
2	1.25	18.21	1.79	18.29	1.71	1.75
3	0.100	18.59	1.41	18.45	1.55	1.48

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	18.50	1.50	18.41	1.59	1.55
1	1.66	18.41	1.59	18.23	1.77	1.68
2	2.50	18.39	1.61	18.10	1.90	1.76
3	3.33	18.20	1.80	17.96	2.04	1.92
4	4.17	18.10	1.90	17.81	2.19	2.05

Company Name : [illegible]
Project : Electric Express Train - Section (5) - Cairo to Aswan
Test Date : 02/08/2023
report date : 03/08/2023
Location : Station (877+020)
Test No. : 01

Repetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	885	1172.8	1768.3	2352.8	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.63	1.65	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	1.13	1.30	1.40	1.50	1.74	1.96

D (mm) =	300	S1 (mm) =	1.30	S2(mm) =	1.76	ΔS =	0.38
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS		193.1				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	988.398	1172.8	1768.3	2352.8	2946.1
Stress (Kg/cm2)	0.10	0.62	1.65	2.50	3.33	4.17
Settlement (mm)	1.48	1.55	1.68	1.76	1.92	2.06

D (mm) =	300	S1 (mm) =	1.68	S2(mm) =	1.86	ΔS =	0.28
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS		193.4				

Unloading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.96	1.93	1.75	1.48

Ev2/Ev1 = 0.98

Ev1 = Modulus of deformation during the loading stage
Ev2 = Modulus of deformation during the Reloading stage
D = Plate diameter (mm)
Δs = The difference between 0.3 and 0.7 mark (on maximum loading curve) (mm)
ΔS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)

Company Name	: شركة عبد الرحمن للتنمية والمقاولات
Project	: Electric Express Train : Sector (3) : Dairut to Armant
Test Date	: 02/08/2023
report date	: 03/08/2023
Location	: Station (671+920)
Test No.	: 02

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	18.99	1.01	19.95	0.05	0.53
2	1.00	18.80	1.20	19.77	0.23	0.72
3	2.50	18.69	1.31	19.61	0.39	0.85
4	3.33	18.41	1.59	19.20	0.80	1.20
5	4.17	18.11	1.89	19.05	0.95	1.42
6	5.00	17.98	2.02	18.96	1.04	1.53

Unloading Stage (1)

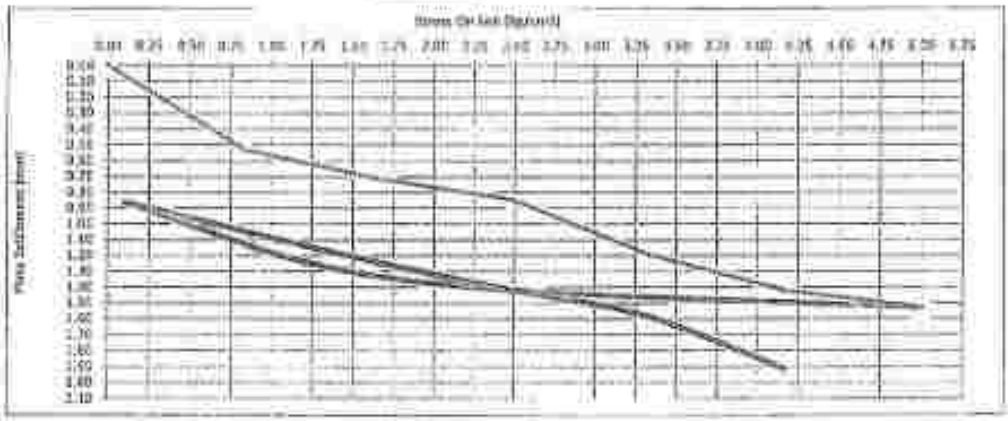
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.06	1.94	19.10	0.90	1.42
2	1.25	18.20	1.80	19.30	0.70	1.25
3	0.100	18.59	1.41	19.69	0.31	0.86

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	18.41	1.59	19.50	0.50	1.05
1	1.66	18.20	1.80	19.31	0.69	1.25
2	2.50	17.95	2.05	19.21	0.79	1.43
3	3:33	17.73	2.27	19.10	0.90	1.59
4	4.17	17.33	2.67	18.84	1.16	1.92

Company name : [illegible]
Project : Electric Express Train - Sohag (3) - Girga to Al-Hamra
Test Date : 02/08/2023
report date : 03/08/2023
Location : Station (671+930)
Test No. : 02

Incrementilve Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.53	0.72	0.85	1.20	1.42	1.53

Unl..oading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.50	1.42	1.26	0.86

D (cm) =	300	δ1 (mm)=	0.66	δ2(mm)=	1.24	Δδ =	0.58
Ev1 (MPa) =	(0.75*D*Δσ)/Δδ		78.6				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.365	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.86	1.05	1.25	1.42	1.58	1.82

Ev2/Ev1 =	1.26

D (cm) =	300	δ1 (mm)=	1.31	δ2(mm)=	1.66	Δδ =	0.48
Ev2 (MPa) =	(0.75*D*Δσ)/Δδ		99.1				

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

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Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Arment.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station (671+987 to 672+087)
Test Date : 02/08/2023
Repot Date : 03/08/2023
Type of soil : Original earth.
Report No. : 1

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For ø 300 mm loading plate, the limit values are 5.0 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 %, 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

1. Evaluation and representation of results.
2. Load Settlement curve
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Original earth
- Job requirement : Ev2 > 40 MPa

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	02/08/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level (m)	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To			E_{v1} (MPa)	E_{v2} (MPa)	
1	671+987	672+087	672+020	-4.0	155.1	151.4	0.98

Signature

Company Name : شركة عبد الرحمن للتنمية والمشروعات
Project : Electric Express Train Sector (B) Giza to Aswan.
Test Date : 02/08/2023
Report date : 03/08/2023
Location : Station (671+920)
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	18.99	1.01	19.95	0.05	0.53
2	1.66	18.80	1.20	19.77	0.23	0.72
3	2.50	18.69	1.31	19.61	0.39	0.85
4	3.33	18.41	1.59	19.20	0.80	1.20
5	4.17	18.11	1.89	19.05	0.95	1.42
6	5.00	17.98	2.02	18.96	1.04	1.53

Unloading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.06	1.94	19.10	0.90	1.42
2	1.25	18.70	1.30	19.30	0.70	1.25
3	0.100	18.59	1.41	19.69	0.31	0.86

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	18.41	1.59	19.50	0.50	1.05
1	1.66	18.20	1.80	19.33	0.69	1.25
2	2.50	17.95	2.06	19.21	0.79	1.42
3	3.33	17.73	2.27	19.10	0.90	1.59
4	4.17	17.53	2.47	19.08	1.16	1.82

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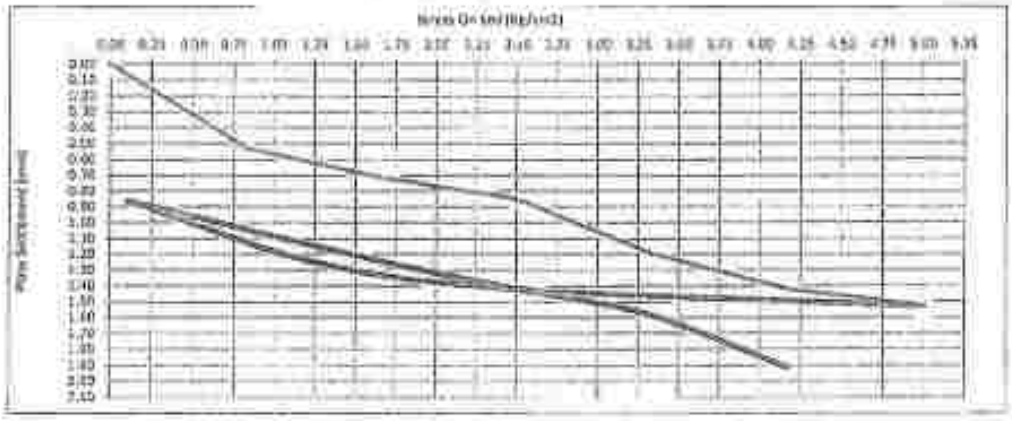
Company Name : شركة فرعون عادلة للطرق
Project: : Electric Express Train - Sector (II) – Qena to Aswan
Test Date : 02/08/2023
report date : 03/08/2023
Location : Station (671+920)
Test No. : 02

Non-repetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	580	1172.8	1766.3	2352.6	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.53	0.72	0.85	1.20	1.42	1.63

Unl.oading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.63	1.42	1.28	0.88

D (mm) = 300		S1 (mm)= 0.85	S2(mm)= 1.2=	ΔS = 0.35
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS	75.6		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	580.365	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.86	1.05	1.25	1.42	1.60	1.82

D (mm) = 300		S1 (mm)= 1.21	S2(mm)= 1.61	ΔS = 0.40
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS	83.1		

Ev2/Ev1 = 1.10

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

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www.cel-egypt.com

Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Arment.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station (672+640 to 672+760)
Test Date : 09/08/2023
Repot Date : 12/08/2023
Type of soil : Original earth.
Report No. : 1 : 2

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the limit values are 5.0 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report content the following:

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Original earth
- Job requirement : Ev2 > 40 MPa

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Plate Diameter (mm)	300
- date of measurement	09/08/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	First Cycle	Second Cycle	Ev_2/Ev_1 Ratio
	From	To		Ev_1 (MPa)	Ev_2 (MPa)	
1	672+640	672+740	672+650	85.0	175.3	2.06
2	672+740	672+780	672+750	81.3	229.3	2.82

Signature /

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Sector (B) – Qena to Aswan
Test Date : 09/08/2023
report date : 12/08/2023
Location : Station (672+750)
Test No. : 02

Nonresolitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.81	0.19	19.84	0.16	0.18
2	1.66	19.45	0.55	19.49	0.51	0.53
3	2.50	19.22	0.78	19.29	0.71	0.75
4	3.33	19.03	0.97	19.04	0.96	0.97
5	4.17	18.80	1.20	18.88	1.12	1.16
6	5.00	18.63	1.37	18.74	1.26	1.32

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.67	1.33	18.80	1.20	1.27
2	1.25	18.75	1.25	18.99	1.01	1.13
3	0.100	18.93	1.07	19.30	0.70	0.89

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	18.88	1.12	19.19	0.81	0.97
1	1.66	18.79	1.21	19.03	0.97	1.09
2	2.50	18.72	1.28	18.92	1.08	1.18
3	3.33	18.69	1.31	18.81	1.19	1.24
4	4.17	18.60	1.40	18.70	1.30	1.35

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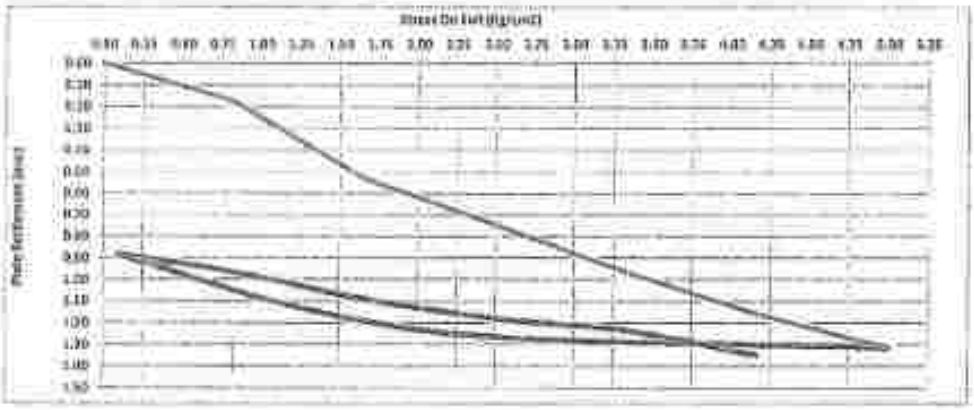
مشروعات محافظات الوجه القبلي

Company Name : [illegible]
Project : Elevate Express Tolls - Section (5) – Gate le Arrant.
Test Date : 09/08/2023
report date : 12/08/2023
Location : Station (671+790)
Test No : 02

Non-repetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.6	1758.3	2352.6	2946.1	3533.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.10	0.55	0.75	0.97	1.19	1.32

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.83	1.250	0.10
Settlement (mm)	1.32	1.27	1.13	0.85

D (mm) = 300		Δ1 (mm)=	0.49	Δ2(mm)=	1.08	Δ5 =	0.54
Ev1 (MPa) =	(0.75*D*Δσ)/Δ5		91.3				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.3391	1172.6	1758.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.03	0.57	1.00	1.18	1.24	1.30

D (mm) = 300		Δ1 (mm)=	1.07	Δ2(mm)=	1.26	Δ5 =	0.19
Ev2 (MPa) =	(0.75*D*Δσ)/Δ5		329.3				

Ev2/Ev1 =	3.62

Ev1 = Modulus of deformation during the loading stage.
Ev2 = Modulus of deformation during the Reloading stage.
D = Plate diameter (mm)
Δσ = The difference between 0.3 and 0.7 from the maximum loading (kg/cm²) Kg/cm²
Δ5 = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)

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Company Name : شركة عبد الله الدهشان للتنمية والمقاولات
Project : Electric Express Train Sector (6) Qena to Aswan.
Test Date : 09/06/2023
report date : 12/06/2023
Location : Station (672+650)
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.58	0.42	19.76	0.24	0.33
2	1.66	19.33	0.67	19.69	0.31	0.49
3	2.50	19.05	0.95	19.50	0.50	0.73
4	3.33	18.89	1.11	19.33	0.67	0.89
5	4.17	18.30	1.70	19.05	0.95	1.33
6	5.00	18.00	2.00	18.87	1.13	1.57

Unloading Stage (1)

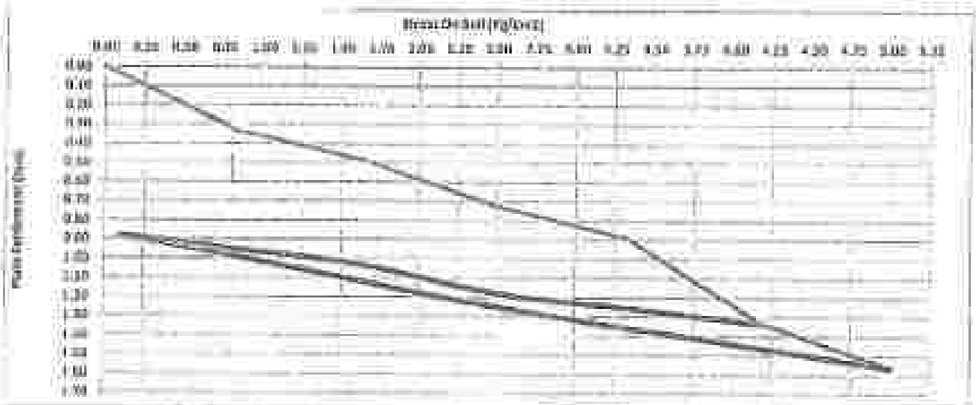
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.60	1.40	18.90	1.10	1.25
2	1.25	18.93	1.07	18.96	1.04	1.06
3	0.100	19.24	0.76	19.00	1.00	0.88

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	19.19	0.81	18.90	1.10	0.96
1	1.66	19.16	0.85	18.78	1.22	1.04
2	2.50	19.04	0.96	18.60	1.40	1.18
3	3.33	19.00	1.00	18.49	1.51	1.26
4	4.17	18.96	1.04	18.37	1.63	1.34

Company Name	: عبد الرحمن للأبنية والمقاولات
Project	: Electric Express Train - Sector (3) - Qous to Armant
Test Date	: 09/06/2023
Report date	: 13/06/2023
Location	: Station (077+055)
Test No.	: 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	500	1172.8	1766.3	2352.5	2940.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.60	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.35	0.48	0.73	0.88	1.35	1.57

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.57	1.25	1.00	0.88

D (mm) =	300	S1 (mm)=	0.46	S2(mm)=	0.88	ΔS =	0.62
Ev1 (MPa) =	0.75*D*Δσ/ΔS	86.8					

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	886.285	1172.8	1766.3	2352.5	2940.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.88	0.90	1.04	1.18	1.28	1.34

Ev2/Ev1 = 2.65

D (mm) =	300	S1 (mm)=	1.04	S2(mm)=	1.27	ΔS =	0.25
Ev2 (MPa) =	0.75*D*Δσ/ΔS	175.1					

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

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Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 15/10/2023
Soil type : Middle Embankment
Location : ST From 671+880 To 672+020
Level : -3 M
Report No. : 34

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+920	1781	2.28	6.4	2.14	96.8%	Comply
2	671+990	1746	2.29	6.4	2.15	97.5%	Comply
3	672+010	1754	2.28	6.4	2.14	96.9%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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Company Name	: شركة عياد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 5/10/2023
Reporting Date	: 9/10/2023
Reporting No.	: 01-8

Dear Gentleman ,

Attached here with the delivered on 5 / 10 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

Signature /.....

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-8

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	99.5
37.5	1.5	93.7
25	1	86.6
19	¾	76.1
12.50	½	70.0
9.50	3/8	63.9
4.75	4	58.4
2.00	10	41.5
0.425	40	27.7

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Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-8

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.3

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Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-8

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب معامل الاستشارات الفنية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-8

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	41.5	Max 50 %	-----	-----
0.425 mm (No. 40).	27.7	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.1	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		-----	-----	-----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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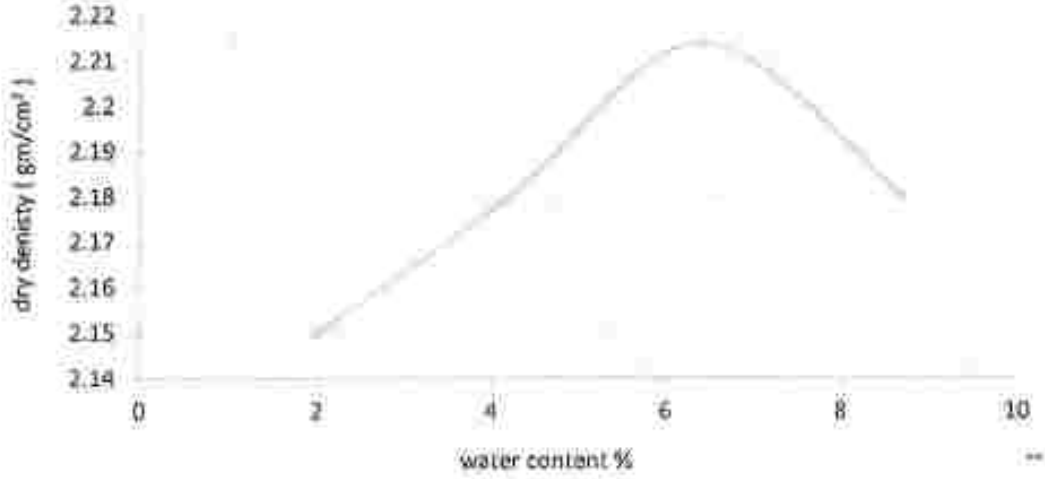
Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-8

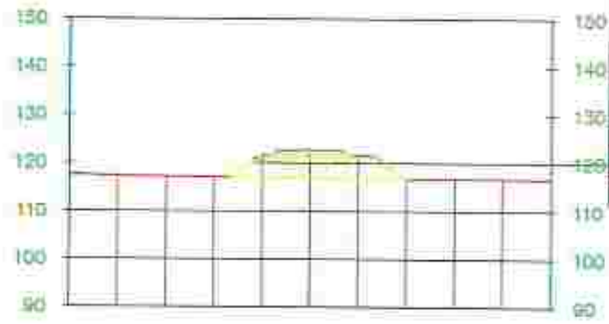
Moisture – Density relation of soil
Test result (Modified proctor test)
ASTM D-1557



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

Signature /.....

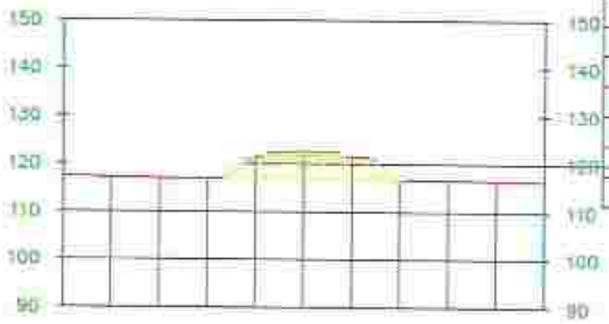
672+170.00



Total Volume at Station 672+170.00	
Cut Area	0.00
Fill Area	126.91
Cut Vol	0.00
Fill Vol	1269.51
Cum Cut Vol	0.00
Cum Fill Vol	55918.50
Net Vol	-55918.50

OFFSET	-30	-20	-10	-5	0	10	20	30
EXISTING ELEVATIONS					119.97			
PROPOSED ELEVATIONS			121.10		121.40	119.53		

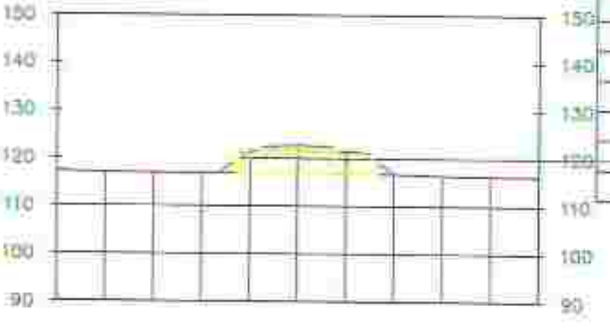
672+180.00



Total Volume at Station 672+180.00	
Cut Area	0.00
Fill Area	127.70
Cut Vol	0.00
Fill Vol	1283.03
Cum Cut Vol	0.00
Cum Fill Vol	57201.62
Net Vol	-57201.62

OFFSET	-30	-20	-10	-5	0	10	20	30
EXISTING ELEVATIONS					119.91			
PROPOSED ELEVATIONS			121.10	121.40		121.40		

672+190.00

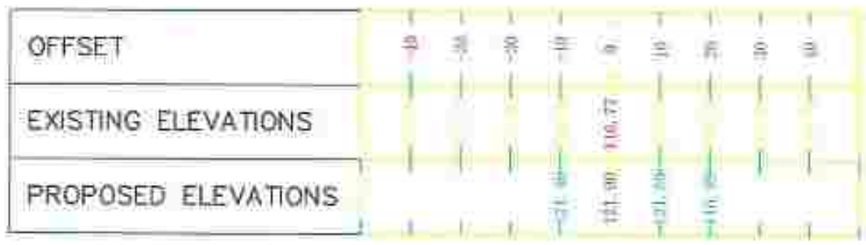


Total Volume at Station 672+190.00	
Cut Area	0.00
Fill Area	120.01
Cut Vol	0.00
Fill Vol	1200.07
Cum Cut Vol	0.00
Cum Fill Vol	58440.18
Net Vol	-58440.18

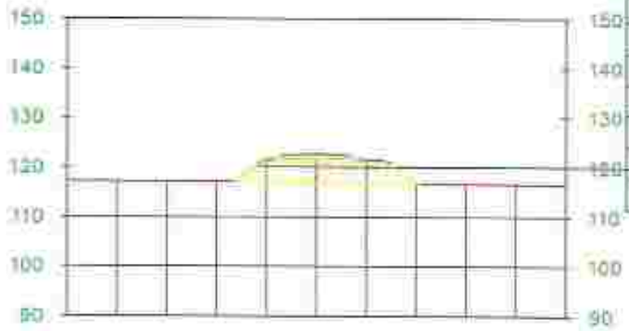
OFFSET	-30	-20	-10	-5	0	10	20	30
EXISTING ELEVATIONS					119.91			
PROPOSED ELEVATIONS			121.10	121.40		121.40		

672+140.00

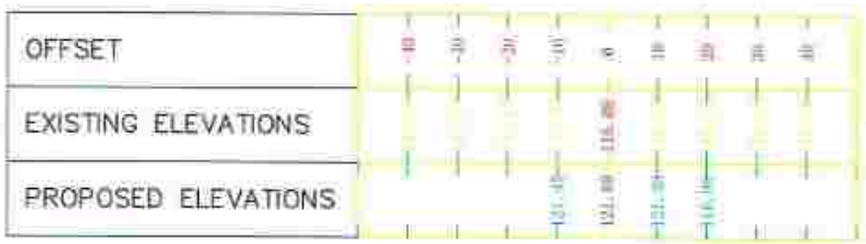
Total Volume at Station 672+140.00	
Cut Area	0.00
Fill Area	133.45
Cut Vol	0.00
Fill Vol	1353.30
Cum Cut Vol	0.00
Cum Fill Vol	52018.54
Net Vol	-52018.54



672+150.00

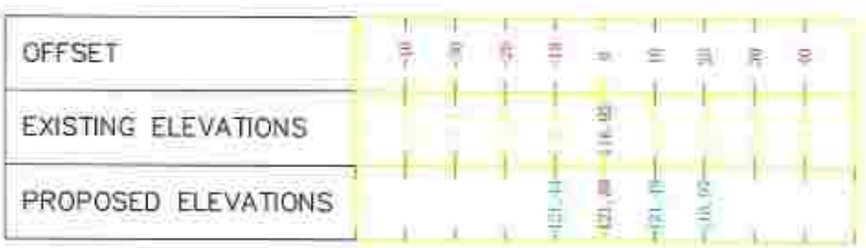


Total Volume at Station 672+150.00	
Cut Area	0.00
Fill Area	129.83
Cut Vol	0.00
Fill Vol	1316.41
Cum Cut Vol	0.00
Cum Fill Vol	53334.94
Net Vol	-53334.94

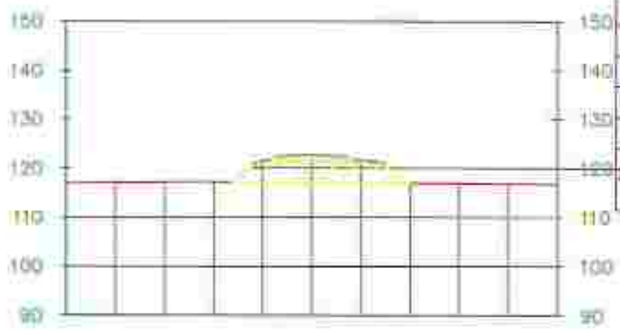


672+160.00

Total Volume at Station 672+160.00	
Cut Area	0.00
Fill Area	129.00
Cut Vol	0.00
Fill Vol	1294.15
Cum Cut Vol	0.00
Cum Fill Vol	54629.09
Net Vol	-54629.09



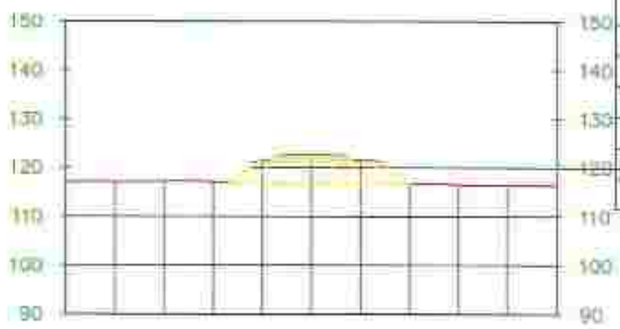
672+110.00



Total Volume at Station 672+110.00	
Cut Area	0.00
Fill Area	128.68
Cut Vol	0.00
Fill Vol	1266.66
Cum Cut Vol	0.00
Cum Fill Vol	47080.95
Net Vol	-47080.95

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.02				
PROPOSED ELEVATIONS				121.81	121.81	121.81	117.81		

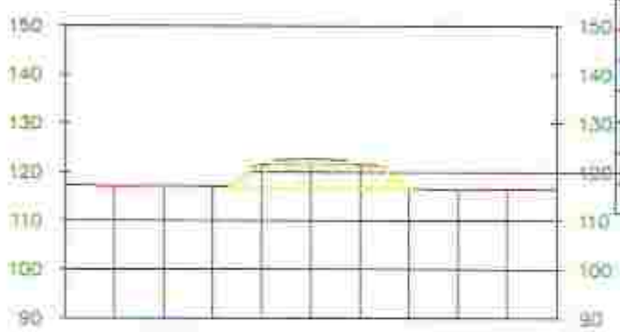
672+120.00



Total Volume at Station 672+120.00	
Cut Area	0.00
Fill Area	133.48
Cut Vol	0.00
Fill Vol	1300.82
Cum Cut Vol	0.00
Cum Fill Vol	48301.77
Net Vol	-48301.77

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.02				
PROPOSED ELEVATIONS				121.81	121.81	121.81	117.81		

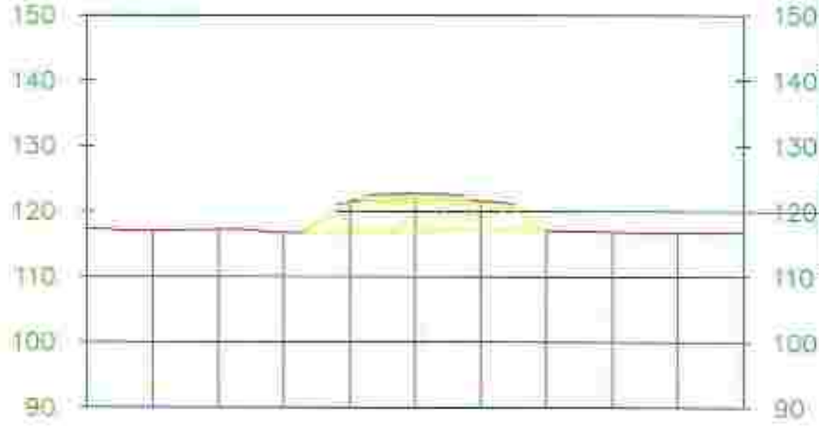
672+130.00



Total Volume at Station 672+130.00	
Cut Area	0.00
Fill Area	137.01
Cut Vol	0.00
Fill Vol	1363.47
Cum Cut Vol	0.00
Cum Fill Vol	50685.24
Net Vol	-50685.24

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.02				
PROPOSED ELEVATIONS				121.81	121.81	121.81	117.81		

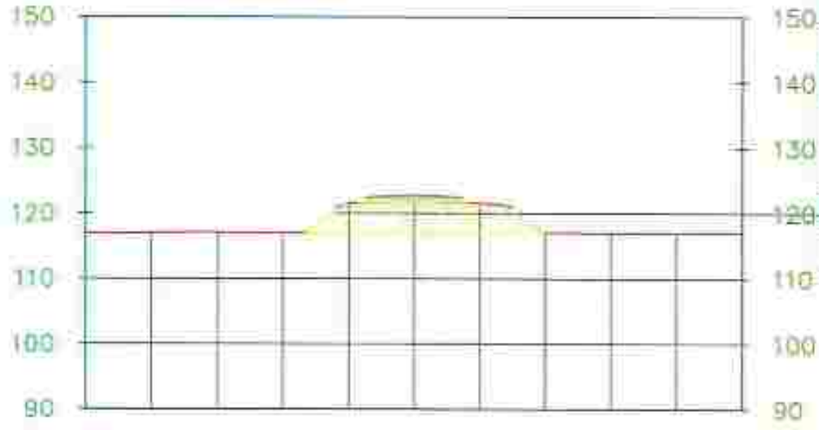
672+090.00



Total Volume at Station 672+090.00	
Cut Area	0.00
Fill Area	127.25
Cut Vol	0.00
Fill Vol	1291.16
Cum Cut Vol	0.00
Cum Fill Vol	45456.13
Net Vol	-45456.13

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.57				
PROPOSED ELEVATIONS				121.51	121.95	121.55			

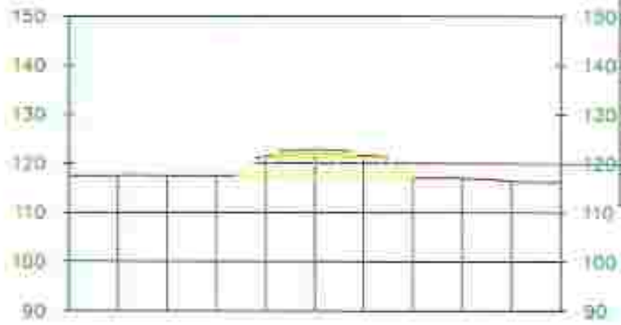
672+100.00



Total Volume at Station 672+100.00	
Cut Area	0.00
Fill Area	124.52
Cut Vol	0.00
Fill Vol	1258.82
Cum Cut Vol	0.00
Cum Fill Vol	46714.95
Net Vol	-46714.95

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					117.04				
PROPOSED ELEVATIONS				121.50	121.94	121.58			

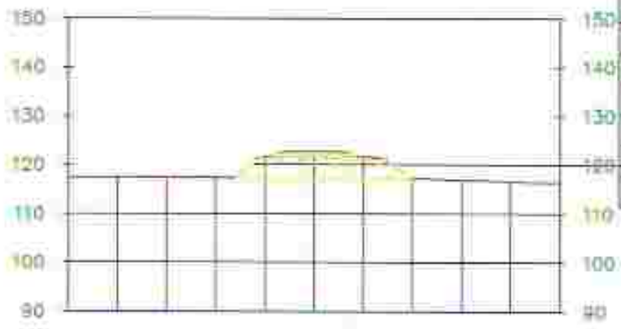
672+060.00



Total Volume at Station 672+060.00	
Cut Area	0.00
Fill Area	123.03
Cut Vol	0.00
Fill Vol	1204.12
Cum. Cut Vol	0.00
Cum. Fill Vol	41615.19
Net Vol	-41615.19

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

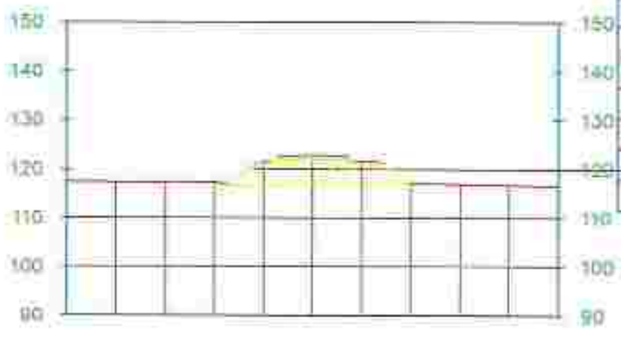
672+070.00



Total Volume at Station 672+070.00	
Cut Area	0.00
Fill Area	127.87
Cut Vol	0.00
Fill Vol	1255.01
Cum. Cut Vol	0.00
Cum. Fill Vol	42870.20
Net Vol	-42870.20

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

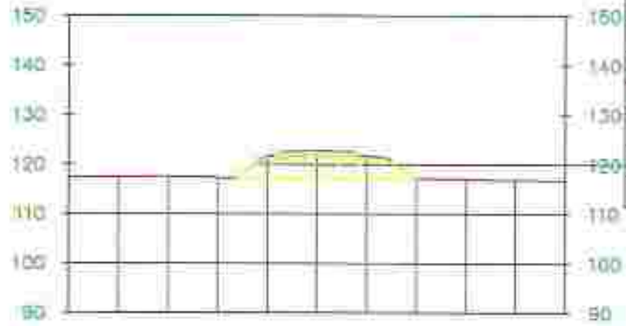
672+080.00



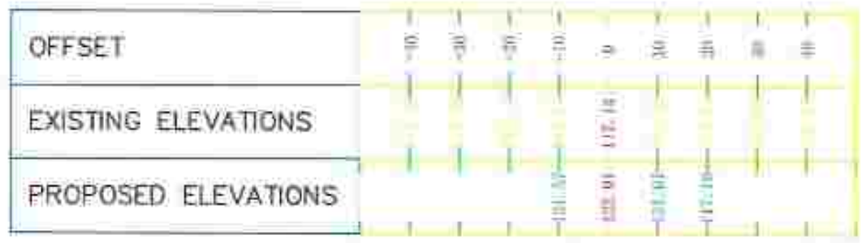
Total Volume at Station 672+080.00	
Cut Area	0.00
Fill Area	130.99
Cut Vol	0.00
Fill Vol	1284.77
Cum. Cut Vol	0.00
Cum. Fill Vol	44154.97
Net Vol	-44154.97

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

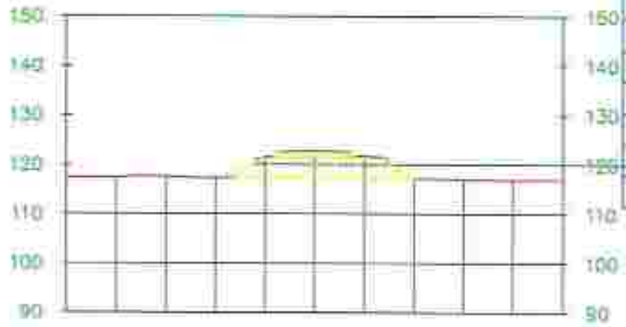
672+030.00



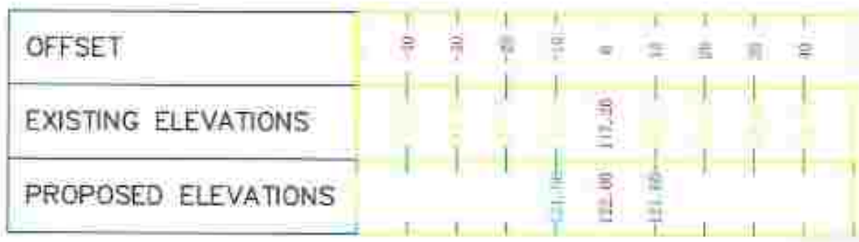
Total Volume at Station 672+030.00	
Cut Area	0.00
Fill Area	121.86
Cut Vol	0.00
Fill Vol	1232.92
Cum Cut Vol	0.00
Cum Fill Vol	38020.69
Net Vol	-38020.69



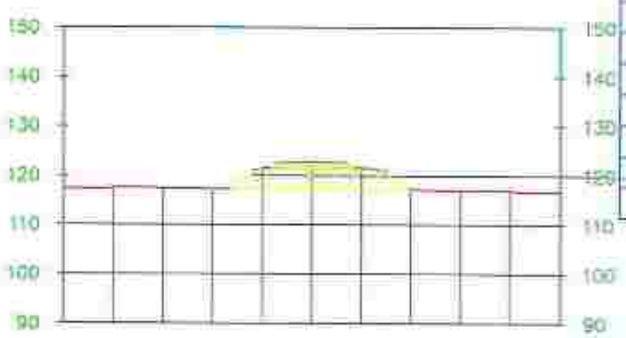
672+040.00



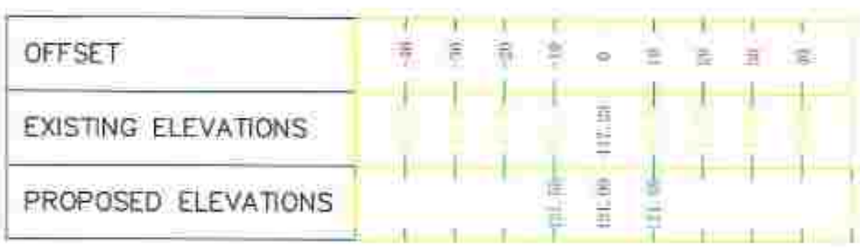
Total Volume at Station 672+040.00	
Cut Area	0.00
Fill Area	119.14
Cut Vol	0.00
Fill Vol	1205.53
Cum Cut Vol	0.00
Cum Fill Vol	39226.42
Net Vol	-39226.42



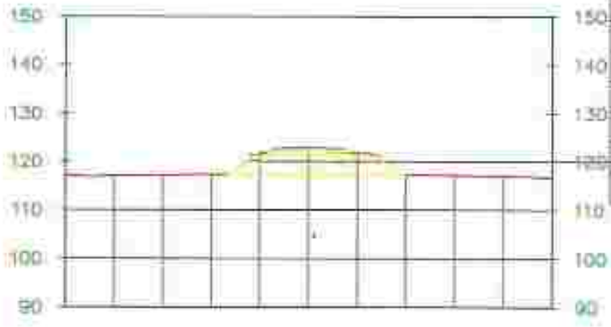
672+050.00



Total Volume at Station 672+050.00	
Cut Area	0.00
Fill Area	117.79
Cut Vol	0.00
Fill Vol	1184.66
Cum Cut Vol	0.00
Cum Fill Vol	40411.07
Net Vol	-40411.07



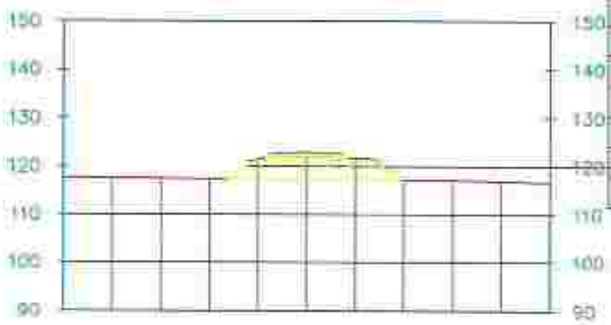
672+000.00



Total Volume at Station 672+000.00	
Cut Area	0.00
Fill Area	123.28
Cut Vol	0.00
Fill Vol	1230.66
Cum Cut Vol	0.00
Cum Fill Vol	34311.65
Net Vol	-34311.65

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

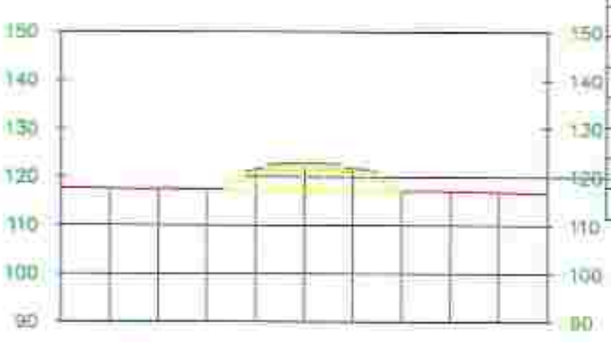
672+010.00



Total Volume at Station 672+010.00	
Cut Area	0.00
Fill Area	123.68
Cut Vol	0.00
Fill Vol	1234.82
Cum Cut Vol	0.00
Cum Fill Vol	35546.47
Net Vol	-35546.47

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

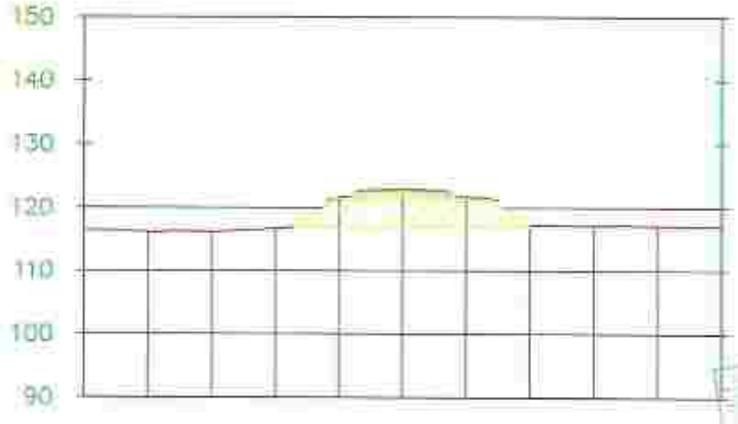
672+020.00



Total Volume at Station 672+020.00	
Cut Area	0.00
Fill Area	124.82
Cut Vol	0.00
Fill Vol	1241.50
Cum Cut Vol	0.00
Cum Fill Vol	36787.97
Net Vol	-36787.97

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

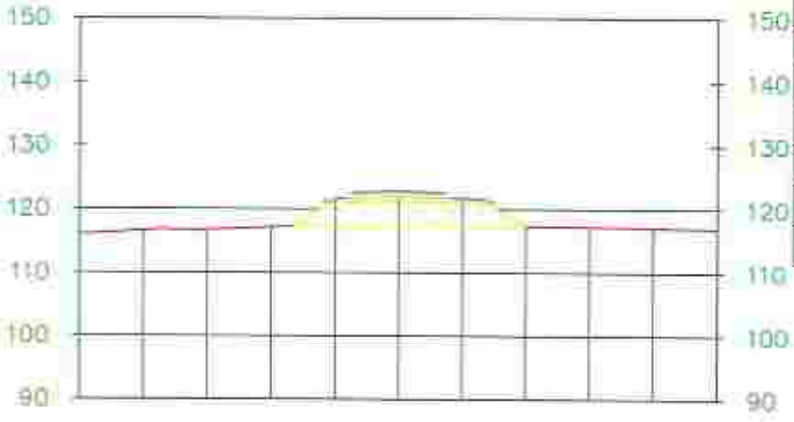
671+980.00



Total Volume at Station 671+980.00	
Cut Area	0.00
Fill Area	130.73
Cut Vol	0.00
Fill Vol	1360.72
Cum Cut Vol	0.00
Cum Fill Vol	31801.09
Net Vol	-31801.09

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.95				
PROPOSED ELEVATIONS				121.62	122.06	121.68			

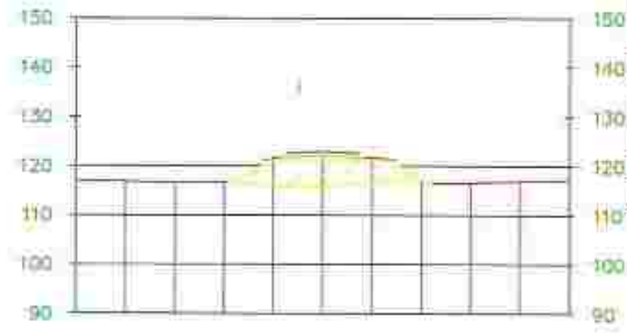
671+990.00



Total Volume at Station 671+990.00	
Cut Area	0.00
Fill Area	124.05
Cut Vol	0.00
Fill Vol	1273.90
Cum Cut Vol	0.00
Cum Fill Vol	33074.99
Net Vol	-33074.99

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					117.17				
PROPOSED ELEVATIONS				121.61	122.06	121.68			

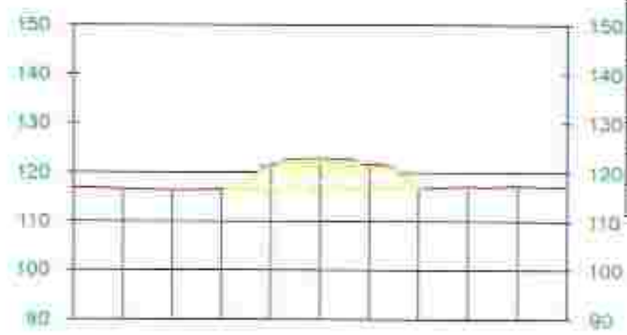
671+950.00



Total Volume at Station 671+950.00	
Cut Area	0.00
Fill Area	158.63
Cut Vol	0.00
Fill Vol	1600.06
Cum Cut Vol	0.00
Cum Fill Vol	27413.33
Net Vol	-27413.33

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.00				
PROPOSED ELEVATIONS				121.45	122.00	121.45	117.15		

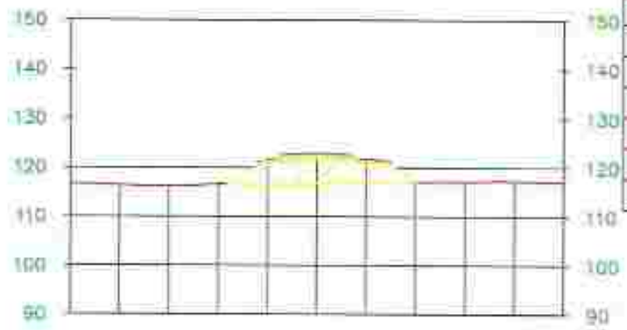
671+960.00



Total Volume at Station 671+960.00	
Cut Area	0.00
Fill Area	152.15
Cut Vol	0.00
Fill Vol	1559.07
Cum Cut Vol	0.00
Cum Fill Vol	28972.40
Net Vol	-28972.40

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.20				
PROPOSED ELEVATIONS				121.45	122.00	121.45	117.15		

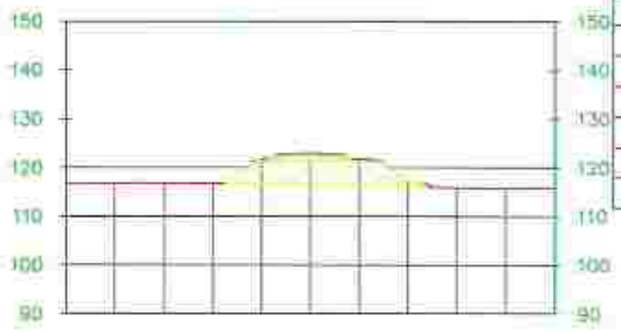
671+970.00



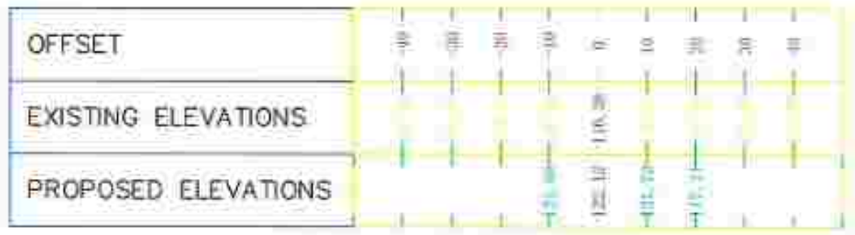
Total Volume at Station 671+970.00	
Cut Area	0.00
Fill Area	141.41
Cut Vol	0.00
Fill Vol	1467.97
Cum Cut Vol	0.00
Cum Fill Vol	30440.37
Net Vol	-30440.37

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.67				
PROPOSED ELEVATIONS				121.45	122.00	121.45	117.15		

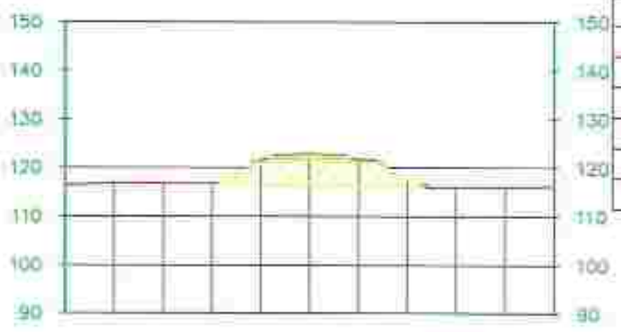
671+920.00



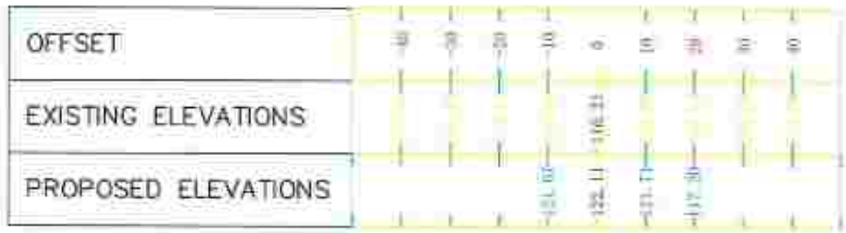
Total Volume at Station 671+920.00	
Cut Area	0.00
Fill Area	157.19
Cut Vol	0.00
Fill Vol	1563.61
Cum Cut Vol	0.00
Cum Fill Vol	22628.11
Net Vol	-22628.11



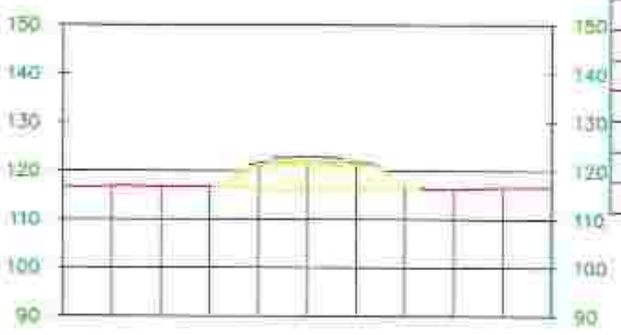
671+930.00



Total Volume at Station 671+930.00	
Cut Area	0.00
Fill Area	158.73
Cut Vol	0.00
Fill Vol	1584.61
Cum Cut Vol	0.00
Cum Fill Vol	24212.71
Net Vol	-24212.71

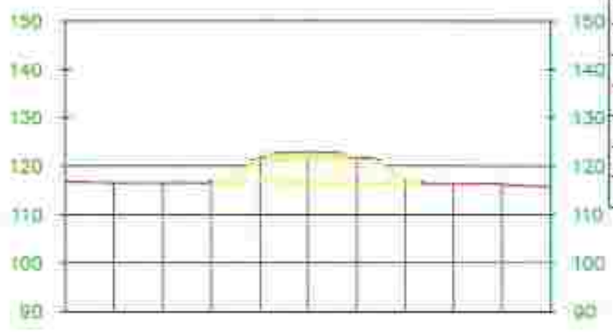


671+940.00



Total Volume at Station 671+940.00	
Cut Area	0.00
Fill Area	160.39
Cut Vol	0.00
Fill Vol	1600.56
Cum Cut Vol	0.00
Cum Fill Vol	25813.27
Net Vol	-25813.27

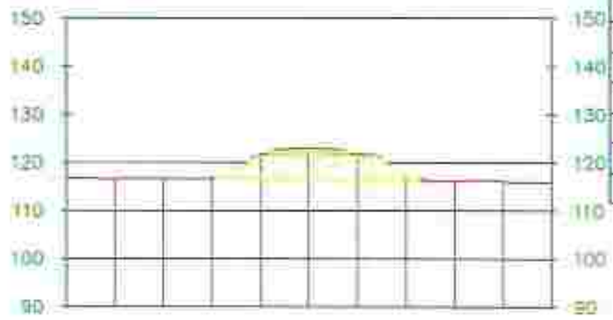
671+890.00



Total Volume at Station 671+890.00	
Cut Area	0.00
Fill Area	155.07
Cut Vol	0.00
Fill Vol	1554.91
Cum Cut Vol	0.00
Cum Fill Vol	17961.46
Net Vol	-17961.46

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

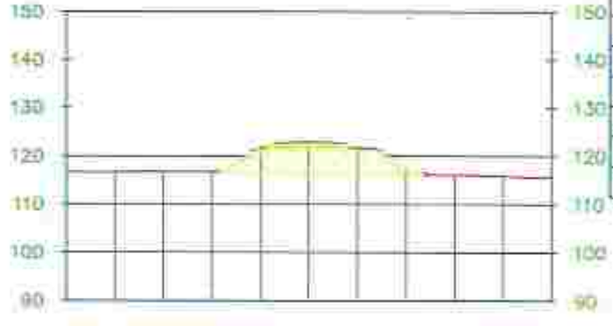
671+900.00



Total Volume at Station 671+900.00	
Cut Area	0.00
Fill Area	154.98
Cut Vol	0.00
Fill Vol	1550.16
Cum Cut Vol	0.00
Cum Fill Vol	19511.62
Net Vol	-19511.62

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

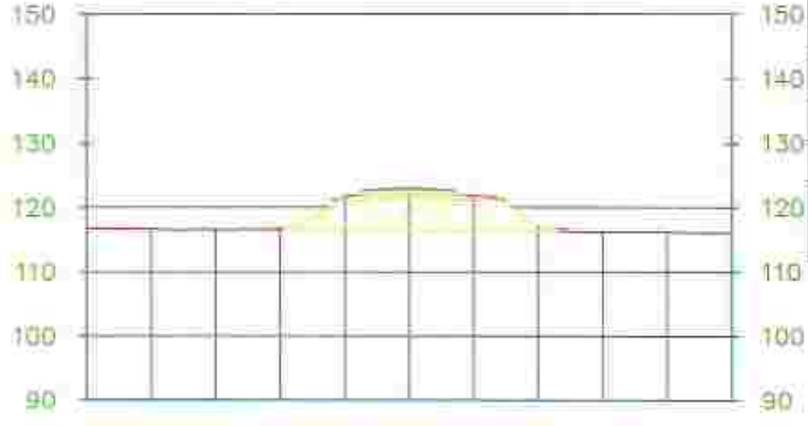
671+910.00



Total Volume at Station 671+910.00	
Cut Area	0.00
Fill Area	155.57
Cut Vol	0.00
Fill Vol	1553.67
Cum Cut Vol	0.00
Cum Fill Vol	21064.30
Net Vol	-21064.30

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

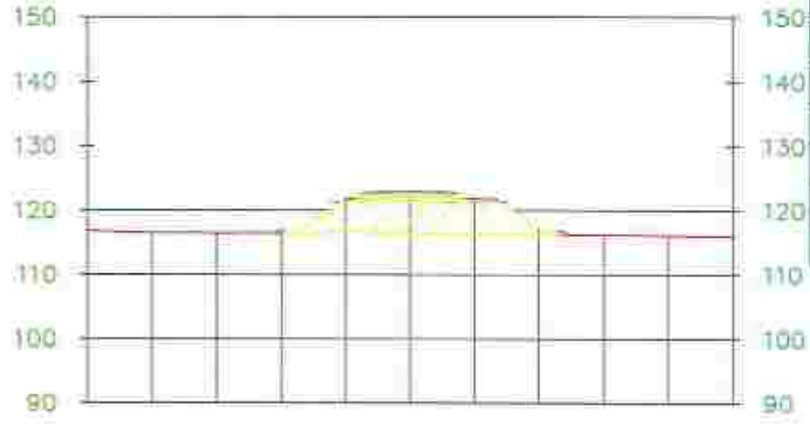
671+870.00



Total Volume at Station 671+870.00	
Cut Area	0.00
Fill Area	157.09
Cut Vol	0.00
Fill Vol	1578.03
Cum Cut Vol	0.00
Cum Fill Vol	14841.56
Net Vol	-14841.56

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.47				
PROPOSED ELEVATIONS				121.72	122.17	121.77	117.36		

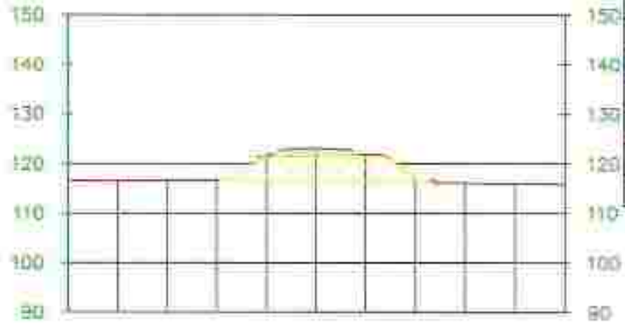
671+880.00



Total Volume at Station 671+880.00	
Cut Area	0.00
Fill Area	155.91
Cut Vol	0.00
Fill Vol	1565.00
Cum Cut Vol	0.00
Cum Fill Vol	16406.56
Net Vol	-16406.56

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.48				
PROPOSED ELEVATIONS				122.16	122.16	121.78	117.36		

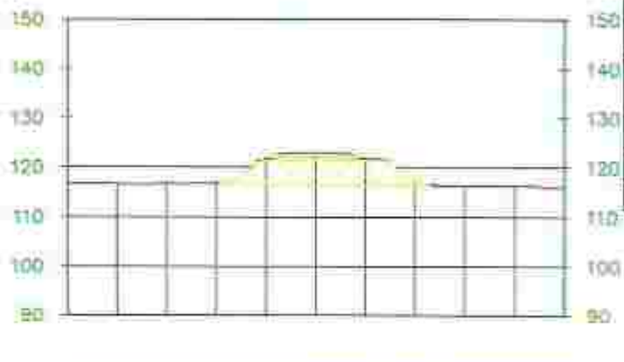
671+840.00



Total Volume at Station 671+840.00	
Cut Area	0.00
Fill Area	162.38
Cut Vol	0.00
Fill Vol	1633.74
Cum Cut Vol	0.00
Cum Fill Vol	10057.35
Net Vol	-10057.35

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

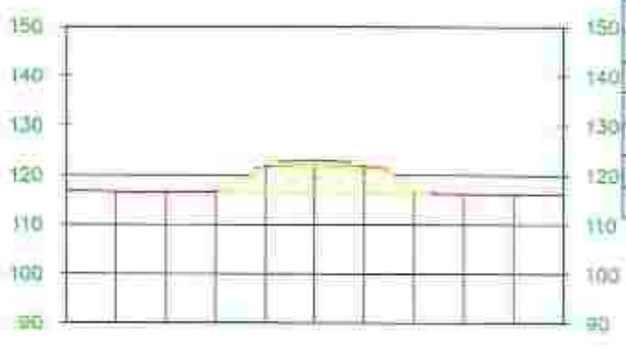
671+850.00



Total Volume at Station 671+850.00	
Cut Area	0.00
Fill Area	160.16
Cut Vol	0.00
Fill Vol	1612.89
Cum Cut Vol	0.00
Cum Fill Vol	11670.05
Net Vol	-11670.05

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

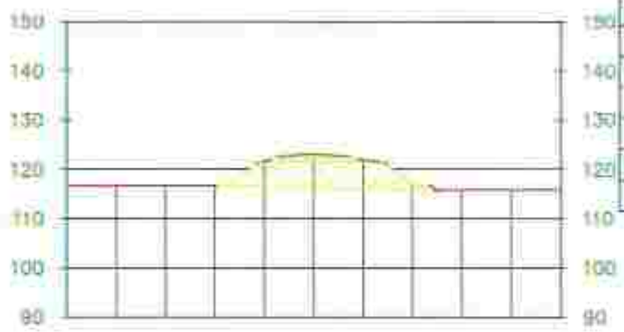
671+860.00



Total Volume at Station 671+860.00	
Cut Area	0.00
Fill Area	158.51
Cut Vol	0.00
Fill Vol	1593.46
Cum Cut Vol	0.00
Cum Fill Vol	13263.53
Net Vol	-13263.53

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

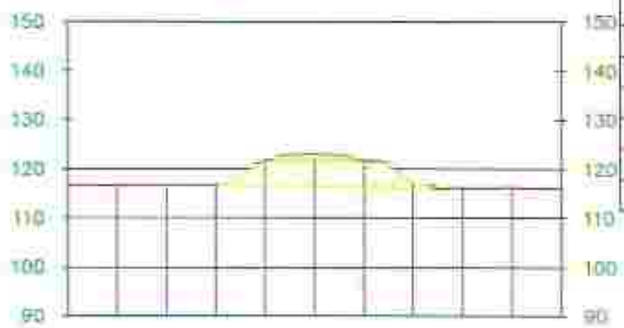
671+810.00



Total Volume at Station 671+810.00	
Cut Area	0.00
Fill Area	106.75
Cut Vol	0.00
Fill Vol	1564.54
Cum Cut Vol	0.00
Cum Fill Vol	5106.90
Net Vol	-5106.90

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

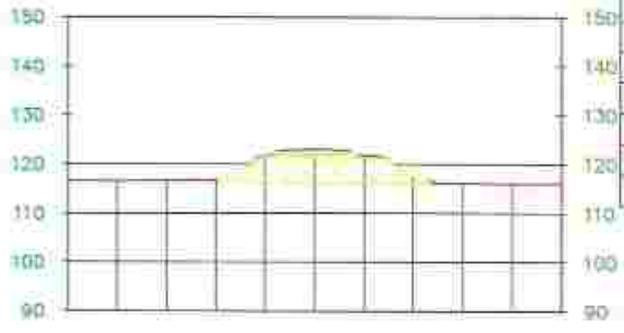
671+820.00



Total Volume at Station 671+820.00	
Cut Area	0.00
Fill Area	166.10
Cut Vol	0.00
Fill Vol	1664.25
Cum Cut Vol	0.00
Cum Fill Vol	6771.15
Net Vol	-6771.15

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

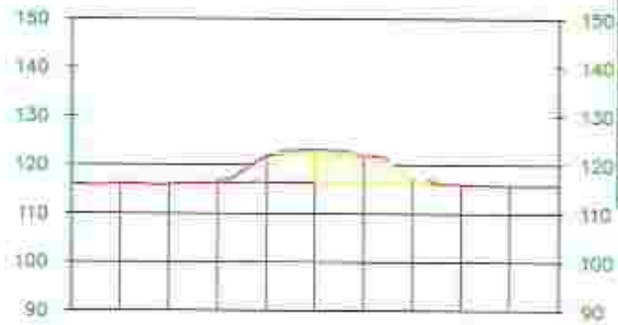
671+830.00



Total Volume at Station 671+830.00	
Cut Area	0.00
Fill Area	184.39
Cut Vol	0.00
Fill Vol	1652.46
Cum Cut Vol	0.00
Cum Fill Vol	8423.61
Net Vol	-8423.61

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

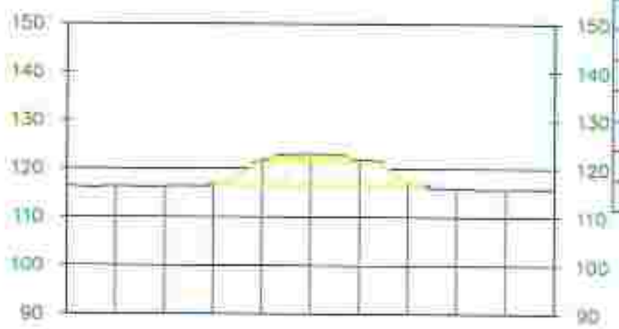
671+780.00



Total Volume at Station 671+780.00	
Cut Area	0.00
Fill Area	84.92
Cut Vol	0.00
Fill Vol	474.56
Cum Cut Vol	0.00
Cum Fill Vol	474.56
Net Vol	-474.56

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

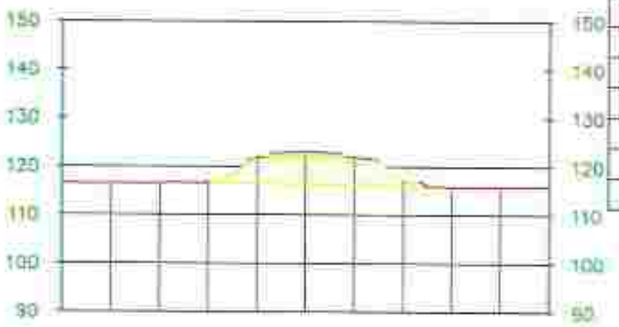
671+790.00



Total Volume at Station 671+790.00	
Cut Area	0.00
Fill Area	166.24
Cut Vol	0.00
Fill Vol	1305.78
Cum Cut Vol	0.00
Cum Fill Vol	1780.37
Net Vol	-1780.37

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

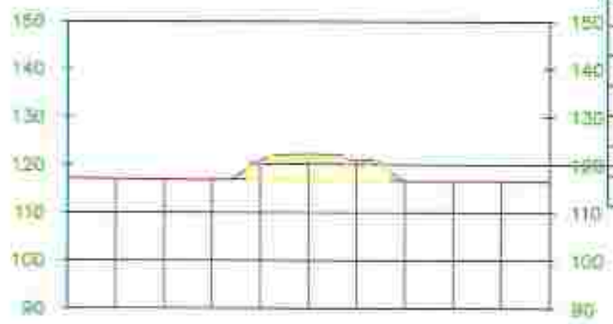
671+800.00



Total Volume at Station 671+800.00	
Cut Area	0.00
Fill Area	165.16
Cut Vol	0.00
Fill Vol	1661.99
Cum Cut Vol	0.00
Cum Fill Vol	3442.36
Net Vol	-3442.36

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

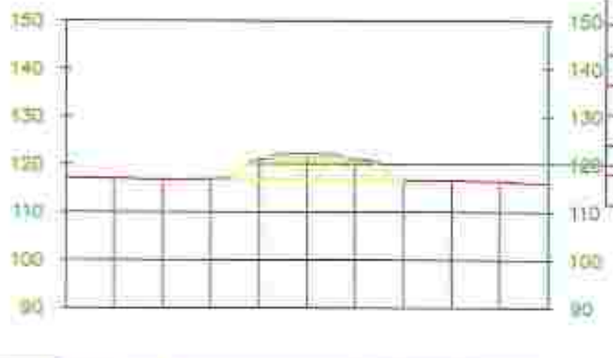
672+630.00



Total Volume at Station 672+630.00	
Cut Area	0.00
Fill Area	105.09
Cut Vol	0.00
Fill Vol	540.30
Cum Cut Vol	0.00
Cum Fill Vol	59560.53
Net Vol	-59560.53

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.98				
PROPOSED ELEVATIONS				120.47	121.41	121.80			

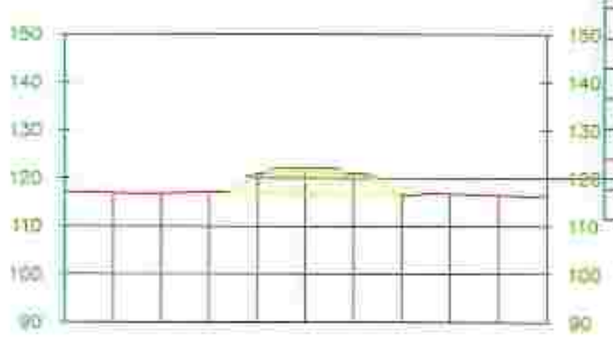
672+640.00



Total Volume at Station 672+640.00	
Cut Area	0.00
Fill Area	117.20
Cut Vol	0.00
Fill Vol	1125.30
Cum Cut Vol	0.00
Cum Fill Vol	60706.84
Net Vol	-60706.84

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.98				
PROPOSED ELEVATIONS				120.50	121.39	121.80			

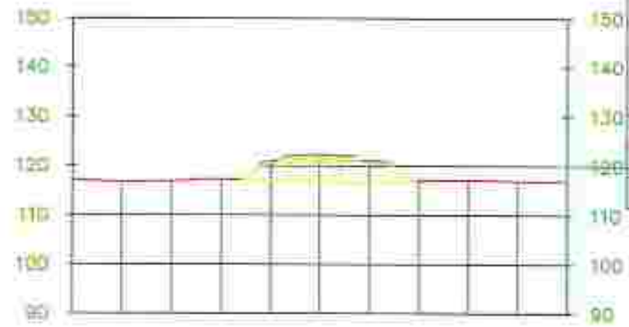
672+650.00



Total Volume at Station 672+650.00	
Cut Area	0.00
Fill Area	117.89
Cut Vol	0.00
Fill Vol	1170.29
Cum Cut Vol	0.00
Cum Fill Vol	61882.13
Net Vol	-61882.13

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					116.98				
PROPOSED ELEVATIONS				120.50	121.39	121.80			

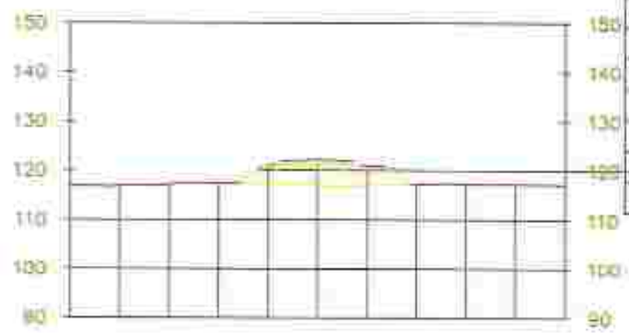
672+660.00



Total Volume at Station 672+660.00	
Cut Area	0.00
Fill Area	112.62
Cut Vol	0.00
Fill Vol	1152.41
Cum Cut Vol	0.00
Cum Fill Vol	63834.54
Net Vol	-63834.54

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					117.00				
PROPOSED ELEVATIONS				120.97	121.38	120.97			

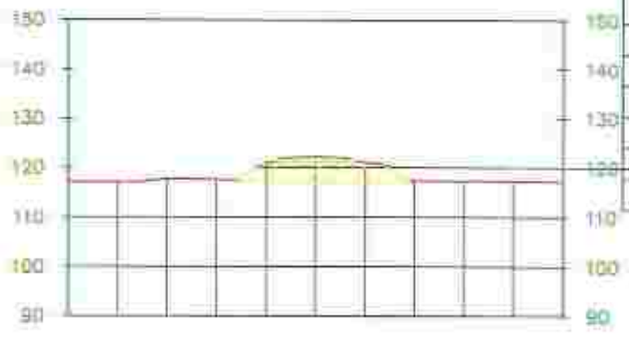
672+670.00



Total Volume at Station 672+670.00	
Cut Area	0.00
Fill Area	103.84
Cut Vol	0.00
Fill Vol	1082.31
Cum Cut Vol	0.00
Cum Fill Vol	64116.85
Net Vol	-64116.85

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					117.00				
PROPOSED ELEVATIONS				120.97	121.38	120.97			

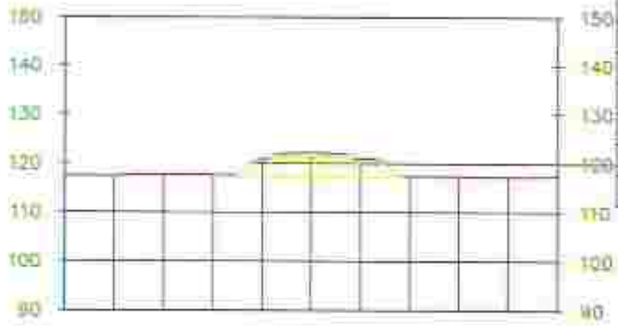
672+680.00



Total Volume at Station 672+680.00	
Cut Area	0.00
Fill Area	99.54
Cut Vol	0.00
Fill Vol	1001.56
Cum Cut Vol	0.00
Cum Fill Vol	65118.73
Net Vol	-65118.73

OFFSET	40	30	20	10	0	10	20	30	40
EXISTING ELEVATIONS					117.10				
PROPOSED ELEVATIONS				120.82	121.28	120.98			

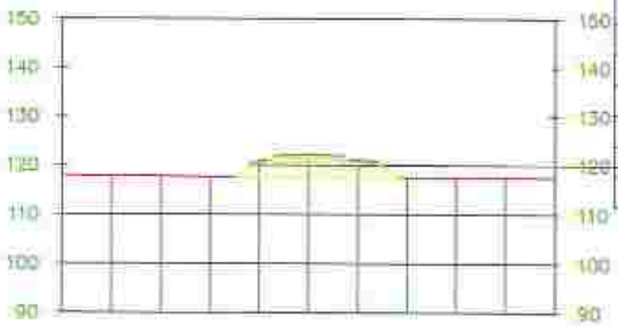
672+690.00



Total Volume at Station 672+690.00	
Cut Area	0.00
Fill Area	80.92
Cut Vol	0.00
Fill Vol	932.58
Cum Cut Vol	0.00
Cum Fill Vol	66056.04
Net Vol	-66056.04

	-40	-30	-20	-10	0	10	20	30	40
OFFSET									
EXISTING ELEVATIONS					117.38				
PROPOSED ELEVATIONS				120.19	121.09	120.95			

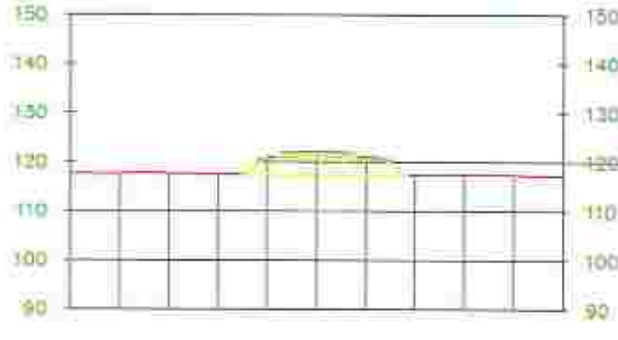
672+700.00



Total Volume at Station 672+700.00	
Cut Area	0.00
Fill Area	90.35
Cut Vol	0.00
Fill Vol	906.58
Cum Cut Vol	0.00
Cum Fill Vol	65965.41
Net Vol	-65965.41

	-40	-30	-20	-10	0	10	20	30	40
OFFSET									
EXISTING ELEVATIONS					117.14				
PROPOSED ELEVATIONS				120.19	121.09	120.95			

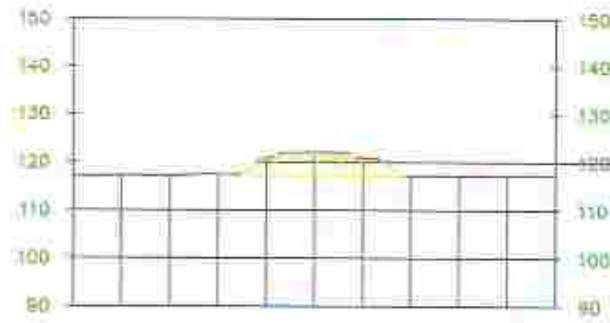
672+710.00



Total Volume at Station 672+710.00	
Cut Area	0.00
Fill Area	91.84
Cut Vol	0.00
Fill Vol	911.46
Cum Cut Vol	0.00
Cum Fill Vol	67873.87
Net Vol	-67873.87

	-40	-30	-20	-10	0	10	20	30	40
OFFSET									
EXISTING ELEVATIONS					117.38				
PROPOSED ELEVATIONS				120.19	121.09	120.95			

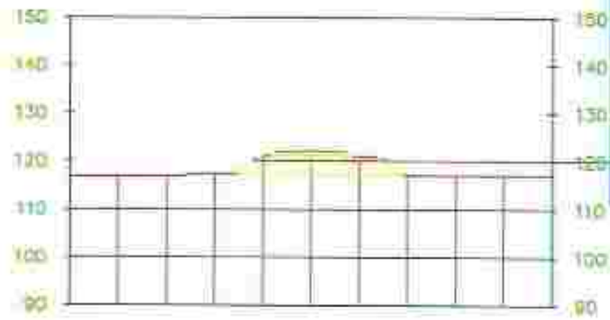
672+720.00



Total Volume at Station 672+720.00	
Cut Area	0.00
Fill Area	94.42
Cut Vol	0.00
Fill Vol	931.77
Cum Cut Vol	0.00
Cum Fill Vol	69805.84
Net Vol	−69805.84

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

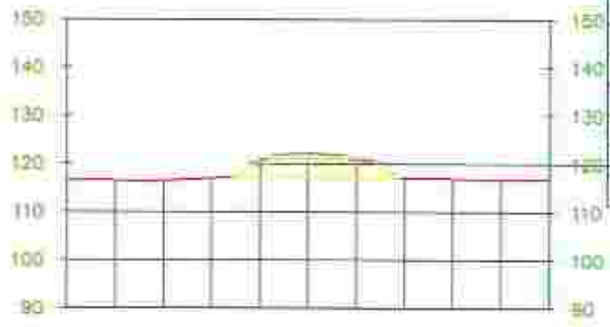
672+730.00



Total Volume at Station 672+730.00	
Cut Area	0.00
Fill Area	97.78
Cut Vol	0.00
Fill Vol	960.88
Cum Cut Vol	0.00
Cum Fill Vol	69766.52
Net Vol	−69766.52

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

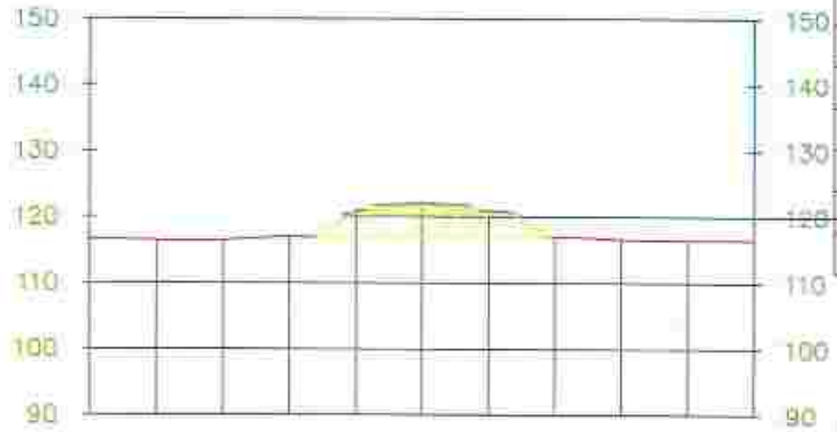
672+740.00



Total Volume at Station 672+740.00	
Cut Area	0.00
Fill Area	99.22
Cut Vol	0.00
Fill Vol	984.91
Cum Cut Vol	0.00
Cum Fill Vol	70751.44
Net Vol	−70751.44

OFFSET	
EXISTING ELEVATIONS	
PROPOSED ELEVATIONS	

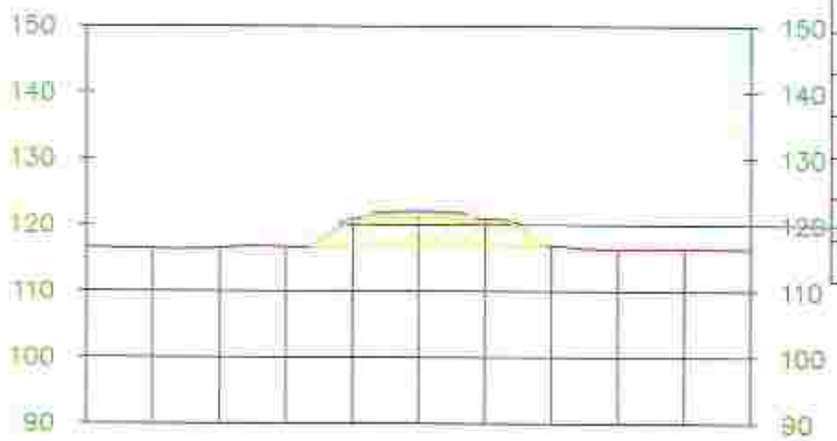
672+750.00



Total Volume at Station 672+750.00	
Cut Area	0.00
Fill Area	102.36
Cut Vol	0.00
Fill Vol	1007.89
Cum Cut Vol	0.00
Cum Fill Vol	71759.33
Net Vol	-71759.33

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					117.06				
PROPOSED ELEVATIONS				120.85	121.29	120.89			

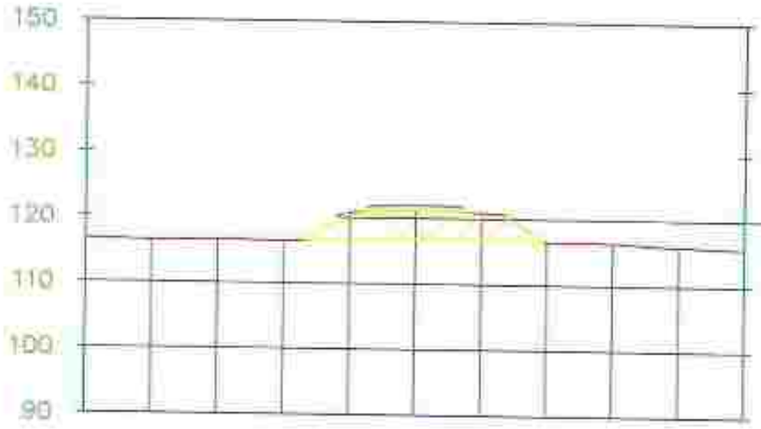
672+760.00



Total Volume at Station 672+760.00	
Cut Area	0.00
Fill Area	107.93
Cut Vol	0.00
Fill Vol	1051.41
Cum Cut Vol	0.00
Cum Fill Vol	72810.74
Net Vol	-72810.74

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.89				
PROPOSED ELEVATIONS				120.84	121.28	120.88			

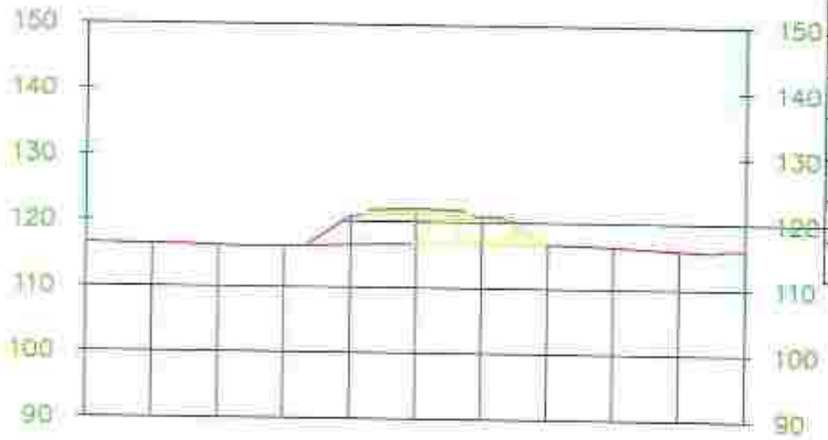
672+770.00



Total Volume at Station 672+770.00	
Cut Area	0.00
Fill Area	112.27
Cut Vol	0.00
Fill Vol	1100.98
Cum Cut Vol	0.00
Cum Fill Vol	73911.73
Net Vol	-73911.73

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					115.80				
PROPOSED ELEVATIONS				120.82	121.27	120.85			

672+780.00



Total Volume at Station 672+780.00	
Cut Area	0.00
Fill Area	63.36
Cut Vol	0.00
Fill Vol	578.17
Cum Cut Vol	0.00
Cum Fill Vol	74789.90
Net Vol	-74789.90

OFFSET	-40	-30	-20	-10	0	10	20	30	40
EXISTING ELEVATIONS					116.68				
PROPOSED ELEVATIONS				120.83	121.20	120.86			

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 9/8/2023
Soil type : Middle Embankment
Location : ST From 672+080 to 672+100
Level : - 4.5 M
Report No. : 01

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+090	1525	2.26	5.3	2.15	96.4	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

Signature /

CEL

Consulting Engineering Bureau & Laboratories

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 25/7/2023
Reporting Date	: 29/6/2023
Reporting No.	: 01

Dear Gentleman,

Attached here with the delivered on 25 / 7 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

CEL

Signature /.....

IAS

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 25/7/2023
Reporting Date : 29/6/2023
Reporting No. : 01

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	96.9
37.5	1.5	89.7
25	1	82.8
19	¾	77.6
12.50	½	73.8
9.50	3/8	59.7
4.75	4	49.8
2.00	10	37.1
0.425	40	22.9

Signature

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Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 25/7/2023
Reporting Date : 29/6/2023
Reporting No. : 01

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	6.9

Signature:

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 25/7/2023

Reporting Date : 29/6/2023

Reporting No. : 01

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Signature /.....

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Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 25/7/2023
Reporting Date : 29/6/2023
Reporting No. : 01

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	37.1	Max 50 %	----	----
0.425 mm (No. 40).	22.9	Max 30 %	Max 50 %	----
0.075 mm (No. 200).	6.9	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	----	----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature /

IAS ACCREDITED

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 25/7/2023
Reporting Date : 29/6/2023
Reporting No. : 01

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

- Max dry density (gm/cm³) : 2.23
- Optimum moisture content % : 5.8

Signature

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 25/7/2023

Reporting Date : 29/6/2023

Reporting No. : 01

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.33
1.27	0.050	1.62
1.91	0.075	2.74
2.54	0.100	3.91
3.18	0.125	5.02
3.81	0.150	6.09
4.45	0.175	7.56
5.08	0.200	9.23
6.35	0.250	14.50

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	56.6 %
	6.90	3.91	

Notes:

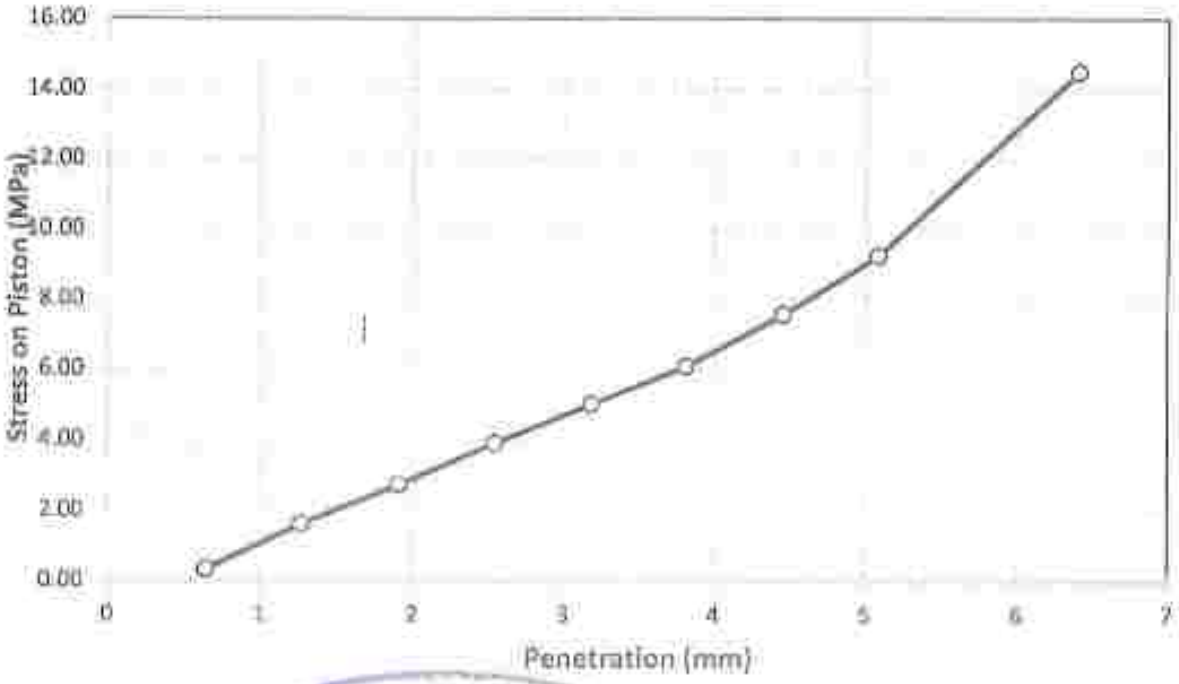
1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.23 (gm /cm^3)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 35.

Signature:

IAS ACCREDITED

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 25/7/2023
Reporting Date : 29/6/2023
Reporting No. : 01

Load Penetration Curve of CBR Test
ASTM D-1883



Signature

CEL
Consulting Engineering Bureau & Laboratories

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 9/8/2023
Soil type : Middle Embankment
Location : ST From 672+100 to 672+140
Level : - 5.0 M
Report No. : 02

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+120	1544	2.27	5	2.17	97.1	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 9/8/2023
Soil type : Middle Embankment
Location : ST From 672+140 to 672+180
Level : - 4.5 M
Report No. : 03

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+160	1514	2.29	5.3	2.18	97.6	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 14/8/2023

Soil type : طبقة استعمال

Location : ST From 672+100 To 672+140

Level : - 4.5 M

Report No. : 06

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+110	1497	2.28	5.8	2.15	96.5%	Comply
2	672+130	1498	2.26	5.8	2.14	95.8%	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 14/8/2023

Soil type : طبقه استعدال

Location : ST From 672+060 To 672+080

Level : - 5 M

Report No. : 05

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+070	1470	2.28	5.8	2.15	96.5%	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 13/8/2023

Soil type : طبقة استعدال

Location : ST From 672+000 To 672+060

Level : - 4.5 M

Report No. : 04

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+020	1372	2.26	5.3	2.15	96.2%	Comply
2	672+040	1385	2.31	5.8	2.18	97.9%	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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مكتب هندسي للاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 16/8/2023

Soil type : طبقه استعمال

Location : ST From 672+060 To 672+080

Level : - 4.5 M

Report No. : 07

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+090	1408	2.32	5.8	2.19	98.3%	Comply

- Degree of compaction based on proctor test dated At
  - Max. dry density = 2.23 gm/cm^3
  - At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 24/8/2023

Soil type : Middle Embankment

Location : ST From 672+020 To 672+180

Level : - 4 M

Report No. : 08

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+050	1807	2.24	5.3	2.12	95.7%	Comply
2	672+100	1605	2.28	5.5	2.16	97.3%	Comply
3	672+150	1635	2.25	5.8	2.13	95.8%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 05/09/2023

Soil type : Lower Embankment

Location : ST From 671+780 To 971+820

Level : - 5.5 M

Report No. : 14

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+830	1427	2.29	5.3	2.18	98.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

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مكتب معامل الاستشارات الهندسية
مشروعات محافظات الوجه القبلي

Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train – Sector (5) – Qous to Arment
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : station 671+780 to 671+820
Station : 671+800
Level : -5.5
Test Date : 5/9/2023
Repot Date : 5/9/2023
Type of soil : Lower Embankment
Report No. : 03

Dear Gentlemen,

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

Apparatus

1. Loading plates consists of two plates with 600 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
7. Reaction loading system by roller compactor with weight approximately 15 ton
8. Calibration certificates are attached

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute.
8. The load shall be released in 3 stages, to 50 %, 25 %, and approximately 2 % of the maximum load
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached)
10. At each stage, the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

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

Report

- **Type of soil : Lower Embankment**
- **Job requirement : Ev_2> 300 kg/cm² (30 Mpa)**

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	300
- date of measurement	05/09/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No	Station		First Cycle	Second Cycle	Ev_2/ Ev_1 Ratio
	From	To	Ev_1 (MPa)	Ev_2 (MPa)	
1	671+780	671+820	52	110	2.11

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مكتب معامل الاستشارات الهندسية
مشروعات محافظات الوجه القبلى

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Section (6) Qous to Armant
Test Date : 04/09/2023
report date : 06/09/2023
Location : station (671+800)
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.80	0.20	19.73	0.27	0.23
2	1.66	19.60	0.40	19.51	0.49	0.44
3	2.50	19.40	0.60	19.34	0.66	0.63
4	3.33	19.20	0.80	19.20	0.80	0.80
5	4.17	19.00	1.00	19.12	0.88	0.94
6	5.00	18.80	1.20	18.96	1.04	1.12

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.90	1.10	19.05	0.95	1.03
2	1.25	19.05	0.95	19.25	0.75	0.85
3	0.100	19.55	0.45	19.60	0.40	0.42

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.45	0.55	19.40	0.60	0.58
1	1.66	19.32	0.68	19.31	0.69	0.69
2	2.50	19.18	0.82	19.17	0.83	0.82
3	3.33	19.08	0.92	19.03	0.97	0.95
4	4.17	18.96	1.04	18.95	1.05	1.05

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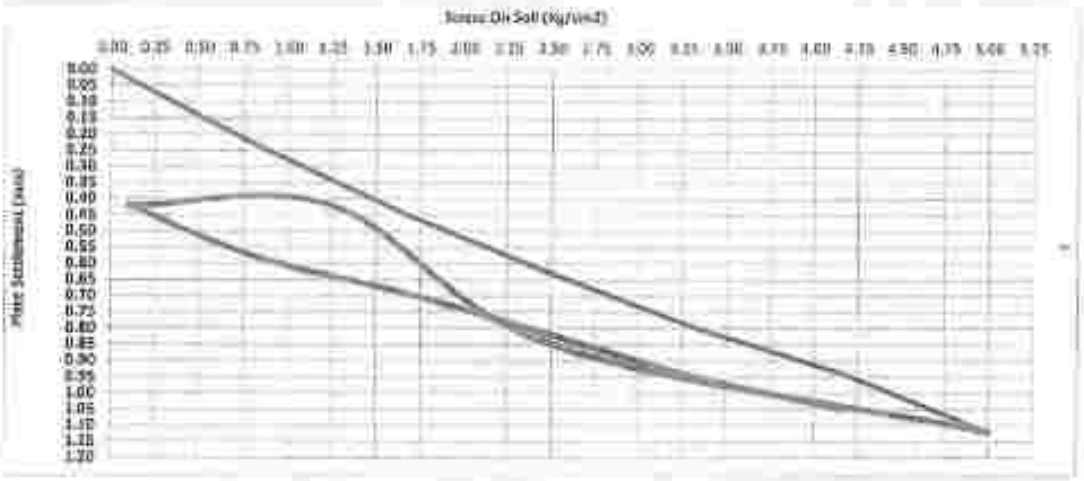
Company Name : شركة بيفا الرحمن للتنمية والمقاولات
Project : Electric Railroad Tracks - Section (6) Qena to Aswan
Test Date : 05/09/2023
report date : 06/09/2023
Location : Station (671+600)
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	686	1172.8	1766.3	2352.8	2946.1	3533
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.23	0.44	0.63	0.80	0.94	1.12

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1768	884	0
Stress (Kg/cm2)	5.00	2.500	1.25	0.10
Settlement (mm)	1.12	0.85	0.42	0.42

D (mm) = 300	S1 (mm)=	0.40	S2(mm)= 0.83	ΔS = 0.42
Ev1 (kg/cm2) = (0.75*D* Δσ)/ΔS		83		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	686	1172.8	1766.3	2352.8	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.42	0.58	0.69	0.82	0.95	1.05

Ev2/Ev1 =	2.1

D (mm) = 300	S1 (mm)=	0.42	S2(mm)= 0.82	ΔS = 0.40
Ev2 (kg/cm2) = (0.75*D* Δσ)/ΔS		175		

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

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مكتب معامل الإستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 17/8/2023
Reporting Date	: 21/8/2023
Reporting No.	: 01-2

Dear Gentleman,

Attached here with the delivered on 17 / 8 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

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مكتب معامل الإستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 17/8/2023
Reporting Date : 21/8/2023
Reporting No. : 01-2

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	90.7
25	1	84.3
19	¾	78.4
12.50	½	74.3
9.50	3/8	60.5
4.75	4	52.4
2.00	10	39.3
0.425	40	24.2

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N=25.6596723

Type of sample : Soil Embankment

Delivery Date : 17/8/2023

Reporting Date : 21/8/2023

Reporting No. : 01-2

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	7.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 17/8/2023

Reporting Date : 21/8/2023

Reporting No. : 01-2

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 17/8/2023

Reporting Date : 21/8/2023

Reporting No. : 01-2

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	39.3	Max 50 %	-----	-----
0.425 mm (No. 40).	24.2	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	7.8	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		-----	-----	-----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

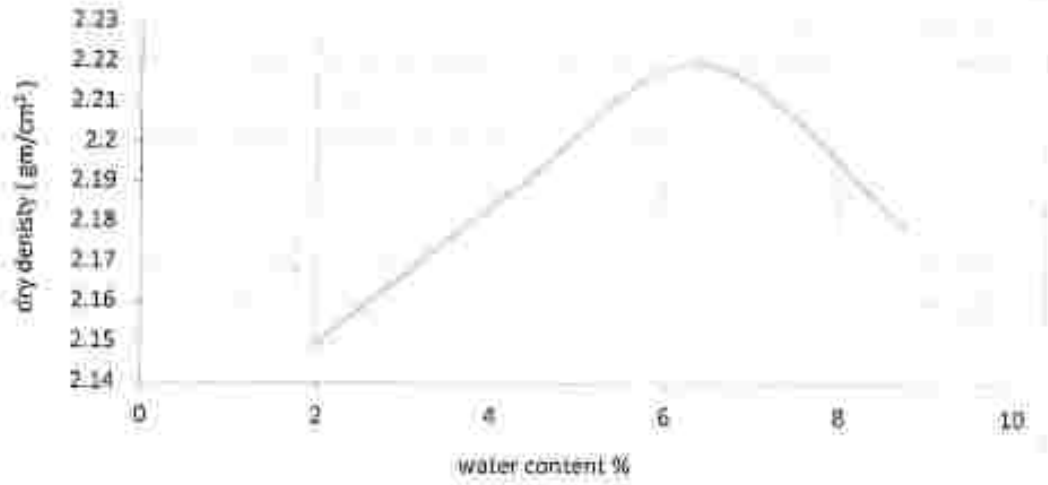
Type of sample : Soil Embankment

Delivery Date : 17/8/2023

Reporting Date : 21/8/2023

Reporting No. : 01-2

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



- Max dry density (gm/cm³) : 2.22
- Optimum moisture content % : 6.4

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Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 17/8/2023

Reporting Date : 21/8/2023

Reporting No. : 01-2

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.56
1.27	0.050	1.69
1.91	0.075	2.76
2.54	0.100	3.75
3.18	0.125	4.62
3.81	0.150	5.33
4.45	0.175	5.68
5.08	0.200	5.98
6.35	0.250	6.09

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	54.4 %
	6.90	3.75	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.22 (gm /cm^3)
At = 6.4 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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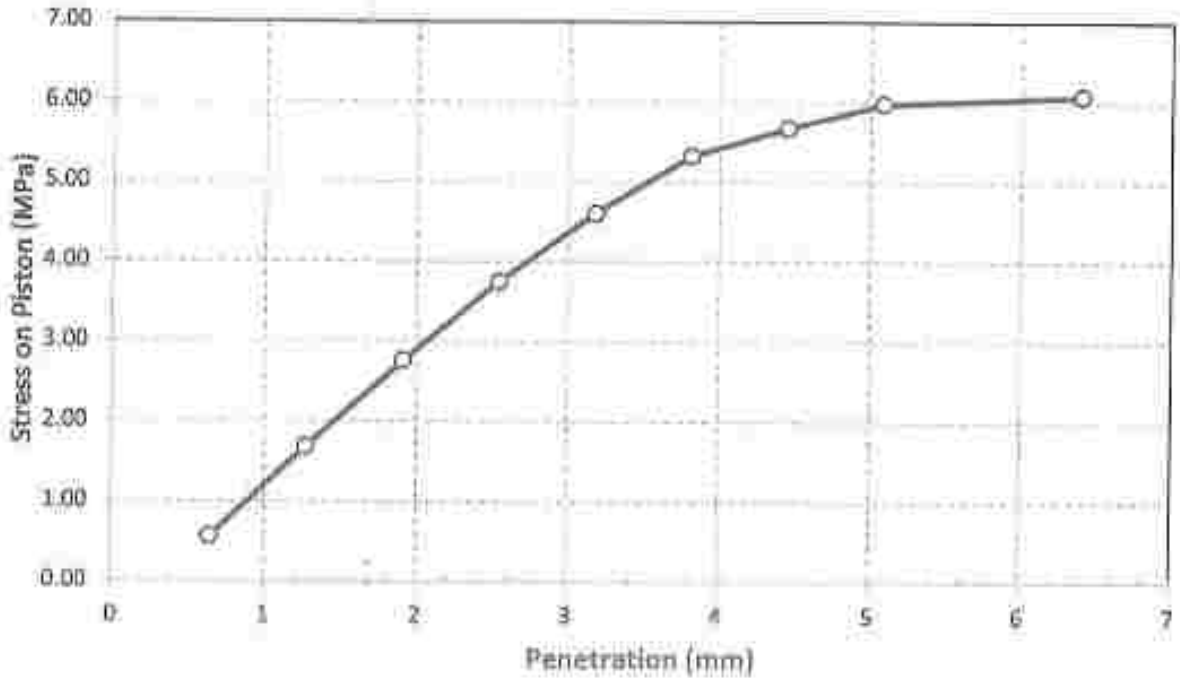
مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 17/8/2023
Reporting Date : 21/8/2023
Reporting No. : 01-2

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 05/09/2023

Soil type : Lower Embankment

Location : ST From 671+820 To 971+840

Level : - 6 M

Report No. : 13

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+830	1489	2.26	5.5	2.15	96.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 14/10/2023
Soil type : Middle Embankment
Location : ST From 671+780 To 671+880
Level : -3 M
Report No. : 32

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	691+800	1412	2.31	6.4	2.17	98.6%	Comply
2	691+860	1468	2.25	6	2.12	96.5%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.20 gm/cm^3
- At optimum moisture content = 5.8 %

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Company Name : [illegible]
Project : Electric Express Train – HSR Phase One Civil Treatment
Testing Date : 04/09/2023
Soil type : Lower Embankment
Location : ST From 671+860 To 671+910
Level : - 5.5 M
Report No. : 11

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1.	671+890	1472	2.28	5.3	2.16	97.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 5.4%

Signature / [illegible]

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مشروعات محافظات الوجه القبلي

Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train – Sector (5) – Qous to Arment
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : station 671+860 to 671+920
Station : 671+900
Level : -5.5
Test Date : 4/9/2023
Repot Date : 5/9/2023
Type of soil : Lower Embankment
Report No. : 01

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with 600 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
7. Reaction loading system by roller compactor with weight approximately 15 ton
8. Calibration certificates are attached

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm^2
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached)
10. At each stage, the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

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

Report

- Type of soil : Lower Embankment
- Job requirement : Ev_2 > 300 kg/cm² (30 Mpa)

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	300
- date of measurement	05/09/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		First Cycle	Second Cycle	Ev_2/Ev_1 Ratio
	From	To	Ev_1 (MPa)	Ev_2 (MPa)	
1	671+860	671+920	72	110	1.52

Signature /

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Section (5) Qena to Assuan
Test Date : 04/09/2023
report date : 06/09/2023
Location : Station 671+860 to 671+920
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.82	0.18	19.85	0.15	0.16
2	1.66	19.70	0.30	19.73	0.27	0.28
3	2.50	19.60	0.40	19.60	0.40	0.40
4	3.33	19.43	0.57	19.48	0.52	0.54
5	4.17	19.31	0.69	19.37	0.63	0.65
6	5.00	19.19	0.81	19.24	0.76	0.77

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	19.19	0.81	19.24	0.76	0.77
2	1.25	19.27	0.73	19.31	0.69	0.69
3	0.100	19.39	0.61	19.45	0.55	0.57

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.56	0.44	19.62	0.38	0.40
1	1.66	19.42	0.58	19.47	0.53	0.54
2	2.50	19.28	0.72	19.33	0.67	0.68
3	3.33	19.18	0.82	19.20	0.80	0.80
4	4.17	19.04	0.96	19.07	0.93	0.92

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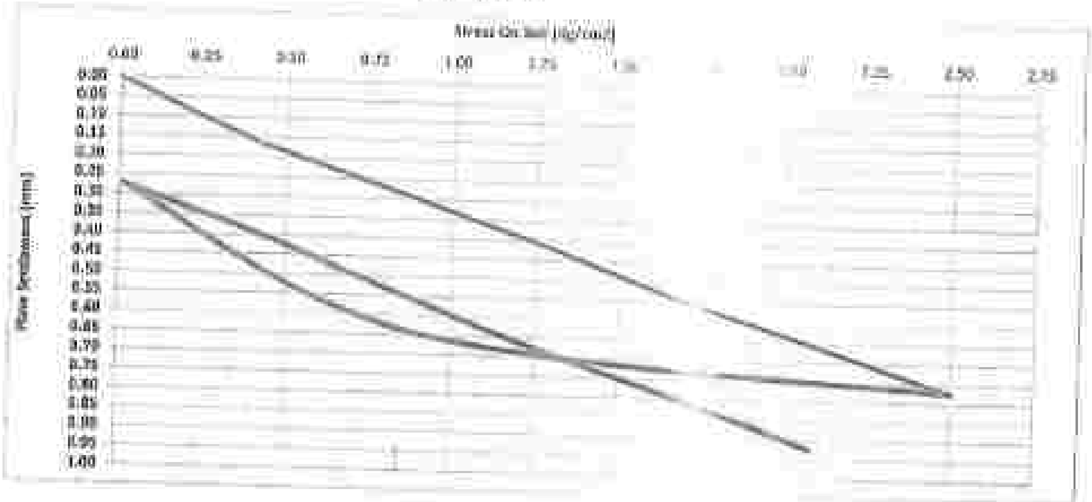
Company Name	: شركة عبد الرحمن التنمية والمقاولات
Project	: Electric Express Train – Section (3) Qena to Aswan
Test Date	: 04/09/2023
report date	: 09/09/2023
Location	: Station 871+000 to 871+500
Test No.	: 01

Nonrepetitive Static Plate Load Tests of Soil
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1760.3	2352.6	2946.1	3533
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.10	0.28	0.40	0.54	0.65	0.77

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1760	884	71
Stress (Kg/cm2)	5.00	2.500	1.25	0.10
Settlement (mm)	0.68	0.57	0.27	0.37

D (mm) =	300	S1 (mm)=	0.20	S2(mm)=	0.55	ΔS =	0.30
Ev1 (kg/cm2) = (0.75*D*Δσ)/ΔS			72				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586	1172.8	1760.1	2352.6	2946.1
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.27	0.40	0.54	0.68	0.80	0.92

Ev2/Ev1 =	0.0

D (mm) =	300	S1 (mm)=	0.42	S2(mm)=	0.81	ΔS =	0.40
Ev2 (kg/cm2) = (0.75*D*Δσ)/ΔS			110				

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

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Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 04/09/2023
Soil type : Lower Embankment
Location : ST From 671+920 To 971+940
Level : - 6 M
Report No. : 10

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+930	1272	2.26	5.5	2.15	96.7%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

Signature / .....

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Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 04/09/2023

Soil type : Lower Embankment

Location : ST From 671+960 To 971+980

Level : - 5.5 M

Report No. : 09

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+970	1441	2.28	5.3	2.16	97.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

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Company : شركة عباد الرحمن للتنمية والعقارات

Project : Electric Express Train – Sector (5) – Qous to Armant
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : station 671+960 to 671+980
Station : 671+970
Level : -5.5
Test Date : 4/9/2023
Repot Date : 5/9/2023
Type of soil : Lower Embankment
Report No. : 02

Dear Gentlemen,

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

Apparatus

1. Loading plates consists of two plates with 600 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
7. Reaction loading system by roller compactor with weight approximately 15 ton
8. Calibration certificates are attached

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm^2
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage, the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

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

Report

- **Type of soil : Lower Embankment**
- **Job requirement : Ev_2> 300 kg/cm² (30 Mpa)**

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	300
- date of measurement	04/09/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No	Station		First Cycle	Second Cycle	Ev_2/Ev_1 Ratio
	From	To	Ev_1 (MPa)	Ev_2 (MPa)	
1	671+780	671+820	68.1	82.8	0.96

Signature /

Company Name : شركة عبد الرحمن للتعبئة والكارتون
Project : Electric Express Train - Section (6) Qous to Aniant
Test Date : 04/09/2023
report date : 05/09/2023
Location : station (671+970)
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.75	0.25	19.79	0.21	0.23
2	1.66	19.55	0.45	19.60	0.40	0.42
3	2.50	19.30	0.70	19.41	0.59	0.65
4	3.33	19.10	0.90	19.19	0.81	0.85
5	4.17	18.85	1.15	19.00	1.00	1.08
6	5.00	18.61	1.39	18.88	1.12	1.26

Unloading Stage (1)

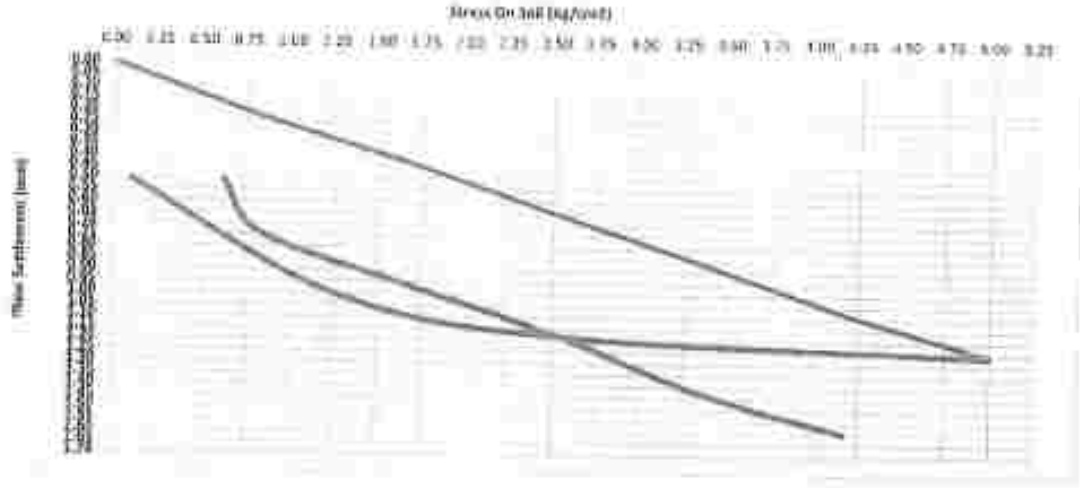
Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.70	1.30	18.95	1.05	1.18
2	1.25	18.95	1.05	19.05	0.95	1.00
3	0.100	19.58	0.42	19.40	0.60	0.51

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.32	0.68	19.19	0.81	0.74
1	1.66	19.10	0.90	18.98	1.02	0.96
2	2.50	18.88	1.12	18.78	1.22	1.17
3	3.33	18.67	1.33	18.50	1.50	1.42
4	4.17	18.49	1.51	18.32	1.68	1.60

Company Name : شركة عزة الرمدى للتنمية والمقاولات
Project : Electric Express Train - Section (B) Cairo to Ain Sokhna
Test Date : 05/05/2021
report date : 06/05/2021
Location : Station 871+970
Test No. : 05

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2940.1	3533
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.23	0.42	0.65	0.85	1.08	1.26

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1768	884	71
Stress (Kg/cm2)	5.00	2.500	1.25	0.10
Settlement (mm)	1.26	1.18	1.00	0.51

D (mm) = 300	S1 (mm)=	0.39	S2(mm)=	0.90	ΔS =	0.51
Ev1 (kg/cm2) = (0.75*D*Δσ)/ΔS		86.1				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2940.1
Stress (Kg/cm2)	0.83	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.51	0.74	0.90	1.17	1.42	1.60

Ev2/Ev1 =	5.66

D (mm) = 600	S1 (mm)=	0.93	S2(mm)=	1.46	ΔS =	0.53
Ev2 (kg/cm2) = (0.75*D*Δσ)/ΔS		82.6				

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

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Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 04/09/2023

Soil type : Lower Embankment

Location : ST From 671+980 To 972+000

Level : - 5 M

Report No. : 12

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+890	1553	2.22	5	2.12	95.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4 %

Signature / .....

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Company Name : شركة عهاد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 10/09/2023
Soil type : Lower Embankment
Location : ST From 672+820 To 672+840
Level : - 5.5 M
Report No. : 16

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+830	1519	2.27	5.5	2.15	97.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 6.4%

Signature /.....

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Company : شركة عبد الرحمن للتنمية والمقاولات

Project : Electric Express Train – Sector (5) – Qous to Armeint
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : station 671+820 to 671+840
Station : 671+830
Level : -5.5
Test Date : 10/9/2023
Repot Date : 10/9/2023
Type of soil : Lower Embankment
Report No. : 02

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with 600 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
7. Reaction loading system by roller compactor with weight approximately 15 ton
8. Calibration certificates are attached

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm^2
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage, the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min
11. Remove the loads

Report

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

Report

- Type of soil : **Lower Embankment**
- **Job requirement : Ev_2 > 300 kg/cm² (30 Mpa)**

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	300
- date of measurement	10/09/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No	Station		First Cycle	Second Cycle	Ev_2/ Ev_1 Ratio
	From	To	Ev_1 (MPa)	Ev_2 (MPa)	
1	871+820	671+840	90.2	101.1	1.78

Signature /

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مشروعات محافظات الوجه القبلي

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Section (5) Qena to Aswan
Test Date : 10/09/2023
report date : 10/09/2023
Location : station (671+830)
Test No. : 02

Nonrepetitive Static Plate Load Tests of Soils DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.90	0.10	19.85	0.15	0.13
2	1.66	19.70	0.30	19.60	0.40	0.35
3	2.50	19.55	0.45	19.40	0.60	0.53
4	3.33	19.30	0.70	19.19	0.81	0.75
5	4.17	19.09	0.91	19.00	1.00	0.96
6	5.00	18.89	1.11	18.82	1.18	1.15

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	19.10	0.90	19.06	0.94	0.92
2	1.25	19.31	0.69	19.27	0.73	0.71
3	0.100	19.59	0.41	19.56	0.44	0.43

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.50	0.50	19.30	0.70	0.60
1	1.66	19.47	0.53	19.22	0.78	0.66
2	2.50	19.35	0.65	19.18	0.82	0.73
3	3.33	19.23	0.77	18.98	1.02	0.90
4	4.17	19.11	0.89	18.87	1.13	1.01

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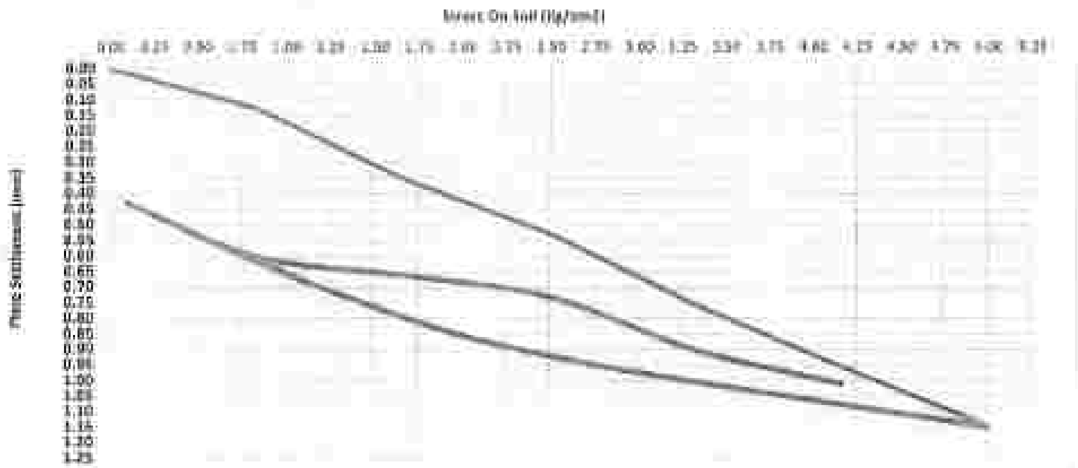
مكتب معامل الإستشارات الهندسية

مشروعات محافظات الوجه القبلي

Company Name	: شركة عبد الرحمن اللثبة ومقاولات
Project	: Electric Express Train - Section 9th Qena to Aswan
Test Date	: 09/09/2023
Report date	: 10/09/2023
Location	: Station 871+630
Test No.	: 03

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3533
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.13	0.35	0.55	0.75	0.96	1.15

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.500	1.25	0.10
Settlement (mm)	1.15	0.92	0.71	0.43

D (mm) =	300	S1 (mm)=	0.31	S2(mm)=	0.80	ΔS =	0.49
Ev1 (kg/cm2) = (0.75*D*Δσ)/ΔS			90.2				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.43	0.60	0.66	0.73	0.80	1.01

Ev2/Ev1 =	1.78

D (mm) =	300	S1 (mm)=	0.64	S2(mm)=	0.92	ΔS =	0.27
Ev2 (kg/cm2) = (0.75*D*Δσ)/ΔS			101.1				

Ev1 = Modulus of deformation during the loading stage.

Ev2 = Modulus of deformation during the Reloading stage.

D = Plate diameter (mm)

Dσ = The difference between 0.3 and 0.7 from the maximum loading (stress) (kg/cm²)

DS = Difference in settlement corresponding to 0.3 and 0.7 from the maximum loading (mm)

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armani
Testing Date : 09/09/2023
Soil type : Lower Embankment
Location : ST From 671+920 To 671+940
Level : - 5.5 M
Report No. : 15

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+930	1469	2.22	5.3	2.11	95.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكاتب معامل الاستشارات الهندسية
مشروعات محافظات الوجه القبلى

Company : شركة حمد عرمن للتعمية والمقاولات

Project : Electric Express Train – Sector (5) – Qous to Armant
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : station 671+920 to 671+940
Station : 671+930
Level : -5,5
Test Date : 9/9/2023
Repot Date : 10/9/2023
Type of soil : Lower Embankment
Report No. : 01

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with 600 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerbac)
7. Reaction loading system by roller compactor with weight approximately 15 ton
8. Calibration certificates are attached

Test Procedure

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 600 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 600 mm loading plate, the limit values are 2.5 kg/cm^2
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 steges, to 50 % , 25 %, and approximately 2 % of the maximum load
9. Following unloading, a further (2nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage, the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

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Report

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

Report

- Type of soil : Lower Embankment
- Job requirement : Ev_2 > 300 kg/cm² (30 Mpa)

Item	Descriptions
- Type of bedding material below the plate	Natural Soil
- Weather condition	Sunny
- Plate Diameter (mm)	300
- date of measurement	09/09/2023
- Unusual observation made during test	NO
- Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		First Cycle	Second Cycle	Ev_2/Ev_1 Ratio
	From	To	Ev_1 (MPa)	Ev_2 (MPa)	
1	671+920	671+940	89.7	61.8	0.69

Signature /

Company Name : شركة عبد الرحمن للكهرباء والسكاورات
Project : Electric Express Train - Section (6) Qous to Aswan
Test Date : 09/09/2023
report date : 10/09/2023
Location : station (671+930)
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Data sheet

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.78	0.22	19.77	0.23	0.23
2	1.66	19.58	0.42	19.54	0.46	0.44
3	2.50	19.30	0.70	19.39	0.61	0.65
4	3.33	19.12	0.88	19.17	0.83	0.85
5	4.17	18.95	1.05	18.99	1.01	1.03
6	5.00	18.77	1.23	18.80	1.20	1.22

Unloading Stage (1)

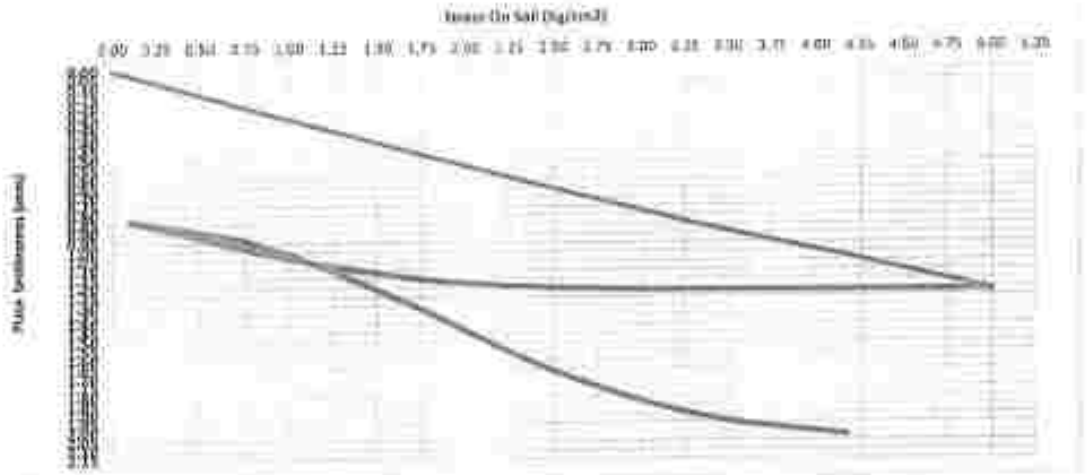
Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.79	1.21	18.81	1.19	1.20
2	1.25	18.90	1.10	18.95	1.05	1.08
3	0.100	19.20	0.80	19.15	0.85	0.83

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	18.99	1.01	19.10	0.90	0.96
1	1.66	18.75	1.25	18.70	1.30	1.28
2	2.50	18.51	1.49	18.18	1.82	1.66
3	3.33	18.29	1.71	17.90	2.10	1.91
4	4.17	18.15	1.85	17.82	2.18	2.02

Company Name : شركة جو فارمن للتنمية والمقاولات
Project : [illegible]
Test Date : 08/09/2023
report date : 19/09/2023
Location : Station 671+930
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1	3533
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.23	0.44	0.69	0.89	1.03	1.22

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1769	884	71
Stress (Kg/cm2)	5.00	2.500	1.25	0.10
Settlement (mm)	1.22	1.20	1.08	0.83

D (mm) = 300	S1 (mm)= 0.48	S2(mm)= 0.89	ΔS = 0.41
Ev1 (kg/cm2) = (0.75*D*Δσ)/ΔS	89.7		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586	1172.8	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.83	0.95	1.26	1.00	1.91	2.02

Ev2/Ev1 =	0.69

D (mm) = 300	S1 (mm)= 1.21	S2(mm)= 1.93	ΔS = 0.71
Ev2 (kg/cm2) = (0.75*D*Δσ)/ΔS	61.8		

Ev1 = Modulus of deformation during the loading stage
Ev2 = Modulus of deformation during the Recoading stage
D = Plate diameter (mm)
Δs = The difference between 0.3 and 0.7 from the maximum loading (mm)
ΔS = Difference in settlements corresponding to 0.3 and 0.7 from the maximum loading (mm)

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Company Name	: شركة جهة الرحمن
Project	: Electric Express Train – HSR From Qong To Armani
Location	: ST: 672+180 E=32.77#5621 N=25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 03/09/2023
Reporting Date	: 07/09/2023
Reporting No.	: 01-3

Dear Gentleman,

Attached here with the delivered on 3 / 9 / 2023

This sample is representative for 5,000 M³

Materials test

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

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

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Project
Location
Type of sample
Delivery Date
Reporting Date
Reporting No

RESULTS OF SIEVE ANALYSIS According to ASTM D 422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.9
37.5	1.5	94.5
25	1	88.5
19	¾	77.3
12.50	½	72.5
9.50	3/8	63.1
4.75	4	54.2
2.00	10	41.5
0.425	40	22.4

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Location: ST: 67+150 [illegible]

Type of sample: Soil Embankment

Delivery Date: 03/02/2020

Reporting Date: 07/02/2020

Reporting No: 01-S

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	7.4

Signature: [illegible]

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Company Name : شركة عبد الرحمن
Project : Electric Express Train – H&R from Qous To Armani
Location : ST: 672+180 E=32.7745623 N=25.6596723
Type of sample : Soil Embankment
Delivery Date : 03/09/2023
Reporting Date : 07/09/2023
Reporting No. : 01-3

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Signature /.....

Location:
Type of sample: Soil Embankment
Delivery Date: 03/02/2021
Reporting Date: 07/02/2021
Reporting No: 03/3

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	41.5	Max 50 %	——	------
0.425 mm (No. 40).	22.4	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	7.4	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		——	——	——
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

The test results are (☑ Comply ☐ No(Comply) with specifications limits

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-8

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.60
1.91	0.075	2.72
2.54	0.100	3.68
3.18	0.125	4.58
3.81	0.150	5.24
4.45	0.175	5.61
5.08	0.200	5.86
6.35	0.250	6.02

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	53.3 %
	6.90	3.68	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =2.21 (gm /cm^3)
At = 5.8 % optimum water content.

3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.

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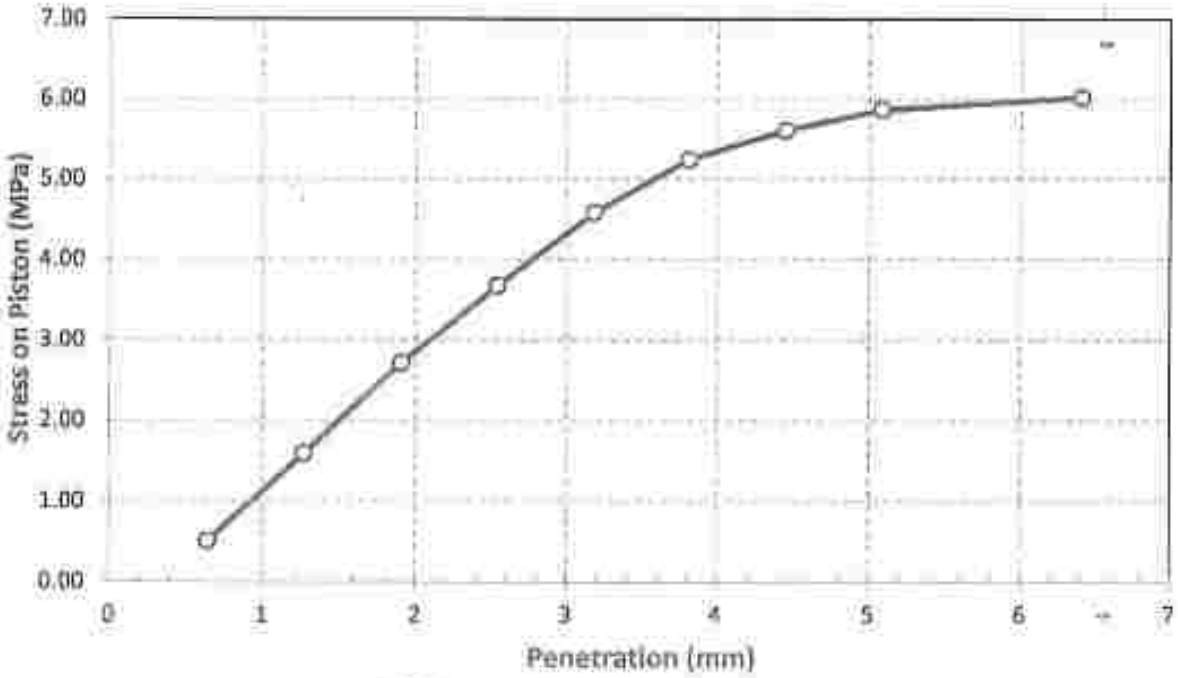
مكتب معامل الاستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 5/10/2023
Reporting Date	: 9/10/2023
Reporting No.	: 01-8

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الإستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 18/10/2023
Soil type : Middle Embankment
Location : ST From 672+640 To 672+780
Level : -2 M
Report No. : 39

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptence
1	672+660	1579	2.26	6.4	2.12	96.0%	Comply
2	672+680	1576	2.30	6	2.17	98.2%	Comply
3	672+700	1325	2.25	6.4	2.12	95.9%	Comply
4	672+720	1306	2.30	5.8	2.17	98.3%	Comply
5	672+740	1470	2.23	5.5	2.11	95.7%	Comply
6	672+760	1369	2.32	5.6	2.20	99.5%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 19/10/2023

Soil type : Middle Embankment

Location : ST From 671+780 To 671+900

Level : -2.5 M

Report No. : 42

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+800	1323	2.26	6	2.13	96.3%	Comply
2	671+850	1328	2.26	6.4	2.13	96.2%	Comply
3	671+885	1417	2.31	6	2.18	98.5%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qona To Arnuat

Testing Date : 21/10/2023

Soil type : Middle Embankment

Location : ST From 671+900 To 672+020

Level : -2.5 M

Report No. : 43

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+920	1564	2.24	5.5	2.12	95.9%	Comply
2	671+940	1516	2.28	5.6	2.15	97.5%	Comply
3	671+960	1439	2.25	6.4	2.11	95.6%	Comply
4	671+980	1461	2.26	5.8	2.13	96.5%	Comply
5	671+000	1508	2.27	5.6	2.15	97.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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Company Name : شركة جولد الرمس
Project : Electric Express Train – HSR From Qoiz To Armani
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-9

Dear Gentleman ,

Attached here with the delivered on 5 / 10 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

Signature /.....

CEL

Consulting Engineering Bureau & Laboratories

مكتب هندسي للاستشارات والمختبرات

Company Name : [illegible]

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-9

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.9
37.5	1.5	94.7
25	1	88.6
19	¾	79.1
12.50	½	72.0
9.50	3/8	64.5
4.75	4	59.4
2.00	10	42.3
0.425	40	29.7

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Consulting Engineering Bureau & Laboratories

Company Name : شركة هيا الرحمن
Project : Electric Express Train –HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N=25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-9

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.5

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Company Name : شركة عجد الرحمن
Project : Electric Express Train - HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-9

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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مكتب سابل للاستشارات الهندسية

Company Name : شركة عجلة الرحمن

Project : Electric Express Train – NSI, F, on, Qous To Aramaul

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-9

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	42.3	Max 50 %	-----	-----
0.425 mm (No. 40).	29.7	Max 30 %	Max 50 %	-----
0.075 mm (No. 200).	9.5	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	-----	----
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

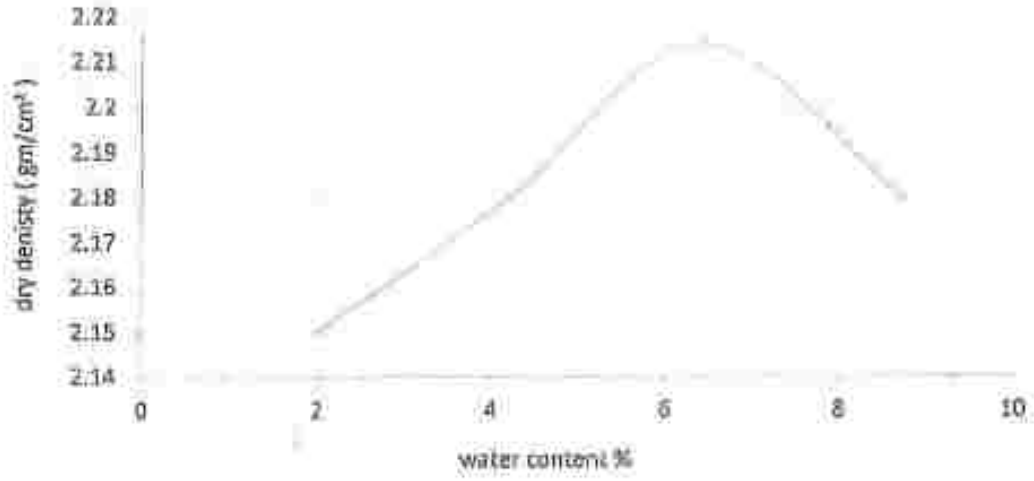
The test results are (□ Comply - □ Not Comply) with specifications limits

Signature / .....

IAS

Company Name : شركة [illegible]
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 5/10/2023
Reporting Date : 9/10/2023
Reporting No. : 01-9

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

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Consulting Engineering Bureau & Laboratories

مكتب سابل للاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Ermant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 5/10/2023

Reporting Date : 9/10/2023

Reporting No. : 01-9

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.65
1.91	0.075	2.76
2.54	0.100	3.80
3.18	0.125	4.64
3.81	0.150	5.33
4.45	0.175	5.68
5.08	0.200	5.86
6.35	0.250	6.02

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	55.1 %
	6.90	3.80	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.

2- The sample was compacted to dry density of =2.21 (gm /cm^3)
At = 5.8 % optimum water content.

3- Surcharge load 4.50 Kg.

4- CBR > 10 for middle and lower embankments according project spec page No 36.

Signature / ...

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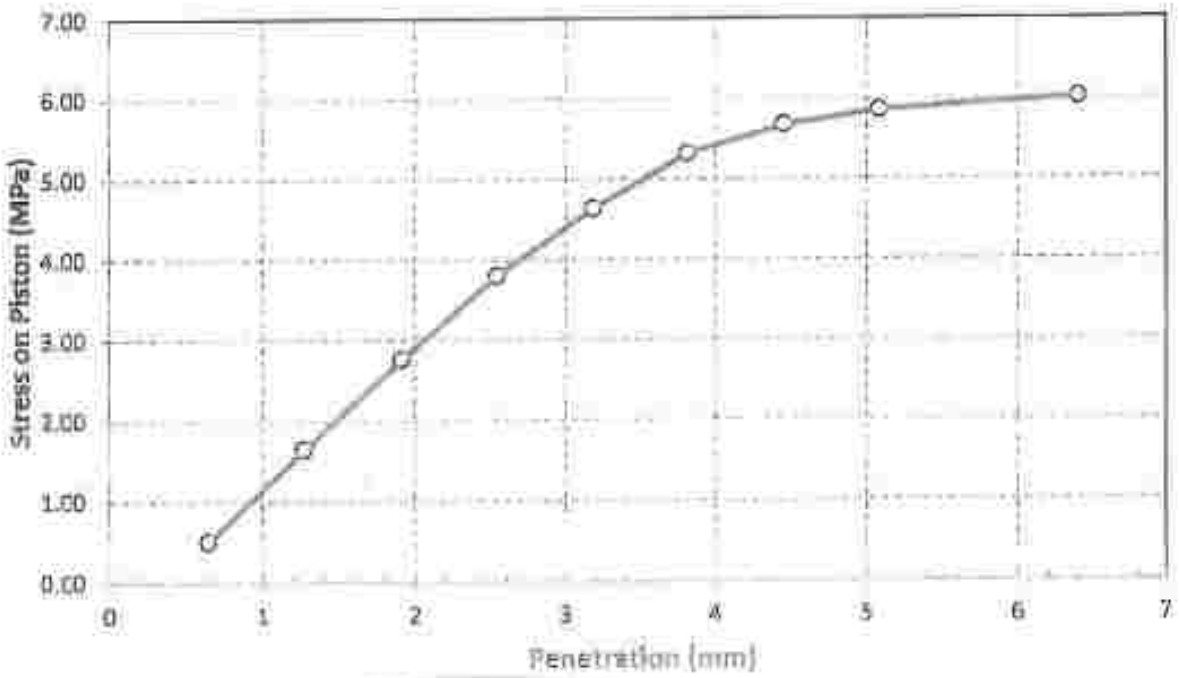
Consulting Engineering Bureau

Company Name	: شركة جبل الزمن
Project	: Electric Express Train -- HSR From Qous To Aroumi
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 5/10/2023
Reporting Date	: 9/10/2023
Reporting No.	: 01-9

Load Penetration Curve of CBR Test

ASTM D-1883



Signature :

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مكتب مماثل الإستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 23/10/2023
Soil type : Middle Embankment
Location : ST From 672+640 To 672+780
Level : -1.75 M
Report No. : 45

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+680	1998	2.27	6	2.15	97.1%	Comply
2	672+700	1752	2.31	5.8	2.18	98.6%	Comply
3	672+760	1443	2.25	5.6	2.13	96.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qasr To Aroussat

Testing Date : 25/10/2023

Soil type : Middle Embankment

Location : ST From 671+780 To 671+900

Level : - 2 M

Report No. : 47

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	671+800	1817	2.29	6.4	2.15	97.2%	Comply
2	671+820	1872	2.24	6	2.11	95.7%	Comply
3	671+840	1430	2.27	6.4	2.14	96.7%	Comply
4	671+860	1401	2.26	6.4	2.12	96.1%	Comply
5	671+880	1454	2.23	6	2.10	95.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm³
- At optimum moisture content = 5.8 %

Signature /

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qour To Armant

Testing Date : 26/10/2023

Soil type : Middle Embankment

Location : ST From 671+900 To 672+020

Level : - 2 M

Report No. : 48-1

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+920	1310	2.28	6.4	2.14	96.9%	Comply
2	671+950	1330	2.25	5.5	2.13	96.3%	Comply
3	671+970	1330	2.27	5.8	2.15	97.2%	Comply
4	672+000	1350	2.29	5.6	2.17	98.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature /

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Consulting Engineering Bureau & Associates

Company Name : CMCR & [illegible]

Project : Electric Express Train – HSR From Qana To Amwaj

Testing Date : 28/10/2023

Soil type : Middle Embankment

Location : ST From 672+020 To 672+180

Level : -2 M

Report No. : 49

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+060	1516	2.28	5.8	2.15	96.9%	Comply
2	672+100	1433	2.26	5.6	2.14	96.3%	Comply
3	672+140	1507	2.27	6.4	2.14	96.2%	Comply
4	672+160	1461	2.25	6	2.13	95.9%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 5.8 %

Signature / .....

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Location [illegible]
Type of sample Soil Embankment
Delivery Date 11/10/2023
Reporting Date 15/10/2023
Reporting no 01-10

Dear Gentlemen,

Attached here with the delivered on 11 / 10 / 2023

This sample is representative for 5,000 M^3

Materials test

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

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

Signature [illegible]

Delivery Date
Reporting Date
Reporting Hr

RESULTS OF SIEVE ANALYSIS According to ASTM D-422

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.2
37.5	1.5	91.5
25	1	85.2
19	¾	73.2
12.50	½	65.0
9.50	3/8	54.5
6.75	4	51.4
4.00	5	48.3
2.00	10	45.1

Project
Location
Type of sample Soil Embankment
Delivery Date 11/10/2023
Reporting Date 15/10/2023
Reporting No 01-10

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	2.8

Signature /. ...

CE I

Type of sample : Soil Embankment
Delivery Date : 11/10/2023
Reporting Date : 15/10/2023
Reporting No : 01-10

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Location : Soil Embankment

Type of sample : Soil Embankment

Delivery Date : 11/10/2023

Reporting Date : 15/10/2023

Reporting No : 01-10

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-7-6)
2.00 mm (No.10).	40.3	Max 50 %	----	----
0.425 mm (No. 40).	26.7	Max 30 %	Max 50 %	----
0.075 mm (No. 200).	8.8	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		----	----	----
Plasticity Index	0	Max 6 %	Max 6 %	Max 15 %

The test results (☒ Comply / ☐ Not Comply) with specification's limits

Signature /

Type of sample : Soil Embankment
Delivery Date : 11/10/2023
Reporting Date : 15/10/2023
Reporting No : 01-10

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

- Max dry density (gm/cm³) : 2.2
- Optimum moisture content % : 5

CEI

Consulting Engineering [illegible]

[illegible]

[illegible]

Project [illegible]

Location [illegible]

Type of sample Soil Embankment

Delivery Date [illegible]/10/2023

Reporting Date 15/10/2023

Reporting No 01-10

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.67
1.91	0.075	2.84
2.54	0.100	3.96
3.18	0.125	4.82
3.81	0.150	5.48
4.45	0.175	5.93
5.08	0.200	6.19
6.35	0.250	6.24

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
[illegible] (2.54 mm) penetration	6.90	[illegible]	[illegible] %

Notes

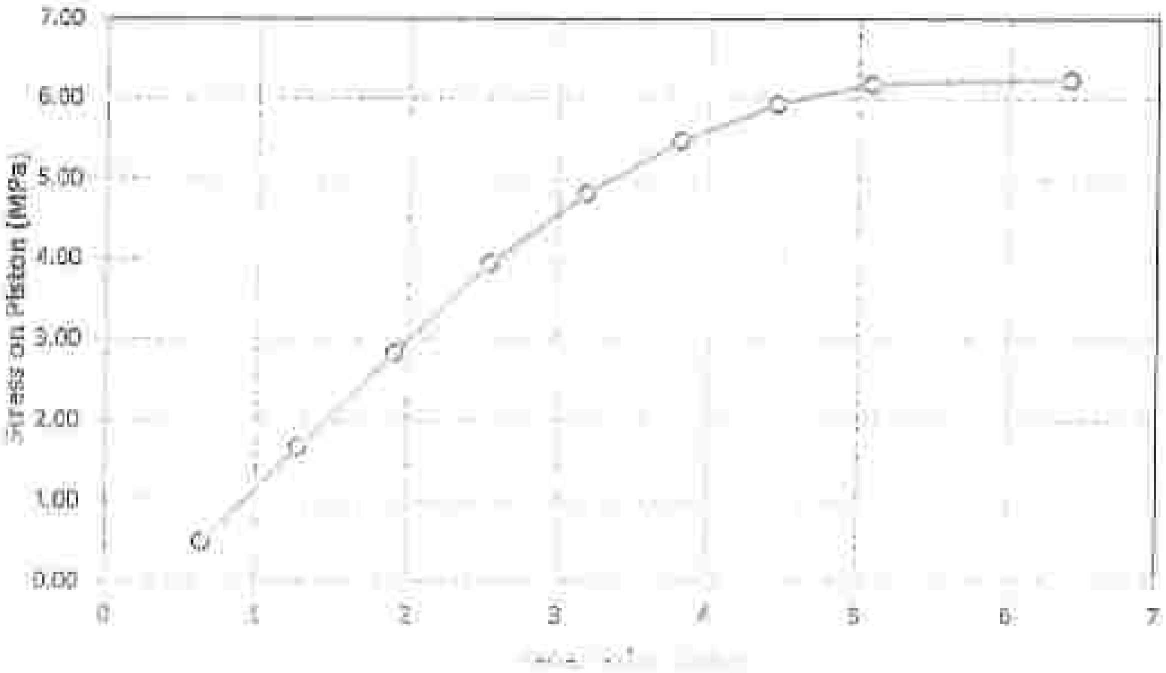
1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.22 (gm /cm³)
   at = [illegible] % optimum water content.
3- Surcharge load [illegible] Kg.
4- [illegible]

[illegible]

CEI

Company Name: [illegible]
Project: Electric Express Train – [illegible]
Location: ST. 67+180 E=[illegible] N=15.559672
Type of sample: Soil Embankment
Delivery Date: 11/10/2023
Reporting Date: 15/10/2023
Reporting No: 01-10

Load Penetration Curve of CBR Test
ASTM D-1883



Signature:

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مكتب معامل الإستشارات الهندسية
لمشروعات محافظات الوجه القبلي

Company : شركة عرابة الرمسيس للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Qaus to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station 873+040 to 872+740
Station : 872+580
Level : -1.5
Test Date : 30/10/2023
Report Date : 04/11/2023
Type of soil : Middle Embankment
Report No. : 01

Dear Gentlemen,

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

Apparatus

1. Loading plates consists of two plates with 300 mm and 300 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerpac)
7. Reaction loading system by roller compactor with weight approximately 18 ton
8. Calibration certificates are attached

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the load values are 0.6 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2 **) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min
11. Remove the loads

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

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www.cel-egypt.com

Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Middle Embankment
- Job requirement : Ev2 > 40 MPa

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	303
date of measurement	: 30/10/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level (m)	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To			E_{v1} (MPa)	E_{v2} (Mpa)	
1	672+640	672+740	: 672+690	: -1.5	88.3	91.7	1.04

Signature /

Company Name : شركة عبد الرحمن للتجهيز والمقاولات
Project : Electric Express Train - Sector (5) - South to Ameriy
Test Date : 30/10/2023
report date : 04/11/2023
Station : 672+680
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.81	0.19	19.80	0.20	0.20
2	1.66	19.59	0.41	19.58	0.42	0.42
3	2.50	19.39	0.61	19.37	0.63	0.62
4	3.33	19.18	0.82	19.15	0.85	0.84
5	4.17	19.00	1.00	18.96	1.04	1.02
6	5.00	18.78	1.22	18.76	1.24	1.23

Unloading Stage (1)

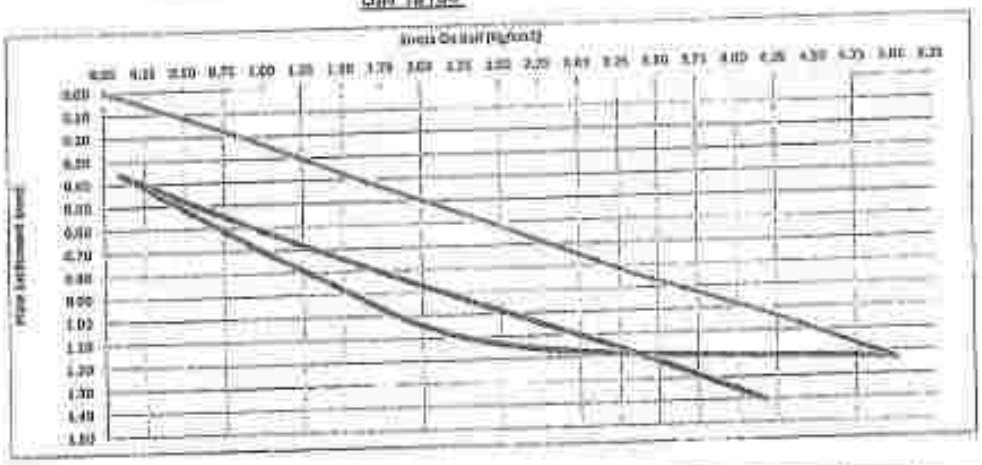
Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.87	1.13	18.86	1.14	1.14
2	1.25	19.22	0.78	19.20	0.80	0.79
3	0.100	19.65	0.35	19.63	0.37	0.36

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.44	0.56	19.43	0.57	0.57
minately equ	1.66	19.23	0.77	19.20	0.80	0.79
stress is reached.						
2	2.50	19.02	0.98	19.00	1.00	0.99
3	3.33	18.83	1.17	18.83	1.18	1.18
4	4.17	18.61	1.39	18.55	1.41	1.40

Company Name : شركة جيه فرحسن للتنمية والمقاولات
Project : Electric Express Train - Sector (3) – Cairo to Ameriy.
Test Date : 30/10/2023
report date : 04/11/2023
Station : 673+600
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	588	1172.8	1758.3	2352.8	2946.1	3533.8
Stress (Kg/cm2)	0.00	0.83	1.66	2.00	3.33	4.17	5.00
Settlement (mm)	0.00	0.00	0.42	0.62	0.84	1.02	1.22

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	884	71
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.23	1.14	0.79	0.00

D (mm) =	300	δ1 (mm)=	0.37	δ2(mm)=	0.87	Δδ =	0.50
Ev1 (MPa) =	(0.75*D*Δσ)/Δδ		88.5				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	588.300	1172.8	1758.3	2352.8	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.36	0.47	0.79	0.89	1.16	1.40

Ev2/Ev1 = 1.84

D (mm) =	300	δ1 (mm)=	0.74	δ2(mm)=	1.32	Δδ =	0.48
Ev2 (MPa) =	(0.75*D*Δσ)/Δδ		81.7				

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

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 30/10/2023

Soil type : Middle Embankment

Location : ST From 672+640 To 672+780

Level : - 1.5 M

Report No. : 52

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+660	1581	2.25	6	2.13	95.8%	Comply
2	672+720	1502	2.26	5.8	2.14	96.2%	Comply
3	672+765	1401	2.28	6	2.15	97.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 5.8 %

Signature / ...

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Company : شركة عبد الرحمن للتجارة والمقاولات

Project : Electric Express Train - Sector (3) – Qaus to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station 972+640 to 972+740
Station : 972+680
Level : -1.5
Test Date : 30/10/2023
Report Date : 04/11/2023
Type of soil : Middle Embankment
Report No. : 01

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 20 seconds.
4. The stain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the limit values are 5.0 kg/cm²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 %, 25 %, and approximately 3 % of the maximum load.
9. Following unloading, a further (2 **) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Middle Embankment
- Job requireme: Ev2 > 40 MPa

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
date of measurement	: 30/10/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level (m)	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To			E_{v1} (MPa)	E_{v2} (Mpa)	
1	672+640	672+740	: 672+680	: -1.5	88.3	91.7	1.04

Signature /

Company Name : شركة [illegible] الرمس للتنمية والسكوبات
Project : Electric Express Train - Sector (3) - Qaw to Armant.
Test Date : 30/10/2023
report date : 04/11/2023
Station : 672+580
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.81	0.19	19.80	0.20	0.20
2	1.66	19.59	0.41	19.58	0.42	0.42
3	2.50	19.39	0.61	19.37	0.63	0.62
4	3.33	19.38	0.62	19.15	0.85	0.84
5	4.17	19.00	1.00	18.96	1.04	1.02
6	5.00	18.78	1.22	18.76	1.24	1.23

Unloading Stage (1)

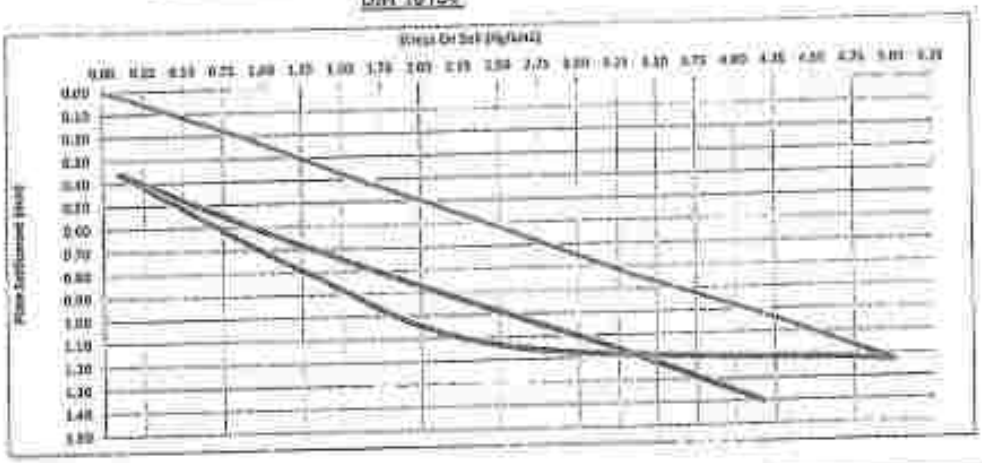
Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	18.87	1.13	18.86	1.14	1.14
2	1.25	19.22	0.78	19.20	0.80	0.79
3	0.100	19.65	0.35	19.63	0.37	0.36

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.44	0.50	19.42	0.58	0.57
oximately equ	1.66	19.23	0.77	19.20	0.80	0.79
stress is reached.						
2	2.50	19.02	0.90	19.00	1.00	0.99
3	3.33	18.83	1.17	18.81	1.19	1.18
4	4.17	18.61	1.39	18.59	1.41	1.40

Company Name : شركة مياه الوجه القبلى للتنمية والمقاولات
Project : Electric Express Train - Sector (3) - Quss to Armant
Test Date : 30/10/2023
report date : 04/11/2023
Station : 273+650
Test No. : 01

Non-repetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	886	1772.8	1786.3	2352.6	2946.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.20	0.42	0.62	0.84	1.02	1.22

Unl.oading (1)	1	2	3	4
Stage(Kg)	3532	1760	884	77
Stress (Kg/cm2)	5.00	2.50	1.250	0.10
Settlement (mm)	1.22	1.14	0.79	0.36

D (mm) =	300	δ1 (mm)=	0.37	δ2(mm)=	0.87	Δδ =	0.50
Ev1 (MPa) =	(0.75*D*Δσ)/Δδ		85.3				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	886.365	1772.8	1786.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.36	0.57	0.74	0.89	1.16	1.40

D (mm) =	300	δ1 (mm)=	0.54	δ2(mm)=	1.33	Δδ =	0.48
Ev1(MPa) =	(0.75*D*Δσ)/Δδ		81.7				

Ev2/Ev1 =	1.04

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Testing Date : 01/11/2023
Soil type : Middle Embankment
Location : ST From 671+780 To 671+980
Level : - 1.75 M
Report No. : 53-2

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	671+820	1454	2.24	5.6	2.12	95.5%	Comply
2	671+860	1363	2.31	6.4	2.17	97.6%	Comply
3	671+910	1490	2.33	6	2.19	98.8%	Comply
4	671+970	1454	2.24	5.8	2.12	95.3%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.22 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 01/11/2023

Soil type : Middle Embankment

Location : ST From 671+980 To 672+180

Level : - 1.75 M

Report No. : 53

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/ cm^3	Moisture Content %	Dry Density (gm/ cm^3)	Degree of Compaction (%)	Acceptance
1	672+020	1658	2.26	5.3	2.15	97.2%	Comply
2	672+070	1811	2.26	5.5	2.14	97.0%	Comply
3	672+120	1770	2.32	5	2.21	99.9%	Comply
4	672+170	1609	2.28	5	2.18	98.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 18/10/2023
Reporting Date	: 22/10/2023
Reporting No.	: 01-11

Dear Gentleman,

Attached here with the delivered on 18 / 10 / 2023

This sample is representative for 5,000 M^3

Materials test

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

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

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Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 18/10/2023
Reporting Date : 22/10/2023
Reporting No. : 01-11

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.1
37.5	1.5	92.6
25	1	88.6
19	¾	75.1
12.50	½	68.4
9.50	3/8	61.5
4.75	4	55.3
2.00	10	40.2
0.425	40	24.2

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 18/10/2023
Reporting Date : 22/10/2023
Reporting No. : 01-11

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.7

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مكتب تعامل الإستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 18/10/2023

Reporting Date : 22/10/2023

Reporting No. : 01-11

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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Company Name : شركة عجلان الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 18/10/2023
Reporting Date : 22/10/2023
Reporting No. : 01-11

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	40.2	Max 50 %	------	------
0.425 mm (No. 40).	24.2	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	9.7	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

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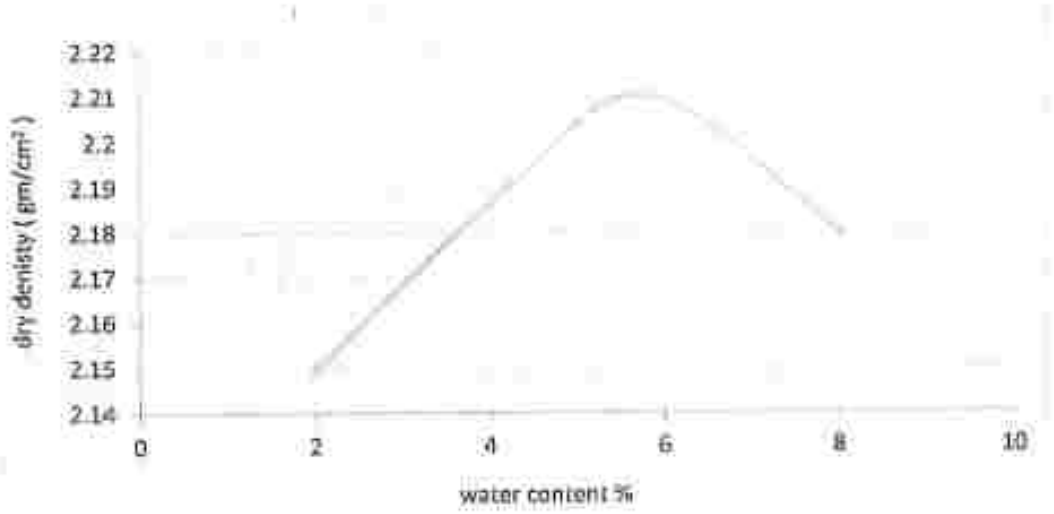
Company Name : شركة عباد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 18/10/2023
Reporting Date : 22/10/2023
Reporting No. : 01-11

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 18/10/2023
Reporting Date : 22/10/2023
Reporting No. : 01-11

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.51
1.27	0.050	1.67
1.91	0.075	2.89
2.54	0.100	3.91
3.18	0.125	4.77
3.81	0.150	5.38
4.45	0.175	5.73
5.08	0.200	5.88
6.35	0.250	5.93

CBR Result	Stress (Mpa)		CBR 100 %
	St. Value	Sample results	
At 0.1 inch (2.54 mm) penetration	6.90	3.91	56.5 %

Notes:
1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of =2.21 (gm /cm^3)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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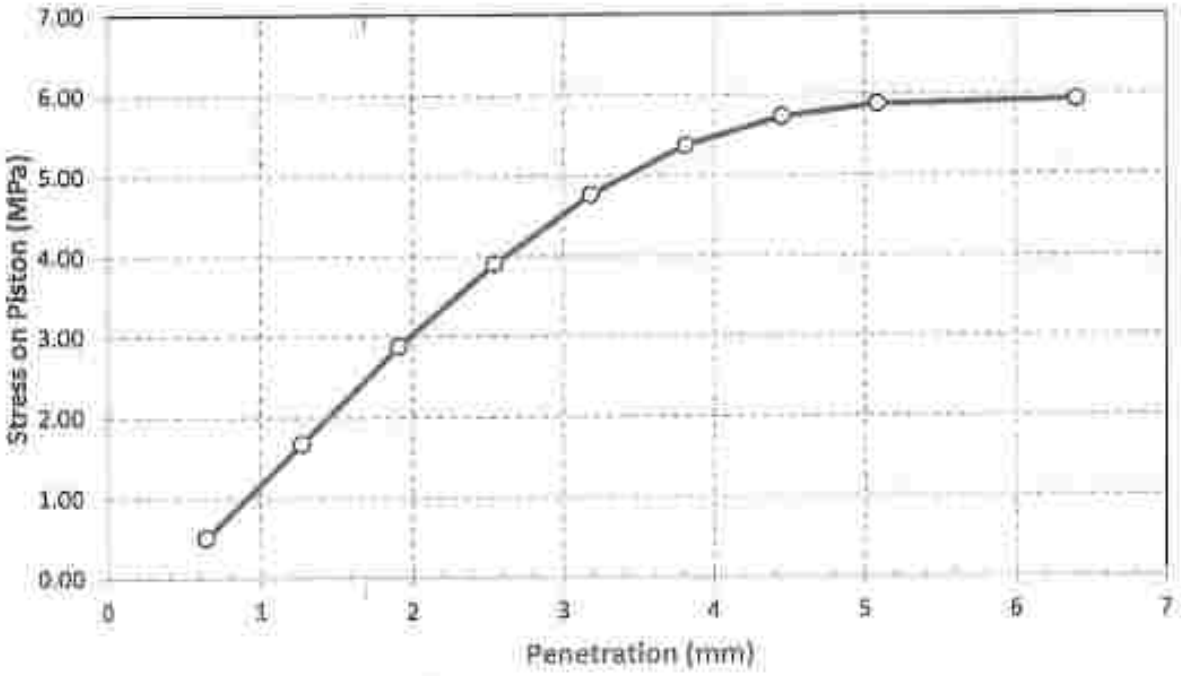
Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 18/10/2023
Reporting Date	: 22/10/2023
Reporting No.	: 01-11

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 05/11/2023

Soil type : Lower Embankment

Location : ST From 672+640 To 672+780

Level : - 1.25 M

Report No. : 54-2

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	672+660	1322	2.28	6.4	2.15	97.2%	Comply
2	672+680	1354	2.23	6	2.10	95.1%	Comply
3	672+700	1515	2.26	5.8	2.14	96.7%	Comply
4	672+720	1524	2.25	5.6	2.13	96.3%	Comply
5	672+740	1691	2.22	5.5	2.11	95.3%	Comply
6	672+760	1632	2.30	6.4	2.17	98.0%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm³
- At optimum moisture content = 5.8 %

Signature : ...

Company : شركة جنة الرحمن للتنمية والمقاولات

Project : Electric Express Train - Sector (5) – Oasis to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station 671+780 to 671+880
Station : 671+850
Level : -1.8
Test Date : 07/11/2023
Report Date : 08/11/2023
Type of soil : Original Earth
Report No. : 01

Dear Gentleman,

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

Apparatus

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

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 35 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the first values are 0.9 kg/cm ²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 60 %, 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2 **) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

Report

1. Evaluation and repreeentation of results.
2. Load Settlement curve.
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Original Earth
- Job requiremer : Ev2 > 40 MPa

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
date of measurement	: 07/11/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To		(m)	E_{v1} (MPa)	E_{v2} (Mpa)	
1	671+760	671+800	: 671+880	-1.5	100.0	116.9	1.17

Signature / .....

Company Name : شركة هيه لترسيخ التنمية والمقاولات
Project : Electric Express Train - Sector (3) - Qena to Aswan
Test Date : 07/11/2023
report date : 08/11/2023
Station : 871+650
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.80	0.20	19.87	0.13	0.16
2	1.66	19.65	0.35	19.67	0.33	0.34
3	2.50	19.43	0.57	19.49	0.51	0.54
4	3.33	19.28	0.72	19.31	0.69	0.71
5	4.17	19.07	0.93	19.10	0.90	0.91
6	5.00	18.92	1.08	18.95	1.05	1.07

Unloading Stage (1)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
1	2.50	19.01	0.99	19.07	0.93	0.96
2	1.25	19.30	0.70	19.29	0.71	0.71
3	0.100	19.75	0.25	19.65	0.35	0.30

Loading Stage (2)

Loading	Stress	Dial 1	Settlement	Dial 2	Settlement	Average
	Kg/cm2		mm		mm	
0	0.83	19.57	0.43	19.47	0.53	0.48
mediately equ	1.66	19.43	0.57	19.31	0.69	0.63
stress is reached.						
2	2.50	19.29	0.71	19.20	0.80	0.76
3	3.33	19.30	0.50	19.01	0.99	0.94
4	4.17	18.91	1.09	18.87	1.13	1.11

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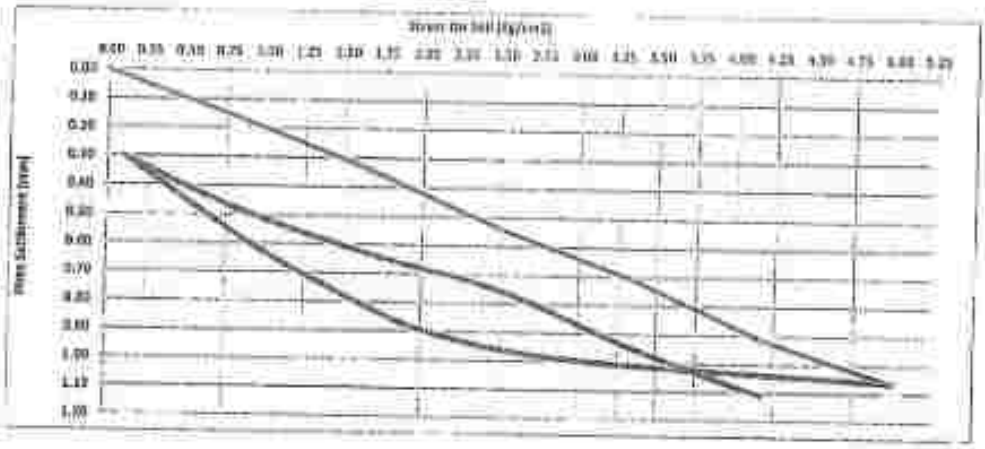
مكتب معامل الاستشارات الهندسية
مشروعات محافظات الوجه القبلي

Company Name : شركة عبد الرحمن للتنمية والتطوير
Project : Electric Express Train - Sector (B) – Cous to Aswan
Test Date : 07/11/2023
report date : 08/11/2023
Station : 87+000
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
ASTM D1194



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.6	1766.3	2352.9	2940.1	3532.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.02
Settlement (mm)	0.00	0.19	0.34	0.54	0.71	0.91	1.07

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	586	71
Stress (Kg/cm2)	5.00	2.50	1.350	0.10
Settlement (mm)	1.07	0.66	0.71	0.38

D (mm) = 300	δ1 (mm)= 0.31	δ2(mm)= 0.75	Δδ = 0.44
Ev1 (MPa) = (0.75*D*Δσ)/Δδ	100.5		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.305	1172.6	1766.3	2352.9	2940.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.30	0.48	0.83	0.76	0.94	1.11

D (mm) = 300	δ1 (mm)= 0.69	δ2(mm)= 0.98	Δδ = 0.29
Ev2 (MPa) = (0.75*D*Δσ)/Δδ	116.5		

Ev2/Ev1 = 1.17

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

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Tel.& Fax : 27367231 - 27363093

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 05/11/2023

Soil type : Middle Embankment

Location : ST From 671+780 To 671+980

Level : - 1.5 M

Report No. : 54-1

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+800	1474	2.26	5.6	2.14	97.0%	Comply
2	671+840	1522	2.29	6.4	2.16	97.6%	Comply
3	671+880	1319	2.29	6	2.16	97.6%	Comply
4	671+940	1328	2.27	5.8	2.15	97.2%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature /.....

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Company : شركة عبد الرحمن للتجارة والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Aydoni.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station #71+730 to #71+680
Station : #71+850
Level : -1.8
Test Date : 07/11/2023
Repot Date : 08/11/2023
Type of soil : Original Earth
Report No. : 01

Dear Gentleman,

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

Apparatus

1. Loading plates consists of two plates with 300 mm and 200 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerpac)
7. Reaction loading system by roller compactor with weight approximately 15 ton.
8. Calibration certificates are attached.

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil.
2. Install loading plates 300 mm and 200 mm diameter, hydraulic jack and 3 dial gauges.
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero.
5. For a 300 mm loading plate, the first values are 8.0 kg/cm ².
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute.
8. The load shall be released in 3 stages, to 50 %, 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2.nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads.

Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The last report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Original Earth
- Job requiremer : Ev2 > 40 MPa

Item	Description
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	800
Date of measurement	: 07/12/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To		(m)	E_{v1} (MPa)	E_{v2} (Mpa)	
1	671+760	671+880	: 671+850	: -1.6	100.0	116.9	1.17

Signature / .....

Company Name : شركة هيه الرحمن للتنمية والمقاولات
Project : Electric Express Train - Sector (3) - Qena to Aswan
Test Date : 07/11/2023
report date : 08/11/2023
Station : 871+850
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.80	0.20	19.87	0.13	0.16
2	1.66	19.65	0.35	19.67	0.33	0.34
3	2.50	19.43	0.57	19.49	0.51	0.54
4	3.33	19.28	0.72	19.31	0.69	0.71
5	4.17	19.07	0.93	19.10	0.90	0.91
6	5.00	18.92	1.08	18.95	1.05	1.07

Unloading Stage (1)

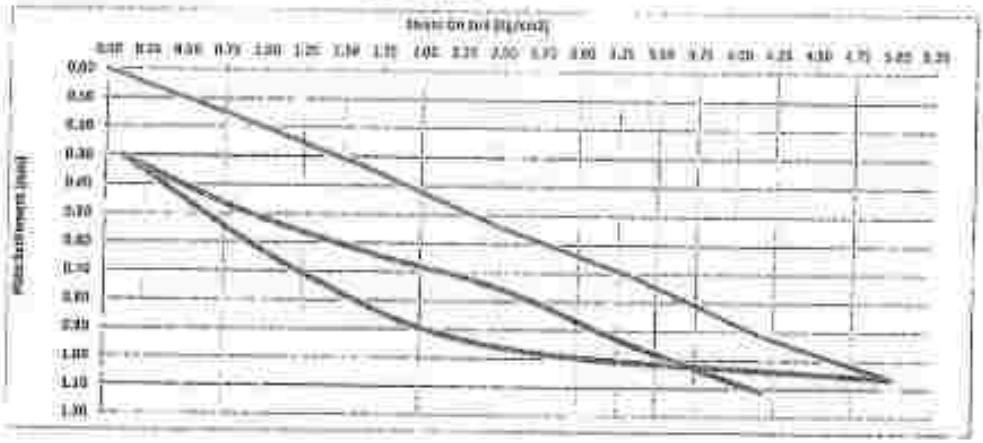
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	19.01	0.99	19.07	0.93	0.96
2	1.25	19.30	0.70	19.29	0.71	0.71
3	0.100	19.75	0.25	19.65	0.35	0.30

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	19.57	0.43	19.47	0.53	0.48
oximately equ	1.66	19.43	0.57	19.31	0.69	0.63
stress is reached.						
2	2.50	19.25	0.71	19.20	0.80	0.76
3	3.33	19.10	0.90	19.03	0.98	0.94
4	4.17	18.91	1.08	18.87	1.13	1.11

Company Name : شركة عبد الرحمن للتنمية والاستثمار
Project : Electric Express Train - Sector (5) - Qous to Aswan.
Test Date : 07/11/2023
report date : 08/11/2023
Station : 971+850
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (T)	0	1	2	3	4	5	6
Stage(Kg)	0	586	1172.0	1758.3	2362.6	2940.1	3522.5
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.16	0.34	0.64	0.71	0.91	1.07

UnLoading (T)	1	2	3	4
Stage(Kg)	3533	1760	684	71
Stress (Kg/cm2)	5.00	2.50	1.050	0.10
Settlement (mm)	1.07	0.96	0.71	0.30

D (mm) =	300	S1 (mm)=	0.31	S2(mm)=	0.72	ΔS =	0.64
Ev1 (MPa) =	(2.75*D*Δσ)/ΔS		100.0				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	586.390	1172.8	1758.3	2362.6	2346.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.30	0.48	0.83	0.76	0.94	1.11

Ev2/Ev1 =	1.17

D (mm) =	300	S1 (mm)=	0.60	S2(mm)=	0.88	ΔS =	0.28
Ev2 (MPa) =	(2.75*D*Δσ)/ΔS		116.9				

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

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مكتب معامل الإستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 09/11/2023

Soil type : Middle Embankment

Location : ST From 671+980 To 672+180

Level : - 1.5 M

Report No. : 57

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	672+030	1324	2.31	6	2.18	98.8%	Comply
2	672+080	1324	2.31	6.4	2.17	98.1%	Comply
3	672+130	1558	2.28	6	2.15	97.3%	Comply
4	672+175	1347	2.27	6	2.14	96.7%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm³
- At optimum moisture content = 5.8 %

Signature /..........

Company : شركة ج.م.ع. للترسانة والمقاولات

Project : Electric Express Train - Sector (5) – Qous to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station 671+880 to 672+080
Station : 672+050
Level : -1.6
Test Date : 08/11/2023
Repot Date : 11/11/2023
Type of soil : Middle Embankment
Report No. : 01

Dear Gentlemen,

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

Apparatus

1. Loading plates consists of two plates with 300 mm and 200 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerpac)
7. Reaction loading system by roller compactor with weight approximately 15 ton.
8. Calibration certificates are attached.

Test Procedure:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 300 mm and 100 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the first values are 8.0 kg/cm ²
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached.
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 50 % , 25 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2 nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/min.
11. Remove the loads

Report

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Middle Embankment
- Job requiremer : Ev2 > 40 MPa

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
date of measurement	: 09/11/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To		(m)	E_{v1} (MPa)	E_{v2} (Mpa)	
1	671+980	672+080	: 672+050	: -1.5	53.1	88.9	1.67

Signature /

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Sector (3) - Cairo to Ameriat
Test Date : 09/11/2023
report date : 11/11/2023
Station : 672+650
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.75	0.25	19.83	0.17	0.21
2	1.66	19.59	0.42	19.60	0.40	0.41
3	2.50	19.34	0.66	19.43	0.57	0.62
4	3.33	19.10	0.90	19.18	0.82	0.86
5	4.17	18.91	1.09	18.95	1.05	1.07
6	5.00	18.74	1.26	18.78	1.22	1.24

Unloading Stage (1)

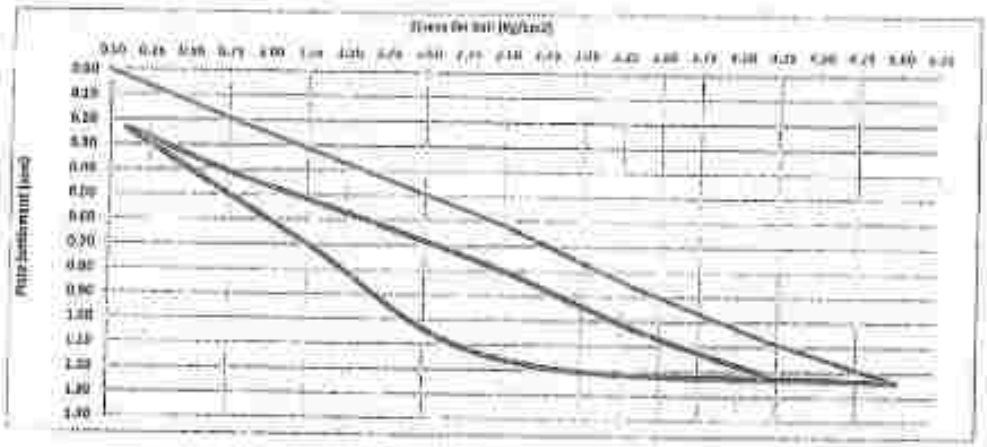
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.85	1.15	18.83	1.17	1.16
2	1.25	19.26	0.74	19.35	0.65	0.69
3	0.100	19.70	0.30	19.82	0.17	0.23

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	19.64	0.46	19.61	0.39	0.43
Immately equ	1.66	18.39	0.61	19.40	0.60	0.61
stress is reached.						
2	2.50	19.18	0.82	19.22	0.78	0.80
3	3.33	18.93	1.07	19.01	0.99	1.03
4	4.17	18.75	1.25	18.83	1.17	1.21

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Sector (B) - Qena to Aswan.
Test Date : 09/11/2023
report date : 11/11/2023
Station : 673+980
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	560	1172.6	1766.3	2352.6	2946.1	3532.6
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.21	0.41	0.62	0.86	1.07	1.24

Unl.oading (1)	1	2	3	4
Stage(Kg)	3533	1766	894	71
Stress (Kg/cm2)	5.00	2.50	1.265	0.10
Settlement (mm)	1.24	1.18	0.69	0.24

D (mm) = 300	S1 (mm)= 0.37	S2(mm)= 0.58	ΔS = 0.53
Ev1 (MPa) = (0.75*D*Δσ)/ΔS	83.1		

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	560.365	1172.6	1766.3	2352.6	2946.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.24	0.43	0.61	0.80	1.03	1.21

D (mm) = 300	S1 (mm)= 0.37	S2(mm)= 1.01	ΔS = 0.55
Ev2 (MPa) = (0.75*D*Δσ)/ΔS	85.9		

Ev2/Ev1 = 1.03

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

Company : شركة عبد الرحمن للتجارة والمقاولات

Project : Electric Express Train – Sector (B) – Qoos to Armant.
Subject : Determine the deformation and strength characteristics of soil by the plate loading test according specifications DIN 18134:2012-04 and project requirements
Test Location : Station 572+000 to 572+180
Station : 572+126
Level : -1.8
Test Date : 09/11/2023
Repot Date : 11/11/2023
Type of soil : Middle Embankment
Report No. : 01

Dear Gentleman,

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

Apperatus

1. Loading plates consists of two plates with 300 mm and 380 mm diameter
2. The thickness of plates 30 mm
3. Dial gauges with accuracy 0.01 mm to measuring the settlement
4. Steel straightedges with magnetic supports to fixed the dial gauges
5. Hydraulic jack with pump to transfer reactive loads to the loading plates
6. Dial indicator measuring device with scale capacity 700 Bar (Enerpac)
7. Reaction loading system by roller compactor with weight approximately 18 ton.
8. Calibration certificates are attached.

Test Procedures:

1. Clean the ground on test area to the required level with undisturbed soil
2. Install loading plates 380 mm and 300 mm diameter, hydraulic jack and 3 dial gauges
3. Prior to starting the test applied preloading about 30 seconds.
4. The strain gauge and the dial gauge shall be set to zero
5. For a 300 mm loading plate, the limit values are 5.0 kg/cm ^{2}
6. The load shall be applied in six stages, in approximately equal increments, until the required maximum normal stress is reached
7. Each change in load (from stage to stage) shall be completed within one minute
8. The load shall be released in 3 stages, to 60 %, 20 %, and approximately 2 % of the maximum load.
9. Following unloading, a further (2 nd) loading cycle shall be carried out, in which, however, the load is to be increased only to the penultimate stage of the first cycle (so that the full load is not reached).
10. At each stage the load shall be maintained until the rate of settlement of the plate becomes less than 0.02 mm/mn.
11. Remove the loads

Report:

1. Evaluation and representation of results.
2. Load Settlement curve.
3. The test report content the following:-

- location of test site - Dimension of loading plate.
- Measuring device used - Type of soil.
- Type of Bedding material below the plate -Weathering condition.
- Time and date of measurements - Unusual observation made during test .
- Dial gauge reading and corresponding normal stress - Loading-settlement curve.
- Description of the soil condition below the plate after testing.

Report

- Type of soil : Middle Embankment
- Job requiremer : Ev2 > 40 MPa

Item	Descriptions
Type of bedding material below the plate	Natural Soil
Plate Diameter (mm)	300
Date of measurement	: 09/11/2023
Unusual observation made during test	NO
Description of the soil conditions below the plate after testing	No deformation

Evaluation and representation of results

Test No.	Station		Location	Level	First Cycle	Second Cycle	E_{v2}/E_{v1} Ratio
	From	To		(m)	E_{v1} (MPa)	E_{v2} (Mpa)	
1	672+060	672+180	: 672+120	: -1.5	98.7	161.5	1.67

Signature /

CEL

Company Name : شركة عبد الرحمن للتنمية والمقاولات
Project : Electric Express Train - Sector (2) - Qous to Armant
Test Date : 09/11/2023
report date : 11/11/2023
Station : 672+120
Test No. : 01

Nonrepetitive Static Plate Load Tests of Soils
DIN 18134

Loading Stage (1)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.00	20.00	0.00	20.00	0.00	0.00
1	0.83	19.80	0.20	19.82	0.18	0.19
2	1.66	19.65	0.35	19.67	0.33	0.34
3	2.50	19.48	0.52	19.45	0.55	0.54
4	3.33	19.29	0.71	19.26	0.74	0.73
5	4.17	19.08	0.92	19.05	0.95	0.94
6	5.00	18.91	1.09	18.89	1.11	1.10

Unloading Stage (1)

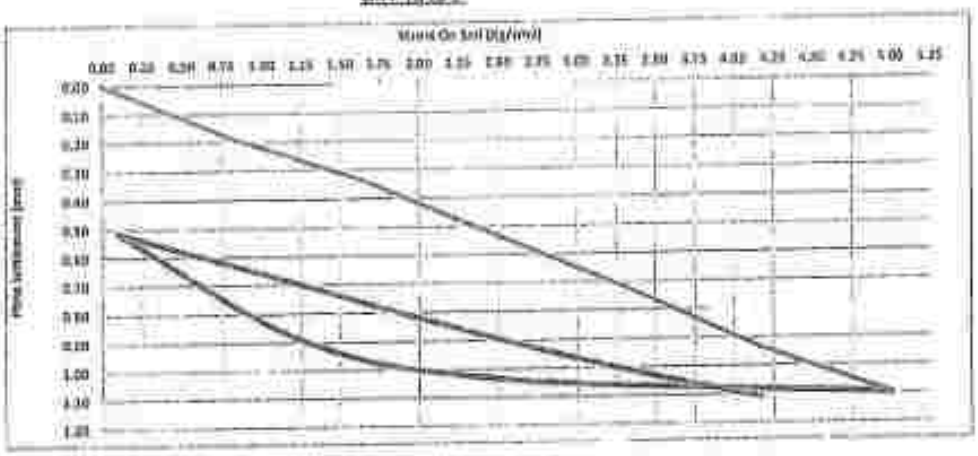
Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
1	2.50	18.98	1.02	18.95	1.05	1.04
2	1.25	19.12	0.88	19.10	0.90	0.89
3	0.100	19.49	0.51	19.48	0.52	0.52

Loading Stage (2)

Loading	Stress Kg/cm2	Dial 1	Settlement mm	Dial 2	Settlement mm	Average
0	0.83	19.38	0.62	19.36	0.64	0.63
…imately equ…	1.66	19.25	0.75	19.22	0.78	0.77
stress is reached						
2	2.50	19.12	0.88	19.09	0.91	0.90
3	3.33	19.00	1.00	18.98	1.02	1.01
4	4.17	18.90	1.10	18.88	1.12	1.11

Company Name : شركة عبد الرحمن النعيمة وشركاه
Project : Etimadi Express Train - Sector (5) - Cous to Amwaj
Test Date : 08/11/2023
report date : 11/11/2023
Station : 672+120
Test No. : (2)

Non-cyclic Static Plate Load Tests of Soils
DIN 18134



Loading (1)	0	1	2	3	4	5	6
Stage(Kg)	0	986	1172.8	1758.3	2352.6	2940.1	3532.8
Stress (Kg/cm2)	0.00	0.83	1.66	2.50	3.33	4.17	5.00
Settlement (mm)	0.00	0.10	0.34	0.54	0.73	0.94	1.10

UnLoading (1)	1	2	3	4
Stage(Kg)	3533	1766	984	71
Stress (Kg/cm2)	5.00	2.50	1.390	0.10
Settlement (mm)	1.10	1.04	0.89	0.68

D (mm) =	300	S1 (mm)=	0.31	S2(mm)=	0.77	ΔS =	0.46
Ev1 (MPa) =	(0.75*D*Δσ)/ΔS		96.7				

Loading (2)	0	1	2	3	4	5
Stage(Kg)	0	986.325	1172.8	1758.3	2352.6	2940.1
Stress (Kg/cm2)	0.10	0.83	1.66	2.50	3.33	4.17
Settlement (mm)	0.52	0.63	0.77	0.90	1.01	1.11

D (mm) =	300	S1 (mm)=	0.24	S2(mm)=	1.03	ΔS =	0.20
Ev2 (MPa) =	(0.75*D*Δσ)/ΔS		161.5				

Ev2/Ev1 =	1.67

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

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 11/11/2023

Soil type : Upper Embankment

Location : ST From 671+780 To 671+980

Level : - 1.25 M

Report No. : 57-2

Compaction test by using Sand – Cone Test Method

ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+800	1399	2.32	5.3	2.20	99.6%	Comply
2	671+820	1596	2.24	5.5	2.12	95.9%	Comply
3	671+840	1764	2.22	5	2.12	95.9%	Comply
4	671+860	1550	2.27	5	2.16	97.9%	Comply
5	671+880	1443	2.33	5.6	2.20	99.6%	Comply
6	671+900	1459	2.35	6.4	2.21	99.8%	Comply
7	671+930	1416	2.28	6	2.15	97.5%	Comply
8	671+960	1538	2.28	5.8	2.16	97.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature /

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name	: شركة عباد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embaakment
Delivery Date	: 21/10/2023
Reporting Date	: 25/10/2023
Reporting No.	: 01-12

Dear Gentleman,

Attached here with the delivered on 21 / 10 / 2023

This sample is representative for 5.000 M^3

Materials test

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

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

Signature /

CEL
Consulting Engineering Bureau & Laboratories
مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن
Project : Electric Express Train – HSR From Qous To Armant
Location : ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample : Soil Embankment
Delivery Date : 21/10/2023
Reporting Date : 25/10/2023
Reporting No. : 01-12

RESULTS OF SIEVE ANALYSIS According to ASTM D-422.

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	97.3
37.5	1.5	91.6
25	1	87.4
19	¾	75.3
12.50	½	67.2
9.50	3/8	61.7
4.75	4	56.3
2.00	10	40.5
0.425	40	25.3

Signature /

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 21/10/2023

Reporting Date : 25/10/2023

Reporting No. : 01-12

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	9.6

Signature /.....

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 21/10/2023

Reporting Date : 25/10/2023

Reporting No. : 01-12

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 21/10/2023

Reporting Date : 25/10/2023

Reporting No. : 01-12

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
• Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	40.5	Max 50 %	------	------
0.425 mm (No. 40).	25.3	Max 30 %	Max 50 %	------
0.075 mm (No. 200).	9.6	Max 15 %	Max 15 %	Max 15 %
Liquid Limit		------	------	------
Plasticity index	0	Max 6 %	Max 6 %	Max 10 %

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

Signature / ...

IAS ACCREDITED

CEL

Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

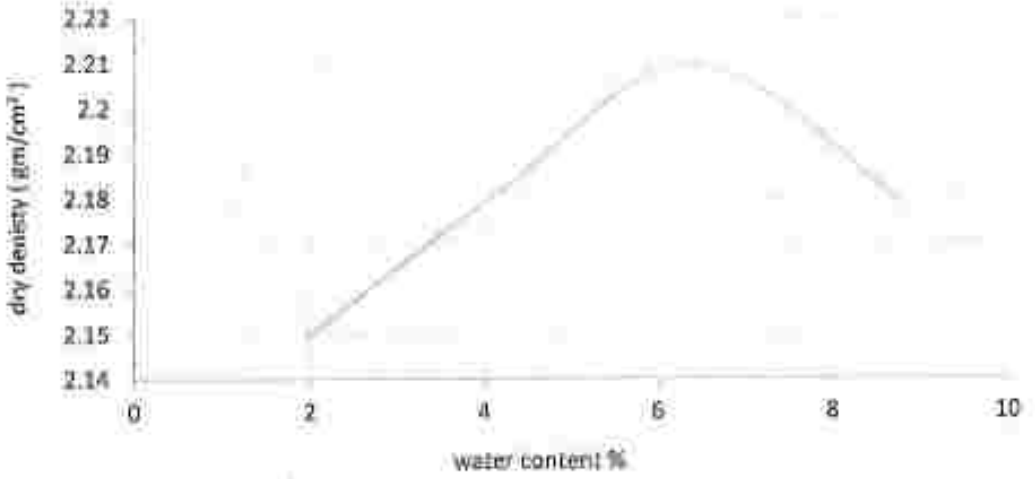
Type of sample : Soil Embankment

Delivery Date : 21/10/2023

Reporting Date : 25/10/2023

Reporting No. : 01-12

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



- Max dry density (gm/cm³) : 2.21
- Optimum moisture content % : 5.8

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Location : ST: 672+180 E=32.7745621 N= 25.6596723

Type of sample : Soil Embankment

Delivery Date : 21/10/2023

Reporting Date : 25/10/2023

Reporting No. : 01-12

Test Results of California Bearing Ratio on Base Materials

ASTM D 1883

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.43
1.27	0.050	1.47
1.91	0.075	2.56
2.54	0.100	3.56
3.18	0.125	4.56
3.81	0.150	5.22
4.45	0.175	5.63
5.08	0.200	5.88
6.35	0.250	5.95

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	51.5 %
	6.90	3.58	

Notes:

1- Attached graph shows penetration resistance versus penetration magnitude.
2- The sample was compacted to dry density of=2.21 (gm /cm^3)
At = 5.8 % optimum water content.
3- Surcharge load 4.50 Kg.
4- CBR > 10 for middle and lower embankments according project spec page No 36.

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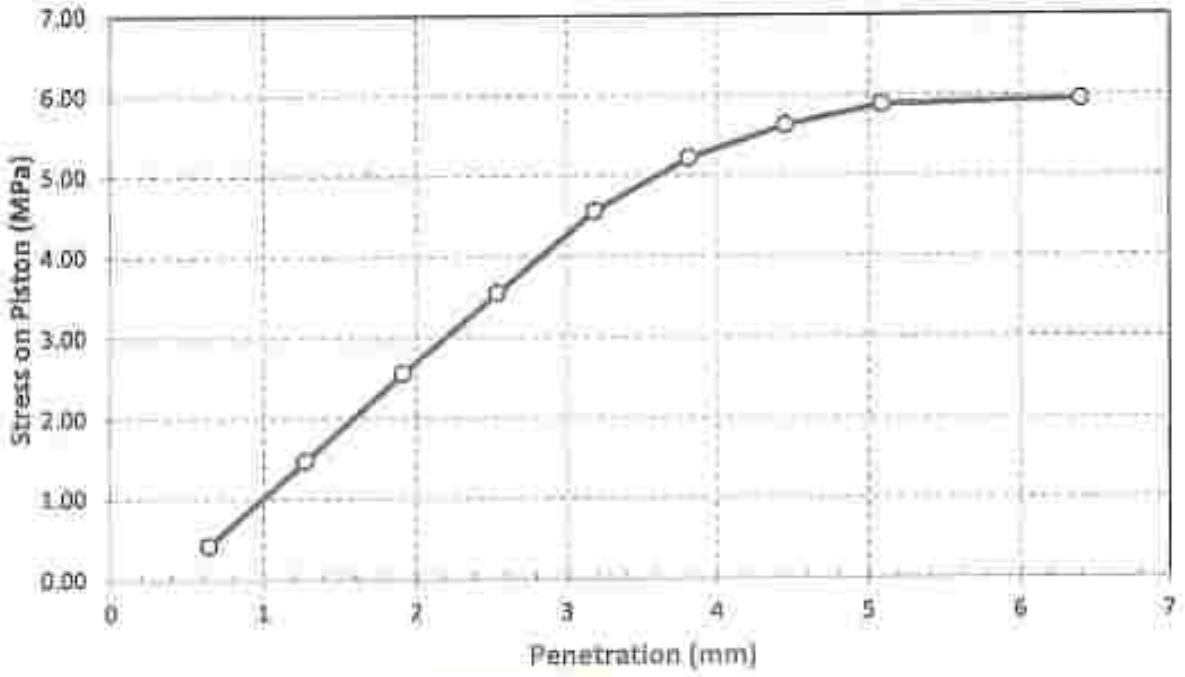
مكتب معامل الاستشارات الهندسية

Company Name	: شركة عبد الرحمن
Project	: Electric Express Train – HSR From Qous To Armant
Location	: ST: 672+180 E=32.7745621 N= 25.6596723
Type of sample	: Soil Embankment
Delivery Date	: 21/10/2023
Reporting Date	: 25/10/2023
Reporting No.	: 01-12

Load Penetration Curve of CBR Test

ASTM D-1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 14/11/2023

Soil type : Upper Embankment

Location : ST From 672+640 To 672+780

Level : - 1. M

Report No. : 58

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	672+660	1475	2.25	5.8	2.13	96.2%	Comply
2	672+680	1360	2.30	5.3	2.19	99.0%	Comply
3	672+700	1459	2.24	5	2.14	96.7%	Comply
4	672+720	1341	2.27	6	2.14	96.9%	Comply
5	672+746	1355	2.24	5.8	2.11	95.6%	Comply
6	672+773	1537	2.28	6	2.15	97.4%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm³
- At optimum moisture content = 5.8 %

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مكتب معامل الإستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armunt

Testing Date : 14/11/2023

Soil type : Upper Embankment

Location : ST From 671+980 To 672+180

Level : - 1.25 M

Report No. : 59

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+000	1390	2.23	5.3	2.12	95.8%	Comply
2	672+025	1712	2.26	5.5	2.14	96.8%	Comply
3	672+050	1746	2.29	5	2.18	98.8%	Comply
4	672+075	1534	2.27	5	2.16	97.9%	Comply
5	672+095	1449	2.32	5.6	2.20	99.5%	Comply
6	672+125	1398	2.31	6.4	2.18	98.4%	Comply
7	672+155	1385	2.33	6	2.19	99.3%	Comply
8	672+175	1512	2.28	5.8	2.16	97.6%	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

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مكتب صابل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 16/11/2023

Soil type : Upper Embankment

Location : ST From 671+780 To 671+980

Level : - 1 M

Report No. : 60

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	671+800	1807	2.24	6.4	2.10	95.1%	Comply
2	671+820	1600	2.29	6	2.16	97.6%	Comply
3	671+840	1630	2.26	5.8	2.13	96.5%	Comply
4	671+870	1415	2.32	5.6	2.19	99.3%	Comply
5	671+900	1283	2.24	5.5	2.13	96.3%	Comply
6	671+920	1477	2.27	5.5	2.15	97.3%	Comply
7	671+940	1503	2.29	5.5	2.18	98.4%	Comply
8	671+960	1620	2.22	5.5	2.10	95.0%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.29 gm/cm³ At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 6/12/2023

Soil type : Upper Embankment

Location : ST From 672+640 To 672+780

Level : -0.75 M

Report No. : 70-2

Compaction test by using Sand – Cone Test Method ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	672+660	1271.7	2.25	5.3	2.14	96.8	Comply
2	672+680	1099.3	2.23	5.5	2.11	95.6	Comply
3	672+700	1027.6	2.24	6.0	2.11	95.5	Comply
4	672+720	1391.0	2.24	6.0	2.11	95.5	Comply
5	672+740	1627.6	2.26	5.3	2.15	97.3	Comply
6	672+760	1629.7	2.32	5.5	2.20	99.7	Comply

Degree of compaction based on proctor test dated At

- Max. dry density = 2.21 gm/cm^3
- At optimum moisture content = 5.8 %

Signature / .....

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Project:

Location:

Type of Sample: Soil Borrow Pit

Delivery Date: 23/10/2023

Reporting Date: 31/10/2023

Reporting No.: 0001

Dear Gentlemen:

Attached here with the delivered on 23/10/2023

This sample is representative for 5,000 M^3

Material test

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

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

Signature:

CEI

[illegible]

[illegible]	[illegible]
Project	[illegible]
Location	[illegible]
Type of sample	Soil Embankment
Delivery Date	[illegible]/10/20[illegible]
Reporting Date	[illegible]/10/20[illegible]
Reporting No	[illegible]

RESULTS OF SIEVE ANALYSIS According to ASTM [illegible]

Sieve Size (mm)	Sieve Size (IN)	Passing %
50	2	98.[illegible]
37.5	1.5	92.5
25	1	87.2
19	¾	74.0
12.50	½	69.[illegible]
9.50	3/8	63.8
4.75	4	57.[illegible]
[illegible].00	10	[illegible]
0.425	40	[illegible]

[illegible]

Location: [illegible]
Type of sample: Soil Embankment
Delivery Date: 27/10/2022
Reporting Date: 31/10/2022
Reporting No: 01-13

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 µM (No.200)	23

Signature/...

Company Name : [illegible]
Project : Electric Express Train - HSR from Qaui To [illegible]
Location : [illegible]
Type of sample : Soil Embankment
Delivery Date : 22/10/2025
Reporting Date : 23/10/2025
Reporting No. : 01-D

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

Test	Results (%)
Liquid Limit	0
Plastic Limit	0
Plasticity Index	0

Signature/...

Type of Sample: Soil Embankment

Delivery Date: 27/10/2022

Reporting Date: 30/10/2022

Reporting No.: 03

Soil Classification

TEST	Results (%)	Limits according Projects Specs		
Group Classification	(A-1-a)	(A-1-a)	(A-1-b)	(A-2-4)
2.00 mm (No.10).	43.4	Max 50 %	—	—
0.425 mm (No. 40).	26.5	Max 30 %	Max 50 %	—
0.075 mm (No. 200).	9.2	Max 15 %	Max 25 %	Max 15 %
Liquid Limit		—	—	—
Plasticity Index	7	Max 6 %	Max 25 %	Max 10 %

The test results are (☐ Comply ☐ Not Comply) with specification limits

Type of sample: Soil Embankment

Delivery Date: 27/10/2023

Reporting Date: 31/10/2023

Reporting No: 01-15

Moisture – Density relation of soil

Test result (modified proctor test)

ASTM D-1557

Max dry density (gm/cm³): 2.21

Optimum moisture content %: 5.5

Signature/...

Material : [illegible]
Location : [illegible]
Type of sample : [illegible]
Delivery Date : 27/10/2022
Reporting Date : 31/10/2022
Reporting No : [illegible]

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	0.41
1.27	0.050	1.47
1.91	0.075	2.49
2.54	0.100	3.44
3.18	0.125	4.36
3.81	0.150	5.17
4.45	0.175	5.78
5.08	0.200	6.04
6.35	0.250	6.14

CBR Result	Stress (Mpa)		CBR 100 %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	45.9 %
	6.90	3.44	

Notes:

1. Attached graph shows penetration resistance versus penetration magnitude.
2. The sample was compacted to dry density of=2.21 Tgm/cm^3
   At= 5.5 % optimum water content.
3. Surcharge load 4.50 Kg.
4. [illegible] for middle and lower embankments according project specification =45.

Location :

Type of sample : Soil Sub-Grade

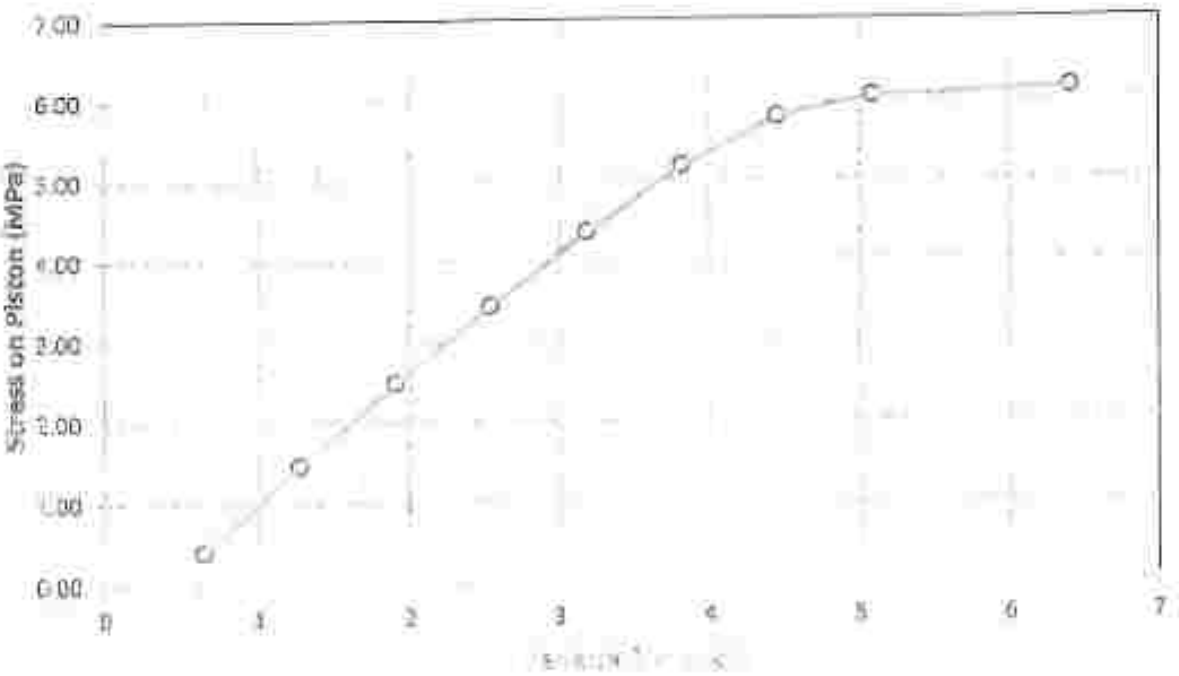
Delivery Date :

Reporting Date :

Reporting By :

Load Penetration Curve of CBR Test

ASTM D 1883



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مكتب معامل الاستشارات الهندسية

Company Name : شركة عباد الرحمن

Project : Electric Express Train – HSR From Qous To Armani

Testing Date : 21/11/2023

Soil type : Upper Embankment

Location : ST From 671+980 To 672+180

Level : - 0.75 M

Report No. : 62

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	672+000	1587	2.22	5.3	2.11	95.5%	Comply
2	672+020	1690	2.28	5.5	2.16	97.9%	Comply
3	672+040	1821	2.27	5.5	2.15	97.4%	Comply
4	672+060	1862	2.28	6	2.15	97.5%	Comply
5	672+090	1646	2.29	6.4	2.15	97.3%	Comply
6	672+110	1678	2.32	5.5	2.20	99.6%	Comply
7	672+130	1560	2.22	5	2.12	95.8%	Comply
8	672+150	1403	2.25	5.3	2.14	96.7%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.21 gm/cm³ At optimum moisture content = 5.8 %

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مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 21/11/2023

Soil type : Upper Embankment

Location : ST From 671+780 To 671+980

Level : - 0.75 M

Report No. : 61

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm^3	Bulk Density gm/cm^3	Moisture Content %	Dry Density (gm/cm^3)	Degree of Compaction (%)	Acceptance
1	671+800	1340	2.24	5.5	2.12	96.0%	Comply
2	671+820	1312	2.29	5.5	2.17	98.1%	Comply
3	671+840	1505	2.32	5.8	2.19	99.1%	Comply
4	671+860	1587	2.25	5.8	2.12	96.1%	Comply
5	671+880	1440	2.24	5.3	2.12	96.1%	Comply
6	671+910	1426	2.21	5	2.11	95.4%	Comply
7	671+930	1542	2.25	5.5	2.13	96.4%	Comply
8	671+960	1676	2.27	5.5	2.15	97.2%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.21 gm/cm^3 At optimum moisture content = 5.8 %

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Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company Name : شركة عبد الرحمن

Project : Electric Express Train – HSR From Qous To Armant

Testing Date : 16/11/2023

Soil type : Upper Embankment

Location : ST From 671+980 To 672+180

Level : - 1 M

Report No. : 60-2

Compaction test by using Sand – Cone Test Method
ASTM D- 1556

Test #	Station	Test Hole Volume cm³	Bulk Density gm/ cm³	Moisture Content %	Dry Density (gm/ cm³)	Degree of Compaction (%)	Acceptance
1	672+020	1695	2.27	6.4	2.14	96.7%	Comply
2	672+040	1589	2.23	6	2.10	95.2%	Comply
3	672+060	1411	2.31	5.8	2.18	98.7%	Comply
4	672+080	1414	2.29	5.6	2.17	98.0%	Comply
5	672+100	1404	2.22	5.5	2.11	95.4%	Comply
6	672+120	1566	2.21	5.5	2.10	95.0%	Comply
7	672+140	1672	2.31	5.5	2.19	99.1%	Comply
8	672+160	1635	2.30	5.5	2.18	98.5%	Comply

Degree of compaction based on proctor test dated At

Max. dry density = 2.21 gm/cm³ At optimum moisture content = 5.8 %

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