

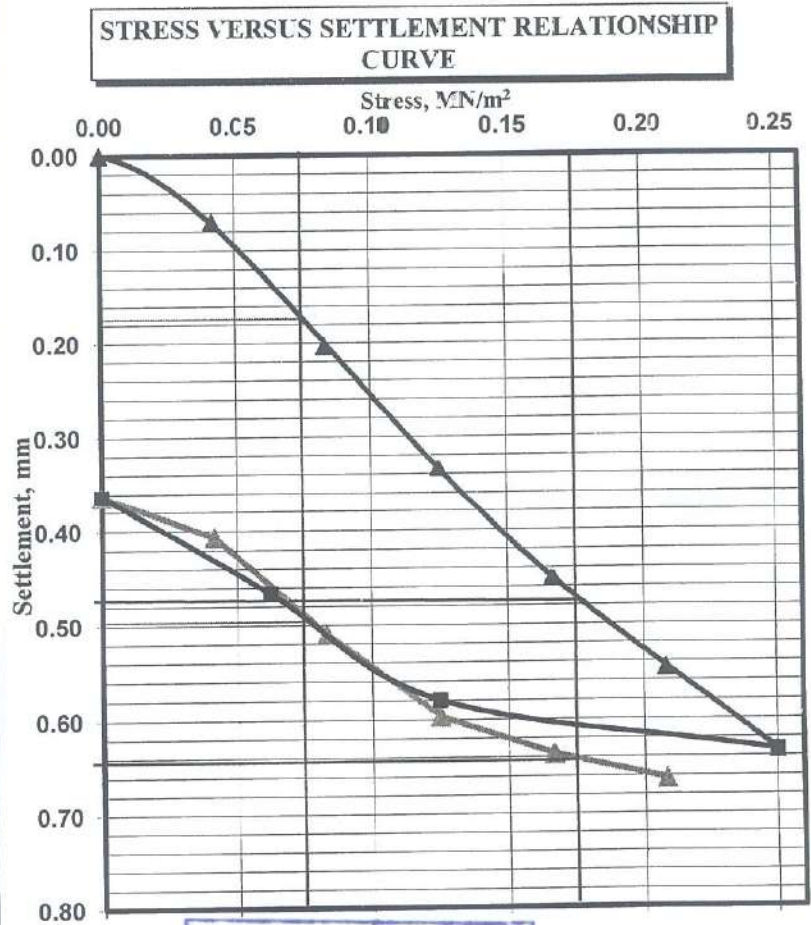
Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Gala'a (483+00) to (483+025) (level +0.90m)
PLATE LOAD NO. PLT- 76
PLATE DIAMETER (cm) 60.00

TYPE OF SOIL Sub-ballast
TIME START: 2:00 PM
TIME FINISH: 3:00 PM
DATE 5-Oct-23
LAB. REF. 06018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.08	0.20
0.13	0.33
0.17	0.45
0.21	0.55
0.25	0.63
0.13	0.58
0.06	0.47
0.00	0.36
0.04	0.41
0.08	0.51
0.13	0.60
0.17	0.64
0.21	0.66
0.25	0.68

0.3*σ _{0max}	0.075
0.7*σ _{0max}	0.175
S1 at 0.3*σ _{0max}	0.172
S2 at 0.3*σ _{0max}	0.490
S1 at 0.7*σ _{0max}	0.470
S2 at 0.7*σ _{0max}	0.640



STRAIN MODULUS, E_v

E _{v1} [MN/m ²]	151.01
E _{v2} [MN/m ²]	300.00
E _{v2} /E _{v1}	1.99

Apparatus

1. Loading plates consists of 600 mm ,The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

FA-P-1

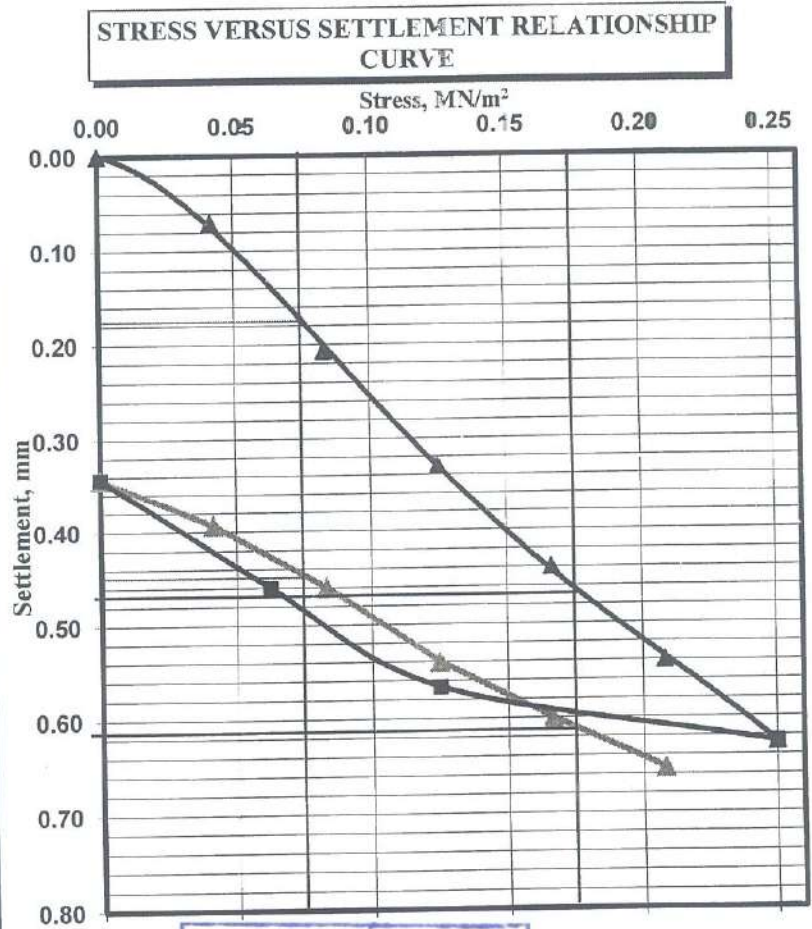
Plate Load Tests of Soils
DIN 18134

CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Galala (483+025) to (483+050) (level +0.90m)
PLATE LOAD NO. PLT- 77
PLATE DIAMETER (cm) 60.00

TYPE OF SOIL Sub-ballast
TIME START: 3:00 PM
TIME FINISH: 4:00 PM
DATE 5-Oct-23
LAB. REF. 06018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.08	0.21
0.13	0.33
0.17	0.44
0.21	0.54
0.25	0.63
0.13	0.57
0.06	0.46
0.00	0.34
0.04	0.39
0.08	0.46
0.13	0.54
0.17	0.60
0.21	0.65
0.25	0.68

0.3* σ_{0max}	0.075
0.7* σ_{0max}	0.175
S1 at 0.3* σ_{0max}	0.175
S2 at 0.3* σ_{0max}	0.445
S1 at 0.7* σ_{0max}	0.465
S2 at 0.7* σ_{0max}	0.610



STRAIN MODULUS, Ev

Ev1 [MN/m ²]	155.17
Ev2 [MN/m ²]	272.73
Ev2/Ev1	1.76

Apparatus

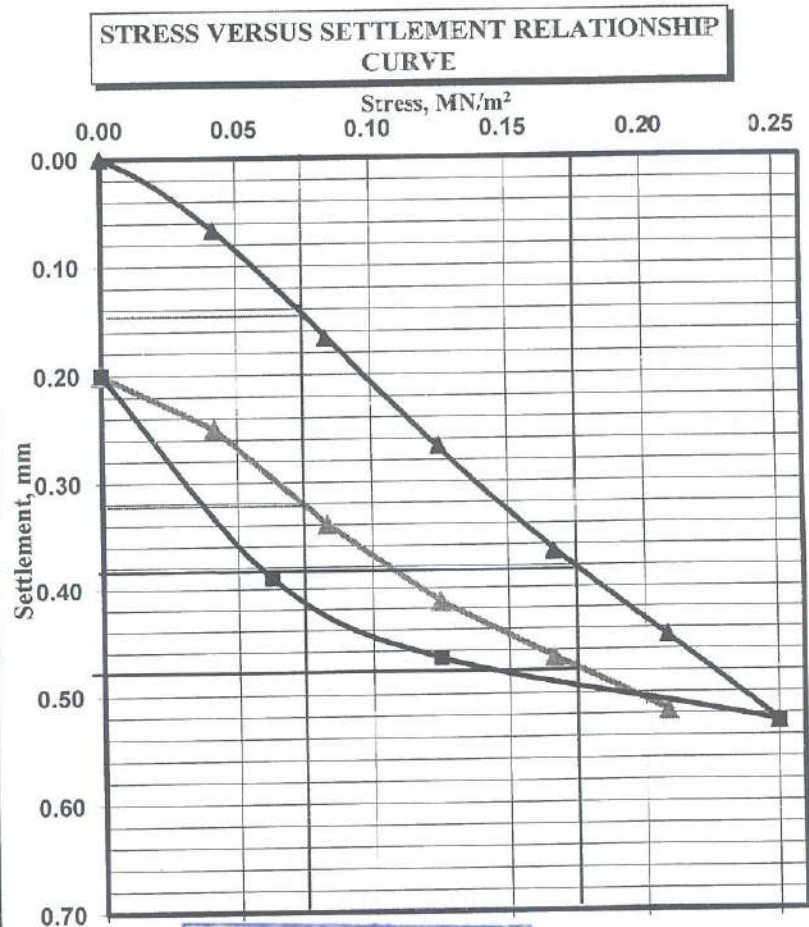
1. Loading plates consists of 600 mm ,The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

Plate Load Tests of Soils
DIN 18134

CLIENT	شركة الفتح	TYPE OF SOIL	Sub-ballast
PROJECT	Electric Express Train	TIME START:	4:00 PM
LOCATION	Al-Galala (483+050) to (483+075) (level +0.90m)	TIME FINISH:	5:00 PM
PLATE LOAD NO.	PLT- 78	DATE	5-Oct-23
PLATE DIAMETER (cm)	60.00	LAB. REF.	06018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.08	0.17
0.13	0.27
0.17	0.37
0.21	0.45
0.25	0.53
0.13	0.47
0.06	0.39
0.00	0.20
0.04	0.25
0.08	0.34
0.13	0.41
0.17	0.47
0.21	0.52
0.25	0.58

0.3*σ _{0max}	0.075
0.7*σ _{0max}	0.175
S1 at 0.3*σ _{0max}	0.143
S2 at 0.3*σ _{0max}	0.320
S1 at 0.7*σ _{0max}	0.380
S2 at 0.7*σ _{0max}	0.477



STRAIN MODULUS, Ev

Ev1 [MN/m ²]	189.87
Ev2 [MN/m ²]	286.62
Ev2/Ev1	1.51

Apparatus

1. Loading plates consists of 600 mm ,The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

Plate Load Tests of Soils
DIN 18134

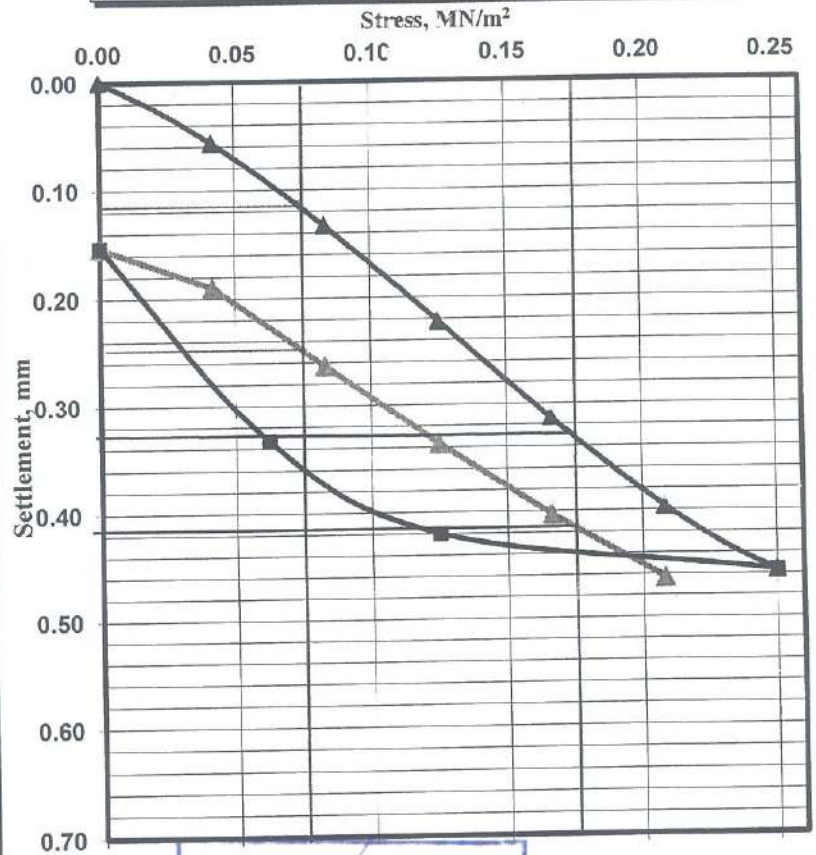
CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Galala (483+075) to (483+100) (level +0.90m)
PLATE LOAD NO. PLT-79
PLATE DIAMETER (cm) 60.00

TYPE OF SOIL Sub-ballast
TIME START: 5:00 PM
TIME FINISH: 6:00 PM
DATE 5-Oct-23
LAB. REF. 06018

Stress MN/m ²	Settlement mm
0.03	0.00
0.04	0.06
0.08	0.13
0.13	0.22
0.17	0.31
0.21	0.40
0.25	0.46
0.13	0.42
0.06	0.33
0.00	0.15
0.04	0.19
0.08	0.26
0.13	0.34
0.17	0.40
0.21	0.46
0.25	0.52

0.3* σ_{0max}	0.075
0.7* σ_{0max}	0.175
S1 at 0.3* σ_{0max}	0.118
S2 at 0.3* σ_{0max}	0.250
S1 at 0.7* σ_{0max}	0.330
S2 at 0.7* σ_{0max}	0.420

STRESS VERSUS SETTLEMENT RELATIONSHIP CURVE



STRAIN MODULUS, E_v

Ev1 [MN/m ²]	212.26
Ev2 [MN/m ²]	264.71
Ev2/Ev1	1.25

Apparatus

1. Loading plates consists of 600 mm, The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

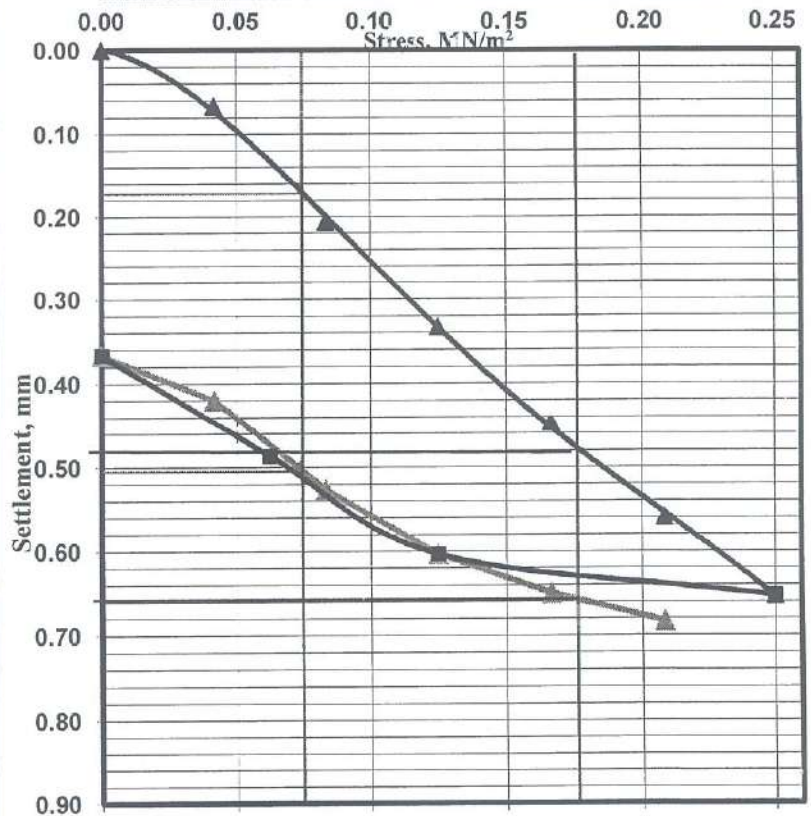
Plate Load Tests of Soils
DIN 18134

CLIENT	شركة الفتح	TYPE OF SOIL	Sub-ballast
PROJECT	Electric Express Train	TIME START:	6:00 PM
LOCATION	Al-Galala (483+100) to (483+125) (level +0.90m)	TIME FINISH:	7:00 PM
PLATE LOAD NO.	PLT-80	DATE	5-Oct-23
PLATE DIAMETER (cm)	60.00	LAB. REF.	05018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.06	0.21
0.13	0.33
0.17	0.45
0.21	0.56
0.25	0.65
0.13	0.60
0.06	0.49
0.00	0.37
0.04	0.42
0.08	0.53
0.13	0.60
0.17	0.65
0.21	0.68
0.25	0.71

0.3* σ_{0max}	0.075
0.7* σ_{0max}	0.175
S1 at 0.3* σ_{0max}	0.150
S2 at 0.3* σ_{0max}	0.503
S1 at 0.7* σ_{0max}	0.480
S2 at 0.7* σ_{0max}	0.660

STRESS VERSUS SETTLEMENT RELATIONSHIP CURVE



STRAIN MODULUS, E_v

Ev1 [MN/m ²]	136.36
Ev2 [MN/m ²]	286.62
Ev2/Ev1	2.10

Apparatus

1. Loading plates consists of 600 mm , The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

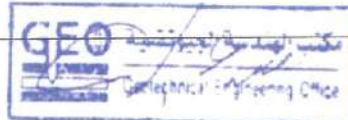


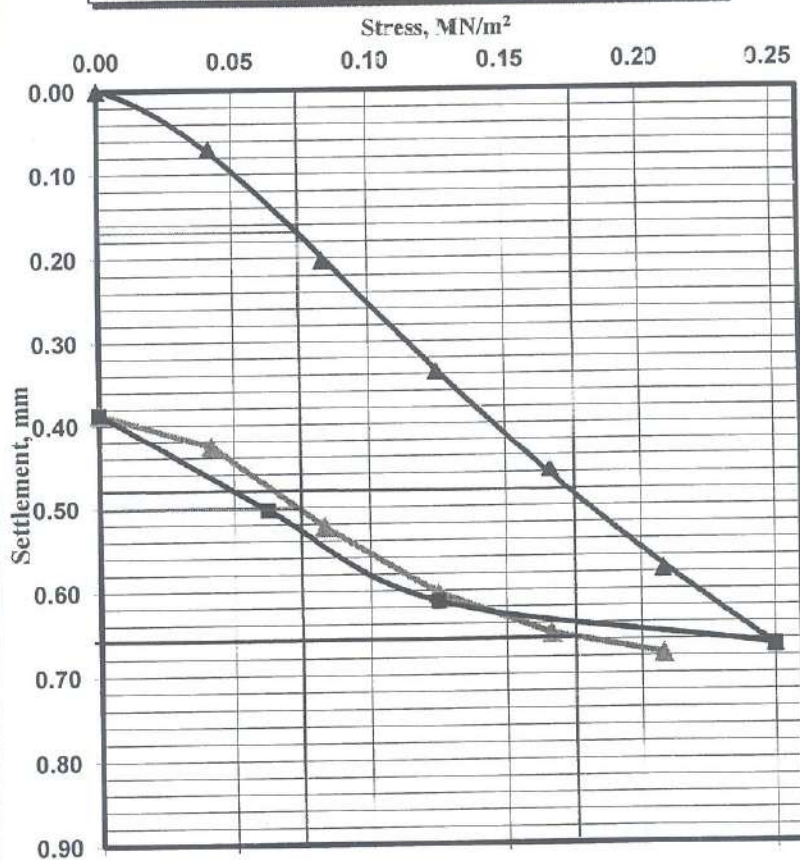
Plate Load Tests of Soils
DIN 18134

CLIENT	شركة الفتح	TYPE OF SOIL	Sub-ballast
PROJECT	Electric Express Train	TIME START:	7:00 PM
LOCATION	Al-Galala (483+125) to (483+150) (level +0.90m)	TIME FINISH:	8:00 PM
PLATE LOAD NO.	PLT-81	DATE	5-Oct-23
PLATE DIAMETER (cm)	60.00	LAB. REF.	06018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.08	0.20
0.13	0.34
0.17	0.46
0.21	0.58
0.25	0.67
0.13	0.61
0.08	0.50
0.00	0.39
0.04	0.43
0.08	0.52
0.13	0.50
0.17	0.55
0.21	0.68
0.25	0.70

0.3*σ _{0max}	0.075
0.7*σ _{0max}	0.175
S1 at 0.3*σ _{0max}	0.170
S2 at 0.3*σ _{0max}	0.506
S1 at 0.7*σ _{0max}	0.480
S2 at 0.7*σ _{0max}	0.660

STRESS VERSUS SETTLEMENT RELATIONSHIP CURVE



STRAIN MODULUS, Ev

Ev1 [MN/m ²]	145.16
Ev2 [MN/m ²]	292.21
Ev2/Ev1	2.01

Apparatus

1. Loading plates consists of 600 mm, The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN

Plate Load Tests of Soils
DIN 18134

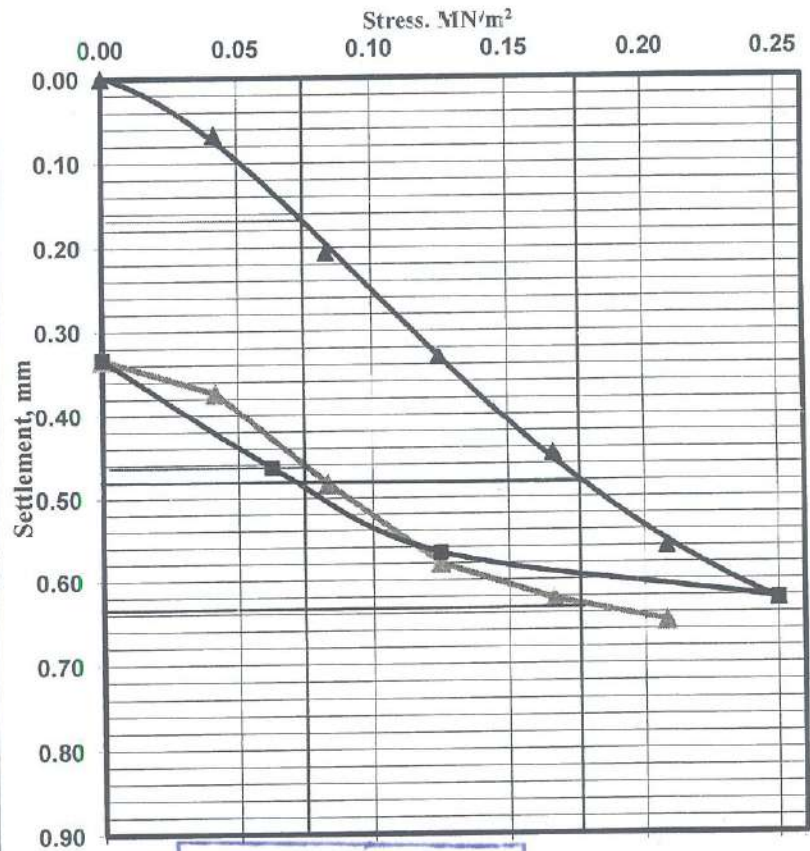
CLIENT شركة الفتح
PROJECT Electric Express Train
LOCATION Al-Galala (483+150) to (483+175) (level +0.90m)
PLATE LOAD NO. PLT-82
PLATE DIAMETER (cm) 60.00

TYPE OF SOIL Sub-ballast
TIME START: 6:00 AM
TIME FINISH: 7:00 AM
DATE 5-Oct-23
LAB. REF. 06018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.07
0.08	0.21
0.13	0.33
0.17	0.45
0.21	0.56
0.25	0.62
0.13	0.57
0.06	0.46
0.00	0.33
0.04	0.37
0.08	0.48
0.13	0.58
0.17	0.62
0.21	0.65
0.25	0.67

0.3* σ_{0max}	0.075
0.7* σ_{0max}	0.175
S1 at 0.3* σ_{0max}	0.170
S2 at 0.3* σ_{0max}	0.460
S1 at 0.7* σ_{0max}	0.480
S2 at 0.7* σ_{0max}	0.630

STRESS VERSUS SETTLEMENT RELATIONSHIP CURVE



STRAIN MODULUS, E_v

Ev1 [MN/m ²]	145.16
Ev2 [MN/m ²]	264.71
Ev2/Ev1	1.82

Apparatus

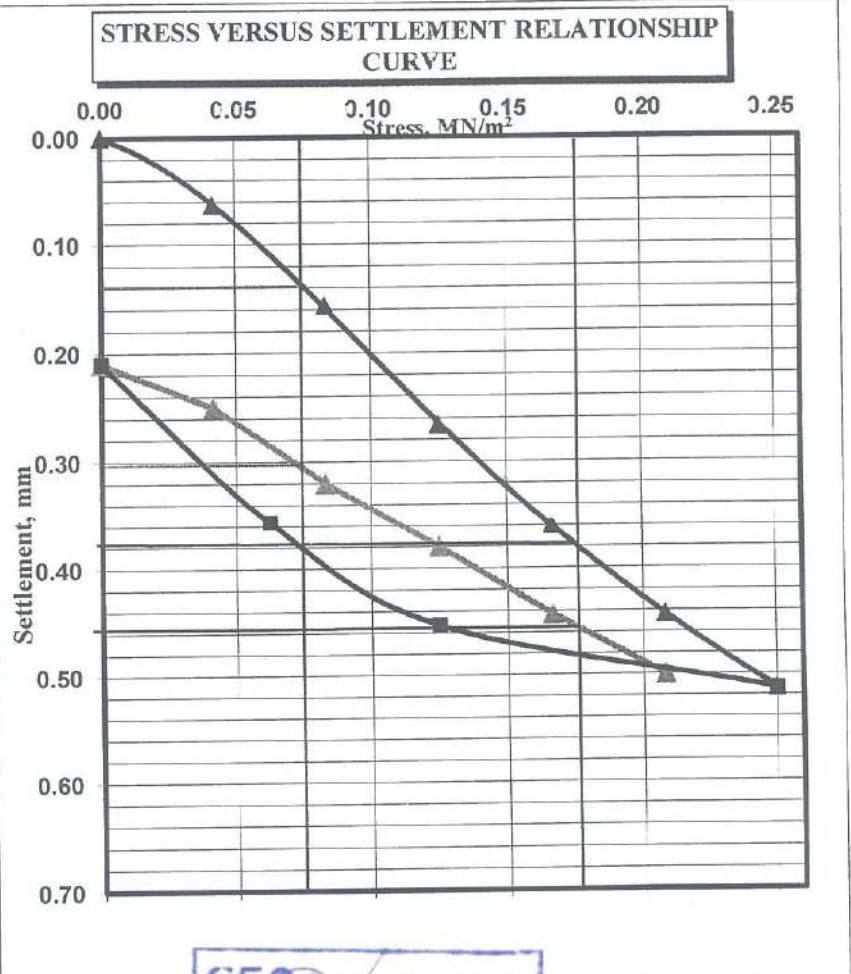
1. Loading plates consists of 600 mm ,The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 kN

Plate Load Tests of Soils
DIN 18134

CLIENT	شركة الفتح	TYPE OF SOIL	Sub-ballast
PROJECT	Electric Express Train	TIME START:	7:00 AM
LOCATION	Al-Gala.a (483+175) to (483+200) (level +0.90m)	TIME FINISH:	8:00 AM
PLATE LOAD NO.	PLT-83	DATE	5-Oct-23
PLATE DIAMETER (cm)	60.00	LAB. REF.	05018

Stress MN/m ²	Settlement mm
0.00	0.00
0.04	0.06
0.08	0.16
0.13	0.27
0.17	0.36
0.21	0.44
0.25	0.51
0.13	0.45
0.06	0.36
0.00	0.21
0.04	0.25
0.08	0.32
0.13	0.38
0.17	0.44
0.21	0.50
0.25	0.56

0.3*σ _{0max}	0.075
0.7*σ _{0max}	0.175
S1 at 0.3*σ _{0max}	0.140
S2 at 0.3*σ _{0max}	0.305
S1 at 0.7*σ _{0max}	0.380
S2 at 0.7*σ _{0max}	0.460

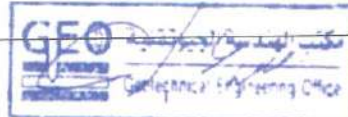


STRAIN MODULUS, Ev

Ev1 [MN/m ²]	187.50
Ev2 [MN/m ²]	290.32
Ev2/Ev1	1.55

Apparatus

1. Loading plates consists of 600 mm, The thickness of plates 25 mm
2. Dial gauges with accuracy 0.01 mm to measuring the settlement
3. Steel straightedges with magnetic supports to fixed the dial gauges
4. Hydraulic jack with pump to transfer reactive loads to the loading plates
5. Proving Ring for plate load 250 KN



MATERIAL INSPECTION REQUEST						
	الهيئة العامة للطرق والكباري (GARB)	وزارة النقل	SGAC	مركز الاستشارات الهندسية للنقل والطرق والكباري (جواندة بوليد) دكتور/ سعد الجوشع	وزارة النقل	SYSTRA

Contractor Company		Designer Company																	
Issued by Contractor	Name: Sign: Eng/ <i>Karam</i>	Date	1/5/2023																
Received by ER		MIR	<table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>DD</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM								
C1	C2	C3	DD	MM	YY	HH	MM												

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

Description of Materials	Fill material results					
Location to be Used	483+780 484-000 S.B1 483+500 483-680 S.B1 483+680 483-780 S.B1 483+200 483-400 S.B1 482+840 483-000 S.B1			483+000 483+200 S.B1 481+000 481+240 S.B1 482+640 482+840 S.B1 483+400 483+500 S.B1 481+400 481+580 S.B1		
MAF Approval No						Date
Supplier Name						
Test Requirement	Specification					Clause
Reference Photos	Yes attached / No					Other
Item	Description	Unit	Quantity	Arrival Date	Note	
1	C.B.R	m3	5000			
2						
3						
4						
Comments by:			Comments by:			
A sample has been taken from fill material by SGAC office to (CEL) lab and the results founded meet the specifications and accepted						
APPROVAL STATUS						
Organisation	Name	Sign	Date	A-AWC-R		
Contractor	<i>Karam</i>	<i>A</i>				
QA/QC *	<i>M. Adel</i>	<i>M. Adel</i>				
GARB**	<i>M. Adel</i>	<i>M. Adel</i>				
Comment by ER						
Employers Representative						

* Designer
** Alignment / Bridges Culvert Only

FA-M-70

MATERIAL INSPECTION REQUEST				مركز الاستشارات الهندسية للتقارير والمطامير والدراسات دكتور/ محمد الجوهري		
	الهيئة العامة للطرق والكباري (GARBU)	وزارة النقل (MTPW)	وزارة النقل (MTPW)	وزارة النقل (MTPW)	وزارة النقل (MTPW)	وزارة النقل (MTPW)

Contractor Company	Designer Company	
Issued by Contractor	Name Sign	Date Time
Received by ER	Eng. <i>[Signature]</i> REAL ESTATE AND ROAD DEVELOPMENT MIR	1'5/2023 C1 C2 C3 DD MM YY HH MM

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

Description of Materials	Fill material results				
Location to be Used	483+780 484+000 S.B1 483+500 483+680 S.B1 483+680 483+780 S.B1 483+200 483+400 S.B1 482+840 483+000 S.B1	483+000 483+200 S.B1 481+000 481+240 S.B1 482+640 482+840 S.B1 483+400 483+500 S.B1 481+400 481+580 S.B1			
MAR Approval No			Date		
Supplier Name					
Test Requirement	Specification		Clause		
Reference Photos	Yes attached / No	Other			
Item	Description	Unit	Quantity	Arrival Date	Note
1	L & P.L & O.M.C %	m3	5000		
2	Proctor	m3	5000		
3	Classification	m3	5000		
4	Seive analysis	m3	5000		
Comments by:		Comments by:			
A sample has been taken from fill material by SGAC office to (CEL) lab and the results founded meet the specifications and accepted					
APPROVAL STATUS					
Organisation	Name	Sign	Date	A-AWC-R	
Contractor	<i>[Signature]</i>	<i>[Signature]</i>			
QA/QC *	<i>[Signature]</i>	<i>[Signature]</i>			
GARB**	<i>[Signature]</i>	<i>[Signature]</i>			
Comment by ER					
Employers Representative					

* Designer
 ** Alignment / Bridges: Culvert On y

STATION		TEST							QUANTITY TEST
FORM	TO	LEVEL	PROCTOR	SEIVE ANALYSES	LL PL PI	OMC	CBR	SEIVE NO. 200	SOIL CLASSIFICATION
483+780	484+000	S.B1	2.21		NP	6.50%	6.50%	A 1.4	(1/5/2023) القليل رطب
483+500	483+680	S.B1							
483+680	483+780	S.B1							
483+200	483+400	S.B1							
482.1840	483+000	S.B1							
483+000	483+200	S.B1	5000 m3						
481+000	481+240	S.B1							
482+640	482+840	S.B1							
483+400	483+500	S.B1							
481+400	481+580	S.B1	84.60%						5000 m3

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

Dear Gentleman,

Attached here with the Sub-Ballast delivered on 01/05/2023

Materials test

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Liquid limits and plasticity index of soil according to ASTM D-4318.
4. Proctor test according to ASTM D-1557.
5. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
6. CBR according to ASTM D-1883
7. Los Anglos according to ASTM C-131.

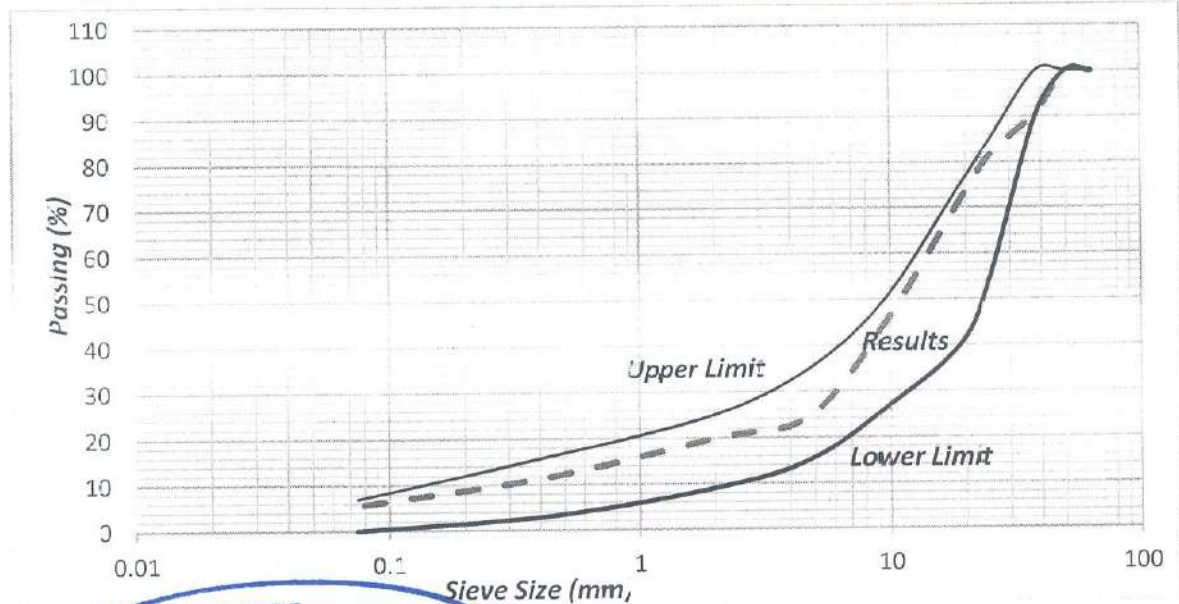
Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken

Signature / ...
The stamp is an oval shape with a blue border. Inside, the word 'CEL' is at the top. Below it, the text 'مكتب معامل الاستشارات الهندسية' is written in Arabic. In the center, there is a signature in Arabic script. At the bottom, there is more text in Arabic, including 'بمصر' (Cairo) and 'شارع' (Street).

Company Name : شركة الفتح لنلشن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

Results of sieve analysis according to ASTM D-422.

Sieve Size (mm)	Passing %	Job specification limits (ASTM D-422)	
		Min.	Max.
63.5	100	100	100
50	100	100	100
38	90.6	90	100
25	81.6	55	85
19	71.6	40	75
12.5	62.2	--	--
9.5	44.7	26	50
4.75	24.5	15	35
2.00	19.9	9	25
0.425	11.6	3	15
0.075	5.6	0	7



The test results are () Comply - () Not Comply with specifications limits.
Signature / ...

Company Name : شركة الفتح للنشحن والتفريغ و الأعمال 'نبحرية'
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 μ M (No.200)	5.6

Signature /



Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

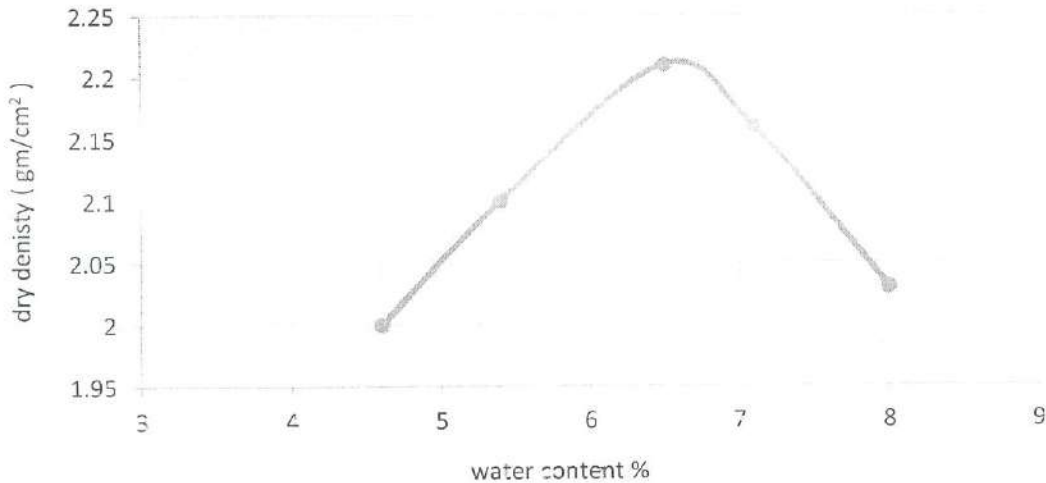
**Results of liquid limit and plasticity index
of soils according to ASTM D-4318**

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

Signature 
مكتب معامل الاستشارات الهندسية
الاستاذ المساعد
249-001-037
الشارع الرئيسي : 3 شارع الملك فيصل - الزمالك - القاهرة

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

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



- Max dry density (gm/cm²) : 2.21
- Optimum moisture content % : 6.5

CEL
مكتب معامل الاستشارات الهندسية
الساحل الشمالي
رقم التسجيل 219-531-537
Signature

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

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

Test	Results
Bulk Specific Gravity (OD)	5.52
Bulk Specific Gravity (SSD)	2.63
Apparent Specific Gravity.	2.71
Absorption %	3.4

Note:

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

Signature /



Company Name : شركة الفتح للشحن والتفريغ و الأعمان البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	4.29
1.27	0.050	4.80
1.91	0.075	5.32
2.54	0.100	5.84
3.18	0.125	6.35
3.81	0.150	6.86
4.45	0.175	7.37
5.08	0.200	7.89
5.71	0.225	8.40
6.35	0.250	8.91

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	84.6
	6.90	5.84	

Notes :

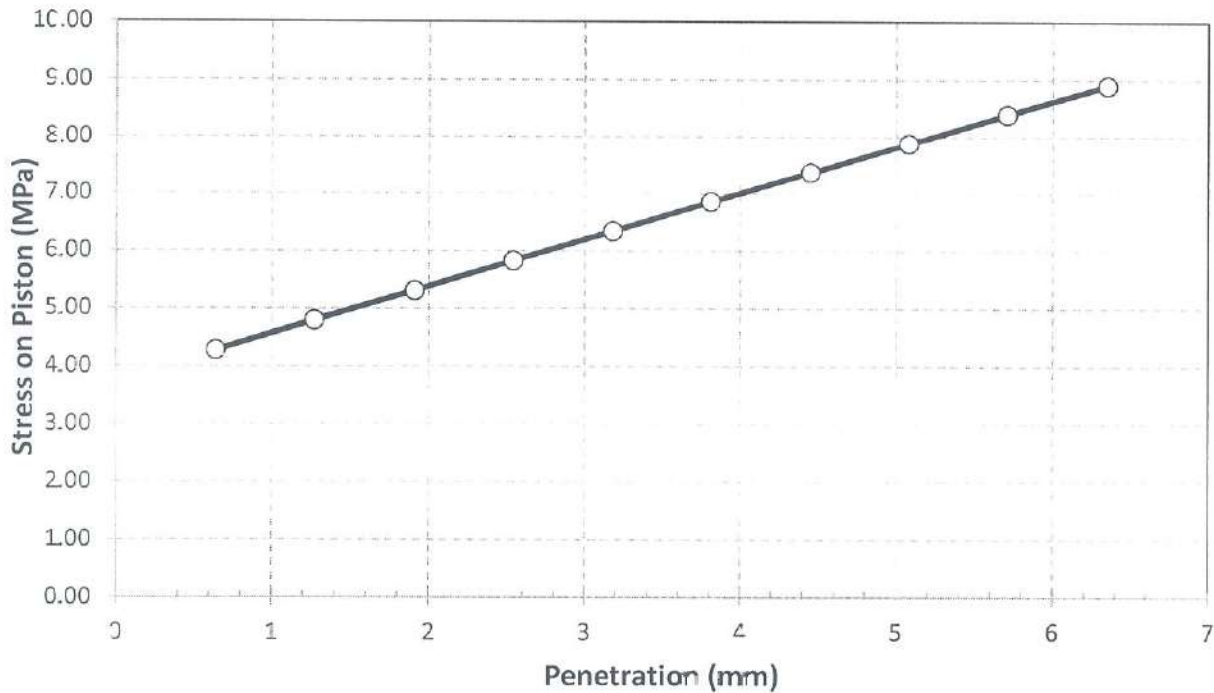
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.21 (gm /cm³) at 6.5 % optimum water content.
- 3- Surcharge load 4.50 kg.

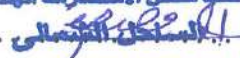
Signature /

مكتب معامل الاستشارات الهندسية
210 - 837 - 837
210 - 837 - 837
210 - 837 - 837

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 01/05/2023
Reporting Date : 10/05/2023
Reporting No. : 45
Sample No. : 02

Load Penetration Curve of CBR Test
ASTM D-1883



Signature / .. 

مكتب معامل الاستشارات الهندسية
د. المهندس / ..
210-091-537 - 210-091-537
البريد الإلكتروني : 3 شارع مكة للشحن - الزمالة - القاهرة



Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company:

الفتح للشحن و التفريغ لاعمال البحرية

Project : Electric express train.
Delivery Date : 09/07/2023
Report Date : 17/07/2023
Sample Id : Sub-ballast sample 1
Type : Coarse Aggregate
Source : Site
Report No. : 06

**RESISTANCE TO DEGRADATION
OF SMALL SIZE AGGREGATE BY ABRASION
AND IMPACT IN LOS ANGELES MACHINE
ASTM C 535**

Test	Results
Amount of loss by abrasion and impact (%) Coarse Aggregate	25.7

• According to project specs :

The amount of loss by abrasion and impact for moderate weathering:

- Shall not exceed 30 % (when Subjected to 500 revolutions)

The Test Results is ☒ Comply - ☐ Not Comply) with Spec. Limits

Signature /



3 El Maiek El Afdal Street
Zamelek, Cairo.
Tel.& Fax : 27367231 - 27363093



ش. المملك الأفضل
الزمالك - القاهرة
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

Contractor Company		Designer Company																	
Issued by Contractor	Name	Sign	Date																
			13/5/2023																
Received by ER		MIR	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>DD</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM								
			C1	C2	C3	DD	MM	YY	HH	MM									

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

Description of Materials	Fill material results																														
Location to be Used <table style="width: 100%;"> <tr> <td>481+400</td> <td>481+580</td> <td>S.B1</td> </tr> <tr> <td>481+940</td> <td>482+100</td> <td>S.B1</td> </tr> <tr> <td>482+100</td> <td>482+300</td> <td>S.B1</td> </tr> <tr> <td>482+300</td> <td>482+500</td> <td>S.B1</td> </tr> <tr> <td>481+240</td> <td>481+400</td> <td>S.B1</td> </tr> </table>	481+400	481+580	S.B1	481+940	482+100	S.B1	482+100	482+300	S.B1	482+300	482+500	S.B1	481+240	481+400	S.B1	<table style="width: 100%;"> <tr> <td>482+500</td> <td>482+600</td> <td>S.B1</td> </tr> <tr> <td>481+580</td> <td>482+700</td> <td>S.B1</td> </tr> <tr> <td>481+700</td> <td>482+900</td> <td>S.B1</td> </tr> <tr> <td>481+480</td> <td>482+700</td> <td>S.B2</td> </tr> <tr> <td>483+000</td> <td>483+200</td> <td>S.B2</td> </tr> </table>	482+500	482+600	S.B1	481+580	482+700	S.B1	481+700	482+900	S.B1	481+480	482+700	S.B2	483+000	483+200	S.B2
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481+480	482+700	S.B2																													
483+000	483+200	S.B2																													

MAR Approval No	Date	
Supplier Name		
Test Requirement	Specification	Clause
Reference Photos	Yes attached / No	Other

Item	Description	Unit	Quantity	Arrival Date	Note
1	C.B.R	m3	5000		
2					
3					
4					

Comments by:	Comments by:
Asample has been taken form fill material by SGAC office to (CEL) lab and the results founded meet the specifcncntions and accepted	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Karam			
QA/QC *	M. Adel			
GARB**	M. Negm			
Comment by ER				
Employers Representative				

* Designer
** Alignment / Bridges: Culvert Only

FA-M-70

Contractor Company		Designer Company																
Issued by Contractor	Name	Date																
	Eng/ <i>Karim</i>	13/5/2023																
Received by ER	MIR	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>C1</td><td>C2</td><td>C3</td><td>DC</td><td>MM</td><td>YY</td><td>HH</td><td>MM</td></tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	C1	C2	C3	DC	MM	YY	HH	MM								
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CODE-1	S1 to S21 Station Reference	D1 to S3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element: of Activity		

Description of Materials	Fill material results																														
Location to be Used <table style="width: 100%;"> <tr><td>481+400</td><td>481+580</td><td>S.B1</td></tr> <tr><td>481+940</td><td>482+100</td><td>S.B1</td></tr> <tr><td>482+100</td><td>482+300</td><td>S.B1</td></tr> <tr><td>482+300</td><td>482+500</td><td>S.B1</td></tr> <tr><td>481+240</td><td>481+400</td><td>S.B1</td></tr> </table>	481+400	481+580	S.B1	481+940	482+100	S.B1	482+100	482+300	S.B1	482+300	482+500	S.B1	481+240	481+400	S.B1	<table style="width: 100%;"> <tr><td>482+500</td><td>482+600</td><td>S.B1</td></tr> <tr><td>481+580</td><td>481+700</td><td>S.B1</td></tr> <tr><td>481+700</td><td>481+900</td><td>S.B1</td></tr> <tr><td>481+480</td><td>481+700</td><td>S.B2</td></tr> <tr><td>483+000</td><td>483+200</td><td>S.B2</td></tr> </table>	482+500	482+600	S.B1	481+580	481+700	S.B1	481+700	481+900	S.B1	481+480	481+700	S.B2	483+000	483+200	S.B2
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MAR Approval No	Date																														
Supplier Name																															
Test Requirement	Specification Clause																														
Reference Photos Yes attached / No	Other																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Item</th> <th>Description</th> <th>Unit</th> <th>Quantity</th> <th>Arrival Date</th> <th>Note</th> </tr> </thead> <tbody> <tr><td>1</td><td>L.L & P.L & O.M.C %</td><td>m3</td><td>5000</td><td></td><td></td></tr> <tr><td>2</td><td>Proctor</td><td>m3</td><td>5000</td><td></td><td></td></tr> <tr><td>3</td><td>Classification</td><td>m3</td><td>5000</td><td></td><td></td></tr> <tr><td>4</td><td>Seive analysis</td><td>m3</td><td>5000</td><td></td><td></td></tr> </tbody> </table>	Item	Description	Unit	Quantity	Arrival Date	Note	1	L.L & P.L & O.M.C %	m3	5000			2	Proctor	m3	5000			3	Classification	m3	5000			4	Seive analysis	m3	5000			Comments by: As sample has been taken from fill material by SGAC office to CEL lab and the results founded meet the specifications and accepted
Item	Description	Unit	Quantity	Arrival Date	Note																										
1	L.L & P.L & O.M.C %	m3	5000																												
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APPROVAL STATUS																															
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Contractor	<i>Karim</i>	<i>K-A</i>																													
QA/QC *	<i>M. Adel</i>	<i>M. Adel</i>																													
GARB**	<i>M. Negm</i>	<i>M. Negm</i>																													
Comment by ER																															
Employers Representative																															

* Designer
** Alignment / Bridges: Culvert Or y

STATION			TEST							QUANTITY TEST
MARK	ID	LEVEL	PRODUCOR	SEIVE ANALYSES	LL, PL, PI	OMC	CBR	SIEVE NO. 200	SOIL CLASSIFICATION	
481+400	481+580	S.B1	2.2	NP	6.70%	A-1-A	5000 m3	(13/5/2023) القياس		
481+940	482+100	S.B1								
482+100	482+300	S.B1								
482+300	482+500	S.B1								
481+240	481+400	S.B1								
482+500	482+600	S.B1								
481+580	481+700	S.B1								
481+700	481+900	S.B1								
481+480	481+700	S.B2								
483+000	483+200	S.B2								
81.90%									5000 m3	

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

Dear Gentleman,

Attached here with the Sub-Ballast delivered on 13/05/2023

Materials test

1. Sieve analysis according to ASTM D-422.
2. Material finer than sieve No. 200 according ASTM D-1140.
3. Liquid limits and plasticity index of soil according to ASTM D-4318.
4. Proctor test according to ASTM D-1557.
5. Specific Gravity & Absorption according to ASTM C-127 & D 6473.
6. CBR according to ASTM D-1883
7. Los Ang'os according to ASTM C-131.

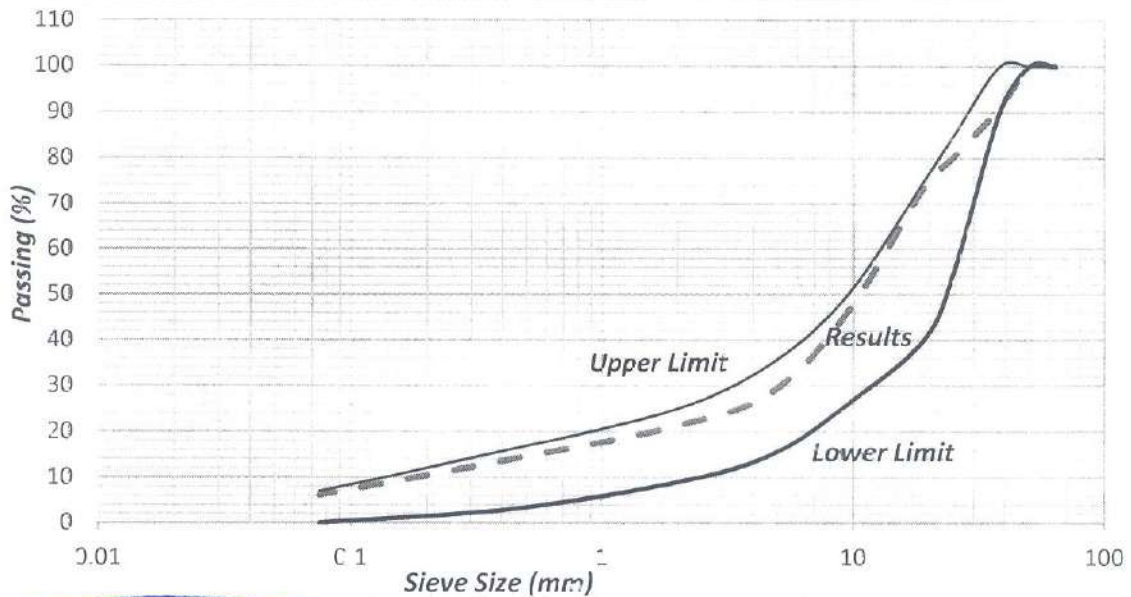
Note: The sample was brought by the client to our laboratory and the laboratory is not responsible for the way it is taken

Signature /


Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
 Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
 Type of sample : Sub-Ballast
 Location : St. (480+000) : (484+000)
 Delivery Date : 13/05/2023
 Reporting Date : 23/05/2023
 Reporting No. : 46
 Sample No. : 03

Results of sieve analysis according to ASTM D-422.

Sieve Size (mm)	Passing %	Job specification limits (ASTM D-422)	
		Min	Max.
63.5	100	100	100
50	100	100	100
38	91.1	90	100
25	80.3	55	85
19	73.6	40	75
12.5	64.1	--	--
9.5	46.2	26	50
4.75	28.6	15	35
2.00	21.3	9	25
0.425	13.8	3	16
0.075	6.2	0	7



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

Signature / 
 رقم التسجيل للمختبر: 219-021-537
 المقر الرئيسي: شارع الملك فيصل - القاهرة

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

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

Test	Results (%)
Percentage of material finer than Sieve Size 75 μ M (No.200)	6.2

CEL
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البريد الإلكتروني: info@cel-egypt.com
Signature / ...
البريد الإلكتروني: info@cel-egypt.com
العنوان الرئيسي: 3 شارع الملك الأفضل - الزمالك - القاهرة

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

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

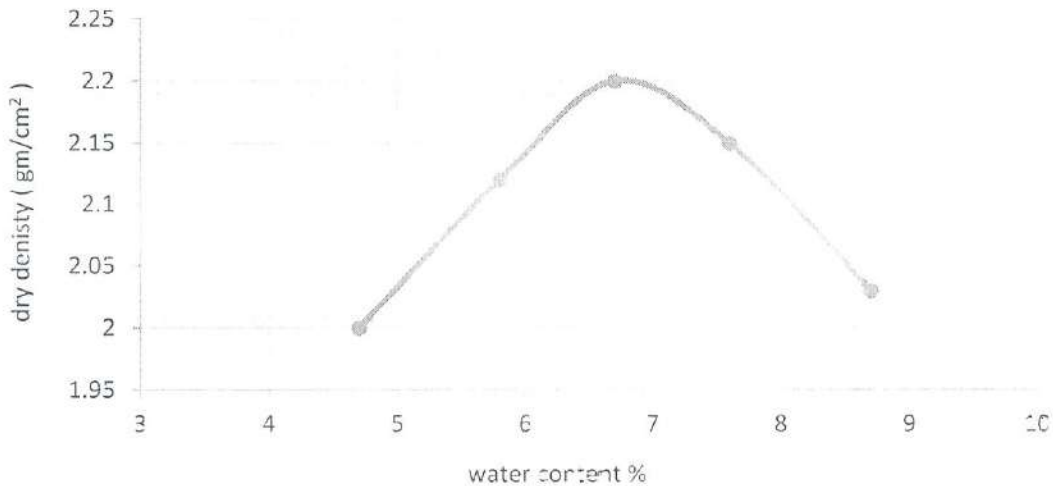
Test	Results (%)
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP

Signature /



Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

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



- Max dry density (gm/cm²) : 2.20
- Optimum moisture content % : 6.7

Signature



Company Name : شركة الفتح لنشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train. from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

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

Test	Results
Bulk Specific Gravity (OD)	2.53
Bulk Specific Gravity (SSD)	2.64
Apparent Specific Gravity.	2.273
Absorption %	3.3

Note:

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

Signature / 
مكتب معامل الاستشارات الهندسية
الرياضة الشمالية
215-216-217
شارع الملك فيصل - القاهرة

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train. from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

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

penetration		stress on piston (Mpa)
mm	Inch	
0.64	0.025	4.13
1.27	0.050	4.64
1.91	0.075	5.14
2.54	0.100	5.65
3.18	0.125	6.16
3.81	0.150	6.66
4.45	0.175	7.17
5.08	0.200	7.68
5.71	0.225	8.19
6.35	0.250	8.69

CBR Result	Stress (Mpa)		CBR %
At 0.1 inch (2.54 mm) penetration	St. Value	Sample results	81.9
	6.90	5.65	

Notes :

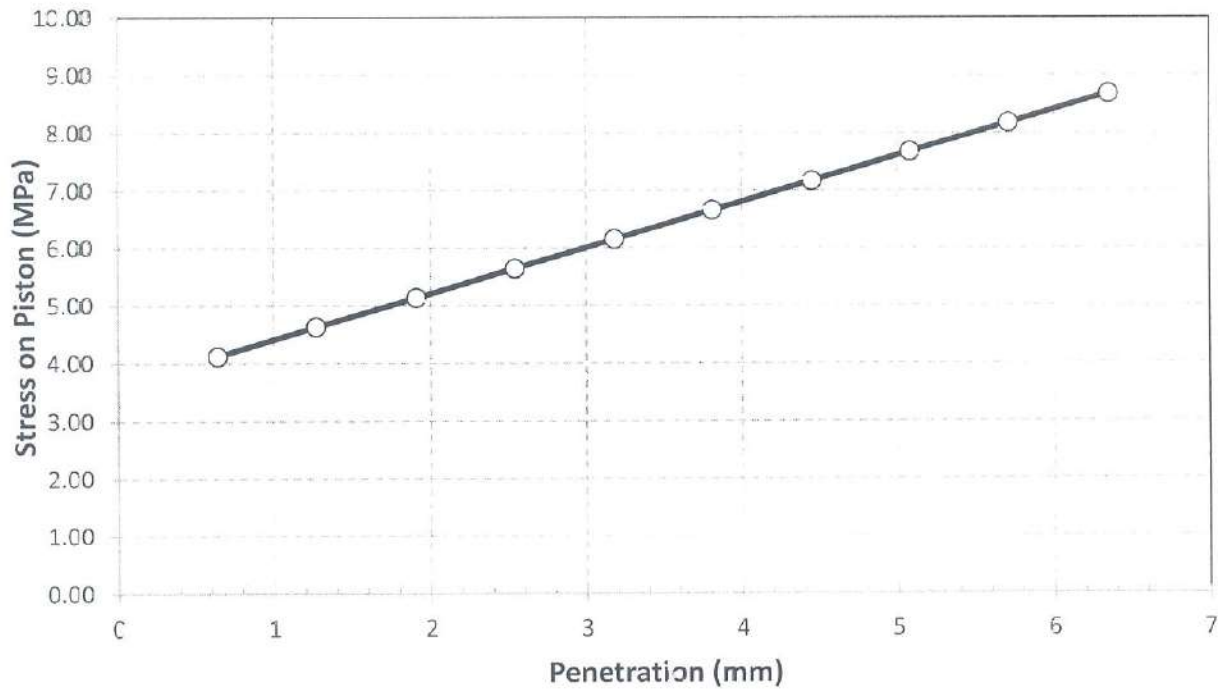
- 1- Attached graph shows penetration resistance versus penetration magnitude.
- 2- The sample was compacted to dry density of 2.20 (gm /cm³) at 6.7 % optimum water content.
- 3- Surcharge load = 50 Kg.

Signature :

مكتب مهندس الاستشارات الهندسية
الاستاذ المساعد
د. محمد عبد الله
210-831-537 - 210-831-537
مركز القوي : 1 شارع شارع الشان - القاهرة

Company Name : شركة الفتح للشحن والتفريغ و الأعمال البحرية
Project : Electric Express Train, from Al Ain Sokhna to Marsa Matrouh
Type of sample : Sub-Ballast
Location : St. (480+000) : (484+000)
Delivery Date : 13/05/2023
Reporting Date : 23/05/2023
Reporting No. : 46
Sample No. : 03

Load Penetration Curve of CBR Test
ASTM D-1883



Signature
مكتب معامل الاستشارات الهندسية
إ. م. محمد عبد الحليم
27367231 - 27363093
3 شارع الملك الأفديل - الزمالك - القاهرة



Consulting Engineering Bureau & Laboratories

مكتب معامل الاستشارات الهندسية

Company:

الفتح للشحن و التفريغ لاعمال البحرية

Project : Electric express train.
Delivery Date : 09/07/2023
Report Date : 17/07/2023
Sample Id : Sub-ballast sample 2
Type : Coarse Aggregate
Source : Site
Report No. : 07

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

Test	Results
Amount of loss by abrasion and impact (%) Coarse Aggregate	28.7

- According to project specs :

The amount of loss by abrasion and impact for moderate weathering:

- Shall not exceed 30 % (when Subjected to 500 revolutions).

The Test Results is ☒ Comply

☐ Not Comply) with Spec. Limits

Signature /



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



ش الملك الأفضل
الزمالك - القاهرة
تليفون - فاكس : ٢٧٣٦٧٢٣١ - ٢٧٣٦٣٠٩٣
www.cel-egypt.com

قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الى الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي عبدالرحمن .
رقم البند و بيانه : (1 - 4) بالمتر المكعب أعمال توريد وتشغيل طبقة اساس ومطابقة للمواصفات والتشغيل .
تنفيذ : شركة الفتح للشحن والتفريغ و الاعمال البحرية

مقدار العمل السابق : 0.0 3م

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الهيئة
م / إبراهيم الحناوى

مهندس الاستشاري
مكتب د. سعد الجيوشي
م / مصطفى نجم

مهندس الاستشاري
مدير مكتب XYZ
م / محمد خليل

مدير المشروع
م / حسن محمد

قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الي الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي عبدالرحمن .

رقم البند و بيانه : (1 - 4) علاوة مسافة النقل 120 كم

تنفيذ : شركة الفتح للشحن و التفريغ و الاعمال البحرية

مقدار العمل السابق : 0.0 م 3

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الاستشاري
مدير مكتب XYZ
م / محمد خليل
مهندس الاستشاري
مكتب د. سعد الجيوشي
م / مصطفى نجم
مهندس الهيئة
م / إبراهيم الحناوي
مدير المشروع
م / حسن محمد

قائمة الكميات الواردة بالمستخلص جاري (2)

مشروع القطار الكهربائي السريع (العين السخنة - العاصمة الإدارية - العلمين - مطروح)
قطاع غرب النيل لتنفيذ المسافة من الكم 400+600 الي الكم 406+600 كم بطول 6 كيلو متر اتجاه سيدي عبدالرحمن .

رقم البند و بيانه : (1 - 4) علاوة تحصيل رسوم الكارثة والموازين طبقاً للائحة الشركة الوطنية

تنفيذ : شركة الفتح للشحن و التفرغ و الاعمال البحرية

مقدار العمل السابق : 0.0 3م

الكمية	الابعاد (متر)		الموقع الكيلومتری		بيان الاعمال بالمقايضة
	مساحة المقطع	طول	الى	من	
1085.963	2.17	500	401+100	400+600	القطاع الأول
1085.963	2.17	500	401+600	401+100	القطاع الثاني
1085.963	2.17	500	402+100	401+600	القطاع الثالث
1085.963	2.17	500	402+600	402+100	القطاع الرابع
1085.963	2.17	500	403+100	402+600	القطاع الخامس
1085.963	2.17	500	403+600	403+100	القطاع السادس
1085.963	2.17	500	404+100	403+600	القطاع السابع
1085.963	2.17	500	404+600	404+100	القطاع الثامن
1085.963	2.17	500	405+100	404+600	القطاع التاسع
1085.963	2.17	500	405+600	405+100	القطاع العاشر
1085.963	2.17	500	406+100	405+600	القطاع الحادي عشر
1085.963	2.17	500	406+600	406+100	القطاع الثاني عشر
13031.550	اجمالي الكميات خلال فترة المستخلص الحالية (م ³)				
13031.550	الاجمالي الكلي (م ³)				

مهندس الهيئة
م / إبراهيم الحناوى

مهندس الاستشاري
مدير مكتب XYZ
م / محمد خليل

مهندس الجيوشى
مكتب د. سعد
م / مصطفى نجم

مدير المشروع
م / حسن محمد