



Electric Express Train - HSR
From El Ain El Sokhna City To El Alamein - MATROUH
Section - 7 From FOKA To MARSALA MATROUH
From Station 504+000 To Station 568+177



Operating Lab **Negida Central Lab**

PARTICLE SIZE DISTRIBUTION OF SOIL

Description of Materials **Embankment**

Testing Date	17-09-23	code	Zone	From Station		TO Station
Location	531+500	UM-21		531+000		532+000
Company Name	U-MARK					

1-visual inspection test :-

2-Gradient test :-

<u>A-gradation of bulk materials</u>			SAMPLE WEIGHT [g]			44339.00		gm	table classify	
sieve size	2	1.5	1	3/4	1/2	3/8	# 4	PASS		soil classify
Mass retained (g)	0.0	7652.0	5558.0	7343.0	1657.0	3560.0	3302.0			
Cumulative Retained (g)	2952.0	7652.0	13210.0	20553.0	22210.0	25770.0	29072.0			
Cumulative Retained %	6.7	17.3	29.8	46.4	50.1	58.1	65.6		PRO	2.128
Cumulative Passing %	93.3	82.7	70.2	53.6	49.9	41.9	34.4		WC	7.8
Cumulative Passing %	93.3	82.7	70.2	53.6	49.9	41.9	34.4		CBR	84.4%
									Corr.Proctor	2.23

B-soft material gradation			WT.OF sample		500.00	gm
sieve size	10	40	200			
Cumulative Retained (g)	64.00	176.00	309.00			
Cumulative Retained %	12.80	35.20	61.80			
Cumulative Passing %	87.20	64.80	38.20			

C-General gradient										
sieve size(in)	2	1.5	1	3/4	1/2	3/8	# 4	# 10	# 40	# 200
sieve size(mm)	50.0	37.5	25.0	19.0	12.5	9.5	4.75	2.00	0.425	0.075
Cumulative Passing %	93.3	82.7	70.2	53.6	49.9	41.9	34.4	30.0	22.3	13.2

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

Contractor

Consultant

المهندس أحمد هاشم
2023
القطار السريع - القطاع السابع

Hassan

19/9/2023

	Electric Express Train - HSR From El Ain El Sokhna City To El Alamein - MATROUH Section - 7 From FOKA TO MARSА MATROUH From Station 504+000 To Station 568+177	
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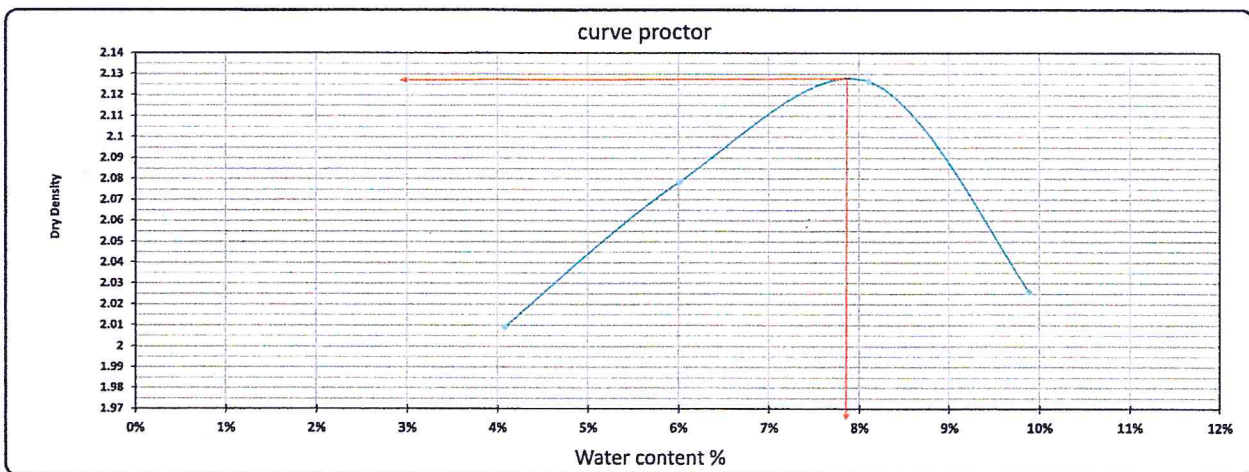
PROCTOR TEST

Testing Date	18-09-23	code		From Station	To Station
Location	531+500	UM-21	Zone	531+000	532+000
U-MARK	U-MARK				

Weight of empty mold	5698.0	MAX Dry Density	2.128
Mold Volume	2127.0	Water content %	7.8

trial no :	1	2	3	4	
Wt. Of Mold+ wet soil	10146.0	10385.0	10588.0	10434	
WT. WET SOIL	4448.0	4687.0	4890.0	4736.0	
Wt. Density	2.091	2.204	2.299	2.227	

Tare No.	1	2	3	4	5	6	1	2		
Tare wt.	29.06	26.85	28.05	25.87	26.75	27.61	35.48	35.76		
Wt. Of wet soil & tare	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0		
Wt. Of dry soil & tare	154.96	154.67	152.58	152.33	150.18	149.90	148.93	148.69		
Wt. Of water	5.0	5.3	7.4	7.7	9.8	10.1	11.1	11.3		
Wt. Of dry soil	125.9	127.8	124.5	126.5	123.4	122.3	113.5	112.9		
Water content %	4.00%	4.17%	5.96%	6.07%	7.96%	8.26%	9.76%	10.02%		
AV. Water content %	4.09%		6.01%		8.11%		9.89%			
Dry Density	2.009		2.079		2.127		2.026			



Contractor

Consultant


المهندس محمد حامد
القطار السريع - القطاع السابع


Hassan
19/9/2023

California Bearing Ratio TEST

Testing Date	19-9-2023	code		From Station		To station
Location	531+500					
Company Name	U-MARK	UM-21	Zone	531+000		532+000

Test Results:

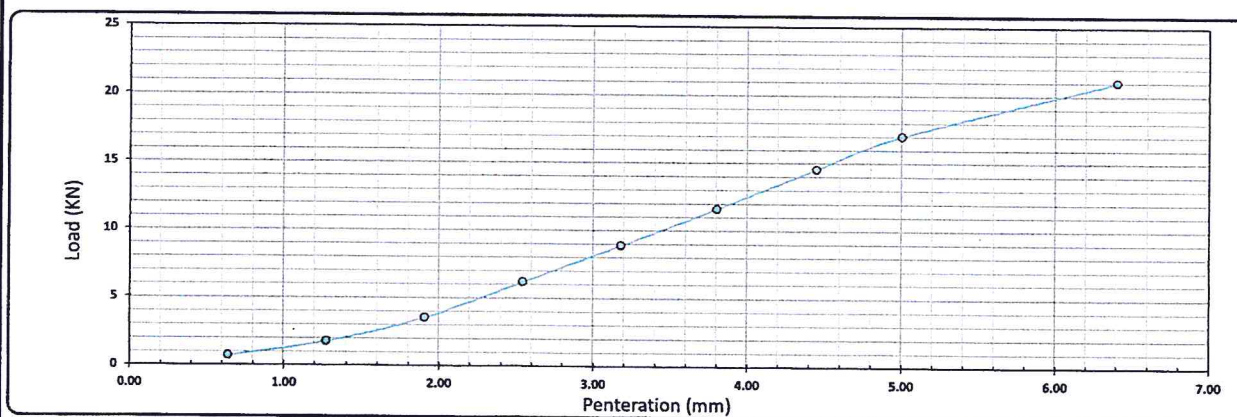
Compaction % for Mold	
Mold No.	1
Mold Vol. (cm ³)	2170
Mold WT. (gm)	7700
Mold WT. + Wet WT. (gm)	12599
Wet WT. (gm)	4899
Wet Density (g/cm ³)	2.258
Dry Density (g/cm ³)	2.097
Proctor Density (g/cm ³)	2.128
Compaction %	99

Moisture Ratio After Compacted Mold	
Tare No.	1
Tare WT. (gm)	35.48
Tare WT. + Wet WT. (gm)	262.5
Tare WT. + Dry WT. (gm)	246.3
Water WT. (gm)	16.2
Dry WT. (gm)	210.8
Moisture Content %	7.7

Swelling	
Mold No.	1
Date	19-9-2023
Initial Height (mm)	0.00
Final Height (mm)	0.00
Difference	0.00
Sample Height (mm)	120.00
Swelling Ratio %	0%

Loading Reading :

Penteration (mm)	0.64	1.27	1.91	2.54	3.18	3.80	4.45	5.00	6.40
Load Reading (kg)	71	182	362	631	906	1184	1483	1734	2145
Load (KN)	0.7	1.8	3.5	6.2	8.9	11.6	14.5	17.0	21.0



Calculations :-

Penteration	Load	Standard Load	CBR	Mold - Compaction	Compaction	CBR
(mm)	(Kn)	(lb)	(%)	(%)	(%)	عند نسبة 98 %
2.50	6.18	13.4	46.3%	99	98	46.1%
5.00	16.99	20.0	84.9%			84.4%

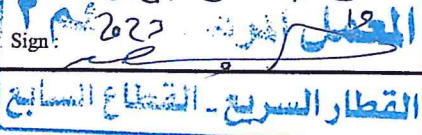
Lab. Specialist

Name :

Sign :

Lab. Engineer

Name : Mohamed Hamed

Sign : 

Consultant Engineer

Name : Hassan

Sign : 

Plate Load Test Results

Company Name

U-Mark 2

Location

531+610

To

531+660

Station

635

Test Date

19/10/2023

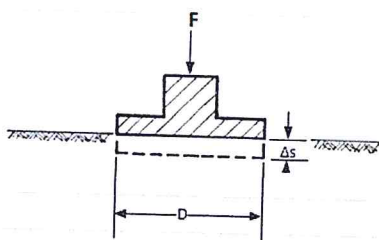
Layer level

1.5

EQUIPMENT AND TEST PROCEDURE :-

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

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



F = load

Δs = settlement

D = diameter of the plate

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

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

Plate diameter = 300mm

Loading	Load	Load	Stress	Dial 1	Dial 2	Dial 3	Sett. 1	Sett. 2	Sett. 3	Avg. Sett.
Stage No.	Bar	KN	MN/M2	mm	mm	mm	mm	mm	mm	mm
0.000	0.0	0.000	0.00	5.57	6.30		0.000	0.000		0.000
1.000	2.1	0.707	0.01	5.42	6.02		0.150	0.280		0.215
2.000	17.1	5.652	0.08	5.32	5.85		0.250	0.450		0.350
0.080	34.2	11.304	0.16	5.17	5.62		0.400	0.680		0.540
4.000	53.4	17.663	0.25	4.99	5.37		0.580	0.930		0.755
5.000	70.5	23.315	0.33	4.85	5.15		0.720	1.150		0.935
6.000	89.7	29.673	0.42	4.68	4.90		0.890	1.400		1.145
7.000	106.8	35.325	0.50	4.52	4.70		1.050	1.600		1.325
8.000	53.4	17.663	0.25	4.60	4.80		0.970	1.500		1.235
9.000	26.7	8.831	0.12	4.72	4.97		0.850	1.330		1.090
9.000	2.1	0.707	0.01	5.09	5.47		0.480	0.830		0.655
10.000	2.1	0.707	0.01	5.09	5.47		0.480	0.830		0.655
11.000	17.1	5.652	0.08	4.96	5.35		0.610	0.950		0.780
12.000	34.2	11.304	0.16	4.85	5.09		0.720	1.210		0.965
13.000	53.4	17.663	0.25	4.76	4.95		0.810	1.350		1.080
14.000	70.5	23.315	0.33	4.69	4.84		0.880	1.460		1.170
15.000	89.7	29.673	0.42	4.59	4.71		0.980	1.590		1.285

		s	Δs	Δσ
0.7 σ_1	0.35	0.9875	0.47125	0.2
0.3 σ_1	0.15	0.51625		
0.7 σ_2	0.35	1.19556	0.29054	0.2
0.3 σ_2	0.15	0.90501		
D (mm)	300			
E_{v1}	95.49			
E_{v2}	154.88			
Area (Sq.m)	0.07065			

E_{v2}/E_{v1}	1.62		
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$$E_v = 0.75 \cdot D \cdot \Delta \sigma / \Delta s$$

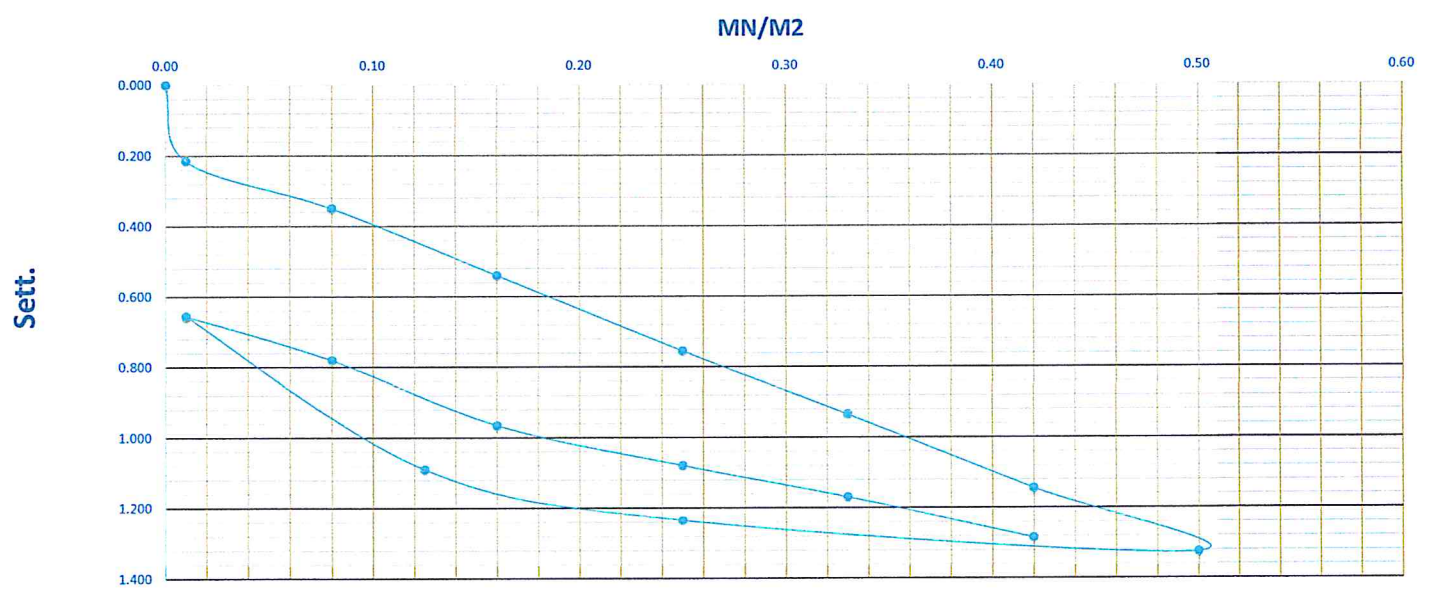
E_v = deformation modulus

$\Delta \sigma$ = load increment

Δs = settlement increment

D = diameter of the plate, generally 0.30 m

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



Lab. Specialist

Name :

Sign : *[Signature]*

Lab. Engineer

Name :

Sign : *[Signature]*
رقم ٣
القطار السريع - القطاع السابع

Consultant Engineer

Name :

Sign : *[Signature]*
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