الهيئة العامة
الطرق و الكباري
(GARS)
المنطقة الخامسة – (غرب الدلتا)

السيد المهندس / رئيس قطاع التنفيذ والمناطق

تحية طيبة وبعد،،

بالإحالة إلى مشروع القطار الكهربائي السريع (الحمام – العلمين) (القطاع الخامس ب)
نتشرف بأن نرفق لسيادتكم طيه المقايسة المعدلة للقطاع الآتي:

مسلسل	اسم الشركة	بداية القطاع (كم)	نهاية القطاع (كم)	الاتجاه
١	شركة المهندس للتعمير	٣٨٤+٠٠٧	٣٨٥+٠٠٧	اتجاه سيدي حنيش

نرجاء من سيادتكم التفضل بالاحاطه والتوجيه بالازم

وتفضلوا بقبول فائق الأحترام والتقدير،،

رئيس الإدارة المركزية

المنطقة الخامسة- غرب الدلتا

حميد مهندس/

م.أ محمد محمود طه

مشروع القطار الكهربائي فائق السرعة قطاع (برج العرب - السعيد)

المقاول : شركة المهندسين للتعمير

القطاع من المحطة 384+007.5 الى 385+007.5 بطول 1 كم اتجاه سيدي حنيش

رقم البند	بيان الأعمال	الوحدة	الكمية	سعر الوحدة	الإجمالي
4	طبقات الأساس				
4-1	بالمتر المكعب أعمال توريد وفرش طبقة تأسيس (prepared Subgrade) من الأحجار المكسرة المتدرجة الناتج تكسير الكسارات والمطابقة للمواصفات و أقصى حجم للحبيبات 100 مم ولا تزيد نسبة المار من منخل 200 عن 12 % و التدرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة المكسر عن 25 % و لا تزيد نسبة الفاقد بجهاز لوس انجلوس عن 30 % ولا يزيد الانتفاش عن 15 % و لا يقل معامل المرونة (Ev2) من تجربة لوح التحميل عن 80 ميجابسكال و يتم فرشها على طبقات بإستخدام آلات التسوية الحديثة على ان لا يزيد سمك الطبقة بعد الدمك عن 25 سم و رشها بالمياه للوصول الى نسبة الرطوبة المطلوبة و الدمك الجيد بالهراسات للوصول الى أقصى كثافة جافة قصوى (لا تقل عن 95 %) من الكثافة المعملية و الفئة تشمل إجراء التجارب المعملية والحقلية وفقاً لتعليمات المهندس المشرف والرسومات التنفيذية المعتمدة وإزالة وجميع مشتملاته طبقاً للمواصفات الفنية للمشروع وتعليمات الاستشاري والمهندس المشرف بمسافة نقل لا تقل عن 20 كم ، يتم احتساب علاوة 1.2 جنيه عن 1 كم بالزيادة او النقصان ، يتم صرف قيمة الفواتير المحجرية في حالة تقديم [illegible] الإدارة للشركة الوطنية .	م3	9,000.00	278.00	2,502,000.00
4-1-1	عدد 1 مسافة نقل لمسافة 100 كم = 1.2*80 = 96جنيه		9,000.00	96.00	864,000.00
4-1-2	علاوة التحصيل رسوم المحاجر والموازين 25 جنيه طبقا لمكاتبة الشركة		9,000.00	25.00	225,000.00
4-2	بالمتر المكعب أعمال توريد وفرش طبقة اساس من الأحجار المكسرة المتدرجة الناتج تكسير الكسارات والمطابقة للمواصفات وأقصى حجم للحبيبات ما بين 37.5 مم الى 40 مم ولا يزيد نسبة المار من منخل 200 عن 5 % والتدرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة المكسر عن 80 % ولا يقل معامل المرونة (Ev2) من تجربة لوح التحميل عن 120 ميجابسكال ولا يزيد نسبة الفاقد بجهاز لوس انجلوس عن 30 % ولا يزيد الانتفاش عن 15 % ويتم فرشها على طبقات بإستخدام آلات التسوية الحديثة على ان لا يزيد سمك الطبقة بعد الدمك عن 20 سم ورشها بالمياه اللازمة للوصول الى نسبة الرطوبة المطلوبة والدمك الجيد بالهراسات للوصول الى أقصى كثافة جافة قصوى (لا يقل عن 100 %) من الكثافة المعملية و الفئة تشمل اجراء التجارب المعملية والحقلية وفقاً لتعليمات المهندس المشرف والرسومات التنفيذية المعتمدة وإزالة وجميع مشتملاته طبقاً للمواصفات الفنية للمشروع وتعليمات الاستشاري والمهندس المشرف ، مسافة النقل لا تقل 20 كم ، يتم احتساب علاوة 1.2 جنيه لكل 1 كم بالزيادة او النقصان ، ويتم صرف قيمة الفواتير الرسمية للشركة المنفذة وعلى الشركة المنفذة تقديم ما يفيد سداد الإتاوة للشركة الوطنية .	م3	5,033.417	298.00	1,499,996.73
4-2-1	علاوة مسافة نقل لمسافة 110 كم – 1.2*80 = 96جنيه		5,033.417	96.00	483,207.55
4-2-2	علاوة التحصيل رسوم المحاجر والموازين 25 جنيه طبقا لمكاتبة الشركة الوطنية		5,033.417	25.00	125,833.30
	الإجمالي				5,700,000

مدير المشروع المقاول — م / حسن بكري حسن

مدير المشروع الإستشاري — م / عبد العزيز مصطفى

مدير المشروع بالهيئة — م / مارجريت مجدي زاخر

مدير عام مشروعات الهيئة بالقطاع الخامس — م/محمد حسني قباني

يعتمد،

رئيس الإدارة المركزية

منطقة غرب الدلتا

الإسكندرية و مرسى مطروح

عميد مهندس /

" هاني محمد محمود طه "

UNIVERSAL INSPECTION REQUEST

RECEIPT of NOTIFICATION-Minimum Notice Period not less than 24 Hours

The Work described below will be complete and ready for inspection at planned time shown

Contractor Company	EL-Mohandsin For Construction			Designer Company*	(SPECTRUM) Engineering Consulting Office						
Issued by Contractor	Name: Eng.Mohamed Abd Elgawad	Sign: Mohamed Abd Elgawad		Date/Serial Number: 13/6/2023 SB (6)	Time: 1:00 PM						
Received by GARB CONSULTANT	Eng. Mostafa Riad		UIR	C1: 0+580	C2: EW	C3: CS	DD: 14	MM: 06	YY: 2023	HH: 01	MM: 00

CODE-1	D1 to D21 Station Reference	D1 to D3 Depot Reference	Kp XXX Note: For Kilo meter point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element of Activity		

EXPLANATION OF WORK TO BE INSPECTED

Description	Element	Item
From St. 0+580 To St. 0+720	At level (SUBBALLAST(DL)) With Slope 2%	EMBANKMENT SOIL LAYER

INSPECTION DETAILS The following will be ready at the Planned Inspection Time

Planned Inspection Date	Planned Inspection Time

COMPLIANCE EVIDENCE Must be included as appropriate

Checklist Attached	Test Results Attached	Calibration Attached	Other as indicated

Drawing Reference	References	MS Reference
Plan and Profile REV. 04	- MAR)M.A.R.). - MIR)M.I.R.)	-Specification: EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2)VERSION2 BY CIVECON GROUP -TECHNICAL REPORT (CG21-122.1) VERSION 1 BY CIVECON GROUP.

Comments by: Eng. Mohamed KHALIL (XYZ)

1- Attached Master Sheet approved by SPECTRUM .

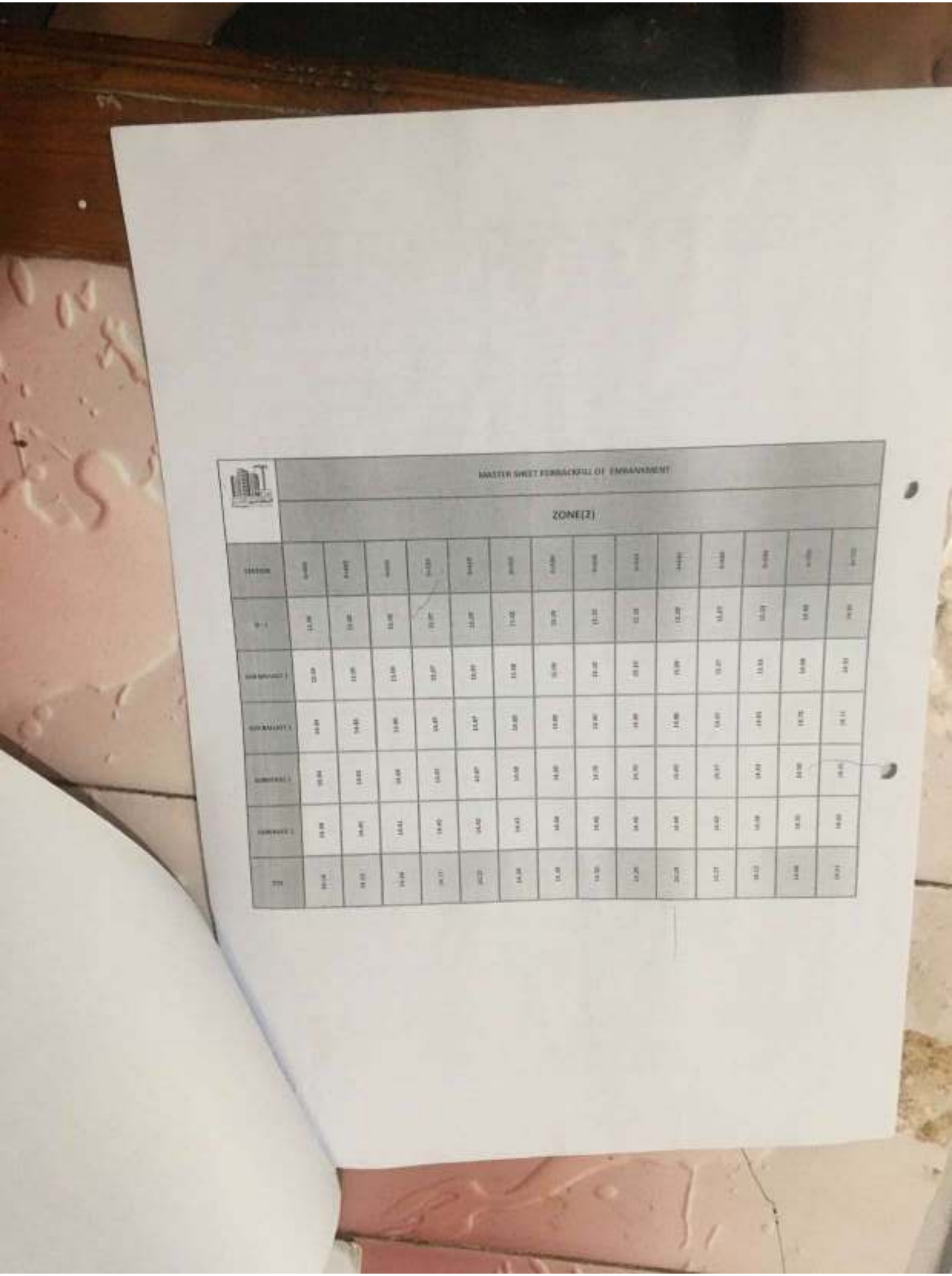
Comments by: Eng. Saied Saief (SPECTRUM)	Comments by: Eng. Alaa Abd-Allatif (ER)
1- تم استلام القطاع فحص بصري 2- تم مراجعة شيت المناسيب	1-coordenates & levels and width checked by GARB consultant 2- (REV. 04 & X-sec./20m) Should Approved from SYSTRA. 3-Final approval is subject to above mentioned comments.

INSPECTION RESULT					Approval Status A-AWC-R	Please Tick if Not Attend
Organisation	Name	Sign	Date	Time		
Contractor	Eng.Mohamed Abd Elgawad				A	
XYZ Survey	Eng. Mohamed Khalil					
QA/QC*	Eng. Mostafa Riad				R	
GARB**	Eng. Mohammed Fayad					
Employers Representative	Eng. Mohamed Badawi					

LEVELS FOR SOIL LAYER (DL) FROM STATION 0+580 TO 0+720

STATION	WL	GL	EL	DL	14	GL4	WR
0+580	3.50	15.16	15.15	15.09	15.03	15.02	3.50
0+600	3.50	15.17	15.16	15.10	15.04	15.03	3.50
0+620	3.50	15.17	15.16	15.10	15.04	15.03	3.50
0+640	3.50	15.16	15.15	15.09	15.03	15.02	3.50
0+660	3.50	15.14	15.13	15.07	15.01	15.00	3.50
0+680	3.50	15.10	15.09	15.03	14.97	14.96	3.50
0+700	3.50	15.05	15.04	14.98	14.92	14.91	3.50
0+720	3.50	14.98	14.97	14.91	14.85	14.84	3.50

STATION	W-L	[illegible]			CL			[illegible]			W-R
		E	N	Z	E	N	Z	E	N	Z	
0+580	3.50	431250.58	898281.89	15.159	431251.00	898285.36	15.09	431251.42	898288.84	15.013	3.50
0+600	3.50	431230.70	898284.41	15.167	431231.16	898287.88	15.10	431231.62	898291.35	15.027	3.50
0+620	3.50	431210.85	898287.18	15.172	431211.35	898290.64	15.10	431211.86	898294.10	15.032	3.50
0+640	3.50	431191.03	898290.19	15.163	431191.58	898293.65	15.09	431192.13	898297.11	15.023	3.50
0+660	3.50	431171.26	898293.46	15.140	431171.85	898296.91	15.07	431172.44	898300.36	15.000	3.50
0+680	3.50	431151.52	898296.97	15.101	431152.16	898300.41	15.03	431152.79	898303.85	14.961	3.50
0+700	3.50	431131.83	898300.73	15.046	431132.51	898304.16	14.98	431133.19	898307.60	14.906	3.50
0+720	3.50	431112.19	898304.73	14.979	431112.92	898308.16	14.91	431113.64	898311.58	14.839	3.50



MASTER SHEET FOR BACKFILL OF EMBANKMENT

ZONE(2)

ASBUILT SB2 ST 0+580 TO 0+720 FOR DIESEL				
P	E	N	Z	D
1	431211.341	898290.639	15.121	L
2	431230.617	898285.212	15.143	L
3	431230.578	898288.111	15.069	L
4	431231.166	898290.539	14.999	L
5	431225.207	898291.229	14.972	L
6	431224.824	898288.706	15.031	L
7	431224.222	898285.36	15.108	L
8	431218.565	898286.472	15.116	L
9	431218.998	898289.839	15.026	L
10	431219.49	898292.537	14.978	L
11	431211.931	898293.355	15.023	L
12	431211.263	898290.819	15.086	L
13	431210.794	898287.897	15.147	L
14	431204.524	898288.886	15.154	L
15	431204.819	898291.752	15.06	L
16	431205.25	898294.831	14.993	L
17	431199.294	898295.5	14.963	L
18	431198.897	898293.176	15.019	L
19	431198.099	898289.754	15.15	L
20	431191.072	898290.614	15.162	L
21	431191.511	898293.606	15.066	L
22	431191.884	898296.74	14.973	L
23	431186.099	898297.661	14.925	L
24	431184.973	898294.974	15.015	L
25	431184.305	898292.169	15.124	L
26	431177.404	898293.037	15.117	L
27	431177.495	898295.657	15.034	L
28	431177.923	898299.026	14.938	L
29	431172.522	898299.816	14.977	L
30	431171.661	898297.253	15.032	L
31	431171.22	898293.851	15.119	L

ASBUILT SB2 ST 0+580 TO 0+720 FOR DIESEL				
P	E	N	Z	D
32	431164.417	898295.465	15.113	L
33	431164.735	898297.839	15.029	L
34	431165.291	898300.755	14.971	L
35	431158.68	898301.955	14.967	L
36	431158.161	898299.716	15.016	L
37	431157.454	898296.476	15.105	L
38	431151.437	898297.325	15.102	L
39	431151.919	898300.472	15.003	L
40	431152.699	898303.326	14.952	L
41	431145.793	898304.576	14.913	L
42	431145.148	898302.05	14.975	L
43	431144.432	898298.952	15.094	L
44	431138.51	898300.129	15.043	L
45	431138.962	898302.869	14.975	L
46	431139.29	898305.763	14.887	L
47	431133.341	898307.735	14.899	L
48	431132.36	898304.222	14.969	L
49	431131.594	898301.255	15.072	L
50	431125.461	898303.047	15.073	L
51	431125.836	898305.642	15.044	L
52	431126.057	898308.61	14.928	L
53	431118.964	898310.173	14.968	L
54	431118.482	898307.372	15.096	L
55	431118.091	898304.504	15.116	L
56	431112.677	898304.764	14.953	L
57	431113.51	898307.978	14.954	L
58	431114.57	898311.319	14.928	L

MATERIAL INSPECTION REQUEST

Contractor Company	Project	Designer Company
El-Mohandsin For Construction	Electrical Express Train (Borg Alarab - Alamein) From St. 325+393 To St. 394+600	(SPECTRUM) Engineering Consulting Office

	Name	Sign		Date / Serial no.	Time
Issued by Contractor	Eng. Mohamed Abdel-Gawad	[signature]		21/06/2023 M.I.R. FDT (D-SB-6)	9:00 AM
Received by GARB Consultant	Eng. Mazen Essamy	[signature]	SNA		

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
394	EW	CS	12	6	2023	9	00

CODE-1 S1 to S21 Station Reference	CODE-2 E1 to E3 Depot Reference	CODE-3 Sp see Note For Kilometer point only	CODE-4 Work Activity	CODE-5 Sub Element of Activity

Description of Materials	Diesel 2nd Sub Ballast Layer (DL)			
Location to be Used	From St.	0+580	To St.	0+720
UIR Approval No	IR (SB-6-2)		Date	20/06/2023
MAR Approval No	M.A.R. QT (12) M.A.R. QT (12-1)			28/02/2023
Supplier Name	Al-Alamia			
Test Requirement	F.D.T.(ASTM D 1556)	Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP	
Reference Photos	No / Yes	Other		

Item	Description	Unit	Quantity	Arrival Date	Note
1	Sand cone test	No.	14	21/6/2023	
2					
3					
4					

Comments by Eng. Mazen Essamy (SPECTRUM) :

1-The Compaction Test Result F.D.T. (ASTM D 1556) is Approved. (by third Party Lab.) COMIBASSAL

Comments by Eng. Alaa Abd-Allatief (ER):

1-F.D.T was carried- out (by third Party Lab.) . CMIBASSAL

2-Results report attached and acceptable with project specifications.

3-Final approval is subject to above mentioned comments.

APPROVAL STATUS

Organisation	Name	Sign	Designation	Date	A-AWC-R
Contractor Engineer	Eng.Mohamed Abdel-Gawad	[signature]			
QA/QC	Eng.Mazen Essamy	[signature]		21/6/2023	A
GARB*	Eng.Margaret Magdy				A
Employers Representative	Eng.Alaa Abd-Allatief	[signature]		27-6-2023	AWC

* Alignment/Bridges/ Culvert only

File: MIR - Material Inspection Request Rev 0822-1.docx

A= Approved, AWC= Approved with Comments, R= Rejected

COMBASSAL International Controllers
Internal inspection and laboratories section

Report NO.: [illegible]
Date: [illegible]

Field Den. Of Density Of Soil In Place Report. ASTM - D 1556

General consultant: [illegible]
Consultant: SYSTRA
Contractor: SPECTRUM
Project: [illegible]
Sample: [illegible]
Date of test: [illegible]
Results: 21-6-2021

Test No.	1	2	3	4
Description	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (gm)	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] (gm)	[illegible]	[illegible]	[illegible]	[illegible]
Wt. of sand [illegible] (gm)	[illegible]	[illegible]	[illegible]	[illegible]
Wt. of sand [illegible] (gm)	[illegible]	[illegible]	[illegible]	[illegible]
Wt. of sand [illegible] (gm)	[illegible]	[illegible]	[illegible]	[illegible]
Density of [illegible] sand (gm/cm³)	1.30			
Volume of Hole (cm³)	[illegible]	[illegible]	[illegible]	[illegible]
Wt. of wet Sample (gm)	200			
Wt. of sample after drying (gm)	191	192	192	192.5
Wet Density (gm/cm³)	2.360	[illegible]	[illegible]	[illegible]
Moisture ratio (%)	4.7	4.2	4.5	3.9
Dry Density (gm/cm³)	[illegible]	[illegible]	[illegible]	[illegible]
Max. dry (gm/cm³)	2.188			
Compaction Ratio (%)	[illegible]	[illegible]	[illegible]	[illegible]

Lab director
Eng: Eman E. Kandil

Geotechnical consultant
Dr. Mohamed Moatafa Badry

Kilo 23 Alexandria - Cairo Desert Road - Merghem
Tel: [illegible]
Email: [illegible]@combassal.com
Website: www.combassal.com

49 El Horria Ave. Alex Egypt
Tel: 002 033920176 - 002 033931482
Fax: 002 033900476
Email: internal-inspection@combassal.com

COMIBASSAL International Controllers
Internal inspection and laboratories sector
Accredited by : Egyption General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyption Accreditation council (EGAC) under No. 031706/5A

Report NO. : 1803 /07/center
Date : 27/6/2023

Field Detr. Of Density Of Soil In Place Report
ASTM - D 1556

General consultant	SYSTRA
Consultant	SPECTRUM
Contractor	شركة المهندسين للتعمير
Project	Diesel
Sample	Sub ballast (2)
Date of test	21-6-2023

Results :

Points NO.	1	2	3	4	5
Description	St(000+630)	St (000+640)	St (000+650)	St (000+660)	St (000+670)
Initial wt. (gm)	10840	7530	10340	7390	8960
Wt.after filling the cone and the hole (gm)	7930	4810	7390	4920	6960
Wt. of wet Sample (gm)	2560	2430	2450	2500	2470
Wt. of sand filling hole (gm)	1910	1820	1850	1970	1990
Wt. of sand filling cone (gm)	1400	1400	1400	1400	1400
Density of standered sand (ɣs) (gm/cm³)	1.50				
Volume of hole (cm³)	1073.33	1013.33	1033	1046.7	1050.0
Wt.of wet Sample (gm)	200				
Wt.of sample after drying (gm)	190	190	192	192.5	191.4
Wet Density (ɣwet) (gm/cm³)	2.366	2.398	2.371	2.389	2.330
Moisture ratio (%)	5.3	5.3	4.0	3.9	4.5
Dry Density (ɣdry) (gm/cm³)	2.248	2.278	2.281	2.299	2.230
(ɣmax.dry) (gm/cm³)	2.188				
Compaction Ratio (%)	103	104	104	105	102

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

Km 23 Alexandria - Cairo Desert Road - Merghem
Tel: 002 03 4704595 - 002 054701191
Email : cindept@comibassal.com
WebSite : www.comibassal.com

49 El Horria Ave. Alex,Egypt
Tel: 002 033920176 - 002 033931482
Fax :002 033900476
Email : internal-inspection@comibassal.com

مكتب (إدارة) عبد تيل

Electrical Express Train From Borg Alarab to Alamein
From Station 325+300 To Station 394+600

Project	Electrical Express Train From Borg Alarab to Alamein		
Date	14/06/2023	STATION REPRESENTED	
STAGE OF WORK	Sub-Ballast (1) - 0.20 DL	0+580 to 0+720	
Request NO	FDT (D-SB-5) For IR No. (5)		

WORKSHEET FOR FIELD DENSITY TEST
BY SAND CONE METHOD ASTM D 1556

LAYER		Sub-Ballast (1) - 0.20 DL							
DEPTH OF HOLE	cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm		
SAMPLE No.	-	9	10	11	12	13	14		
STATION	-	0+670	0+680	0+690	0+700	0+710	0+720		
CONTAINER No.	-	10	11	12	A	B	C		
WEIGHT OF CAN	gm	27.58	27.09	27.49	24.99	23.78	27.1		
WT. OF CAN+WET SOIL	gm	169.58	179.52	172.50	168.50	172.33	164.20		
WT. OF CAN+DRY SOIL	gm	132.86	169.41	162.33	158.90	162.50	154.86		
WT. OF WATER	gm	8.71	10.11	10.17	9.60	9.83	9.32		
WT. OF DRY SOIL	gm	131.8	142.32	134.84	133.81	138.72	127.78		
WATER CONTENT	%	7.36	7.10	7.54	7.17	7.09	7.29		
WT. OF WET SOIL	gm	3295	3758	4110	3429	3610	3458		
WT. OF INITIAL SAND+CONT	gm	8355	7952	7835	6999	8532	8925		
WT. OF RESIDUAL SAND + CONT	gm	5000	4102	4210	3825	4941	5225		
WT. OF SAND TO FILL CONE+HOLE	gm	3355	3850	3625	3174	3591	3700		
WT. OF SAND TO FILL CONE	gm	1324	1555	1109	1073	1324	1555		
WT. OF SAND TO FILL HOLE	gm	2031	2295	2516	2101	2267	2145		
UNIT WT. OF SAND	[illegible]	1.46	1.46	1.46	1.46	1.46	1.46		
GROSS VOLUME OF HOLE	cc	1391.1	1571.9	1723.3	1439.0	1621.2	1469.2		
WET UNIT WT. OF SOIL	[illegible]	2.37	2.40	2.38	2.38	2.35	2.35		
DRY UNIT WT. OF SOIL	[illegible]	2.206	2.236	2.218	2.223	2.195	2.194		
MAX. DRY DENSITY	[illegible]	2.188	2.188	2.188	2.188	2.188	2.188		
OPTIMUM MOISTURE CONTENT	%	6.70	6.70	6.70	6.70	6.70	6.70		
COMPACTION	%	**100.82**	**102.21**	**101.36**	**101.59**	**100.30**	**100.26**		
REQUIRED COMPACTION	%	100	100	100	100	100	100		
REMARKS		PASSED	PASSED	PASSED	PASSED	PASSED	PASSED		

Eng. / CONSULTANT

Eng. / CONTRACTOR

building solutions
ibs

MATERIAL INSPECTION REQUEST

Contractor Company	Project	Designer Company
El Mohandes for Construction	[illegible] ([illegible]) From St. [illegible] To St. [illegible]	SPECTRUM Engineering Consulting Office

	Name	Sign	Date	Time
Issued by Contractor	Eng. Mohamed Abdel-Gawad		29/6/2023 M.I.R. PLT (SB-6-2)	[illegible]
Received by Lead Consultant	Eng. Mazen Essamy		[illegible]	[illegible]

Description of Materials	[illegible] layer ([illegible])		
Location to be Used	From St. 0+500 To St. 0+720		
MAR Approval No.	M.A.R. QT (22) M.A.R. QT (23)	Date	[illegible]/2023
Supplier Name	Alexandria Quarry		
Test Requirement	P.L.T (DIN 18134)	Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT ([illegible]) GROUP
Reference ITP	IP (SB-6-2)	Other	

Item	Description	Unit	Quantity	Actual Date	Note
1	(P.L.T St. 0+500 To St. 0+720)	No.	5	29/06/2023	
2					
3					
4					

Comments by Eng. Mazen Essamy (SPECTRUM) :

1- The Plate Load Test Result P.L.T (DIN 18134) is Approved.

Comments by Eng. Alaa Abd-Allatief (ER) :

1-Plate Load Test Was Carried-out By (CONSULTANT).

2-Results report attached and acceptable with project specifications.

3-Final approval is subject to above mentioned comments.

APPROVAL STATUS

Organization	Name	Sign	Designation	Date	A-ABC-R
Contractor Engineer	Eng. Mohamed Abdel-Gawad			29/06/2023	A
QA/QC	Eng. Mazen Essamy				A
CARE*	Eng. Margaret Magdy				
Employers Representative	Eng. Alaa Abd-Allatief			21-6-2023	Auk

* [illegible]

[illegible] Material Inspection Request [illegible]

A= Approved, ABC= Approved with Comments, R= Rejected

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Internal inspection and laboratories sector
Accredited by : Egyption General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyption Accreditation council (EGAC) under No. 031706/LA

Technical report

of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة المهندسين للتعمير
Project	:	Diesel
Sample	:	Sub-Ballast (2)
Station	:	ST(000+600) TO ST(000+700)
Date of Test	:	20/06/2023
QC	:	1802

49 El Horria Ave. Alex,Egypt
Tel: 002 033920176 - 002 033931482
Fax :002 033900476
Email : internal-inspection@comibassal.com

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Internal inspection and laboratories sector
Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031708/1A

Introduction:

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by assessing the force and amount of penetration with time when a rigid plate is made to penetrate the soil.
The test to be carried out on the native soil according to German specifications DIN 18134.

Test methods ;

1- The German standard DIN 18134 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.
2- Loading plates with a diamter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffners with even upper faces parallel to the plate bottom face to allow 300 mm plate to be placed on top of it.
3- The loading system consisted of a hydrulic pump connected to a hydrulic jack of 700 bar capacity, which is capable of applying and releasing the load stages.
4- The dial gauge used to measure the plate settlement has a resolution of 0.01mm and the lever ratio was equal to 1.
5- The temperature at the time of the test was 25°.
6- The plate was carried out on a native soil (sand-gravel). The test surface area was levelled and the plate was bedded on this surface.
7- The hyrulic jack was placed on the middle of, and at normal to, the loading plate beneth the reaction loading system and secured against tiliting.
8- The reaction loading system was a heavey multi-purpose excavator (more than 20 ton).

Description of exprement:

1- Loading, unloading and reloading regims were applied according to DIN 18134 for the plate load test to estimate the resilient modulus
2- Prior to the test, the force transeducer and dial guage were set to zero, after which a load was applied corressponding to a stress of 0.01 MN/m2.
3- In the first loading cycle, the load was increased until a normal stress of 0.25 MN/m2 was reached, and the loading increaement was 0.025 MN/m2. The load was released in four stages.
4- Following unloading, a further second loading cycle was carried out, in which, the lead was increased only to the penultimate stage of the first cycle.

COMIBASSAL INTERNATIONAL CONTROLLERS

Km 23 Alexandria - Cairo Desert Road - Mergheem
Tel: 002 03 4704595 - 002 034701191
Email : civdept@comibassal.com
WebSite : www.comibassal.com

49 El Horria Ave. Alex.Egypt
Tel: 002 033920176 - 002 033931482
Fax :002 033900476
Email : internal-inspection@comibassal.com

St(000+600)

600

Table 1: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.07
2	14.14	0.050	0.16
3	21.21	0.075	0.22
4	28.28	0.100	0.29
5	35.35	0.125	0.39
6	42.42	0.150	0.45
7	49.49	0.175	0.52
8	56.56	0.200	0.56
9	63.63	0.225	0.62
10	70.7	0.250	0.67
11	56.56	0.200	0.66
12	49.49	0.175	0.64
13	35.35	0.125	0.52
14	21.21	0.075	0.41
15	1.414	0.005	0.22

Table 2: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.22
16	7.07	0.025	0.25
17	14.14	0.050	0.29
18	21.21	0.075	0.34
19	28.28	0.100	0.38
20	35.35	0.125	0.42
21	42.42	0.150	0.46
22	49.49	0.175	0.51
23	56.56	0.200	0.56
24	63.63	0.225	0.63

Table 3: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{0,max}$) MN/m^2	0.250	0.250
a_0 (mm)	-0.019	0.212
a_1 (mm/(MN/m^2))	3.581	1.566
a_2 (mm/(MN^2/m^4))	-3.254	0.845
Ev= 1.5 r/(a_1+a_2 $\sigma_{0,max}$)	162.58	253.1
E=2/Ev1	1.56	

Km 23 Alexandria - Cairo Desert Road - Mergham
Tel: 002 03 4704595 - 002 034701191
Email: dindy@comibassal.com
WebSite : www.comibassal.com

49 El Horria Ave. Alex.Egypt
Tel: 002 033920176 - 002 033931482
Fax :002 033900476
Email : internal-inspection@comibassal.com

Fig. 1: Load-settlement curve, fitting curves according to Table 1 and Table 2 for the first and second loading cycles

- Measurment points from the first loading cycle
- Measurment points from the unloading cycle
- Measurment points from the second loading cycle
- S Settlement in mm
- σ_0 Normal stress MN/m²

[illegible]

[illegible]

Table 4: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ_0) MN/m^2	Settlement of loading plate S (mm)
0	1.414	0.005	0.00
1	7.07	0.025	0.09
2	14.14	0.050	0.16
3	21.21	0.075	0.22
4	28.28	0.100	0.27
5	35.35	0.125	0.32
6	42.42	0.150	0.36
7	49.49	0.175	0.42
8	56.56	0.200	0.50
9	63.63	0.225	0.57
10	70.7	0.250	0.62
11	56.56	0.200	0.61
12	49.49	0.175	0.59
13	35.35	0.125	0.52
14	21.21	0.075	0.33
15	1.414	0.005	0.22

Table 5: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ0) MN/m2	Settlement of loading plate S (mm)
15	1.414	0.005	0.22
16	7.07	0.025	0.26
17	14.14	0.050	0.31
18	21.21	0.075	0.35
19	28.28	0.100	0.40
20	35.35	0.125	0.44
21	42.42	0.150	0.48
22	49.49	0.175	0.53
23	56.56	0.200	0.57
24	63.63	0.225	0.61

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
($\sigma_{0,max}$) MN/m^2	0.250	0.250
a_0 (mm)	0.051	0.212
a_1 (mm/(MN/m^2))	2.003	1.931
a_2 (mm/(MN^2/m^4))	1.132	-0.707
$Ev = 1.5\,r/(a_1 + a_2\,\sigma_{0,max})$	196.88	256.57
Ev2/Ev1	1.30	

Kilo 21 Alexandria - Cairo Desert Road - Merghem
Tel: 002 03 4704595 - 002 03470131
Email : [illegible]@comibassal.com
WebSite : www.comibassal.com

49 El Horria Ave. Alex,Egypt
Tel: 002 033920176 - 002 033931482
Fax :002 033900476
Email : internal-inspection@comibassal.com

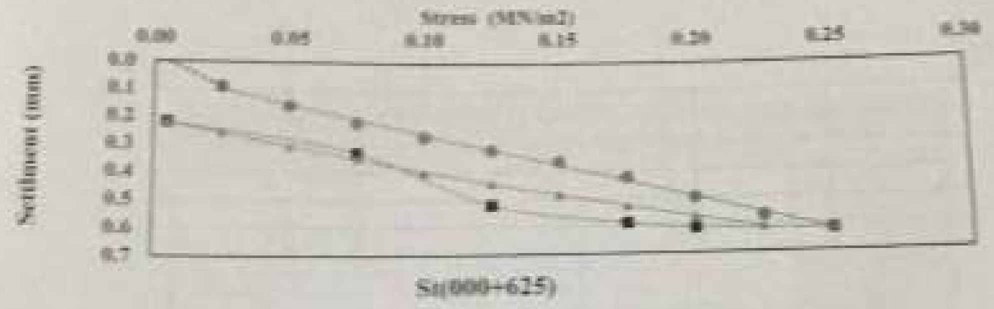

Fig. 2: Load-settlement curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- ● Measurment points from the first loading cycle
- ■ Measurment points from the unloading cycle
- ▲ Measurment points from the second loading cycle

S Settlement in mm
σ_0 Normal stress MN/m²