

مشروع القطر الكهربائي فائق السرعة قطاع (برج العرب - العبد)

المقايمة لبيود الاعمال تنفيذ شركة عبدالسلام الفقي

القطاع من المحطة ٣٨٥+ إلى ٣٨٦+ بطول ١ كم اتجاه أوكة رقم العقد (٨٣٤/٢٠٢٢/٢٠٢٣)

رقم البند	بيان الأعمال	الوحدة	الكمية	سعر الفقة	الإجمالي
١٠٠	بالمتر المكعب أعمال تحميل وتوريد ونقل التربة صالحة للردم مطابقة للمواصفات وتشغيلها باستخدام آلات التسوية بسعة لا يزيد عن ٥٠ سم حتى متسوب ١٠ متر وبسعة لا يزيد عن ٢٥ سم لاستكمال المنسوب التصميمي لتشكيل الجسر والانتفاف (تسوية تعمل كإيقونيا لا تقل عن ١٠%) و رشها بالبياد الاصولية للوصول إلى نسبة الرطوبة المطلوبة والتمك الجيد بالهراسات للوصول إلى النسب المثابة جافة (٩٥% من المثابة الجافة القصوى) ويتم تنفيذ طبقا للمنسوب التصميمية والمطامعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف.	م ^٣	17110.00	85.00	1454350.00
١٠١	في حدة طلب جهاز الإشراف زيادة نسبة الدمك عن ٩٥% بحسب زيادة ١ جنيه على زيادة نسبة الدمك لكل ١%.	م ^٣			
١٠٢	مسافة النقل حتى ١ كم و يتم احتساب علاوة ١,١ جنيه لكل كم بالزيادة أو النقصان.	م ^٣			
١٠٣	الغباريات ونقل لموقع العمل حتى مسافة ٢ كم.	م ^٣			
١٠٤	علاوة مسافة نقل للتربة لمسافة ١٢٢ كم = ١,١*١٢٢ = ١٣٦,٢ جنيه	م ^٣	13688.00	168.00	2299584.00
١٠٥	علاوة مسافة نقل للرم لمسافة ٧٥ كم = ١,١*٧٥ = ٨٢,٥ جنيه	م ^٣	3422.00	102.20	349728.40
١٠٦	علاوة تحميل رسوم الكارثة والموازين طبقا للامعة الشركة الوطنية	م ^٣	17110.00	13.00	222430.00
١٠٧	طبقات الاساس				
١٠٨	بالمتر المكعب أعمال توريد وفرش طبقة تلميس (prepared Subgrade) من الاحجار الصلبة المترجة ناتج تكسير الكسرات والمطابقة للمواصفات والنسب حجم التحبيبات ١٠٠ مم والا تزيد نسبة الصغر من مثقل ١٠٠ عن ١٢% والتخرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة تحميل كاتولونيا عن ٢٥% والا تزيد نسبة الفك بجهاز لوس الجثوس عن ٣٠% والا يزيد الامتصاص عن ١٥% والا يقل معامل المرونة (Ev2) من تجربة لوح التحميل عن ٨٠ ميجاباسكال ويتم فردها على طبقتين باستخدام آلات التسوية الحديثة على ان لا يزيد سم الطبقة بعد تمام الدمك عن ٢٥ سم و رشها بالبياد الاصولية للوصول إلى نسبة الرطوبة المطلوبة والتمك الجيد للهراسات للوصول إلى النسب المثابة جافة (٩٥% من المثابة الجافة القصوى) ويتم تنفيذ طبقا للمنسوب التصميمية والمطامعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف ومسافة النقل لا تقل عن ١٠ كم، يتم احتساب علاوة ١,٢ جنيه لكل ١ كم بالزيادة أو النقصان، يتم صرف قيمة المواد المعجربة في حدة تقديم ما يثبت تسديد الاتاة للشركة الوطنية.	م ^٣	8037.00	278.00	2234286.00
١٠٩	علاوة مسافة النقل ١٠٣ كم = ١,٢*١٠٣ = ١٢٣,٦ جنيه	م ^٣	8037.00	99.60	800485.20
١١٠	علاوة تحميل رسوم الكارثة والموازين طبقا للامعة الشركة الوطنية	م ^٣	8037.00	25.00	200925.00
١١١	بالمتر المكعب أعمال توريد وفرش طبقة اسس من الاحجار الصلبة المترجة ناتج تكسير الكسرات والمطابقة للمواصفات والنسب حجم التحبيبات ما بين ٣١,٥ مم إلى ١٠ مم والا يزيد نسبة الصغر من مثقل ١٠٠ عن ٥% والتخرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة تحميل كاتولونيا عن ٨٠% والا يقل معامل المرونة (Ev2) من تجربة لوح التحميل عن ١١٠ ميجاباسكال والا يزيد نسبة الفك بجهاز لوس الجثوس عن ٣٠% والا يزيد الامتصاص عن ١٥% ويتم فردها على طبقتين باستخدام آلات التسوية الحديثة على ان لا يزيد سم الطبقة بعد تمام الدمك عن ٢٥ سم و رشها بالبياد الاصولية للوصول إلى نسبة الرطوبة المطلوبة والتمك الجيد بالهراسات للوصول إلى النسب المثابة جافة (٩٥% من المثابة الجافة القصوى) ويتم تنفيذ طبقا للمنسوب التصميمية والمطامعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف ومسافة النقل لا تقل عن ١٠ كم، يتم احتساب علاوة ١,٢ جنيه لكل ١ كم بالزيادة أو النقصان، يتم صرف قيمة المواد المعجربة في حدة تقديم ما يثبت تسديد الاتاة للشركة الوطنية.	م ^٣	5855.00	298.00	1744790.00
١١٢	علاوة مسافة النقل ١٠٣ كم = ١,٢*١٠٣ = ١٢٣,٦ جنيه	م ^٣	5855.00	99.60	583158.00
١١٣	علاوة تحميل رسوم الكارثة والموازين طبقا للامعة الشركة الوطنية	م ^٣	5855.00	25.00	146375.00
١١٤	الطبقات الفرشانية				
١١٥	بالمتر المكعب أعمال توريد وعصب خرسانة عادية سمك ١٥ سم لحماية الانتفاف والبيود الجانبية تتكون من ٨, ٣ م من دولوميت مترج + ٠,١ م رمل حرس + ٢٥٠ كجم اسمنت بورتلاندي عادي و اضافة fiber reinforcement على ان يكون السن نظيف ومغسول والرمل خالى من الشوائب والطفلة والاملاح والمواد الغريبة والبند يشمل تجهيل واستبدال منسوب التربة الطبيعية اسفل البلاطة للوصول إلى المنسوب التصميمية على ان تحلق الخرسانة اجهاد لا يقل عن ٢٥٠ كجم / سم ^٢ وتنظيف السطح وتنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لمواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف.	م ^٣	10045.57	266.00	2672121.62
١١٦	بالمتر المكعب أعمال توريد وعصب خرسانة عادية لتقدمات العمليات والبيود الجانبية تتكون من ٨, ٣ م من دولوميت مترج + ٠,١ م رمل حرسو الاضافات طبقا لتعليمات الاستشاري (اهرير - سبكا) على ان يكون السن نظيف ومغسول والرمل خالى من الشوائب والطفلة والاملاح والمواد الغريبة مع وضع لوم (بلفاسل) بسك ٢ سم (طبقا لتعليمات الاستشاري) والبند يشمل اصلاح الحفر والشقوق و مل ما يلزم لتبويد العمل على ان تحلق الخرسانة اجهاد لا يقل عن ٢٥٠ كجم / سم ^٢ و مله القواصل بالبيتومين المعمرل و التنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لمواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف.	م ^٣	480.00	2200.00	1056000.00
١١٧	أعمال التربة المسلحة				
١١٨	بالمتر المكعب توريد وتركيب طبقة من السجج الصناعي جيوجريد مستورد تتداخل لا يقل عن ١٠% و يتم التنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والبند بجميع مشتلاته طبقا لمواصفات الهيئة العامة للطرق والكبارى				
١١٩	ات قوة شد ٢٠ ك . نيوتن في الاتجاهين Biaxial	م ^٢		23.00	
١٢٠	ات قوة شد ٣٠ ك . نيوتن في الاتجاهين Biaxial	م ^٢	3669.37	37.00	135766.69
١٢١					13900000.00

يتمتع
رئيس الإدارة المركزية
منطقة غرب الدلتا
(بالإسكندرية / مرسى مطروح)
عقيد مهلمس /
هاني محمد محمود طه"

مدير عام مشروعات المنطقة الخاصة
م / محمد حسني قناص

مدير المشروع العام
م / ماريات مجدي



عبد السلام عبد الحليم الفقي وشركاه
للمقاولات والاستشارات الهندسية

MATERIAL APPROVAL REQUEST



الهيئة العامة
للطرق و الجسور
(GARB)



Contractor Company	Eng. Abdelsalam ELFely For Contracting		Designer Company	(SPECTRUM) Engineering Consulting Office							
Issued by Contractor	Name	Eng. Mohamed Ismael	Date/Serial Number	24/3/2023							
	Signature		Time	8:00							
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	C1	C2	C3	DD	MM	YY	HH	MM
				385	EW	CS	28	3	23	8	0

CODE 1	S1 to S21	D1 to S3	Kp XXX Note
CODE 2	Station Reference	Depot Reference	For Kilometer point only Start Km is used
CODE 3	Work Activity		
CODE 4	Sub Element of Activity		

Description of Materials	Subballast Layer Total Quantity (5000 m ³)		
Location to be Used	From Station 385+007.5) to Station (386+007.5)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached
Reference in BoQ		Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-43.2) VERSION 2 BY CIVECON GROUP
Prequalification reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by: Eng. Mazen Essamy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allatif (ER)	
1-Quality test Result By Third Party lab Comibassal is Approved.		1-All tests were selected for Quality test and were carried out by Thrid party lab Comibassal.	
2-This Sample Representative (5000 m3) only.		2-Results report attached and acceptable with the project specifications.	
		3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS

Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismael			A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. 9023			AWC

* Designer

** Alignment/Bridges: Culvert only

11/4



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Internal inspection and laboratories sector

Accredited by : Egypton General Authority for Petroleum under No. 34/29-11-2011
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I- Introduction

General Consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبدالسلام الفني للمقاولات
Sample : Sub-Ballast
Station : St(385+007.5) to st(386+007.5)
Date of Test : 28/03/2023
QC : 900

II- Sample description:

Crushed stone and sand

III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)
- 5- Specific gravity (SG)
- 6- Los Angeles test

IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction (Proctor test)	MDD	2.188
	OMC	5.9%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CB)	CBR ratio	96%
5- Specific gravity (SG), absorption and degradation	S S D	2.520
	Absorption	1.2%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	27.0%

LAB DIRECTOR

Eng / Eman kandil



Geotechnical consultant

For: Dr. Mohamed Mostafa Badry

Kilo 23 Alexandria - Cairo Desert Road - Merghem

Tel: 002 03 4704595 - 002 034701191

Email : civdept@comibassal.com

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APPENDIX

Kilo 23 Alexandria - Cairo Desert Road - Merghem
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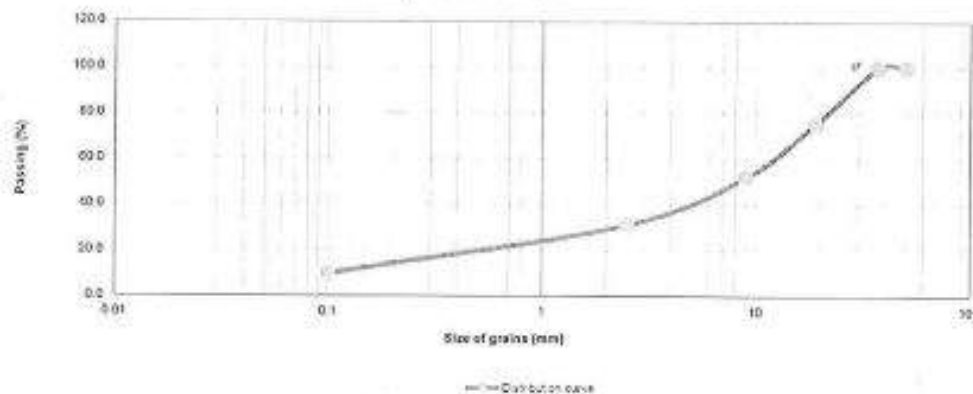
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PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT RETAINED (gm)	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDARD SPECIFICATION LIMITS
	(gm)				
2	0.00	0.00	0.00	100.0	
1 1/2	0.00	0.00	0.00	100.0	
1	847.00	847.00	8.47	91.5	
3/4	1603.00	2450.00	24.50	75.5	
1/2	1697.00	4147.00	41.47	58.5	
3/8	656.00	4803.00	48.03	52.0	
No.4	1325.00	6128.00	61.28	38.7	
No.10	98.00	98.00	19.60	31.1	
No.200	375.00	375.00	75.00	9.7	

total sample weight= 10000.00 pass No.4= 3872.0 Total fine aggregates weight = 500 gm
pass% 38.7

Size analysis distribution curve



Soil classification: A - 1 - a - sample is non plastic



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Modified Proctor Test Report

ASTM - D 1557

Mould Number :- 3
Volume of mould = 2188 cm³
Weight of mould = 7256 g
G.S = 2.6 g/cm³

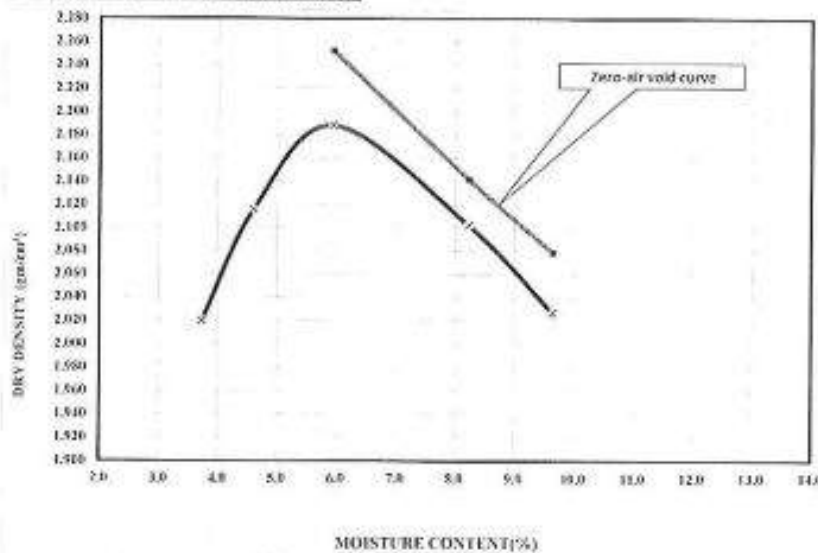
A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11840	12098	12335	12234	12119
Weight of mould (g)	7256	7256	7263	7256	7256
Weight of wet soil (g)	4584	4842	5072	4978	4863
Volume of mould (cm ³)	2188	2188	2188	2188	2188
Wet density (g/cm ³)	2.095	2.213	2.318	2.275	2.223
Dry density (g/cm ³)	2.020	2.116	2.188	2.102	2.027
Zero-air Void curve			2.253	2.142	2.079

B- Moisture Calculations :-

Weight of wet soil (g)	250.0	250.0	250.0	250.0	250.0
Weight of dry soil (g)	241.0	239.0	236.0	231.0	228.0
moisture content %	3.7	4.6	5.9	8.2	9.6

C - Dry density-Moisture relationship:-



M.D.D= 2.188 gm/cm³
O.M.C= 5.9 %



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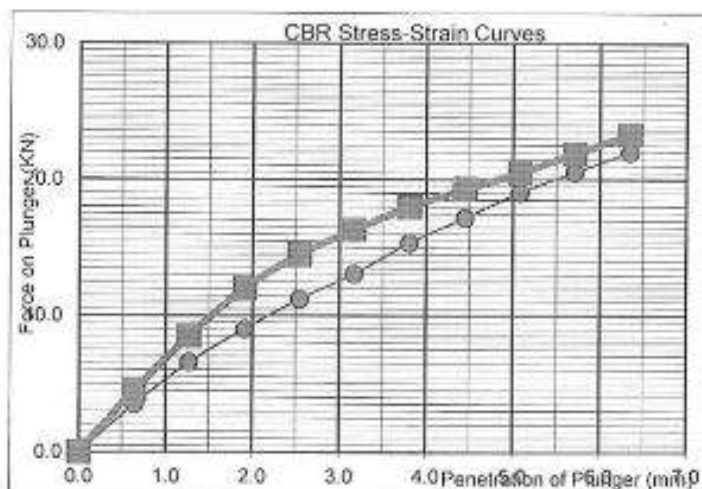
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Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56			Swell %			
MOULD NO	1				56		
WT OF MOULD+SOIL	12305			Start	0.00		
WT OF MOULD	7250			End	0.00		
WT OF SOIL	5055			Swell	0.00		
VOLUME OF MOULD	2190						
WET DENSITY	2.308						
		MC before soaking		Weight of Rammer			4.54Kg
TIN NO	1				MDD	Kg/m3	2.188
WT OF WET SOIL+TIN	250.00						
WT OF DRY SOIL+TIN	241				OMC	%	5.9
WT OF WATER	9.00						
WT OF TIN	82			PROVING RING			
WT OF DRY SOIL	159	2.125		Dw/KN			
MOISTURE CONTENT	5.7						
DRY DENSITY	2.185				Capacity (KN)	50	
Pen mm	97		Bearing (KN)		CBR		
	56			56		standar	56
0.00	0			FALSE		0.0	
0.64	385			3.5		4.5	
1.27	670			6.6		8.5	
1.91	920			9.0		12.0	
2.54	1145			11.2		14.5	85
3.17	1335			13.1		16.3	
3.81	1567			15.4		18.0	
4.45	1753			17.2		19.3	
5.08	1945			19.1		20.5	96
5.71	2097			20.6		21.9	
6.35	2245			22.0		23.3	



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ABRASION AND IMPACT " LOS ANGELES " TEST

(For coarse aggregate)

ASTM- C 131-96 / AASHTO-T-96

Speed	Rotate at 30 to 33 Rpm For 500 Revolution
Trial Grading	A
Intital Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3650
% abrasion By Weight Passing from Sieve No.12	27.0%



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Absorption & Specific Gravity for Aggregate AASHTO T85 - ASTM C127

Weight of sample	2500
Weight of saturated - dry surface sample (B)	2525
Weight of saturated sample in water (C)	1523
Weight of dry sample after heating (A)	2496

Results:-

Saturation surface dry specific gravity = $B / (B - C)$	2.520
Bulk specific gravity = $A / (B - C)$	2.491
Apparent specific gravity = $A / (A - C)$	2.565
Absorption of water = $(B - A) / A * 100$	1.2
Degradation of aggregate = $(2500 - A) / A * 100$	0.2



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Internal inspection and laboratories sector

Accredited by : Egypton General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypton Accreditation council (EGAC) under No. 031706/1A

Report	:	399 - 2 - Center
Date	:	11/04/2023

CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة عيد السلام القوي للمقاولات
Project	:	Electric express train
Sample	:	Sub Ballast
Station	:	ST (385 + 007.5) : (386 + 007.5)
Date of Test	:	28-3-2023
Temperature	:	18 °C
Humidity	:	40%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0039%	ASTM D 2974
SULPHATE	0.0025%	
ORGANIG MATTER	NEGATIVE	



LAB DIRECTOR
CH/ Mostafa Asker
for Amany Amin

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MATERIAL APPROVAL REQUEST



الهيئة العامة
للمرور والجسور
(GARAB)



Contractor Company	Eng. Abdelsalam El Feky For Contracting	Designer Company	(SPECTRUM) Engineering Consulting Office
Issued by Contractor	Name Eng. Mohamed Ismael	Date/Serial Number 17/5/2023 QT 56 (2)	Time 8:00
Received by GARAB CONSULTANT	Eng. Mazen Essamy	Signature	Signature
	385	EW	CS
	18	5	23
	8	0	

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

Description of Materials	Subballast Layer Total Quantity (5000 m³)		
Location to be Used	From Station 385+007.5) to Station (386+007.5)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached
Reference in BoQ		Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY CIVECON GROUP
Prequalification reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by: Eng. Mazen Essamy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allatif (ER)	
1-Quality test Result By Third Party lab Comibassal Is Approved.		1-All tests were selected for Quality test and were carried-out by Thrid party lab Comibassal.	
2-This Sample Representative (5000 m3) only.		2-Results report attached and acceptable with the project specifications.	
		3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismael	[Signature]		A
QA/QC *	Eng. Mazen Essamy	[Signature]		A
GARB**	Eng. Mohammed Fayad	[Signature]		
Employers Representative	Eng. Alaa Abd-Allatif	[Signature]		Awc

* Designer

** Alignment/Bridges: Culvert only

15/6



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I- Introduction

General Consultant : SYSTRA
Consultant : Spectrum
Contractor : شركة عبد السلام الفقى للمقاولات
Sample : Sub-Ballast
Station : St(386+007.5)to st(385+007.5)
Date of Test : 18/5/2023
QC : 1409-1

II- Sample description:

Crushed stone and sand

III- Required tests and Results:

Required Tests		Results
1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction (Proctor test)	MDD	2.210
	OMC	6.3%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CBR)	CBR ratio	95%
5- Specific gravity (SG), absorption and degradation	S S D	2.518
	Absorption	1.2 %
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	27.0%

IV- Notes

- 1- Samples were brought by : client
- 2- Samples are responsible from the Person who brought it.
- 3- The results are applying only for the present report.

LAB DIRECTOR

Eng / Eman kandil



Geotechnical consultant

For Dr. H.
Dr. Mohamed Mostafa Badry

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APPENDIX

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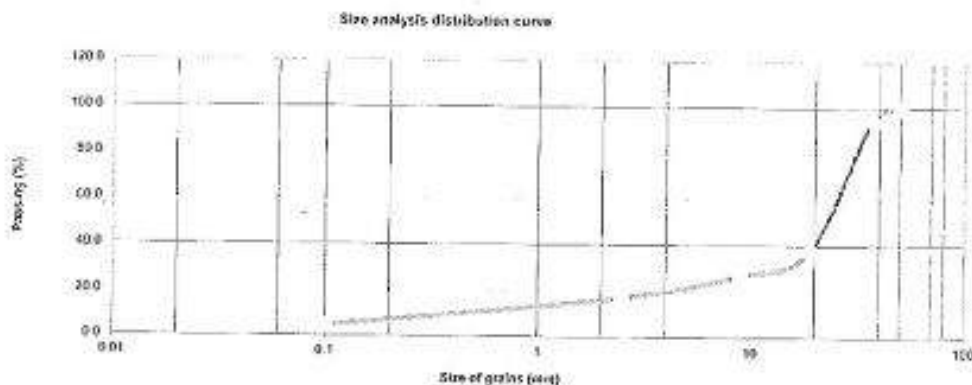
Internal inspection and laboratories sector

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PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED (gm)	CUMULATIVE WEIGHT RETAINED (gm)	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDARD SPECIFICATION LIMITS
2	0.00	0.00	0.00	100.0	
1 1/2	556.00	556.00	5.56	94.4	
1	3721.00	4277.00	42.77	57.2	
3/4	1973.00	6250.00	62.50	37.5	
1/2	773.00	7023.00	70.23	29.8	
3/8	312.00	7335.00	73.35	26.7	
No.4	684.00	8019.00	80.19	19.8	
No.10	74.00	74.00	14.80	16.9	
No.200	392.00	392.00	78.40	4.3	

Total sample weight = 10000.00 pass No.4- 1981.0 Total fine aggregates weight = 500 gm



Soil classification: A - 1- a - sample is non plastic



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Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Modified Proctor Test Report

ASTM - D 1557

Mould Number :- 1
Volume of mould = 2199 cm³
Weight of mould = 5890 g
G.S = 2.65 g/cm³

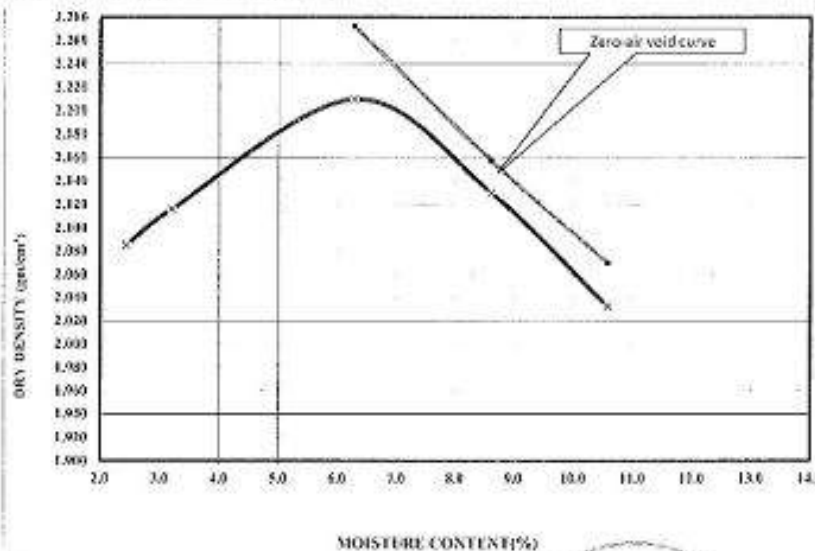
A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	10586	10691	11054	10977	10832
Weight of mould (g)	5890	5890	5890	5890	5890
Weight of wet soil (g)	4696	4801	5164	5087	4942
Volume of mould (cm ³)	2199	2199	2199	2199	2199
Wet density (g/cm ³)	2.136	2.183	2.348	2.313	2.247
Dry density (g/cm ³)	2.085	2.116	2.210	2.130	2.032
Zero-air Void curve			2.272	2.158	2.070

B- Moisture Calculations :-

Weight of wet soil+container (g)	250.0	250.0	250.0	250.0	250.0
Weight of dry soil+container (g)	246.0	244.2	237.0	232.0	234.5
Weight of container (g)	82.0	63.0	30.0	23.0	88.0
moisture content(%)	2.4	3.2	6.3	8.6	10.6

C - Dry density-Moisture relationship:-



M.D.D= 2.210 gm/cm³
O.M.C= 6.3 %



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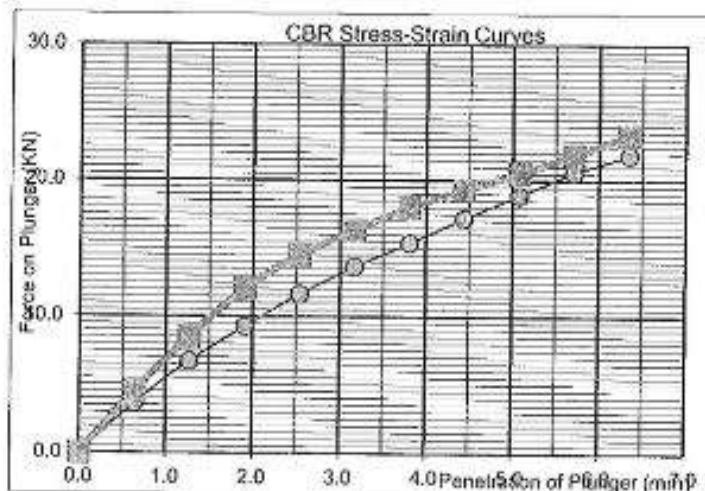
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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56					Swell %	
MOULD NO	1					56	
WT OF MOULD+SOIL	12360				Start	0.00	
WT OF MOULD	7250				End	0.00	
WT OF SOIL	5110				Swell	0.00	
VOLUME OF MOULD	2190						
WET DENSITY	2.333						
	MC before soaking				Weight of Rammer		4.54Kg
TIN NO	1				MDD	Kg/m3	2.210
WT OF WET SOIL+TIN	250.00				OMC	%	6.3
WT OF DRY SOIL+TIN	241						
WT OF WATER	9.00						
WT OF TIN	82				PROVING RING		
WT OF DRY SOIL	159	2.125			D ₁₀₀ /KN		
MOISTURE CONTENT	5.7						
DRY DENSITY	2.208				Capacity (KN)		50
Pen mm	97		Bearing (KN)		CBR		
0.00	0		56		standar	56	
0.64	368		FALSE		0.0		
1.27	684		3.6		4.5		
1.91	943		6.7		8.5		
2.54	1186		9.2		12.0		
3.17	1392		11.6		14.5	89	
3.81	1567		13.6		16.3		
4.45	1753		15.4		18.0		
5.08	1925		17.2		19.3		
5.71	2097		18.9		20.5	95	
6.35	2230		20.6		21.9		
			21.9		23.3		



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Internal inspection and laboratories sector

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ABRASION AND IMPACT " LOS ANGELES " TEST

(For coarse aggregate)

ASTM- C 131-96 / AASHTO-T-96

Speed	Rotate at 30 to 33 Rpm For 500 Revolution
Trial Grading	A
Intital Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3650
% abrasion By Weight Passing from Sieve No.12	27.0%



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COMIBASSAL International Controllers

Internal inspection and laboratories sector

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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Absorption & Specific Gravity for Aggregate AASHTO T85 - ASTM C127

Weight of sample	2500
Weight of saturated - dry surface sample (B)	2526
Weight of saturated sample in water (C)	1523
Weight of dry sample after heating (A)	2496

Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.518
Bulk specific gravity = $A / (B-C)$	2.489
Apparent specific gravity = $A / (A-C)$	2.565
Absorption of water = $(B-A)/A \times 100$	1.2
Degradation of aggregate = $(2500-A) / A \times 100$	0.2



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COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egypton General Authority for Petroleum under No. 34/29-11-2011
Accredited by : Egypton Accreditation council (EGAC) under No. 031708/LA

Report :	553 - 1 - Center
Date :	15/06/2023

CHEMICAL ANALYSIS

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة عيد السلام القوي للمقاولات
Project :	Electric express train
Sample :	Sub Ballast
Station :	ST (386 + 007.5) : (385 + 007.5)
Date of Test :	18-5-2023
Temperature : 25 °C	Humidity : 40%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0046%	ASTM D 2974
SULPHATE	0.0180%	
ORGANIC MATTER	NEGATIVE	



LAB DIRECTOR
CH/ Mostafa Asker

Mostafa

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MATERIAL INSPECTION REQUEST

الهيئة العامة
للطرق والكباري
(GARB)



الهيئة العامة
للطرق والكباري
(GARB)



Contractor Company	Eng. Abdelalam ELFeky For Contracting	Designer Company	(SPECTRUM) Engineering Consulting Office
Issued by Contractor	Name: Eng. Mohamed Ismael	Signature: [Signature]	Time: 12:00 PM
Received by GARB CONSULTANT	Eng. Mazen Essamy	Signature: [Signature]	PLT (14)

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

Description of Materials	AT LAYER (SUB BALLAST 2)				
Location to be Used	From	385+007.5	TO	385+500	
MAR & UIR Approval No	UIR SB (005)	Date	3/5/2023		
	UIR SB (006)		3/5/2023		
	UIR SB (010)		17/5/2023		
	M.A.R.(QT SB 1)		28/3/2023		
Supplier Name					
Test Requirement	PLATE LOAD TEST ON FILL LAYER FERMA	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	PLT BY Comibassal LABORATORY	NUMBER	20	11/6/2023	
2					
3					
4					
Comments by: Eng. Mazen Essamy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allatif (ER)			
1-The Plate Load Test Result by third party is Approved.		1-9 Point was carried- out by (Comibassal) on Sub ballast layer 2-Results report attached and acceptable with project specifications. 3-Final approval is subject to above mentioned comments.			

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismael	[Signature]		A
QA/QC *	Eng. Mazen Essamy	[Signature]		A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif	[Signature]		AWC

* Designer

** Alignment/Bridges: Consent only

15/6



COMIBASSAL International Controllers Internal inspection and laboratories sector

Authorized by Egyptian General Authority for Metrology number No. 154/2014-EG
Authorized by Egyptian Ministry of Transport / ECACT number No. 002/2014

Technical report of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة عبد السلام القلي القنطرة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Subballast layer (2)
Station	:	St(385+275) to st(385+500)
Date of Test	:	11/06/2023
QC	:	1385

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COMIBASSAL International Controllers Internal Inspection and laboratories sector

Accredited by Egyptian General Authority for Petroleum Companies (EGAP) as follows:
Accredited by Egyptian General Authority (EGAC) number EGAC/0001/04

Introduction:

The three load test is designed to determine the vertical deformation and strength characteristics of soil by increasing the force and measure of penetration with clear relation a digital plate is made to penetration. For soil.

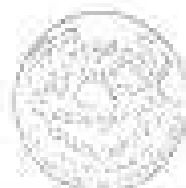
The test to be carried out on the surface soil according to Egyptian specification ENR 18134.

Test methods:

- 1- The Compressor standard C-18, 150 bar was applied to inflate the apparatus (pneum, the loading system, and pressure), and procedure for the test.
- 2- Loading plate with a diameter of 600 mm and 10 cm thickness of 10 mm and is provided with equally spaced columns with corresponding holes provided for the plate fixture base to allow 300 mm plate to be placed on top of it.
- 3- The loading system consisted of a hydraulic pump connected to a hydraulic jack of 100 bar capacity, which is capable of loading and releasing the load in 10 s.
- 4- The load gauge used to measure the plate surface and has a resolution of 0.005 mm and the lower cells are equal to 1.
- 5- The temperature at the time of the test was 22°C.
- 6- The plate was carried out on a loading cell (loading cell), the test surface area was leveled and the plate was loaded on the surface.
- 7- The hydraulic jack was placed on the middle of, and is normal to the loading plate with the reaction loading system, and connected system piping.
- 8- The reaction loading system was a fixed and supported structure (more than 20 tons).

Description of experiment:

- 1- Loading, unloading and reloading system was applied according to ENR 18134 for the plate fixture to estimate the vertical modulus.
- 2- After the test, the load measurement and load gauge were on to any, after which a load was applied corresponding to a stress of 0.15 MPa.
- 3- In the first loading cycle, the load was increased with a normal stress of 0.25 MPa/m² was reached, and the loading was increased with 0.05 MPa/m². The load was released in four steps.
- 4- Following unloading, a further series loading cycle was carried out, in which, the load was increased only to the previously applied the first cycle.



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2020-12-31

ISO

Table 1: Internal inspection and laboratories sector

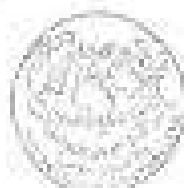
Activity description	Frequency	Number of activities per month	Administrative activities per month
1	1/12	1/12	1/12
2	1/12	1/12	1/12
3	1/12	1/12	1/12
4	1/12	1/12	1/12
5	1/12	1/12	1/12
6	1/12	1/12	1/12
7	1/12	1/12	1/12
8	1/12	1/12	1/12
9	1/12	1/12	1/12
10	1/12	1/12	1/12
11	1/12	1/12	1/12
12	1/12	1/12	1/12
13	1/12	1/12	1/12
14	1/12	1/12	1/12
15	1/12	1/12	1/12
16	1/12	1/12	1/12
17	1/12	1/12	1/12
18	1/12	1/12	1/12
19	1/12	1/12	1/12
20	1/12	1/12	1/12

Table 2: Internal inspection and laboratories sector

Activity description	Frequency	Number of activities per month	Administrative activities per month
1	1/12	1/12	1/12
2	1/12	1/12	1/12
3	1/12	1/12	1/12
4	1/12	1/12	1/12
5	1/12	1/12	1/12
6	1/12	1/12	1/12
7	1/12	1/12	1/12
8	1/12	1/12	1/12
9	1/12	1/12	1/12
10	1/12	1/12	1/12
11	1/12	1/12	1/12
12	1/12	1/12	1/12
13	1/12	1/12	1/12
14	1/12	1/12	1/12
15	1/12	1/12	1/12
16	1/12	1/12	1/12
17	1/12	1/12	1/12
18	1/12	1/12	1/12
19	1/12	1/12	1/12
20	1/12	1/12	1/12

Table 3: Internal inspection and laboratories sector

Activity description	Frequency	Number of activities per month	Administrative activities per month
1	1/12	1/12	1/12
2	1/12	1/12	1/12
3	1/12	1/12	1/12
4	1/12	1/12	1/12
5	1/12	1/12	1/12
6	1/12	1/12	1/12
7	1/12	1/12	1/12
8	1/12	1/12	1/12
9	1/12	1/12	1/12
10	1/12	1/12	1/12
11	1/12	1/12	1/12
12	1/12	1/12	1/12
13	1/12	1/12	1/12
14	1/12	1/12	1/12
15	1/12	1/12	1/12
16	1/12	1/12	1/12
17	1/12	1/12	1/12
18	1/12	1/12	1/12
19	1/12	1/12	1/12
20	1/12	1/12	1/12



Our objectives - Our first goal - Register
 Our second goal - Register
 Our third goal - Register
 Our fourth goal - Register



1912 1912 1912 1912
 1912 1912 1912 1912
 1912 1912 1912 1912
 1912 1912 1912 1912



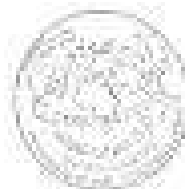
COMIBASSAL International Controllers Internal inspection and laboratories sector

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Fig. 1: Load reduction curve, showing the ratio of the load to the rated load (R) for the test and rated loading modes

- Theoretical value of the ratio of the load to the rated load (R)
- Theoretical value of the ratio of the load to the rated load (R)
- △ Theoretical value of the ratio of the load to the rated load (R)
- Theoretical value of the ratio of the load to the rated load (R)
- Theoretical value of the ratio of the load to the rated load (R)



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Internal Inspection

2022

Table 1: Internal inspection results and compliance rate

Inspection stage	Number of inspections	Number of inspections compliance	Compliance rate (%)
1	100	95	95%
2	100	95	95%
3	100	95	95%
4	100	95	95%
5	100	95	95%
6	100	95	95%
7	100	95	95%
8	100	95	95%
9	100	95	95%
10	100	95	95%
11	100	95	95%
12	100	95	95%
13	100	95	95%
14	100	95	95%
15	100	95	95%
16	100	95	95%
17	100	95	95%
18	100	95	95%
19	100	95	95%
20	100	95	95%
21	100	95	95%
22	100	95	95%
23	100	95	95%
24	100	95	95%
25	100	95	95%
26	100	95	95%
27	100	95	95%
28	100	95	95%
29	100	95	95%
30	100	95	95%
31	100	95	95%
32	100	95	95%
33	100	95	95%
34	100	95	95%
35	100	95	95%
36	100	95	95%
37	100	95	95%
38	100	95	95%
39	100	95	95%
40	100	95	95%
41	100	95	95%
42	100	95	95%
43	100	95	95%
44	100	95	95%
45	100	95	95%
46	100	95	95%
47	100	95	95%
48	100	95	95%
49	100	95	95%
50	100	95	95%
51	100	95	95%
52	100	95	95%
53	100	95	95%
54	100	95	95%
55	100	95	95%
56	100	95	95%
57	100	95	95%
58	100	95	95%
59	100	95	95%
60	100	95	95%
61	100	95	95%
62	100	95	95%
63	100	95	95%
64	100	95	95%
65	100	95	95%
66	100	95	95%
67	100	95	95%
68	100	95	95%
69	100	95	95%
70	100	95	95%
71	100	95	95%
72	100	95	95%
73	100	95	95%
74	100	95	95%
75	100	95	95%
76	100	95	95%
77	100	95	95%
78	100	95	95%
79	100	95	95%
80	100	95	95%
81	100	95	95%
82	100	95	95%
83	100	95	95%
84	100	95	95%
85	100	95	95%
86	100	95	95%
87	100	95	95%
88	100	95	95%
89	100	95	95%
90	100	95	95%
91	100	95	95%
92	100	95	95%
93	100	95	95%
94	100	95	95%
95	100	95	95%
96	100	95	95%
97	100	95	95%
98	100	95	95%
99	100	95	95%
100	100	95	95%

Table 2: Internal inspection results and compliance rate

Inspection stage	Number of inspections	Number of inspections compliance	Compliance rate (%)
1	100	95	95%
2	100	95	95%
3	100	95	95%
4	100	95	95%
5	100	95	95%
6	100	95	95%
7	100	95	95%
8	100	95	95%
9	100	95	95%
10	100	95	95%
11	100	95	95%
12	100	95	95%
13	100	95	95%
14	100	95	95%
15	100	95	95%
16	100	95	95%
17	100	95	95%
18	100	95	95%
19	100	95	95%
20	100	95	95%
21	100	95	95%
22	100	95	95%
23	100	95	95%
24	100	95	95%
25	100	95	95%
26	100	95	95%
27	100	95	95%
28	100	95	95%
29	100	95	95%
30	100	95	95%
31	100	95	95%
32	100	95	95%
33	100	95	95%
34	100	95	95%
35	100	95	95%
36	100	95	95%
37	100	95	95%
38	100	95	95%
39	100	95	95%
40	100	95	95%
41	100	95	95%
42	100	95	95%
43	100	95	95%
44	100	95	95%
45	100	95	95%
46	100	95	95%
47	100	95	95%
48	100	95	95%
49	100	95	95%
50	100	95	95%
51	100	95	95%
52	100	95	95%
53	100	95	95%
54	100	95	95%
55	100	95	95%
56	100	95	95%
57	100	95	95%
58	100	95	95%
59	100	95	95%
60	100	95	95%
61	100	95	95%
62	100	95	95%
63	100	95	95%
64	100	95	95%
65	100	95	95%
66	100	95	95%
67	100	95	95%
68	100	95	95%
69	100	95	95%
70	100	95	95%
71	100	95	95%
72	100	95	95%
73	100	95	95%
74	100	95	95%
75	100	95	95%
76	100	95	95%
77	100	95	95%
78	100	95	95%
79	100	95	95%
80	100	95	95%
81	100	95	95%
82	100	95	95%
83	100	95	95%
84	100	95	95%
85	100	95	95%
86	100	95	95%
87	100	95	95%
88	100	95	95%
89	100	95	95%
90	100	95	95%
91	100	95	95%
92	100	95	95%
93	100	95	95%
94	100	95	95%
95	100	95	95%
96	100	95	95%
97	100	95	95%
98	100	95	95%
99	100	95	95%
100	100	95	95%

Table 3: Internal inspection results and compliance rate

Inspection stage	Number of inspections	Number of inspections compliance	Compliance rate (%)
1	100	95	95%
2	100	95	95%
3	100	95	95%
4	100	95	95%
5	100	95	95%
6	100	95	95%
7	100	95	95%
8	100	95	95%
9	100	95	95%
10	100	95	95%
11	100	95	95%
12	100	95	95%
13	100	95	95%
14	100	95	95%
15	100	95	95%
16	100	95	95%
17	100	95	95%
18	100	95	95%
19	100	95	95%
20	100	95	95%
21	100	95	95%
22	100	95	95%
23	100	95	95%
24	100	95	95%
25	100	95	95%
26	100	95	95%
27	100	95	95%
28	100	95	95%
29	100	95	95%
30	100	95	95%
31	100	95	95%
32	100	95	95%
33	100	95	95%
34	100	95	95%
35	100	95	95%
36	100	95	95%
37	100	95	95%
38	100	95	95%
39	100	95	95%
40	100	95	95%
41	100	95	95%
42	100	95	95%
43	100	95	95%
44	100	95	95%
45	100	95	95%
46	100	95	95%
47	100	95	95%
48	100	95	95%
49	100	95	95%
50	100	95	95%
51	100	95	95%
52	100	95	95%
53	100	95	95%
54	100	95	95%
55	100	95	95%
56	100	95	95%
57	100	95	95%
58	100	95	95%
59	100	95	95%
60	100	95	95%
61	100	95	95%
62	100	95	95%
63	100	95	95%
64	100	95	95%
65	100	95	95%
66	100	95	95%
67	100	95	95%
68	100	95	95%
69	100	95	95%
70	100	95	95%
71	100	95	95%
72	100	95	95%
73	100	95	95%
74	100	95	95%
75	100	95	95%
76	100	95	95%
77	100	95	95%
78	100	95	95%
79	100	95	95%
80	100	95	95%
81	100	95	95%
82	100	95	95%
83	100	95	95%
84	100	95	95%
85	100	95	95%
86	100	95	95%
87	100	95	95%
88	100	95	95%
89	100	95	95%
90	100	95	95%
91	100	95	95%
92	100	95	95%
93	100	95	95%
94	100	95	95%
95	100	95	95%
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97	100	95	95%
98	100	95	95%
99	100	95	95%
100	100	95	95%

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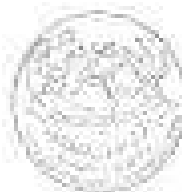
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Fig. 3. Good uniformity curve (dotted curve) and Bad uniformity curve (solid curve) for the first and second testing cycles.

- Measured value from the first testing cycle
- Measured value from the second testing cycle
- ▲ Measured value from the third testing cycle

2. Uniformity curve
by internal area method



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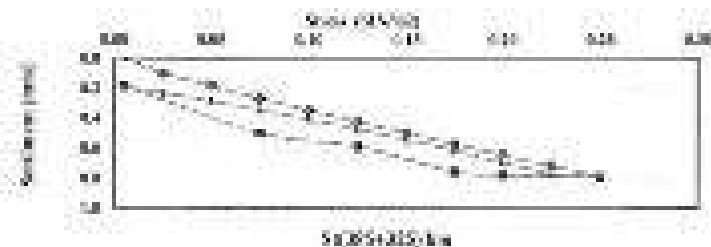
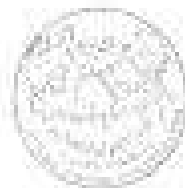


Fig. 3. Compressive strength curves. Curing in water according to Table 7 and Table 8 for the first and second loading cycle

- 1. Curing in water according to Table 7 and Table 8 for the first and second loading cycle
- 2. Curing in water according to Table 7 and Table 8 for the third loading cycle
- 3. Curing in water according to Table 7 and Table 8 for the fourth loading cycle
- 4. Curing in water according to Table 7 and Table 8 for the fifth loading cycle



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Table 10: Internal inspection and laboratories sector

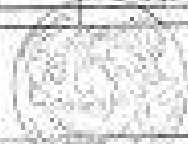
Inspection No.	Inspection Date	Inspection Result	Inspection Status
1	1/1/2020	Pass	Pass
2	1/1/2020	Pass	Pass
3	1/1/2020	Pass	Pass
4	1/1/2020	Pass	Pass
5	1/1/2020	Pass	Pass
6	1/1/2020	Pass	Pass
7	1/1/2020	Pass	Pass
8	1/1/2020	Pass	Pass
9	1/1/2020	Pass	Pass
10	1/1/2020	Pass	Pass
11	1/1/2020	Pass	Pass
12	1/1/2020	Pass	Pass
13	1/1/2020	Pass	Pass
14	1/1/2020	Pass	Pass
15	1/1/2020	Pass	Pass
16	1/1/2020	Pass	Pass
17	1/1/2020	Pass	Pass
18	1/1/2020	Pass	Pass
19	1/1/2020	Pass	Pass
20	1/1/2020	Pass	Pass

Table 11: Internal inspection and laboratories sector

Inspection No.	Inspection Date	Inspection Result	Inspection Status
21	1/1/2020	Pass	Pass
22	1/1/2020	Pass	Pass
23	1/1/2020	Pass	Pass
24	1/1/2020	Pass	Pass
25	1/1/2020	Pass	Pass
26	1/1/2020	Pass	Pass
27	1/1/2020	Pass	Pass
28	1/1/2020	Pass	Pass
29	1/1/2020	Pass	Pass
30	1/1/2020	Pass	Pass
31	1/1/2020	Pass	Pass
32	1/1/2020	Pass	Pass
33	1/1/2020	Pass	Pass
34	1/1/2020	Pass	Pass
35	1/1/2020	Pass	Pass
36	1/1/2020	Pass	Pass
37	1/1/2020	Pass	Pass
38	1/1/2020	Pass	Pass
39	1/1/2020	Pass	Pass
40	1/1/2020	Pass	Pass

Table 12: Internal inspection and laboratories sector

Inspection No.	Inspection Date	Inspection Result	Inspection Status
41	1/1/2020	Pass	Pass
42	1/1/2020	Pass	Pass
43	1/1/2020	Pass	Pass
44	1/1/2020	Pass	Pass
45	1/1/2020	Pass	Pass
46	1/1/2020	Pass	Pass
47	1/1/2020	Pass	Pass
48	1/1/2020	Pass	Pass
49	1/1/2020	Pass	Pass
50	1/1/2020	Pass	Pass
51	1/1/2020	Pass	Pass
52	1/1/2020	Pass	Pass
53	1/1/2020	Pass	Pass
54	1/1/2020	Pass	Pass
55	1/1/2020	Pass	Pass
56	1/1/2020	Pass	Pass
57	1/1/2020	Pass	Pass
58	1/1/2020	Pass	Pass
59	1/1/2020	Pass	Pass
60	1/1/2020	Pass	Pass



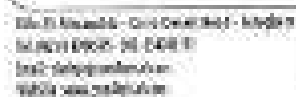
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 11. Information policy is the building block.
 12. Information policy is the building block.
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Page 1 of 1

2018

Table 1: Laboratory results for the laboratory and the external results

Testing Method	Value (g)	Reference value (g)	Reference value (g)
1	1.15	1.15	1.15
2	1.15	1.15	1.15
3	1.15	1.15	1.15
4	1.15	1.15	1.15
5	1.15	1.15	1.15
6	1.15	1.15	1.15
7	1.15	1.15	1.15
8	1.15	1.15	1.15
9	1.15	1.15	1.15
10	1.15	1.15	1.15
11	1.15	1.15	1.15
12	1.15	1.15	1.15
13	1.15	1.15	1.15
14	1.15	1.15	1.15
15	1.15	1.15	1.15
16	1.15	1.15	1.15
17	1.15	1.15	1.15
18	1.15	1.15	1.15
19	1.15	1.15	1.15
20	1.15	1.15	1.15

Table 2: Laboratory results for the laboratory and the external results

Testing Method	Value (g)	Reference value (g)	Reference value (g)
1	1.15	1.15	1.15
2	1.15	1.15	1.15
3	1.15	1.15	1.15
4	1.15	1.15	1.15
5	1.15	1.15	1.15
6	1.15	1.15	1.15
7	1.15	1.15	1.15
8	1.15	1.15	1.15
9	1.15	1.15	1.15
10	1.15	1.15	1.15
11	1.15	1.15	1.15
12	1.15	1.15	1.15
13	1.15	1.15	1.15
14	1.15	1.15	1.15
15	1.15	1.15	1.15
16	1.15	1.15	1.15
17	1.15	1.15	1.15
18	1.15	1.15	1.15
19	1.15	1.15	1.15
20	1.15	1.15	1.15

Table 3: Laboratory results for the laboratory and the external results

Testing Method	Value (g)	Reference value (g)	Reference value (g)
1	1.15	1.15	1.15
2	1.15	1.15	1.15
3	1.15	1.15	1.15
4	1.15	1.15	1.15
5	1.15	1.15	1.15
6	1.15	1.15	1.15
7	1.15	1.15	1.15
8	1.15	1.15	1.15
9	1.15	1.15	1.15
10	1.15	1.15	1.15
11	1.15	1.15	1.15
12	1.15	1.15	1.15
13	1.15	1.15	1.15
14	1.15	1.15	1.15
15	1.15	1.15	1.15
16	1.15	1.15	1.15
17	1.15	1.15	1.15
18	1.15	1.15	1.15
19	1.15	1.15	1.15
20	1.15	1.15	1.15



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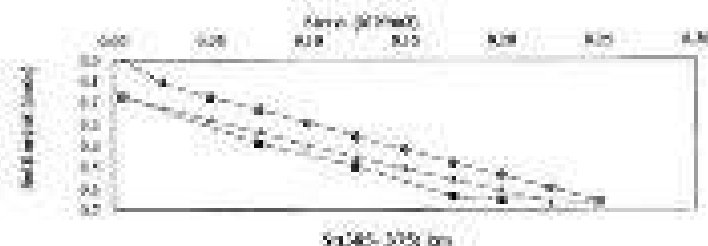


Fig. 3. Load (kg) vs. Distance (km) for three different loading rates. The graph shows the load and distance loading rates.

- Actual load from the first loading rate
- Actual load from the second loading rate
- Actual load from the third loading rate
- Difference between the actual and the theoretical load



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Building category	Load (kN/m ²)	Normal design load (kN/m ²)	Self-imposed load (kN/m ²)
1	1.5	0.005	0.00
2	2.0	0.005	0.00
3	2.5	0.005	0.00
4	3.0	0.005	0.00
5	3.5	0.005	0.00
6	4.0	0.005	0.00
7	4.5	0.005	0.00
8	5.0	0.005	0.00
9	5.5	0.005	0.00
10	6.0	0.005	0.00
11	6.5	0.005	0.00
12	7.0	0.005	0.00
13	7.5	0.005	0.00
14	8.0	0.005	0.00
15	8.5	0.005	0.00
16	9.0	0.005	0.00
17	9.5	0.005	0.00
18	10.0	0.005	0.00
19	10.5	0.005	0.00
20	11.0	0.005	0.00

1. **NAME** _____

Learning stage no.	Unit 1 (%)	Intermediate (%)	Subsequent learning stage (%)
11	1.2	0.05	0.26
12	1.0	0.05	0.21
13	1.0	0.05	0.27
14	1.0	0.05	0.23
15	1.0	0.05	0.29
16	1.0	0.05	0.25
17	1.0	0.05	0.28
18	1.0	0.05	0.26
19	1.0	0.05	0.27

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

Expenditure	1st January 2007	31st December 2007
Revenue	100	100
Capital	100	100
Total	200	200



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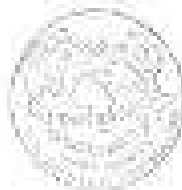
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ACTIVIDADES DE INSPECCIÓN INTERNA Y DE LABORATORIOS



Fig. 4 Load reduction curves. Loading curves are defined in Table 1 from Table 17 for the first and second loading cycle.

- Maximum load reduction in loading cycle
- Maximum load reduction in loading cycle
- Maximum load reduction in loading cycle
- Maximum load reduction in loading cycle



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International Regulatory System of Authorities For Petroleum under ICAO (ICAO-IRIS) and IATA (IATA-IRIS) and ICAO (ICAO-IRIS) under ICAO (ICAO-IRIS)

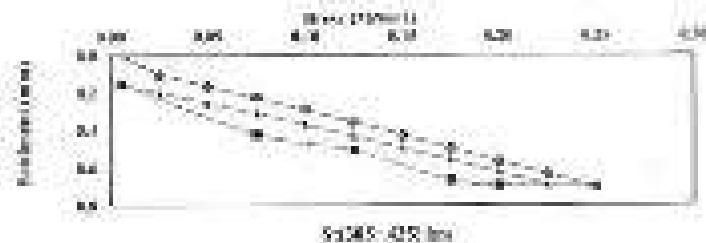


Fig. 1: Fuel consumption (kg/hr) vs. SFC (kg/hr) according to Table 10 and Table 20 for the first and second fueling system

- 1. High speed engine (HSE)
- 2. High speed engine (HSE) with fuel injection
- 3. High speed engine (HSE) with fuel injection and fuel injection
- 4. High speed engine (HSE) with fuel injection and fuel injection



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Accredited for ISO 9001:2015 and ISO 17025 for the reference number 04. 04.001-03-0002
 Accredited for a Regulatory Technical Specification (RTS) (ENAC) number 04. 03.0003-04

ABBREVIATION

mm

Table 23: Conversion table for the loading system (continued)

Loading stage no.	Load (kg)	Normal stress (MPa)	Deformation of the plate (mm)
1	1.1	1.00	0.00
2	1.1	1.00	0.1
3	1.1	1.00	0.2
4	1.1	1.00	0.3
5	1.1	1.00	0.4
6	1.1	1.00	0.5
7	1.1	1.00	0.6
8	1.1	1.00	0.7
9	1.1	1.00	0.8
10	1.1	1.00	0.9
11	1.1	1.00	1.0
12	1.1	1.00	1.1
13	1.1	1.00	1.2
14	1.1	1.00	1.3
15	1.1	1.00	1.4
16	1.1	1.00	1.5
17	1.1	1.00	1.6
18	1.1	1.00	1.7
19	1.1	1.00	1.8
20	1.1	1.00	1.9
21	1.1	1.00	2.0

Table 24: Conversion table for the loading system

Loading stage no.	Load (kg)	Normal stress (MPa)	Deformation of the plate (mm)
1	1.1	1.00	0.00
2	1.1	1.00	0.1
3	1.1	1.00	0.2
4	1.1	1.00	0.3
5	1.1	1.00	0.4
6	1.1	1.00	0.5
7	1.1	1.00	0.6
8	1.1	1.00	0.7
9	1.1	1.00	0.8
10	1.1	1.00	0.9
11	1.1	1.00	1.0
12	1.1	1.00	1.1
13	1.1	1.00	1.2
14	1.1	1.00	1.3
15	1.1	1.00	1.4
16	1.1	1.00	1.5
17	1.1	1.00	1.6
18	1.1	1.00	1.7
19	1.1	1.00	1.8
20	1.1	1.00	1.9
21	1.1	1.00	2.0

Table 25: Conversion table for the loading system

Parameter	Unit	Value
Load (kg)	kg	1.1
Load (N)	N	10.8
Load (kN)	kN	0.011
Load (MN)	MN	0.000011
Load (GPa)	GPa	0.000000011
Load (T)	T	0.0000000011



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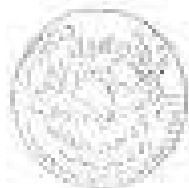
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Accreditation - Equivalence of national standards (ISO/IEC) - under the COMIBASSAL system



Fig. 1. Moisture ratio and moisture content for different samples under the COMIBASSAL system

- 1. Moisture ratio from the first sample
- 2. Moisture ratio from the second sample
- 3. Moisture ratio from the third sample
- 4. Moisture ratio from the fourth sample



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E-mail address: shawn@uic.edu (S. J. Shettleworth).

Abstract

100

FIGURE 10 *Estimated values for the 1990-1991 season*

Country/region	2012 GDP (\$)	Domestic credit to business (\$Billion)	As % percent of GDP (2012)
1	1,154	1,081	93%
2	1,111	1,051	94%
3	841.4	800	95%
4	1,111	1,081	97%
5	801.8	770	96%
6	1,111	1,081	97%
7	1,111	1,081	97%
8	1,111	1,081	97%
9	1,111	1,081	97%
10	1,111	1,081	97%
11	1,111	1,081	97%
12	1,111	1,081	97%
13	1,111	1,081	97%
14	1,111	1,081	97%
15	1,111	1,081	97%
16	1,111	1,081	97%
17	1,111	1,081	97%
18	1,111	1,081	97%
19	1,111	1,081	97%
20	1,111	1,081	97%
21	1,111	1,081	97%
22	1,111	1,081	97%
23	1,111	1,081	97%
24	1,111	1,081	97%
25	1,111	1,081	97%
26	1,111	1,081	97%
27	1,111	1,081	97%
28	1,111	1,081	97%
29	1,111	1,081	97%
30	1,111	1,081	97%
31	1,111	1,081	97%
32	1,111	1,081	97%
33	1,111	1,081	97%
34	1,111	1,081	97%
35	1,111	1,081	97%
36	1,111	1,081	97%
37	1,111	1,081	97%
38	1,111	1,081	97%
39	1,111	1,081	97%
40	1,111	1,081	97%
41	1,111	1,081	97%
42	1,111	1,081	97%
43	1,111	1,081	97%
44	1,111	1,081	97%
45	1,111	1,081	97%
46	1,111	1,081	97%
47	1,111	1,081	97%
48	1,111	1,081	97%
49	1,111	1,081	97%
50	1,111	1,081	97%
51	1,111	1,081	97%
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59	1,111	1,081	97%
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61	1,111	1,081	97%
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63	1,111	1,081	97%
64	1,111	1,081	97%
65	1,111	1,081	97%
66	1,111	1,081	97%
67	1,111	1,081	97%
68	1,111	1,081	97%
69	1,111	1,081	97%
70	1,111	1,081	97%
71	1,111	1,081	97%
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82	1,111	1,081	97%
83	1,111	1,081	97%
84	1,111	1,081	97%
85	1,111	1,081	97%
86	1,111	1,081	97%
87	1,111	1,081	97%
88	1,111	1,081	97%
89	1,111	1,081	97%
90	1,111	1,081	97%
91	1,111	1,081	97%
92	1,111	1,081	97%
93	1,111	1,081	97%
94	1,111	1,081	97%
95	1,111	1,081	97%
96	1,111	1,081	97%
97	1,111	1,081	97%
98	1,111	1,081	97%
99	1,111	1,081	97%
100	1,111	1,081	97%

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Leaflet size (m)	Leaflet area (m ²)	Number of leaves (n) collected	Number of leaflets given (n)
0	0.00	0.00	0.00
1	0.01	0.01	0.01
2	0.04	0.04	0.04
3	0.09	0.09	0.09
4	0.16	0.16	0.16
5	0.25	0.25	0.25
6	0.36	0.36	0.36
7	0.49	0.49	0.49
8	0.64	0.64	0.64
9	0.81	0.81	0.81
10	1.00	1.00	1.00

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

	Pre-merger	Post-merger
Operating Assets	\$7.90	\$8.00
Goodwill	\$0.00	\$0.00
Intangible Assets	\$0.00	\$0.00
Total Intangible Assets	\$0.00	\$0.00
Total Intangible Assets as % of Operating Assets	0.0%	0.0%



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10. Subsequent to release from the first training trial, subjects were placed in the arena again, and the following trials were conducted from the subject's starting point:
- a. "Unfamiliar" trials
 - b. "Revisit" trials (5 trials)



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COMIBASSAL International Controllers Internal inspection and laboratories section

Inspected by: 18/09/2022 and 19/09/2022 for the values under the 104/2019-0003
Authorized by: 18/09/2022 and 19/09/2022 for the values under the 104/2019-0003

18/09/2022 and 19/09/2022

155

Table 10: Processed values for the loading and unloading cycle

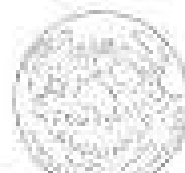
Loading cycle no.	Load (kg)	Actual unloading value	Unprocessed loading value (kg)
1	10.00	1.000	1.00
2	10.00	1.000	1.00
3	10.00	1.000	1.00
4	10.00	1.000	1.00
5	10.00	1.000	1.00
6	10.00	1.000	1.00
7	10.00	1.000	1.00
8	10.00	1.000	1.00
9	10.00	1.000	1.00
10	10.00	1.000	1.00
11	10.00	1.000	1.00
12	10.00	1.000	1.00
13	10.00	1.000	1.00
14	10.00	1.000	1.00
15	10.00	1.000	1.00

Table 11: Processed values for the unloading cycle

Loading cycle no.	Load (kg)	Actual unloading value	Unprocessed loading value (kg)
1	10.00	1.000	1.00
2	10.00	1.000	1.00
3	10.00	1.000	1.00
4	10.00	1.000	1.00
5	10.00	1.000	1.00
6	10.00	1.000	1.00
7	10.00	1.000	1.00
8	10.00	1.000	1.00
9	10.00	1.000	1.00
10	10.00	1.000	1.00
11	10.00	1.000	1.00
12	10.00	1.000	1.00
13	10.00	1.000	1.00
14	10.00	1.000	1.00
15	10.00	1.000	1.00

Table 12: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
Actual (kg)	10.00	10.00
Unprocessed	1.00	1.00
Unprocessed (kg)	1.00	1.00
Unprocessed (kg)	1.00	1.00
Unprocessed (kg)	1.00	1.00
Unprocessed (kg)	1.00	1.00



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18/09/2022 - 19/09/2022



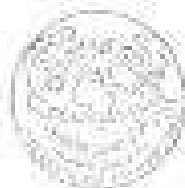
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Fig. 10: Load factor (in %) vs. Stress (MPa) according to Table 28 and Table 29 for other flow and extreme loading cycles

- (a) 100% loading cycle from the first loading cycle
- (b) 100% loading cycle from the second loading cycle
- (c) 100% loading cycle from the third loading cycle
- (d) 100% loading cycle from the fourth loading cycle



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Authorized by Egyptian Accreditation Council (EASAC) under No. 002/06/2014

Conclusion:

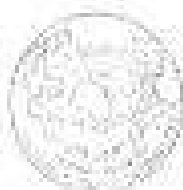
The presented results which were obtained from the performance tests of the studied and analyzed tested types within the SCV systems inside project 11 included from 02/05/2015 to 12/08/2015 in accordance to the German standard, DIN 154 (1.3) is illustrated in table (1).

Table (1) - Test results

Condition	$P_{\text{v2/100}}/(\text{m}^3/\text{hr})$	$P_{\text{v2/100}}/(\text{m}^3/\text{hr})$	$P_{\text{v2/100}}$ ratio
20/200+270 bar	154.54	182.66	1.17
20/200+300 bar	164.28	179.21	1.09
20/200+320 bar	176.33	186.88	1.04
20/200+350 bar	207.23	208.04	1.14
20/200+400 bar	285.30	304.23	1.10
20/200+450 bar	371.43	397.62	1.10
20/200+500 bar	458.34	483.53	1.05
20/200+550 bar	578.75	583.09	1.02
20/200+600 bar	675.67	694.14	1.03
20/200+650 bar	774.43	808.07	1.17

Lab Director

Eng. / Elwan Khalil



Controlled Document
Rev. 01

Dr. / Mohamed Mostafa Bailey

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Authorized by Egyptian Council of Scientific Research under No. 24/2013-CP-EGAL
and verified by Egyptian Council of Scientific Research (EGAS) under No. 23/2016-CA

Technical report of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة عبد السلام مكي القنطرة
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Subballast layer (2)
Station	:	S(385+025) to S(385+250)
Date of Test	:	11/06/2023
QC	:	1389

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Accredited by Egyptian Ministry of Planning and Economic Development under No. 144 (19-10-2019)
Accredited by Egyptian Accreditation Authority (EAA) under No. 008/2019/14

Introduction

The Plate Load test is designed to determine the vertical deformation and strength characteristics of soil by measuring the force and amount of penetration into the soil when a rigid plate is made to penetrate the soil.

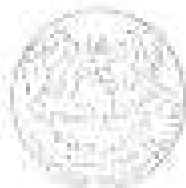
The test is performed on the native soil according to the main specifications EN 15318.

Test methods

- 1- The system standard EN 15318 was applied to define the apparatus used, the loading system, test conditions, and procedure for plate load test.
- 2- Loading plates with a diameter of 600 mm have a thickness of 20 mm and are prepared with equally spaced radial ribs with cross section parallel to the plate surface. Two 100 mm plates to be placed on top of it.
- 3- The loading system consisted of a hydraulic cylinder connected to a hydraulic jack of 100 ton capacity, which is capable of applying and releasing the load stages.
- 4- The dial gauge used to measure the displacement system has a resolution of 0.002 mm and the lower scale was adjusted to 0.
- 5- The temperature of the floor of the test was 20°C.
- 6- The plate was placed on a uniform loading area. The test set-up was leveled and the plate was leveled on this surface.
- 7- The hydraulic jack was placed on the specified, and at the same time, the loading plate beneath the reaction loading system and secured against lifting.
- 8- The reaction loading system was a heavy multi-point reaction frame (more than 20 tons).

Description of experiment

- 1- Loading, unloading and reloading stages were applied according to EN 15318 for the plate load test to get the desired load of 200 kN.
- 2- Prior to the test, the force transducer and dial gauge were calibrated, after which a total test applied corresponding to a load of 0.05 MPa was.
- 3- In the first loading cycle, the load was increased until a normal stress of 0.25 MPa (250 kPa) was reached, and the loading was increased up to 0.5 MPa (500 kPa). The load was released to four stages.
- 4- Following unloading, a further second loading cycle was started until, in effect, the load was increased only to the previous stage of the first cycle.



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COMIBASSAL International Controllers **Internal inspection and laboratories sector**

Accredited by: Egyptian General Authority for Quality Control and Assurance (EGQA) No. 100/2015
 Accredited by: Egyptian Association of Accredited Control (EAAC) under No. 001/2015/EA

ISIRI-001-1/15

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Table 1: Chemical analysis for Lead (Pb) in 100% acrylonitrile butadiene

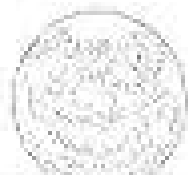
Sampling step no.	Lead (Pb) %	Maximum value for Pb (%)	Maximum of Lead (Pb) %
1	1.91	1.91	1.91
2	1.84	1.84	1.84
3	1.84	1.84	1.84
4	1.84	1.84	1.84
5	1.84	1.84	1.84
6	1.84	1.84	1.84
7	1.84	1.84	1.84
8	1.84	1.84	1.84
9	1.84	1.84	1.84
10	1.84	1.84	1.84
11	1.84	1.84	1.84
12	1.84	1.84	1.84
13	1.84	1.84	1.84
14	1.84	1.84	1.84
15	1.84	1.84	1.84
16	1.84	1.84	1.84
17	1.84	1.84	1.84
18	1.84	1.84	1.84
19	1.84	1.84	1.84
20	1.84	1.84	1.84

Table 2: Chemical analysis for Cadmium (Cd) in 100% acrylonitrile butadiene

Sampling step no.	Cadmium (Cd) %	Maximum value for Cd (%)	Maximum of Cadmium (Cd) %
1	0.04	0.04	0.04
2	0.04	0.04	0.04
3	0.04	0.04	0.04
4	0.04	0.04	0.04
5	0.04	0.04	0.04
6	0.04	0.04	0.04
7	0.04	0.04	0.04
8	0.04	0.04	0.04
9	0.04	0.04	0.04
10	0.04	0.04	0.04
11	0.04	0.04	0.04
12	0.04	0.04	0.04
13	0.04	0.04	0.04
14	0.04	0.04	0.04
15	0.04	0.04	0.04
16	0.04	0.04	0.04
17	0.04	0.04	0.04
18	0.04	0.04	0.04
19	0.04	0.04	0.04
20	0.04	0.04	0.04

Table 3: Chemical analysis for Nickel (Ni) in 100% acrylonitrile butadiene

Sampling step no.	Nickel (Ni) %	Maximum value for Ni (%)	Maximum of Nickel (Ni) %
1	0.04	0.04	0.04
2	0.04	0.04	0.04
3	0.04	0.04	0.04
4	0.04	0.04	0.04
5	0.04	0.04	0.04
6	0.04	0.04	0.04
7	0.04	0.04	0.04
8	0.04	0.04	0.04
9	0.04	0.04	0.04
10	0.04	0.04	0.04
11	0.04	0.04	0.04
12	0.04	0.04	0.04
13	0.04	0.04	0.04
14	0.04	0.04	0.04
15	0.04	0.04	0.04
16	0.04	0.04	0.04
17	0.04	0.04	0.04
18	0.04	0.04	0.04
19	0.04	0.04	0.04
20	0.04	0.04	0.04



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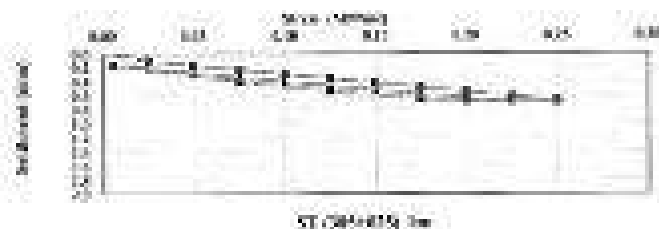


Fig. 1. Sedimentation curve, showing data as recorded in Table 1 and Table 2 for the test and control testing system

- Sedimentation rate 1.0 mm/min
- Sedimentation rate 0.5 mm/min
- ▲ Sedimentation rate 0.2 mm/min
- Sedimentation rate 0.1 mm/min
- Sedimentation rate 0.05 mm/min



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 Accredited by : Egyptian Accreditation Council (EGAC) under No. 0000000000

TABLE 1

mm

Table 1: Laboratory work for internal quality and safety inspection

Sampling degree	Level 25 mm	Number of samples per unit	Number of internal sampling points per unit
1	12.5	0.05	0.05
2	12.5	0.10	0.10
3	12.5	0.15	0.15
4	12.5	0.20	0.20
5	12.5	0.25	0.25
6	12.5	0.30	0.30
7	12.5	0.35	0.35
8	12.5	0.40	0.40
9	12.5	0.45	0.45
10	12.5	0.50	0.50
11	12.5	0.55	0.55
12	12.5	0.60	0.60
13	12.5	0.65	0.65
14	12.5	0.70	0.70
15	12.5	0.75	0.75
16	12.5	0.80	0.80
17	12.5	0.85	0.85
18	12.5	0.90	0.90
19	12.5	0.95	0.95
20	12.5	1.00	1.00

Table 2: Laboratory work for internal quality and safety inspection

Sampling degree	Level 25 mm	Number of samples per unit	Number of internal sampling points per unit
1	12.5	0.05	0.05
2	12.5	0.10	0.10
3	12.5	0.15	0.15
4	12.5	0.20	0.20
5	12.5	0.25	0.25
6	12.5	0.30	0.30
7	12.5	0.35	0.35
8	12.5	0.40	0.40
9	12.5	0.45	0.45
10	12.5	0.50	0.50
11	12.5	0.55	0.55
12	12.5	0.60	0.60
13	12.5	0.65	0.65
14	12.5	0.70	0.70
15	12.5	0.75	0.75
16	12.5	0.80	0.80
17	12.5	0.85	0.85
18	12.5	0.90	0.90
19	12.5	0.95	0.95
20	12.5	1.00	1.00

Table 3: Laboratory work for internal quality and safety inspection

Sampling degree	Level 25 mm	Number of samples per unit	Number of internal sampling points per unit
1	12.5	0.05	0.05
2	12.5	0.10	0.10
3	12.5	0.15	0.15
4	12.5	0.20	0.20
5	12.5	0.25	0.25
6	12.5	0.30	0.30
7	12.5	0.35	0.35
8	12.5	0.40	0.40
9	12.5	0.45	0.45
10	12.5	0.50	0.50
11	12.5	0.55	0.55
12	12.5	0.60	0.60
13	12.5	0.65	0.65
14	12.5	0.70	0.70
15	12.5	0.75	0.75
16	12.5	0.80	0.80
17	12.5	0.85	0.85
18	12.5	0.90	0.90
19	12.5	0.95	0.95
20	12.5	1.00	1.00



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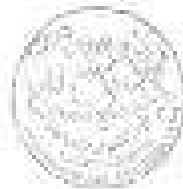
COMIBASSAL International Controllers Internal inspection and laboratories sector

Accreditation & Regulatory Demand of Authority for Participation under the ICAO in 2016
Accreditation & Regulatory Demand of Authority for Participation under the ICAO in 2016



Fig. 1: Graph showing the relationship between the number of controllers and the number of airports.

- International airports from the first level of the
- International airports from the second level of the
- International airports from the third level of the
- International airports from the fourth level of the
- International airports from the fifth level of the



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ICAO - International Civil Aviation Organization
EASA - European Aviation Safety Agency
ECAA - European Civil Aviation Conference
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COMIBASSAL International Controllers **Internal inspection and laboratories sector**

Approved by the General Assembly for the first time under No. 10/2010, with amendments by the General Assembly under No. 10/2011 and No. 10/2012

Table 1: Internal inspection and laboratories sector

Unit: USD

Table 1: Internal inspection and laboratories sector

Country (kg/ha)	Unit (kg/ha)	Internal inspection (kg/ha)	Internal inspection (kg/ha)
1	1.00	1.00	1.00
2	2.00	2.00	2.00
3	3.00	3.00	3.00
4	4.00	4.00	4.00
5	5.00	5.00	5.00
6	6.00	6.00	6.00
7	7.00	7.00	7.00
8	8.00	8.00	8.00
9	9.00	9.00	9.00
10	10.00	10.00	10.00
11	11.00	11.00	11.00
12	12.00	12.00	12.00
13	13.00	13.00	13.00
14	14.00	14.00	14.00
15	15.00	15.00	15.00
16	16.00	16.00	16.00
17	17.00	17.00	17.00
18	18.00	18.00	18.00
19	19.00	19.00	19.00
20	20.00	20.00	20.00

Table 2: Internal inspection and laboratories sector

Country (kg/ha)	Unit (kg/ha)	Internal inspection (kg/ha)	Internal inspection (kg/ha)
1	1.00	1.00	1.00
2	2.00	2.00	2.00
3	3.00	3.00	3.00
4	4.00	4.00	4.00
5	5.00	5.00	5.00
6	6.00	6.00	6.00
7	7.00	7.00	7.00
8	8.00	8.00	8.00
9	9.00	9.00	9.00
10	10.00	10.00	10.00
11	11.00	11.00	11.00
12	12.00	12.00	12.00
13	13.00	13.00	13.00
14	14.00	14.00	14.00
15	15.00	15.00	15.00
16	16.00	16.00	16.00
17	17.00	17.00	17.00
18	18.00	18.00	18.00
19	19.00	19.00	19.00
20	20.00	20.00	20.00

Table 3: Internal inspection and laboratories sector

Country (kg/ha)	Unit (kg/ha)	Internal inspection (kg/ha)	Internal inspection (kg/ha)
1	1.00	1.00	1.00
2	2.00	2.00	2.00
3	3.00	3.00	3.00
4	4.00	4.00	4.00
5	5.00	5.00	5.00
6	6.00	6.00	6.00
7	7.00	7.00	7.00
8	8.00	8.00	8.00
9	9.00	9.00	9.00
10	10.00	10.00	10.00
11	11.00	11.00	11.00
12	12.00	12.00	12.00
13	13.00	13.00	13.00
14	14.00	14.00	14.00
15	15.00	15.00	15.00
16	16.00	16.00	16.00
17	17.00	17.00	17.00
18	18.00	18.00	18.00
19	19.00	19.00	19.00
20	20.00	20.00	20.00



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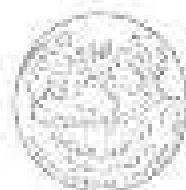
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Accreditation: ISO 9001:2015 (scope: All services) Accreditation number: 04-0274-01-008
Accreditation: ISO 17025:2017 (scope: All services) Accreditation number: 04-0274-01-008



Fig. 3. Graph of the relationship between the number of controllers and the number of internal inspections

- Number of internal inspections for the internal inspection system
- Number of internal inspections for the external inspection system
- Number of internal inspections for the internal and external inspection system



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Approved by a Regulatory Board of Authority for Metrology under the number 11/2019
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Internal inspection
 100%

Table 1: Parameters for the testing and measurement

Testing type	Test type	Value of the parameter	Value of the parameter
1	1.1	1.1	1.1
2	1.2	1.2	1.2
3	1.3	1.3	1.3
4	1.4	1.4	1.4
5	1.5	1.5	1.5
6	1.6	1.6	1.6
7	1.7	1.7	1.7
8	1.8	1.8	1.8
9	1.9	1.9	1.9
10	2.0	2.0	2.0
11	2.1	2.1	2.1
12	2.2	2.2	2.2
13	2.3	2.3	2.3
14	2.4	2.4	2.4
15	2.5	2.5	2.5
16	2.6	2.6	2.6
17	2.7	2.7	2.7
18	2.8	2.8	2.8
19	2.9	2.9	2.9
20	3.0	3.0	3.0

Table 2: Parameters for the testing and measurement

Testing type	Test type	Value of the parameter	Value of the parameter
1	1.1	1.1	1.1
2	1.2	1.2	1.2
3	1.3	1.3	1.3
4	1.4	1.4	1.4
5	1.5	1.5	1.5
6	1.6	1.6	1.6
7	1.7	1.7	1.7
8	1.8	1.8	1.8
9	1.9	1.9	1.9
10	2.0	2.0	2.0
11	2.1	2.1	2.1
12	2.2	2.2	2.2
13	2.3	2.3	2.3
14	2.4	2.4	2.4
15	2.5	2.5	2.5
16	2.6	2.6	2.6
17	2.7	2.7	2.7
18	2.8	2.8	2.8
19	2.9	2.9	2.9
20	3.0	3.0	3.0

Table 3: Parameters for the testing and measurement

Testing type	Test type	Value of the parameter	Value of the parameter
1	1.1	1.1	1.1
2	1.2	1.2	1.2
3	1.3	1.3	1.3
4	1.4	1.4	1.4
5	1.5	1.5	1.5
6	1.6	1.6	1.6
7	1.7	1.7	1.7
8	1.8	1.8	1.8
9	1.9	1.9	1.9
10	2.0	2.0	2.0
11	2.1	2.1	2.1
12	2.2	2.2	2.2
13	2.3	2.3	2.3
14	2.4	2.4	2.4
15	2.5	2.5	2.5
16	2.6	2.6	2.6
17	2.7	2.7	2.7
18	2.8	2.8	2.8
19	2.9	2.9	2.9
20	3.0	3.0	3.0

Table 4: Parameters for the testing and measurement

Testing type	Test type	Value of the parameter	Value of the parameter
1	1.1	1.1	1.1
2	1.2	1.2	1.2
3	1.3	1.3	1.3
4	1.4	1.4	1.4
5	1.5	1.5	1.5
6	1.6	1.6	1.6
7	1.7	1.7	1.7
8	1.8	1.8	1.8
9	1.9	1.9	1.9
10	2.0	2.0	2.0
11	2.1	2.1	2.1
12	2.2	2.2	2.2
13	2.3	2.3	2.3
14	2.4	2.4	2.4
15	2.5	2.5	2.5
16	2.6	2.6	2.6
17	2.7	2.7	2.7
18	2.8	2.8	2.8
19	2.9	2.9	2.9
20	3.0	3.0	3.0

Table 5: Parameters for the testing and measurement

Testing type	Test type	Value of the parameter	Value of the parameter
1	1.1	1.1	1.1
2	1.2	1.2	1.2
3	1.3	1.3	1.3
4	1.4	1.4	1.4
5	1.5	1.5	1.5
6	1.6	1.6	1.6
7	1.7	1.7	1.7
8	1.8	1.8	1.8
9	1.9	1.9	1.9
10	2.0	2.0	2.0
11	2.1	2.1	2.1
12	2.2	2.2	2.2
13	2.3	2.3	2.3
14	2.4	2.4	2.4
15	2.5	2.5	2.5
16	2.6	2.6	2.6
17	2.7	2.7	2.7
18	2.8	2.8	2.8
19	2.9	2.9	2.9
20	3.0	3.0	3.0

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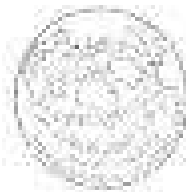
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Accreditation e Regulação Demand Authority (SINAC) sector (Nº 008.000404)



Fig. 4. Evolution of values, during values according to Table 30 and Table 32 for the first and second loading cycle

- Inspection control described in the graph
- ▲ Inspection control described in the graph
- ◆ Inspection control described in the graph
- Inspection control
- Inspection control



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 (United States Petroleum Association account) (U.S.P.A.) under No. 4100-1-1000

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Table 1. Summary of steps for development of the model.

Learning Strategy	Mean (s.d.) N=30	Normal distribution mean (s.d.) N=30	Significance of learning pattern by gender
1	1.2 (1.1)	0.000	0.000
2	1.00 (1.00)	0.000	0.000
3	1.5 (1.1)	0.000	0.000
4	1.4 (1.0)	0.000	0.000
5	1.0 (1.0)	0.000	0.000
6	1.0 (1.0)	0.000	0.000
7	1.0 (1.0)	0.000	0.000
8	1.0 (1.0)	0.000	0.000
9	1.0 (1.0)	0.000	0.000
10	1.0 (1.0)	0.000	0.000
11	1.0 (1.0)	0.000	0.000
12	1.0 (1.0)	0.000	0.000
13	1.0 (1.0)	0.000	0.000
14	1.0 (1.0)	0.000	0.000
15	1.0 (1.0)	0.000	0.000
16	1.0 (1.0)	0.000	0.000
17	1.0 (1.0)	0.000	0.000
18	1.0 (1.0)	0.000	0.000
19	1.0 (1.0)	0.000	0.000
20	1.0 (1.0)	0.000	0.000
21	1.0 (1.0)	0.000	0.000
22	1.0 (1.0)	0.000	0.000
23	1.0 (1.0)	0.000	0.000
24	1.0 (1.0)	0.000	0.000
25	1.0 (1.0)	0.000	0.000
26	1.0 (1.0)	0.000	0.000
27	1.0 (1.0)	0.000	0.000
28	1.0 (1.0)	0.000	0.000
29	1.0 (1.0)	0.000	0.000
30	1.0 (1.0)	0.000	0.000

Table 1. *Summary of the study*

Leading edge on	Last 10 m	Vertical stress path (kN/m ²)	Amplitude of vertical stress σ_v (kN/m ²)
11	1.813	0.000	0.00
12	1.80	0.000	0.00
13	1.843	0.000	0.00
14	1.843	0.000	0.00
15	1.840	0.000	0.00
16	1.837	0.000	0.00
17	1.843	0.000	0.00
18	1.840	0.000	0.00
19	1.843	0.000	0.00

11. *Journal of the American Medical Association*, 277:1033-1034, 1997

[illegible]

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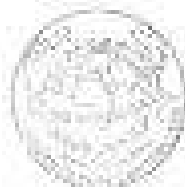
COMIBASSAL International Controllers Internal inspection and laboratories sector

Information by all parties General assembly and technical committee under the guidance of the
Administrative and Regulatory Committee of the sector (ARCA) under the direction of



Fig. 1. Relationship between the ratio of the area of the sector to the area of the circle (S/S0) and the ratio of the radius of the sector to the radius of the circle (R/R0).

- Relationship between the ratio of the area of the sector to the area of the circle (S/S0) and the ratio of the radius of the sector to the radius of the circle (R/R0) for the first and second loading points
- Relationship between the ratio of the area of the sector to the area of the circle (S/S0) and the ratio of the radius of the sector to the radius of the circle (R/R0) for the first and second loading points
- ▲ Relationship between the ratio of the area of the sector to the area of the circle (S/S0) and the ratio of the radius of the sector to the radius of the circle (R/R0) for the first and second loading points



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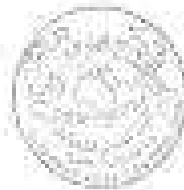
COMIBASSAL International Controllers Internal inspection and laboratories sector

Authorized by Egyptian General Authority for Petroleum under No. 245 (E-G-100)
Authorized by Egyptian Ministry of Petroleum under No. 008/2008



Fig. 4: Evaporation Loss (%) vs. Volume of Fuel (m³) for the first and second loading cycle

- Diesel
- Gasoline
- ▲ Kerosene
- ◆ Jet A-1



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COMIBASSAL International Controllers Internal inspection and laboratories sector

Asociación Interamericana de Controladores Internos y Laboratorios
Interamerican Association of Internal Controllers and Laboratories

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Table 10. Internal inspection and laboratories sector

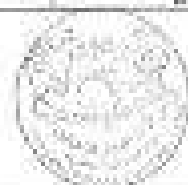
Country/region no.	Area (%)	Performance (p.p.)	Efficiency of facilities (p.p.)
1	1.00	0.00	0.00
2	1.00	0.00	0.00
3	1.00	0.00	0.00
4	1.00	0.00	0.00
5	1.00	0.00	0.00
6	1.00	0.00	0.00
7	1.00	0.00	0.00
8	1.00	0.00	0.00
9	1.00	0.00	0.00
10	1.00	0.00	0.00
11	1.00	0.00	0.00
12	1.00	0.00	0.00
13	1.00	0.00	0.00
14	1.00	0.00	0.00
15	1.00	0.00	0.00
16	1.00	0.00	0.00
17	1.00	0.00	0.00
18	1.00	0.00	0.00
19	1.00	0.00	0.00
20	1.00	0.00	0.00

Table 11. Internal inspection and laboratories sector

Country/region no.	Area (%)	Performance (p.p.)	Efficiency of facilities (p.p.)
21	1.00	0.00	0.00
22	1.00	0.00	0.00
23	1.00	0.00	0.00
24	1.00	0.00	0.00
25	1.00	0.00	0.00
26	1.00	0.00	0.00
27	1.00	0.00	0.00
28	1.00	0.00	0.00
29	1.00	0.00	0.00
30	1.00	0.00	0.00
31	1.00	0.00	0.00
32	1.00	0.00	0.00
33	1.00	0.00	0.00
34	1.00	0.00	0.00
35	1.00	0.00	0.00

Table 12. Consolidation of results

Country/region no.	Area (%)	Performance (p.p.)	Efficiency of facilities (p.p.)
36	1.00	0.00	0.00
37	1.00	0.00	0.00
38	1.00	0.00	0.00
39	1.00	0.00	0.00
40	1.00	0.00	0.00
41	1.00	0.00	0.00
42	1.00	0.00	0.00
43	1.00	0.00	0.00
44	1.00	0.00	0.00
45	1.00	0.00	0.00
46	1.00	0.00	0.00
47	1.00	0.00	0.00
48	1.00	0.00	0.00
49	1.00	0.00	0.00
50	1.00	0.00	0.00
51	1.00	0.00	0.00
52	1.00	0.00	0.00
53	1.00	0.00	0.00
54	1.00	0.00	0.00
55	1.00	0.00	0.00
56	1.00	0.00	0.00
57	1.00	0.00	0.00
58	1.00	0.00	0.00
59	1.00	0.00	0.00
60	1.00	0.00	0.00
61	1.00	0.00	0.00
62	1.00	0.00	0.00
63	1.00	0.00	0.00
64	1.00	0.00	0.00
65	1.00	0.00	0.00
66	1.00	0.00	0.00
67	1.00	0.00	0.00
68	1.00	0.00	0.00
69	1.00	0.00	0.00
70	1.00	0.00	0.00
71	1.00	0.00	0.00
72	1.00	0.00	0.00
73	1.00	0.00	0.00
74	1.00	0.00	0.00
75	1.00	0.00	0.00
76	1.00	0.00	0.00
77	1.00	0.00	0.00
78	1.00	0.00	0.00
79	1.00	0.00	0.00
80	1.00	0.00	0.00
81	1.00	0.00	0.00
82	1.00	0.00	0.00
83	1.00	0.00	0.00
84	1.00	0.00	0.00
85	1.00	0.00	0.00
86	1.00	0.00	0.00
87	1.00	0.00	0.00
88	1.00	0.00	0.00
89	1.00	0.00	0.00
90	1.00	0.00	0.00
91	1.00	0.00	0.00
92	1.00	0.00	0.00
93	1.00	0.00	0.00
94	1.00	0.00	0.00
95	1.00	0.00	0.00
96	1.00	0.00	0.00
97	1.00	0.00	0.00
98	1.00	0.00	0.00
99	1.00	0.00	0.00
100	1.00	0.00	0.00



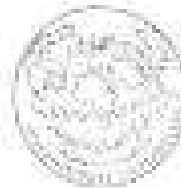
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- ☐ The measured value is the first reading only.
 - ☐ The measured value is the average of 10.
 - ☐ The measured value is the second reading only.
- ✓ (Corrected is not
✓ indicated above answer)



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COMIBASSAL International Controllers **Internal inspection and laboratories sector**

Accredited by a Egyptian Board of Accreditation (EBC) for laboratories and for internal inspection
 Accredited by a Egyptian Accreditation Council (EAC) for internal inspection

Page 1 of 10

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Table 1: Internal inspection for the laboratories internal inspection

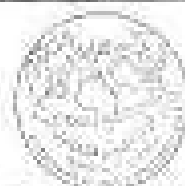
Inspection type	Number of inspections	Number of inspections	Number of inspections
1	1000	1000	1000
2	1000	1000	1000
3	1000	1000	1000
4	1000	1000	1000
5	1000	1000	1000
6	1000	1000	1000
7	1000	1000	1000
8	1000	1000	1000
9	1000	1000	1000
10	1000	1000	1000
11	1000	1000	1000
12	1000	1000	1000
13	1000	1000	1000
14	1000	1000	1000
15	1000	1000	1000
16	1000	1000	1000
17	1000	1000	1000
18	1000	1000	1000
19	1000	1000	1000
20	1000	1000	1000

Table 2: Internal inspection for the laboratories internal inspection

Inspection type	Number of inspections	Number of inspections	Number of inspections
1	1000	1000	1000
2	1000	1000	1000
3	1000	1000	1000
4	1000	1000	1000
5	1000	1000	1000
6	1000	1000	1000
7	1000	1000	1000
8	1000	1000	1000
9	1000	1000	1000
10	1000	1000	1000
11	1000	1000	1000
12	1000	1000	1000
13	1000	1000	1000
14	1000	1000	1000
15	1000	1000	1000
16	1000	1000	1000
17	1000	1000	1000
18	1000	1000	1000
19	1000	1000	1000
20	1000	1000	1000

Table 3: Internal inspection for the laboratories internal inspection

Inspection type	Number of inspections	Number of inspections
1	1000	1000
2	1000	1000
3	1000	1000
4	1000	1000
5	1000	1000
6	1000	1000
7	1000	1000
8	1000	1000
9	1000	1000
10	1000	1000
11	1000	1000
12	1000	1000
13	1000	1000
14	1000	1000
15	1000	1000
16	1000	1000
17	1000	1000
18	1000	1000
19	1000	1000
20	1000	1000



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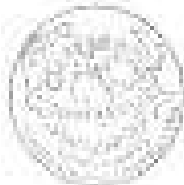
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Accreditation / Registro General A: quality for inspection sector No. 24-2018-E-004
Accreditation / Registro General A: quality for laboratory sector (ISO/IEC) number No. 000000004



Fig. Internal Compressive strength, MPa, curves according to Table 11 and Table 26 for the first and second loading series

- 1) Compressive strength from the first test series
- 2) Compressive strength from the second test series
- 3) Compressive strength from the third test series
- 4) Compressive strength from the fourth test series
- 5) Compressive strength from the fifth test series



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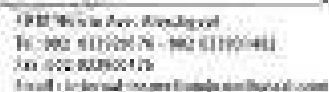
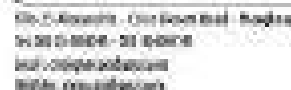
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Ranking stage in	Rank 2012	Ranking stage 2012 followed	Ranking stage 2012 followed
1	1.000	1.000	1.000
2	1.000	1.000	1.000
3	1.000	1.000	1.000
4	1.000	1.000	1.000
5	1.000	1.000	1.000
6	1.000	1.000	1.000
7	1.000	1.000	1.000
8	1.000	1.000	1.000
9	1.000	1.000	1.000
10	1.000	1.000	1.000
11	1.000	1.000	1.000
12	1.000	1.000	1.000
13	1.000	1.000	1.000
14	1.000	1.000	1.000
15	1.000	1.000	1.000
16	1.000	1.000	1.000
17	1.000	1.000	1.000
18	1.000	1.000	1.000
19	1.000	1.000	1.000
20	1.000	1.000	1.000
21	1.000	1.000	1.000
22	1.000	1.000	1.000
23	1.000	1.000	1.000
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25	1.000	1.000	1.000
26	1.000	1.000	1.000
27	1.000	1.000	1.000
28	1.000	1.000	1.000
29	1.000	1.000	1.000
30	1.000	1.000	1.000
31	1.000	1.000	1.000
32	1.000	1.000	1.000
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35	1.000	1.000	1.000
36	1.000	1.000	1.000
37	1.000	1.000	1.000
38	1.000	1.000	1.000
39	1.000	1.000	1.000
40	1.000	1.000	1.000
41	1.000	1.000	1.000
42	1.000	1.000	1.000
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49	1.000	1.000	1.000
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59	1.000	1.000	1.000
60	1.000	1.000	1.000
61	1.000	1.000	1.000
62	1.000	1.000	1.000
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70	1.000	1.000	1.000
71	1.000	1.000	1.000
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73	1.000	1.000	1.000
74	1.000	1.000	1.000
75	1.000	1.000	1.000
76	1.000	1.000	1.000
77	1.000	1.000	1.000
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81	1.000	1.000	1.000
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83	1.000	1.000	1.000
84	1.000	1.000	1.000
85	1.000	1.000	1.000
86	1.000	1.000	1.000
87	1.000	1.000	1.000
88	1.000	1.000	1.000
89	1.000	1.000	1.000
90	1.000	1.000	1.000
91	1.000	1.000	1.000
92	1.000	1.000	1.000
93	1.000	1.000	1.000
94	1.000	1.000	1.00

Learning stage (s)	Learning time (s)	Normal stress (MPa)	Maximum strain of sample
10	1.483	88.02	0.02
20	1.561	89.72	0.03
30	1.638	91.42	0.04
40	1.715	93.12	0.05
50	1.792	94.82	0.06
60	1.870	96.52	0.07
70	1.947	98.22	0.08
80	2.024	99.92	0.09
90	2.102	101.62	0.10
100	2.179	103.32	0.11

Particulars	In Working Capital	Less Working Capital
Inventory (Rs. 100)	100	100
Prepaid Expenses	50	50
Accounts Payable	200	200
Accounts Receivable	150	150
Net Working Capital	500	500





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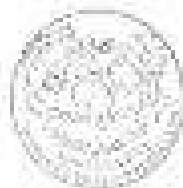
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Fig. 0014-2100 Line

Fig. 0014-2100 Line: Three curves according to table 0014-2100 for the first and second loading cycles

- Subsequent points from the first loading cycle
- Subsequent points from the second loading cycle
- Subsequent points from the third loading cycle
- Subsequent points from the fourth loading cycle
- Subsequent points from the fifth loading cycle



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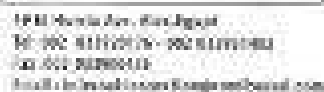
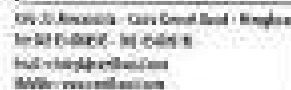


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Transformation no.	Land (m ²)	Normalised $\log_{10}$ values ^a	Retention of feeding parts (mm)
1	1,500	mean	mean
2	2,000	0.000	0.000
3	3,000	0.000	0.000
4	4,000	0.000	0.000
5	5,000	0.000	0.000
6	6,000	0.000	0.000
7	7,000	0.000	0.000
8	8,000	0.000	0.000
9	9,000	0.000	0.000
10	10,000	0.000	0.000
11	11,000	0.000	0.000
12	12,000	0.000	0.000
13	13,000	0.000	0.000
14	14,000	0.000	0.000
15	15,000	0.000	0.000
16	16,000	0.000	0.000
17	17,000	0.000	0.000
18	18,000	0.000	0.000
19	19,000	0.000	0.000
20	20,000	0.000	0.000

Leading eigenvalue	Local D ₁ (s)	Normal mechanical lifetime	Normalized leading eigenvalue
1	1.2	0.001	0.42
2	1.0	0.005	0.34
3	0.9	0.010	0.25
4	0.8	0.016	0.16
5	0.7	0.025	0.11
6	0.6	0.037	0.07
7	0.5	0.056	0.05
8	0.4	0.085	0.03
9	0.3	0.130	0.02

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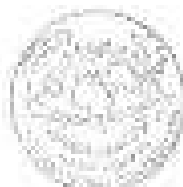
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Fig. 1: Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2) for the first and second reading cycle

- Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2)
- Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2)
- Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2)
- Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2)
- Ratio of the area of the internal inspection and the area of the internal inspection (A1/A2)



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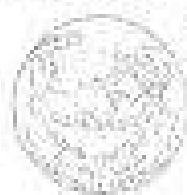
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The present book consideration has a limitation: there is no whole housing policy of the author and no full-fledged theory of the economic system in its proper sense. It is not a book of theory and it is not a book of policy, but it is a book of the German school of thought and it is a book of the German school of thought.

Location	Co1 (MPa/m ²)	Co2 (MPa/m ²)	Co1/Co2 ratio
Co1(200+010) km	174.88	159.87	1.09
Co1(200+020) km	170.84	169.17	1.05
Co1(200+030) km	170.80	156.51	1.15
Co1(200+100) km	162.38	161.24	1.00
Co1(200+120) km	177.05	152.39	1.16
Co1(200+130) km	165.15	168.75	1.08
Co1(200+170) km	164.71	169.60	1.17
Co1(200+180) km	164.36	163.48	1.10
Co1(200+220) km	173.17	161.88	1.19
Co1(200+210) km	173.21	158.17	1.15

Figure 1



Dr. Mohamed Ghannam, Director



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E-mail: info@edg.com

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Contractor Category	Eng. Installation & Maintenance of Electrical Systems	Project or Contract	Installation of Electrical Systems in the School
Contractor Name	Eng. Al-Muhammadiyah	Contract No.	1000000000000000
Contractor Address	Box 1000000000000000	Contract Value	1000000000000000
Contractor Signature	Eng. Al-Muhammadiyah	Contract Date	10/10/2020

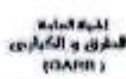
Contractor Category	Eng. Installation & Maintenance of Electrical Systems	Project or Contract	Installation of Electrical Systems in the School
Contractor Name	Eng. Al-Muhammadiyah	Contract No.	1000000000000000
Contractor Address	Box 1000000000000000	Contract Value	1000000000000000
Contractor Signature	Eng. Al-Muhammadiyah	Contract Date	10/10/2020

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Contractor Address	Box 1000000000000000	Contract Value	1000000000000000
Contractor Signature	Eng. Al-Muhammadiyah	Contract Date	10/10/2020
Contractor Category	Eng. Installation & Maintenance of Electrical Systems	Project or Contract	Installation of Electrical Systems in the School
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Contractor Signature	Eng. Al-Muhammadiyah	Contract Date	10/10/2020

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Contractor Address	Box 1000000000000000	Contract Value	1000000000000000
Contractor Signature	Eng. Al-Muhammadiyah	Contract Date	10/10/2020

* For more information, please contact the Ministry of Education.

MATERIAL INSPECTION REQUEST



Contractor Company	Eng. Abdelsalam ElFekher Contracting Co.	Designer Company	(SPECTRUM) Engineering Consulting Office																
Issued by Contractor	Name	Date/Serial Number	Time																
	Eng. Mohamed Ismael	11/6/2023 PLT (15)	12:00 PM																
Received by GARBU CONSULTANT	Eng. Mazen Essamy	MIR	<table border="1"> <tr> <td>CL</td> <td>C2</td> <td>C3</td> <td>DO</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td>385</td> <td>EW</td> <td>CS</td> <td>12</td> <td>6</td> <td>23</td> <td>3</td> <td>0</td> </tr> </table>	CL	C2	C3	DO	MM	YY	HH	MM	385	EW	CS	12	6	23	3	0
CL	C2	C3	DO	MM	YY	HH	MM												
385	EW	CS	12	6	23	3	0												

CODE-1	S1 to S21	D1 to S3	Kp XXX Note
CODE-2	Station Reference	Depot Reference	For Kilometer point only Start Km is used
CODE-3	Work Activity		
CODE-4	Sub Element of Activity		

Description of Materials	AT LAYER (SUB BALLAST 2)				
Location to be Used	From	385+500	TO	386+007.5	
MAR & UIR Approval No	UIR SB (007)	Date	16/5/2023		
	UIR SB (011)		28/5/2023		
	UIR SG (012)		30/3/2023		
	M.A.R.(QT SB 2)		18/5/2023		
Supplier Name					
Test Requirement	PLATE LOAD TEST ON FILL LAYER FERMA	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	PLT BY Comibassal LABORATORY	NUMBER	20	13/6/2023	
2					
3					
4					
Comments by: Eng. Mazen Essamy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allatif (ER)			
1-The Plate Load Test Result by third party is Approved.		1-9 Point was carried- out by (Comibassal) on Sub ballast layer 2-Results report attached and acceptable with project specifications. 3-Final approval is subject to above mentioned comments.			

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismael			A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		15/6	AWC

* Designer

** Alignment/Bridges/Culvert only



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Technical report

of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة عبد السلام القلي للمقاولات
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Subballast layer (2)
Station	:	St(385+525)to st(385+750)
Date of Test	:	12/06/2023
QC	:	1405

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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.

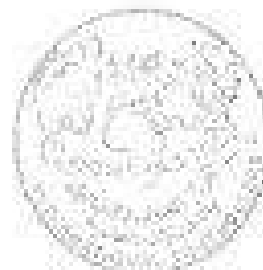
The test is to be carried out on the native soil according to German specifications DIN 18134.

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 diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners 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 hydraulic pump connected to a hydraulic 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°C.
- 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 hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.
- 8- The reaction loading system was a heavy multi-purpose excavator (more than 30 ton).

Description of experiment:

- 1- Loading, unloading and reloading regime were applied according to DIN 18134 for the plate load test to estimate the resilient modulus.
- 2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding 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 increment 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 load was increased only to the penultimate stage of the first cycle.



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

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain rate of loading plate (ε/mm)
1	1.434	0.005	0.05
2	7.81	0.009	0.10
3	14.35	0.009	0.11
4	21.31	0.009	0.22
5	28.26	0.108	0.25
6	35.37	0.125	0.35
7	42.43	0.138	0.41
8	49.47	0.175	0.48
9	56.45	0.208	0.53
10	63.43	0.225	0.61
11	70.41	0.248	0.65
12	77.35	0.268	0.68
13	84.37	0.275	0.68
14	91.31	0.305	0.74
15	98.34	0.333	0.77

Table 1: 2 measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain rate of loading plate (ε/mm)
16	1.435	0.005	0.07
17	7.81	0.005	0.08
18	14.35	0.008	0.11
19	21.31	0.009	0.20
20	28.26	0.108	0.24
21	35.37	0.125	0.35
22	42.43	0.138	0.40
23	49.47	0.175	0.48
24	56.45	0.208	0.53
25	63.43	0.225	0.58

Table 2: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.333	0.290
ϵ_{max} (mm)	0.333	0.211
$\Delta \epsilon$ (mm/215 mm)	1.531	1.080
σ_y (MPa/215 mm ²)	1.075	1.038
σ_{avg} (MPa/215 mm ²)	1.1654	1.0731
Factor	1.02	



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

- Measurement points from the first loading cycle
- Measurement points from the 2nd loading cycle
- Measurement points from the second loading cycle
- Settlement in mm
- σ_v Vertical stress (MPa)



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

Loading stage no.	Load (T) kN	Normal stress (kN/m ²)	Reduction of loading plate N mm ²
0	1.114	0.005	0.00
1	7.07	0.029	0.18
2	14.14	0.058	0.35
3	21.21	0.079	0.52
4	28.28	0.108	0.69
5	35.35	0.129	0.86
6	42.42	0.158	0.98
7	49.49	0.179	1.07
8	56.56	0.208	0.92
9	63.63	0.229	0.98
10	70.7	0.258	0.98
11	77.76	0.288	0.94
12	84.83	0.319	0.92
13	91.89	0.339	0.92
14	98.96	0.379	0.98
15	1.114	0.008	0.15

Table 5: Measured values for several loading cycle

Loading stage no.	Load (T) kN	Normal stress (kN/m ²)	Reduction of loading plate N mm ²
16	1.114	0.005	0.15
18	7.07	0.025	0.51
17	14.14	0.058	0.75
18	21.21	0.079	0.94
19	28.28	0.108	0.98
20	35.35	0.129	0.91
21	42.42	0.158	0.69
22	49.49	0.179	0.75
23	56.56	0.208	0.98
24	63.63	0.229	0.95

Table 6: Comparison of results

Parameter	1st loading cycle	1st unloading cycle
σ_{max} (kN/m ²)	0.258	0.258
Δ_p (mm ²)	0.028	0.141
Δ_p (mm ² /N mm ²)	0.001	0.001
Δ_p (mm ² /N mm ²)	0.002	0.001
Δ_p (mm ² /N mm ²)	0.001	0.001
Δ_p (mm ² /N mm ²)	0.001	0.001

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S1(285)(575) 1054

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Table (1): Allowable values for first loading cycle and unloading cycle

Loading stage no.	Load (P) kN	Normal stress (σ_x) MPa	Settlement of loading plate S (mm)
0	1.414	0.000	0.00
1	7.07	0.014	0.08
2	14.14	0.028	0.15
3	21.21	0.042	0.24
4	28.28	0.056	0.38
5	35.35	0.070	0.50
6	42.42	0.084	0.68
7	49.49	0.098	0.90
8	56.56	0.112	0.98
9	63.63	0.126	0.98
10	70.7	0.140	0.73
11	77.78	0.154	0.73
12	84.85	0.168	0.78
13	91.92	0.182	0.58
14	98.99	0.196	0.30
15	1.414	0.000	0.18

Table (2): Allowable values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (σ_x) MPa	Settlement of loading plate S (mm)
16	1.414	0.000	0.18
17	7.07	0.014	0.28
18	14.14	0.028	0.35
19	21.21	0.042	0.40
20	28.28	0.056	0.45
21	35.35	0.070	0.42
22	42.42	0.084	0.47
23	49.49	0.098	0.54
24	56.56	0.112	0.50
25	63.63	0.126	0.78

Table (3): Comparison of results

Parameters	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.198	0.200
σ_y (MPa)	0.000	0.190
σ_x (max) (MPa)	0.000	1.791
σ_x (min) (MPa)	0.000	1.740
P_{cr} (kN/cy (1st cycle))	155.24	155.25
σ_{cr} (MPa)	1.98	

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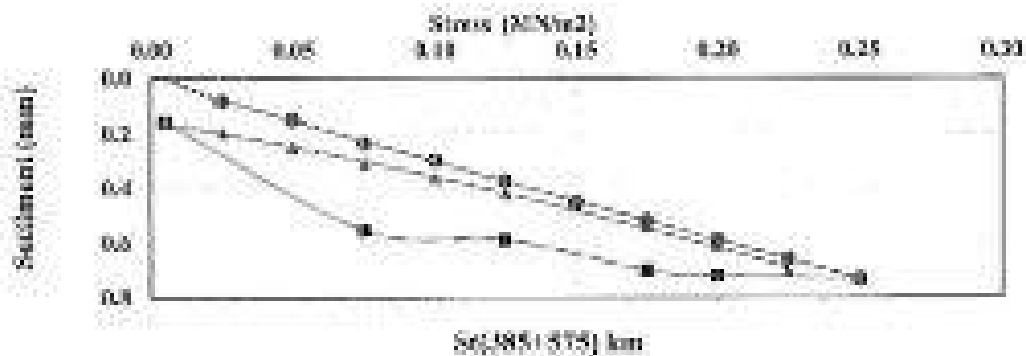


Fig. 3: Load-settlement curves, fitting curves according to Table 7 and Table 8 for the first and second loading cycles

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



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Table 10: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Settlement of loading plate S (mm)
0	1.04	0.005	0.00
1	7.07	0.009	0.00
2	14.14	0.009	0.07
3	21.21	0.009	0.24
4	28.28	0.009	0.30
5	35.35	0.009	0.40
6	42.42	0.009	0.44
7	49.49	0.009	0.51
8	56.56	0.009	0.50
9	63.63	0.009	0.43
10	70.7	0.009	0.70
11	77.76	0.009	0.60
12	84.83	0.009	0.67
13	91.89	0.009	0.54
14	98.96	0.009	0.45
15	1.04	0.005	0.77

Table 11: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Settlement of loading plate S (mm)
16	1.04	0.008	0.07
17	7.07	0.005	0.23
18	14.14	0.008	0.28
19	21.21	0.009	0.30
20	28.28	0.009	0.41
21	35.35	0.009	0.45
22	42.42	0.009	0.54
23	49.49	0.009	0.58
24	56.56	0.009	0.64
25	63.63	0.009	0.70

Table 12: Consolidation of results

Parameter	1st loading cycle	2nd loading cycle
Normal Load (kN)	0.158	0.285
σ_1 (mm)	0.005	0.005
σ_2 (mm/MPa) ^{1/2}	2.008	1.651
σ_3 (mm/MPa) ^{1/2}	1.381	1.151
$E = \frac{1}{\sigma_2 - \sigma_3} \ln \frac{S_2}{S_3}$	105.06	119.49
Excluded	1.34	

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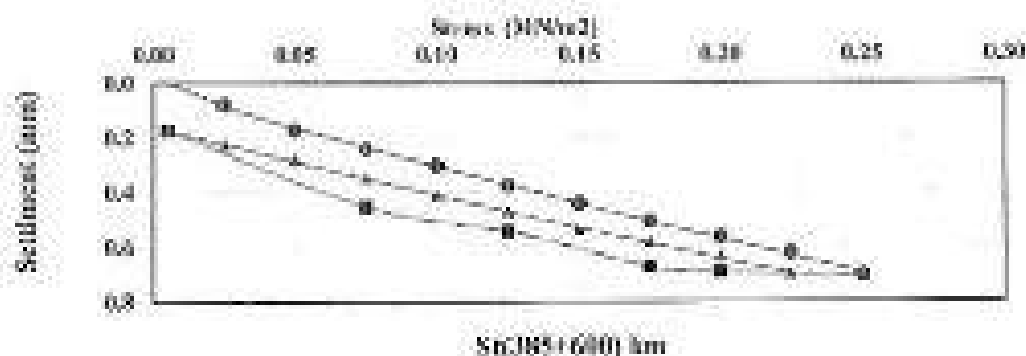


Fig. 4: Load-settlement curves, fitting curves according to Table 10 and Table 11 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement curve
- σ_p Maximal stress MN/m²



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Table 10: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (P) kN	Normal stress (p) MPa	Settlement at loading plate S (mm)
0	1.14	0.004	0.00
1	5.89	0.025	0.30
2	14.34	0.060	0.77
3	21.21	0.075	0.91
4	25.26	0.100	0.98
5	25.25	0.125	0.95
6	42.41	0.190	0.43
7	45.45	0.175	0.47
8	45.45	0.200	0.50
9	55.65	0.225	0.60
10	78.7	0.290	0.95
11	85.85	0.300	0.95
12	10.47	0.175	0.55
13	20.15	0.125	0.54
14	11.21	0.075	0.45
15	1.14	0.005	0.15

Table 11: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (p) MPa	Settlement of loading plate S (mm)
15	1.14	0.005	0.15
16	7.87	0.035	0.90
17	14.34	0.060	0.95
18	21.21	0.075	0.95
19	28.14	0.090	0.94
20	28.15	0.115	0.90
21	42.41	0.150	0.45
22	45.47	0.175	0.50
23	55.65	0.200	0.50
24	55.65	0.225	0.50

Table 12: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
(q_{lim}) MPa	0.300	0.190
s_u (mm)	0.037	0.125
a_1 (mm ² /N ^{0.5})	2.408	1.001
a_2 (mm ² /N ^{0.5})	0.111	1.581
$C = 1.2(a_1 + a_2)$	186.11	176.45
$(C/2E)$	1.09	



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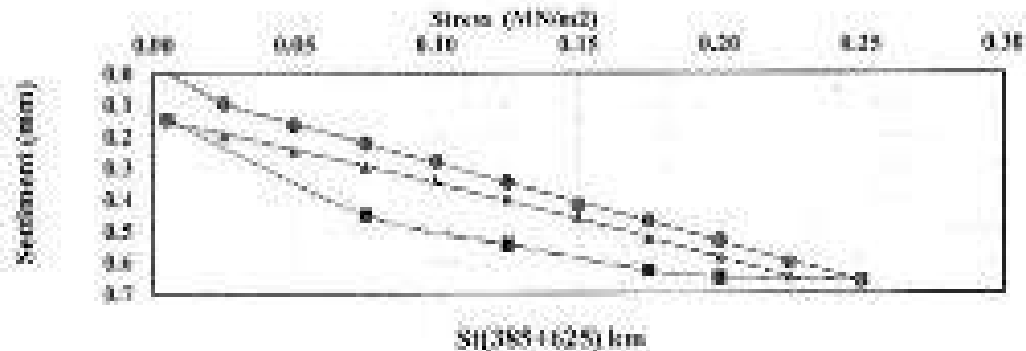


Fig. 5: Load-settlement curve, fitting curves according to Table 1.5 and Table 2.4 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Fitting curve
- σ_u Unloading stress (MPa)



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Table 16: Measured values for first loading cycle and unloading cycle

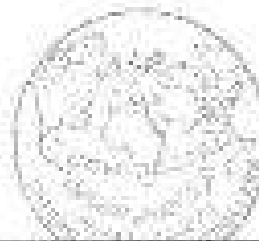
Loading stage no.	Load (T) kN	Normal stress (σ_n) MPa	Settlement at loading plate s_p (mm)
0	1.14	0.000	0.00
1	1.31	0.004	0.01
2	14.14	0.008	0.06
3	21.21	0.012	0.23
4	26.26	0.109	0.31
5	31.31	0.121	0.36
6	41.41	0.150	0.44
7	49.49	0.170	0.50
8	55.55	0.186	0.57
9	61.61	0.201	0.63
10	71.71	0.220	0.69
11	81.81	0.240	0.69
12	41.41	0.170	0.64
13	31.31	0.121	0.51
14	21.21	0.071	0.35
15	1.14	0.001	0.11

Table 17: Measured values for second loading cycle

Loading stage no.	Load (T) kN	Normal stress (σ_n) MPa	Settlement at loading plate s_p (mm)
16	1.14	0.001	0.11
17	1.31	0.005	0.11
18	14.14	0.006	0.36
19	21.21	0.075	0.33
20	26.26	0.100	0.39
21	31.31	0.121	0.44
22	41.41	0.150	0.51
23	49.49	0.170	0.59
24	55.55	0.186	0.64
25	61.61	0.201	0.69

Table 18: Compilation of results

Parameter	1st loading cycle	2nd loading cycle
$(\sigma_{lim})_{2.01 MPa}$	0.200	0.219
s_p (mm)	0.617	0.602
α_p (mm/MPa ^{0.5})	0.111	0.109
α_q (mm/MPa ^{0.5})	1.809	0.157
For 1.5 MPa σ_{lim} (kPa)	168.16	189.41
Factor	1.11	



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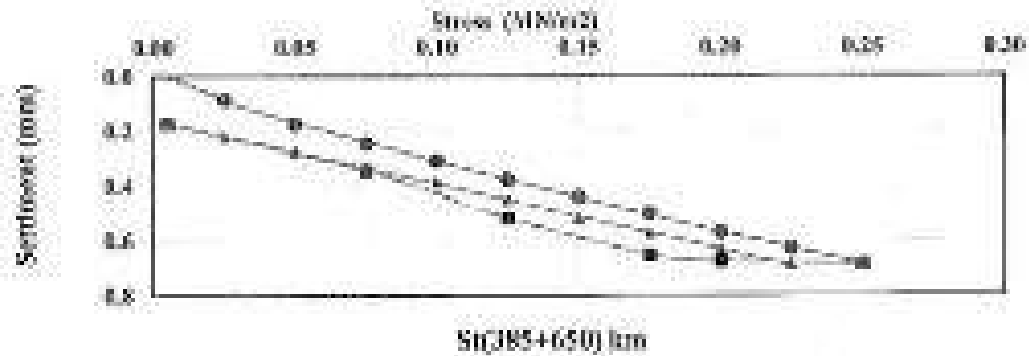


Fig. 6: Load-settlement curve, fitting curves according to Table 16 and Table 17 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S: Settlement in mm
- σ_p : Nominal stress (MN/m²)



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Table 17: Measured values for first loading cycle and unloading cycle

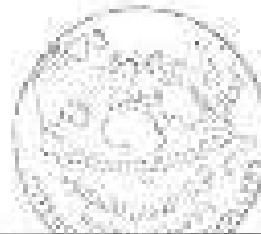
Loading stage no.	Load (F) kN	Maximal stress (σ_1) MPa	Settlement of loading plate S (mm)
0	1.114	0.006	0.08
1	3.07	0.018	0.11
2	14.14	0.060	0.18
3	21.21	0.079	0.24
4	28.28	0.090	0.28
5	35.35	0.110	0.34
6	42.42	0.130	0.54
7	49.49	0.170	0.75
8	56.56	0.200	0.91
9	63.63	0.210	0.98
10	70.7	0.250	0.93
11	77.76	0.300	0.81
12	84.83	0.370	0.68
13	91.90	0.410	0.49
14	98.97	0.470	0.33
15	106.04	0.600	0.19

Table 18: Measured values for second loading cycle

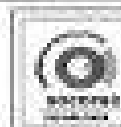
Loading stage no.	Load (F) kN	Maximal stress (σ_1) MPa	Settlement of loading plate-S mm
16	0.114	0.000	0.18
17	3.07	0.009	0.24
18	14.14	0.030	0.28
19	21.21	0.079	0.33
20	28.28	0.100	0.49
21	35.35	0.120	0.40
22	42.42	0.150	0.30
23	49.49	0.170	0.20
24	56.56	0.200	0.20
25	63.63	0.220	0.05

Table 19: Calculation of results

Parameter	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.600	0.250
σ_1 (mm)	0.008	0.015
σ_1 (mm) (MPa)	1.666	1.300
σ_2 (mm) (MPa)	2.400	0.400
For US (kg/cm ²)	100.00	104.15
Result	106	



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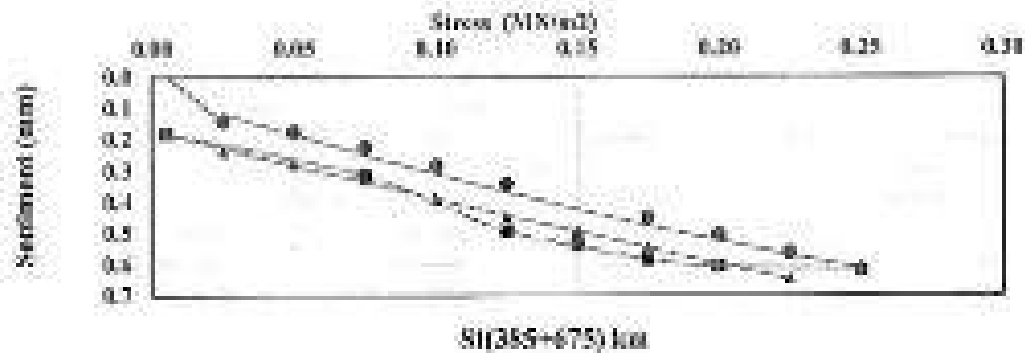
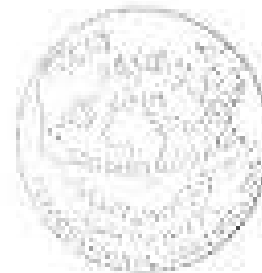


Fig. 3: Load-settlement curve, fitting curves according to Table 16 And Table 20 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ_p Normal stress (kN/m²)



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Table 21: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Maximal stress (σ_1) MPa	Settlement of loading plate S (mm)
0	1.414	0.005	0.08
1	5.07	0.015	0.08
2	14.14	0.030	0.12
3	21.21	0.045	0.18
4	28.28	0.060	0.27
5	35.35	0.075	0.32
6	42.42	0.100	0.38
7	49.49	0.175	0.44
8	56.56	0.200	0.58
9	63.63	0.215	0.59
10	70.7	0.230	0.62
11	77.78	0.300	0.61
12	84.85	0.172	0.55
13	91.92	0.115	0.61
14	98.99	0.072	0.55
15	1.414	0.005	0.14

Table 16: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Maximal stress (σ_1) MPa	Settlement of loading plate S mm
16	1.414	0.005	0.14
18	5.07	0.009	0.15
17	14.14	0.009	0.24
19	21.21	0.009	0.30
19	28.28	0.108	0.34
20	35.35	0.122	0.35
21	42.42	0.158	0.44
22	49.49	0.172	0.50
23	56.56	0.208	0.58
24	63.63	0.222	0.61

Table 24: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.230	0.219
s_1 (mm)	0.001	0.007
s_2 (mm) (20 MPa)	2.197	1.550
s_3 (mm) (5 MPa)	0.005	0.002
$E = \frac{1.5 \times 10^4 \times s_2}{s_3}$	689.31	11.150
Exceed	0.12	



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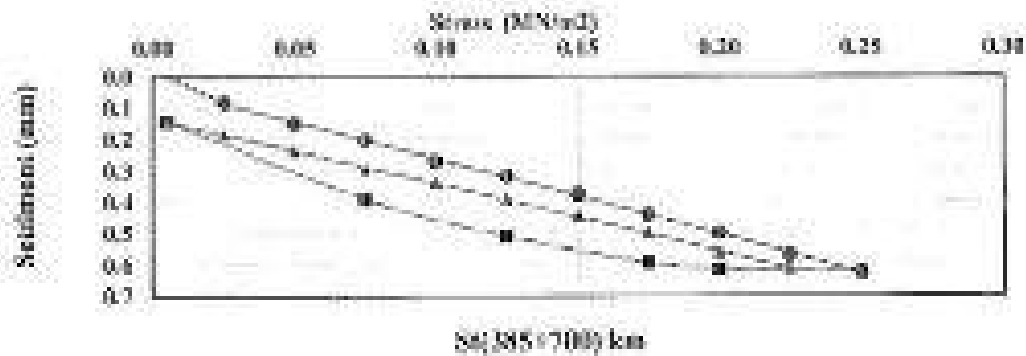


Fig. 8: Load-settlement curve, fitting curves according to Table 22 and Table 23 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the second loading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_v Vertical stress (kPa/cm)



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Table 15: Measured values for first loading cycle and unloading cycle

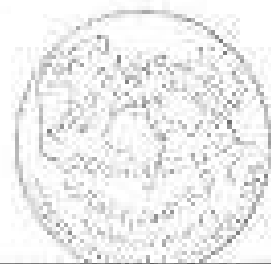
Loading stage no.	Load (F) kN	Measured stress (σ) MN/m ²	Settlement of loading plate S (mm)
0	1.414	0.000	0.08
1	7.07	0.015	0.09
2	14.14	0.030	0.17
3	21.21	0.045	0.22
4	28.28	0.060	0.28
5	35.35	0.075	0.30
6	42.42	0.090	0.38
7	49.49	0.115	0.45
8	56.56	0.200	0.51
9	63.63	0.215	0.59
10	70.7	0.230	0.55
11	77.78	0.260	0.54
12	84.85	0.175	0.50
13	91.92	0.115	0.50
14	98.99	0.075	0.38
15	1.414	0.005	0.17

Table 16: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Measured stress (σ) MN/m ²	Settlement of loading plate S (mm)
16	1.414	0.005	0.17
17	7.07	0.015	0.22
18	14.14	0.030	0.27
19	21.21	0.045	0.33
20	28.28	0.060	0.38
21	35.35	0.075	0.44
22	42.42	0.090	0.49
23	49.49	0.075	0.55
24	56.56	0.200	0.60
25	63.63	0.215	0.65

Table 27: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
σ_{max} (MN/m ²)	0.230	0.230
σ_y (MN/m ²)	0.015	0.190
σ_u (MN/m ²)	0.230	0.230
σ_c (MN/m ²)	0.005	0.008
Compressive strength (σ_{cu})	195.16	205.74
σ_{avg}	1.00	



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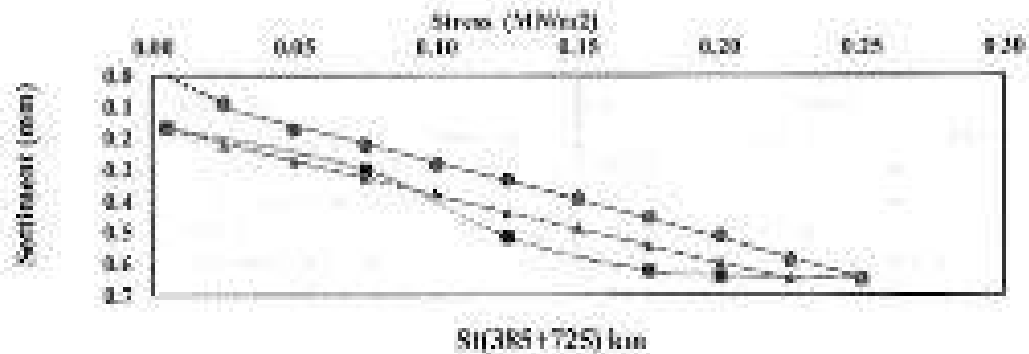


Fig. 5: Load-settlement curve, fitting curves according to Table 25 and Table 26 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the second loading cycle
- △ Measurement points from the third loading cycle
- S Settlement in mm
- σ_g Normal stress 800 kN/m²



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Table 20: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (P) kN	Normal stress (σ_2) MPa ²	Settlement at loading plate (mm)
0	1.04	0.004	0.00
1	1.07	0.005	0.10
2	14.14	0.050	0.15
3	21.21	0.075	0.21
4	28.28	0.100	0.27
5	35.35	0.125	0.32
6	42.42	0.150	0.38
7	49.49	0.175	0.45
8	56.56	0.200	0.52
9	63.63	0.225	0.58
10	70.7	0.250	0.65
11	77.76	0.280	0.70
12	84.82	0.310	0.75
13	91.88	0.335	0.82
14	98.94	0.360	0.88
15	1.04	0.004	0.12

Table 21: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (σ_2) MPa ²	Settlement at loading plate S (mm)
16	1.04	0.004	0.77
16	1.07	0.005	0.79
17	14.14	0.050	0.21
18	21.21	0.075	0.35
19	28.28	0.100	0.38
20	35.35	0.125	0.44
21	42.42	0.150	0.49
22	49.49	0.175	0.54
23	56.56	0.200	0.59
24	63.63	0.225	0.65

Table 22: Comparison of results

Parameters	1st loading cycle	2nd loading cycle
σ_{2max} (MPa ²)	0.360	0.280
s_2 (mm)	0.880	0.787
σ_2 (mm/MPa ²)	2.444	1.316
s_2 (mm/MPa ²)	1.637	4.798
σ_2 (kN/m ²)	185.09	709.11
(% Error)		1.11



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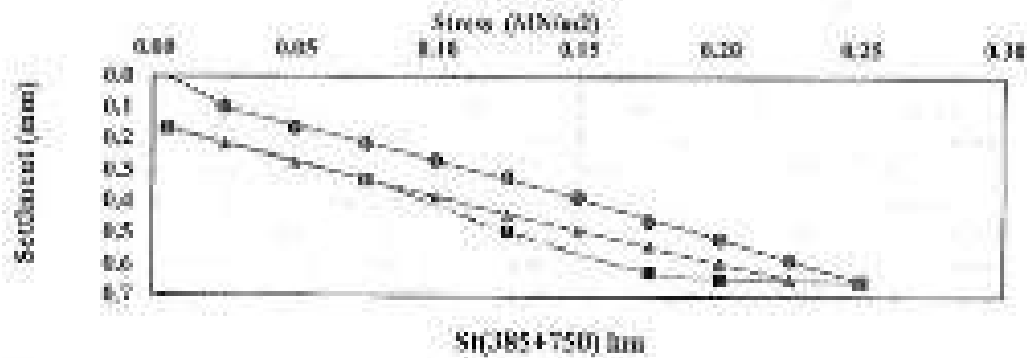


Fig. 5: Load-settlement curve, Siting curves according to Table 28 and Table 29 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the second loading cycle
- △ Measurement points from the third loading cycle
- Settlement limits
- Normal stress (kN/m²)



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Conclusions:

The present test results which obtained from the plate loading tests of the native fill-fallst layer of the electric express toll project at location (From km 385+525 to km 385+750) in accordance to the German standard , DIN 18134 are illustrated in table 31 .

Table 31 : Test results

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
St(385+525) km	174.54	212.72	1.22
St(385+550) km	184.31	200.45	1.09
St(385+575) km	155.24	183.39	1.18
St(385+600) km	168.06	190.40	1.13
St(385+625) km	180.11	196.45	1.09
St(385+650) km	168.14	189.41	1.13
St(385+675) km	199.17	214.28	1.08
St(385+700) km	189.23	211.33	1.12
St(385+725) km	187.36	206.74	1.10
St(385+750) km	186.69	209.41	1.12

Lab Director

Eng / Esmat Kamel

Geotechnical Consultant

for Mr. H.
Dr / Mohamed Mustafa Badry



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Technical report

of Plate Loading Test (DIN 18134)

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة عبد السلام القلي للمقاولات
Project	:	ELECTRIC EXPRESS TRAIN
Sample	:	Subballast layer (2)
Station	:	St(385+775)to st(386+000)
Date of Test	:	12/06/2023
QC	:	1405

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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 diameter of 600 mm have a thickness of 25mm and are provided with equally spaced stiffeners 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 hydraulic pump connected to a hydraulic 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°C.
- 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 hydraulic jack was placed on the middle of, and at normal to, the loading plate beneath the reaction loading system and secured against tilting.
- 8- The reaction loading system was a heavy multi-purpose excavator (more than 20 ton).

Description of experiment:

- 1- Loading, unloading and reloading regime were applied according to DIN 18134 for the plate load test to estimate the resilient modulus.
- 2- Prior to the test, the force transducer and dial gauge were set to zero, after which a load was applied corresponding 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 increment 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 load was increased only to the penultimate stage of the first cycle.



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

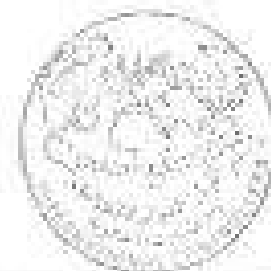
Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain end of loading phase ϵ (mm/mm)
1	1.11	0.003	0.00
2	7.61	0.003	0.00
3	14.34	0.003	0.10
4	21.11	0.003	0.21
5	28.25	0.100	0.36
6	35.35	0.128	0.51
7	42.41	0.158	0.64
8	49.45	0.178	0.78
9	56.50	0.198	0.91
10	63.55	0.218	1.04
11	70.61	0.238	1.17
12	77.65	0.258	1.30
13	84.70	0.278	1.43
14	91.75	0.298	1.56
15	98.80	0.318	1.69

Table 2: Mechanical values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain end of loading phase ϵ (mm/mm)
16	1.11	0.003	0.14
17	7.61	0.003	0.20
18	14.34	0.003	0.27
19	21.11	0.003	0.34
20	28.25	0.100	0.48
21	35.35	0.128	0.61
22	42.41	0.158	0.75
23	49.45	0.178	0.88
24	56.50	0.198	1.01
25	63.55	0.218	1.14

Table 3: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
Proportional Limit	0.178	0.200
σ_y (MPa)	0.003	0.003
σ_u (MPa) (UTS)	0.318	0.298
σ_b (MPa) (BTS)	0.003	0.003
Extensometer constant	0.003	0.003
Extensometer	1.07	



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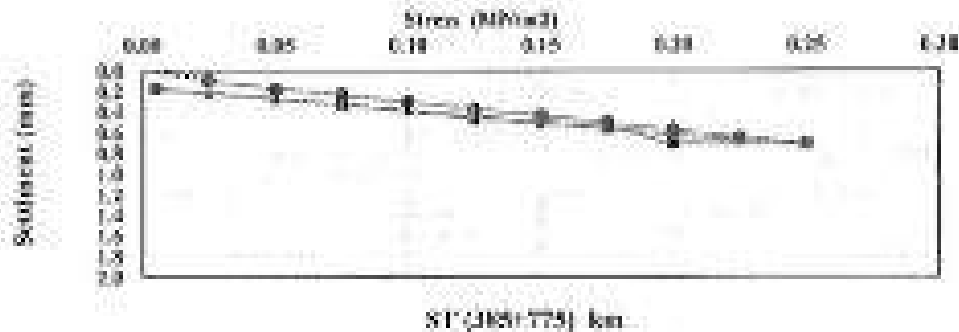
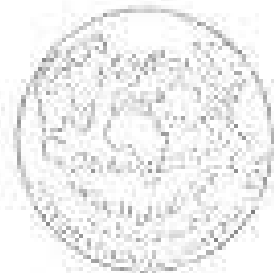


Fig. 2- Load-settlement curve, fitting curves according to Table 3 and Table 2 for the first and second loading cycles

- Measured points from the first loading cycle
- Measured points from the unloading cycle
- Measured points from the second loading cycle
- s Settlement in mm
- σ Normal stress MPa/cm²



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

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate mm
0	1.14	0.005	0.00
1	1.39	0.009	0.00
2	16.14	0.059	0.30
3	31.21	0.075	0.35
4	36.26	0.100	0.41
5	41.31	0.125	0.46
6	46.37	0.150	0.47
7	49.40	0.170	0.49
8	55.50	0.200	0.50
9	61.61	0.220	0.61
10	70.7	0.250	0.60
11	75.26	0.260	0.66
12	83.35	0.310	0.60
13	91.45	0.330	0.51
14	99.51	0.355	0.40
15	1.14	0.005	0.37

Table 5: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate mm
15	1.14	0.005	0.37
16	1.39	0.005	0.33
17	16.14	0.059	0.28
18	31.21	0.075	0.34
19	36.26	0.100	0.30
20	41.31	0.125	0.45
21	46.37	0.150	0.51
22	49.40	0.170	0.61
23	55.50	0.200	0.61
24	61.61	0.220	0.60

Table 6: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
$E_{avg} (MPa)$	0.198	0.203
$\alpha_1 (mm)$	0.008	0.011
$\alpha_2 (mm/MPa)$	2.180	1.511
$\alpha_3 (mm/MPa)$	0.120	-1.364
$E_{avg} (MPa) = \frac{1}{\alpha_1 + \alpha_2 + \alpha_3}$	184.51	208.18
EDDD	1.00	

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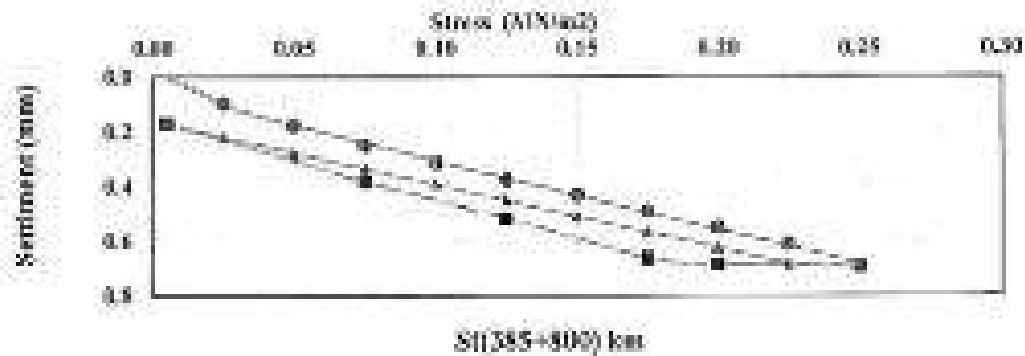


Fig. 3: Load-relaxation curve, fitting curves according to Table 4 and Table 5 for the first and second loading cycles

- measurement points from the first loading cycle
- measurement points from the second loading cycle
- △ measurement points from the third loading cycle
- S Settlement in mm
- σ_0 Normal stress MPa/cm²



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Table 2: Measured values for Test loading cycle and unloading cycle

Loading stage no.	Load (T) kN	Normal stress (p ₂) MPa ²	Settlement of loading plate S (mm)
0	1.411	0.004	0.00
1	7.67	0.015	0.09
2	14.11	0.030	0.14
3	21.11	0.045	0.20
4	28.20	0.060	0.27
5	35.20	0.074	0.33
6	42.43	0.090	0.39
7	49.49	0.103	0.45
8	55.56	0.108	0.50
9	62.62	0.120	0.56
10	70.7	0.126	0.62
11	80.56	0.138	0.67
12	89.38	0.150	0.68
13	98.38	0.170	0.69
14	21.11	0.075	0.40
15	1.411	0.005	0.17

Table 3: Measured values for second loading cycle

Loading stage no.	Load (T) kN	Normal stress (p ₂) MPa ²	Settlement of loading plate S (mm)
16	1.411	0.005	0.17
16	7.67	0.015	0.23
17	14.11	0.030	0.27
18	21.21	0.045	0.30
19	28.36	0.060	0.36
20	35.39	0.074	0.40
21	41.43	0.090	0.45
22	49.49	0.103	0.54
23	56.56	0.108	0.58
24	62.62	0.119	0.62

Table 4: Comparison of results

Parameters	1st loading cycle	2nd loading cycle
$\sigma_{ult} (MPa)^2$	0.250	0.150
$\sigma_u (MPa)$	0.015	0.150
$\sigma_v (MPa)$ (15% σ_u)	2.406	2.250
$\sigma_v (MPa)$ (15% σ_u)	-0.040	-0.250
Dev. % of σ_u (15% σ_u)	100.00	100.00
Factor	1.14	

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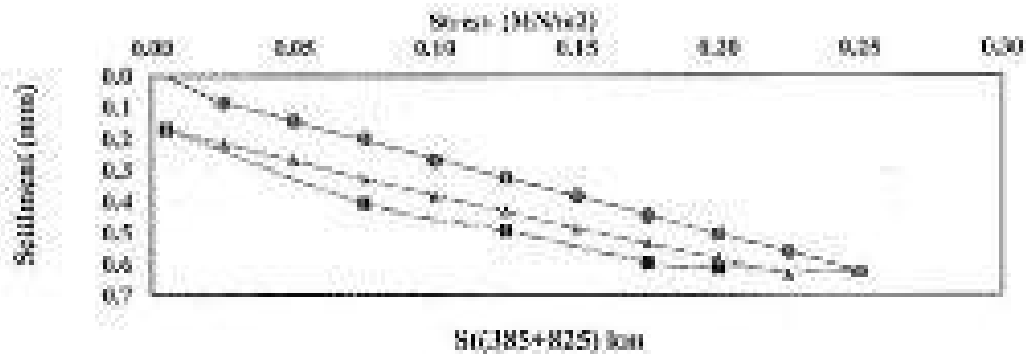


Fig. 3: Load-settlement curves, fitting curves according to Table 7 and Table 8 for the first and second loading cycle.

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_p Nominal stress (MPa)



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51(205+850) KPa

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Table 10: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (P) MPa	Measured stress (σ) MPa	Settlement of loading plate (mm)
1	1.414	0.005	0.08
2	2.827	0.025	0.19
3	4.241	0.055	0.27
4	5.655	0.075	0.33
5	7.069	0.099	0.38
6	8.483	0.125	0.45
7	9.897	0.159	0.51
8	11.311	0.175	0.57
9	12.725	0.200	0.63
10	14.139	0.225	0.68
11	15.553	0.250	0.75
12	16.967	0.275	0.80
13	18.381	0.300	0.85
14	19.795	0.325	0.91
15	21.209	0.350	0.95

Table 11: Measured values for second loading cycle

Loading stage no.	Load (P) MPa	Measured stress (σ) MPa	Settlement of loading plate (mm)
16	1.415	0.005	0.10
17	2.827	0.025	0.21
18	4.241	0.050	0.32
19	5.655	0.075	0.35
20	7.069	0.100	0.37
21	8.483	0.125	0.40
22	9.897	0.150	0.45
23	11.311	0.175	0.50
24	12.725	0.200	0.55

Table 12: Comparison of results

Parameter	1st loading cycle	2nd loading cycle
(σ_{max}) (MPa)	0.350	0.358
σ_y (MPa)	0.280	0.310
σ_u (MPa)	1.461	2.228
σ_c (MPa)	0.840	1.649
Compressive strength (MPa)	100.00	285.75
Factor	1.14	

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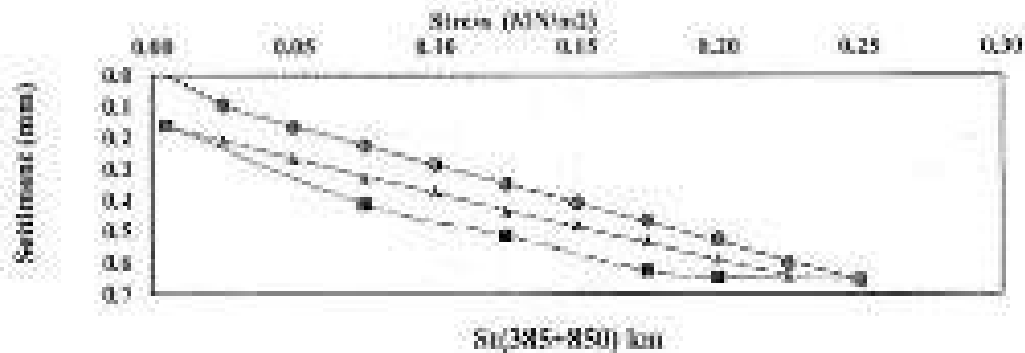


Fig. 4. Load-settlement curve, fitting curves according to Table 10 and Table 11 for the first and second loading cycles.

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- ▲ Measurement points from the second loading cycle
- S Settlement in mm
- σ_p Normal stress kN/m²



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Table 13: Measured values for first loading cycle and unloading cycle

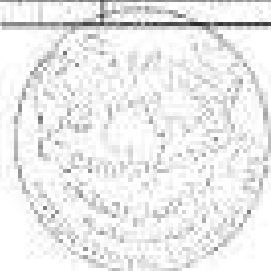
Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain rate at loading plate S/mm
0	1.14	0.005	0.00
1	1.01	0.005	0.00
2	14.14	0.008	0.10
3	21.21	0.009	0.21
4	25.28	0.100	0.30
5	25.25	0.105	0.31
6	41.41	0.150	0.39
7	41.40	0.175	0.40
8	45.46	0.200	0.41
9	45.47	0.200	0.40
10	70.7	0.280	0.60
11	25.28	0.100	0.61
12	41.40	0.175	0.60
13	25.25	0.105	0.40
14	21.21	0.009	0.30
15	1.14	0.005	0.01

Table 14: Measured values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (σ) MPa	Strain rate at loading plate: S (mm/s)
16	1.14	0.008	0.17
17	1.01	0.005	0.21
18	14.14	0.008	0.28
19	21.21	0.009	0.34
20	25.28	0.100	0.38
21	25.25	0.105	0.40
22	41.41	0.150	0.51
23	41.40	0.175	0.50
24	50.50	0.200	0.60
25	61.61	0.225	0.68

Table 15: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.280	0.280
σ_y (MPa)	0.009	0.100
σ_u (MPa) (21% σ_y)	0.004	0.004
σ_1 (MPa) (21% σ_{max})	0.058	0.058
Dev. % of σ_y to σ_{max}	100.00	200.70
Recovery	1.02	



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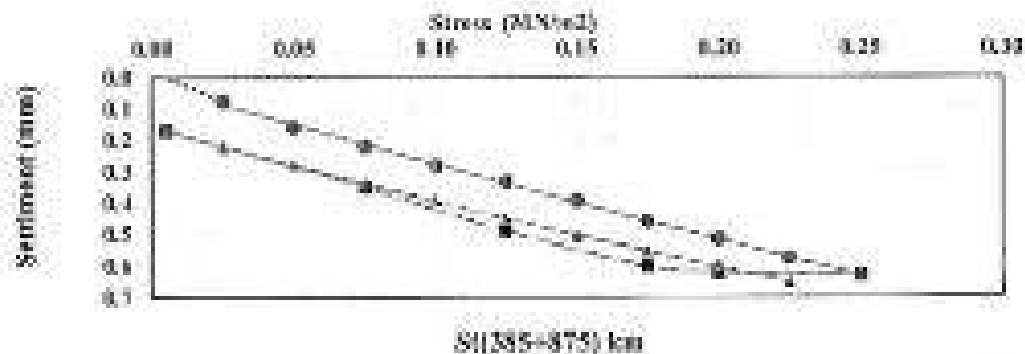


Fig. 14 Load-settlement curve, fitting curves according to Table 13 and Table 14 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement in mm
- σ Stress in MPa



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Table 16: Measured values for First loading cycle and unloading cycle

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate S (mm)
0	1.04	0.005	0.00
1	1.07	0.015	0.05
2	11.14	0.050	0.14
3	21.21	0.075	0.23
4	25.28	0.090	0.26
5	25.25	0.105	0.30
6	41.42	0.150	0.41
7	45.49	0.175	0.47
8	61.66	0.200	0.53
9	61.63	0.215	0.56
10	77.7	0.250	0.64
11	85.84	0.300	0.83
12	45.49	0.175	0.61
13	25.28	0.105	0.45
14	21.21	0.075	0.43
15	1.04	0.005	0.18

Table 17: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate S (mm)
16	1.04	0.005	0.18
16	1.07	0.015	0.24
17	11.14	0.050	0.23
18	21.21	0.075	0.26
19	25.28	0.090	0.42
20	25.25	0.105	0.48
21	41.42	0.150	0.53
22	45.49	0.175	0.57
23	61.66	0.200	0.61
24	61.63	0.215	0.66

Table 18: Compilation of results

Parameters	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.300	0.250
$s_{1/2}$ (mm)	0.615	0.155
α (mm/MPa ^{2/3})	1.695	1.082
$\alpha_{1/2}$ (mm/MPa ^{2/3})	0.819	0.411
C_m (1/MPa ^{2/3})(mm)	180.67	20.169
Exponent	1.32	



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Fig. 6: Load-settlement curve, fitting curves according to Table 16 and Table 17 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- Settlement in mm
- σ_{10} Normal stress (MPa/cm²)



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Table 19: Viewward values for first loading cycle and unloading cycle

Loading stage no.	Load (F) kN	Normal stress (F _N) MPa	Settlement of loading plate (mm)
0	0.00	0.000	0.00
1	7.07	0.005	0.18
2	14.14	0.009	0.17
3	21.21	0.013	0.23
4	28.28	0.018	0.29
5	35.35	0.023	0.34
6	42.42	0.028	0.38
7	49.49	0.033	0.46
8	56.56	0.038	0.53
9	63.63	0.043	0.58
10	70.7	0.048	0.64
11	77.78	0.053	0.62
12	84.85	0.058	0.61
13	91.92	0.063	0.63
14	98.99	0.068	0.71
15	106.06	0.073	0.77

Table 19a: Shearward values for second loading cycle

Loading stage no.	Load (F) kN	Normal stress (F _N) MPa	Settlement of loading plate S (mm)
16	0.00	0.000	0.17
17	7.07	0.005	0.23
18	14.14	0.009	0.29
19	21.21	0.013	0.34
20	28.28	0.018	0.38
21	35.35	0.023	0.44
22	42.42	0.028	0.50
23	49.49	0.033	0.58
24	56.56	0.038	0.68
25	63.63	0.043	0.78

Table 20: Compilation of results

Parameter	1st loading cycle	2nd loading cycle
(σ_{Nmax}) MPa	0.073	0.078
s_u (mm)	0.68	0.62
α_1 (mm/218kN) ^{1/2}	2.369	2.371
α_2 (mm/235kN) ^{1/2}	0.038	0.036
C_{α_1} (mm/218kN) ^{1/2}	199.54	219.50
C_{α_2} (mm)	1.01	



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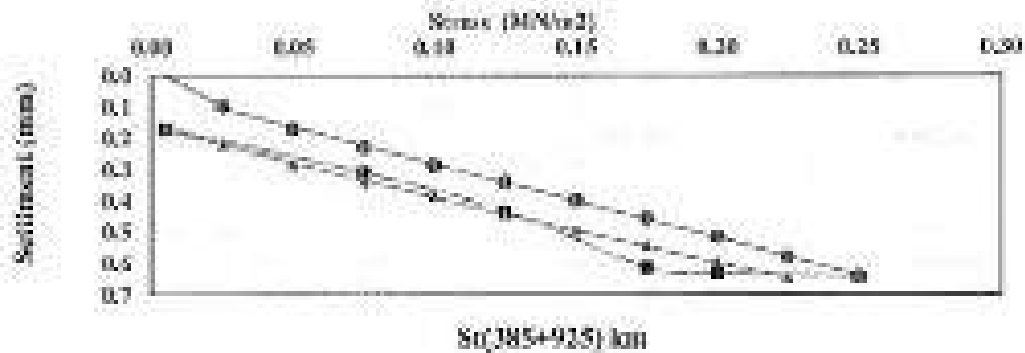


Fig. 3: Load-settlement curves, fitting curves according to Table 14 and Table 20 for the first and second loading cycles

- Measured points from the first loading cycle
- Measured points from the unloading cycle
- ▲ Measured points from the second loading cycle
- x Settlement in mm
- σ_v Normal stress (MN/m²)



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Table 22: Measured values for first loading cycle and unloading cycle

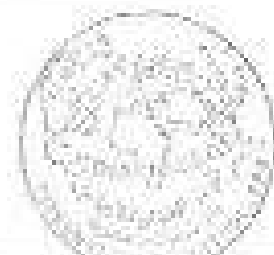
Loading stage no.	Load (T) KN	Normal stress (σ) MPa	Settlement of loading plate (Δmm)
0	1.414	0.004	0.00
1	7.07	0.021	0.10
2	14.14	0.040	0.17
3	21.21	0.059	0.25
4	28.28	0.080	0.32
5	35.35	0.100	0.39
6	42.42	0.120	0.45
7	49.49	0.139	0.52
8	56.56	0.160	0.59
9	63.63	0.179	0.64
10	70.7	0.198	0.69
11	77.75	0.208	0.73
12	84.82	0.219	0.76
13	91.89	0.230	0.81
14	98.96	0.240	0.85
15	1.414	0.004	0.00

Table 23: Measured values for second loading cycle

Loading stage no.	Load (T) KN	Normal stress (σ) MPa	Settlement of loading plate (Δmm)
16	1.414	0.004	0.00
17	7.07	0.021	0.02
18	14.14	0.040	0.07
19	21.21	0.059	0.10
20	28.28	0.080	0.14
21	35.35	0.100	0.18
22	42.42	0.120	0.23
23	49.49	0.139	0.28
24	56.56	0.159	0.33

Table 24: Compilation of results

Parameters	for loading cycle	for unloading cycle
(σ_{max}) MPa	0.240	0.208
σ_0 (mm)	0.014	0.004
σ_1 (mm) MPa	2.100	2.100
σ_2 (mm) MPa	1.405	0.701
σ_3 (mm) MPa	100.00	100.00
REMARK	1.00	



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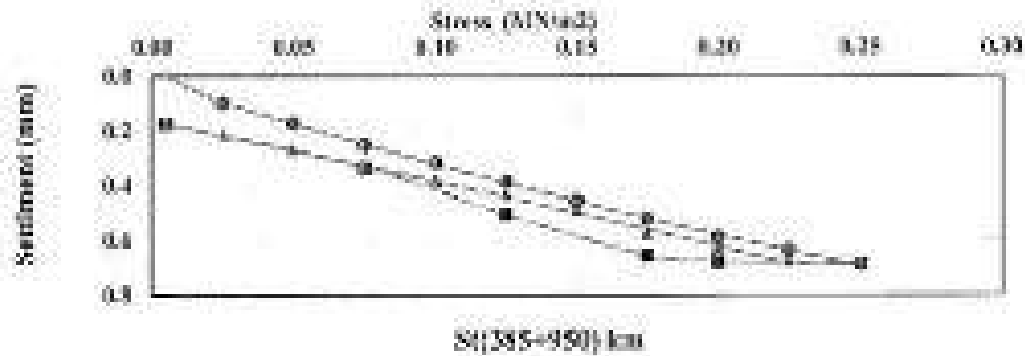


Fig. 8: Load-settlement curves, hysteresis curves according to Table 22 and Table 23 for the first and second loading cycles.

- Measurement points from the first loading cycle
- Measurement points from the unloading cycle
- △ Measurement points from the second loading cycle
- S Settlement curves
- eg, Normal stress, MN/m²



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Table 20: Measured values for first loading cycle and unloading cycle

Loading stage no.	Load (P) kN	Strained stress (σ) MPa	Settlement of loading plate mm
0	1.415	0.005	0.00
1	7.87	0.021	0.05
2	14.15	0.039	0.15
3	21.21	0.075	0.70
4	28.28	0.100	0.75
5	35.35	0.175	0.70
6	42.42	0.090	0.45
7	49.49	0.075	0.10
8	56.56	0.080	0.30
9	63.63	0.115	0.50
10	70.7	0.200	0.50
11	77.78	0.300	0.50
12	84.85	0.175	0.50
13	91.92	0.115	0.28
14	98.99	0.075	0.20
15	1.014	0.005	0.18

Table 21: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Strained stress (σ) MPa	Settlement of loading plate mm
16	1.014	0.000	0.18
17	7.87	0.025	0.20
18	14.14	0.030	0.28
19	21.21	0.075	0.50
20	28.28	0.100	0.70
21	35.35	0.120	0.80
22	42.42	0.150	0.90
23	49.49	0.175	0.80
24	56.56	0.200	0.80
25	63.63	0.225	0.80

Table 22: Comparison of results

Parameters	1st loading cycle	2nd loading cycle
σ_{max} (MPa)	0.200	0.225
σ_y (MPa)	0.090	0.170
σ_{avg} (MPa)	1.334	1.330
σ_{avg} (MPa)	0.021	0.200
σ_{avg} (MPa)	0.075	0.180
EGAC	1.10	



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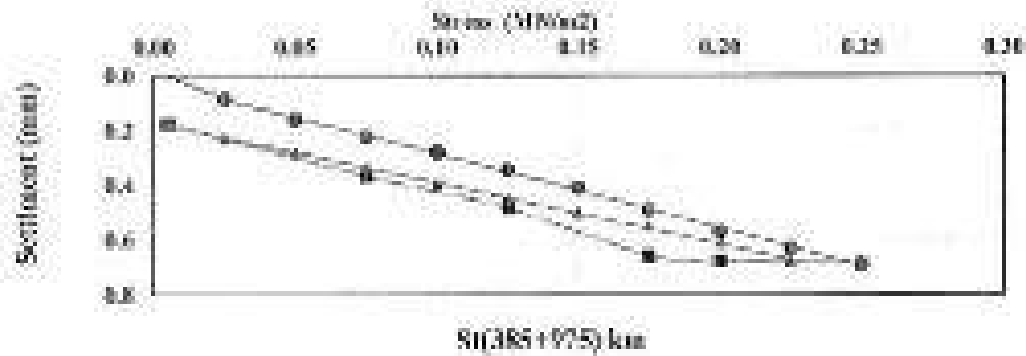


Fig. 9: Load-settlement curve, fitting curves according to Table 25 and Table 26 for the first and second loading cycles

- Measurement points from the first loading cycle
- Measurement points from the second loading cycle
- ▲ Measurement points from the original loading cycle
- s Settlement in mm
- σ_n Normal stress MPa/cm²



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Table 20: Measured values for first loading cycle and unloading cycle.

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate (δ) mm
0	1.04	0.000	0.00
1	7.07	0.025	0.18
2	14.14	0.050	0.37
3	21.21	0.075	0.54
4	28.28	0.100	0.70
5	35.35	0.125	0.87
6	42.42	0.150	0.94
7	49.49	0.175	0.99
8	56.56	0.200	0.98
9	63.63	0.225	0.68
10	70.7	0.250	0.70
11	77.75	0.280	0.71
12	84.82	0.315	0.69
13	91.89	0.345	0.85
14	98.96	0.375	0.86
15	1.04	0.000	0.21

Table 20: Measured values for second loading cycle

Loading stage no.	Load (P) kN	Normal stress (σ) MPa	Settlement of loading plate (δ) mm
16	1.04	0.000	0.20
17	7.07	0.025	0.27
18	14.14	0.050	0.32
19	21.21	0.075	0.38
20	28.28	0.100	0.43
21	35.35	0.125	0.48
22	42.42	0.150	0.55
23	49.49	0.175	0.60
24	56.56	0.200	0.64
25	63.63	0.225	0.70

Table 20: Comparison of results

Parameters	1st loading cycle	2nd loading cycle
$P_{lim} (kN/m^2)$	0.190	0.240
σ_p (mm)	0.004	0.011
σ_p (mm/MPa $^{0.5}$)	2.668	1.165
σ_p (mm/MPa $^{0.5}$)	0.184	0.000
For 1st loading cycle σ_p (mm)	161.27	207.11
For 2nd loading cycle σ_p (mm)	1.21	



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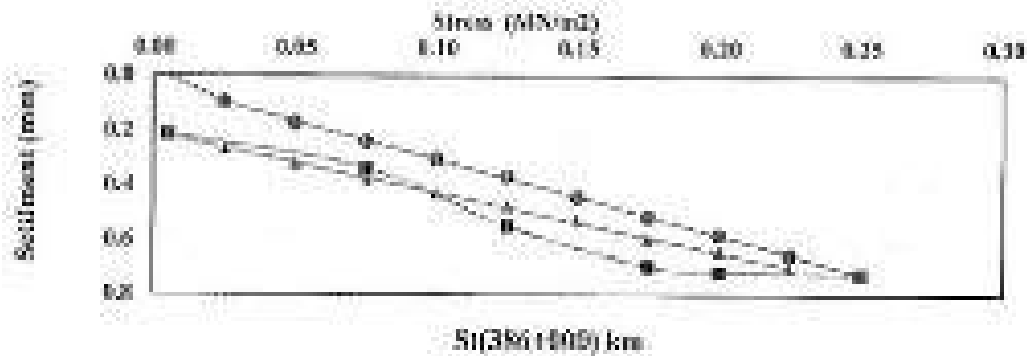


Fig. 9: Load-settlement curve, fitting curves according to Table 26 and Table 29 for the first and second loading cycle

- Measurement points from the first loading cycle
- Measurement points from the second loading cycle
- ▲ Measurement points from the third loading cycle
- S: Settlement in mm
- σ_h : Horizontal stress in kg/cm^2



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Conclusions:

The present test results which obtained from the plate loading tests of the native soil on sub-ballast layer of the electric express train project at location (From km 385+775 to km 386+000) in accordance to the German standard , DIN 18194 are illustrated in table 31 .

Table 31 : (Test results)

Location	Ev1(MN/m ²)	Ev2(MN/m ²)	Ev2/Ev1 ratio
S1(385+775) km	164.50	167.44	0.99
S2(385+800) km	184.53	200.45	1.09
S1(385+825) km	187.83	215.05	1.14
S1(385+850) km	182.68	207.75	1.14
S2(385+875) km	183.91	207.76	1.13
S2(385+900) km	180.67	204.09	1.13
S1(385+925) km	189.54	210.50	1.11
S2(385+950) km	186.51	192.11	1.15
S2(385+975) km	187.87	201.81	1.10
S1(386+000) km	163.27	207.11	1.27

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RECEIPT OF NOTIFICATION: Minimum Notice Period: not less than 24 Hours
The Work described below will be completed and ready for inspection on stated date above

Contractor Company	Ahd EL-Salam EL-Fiky Contracting Company		Designer Company*	Project Study & Engineering Consulting Office
Issued by Contractor	Name Eng. Ahmed Al-Mansour	Sign <i>[Signature]</i>	Date/Serial Number 15/05/2023 (KISB2/007)	Time 4:00 PM
Received by QA/QC CONSULTANT	Eng. Mohamed Elsayed	Sign <i>[Signature]</i>	CS	MS
CODE-1	81-30-011 General Materials	CS	MS	CS
CODE-2	81-30-011 General Materials	CS	MS	CS
CODE-3	81-30-011 General Materials	CS	MS	CS
CODE-4	81-30-011 General Materials	CS	MS	CS
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CODE-72	81-30-011 General Materials	CS	MS	CS
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CODE-74	81-30-011 General Materials	CS	MS	CS
CODE-75	81-30-011 General Materials	CS	MS	CS
CODE-76	81-30-011 General Materials	CS	MS	CS
CODE-77	81-30-011 General Materials	CS	MS	CS
CODE-78	81-30-011 General Materials	CS	MS	CS
CODE-79	81-30-011 General Materials	CS	MS	CS
CODE-80	81-30-011 General Materials	CS	MS	CS
CODE-81	81-30-011 General Materials	CS	MS	CS
CODE-82	81-30-011 General Materials	CS	MS	CS
CODE-83	81-30-011 General Materials	CS	MS	CS
CODE-84	81-30-011 General Materials	CS	MS	CS
CODE-85	81-30-011 General Materials	CS	MS	CS
CODE-86	81-30-011 General Materials	CS	MS	CS
CODE-87	81-30-011 General Materials	CS	MS	CS
CODE-88	81-30-011 General Materials	CS	MS	CS
CODE-89	81-30-011 General Materials	CS	MS	CS
CODE-90	81-30-011 General Materials	CS	MS	CS
CODE-91	81-30-011 General Materials	CS	MS	CS
CODE-92	81-30-011 General Materials	CS	MS	CS
CODE-93	81-30-011 General Materials	CS	MS	CS
CODE-94	81-30-011 General Materials	CS	MS	CS
CODE-95	81-30-011 General Materials	CS	MS	CS
CODE-96	81-30-011 General Materials	CS	MS	CS
CODE-97	81-30-011 General Materials	CS	MS	CS
CODE-98	81-30-011 General Materials	CS	MS	CS
CODE-99	81-30-011 General Materials	CS	MS	CS
CODE-100	81-30-011 General Materials	CS	MS	CS

EXPLANATIONS OF WORK TO BE INSPECTED			
Description	Element	Item	Sub-item
Item 11	81-30-011	81-30-011	81-30-011

INSPECTION DETAILS	
Planned Inspection Date	Planned Inspection Time

COMPLIANCE PROVIDED FOR BY INSPECTION COMPLIANCE			
Checklist Attached	Test Results Attached	Calibration Attached	Other as Indicated
Drawing Reference: Plan and Profile R/W 12	Reference: MAR (Q130) MAR (Q130/01)	Reference: MAR (Q130) MAR (Q130/01)	Reference: MAR (Q130) MAR (Q130/01)

Comments by Eng. Mohamed Elsayed (Q130)
1. Attached Master Sheet approved by SPECTRUM.

Comments by Eng. Ahmed Al-Mansour (Q130)	Comments by Eng. Ahmed Al-Mansour (Q130)
1. Consideration to levels and width checked by field	1. Consideration to levels and width checked by field
2. Part 31 & 32 (2011) Should Approved from SPECTRUM	2. Part 31 & 32 (2011) Should Approved from SPECTRUM
3. Final approval is subject to above mentioned comments	3. Final approval is subject to above mentioned comments

INSPECTION RESULT						Approval Status	Please Tick if Not Attended
Organization	Name	Signature	Date	Time	Approval Status	Please Tick if Not Attended	
Contractor	Eng. Ahmed Al-Mansour	<i>[Signature]</i>			A		
Q12 Survey	Eng. Mohamed Elsayed	<i>[Signature]</i>					
QA/QC	Eng. Mohamed Elsayed	<i>[Signature]</i>					
QA/QC	Eng. Mohamed Elsayed	<i>[Signature]</i>					
Employers Representative	Mr. John Smith	<i>[Signature]</i>	16-5-23			A	

UNIVERSAL INSPECTION REQUEST		      		
RECEIPT OF NOTIFICATION Minimum Notice Period not less than 24 Hours The below mentioned system will be complete and ready for inspection at the mentioned location				
Contractor Company	Abd EL-Salam EL-Sayed Company		Designer Company*	
Issued by Contractor	Name: محمد عبد الحميد العتيق وشركاه Eng. محمد عبد الحميد العتيق		Date/Serial Number 27/05/2023 IR/550312	
Received by QA/QC CONSULTANT	Eng. Mostafa Ryad	USA	SPECTRUM Engineering 4:00 PM 15 08 2023	
PROJECT	SI to S21 Eastern Bypass Road From KBR to El-Dokki Work Activity 2000' Extension of Activity			
EXPLANATION OF WORK TO BE INSPECTED				
Description		Drawn	Issue	
From: SI 2000-000 To: S21 2000-000		Submitted: 2	Subscribed:	
INSPECTION DETAILS The following will be made in the stated inspection time				
Planned Inspection Date		Planned Inspection Time		
COMPLIANCE EVIDENCE It will be indicated as appropriate				
Checklist Attached	Test Results Attached	Calibration Attached	Other as Indicated	
Drawing Reference	Reference	As Reference		
Plan and Profile REV. 02	MAN (07 503) MAN (10 000)	Specification, INTERNATIONAL STANDARD A TESTING REPORT (0001-41.1) FOR THE CONCRETE GROUP TECHNICAL REPORT (0001-10.1) FOR THE CONCRETE GROUP		
Comments by: Eng. Mohamed Khalil (QA/QC)				
1- Attached Material Sheet approved by SPECTRUM.				
Comments by: Eng. Mostafa Ryad (SPECTRUM)		Comments by: Eng. Mostafa Ryad (SPECTRUM)		
1- تم استلام القوائم المرفقة 2- تم مراجعة القوائم المرفقة		1- Material sheet & tests and width checked by QA/QC consultant 2- plan, 02 & 100m (20m) sheet approved from SPECTRUM 3- Final approval is subject to above mentioned comments.		
INSPECTION RESULT				
Organization	Name	Sign	Date	Time
Contractor	Eng. Ahmed Abd-Elmoneem			
QA/QC Survey	Eng. Mohamed Khalil			
QA/QC	Eng. Mostafa Ryad			
QA/QC	Eng. Mohamed Ryad			
Drawings & Inspection	Eng. John Sigmund		28-5-2023	
Approval Status: A, MAN-8 Please Tick if Not Attended				

MATERIAL APPROVAL REQUEST



المملكة العربية
السعودية
Ministry of
Transport and
Public Works



المملكة العربية
السعودية
Ministry of
Transport and
Public Works



Contract Company	Eng. Alkhatibah Group شركة الخياطية	Design Company	Engineering Consulting Office
Issued by Contract	Eng. Mohamed Elmaghrabi محمد الماهر	Quality Control Number	Page
Received by QMS CONSULTANT	Eng. Mohamed Elmaghrabi محمد الماهر	OT 15 (1)	8:30
		21	22
		23	24
		25	26
		27	28
		29	30
		31	32

QMS	SI to SI	SI to SI	SI to SI
	Initial Reference	Project Reference	For Material approval from SI to SI
Check & Verify			
Sub Contract of Material			

Description of Material	Subbase Layer Total Quantity (5000 m³)		
Location to be Used	From Station 265+007.5 to Station (285+007.5)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Not attached
Reference in BoQ		Specification	USEMATERIAL SPECIFICATION & TECHNICAL REPORTS FOR ALL 2 LAYERS 2 BY ONE GROUP
Prepared location reference		Test Samples Results	
Reference Photos	Not/Yes	Other	
Comments by: Eng. Maher Elmaghrabi (SPECIATION)		Comments by: Eng. Alaa Al-Maghrabi (SI)	
Test results by third party for material is approved. Sample Representative (SI) is 100%.		1- All tests were collected for Quality test and were carried out by Third party (SI) as attached. 2- All test report attached and acceptable with the project specifications. 3- Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Signature	Name	Sign	Date	Signature
	Eng. Mohamed Elmaghrabi			A
	Eng. Maher Elmaghrabi			A
	Eng. Mohamed Elmaghrabi			
Project Representative	Eng.	2023/11/4		AWC

For Approval only

11/4



Contractor Company	Eng. Abdelhakim El-Daly For Consulting مهندس عبد الحليم الدالي للاستشارات	Contract Company	Project No. / Project Name																		
Issued by Contractor	Mr. Mohamed El-Daly م. محمد الدالي	Drawn Serial Number (1/1/2021) or (1/1/21)	Page No.																		
Reviewed by QA/QC CONSULTANT	Eng. Mervat El-Daly م. مervat الدالي	<table border="1"> <tr> <td>NO.</td> <td>DATE</td> <td>BY</td> <td>NO.</td> <td>DATE</td> <td>BY</td> <td>NO.</td> <td>DATE</td> <td>BY</td> </tr> <tr> <td>100</td> <td>10/11</td> <td>CS</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> </table>	NO.	DATE	BY	NO.	DATE	BY	NO.	DATE	BY	100	10/11	CS	10	10	10	10	10	10	
NO.	DATE	BY	NO.	DATE	BY	NO.	DATE	BY													
100	10/11	CS	10	10	10	10	10	10													

NO. / DATE	NO. / DATE	NO. / DATE
Project Reference	Project Reference	Project Reference
Work Activity		
No. / Date of Issue		

Description of Materials	Subcontract Layer Total Quantity (5000 m ²)		
Location to be used	From Station (85+000.5) to Station (86+000.5)		
Sample only	Yes	Materials Type	Filler
Supplier Name		Case Sheet provided	Not attached
Reference in BoD		Specification	Subcontract layer should be tested at most possible locations in the project center
Prequal Location reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by Eng. Mervat El-Daly (QA/QC)	Comments by Eng. Mervat El-Daly (QA/QC)		
1- Quality and Quantity of 1000 m ² sample has been approved.	1- All tests were tested for Quality and were carried out by Third party Lab Consultant.		
2- 1000 m ² sample Report No. (9900 m ²) only.	2- 1000 m ² report attached and is compliant with the project specifications.		
	3- Final approval is subject to above mentioned comments.		

APPROVAL STATUS				
Organization	Name	Sign	Date	REMARKS
Contractor	Eng. Mohamed El-Daly		15/11	A
QA/QC *	Eng. Mervat El-Daly			A
QA/QC **	Eng. Mohamed El-Daly			
Employer Representative	Eng. Mervat El-Daly			Approved

* Supplier
** if provided, please attach

15/11

Contractor Company	Eng. Abdelkarem El-Feky for Contracting		Designer Company	SPECTRUM Engineering Consulting Office	
Issued by Contractor	Name	Eng. Mohamed El-Feky	Date/Serial Number	10/5/2023	
Received by GAQA CONSULTANT	Eng. Momen Essawy		(M.I.R. No)	3:00 PM	

CODE: 1	SI to SI	DO to SI	Sp XXX Site
	Station Reference	Depart Reference	For Kilometer point only Start Km is used
	Work Activity		
	Sub Element of Activity		

Description of Materials	[Subbelast2]			
Location to be Used	From	385+007.5	TO	385+500
MAR & UR Approval No	UHR SB-005	Date	3/5/2023	
	Utk SB-005		3/5/2023	
	UHR SB-010		17/5/2023	
	M.A.R.(QT SB)		28/3/2023	
Supplier Name				
Test Requirement	F.D.T (ASTM D 1556)	Specification	DATAWORK SPECIFICATIONS & TESTING REPORT (Q2)-10.2 VERSION 2 BY CRACKON GROUP	
Reference Photos	Na/Yes	Other		
Item	Description	Unit	Quantity	Arrival Date
1	SAND CONE TEST	NUMBER	50	11/6/2023
2				
3				
4				
Comments by: Eng. Momen Essawy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allah (ER)		
1-The Compaction Test Result F.D.T. (ASTM D 1556) is Approved.		1-F.D.T was carried-out by Third party lab Combussal. 2-Results report attached and acceptable with project specifications. 3-Final approval is subject to above mentioned comments.		

APPROVAL STATUS				
Organization	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed El-Feky			A
QA/QC *	Eng. Momen Essawy			A
GAQA**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allah	for	12-6-2023	AWC

* Designer
** Approving/Signs Client only



COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/20-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031708/LA

Report NO. : 1386/01/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام الظلي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	1	2	3	4	5
Description	St (385+010)	St (385+020)	St (385+030)	St (385+040)	St (385+050)
Initial wt. (gm)	11348	9070	10078	6736	9236
Wt. after filling the cone and the hole (gm)	8230	6883	9910	3648	6100
Wt. of wet Sample from hole (gm)	2490	2439	2540	2478	2460
Wt. of sand filling hole (gm)	1590	1590	1040	1678	1610
Wt. of sand filling cone (gm)	1620	1620	1520	1528	1520
Density of standard sand (g/cm ³)	1.50				
Volume of hole (cm ³)	1060.66	1060.66	993	1048.7	1073.3
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	188.1	181.7	191	190.6	191.2
Wet Density (g/cm ³)	2.340	2.292	2.323	2.388	2.290
Moisture ratio (%)	6.2	4.5	5.0	4.9	4.8
Dry Density (g/cm ³)	2.224	2.187	2.213	2.289	2.191
(Prox. dry) (g/cm ³)	2.188				
Compaction Ratio (%)	102	106	101	103	100

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers

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. 031705/1A

Report NO. : 1386/02/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام الطائي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Points NO.	6	7	8	9	10
Description	St (385+688)	St (385+678)	St (385+683)	St (385+990)	St (385+500)
Initial wt. (gm)	8760	8660	16493	7216	6190
Wt. after filling the cone and the hole (gm)	5630	5530	7390	4076	3086
Wt. of wet Sample from hole (gm)	3130	3130	9103	3140	3104
Wt. of sand filling hole (gm)	1600	1630	1590	1628	1580
Wt. of sand filling cone (gm)	1530	1500	1520	1628	1520
Density of standard sand (kg/m ³)	1.60				
Volumes of hole (cm ³)	1088.67	1088.67	1053	1088.0	1088.0
Wt. of wet Sample (gm)	209				
Wt. of sample after drying (gm)	188.1	189.3	191	193.6	193.8
Wet Density (gm/cm ³)	2.326	2.301	2.326	2.361	2.290
Moisture ratio (%)	6.2	6.1	4.7	4.9	4.8
Dry Density (gm/cm ³)	2.210	2.189	2.221	2.369	2.187
(Max. dry) (gm/cm ³)	2.188				
Compaction Ratio (%)	101	100	102	103	100

Lab director
Eng : Eman, E. Kandil

Geotechnical consultant
Dr. Mohamed Mostafa Badry



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COMIBASSAL International Controllers

Internal inspection and laboratories sector

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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/IA

Report NO. : 1386/03/center
Date : 12/6/2023

Field Deter. Of Density Of Soil In Place Report ASTM - D 1558

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام القلي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Point NO.	11	12	13	14	15
Description	St (385+110)	St (385+120)	St (385+130)	St (385+140)	St (385+150)
Initial wt. (gm)	5138	6290	10188	9670	6580
Wt. after filling the cone and the hole (gm)	8190	6160	7930	6860	3490
Wt. of wet Sample from hole (gm)	3690	2470	2510	2470	2005
Wt. of sand filling hole (gm)	1792	1582	1582	1572	1572
Wt. of sand filling cone (gm)	1518	1518	1518	1518	1518
Density of standard sand (g/cm ³)	1.50				
Volume of hole (cc)	1124.67	1064.67	935	1048.0	1048.0
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	199.1	198.3	191	190.8	190.8
Wet Density (g/cc)	2.362	2.342	2.366	2.357	2.388
Moisture ratio (%)	6.2	6.1	4.7	4.9	4.8
Dry Density (g/cc)	2.245	2.238	2.273	2.245	2.290
(g/cc)	2.188				
Compaction Ratio (%)	103	102	104	103	104

Lab director

Eng : Eman. H. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



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COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/29-15-2011
Accredited by : Egyptian Accreditation Council (EGAC) under No. 033708/1A

Report NO. : 1389/04/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام علي تفتاوت
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	16	17	18	19	20
Description	St (386+169)	St (386+179)	St (395+180)	St (386+188)	St (395+206)
Initial wt. (gr)	9608	6008	8810	7510	6610
Water filling the cone and the hole (gr)	6608	3360	4890	4300	3600
Wt. of wet Sample from hole (gr)	2938	2648	3920	3210	3010
Wt. of sand filling hole (gr)	1832	1602	1612	1692	1592
Wt. of sand filling cone (gr)	1518	1518	1518	1518	1518
Density of standard sand (gr/cm ³)	1.50				
Volume of hole (cm ³)	1088.00	1088.00	1075	1128.0	1061.3
Wt. of wet Sample (gr)	200				
Wt. of sample after drying (gr)	191.5	188.6	191	190.3	193.7
Wet Density (gr/cm ³)	2.325	2.388	2.364	2.295	2.337
Moisture ratio (%)	4.4	4.9	4.7	5.1	4.9
Dry Density (gr/cm ³)	2.227	2.276	2.267	2.195	2.238
(γ_{max} dry) (gr/cm ³)	2.188				
Compaction Ratio (%)	102	104	103	100	102

Lab director

Eng : Esmat E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



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COMIBASSAL International Controllers

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. 031705/1A

Report NO. : 1388/05center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام قنبر للتقنيات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Points NO.	21	22	23	24	25
Descriptions	St (385+210)	St (385+220)	St (385+230)	St (385+240)	St (385+250)
Initial wt. (gm)	11290	6383	9983	9750	7390
Wt. after filling the cone and the hole (gm)	6386	9050	6789	3690	4250
Wt. of wet Sample from hole (gm)	2616	2600	2679	2515	2490
Wt. of sand filling hole (gm)	1662	1692	1682	1692	1622
Wt. of sand filling cone (gm)	1618	1616	1618	1518	1518
Density of standard sand (g/cc)	1.56				
Volume of hole (cm³)	9041.33	9061.33	1121	1068.9	9991.3
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	190.6	191.7	191	193.7	191.6
Wet Density (g/cm³)	2.419	2.359	2.292	2.385	2.305
Moisture ratio (%)	6.9	4.3	6.9	4.5	4.3
Dry Density (g/cm³)	2.295	2.259	2.194	2.245	2.268
(Proctor Dry) (g/cm³)	2.189				
Compaction Ratio (%)	105	103	100	103	101

Lab director

Eng : Eman, E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



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COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/29-15-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031708/1A

Report NO. : 1388/06/center
Date : 12/8/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام علي شقولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	24	27	28	29	30
Description	St (385+200)	St (385+270)	St (386+280)	St (388+290)	St (385+399)
Initial wt. (gm)	8290	7930	7200	6750	6420
Weight filling the cone and the hole (gm)	5170	4733	4390	3660	3300
Wt. of wet Sample from hole (gm)	3195	2840	2800	2520	2480
Wt. of sand filling hole (gm)	9002	8582	8642	8582	8602
Wt. of sand filling cone (gm)	1018	9516	1018	1018	1018
Density of standard sand (g/cc)	1.50				
Volume of hole (cm ³)	1995.93	1521.33	1686	1954.7	1998.6
Wt. of wet Sample (gm)	200				
Wet sample after drying (gm)	101.5	100.5	92	101.5	106.5
Wet Density (g/cc) (gm/cm ³)	2.335	2.354	2.294	2.380	2.322
Moisture ratio (%)	4.4	4.9	4.3	4.4	4.6
Dry Density (g/cc) (gm/cm ³)	2.237	2.246	2.190	2.298	2.215
(Theoretical dry) (g/cc) (gm/cm ³)	2.180				
Compaction Ratio (%)	102	103	100	995	101

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers

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

Report NO. : 1388/07/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام علي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	31	32	33	34	35
Description	St (388+319)	St (388+328)	St (388+339)	St (388+348)	St (388+350)
Initial wt. (gm)	8266	7748	19390	8930	8863
Wt. after filling the cone and the hole (gm)	6589	4618	7389	3940	6750
Wt. of wet Sample from hole (gm)	2440	2459	3550	2470	2420
Wt. of sand filling hole (gm)	1642	1652	1632	1672	1682
Wt. of sand filling cone (gm)	1618	1618	1618	1618	1618
Density of standard sand (gm/cc)	1.55				
Volume of hole (cc)	1608.66	1614.67	1939.0	1648.0	1664.7
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	190.5	190.3	191	196.3	190.2
Wet Density (gm/cc)	2.374	2.357	2.344	2.367	2.295
Moisture ratio (%)	6.0	4.8	4.5	6.1	5.2
Dry Density (gm/cc)	2.261	2.210	2.243	2.243	2.182
(max dry) (gm/cc)	2.188				
Compaction Ratio (%)	103	101	103	102	100

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/28-El-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Report NO. : 1386/08/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام القلي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	36	37	38	39	40
Description	St (385+388)	St (385+376)	St (385+380)	St (385+390)	St (385+400)
Initial wt. (gm)	6720	9400	9400	6055	8648
Wt. after filling the cone and the hole (gm)	3550	6340	6330	2870	5490
Wt. of wet Sample from hole (gm)	2680	2530	2640	2500	2500
Wt. of sand filling hole (gm)	1622	1602	1652	1672	1632
Wt. of sand filling cone (gm)	1518	1518	1518	1510	1510
Density of standard sand (Y _s) (gm/cc)	1.50				
Volume of hole (cc)	1001.33	1008.00	1035	1114.7	1038.0
Wt. of wet Sample (gm)	209				
Wt. of sample after drying (gm)	191.5	190.7	190	191.4	190.2
Wet Density (Y _{wet}) (gm/cc)	2.293	2.359	2.356	2.288	2.256
Mixture ratio (%)	4.4	4.9	5.2	4.5	5.1
Dry Density (Y _{dry}) (gm/cc)	2.196	2.269	2.243	2.189	2.188
(Y _{max dry}) (gm/cc)	2.188				
Compaction Ratio (%)	100	103	102	100	100

Lab director

Eng : Emran E. Kandil

Geotechnical consultant

Dr Mohamed Mostafa Barry



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Accredited by : Egyptian Accreditation Council (EGAC) under No. 031706/1A

Report NO. : 1388/09/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام التلي للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Point NO.	41	42	43	44	45
Description	St (265+450)	St (385+429)	St (385+430)	St (385+448)	St (385+458)
Initial wt. (gm)	10360	7658	6418	7990	7980
Wt. after filling the cone and the hole (gm)	7263	5980	5289	4700	3340
Wt. of wet Sample from hole (gm)	2490	2428	2530	2556	2450
Wt. of sand filling hole (gm)	1582	1582	1612	1642	1622
Wt. of sand filling cone (gm)	1018	1010	1016	1018	1018
Density of standard sand (g/cc)	1.50				
Volume of hole (cc)	1054.67	1056.67	1679	1054.7	1091.3
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	188.6	191.5	191	192.8	193.8
Wet Density (g/cc)	2.352	2.295	2.354	2.329	2.283
Moisture ratio (%)	4.6	4.4	4.5	4.2	4.9
Dry Density (g/cc)	2.223	2.197	2.245	2.236	2.194
Compaction Ratio (%)	102	100	103	103	100

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

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Report NO. : 1306/10/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام للمقاولات
Project : Electric express train
Sample : Sub ballast (2)
Date of test : 11-6-2023

Results :

Points NO.	46	47	48	49	50
Description	St (385+460)	St (385+470)	St (385+480)	St (385+490)	St (385+500)
Initial wt. (gr)	6400	7000	9000	6578	7338
Wt after filling the cone and the hole (gr)	5400	4350	6570	3433	4243
Wt of wet Sample from hole (gr)	2500	2550	2470	3520	2490
Wt. of sand filling hole (gr)	1582	1612	1832	1622	1572
Wt. of sand filling cone (gr)	1518	1518	1518	1518	1518
Density of standard sand (Mg/m ³)	1.50				
Volume of hole (cm ³)	1641.33	1685.33	1666	1695.3	1649.6
Wt of wet Sample (gr)	200				
Wt of sample after drying (gr)	191.5	191.8	191	192.0	190.8
Wet Density (Mg/m ³)	2.435	2.349	2.313	2.320	2.376
Moisture ratio (%)	4.4	4.3	4.9	4.2	4.8
Dry Density (Mg/m ³)	2.299	2.263	2.204	2.237	2.267
($\gamma_{max dry}$) (Mg/m ³)	2.588				
Compaction Ratio (%)	108	103	101	102	104

Lab director

Eng : Eman E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



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* Designer
File Name: MS-F L002

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		Abd EL-Salam EL-Faky Contracting Company				Designer Company*		(SPECTRUM) Engineering Consulting Office																											
Issued by Contractor		 Eng. Ahmed Abdel-Aziz				Date/Serial Number		2/05/2023 IRSB2(008)																											
Received by GARB CONSULTANT		 Eng. Mohamed Nagib				UHR		<table border="1"> <tr> <td>01</td><td>02</td><td>03</td><td>04</td><td>05</td><td>06</td><td>07</td><td>08</td><td>09</td><td>10</td><td>11</td><td>12</td> </tr> <tr> <td>385</td><td>386</td><td>387</td><td>388</td><td>389</td><td>390</td><td>391</td><td>392</td><td>393</td><td>394</td><td>395</td><td>396</td> </tr> </table>				01	02	03	04	05	06	07	08	09	10	11	12	385	386	387	388	389	390	391	392	393	394	395	396
01	02	03	04	05	06	07	08	09	10	11	12																								
385	386	387	388	389	390	391	392	393	394	395	396																								
CODE - 1		S1 to S21 Station Reference				C1 to C3 Depot Reference		Rp XXX Note For K50 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. 385+100 To St. 385+108		Subballast 2				Subballast																													
INSPECTION DETAILS The following will be ready at the Planned Inspection Time																																			
Planned Inspection Date						Planned Inspection Time																													
COMPLIANCE EVIDENCE Submit be included as appropriate																																			
Checklist Attached		Test Results Attached				Calibration Attached		Other as Indicated																											
Drawing Reference		References				MS Reference																													
Plan and Profile REV. 32		MAR (QT 581) MIR () (SB(002))				-Specification: EARTHWORK SPECIFICATIONS & TESTING REPORT (EG21-4L) VERSION 02 BY CIVECON GROUP. -TECHNICAL REPORT (EG21-122-1) VERSION 1 BY CIVECON GROUP.																													
Comments by Eng. Mohamed Khalil (XYZ)																																			
1- Attached Master Sheet approved by SPECTRUM.																																			
Comments by Eng. Mohamed Nagib (SPECTRUM)																																			
1- تم استلام القطاع الممنوع بهاري 2- تم مراجعة شيفت المتناسب																																			
Comments by Eng. Alaa Abd-Alaziz (GB)																																			
1-coordinates & levels and width checked by GARB consultant 2- (REV. 31 & X-sec./20m) Should Approved from SYSTRAL. 3-final approval is subject to above mentioned comments.																																			
INSPECTION RESULT																																			
Organisation	Name	Sign	Date	Time	Approval Status	Please Tick if Not Attend																													
Contractor	Eng. Ahmed Abdel-Aziz				A																														
XYZ Survey	Eng. Mohamed Khalil				AWC																														
QA/QC*	Eng. Mohamed Nagib				A																														
GARB**	Eng. Mohammed Fayal																																		
Employers Representative	Eng. John Samy		3-5-2023		AWC																														

* Designer
File Name : IRS-F-002

Page 1 of 1

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			
Contractor Company	Abd EL-Salam EL-Paky Contracting Company	Designer Company*	(SPECTRUM) Engineering Consulting Office
Issued by Contractor	Name: Eng. Ahmed Abd-Almosaef Sign: [Signature] Date/Social Number: 16/05/2023 (R.SB2 (010))	Time	4:00 PM
Received by GARB CONSULTANT	Eng. Mustafa Ryad	UR	SS SS SH CS 17 05 2023 12 00
CODE-1	S1 to S21 Station Reference	D1 to D3 Depot Reference	Ko XXX Note For KRo meter print 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. 385+300 To St. 385+500	Subballast 2	Subballast	
INSPECTION DETAILS The following will be ready at the Planned Inspection Date			
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. 32	WAR (QT SB1) MR (SO (004))	-Specification: EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-43) VERSION 2 BY OMVECON GROUP. -TECHNICAL REPORT (CG21-122-1) VERSION 3 BY OMVECON GROUP.	
Comments by: Eng. Mohamed Khalil (XYZ)			
1- Attached Master Sheet approved by SPECTRUM.			
Comments by: Eng. Eng. Mustafa Ryad (SPECTRUM)		Comments by: Eng. Alaa Abd-Almot (GRI)	
1- تم استلام اللقاح لمسحري 2- تم مراجعة شوك المسحور		1-coordinates & levels and width checked by GARB consultant 2- (REV. 32 & X-sec./20m) Should Approved from SYSTRA. 3-Final approval is subject to above mentioned comments.	
INSPECTION RESULT			
Organisation	Name	Sign	Date
Contractor	Eng. Ahmed Abd-Almosaef	[Signature]	
XYZ Survey	Eng. Mohamed Khalil	[Signature]	
QA/QC*	Eng. Mustafa Ryad	[Signature]	
GARB**	Eng. Mohammed Fayad		
Employers Representative	Eng. John Samy	[Signature]	17-5-23
Approval Status		Please Tick If Not Attend	
A-AWC-R		A	
A-AWC-R		A	
A-AWC-R		A	

Contractor Company	Eng. Abdelhaleem ElFayez شركة	Designer Company	(SPECTRUM) Engineering Consulting Office
Issued by Contractor	Name: Eng. Mohamed Ismail Date/Serial Number: 28/7/2023 07/28/23	Time	09:00
Received by GAAR CONSULTANT	Eng. Mazen Essany	CS	CS
	285	EW	CS
	28	9	23
	8	0	

Station Reference	Station Reference	Sub Element of Activity
Sub Element of Activity	Sub Element of Activity	Sub Element of Activity

Description of Materials	Subballast Layer Total Quantity (5000 m ³)		
Location to be Used	From Station 385+007.5) to Station (386+007.5)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached
Reference in BoQ		Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (EG21-41.2) VERSION 2 BY CHRECON GROUP
Prequalification reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by: Eng. Mazen Essany (SPECTRUM)	Comments by: Eng. Alaa Abd-Atatif (ER)		
Quality test Result By Third Party Lab Comiborsal is Approved.	1-All tests were selected for Quality test and were carried-out by Third party lab Comiborsal.		
This Sample Representative (5000 m ³) only.	2-Results report attached and acceptable with the project specifications.		
	3-Final approval is subject to above mentioned comments		

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismail			A
JA/OC *	Eng. Mazen Essany			A
SARB**	Eng. Mohammed Fayad			
Employers Representative	Eng.			AWC

* Designer
** Engineer/Engineer Consultant

11/4

Contractor Company	Eng. Abdifattah El-Fay	Designer Company	(SPECTRUM) Engineering Consulting Office
Issued by Contractor	Eng. Mohamed Ismail	Date/Serial Number	12/6/2023 (MLR SB) (MR)
Received by G&B CONSULTANT	Eng. Maren Essawy	Time	2:00 PM

CODE-1	33 to 531	01 to 53	Sp. 1000 Note
	Material Reference	Design Reference	For Kilo-meter point only that it is used
	Work Activity		
	Sub Elements of Activity		

Description of Materials	(Subballast2)		
Location to be Used	From	385+500	TO 396+007.5
MAR & UR Approval No	U.R. SB-007 U.R. SB-011 U.R. SB-0012 M.A.R. (QT 592)	Date	16/5/2023 28/5/2023 30/5/2023 18/5/2023
Supplier Name			
Test Requirement	F.D.T (ASTM D 1556)	Specification	LANDWORK SPECIFICATIONS & TESTING REPORT (C021-45.1) VERSION 2 BY CIVILCON GROUP
Reference Photos	No/Yes	Other	
Item	Description	Unit	Quantity
1	SAND CONE TEST	NUMBER	50
2			
3			
4			
Comments by: Eng. Maren Essawy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allah (ER)	
1-The Compaction Test Result F.D.T. (ASTM D 1556) is Approved.		1-F.D.T was carried-out by Third party lab Comibatool. 2-Results report attached and acceptable with project specifications. 3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A.AWC-R
Contractor	Eng. Mohamed Ismail			A
QA/QC *	Eng. Maren Essawy			A
G&B**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allah		13-6-2023	Awc

* Designer
** Alignment/Design, Survey only



COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2021
Accredited by : Egyptian Accreditation Council (EGAC) under No. 031706/LA

Report NO. : 140401/center
Date : 13/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام طاهر للمقاولات
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Pallets NO.	1	2	3	4	5
Description	SI (285+512)	SI (285+528)	SI (285+538)	SI (285+543)	SI (285+558)
Initial wt. (gm)	7180	8188	6640	7739	8900
Weight filling the cone and the hole (gm)	3330	5128	3588	4479	4980
Wt. of wet sample in hole (gm)	2450	2538	2588	2470	2950
Wt. of sand filling hole (gm)	1560	1618	1633	1610	1890
Wt. of sand filling cone (gm)	1850	1658	1650	1650	1850
Density of standard sand (g/cc)	1.52				
Volume of hole (cc)	1648.69	1673.32	1687	1673.3	1596.7
Wt. of wet sample (gm)	209				
Wt. of sample after drying (gm)	182.3	193	192	193.4	183.2
Wet Density (g/cc)	2.388	2.357	2.301	2.301	2.384
Moisture ratio (%)	4.8	3.6	4.2	3.4	3.6
Dry Density (g/cc)	2.265	2.276	2.268	2.265	2.328
Specific Gravity	2.210				
Compaction Ratio (%)	102	103	100	101	101

Lab director

Eng : Eman E. Kandil

Geotechnical consultant

For Dr. H.
Dr. Mohamed Mostafa Badry

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Internal inspection and laboratories sector

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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Report NO. : 1404021center
Date : 13/6/2023

Field Deter. Of Density Of Soil In Place Report

ASTM - D 1556

General consultant

SYSTRA

Consultant

SPECTRUM

Contractor

شركة عبد السلام القلي للمقاولات

Project

Electric express train

Sample

Sub-ballast layer (2)

Date of test

12-6-2023

Results

Punches NO.	6	7	8	9	10
Description	Sr (285+568)	Sr (285+570)	Sr (285+568)	Sr (285+568)	Sr (285+568)
Initial wt. (gms)	11688	4268	18700	7368	4870
Wt. after filling the cone and the hole (gms)	8320	5900	1462	4601	3580
Wt. of wet sample from hole (gms)	2870	2430	2458	2489	2340
Wt. of sand filling hole (gms)	1630	1550	1088	1622	1640
Wt. of sand filling cone (gms)	1850	1850	1668	1652	1650
Density of standard sand (g/cc)	1.50				
Volume of hole (cc)	1906.67	1633.33	1068	1084.8	1683.3
Wt. of wet Sample (gms)	280				
Wt. of sample after drying (gms)	190.5	193	193	193.0	190.5
Wet Density (g/cc)	2.295	2.382	2.390	2.284	2.323
Moisture ratio (%)	4.0	3.8	3.8	3.8	3.4
Dry Density (g/cc)	2.274	2.388	2.274	2.204	2.268
Compaction Ratio (%)	2.270				
Compaction Ratio (%)	93	102	93	90	102

Lab director

Eng. Ezzan. E. Kandil



Geotechnical consultant

For Dr. M.
Dr. Mohamed Mostafa Badry

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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/LA

Report NO. : 1404/03/center
Date : 13/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام العلي للهندسة
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Pokes NO.	11	12	13	14	15
Description	St (285+618)	St (285+628)	St (285+630)	St (285+640)	St (285+650)
Initial wt. (gm)	10659	7270	9430	6030	8706
Wt. after filling the cone and the hole (gm)	7378	4820	6210	2778	5468
Wt. of wet Sample from hole (gm)	2883	2450	2623	2468	2930
Wt. of sand filling hole (gm)	1630	1008	1650	1610	1640
Wt. of sand filling cone (gm)	1650	1658	1630	1630	1650
Density of standard sand (Mg/m ³)	1.50				
Volume of hole (cm ³)	1066.67	1666.67	1613	1673.3	1693.3
Wt. of wet Sample (gm)	200				
Wt. of Sample after drying (gm)	192.2	100	180	182.8	181.5
Wet Density (Mg/m ³)	2.358	2.325	2.342	2.382	2.314
Moisture ratio (%)	3.9	5.3	3.8	4.2	4.6
Dry Density (Mg/m ³)	2.276	2.209	2.254	2.308	2.218
(Mg/m ³)	2.210				
Compaction Ratio (%)	103	106	102	103	100

Lab director

Eng : Esmat E. Kandil

Geotechnical consultant

For. Or. H.

Dr. Mohamed Mostafa Badry

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Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/LA

Report NO. :140404/center
Date : 13/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام القلي للمقاولات
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Pebble NO.	16	17	18	19	20
Description	St (185+966)	St (305+570)	St (185+088)	St (185+090)	St (305+780)
Initial wt. (gm)	9656	2055	9583	6189	7530
Wt. after filling the cone and the hole (gm)	7260	4583	6190	3895	4268
Wt. of wet Sample from hole (gm)	2478	2590	2436	2560	2579
Wt. of sand filling hole (gm)	1589	1968	1583	1044	1620
Wt. of sand filling cone (gm)	1650	1668	1650	1650	1650
Density of standard sand (g/cc)	1.50				
Volume of hole (cc)	1880.00	1693.33	1048	1006.0	1689.8
Wt. of wet Sample (gm)	280				
Wt. of sample after drying (gm)	190	193	190	193.6	198.3
Wet Density (Wet) (g/cc)	2.338	2.287	2.337	2.318	2.389
Moisture ratio (%)	4.2	3.6	6.3	3.4	5.1
Dry Density (Dry) (g/cc)	2.237	2.287	2.228	2.241	2.264
(Wet/Dry) (g/cc)	2.218				
Compaction Ratio (%)	101	99	100	101	102

Lab director

Eng : Eman E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers

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. 031706/1A

Report NO. : 1484/05/center
Date : 12/6/2023

Field Detr. Of Density Of Soil In Place Report

ASTM - D 1556

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام طاني للمقاولات
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Points NO.	21	22	23	24	25
Description	St (285+712)	St (285+726)	St (285+732)	St (285+742)	St (285+752)
Initial wt. (gm)	11608	7630	13166	7048	6890
Wt. after filling the cone and the hole (gm)	7950	4488	7083	3043	3380
Wt. of wet Sample from hole (gm)	2550	2069	5889	2475	2500
Wt. of sand filling hole (gm)	5625	1615	1665	1885	985
Wt. of sand filling cone (gm)	1545	1545	1545	1545	1545
Density of standard sand (kg/m ³)	1.60				
Volume of hole (cm ³)	1883.33	1075.87	997	1056.7	1123.3
Wt of wet Sample (gm)	200				
Wt of sample after drying (gm)	193.0	182.8	192	193.3	193.4
Wet Density (kg/m ³)	2.394	2.322	2.378	2.342	2.396
Moisture ratio (%)	3.3	3.8	4.2	3.5	3.4
Dry Density (kg/m ³)	2.279	2.238	2.281	2.283	2.238
(kg/m ³)	2.210				
Compaction Ratio (%)	101	101	103	102	101

Lab director

Eng : Eman. E. Kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



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COMIBASSAL International Controllers

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. 031706/1A

Report NO. : 1404/08/center
Date : 13/6/2023

Field Detr. Of Density Of Soil In Place Report

ASTM - D 1556

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام المكي للتقانة
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Points NO.	26	27	28	29	30
Description	S1 (305+790)	S2 (385+778)	S3 (395+780)	S4 (395+790)	S1 (385+800)
Initial wt. (gm)	8938	8880	7450	6490	10890
Wt after filling the cone and the hole (gm)	5733	6882	4905	3306	7706
Wt. of wet Sample from hole (gm)	2925	2998	2545	2484	2665
Wt. of sand filling hole (gm)	1885	1645	1688	1585	1645
Wt. of sand filling cone (gm)	1545	1545	1545	1545	1545
Density of standard sand (gm/cc)	1.55				
Volume of hole (cc)	1118.90	1096.67	1670	1583.3	1096.7
Wt of wet Sample (gm)	203				
Wt of sample after drying (gm)	193.6	183.2	193	193.8	182.1
Wet Density (gm/cc)	2.275	2.288	2.383	2.332	2.375
Moisture ratio (%)	3.4	3.5	3.8	3.8	4.1
Dry Density (gm/cc)	2.201	2.282	2.384	2.251	2.260
G(max,dry) (gm/cc)	2.210				
Compaction Ratio (%)	100	100	104	100	103

Lab director

Eng : Eiman E. Kasdi

Geotechnical consultant

For Dr. H -
Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers

Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/28-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Report NO. : 140407/center
Date : 13/6/2023

Field Deter. Of Density Of Soil in Place Report

ASTM - D 1556

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام طه للمقاولات
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Results :

Points NO.	31	32	33	34	35
Description	S1 (285+850)	S1 (285+820)	S2 (285+830)	S2 (285+840)	S1 (285+850)
Initial wt. (gm)	16640	7700	9770	8520	8906
Water filling the cone and the hole (gm)	7000	4480	8590	3400	6838
Wt. of wet Sample from hole (gm)	2458	2805	2496	2476	2580
Wt. of sand filling hole (gm)	1585	1605	1635	1575	1575
Wt. of sand filling cone (gm)	1545	1545	1545	1545	1545
Density of standard sand (gm/cc)	1.58				
Volume of hole (cc)	1063.33	1110.00	1690	1950.0	1058.0
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	181	192	193	188.2	193.6
Wet Density (gm/cc)	3.384	2.342	2.384	2.362	2.381
Moisture ratio (%)	4.7	4.2	3.7	5.2	4.9
Dry Density (gm/cc)	2.280	2.263	2.282	2.237	2.266
(Proctor) (gm/cc)	2.210				
Compaction Ratio (%)	100	102	100	101	103

Lab director

Eng : Eman. E. Kandil



Geotechnical consultant

Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/89-11-2011
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

Report NO. : 1404/86/center
Date : 12/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام القلي للخطوط
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Points NO.	34	37	38	39	40
Description	St (285+668)	St (285+878)	St (285+889)	St (355+890)	St (385+906)
Initial wt. (gm)	8440	8290	7350	8900	8458
Wt after filling the cone and the hole (gm)	5789	5540	4758	5768	5395
Wt. of wet Sample from hole (gm)	2550	2658	2592	2890	2478
Wt. of sand filling hole (gm)	1635	1685	1655	1655	1689
Wt. of sand filling cone (gm)	1645	1545	1645	1645	1645
Density of standard sand (g/cc)	1.50				
Volume of hole (cm ³)	1099.89	1076.68	1593	1763.3	1666.7
Wt of wet Sample (gm)	260				
Wt of sample after drying (gm)	190	190.8	192	199.0	181.8
Wet Density (g/cc)	2.321	2.357	2.347	2.308	2.218
Moisture ratio (%)	5.3	4.8	4.1	4.2	4.7
Dry Density (g/cc)	2.205	2.229	2.255	2.267	2.211
(gmax.dry) (g/cc)	2.188				
Compaction Ratio (%)	101	102	103	103	101

Lab director
Eng : Eman E. Kandil



Geotechnical consultant
For Dr. H.
Dr. Mohamed Mostafa Badry

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COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by: Egyptian General Authority for Petroleum under No. 84/29-11-2021
Accredited by: Egyptian Accreditation Council (EGAC) under No. 031708/1A

Report NO.: 140409/ceniter
Date: 13/6/2023

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

General consultant: SYSTRA
Consultant: SPECTRUM
Contractor: شركة عبد السلام اللامي للتقنيات
Project: Electric express train
Sample: Sub-ballast layer (2)
Date of test: 12-6-2023

Results:

Points NO.	41	42	43	44	45
Description	St (385+810)	St (385+928)	St (385+930)	St (385+940)	St (385+950)
Initial wt. (gm)	10990	6940	7410	8900	8120
Wt after filling the cone and the hole (gm)	7030	3720	4730	5040	4580
Wt of wet Sample from hole (gm)	3460	2420	2530	2470	2470
Wt. of sand filling hole (gm)	1615	1575	1635	1585	1505
Wt. of sand filling cone (gm)	1545	1645	1545	1505	1545
Density of standard sand (Mg/m ³)	1.50				
Volume of hole (cc)	9076.67	1890.00	1058	1663.3	1982.3
Wt of wet Sample (gm)	290				
Wt of sample after drying (gm)	193.4	193	192	193.5	193.4
Wet Density (Mg/m ³)	2.383	2.353	2.391	2.392	2.276
Moisture ratio (%)	3.2	3.6	4.2	3.4	3.6
Dry Density (Mg/m ³)	2.292	2.292	2.228	2.267	2.201
(from dry) (Mg/m ³)	2.188				
Compaction Ratio (%)	102	95	102	103	101

Lab director

Eng. Eman E. Kandil

Geotechnical consultant

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COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by: Egyptian General Authority for Petroleum under No. 34/28-ET-8011
Accredited by: Egyptian Accreditation council (EGAC) under No. 031706/1A

Report NO.: 1464/16center
Date: 13/6/2023

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

General consultant : SYSTRA
Consultant : SPECTRUM
Contractor : شركة عبد السلام الفلي للمقاولات
Project : Electric express train
Sample : Sub-ballast layer (2)
Date of test : 12-6-2023

Pit No.	46	47	48	49	50
Description	SI (285+988)	SI (305+376)	SI (285+988)	SI (285+988)	SI (305+820)
Initial wt. (gm)	10000	9283	6670	8340	7558
Wt. after filling the cone and the hole (gm)	6632	6870	2008	5178	4389
Wt. of wet Sample from hole (gm)	2518	2518	2592	2490	2520
Wt. of sand filling hole (gm)	1645	1675	938	925	1638
Wt. of sand filling cone (gm)	1545	1588	1545	1545	1545
Density of standard sand (g/cm³)	1.60				
Volume of hole (cm³)	1006.62	1116.87	1068	1083.3	1080.0
Wt. of wet Sample (gm)	200				
Wt. of sample after drying (gm)	192.3	193.5	193	198.6	190.5
Wet Density (g/cm³)	2.289	2.268	2.294	2.288	2.312
Moisture ratio (%)	4.0	3.4	3.9	4.0	5.8
Dry Density (g/cm³)	2.285	2.192	2.208	2.189	2.202
(gmax dry) (g/cm³)	2.188				
Compaction Ratio (%)	101	100	101	100	101

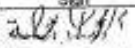
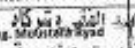
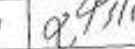
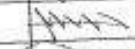
Lab director
Eng. Eman, E. Kandil

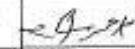
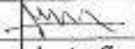
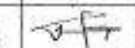
Geotechnical consultant
For Dr. M.
Dr. Mohamed Mostafa Badry

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UNIVERSAL INSPECTION REQUEST		   	
RECEIPT of NOTIFICATION-Minimum Notice Period not less than 24 Hours The block described below will be complete and ready for inspection at planned time shown			
Contractor Company	Abd EL-Salam EL-Feky Contracting Company		Designer Company* SPECTRUM Engineering Consulting Office
Issued by Contractor	Name Eng. Ahmed Abd-Almoneem	Sign 	Date/Serial Number 15/05/2023 IRSB2(007)
Received by GARB CONSULTANT	Eng. Mustafa Ayed 	Unit 385	Time 4:00 PM
CODE-1	S1 to S21 Station Reference	Q1 to Q3 Datum Reference	For 100m 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. 385+000 To St. 385+007.5	Subelement 2	Subelement	
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 Plan and Profile REV. 32	References MAR (QT 5B2) MIR (SB003)	MS Reference Specification: EARTHWORK SPECIFICATIONS & TESTING REPORT (G25-41) VERSION 2 BY CAVECON GROUP TECHNICAL REPORT (G25-122.3) VERSION 1 BY CAVECON GROUP	
Comments by Eng. Mohamed Khalil (XYZ) 1- Attached Master Sheet approved by SPECTRUM.			
Comments by Eng. Eng. Mustafa Ayed (SPECTRUM) 1- تم استلام المقام لمسح بصري 2- تم مراجعة كتيبات الماكشيب		Comments by Eng. Alaa Abd-Alattif (GSI) 1-coordinates & levels and width checked by GARB consultant 2- (REV. 32 & X-sec./10m) Should Approved from SYSTRA. 3-Final approval is subject to above mentioned comments.	
INSPECTION RESULT			
Organisation	Name	Sign	Date
Contractor	Eng. Ahmed Abd-Almoneem		
XYZ Survey	Eng. Mohamed Khalil		
QA/QC*	Eng. Mustafa Ayed		
GARB**	Eng. Mohammed Fayed		
Employers Representative	Eng. John Samad		16-5-2023
Approval Status		Please Tick if Not Attend	
A-AWC-R		A	
		A	
		AWC	

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	Abd EL-Salem EL-Sayed Contracting Company		Designer Company*
Issued by Contractor	Name: <u>Eng. Mohamed Khalil</u> Eng. <u>Abd-El-Moneem</u>		Date/Serial Number 27/05/2023 IBSB2(012)
Received by GARB CONSULTANT	Eng. Moustafa Ryad		Time 4:00 PM
CODE: 1	R1 to R21 Station Reference		R2 to R31 Station Reference
CODE: 2	R32 to R42 Station Reference		R43 to R53 Station Reference
CODE: 3	R54 to R64 Station Reference		R65 to R75 Station Reference
EXPLANATION OF WORK TO BE INSPECTED			
Description		Element	Item
From St. 305+500 To St. 305+600		Subblast 2	Subblast
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. 32	MAR (Q2 502) MAR (Q3 505)	-Specification: EARTHWORK SPECIFICATIONS & TESTING REPORT (EGS-41.2) VERSION 2 BY CIVTECON GROUP. -TECHNICAL REPORT (COT-122.1) VERSION 3 BY CIVTECON GROUP.	
Comments by: Eng. Mohamed Khalil (XYZ)			
1- Attached Master Sheet approved by SPECTRUM.			
Comments by: Eng. Eng. Moustafa Ryad (SPECTRUM)		Comments by: Eng. Alex Abd-Allah (GRI)	
1- تم استلام القطاع فحص وصرى 2- تم مراجعة شيت المتناسيب		1-coordinates & levels and width checked by GARB consultant 2- (REV. 32 & X-sec./20m) Should Approved from SYSTRA. 3-Final approval is subject to above mentioned comments.	
INSPECTION RESULT			
Organisation	Name	Sign	Date
Contractor	Eng. Ahmed Abd-Elmoneem		
XYZ Survey	Eng. Mohamed Khalil		
QA/QC*	Eng. Moustafa Ryad		
GARB**	Eng. Mohammed Fayad		
Employers Representative	Eng. John Samy		28-5-2023
			AWC

Contractor Company	Eng. Abdulsalam ELFayoumy	Designer Company	SPECTRUM Engineering Consulting Office																
Issued by Contractor	Name: Eng. Mohamed Essam Date/Serial Number: 27/4/2023 QT 99 (1)	Time	8:00																
Received by GARB CONSULTANT	Eng. Maen Essam	MM	<table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>SO</td> <td>MSH</td> <td>YY</td> <td>HT</td> <td>MS</td> </tr> <tr> <td>335</td> <td>EW</td> <td>CS</td> <td>29</td> <td>3</td> <td>22</td> <td>2</td> <td>0</td> </tr> </table>	C1	C2	C3	SO	MSH	YY	HT	MS	335	EW	CS	29	3	22	2	0
C1	C2	C3	SO	MSH	YY	HT	MS												
335	EW	CS	29	3	22	2	0												

Station Reference	Station Reference	By KEM Note
Station Reference	Station Reference	For Kilometer point only Start Km is used
Work Activity	Work Activity	
Sub Element of Activity	Sub Element of Activity	

Description of Materials	Subballast Layer Total Quantity (5000 m³)		
Location to be Used	From Station 385+007.5) to Station (386+007.5)		
Sample only	Yes	Materials Type	F81 layers
Supplier Name		Data Sheet provided	Yes attached
Reference in BoQ		Specification	SARFADWORK SPECIFICATIONS & TESTING REPORT (0223-AL 2) VERSION 2 BY OVERSEA GROUP
Prequalification reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by: Eng. Maen Essam (SPECTRUM)		Comments by: Eng. Alaa Abd-Alhadi (ER)	
Quality test Result By Third Party Lab Confirmed to Approval. This Sample Representation (5000 m³) only.		1-All tests were selected for Quality test and were carried-out by Third party Lab Confirmed. 2-Results report attached and acceptable with the project specifications. 3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC/R
Contractor	Eng. Mohamed Essam			A
QA/QC *	Eng. Maen Essam			A
GARB**	Eng. Mohamed Fayed			
Employers Representative	Eng. 9023			AWC

* Engineer
** Engineer/Inspector - Civil only

11/4

Contractor Company	Eng. Abdel Salam Safeky For Contracting	Designer Company	SPECTRUM Engineering Consulting Office
Issued by Contractor	Name: Eng. Mohamed Ismail Date/Serial Number: 17/5/2023 Time: 9:09	Received by GARB CONSULTANT	Eng. Mazen Essawy
CL		CS	DS
385	FW	CS	18
5	23	8	0

ST to ST2	ST to ST2	By KKK Note
Station Reference	Station Reference	Per Kilometer point only Start Km is used
Work Activity		
Sub Element of Activity		

Description of Materials	Subballast Layer Total Quantity (5000 m³)		
Location to be Used	From Station 385+007.5) to Station (386+007.5)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached
Reference in BoQ		Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (E023-41-2) VERSION 2 BY CH2M HILL GROUP
Pregualification reference		Test Samples Results	
Reference Photos	No/Yes	Other	
Comments by: Eng. Mazen Essawy (SPECTRUM)		Comments by: Eng. Alaa Abd-Allah (SR)	
1-Quality test Result By Third Party Lab Combrasil is Approved.		1-All tests were selected for Quality test and were carried-out by Third party lab Combrasil.	
2-This Sample Representative (5000 m³) only.		2-Results report attached and acceptable with the project specifications.	
		3-Final approval is subject to above mentioned comments.	

APPROVAL STATUS				
Organization	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mohamed Ismail			A
QA/QC *	Eng. Mazen Essawy			A
GARB **	Eng. Mohammed Fayel			
Employers Representative	Eng. Alaa Abd-Allah			AWC

* Designer
** Alignment/Highway Center only

15/6