

## محضر استلام موقع

مشروع: أعمال الجسر الترابي للخط الأول للقطار الكهربائي السريع قطاع  
( برج العرب - العلمين) في المسافة من الكم 373+000 إلى الكم 374+000  
بطول 1 كم

تنفيذ: شركة إنشاء للمقاولات العامة .  
إشراف : المنطقة الخامسة – منطقة غرب الدلتا

طبقاً للعقد رقم (2024/2023/815) بتاريخ 2023/12/04  
إنه في يوم الاربعاء الموافق 2023/12/5 اجتمع كل من:-

- 1- السيد المهندس/محمد حسني فياض مدير عام مشروعات - الهيئة العامة للطرق والكباري
- 2- السيدة المهندسة/مارجريت مجدي زاهر مدير مشروع - الهيئة العامة للطرق والكباري
- 3- السيد المهندس/ محمود شعبان أحمد مدير مشروع- شركة إنشاء للمقاولات العامة

وذلك للمرور على مسار العملية المذكورة عاليه لاستلام الموقع :-  
وقد تبين أن الموقع خالياً من العوائق الظاهرية ويسمح بالبدا في التنفيذ وبناء عليه يعتبر  
تاريخ 2023/12/5 هو تاريخ استلام الموقع وبدء الأعمال بالعملية  
واقفل المحضر على ذلك ووقع الحضور

التوقيعات

3- محمد شعبان أحمد

2- هاني محمد محمود طه

1- محمد حسني فياض

رئيس الإدارة المركزية

منطقة غرب الدلتا

الاسكندرية - من م. م. مطروح

مهندس /

هاني محمد محمود طه



## محضر معاينة مسافة

أنه في يوم السبت 2023/12/2 وبحضور كلا من :-

- 1- م/ مارجريت مجدي الهيئة العامة للطرق والكباري
- 2- م/ عبدالعزيز مصطفى سبكتروم للاستشارات الهندسية ( مكتب د. عماد نبيل )
- 3- م/ محمود شعبان احمد شركة إنشاء للمقاولات العامة

تم النزول والمعاينة وطبقا للتعليمات الواردة بالمقايمة بمسافات نقل التوريد للسفن

(prepared subgrade & sub ballast )

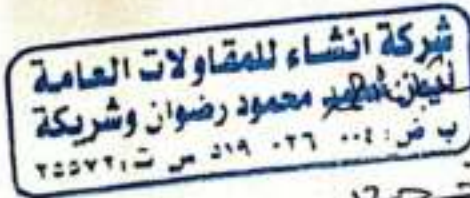
من الكسارة حتى محور مسار الطريق وجد أنه :-

يتم النقل السن من الكسارة إلى محور مسار القطار السريع ( الحمام - العلمين ) لقطاع شركة إنشاء للمقاولات العامة من 373+000 الى 374+000 مسافة قدرها :-

( 81 كم )

التوقيعات :-

- 3- م/ محمود شعبان
- 2- م/ عبدالعزيز مصطفى
- 1- م/ مارجريت مجدي



التوقيع / م/ مارجريت مجدي  
التوقيع / م/ عبدالعزيز مصطفى  
التوقيع / م/ محمود شعبان



مشروع : القطار السريع ( السخنة - العلمين - مطروح )  
المقاييس التقديرية لتبؤ الاعمال تنفيذ شركة : إنشاء للمقاولات العامة (2)  
القطاع من الكم 373+000 الي الكم 374+000 بطول 1 كم

رقم البند	بيان الأعمال	الوحدة	الكمية	سعر الوحدة	الإجمالي
1	<b>أعمال الحفر</b>				
1-1	بالمر المكعب أعمال حفر باستخدام المعدات الميكانيكية لجميع أنواع التربة عدا التربة الصخرية و لسوية السطح بالأت الترسوية والرش بالمياه الاصولية للوصول الى نسبة الرطوبة المطلوبة والتمك الجيد بالهرسات للوصول الى أقصى كثافة جافه ( 95% من الكثافة الجافة القصوى) ومحمل على البند تحميل ونقل التربة الزائدة لمسافة 500 متر من محور الطريق ويتم التنفيذ طبقا للنسب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند يجمع مشتتات طينا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف. يتم احتساب علاوة 1 جنية لكل 1 كم بالزيادة.	م3	20000	20	400000
2	<b>أعمال الردم</b>				
3-1	أعمال تحميل وتوريد التربة مطابقة المواصفات وتشغيلها باستخدام الات الترسوية يسلك لا يزيد عن 50 سم حتى منسوب -2 متر ويسمك لا يزيد عن 25 سم لامتثال المطلوب التصميمي لتشكيل الجسر والاكتاف (سبة تحمل كاليفورنيا لا تقل عن 15 %) ورشها بالمياه الاصولية الى نسبة الرطوبة المطلوبة والتمك الجيد بالهرسات للوصول الى أقصى كثافة جافه ( 95% من الكثافة الجافة القصوى ) ويتم التنفيذ طبقا للنسب التصميمية والقطاعات العرضية النموذجية والرسومات التفصيلية المعتمدة والبند يجمع مشتتات طينا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف. في حالة طلب جهاز الاشرف زيادة نسبة التمدك عن 95% يحسب زيادة 1 جنية على زيادة نسبة التمدك لكل 1% -مسافة النقل حتى 2 كم ويتم احتساب علاوة 1.4 جنية لكل بالزيادة او التفصيل. السعر يشمل عمل لشبكات ونخليط واختبارات ونقل لمواقع العمل حتى مسافة 2 كم السعر يشمل قيمة المادة المحجيرة .	م3	30000	85	2550000
	علاوة مسافة النقل 92 كم ( 1.4*90=126 )	م3	24000	126	3024000
	علاوة مسافة النقل 80 كم (إزال طبيعية ) ( 1.4*78=109.2 )	م3	6000	109.2	655200
	علاوة تحميل رسوم الكارثة والموازن طبقا للائحة الشركة الوطنية	م3	30000	13	390000
4	<b>طبقات الاسفلت</b>				
4-1	بالمر المكعب أعمال توريد وفرش طبقة تأسيس (Prepared subgrade) من الاحجار الصلبة المنتشرة ناتج تكسير الكسارات والمطابقة للمواصفات وأقصى حجم التحبيبات 100 مم ولا تزيد نسبة الغار من متخل 200 عن 12% وانتدج الورد بالاشقراطات الخاصة بالمشروع لا تقل نسبة تحمل كاليفورنيا عن 25% والا تزيد نسبة الفاقد بهمال لوس الجلولس عن 30% ولا يزيد الاسفلس عن 15% والا يقل معامل المرولة [EV2] من تجريه لوح التحميل عن 80 ميجاباسكال ويتم فردها على طبقتين باستخدام الات الترسوية الحديثة على ان لا يزيد سمك الطبقة بعد تمام التمدك عن 25 سم ورشها بالمياه الاصولية للوصول الى نسبة الرطوبة المطلوبة والتمك الجيد بالهرسات للوصول الى أقصى كثافة جافه ( 95% من الكثافة الجافة القصوى) وقلته تشمل اجراء التجارب المعملية والحقلية ويتم التنفيذ طبقا لاصول الصناعة والرسومات التفصيلية المعتمدة والبند يجمع مشتتات طينا لاصول الصناعة ومواصفات الهيئة العامة للطرق والكبارى وتعليمات المهندس المشرف. - مساه النقل 20 كم . - يتم احتساب علاوة 1.2 جنية لكل 1 كم بالزيادة . - السعر يشمل قيمة المواد المحجيرة طبقا لائحة وزارة النواج رقم (4) من 2012 في 2012 392.5	م3	8500	278	2363000
	علاوة مسافة النقل 81 كم ( 1.2*75=75.2 )	م3	8500	73.2	622200
	علاوة تحميل رسوم الكارثة والموازن طبقا لائحة الشركة الوطنية	م3	8500	25	212,500

شركة افندي للمقاولات والتجارة  
ايمن محمد محمود رضوان وشركاه  
ب.ض. ٠٠٤/٠٢٦/٠١٩ ص.ت ٢٥٥٧٢





مشروع : القطار السريع ( السخنة - العلمين - مطروح )  
المقاييس التقديرية لبنود الاعمال تنفيذ شركة: إنشاء للمقاولات العامة (2)  
القطاع من الكم 373+000 الي الكم 374+000 بطول 1 كم

رقم البند	بيان الاعمال	الوحدة	الكمية	سعر الوحدة	الاجمال
4-2	<p>والماترك المكسب اعدال لوريد وفرش طبقة اساس من الاحجار الصلبة المتدرجة ناتج تكسير الكسارات والمطابقة للمواصفات والقياس حجم للحبيبات ما بين 3.5م الى 40م والا يزيد نسبة الدار من متخل 200 من 5% والتدرج الوارد بالاشتراطات الخاصة بالمشروع لا تقل نسبة تحمل كاليفورنيا من 80% ولا يقل معامل المرونة [E+2] من تجربته لوح التعميل من 120 ميجاسكال والا يزيد نسبة الفاقد بجهاز لوس الجولوس من 30% والا يزيد الامتصاص من 15% ويتم فردها علي طبقتين باستخدام الات التسوية الحديثة علي ان لا يزيد سمك الطبقة بعد تمام الدماك من 20 سم وركنها بالمياة الاسفلتية للوصول الي نسبة الرطوبة المطلوبة والدماك الجيد والهرسات للوصول الي القوي كطاقة جافة [لا تقل عن 100%] من الكثافة العملية والقلته تشمل اجراء التجارب العملية والحقلية ويتم التنفيذ طبقا لاصول الصناعة والرسومات التنفيذية المعتمدة والبلد بجميع مشتاتله طبقا للمواصفات الفنية للمشروع ونظير الاستشاري وتعليمات المهندس المشرف</p> <ul style="list-style-type: none"> <li>- مسافة النقل لا تقل 20 كم .</li> <li>- يتم احتساب علاوة 1.2 جنيه لكل 1 كم بزيادة او نقصان .</li> <li>- السعر يشمل قيمة المواد المستعملة طبقا لائحة المنطقة بهذا القطاع رقم (5) من الكم 325 الي الكم 392.5</li> </ul>	م <sup>3</sup>	5,886.42	298	1,754,153
		م <sup>3</sup>	5,886.42	73.2	430,886
		م <sup>3</sup>	5,886.42	25	147,161
	الاجمالي				12,549,100

شركة إنشاء للمقاولات العامة  
أ.م.م. محمد محمود رضوان وشركه  
ب.ض. ٢٥٥٧٢١

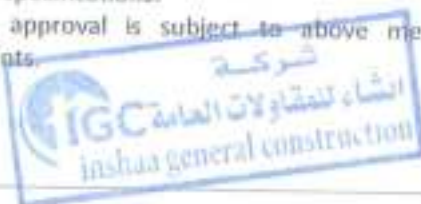


MATERIAL  
APPROVAL  
REQUEST

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	[SPECTRUM] Engineering Consulting Office							
Issued by Contractor	Name Eng. Mahmoud Shaban	Sign 	Date/Serial Number 30/3/2023 (M.A.R. REV) (F-1)	Time 1:30							
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	C1 373	C2 EW	C3 CS	DD 31	MM 03	YY 23	HH 01	MM 30

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

Description of Materials	FILL LAYER TOTAL QUANTITY (5000 m3)		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	[3-1]	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 is Approved. 2-This Sample Representative (5000 m3) only.		1-All tests were carried-out (by third party lab of comibassal international). 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. Mahmoud shaban		31/3/2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		12-4-2023	Awc

\* Designer

\*\* Alignment/Bridges: Culvert only





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة إنشاء للمقاولات
Sample :	FERMA
Station :	St(373+000) to St(374+000)
Date of Test :	31/03/2023
QC :	847-1

### II- Sample description:

Gravel and sand

### III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction and optimum moisture content (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)

### IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction and optimum moisture content (Proctor test)	MDD	2.103
	OMC	5.9%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CBR)	CBR ratio	49%

LAB DIRECTOR

Eng / Eman kandil



Geotechnical consultant

Dr. Mohamed Mostafa Badry



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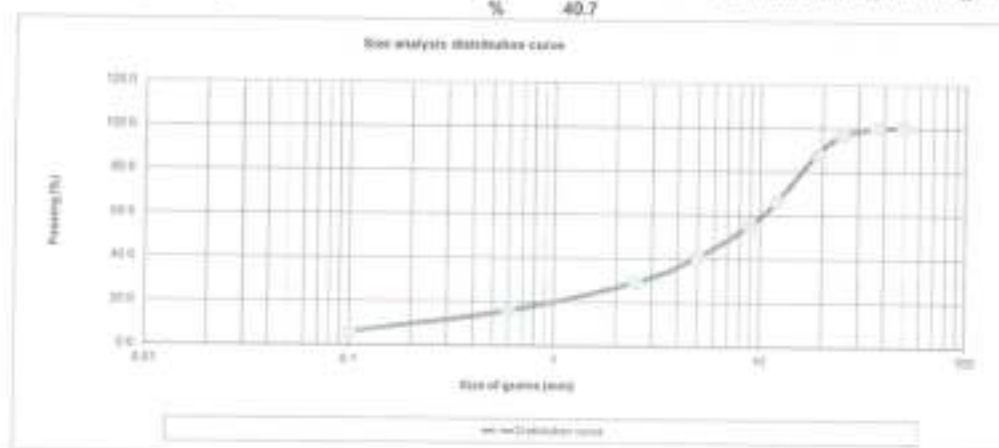
## Internal inspection and laboratories sector

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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
2	0.00	0.00	0.00	100.0	
1 1/2	0.00	0.00	0.00	100.0	
1	271.00	271.00	3.43	96.6	
3/4	657.00	928.00	11.76	88.2	
1/2	1738.00	2666.00	33.78	66.2	
3/8	851.00	3517.00	44.56	55.4	
No.4	1162.00	4679.00	59.28	40.7	
No.10	143.00	4822.00	60.91	39.09	
No.40	305.00	5127.00	64.92	35.08	
No.200	427.00	5554.00	70.61	29.39	

Total sample weight = 7893.00 pass No.4 = 3214.0 Total fine aggregates weight = 500 gm  
% 40.7



Soil classification: A - 1- a (Non Plastic)







# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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### Modified Proctor Test Report ASTM - D 1557

Mould Number :- 1  
Volume of mould = 2189 cm<sup>3</sup>  
Weight of mould = 7239 g  
G.S = 2.5 g/cm<sup>3</sup>

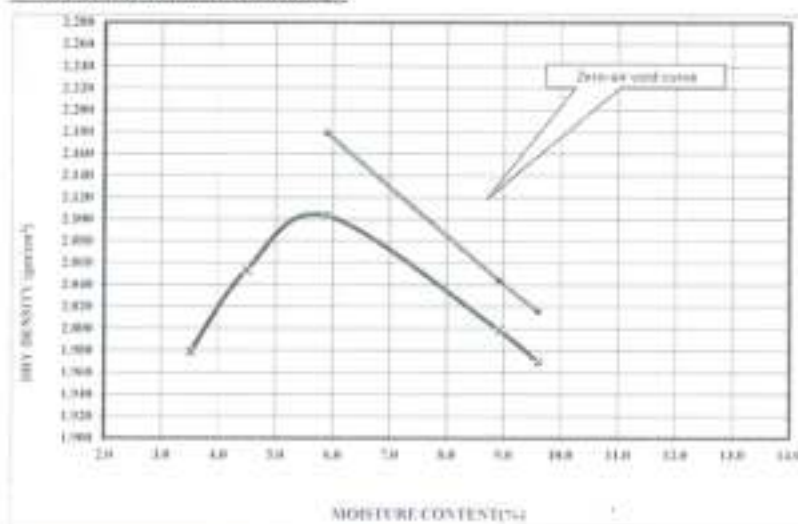
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11723	11935	12114	12004	11965
Weight of mould (g)	7239	7239	7239	7239	7239
Weight of wet soil (g)	4484	4696	4875	4765	4726
Volume of mould (cm <sup>3</sup> )	2189	2189	2189	2189	2189
Wet density (g/cm <sup>3</sup> )	2.048	2.145	2.227	2.177	2.159
Dry density (g/cm <sup>3</sup> )	1.979	2.053	2.103	1.998	1.970
Zero-air Void curve			2.179	2.044	2.016

#### 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)	244.3	242.7	240.6	236.4	235.8
Weight of container (g)	82.0	80.0	81.0	84.0	88.0
moisture content (%)	3.5	4.5	5.9	8.9	9.6

#### C- Dry density-Moisture relationship:-



M.D.D= 2.103 gm/cm<sup>3</sup>  
O.M.C= 5.9 %



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# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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### Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56					Swell %	
MOULD NO	1					56	
WT OF MOULD+SOIL	11915				Start	0.00	
WT OF MOULD	7025				End	0.00	
WT OF SOIL	4890				Swell	0.00	
VOLUME OF MOULD	2198						
WET DENSITY	2.225						
	MC before soaking				Weight of Rammer	4.54Kg	
TIN NO	1				MDD	Kg/m3	2.103
WT OF WET SOIL+TIN	250.00				OMC	%	5.9
WT OF DRY SOIL+TIN	241						
WT OF WATER	9.00						
WT OF TIN	88				PROVING RING		
WT OF DRY SOIL	153				Div/KN	0.0210	
MOISTURE CONTENT	5.9						
DRY DENSITY	2.101				Capacity (KN)	50	
Pen	Reading (Div)			Bearing (KN)		CBR	
mm	56			56		standar	56
0.00	0			0.0		0.0	
0.64	110			1.1		4.5	
1.27	240			2.4		8.5	
1.91	370			3.6		12.0	
2.54	510			5.0		14.5	38
3.17	630			6.2		16.3	
3.81	760			7.5		18.0	
4.45	875			8.6		19.3	
5.08	995			9.8		20.5	49
5.71	1150			11.3		21.9	
6.35	1275			12.5		23.3	



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## Internal inspection and laboratories sector

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

Report	:	379 - 1 - Center
Date	:	12/04/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	FERMA
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	31-3-2023

Temperature : 20 °C

Humidity : 40%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIG MATTER	NEGATIVE	ASTM D 2974



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*


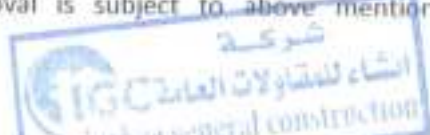




MATERIAL APPROVAL REQUEST	Inshaa		شركة انشاء العامة		General Construction	

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	(SPECTRUM) Engineering Consulting Office																
Issued by Contractor	Name	Sign	Date/Serial Number	Time																
	Eng. Mohamed hassan		02-04-2023 (M.A.R) (F.2)	1:30																
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	<table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>DD</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td>373</td> <td>EW</td> <td>C5</td> <td>03</td> <td>04</td> <td>23</td> <td>01</td> <td>30</td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM	373	EW	C5	03	04	23	01	30
C1	C2	C3	DD	MM	YY	HH	MM													
373	EW	C5	03	04	23	01	30													

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

Description of Materials	Fill Layer Total Quantity ( 10000 m3) Upper Embankment		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	(1-1)	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 is Approved 2-This Sample Representative ( 5000 m3 ) only 		1- All tests were carried-out by third party lab (comibassal international) 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 hassan		03-04-2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		12-4-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

Accredited by : Egyptian General Authority for Petroleum under No. 34/29-II-2011  
Accredited by : Egyptian Accreditation (EGAC) under No. 031706/IA

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة انشاء للمقاولات
Sample :	FERMA
Station :	St(373+000) to St(374+000)
Date of Test :	03/04/2023
QC :	847-2

### II- Sample description:

Gravel and sand

### III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction and optimum moisture content (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)

### IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction and optimum moisture content (Proctor test)	MDD	2.112
	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	53%

LAB DIRECTOR

Eng / Eman kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



Kilo 23 Alexandria - Cairo Desert Road - Merghem

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Email : internal-inspection@comibassal.com



# COMIBASSAL International Controllers

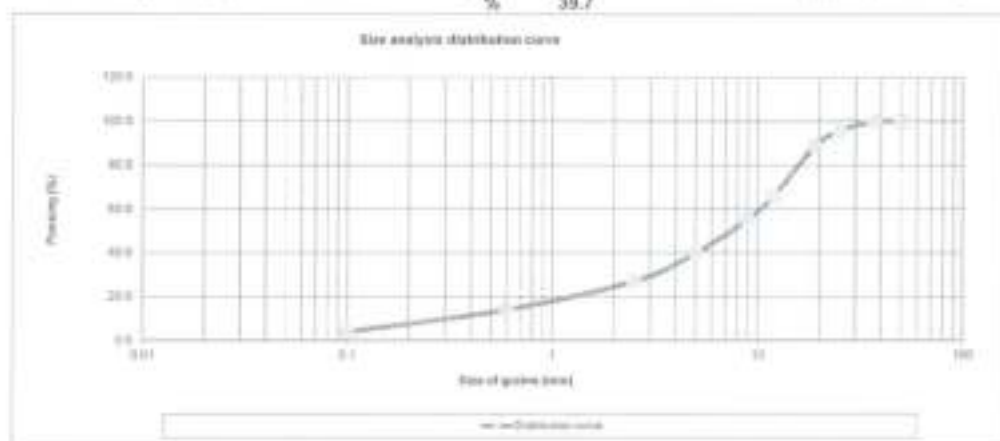
## Internal inspection and laboratories sector

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

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE	CUMULATIVE PERCENTAGE	STANDARD SPECIFICATION
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)	LIMITS
2	0.00	0.00	0.00	100.0	
1 1/2	0.00	0.00	0.00	100.0	
1	352.00	352.00	4.35	95.7	
3/4	568.00	920.00	11.37	88.6	
1/2	1832.00	2752.00	34.00	66.0	
3/8	864.00	3616.00	44.68	55.3	
No.4	1263.00	4879.00	60.29	39.7	
No.10	162.00	162.00	32.40	26.8	
No.40	324.00	324.00	64.80	14.0	
No.200	451.00	451.00	90.20	3.9	

Total sample weight = 8093.00 pass No.4 = 3214.0 Total fine aggregates weight = 500 gm  
% 39.7



Soil classification: A - 1 - a (Non Plastic)







# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### Modified Proctor Test Report

#### ASTM - D 1557

Mould Number :- 1  
Volume of mould = 2198 cm<sup>3</sup>  
Weight of mould = 7020 g  
G.S = 2.5 g/cm<sup>3</sup>

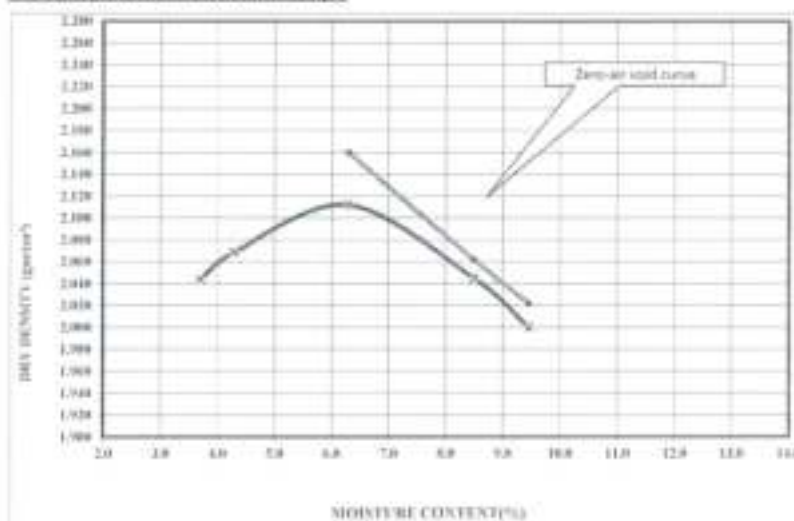
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11679	11762	11954	11897	11832
Weight of mould (g)	7020	7020	7020	7020	7020
Weight of wet soil (g)	4659	4742	4934	4877	4812
Volume of mould (cm <sup>3</sup> )	2198	2198	2198	2198	2198
Wet density (g/cm <sup>3</sup> )	2.120	2.157	2.245	2.219	2.189
Dry density (g/cm <sup>3</sup> )	2.044	2.069	2.112	2.045	2.000
Zem-air Void curve			2.160	2.062	2.022

#### 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)	244.0	243.0	240.0	237.0	236.0
Weight of container (g)	82.0	80.0	81.0	84.0	88.0
moisture content(%)	3.7	4.3	6.3	8.5	9.5

#### C - Dry density-Moisture relationship:-



M.D.D= 2.112 gm/cm<sup>3</sup>  
O.M.C= 6.3 %





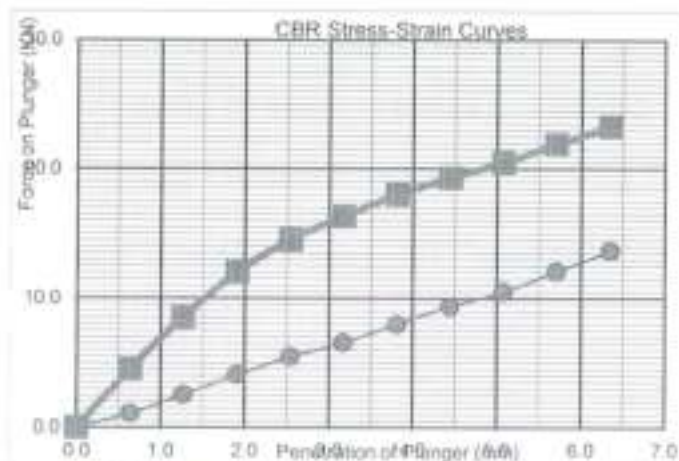
# COMIBASSAL International Controllers

## 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 Of CBR Test - ASTM - D 1883

NO OF BLOWS	56				Swell %	
MOULD NO	1				56	
WT OF MOULD+SOIL	11944			Start	0.00	
WT OF MOULD	7010			End	0.00	
WT OF SOIL	4934			Swell	0.00	
VOLUME OF MOULD	2198					
WET DENSITY	2.245					
	MC before soaking			Weight of Rammer	4.54Kg	
TIN NO	1			MDD	Kg/m <sup>3</sup>	2.112
WT OF WET SOIL+TIN	250.00			OMC	%	6.3
WT OF DRY SOIL+TIN	240.5					
WT OF WATER	9.50					
WT OF TIN	92			PROVING RING		
WT OF DRY SOIL	148.5			Div/KN	0.0210	
MOISTURE CONTENT	6.4					
DRY DENSITY	2.110			Capacity (KN)	50	
Pen	Reading (Div)		Bearing (KN)		CBR	
mm	56		56	standar	56	
0.00	0		0.0	0.0		
0.64	110		1.1	4.5		
1.27	258		2.5	8.5		
1.91	415		4.1	12.0		
2.54	558		5.5	14.5	41	
3.17	667		6.5	16.3		
3.81	816		8.0	18.0		
4.45	956		9.4	19.3		
5.08	1070		10.5	20.5	53	
5.71	1230		12.1	21.9		
6.35	1393		13.7	23.3		



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Tel: 002 033920176 - 002 033931482

Fax : 002 033900476

Email : internal-inspection@comibassal.com



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

Report	:	379 - 2 - Center
Date	:	12/04/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة إنشاء للمقاولات
Project	:	Electric express train
Sample	:	FERMA
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	3-4-2023

Temperature : 20 °C

Humidity : 40%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIG MATTER	NEGATIVE	ASTM D 2974



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*





# MATERIAL APPROVAL REQUEST

Inshaa

الهيئة العامة  
للتنظيم والبناءالهيئة العامة  
للتنظيم والبناء

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	(SPECTRUM) Engineering Consulting Office																
Issued by Contractor	Name	Sign	Date/Serial Number	Time																
	Eng. Mohamed hassan		07-04-2023 (M.A.R) (F.3)	1:30																
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	<table border="1"> <tr> <td>C1</td> <td>C2</td> <td>C3</td> <td>DD</td> <td>MM</td> <td>YY</td> <td>HH</td> <td>MM</td> </tr> <tr> <td>373</td> <td>FW</td> <td>CS</td> <td>08</td> <td>04</td> <td>23</td> <td>01</td> <td>30</td> </tr> </table>	C1	C2	C3	DD	MM	YY	HH	MM	373	FW	CS	08	04	23	01	30
C1	C2	C3	DD	MM	YY	HH	MM													
373	FW	CS	08	04	23	01	30													

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

Description of Materials	Fill Layer Total Quantity ( 15000 m3) Upper Embankment		
Location to be Used	From Station (37T+000) to Station (374+000)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	12.1	Specification	EARTHWORK SPECIFICATIONS & TESTING REPORT (CG21-41.2) VERSION 2 BY OVECON 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 is Approved. 2-This Sample Representative ( 3000 m3 ) only 		1- All tests were carried-out by third Party lab (comibassal international ) 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 hassan		08-04-2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		12-4-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### I- Introduction

General Consultant :	SYSTRA
Consultant :	spectrum
Contractor :	شركة إنشاء للمقاولات
Sample :	FERMA
Station :	St(373+000) to st(374+000)
Date of Test :	08/04/2023
QC :	847-3

### II- Sample description:

Gravel and sand

### III- Required tests

- 1- Grain size analysis and classification
- 2- Modified compaction and optimum moisture content (Proctor test)
- 3- Liquid limit, plastic limit and plasticity index
- 4- California bearing ratio (CBR)

### IV- Results

1- Grain size analysis and classification	Grain size analysis	As showed in appendix
	Classification	A-1-a
2- Modified compaction and optimum moisture content (Proctor test)	MDD	2.114
	OMC	5.9%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CBR)	CBR ratio	52%

LAB DIRECTOR

Eng / Eman kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry



Kilo 23-Alexandria - Cairo Desert Road - Merghem

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Fax : 002 033900476

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# COMIBASSAL-International Controllers

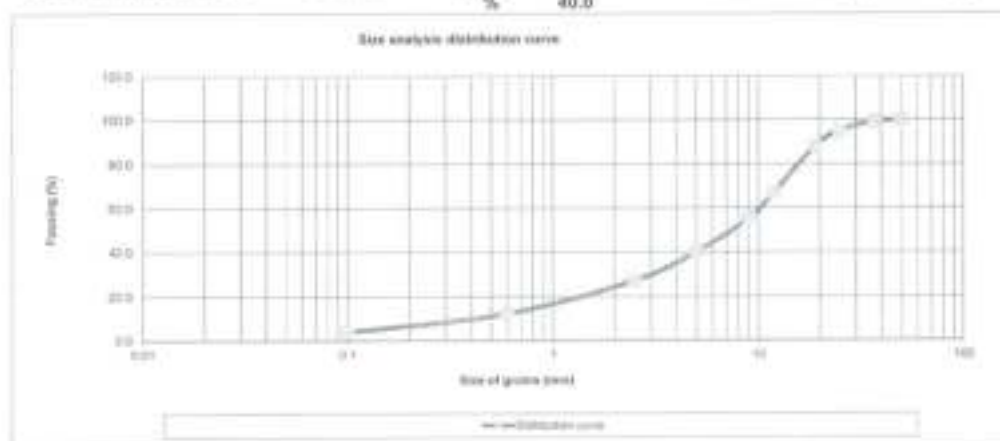
## Internal inspection and laboratories sector

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

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE	CUMULATIVE PERCENTAGE	STANDARD SPECIFICATION
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)	LIMITS
2	0.00	0.00	0.00	100.0	
1 1/2	59.00	59.00	0.73	99.3	
1	346.00	405.00	4.98	95.0	
3/4	568.00	973.00	11.98	88.0	
1/2	1698.00	2671.00	32.87	67.1	
3/8	970.00	3641.00	44.81	55.2	
No.4	1230.00	4871.00	59.95	40.0	
No.10	162.00	162.00	12.40	27.1	
No.40	348.00	348.00	69.60	12.2	
No.200	453.00	453.00	90.60	3.8	

Total sample weight = 8125.00 pass No.4= 3254.0 Total fine aggregates weight = 500 gm  
% 40.0



Soil classification: A - 1 - a (Non Plastic)







# 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

### Modified Proctor Test Report ASTM - D 1557

Mould Number :- 3  
Volume of mould = 2120 cm<sup>3</sup>  
Weight of mould = 7080 g  
G.S = 2.5 g/cm<sup>3</sup>

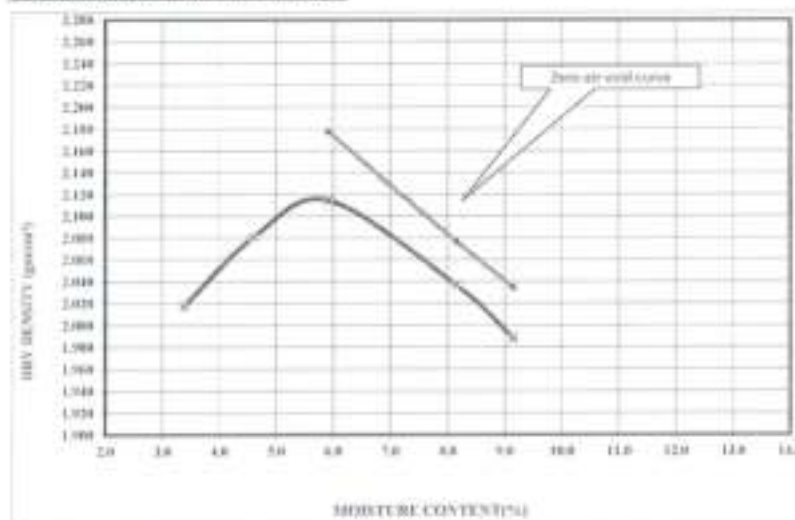
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11502	11695	11828	11750	11611
Weight of mould (g)	7080	7080	7080	7080	7010
Weight of wet soil (g)	4422	4615	4748	4670	4601
Volume of mould (cm <sup>3</sup> )	2120	2120	2120	2120	2120
Wet density (g/cm <sup>3</sup> )	2.086	2.177	2.240	2.203	2.170
Dry density (g/cm <sup>3</sup> )	2.018	2.081	2.114	2.037	1.988
Zero-air Void curve			2.178	2.077	2.034

#### 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)	244.5	242.5	240.5	237.8	236.5
Weight of container (g)	82.0	80.0	80.0	88.0	89.0
moisture content (%)	3.4	4.6	5.9	8.1	9.2

#### C- Dry density-Moisture relationship:-



M.D.D= 2.114 gm/cm<sup>3</sup>  
O.M.C= 5.9 %





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/28-11-2011  
Accredited by : Egypt 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	11950			Start	0.00		
WT OF MOULD	7010			End	0.00		
WT OF SOIL	4940			Swell	0.00		
VOLUME OF MOULD	2198						
WET DENSITY	2.247						
	MC before soaking			Weight of Rammer	4.54Kg		
TIN NO	1			MDD	Kg/m3	2.114	
WT OF WET SOIL+TIN	250.00						
WT OF DRY SOIL+TIN	240.5			OMC	%	5.9	
WT OF WATER	9.50						
WT OF TIN	92			PROVING RING			
WT OF DRY SOIL	148.5			Div/KN	0.0210		
MOISTURE CONTENT	6.4						
DRY DENSITY	2.112			Capacity (KN)	50		
Pen	Reading (Div)		Bearing (KN)		CBR		
mm	56		56	standar	56		
0.00	0		0.0	0.0			
0.64	110		1.1	4.5			
1.27	230		2.3	8.5			
1.91	360		3.5	12.0			
2.54	510		5.0	14.5	38		
3.17	640		6.3	16.3			
3.81	780		7.6	18.0			
4.45	930		9.1	19.3			
5.08	1050		10.3	20.5	52		
5.71	1203		11.8	21.9			
6.35	1355		13.3	23.3			





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

Report	:	379 - 3 - Center
Date	:	12/04/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	FERMA
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	8-4-2023

Temperature : 20 °C

Humidity : 40%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIG MATTER	NEGATIVE	ASTM D 2974



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa Asker*





MATERIAL  
APPROVAL  
REQUEST

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	[SPECTRUM] Engineering Consulting Office			
	Name	Sign	Date/Serial Number	Time			
Issued by Contractor	Eng. Mahmoud Shaban		9/5/2023 (M.A.R. REV) (F-4)	1:30			
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	C1	C2	C3	DD
				373	EW	C5	10
				5	23	01	30

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

Description of Materials	FILL LAYER TOTAL QUANTITY (20000 m3)		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	(3-1)	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 Is Approved.	1-All tests were carried out (by third party lab of comibassal international).
2-This Sample Representative ( 5000 m3 )	2-Results report attached and acceptable with the project specifications.
	3-Final approval is subject to above mentioned comments.
	Note: wait for chemical analysis Result
	Done 5-7-2023

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mahmoud shaban		10/5/2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		15.5.2023	Awc

\* Designer

\*\* Alignment/Bridges, Culvert only



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031708/1A

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة انشاء للمقاولات
Sample :	FERMA
Station :	St(373+000) to St(374+000)
Date of Test :	10/05/2023
QC :	1457

### II- Sample description:

Gravel 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-b
2- Modified compaction (Proctor test)	MDD	2.123
	OMC	7.1%
3- Liquid limit, plastic limit and plasticity index	LL	24.0%
	PL	21.2%
	PI	2.8
4- California bearing ratio (CBR)	CBR ratio	22%

### 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

*Eman*



Geotechnical consultant

For Dr. M.  
Dr. Mohamed Mostafa Badry





## 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/LA

# APPENDIX





# COMIBASSAL International Controllers

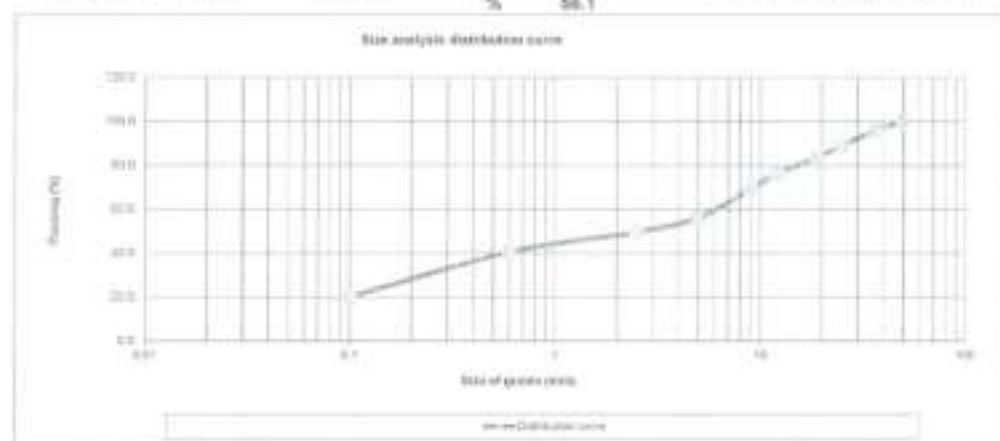
## Internal inspection and laboratories sector

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

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE	CUMULATIVE PERCENTAGE	STANDARD SPECIFICATION
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)	LIMITS
2	0.00	0.00	0.00	100.0	
1 1/2	381.00	381.00	3.81	96.2	
1	726.00	1107.00	11.07	88.9	
3/4	528.00	1635.00	16.35	83.7	
1/2	765.00	2400.00	24.00	76.0	
3/8	679.00	3079.00	30.79	69.2	
No.4	1368.00	4387.00	43.87	56.1	
No.10	59.00	59.00	11.80	49.3	
No.40	140.00	140.00	28.00	40.4	
No.200	322.00	322.00	64.40	20.0	

Total sample weight = 10000.00 pass No.4= 5613.0 Total fine aggregates weight = 500 gm  
%



Soil classification: A - 1 - b



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Fax :002 033900476  
Email : internal-inspection@comibassal.com



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031708/1A

### Modified Proctor Test Report ASTM - D 1557

Mould Number :- 1  
Volume of mould = 2199 cm<sup>3</sup>  
Weight of mould = 5657 g  
G.S = 2.6 g/cm<sup>3</sup>

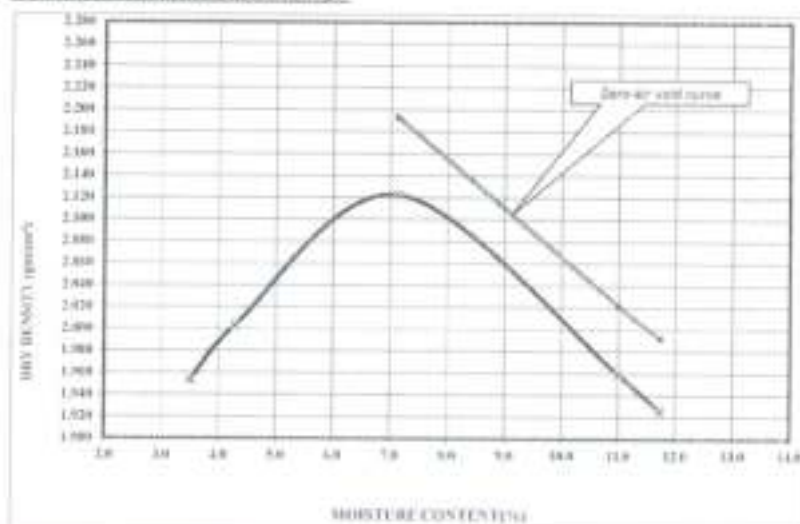
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	10103	10250	10657	10439	10368
Weight of mould (g)	5657	5657	5657	5657	5657
Weight of wet soil (g)	4446	4593	5000	4782	4711
Volume of mould (cm <sup>3</sup> )	2199	2199	2199	2199	2199
Wet density (g/cm <sup>3</sup> )	2.022	2.089	2.274	2.175	2.151
Dry density (g/cm <sup>3</sup> )	1.953	2.003	2.123	1.959	1.925
Zero-air Void curve			2.194	2.022	1.992

#### 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)	244.3	241.0	234.9	228.3	227.0
Weight of container (g)	82.0	31.0	23.0	31.0	31.0
moisture content (%)	3.5	4.3	7.1	11.0	11.7

#### C - Dry density-Moisture relationship:-



M.D.D= 2.123 gm/cm<sup>3</sup>  
O.M.C= 7.1 %









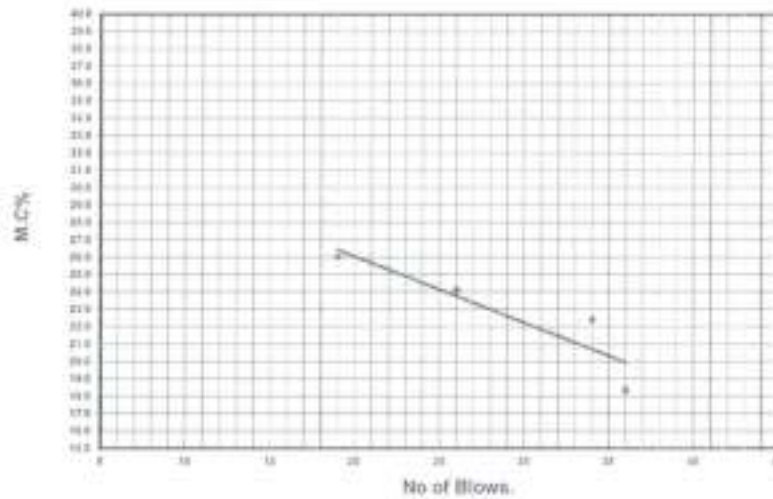
# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### Liquid and Plastic Limits Test ASTM - D 4318

Test No	1	2	3	4	5	6
Type of test	Liquid Limit			Plastic Limit		
NO of B.	36	34	26	19		
Container No	j	c	s	m	F	J
Mass of wet soil + container	49.50	54.90	45.30	43.80	31.90	30.80
Mass of dry soil + container	46.20	49.50	41.40	39.40	30.70	29.80
Mass of container	28.20	25.40	25.20	22.50	24.60	25.40
Mass of moisture	3.30	5.40	3.90	4.40	1.20	1.00
Mass of dry soil	18.00	24.10	16.20	16.90	6.10	4.40
Moisture content	18.33	22.41	24.07	26.04	19.67	22.73



#### Results:

Liquid Limit (L.L.) : 24 %  
Plastic Limit (P.L.) : 21.2 %  
Plasticity Index (P.I.) : 2.8 %





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

Report	:	582 - I - Center
Date	:	05/07/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة إنشاء المقاولات
Project	:	Electric express train
Sample	:	FERMA
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	10-5-2023

Temperature : 25 °C

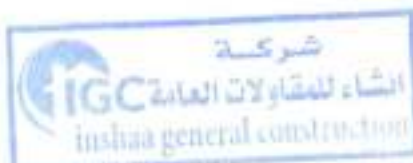
Humidity : 45%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIG MATTER	NEGATIVE	ASTM D 2974



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*

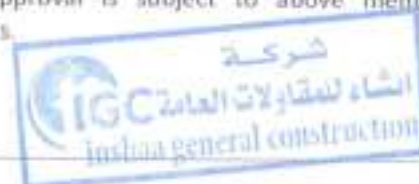


MATERIAL  
APPROVAL  
REQUEST

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	(SPECTRUM) Engineering Consulting Office																
Issued by Contractor	Name	Sign	Date/Serial Number	Time																
	Eng. Mahmoud Shaban		23/08/2023 (M.A.R) (F.5)	1:30																
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	<table border="1"> <tr> <td>CE</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>373</td> <td>EW</td> <td>C5</td> <td>24</td> <td>08</td> <td>23</td> <td>01</td> <td>30</td> </tr> </table>	CE	C2	C3	DO	MM	YY	HH	MM	373	EW	C5	24	08	23	01	30
CE	C2	C3	DO	MM	YY	HH	MM													
373	EW	C5	24	08	23	01	30													

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

Description of Materials	FILL LAYER TOTAL QUANTITY (25000 m3)		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Fill layers
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	(3-1)	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 is Approved. 2-This Sample Representative (5000 m3) only.		1-All tests were carried-out (by third party lab of comibassal international). 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. Mahmoud shaban		24/08/2023	A
QA/QC *	Eng. Mazen Essamy			F
GARB**	Eng. Margret magdy			
Employers Representative	Eng. Alaa Abd-Allatif		7-9-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

Report NO.	1851
Date of report	07-09-2023

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة إنشاء للمقاولات العامة
Sample :	Upper Embankment.
Station :	St(373+000) to st(374+000)
Date of Test :	24/08/2023

### II- Sample description:

Gravel 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-b
2- Modified compaction (Proctor test)	MDD	2.113
	OMC	8.4%
3- Liquid limit, plastic limit and plasticity index	LL	24.0%
	PL	21.2%
	PI	2.8%
4- California bearing ratio (CBR)	CBR ratio	32%

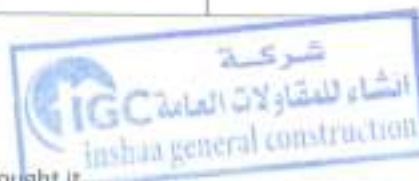
### IV- Notes

- 1- Samples were brought by : Contractor.
- 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

Eman



Geotechnical consultant

Dr. Mohamed Mostafa Badry



## 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

# APPENDIX



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

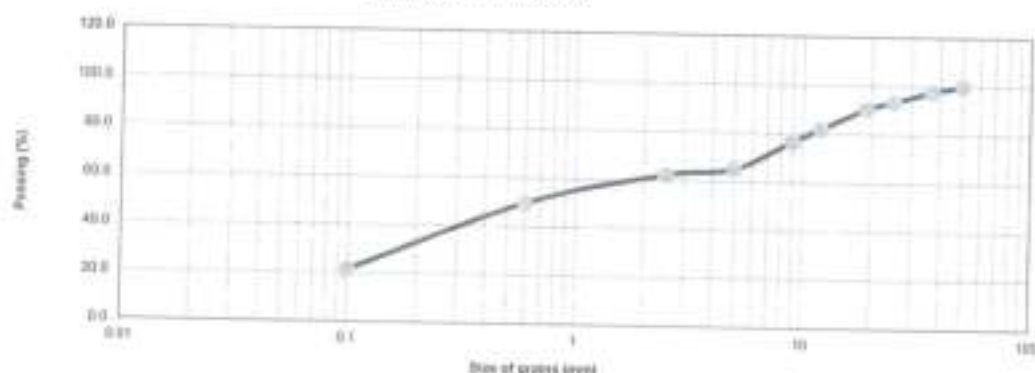
Accredited by : Egypton General Authority for Petroleum under No. 34/28-11-2011  
Accredited by : Egypton Accreditation council (EGAC) under No. 031706/1A

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	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	250.00	250.00	2.50	97.5	
1	418.00	668.00	6.68	93.3	
3/4	297.00	965.00	9.65	90.3	
1/2	860.00	1825.00	18.25	81.7	
3/8	519.00	2344.00	23.44	76.6	
No.4	1155.00	3499.00	34.99	65.0	
No.10	22.00	22.00	4.40	62.1	
No.40	118.00	118.00	23.60	49.7	
No.200	336.00	336.00	67.20	21.3	

Total sample weight = 9999.00 pass No.4= 6500.0 Total fine aggregates weight = 500 gm  
% 65.0

Size analysis distribution curve



Soil classification: A - 1 - b



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WebSite : www.comibassal.com



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Fax : 002 033900476  
Email : internal-inspection@comibassal.com





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### Modified Proctor Test Report ASTM - D 1557

Mould Number = 1  
Volume of mould = 2199 cm<sup>3</sup>  
Weight of mould = 5657 g  
G.S = 2.65 g/cm<sup>3</sup>

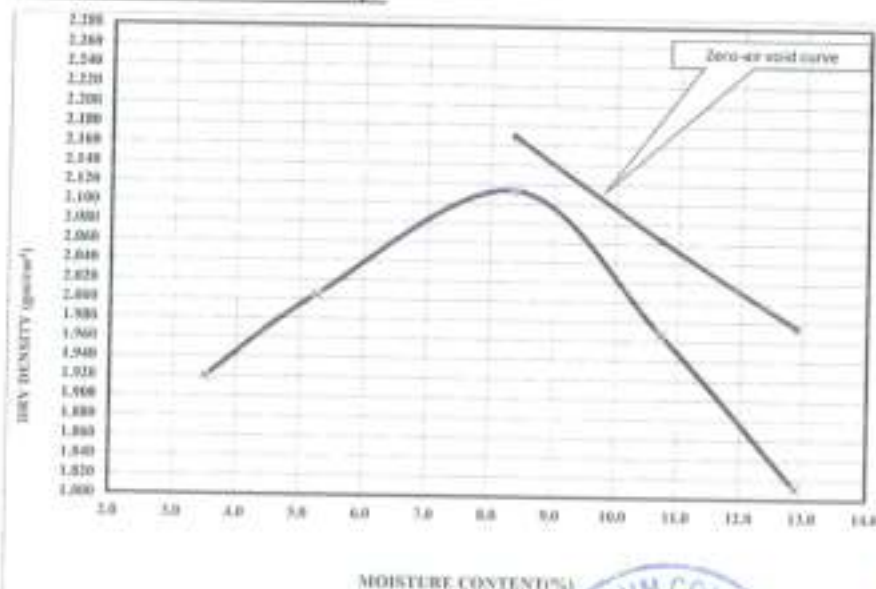
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	9989	10257	10650	10405	10115
Weight of mould (g)	5657	5657	5657	5657	5657
Weight of wet soil (g)	4332	4600	4993	4748	4458
Volume of mould (cm <sup>3</sup> )	2180	2180	2180	2180	2180
Wet density (g/cm <sup>3</sup> )	1.987	2.110	2.290	2.178	2.045
Dry density (g/cm <sup>3</sup> )	1.920	2.005	2.113	1.967	1.812
Zero-air Void curve			2.169	2.063	1.975

#### 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)	244.3	239.0	233.0	228.0	225.0
Weight of container (g)	82.0	30.0	30.0	23.0	31.0
moisture content(%)	3.5	5.3	8.4	10.7	12.9

#### C- Dry density-Moisture relationship:-



M.D.D= 2.113 gm/cm<sup>3</sup>  
O.M.C= 8.4 %



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WebSite: www.comibassal.com



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# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

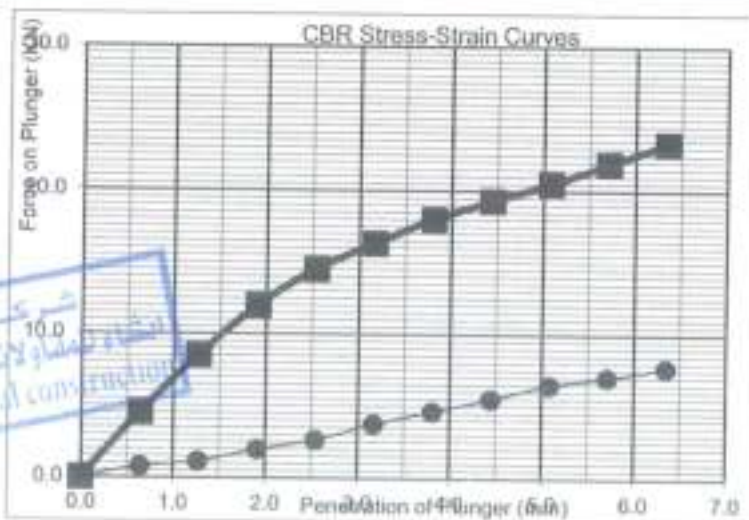
Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

### Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56				
MOULD NO	1				
WT OF MOULD+SOIL	10150				
WT OF MOULD	5171				
WT OF SOIL	4979				
VOLUME OF MOULD	2198				
WET DENSITY	2.265				
	MC before soaking		Weight of Rammer	4.54Kg	
TIN NO	1		MDD	Kg/m3	2.113
WT OF WET SOIL+TIN	250.00		OMC	%	8.4
WT OF DRY SOIL+TIN	238				
WT OF WATER	12.00				
WT OF TIN	92				
WT OF DRY SOIL	146				
MOISTURE CONTENT	8.2				
DRY DENSITY	2.093				

Pen	Reading (Div)	Bearing (KN)	standar	CBR
mm	56	56	56	
0.00	0	0.0	0.0	
0.64	77	0.8	4.5	
1.27	114	1.1	8.5	
1.91	200	2.0	12.0	
2.54	267	2.6	14.5	20
3.17	380	3.7	16.3	
3.81	470	4.6	18.0	
4.45	560	5.5	19.3	
5.08	660	6.5	20.5	32
5.71	715	7.0	21.9	
6.35	785	7.7	23.3	







# COMIBASSAL International Controllers

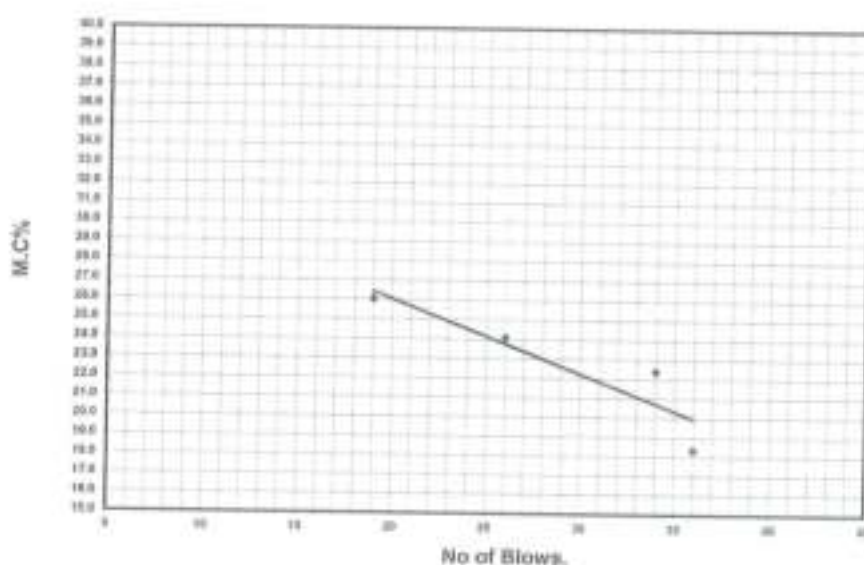
## Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031708/1A

### Liquid and Plastic Limits Test

#### ASTM - D 4318

Test No	1	2	3	4	5	6
Type of test	Liquid Limit				Plastic Limit	
NO of B.	36	34	26	19		
Container No	J	C	S	m	F	J
Mass of wet soil +container	49.50	54.90	45.30	43.80	31.90	30.80
Mass of dry soil +container	46.20	49.50	41.40	39.40	30.70	29.80
Mass of container	28.20	25.40	25.20	22.50	24.60	25.40
Mass of moisture	3.30	5.40	3.90	4.40	1.20	1.00
Mass of dry soil	18.00	24.10	16.20	16.90	6.10	4.40
Moisture content	18.33	22.41	24.07	26.04	19.67	22.73



#### Results:

Liquid Limit (L.L.) : 24 %  
Plastic Limit (P.L.) : 21.2 %  
Plasticity Index (P.I.) : 2.8 %







# 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	:	697 - 1 - Center
Date	:	07/09/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	Upper Embankment
Station	:	ST (373 +0.00) : (374 +0.00)
Date of Test	:	24-8-2023

Temperature : 25 °C

Humidity : 45%

ANALYSIS	RESULTS	METHOD REFERENCE
ORGANIC MATTER	NEGATIVE	ASTM D 2974



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*



# MATERIAL APPROVAL REQUEST



Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	(SPECTRUM) Engineering Consulting Office				
Issued by Contractor	Name	Sign	Date/Serial Number		Time			
	Eng. Mohamed hassan							
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	30-03-2023 (M.A.R) (P.S.G.1)	1:30			
				373	EW	CS	31	03

CODE - 1	S1 to S21 Station Reference	D1 to D3 Depot Reference	Kp XXX Note For Kilometer point only Start Km is used
CODE - 2	Work Activity		
CODE - 3	Sub Element of Activity		

Description of Materials	Prepared Subgrade Total Quantity { 5000 m3 }		
Location to be Used	From Station (37 <sup>+</sup> +000) to Station (374+000)		
Sample only	Yes	Materials Type	Prepared Subgrade
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	[3-1]	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 is Approved. 2-This Sample Representative { 5000 m3 } only.		1- All tests were carried-out by third Party lab (comibassal international ) 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 hassan		31-03-2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		12-4-2023	Awc

\* Designer

\*\* Alignment/Bridges: Culvert only



# 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/LA

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة انشاء للمقاولات
Sample :	Prepare Sub-Grade
Station :	St(373+000) to st(374+000)
Date of Test :	31/03/2023
QC :	883-1

### 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	2.150
	OMC	5.70%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CB)	CBR ratio	90%
5- Specific gravity (SG), absorption and degradation	S S D	2.511
	Absorption	1.2%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	26.5%

LAB DIRECTOR

Eng / Eman kandil

Geotechnical consultant

Dr. Mohamed Mostafa Badry

Kilo 23, Alexandria - Cairo Desert Road - Mergham

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# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

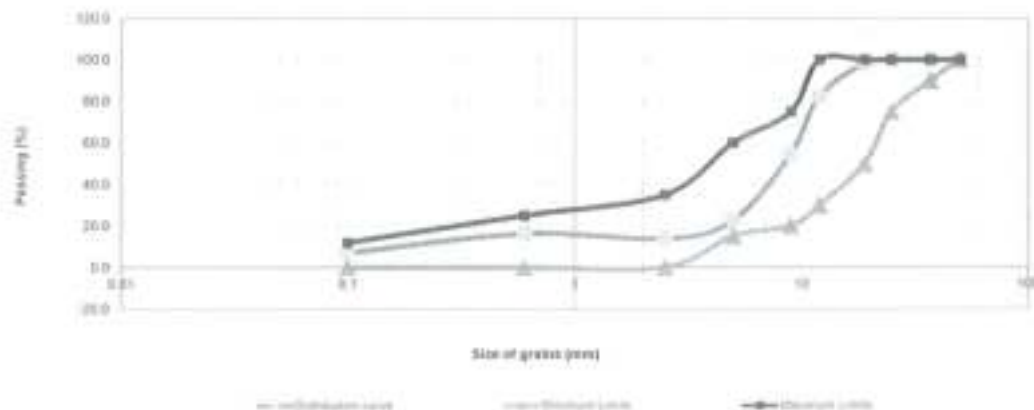
Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

	WEIGHT RETAINED	CUMULATIVE WEIGHT	CUMULATIVE PERCENTAGE	CUMULATIVE PERCENTAGE	STANDARD SPECIFICATION	
	(gm)	RETAINED (gm)	RETAINED (%)	PASSING (%)	LIMITS	
5	0.00	0.00	0.00	100.0	100	100
4	0.00	0.00	0.00	100.0	80	100
3	0.00	0.00	0.00	100.0	75	100
1.5	189.00	189.00	1.88	98.1	60	100
3/4	2800.00	4567.00	45.53	54.5	20	75
3/8	3197.00	7764.00	77.40	22.6	15	60
No.10	195.00	195.00	39.00	13.8	0	30
No.200	343.00	343.00	68.60	7.1	0	12

Total sample weight = 10031.00 pass No. 3/8 = 3845.0 Total fine aggregates weight = 500 gm  
% 38.3

Size analysis distribution curve



Soil classification: A - 1 - a ( Non-Plastic )



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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. 031706/1A

### Modified Proctor Test Report ASTM - D 1557

Mould Number :- 1  
Volume of mould = 2120 cm<sup>3</sup>  
Weight of mould = 7021 g  
G.S = 2.5 g/cm<sup>3</sup>

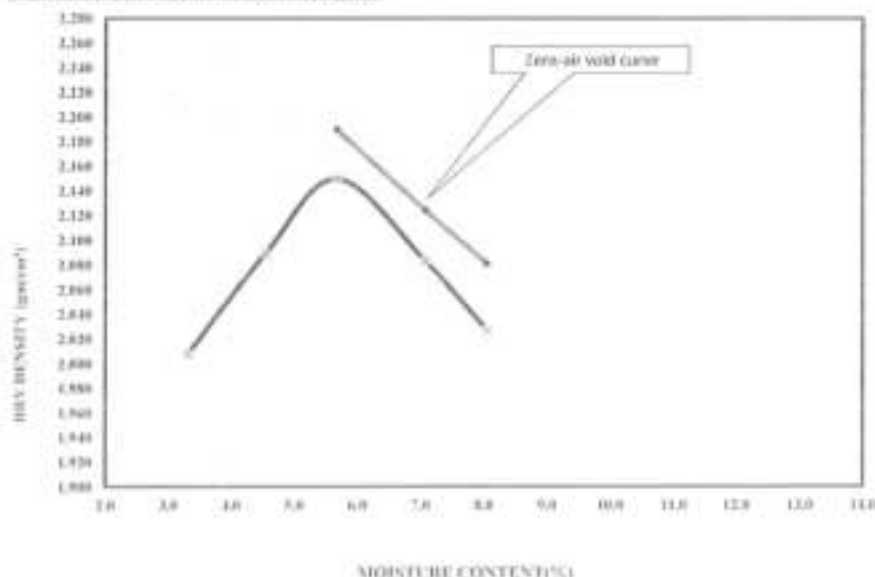
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11420	11651	11837	11750	11665
Weight of mould (g)	7021	7021	7021	7021	7021
Weight of wet soil (g)	4399	4630	4816	4729	4644
Volume of mould (cm <sup>3</sup> )	2120	2120	2120	2120	2120
Wet density (g/cm <sup>3</sup> )	2.075	2.184	2.272	2.231	2.191
Dry density (g/cm <sup>3</sup> )	2.008	2.089	2.150	2.083	2.027
Zero-air Void curve			2.190	2.124	2.081

#### 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)	244.8	242.7	241.2	239.3	238.0
Weight of container (g)	88.0	82.0	86.0	88.0	89.0
moisture content (%)	3.3	4.5	5.7	7.1	8.1

#### C - Dry density-Moisture relationship:-



M.D.D= 2.150 gm/cm<sup>3</sup>  
O.M.C= 5.70 %









## 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

### 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
Intitial Weight (W1) gms	5000
Weight of tested sample (W2) gms Retained on sieve No.12	3675
% abrasion By Weight Passing from Sieve No.12	26.5%





## COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt 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)	2525
Weight of saturated sample in water (C)	1520
Weight of dry sample after heating (A)	2495

#### Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.512
Bulk specific gravity = $A / (B-C)$	2.483
Apparent specific gravity = $A / (A-C)$	2.559
Absorption of water = $(B-A)/A \times 100$	1.2
Degradation of aggregate = $(2500-A) / A \times 100$	0.2





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

Report	:	379 - 4 - Center
Date	:	12/04/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	Prepared Sub Grade
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	31-3-2023

Temperature : 20 °C

Humidity : 40%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0010%	ASTM D 2974
SULPHATE	0.0120%	
ORGANIC MATTER	NEGATIVE	



LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*





S5-B-IN2

# MATERIAL APPROVAL REQUEST

Inshaa

شركة  
إنشاء  
العامة

شركة  
إنشاء  
العامة

شركة  
إنشاء  
العامة



Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	[SPECTRUM] Engineering Consulting Office							
Issued by Contractor	Name	Sign	Date/Serial Number	Time							
	Eng. Mohamed hassan		02-04-2023 (M.A.R) (P.S.G.2)	1:30							
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	C1	C2	C3	DD	MM	YY	HH	MM
				373	EW	CS	03	04	23	01	01

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

Description of Materials	Prepared Subgrade Total Quantity ( 10000 m3)		
Location to be Used	From Station (37T+000) to Station (374+000)		
Sample only	Yes	Materials Type	Prepared Subgrade
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
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 is Approved. 2-This Sample Representative (5000 m3) only 		1- All tests were carried-out by third Party lab (comibassal international) 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 hassan		03-04-2023	A
QA/QC *	Eng. Mazen Essamy			A
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		12-4-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة انشاء للمقاولات
Sample :	Prepare Sub-Grade
Station :	St(373+000) to st(374+000)
Date of Test :	03/04/2023
QC :	883-2

### 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	2.155
	OMC	5.7%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CB)	CBR ratio	92%
5- Specific gravity (SG), absorption and degradation	S S D	2.512
	Absorption	1.2%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	27%

LAB DIRECTOR

Eng / Eman kandil



Geotechnical consultant

Dr. Mohamed Mostafa Badry





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

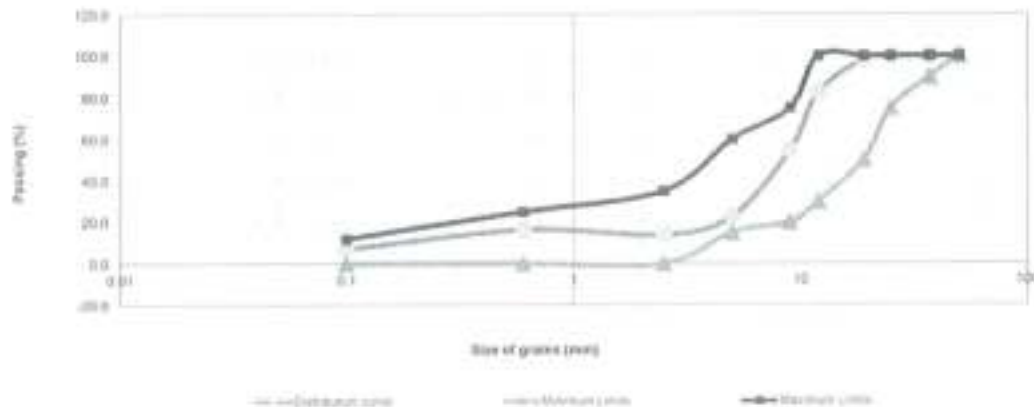
Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031706/1A

### 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)					
5	0.00	0.00	0.00	100.0	100	100
4	0.00	0.00	0.00	100.0	80	100
3	0.00	0.00	0.00	100.0	75	100
1.5	189.00	189.00	1.88	98.1	80	100
3/4	2800.00	4567.00	45.53	54.5	30	75
3/8	3197.00	7764.00	77.40	22.6	15	60
No.10	195.00	195.00	39.00	13.8	0	35
No.200	343.00	343.00	68.60	7.1	0	12

Total sample weight = 10031.00 pass No 3/8 = 3845.0 Total fine aggregates weight = 500 gm  
% 38.3

Size analysis distribution curve



Soil classification: A - 1 - a ( Non-Plastic )



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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/LA

### Modified Proctor Test Report

#### ASTM - D 1557

Mould Number :- 1  
Volume of mould = 2150 cm<sup>3</sup>  
Weight of mould = 7043.5 g  
G.S = 2.6 g/cm<sup>3</sup>

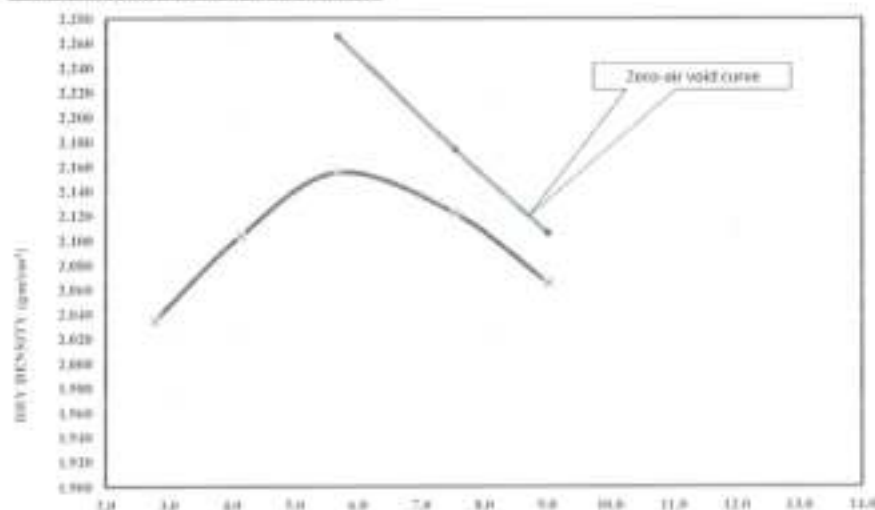
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11540	11755	11940	11950	11885
Weight of mould (g)	7043.5	7043.5	7043.5	7043.5	7043.5
Weight of wet soil (g)	4496.5	4711.5	4896.5	4906.5	4841.5
Volume of mould (cm <sup>3</sup> )	2150	2150	2150	2150	2150
Wet density (g/cm <sup>3</sup> )	2.091	2.191	2.277	2.282	2.252
Dry density (g/cm <sup>3</sup> )	2.035	2.104	2.155	2.122	2.065
Zero-air Void curve			2.266	2.174	2.106

#### 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)	245.5	243.5	241.0	238.5	238.0
Weight of container (g)	84.0	87.0	82.5	86.0	105.0
moisture content (%)	2.8	4.2	5.7	7.5	9.0

#### C - Dry density-Moisture relationship:-



M.D.D= 2.155 gm/cm<sup>3</sup>  
O.M.C= 5.70 %



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Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt Accreditation council (EGAC) under No. 031708/1A



## COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
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)	2525
Weight of saturated sample in water (C)	1520
Weight of dry sample after heating (A)	2495

#### Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.512
Bulk specific gravity = $A / (B-C)$	2.483
Apparent specific gravity = $A / (A-C)$	2.559
Absorption of water = $(B-A) / A * 100$	1.2
Degradation of aggregate = $(2500-A) / A * 100$	0.2







## COMIBASSAL International Controllers Internal inspection and laboratories sector

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

### 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%





# 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	:	379 - 5 - Center
Date	:	12/04/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء المقاولات
Project	:	Electric express train
Sample	:	Prepared Sub Grade
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	3-4-2023

Temperature : 20 °C

Humidity : 40%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0012%	ASTM D 2974
SULPHATE	0.0090%	
ORGANIC MATTER	NEGATIVE	



LAB DIRECTOR  
CH/ Mostafa Asker

Mostafa



S5-B-IN2

MATERIAL APPROVAL REQUEST	Inshaa		 	

Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company		Designer Company	(SPECTRUM) Engineering Consulting Office																																									
Issued by Contractor	Name	Sign	Date/Serial Number	Time																																									
	Eng. Mahmoud shaban		28-04-2023 (M.A.R) (B.S.1)	1:30																																									
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	<table border="1"> <tr> <td>11</td> <td>12</td> <td>13</td> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> <td>21</td> <td>22</td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> <td>28</td> <td>29</td> <td>30</td> <td>31</td> </tr> <tr> <td>373</td> <td>EW</td> <td>CS</td> <td>29</td> <td>04</td> <td>23</td> <td>01</td> <td>30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	373	EW	CS	29	04	23	01	30												
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31																									
373	EW	CS	29	04	23	01	30																																						

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

Description of Materials	Sub-Ballast Total Quantity ( 5000 m3)		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Prepared Subgrade
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	(1-2)	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 is Approved. 2-This Sample Representative 5000 m3 Only. 		1- All tests were carried-out by third Party lab (comibassal international) 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 Hassan		29-04-2023	A
QA/QC *	Eng. Mazen Essamy			P
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		6-5-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### I- Introduction

General Consultant :	SYSTRA
Consultant :	SPECTRUM
Contractor :	شركة إنشاء للمقاولات
Sample :	Sub-Ballast
Station :	St(373+000) to st(374+000)
Date of Test :	29/04/2023
QC :	1034-1

### 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	2.180
	OMC	7.5%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CBR)	CBR ratio	94%
5- Specific gravity (SG), absorption and degradation	S S D	2.578
	Absorption	1.3%
	Degradation	0.2%
6- Los Angeles test	Abrasion ratio	29.7%

LAB DIRECTOR

Eng / Eman kandil



Geotechnical consultant

For Dr. M.  
Dr. Mohamed Mostafa Badry





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### PARTICLE SIZE DISTRIBUTION ANALYSIS ASTM C-136 / AASHTO T27

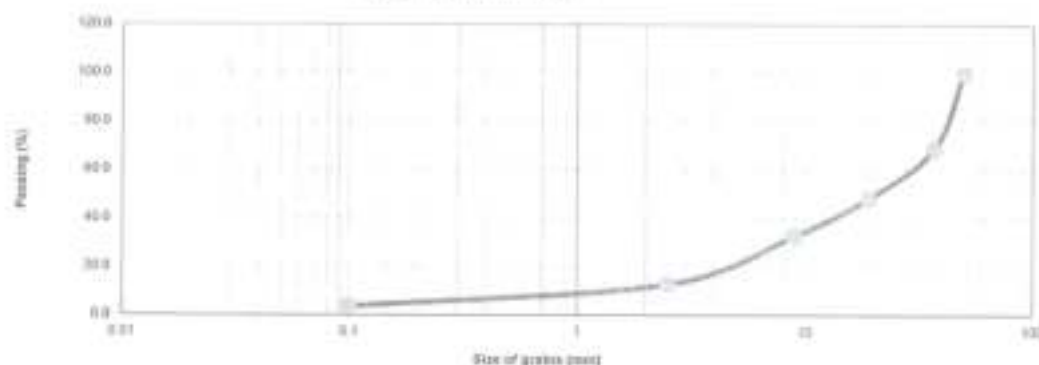
	WEIGHT RETAINED (gm)	CUMULATIVE WEIGHT RETAINED (gm)	CUMULATIVE PERCENTAGE RETAINED (%)	CUMULATIVE PERCENTAGE PASSING (%)	STANDARD SPECIFICATION LIMITS
2	0.00	0.00	0.00	100.0	
1 1/2	3125.00	3125.00	31.25	68.8	
1	1851.00	4976.00	49.76	50.2	
3/4	220.00	5196.00	51.95	48.0	
1/2	843.00	6039.00	60.38	39.6	
3/8	702.00	6741.00	67.40	32.6	
No.4	1150.00	7891.00	78.90	21.1	
No.10	200.00	200.00	40.00	12.7	
No.200	418.00	418.00	83.60	3.5	

total sample weight= 10001.00

pass No.4= 2110.0  
pass% 21.1

Total fine aggregates weight = 500 gm

Size analysis distribution curve



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



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Fax :002 033900476

Email : internal-inspection@comibassal.com



# 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

### Modified Proctor Test Report ASTM - D 1557

Mould Number :- 3  
Volume of mould = 2199 cm<sup>3</sup>  
Weight of mould = 7046 g  
G.S = 2.7 g/cm<sup>3</sup>

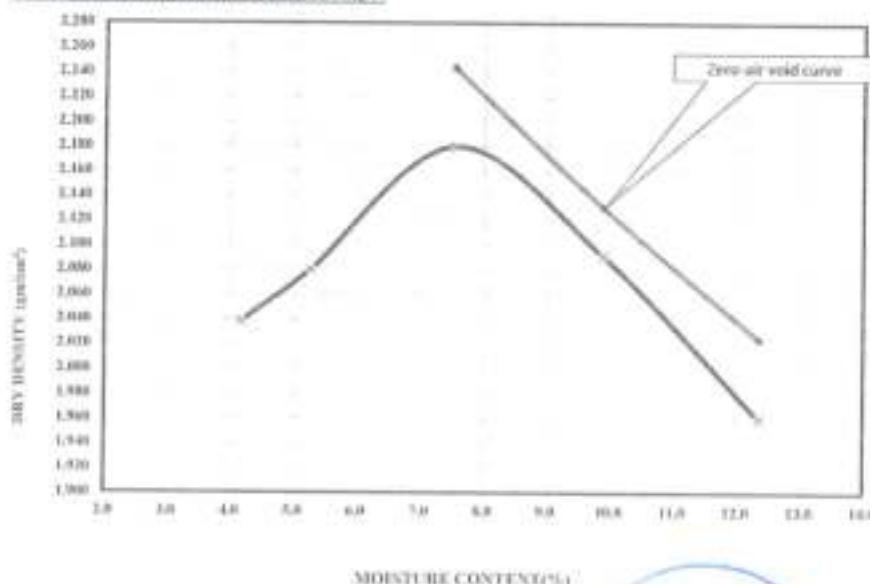
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	11715	11861	12201	12100	11890
Weight of mould (g)	7046	7046	7046	7046	7046
Weight of wet soil (g)	4669	4815	5155	5054	4844
Volume of mould (cm <sup>3</sup> )	2199	2199	2199	2199	2199
Wet density (g/cm <sup>3</sup> )	2.123	2.190	2.344	2.298	2.203
Dry density (g/cm <sup>3</sup> )	2.038	2.080	2.180	2.091	1.961
Zero-air Void curve			2.244	2.131	2.024

#### B- Moisture Calculations :-

Weight of wet soil (g)	100.0	100.0	100.0	100.0	100.0
Weight of dry soil (g)	96.0	95.0	93.0	91.0	89.0
moisture content%	4.2	5.3	7.5	9.9	12.4

#### C - Dry density-Moisture relationship:-



M.D.D= 2.180 gm/cm<sup>3</sup>  
O.M.C= 7.5 %



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WebSite : www.comibassal.com



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# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### Report Of CBR Test - ASTM - D 1883

NO OF BLOWS	56			Swell %		
MOULD NO	1				56	
WT OF MOULD+SOIL	12140			Start	0.00	
WT OF MOULD	7047			End	0.00	
WT OF SOIL	5093			Swell	0.00	
VOLUME OF MOULD	2190					
WET DENSITY	2.326					
	MC before soaking			Weight of Rammer		4.54Kg
TIN NO	1				MOD	Kg/m3 2.180
WT OF WET SOIL+TIN	250.00					
WT OF DRY SOIL+TIN	240				OMC	% 7.5
WT OF WATER	10.00					
WT OF TIN	92			PROVING RING		
WT OF DRY SOIL	148	2.125		Div/KN		
MOISTURE CONTENT	6.8					
DRY DENSITY	2.178				Capacity (KN)	50

Pen mm	97			Bearing (KN)		CBR		
	56			56		standar	56	
0.00	0			FALSE		0.0		
0.64	305			3.0		4.5		
1.27	600			5.9		8.5		
1.91	855			8.4		12.0		
2.54	1115			10.9		14.5	83	
3.17	1325			13.0		16.3		
3.81	1520			14.9		18.0		
4.45	1715			16.8		19.3		
5.08	1910			18.7		20.5	94	
5.71	2095			20.5		21.9		
6.35	2260			22.2		23.3		





## COMIBASSAL International Controllers Internal inspection and laboratories sector

Accredited by : Egypt General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egypt 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)	1546
Weight of dry sample after heating (A)	2494

#### Results:-

Saturation surface dry specific gravity = $B / (B-C)$	2.578
Bulk specific gravity = $A / (B-C)$	2.545
Apparent specific gravity = $A / (A-C)$	2.631
Absorption of water = $(B-A)/A \times 100$	1.3
Degradation of aggregate = $(2500-A) / A \times 100$	0.2





## COMIBASSAL International Controllers Internal inspection and laboratories sector

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

### 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	3515
% abrasion By Weight Passing from Sieve No.12	29.7%







# 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	:	442 - 2 - Center
Date	:	06/05/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	Sub Ballast
Station	:	ST ( 373 + 0.00 ) : ( 374 + 0.00 )
Date of Test	:	29-4-2023

Temperature : 21 °C

Humidity : 55%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0053%	ASTM D 2974
SULPHATE	0.0190%	
ORGANIC MATTER	NEGATIVE	



LAS DIRECTOR  
CH/ Mostafa Asker

*Mostafa*



# MATERIAL APPROVAL REQUEST



Contractor Company	INSHAA GENERAL OF CONSTRUCTION Company			Designer Company				(SPECTRUM) Engineering Consulting Office			
Issued by Contractor	Name	Sign		Date/Serial Number				Time			
	Eng : mahmoud shaban			2/6/2023 (M.A.R.) (B.S.2)				1:30			
Received by GARB CONSULTANT	Eng. Mazen Essamy		MAR	CL	C2	C3	DO	MM	YY	HH	MM
				373	EW	CS	3	6	23	01	30

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

Description of Materials	SUB-BALLAST TOTAL QUANTITY (10000 m3)		
Location to be Used	From Station (373+000) to Station (374+000)		
Sample only	Yes	Materials Type	Sub ballast
Supplier Name		Data Sheet provided	Yes attached INSHAA GENERAL OF CONSTRUCTION Company contracting ASTM D (1557)
Reference in BoQ	(4-2)	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 is Approved.	1-All tests were carried out (by third party lab comibassal internation)
2-This Sample Representative (3000 m3) only.	2-Results report attached and acceptable with the project specifications.
	3-Final approval is subject to above mentioned comments.
	Note: Wait for chemical analysis Result
	Done 5-7-2023

APPROVAL STATUS				
Organisation	Name	Sign	Date	A-AWC-R
Contractor	Eng. Mahmoud shaban		3/6/2023	A
QA/QC *	Eng. Mazen Essamy			n
GARB**	Eng. Mohammed Fayad			
Employers Representative	Eng. Alaa Abd-Allatif		6-6-2023	AWC

\* Designer

\*\* Alignment/Bridges: Culvert only



# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

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

### I- Introduction

General Consultant :	SYSTRA
Consultant :	Spectrum
Contractor :	شركة إنشاء للمقاولات
Sample :	Sub-Ballast
Station :	St(373+000) to st(374+000)
Date of Test :	03/06/2023
QC :	1475

### 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	2.200
	OMC	6.1%
3- Liquid limit, plastic limit and plasticity index	LL	Non plastic
	PL	Non plastic
	PI	Non plastic
4- California bearing ratio (CBR)	CBR ratio	93%
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. M.

Dr. Mohamed Mostafa Badry



Kilo 23 Alexandria - Cairo Desert Road - Mersham

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Fax : 002 033900476

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# APPENDIX





# COMIBASSAL International Controllers

## Internal inspection and laboratories sector

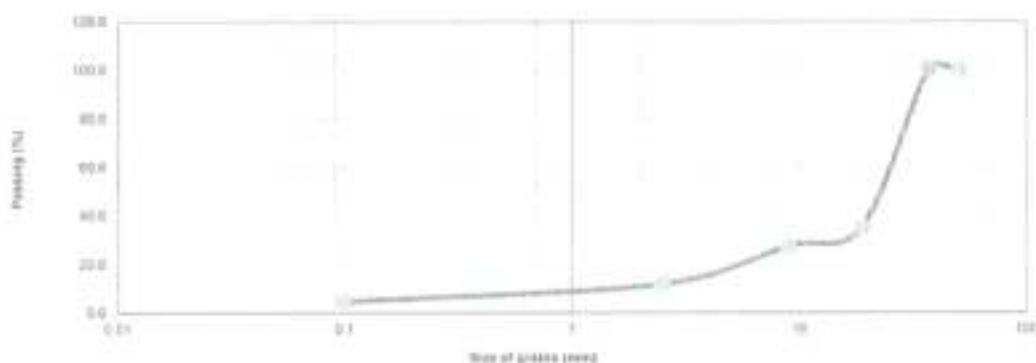
Accredited by : Egyptian General Authority for Petroleum under No. 34/29-11-2011  
Accredited by : Egyptian Accreditation council (EGAC) under No. 031706/1A

### 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	0.00	0.00	0.00	100.0	
1	3047.00	3047.00	30.47	69.5	
3/4	3402.00	6449.00	64.49	35.5	
1/2	501.00	6950.00	69.50	30.5	
3/8	300.00	7250.00	72.50	27.5	
No.4	516.00	7766.00	77.66	22.3	
No.10	235.00	7999.00	79.99	11.8	
No.200	396.00	8395.00	83.95	4.6	

Total sample weight = 10000.00 pass No.4= 2234.0 Total fine aggregates weight = 500 gm

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 :- 1  
Volume of mould = 2199 cm<sup>3</sup>  
Weight of mould = 5657 g  
G.S = 2.6 g/cm<sup>3</sup>

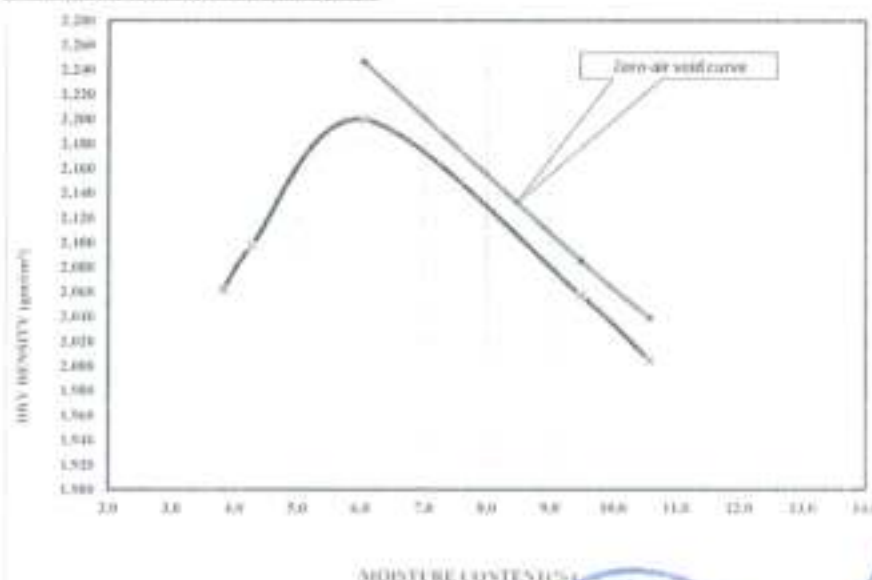
#### A- Density Calculations :-

	1	2	3	4	5
Weight of wet soil+mould (g)	10365	10467	10787	10611	10532
Weight of mould (g)	5657	5657	5657	5657	5657
Weight of wet soil (g)	4708	4810	5130	4954	4875
Volume of mould (cm <sup>3</sup> )	2199	2199	2199	2199	2199
Wet density (g/cm <sup>3</sup> )	2.141	2.187	2.333	2.253	2.217
Dry density (g/cm <sup>3</sup> )	2.062	2.098	2.200	2.058	2.005
Zero-air Void curve			2.246	2.085	2.039

#### 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)	242.0	241.1	237.5	231.1	234.5
Weight of container (g)	33.0	33.0	31.0	32.0	88.0
moisture content (%)	3.8	4.3	6.1	9.5	10.6

#### C - Dry density-Moisture relationship:-



M.D.D= 2.200 gm/cm<sup>3</sup>  
O.M.C= 6.1 %









## COMIBASSAL International Controllers Internal inspection and laboratories sector

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### 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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### 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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Report	:	582 - 2 - Center
Date	:	05/07/2023

### CHEMICAL ANALYSIS

General Consultant	:	SYSTRA
Consultant	:	SPECTRUM
Contractor	:	شركة انشاء للمقاولات
Project	:	Electric express train
Sample	:	Sub Ballast
Station	:	ST ( 373 +0.00 ) : ( 374 +0.00 )
Date of Test	:	3-6-2023

Temperature : 25 °C

Humidity : 45%

ANALYSIS	RESULTS	TEST METHOD
CHLORIDE	0.0018%	ASTM D 2974
SULPHATE	0.0400%	
ORGANIG MATTER	NEGATIVE	

LAB DIRECTOR  
CH/ Mostafa Asker

*Mostafa*

