

DOCUMENT TRANSMITTAL

Ref. No.	: FSL JUBAIL : SA08-3012	Date	: 18 June 2016
To	: A.H. Al Marhoon & Bros.Co Rahima, Saudi Arabia Fax: (03) 667-4721		
Attention	: Plant Manager		
Re	: Monthly Aggregate Testing – June 2016		

Please find enclosed the following documents:

Quantity	Document Reference	
1 each	3/4" Coarse Aggregate	Lab.No. 14227
-do-	3/8" Coarse Aggregate	Lab.No. 14228
-do-	Dune Sand	Lab.No. 14229
-do-	Summary Combined Aggregate	Lab No. 14227 – 14228
-do-	Chemical Analysis, Water	Lab No. 14230
	Invoice #	
Remarks:	ARAMCO & SCECO Specs.	

We request you to return a signed copy of this document transmittal form by facsimile transmission on
03 341-2701

Regards,

Receipt confirmation of document(s)

FUGRO-SUHAIMI LTD.

Muhammad Nawaz
Lab. Manager
050-6800943



Signature :

Name (print) :

Date :

Company Stamp:



Certificate # 3512.05

**Construction Materials Testing Laboratory
Jubail Branch**P.O. Box 2165 - Tel.: (013) 341 2700
Dammam 31451 - Fax: (013) 341 2701
Saudi Arabia - E-mail.: fsljubail@fugro-suhaimi.com**SUMMARY OF TEST REPORT**

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14227
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.5	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.41	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.2	--
Loss at 500 revolutions %		32.9	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	10.5	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.617	--
SSD basis		2.572	--
Dry basis		2.544	--
Absorption		1.1	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.015	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.121	
Flakiness index	BS-812	9.9	30 Max.
Elongation index	BS-812	11.4	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: Thomas Reviewed By: Imran Ahmed
CTTA # : 0194 . CTTA # : 0556Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037



Certificate # 3512.05

**Construction Materials Testing Laboratory
Jubail Branch**

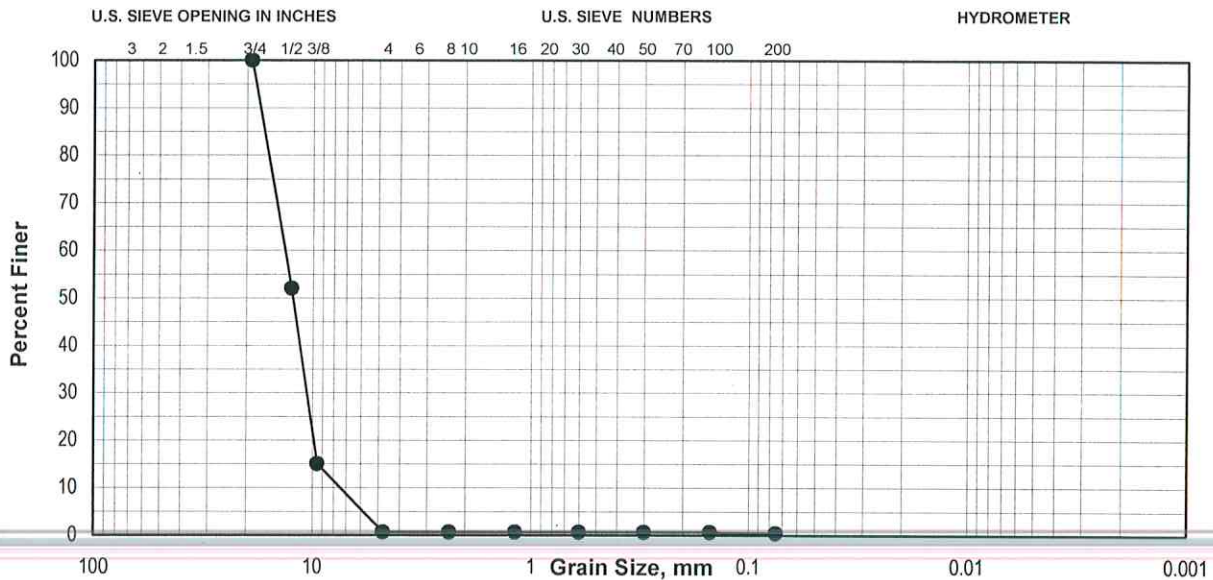
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Saudi Arabia – E-mail.: fsljubail@fugro-suhaimi.com



PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14227
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-136/117	Date Reported	16 June 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

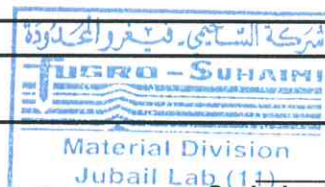
Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
1 (25.0 mm)					
3/4 (19 mm)	100				
1/2 (12.5 mm)	52				
3/8 (9.5 mm)	15				
#4 (4.75 mm)	0.7				
#8 (2.36 mm)	0.7				
#16 (1.18 mm)	0.7				
#30 (0.600 mm)	0.7				
#50 (0.300 mm)	0.7				
#100 (0.150 mm)	0.7				
#200 (0.075 mm)	0.5				

Remarks	
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Tested By: Thomas Reviewed By: Imran Ahmed
CTTA # : 0194 CTTA # : 0556



Sr. Laboratory Supervisor
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السحيمي - فيفرو

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14228
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.0	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.35	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.5	--
Loss at 500 revolutions %		34.5	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	16.0	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.617	--
SSD basis		2.564	--
Dry basis		2.531	--
Absorption		1.3	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(Cl), %		0.011	0.03 max
(NaCl), %		0.013	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.175	
		0.210	0.5 max
Flakiness index	BS-812	9.2	30 Max.
Elongation index	BS-812	11.3	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: Thomas Reviewed By: WN
CTTA #: 0194 CTTA #: -



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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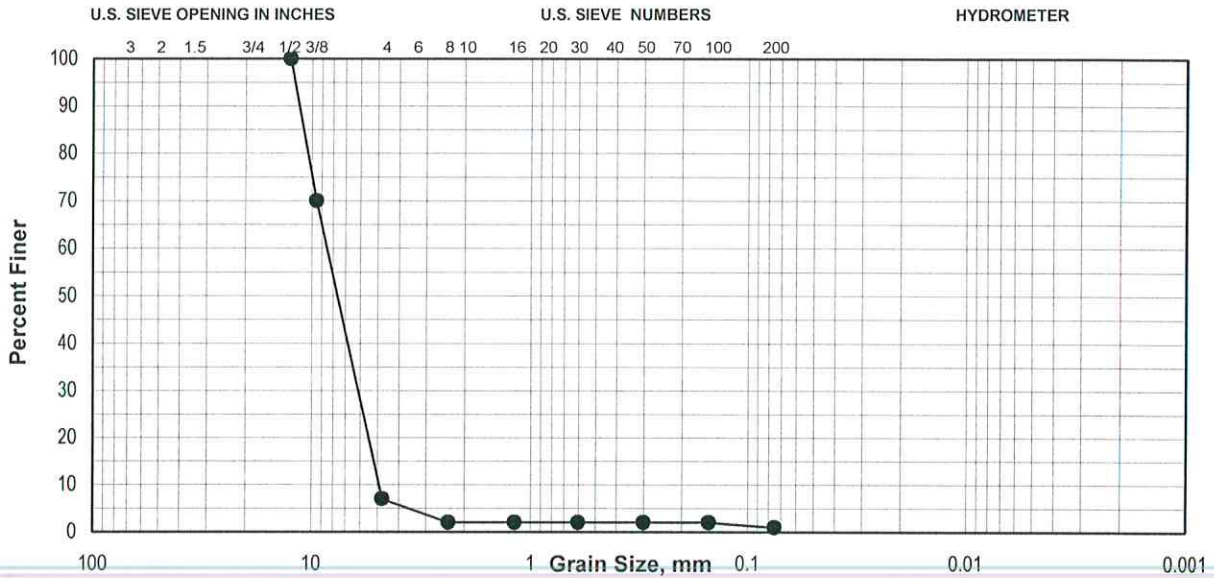
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PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14228
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	06 June 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-117/136	Date Reported	16 June 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
3/4 (19.0 mm)					
1/2 (12.5 mm)	100				
3/8 (9.5 mm)	70				
#4 (4.75 mm)	7				
#8 (2.36 mm)	2				
#16 (1.18 mm)	2				
#30 (0.600 mm)	2				
#50 (0.300 mm)	2				
#100 (0.15 mm)	2				
#200 (75 mm)	1.0				

Remarks	
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Tested By: Thomas
CTTA # : 0194

Reviewed By: Imran Ahmed
CTTA # : 0556



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SUMMARY OF TEST REPORT

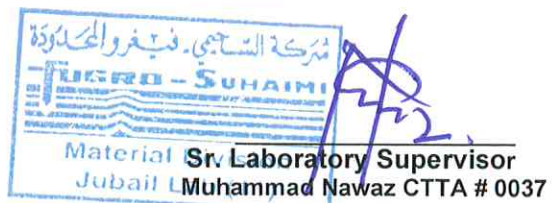
Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14229
Material	Dune Sand	Date Sampled	06 June 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	16 June 2016

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.2	2.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	2.0 Max.
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	5.8	15 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.652	--
SSD basis		2.614	--
Dry basis		2.591	--
Absorption		0.9	1.0 max
Acid soluble chloride, %	ASTM C 114		
(Cl), %		0.007	0.05 max
(NaCl), %		0.007	
Acid soluble sulphate	BS-812 Part 118		
(SO ₃), %		0.359	0.4 Max
(SO ₄), %		0.430	
Organic impurities	ASTM C-40	Light then std.	

Remarks: Not applicable: Material is finer than test size i.e. retained on Sieve No.16 hence the test is not applicable

Tested By: Thomas **Reviewed By:** WN
CTTA # : 0194 **CTTA # :** -



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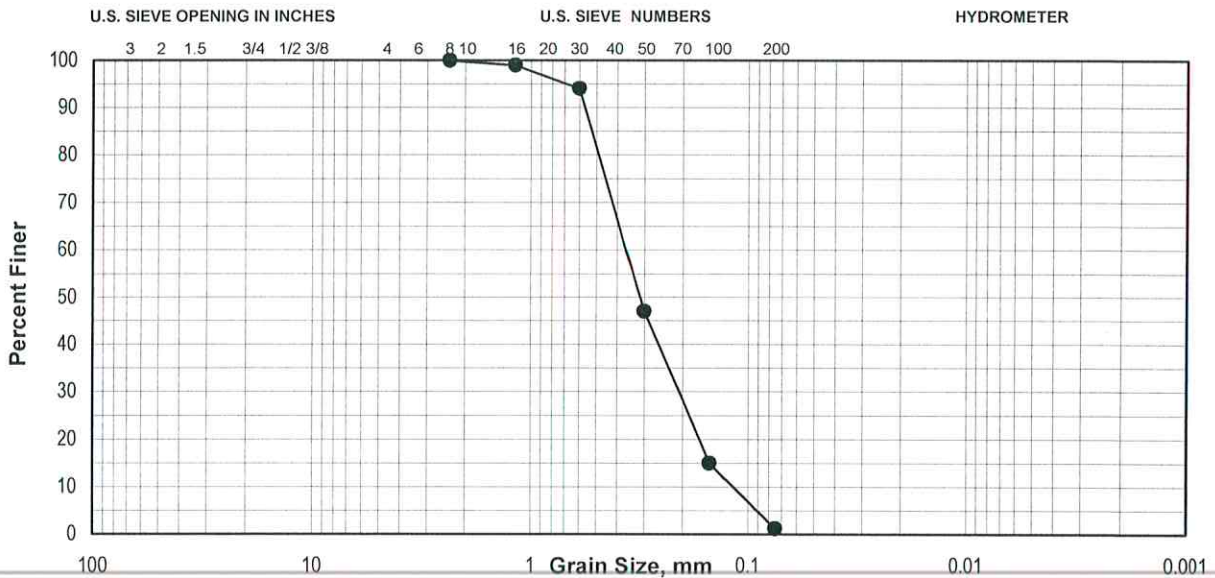
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PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	14229
Material	Sand	Date Sampled	06 June 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	07 June 2016
Method	ASTM C-117/136	Date Reported	16 June 2016



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
#8 (2.36 mm)	100				
#16 (1.18 mm)	99				
#30 (0.600 mm)	94				
#50 (0.300 mm)	47				
#100 (0.15 mm)	15				
#200 (0.075 mm)	1.2				

Remarks	
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Tested By: Thomas
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Reviewed By: Imran Ahmed
CTTA # : 0556



(Signature)
Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037



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TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

Client	A.H. Al Marhoon & Bros. Co.	Report Date	16 June 2016
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL	Lab No.	14230
Sample Location	From Batch Plant	Sampled by	Sampled by FSL

Fugro-Suhaimi Ltd. (FSL) has performed chemical analysis on a water sample based on client request. The testing was carried out in accordance with the relevant ASTM and APHA Methods. The results and pertinent information are as follows:

Test results

Serial No.	Determination	Test Results	SCECO Specs.
1.	pH	6.5	7 – 8.5
2.	Chloride as Cl ⁻ , ppm	39.0	300 max
3.	Sulfate as SO ₃ , ppm	6.0	300 max
4.	Total Dissolved Solids- TDS, ppm	149.4	500 max

Remarks: Test results indicate compliance with the SCECO Standard 71-SMSS-5, Rev.4.

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CTTA # : 0194 . CTTA # : -



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