

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12869
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	03 Feb 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	15 Feb 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	0.7	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.5	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.6	--
Loss at 500 revolutions %		33.8	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	9.5	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.628	--
SSD basis		2.582	--
Dry basis		2.554	--
Absorption		1.1	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114	0.02	0.03 max
(NaCl), %		0.024	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118	-	
(SO ₄), %		0.210	0.5 max
Flakiness index	BS-812	6.9	30 Max.
Elongation index	BS-812	9.6	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: CBB
CTTA # : 0428

Reviewed By: Imran Ahmed
CTTA # : 0556



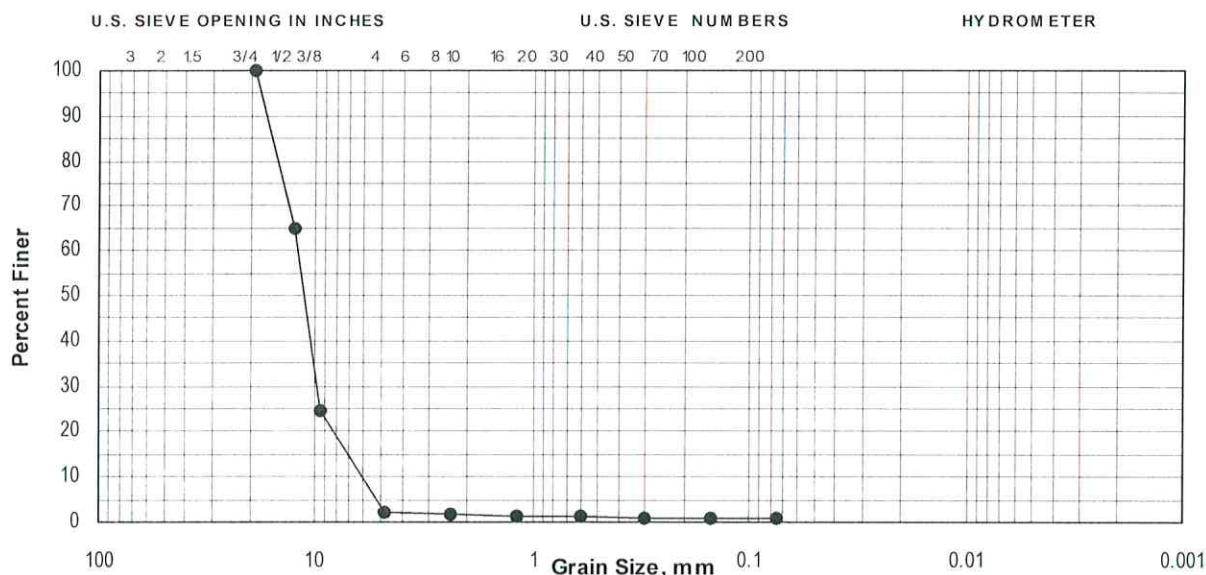
Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037



Certificate # 3512.05

Construction Materials Testing Laboratory
Jubail BranchP.O. Box 2165 – Tel.: (013) 341 2700
Dammam 31451 – Fax.: (013) 341 2701
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.	12869
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	03 Feb 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	04-06 Feb 2016
Method	ASTM C-136/117	Date Reported	15 Feb 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		
1 (25.0 mm)	100		Item	Description	Result
3/4 (19 mm)	64.8				
1/2 (12.5 mm)	24.5				
3/8 (9.5 mm)	2.4				
#4 (4.75 mm)	1.6				
#8 (2.36 mm)	1.5				
#16 (1.18 mm)	1.1				
#30 (0.600 mm)	0.95				
#50 (0.300 mm)	0.82				
#100 (0.150 mm)	0.71				
#200 (0.075 mm)					

Remarks	
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Tested By: CBB

Reviewed By: Imran Ahmed

CTTA # : 0428

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**Sr. Laboratory Supervisor**
Muhammad Nawaz CTTA # 0037

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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.	12870
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	03 Feb 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	15 Feb 2016

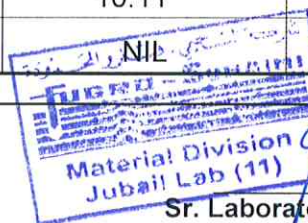
Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.9	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.7	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.7	--
Loss at 500 revolutions %		34.8	35 Max.
Ratio 100/500 rev.		0.25	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	13.15	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.636	--
SSD basis		2.575	--
Dry basis		2.538	--
Absorption		1.5	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114	0.016	0.03 max
(NaCl), %		0.019	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118	0.332	
(SO ₄), %		0.332	0.5 max
Flakiness index	BS-812	8.12	30 Max.
Elongation index	BS-812	10.11	45 Max.
Coal & lignite	ASTM C-123		0.5 Max.

Remarks:

Tested By: CBB
CTTA # : 0428

Reviewed By: Imran Ahmed
CTTA # : 0556



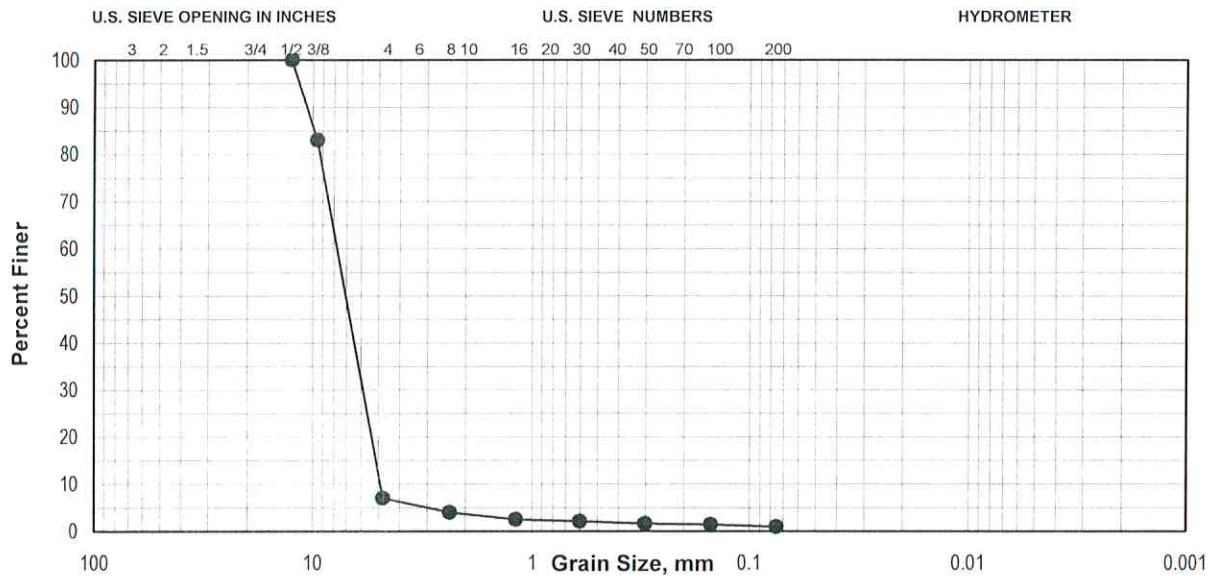
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Dammam 31451 – Fax.: (013) 341 2701Saudi Arabia – E-mail.: fsljubail@fugro-suhaimi.com**PARTICLE SIZE ANALYSIS TEST REPORT**

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12870
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	03 Feb 2016
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	04-06 Feb 2016
Method	ASTM C-117/136	Date Reported	15 Feb 2016



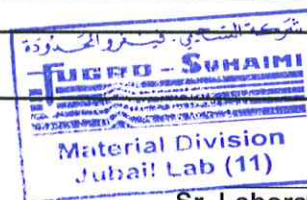
Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
3/4 (19.0 mm)	100		Item	Description	Result
1/2 (12.5 mm)	83				
3/8 (9.5 mm)	7				
#4 (4.75 mm)	4				
#8 (2.36 mm)	2.5				
#16 (1.18 mm)	2.1				
#30 (0.600 mm)	1.6				
#50 (0.300 mm)	1.4				
#100 (0.15 mm)	0.94				
#200 (75 mm)					

Remarks	
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Tested By: CBB
CTTA # : 0428Reviewed By: Imran Ahmed
CTTA # : 0556**Sr. Laboratory Supervisor**
Muhammad Nawaz CTTA # 0037

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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.	12871
Material	Dune Sand	Date Sampled	03 Feb 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	15 Feb 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	1.8	2.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	2.0 Max.
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	6.7	15 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.643	--
SSD basis		2.605	--
Dry basis		2.582	--
Absorption		0.9	1.0 max
Acid soluble chloride, %	ASTM C 114		
(Cl), %		0.008	0.05 max
(NaCl), %		0.0096	
Acid soluble sulphate	BS-812 Part 118		
(SO ₃), %		0.062	0.4 Max
(SO ₄), %		0.062	
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 applicableTested By: CBB
CTTA # : 0428Reviewed By: Imran Ahmed
CTTA # : 0556**Sr. Laboratory Supervisor**
Muhammad Nawaz CTTA # 0037

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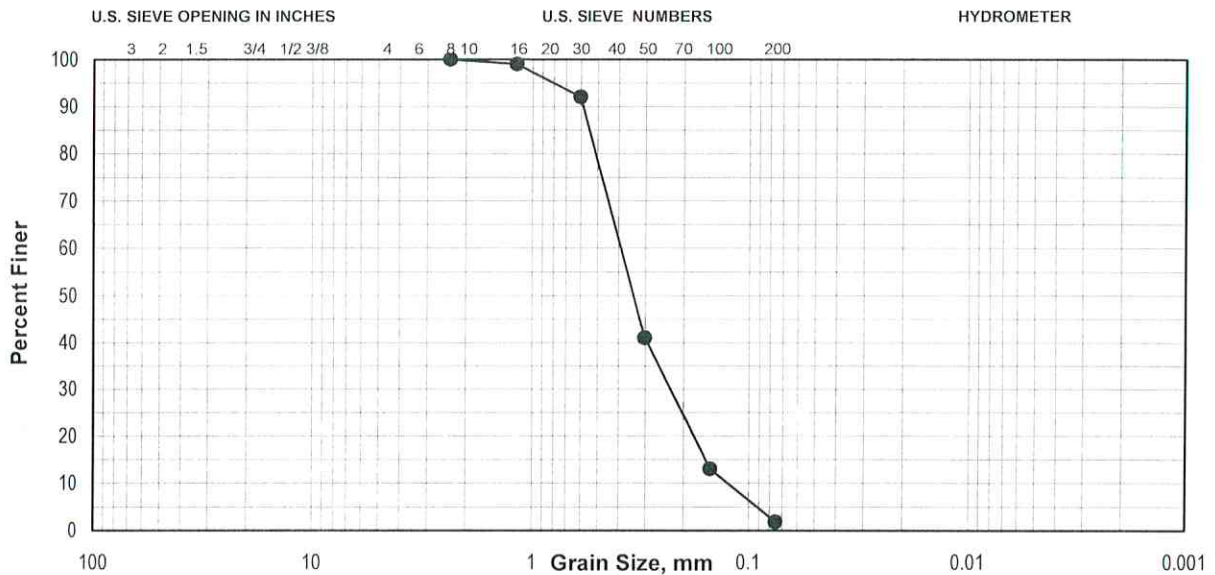
Certificate # 3512.05

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السحيمي - فيفرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12871
Material	Sand	Date Sampled	03 Feb 2016
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	04-06 Feb 2016
Method	ASTM C-117/136	Date Reported	15 Feb 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)	92				
#50 (0.300 mm)	42				
#100 (0.15 mm)	13				
#200 (0.075 mm)	1.8				

Remarks

Tested By: CBB
CTTA # : 0428Reviewed By: Imran Ahmed
CTTA # : 0556Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

Client	A.H. Al Marhoon & Bros. Co.	Report Date	15 Feb 2016
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL	Lab No.	12872/7631
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	7.35	7 – 8.5
2.	Chloride as Cl ⁻ , ppm	127.6	300 max
3.	Sulfate as SO ₃ , ppm	19.0	300 max
4.	Total Dissolved Solids- TDS, ppm	152.2	500 max

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

Tested By: CBB
CTTA # : 0428

Reviewed By: WN
CTTA # : -

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