



ACCREDITED
Certificate # 3512.05

Construction Materials Testing Laboratory
Jubail Branch

P.O. Box 2165 - Tel.: (013) 341 2700
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Saudi Arabia - E-mail: fsljubail@fugro-suhaimi.com



السحيمي - فيفرو

SUMMARY OF TEST REPORT

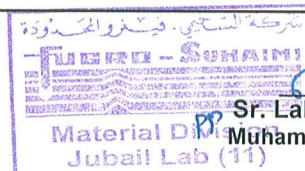
Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	11007
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	01 July 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 July 2015

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.6	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.38	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.1	--
Loss at 500 revolutions %		33.8	35 Max.
Ratio 100/500 rev.		0.24	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	10.4	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.621	--
SSD basis		2.580	--
Dry basis		2.554	--
Absorption		1.0	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.016	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.157	0.5 max
Flakiness index	BS-812	8.1	30 Max.
Elongation index	BS-812	9.6	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

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



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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SUMMARY OF TEST REPORT

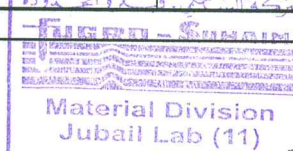
Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	11008
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	01 July 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 July 2015

Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.1	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.44	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.6	--
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	14.7	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.632	--
SSD basis		2.573	--
Dry basis		2.538	--
Absorption		1.4	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.020	0.03 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.033	0.5 max
Flakiness index	BS-812	9.6	30 Max.
Elongation index	BS-812	12.4	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: Thomas Reviewed By: Imran Ahmed
CTTA # : 0194 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.	11009
Material	Dune Sand	Date Sampled	01 July 2015
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	16 July 2015

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	2.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	2.0 Max.
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	6.5	15 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.661	--
SSD basis		2.623	--
Dry basis		2.600	--
Absorption		0.9	1.0 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.008	0.05 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.053	0.4 Max
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

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TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

Client	A.H. Al Marhoon & Bros. Co.	Report Date	16 July 2015
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL	Lab No.	11010
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.
2.	pH	7.14	7 – 8.5
3.	Chloride as Cl ⁻ , ppm	37.2	300 max
4.	Sulfate as SO ₃ , ppm	2.0	300 max
5.	Total Dissolved Solids- TDS, ppm	110.8	500 max

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

Tested By: CPN Reviewed By: WN
CTTA #: - CTTA #: -




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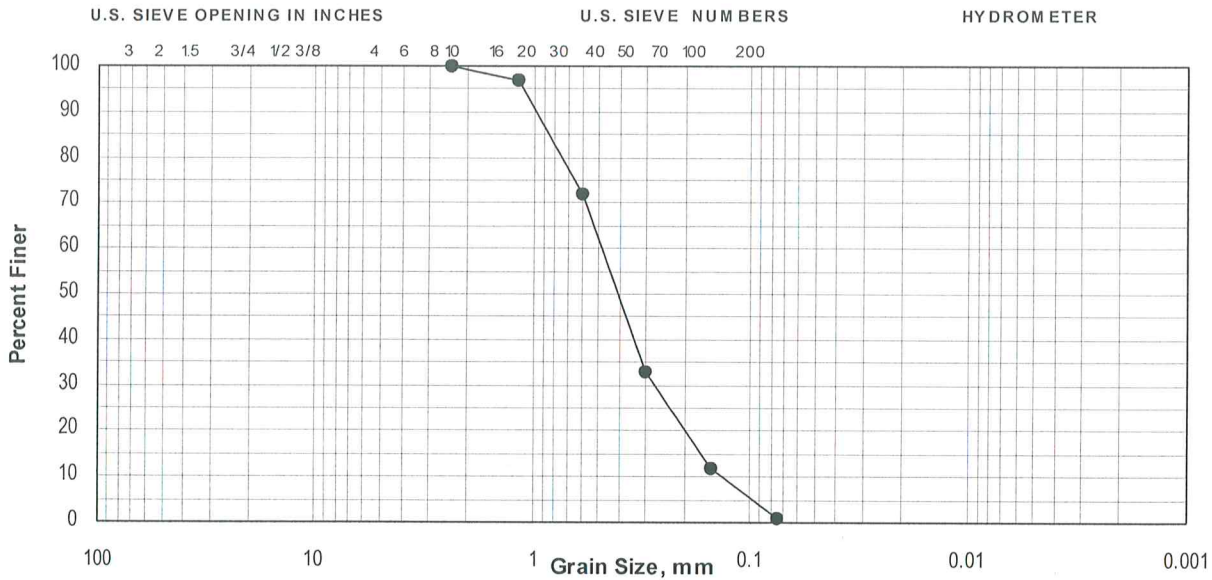
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السحيمي - فيفرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	11009
Material	Sand	Date Sampled	01 July 2015
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	05-06 July 2015
Method	ASTM C-117/136	Date Reported	16 July 2015



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)	97				
#30 (0.600 mm)	72				
#50 (0.300 mm)	33				
#100 (0.15 mm)	12				
#200 (75 mm)	0.9				

Remarks	
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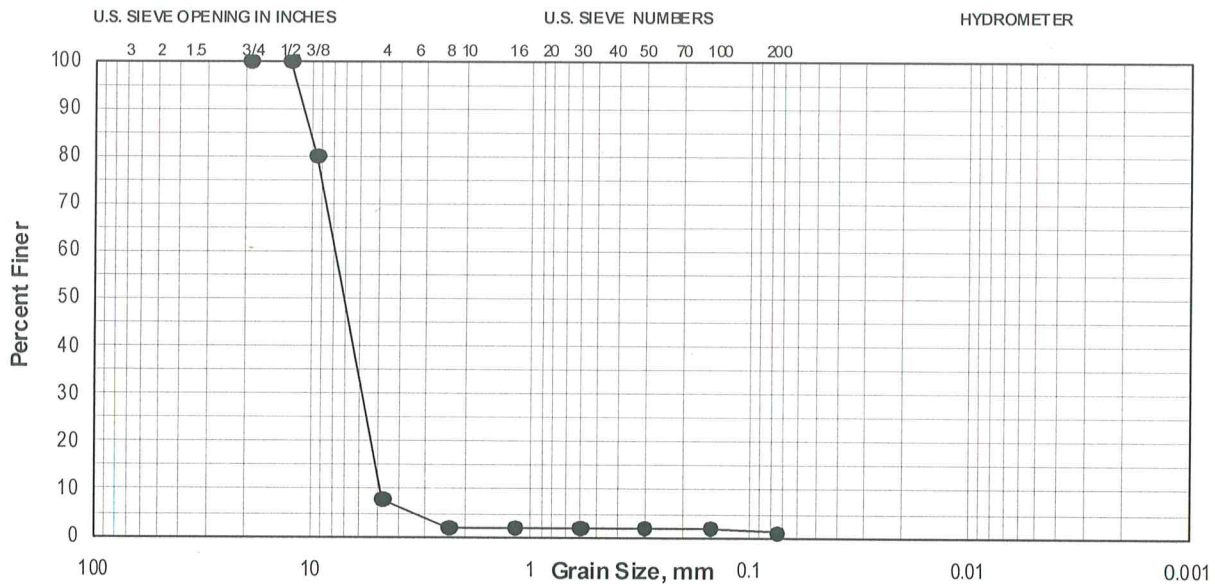
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PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	11008
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	01 July 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	05-06 July 2015
Method	ASTM C-117/136	Date Reported	16 July 2015



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)	100				
1/2 (12.5 mm)	100				
3/8 (9.5 mm)	80				
#4 (4.75 mm)	8				
#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)	1.1				

Remarks	
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(Signature)
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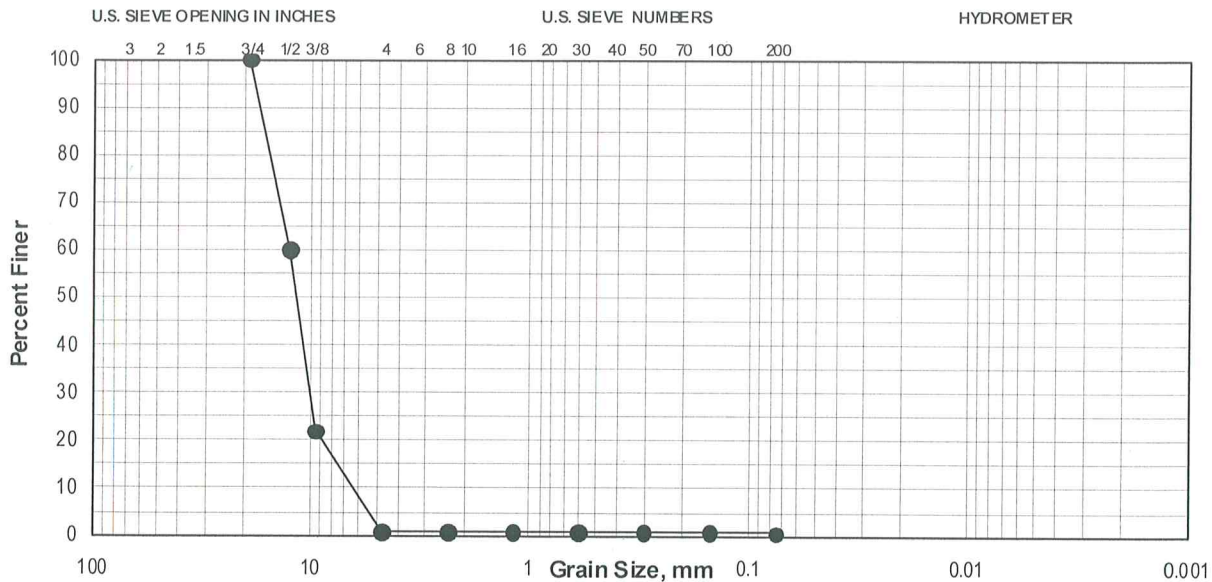
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Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	11007
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	01 July 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	05-06 July 2015
Method	ASTM C-136/117	Date Reported	16 July 2015



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

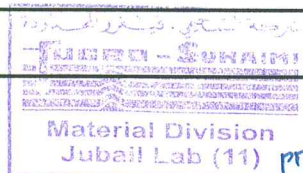
Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing g %	Specification	Properties Tested		
			Item	Description	Result
1 (25.0 mm)					
3/4 (19 mm)	100				
1/2 (12.5 mm)	60				
3/8 (9.5 mm)	22				
#4 (4.75 mm)	0.8				
#8 (2.36 mm)	0.8				
#16 (1.18 mm)	0.8				
#30(600)	0.8				
#50(300)	0.8				
#100 (0.15 mm)	0.8				
#200 (75 mm)	0.6				

Remarks	
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(Signature)
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