



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.: fstjubail@fugro-suhaimi.com

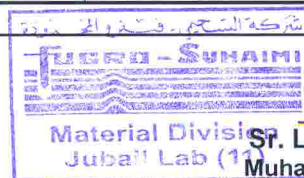
السحيمي - فيغرو

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	10858
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	01 June 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	14 June 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	0.14	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.34	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		7.8	--
Loss at 500 revolutions %		32.5	35 Max.
Ratio 100/500 rev.		0.24	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	12.2	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.638	--
SSD basis		2.591	--
Dry basis		2.563	--
Absorption		1.1	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.016	0.03 max
		0.026	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118	0.310	
(SO ₄), %		0.310	0.5 max
Flakiness index	BS-812	11.4	30 Max.
Elongation index	BS-812	13.0	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

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

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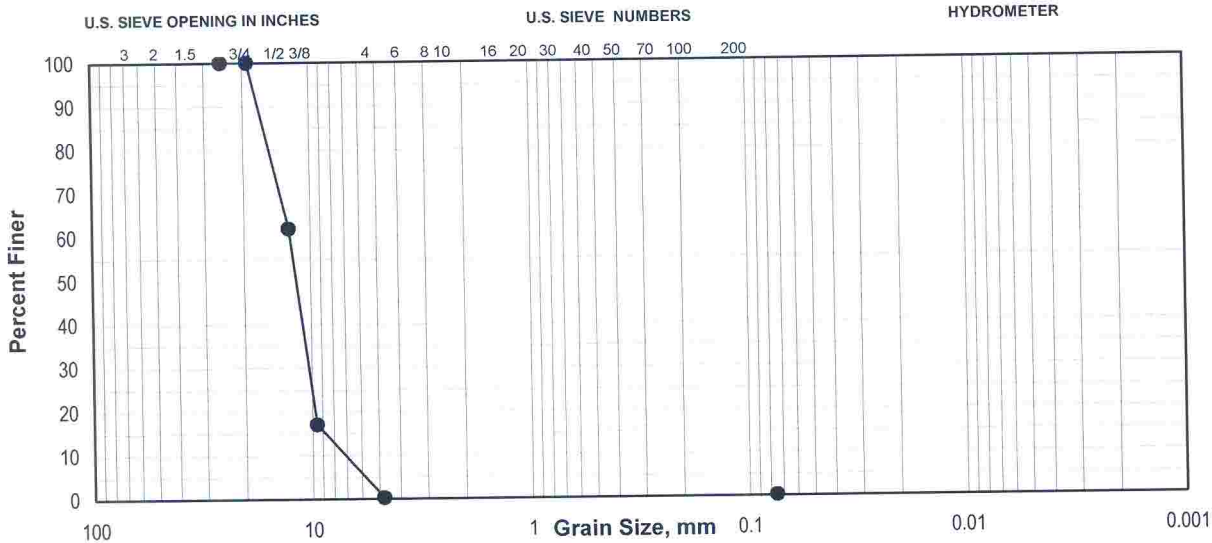
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Certificate # 3512.05

PARTICLE SIZE ANALYSIS TEST REPORT السحيمي - فيغرو

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	10858
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	01 June 2015
Source	Al Marhoon RMC Plant	Date Tested	03-04 June



Method	ASTM C-136/117	Date Reported	13 June 2015
Gravel		Sand	
Coarse	fine	Coarse	medium fine
			Silt or Clay

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)	100				
3/4 (19 mm)	100				
1/2 (12.5 mm)	62				
3/8 (9.5 mm)	17				
#4 (4.75 mm)	0.2				
#8 (2.36 mm)	-				
#16 (1.18 mm)	-				
#30(600)	-				
#50(300)	-				
#100 (0.15 mm)	-				
#200 (75 mm)	0.14				

Remarks السحيمي - فيغرو

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

Material Division
Jubail
Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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السحيمي - فيغرو

SUMMARY OF TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	10859
Material	3/8" (10- mm) Coarse Aggregate	Date Sampled	01 June 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	14 June 2015

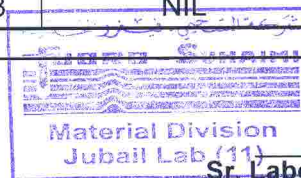
Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	0.32	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.51	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.2	--
Loss at 500 revolutions %		34.2	35 Max.
Ratio 100/500 rev.		0.24	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	15.0	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.630	--
SSD basis		2.568	--
Dry basis		2.530	--
Absorption		1.5	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114	0.012	0.03 max
(NaCl), %		0.020	
Acid soluble sulphate (SO ₃), %	BS-812 Part 118	0.279	
(SO ₄), %			0.5 max
Flakiness index	BS-812	11.6	30 Max.
Elongation index	BS-812	10.6	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: Jose Daniel
CTTA # : 0195

Reviewed By: Imran Ahmed
CTTA # : 0556



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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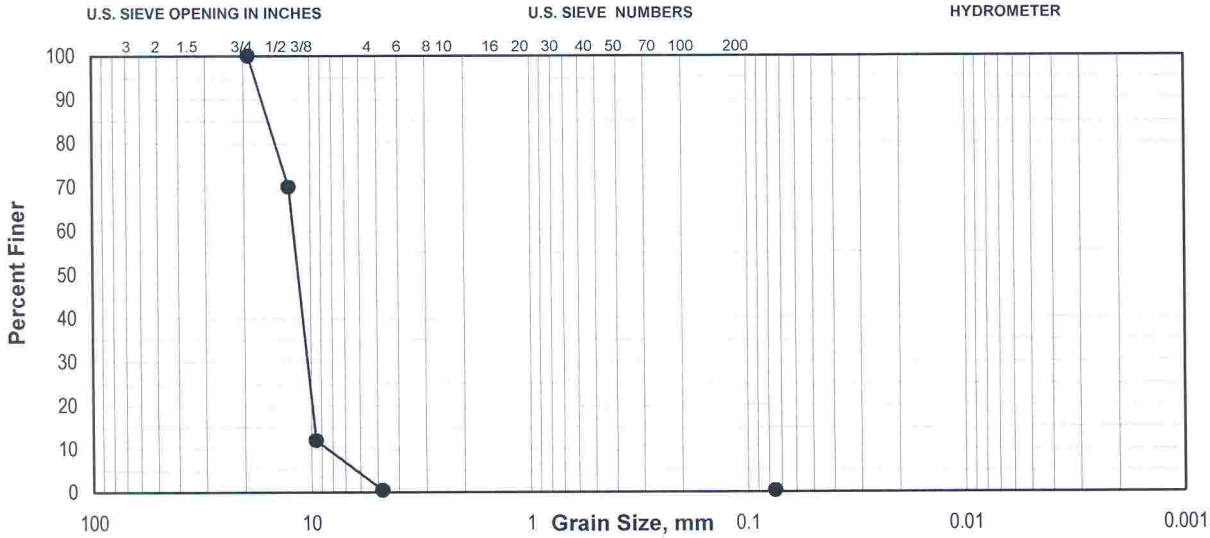


السَّحْمِي - فَيغرو

Certificate # 3512.05

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	10859
Material	3/8" (20 mm) Coarse Aggregate	Date Sampled	01 June 2015
Source	Al Marhoon RMC Plant	Date Tested	03-04 June



Method	ASTM C-136/117	Date Reported	13 June 2015
Gravel		Sand	
Coarse	fine	Coarse	medium
		fine	Silt or Clay

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)	70	100			
3/8 (9.5 mm)	12	70			
#4 (4.75 mm)	0.4	12			
#8 (2.36 mm)	-	0.4			
#16 (1.18 mm)	-				
#30(600)	-				
#50(300)	-				
#100 (0.15 mm)	-				
#200 (75 mm)	0.32				

Remarks	
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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.	10860
Material	Dune Sand	Date Sampled	01 June 2015
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	14 June 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	0.4	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		2.656	--
SSD basis		2.622	--
Dry basis		2.601	--
Absorption		0.8	1.0 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.012	0.05 max
Acid soluble sulphate (SO ₃), %	BS-812 Part 118		
(SO ₄), %		0.020	
Acid soluble sulphate (SO ₃), %		0.127	0.4 Max
(SO ₄), %		0.127	
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: Jose Daniel
CTTA # : 0195

Reviewed By: Imran Ahmed
CTTA # : 0556



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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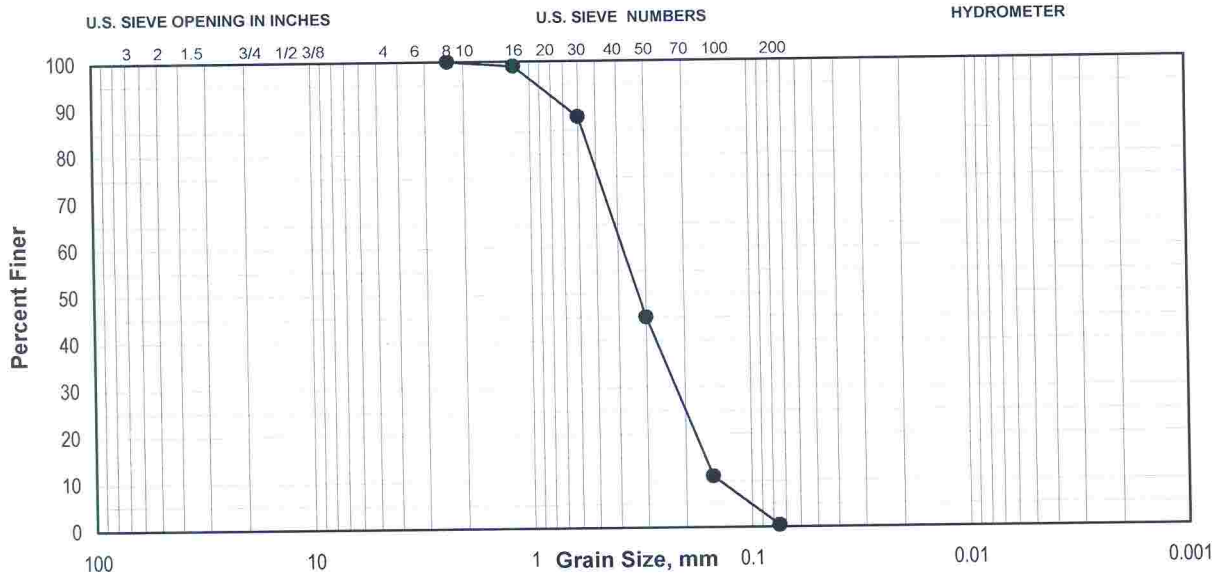
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السحيمي - فيغرو

PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	10860
Material	Sand	Date Sampled	01 June 2015
Source	Al Marhoon RMC Plant	Date Tested	03-04 June 2015



Method	ASTM C-117/136	Date Reported	13 June 2015
Gravel		Sand	
Coarse	fine	Coarse	medium
		fine	Silt or Clay

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)	88				
#50 (0.300 mm)	45				
#100 (0.15 mm)	11				
#200 (75 mm)	0.4				

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

شركة السحيمي - فيغرو المحدودة

Material Division
Jubail L. 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	14 June 2015
Project	Concrete Batch Plant, Rahima	Job No.	SA08-3012
Source	Sampled by FSL	Lab No.	10861
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	7.76	7 – 8.5
3.	Chloride as Cl ⁻ , ppm	3.0	300 max
4.	Sulfate as SO ₃ , ppm	17.73	300 max
5.	Total Dissolved Solids- TDS, ppm	64.8	500 max

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

Tested By: CPN
CTTA # : -

Reviewed By: WN
CTTA # : -



Sr. Laboratory Supervisor
Muhammad Nawaz CTTA # 0037

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