

### SUMMARY OF TEST REPORT


Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12257
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	02 Dec 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Reported	16 Dec 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	0.57	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.30	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.3	--
Loss at 500 revolutions %		32.2	35 Max.
Ratio 100/500 rev.		0.26	0.25 max
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	8.9	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.618	--
SSD basis		2.577	--
Dry basis		2.552	--
Absorption		1.0	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.012	0.03 max
Acid soluble sulphate (SO <sub>3</sub> ), %	BS-812 Part 118	0.014	
(SO <sub>4</sub> ), %		-	
		0.197	0.5 max
Flakiness index	BS-812	7.7	30 Max.
Elongation index	BS-812	9.3	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

Remarks:

Tested By: CBB Reviewed By: Imran Ahmed  
CTTA # : 0428 . CTTA # : 0556



شركة السحيمي - فيغرو المحدودة  
FUGRO - SUHAIMI  
Sr. Laboratory Supervisor  
Muhammad Nawaz CTTA # 0037  
Material Division

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Certificate # 3512.05

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Jubail Branch

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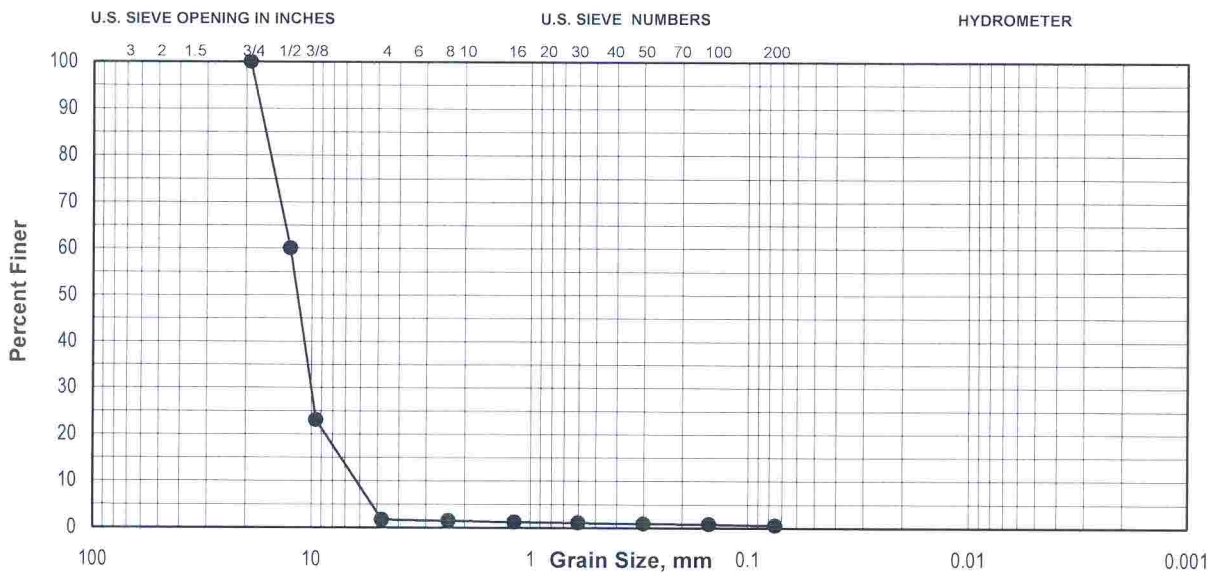
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السحيمي - فيغرو

**PARTICLE SIZE ANALYSIS TEST REPORT**

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12257
Material	3/4" (20 mm) Coarse Aggregate	Date Sampled	02 Dec 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	05-06 Dec 2015
Method	ASTM C-136/117	Date Reported	16 Dec . 2015



Gravel		Sand			Silt or Clay
Coarse	fine	Coarse	medium	fine	

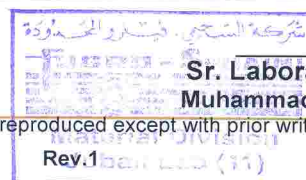
Description of Sand / Gravel Particles:

Shape	Hardness	Specific Gravity

Sieve Size Inch(mm)	Passing %	Specification	Properties Tested		
			Item	Description	Result
1 (25.0 mm)					
3/4 (19 mm)					
1/2 (12.5 mm)	100				
3/8 (9.5 mm)	60				
#4 (4.75 mm)	23				
#8 (2.36 mm)	1.7				
#16 (1.18 mm)	1.5				
#30 (0.600 mm)	1.2				
#50 (0.300 mm)	1.1				
#100 (0.150 mm)	0.9				
#200 (0.075 mm)	0.83				

Remarks	
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Tested By: CBB Reviewed By: Imran Ahmed  
CTTA #: 0428 CTTA #: 0556



Sr. Laboratory Supervisor  
Muhammad Nawaz CTTA # 0037





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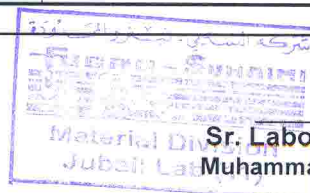
السحيمي - فيفرو

**SUMMARY OF TEST REPORT**

<b>Client</b>	A.H. Al Marhoon & Bros. Co.	<b>Job No.</b>	SA08-3012
<b>Project</b>	Concrete Batch Plant, Rahima	<b>Lab No.</b>	12258
<b>Material</b>	3/8" (10- mm) Coarse Aggregate	<b>Date Sampled</b>	02 Dec 2015
<b>Source</b>	Al Osais, Abuhadriya (Sampled by FSL)	<b>Date Reported</b>	16 Dec 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	0.93	5.0 Max.
Clay lumps & friable particles %	ASTM C-142	0.49	1.0 Max.
Los Angeles Abrasion	ASTM C-131		
Loss at 100 revolutions %		8.35	--
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	13.4	18 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.627	--
SSD basis		2.568	--
Dry basis		2.532	--
Absorption		1.4	2.5 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.016	0.03 max
Acid soluble sulphate (SO <sub>3</sub> ), %	BS-812 Part 118		
(SO <sub>4</sub> ), %		0.019	
Flakiness index	BS-812	11.5	30 Max.
Elongation index	BS-812	15.7	45 Max.
Coal & lignite	ASTM C-123	NIL	0.5 Max.

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

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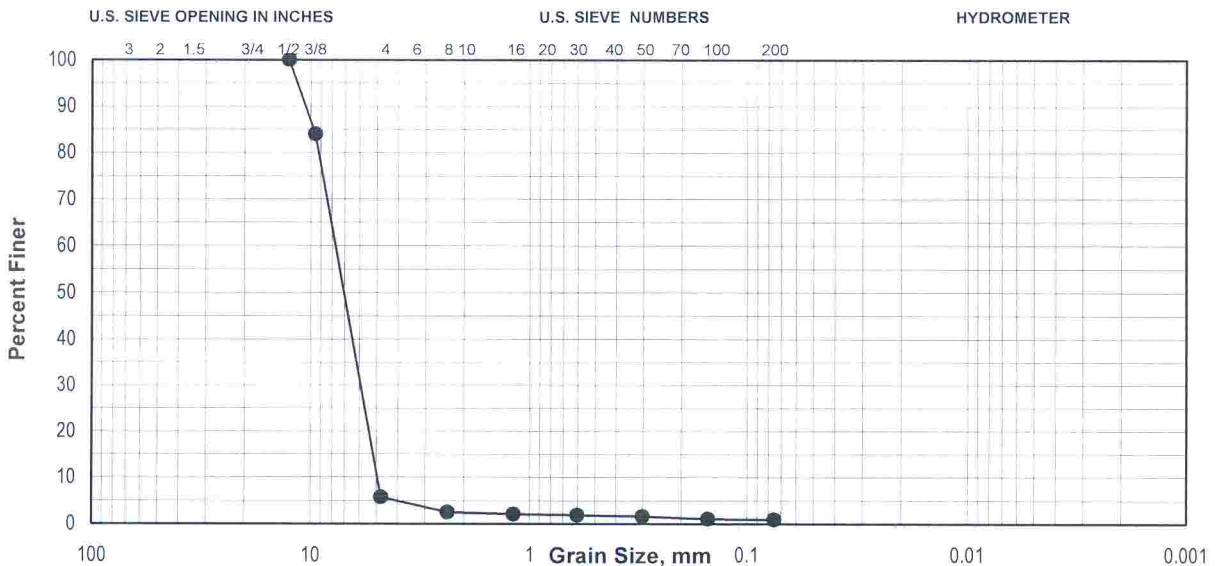
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## PARTICLE SIZE ANALYSIS TEST REPORT

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12258
Material	3/8" (10 mm) Coarse Aggregate	Date Sampled	02 Dec 2015
Source	Al Osais, Abuhadriya (Sampled by FSL)	Date Tested	05-06 Dec 2015
Method	ASTM C-117/136	Date Reported	16 Dec . 2015



<b>Gravel</b>		<b>Sand</b>			<b>Silt or Clay</b>
Coarse	fine	Coarse	medium	fine	

**Description of Sand / Gravel Particles:**

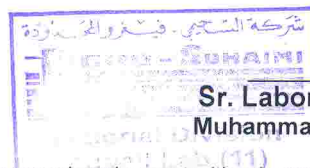
Shape	Hardness	Specific Gravity

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)	84				
#4 (4.75 mm)	5.7				
#8 (2.36 mm)	2.5				
#16 (1.18 mm)	2.1				
#30 (0.600 mm)	1.9				
#50 (0.300 mm)	1.6				
#100 (0.15 mm)	1.1				
#200 (75 mm)	0.93				

<b>Remarks</b>	
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Tested By: CBB  
CTTA # : 0428

Reviewed By: Imran Ahmed  
CTTA # : 0556



*(Signature)*

**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.	12259
Material	Dune Sand	Date Sampled	02 Dec 2015
Source	Baladiyah, Jubail (Sampled by FSL)	Date Reported	16 Dec 2015

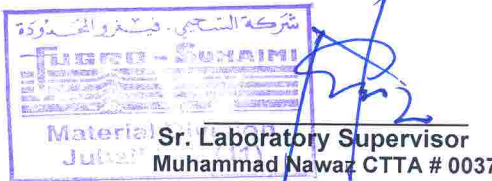
Properties:

Properties Tested	Test Method	Results	SCECO Specs.
Sieve analysis	ASTM C-136	See Attached	--
Material finer than No. 200 sieve %	ASTM C-117	1.0	2.0 Max.
Clay lumps & friable particles %	ASTM C-142	N/A	2.0 Max.
Magnesium sulfate soundness loss (5 cycles) %	ASTM C-88	5.07	15 Max.
Specific gravity and absorption	ASTM C-127		
Apparent		2.661	--
SSD basis		2.616	--
Dry basis		2.589	--
Absorption		1.0	1.0 max
Acid soluble chloride, (Cl), %	ASTM C 114		
(NaCl), %		0.004	0.05 max
Acid soluble sulphate (SO <sub>3</sub> ), %	BS-812 Part 118		
(SO <sub>4</sub> ), %		0.0048	
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: CBB  
CTTA # : 0428

Reviewed By: Imran Ahmed  
CTTA # : 0556



Sr. Laboratory Supervisor  
Muhammad Nawaz CTTA # 0037

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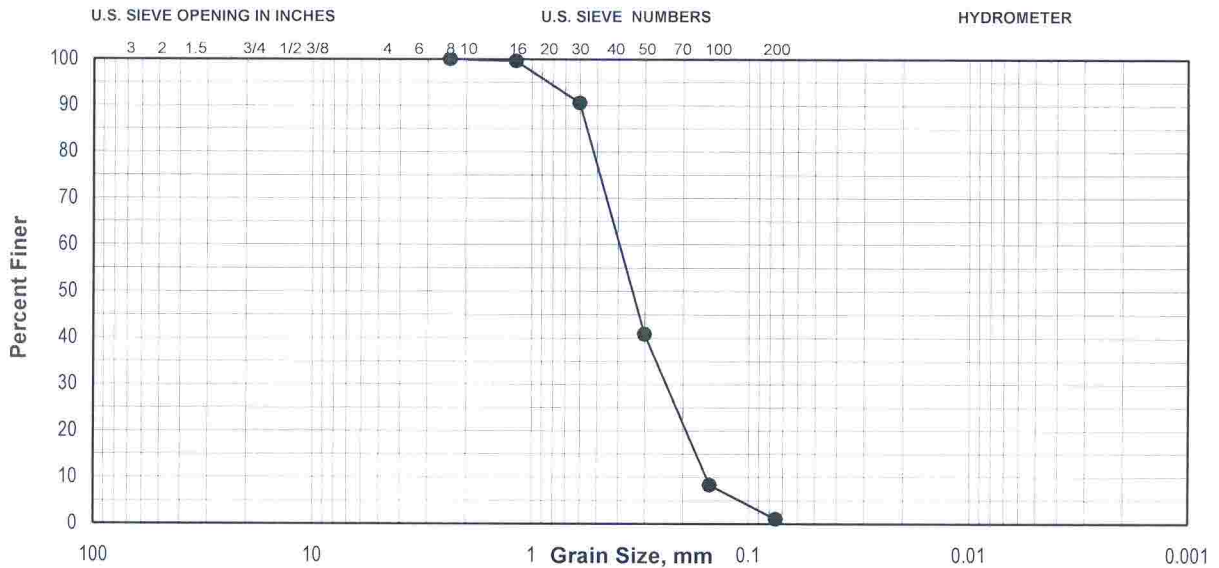
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**PARTICLE SIZE ANALYSIS TEST REPORT**

Client	A.H. Al Marhoon & Bros. Co.	Job No.	SA08-3012
Project	Concrete Batch Plant, Rahima	Lab No.	12259
Material	Sand	Date Sampled	02 Dec 2015
Source	Baladiyah, Jubail (Sampled by FSL)	Date Tested	05-06 Dec 2015
Method	ASTM C-117/136	Date Reported	16 Dec 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)	99.6				
#30 (0.600 mm)	90.5				
#50 (0.300 mm)	40.8				
#100 (0.15 mm)	8.3				
#200 (0.075 mm)	1.0				

Remarks	
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Tested By: CBB  
CTTA # : 0428

Reviewed By: Imran Ahmed  
CTTA # : 0556

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

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## TEST REPORT FOR CHEMICAL ANALYSIS ON WATER

<b>Client</b>	A.H. Al Marhoon & Bros. Co.	<b>Report Date</b>	16 Dec 2015
<b>Project</b>	Concrete Batch Plant, Rahima	<b>Job No.</b>	SA08-3012
<b>Source</b>	Sampled by FSL	<b>Lab No.</b>	12260
<b>Sample Location</b>	From Batch Plant	<b>Sampled by</b>	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	7.3	7 - 8.5
2.	Chloride as Cl <sup>-</sup> , ppm	81.5	300 max
3.	Sulfate as SO <sub>4</sub> <sup>2-</sup> , ppm	10.0	300 max
4.	Total Dissolved Solids- TDS, ppm	167.0	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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