MEMORANDUM

To:

SFSWMA Joint Powers Board Members

From:

Randall Kippenbrock, P.E., Executive Director

Date:

August 14, 2014

Subject:

Request for Approval to Purchase Aggregate for the Cell 5B Liner Construction Project Under the Construction Agreement - Basalt Rock Crushing and Sales Operation for the Caja del Rio Landfill - with Del Hur Industries of Port Angeles,

WA, in the Amount of \$200,000.00.

BACKGROUND & SUMMARY:

On June 16, 2014, the Agency issued Request for Bids No. '14/43/B for the Cell 5B liner construction project at the Caja del Rio landfill. The specifications and bid documents were prepared by CDM Smith Inc. The bid documents did not include the purchase of the drainage layer material. The estimated quantity of the material is 27,000 cubic yards, which is equivalent to 40,000 tons.

On May 15, 2014, the Joint Powers Board approved RFP No. '14/29/P to Del Hur Industries of Port Angeles, WA, for the basalt rock crushing and sales operation for the Caja del Rio Landfill. The Construction Agreement states Del Hur will sell the Agency aggregate materials to be utilized for landfill projects (e.g., drainage layer material for liners, rock armor for final cover, and gravel for haul roads) at \$5.00 per ton.

CDM Smith evaluated the cost of crushing the basalt rock available at the landfill versus the cost of hauling material from off-site for use as a drainage layer material for the Cell 5B liner construction project. The cost to the Agency for processing and screening basalt rock available on site is \$5.00 per ton. As a price comparison, CDM Smith contacted several vendors that could deliver the required quality and quantity of material. The lowest cost to deliver the required material on site is \$23.20 per ton (see attachment). In conclusion, CDM Smith recommended that the Agency use the on-site material for the drainage layer.

For payment purposes to Del Hur, the conversion factor for the drainage material is one cubic yard to 1.51 ton. Therefore, the Agency will need to purchase up to 40,000 tons of material from Del Hur at \$5.00 per ton for an amount up to \$200,000.00.

Funding is available in the Operating Fund.

ACTION REQUESTED:

The Agency is requesting the Board approve the purchase of aggregate up to 40,000 tons for the Cell 5B liner construction project under the Construction Agreement - Basalt Rock Crushing and Sales Operation for the Caja del Rio Landfill - with Del Hur Industries in the amount of \$200,000.00.

The Agency also requests approval of a budget increase to 52510.572970 (WIP - Cell 5B Construction) from 5500.100700 (Operating Fund Cash) in the amount of \$200,000.00.

Attachments: Budget Adjustment Request CDM Smith's Cost Evaluation for On-Site vs Off-Site Materials

Del Hur Industries' Written Quote

Western Technologies' Laboratory Reports

M:/Memo/Memo081214.1.docx

ATTACHMENT

Budget Adjustment Request

City of Santa Fe, New Mexico budget adjustment request (BAR)

DEPARTM SANTA FE	DATE				
	1	<(Finance Dept Use		,	
ITEM DESCRIPTION	BU / LINE ITEM	SUBLEDGER / SUBSIDIARY	DR / (CR)	INCREASE	DECREASE
			10,		
Operating Fund	52501.700150	5507	DR	200,000.00	
Cell Development	51507.600150	5500	(CR)	(200,000.00)	
WIP Cell 5B Construction-					
Drainage	52510.572970		DR	200,000.00	
		_			·
		\)		A = .000
JUSTIFICATION: (use additional)Attach supporting document		то	TAL	200,000.00	_
BAR to transfer cash from 5500					eserve Fund)
to purchase 40,000 tons of crus		ir for the Cell 5B D	ramage	Layer	
Approved at JPB Meeting of Aug		COUNCIL APPROVAL			
Angelica G. Salazar	City Counc	cil Approval Required]	Budget Officer	Da
	City Council App	roval Date		Finance Director	Da
	Agenda Item #:				
Randall Kippenbrock, P.E. Exec Di				City Manager	Da

ATTACHMENT

CDM Smith's Cost Evaluation for On-Site vs Off-Site Materials



6000 Uptown Blvd. NE, Suite 200 Albuquerque, NM 87110 tel: 505 243-3200

fax: 505 243-2700

August 12, 2014

Mr. Randall Kippenbrock, P.E. Executive Director Santa Fe Solid Waste Management Agency 149 Wildlife Way Santa Fe, New Mexico 87506-8342

Subject: Caja del Rio Landfill

Cost Evaluation of Drainage Material for Cell 5B Construction

CDM Smith Project No.: 10679-91152

Dear Mr. Kippenbrock:

The Santa Fe Solid Waste Management Agency (SFSWMA) requested that CDM Smith Inc. (CDM Smith) evaluate the cost of crushing the basalt rock available on-site versus the cost of hauling drainage material from off-site for use as drainage layer material for Cell 5B construction at the Caja del Rio Landfill (Landfill). This letter presents a summary of the evaluation.

The quantity of material required for the construction of Cell 5B is approximately 40,000 tons. The drainage layer material shall conform to the following gradation requirements:

Sieve Size	Percent Passing By Weight
0.5-inch	100
200	<15

The drainage layer material shall meet these requirements:

- Well-graded, inorganic non-calcareous material, free from organic substance (<5%) and other deleterious matter.
- Minimum hydraulic conductivity of 1 x 10-4 cm/sec or greater.
- Uniformity coefficient (Cu) shall be less than 6, where Cu is defined as D60/D10.

The cost to the SFSWMA for processing and screening basalt rock available on site is \$5.00 per ton. As a price comparison, CDM Smith contacted several vendors that could deliver the required quality and quantity of drainage material. The lowest cost to deliver the required drainage on site is \$23.20 per ton. Attached is the price quote from Lafarge Aggregates detailing the material specifications from the Placitas, NM source pit.



Mr. Randall Kippenbrock, P.E. August 12, 2014 Page 2

In summary, CDM Smith recommends SFSWMA facilitate the processing and screening to process and screen the on-site basalt rock material for use as the drainage layer material for Cell 5B construction at the Landfill.

If you have any questions, please contact us at (505) 243-3200.

Sincerely,

Kerrie L. Greenfelder, PE, BCEE

Project Manager CDM Smith Inc.

Enclosure

cc: Ravi Kadambala, CDM Smith Tom Parker, CDM Smith File



Quote

LAFARGE AGGREGATES

1500 N. Renaissance Blvd. NE Suite B

Albuquerque, NM 87107 Ron Polnaszek: 505-506-2400

e-mail: ron.polnaszek@lafarge-na.com

Fax: 505-343-7686

Attention:

Customer Number:

1549508

Acceptance Date: 09/11/2014

879505

Date: 08/12/2014

Customer Name:

ALL BIDDERS - US

Quote Number:

Customer Phone:

Please refer to Quote No. when ordering

Customer Fax:

Project Description:

CAJA DEL RIO LANDFILL

Project Address:

149 WILDLIFE WAY - MP 13

City:

SANTA FE

State and Zip Code: NM

87507

We are pleased to offer the following quotation for the supply of aggregate. Prices are valid for 30 days from the date of this quotation.

Lafarge Southwest, Inc., (referred to as "Seller"), is pleased to quote the following prices for aggregate requirements for the above referenced project. Prices are subject to the terms and conditions stated on the following page of this proposal. The quoted prices are based on current costs. In the event these costs increase (including diesel fuel); Lafarge has the option to increase rates accordingly. Any rate increase will be substantiated with applicable documentation. Material prices do not include applicable sales tax. Customer agrees to remit to Lafarge the applicable sales tax for the point of sale unless the Customer provides Lafarge with a current Certificate of Exemption for exempt purchases. Please fax Tax Documents to 505-343-7686.

						All applicab	e sales taxes	are extra
Code	Material Description	Source	Estimated Quantity	Unit	Material Price	Truck Type	Freight Price	Total Price
AG2109	WASHED CONCRETE SAND AS	TM PLACITAS	40,000	TN	\$ 15.75	Tandem End Dump	\$ 11.60 \$ 7.45	\$ 27.35 \$ 23.20
AG7450	MASONRY SAND ASTM C144	PLACITAS	1	TN	\$ 17.00	Tandem End Dump	\$ 11.60 \$ 7.45	\$ 28.60 \$ 24.45

All delivered materials larger than 2" will be assessed an additional \$1.00 per ton. This amount will be in addition to the Haul Rate quoted above.

AGREEMENT: This Agreement excludes and supercedes all other writings or oral understandings. Quote is contingent on the availability of material. Tons quoted are estimates only. Actual yields are the responsibility of purchaser. Customer assumes responsibility of materials upon receipt of the scale ticket. Reasonable notification required for timely delivery.

Thank you for the opportunity of quoting.

Sincerely, Hos Manuel

Ron Polnaszek

Inside Sales Representative

Lafarge Aggregates

ATTACHMENT

Del Hur Industries' Written Quote

DELHUR INDUSTRIES, INC.

GENERAL CONTRACTORS

2443 West Highway 176 Andrews, TX 79714 (432) 897-4301 FAX (432) 360-4273

Rick Hurworth Cell: 970-799-0994 Email: rhurworth@delhur.com

To: Randali Kippenbrock - SFSWMA

From: Rick Hurworth

RE: Stockpiling 40,000 Tons Ops Layer Material

August 05, 2014

Randall,

Consistent with our Rock Marketing Proposal, DelHur is pleased to provide SFSWMA this pricing for the subject material:

- Price: \$5.00 per ton (measured and paid for in a stockpile adjacent to Crusher)
- Measurement: Survey measure in our stockpile converted to tons using 1.51 tons per cubic yard conversion
- · Payment: per ton in the stockpile using above conversion factor
- Terms: 30 days after stockpile complete

DelHur has performed the following preliminary testing and provided SFSWMA with all results:

- Gradation: Pass
- Proctor
- Permeability: Pass

We assume that material is acceptable based on these results.

Thank You For The Opportunity,

Rick Hurworth Vice President

ATTACHMENT

Western Technologies' Laboratory Reports



8305 Washington Place N.E. Albuquerque, New Mexico 87113-1670 (505) 823-4488 • fax 821-2963

June 24, 2014

To Whom It May Concern

RE: Delhur Industries - Caja Del Rio Aggregate Pit - Santa Fe, New Mexico

Western Technologies Inc. is an accredited *AMRL* laboratory by the American Association of State Highway and Transportation Officials (AASHTO) doing business in the greater Albuquerque area since 1984. We have provided quality control and materials acceptance reports on many of the products produced out of the Caja Del Rio Pit for many years. As such, we can attest that the materials produced out of the pit have been tested and acceptable by many agencies that specify aggregates for highway, bridge, and building materials. We have tested and produced reports for the following agencies:

- New Mexico Department of Transportation (NMDOT)
- Bureau of Indian Affairs(BIA)
- Federal Highway Administration(FHWA)
- · City of Santa Fe Public Works
- Private Contractors and subcontractors.
- Federal Aviation Administration (FAA)

The aggregate pit is a basalt flow crushed material that meets the aggregate index required by the NMDOT for concrete, asphalt, and base course materials. In addition, the aggregates meet the durability requirements of the FHWA section 703, for concrete, asphalt, base course, and RIP RAP materials. The coarse aggregates have been used for concrete on Santa Fe Public Works projects for years and meet all requirements of ASTM C-33.

Respectfully Stated,

WESTERN TECHNOLOGIES INC.

Andrew L. Cuaderes, SR. - Managing Director/Vice President



PHYSICAL PROPERTIES **OF AGGREGATES**

Client **DELHUR INDUSTRIES** P.O. BOX 1116 **PORT ANGELES, WA 98362** Date of Report 08-05-14 Job No. 3244JK004

Event / Invoice No. 4L444 Authorized by RICK HURWORTH

Sampled by CLIENT

Lab No. 4L444 Date 08-05-14

Date 08-05-14

Date 08-05-14

Submitted by **CLIENT**

Source / Location Desig. By CLIENT

Location SANTA FE NM

Arch. / Engr. N/A Supplier / Source DEL HUR Date 08-05-14

Project CAJA DEL RIO PIT CRUSHER CONTROL

Contractor N/A

Type / Use of Material OPS LAYER Sample Source / Location STOCKPILES

Testing Authorized: UNIT WEIGHT @ 3% MOISTURE

Special Instructions:

TEST RESULTS SIEVE ANALYSIS ASTM C136 AASHTO T27 PHYSICAL PROPERTIES RESULTS SPECS FINER THAN #200 ASTM C117 AASHTO T11 UNIT WEIGHT & VOIDS ACCUMULATIVE 112 UNIT WEIGHT, PCF -SIEVE SPECIFICATION FINE AGGREGATE % PASSING X ASTM C29 ☐ AASHTO T19 VOIDS. % -> ☐ JIGGING LOOSE COARSE AGGREGATE UNIT WEIGHT, PCF > X RODDING VOIDS, % -> BULK SPECIFIC GRAVITY -> FINE AGGREGATE ☐ ASTM C128 ☐ AASHTO T84 BULK SPECIFIC GRAVITY (SSD) → AGGREGATE DRIED APPARENT SPECIFIC GRAVITY -> SPECIFIC YES ОИ ABSORPTION, % -> GRAVITY COARSE AGGREGATE BULK SPECIFIC GRAVITY → ABSORPTION ☐ ASTM C127 ☐ AASHTO T85 BULK SPECIFIC GRAVITY (SSD) → AGGREGATE DRIED APPARENT SPECIFIC GRAVITY -> ABSORPTION, % → YES __ NO SAND EQUIVALENT VALUE ASTM D2419 AASHTO T176 SE, % -> SMALL COARSE AGGREGATE GRADING 100 REV., %LOSS → RESISTANCE ☐ ASTM C131 ☐ AASHTO T96 GRADING 500 REV., %LOSS → TO LIQUID LIMIT & PLASTIC PROPERTIES LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS → DEGRADATION ASTM D4318 AASHTO T89 & T90 ASTM C535 GRADING 1000 REV., %LOSS → METHOD SAMPLE AIR DRIED YES NO LIGHTWEIGHT PIECES FINE AGGREGATE. % → ESTIMATED % RETAINED ON NO 40 ASTM C123 AASHTO T113 COARSE AGGREGATE. % → SPECS RESULTS LIQUID LIMIT **CLAY LUMPS & FRIABLE PARTICLES** FINE AGGREGATE, % → PLASTIC LIMIT -> ASTM C142 AASHTO T112 COARSE AGGREGATE, %→ PLASTICITY INDEX -FRACTURED FACES OF COARSE AGGREGATES BY WEIGHT **FINENESS MODULUS** ONE OR MORE FACES, % → ASTM C125 -TWO OR MORE FACES, % → AZ 212 FLH T507 FAA ORGANIC IMPURITIES **DURABILITY INDEX** D_C → ASTM C40 ASTM D3744 AASHTO T210 PLATE NO:→ D_f → PROCEDURE : A COARSE B FINE C COARSE & FINE AASHTO T21 UNCOMPACTED VOID CONTENT **CLEANNESS VALUE** VC, % → ASTM C1252 CA 227 **→** AZ 247 METHOD

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY

Laboratory Report for Western Technologies, Inc.

PO#3244PO585

August 4, 2014



Daniel B. Stephens & Associates, Inc.

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113



Justin Kelly Western Technologies, Inc. 8305 Washington Place N.E. Albuquerque, NM 87113 (505) 823-4488

Re: DBS&A Laboratory Report for the Western Technologies, Inc. PO#3244PO585 Samples

Dear Mr. Kelly:

Enclosed is the report for the Western Technologies, Inc. PO#3244PO585 samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Western Technologies, Inc. and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC. SOIL TESTING & RESEARCH LABORATORY

Crystal Krous

Quality Analyst; for Joleen Hines

Enclosure

Albuquerque, NM 87113

Summaries



Summary of Tests Performed

		Saturated						
	Initial Soil	Hydraulic	Moisture	Particle	Specific	Air		
Laboratory	Properties ¹	Conductivity ²	Characteristics ³	Size ⁴	Gravity ⁵	Perm-	Perm- Atterberg	Proctor
Sample Number	G VM VD CH		FH FW HC PP FP DPP RH EP WHC Kursat DS WS H	Kunsat DS WS H	FC	eability	Limits	F C eability Limits Compaction
Caja Del Rio Landfill Setting #1 (116.1, 90%)	×	×						
Caja Del Rio Landfill Setting #4 (116.2, 90%)	×	×						

 $^{^1}$ G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method 2 CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

³ HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box,

 $EP = Effective \ Porosity, \ WHC = Water \ Holding \ Capacity, \ Kunsat = Calculated \ Unsaturated \ Hydraulic \ Conductivity \ ^4 \ DS = Dry \ Sieve, \ WS = Wet \ Sieve, \ H = Hydrometer \ ^5 \ F = Fine \ (<4.75mm), \ C = Coarse \ (>4.75mm)$



Notes

Sample Receipt:

Two samples were hand delivered, each in a full 6" x 12" plastic cylinder sealed with a lid, on July 25, 2014 and July 28, 2014.

Sample Preparation and Testing:

Two sub-samples were prepared for saturated hydraulic conductivity testing by remolding the material into testing rings to target 90% of the maximum dry bulk density, based on the client provided standard proctor compaction testing results. The density (in pcf) and the percent of maximum dry bulk density achieved were added to the sample ID's.

Total porosity calculations were performed using an assumed specific gravity value of 2.65.



Summary of Sample Preparation/Volume Changes

turation ²	% of Max.	(%)	90.4%	90.4%
Post Sa	% Volume Change	(%)	I	I
Volume Change Post Saturation ²	Dry Bulk Density	(bct)	116.1	116.2
Volum	Dry Bulk Density	(g/cm³)	1.86	1.86
	% of Max. Density	(%)	90.4%	90.4%
Actual Remold Data	Dny Bulk Density	(bct)	116.1	116.2
Actual Rer	Dry Bulk Density	(%, g/g) (g/cm ³)	1.86	1.86
	Moist. Cont.	(%, g/g)	9.5	9.5
ers1	% of Max. Density	(%)	%06	%06
≷emold Parameters¹	Dry Bulk Density	(bct)	115.7	115.7
et Remolo	Dry Bulk Density	(g/cm ³)	1.85	1.85
Target R	Moist. Cont.	(%, g/g)	10.0	10.0
m l	Max. Dry Density	(bct)	128.5	128.5
Proctor Data	Max. Max. Dry Dry Density Density	(g/cm³)	2.06	2.06
ā.	Opt. Moist. Cont.	(%, g/g)	12.0	12.0
		Sample Number (%, g/g) (g/cm³) (pcf) (%, g/g) (g/	Caja Del Rio Landfill Setting #1 (116.1, 90%) Caja Del Rio	Landfill Setting #4 (116.2, 90%)

Notes:

¹Target Remold Parameters: Provided by the client: 90% of maximum dry density.

²Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

[&]quot;+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.



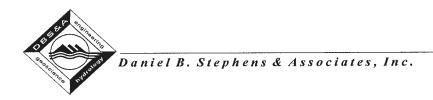
Summary of Saturated Hydraulic Conductivity Tests

	K _{sat}	Oversize Corrected K _{sat}	Method of	f Analysis
Sample Number	(cm/sec)	(cm/sec)	Constant Head	Falling Head
Caja Del Rio Landfill Setting #1 (116.1, 90%)	2.2E-02	NA	X	
Caja Del Rio Landfill Setting #4 (116.2, 90%)	4.5E-02	NA	×	

^{--- =} Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NR = Not requested
NA = Not applicable

Saturated Hydraulic Conductivity



Summary of Saturated Hydraulic Conductivity Tests

	K _{sat}	Oversize Corrected K _{sat}	Method of	^r Analysis
Sample Number	(cm/sec)	(cm/sec)	Constant Head	Falling Head
Caja Del Rio Landfill Setting #1				
(116.1, 90%)	2.2E-02	NA	Х	
Caja Del Rio Landfill Setting #4	. ==		V	
(116.2, 90%)	4.5E-02	NA	X	

^{--- =} Oversize correction is unnecessary since coarse fraction < 5% of composite mass NR = Not requested NA = Not applicable



Saturated Hydraulic Conductivity Constant Head Method

Job Name: Western Technologies, Inc.

Type of water used: TAP

Job Number: LB14.0152.00

Collection vessel tare (g): 10.96

Sample Number: Caja Del Rio Landfill Setting #1

Sample length (cm): 12.68

PO Number: 3244PO585

Sample diameter (cm): 9.73

Sample diameter (cm). 9.73

Depth: NA

Sample x-sectional area (cm2): 74.31

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm³)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1: 31-Jul-14 31-Jul-14	13:28:00 13:29:10	23.0	1.9	30.36	19.4	70	2.5E-02	2.3E-02
Test # 2: 31-Jul-14 31-Jul-14	13:44:00 13:45:00	23.0	1.05	19.80	8.8	60	2.4E-02	2.2E-02
Test # 3: 31-Jul-14 31-Jul-14	14:01:00 14:02:00	23.0	0.85	17.58	6.6	60	2.2E-02	2.1E-02

Average Ksat (cm/sec):

2.2E-02

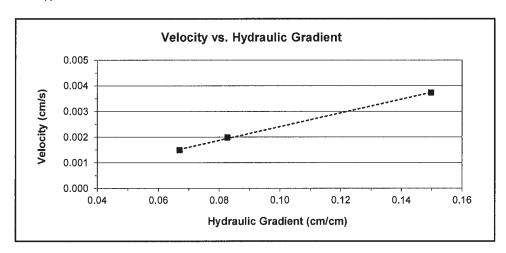
Oversize Corrected Ksat (cm/sec):

NA

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable



Laboratory analysis by: D. O'Dowd

Data entered by: D. O'Dowd

Checked by: J. Hines



Saturated Hydraulic Conductivity Constant Head Method

Job Name: Western Technologies, Inc.

Type of water used: TAP

Job Number: LB14.0152.00

Collection vessel tare (g): 10.97

Sample Number: Caja Del Rio Landfill Setting #4

Sample length (cm): 12.67

PO Number: 3244PO585

Sample diameter (cm): 9.74

Depth: NA

Sample x-sectional area (cm2): 74.57

Date	Time	Temp (°C)	Head (cm)	Q + Tare (g)	Q (cm ³)	Elapsed time (sec)	Ksat (cm/sec)	Ksat @ 20°C (cm/sec)
Test # 1: 31-Jul-14 31-Jul-14	13:28:30 13:29:30	23.0	1.85	43.62	32.7	60	5.0E-02	4.7E-02
Test # 2: 31-Jul-14 31-Jul-14	13:43:30 13:44:30	23.0	0.95	27.62	16.7	60	5.0E-02	4.6E-02
Test # 3: 31-Jul-14 31-Jul-14	14:01:30 14:02:30	23.0	0.6	20.85	9.9	60	4.7E-02	4.3E-02

Average Ksat (cm/sec):

4.5E-02

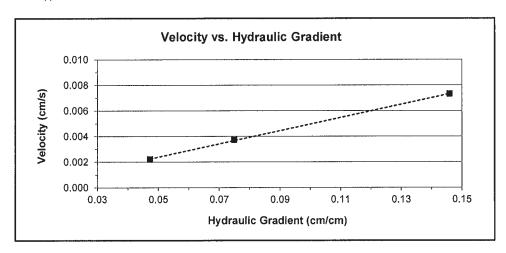
Oversize Corrected Ksat (cm/sec):

NA

Comments:

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass

NA = Not applicable



Laboratory analysis by: D. O'Dowd

Data entered by: D. O'Dowd

Checked by: J. Hines

Laboratory Tests and Methods



Tests and Methods

Dry Bulk Density:

ASTM D7263

Moisture Content:

ASTM D7263

Saturated Hydraulic Conductivity:

Constant Head:

ASTM D 2434 (modified apparatus)

(Rigid Wall)



Summary of Tests Performed

Laboratory Sample Number Caja Del Rio Landfill Setting #1 (116.1, 90%) Caia Del Rio Landfill Setting #4	Saturat Initial Soil Hydrau Properties¹ Conducti G VM VD CH FH X X X X		Moisture Particle	stics³	Particle Size ⁴ DS WS H	Specific Gravity ⁵ F C	Air Pem- eability	cific Air Atterberg Proctor C eability Limits Compaction	Proctor
(116.2, 90%)	× ×	 ×							

¹ G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

² CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

³ HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity

⁴ DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

⁵ F = Fine (<4.75mm), C = Coarse (>4.75mm)



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report **07-30-14**Job No. **3244JK004**

Event / Invoice No. 4L423-1

Authorized by RICK HURWORTH

Sampled by CLIENT

Submitted by CLIENT

Date 07-24-14

Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL Contractor N/A Type / Use of Material OPS LAYER Sample Source / Location SETTING 1

Testing Authorized: **SA** Special Instructions:

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X			AASHTO T27 AASHTO T11		P	HYSICAL PROP	ERTIES		RESULTS	SPECS
SIEVE	ACCUMUL % PASS	ATIVE	SPECIFICATION	UNIT WEIGHT &	_	FINE	AGGREGATE	UNIT WEIGHT,KG/M³ →		
4				ASTM C29	AASHTO T19			VOIDS, % →	,	
3				RODDING	JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2								VOIDS, % →	,	
1 1/2										
1 1/4					FINE AGGREGATE	•	BU	LK SPECIFIC GRAVITY 👈		
1					ASTM C128	AASHTO T84	BULK SP	ECIFIC GRAVITY (SSD) 🖜		
3/4				SPECIFIC	AGGREGATE DRIE	ĒD	APPARE	NT SPECIFIC GRAVITY →		
1/2	100				YES	Пио		ABSORPTION, % →		
3/8	91			GRAVITY						
1/4	70	1		8.	COARSE AGGREG	BATE	BU	LK SPECIFIC GRAVITY 👈		
No.4	59			ABSORPTION	ASTM C127	AASHTO T85	BULK SP	ECIFIC GRAVITY (SSD) ->		
8	40	- 1			AGGREGATE DRIE	=D	APPARE	NT SPECIFIC GRAVITY →		
10	37	1			YES	□NO		ABSORPTION, % →		
16	29							7.00011, 71011, 70 2		
30	22 19			SAND EQUIVAL	ENT VALUE	ASTM D2419	AASHTO T1	76 SE, % →		
40 50	17							,		
100	13	ļ			SMALL COARSE A	CCRECATE	GRADING	100 REV., %LOSS →		
200	10			RESISTANCE	ASTM C131	AASHTO T96	GRADING	· ·		
				то	ASIM C131	☐ AYZHIO 198	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLASTIC PROPERTIES				14B05 004B05 4	00050475	ODADINO	000 DEV 04 000			
ASTM D4318 AASHTO T89 & T90		DEGRADATION	LARGE COARSE A	AGGREGATE	GRADING	200 REV., %LOSS →				
METHOD					☐ ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIED				LIGHTWEIGHT PIECES FINE AGGREGATE, % →						
ESTIMATED % RET	AINED ON	NO 40		THE ASSICUATE, W						
		RESUL	TS SPECS	ASTM C123	AASHTO T113		C(DARSE AGGREGATE, %→		
LIQUID LIMIT	→			CLAY LUMPS &	FRIABLE PARTICLE	s		FINE AGGREGATE, % →		
PLASTIC LIMIT	→			ASTM C142	☐ AASHTO T112		C	DARSE AGGREGATE, %		
PLASTICITY INDEX	· ->			ASTW C142	AAGHTOTTI2			DANGE AGGINEGATE, 76-7		
FINENESS MODULUS				FRACTURED FA	CES OF COARSE A	GGREGATES BY W	EIGHT ON	IE OR MORE FACES, % →		
ASTM C125	→			AZ 212	☐ FLH T507	FAA		O OR MORE FACES, % ->		
ORGANIC IMPURITIES	S			DURABILITY INC				D _c →		1
ASTM C40 PL	ATE NO.→				☐ ASTM D3744	AASHTO T210		p .a.		
AASHTO T21				PROCEDURE :	A COARSE B	☐ FINE C	COARSE & F	TINE of T		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
CA 227	→				AZ 247	ASTM C1252	METHOD	VC, % →		

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY	
	(SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Special Instructions:

Date of Report 07-30-14 Job No. 3244JK004

Submitted by **CLIENT**

Event / Invoice No. 4L423-2
Authorized by RICK HURWORTH
Sampled by CLIENT

Date 07-24-14
Date 07-24-14
Date 07-24-14

Lab No. 4L423-2

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A
Type / Use of Material OPS LAYER
Sample Source / Location SETTING 2
Testing Authorized: SA

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS		AASHTO		PHYSICAL PROPERTIES		
SIEVE	ACCUMULATIV % PASSING	SPECIFICA		FINE AGGREGATE UNIT WEIGHT, KG/M°		
4			☐ ASTM C29	☐ AASHTO T19 VOIDS, % →		
3			RODDING	☐ JIGGING ☐ LOOSE COARSE AGGREGATE UNIT WEIGHT,KG/M ³ →		
2				VOIDS, % →		
1 1/2						
1 1/4				FINE AGGREGATE BULK SPECIFIC GRAVITY →		
1				☐ ASTM C128 ☐ AASHTO T84 BULK SPECIFIC GRAVITY (SSD) →		
3/4			SPECIFIC	AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
1/2	100			☐YES ☐NO ABSORPTION, % →		
3/8	94		GRAVITY	The About tion, w	İ	
1/4	76		&	COARSE AGGREGATE BULK SPECIFIC GRAVITY →		
No.4	66		ABSORPTION	☐ ASTM C127 ☐ AASHTO T85 BULK SPECIFIC GRAVITY (SSD) →		
8	47			AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
10	43					
16	34			☐ YES ☐ NO ABSORPTION, % →		I
30	26		CAND FOUNTAI	LENT VALUE ASTM D2419 AASHTO T176 SE, % →		
40	23		SAND EQUIVAL	LENI VALUE ASIM D2419 AASHIO 1176 SE, % 7		
50	20					
100	16		DEDIGTATION	SMALL COARSE AGGREGATE GRADING 100 REV., %LOSS →		
200	12		RESISTANCE	☐ ASTM C131 ☐ AASHTO T96 GRADING 500 REV., %LOSS →	ŀ	
LIQUID LIMIT & PLA	STIC PROPERTI	ES	то			
ASTM D4318	ASTM D4318 AASHTO T89 & T90		DEGRADATION	LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS →		
METHOD			☐ ASTM C535 GRADING 1000 REV., %LOSS →			
SAMPLE AIR DRIED YES NO						
ESTIMATED % RETAINED ON NO 40		LIGHTWEIGHT	LIGHTWEIGHT PIECES FINE AGGREGATE, % →			
	RE	SULTS SPI	ECS ASTM C123	☐ AASHTO T113 COARSE AGGREGATE, %→		
LIQUID LIMIT	→		CLAY LUMPS 8	FRIABLE PARTICLES FINE AGGREGATE, % →	,	
PLASTIC LIMIT	STIC LIMIT →			_		ı
PLASTICITY INDE	EX →		ASTM C142	☐ AASHTO T112 COARSE AGGREGATE, %→		
FINENESS MODULU	JS		FRACTURED F	ACES OF COARSE AGGREGATES BY WEIGHT ONE OR MORE FACES, % →		
ASTM C125	→		AZ 212	☐ FLH T507 ☐ FAA TWO OR MORE FACES, % →		
ORGANIC IMPURITE	ES		DURABILITY IN	DEX		
☐ ASTM C40 PLATE NO:>			☐ ASTM D3744 ☐ AASHTO T210	,		
☐ AASHTO T21	PLATE NU.		PROCEDURE:	A ☐ COARSE B ☐ FINE C ☐ COARSE & FINE Df →		
CLEANNESS VALUE	E		UNCOMPACTE	D VOID CONTENT	,	İ
□ CA 227	-3			☐ AZ 247 ☐ ASTM C1252 METHOD VC, % →	.	I

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY
	(SIGNED COPY ON FILE)



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES P.O. BOX 1116 **PORT ANGELES, WA 98362** Date of Report 07-30-14 Job No. 3244JK004

Event / Invoice No. 4L423-3 Authorized by RICK HURWORTH

Sampled by CLIENT

Lab No. 4L423-3 Date 07-24-14

Date 07-24-14

Submitted by **CLIENT**

Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL

Contractor N/A

Type / Use of Material OPS LAYER Sample Source / Location SETTING 3

Testing Authorized: SA Special Instructions:

Location SANTA FE NM Arch. / Engr. N/A Supplier / Source DEL HUR Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X FINER THAN #200 X			AASHTO T27 AASHTO T11	PHYSICAL PROPERTIES				RESULTS	SPECS	
SIEVE	ACCUMUL % PASSI		PECIFICATION	UNIT WEIGHT &		FINE .	AGGREGATE	UNIT WEIGHT,KG/M ³ →		
4				ASTM C29	AASHTÓ T19			VOIDS, % →		
3				RODDING	JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2		1						VOIDS, % 👈		
1 1/2										
1 1/4					FINE AGGREGATE		BUL	SPECIFIC GRAVITY →		
1					ASTM C128	AASHTO T84	BULK SPE	CIFIC GRAVITY (SSD) 👈		
3/4				SPECIFIC	AGGREGATE DRIE	- C	APPAREN	T SPECIFIC GRAVITY ->		i
1/2	100				YES	Пио		ABSORPTION, % →		
3/8	95			GRAVITY			,	7,500,11,11011,70		
1/4	80			&	COARSE AGGREG	ATE	BUL	SPECIFIC GRAVITY ->		
No.4	71			ABSORPTION	ASTM C127	AASHTO T85	BULK SPE	CIFIC GRAVITY (SSD) -		
8	51				AGGREGATE DRIE			T SPECIFIC GRAVITY ->	İ	
10	46				TYES	Пио	ALLANEN	ABSORPTION, % →		
16	36				☐ 1E9	NO		ABSORPTION, 76 7		
30	28			SAND EQUIVALE	ENT VALUE	ASTM D2419	☐ AASHTO T176	se, % →		
40	24		ĺ	SAND EQUIVALE	ENI VALUE	A31M D2416		01, 70		
50	21							400 051/ 0/1000		
100	16			RESISTANCE	SMALL COARSE A		GRADING	100 REV., %LOSS →		
200	12			TO	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLAS	TIC PROPE	RTIES					00.40.00	000 051/ 0/1000		
☐ ASTM D4318	AASH	TO T89 8	T90	DEGRADATION	LARGE COARSE A	GGREGATE	GRADING	200 REV., %LOSS →		
METHOD	-	_			ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIED	_	_		LIGHTWEIGHT P	IECES			FINE AGGREGATE, % →		
ESTIMATED % RET	AINED ON	NO 40						·		
		RESUL	TS SPECS	ASTM C123	AASHTO T113		CO	ARSE AGGREGATE, % →		
LIQUID LIMIT	→			CLAY LUMPS &	FRIABLE PARTICLE	s		FINE AGGREGATE, % 🖜		
PLASTIC LIMIT	→			ASTM C142	AASHTO T112			ARSE AGGREGATE, % ->		
PLASTICITY INDEX										
FINENESS MODULUS				FRACTURED FA	CES OF COARSE A	GREGATES BY W	'EIGHT ONE	OR MORE FACES, % 🖜		
ASTM C125	→			AZ 212	FLH T507	FAA	TWC	OR MORE FACES, % 🖈		
ORGANIC IMPURITIES	s			DURABILITY IND	DEX					
□ ASTM C40						AASHTO T210		D _c →		
AASHTO T21	ATE NO.→			PROCEDURE :	а 🗌 COARSE В	FINE C	COARSE & FI	NE Df →		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
CA 227	→				AZ 247	ASTM C1252	METHOD	vc,% →		

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY	



PHYSICAL PROPERTIES **OF AGGREGATES**

Client DELHUR INDUSTRIES P.O. BOX 1116 **PORT ANGELES, WA 98362** Date of Report 07-30-14 Job No. 3244JK004

Lab No. 4L423-4 Event / Invoice No. 4L423-4 Date 07-24-14 Authorized by RICK HURWORTH Date 07-24-14 Sampled by CLIENT Submitted by **CLIENT** Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL Contractor N/A Type / Use of Material OPS LAYER Sample Source / Location SETTING 4

Location SANTA FE NM Arch. / Engr. N/A Supplier / Source DEL HUR Source / Location Desig. By CLIENT

Date 07-24-14

Testing Authorized: SA Special Instructions:

TEST RESULTS

SIEVE ANALYSIS X			AASHTO T27 AASHTO T11		Р	HYSICAL PROP	ERTIES		RESULTS	SPECS
SIEVE	ACCUMULA % PASSIN	TIVE	SPECIFICATION	UNIT WEIGHT &	VOIDS	FINE	AGGREGATE	UNIT WEIGHT,KG/M ³ → VOIDS, % →		
4 3				RODDING	☐ JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2								VOIDS, % →		
1 1/2 1 1/4					FINE AGGREGATE		BIII V	SPECIFIC GRAVITY ->		
1					ASTM C128	. AASHTO T84		CIFIC GRAVITY (SSD) -		
3/4				27721712	AGGREGATE DRIE	_		SPECIFIC GRAVITY		
1/2	100			SPECIFIC	YES	□NO	ALLANEN	ABSORPTION, % →		
3/8	94			GRAVITY				ABSORT HOR, 70 2		
1/4	76			&	COARSE AGGREG	SATE	BULK	SPECIFIC GRAVITY ->	i	
No.4	66	1		ABSORPTION	ASTM C127	AASHTO 185	BULK SPEC	CIFIC GRAVITY (SSD) ->		
8	46				AGGREGATE DRIE	ĒD	APPARENT	SPECIFIC GRAVITY 🖜		
10	41 31				TYES	[] NO		ABSORPTION, % ->		
16 30	23									
40	20			SAND EQUIVALE	ENT VALUE	ASTM D2419	AASHTO T176	SE, % →	.	
50	17									
100	13				SMALL COARSE A	GGREGATE	GRADING	100 REV., %LOSS →		
200	10			RESISTANCE	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLAS	TIC PROPER	TIES		то						
ASTM D4318	AASHT	O T89	§ т90	DEGRADATION	LARGE COARSE A	AGGREGATE	GRADING	200 REV., %LOSS →		
METHOD	_				ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIED YES NO			LIGHTWEIGHT P	HECES						
ESTIMATED % RETAINED ON NO 40										
	L	RESUL	TS SPECS	ASTM C123	AASHTO T113		COA	RSE AGGREGATE, %→		
LIQUID LIMIT	->			CLAY LUMPS &	FRIABLE PARTICLE	S	F	INE AGGREGATE, % ->		
PLASTIC LIMIT	→			☐ ASTM C142	AASHTO T112	?	COA	RSE AGGREGATE, % ->		
PLASTICITY INDEX							C.O.D.			
FINENESS MODULUS			ĺ	FRACTURED FA	CES OF COARSE A		ONE	OR MORE FACES, % →		
ASTM C125	->			AZ 212	FLH T507	FAA	TWO	OR MORE FACES, % ->		
ORGANIC IMPURITIE	s			DURABILITY INC	DEX					
☐ ASTM C40					ASTM D3744	AASHTO T210		D _c →		
AASHTO T21	ATE NO.→			PROCEDURE :	A COARSE B	FINE C	COARSE & FIN	IE Df →		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
CA 227	→				AZ 247	ASTM C1252	METHOD	VC, % →		

Comments	;	
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Copies to: CLIENT (1)

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	(SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Special Instructions:

Date of Report 07-30-14 Job No. 3244JK004

Event / Invoice No. 4L423-5
Authorized by RICK HURWORTH
Sampled by CLIENT Date 07-24-14
Submitted by CLIENT Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A
Type / Use of Material OPS LAYER
Sample Source / Location SETTING 1
Testing Authorized: SA

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR

Source / Location Desig. By CLIENT Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X ASTM C136 ASSHTO T27 PHYSICAL PROPERTIES FINER THAN #200 X ASTM C117 ASSHTO T11	RESULTS	SPECS
SIEVE ACCUMULATIVE SPECIFICATION UNIT WEIGHT & VOIDS FINE AGGREGATE UNIT WEIGHT, KG/M ³ →		
4 □ ASTM C29 □ AASHTO T19 VOIDS, % →		
3 □ RODDING □ JIGGING □ LOOSE COARSE AGGREGATE UNIT WEIGHT, KG/M³ →		
2 Voids, % →		
1 1/2		
1 1/4 FINE AGGREGATE BULK SPECIFIC GRAVITY →		
1 ☐ ASTM C128 ☐ AASHTO T84 BULK SPECIFIC GRAVITY (SSD) →		
3/4 SPECIFIC AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
1/2 100 CRAVEY TYES TNO ABSORPTION, **		
3/0		
1/4 80 & COARSE AGGREGATE BULK SPECIFIC GRAVITY →		
No.4 72 ABSORPTION ASTM C127 AASHTO 186 BULK SPECIFIC GRAVITY (SSD) →		
8 53 10 48 AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
16 38 □ YES □ NO ABSORPTION, % →		
30 29		
40 25 SAND EQUIVALENT VALUE ☐ ASTM D2419 ☐ AASHTO T176 SE, % →		
50 22		
100 18 SMALL COARSE AGGREGATE GRADING 100 REV., %LOSS →		
200 13 RESISTANCE ASTM C131 AASHTO 196 GRADING 500 REV., %LOSS →		
LIQUID LIMIT & PLASTIC PROPERTIES TO		
□ ASTM D4318 □ AASHTO T89 & T90 □ DEGRADATION □ LARGE COARSE AGGREGATE □ GRADING □ 200 REV., %LOSS →		
METHOD □ ASTM C535 GRADING 1000 REV., %LOSS →	ŀ	
SAMPLE AIR DRIED TYES TO		
ESTIMATED % RETAINED ON NO 40 LIGHTWEIGHT PIECES FINE AGGREGATE, % →	İ	
RESULTS SPECS ☐ ASTM C123 ☐ AASHTO T113 COARSE AGGREGATE, %→		
LIQUID LIMIT CLAY LUMPS & FRIABLE PARTICLES FINE AGGREGATE, %		
PLASTIC LIMIT >	1	
PLASTICITY INDEX →		
FINENESS MODULUS FRACTURED FACES OF COARSE AGGREGATES BY WEIGHT ONE OR MORE FACES, % →	ł	
□ ASTM C125 → □ AZ 212 □ FLH T507 □ FAA TWO OR MORE FACES, % →		
ORGANIC IMPURITIES DURABILITY INDEX		
□ ASTM C40 □ ASTM D3744 □ AASHTO T210 □ Dc →		
PLATE NO. PLATE NO. PROCEDURE: A COARSE B FINE C COARSE & FINE	1	
CLEANNESS VALUE UNCOMPACTED VOID CONTENT		

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY
	(SIGNED COPY ON FILE)



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report 07-30-14

Job No. 3244JK004

Event / Invoice No. 4L423-6
Authorized by RICK HURWORTH
Sampled by CLIENT Date 07-24-14
Submitted by CLIENT Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A
Type / Use of Material OPS LAYER
Sample Source / Location SETTING 1

Testing Authorized: SA Special Instructions:

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X		AASHTO T27	PHYSICAL PROPERTIES			SPECS
	ACCUMULATIVE % PASSING	_	UNIT WEIGHT &	FINE AGGREGATE UNIT WEIGHT,KG/M³ →		
4			ASTM C29	□ AASHTO T19 VOIDS, % →		
3			RODDING	☐ JIGGING ☐ LOOSE COARSE AGGREGATE UNIT WEIGHT, KG/M ³ →		
2				VOIDS, % →		
1 1/2						
1 1/4				FINE AGGREGATE BULK SPECIFIC GRAVITY →		
1				☐ ASTM C128 ☐ AASHTO T84 BULK SPECIFIC GRAVITY (SSD) →		
3/4			SPECIFIC	AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
1/2	100			TYES NO ABSORPTION, % →		
3/8	94		GRAVITY	TEG NO ABBOTT HOLY, IN 2		
1/4	79		&	COARSE AGGREGATE BULK SPECIFIC GRAVITY →		
No.4	70		ABSORPTION	ASTM C127		
8	51					
10	47			AGGREGATE DRIED APPARENT SPECIFIC GRAVITY →		
16	37			☐ YES ☐ NO ABSORPTION, % →		
30	28					
40	24		SAND EQUIVAL	ENT VALUE ☐ ASTM D2419 ☐ AASHTO T176 SE, % →		
50	22					
100	17			SMALL COARSE AGGREGATE GRADING 100 REV., %LOSS →		
200	13		RESISTANCE	☐ ASTM C131 ☐ AASHTO T96 GRADING 500 REV., %LOSS →		
LIQUID LIMIT & PLAS	TIC PROPERTIES		то			
			DEGRADATION	LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS →		
ASTM D4318 AASHTO T89 & T90 METHOD			☐ ASTM C535 GRADING 1000 REV., %LOSS →			
SAMPLE AIR DRIED	DVEC DN	10				· · · · · · · · · · · · · · · · · · ·
ESTIMATED % RET			LIGHTWEIGHT I	PIECES FINE AGGREGATE, % →		
ESTIMATED % RET			ASTM C123	□ AASHTO T113 COARSE AGGREGATE, % →		
	RES	ULTS SPECS	AOTM OTZU			
LIQUID LIMIT	→		CLAY LUMPS &	FRIABLE PARTICLES FINE AGGREGATE, % ->		
PLASTIC LIMIT	→		□ ASTM C142 □ AASHTO T112 COARSE AGGREGATE, %→			
PLASTICITY INDEX	· ->					
FINENESS MODULUS			FRACTURED FA	CES OF COARSE AGGREGATES BY WEIGHT ONE OR MORE FACES, % ->		
ASTM C125	->		☐ AZ 212	☐ FLH T507 ☐ FAA TWO OR MORE FACES, % →		
ORGANIC IMPURITIES	S		DURABILITY IN	DEX Dc →		
ASTM C40	ATE NO:→			L ASTM D3744 L AASHTO 1210		
AASHTO T21	ATE NO.7		PROCEDURE :	A ☐ COARSE B ☐ FINE C ☐ COARSE & FINE Df →		
CLEANNESS VALUE			UNCOMPACTED) VOID CONTENT		
□ CA 227	→	1		☐ AZ 247 ☐ ASTM C1252 METHOD VC, % →		

Comments:

Copies to: CLIENT (1)

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	(SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report 07-30-14

Job No. 3244JK004

Event / Invoice No. 4L423-7
Authorized by RICK HURWORTH
Sampled by CLIENT
Submitted by CLIENT
Date 07-24-14
Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL Contractor N/A

Type / Use of Material OPS LAYER Sample Source / Location SETTING 2

Testing Authorized : SA Special Instructions :

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS FINER THAN #200	X ASTM C1:		AASHTO T27 AASHTO T11		P	HYSICAL PROP	PERTIES		RESULTS	SPECS
SIEVE	ACCUMUL % PASS		SPECIFICATION	UNIT WEIGHT &	_	FINE	AGGREGATE	UNIT WEIGHT, KG/M3	1 1	
4				ASTM C29	AASHTO T19	_		VOIDS, %	i 1	
3				RODDING	JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT, KG/M3 -	>	
2								VOIDS, % ·	>	
1 1/2										
1 1/4					FINE AGGREGATE		BUL	K SPECIFIC GRAVITY	≯ i	
1					ASTM C128	AASHTO T84	BULK SPE	CIFIC GRAVITY (SSD)	• l	
3/4	1			SPECIFIC	AGGREGATE DRIE	ED.	APPAREI	IT SPECIFIC GRAVITY .	•	
1/2	100				YES	Пио		ABSORPTION, %	•	,
3/8	94			GRAVITY				7,500711 11011; 70		
1/4	78			8,	COARSE AGGREG	SATE	BUL	K SPECIFIC GRAVITY -	• l	
No.4	69			ABSORPTION	ASTM C127	☐ AASHTO T85	BULK SPE	CIFIC GRAVITY (SSD)	•	
8	50				AGGREGATE DRIE			IT SPECIFIC GRAVITY		
10	45				TYES	□NO	70770121	ABSORPTION, %		
16	36							AUGORF HON, 76	,	
30	27			SAND EQUIVALE	ENT VALUE	☐ ASTM D2419	AASHTO T17	5 SE.% -	<u>,</u>	
40	23			OAND ENGINAE	III TALUL	AOTIM DE 410		5 52, 70]	
50 1 00	20 15				SMALL COARSE A	CODECATE	GRADING	100 REV., %LOSS		
200	11			RESISTANCE						
				TO	ASTM C131	☐ AASHTO T96	GRADING	500 REV., %LOSS •	<u>'</u>	
LIQUID LIMIT & PLA	_									
ASTM D4318	AAS	1TO T89	& T90	DEGRADATION		ROGREGATE	GRADING			
METHOD					ASTM C535		GRADING	1000 REV., %LOSS -	<u> </u>	
SAMPLE AIR DRI			,	LIGHTWEIGHT P	IECES			FINE AGGREGATE, %	<u>,</u>	
ESTIMATED % RE	I AINED ON			☐ ASTM C123	☐ AASHTO T113		00	ARSE AGGREGATE, %		
	_	RESU	LTS SPECS	AGTW C123				ANGE AGGILGATE, M	1	
LIQUID LIMIT	*			CLAY LUMPS &	FRIABLE PARTICLE	S		FINE AGGREGATE, % -	<u>•</u>	
PLASTIC LIMIT PLASTICITY INDI	→			ASTM C142	AASHTO T112		co	ARSE AGGREGATE, % •	•	
FINENESS MODULU	Js			FRACTURED FA	CES OF COARSE AG	GREGATES BY W	/EIGHT ON	OR MORE FACES, %		
ASTM C125	→			AZ 212	FLH T507	FAA		OR MORE FACES, %		
ORGANIC IMPURITI	ES			DURABILITY IND				D _c •	»	
	PLATE NO:→				ASTM D3744	AASHTO T210		Б		
AASHTO T21				PROCEDURE :	A COARSE B	∐ FINE C	COARSE & F	NE of		
CLEANNESS VALU	E		1	UNCOMPACTED	VOID CONTENT					
CA 227	→				AZ 247	ASTM C1252	METHOD	VC, %	•	

Comments ;

Copies to: CLIENT (1)

REVIEWED E	J.KELLY	
	(SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report **07-30-14**Job No. **3244JK004**

Event / Invoice No. 4L423-8
Authorized by RICK HURWORTH
Sampled by CLIENT
Submitted by CLIENT
Date 07-24-14
Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL Contractor N/A Type / Use of Material OPS LAYER Sample Source / Location SETTING 2

Testing Authorized: **SA** Special Instructions:

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X FINER THAN #200 X			SHTO T27 SHTO T11	PHYSICAL PROPERTIES						SPECS
SIEVE	ACCUMULATIV % PASSING	VE.	CIFICATION	UNIT WEIGHT &	VOIDS AASHTO T19	FINE	AGGREGATE	UNIT WEIGHT,KG/M ³ → VOIDS, % →		
4				ASTM C29	_					
3				RODDING	JIGGING	LOOSE COAL	KSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2								VOIDS, % →		
1 1/2										
1 1/4					FINE AGGREGATI		BU	LK SPECIFIC GRAVITY →		
1					ASTM C128	AASHTO T84	BULK SP	ECIFIC GRAVITY (SSD) →		
3/4	400			SPECIFIC	AGGREGATE DRI	ED	APPARE	NT SPECIFIC GRAVITY →		
1/2	100			GRAVITY	YES	NO		ABSORPTION, % →		
3/8	95			}						
1/4	78			8.	COARSE AGGRE	SATE	BU	LK SPECIFIC GRAVITY →		
No.4	68			ABSORPTION	ASTM C127	AASHTO T85	BULK SP	ECIFIC GRAVITY (SSD) →		
8	47				AGGREGATE DRI	ED	APPARE	NT SPECIFIC GRAVITY →		
10	42				YES	NO		ABSORPTION, % →		
16	32							7,200,000,000		
30	23			SAND EQUIVAL	ENT VALUE	ASTM D2419	AASHTO T17	76 SE, % →		
40	20 17									
50					SMALL COARSE	ACCRECATE	GRADING	100 REV., %LOSS →		
100	13 10			RESISTANCE		_		-	į	
	l				ASTM C131	☐ AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLAS	TIC PROPERTI	ES		то						
ASTM D4318	AASHTO	T89 & T9	90	DEGRADATION LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS →						
METHOD					☐ ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIE	YES [ОИ		LIGHTWEIGHT F	NECER					
ESTIMATED % RET	AINED ON NO	40		_				FINE AGGREGATE, % ->		
	RI	ESULTS	SPECS	ASTM C123	AASHTO T113	3	CC	DARSE AGGREGATE, %→		
LIQUID LIMIT	->			CLAY LUMPS &	FRIABLE PARTICLE	s		FINE AGGREGATE, % →		
PLASTIC LIMIT	->			ASTM C142	□ AASHTO T112)	CC	DARSE AGGREGATE, % ->		
PLASTICITY INDEX	< →							5/11/02/100/120/12, 7/ 2/		
FINENESS MODULUS	;			FRACTURED FA	CES OF COARSE A	GGREGATES BY W	VEIGHT ON	IE OR MORE FACES, % →		
ASTM C125	→			AZ 212	FLH T507	FAA	TW	O OR MORE FACES, % 👈		
ORGANIC IMPURITIES	s			DURABILITY INC	DEX	· , · · ·				
☐ ASTM C40					ASTM D3744	AASHTO T210		D _c →		
AASHTO T21	ATE NO.→			PROCEDURE :	A COARSE B	FINE C	COARSE & F	INE Df →		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
				UNCOMI ACTED	AZ 247	ASTM C1252	METHOD	vc, % →		
CA 227	→				AZ 241	[] WO LINI C 1505	METHOD	VC, 76		

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY	
	(SIGNED CODY ON EILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report **07-30-14** Job No. **3244JK004**

Event / Invoice No. 4L423-9
Authorized by RICK HURWORTH
Sampled by CLIENT
Lab No. 4L423-9
Date 07-24-14
Date 07-24-14

Sampled by CLIENT Date 07-24-14
Submitted by CLIENT Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A

Type / Use of Material OPS LAYER
Sample Source / Location SETTING 3

Testing Authorized: **SA** Special Instructions:

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X FINER THAN #200 X		AASHTO T27 AASHTO T11		RESULTS	SPECS				
SIEVE	ACCUMULATIVE % PASSING	SPECIFICATION	UNIT WEIGHT &		FINE .	AGGREGATE	UNIT WEIGHT,KG/M ³ →		
4			ASTM C29	AASHTO T19			VOIDS, % →		
3			RODDING	JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2							VOIDS, % →	į	
1 1/2									
1 1/4				FINE AGGREGATE		BUL	K SPECIFIC GRAVITY 👈		
1				ASTM C128	AASHTO T84	BULK SPE	CIFIC GRAVITY (SSD) 👈	- 1	
3/4			SPECIFIC	AGGREGATE DRIE	D	APPAREN	T SPECIFIC GRAVITY ->	1	
1/2	100			YES	□NO		ABSORPTION, % →	1	
3/8	96		GRAVITY						
1/4	81		8.	COARSE AGGREG	ATE	BUL	SPECIFIC GRAVITY ->		
No.4	73		ABSORPTION	ASTM C127	AASHTO T85	BULK SPE	CIFIC GRAVITY (SSD) -		
8	54			AGGREGATE DRIE			T SPECIFIC GRAVITY -		
10	49			YES	Пио	71 TAILE	ABSORPTION, % →		
16	39			☐ 1E9			ABSORPTION, 76 -		
30	29		SAND EQUIVAL	ENT MALUE	ASTM D2419	AASHTO T176	SE, % →		
40	25		SAND EQUIVAL	ENI VALUE	A31W1 D2419		JL, /6		
50	22			****					
100	17		BEGINTALIAE	SMALL COARSE A	_	GRADING	100 REV., %LOSS →		
200	13		RESISTANCE	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLAS	TIC PROPERTIES	ì	то						
ASTM D4318	AASHTO TE	9 & T90	DEGRADATION	LARGE COARSE A	RGE COARSE AGGREGATE GRADING 200 REV., %LOSS →				
METHOD				ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIED	YES N	10							
ESTIMATED % RET	AINED ON NO 40		LIGHTWEIGHT F	PIECES			FINE AGGREGATE, % →		
	RES	ULTS SPECS	ASTM C123	AASHTO T113		CO	ARSE AGGREGATE, %→		
LIQUID LIMIT	->		CLAY LUMPS &	FRIABLE PARTICLES	S		FINE AGGREGATE, % ->		
PLASTIC LIMIT	→		☐ ASTM C142	☐ AASHTO T112			ARSE AGGREGATE, %→	i	
PLASTICITY INDEX	(->		A31WICI42	AAGIIIO III2			THOSE THOUTHER THE THOU		
FINENESS MODULUS			FRACTURED FA	CES OF COARSE AG	GREGATES BY W	EIGHT ONE	OR MORE FACES, % ->		
ASTM C125	→		AZ 212	FLH T507	FAA	TWO	OR MORE FACES, % →		
ORGANIC IMPURITIES	s		DURABILITY INC	DEX			D		
ASTM C40	ATE NO.→			ASTM D3744	AASHTO T210		Dc →		
AASHTO T21	ATE NU.		PROCEDURE:	A COARSE B	FINE C	COARSE & FI	NE D _f →		
CLEANNESS VALUE			UNCOMPACTED	VOID CONTENT					
☐ CA 227	→			AZ 247	ASTM C1252	METHOD	VC, % →		

Comments	
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	 (SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Special Instructions:

Date of Report 07-30-14 Job No. 3244JK004

Event / Invoice No. 4L423-10
Authorized by RICK HURWORTH
Sampled by CLIENT
Submitted by CLIENT
Date 07-24-14
Date 07-24-14
Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A
Type / Use of Material OPS LAYER
Sample Source / Location SETTING 3
Testing Authorized: SA

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR

Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X			AASHTO T27 AASHTO T11	PHYSICAL PROPERTIES					RESULTS	SPECS
	ACCUMUL/ % PASSII	ATIVE	PECIFICATION	UNIT WEIGHT &	_	FINE A	AGGREGATE	UNIT WEIGHT,KG/M ³ →		
4				ASTM C29	AASHTO T19	_		VOIDS, % →		
3				RODDING	JIGGING	LOOSE COAR	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2				VOIDS, % →						
1 1/2										
1 1/4		į			FINE AGGREGATE		BULK	SPECIFIC GRAVITY -		
1				:	ASTM C128	AASHTO T84	BULK SPEC	CIFIC GRAVITY (SSD) ->		
3/4				SPECIFIC	AGGREGATE DRIE	 :D	APPAREN'	T SPECIFIC GRAVITY ->		
1/2	100				YES	□NO		ABSORPTION, % →		
3/8	93			GRAVITY				71500111 11011, 70 2		
1/4	74			&	COARSE AGGREG	ATE	BULF	SPECIFIC GRAVITY -		
No.4	63			ABSORPTION	ASTM C127	AASHTO T85		CIFIC GRAVITY (SSD) ->		
8	44	- 1			AGGREGATE DRIE			T SPECIFIC GRAVITY →	ŀ	
10	39				TYES	□NO	ALLANEN	ABSORPTION, % →	[
16	30	1			LITES			ABSORPTION, % T		
30	22	-		SAND EQUIVALE	INT VALUE	ASTM D2419	AASHTO T176	SE, % →	l	
40	19	1		SAND EQUIVALE	INI VALUE	☐ Y21M D541A		3E, 76		
50	16									
100	12			DEDIDE - NOT	SMALL COARSE A		GRADING	100 REV., %LOSS →	1	
200 7.8				RESISTANCE	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLAST	TIC PROPE	RTIES		то						
ASTM D4318	AASH	TO T89 8	k T90	DEGRADATION LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS →						
METHOD]	ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIED	YES	□ №	ŀ							
ESTIMATED % RET	AINED ON I	NO 40		LIGHTWEIGHT P	IECES		F	FINE AGGREGATE, % ->		
		RESUL	TS SPECS	ASTM C123	AASHTO T113		COA	RSE AGGREGATE, %→		
LIQUID LIMIT	→			CLAY LUMPS &	FRIABLE PARTICLE	s	ı	FINE AGGREGATE, % ->		
PLASTIC LIMIT	→			ASTM C142	AASHTO T112		COA	RSE AGGREGATE, %->		
PLASTICITY INDEX	→							, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
FINENESS MODULUS	İ			FRACTURED FA	CES OF COARSE A	GREGATES BY W	EIGHT ONE	OR MORE FACES, % →		
ASTM C125	→			AZ 212	☐ FLH T507	FAA	TWO	OR MORE FACES, % →		
ORGANIC IMPURITIES	5			DURABILITY IND	EX					
□ ASTM C40			ASTM D3744	AASHTO T210		D _C →				
AASHTO T21	ATE NO.→			PROCEDURE :	A COARSE B	FINE C	COARSE & FIN	NE D _f →		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
☐ CA 227	→				AZ 247	ASTM C1252	METHOD	VC, % →		

Comments:

Copies to: CLIENT (1)

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	(SIGNED COPY ON FILE)	



PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report **07-30-14**Job No. **3244JK004**

Event / Invoice No. 4L423-11

Authorized by RICK HURWORTH

Sampled by CLIENT

Submitted by CLIENT

Date 07-24-14

Date 07-24-14

Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL
Contractor N/A
Type / Use of Material OPS LAYER
Sample Source / Location SETTING 4
Testing Authorized: SA
Special Instructions:

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS X			AASHTO T27 AASHTO T11		RESULTS	SPECS				
SIEVE	ACCUMUL % PASSI		SPECIFICATION	UNIT WEIGHT &		FINE /	AGGREGATE	UNIT WEIGHT,KG/M ³ →		
4				ASTM C29	AASHTO T19			VOIDS, % →		
3				RODDING	JIGGING	LOOSE COAR	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2								VOIDS, % 🔿		
1 1/2										
1 1/4					FINE AGGREGATE		BUI	_K SPECIFIC GRAVITY →		
1					ASTM C128	AASHTO T84	BULK SPE	ECIFIC GRAVITY (SSD) 👈	-	İ
3/4				SPECIFIC	AGGREGATE DRIE	ED .	APPARE	NT SPECIFIC GRAVITY →		-
1/2	100			GRAVITY	YES	□NO		ABSORPTION, % →		1
3/8	97									
1/4	87			&	COARSE AGGREG	SATE	BUI	LK SPECIFIC GRAVITY 🔿		
No.4	80			ABSORPTION	ASTM C127	AASHTO T85	BULK SPE	ECIFIC GRAVITY (SSD) 👈		
8	60			•	AGGREGATE DRIE	E D	APPARE	NT SPECIFIC GRAVITY ->		
10	55				YES	NO		ABSORPTION, % →		
16	43 31									
30 40	26			SAND EQUIVAL	ENT VALUE	ASTM D2419	AASHTO T17	6 SE, % →		
50	23									
100	17			ĺ	SMALL COARSE A	GGREGATE	GRADING	100 REV., %LOSS →		Į
200	13			RESISTANCE	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
				то						
LIQUID LIMIT & PLAS	_			DEGRADATION	LARGE COARSE A	AGGREGATE	GRADING	200 REV., %LOSS →		
ASTM D4318	AASH	1TO T89	& T90	DEGRADATION	ASTM C535		GRADING	1000 REV., %LOSS →		
METHOD					AGTM C000		010101110	10001121., 702000		
SAMPLE AIR DRIED ESTIMATED % RET			•	LIGHTWEIGHT P	PIECES			FINE AGGREGATE, % →		
ESTIMATED % RET	AINED ON			ASTM C123	□ AASHTO T113	l	cc	DARSE AGGREGATE, %→		
	-	RESU	LTS SPECS	ASTMICTES						
LIQUID LIMIT	→			CLAY LUMPS &	FRIABLE PARTICLE	S		FINE AGGREGATE, % →	ł	
PLASTIC LIMIT	→			ASTM C142	AASHTO T112	!	CC	DARSE AGGREGATE, % →		
PLASTICITY INDEX										
FINENESS MODULUS			ļ	FRACTURED FA	CES OF COARSE A	GGREGATES BY W	EIGHT ON	IE OR MORE FACES, % →		
ASTM C125	->			AZ 212	FLH T507	FAA	TW	O OR MORE FACES, % ->		
ORGANIC IMPURITIE	s			DURABILITY INC	EX					
ASTM C40	i					AASHTO T210		D _c →		
AASHTO T21	ATE NO:			PROCEDURE :	A ☐ COARSE B	FINE C	COARSE & F	TINE Df →		
					VOID CONTENT					
CLEANNESS VALUE	_ [UNCOMPACTED	_	ASTM C1252	METHOD	vc, % →		
CA 227	→				AZ 247	ASTM C1202	MEILOD	VC, 70 -	i	

Comments :

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PHYSICAL PROPERTIES OF AGGREGATES

Client DELHUR INDUSTRIES
P.O. BOX 1116
PORT ANGELES, WA 98362

Date of Report **07-30-14** Job No. **3244JK004**

Event / Invoice No. 4L423-12
Authorized by RICK HURWORTH

Sampled by CLIENT
Submitted by CLIENT

Lab No. 4L423-12

Date 07-24-14 Date 07-24-14 Date 07-24-14

Project CAJA DEL RIO PIT CRUSHER CONTROL

Contractor N/A

Type / Use of Material OPS LAYER
Sample Source / Location SETTING 4

Testing Authorized : SA Special Instructions :

Location SANTA FE NM
Arch. / Engr. N/A
Supplier / Source DEL HUR
Source / Location Desig. By CLIENT

Date 07-24-14

TEST RESULTS

SIEVE ANALYSIS D			AASHTO T27 AASHTO T11	PHYSICAL PROPERTIES					RESULTS	SPECS
SIEVE	ACCUMUL % PASS		SPECIFICATION	UNIT WEIGHT &		FINE	AGGREGATE	UNIT WEIGHT,KG/M ³ →		
4				ASTM C29	AASHTO T19			VOIDS, % →		
3				RODDING	JIGGING	LOOSE COAF	RSE AGGREGATE	UNIT WEIGHT,KG/M ³ →		
2								VOIDS, % ⋺		
1 1/2	}									
1 1/4					FINE AGGREGATE		BUL	K SPECIFIC GRAVITY →		
1				1	ASTM C128	AASHTO T84	BULK SPE	CIFIC GRAVITY (SSD) ->		
3/4				SPECIFIC	AGGREGATE DRIE	-D	APPAREN	IT SPECIFIC GRAVITY →		
1/2	100				TYES	□NO	7.1.7.1.1.2.7	ABSORPTION, % ->	-	
3/8	96	.		GRAVITY				ABGORFION, 78 -27		
1/4	85			&	COARSE AGGREC	SATE	BUL	K SPECIFIC GRAVITY ->		
No.4	76			ABSORPTION	ASTM C127	AASHTO T85		CIFIC GRAVITY (SSD) -		
8	55				_	_		IT SPECIFIC GRAVITY	i	
10	50	1	İ		AGGREGATE DRII		APPAREI			
16	38				YES	□ NO		ABSORPTION, % →		
30	28									
40	24	. 1		SAND EQUIVAL	ENT VALUE	ASTM D2419	AASHTO T17	SE, % →		
50	21									
100	16				SMALL COARSE A	GGREGATE	GRADING	100 REV., %LOSS →		
200	12	:		RESISTANCE	ASTM C131	AASHTO T96	GRADING	500 REV., %LOSS →		
LIQUID LIMIT & PLA	STIC PROPE	ERTIES		то						
ASTM D4318		HTO T89 8	& T90	DEGRADATION LARGE COARSE AGGREGATE GRADING 200 REV., %LOSS						
METHOD			. ,		ASTM C535		GRADING	1000 REV., %LOSS →		
SAMPLE AIR DRIE	D TYES	Пио								
ESTIMATED % RE	_	_		LIGHTWEIGHT F	PIECES			FINE AGGREGATE, % →		
		RESUL	TS SPECS	ASTM C123	AASHTO T113	1	co	ARSE AGGREGATE, % ->	1	
		RESUL	.18 SPEC8							
LIQUID LIMIT	→	i		CLAY LUMPS &	FRIABLE PARTICLE	S		FINE AGGREGATE, % →		
PLASTIC LIMIT	→	ŀ		ASTM C142	AASHTO T112	!	co	ARSE AGGREGATE, % →		
PLASTICITY INDE										
FINENESS MODULU	S			FRACTURED FA	CES OF COARSE A	GGREGATES BY W	EIGHT ON	E OR MORE FACES, % 🖈		
ASTM C125	→			AZ 212	FLH T507	FAA	TWO	O OR MORE FACES, % ->		
ORGANIC IMPURITIES				DURABILITY INC				D _c →		
ASTM C40	LATE NO:				_	AASHTO T210		D -3		
AASHTO T21				PROCEDURE :	A COARSE B	☐ FINE C	COARSE & FI	NE of		
CLEANNESS VALUE				UNCOMPACTED	VOID CONTENT					
□ CA 227	→				AZ 247	ASTM C1252	METHOD	VC, % →		

Comments:

Copies to: CLIENT (1)

REVIEWED BY	J.KELLY
	(SIGNED COPY ON FILE)