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El Paso, Texas 79902  
tel: 915 544 2340  
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October 14, 2009

Thomas Klempel, P.E.  
Environmental Engineering Services Manager  
5285 E. Williams Circle, Suite 2000  
Tucson, AZ 85711

Subject: Addendum No. 1 to ASARCO El Paso Construction Report for Category I  
Landfills 1, 2, 3 and Category II Capping: Surface Paving of Landfills 1 and 2

Dear Mr. Klempel:

At the direction of ASARCO LLC, Camp Dresser and McKee Inc. (CDM) has prepared this letter report, which will serve to document the paving of the surfaces of Landfills 1 and 2 with hot mix asphaltic concrete (HMAC) at the El Paso Copper Smelter Facility in June of 2009. The construction of Landfills 1 and 2, completed in 2006 and 2007, respectively, resulted from the Texas Commission on Environmental Quality (TCEQ) Agreed Order Docket No. 96-0212-MLM-E, and was documented in the June 2009 report: ASARCO El Paso Construction Report for Category I Landfills 1, 2, 3 and Category II Capping. This letter report is an addendum to the aforementioned construction report.

## **Background**

Construction of Landfill Cell 1 was completed on November 20, 2006, and Construction of Landfill Cell 2 was completed on December 5, 2007, as described in the ASARCO El Paso Construction Report for Category I Landfills 1, 2, 3 and Category II Capping. Both landfills had a top layer consisting of 2 feet of intermediate cover, an unreinforced geosynthetic clay liner, a 40 mil smooth very flexible polyethylene layer, a single sided geocomposite drainage layer, and a 17-inch soil erosion layer. As-built drawings of the final cover extents and elevations were done at the time of completion, and are attached to this report (Attachment A).



Mr. Thomas Klempel, P.E.  
October 14, 2009  
Page 2

In a meeting between ASARCO and the TCEQ on April 14, 2009, action items were identified that included installing an additional erosion protection cover on Cells 1 and 2. In a letter to the TCEQ on May 14, 2009, ASARCO proposed paving the two landfill surfaces with 1.5 inches of HMAC and submitted the proposed mix design. Approval to proceed with the proposed actions was received on May 21, 2009 in an e-mail from the TCEQ to ASARCO. This correspondence, and the HMAC mix design that was proposed, are included as Attachment B.

### **Scope of Work**

The scope of work for paving activities was proposed by the General Contractor, Dieter & James Incorporated, at ASARCO's request, in two letters dated May 14 and May 26, 2009, included in this report as Attachment C.

The first letter describes the scope for rework of the subgrade of a portion of Cell 1 over an area of 6,222 square yards to prepare it for paving, including breaking the surface with a sheep's foot roller, processing with a motor grader, and applying 100 tons of crusher fines.

The second letter describes the scope of the paving on Cells 1 and 2, including saw cuts of existing paving, compaction of the subgrade, spray emulsion, installation of 1.5 inches of HMAC over an area of approximately 18,000 square yards, and paint striping the perimeters of the areas. It should be noted that the spray emulsion in the scope of work was not actually included in the final work product. Compaction of the subgrade only took place to the extent that it would not damage the existing geosynthetic, polyethylene, or geocomposite layers, and can better be described as a rolling to smooth the surface.

### **Work Execution and Field Quality Control**

The paving was done in June 2009. CQC Testing and Engineering, LLC, took two samples of the Type "C" HMAC material for sieve analyses, Marshall stability, and flow tests. The analyses showed that the samples were within the mix design range that was approved by the TCEQ in their May 21, 2009 correspondence. Photo documentation shows that the thickness of the HMAC layer was measured in the field to be at least 1.5 inches. Documentation of quality control testing is included in Attachment D. Construction photographs are included in Attachment E.



Mr. Thomas Klempel, P.E.  
October 14, 2009  
Page 3

We are submitting one hard copy and one electronic copy, on compact disk, of this report.

Please do not hesitate to contact Sarah Guemez at 915-544-2340 or Randy Huffsmith at 406-441-1400 with questions about this document.

Very truly yours,  
Sarah Guemez, P.E.

A handwritten signature in blue ink that reads 'Sarah Guemez'.

Project Manager  
Camp Dresser and McKee Inc.

Very truly yours,  
Randal Huffsmith, P.E.

A handwritten signature in blue ink that reads 'Randal Huffsmith'.

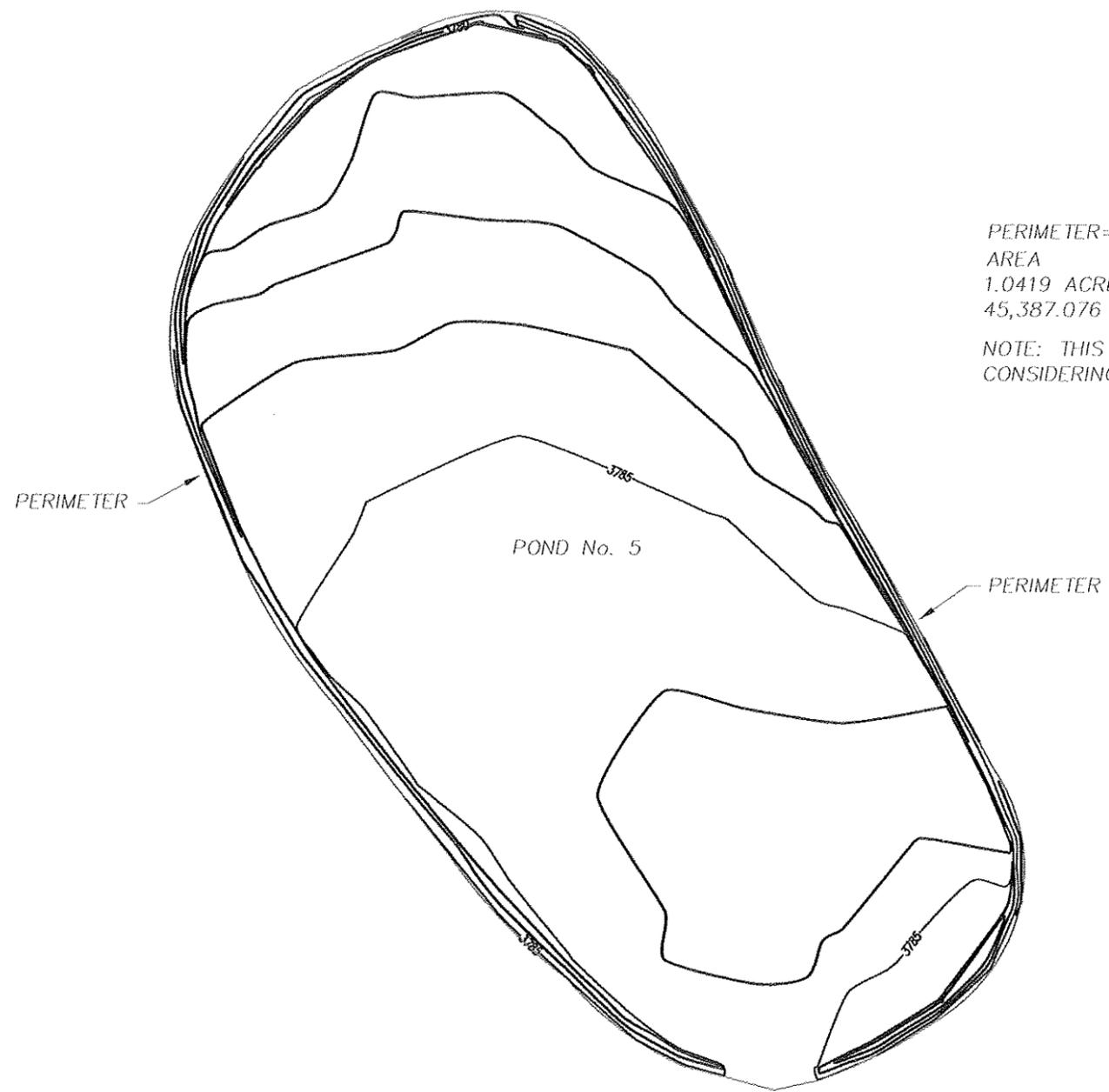
Program Manager  
Camp Dresser and McKee Inc.

cc: Walter Boyle of ASARCO, LLC

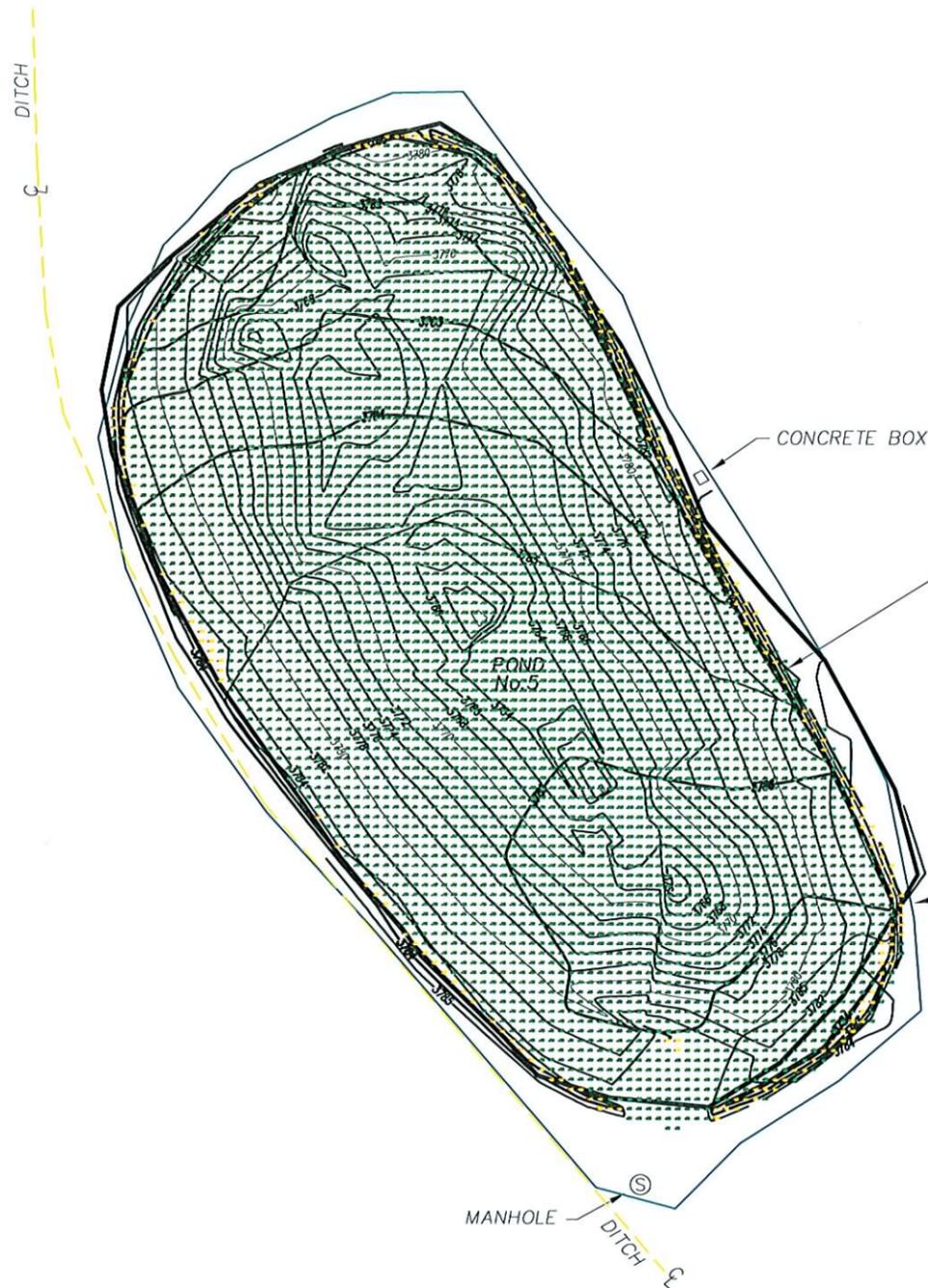
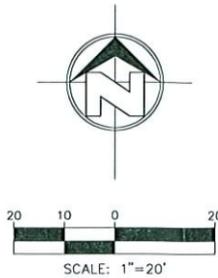
Attachments

## **Attachment A**

# **Cell 1 and 2 As-Built Drawings Prior to Surface Paving**



PERIMETER=836 FT.  
AREA  
1.0419 ACRES  
45,387.076 SQ.FT. MORE OR LESS  
NOTE: THIS IS A FLAT AREA, NOT  
CONSIDERING A "DOME" SHAPE.



PERIMETER= 836 FT.  
 AREA 1  
 1.0419 ACRES  
 45,387.076 SQ.FT. MORE OR LESS  
 NOTE: THIS IS A FLAT AREA, NOT  
 CONSIDERING A "DOME" SHAPE.

PERIMETER= 899 FT.  
 AREA 2  
 1.1811 ACRES  
 51,446.725 SQ.FT. MORE OR LESS  
 NOTE: THIS IS A FLAT AREA, NOT  
 CONSIDERING A "DOME" SHAPE.

Site name: ASARCO POND 5 VOLUME REPORT. DECEMBER 11, 2007

Lower left X: 374541.750898 Y: 10664132.362645  
 Upper right X: 374834.750898 Y: 10664521.362645  
 Rotation angle: 0-00-00 M size: 1.000 N size: 1.000

Site Volume Table: Unadjusted			
Cut	Fill	Net	Method
cu.yds	cu.yds	cu.yds	
=====			
Site: ASARCO	POND 5 VOL REPORT		
Stratum: Pond 5 Vol Liner & Top Soil	Pond 5 Topo-1	Pond 5 Topo-2	
0	3299	3299 (F)	Grid

Site Volume Table: Unadjusted			
Cut	Fill	Net	Method
cu.yds	cu.yds	cu.yds	
=====			
Site: ASARCO	POND 5 VOL REPORT		
Stratum: Pond 5 Previous Topo	Pond 5 Topo-1	Pond 5 Topo-3	
0	16,201	16,201 (F)	Grid

CONCLUSION

VOLUME OF POND 5 ON 2006= 16,201 Cubic Yards.  
 VOLUME OF LINER AND TOP SOIL= 3,299 Cubic Yards,  
 TOTAL VOLUME OF POND 5= 19,500 Cubic Yards, more or less.

LEGEND

-----	MJR CONTOUR TOPO 1
-----	MNR CONTOUR TOPO 1
-----	MJR CONTOUR TOPO 2 (TOP SOIL)
-----	MNR CONTOUR TOPO 2 (TOP SOIL)
+ 3.2	CUTS OR FILLS BETWEEN SURFACES



**Attachment B**  
**Correspondence**

James -

As a follow-up to the action items identified in our meeting with you in Austin on April 14, 2009 Tom Klempel and I have prepared the following status summary:

1. Diesel Plume Remediation

The 2008 annual groundwater monitoring report for the Diesel 2 Recovery System has been finalized and a copy submitted to your office on May 4th.

Based on the monitoring results of the diesel recovery system, we don't believe the site meets the TCEQ closure criteria because a couple of wells on the plant site still indicate measurable amounts of free product. However, the recovery system has been extremely effective and we haven't detected any measurable free product in the entire Smelertown area during the past year of monitoring. It's difficult to predict when we can expect to achieve the closure criteria requirements but based on the demonstrated success of the system, we anticipate that we will eliminate the presence of free product by the end of 2009.

During the month of April 2009, the Diesel 2 Recovery System recovered 1773 gallons of water and 0 gallons of free phase hydrocarbons. Also attached is the stack emissions analytical report for April.

2. Installation of Cover for Cells 1 and 2

We met with our technical consultants and the asphalt contractor yesterday to determine an asphalt pavement recommendation for the surface of Cells 1 and 2. After reviewing the landfill design specifications and as-built conditions, it is our consensus that the proposed placement of a 1.5" thick hot mixed asphaltic concrete (HMAC) will protect the surface area from erosion and provide a durable surface for light-duty vehicle parking. Attached is the recommended HMAC design.

Maintaining the integrity of the subsurface landfill liner system is paramount but we feel we can prepare the existing protective soil cap to construct a suitable base for the placement of the asphalt pavement. The base preparation activity will also include grading to insure adequate storm water drainage.

As soon as TCEQ authorizes the asphalt pavement work, we will contact the contractor to obtain a schedule for the site preparation and paving activities.

If you have any questions and need further information, please don't hesitate to contact Tom Klempel or me.



**MATERIAL SUBMITTAL**

May 7, 2009

**ASPHALTIC CONCRETE PAVEMENT DESIGN**

MIX ID: ITEM K3305 - Grade "C" HMA  
PRODUCT CODE: N-013

PROJECT: Asarco  
El Paso, TX  
CONTRACTOR: Diester & James  
SOURCE: CEMEX - McKelligon Canyon

<u>SIEVE SIZE</u>	<u>DESIGN RANGE</u>	<u>JMF</u>	<u>JOB CONTROL</u>
3/4"	100	100	93-100
1/2"	79 - 99	92	85-99
3/8"	68 - 88	82	75-89
No. 4	48 - 68	55	48-62
No. 8	33 - 53	39	33-45
No. 16	20 - 40	28	22-34
No. 30	14 - 30	19	14-24
No. 50	9 - 21	12	7-17
No. 100	5 - 16	7	4-10
No 200	3 - 6	4	1-7
Asphalt Content:	4.8-5.5	4.8	4.35-5.25
Percent Air Voids:	3 to 5	4.0	3-5
Voids in Mineral Aggregate:	15 Min.	15	
Marshall Stability:	1500 Min.	2450	1500 Min.
Flow:	8 - 16	14	8-16
Lab Compaction Procedure:	75 Blows at 260 ± 5 Degrees		
Mixture Discharge Temperature:	315 ± 20 Degrees		
Index of Retained Strength:	88% Minimum: 75%		

Lab density and stability are based in accordance with Asphalt Institute MS-2 Manual, Methods of Mix Design, and ASTM D-6927. Asphalt cement is Western Refinery Grade PG 64-22.

When placing order, please refer to Product Code.

Prepared By:

  
Joe Lopez CET  
Laboratory Supervisor

**Boyle, Walter**

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**From:** James Sher [JSHER@tceq.state.tx.us]  
**Sent:** Thursday, May 21, 2009 7:12 AM  
**To:** Klempel, Tom; Boyle, Walter  
**Cc:** Ashley Forbes; Brent Wade; Lorinda Gardner  
**Subject:** TCEQ Concurrence on Asphalt design for Repository Cell # 1 & 2  
**Attachments:** Cell construction detail.pdf

Tom & Walter:

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The TCEQ does not have any objection to ASARCO's May 14, 2009 proposal regarding the 1.5 inch asphalt design for repository cell # 1 & 2. It is the TCEQ's understanding that the asphalt design will adequately support the future use of cell as a parking lot. Please be advised:

- The cell covers should include but not be limited to drainage layer, GCL, HDPE liner, and 12 inch erosion layer. The cell shall be constructed in accordance with ARCADIS's repository cell design. (see attached file) If there is any deviation from the design, please seek our concurrence prior to start the work.
- The permanent identification of the edge of the cell should be clearly visible from the ground surface to help future users to identify the exact extent of the cell cover.
- A final survey should be performed by a licensed surveyor registered in the state of Texas to ensure the boundaries of repository cells # 1 & 2 will be recorded in the real estate deed as a part of the institutional control.

We received your diesel report and will provide you our comments by the end of next month. Please remember to notify the region prior to start the field work. If you have any questions, please contact me at 512-239-2444. Thanks!

James Sher

**Attachment C**  
**Scope of Work**

**DIETER & JAMES INCORPORATED****General Contractor**

**1110 N. Piedras  
El Paso, Texas 79903  
New Mexico License #90530**

**Phone (915) 587-7550  
Fax (915) 833-8406  
E-Mail - dijames@aol.com**

May 14, 2009

Mr. Walter Boyle  
ASARCO  
2301 W. Paisano Dr.  
El Paso, Texas 79922

Dear Mr. Boyle,

Dieter & James, Inc. proposes to provide the following scope of work.

Area 1 Rework required- 6222 sy

**INCLUSIONS**

1. Rework subgrade by breaking the surface loose with a sheeps foot roller.
2. Spray with water and process the material with a motor grader.
3. Including 100 tons of crusher fines per our conversation of 5/13/09 to replace unsuitable material and stabilize the soil.
4. Once subgrade is compacted the surface will have 1 1/2" HMAC applied.

Thank you for the opportunity to submit this proposal.

Sincerely,

Philipp G. Dieter, III  
President

cc: 1100



**DIETER & JAMES INCORPORATED**

General Contractor

1110 N. Piedras  
El Paso, Texas 79903  
New Mexico License #90530

Phone (915) 587-7550  
Fax (915) 833-8406  
E-Mail - dijames@aol.com

May 26, 2009

Mr. Walter Boyle  
ASARCO  
2301 W. Paisano Dr.  
El Paso, Texas 79922

Re: Pavement Installation

Dear Mr. Boyle,

Dieter & James, Inc. proposes to provide the following:

**PREPARE SUBGRADE BOTH AREAS**  
**AREA 1**  
**AREA 2**  
**STRIPING AROUND NEW PAVING**

The following are inclusions and exclusions that apply to both areas:

**INCLUSIONS**

1. Saw cut as required for pavement installation.
2. Compact subgrade.
3. Spray emulsion.
4. Install 1½" HMAC ± 18,000 sy.
5. Paint striping to delineate area.
6. Performance and Payment Bond.

**EXCLUSIONS**

1. Sales Tax not included.

Thank you for the opportunity to submit this proposal.

Sincerely,

Philipp G. Dieter, III  
President

cc: 1100

**Attachment D**  
**Field Quality Control**



**PROJECT HOT MIX ASPHALTIC CONCRETE (HMAC) TEST REPORT**  
**BITUMEN EXTRACTION, AGGREGATE SIEVE ANALYSIS, RICE SPECIFIC GRAVITY**  
**AIR VOIDS, UNIT WEIGHT, MARSHALL STABILITY AND FLOW**

Test Methods: ASTM D 6307, D5444, D6927, AIM Series No.2 (MS-2)

CQC PROJECT NO.: ATCQC09-045  
 PROJECT NAME: ASARCO - Paving QC Testing

REPORT DATE: 7/1/2009  
 CLIENT: Express Building Materials, LLC.

**SAMPLE INFORMATION:**

MARSHALL VALUE SET: 1  
 SAMPLE DATE: 6/24/2009 at 10:00 am  
 SAMPLE LOCATION: Southwest Paving Section Area  
 CEMEX Type "C" / Hot Mixed Asphaltic -  
 Concrete Material, City of El Paso - Type  
 "C"  
 SAMPLE SUPPLIER/SOURCE:

SAMPLED BY: Adrian Ortiz  
 PCN No. 09-1319

SAMPLE OBTAINED AT: 253 tons

**TEST RESULTS:**

**Bitumen Extraction and Sieve Analysis Test:**

Sieve Size/No.	Surface Course Master Grading	Job Mix Formula	Mix Design Range	Sieve Analysis - % Passing by Weight
¾"	100	100	93-100	95
½"	79-99	92	85-99	92
⅜"	68-88	82	75-89	87
No. 4	48-68	55	48-62	60
No. 8	33-53	39	33-45	43
No. 16	20-40	28	22-34	28
No. 30	14-30	19	14-24	20
No. 50	9-21	12	7-17	11
No. 100	6-16	7	4-10	6
No. 200	3-6	4	1-7	3.3
Bitumen Content, %		4.8	4.35-5.25	5.01

**Marshall Stability and Flow Test Results:**

Test Item	Average Test Results	Project Specifications
Maximum Theoretical Specific Gravity	2.539	N/A
Unit Weight (PCF)	151.1	N/A
Air Voids (%)	4.6%	3.0-5.0
Marshall Stability	2,467	Minimum 1,500
Flow	13	8-16

Remarks: The sampled and tested hot-mixed asphaltic-concrete material met the mix design minimum requirements with respect to bitumen content, gradation, air voids, Marshall Stability and flow

**COPIES SUBMITTED:**

1.) Mr. Phillip G. Dieter, III  
 Project Manager  
 Express Building Materials, LLC.  
 P.O. Box 221886  
 El Paso, Texas 79913  
 Fax: (915) 833-8406  
 Email: dijames@aol.com

2.) Mr. Walter Boyle  
 ASARCO Co.  
 Fax: (915) 541-1821

**CQC TESTING AND ENGINEERING**

Reviewed By:

Jaime Rojas, P.E.  
 Principal Engineer  
 TX License No. 89944

CQC Testing and Engineering, LLC.  
 TBPE Firm Registration No. F-10632



**PROJECT HOT MIX ASPHALTIC CONCRETE (HMAC) TEST REPORT**  
**BITUMEN EXTRACTION, AGGREGATE SIEVE ANALYSIS, RICE SPECIFIC GRAVITY**  
**AIR VOIDS, UNIT WEIGHT, MARSHALL STABILITY AND FLOW**

Test Methods: ASTM D 6307, D5444, D6927 AIM Series No.2 (MS-2)

CQC PROJECT NO.: ATCQC09-045  
 PROJECT NAME: ASARCO - Paving QC Testing

REPORT DATE: 7/1/2009  
 CLIENT: Express Building Materials, LLC.

**SAMPLE INFORMATION:**

MARSHALL VALUE SET: 2  
 SAMPLE DATE: 6/26/2009 at 11:15 am

SAMPLED BY: Adrian Ortiz  
 PCN No. 09-1344

SAMPLE LOCATION: Northeast Paving Section Area  
 CEMEX Type "C" / Hot Mixed Asphaltic-  
 Concrete Material, City of El Paso - Type  
 "C"

SAMPLE OBTAINED AT: 22 tons

**TEST RESULTS:**

**Bitumen Extraction and Sieve Analysis Test:**

**Marshall Stability and Flow Test Results:**

Sieve Size/No.	Surface Course Master Grading	Job Mix Formula	Mix Design Range	Sieve Analysis - % Passing by Weight
¾"	100	100	93-100	95
½"	79-99	92	85-99	90
¼"	68-88	82	75-89	82
No. 4	48-68	55	48-62	56
No. 8	33-53	39	33-45	44
No. 16	20-40	28	22-34	34
No. 30	14-30	19	14-24	24
No. 50	9-21	12	7-17	13
No. 100	6-16	7	4-10	6
No. 200	3-6	4	1-7	2.7
Bitumen Content, %		4.8	4.35-5.25	4.91

Test Item	Average Test Results	Project Specifications
Maximum Theoretical Specific Gravity	2.517	N/A
Unit Weight (PCF)	150.6	N/A
Air Voids (%)	4.1%	3.0-5.0
Marshall Stability	2,520	Minimum 1,500
Flow	13	8-16

Remarks: The sampled and tested hot-mixed asphaltic-concrete material met the mix design minimum requirements with respect to bitumen content, gradation, air voids, Marshall Stability and flow.

**COPIES SUBMITTED:**

1.) Mr. Phillip G. Dieter, III  
 Project Manager  
 Express Building Materials, LLC.  
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2.) Mr. Walter Boyle  
 ASARCO Co.  
 Fax: (915) 541-1821

**CQC TESTING AND ENGINEERING**

Reviewed By:  
  
 Jaime Rojas, P.E.  
 Principal Engineer  
 TX License No. 89944

CQC Testing and Engineering, LLC.  
 TBPE Firm Registration No. F-10632

**Attachment E**  
**Construction Photos**















