Kumar & Associates, Inc.®
Geotechnical and Materials Engineers
and Environmental Scientists

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An Employee Owned Company

Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

October 2, 2026

Colorado Aggregate Recycling
Attn: Matt Bustamante
8900 Highway 93, Unit A
Golden, Colorado 80403

Subject: Laboratory Test Results, Class 1 Aggregate Base Course/Recycled Concrete, 2026 Colorado Aggregate Recycling, DEN South Yard, Denver, Colorado

Project No. 26-1-168

Dear Mr. Bustamante:

Attached are the results of laboratory testing performed on a bulk sample of recycled concrete material submitted to our Denver laboratory by a representative of Colorado Aggregate Recycling. The sample was assigned Kumar & Associates, Inc. (K+A) laboratory sample number 102062. We understand the sample was requested to be tested to evaluate the material's suitability to be classified as the Colorado Department of Transportation (CDOT) Class 1 aggregate base course (ABC). The sample originated from Colorado Aggregate Recycling's DEN South Yard (Jackson Gap Pit) located in Denver, Colorado. Laboratory testing was performed to determine the material classification parameters, including Atterberg Limits, gradation, and moisture-density relationships (modified Proctor). R-Value (hveem-stabilometer) and Los Angeles abrasion testing were also performed. The results of the testing are summarized in the attached Table 1 and figures.

Based on the testing results, the submitted sample meets the gradation and Atterberg limit specifications for Class 1 ABC presented on Table 703-2 in the CDOT's 2025 *Standard Specifications for Road and Bridge Construction. The testing indicated* the material had an R-value of 78 at an exudation pressure of 300 psi and a 37% loss as evaluated by the Los Angeles abrasion test.

If you have questions or need further information, please call.

Sincerely,

KUMAR & ASSOCIATES, INC.
Justin Cupich, P.E.

COLORADO REGISTERED
JUSTIN D. CUPICH
60144
10-2-26
PROFESSIONAL ENGINEER

JDC/as
Attachments
cc: file

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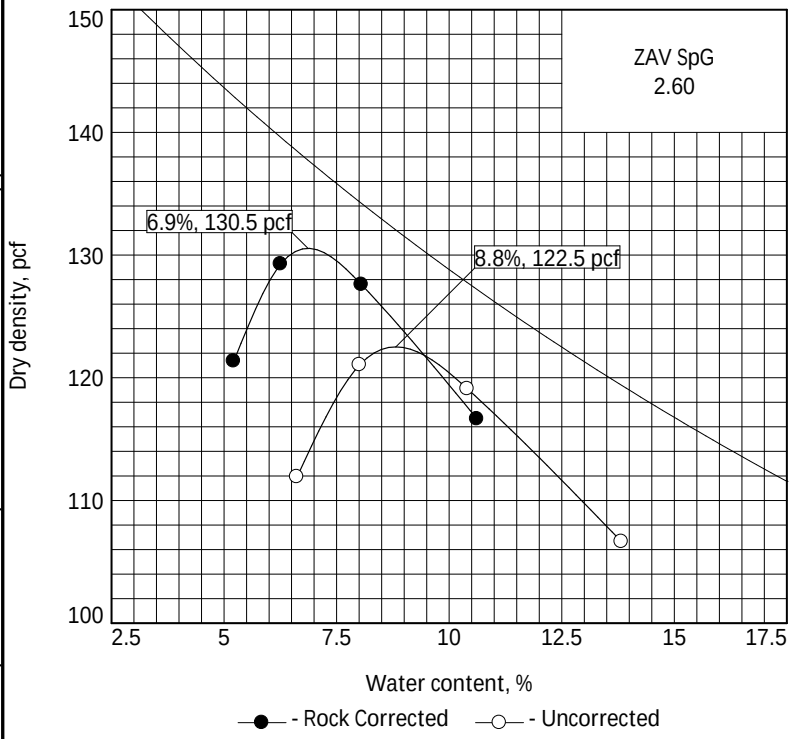
TABLE 1
SUMMARY OF LABORATORY TEST RESULTS
DEN SOUTH YARD (JACKSON GAP)

PROJECT NO.: 26-1-168
PROJECT NAME: 2026 COLORADO AGGREGATE RECYCLING LABORATORY TESTING
DATE RECEIVED: 9/4/2026

SAMPLE NO.	DATE TESTED	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)	GRADATION		PERCENT PASSING No. 200 SIEVE	ATTERBERG LIMITS		R-VALUE @ 300 PSI	LOS ANGELES ABRASION (ASTM C-131)		SOIL OR BEDROCK TYPE
				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTICITY INDEX (%)		GRADING	PERCENT LOSS (%)	
102062	9/4/26	122.5	8.8	61	26	13	31	6	78	B	37	SILTY GRAVEL WITH SAND ABC CLASS 1 (RECYCLED CONCRETE)

COMPACTION TEST REPORT

Curve No. 102062 (5225)



Preparation Method	
Rammer: Wt.	10 lb. Drop 18 in.
Type	Manual
Layers: No.	five Blows per 56
Mold Size	0.075 cu. ft.
Test Performed on Material Passing	3/4 in. Sieve
%>3/4 in.	25 %<No.200 13
Atterberg (D 4318): LL	31 PI 6
NM (D 2216)	Sp.G. (D 854) 2.6
USCS (D 2487)	GM
AASHTO (M 145)	A-1-a
Date: Sampled	9/4/26
Received	9/4/26
Tested	9/16/26
Tested By	AS

COMPACTION TESTING DATA
ASTM D 1557-12 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

	1	2	3	4	5	6
WM + WS	10535.0	10925.0	10950.0	10605.0		
WM	6459.0	6459.0	6459.0	6459.0		
WW + T #1	618.0	499.8	517.3	717.3		
WD + T #1	598.3	476.9	496.8	667.8		
TARE #1	300.8	191.1	299.8	309.8		
WW + T #2						
WD + T #2						
TARE #2						
MOIST.	5.2	6.3	8.1	10.6		
DRY DENS.	121.3	129.3	127.6	116.6		

SIEVE TEST RESULTS

Opening Size	% Passing	Specs.
2-1/2"	100	100
2"	100	95-100
1-1/2"	97	
1"	84	
3/4"	75	
1/2"	60	
3/8"	53	
#4	39	30-65
#8	33	
#16	28	
#30	24	
#50	20	
#100	16	
#200	13	3-15

ROCK CORRECTED TEST RESULTS	UNCORRECTED
Maximum dry density = 130.5 pcf	122.5 pcf
Optimum moisture = 6.9 %	8.8 %

Material Description: silty gravel with sand

Remarks:

Project No. 26-1-168 Client: Colorado Aggregate Recycling

Project: Colorado Aggregate Recycling - 2026 Various Laboratory Projects

○ Location: DEN South - ABC Class 1 Sample Number: 102062

Checked by: JJM

Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

Figure

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

Particle Size Distribution Report

ASTM C136

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	25	36	7	10	9	13	

Test Results (ASTM C136)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
2-1/2"	100	100		
2"	100	95-100		
1-1/2"	97			
1"	84			
3/4"	75			
1/2"	60			
3/8"	53			
#4	39	30-65		
#8	33			85
#16	28			72
#30	24			61
#50	20			51
#100	16			42
#200	13	3-15		34

* CDOT ABC Class 1

Material Description

silty gravel with sand

Atterberg Limits

PL= 25 LL= 31 PI= 6

Classification

USCS= GM AASHTO= A-1-a

Test Remarks

Location: DEN South - ABC Class 1
Sample Number: 102062

Sample Date: 9/4/26

Kumar & Associates, Inc.

Denver, Colorado

Client: Colorado Aggregate Recycling
Project: Colorado Aggregate Recycling - 2026 Various Laboratory Projects

Project No: 26-1-168 Figure

Tested By: JF Checked By: JJM

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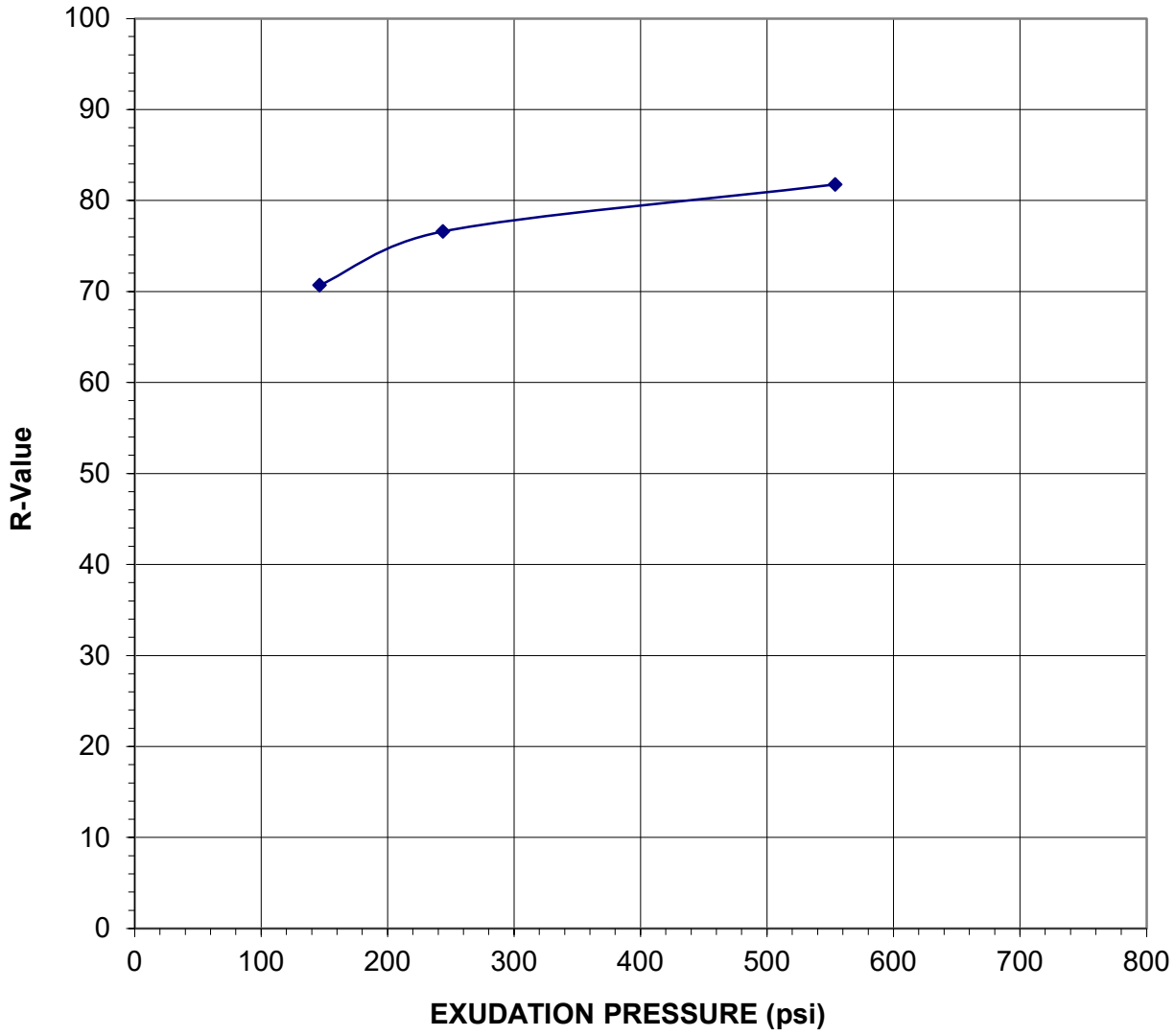
R-VALUE

TEST SPECIMEN	1	2	3	4	R-VALUE (300 psi)
MOISTURE CONTENT (%)	14.0	13.5	13.1		
DENSITY (pcf)	117.4	113.1	114.5		
EXPANSION PRESSURE (psi)	0.000	0.000	0.000		
EXUDATION PRESSURE (psi)	146	244	554		
R-VALUE	71	77	82		**78**



SOIL TYPE: Silty Gravel with Sand - ABC Class 1 (Recycled)

LOCATION: DEN South Yard (Jackson Gap Pit)

DATE SAMPLED: 9/4/26 DATE RECEIVED: 9/4/26 DATE TESTED: 9/16/26

GRAVEL: 61 SAND: 26 SILT AND CLAY: 13

LIQUID LIMIT: 31 PLASTICITY INDEX: 6

These test results apply to the samples which were tested. The testing report shall not be reproduced, except in full, without the written approval of Kumar & Associates, Inc. R-value performed in accordance with ASTM D2844. Atterberg limits performed in accordance with ASTM D4318. Sieve analyses performed in accordave with ASTM D422, D1140

26-1-168	KUMAR & ASSOCIATES	HVEEM STABILOMETER TEST RESULTS	102062

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Denver (HQ)
2390 South Lipan Street
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Phone: 3037429700

LA Abrasion - Small-Size Coarse Agg

ASTM C131

Client:

Colorado Aggregate Recycling
8900 Highway 93, Unit A
Golden, CO 80403

Project:

26-1-168
Colorado Aggregate Recycling - 2026 Various Laboratory Projects
8900 Highway 93, Unit A
Golden, CO 80403

Sample Information

Sample Number:	102062	**Sample Date:**	09/04/2026
Sample From:	Stockpile	**Sampling Method:**	Not Provided
Location Details:	ABC Class 1 (Recycled Concrete)		
Material Description:	Recycled Base Aggregate	**Technician:**	Client
Supplier:	Colorado Aggregate Recycling	**Plant or Source:**	DEN South Yard (Jackson Gap Pit)

Laboratory Test Results

Grading Designation	Nominal Maximum Aggregate Size	Percent Loss (%)
B	19 mm (3/4 inch)	37

Test Completed Date: 09/11/2026

Test Completed By: Kyle Wikowsky

These test results only apply to the samples which were tested. The testing report shall not be reproduced, except in full, without the written approval of Kumar and Associates, Inc. Testing performed in accordance with ASTM C131, C702 and D75. Consider the condition of the specimens testable unless otherwise noted above in "Report Comments"