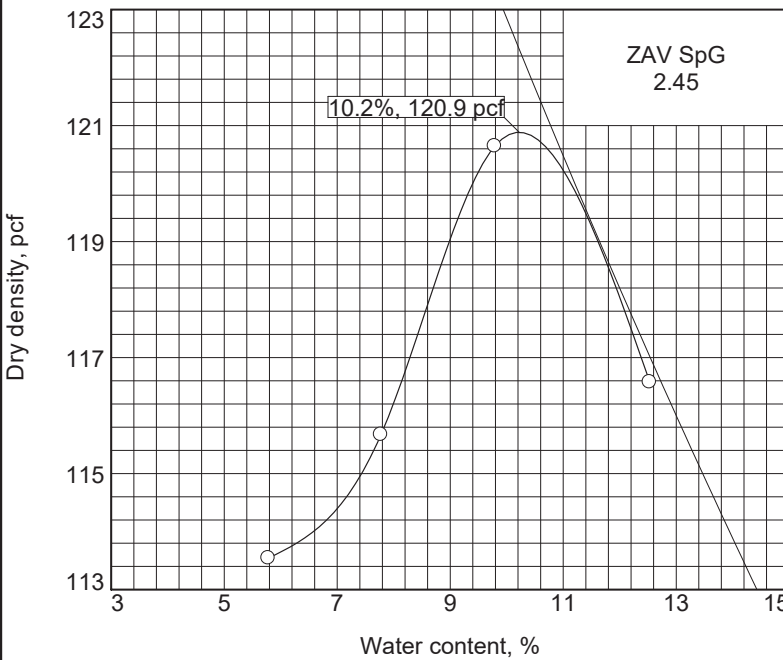


These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

# COMPACTION TEST REPORT

Curve No. 1559



Preparation Method _____	
Rammer: Wt. <u>10 lb.</u>	Drop <u>18 in.</u>
Type <u>Manual</u>	
Layers: No. <u>five</u>	Blows per <u>56</u>
Mold Size <u>0.075 cu. ft.</u>	
Test Performed on Material	
Passing <u>3/4 in.</u> Sieve	
%>3/4 in. <u>3</u>	%<No.200 <u>10</u>
Atterberg (D 4318): LL <u>NV</u>	PI <u>NP</u>
NM (D 2216) _____	Sp.G. (D 854) <u>2.45</u>
USCS (D 2487) <u>GP-GM</u>	
AASHTO (M 145) <u>A-1-a</u>	
Date: Sampled <u>7-30-2021</u>	
Received <u>7-30-2021</u>	
Tested <u>8-4-2021</u>	
Tested By <u>KP</u>	

### COMPACTION TESTING DATA AASHTO T 180-10 Method D Modified

	1	2	3	4	5	6
<b>WM + WS</b>	10590.0	10745.0	11010.0	10967.0		
<b>WM</b>	6504.0	6504.0	6504.0	6504.0		
<b>WW + T #1</b>	631.5	711.6	597.4	661.2		
<b>WD + T #1</b>	605.8	671.4	558.2	613.2		
<b>TARE #1</b>	161.3	154.3	157.7	230.2		
<b>WW + T #2</b>						
<b>WD + T #2</b>						
<b>TARE #2</b>						
<b>MOIST.</b>	5.8	7.8	9.8	12.5		
<b>DRY DENS.</b>	113.5	115.7	120.6	116.6		

### SIEVE TEST RESULTS AASHTO T27 AASHTO T11

Opening Size	% Passing	Specs.
1"	100	100
3/4"	97	95 - 100
1/2"	70	
3/8"	61	
#4	45	30 - 65
#8	36	25 - 55
#16	29	
#30	23	
#50	18	
#100	13	
#200	10	3.0 - 12

### TEST RESULTS

Maximum dry density = 120.9 pcf  
 Optimum moisture = 10.2 %

**Project No.** 21-1-235    **Client:**  
**Project:** Colorado Aggregate Recycling

○ **Location:** South Yard    **Sample Number:** 1559

**Kumar & Associates, Inc.**

**Denver, Colorado**

### Material Description

Recycled Concrete/ Class 6 ABC/ poorly graded gravel with silt and sand

### Remarks:

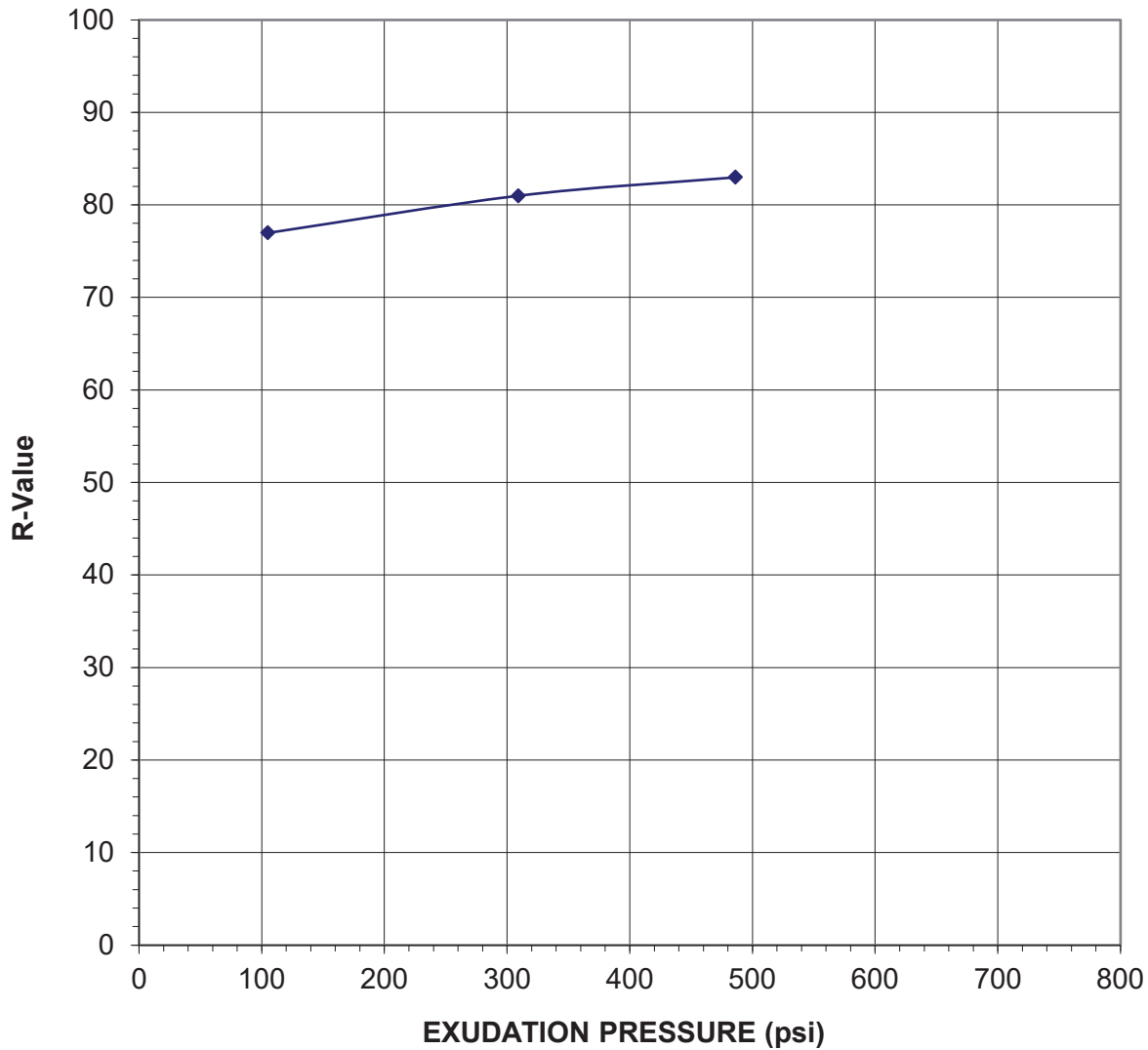
**Checked by:** \_\_\_\_\_ DS

**Title:** Lab Manager

**Figure**

**R-VALUE**

TEST SPECIMEN	1	2	3	4	R-VALUE (300 psi)
MOISTURE CONTENT (%)	11.6	12.4	13.3		
DENSITY (pcf)	118.4	117.1	111.7		
EXPANSION PRESSURE (psi)	0.000	0.000	0.000		
EXUDATION PRESSURE (psi)	486	309	105		
R-VALUE	83	81	77		



SOIL TYPE: **Class 6 ABC/ Recycled Concrete/ poorly graded gravel with silt and sand**

LOCATION: **Colorado Aggregate Recycling/ South Yard**

DATE SAMPLED: **7/30/2021**      DATE RECEIVED: **7/30/2021**      DATE TESTED: **8/25/2021**

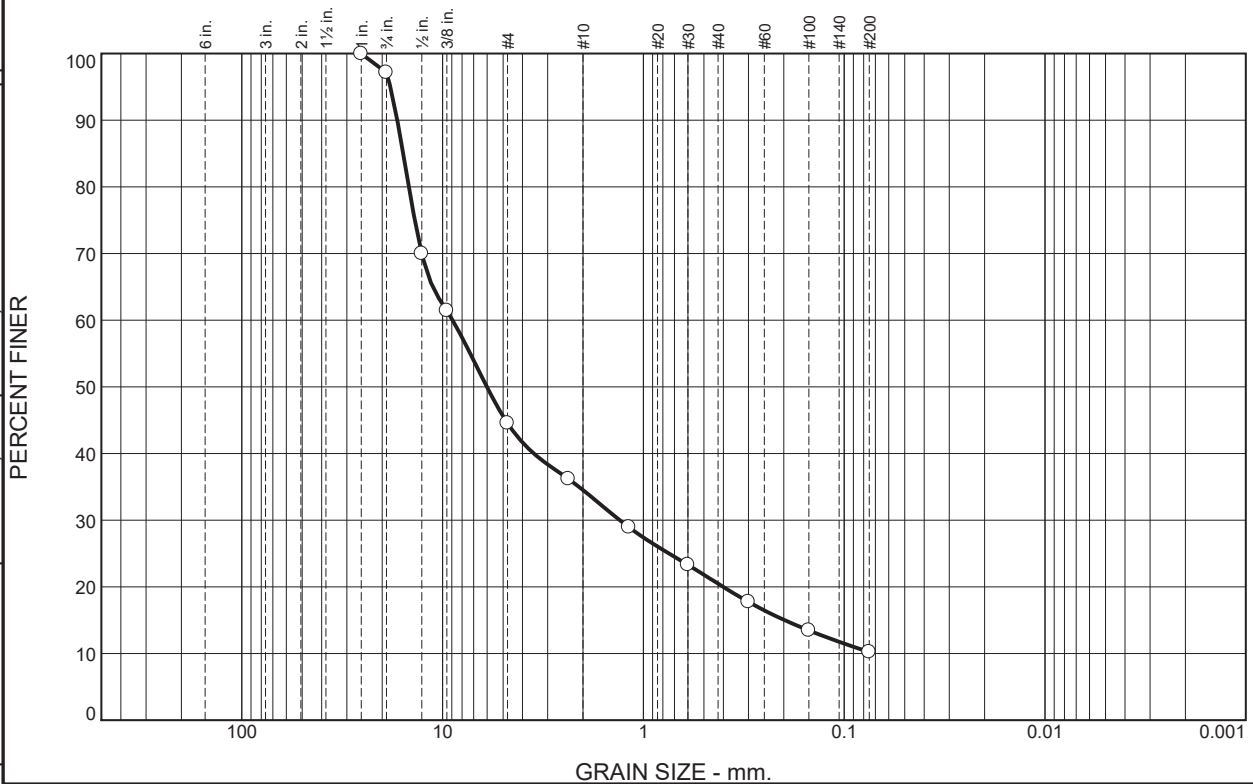
GRAVEL: **55**      SAND: **35**      SILT AND CLAY: **10**

LIQUID LIMIT: **NV**      PLASTICITY INDEX: **NP**

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 accordance with ASTM D422, D1140

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



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
		52	10	15	10		10

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100	100	
3/4"	97	95 - 100	
1/2"	70		
3/8"	61		
#4	45	30 - 65	
#8	36	25 - 55	
#16	29		
#30	23		
#50	18		
#100	13		
#200	10	3.0 - 12	

**Material Description**

Recycled Concrete/ Class 6 ABC/ poorly graded gravel with silt and sand

**Atterberg Limits**

PL= NP      LL= NV      PI= NP

**Classification**

USCS= GP-GM      AASHTO= A-1-a

**Remarks**

\* AASHTO M 147 Class 6 ABC

Location: South Yard  
Sample Number: 1559

Date: 7-30-2021

**Kumar & Associates, Inc.**  
  
**Denver, Colorado**

Client:  
Project: Colorado Aggregate Recycling  
  
Project No: 21-1-235

Figure

Tested By: KP      Checked By: DS



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



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

TABLE 1  
SUMMARY OF LABORATORY TEST RESULTS

PROJECT NO.: 21-1-235  
PROJECT NAME: Colorado Aggregate Recycling (South Yard)  
DATE SAMPLED: 07-30-2021  
DATE RECEIVED: 07-30-2021

SAMPLE LOCATION	DATE TESTED	GRADATION		PERCENT PASSING No. 200 SIEVE	ATTERBERG LIMITS		R-VALUE @ 300 PSI	LOS ANGELES ABRASION GRADING B % LOSS	OMC %	MDD pcf	SOIL OR BEDROCK TYPE
		GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTICITY INDEX (%)					
South Yard	7-30	55	35	10	NV	NP	82	38.9	10.2	120.9	Recycled Concrete Class 6 ABC Poorly Graded Gravel with Silt and Sand (GP-GM) A-1-a
South Yard	7-30	24	55	21	NV	NP			4.7	127.0	Recycled Asphalt 3/4" Material Silty Sand with Gravel (SM) A-1-b



**Kumar & Associates, Inc.**  
Geotechnical and Materials Engineers  
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**An Employee Owned Company**

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

August 20, 2021

Matt Bustamante  
Colorado Aggregate Recycling  
9615 East County Line Road #303  
Centennial, Colorado 80112

Subject: Laboratory Test Results, Recycled Concrete and Recycled Asphalt Samples,  
South Yard

Project No. 21-1-235

Dear Mr. Bustamante:

Attached are the results of testing performed on two lab samples submitted to our laboratory of recycled concrete and recycled asphalt (Kumar Lab Sample Nos. 1559 and 1560, respectively) obtained from the South Yard location. Testing was performed to determine soil classification parameters, including Atterberg Limits and gradation, moisture-density relationship (modified Proctor), R-Value (Hveem stabilometer) and L.A. Abrasion. The results of the tests are summarized in the attachments.

Based on the test results, the submitted sample of recycled concrete conforms to the gradation requirements for Class 6 Aggregate Base Course presented on Table 703-2 in the Colorado Department of Transportation's (CDOT) 2021 *Standard Specifications for Road and Bridge Construction*.

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

Sincerely,

KUMAR & ASSOCIATES, INC.

Ryan R. Kumar, P.E.



RRK:mg  
Attachments  
cc: file