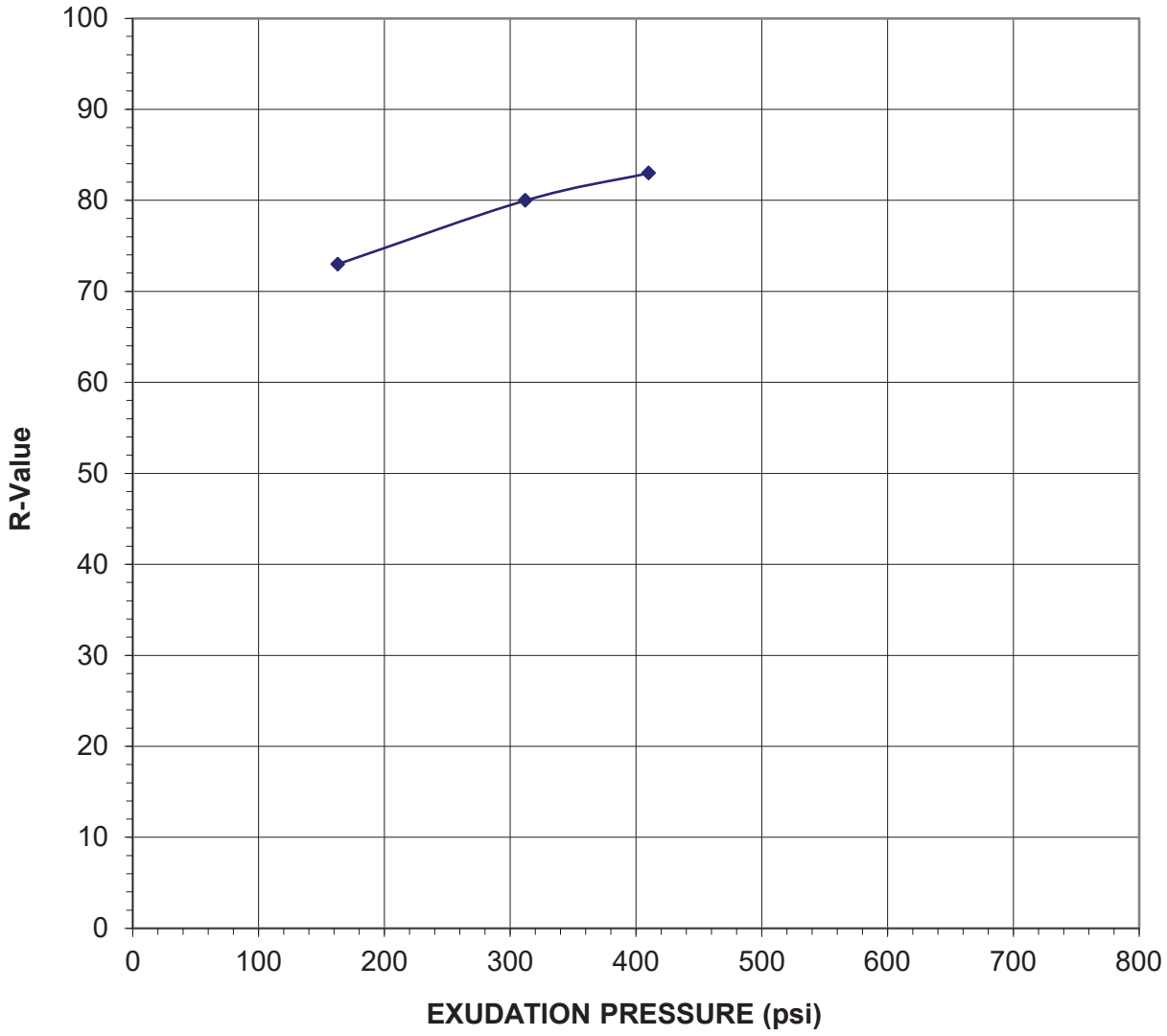
R-VALUE

TEST SPECIMEN	1	2	3	4	Rvalue @ 300 psi
MOISTURE CONTENT (%)	15.0	13.8	12.3		
DENSITY (pcf)	101.7	104.2	105.1		
EXPANSION PRESSURE (psi)	0.000	0.000	0.000		
EXUDATION PRESSURE (psi)	163	312	410		
R-VALUE	73	80	83		**80**



SOIL TYPE: **Class 6 ABC/Recycled Concrete/Well Graded Gravel with Silt and Sand**

LOCATION: **Colorado Aggregate Recycling/Golden Pit Stockpile**

DATE SAMPLED: **6/21/2021** DATE RECEIVED: **6/21/2020** DATE TESTED: **6/30/2021**

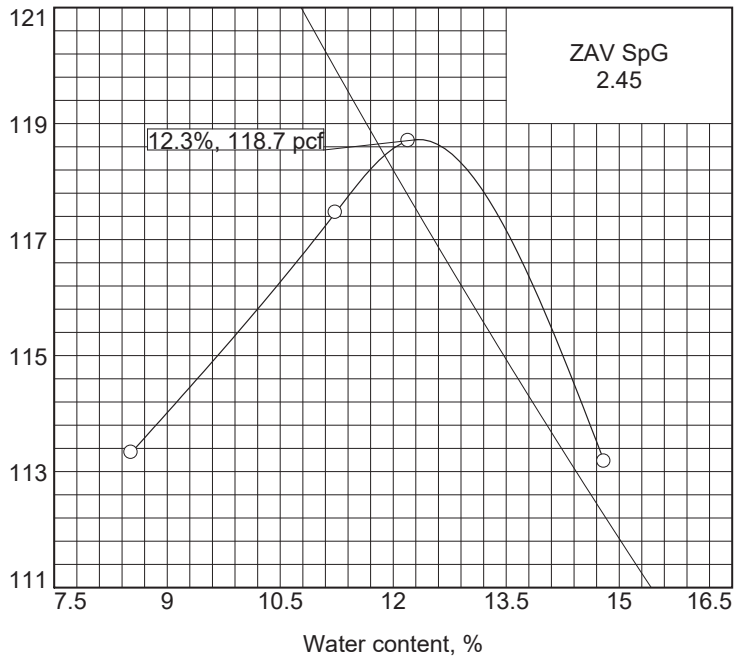
GRAVEL: **54** SAND: **41** SILT AND CLAY: **5.2**

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

21-1-235	KUMAR & ASSOCIATES	HVEEM STABILOMETER TEST RESULTS	1450

COMPACTION TEST REPORT

Curve No. 1450



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. 0 %<No.200 5.2
Atterberg (D 4318): LL NV PI NP
NM (D 2216) Sp.G. (D 854) 2.45
USCS (D 2487) GW-GM
AASHTO (M 145) A-1-a
Date: Sampled 6-21-2021
Received 6-21-2021
Tested 6-30-2021
Tested By KP

COMPACTION TESTING DATA
ASTM D 1557-12 Method C Modified

	1	2	3	4	5	6
WM + WS	10688.0	10949.0	11035.0	10924.0		
WM	6504.0	6504.0	6504.0	6504.0		
WW + T #1	573.8	709.1	687.0	548.2		
WD + T #1	542.5	655.5	627.8	496.5		
TARE #1	175.3	178.4	142.7	147.2		
WW + T #2						
WD + T #2						
TARE #2						
MOIST.	8.5	11.2	12.2	14.8		
DRY DENS.	113.3	117.5	118.7	113.2		

SIEVE TEST RESULTS
ASTM D-422 ASTM D-1140

Opening Size	% Passing	Specs.
1"	100	100
3/4"	100	95 - 100
3/8"	71	
#4	46	30 - 65
#8	36	25 - 55
#16	26	
#30	19	
#50	12	
#100	8	
#200	5.2	3.0 - 12

TEST RESULTS

Maximum dry density = 118.7 pcf

Optimum moisture = 12.3 %

Material Description

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

Remarks:

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

○ **Location:** Golden Pit, Stockpile **Sample Number:** 1450

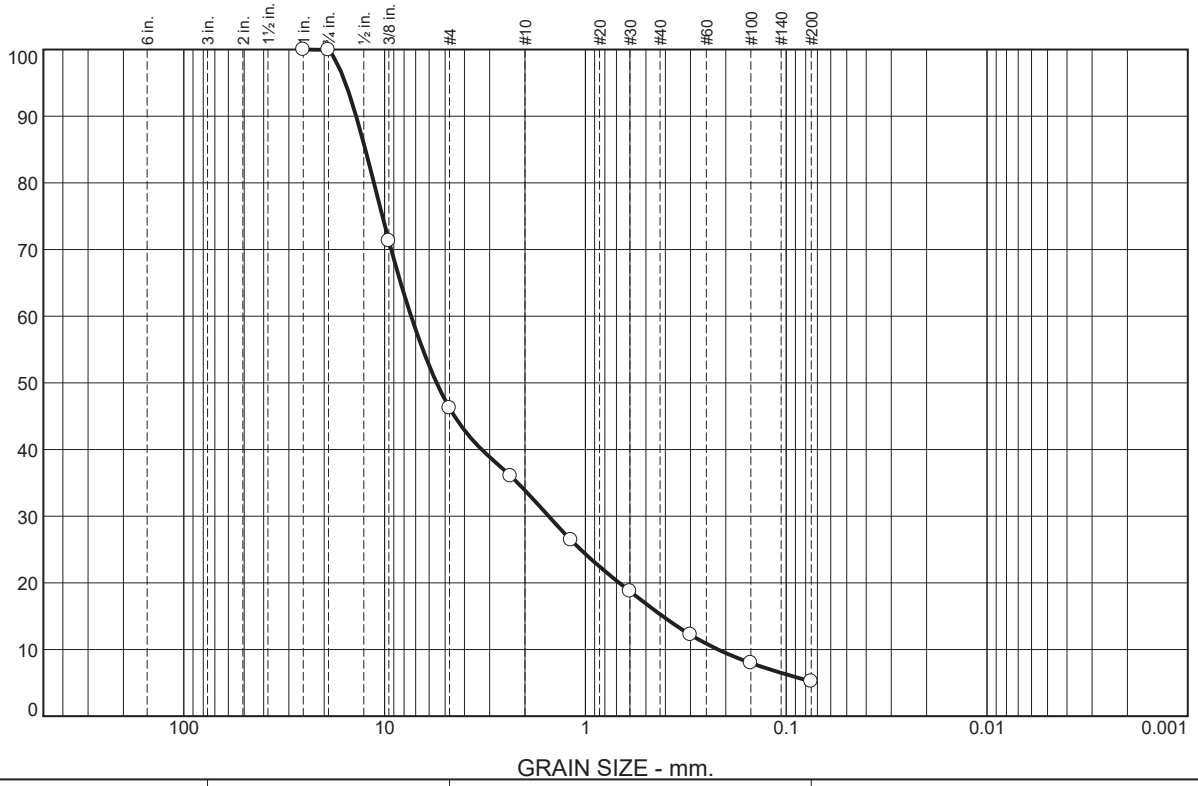
Checked by: DS
Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	54	12	19	10	5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100	100	
3/4"	100	95 - 100	
3/8"	71		
#4	46	30 - 65	
#8	36	25 - 55	
#16	26		
#30	19		
#50	12		
#100	8		
#200	5.2	3.0 - 12	

* AASHTO M 147 Class 6 ABC

Material Description

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

Atterberg Limits

PL= NP LL= NV PI= NP

Classification

USCS= GW-GM AASHTO= A-1-a

Remarks

Location: Golden Pit, Stockpile
Sample Number: 1450

Date: 6-21-2021

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

ACEC
MEMBER

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TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

PROJECT NO.: 21-1-235
PROJECT NAME: Colorado Aggregate Recycling
DATE SAMPLED: 06-21-2021
DATE RECEIVED: 06-21-2021

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 (%)					
Golden Pit Stockpile	6-30-21	54	41	5.2	NV	NP	80	40.3	12.3	118.7	Class 6 ABC/Recycled Concrete/Well Graded Gravel with Silt and Sand (GW-GM) A-1-a
Golden Pit Stockpile	7-6-21	63	34	3.2	NV	NP			5.4	126.1	Class 6 ABC/Recycled Asphalt/Well Graded Gravel with Sand (GW) A-1-a

Kumar & Associates, Inc.®
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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

July 13, 2021

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

Subject: Laboratory Test Results, Recycled Concrete Samples, Golden Pit Stockpile

Project No. 21-1-235

Dear Mr. Bustamante:

Attached are the results of testing performed on four lab samples submitted to our laboratory (Kumar Lab Sample Nos. 1450 and 1451) of recycled concrete obtained from the Golden Pit Stockpile. 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, two of the submitted samples conform to the gradation requirements for Class 6 Aggregate Base Course presented on Table 703-2 in the Colorado Department of Transportation's (CDOT) 2019 *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/ma
Attachments
cc: file