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May 30, 2019
 ATMI Job No. 19-0040

Mr. William Osborn
 Crossroads West Phoenix, LLC
 515 Congress Avenue
 Austin, TX 78701

**Project: Arema No. 4 Main Line Ballast
 Elkins Quarry Materials Testing
 Chavez County, NM**

**Date Tested: May 20, 2019
 Technician: T. Steigely
 Office: Las Cruces**

Lab No. 9840 Railroad Ballast Material, AREMA Size #4 Granite, medium gravel, grey and brown, prepared by Advanced Testing & Materials, Inc., sampled by Client May 8, 2019

SIEVE ANALYSIS

ASTM C-136

Sieve Size		Percent Passing	Specification
2 inch	50 mm	100	100
1 1/2 inch	37.5 mm	95	90-100
1 inch	25 mm	30	20-55
3/4 inch	19 mm	6	0-15
1/2 inch	12.5 mm	3	---
3/8 inch	9.5 mm	1	0-5
No. 4	4.75 mm	1	---
No. 8	2.36 mm	1	---
No. 50	300 um	1	---
No. 200	75 um	0.3	0-1

Note: Gradation developed using crushed and blended material supplied by Client.

BULK SPECIFIC GRAVITY	ASTM C-127	2.913	2.60 Min
% ABSORPTION OF AGGREGATE	ASTM C-127	0.11%	1.0 Max
% CLAY LUMPS/FRIABLE PARTICLES	ASTM C-142	0.07%	1.0 Max
LAS ANGELES ABRASION	ASTM C-535	17.6%	35 Max
NaSO4 SOUNDNESS (5 cycle)	ASTM C-88	1.13%	5 Max
UNIT WEIGHT OF AGGREGATE (Rodding Method)	ASTM C-29	107.32 pcf	---
% FLAT / ELONGATED PARTICLES (3:1)	ASTM C-4791	1.3%	5 Max

David Bollschweiler P.E.

cc: Adresse (1)