February 20, 2020

EARTH ENGINEERING CONSULTANTS, LLC

Asphalt Specialties Company, Inc.
10100 Dallas Street
Henderson, Colorado 80640

Attn: Mr. Greg Geras (GregG@asphaltspecialties.com)

Re: Construction Observation and Testing – ***Submittal No. 8***
Turnpike – Mine Backfill Process & Operations
Highway 52 and Weld County Road 1
Weld County, Colorado
EEC Project No. 1174016

Mr. Geras:

As requested, on January 17, 2020, Earth Engineering Consultants, LLC (EEC) personnel provided construction observation and testing services for the referenced project. The Turnpike Reservoir property is located northeast of the intersection of County Line Road/Weld County Road 1 and Highway 52 in Erie, Weld County, Colorado. More particularly the site is located within Section 31 and the South ½ of Section 30, Township 2 North, Range 68 West of 6th PM. The services completed were provided on a part-time, on-call/as-needed basis and included field density testing of over-excavated and processed bedrock material placed and compacted to develop site grades within the pit's backfill zones as presented herein. EEC personnel also obtained a representative placed and compacted processed bedrock fill material sample by means of hand-driving a "Shelby-tube" device into the compacted layer. The retrieved compacted sample was then set up for a flex-wall Permeameter procedure: "*Hydraulic conductivity testing in general accordance with ASTM Specification D5084*" as per the agreed upon *Contractor's Quality Control/Quality Assurance Plan (CQC/QA) Plan* dated March 12, 2013. Results of the field density services completed by EEC personnel during the referenced period as well as the flex-wall Permeameter laboratory test results are provided with this report.

Field Density Testing

On January 17, 2020, EEC personnel performed field density tests on placed and compacted processed shale/siltstone bedrock fill materials that had been placed and compacted prior to our site visit. Asphalt Specialties Company, Inc. (ASCI) has been using their own resources and personnel for the on-site overburden material during the backfill operations at the Turnpike Sand & Gravel Pit. Their resources include personnel, heavy highway equipment such as Dozers, Front End Loaders, Self-

propel Compacter, Water Truck and 30 Yard Haul Trucks to place uniform lifts not to exceed 2 to 3-foot lifts. The equipment, especially the dozer and compactor, simulate the compaction efforts needed. Each lift is tested for percent compaction along with a Flex-Wall permeability testing procedure; with field density Flex Wall Permeameter test results presented herein.

The field density tests were completed at random locations and elevations in the embankment fill zone as noted herein and were performed in general accordance with ASTM Specification D6938. The results of the field density tests completed by EEC personnel during the referenced period are shown on the attached summary sheets. The field density test results, at the locations as described herein, conformed to the minimum project compaction requirements of at least 90% of standard Proctor maximum dry density (ASTM Specification D698) and were within the allotted moisture content range of 7% to 18% of the material's optimum moisture content, as per the agreed upon CQC/QA plan dated March 12, 2013.

Laboratory Testing

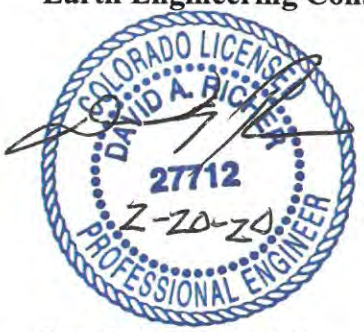
As per the CQC/QA plan, EEC personnel obtained a relatively undisturbed sample on January 17, 2020 of the previously placed and compacted processed bedrock fill material by hand driving a "Shelby-tube" device approximately 12 inches into the compacted zone. This was performed to obtain a relative "*in-tact sample*" for hydraulic conductivity testing in general accordance with ASTM D 5084 Specifications. The sample was obtained at the general location of EEC Field Density Test No. 34 (1-17-20). Laboratory testing performed on the retrieved hydraulic conductivity sample included a remolded "Flex-Wall Permeameter" test in general accordance with ASTM Specification D 5084 Method A; results are shown below and are also included on the attached summary sheet.

Hydraulic Conductivity Test Results					
Hydraulic Conductivity Sample ID	**Laboratory Testing - Soil Classification**				
	In-Situ Moisture, %	**In-Situ Dry Density, PCF**	**Final Moisture Content, %**	**Final Dry Density, PCF**	**Hydraulic Conductivity, cm/sec**
1-17-20	11.3	115.8	21.0	114.3	1.87×10^{-6}

Based on the reported field density test results and the laboratory test results as presented herein, this lift within this phase of the placed and compacted processed bedrock material, generally conforms to the project specifications and the CQC/QA plan dated March 12, 2013.

We appreciate the opportunity to work with you on this project. If you have any questions concerning this report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Consultants, LLC



David A. Richer, P.E.
Senior Geotechnical Engineer

cc: Asphalt Specialties Company — Dan Hunt (dan@asphaltspecialties.com)
David King (davidk@asphaltspecialties.com)

EARTH ENGINEERING CONSULTANTS, LLC
SUMMARY OF FIELD DENSITY TESTS

Project Name: Turnpike Reservoir - Gravel Pit Backfill

Project No: 1174016

Location: Erie, Colorado

Date: February 2020

Proctor Designation	A
Maximum Dry Density (pcf)	112.0
Optimum Moisture Content (%)	15.5%
Required Moisture Variance	7% to 18%
Required Percent Compaction	90%
Laboratory Method	ASTM D-698

Consecutive Test Number	Date	Daily Test Number	Approximate Test Location / Notes	Field Test Results				Moisture Variance	Percent Compaction	Compliance with Project Specs	
				Elev. / Lift No.	Material (Proctor)	Percent Moisture	Dry Density			Moisture (Pass / Fail)	%Comp. (Pass / Fail)
34	1/17	1	Fill - See Diagram		A	10.3%	109.7	-5.2%	98%	Pass	Pass
35	1/17	2	Fill - See Diagram		A	13.5%	114.8	-2.0%	103%	Pass	Pass
36	1/17	3	Fill - See Diagram		A	15.8%	114.3	0.3%	102%	Pass	Pass

North
Not to Scale

Field Density Test Location Diagram
Turnpike Reservoir - Gravel Pit Backfill - Erie, Colorado
EEC Project #: 1174016
Fill, Subgrade, & Aggregate Base

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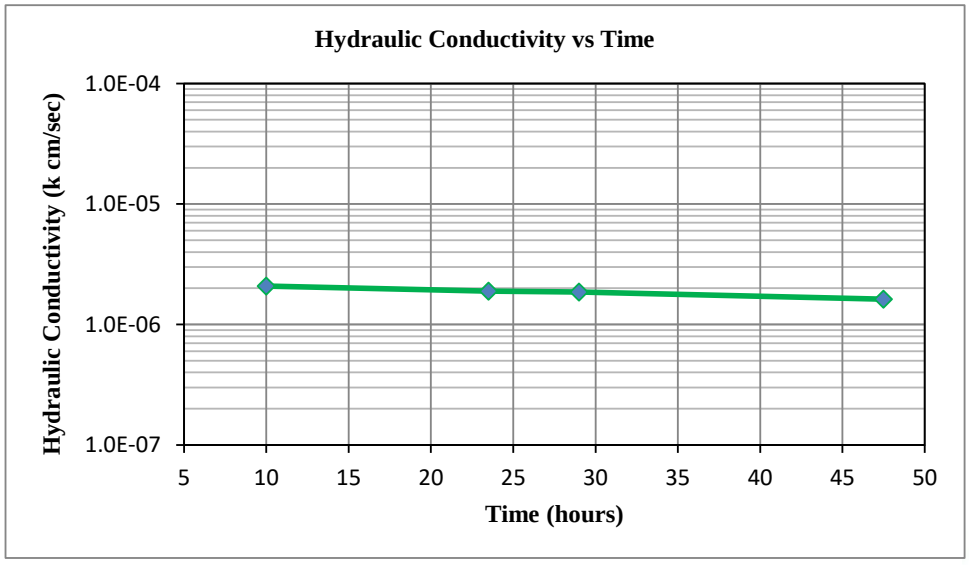
Summary of Laboratory Permeability Testing (ASTM Specification D5084)

Test Method		
Method	Description	Used
ASTM D5084	Measurement of Hydraulic Conductivity at Saturated Porous Materials Using a Flexible Wall Permeameter	Method A

Sample Description	
Sample Info	Results
Sample ID	FDT#2: Remold Sample
Sample Color	Gray
Sample Description	Processed Shale Siltstone
Liquid Limit	32
Plasticity Index	14
Passing #200 (%)	75.8
Specific Gravity (assumed)	2.650

Specimen Information		
Properties	Initial	Final
Height (in)	3.13	3.13
Diameter (in)	2.80	2.80
Area (in^2)	6.16	6.16
Volume (in^3)	19.27	19.27
Water Content (%)	11.3	21.0
Dry Density (pcf)	115.8	114.3
B Value (%)	0.95	--

Test Information / Results	
Test	Results
Permeant Used	Tap Water
Magnitude of Back Pressure (psi)	47
Effective Stress (psi)	3.0
Hydraulic Gradient	18
Measurement 1 Hydraulic Conductivity (cm/s)	2.09E-06
Measurement 2 Hydraulic Conductivity (cm/s)	1.90E-06
Measurement 3 Hydraulic Conductivity (cm/s)	1.86E-06
Measurement 4 Hydraulic Conductivity (cm/s)	1.62E-06
Average Hydraulic Conductivity (cm/s)	**1.87E-06**



Project: TURNPIKE RESERVOIR
Location: Erie, Colorado
Project No 1174016 S-Tube FDT #2 - Remold
Date: February 2020