ATTACHMENT 1

GEOTECHNICAL DATA MEMO (GDM) REPORT

MEMORANDUM

State of Alaska

Department of Transportation & Public Facilities
Design and Engineering Services – Southeast Region
Preconstruction / Materials

TO: Bran Pollard, PE
Project Manager

THRU: Mitch McDonald
Regional Engineering Geologist

FROM: Mort Larsen
Engineering Geologist

PROJECT NO: SFHWY00229

PROJECT NAME: JNU-Resurface Glacier Hwy/Willoughby: Ross Way-Channel Vista/Salmon Creek

DATE: 12/21/2020

SUBJECT: Data Memo-Geotechnical Investigation

INTRODUCTION

DOT&PF proposes to resurface and complete selected spot repairs on 1.7 miles of Glacier Highway from the intersection of Ross Way to the end of Channel Vista. The project will also address damaged sidewalks, ADA deficiencies, and selected culverts in poor condition. Intern Engineering Geologist, Kimber Harnar, completed the geotechnical investigation on August 20, 2020 at the request of the project manager, Bran Pollard, P.E. The geotechnical investigation was very limited in scope and focused on Channel Vista where spot repairs were needed. A total of two borings ranging in depth from 2-4 feet, two DCPs and two asphalt cores were completed. Due to utility conflicts within the roadway prism, the borings were limited in depth.

EXPLORATION METHODS

At each boring location an electric drill with a 6" diameter core barrel was used to cut through and remove a core of the asphalt (see Fig 1). This provides an exact thickness of the asphalt at that location and the opportunity to visually inspect the pavement layers.

Once the asphalt core was removed, a truck-mounted CME-45 drill rig operated by DOT&PF Northern Region drilling services advanced each boring by driving a 2.5" O.D., split barrel sampler, with a 340 lbs hammer to the target depth of 2-4 feet. Modified Penetration Tests (MPTs) were taken continuously and provide a measure of penetration resistance recorded on the boring logs as uncorrected blow counts. MPTs also provide a sample of the soils which are visually described in the field in accordance with the Alaska Geotechnical Procedures Manual and then transported back to the Southcoast Region Materials lab for testing. The results of the lab testing are used to confirm and modify the field descriptions recorded on the final boring logs presented in this memo. Lab testing included sieve analysis of soils (AASHTO T11, T27), moisture content (AASHTO T255), and Unified Soil Classification (ASTM D2487).

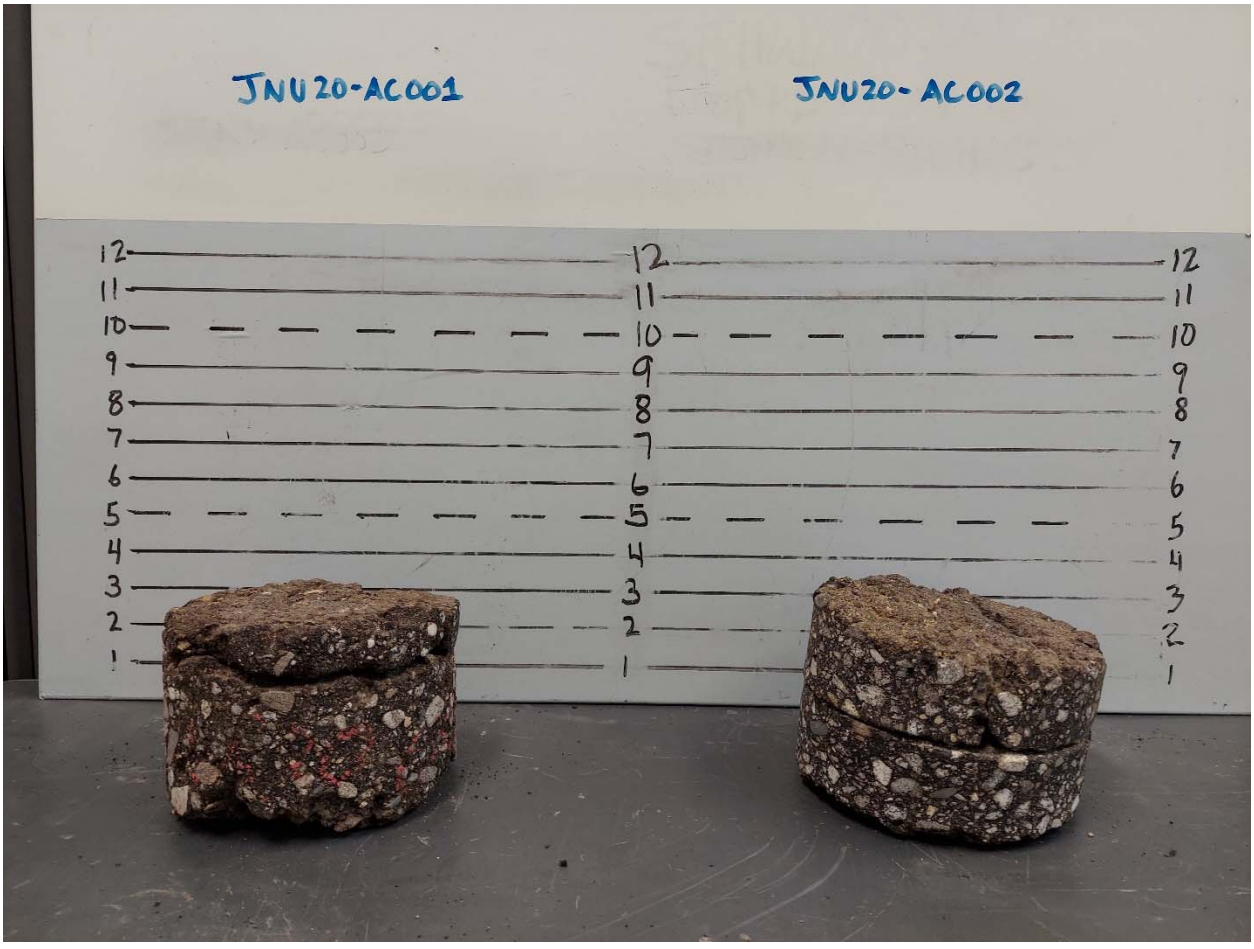
Dynamic Cone Penetrometers (DCP) were completed adjacent to both borings in accordance with ASTM D6951. The DCP is a steel rod, 1 meter in length, 16 mm in diameter, and driven with an 8 kg manual drop hammer. See attached DCP logs for field blow counts recorded at 20 mm intervals.

FINDINGS

Table 1: Summary of Borings

Boring ID	JNU20-TH001	JNU20-002
Depth	3.67’ (obstructed by utility)	2’ (target depth above utilities)
Asphalt Thickness	0.25’	0.2’
Soil Types	SP-SM, SM	SP-SM, SM
%MC by depth	4.4 / 6.7 / 16.2	4.6 / 4.7
% passing p200 by depth	6.8 / 15.2 / 20.9	9.0 / 14.8
Notes	with gravel, no groundwater	with gravel, no groundwater

Fig 1: Asphalt Cores



Attachments

- *Boring and DCP Logs*
- *Laboratory Testing Report*
- *Boring, DCP and Asphalt Core Location Map*

LOG OF TEST HOLE

Hole No. JNU20-TH001
Location Centerline
Project SFHWY JNU229 JNU: Channel Vista
Station _____ Align _____
Lat/Long / (WGS 1984)
Precision Recreational grade GPS, Accuracy 10'
Elevation feet Depth 3.67 feet

STATE OF ALASKA DOT/PF
SE Region Materials
Geology Section

Geologist K. Harnar
Field Crew Northern Region
Date Begin 8-20-20
Date End 8-20-20
Weather Light Rain, 60° F
Equipment CME 45
Hammer CME Auto Hammer (340 lbs)

Drilling Notes:
Asphalt surface, pavement data

Drilling Method	Depth in (Feet)	Casing Blows / ft.	Sample Data: Sample Method	Sample Number	SPT Blow Count	Recovery (feet)	N-Value	Sample Data	Soil Graph
Continuous SPT Sampling	1		MPT	TH001-S1	4, 3, 3	1.0		SP-SM M.C.=4.4% p200=6.8%	
	2		MPT	TH001-S2	3	0.5		SM M.C.=6.7% p200=15.2%	
	3		MPT	TH001-S3	3, 2, 1	1.6		SM M.C.=16.2% p200=20.9%	
	4				4/2				BOH
	5								
	6								
	7								
	8								

Elevation in (Feet)

SUBSURFACE MATERIAL

0-0.25': ASPHALT

0.25-1.5':, grayish brown, fine to coarse grained **Poorly Graded SAND with Silt and Gravel (SP-SM)**, dry to moist, Gravel subrounded-subangular (FILL)

1.5-3.67':, dark grayish brown, fine to coarse grained **SILTY SAND with Gravel (SM)**, moist, Gravel subrounded-rounded

Bottom Of Hole 3.67'

Refusal at 3.67, encountered possible utility? Terminated hole

Sample Definition: **SPT** - 1.5' long, 2" O.D. split spoon without a liner driven with a 140 lb. hammer dropped 30 inches. **MPT** - 2' long, 2.5" O.D. split spoon driven with a 340 lbs hammer dropped 30 inch

LOG OF TEST HOLE

Hole No. JNU20-TH002
Location Centerline
Project SFHWY JNU: Channel Vista
Station _____ Align _____
Lat/Long / (WGS 1984)
Precision Recreational grade GPS, Accuracy 10'
Elevation _____ feet Depth 2 feet

STATE OF ALASKA DOT/PF
SE Region Materials
Geology Section

Geologist K. Harnar
Field Crew Northern Region
Date Begin 8-20-20
Date End 8-20-20
Weather Light Rain, 60° F
Equipment CME 45
Hammer CME Auto Hammer (340 lbs)

Drilling Notes:
Asphalt surface, pavement data

Drilling Method	Depth in (Feet)	Casing Blows / ft.	Sample Data: Sample Method	Sample Number	SPT Blow Count	Recovery (feet)	N-Value	Sample Data	Soil Graph
Continuous SPT Sampling	0		MPT	TH002-S1	5			M.C.=4.6% p200=9.0%	
	1		MPT	TH002-S2	9 / 13			SM M.C.=4.7% p200=14.8%	
	2								BOH
	3								
	4								
	5								
	6								
	7								
	8								

Elevation in (Feet)

SUBSURFACE MATERIAL

0-0.2': ASPHALT

0.2-0.6':, grayish brown, fine to coarse grained **Poorly Graded SAND with Silt and Gravel (SP-SM)**, dry to moist, Gravel subrounded-subangular (FILL)

0.6-2':, dark grayish brown, fine to coarse grained **SILTY SAND with Gravel (SM)**, moist, Gravel subrounded-rounded

Bottom Of Hole 2'

Terminated hole at 2ft because of shallow utilities

Sample Definition: **SPT** - 1.5' long, 2" O.D. split spoon without a liner driven with a 140 lb. hammer dropped 30 inches. **MPT** - 2' long, 2.5" O.D. split spoon driven with a 340 lbs hammer dropped 30 inch

JNU: Channel Vista-SFHWY00229
DCP Logs

Depth (mm)	Blows	Driving Notes	Depth (mm)	Blows	Driving Notes
20			620	2	
40			640	1	
60			660	2	
80		Asphalt	680	1	
100			700	2	
120			720	1	
140			740	1	
160	6		760	1	
180	4		780	1	
200	7		800	1	
220	4		820	1	
240	5		840	1	
260	4		860	1	
280	2		880	1	
300	5		900	1	
320	5				
340	4				
360	4				
380	4				
400	5				
420	5				
440	4				
460	5				
480	4				
500	5				
520	4				
540	5				
560	4				
580	4				
600	3				

Project: JNU: Channel Vista

Pr. No.: SFHWY00229
DCP No.: JNU20-DCP001
Station:
Start Time:
Stop Time:

Existing Pvmt Type & Thickness

Asphalt- 0.6

Hammer: 8 kg
Drop: 20mm
Date: 8/20/2020
Lat:
Long:

Depth (mm)	Blows	Driving Notes	Depth (mm)	Blows	Driving Notes
20		Asphalt	620	9	
40			640		
60	4		660		
80	4		680		
100	4		700		
120	4		720		
140	4		740		
160	4		760		
180	4		780		
200	6		800		
220	5		820		
240	5		840		
260	4		860		
280	4		880		
300	6		900		
320	4				
340	5				
360	4				
380	4				
400	5				
420	4				
440	5				
460	5				
480	5				
500	6				
520	7				
540	7				
560	7				
580	11				
600	12				

Project: JNU: Channel Vista

Pr. No.: SFHWY00229
DCP No.: JNU20-DCP002
Station:
Start Time:
Stop Time:

Existing Pvmt Type & Thickness

Asphalt- 0.6

Hammer: 8 kg
Drop: 20mm
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Lat:
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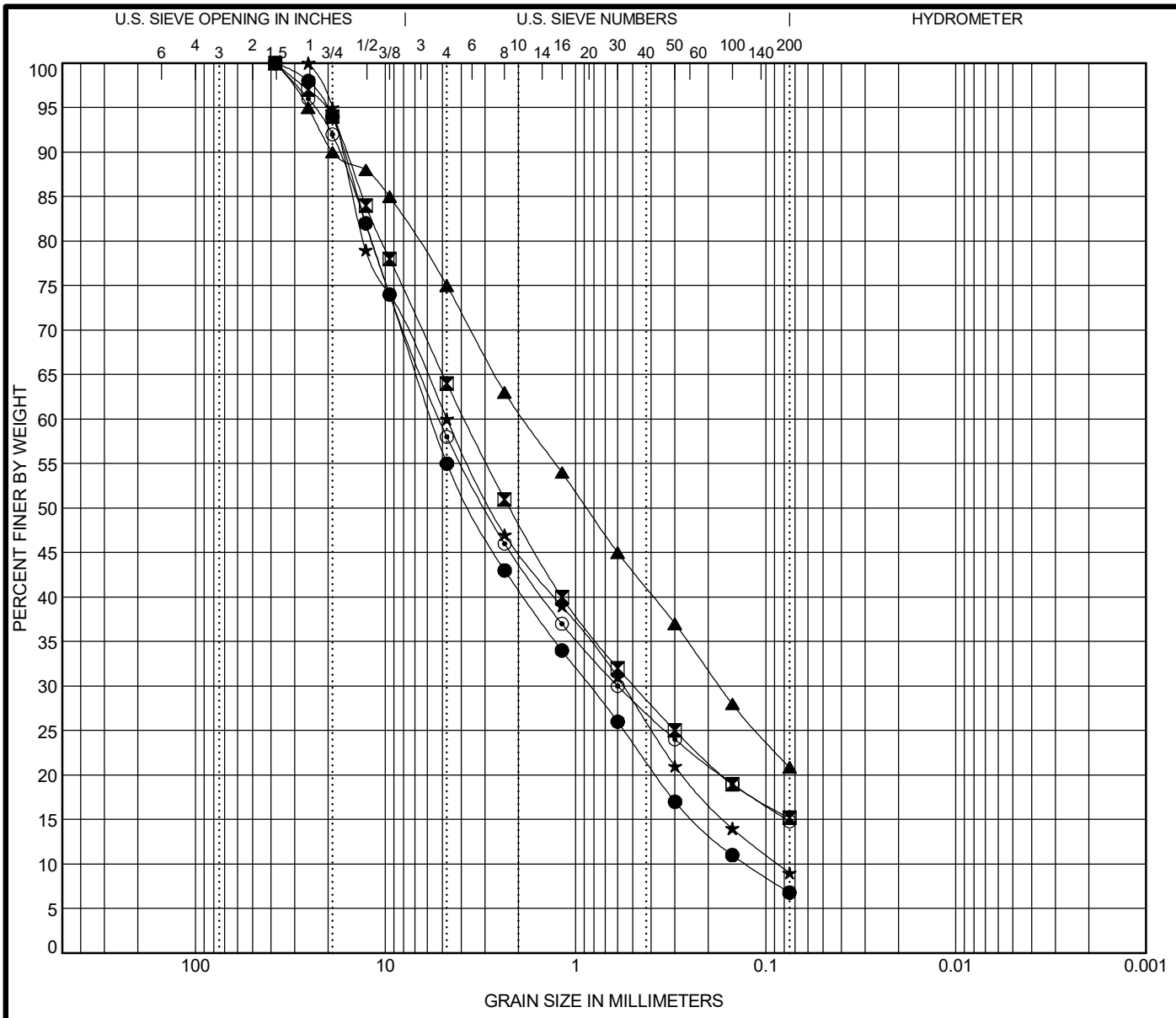

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample # / Depth	Lab #	Classification (USCS & AASHTO)	% Organics	% MC	LL	PL	PI
●	JNU20-TH6001		POORLY GRADED SAND with SILT and GRAVEL(SP-SM) (A-1-a)		4.4			
⊠	JNU20-TH5001		SILTY SAND with GRAVEL(SM) (A-1-a)		6.7			
▲	JNU20-TH4001		SILTY SAND with GRAVEL(SM) (A-1-b)		16.2			
★	JNU20-TH2002		POORLY GRADED SAND with SILT and GRAVEL(SP-SM) (A-1-a)		4.6			
⊙	JNU20-TH6002		SILTY SAND with GRAVEL(SM) (A-1-a)		4.7	NV	NP	NP

	Sample # / Depth	Cc	Cu	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	JNU20-TH6001	0.98	44.82	38	5.7	0.841	0.127	45.0	48.2	6.8	
⊠	JNU20-TH5001			38	3.83	0.492		36.0	48.8	15.2	
▲	JNU20-TH4001			38	1.873	0.175		25.0	54.1	20.9	
★	JNU20-TH2002	0.77	55.13	25.4	4.75	0.56	0.086	40.0	51.0	9.0	
⊙	JNU20-TH6002			38	5.18	0.6		42.0	43.2	14.8	

Alaska Department of Transportation

Juneua, AK
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SUBSURFACE DATA: LAB DATA SHEET

Location:

Project: JNU: Channel Vista

Number: SFHWY00229

US GRAIN SIZE JNU 00229.GPJ 71100 SE AKDOT MOD DEC 2005.GDT 12/2/20

DRAFT

TH-002

TH-001

EXPLANATION

JNU-Geotech Investigation

Type

⊙ Boring-DCP-AC

N

400 200 0 400 Feet

GEOTECH INVESTIGATION-SFHWY00229

JUN: GLCR Hwy/Willougby: Ross WY-CHNL Vista/Salmon Creek

State of Alaska
Department of Transportation and Public Facilities
Southcoast Region

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