Addendum No. 1 December 28, 2022

LEA COUNTY, NEW MEXICO



ALABAMA STREET RECONSTRUCTION NIGP COMMODITY CODE # 91371 BID # 03 - (22-23)

NOTICE TO BIDDERS:

- 1. This Addendum is issued to all plan holders. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.
- 2. The Bidder shall acknowledge receipt of this Addendum in Section 3 Bid Form, page 3.2.
- 3. All terms, conditions, and requirements of the original project manual and construction documents shall remain in place unless explicitly mentioned in this Addendum.
- 4. All bids shall be sealed, addressed and delivered <u>no later than 2:00 p.m. (local time) on</u> <u>Tuesday, January 03, 2023</u> to the:

Finance Director Finance Department, 4th Floor Lea County Courthouse 100 N. Main, Suite 11 Lovington, New Mexico 88260-4030

5. Bids will be officially opened and publicly read aloud <u>after 2:00 p.m. (local time) Tuesday,</u> January03, 2023 in the:

Commission Chambers, 1st Floor Lea County Courthouse 100 N. Main Lovington, New Mexico 88260

Addendum No. 1 December 28, 2022

- 6. Invitation for Bids, as advertised in newspapers, showed the bid number as # 06-(21-22). The correct bid number is # 03-(22-23).
- 7. The correct contact emails are <u>DRoybal@pettigrew.us</u> and <u>RZalmanek@pettigrew.us</u>.
- 8. Question: Will the utility owner be covering the cost of the gas meter remove and relocate, or will this cost also fall to the contractor?

Answer: Gas Meter removal/relocation will be paid for by owner and/or utility owner. Contractor is not responsible for these costs as well as any related costs to meter removal/relocation.

9. Question: Will the utility owner be covering the cost of the power pole remove and relocate, or will this cost also fall to the contractor?

Answer: Power Pole removal/relocation will be paid for by owner and/or utility owner. Contractor is not responsible for these costs as well as any related costs to pole removal/relocation.

10. Question: Is there a detail for the fence?

Answer: There is not a detail provided for fencing. Proposed fencing and fence removal/relocation shall match existing fence material or be of equal quality.

11. Question: What is the existing ROW width?

Answer: In general, a 60' ROW width is observed for the project. Final ROW maps will be provided to the contractor upon contract award.

12. Question: Is it required to bid the same unit pricing for each bid lot?

Answer: Same pricing for each bit lot is not required but it should be noted that both bid lots will be awarded and constructed as one project.

13. Question: Is there a bid item for Rip Rap?

Answer: There is not a bid item for Rip Rap. Rip rap shall be considered incidental to bid item 511030 Structural Concrete, CL AA.

14. Question: Was there a geotechnical report done for this project?

Answer: A pavement investigation report was completed for the project and is attached to this addendum for reference.

Addendum No. 1 December 28, 2022

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David Roybal, P.E. Project Engineer



Acknowledgement of this Addendum is required in Section 3 – Bid Form, Page 3.2.



PAVEMENT INVESTIGATION REPORT

Alabama Street Pavement Investigation N. Lovington Hwy to N. Dal Paso Street Hobbs, New Mexico



Debra P. Hicks, PE/LSI NM 10871

PREPARED FOR:

Corey Needham Lea County P.O. Box 1106 Hobbs, New Mexico 88241

PROJECT No. 2021.1127

July 19, 2022



PREFACE

This report is generated specifically for the purpose of providing design criteria for the Alabama Street Pavement Investigation – Hobbs, New Mexico. Under no circumstances shall it be used for any other project on or off the site. This report is meant to provide information that will inform Lea County of appropriate design criteria for the planned use. The conditions encountered in field exploration and reported herein are accurate for the test location(s), time and conditions. It is not meant to eliminate the uncertainty regarding the potential for variation or changes in subsurface conditions at the site. Subsurface descriptions contained herein are of a generalized nature to provide highlights of major strata and conditions revealed in the soil samples, however it represents only the conditions at the actual boring locations.

Jum P. Hicks

Debra P. Hicks, PE/LSI NM 10871



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Scope

This report presents the results of the Pavement Investigation performed on September 2, 2021 through September 3, 2021 for Alabama Street. Lea County proposes to reconstruct approximately 5.3 miles of Alabama Street – beginning at N. Lovington Hwy and ending at N. Dal Paso Street. This investigation was performed at the direction and authorization of Lea County.

The purpose of this investigation is to determine the characteristics of the subsoils and pavement recommendations.



Site Description

	Alabama Street – Between N. Lovington Hwy	32°47′54.18312″	STA: 4+98.93
	& N. World Drive	-103°12′59.13308″	OFF: 6.48 RT
	Alabama Street – Between N. Lovington Hwy	32°47′54.24668″	STA: 20+83.98
DH-02	& N. World Drive	-103°12′40.56718″	OFF: 4.84 LT
	Alabama Street – Between N. Lovington Hwy	32°47′54.13546″	STA: 31+11.25
DU-02	& N. World Drive	-103°12′28.53530″	OFF: 3.90 RT
	Alabama Street – Between N. Lovington Hwy	32°47′54.19418″	STA: 43+83.92
DU-04	& N. World Drive	-103°12′13.62818″	OFF: 5.13 LT
	Alabama Street – Between N. Lovington Hwy	32°47′54.05319″	STA: 57+31.23
DI FOS	& N. World Drive	-103°11′57.47390″	OFF: 4.76 RT
BH-06	Alabama Street – Between N. World Drive &	32°47′54.17432″	STA: 70+31.97
DI I-00	N. Bensing Road	-103°11′42.61158″	OFF: 6.44 LT
	Alabama Street – Between N. World Drive &	32°47′54.02575″	STA: 83+65.50
DI FO7	N. Bensing Road	-103°11′26.99215″	OFF: 7.15 RT
	Alabama Street – Between N. World Drive &	32°47′54.1850″	STA: 96+82.50
DI FUO	N. Bensing Road	-103°11′11.56625″	OFF: 5.83 LT
	Alabama Street – Between N. World Drive &	32°47′54.07531″	STA: 111+18.20
DI F09	N. Bensing Road	-103°10′54.75021″	OFF: 5.43 RT
ВП 10	Alabama Street – Between N. World Drive &	32°47′54.19390″	STA: 122+10.30
DIFIO	N. Bensing Road	-103°10′41.95869″	OFF: 5.62 LT
RH_11	Alabama Street – Between N. Bensing Road &	32°47′54.09329″	STA: 135+57.60
	N. Grimes Street	-103°10′26.17765″	OFF: 5.92 RT
RH_12	Alabama Street – Between N. Bensing Road &	32°47′54.10192″	STA: 144+51.71
DIFIZ	N. Grimes Street	-103°10′15.70515″	OFF: 5.59 LT
BH-13	Alabama Street – Between N. Bensing Road &	32°47′54.10192″	STA: 160+80.08
DIT IS	N. Grimes Street	-103°09′56.63220″	OFF: 5.49 RT
BH_14	Alabama Street – Between N. Bensing Road &	32°47′54.23724″	STA: 176+2.9
	N. Grimes Street	-103°09'38.79714"	OFF: 7.26 LT
RH_15	Alabama Street – Between N. Bensing Road &	32°47′54.07410″	STA: 188+66.11
	N. Grimes Street	-103°09'23.99972"	OFF: 5.57 RT
BH-16	Alabama Street – Between N. Bensing Road &	32°47′54.18844″	STA: 202+75.98
DIFIO	N. Grimes Street	-103°09'07.48654"	OFF: 4.21 LT
BH_17	Alabama Street – Between N. Bensing Road &	32°47′54.08311″	STA: 219+41.00
DIFT	N. Grimes Street	-103°08'47.98408"	OFF: 7.24 RT
ВП 10	Alabama Street – Between N. Grimes Street &	32°47′54.21857″	STA: 226+79.70
DU-10	N. Dal Paso Street	-103°08′39.33191″	OFF: 6.12 LT
ВП 10	Alabama Street – Between N. Grimes Street &	32°47′54.06670″	STA: 239+41.73
DIFIS	N. Dal Paso Street	-103°08′24.55019″	OFF: 8.17 RT
	Alabama Street – Between N. Grimes Street &	32°47′54.20383″	STA: 256+13.73
DH-20	N. Dal Paso Street	-103°08'04.96624"	OFF: 4.68 LT
	Alabama Street – Between N. Grimes Street &	32°47′54.09656″	STA: 286+12.03
DU-71	N. Dal Paso Street	-103°07′50.93094″	OFF: 4.67 RT



Field Exploration

Twenty-one (21) bore holes were drilled using a contracted drill rig with Atkins Engineering – Roswell, NM. The field investigation consisted of advancing through the asphalt with a hollow stem auger. Each borehole was advanced approximately five (5) feet below the surface or to auger refusal and soil samples were collected utilizing a split-spoon sampler. Soil samples were tested for engineering properties.

Laboratory Analysis

Representative samples were tested in the laboratory to determine certain engineering properties of the soils. Mechanical analysis and soil constant determinations were performed for classification and identification of each soil type encountered. Classifications are in accordance with the Unified Soil Classification System ASTM D 2487. The results of the laboratory tests are presented on the Logs.

The following tests were conducted on selected soil samples:

- Moisture Content
- Sieve Analysis
- Atterberg Limits



Discussion

The following discussion and recommendations are based upon the results of field and laboratory testing, engineering analyses, experience with similar soil conditions, and our understanding of the proposed project.

The Log of Borings presents the existing structural section encountered in the field investigation. The existing structural section includes asphalt surfacing varying approximately 1.5" to 3.0" thick underlain by clayey, silty sand and gravel to a depth of 5'0" (+/-) below ground surface. Estimated R-Values for subgrade range from 11 to 69.

Borehole ID	Chip Seal
BH-01	3.0″
BH-02	2.5″
BH-03	2.5″
BH-04	1.5″
BH-05	2.0″
BH-06	1.5″
BH-07	2.0″
BH-08	1.5″
BH-09	2.0″
BH-10	2.0″
BH-11	2.0″
BH-12	2.0″
BH-13	2.0″
BH-14	1.5″
BH-15	1.5″
BH-16	2.0"
BH-17	2.5″
BH-18	2.0″
BH-19	2.5″
BH-20	2.0"
BH-21	2.5″



Recommendations

PAVEMENT RECOMMENDATIONS: The subgrade should be proof-rolled to observe for unsuitable or weak soils. At least five (5) passes with a heavy Pneumatic Rubber Tire Roller should be made during proof-rolling. Proof-rolling operations should be observed by a representative of Pettigrew & Associates, P.A. Unstable and unsuitable soils, which are revealed by proof-rolling and which cannot be adequately densified in-place, should be removed under the direction of the Pettigrew & Associates, P.A. representative. It may be necessary to perform selective removal of soft, wet soils and/or stabilize existing soft soils in-place. If required, the methods of stabilization will typically include incorporating fly ash, a lift of crushed stone materials, or a geosynthetic over the soft soils. The identification of areas that may require undercutting and/or stabilization should be based on the actual conditions at the time of construction, and will depend on the location of the soft area.

The remaining subgrade and embankment should be compacted in lifts to a minimum of 95% of the maximum proctor density of ASTM D-1557, Modified Proctor Moisture-Density Relationship. The moisture content should also be controlled to +/- 2% of the optimum. The subgrade should be tested by a representative of Pettigrew & Associates, P.A and approved for placement embankment or base course.

A project R-value of 30 is recommended. Unsuitable A-2-6 and A-6 material should be:

- (a) Removed and replaced with an A-2-4 soil (pit run caliche) or,
- (b) In accordance with FWHA-IP-80-2, "Soil Stabilization in Pavements Structures-A User's Manual."

Field verification of subgrade R-values is recommended. The recommended structural section is determined by utilizing the AASHTO Pavement Design Guide and the NMDOT Design Directive. The proposed structural section is presented on the following page.



Flexible Pavement Design

Alabama Street

Design Parameters

Regional Factor	0.8
Design Period	20 years
Serviceability Index (Pt)	2.0
Estimated ESALS Cum. (Flex)	238,318 per lane
Project Minimum R-VALUE	30
Structural Number required	1.9

Proposed Structural Section:

Flexible Required 18-kip Required	Pavement 9 ESAL = 476,635 ¹ d SN = 1.9
НМА	3"
Base Course	6″
Calculated SN	1.98
Design Life	20 years

Design Assumptions: This design is based upon traffic counts collected between November 2nd and 8th, 2021 were the basis of this design. The City of Hobbs Thoroughfare Plan (2005) categorizes North Grimes Street as a major arterial road and Alabama Street as a major arterial road. As a major arterial road, Alabama Street is expected to experience traffic levels equal to those of North Grimes Street.

¹ ESALS determined using 2% growth rate and 2021 traffic counts.



Closure

Our conclusions, recommendations and opinions presented herein are based upon our evaluation and interpretation of the findings of the field and laboratory investigation. **If during construction, conditions are found to be other than those presented in this report, this office should be consulted.** Pettigrew & Associates, P.A appreciates the opportunity to provide our services on this project and looks forward to working with you during construction and on future projects. Should you have any questions, please do not hesitate to contact us.



Boring Location Maps









Logs and Summaries

ENGI		PE & AS		ATES PA								E	BORI	NGN	10.:	BH-0	1
CLIEN PROJ DATE	ECT NA ECT NA DRILL	AME: D.: ED:	Lea Alab 2021 9-2-	County ama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TC	ATES ELEV E DEP WAT	: ATIOI TH: TR:	Lat.32 Long. N: 4'4" N/A	2.7984° -103.21 3,708.	164° 6'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	W TES	% PASSING #200		PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	dau (psd)	SHEAR STRENGTH (tsf)

	L	Brown Clayey Sand AASHTO A-2-6											
	17		sc	12.2	100	96	93	71	25.0	26	15	11	3,940
				11.8									
	80/7*	White Silty Sand w/ Gravel AASHTO A-1-b		4.6									>8,000
			SM		100	69	52	33	16.3	SNP	SNP	SNP	
Alla	50/1"	1		N/A									>8.000

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DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LUMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(jsd) nb	SHEAR STRENGTH (tsf)

0		3" Chipseal											
	14	Brown Clayey Sand AASHTO A-2-6	sc	11.8	100	96	93	71	25.0	26	15	11	3,060
	50/2*	White Sity Sand w/ Gravel AASHTO A-1-b		3.6									>8,000
	50/1*	-	SM	N/A	100	69	52	33	16.3	SNP	SNP	SNP	>8,000

 SPLIT SPOON SAMPLE
 AIR ROTARY
 WATER
 SHELBY SAMPLE
 #

 100 E. Navajo Drive
 Suite 100
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 F 575 393 1543
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CLIENT: Lea County COORDINATES: Lat.32.7984° Long103.2079° PROJECT NAME: Alabama Street SURFACE ELEVATION: 3,703.8' PROJECT NO.: 2021.1127 BOREHOLE DEPTH: 4'5" DATE DRILLED: 9-2-2021 DEPTH TO WATER: N/A LABORATORY TEST DATA Image: Complex and the street of the s	ENGI		PE & AS		GREW IATES PA								E	BORI	NGN	10.:	BH-0	3
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-	[S CHIPAGA						_	<u> </u>		<u> </u>	-	4
10	Brown Silty Sand AASHTO A-2		10.5									1,410
		SM		100	97	93	84	34.8	N/A	N/A	N/A	
<u> </u>			13.9									
57/11"	White Silty Sand w/ Gravel		5.9									>8,000
	AASHTO A-1-b	SM		100	69	52	33	16.3	SNP	SNP	SNP	
50/2"			N/A									>8,000

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		2" Chipseal			-		-	-	-		-	-	
	31	Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4		7.8									>8,000
5	50/1*		SC-SM	5.3	92	66	54	42	19.6	23	19	4	>8,000
	50/6*	White Silty Sand w/ Gravel	SM	8.8	100	69	52	33	16.3	SNP	SNP	SNP	>8,000

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0		23	2" Chipseal Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4		9.4									5,700
-	×	50/4*		SC-SM	7.8	92	66	54	42	19.6	23	19	4	>8.000
5-		53	White Silty Sand w/ Gravel AASHTO A-1-b	SM	7.6	100	69	52	33	16.3	SNP	SNP	SNP	>8,000

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REFINING QUALITY SINCE 1965 COORDINATES: Lat.32.7984° Long103.1952° COORDINATES: Lat.32.7984° Long103.1952° SURFACE ELEVATION: 3,696.6° BOREHOLE DEPTH: 4'2" DEPTH TO WATER: N/A COORDINATES: Lat.32.7984° Long103.1952° SURFACE ELEVATION: 3,696.6° BOREHOLE DEPTH: 4'2" DEPTH TO WATER: N/A OPTH TO WATER: N/A Intervention of the parameter of the)	PE & AS	TTIC ssoci	ATES PA								E	BORI	NGN	10.:	BH-0	6
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	1 2 Chipseal			_			-	1		_	_	1
24	Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	7.8	92	66	54	42	19.6	23	19	4	6,000
	Brown Sand AASHTO A-2	N/A	15.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
42	White Silty Sand w/ Gravel		5.3									>8,000
	AA3110 A-1-0	SM		100	69	52	33	16.3	SNP	SNP	SNP	
50/0"	1		N/A									>8,000

WATER

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+	6 060
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4 N/A	7,140
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		2" Chipseal		-	-				-		-		
	41	Brown Clayey Sand AASHTO A-6	1	8.1									>8,000
			sc	8.9	98	90	86	80	39,7	26	14	12	
	27	Brown Silty Sand w/ Gravel AASHTO A-1-b	SM	5.1	89	66	56	43	17.4	SNP	SNP	SNP	5,160
X	49	White Silty Sand (CALICHE) AASHTO A-2	SM	7.2	100	92	83	69	15.6	SNP	SNP	SNP	>8,000



		RE AS		ATES PA								E	BORI	NGN	10.:	BH-0	9
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NC DRILL	AME: D.: ED:	Lea Alai 202 9-2-	County Dama Street 1.1127 2021				LAB	ORATO	RYTES		FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATIOI TH: ER:	Lat.32 Long. N: 4'4" N/A	2.7984° -103.18 3,691.	819° 8'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200		PLASTIC LUMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(jsd) nb	SHEAR STRENGTH (tsf)

00		2" Chipseal	-				-		-		-		
	52	Brown Silty Sand w/ Gravel AASHTO A-1-b		8.0									>8,000
	36		SM	8.5	89	66	56	43	17.4	SNP	SNP	SNP	7,140
	50/2*			6.3									>8,000



ENGI		PE & AS		ATES PA								E	BORI	NGN	10.:	BH-1	0
CLIEN PROJ PROJ DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alab 202 9-3-	County Dama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TC	ATES ELEV E DEP WAT	: ATIOI TH: ER:	Lat.32 Long. N: 5'8" N/A	.7984° -103.17 3,692.	'83° 6'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(Jsd) nb	SHEAR STRENGTH (tsf)

0		2" Chipseal	-				-	-	-		-	-	
	8	Reddish-Tan Clayey Sand AASHTO A-6	1	13.0									1,290
	12	_	sc	12.9	100	96	93	88	42.0	29	13	16	2,470
	10	Red Silty Sand AASHTO A-2	SM	12.0	100	99	97	92	30.7	N/A	N/A	N/A	1,410



		RE A		ATES PA								E	BORI	NG N	10.:	BH-1	1
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County pama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES: ELEV/ E DEP WAT	: ATION TH: ER:	Lat.32 Long. I: 5'8" N/A	.7984° -103.17 3,688.9	'39° 9'
	MBOL	ERED	ы		ATION			LAB	DRATO	RY TES	TDATA		(14	EX (PI)	CITY (psf)		TH (tsf)
DEPTH (FT)	LITHOLOGIC SYI	SAMPLE RECOV	BLOWS PER FOC	DESCRIPTION	SOIL CLASSIFIC	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #20	LIQUID LIMIT (LI	PLASTIC LIMIT (I	PLASTICITY IND	BEARING CAPAC	(Jsd) nb	SHEAR STRENG

36	2" Chipseal Brown Silty Sand w/ Gravel AASHTO A-1-b		9.1									7,140
50/4*		SM	6.7	89	66	56	43	17.4	SNP	SNP	SNP	>8.000
64	White Silty Sand (CALICHE) AASHTO A-2	SM	6.5	100	92	83	69	15.6	SNP	SNP	SNP	>8,000



ENGI		& AS	SOC	IATES PA													
	NTN G ECT N/ ECT N/ DRILL	AME: D.: ED:	Lea Ala 202 9-3	County bama Street 21.1127 -2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATIOI TH: ER:	Lat.32 Long. N: 5'8" N/A	.7984° -103.17 3,681.	'1° 5'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LLL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	dın (bst)	SHEAR STRENGTH (tsf)
0		$\overline{\mathbf{A}}$		2" Chipseal Brown Clayey Sand AASHTO A-6		12.1											

13	AASHTO A-6		12.1									2,760	
21		sc	13.2	98	90	86	80	39.7	26	14	12	5,120	
5			8.7									3,940	

 SPLIT SPOON SAMPLE
 AIR ROTARY
 WATER
 SHELBY SAMPLE
 #

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		RE AS		GREW ATES PA								E	BORI	NGN	10.:	BH-1	3
CLIEN PROJ PROJ DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County pama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: ER:	Lat.32 Long. N: 5'8" N/A	.7984° -103.16 3,682.	57° 1'
								LAB	DRATO	RY TES	T DATA	\ 			Ģ		
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (p	(Jsd) nb	SHEAR STRENGTH (tsf)

\mathbb{N}		2" Chipseal Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	9.8	99	81	71	61	28.6	24	17	7	
	36	White Silty Sand w/ Gravel (CALICHE)	1	12.0									7,140
		AASHTO A-1-b											
● a	40		SM	8.0	99	79	65	47	21.4	SNP	SNP	SNP	>8,000
• •													
• q • q	15	-		12.9									2,510

		PE & AS		ATES PA								E	BORI	NGN	10.:	BH-1	4
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County pama Street 1.1127 2021							COO SURI BOR DEPT	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: TR:	Lat.32 Long. N: 5'8" N/A	.7984° -103.16 3,680.1	08° 1'
								LAB	DRATO	RY TES	T DATA				(js		
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	(TIGNID FIWIL (FT	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (p.	(Jsd) nb	SHEAR STRENGTH (tsf)

	29	2" Chipseal Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	7.8	99	81	71	61	28.6	24	17	7	7,470
• • • • • • • •	59	White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b		9.1									>8,000
• • • • •	31	-	SM	15.1	99	79	65	47	21.4	SNP	SNP	SNP	6,040

		RE AS		ATES PA								E	BORI	NGN	10.:	BH-1	5
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County Dama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: ER:	Lat3: Long. N: 5'1" N/A	2.7984° -103.15 3,679.	67° 7'
								LAB	ORATO	RY TES	T DATA	1					
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(Jsd) nb	SHEAR STRENGTH (tsf)

		2" Chipseal					-					-	
	22	Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	11.8	99	81	71	61	28.6	24	17	7	4.060
•		White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b											
• 0 0 0	54	-	SM	16.0	99	79	65	47	21.4	SNP	SNP	SNP	>8,000
	50/5"	_		19.1									>8,000

ENGI		RE A		GREW								E	BORI	NGN	10.:	BH-1	6
CLIEN PROJ PROJ DATE	IT: ECT N/ ECT N/ DRILL	AME: O.: .ED:	Lea Alal 202 9-3-	County Dama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: ER:	Lat.32 Long. I: 5'8" N/A	.7984° -103.15 3,674.9	i21° 9'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	RY TES 04# 5NISSING %	% PASSING #200	TIGUID LIMIT (LLL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(Jsd) nb	SHEAR STRENGTH (tsf)

		2" Chipseal			_	-							
X	26	Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	8.9	99	81	71	61	28.6	24	17	7	6,590
	50/3*	Reddish-White Silty Sand w/ Gravel AASHTO A-1-b	SM	7.2	95	71	52	32	15.8	N/A	N/A	N/A	>8,000-
• • • • • • • • • • • • • • • • • • •	60	White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b	SM	10.6	99	79	65	47	21.4	SNP	SNP	SNP	>8,000

		RE A		GREW ATES PA								E	BORI	NGN	10.:	BH-1	7
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County Dama Street 1.1127 2021							COO SURI BOR DEPT	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: ER:	Lat.32 Long. I: 5'9" N/A	.7984° -103.14 3,670.9	67° 9'
	ABOL	RED	۲ ۲		LION			LAB	DRATO	RY TES	TDATA		۲IJ	EX (PI)	(TY (psf)		(H (tst)
DEPTH (FT)	LITHOLOGIC SYA	SAMPLE RECOVE	BLOWS PER FOO	DESCRIPTION	SOIL CLASSIFICA	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	LIQUID LIMIT (LL	PLASTIC LIMIT (P	PLASTICITY INDI	BEARING CAPAC	(Jsd) nb	SHEAR STRENGT

12	3" Chipseal Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4		11.6									2,470
17		SC-SM	11.0	99	81	71	61	28.6	24	17	7	3,940
• • • • • • • • • • • • • • • • • • •	White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b	SM	11.4	99	79	65	47	21.4	SNP	SNP	SNP	3,620

		PE & AS		ATES PA								E	BORI	NGN	10.:	BH-1	8
CLIEN PROJ PROJ DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alat 202 9-3-	County pama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: TR:	Lat.32 Long. N: 4'5" N/A	.7984° -103.14 3,666.	143° 3'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	00 # 10 MISSING #10	% PASSING #40	% PASSING #200		PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(Jsd) nb	SHEAR STRENGTH (tsf)

		2" Chipseal	-			-	-	-	-		-		
- 🛛	21	Brown Silty, Clayey Sand w/ Gravel AASHTO A-2-4	SC-SM	11.3	99	81	71	61	28.6	24	17	7	5,120
	50/4"	Reddish-White Silty Sand w		10.9 10.0									>8,000
• 0 • 0		AASHTO A-1-b	SM		95	71	52	32	15.8	N/A	N/A	N/A	
	50/3*	White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b	SM	9.7	99	79	65	47	21.4	SNP	SNP	SNP	8,000



	0	PE & AS	TTIC ssoci	ATES PA								E	BORI	NGN	10.:	BH-1	9
	NING ECT NA ECT NA DRILL	AME: D.: ED:	Lea (Alab 2021 9-3-:	County ama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TC	ATES ELEV E DEP WAT	: ATIOI TH: TR:	Lat.32 Long. N: 5'7" N/A	.7984° -103.14 3,661.	102° 7'
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	00 # SNISSING #10	RY TES 0## ONISSEN %	% PASSING #200		PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	dır (bət)	SHEAR STRENGTH (tsf)

0	 3" Chips	eal													L
	9 Brown Cl AASHTC	layey Sand) A-6		12.3									1,590		
	5		sc	12.5	100	98	94	84	37.1	29	15	14	410		
5-	 \$/10"			7.3									>8,000		



		RE AS		ATES PA								E	BORI	NGN	10.:	BH-2	0
CLIEN PROJ PROJ DATE	IT: ECT N/ ECT NO DRILL	AME: D.: ED:	Lea Alab 202 9-3-	County bama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES ELEV E DEP WAT	: ATION TH: TR:	Lat.32 Long. N: 5'8" N/A	-103.13 3,659.	147° 8'
EPTH (FT)	THOLOGIC SYMBOL	AMPLE RECOVERED	LOWS PER FOOT	DESCRIPTION	OIL CLASSIFICATION	MOISTURE	PASSING 3/4"	PASSING #4	PASSING #10	DASSING #40	PASSING #200	IONID LIMIT (LL)	LASTIC LUMIT (PL)	LASTICITY INDEX (PI)	EARING CAPACITY (psf)	(jsd) n	HEAR STRENGTH (tsf)

	1	2" Chipseal	SM	7.6	100	70	57	44	18.3	N/A	N/A	N/A	
7.7.		White Silty Sand w/ Gravel AASHTO A-1-b	1 Sm	1.0	100				10.0	INCA	10.0	100/5	
	15	Brown Clayey Sand AASHTO A-6		10.9									3,350
	13		sc	10.7	100	96	94	84	37.1	29	15	14	2,760
				11.3									
	12	White Silty Sand w/ Gravel (CALICHE) AASHTO A-1-b	SM	10.6	99	79	65	47	21.4	SNP	SNP	SNP	1,850

 SPLIT SPOON SAMPLE
 AIR ROTARY
 WATER
 SHELBY SAMPLE
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		RE AS	SSOCI	ATES PA								E	BORI	NG N	0.:	BH-2	1
CLIEN PROJI PROJI DATE	IT: ECT N/ ECT NG DRILL	AME: D.: ED:	Lea Alai 202 9-3-	County pama Street 1.1127 2021							COO SUR BOR DEP	RDIN FACE EHOL TH TO	ATES: ELEV/ E DEP WAT	: ATION TH: ER:	Lat.32 Long. I: 4'8" N/A	.7984° -103.13 3,658.2	:08° 2'
						-		LAB	DRATO	RY TES	T DATA	\ 					
DEPTH (FT)	LITHOLOGIC SYMBOL	SAMPLE RECOVERED	BLOWS PER FOOT	DESCRIPTION	SOIL CLASSIFICATION	% MOISTURE	% PASSING 3/4"	% PASSING #4	% PASSING #10	% PASSING #40	% PASSING #200	(TIGNID LIMIT (LLL)	PLASTIC LIMIT (PL)	PLASTICITY INDEX (PI)	BEARING CAPACITY (psf)	(Jsd) nb	SHEAR STRENGTH (tsf)

		2" Chipseal											
	<u> </u>	White Silty Sand w/ Gravel AASHTO A-1-b	SM	6.3	100	70	57	44	18.3	N/A	N/A	N/A	
	7	Brown Clayey Sand AASHTO A-6		13.6									1,000
		_	sc		100	98	94	84	37.1	29	15	14	
2Å	5			13.6									410
		White Silty Sand w/ Gravel (CALICHE)											
	50/5*	AASHTO A-1-5	SM	6.9	99	79	65	47	21.4	SNP	SNP	SNP	>8,000





775 CM35555 \\

TERMS DESCRIBING CONSISTENCY OR CONDITION GENERAL NOTES COARSE-GRAINED SOILS (major partices retained on No. 200 skeve), includes (1) clean 1. Classifications are based on the United Soit Classification gravel and sands and (2) sity or dayay gravels and sands. Condition is rated according to retailye density as determined by latoratory tests or standard penetration resistance tests System and include consistency, inclution, and color. Field descriptions have been modified to reflect results of faboratory tests where deemed appropriate. Descriptive Terms Relative Density 0 to 15 % SPT Blow Count 2. Surface elevations are based on topographic maps and estimated Very loose ×4 Loose 15 to 35 % 4 10 10 Incations Medium dense 35 to 65 % **1**0 to 30 65 10 85 % Descriptions on these boring logs apply only at the specific boring focations and at the time the borings were made. they are not 30 to 50 Dense Very dense 85 to 100 % > 50 guaranteed to be representative of subsurface conditions at other FINE-GRAINED SOILS (major portions passing on No. 200 slove); includes (1) inorganic and organic sits and obye, (2) gravely, sandy, or sity days, and (3) dayey sits. Consistency is reled according to shearing strength, as indicated by penetrometer readings, SPT blow cauto. locations or times. or unconfined compression tests. Unconfined Compressive Descriptive Terms Strength kPa SPT Blow Count Very soft Soft < 26 < 225 to 50 2:54 Nedum stiff 50 to 100 4 to 8 848 160 to 200 8 10 15 Very Still 260 to 400 15:5030 Hard > 400 > 30 င်) စဆု Typesal Marries Lionnatory Class Reation Ontera Maps Develops e anne i D_{60} greater than 4. $C_c = \frac{N_{-200}}{D_{10} \times D_{60}}$ Crean grave (Little or incfrees) Well-graded gravels, gravel-sand \$ 200 to \$ 400 Ocaves Norr Inser 1915 of costan foction -Tanger Frank Ko, 4 sevels vel GW 10000 ್ಮ= -between 1 and 3 0.# ∩l 0⊁ g 40 N 10 AM Dio Sove seres mixtures, little or no fines 0020 -(ere s ro) Drick'n ne percentagna af sand and growd form goer aele curro. Decendeng en per entage et finner (frach en seneker bært kar 200 e ouwster granset ooks mei ditpar fickwis. Poorly-graded gravels, gravel-vand 1000 GР Not meeting all gradation requirements for GW minutes little of polices ĝ Graves with fitter (Accreted for number of for Atterberg limits below "A" Above "A" line with P.1 1040 with fixes đ GM' Silty gravels, gravel-sand-silt mixtures ź line or P.I. less than 4. between 4 and 7 are sredsow stige Parth Pactor P border-line cases. 26 . 26 26 . 26 Attendeng limits below "A" requiring use of coal Cleyey gravels, gravel-sand-sitt 31.36 GC mixtures line or P.I. greater than 7 symbols deriver cases GP. S GC. S 6.674 h 0.42 0.42 to 2.03 Juanse-Gra Z.00 to 4.76 $\frac{D_{60}}{D_{10}}$ greater than 6: $C_{0} = \frac{C_{30}}{D_{30} \times D_{60}}$ $(D_{30})^2$ Clears sands Little or no kres) Well-graded sands, graveliy sands, r certo Presenta < 0.074 C, 7 SW 36 D₁₀ -between 1 and 3 C.S. 4 serve 5-28) litte or no lines Poorly-greated sands, grevelity sands, 201 J-Pt. 1 SP Not meeting all gradation requirements for SW 000000 the or no floas. than 5 percent spue (more trues rust of no arraiter trues Nu. 4 Sinds with thes (Active coector arrund of ferme) Above "A" line with P.I Attenberg limits below "A" CARS BUILD ŗ, \$M' Sity sands, send-sit: nixtures line or P.L less than 4 between 4 and 7 are Cost than ! Soll or Day Waters/ border-line cases Conse Attenberg limits below "A" little or P.I. greater than 7 Neder requiring use of eace Q Ç 2 Byed SC Clayey sands, same-day mixtures symbols inorganic sits and very line sands, MŁ rock floor, silly or devey fine series or (an dayey sits with slight presticity inorganic clays of low to medium Sols and Olive (Liqued Fort less Proct60) Part No. 200 surve s 80 54.5 34 01 10 341 12.11 88 21 S (340 3 n. tc 1 plasticity, gravely clays, sandy clays, 735 CE 1 52 AL sitty clays, lean clays NICHY MUCEX (14) 15 45 15 15 626 Organic sits and organic sitty days of OL. four plasticity 504 A.A A and how a norganic sits, micaceous or diato-MH maceious fine sandy or sitty solis, 524.5 to 9'4.4 đ 75.2 to 504.6 30 18.1 to 75.2 Siti and Cays duged find greater (ner 60) Electrony organic site i dicele: 5 4,7516 121 20 inorganic clays of high plasticity, fat Сн MH to CH davs Ľ, 7772 101 or D Organic clays of medium to high 9 ΩЧ 10 20 86 4 50 50 70 FC) SE 901 150 plasticity, organic sitts 0.08480 LIQUED ELET (LL) Boardare ż 00008 会社市た НЪС П 0.000 stos Seas Seas $\{ \boldsymbol{u}_i \}$ Peat and other highly organic soils Plasticity Chart

SPORTE.

Evention of GM and SM groups into supplications of d and a white modes and avfields only. Subdivisions based on Abstang Pinds

...

Foil example; GW-GC, well-graded gravel-sand mature whickay order.



APPENDIX B – TERMINOLOGY

TERMINOLOGY USED TO DESCRIBE THE RELATIVE DENSITY, CONSISTENCY, OR FIRMNESS OF SOILS

The terminology used on the boring logs to describe the relative density, consistency, or firmness of soils relative to the standard penetration resistance is presented below. The standard penetration resistance (N) in blows per foot is obtained by ASTM D1586 procedure using 2" O.D., 1-3/8" I.D. samplers.

1. Relative Density. Terms for description of relative density of cohesionless, uncemented sands and sand-gravel mixtures.

N	Relative Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
50+	Very Dense

2. Relative Consistency. Terms for the description of clays which are saturated or near saturation.

N	Relative Consistency	Remarks
0 - 2	Very Soft	Easily penetrated several inches with fist
3 - 4	Soft	Easily penetrated several inches
5 - 8	Medium Stiff	Can be penetrated several inches with thumb with moderate effort
9 - 15	Stiff	Readily indented with thumb, but penetrated only with great effort
16 - 30	Very Stiff	Readily indented with thumbnail
30+	Hard	Indented only with difficulty with thumbnail

3. Relative Firmness. Terms for the description of partially saturated and/or cemented soils which commonly occur in the Southwest including clays cemented granular materials, silts, and silty and clayey granular soils.

Ν	Relative Firmness	
0 - 4	Very Soft	
5 - 8	Soft	
9 - 15	Moderately Firm	
16 - 30	Firm	
31 - 50	Very Firm	
50+	Hard	