ENGINEERING & TESTING CONSULTANTS INC.

January 18, 2024

Town of Chino Valley
Attn: Mr. Steve Sullivan, PE
1982 Voss Drive, #201
Chino Valley, AZ 86323

SUBJECT: REPORT OF SOIL SURVEY AND PAVEMENT THICKNESS DESIGN FOR THE FOLLOWING ROADS IN CHINO VALLEY, ARIZONA:

- **N. REED ROAD – W. ROAD 1 NORTH TO W. ROAD 3 NORTH**
- **N. ROAD 1 EAST– JUNIPER DRIVE TO PERKINSVILLE ROAD**

Dear Mr. Sullivan:

Engineering & Testing Consultants, Inc. (ETC) has completed the geotechnical engineering services for the proposed roadway improvements described above. Boring Location Maps are attached as Figures 1 and 2.

The purpose of this exploration was to determine the existing pavement structure and subsurface soil conditions along both road segments at the locations indicated, which provide a basis for the conclusions and recommendations for pavement thickness design and soil design factors.

This report discusses the general site conditions, laboratory test results, and provides pavement structure recommendations and suggested construction procedures and design parameters. These services were provided following accepted soil mechanics and engineering practices. We make no other warranty, either implied or expressed.

If soil conditions are encountered during construction that differ from those presented herein, this firm should be notified for evaluation.

PROJECT INFORMATION AND SITE CONDITIONS

We understand that the projects will include roadway improvements for a portion of N. Reed Road and N. Road 1 East.

Significant cracking and potholes were observed throughout both roads. A build-up of soil along the edges of the roads in areas appears likely to limit efficient drainage of surface water.

Some driveways/accesses to adjacent properties were observed to either not have culverts, or installed culverts were blocked, which can cause water in bar ditches to pond which can negatively affect road subgrade soils. This was more prevalent along **N. Road 1 East**. In addition, bar ditches and drainage along the edges of **N. Road 1 East** in areas appeared to be lacking adequate control of storm water drainage.

SUBSURFACE CONDITIONS

ETC performed a total of five (5) exploratory test borings along **N. Reed Road**. Four (4) borings were performed along **N. Road 1 East**.

The test borings were drilled in both southbound and northbound lanes using our truck mounted Mobile B-47 Drilling Rig equipped with a 4-inch diameter continuous flight auger and 4.5-inch diameter cutter head with carbide tipped fingerbit inserts. The borings were backfilled with auger cuttings and patched with a compacted cold mix of asphaltic concrete.

A more detailed description of the existing pavement structure and subgrade soil conditions encountered at each of the nine boring locations is included on the boring logs attached in Appendix A. Boring Location Maps are attached to this report as Figures 1 and 2.

N. Reed Road – W. Road 2 North to W. Road 3 North

Borings B-1 through B-3 drilled along this section of N. Reed Road encountered approximately 2 to 3 inches of asphaltic concrete (AC) underlain by a thin older/weak layer of AC, chip seal, millings, granular select material, and/or base course material.

Clayey subgrade soils were encountered at depths of approximately 6¾ to 11¾ inches below the pavement surface.

The clayey subgrade soils consist of medium and medium-high plasticity Sandy Clay (CL) and Clayey Sand (SC).

Subgrade soils along this section of N. Reed Road are very weak, or soft/loose. The soils generally become firm at depths of 2 to 3.5 feet below the pavement surface. ETC is recommending pavement improvements include additional compaction and/or over-excavation along this section of N. Reed Road to adequately strengthen the very weak subgrade soils encountered.

N. Reed Road – W. Road 2 North to W. Road 1 North

Borings B-4 and B-5 drilled along this section of N. Reed Road encountered approximately ½ to ¾ inches of chip seal or asphaltic concrete (AC), aggregate base course material (ABC).

Clayey subgrade soils were encountered at depths of approximately 6¾ and 9 inches below the pavement surface in borings B-4 and B-5, respectively.

The clayey subgrade soils consist of medium and medium-high plasticity Sandy Clay (CL). The clayey subgrade soils encountered in this section of N. Reed Road were found to be firm, or stiff.

We are providing an option for this section of N. Reed Road that includes pulverizing/milling the existing pavement structure in-place with thorough compaction for a select subbase that can be overlaid with a new asphaltic concrete layer.

N. Road 1 East – E. Perkinsville Road to Juniper Drive

Borings B-6 through B-9 drilled along this section of N. Road 1 East encountered approximately 3¾ to 6 inches of AC, ship seal, older/weak AC, and/or millings.

The asphaltic materials are underlain by 2 to 5¾ inches of what appeared to be relatively poor quality base course material and/or granular select material.

Clayey subgrade soils were encountered at depths of approximately 6¼ to 9.5 inches below the pavement surface.

The clayey subgrade soils consist of medium to high plasticity clayey soils (Sandy Clay, CL & Clayey Sand, SC). The clayey subgrade soils encountered were found to be firm, or medium dense/stiff.

We are providing an option for this section of N. Road 1 East that includes pulverizing/milling the existing pavement structure in-place with thorough compaction for a select subbase that can be overlaid with a new asphaltic concrete layer.

LABORATORY TESTING

Atterberg limits, gradation, and moisture content laboratory testing was performed for representative soil samples collected during the field operation. A summary of the laboratory test results is shown below in Table 1. Laboratory testing was performed in accordance with applicable ASTM standards.

As shown in Table 1, the subgrade soils encountered along both roads are typically very clayey, with medium and medium-high plasticity indices.

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Road	Boring	Depth	Liquid Limit (%)	Plasticity Index	Moisture Content (%)	Fines Content (%)	Gravel Content (%)	USCS
N. Reed Road	B-1	2 – 4	42	19	15.7	71	1	CL
	B-3	¾ – 2	33	14	10.9	43	12	SC
	B-4	1 – 4	36	17	14.6	66	3	CL
N. Road 1 East	B-9	1 – 3	37	19	10.0	38	3	SC
	B-8	1 – 2¼	44	22	17.9	63	2	CL

PAVEMENT STRUCTURAL SECTIONS

Site grading for pavement areas should be as outlined herein, to provide subgrade support of flexible pavements.

Efficient surface water drainage must be provided and maintained to help prevent excessive moisture infiltration into the subgrade soils.

Traffic volume data provided to us included up to 2,792vpd on this section of Reed Road, and up to 2,701vpd on this section of North Road 1 East.

We applied a traffic growth rate of 2% per year, a directional split of 60/40 for design lane, and a traffic composition that includes 2% heavy trucks.

The recommended pavement sections, discussed herein, were determined using design methods outlined in the Asphalt Institute's "Thickness Design-Asphalt Pavements of Highways and Streets," (MS-1) 9th ed., and other selected design parameters from ADOT Materials, "Preliminary Engineering and Design Manual," 1992 which are based upon AASHTO design guidelines.

Using the above data, ETC has determined the structurally equivalent full depth pavement sections presented in Table 2.

Prepared subgrade soils in all roadway areas shall be proof-rolled to verify stable subgrade soil conditions prior to placement of the new pavement structure.

The recommendations provided herein are expected to function with periodic maintenance or overlays when the subgrade, base, and pavement are constructed in accordance with accepted construction standards.

TABLE 2
PAVEMENT STRUCTURAL SECTIONS

Road	Alternative	Asphaltic Concrete Thickness (inches)	Aggregate Base Thickness (inches)	Prepared Subgrade Thickness (inches)
N. Reed Road (W. Road 3 North through W. Road 2 North)	1	3	10	8
	2	4	7	8
N. Reed Road (South of W. Road 2 North)	1	3	11	8
	2*	4	8	8
N. Road 1 East (S of Perkinsville Rd through E. Road 2 North)	1	3	11	8
	2*	4	8	8
N. Road 1 East (S of E. Road 2 North)	1	3	9	8
	2*	4	6	8

*Note: Herein, ETC has discussed an option to pulverize the existing pavement structure in-place prior to installation of a new asphaltic concrete layer.

N. Reed Road – W. Road 2 North to W. Road 3 North

As discussed herein, subgrade soils along this section of N. Reed Road were found to be soft and loose and will require increased compaction for adequate stabilization.

Extended compaction with a large vibratory sheepsfoot roller may be sufficient to stabilize the weak subgrade soils. Alternatively, the weak soils shall be over-excavated to a minimum depth

of 12 inches. After thorough compaction of the exposed ground surface, the removed soils may be replaced in moisture conditioned and compacted lifts.

N. Road 1 East &
N. Reed Road – South of W. Road 2 North

If desired, the existing pavement structure along these road sections may be milled/pulverized in-place and blended with the underlying base material. However, depths of existing pavement materials varied significantly. Therefore, for this method of construction special care would need to be taken so as to not contaminate the blended pavement materials with the underlying clayey subgrade soils.

Four (4) inches of new asphaltic concrete could then be installed on the pulverized, blended, and compacted pavement materials, which would be in general conformance with Table 2.

This method of construction is likely not suitable north of Road 2 North on Reed Road, due the loose/soft subgrade soils that need to be addressed prior to installation of the new pavement structure.

Recycled Pavement Materials

We have discussed pulverizing of existing pavement with a pulverize/milling machine and blending of the underlying, granular material. Depths of existing pavement materials varied significantly. Therefore, during grading operations special care and attention must be taken so as to not contaminate the existing pavement materials with the underlying clayey subgrade soils.

If pulverized and blended existing pavement materials will be used, the proposed material should be sampled, and tested prior to use, to ensure the material has not become contaminated by the underlying clayey subgrade.

In addition, the existing pavement structure may be pulverized, thoroughly mixed, and incorporated into a new pavement section as a select subbase.

If desired, new ABC may be replaced with recycled/reclaimed pavement materials at a ratio of 1.25:1 (reclaimed select: new ABC). For example, 10 inches of recycled pavement materials may be used to replace 8 inches of new required ABC in Table 2.

EARTHWORK

The exposed ground surface shall be scarified, moisture conditioned and compacted to a minimum depth of 8 inches prior to placement of new pavement structure.

The materials testing firm shall be contacted to observe that the ground surface has been adequately prepared prior to placement of aggregate base or subgrade fill.

All subbase fill required to bring the structured areas up to subgrade elevation should be placed in horizontal lifts not exceeding 8 inches compacted thickness. All soils within the roadway prism shall be compacted to a minimum relative density of 95% maximum dry density at a moisture content of +/-2% of optimum moisture content, per ASTM D698. Clay soils should be compacted at a moisture content range of -4% to +1% of optimum.

ETC recommends the observation of the grading operation with sufficient test to verify proper compaction and adequate moisture content.

N. Reed Road – W. Road 2 North to W. Road 3 North

As discussed herein, borings B-1 through B-3 drilled along this section of N. Reed Road encountered soft and loose clayey Subgrade soils to depths ranging from approximately 2 to 3.5 feet below the existing pavement surface.

ETC is recommending site grading work along this section of N. Reed Road include additional compaction to adequately strengthen the very weak subgrade soils encountered.

Adequate stabilization and compaction of the weak subgrade soils may be able to be accomplished with extended compaction using a large vibratory sheepsfoot roller. Alternatively, the weak subgrade soils may be over-excavated at least 12 inches. The exposed ground surface should be scarified, moisture conditioned, and thoroughly compacted prior to replacement of the removed soils in moisture conditioned and compacted lifts.

LIMITATIONS

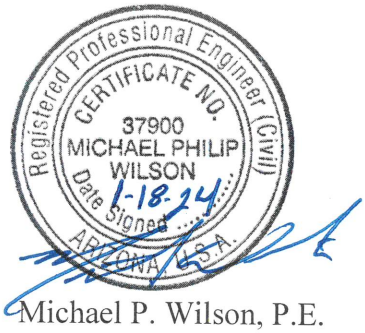
The recommendations in this report were prepared in accordance with accepted professional engineering principles and soil mechanics practices. We make no other warranty, either implied or expressed. If during subsequent planning and construction, conditions are different than as indicated, this firm should be notified for evaluation.

This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction techniques to be used on this project. ETC has not reviewed building or grading plans for the proposed construction.

Engineering & Testing Consultants, Inc. is pleased to provide these services and we are available to discuss the results of this evaluation at your convenience.

Sincerely,

ENGINEERING & TESTING CONSULTANTS, INC.

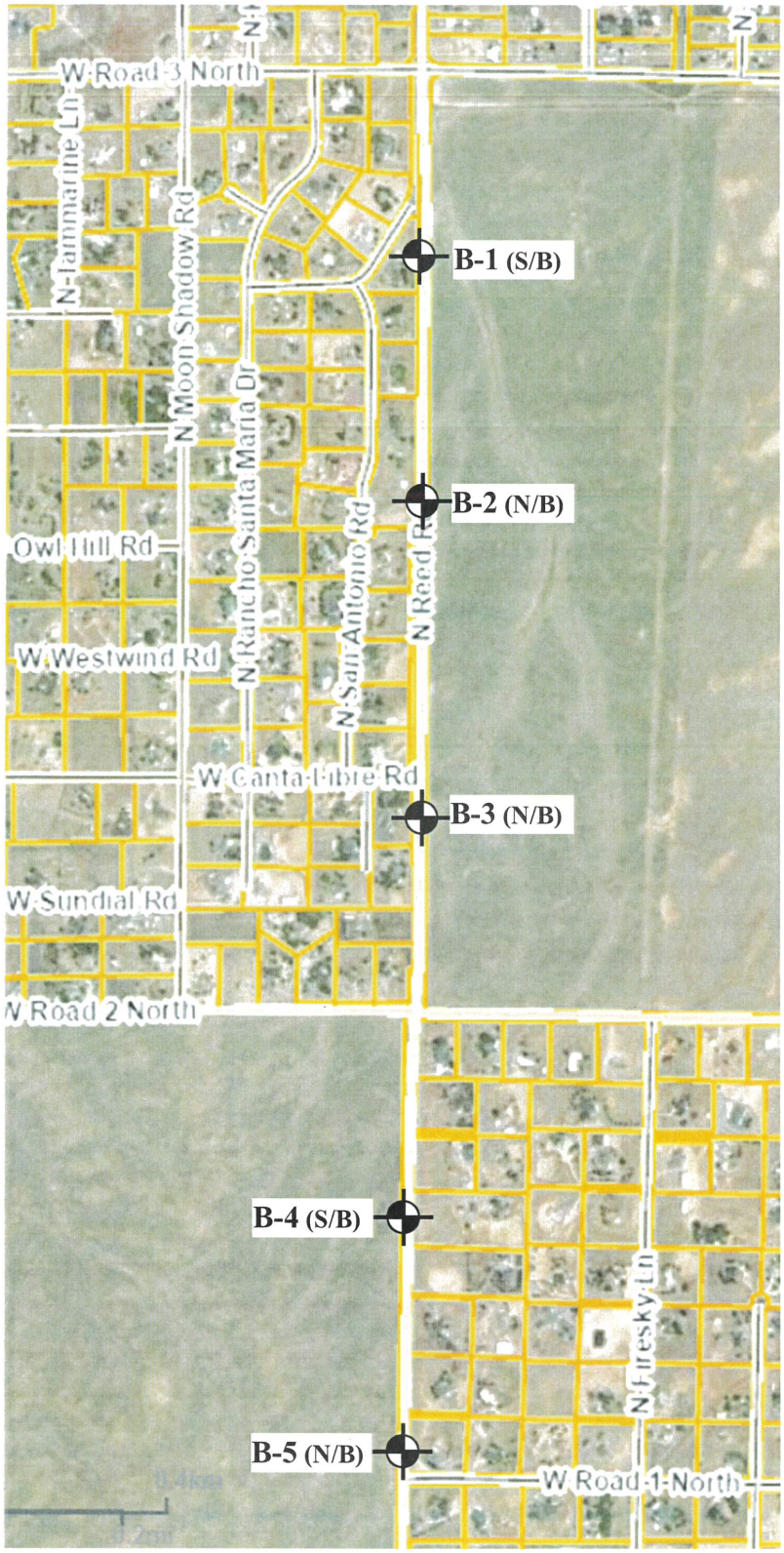


Michael P. Wilson, P.E.
Project Engineer

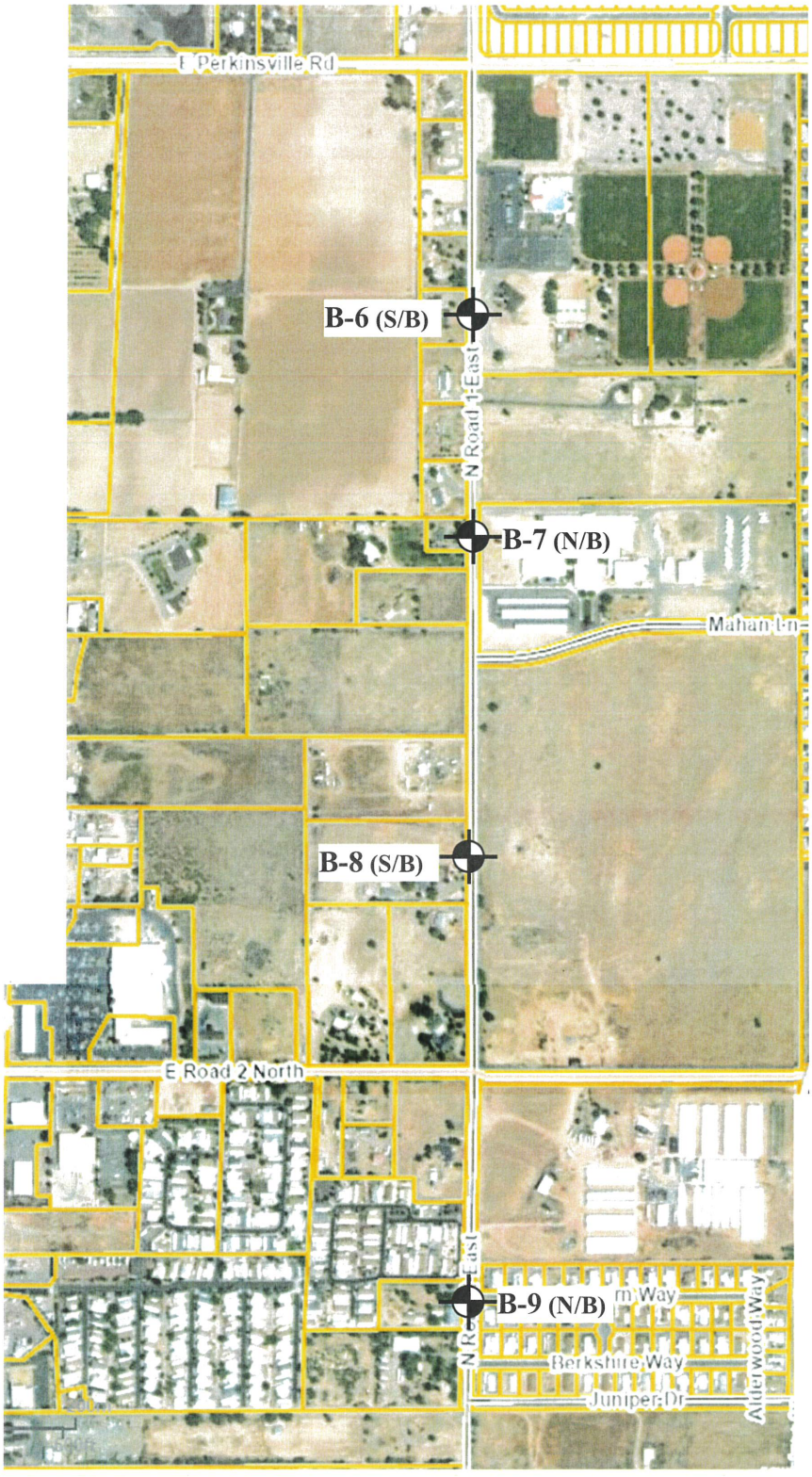
Reviewed by: Richard G. Kelley, P.E.
Project Manager

Attachment: Figures 1 & 2
Appendix A

cc: ETC File No. 12444



Engineering & Testing Consultants, Inc. •Subsurface Drilling •Geotechnical •Environmental Support	**FIGURE 1** **BORING LOCATION MAP**	ETC
Drawn by: others Date: 01/09/24 Project No: ETC 12444 Page No:	N. Reed Road Chino Valley, AZ	



Legend

Approximate Boring Location

N

Engineering & Testing Consultants, Inc. •Subsurface Drilling •Geotechnical •Environmental Support	**FIGURE 2** **BORING LOCATION MAP**	
Drawn by: others Date: 01/09/24 Project No: ETC 12444 Page No:	N. Road 1 East Chino Valley, AZ	

APPENDIX A

FIELD EXPLORATION

GENERAL NOTES

DESCRIPTIVE SOIL CLASSIFICATION:

Soil Classification is based on the Unified Soil Classification System and ASTM Designations D-2487 and D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: Clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS:

N-Blows/ft.	Consistency
0-2	Very Soft
3-4	Soft
5-8	Medium
9-16	Stiff
17-32	Very Stiff
33+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft.	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL:

Description Term(s) (of Components Also Present in Sampling)	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY:

Major Component of Sampling	Size Range
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES:

Description Term(s) (of Components Also Present in Sampling)	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

UNIFIED SOIL CLASSIFICATION SYSTEM*

				Soil Classification	
				Group Symbol	Group Name [B]
COARSE-GRAINED SOILS More than 50 % retained on No. 200 sieve	Gravels More than 50 % of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5 % fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]	GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]	GP	Poorly graded gravel [F]
		Gravels with Fines More than 12 % fines [C]	Fines classify as ML or MH	GM	Silty gravel [F,G,H,]
			Fines classify as CL or CH	GC	Clayey gravel [F,G,H]
	Sands 50 % or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5 % fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]	SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]	SP	Poorly graded sand [I]
		Sands with Fines More than 12 % fines [D]	Fines classify as ML or MH	SM	Silty sand [G,H,I]
			Fines classify as CL or CH	SC	Clayey sand [G,H,I]
FINE-GRAINED SOILS 50 % or more passes the No. 200 sieve	Silts and Clays Liquid limit less than 50	inorganic	PI > 7 and plots on or above "A" line [J]	CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay [K,L,M,N] / Organic silt [K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay [K,L,M]
			PI plots below "A" line	MH	Elastic silt [K,L,M]
		organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay [K,L,M,P] / Organic silt [K,L,M,Q]
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12 % fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D] Sands with 5 to 12 % fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15 % sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15 % gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.

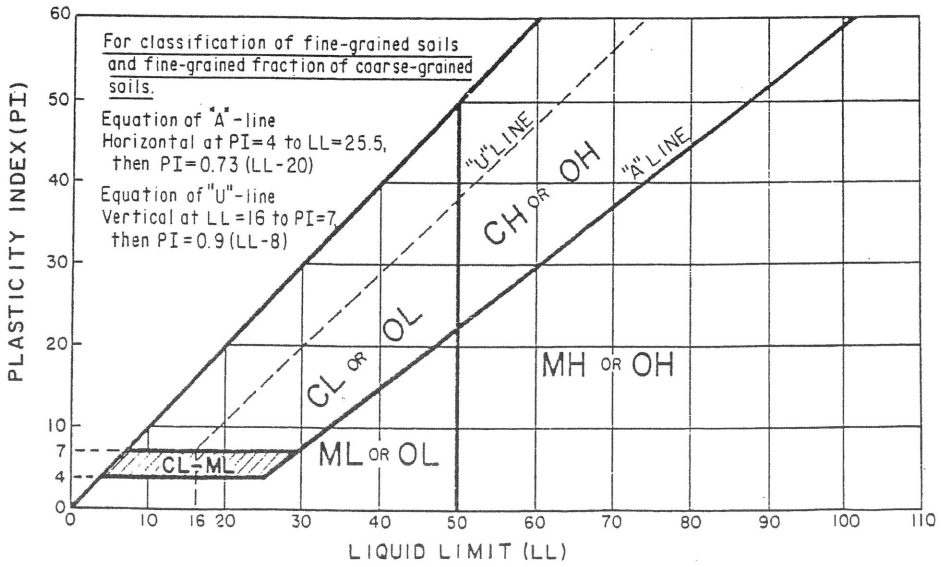
[M] If soil contains ≥ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



LOG OF BORING NO. B-1

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Reed Road - See Figure 1 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	3" ASPHALTIC CONCRETE	AC				
	8-3/4" BASE COURSE MATERIAL	AB				Likely base course and millings material
1	CLAY WITH SAND, light brown, damp-moist, some calcification, Soft to Medium Stiff	CL				Soft Clay
2	Stiff					Stiff Clay
3					● —	
4						
	Boring terminated at 4.5 feet depth.					
5						
6						
7						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING NO. B-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Reed Road - See Figure 1 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	2" ASPHALTIC CONCRETE, newer	AC				
	1.75" WEAK AC OR CHIPSEAL	AC				
	3" BASE COURSE/GRANULAR MATERIAL	AB				
	CLAY WITH SAND, light brown to brown, moist, Soft	CL				Soft Clay
1						
2						
3						
	Light brown, some calcification, Stiff					Stiff Clay
4						
	Boring terminated at 4.5 feet depth.					
5						
6						
7						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING NO. B-3

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Reed Road - See Figure 1 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	2" ASPHALTIC CONCRETE, newer	AC				
	1.5" ASPHALTIC CONCRETE, Older/ Weak	AC				Possible Chip Seal layer
	5" MILLINGS/SELECT MATERIAL	AB				
1	CLAYEY SAND, light brown to brown, high clayey fines, moist, Loose	SC			● ⊢▨⊣	Loose
2	Light brown					
3	SANDY CLAY, light brown, damp-moist, Stiff	CL				Stiff Clay
4						
	Boring terminated at 4.5 feet depth.					
5						
6						
7						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING NO. B-4

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Reed Road - See Figure 1 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	3/4" ASPHALTIC CONCRETE/ CHIPSEAL	AC				
	6" BASE COURSE MATERIAL	AB				
	SANDY CLAY, dark brown, moist, Medium Stiff to Stiff	CL				
1						
2						
3						
	Stiff					
4						
	Boring terminated at 4.5 feet depth.					
5						
6						
7						

LOG OF BORING NO. B-5

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East
PROJECT NO.: 12444
CLIENT: Town of Chino Valley
DATE: 01-09-2024
LOCATION: N. Reed Road - See Figure 1
ELEVATION: ---
DRILLER: ETC
LOGGED BY: M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	1/2" to 3/4" CHIPSEAL/AC	AC				
	8.5" BASE COURSE MATERIAL	AB				
1	SANDY CLAY, orangish-brown, moist, Stiff	CL				
2	SANDY CLAY, light brown, med PI, Medium Stiff	CL				
3	Stiff					
4						
5	Boring terminated at 4.5 feet depth.					
6						
7						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING NO. B-6

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Road 1 East - See Figure 2 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	2.5" ASPHALTIC CONCRETE	AC				
	1.5" MILLINGS-TYPE MATERIAL	AB				
	2.5" BASE MATERIAL, poor to fair quality.	SC				
1	CLAYEY SAND, brown to dark brown, moist, med-high PI, high clayey fines, Medium Dense					
2						
	Boring terminated at 2.5 feet depth due to utilities.					
3						
4						
5						
6						
7						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

LOG OF BORING NO. B-7

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Road 1 East - See Figure 2 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	2" ASPHALTIC CONCRETE	AC				
	2.25" MILLINGS-TYPE MATERIAL					
	2" BASE COURSE MATERIAL	AB				
1	SANDY CLAY, light brown, moist, med-high PI, some calcification, Stiff	CL				
2	High PI					
3	Damp					
4						
5	Boring terminated at 4.5 feet depth.					
6						
7						

LOG OF BORING NO. B-8

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East | **PROJECT NO.:** 12444
CLIENT: Town of Chino Valley | **DATE:** 01-09-2024
LOCATION: N. Road 1 East - See Figure 2 | **ELEVATION:** ---
DRILLER: ETC | **LOGGED BY:** M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	3/4" ASPHALTIC CONCRETE/CHIP SEAL	AC				
	3" WEAK AC/MILLINGS	AB				
	2-1/4" BASE COURSE MATERIAL					
1	3.5" GRANULAR/SELECT MATERIAL	SC				
	CLAYEY SAND, brown to dark brown, moist, high PI, high clayey fines, Medium Dense				● —	
2						
	SANDY CLAY, light brown, damp-moist, med-high PI, Stiff	CL				
3						
4						
	Boring terminated at 4.5 feet depth.					
5						
6						
7						

LOG OF BORING NO. B-9

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: N. Reed Road & N. Road 1 East
PROJECT NO.: 12444
CLIENT: Town of Chino Valley
DATE: 01-09-2024
LOCATION: N. Road 1 East - See Figure 2
ELEVATION: ---
DRILLER: ETC
LOGGED BY: M. Wilson
DRILLING METHOD: Continuous flight auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	2-1/4" ASPHALTIC CONCRETE	AC				
	3-3/4" MILLINGS-TYPE MATERIAL					
	2" BASE COURSE MATERIAL, poor quality	AB				
1	CLAYEY SAND, dark to brown, moist, high PI, high clayey fines, Medium Dense	SC				
	Brown					
2					● ——	
3	Sandier					
	Boring terminated at 3.5 feet depth.					
4						
5						
6						
7						

KEY TO SYMBOLS

Symbol Description

Strata symbols

Asphaltic Concrete

Aggregate base material

Low plasticity clay

Clayey sand

Soil Samplers

Bulk sample taken from 4 in. auger

Notes:

1. Exploratory borings were drilled on 01-09-2024 using a 4-inch diameter continuous flight power auger.

2. No free water was observed at the time of drilling.

3. Boring locations were estimated from existing site features.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.