REFERENCE: U-5808

PROJECT: 44381.1.1

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *UNION*

PROJECT DESCRIPTION *CHESTNUT LANE CONNECTOR (SR 1362) FROM MATTHEWS INDIAN TRAIL ROAD (SR 1367) TO GRIBBLE ROAD (SR 1368)*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5808	1	17

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:
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2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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SUBMITTED BY *S. JOHNSON*

DATE *SEPTEMBER, 2018*

NC Engineering F-1253 NC Geology C-247

NORTH CAROLINA LICENSED SEAL 1753 GEOLOGIST J. SHANE JOHNSON

DocuSigned by:
Shane Johnson 9/25/2018 6:44:05
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5808	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	—	6 MX	—	NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0		0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND					SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD								FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
_ CME-45C
_ CME-55
_ CME-550
_ VANE SHEAR TEST
_ PORTABLE HOIST
X CME-550X
_ _____

ADVANCING TOOLS:
_ CLAY BITS
_ 6" CONTINUOUS FLIGHT AUGER
X 8" HOLLOW AUGERS
_ HARD FACED FINGER BITS
_ TUNG.-CARBIDE INSERTS
_ CASING _ W/ ADVANCER
_ TRICONE _____" STEEL TEETH
_ TRICONE _____" TUNG.-CARB.
X CORE BIT
_ _____

HAMMER TYPE:
X AUTOMATIC _ MANUAL

CORE SIZE:
_ -B _____ _ -H _____
X -N Q

HAND TOOLS:
_ POST HOLE DIGGER
_ HAND AUGER
_ SOUNDING ROD
_ VANE SHEAR TEST
_ _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: BORING ELEVATIONS OBTAINED FROM TIN FILE PROVIDED BY NCDOT (U5808_LS_TIN.tin).

ELEVATION: N/A FEET

NOTES:

DATE: 8-15-14

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5808	3	17

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
44381.1.1	N/A	PE

25% PLANS

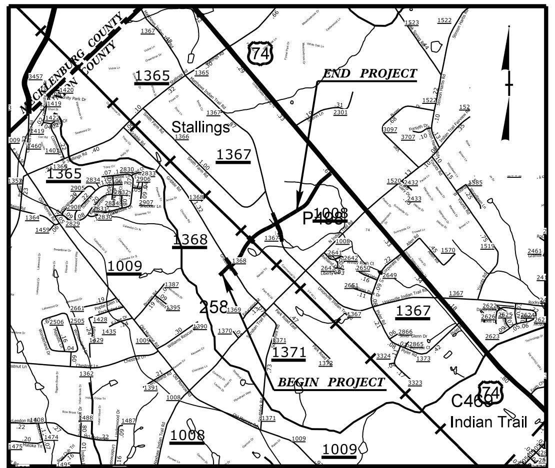
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

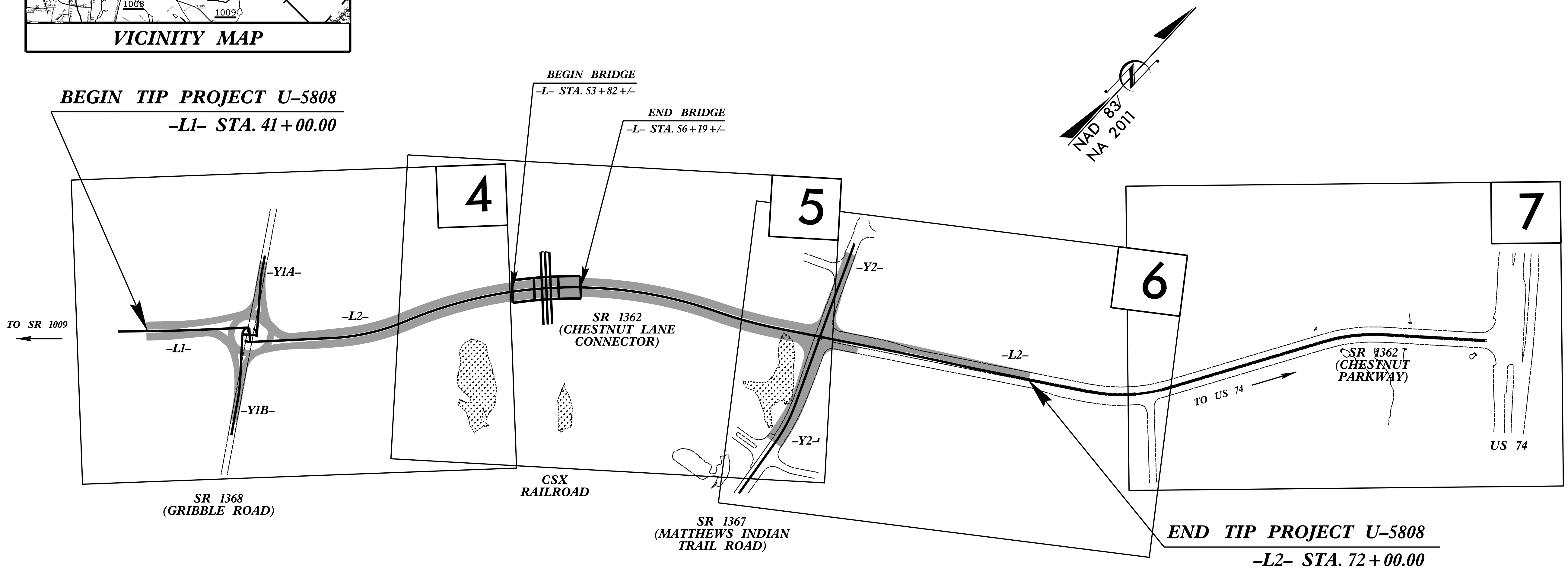
LOCATION: CHESTNUT LANE CONNECTOR (SR 1362) FROM MATTHEWS INDIAN TRAIL ROAD (SR 1367) TO GRIBBLE ROAD (SR 1368)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

TIP PROJECT: U-5808



VICINITY MAP



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF INDIAN TRAIL.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2021 = 21,650
ADT 2041 = 24,650
K = 7 %
D = 60 %
T = 4 % *
V = 40 MPH
* TTST = 3% DUAL = 1%
FUNC CLASS = MINOR ARTERIAL REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5808	=	0.544 MILES
LENGTH STRUCTURE TIP PROJECT U-5808	=	0.043 MILES
TOTAL LENGTH TIP PROJECT U-5808	=	0.587 MILES

Prepared for NCDOT Division 10 In the Office of:

Mead&Hunt
133 Fayetteville Street, Suite 210
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 17, 2019

LETTING DATE:
JUNE 15, 2021

RICK DECOLA, PE
PROJECT ENGINEER

SURAJ SANGHANI
PROJECT DESIGN ENGINEER

SEAN EPPERSON, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

September 25, 2018

WBS Number: 44381.1.1
TIP Number: U-5808
COUNTY: Union
DESCRIPTION: Chestnut Lane Connector (SR 1362) from Matthews Indian Trail Road (SR 1367) to Gribble Road (SR 1368)
WOOD E&IS Number: 6468188045

SUBJECT: Geotechnical Inventory Report

Project Description

The project area lies on the north side of the town of Indian Trail, NC between Highway 74 and SR1009. This project consists of approximately 2,000 feet of new location roadway that will extend from Gribble Road to Matthews Indian Trail Road. A potential roundabout is planned at the intersection of the new alignment and Gribble Road. Roadway widening is planned on Gribble Road and Matthews Indian Trail Road near the intersection with the new alignment. A grade separation bridge is planned to carry the new alignment over the existing CSX Railroad.

The geotechnical field investigation was conducted in August, 2018. A CME 550X drill rig mounted on a rubber tracked all-terrain carrier and equipped with an automatic hammer was used to advance borings for the subsurface exploration. Hollow stem auger drilling procedures were used to advance borings to the required depths. Standard Penetration Tests were performed at approximately 2.5-foot to 5.0-foot intervals to termination in selected borings. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis.

The following alignments were explored. Subsurface profiles and/or cross sections of these alignments are included in this report.

Alignment	Station (±)
-L1-	41+00 to 43+84
-L2-	45+30 to 72+00
-Y1A-	10+25 to 11+96
-Y1B-	10+69 to 13+00
-Y2-	10+40 to 17+40

Areas of Special Geotechnical Interest

1) Loose/Soft Soils: The following sections contain very soft or very loose, compressible soils (n-value < 4) which have the potential to cause embankment/subgrade and/or slope stability problems during construction.

Line	Stations (±)	Offsets (ft.)
-L2-	63+30 – 63+80	LT & RT

2) Fine Grained Soils: The following sections contain fine grained/cohesive soils which have the potential to cause embankment/subgrade and/or slope stability problems during construction.

Line	Stations (±)	Offsets (ft.)
-L1-	41+00 – 43+84	LT & RT
-Y1B-	10+69 – 13+00	LT & RT

3) Groundwater: Groundwater was only encountered at two boring locations at depths greater than 20 feet below existing grades.

4) Water wells: Two existing residential water supply wells were found within or in close proximity to the proposed right of way at the following locations:

Line	Station (±)	Offset (ft.)
-L2-	44+80	15 RT
-Y1B-	15+40	108 RT

5) Ponds: Several ponds occur on or within close proximity to the right of way on this project at the following locations:

Line	Station (±)	Offset (ft.)
-L2-	60+40 – 63+50	480 RT to 590 RT
-L2-	62+45 – 62+55	200 RT to 215 RT
-L2-	62+30 – 62+60	665 RT to 700 RT
-L2-	83+04 – 83+35	40 RT to 70 RT
-L2-	84+27 – 84+37	49 RT to 62 RT

Physiography and Geology

The project is located in the Piedmont Province. Land use along the project corridor consists of residential, agricultural, commercial businesses and woods. Geologically, the project is located within the Charlotte Belt. metavolcanic rock (CZv) was encountered at the project site. Fourmile Creek and its tributaries and a few ditches drain the project towards south and southeast in general.

Soil Properties

Soils encountered at the project site include roadway embankment, agricultural till, alluvial, residual, weathered metavolcanic rock and crystalline metavolcanic rock.

Roadway Embankment soils are present along existing SR 1368 and SR1362.

Alluvial deposits are located within the floodplains of Fourmile Creek's tributaries, ditches and wetland areas that traverse the project. These soils are primarily brown and gray, very soft to soft, silty clay (A-7).

Residual soils were encountered throughout the project. These soils consist primarily of gray, tan and brown, stiff to hard silt and clay (A-4, A-7) with Liquid Limit ranging from 42 to 59 and Plasticity Indices ranging from 21 to 28.

Rock Properties

Weathered rock was encountered during the roadway investigation at elevations ranging from approximately 697 to 670 feet. It originates from the underlying metavolcanic rock.

Crystalline rock was encountered during the roadway investigation at elevations ranging from approximately 687 to 661 feet, and consists of metavolcanic rock.

Ground Water

Groundwater was encountered in two borings and ranges in elevation from approximately 671 to 675 feet. Groundwater may fluctuate with seasonal precipitation.

Prepared By,

DocuSigned by:
Pu Zhang 9/25/2018 6:46:41 AM PDT
B37087AE5CC74C5...

Pu Zhang, P.E.
Geotechnical Engineer

DocuSign Envelope ID: E6D73F60-A38D-49F8-8145-75EA2E536AD0

PROJECT REFERENCE NO.	SHEET NO.
U-5808	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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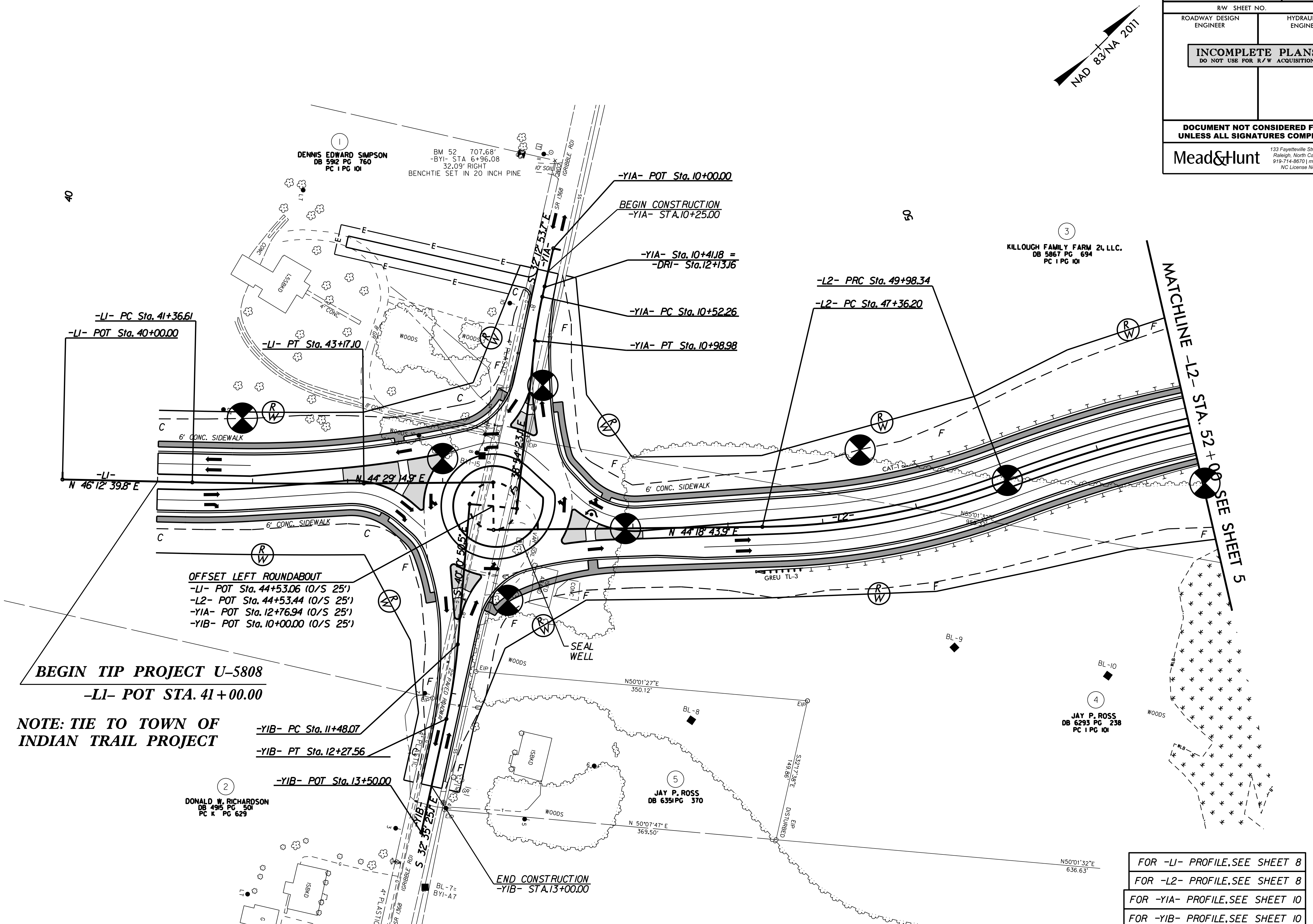

FOR -LI- PROFILE, SEE SHEET 8
FOR -L2- PROFILE, SEE SHEET 8
FOR -YIA- PROFILE, SEE SHEET 10
FOR -YIB- PROFILE, SEE SHEET 10

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5808	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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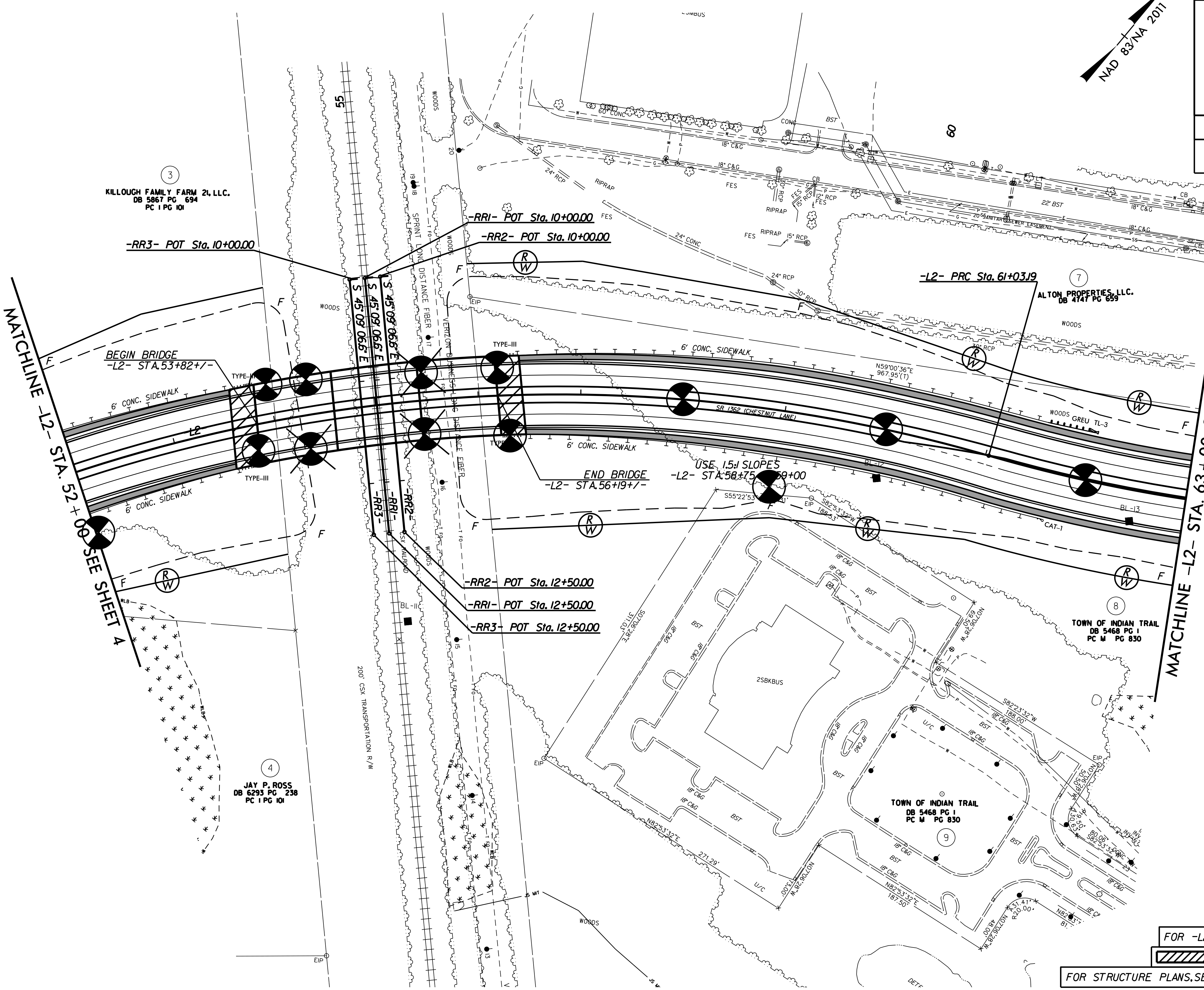

FOR -L2- PROFILE, SEE SHEET 8

BRIDGE APPROACH SLAB

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-??

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5808	6

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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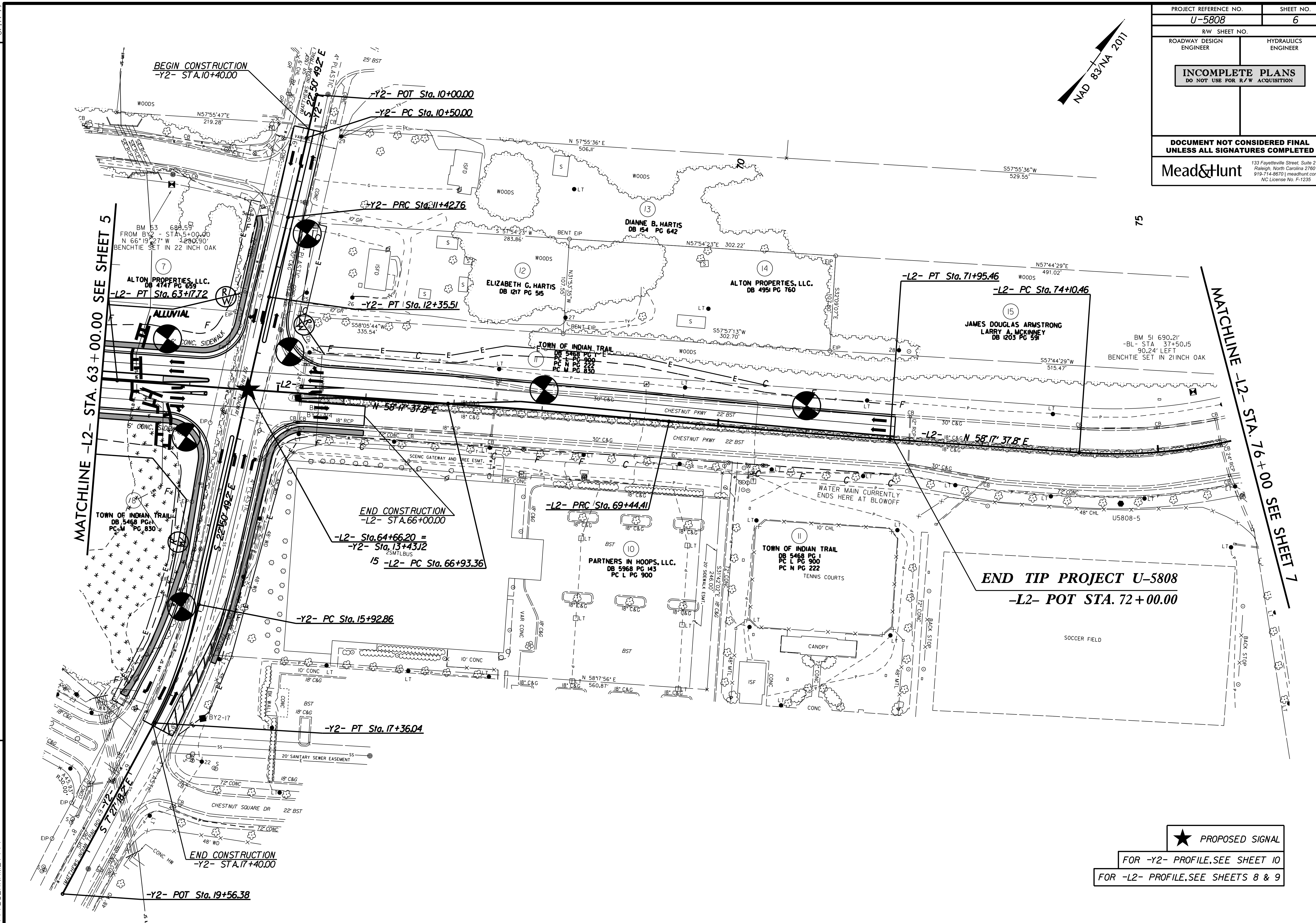

NAD 83/NA 2011
BEGIN CONSTRUCTION
-Y2- STA.10+40.00
-Y2- POT Sta. 10+00.00
-Y2- PC Sta. 10+50.00
-Y2- PRC Sta. 11+42.76
-Y2- PT Sta. 12+35.51
BM 63 684.59'
FROM BY2 - STA 15+00.00
N 66° 19' 27" W 280.90'
BENCHTIE SET IN 22 INCH OAK
ALTON PROPERTIES, LLC.
DB 4747 PG 659
-L2- PT Sta. 63+17.72
ALLUVIAL
MATCHLINE -L2- STA. 63+00.00 SEE SHEET 5
DIANNE B. HARTIS
DB 154 PG 642
ELIZABETH G. HARTIS
DB 1217 PG 515
ALTON PROPERTIES, LLC.
DB 4951 PG 760
JAMES DOUGLAS ARMSTRONG
LARRY A. MCKINNEY
DB 1203 PG 591
-L2- PT Sta. 71+95.46
-L2- PC Sta. 74+10.46
BM 51 690.21'
-BL- STA 37+50.15
90.24' LEFT
BENCHTIE SET IN 21 INCH OAK
MATCHLINE -L2- STA. 76+00 SEE SHEET 7
TOWN OF INDIAN TRAIL
DB 5468 PG 1
PC L PG 900
PC N PG 222
PC M PG 830
CHESTNUT PKWY
N 58° 17' 37.8" E
WATER MAIN CURRENTLY
ENDS HERE AT BLOWOFF
END CONSTRUCTION
-L2- STA.66+00.00
-L2- Sta. 64+66.20 =
-Y2- Sta. 13+43.12
-L2- PC Sta. 66+93.36
-L2- PRC Sta. 69+44.41
PARTNERS IN HOOPS, LLC.
DB 5968 PG 143
PC L PG 900
TOWN OF INDIAN TRAIL
DB 5468 PG 1
PC L PG 900
PC N PG 222
TENNIS COURTS
END TIP PROJECT U-5808
-L2- POT STA. 72+00.00
SOCCER FIELD
CANOPY
TOWN OF INDIAN TRAIL
DB 5468 PG
PC M PG 830
S 22° 50' 49.2" E
-Y2- PC Sta. 15+92.86
-Y2- PT Sta. 17+36.04
20' SANITARY SEWER EASEMENT
CHESTNUT SQUARE DR
END CONSTRUCTION
-Y2- STA.17+40.00
-Y2- POT Sta. 19+56.38
MATTHEWS INDIAN TRAIL RD
PROPOSED SIGNAL
FOR -Y2- PROFILE, SEE SHEET 10
FOR -L2- PROFILE, SEE SHEETS 8 & 9

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5808	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NA 2011

-L2- CURVE DATA

PI Sta 75+55.62	PI Sta 83+57.76
Δ = 27° 45' 51.2" (LT)	Δ = 19° 54' 20.5" (RT)
D = 9° 45' 19.9"	D = 9° 32' 45.8"
L = 284.60'	L = 208.52'
T = 145.15'	T = 105.32'
R = 587.32'	R = 600.20'

-L2- PT Sta. 76+95.06

MATCHLINE -L- STA. 76+00 SEE SHEET 6

-L2- PC Sta. 82+52.43

-L2- PT Sta. 84+60.96

-L2- POT Sta. 88+11.77

-L2- N 30° 31' 46.6" E

-L2- N 50° 26' 07.0" E

FOR -L2- PROFILE, SEE SHEET 9

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-5808	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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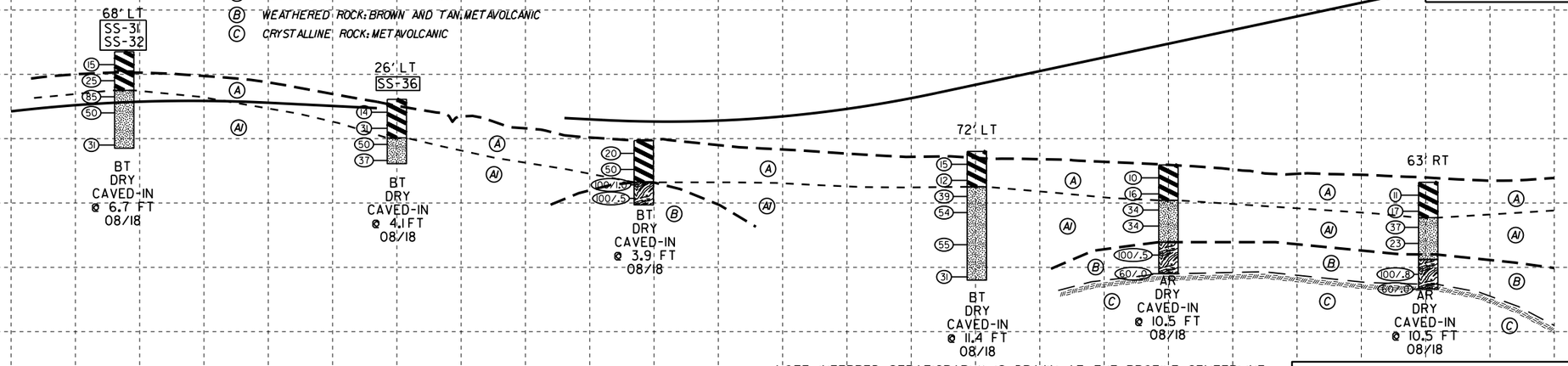
-L1-

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR) C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-31	42+00	68' LT	-L1-	1.0-2.5	A-7-5(30)	59	23	0.3	1.0	64.6	34.1	100	99.9	99.2	19.5	-
SS-32	42+00	68' LT	-L1-	3.5-5.0	A-7-6(24)	43	22	1.8	1.1	63.4	33.7	100	98.4	97.5	8.3	-
SS-36	44+00	26' LT	-L1-	1.0-2.5	A-7-6(26)	46	24	2.0	1.4	47.7	48.8	99.7	98.1	96.8	13.7	-

(A) RESIDUAL: STIFF TO HARD, DRY TO MOIST, GRAY, TAN AND BROWN, SILTY CLAY (A-7-5/A-7-6)
(AI) RESIDUAL: VERY STIFF TO HARD, DRY TO MOIST, GRAY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC
(B) WEATHERED ROCK: BROWN AND TAN, METAVOLCANIC
(C) CRYSTALLINE ROCK: METAVOLCANIC

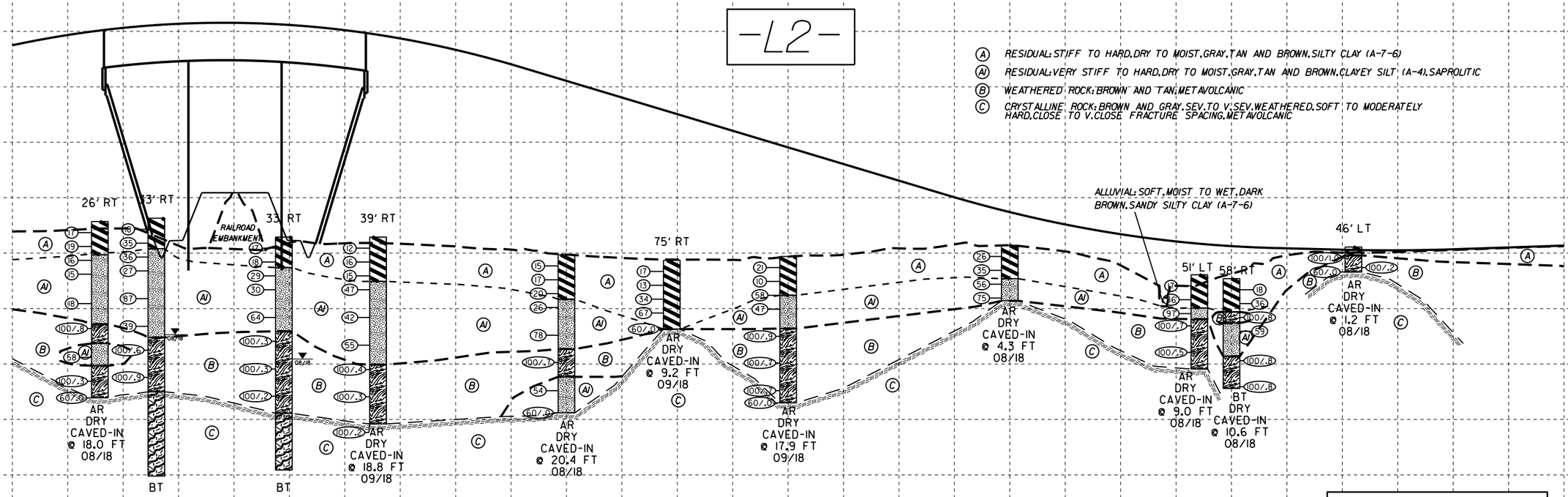


NOTE: INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE CENTERLINE WITH THE BORINGS PROJECTED ONTO THE PROFILE.

FOR -L1- & -L2- PLAN, SEE SHEETS 4 & 5

-L2-

(A) RESIDUAL: STIFF TO HARD, DRY TO MOIST, GRAY, TAN AND BROWN, SILTY CLAY (A-7-6)
(AI) RESIDUAL: VERY STIFF TO HARD, DRY TO MOIST, GRAY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC
(B) WEATHERED ROCK: BROWN AND TAN, METAVOLCANIC
(C) CRYSTALLINE ROCK: BROWN AND GRAY, SEV. TO V. SEV. WEATHERED, SOFT TO MODERATELY HARD, CLOSE TO V. CLOSE FRACTURE SPACING, METAVOLCANIC



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FOR -L2- PLAN, SEE SHEETS 5 & 6

PROJECT REFERENCE NO.	SHEET NO.
U-5808	9
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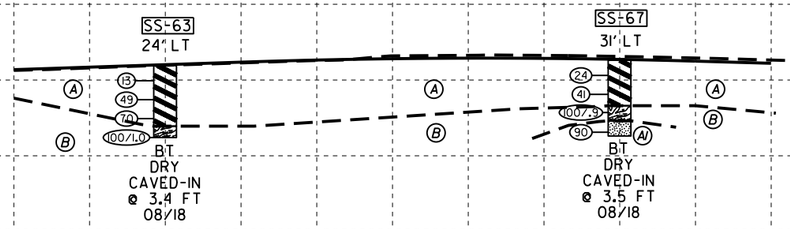
-L2-

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR)				% PASSING SIEVES			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-63	68+00	24' LT	-L2-	1.0-2.5	A-7-6(22)	46	22	6.8	3.3	57.4	32.5	100	95.4	90.6	17.4	-
SS-67	71+00	31' LT	-L2-	1.0-2.5	A-7-6(21)	45	24	4.5	8.2	59.6	27.7	100	97.4	88.5	22.1	-

(A) RESIDUAL: STIFF TO HARD, DRY TO MOIST, GRAY AND BROWN, SILTY CLAY (A-7-6)
(AI) RESIDUAL: HARD, DRY, BROWN, CLAYEY SILT (A-4), SAPROLITIC
(B) WEATHERED ROCK: BROWN AND TAN, METAVOLCANIC



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FOR -L2- PLAN, SEE SHEET 6

720 710 700 690 680 670 660

67 68 69 70 71 72 73 74 75 76 77 78 79 80 81

-L2-

720 710 700 690 680 670 660

81 82 83 84 85 86 87 88

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PROJECT REFERENCE NO.	SHEET NO.
U-5808	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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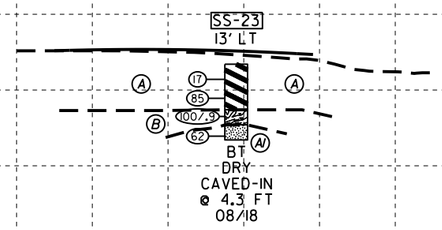
-Y1A-

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.
SS-23	11+45	13' LT	-Y1A-	1.0-2.5	A-7-6(26)	45	24

% PASSING SIEVES (SOIL MORTAR)				% PASSING SIEVES			%	%
C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
1.0	1.1	54.9	43.0	100	99.3	98.3	18.4	-

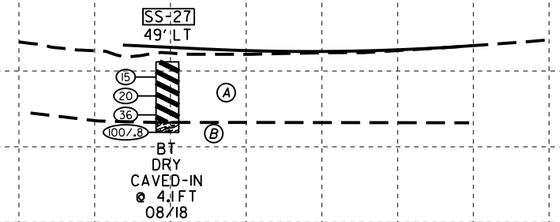
(A) RESIDUAL: VERY STIFF TO HARD, MOIST TO DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)
(AI) RESIDUAL: HARD, DRY, BROWN, CLAYEY SILT (A-4), SAPROLITIC
(B) WEATHERED ROCK: BROWN, METAVOLCANIC



-Y1B-

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR)				% PASSING SIEVES			%	%
								C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-27	10+98	49' LT	-Y1B-	1.0-2.5	A-7-6(28)	46	28	3.7	1.7	44.2	50.4	99.3	96.5	94.5	14.5	-

(A) RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)
(B) WEATHERED ROCK: BROWN, METAVOLCANIC



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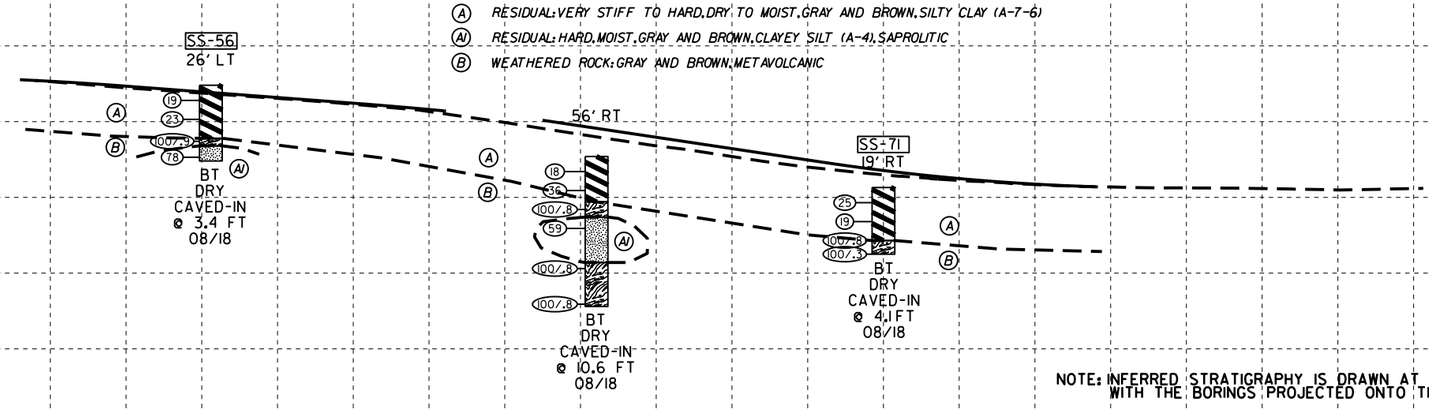
FOR -Y1A- & -Y1B- PLAN, SEE SHEET 4

-Y2-

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR)				% PASSING SIEVES			%	%
								C. SAND	F. SAND	SILT	CLAY	10	40	200	MOISTURE	ORGANIC
SS-56	11+56	26' LT	-Y2-	1.0-2.5	A-7-6(21)	44	21	4.6	3.8	55.7	35.9	100	96.5	92.7	8.9	-
SS-71	16+00	19' RT	-Y2-	1.0-2.5	A-7-6(19)	42	21	10.5	2.3	52.8	34.3	99.0	90.4	87.1	6.6	-

(A) RESIDUAL: VERY STIFF TO HARD, DRY TO MOIST, GRAY AND BROWN, SILTY CLAY (A-7-6)
(AI) RESIDUAL: HARD, MOIST, GRAY AND BROWN, CLAYEY SILT (A-4), SAPROLITIC
(B) WEATHERED ROCK: GRAY AND BROWN, METAVOLCANIC



NOTE: INFERRED STRATIGRAPHY IS DRAWN AT THE PROFILE CENTERLINE WITH THE BORINGS PROJECTED ONTO THE PROFILE.

FOR -Y2- PLAN, SEE SHEET 6

RESIDUAL: STIFF TO VERY STIFF, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

HARD, DRY TO MOIST, GRAY AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

43 + 50.00

RESIDUAL: STIFF TO VERY STIFF, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

HARD, DRY TO MOIST, GRAY AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

43 + 00.00

RESIDUAL: STIFF TO VERY STIFF, DRY TO MOIST, TAN AND BROWN, SILTY CLAY (A-7-5/A-7-6)

HARD, DRY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

42 + 50.00

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR) C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-31	42+00	68' LT	-L1-	1.0-2.5	A-7-5(30)	59	23	0.3	1.0	64.6	34.1	100	99.9	99.2	19.5	-
SS-32	42+00	68' LT	-L1-	3.5-5.0	A-7-6(24)	43	22	1.8	1.1	63.4	33.7	100	98.4	97.5	8.3	-

SS-31
SS-32

41+88

15
25
85
50
31

BT
DRY
CAVED-IN
@ 6.7 FT
08/18

RESIDUAL: STIFF TO VERY STIFF, DRY TO MOIST, TAN AND BROWN, SILTY CLAY (A-7-5/A-7-6)

HARD, DRY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

42 + 00.00

RESIDUAL: STIFF TO VERY STIFF, DRY TO MOIST, TAN AND BROWN, SILTY CLAY (A-7-5/A-7-6)

HARD, DRY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

41 + 50.00

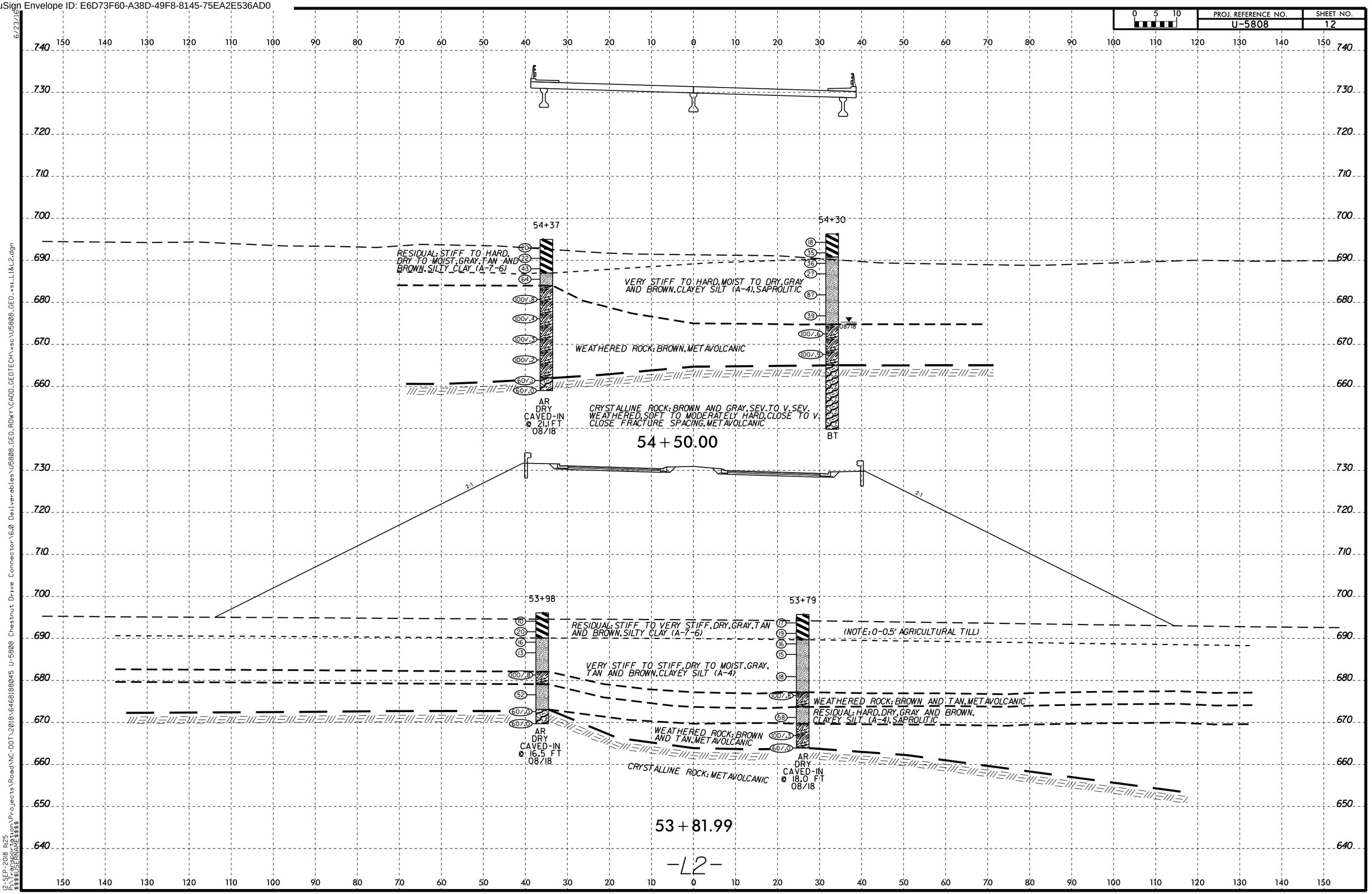
RESIDUAL: STIFF TO VERY STIFF, DRY TO MOIST, TAN AND BROWN, SILTY CLAY (A-7-5/A-7-6)

HARD, DRY, TAN AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

(NOTE: 0-0.5' AGRICULTURAL TILL)

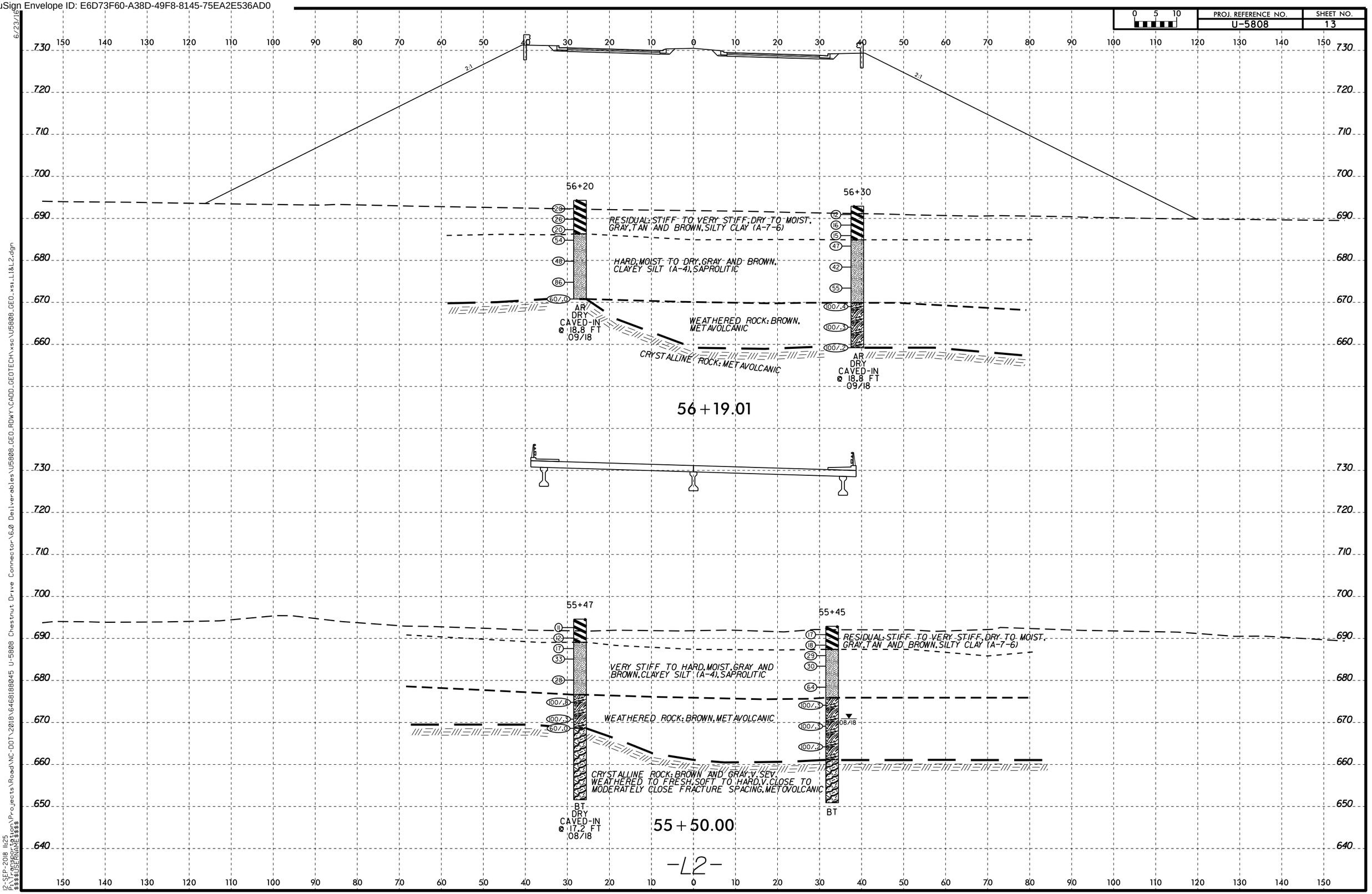
41 + 00.00

-L1-

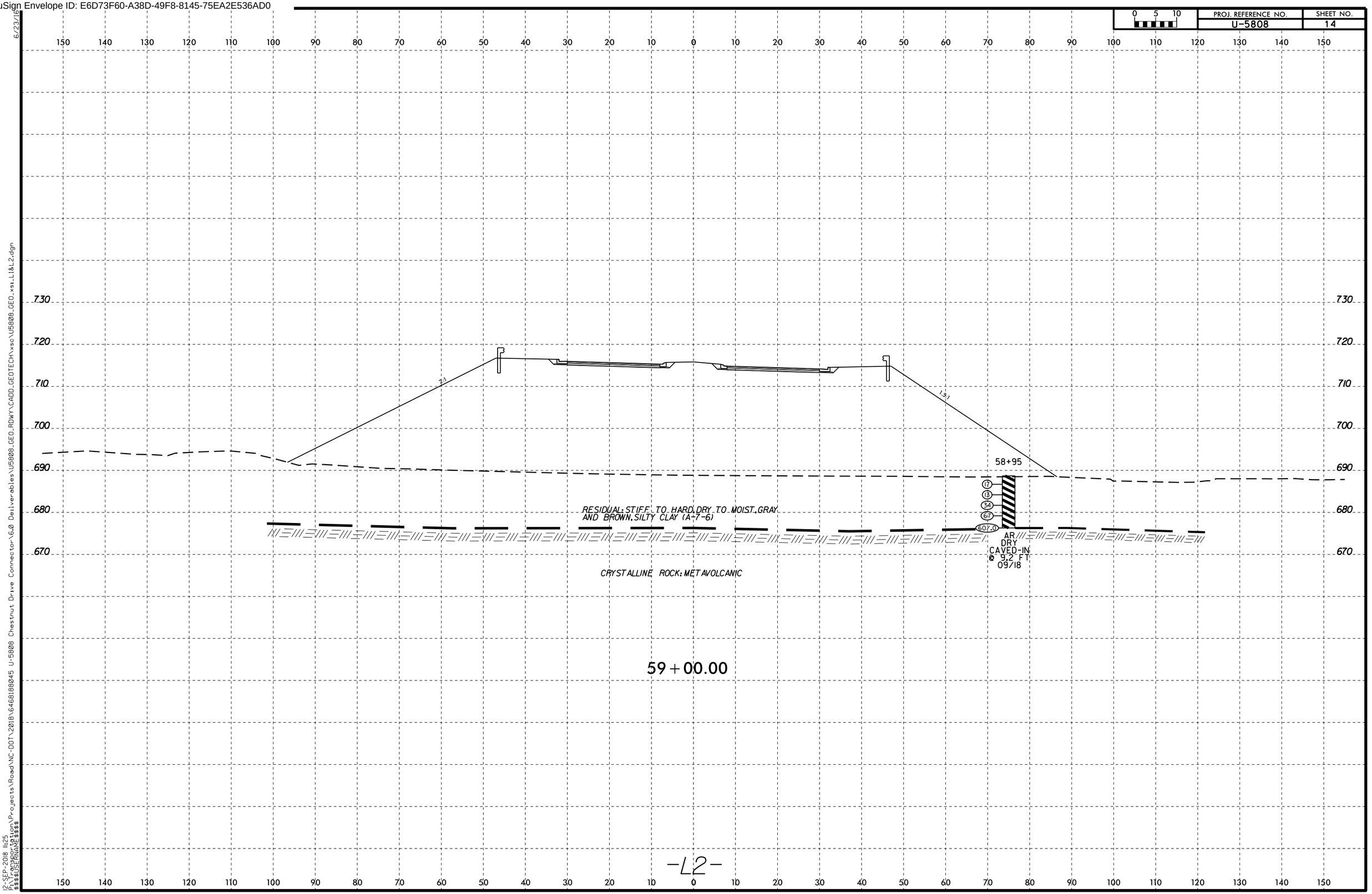


PROJ. REFERENCE NO.	SHEET NO.
U-5808	13

0 5 10



-L2-



PROJ. REFERENCE NO.	SHEET NO.
U-5808	15

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

700 690 680 670 660 650 640

3:1

RESIDUAL: VERY STIFF TO HARD, DRY, GRAY, TAN AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN AND WHITE, METAVOLCANIC

RESIDUAL: HARD, DRY, WHITE AND BROWN, CLAYEY SILT (A-4), SAPROLITIC

WEATHERED ROCK: BROWN AND WHITE, METAVOLCANIC

18 36 100/.8 59 100/.8 100/.8

BT
DRY
CAVED-IN
@ 10.6 FT
08/18

64+00.00

63+71

RESIDUAL: VERY STIFF TO HARD, DRY, GRAY, TAN AND BROWN, SILTY CLAY (A-7-6)

ALLUVIAL: SOFT, MOIST TO WET, DARK BROWN, SILTY CLAY (A-7-6)

HARD, DRY, BROWN, CLAYEY SILT (A-4), SAPROLITIC

WEATHERED ROCK: BROWN AND WHITE, METAVOLCANIC

17 36 97 100/.1 100/.5

AR
DRY
CAVED-IN
@ 9.0 FT
08/18

63+50.00

RESIDUAL: VERY STIFF TO HARD, DRY, GRAY, TAN AND BROWN, SILTY CLAY (A-7-6)

HARD, DRY, BROWN, CLAYEY SILT (A-4), SAPROLITIC

WEATHERED ROCK: BROWN AND WHITE, METAVOLCANIC

63+00.00

-L2-

6/23/16

12-SEP-2018 11:25
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710 705 700 695 690 715 685

4:1

ROADWAY EMBANKMENT

4:1

RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN, METAVOLCANIC

12+00.00

4:1

ROADWAY EMBANKMENT

4:1

RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN, METAVOLCANIC

11+50.00

SAMPLE NO.	STATION	OFFSET	LINE	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% PASSING SIEVES (SOIL MORTAR)				% PASSING SIEVES			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-27	10+98	49' LT	-Y1B-	1.0-2.5	A-7-6(28)	46	28	3.7	1.7	44.2	50.4	99.3	96.5	94.5	14.5	-

SS-27

4:1

15 20 36 100/.8

BT
DRY
CAVED-IN
@ 4.1FT

ROADWAY EMBANKMENT

4:1

RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN, METAVOLCANIC

11+00.00

-Y1B-

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6/23/16

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
U-5808	17

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

710
705
700
695
690

ROADWAY EMBANKMENT

RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN, METAVOLCANIC

13 + 00.00

4:1

ROADWAY EMBANKMENT

RESIDUAL: STIFF TO HARD, DRY, GRAY AND BROWN, SILTY CLAY (A-7-6)

WEATHERED ROCK: BROWN, METAVOLCANIC

12 + 50.00

-YIB-

12-SEP-2018 11:25
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