REFERENCE: U-6036

PROJECT: 46971

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN
-L-	11+80 - 46+56	4-6
-Y-	12+40 - 15+59	4
-Y1-	12+50 - 20+05	5

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	12+00 - 46+50	7-30
-Y-	13+00 - 15+00	31
-Y1-	13+00 - 18+90	32-33

APPENDICES

APPENDIX	TITLE	SHEETS
A	LABORATORY RESULTS	34-35

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *CALDWELL*

PROJECT DESCRIPTION *SR 1109 FROM SR 1252 TO US 321*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6036	1	35

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:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
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.

PERSONNEL

R. KRAL

M. BREWER

HPC

ITHIR TESTING

INVESTIGATED BY *CG2*

DRAWN BY *M. BREWER, P.E.*

CHECKED BY *R. KRAL, P.E.*

SUBMITTED BY *M. BREWER, P.E.*

DATE *FEBRUARY 2019*

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DocuSigned by:
D. Matthew Brewer 02/08/19
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-6036	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		
	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PLASTIC RANGE (PI)		
PL — PLASTIC LIMIT		
	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT		
	- 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
- [X] CME-550X
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] 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:

ELEVATION: FEET

NOTES:

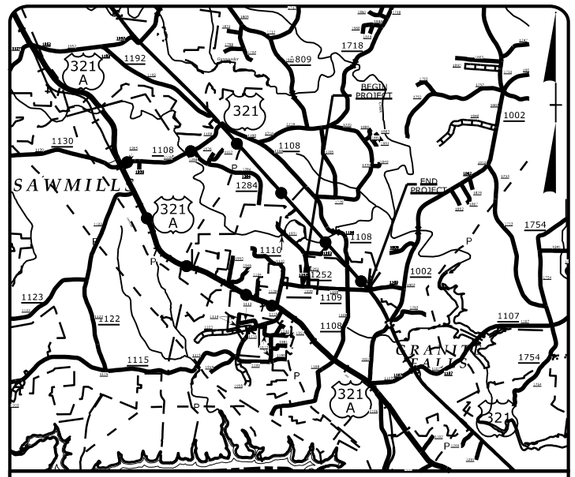
SURVEY AND ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18

DATE: 8-15-14

CONTRACT:

TIP PROJECT: U-6036

See Sheet 1A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

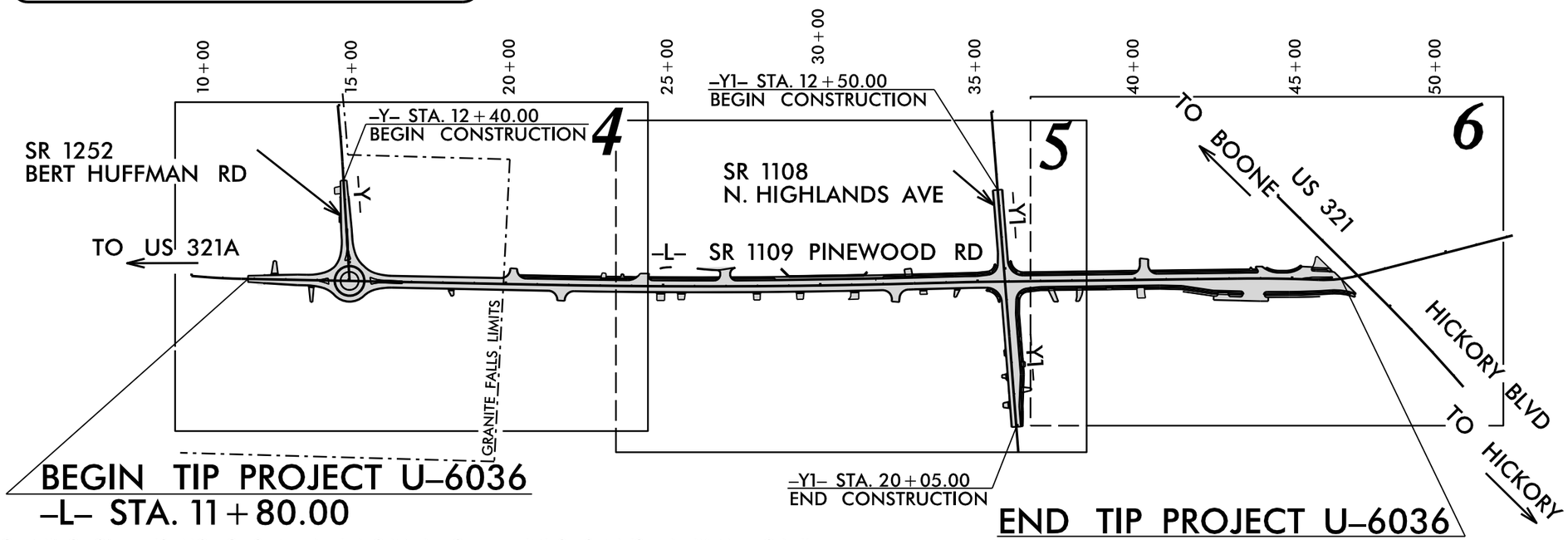
CALDWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6036	3	35

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46971.1.1	N/A	PE
46971.2.1	N/A	ROW, UTIL.
46971.3.1	N/A	CONST.

LOCATION: *SR 1109 (PINEWOOD RD) FROM SR 1252 (BERT HUFFMAN RD) TO US 321*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CURB AND GUTTER, AND SIGNALS*



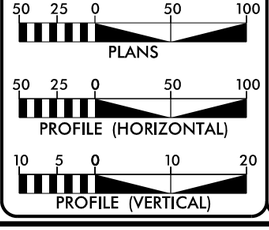
BEGIN TIP PROJECT U-6036
-L- STA. 11+80.00

END TIP PROJECT U-6036
-L- STA. 46+56.06

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF GRANITE FALLS.
DESIGN EXCEPTION REQUIRED FOR VERTICAL CURVATURE AND VERTICAL SSD.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 8,800
ADT 2040 = 11,000
K = 9 %
D = 55 %
T = 4 % *
V = 40 MPH
* TTST =1% DUAL =3%
FUNC CLASS =
LOCAL – RURAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-6036 = 0.658 MILES
TOTAL LENGTH TIP PROJECT U-6036 = 0.658 MILES

NCDOT CONTACT: RAMIE SHAW

PLANS PREPARED BY:	*PLANS PREPARED FOR:*
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	NORTH CAROLINA DEPARTMENT OF TRANSPORATION DIVISION 11 801 Statesville Rd North Wilkesboro, NC 28659
RIGHT OF WAY DATE:	JIMMY L. TERRY, PE *PROJECT ENGINEER*
LETTING DATE:	CLINTON B. PRUETT, EI *PROJECT DESIGN ENGINEER*
2018 STANDARD SPECIFICATIONS	

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2/8/2019

STATE PROJECT: 46971.1.1
TIP NUMBER: U-6036
COUNTY: Caldwell
DESCRIPTION: SR 1109 (Pinewood Road) from SR 1252 (Bert Huffman Road) to US 321

SUBJECT: Geotechnical Roadway Inventory Report

PROJECT DESCRIPTION

This roadway improvement project consists of intersection improvements to SR 1109 at the intersections of SR 1252 (Bert Huffman Road), SR 1108 (N. Highlands Avenue), and US 321. The project begins just west of the intersection of SR 1109 with SR 1252 and will end at the intersection with US 321. The project is approximately 0.7 miles in length, measured along -L- (SR 1109) from Station 11+80 to 46+56. The roadway construction consists of turn lane and driveway improvements, additional sidewalk, a roundabout at the SR 1109/SR 1252 intersection and a retaining wall. The following alignments are included as part of this investigation:

Alignment	Stations
-L- (SR 1109)	11+80 to 46+56
-Y- (SR 1252)	12+40 to 15+59
-Y1- (SR 1108)	12+50 to 20+05

The provided roadway plans generally indicate cuts and fills on the order of 5 feet or less. Larger Fill between approximately 6 and 12 feet are planned in the vicinity of the roundabout. Additional sliver cuts and fills are shown on the plans along the -Y- lines.

The geotechnical field investigation was conducted during the period of December 2018 through January 2019. Hand augers and dynamic cone penetrometer testing was performed for most of the borings due to utility and access conflicts. A subcontract drill crew was used to drill, sample, and log eight of the borings in this report. The subcontractor's drill rig was an ATV-mounted CME-550 equipped with an automatic hammer. Standard Penetration Tests were performed at selected depths for the eight borings. Representative soil samples were collected for visual-manual classification in the field and selected samples were submitted for laboratory analysis by an approved NCDOT M&T testing facility.

PHYSIOGRAGHY AND GEOLOGY

The project corridor is located within the Inner Piedmont Belt of the Piedmont Physiographic Province of North Carolina. The Piedmont Province generally consists of well-rounded hills and ridges, which are dissected by a well-developed system of draws and streams. The Piedmont Province is predominantly underlain by metamorphic rock (formed by heat, pressure and/or chemical action) and igneous rock (formed directly from molten material), which were initially formed during the Precambrian and Paleozoic eras. The Inner Piedmont Belt is described as a fault bounded stack of thrust sheets containing metamorphic and intrusive rock types. The metamorphic rocks found in this terrane include schist, gneiss, metagraywacke and amphibolite. Intrusive rocks found include granite and diabase dikes. According to the 1985 Geologic Map of North Carolina, the bedrock under the site consists of mica schist and biotite gneiss.

The topography and relief of the area have developed from differential weathering of the underlying metamorphic rock. Because of the continued chemical and physical weathering, the rocks in the area are now generally covered with a mantle of soil that has weathered in place from the parent bedrock. These soils have variable thicknesses and are referred to as residual soils. The residual soil is typically finer grained and has higher clay content near the surface because of the advanced weathering. Similarly, the soils typically become coarser grained with increasing depth because of decreased weathering. As the degree of weathering decreases, the residual soils generally retain the overall appearance, texture, gradation and foliations of the parent rock. The boundary between soil and rock in the Piedmont is not sharply defined. A transitional zone termed "weathered rock" is normally found overlying the parent bedrock.

Soil Properties

Soils and rock encountered during this investigation include roadway embankment, alluvial, residual, and weathered rock.

Roadway Embankment soils are similar in nature to residual soils and may be derived from nearby sources. These soils consisted of brown-gray-red-orange-tan-black, very soft to very stiff, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6), moderately to highly plastic silty clay (A-7-5), and sandy silt (A-4) with trace amounts of organics, mica, and gravel.

Alluvial soils were encountered in Hand Auger L_HA-15 and Y1_HA-1 in the vicinity of stormwater pipes. These soils consist of tan-brown-red-orange, very soft to soft, sandy clay (A-6) and highly plastic silty clay (A-7-6).

Residual soils are derived from the weathering of underlying rock in the area. These soils consist of red-orange-brown-tan-gray-white-gray, very soft to very stiff, sandy silt (A-4), clayey silt (A-5), sandy clay (A-6), and highly plastic silty clay (A-7-5) with trace mica and organics; and red-orange-tan-white-brown-yellow, loose to very dense, silty sand (A-2-4) and clayey sand (A-2-6) with trace amounts of mica and gravel-sized rock fragments.

Weathered rock was also encountered along the project corridor within two boring locations (RW1_B-1 and RW1_B-2). The weathered rock consists of red-tan-brown-white schist and was encountered at an approximate depth of 9 feet (EL 1182.0 feet) below existing grades.

Groundwater

Groundwater measurements were taken in December 2018 and January 2019 during above average rainfall conditions. Groundwater was encountered in Boring L_B-3 at a depth of 16.5 feet (EL 1169.3 feet) below existing grades at the completion of drilling activities. A stabilized groundwater reading was not collected because Boring L_B-3 was backfilled at completion of drilling activities due to

demobilization from the site. Groundwater was encountered at a depth of 3 feet (EL 1189.4 feet) below existing grades in Hand Auger Y_HA-3 after a stabilization period of at least 24 hours. The remaining hand augers and borings were recorded as dry at the bottom of the boring cylinder. Groundwater is not expected to cause any significant impacts for construction.

Areas of Special Geotechnical Interest

The following borehole locations encountered very soft to soft or very loose to loose soils which have the potential to cause embankment stability and/or long-term settlement problems:

Alignment	Stations	Offsets (ft)
-L-	13+00	20 RT
-L-	18+50 to 22+50	20 to 25 LT
-L-	24+50	20 RT
-L-	28+50	45 LT
-L-	28+50 to 32+50	20 RT
-L-	34+50	25 LT
-L-	36+50	20 RT
-L-	38+50	27 LT
-L-	40+50 to 46+50	20 to 49 RT
-Y-	13+00 to 15+17	15 to 41 RT
-Y-	15+22	43 LT
-Y1-	13+00	15 LT
-Y1-	15+00	20 RT
-Y1-	17+00	25 LT
-Y1-	19+00	20 RT
-RW1-	30+46 to 31+48	6 to 7 LT

Highly Plastic Clays: Highly plastic clays (PI > 26) were encountered on the project at the following borehole locations:

Alignment	Stations	Offsets (ft)
-L-	13+00 to 17+50	20 to 40 RT
-L-	18+50 to 22+50	20 to 25 LT
-L-	22+50 to 26+50	20 RT
-L-	28+50 to 32+50	20 RT
-L-	34+50	25 LT
-L-	36+50	20 RT
-L-	38+50	27 LT
-L-	40+50	20 RT
-L-	44+50 to 46+50	35 to 49 RT
-Y-	13+00 to 15+17	15 to 41 RT
-Y1-	13+00	15 RT, 15 LT
-Y1-	19+00	20’ RT

Alignment	Stations	Offsets (ft)
-RW1-	28+73, 31+48	6 to 7 LT

Water or Monitoring Wells: Several monitoring wells are located in the southeast quadrant of the Pinewood Road and US 321 intersection, but they are beyond the proposed project corridor construction limits.

Geotechnical Testing

No thin wall Shelby tube samples nor bulk samples were collected during the investigation.

Sincerely,
Carolinas Geotechnical Group, PLLC

DocuSigned by:
Robert E. Kral
8AD703B2A8484F4...
Robert E. Kral, PE
Senior Project Engineer

DocuSigned by:
D. Matthew Brewer
386129C0A4C1462...
D. Matthew Brewer, PE
Senior Project Engineer

PROJECT REFERENCE NO.	SHEET NO.
U-6036	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROP CONC SIDEWALK
PROP MONOLITHIC CONC ISLAND

-Y- POT 10+00.00
-Y- PC 10+64.59
-Y- PT 11+80.86
-L- STA. 12+40.00
BEGIN CONSTRUCTION

-L- CURVE DATA
PI Sta 11+04.52
Δ = 3°04' 24.9" (LT)
D = 2°51' 53.2"
L = 107.29'
T = 53.66'
R = 2,000.00'

PI Sta 27+20.62
Δ = 2°41' 35.1" (LT)
D = 0°14' 01.9"
L = 1,151.58'
T = 575.90'
R = 24,500.00'
SE = NC
DS = 60+ MPH

-Y- CURVE DATA
PI Sta 11+22.73
Δ = 1°44' 38.2" (RT)
D = 1°29' 59.6"
L = 116.27'
T = 58.14'
R = 3,820.00'
SE = NC
DS = 35 MPH

NAD 83/2011

S 82°32'00" E 1355.00' -ROADWAY EMBANKMENT-

GRANITE FALLS LIMITS

SR 1252 BERT HUFFMAN RD. 9.9' BST

SR 1109 PINEWOOD RD. 9.9' BST

DANA E. SMITH
DB 1812 PG 1890
PB 18 PG 183

ERIC V. BIGGINS
DB 1338 PG 389
PB 18 PG 183

TRAVIS A. LEONARD
DB 1928 PG 1995
PB 19 PG 31

AARON MILLER
DB 1254 PG 1870
PB 19 PG 31

JONES DENNIS DECKER
DB 1564 PG 705
PB 19 PG 31

MARY F. COONSE
DB 1249 PG 162

MARY FRANCES COONSE
DB 1352 PG 1572

TOWN OF GRANITE FALLS
DB 504 PG 45

PROP. CONC DRIVE
PROP. ASPHALT DRIVE
PROP. 20' ASPHALT DRIVE
PROP. GRAVEL DRIVE
PROP. 22' ASPHALT DRIVE

-L- POT 10+00.00
-L- PC 10+60.86
-L- PT 11+58.15
-L- POT 15+03.00 = -Y- POT 15+59.41

+55 BEGIN CHAIN LINK FENCE (BLACK)
+41 END CHAIN LINK FENCE (BLACK)
-L- PC 21+44.73

-RESIDUAL-
50' TAPER TO EXIST.
50' TAPER TO EXIST.
30' TYP

Y_HA-1
Y_HA-2
Y_HA-3
L_HA-1
L_HA-5
L_HA-6
L_HA-7
L_HA-8
L_B-2
L_B-3
L_B-4

BEGIN TIP PROJECT U-6036
-L- STA. 11+80.00

MATCH LINE STA. -L- 24+00
MATCH TO SHEET NO. 5

SHERRY L. COONSE
DB 984 PG 8

MARISA C. WALLACE
DB 984 PG 6

REGINA L. COONSE HEFNER
DB 1677 PG 311

LESTER C. COONSE
DB 896 PG 954
DB 688 PG 1520

BRADLEY EDWARD HAAS
DB 1353 PG 1384
PB 4 PG 55

GLENN E. OYLER
DB 1378 PG 1062
PB 4 PG 55

REVISIONS

06-FEB-2019 17:40
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PROJECT REFERENCE NO.	SHEET NO.
U-6036	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

8/17/99

PROP CONC SIDEWALK

-L- CURVE DATA

PI Sta 27+20.62
Δ = 2°41' 35.1" (LT)
D = 0°14' 01.9"
L = 1,151.58'
T = 575.90'
R = 24,500.00'
SE = NC
DS = 60+ MPH

PI Sta 34+63.28
Δ = 0°49' 54.2" (RT)
D = 1°08' 45.3"
L = 72.58'
T = 36.29'
R = 5,000.00'
SE = NC
DS = 40 MPH

-Y1- CURVE DATA

PI Sta 18+08.44
Δ = 0°12' 35.6" (RT)
D = 0°06' 52.5"
L = 183.17'
T = 91.59'
R = 50,000.00'
SE = NC
DS = 60+ MPH

-Y1- STA. 12+50.00
BEGIN CONSTRUCTION

NAD 83/2011

MATCH LINE STA. -L- 24+00
MATCH TO SHEET NO. 4

MATCH LINE STA. -L- 38+00
MATCH TO SHEET NO. 6

PROP. ASPHALT DRIVE

PROP. 30' ASPHALT DRIVE

TOWN OF GRANITE FALLS
DB 504 PG 45

REMOVE PLANTER & TREES

PROP. 2'-6" C&G

+75 BEGIN RETAINING WALL #1 AND CHAIN LINK FENCE

+50 END RETAINING WALL #1 AND CHAIN LINK FENCE

VETERAN'S MONUMENT (DO NOT DISTURB)

PROP. CONCRETE / ASPHALT DRIVE

PHILADELPHIA EVANGELICAL LUTHERAN CHURCH OF GRANITE FALLS, NORTH CAROLINA
DB 1593 PG 1603

-L- PT 32+96.30

-L- PT 34+99.57

-L- PC 34+26.99

-L- POT 35+86.98 = -Y1- POT 15+41.97

PINEWOOD ROAD PROPERTIES, LLC.
DB 1797 PG 1274

-ROADWAY EMBANKMENT-

-RESIDUAL-

-ALLUVIAL-

SR 1109 PINEWOOD RD.

SR 1108 N. HIGHLANDS AVE.

HOWARD PARTEE BENFIELD
DB 1549 PG 2132
PB 4 PG 55

PATRICK H. BENFIELD
DB 1430 PG 1952
PB 4 PG 55

TOMMY L. PFEIFFER
DB 1887 PG 619
PB 4 PG 55

JUDY T. FORBES
DB 1687 PG 1080
PB 4 PG 55

MARIA DEL CARMEN PEREZ
DB 1894 PG 1246
DB 1507 PG 1515
PB 4 PG 55

GLENN E. OYLER
DB 1378 PG 1062
PB 4 PG 55

COLEMAN H. CLARK
DB 707 PG 194
PB 4 PG 55

MAX VERNON McRARY
DB 855 PG 459
PB 1PG 22

JOHN JUSTICE
DB 904 PG 347

JENNIFER WATTS PARHAM
DB 1174 PG 470
PB 1PG 22

LINDA R. CROWDER
DB 1147 PG 1081
PB 1PG 22

GINGER WATTS JUSTICE
DB 1174 PG 472
PB 1PG 22

SHIRLEY P. RICHARDS
DB 811 PG 469
PB 1PG 22

PROP. CONCRETE DRIVE

PROP. GRAVEL DRIVE

PROP. CONC DRIVE

PROP. ASPHALT DRIVE

PROP. CONCRETE/ ASPHALT DRIVE

-Y1- PC 17+16.86

-Y1- PT 19+00.03

-Y1- STA. 20+05.00
END CONSTRUCTION

20+00

06-FEB-2018 17:40
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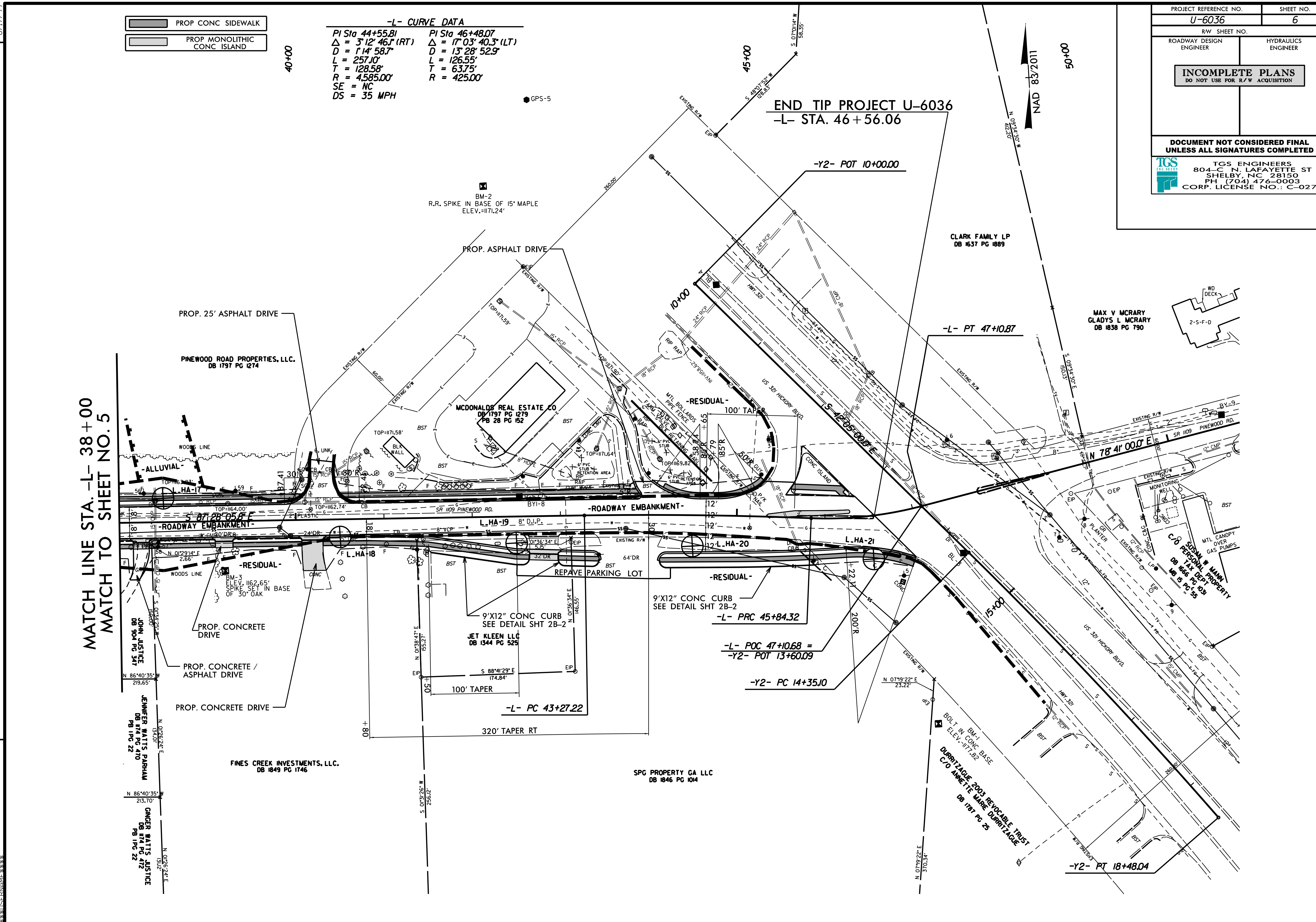
8/17/99

REVISIONS



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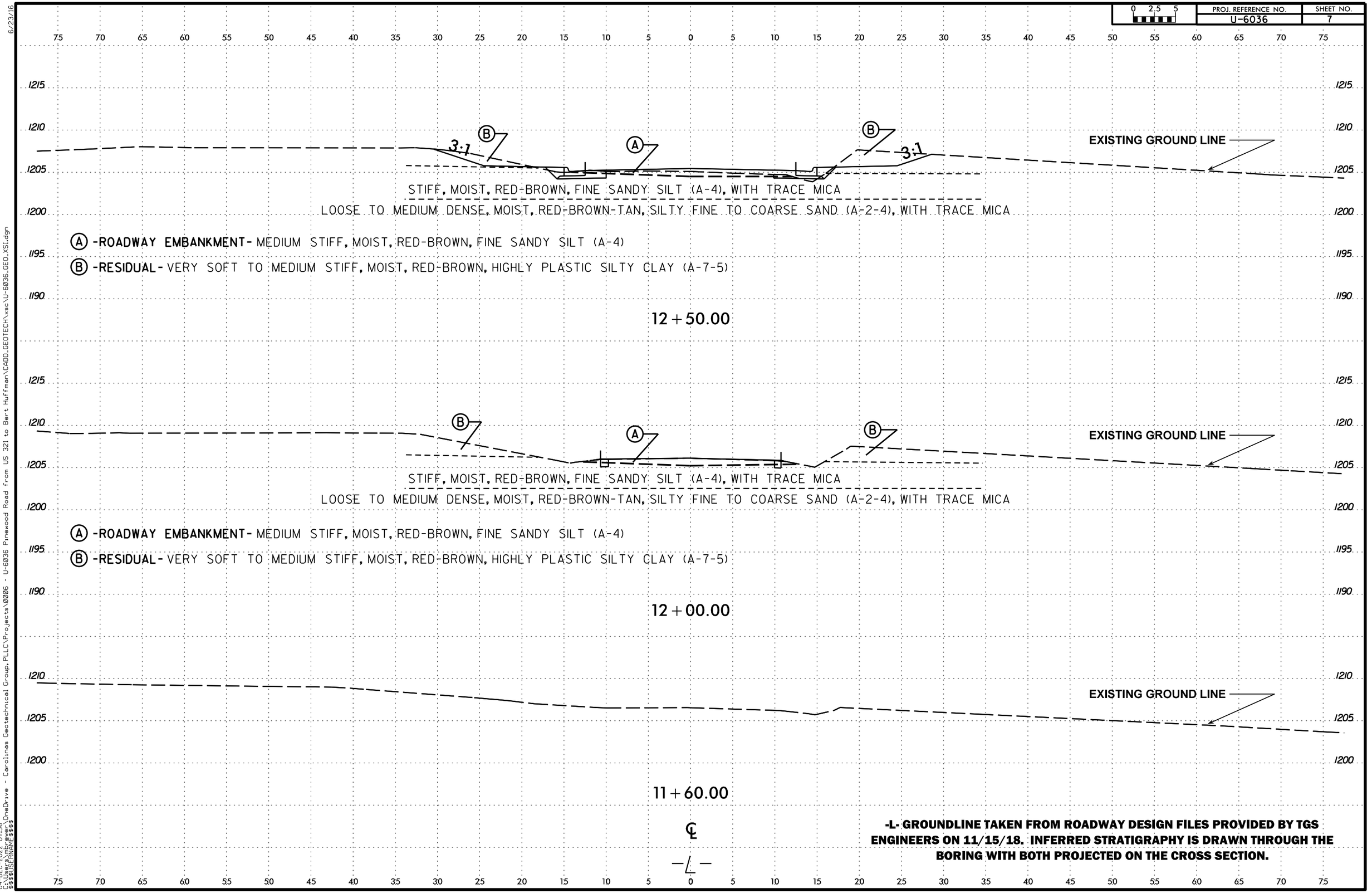
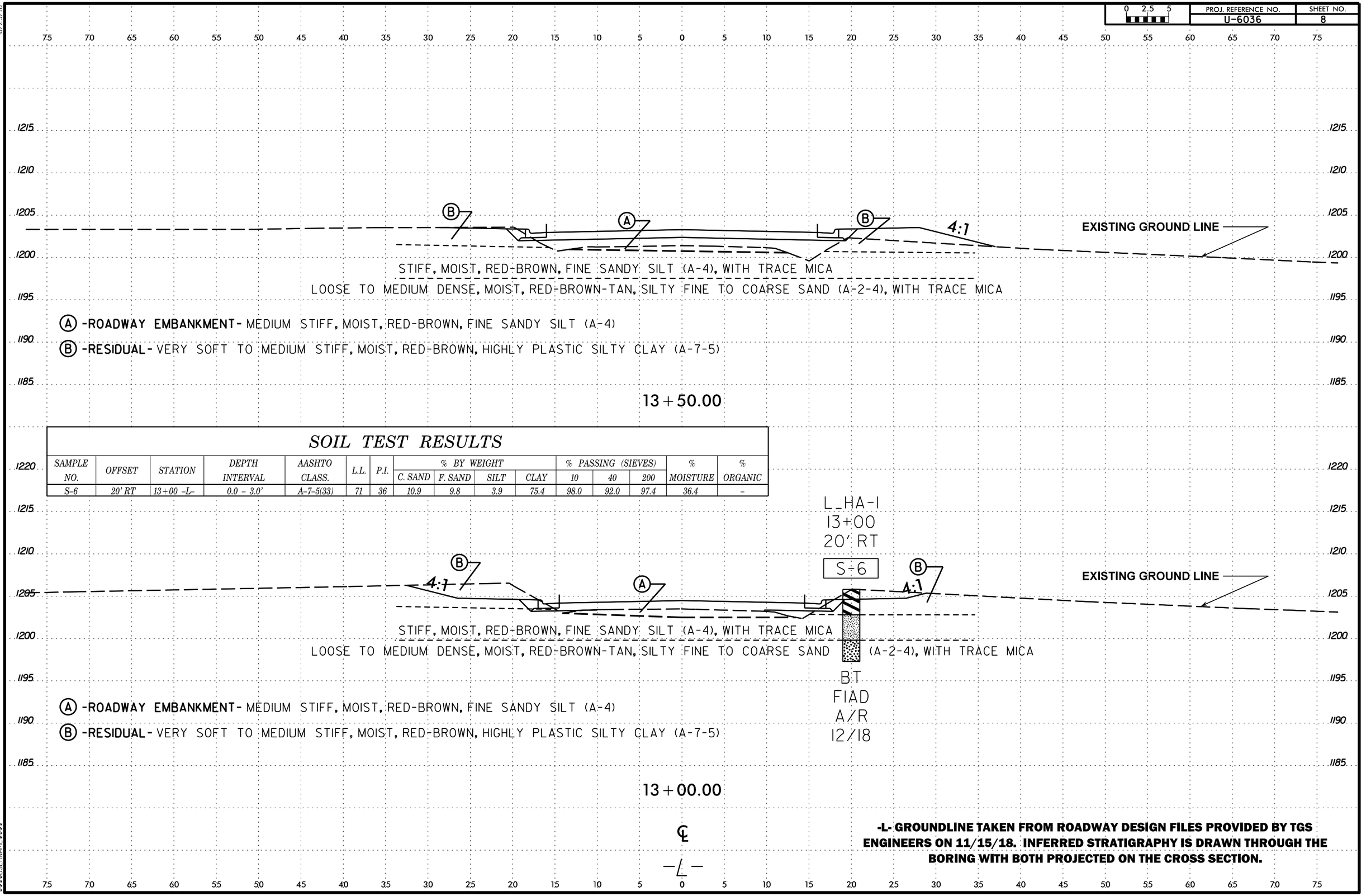
	U-6036	7



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

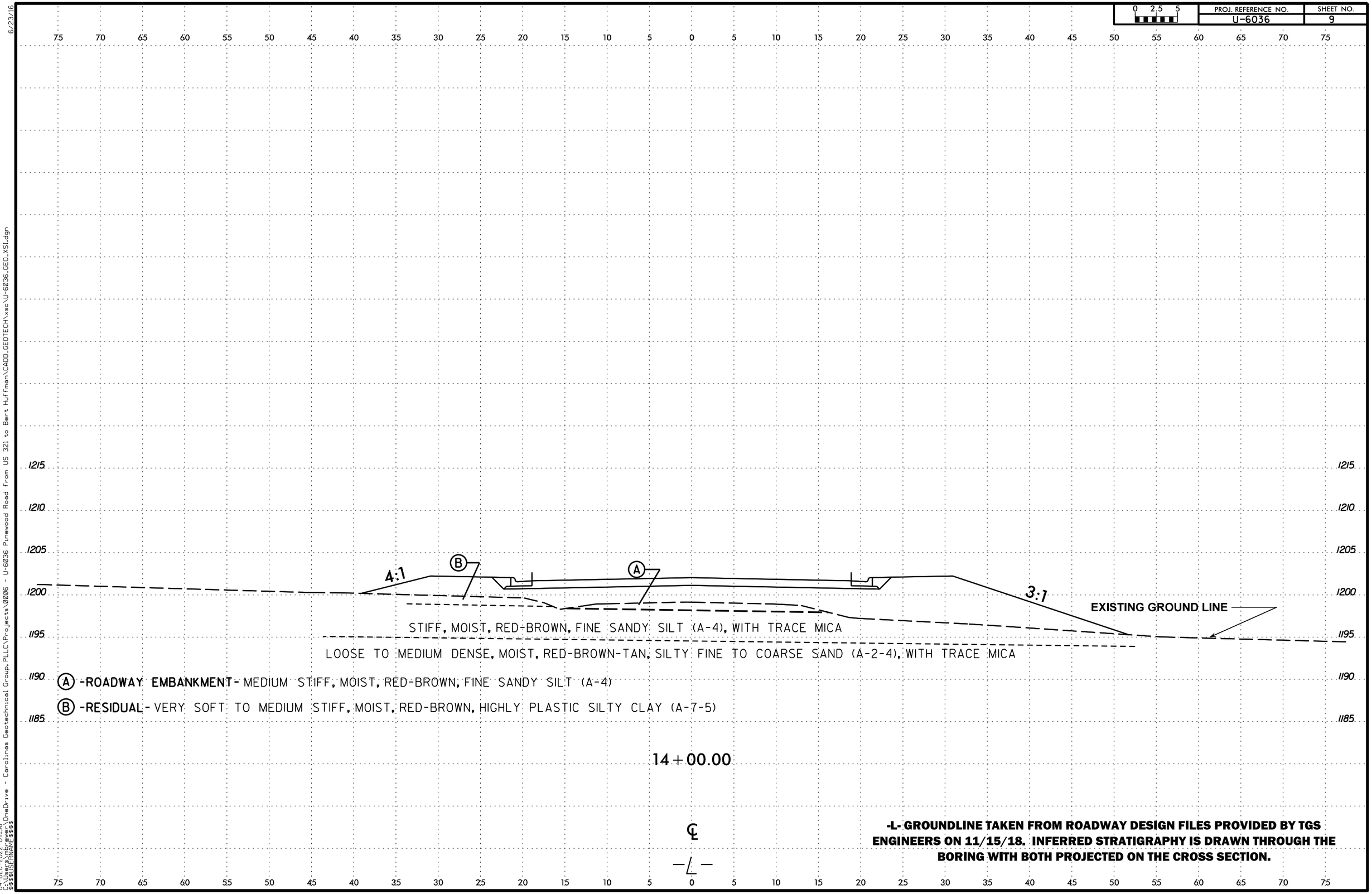


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-6	20' RT	13+00 -L-	0.0 - 3.0'	A-7-5(33)	71	36	10.9	9.8	3.9	75.4	98.0	92.0	97.4	36.4	-

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6036	9



Y_HA-2
-L- STA.
14+59
39' LT

L_B-2
14+50
40' RT

4:1

3:1

EXISTING GROUND LINE

-RESIDUAL- SOFT TO VERY STIFF, WET TO MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5),

STIFF, MOIST, TAN-RED-BROWN, FINE SANDY SILT (A-4) AND CLAYEY SILT (A-5), WITH TRACE MICA

WITH TRACE ORGANICS AND MICA

MEDIUM DENSE, MOIST, GRAY-WHITE, SILTY FINE SAND (A-2-4), WITH TRACE MICA

BT
FIAD
12/18

BT
DRY
01/19

10
17
14
12
15

Ⓐ -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, RED-BROWN, FINE SANDY SILT (A-4)

14+50.00

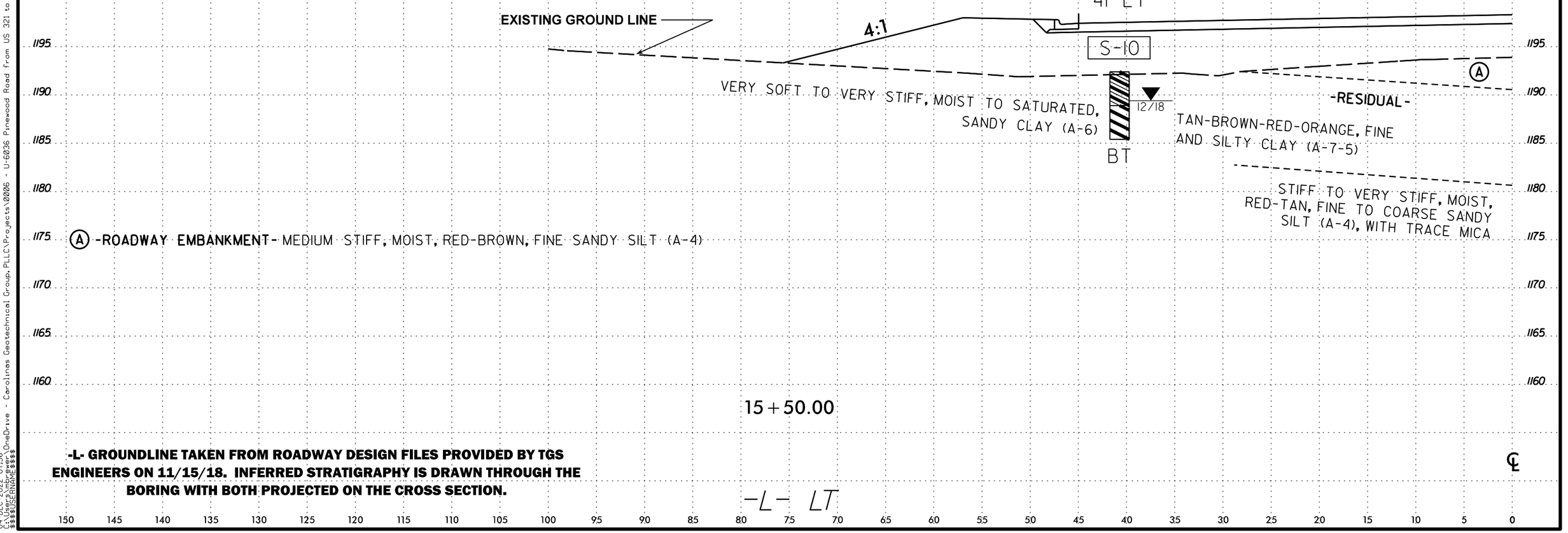
℄

-L-

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-10	41' LT	15+43 -L-	1.5 - 3.5'	A-6(5)	38	16	29.5	21.3	11.7	37.5	99.0	80.0	51.1	27.6	-



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

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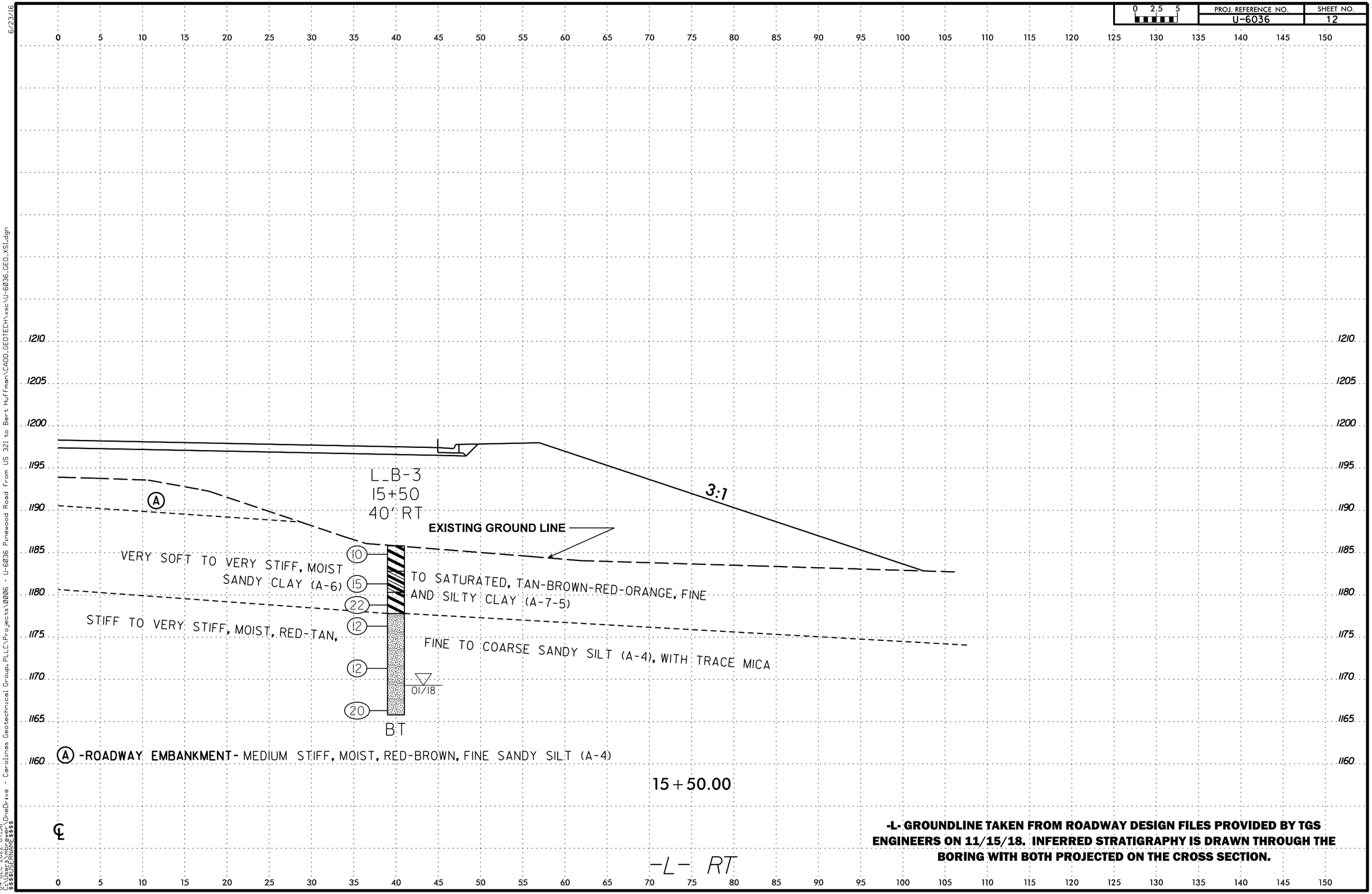
	U-6036	12



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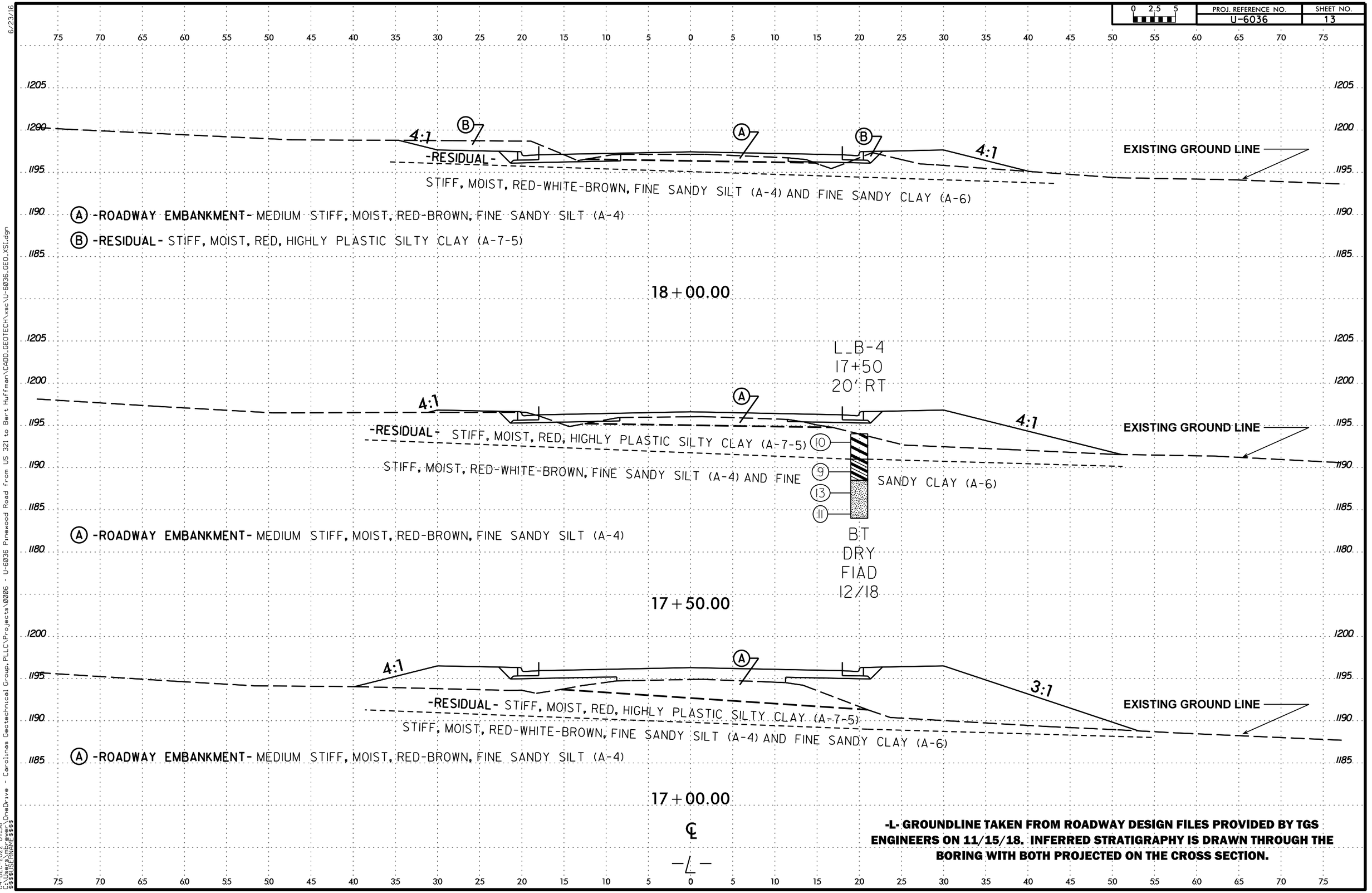
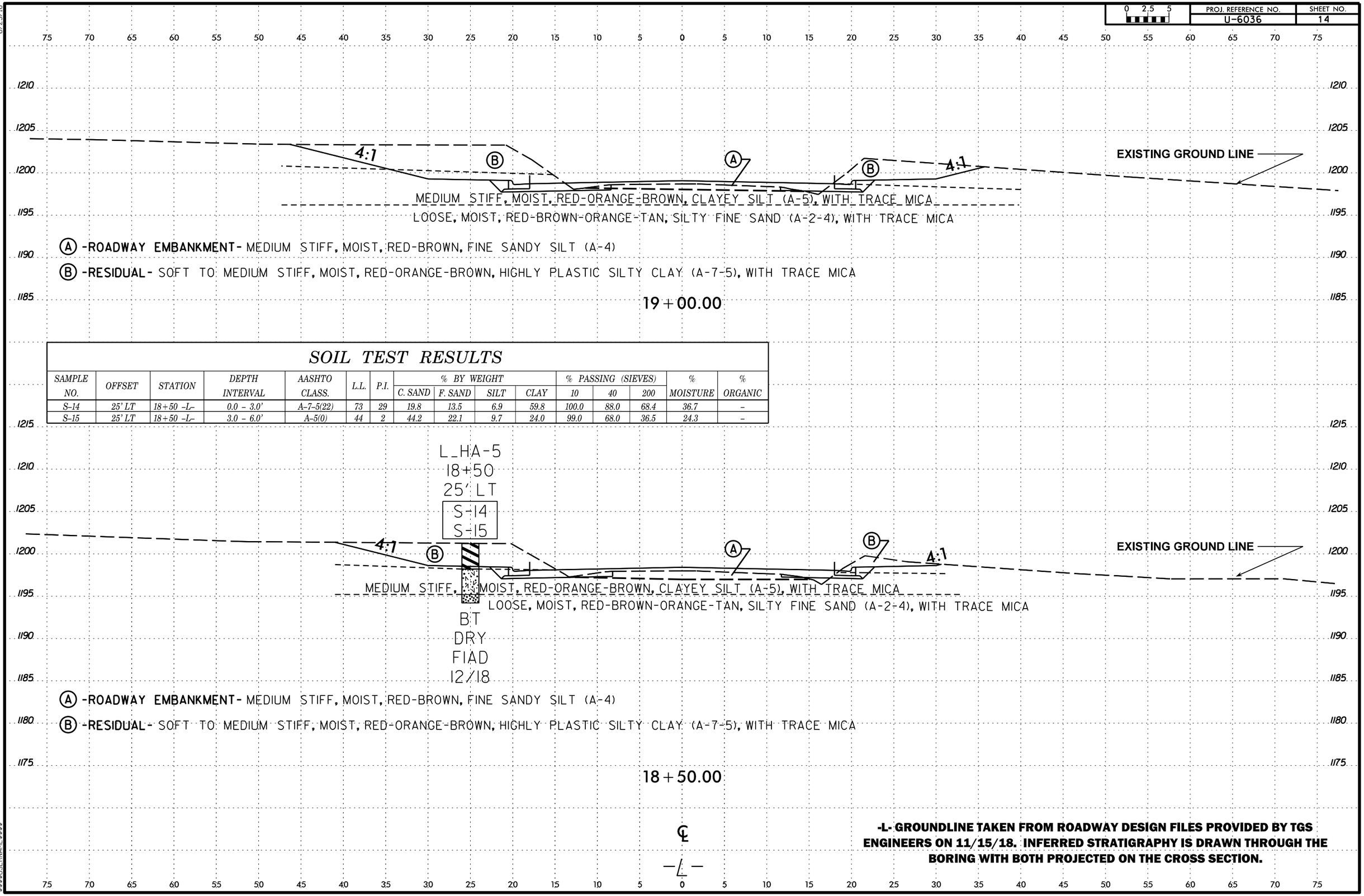


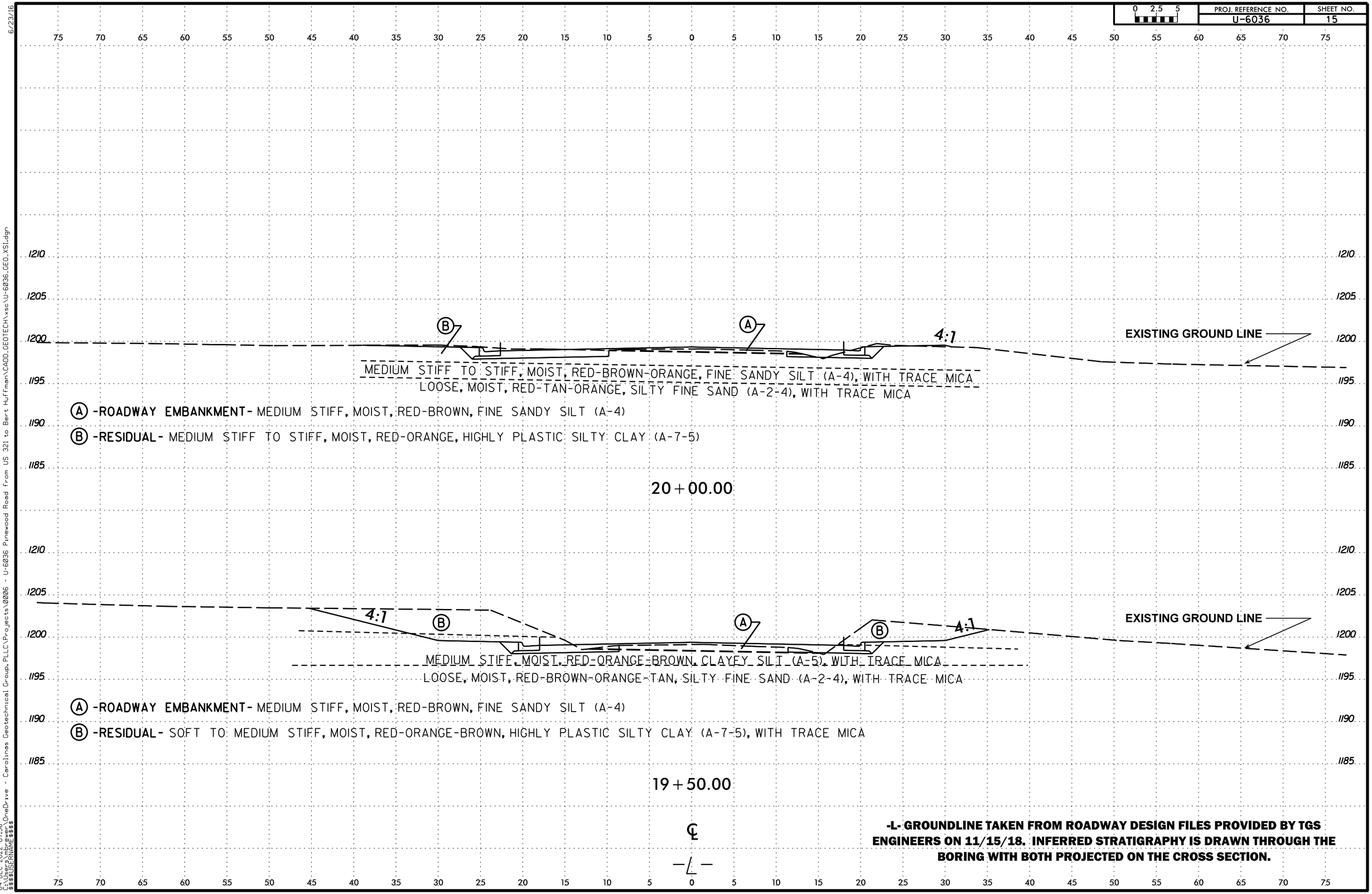
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



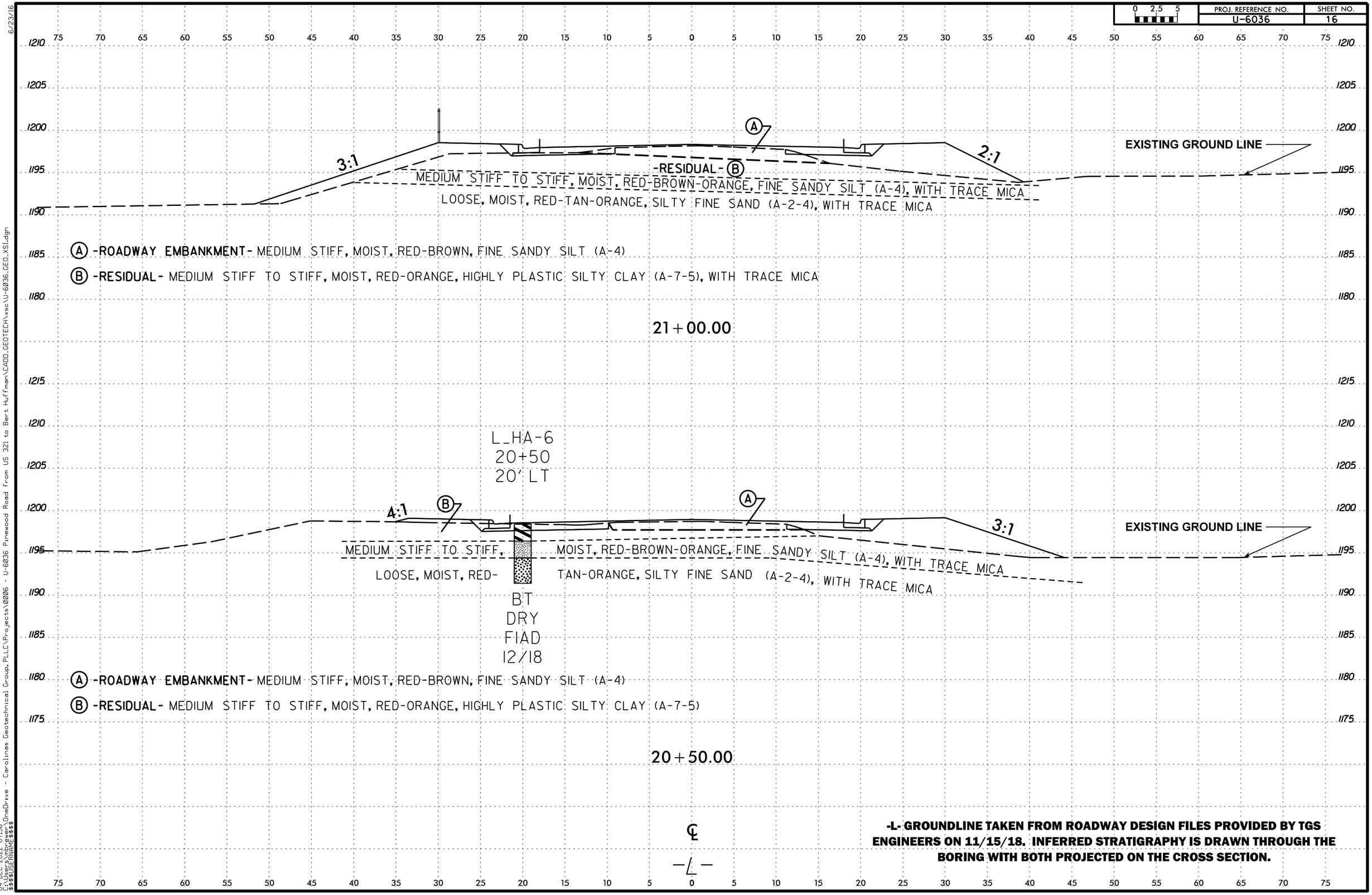
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-14	25' LT	18+50 -L-	0.0 - 3.0'	A-7-5(22)	73	29	19.8	13.5	6.9	59.8	100.0	88.0	68.4	36.7	-
S-15	25' LT	18+50 -L-	3.0 - 6.0'	A-5(0)	44	2	44.2	22.1	9.7	24.0	99.0	68.0	36.5	24.3	-

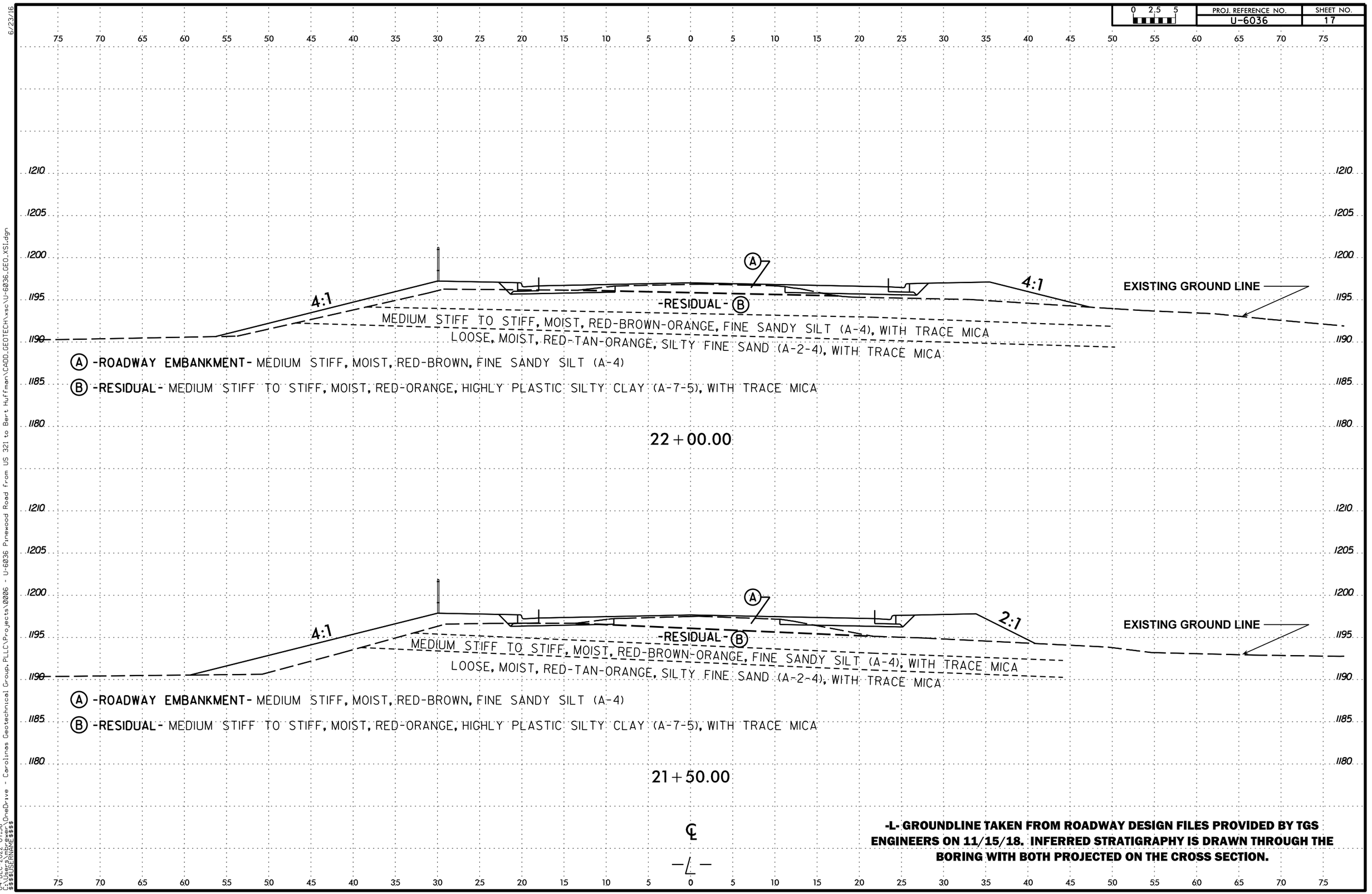
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



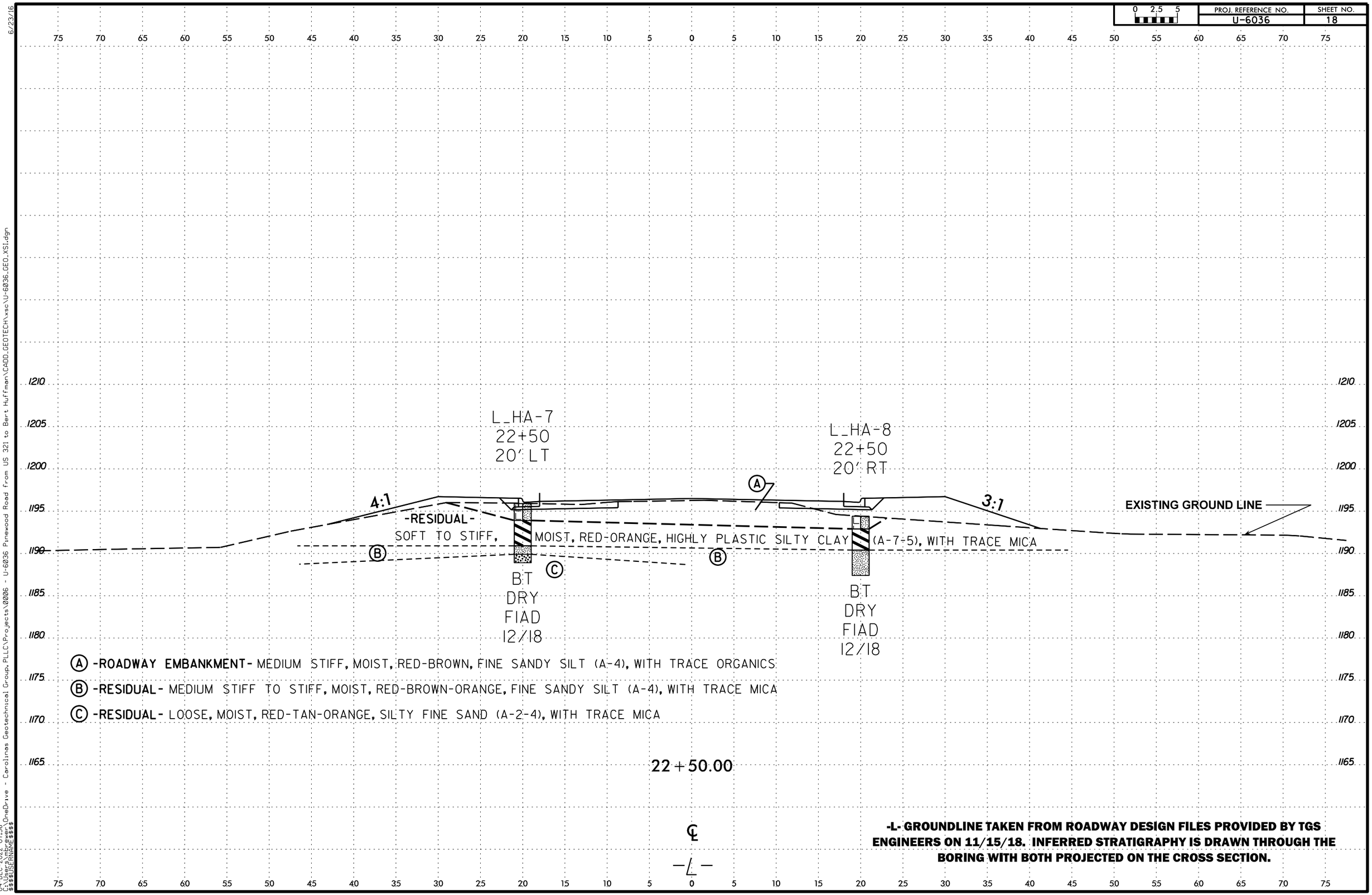
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6036	18

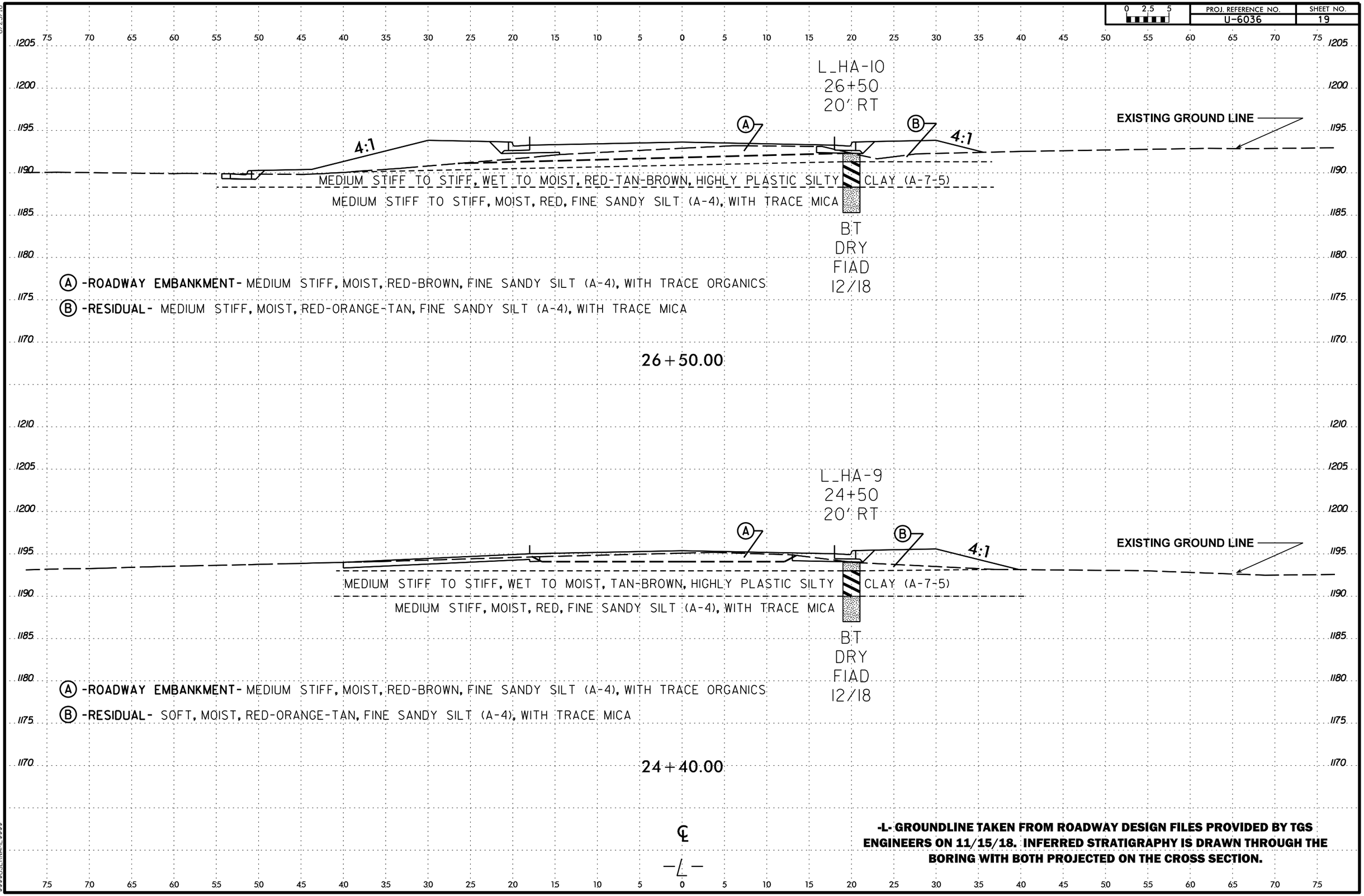


Ⓐ **-ROADWAY EMBANKMENT-** MEDIUM STIFF, MOIST, RED-BROWN, FINE SANDY SILT (A-4), WITH TRACE ORGANICS

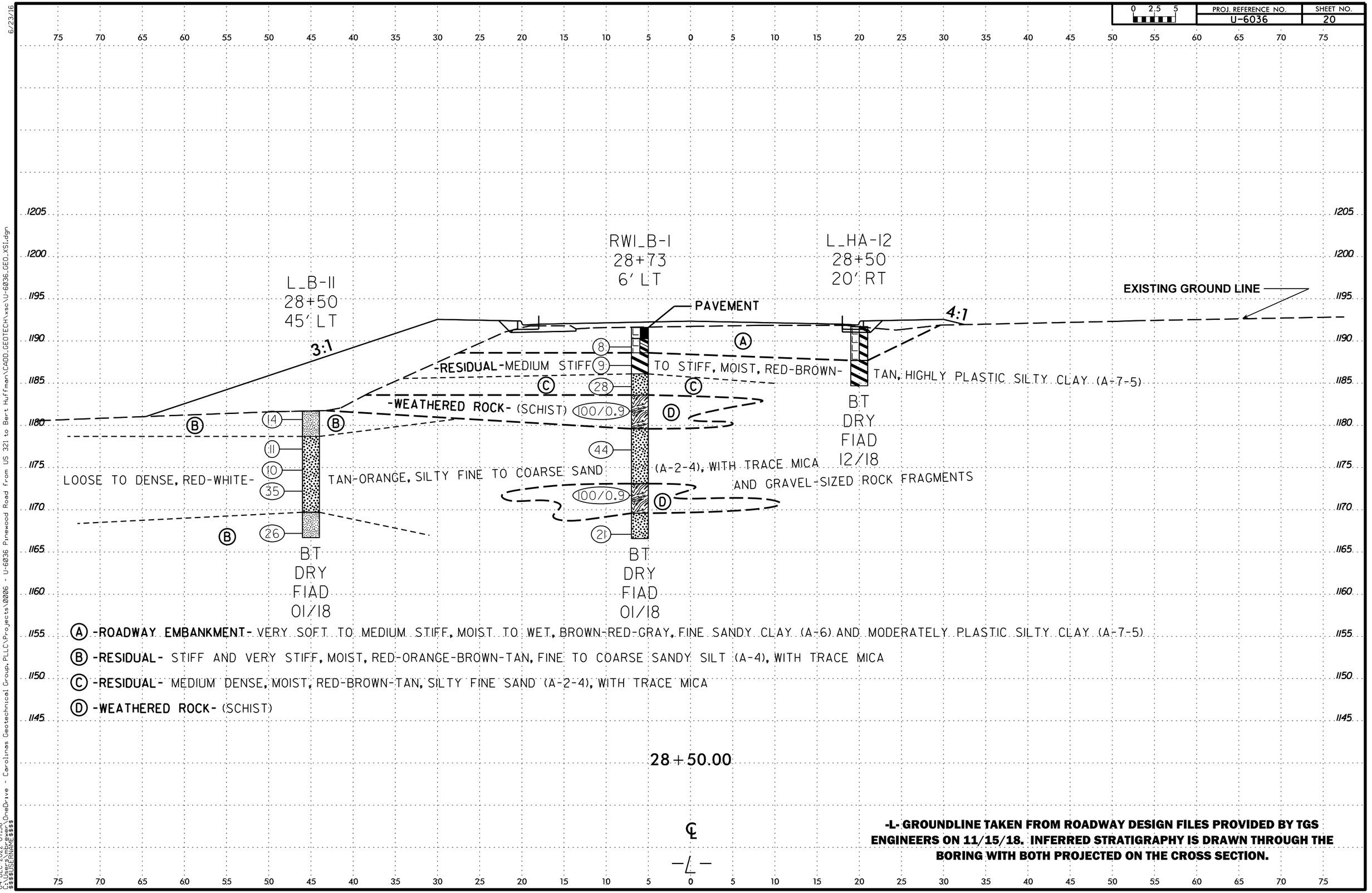
Ⓑ **-RESIDUAL-** MEDIUM STIFF TO STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA

Ⓒ **-RESIDUAL-** LOOSE, MOIST, RED-TAN-ORANGE, SILTY FINE SAND (A-2-4), WITH TRACE MICA

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



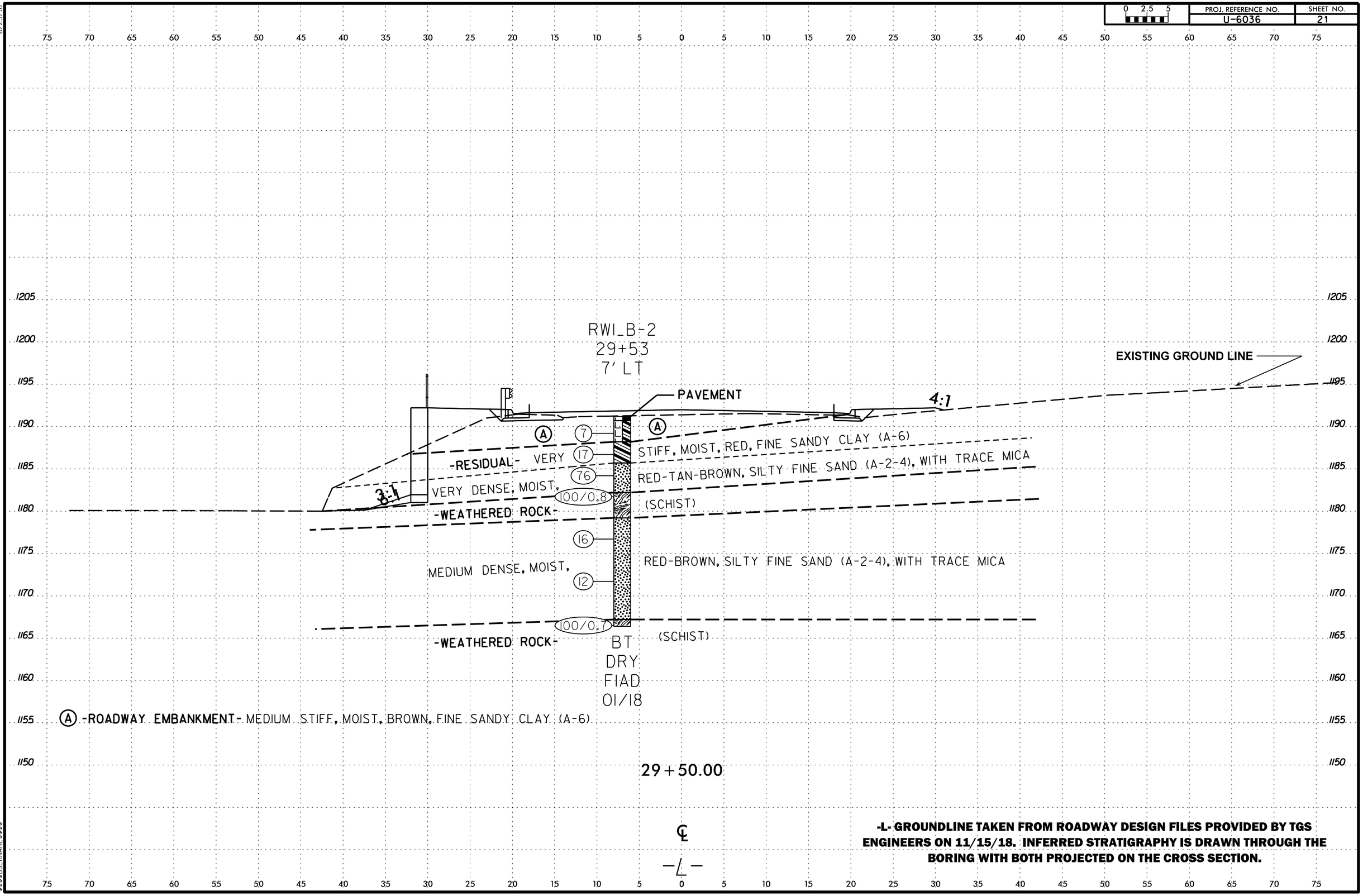
Ⓐ **-ROADWAY EMBANKMENT-** VERY SOFT TO MEDIUM STIFF, MOIST TO WET, BROWN-RED-GRAY, FINE SANDY CLAY (A-6) AND MODERATELY PLASTIC SILTY CLAY (A-7-5)

Ⓑ **-RESIDUAL-** STIFF AND VERY STIFF, MOIST, RED-ORANGE-BROWN-TAN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

Ⓒ **-RESIDUAL-** MEDIUM DENSE, MOIST, RED-BROWN-TAN, SILTY FINE SAND (A-2-4), WITH TRACE MICA

Ⓓ **-WEATHERED ROCK-** (SCHIST)

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJ. REFERENCE NO.	SHEET NO.
U-6036	22

0 2.5 5

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

1205 1200 1195 1190 1185 1180 1175 1170 1165 1160 1155 1150 1145

RWI_B-3
30+46
7' LT

L_HA-13
30+50
20' RT

EXISTING GROUND LINE

PAVEMENT

4:1

8:1

-RESIDUAL-

LOOSE TO DENSE, MOIST,

SAND (A-2-4), WITH TRACE MICA

(A)

15
15
6
8
7
45
12

TAN-ORANGE-RED-

AND GRAVEL-SIZED

BT
DRY
FIAD
01/18

(B)

(C)

BT
DRY
FIAD
12/18

BROWN, SILTY FINE

ROCK FRAGMENTS

(A) **-ROADWAY EMBANKMENT-** STIFF, MOIST, RED-BROWN, FINE SANDY CLAY (A-6), WITH TRACE MICA

(B) **-RESIDUAL-** MEDIUM STIFF TO STIFF, MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5), WITH TRACE MICA

(C) **-RESIDUAL-** MEDIUM STIFF TO STIFF, MOIST, RED-BROWN, FINE SANDY SILT (A-4), WITH TRACE MICA

30+50.00

℄

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16

04-DEC-2022 07:56
C:\Users\$$$$USERNAME$$$$\OneDrive - Carolinas Geotechnical Group,PLLC\Projects\0006 - U-6036 Pinewood Road from US 321 to Bert Huffman\CADD_GEOTECH\xsc\U-6036_GEO_XSI.dgn

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6036	23

RWI_B-4
31+48
7' LT

EXISTING GROUND LINE

PAVEMENT

2:1

4:1

-RESIDUAL-

(A) (16) (20) (16) (14) (9) (8) (10)

(B)

LOOSE TO MEDIUM DENSE, MOIST, RED-TAN- WHITE-ORANGE, SILTY FINE SAND (A-2-4), WITH TRACE MICA

BT
DRY
FIAD
01/18

(A) **-ROADWAY EMBANKMENT-** VERY STIFF, MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5), WITH TRACE MICA

(B) **-RESIDUAL-** VERY STIFF, MOIST, RED-BROWN, FINE SANDY CLAY (A-6), WITH TRACE MICA

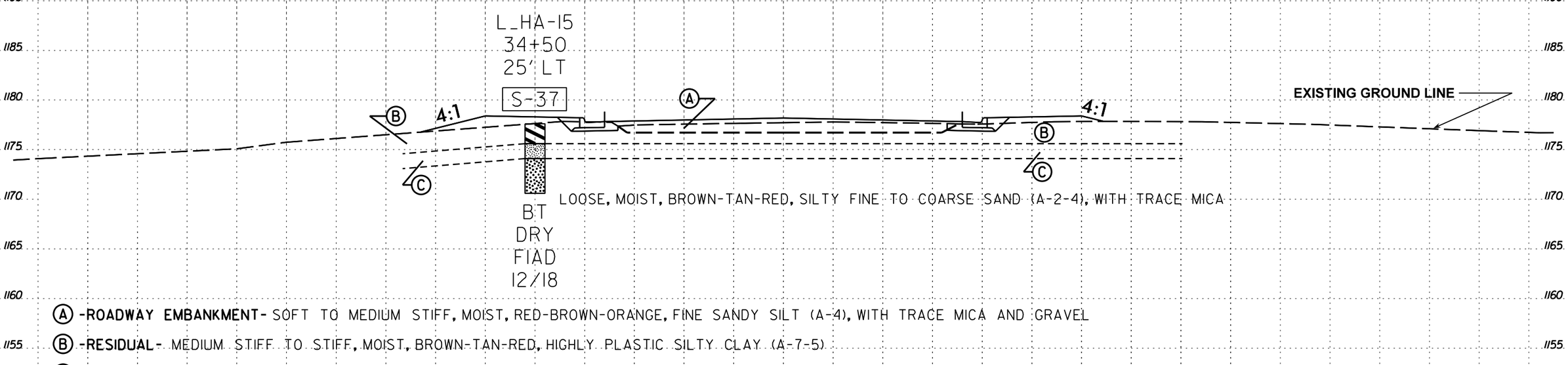
31+50.00

℄

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

SOIL TEST RESULTS

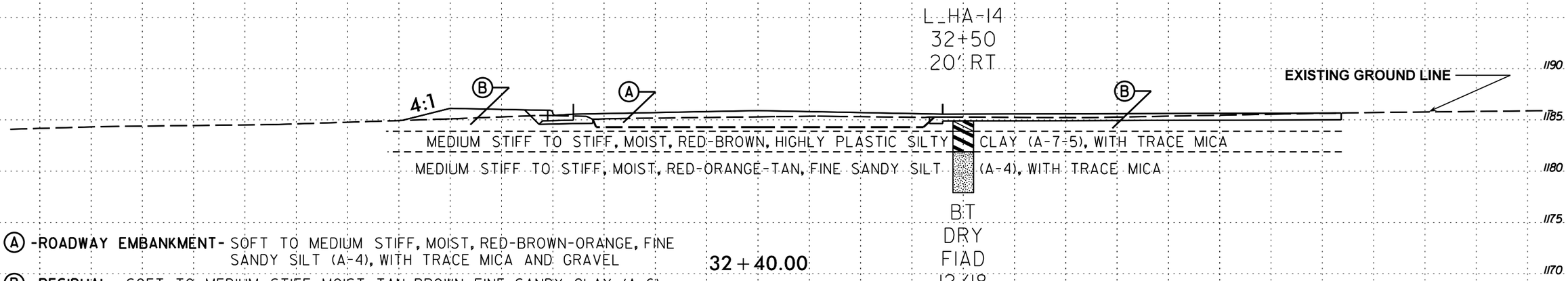
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
S-37	25' LT	34+50 -L-	0.0 - 2.0'	A-7-5(21)	69	33	21.6	13.9	9.3	55.2	97.0	84.0	64.1	30.7	-



Ⓐ **-ROADWAY EMBANKMENT-** SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

Ⓑ **-RESIDUAL-** MEDIUM STIFF TO STIFF, MOIST, BROWN-TAN-RED, HIGHLY PLASTIC SILTY CLAY (A-7-5)

Ⓒ **-RESIDUAL-** STIFF, MOIST, RED-BROWN-TAN, FINE SANDY SILT (A-4), WITH TRACE MICA



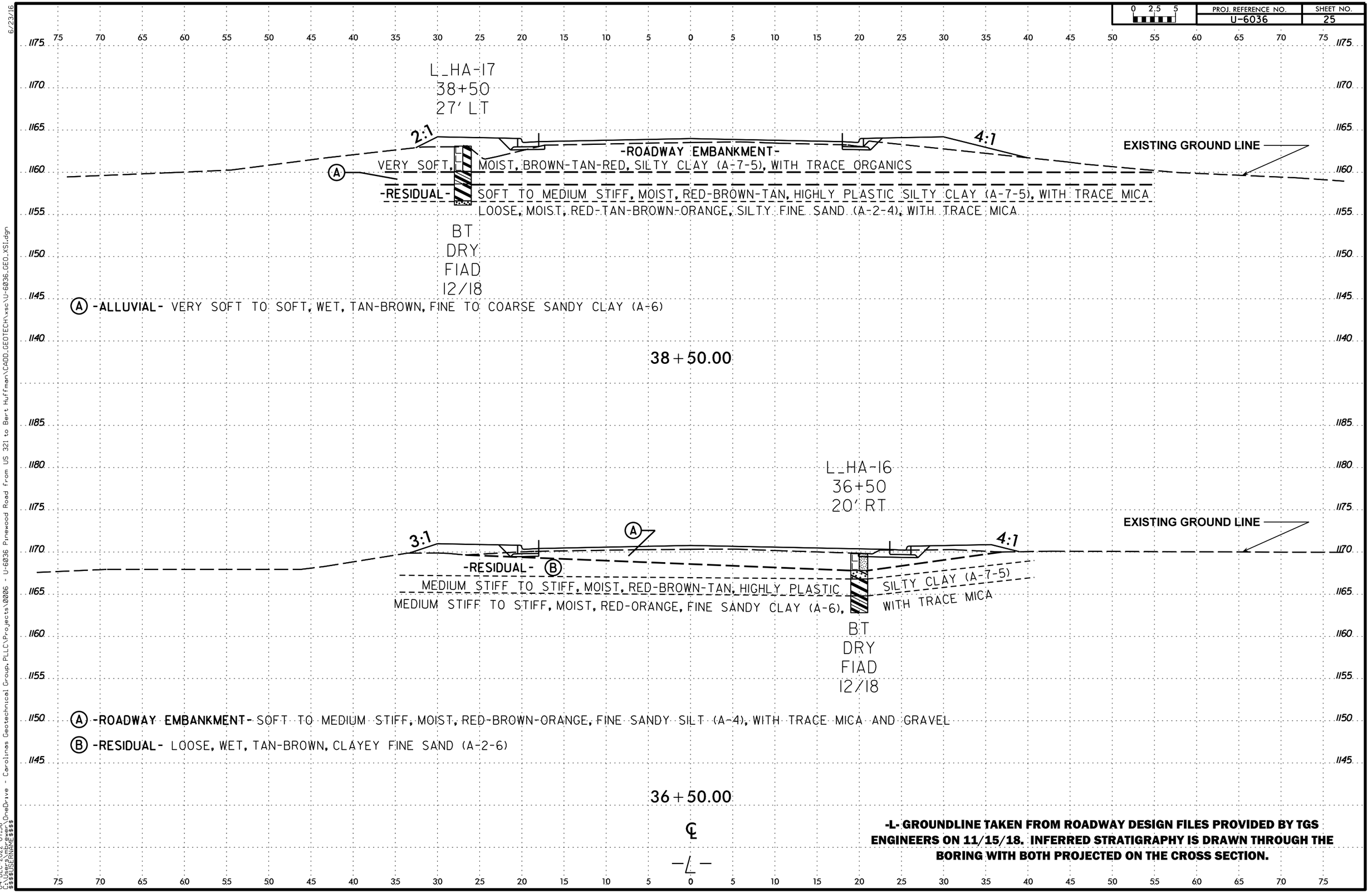
Ⓐ **-ROADWAY EMBANKMENT-** SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

Ⓑ **-RESIDUAL-** SOFT TO MEDIUM STIFF, MOIST, TAN-BROWN, FINE SANDY CLAY (A-6)

℄

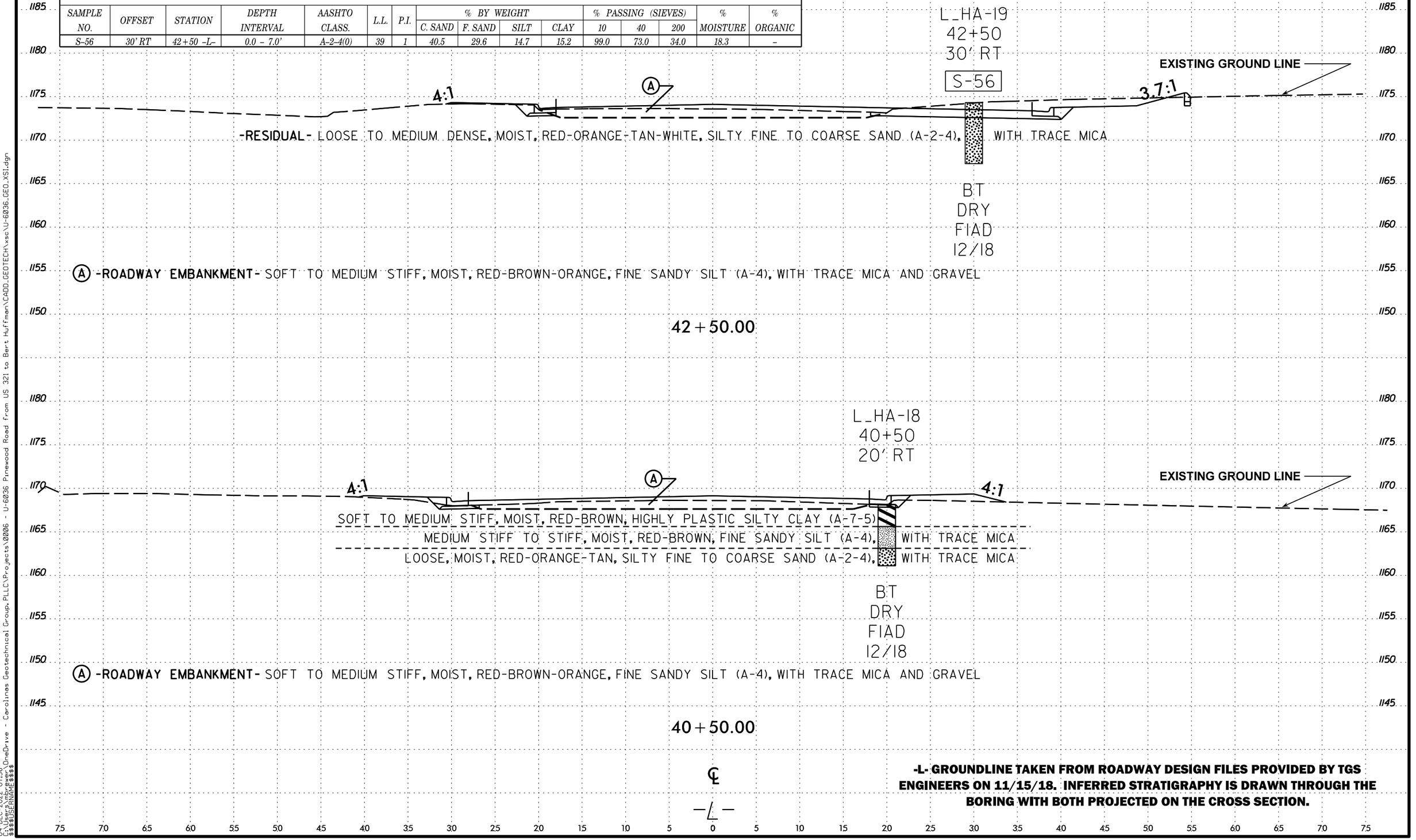
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6036	25



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-56	30' RT	42+50 -L-	0.0 - 7.0'	A-2-4(0)	39	1	40.5	29.6	14.7	15.2	99.0	73.0	34.0	18.3	-



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6036	27

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

1185 1180 1175 1170 1165 1160

EXISTING GROUND LINE

4:1 A B

-RESIDUAL-

MEDIUM STIFF TO STIFF, MOIST, RED-BROWN, CLAYEY SILT (A-5), WITH TRACE MICA

LOOSE, MOIST, TAN-BROWN-ORANGE-RED, SILTY FINE SAND (A-2-4), WITH TRACE MICA

(A) **-ROADWAY EMBANKMENT-** SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

(B) **-RESIDUAL-** SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-TAN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

43+50.00

1185 1180 1175 1170 1165

EXISTING GROUND LINE

4:1 A 3:1

-RESIDUAL-

LOOSE TO MEDIUM DENSE, MOIST, RED-ORANGE-TAN-WHITE, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA

(A) **-ROADWAY EMBANKMENT-** SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

43+00.00

℄

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

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

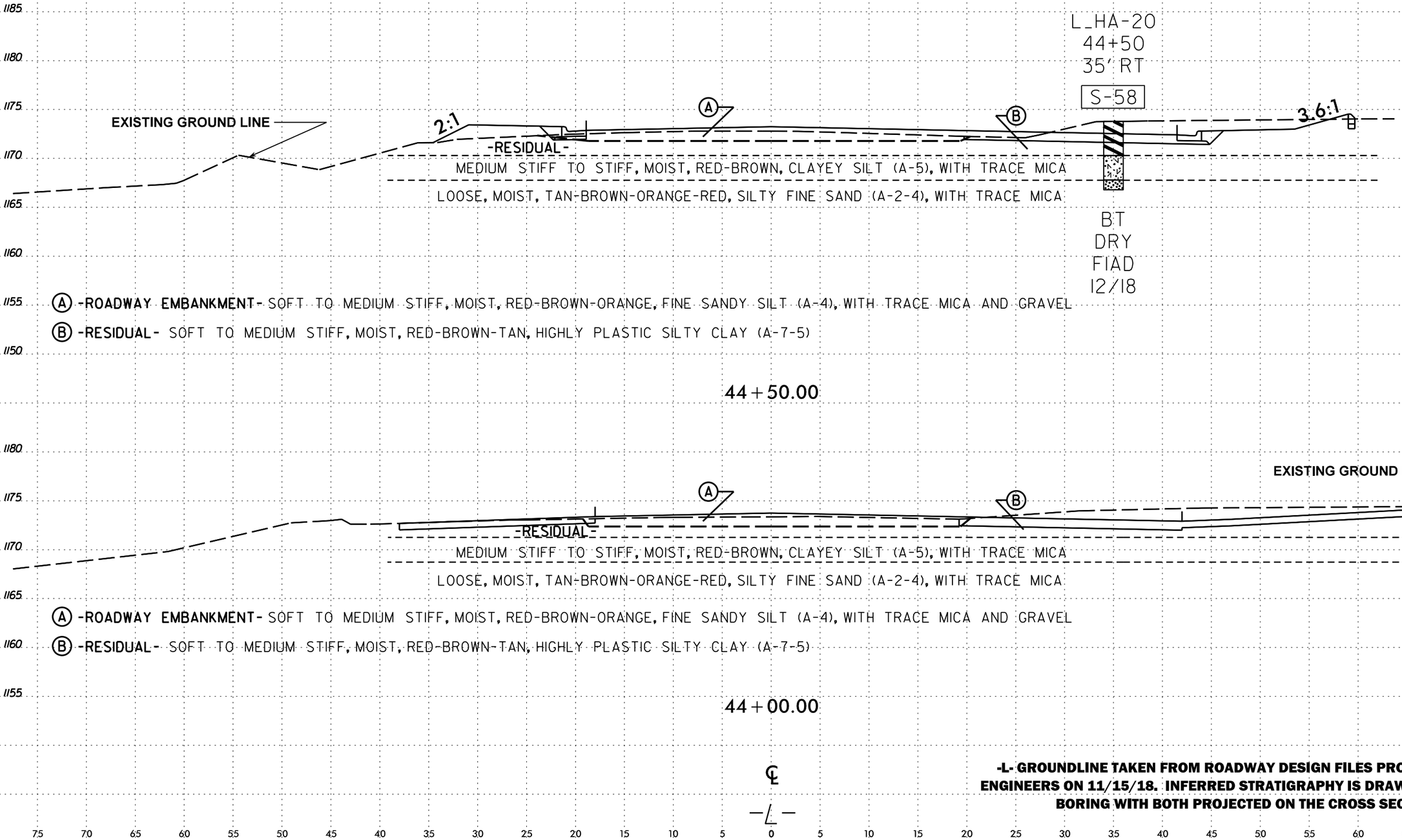
6/23/16

US 321 to Bert Huffman\CADD_GEOTECH\xsc\U-6036_GEO_XSI.dgn

04-DEC-2022 07:56
C:\Users\$$$$USERNAME$$$$\OneDrive - Carolinas Geotechnical Group, PLLC\Projects\0006 - U-6036 Pinewood Road from

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-58	35' RT	44+50 -L-	0.0 - 3.5'	A-7-5(18)	64	29	17.5	22.0	7.8	52.7	99.0	91.0	61.9	26.9	-



-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJ. REFERENCE NO.	SHEET NO.
U-6036	29

0 2.5 5

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

1180 1175 1170 1165 1160

EXISTING GROUND LINE

Ⓐ

4:1

-RESIDUAL- MEDIUM STIFF, MOIST, RED-BROWN-TAN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

MEDIUM STIFF TO STIFF, MOIST, RED-BROWN, FINE SANDY SILT (A-4), WITH TRACE MICA

LOOSE, MOIST, RED-BROWN-ORANGE, SILTY FINE SAND (A-2-4), WITH TRACE MICA

Ⓐ -ROADWAY EMBANKMENT- SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

45+50.00

1185 1180 1175 1170 1165 1160 1155

EXISTING GROUND LINE

2:1

Ⓐ

Ⓑ

3.5:1

MEDIUM STIFF TO STIFF, MOIST, RED-BROWN, CLAYEY SILT (A-5), WITH TRACE MICA

LOOSE, MOIST, TAN-BROWN-ORANGE-RED, SILTY FINE SAND (A-2-4), WITH TRACE MICA

Ⓐ -ROADWAY EMBANKMENT- SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

Ⓑ -RESIDUAL- SOFT TO MEDIUM STIFF, MOIST, RED-BROWN-TAN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

45+00.00

℄

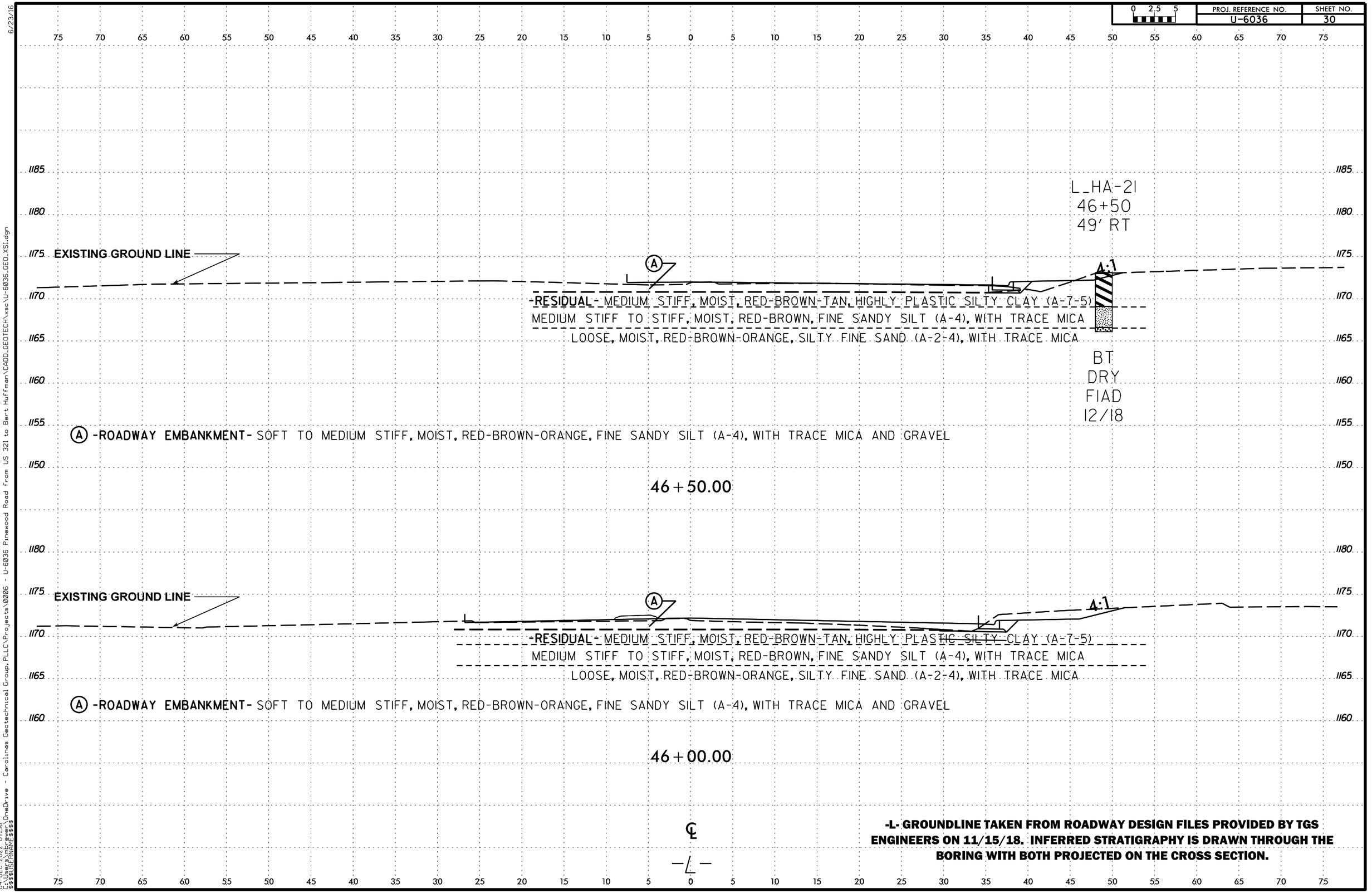
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY TGS ENGINEERS ON 11/15/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING WITH BOTH PROJECTED ON THE CROSS SECTION.

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

6/23/16

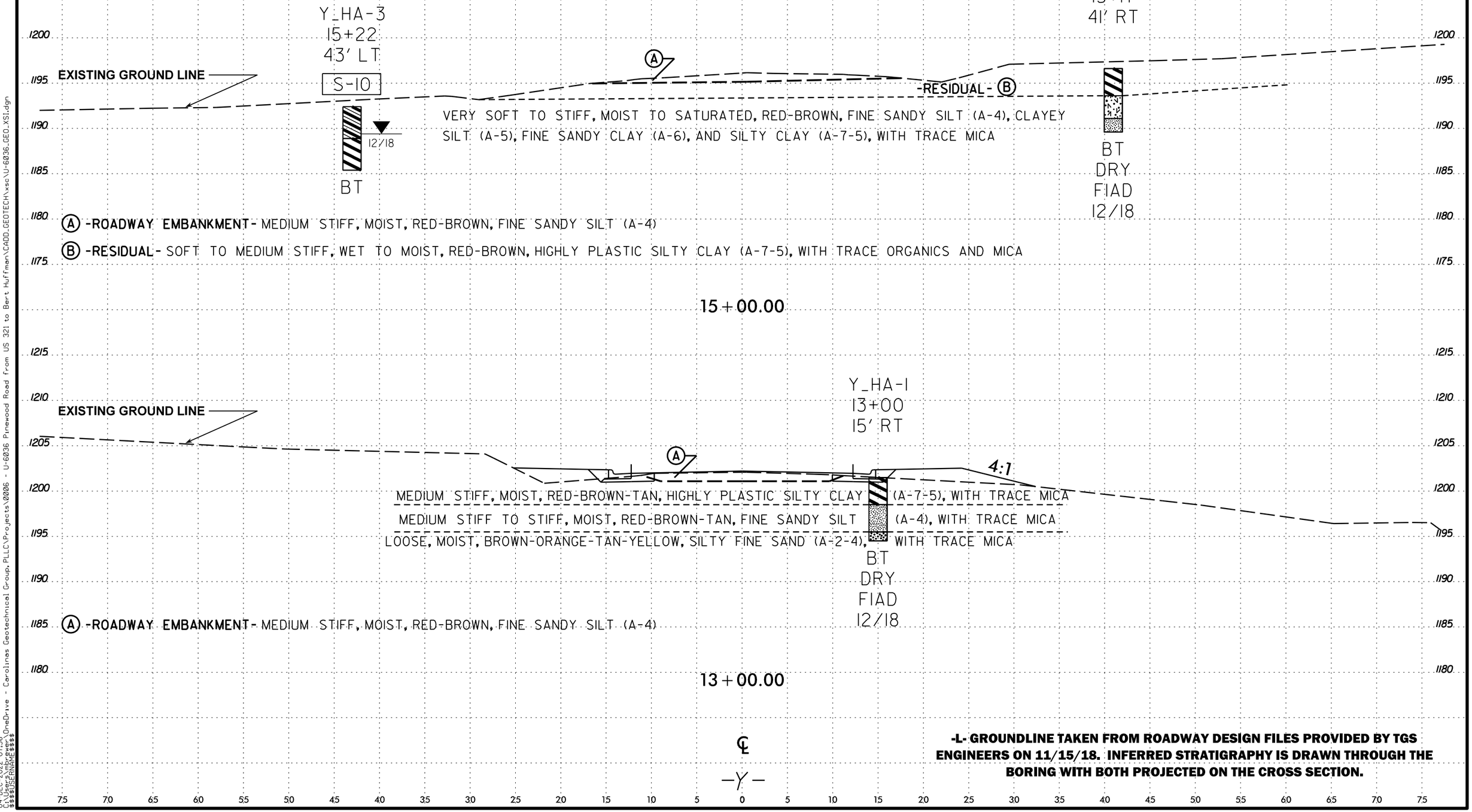
C:\Users\$$USERNAME$$$$\OneDrive - Carolinas Geotechnical Group, PLLC\Projects\0006 - U-6036 Pinewood Road from US 321 to Bert Huffman\CADD_GEOTECH\xsc\U-6036_GEO_XSI.dgn

04-DEC-2022 07:56



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-10	43' LT	15+22 -Y-	1.5 - 3.5'	A-6(5)	38	16	29.5	21.3	11.7	37.5	99.0	80.0	51.1	27.6	-



PROJ. REFERENCE NO.	SHEET NO.
U-6036	32

0 2.5 5

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

1185 1180 1175 1170 1165 1160 1155 1150

YI_HA-2
15+00
20' RT

EXISTING GROUND LINE

3:1

Ⓐ

-RESIDUAL-
MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA
LOOSE, MOIST, RED-BROWN-ORANGE-TAN, SILTY FINE SAND (A-2-4), WITH TRACE MICA

BT
DRY
FIAD
12/18

Ⓐ -ROADWAY EMBANKMENT- MEDIUM STIFF, MOIST, RED-BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA AND GRAVEL

15+00.00

1180 1175 1170 1165 1160 1155 1150 1145

YI_HA-1
13+00
15' LT

EXISTING GROUND LINE

2:1

Ⓑ

-ROADWAY EMBANKMENT-

4:1

Ⓐ

SOFT TO VERY SOFT, SATURATED, TAN-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-5)

BT
DRY
12/18

Ⓐ -ROADWAY EMBANKMENT- VERY SOFT TO MEDIUM STIFF, MOIST, BROWN-ORANGE-BLACK-RED, FINE SANDY SILT (A-4) AND SILTY CLAY (A-7-5), WITH TRACE MICA

Ⓑ -ALLUVIAL- VERY SOFT TO SOFT, WET, TAN-RED-ORANGE, FINE TO COARSE SANDY CLAY (A-6)

13+00.00

℄

-Y1-

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

6/23/16

US 321 to Bert Huffman\CADD_GEOTECH\xsc\U-6036_GEO_XSI.dgn

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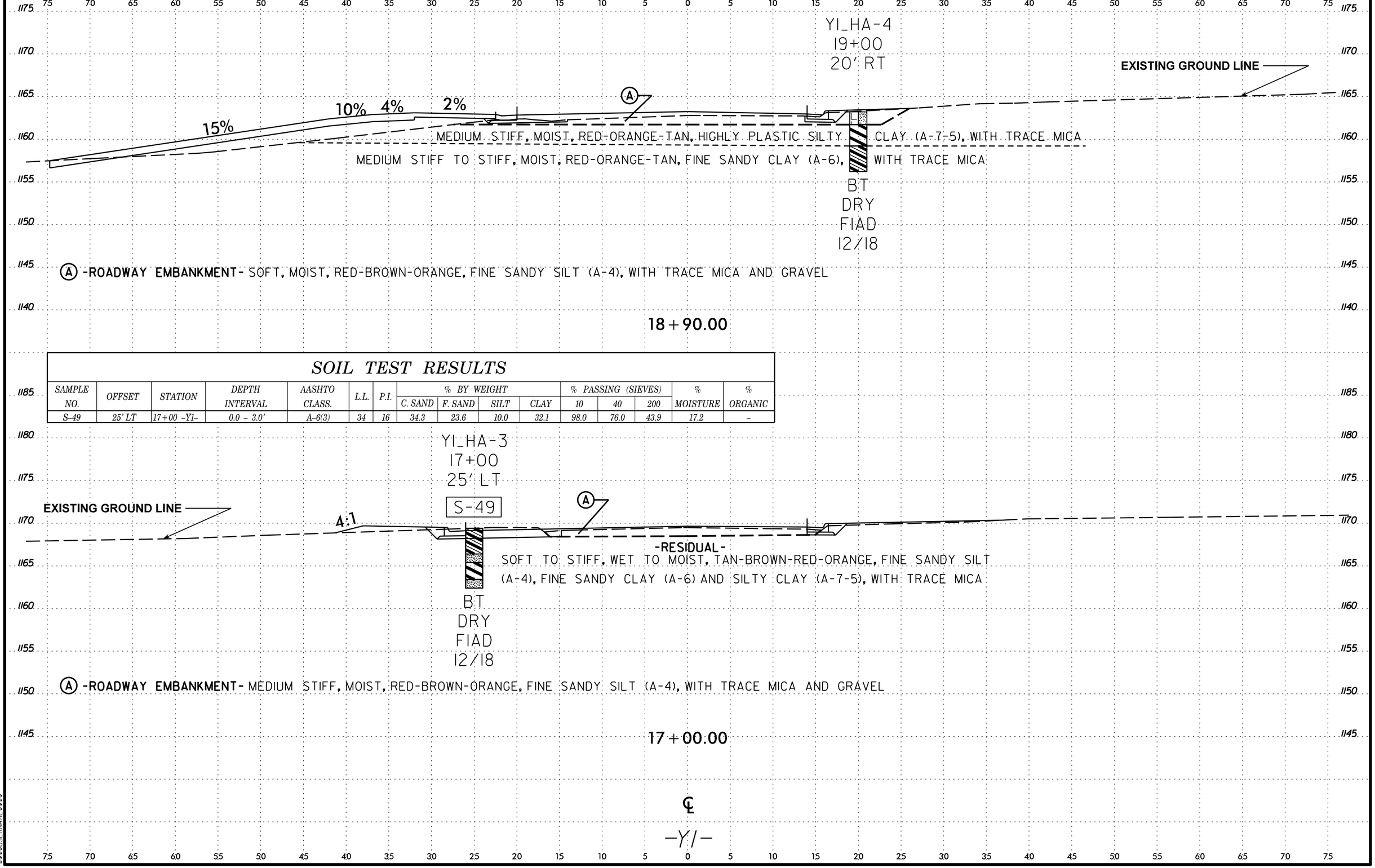

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-49	25' LT	17+00 -Y1-	0.0 - 3.0'	A-6(3)	34	16	34.3	23.6	10.0	32.1	98.0	76.0	43.9	17.2	-

PROJECT REFERENCE NO.	SHEET NO.
U–6036	34

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
LABORATORY RESULTS

REFERENCE: U–6036

PROJECT: 46971

Prepared in the Office of:

ITHIR TESTING, LLC
NCDOT CERT NO. 138-0147
9908 Raddington Lane
Charlotte, NC 28269
(704)-659-5277

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S–6	20' RT	13+00 –L–	0.0 – 3.0'	A–7–5(33)	71	36	10.9	9.8	3.9	75.4	98.0	92.0	97.4	36.4	–
S–10	41' LT	15+43 –L–	1.5 – 3.5'	A–6(5)	38	16	29.5	21.3	11.7	37.5	99.0	80.0	51.1	27.6	–
S–14	25' LT	18+50 –L–	0.0 – 3.0'	A–7–5(22)	73	29	19.8	13.5	6.9	59.8	100.0	88.0	68.4	36.7	–
S–15	25' LT	18+50 –L–	3.0 – 6.0'	A–5(0)	44	2	44.2	22.1	9.7	24.0	99.0	68.0	36.5	24.3	–
S–37	25' LT	34+50 –L–	0.0 – 2.0'	A–7–5(21)	69	33	21.6	13.9	9.3	55.2	97.0	84.0	64.1	30.7	–
S–56	30' RT	42+50 –L–	0.0 – 7.0'	A–2–4(0)	39	1	40.5	29.6	14.7	15.2	99.0	73.0	34.0	18.3	–
S–58	35' RT	44+50 –L–	0.0 – 3.5'	A–7–5(18)	64	29	17.5	22.0	7.8	52.7	99.0	91.0	61.9	26.9	–
S–10	43' LT	15+22 –Y–	1.5 – 3.5'	A–6(5)	38	16	29.5	21.3	11.7	37.5	99.0	80.0	51.1	27.6	–
S–49	25' LT	17+00 –Y1–	0.0 – 3.0'	A–6(3)	34	16	34.3	23.6	10.0	32.1	98.0	76.0	43.9	17.2	–

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