STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5899	1	66

REFERENCE: U-5899

PROJECT: 44689

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

APPENDICES

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *FORSYTH*

PROJECT DESCRIPTION *FORUM PARKWAY CONNECTOR FROM SR 3955 (FORUM PARKWAY) TO NC 66 (UNIVERSITY PARKWAY) IN RURAL HALL*

INVENTORY

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

P.M. WEAVER

C.R. PASTRANA

D. TINSON

M. ULMER

RED DOG DRILLING

INVESTIGATED BY *ESP Associates, INC.*

DRAWN BY *PASTRANA /BARRERA*

CHECKED BY *P.M. WEAVER*

SUBMITTED BY *ESP Associates, INC.*

DATE *November 2021*

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DocuSigned by:
Paul M. Weaver Nov 30, 2021
01847D3739AD49C...
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5899	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:
- [X] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] 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
- [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: BL 204: N898203.1760, E1619929.9670

ELEVATION: 858.32 FEET

NOTES:

F.I.A.D. FILLED IN AFTER DRILLING

TIN FILE "U5899_Merged.tin" WAS USED TO DETERMINE GROUND ELEVATION FOR ALL ROADWAY AND RETAINING WALL BORINGS

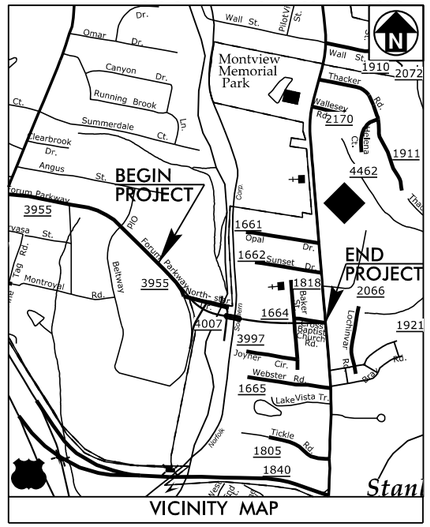
DATE: 8-15-14

09/08/99

TIP PROJECT: U-5899

CONTRACT:

See Sheet 1A For Index of Sheets



VICINITY MAP

75% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

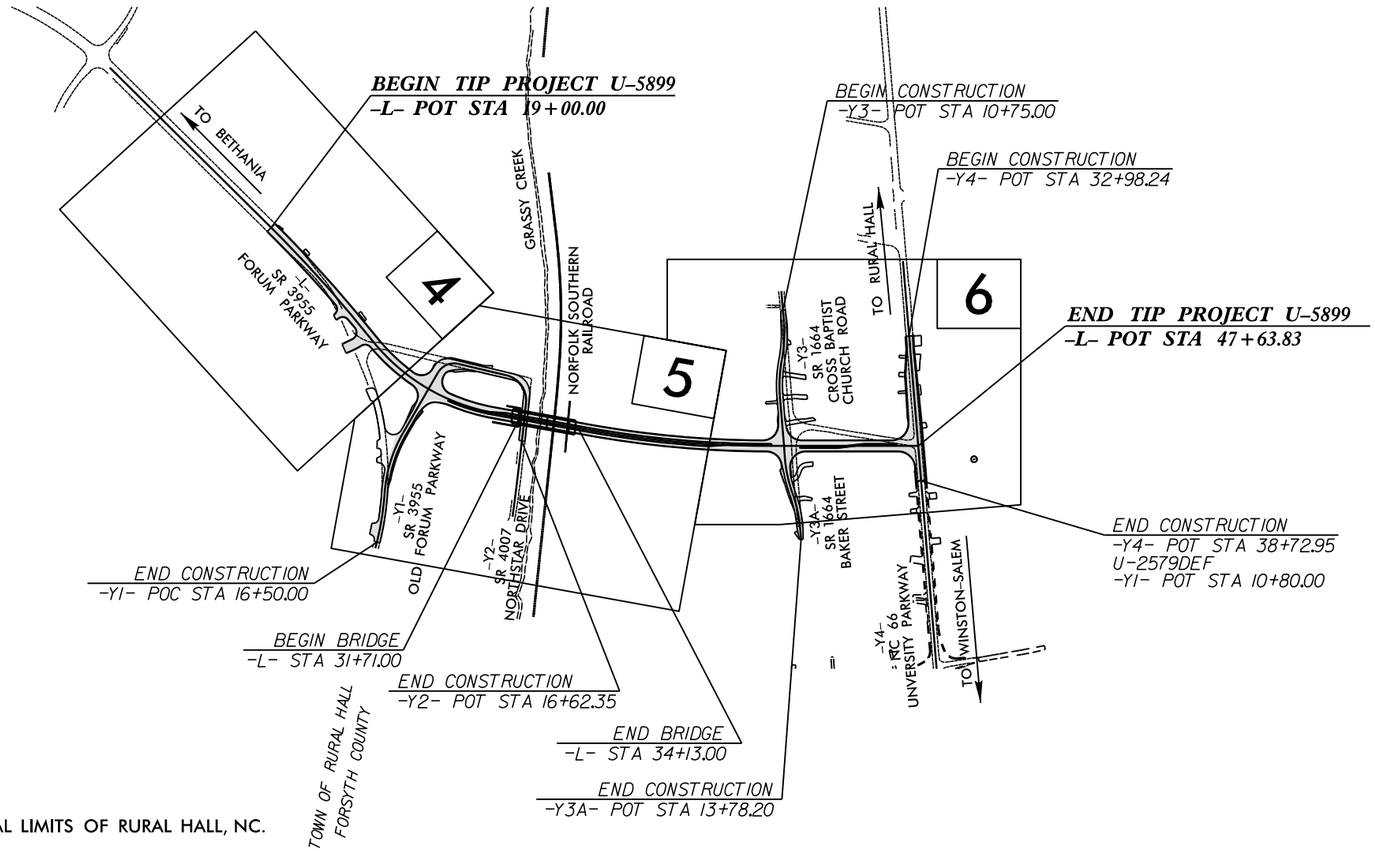
FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5899	3	66

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44689.1.1	N/A	PE
44689.2.1	N/A	ROW/UTIL.
44689.3.1	N/A	CONST.

LOCATION: FORUM PARKWAY CONNECTOR FROM SR 3955 (FORUM PARKWAY) TO NC 66 (UNIVERSITY PARKWAY) IN RURAL HALL

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



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL LIMITS OF RURAL HALL, NC.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2024 = 6,100
ADT 2044 = 7,300
K = 7 %
D = 70 %
T = 13 % *
V = 40 MPH
* TTST = 8% DUAL 5%
FUNC CLASS = LOCAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5899 = 0.498 MILES
LENGTH STRUCTURE TIP PROJECT U-5899 = 0.045 MILES
TOTAL LENGTH OF TIP PROJECT U-5899 = 0.542 MILES

TOTAL PROJECT LENGTH BASED ON -L- STATIONS.

PLANS PREPARED FOR THE NCDOT BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.mottmac.com/americas
LICENSE NO. F-0669

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 17, 2021

LETTING DATE:
JUNE 18, 2024

DAVID C. WALLER, PE
PROJECT ENGINEER
PEF ENGINEER

JEFFREY R. COOKE, PE
PROJECT DESIGN ENGINEER
PEF ENGINEER

CONNIE JAMES, PE
NCDOT DIVISION PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

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rpastrana

November 17 , 2021

STATE PROJECT NO.: 44689.1.1
TIP: U-5899
COUNTY: Forsyth
DESCRIPTION: Forum Parkway Connector from 3955 (Forum Parkway) to NC 66 (University Parkway) in Rural Hall
SUBJECT: Geotechnical Report – Roadway Inventory

Project Description

This proposed project is located in Rural Hall, North Carolina. The project begins at -L- Station 19+00.00 and continues to -L-Station 47+63.83, which is at the University Parkway intersection. The total length of the project is approximately 0.5 miles. The existing -L- and intersecting -Y- lines are two-lane roads. The -L- line will be on new location from approximately Station 24+00 to approximately Station 46+00. The project area is commercial on the west side of Grassy Creek (to approximately Station 32+60), wooded from Grassy Creek to approximately Station 42+50, and primarily residential east of approximately Station 42+50. For the -Y- lines, property along -Y1- (Old Forum Parkway) and -Y2- (Northstar Drive) is commercial while property along -Y3- (Cross Baptist Church Road), -Y3A- (Baker Street), and -Y4- (University Parkway) is primarily residential. A line of Norfolk Southern Railroad tracks crosses the -L- line at approximately Station 33+15.

The proposed project construction consists of the following:

- Constructing new pavements for the majority of the existing roads within the project corridor with the following exception:
  - -Y2- is to only receive an overlay for the portion of the roadway to be reused between Stations 13+00 and 16+62.35
- The widening and construction of curb and gutter along both sides of -L- from Station 19+00 to approximately Station 24+00
- The construction of a two-lane roadway for -L- on new location with curb and gutter along both sides of from approximately Station 24+00 to approximately Station 31+70
- The construction of a retaining wall for -L- approximately 37 feet right beginning at approximately Station 30+70 and extending to the beginning of the bridge over Grassy Creek and the Norfolk Southern Railroad at approximately Station 31+70
- The construction of a retaining wall for -L- approximately 37 feet left beginning at approximately Station 31+20 and extending to the beginning of the bridge over Grassy Creek and the Norfolk Southern Railroad at approximately Station 31+70
- The construction of a retaining wall for -L- in front of End Bent 2 of the bridge over Grassy Creek and the Norfolk Southern Railroad at approximately Station 33+70
- The construction of a bridge for -L- over Grassy Creek and the Norfolk Southern Railroad between approximately Stations 31+70 and 33+75
- The construction of a two-lane roadway for -L- on new location with curb and gutter on both sides and a 10-foot wide median with curb and gutter on both sides from approximately Station 33+75 to approximately Station 39+75
- The construction of a two-lane roadway for -L- on new location with curb and gutter on both sides from approximately Station 39+75 to approximately Station 47+33
- The construction of a two-lane roadway for -Y1- on new location with curb and gutter along both sides from approximately Station 10+00 (intersection with -L-) to approximately Station 11+00
- The construction of a two-lane roadway for -Y1- on new location with curb and gutter along the left side from approximately Station 11+00 to approximately Station 13+75
- The widening of -Y1- from approximately Station 13+75 to approximately Station 16+50
- The construction of a two-lane roadway for -Y2- on new location with curb and gutter along both sides from approximately Station 10+00 (intersection with -L-) to approximately Station 11+00
- The widening of -Y2- with from approximately Station 11+00 to approximately Station 13+00
- The widening of -Y3- from approximately Station 10+75 to approximately Station 13+00
- The construction of a two-lane roadway for -Y3- on new location from approximately Station 13+00 to approximately Station 16+15 (intersection with -L-)
- The construction of a two-lane roadway for -Y3A- on new location from approximately Station 10+00 (intersection with -L-) to approximately Station 11+50 with curb and gutter along both sides beginning at approximately Station 10+50
- The widening of -Y3A- from approximately Station 11+50 to approximately Station 13+78
- The widening of -Y4- from approximately Station 32+98 to approximately Station 38+73

The proposed maximum new embankment fill heights are approximately 33 feet. The maximum cuts proposed for the project are approximately 20 feet.

The drainage along the project is generally handled by side ditches and concrete drains.

The intersections along the project are as follows:

- -L- and Old Forum Parkway (-Y1-)
- -L- and Northstar Drive (-Y2-)
- -L- and Cross Baptist Church Road (-Y3-)
- -L- and Baker Street (-Y3A-)
- -L- and University Parkway (-Y4-)

This geotechnical investigation was confined to the areas of proposed construction.

Initial site scoping was performed on June 5, 2019. The field investigation was performed from July 16, 2019 to September 25, 2019. Standard Penetration Test borings were advanced with a CME 45C drill machine equipped with an automatic hammer. Representative soil samples were collected for visual classification in the field and for laboratory analyses.

The following alignments were investigated. Subsurface cross sections of these alignments, as well as a subsurface profile for -L-, are included in this report:

Alignment	Station (±)
-L-	19+00.00 to 47+63.83
-Y1-	10+00.00 to 16+50.00
-Y2-	10+00.00 to 16+62.35
-Y3-	10+75.00 to 16+14.98
-Y3A-	10+00.00 to 13+78.20
-Y4-	32+98.24 to 38+72.95

Physiography and Geography

The project corridor is located in the Sauratown Mountains Anticlinorium of the Piedmont physiographic province. This anticlinorium "lies at the juncture of the Blue Ridge, Inner Piedmont and central Piedmont, and is a northeast-trending foliation arch characterized by a nearly symmetrical distribution of basement-cover rock sequences and an inverted sequence of metamorphic isograds" (*The Geology of the Carolinas*, Horton and Zullo, 1991). The anticlinorium is composed of four stacked thrust sheets of Middle Proterozoic basement rock overlain by a sequence of Late Proterozoic to Early Cambrian metasedimentary and metaigneous rocks. The thrust sheets were domed during the formation of the anticlinorium resulting in a complex, multitiered window where exposed by erosion. According to the Geologic Map of North Carolina, 1985, the rock underlying the project corridor consists of Metagraywacke (Biotite Gneiss), Amphibolite, and Kyanite Schist with minor utramafic and granitic rock. Rock coring was performed for the interior bent borings for the proposed bridge over Grassy Creek and the Norfolk Southern Railroad. The rock cored in these borings was classified as Biotite Gneiss and Granitic Gneiss.

The topography along the project corridor generally consists of gently rolling hills. The proposed roadway along the Forum Parkway Connector (-L-) generally slopes down from each end of the project towards Grassy Creek with elevations ranging from approximately 947 feet (MSL) to approximately 842 feet (MSL), while the proposed roadway along Old Forum Parkway (-Y1-) slopes down from north to south with elevations ranging from approximately 902 feet (MSL) to approximately 887 feet (MSL). The topography along Northstar Drive (-Y2-) slopes down from the beginning of construction to the end of construction with elevations ranging from approximately 886 feet (MSL) to approximately 864 feet (MSL). Cross Baptist Church Road (-Y3-) generally slopes down from north to south with elevations ranging from approximately 929 feet (MSL) to approximately 919 feet (MSL), while Baker Street (-Y3A-) generally slope up from north to south with elevations ranging from approximately 920 feet (MSL) to approximately 925 feet (MSL). University Parkway (-Y4) slopes up from north to south with elevations ranging from approximately 943 feet (MSL) to approximately 948 feet (MSL).

Soil Properties

Soils encountered within this project area have been divided into four categories: artificial fill, roadway embankment, residual soils, and weathered rock.

Artificial fill was encountered in three of the borings drilled for this project (Y1_1550, Y4_3350 and Y4-3500). The artificial fill ranges in thickness from approximately 0.5 feet to approximately 2.8 feet. The artificial fill in boring Y1_1550 is gravel, while the artificial fill soil in the -Y4- borings consists of sandy silt (A-4) and silty clay (A-7-5), and SPT values within this material were 9 and 10.

The roadway embankment ranges in thickness from less than 2 feet to approximately 6 feet. The roadway embankment was not encountered within our soil test borings but has been interpolated from the cross-sections as being present at the beginning of -L-, the middle portion of -Y2-, and underlying most of the existing roadway along -Y3A-.

Residual soils were encountered in almost all of the borings drilled for this project. The residual soils consist of loose to dense sand (A-1-b), silty sand (A-2-4), and clayey sand (A-2-6), and of very soft to hard, sandy silt (A-4), sandy clay (A-6), and silty clay (A-7-5 and A-7-6). Plasticities within the cohesive residual soils range from slightly plastic to highly plastic with laboratory plasticity index results ranging from 8 to 45.

Weathered rock classified as Biotite Gneiss was encountered underlying the residual soils within the depths explored in 15 borings drilled for this project. The top of the weathered rock was encountered at depths ranging from 12.0 feet to 37.5 feet below the existing ground surface and at elevations ranging from 855.7 feet to 819.7 feet above sea level.

Rock Properties

Crystalline rock classified as Gneiss was encountered underlying the weathered rock in 12 of the borings drilled for this project. The depth to the top of the crystalline rock ranged from 18.5 feet to 47.2 feet, and at elevations ranging from 845.3 feet to 810.0 feet above sea level. The crystalline rock was not encountered at depths that should affect project construction based on the 75 percent project plans.

Groundwater Properties

Ground water data was collected in July 2019. Twenty-four-hour ground water depths ranged from 4.8 to 11.5 feet below the existing ground surface, and groundwater elevations ranged from 896.6 to 846.6 feet above sea level. Groundwater was not encountered within 6 feet of the proposed grade in the borings drilled for this project.

Areas of Special Geotechnical Interest

1) The following areas contain soft, cohesive soils and/or loose sands within 3 feet of the proposed grade or at the base of proposed embankments which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	23+25 to 24+25	Across extents of construction
-L-	26+75 to 28+25	Across extents of construction
-L-	43+25 to 45+25	Across extents of construction
-Y1-	11+25 to 12+25	Across extents of construction
-Y1-	15+25 to 16+50	Across extents of construction
-Y2-	10+00 to 13+00	Across extents of construction

2) The following area contains wet to saturated soils within 3 feet of the proposed grade or at the base of proposed embankments which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	26+75 to 27+25	Across extents of construction

3) The following areas contain soils with plasticity indexes greater than 25, liquid limits greater than 70, and/or percent passing the no. 200 sieve greater than 70 within 3 feet of the proposed grade which have the potential to cause embankment, subgrade, and/or slope stability problems during construction:

Alignment	STA (±) to STA (±)	Offset (±)
-L-	20+25 to 26+25	Across extents of construction
-Y1-	12+75 to 15+25	Across extents of construction
-Y3-	12+75 to 14+75	Across extents of construction
-Y4-	32+98 to 38+73	Across extents of construction

Water Wells

No water wells were identified within or adjacent to the proposed right-of-way on the plans provided to ESP or by ESP personnel in the field.

PROJECT REFERENCE NO.	SHEET NO.
U-5899	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM2 ELEVATION = 932.12
N 898879 E 1618907
BL STATION 13+36.00 263 LEFT
RAIL ROAD SPIKE SET IN 10 INCH PINE

NAD 83/NA 2011

OLD BELT FARMERS CO-OP INC
DB 3272 PG 3002
PB 26 PG 103

275 LAND INVESTOR LLC
DB 3259 PG 1265

MYR REAL ESTATE HOLDINGS LLC
DB 3196 PG 3244

RS & A INC
DB 2291PG 3551

SHEILA P OPPEL
DB 2115 PG 1564

J & L HAYES INVESTMENTS LLC
DB 1921PG 2264

DOUD BUILDING SUPPLY INC
DB 1561PG 1424

CUMORAH PROPERTIES LLC
DB 3177 PG 1170

FARRELL AND ANITA COOK REVOCABLE LIVING TRUST
DB 3385 PG 2736

POLK INDUSTRIAL PROPERTIES LLC
DB 3280 PG 1365

WINSTON SALEM BUSINESS INC
DB 2927 PG 3950

J & G PARTNERS LLC
DB 3346 PG 1969
PB 35 PG 55

J & G PARTNERS LLC
DB 3301PG 3186
PB 35 PG 55

TOWN OF RURAL HALL
FORSYTH COUNTY

ROADWAY EMBANKMENT

RESIDUAL

-L- PC Sta. 25+04.92

-L- PC Sta. 19+03.29

-L- PT Sta. 24+38.33

BEGIN TIP PROJECT U-5899
-L- POT Sta. 19+00.00

MATCHLINE -L- STA. 26+50.00

NO PIPES IN STRUCTURE/ FULL OF WATER STORMWATER FLOWS INTO STREET VIA PAVED DITCH PER PROPERTY OWNER

SR 3955 - FORUM PKWY

-L-
S 55° 28' 46.0" E

L 2152

L 2350

L 2554

49° 20' 54.2" E

S 47°28'41" W 72.23'

N 47°28'41" W 296.64'

S 17°19'44" E 57.70'

S 27°24'05" E 68.35'

S 26°38'11" E 126.74'

N 45°25'20" W 319.40'

S 46°14'47" E 33.04'

S 68°35'19" E 119.98'

S 65°02'06" E 79.88'

S 65°02'06" E 67.77'

S 69°25'1 129.61'

N 55°59'30" E 390.02'

S 44°35'31" W 293.77'

S 44°37'04" W 293.57'

S 39°43'34" W 478.23'

N 67°35'45" E 345.17'

-L-

PI Sta 21+71.07	PI Sta 28+01.26
△ = 6° 07' 51.8" (RT)	△ = 40° 39' 05.8" (LT)
D = 1° 08' 45.3"	D = 7° 09' 43.1"
L = 535.04'	L = 567.60'
T = 267.77'	T = 296.34'
R = 5,000.00'	R = 800.00'
SE = 0.04	SE = 0.04
RO = 104.00'	RO = 104.00'

~~FOR -L- PROFILE, SEE SHEET NO. 7~~

~~FOR DITCH DETAILS, SEE SHEET NO. 2D-1~~

PAVEMENT REMOVAL

8/17/99

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8/17/99

REVISIONS

-L- SEE PROFILE SHEET 7
-Y1- SEE PROFILE SHEET 8
-Y2- SEE PROFILE SHEET 8

FOR INTERSECTION DETAIL, SEE SHEET 2B-1

FOR DITCH DETAILS, SEE SHEET 2D-1

PAVEMENT REMOVAL

PAVED SHOULDER

MONOLITHIC CONCRETE ISLAND

NAD 83/NA 2011

MATCHLINE -L- STA. 26+50.00

MATCHLINE -L- STA. 38+00.00

TOWN OF RURAL HALL
FORSYTH COUNTY

RESIDUAL

ARTIFICIAL FILL

ROADWAY EMBANKMENT

END GRADE
BEGIN OVERLAY
-Y2- POT Sta. 13+00.00
-Y2- PC Sta. 10+73.40
-Y2- PT Sta. 11+69.50

-Y5- PT Sta. 16+71.97
-Y5- PC Sta. 16+91.67
-Y5- PT Sta. 17+72.33
-Y5- PC Sta. 18+26.50
-Y2- PC Sta. 13+65.42

-Y2- PCC Sta. 15+09.06
-Y5- PT Sta. 19+54.58
-L- PC Sta. 34+50.42
-L- PT Sta. 30+72.53

-L- POC Sta. 27+96.30
-Y1- POT Sta. 10+00.00
-Y2- POT Sta. 10+00.00
-Y1- PC Sta. 12+02.88

END OVERLAY
END CONSTRUCTION
-Y2- POC Sta. 16+62.35

LOW POINT
-L- STA. 29+40.83

-Y1- PRC Sta. 14+54.96
-Y2- PT Sta. 19+64.96

END CONSTRUCTION
-Y1- POC Sta. 16+50.00
-Y1- PT Sta. 16+74.90.00

-L- Sta. 33+14.61 =
-Y5- Sta. 19+98.24
△ = 85°46'19.4"

-L- Sta. 31+95.90
-Y2- Sta. 15+72.12
△ = 85°45'13.3"

-Y5- POT Sta. 22+74.17

L_2700
L_2900
L_3038
L_3550
L_3750

Y2_1150
Y2_1050
Y1_1200
Y1_1350
Y1_1550

RWI-1
RWI-2
EBI-A
EBI-B
BI-A
BI-B
RW2-1
RW2-2
EB2-A
EB2-B

S 86° 48' 16.0" E
S 19° 47' 00.8" W
S 8° 09' 20.8" E
S 5° 41' 41.4" E
S 4° 13' 40.6" E
N 90° 00' 00.0" E

BEGIN APPROACH SLAB
-L- STA 31+46.84
TYPE III

BEGIN BRIDGE
-L- STA 31+71.00

END BRIDGE
-L- STA 34+13.00
2'-6" C&G
TYPE III

END APPROACH SLAB
-L- STA 34+37.66

BM4 ELEVATION = 861.31
N 897786 E 1620106
BL STATION 28+39.00 429 RIGHT
RAIL ROAD SPIKE SET IN 16 INCH PINE

EST. 2024/2044 TRAFFIC VOLUMES
-L- FORUM PKWY 4000/4700
FORUM PKWY -L- 2400/2900
FORUM PKWY 2800/3300
400/400
-Y1- OLD FORUM PKWY 2000/2200

PROJECT REFERENCE NO.	SHEET NO.
U-5899	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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Fuquay-Varina, NC 27526
www.mottmac.com/americas

-L-
PI Sta 28+01.26
△ = 40° 39' 05.8" (LT)
D = 7° 09' 43.1"
L = 567.60'
T = 296.34'
R = 800.00'
SE = 0.04
RO = 104.00'

PI Sta 38+09.52
△ = 10° 15' 35.8" (LT)
D = 1° 25' 56.6"
L = 716.28'
T = 359.10'
R = 4,000.00'
SE = 0.04
RO = 104.00'

-Y1-
PI Sta 13+31.17
△ = 26° 15' 35.4" (LT)
D = 10° 25' 02.7"
L = 252.08'
T = 128.29'
R = 550.00'
SE = 0.04
RO = 84.00'

PI Sta 15+65.31
△ = 11° 36' 51.1" (RT)
D = 5° 16' 50.6"
L = 219.94'
T = 110.35'
R = 1,085.00'
SE = 0.04
RO = 84.00'

-Y2-
PI Sta 11+29.31
△ = 73° 24' 43.2" (RT)
D = 76° 23' 39.7"
L = 96.10'
T = 55.92'
R = 75.00'
SE = 0.04
RO = 84.00'
DS = 15 MPH

PI Sta 14+52.81
△ = 82° 17' 44.9" (RT)
D = 57° 17' 44.8"
L = 143.63'
T = 87.38'
R = 100.00'
SE = 0.04
RO = 84.00'
DS = 20 MPH

PI Sta 17+37.03
△ = 1° 53' 47.5" (RT)
D = 0° 24' 57.6"
L = 455.90'
T = 227.97'
R = 13,773.24'
SE = 0.04
RO = 84.00'

-Y5-
PI Sta 17+32.01
△ = 2° 18' 39.4" (RT)
D = 2° 51' 53.2"
L = 80.67'
T = 40.34'
R = 2,000.00'

PI Sta 18+90.58
△ = 1° 28' 00.8" (RT)
D = 1° 08' 45.3"
L = 128.01'
T = 64.01'
R = 5,000.00'

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5899	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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-Y3-

PI Sta 11+99.24
Δ = 15° 32' 46.3" (RT)
D = 10° 44' 58.8"
L = 144.62'
T = 72.76'
R = 533.00'
SE = 0.04
RO = 84.00'

PI Sta 13+43.86
Δ = 15° 32' 46.3" (LT)
D = 10° 44' 58.8"
L = 144.62'
T = 72.76'
R = 533.00'
SE = 0.04
RO = 84.00'

-L-

PI Sta 38+09.52
Δ = 10° 15' 35.8" (LT)
D = 1° 25' 56.6"
L = 716.28'
T = 359.10'
R = 4,000.00'
SE = 0.04
RO = 104.00'

-Y3A-

PI Sta 11+21.06
Δ = 15° 13' 43.4" (LT)
D = 10° 44' 58.8"
L = 141.67'
T = 71.25'
R = 533.00'
SE = 0.04
RO = 84.00'

PI Sta 12+60.21
Δ = 14° 41' 54.3" (RT)
D = 10° 44' 58.8"
L = 136.73'
T = 68.74'
R = 533.00'
SE = 0.04
RO = 84.00'

-Y3- POT Sta.10+00.00
BEGIN CONSTRUCTION
-Y3- POT Sta. 10+75.00
LOW POINT
-Y3- STA.11+25.41
-Y3- PC Sta. 11+26.48
-Y3- PRC Sta. 12+71.10
HIGH POINT
-Y3- STA.13+34.93
-Y3- PT Sta. 14+15.72
-L- POT Sta.42+32.09
-Y3- POT Sta.16+14.98
-Y3A- POT Sta.10+00.00
-L- PT Sta. 41+66.70
-Y3A- PC Sta. 10+49.80
LOW POINT
-Y3A- STA.11+37.51
-Y3A- PRC Sta. 11+91.47
-Y3A- PT Sta. 13+28.20
BEGIN CONSTRUCTION
-Y3A- POT Sta.13+78.20
BEGIN CONSTRUCTION
-Y4- POT Sta.32+98.24
LOW POINT
-Y4- STA.33+80.04
-L- POT Sta.47+63.83
-Y4- POT Sta.37+34.49
END CONSTRUCTION
-Y4- POT Sta.38+72.95 = U-2579DEF
-Y1- POT Sta.10+80.00

MATCHLINE -L- STA. 38+00.00

RESIDUAL
ROADWAY EMBANKMENT
ARTIFICIAL FILL
DO NOT DISTURB
TIP PROJECT U-2579DEF TO BE COMPLETED BY OTHERS
SOME PARCELS TO BE AQUIRED WITH TIP PROJECT U-2579DEF BY OTHERS

Y3_1200
Y3_1400
Y3A_1150
Y3A_1350
Y4_3350
Y4_3500
Y4_3650
Y4_3850
Y4_4050
L_3900
L_4100
L_4200
L_4400
L_4600

-L- SEE PROFILE SHEETS 7 & 8
-Y3- SEE PROFILE SHEET 8
-Y3A- SEE PROFILE SHEET 9
-Y4- SEE PROFILE SHEET 9
-L_D1- SEE PROFILE SHEET 9

FOR DITCH DETAILS, SEE SHEET 2D-1

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

27

PAVEMENT REMOVAL
PROPOSED SHOULDER
MONOLITHIC CONCRETE ISLAND

11500/100	-Y4- UNIVERSITY PKWY	
50/500		
1600/4500	FORUM PKWY -L-	
1600/4000		
EST. 2016/2040 TRAFFIC VOLUMES	13100/800	-Y4- UNIVERSITY PKWY

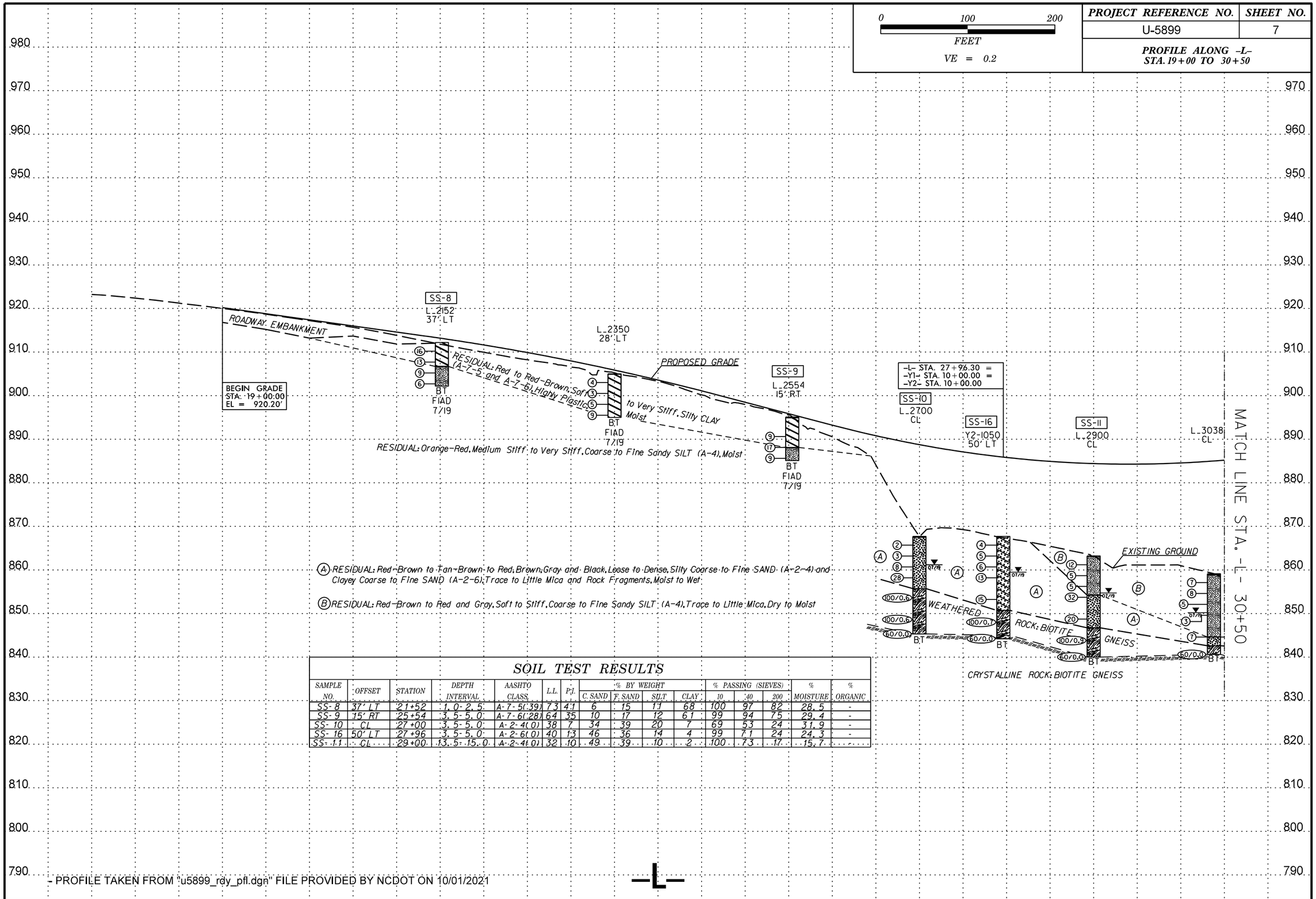
NAD 83/NA 2011

11/15/2021 10:08:58 AM
W:\Projects\2018 (G)\NCDOT On-Call 2018-2020\GR22.314 (U-5899 Forum Pkwy Connector)\U5899_GEO_RDWY\CADD_GEOTECH\PlanProf\u5899_Geo_psh06.dgn
rastrano

PROJECT REFERENCE NO.	SHEET NO.
U-5899	7

0 100 200
FEET
VE = 0.2

PROFILE ALONG -L-
STA. 19+00 TO 30+50



(A) RESIDUAL: Red-Brown to Tan-Brown to Red, Brown, Gray and Black, Loose to Dense, Silty Coarse to Fine SAND (A-2-4) and Clayey Coarse to Fine SAND (A-2-6), Trace to Little Mica and Rock Fragments, Moist to Wet

(B) RESIDUAL: Red-Brown to Red and Gray, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace to Little Mica, Dry to Moist

SOIL TEST RESULTS

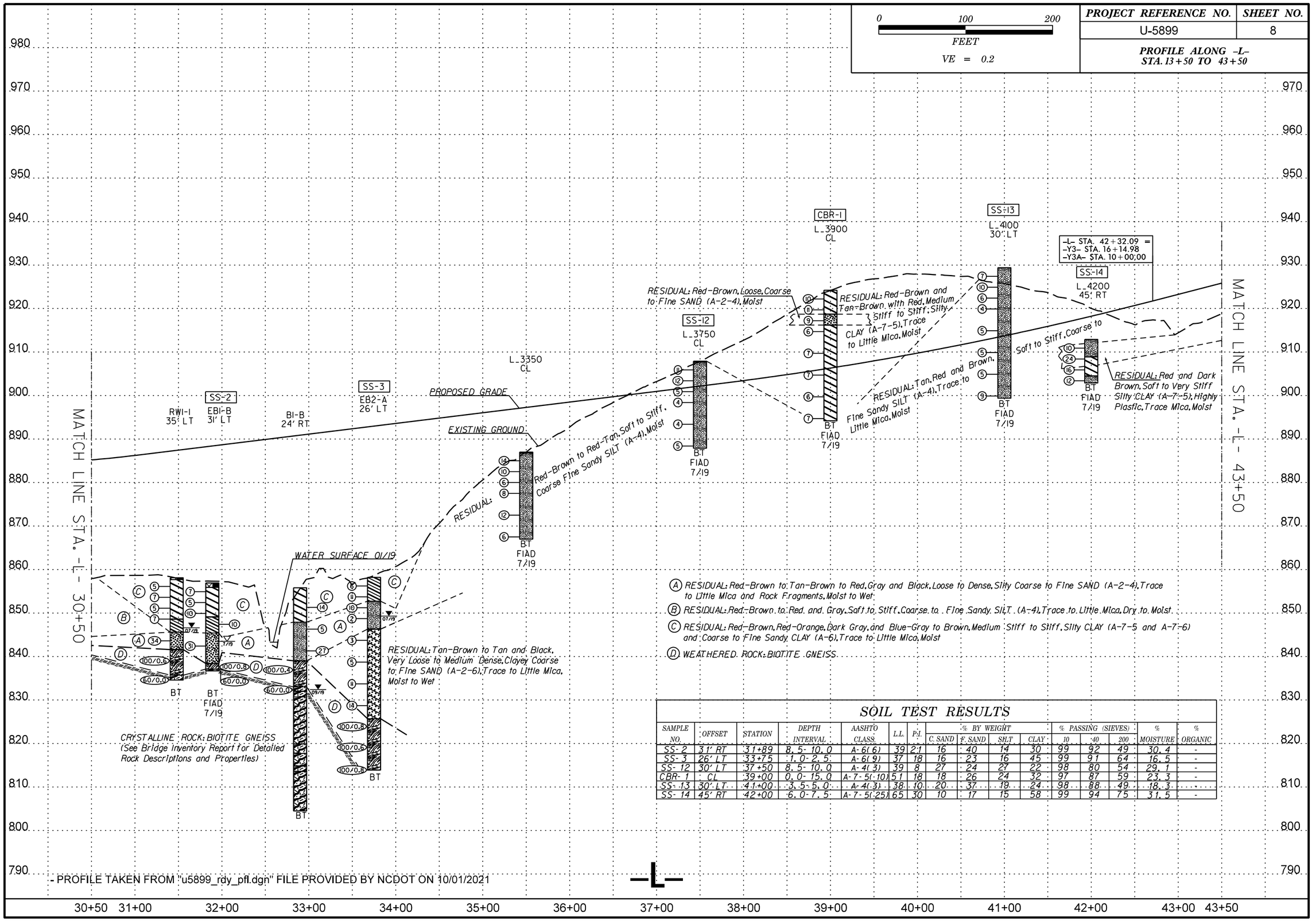
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-8	37' LT	21+52	1.0-2.5	A-7-5(39)	73	41	6	15	11	68	100	97	82	28.5	-
SS-9	15' RT	25+54	3.5-5.0	A-7-6(28)	64	35	10	17	12	61	99	94	75	29.4	-
SS-10	CL	27+00	3.5-5.0	A-2-4(0)	38	7	34	39	20	7	69	53	24	31.9	-
SS-16	50' LT	27+96	3.5-5.0	A-2-6(0)	40	13	46	36	14	4	99	71	24	24.3	-
SS-11	CL	29+00	13.5-15.0	A-2-4(0)	32	10	49	39	10	2	100	73	17	15.7	-

- PROFILE TAKEN FROM "u5899_rdy_pfl.dgn" FILE PROVIDED BY NCDOT ON 10/01/2021

PROJECT REFERENCE NO.	SHEET NO.
U-5899	8

PROFILE ALONG -L-
STA. 13+50 TO 43+50

0 100 200
FEET
VE = 0.2



(A) RESIDUAL: Red-Brown to Tan-Brown to Red, Gray and Black, Loose to Dense, Silty Coarse to Fine SAND (A-2-4), Trace to Little Mica and Rock Fragments, Moist to Wet

(B) RESIDUAL: Red-Brown to Red and Gray, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace to Little Mica, Dry to Moist

(C) RESIDUAL: Red-Brown, Red-Orange, Dark Gray, and Blue-Gray to Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5 and A-7-6) and Coarse to Fine Sandy CLAY (A-6), Trace to Little Mica, Moist

(D) WEATHERED ROCK: BIOTITE GNEISS

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-2	31' RT	31+89	8.5-10.0	A-6(6)	39	21	16	40	14	30	99	92	49	30.4	-
SS-3	26' LT	33+75	1.0-2.5	A-6(9)	37	18	16	23	16	45	99	91	64	16.5	-
SS-12	30' LT	37+50	8.5-10.0	A-4(3)	39	8	27	24	27	22	98	80	54	29.1	-
CBR-1	CL	39+00	0.0-15.0	A-7-5(10)	51	18	18	26	24	32	97	87	59	23.3	-
SS-13	30' LT	41+00	3.5-5.0	A-4(3)	38	10	20	37	19	24	98	88	49	18.3	-
SS-14	45' RT	42+00	6.0-7.5	A-7-5(25)	65	30	10	17	15	58	99	94	75	31.5	-

- PROFILE TAKEN FROM "u5899_rdy_pfl.dgn" FILE PROVIDED BY NCDOT ON 10/01/2021

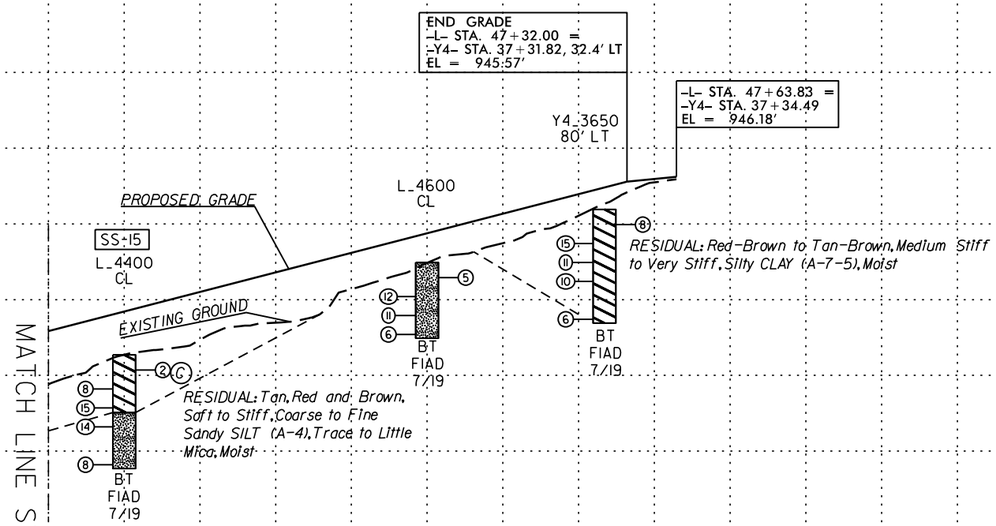
0	100	200

FEET

VE = 0.2

PROJECT REFERENCE NO.	SHEET NO.
U-5899	9

PROFILE ALONG –L–
STA. 43+50 TO 47+63.83



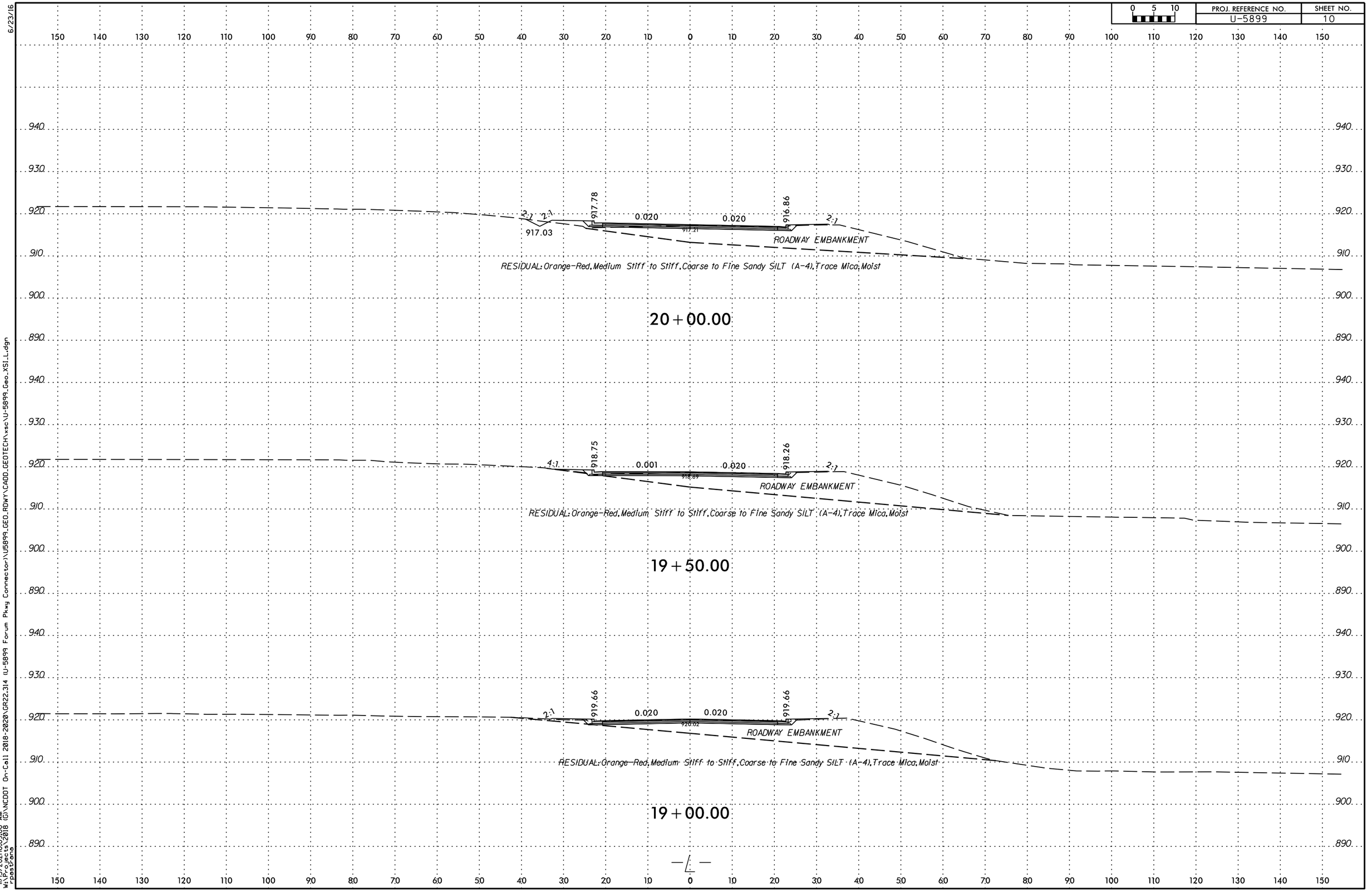
Ⓒ RESIDUAL: Red and Dark Brown, Soft to Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Trace Mica, Moist

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		
SS-15	CL	44+00	1.0-2.5	A-7-5(38)	75	43	7	11	14	68	95	92	80	34.8	-

– PROFILE TAKEN FROM "u5899_rdy_pfl.dgn" FILE PROVIDED BY NCDOT ON 10/01/2021

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	10



6/23/16

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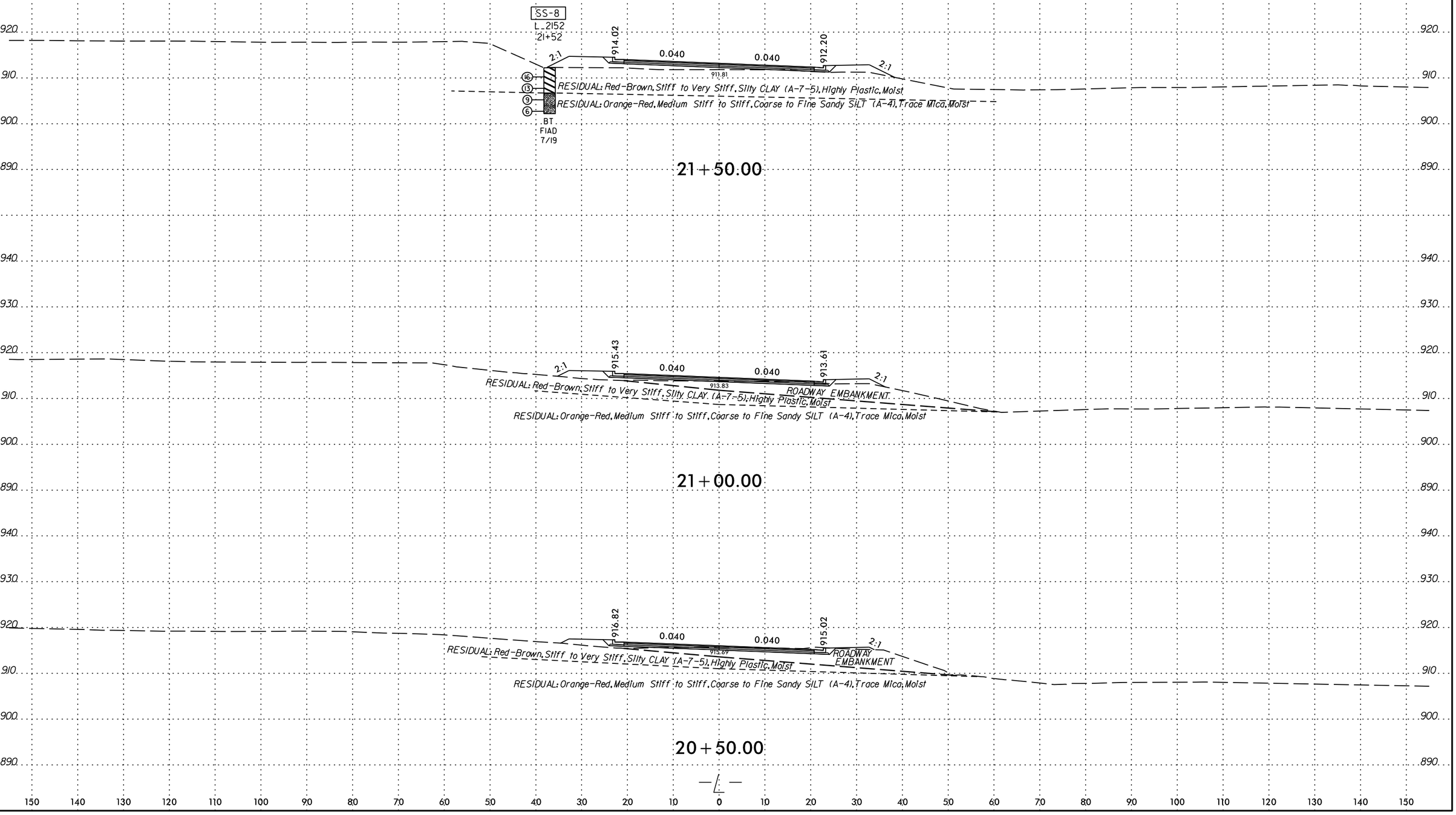
rpastrana

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
SS-8	37' LT	21+52	1.0-2.5	A-7-5(39)	73	41	6	15	11	68	100	97	82	28.5	



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	12

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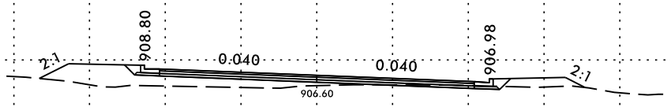
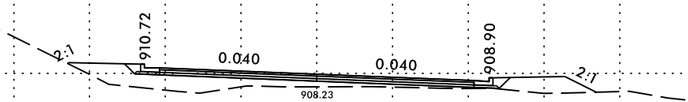
940 930 920 910 900 890 880



RESIDUAL: Red-Brown, Stiff to Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Orange-Red, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

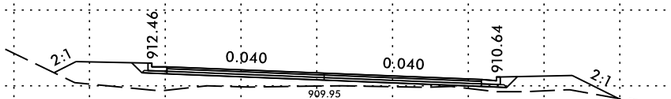
23 + 00.00



RESIDUAL: Red-Brown, Stiff to Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Orange-Red, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

22 + 50.00

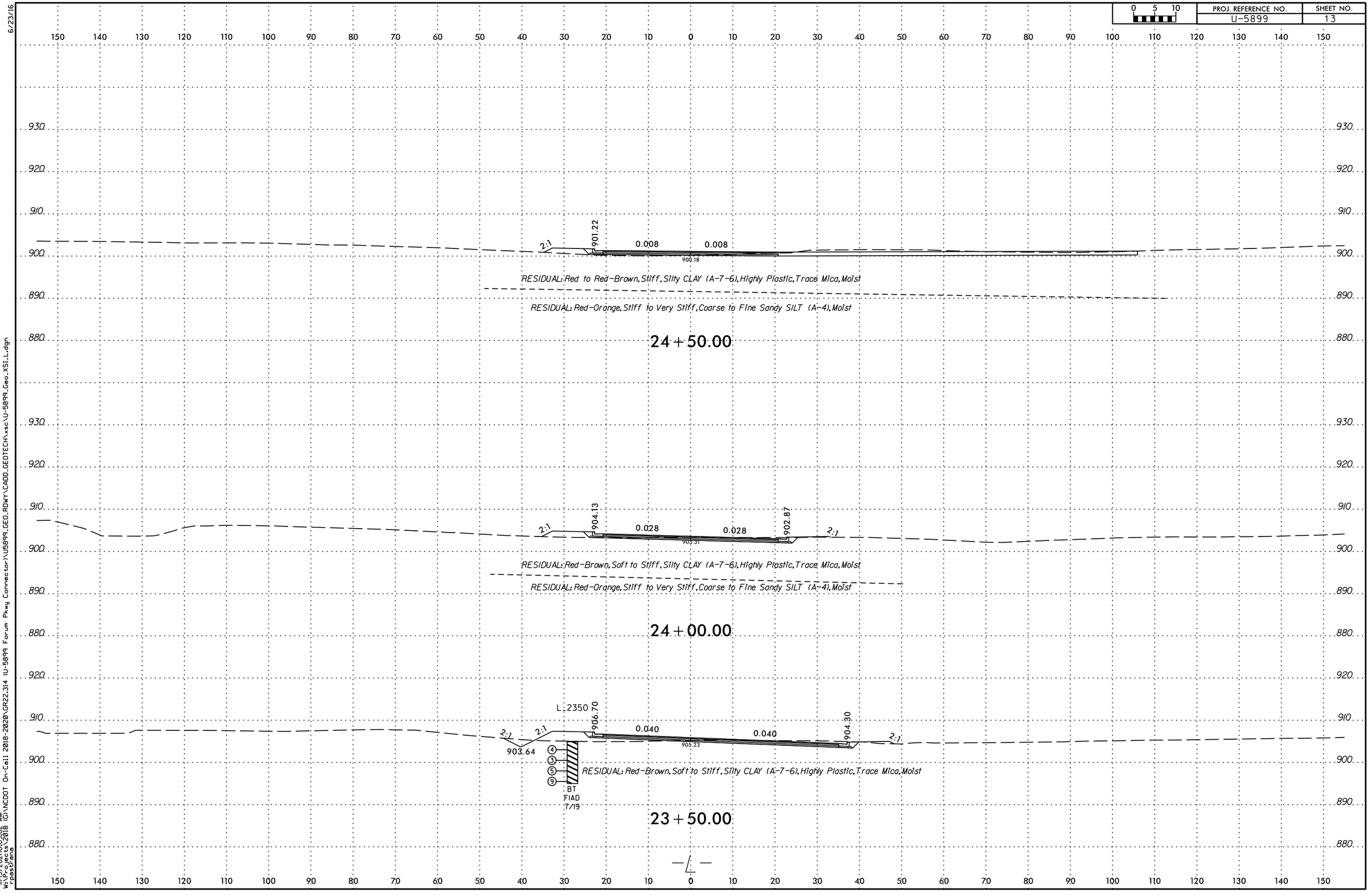


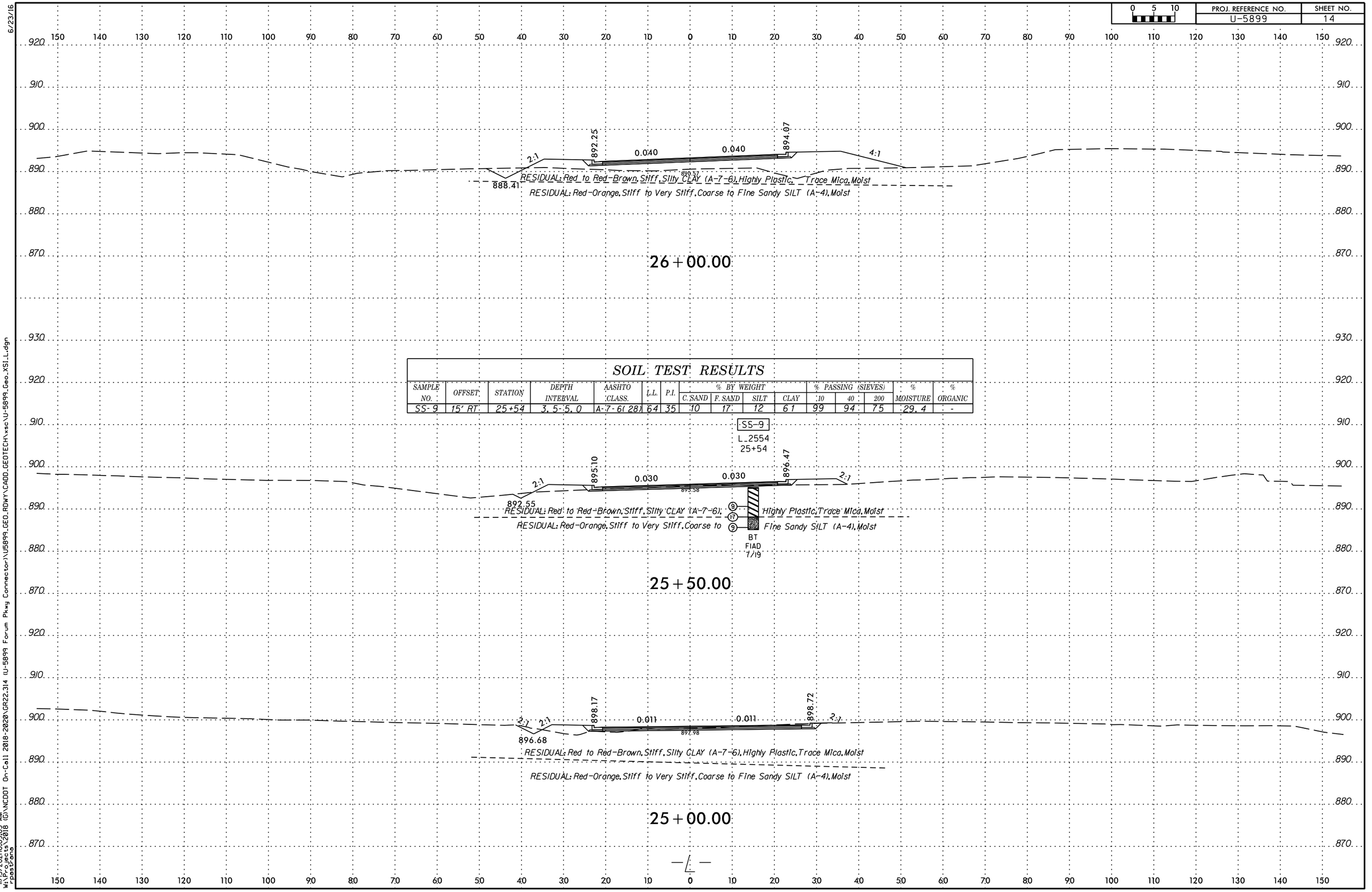
RESIDUAL: Red-Brown, Stiff to Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Orange-Red, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

22 + 00.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	13



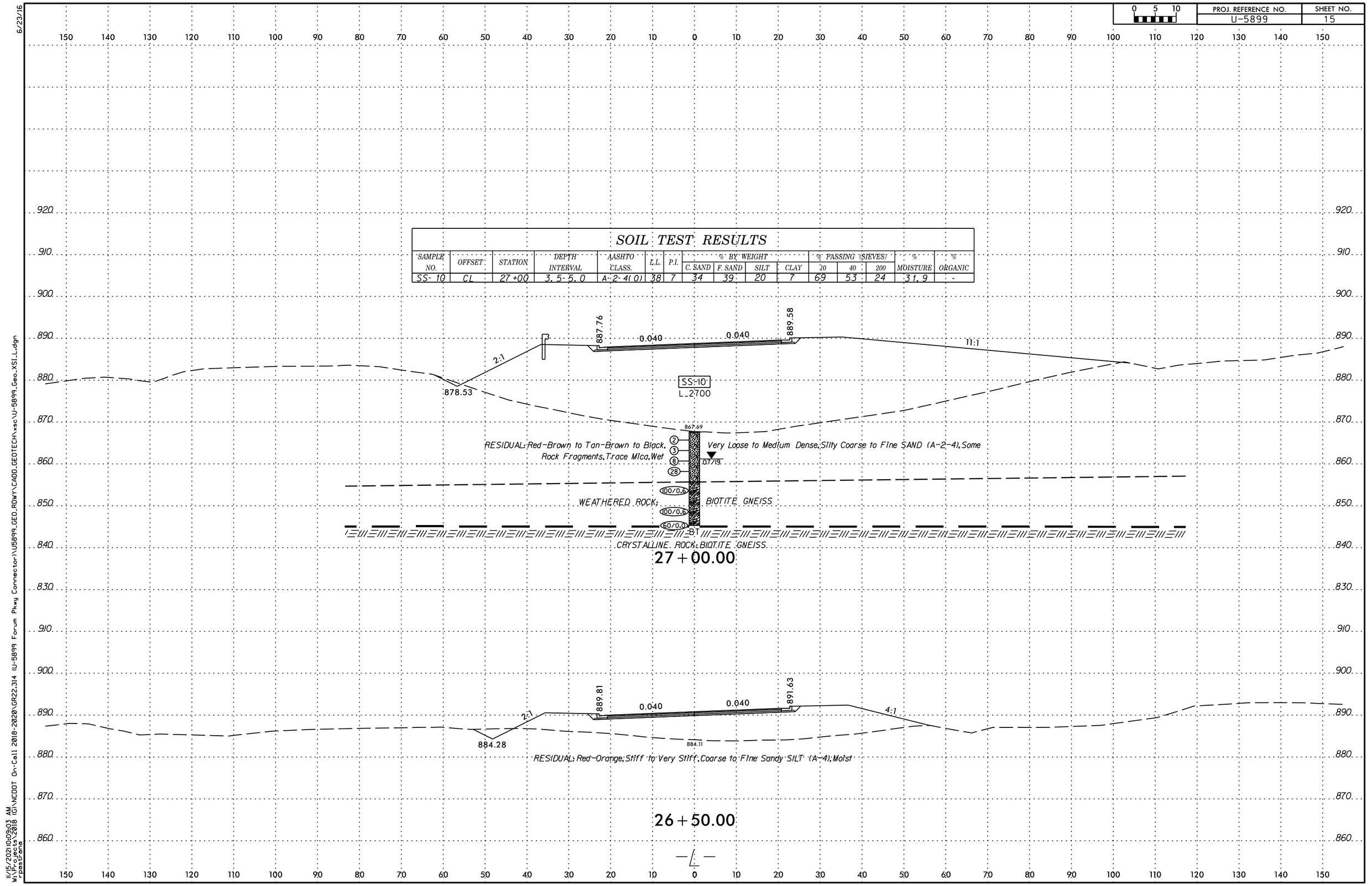


SOIL TEST RESULTS

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
SS-9	15' RT	25+54	3.5-5.0	A-7-6(28)	64	35	10	17	12	61	99	94	75	29.4	-

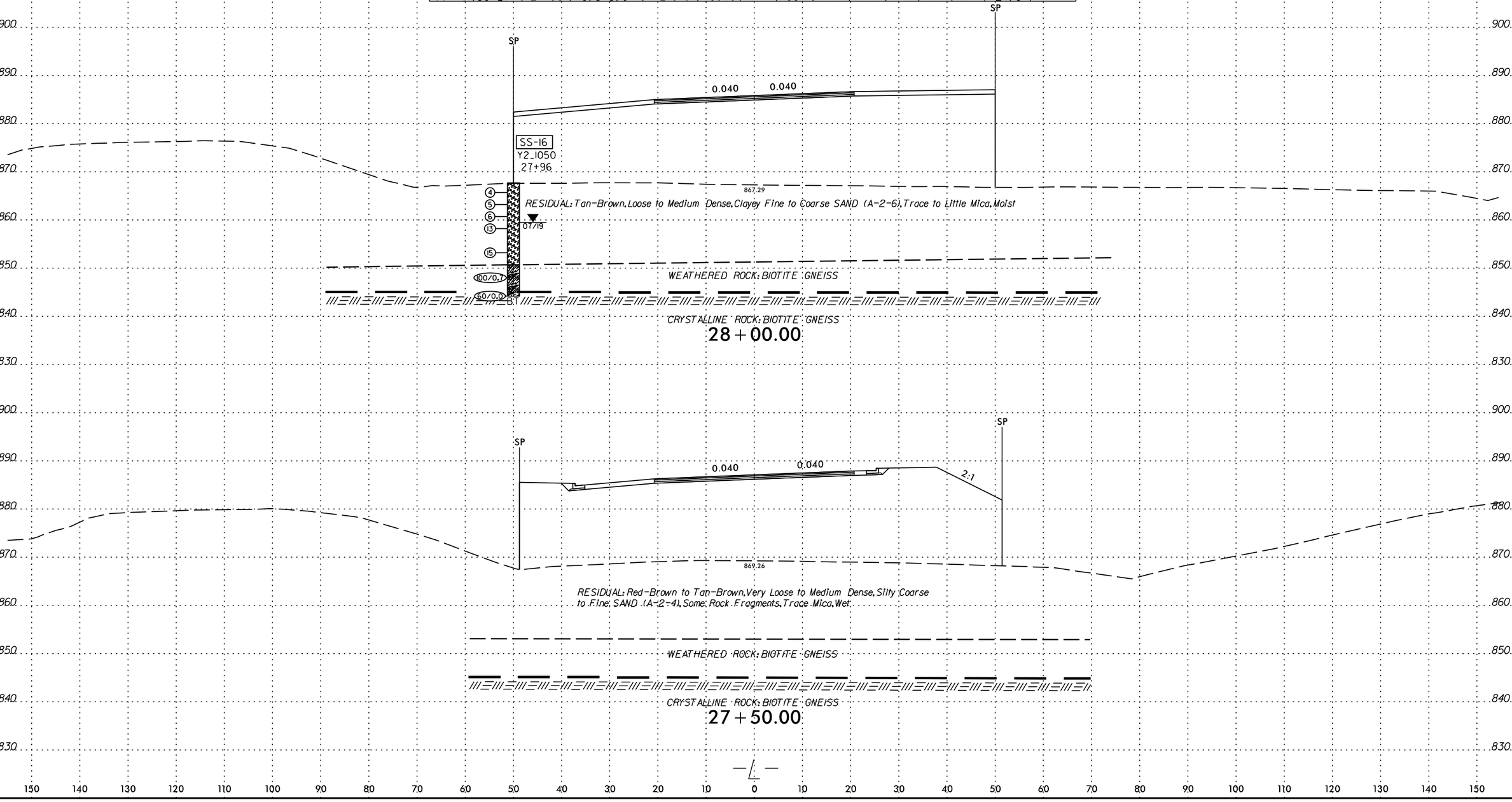
SOIL TEST RESULTS

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
SS-10	CL	27+00	3.5-5.0	A-2-4(0)	38	7	34	39	20	7	69	53	24	31.9	-



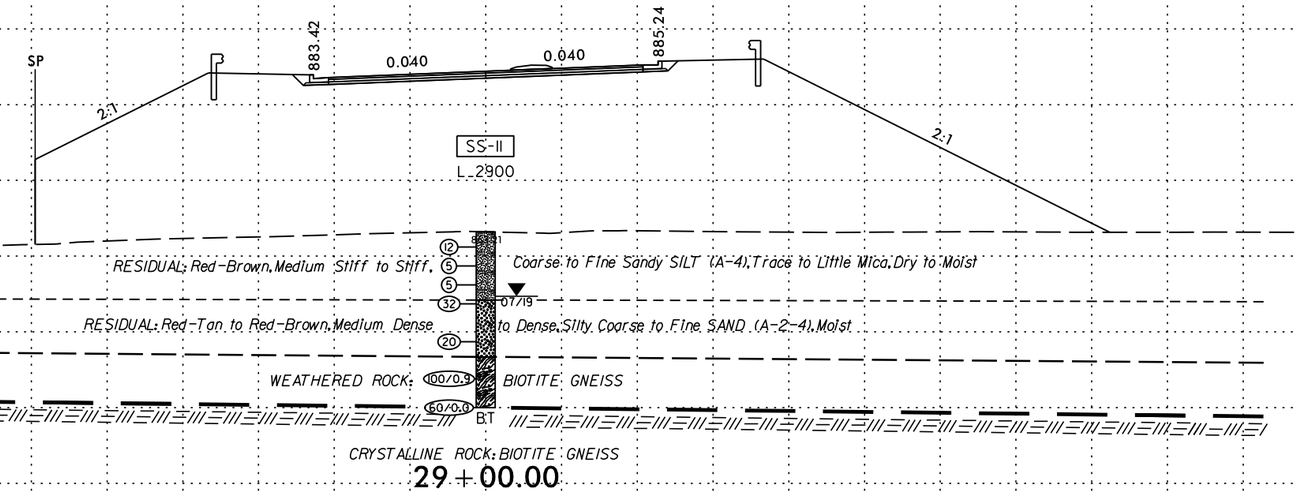
SOIL TEST RESULTS

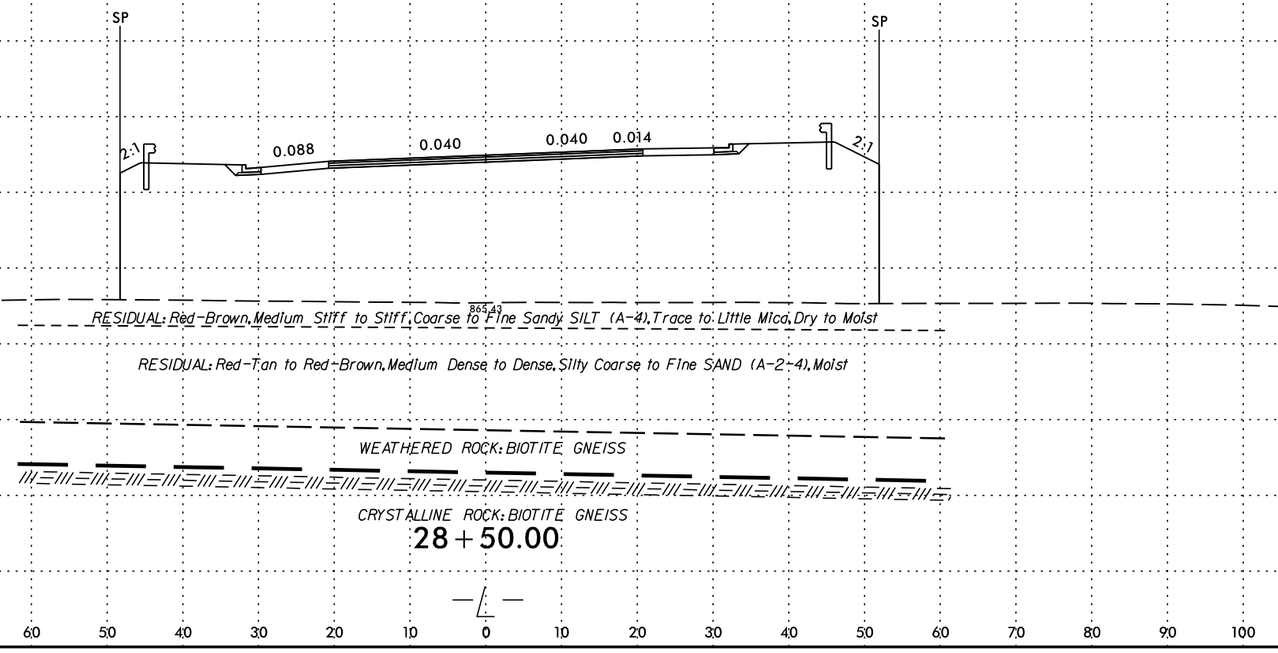
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) #10	#40	#200	% MOISTURE	% ORGANIC
SS-16	50' LT	27+96	3.5-5.0	A-2-6(0)	40	13	46	36	14	4	99	71	24	24.3	-



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
SS-11	CL	29+00	13.5-15.0	A-2-4(0)	32	10	49	39	10	2	100	73	17	15.7	-





PROJ. REFERENCE NO.	SHEET NO.
U-5899	18

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

900 890 880 870 860 850 840 830

883.56 0.040 0.040 885.38

2:1 2:1

860.98

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

RESIDUAL: Gray to Black, Loose, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

30+00.00

883.30 0.040 0.040 885.12

2:1 2:1

861.14

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace to Little Mica, Dry to Moist

RESIDUAL: Red-Tan to Red-Brown, Medium Dense to Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

29+50.00

—L—

6/23/16

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rpastrana

PROJ. REFERENCE NO.	SHEET NO.
U-5899	19

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

900 890 880 870 860 850 840 830

884.07 0.039 0.039 885.85

2:1 2:1

L_3038
30+38

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

7 8 5 3 — 855.5 — 01/19

7 — RESIDUAL: Gray to Black, Loose, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

50/0.0 — BT

CRYSTALLINE ROCK: BIOTITE GNEISS

30+40.00

883.77 0.040 0.040 885.59

2:1 2:1

860.00

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

RESIDUAL: Gray to Black, Loose, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

30+20.00

—L—

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rpastrana

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	20

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

900 890 880 870 860 850 840 830

Ⓒ RESIDUAL: Red-Brown to Red-Orange to Blue-Gray, Soft to Medium Stiff, Silty CLAY (A-7-5 and A-7-6), Moist

884.58 0.032 0.032 886.01

2:1 2:1

Ⓒ

858.29

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

RESIDUAL: Gray to Black, Loose, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

30 + 60.00

884.31 0.035 0.035 885.92

2:1 2:1

858.06

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

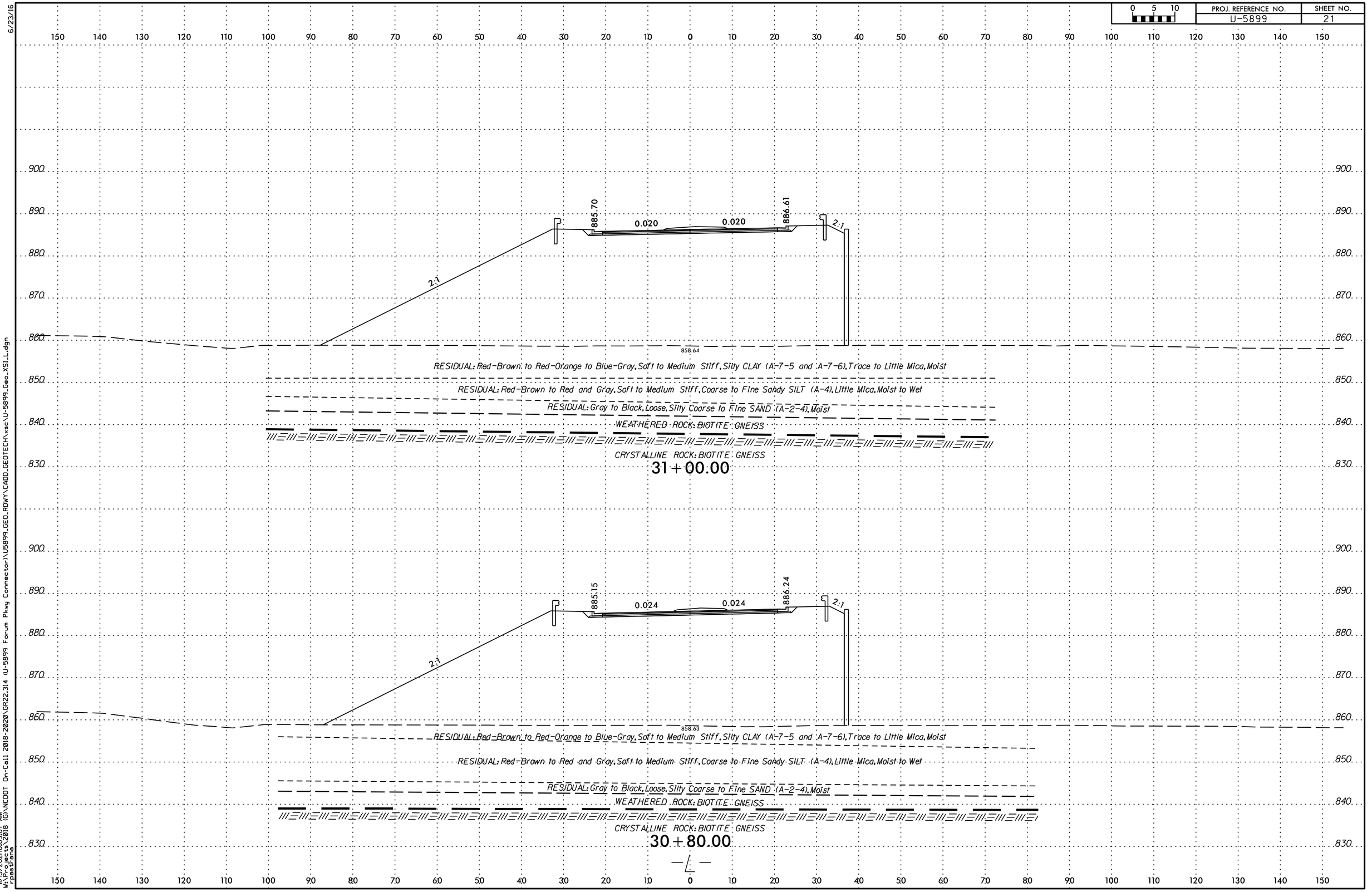
RESIDUAL: Gray to Black, Loose, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

30 + 50.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	21



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	22

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

900 890 880 870 860 850 840 830 820 890 880 870 860 850 840 830

886.68 0.020 0.020 887.59 2:1 2:1

RWI-2
31+34

858.37

RESIDUAL: Red-Brown to Red-Orange to Blue-Gray, Soft to Medium Stiff, Silty CLAY (A-7-5 and A-7-6), Trace to Little Mica, Moist

5 5 5 3

07/19

RESIDUAL: Gray-Blue to Gray-White, Dense, SAND and Rock Fragments (A-1-b) and Silty Coarse SAND (A-2-4), Saturated to Moist

32

WEATHERED ROCK: BIOTITE GNEISS

100/0.4

50/0.0 BT

CRYSTALLINE ROCK: BIOTITE GNEISS

31+40.00

886.19 0.020 0.020 887.10 2:1 2:1

858.72

RESIDUAL: Red-Brown to Red-Orange to Blue-Gray, Soft to Medium Stiff, Silty CLAY (A-7-5 and A-7-6), Trace to Little Mica, Moist

RESIDUAL: Red-Brown to Red and Gray, Soft to Medium Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist to Wet

RESIDUAL: Gray-Blue to Gray-White, Dense, SAND and Rock Fragments (A-1-b) and Silty Coarse SAND (A-2-4), Saturated to Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

31+20.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	23

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

900 890 880 870 860 850 840 830 820

887.17 0.020 0.020 888.08

2:1 2:1

857.53

RESIDUAL: Red-Brown to Gray, Medium Stiff, Silty CLAY (A-7-5 and A-7-6) and Coarse to Fine Sandy CLAY (A-6), Moist to Wet

RESIDUAL: Black to Gray, Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

31+60.00

886.93 0.020 0.020 887.84

2:1 2:1

RWI-1
31+48

857.92

5 7 6 7

RESIDUAL: Red-Brown to Gray, Medium Stiff, Silty CLAY (A-7-5 and A-7-6) and Coarse to Fine Sandy CLAY (A-6), Moist to Wet

07/19

34

RESIDUAL: Black to Gray, Dense, Silty Coarse to Fine SAND (A-2-4), Moist

100/0.5

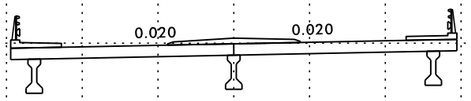
WEATHERED ROCK: BIOTITE GNEISS

60/0.0

B1

CRYSTALLINE ROCK: BIOTITE GNEISS

31+50.00



See "U5899_GEO_BRDG_InventoryReport" for Stratification Under Proposed Bridge

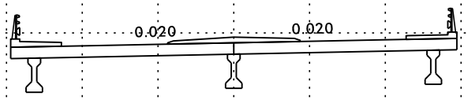
847.20

32+50.00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-1	31' LT	31+83	3.5-5.0	A-7-6(17)	53	25	11	25	15	49	99	94	68	27.5	-
SS-2	31' RT	31+89	8.5-10.0	A-6(6)	39	21	16	40	14	30	99	92	49	30.4	-

(E) ROADWAY EMBANKMENT: 0.3' Asphalt Over 0.7' ABC Stone



SS-1
EBI-A
31+83

SS-2
EBI-B
31+89

(E)

857.24

RESIDUAL: Red to Red-Orange to Red-Brown to Gray-Yellow to Blue-Gray to Gray and Brown, Medium Stiff to Stiff, Silty CLAY (A-7-6) and Coarse to Fine Sandy CLAY (A-6), Trace Mica, Moist to Wet

RESIDUAL: Gray to Brown, Dense, (A-2-4), Trace Mica, Moist

7/19 Silty Coarse to Fine SAND

WEATHERED ROCK: BIOTITE GNEISS

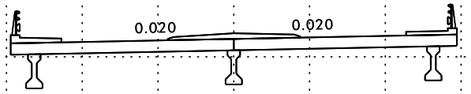
CRYSTALLINE ROCK: BIOTITE GNEISS

BT FIAD 7/19

BT FIAD 7/19

32+00.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	25



See "U5899_GEO_BRDG_InventoryReport" for Complete Stratification Under Proposed Bridge

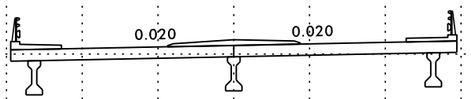
2:1 2:1

855.27

RESIDUAL: Red-Brown, Medium Stiff to Very Stiff, Medium Stiff to Very Stiff, Coarse to Fine Sandy CLAY (A-6), Trace Mica, Moist

856.51

33+50.00



See "U5899_GEO_BRDG_InventoryReport" for Stratification Under Proposed Bridge

857.89

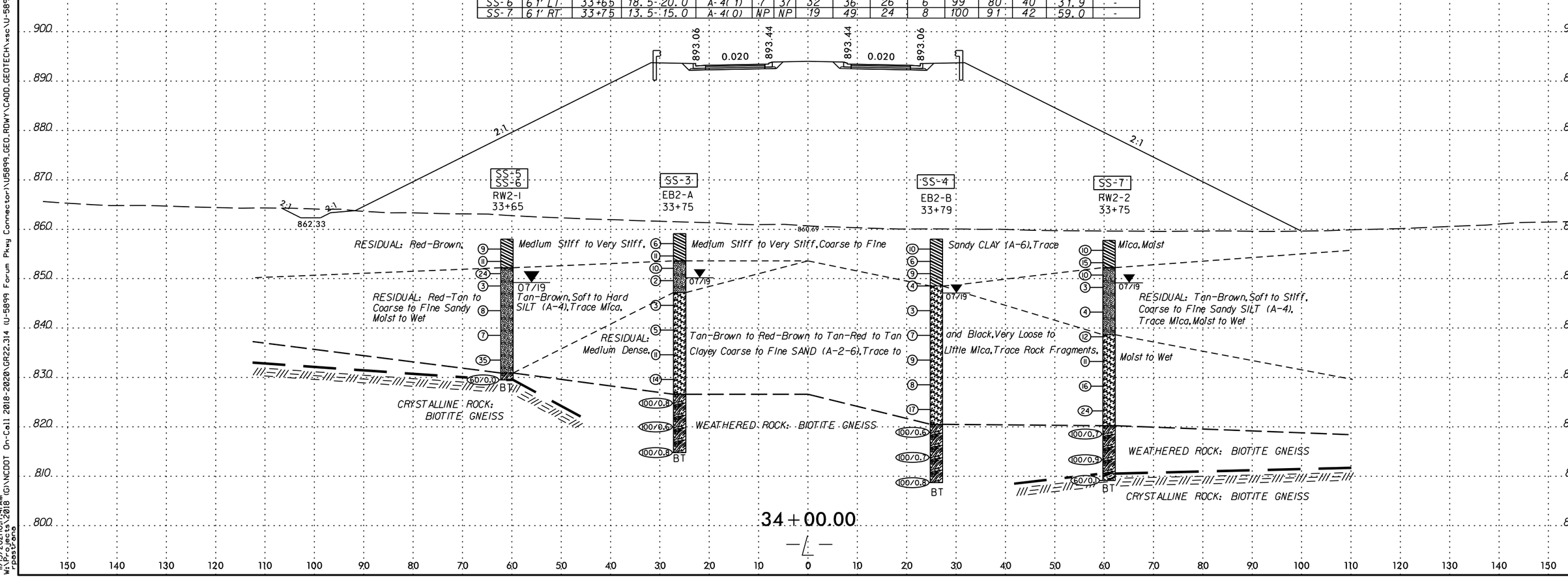
33+00.00

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	26

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
SS-3	26' LT	33+75	1.0-2.5	A-6(9)	37	18	16	23	16	45	99	91	64	16.5	-
SS-4	26' RT	33+79	23.5-25.0	A-2-6(0)	37	11	26	48	18	8	95	83	33	37.1	-
SS-5	61' LT	33+65	8.5-10.0	A-4(1)	3	33	23	42	23	12	100	89	40	43.0	-
SS-6	61' LT	33+65	18.5-20.0	A-4(1)	7	37	32	36	26	6	99	80	40	31.9	-
SS-7	61' RT	33+75	13.5-15.0	A-4(0)	NP	NP	19	49	24	8	100	91	42	59.0	-



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rpost-ano

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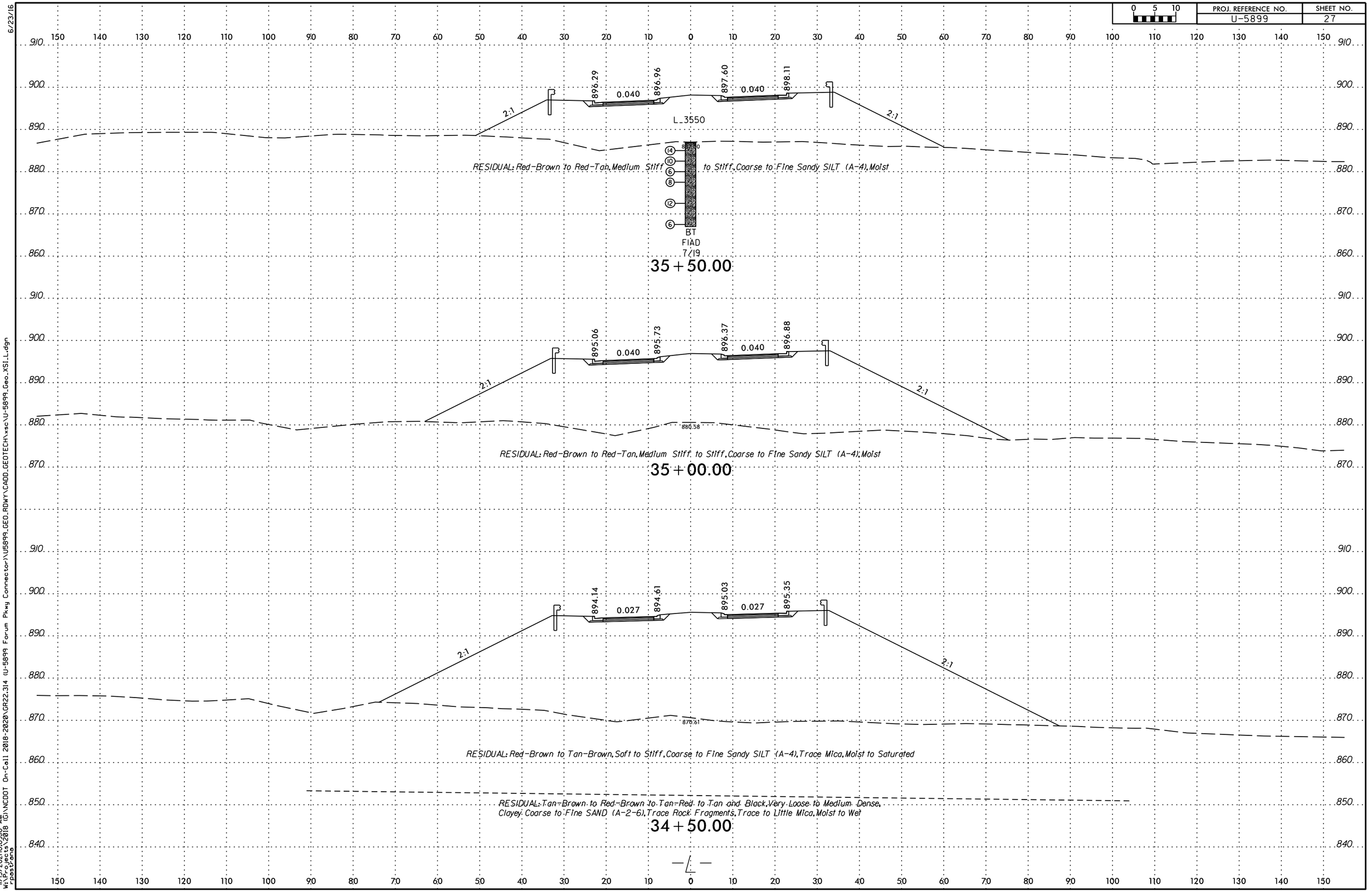
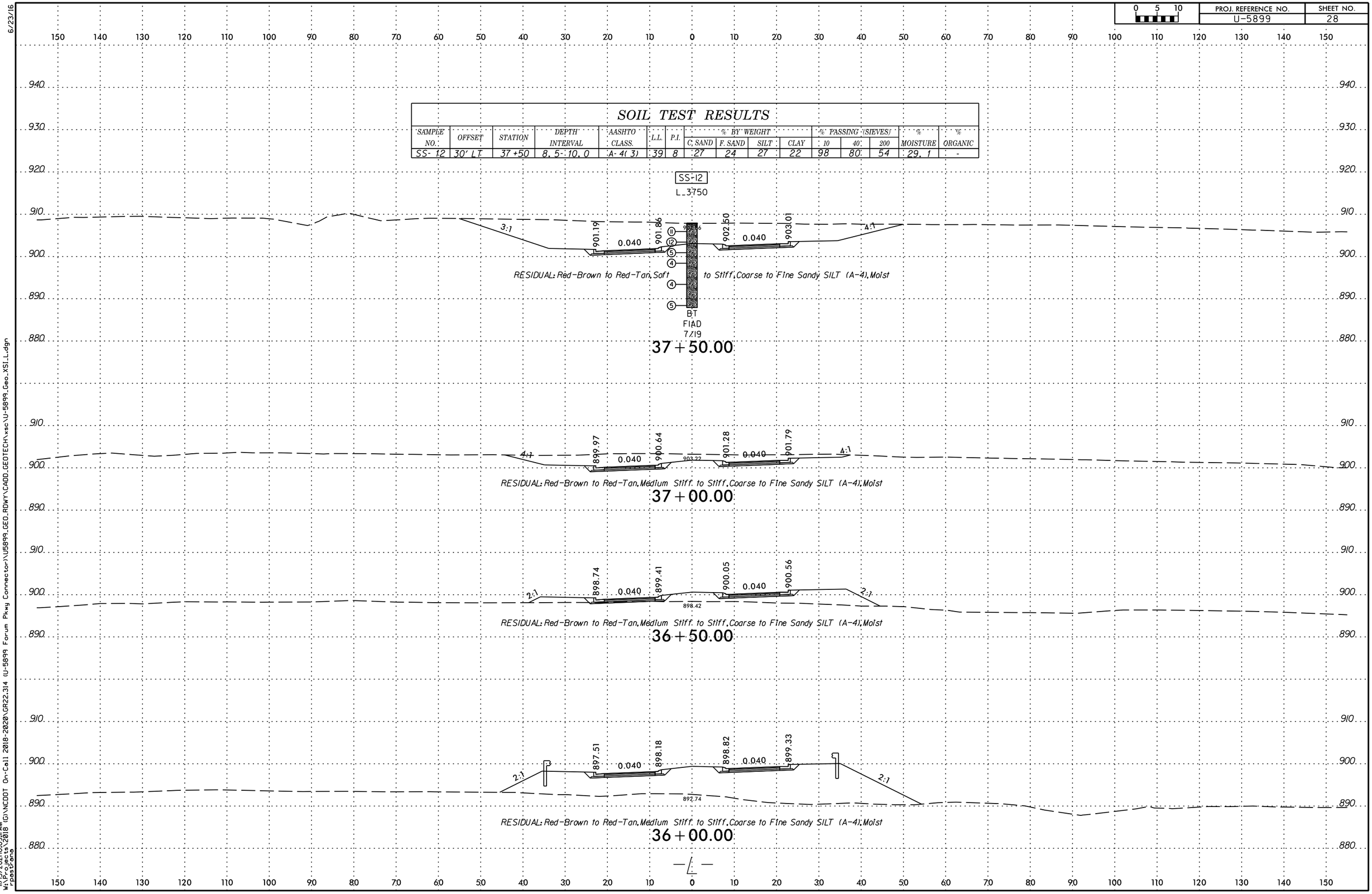
	U-5899	27



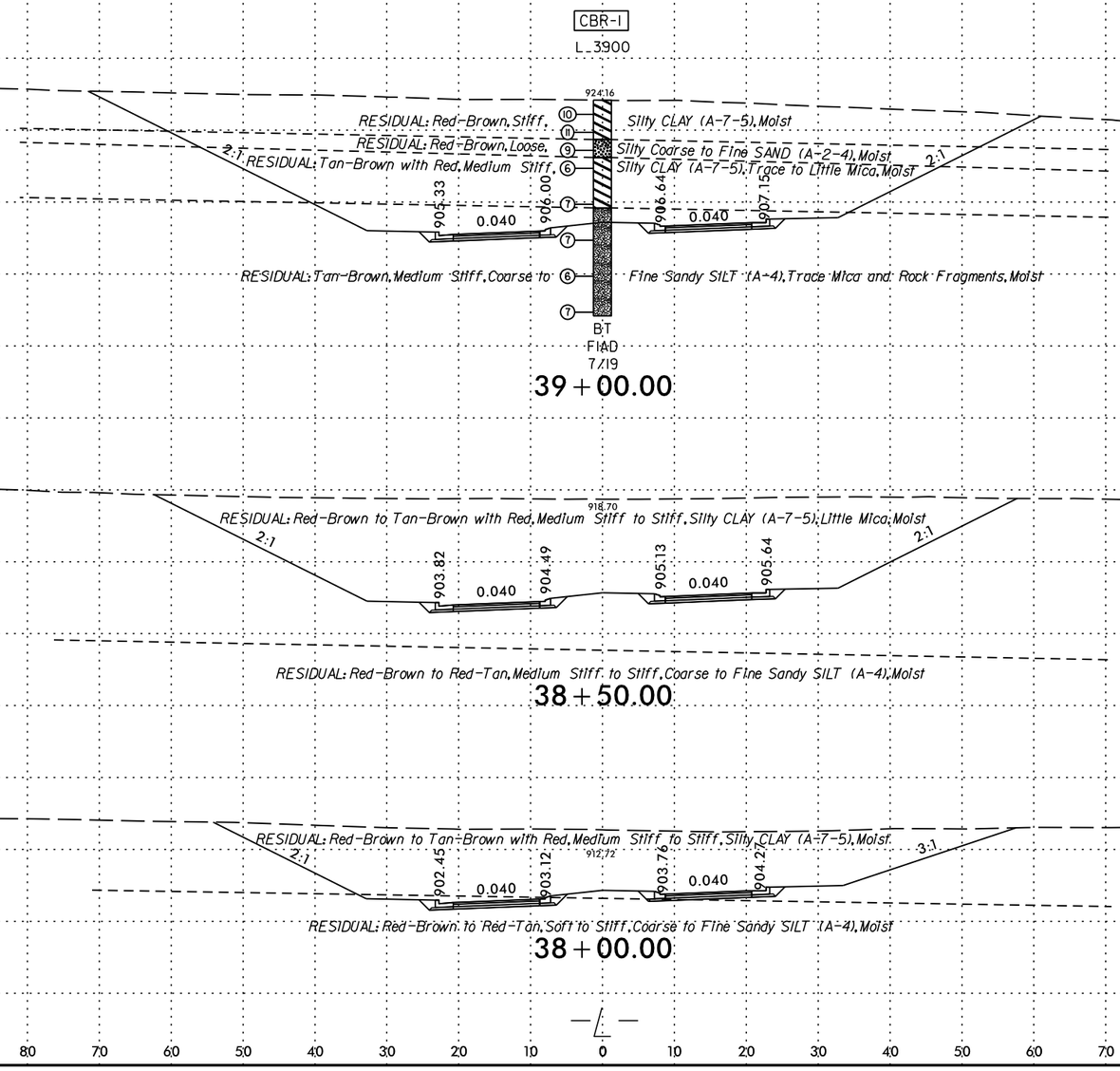
SOIL TEST RESULTS

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
SS-12	30' LT	37+50	8.5-10.0	A-4(3)	39	8	27	24	27	22	98	80	54	29.1	-



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) #10	% PASSING (SIEVES) #40	% PASSING (SIEVES) #200	% MOISTURE	% ORGANIC
CBR- 1	CL	39+00	0.0- 15.0	A-7-5(10)	51	18	18	26	24	32	97	87	59	23.3	-



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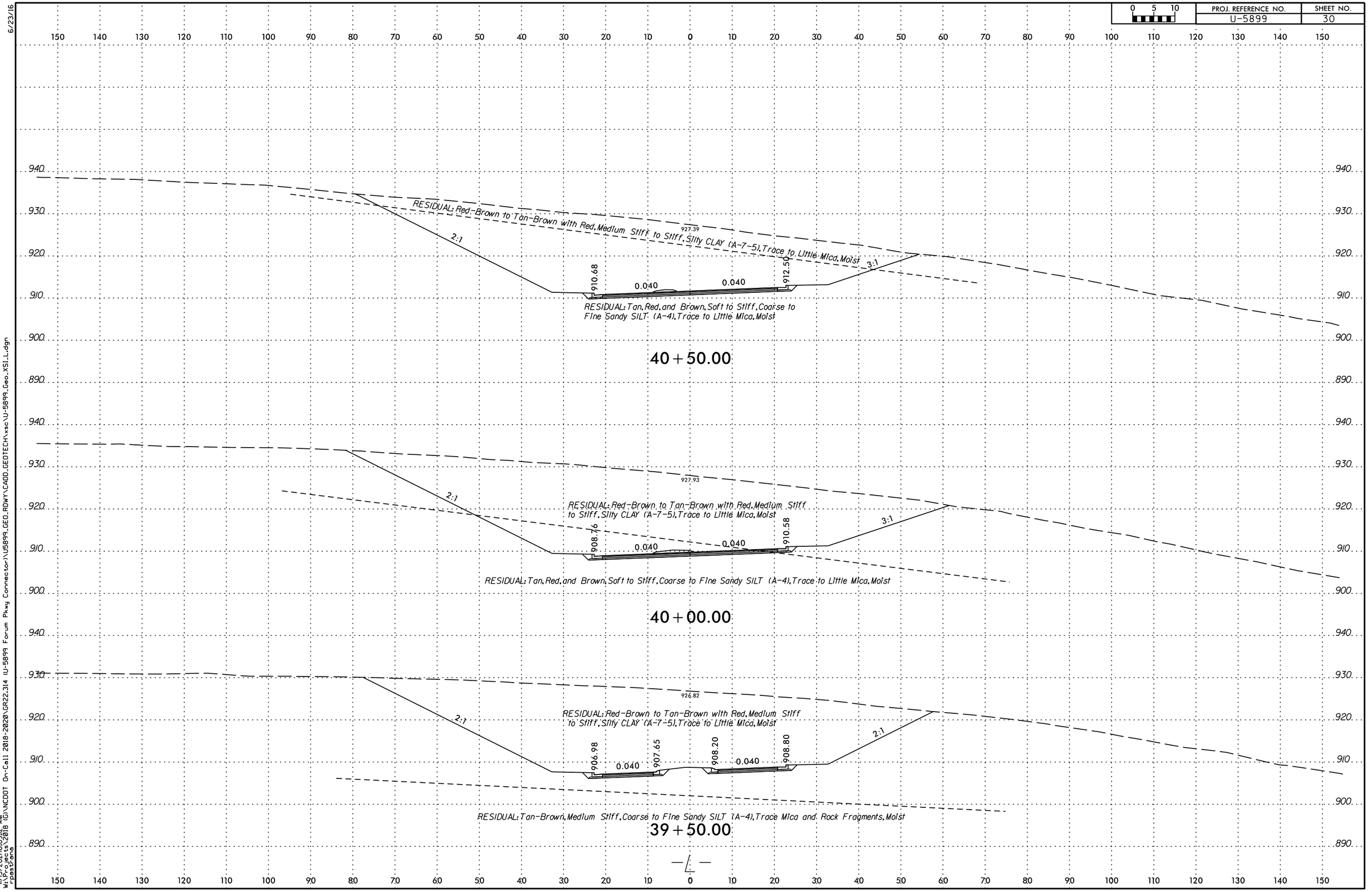
	U-5899	30



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	31

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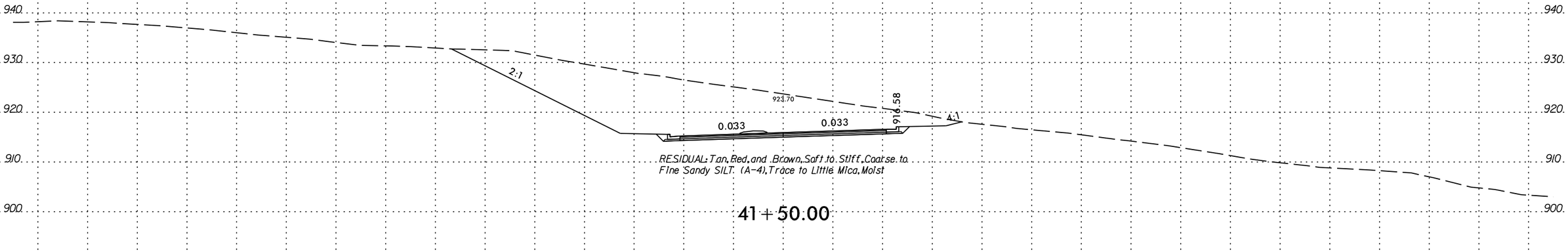
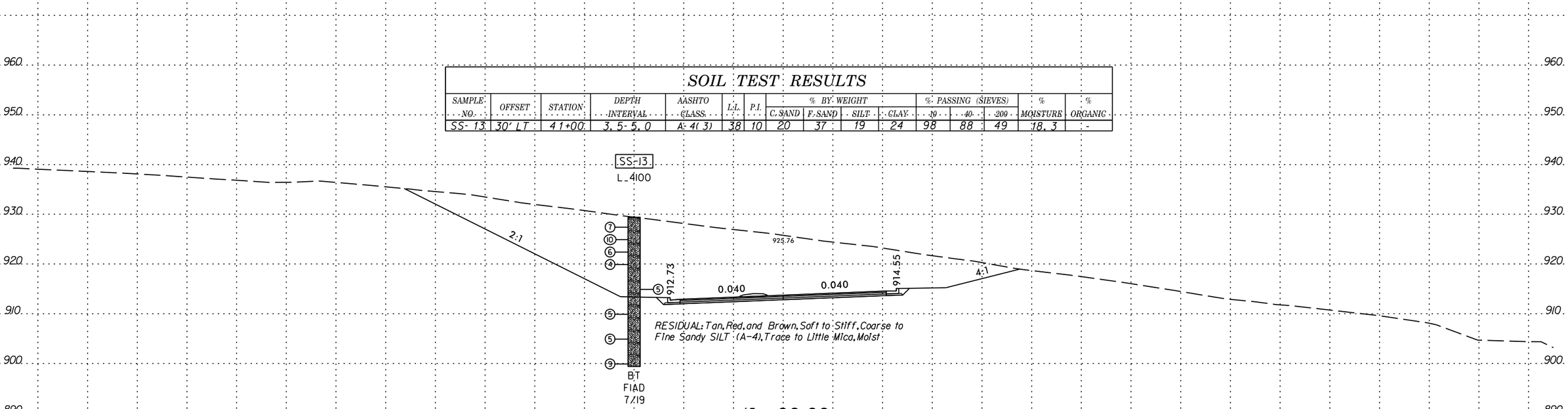
940 930 920 910 900



41+50.00

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
SS-13	30' LT	41+00	3.5-5.0	A-4(3)	38	10	20	37	19	24	98	88	49	18.3	-



41+00.00

960 950 940 930 920 910 900 890

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

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	32

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

950 940 930 920 910 900 980 970 960 950 940 930 920 910 900 890

SP

2:1

0.020 0.005

915.28

RESIDUAL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Trace Mica, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine, Sandy SILT (A-4), Trace Mica, Moist

42+50.00

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		
SS-14	45' RT	42+00	6.0-7.5	A-7-5(25)	65	30	10	17	15	58	99	94	75	31.5	-

SP

SS-14

L-4200

2:1

0.020 920.05 0.014

2:1

RESIDUAL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Trace Mica, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine, Sandy SILT (A-4), Trace Mica, Moist

10 24 15 12

BT

FIAD

7/19

42+00.00

PROJ. REFERENCE NO.	SHEET NO.
U-5899	33

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

950 940 930 920 910 900 890

925.31 0.020 0.020 925.31

2:1 2:1 2:1 2:1

918.90 918.81 916.64

RESIDUAL: Red, Soft to Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist

43+50.00

916.94 914.42

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Trace Mica, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine, Sandy SILT (A-4), Trace Mica, Moist

43+00.00

6/23/16

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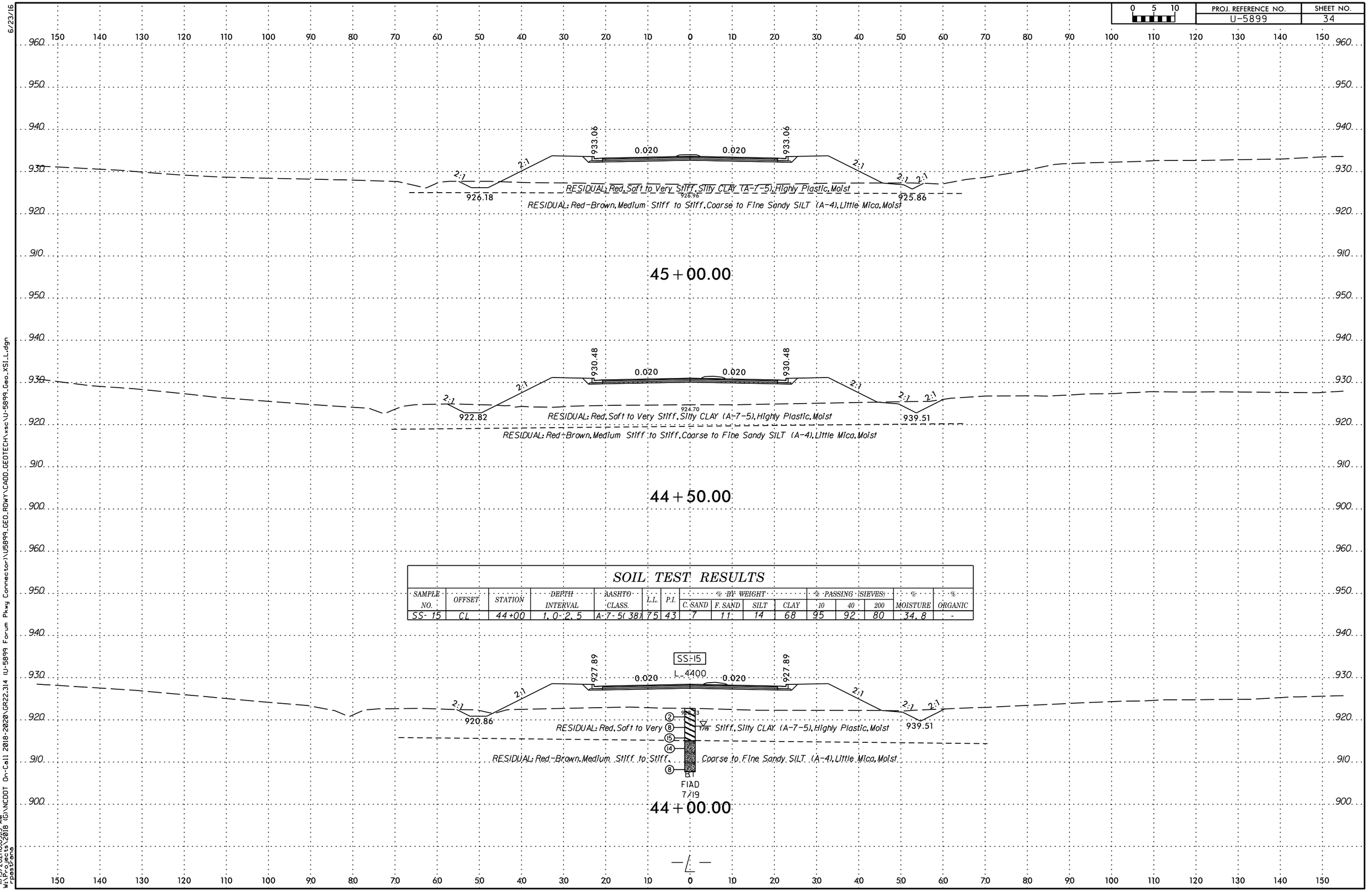
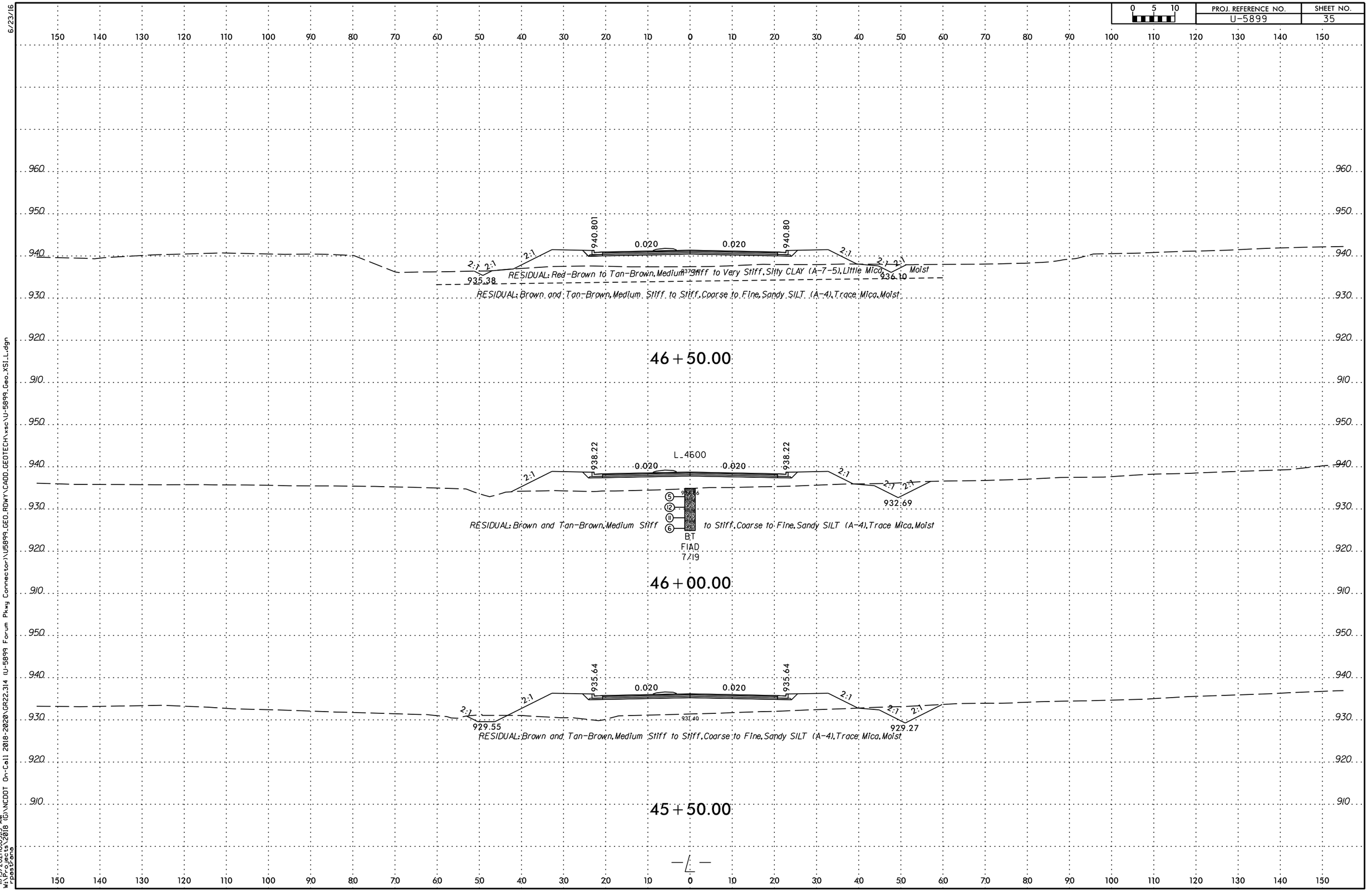
rpastrana



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
SS-15	CL	44+00	1.0-2.5	A-7-5(38)	75	43	7	11	14	68	95	92	80	34.8	-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	35



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rpastrana

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rpatterson

SP

Y4_3650
47+17

0.020 0.001 2:1

944.25

RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Very Stiff, Silty CLAY (A-7-5), Little Mica, Moist

8
15
11
10
6

BT
FIAD
7/19

47 + 32.72

2:1 0.020 0.012 2:1 2:1

941.07 939.51

RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Very Stiff, Silty CLAY (A-7-5), Little Mica, Moist

47 + 00.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	37

6/23/16

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

920 910 900 890 880 870 860 850 840 920 830

SP

SP

1.59:1

0.030

0.030

68:1

866.90

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Wet

RESIDUAL: Red-Tan to Red-Brown, Medium Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

10+50.00

SP

SP

0.043

0.043

867.22

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Wet

RESIDUAL: Red-Tan to Red-Brown, Medium Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

CRYSTALLINE ROCK: BIOTITE GNEISS

10+20.75

—Y1—

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

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	38

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

920 910 900 890 880 870 860 850 840

0.020 0.020

6.6:1

2:1

2:1 2:1

861.64

865.25

RESIDUAL: Tan-Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace to Little Mica, Moist to Wet

RESIDUAL: Red-Tan to Red-Brown, Medium Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

11+50.00

0.020 0.020

20:1

2:1

2:1 2:1

861.46

866.84

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Wet

RESIDUAL: Red-Tan to Red-Brown, Medium Dense, Silty Coarse to Fine SAND (A-2-4), Moist

WEATHERED ROCK: BIOTITE GNEISS

11+00.00

—Y1—

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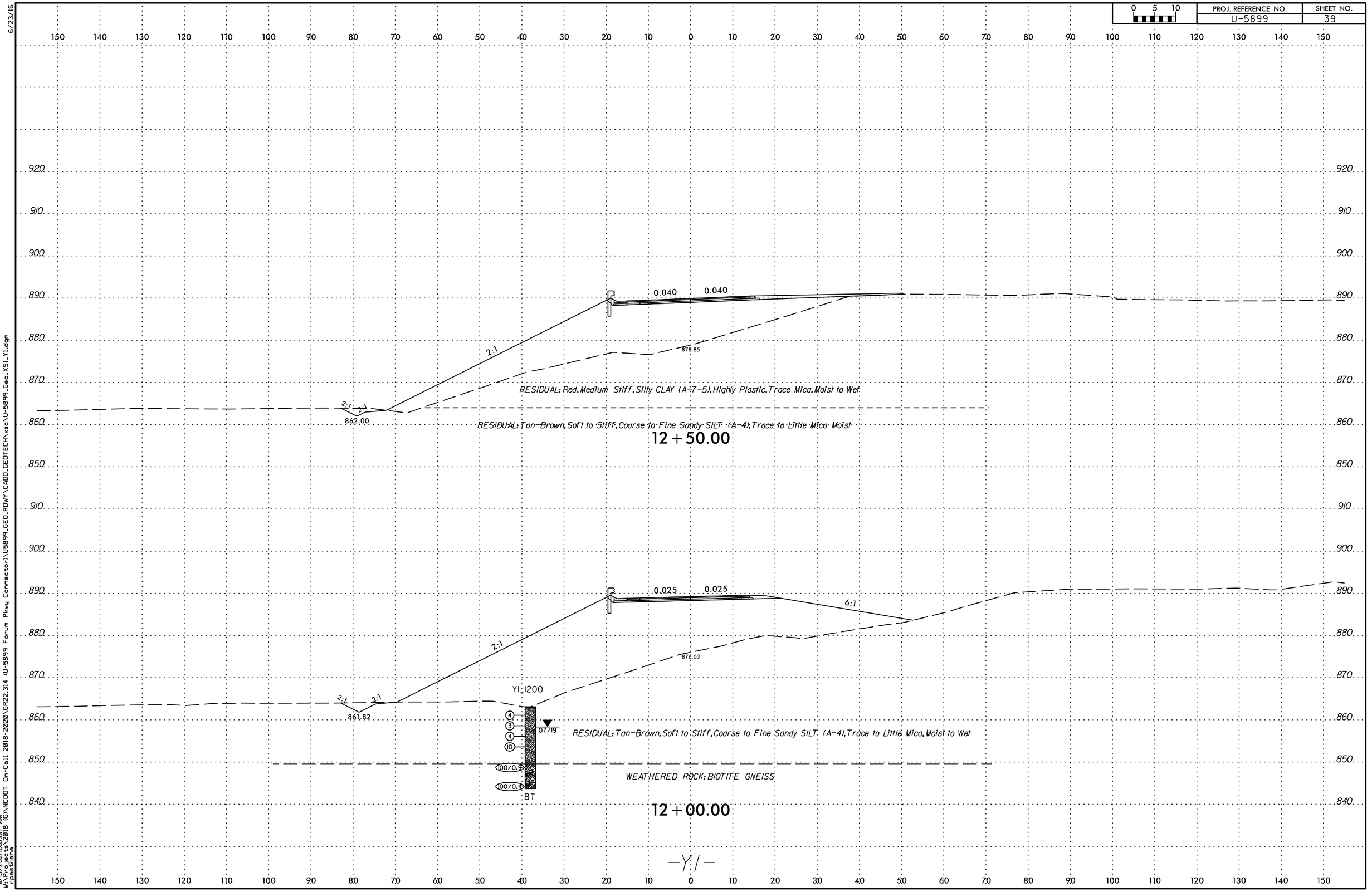
rpastrana



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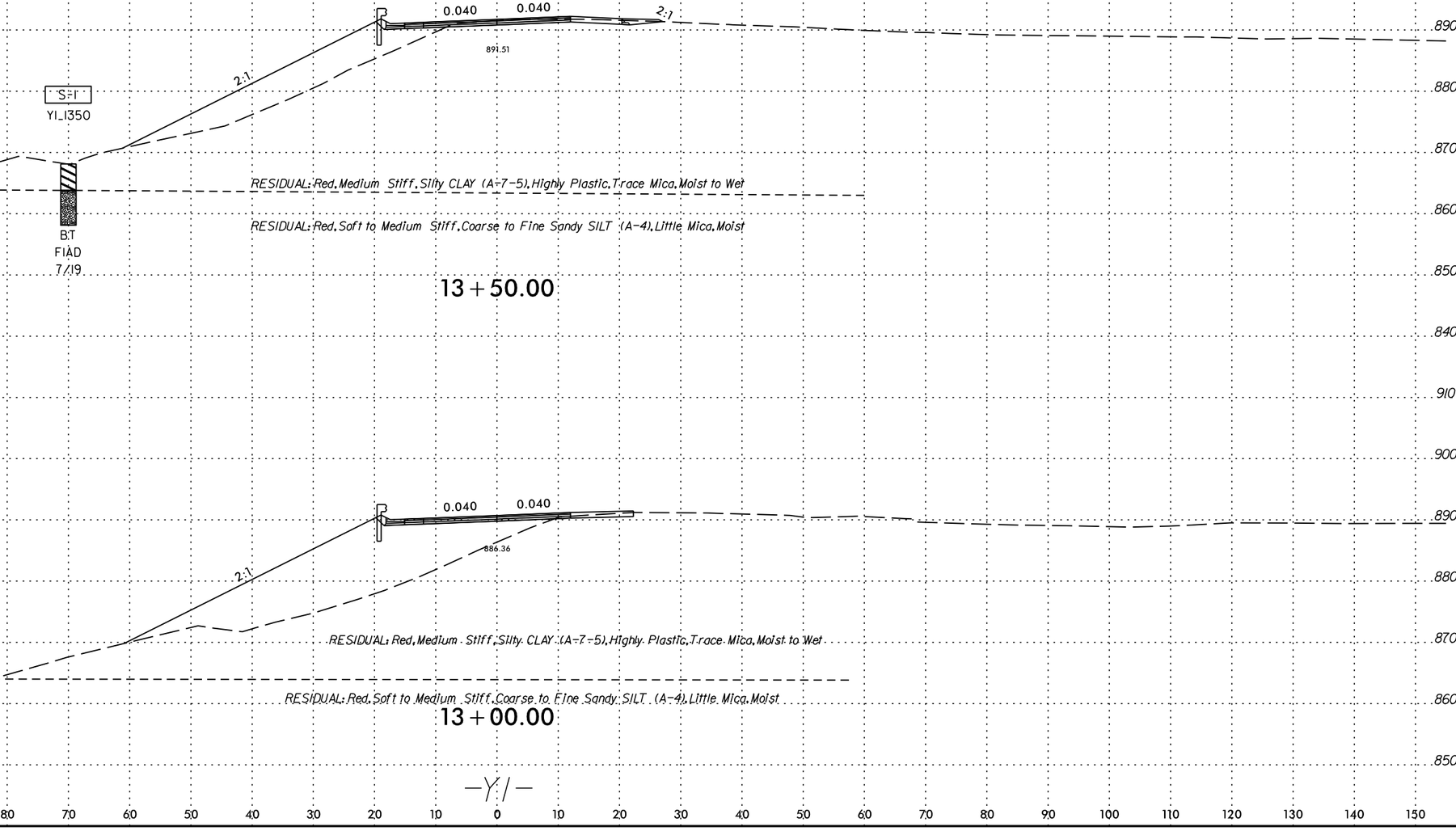
rpastrano

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-1	70' LT	13+50	1.0-4.3	A-7-5(38)	75	37	4	14	20	62	100	98	86	33.2	-



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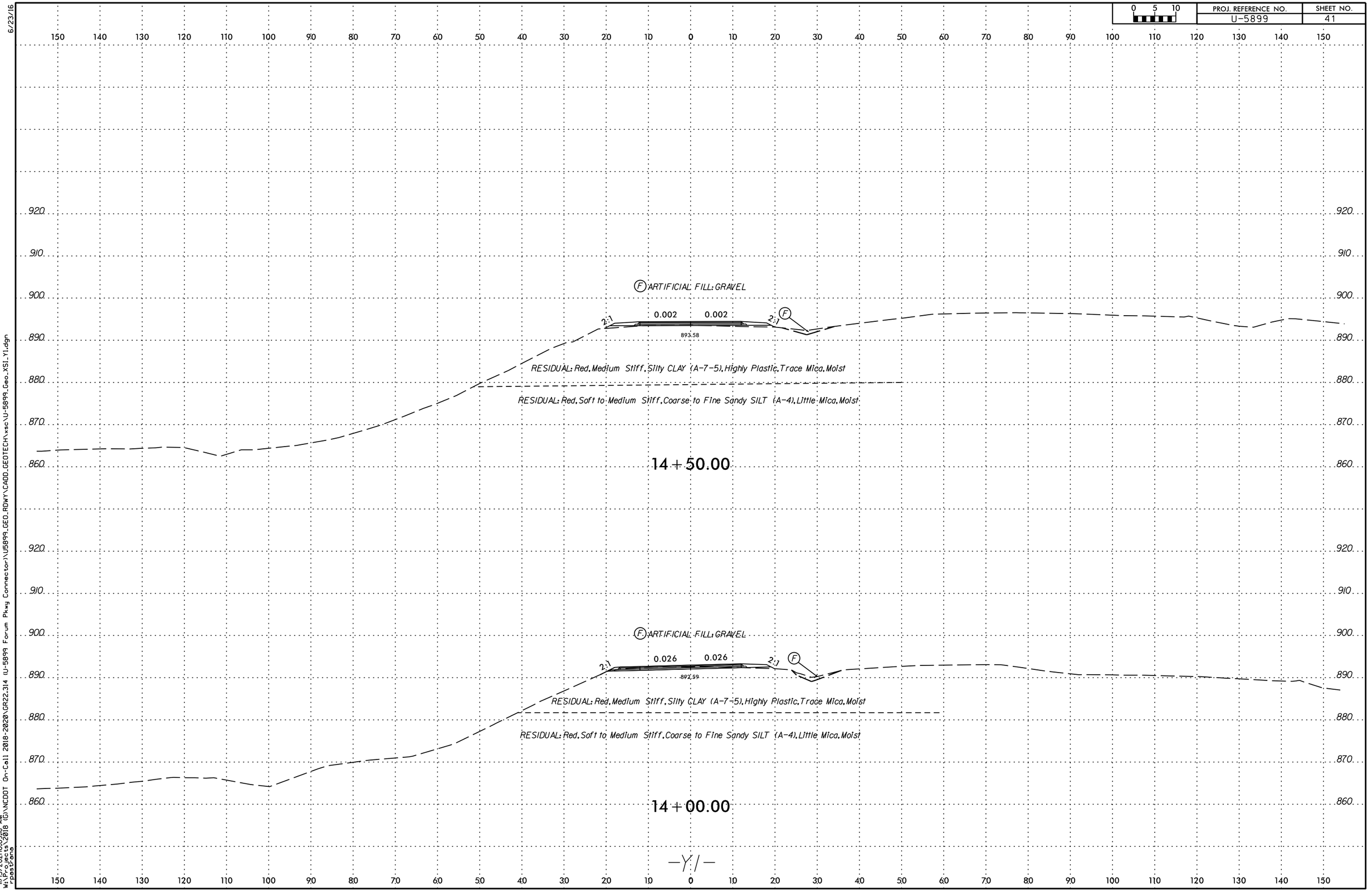
	U-5899	41



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	42

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

920 910 900 890 880 870 860 850

Ⓕ ARTIFICIAL FILL: GRAVEL

YI_1550

2:1 0.030 0.030 4:1 2:1

897.63

895.15

RESIDUAL: Red-Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist

3 8 6 8

BT
FIAD
7/19

15+50.00

Ⓕ ARTIFICIAL FILL: GRAVEL

2:1 0.021 0.021 2:1

895.38

RESIDUAL: Red, Medium Stiff, Silty CLAY (A-7-5), Highly Plastic, Trace Mica, Moist

RESIDUAL: Red-Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist

15+00.00

—Y1—

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	43

16+50.00

0.007 0.007

2:1 4:1 2:1

901.98 899.75

RESIDUAL: Red-Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist

16+00.00

0.017 0.017

2:1

899.91

RESIDUAL: Red-Brown, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Moist

—Y1—

6/23/16

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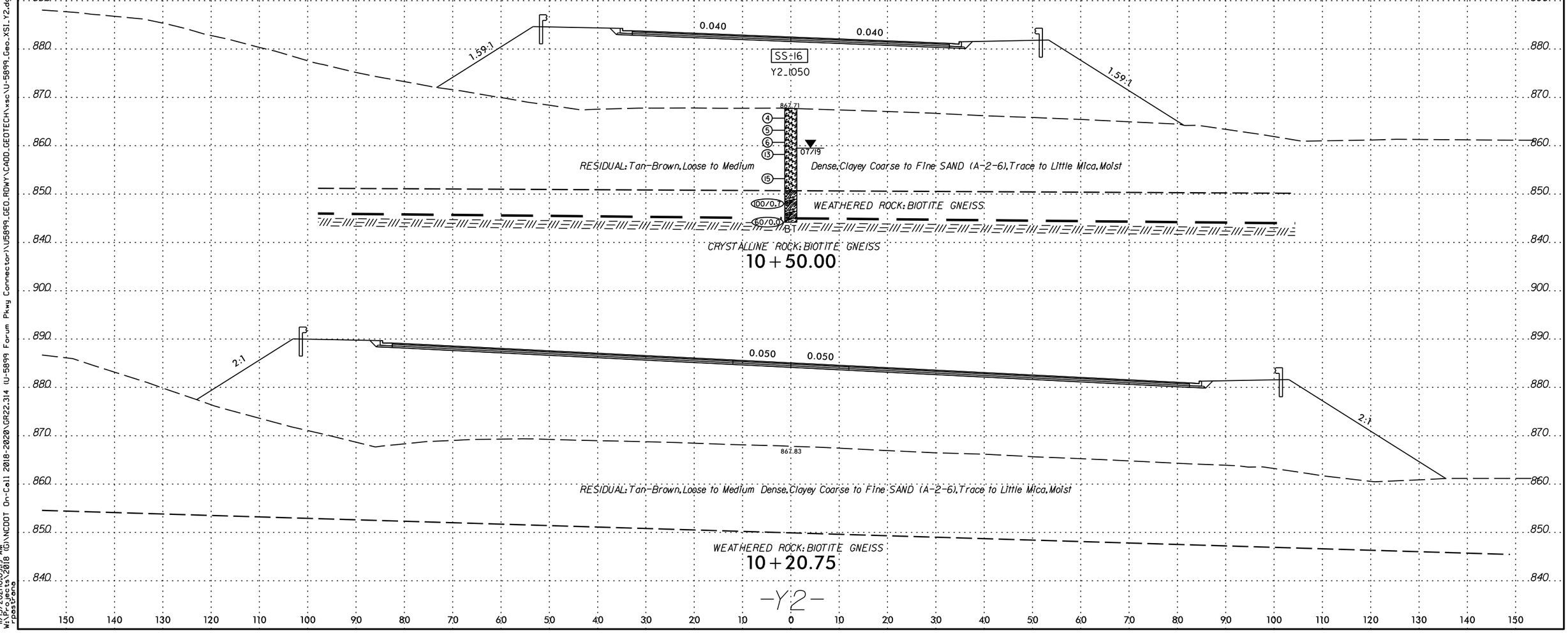
rpastrano

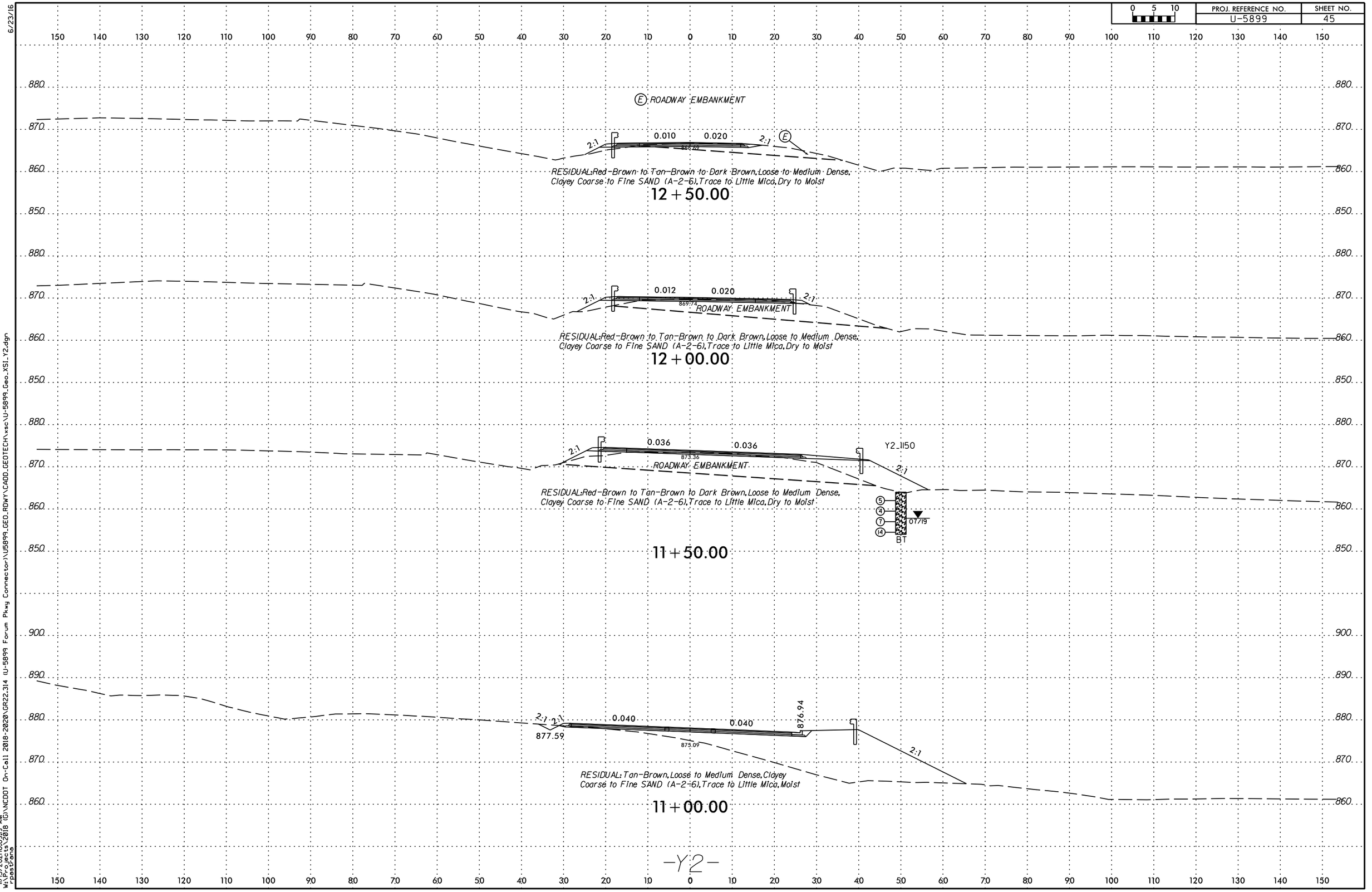
SOIL TEST RESULTS

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
SS-16	CL	10+50	3.5-5.0	A-2-6(0)	40	13	46	36	14	4	99	71	24	24.3	-



-Y2-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	45



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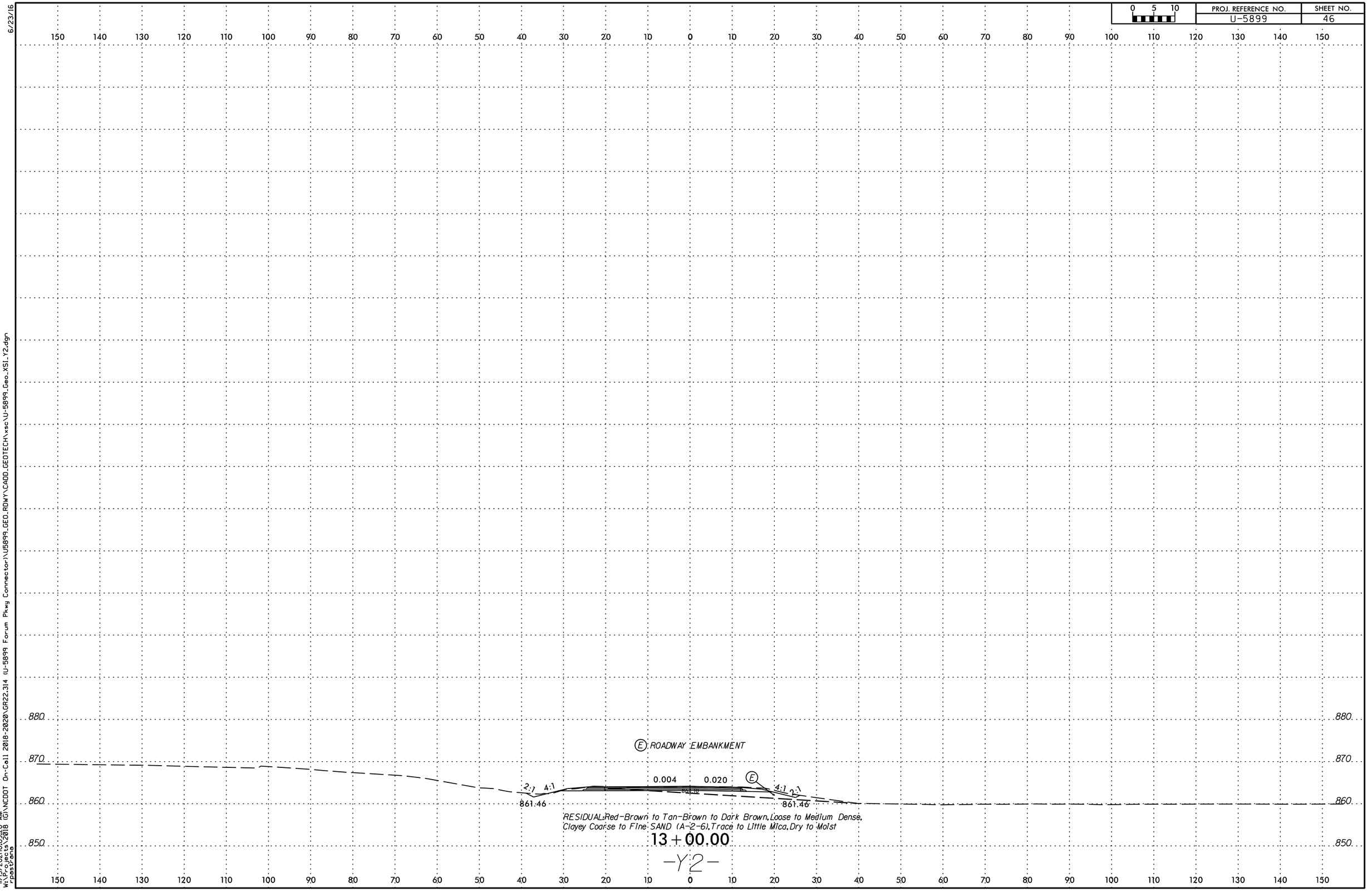
	U-5899	46



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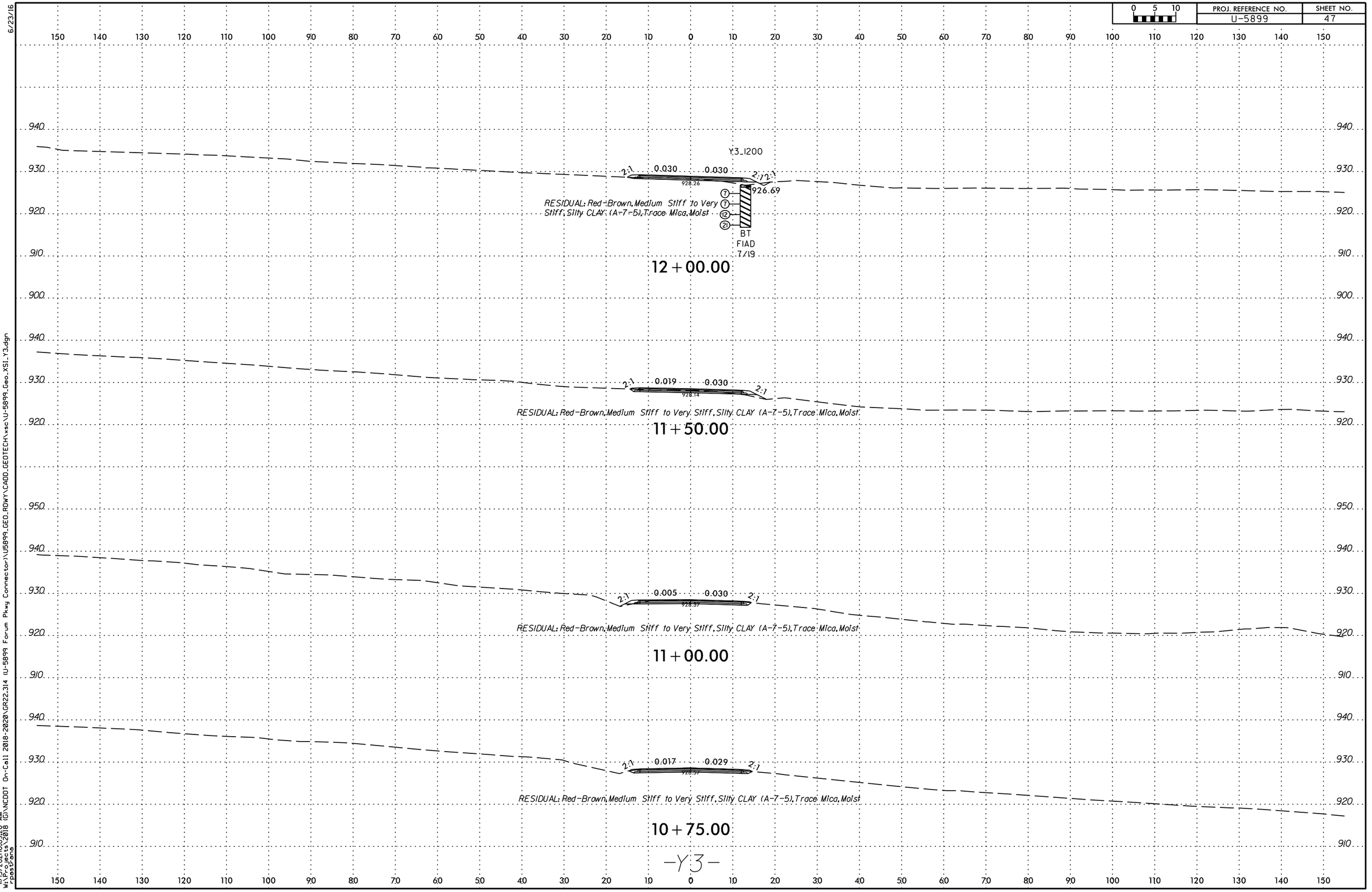
rpastrana



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
SS-17	CL	14+00	8.5-10.0	A-7-5(12)	50	14	9	26	39	26	100	95	75	26.7	-

SS-17
Y3_1400

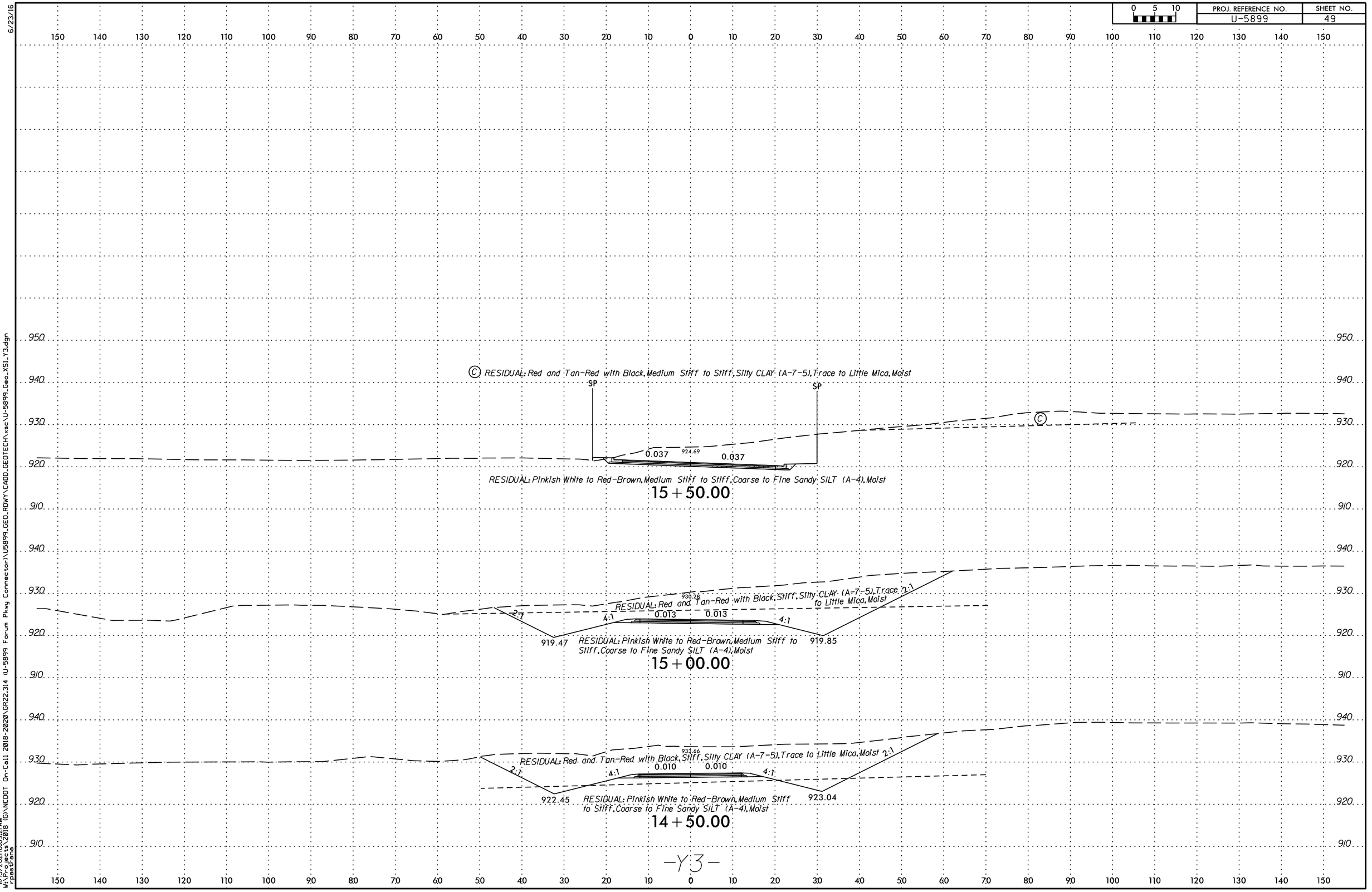
RESIDUAL: Red and Tan-Red with Black, Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist
RESIDUAL: Pinkish White to Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Moist
B-1
FIAD
7/19
14+00.00

RESIDUAL: Red and Tan-Red with Black, Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist
RESIDUAL: Pinkish White to Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Moist
13+50.00

RESIDUAL: Red and Tan-Red with Black, Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist
RESIDUAL: Pinkish White to Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Moist
13+00.00

RESIDUAL: Red-Brown, Medium Stiff to Very Stiff, Silty CLAY (A-7-5), Trace Mica, Moist
RESIDUAL: Pinkish White to Red-Brown, Medium Stiff to Stiff, Coarse to Fine Sandy SILT (A-4), Moist
12+50.00

-Y3-



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rpostrano

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5899	50

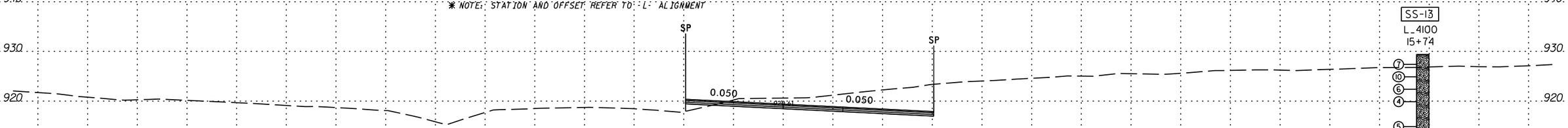
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

960 950 940 930 920 910 900 890

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		
SS-13	30' LT	41+00	3.5-5.0	A-4(3)	38	10	20	37	19	24	98	88	49	18.3	-

✱ NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT



15+94.15

-Y3-

6/23/16
11/5/2021 10:09:22 AM
W:\Projects\2018 (G)\NCDOT On-Call 2018-2020\GR22.314 (U-5899 Forum Pkwy Connector\U5899_GEO_RDWY\CADD_GEOTECH\xsc\U-5899_Geo_XSI_Y3A.dgn
rpastrana

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

940 930 920 910 900 890 950 940

Ⓔ ROADWAY EMBANKMENT

Ⓔ 4:1 | 918.21 | 0.012 | 0.012 | 2:1 | 912.08

RESIDUAL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

11+00.00

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
SS-14	45' RT	42+00	6.0-7.5	A-7-5(25)	65	30	10	17	15	58	99	94	75	31.5	-

* NOTE: STATION AND OFFSET REFER TO -L- ALIGNMENT

SS-14
L_4200
10+42

3:1 | 0.036 | 0.036 | 3:1 | 917.99

ROADWAY EMBANKMENT

RESIDUAL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

10 | 24 | 16 | 12

BT
FIAD
7/19

10+50.00

0.049 | 0.049 | 914.45

ROADWAY EMBANKMENT

RESIDUAL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

RESIDUAL: Dark Brown, Very Stiff, Silty CLAY (A-7-5), Highly Plastic, Moist

RESIDUAL: Red-Tan, Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist

10+20.82

-Y3A-

PROJ. REFERENCE NO.	SHEET NO.
U-5899	52

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

940 930 920 910 900 930 920 910 900 890 880

3:1 0.030 0.043 2:1
920.88
ROADWAY EMBANKMENT
RESIDUAL: Red-Brown to Tan-Red, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Saturated

12 + 50.00

2:1 2:1 0.019 0.019 2:1
915.95 917.89
ROADWAY EMBANKMENT
RESIDUAL: Red-Brown to Tan-Red, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Saturated

12 + 00.00

2:1 0.010 0.010 Y3A: 1150 2:1
914.60
ROADWAY EMBANKMENT
RESIDUAL: Red-Brown to Tan-Red, Soft to Stiff, Coarse to Fine Sandy SILT (A-4), Trace Mica, Moist to Saturated

9 7 6 5 07/19 4 5 BT

11 + 50.00

-Y3A-

6/23/16

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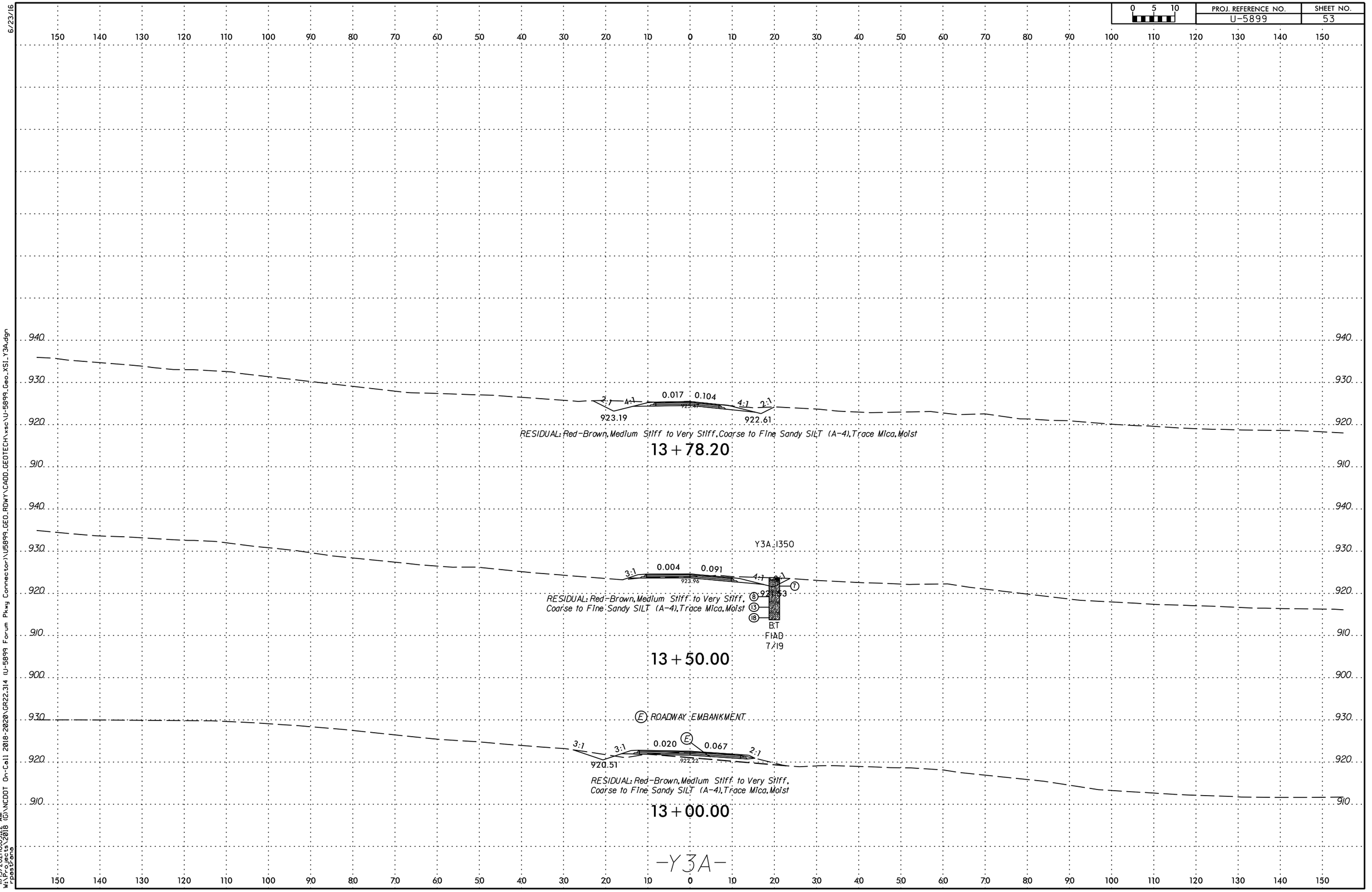
rpastrana



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
SS-18	38' LT	33+50	6.0-7.5	A-7-5(48)	80	45	5	7	14	74	100	97	89	32.3	-

SS-18
Y4_3350

6:1 6:1 0.020 0.020 6:1 4:1

940.80 943.18 940.45

ARTIFICIAL FILL: Red-Brown, Stiff, Coarse to Fine Sandy SILT (A-4), Little Mica, Trace Roots, Moist

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Highly Plastic, Little Mica, Moist

BT
FIAD
7/19

33+50.00

0.028 0.015 6:1 6:1

943.51 940.98

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Highly Plastic, Little Mica, Moist

33+00.00

EXIST. EXIST. 6:1 6:1

943.53 940.99

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Highly Plastic, Little Mica, Moist

32+98.24

-Y4-

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
SS-19	53' RT	35+00	6.0-7.5	A-7-5(24)	59	22	3	17	41	39	98	96	87	34.0	-

(G) ARTIFICIAL FILL: Red-Brown, Red, and Tan-Brown, Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist

SS-19
Y4_3500

6:1 0.020 0.020 6:1 4:1 (G)

943.25 939.72

RESIDUAL: Red to Tan-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist

BT
FIAD
7/19

35+00.00

6:1 0.020 0.020 6:1 4:1

943.05 940.09

RESIDUAL: Red to Tan-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Trace to Little Mica, Moist

34+50.00

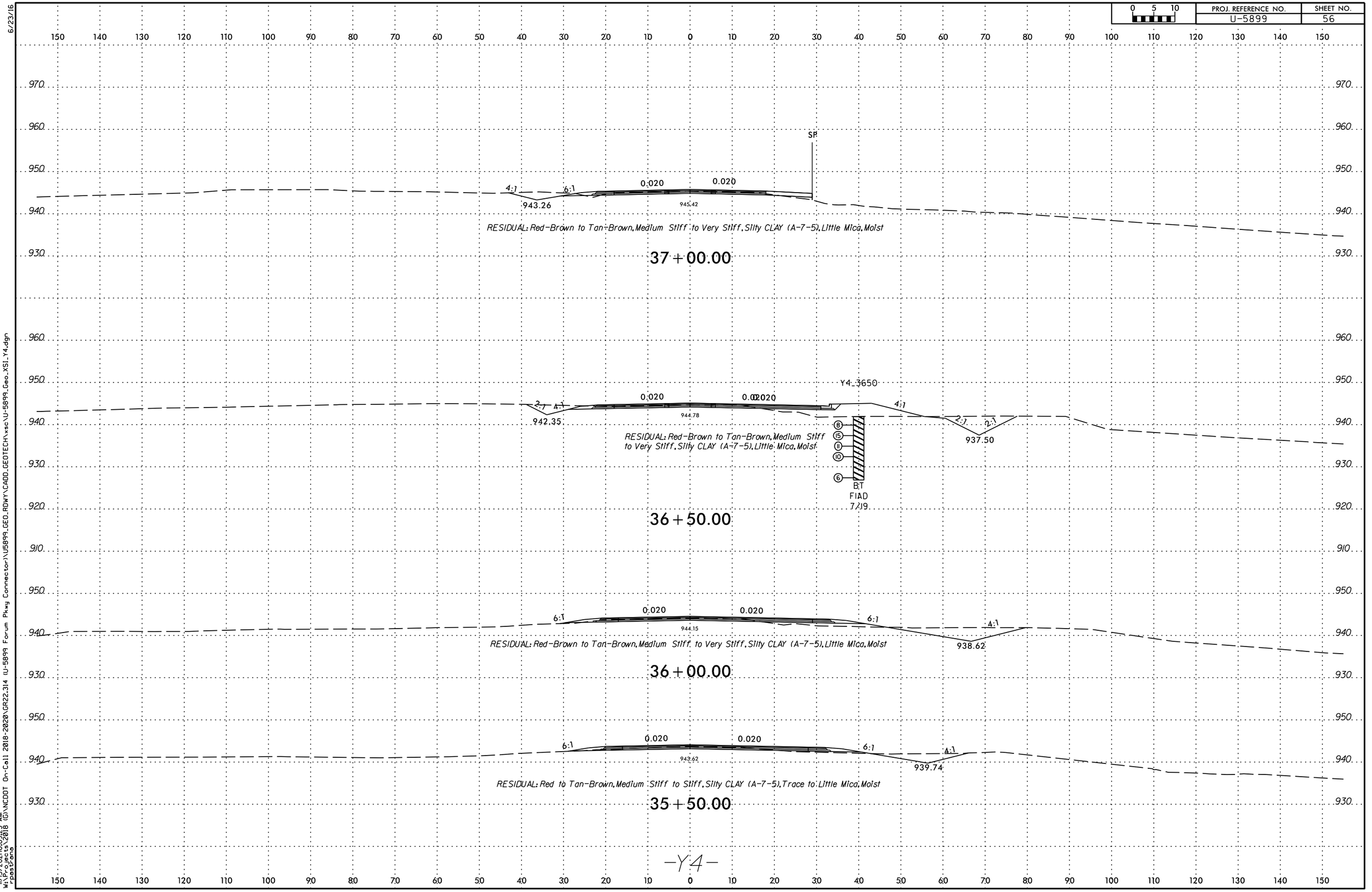
6:1 0.020 0.020 6:1 4:1

943.01 940.27

RESIDUAL: Red-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Highly Plastic, Little Mica, Moist

34+00.00

-Y4-



6/23/16

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
SS-20	46' LT	38+50	3.5-5.0	A-7-5(20)	60	21	6	22	27	45	100	97	78	30.6	- -

EXIST. EXIST.
6:1 6:1 6:1 6:1
944.95 947.67 945.14
RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Moist
38+72.95

SS-20
Y4_3850
13 15 11 7 5
BT
FIAD
7/19
6:1 6:1 0.020 0.020 6:1 4:1
944.72 947.35 944.29
RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Moist
38+50.00

4:1 6:1 0.020 0.020 4:1 2:1 2:1
944.24 946.72 941.17
RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Stiff, Silty CLAY (A-7-5), Little Mica, Moist
38+00.00

SP
4:1 6:1 0.020 0.020
943.75 946.07
RESIDUAL: Red-Brown to Tan-Brown, Medium Stiff to Very Stiff, Silty CLAY (A-7-5), Little Mica, Moist
37+50.00

-Y4-

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

970 960 950 940 930

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rpestrano

PROJECT REFERENCE NO.	SHEET NO.
U–5899	58

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
SOIL TEST BORING LOGS

REFERENCE: U–5899

PROJECT: 44689

ESP
ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
WWW.ESPASSOCIATES.COM

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44689.1.1	**TIP** U-5899	**COUNTY** FORSYTH	**GEOLOGIST** Tinson, D.	
SITE DESCRIPTION New Route for Forum Pkwy Connector from SR 3955 (Forum Pkwy) to NC 66 (University Pkwy)				**GROUND WTR (ft)**
BORING NO. Y4_4050	**STATION** 40+50	**OFFSET** 45 ft RT	**ALIGNMENT** -Y4-	**0 HR.** Dry
COLLAR ELEV. 949.5 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 897,895	**EASTING** 1,621,516	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Seiler, M.	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
950										ELEV. (ft) DEPTH (ft)
										949.5 GROUND SURFACE 0.0
	948.5	1.0	5	6	8	14		M		**RESIDUAL** Red-Brown to Tan-Brown, Silty CLAY, Trace to Little Mica
	946.0	3.5								
945			4	6	6	12		M		
	943.5	6.0								
			3	2	2	4		M		
	941.0	8.5								
940			2	3	4	7		M		
	936.0	13.5								
935			2	2	3	5		M		934.5 15.0
										Boring Terminated at Elevation 934.5 ft in Residual Soil: Silty CLAY

WBS 44689.1.1	**TIP** U-5899	**COUNTY** FORSYTH	**GEOLOGIST** Tinson, D.	
SITE DESCRIPTION New Route for Forum Pkwy Connector from SR 3955 (Forum Pkwy) to NC 66 (University Pkwy)				**GROUND WTR (ft)**
BORING NO. Y4_4250	**STATION** 42+60	**OFFSET** 40 ft LT	**ALIGNMENT** -Y4-	**0 HR.** Dry
COLLAR ELEV. 948.7 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 897,714	**EASTING** 1,621,652	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Seiler, M.	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
950										
										948.7 GROUND SURFACE 0.0
	947.7	1.0	5	4	5	9		M		**ARTIFICIAL FILL** Red-Brown, Silty CLAY, Trace Mica
	945.2	3.5								945.8 2.9
945			4	5	5	10		M		**RESIDUAL** Red-Brown to Tan-Brown, Silty CLAY, Trace Mica
	942.7	6.0								
			5	5	7	12		M		
940	940.2	8.5								
			2	2	3	5		M		
	935.2	13.5								
935			2	2	3	5		M		933.7 15.0
										Boring Terminated at Elevation 933.7 ft in Residual Soil: Silty CLAY

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44689.1.1	**TIP** U-5899	**COUNTY** FORSYTH	**GEOLOGIST** Tinson, D.	
SITE DESCRIPTION New Route for Forum Pkwy Connector from SR 3955 (Forum Pkwy) to NC 66 (University Pkwy)				**GROUND WTR (ft)**
BORING NO. Y4_4450	**STATION** 44+50	**OFFSET** 45 ft RT	**ALIGNMENT** -Y4-	**0 HR.** Dry
COLLAR ELEV. 946.4 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 897,509	**EASTING** 1,621,619	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Seiler, M.	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
950										
										946.4 GROUND SURFACE 0.0
	945.4	1.0								**RESIDUAL**
945			6	5	4	9 15	SS-21	19%		Red-Brown, Silty CLAY
	942.9	3.5	4	6	9			M		
940	940.4	6.0	4	5	6	11 13		M		
	937.9	8.5	5	6	7			M		
935										
	932.9	13.5	2	3	3	6		M		931.4 15.0
										Boring Terminated at Elevation 931.4 ft in Residual Soil: Silty CLAY

WBS 44689.1.1	**TIP** U-5899	**COUNTY** FORSYTH	**GEOLOGIST** Tinson, D.	
SITE DESCRIPTION New Route for Forum Pkwy Connector from SR 3955 (Forum Pkwy) to NC 66 (University Pkwy)				**GROUND WTR (ft)**
BORING NO. Y4_4650	**STATION** 46+50	**OFFSET** 40 ft RT	**ALIGNMENT** -Y4-	**0 HR.** Dry
COLLAR ELEV. 938.6 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 897,317	**EASTING** 1,621,676	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE RED5584 CME-45C 84% 03/13/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Seiler, M.	**START DATE** 07/25/19	**COMP. DATE** 07/25/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
940										
										938.6 GROUND SURFACE 0.0
	937.6	1.0								**RESIDUAL**
935			2	3	4	7		M		Red-Brown to Tan-Brown, Silty CLAY
	935.1	3.5	4	7	10			M		
	932.6	6.0	4	5	7	17 12	SS-22	35%		
930	930.1	8.5	3	4	5			M		
						9				
925	925.1	13.5	1	3	4	7		M		923.6 15.0
										Boring Terminated at Elevation 923.6 ft in Residual Soil: Silty CLAY

PROJECT REFERENCE NO.	SHEET NO.
U–5899	61

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
SOIL TEST RESULTS SUMMARY

REFERENCE: U–5899

PROJECT: 44689

ESP
ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
WWW.ESPASSOCIATES.COM

SOILS LABORATORY TESTS RESULTS

WBS NO.: 44689.1.1

TIP NO.: U-5899

COUNTY: Forsyth

SITE DESCRIPTION: Forum Parkway Connector from SR 3955 (Forum Parkway) to NC 66 (University Parkway) in Rural Hall

BORING NO.	SAMPLE NO.	BORING LOCATION	DEPTH INTERVAL (FT)	AASHTO CLASS	N	L.L	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
								CSE. SAND	F. SAND	SILT	CLAY	10	40	200		
EB1-A	SS-1	-L- STA. 31+83, 31' LT	3.5-5.0	A-7-6 (17)	7	53	25	11	25	15	49	99	94	68	27.5	-
EB1-B	SS-2	-L- STA. 31+89, 31' RT	8.5-10.0	A-6 (6)	10	39	21	16	40	14	30	99	92	49	30.4	-
EB2-A	SS-3	-L- STA. 33+75, 26' LT	1.0-2.5	A-6 (9)	6	37	18	16	23	16	45	99	91	64	16.5	-
EB2-B	SS-4	-L- STA. 33+79, 26' RT	23.5-25.0	A-2-6 (0)	9	37	11	26	48	18	8	95	83	33	37.1	-
RW2-1	SS-5	-L- STA. 33+65, 61' LT	8.5-10.0	A-4 (1)	3	33	8	23	42	23	12	100	89	40	43.0	-
RW2-1	SS-6	-L- STA. 33+65, 61' LT	18.5-20.0	A-4 (1)	7	37	9	32	36	26	6	99	80	40	31.9	-
RW2-2	SS-7	-L- STA. 33+75, 61' RT	13.5-15.0	A-4 (0)	3	NP	NP	19	49	24	8	100	91	42	59.0	-
L_2152	SS-8	-L- STA. 21+52, 37' LT	1.0-2.5	A-7-5 (39)	16	73	41	6	15	11	68	100	97	82	28.5	-
L-2554	SS-9	-L-STA. 25+54, 15' RT	3.5-5.0	A-7-6 (28)	9	64	35	10	17	12	61	99	94	75	29.4	-
L_2700	SS-10	-L- STA. 27+00, CL	3.5-5.0	A-2-4 (0)	3	38	7	34	39	20	7	69	53	24	31.9	-
L_2900	SS-11	-L- STA. 29+00, CL	13.5-15.0	A-2-4 (0)	20	32	10	49	39	10	2	100	73	17	15.7	-
L_3750	SS-12	-L- STA. 37+50, 30' LT	8.5-10.0	A-4 (3)	4	39	8	27	24	27	22	98	80	54	29.1	-
L_3900	CBR-1	-L- STA. 39+00, CL	0.0-15.0	A-7-5 (10)	N/A	51	18	18	26	24	32	97	87	59	23.3	-
L_4100	SS-13	-L- STA. 41+00, 30' LT	3.5-5.0	A-4 (3)	10	38	10	20	37	19	24	98	88	49	18.3	-
L_4200	SS-14	-L- STA. 42+00, 45' RT	6.0-7.5	A-7-5 (25)	16	65	30	10	17	15	58	99	94	75	31.5	-
L_4400	SS-15	-L- STA. 44+00, CL	1.0-2.5	A-7-5 (38)	2	75	43	7	11	14	68	95	92	80	34.8	-
Y1-1350	S-1	-Y- STA. 13+50, 70' LT	1.0-4.3	A-7-5 (38)	N/A	75	37	4	14	20	62	100	98	86	33.2	-
Y2_1050	SS-16	-Y2- STA. 10+50, CL	3.5-5.0	A-2-6 (0)	5	40	13	46	36	14	4	99	71	24	24.3	-
Y3_1400	SS-17	-Y3- STA. 14+00, CL	8.5-10.0	A-7-5 (12)	11	50	14	9	26	39	26	100	95	75	26.7	-
Y4_3350	SS-18	-Y4- STA. 33+50, 38' LT	6.0-7.5	A-7-5 (48)	11	80	45	5	7	14	74	100	97	89	32.3	-
Y4_3500	SS-19	-Y4- STA. 35+00, 53' RT	6.0-7.5	A-7-5 (24)	8	59	22	3	17	41	39	98	96	87	34.0	-
Y4_3850	SS-20	-Y4- STA. 38+50, 46' LT	3.5-5.0	A-7-5 (20)	15	60	21	6	22	27	45	100	97	78	30.6	-
Y4_4450	SS-21	-Y4- STA. 44+50, 45' RT	1.0-2.5	A-7-6 (14)	9	46	21	12	20	23	45	97	91	69	19.3	-
Y4_4650	SS-22	-Y4- STA. 46+50, 40' RT	6.0-75	A-7-5 (31)	12	64	25	2	6	32	60	100	99	94	35.0	-

Tony Dumoncea

Certification No. 121-01-1108

PROJECT REFERENCE NO.	SHEET NO.
U–5899	63

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX C
STANDARD PROCTOR & CBR RESULTS

REFERENCE: U–5899

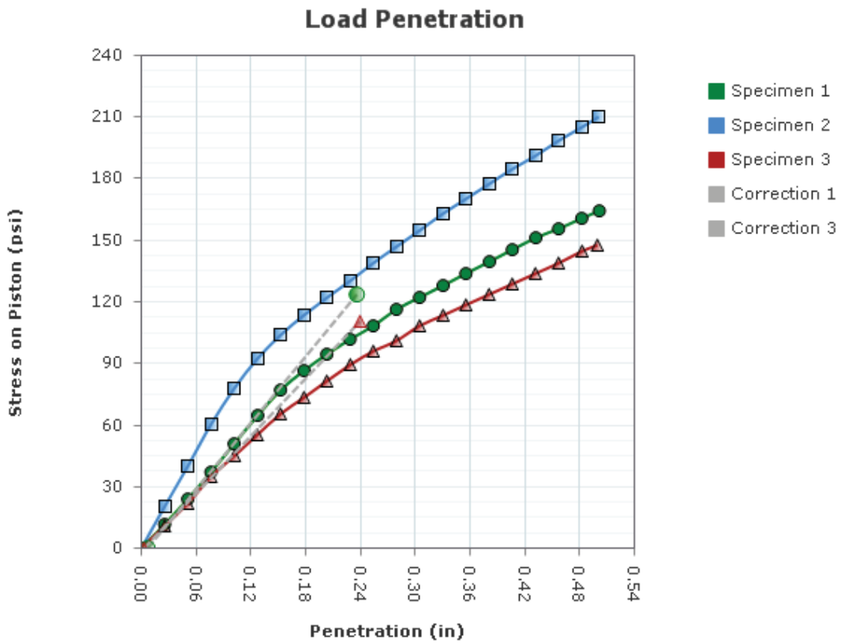
PROJECT: 44689

ESP
ESP ASSOCIATES, INC.
7011 ALBERT PICK RD
SUITE E
GREENSBORO, NC 27409
WWW.ESPASSOCIATES.COM

ESP Associates, Inc.
3475 Lakemont Blvd.
Fort Mill, South Carolina 29708

CBR Test Results

ASTM (D1883) / AASHTO (T193)



CBR Results								
Results	1	2	3	4	5	6	7	8
CBR @ 0.10 (in)	5.5	7.8	4.6					
CBR @ 0.20 (in)	6.4	8.1	5.5					

Project Information	
Project:	U-5899
Project Number:	GR22.314
Sampling Date:	
Sample Number:	CBR-1
Sample Depth:	0-15 ft
Location:	L-3900
Client Name:	
Remarks:	

ESP Associates, Inc.
3475 Lakemont Blvd.
Fort Mill, South Carolina 29708

CBR Test

ASTM (D1883) / AASHTO (T193)

Before Soaking	Specimen Number 1	2	3	4	5	6	7	8
Specific Gravity	2.72	2.72	2.72					
Liquid Limit	51	51	51					
Plastic Limit	18	18	18					
Surcharge Weight (g)	9072.0	9072.0	9072.0					
Number of Blows	56	56	56					
Maximum Dry Density (pcf)	104.4	104.4	104.4					
Optimum Moisture Content (%)	18.6	18.6	18.6					
Mold ID	CBR-1	CBR-2	CBR-3					
Mold Diameter (in)	6.000	6.000	6.000					
Mold Weight (g)	4160.0	4161.0	4175.0					
Sample Height (in)	4.584	4.584	4.584					
Mold Volume (in³)	129.61	129.61	129.61					
Moisture Content (%)	15.8	18.3	21.5					
Weight of Mold + Soil (g)	8228.0	8370.0	8425.0					
Weight of Soil (g)	4068.0	4209.0	4250.0					
Dry Density (pcf)	103.3	104.6	102.9					
Wet Density (pcf)	119.6	123.7	124.9					
After Soaking	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Soaked Sample Height (in)	4.700	4.645	4.637					
Soaked Time (Hr)	96.000	96.000	96.000					
Swell (%)	2.5	1.3	1.2					
Moisture Content (%)	27.0	26.8	28.3					
Weight of Mold + Soil (g)	8496.0	8528.0	8518.0					
Weight After Soaking (g)	4336.0	4367.0	4343.0					
Dry Density (pcf)	100.4	101.2	99.5					
Wet Density (pcf)	127.4	128.4	127.7					

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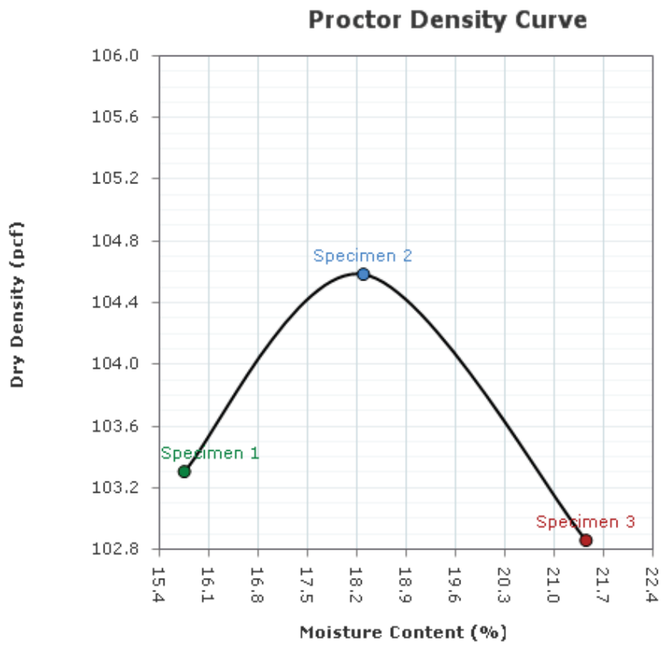
CBR Proctor Density Curve

ASTM (D1883) / AASHTO (T193)



CBR Proctor Density Curve	
Maximum Dry Density (pcf)	104.6
Optimum Moisture Content (%)	18.3

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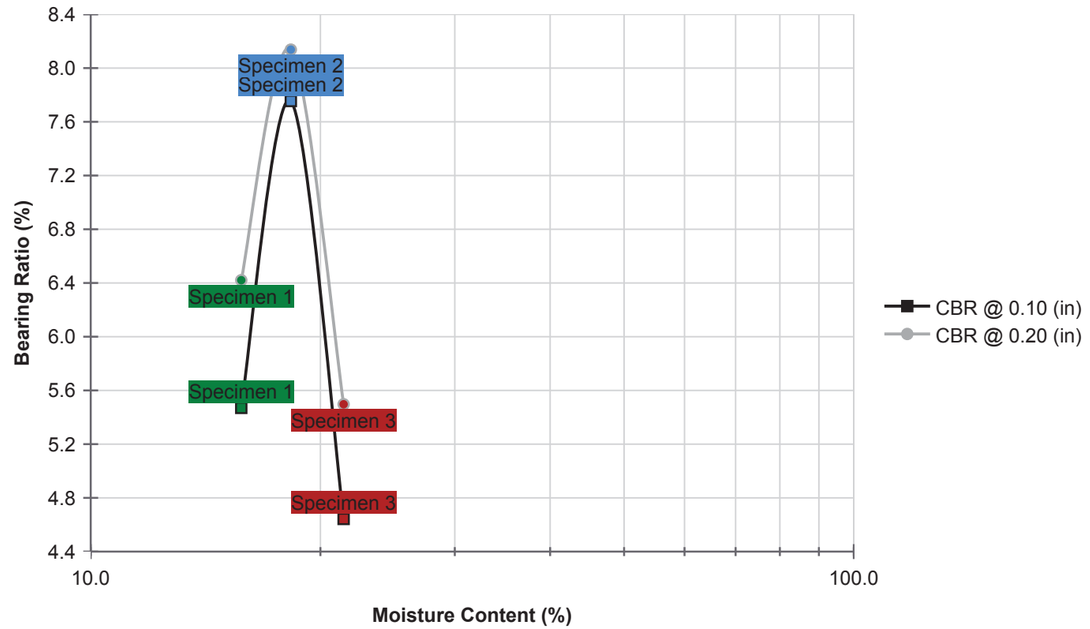
CBR Bearing Ratio

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	7.8
CBR @ 0.20 (in)	8.1
Moisture Content (%)	21.5

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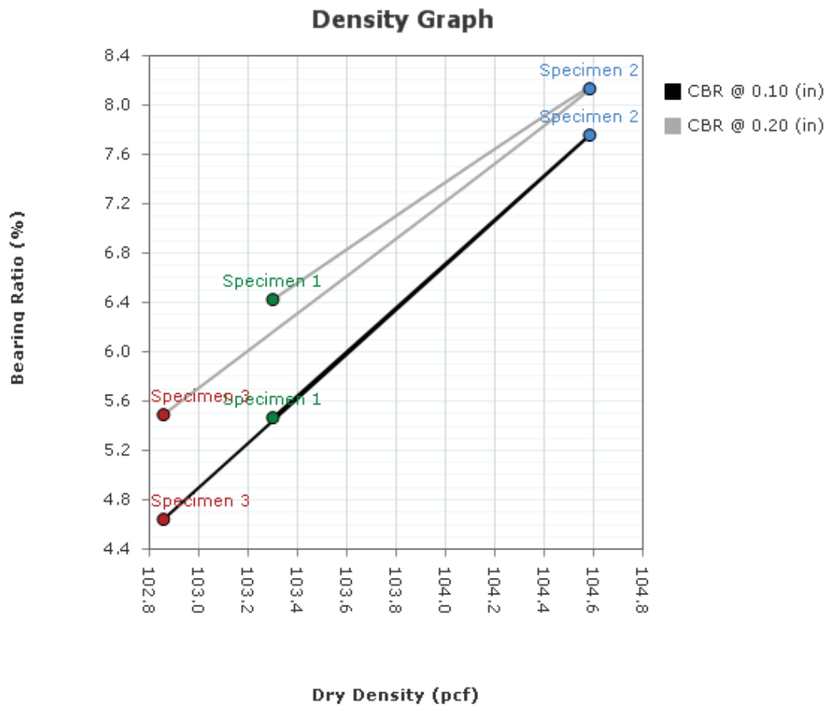
CBR Density Graph

ASTM (D1883) / AASHTO (T193)



CBR Results	
CBR @ 0.10 (in)	7.8
CBR @ 0.20 (in)	8.1
Maximum Dry Density (pcf)	104.6