STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5748	1	99

REFERENCE: U-5748

PROJECT: 50168

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	15+50 TO 85+17	4-8	17-28
-LI-	19+00 TO 73+74	12-16	29-30
-YI-	10+00 TO 13+74	5,9	31
-Y2-	12+00 TO 34+17	6,10,11	32-33
-Y3-	11+00 TO 15+11	10	34
-Y4-	10+50 TO 17+70	5	35

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	18+50 TO 23+00	36-40
-L-	26+50	41
-L-	28+50	42
-L-	30+00 TO 32+00	43-45
-L-	35+00 TO 42+00	46-56
-L-	43+00 TO 47+00	57-61
-L-	49+00 TO 52+50	62-65
-L-	58+50 TO 60+50	66-67
-L-	75+00 TO 82+00	68-73
-LI-	24+50	74
-LI-	26+50	75
-LI-	28+50 TO 31+00	76-77
-LI-	49+50	78
-LI-	56+50	79
-YI-	12+00 TO 13+50	80-81
-Y2-	17+00 TO 21+50	82-85
-Y2-	22+50 TO 31+50	86-90
-Y3-	12+50 TO 14+93	91-92

APPENDICES

APPENDIX	TITLE	SHEETS
A	SOIL TEST RESULTS	93-96
B	ROCK CORE PHOTOGRAPHS	97-99

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *WAKE*

PROJECT DESCRIPTION *US 401 (LOUISBURG RD) AT SR 2044 (LIGON MILL RD) / SR 2224 (MITCHELL MILL RD) AND SR 2006 (PERRY CREEK ROAD) INTERSECTION IMPROVEMENTS*

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

R. DOYLE

A. LOZADA

A. PITZER

SUMMIT GEOTECHNICS

INVESTIGATED BY *A. PITZER*

DRAWN BY *A. PITZER*

CHECKED BY *R. DOYLE*

SUBMITTED BY *AECOM*

DATE *NOVEMBER 2022*

NORTH CAROLINA PROFESSIONAL SEAL 045161 ENGINEER RYAN PATRICK DOYLE

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5748	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
PLASTIC RANGE (PI): LL — LIQUID LIMIT		
	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR 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 / OPT 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
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] DIEDRICH D-50
- [X] CME 450

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 4" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [X] TRICONE 3-7/8" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] CORE BIT
- [X] 2-1/4" ID HOLLOW-STEM AUGER

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:

ADDITIONAL ABBREVIATIONS:

WOH - WEIGHT OF HAMMER

FIAD - FILLED IMMEDIATELY AFTER DRILLING

ROADWAY BORING ELEVATIONS BASED OFF u5748_ls_tin.tin FILE DATED 7/15/2019

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

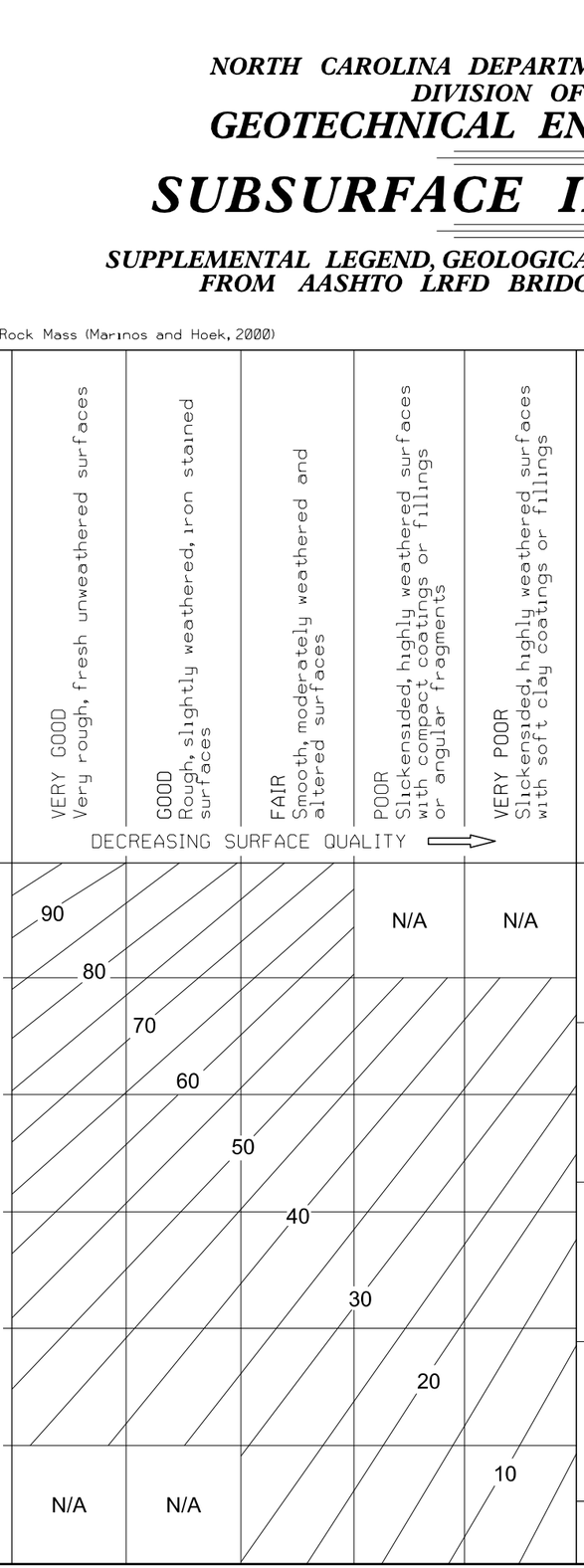
AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)

From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.

STRUCTURE

- INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities
- BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets
- VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets
- BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity
- DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces
- LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes

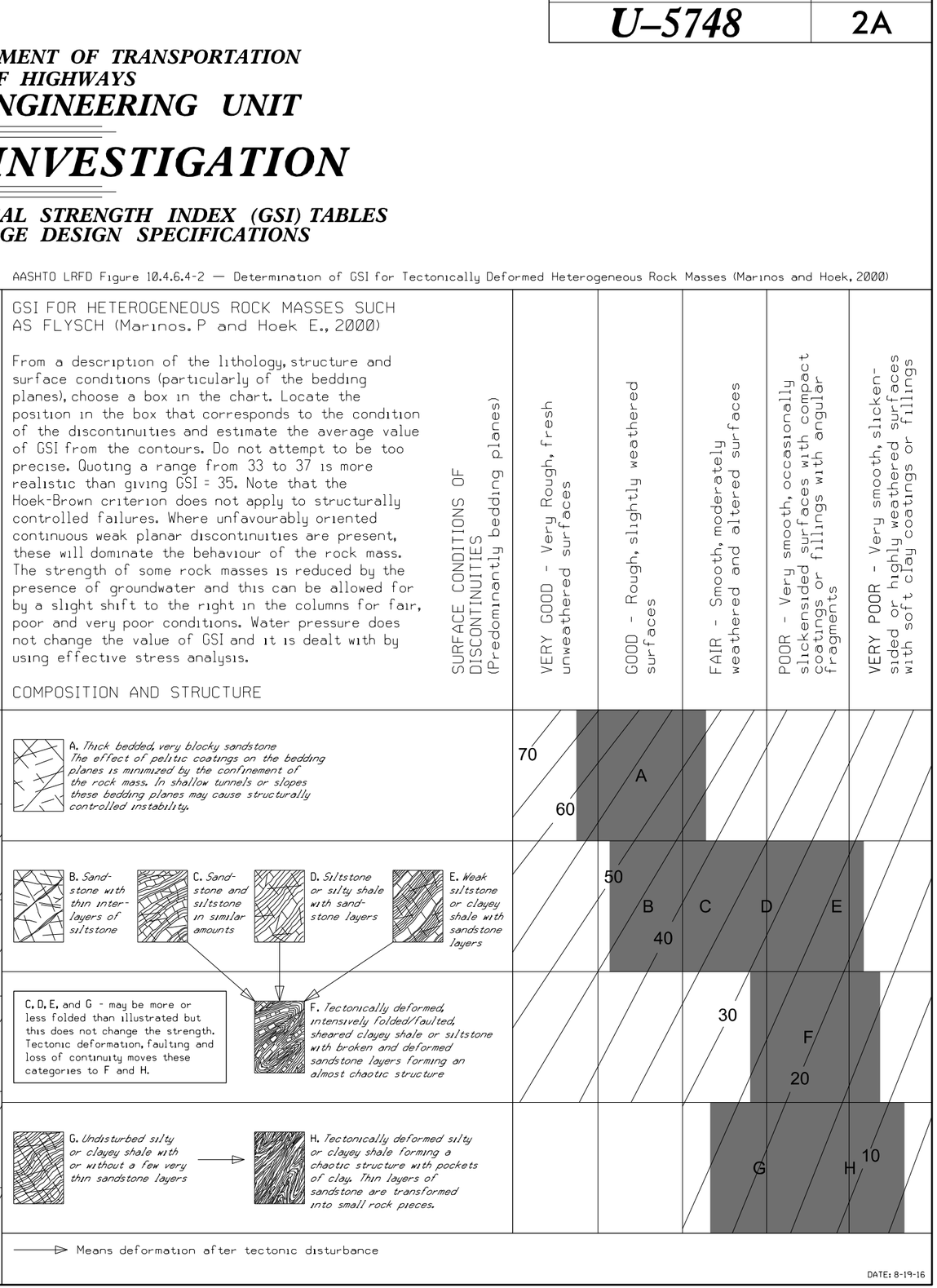


AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos. P and Hoek E., 2000)

From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.

COMPOSITION AND STRUCTURE



DATE: 8-19-16

TIP PROJECT: U-5748

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

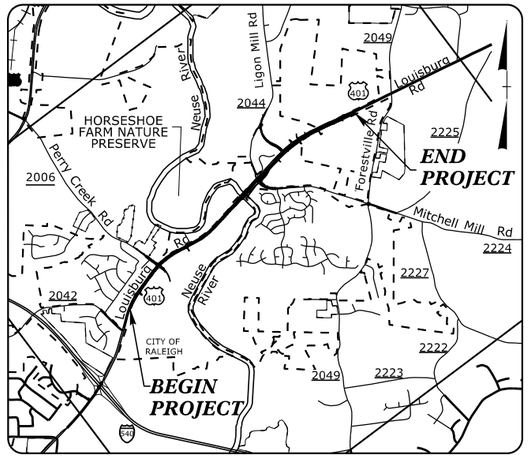
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5748	3	99

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50168.1.1		PE
50168.2.1		R/W

LOCATION: US 401 (LOUISBURG RD) AT SR 2044 (LIGON MILL RD) / SR 2224 (MITCHELL MILL RD) AND SR 2006 (PERRY CREEK ROAD) INTERSECTION IMPROVEMENTS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES

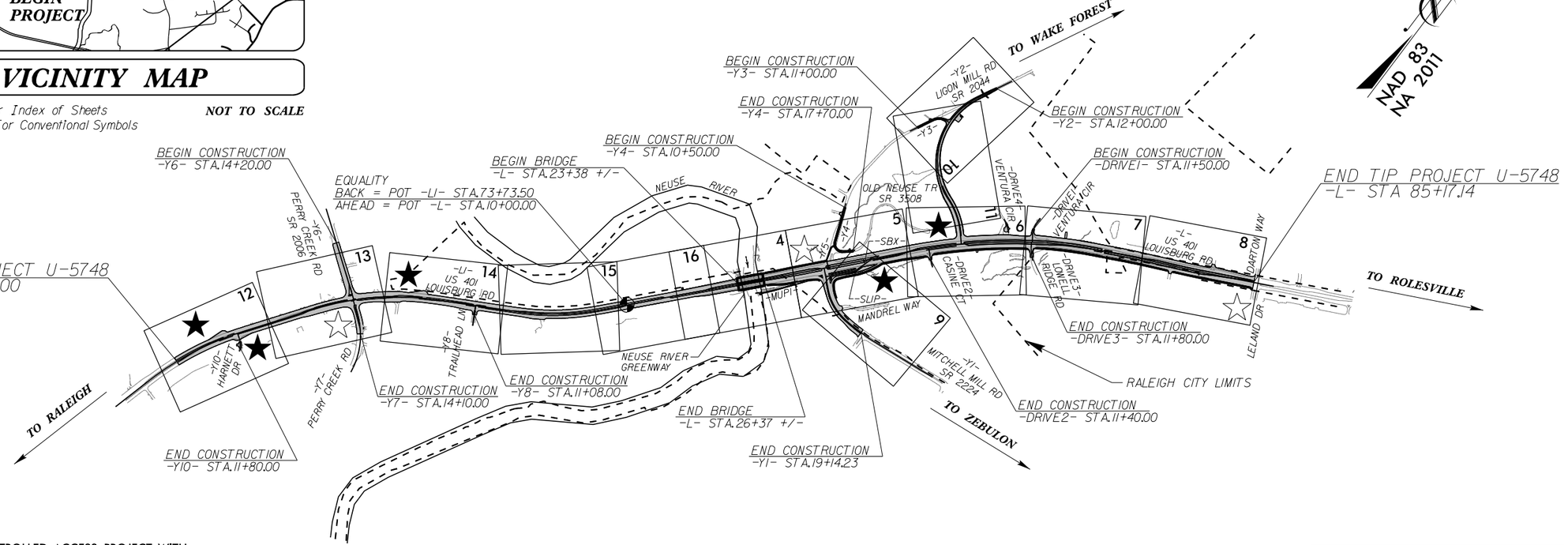
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



VICINITY MAP

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

NOT TO SCALE



THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS LIMITED TO POINTS AS SHOWN ON THE PLANS.

CLEARING ON THE PROJECT SHALL BE TO THE LIMITS ESTABLISHED USING METHOD III.

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF RALEIGH.

SUBMITTAL: 75% ROADWAY PLANS
DATE: MARCH 4, 2022

★ PROPOSED SIGNAL
☆ EXISTING SIGNAL

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2022 = 38,425
ADT 2042 = 58,842
K = 10 %
D = 55 %
T = 3% % *
V = 50 MPH
* TTST =1% DUAL 2%
FUNC CLASS =
PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5748 = 2.403 MI

LENGTH STRUCTURE TIP PROJECT U-5748 = 0.057 MI

TOTAL LENGTH TIP PROJECT U-5748 = 2.460 MI

Prepared In the Office of :
AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 8, 2021

LETTING DATE: MARCH 21, 2023

ED EDENS, P.E.
PROJECT ENGINEER

ELIZABETH WARGO, P.E.
PROJECT DESIGN ENGINEER

JENNIFER EVANS, P.E
NCDOT PROJECT ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

AECOM – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
Tel: 919-461-1100
Fax: 919-461-1415

October 4, 2022

WBS NO.: 50168.1.1
NCDOT TIP: U-5748
COUNTY: Wake

DESCRIPTION: US 401 (Louisburg Rd) from South of SR 2044 (Ligon Mill Rd)/SR 2224 (Michell Mill Rd) to Leland Dr & US 401 at SR 2006 (Perry Creek Rd) Intersection Improvements

SUBJECT: Geotechnical Report – Roadway Inventory

Project Description

The proposed project consists of widening 2.44 miles of US-401 starting from about 1/2 mile south of Perry Creek Road and ending at the intersection of US-401/Leland Drive in Wake Forest, Wake County, North Carolina. The intersection of US 401 and Perry Creek Road will be upgraded to a superstreet configuration. Also, to improve traffic flow near the existing US-401/Ligon Mill Rd/Mitchell Mill Rd intersection, this project includes realigning Ligon Mill Rd so that it intersects US-401 about 0.30 miles northeast from its current location and reconfiguring the Mitchell Mill Rd side of the intersection. Maximum cut and fill thicknesses on the project are approximately 25-ft and 30-ft, respectively.

Two geotechnical investigations were conducted. The initial investigation was conducted from December 9, 2019 through March 12, 2020 and the second investigation was conducted from January 11, 2022 to January 14, 2022. Summit Design and Engineering Services from Hillsborough, North Carolina were contracted for both investigations to provide drilling services.. A total of 94 hollow stem auger borings and 32 hand-auger borings were conducted. Standard penetration testing (SPT) was performed in the majority of the hollow stem auger borings. Representative soil samples were collected for visual classification in the field and select samples were submitted for laboratory analysis. AECOM subcontracted Geotechnics, Inc. of Raleigh, North Carolina to provide laboratory services for this project. The following alignments were investigated:

Line	Station(±)
-L-	15+50 to 85+17
-L1-	19+00 to 73+74
-Y1-	10+00 to 13+74
-Y2-	12+00 to 34+17
-Y3-	11+00 to 15+11
-Y4-	10+50 to 17+70

[1]https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NCPPAmg%3B8

Physiography and Geology

The project is located in the Piedmont Physiographic Province. Along the project corridor the terrain is relatively flat to slightly undulated and land use mostly consists of existing roadways and adjacent commercial and private properties. According to the US Geological Survey[1], the near surface geology consists primarily of foliated to massive granitic rock. Foliated to massive granitic rock is described as megacrystic to equigranular. According to the North Carolina Geological Survey[2], the igneous units along the project corridor are Late-Paleozoic-aged Rolesville granitoid (*Prg)*. *Prg* is described as medium-to coarse-grained to megacrystic monzogranite, granite, and granodiorite. Alluvial material is also located within the project limits as the Neuse River crosses near the southern part of the project. Alluvium in this area is described as tan to light gray, unconsolidated, with poorly sorted and stratified deposits of angular to subrounded gravel, sand, silt, and clay.

Soil Properties

The project encountered the following soil types: Roadway Embankment, Alluvium, Residuum, and Artificial Fill.

Roadway Embankment soils consisted of brown to orange to gray, dry to wet, sand and fine sand (A-1-b, A-3), silty to clayey sand (A-2-4, A-2-6), sandy silt (A-4), and sandy clay (A-6). N-values ranged from 2 to 19 blows per foot (bpf), indicating very loose to medium dense conditions for granular soils and soft to very stiff consistencies for fine soils. The average N-value is 11 bpf.

Alluvial deposits were mainly found in the area around the Neuse River. These deposits consisted of brown to tan to gray, moist to saturated, silty to clayey sand (A-2-4, A-2-6), sandy to clayey silt (A-4, A-5), and sandy to silty clay (A-6, A-7). N-values ranged from 2 to 25 bpf, indicating very loose to medium dense conditions for granular deposits and soft to very stiff consistencies for fine soils. The average N-value is 9 bpf.

Residual soils were encountered throughout the entire project and consisted of brown to orange to gray, dry to wet, sand (A-1-b), silty to clayey sand (A-2-4, A-2-6, A-2-7), sandy silty (A-4), and sandy to silty clay (A-6, A-7-5, A-7-6). SPT N-values indicate the consistency and densities of the soils ranged from soft to hard for fines and very loose to very dense for granular soils. These soils appeared to be broken down Rolesville granite.

Artificial Fill was encountered in few areas across the project: (1) a man-made soil mound near the proposed -Y2-/-Y3- intersection consists of brown and gray, saturated, sandy clay (A-6); (2) the right side of US 401, near STA 77+00, consists of brown to orange, dry to moist, silty sand (A-2-4); and (3) the right side of US 401, near STA 82+80, consists of dark brown to olive gray, moist to saturated, silty to clayey sand (A-2-4, A-2-6).

[2]https://files.nc.gov/ncdeq/Energy%20Mineral%20and%20Land%20Resources/Geological%20Survey/OFRs_Geological_Survey/NCGS_OFR_2004-02_Raleigh_100k_bedrock_geopdf.pdf

Rock Properties

Rolesville granite was the predominant rock type encountered across the project. Rolesville granite generally consists of highly competent, fine-grained granite which is often exposed at the surface and weathers to sandy soils.

Groundwater Properties

Groundwater was encountered in 19 of the borings. In these borings, depth to groundwater ranged from 0.6-ft to 22.9-ft below ground surface (bgs) with an average depth of 7.2-ft bgs.
The Neuse River crosses the -L- alignment at STA 25+00. A drainage ditch, running parallel to the -L- alignment on the right side, flows back station towards the Neuse River beginning at STA 45+48 and ending at STA 37+17 where it flows into an existing culvert, which transports it underneath US-401 and towards the Neuse River. A stream that flows south, into an existing culvert crosses US-401 (-L-) near STA 64+50 where the toe of the embankment is expected to widen approximately 70-ft. A stream that flows into a farm pond crosses the proposed -Y2- alignment near STA 25+00.

Areas of Special Geotechnical Interest

1) Shallow Rock: The following sections were found to contain rock above or within 6 feet of grade:

Line	Stations (±)	Offset
-L-	31+50 to 34+00	RT
-L-	38+50 to 40+00	LT
-L-	70+50 to 75+50	LT
-L-	76+50 to 77+50	RT
-L-	78+75 to 79+25	LT

2) Highly Plastic Soils: Highly plastic soils were encountered in few areas and at various individual borings throughout the project. Atterberg limit tests for 24 samples had plasticity indices greater than or equal to 26. The following alignments were found to contain highly plastic soils:

Line	Stations (±)	Offset
-L-	30+25 to 31+75	RT
-L-	39+25 to 41+75	LT
-L-	43+25 to 46+75	LT
-L-	49+25 to 56+50	RT
-L-	51+75 to 55+75	LT
-L-	58+95 to 60+10	LT
-L-	65+50 to 67+50	LT
-L-	75+50 to 77+75	LT
-L-	78+00 to 80+75	RT
-L-	80+50 to 81+50	LT
-L-	82+00 to 83+75	RT
-L1-	28+75 to 30+75	RT
-L1-	55+75 to 57+25	RT
-Y1-	12+25 to 14+25	LT
-Y2-	17+25 to 22+00	LT to RT
-Y2-	25+75 to 31+50	LT to RT
-Y3-	14+00 to 15+00	LT to RT
-Y4-	11+75 to 15+75	LT

3) Soft Soils: Soft soils were found in the following alignments:

Line	Stations (±)	Offset
-L-	27+00 to 29+50	LT
-L-	34+50 to 37+43	RT
-L-	38+00 to 40+00	RT
-L-	58+95 to 60+10	LT
-L-	82+00 to 83+75	RT

4) Loose Sands: Loose sands were found in the following alignments:

Line	Stations (±)	Offset
-L-	17+00 to 19+50	LT to RT
-L-	26+41 to 29+50	RT
-L-	29+50 to 31+50	LT to RT
-L-	34+00 to 44+25	LT
-L-	35+50 to 44+50	RT
-L-	46+00 to 49+75	LT
-L-	47+50 to 48+50	RT
-L-	51+25 to 52+75	LT
-L-	54+25 to 61+50	LT
-L-	54+50 to 56+25	RT
-L-	62+50 to 66+50	LT
-L-	67+50 to 69+50	LT
-L-	73+75 to 77+50	LT
-L-	76+75 to 77+25	RT
-L-	79+50 to 82+00	LT
-L-	80+25 to 83+75	RT
-Y1-	12+25 to 14+25	LT
-Y2-	17+25 to 33+50	LT to RT

5) High Water: The following areas encountered water within 6-ft of proposed grade:

Line	Stations (±)	Offset
-L-	35+25 to 35+75	RT
-L-	36+25 to 36+50	LT
-L-	40+50 to 41+50	LT to RT
-L-	46+00 to 47+50	LT

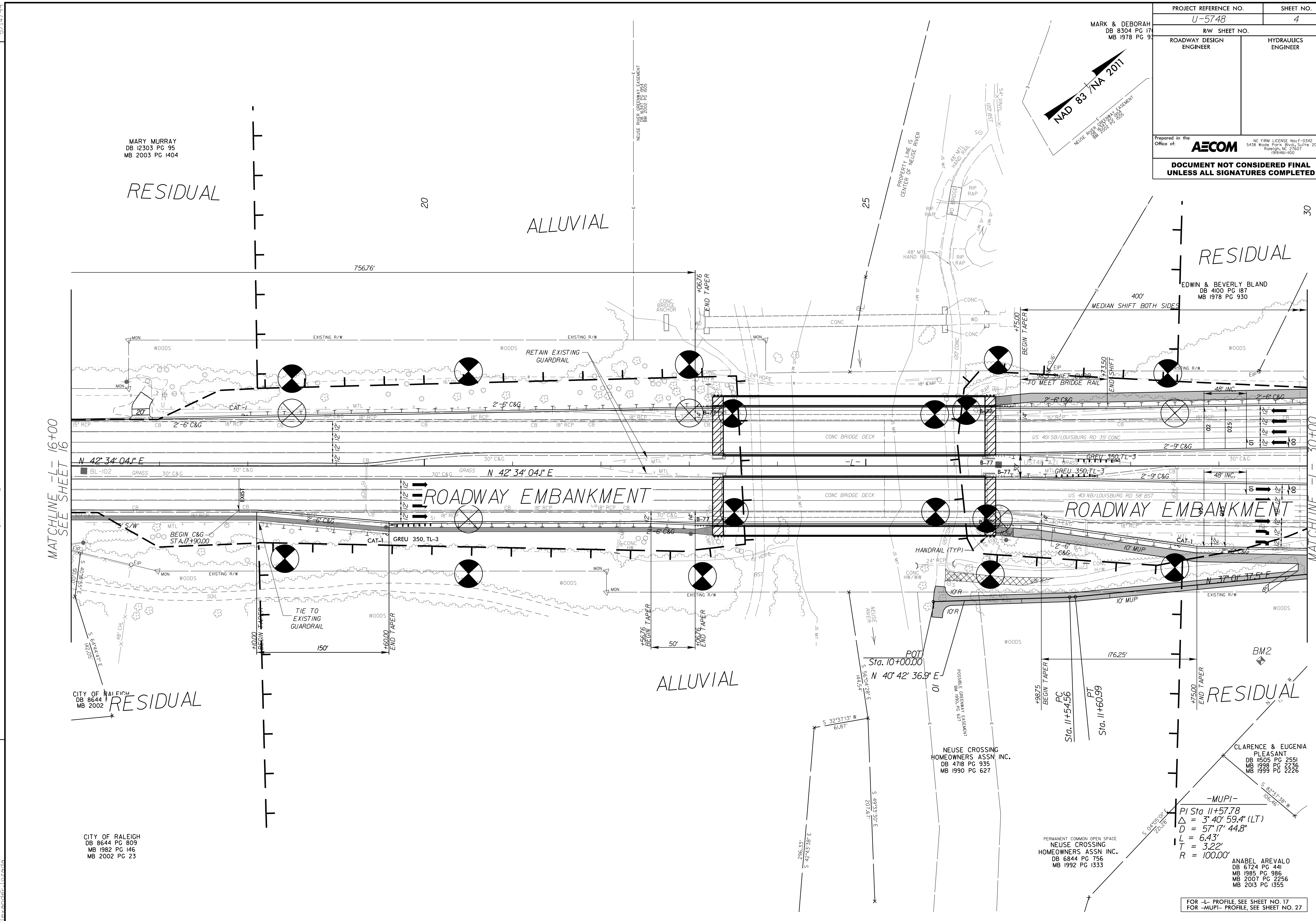
6) Wet Soils: The following areas had wet to saturated soils near the surface that could potentially affect construction of proposed embankment widening.

Line	Stations (±)	Offset	Moisture
-L-	38+75 to 39+75	RT	W-Sat.
-L-	41+75 to 44+75	RT	M-W

Bulk Samples

Bulk samples were collected at the following locations and submitted for testing.

Line	Sample No.	Station	Offset	Depth (ft)	Test
-L-	BULK-02	48+00	95' RT	0.5-2.0	Standard Proctor/CBR
-L-	BULK-03	77+00	70' LT	0.5-2.0	Standard Proctor/CBR
-L-	BULK-04	78+00	95' LT	0.1-1.0	Standard Proctor
-L-	BULK-05	52+00	108' LT	0.5-2.0	Standard Proctor/CBR
-L-	BULK-06	36+32	123’ LT	0.1-1.0	Standard Proctor/CBR
-L1-	BS-001	49+46	70’ LT	0.5-2.0	Standard Proctor/CBR
-L1-	BS-002	26+48	65’ RT	0.5-2.0	Standard Proctor/CBR
-Y2-	BULK-01	28+50	0' CL	1.3-3.0	Standard Proctor
-Y3-	BULK-07	14+13	36' RT	0.5-2.0	Standard Proctor/CBR


MARK & DEBORAH
DB 8304 PG 17
MB 1978 PG 93
NAD 83 / NA 2011
NEUSE RIVER GREENWAY EASEMENT
MARY MURRAY
DB 12303 PG 95
MB 2003 PG 1404
RESIDUAL
ALLUVIAL
20
25
30
PROPERTY LINE IS CENTER OF NEUSE RIVER
756.76'
+06.76 END TAPER
CONC BRIDGE ANCHOR
RETAIN EXISTING GUARDRAIL
EDWIN & BEVERLY BLAND
DB 4100 PG 187
MB 1978 PG 930
400'
MEDIAN SHIFT BOTH SIDES
+75.00 BEGIN TAPER
+73.50 END SHIFT
TO MEET BRIDGE RAIL
EXISTING R/W
WOODS
CAT-1
2'-6" C&G
CONC BRIDGE DECK
US 401 SB/LOUISBURG RD 35' CONC
US 401 NB/LOUISBURG RD 58' BST
GREU 350 TL-3
N 42° 34' 04.1" E
BL-102
B-77
MATCHLINE -L- 16+00 SEE SHEET 16
MATCHLINE -L- 30+00 SEE SHEET 5
ROADWAY EMBANKMENT
BEGIN C&G STA.17+90.00
TIE TO EXISTING GUARDRAIL
+10.00 BEGIN TAPER
150'
+60.00 END TAPER
+56.76 BEGIN TAPER
50'
+06.76 END TAPER
HANDRAIL (TYP)
10' MUP
N 37° 01' 37.5" E
POT Sta. 10+00.00
N 40° 42' 36.9" E
176.25'
+98.75 BEGIN TAPER
PC Sta. 11+54.56
PT Sta. 11+60.99
+75.00 END TAPER
BM2
CITY OF RALEIGH
DB 8644
MB 2002
NEUSE CROSSING HOMEOWNERS ASSN INC.
DB 4718 PG 935
MB 1990 PG 627
CLARENCE & EUGENIA PLEASANT
DB 11505 PG 2551
MB 1998 PG 2236
MB 1999 PG 2226
-MUPI-
PI Sta 11+57.78
Δ = 3° 40' 59.4" (LT)
D = 57° 17' 44.8"
L = 6.43'
T = 3.22'
R = 100.00'
ANABEL AREVALO
DB 6724 PG 441
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355
CITY OF RALEIGH
DB 8644 PG 809
MB 1982 PG 146
MB 2002 PG 23
PERMANENT COMMON OPEN SPACE
NEUSE CROSSING HOMEOWNERS ASSN INC.
DB 6844 PG 756
MB 1992 PG 1333
FOR -L- PROFILE, SEE SHEET NO. 17
FOR -MUPI- PROFILE, SEE SHEET NO. 27

PROJECT REFERENCE NO.	SHEET NO.
U-5748	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM
NC FIRM LICENSE No. F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW REV. – March 11, 2021 – Parcel 1: Rev. owner info, rev PUE, add R/W. Parcel 2: Rev. owner info, rev. PUE, rev. TCE, add R/W. Parcel 3: Rev. PUE, add R/W. Parcel 4: Rev. PUE, add R/W. Parcel 49: Rev. R/W. Parcel 50: Rev. R/W.

ROW REV. – July 14, 2021 – Parcel 50: Combined Parcels 49 and 50. Eliminated Parcel 49.

5/14/99

10/21/2022
U5748_Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh04.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5748	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 5438 Wade Park Blvd., Suite 200, Raleigh, NC 27607, (919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRAFFIC DIAGRAM

-L-

PI Sta 31+05.33
$\triangle$ = 0° 33' 54.4" (LT)
D = 0° 17' 11.3"
L = 197.26'
T = 98.63'
R = 20,000.00'
e = NC

PIs Sta 44+20.76
Θs = 0° 54' 13.4"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-Y4-

PI Sta 15+94.58
$\triangle$ = 106° 18' 22.6" (LT)
D = 63° 39' 43.1"
L = 166.99'
T = 120.10'
R = 90.00'
e = 0.04 FT/FT
R.O. = 60'

PI Sta 17+47.92
$\triangle$ = 17° 44' 30.3" (LT)
D = 18° 56' 36.1"
L = 93.66'
T = 47.21'
R = 302.46'
e = 0.03 FT/FT
R.O. = 45'

-Y5-

PI Sta 12+59.85
$\triangle$ = 56° 38' 24.9" (RT)
D = 143° 14' 22.0"
L = 39.54'
T = 21.56'
R = 40.00'

PI Sta 10+88.62
$\triangle$ = 31° 23' 48.0" (RT)
D = 286° 28' 44.0"
L = 10.96'
T = 5.62'
R = 20.00'

-Y1-

PI Sta 14+64.69
$\triangle$ = 35° 44' 35.1" (LT)
D = 8° 57' 08.9"
L = 399.25'
T = 206.36'
R = 640.00'
e = 0.04 FT/FT
R.O. = 168'

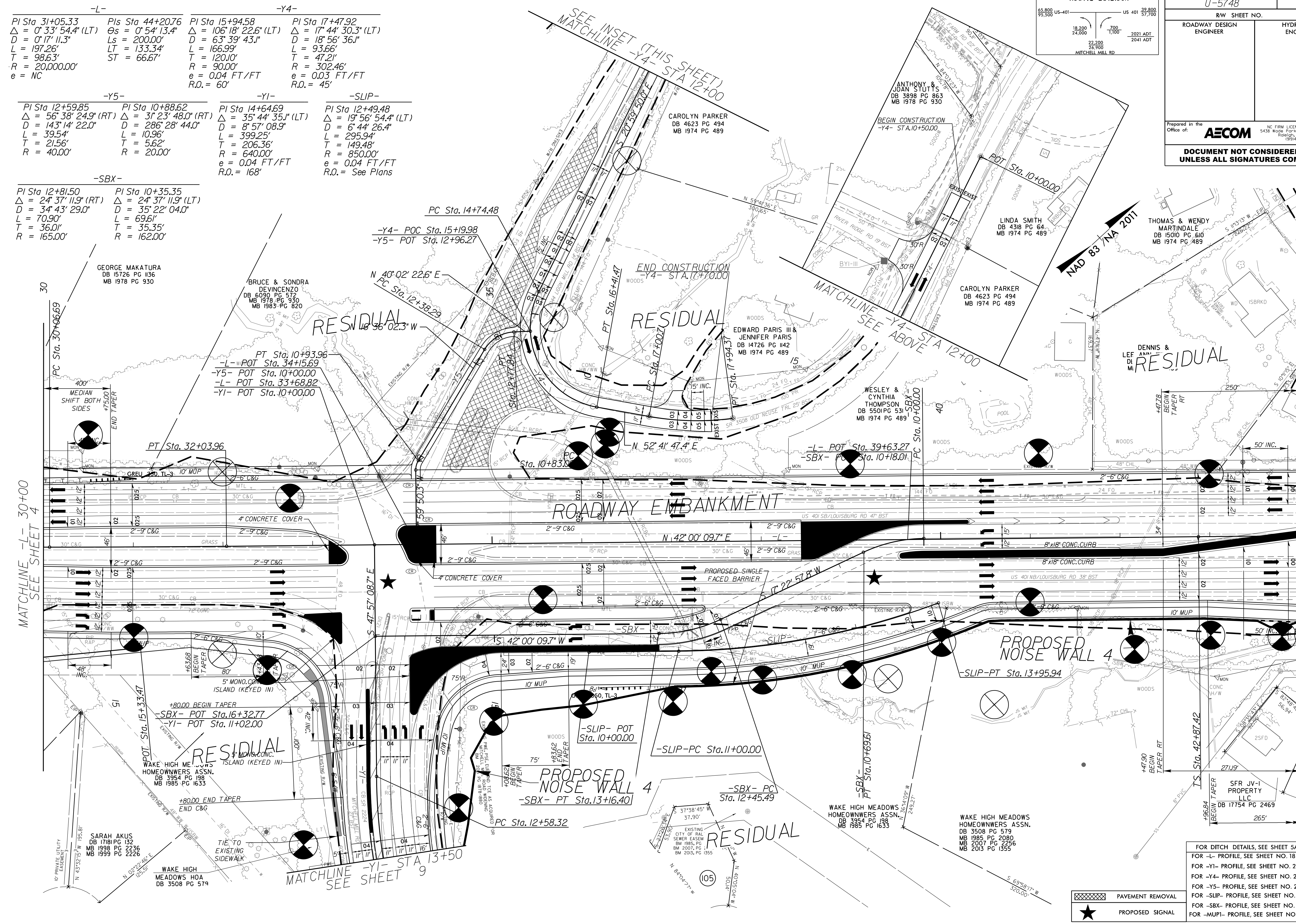
-SLIP-

PI Sta 12+49.48
$\triangle$ = 19° 56' 54.4" (LT)
D = 6° 44' 26.4"
L = 295.94'
T = 149.48'
R = 850.00'
e = 0.04 FT/FT
R.O. = See Plans

-SBX-

PI Sta 12+81.50
$\triangle$ = 24° 37' 11.9" (RT)
D = 34° 43' 29.0"
L = 70.90'
T = 36.01'
R = 165.00'

PI Sta 10+35.35
$\triangle$ = 24° 37' 11.9" (LT)
D = 35° 22' 04.0"
L = 69.61'
T = 35.35'
R = 162.00'



FOR DITCH DETAILS, SEE SHEET 5A
FOR -L- PROFILE, SEE SHEET NO. 18
FOR -Y1- PROFILE, SEE SHEET NO. 22
FOR -Y4- PROFILE, SEE SHEET NO. 24
FOR -Y5- PROFILE, SEE SHEET NO. 25
FOR -SLIP- PROFILE, SEE SHEET NO. 22
FOR -SBX- PROFILE, SEE SHEET NO. 25
FOR -MUP1- PROFILE, SEE SHEET NO. 27

(hatch)	PAVEMENT REMOVAL
★	PROPOSED SIGNAL

REVISIONS

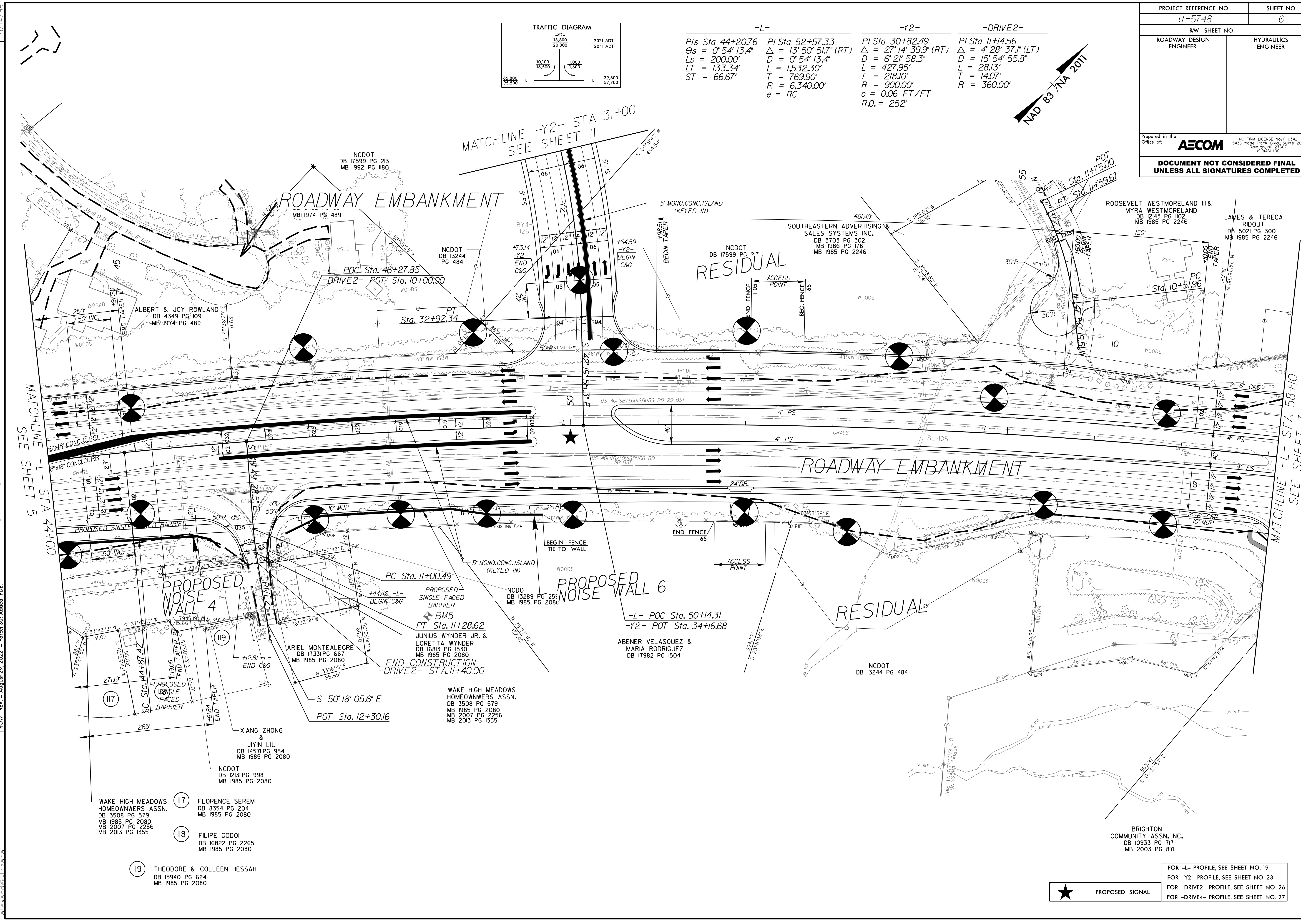
ROW REV. - March 11, 2021 - Parcel 4-Rev. PUE, added R/W. Parcel 5: Rev. PUE, rev. PDE, added R/W. Parcel 7: Rev. PUE. Parcel 8: Rev. PUE. Parcel 9: Rev. PUE. Parcel 23: Corrected Parcel 24 to parcel 23 near -SBX- PT Sta. 10+69.61, rev. R/W.
Parcel 24: Rev. R/W, rev. PDE, added DUE, added PUE. Parcel 25: Rev. PUE. Parcel 50: Rev. R/W.
ROW REV. - July 14, 2021 - Parcel 23: Combined parcels 23 and 24. Added Noise Wall. Eliminated Parcel 24.
ROW REV. - Oct. 29, 2021 - Parcel 23: Added TCE.

5/14/99

10/4/2022 ...\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh05.dgn

REVISIONS

ROW REV. – March 11, 2021 – Parcel 9: Rev. PUE. Parcel 10 Rev. PUE. Parcel 12: Rev. owner info, rev. access point. Parcel 13: Rev. PUE. Parcel 14: Rev. R/W, rev. PUE. Parcel 24: Rev. R/W, rev. PDE, add DUE, add PUE. Parcel 25: Rev. PUE, add DUE.
Parcel 28: Corrected Parcel 28 to Parcel 24, eliminated parcel 28. Parcel 29: Rev. owner info, rev. R/W. Parcel 30: Rev. R/W, rev. PDE. Parcel 31: Rev. PDE. Parcel 44: Rev. Owner info. Parcel 44: Added Label fpr 44 and corrected sta/offset.
ROW REV. – July 14, 2021 – Parcel 15: Rev. R/W. Parcel 23: Combined parcels 23 and 24. Eliminated Parcel 24. Parcels 23, 27, & 29: Added proposed noise walls.
ROW REV. – August 3, 2021 – Parcel 23: Revised PUE and DUE for closure.
ROW REV. – August 17, 2021 – Parcel 14: Eliminated PUE and added TCE.
ROW REV. – August 24, 2021 – Parcel 13: Added TCE.
ROW REV. – October 29, 2021 – Parcel 30: Revised PDE.
ROW REV. – August 29, 2022 – Parcel 30: Added PDE.



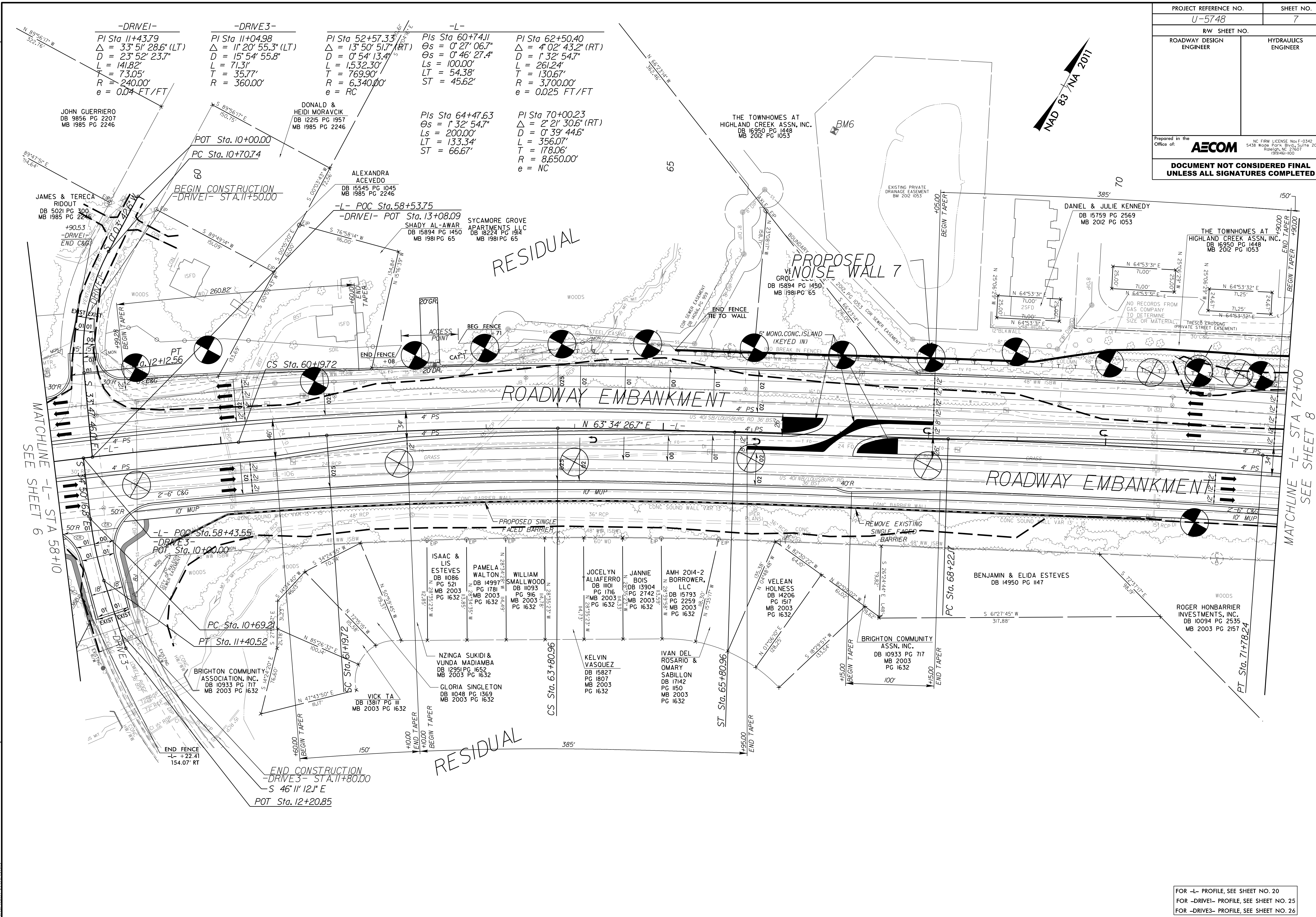
PROJECT REFERENCE NO.	SHEET NO.
U-5748	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 5438 Wade Park Blvd., Suite 200, Raleigh, NC 27607, (919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW REV. – March 11, 2021– Parcel 16: Rev. R/W. Parcel 17: Rev. R/W. Parcel 18: Rev. owner info, rev. R/W, rev. PUE, add TCE. Parcel 19: Rev. owner info, rev. R/W, rev. PUE, rev. TCE. Parcel 20: Rev. R/W, rev. PUE, Rev TCE. Parcel 30: Rev. R/W, rev. PDE. Parcel 31: Rev. PDE.
ROW REV. – July 14, 2021– Parcel 15: Rev. R/W. Parcel 18: Combined Parcels 18 and 19. Eliminated Parcel 19. Parcels 18 & 20 – Added proposed noise wall.
ROW REV. – March 01, 2022– Parcel 18: Added access point
ROW REV. – August 29, 2022– Parcel 18: Added driveway. Parcels 16, 17, 18: Rev. drainage.



FOR -L- PROFILE, SEE SHEET NO. 20
FOR -DRIVE1- PROFILE, SEE SHEET NO. 25
FOR -DRIVE3- PROFILE, SEE SHEET NO. 26

5/14/99
Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh07.dgn
10/4/2022

PROJECT REFERENCE NO.	SHEET NO.
U-5748	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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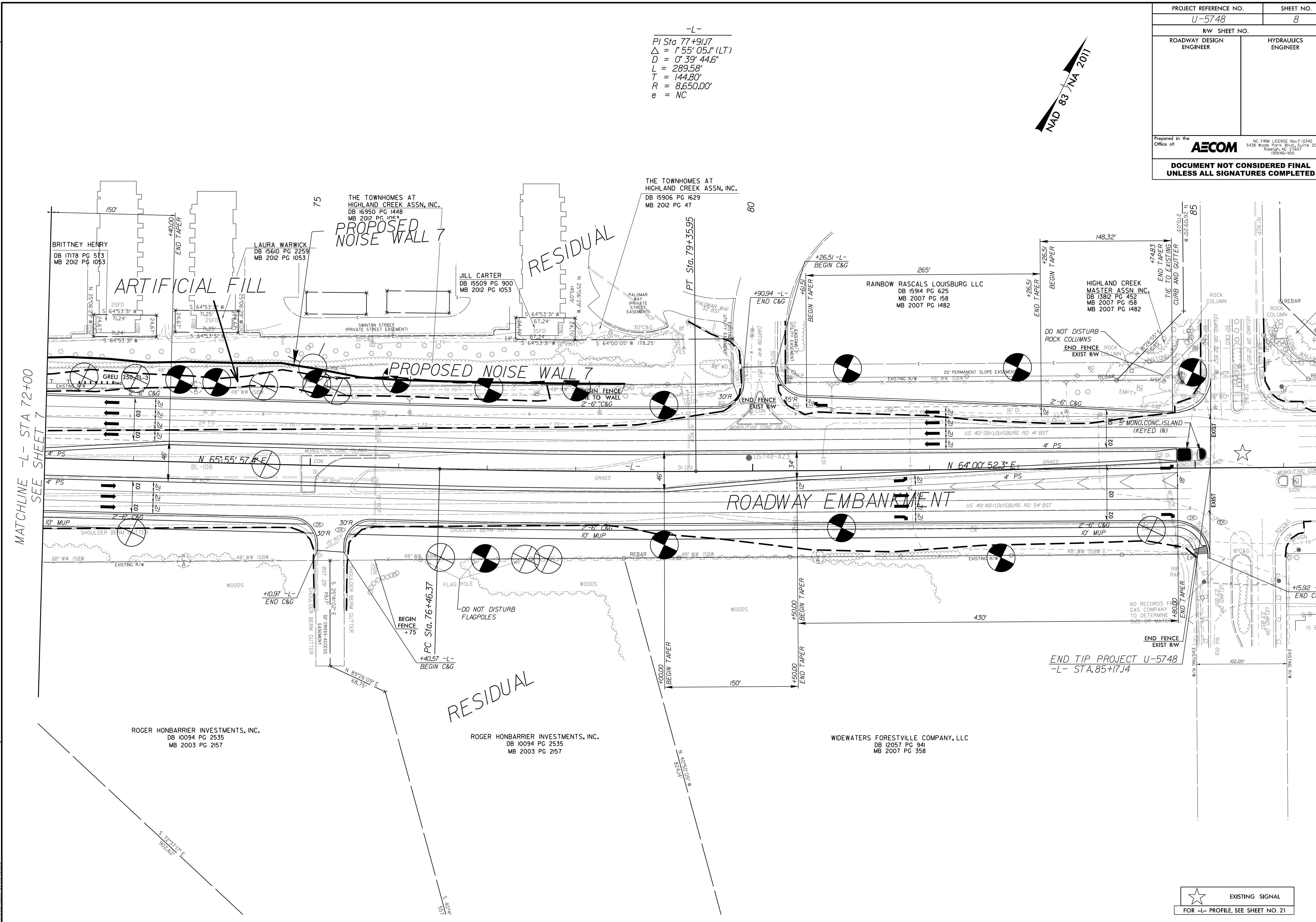
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW REV. – March 11, 2021 – Parcel 20: Rev. R/W, rev. PUE, rev. TCE. Parcel 21: Corrected Parcel 21 to Parcel 20. Eliminated Parcel 21. Parcel 22: Rev. R/W, rev. TCE.

ROW REV. – July 14, 2021 – Parcel 33: Combined Parcels 33 and 34. Eliminated Parcel 34. Parcel 51: Added previously omitted Parcel 51. Added TCE. Parcel 20 – Added proposed noise wall.



-L-
PI Sta 77+91.17
Δ = 1° 55' 05.1" (LT)
D = 0° 39' 44.6"
L = 289.58'
T = 144.80'
R = 8,650.00'
e = NC
NAD 83/NA 2011
MATCHLINE -L- STA 72+00
SEE SHEET 7
BRITTNEY HENRY
DB 17178 PG 573
MB 2012 PG 1053
LAURA WARWICK
DB 15610 PG 2259
MB 2012 PG 1053
THE TOWNHOMES AT HIGHLAND CREEK ASSN, INC.
DB 16950 PG 1448
PROPOSED NOISE WALL 7
ARTIFICIAL FILL
JILL CARTER
DB 15509 PG 900
MB 2012 PG 1053
RESIDUAL
THE TOWNHOMES AT HIGHLAND CREEK ASSN, INC.
DB 15906 PG 1629
MB 2012 PG 47
PT Sta. 79+35.95
RAINBOW RASCALS LOUISBURG LLC
DB 15914 PG 625
MB 2007 PG 158
MB 2007 PG 1482
HIGHLAND CREEK MASTER ASSN INC.
DB 13812 PG 452
MB 2007 PG 158
MB 2007 PG 1482
DO NOT DISTURB ROCK COLUMNS
END FENCE EXIST R/W
N 65°55' 57.8" E
N 64°00' 52.3" E
ROADWAY EMBANKMENT
US 401 SB/LOUISBURG RD
US 401 NB/LOUISBURG RD
BEGIN FENCE +75
PC Sta. 76+46.37
DO NOT DISTURB FLAGPOLES
+40.57 -L- BEGIN C&G
+10.97 -L- END C&G
END TIP PROJECT U-5748
-L- STA.85+17.14
END FENCE EXIST R/W
RESIDUAL
ROGER HONBARRIER INVESTMENTS, INC.
DB 10094 PG 2535
MB 2003 PG 2157
ROGER HONBARRIER INVESTMENTS, INC.
DB 10094 PG 2535
MB 2003 PG 2157
WIDEWATERS FORESTVILLE COMPANY, LLC
DB 12057 PG 941
MB 2007 PG 358
EXISTING SIGNAL
FOR -L- PROFILE, SEE SHEET NO. 21

5/14/99

10/4/2022 ...\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh08.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5748	9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW REV. – March 11, 2021 – Parcel 23: Revised Parcel 51 to parcel 23. Eliminated parcel 51.
ROW REV. – July 14, 2021 – Parcel 23: Added proposed noise wall.

5/14/99

(101) MARIA HERNANDEZ
DB 1551 PG 1137
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(102) NAT HUNT, JR. FAMILY TRUST
DB 16204 PG 2354
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(103) ANGELA GUNN
DB 8293 PG 1462
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(104) LISA DUEBLER
DB 13967 PG 2466
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(108) GLENN LISSNER
DB 12954 PG 1463
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(109) KATHERINE BRICKELL
DB 7766 PG 356
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(110) VICTOR CARAPIA & ANGELA ROMERO
DB 15519 PG 1481
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

(111) BONITA HEAD
DB 8379 PG 724
MB 1985 PG 986
MB 2007 PG 2256
MB 2013 PG 1355

-Y1-

PI Sta 14+64.69	PI Sta 18+74.27
Δ = 35° 44′ 35.1″ (LT)	Δ = 11° 46′ 57.9″ (LT)
D = 8° 57′ 08.9″	D = 2° 43′ 42.1″
L = 399.25′	L = 431.86′
T = 206.36′	T = 216.69′
R = 640.00′	R = 2,100.00′
e = 0.04 FT/FT	
R.O. = 168′	

FOR -Y1- PROFILE, SEE SHEET NO. 22

10/4/2022
754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh09.dgn
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 5438 Wade Park Blvd., Suite 200, Raleigh, NC 27607, (919)461-1100

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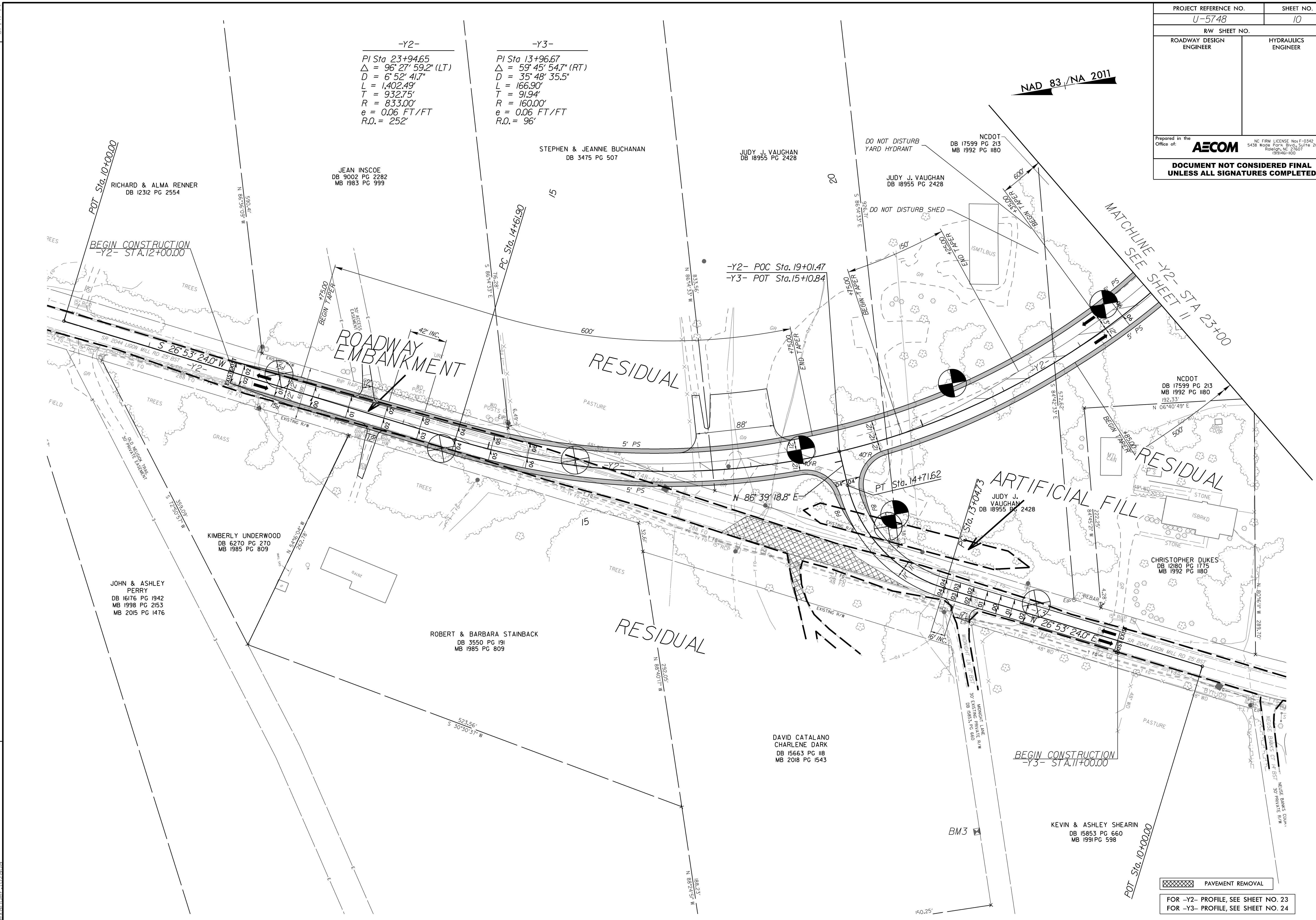


NAD 83 /NA 2011
-Y2-
PI Sta 23+94.65
△ = 96° 27' 59.2" (LT)
D = 6° 52' 41.7"
L = 1,402.49'
T = 932.75'
R = 833.00'
e = 0.06 FT/FT
R.O. = 252'
-Y3-
PI Sta 13+96.67
△ = 59° 45' 54.7" (RT)
D = 35° 48' 35.5"
L = 166.90'
T = 91.94'
R = 160.00'
e = 0.06 FT/FT
R.O. = 96'
RICHARD & ALMA RENNER
DB 12312 PG 2554
JEAN INSCOE
DB 9002 PG 2282
MB 1983 PG 999
STEPHEN & JEANNIE BUCHANAN
DB 3475 PG 507
JUDY J. VAUGHAN
DB 18955 PG 2428
NCDOT
DB 17599 PG 213
MB 1992 PG 1180
POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y2- STA.12+00.00
PC Sta. 14+61.90
-Y2- POC Sta. 19+01.47
-Y3- POT Sta.15+10.84
DO NOT DISTURB YARD HYDRANT
DO NOT DISTURB SHED
MATCHLINE -Y2- STA 23+00
SEE SHEET 11
ROADWAY EMBANKMENT
RESIDUAL
ARTIFICIAL FILL
SR 2044 LIGON MILL RD 25' BST
S 26° 53' 24.0" W
N 26° 53' 24.0" E
N 86° 39' 18.8" E
PT Sta. 14+71.62
PC Sta. 13+04.73
KIMBERLY UNDERWOOD
DB 6270 PG 270
MB 1985 PG 809
JOHN & ASHLEY PERRY
DB 16176 PG 1942
MB 1998 PG 2153
MB 2015 PG 1476
ROBERT & BARBARA STAINBACK
DB 3550 PG 191
MB 1985 PG 809
JUDY J. VAUGHAN
DB 18955 PG 2428
NCDOT
DB 17599 PG 213
MB 1992 PG 1180
CHRISTOPHER DUKES
DB 12180 PG 1775
MB 1992 PG 1180
DAVID CATALANO
CHARLENE DARK
DB 15663 PG 118
MB 2018 PG 1543
BEGIN CONSTRUCTION
-Y3- STA.11+00.00
KEVIN & ASHLEY SHEARIN
DB 15853 PG 660
MB 1991 PG 598
POT Sta. 10+00.00
BM3

PAVEMENT REMOVAL

FOR -Y2- PROFILE, SEE SHEET NO. 23
FOR -Y3- PROFILE, SEE SHEET NO. 24

REVISIONS

ROW REV. – March 11, 2021 – Parcel 40: Corrected TCE labels. Parcel 41: Rev. owner info.
ROW REV. – July 14, 2021 – Parcel 39: Combined Parcels 39 and 40. Eliminated Parcel 40. Parcel 43: Updated owner name. Parcel 47: Removed TCE. Eliminated Parcel 47. Parcel 48: Removed TCE. Eliminated Parcel 48.
ROW REV. – February 08, 2022 – Parcel 39: Revised PUE and TCE.
ROW REV. – February 24, 2022 – Parcel 39: Revised PUE.
ROW REV. – May 3, 2022 – Parcel 39: Added additional PUE, revised owner name and deed book info. Parcel 45Z: Added parcel for additional PUE. Parcel 46Z: Added parcel for additional PUE.

PROJECT REFERENCE NO.	SHEET NO.
U-5748	11

R/W SHEET NO.

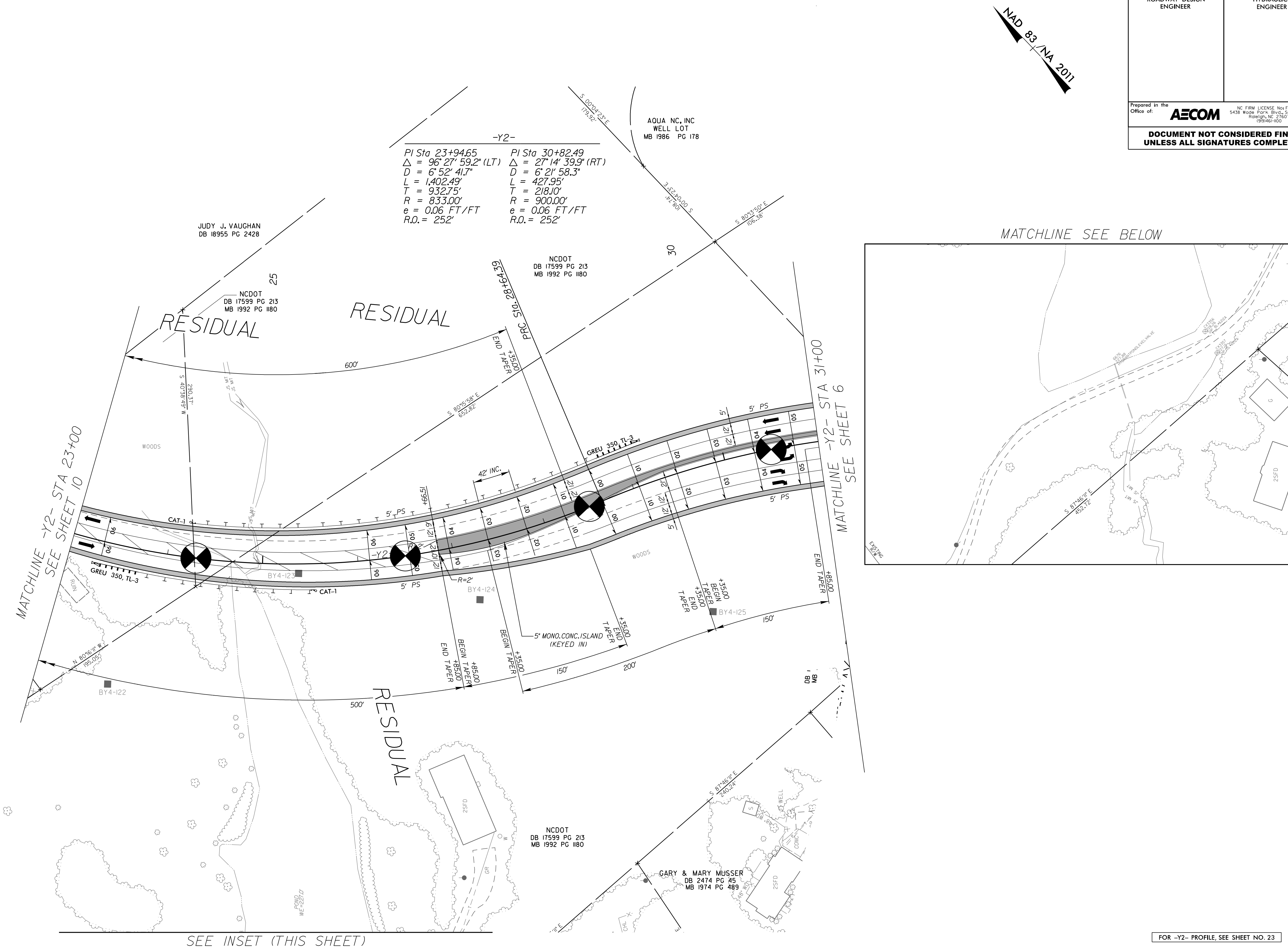
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 5438 Wade Park Blvd., Suite 200 Raleigh, NC 27607 (919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW REV. – March 11, 2021 – Parcel 41: Rev. owner info. Parcel 42: Corrected Parcel 42 to 41, eliminated parcel 42. Parcel 44: Rev. owner info, added PDE.
ROW REV. – July 14, 2021 – Parcel 39: Combined Parcels 39 and 40. Eliminated Parcel 40.
ROW REV. – July 14, 2021 – Parcel 39: Combined Parcels 39 and 40. Eliminated Parcel 40.



NAD 83/NA 2011
-Y2-
PI Sta 23+94.65
Δ = 96° 27' 59.2" (LT)
D = 6° 52' 41.7"
L = 1,402.49'
T = 932.75'
R = 833.00'
e = 0.06 FT/FT
R.O. = 252'
PI Sta 30+82.49
Δ = 27° 14' 39.9" (RT)
D = 6° 21' 58.3"
L = 427.95'
T = 218.10'
R = 900.00'
e = 0.06 FT/FT
R.O. = 252'
JUDY J. VAUGHAN
DB 18955 PG 2428
NCDOT
DB 17599 PG 213
MB 1992 PG 1180
AQUA NC, INC
WELL LOT
MB 1986 PG 178
RESIDUAL
PRC Sta. 28+64.39
MATCHLINE -Y2- STA 23+00 SEE SHEET 10
MATCHLINE -Y2- STA 31+00 SEE SHEET 6
MATCHLINE SEE BELOW
GREU 350, TL-3
CAT-1
5' PS
42' INC.
R=2'
5" MONO.CONC.ISLAND (KEYED IN)
BEGIN TAPER +85.00
END TAPER +85.00
BEGIN TAPER +35.00
END TAPER +35.00
600'
500'
150'
200'
WOODS
BY4-121
BY4-122
BY4-123
BY4-124
BY4-125
GARY & MARY MUSSER
DB 2474 PG 45
MB 1974 PG 489
2SFD
SEE INSET (THIS SHEET)

FOR -Y2- PROFILE, SEE SHEET NO. 23

10/4/2022
...\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh11.dgn
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM — NC FIRM LICENSE No. F-0342, 5438 Wade Park Blvd., Suite 200, Raleigh, NC 27607 (919)461-1100

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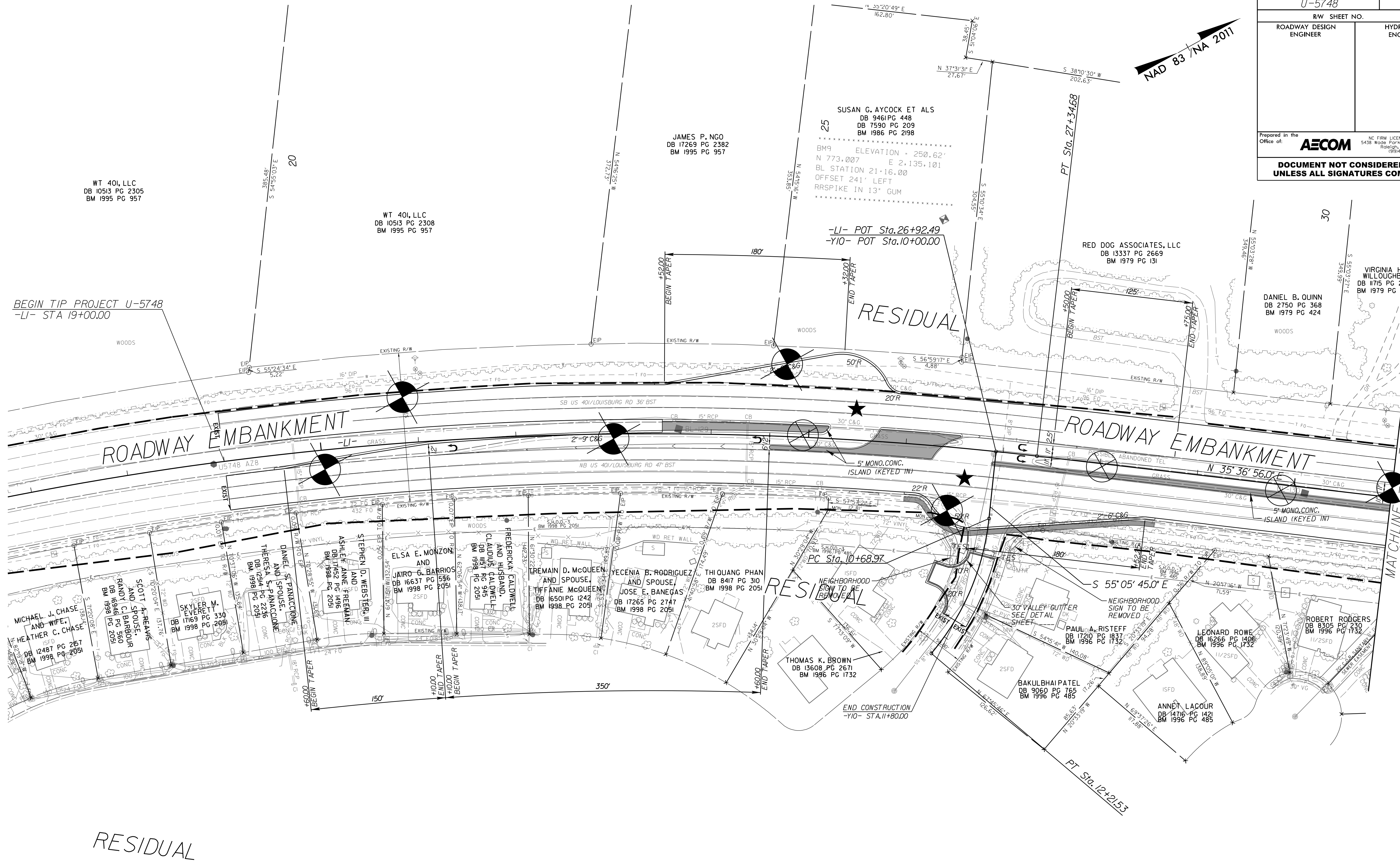
NAD 83 / NA 2011



RESIDUAL

-L1-	-Y10-
PI Sta 21+32.83	PI Sta 11+47.63
Δ = 20° 30' 59.4" (RT)	Δ = 34° 22' 23.2" (RT)
D = 1° 41' 09.6"	D = 22° 31' 50.8"
L = 1,216.87'	L = 152.56'
T = 615.02'	T = 78.65'
R = 3,398.32'	R = 254.30'
e = EXIST.	e = EXIST.

★ PROPOSED SIGNAL

FOR -L1- PROFILE, SEE SHEET NO. 28
FOR -Y10- PROFILE, SEE SHEET NO. 31

REVISIONS

Design REV. – April 2022 – Changed project limits and added Sheet 12. Parcel 52: added CA and TCE. Parcel 53: added RW, CA, and TCE. Parcel 54: added CA and TCE. Parcel 61: added CA and TCE. Parcel 62: added CA. Parcel 63: added CA and PDE. Parcel 64: Added CA and PDE.
ROW REV. – August 29, 2022 – Parcel 64: Removed PDE. Eliminated claim on Parcel 64.

5/14/99

...\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh12.dgn
10/4/2022

PROJECT REFERENCE NO.	SHEET NO.
U-5748	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

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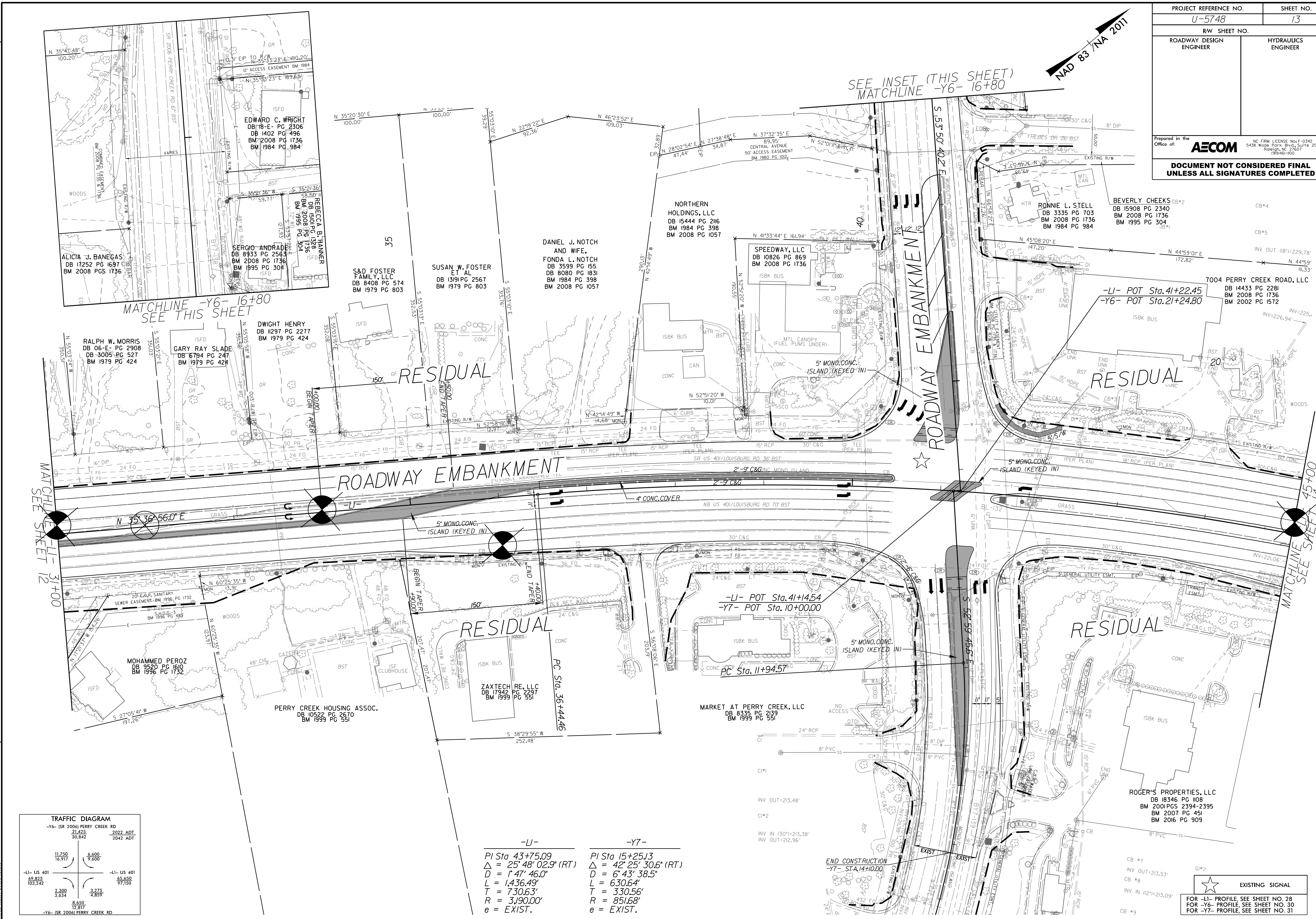
REVISIONS

Design REV. – April, 2022 – Changed project limits and added Sheet 13. Parcel 55: added R/W.
ROW REV. – June 10, 2022 – Eliminated claim on Parcel 55.



NAD 83 / NA 2011
SEE INSET (THIS SHEET)
MATCHLINE -Y6- 16+80
MATCHLINE -Y6- 16+80
SEE THIS SHEET
MATCHLINE -L1- SEE SHEET 12 31+00
MATCHLINE -L1- 45+00 SEE SHEET 14
ROADWAY EMBANKMENT
RESIDUAL
EDWARD C. WRIGHT
DB 18-E- PG 2306
DB 1402 PG 496
BM 2008 PG 1736
BM 1984 PG 984
ALICIA J. BANEGAS
DB 17252 PG 1697
BM 2008 PGS 1736
SERGIO ANDRADE
DB 8933 PG 2563
BM 2008 PG 1736
BM 1995 PG 304
REBECCA B. HANNER
S&D FOSTER FAMILY, LLC
DB 8408 PG 574
BM 1979 PG 803
SUSAN W. FOSTER ET AL
DB 13191 PG 2567
BM 1979 PG 803
DANIEL J. NOTCH AND WIFE, FONDA L. NOTCH
DB 3599 PG 155
DB 8080 PG 1831
BM 1984 PG 398
BM 2008 PG 1057
NORTHERN HOLDINGS, LLC
DB 15444 PG 2116
BM 1984 PG 398
BM 2008 PG 1057
SPEEDWAY, LLC
DB 10826 PG 869
BM 2008 PG 1736
RONNIE L. STELL
DB 3335 PG 703
BM 2008 PG 1736
BM 1984 PG 984
BEVERLY CHEEKS
DB 15908 PG 2340
BM 2008 PG 1736
BM 1995 PG 304
7004 PERRY CREEK ROAD, LLC
DB 14433 PG 2281
BM 2008 PG 1736
BM 2002 PG 1572
RALPH W. MORRIS
DB 06-E- PG 2908
DB 3005 PG 527
BM 1979 PG 424
GARY RAY SLADE
DB 6794 PG 247
BM 1979 PG 424
DWIGHT HENRY
DB 11297 PG 2277
BM 1979 PG 424
MOHAMMED PEROZ
DB 9520 PG 1610
BM 1996 PG 1732
PERRY CREEK HOUSING ASSOC.
DB 10522 PG 2670
BM 1999 PG 551
ZAXTECH RE, LLC
DB 17942 PG 2297
BM 1999 PG 551
MARKET AT PERRY CREEK, LLC
DB 8335 PG 2139
BM 1999 PG 551
ROGER'S PROPERTIES, LLC
DB 18346 PG 1108
BM 2001 PGS 2394-2395
BM 2007 PG 451
BM 2016 PG 909
-L1- POT Sta. 41+22.45
-Y6- POT Sta. 21+24.80
-L1- POT Sta. 41+14.54
-Y7- POT Sta. 10+00.00
PC Sta. 11+94.57
PC Sta. 36+44.46
5' MONO.CONC. ISLAND (KEYED IN)
END CONSTRUCTION -Y7- STA 14+10.00
BEGIN TAPER
END TAPER
N 35°36'56.0" E
S 53°50'40.2" E
S 52°59'45.6" E

TRAFFIC DIAGRAM

-L1-	-Y7-
PI Sta 43+75.09	PI Sta 15+25.13
Δ = 25° 48' 02.9" (RT)	Δ = 42° 25' 30.6" (RT)
D = 1° 47' 46.0"	D = 6° 43' 38.5"
L = 1,436.49'	L = 630.64'
T = 730.63'	T = 330.56'
R = 3,190.00'	R = 851.68'
e = EXIST.	e = EXIST.

☆ EXISTING SIGNAL

FOR -L1- PROFILE, SEE SHEET NO. 28
FOR -Y6- PROFILE, SEE SHEET NO. 30
FOR -Y7- PROFILE, SEE SHEET NO. 31

10/4/2022
...9754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh13.dgn
alexander.lozada
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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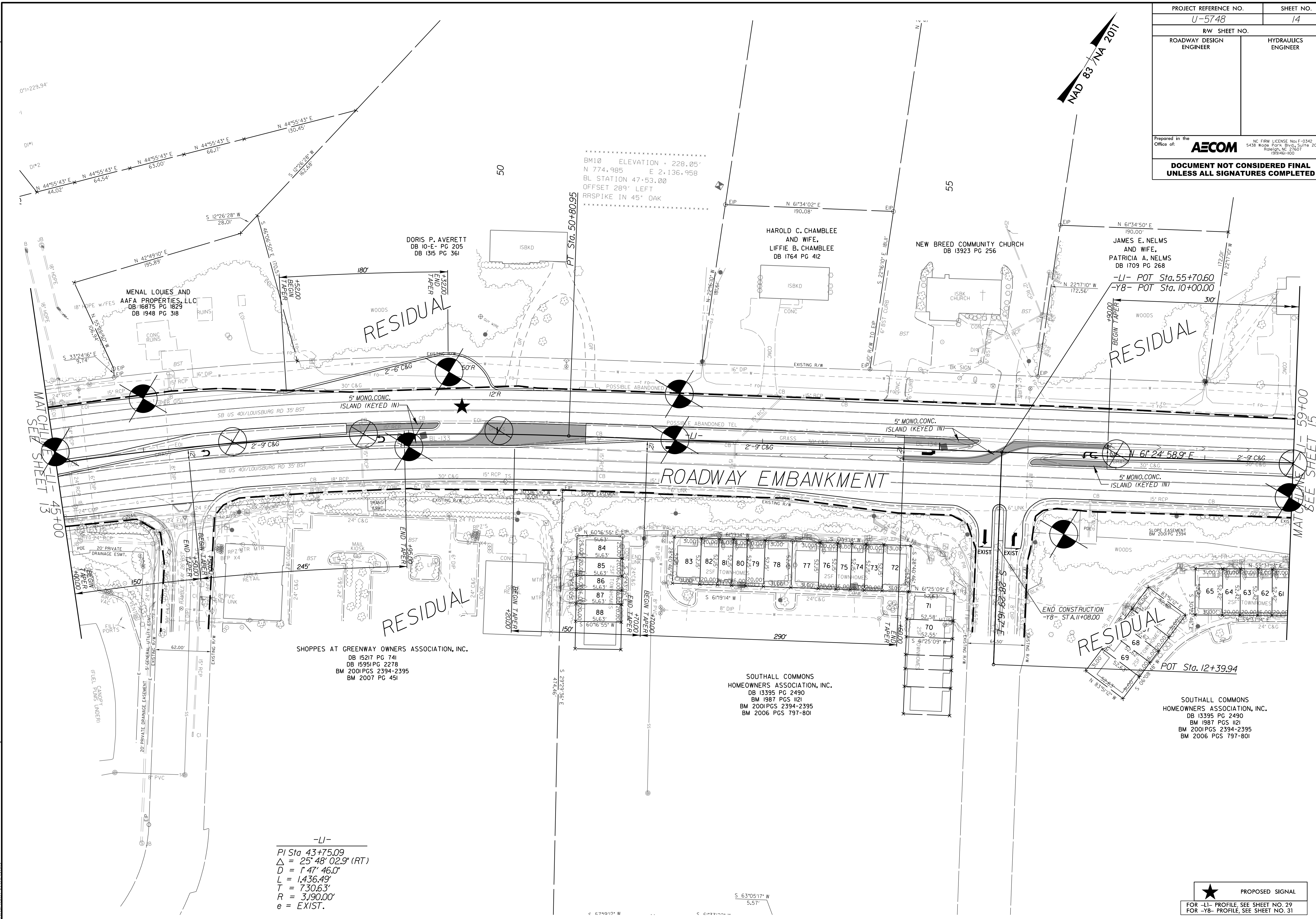

NAD 83 /NA 2011
BM10 ELEVATION = 228.05'
N 774,985 E 2,136,958
BL STATION 47+53.00
OFFSET 289' LEFT
RRSPIKE IN 45" OAK
DORIS P. AVERETT
DB 10-E- PG 205
DB 1315 PG 361
MENAL LOUIES AND AAFA PROPERTIES, LLC
DB 16875 PG 1829
DB 1948 PG 318
HAROLD C. CHAMBLEE AND WIFE, LIFFIE B. CHAMBLEE
DB 1764 PG 412
NEW BREED COMMUNITY CHURCH
DB 13923 PG 256
JAMES E. NELMS AND WIFE, PATRICIA A. NELMS
DB 1709 PG 268
-L1- POT Sta. 55+70.60
-Y8- POT Sta. 10+00.00
PT Sta. 50+80.95
RESIDUAL
ROADWAY EMBANKMENT
SB US 401/LOUISBURG RD 35' BST
NB US 401/LOUISBURG RD 35' BST
5' MONO. CONC. ISLAND (KEYED IN)
N 61° 24' 58.9" E
MATCHLINE -L1- 45+00 SEE SHEET 13
MATCHLINE -L1- 59+00 SEE SHEET 15
SHOPPES AT GREENWAY OWNERS ASSOCIATION, INC.
DB 15217 PG 741
DB 15951 PG 2278
BM 2001 PGS 2394-2395
BM 2007 PG 451
SOUTHALL COMMONS HOMEOWNERS ASSOCIATION, INC.
DB 13395 PG 2490
BM 1987 PGS 1121
BM 2001 PGS 2394-2395
BM 2006 PGS 797-801
END CONSTRUCTION -Y8- STA. 11+08.00
POT Sta. 12+39.94

-L1-

PI Sta 43+75.09
Δ = 25° 48' 02.9" (RT)
D = 1° 47' 46.0"
L = 1,436.49'
T = 730.63'
R = 3,190.00'
e = EXIST.

★ PROPOSED SIGNAL

FOR -L1- PROFILE, SEE SHEET NO. 29
FOR -Y8- PROFILE, SEE SHEET NO. 31

REVISIONS

Design REV. - April, 2022 - Changed project limits and added Sheet 14. Parcel 56: added C/A and TCE. Parcel 57: added C/A and TCE. Parcel 58: added PDE. Parcel 65: added C/A.

5/14/99

10/4/2022
...\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh14.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5748	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
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Raleigh, NC 27607
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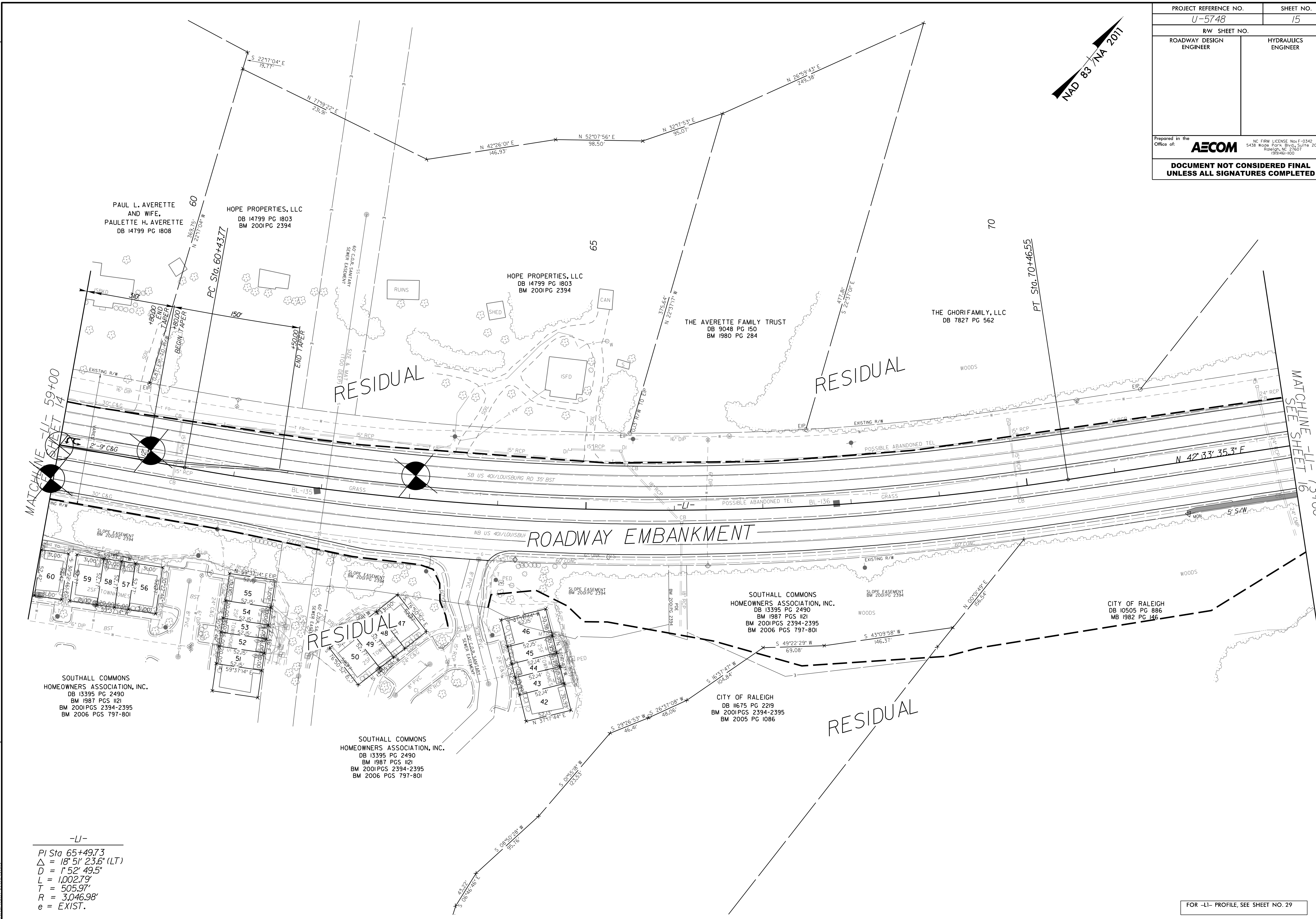

NAD 83/NA 2011
PAUL L. AVERETTE AND WIFE, PAULETTE H. AVERETTE DB 14799 PG 1808
HOPE PROPERTIES, LLC DB 14799 PG 1803 BM 2001 PG 2394
HOPE PROPERTIES, LLC DB 14799 PG 1803 BM 2001 PG 2394
THE AVERETTE FAMILY TRUST DB 9048 PG 150 BM 1980 PG 284
THE GHORI FAMILY, LLC DB 7827 PG 562
PC Sta. 60+43.77
PT Sta. 70+46.55
RESIDUAL
RESIDUAL
RESIDUAL
RESIDUAL
ROADWAY EMBANKMENT
MATCHLINE -L1- 59+00 SEE SHEET 14
MATCHLINE -L1- 73+00 SEE SHEET 16
N 42°33' 35.3" E
SB US 401/LOUISBURG RD 35' BST
NB US 401/LOUISBURG
SOUTHALL COMMONS HOMEOWNERS ASSOCIATION, INC. DB 13395 PG 2490 BM 1987 PGS 1121 BM 2001 PGS 2394-2395 BM 2006 PGS 797-801
SOUTHALL COMMONS HOMEOWNERS ASSOCIATION, INC. DB 13395 PG 2490 BM 1987 PGS 1121 BM 2001 PGS 2394-2395 BM 2006 PGS 797-801
SOUTHALL COMMONS HOMEOWNERS ASSOCIATION, INC. DB 13395 PG 2490 BM 1987 PGS 1121 BM 2001 PGS 2394-2395 BM 2006 PGS 797-801
CITY OF RALEIGH DB 11675 PG 2219 BM 2001 PGS 2394-2395 BM 2005 PG 1086
CITY OF RALEIGH DB 10505 PG 886 MB 1982 PG 146

-L1-
PI Sta 65+49.73
Δ = 18° 51' 23.6" (LT)
D = 1° 52' 49.5"
L = 1,002.79'
T = 505.97'
R = 3,046.98'
e = EXIST.

FOR -L1- PROFILE, SEE SHEET NO. 29

REVISIONS

Design REV. - April, 2022 - Changed project limits and added Sheet 15. Parcel 59: added TCE.

5/14/99

10/4/2022
9754-U-5748_Lyon_Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh15.dgn
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 5438 Wade Park Blvd., Suite 200, Raleigh, NC 27607, (919)461-1100

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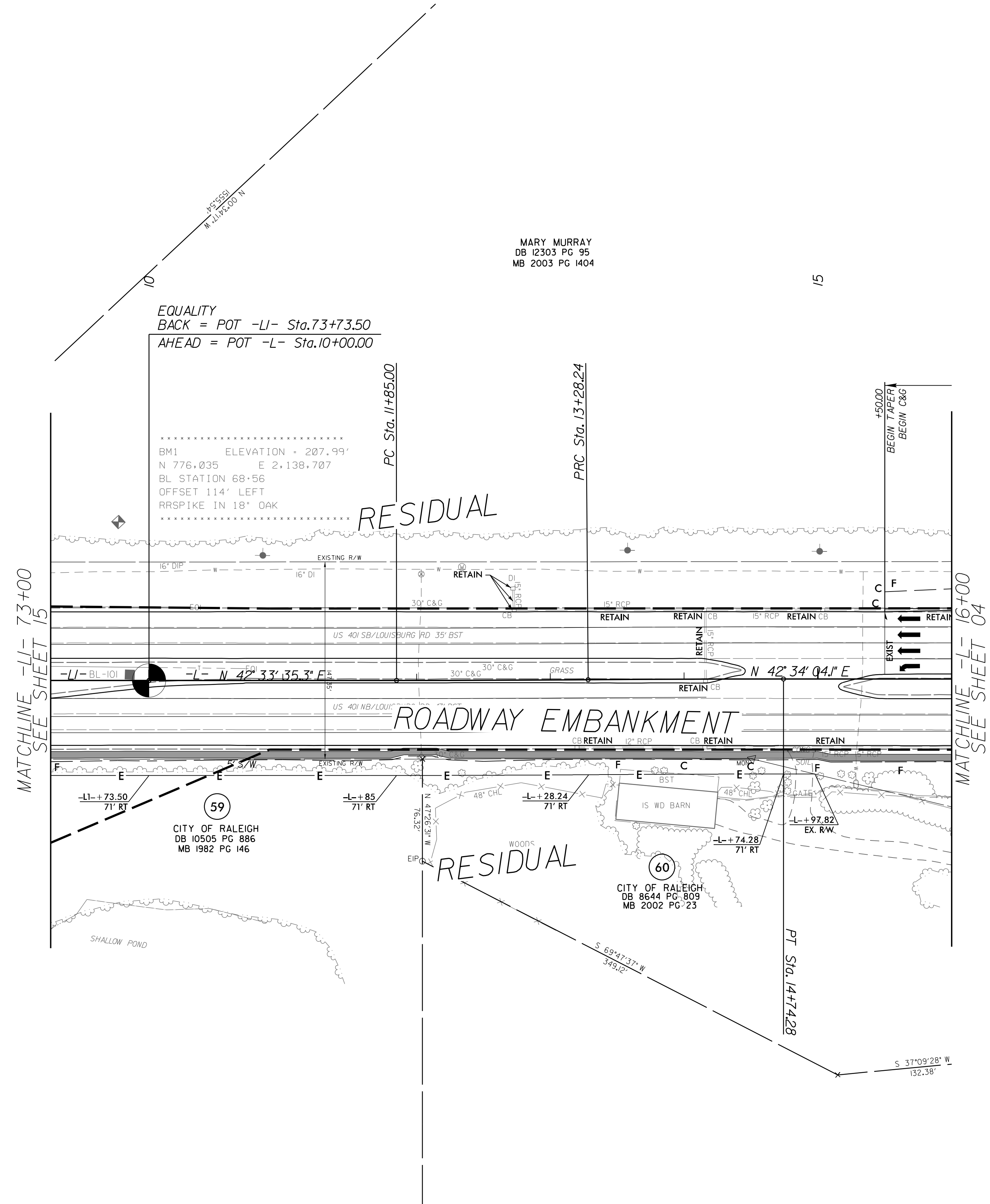
NAD 83/NA 2011



MARY MURRAY
DB 12303 PG 95
MB 2003 PG 1404
EQUALITY
BACK = POT -L1- Sta.73+73.50
AHEAD = POT -L- Sta.10+00.00
BM1 ELEVATION = 207.99'
N 776.035 E 2.138.707
BL STATION 68+56
OFFSET 114' LEFT
RRSPIKE IN 18" OAK
PC Sta. 11+85.00
PRC Sta. 13+28.24
+50.00 BEGIN TAPER BEGIN C&G
RESIDUAL
ROADWAY EMBANKMENT
US 401 SB/LOUISBURG RD 35' BST
US 401 NB/LOUISBURG RD
-L- N 42° 33' 35.3" E
N 42° 34' 04.1" E
RETAIN
EXISTING R/W
MATCHLINE -L1- 73+00 SEE SHEET 15
MATCHLINE -L- 16+00 SEE SHEET 04
-L1- +73.50 71' RT
-L- +85 71' RT
-L- +28.24 71' RT
-L- +74.28 71' RT
-L- +97.82 EX. R/W
59
CITY OF RALEIGH
DB 10505 PG 886
MB 1982 PG 146
60
CITY OF RALEIGH
DB 8644 PG 809
MB 2002 PG 23
15 WD BARN
WOODS
SHALLOW POND
PT Sta. 14+74.28
S 69°47'37" W 349.12'
S 37°09'28" W 132.38'

-L-	
PI Sta 12+56.62	PI Sta 14+01.26
Δ = 0° 24' 37.3" (LT)	Δ = 0° 25' 06.1" (RT)
D = 0° 17' 11.3"	D = 0° 17' 11.3"
L = 143.24'	L = 146.04'
T = 71.62'	T = 73.02'
R = 20,000.00'	R = 20,000.00'
e = EXIST.	e = EXIST.

FOR -L1- PROFILE, SEE SHEET NO. 30

REVISIONS

Design REV. – April, 2022 – Changed project limits and added Sheet 16. Parcel 59: added TCE. Parcel 60: added TCE.

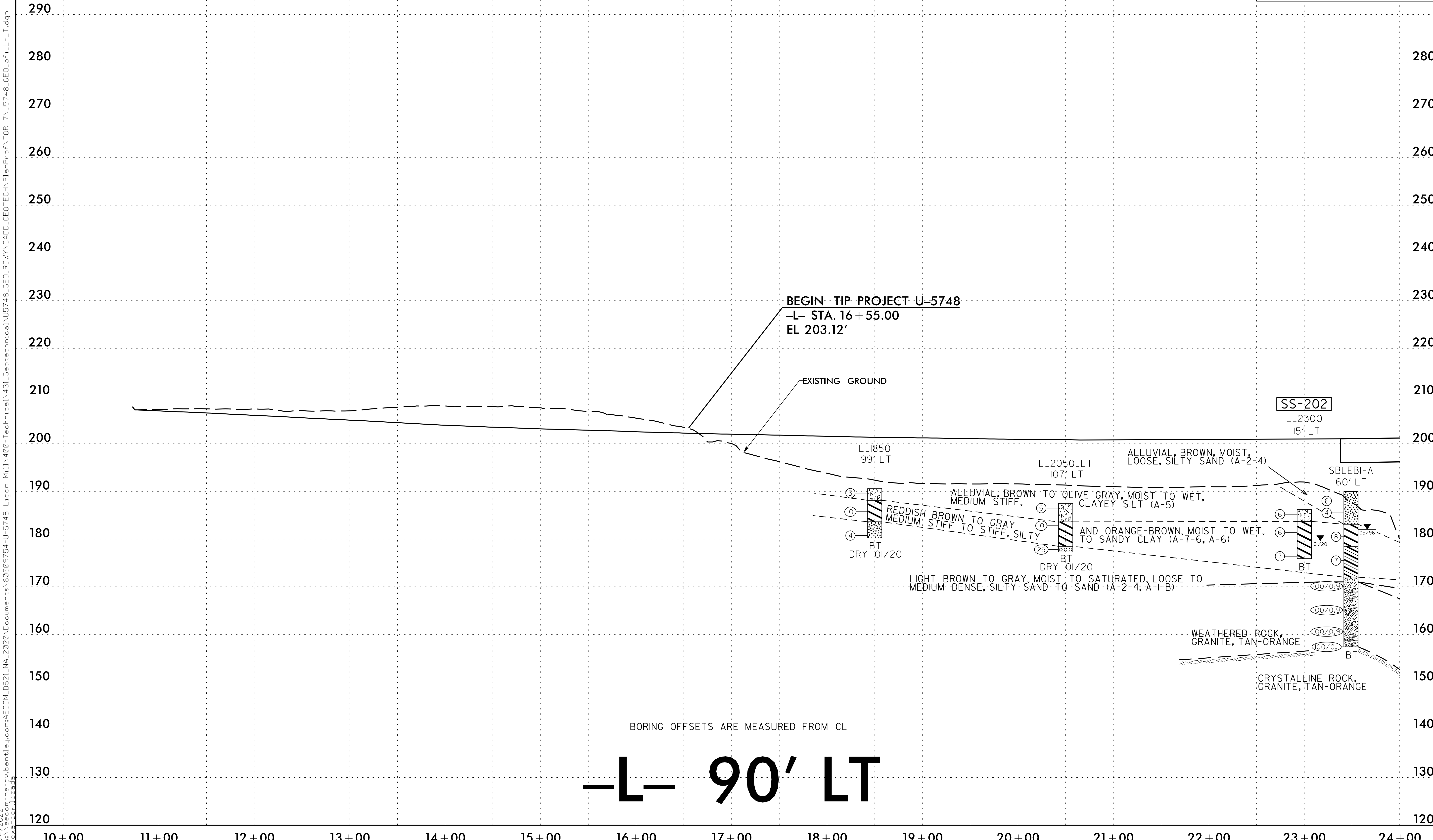
5/14/99

8754-U-5748_Lyon_Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\U5748_rdy_psh16.dgn
10/4/2022
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
BEGIN TIP PROJECT U-5748
-L- STA. 16+55.00
EL 203.12'
EXISTING GROUND
SS-202
L_2300
115' LT
L_1850
99' LT
L_2050_LT
107' LT
SBLEBI-A
60' LT
ALLUVIAL, BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)
ALLUVIAL, BROWN TO OLIVE GRAY, MOIST TO WET, MEDIUM STIFF, CLAYEY SILT (A-5)
REDDISH BROWN TO GRAY MEDIUM STIFF TO STIFF, SILTY
AND ORANGE-BROWN, MOIST TO WET, TO SANDY CLAY (A-7-6, A-6)
BT
DRY 01/20
BT
DRY 01/20
BT
BT
01/20
05/96
LIGHT BROWN TO GRAY, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
100/0.9
100/0.9
100/0.9
100/0.1
WEATHERED ROCK, GRANITE, TAN-ORANGE
CRYSTALLINE ROCK, GRANITE, TAN-ORANGE
BORING OFFSETS ARE MEASURED FROM CL
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00

-L- 90' LT

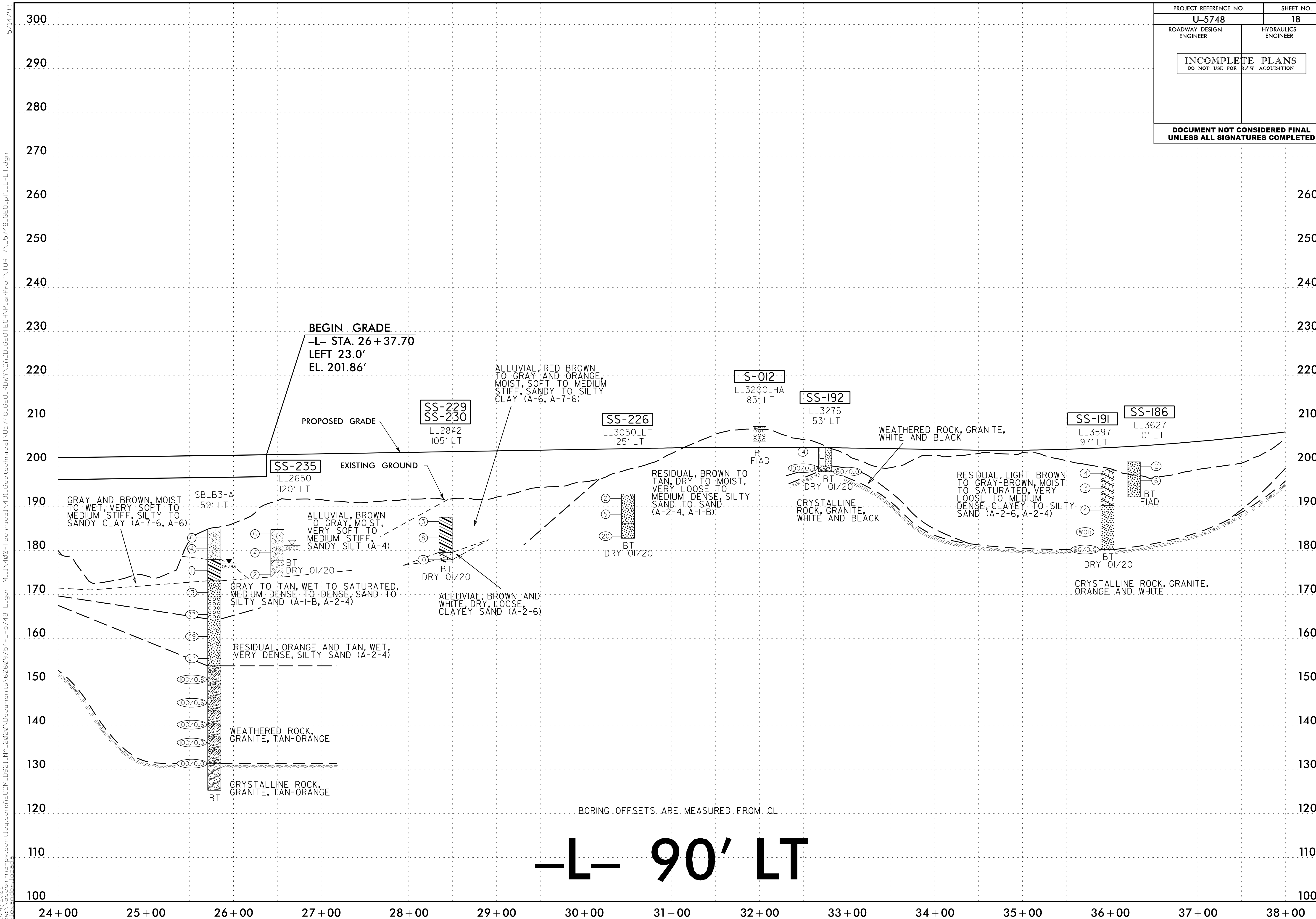
5/14/99

10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_L-LT.dgn
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
BEGIN GRADE
-L- STA. 26+37.70
LEFT 23.0'
EL. 201.86'
PROPOSED GRADE
EXISTING GROUND
SS-235
L_2650
120' LT
SS-229
SS-230
L_2842
105' LT
SS-226
L_3050_LT
125' LT
S-012
L_3200_HA
83' LT
SS-192
L_3275
53' LT
SS-191
L_3597
97' LT
SS-186
L_3627
110' LT
SBLB3-A
59' LT
GRAY AND BROWN, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, SILTY TO SANDY CLAY (A-7-6, A-6)
ALLUVIAL, BROWN TO GRAY, MOIST, VERY SOFT TO MEDIUM STIFF, SANDY SILT (A-4)
ALLUVIAL, RED-BROWN TO GRAY AND ORANGE, MOIST, SOFT TO MEDIUM STIFF, SANDY TO SILTY CLAY (A-6, A-7-6)
ALLUVIAL, BROWN AND WHITE, DRY, LOOSE, CLAYEY SAND (A-2-6)
GRAY TO TAN, WET TO SATURATED, MEDIUM DENSE TO DENSE, SAND TO SILTY SAND (A-1-B, A-2-4)
RESIDUAL, ORANGE AND TAN, WET, VERY DENSE, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, TAN-ORANGE
CRYSTALLINE ROCK, GRANITE, TAN-ORANGE
RESIDUAL, BROWN TO TAN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
CRYSTALLINE ROCK, GRANITE, WHITE AND BLACK
WEATHERED ROCK, GRANITE, WHITE AND BLACK
RESIDUAL, LIGHT BROWN TO GRAY-BROWN, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)
CRYSTALLINE ROCK, GRANITE, ORANGE AND WHITE
BT
DRY 01/20
BT FIAD
BORING OFFSETS ARE MEASURED FROM CL
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00

-L- 90' LT

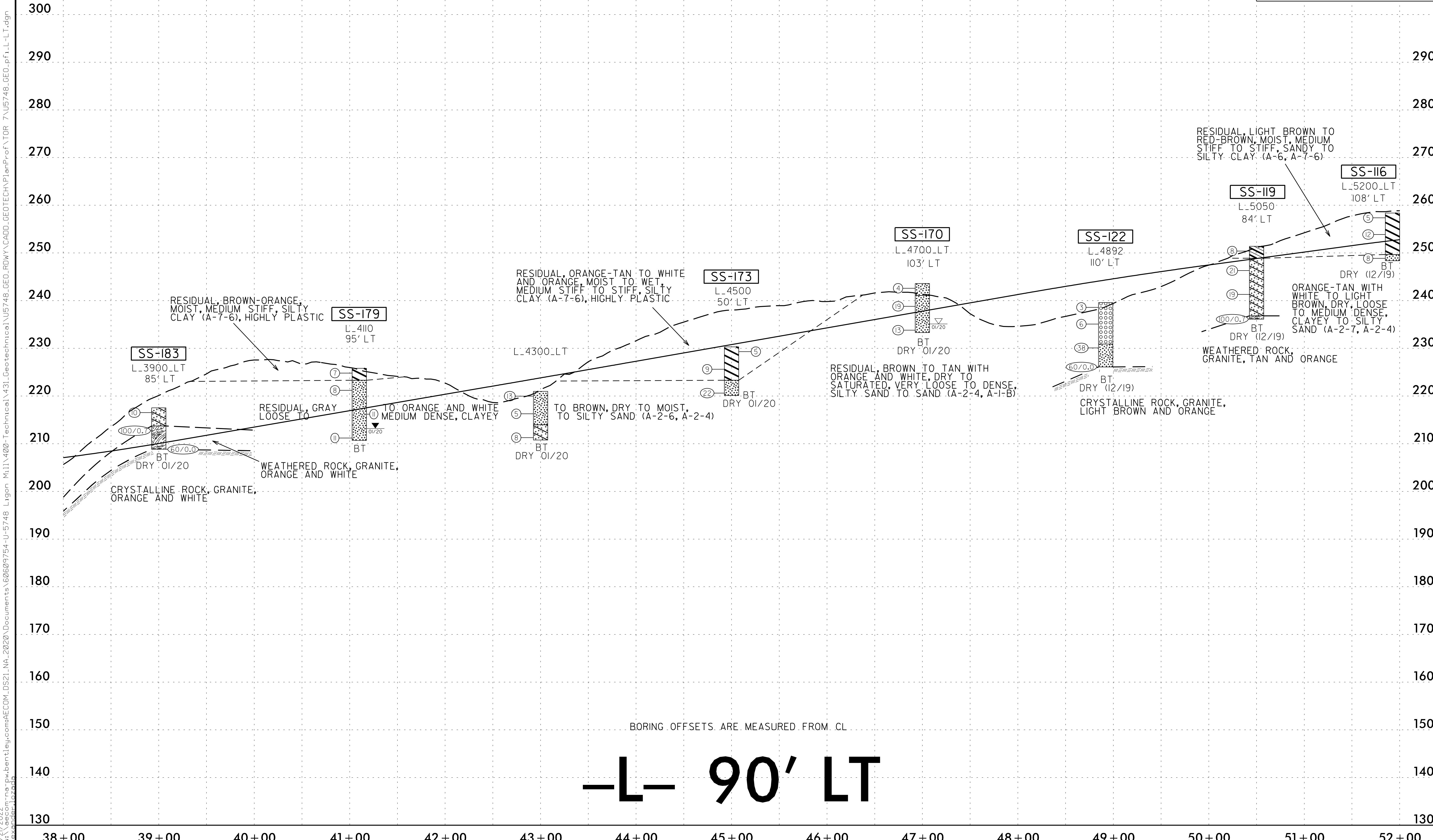
5/14/99

10/4/2022 pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_L-LT.dgn
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



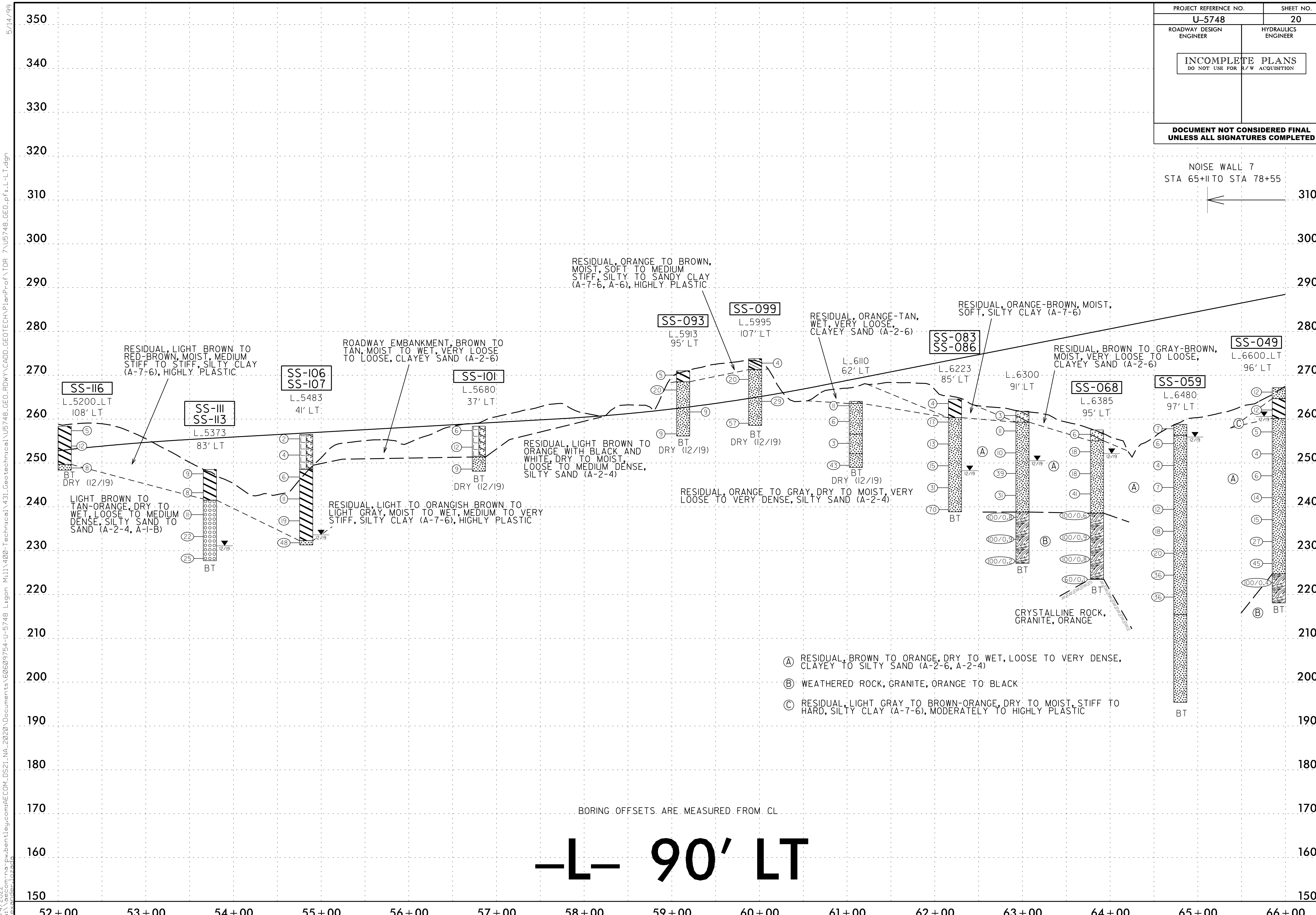
SS-183
L_3900_LT
85' LT
DRY 01/20
SS-179
L_4110
95' LT
L_4300_LT
DRY 01/20
SS-173
L_4500
50' LT
DRY 01/20
SS-170
L_4700_LT
103' LT
DRY 01/20
SS-122
L_4892
110' LT
DRY (12/19)
SS-119
L_5050
84' LT
DRY (12/19)
SS-116
L_5200_LT
108' LT
DRY (12/19)
RESIDUAL, BROWN-ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, ORANGE-TAN TO WHITE AND ORANGE, MOIST TO WET, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, GRAY TO ORANGE AND WHITE TO BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)
RESIDUAL, BROWN TO TAN WITH ORANGE AND WHITE, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
RESIDUAL, LIGHT BROWN TO RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY TO SILTY CLAY (A-6, A-7-6)
ORANGE-TAN WITH WHITE TO LIGHT BROWN, DRY, LOOSE TO MEDIUM DENSE, CLAYEY TO SILTY SAND (A-2-7, A-2-4)
WEATHERED ROCK, GRANITE, ORANGE AND WHITE
CRYSTALLINE ROCK, GRANITE, ORANGE AND WHITE
CRYSTALLINE ROCK, GRANITE, LIGHT BROWN AND ORANGE
WEATHERED ROCK, GRANITE, TAN AND ORANGE
BORING OFFSETS ARE MEASURED FROM CL
38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00
330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130

–L– 90' LT

PROJECT REFERENCE NO.	SHEET NO.
U-5748	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

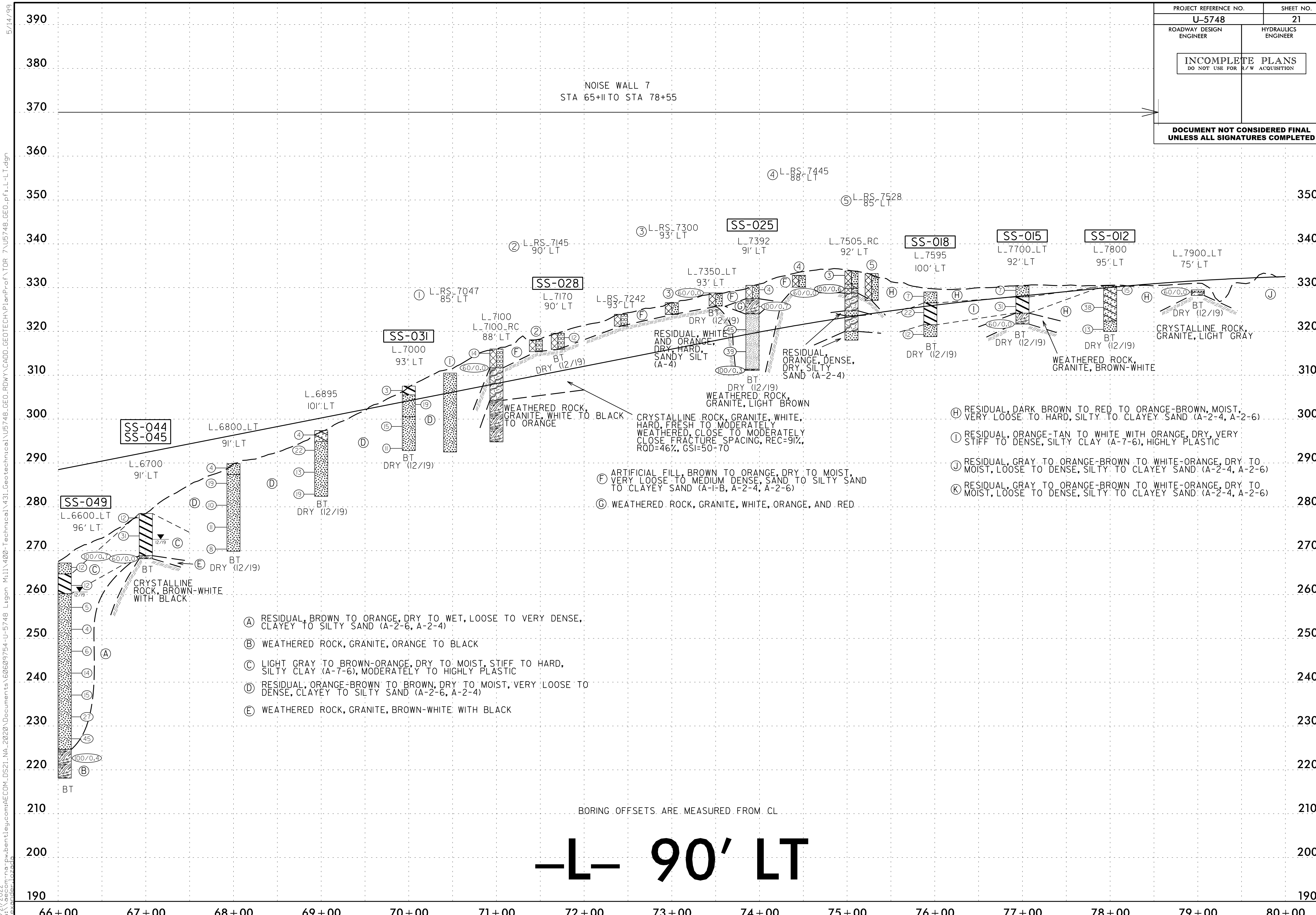
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOISE WALL 7
STA 65+11 TO STA 78+55
SS-116
L_5200_LT
108' LT
BT
DRY (12/19)
SS-111
SS-113
L_5373
83' LT
BT
SS-106
SS-107
L_5483
41' LT
SS-101
L_5680
37' LT
BT
DRY (12/19)
SS-093
L_5913
95' LT
BT
DRY (12/19)
SS-099
L_5995
107' LT
BT
DRY (12/19)
L_6110
62' LT
BT
DRY (12/19)
SS-083
SS-086
L_6223
85' LT
BT
L_6300
91' LT
BT
SS-068
L_6385
95' LT
BT
SS-059
L_6480
97' LT
BT
SS-049
L_6600_LT
96' LT
BT
RESIDUAL, LIGHT BROWN TO RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
LIGHT BROWN TO TAN-ORANGE, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
ROADWAY EMBANKMENT, BROWN TO TAN, MOIST TO WET, VERY LOOSE TO LOOSE, CLAYEY SAND (A-2-6)
RESIDUAL, LIGHT TO ORANGISH BROWN TO LIGHT GRAY, MOIST TO WET, MEDIUM TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, LIGHT BROWN TO ORANGE WITH BLACK AND WHITE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)
RESIDUAL, ORANGE TO BROWN, MOIST, SOFT TO MEDIUM STIFF, SILTY TO SANDY CLAY (A-7-6, A-6), HIGHLY PLASTIC
RESIDUAL, ORANGE-TAN, WET, VERY LOOSE, CLAYEY SAND (A-2-6)
RESIDUAL, ORANGE TO GRAY, DRY TO MOIST, VERY LOOSE TO VERY DENSE, SILTY SAND (A-2-4)
RESIDUAL, ORANGE-BROWN, MOIST, SOFT, SILTY CLAY (A-7-6)
RESIDUAL, BROWN TO GRAY-BROWN, MOIST, VERY LOOSE TO LOOSE, CLAYEY SAND (A-2-6)
CRYSTALLINE ROCK, GRANITE, ORANGE
Ⓐ RESIDUAL, BROWN TO ORANGE, DRY TO WET, LOOSE TO VERY DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)
Ⓑ WEATHERED ROCK, GRANITE, ORANGE TO BLACK
Ⓒ RESIDUAL, LIGHT GRAY TO BROWN-ORANGE, DRY TO MOIST, STIFF TO HARD, SILTY CLAY (A-7-6), MODERATELY TO HIGHLY PLASTIC
BORING OFFSETS ARE MEASURED FROM CL
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00

-L- 90' LT

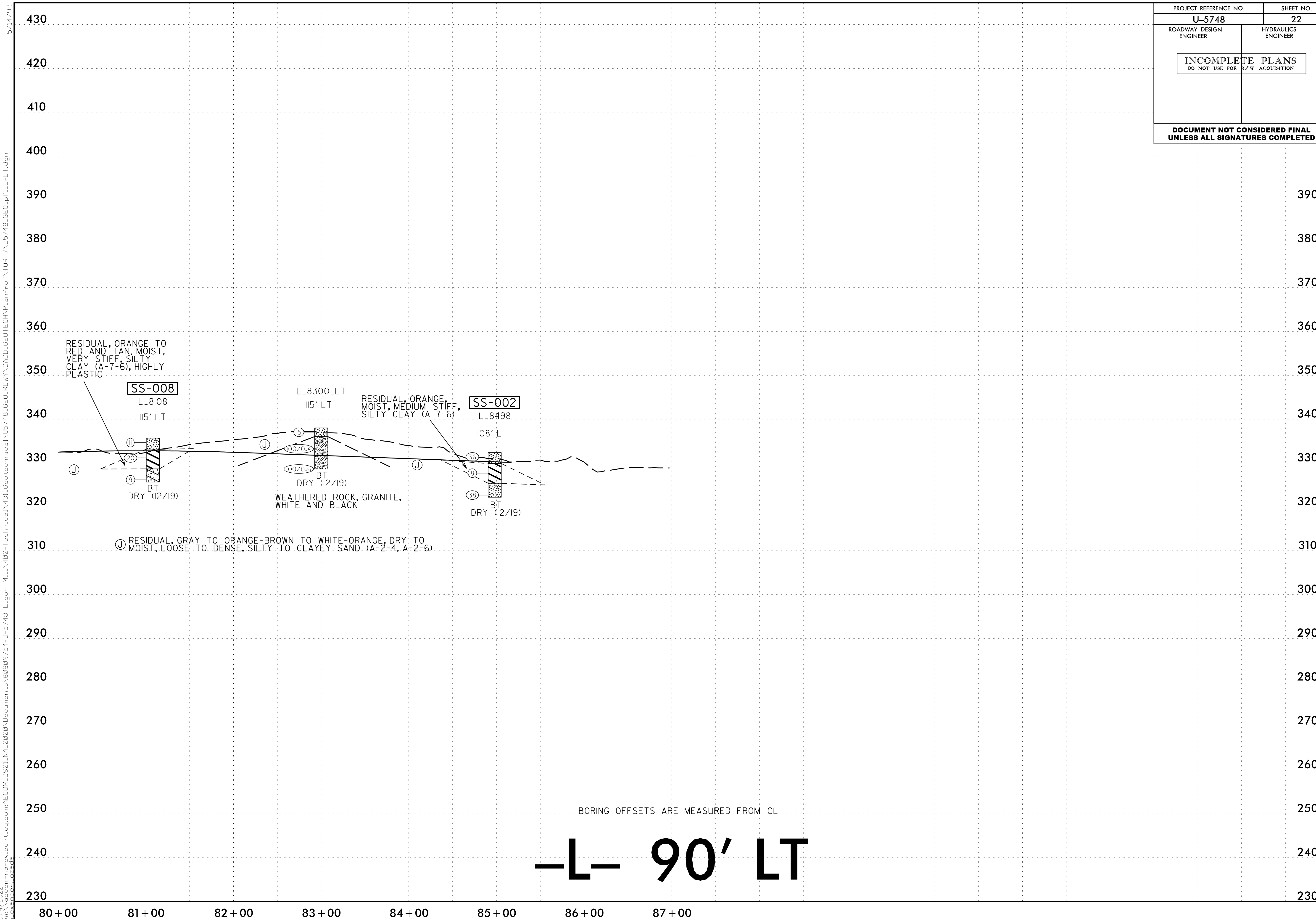


PROJECT REFERENCE NO. U-5748
SHEET NO. 21
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NOISE WALL 7
STA 65+11 TO STA 78+55
SS-049 L_6600_LT 96' LT
L_6700 91' LT
SS-044 SS-045
L_6800_LT 91' LT
L_6895 101' LT
SS-031 L_7000 93' LT
L_RS_7047 85' LT
L_7100 L_7100_RC 88' LT
L_RS_7145 90' LT
SS-028 L_7170 90' LT
L_RS_7242 93' LT
L_RS_7300 93' LT
L_7350_LT 93' LT
SS-025 L_7392 91' LT
L_RS_7445 88' LT
L_7505_RC 92' LT
L_RS_7528 85' LT
SS-018 L_7595 100' LT
SS-015 L_7700_LT 92' LT
SS-012 L_7800 95' LT
L_7900_LT 75' LT
CRYSTALLINE ROCK, BROWN-WHITE WITH BLACK
WEATHERED ROCK, GRANITE, WHITE TO BLACK TO ORANGE
CRYSTALLINE ROCK, GRANITE, WHITE, HARD, FRESH TO MODERATELY WEATHERED, CLOSE TO MODERATELY CLOSE FRACTURE SPACING, REC=91%, RQD=46%, GSI=50-70
RESIDUAL, WHITE AND ORANGE, DRY, HARD, SANDY SILT (A-4)
WEATHERED ROCK, GRANITE, LIGHT BROWN
RESIDUAL, ORANGE, DENSE, DRY, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, BROWN-WHITE
CRYSTALLINE ROCK, GRANITE, LIGHT GRAY
BT
DRY (12/19)
Ⓐ RESIDUAL, BROWN TO ORANGE, DRY TO WET, LOOSE TO VERY DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)
Ⓑ WEATHERED ROCK, GRANITE, ORANGE TO BLACK
Ⓒ LIGHT GRAY TO BROWN-ORANGE, DRY TO MOIST, STIFF TO HARD, SILTY CLAY (A-7-6), MODERATELY TO HIGHLY PLASTIC
Ⓓ RESIDUAL, ORANGE-BROWN TO BROWN, DRY TO MOIST, VERY LOOSE TO DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)
Ⓔ WEATHERED ROCK, GRANITE, BROWN-WHITE WITH BLACK
Ⓕ ARTIFICIAL FILL, BROWN TO ORANGE, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SAND TO SILTY SAND TO CLAYEY SAND (A-1-B, A-2-4, A-2-6)
Ⓖ WEATHERED ROCK, GRANITE, WHITE, ORANGE, AND RED
Ⓗ RESIDUAL, DARK BROWN TO RED TO ORANGE-BROWN, MOIST, VERY LOOSE TO HARD, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
Ⓘ RESIDUAL, ORANGE-TAN TO WHITE WITH ORANGE, DRY, VERY STIFF TO DENSE, SILTY CLAY (A-7-6), HIGHLY PLASTIC
Ⓙ RESIDUAL, GRAY TO ORANGE-BROWN TO WHITE-ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
Ⓚ RESIDUAL, GRAY TO ORANGE-BROWN TO WHITE-ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
BORING OFFSETS ARE MEASURED FROM CL
-L- 90' LT
390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190
66+00 67+00 68+00 69+00 70+00 71+00 72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00
5/14/99
10/21/2022

PROJECT REFERENCE NO.	SHEET NO.
U-5748	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



430
420
410
400
390
380
370
360
350
340
330
320
310
300
290
280
270
260
250
240
230
RESIDUAL, ORANGE TO RED AND TAN, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
SS-008
L_8108
115' LT
BT
DRY (12/19)
L_8300_LT
115' LT
BT
DRY (12/19)
WEATHERED ROCK, GRANITE, WHITE AND BLACK
RESIDUAL, ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6)
SS-002
L_8498
108' LT
BT
DRY (12/19)
J RESIDUAL, GRAY TO ORANGE-BROWN TO WHITE-ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
BORING OFFSETS ARE MEASURED FROM CL
80+00
81+00
82+00
83+00
84+00
85+00
86+00
87+00

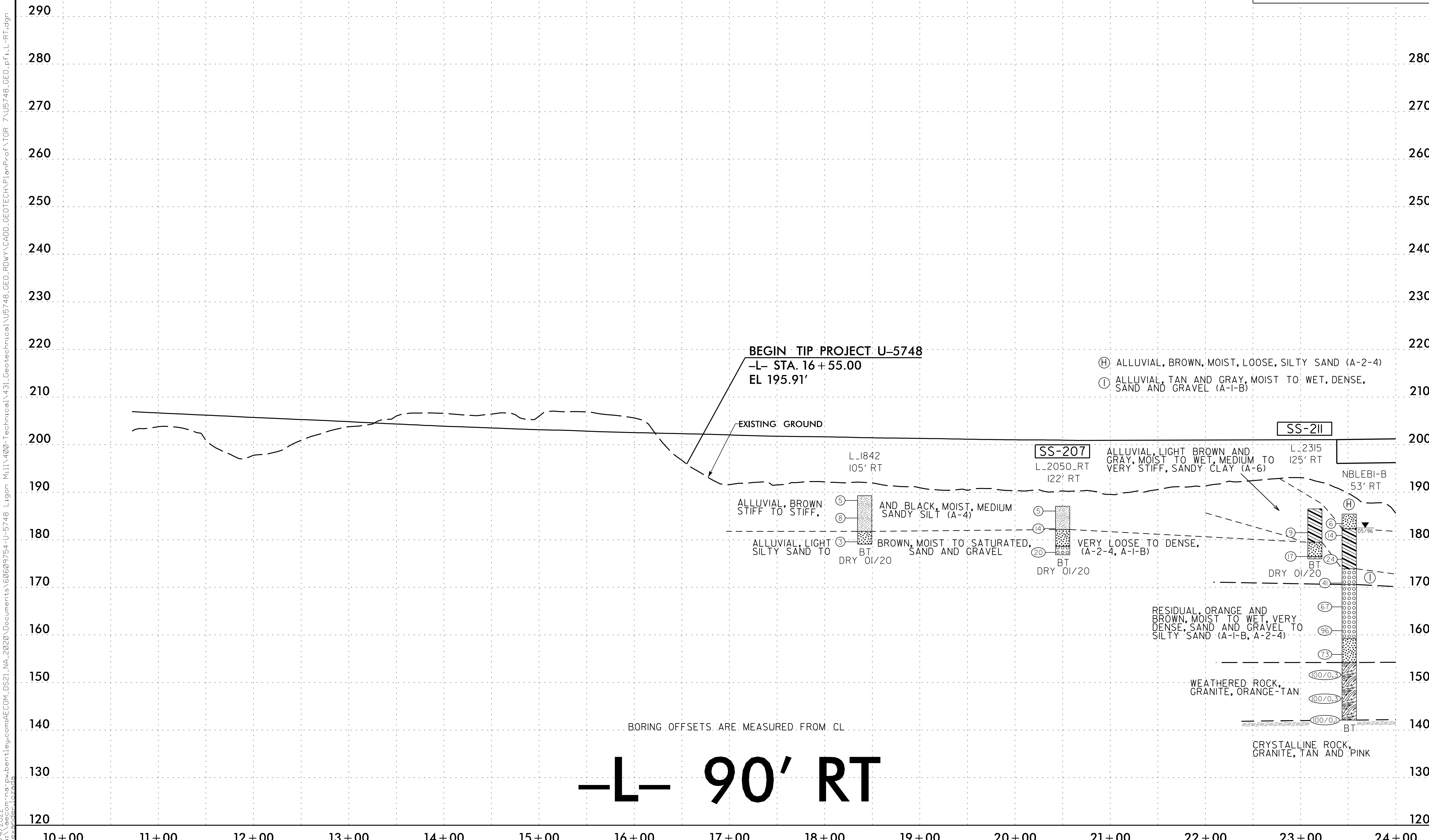
-L- 90' LT

5/14/99
10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pf1_L-LT.dgn
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



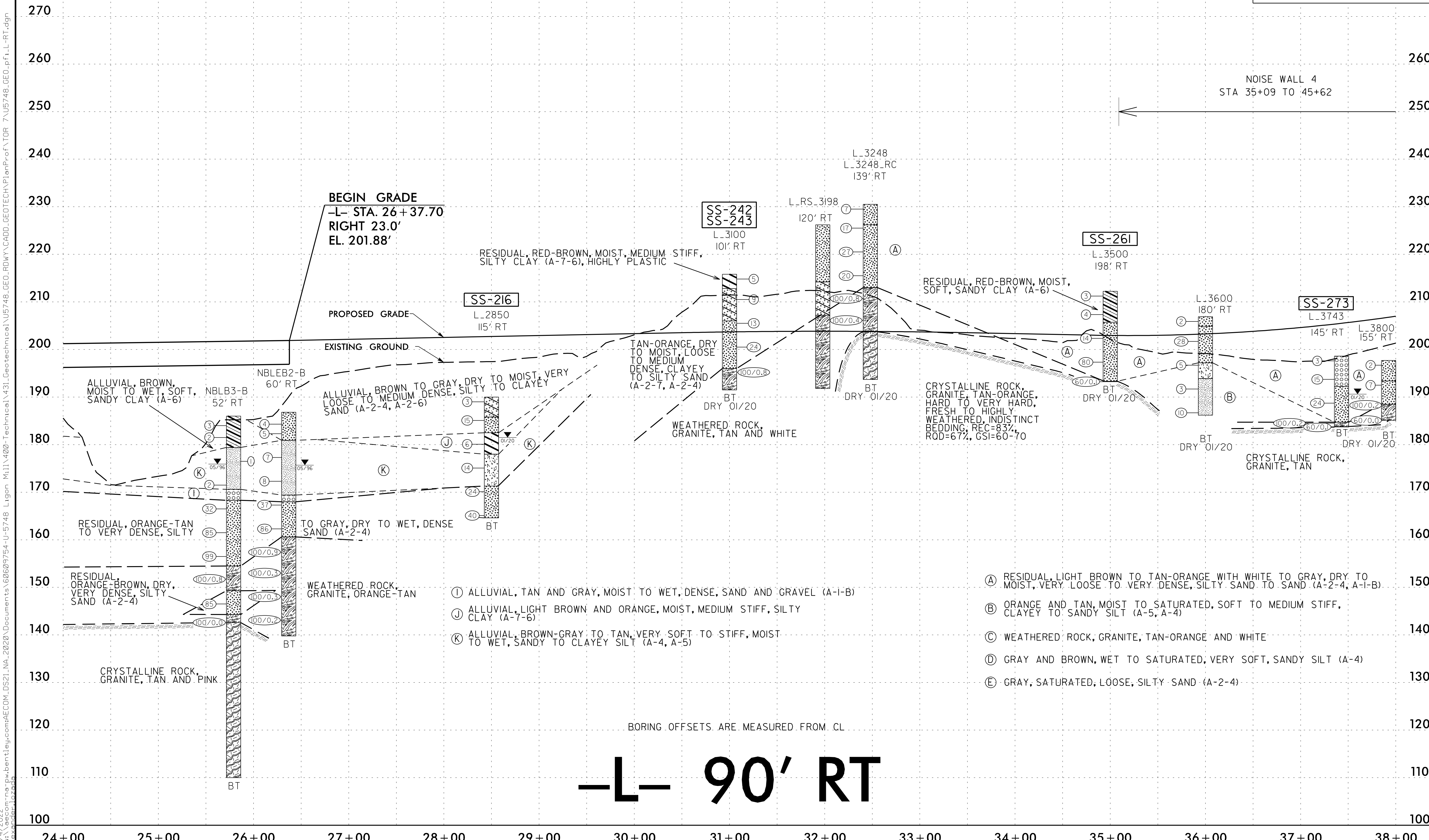
BEGIN TIP PROJECT U-5748
-L- STA. 16+55.00
EL 195.91'
EXISTING GROUND
(H) ALLUVIAL, BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)
(I) ALLUVIAL, TAN AND GRAY, MOIST TO WET, DENSE, SAND AND GRAVEL (A-1-B)
L_1842
105' RT
SS-207
L_2050_RT
122' RT
SS-211
L_2315
125' RT
NBLEBI-B
53' RT
ALLUVIAL, BROWN STIFF TO STIFF,
AND BLACK, MOIST, MEDIUM SANDY SILT (A-4)
ALLUVIAL, LIGHT SILTY SAND TO
BROWN, MOIST TO SATURATED, SAND AND GRAVEL
VERY LOOSE TO DENSE, (A-2-4, A-1-B)
ALLUVIAL, LIGHT BROWN AND GRAY, MOIST TO WET, MEDIUM TO VERY STIFF, SANDY CLAY (A-6)
BT
DRY 01/20
RESIDUAL, ORANGE AND BROWN, MOIST TO WET, VERY DENSE, SAND AND GRAVEL TO SILTY SAND (A-1-B, A-2-4)
WEATHERED ROCK, GRANITE, ORANGE-TAN
CRYSTALLINE ROCK, GRANITE, TAN AND PINK
BORING OFFSETS ARE MEASURED FROM CL
320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00

-L- 90' RT

PROJECT REFERENCE NO.	SHEET NO.
U-5748	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

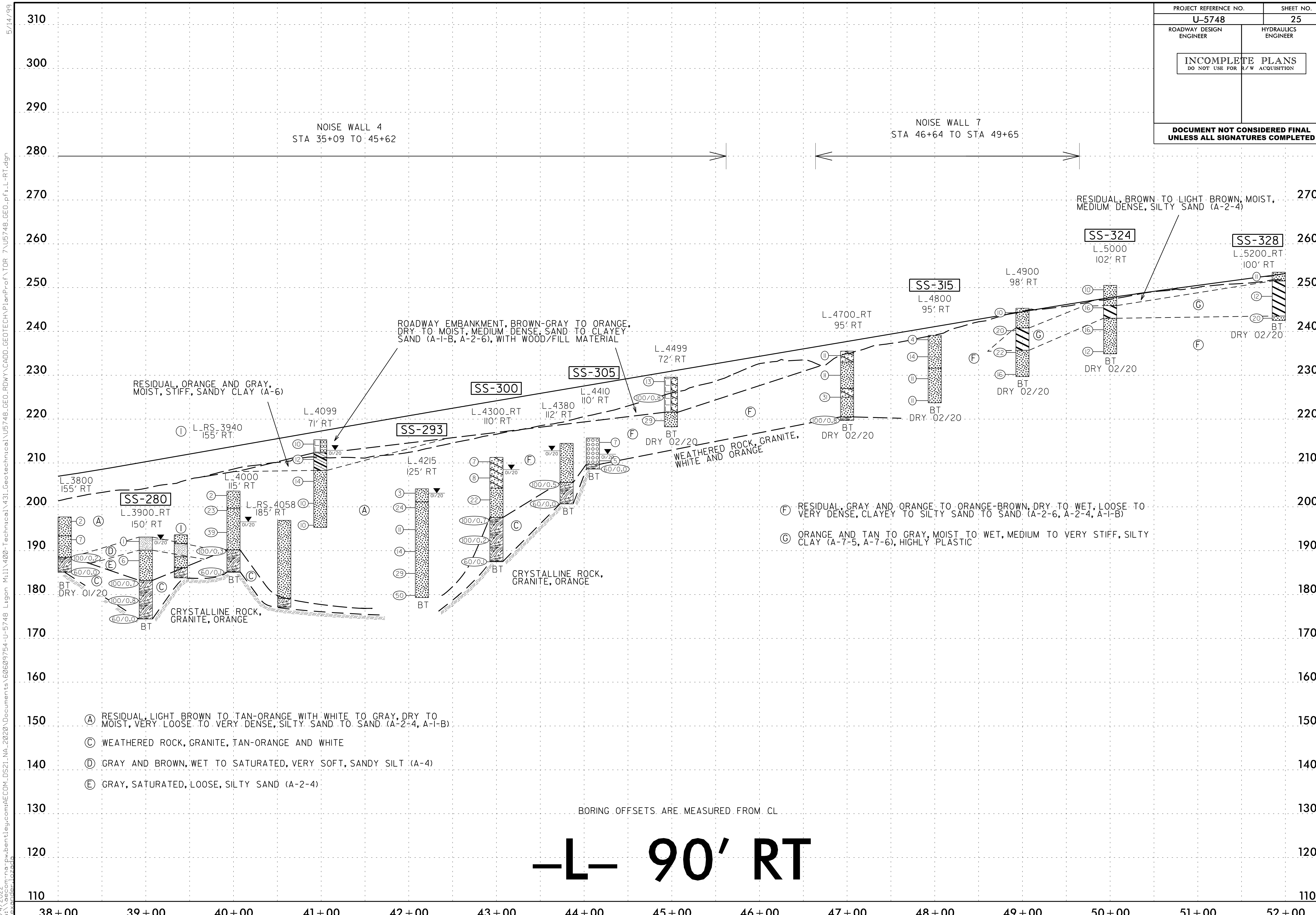
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00
NOISE WALL 4
STA 35+09 TO 45+62
BEGIN GRADE
-L- STA. 26+37.70
RIGHT 23.0'
EL. 201.88'
PROPOSED GRADE
EXISTING GROUND
SS-216
L_2850
115' RT
SS-242
SS-243
L_3100
101' RT
L_RS_3198
120' RT
L_3248
L_3248_RC
139' RT
SS-261
L_3500
198' RT
L_3600
180' RT
SS-273
L_3743
145' RT
L_3800
155' RT
NBLEB2-B
60' RT
NBLB3-B
52' RT
ALLUVIAL, BROWN, MOIST TO WET, SOFT, SANDY CLAY (A-6)
ALLUVIAL, BROWN TO GRAY, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
RESIDUAL, RED-BROWN, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
TAN-ORANGE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY TO SILTY SAND (A-2-7, A-2-4)
WEATHERED ROCK, GRANITE, TAN AND WHITE
RESIDUAL, RED-BROWN, MOIST, SOFT, SANDY CLAY (A-6)
CRYSTALLINE ROCK, GRANITE, TAN-ORANGE, HARD TO VERY HARD, FRESH TO HIGHLY WEATHERED, INDISTINCT BEDDING, REC=83%, RQD=67%, GSI=60-70
CRYSTALLINE ROCK, GRANITE, TAN
RESIDUAL, ORANGE-TAN TO VERY DENSE, SILTY
TO GRAY, DRY TO WET, DENSE SAND (A-2-4)
RESIDUAL, ORANGE-BROWN, DRY, VERY DENSE, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, ORANGE-TAN
CRYSTALLINE ROCK, GRANITE, TAN AND PINK
BT
DRY 01/20
05/96
01/20
Ⓘ ALLUVIAL, TAN AND GRAY, MOIST TO WET, DENSE, SAND AND GRAVEL (A-1-B)
Ⓙ ALLUVIAL, LIGHT BROWN AND ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6)
Ⓚ ALLUVIAL, BROWN-GRAY TO TAN, VERY SOFT TO STIFF, MOIST TO WET, SANDY TO CLAYEY SILT (A-4, A-5)
Ⓐ RESIDUAL, LIGHT BROWN TO TAN-ORANGE WITH WHITE TO GRAY, DRY TO MOIST, VERY LOOSE TO VERY DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
Ⓑ ORANGE AND TAN, MOIST TO SATURATED, SOFT TO MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)
Ⓒ WEATHERED ROCK, GRANITE, TAN-ORANGE AND WHITE
Ⓓ GRAY AND BROWN, WET TO SATURATED, VERY SOFT, SANDY SILT (A-4)
Ⓔ GRAY, SATURATED, LOOSE, SILTY SAND (A-2-4)
BORING OFFSETS ARE MEASURED FROM CL

-L- 90' RT

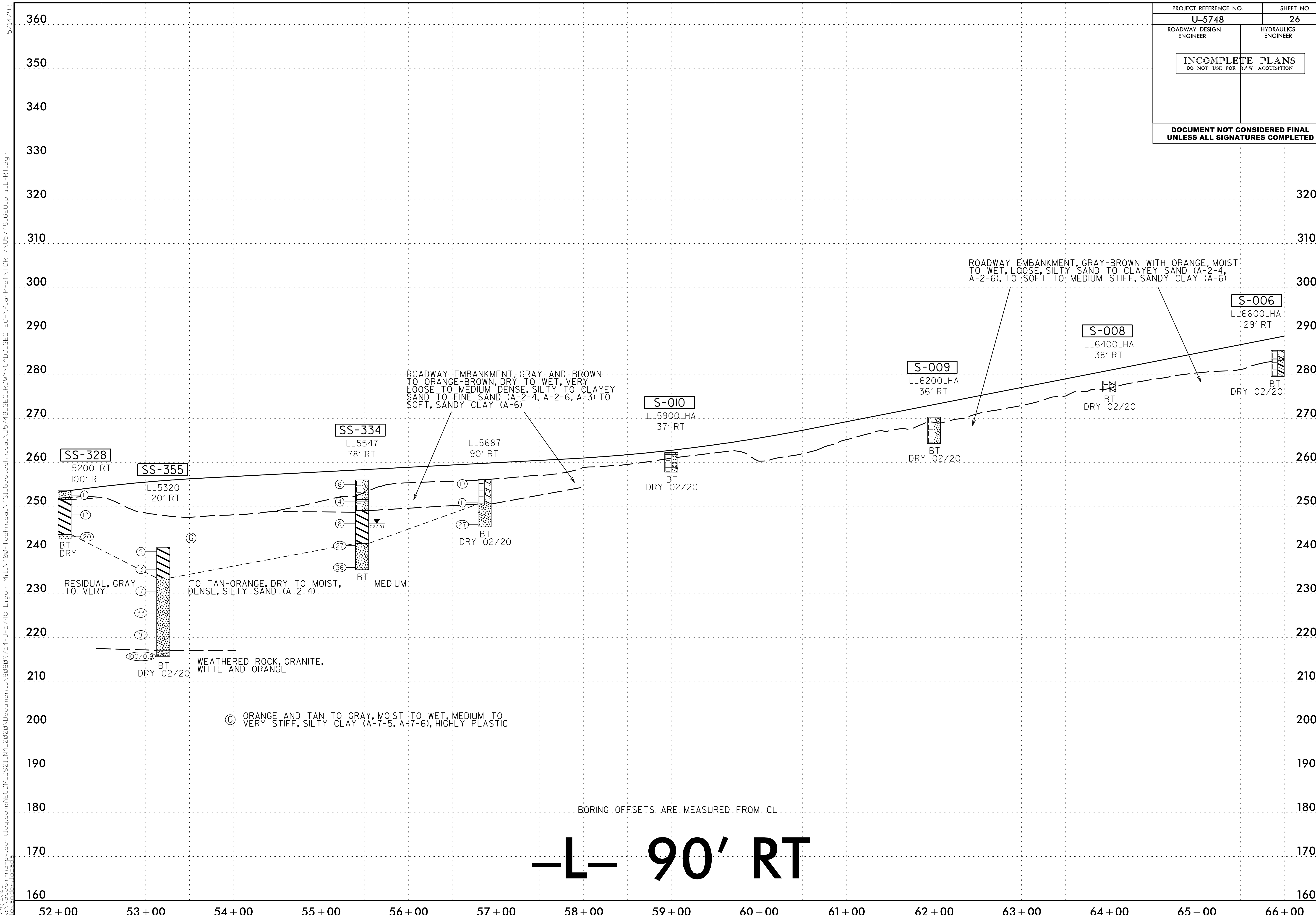
5/14/99
10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_L-RT.dgn
alexander.lozada


PROJECT REFERENCE NO. U-5748
SHEET NO. 25
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NOISE WALL 4
STA 35+09 TO 45+62
NOISE WALL 7
STA 46+64 TO STA 49+65
RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)
ROADWAY EMBANKMENT, BROWN-GRAY TO ORANGE, DRY TO MOIST, MEDIUM DENSE, SAND TO CLAYEY SAND (A-1-B, A-2-6), WITH WOOD/FILL MATERIAL
RESIDUAL, ORANGE AND GRAY, MOIST, STIFF, SANDY CLAY (A-6)
SS-280
SS-293
SS-300
SS-305
SS-315
SS-324
SS-328
L_3800 155' RT
L_3900_RT 150' RT
L_RS_3940 155' RT
L_4000 115' RT
L_RS_4058 185' RT
L_4099 71' RT
L_4215 125' RT
L_4300_RT 110' RT
L_4380 112' RT
L_4410 110' RT
L_4499 72' RT
L_4700_RT 95' RT
L_4800 95' RT
L_4900 98' RT
L_5000 102' RT
L_5200_RT 100' RT
DRY 01/20
DRY 02/20
CRYSTALLINE ROCK, GRANITE, ORANGE
WEATHERED ROCK, GRANITE, WHITE AND ORANGE
(F) RESIDUAL, GRAY AND ORANGE TO ORANGE-BROWN, DRY TO WET, LOOSE TO VERY DENSE, CLAYEY TO SILTY SAND TO SAND (A-2-6, A-2-4, A-1-B)
(G) ORANGE AND TAN TO GRAY, MOIST TO WET, MEDIUM TO VERY STIFF, SILTY CLAY (A-7-5, A-7-6), HIGHLY PLASTIC
(A) RESIDUAL, LIGHT BROWN TO TAN-ORANGE WITH WHITE TO GRAY, DRY TO MOIST, VERY LOOSE TO VERY DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)
(C) WEATHERED ROCK, GRANITE, TAN-ORANGE AND WHITE
(D) GRAY AND BROWN, WET TO SATURATED, VERY SOFT, SANDY SILT (A-4)
(E) GRAY, SATURATED, LOOSE, SILTY SAND (A-2-4)
BORING OFFSETS ARE MEASURED FROM CL
38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00
310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110

–L– 90' RT

5/14/99

10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_ROWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_L-RT.dgn
alexander.lozada



PROJECT REFERENCE NO.
SHEET NO.
U-5748
26
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SS-328
L_5200_RT
100' RT
SS-355
L_5320
120' RT
SS-334
L_5547
78' RT
L_5687
90' RT
S-010
L_5900_HA
37' RT
S-009
L_6200_HA
36' RT
S-008
L_6400_HA
38' RT
S-006
L_6600_HA
29' RT
ROADWAY EMBANKMENT, GRAY AND BROWN TO ORANGE-BROWN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY TO CLAYEY SAND TO FINE SAND (A-2-4, A-2-6, A-3) TO SOFT, SANDY CLAY (A-6)
ROADWAY EMBANKMENT, GRAY-BROWN WITH ORANGE, MOIST TO WET, LOOSE, SILTY SAND TO CLAYEY SAND (A-2-4, A-2-6), TO SOFT TO MEDIUM STIFF, SANDY CLAY (A-6)
RESIDUAL, GRAY TO TAN-ORANGE, DRY TO MOIST, MEDIUM TO VERY DENSE, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, WHITE AND ORANGE
Ⓖ ORANGE AND TAN TO GRAY, MOIST TO WET, MEDIUM TO VERY STIFF, SILTY CLAY (A-7-5, A-7-6), HIGHLY PLASTIC
BT DRY
BT DRY 02/20
BT
BORING OFFSETS ARE MEASURED FROM CL
-L- 90' RT
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00

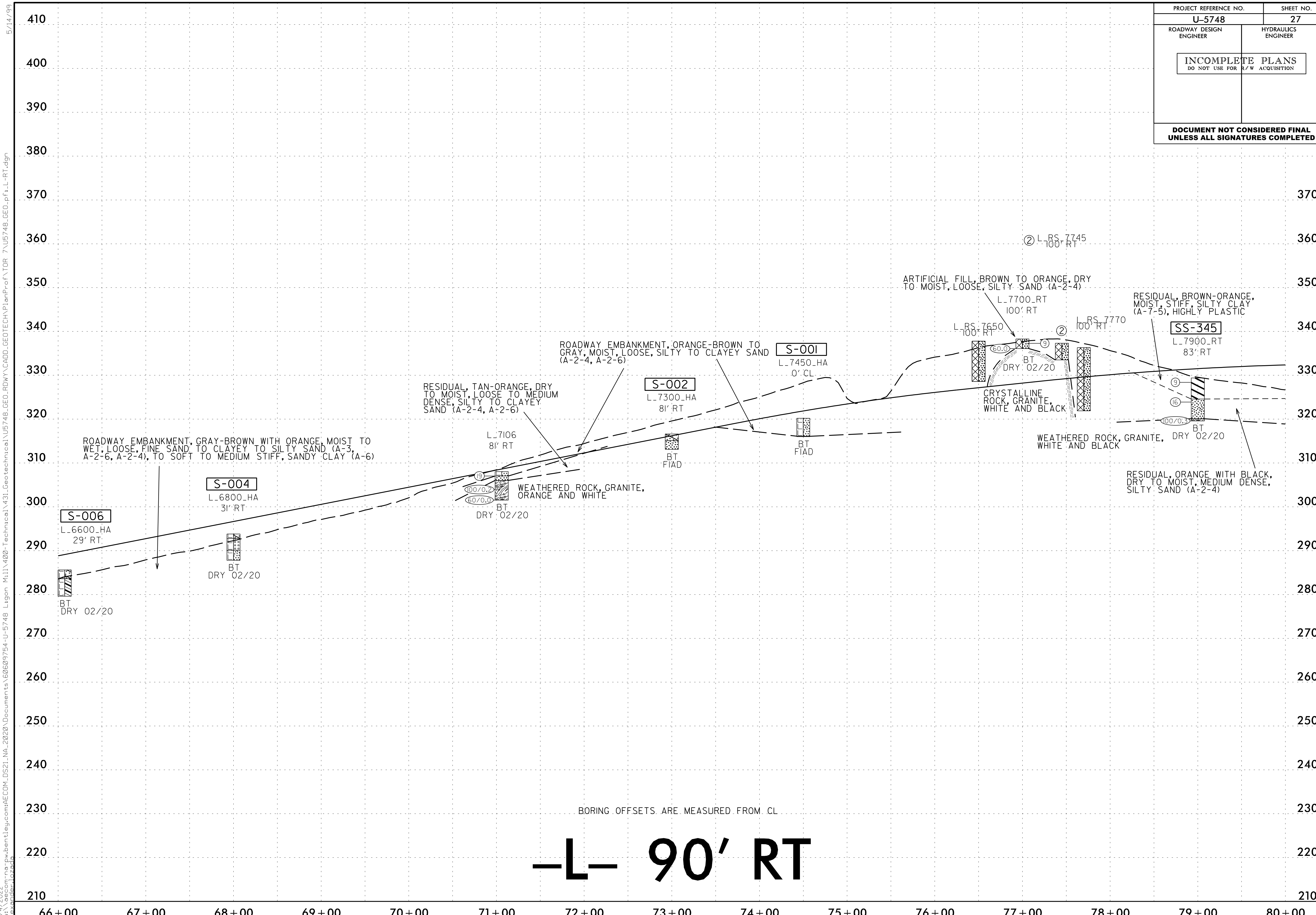
PROJECT REFERENCE NO.	SHEET NO.
U-5748	27

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99

10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_L-RT.dgn
alexander.lozada

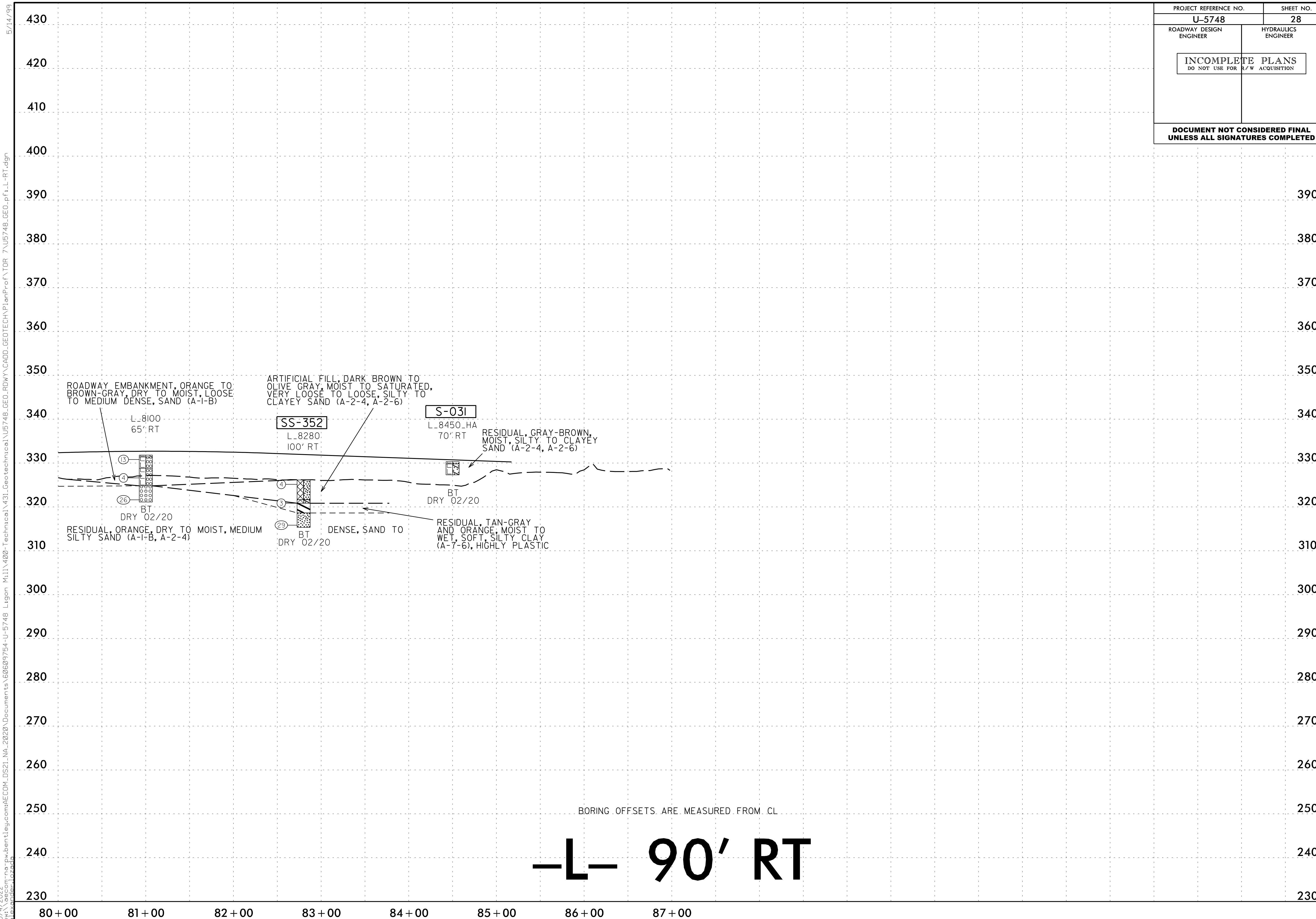
PROJECT REFERENCE NO.	SHEET NO.
U-5748	28

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

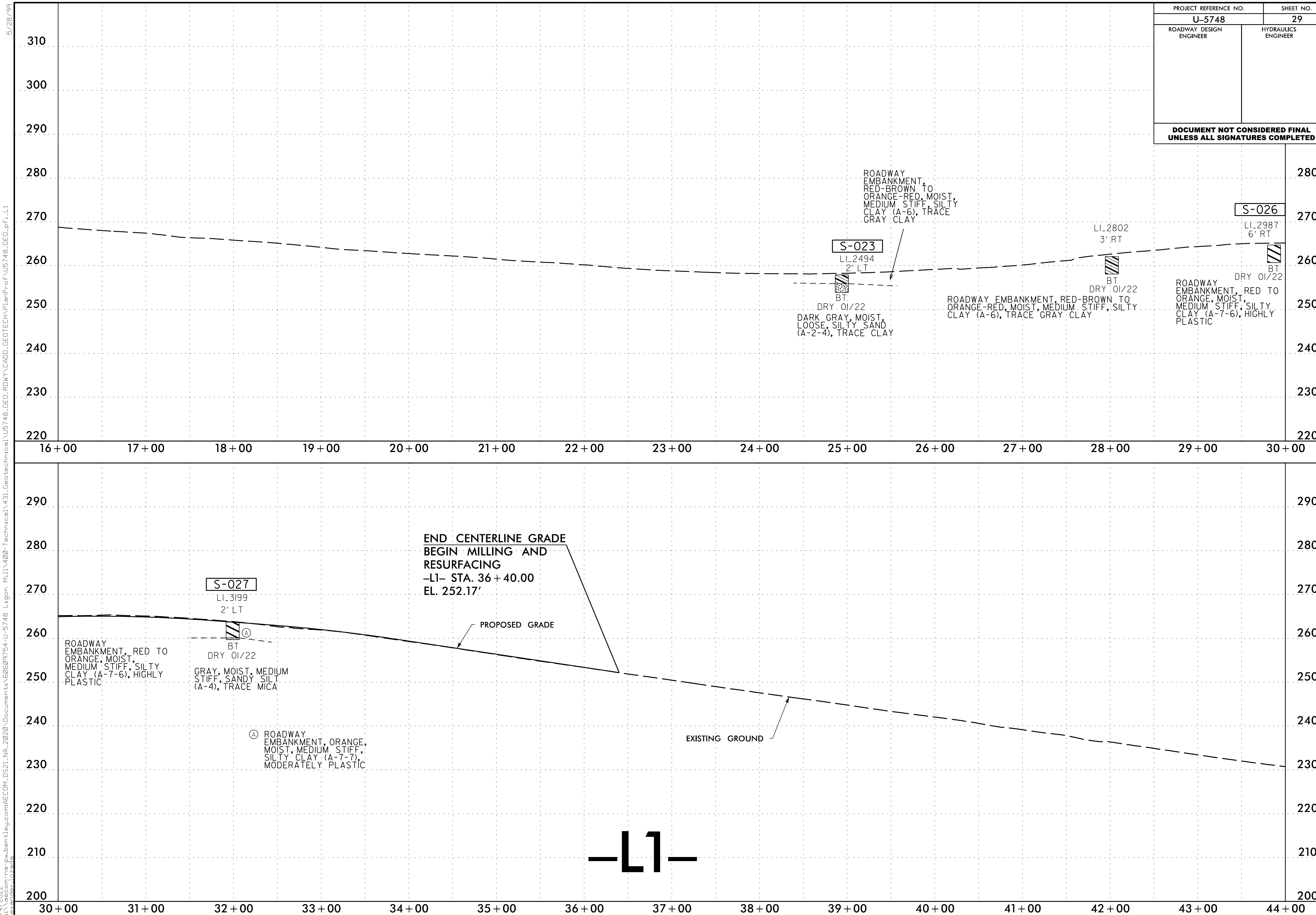
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-L- 90' RT

PROJECT REFERENCE NO.	SHEET NO.
U-5748	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

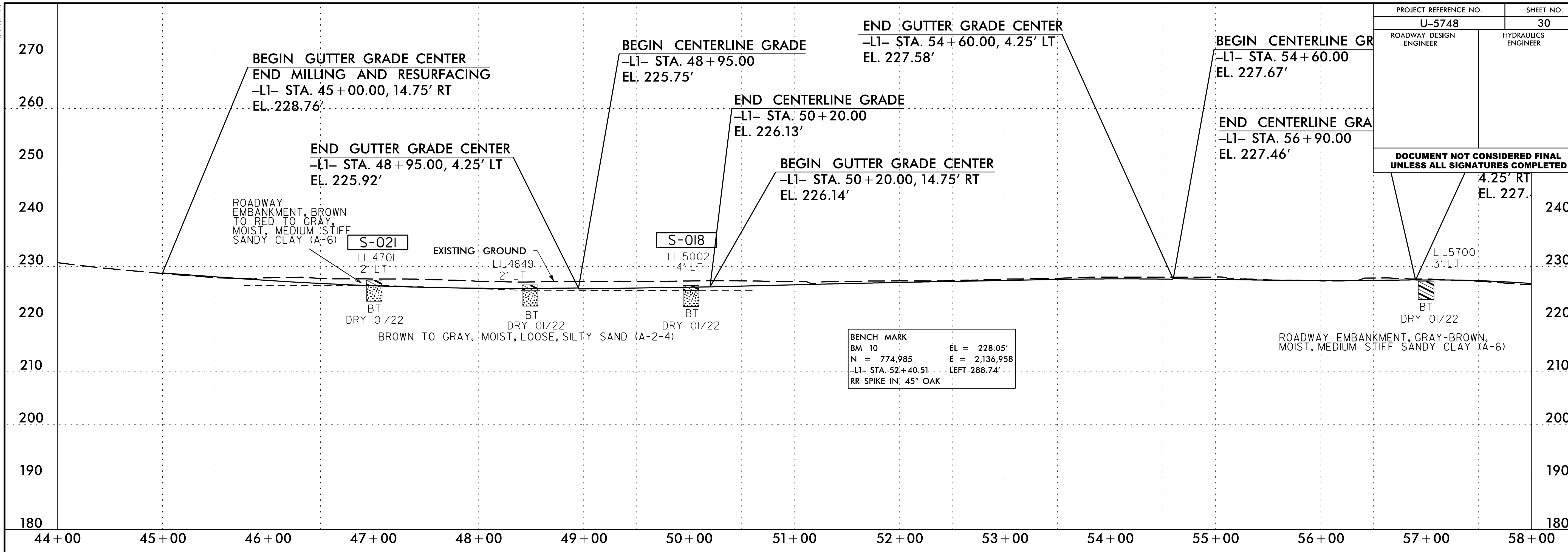
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



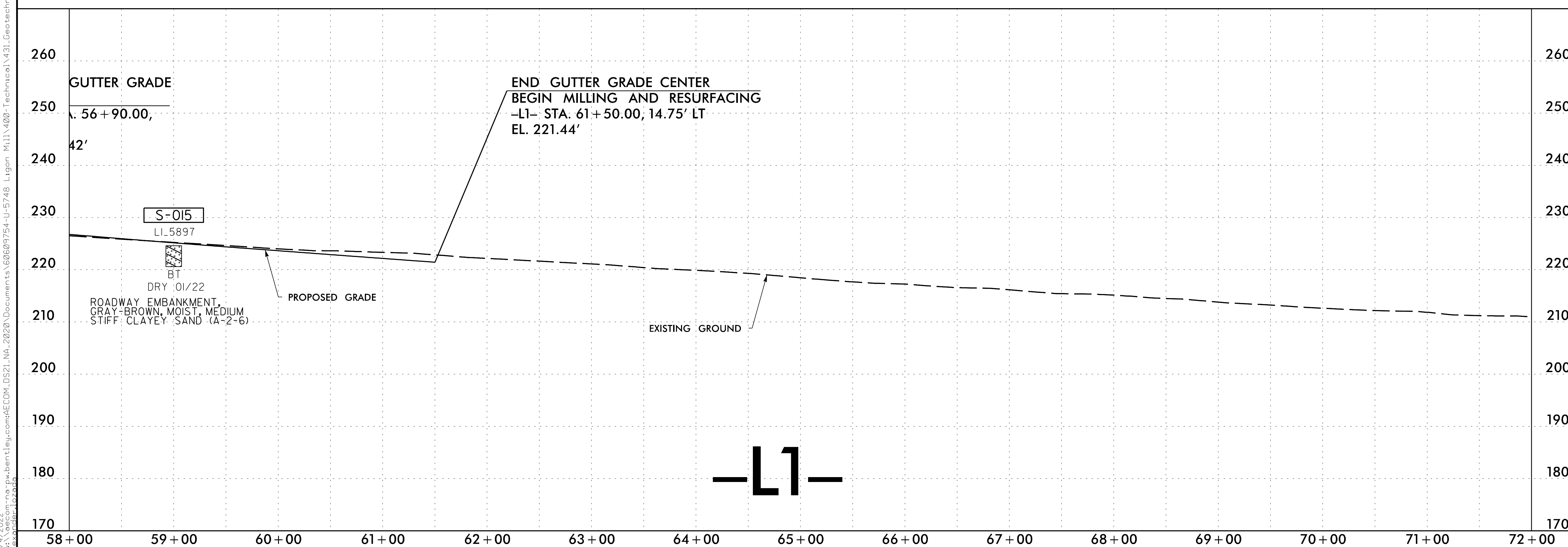
S-023
L1_2494
2' LT
BT
DRY 01/22
DARK GRAY, MOIST, LOOSE, SILTY SAND (A-2-4), TRACE CLAY
ROADWAY EMBANKMENT, RED-BROWN TO ORANGE-RED, MOIST, MEDIUM STIFF, SILTY CLAY (A-6), TRACE GRAY CLAY
L1_2802
3' RT
BT
DRY 01/22
ROADWAY EMBANKMENT, RED-BROWN TO ORANGE-RED, MOIST, MEDIUM STIFF, SILTY CLAY (A-6), TRACE GRAY CLAY
S-026
L1_2987
6' RT
BT
DRY 01/22
ROADWAY EMBANKMENT, RED TO ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00
ROADWAY EMBANKMENT, RED TO ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
S-027
L1_3199
2' LT
BT
DRY 01/22
GRAY, MOIST, MEDIUM STIFF, SANDY SILT (A-4), TRACE MICA
Ⓐ ROADWAY EMBANKMENT, ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-7), MODERATELY PLASTIC
END CENTERLINE GRADE
BEGIN MILLING AND RESURFACING
-L1- STA. 36+40.00
EL. 252.17'
PROPOSED GRADE
EXISTING GROUND
-L1-
30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00

PROJECT REFERENCE NO.	SHEET NO.
U-5748	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BEGIN GUTTER GRADE CENTER
END MILLING AND RESURFACING
–L1– STA. 45+00.00, 14.75′ RT
EL. 228.76′
END GUTTER GRADE CENTER
–L1– STA. 48+95.00, 4.25′ LT
EL. 225.92′
BEGIN CENTERLINE GRADE
–L1– STA. 48+95.00
EL. 225.75′
END CENTERLINE GRADE
–L1– STA. 50+20.00
EL. 226.13′
BEGIN GUTTER GRADE CENTER
–L1– STA. 50+20.00, 14.75′ RT
EL. 226.14′
END GUTTER GRADE CENTER
–L1– STA. 54+60.00, 4.25′ LT
EL. 227.58′
BEGIN CENTERLINE GR
–L1– STA. 54+60.00
EL. 227.67′
END CENTERLINE GRA
–L1– STA. 56+90.00
EL. 227.46′
4.25′ RT
EL. 227.
ROADWAY EMBANKMENT, BROWN TO RED TO GRAY, MOIST, MEDIUM STIFF SANDY CLAY (A-6)
S-021
L1_4701
2′ LT
EXISTING GROUND
L1_4849
2′ LT
S-018
L1_5002
4′ LT
L1_5700
3′ LT
BT
DRY 01/22
BROWN TO GRAY, MOIST, LOOSE, SILTY SAND (A-2-4)
ROADWAY EMBANKMENT, GRAY-BROWN, MOIST, MEDIUM STIFF SANDY CLAY (A-6)
BENCH MARK
BM 10
EL = 228.05′
N = 774,985
E = 2,136,958
–L1– STA. 52+40.51
LEFT 288.74′
RR SPIKE IN 45″ OAK
270
260
250
240
230
220
210
200
190
180
44+00
45+00
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00



GUTTER GRADE
. 56+90.00,
42′
END GUTTER GRADE CENTER
BEGIN MILLING AND RESURFACING
–L1– STA. 61+50.00, 14.75′ LT
EL. 221.44′
S-015
L1_5897
BT
DRY 01/22
ROADWAY EMBANKMENT, GRAY-BROWN, MOIST, MEDIUM STIFF CLAYEY SAND (A-2-6)
PROPOSED GRADE
EXISTING GROUND
–L1–
260
250
240
230
220
210
200
190
180
170
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00
71+00
72+00

5/28/99

10/4/2022

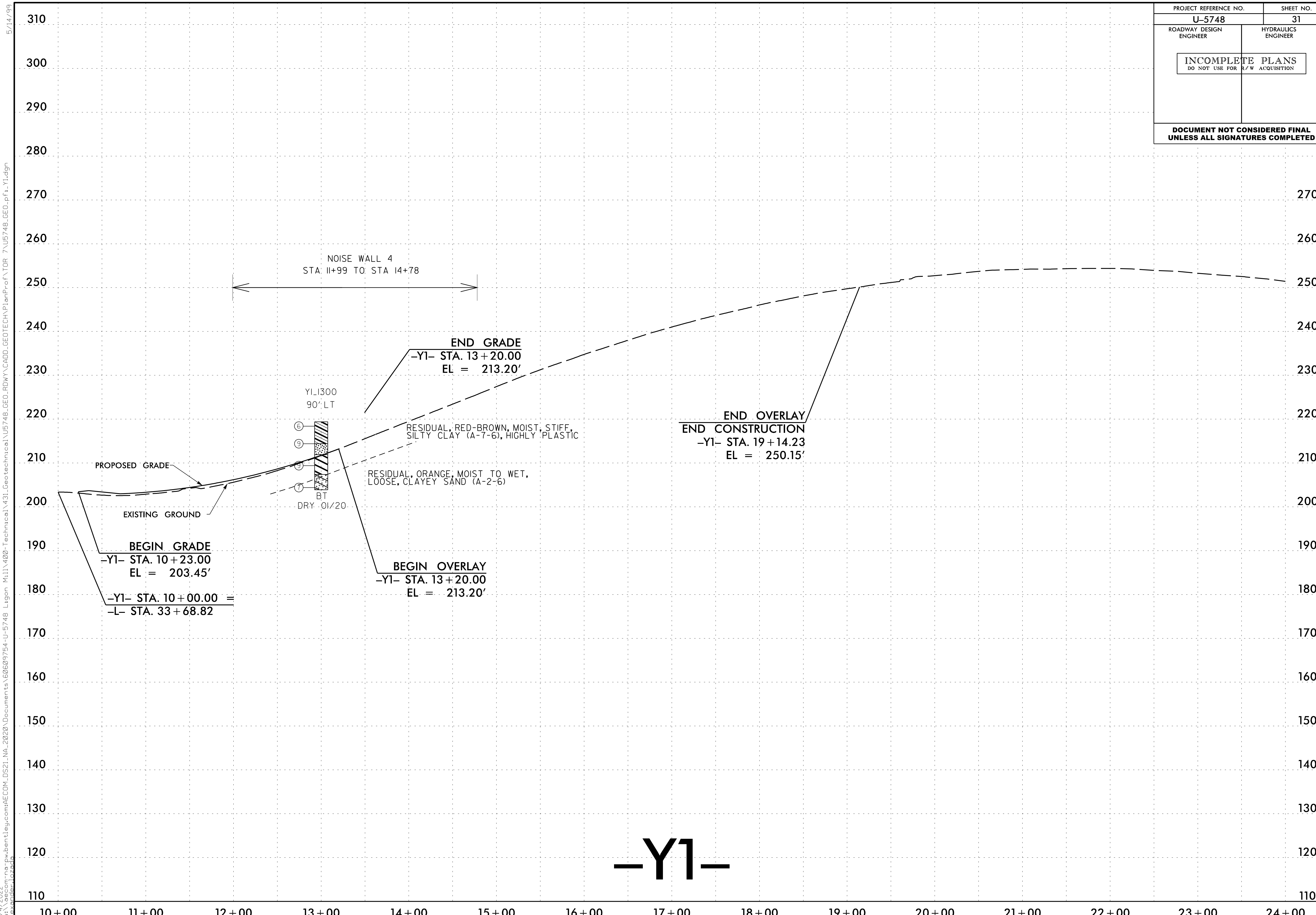
PROJECT REFERENCE NO.	SHEET NO.
U-5748	31

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOISE WALL 4
STA 11+99 TO STA 14+78
END GRADE
-Y1- STA. 13+20.00
EL = 213.20'
Y1_1300
90' LT
RESIDUAL, RED-BROWN, MOIST, STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, ORANGE, MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)
BT
DRY 01/20
PROPOSED GRADE
EXISTING GROUND
BEGIN GRADE
-Y1- STA. 10+23.00
EL = 203.45'
-Y1- STA. 10+00.00 =
-L- STA. 33+68.82
BEGIN OVERLAY
-Y1- STA. 13+20.00
EL = 213.20'
END OVERLAY
END CONSTRUCTION
-Y1- STA. 19+14.23
EL = 250.15'
-Y1-
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00

5/14/99

10/4/2022
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\400-Technical\431_Geotechnical\U5748_GEO_RDWY\CADD_GEOTECH\PlanProf\TOR 7\U5748_GEO_pfl_Y1.dgn
alexander.lozada

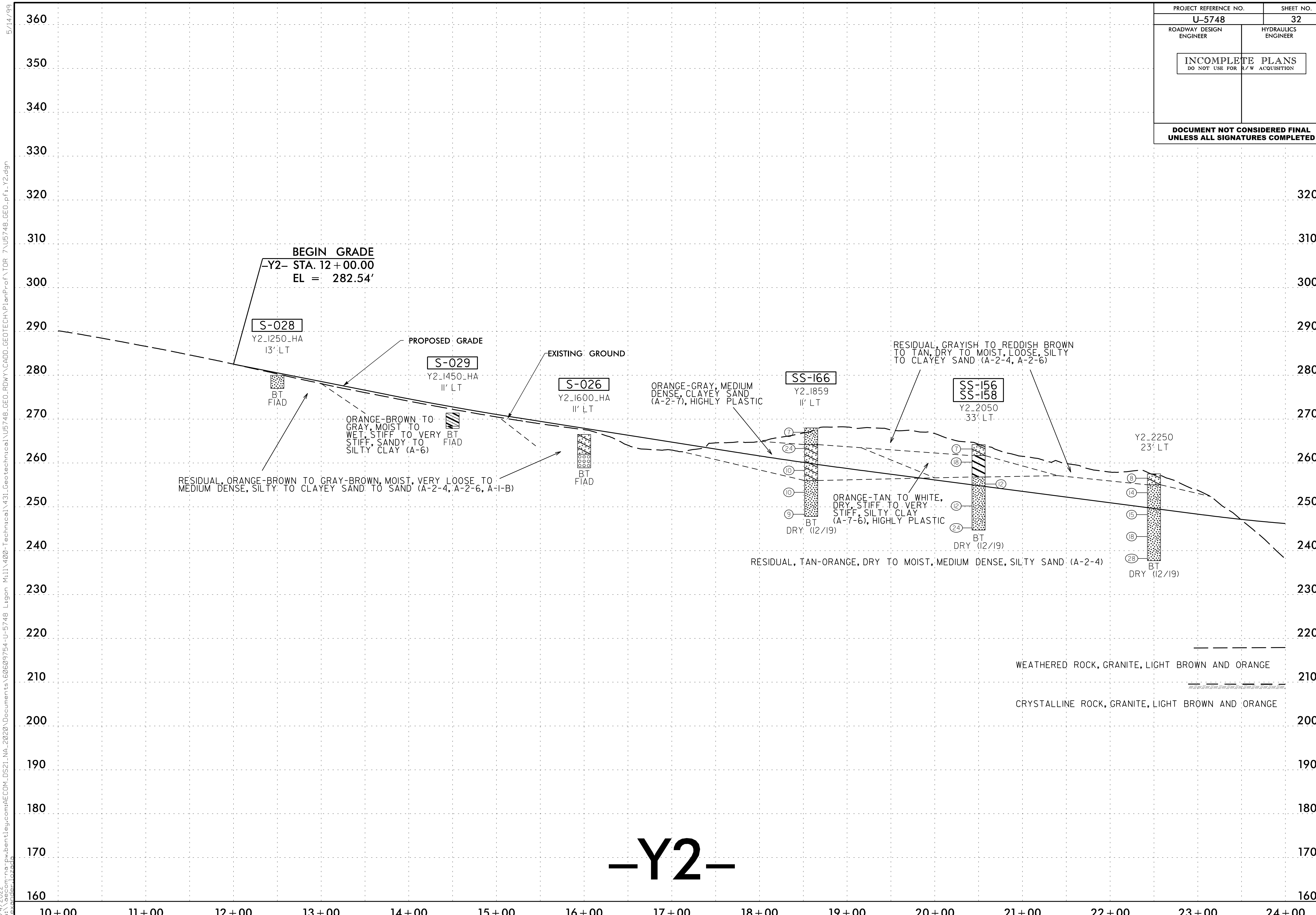
PROJECT REFERENCE NO.	SHEET NO.
U-5748	32

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BEGIN GRADE
-Y2- STA. 12+00.00
EL = 282.54'
PROPOSED GRADE
EXISTING GROUND
S-028
Y2_1250_HA
13' LT
BT
FIAD
S-029
Y2_1450_HA
11' LT
BT
FIAD
S-026
Y2_1600_HA
11' LT
BT
FIAD
SS-166
Y2_1859
11' LT
BT
DRY (12/19)
SS-156
SS-158
Y2_2050
33' LT
BT
DRY (12/19)
Y2_2250
23' LT
BT
DRY (12/19)
ORANGE-BROWN TO GRAY, MOIST TO WET, STIFF TO VERY STIFF, SANDY TO SILTY CLAY (A-6)
RESIDUAL, ORANGE-BROWN TO GRAY-BROWN, MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY TO CLAYEY SAND TO SAND (A-2-4, A-2-6, A-1-B)
ORANGE-GRAY, MEDIUM DENSE, CLAYEY SAND (A-2-7), HIGHLY PLASTIC
RESIDUAL, GRAYISH TO REDDISH BROWN TO TAN, DRY TO MOIST, LOOSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)
ORANGE-TAN TO WHITE, DRY, STIFF TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, TAN-ORANGE, DRY TO MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, LIGHT BROWN AND ORANGE
CRYSTALLINE ROCK, GRANITE, LIGHT BROWN AND ORANGE
7
24
10
10
9
7
18
12
12
24
8
14
15
18
28
360
350
340
330
320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
-Y2-

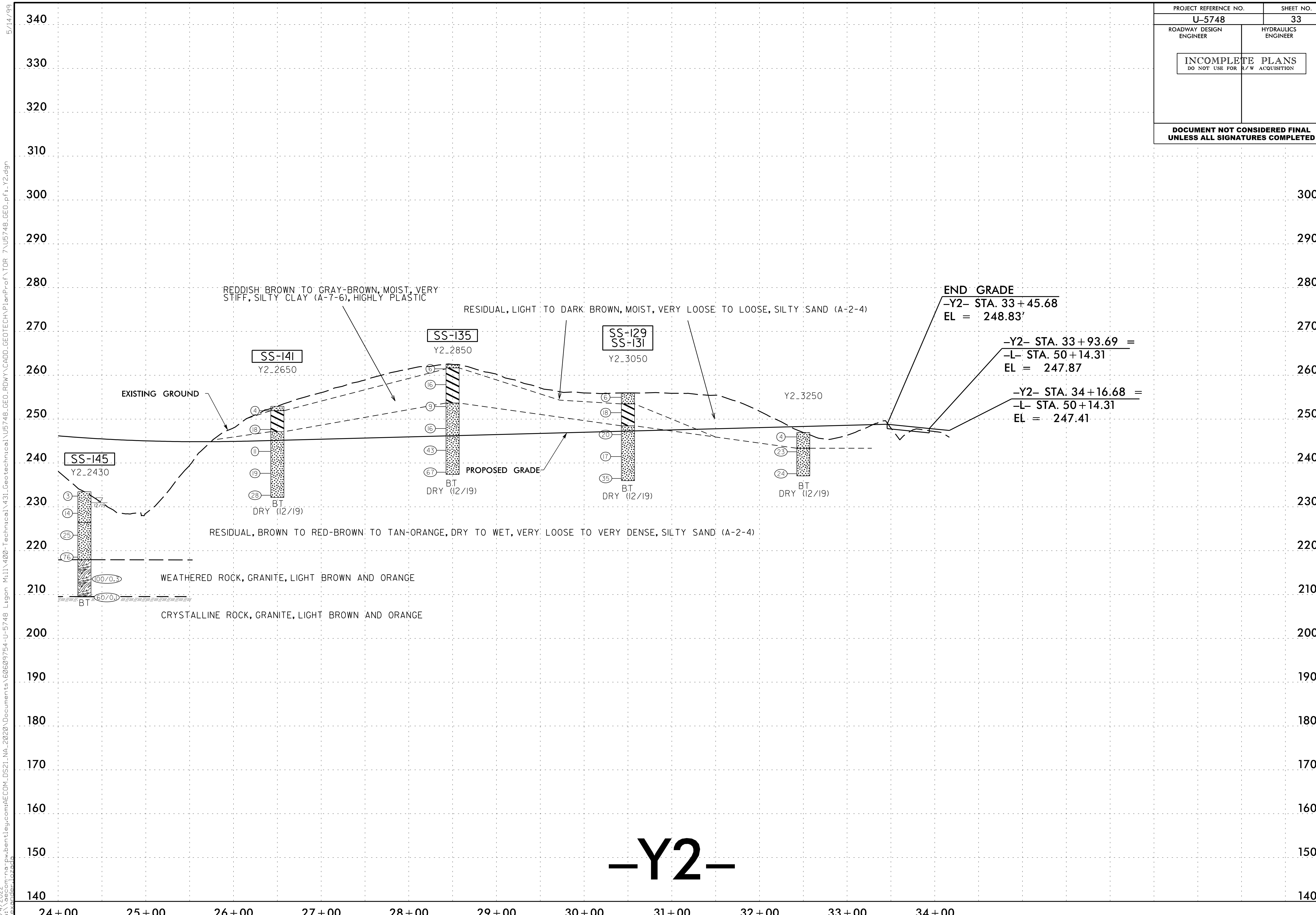
PROJECT REFERENCE NO.	SHEET NO.
U-5748	33

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SS-145
Y2_2430
SS-141
Y2_2650
SS-135
Y2_2850
SS-129
SS-131
Y2_3050
Y2_3250
EXISTING GROUND
PROPOSED GRADE
REDDISH BROWN TO GRAY-BROWN, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC
RESIDUAL, LIGHT TO DARK BROWN, MOIST, VERY LOOSE TO LOOSE, SILTY SAND (A-2-4)
RESIDUAL, BROWN TO RED-BROWN TO TAN-ORANGE, DRY TO WET, VERY LOOSE TO VERY DENSE, SILTY SAND (A-2-4)
WEATHERED ROCK, GRANITE, LIGHT BROWN AND ORANGE
CRYSTALLINE ROCK, GRANITE, LIGHT BROWN AND ORANGE
BT
DRY (12/19)
END GRADE
-Y2- STA. 33+45.68
EL = 248.83'
-Y2- STA. 33+93.69 =
-L- STA. 50+14.31
EL = 247.87
-Y2- STA. 34+16.68 =
-L- STA. 50+14.31
EL = 247.41
-Y2-
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00

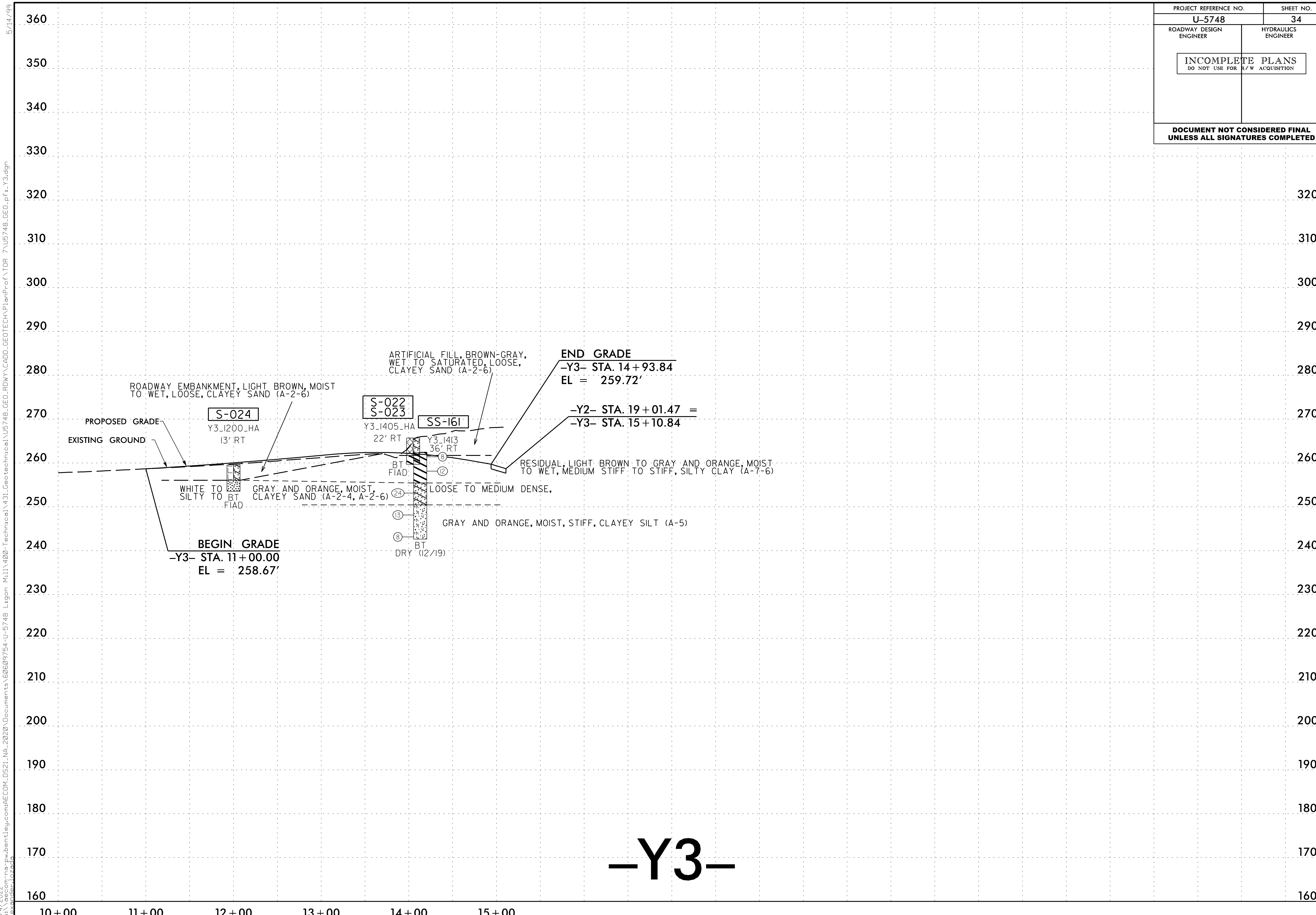
PROJECT REFERENCE NO.	SHEET NO.
U-5748	34

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/14/99

10/4/2022
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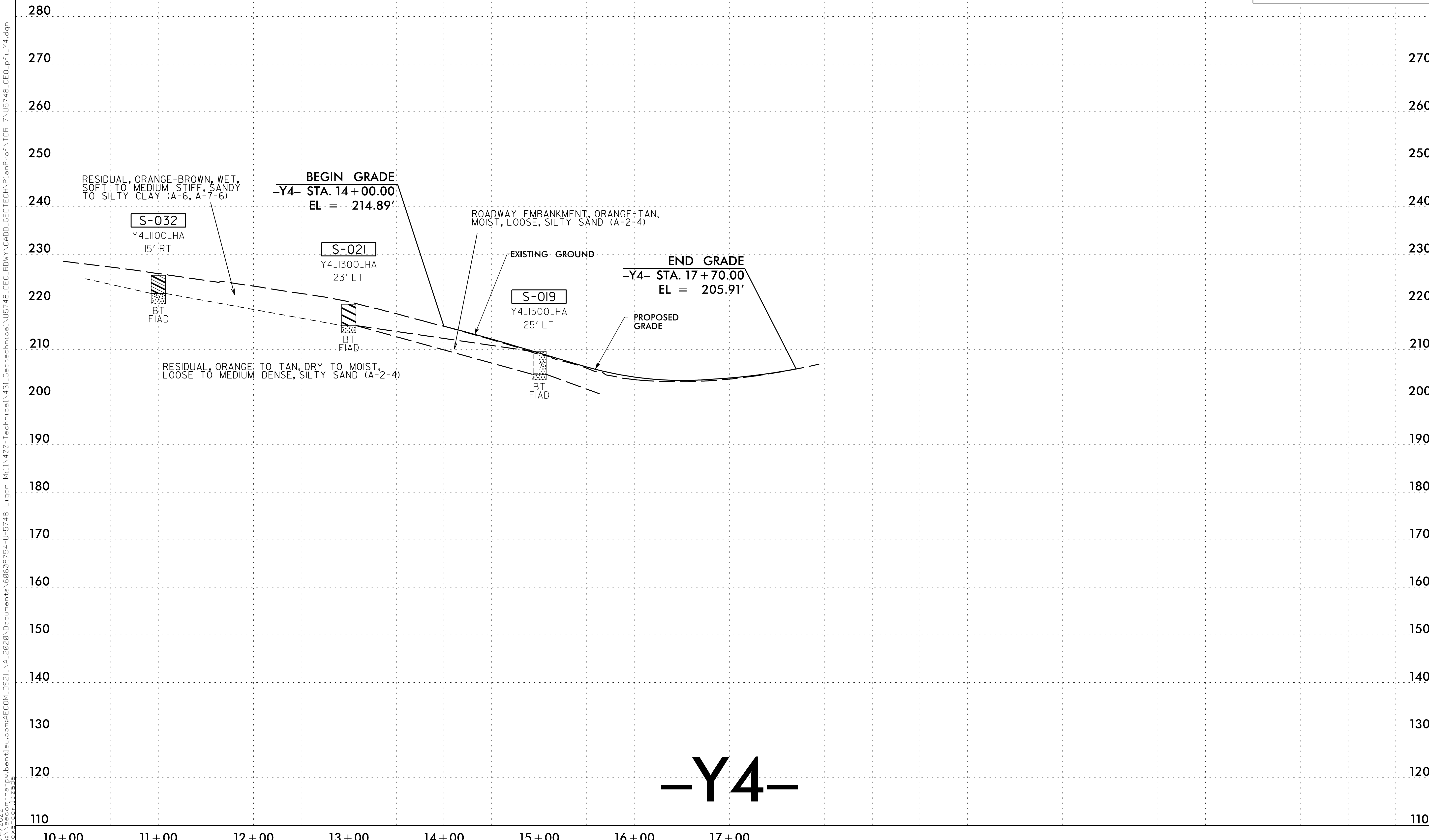
alexander.lozada

PROJECT REFERENCE NO.	SHEET NO.
U-5748	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



5/14/99

10/4/2022
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alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	36

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

200
190
180

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, LIGHT BROWN TO GRAY, DRY TO MOIST, MEDIUM STIFF, SANDY CLAY (A-6) TO LOOSE, SILTY SAND (A-2-4)

REDDISH BROWN, MOIST, STIFF, SILTY CLAY (A-7)

ALLUVIAL, LIGHT BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

LIGHT BROWN, MOIST, VERY LOOSE TO LOOSE, SILTY SAND (A-2-4)

19+00.00

S-013
L_1850_HA

210
200
190
180
170
160
150

L_1850

BT
FIAD

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, LIGHT BROWN TO GRAY, DRY TO MOIST, MEDIUM STIFF, SANDY CLAY (A-6) TO LOOSE, SILTY SAND (A-2-4)

L_1842

REDDISH BROWN, MOIST, STIFF, SILTY CLAY (A-7)

⑤ ⑩ ④

BT
DRY 01/20

ALLUVIAL, LIGHT BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

LIGHT BROWN, MOIST, VERY LOOSE TO LOOSE, SILTY SAND (A-2-4)

⑥ ⑧ ③

BT
DRY 01/20

18+50.00

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

I:\DCS\Projects\L-URS\Jobs4_Projects\NCDOT\60609754_U5748 Alt 7 US 401\400_Technical\431_Geotechnical\U5748_GEO_RDWY_TOR7\CADD_GEOTECH\xsc\U5750_GEO_xsi_L_1850to2300.dgn

10/4/2022
alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	37

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

200
190
180
170

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, ORANGE-TAN AND GRAY, MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

REDDISH BROWN, MOIST, STIFF, SILTY CLAY (A-7)

ALLUVIAL, BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

BROWN TO REDDISH BROWN WITH WHITE, DRY, MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4)

LIGHT BROWN, WET, MEDIUM DENSE, SAND (A-1-B), TRACE SUBROUND GRAVEL

20+00.00

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, ORANGE-BROWN TO GRAY, DRY TO WET, STIFF, SANDY CLAY (A-6) TO LOOSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

REDDISH BROWN, MOIST, STIFF, SILTY CLAY (A-7)

ALLUVIAL, LIGHT BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

LIGHT BROWN TO REDDISH BROWN WITH WHITE, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY SAND TO SAND (A-2-4, A-1-B)

LIGHT BROWN, WET, MEDIUM DENSE, SAND (A-1-B), TRACE SUBROUND GRAVEL

19+50.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	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

200
190
180

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, ORANGE-TAN AND GRAY,
MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

ALLUVIAL, BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

REDDISH BROWN, MOIST,
STIFF, SILTY CLAY (A-7)

BROWN TO REDDISH BROWN WITH WHITE, DRY, MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4)

LIGHT BROWN, WET, MEDIUM DENSE, SAND
(A-1-B), TRACE SUBROUND GRAVEL

21+00.00

210
200
190
180
170
160
150

S-015
L_2050_HA

SS-207
L_2050_RT

EEOP EEOP EEOP EEOP

L_2050_LT

ROADWAY EMBANKMENT, ORANGE-TAN AND GRAY,
MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

BT
FIAD

ALLUVIAL, BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

REDDISH BROWN, MOIST,
STIFF, SILTY CLAY (A-7)

BROWN TO REDDISH BROWN WITH WHITE, DRY, MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4)

LIGHT BROWN, WET, MEDIUM DENSE, SAND
(A-1-B), TRACE SUBROUND GRAVEL

6
10
25
BT
DRY 01/20

5
14
20
BT
DRY 01/20

20+50.00

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

10/4/2022
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alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	39

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

200
190
180
170
160
150

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT

ALLUVIAL, BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

GRAY WITH ORANGE TO LIGHT BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, SILTY TO SANDY CLAY (A-7, A-6)

REDDISH BROWN TO LIGHT BROWN, DRY TO WET, LOOSE TO MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4), TRACE SUBROUND GRAVEL

RESIDUAL, ORANGE AND BROWN, MOIST TO WET, VERY DENSE, SAND AND GRAVEL TO SILTY SAND (A-1-B, A-2-4)

WEATHERED ROCK, GRANITE, ORANGE-TAN

22 + 00.00

200
190
180

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT

ALLUVIAL, BROWN TO REDDISH BROWN, MOIST TO WET, MEDIUM STIFF, CLAYEY TO SANDY SILT (A-5, A-4)

GRAY WITH ORANGE TO LIGHT BROWN, MOIST TO WET, MEDIUM STIFF TO STIFF, SILTY TO SANDY CLAY (A-7, A-6)

REDDISH BROWN TO LIGHT BROWN, DRY TO WET, LOOSE TO MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4), TRACE SUBROUND GRAVEL

21 + 50.00

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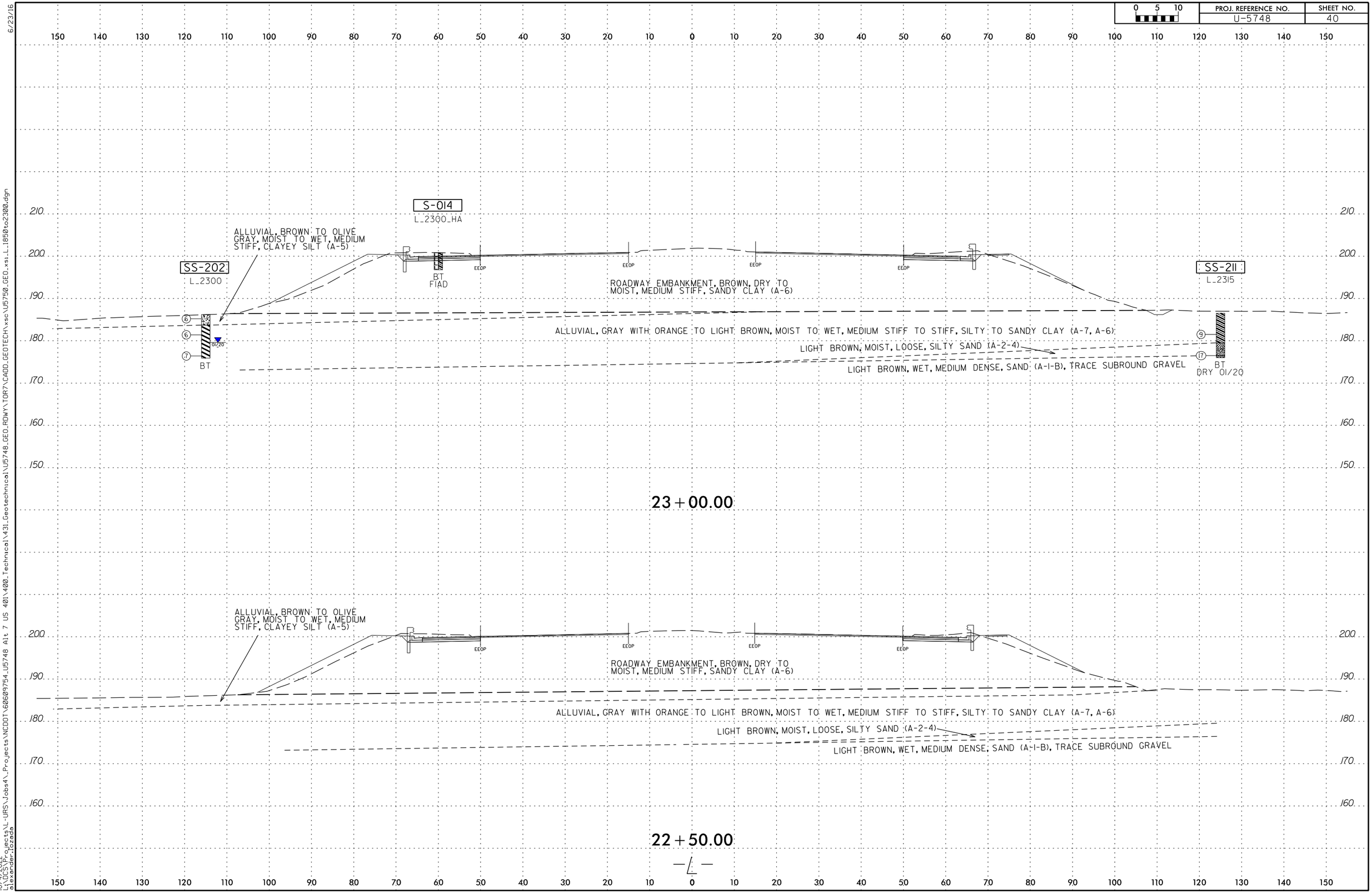

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210 200 190 180 170 160 150

SS-235
L_2650

S-018
L_2650_HA

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, BROWN, MOIST, MEDIUM STIFF, SANDY CLAY (A-6), TO LOOSE, SILTY SAND (A-2-4)

BT
FIAD
NBLEB2-B
26+37

L_2641

ALLUVIAL, BROWN TO LIGHT BROWN, DRY TO SATURATED, LOOSE, SILTY SAND TO SAND (A-2-4, A-1-B)

GRAY AND ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6)

TAN AND GRAY, MOIST TO WET, DENSE, SAND AND GRAVEL (A-1-B)

LIGHT GRAY, LOOSE, MOIST TO WET, SILTY SAND (A-2-4)

RESIDUAL, ORANGE-TAN, MOIST TO WET, DENSE TO VERY DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, ORANGE-TAN

BT
DRY 01/20

BT
DRY 01/20

BT

26+50.00

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

210 200 190 180 170 160 150

S-016
L_2850_HA

SS-229
SS-230
L_2842

BT
FIAD

EEOP EEOP EEOP EEOP

ROADWAY EMBANKMENT, ORANGE-TAN TO GRAY, MOIST TO WET, LOOSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)

SS-216
L_2850

ALLUVIAL, RED AND GRAY TO LIGHT BROWN, TO MEDIUM DENSE, CLAYEY TO SILTY SAND

DRY TO MOIST, VERY LOOSE (A-2-6, A-2-4)

3
8
10
BT
DRY 01/20

RED-BROWN TO GRAY AND LIGHT BROWN WITH ORANGE MOTTLING, MOIST, SOFT TO MEDIUM STIFF, SANDY TO SILTY CLAY (A-6, A-7)

3
15
6
01/20

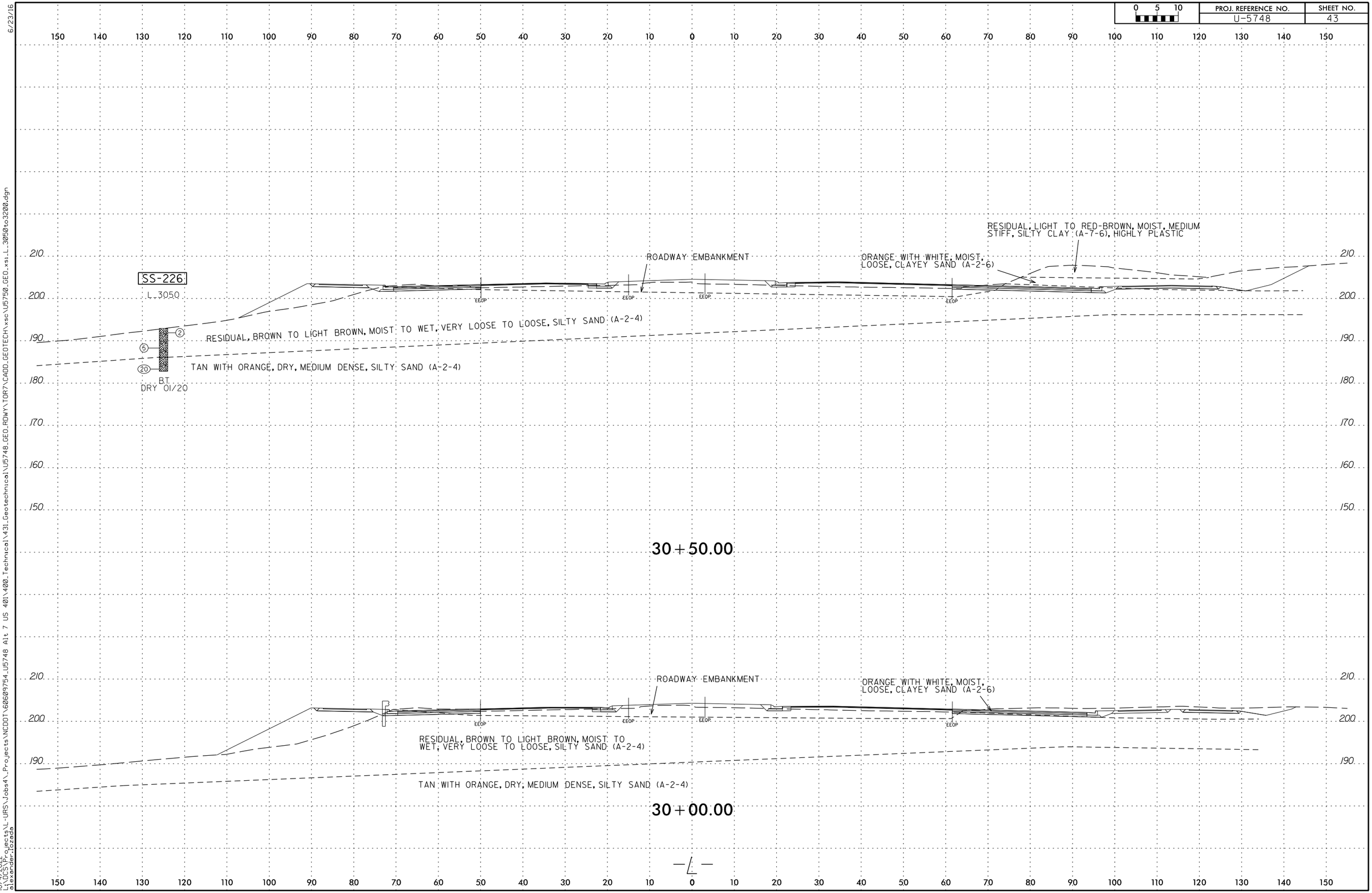
GRAY WITH ORANGE MOTTLING, MOIST, STIFF, CLAYEY SILT (A-5)

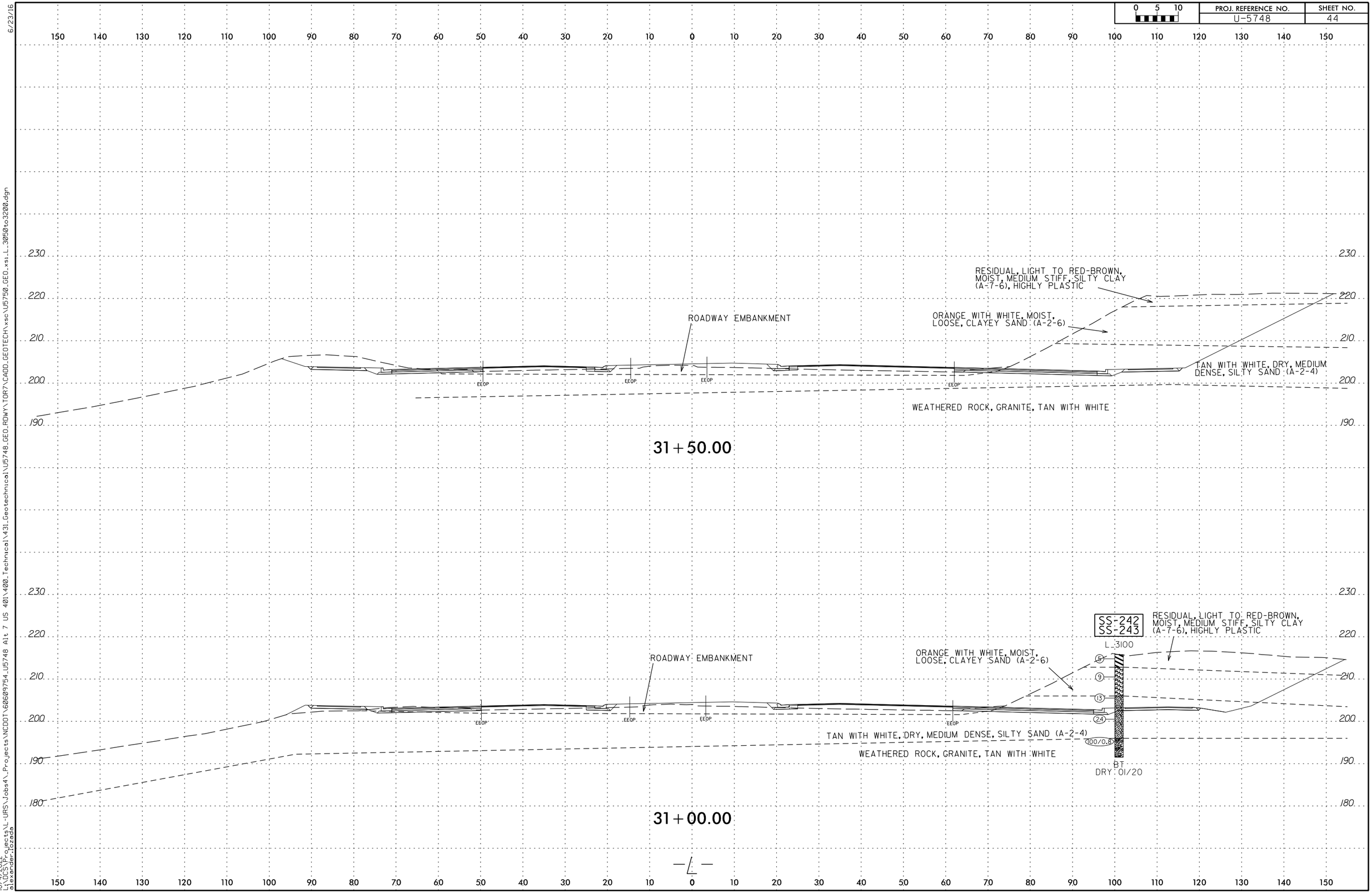
14
24
40
BT

TAN TO GRAY, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6)

BROWN WITH WHITE TO GRAY AND ORANGE, DRY, LOOSE TO MEDIUM DENSE, CLAYEY TO SILTY SAND (A-2-6, A-2-4)

28+50.00





S-012

L_3200_HA RESIDUAL, LIGHT BROWN, DRY TO MOIST, LOOSE, SAND (A-1-B)

ROADWAY EMBANKMENT

RESIDUAL, LIGHT BROWN TO ORANGE AND WHITE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND TO CLAYEY SAND (A-2-4, A-2-6)

L_RS_3198

WEATHERED ROCK, GRANITE, TAN WITH WHITE

BT

FIAD

EEOP

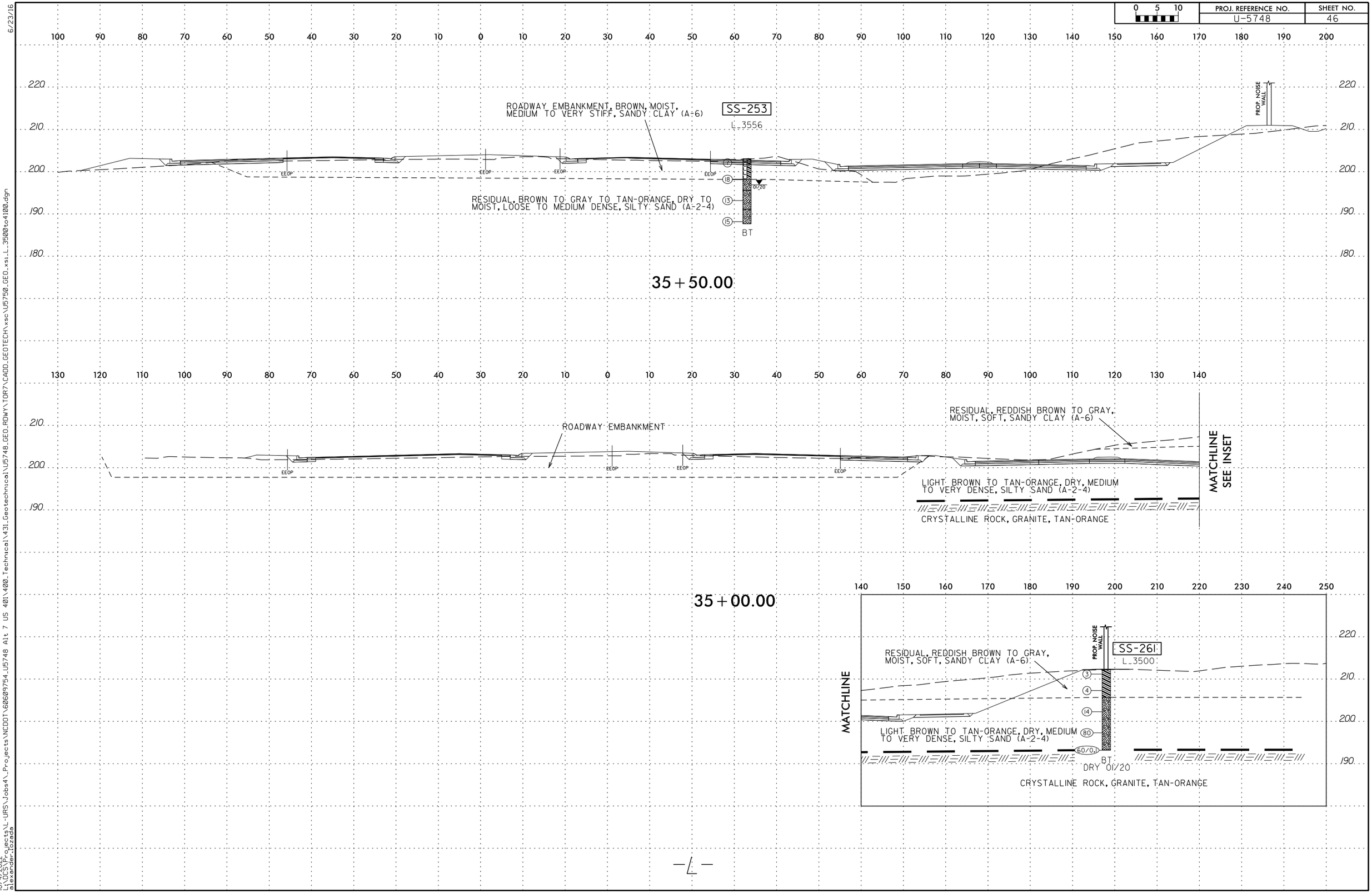
EEOP

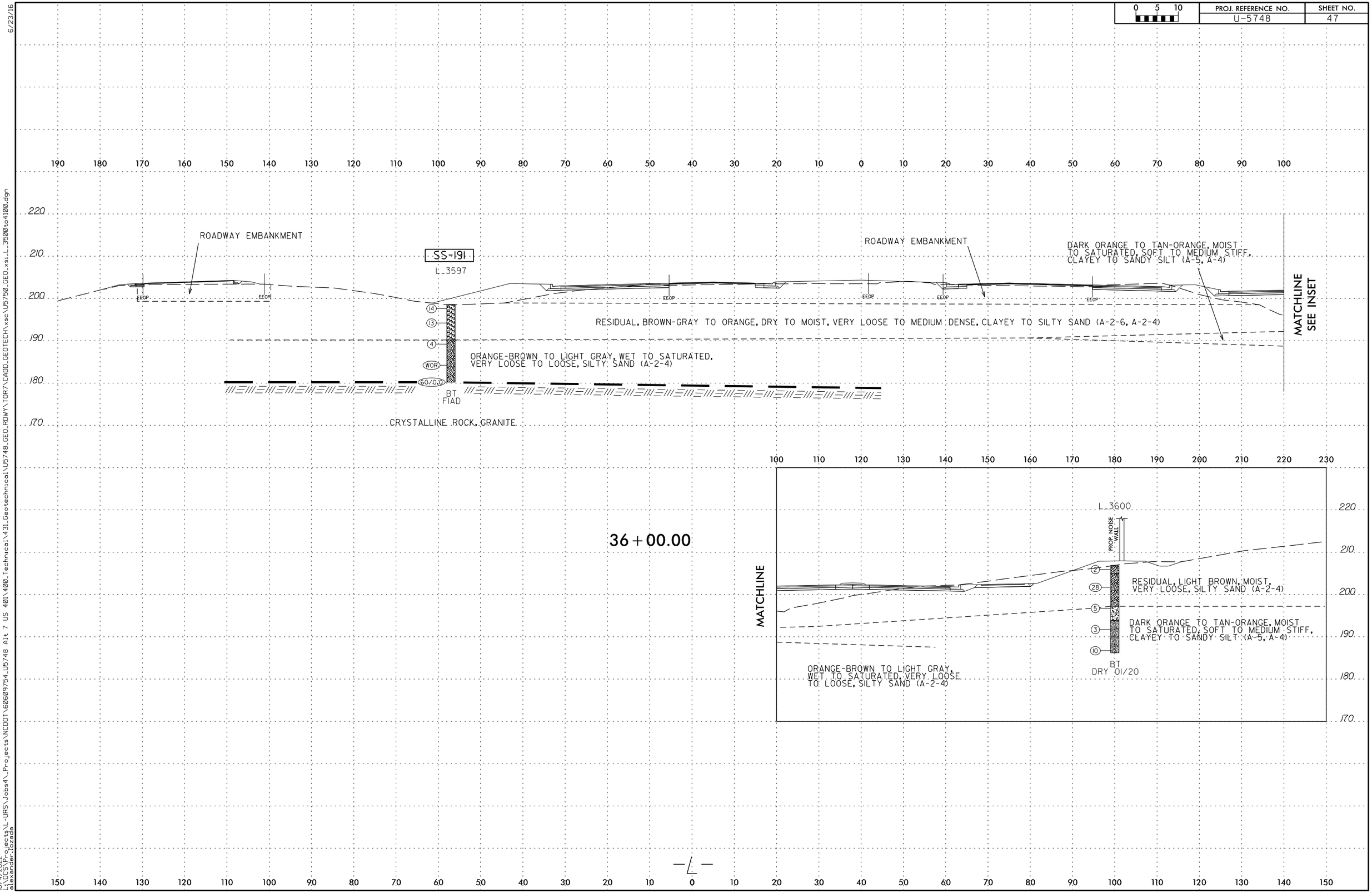
EEOP

EEOP

BT

32+00.00





6/23/16

10/4/2022
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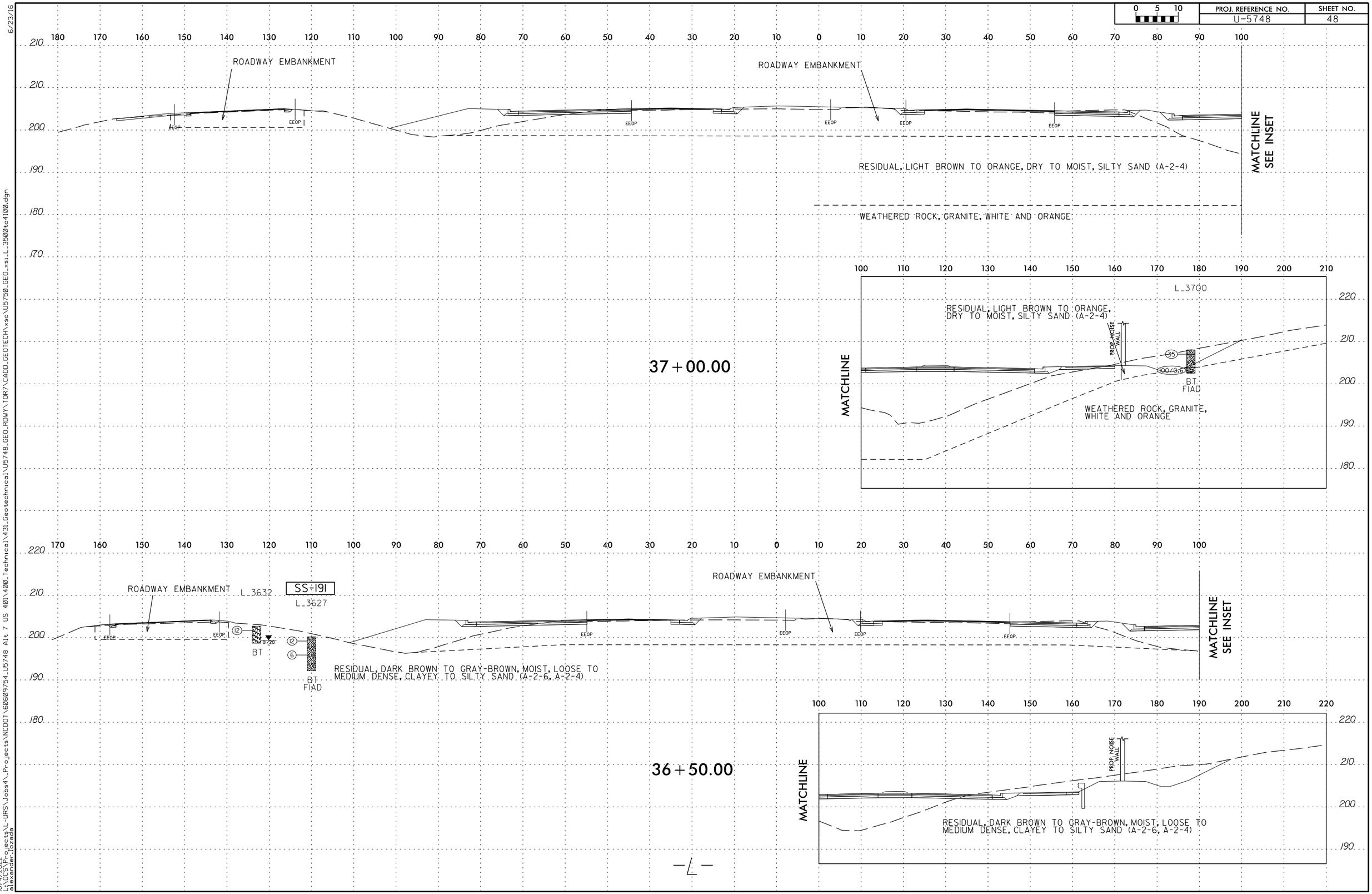
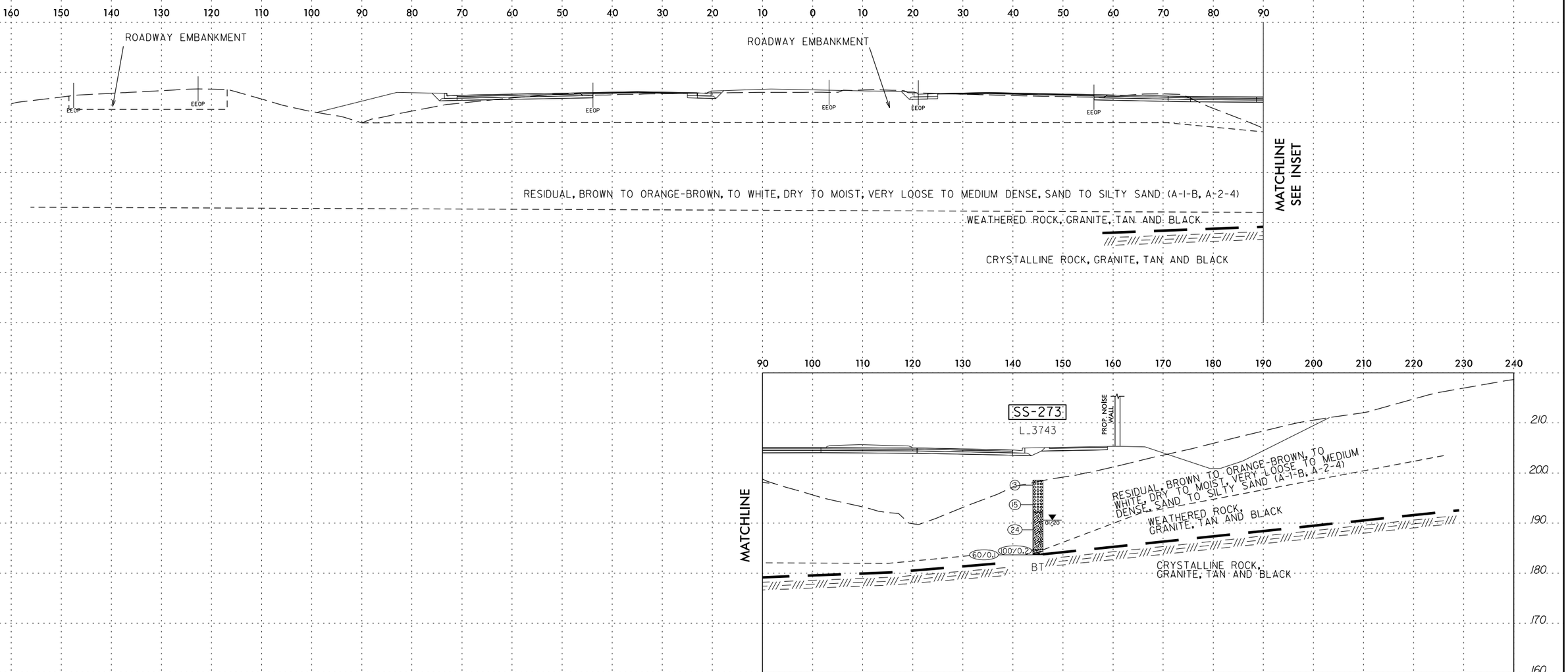
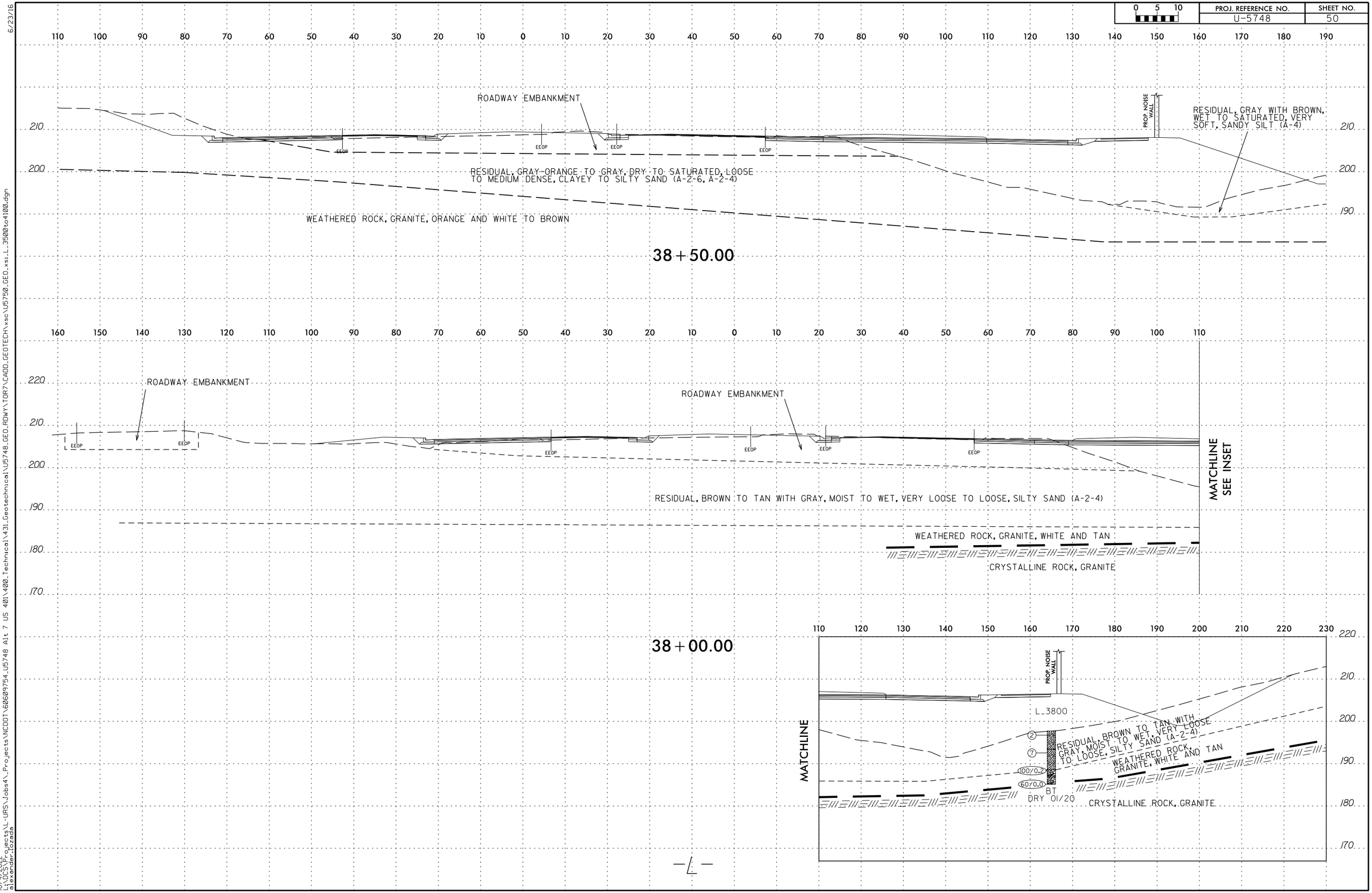
alexander.lozada

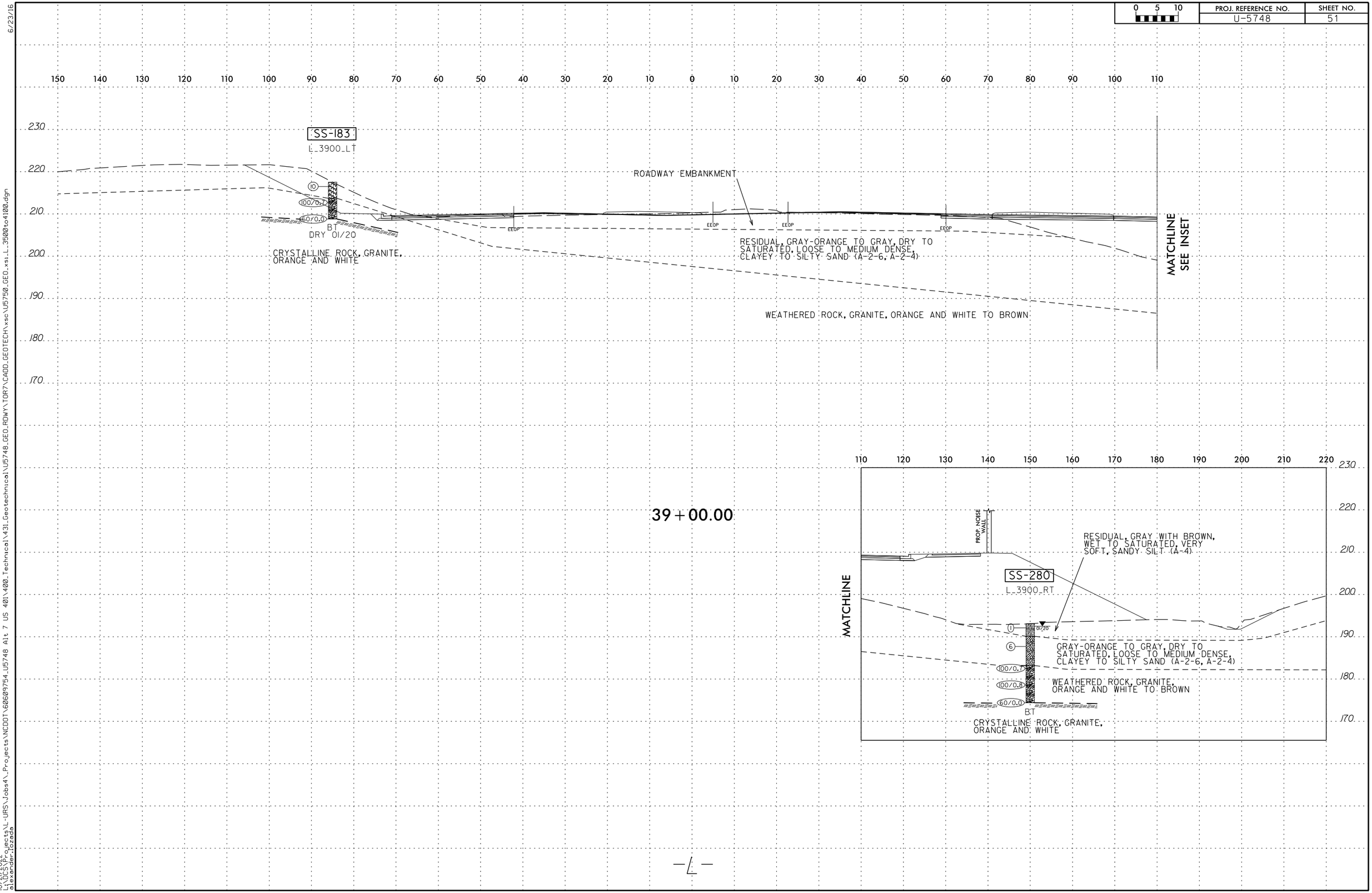


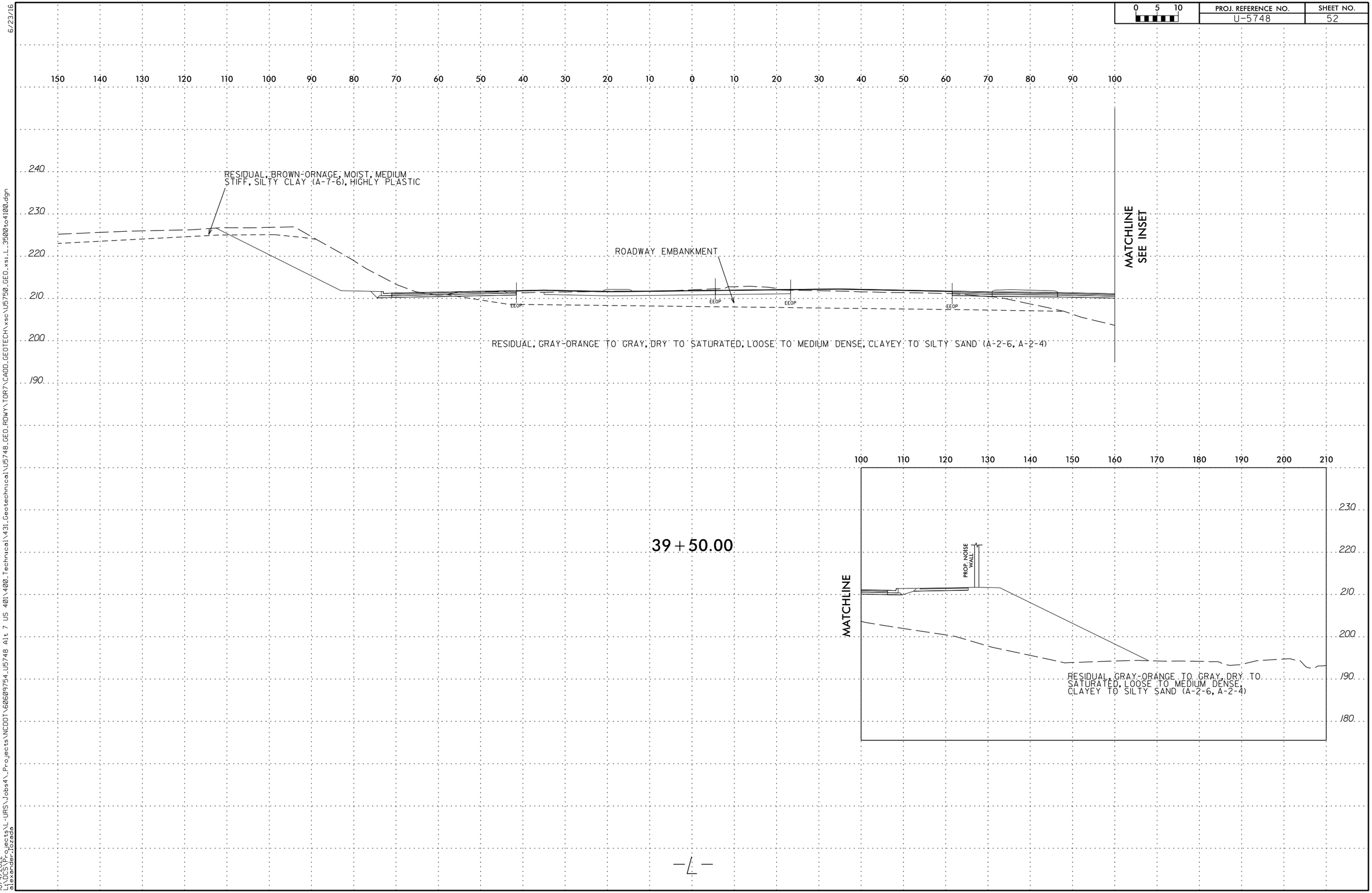


37 + 50.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	50







PROJ. REFERENCE NO.	SHEET NO.
U-5748	53

0 5 10

130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170

240
230
220
210
200
190
180
170

RESIDUAL, BROWN-ORNAGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

EEOP

PROP. NOISE WALL

L_4000

RESIDUAL, LIGHT BROWN TO TAN-ORANGE, DRY TO MOIST, VERY LOOSE TO DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, ORANGE AND WHITE

2
23
39
100/0.3
60/0.1
07/20
BT

CRYSTALLINE ROCK, GRANITE, ORANGE AND WHITE

40+00.00

6/23/16

10/21/2022
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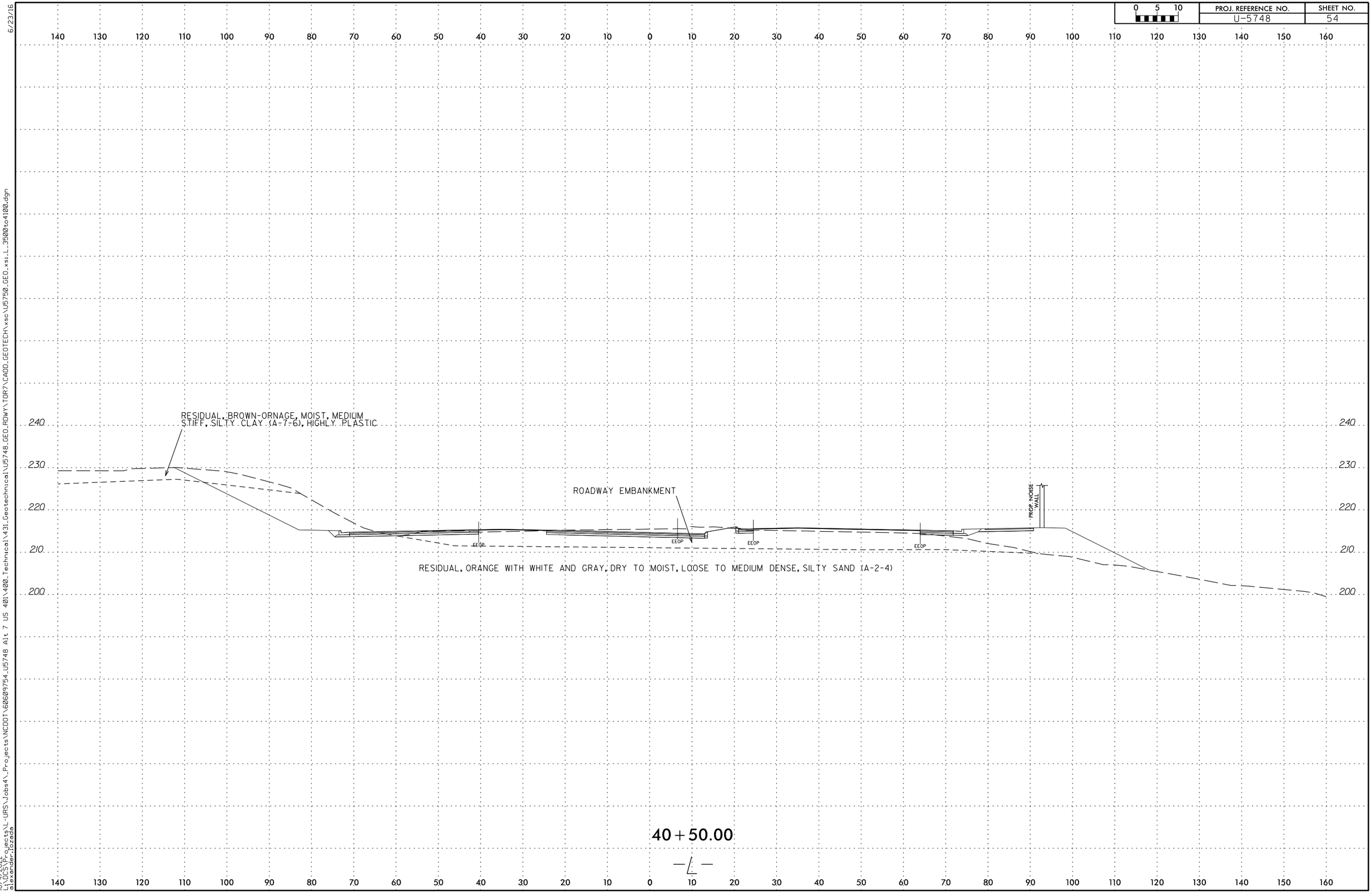
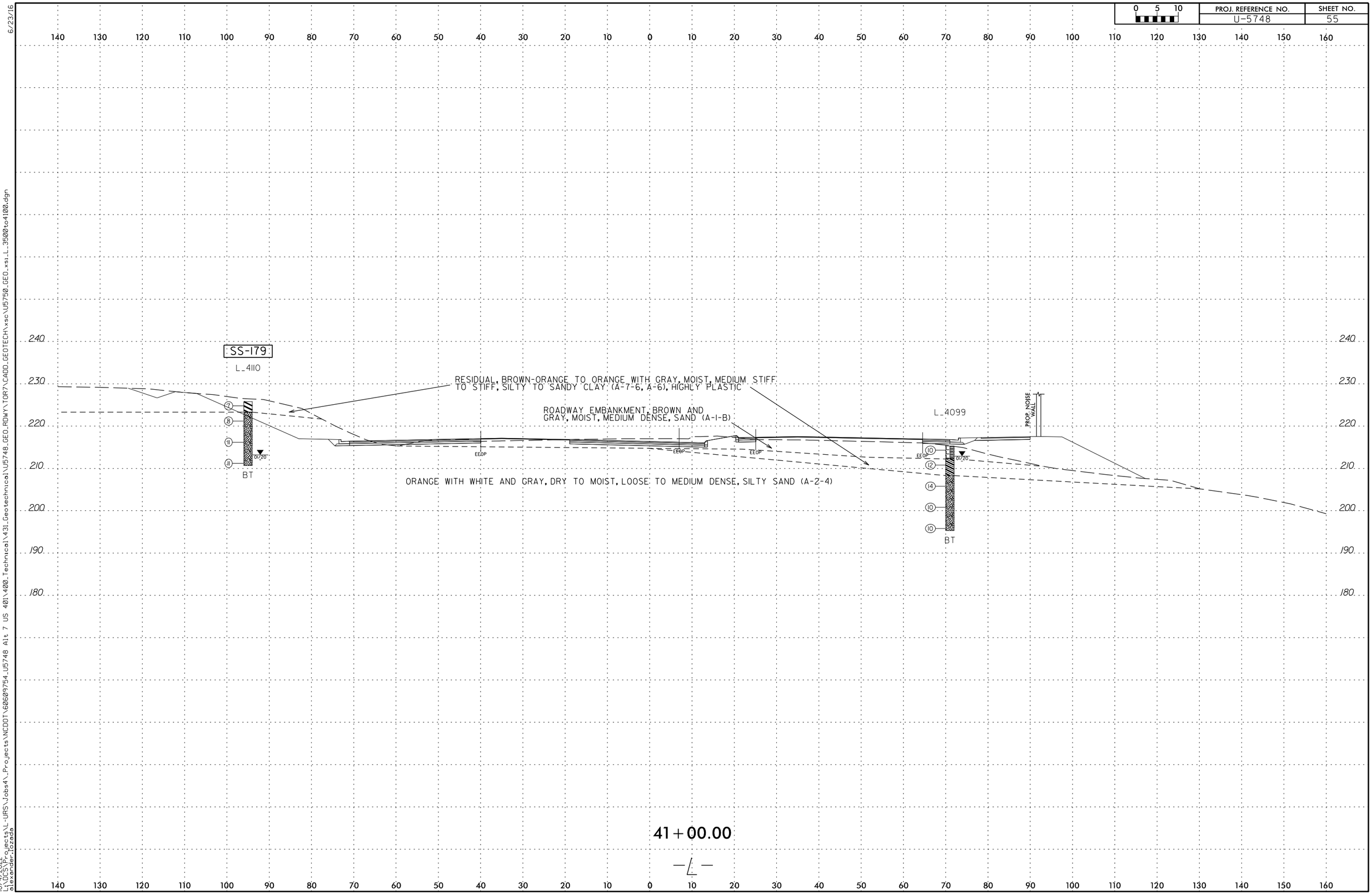
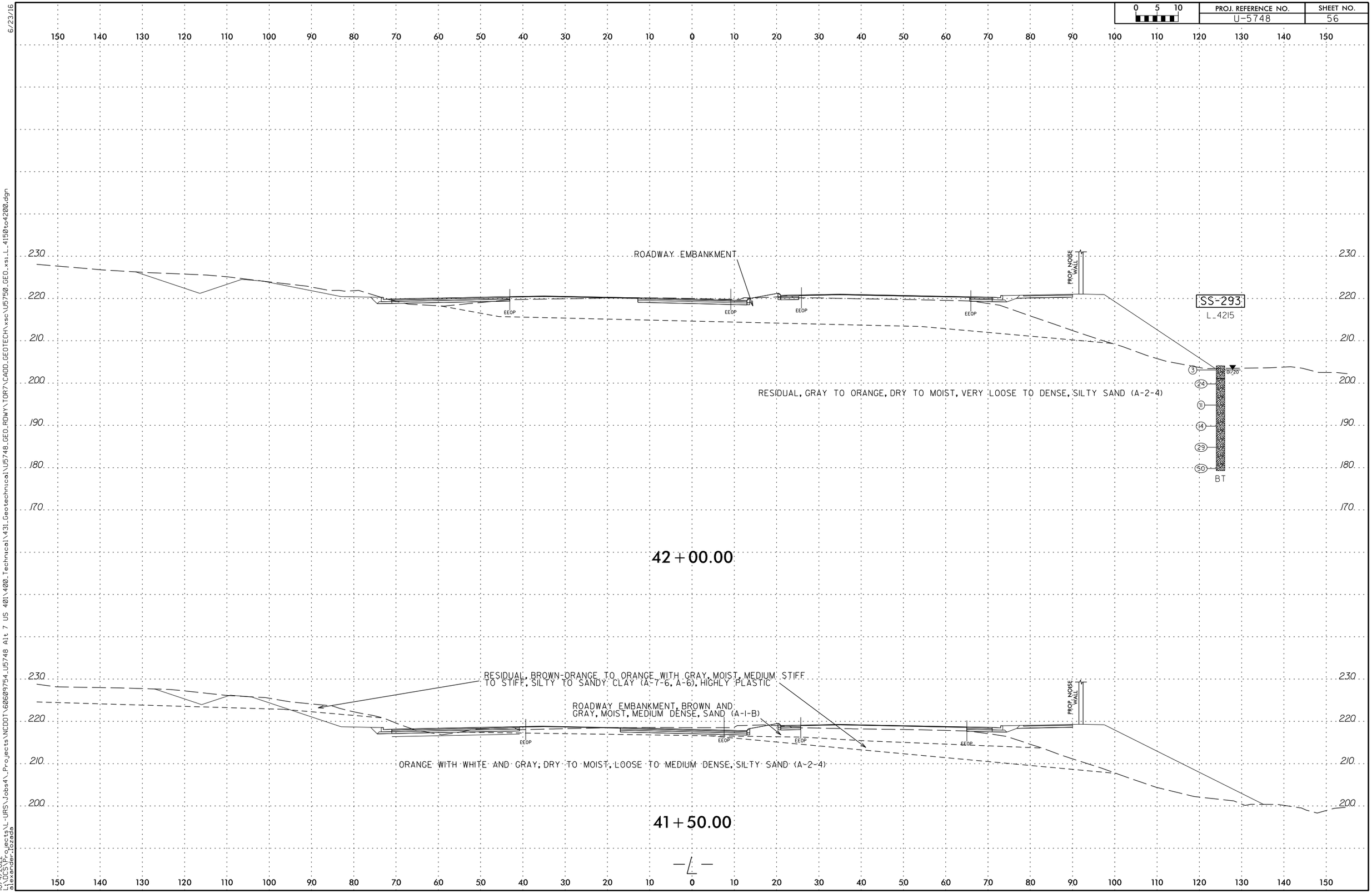
alexander.lozada

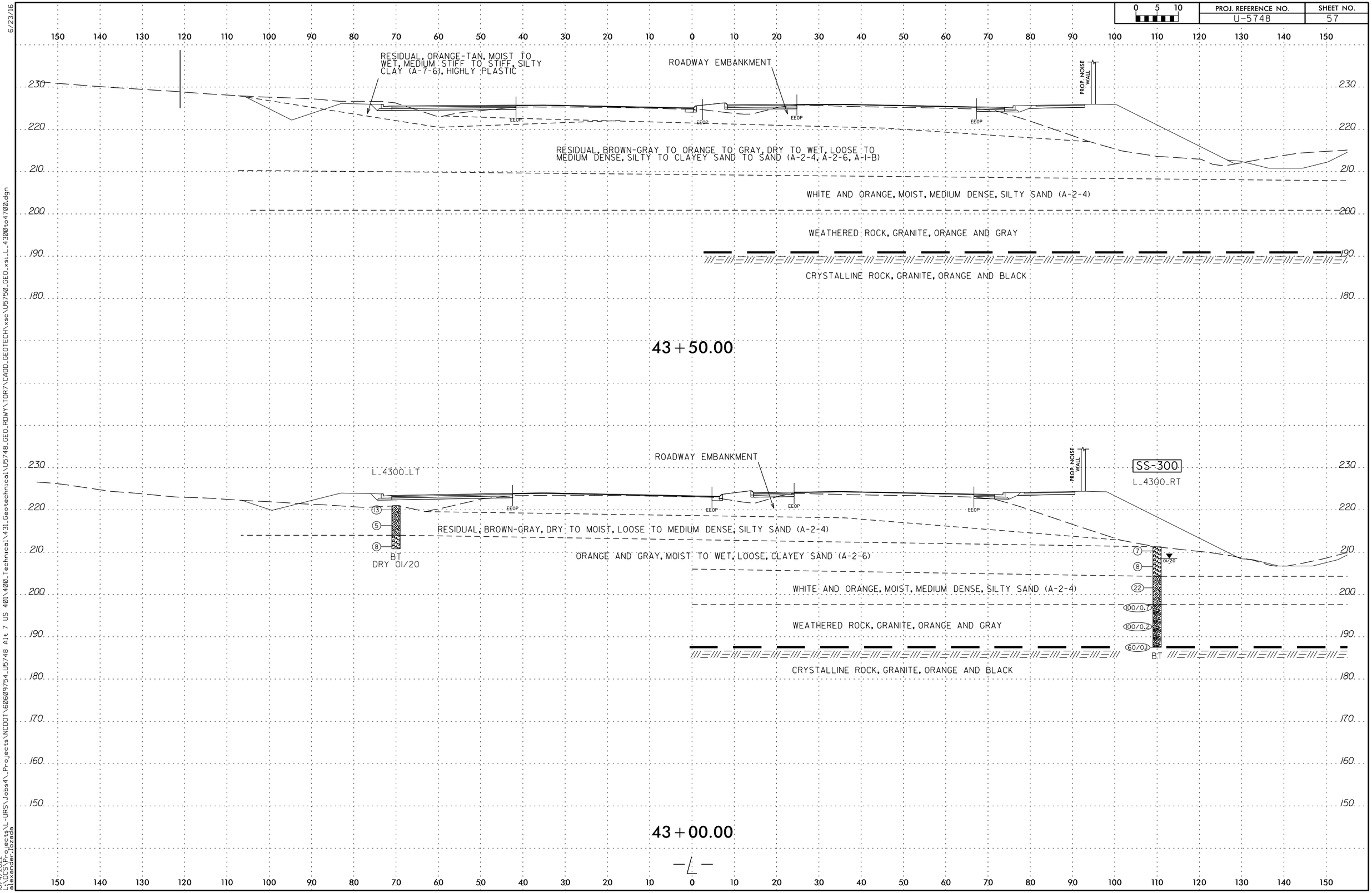


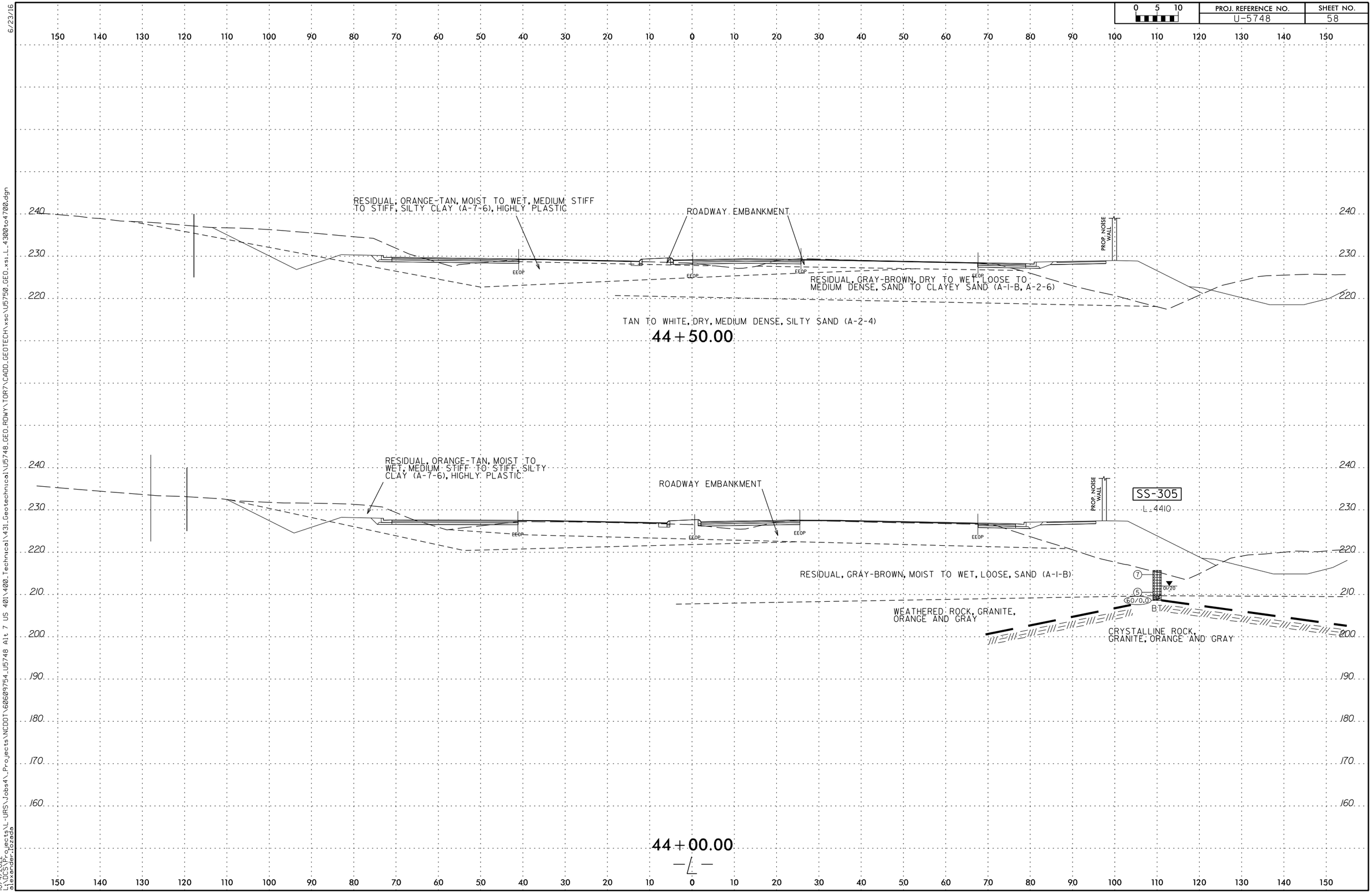
40+50.00

—L—









6/23/16

10/4/2022
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alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	59

RESIDUAL, ORANGE-TAN, MOIST TO WET, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

RESIDUAL, LIGHT GRAY-BROWN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND (A-2-6)

PROP. NOISE WALL

EEOP

TAN TO WHITE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

45+50.00

SS-173

L-4500

L-4499

(5) (9) (22) BT DRY 01/20

(5) (100/0.8) (29) BT DRY 02/20

45+00.00

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

250
240
230
220

ROADWAY EMBANKMENT

EEOP EEOP EEOP EEOP

RESIDUAL, BROWN TO TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

RESIDUAL, ORANGE TO WHITE, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

WEATHERED ROCK, GRANITE, WHITE AND ORANGE

46+50.00

250
240
230

RESIDUAL, ORANGE-TAN, MOIST TO WET, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

EEOP EEOP EEOP EEOP EEOP EEOP

RESIDUAL, BROWN TO TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

RESIDUAL, ORANGE TO WHITE, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

46+00.00

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-5748	61

SS-170

L_4700_LT

L_4700_RT

ROADWAY EMBANKMENT

PROP. NOISE WALL

EEOP

EEOP

EEOP

EEOP

(4) (19) (13) 01/20

BT

DRY 01/20

RESIDUAL, BROWN TO TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

RESIDUAL, ORANGE TO WHITE, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

(11) (11) (31) 100/0.8

WEATHERED ROCK, GRANITE, WHITE AND ORANGE

BT

DRY 02/20

47+00.00

—L—

250 240 230 220 210 200 190 180

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

10/4/2022
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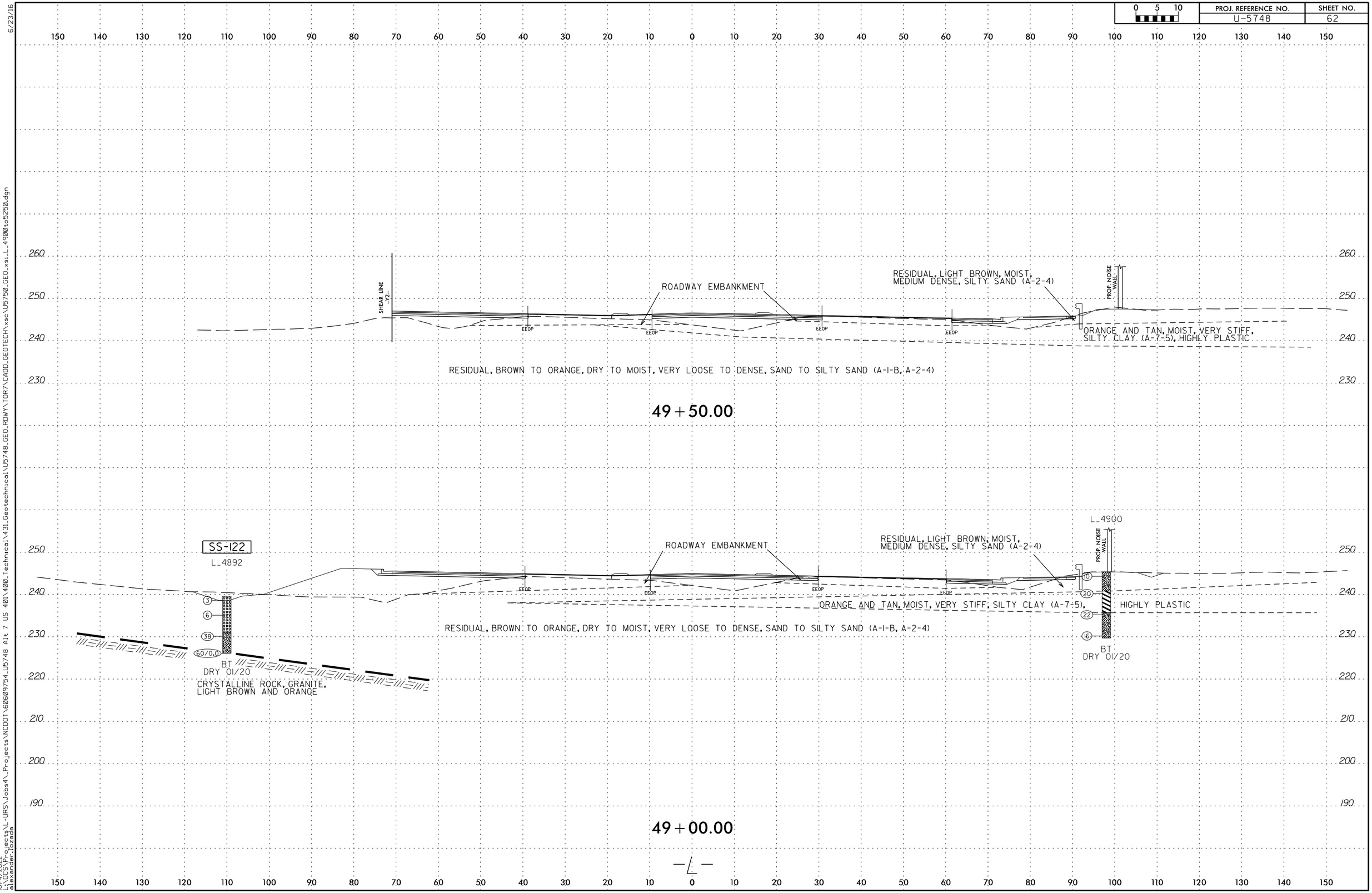
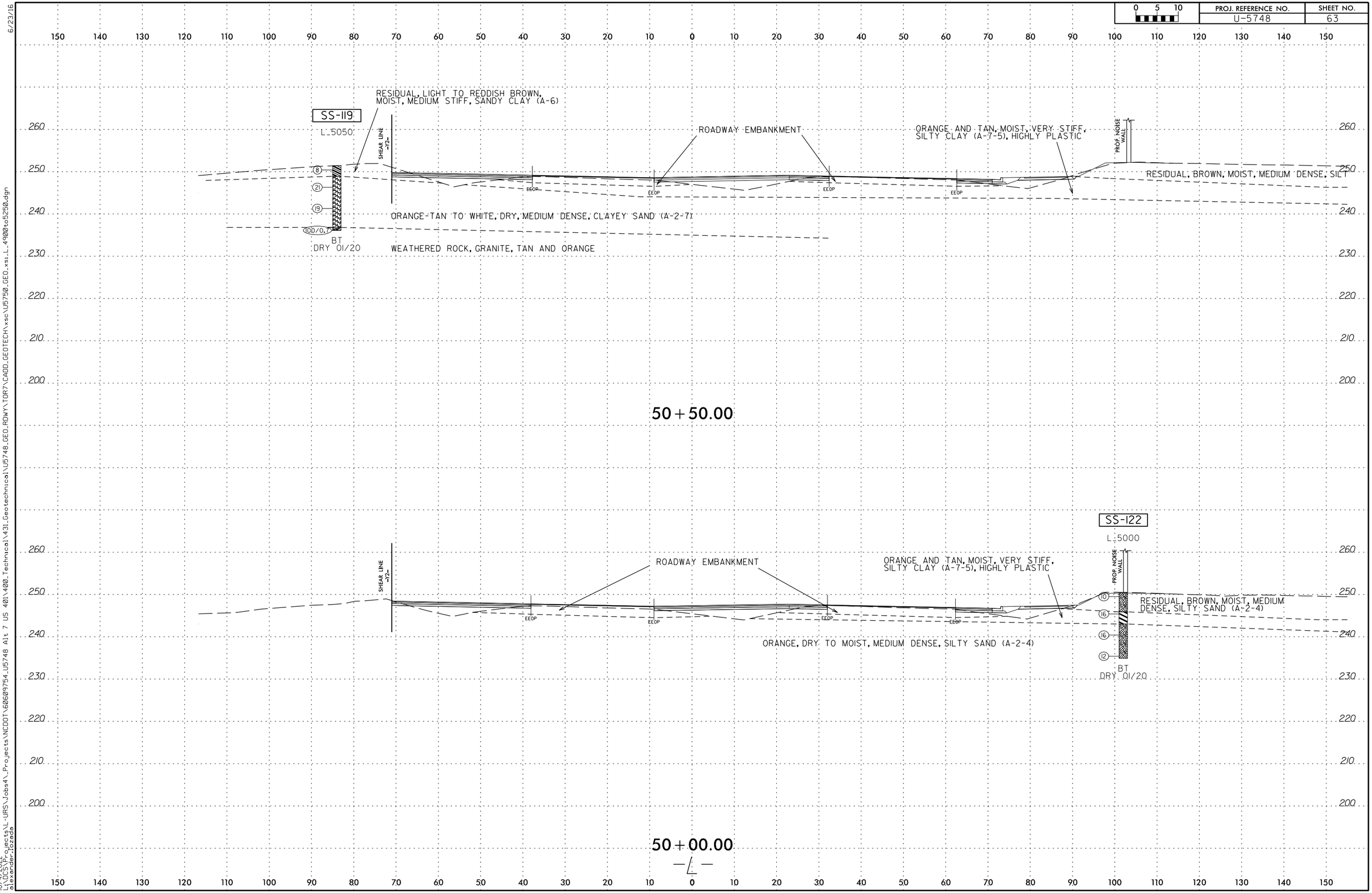
alexander.lozada





6/23/16

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10/4/2022
alexander.lozada

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

260
250
240

ROADWAY EMBANKMENT

RESIDUAL, BROWN, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

EEOP EEOP EEOP EEOP

RESIDUAL, RED-BROWN TO RED-ORANGE, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), MODERATELY TO HIGHLY PLASTIC

LIGHT BROWN TO ORANGE, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

51+50.00

RESIDUAL, LIGHT TO REDDISH BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY TO SILTY CLAY (A-6, A-7-6)

ROADWAY EMBANKMENT

ORANGE AND TAN TO GRAY, MOIST TO WET, MEDIUM TO VERY STIFF, SILTY CLAY (A-7-5, A-7-6), HIGHLY PLASTIC

RESIDUAL, BROWN TO LIGHT BROWN, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

EEOP EEOP EEOP EEOP

ORANGE TO GRAY TO BROWN, DRY TO WET, LOOSE TO VERY DENSE, CLAYEY TO SILTY SAND TO SAND (A-2-7, A-2-6, A-2-4, A-1-B)

51+00.00

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-5748	65

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

260
250
240
230
220

ROADWAY EMBANKMENT

EEOP EEOP EEOP EEOP

RESIDUAL, ORANGE-TAN, MOIST, STIFF, SILTY CLAY (A-7-6)

GRAY AND ORANGE-TAN, DRY, MEDIUM TO VERY DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, BROWN AND ORANGE

52+50.00

270
260
250
240
230
220
210
200

SS-116
L_5200_LT

(5) (12) (8) BT
DRY 01/20

ROADWAY EMBANKMENT

EEOP EEOP EEOP EEOP

RESIDUAL, RED-BROWN TO RED-ORANGE, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY (A-7-6), MODERATELY TO HIGHLY PLASTIC

LIGHT BROWN TO ORANGE, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

SS-328
L_5200_RT

RESIDUAL, BROWN, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

(11) (12) (20) BT
DRY 01/20

52+00.00

—/.—

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

10/4/2022
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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

280 270 260 250

RESIDUAL, ORANGE TO DARK BROWN TO TAN, MOIST, SOFT TO MEDIUM STIFF, SILTY TO SANDY CLAY (A-7-6, A-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

EXIST. NOISE WALL

EEOP

ORANGE WITH WHITE AND BLACK, DRY, LOOSE TO VERY DENSE, SILTY SAND (A-2-4)

59+50.00

SS-093
L_5913

RESIDUAL, ORANGE, MOIST, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

5
20
9
9

BT
DRY 12/19

ROADWAY EMBANKMENT, BROWN TO GRAY TO RED-ORANGE, MOIST, SOFT, SANDY CLAY (A-6), TO LOOSE, FINE SAND (A-3)

S-010
L_5900_HA

BT
FIAD

ORANGE WITH WHITE AND BLACK, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

59+00.00

SHEAR LINE -DRIVE1-

ROADWAY EMBANKMENT

SHEAR LINE -DRIVE1-

RESIDUAL, ORANGE WITH WHITE AND BLACK, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

58+50.00

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

280 270 260 250

EEOP EEOP EEOP EEOP

EXIST. NOISE WALL

ROADWAY EMBANKMENT

RESIDUAL, ORANGE WITH WHITE AND BLACK, DRY, MEDIUM TO VERY DENSE, SILTY SAND (A-2-4)

60+50.00

SS-099

L-5995

RESIDUAL, DARK BROWN TO TAN, MOIST, SOFT, SANDY CLAY (A-6)

4 20 29 57

BT

DRY 12/19

EEOP ROADWAY EMBANKMENT EEOP EEOP EEOP

EXIST. NOISE WALL

RESIDUAL, ORANGE WITH WHITE AND BLACK, DRY, MEDIUM TO VERY DENSE, SILTY SAND (A-2-4)

280 270 260 250 240 230 220 210

60+00.00

—L—

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

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

340
330
320
310
300

RESIDUAL, ORANGE-TAN, DRY, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

PROP. NOISE WALL

ARTIFICIAL FILL

ROADWAY EMBANKMENT

EEOP

ORANGE-WHITE, DRY TO MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

75+50.00

PROP. NOISE WALL

L_7505

3

100/0.0

60/0.0

ARTIFICIAL FILL, DARK BROWN TO ORANGE, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

ROADWAY EMBANKMENT

RESIDUAL, ORANGE, DENSE, SILTY SAND (A-2-4)

BT

GRANITE, WHITE, VERY HARD, FRESH, INDISTINCT BEDDING, CLOSE TO WIDE FRACTURES (FLAT TO SHALLOW), REC=72.4%, RQD=62.0%, GSI=60-65

75+00.00

—/.—

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

340
330
320

RESIDUAL, ORANGE-TAN TO WHITE WITH ORANGE, DRY, VERY STIFF TO HARD, SILTY CLAY (A-7-6), HIGHLY PLASTIC

PROP. NOISE WALL

ARTIFICIAL FILL

ROADWAY EMBANKMENT

EEOP

ARTIFICIAL FILL

ORANGE-WHITE, DRY TO MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, BROWN-WHITE

76+50.00

350
340
330
320
310
300

SS-018

L 7595

RESIDUAL, ORANGE-TAN, DRY, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ARTIFICIAL FILL, BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

PROP. NOISE WALL

7
22
12

BT
DRY 12/19

ROADWAY EMBANKMENT

EEOP

ARTIFICIAL FILL

ORANGE-WHITE, DRY TO MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

76+00.00

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

10/4/2022
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	70

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

350
340
330

RESIDUAL, WHITE WITH ORANGE, DRY, HARD, SILTY CLAY (A-7-6), HIGHLY PLASTIC

PROP. NOISE WALL

ARTIFICIAL FILL, LIGHT BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

ROADWAY EMBANKMENT

ARTIFICIAL FILL, BROWN TO ORANGE, DRY TO MOIST, LOOSE, SILTY SAND (A-2-4)

EEOP EEOP EEOP EEOP

WEATHRED ROCK, GRANITE, BROWN-WHITE

77+50.00

350
340
330
320
310
300

RESIDUAL, WHITE WITH ORANGE, DRY, HARD, SILTY CLAY (A-7-6), HIGHLY PLASTIC

SS-015

L_7700_LT

PROP. NOISE WALL

ARTIFICIAL FILL, LIGHT BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

ROADWAY EMBANKMENT

ARTIFICIAL FILL, BROWN TO ORANGE, DRY TO MOIST, LOOSE, SILTY SAND (A-2-4)

L_7700_RT

7 31 60/0.0 BT DRY 12/19

9 60/0.0 BT FIAD

EEOP EEOP EEOP EEOP

WEATHRED ROCK, GRANITE, BROWN-WHITE

CRYSTALLINE ROCK, GRANITE

77+00.00

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

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10/4/2022
alexander.lozada

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

340 330 320 310

L_7900_LT

ROADWAY EMBANKMENT

SS-345

L_7900_RT

RESIDUAL, BROWN-ORANGE, MOIST, STIFF, SILTY CLAY (A-7-5), HIGHLY PLASTIC

RESIDUAL, DARK BROWN TO ORANGE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, WHITE AND BLACK

60/0.0'

10/20

BT

EEOP

9

16

100/0.3'

BT
DRY 02/20

CRYSTALLINE ROCK, GRANITE, LIGHT GRAY

79+00.00

PROP. NOISE WALL

RESIDUAL, BROWN-ORANGE, MOIST, STIFF, SILTY CLAY (A-7-5), HIGHLY PLASTIC

ROADWAY EMBANKMENT

DARK BROWN TO ORANGE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, WHITE AND BLACK

78+50.00

SS-012

L_7800

PROP. NOISE WALL

15

38

13

BT
DRY 12/19

ROADWAY EMBANKMENT

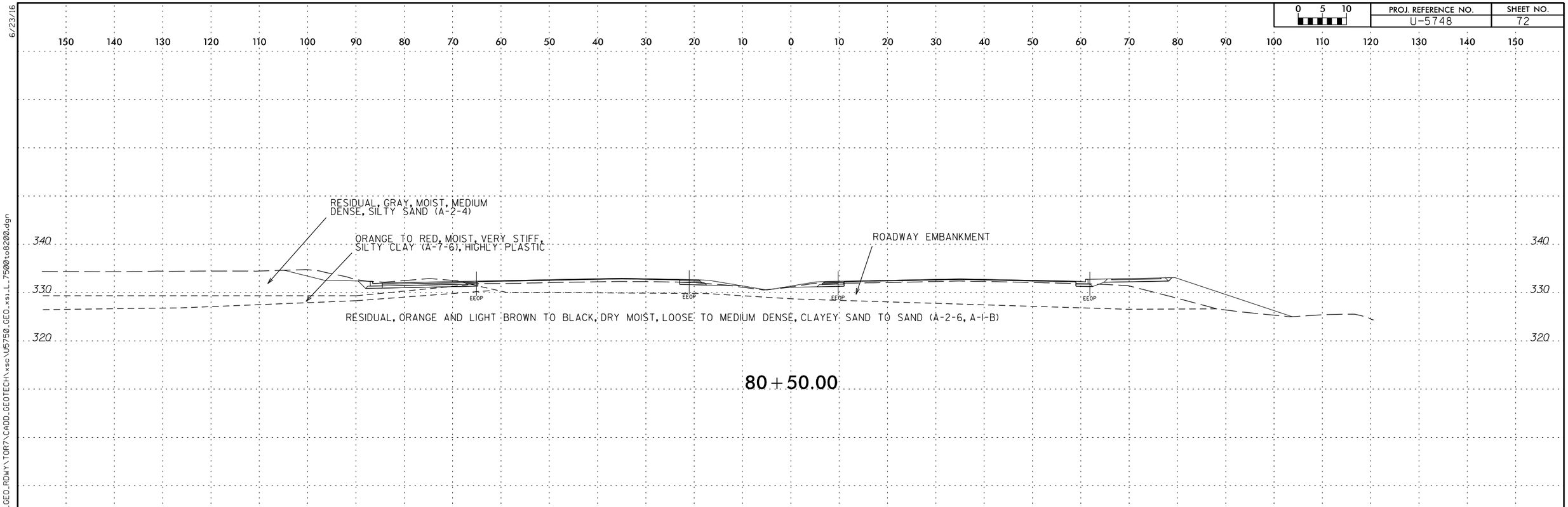
ARTIFICIAL FILL

RESIDUAL, ORANGE-BROWN TO RED, MOIST, MEDIUM DENSE TO DENSE, CLAYEY SAND (A-2-6)

RED, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

78+00.00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	72



PROJ. REFERENCE NO.	SHEET NO.
U-5748	73

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

350 340 330

RESIDUAL, GRAY, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

ORANGE TO RED, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

ARTIFICIAL FILL

EEOP

GRAY TO ORANGE-BROWN TO WHITE-ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY TO CLAYEY SAND TO SAND (A-2-4, A-2-6, A-1-B)

82+00.00

350 340 330

RESIDUAL, GRAY, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

ORANGE TO RED, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

ARTIFICIAL FILL

EEOP

GRAY TO ORANGE-BROWN TO WHITE-ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY TO CLAYEY SAND TO SAND (A-2-4, A-2-6, A-1-B)

81+50.00

350 340 330 320 310 300

SS-008

L_8108

RESIDUAL, GRAY, MOIST, MEDIUM DENSE, SILTY SAND (A-2-4)

ORANGE TO RED, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT, ORANGE TO BROWN-GRAY, DRY TO MOIST, SOFT, SANDY CLAY (A-6), TO LOOSE TO MEDIUM DENSE, SAND (A-1-B)

L_8100

11 20 9

BT
DRY 12/19

EEOP

RESIDUAL, ORANGE AND LIGHT BROWN TO BLACK, DRY MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND TO SAND (A-2-6, A-1-B)

13 4 26

BT
DRY 02/20

81+00.00

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

10/4/2022
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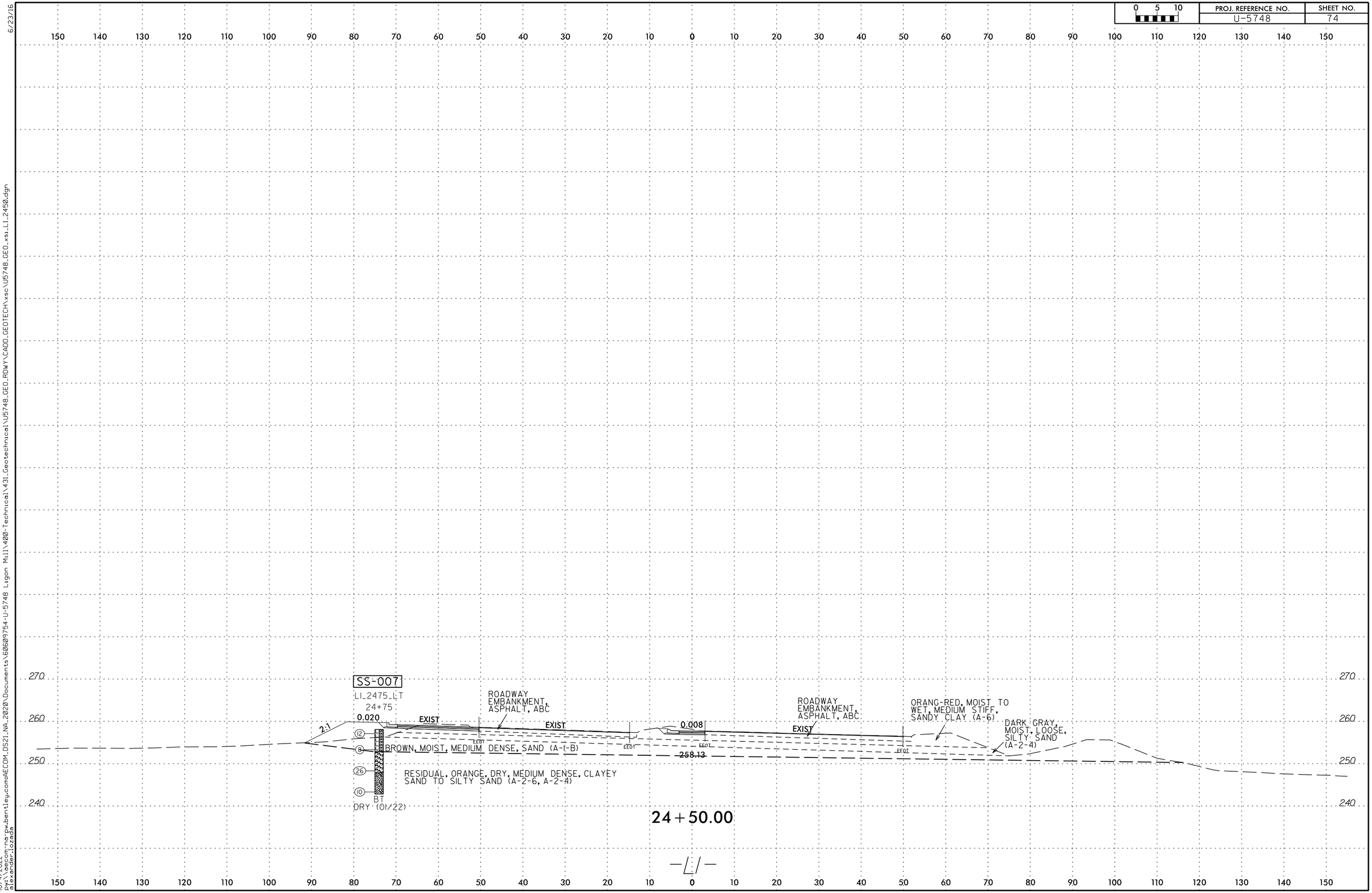
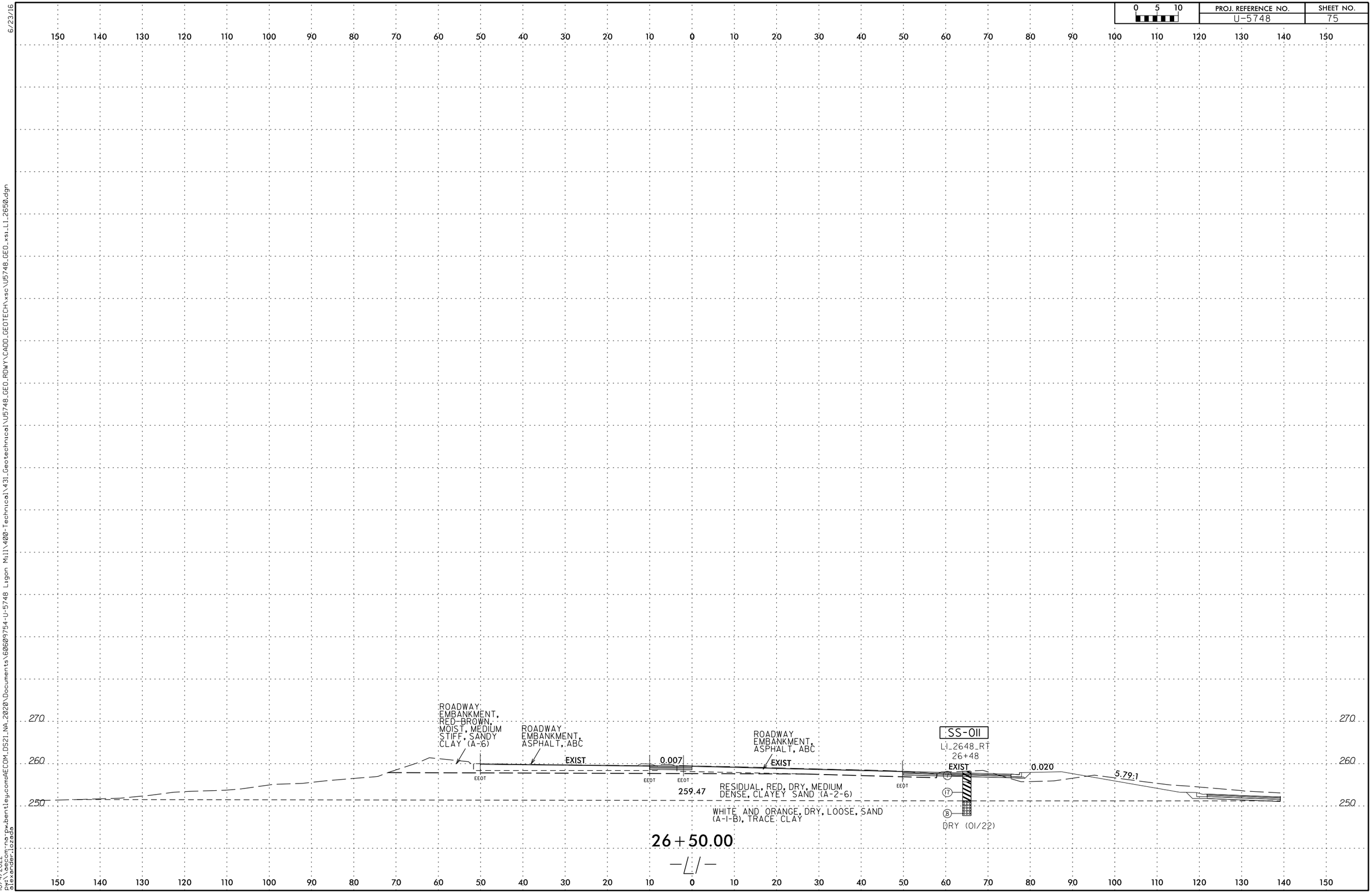
alexander.lozada



24+50.00

—L/—

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	75



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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	76

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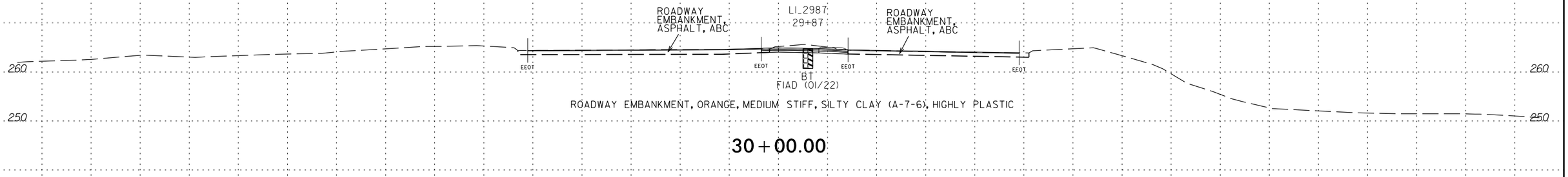
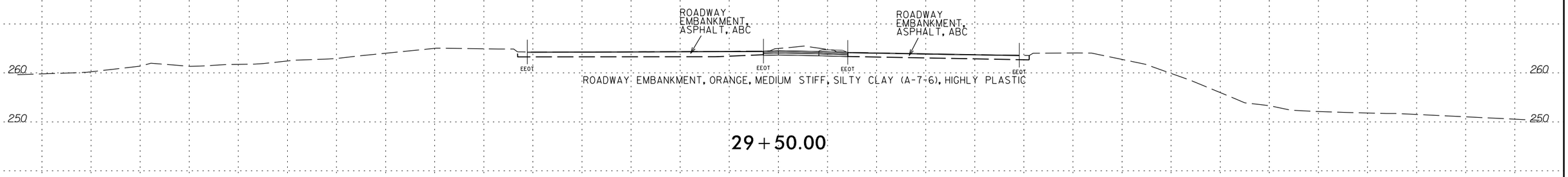


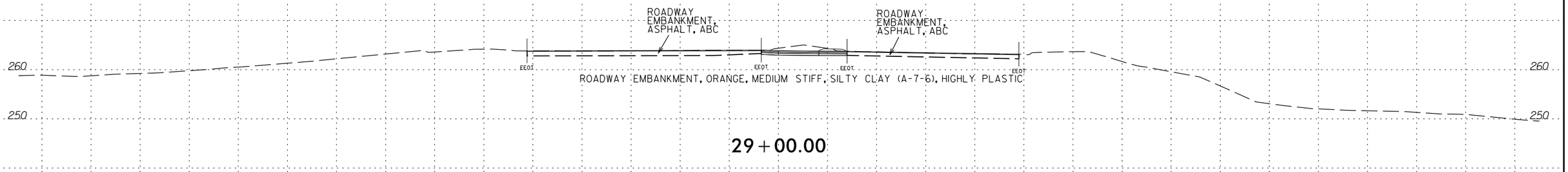
ROADWAY EMBANKMENT, ORANGE, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

30+00.00



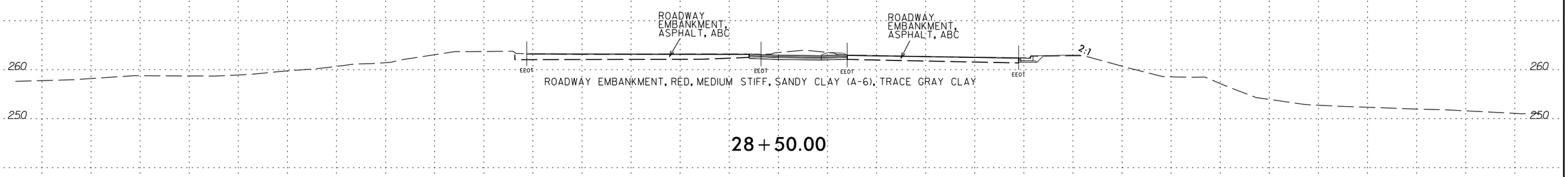
ROADWAY EMBANKMENT, ORANGE, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

29+50.00



ROADWAY EMBANKMENT, ORANGE, MEDIUM STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

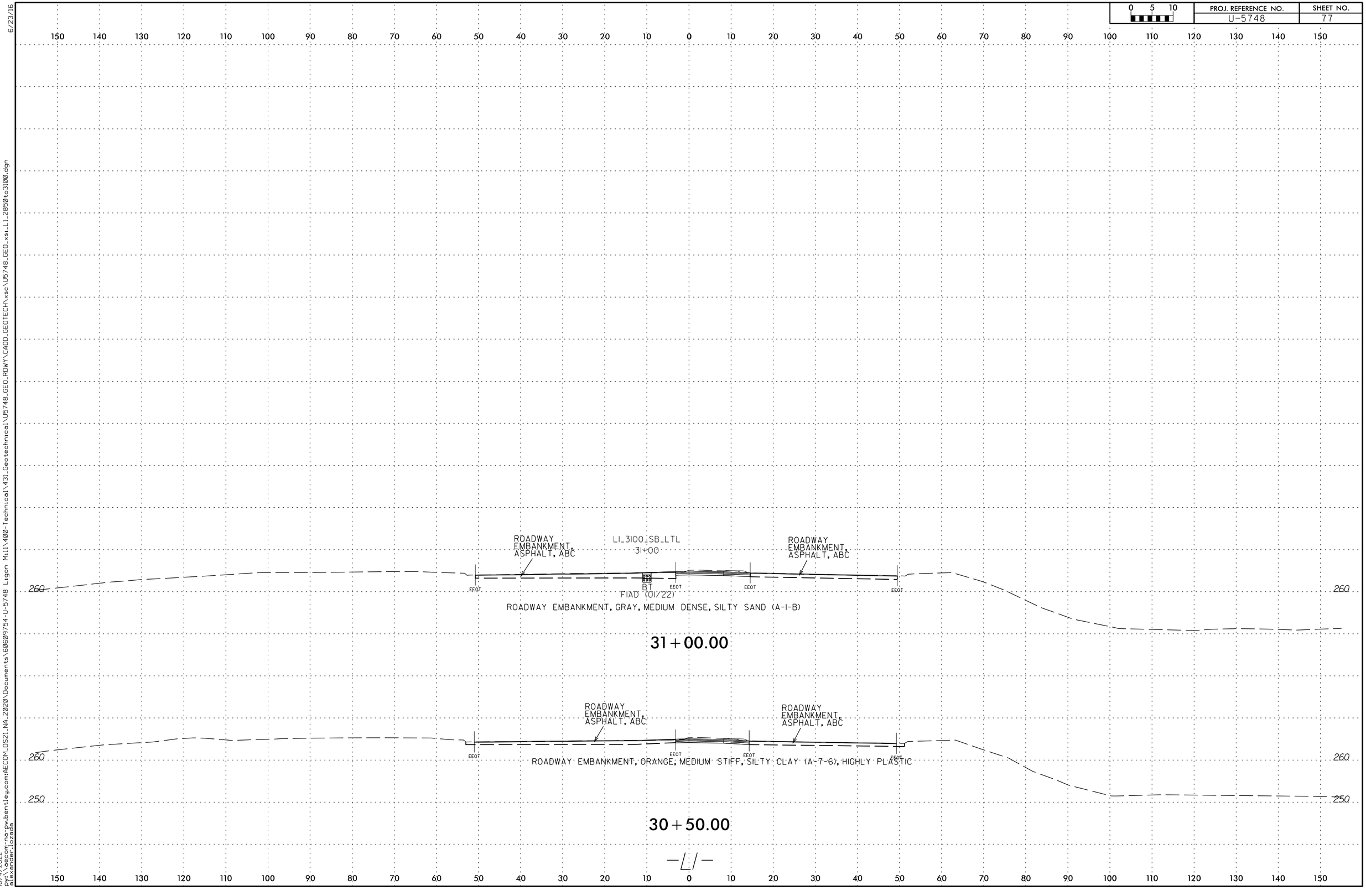
29+00.00



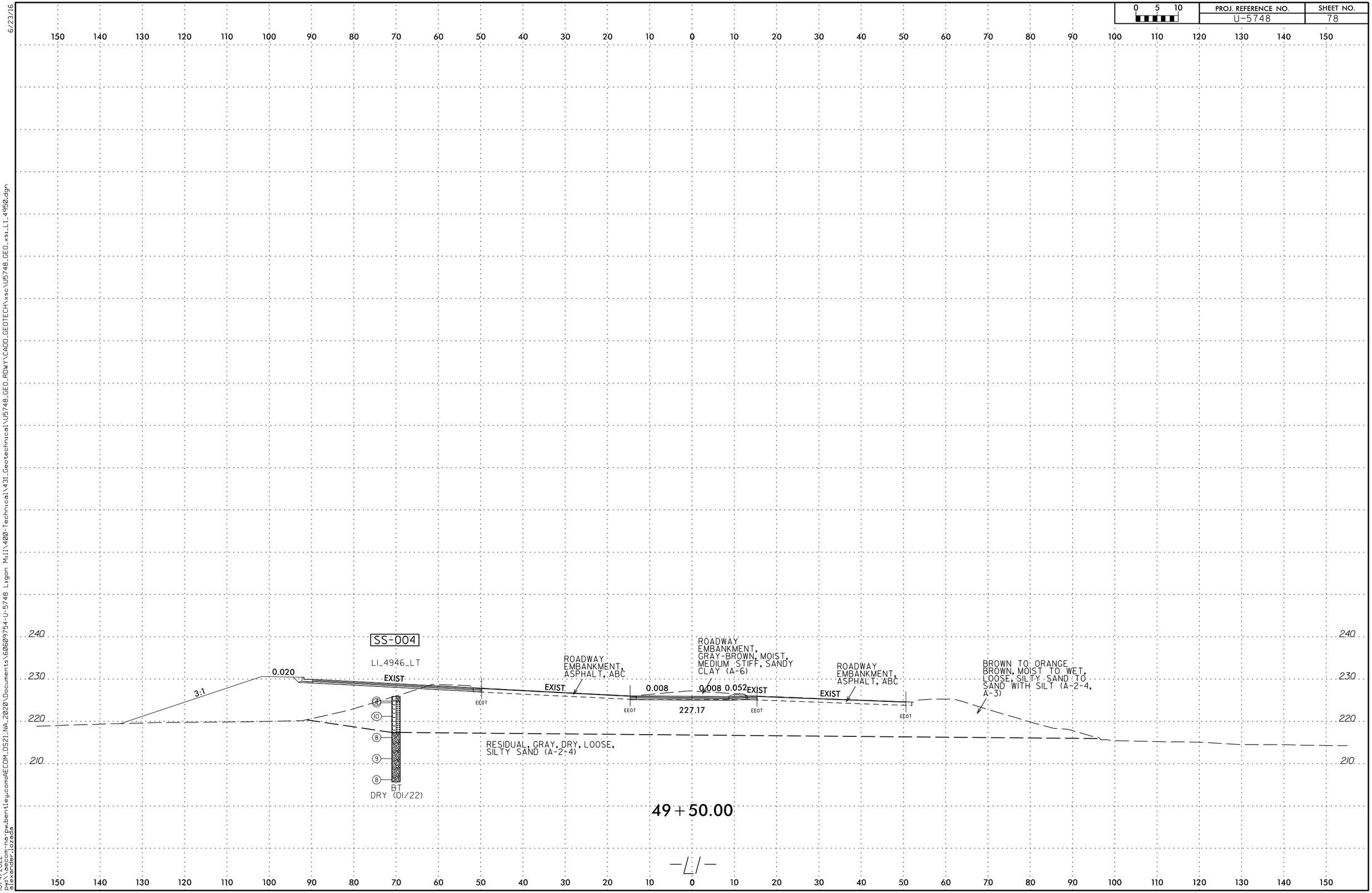
ROADWAY EMBANKMENT, RED, MEDIUM STIFF, SANDY CLAY (A-6), TRACE GRAY CLAY

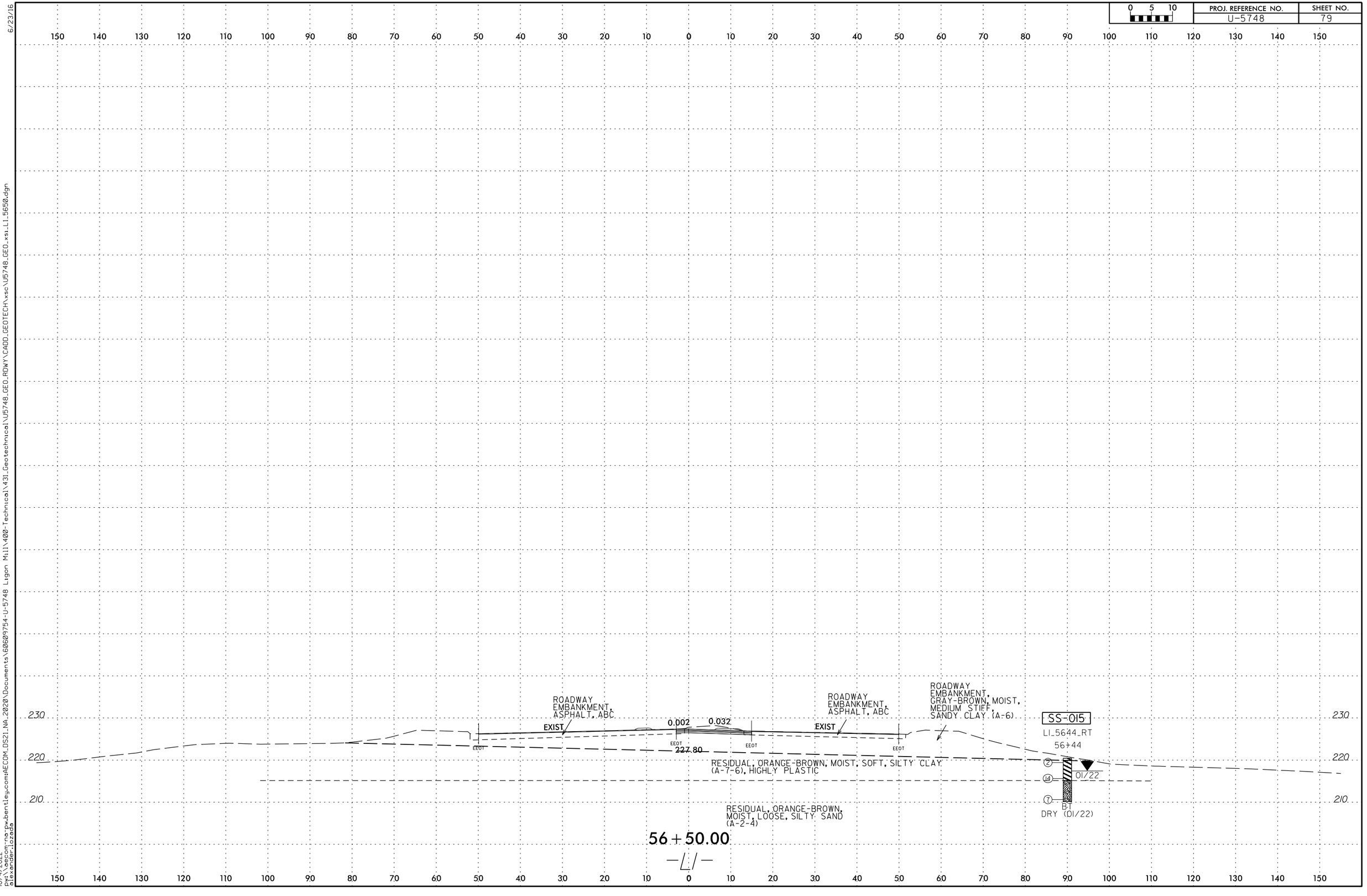
28+50.00

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-5748	78





6/23/16

10/4/2022
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PROJ. REFERENCE NO.	SHEET NO.
U-5748	80

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

230 220 210 200 190

Y1_1300

RESIDUAL, RED-BROWN TO GRAY-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY (A-6)

PROP. NOISE WALL

3:1

2.79:1

⑥ ⑨ ⑨ ⑦

WHITE AND TAN, DRY, LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

B'T DRY 01/20'

ORANGE AND WHITE, MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

ROADWAY EMBANKMENT

211.70

RESIDUAL, LIGHT BROWN TO ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, ORANGE AND WHITE

ORANGE AND WHITE, DRY, DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, WHITE AND TAN

CRYSTALLINE ROCK, GRANITE, WHITE AND TAN

13 + 00.00

RESIDUAL, RED-BROWN TO GRAY-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY (A-6)

PROP. NOISE WALL

3:1

2.52:1

WHITE AND TAN, DRY, LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ORANGE AND WHITE, MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

ROADWAY EMBANKMENT

208.27

RESIDUAL, LIGHT BROWN TO ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND (A-2-4)

2:1

WEATHERED ROCK, GRANITE, ORANGE AND WHITE

ORANGE AND WHITE, DRY, DENSE, SILTY SAND (A-2-

WEATHERED ROCK, GRANITE, WHITE AND TAN

CRYSTALLINE ROCK, GRANITE, WHITE AND TAN

12 + 50.00

RESIDUAL, LIGHT BROWN TO ORANGE AND WHITE, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

2:1

RESIDUAL, RED-BROWN TO GRAY-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY (A-6)

SHEAR LINE

ROADWAY EMBANKMENT

205.61

TAN AND WHITE TO ORANGE, DRY TO WET, LOOSE, SILTY TO CLAYEY SAND (A-2-4, A-2-6)

WEATHERED ROCK, GRANITE, TAN AND WHITE

CRYSTALLINE ROCK, GRANITE, TAN AND ORANGE

12 + 00.00

—Y1—

PROJ. REFERENCE NO.	SHEET NO.
U-5748	81

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

230 220 210 200

WHITE AND TAN, DRY, LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

3:1

2:1

PROP. NOISE WALL

ROADWAY EMBANKMENT

215.55

RESIDUAL, LIGHT BROWN TO ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, ORANGE AND WHITE

ORANGE AND WHITE, DRY, DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, WHITE AND TAN

CRYSTALLINE ROCK, GRANITE, WHITE AND TAN

13+50.00

RESIDUAL, RED-BROWN TO GRAY-BROWN, MOIST, MED. TO STIFF, SANDY CLAY (A-6)

3:1

2.97:1

PROP. NOISE WALL

WHITE AND TAN, DRY, LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

ROADWAY EMBANKMENT

213.20

ORANGE AND WHITE, MOIST TO WET, LOOSE, CLAYEY SAND (A-2-6)

YI_1325

6 40 100/0.9 40 100/0.9 60/0.1

BT DRY 01/20

RESIDUAL, LIGHT BROWN TO ORANGE, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, ORANGE AND WHITE

ORANGE AND WHITE, DRY, DENSE, SILTY SAND (A-2-4)

WEATHERED ROCK, GRANITE, WHITE AND TAN

CRYSTALLINE ROCK, GRANITE, WHITE AND TAN

13+20.00

—Y1—

6/23/16

10/4/2022
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alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	82

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

270
260

6:1 6:1

RESIDUAL, ORANGE AND GRAY, MOIST, MEDIUM DENSE, CLAYEY SAND (A-2-7), HIGHLY PLASTIC

TAN AND ORANGE, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

18+00.00

270
260
250

2:1 4:1 6:1

RESIDUAL, ORANGE AND GRAY, MOIST, MEDIUM DENSE, CLAYEY SAND (A-2-7), HIGHLY PLASTIC

TAN AND ORANGE, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

17+50.00

270
260

6:1 6:1

ROADWAY EMBANKMENT

RESIDUAL, GRAY-BROWN TO TAN AND ORANGE, MOIST, VERY LOOSE TO MEDIUM DENSE, SAND TO SILTY SAND (A-1-B, A-2-4)

17+00.00

-Y2-

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

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10/4/2022
alexander.lozada

PROJ. REFERENCE NO.	SHEET NO.
U-5748	83

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

270
260
250

RESIDUAL, GRAY-BROWN TO LIGHT BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

ORANGE AND GRAY, MOIST, MEDIUM DENSE, CLAYEY SAND (A-2-7), HIGHLY PLASTIC

2:1 4:1 6:1

SHEAR LINE -Y3-

TAN AND ORANGE, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

19+00.00

280
270
260
250
240
230

SS-166
Y2_1859

RESIDUAL, GRAY-BROWN TO LIGHT BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

ORANGE AND GRAY, MOIST, MEDIUM DENSE, CLAYEY SAND (A-2-7), HIGHLY PLASTIC

2:1 4:1 6:1 6:1 4:1 2:1

7
24
10
10
9

TAN AND ORANGE, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND (A-2-4)

BT
DRY 12/19

18+50.00

-Y2-

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

10/4/2022
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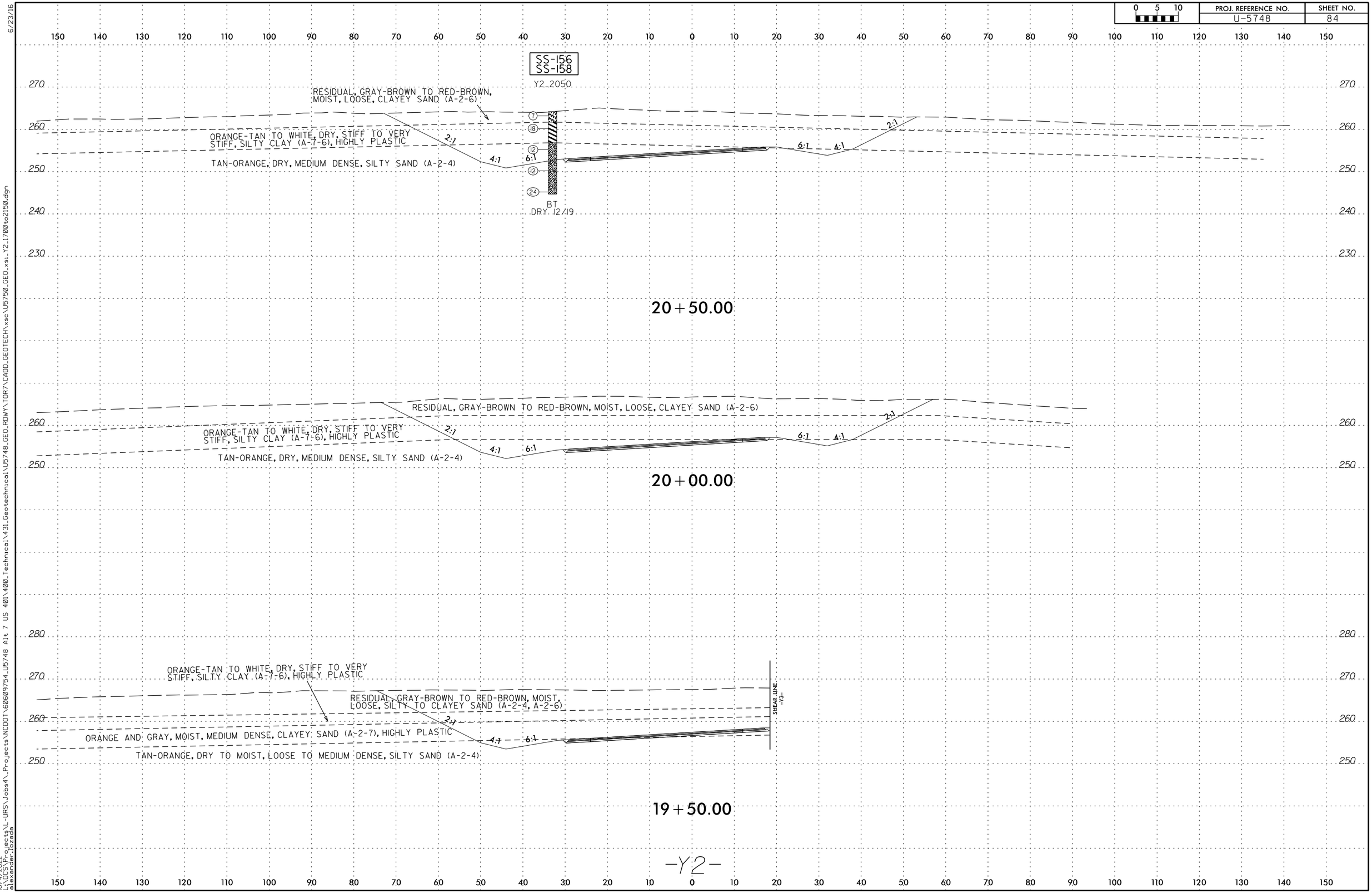
alexander.lozada



6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	85

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

260
250

RESIDUAL, GRAY-BROWN TO TAN, MOIST, LOOSE, CLAYEY SAND (A-2-6)

TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

21+50.00

280
270
260
250

ORANGE-TAN TO WHITE, DRY, STIFF TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

RESIDUAL, GRAY-BROWN TO RED-BROWN, MOIST, LOOSE, CLAYEY SAND (A-2-6)

TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

21+00.00

-Y2-

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

10/4/2022
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alexander.lozada

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5748	86

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

260
250
240
230
220
210

SS-141
Y2_2650

RESIDUAL, LIGHT BROWN, MOIST, VERY LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, SOFT TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

RED-BROWN TO TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

4
18
11
19
28

BT
DRY 12/19

26+50.00

RESIDUAL, RED-BROWN, MOIST, SOFT TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

RED-BROWN TO TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1

26+00.00

RESIDUAL, RED-BROWN TO TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 3.12:1

25+50.00

-Y2-

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

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alexander.lozada

PROJ. REFERENCE NO.	SHEET NO.
U-5748	87

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

270
260
250

RESIDUAL, LIGHT BROWN, MOIST, VERY LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, MEDIUM TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

GRAY-BROWN TO TAN-ORANGE, DRY, LOOSE TO VERY DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

28+00.00

260
250
240

RESIDUAL, LIGHT BROWN, MOIST, VERY LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, SOFT TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

RED-BROWN TO TAN-ORANGE, DRY, LOOSE TO VERY DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

27+50.00

260
250
240

RESIDUAL, LIGHT BROWN, MOIST, VERY LOOSE, SILTY SAND (A-2-4)

RED-BROWN, MOIST, SOFT TO VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

RED-BROWN TO TAN-ORANGE, DRY, MEDIUM DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

27+00.00

-Y2-

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

10/4/2022
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alexander.lozada

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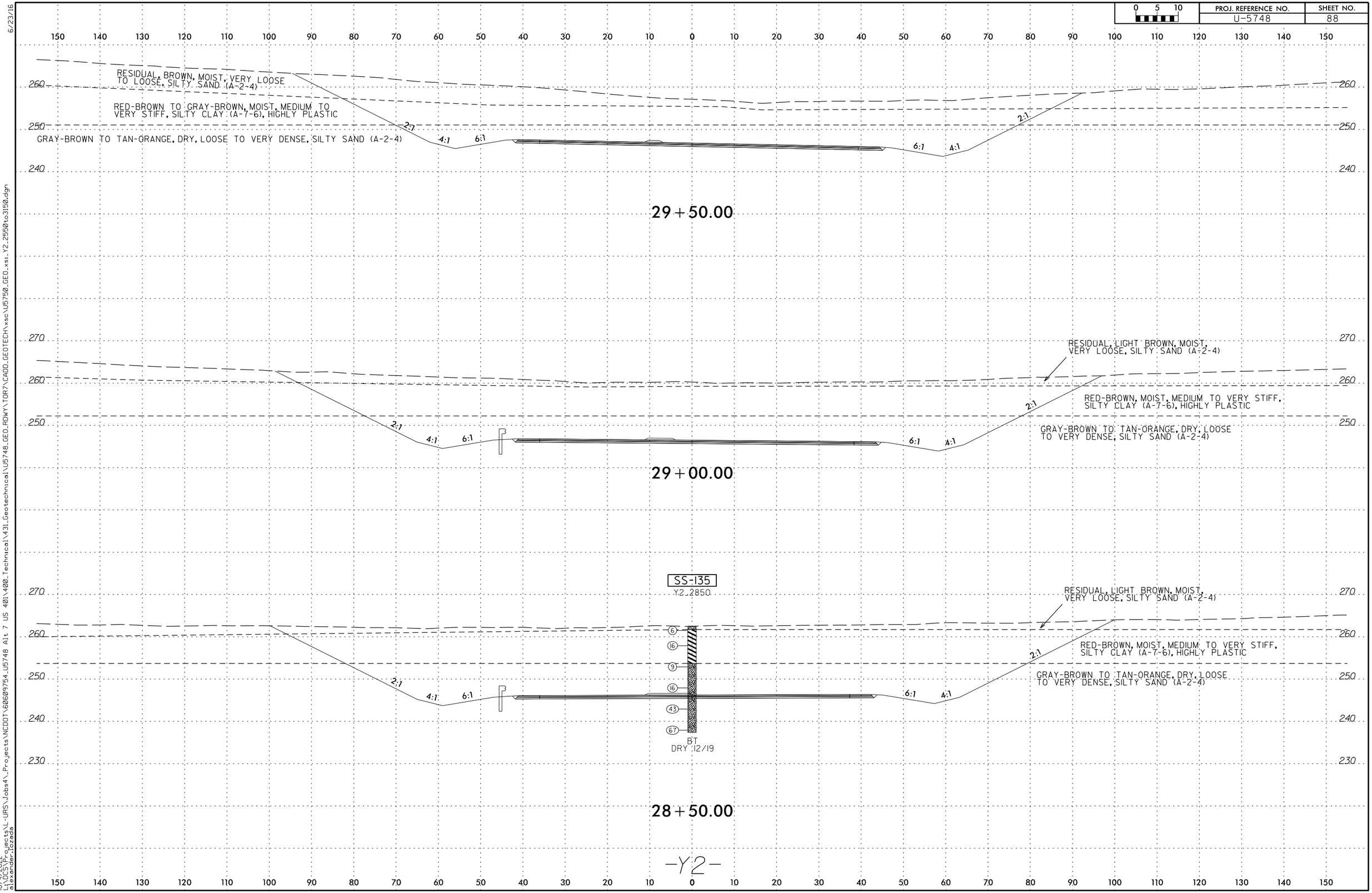
	U-5748	88



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alexander.lozada

PROJ. REFERENCE NO.	SHEET NO.
U-5748	89

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

270
260
250
240
230
220
210

SS-129
SS-131
Y2_3050

RESIDUAL, BROWN, MOIST, LOOSE, SILTY SAND (A-2-4)

GRAY-BROWN, MOIST, VERY STIFF, SILTY CLAY (A-7-6), HIGHLY PLASTIC

TAN-ORANGE, DRY, MEDIUM DENSE TO DENSE, SILTY SAND (A-2-4)

2:1 4:1 6:1 6:1 4:1 2:1

6
18
20
17
35
BT
DRY 12/19

30+50.00

30+00.00

-Y2-

6/23/16

10/4/2022
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alexander.lozada

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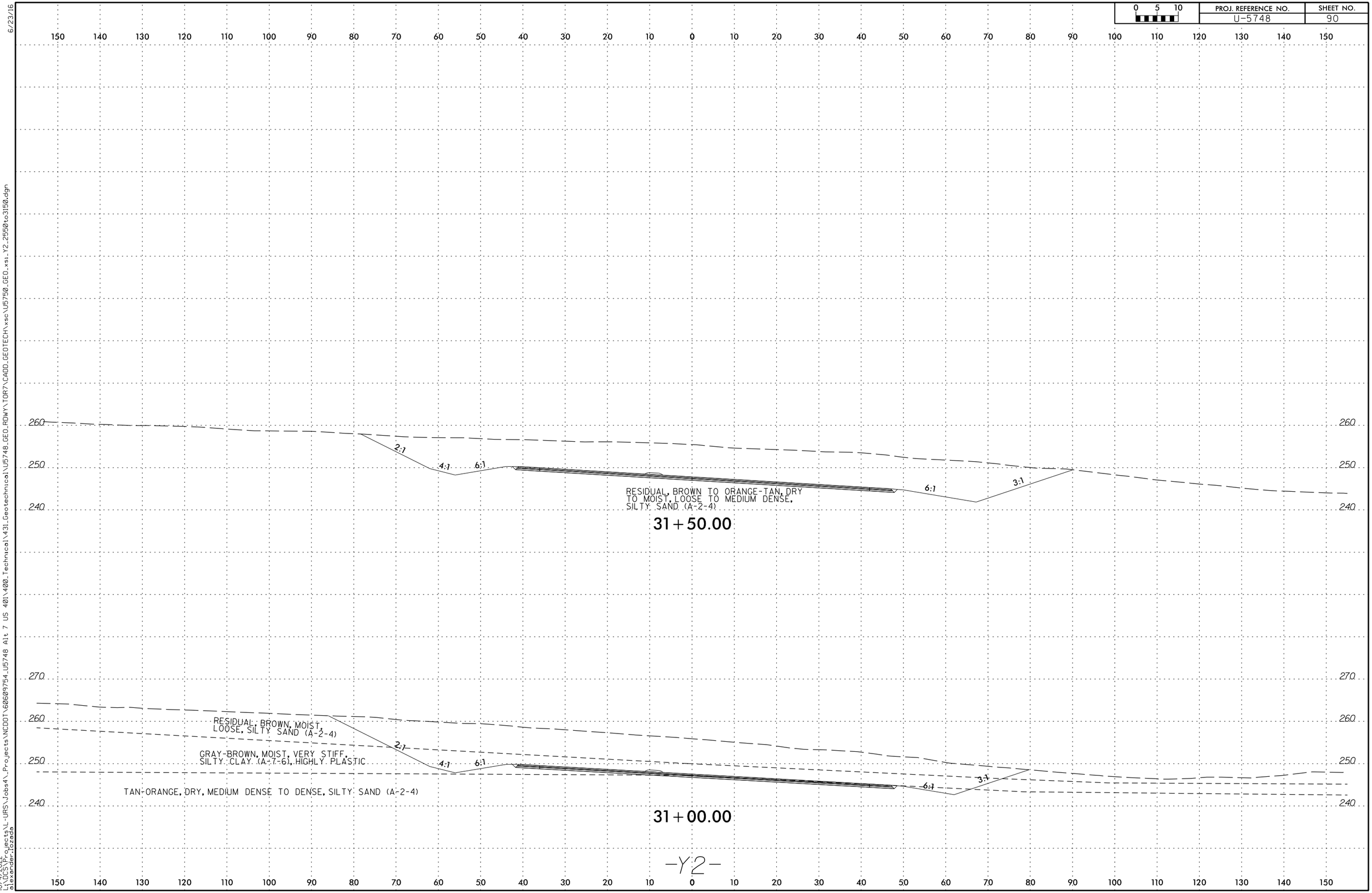
	U-5748	90



6/23/16

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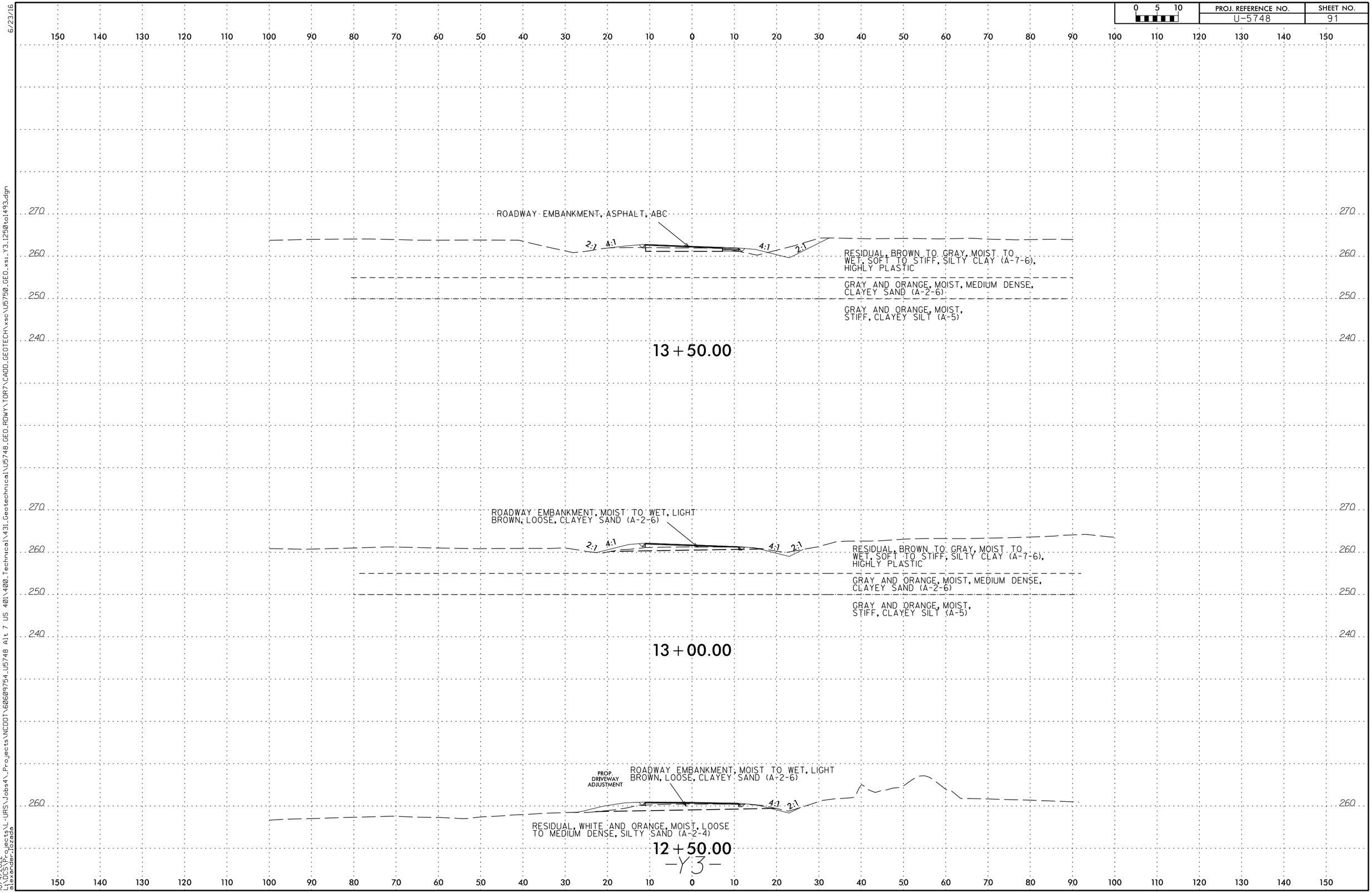
10/4/2022
alexander.lozada



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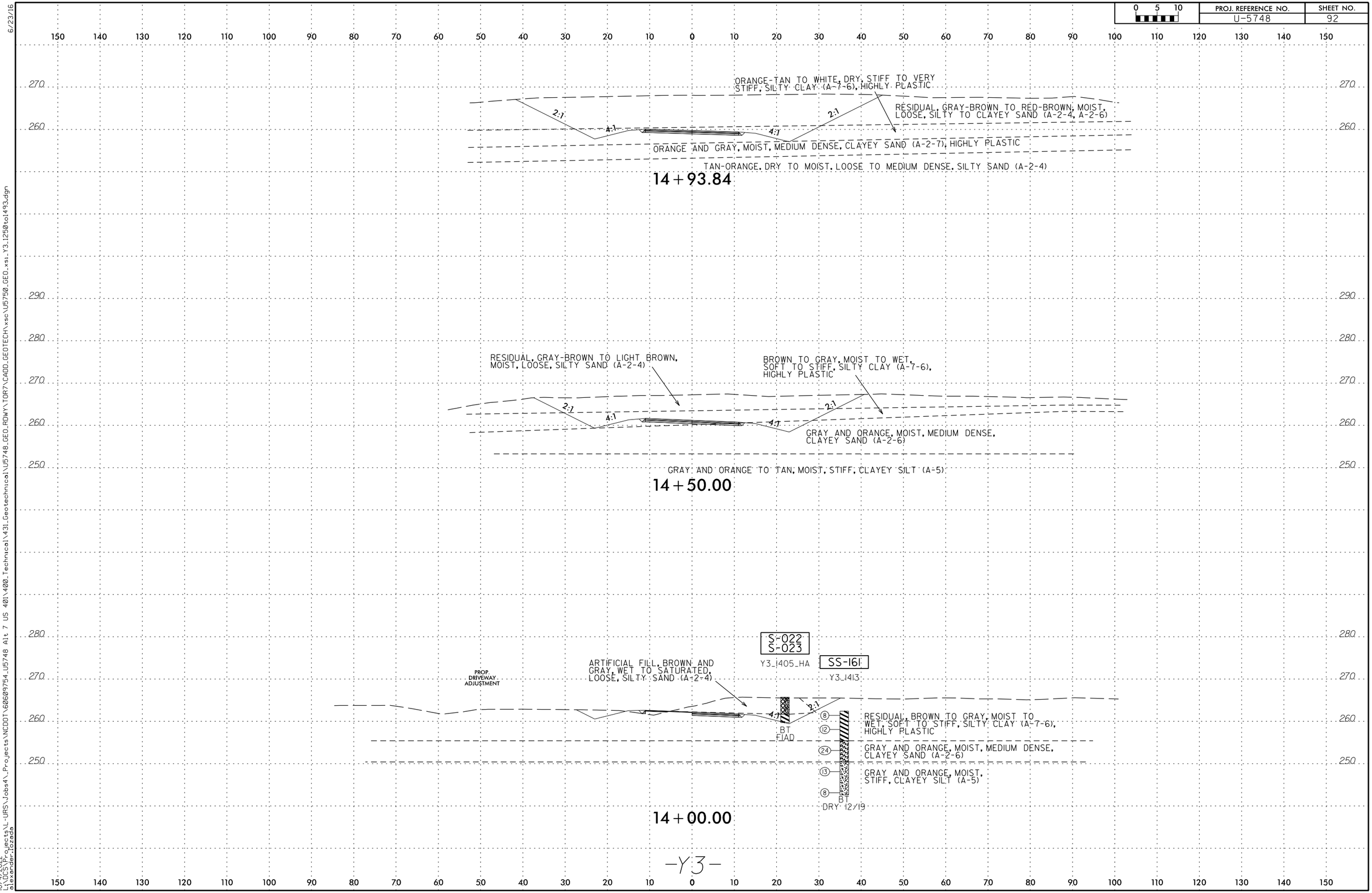
	U-5748	92



PROJECT REFERENCE NO.	SHEET NO.
U–5748	93

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
SOIL TEST RESULTS

REFERENCE: U–5748

PROJECT: 50168

AECOM

SOIL TEST RESULTS

Soil Classification and Gradation

5438 Wade Park Blvd Suite 200, Raleigh, NC 27607

WBS No.: 50168.1.1
Description: US 401 at Ligon Mill Rd/Mitchell Mill Rd and Perry Creek Rd Intersection Improvements
Client: NCDOT

County: Wake
TIP No: U-5748
Date(s) Tested: 2/3/2020 - 2/11/2022

						AASHTO					% BY WEIGHT				% FINER (SIEVES)				
BORING NO.	SAMPLE NO.	ALIGNMENT	STATION	OFFSET	DEPTH (FT)	CLASS	GI	LL	PL	PI	GRAVEL	C. SAND	F. SAND	FINES	10	40	200	% MOIST.	% ORG.
L_1850_HA	S-013	-L-	18+50	60' LT	1.0-2.5	A-6	2	36	17	19	11.3	23.8	29.3	35.6	88.7	64.9	35.6	14.5	--
L_2050_HA	S-015	-L-	20+50	60' RT	1.0-3.0	A-2-6	1	32	18	14	4.2	34.2	26.3	35.4	95.8	61.7	35.4	15.6	--
L_2050_RT	SS-207	-L-	20+50	122' RT	0.0-1.5	A-4	4	27	17	10	0.1	2.0	30.1	67.9	99.9	97.9	67.9	18.7	--
L_2300	SS-202	-L-	23+00	115' LT	3.8-5.3	A-7-6	4	45	22	23	0.0	0.1	60.3	39.6	100.0	99.9	39.6	25.2	--
L_2300_HA	S-014	-L-	23+00	60' LT	2.0-3.0	A-6	3	33	15	18	5.4	21.7	32.5	40.4	94.6	72.9	40.4	22.3	--
L_2315	SS-211	-L-	23+15	125' RT	4.0-5.5	A-6	4	34	18	16	0.0	0.8	53.6	45.6	100.0	99.2	45.6	23.2	--
L_2650	SS-235	-L-	26+50	120' LT	9.3-10.8	A-4	0	NP	NP	NP	0.1	0.4	50.8	48.8	100.0	99.6	48.8	24.9	--
L_2650_HA	S-018	-L-	26+50	60' RT	0.0-1.5	A-6	1	30	17	13	8.7	28.3	27.1	36.0	91.3	63.0	36.0	7.3	--
L_2842	SS-230	-L-	28+42	105' LT	3.7-5.2	A-6	13	36	16	20	0.1	1.7	25.3	72.9	99.9	98.2	72.9	18.4	3.1
L_2842	SS-229	-L-	28+42	105' LT	0.0-1.5	A-6	1	30	19	11	6.4	21.7	32.3	39.7	93.6	71.9	39.7	17.1	--
L_2850	SS-216	-L-	28+50	115' RT	8.9-10.4	A-7-6	18	41	21	20	0.1	1.3	12.6	86.0	99.9	98.6	86.0	24.7	3.5
L_2850_HA	S-016	-L-	28+50	60' LT	1.0-2.0	A-2-6	0	27	15	12	8.0	29.1	27.6	35.3	92.0	62.9	35.3	17.8	--
L_3050	SS-226	-L-	30+50	125' LT	0.0-1.5	A-2-4	0	21	17	4	8.8	37.1	27.9	26.2	91.2	54.1	26.2	10.9	--
L_3100	SS-243	-L-	31+00	101' RT	4.3-5.8	A-2-7	1	43	24	19	4.7	39.9	22.1	33.4	95.3	55.4	33.4	15.8	--
L_3100	SS-242	-L-	31+00	101' RT	0.0-1.5	A-7-6	12	51	22	29	2.5	21.3	22.2	54.0	97.5	76.2	54.0	14.0	--
L_3200_HA	S-012	-L-	32+00	83' LT	1.0-2.5	A-1-b	0	NP	NP	NP	19.6	31.1	31.9	17.4	80.4	49.4	17.4	9.0	--
L_3275	SS-192	-L-	32+75	53' LT	0.0-1.5	A-2-4	0	27	18	9	8.7	33.8	29.4	28.0	91.3	57.5	28.0	14.3	--
L_3500	SS-261	-L-	35+00	198' RT	0.0-1.5	A-6	2	37	18	19	10.1	29.1	23.6	37.2	89.9	60.9	37.2	16.4	--
L_3556	SS-256	-L-	35+56	63' RT	0.0-1.5	A-6	1	33	18	15	6.6	39.3	28.3	35.8	103.4	64.1	35.8	17.6	--
L_3597	SS-191	-L-	35+97	97' LT	13.4-14.9	A-2-4	0	NP	NP	NP	4.6	35.9	31.5	28.0	95.4	59.5	28.0	20.0	--
L_3627	SS-186	-L-	26+27	110' LT	3.3-4.8	A-2-4	0	28	18	10	13.2	33.6	24.8	28.4	86.8	53.2	28.4	13.6	--
L_3743	SS-273	-L-	37+43	145' RT	0.0-1.5	A-1-b	0	NP	NP	NP	8.5	44.1	27.6	19.8	91.5	47.4	19.8	16.3	--
L_3900_LT	SS-183	-L-	39+00	85' LT	0.0-1.5	A-2-6	0	33	17	16	6.9	35.6	27.8	29.8	93.1	57.5	29.8	15.4	--
L_3900_RT	SS-280	-L-	39+00	150' RT	0.0-1.5	A-4	0	35	30	5	2.3	26.5	32.2	39.0	97.7	71.2	39.0	60.2	--
L_4110	SS-179	-L-	41+00	95' LT	0.0-1.5	A-7-6	15	60	27	33	2.5	22.1	20.1	55.4	97.5	75.4	55.4	19.0	--
L_4215	SS-293	-L-	42+15	125' RT	0.0-1.5	A-2-4	0	29	24	5	4.2	35.5	28.5	31.8	95.8	60.3	31.8	18.4	--
L_4300_RT	SS-300	-L-	43+00	110' RT	3.7-5.2	A-2-6	0	40	24	16	8.5	42.0	23.3	26.2	91.5	49.5	26.2	20.7	--
L_4410	SS-305	-L-	44+10	110' RT	4.2-5.7	A-1-b	0	NP	NP	NP	7.5	48.9	25.1	18.5	92.5	43.6	18.5	15.1	--
L_4500	SS-173	-L-	45+00	50' LT	0.0-1.5	A-7-6	6	53	25	28	4.6	37.1	17.8	40.6	95.4	58.4	40.6	20.1	--
L_4700_LT	SS-170	-L-	47+00	103' LT	0.0-1.5	A-2-4	0	NP	NP	NP	4.3	41.5	29.3	24.9	95.7	54.2	24.9	12.4	--
L_4800	SS-315	-L-	48+00	95' RT	0.0-1.5	A-2-4	0	14	11	3	1.7	45.1	25.6	27.7	98.4	53.2	27.7	11.0	--
L_4892	SS-122	-L-	48+92	110' LT	0.0-1.5	A-1-b	0	NP	NP	NP	4.9	47.5	26.0	21.7	95.2	47.6	21.7	9.6	--
L_5000	SS-324	-L-	50+00	102' RT	4.6-5.6	A-7-5	9	65	31	34	2.3	31.1	24.0	42.6	97.7	66.6	42.6	21.6	--
L_5050	SS-119	-L-	50+50	84' LT	4.1-5.6	A-2-7	1	43	23	20	5.5	35.7	26.8	32.0	94.5	58.8	32.0	9.1	--
L_5200_LT	SS-116	-L-	52+00	108' LT	3.5-5.0	A-7-6	5	48	28	20	3.7	27.7	25.4	43.3	96.3	68.7	43.3	19.8	--

AECOM

SOIL TEST RESULTS

Soil Classification and Gradation

5438 Wade Park Blvd Suite 200, Raleigh, NC 27607

WBS No.: 50168.1.1
Description: US 401 at Ligon Mill Rd/Mitchell Mill Rd and Perry Creek Rd Intersection Improvements
Client: NCDOT

County: Wake
TIP No: U-5748
Date(s) Tested: 2/3/2020 - 2/11/2022

						AASHTO					% BY WEIGHT				% FINER (SIEVES)				
BORING NO.	SAMPLE NO.	ALIGNMENT	STATION	OFFSET	DEPTH (FT)	CLASS	GI	LL	PL	PI	GRAVEL	C. SAND	F. SAND	FINES	10	40	200	% MOIST.	% ORG.
L_5200_RT	SS-328	-L-	52+00	100' RT	4.5-6.0	A-7-6	8	53	26	27	3.0	30.0	20.9	46.1	97.0	67.0	46.1	19.6	--
L_5320	SS-355	-L-	53+20	120' RT	3.5-5.0	A-7-6	3	44	25	19	13.0	32.1	17.6	37.3	87.0	54.9	37.3	17.7	--
L_5373	SS-113	-L-	53+73	83' LT	14.3-15.8	A-1-b	0	NP	NP	NP	11.3	39.7	26.4	22.6	88.7	49.1	22.6	11.9	--
L_5373	SS-111	-L-	53+73	83' LT	4.3-5.8	A-7-6	11	56	24	32	1.6	26.1	25.1	47.2	98.4	72.3	47.2	20.0	--
L_5483	SS-106	-L-	54+83	41' LT	8.7-10.2	A-7-6	9	56	24	32	5.5	29.4	20.4	44.8	94.6	65.2	44.8	20.3	--
L_5483	SS-107	-L-	54+83	41' LT	13.7-15.2	A-7-6	6	42	15	27	1.7	34.5	21.6	42.2	98.3	63.8	42.2	11.0	--
L_5547	SS-334	-L-	55+47	78' RT	9.5-10.5	A-7-6	7	53	25	28	5.2	31.3	19.8	43.7	94.8	63.5	43.7	19.7	
L_5680	SS-101	-L-	56+80	37' LT	0.0-1.5	A-2-6	0	32	17	15	13.2	40.3	18.3	28.1	86.8	46.4	28.1	15.7	--
L_5900_HA	S-010	-L-	59+00	37' RT	0.0-0.5	A-6	1	33	19	14	7.3	35.4	21.5	35.8	92.7	57.3	35.8	14.7	--
L_5913	SS-093	-L-	59+13	95' LT	0.0-1.5	A-7-6	14	42	15	27	3.0	20.3	14.9	61.9	97.0	76.7	61.9	21.2	--
L_5995	SS-099	-L-	59+95	107' LT	8.7-10.2	A-2-4	0	28	24	4	7.7	37.7	30.2	24.5	92.3	54.7	24.5	5.7	--
L_6200_HA	S-009	-L-	62+00	36' RT	4.5-6.0	A-2-4	0	NP	NP	NP	17.0	22.8	45.7	14.5	83.1	60.2	14.5	11.3	
L_6223	SS-086	-L-	62+23	85' LT	14.2-15.7	A-2-4	0	32	26	6	9.9	35.3	28.2	26.6	90.1	54.8	26.6	16.1	--
L_6223	SS-083	-L-	62+23	85' LT	0.0-1.5	A-7-6	5	48	23	25	4.6	28.3	26.6	40.5	95.4	67.0	40.5	21.9	--
L_6385	SS-068	-L-	63+85	95' LT	4.0-5.5	A-2-4	0	21	14	7	11.6	40.9	21.5	26.1	88.4	47.6	26.1	8.8	--
L_6400_HA	S-008	-L-	64+00	38' RT	0.0-2.5	A-2-6	1	36	19	17	27.9	19.6	19.4	33.1	72.1	52.5	33.1	11.3	--
L_6480	SS-059	-L-	64+80	97' LT	3.4-4.9	A-2-5	0	45	35	10	10.0	35.2	23.8	31.1	90.0	54.9	31.1	25.5	--
L_6600_HA	S-006	-L-	66+00	29' RT	1.0-2.0	A-2-6	0	28	16	12	14.9	29.7	24.0	31.5	85.2	55.5	31.5	10.1	--
L_6600_LT	SS-049	-L-	66+00	96' LT	4.1-5.6	A-7-6	4	46	23	23	3.0	34.0	25.0	38.0	97.0	63.0	38.0	13.3	--
L_6700	SS-044	-L-	67+00	91' LT	0.0-1.5	A-7-6	12	61	21	40	3.2	24.5	27.7	44.6	96.8	72.3	44.6	16.7	--
L_6700	SS-045	-L-	67+00	91' LT	4.1-5.9	A-7-6	6	46	22	24	4.5	24.6	28.0	43.0	95.5	71.0	43.0	13.7	--
L_6800_HA	S-005	-L-	68+00	31' RT	4.0-5.0	A-2-4	0	NP	NP	NP	16.1	25.4	43.2	15.3	83.9	58.5	15.3	9.2	--
L_7000	SS-031	-L-	70+00	93' LT	0.0-1.5	A-7-6	5	42	20	22	3.7	24.3	29.6	42.3	96.3	72.0	42.3	21.9	--
L_7170	SS-028	-L-	71+70	90' LT	0.0-1.5	A-1-b	0	21	17	4	23.7	32.3	26.3	17.7	76.3	44.0	17.7	7.9	--
L_7300_HA	S-002	-L-	73+00	81' RT	0.0-1.5	A-2-6	1	35	19	16	17.1	28.4	21.0	33.5	82.9	54.5	33.5	17.5	
L_7392	SS-025	-L-	73+92	91' LT	14.1-15.6	A-4	0	29	22	7	1.2	31.8	30.6	36.4	98.8	67.0	36.4	12.3	--
L_7450_HA	S-001	-L-	74+50	0' CL	1.0-3.0	A-2-4	0	NP	NP	NP	16.9	24.3	44.2	14.6	83.1	58.8	14.6	7.4	--
L_7595	SS-018	-L-	75+95	100' LT	3.7-5.2	A-7-6	12	60	25	35	0.7	26.7	24.8	47.8	99.3	72.6	47.8	17.3	--
L_7700_LT	SS-015	-L-	77+00	92' LT	3.7-5.2	A-7-6	28	74	26	48	0.9	20.0	17.4	61.7	99.1	79.1	61.7	26.6	--
L_7800	SS-012	-L-	78+00	95' LT	3.9-5.4	A-2-6	0	39	25	14	2.9	36.6	28.6	31.9	97.1	60.5	31.9	27.3	--
L_7900_RT	SS-345	-L-	79+00	83' RT	0.0-1.5	A-7-5	38	75	30	45	0.4	11.8	10.7	77.1	99.6	87.8	77.1	29.5	
L_8108	SS-008	-L-	81+08	115' LT	3.5-5.0	A-7-6	12	56	29	27	0.7	19.1	25.1	55.0	99.3	80.2	55.0	21.0	--
L_8280	SS-352	-L-	82+80	100' RT	5.3-5.8	A-7-6	4	50	21	29	3.8	39.0	18.4	38.8	96.2	57.2	38.8	18.7	
L_8450_HA	S-031	-L-	84+50	70' RT	0.5-1.0	A-2-6	0	35	21	14	17.3	32.3	25.9	24.6	82.7	50.5	24.6	12.9	--
L_8498	SS-002	-L-	84+98	108' LT	3.7-5.2	A-7-6	5	50	27	23	3.1	28.1	28.4	40.3	96.9	68.7	40.3	25.0	--

AECOM

SOIL TEST RESULTS

Soil Classification and Gradation

5438 Wade Park Blvd Suite 200, Raleigh, NC 27607

WBS No.: 50168.1.1
Description: US 401 at Ligon Mill Rd/Mitchell Mill Rd and Perry Creek Rd Intersection Improvements
Client: NCDOT

County: Wake
TIP No: U-5748
Date(s) Tested: 2/3/2020 - 2/11/2022

						AASHTO					% BY WEIGHT				% FINER (SIEVES)				
BORING NO.	SAMPLE NO.	ALIGNMENT	STATION	OFFSET	DEPTH (FT)	CLASS	GI	LL	PL	PI	GRAVEL	C. SAND	F. SAND	FINES	10	40	200	% MOIST.	% ORG.
L1_2475_LT	SS-007	-L1-	24+75	74 LT	0.0-1.5	A-1-b	0	0	0	0	33.4	22.6	25.7	18.3	66.6	44.1	18.3	15.5	--
L1_2494	SS-023	-L1-	24+94	2 LT	0.0-2.0	A-6	5	38	19	19	2.1	28.6	24.5	44.8	97.9	69.3	44.8	18.3	--
L1_2648_RT	SS-011	-L1-	26+48	65 RT	0.0-1.5	A-6	4	36	17	19	0.7	27.4	27.8	44.1	99.3	71.9	44.1	15.8	--
L1_2987	SS-026	-L1-	29+87	6 RT	0.0-4.0	A-7-6	13	59	27	32	0.2	26.0	22.8	51.0	99.8	73.8	51.0	21.7	--
L1_3199	SS-027	-L1-	31+99	2 LT	0.0-3.6	A-7-7	7	47	22	25	0.9	28.6	25.5	44.9	99.1	70.5	44.9	18.8	--
L1_4701	SS-021	-L1-	47+01	2 LT	0.0-1.0	A-6	3	36	19	17	0.7	23.7	34.4	41.3	99.3	75.7	41.3	21.2	--
L1_4946_LT	S-004	-L1-	49+46	70 LT	8.7-10.2	A-2-4	0	0	0	0	0.7	35.6	31.9	31.9	99.3	63.8	31.9	16.3	--
L1_5002	SS-018	-L1-	50+02	4 LT	1.0-4.0	A-2-4	0	0	0	0	7.7	34.0	32.1	26.3	92.3	58.4	26.3	16.5	--
L1_5644_RT	SS-015	-L1-	56+44	70 RT	3.8-5.2	A-7-6	9	54	28	26	0.9	28.6	25.5	44.9	99.1	70.5	44.9	24.5	--
L1_5897	SS-015	-L1-	58+97	1 RT	0.0-4.0	A-2-6	1	35	16	19	4.4	33.9	29.3	32.3	95.6	61.7	32.3	16.5	--
Y1_1300	SS-257	-Y1-	13+00	90' LT	0.0-1.5	A-6	2	37	19	18	5.5	34.0	22.4	38.1	94.5	60.5	38.1	15.1	
Y1_1300	SS-259	-Y1-	13+00	90' LT	9.0-10.5	A-7-6	12	59	23	36	2.5	24.5	25.0	48.1	97.6	73.1	48.1	16.4	
Y2_1250_HA	S-028	-Y2-	12+50	13' LT	1.0-1.5	A-2-4	0	20	13	7	1.3	31.7	35.1	31.9	98.7	67.0	31.9	15.4	
Y2_1450_HA	S-029	-Y2-	14+50	14' RT	1.0-1.5	A-6	2	35	18	17	3.4	32.5	27.7	36.4	96.6	64.1	36.4	11.3	--
Y2_1600_HA	S-026	-Y2-	16+00	6' LT	1.0-2.5	A-2-6	0	28	15	13	4.1	33.0	34.2	28.7	95.9	62.9	28.7	24.0	--
Y2_1859	SS-166	-Y2-	18+59	11' LT	8.7-10.2	A-2-7	5	59	23	36	6.5	28.9	29.6	34.9	93.5	64.5	34.9	11.0	--
Y2_2050	SS-158	-Y2-	20+50	33' LT	13.0-14.5	A-2-4	0	35	30	5	6.3	35.7	26.4	31.6	93.8	58.1	31.6	16.2	
Y2_2050	SS-156	-Y2-	20+50	33' LT	3.0-4.5	A-7-6	4	50	24	26	2.1	32.5	27.9	37.5	98.0	65.4	37.5	13.5	--
Y2_2430	SS-145	-Y2-	24+30	0' CL	0.0-1.5	A-2-4	0	NP	NP	NP	7.2	40.1	32.8	19.9	92.8	52.8	19.9	8.9	--
Y2_2650	SS-141	-Y2-	26+50	0' CL	4.3-5.8	A-7-6	6	51	22	29	2.8	33.8	22.5	40.9	97.2	63.4	40.9	13.3	--
Y2_2850	SS-135	-Y2-	28+50	0' CL	3.6-5.1	A-7-6	8	55	25	30	2.6	30.3	23.8	43.2	97.4	67.0	43.2	15.1	
Y2_3050	SS-131	-Y2-	30+50	0' CL	13.5-15.0	A-2-4	0	33	25	8	8.0	34.3	27.0	30.7	92.0	57.7	30.7	12.5	--
Y2_3050	SS-129	-Y2-	30+50	0' CL	3.5-5.0	A-7-6	15	63	25	38	1.1	24.1	23.7	51.1	98.9	74.8	51.1	22.6	--
Y3_1200_HA	S-024	-Y3-	12+00	13' RT	1.0-2.5	A-2-6	0	27	15	12	14.3	36.6	21.4	27.6	85.7	49.1	27.6	13.1	
Y3_1405_HA	S-022	-Y3-	14+05	22' RT	1.0-2.5	A-2-4	0	27	17	10	10.7	28.1	30.5	30.7	89.3	61.2	30.7	20.0	--
Y3_1405_HA	S-023	-Y3-	14+05	22' RT	4.0-5.5	A-7-6	49	78	26	52	0.5	7.8	6.6	85.2	99.6	91.7	85.2	33.4	--
Y3_1413	SS-161	-Y3-	14+13	36' RT	3.3-4.8	A-7-6	4	43	23	20	2.9	31.3	23.5	42.3	97.1	65.8	42.3	--	--
Y4_1100_HA	S-032	-Y4-	11+00	15' RT	1.0-2.0	A-6	3	40	21	19	8.5	26.3	26.3	38.9	91.5	65.2	38.9	10.4	
Y4_1300_HA	S-021	-Y4-	13+00	23' LT	1.0-2.5	A-7-6	5	54	27	27	2.6	29.3	29.6	38.5	97.5	68.2	38.5	18.2	--
Y4_1500_HA	S-019	-Y4-	15+00	25' LT	1.0-2.5	A-2-4	0	20	17	3	12.6	29.5	26.6	31.3	87.4	57.9	31.3	16.0	--

TESTED BY: Michael P. Sm

NCDOT No.: 129-03-0411

PROJECT REFERENCE NO.	SHEET NO.
U–5748	97

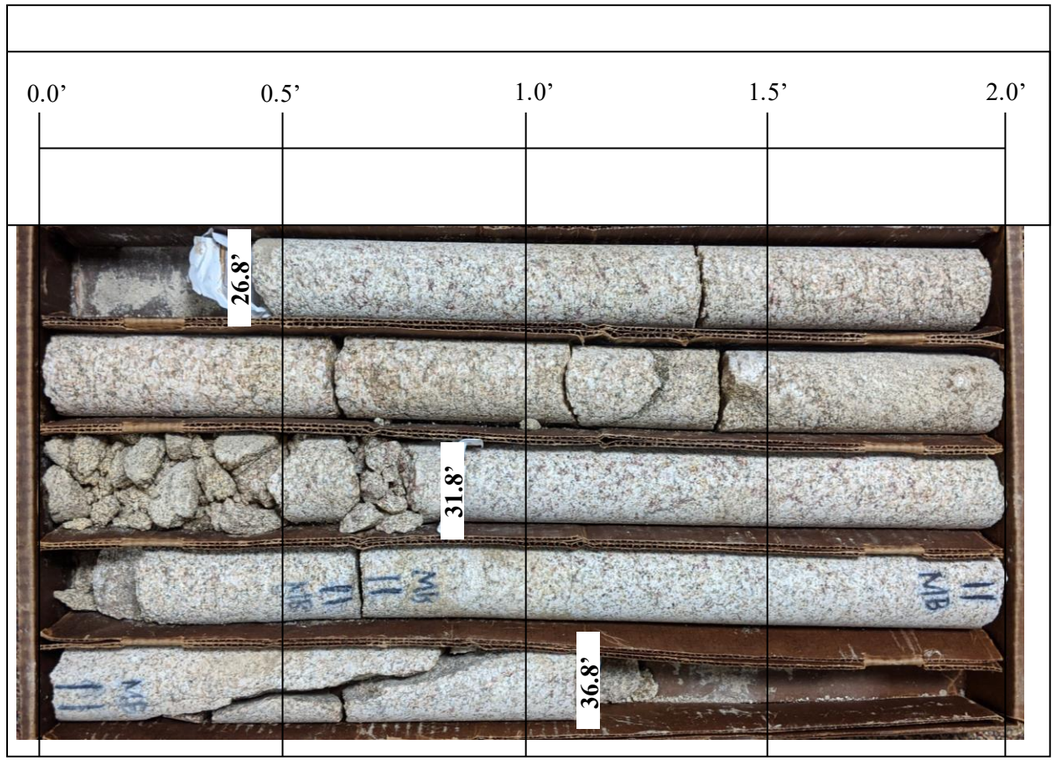
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

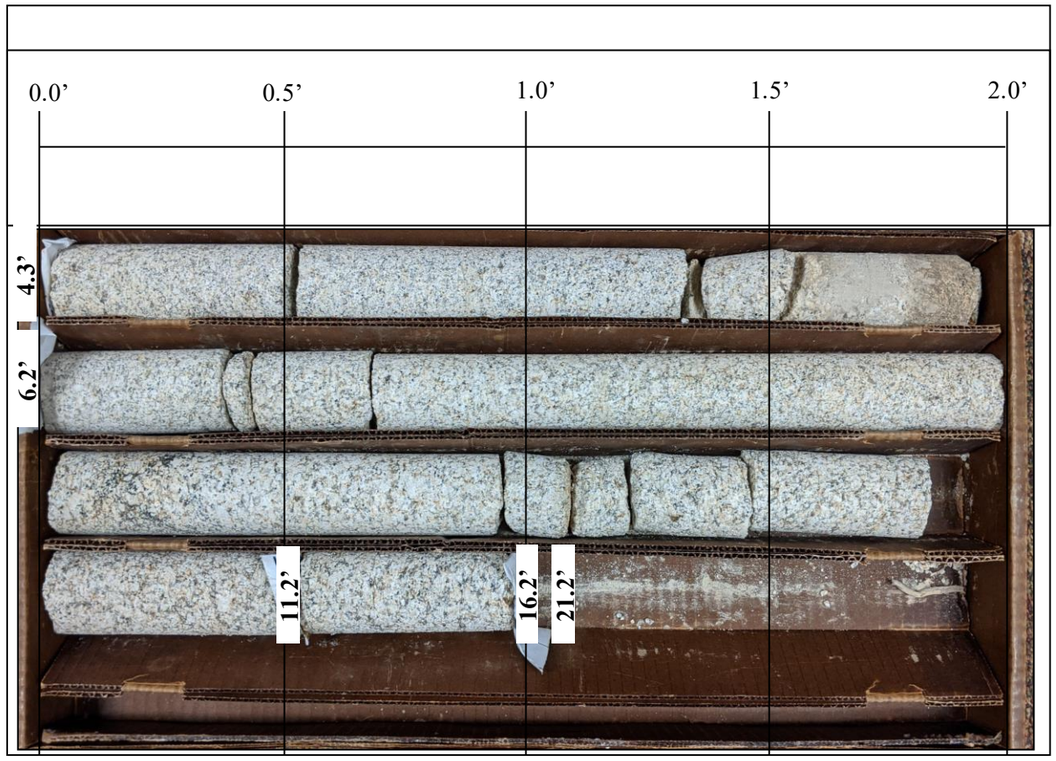
APPENDIX B
ROCK CORE PHOTOGRAPHS

REFERENCE: U–5748

PROJECT: 50168



Sta. 32+48 -L-, 139-ft RT, Box 1 of 1, 26.8-ft to 36.8-ft



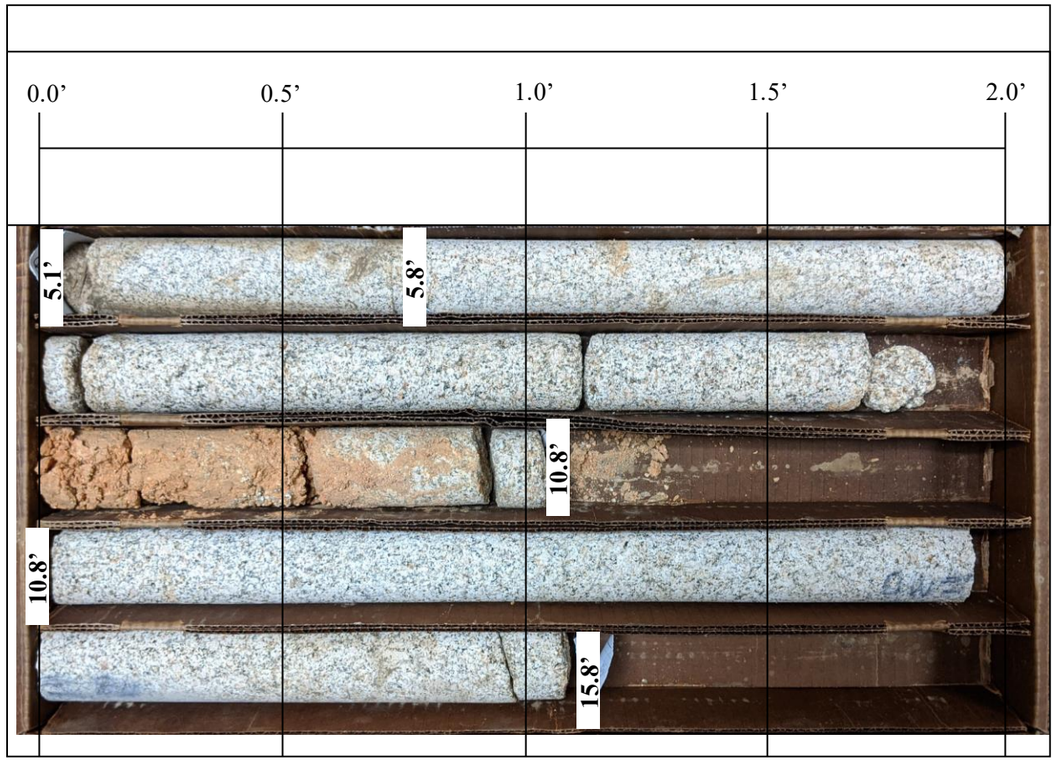
Sta. 71+00 -L-, 92-ft LT, Box 1 of 1, 4.3-ft to 21.2-ft

SCALE 1:40 (1”=4”)

ROCK CORE PHOTOGRAPHS

U.S. 401 AND LIGON MILL-MITCHELL MILL ROAD IMPROVEMENTS
WAKE COUNTY, NORTH CAROLINA
WBS NO.: 50168.1.1, TIP NO.: U-5748

AECOM
AECOM– North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
Tel: 919-461-1100 Fax: 919-46-1415



Sta. 75+00 -L-, 110-ft LT, Box 1 of 1, 5.1-ft to 15.8-ft

SCALE 1:40 (1”=4”)

ROCK CORE PHOTOGRAPHS

U.S. 401 AND LIGON MILL-MITCHELL MILL ROAD IMPROVEMENTS
WAKE COUNTY, NORTH CAROLINA
WBS NO.: 50168.1.1, TIP NO.: U-5748

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AECOM– North Carolina
1600 Perimeter Park Drive, Suite 400
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