REFERENCE: I-2513AA/AB

PROJECT: 34165

SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-LI_WB-	37+50 TO 67+00	11-13	N/A
-LI_EB-	37+00 TO 66+50	11-13	N/A
-Y_LT-	18+76 TO 92+44	4-9	N/A
-Y_RT-	18+76 TO 92+44	4-9	N/A
-Y_WB-	10+44 TO 19+00	9-10	N/A
-Y_EB-	10+44 TO 15+50	9-10	N/A
-Y5RPA-	25+00 TO 27+50	6-7	N/A
-RPC-	10+00 TO 39+50	10-12	N/A

CROSS SECTIONS

LINE	STATION	SHEETS
-LI_EB-	38+00 TO 66+00	16-30
-Y_LT-	39+50 TO 92+00	31-53
-Y_RT-	50+00 TO 92+00	54-70
-Y_WB-	10+50 TO 18+00	71-77
-Y_EB-	10+50 TO 13+50	78-81
-Y5RPA-	25+00 TO 27+00	82-84
-RPC-	22+00 TO 39+50	85-98

APPENDICES

APPENDIX	TITLE	SHEETS
A	BORE LOGS	99-114
B	LABORATORY TEST RESULTS	115-120

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *BUNCOMBE*

PROJECT DESCRIPTION *I-40 FROM EAST OF SR 1224 (MONTE VISTA RD) TO PAVEMENT JOINT WEST OF SR 3412 (SAND HILL RD). I-26 FROM POND ROAD BRIDGE TO I-26/I-40/I-240 INTERCHANGE. INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB RAMP AND US19 /23 (SMOKEY PARK HIGHWAY)*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AA/AB	1	123

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

A. BLACKMORE

A. SUTTLE, P.G.

M&W DRILLING

INVESTIGATED BY *ECS SOUTHEAST, LLP*

DRAWN BY *K. DE MONTBRUN, P.E.*

CHECKED BY *M. WALKO, P.E.*

SUBMITTED BY *ECS SOUTHEAST, LLP*

DATE *AUGUST 2022*

Prepared in the Office of:
ECS SOUTHEAST, LLP
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED ENGINERING FIRM # F-1078

NORTH CAROLINA PROFESSIONAL SEAL 045542 ENGINEER KELLY N. DE MONTBRUN

DocuSigned by:
Kelly de Montbrun 8/26/2022
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
I-2513AA/AB	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	25 MX	50 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER			HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX				
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS					
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR		UNSUITABLE

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

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

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

RECOMMENDATION SYMBOLS

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

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] GEOPROBE 7822
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

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

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK: N/A

ELEVATION: FEET

NOTES:

ROADWAY DESIGN FILES, .TIN FILE, AND GPK FILE PROVIDED BY AECOM

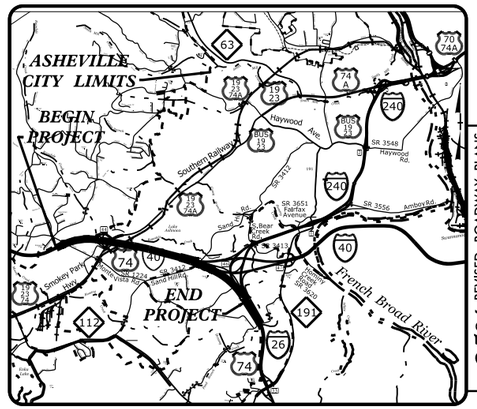
NORTHING AND EASTINGS OBTAINED USING A TRIMBLE GEO7X BORING ELEVATIONS FOR ROADWAY BORINGS WERE OBTAINED USING THE PROVIDED .TIN FILE

FIAD = FILLED IN AFTER DRILLING

DATE: 8-15-14

CONTRACT: **TIP PROJECT: I-2513AA/AB**

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



25% REVISED ROADWAY PLANS JANUARY 13, 2022

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

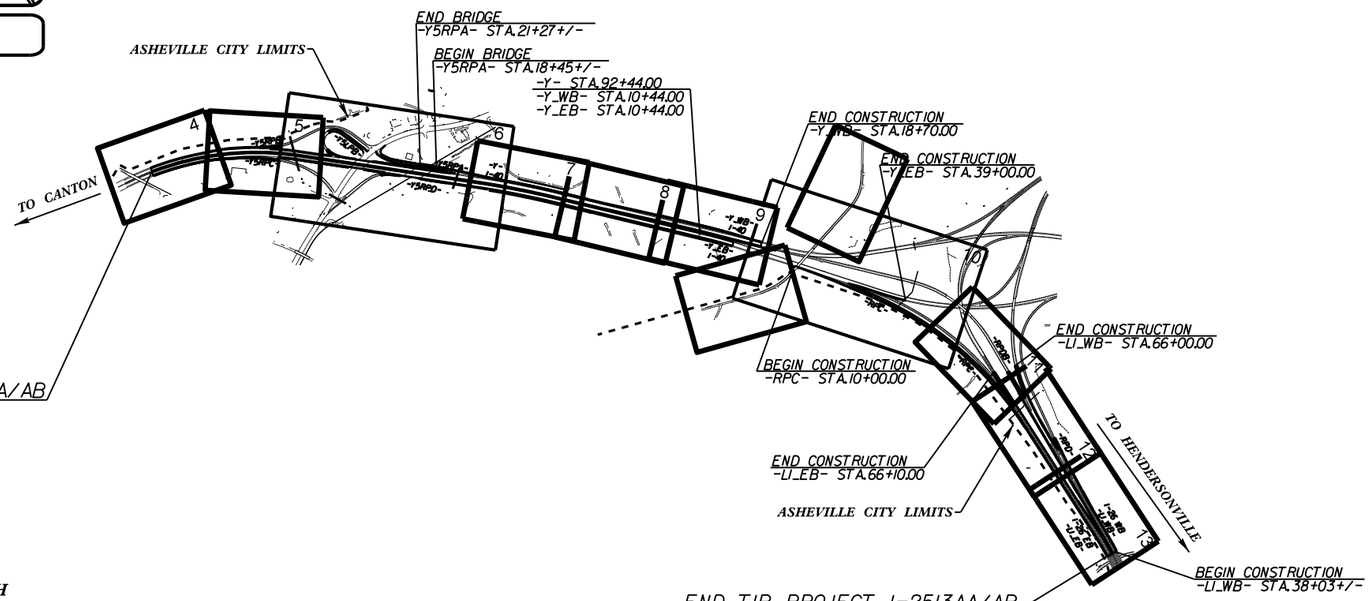
BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AA/AB	2A	123

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34165.1.6		P.E., R/W, UTIL

LOCATION: *I-40 FROM MONTE VISTA ROAD TO WEST OF SAND HILL RD. I-26 FROM POND ROAD BRIDGE TO I-26/I-40/I-240 INTERCHANGE. INCLUDES INITIAL IMPROVEMENTS AT I-40EB TO I-26EB RAMP AND US 19/23 (SMOKEY PARK HIGHWAY)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS, RETAINING WALLS, SOUND WALLS, SIGNALS, AND SIGNING*



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

THIS PROJECT IS LOCATED WITHIN THE CITY LIMITS OF THE CITY OF ASHEVILLE

CLEARING ON THIS PROJECT WILL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD __

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Raleigh, N.C. 27606
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Bus: 919 851 8077
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2024 = 95,100
ADT 2040 = 118,800
K = 9 %
D = 55 %
T = 11 % *
V = 60 MPH
* TTST = 8% DUAL 3%
FUNC CLASS = INTERSTATE

STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-2513AA/AB = *2.661 MI*

TOTAL LENGTH TIP PROJECT I-2513AA/AB = *2.661 MI*

KCI Associates of N.C., P.A.
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266
http://www.kci.com

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 17, 2022

LETTING DATE: FEBRUARY 20, 2024

CHARLES L. FLOWE, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

KEVIN E. MOORE, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

ECS Southeast, LLP

1812 Center Park Drive, Suite D
Charlotte, NC 28217
T 704.525.5152 I F 704.357.0023
www.ecslimited.com

August 26, 2022

WBS NO:
TIP NO: I-2513AA/AB
F.A. NUMBER: N/A
COUNTY: Buncombe
DESCRIPTION: I-40 from East of SR 1224 (Monte Vista Rd.) to West of SR 3412 (Sand Hill Rd.) and I-26 from the Pond Road Bridge to the I-26/I-40/I-240 Interchange

SUBJECT: **Geotechnical Report – Inventory**

Project Description

The approximately 2.66-mile long project consists of realigning and widening portions of I-40 (-Y_LT-, -Y_RT-, -Y_EB-, -Y_WB-) from east of SR 1224 (Monte Vista Road) to west of SR 3412 (Sand Hill Road) and portions of I-26 (-L1_EB-, -L1_WB-) from the Pond Road Bridge to the I-26/I-40/I-240 interchange. Reconfiguration of the ramps within the existing I-26/I-40/I240 interchange will also be performed as part of the interchange improvements. Several ramps and loops (-Y5RPA-, -Y5RPB-, -Y5RPC-, -Y5RPD-, -RPC-, -RPDB-, and -RPD-) will also be widened/constructed within the project corridor.

The typical section along the I-26 (-L1-) alignments will include 4 travel lanes in each direction separated by either a median or a concrete barrier. The typical section along the I-40 (-Y-) alignments will include 5 travel lanes in each direction separated by a concrete barrier. Work within the project corridor will generally consist of retaining a majority of the existing pavement section and will include the addition of travel lanes and full depth paved shoulders.

The western portion of the project corridor, in the vicinity of the Smokey Park Highway (US 19/23) interchange, is developed and consists of a mixture of residential and commercial properties. Heading east along I-40 towards Sandhill Road, a few residential areas are located south of I-40 and the area north of I-40 is primarily wooded. The property within the existing I-26/I-40/I-240 interchange consists mainly of grassed/wooded areas. Hominy Creek parallels the east side of I-26 just south of the interchange.

A geotechnical field investigation was performed by ECS between April and May 2022. During this time period, a total of fifty-nine (59) standard penetration test (SPT) borings were advanced using a 7822DT Geoprobe drill rig equipped with an automatic hammer. Representative soil samples were collected for visual classification in the field and for analysis by ECS's testing laboratory. Representative soil samples were collected for visual classification in the field and for analysis by ECS's testing laboratory. Additionally, bulk samples were collected from the various cut areas and were used for standard Proctor and California Bearing Ratio (CBR) testing.

Between November 2003 and January 2004, NCDOT conducted a field investigation at the site. During that time period, a total of thirty-two (32) standard penetration test (SPT) borings and two (2) hand auger borings performed. Field logs were provided to ECS for use in the preparation of this report.

The following alignments were investigated. Subsurface plans, profiles and cross sections of these alignments are included in this report.

Line	Station (±)
-Y_LT-	18+80 to 92+44
-Y_RT-	18+76 to 92+44
-Y_WB-	10+44 to 19+00
-Y_EB-	10+44 to 15+00
-Y5RPA-	25+00 to 27+50
-RPC-	10+00 to 39+50
-L1_EB-	37+00 to 66+50
-L1_WB-	37+50 to 67+00

Note that field investigations for structures and retaining walls were not part of the scope of work for this exploration.

Physiography and Geology

The project site is located in the Blue Ridge Physiographic Province of North Carolina. In accordance with the Geologic Map of North Carolina, 1985, the predominant rock types in this area are mapped as muscovite-biotite gneiss. Weathered rock samples recovered from the borings typically exhibited characteristic of biotite gneiss. The virgin soils are the residual product of in-place chemical weathering of rock that was similar to the rock presently underlying the site.

Soil Properties

Soils within the area of this project have been divided into five categories: artificial fill, roadway embankment, alluvial, colluvial, and residual soils.

Artificial Fill: Materials identified as Artificial Fill (A.F.) were encountered at several locations along the project corridor. The artificial fill generally consists of very loose to loose sandy gravel (A-1-a) and very loose to loose clayey sand (A-2-7) and extend to depths of approximately 6.5 feet below existing grades.

Laboratory testing of the Artificial Fill soils indicated a Plasticity Index (PI) of Non-Plastic (NP) for the gravels (A-1-a) and a PI of 11 for the sandy soils (A-2-7).

Roadway Embankment: Roadway Embankment (R.E.) soils extend to depths up to approximately 33.6 feet below existing grades and generally consist of very loose to medium dense silty/clayey sands (A-2-4, A-2-6, A-2-7), very soft to hard sandy/clayey silt (A-4, A-5), and very soft to medium stiff sandy/silty clay (A-6, A-7-5) with various amounts of organics, mica and rock fragments throughout. Laboratory testing of the Roadway Embankment soils indicated PI's ranging from NP to 12 for the sandy soils (A-2-4, A-2-7) and PI's ranging from NP to 10 for the silty soils (A-4, A-5).

Alluvial Soils: Alluvial soils were encountered along several creeks and drainage features within the project corridor and extend to depths ranging from approximately 7.0 to 28.0 feet below existing grades. The alluvial soils generally consist of very loose to medium dense sandy gravel (A-1-a, A-1-b), very loose to medium dense silty/clayey sand (A-2-4, A-2-6), very soft to medium stiff sandy/clayey silt (A-4, A-5), and very soft to stiff sandy/silty clay (A-6, A-7-5, A-7-6) with trace organics and mica throughout. Laboratory testing of the Alluvial soils indicated a PI of NP for the silty soils (A-5) and PI's ranging from 11 to 19 for the clayey soils (A-6, A-7-6).

Colluvial Soils: Colluvial soils were encountered at several locations along the project corridor and extend to depths ranging from approximately 7.0 to 22.1 feet below existing grades. The colluvial soils generally consisted of very soft to medium stiff silty clay (A-7-5) with trace mica and rock fragments throughout.

Residual Soils: Residual soils were encountered throughout the project corridor are derived from the weathering of the underlying parent bedrock. A majority of the residual soils encountered generally consist of medium dense sandy gravel (A-1-b), very loose to very dense silty sand (A-2-4, A-2-5), very soft to hard sandy/clayey silt (A-4, A-5), and soft to very stiff sandy/silty clay (A-6, A-7-5, A-7-6) with trace to some mica and rock fragments throughout. Laboratory testing of the Residual soils indicated a PI of NP for the gravels (A-1-b), a PI of NP for the sandy soils (A-2-4, A-2-5), PI's ranging from NP to 6 for the silty soils (A-4, A-5), and PI's ranging from 11 to 30 for the clayey soils (A-6, A-7-5, A-7-6).

Rock Properties

Weathered Rock: The top of the weathered rock varied significantly along the corridor and was encountered at depths ranging from approximately 6.0 to 58.6 feet below the existing ground surface; corresponding to elevations ranging from approximately 2,107.3 feet to 2,041.7 feet. At several locations, lenses of weathered rock were encountered within the residual soil zone. The weathered rock encountered generally consists of Gneiss.

Crystalline Rock: The top of the crystalline rock varied significantly along the corridor and was encountered at depths ranging from approximately 6.0 to 68.5 feet below the existing ground surface, corresponding to elevations ranging from approximately 2,074.8 feet to 2,035.5 feet. The crystalline rock encountered consists of Gneiss.

Groundwater Properties

At the time of drilling, groundwater was encountered in six (6) of the borings drilled by ECS at depths ranging from approximately 8.3 to 11.2 feet below the existing ground surface, corresponding to elevations ranging from approximately 2,061.4 feet to 2,010.6 feet. After a stabilization period of at least 24 hours, groundwater was encountered in three (3) of the borings drilled by ECS at depths ranging from approximately 5.8 to 7.2 feet below the existing ground surface, corresponding to elevations ranging from approximately 2,019.1 feet to 2,013.5 feet. The recovered soil samples were generally described as moist above the groundwater level and moist to wet below the groundwater level.

For historical reference, thirteen (13) of the borings drilled by NCDOT in 2003-2004 encountered groundwater at depths ranging from approximately 0.4 to 30.1 feet below the existing ground surface, at the time of drilling. This corresponds to elevations ranging from 2,084.8 feet to 2,060.3 feet. After a stabilization period, groundwater was encountered in seven (7) of the NCDOT borings at depths ranging from approximately 0.0 feet to 25.2 feet, corresponding to elevations ranging from 2,088.3 feet to 2,060.8 feet.

Areas of Special Geotechnical Interest

1) Artificial Fill: The following areas encountered artificial fill that may impact construction. Artificial Fill Soils were encountered at the following locations:

Line	Station (±)	Offsets
-Y-	50+75 to 52+75	LT
-Y5RPA-	25+00 to 27+19	LT to RT

2) Soft/Very Loose Soils: The following areas contain relatively soft or very loose and/or Alluvial soils that have the potential for subgrade instability, embankment stability or long-term settlement problems during construction:

Line	Station (±)	Offsets
-L1EB-	58+75 to 59+75	LT
-L1EB-	61+75 to 63+75	LT
-Y-	57+75 to 62+25	LT
-Y-	69+75 to 74+75	RT
-Y-	90+75 to 92+44	LT to RT
-Y_WB-	10+75 to 11+75	LT
-Y_EB-	10+44 to 13+25	RT
-RPC-	22+25 to 31+25	LT to RT
-Y5RPA-	26+75 to 27+19	LT to RT

3) High Plasticity Soils: The following areas contain high plasticity soils with plasticity indices (PI's) in excess of 25. High plasticity soils have the potential to cause subgrade instability during construction, embankment stability or long-term settlement problems.

Line	Station (±)	Offsets
-L1EB-	64+75 to 65+75	LT
-Y_WB-	15+25 to 17+25	LT
-RPC-	38+75 to 39+50	RT

4) High Organic Content: Based on laboratory testing results, the following areas possess an organic content greater than 4% and are therefore unsuitable borrow sources.

Line	Station (±)	Offsets
-Y-	74+75 to 77+75	LT to RT
-RPC-	23+75 to 25+25	RT

5) High Groundwater: Groundwater was encountered within six feet of the proposed subgrade at the following locations. This has the potential to cause subgrade instability and/or constructability issues.

Line	Station (±)	Offsets
-Y-	55+00 to 72+00	LT to RT
-Y_WB-	10+44 to 11+75	LT
-Y_EB-	10+44 to 13+25	RT
-RPC-	22+25 to 29+00	LT to RT

Bulk Samples

Bulk soil samples of auger cuttings were obtained at the following locations and were used for standard Proctor and/or California Bearing Ratio (CBR) testing. At the time of this report, the laboratory testing of the bulk samples is on-going.

Sample	Line	Station (±)	Offset	Depth (ft.)
BULK 1	-Y6-	N/A	N/A	1.0-6.0
BULK 2	-RPDB-	44+00	80’ RT	1.0-6.0
BULK 3	-RPC-	38+00	90’ RT	1.0-6.0

Respectively Submitted,

DocuSigned by:
Kelly de Montbrun
7BDD9975E22C480...

Kelly N. de Montbrun, P.E.
Senior Project Engineer

DocuSigned by:
Michael J. Walko
78222AC7F82F4D7...

Michael J. Walko, P.E.
Principal Engineer

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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KCI
Engineers • Planners • Scientists • Construction Managers
4505 Falls of Neuse Road, Suite 400
Raleigh, NC 27609-6270
Phone (919) 783-9214 • Fax (919) 783-9266
http://www.kci.com

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
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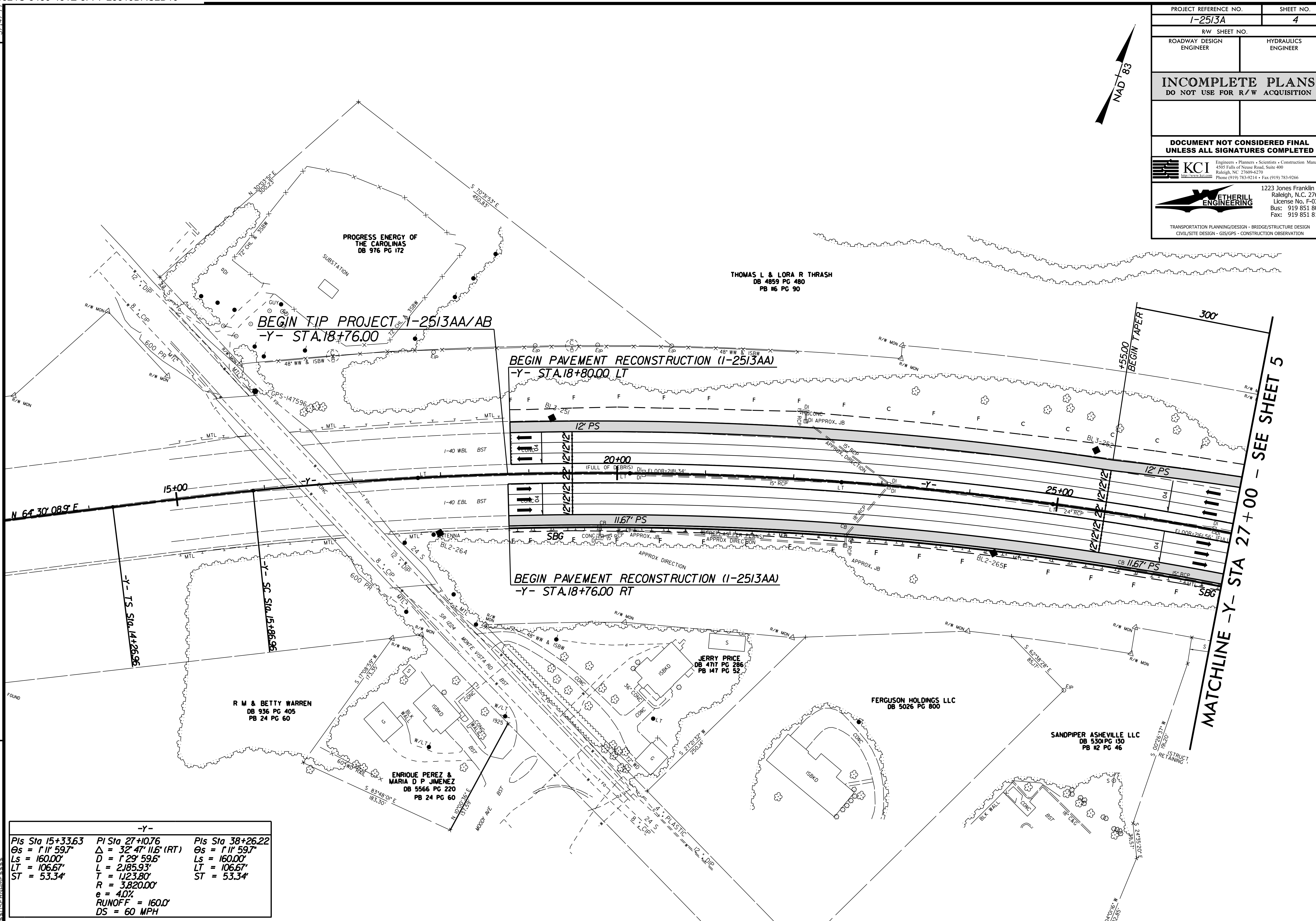

-Y-		
PIs Sta 15+33.63	PI Sta 27+10.76	PIs Sta 38+26.22
Θs = 1° 11' 59.7"	Δ = 32° 47' 11.6" (RT)	Θs = 1° 11' 59.7"
Ls = 160.00'	D = 1° 29' 59.6"	Ls = 160.00'
LT = 106.67'	L = 2,185.93'	LT = 106.67'
ST = 53.34'	T = 1,123.80'	ST = 53.34'
	R = 3,820.00'	
	e = 4.0%	
	RUNOFF = 160.0'	
	DS = 60 MPH	

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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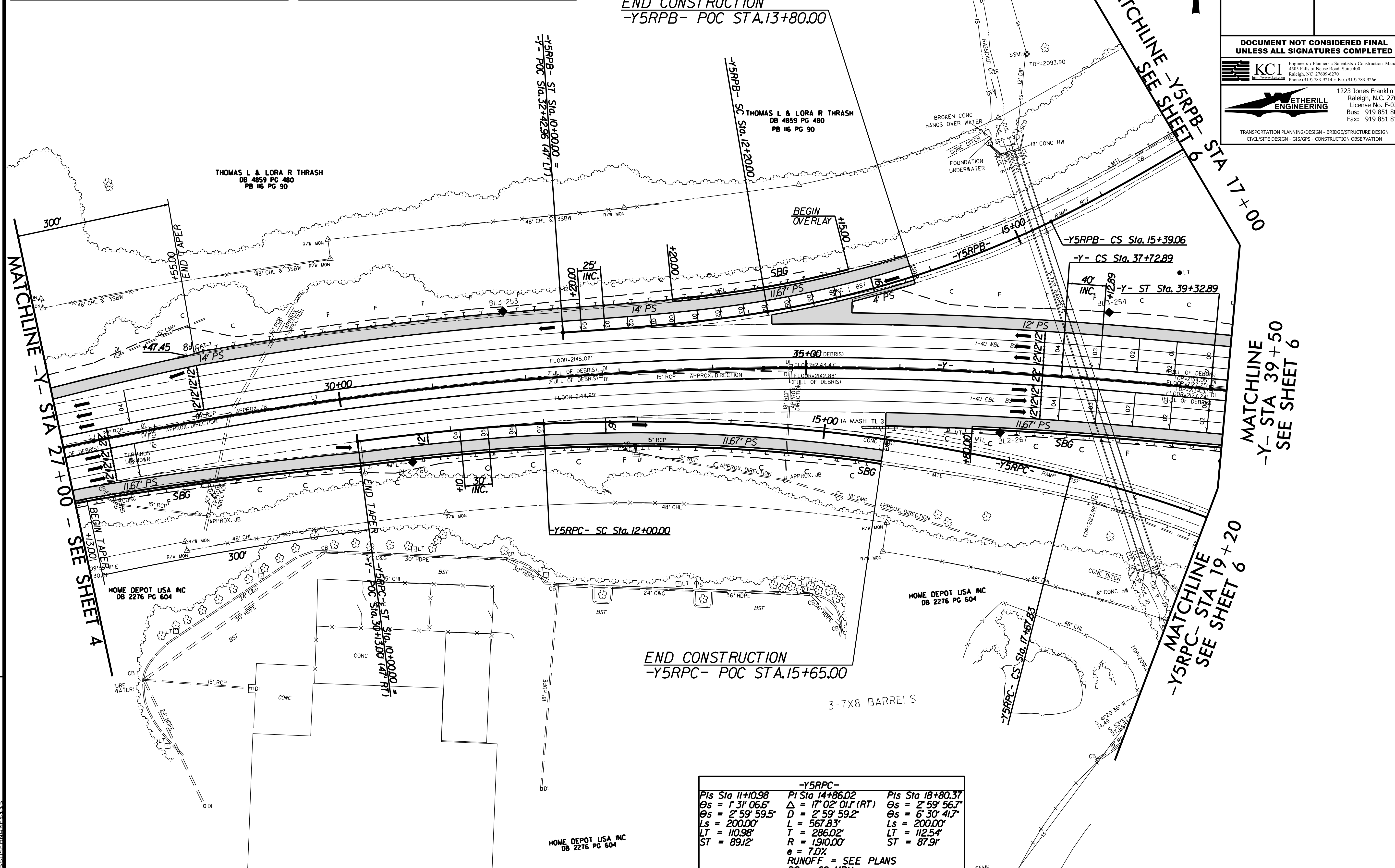
-Y-

PIs Sta 15+33.63	PI Sta 27+10.76	PIs Sta 38+26.22
Θs = 1° 11' 59.7"	Δ = 32° 47' 11.6" (RT)	Θs = 1° 11' 59.7"
Ls = 160.00'	D = 1° 29' 59.6"	Ls = 160.00'
LT = 106.67'	L = 2,185.93'	LT = 106.67'
ST = 53.34'	T = 1,123.80'	ST = 53.34'
	R = 3,820.00'	
	e = 4.0%	
	RUNOFF = 160.0'	
	DS = 60 MPH	

-Y5RPB-

PIs Sta 11+46.74	PI Sta 13+80.60	PIs Sta 16+05.78
Θs = 5° 34' 38.9"	Δ = 16° 10' 40.3" (LT)	Θs = 5° 04' 13.5"
Ls = 220.00'	D = 5° 04' 13.5"	Ls = 200.00'
LT = 146.74'	L = 319.06'	LT = 133.39'
ST = 73.40'	T = 160.60'	ST = 66.72'
	R = 1,130.00'	
	e = 8.0%	
	RUNOFF = SEE PLANS	
	DS = 50 MPH	



-Y5RPC-

PIs Sta 11+10.98	PI Sta 14+86.02	PIs Sta 18+80.37
Θs = 1° 31' 06.6"	Δ = 17° 02' 01.1" (RT)	Θs = 2° 59' 56.7"
Θs = 2° 59' 59.5"	D = 2° 59' 59.2"	Θs = 6° 30' 41.7"
Ls = 200.00'	L = 567.83'	Ls = 200.00'
LT = 110.98'	T = 286.02'	LT = 112.54'
ST = 89.12'	R = 1,910.00'	ST = 87.91'
	e = 7.0%	
	RUNOFF = SEE PLANS	
	DS = 60 MPH	

REVISIONS

REVISIONS

-Y5LPB-
PI Sta 12+92.66
Δb = 37°41'32"
Δf = 52°59'09.9"
Δ = 90°40'42.2"
D = 22°59'09.9"
Lc = 85.46'
L = 94.70'
T = 60.72'
R = 250.00'
e = 6.00%
Rwall? = SEE PLANS
DS = 30 MPH
PI Sta 13+48.70
Δ = 16°08'12.6" (RT)
D = 38°49.9"
Lc = 301.96'
L = 303.92'
T = 153.09'
R = 150.00'
e = EXIST.
PI Sta 16+70.58
Δ = 90°40'42.2" (RT)
D = 38°49.9"
Lc = 89.07'
L = 99.47'
T = 63.66'
R = 150.00'
e = EXIST.

-Y5RPB-
PI Sta 8+70.78
Δb = 2°04'13.5"
Δf = 13°01'18.4"
Lc = 200.00'
Lt = 199.79'
T = 99.72'
PI Sta 8+86.36
Δb = 13°01'18.4"
Lc = 200.00'
Lt = 199.70'
T = 99.70'
PI Sta 11+34.83
Δ = 39°09'31.3" (RT)
D = 11°19'.8.4"
L = 392.08'
R = 506.00'
e = EXIST.
PI Sta 11+42.54
Δb = 15°01'18.4"
Lc = 200.00'
Lt = 199.70'
T = 99.70'

PROJECT REFERENCE NO. I-2513A
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

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KCI
1223 Jones Franklin Rd.
Suite 205
Raleigh, NC 27606
Phone: 919.851.6000
Fax: 919.851.8101

ETHERIDGE ENGINEERING
1223 Jones Franklin Rd.
Suite 205
Raleigh, NC 27606
Phone: 919.851.6000
Fax: 919.851.8101

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CIVIL/SITE DESIGN • SURVEY • CONSTRUCTION OPERATIONS

HOLD 63

MATCHLINE -Y5RPB- STA 17+00
SEE SHEET 5

MATCHLINE -Y- STA 39+50
SEE SHEET 5

MATCHLINE -Y5RPC- STA 19+20
SEE SHEET 5

MATCHLINE -Y- STA 63+00 – SEE SHEET 7

END GRADE
-Y5LPB- POC STA.12+84.28

END CONSTRUCTION
-Y5LPB- POT STA.22+38.00

END CONSTRUCTION
-Y5RPA- POC STA.27+49.45

END CONSTRUCTION
-Y5RPD- POC STA.12+71.05

Y.3950L
Y.4100L
Y.4250L
Y.4500L
Y.5000L
Y.5000R
Y5RPA.2600R
Y5RPD.2500L
B-19
B-20
B-22
B-33
B-34

-Y5RPC-
PI Sta 8+80.37
Δb = 5°32'56.7"
Δf = 27°13'.52.1" (RT)
Lc = 220.00'
Lt = 219.92'
T = 111.04'
R = 230.00'
e = EXIST.
PI Sta 11+58.09
Δ = 32°51'.52"
L = 410.42'
R = 715.00'
e = EXIST.

-Y5LPA-
PI Sta 12+25.28
Δ = 3°06'.20.5" (RT)
D = 0°42'.38.6"
L = 400.00'
R = 8,500.00'
e = NC
DS = 50 MPH
PI Sta 16+80.20
Δ = 4°44'.08.5" (LT)
D = 0°40'.38.6"
L = 708.32'
R = 8,500.00'
e = NC
DS = 50 MPH
PI Sta 25+45.16
Δ = 9°04'.32" (RT)
D = 1°36'.20"
L = 356.67'
R = 760.00'
e = 3.6%
RwallPT = 950'
DS = 30 MPH

-Y5RPD-
PI Sta 11+77.15
Δb = 15°54'.35.8"
Lc = 250.00'
Lt = 167.32'
T = 83.99'
PI Sta 13+17.78
Δ = 1°08'.02" (LT)
D = 0°45'.56.6"
L = 134.92'
R = 7,679'
e = 4.00%
RwallPT = SEE PLANS
DS = 30 MPH
PI Sta 14+10.22
Δb = 15°15'.57"
Lc = 254.98'
Lt = 170.72'
T = 89.60'

-Y-
PI Sta 37+46.89
Δ = 4°56'.48" (RT)
D = 0°15'.38.9"
L = 1,045.00'
T = 521.99'
R = 2,000.00'
e = NC
DS = 60 MPH

-BASSPUR-
PI Sta 11+20.28
Δ = 15°37'.40.2" (RT)
D = 15°18'.43.9"
L = 103.59'
T = 52.08'
R = 375.00'
PI Sta 13+28.14
Δ = 23°12'.34" (LT)
D = 12°49'.57.9"
L = 214.60'
T = 108.84'
R = 530.00'

REVISED SIGNAL

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

-Y-
PI Sta 67+46.87
△ = 4° 58' 48.4" (RT)
D = 0° 28' 38.9"
L = 1,043.03'
T = 521.85'
R = 12,000.00'
e = NC
DS = 60 MPH

-Y5RPA-
PI Sta 12+25.48
△ = 3° 02' 20.5" (RT)
D = 0° 40' 26.6"
L = 450.85'
T = 225.48'
R = 8,500.00'
e = NC
DS = 50 MPH

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NAD 83

MATCHLINE -Y- STA 63+00 – SEE SHEET 6

MATCHLINE -Y- STA 75+00 – SEE SHEET 8

-Y5RPA- PC Sta. 10+00.00=
-Y- POC Sta.65+78.08 (59' LT)

-Y5RPA- PT Sta. 14+66.06

84 PROPERTIES LLC
DB 5489 PG 927

THE ASHEVILLE SCHOOL INC
DB 88 PG 116
PB 19 PG 87

THE ASHEVILLE SCHOOL
DB 88 PG 116
PB 19 PG 87

AUTOSTAR PROPERTY GROUP LLC
DB 5302 PG 1045

HAYES & LEDFORD LLC
DB 4196 PG 816

DAVID D & SHIRLEY R BAKER
DB 5755 PG 1558
PB 35 PG 97

PHYILLIS DUCKETT MORGAN
DB 1252 PG 564

RONNI & CARMON D O'BRIEN
DB 5588 PG 1962
PB 35 PG 124

LUIS A & MARIA ARROYO
DB 4242 PG 563
PB 35 PG 124

JEFFREY A CLARK & TAMMY G CLARK
DB 3730 PG 326
PB 35 PG 124

ZELMA PERKINS ET AL
DB 2008 PG 30
PB 35 PG 124

CHARLIE & CHRISTINA CALDER
DB 4896 PG 1557
PB 97 PG 153

THOMAS JAMES HEY REVOCABLE TRUST
DB 5742 PG 766
PB 97 PG 153

GARNET JOHN BUDD III & CYNTHIA BUDD
DB 5489 PG 1220
PB 97 PG 153

HEATHER A PERRY
DB 5387 PG 980
PB 97 PG 153

BRUCE R & JUDY V DILLS
DB 1058 PG 17
PB 35 PG 124

HARVEY G & RUTH M BUCKNER
DB 1972 PG 749
PB 18 PG 43

-RESIDUAL-
-ALLUVIAL-
-COLLUVIAL-
-ROADWAY EMBANKMENT-

BEG PROP.RETAIN.WALL W701
-Y- STA.66+46.00,
OS=129' LT

BEG.PAVED SHOULDER
-Y- STA.67+50.00,
OS=147.20' LT

BEG.PROP.2'-6" C&G
-Y- STA.68+05.00,
OS=131.50' LT

END PROP.2'-6" C&G
-Y- STA.73+57.00,
OS=131.50' LT

END PROP.RETAIN.WALL W701
-Y- STA.74+55.00,
OS=129' LT

END PAVED SHOULDER
-Y- STA.74+38.00,
OS=157.60' LT

BEGIN PROP.NOISE WALL NWC-1A
-Y- STA.63+70.00,
OS=86.50' RT

REMOVE EXIST. NOISE WALL
-Y- FROM STA. 70+00.00 TO STA. 76+00.00

NWC-1A

B-13 B-14 B-15 B-16 B-17 B-18 B-23 B-24 B-25

SSMH TOP=2069.30'
SSMH TOP=2062.55'
SSMH TOP=2067.00'
SSMH TOP=2076.83'
SSMH TOP=2082.90'
SSMH TOP=2098.69'
SSMH TOP=2093.86'
SSMH TOP=2105.27'
TOP=2085.55' VAULT
TOP=2069.69'
TOP=2122.54'
TOP=2098.39' FLOOR=2097.00 (FULL OF DEBRIS)
TOP=2096.61' FLOOR=2090.14' (FULL OF DEBRIS)
TOP=2097.85' FLOOR=2090.19' (FULL OF DEBRIS)

SUPPORTS CREEK CROSSING

LOW POINT -Y- STA 67+99

LOW POINT -Y- STA 67+22.31

PROP.2'-6" C&G

RET W701

GRANDVIEW CR 16' BST

-Y- S 75°19'51.7" E

REVISIONS

5/14/99

26-AUG-2022 10:35
c:\ts_3000_-_4199\31_-_4100-31-4199\31-4137_I-2513A_I-26,_Pursuit\CADD_GEOTECH\PlanProf\I2513AA_geo_psh_7.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
1-2513A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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NAD 83

MATCHLINE -Y- STA 75+00 – SEE SHEET 7

MATCHLINE -Y- STA 88+00 – SEE SHEET 9

REVISIONS

5/14/99

VONDELL RHODES
MICHAEL R RHODES
DB 5292 PG 1021
PB 29 PG 131

CLYDE S. TRAVIS SR
& JANE TRAVIS
DB 4905 PG 1200
PB 29 PG 131

ANTHONY NESBITT
DB 5525 PG 1947
PB 29 PG 131

MICHAEL K & SHIRLEY DENEESE
DB 1142 PG 352
PB 29 PG 131

CARL S TRAVIS JR
DB 4945 PG 1314
PB 29 PG 131

BENNIE A. GASKIN
DB 1941 PG 760

HEMANT & DAXA PATEL
DB 4189 PG 79

CHARLES E SMITH LE
& BARBARA B SMITH LE
DB 5662 PB 29
PG 768 PG 131

THE ASHEVILLE SCHOOL, INC.
DB 118 PG 116
PB 19 PG 87

KATHY RENA BRANCH
DB 4466 PG 888
PB 48 PG 50

NICONDA B. GARCIA
DB 5255 PG 879
PB 32 PG 15

HARVEY G & RUTH M BUCKNER
DB 1972 PG 749
PB 18 PG 43

JAMES RICHARD WYNNE
DB 3534 PG 777
PB 32 PG 15

WILSON DEBRA K JONES & JONES
DB 1916 PG 125
PB 32 PG 199

JERRY BRYAN BOYD (LE)
JOAN B BOYD (LE)
DB 5193 PG 1043
PB 32 PG 15

MELANIE ROBERTSON
DB 5555 PG 1955

PERRY J MARTINO & RUSSEL ROOT
DB 5421 PG 187
PB 160 PG 165

JENNIFER W & CHARLES D CAMPBELL
DB 546 PG 997
PB 27 PG 8

SAMUEL P. & BARBARA N. FAULKNER
DB 5784
PG 102
PB 27
PG 8

STEWART & CLARK PROPERTIES LLC
DB 5726 PG 105
PB 190 PG 51

ELIZABETH A GELINEAU
DB 5745 PG 465
PB 190 PG 51

DARCY KIRBY
DB 2543 PG 105
PB 27 PG 8

JOSHUA D BOYD & JULIE L P BOYD
DB 5432 PG 197
PB 99 PG 81

TANYALEE RATTE
DB 4446 PG 1050
PB 99 PG 81

LARRY L & MITZIK RIDDLE
DB 1693 PG 36

-RESIDUAL-
-ROADWAY EMBANKMENT-
-COLLUVIAL-

B-11 B-12 B-10 B-26

720'

END PROP. SBG
BEG. PROP. EXP. GUTTER
-Y- STA. 76+90.00

BEGIN TAPER +30.00

END PROP. EXP. GUTTER
BEG. PROP. SBG
-Y- STA. 86+60.00

END TAPER +50.00

HIGH POINT 82+65.18

HIGH POINT 82+62.42

REMOVE EXIST. WALL
-Y- 54+00.00 TO
76+71.00 RT

BEG PROP. NOISE. WALL NWC-IB
-Y- STA. 77+40.00.
OS=99.00' RT

END PROP. NOISE. WALL NWC-IA
END PROP. SFB
-Y- STA. 77+70.00.
OS=86.50' RT

CONC SOUND BARRIER

Y_7600R Y_7800R Y_8000R Y_8400R Y_8600R Y_8800R

+42.83

S 75°19'51.7" E

80+00 85+00

EXP.G

SBG

12" PS

11.67" PS

NWC-IA NWC-IB

MONTGOMERY ST

SEMAN RD

48" CMP 15" RCP 30" RCP 18" RCP 24" RCP

TOP=2097.47' TOP=2136.65' TOP=2143.16'

ARC=25.14'
RADIUS=264.29'

ARC=49.35'
RAD=264.29'

ARC=32.12'
RADIUS=151.28'

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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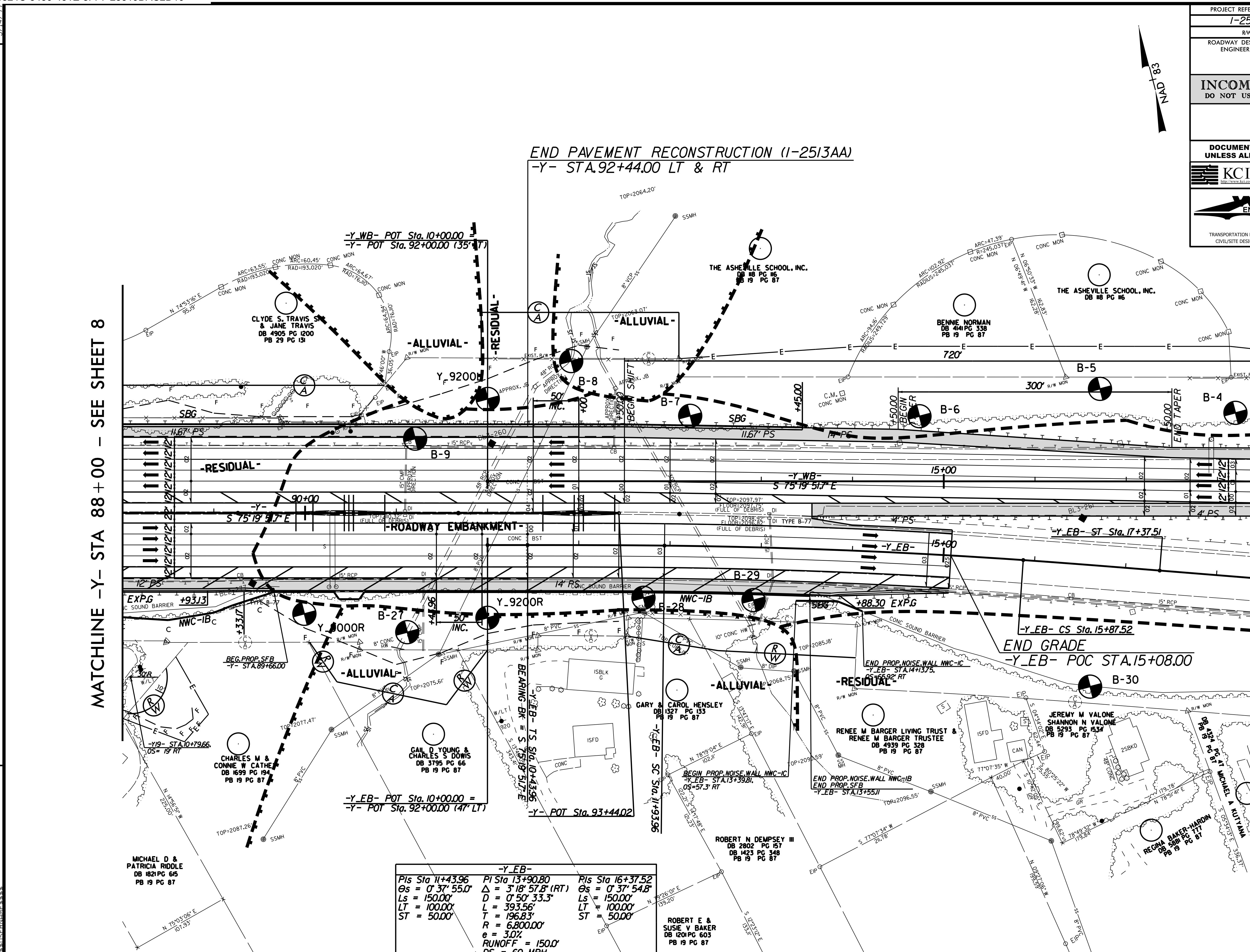
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION


NAD 83
END PAVEMENT RECONSTRUCTION (I-2513AA)
-Y- STA.92+44.00 LT & RT
-Y_WB- POT Sta. 10+00.00 =
-Y- POT Sta. 92+00.00 (35' LT)
MATCHLINE -Y- STA 88+00 - SEE SHEET 8
MATCHLINE -Y_WB- STA 17+00 - SEE SHEET 10
-ALLUVIAL-
-RESIDUAL-
-ROADWAY EMBANKMENT-
THE ASHEVILLE SCHOOL, INC.
DB 118 PG 16
PB 19 PG 87
CLYDE S. TRAVIS SR. & JANE TRAVIS
DB 4905 PG 1200
PB 29 PG 131
BENNIE NORMAN
DB 4141 PG 338
PB 19 PG 87
B-4
B-5
B-6
B-7
B-8
B-9
B-27
B-28
B-29
B-30
Y_9200L
Y_9200R
Y_9000R
-Y_WB-
S 75°19'51.7" E
-Y-
S 75°19'51.7" E
-Y_EB-
-Y_EB- ST Sta. 17+37.51
-Y_EB- CS Sta. 15+87.52
END GRADE
-Y_EB- POC STA.15+08.00
BEG. PROP. SFB
-Y- STA.89+66.00
-Y19- STA.10+79.66, OS= 19' RT
END PROP. NOISE. WALL NWC-IC
-Y_EB- STA.14+13.75, OS=56.82' RT
BEGIN PROP. NOISE. WALL NWC-IC
-Y_EB- STA.13+39.81, OS=57.3' RT
END PROP. NOISE. WALL NWC-IB
END PROP. SFB
-Y_EB- STA.13+55.11
BEARING BK = S 75°19'51.7" E
-Y_EB- TS Sta. 10+43.96
-Y_EB- SC Sta. 11+93.96
-Y- POT Sta. 93+44.02
-Y_EB- POT Sta. 10+00.00 =
-Y- POT Sta. 92+00.00 (47' LT)
CHARLES M & CONNIE W CATHEY
DB 1699 PG 194
PB 19 PG 87
GAIL D YOUNG & CHARLES S DOWIS
DB 3795 PG 66
PB 19 PG 87
GARY & CAROL HENSLEY
DB 1327 PG 133
PB 19 PG 87
RENEE M BARGER LIVING TRUST & RENEE M BARGER TRUSTEE
DB 4939 PG 328
PB 19 PG 87
JEREMY M VALONE SHANNON N VALONE
DB 5293 PG 1534
PB 19 PG 87
ROBERT N DEMPSEY III
DB 2802 PG 157
DB 1423 PG 348
PB 19 PG 87
MICHAEL D & PATRICIA RIDDLE
DB 1821 PG 615
PB 19 PG 87
ROBERT E & SUSIE V BAKER
DB 1201 PG 603
PB 19 PG 87
REGINA BAKER-HARDIN
DB 5881 PG 177
PB 19 PG 87
MICHAEL A KUTYANA
EXP.G +93.13
+88.30 EXP.G
NWC-IB
NWC-IC
SBG
11.67' PS
12' PS
14' PS
4' PS
15+00
90+00
720'
300'

-Y_EB-		
PIs Sta 11+43.96	PI Sta 13+90.80	PIs Sta 16+37.52
θs = 0° 37' 55.0"	Δ = 3° 18' 57.8" (RT)	θs = 0° 37' 54.8"
Ls = 150.00'	D = 0° 50' 33.3"	Ls = 150.00'
LT = 100.00'	L = 393.56'	LT = 100.00'
ST = 50.00'	T = 196.83'	ST = 50.00'
	R = 6,800.00'	
	e = 3.0%	
	RUNOFF = 150.0'	
	DS = 60 MPH	

REVISIONS

5/14/99

26-AUG-2022 10:35
I-26_Pursuit\CADD_GEOTECH\PlanProf\I2513AA_geo_psh_9.dgn

REVISIONS

PROJECT REFERENCE NO. I-2514A
SHEET NO. M
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

INCOMPLETE PLANS
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Raleigh, NC 27606
Phone: 919 851 6000
Fax: 919 851 8101

TRANSPORTATION PLANNING•DESIGN •BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN •CONSTR. CONSTRUCTION OBSERVATION

MATCHLINE -Y6- STA 29+00 - SEE SHEET 15

MATCHLINE -Y_WB- STA 17+00 - SEE SHEET 9

MATCHLINE -Y6- STA 18+50 - SEE SHEET 14

MATCHLINE -RPC- STA 32+00 - SEE SHEET 11

END GRADE
-Y_WB- POT STA.18+78.00

END CONSTRUCTION
-Y_WB- POT STA.20+82.00

BEGIN MILL & OVERLAY
-Y_EB- POT STA.23+69.74

END SHOULDER CONSTRUCTION
END MILL & OVERLAY
-Y_EB- POC STA.39+00.00

END CONSTRUCTION
-Y_EB- POC STA.40+00.00

RPDB.4400R
RPDB.4800L
RPDB.4600L
RPC.2400R
RPC.2600R
RPC.2800R
RPC.3000

B-1
B-2
B-3
B-4
B-5

Y6.2500
YEB.2200R
Y6.2100L
Y6.1900

ROADWAY EMBANKMENT

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	11

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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CIVIL/SITE DESIGN • GIS/GPS • CONSTRUCTION OBSERVATION

-Y_EB-

PI Sta 50+80.91
Δ = 19° 00' 54.7" (LT)
D = 1° 29' 59.3"
267.85'
539.81'
3,820.22'
EXIST.

-RPDB-

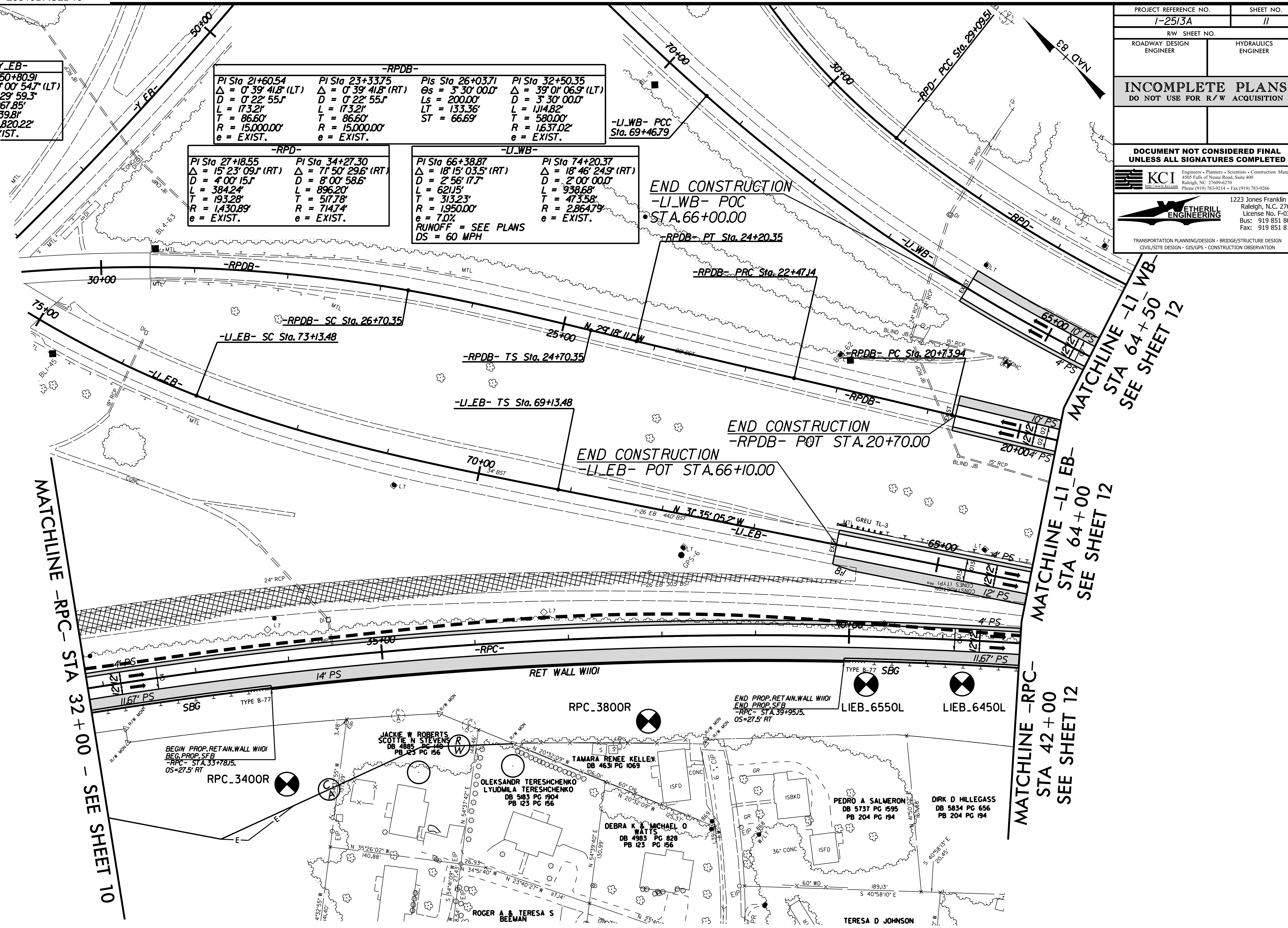
PI Sta 21+60.54	PI Sta 23+33.75	PIs Sta 26+03.71	PI Sta 32+50.35
Δ = 0° 39' 41.8" (LT)	Δ = 0° 39' 41.8" (RT)	Θs = 3° 30' 00.0"	Δ = 39° 01' 06.9" (LT)
D = 0° 22' 55.1"	D = 0° 22' 55.1"	Ls = 200.00'	D = 3° 30' 00.0"
L = 173.21'	L = 173.21'	LT = 133.36'	L = 1,114.82'
T = 86.60'	T = 86.60'	ST = 66.69'	T = 580.00'
R = 15,000.00'	R = 15,000.00'		R = 1,637.02'
e = EXIST.	e = EXIST.		e = EXIST.

-RPD-

PI Sta 27+18.55	PI Sta 34+27.30
Δ = 15° 23' 09.1" (RT)	Δ = 71° 50' 29.6" (RT)
D = 4° 00' 15.1"	D = 8° 00' 58.6"
L = 384.24'	L = 896.20'
T = 193.28'	T = 517.78'
R = 1,430.89'	R = 714.74'
e = EXIST.	e = EXIST.

-L1_WB-

PI Sta 66+38.87	PI Sta 74+20.37
Δ = 18° 15' 03.5" (RT)	Δ = 18° 46' 24.9" (RT)
D = 2° 56' 17.7"	D = 2° 00' 00.0"
L = 621.15'	L = 938.68'
T = 313.23'	T = 473.58'
R = 1,950.00'	R = 2,864.79'
e = 7.0%	e = EXIST.
RUNOFF = SEE PLANS	
DS = 60 MPH	


NAD 83
-RPD- PCC Sta. 29+09.51
-L1_WB- PCC Sta. 69+46.79
END CONSTRUCTION
-L1_WB- POC
STA.66+00.00
-RPDB- PT Sta. 24+20.35
-RPDB- PRC Sta. 22+47.14
-RPDB- SC Sta. 26+70.35
-L1_EB- SC Sta. 73+13.48
-RPDB- TS Sta. 24+70.35
-RPDB- PC Sta. 20+73.94
-L1_EB- TS Sta. 69+13.48
END CONSTRUCTION
-RPDB- POT STA.20+70.00
END CONSTRUCTION
-L1_EB- POT STA.66+10.00
N 29° 18' 11.1" W
N 31° 35' 05.2" W
MATCHLINE -L1_WB- STA 64+50 SEE SHEET 12
MATCHLINE -L1_EB- STA 64+00 SEE SHEET 12
MATCHLINE -RPC- STA 42+00 SEE SHEET 12
MATCHLINE -RPC- STA 32+00 - SEE SHEET 10
RET WALL W1101
TYPE B-77
SBG
RPC_3800R
RPC_3400R
LIEB_6550L
LIEB_6450L
END PROP.RETAIN.WALL W1101
END PROP.SFB
-RPC- STA.39+95.15
OS=27.5' RT
BEGIN PROP.RETAIN.WALL W1101
BEG.PROP.SFB
-RPC- STA.33+78.15
OS=27.5' RT
JACKIE W ROBERTS
SCOTTIE N STEVENS
DB 4885 PG 140
PB 123 PG 156
TAMARA RENEE KELLEY
DB 4631 PG 1069
OLEKSANDR TERESHCHENKO
LYUDMILA TERESHCHENKO
DB 5183 PG 1904
PB 123 PG 156
DEBRA K & MICHAEL O
WATTS
DB 4983 PG 828
PB 123 PG 156
PEDRO A SALMERON
DB 5737 PG 1595
PB 204 PG 194
DIRK D HILLEGASS
DB 5834 PG 656
PB 204 PG 194
ROGER A & TERESA S
BEEMAN
TERESA D JOHNSON

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
I-2513A	12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
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-RPD-

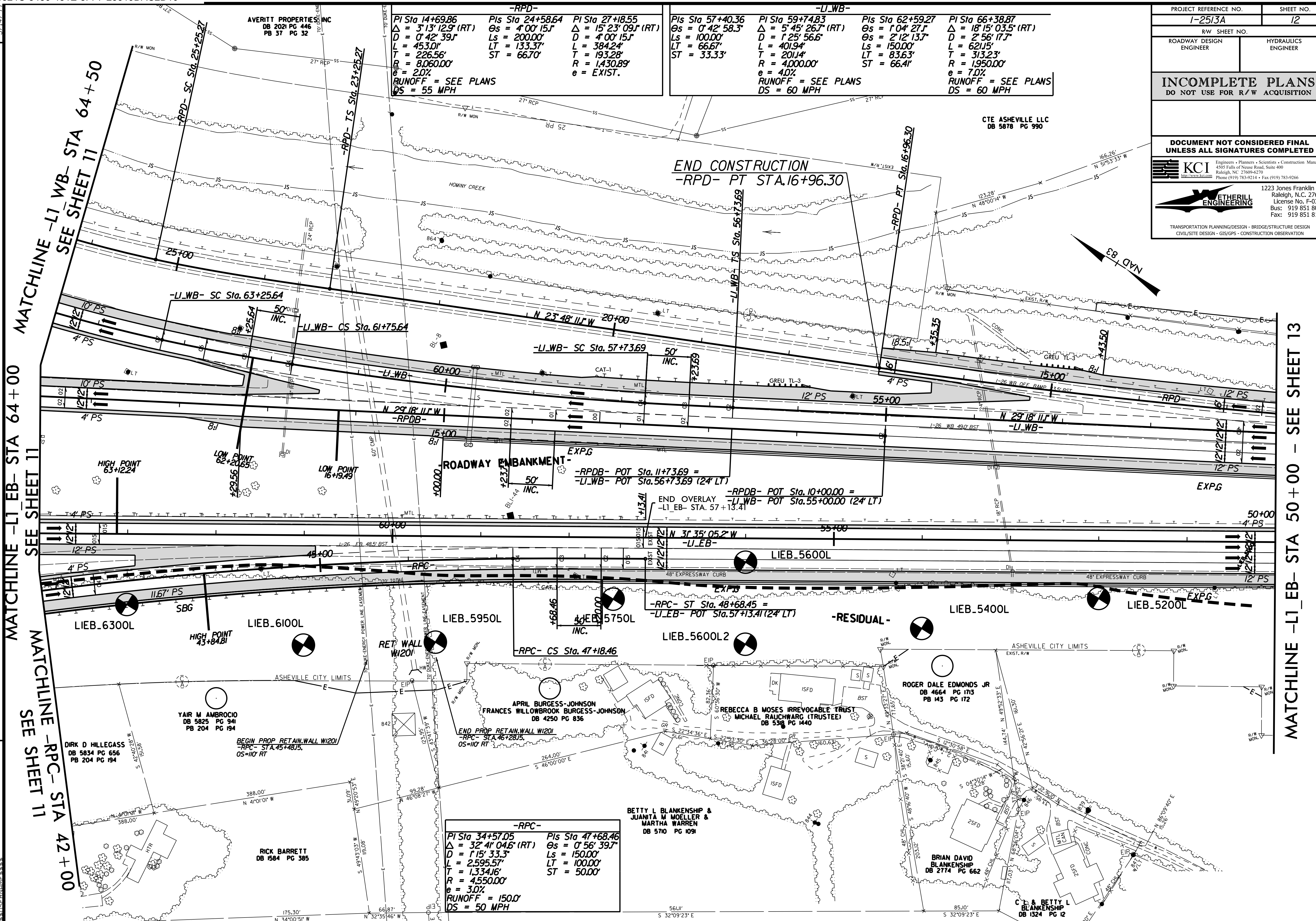
PI Sta 14+69.86	PIs Sta 24+58.64	PI Sta 27+18.55
Δ = 3°13' 12.9" (RT)	Θs = 4°00' 15.1"	Δ = 15°23' 09.1" (RT)
D = 0°42' 39.1"	Ls = 200.00'	D = 4°00' 15.1"
L = 453.01'	LT = 133.37'	L = 384.24'
T = 226.56'	ST = 66.70'	T = 193.28'
R = 8,060.00'		R = 1,430.89'
e = 2.0%		e = EXIST.
RUNOFF = SEE PLANS		
DS = 55 MPH		

-L1_WB-

PIs Sta 57+40.36	PI Sta 59+74.83	PIs Sta 62+59.27	PI Sta 66+38.87
Θs = 0°42' 58.3"	Δ = 5°45' 26.7" (RT)	Θs = 1°04' 27.1"	Δ = 18°15' 03.5" (RT)
Ls = 100.00'	D = 1°25' 56.6"	Θs = 2°12' 13.7"	D = 2°56' 17.7"
LT = 66.67'	L = 401.94'	Ls = 150.00'	L = 621.15'
ST = 33.33'	T = 201.14'	LT = 83.63'	T = 313.23'
	R = 4,000.00'	ST = 66.41'	R = 1,950.00'
	e = 4.0%		e = 7.0%
	RUNOFF = SEE PLANS		RUNOFF = SEE PLANS
	DS = 60 MPH		DS = 60 MPH

-RPC-

PI Sta 34+57.05	PIs Sta 47+68.46
Δ = 32°41' 04.6" (RT)	Θs = 0°56' 39.7"
D = 1°15' 33.3"	Ls = 150.00'
L = 2,595.57'	LT = 100.00'
T = 1,334.16'	ST = 50.00'
R = 4,550.00'	
e = 3.0%	
RUNOFF = 150.0'	
DS = 50 MPH	



MATCHLINE -L1_WB- STA 64+50 SEE SHEET 11
MATCHLINE -L1_EB- STA 64+00 SEE SHEET 11
MATCHLINE -RPC- STA 42+00 SEE SHEET 11
MATCHLINE -L1_EB- STA 50+00 - SEE SHEET 13
END CONSTRUCTION -RPD- PT STA.16+96.30
AVERITT PROPERTIES INC DB 2021 PG 446 PB 37 PG 32
CTE ASHEVILLE LLC DB 5878 PG 990
HOMINY CREEK
-RPD- SC Sta. 25+25.27
-RPD- TS Sta. 23+25.27
-RPD- PT Sta. 16+96.30
-L1_WB- TS Sta. 56+73.69
-L1_WB- SC Sta. 63+25.64
-L1_WB- CS Sta. 61+75.64
-L1_WB- SC Sta. 57+73.69
N 23°48' 11.1" W
N 29°18' 11.1" W
N 31°35' 05.2" W
-RPDB- POT Sta. 11+73.69 = -L1_WB- POT Sta.56+73.69 (24' LT)
-RPDB- POT Sta. 10+00.00 = -L1_WB- POT Sta.55+00.00 (24' LT)
END OVERLAY -L1_EB- STA. 57+13.41
-RPC- ST Sta. 48+68.45 = -L1_EB- POT Sta.57+13.41 (24' LT)
-RPC- CS Sta. 47+18.46
ROADWAY EMBANKMENT
-RESIDUAL-
HIGH POINT 63+12.24
LOW POINT 62+20.65
LOW POINT 16+19.49
HIGH POINT 43+84.81
RET WALL W1201
BEGIN PROP RETAIN.WALL W1201 -RPC- STA.45+48.15, OS=110' RT
END PROP RETAIN.WALL W1201 -RPC- STA.46+28.15, OS=110' RT
LIEB_6300L
LIEB_6100L
LIEB_5950L
LIEB_5750L
LIEB_5600L
LIEB_5600L2
LIEB_5400L
LIEB_5200L
ASHEVILLE CITY LIMITS
YAIR M AMBROCIO DB 5825 PG 941 PB 204 PG 194
DIRK D HILLEGASS DB 5834 PG 656 PB 204 PG 194
RICK BARRETT DB 1584 PG 385
APRIL BURGESS-JOHNSON FRANCES WILLOWBROOK BURGESS-JOHNSON DB 4250 PG 836
REBECCA B MOSES IRREVOCABLE TRUST MICHAEL RAUCHWARG (TRUSTEE) DB 5318 PG 1440
ROGER DALE EDMONDS JR DB 4664 PG 1713 PB 143 PG 172
BETTY L BLANKENSHIP & JUANITA M MOELLER & MARTHA WARREN DB 5710 PG 1091
BRIAN DAVID BLANKENSHIP DB 2774 PG 662
C L & BETTY L BLANKENSHIP DB 1324 PG 12
NAD 83
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	13

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

KCI — Engineers • Planners • Scientists • Construction Managers, 4505 Falls of Neuse Road, Suite 400, Raleigh, NC 27609-6270, Phone (919) 783-9214 • Fax (919) 783-9266, http://www.kci.com

WETHERILL ENGINEERING — 1223 Jones Franklin Rd., Raleigh, N.C. 27606, License No. F-0377, Bus: 919 851 8077, Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN • BRIDGE/STRUCTURE DESIGN • CIVIL/SITE DESIGN • GIS/GPS • CONSTRUCTION OBSERVATION

-LI_WB-

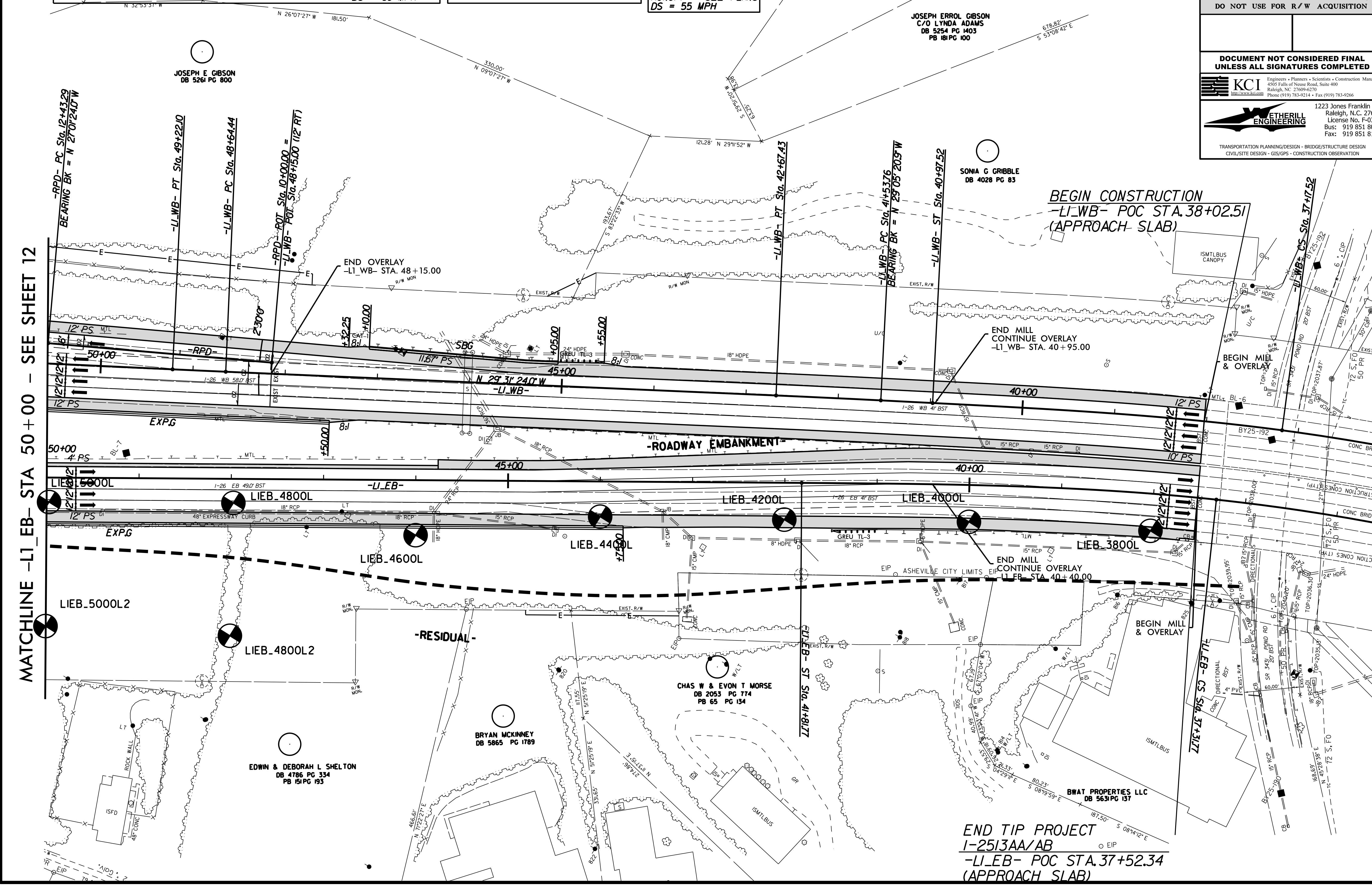
PI Sta 31+75.76	PIs Sta 38+44.27	PI Sta 42+10.59	PI Sta 48+93.27
Δ = 27° 09' 54.2" (LT)	Θs = 4° 40' 19.9"	Δ = 0° 26' 03.1" (LT)	Δ = 0° 13' 12.9" (RT)
D = 2° 27' 32.6"	Ls = 380.00'	D = 0° 22' 55.1"	D = 0° 22' 55.1"
L = 1,104.70'	LT = 253.42'	L = 113.67'	L = 57.66'
T = 562.93'	ST = 126.75'	T = 56.84'	T = 28.83'
R = 2,330.00'		R = 15,000.00'	R = 15,000.00'
e = EXIST.		e = EXIST.	e = NC
			DS = 60 MPH

-LI_EB-

PI Sta 31+83.19	PIs Sta 24+84.39
Δ = 28° 27' 55.0" (LT)	Θs = 4° 49' 31.6"
D = 2° 32' 22.9"	Ls = 380.00'
L = 1,120.81'	LT = 253.43'
T = 572.22'	ST = 126.75'
R = 2,256.00'	
e = EXIST.	

-RPD-

PI Sta 14+69.86
Δ = 3° 13' 12.9" (RT)
D = 0° 42' 39.1"
L = 453.01'
T = 226.56'
R = 8,060.00'
e = 2.0%
RUNOFF = SEE PLANS
DS = 55 MPH



PROJECT REFERENCE NO.	SHEET NO.
I-2513A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

5/14/99

26-AUG-2022 10:36
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-2513A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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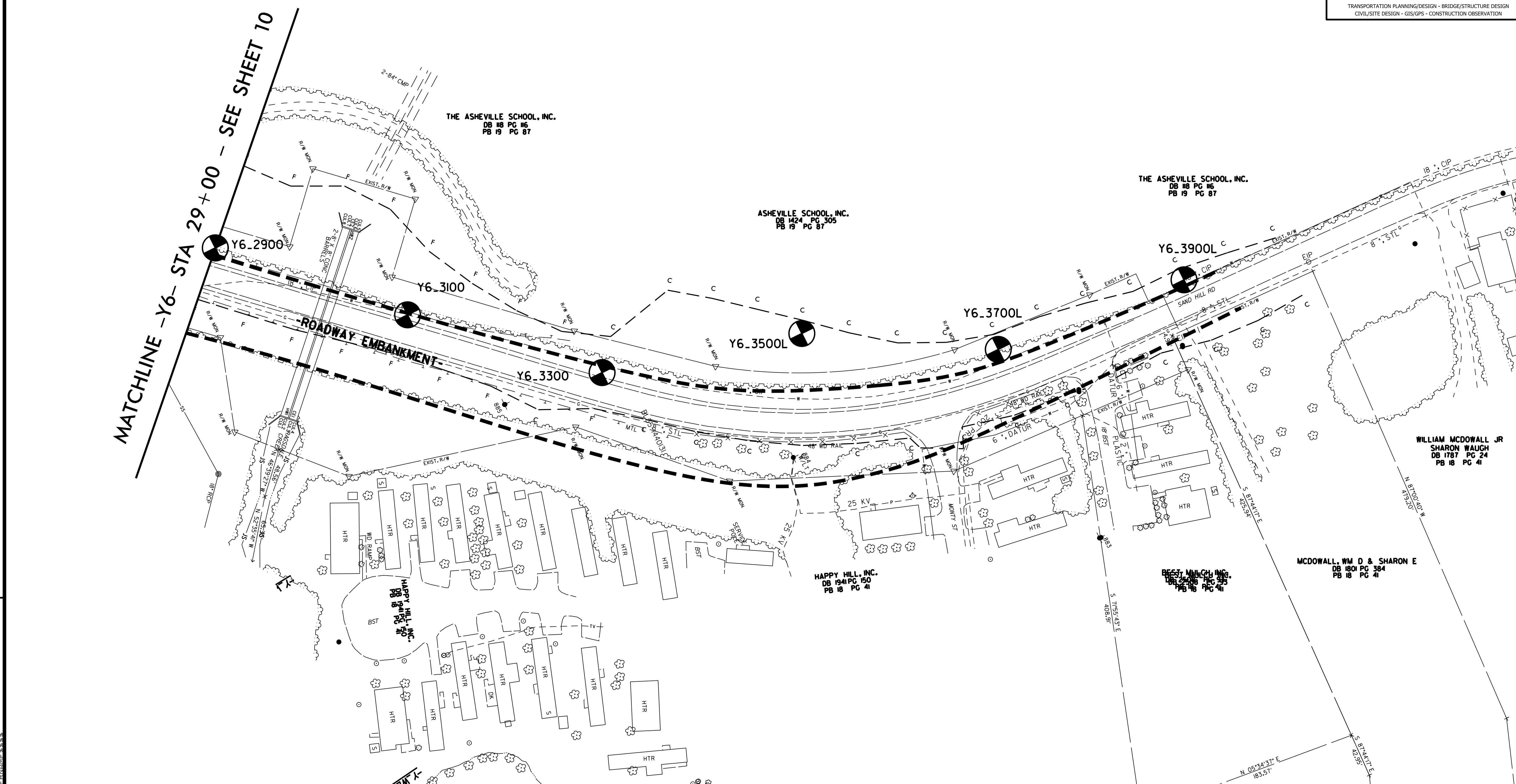
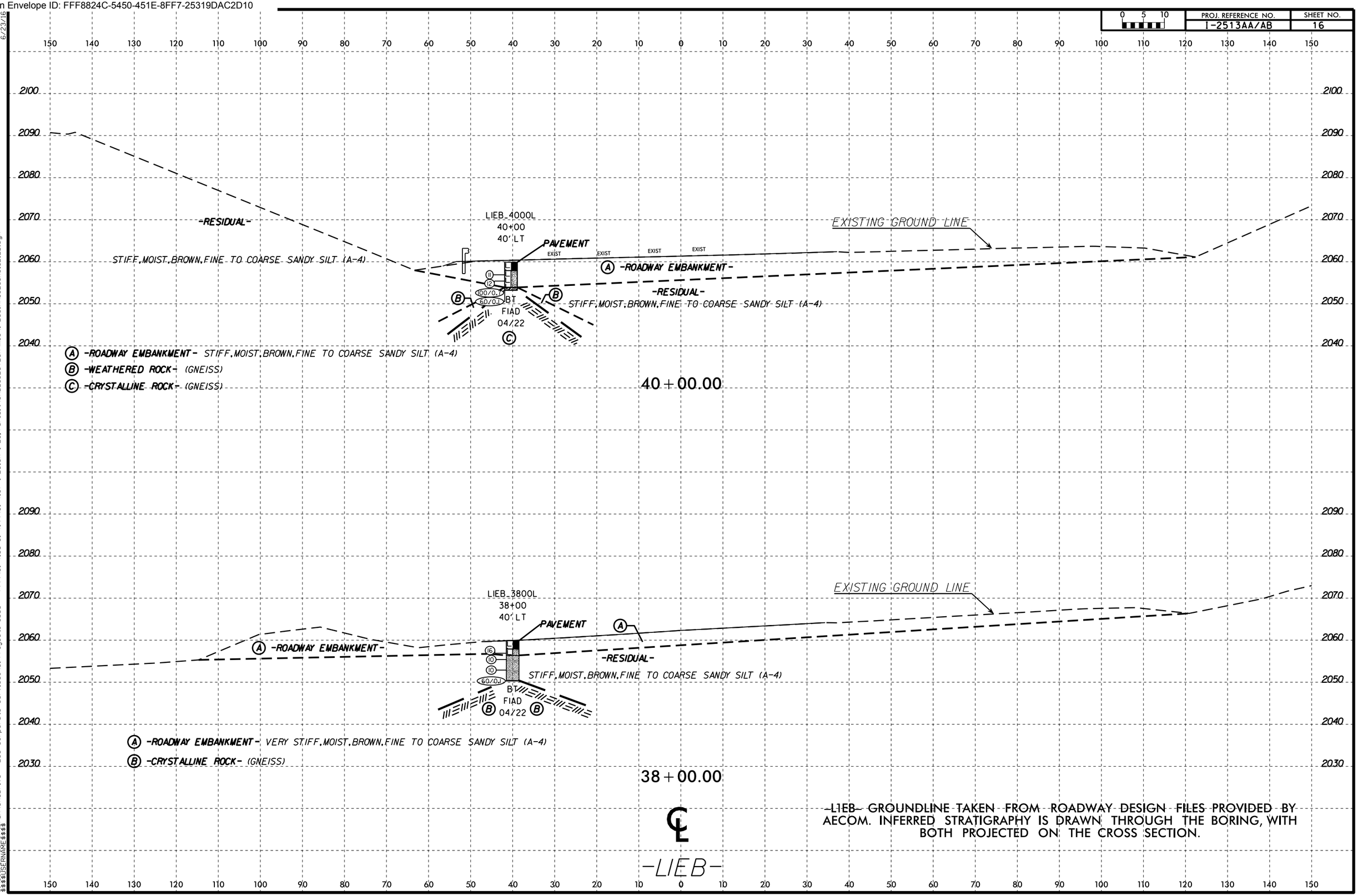
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS


NAD 83
MATCHLINE -Y6- STA 29+00 - SEE SHEET 10
Y6_2900
Y6_3100
Y6_3300
Y6_3500L
Y6_3700L
Y6_3900L
-ROADWAY EMBANKMENT-
THE ASHEVILLE SCHOOL, INC.
DB 118 PG 116
PB 19 PG 87
ASHEVILLE SCHOOL, INC.
DB 1424 PG 305
PB 19 PG 87
THE ASHEVILLE SCHOOL, INC.
DB 118 PG 116
PB 19 PG 87
WILLIAM MCDOWALL JR
SHARON WAUGH
DB 1787 PG 24
PB 18 PG 41
MCDOWALL, WM D & SHARON E
DB 1801 PG 384
PB 18 PG 41
HAPPY HILL, INC.
DB 1941 PG 150
PB 18 PG 41
SAND HILL RD
2-84" CMP
EXIST. R/W
25 KV
MONTY ST
HTR
BST

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	16



-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
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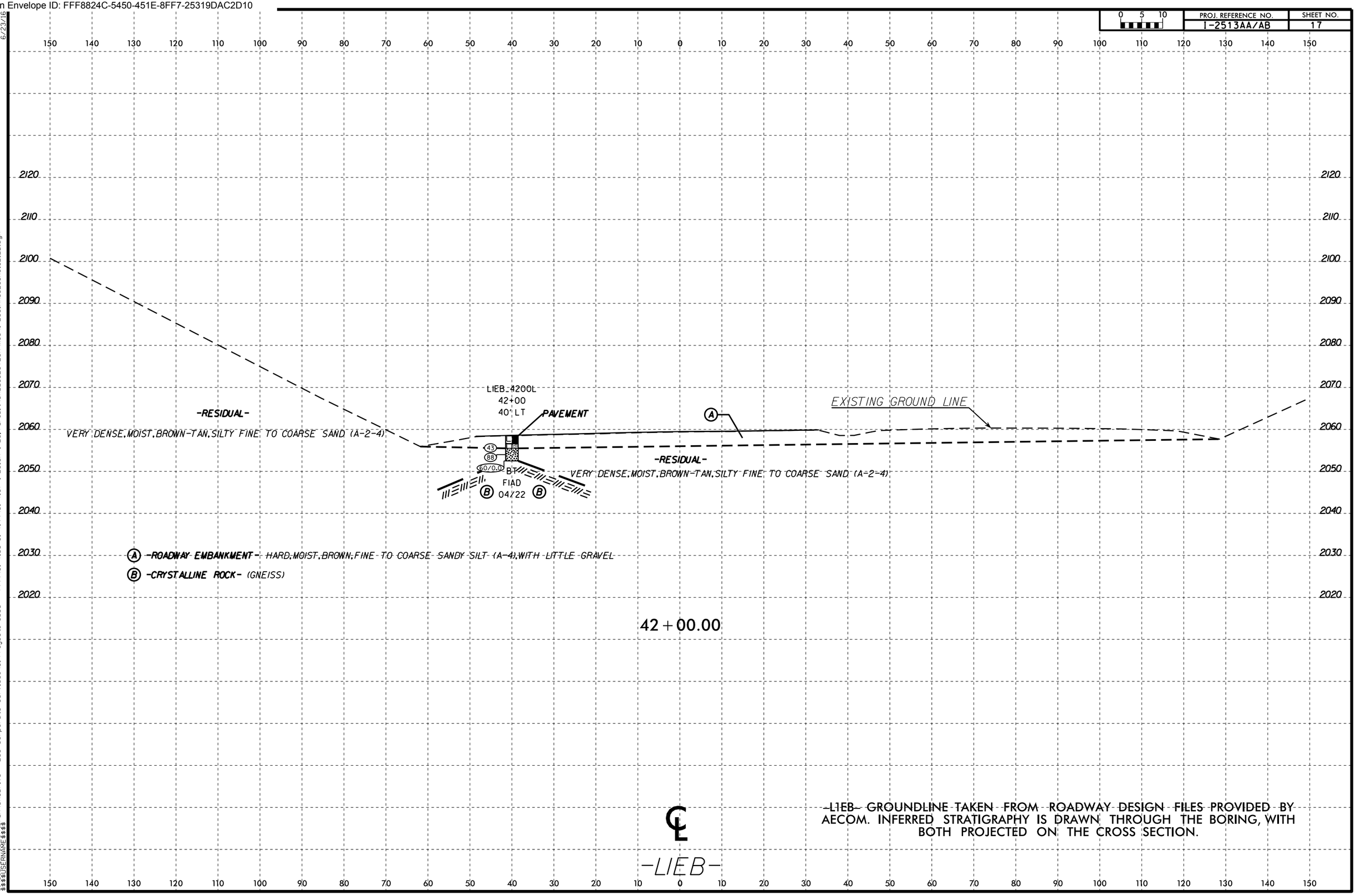
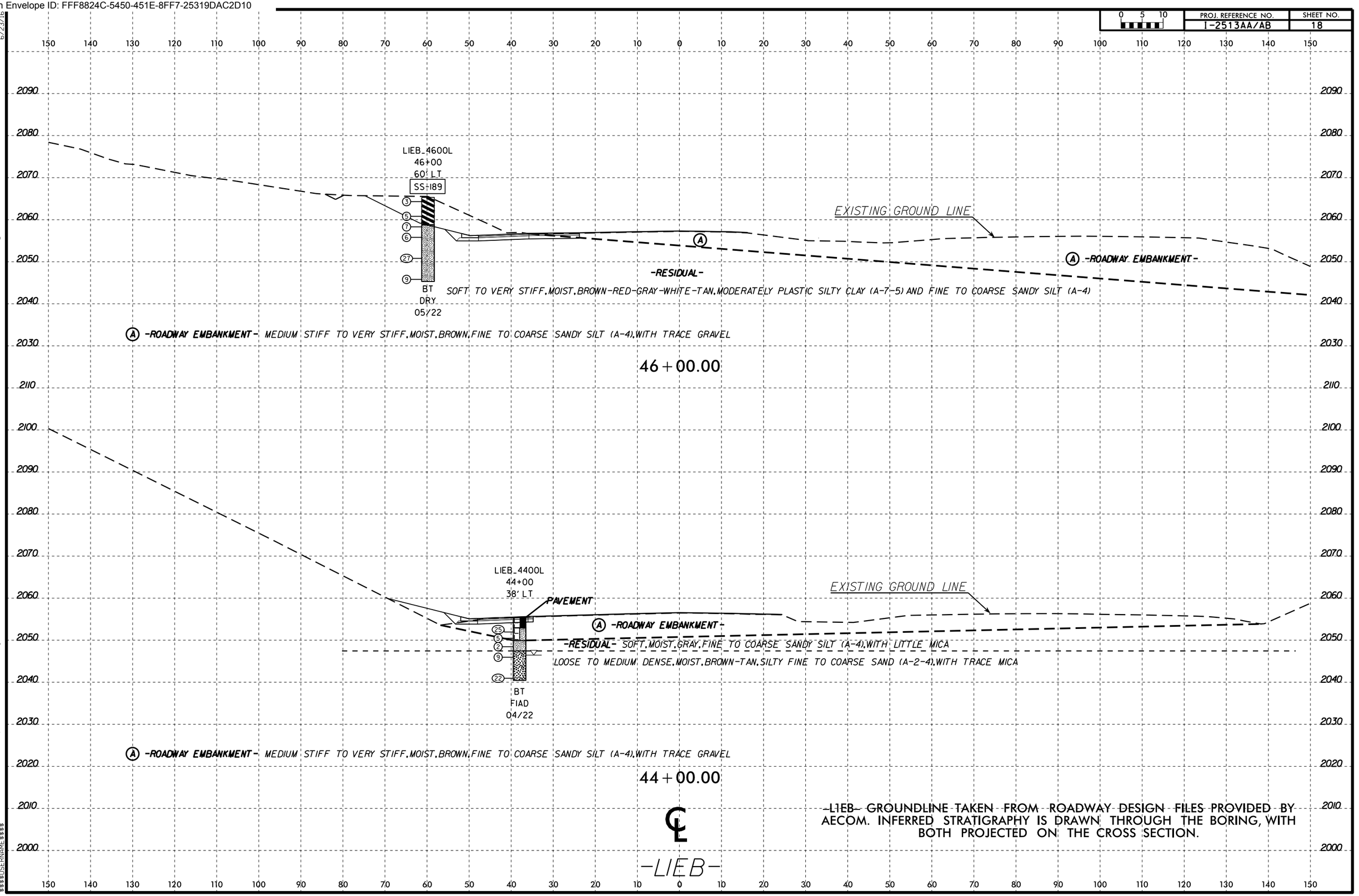


-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	18



-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	19

6/23/16

200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020 2010 2000

LIEB-4800L2
48+00
170' LT
SS-194

7 12 10 19 22 29 30 14 20 26 26 33 28 33 92 50/0.0

B

BT
DRY
05/22

C

-RESIDUAL-

MEDIUM STIFF TO HARD, MOIST, RED-BROWN-TAN, MODERATELY PLASTIC SILTY CLAY (A-7-5) AND FINE

LOOSE TO VERY DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE TO LITTLE

LIEB-4800L
47+98
26' LT

PAVEMENT

EXISTING GROUND LINE

6 6 6 10 26

BT
FIAD
04/22

A

TO COARSE SANDY SILT (A-4), WITH TRACE TO LITTE MICA

MICA AND TRACE ROCK FRAGMENTS

A -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

B -RESIDUAL- MEDIUM DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA

C -CRYSTALLINE ROCK- (GNEISS)

48+00.00

-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

-LIEB-

EXISTING GROUND LINE

LIEB_5000L2
50+00
161' LT

(9) (25) (31) (30) (24) (21) (28) (29) (75) (100/0.1) (60/0.1)

-RESIDUAL-
LOOSE TO DENSE, MOIST, BROWN-WHITE, SILTY FINE TO COARSE SAND (A-2-4)

-RESIDUAL-
STIFF TO VERY STIFF, MOIST, GRAY-TAN-WHITE-BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

-RESIDUAL-
MEDIUM DENSE TO VERY DENSE, MOIST, WHITE-TAN-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA

BT
DRY
05/22

LIEB_5000L
49+97
26' LT

PAVEMENT

(7) (14) (25) (25) (34)

(A) -ROADWAY EMBANKMENT-

-RESIDUAL-

-RESIDUAL-

BT
FIAD
04/22

HARD, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

(A) **-ROADWAY EMBANKMENT-** MEDIUM STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

(B) **-WEATHERED ROCK-** (GNEISS)

(C) **-CRYSTALLINE ROCK-** (GNEISS)

50+00.00

-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

℄

-LIEB-

PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	21

0 5 10

LIEB_5400L
54+00
101' LT
SS-251
SS-253

-RESIDUAL- MEDIUM STIFF TO STIFF, RED-BROWN-TAN, MODERATELY CLAY (A-7-5) AND FINE TO MOIST, PLASTIC SILTY COARSE SANDY SILT (A-4), WITH TRACE MICA

MEDIUM DENSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4)

BT
DRY
05/22

-RESIDUAL- VERY STIFF, MOIST, BROWN-TAN-WHITE, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

(A) -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

(A) -ROADWAY EMBANKMENT-

EXISTING GROUND LINE

54+00.00

LIEB_5200L
52+00
65' LT
SS-234

-RESIDUAL-

(A) -ROADWAY EMBANKMENT-

BT
DRY
05/22

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

EXISTING GROUND LINE

(A) -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

(B) -RESIDUAL- MEDIUM STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4)

(C) -RESIDUAL- MEDIUM DENSE, MOIST, BROWN-TAN, FINE TO COARSE SANDY GRAVEL (A-1-b)

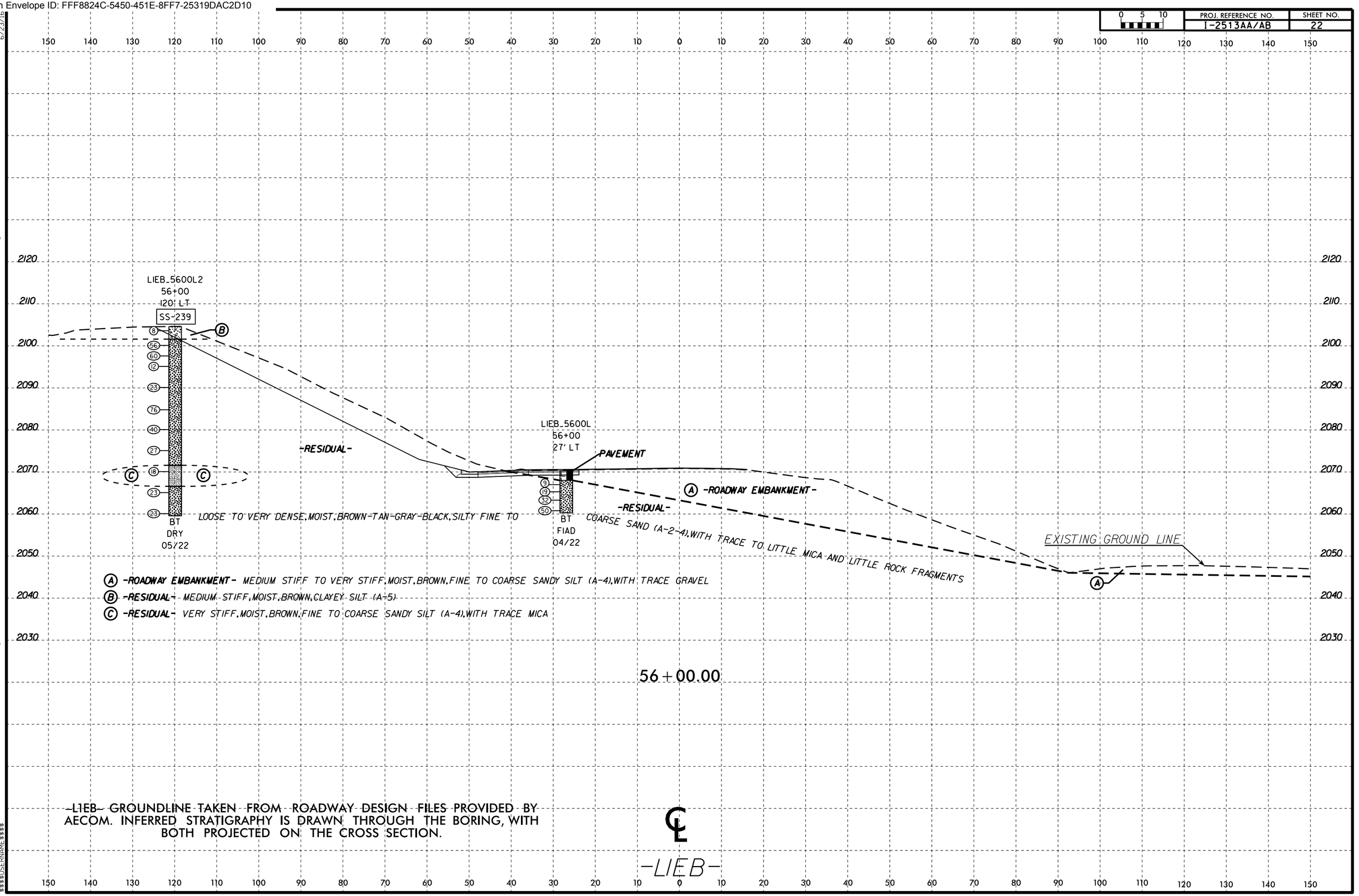
52+00.00

-LIEB-

-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16

26-AUG-2022 08:55
C:\Users\$$$$USERNAME$$$$\OneDrive - ECS Corporate Services\31 Projects 3000 - 4999\31-4100-31-4199\31-4137 I-2513A I-26, Pursuit\CADD\GEOTECH\xsc\I-2531AA_GEO_XSI_LIEB.dgn



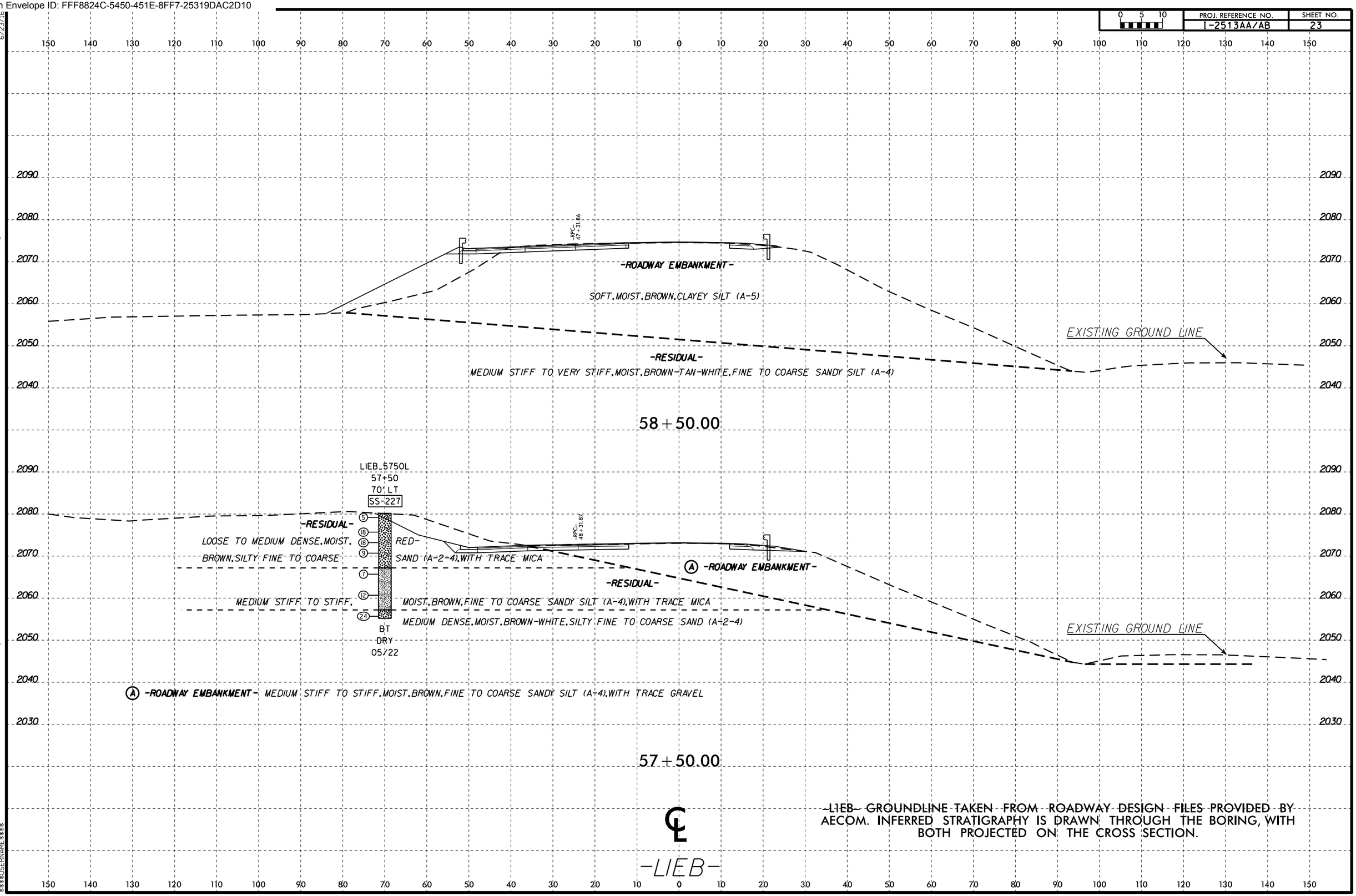
A -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE GRAVEL

B -RESIDUAL- MEDIUM STIFF, MOIST, BROWN, CLAYEY SILT (A-5)

C -RESIDUAL- VERY STIFF, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

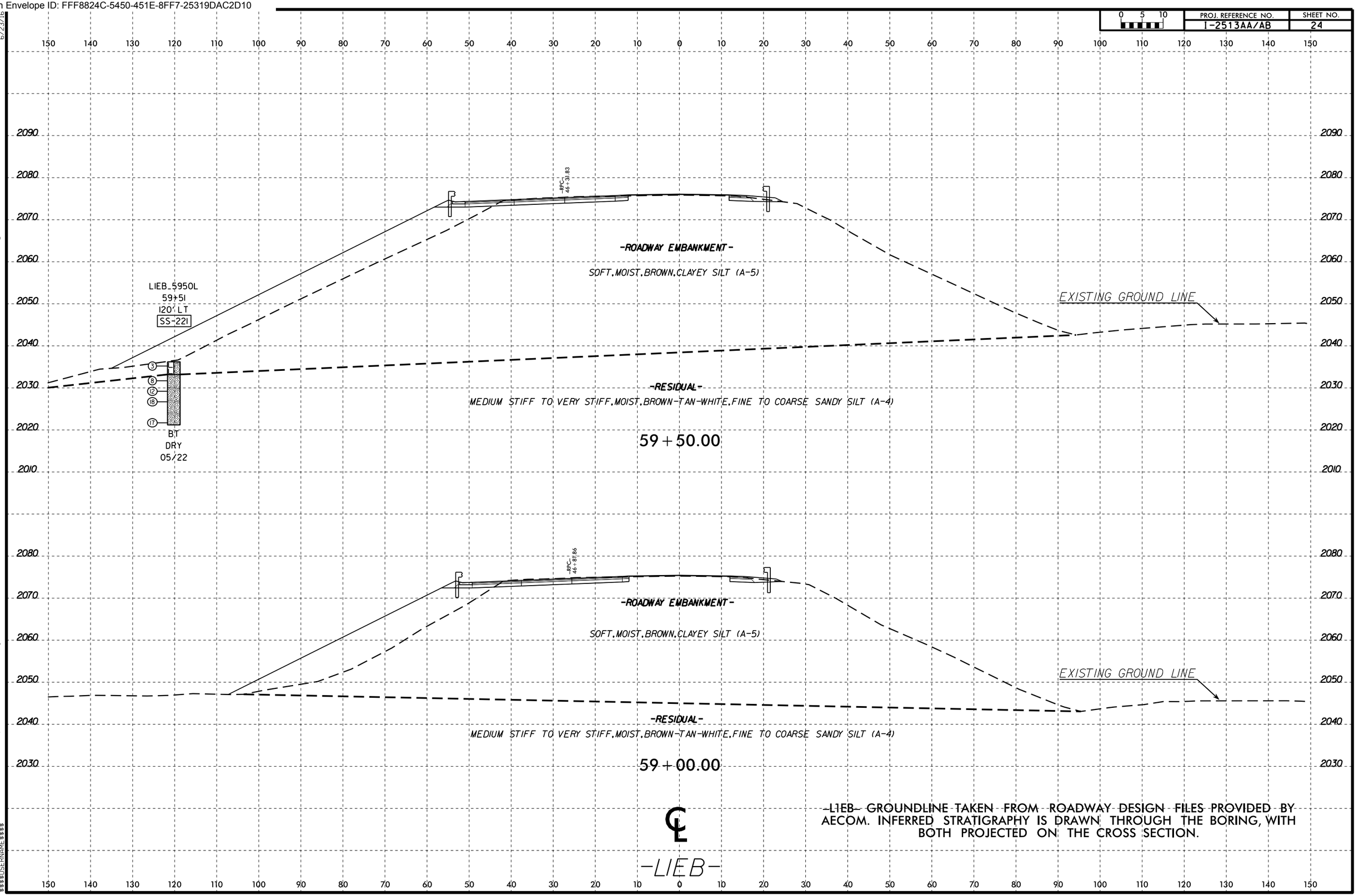
-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	23



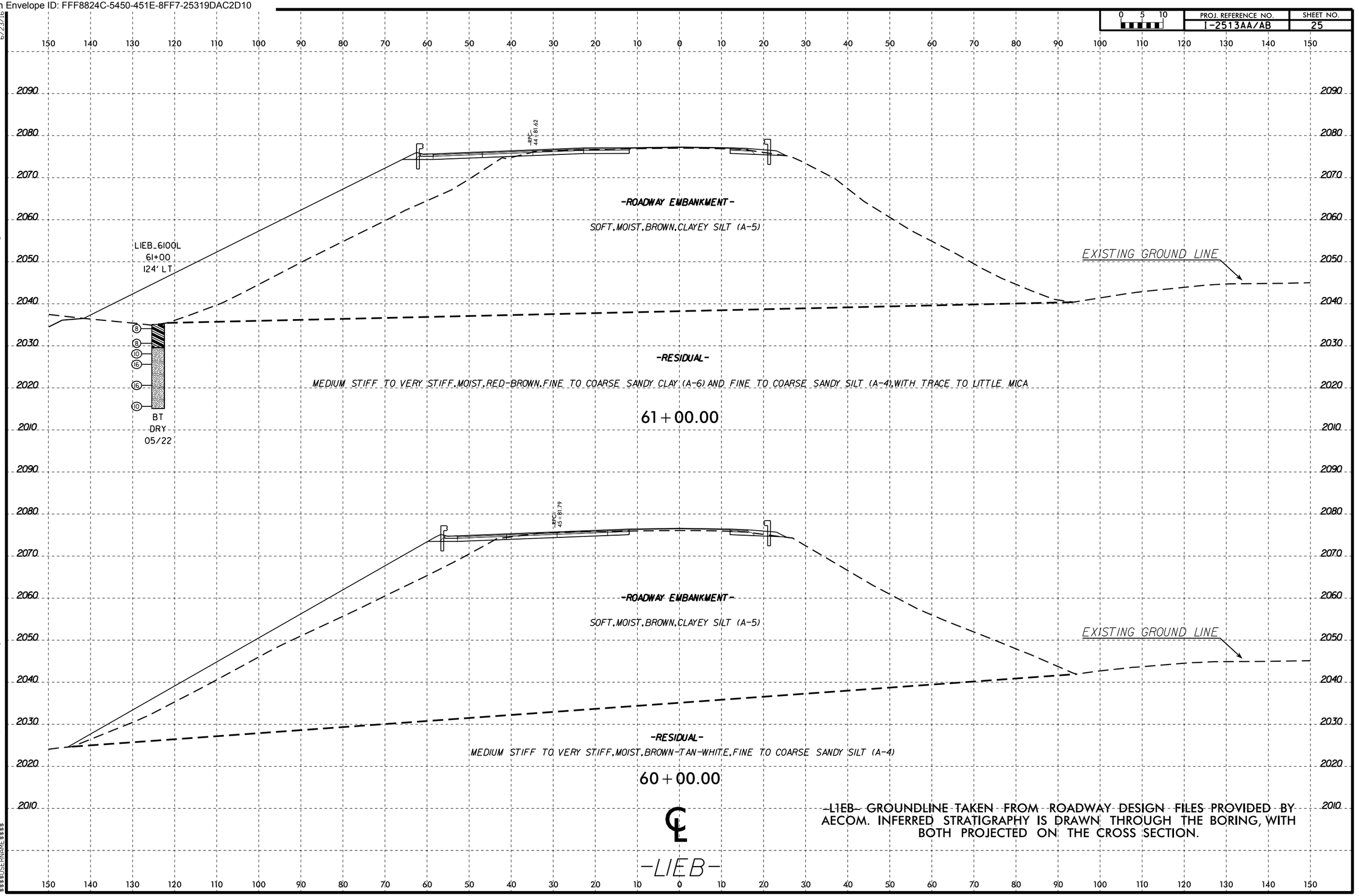
-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	24

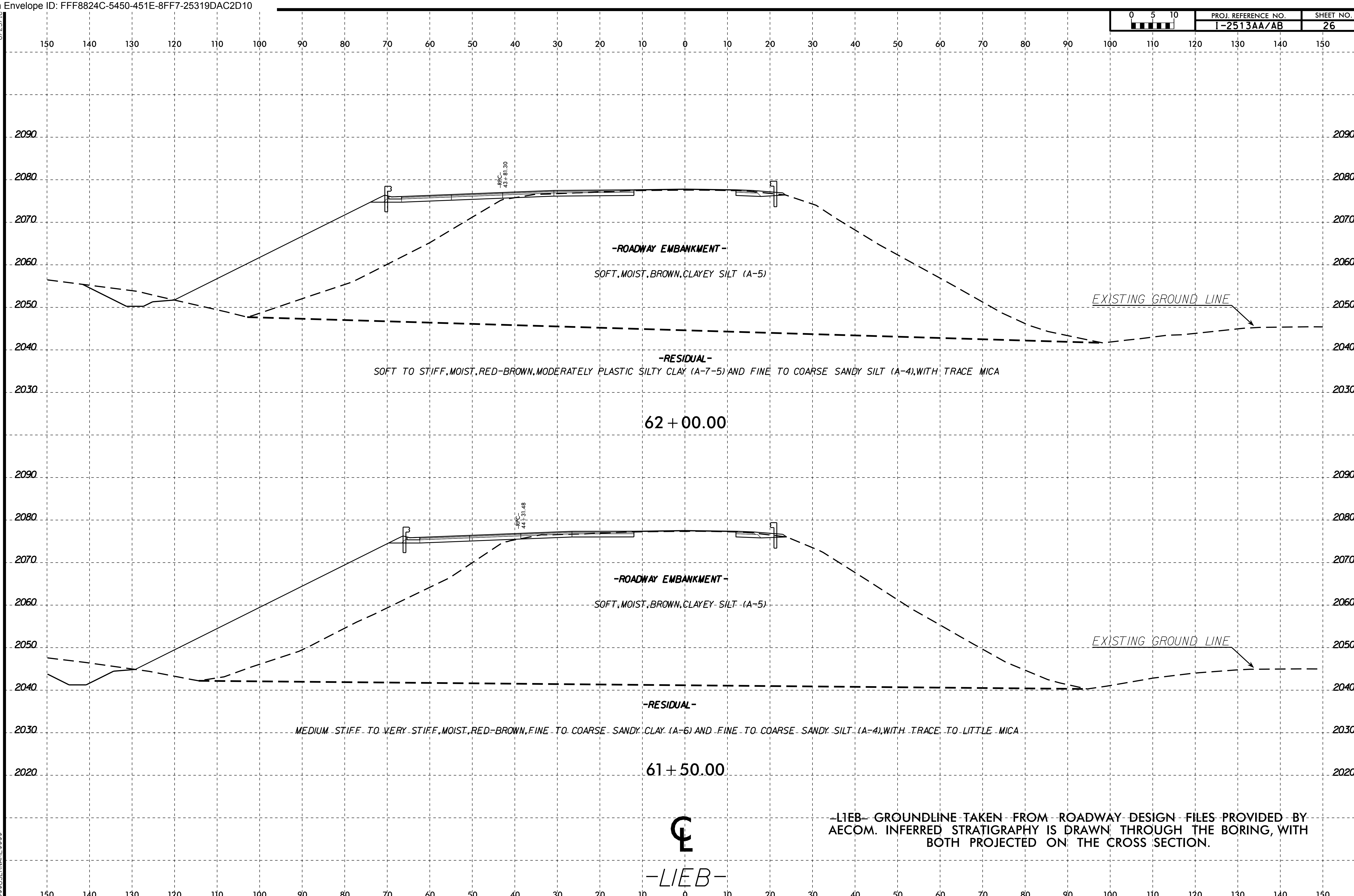


-L1EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

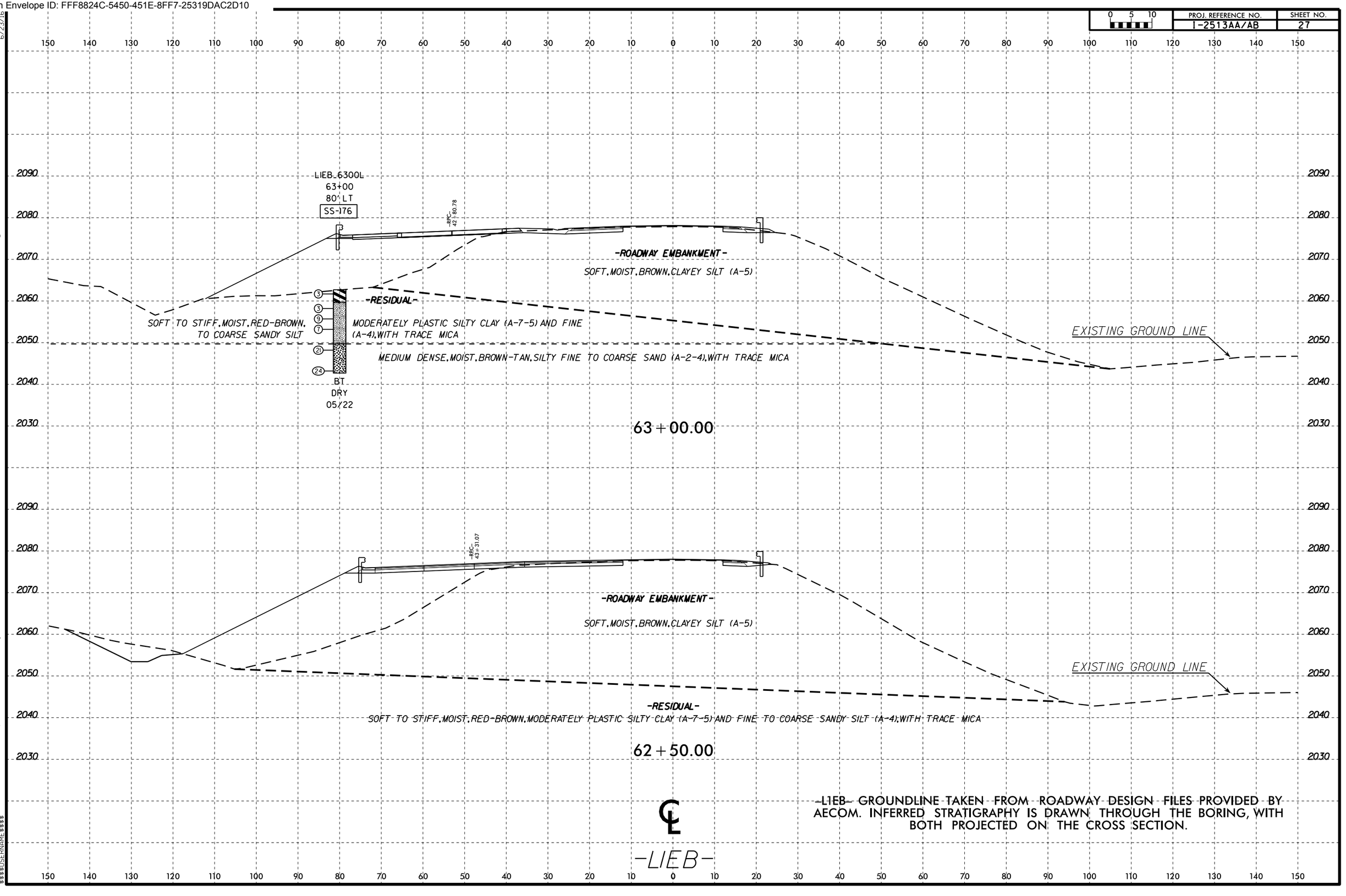
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	25



-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.


PROJ. REFERENCE NO.
I-2513AA/AB
SHEET NO.
26
0 5 10
-RPC- 43+81.30
-ROADWAY EMBANKMENT-
SOFT,MOIST,BROWN,CLAYEY SILT (A-5)
EXISTING GROUND LINE
-RESIDUAL-
SOFT TO STIFF,MOIST,RED-BROWN,MODERATELY PLASTIC SILTY CLAY (A-7-5) AND FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA
62+00.00
-RPC- 44+31.48
-ROADWAY EMBANKMENT-
SOFT,MOIST,BROWN,CLAYEY SILT (A-5)
EXISTING GROUND LINE
-RESIDUAL-
MEDIUM STIFF TO VERY STIFF,MOIST,RED-BROWN,FINE TO COARSE SANDY CLAY (A-6) AND FINE TO COARSE SANDY SILT (A-4),WITH TRACE TO LITTLE MICA
61+50.00
-L1EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.
-LIEB-

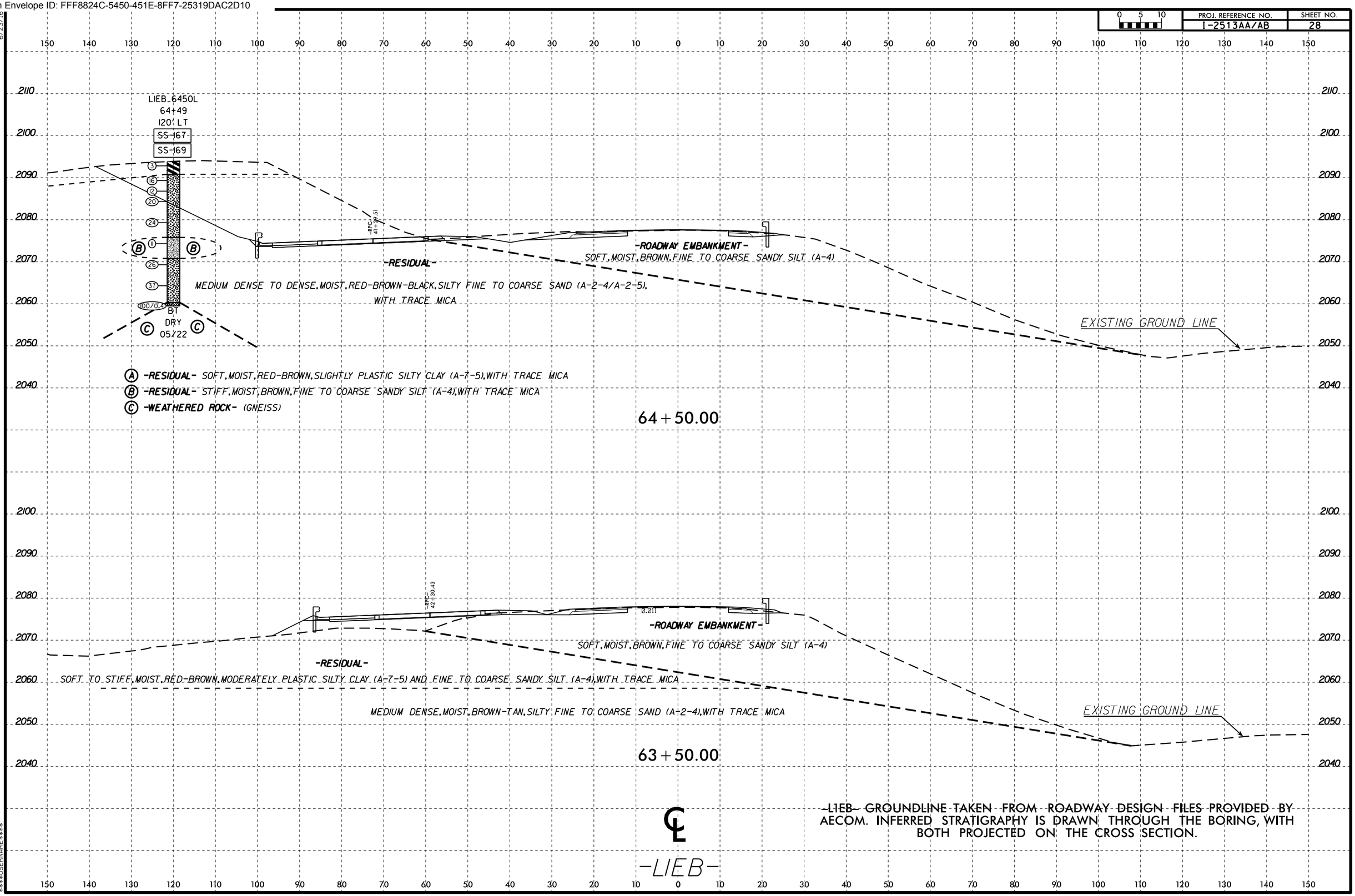
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	27



-L1EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

-LIEB-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	28



-L1EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	29

LIEB_6550L
65+50
140' LT
SS-158

8
8
18
7
15
16
11
85
53
50/0.0

BT
DRY
05/22

-RESIDUAL- MEDIUM STIFF TO VERY STIFF, MOIST, WHITE-PINK-TAN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE TO LITTLE MICA

APC
140+28.26

-RESIDUAL-

EXISTING GROUND LINE

-ROADWAY EMBANKMENT- SOFT, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4)

VERY DENSE, MOIST, WHITE-TAN-BROWN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA AND ROCK FRAGMENTS

(A) -RESIDUAL- MEDIUM STIFF, MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6), WITH TRACE MICA

(B) -CRYSTALLINE ROCK- (GNEISS)

65+50.00

(A) -RESIDUAL-

-RESIDUAL-
MEDIUM STIFF TO VERY STIFF, MOIST, WHITE-PINK-TAN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE TO LITTLE MICA

APC
40+79.93

EXISTING GROUND LINE

-ROADWAY EMBANKMENT-
SOFT, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4)

-RESIDUAL-

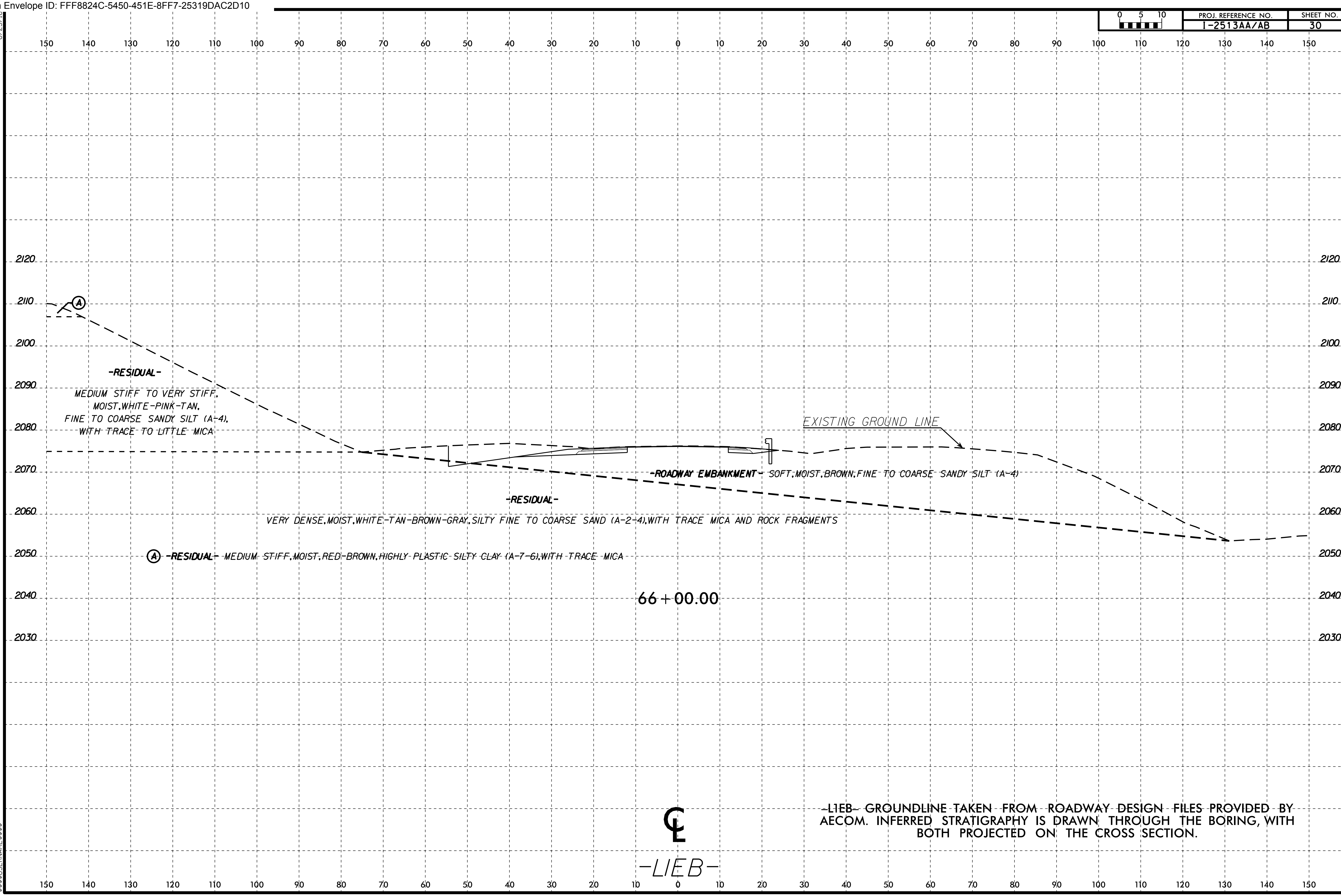
VERY DENSE, MOIST, WHITE-TAN-BROWN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA AND ROCK FRAGMENTS

(A) -RESIDUAL- MEDIUM STIFF, MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6), WITH TRACE MICA

65+00.00

-LIEB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

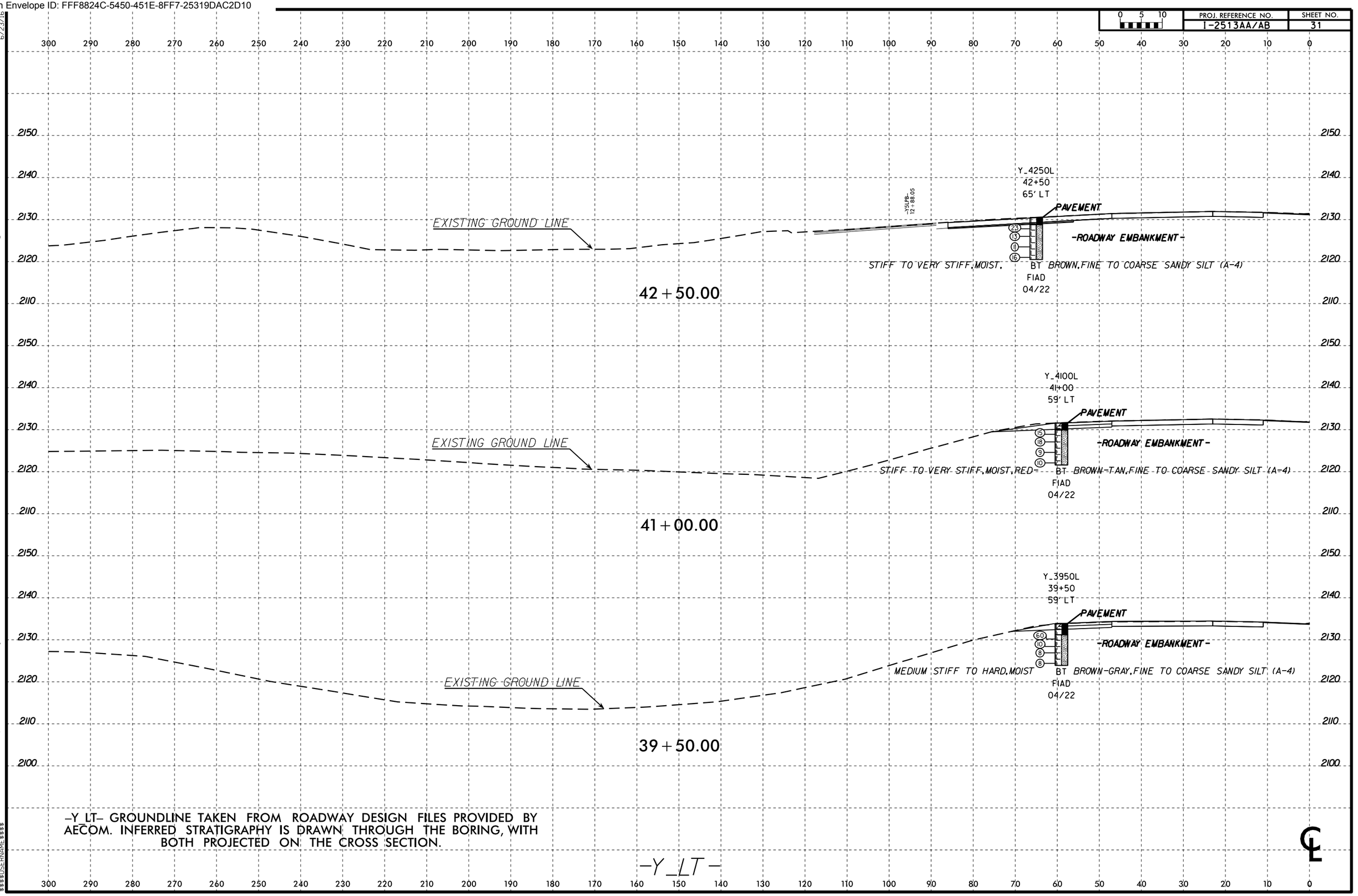
-LIEB-



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
2120
2110
2100
2090
2080
2070
2060
2050
2040
2030
A
-RESIDUAL-
MEDIUM STIFF TO VERY STIFF, MOIST, WHITE-PINK-TAN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE TO LITTLE MICA
EXISTING GROUND LINE
-ROADWAY EMBANKMENT- SOFT, MOIST, BROWN, FINE TO COARSE SANDY SILT (A-4)
-RESIDUAL-
VERY DENSE, MOIST, WHITE-TAN-BROWN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA AND ROCK FRAGMENTS
A -RESIDUAL- MEDIUM STIFF, MOIST, RED-BROWN, HIGHLY PLASTIC SILTY CLAY (A-7-6), WITH TRACE MICA
66+00.00
CL
-LIEB-

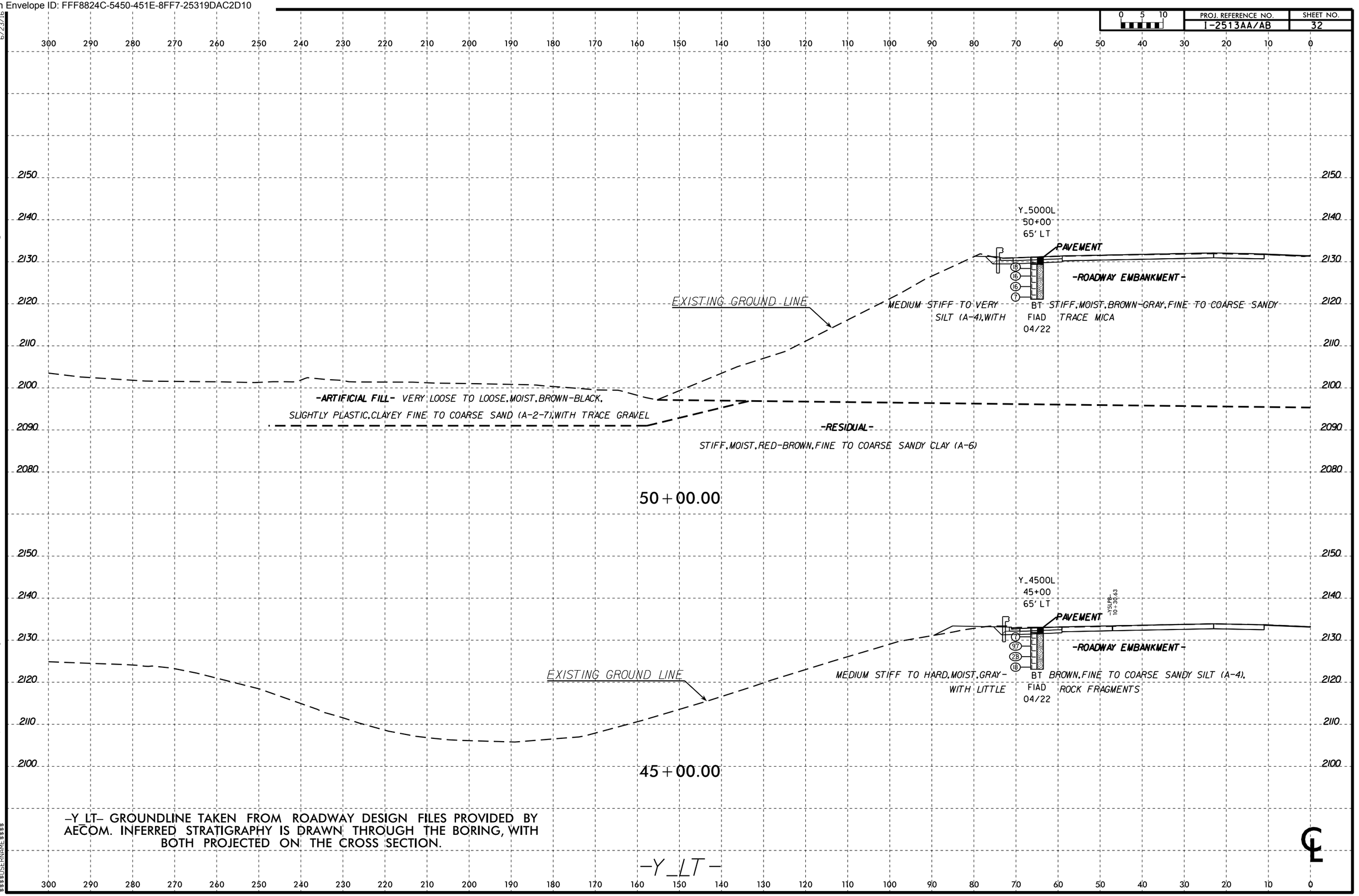
-L1EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	31



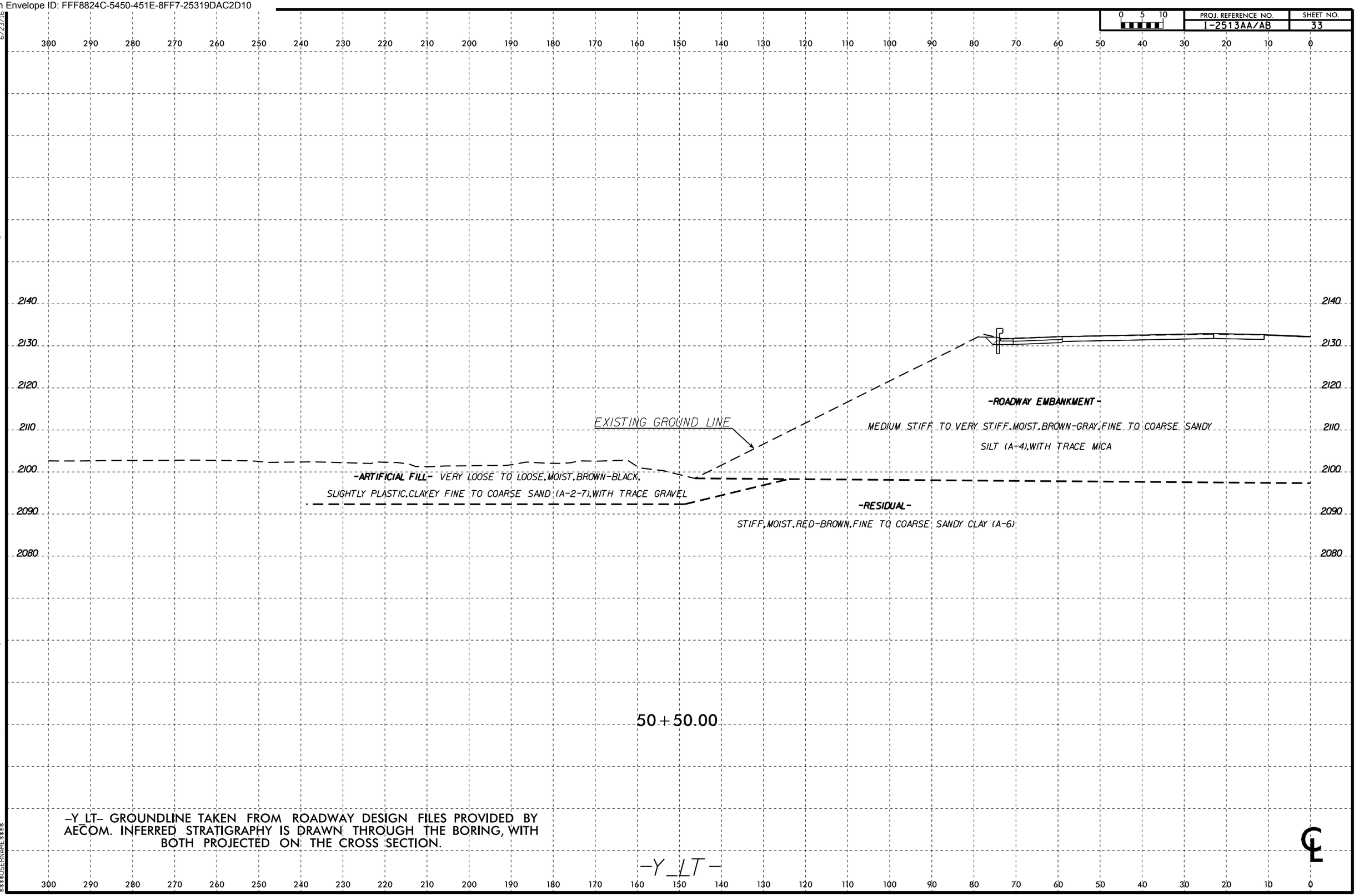
-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	32



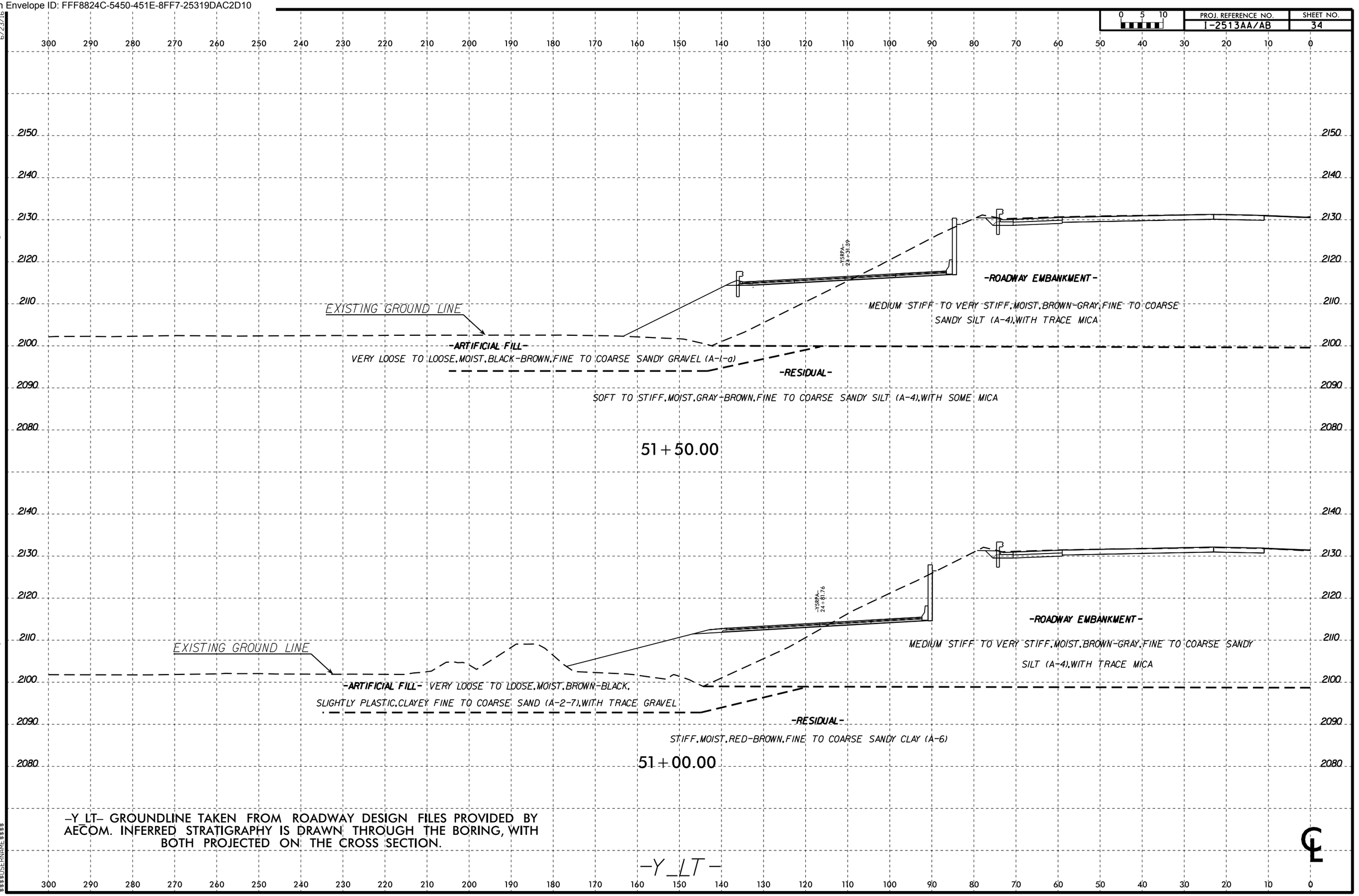
-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	33



-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

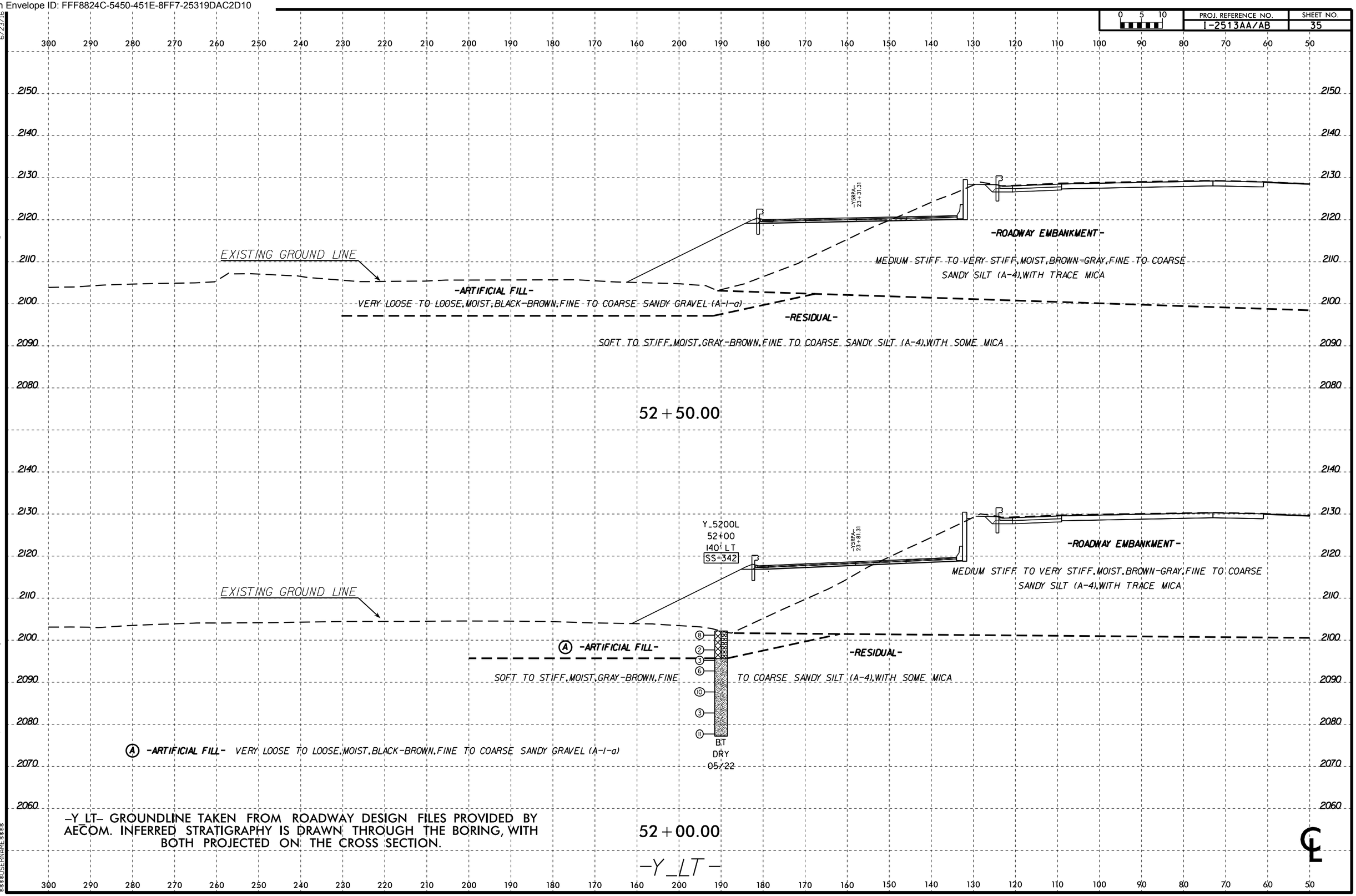
PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	34



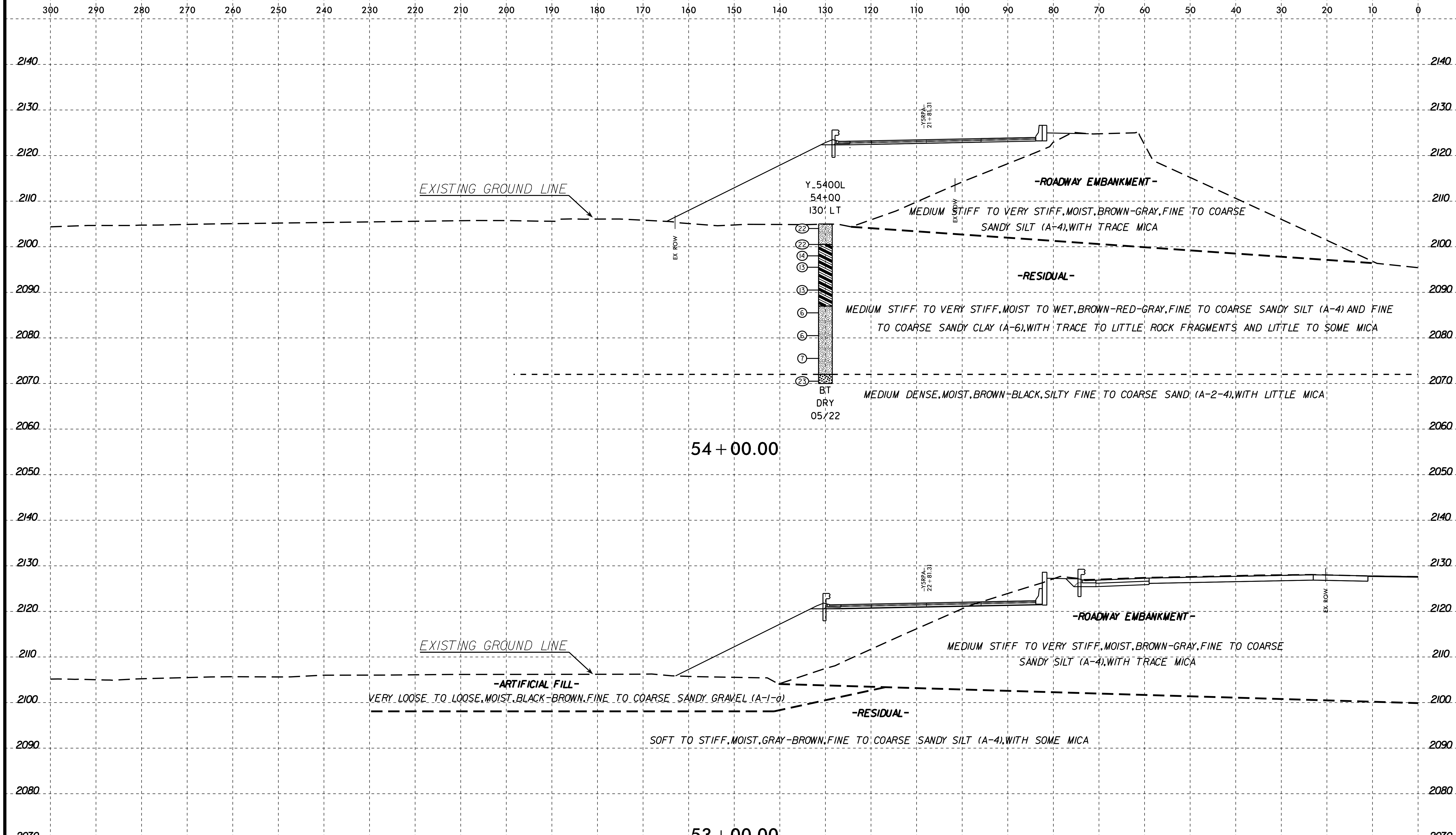
–Y_LT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

–Y_LT–

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	35



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

-Y_LT-

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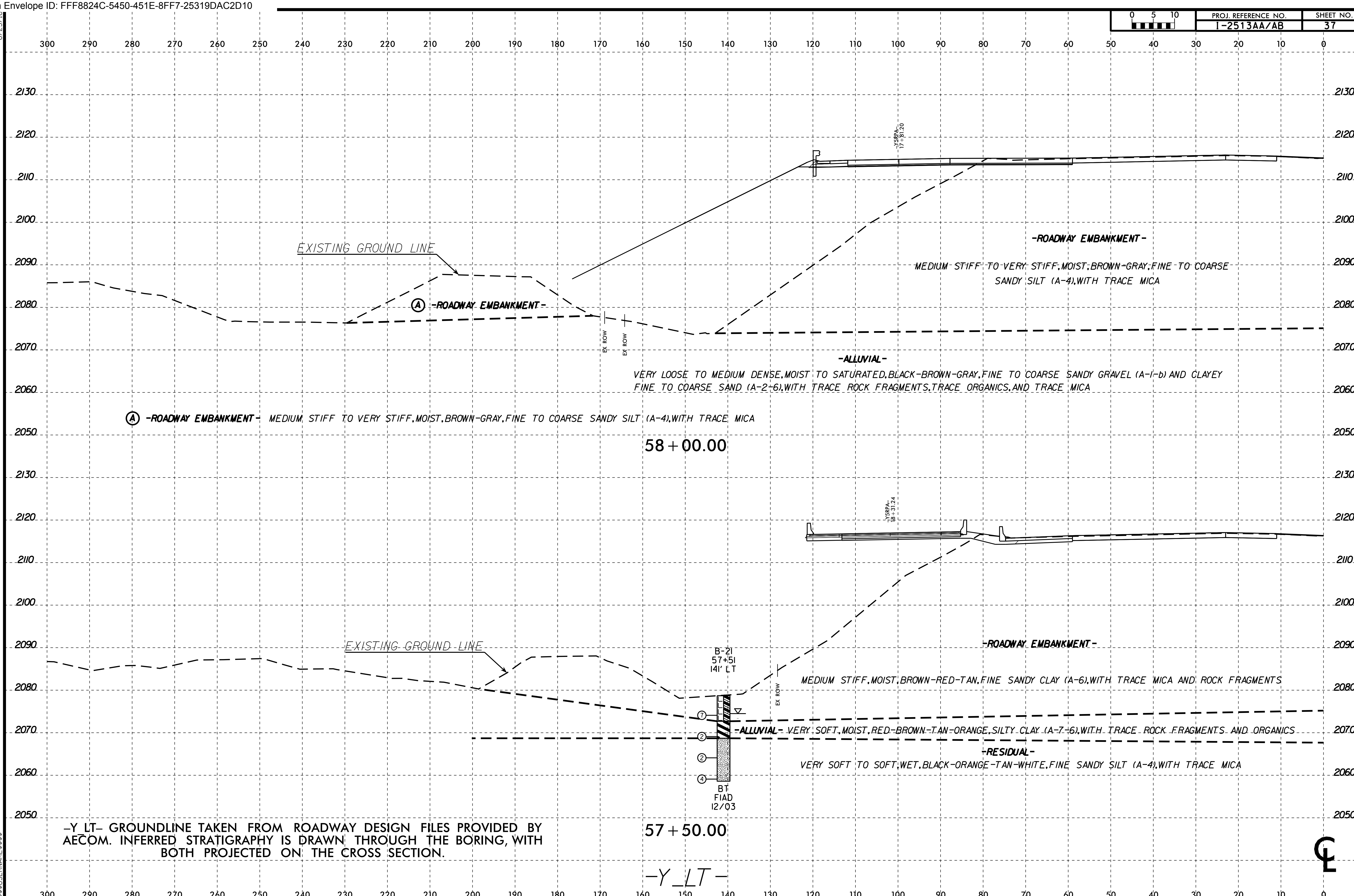


PROJ. REFERENCE NO.
I-2513AA/AB
SHEET NO.
37
EXISTING GROUND LINE
(A) -ROADWAY EMBANKMENT-
EX ROW
-ROADWAY EMBANKMENT-
MEDIUM STIFF TO VERY STIFF,MOIST,BROWN-GRAY,FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA
-ALLUVIAL-
VERY LOOSE TO MEDIUM DENSE,MOIST TO SATURATED,BLACK-BROWN-GRAY,FINE TO COARSE SANDY GRAVEL (A-1-b) AND CLAYEY FINE TO COARSE SAND (A-2-6),WITH TRACE ROCK FRAGMENTS,TRACE ORGANICS,AND TRACE MICA
(A) -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF,MOIST,BROWN-GRAY,FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA
58+00.00
EXISTING GROUND LINE
B-21
57+51
141' LT
-ROADWAY EMBANKMENT-
MEDIUM STIFF,MOIST,BROWN-RED-TAN,FINE SANDY CLAY (A-6),WITH TRACE MICA AND ROCK FRAGMENTS
-ALLUVIAL- VERY SOFT,MOIST,RED-BROWN-TAN-ORANGE,SILTY CLAY (A-7-6),WITH TRACE ROCK FRAGMENTS AND ORGANICS
-RESIDUAL-
VERY SOFT TO SOFT,WET,BLACK-ORANGE-TAN-WHITE,FINE SANDY SILT (A-4),WITH TRACE MICA
BT
FIAD
12/03
-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.
57+50.00
-Y_LT-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	38

300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

2130
2120
2110
2100
2090
2080
2070
2060
2050
2040

EXISTING GROUND LINE

-Y5RPA-
17-31.14

-ROADWAY EMBANKMENT-

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

Ⓐ -ROADWAY EMBANKMENT-

EX ROW

EX ROW

-ALLUVIAL-

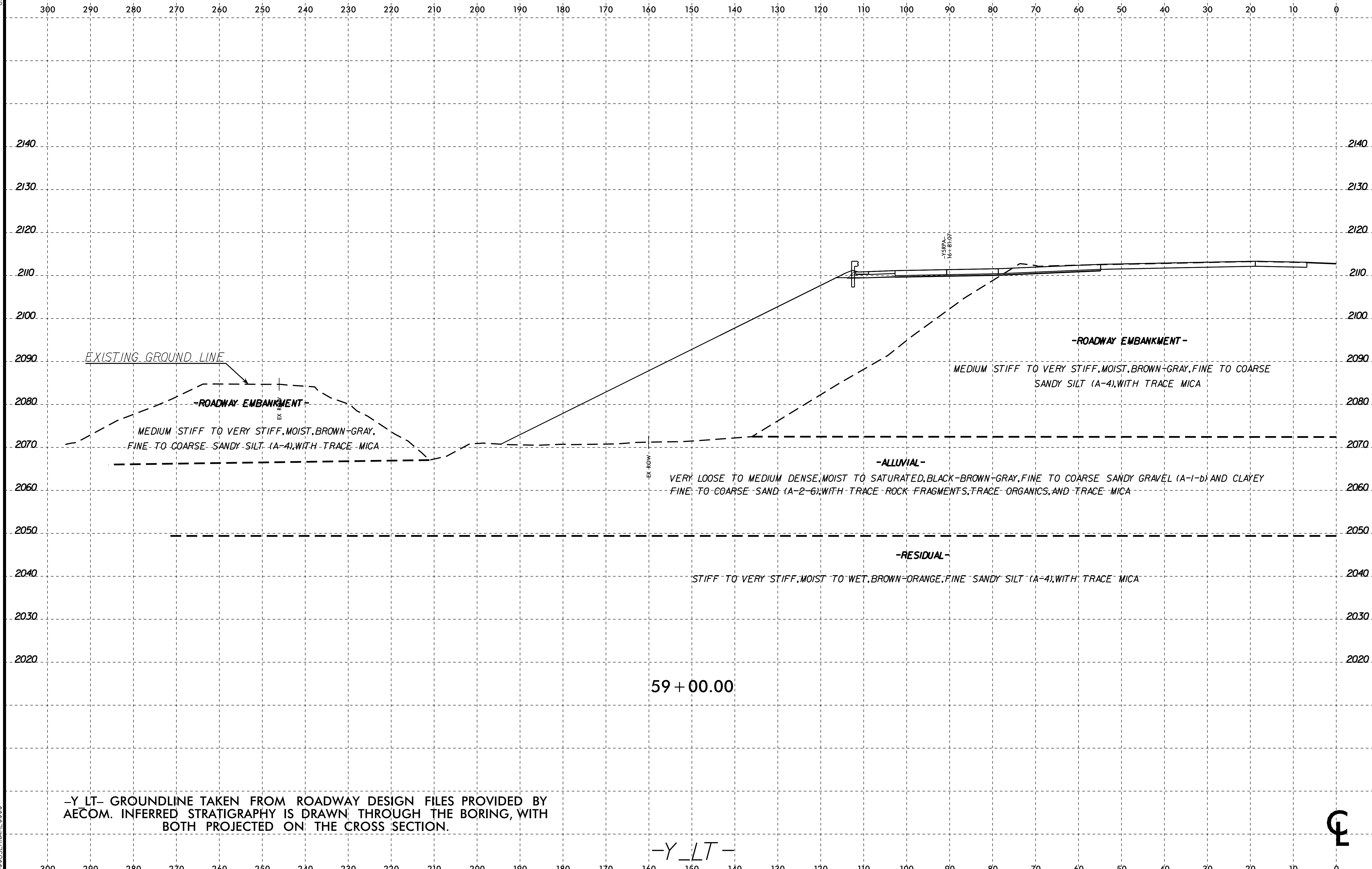
VERY LOOSE TO MEDIUM DENSE, MOIST TO SATURATED, BLACK-BROWN-GRAY, FINE TO COARSE SANDY GRAVEL (A-1-b) AND CLAYEY FINE TO COARSE SAND (A-2-6) WITH TRACE ROCK FRAGMENTS, TRACE ORGANICS, AND TRACE MICA

Ⓐ -ROADWAY EMBANKMENT- MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4) WITH TRACE MICA

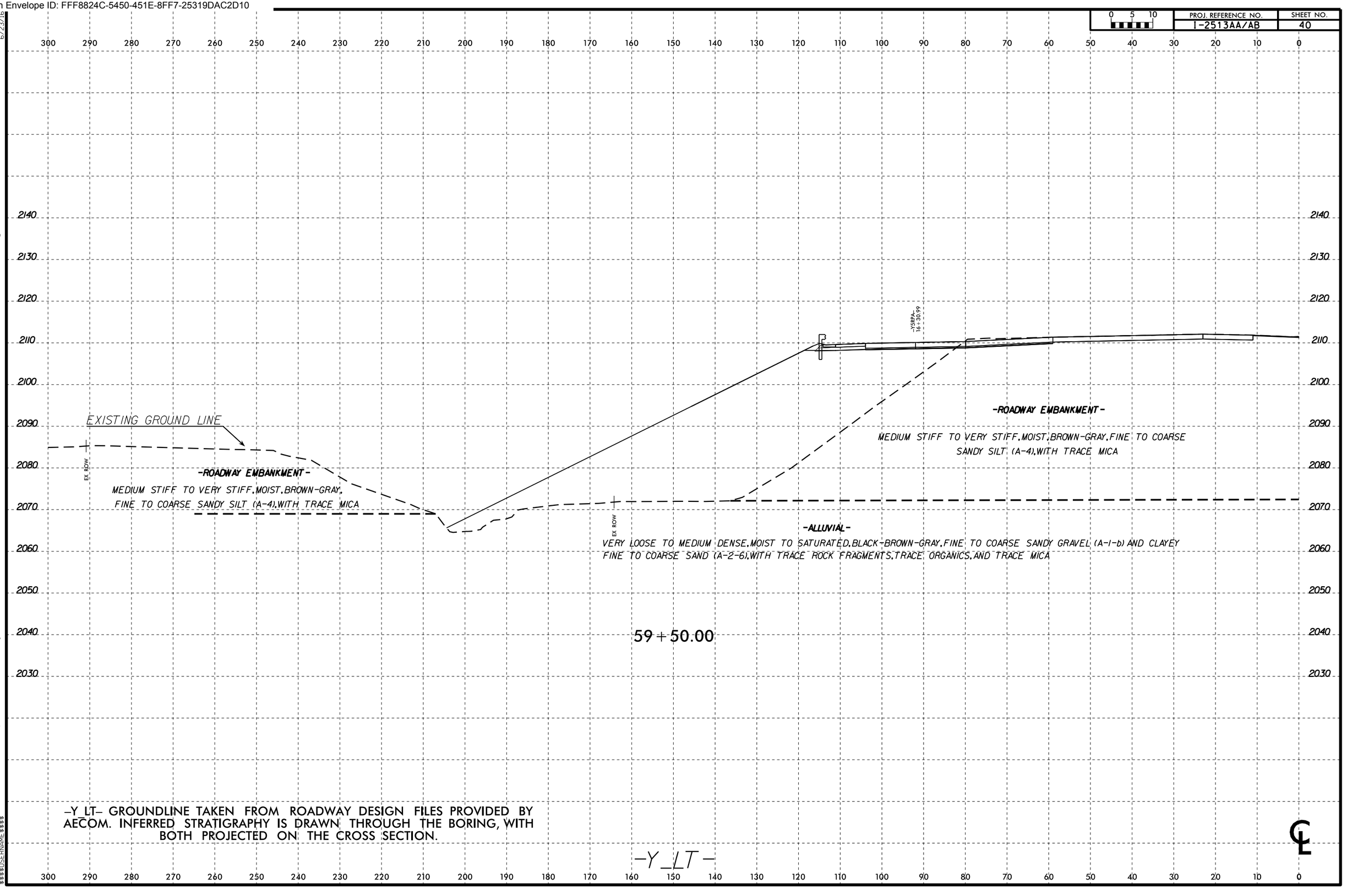
58+50.00

-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

-Y_LT-


EXISTING GROUND LINE
-ROADWAY EMBANKMENT-
MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA
-ROADWAY EMBANKMENT-
MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA
-ALLUVIAL-
VERY LOOSE TO MEDIUM DENSE, MOIST TO SATURATED, BLACK-BROWN-GRAY, FINE TO COARSE SANDY GRAVEL (A-1-b) AND CLAYEY FINE TO COARSE SAND (A-2-6), WITH TRACE ROCK FRAGMENTS, TRACE ORGANICS, AND TRACE MICA
-RESIDUAL-
STIFF TO VERY STIFF, MOIST TO WET, BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA
EX ROW
59+00.00
-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.
-Y_LT-
CL

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	40



-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

2140 2130 2120 2110 2100 2090 2080 2070 2060 2050 2040 2030 2020

-Y5RPA-
15+80.88

-ROADWAY EMBANKMENT-
MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

EXISTING GROUND LINE

-ROADWAY EMBANKMENT-
MEDIUM STIFF TO VERY STIFF, MOIST, BROWN-GRAY, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

B-20
59+96
141' LT

EX ROW

4
7
27
11

BT
FIAD
12/03

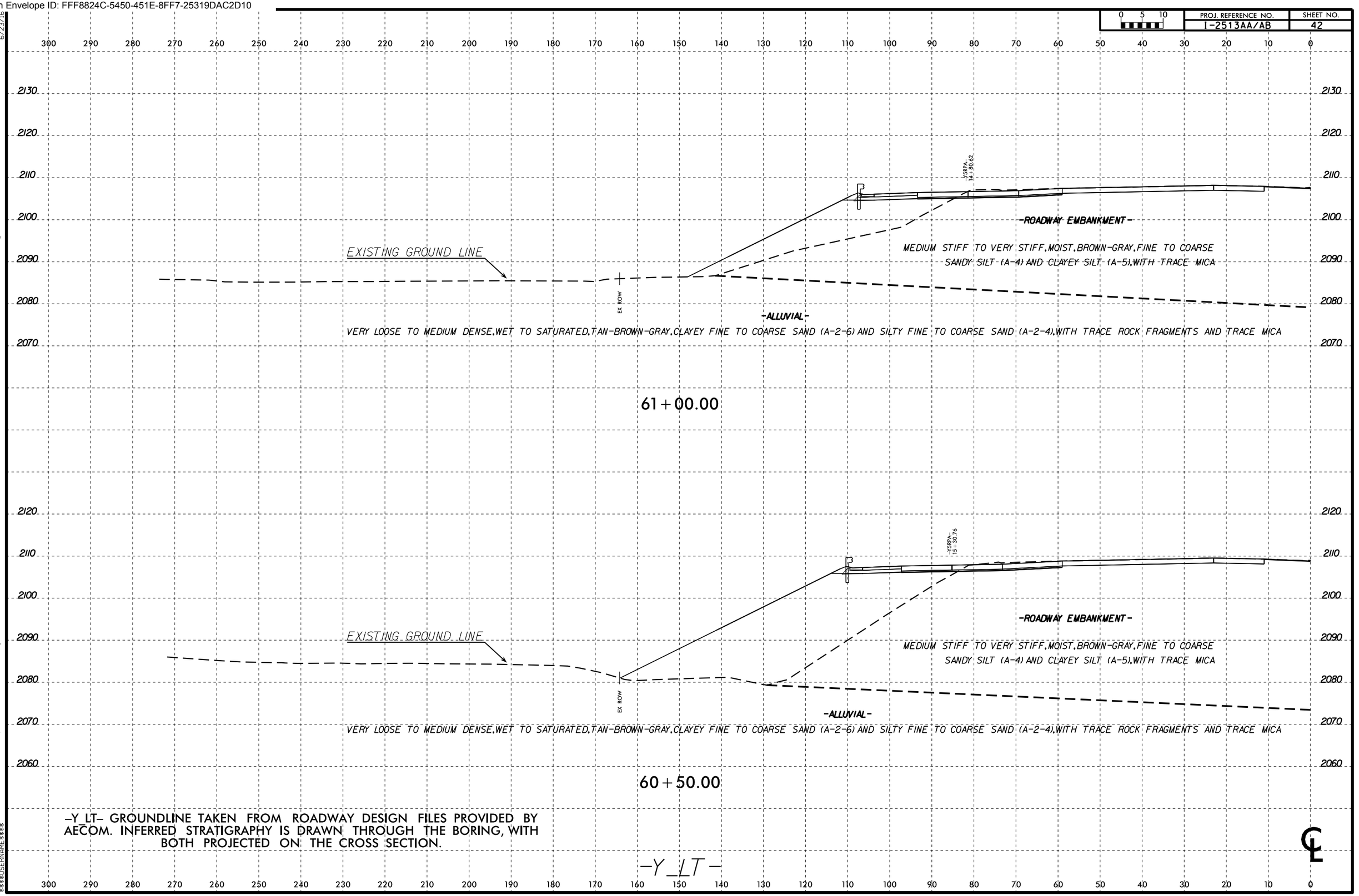
-ALLUVIAL-
VERY LOOSE TO MEDIUM DENSE, WET TO SATURATED, BROWN-BLACK, SILTY FINE TO COARSE SAND (A-2-4) AND COARSE SANDY GRAVEL (A-1-a), WITH TRACE MICA AND ORGANICS

-RESIDUAL-
STIFF, WET, RED-BROWN, FINE SANDY SILT (A-4)

60+00.00

-Y_LT-

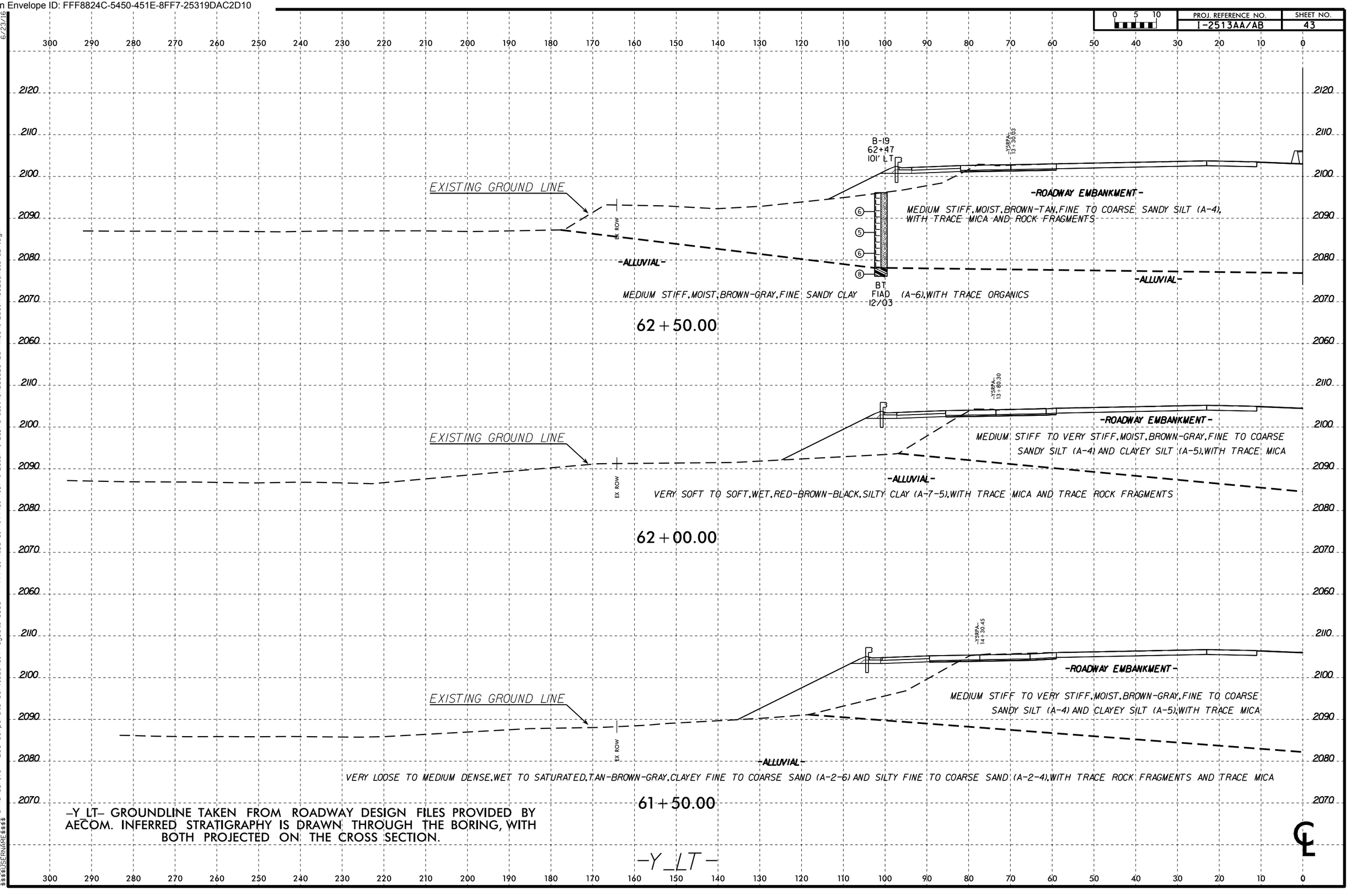
-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



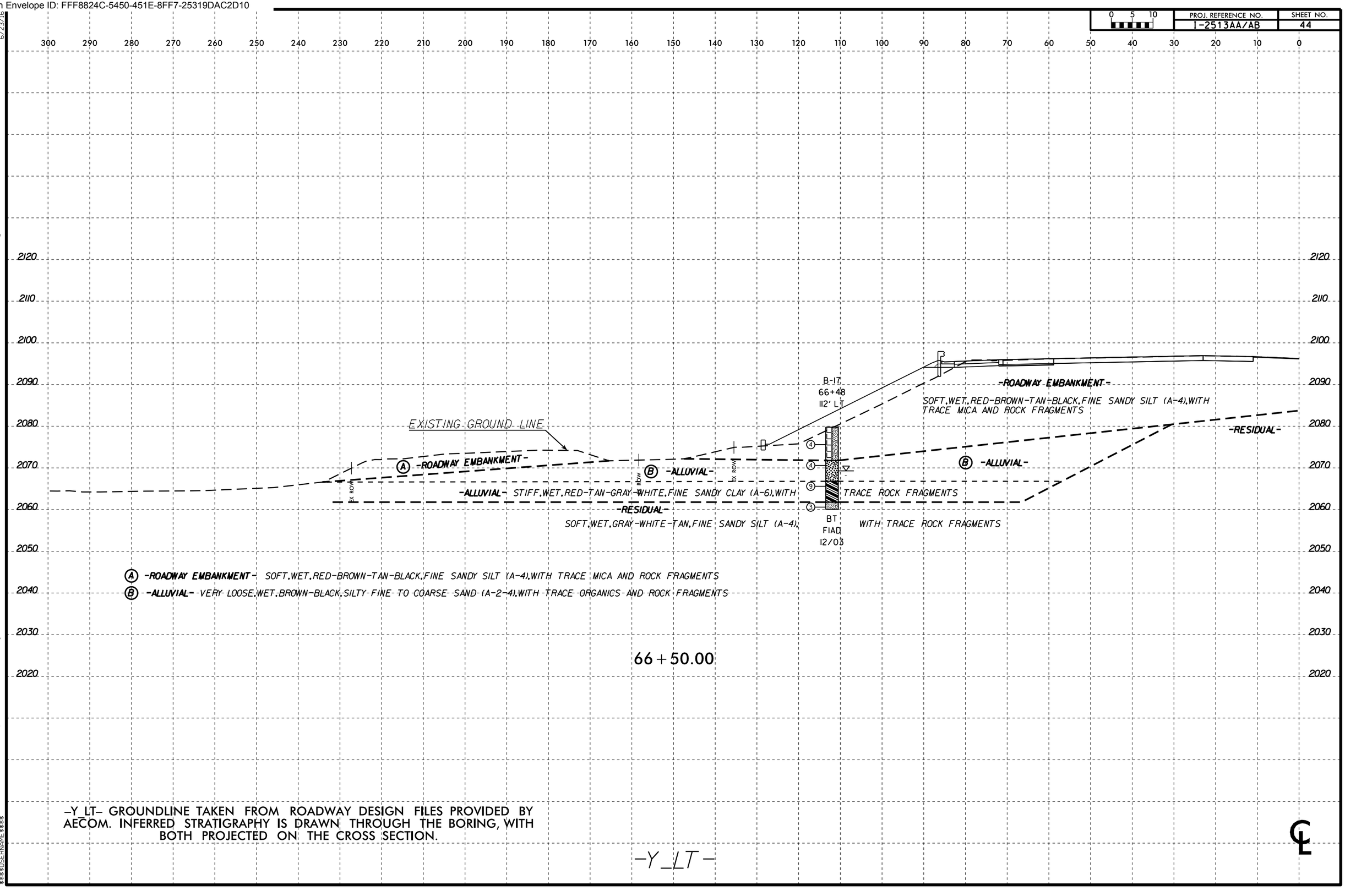
–Y_LT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

–Y_LT–

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	43



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

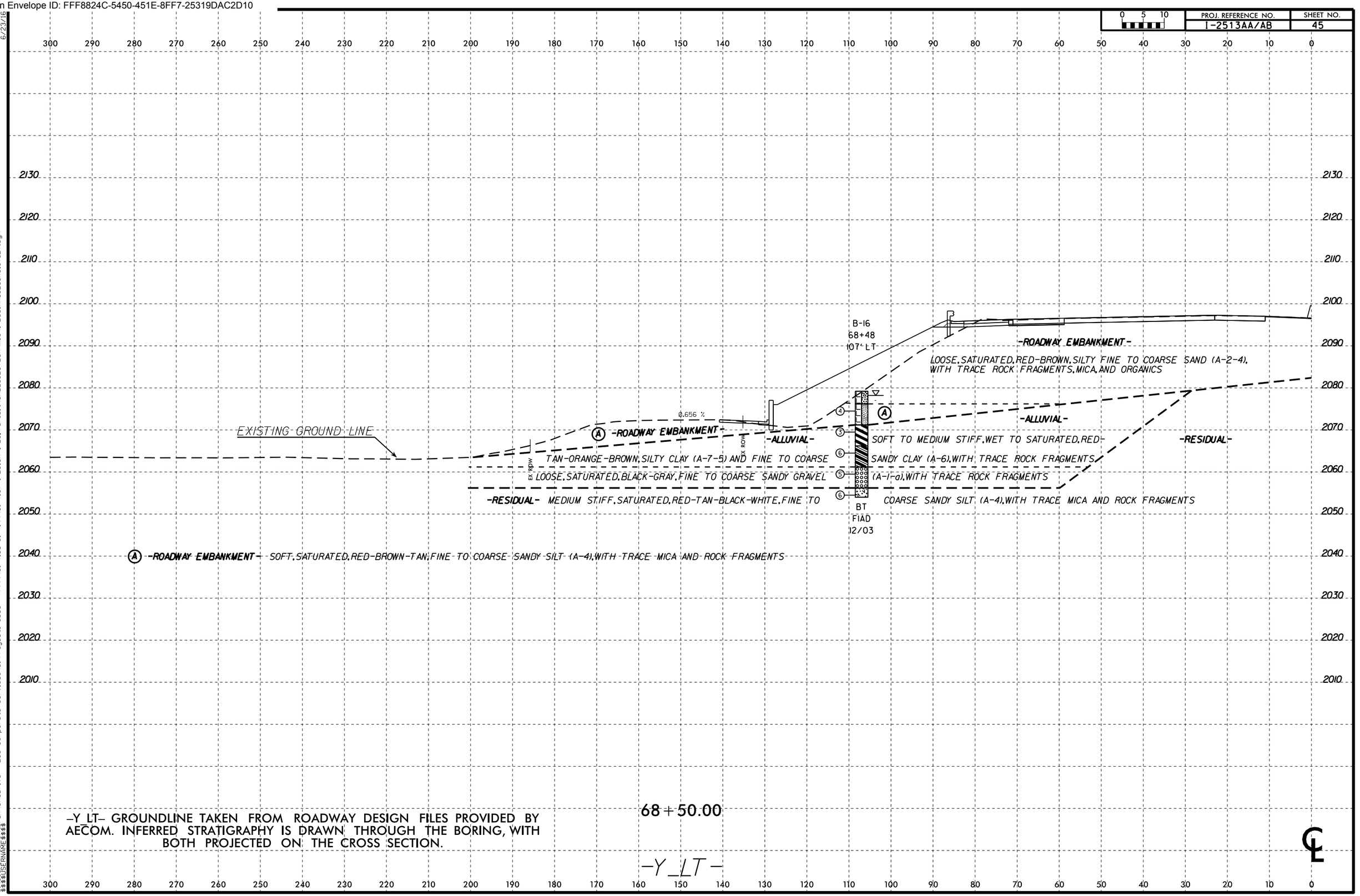


(A) **-ROADWAY EMBANKMENT-** SOFT,WET,RED-BROWN-TAN-BLACK,FINE SANDY SILT (A-4),WITH TRACE MICA AND ROCK FRAGMENTS

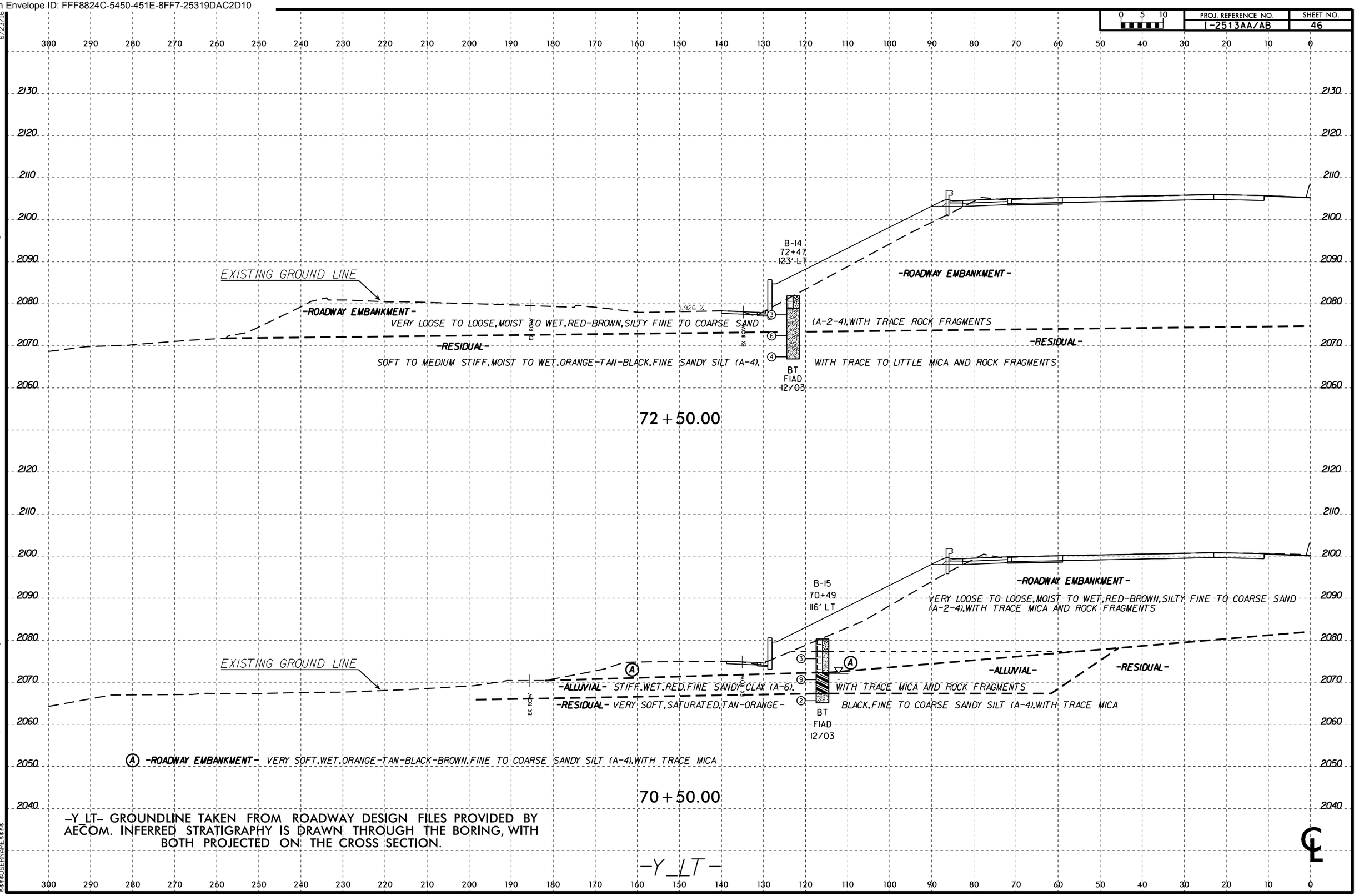
(B) **-ALLUVIAL-** VERY LOOSE,WET,BROWN-BLACK,SILTY FINE TO COARSE SAND (A-2-4),WITH TRACE ORGANICS AND ROCK FRAGMENTS

-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	45

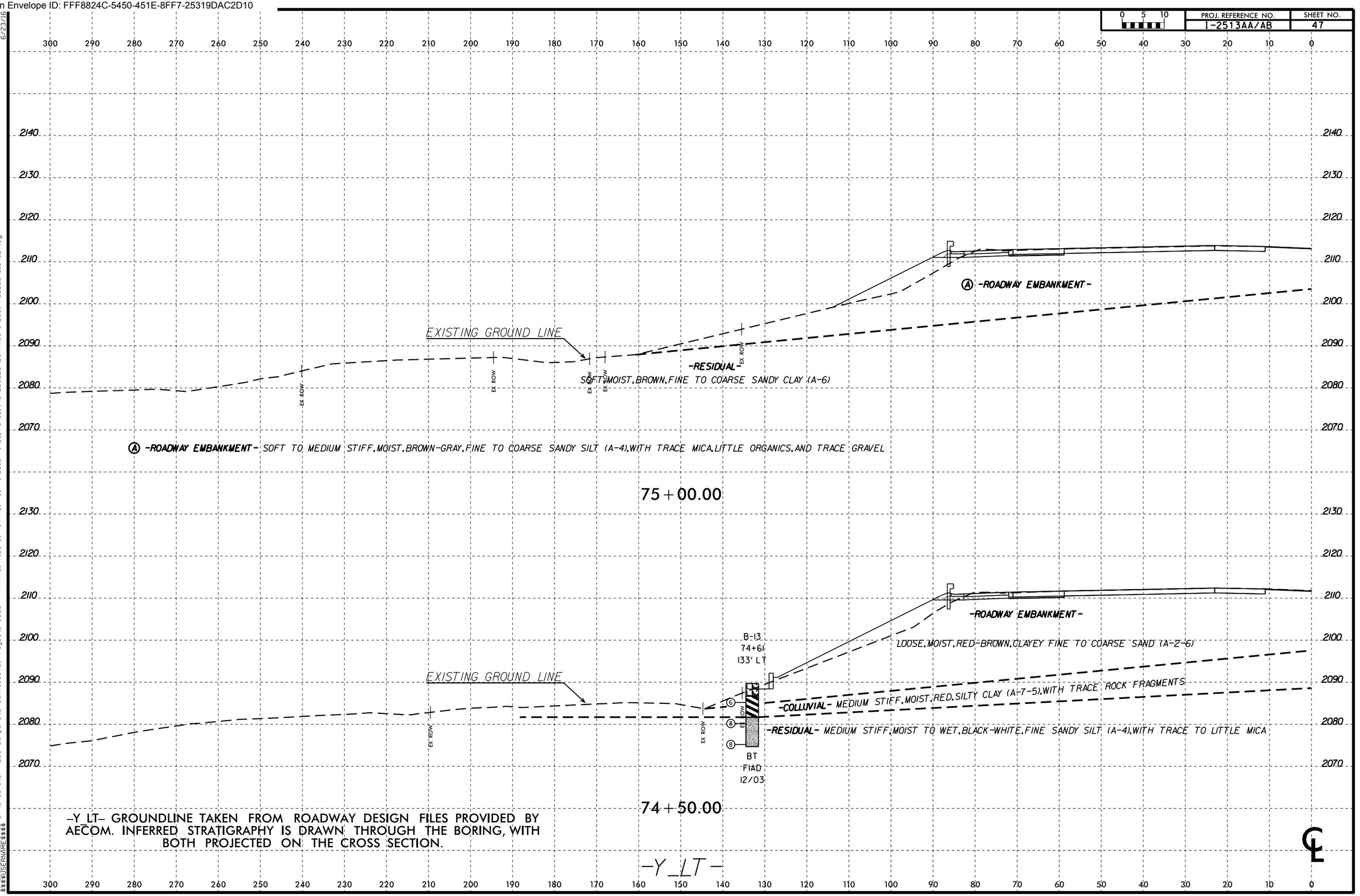


-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	47



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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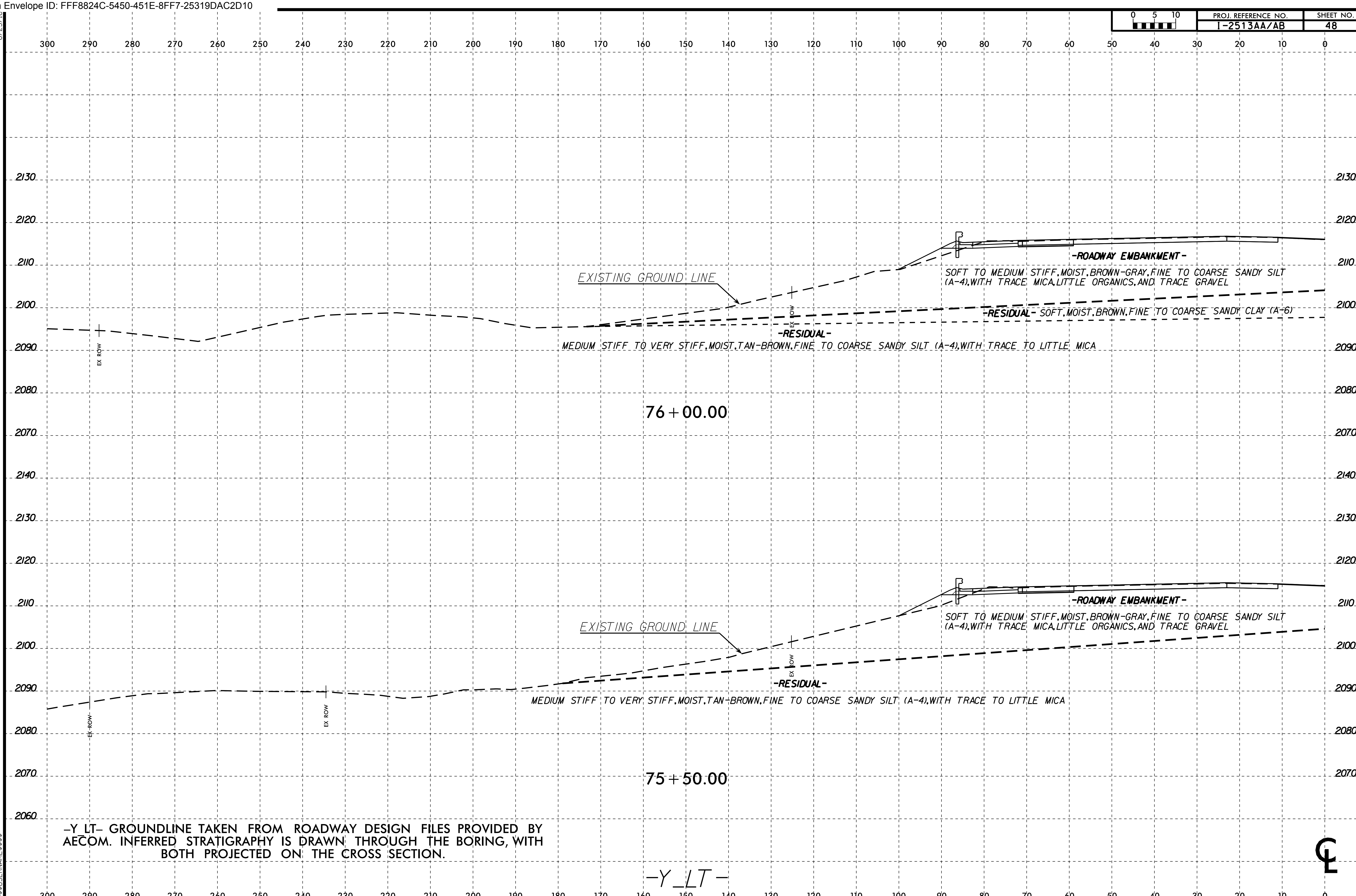

6/23/16

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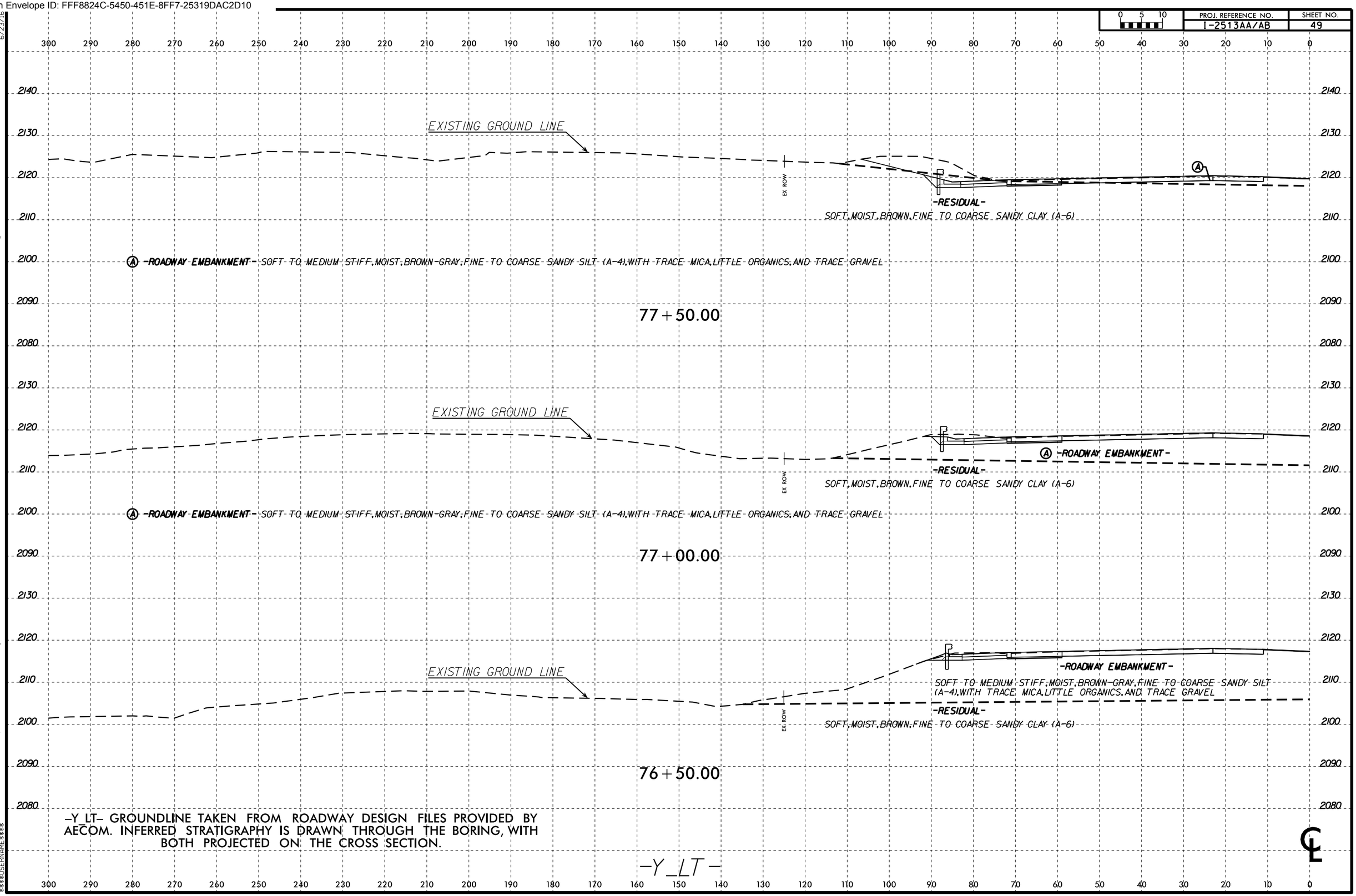
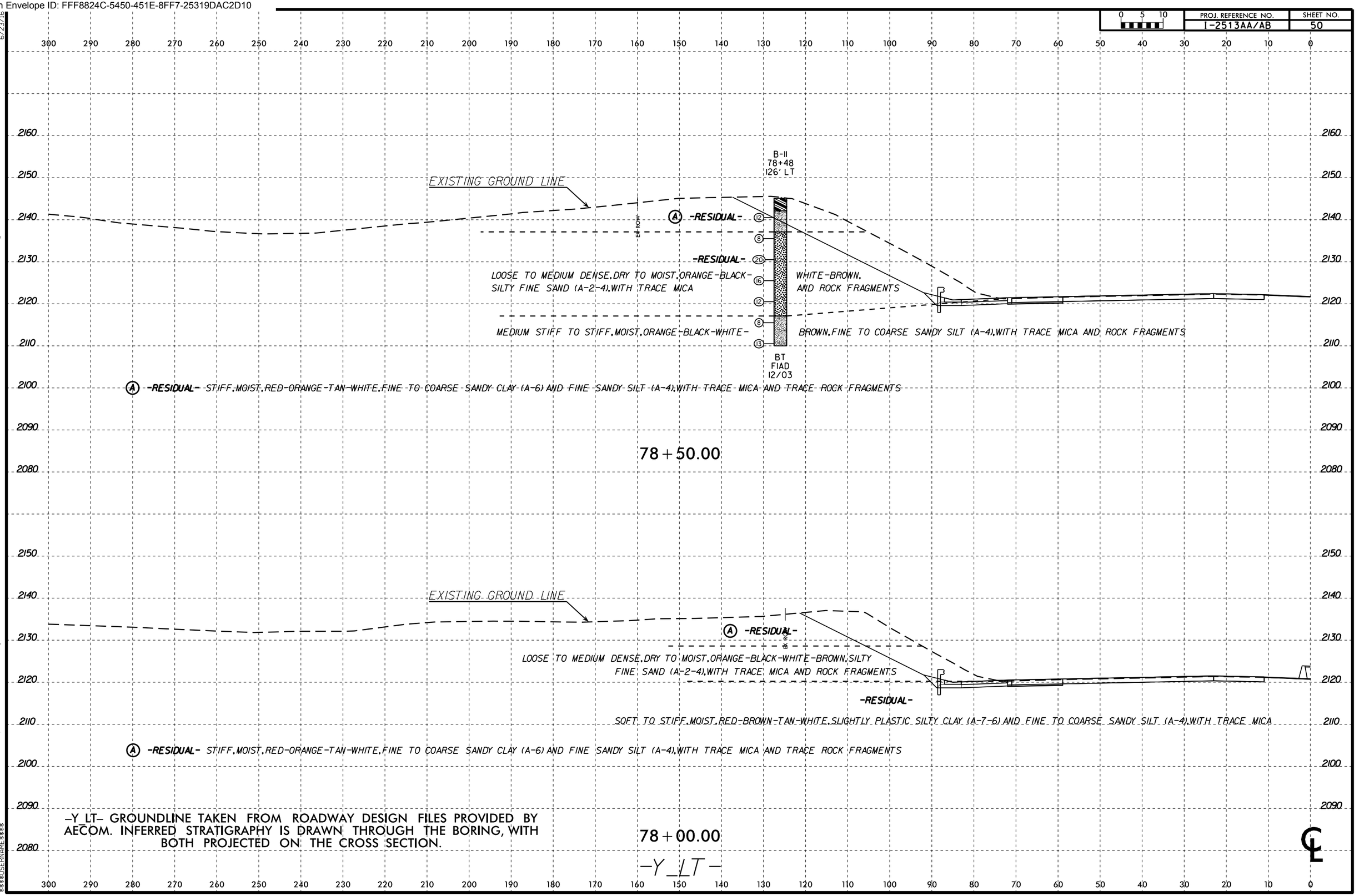
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	49



–Y_LT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	50



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	51

EXISTING GROUND LINE

-ROADWAY EMBANKMENT-
STIFF TO VERY STIFF, MOIST, RED-BROWN-WHITE, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA

EX ROW

-RESIDUAL-
SOFT TO VERY STIFF, MOIST, RED-BROWN-TAN-WHITE-GRAY, FINE TO COARSE SANDY CLAY (A-6) AND FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA AND ROCK FRAGMENTS

90+50.00

EXISTING GROUND LINE

B-10
82+96
126' LT

EX ROW

-RESIDUAL-
STIFF TO VERY STIFF, DRY, RED-TAN-BROWN, FINE SANDY SILT (A-4), WITH TRACE TO LITTLE MICA

A	17
	13
	20
	22
	34
	24
	5
	49

BT
DRY
12/03

-RESIDUAL-
MEDIUM DENSE TO VERY DENSE, DRY TO MOIST, GRAY-BLACK-WHITE-TAN-ORANGE, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE TO LITTLE MICA AND ROCK FRAGMENTS

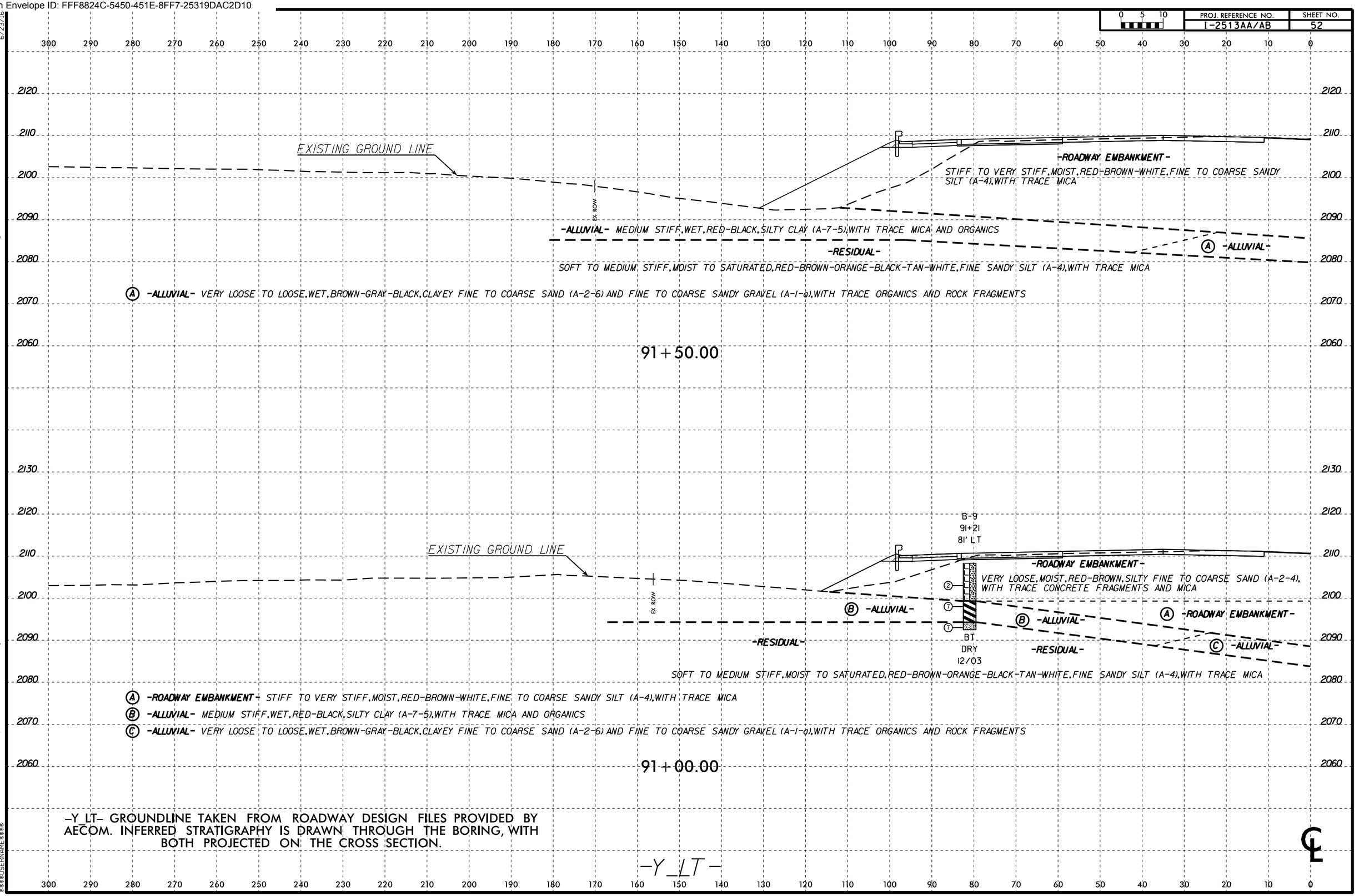
(A) -RESIDUAL- MEDIUM DENSE, DRY, RED-BROWN, SILTY FINE TO COARSE SAND (A-2-4)

83+00.00

-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

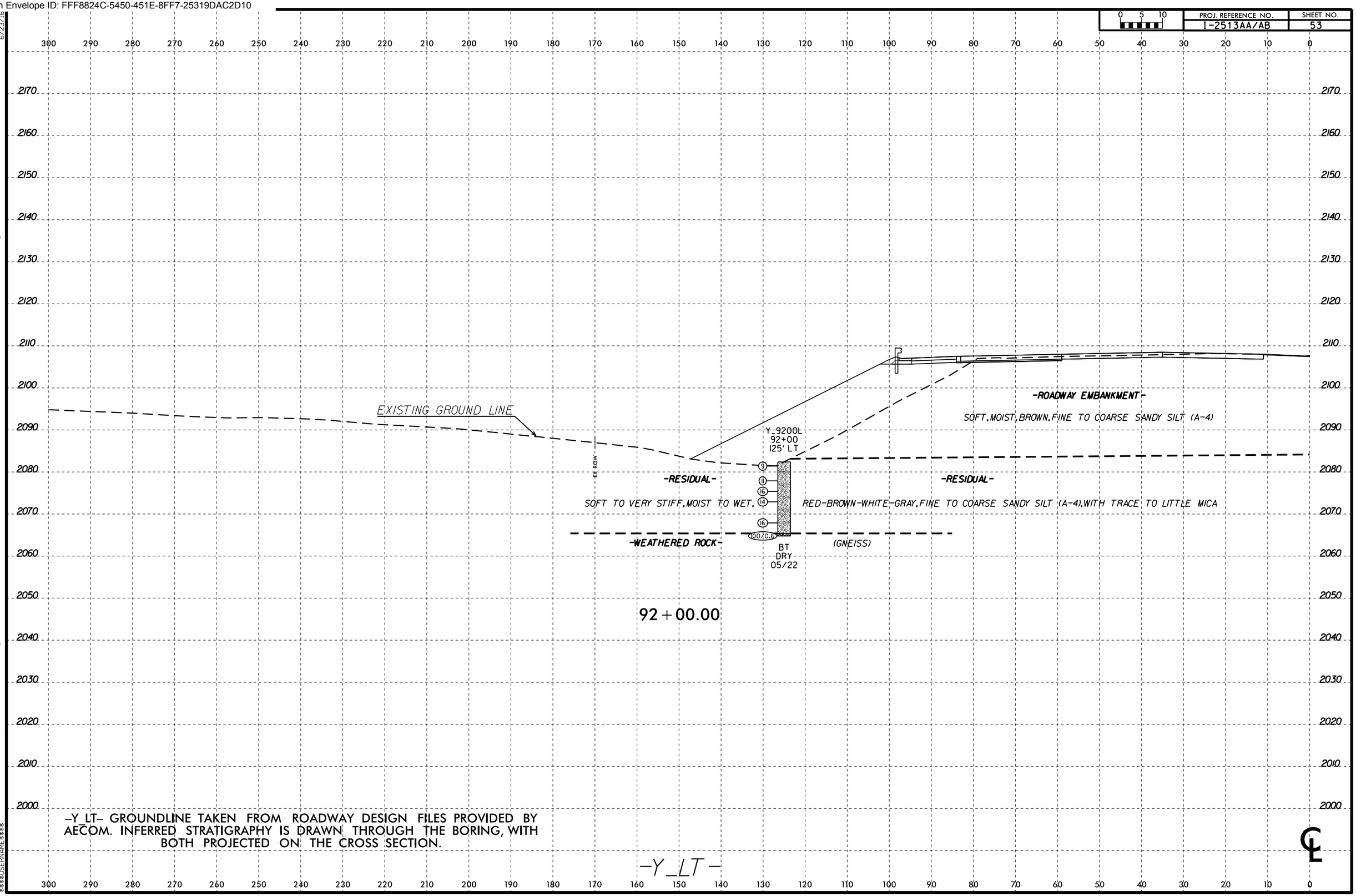
-Y_LT-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	52



-Y_LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	53



-Y LT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	54

-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

EX. BARRIER & WALL

-ROADWAY EMBANKMENT-

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

EXISTING GROUND LINE

B-22
59+22
179' RT

EX ROW

-ALLUVIAL-

VERY LOOSE TO MEDIUM DENSE, MOIST TO SATURATED, BLACK-BROWN-GRAY, FINE TO COARSE SANDY GRAVEL (A-1-b) AND CLAYEY FINE TO COARSE SAND (A-2-6), WITH TRACE ROCK FRAGMENTS, TRACE ORGANICS, AND TRACE MICA

0/04

1
10
11
17
10

BT

-RESIDUAL-

STIFF TO VERY STIFF, MOIST TO WET, BROWN-ORANGE, FINE SANDY SILT (A-4), WITH TRACE MICA

59+00.00

Y_5000R
49+92
86' RT

-YSRPD-
12+25.61

PAVEMENT

-ROADWAY EMBANKMENT-

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

14
17
12
12
7
8
30
26
9

BT
FIAD
04/22

-RESIDUAL-

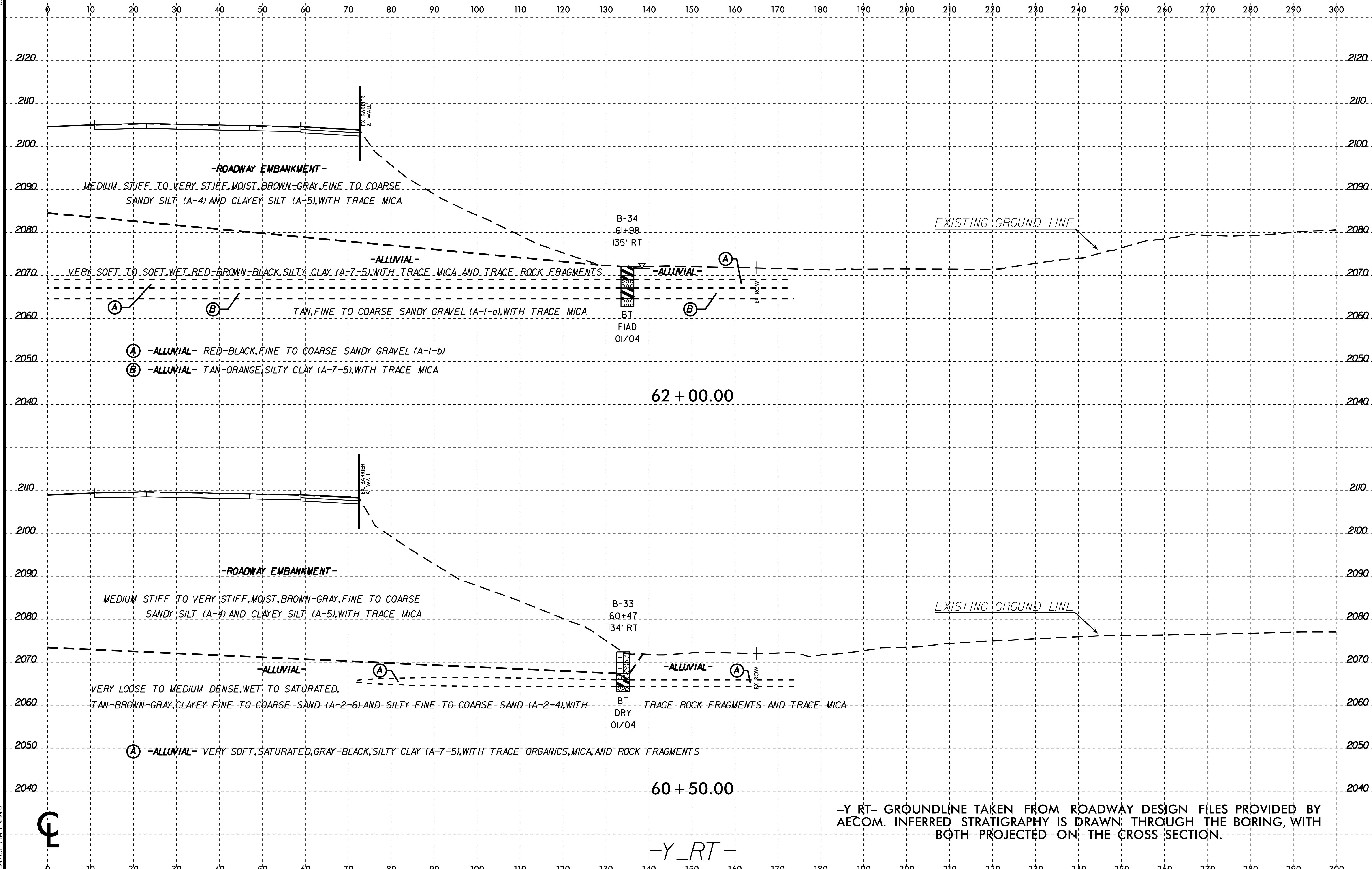
STIFF, MOIST, RED-BROWN, FINE TO COARSE SANDY CLAY (A-6)

EXISTING GROUND LINE

EX ROW

50+00.00

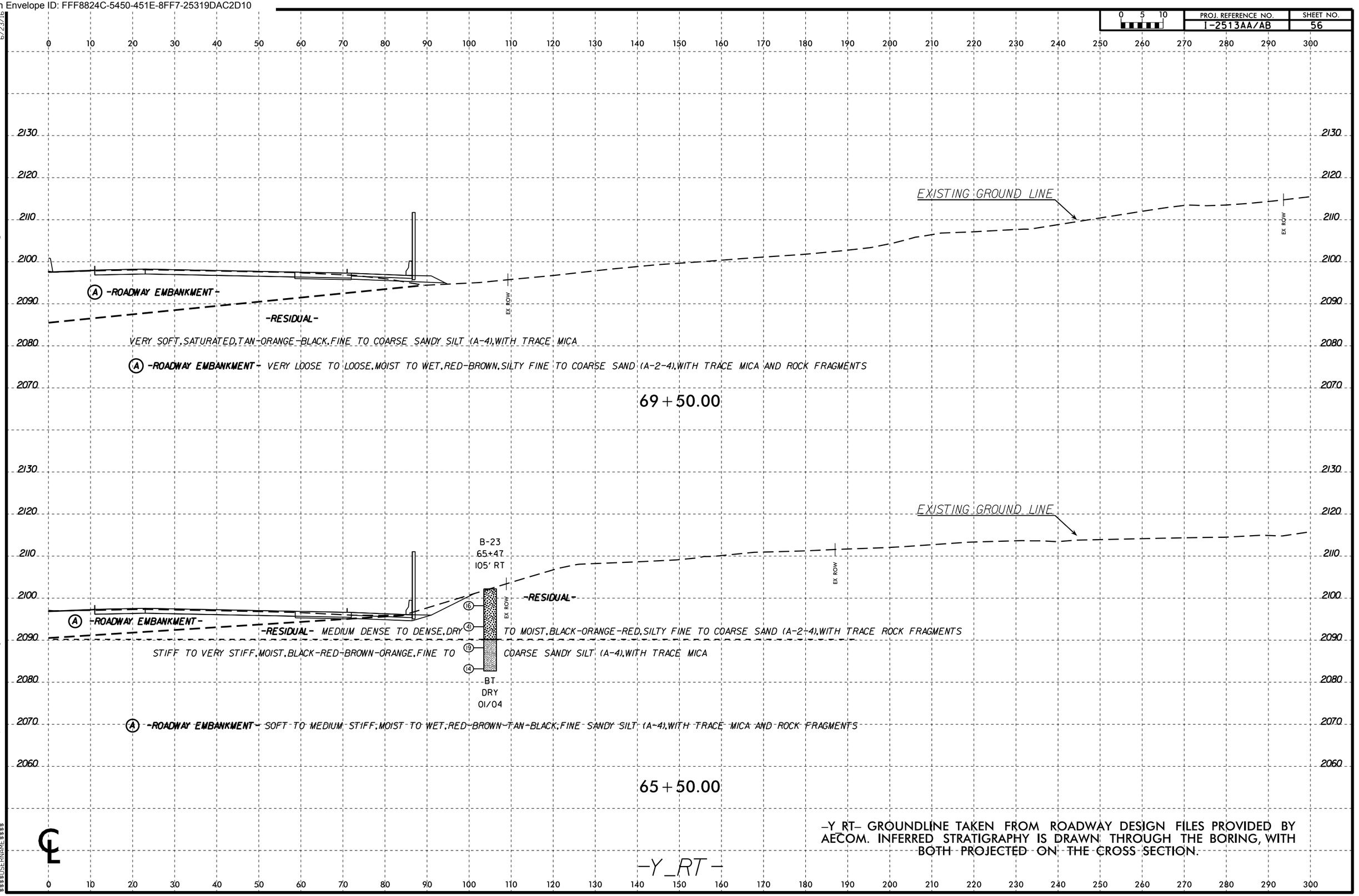
-Y_RT-



–Y_RT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

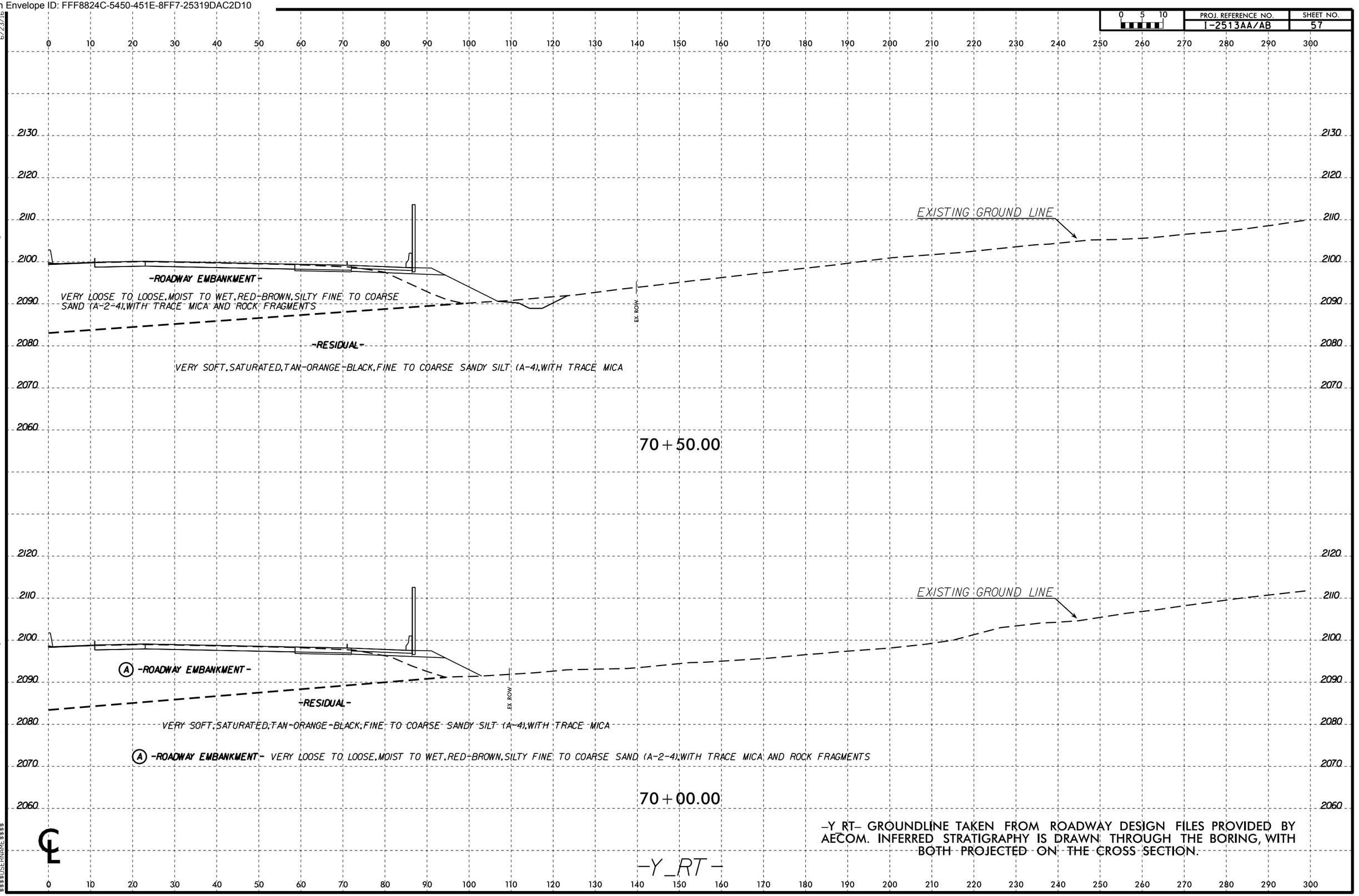
PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	56

0 5 10



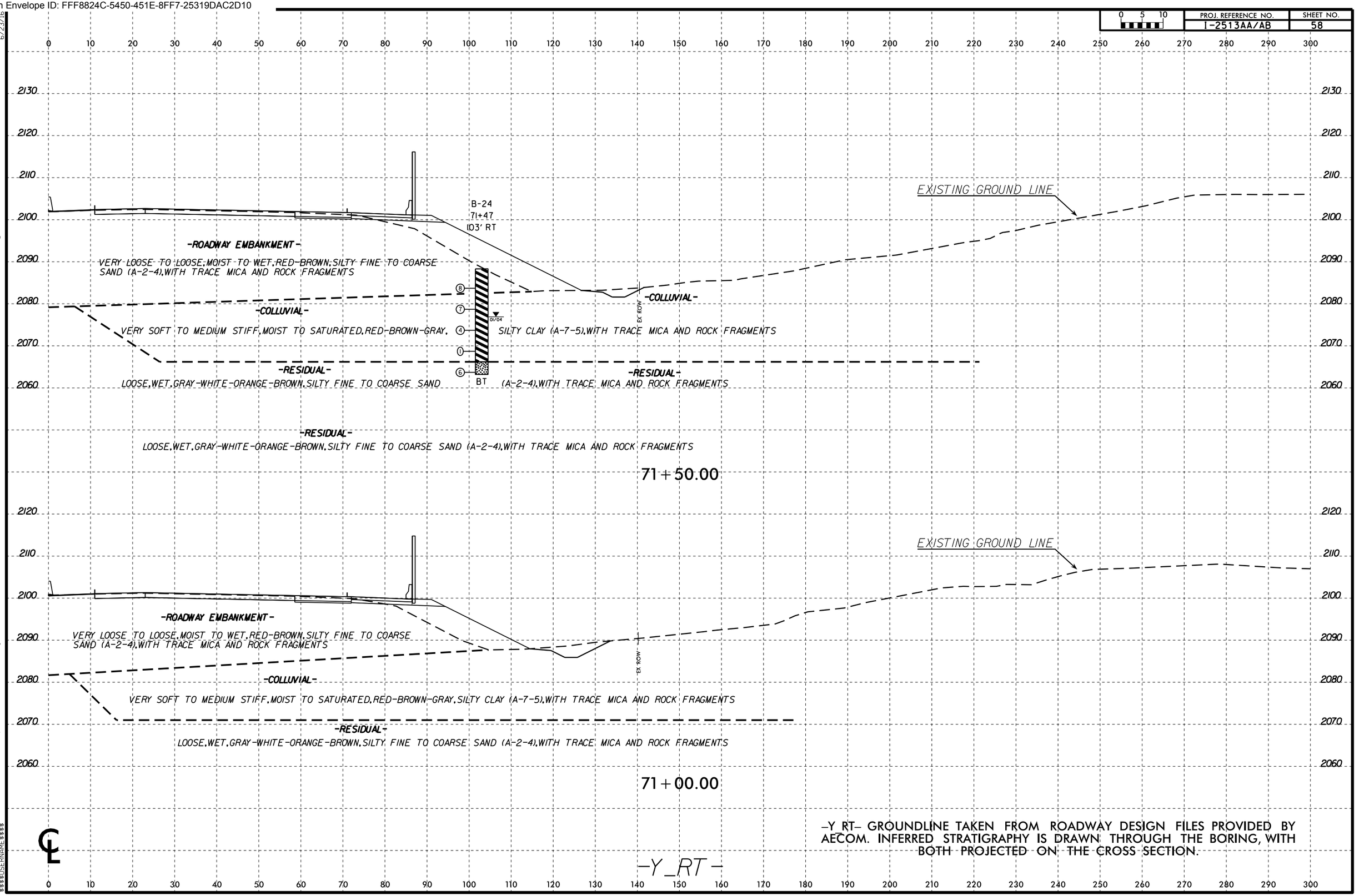
-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	57



-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

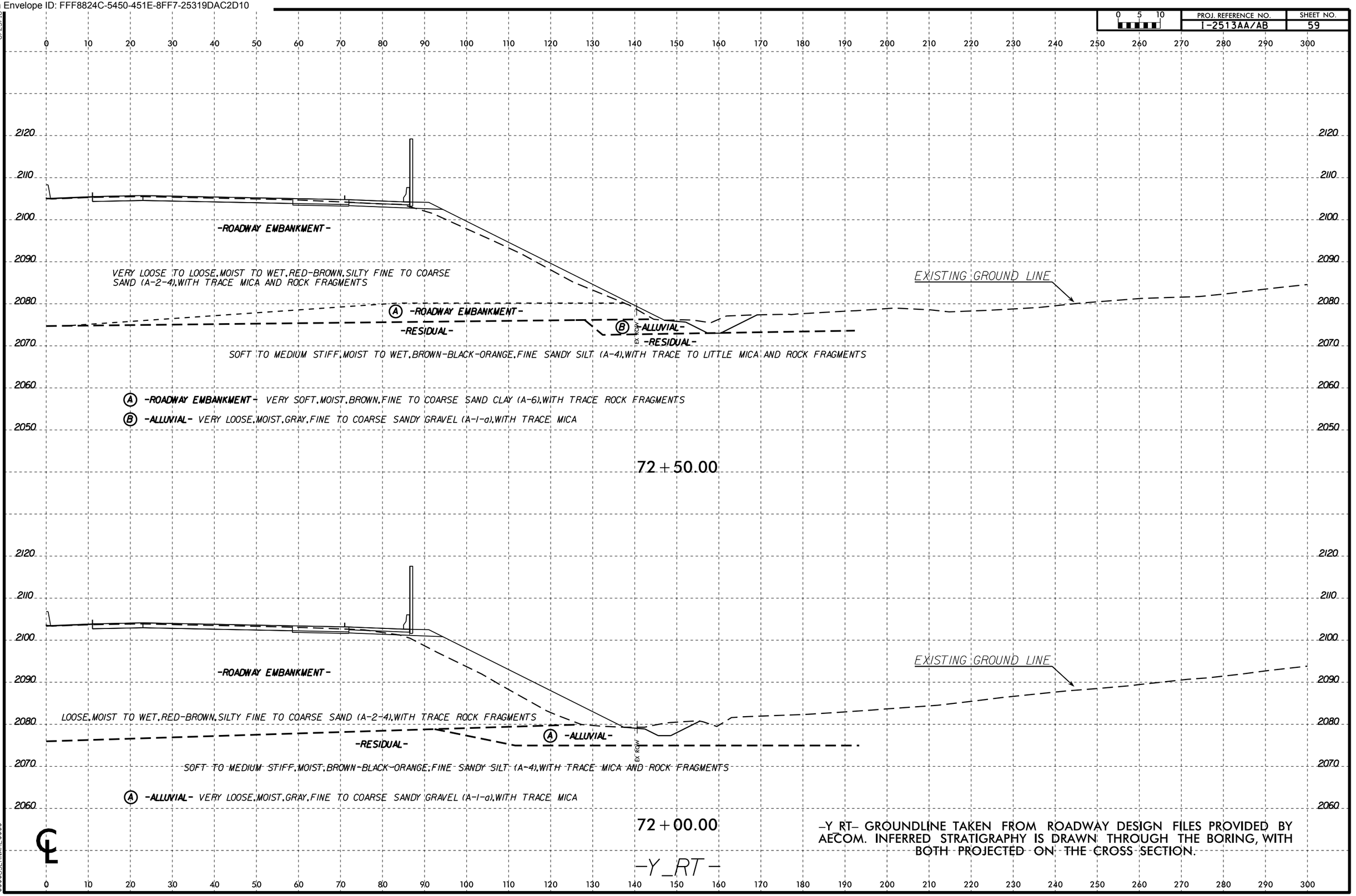
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	58



–Y RT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

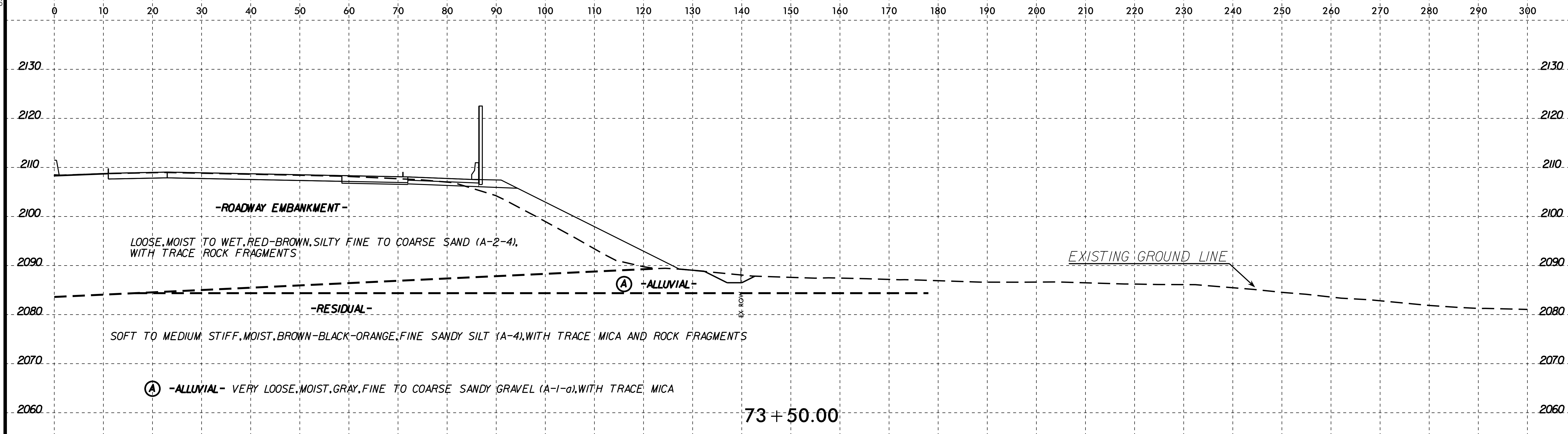
PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	59

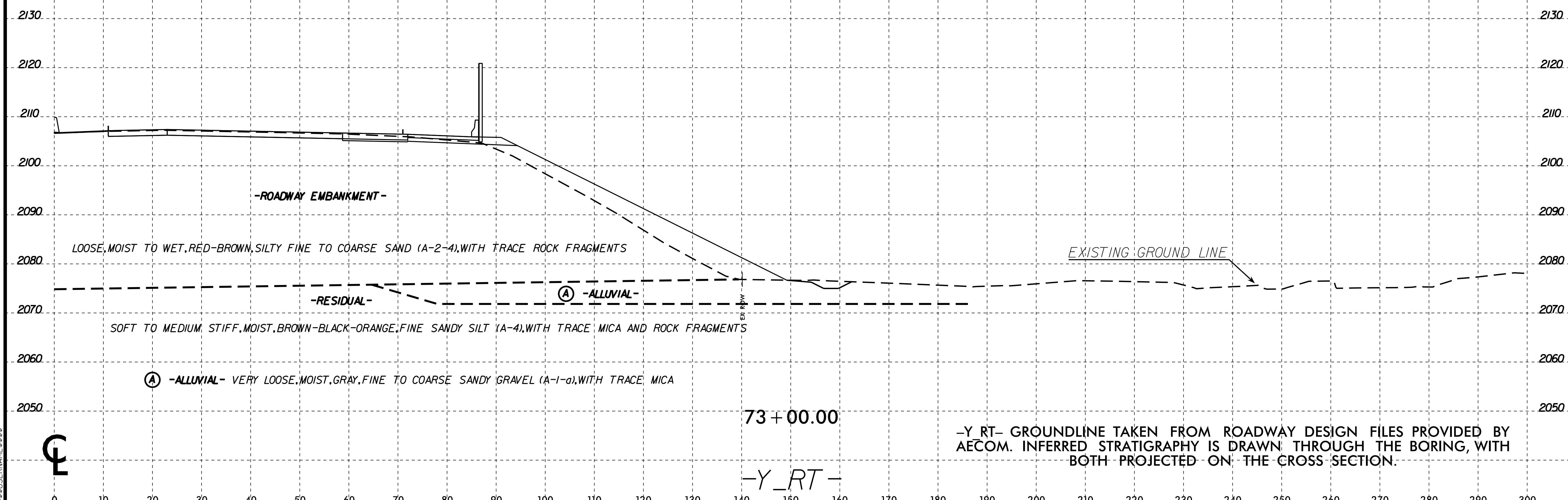
0 5 10



-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	60

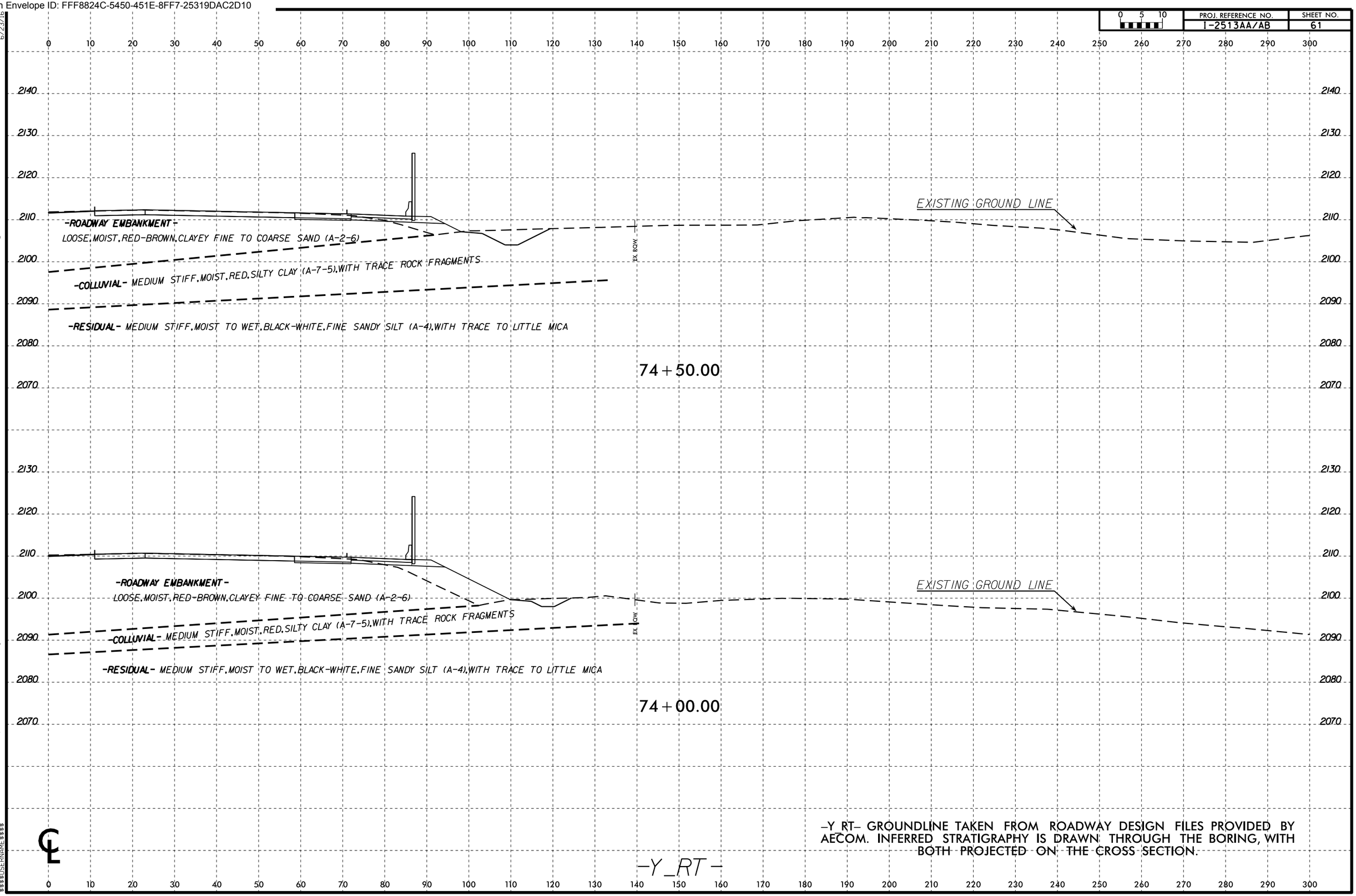




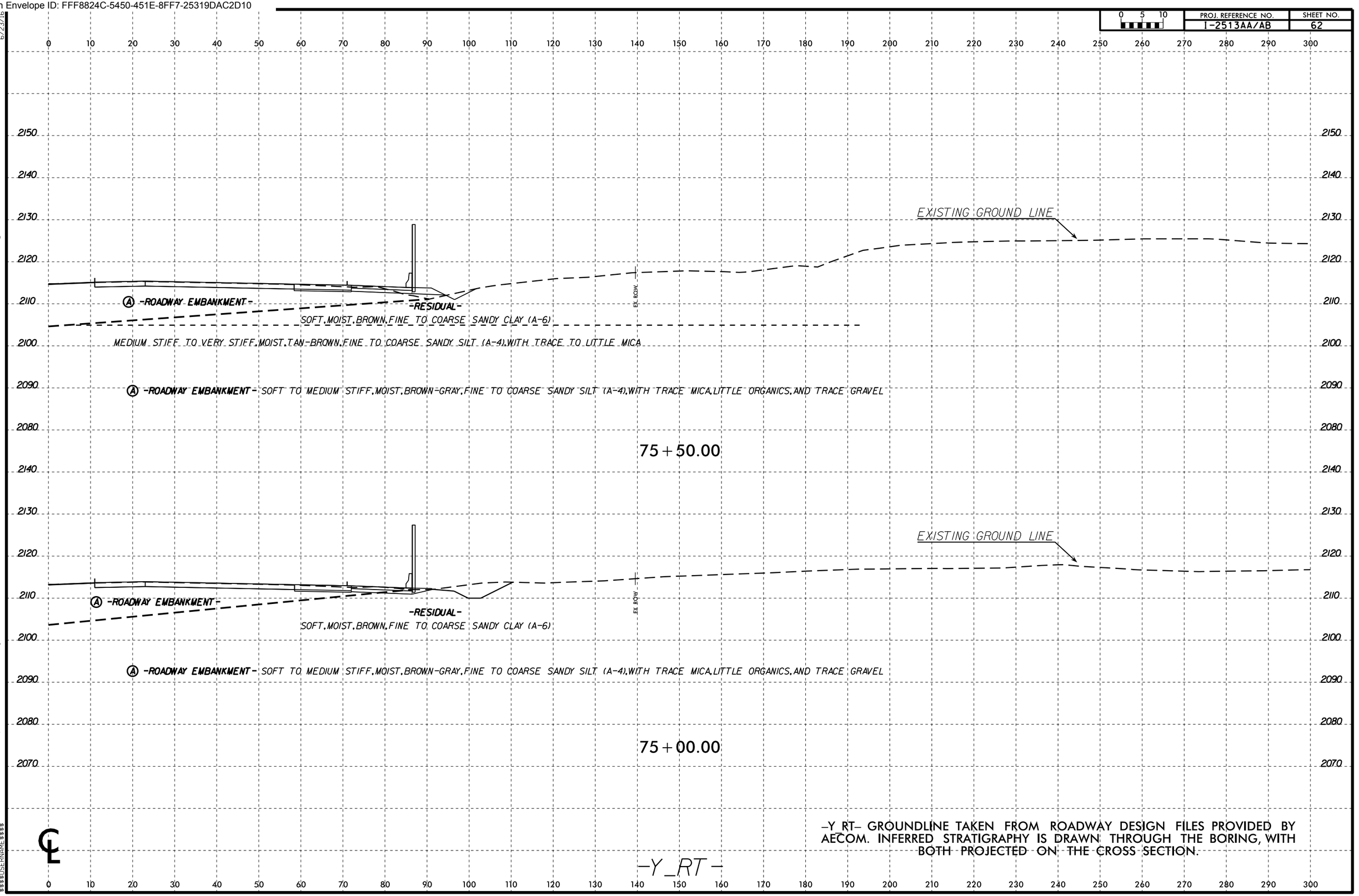
–Y_RT– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

–Y_RT–

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	61

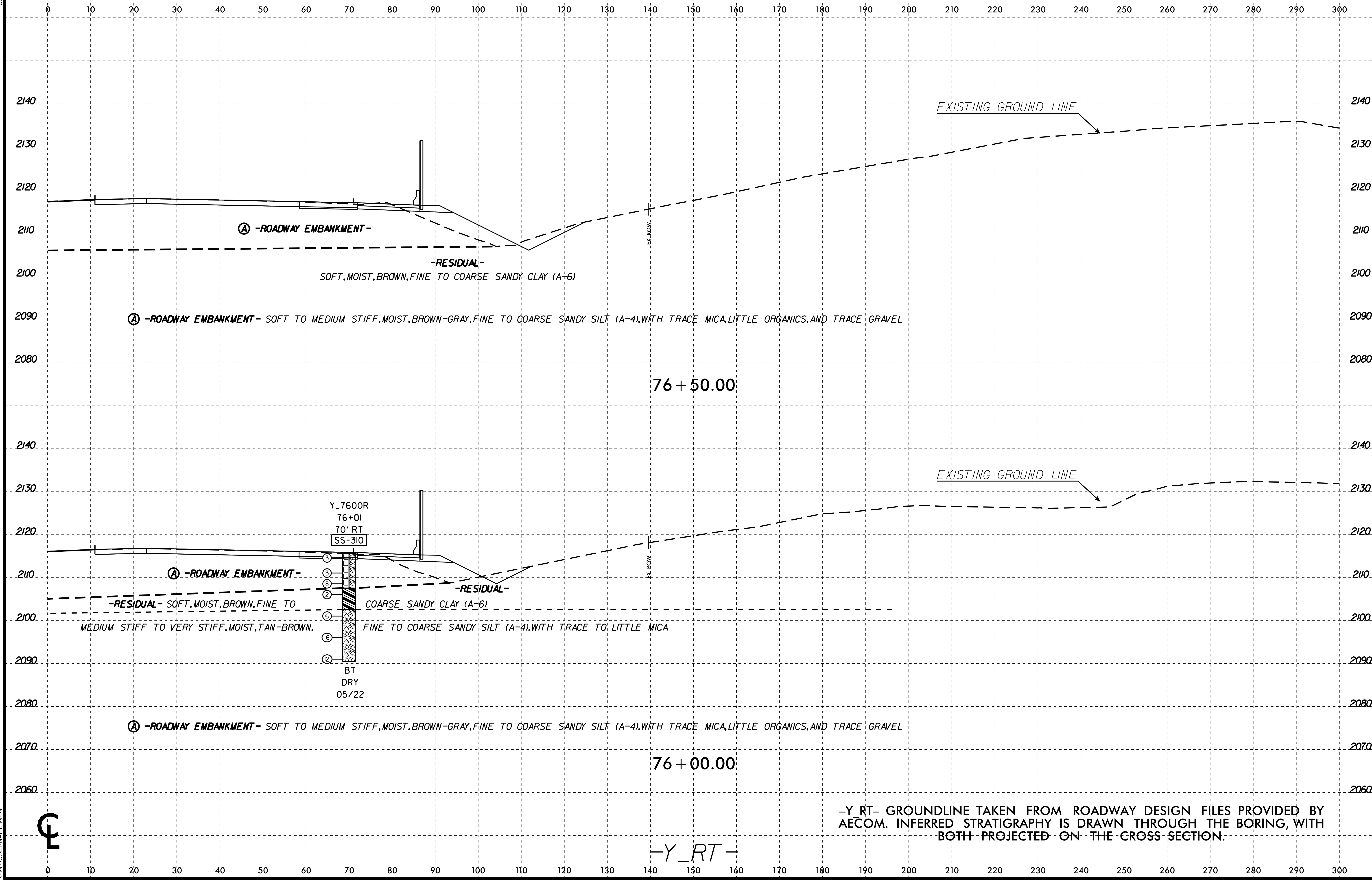


-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

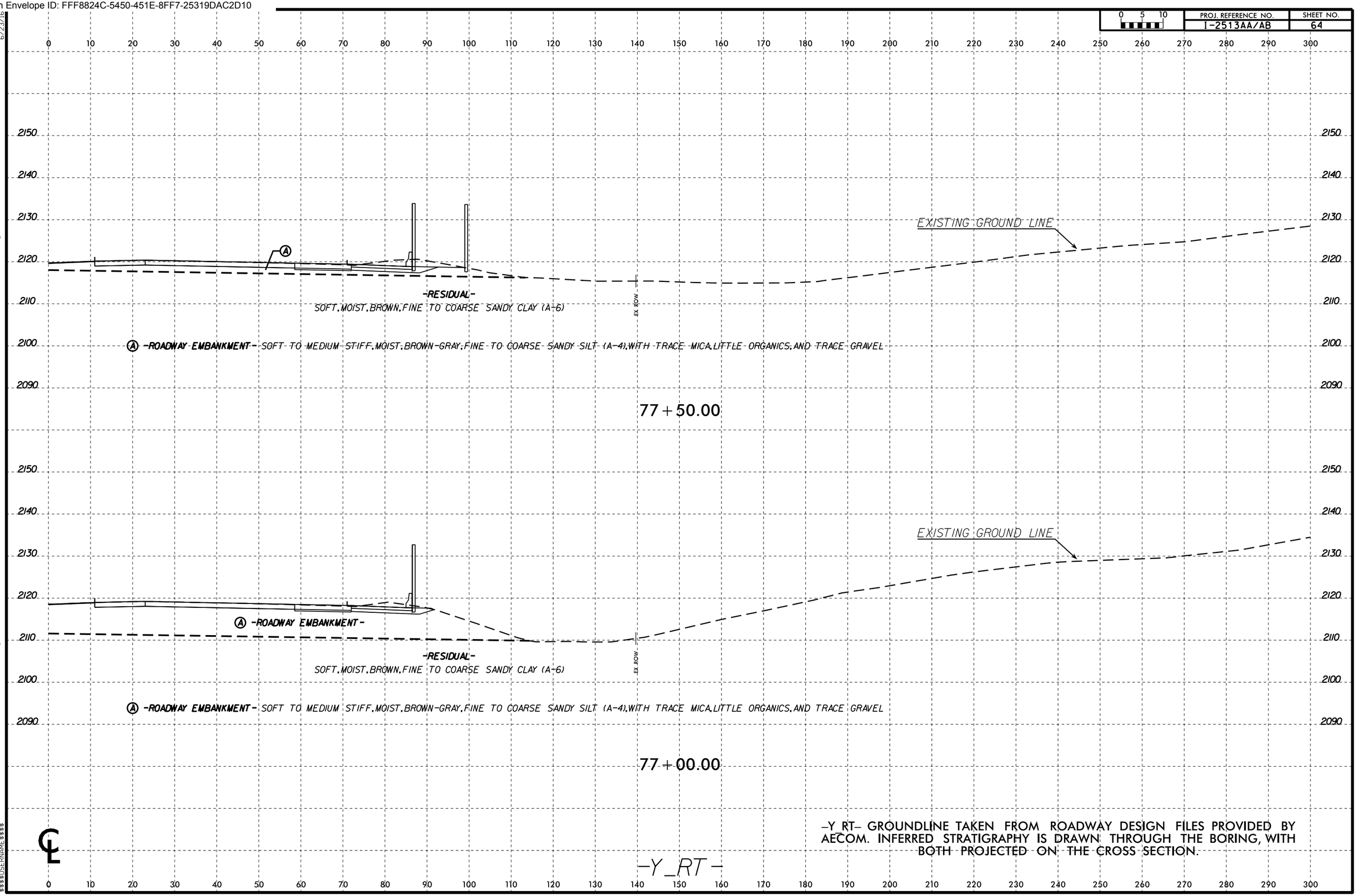
PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	63



-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

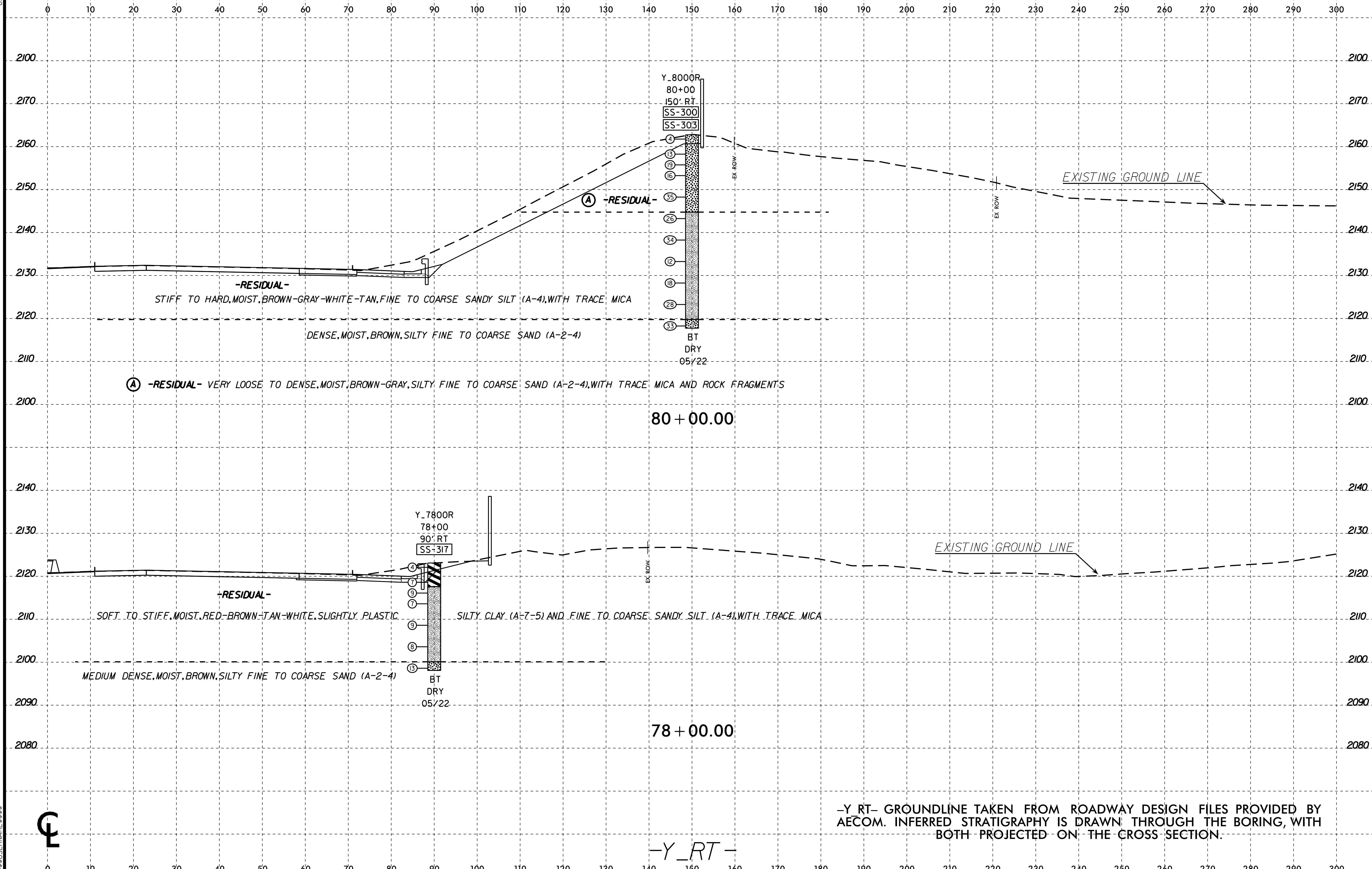
-Y_RT-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	64



-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

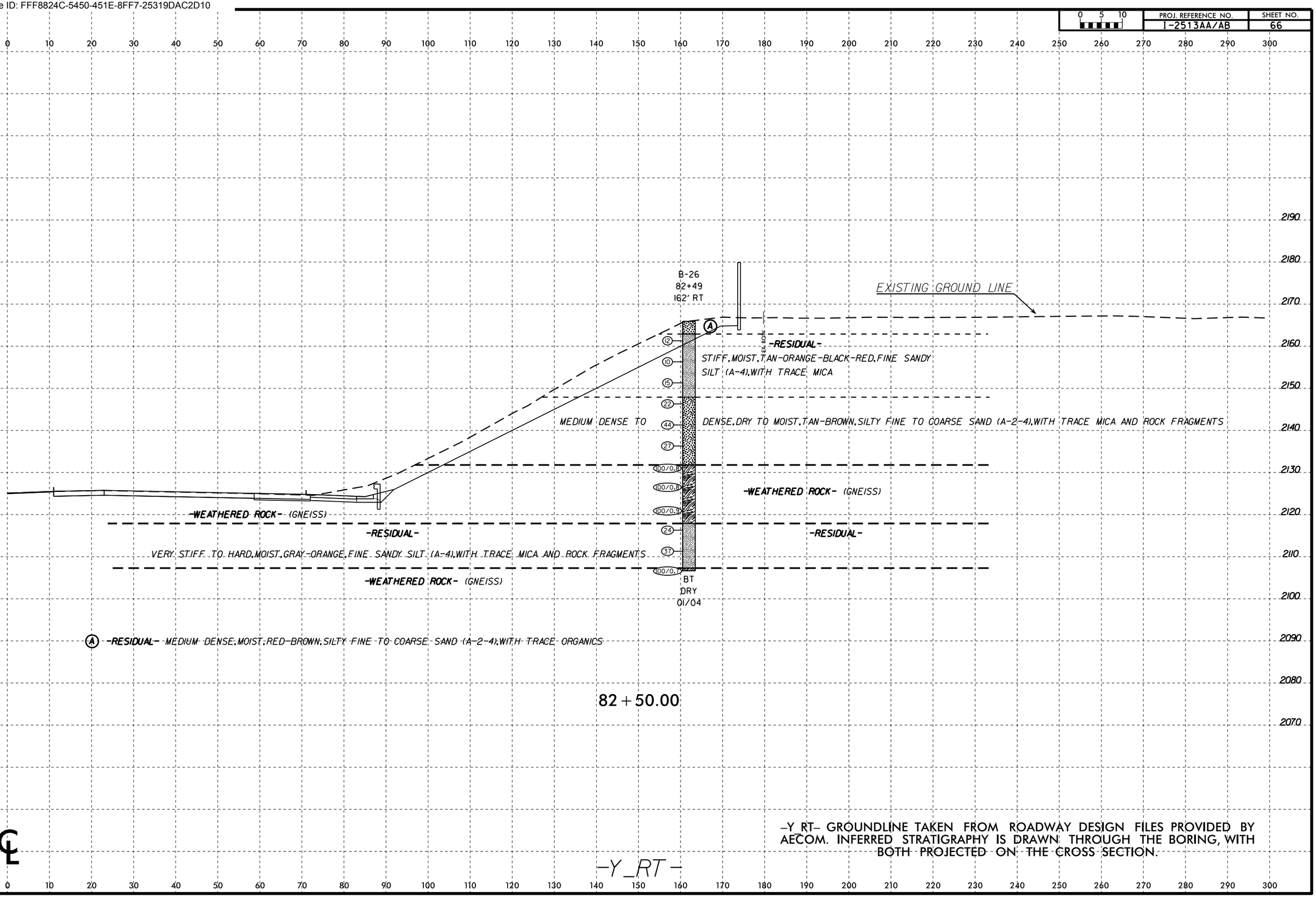
PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	65



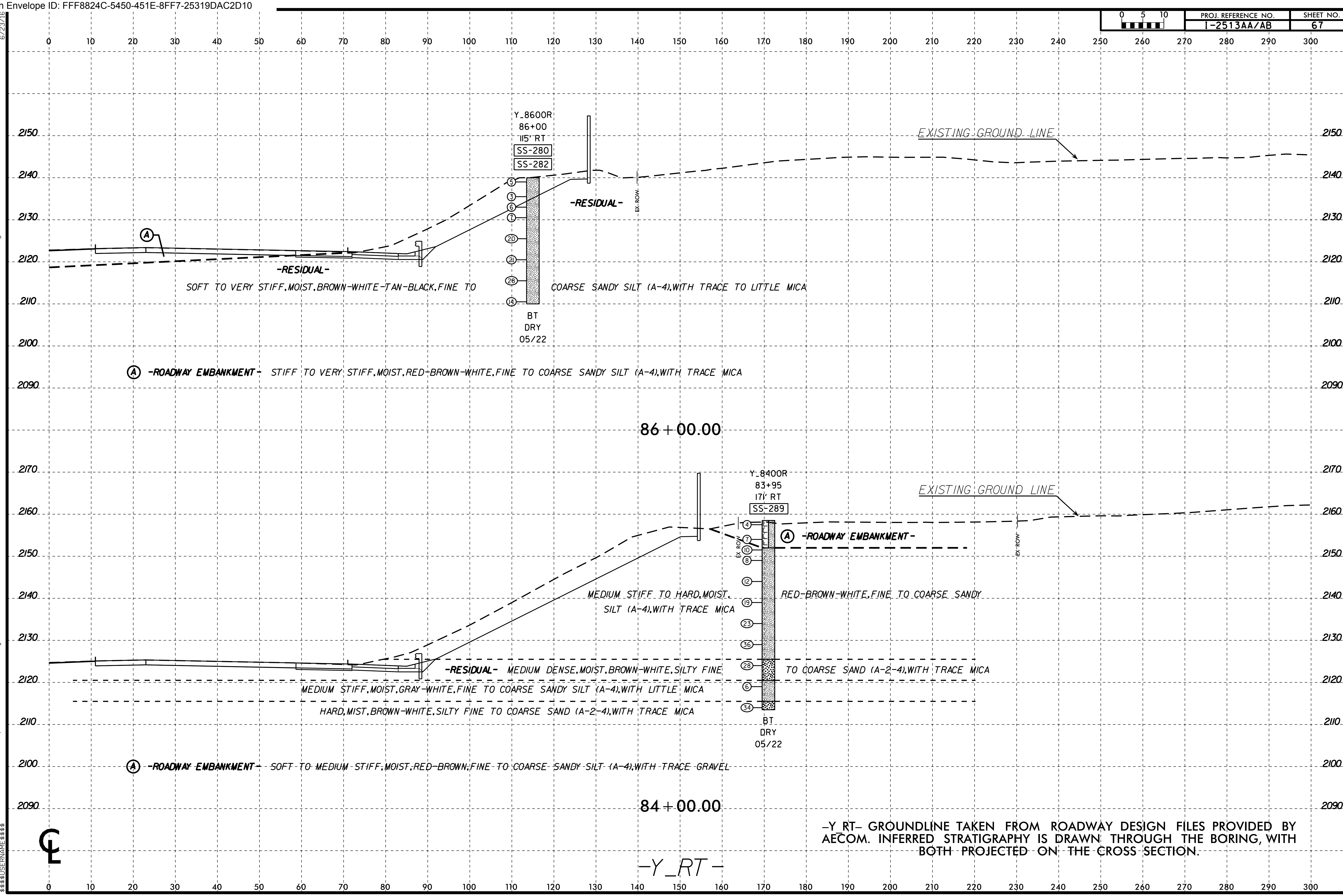
-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	66

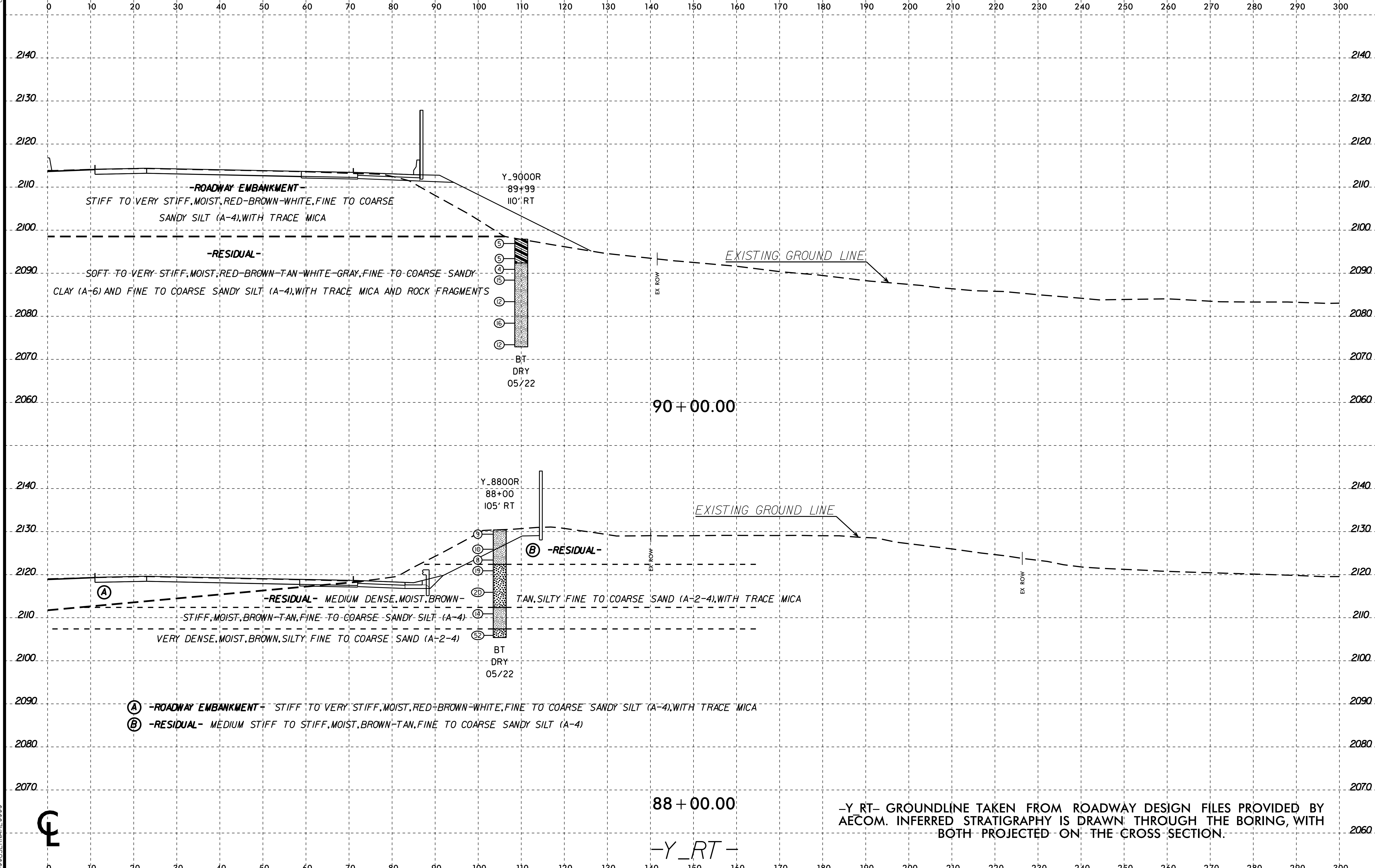
0 5 10



-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

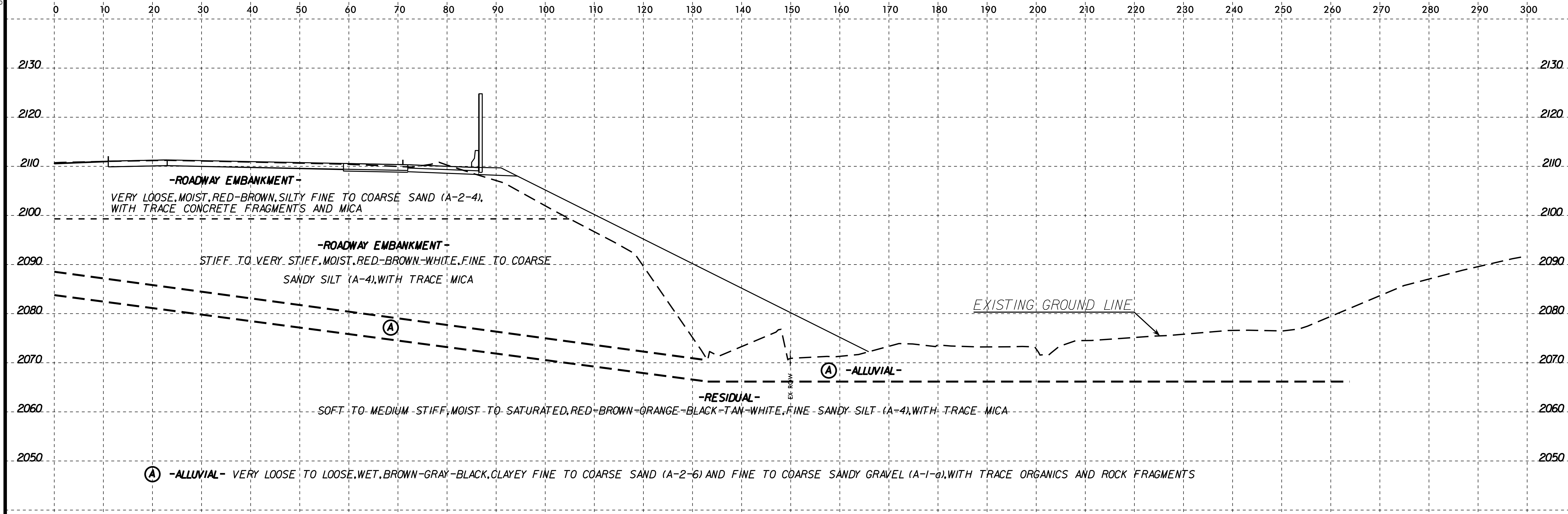


PROJ. REFERENCE NO.
I-2513AA/AB
SHEET NO.
67
0 5 10
Y_8600R
86+00
115' RT
SS-280
SS-282
EXISTING GROUND LINE
-RESIDUAL-
EX-ROW
-RESIDUAL-
SOFT TO VERY STIFF,MOIST,BROWN-WHITE-TAN-BLACK,FINE TO COARSE SANDY SILT (A-4),WITH TRACE TO LITTLE MICA
BT
DRY
05/22
(A) -ROADWAY EMBANKMENT- STIFF TO VERY STIFF,MOIST,RED-BROWN-WHITE,FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA
86+00.00
Y_8400R
83+95
171' RT
SS-289
EXISTING GROUND LINE
(A) -ROADWAY EMBANKMENT-
EX-ROW
MEDIUM STIFF TO HARD,MOIST, RED-BROWN-WHITE,FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA
-RESIDUAL- MEDIUM DENSE,MOIST,BROWN-WHITE,SILTY FINE TO COARSE SAND (A-2-4),WITH TRACE MICA
MEDIUM STIFF,MOIST,GRAY-WHITE,FINE TO COARSE SANDY SILT (A-4),WITH LITTLE MICA
HARD,MIST,BROWN-WHITE,SILTY FINE TO COARSE SAND (A-2-4),WITH TRACE MICA
BT
DRY
05/22
(A) -ROADWAY EMBANKMENT- SOFT TO MEDIUM STIFF,MOIST,RED-BROWN,FINE TO COARSE SANDY SILT (A-4),WITH TRACE GRAVEL
84+00.00
-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.
-Y_RT-

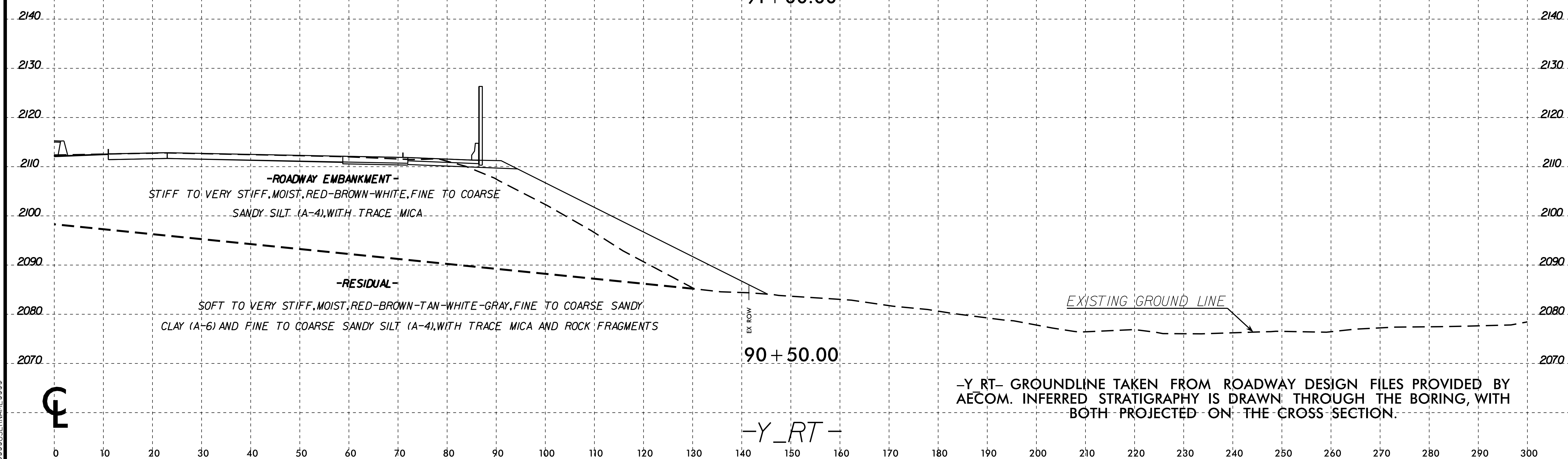


-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

-Y_RT-



91+00.00

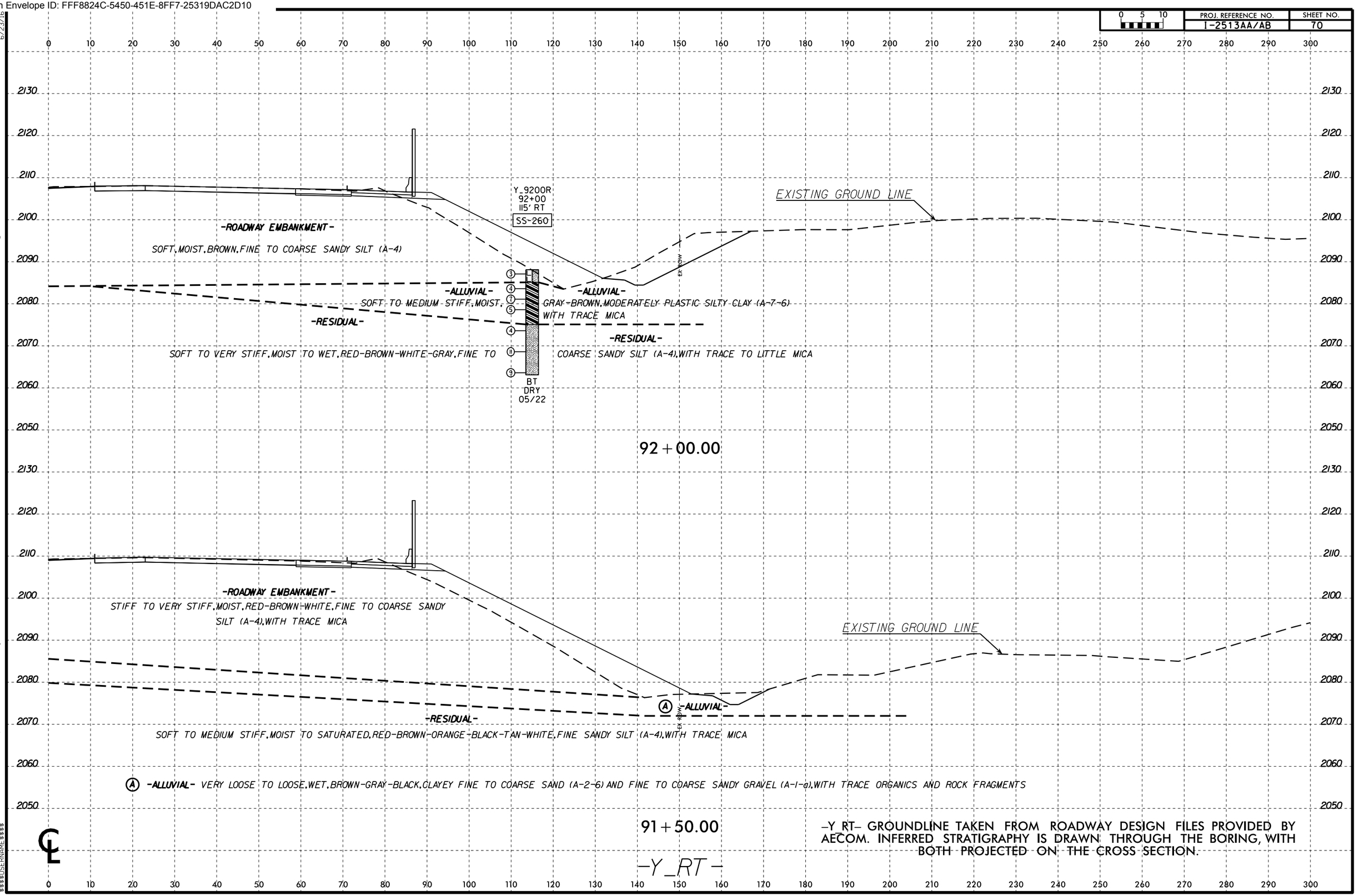


90+50.00

-Y_RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

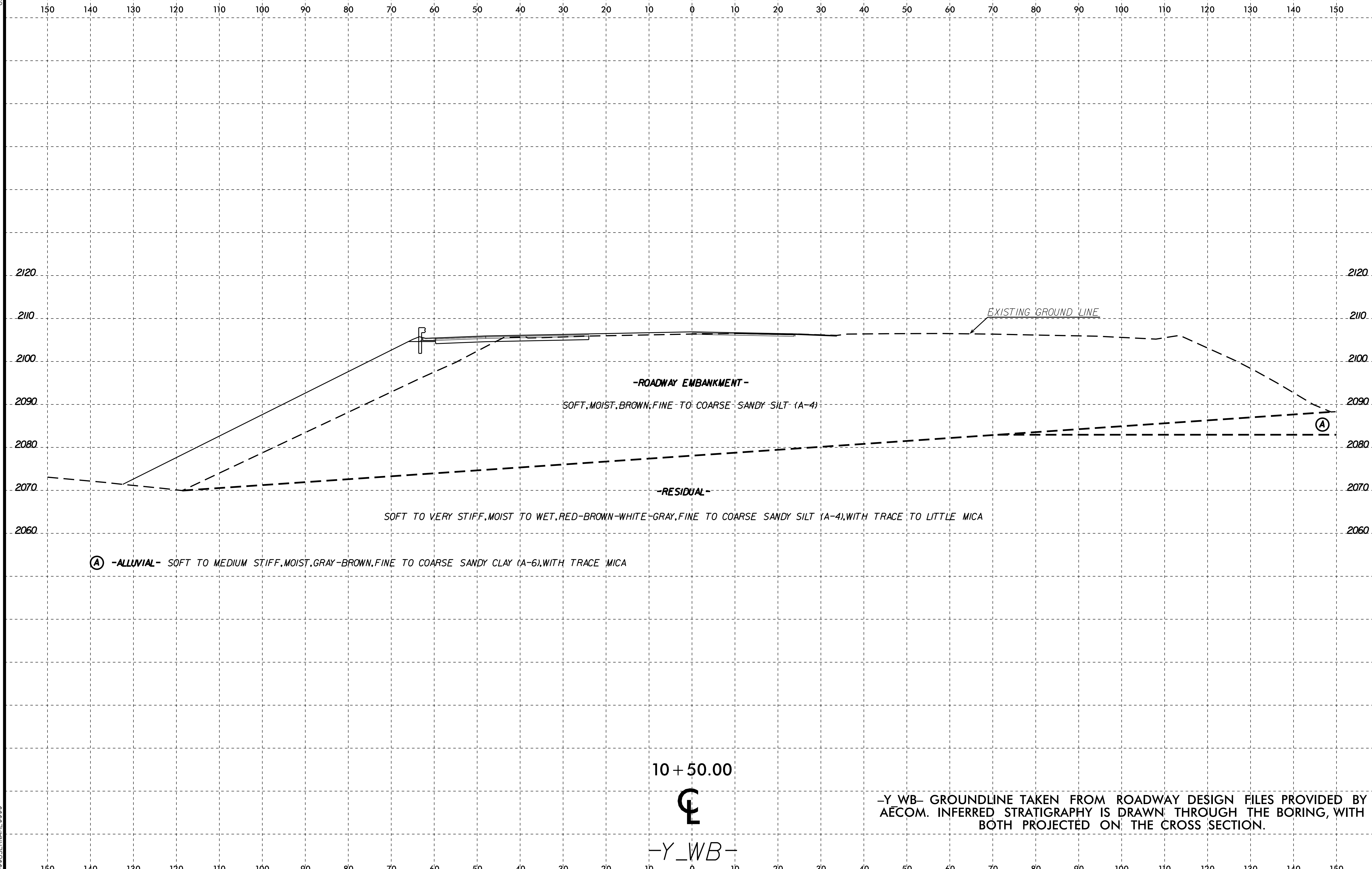
-Y_RT-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	70



-Y RT- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	71



10+50.00

℄

-Y_WB-

-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16

25-AUG-2022 17:41
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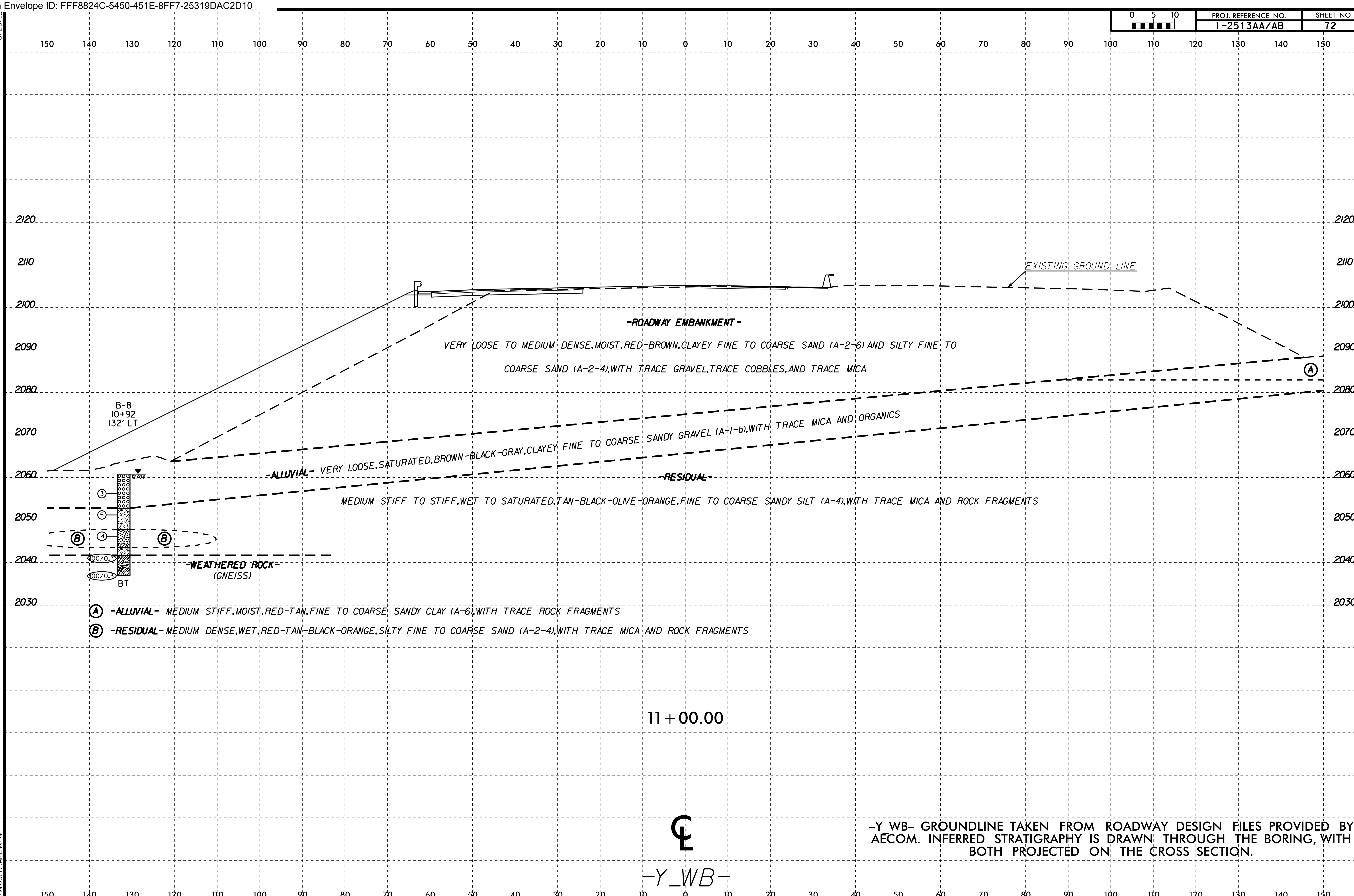
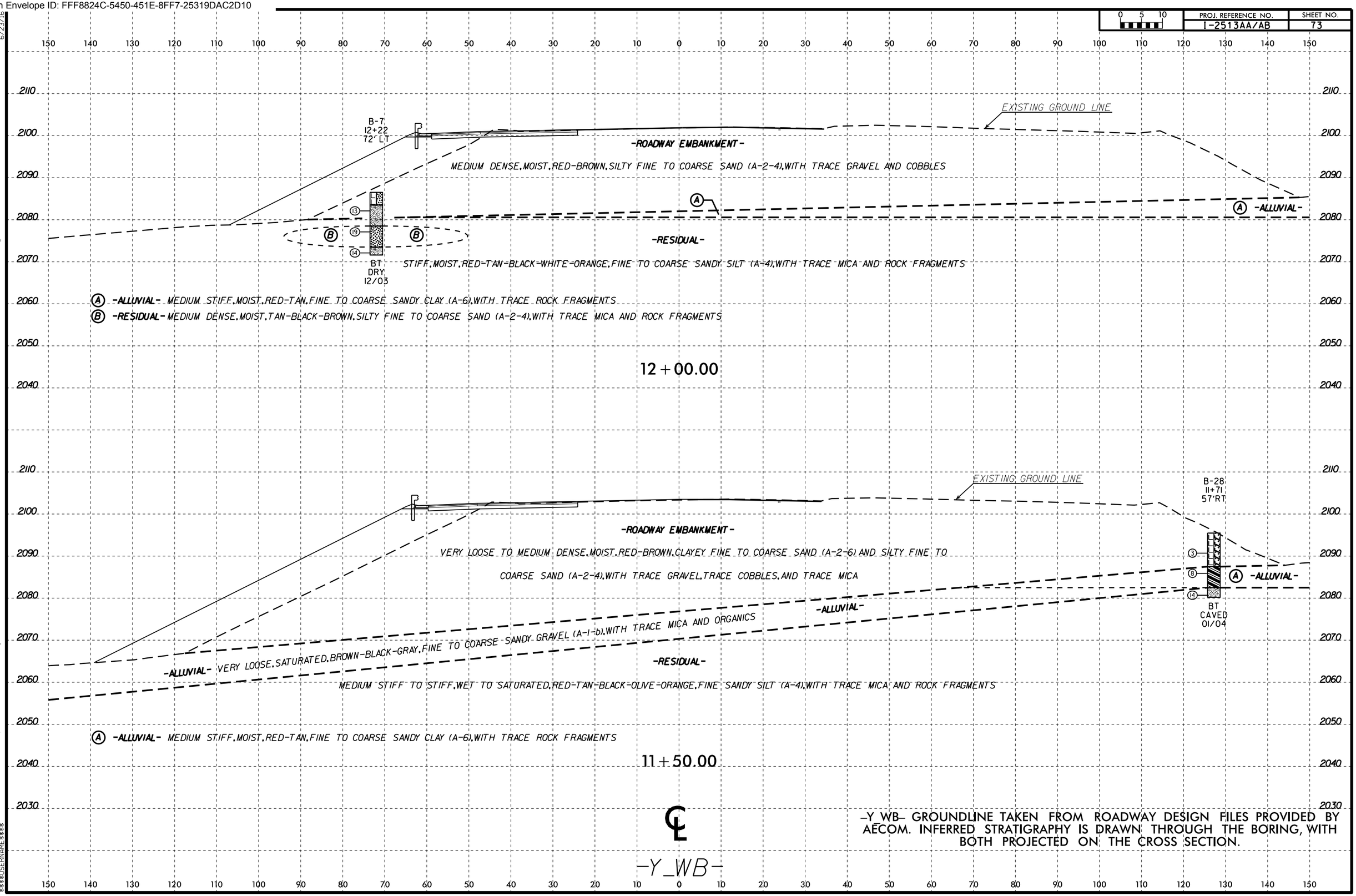
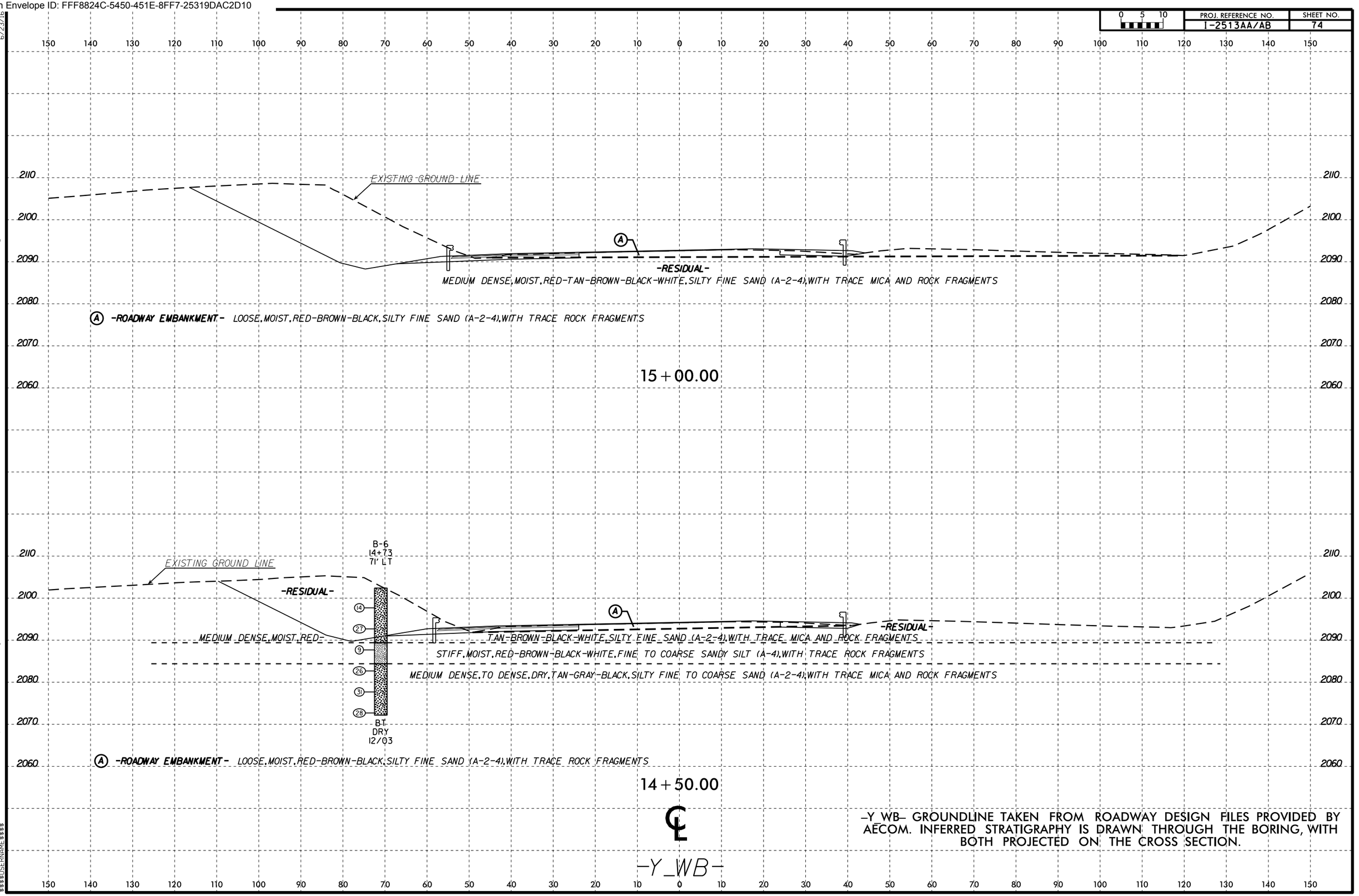


PROJ. REFERENCE NO.
I-2513AA/AB
SHEET NO.
72
0 5 10
EXISTING GROUND LINE
-ROADWAY EMBANKMENT-
VERY LOOSE TO MEDIUM DENSE,MOIST,RED-BROWN,CLAYEY FINE TO COARSE SAND (A-2-6) AND SILTY FINE TO
COARSE SAND (A-2-4),WITH TRACE GRAVEL,TRACE COBBLES,AND TRACE MICA
B-8
10+92
132' LT
-ALLUVIAL- VERY LOOSE,SATURATED,BROWN-BLACK-GRAY,CLAYEY FINE TO COARSE SANDY GRAVEL (A-1-b),WITH TRACE MICA AND ORGANICS
-RESIDUAL-
MEDIUM STIFF TO STIFF,WET TO SATURATED,TAN-BLACK-OLIVE-ORANGE,FINE TO COARSE SANDY SILT (A-4),WITH TRACE MICA AND ROCK FRAGMENTS
-WEATHERED ROCK-
(GNEISS)
BT
Ⓐ -ALLUVIAL- MEDIUM STIFF,MOIST,RED-TAN,FINE TO COARSE SANDY CLAY (A-6),WITH TRACE ROCK FRAGMENTS
Ⓑ -RESIDUAL- MEDIUM DENSE,WET,RED-TAN-BLACK-ORANGE,SILTY FINE TO COARSE SAND (A-2-4),WITH TRACE MICA AND ROCK FRAGMENTS
11+00.00
℄
-Y_WB-
-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16
25-AUG-2022 17:41
C:\Users\kdementbrun\OneDrive - ECS Corporate Services\31 Projects 3000 - 4999\31-4100-31-4199\31-4137 I-2513A I-26, Pursuit\CADD_GEOTECH\xsc\12513AA_GEO_XS1_Y_WB.dgn
$$$$USERNAME$$$$

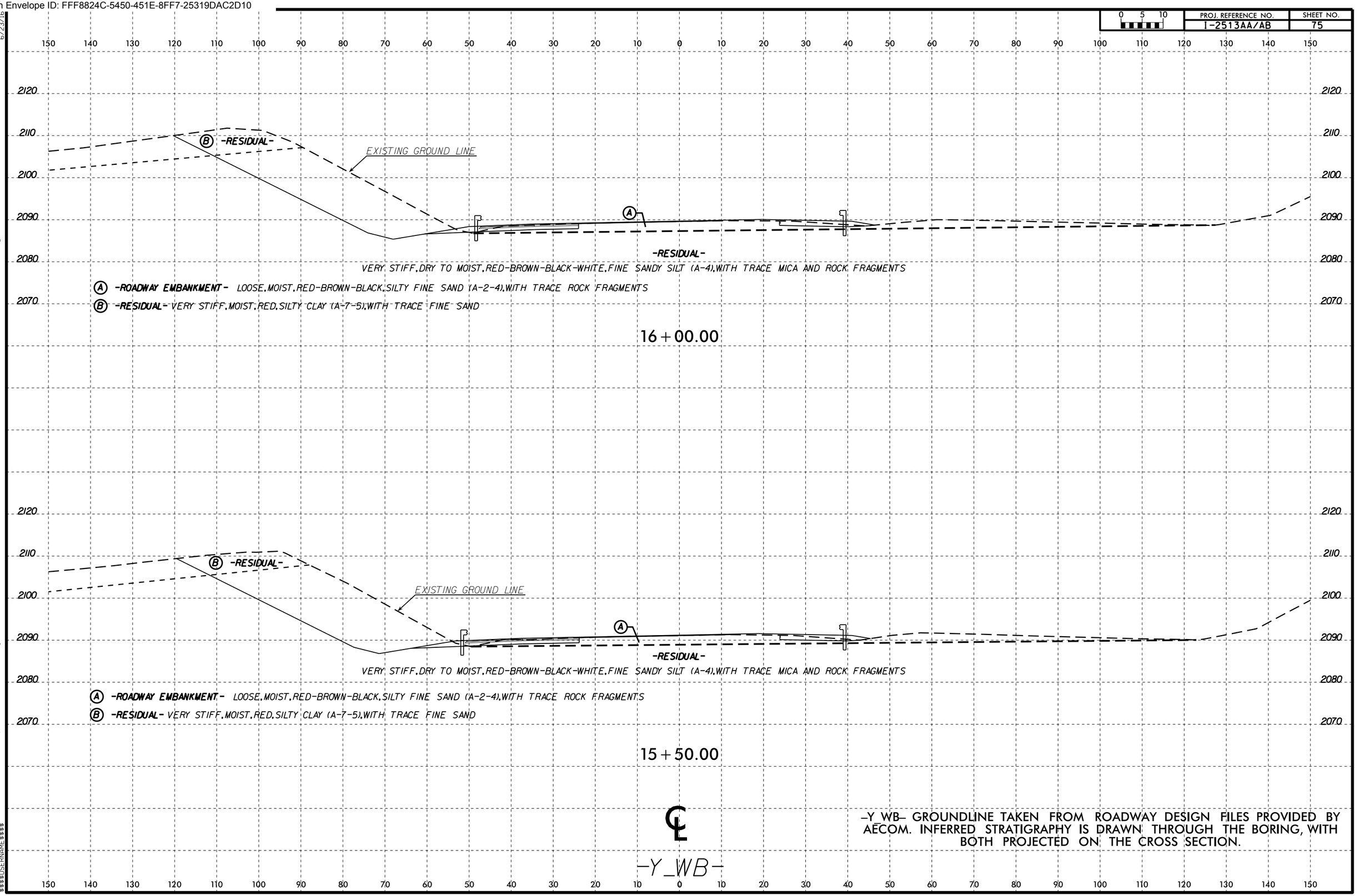


0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	74



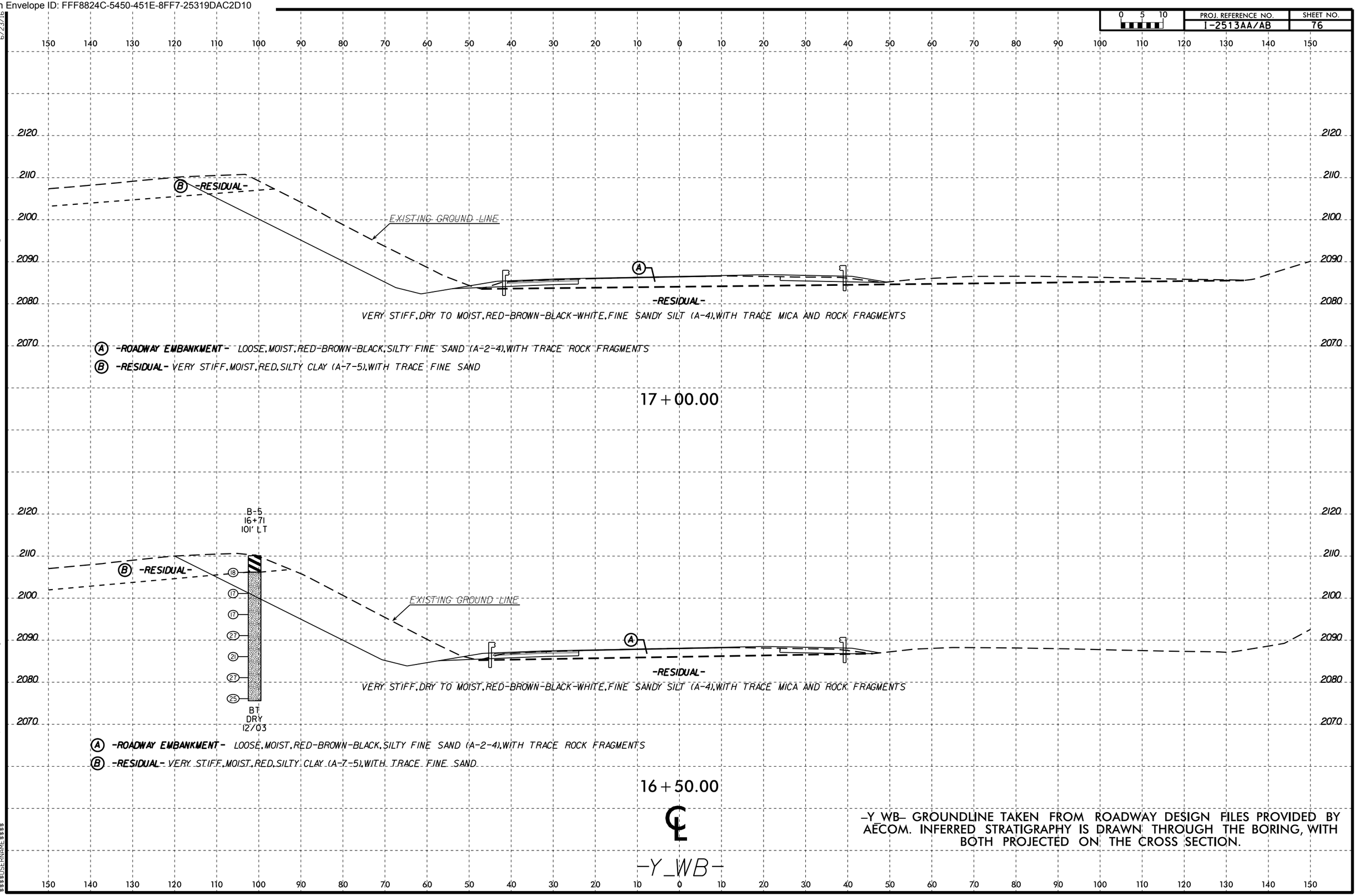
-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	75



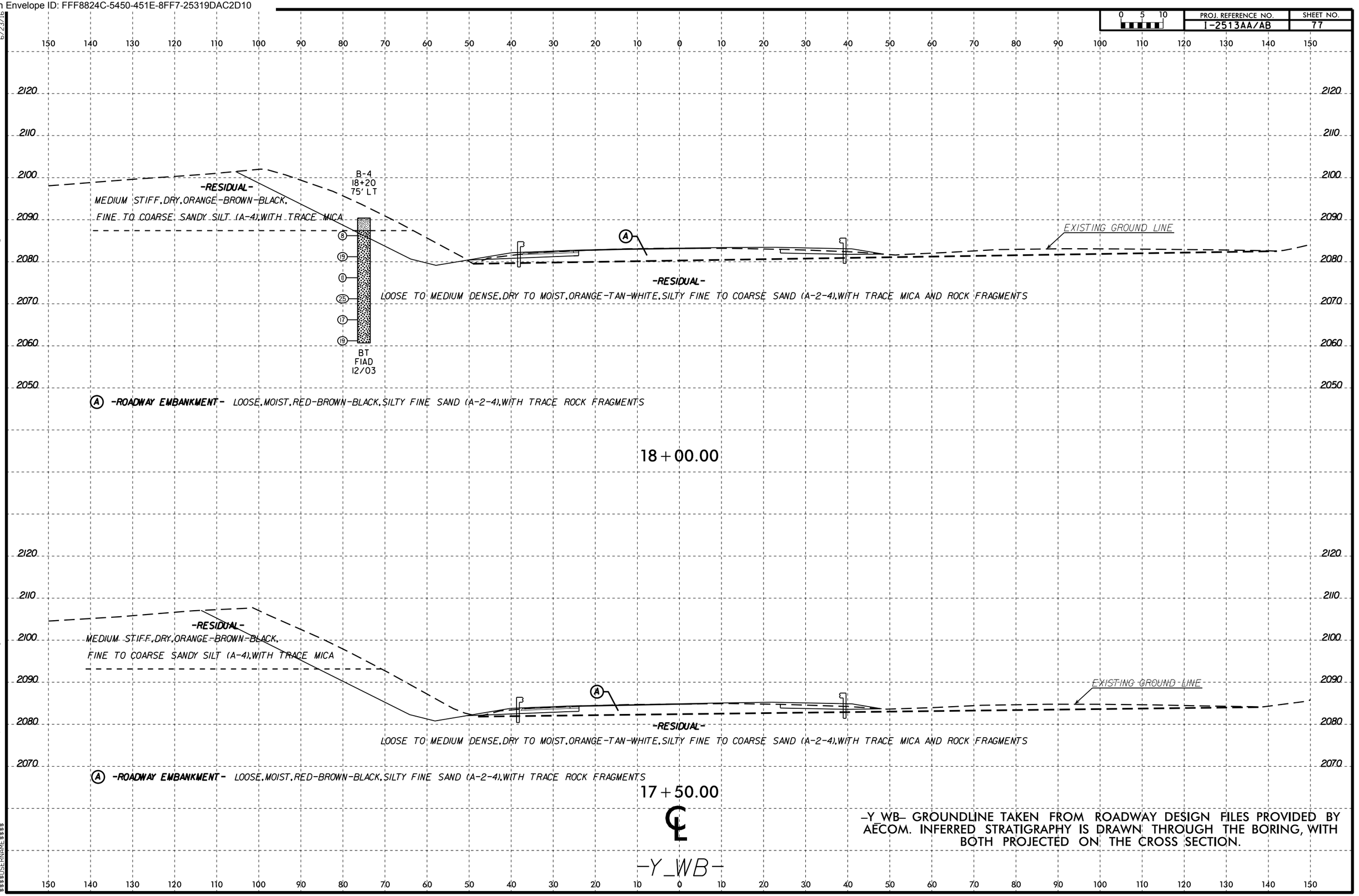
-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	76



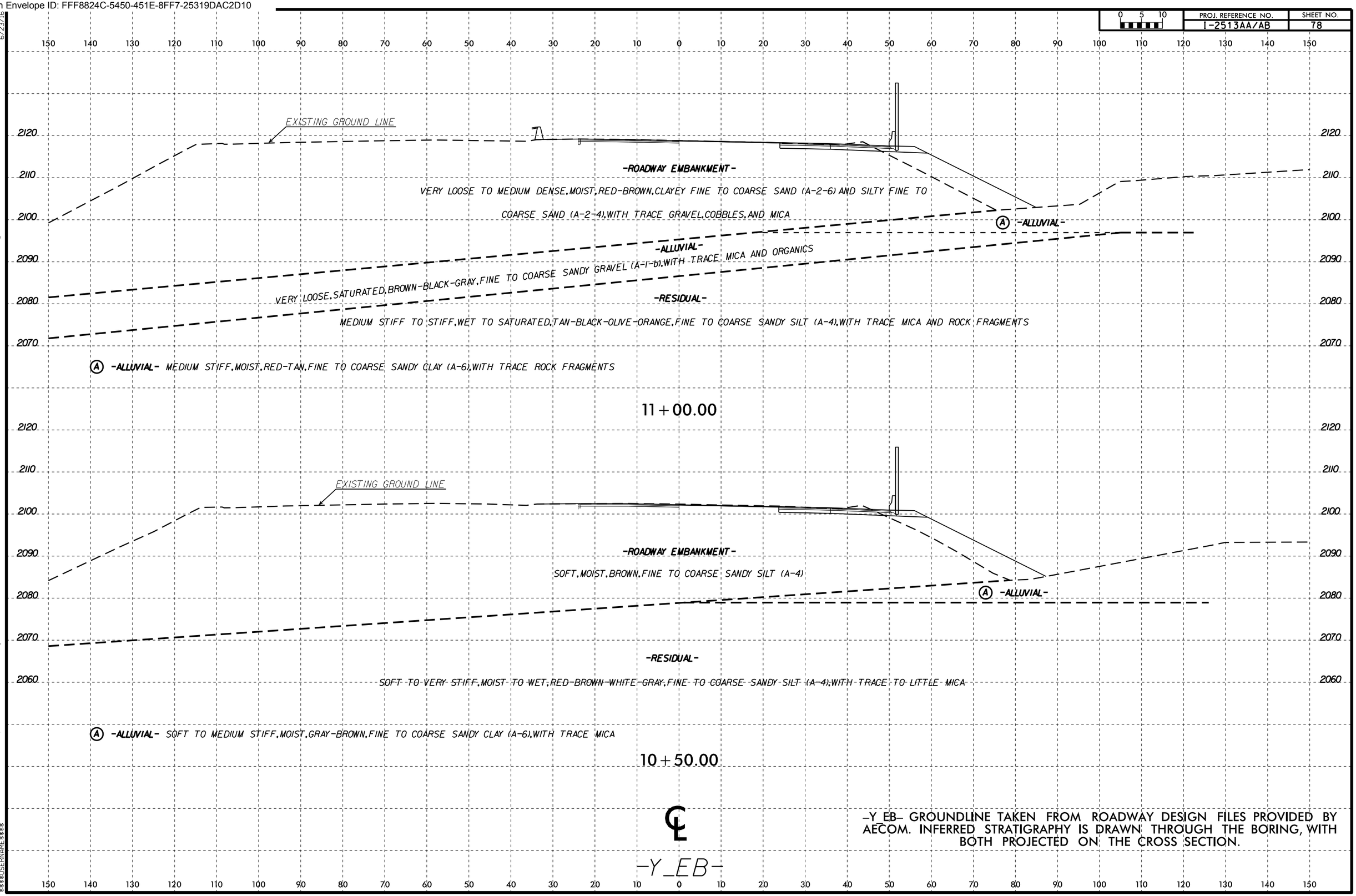
-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	77



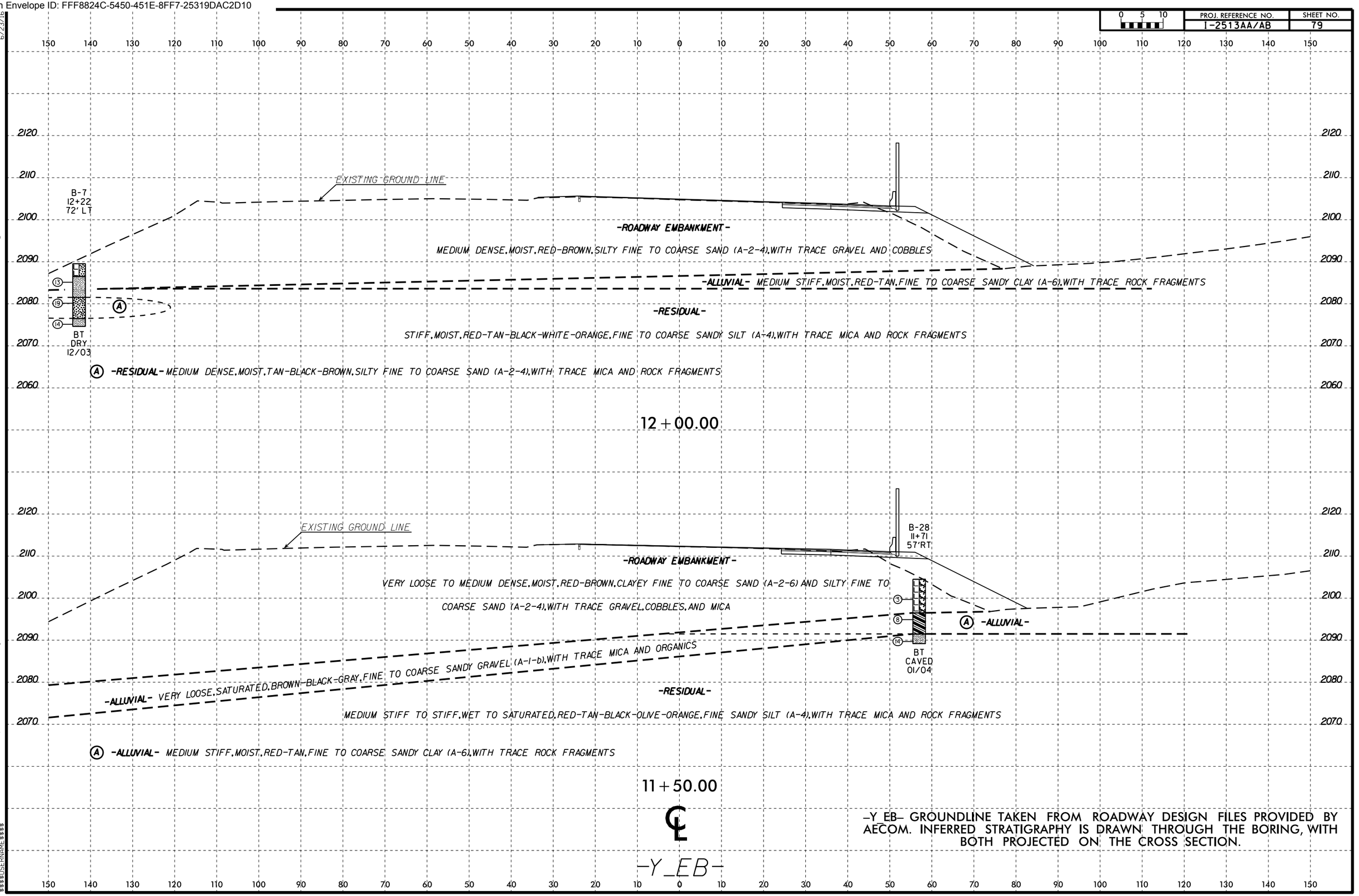
-Y_WB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	78



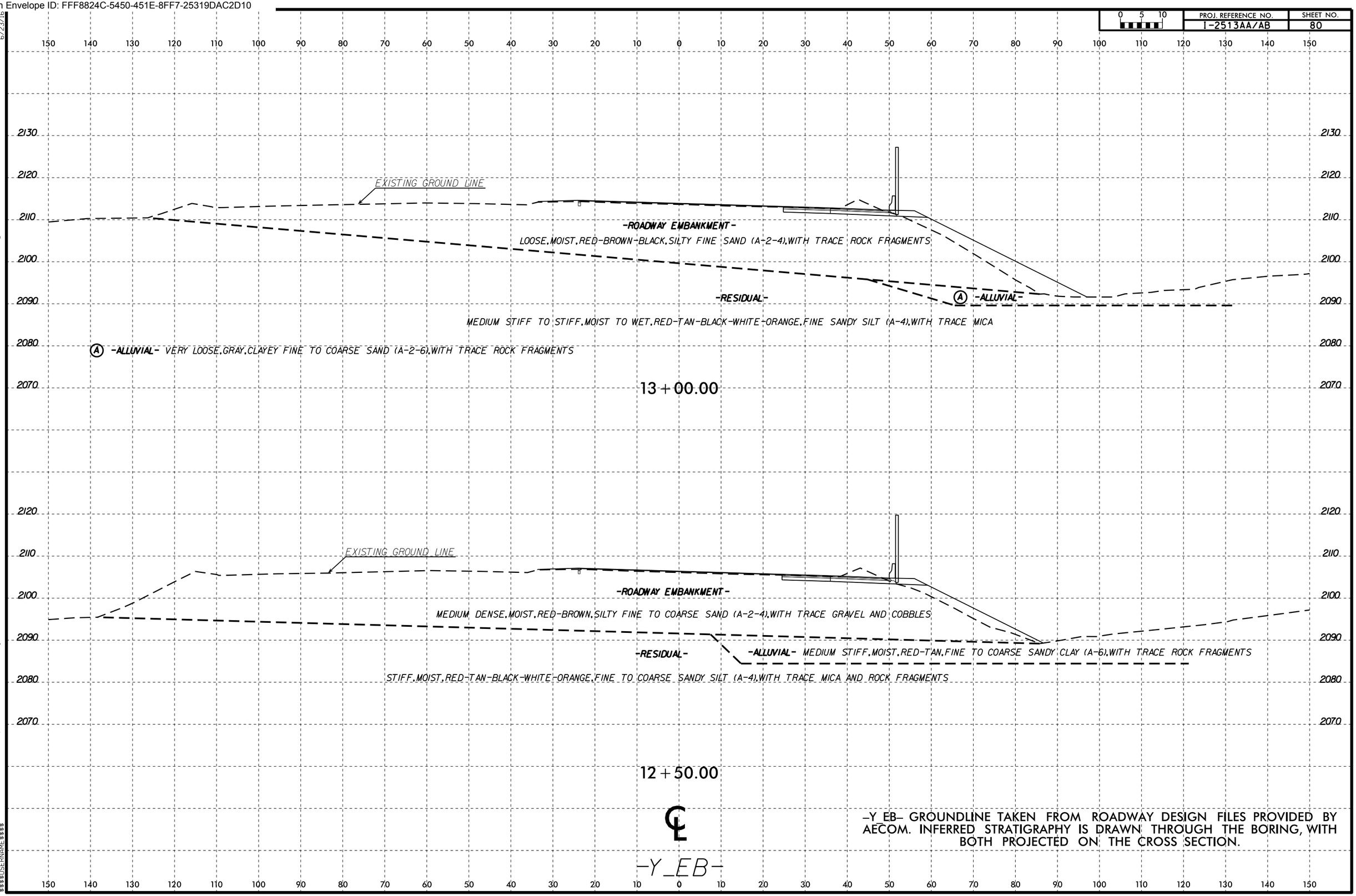
-Y_EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	79

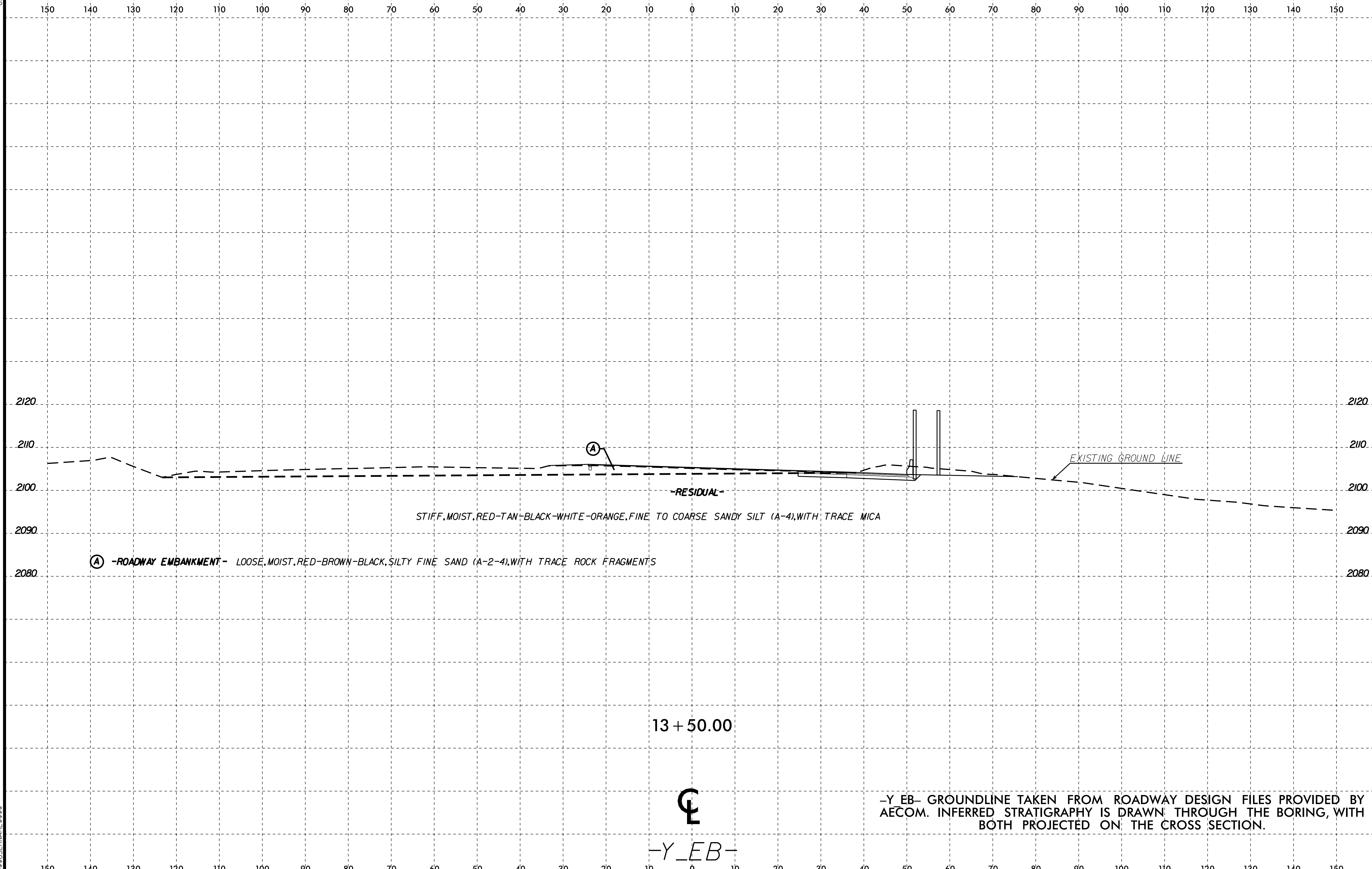


-Y_EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	80

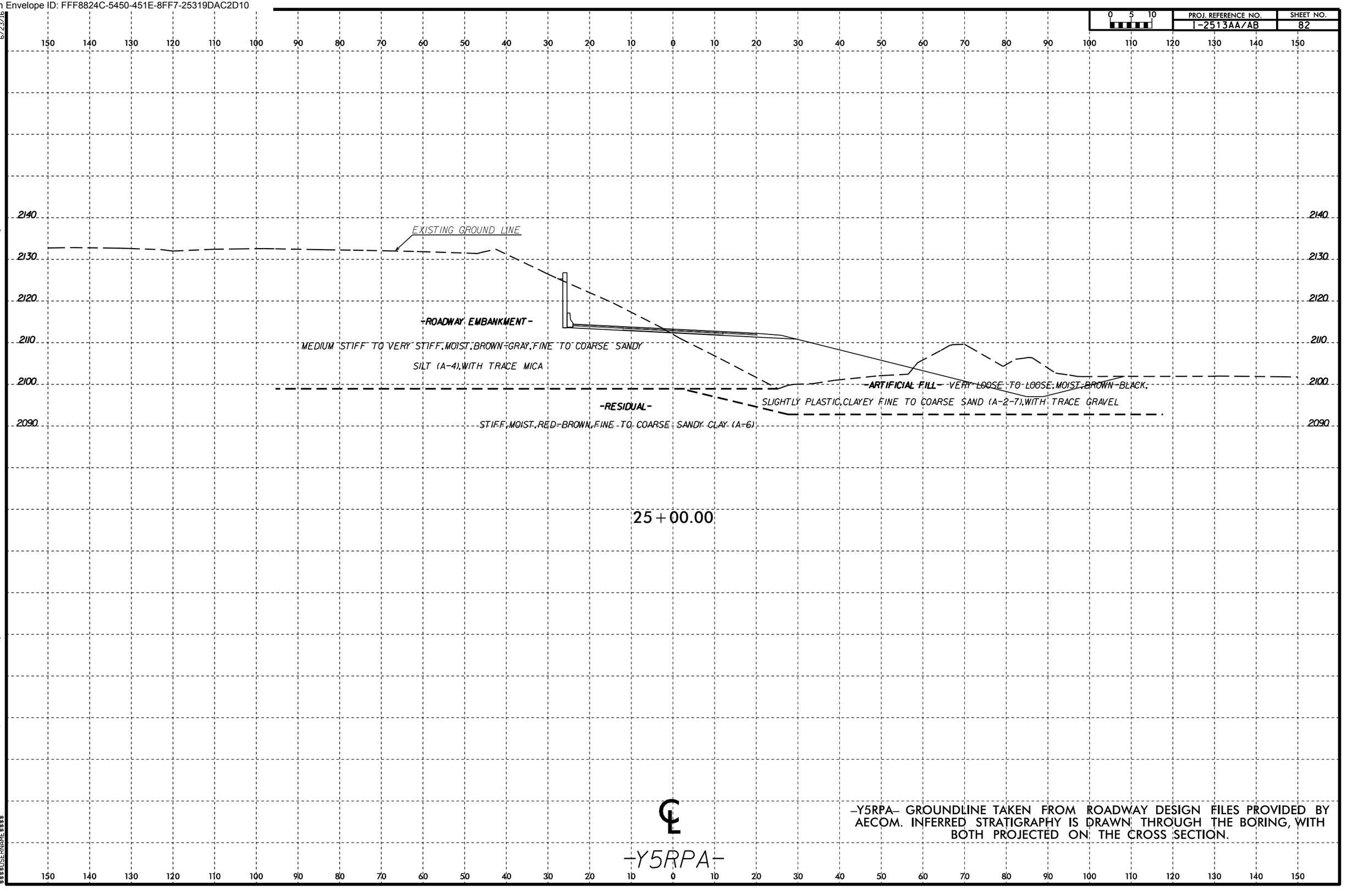


-Y_EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.



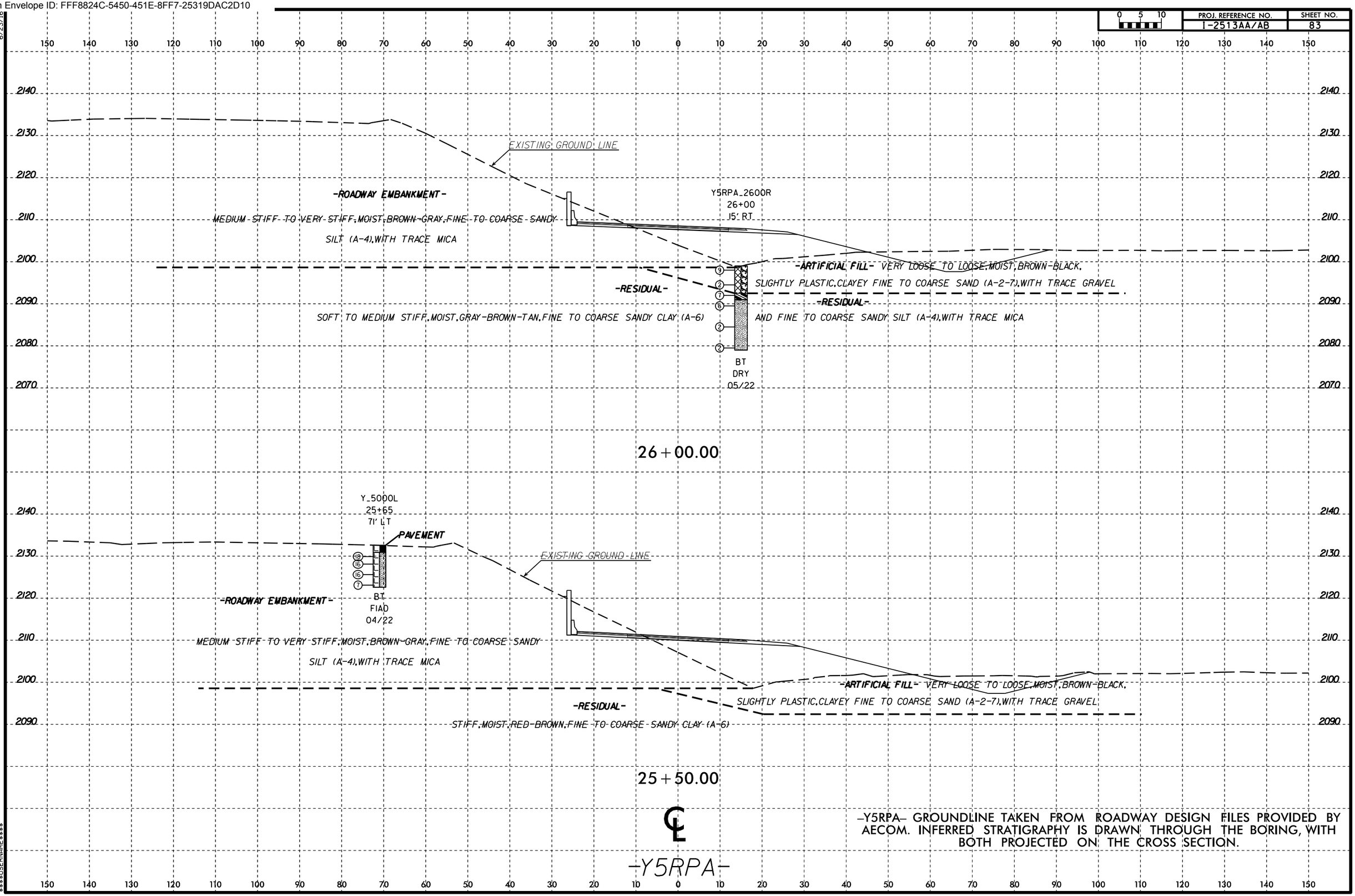
-Y_EB- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	82



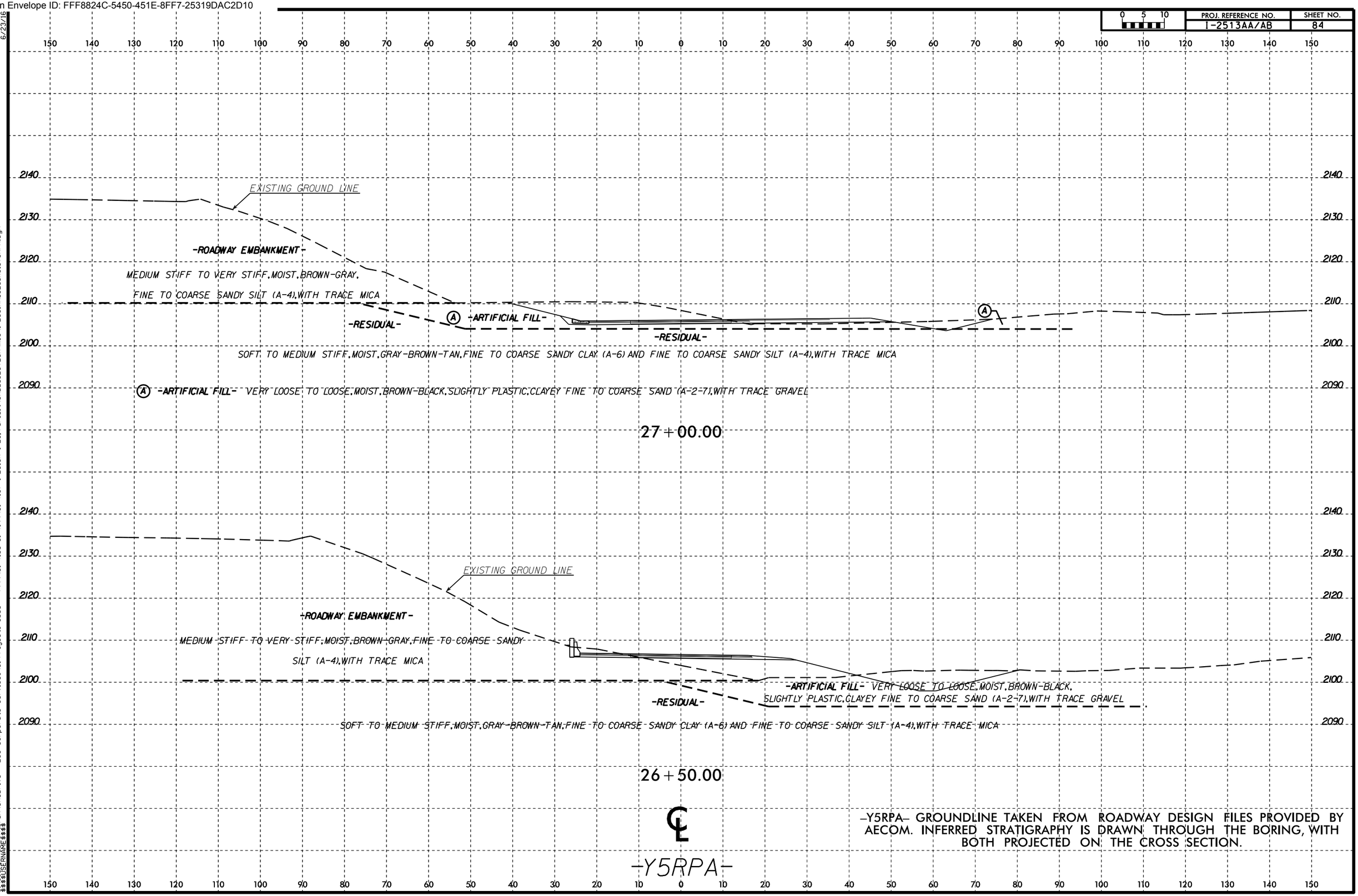
–Y5RPA– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	83



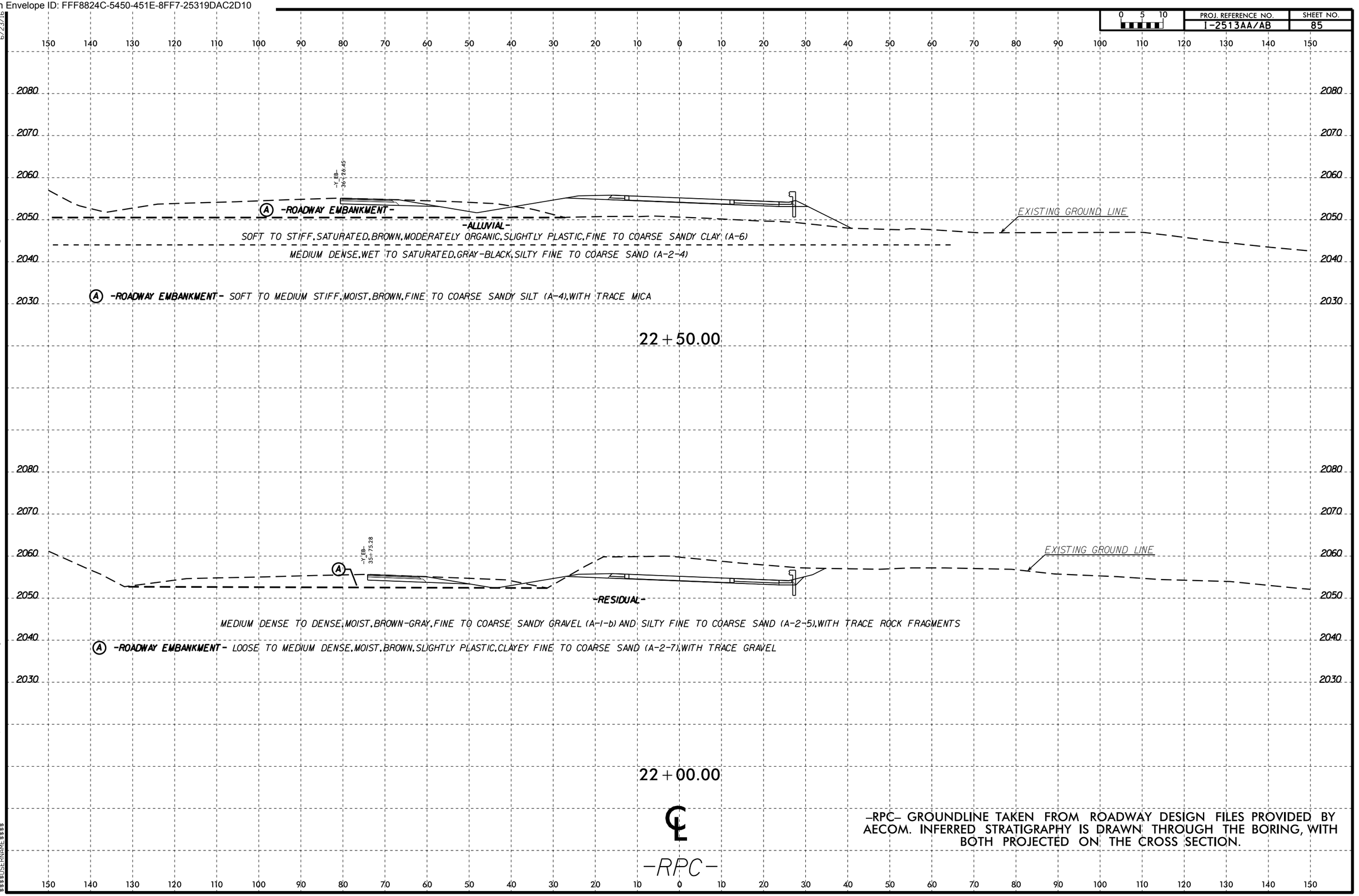
-Y5RPA- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	84



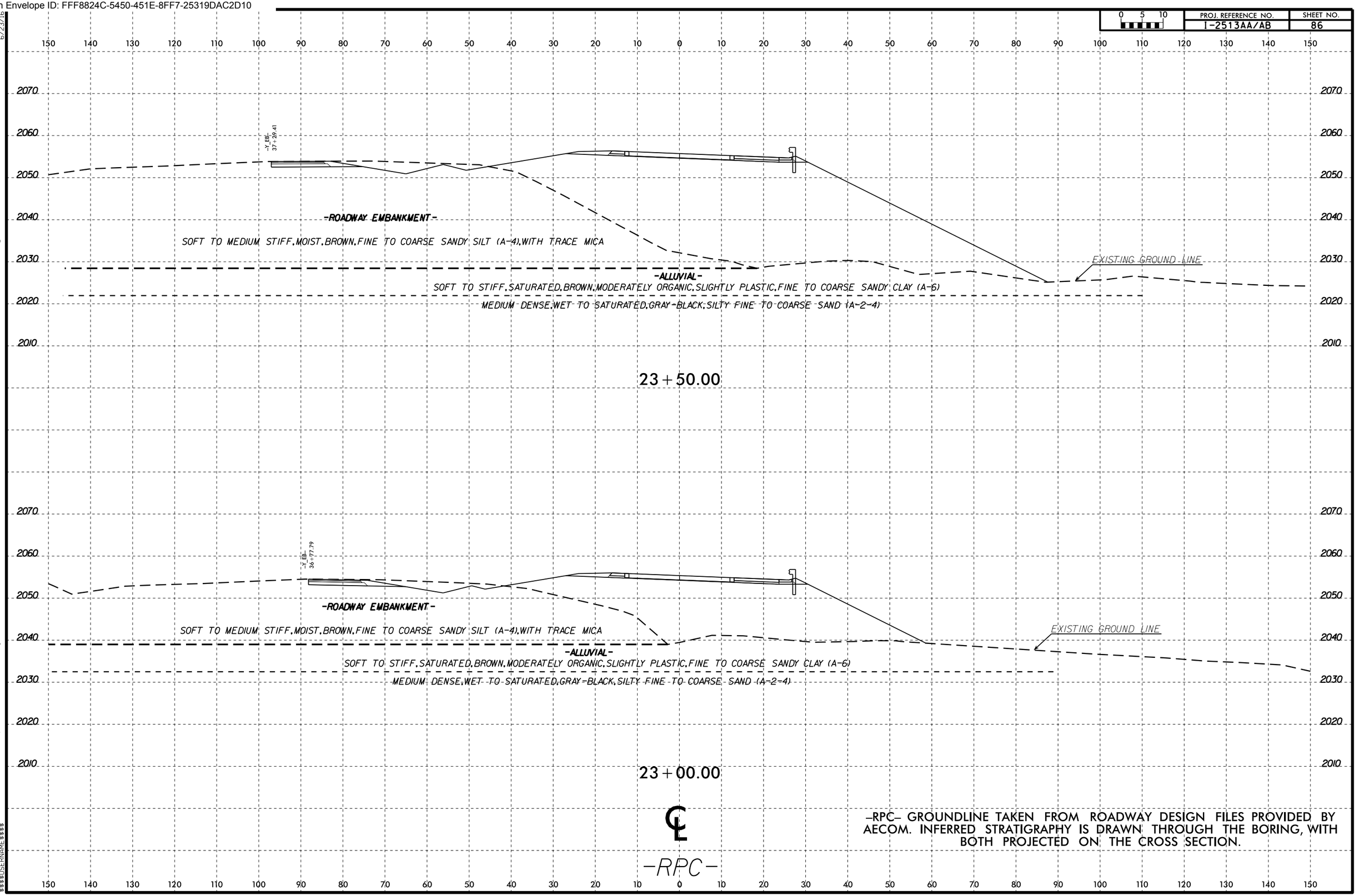
-Y5RPA- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	85



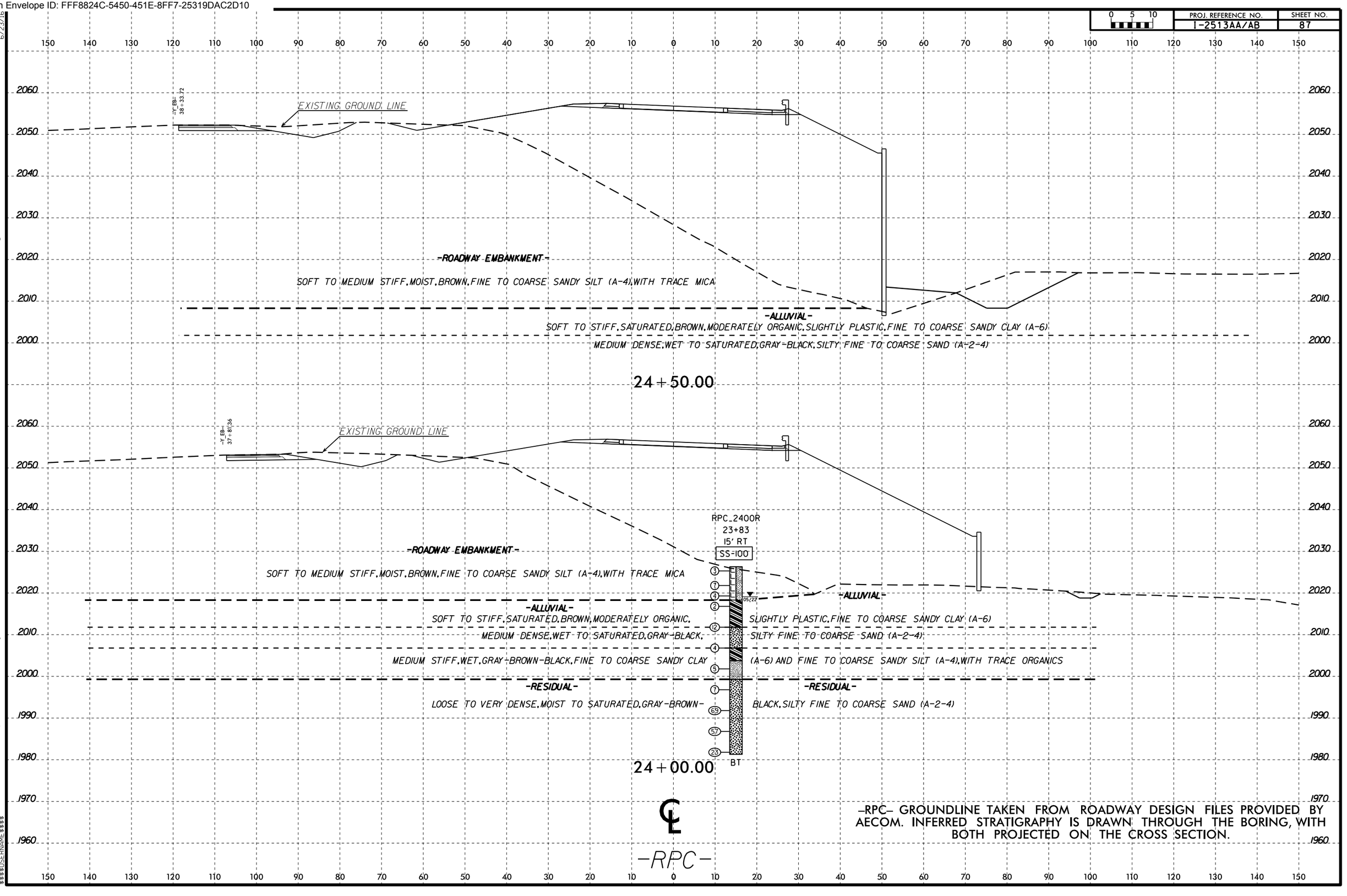
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	86



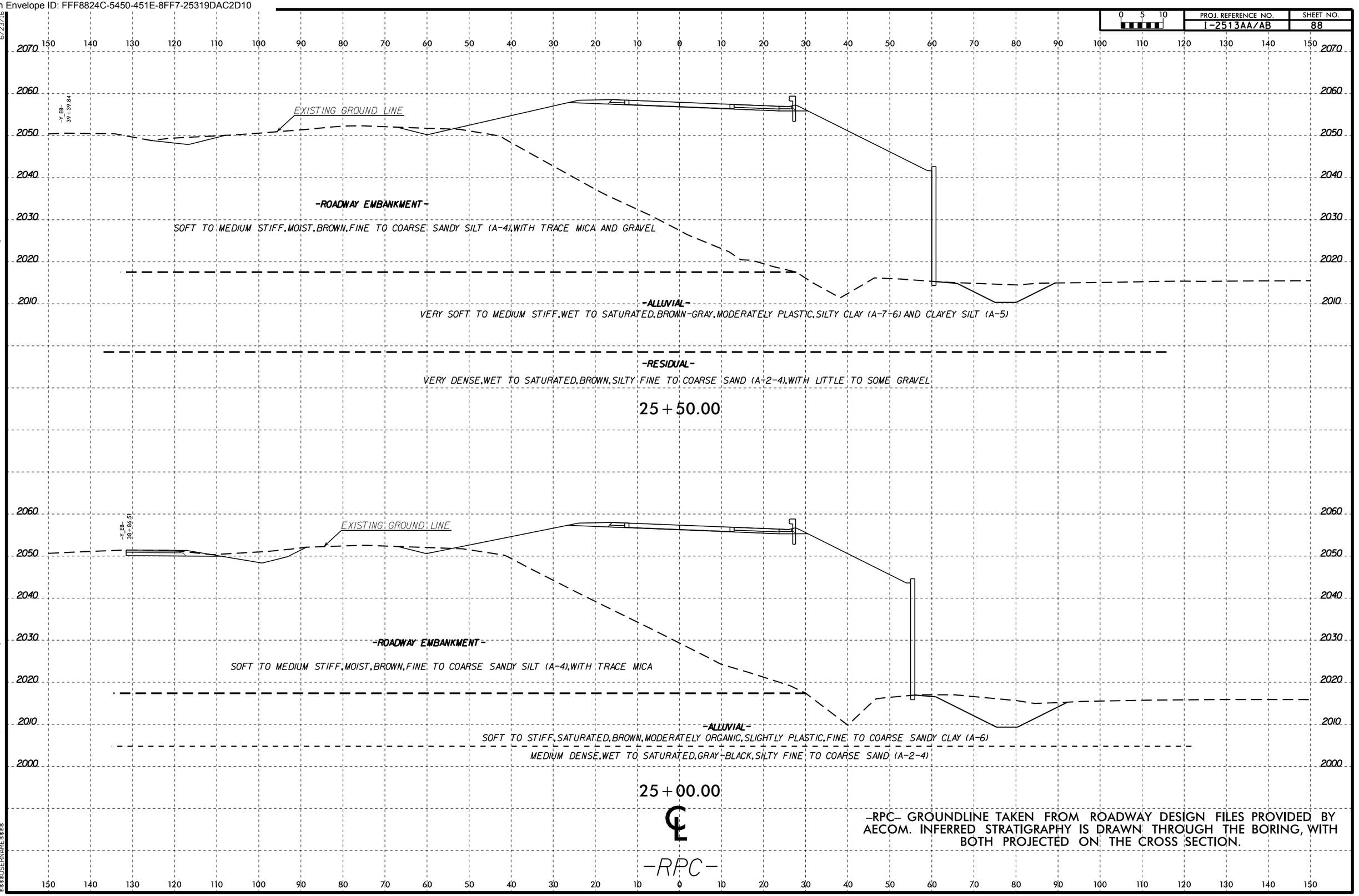
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	87



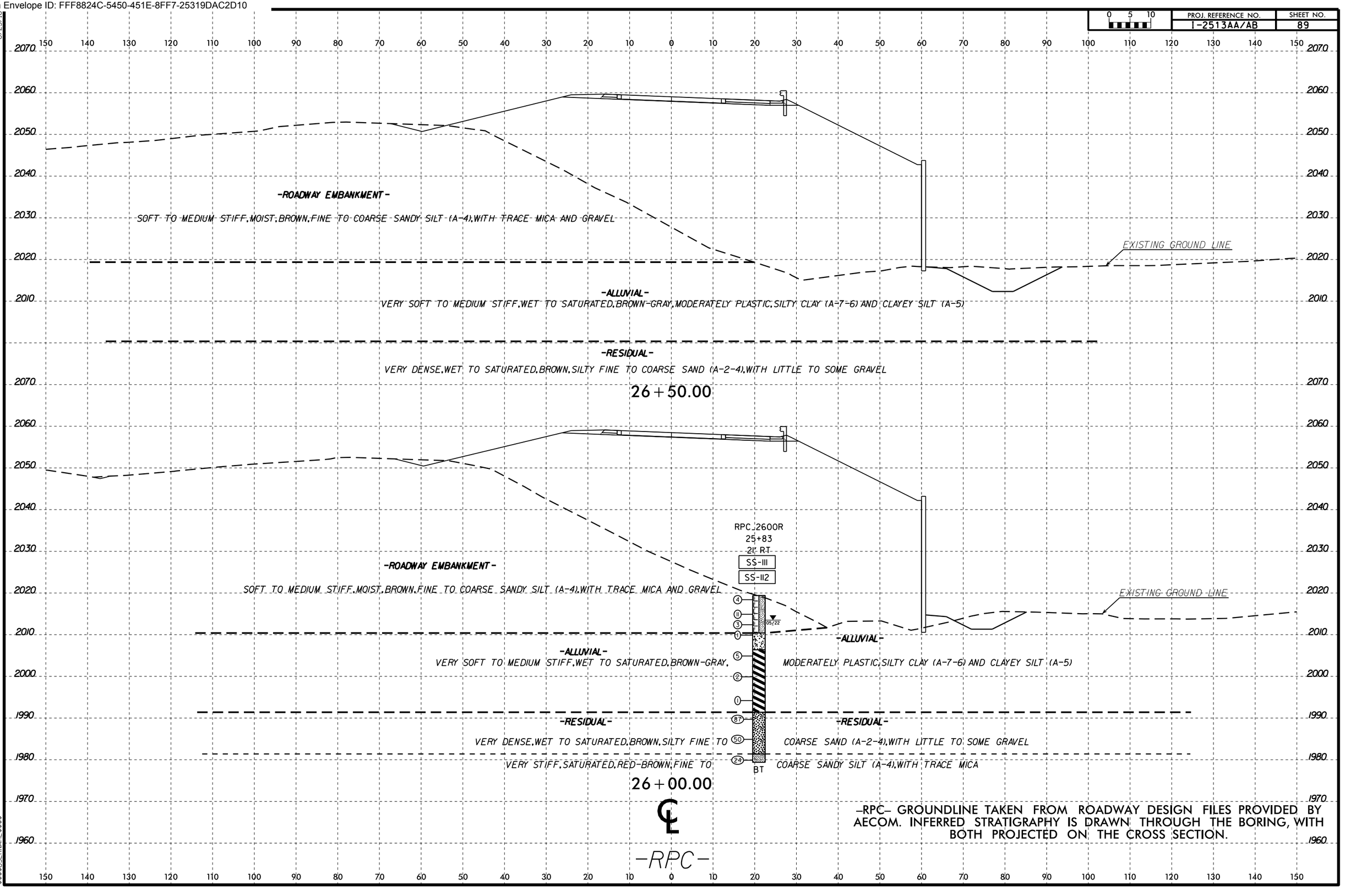
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	88



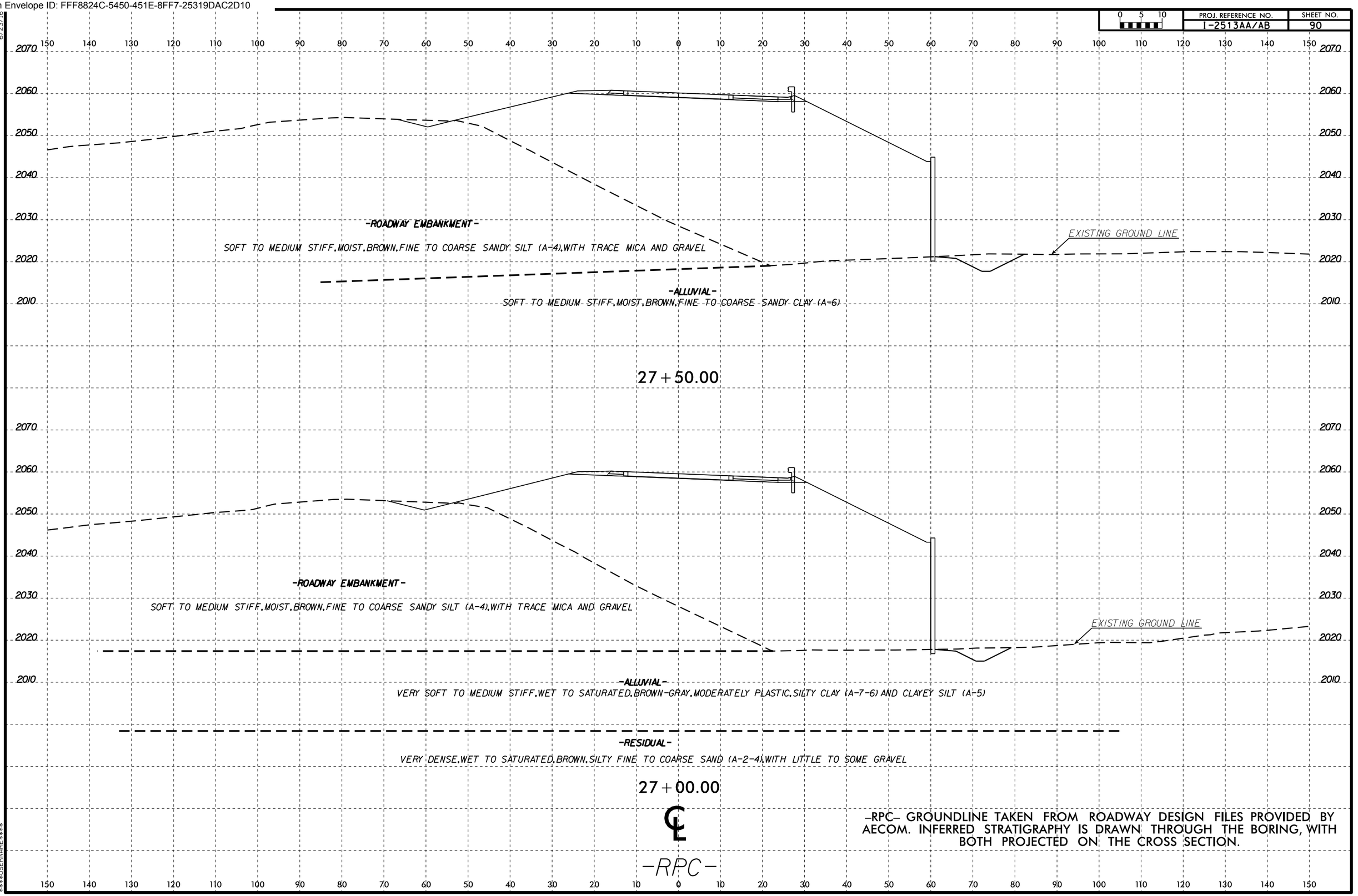
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	89



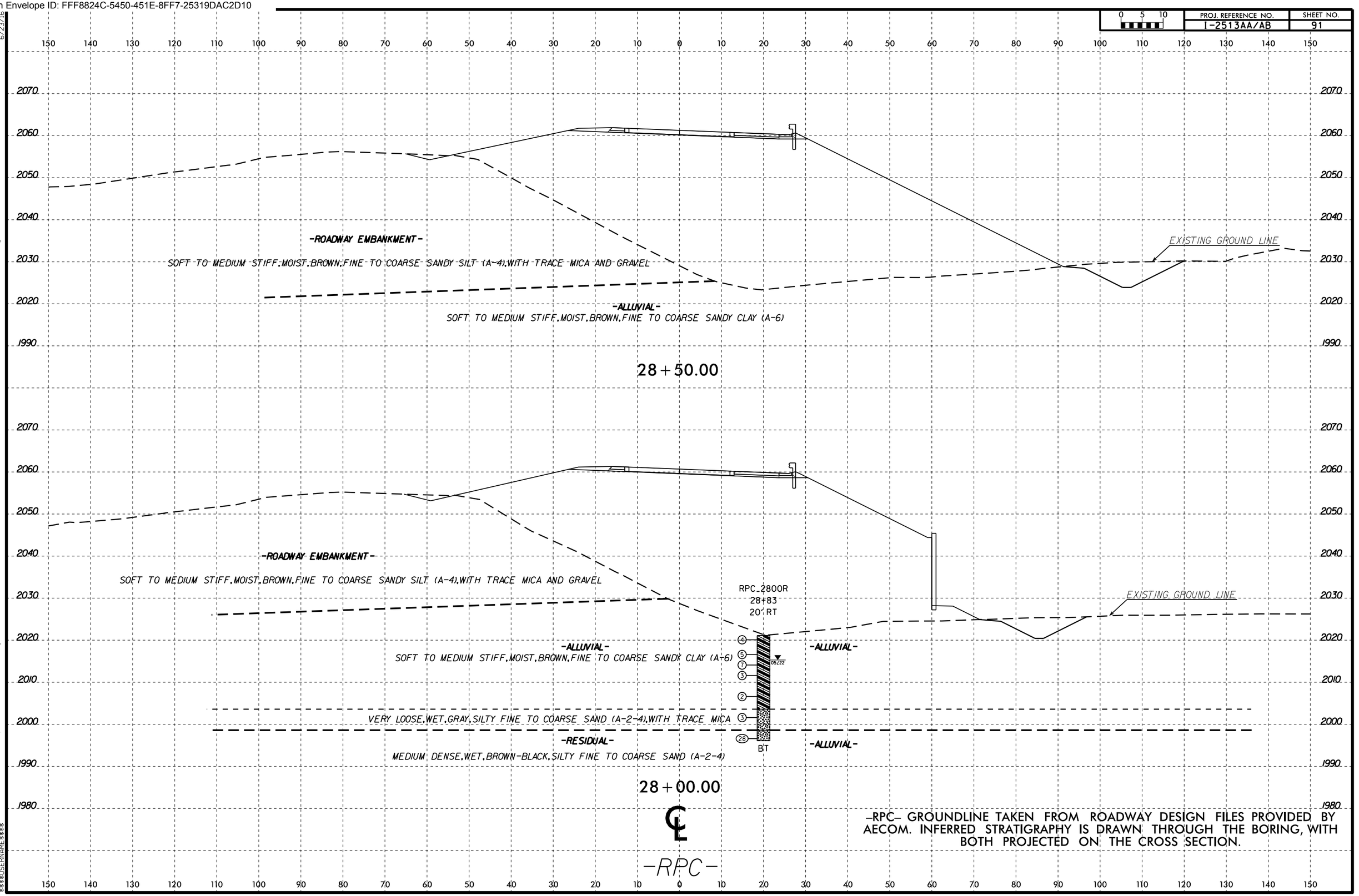
–RPC– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	90



-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	91



-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16

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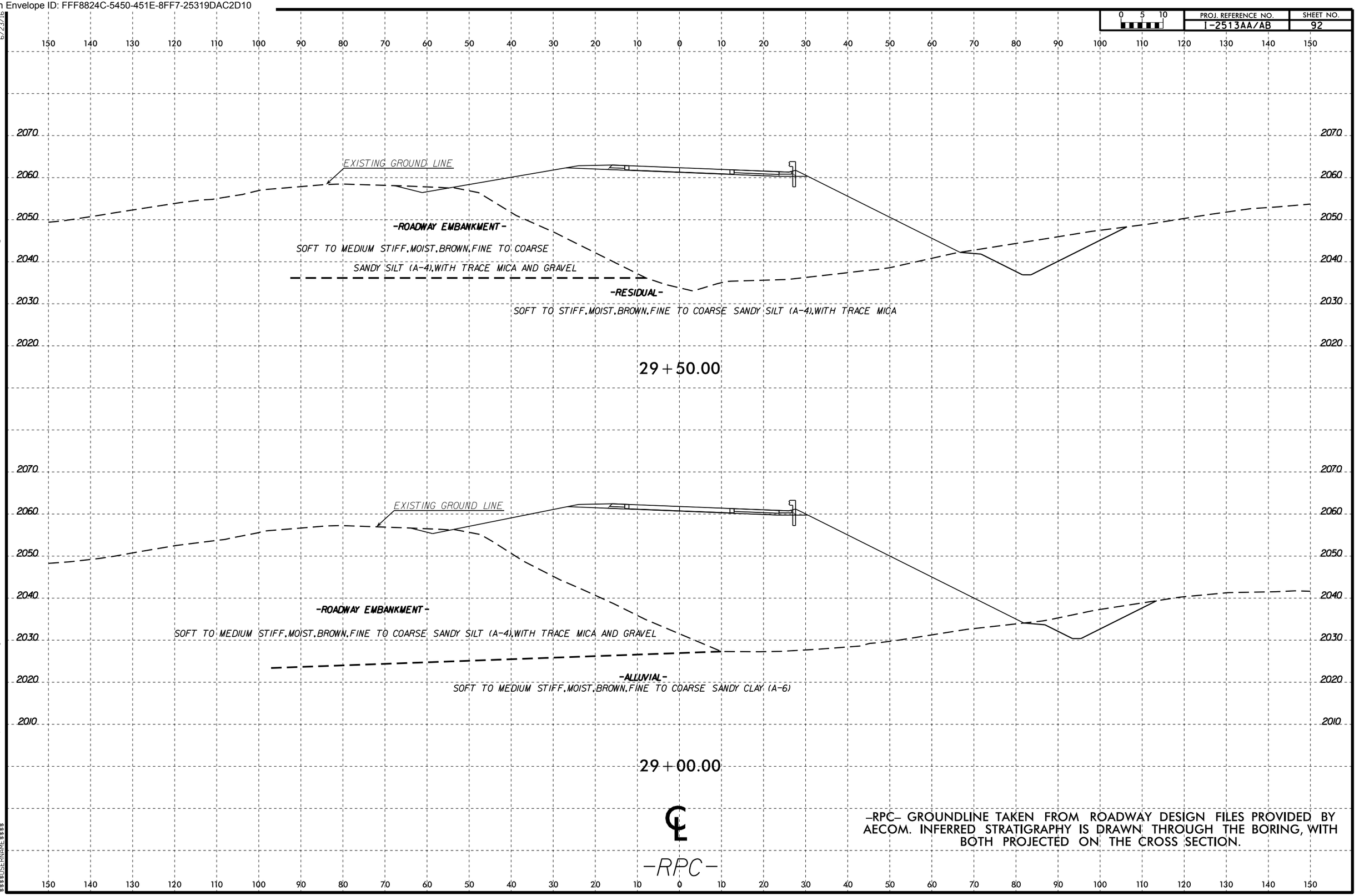
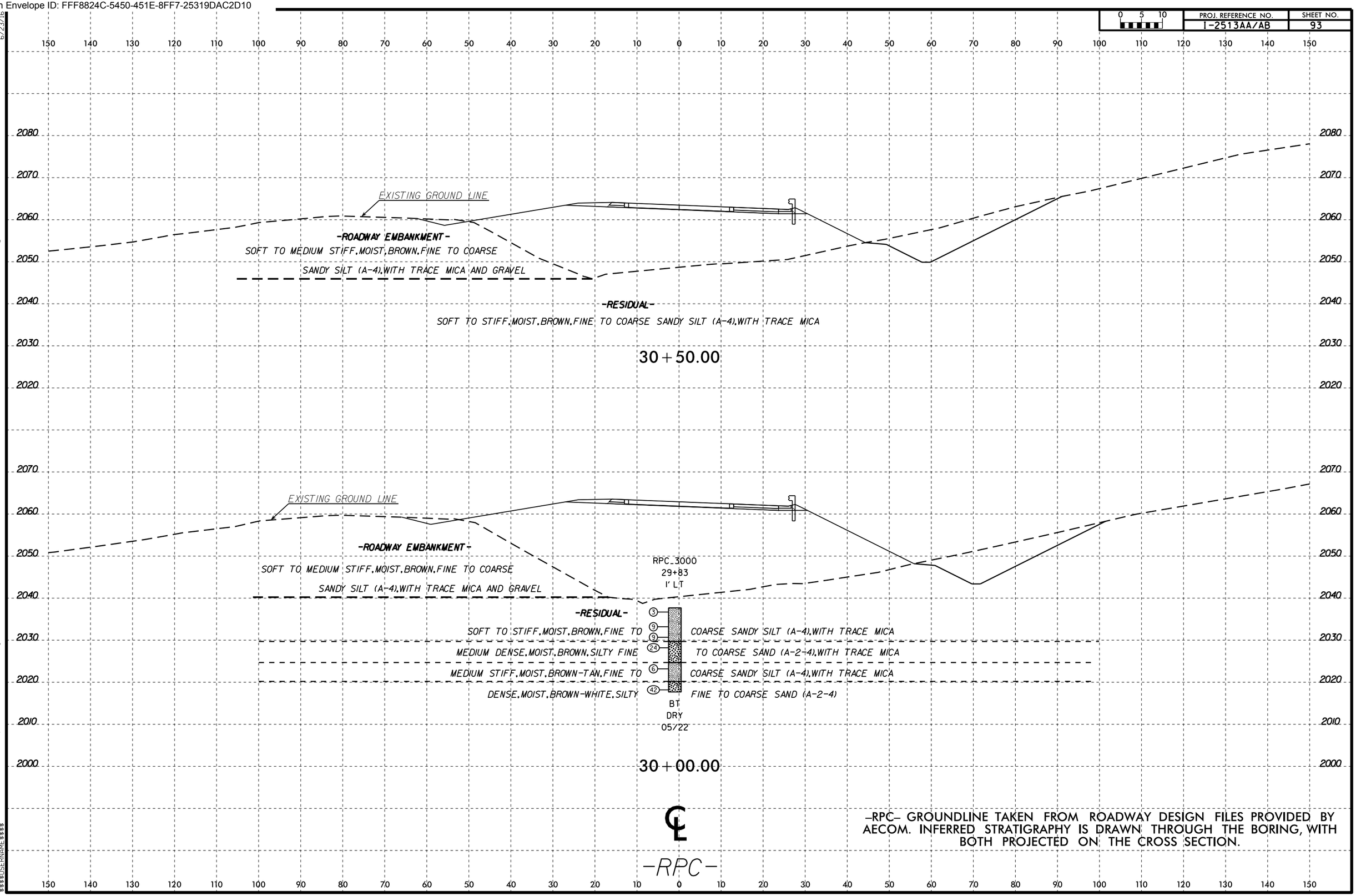
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	92



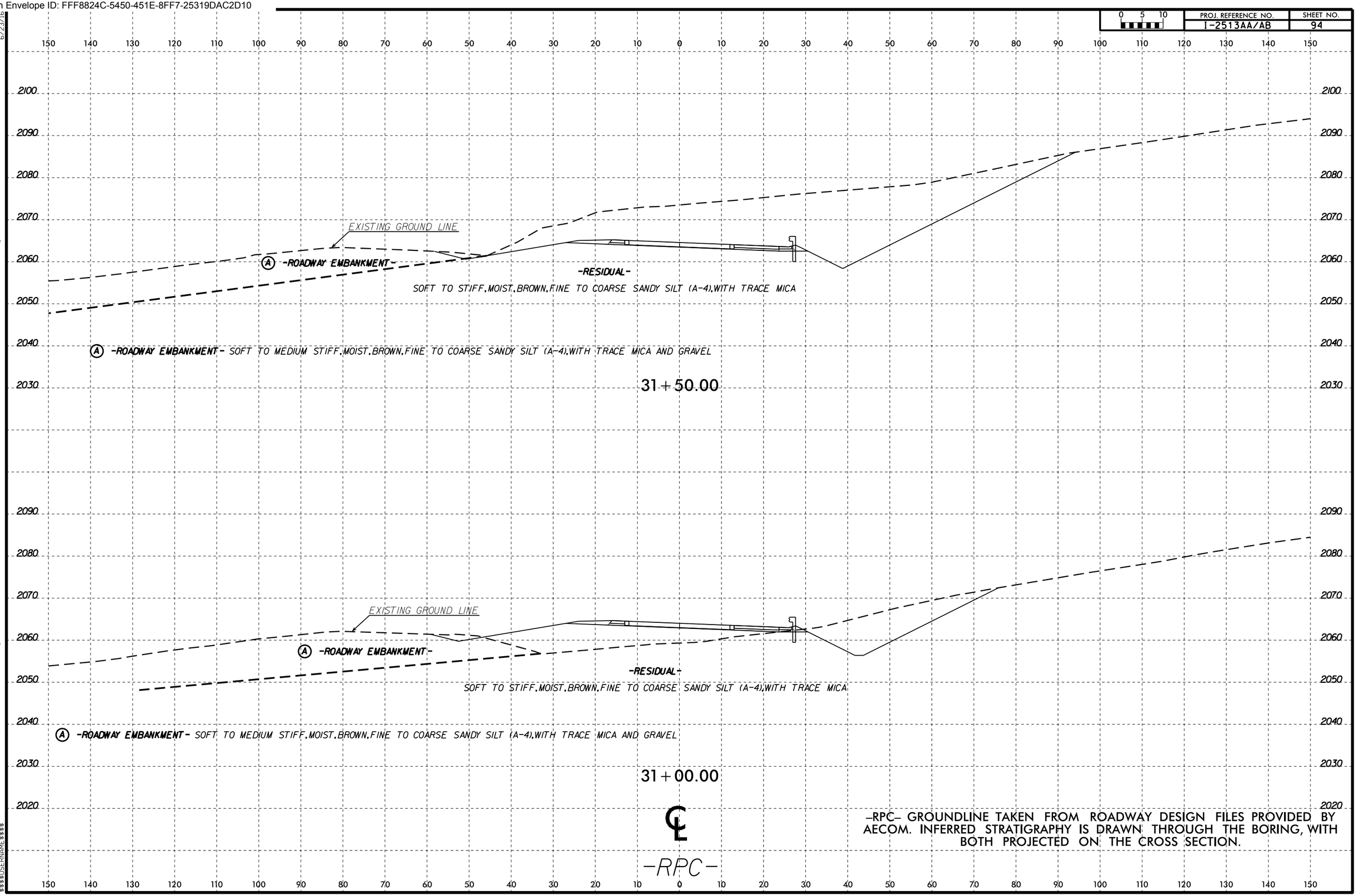
–RPC– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	93



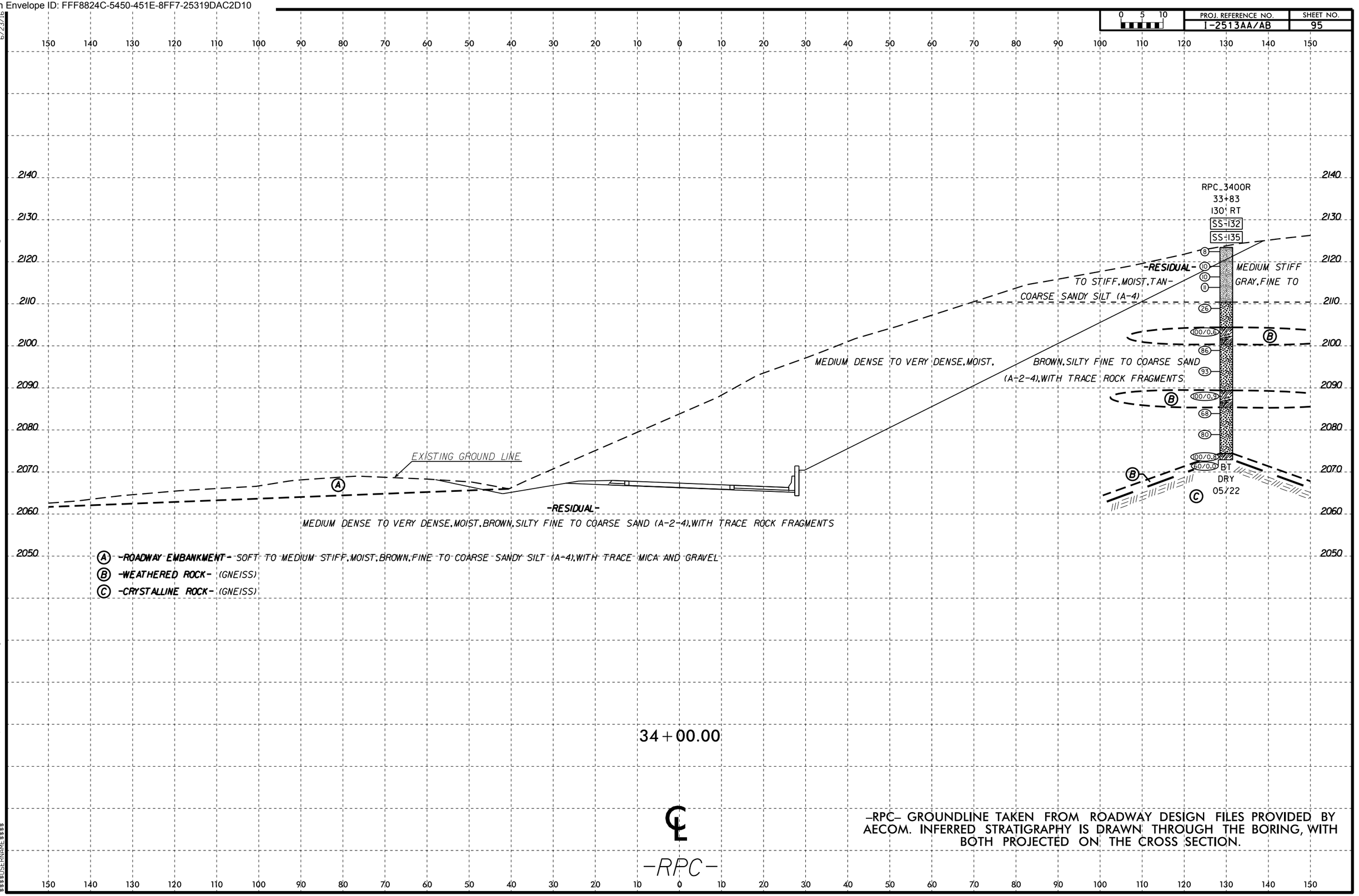
–RPC– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	94



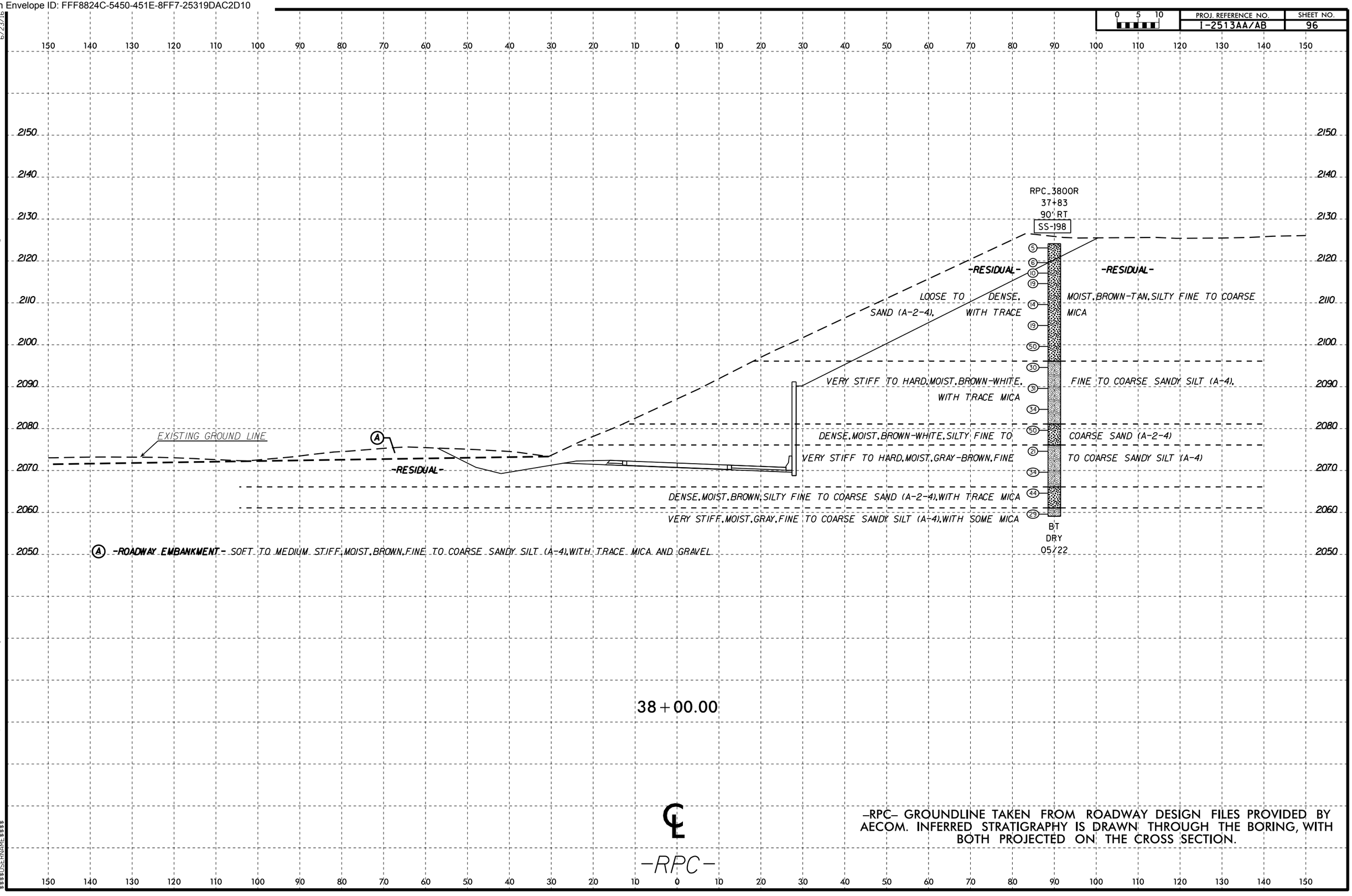
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	95



–RPC– GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	96



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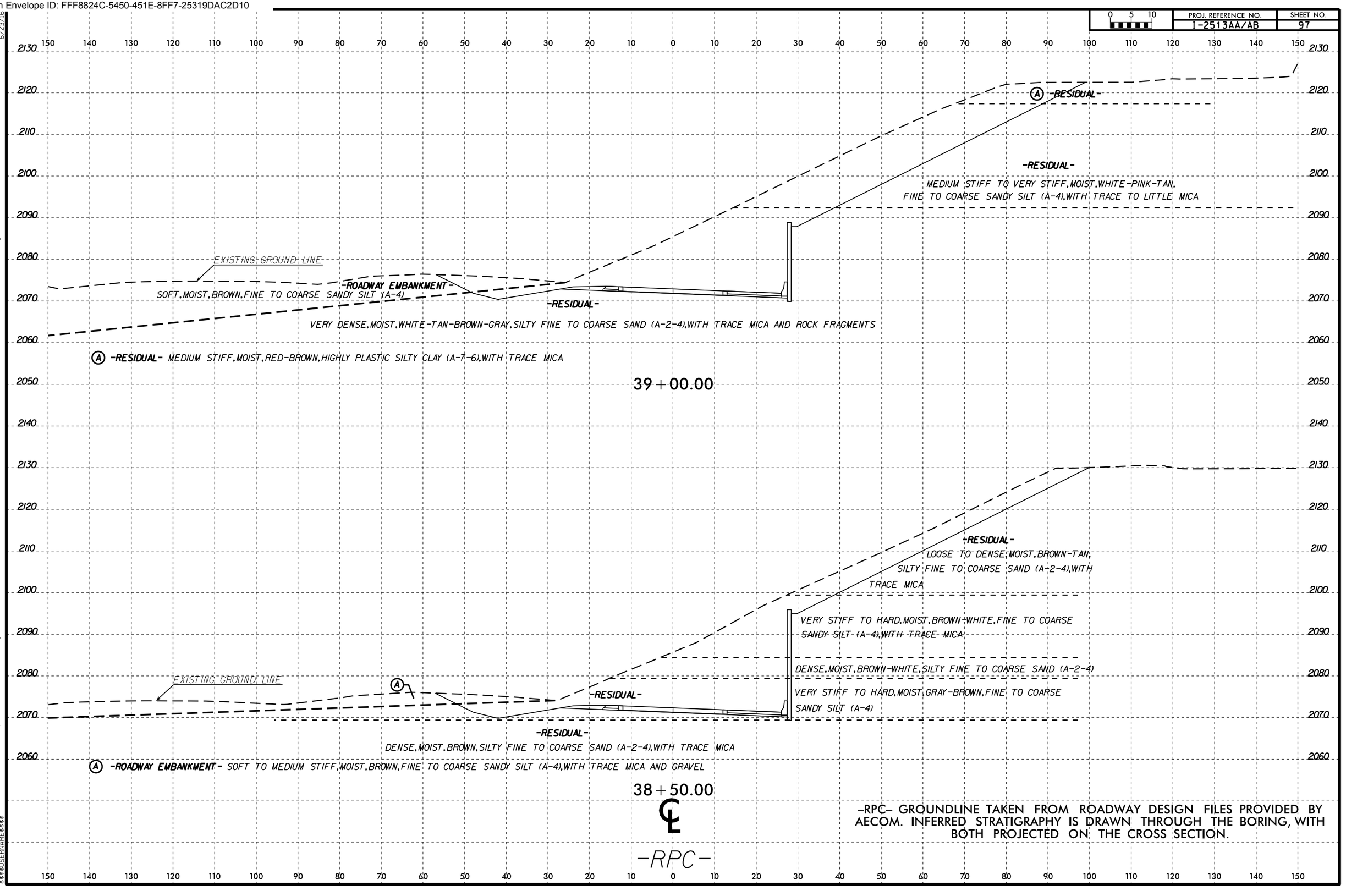
-RPC-

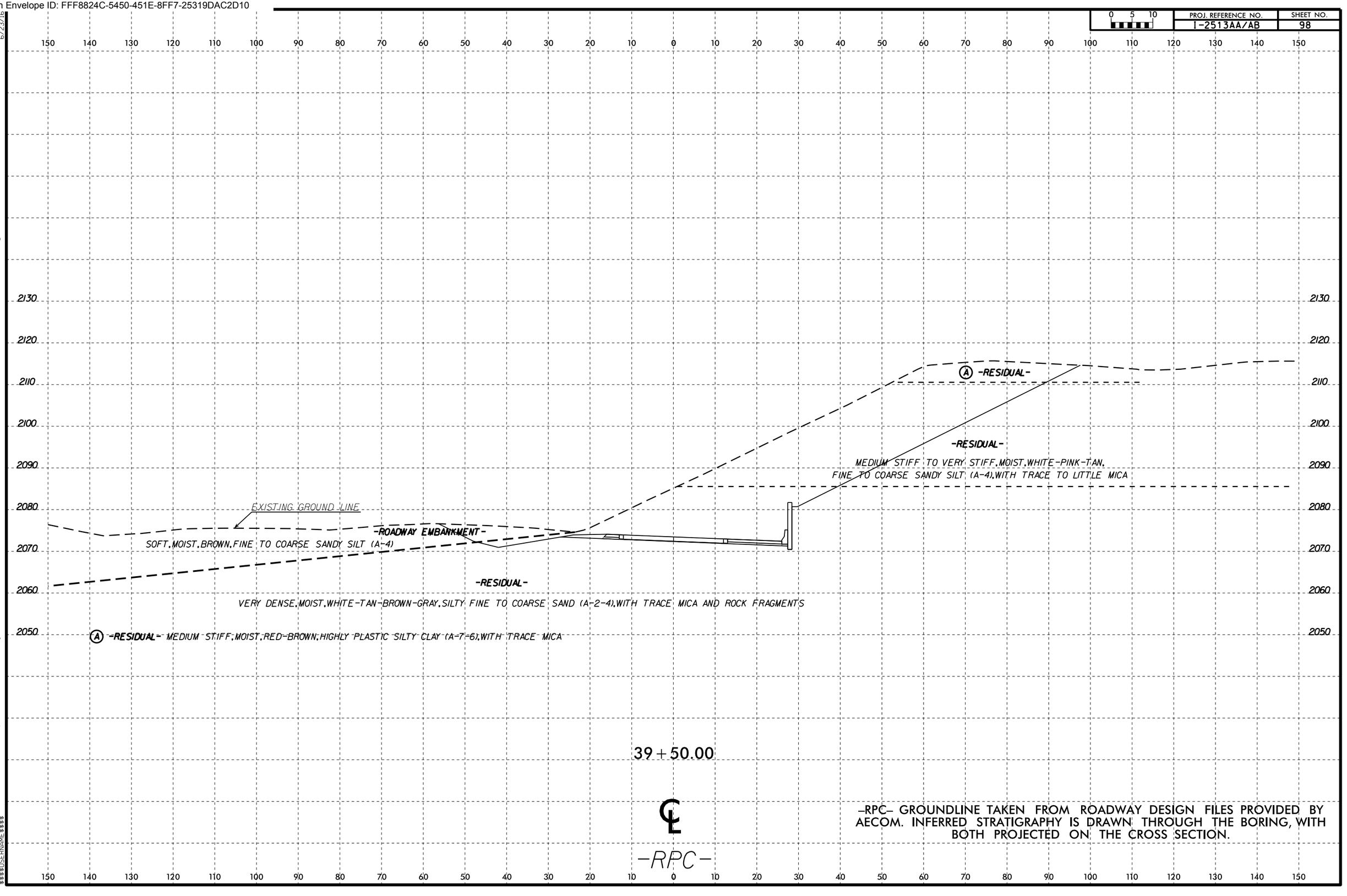
-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	97



-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-2513AA/AB	98



-RPC- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY AECOM. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

PROJECT REFERENCE NO.	SHEET NO.
I–2513AA/AB	99

REFERENCE: I–2513AA/AB

PROJECT: 34165

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
BORE LOGS

Prepared in the Office of:

ECS SOUTHEAST, LLP
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINERING
FIRM # F-1078

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A | **TIP** I-2513A | **COUNTY** BUNCOMBE | **GEOLOGIST** D. Cheek

SITE DESCRIPTION I-40 From US-19 To I-240 | **GROUND WTR (ft)**

BORING NO. B-12 | **STATION** 76+21 | **OFFSET** 76 ft LT | **ALIGNMENT** -Y- | **0 HR.** Dry

COLLAR ELEV. 2,116.4 ft | **TOTAL DEPTH** 14.9 ft | **NORTHING** 677,799 | **EASTING** 921,048 | **24 HR.** FIAD

DRILL RIG/HAMMER EFF./DATE N/A | **DRILL METHOD** H.S. Augers | **HAMMER TYPE** Automatic

DRILLER N/A | **START DATE** 12/16/03 | **COMP. DATE** 12/16/03 | **SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
2120												
										GROUND SURFACE	2,116.4	0.0
2115										**RESIDUAL** Stiff, Red-Brown, Silty CLAY (A-7-5)		
	2,113.0	3.4	3	5	7	12		M		Stiff, Orange-Black-Tan-White, Fine Sandy SILT (A-4), with trace mica and rock fragments	2,113.4	3.0
2110												
	2,108.0	8.4	4	5	6	11		M				
2105												
	2,103.0	13.4	4	5	5	10		M			2,101.5	14.9
										Boring Terminated at Elevation 2,101.5 ft In Residual Sandy SILT (A-4)		

WBS N/A | **TIP** I-2513A | **COUNTY** BUNCOMBE | **GEOLOGIST** D. Cheek

SITE DESCRIPTION I-40 From US-19 To I-240 | **GROUND WTR (ft)**

BORING NO. B-25 | **STATION** 72+73 | **OFFSET** 122 ft RT | **ALIGNMENT** -Y- | **0 HR.** 5.3

COLLAR ELEV. 2,087.5 ft | **TOTAL DEPTH** 19.3 ft | **NORTHING** 677,696 | **EASTING** 920,661 | **24 HR.** 2.1

DRILL RIG/HAMMER EFF./DATE N/A | **DRILL METHOD** H.S. Augers | **HAMMER TYPE** Automatic

DRILLER N/A | **START DATE** 01/12/04 | **COMP. DATE** 01/12/04 | **SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
2090												
										GROUND SURFACE	2,087.5	0.0
2085										**ROADWAY EMBANKMENT** Very Soft, Brown, Fine to Coarse Sandy CLAY (A-6), with trace rock fragments	2,085.5	2.0
	2,084.7	2.8	WOH	1	1	2		M		**ALLUVIAL** Very Loose, Gray, Clayey, Fine to Coarse Sandy Gravel (A-1-a), with trace mica	2,080.5	7.0
2080	2,079.7	7.8	WOH	1	2	3		M		**RESIDUAL** Soft to Medium Stiff, Brown-Black-Orange, Fine Sandy SILT (A-4), with trace mica and rock fragments		
2075	2,074.7	12.8	1	1	2	3		M				
2070	2,069.7	17.8	1	3	4	7		M			2,068.2	19.3
										Boring Terminated at Elevation 2,068.2 ft In Residual Sandy SILT (A-4)		

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-27	**STATION** 91+12	**OFFSET** 131 ft RT	**ALIGNMENT** -Y-	**0 HR.** 10.1
COLLAR ELEV. 2,084.6 ft	**TOTAL DEPTH** 20.1 ft	**NORTHING** 677,222	**EASTING** 922,438	**24 HR.** 3.1
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 01/13/04	**COMP. DATE** 01/13/04	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
2085										2,084.6 GROUND SURFACE	0.0
	2,081.0	3.6	WOH	1	1	2		W		**ALLUVIAL** Very Loose, Brown-Gray-Black, Clayey Fine to Coarse SAND (A-2-6), with trace organics and rock fragments	
2080											
	2,076.0	8.6	1	5	4	9		W		2,076.6 Loose, Brown-Gray-Black, Fine to Coarse Sandy Gravel (A-1-a)	8.0
2075											
	2,071.0	13.6	2	2	2	4		Sat.		2,071.6 **RESIDUAL** Soft to Medium Stiff, Red-Brown-Orange-Black, Fine Sandy SILT (A-4), with trace mica	13.0
2070											
	2,066.0	18.6	1	2	3	5		Sat.		2,064.5 Boring Terminated at Elevation 2,064.5 ft In Residual Sandy SILT (A-4)	20.1
2065											

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-3	**STATION** 21+69	**OFFSET** 93 ft LT	**ALIGNMENT** -Y_WB-	**0 HR.** 30.1
COLLAR ELEV. 2,090.8 ft	**TOTAL DEPTH** 39.8 ft	**NORTHING** 677,154	**EASTING** 923,719	**24 HR.** 25.2
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 11/25/03	**COMP. DATE** 11/25/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2095										2,090.8 GROUND SURFACE 0.0
2090	2,087.5	3.3	5	6	9	15		M		**RESIDUAL** Stiff, Red, Silty CLAY (A-7-5), with trace fine sand 2,086.5 4.3
2085	2,082.5	8.3	5	6	9	15		D		Medium Dense, Brown-Red-Tan-Black, Silty Fine SAND (A-2-4), with trace mica
2080	2,077.5	13.3	3	7	8	15		M		2,072.8 18.0
2075	2,072.5	18.3	3	5	8	13		M		Stiff, Red-Brown-Tan-Black, Clayey SILT (A-5), with trace mica
2070	2,067.5	23.3	3	4	7	11		W		
2065	2,062.5	28.3	3	3	5	8		W		2,062.8 28.0 Loose to Medium Dense, Brown-Tan-Black, Silty Fine to Coarse SAND (A-2-4), with some mica
2060	2,057.5	33.3	4	6	12	18		W		
2055	2,052.5	38.3	5	7	11	18		W		2,051.0 39.8 Boring Terminated at Elevation 2,051.0 ft In Residual Silty SAND (A-2-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-2	**STATION** 23+71	**OFFSET** 128 ft LT	**ALIGNMENT** -Y_WB-	**0 HR.** Dry
COLLAR ELEV. 2,099.2 ft	**TOTAL DEPTH** 44.0 ft	**NORTHING** 677,143	**EASTING** 923,919	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 11/20/03	**COMP. DATE** 11/20/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2100										ELEV. (ft) DEPTH (ft)
										2,099.2 GROUND SURFACE 0.0
										RESIDUAL Stiff, Red, Fine Sandy CLAY (A-6)
2095	2,095.6	3.6	7	7	8	15		D		2,096.2 3.0
2090	2,090.6	8.6	9	15	12	27		M		Medium Dense to Very Dense, Tan-White-Black-Brown, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments
2085	2,085.6	13.6	6	16	40	56		M		
2080	2,080.6	18.6	9	13	18	31		M		
2075	2,075.6	23.6	7	13	12	25		M		
2070	2,070.6	28.6	23	66	34/0.4	100/0.9				2,070.1 29.1
2065	2,065.6	33.6	45	55/0.2		100/0.7				**WEATHERED ROCK** Black-Orange-Tan-Gray (GNEISS)
2060	2,060.6	38.6	24	20	24	44		M		2,061.2 38.0 **RESIDUAL** Dense, Black-Gray-White-Orange, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments
	2,055.6	43.6	100/0.4			100/0.4				2,055.6 43.6 2,055.3 44.0 **WEATHERED ROCK** Black-Orange-Tan-Gray (GNEISS) Boring Terminated at Elevation 2,055.3 ft In Weathered Rock (GNEISS)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-1	**STATION** 25+22	**OFFSET** 117 ft LT	**ALIGNMENT** -Y_WB-	**0 HR.** Dry
COLLAR ELEV. 2,082.4 ft	**TOTAL DEPTH** 33.3 ft	**NORTHING** 677,105	**EASTING** 924,059	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 11/20/03	**COMP. DATE** 11/20/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2085										
										2,082.4 GROUND SURFACE 0.0
										RESIDUAL Very Stiff, Red, Fine to Coarse Sandy Clay (A-6), with trace mica and rock fragments
2080	2,080.6	1.8	4	6	10	16		D		2,076.4 6.0
2075	2,075.6	6.8	4	6	7	13		D		Loose to Dense, Brown-Tan-White-Black, Silty Fine to Coarse SAND (A-2-4), with trace rock fragments
2070	2,070.6	11.8	4	4	6	10		D		
2065	2,065.6	16.8	3	4	6	10		M		
2060	2,060.6	21.8	7	8	8	16		M		
2055	2,055.6	26.8	11	18	23	41		D		
2050	2,050.6	31.8	27	13	14	27		D		2,049.1 33.3 Boring Terminated at Elevation 2,049.1 ft In Residual Silty SAND (A-2-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-29	**STATION** 12+93	**OFFSET** 58 ft RT	**ALIGNMENT** -Y_EB-	**0 HR.** 8.8
COLLAR ELEV. 2,093.6 ft	**TOTAL DEPTH** 14.5 ft	**NORTHING** 677,160	**EASTING** 922,814	**24 HR.** 5.3
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 01/13/03	**COMP. DATE** 01/13/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
2095										
										2,093.6 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT
										Loose, Brown-Black, Silty Fine SAND (A-2-4), with trace rock fragments
2090	2,090.6	3.0	2	3	4	7		M		2,090.6 3.0
										Medium Stiff, Red, Silty CLAY (A-7-5), with trace rock fragments
2085	2,085.6	8.0	2	1	3	4		M		2,085.6 8.0
										ALLUVIAL
										Very Loose, Gray, Clayey Fine to Coarse SAND (A-2-6), with trace rock fragments
2080	2,080.6	13.0	2	3	2	5		W		2,081.6 12.0
										RESIDUAL
										2,079.1 Medium Stiff, Tan-Brown-Orange-Black, Fine Sandy SILT (A-4), with trace mica 14.5
										Boring Terminated at Elevation 2,079.1 ft In Residual Sandy SILT (A-4)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-30	**STATION** 16+71	**OFFSET** 133 ft RT	**ALIGNMENT** -Y_EB-	**0 HR.** N/A
COLLAR ELEV. 2,128.9 ft	**TOTAL DEPTH** 55.0 ft	**NORTHING** 676,975	**EASTING** 923,147	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 01/13/04	**COMP. DATE** 01/13/04	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2130										
										2,128.9 GROUND SURFACE 0.0
										RESIDUAL
										Stiff to Very Stiff, Red-Brown-Black-White, Fine Sandy SILT (A-4), with trace mica
2125	2,125.4	3.5	6	8	10	18		D		
2120	2,120.4	8.5	6	7	11	18		D		
2115	2,115.4	13.5	5	6	9	15		M		
2110	2,110.4	18.5	5	5	8	13		M		
2105	2,105.4	23.5	2	4	5	9		M		
2100	2,100.4	28.5	4	8	9	17		M		
2095	2,095.4	33.5	3	5	6	11		M		
2090	2,090.4	38.5	3	4	6	10		M		
2085	2,085.4	43.5	3	7	10	17		M		
2080	2,080.4	48.5	3	5	11	16		W		
2075	2,075.4	53.5	9	10	13	23		W		
										2,073.9 55.0
										Boring Terminated at Elevation 2,073.9 ft In Residual Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-31	**STATION** 18+72	**OFFSET** 107 ft RT	**ALIGNMENT** -Y_EB-	**0 HR.** Dry
COLLAR ELEV. 2,111.4 ft	**TOTAL DEPTH** 45.3 ft	**NORTHING** 676,933	**EASTING** 923,345	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 01/14/03	**COMP. DATE** 01/14/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
2115										
										2,111.4 GROUND SURFACE 0.0
2110										**RESIDUAL** Stiff, Red-Brown, Fine Silty Clay (A-7-5), with trace mica and rock fragments
	2,107.6	3.8	4	4	8	12		M		2,108.4 3.0
2105										Stiff to Very Stiff, Red-Brown-Tan-Black-Orange, Fine Sandy SILT (A-4), with trace mica and rock fragments
	2,102.6	8.8	3	6	6	12		M		
2100										
	2,097.6	13.8	3	4	7	11		M		
2095										
	2,092.6	18.8	5	7	7	14		M		
2090										
	2,087.6	23.8	4	7	10	17		M		
2085										
	2,082.6	28.8	4	5	10	15		M		
2080										
	2,077.6	33.8	6	9	10	19		M		
2075										
	2,072.6	38.8	4	6	10	16		M		
2070										
	2,068.4	43.0								43.0
	2,067.6	43.8	6	18	18	36		M		Dense, Red-Brown-Black-Orange, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments
	2,066.1	45.3								45.3 Boring Terminated at Elevation 2,066.1 ft In Residual Silty SAND (A-2-4)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-32	**STATION** 20+72	**OFFSET** 74 ft RT	**ALIGNMENT** -Y_EB-	**0 HR.** Caved
COLLAR ELEV. 2,088.6 ft	**TOTAL DEPTH** 24.0 ft	**NORTHING** 676,899	**EASTING** 923,544	**24 HR.** Caved
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 01/14/04	**COMP. DATE** 01/14/04	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2090										
										2,088.6 GROUND SURFACE 0.0
										COLLUVIAL Medium Stiff, Red-Brown, Silty CLAY (A-7-5)
2085	2,086.1	2.5	3	4	4	8		M		
	2,081.1	7.5								2,081.6 7.0
2080			3	3	5	8		M		**RESIDUAL** Loose, Red-Brown-Tan, Silty Fine SAND (A-2-4), with trace rock fragments
	2,076.1	12.5								2,076.6 12.0
2075			3	3	7	10		M		Soft to Stiff, Red-Brown-Tan-Orange-Black, Fine Sandy SILT (A-4), with trace mica
	2,071.1	17.5								
2070			5	6	8	14		M		
	2,066.1	22.5								
2065			2	2	2	4		W		2,064.6 24.0 Boring Terminated at Elevation 2,064.6 ft In Residual Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. YEB_2200R	**STATION** 23+44	**OFFSET** 33 ft RT	**ALIGNMENT** -Y_EB-	**0 HR.** 11.2
COLLAR ELEV. 2,072.6 ft	**TOTAL DEPTH** 33.7 ft	**NORTHING** 676,848	**EASTING** 923,815	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Snow	**START DATE** 04/20/22	**COMP. DATE** 04/20/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										ELEV. (ft) DEPTH (ft)
2075										
	2,072.6	0.0								GROUND SURFACE
	2,071.3	1.3								**ROADWAY EMBANKMENT** Asphalt (0.8'), Stone (0.5') 1.3
2070			5	4	5	9		M		
	2,069.1	3.5								2,069.6 Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4) 3.0
			5	5	6	11		M		**RESIDUAL**
	2,066.6	6.0								Medium Stiff to Hard, Brown-Tan-White, Fine to Coarse Sandy SILT (A-4), with trace to little mica
2065			7	6	9	15		M		
	2,064.1	8.5								
			2	2	6	8		M		
2060										
	2,059.1	13.5								
			3	4	8	12		M		
2055										
	2,054.1	18.5								
			4	18	31	49		M		
2050										
	2,049.1	23.5								
			8	34	66	100/1.0				
2045										
	2,044.1	28.5								
			50	50/0.2		100/0.7				
2040										
	2,039.1	33.5								
			100/0.2			100/0.2				
	2,048.6	24.0								**WEATHERED ROCK** Brown-Tan (GNEISS)
	2,038.9	33.7								Boring Terminated at Elevation 2,038.9 ft In Weathered Rock (GNEISS)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-18	**STATION** 11+32	**OFFSET** 26 ft RT	**ALIGNMENT** -Y5RPA-	**0 HR.** Dry
COLLAR ELEV. 2,094.8 ft	**TOTAL DEPTH** 14.9 ft	**NORTHING** 678,081	**EASTING** 919,903	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 12/17/03	**COMP. DATE** 12/17/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2095										
	2,094.8	0.0								GROUND SURFACE
										ROADWAY EMBANKMENT Very Loose, Red-Brown, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments
	2,091.8	3.0								**RESIDUAL**
2090	2,091.4	3.4	WOH	WOH	1	1		M		Very Soft, Red-Brown-Black, Clayey SILT (A-5), with trace fine sand
										2,086.8 8.0
	2,086.4	8.4								Stiff, Red, Silty Clay (A-7-5), with trace mica and rock fragments
2085			1	3	6	9		M		
										2,081.8 13.0
	2,081.4	13.4								Medium Stiff, Tan-Black-Gray, Fine Sandy SILT (A-4), with trace mica and rock fragments
2080			2	3	5	8		M		2,079.9 14.9
										Boring Terminated at Elevation 2,079.9 ft In Residual Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-19	**STATION** 13+35	**OFFSET** 31 ft RT	**ALIGNMENT** -Y5RPA-	**0 HR.** Dry
COLLAR ELEV. 2,096.1 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 678,131	**EASTING** 919,707	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 12/17/03	**COMP. DATE** 12/17/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)
2100										
										2,096.1 GROUND SURFACE 0.0
2095										**ROADWAY EMBANKMENT** Medium Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica and rock fragments
	2,092.6	3.5	1	3	3	6		M		
2090										
	2,087.6	8.5	1	3	2	5		M		
2085										
	2,082.6	13.5	1	2	4	6		M		
2080										
	2,077.6	18.5	1	4	4	8		M		2,078.1 18.0 **ALLUVIAL** 2,076.1 Medium Stiff, Brown-Grey, Fine Sandy CLAY (A-6), with trace organics 20.0 Boring Terminated at Elevation 2,076.1 ft In Alluvial Sandy CLAY (A-6)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-20	**STATION** 15+88	**OFFSET** 52 ft RT	**ALIGNMENT** -Y5RPA-	**0 HR.** 1.1
COLLAR ELEV. 2,071.1 ft	**TOTAL DEPTH** 22.5 ft	**NORTHING** 678,213	**EASTING** 919,466	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 12/18/03	**COMP. DATE** 12/18/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2075										
										2,071.1 GROUND SURFACE 0.0
2070										**ALLUVIAL** Very Loose, Brown-Black, Silty Fine to Coarse SAND (A-2-4), with trace mica and organics
	2,067.8	3.3	1	2	2	4		W		2,068.1 3.0
2065										Very Loose to Medium Dense, Brown-Black, Coarse Sandy Gravel (A-1-a)
	2,062.8	8.3	3	3	4	7		Sat.		
2060										
	2,057.8	13.3	8	12	15	27		Sat.		2,055.9 15.2
2055										**RESIDUAL** Stiff, Red-Brown, Fine Sandy SILT (A-4)
	2,052.8	18.3	2	3	8	11		W		
2050										2,048.6 22.5 Boring Terminated at Elevation 2,048.6 ft In Residual Sandy SILT (A-4)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** D. Cheek	
SITE DESCRIPTION I-40 From US-19 To I-240				**GROUND WTR (ft)**
BORING NO. B-21	**STATION** 18+32	**OFFSET** 39 ft RT	**ALIGNMENT** -Y5RPA-	**0 HR.** 4.2
COLLAR ELEV. 2,078.7 ft	**TOTAL DEPTH** 20.1 ft	**NORTHING** 678,254	**EASTING** 919,224	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE N/A		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER N/A	**START DATE** 12/18/03	**COMP. DATE** 12/18/03	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2080										ELEV. (ft) DEPTH (ft)
										2,078.7 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT Medium Stiff, Brown-Red-Tan, Fine Sandy CLAY (A-6), with trace mica and rock fragments
2075	2,075.1	3.6	1	1	6	7		M		2,072.7 6.0
										ALLUVIAL Very Soft, Red-Brown-Tan-Orange, Silty CLAY (A-7-6), with trace rock fragments and organics
2070	2,070.1	8.6	1	1	1	2		M		2,068.7 10.0
										RESIDUAL Very Soft to Soft, Black-Orange-Tan-White, Fine Sandy SILT (A-4), with trace mica
2065	2,065.1	13.6	WOH	1	1	2				
2060	2,060.1	18.6	WOH	2	2	4		W		2,058.6 20.1
										Boring Terminated at Elevation 2,058.6 ft In Residual Sandy SILT (A-4)

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. RPDB_4400R	**STATION** 44+00	**OFFSET** 80 ft RT	**ALIGNMENT** -RPDB-	**0 HR.** Dry
COLLAR ELEV. 2,083.6 ft	**TOTAL DEPTH** 21.0 ft	**NORTHING** 676,819	**EASTING** 924,891	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/18/22	**COMP. DATE** 05/18/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2085										
	2,083.6	0.0	9	14	14	28	SS-355	9%		2,083.6 GROUND SURFACE 0.0
										RESIDUAL Medium Dense, Brown-Gray, Fine to Coarse Sandy GRAVEL (A-1-b)
2080	2,080.1	3.5	20	13	20	33	SS-356	10%		2,080.6 3.0
	2,077.6	6.0	18	48	52/0.4	100/0.9				Dense, Brown, Silty Fine to Coarse SAND (A-2-5(0)), with trace rock fragments
2075	2,075.1	8.5	25	40	60/0.2	100/0.7				2,077.1 6.5
										WEATHERED ROCK Gray (GNEISS)
2070	2,070.1	13.5	14	30	50	80		M		2,070.6 13.0
										RESIDUAL Very Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4)
2065	2,065.1	18.5	13	33	67/0.3	100/0.8				2,064.6 19.0
	2,062.6	21.0	60/0.0			60/0.0				**WEATHERED ROCK** Brown-Tan (GNEISS)
										2,062.6 21.0
										Boring Terminated with Standard Penetration Test Refusal at Elevation 2,062.6 ft On Crystalline Rock (GNEISS)
										Surficial Organic Soil from 0.0 - 0.3 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. RPDB_4600L	**STATION** 46+00	**OFFSET** 40 ft LT	**ALIGNMENT** -RPDB-	**0 HR.** Dry
COLLAR ELEV. 2,054.8 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 676,755	**EASTING** 924,667	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/19/22	**COMP. DATE** 05/19/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
2055												
	2,054.8	0.0	4	4	6	10	SS-366	9% M		GROUND SURFACE	2,054.8	0.0
										ROADWAY EMBANKMENT Loose to Medium Dense, Brown, Slightly Plastic, Clayey Fine to Coarse SAND (A-2-7(0)), with trace gravel		
2050	2,051.3	3.5	20	7	5	12		M			2,049.3	5.5
	2,048.8	6.0	12	8	11	19		M		**RESIDUAL** Very Stiff, Brown-White, Fine to Coarse Sandy SILT (A-4), with trace mica		
	2,046.3	8.5									2,046.8	8.0
2045			15	24	40	64		M		Very Dense, Brown, Silty Fine to Coarse SAND (A-2-4)		
	2,041.3	13.5										
2040			11	21	40	61		M			2,039.8	15.0
										Boring Terminated at Elevation 2,039.8 ft In Residual Silty SAND (A-2-4)		
										Surficial Organic Soil from 0.0 - 0.2 feet		

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. RPDB_4800L	**STATION** 48+00	**OFFSET** 35 ft LT	**ALIGNMENT** -RPDB-	**0 HR.** Dry
COLLAR ELEV. 2,054.3 ft	**TOTAL DEPTH** 15.0 ft	**NORTHING** 676,811	**EASTING** 924,475	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/19/22	**COMP. DATE** 05/19/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
2055										
	2,054.3	0.0	4	2	2	4	SS-361	14%		2,054.3 GROUND SURFACE 0.0
										ROADWAY EMBANKMENT Loose to Medium Dense, Brown, Silty Fine to Coarse SAND (A-2-4(0)), with trace gravel
2050	2,050.8	3.5	5	4	5	9		M		
	2,048.3	6.0	7	7	8	15		M		2,047.3 7.0
	2,045.8	8.5								**RESIDUAL** Stiff to Very Stiff, Brown-White-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica
2045			7	5	6	11		M		
	2,040.8	13.5								
2040			7	10	13	23		M		2,039.3 15.0
										Boring Terminated at Elevation 2,039.3 ft In Residual Sandy SILT (A-4)
										Surficial Organic Soil from 0.0 - 0.2 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A I-26				**GROUND WTR (ft)**
BORING NO. Y5RPD_2500L	**STATION** 14+38	**OFFSET** 101 ft LT	**ALIGNMENT** -Y5RPD-	**0 HR.** Dry
COLLAR ELEV. 2,092.7 ft	**TOTAL DEPTH** 33.6 ft	**NORTHING** 678,030	**EASTING** 918,298	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Snow	**START DATE** 04/19/22	**COMP. DATE** 04/19/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
2095										
										2,092.7 GROUND SURFACE 0.0
	2,090.9	1.8								2,090.9 **ROADWAY EMBANKMENT** Asphalt (1.6'), Stone Base (0.2') 1.8
2090	2,089.2	3.5	7	7	14	21		M		Stiff to Hard, Brown, Fine to Coarse Sandy SILT (A-4), with trace rock fragments
			10	4	10	14		M		
	2,086.7	6.0	10	8	9	17		M		
2085	2,084.2	8.5	3	6	5	11		M		
2080	2,079.2	13.5	6	29	13	42		M		
2075	2,074.2	18.5	3	4	6	10		M		
2070	2,069.2	23.5	4	3	8	11		M		
2065	2,064.2	28.5	9	8	17	25		M		
2060	2,059.2	33.5	60/0.1			60/0.1				2,059.1 33.6 Boring Terminated with Standard Penetration Test Refusal at Elevation 2,059.1 ft In Roadway Embankment Sandy SILT (A-4) on suspected boulder fill

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. Y6_1500L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.0 ft	**NORTHING** 676,480	**EASTING** 923,204	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/16/22	**COMP. DATE** 05/16/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
		0.0	2	2	3	5	SS-324	15%		**RESIDUAL** Medium Stiff to Very Stiff, Pink-Tan-White-Brown, Fine to Coarse Sandy SILT (A-4(0)), with trace mica
		3.5	8	5	6	11		M		
		6.0	7	5	5	10		M		
		8.5	3	3	5	8		M		
		13.5	6	8	10	18		M		15.0
										Boring Terminated at Depth 15.0 ft In Residual Sandy SILT (A-4) Surficial Organic Soil from 0.0 - 0.2 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore
SITE DESCRIPTION I-2513A			**GROUND WTR (ft)**
BORING NO. Y6_1700R	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.0 ft	**NORTHING** 676,488	**EASTING** 923,413	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022	**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/16/22	**COMP. DATE** 05/16/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
										GROUND SURFACE 0.0
		0.0	1	1	1	2		M		**ROADWAY EMBANKMENT** Soft, Brown, Fine to Coarse Sandy SILT (A-4)
		3.5	4	1	2	3		M		3.0 **RESIDUAL** Soft to Medium Stiff, Red-Brown, Fine to Coarse Sandy CLAY (A-6)
		6.0	4	2	4	6		M		
		8.5	4	5	10	15		M		8.0 Stiff to Very Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace mica
		13.5	6	9	10	19		M		15.0 Boring Terminated at Depth 15.0 ft In Residual Sandy SILT (A-4)

Surficial Organic Soil from 0.0 - 0.3 feet

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore
SITE DESCRIPTION I-2513A			**GROUND WTR (ft)**
BORING NO. Y6_1900	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.0 ft	**NORTHING** 676,621	**EASTING** 923,570	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022	**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/16/22	**COMP. DATE** 05/16/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
										GROUND SURFACE 0.0
		0.0	3	3	2	5		M		**ROADWAY EMBANKMENT** Medium Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace mica
		3.5	3	3	3	6		M		3.0 **RESIDUAL** Medium Stiff to Very Stiff, Brown, Fine to Coarse Sandy SILT (A-4), with trace mica
		6.0	4	5	5	10		M		
		8.5	5	6	9	15		M		
		13.5	5	7	10	17		M		15.0 Boring Terminated at Depth 15.0 ft In Residual Sandy SILT (A-4)

Surficial Organic Soil from 0.0 - 0.2 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore
SITE DESCRIPTION I-2513A			**GROUND WTR (ft)**
BORING NO. Y6_2100L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 20.0 ft	**NORTHING** 676,775	**EASTING** 923,698	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER B. Lumpkin	**START DATE** 05/16/22	**COMP. DATE** 05/16/22	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
										GROUND SURFACE 0.0
		0.0	3	3	4	7		M		**RESIDUAL** Medium Stiff to Stiff, White-Pink-Brown, Clayey SILT (A-5(0)), with trace to little mica
		3.5	11	5	7	12	SS-340	18%		
		6.0	5	5	8	13		M		
		8.5	6	6	7	13		M		
		13.5	1	4	5	9		M		
		18.5	4	5	6	11		M		20.0 Boring Terminated at Depth 20.0 ft In Residual Sandy SILT (A-4) Surficial Organic Soil from 0.0 - 0.2 feet

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore
SITE DESCRIPTION I-2513A			**GROUND WTR (ft)**
BORING NO. Y6_2550	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 38.5 ft	**NORTHING** 677,073	**EASTING** 924,036	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER B. Lumpkin	**START DATE** 05/17/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
		0.0	3	2	3	5		M		**RESIDUAL** Medium Stiff to Very Stiff, White-Brown, Fine to Coarse Sandy SILT (A-4), with trace mica
		3.5	9	5	3	8		M		
		6.0	4	4	3	7		M		
		8.5	7	7	8	15		M		
		13.5	5	7	10	17		M		
		18.5	11	11	10	21		M		18.0 Medium Dense to Very Dense, Brown-White-Gray, Silty Fine to Coarse SAND (A-2-4), with trace mica and rock fragments
		23.5	19	20	18	38		M		
		28.5	32	38	34	72		M		
		33.5	9	18	22	40		M		33.0 Hard, Brown-Gray, Fine to Coarse Sandy SILT (A-4), with trace mica
		38.5	60/0.0			60/0.0				38.5 Boring Terminated with Standard Penetration Test Refusal at Depth 38.5 ft On Crystalline Rock (GNEISS) Surficial Organic Soil from 0.0 - 0.1 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A | **TIP** I-2513A | **COUNTY** BUNCOMBE | **GEOLOGIST** A. Blackmore

SITE DESCRIPTION I-2513A I-26 | **GROUND WTR (ft)**

BORING NO. Y6_2900 | **STATION** N/A | **OFFSET** N/A | **ALIGNMENT** -Y6- | **0 HR.** Dry

COLLAR ELEV. N/A | **TOTAL DEPTH** 20.0 ft | **NORTHING** 677,319 | **EASTING** 924,285 | **24 HR.** FIAD

DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022 | **DRILL METHOD** H.S. Augers | **HAMMER TYPE** Automatic

DRILLER B. Snow | **START DATE** 04/18/22 | **COMP. DATE** 04/18/22 | **SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
										GROUND SURFACE 0.0
		2.1								**ROADWAY EMBANKMENT** Asphalt (0.6'), Stone Base (1.5') 2.1
		4.0	6	4	3	7		M		Medium Stiff to Stiff, Tan-Brown-Gray, Fine to Coarse Sandy SILT (A-4), with trace mica
		6.0	1	3	5	8		M		
		8.5	3	2	6	8		M		
		13.5	2	2	6	8		M		
		18.5	6	3	7	10		M		18.0 **RESIDUAL** Medium Dense, Brown, Silty Fine to Coarse SAND (A-2-4) 20.0
			10	8	10	18		M		Boring Terminated at Depth 20.0 ft In Residual Silty SAND (A-2-4)

WBS N/A | **TIP** I-2513A | **COUNTY** BUNCOMBE | **GEOLOGIST** A. Blackmore

SITE DESCRIPTION I-2513A I-26 | **GROUND WTR (ft)**

BORING NO. Y6_3100 | **STATION** N/A | **OFFSET** N/A | **ALIGNMENT** -Y6- | **0 HR.** Dry

COLLAR ELEV. N/A | **TOTAL DEPTH** 30.0 ft | **NORTHING** 677,459 | **EASTING** 924,428 | **24 HR.** FIAD

DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022 | **DRILL METHOD** H.S. Augers | **HAMMER TYPE** Automatic

DRILLER B. Snow | **START DATE** 04/18/22 | **COMP. DATE** 04/18/22 | **SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
		1.4								**ROADWAY EMBANKMENT** Asphalt (0.6'), Stone Base (0.8') 1.4
		3.5	4	4	5	9		M		Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica
		8.5	4	4	5	9		M		
		13.5	3	5	5	10		M		12.0 Loose to Medium Dense, Brown-Gray, Silty Fine to Coarse SAND (A-2-4), with trace rock fragments and trace mica
		18.5	3	5	20	25		M		
		23.5	2	3	3	6		M		
		28.5	1	3	2	5		M		28.0 **RESIDUAL** Dense, Tan-Brown, Silty Fine to Coarse SAND (A-2-4) 30.0
			6	11	23	34		M		Boring Terminated at Depth 30.0 ft In Residual Silty SAND (A-2-4)
										Boring refused on debris encountered within roadway enbankment at 7.0 ft. Boring offset 5 ft and continued.

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A I-26				**GROUND WTR (ft)**
BORING NO. Y6_3300L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 10.0 ft	**NORTHING** 677,605	**EASTING** 924,564	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Snow	**START DATE** 04/18/22	**COMP. DATE** 04/18/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										GROUND SURFACE	0.0
		2.1								**ROADWAY EMBANKMENT** Asphalt (0.6'), Stone Base (1.5')	2.1
		4.0	5	5	6	11		M		**RESIDUAL** Medium Dense to Dense, Brown, Silty Fine to Coarse SAND (A-2-4), with trace mica	
		6.0	4	4	6	10		M			
		8.5	3	6	7	13		M			
			11	19	28	47		M			10.0
										Boring Terminated at Depth 10.0 ft In Residual Silty SAND (A-2-4)	

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. Y6_3500L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 30.0 ft	**NORTHING** 677,798	**EASTING** 924,617	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/17/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
		0.0	2	3	4	7		M		**RESIDUAL** Medium Stiff to Very Stiff, Gray-White-Tan-Brown-Black, Fine to Coarse Sandy SILT (A-4(0)), with trace to little mica
		3.5	6	7	7	14	SS-360	13%		
		6.0	10	5	6	11		M		
		8.5	3	3	7	10		M		
		13.5	8	10	12	22		M		
		18.5	6	5	6	11		M		
		23.5	6	7	10	17		M		
		28.5	14	13	19	32		M		28.0 Dense, Brown, Silty, Fine to Coarse SAND (A-2-4), with trace mica 30.0
										Boring Terminated at Depth 30.0 ft In Residual Silty SAND (A-2-4)
										Surficial Organic Soil from 0.0 - 0.3 feet

GEOTECHNICAL BORING REPORT
BORE LOG

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A				**GROUND WTR (ft)**
BORING NO. Y6_3700L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.0 ft	**NORTHING** 677,964	**EASTING** 924,717	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Lumpkin	**START DATE** 05/17/22	**COMP. DATE** 05/17/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										GROUND SURFACE	0.0
		0.0	3	4	4	8	SS-354	24%		**RESIDUAL** Medium Stiff to Stiff, Red-Brown, Slightly Plastic Fine to Coarse Sandy CLAY (A-6(7))	
		3.5	9	5	5	10		M			5.5
		6.0	3	5	6	11		M		Stiff to Very Stiff, Brown-Tan, Fine to Coarse Sandy SILT (A-4), with trace mica	
		8.5	5	4	6	10		M			
		13.5	3	7	11	18		M			15.0
										Boring Terminated at Depth 15.0 ft In Residual Sandy SILT (A-4)	
										Surficial Organic Soil from 0.0 - 0.3 feet	

WBS N/A	**TIP** I-2513A	**COUNTY** BUNCOMBE	**GEOLOGIST** A. Blackmore	
SITE DESCRIPTION I-2513A I-26				**GROUND WTR (ft)**
BORING NO. Y6_3900L	**STATION** N/A	**OFFSET** N/A	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 13.9 ft	**NORTHING** 678,158	**EASTING** 924,737	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE M&W1032 GeoProbe 7822 DT 88% 04/18/2022		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER B. Snow	**START DATE** 04/18/22	**COMP. DATE** 04/18/22	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
										GROUND SURFACE 0.0
		2.0								**ROADWAY EMBANKMENT** Asphalt (0.5'), Stone Base (1.5') 2.0
		3.5	18	7	6	13		M		**RESIDUAL** Stiff to Hard, Red-Brown, Fine to Coarse Sandy SILT (A-4), with trace mica
		6.0	2	7	29	36		M		6.5
		8.5	20	72	28/0.3	100/0.8				**WEATHERED ROCK** Red-Brown (GNEISS)
		13.5	100/0.4			100/0.4				13.9
			100/0.4			100/0.4				Boring Terminated at Depth 13.9 ft In Weathered Rock (GNEISS)

PROJECT REFERENCE NO.	SHEET NO.
I–2513AA/AB	115

REFERENCE: I–2513AA/AB

PROJECT: 34165

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B

LABORATORY TEST RESULTS

SOIL TESTS FOR QUALITY

Prepared in the Office of:

ECS SOUTHEAST, LLP
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINERING
FIRM # F-1078

SOIL TEST RESULTS

BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
L1EB_4600L	SS–189	60' LT	46+00 –L1_EB–	3.5–5.0'	A–7–5(6)	49	18	29.4	23.3	43.5	3.8	92.0	72.0	48.1	20.6	–
L1EB_4800L2	SS–194	170' LT	48+00 –L1_EB–	0.0–1.5'	A–7–5(13)	52	22	21.7	19.5	18.6	40.2	98.0	85.6	62.2	24.0	–
L1EB_5200L	SS–234	65' LT	52+00 –L1_EB–	3.5–5.0'	A–1–b	41	NP	54.2	25.1	16.7	4.0	64.0	37.7	16.1	9.1	–
L1EB_5400L	SS–251	101' LT	54+00 –L1_EB–	3.5–5.0'	A–7–5(19)	58	24	13.7	16.2	25.9	44.2	97.2	88.1	72.0	22.7	–
L1EB_5400L	SS–253	101' LT	54+00 –L1_EB–	8.5–10.0'	A–4(0)	34	4	42.7	23.9	25.6	7.8	97.8	67.9	37.6	16.5	–
L1EB_5600L2	SS–239	120' LT	56+00 –L1_EB–	0.0–1.5'	A–5(0)	43	NP	43.1	19.3	25.7	11.9	97.3	65.0	40.1	15.3	–
L1EB_5750L	SS–227	70' LT	57+50 –L1_EB–	3.5–5.0'	A–2–4(0)	37	NP	42.0	28.7	23.3	6.0	97.2	65.8	34.9	12.9	–
L1EB_5950L	SS–221	120' LT	59+51 –L1_EB–	0.0–1.5'	A–5(0)	44	NP	28.6	21.1	33.5	16.7	83.3	66.7	45.6	19.1	–
L1EB_6300L	SS–176	80' LT	63+00 –L1_EB–	0.0–1.5'	A–7–5(6)	46	16	21.2	24.2	30.5	24.0	87.8	74.5	52.5	22.4	–
L1EB_6450L	SS–167	120' LT	64+49 –L1_EB–	0.0–1.5'	A–7–5(3)	46	12	39.9	20.4	27.7	12.0	98.5	65.9	44.2	20.7	–
L1EB_6450L	SS–169	120' LT	64+49 –L1_EB–	6.0–7.5'	A–2–5(0)	51	NP	43.2	30.8	18.0	8.0	91.6	63.6	29.9	14.8	–
L1EB_6550L	SS–158	140' LT	65+50 –L1_EB–	0.0–1.5'	A–7–6(16)	57	30	17.5	18.9	17.2	46.3	89.7	79.0	60.4	23.0	–
Y_5200L	SS–342	140' LT	52+00 –Y–	0.0–1.5'	A–1–a	33	NP	51.9	27.1	19.0	2.0	43.5	26.4	11.5	10.9	–
Y_7600R	SS–310	70' RT	76+01 –Y–	0.0–1.5'	A–4(2)	33	10	28.2	26.0	22.5	23.3	99.1	82.9	50.1	22.4	4.5
Y_7800R	SS–317	90' RT	78+00 –Y–	0.0–1.5'	A–7–5(4)	44	11	23.2	26.6	20.0	30.2	96.5	82.9	52.9	23.8	–
Y_8000R	SS–300	150' RT	80+00 –Y–	3.5–5.0'	A–2–4(0)	37	NP	31.7	36.7	25.5	6.0	93.4	75.1	33.6	11.5	–
Y_8000R	SS–303	150' RT	80+00 –Y–	13.5–15.0'	A–2–4(0)	32	NP	37.1	29.5	19.4	14.0	93.7	78.8	33.7	13.9	–
Y_8400R	SS–289	171' RT	83+95 –Y–	3.5–5.0'	A–2–4(0)	39	7	31.7	31.5	24.7	12.1	60.5	48.8	26.0	14.8	–
Y_8600R	SS–280	115' RT	86+00 –Y–	0.0–1.5'	A–4(0)	40	NP	32.2	40.2	23.6	4.0	97.9	77.5	37.3	19.1	–
Y_8600R	SS–282	115' RT	86+00 –Y–	6.0–7.5'	A–4(0)	33	6	28.1	31.1	26.9	13.9	95.2	78.2	45.1	19.7	–
Y_9200R	SS–260	115' RT	92+00 –Y–	3.5–5.0'	A–7–6(9)	46	19	21.7	22.9	25.2	30.2	98.1	85.2	58.8	22.3	–
Y5RPA_2600R	SS–349	15' RT	26+00 –Y5RPA–	0.0–1.5'	A–2–7(0)	47	11	40.5	25.0	26.6	7.9	66.4	47.3	26.0	25.0	–
RPC_2400R	SS–100	15' RT	23+83 –RPC–	8.5–10.0'	A–6(5)	33	11	14.2	30.6	28.4	26.8	99.8	92.8	63.0	29.9	6.2
RPC_2600R	SS–111	21' RT	25+83 –RPC–	8.5–10.0'	A–5(0)	27	NP	17.8	44.7	21.6	15.8	97.5	90.0	44.3	26.4	–
RPC_2600R	SS–112	21' RT	25+83 –RPC–	13.5–15.0'	A–7–6(6)	43	16	23.3	25.5	21.2	29.9	94.4	79.8	53.4	22.7	–
RPC_3400R	SS–132	130' RT	33+83 –RPC–	3.5–5.0'	A–4(0)	33	NP	40.0	22.7	19.2	18.1	96.5	70.0	40.7	16.8	–
RPC_3400R	SS–135	130' RT	33+83 –RPC–	13.5–15.0'	A–2–4(0)	35	NP	37.3	36.7	23.9	2.0	81.6	60.5	27.9	10.4	–
RPC_3800R	SS–198	90' RT	37+83 –RPC–	18.5–20.0'	A–2–4(0)	35	NP	48.3	34.5	8.2	9.0	95.3	60.1	22.1	6.6	–
RPC_3800R	BULK 1	90' RT	37+83 –RPC–	1.0–6.0'	A–4(1)	35	4	23.4	29.4	28.9	18.3	95.4	81.0	52.0	17.5	–

LAB TECHNICIAN: AMANDA SUTTLE, P.G. NCDOT CERTIFICATION NO. 112–09–1003

LAB TECHNICIAN: DILLON KESTNER NCDOT CERTIFICATION NO. 135–01–0816

DATE: 9-15-14

SOIL TEST RESULTS

BORING NO.	SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
								C. SAND	F. SAND	SILT	CLAY	10	40	200		
RPDB_4400R	SS–355	80' RT	44+00 –RPDB–	0.0–1.5'	A–1–b	40	NP	41.2	34.7	22.3	1.8	44.9	32.1	14.2	8.6	–
RPDB_4400R	SS–356	80' RT	44+00 –RPDB–	3.5–5.0'	A–2–5(0)	37	NP	40.1	32.9	25.2	1.8	73.1	52.3	24.4	9.7	–
RPDB_4400R	BULK 2	80' RT	44+00 –RPDB–	1.0–6.0'	A–4(0)	34	2	20.5	44.2	25.0	10.3	96.8	86.0	44.4	16.3	–
RPDB_4600L	SS–366	40' LT	46+00 –RPDB–	0.0–1.5'	A–2–7(0)	42	12	33.8	31.6	22.5	12.1	62.4	48.5	25.8	9.3	–
RPDB_4800L	SS–361	35' LT	48+00 –RPDB–	0.0–1.5'	A–2–4(0)	41	NP	34.1	33.7	24.2	8.1	85.4	66.6	33.4	14.0	–
Y6_1500L	SS–324	N/A	N/A	0.0–1.5'	A–4(0)	40	NP	33.6	24.1	28.4	13.9	95.3	78.2	43.7	14.7	–
Y6_2100L	SS–340	N/A	N/A	3.5–5.0'	A–5(0)	46	NP	27.5	36.6	26.1	9.8	94.1	77.7	41.8	18.0	–
Y6_3500L	SS–360	N/A	N/A	3.5–5.0'	A–4(0)	39	NP	27.5	42.6	23.8	6.0	98.1	82.6	37.2	13.0	–
Y6_3500L	BULK 3	N/A	N/A	1.0–6.0'	A–5(0)	41	3	27.5	32.8	27.4	12.2	93.8	77.6	44.4	22.2	–
Y6_3700L	SS–354	N/A	N/A	0.0–1.5'	A–6(7)	39	12	9.0	34.7	26.3	29.9	97.6	93.2	64.5	24.3	–

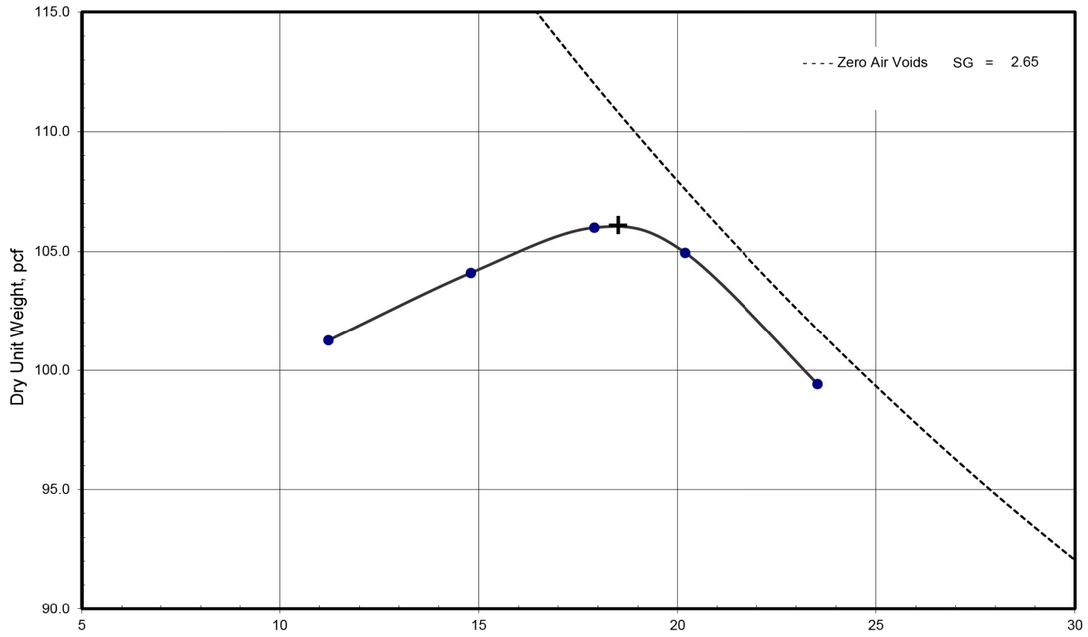
LAB TECHNICIAN: AMANDA SUTTLE, P.G. NCDOT CERTIFICATION NO. 112–09–1003

LAB TECHNICIAN: DILLON KESTNER NCDOT CERTIFICATION NO. 135–01–0816

DATE: 9-15-14

PROJECT REFERENCE NO.	SHEET NO.
I–2513AA/AB	118

Laboratory Compaction Characteristics of Soil Using Standard Effort



Optimum Moisture Content	**18.5**	%
Maximum Dry Unit Weight	**106.1**	pcf
Cumulative material retained on: 3/4 in. sieve		%
3/8 in. sieve		%
#4 sieve		%

Preparation	ASTM moist preparation
Type of rammer	Manual - 5.5lbf (24.5N)
Test Specfication / Method	ASTM D698-12e2-method A
Specific gravity - D854 water pycnometer	2.65 Historical
Coarse Aggregate Specific Gravity -	

Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Brown Fine to Coarse Sandy SILT (A-4(1))	17.5	35	4	52.0		A-4(1)

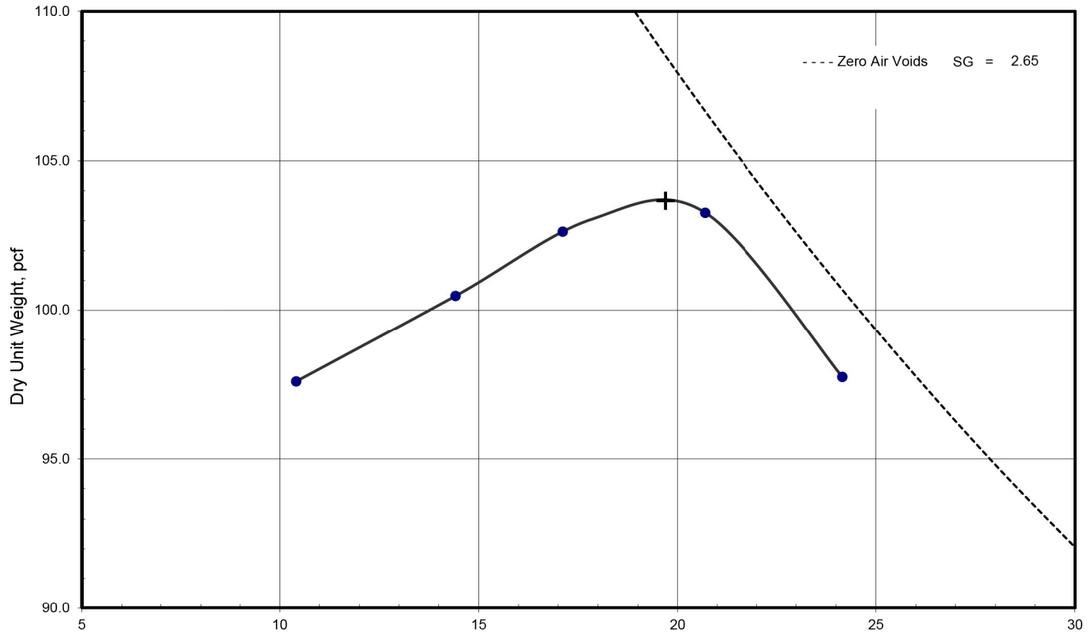
Project: I-2513A - I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)
Client: AECOM
Sample / Source RPC_3800R
Test Reference/No.:

Project No.: 31:4137
Depth (ft.): 1 - 6
Sample No.: BULK 1
Date Reported: 8/26/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

DATE: 9-15-14

Laboratory Compaction Characteristics of Soil Using Standard Effort



Optimum Moisture Content	**19.7**	%
Maximum Dry Unit Weight	**103.7**	pcf

Cumulative material retained on:

3/4 in. sieve	%
3/8 in. sieve	%
#4 sieve	%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	AASHTO T 99-19-method A	
Specific gravity - D854 water pycnometer	2.65	Historical
Coarse Aggregate Specific Gravity -	2.65	Historical

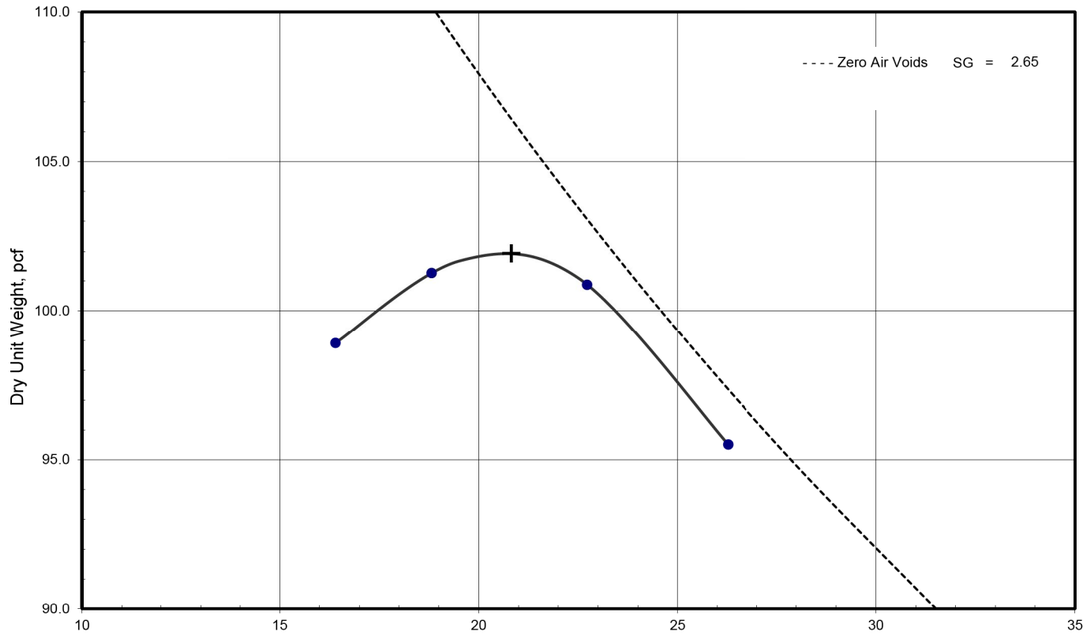
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Brown Fine to Coarse Sandy SILT (A-4(0))	16.3	34	2	44.4		A-4(0)

Project: I-2513A - I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)
Client: AECOM
Sample / Source RPDB_4400R
Test Reference/No.:

Project No.: 31:4137
Depth (ft.): 1 - 6
Sample No.: BULK 2
Date Reported: 8/26/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil Using Standard Effort



Optimum Moisture Content	**20.8**	%	
Maximum Dry Unit Weight	**101.9**	pcf	
Cumulative material retained on:	3/4 in. sieve	%	
	3/8 in. sieve	%	
	#4 sieve	%	

Preparation	ASTM moist preparation
Type of rammer	Manual - 5.5lbf (24.5N)
Test Specfication / Method	AASHTO T 99-19-method A
Specific gravity - D854 water pycnometer	2.65 Historical
Coarse Aggregate Specific Gravity -	

Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Brown Clayey SILT (A-5(0))	22.2	41	3	44.4		A-5(0)

Project: I-2513A - I-26/I-40/I-240 Interchange to SR 3548 (Haywood Road)
Client: AECOM
Sample / Source Y6_3500L
Test Reference/No.:

Project No.: 31:4137
Depth (ft.): 1 - 6
Sample No.: BULK 3
Date Reported: 8/26/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

DATE: 9-15-14