REFERENCE: U-4700CB

PROJECT: N/A

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	593+50 TO 622+47	4-6	N/A
-RPA-	5+00 TO 9+83	6	N/A
-Y38NE-	19+00 TO 25+85	5-6	N/A
-Y38SW-	10+00 TO 18+38	5-6	N/A

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	593+50 TO 622+00	7-19
-RPA-	7+50 TO 9+00	20
-Y38NE-	20+50 TO 24+50	21-23
-Y38SW-	16+50	24

APPENDICES

APPENDIX	TITLE	SHEETS
A	LABORATORY TEST RESULTS	25-26

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *CALDWELL*

PROJECT DESCRIPTION *US-321 AT SR 1809 (PINE MOUNTAIN ROAD) INTERSECTION PROJECT*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CB	1	28

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.

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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.

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SIGNATURE 7/22/21 DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-4700CB	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	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
MATERIAL PASSING #40 LL	—		—	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PI	6 MX		NP	10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
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
GRAIN SIZE 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) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
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
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [ ] 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 VAUGHN & MELTON.

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

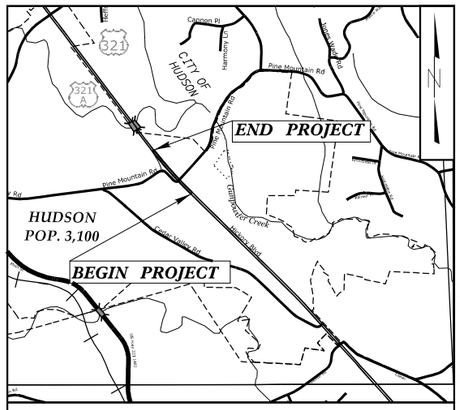
FIAD = FILLED IN AFTER DRILLING

DATE: 8-15-14

09/08/99

TIP PROJECT: U-4700CB

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



VICINITY MAP

25% PRELIMINARY PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

LOCATION: US 321 (HICKORY BLVD) AT SR 1809 (PINE MOUNTAIN ROAD)

TYPE OF WORK: DRAINAGE, GRADING, PAVING AND SIGNALS

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Boone, NC 828-355-9933
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5660
Middlesboro, KY 606-248-6000
Atlanta, GA 770-627-3509

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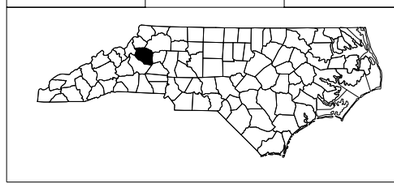
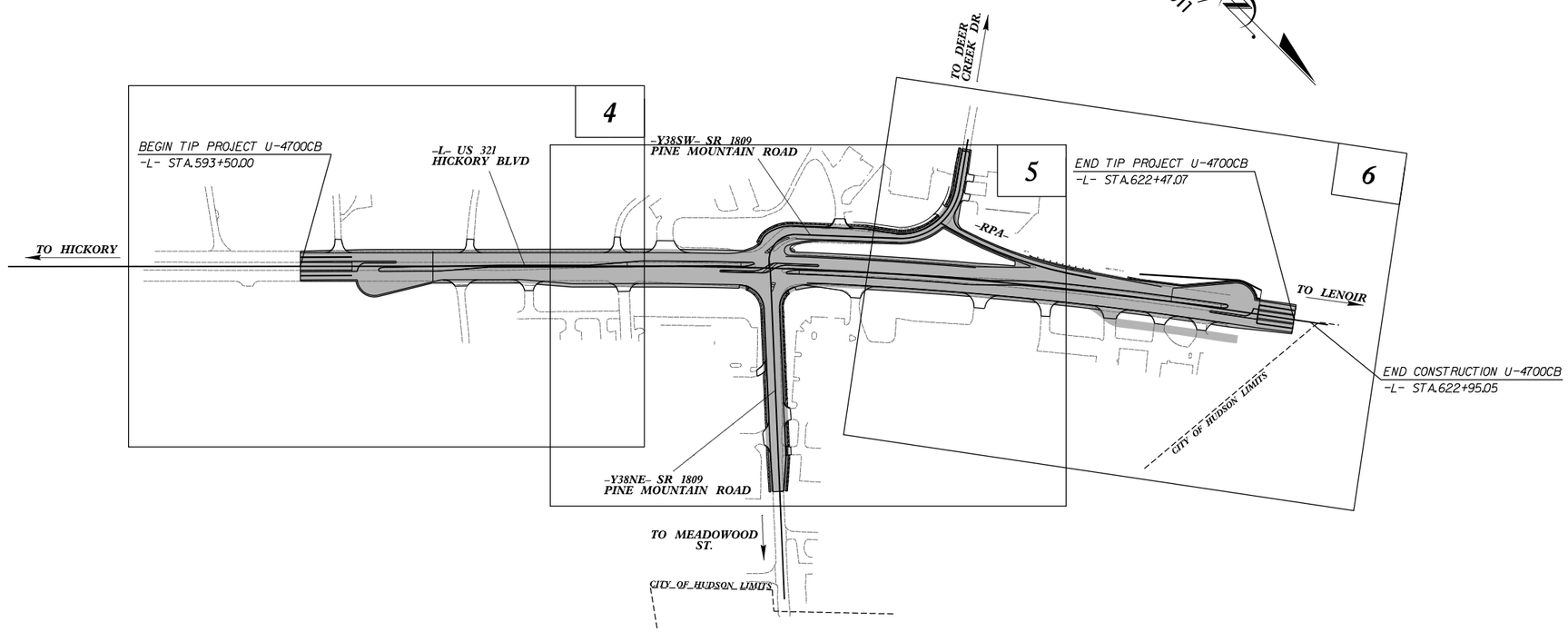
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4700CB	3	28

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
35993.1.11	NHF-321(18)	P.E.



NAD 83 / NA 2011



Clearing on this project shall be performed to the limits established by Method III.
This project is within the municipal boundaries of the city of Hudson.
This is a partial Controlled-Access Project with access being limited to points as shown on the plans.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2019 = 34100
ADT 2039 = 45900
K = 8 %
D = 55 %
T = 6 % *
V = 60 MPH
* TTST = 3 DUAL 3
FUNC CLASS =
PRINCIPAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CB = 0.549 MI.
LENGTH STRUCTURE PROJECT U-4700CB = 0.000 MI.
TOTAL LENGTH OF PROJECT U-4700CB = 0.549 MI.

Prepared In the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
JUNE 2019

REECE SCHULER, PE, PLS
PROJECT ENGINEER

JARED PHILPOT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

7/30/2019 12:45:57 PM
V:\Asheville\transportation\31535-13 U4700CB\Roadway\Proj\U4700CB_Rdy_TSH.dgn
User:jddaves

ECS Southeast, LLP

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

July 22, 2021

WBS NO:	N/A
TIP NO:	U-4700CA
COUNTY:	Caldwell
DESCRIPTION:	US 321 at Pine Mountain Road (SR 1809) Intersection Improvements
SUBJECT:	**Geotechnical Report – Inventory**

Project Description

The project consists of interchange improvements along US 321 at Pine Mountain Road (SR 1809) in Caldwell County, North Carolina. Improvements include widening and resurfacing US 321 (-L-) and constructing two U-turn bulb outs along the L-alignment to the north and south of the Pine Mountain Road. Other improvements also consist of slightly widening and resurfacing Pine Mountain Road (-Y38SW- and -Y38NE-) and associated ramps (-RPA-). The project is approximately 0.55 miles in length, measured along the US 321 (-L-) alignment.

US 321 will be widened in the vicinity of SR 1809 (Pine Mountain Road) to accommodate 2 through lanes in each direction, with either a 30-foot wide median or a turning lane. Two (2) corresponding U-Turn bulb outs to the north and south of the intersection will also be constructed along the -L- alignment. Pine Mountain Road (-Y38NE- and -Y38SW- alignments) will consist of two 11-foot wide travel lanes in each direction along the -Y38NE- alignment and will have one 12-foot wide travel lane in each direction along the -Y38SW- alignment. Ramp A (-RPA-) will consist of one 12-foot wide travel lane.

At the beginning of the project, the proposed road grade along the -L- alignment centerline start at approximate elevation 1171 feet and slopes downward to a low elevation of approximately 1168 feet in the vicinity of Station 597+50. At Station 597+50, the road slopes upwards to a high of approximate elevation 1202 feet around Station 614+00. At Station 614+00 the alignment slopes downwards to approximate elevation 1186 feet at the end of the project. Soils encountered in the proposed construction areas generally consisted of roadway embankment underlain by residual soils. Mass grading will generally be limited to the widened areas with cut depths on the order of approximately 8 feet or less and fill heights on the order of 22 feet or less.

The following roads are included as part of this exploration:

Line	Road Name	Station (±)	Offsets
-L-	US 321	593+50 to 622+47	LT to RT
-Y38SW-	Pine Mountain Road (SR 1809)	10+00 to 18+38	LT to RT
-Y38NE-	Pine Mountain Road (SR 1809)	19+00 to 25+85	LT to RT
-RPA-	Ramp A	5+00 to 9+83	LT to RT

A geotechnical field investigation was performed by ECS from February to March 2018. During this time period, a total of twenty-five (25) hand auger borings supplemented with Dynamic Cone Penetrometer (DCP) tests were performed along the -L-, -Y38SW-, -Y38NE-, and -RPA- alignments. Representative soil samples were collected for visual classification in the field and for analysis by ECS's testing laboratory.

Additionally, ECS performed a geotechnical field investigation along the proposed Retaining Wall No. 1 located between -L- Station 617+85 and 621+41, LT in September 2018. The Structure Subsurface Investigation Report for that exploration was issued as a separate report in December 2018. A total of three (3) soil test borings were performed during that investigation and pertinent subsurface information is included in this inventory.

Physiography and Geology

In accordance with the Geologic Map of North Carolina, 1985, the project corridor is located in the Piedmont Physiographic Provinces of North Carolina. Piedmont soils are the residual product of in-place chemical weathering of rock that is similar to the rock presently underlying the site. Bedrock at the site is mapped predominantly as mica schist, with local lenses of quartz schist, biotite gneiss, amphibolite, and phyllite.

Soil Properties

Soils within the area of this project have been divided into two categories: roadway embankment, and residual soils.

Roadway Embankment: Roadway Embankment (R.E.) soils generally consist of loose to medium dense silty fine to coarse sand (A-2-4), stiff to very stiff fine to coarse sandy silt (A-4), very soft to very stiff clayey silt (A-5), and medium stiff silty clay (A-7-5). Trace to little amounts of organics, mica, and gravel were

encountered throughout the roadway embankment. The roadway embankment extends to depths ranging from approximately 1.0 to 6.0 feet below existing grades.

Residual Soils: Residual soils throughout the project corridor are derived from the weathering of the underlying parent bedrock. A majority of the residual soils encountered generally consisted of loose to medium dense silty fine to coarse sand (A-2-4), loose to medium dense clayey fine to coarse sand (A-2-6), very soft to very stiff fine to coarse sandy silt (A-4), medium stiff to very stiff clayey silt (A-5), soft to stiff fine to coarse sandy clay (A-6), and soft to very stiff silty clay (A-7-5). Laboratory testing of the residual soils indicated Plasticity Indices (PI's) ranging from 3 to 10 for the silty (A-4) soils, and PI's ranging from 14 to 32 for the clayey (A-6, A-7-5) soils.

Groundwater Properties

Groundwater levels were measured in the borings both immediately after drilling (0-hr reading) and after a stabilization period of at least 24 hours. At the time of drilling, water was encountered in 4 borings at depths ranging from approximately 4.0 to 8.9 feet below existing grades, which corresponds to elevations ranging from 1,129.3 feet to 1,178.5 feet. The remaining borings were dry when groundwater readings were taken. After a stabilization period of at least 24 hours, groundwater was encountered in the same 4 borings at depths ranging from approximately 3.5 to 5.2 feet below existing grades which corresponds to elevations ranging from 1,132.4 feet to 1,179.8 feet. The recovered soil samples were generally described as moist above the groundwater level and moist to wet below the groundwater level

Areas of Special Geotechnical Interest

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

Line	Station (±)	Offsets
-L-	596+25 to 597+75	LT to RT
-Y38NE-	24+25 to 25+50	LT to RT

2) 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
-L-	597+75 to 599+75	LT to RT

3) 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
-L-	596+25 to 597+75	LT to RT

4) Shallow Rock: The following areas were found to contain rock above or within 6 feet of proposed subgrade:

Line	Station (±)	Offsets
-L-	618+75 to 621+75	LT to RT

5) Hand Auger Refusal: The following areas encountered hand auger refusal above or within 6 feet of proposed subgrade. Hand auger refusal could indicate areas of rocky embankment fill, hard or dense residual soils layers, weathered rock or crystalline rock.

Line	Station (±)	Offsets
-L-	593+50 to 596+25	LT to RT
-L-	598+75 to 601+00	LT
-L-	603+00 to 605+00	LT
-L-	608+00 to 610+00	RT
-L-	618+25 to 622+47	LT to RT
-Y38SW-	16+00 to 18+38	RT

PROJECT REFERENCE NO.	SHEET NO.
U-4700CB	4

SITE PLAN

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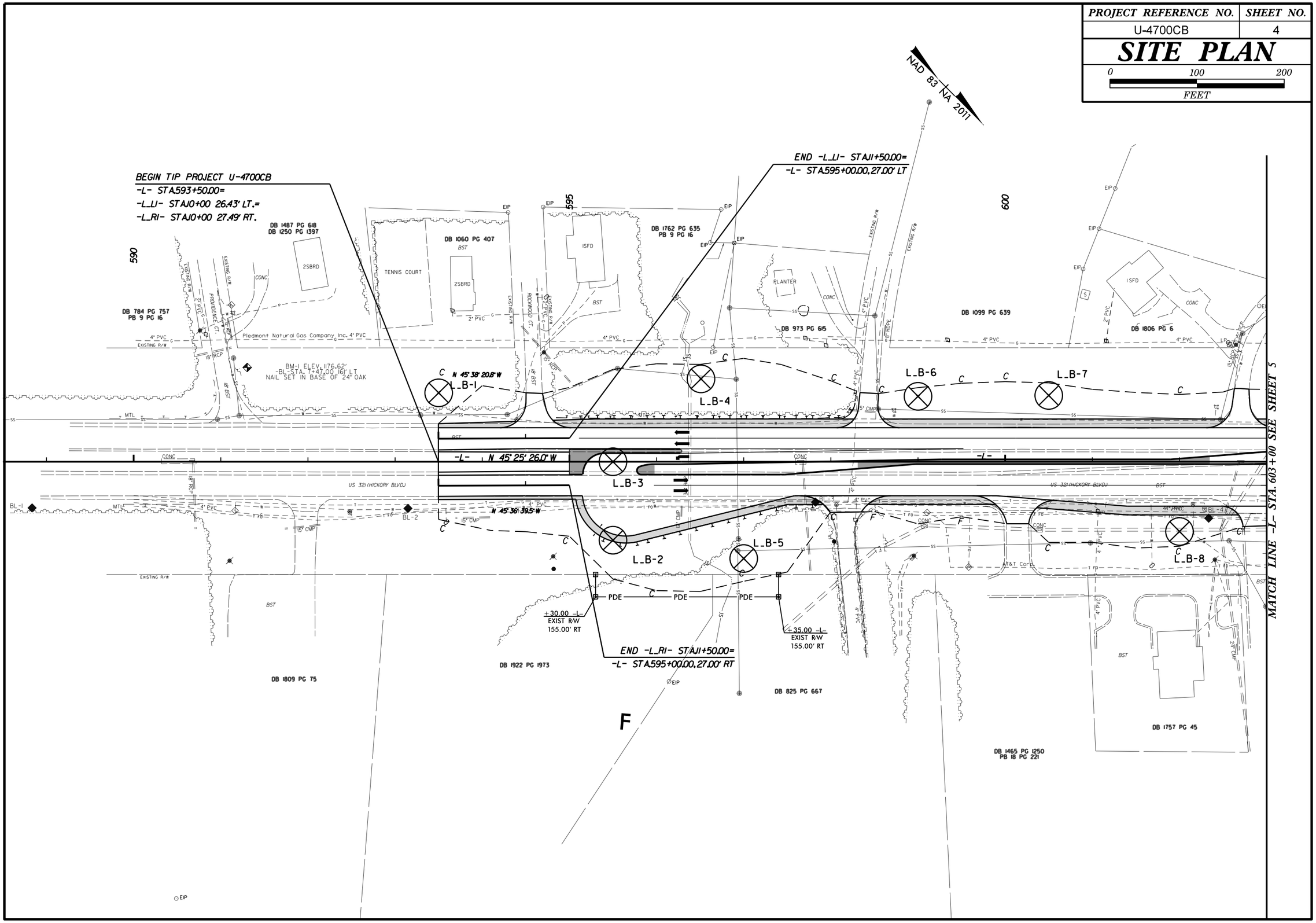
FEET



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SITE PLAN

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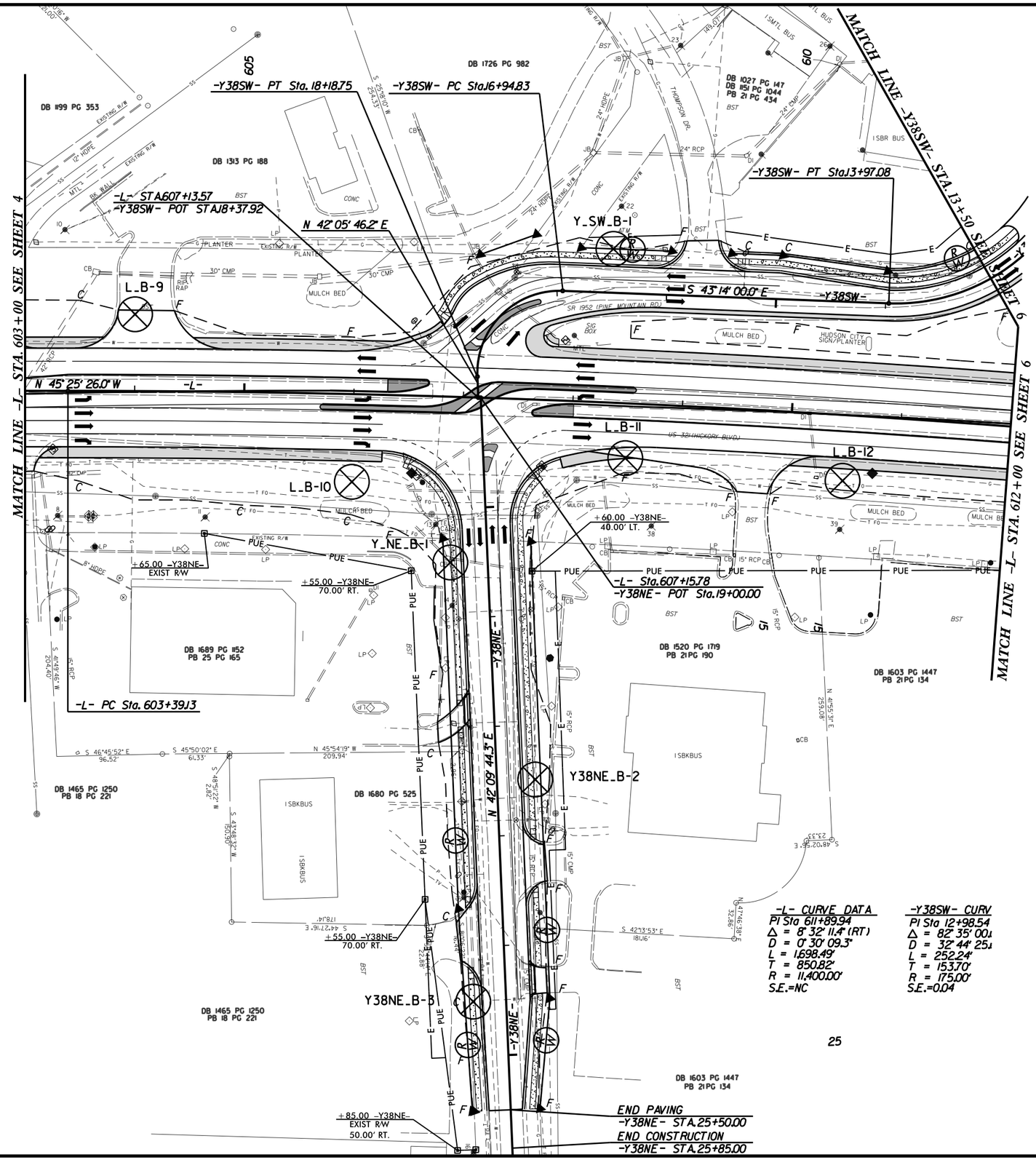

-L- CURVE DATA

PI Sta 611+89.94
Δ = 8° 32' 11.4" (RT)
D = 0° 30' 09.3"
L = 1,698.49'
T = 850.82'
R = 11,400.00'
S.E.=NC

-Y38SW- CURV

PI Sta 12+98.54
Δ = 82° 35' 00.
D = 32° 44' 25.
L = 252.24'
T = 153.70'
R = 175.00'
S.E.=0.04

PROJECT REFERENCE NO.	SHEET NO.
U-4700CB	6

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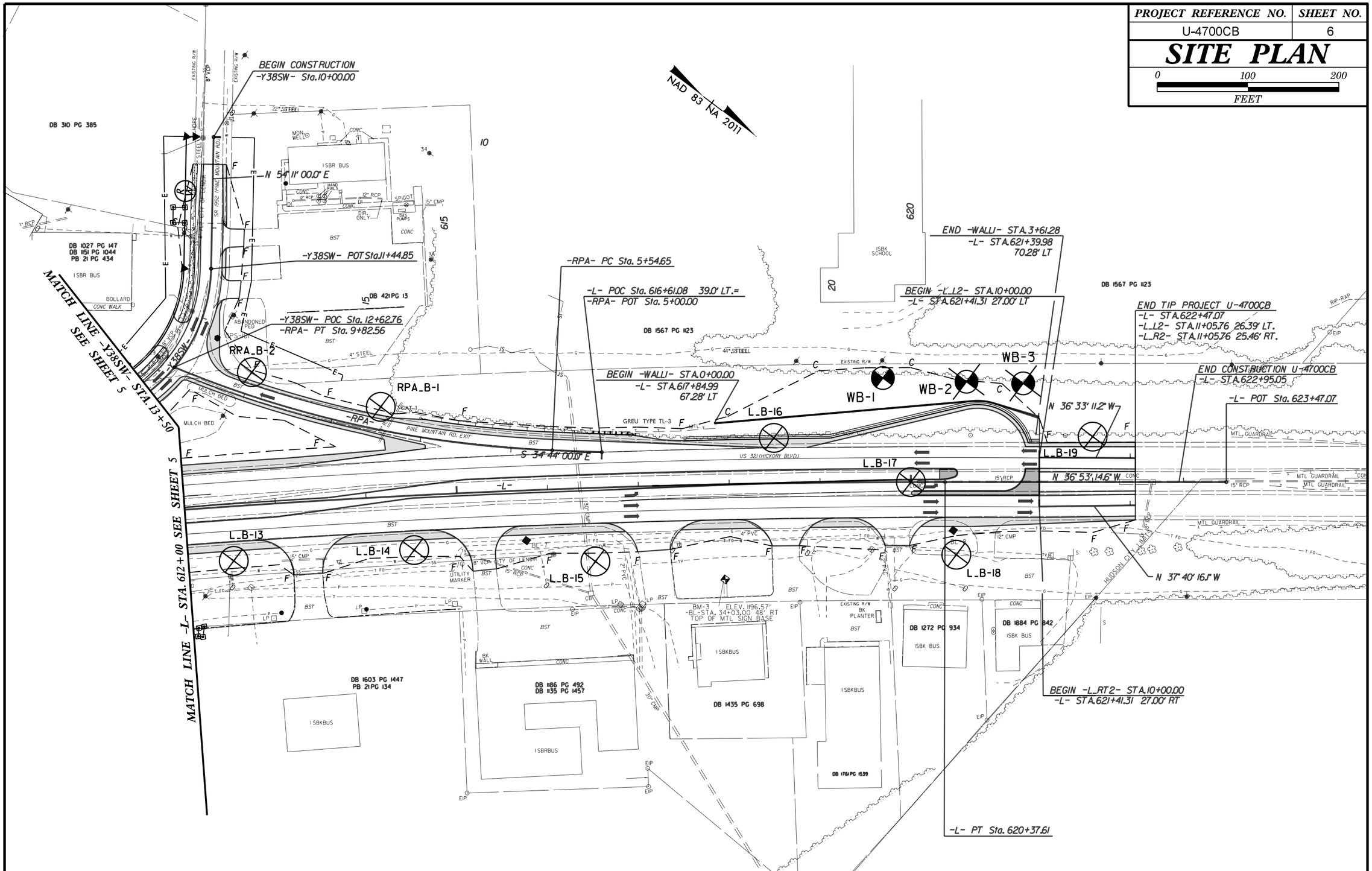

-L- CURVE DATA
PI Sta 611+89.94
Δ = 8° 32' 11.4" (RT)
D = 0° 30' 09.3"
L = 1,698.49'
T = 850.82'
R = 11,400.00'
S.E. = NC

-Y38SW- CURVE DATA
PI Sta 12+98.54
Δ = 82° 35' 00.0" (RT)
D = 32° 44' 25.6"
L = 252.24'
T = 153.70'
R = 175.00'
S.E. = 0.04

-RPA- CURVE DATA
PI Sta 7+70.90
Δ = 20° 25' 52.3" (RT)
D = 4° 46' 28.7"
L = 427.91'
T = 216.25'
R = 1,200.00'

-WALL1- CURVE DATA
PI Sta 2+97.22
Δ = 21° 16' 03.4" (RT)
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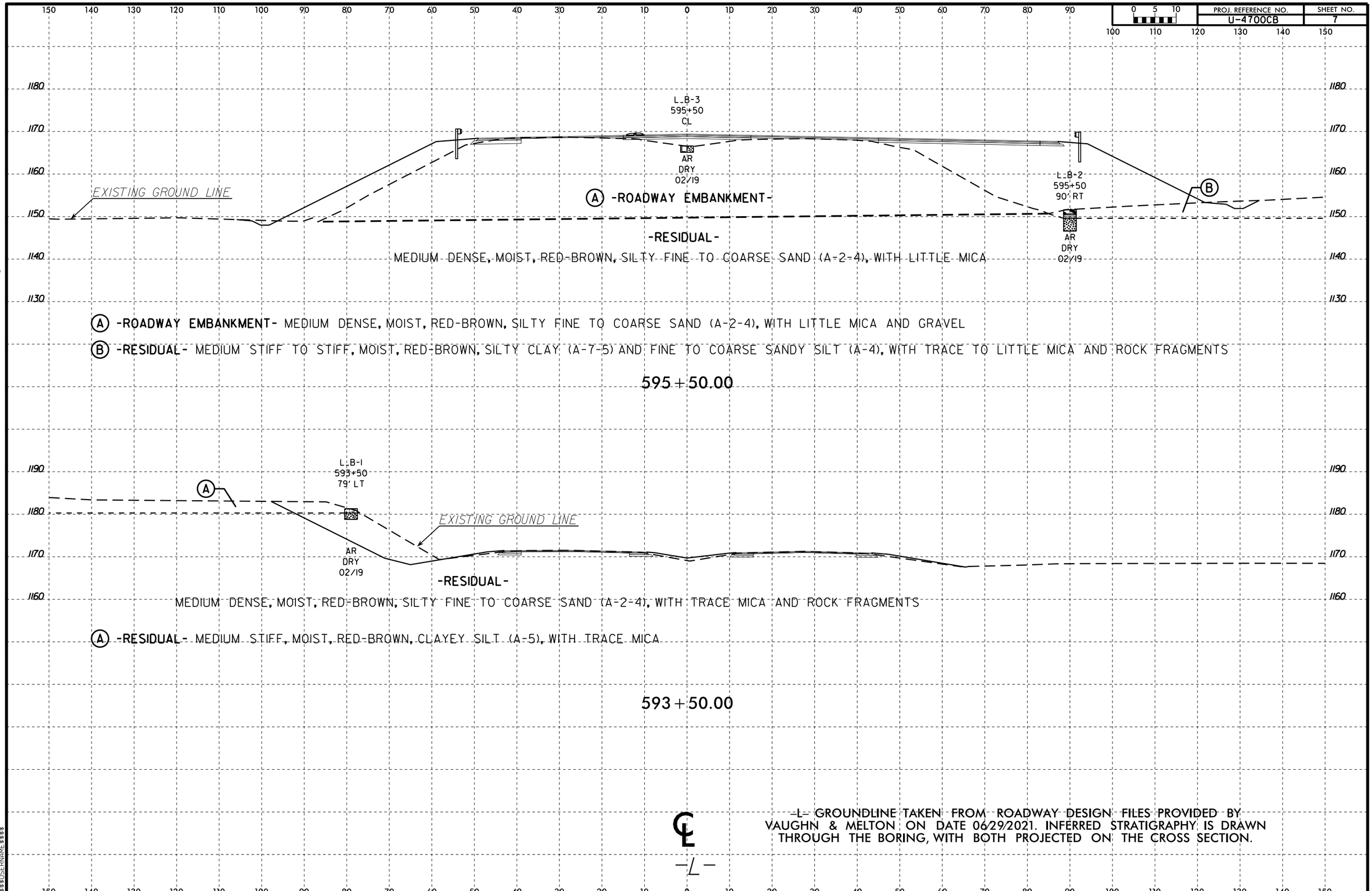

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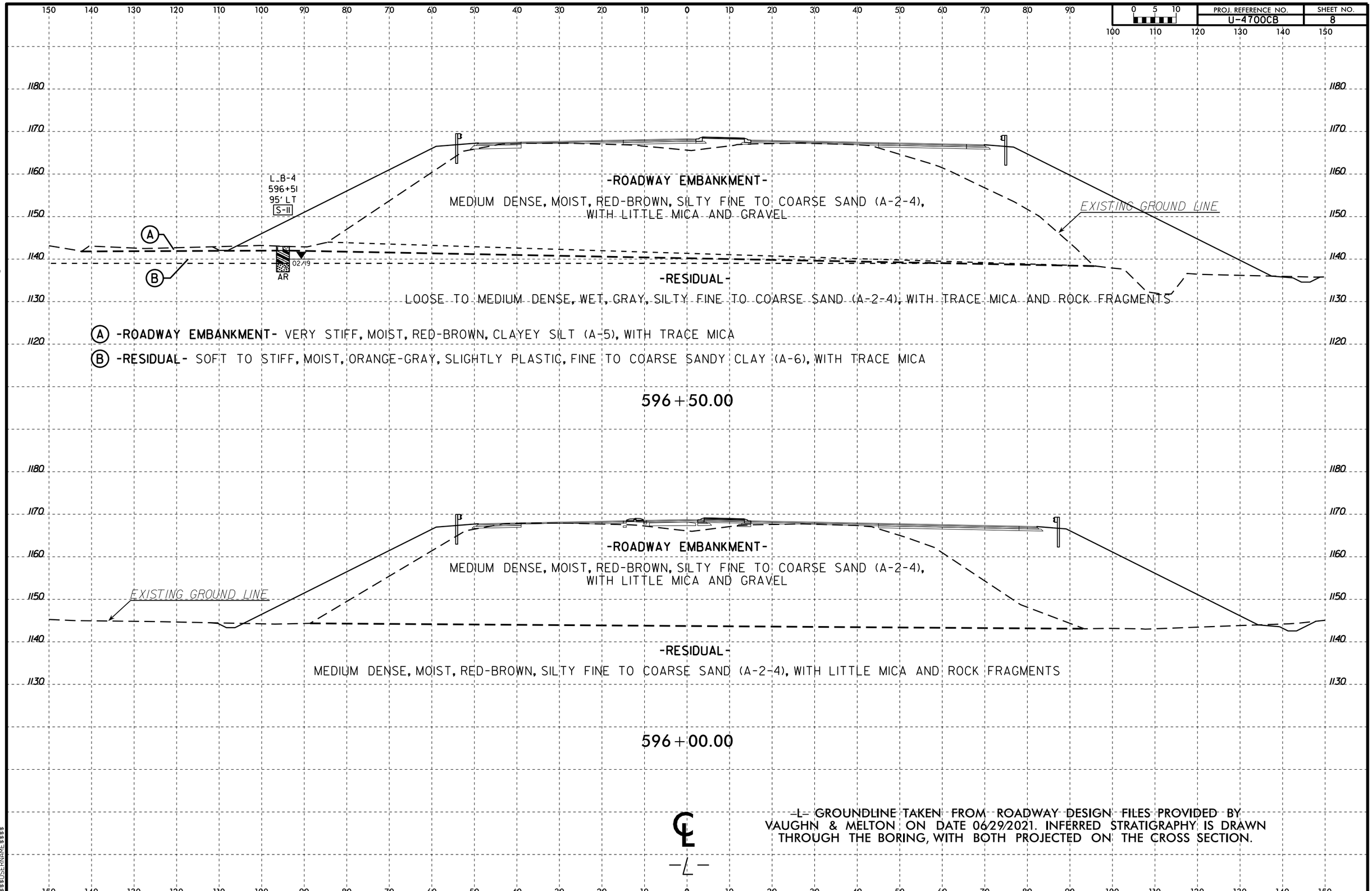

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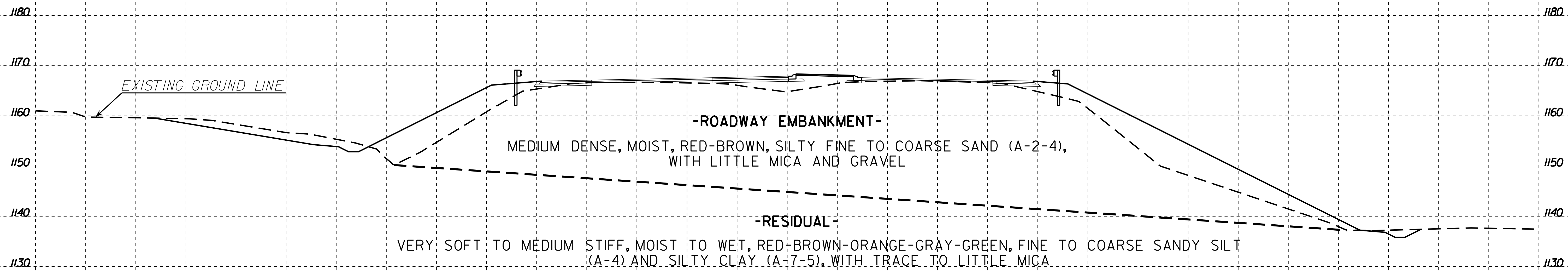

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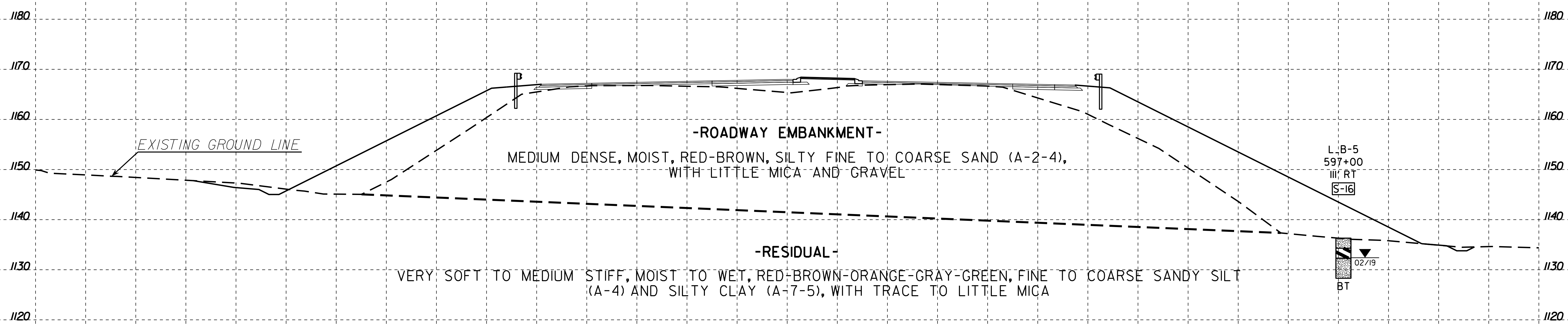

597+00.00

CL

-L-

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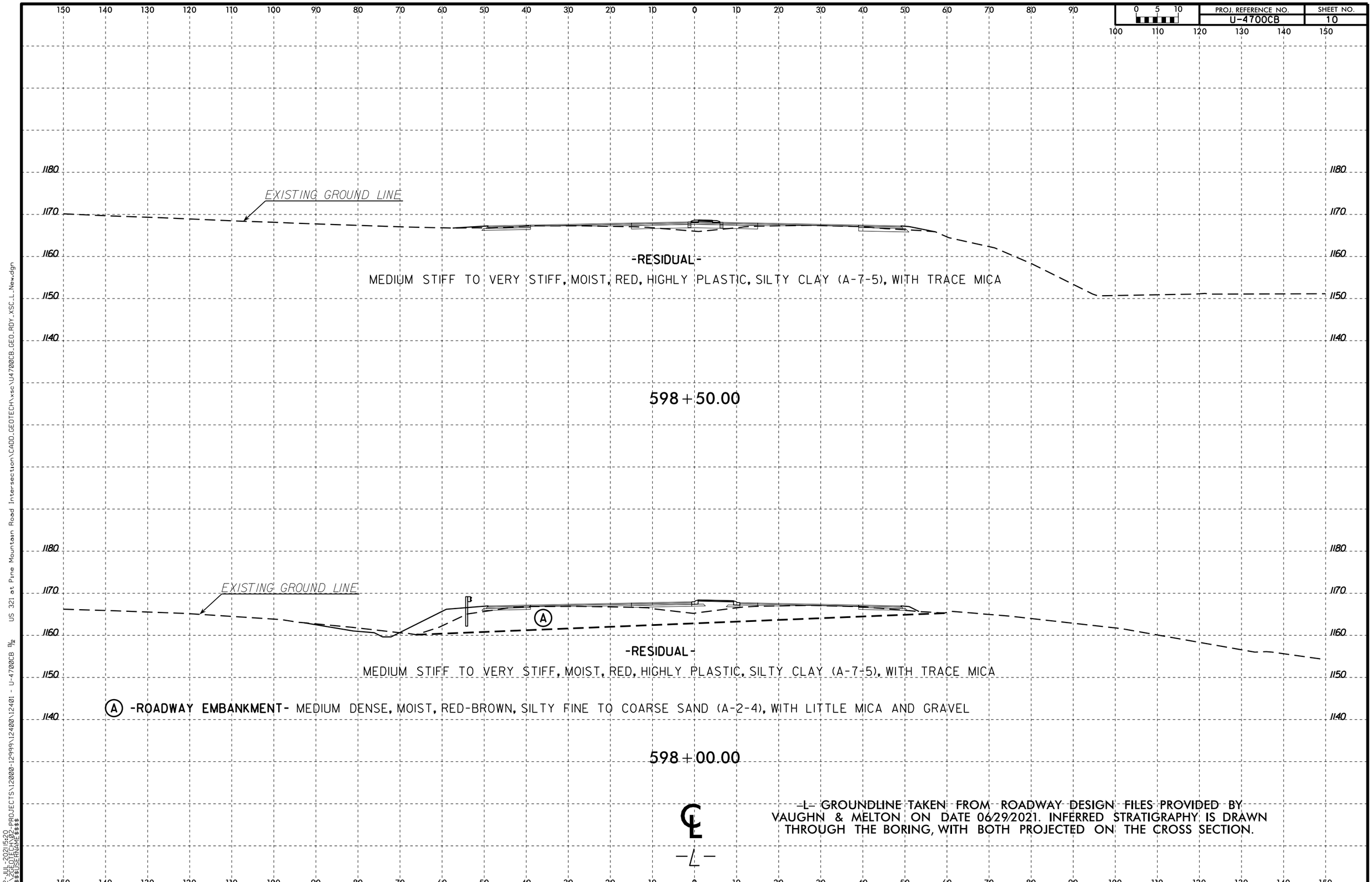

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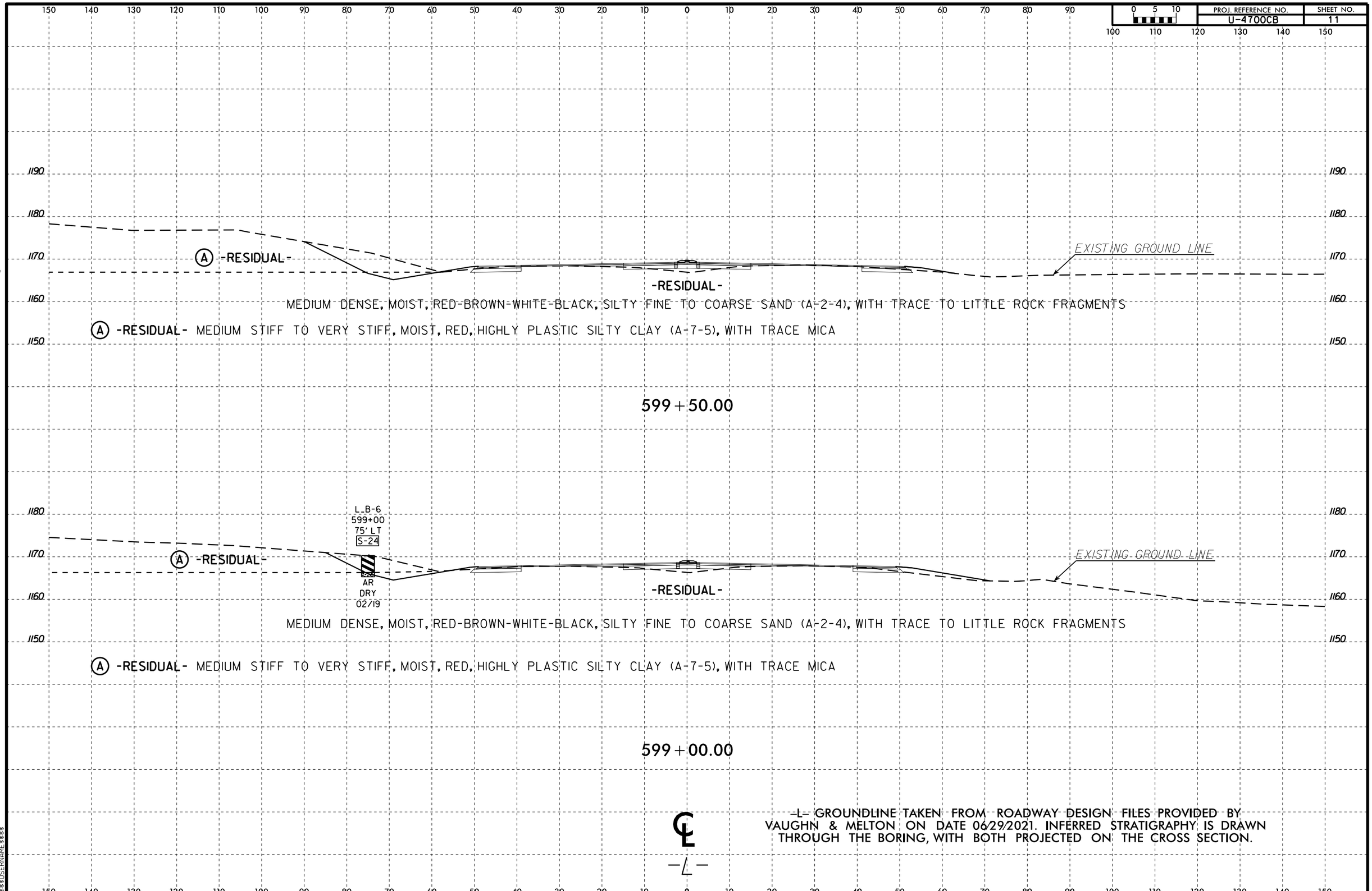

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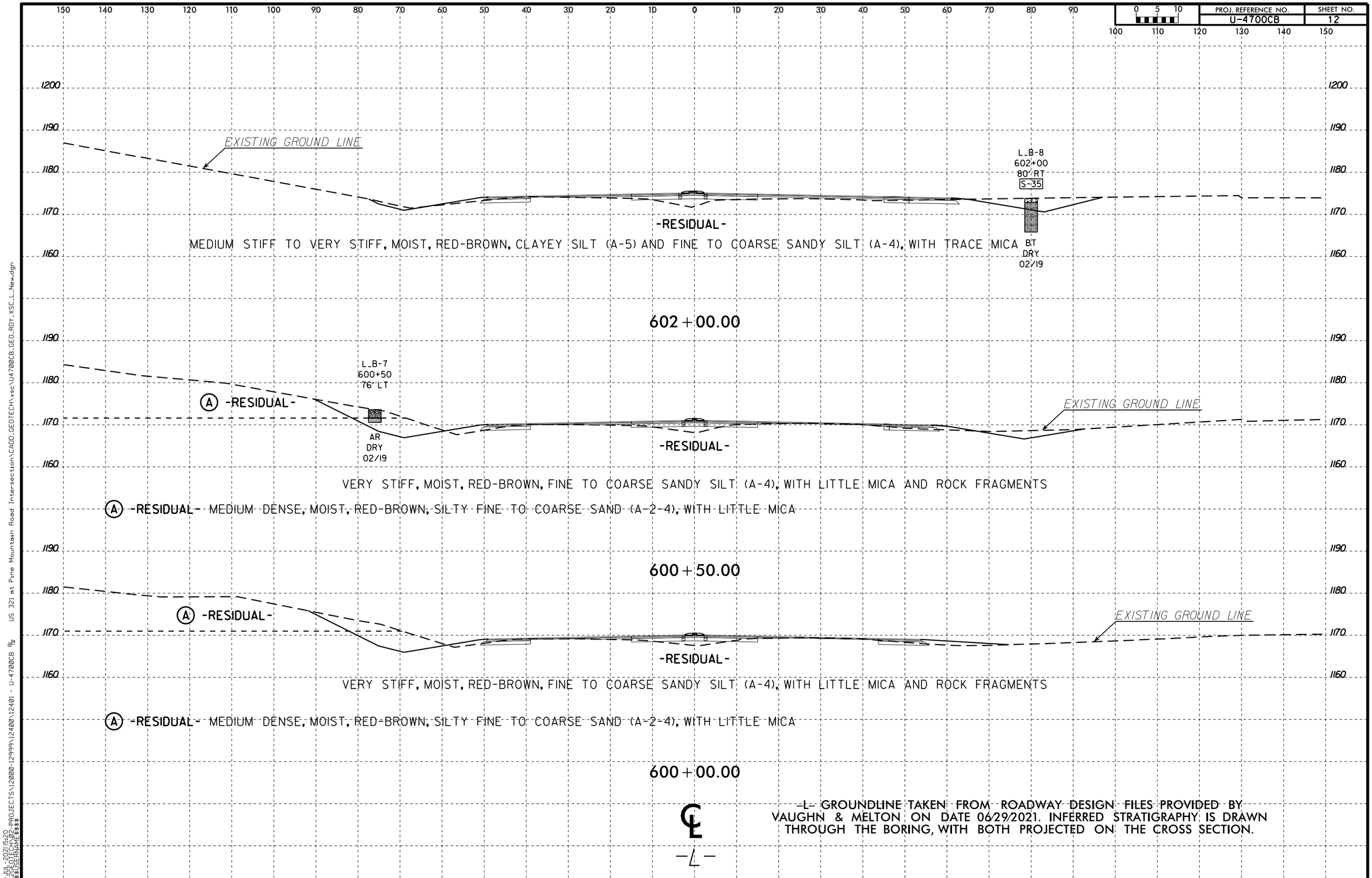

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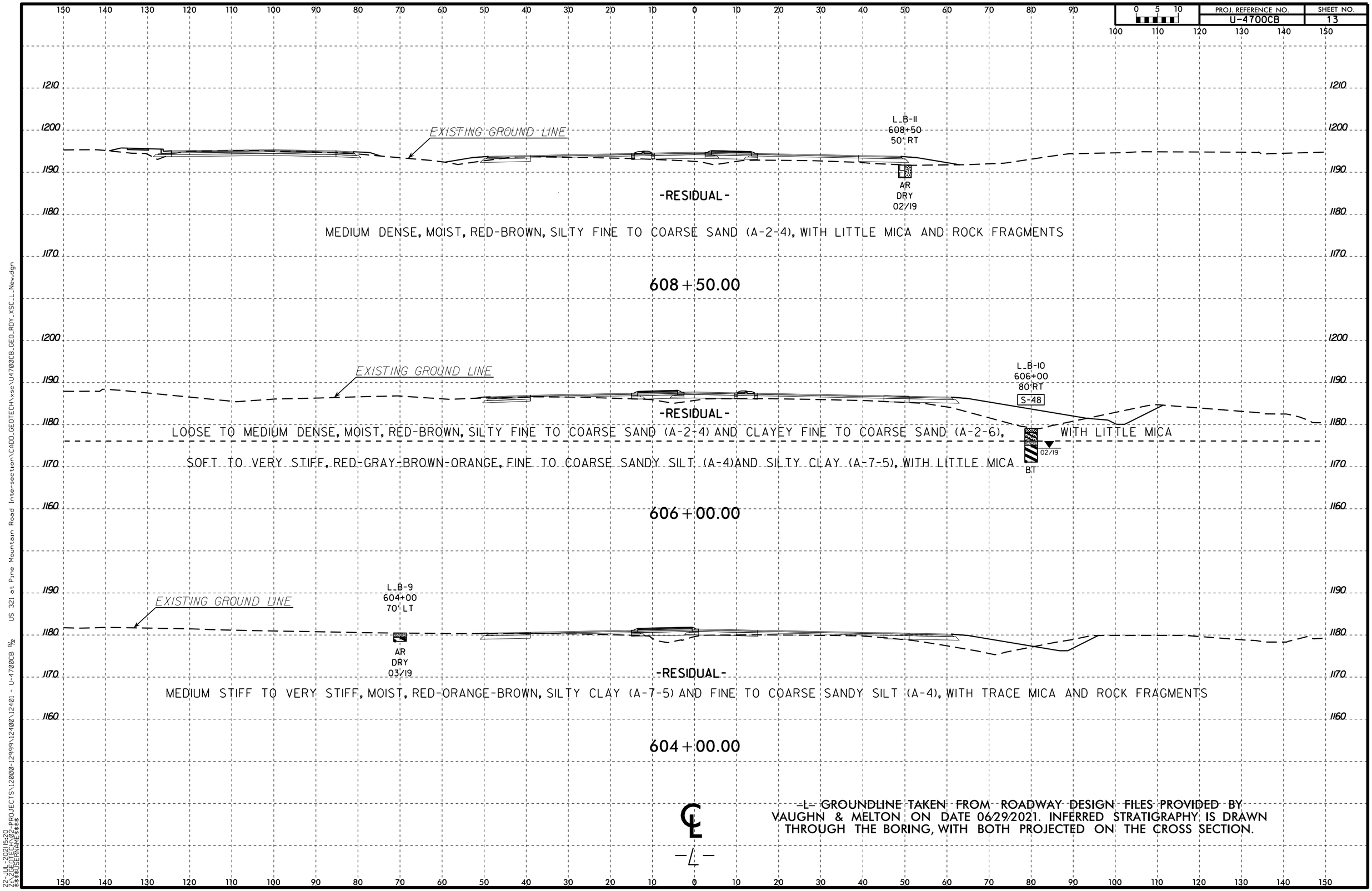

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US 321 at Pine Mountain Road Intersection

U-4700CB 1/2

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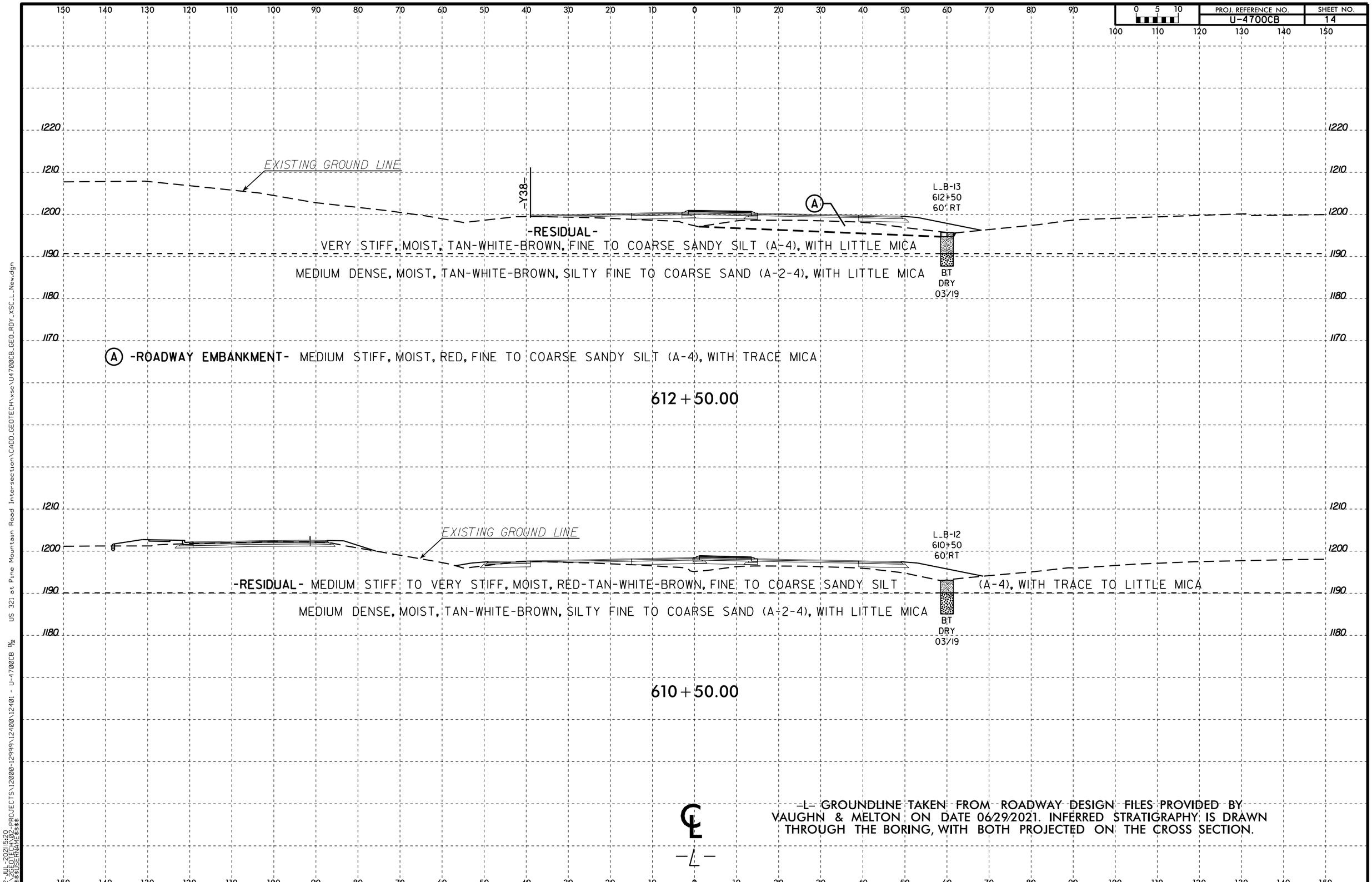

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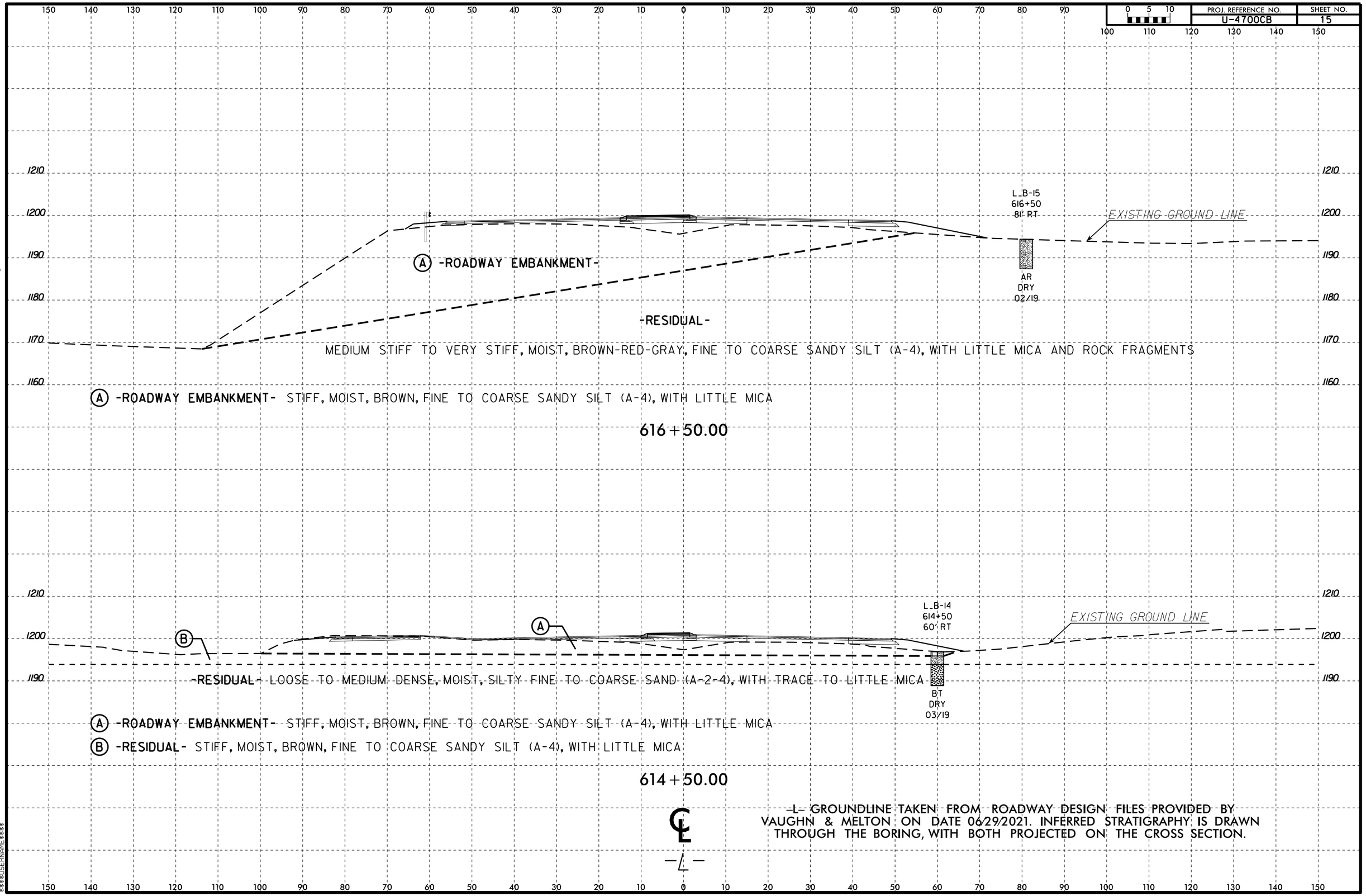

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US 321 at Pine Mountain Road Intersection

U-4700CB 13/12

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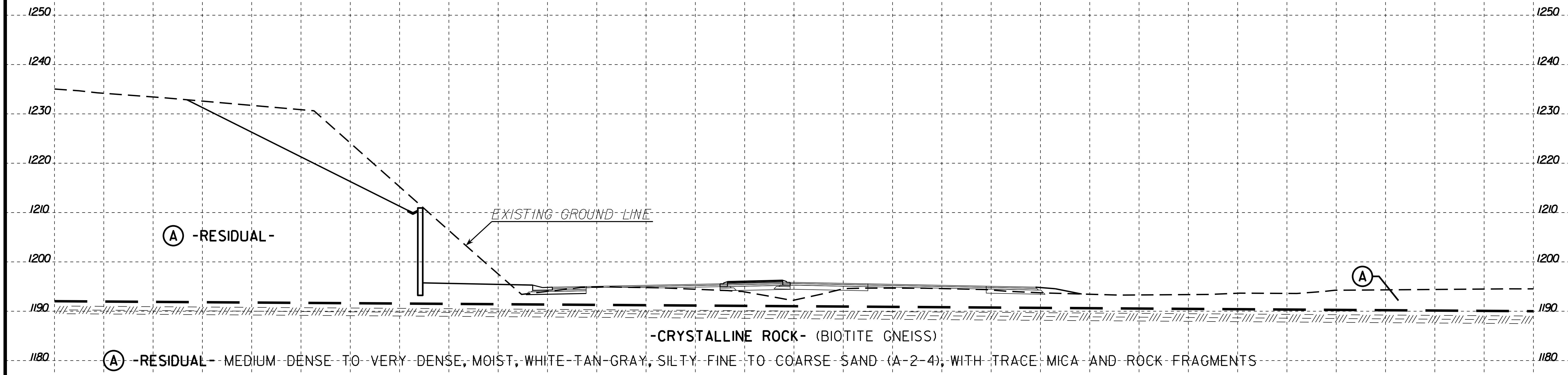

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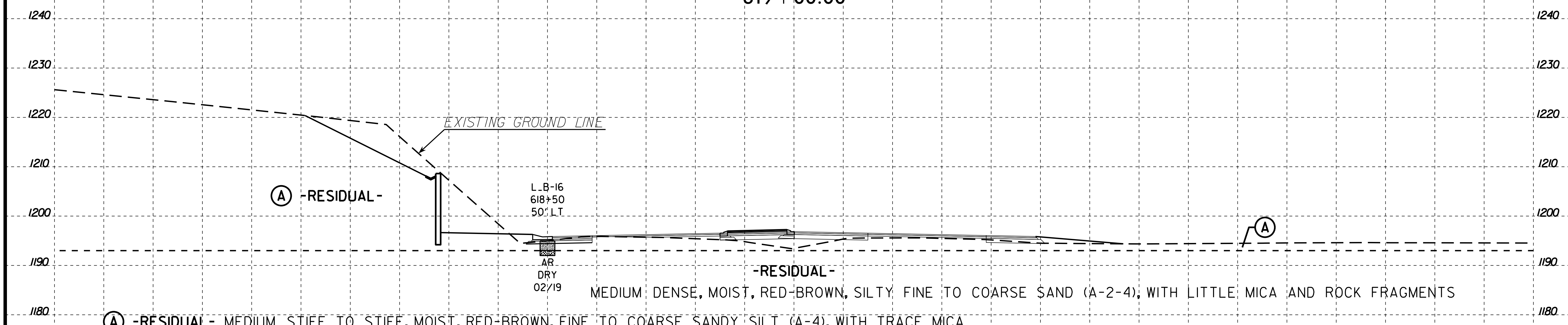

618 + 50.00

CL

-L-

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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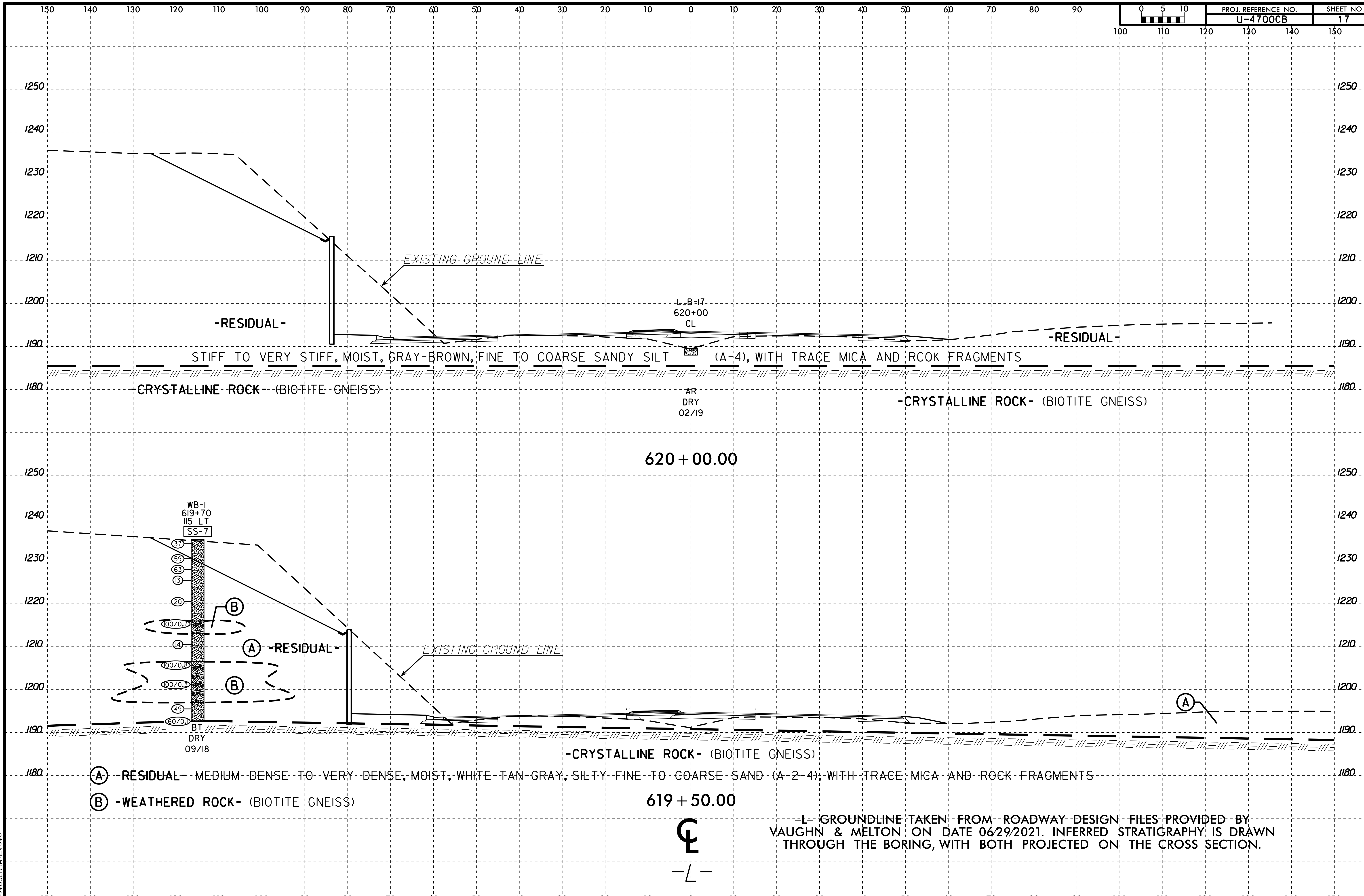
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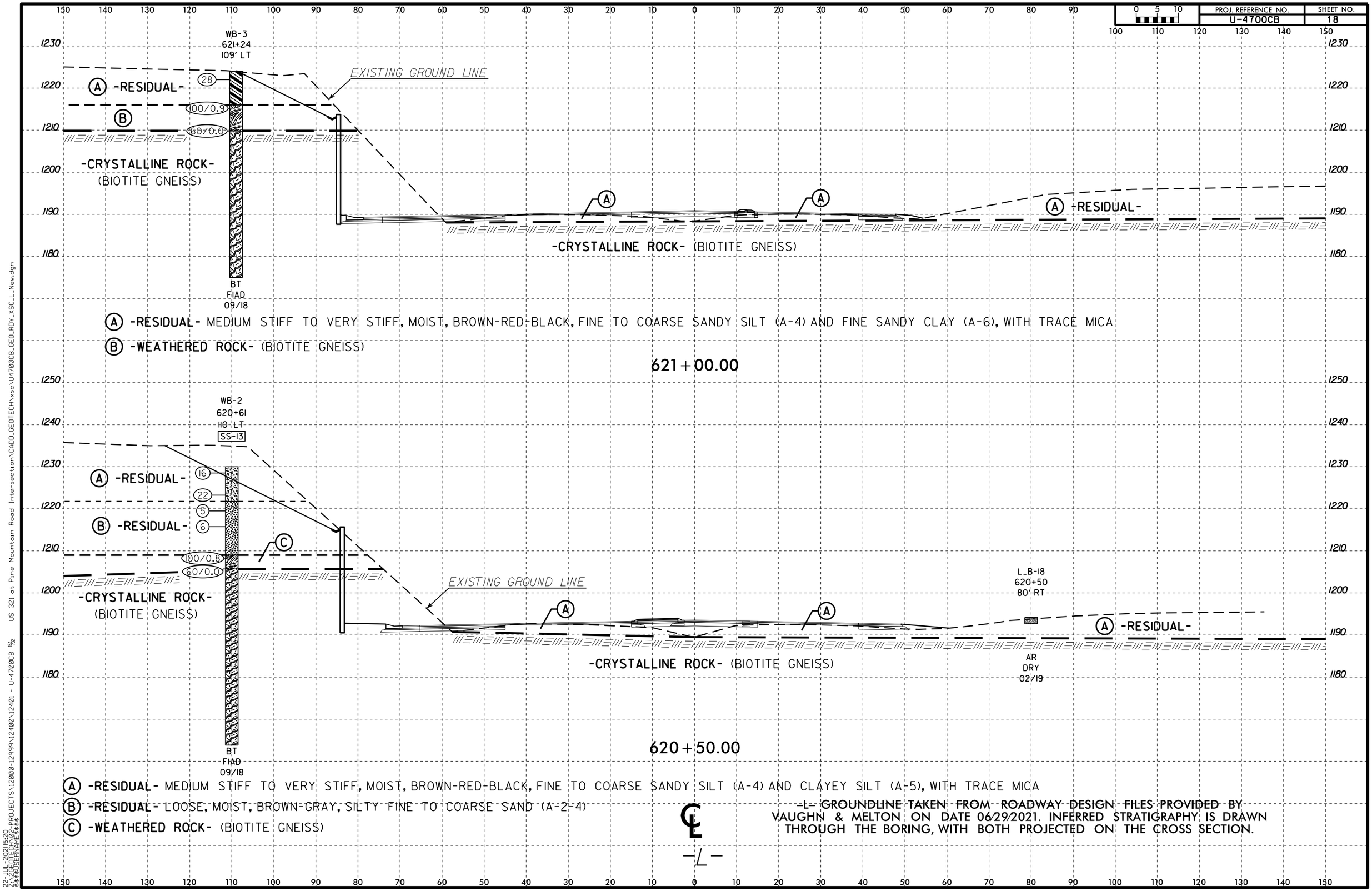
EXISTING GROUND LINE
L_B-17
620+00
CL
-RESIDUAL-
-RESIDUAL-
STIFF TO VERY STIFF, MOIST, GRAY-BROWN, FINE TO COARSE SANDY SILT (A-4), WITH TRACE MICA AND RCOK FRAGMENTS
-CRYSTALLINE ROCK- (BIOTITE GNEISS)
AR
DRY
02/19
-CRYSTALLINE ROCK- (BIOTITE GNEISS)
620+00.00
WB-1
619+70
115 LT
SS-7
37
59
63
13
20
100/0.7
14
100/0.8
100/0.3
49
60/0.1
BT
DRY
09/18
B
A -RESIDUAL-
EXISTING GROUND LINE
A
-CRYSTALLINE ROCK- (BIOTITE GNEISS)
A -RESIDUAL- MEDIUM DENSE TO VERY DENSE, MOIST, WHITE-TAN-GRAY, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE MICA AND ROCK FRAGMENTS
B -WEATHERED ROCK- (BIOTITE GNEISS)
619+50.00
-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.
CL
-L-

PROJ. REFERENCE NO.	SHEET NO.
U-4700CB	18



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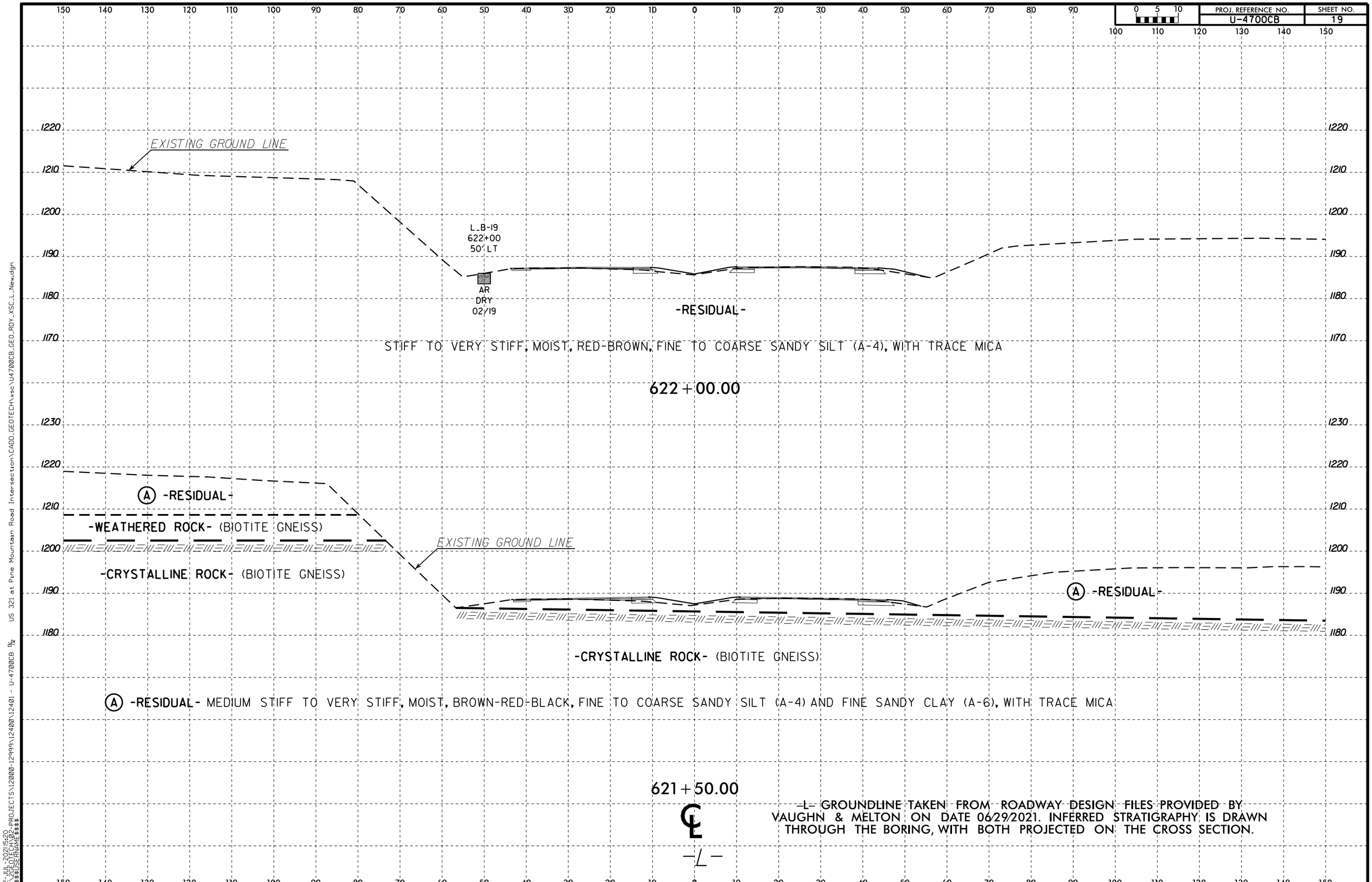

-L- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

US 321 at Pine Mountain Road Intersection\CADD_GEOTECH\xsc\U4700CB_GEO_RDY_XSC_L_New.dgn

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PROJ. REFERENCE NO.	SHEET NO.
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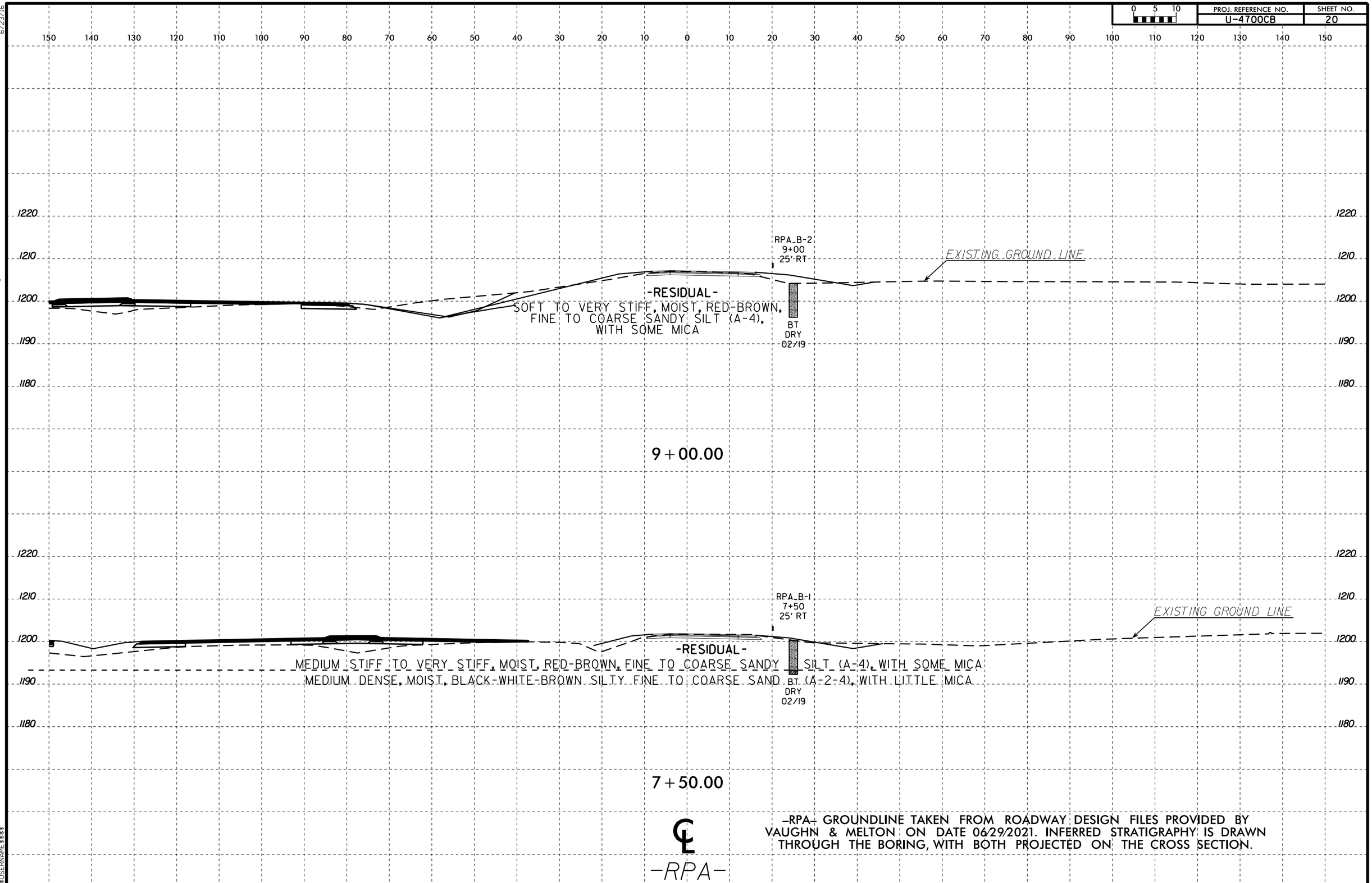

-RPA- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

6/23/16

US 321 at Pine Mountain Road Intersection\CADD_GEOTECH\xsc\U4700CB_GEO_RDY_XS1_RPA.dgn

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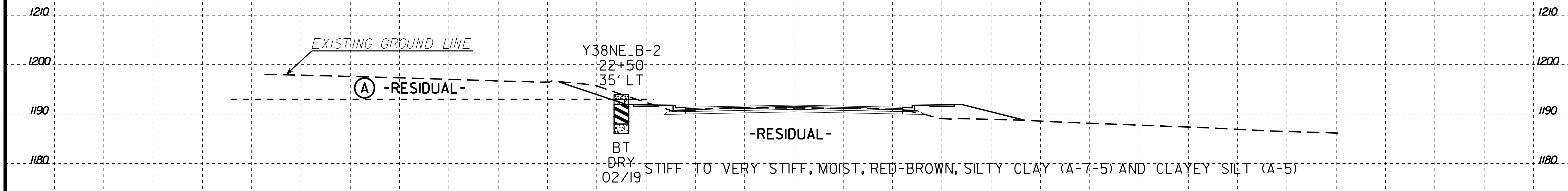
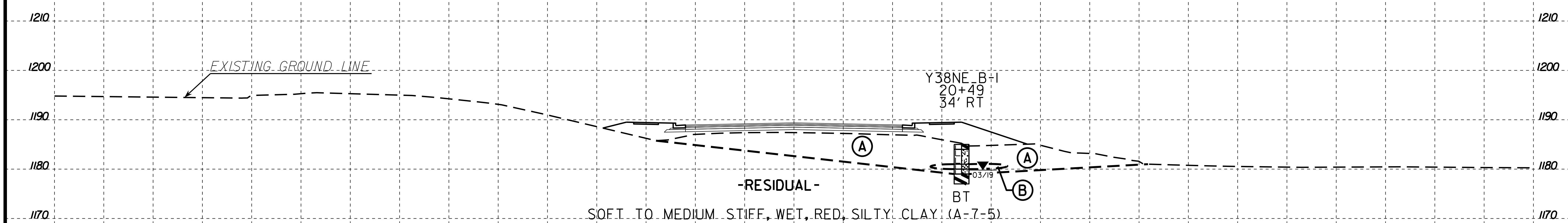


(A) **-RESIDUAL-** LOOSE, MOIST, RED-BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE ORGANICS, GRAVEL, AND MICA

22 + 50.00



(A) **-ROADWAY EMBANKMENT-** VERY SOFT TO MEDIUM STIFF, MOIST, RED-BROWN, SILTY CLAY (A-7-5) AND CLAYEY SILT (A-5), WITH TRACE GRAVEL

(B) **-ROADWAY EMBANKMENT-** LOOSE, MOIST, BROWN, SILTY FINE TO COARSE SAND (A-2-4), WITH TRACE ORGANICS

20 + 50.00

CL

-Y38NE-

-Y38NE- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

US 321 at Pine Mountain Road Intersection\CADD_GEOTECH\xsc\U4700CB_GEO_RDY_XSC_Y38_New.dgn

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PROJ. REFERENCE NO.	SHEET NO.
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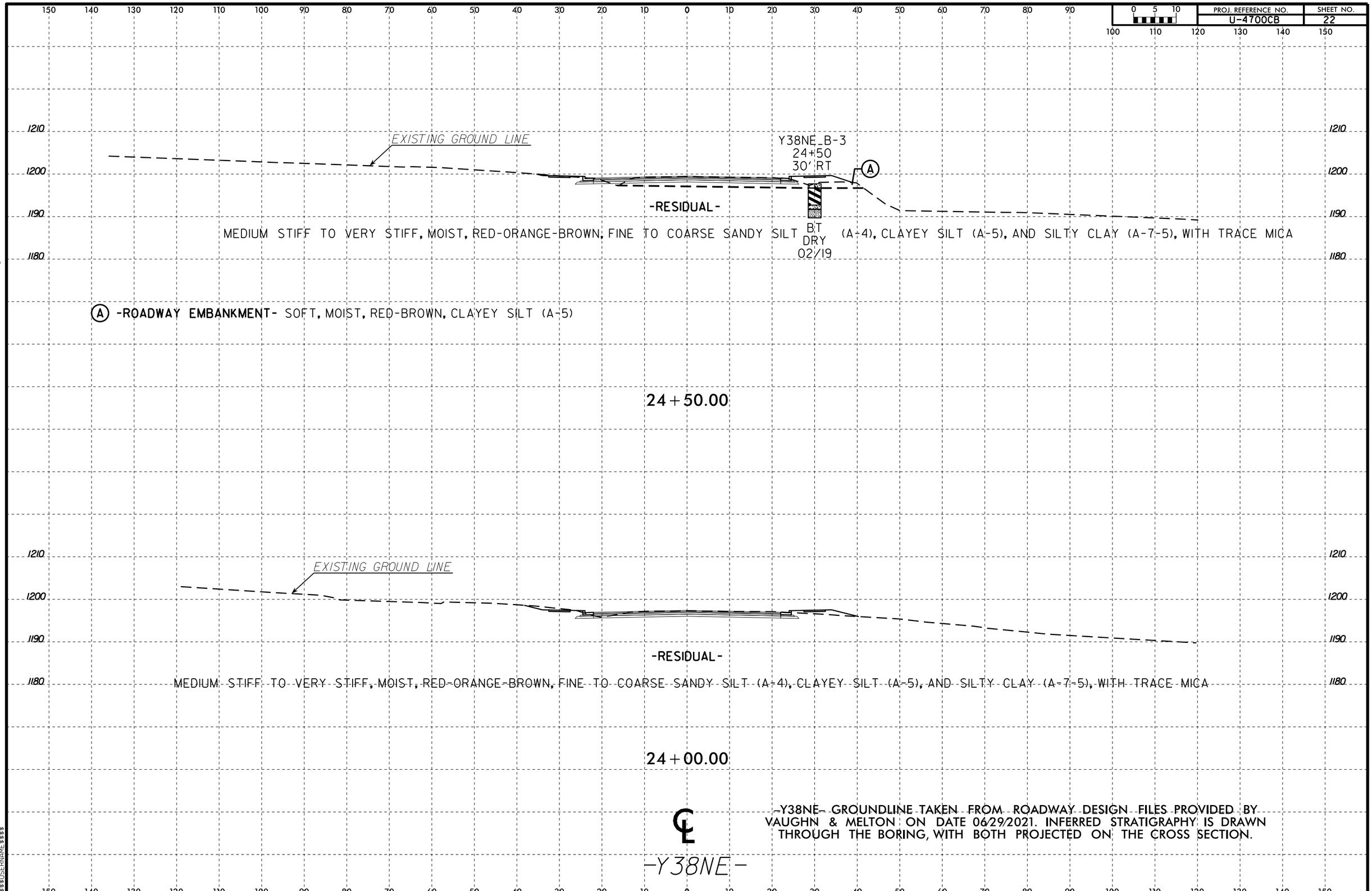

-Y38NE- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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PROJ. REFERENCE NO.	SHEET NO.
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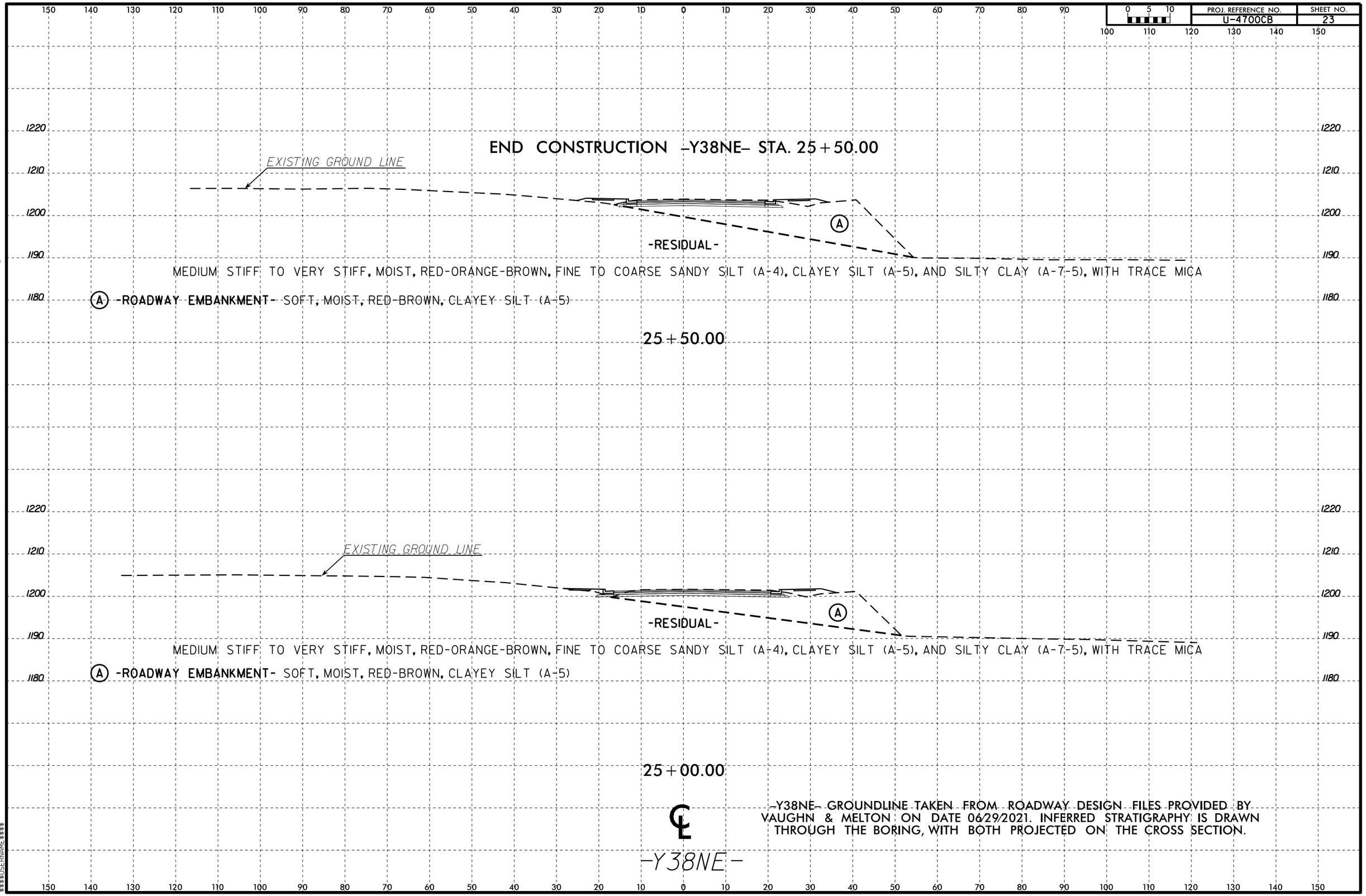

-Y38NE- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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PROJ. REFERENCE NO.	SHEET NO.
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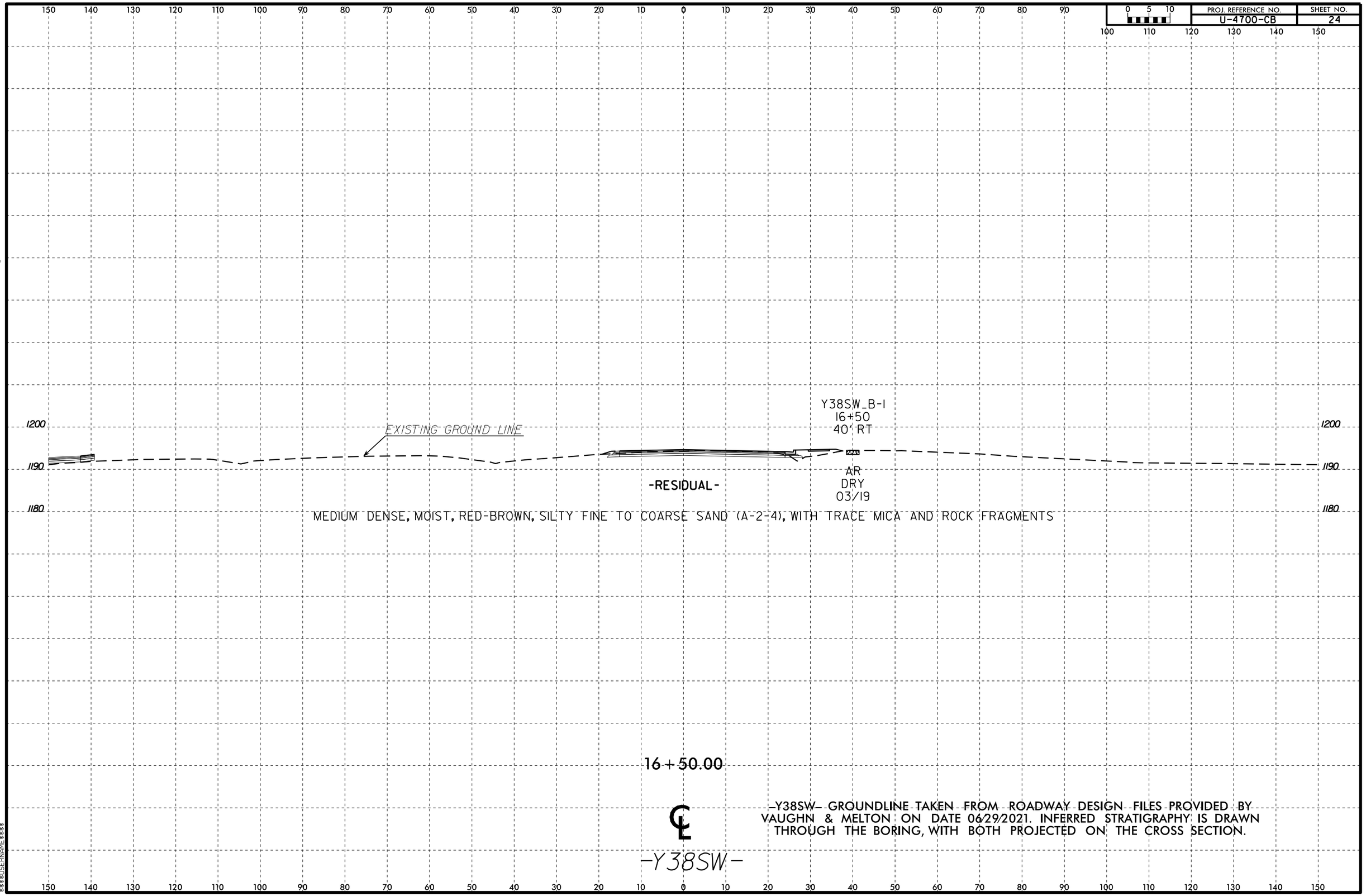

-Y38SW- GROUNDLINE TAKEN FROM ROADWAY DESIGN FILES PROVIDED BY VAUGHN & MELTON ON DATE 06/29/2021. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORING, WITH BOTH PROJECTED ON THE CROSS SECTION.

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$$$$USERNAME$$$$

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
LABORATORY TEST RESULTS

REFERENCE: U–4700CB

PROJECT: N/A

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		
L_B–4	S–11	95' LT	596+51	2.0–3.0'	A–6(4)	38	14	30.6	24.6	2.9	41.9	98.9	80.5	49.1	29.5	–
L_B–5	S–16	111' RT	597+00	1.0–2.0'	A–4(0)	39	3	31.9	31.4	5.3	31.3	95.1	76.9	40.7	26.5	–
L_B–6	S–24	75' LT	599+00	1.0–2.0'	A–7–5(24)	66	32	19.6	9.6	4.8	66.0	95.0	80.3	69.6	31.4	–
L_B–8	S–35	80' RT	602+00	4.0–5.0'	A–4(2)	34	10	34.8	21.8	8.2	35.2	90.8	68.8	43.1	18.8	–
L_B–10	S–48	80' RT	606+00	7.0–8.0'	A–7–5(14)	57	24	21.9	17.0	12.1	49.0	95.1	82.0	60.7	34.5	–
WB–1	SS–7	115' LT	619+70	23.5–25.0'	A–2–4(0)	32	NP	55.3	38.5	1.5	4.7	95.7	59.7	11.7	17.0	–
WB–2	SS–13	110' LT	620+16	3.5–5.0'	A–5(2)	45	6	22.7	30.7	8.1	38.6	95.7	87.1	49.7	19.8	–

LAB TECHNICIAN: C. RUPERT

NCDOT CERTIFICATION NO. 112–01–1003