REFERENCE: A-0009CC

PROJECT: 32572

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *GRAHAM*

PROJECT DESCRIPTION *ROCK SLOPE MITIGATION DESIGN – FUTURE US 74 FROM ROBBINSVILLE TO NC 28 IN STECOAH*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0009CC	1	118

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:
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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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DATE *JANUARY 2022*

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NORTH CAROLINA LICENSED SEAL 546 GEOLOGIST MALCOM FRANCIS SCHAEFFER

Malcom Francis Schaeffer 5/3/2022
SIGNATURE DATE

NORTH CAROLINA PROFESSIONAL SEAL 038206 ENGINEER KENNETH R. BUSSEY, JR.

Kenneth R. Bussey, Jr 5/3/2022
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

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

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

RECOMMENDATION SYMBOLS

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

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

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

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.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [X] -N Q2

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK: _____

ELEVATION: _____ FEET

NOTES:

BORING ELEVATIONS OBTAINED USING A0009C_TIN.tin FILE DATED 3-29-2021

FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	2A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

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

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

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

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

STRUCTURE

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

DECREASING INTERLOCKING OF ROCK PIECES ⇩

SURFACE CONDITIONS

DECREASING SURFACE QUALITY ⇨

VERY GOOD Very rough, fresh unweathered surfaces	GOOD Rough, slightly weathered, iron stained surfaces	FAIR Smooth, moderately weathered and altered surfaces	POOR Slickensided, highly weathered surfaces with compact coatings or fillings or angular fragments	VERY POOR Slickensided, highly weathered surfaces with soft clay coatings or fillings
90			N/A	N/A
80				
70				
60				
50				
40				
30				
20				
10				
N/A	N/A			

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

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

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

COMPOSITION AND STRUCTURE

A. *Thick bedded, very blocky sandstone The effect of pelitic coatings on the bedding planes is minimized by the confinement of the rock mass. In shallow tunnels or slopes these bedding planes may cause structurally controlled instability.*

B. *Sandstone with thin interlayers of siltstone*

C. *Sandstone and siltstone in similar amounts*

D. *Siltstone or silty shale with sandstone layers*

E. *Weak siltstone or clayey shale with sandstone layers*

C, D, E, and G - may be more or less folded than illustrated but this does not change the strength. Tectonic deformation, faulting and loss of continuity moves these categories to F and H.

F. *Tectonically deformed, intensively folded/faulted, sheared clayey shale or siltstone with broken and deformed sandstone layers forming an almost chaotic structure*

G. *Undisturbed silty or clayey shale with or without a few very thin sandstone layers* → H. *Tectonically deformed silty or clayey shale forming a chaotic structure with pockets of clay. Thin layers of sandstone are transformed into small rock pieces.*

→ Means deformation after tectonic disturbance

SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)

VERY GOOD - Very Rough, fresh unweathered surfaces	GOOD - Rough, slightly weathered surfaces	FAIR - Smooth, moderately weathered and altered surfaces	POOR - Very smooth, occasionally slickensided surfaces with compact coatings or fillings with angular fragments	VERY POOR - Very smooth, slickensided or highly weathered surfaces with soft clay coatings or fillings
70				
60	A			
50		B	C	D E
40				
30				F
20				
		G		H 10

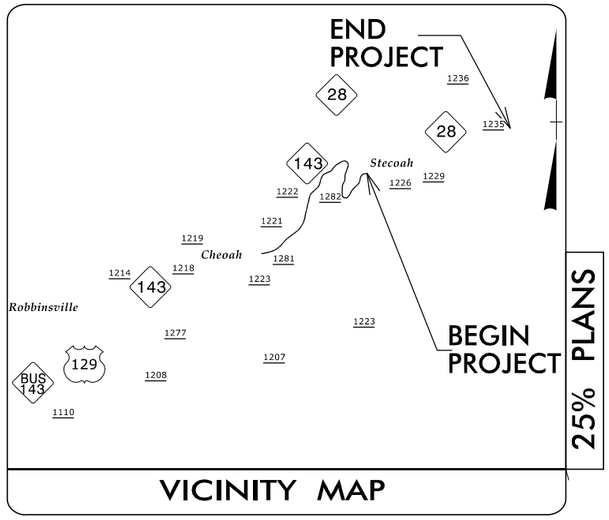
DATE: 8-19-16

09/08/95

TIP PROJECT: A–0009CC

CONTRACT:

See Sheet 1A For Index of Sheets



VICINITY MAP

25% PLANS

3R GUIDELINES WERE USED FROM
–L– 414+50 TO –L– STA 474+20
AND FROM –Y2– 12+60± TO 23+00±
TO MINIMIZE IMPACTS TO USFD PROPERTY
AND NATURAL RESOURCES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GRAHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A–0009CC	1	99

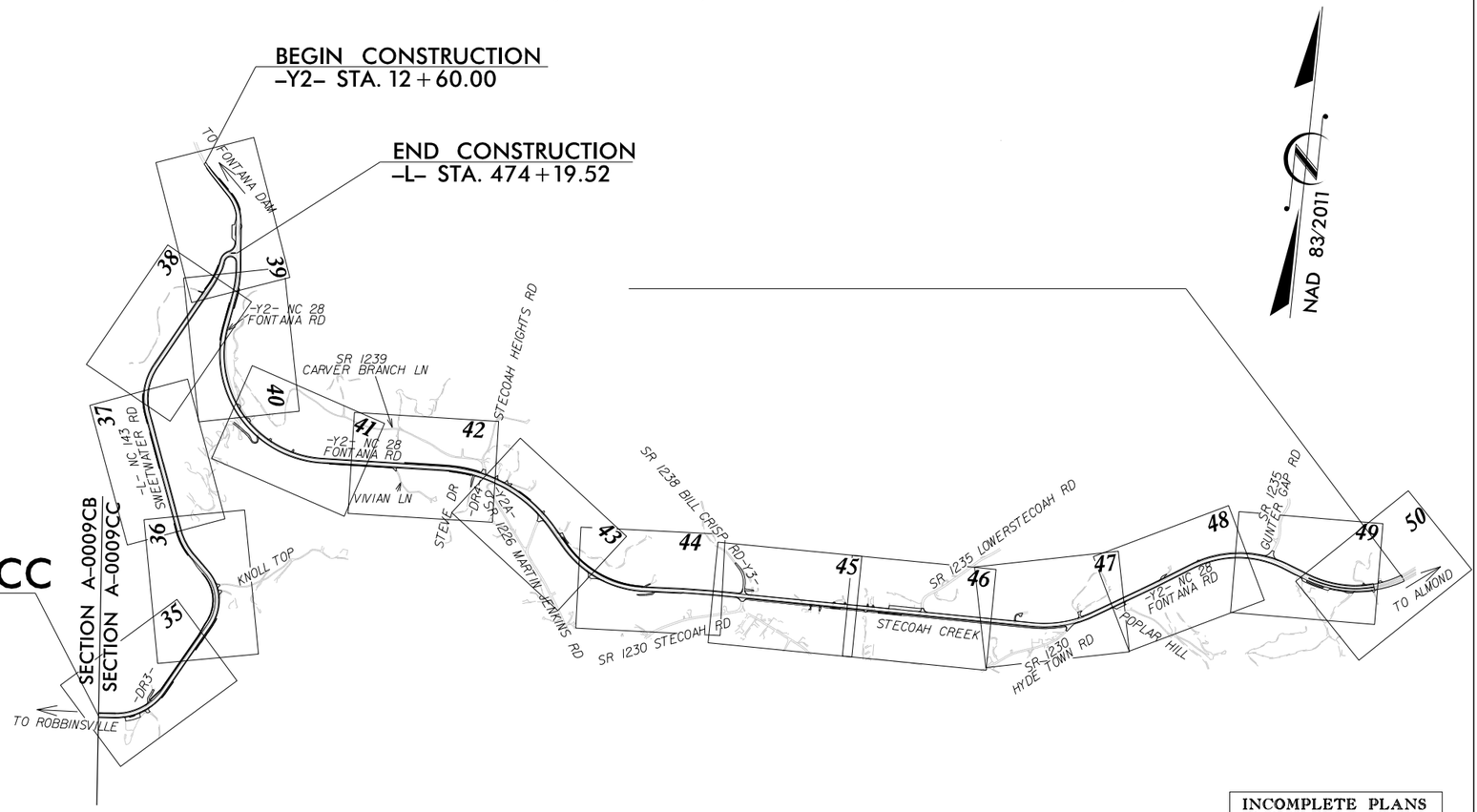
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32572.1.15	APD–0074(178)	PE
32572.2.15	APD–0074(178)	ROW,UTIL.
32572.3.15	APD–0074(178)	CONST.

LOCATION: ***UPGRADE NC 143 FROM 0.5 MILES NORTH OF APPALACHIAN TRAIL TO NC 28***
UPGRADE NC 28 FROM 0.2 WEST OF NC 143 TO 0.3 MILES EAST OF SR 1235 (GUNTERS GAP RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERTS, CURB AND GUTTER, & RETAINING WALLS

BEGIN CONSTRUCTION
–Y2– STA. 12+60.00

END CONSTRUCTION
–L– STA. 474+19.52



BEGIN TIP PROJECT A–0009CC
–L– STA. 414+50.00

DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVATURE AND HORIZONTAL SSD.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD __.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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)

10 5 0 10 20
PROFILE (VERTICAL)

–L– DESIGN DATA

ADT 2022 = 6590
ADT 2045 = 8800
K = 11 %
D = 57.5 %
T = 7 % *
V = 60 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS =
RURAL ARTERIAL
REGIONAL TIER

–Y2– DESIGN DATA

ADT 2022 = 3800
ADT 2045 = 5200
K = 11 %
D = 67.5 %
T = 7 % *
V = 50 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS =
RURAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT A–0009CC
–L– = 1.131 MILES
–Y2– = 2.973 MILES
TOTAL LENGTH TIP PROJECT A–0009CC = 4.104 MILES

NCDOT CONTACT: WANDA H. AUSTIN, PE

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

PLANS PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF TRANSPORATION
DIVISION 14
252 Webster Rd
Sylva, NC 28779

RIGHT OF WAY DATE:
SEPTEMBER 2021

LETTING DATE:
OCTOBER 18, 2022

2018 STANDARD SPECIFICATIONS

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN TURNER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

4/1/2021
\Title and Legend Sheet
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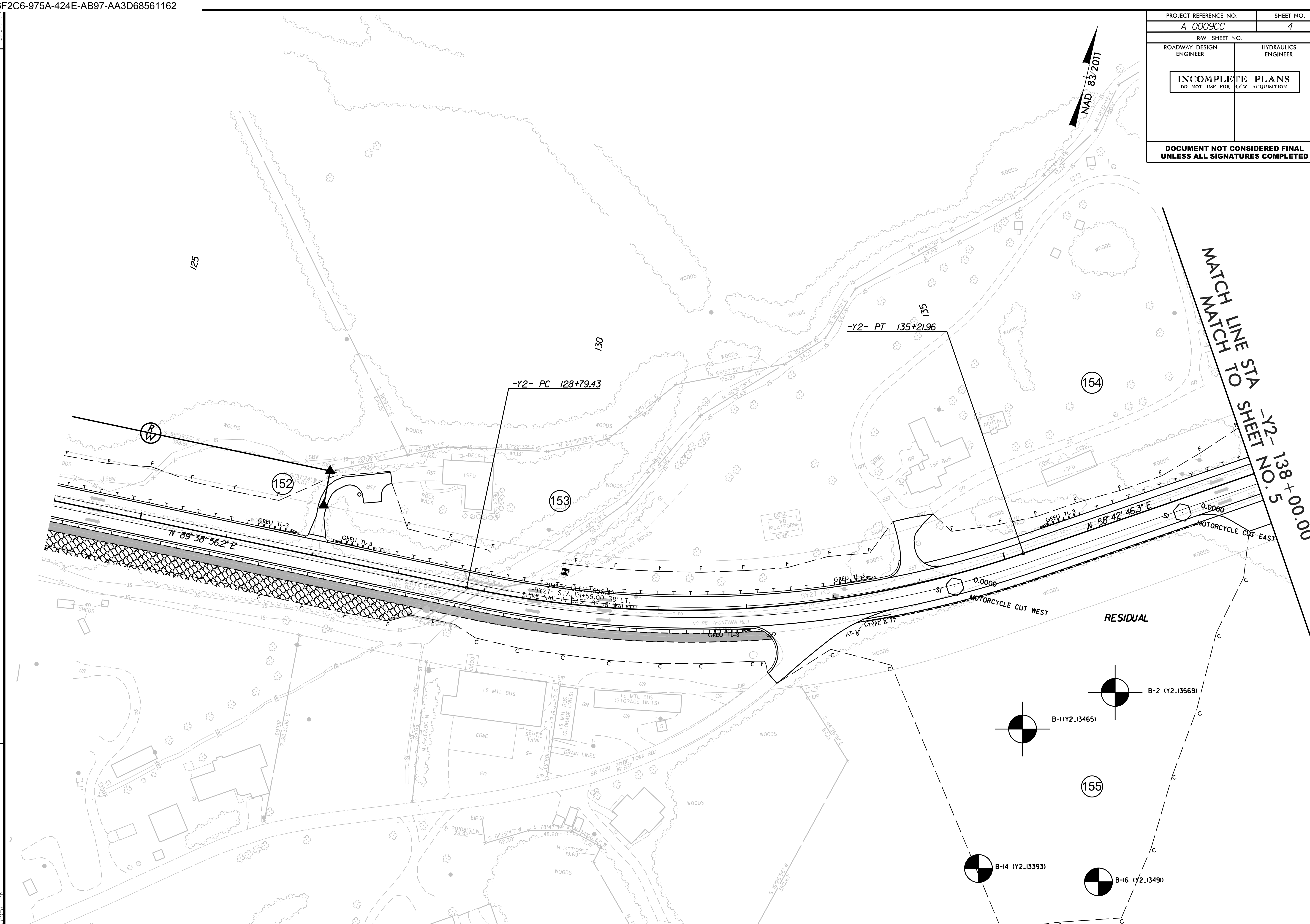
A-0009CC	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



8/17/99
2/3/2022

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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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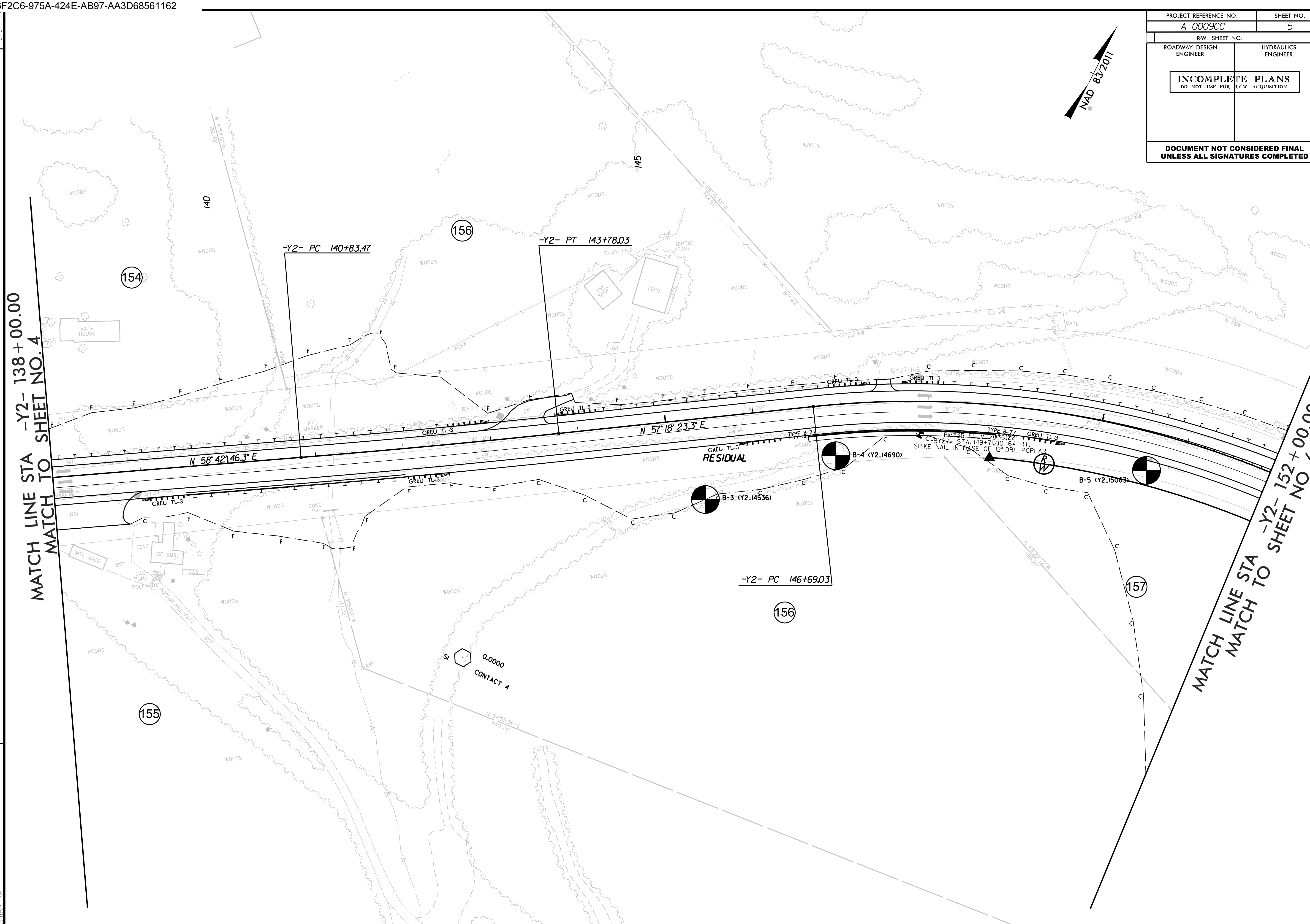
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



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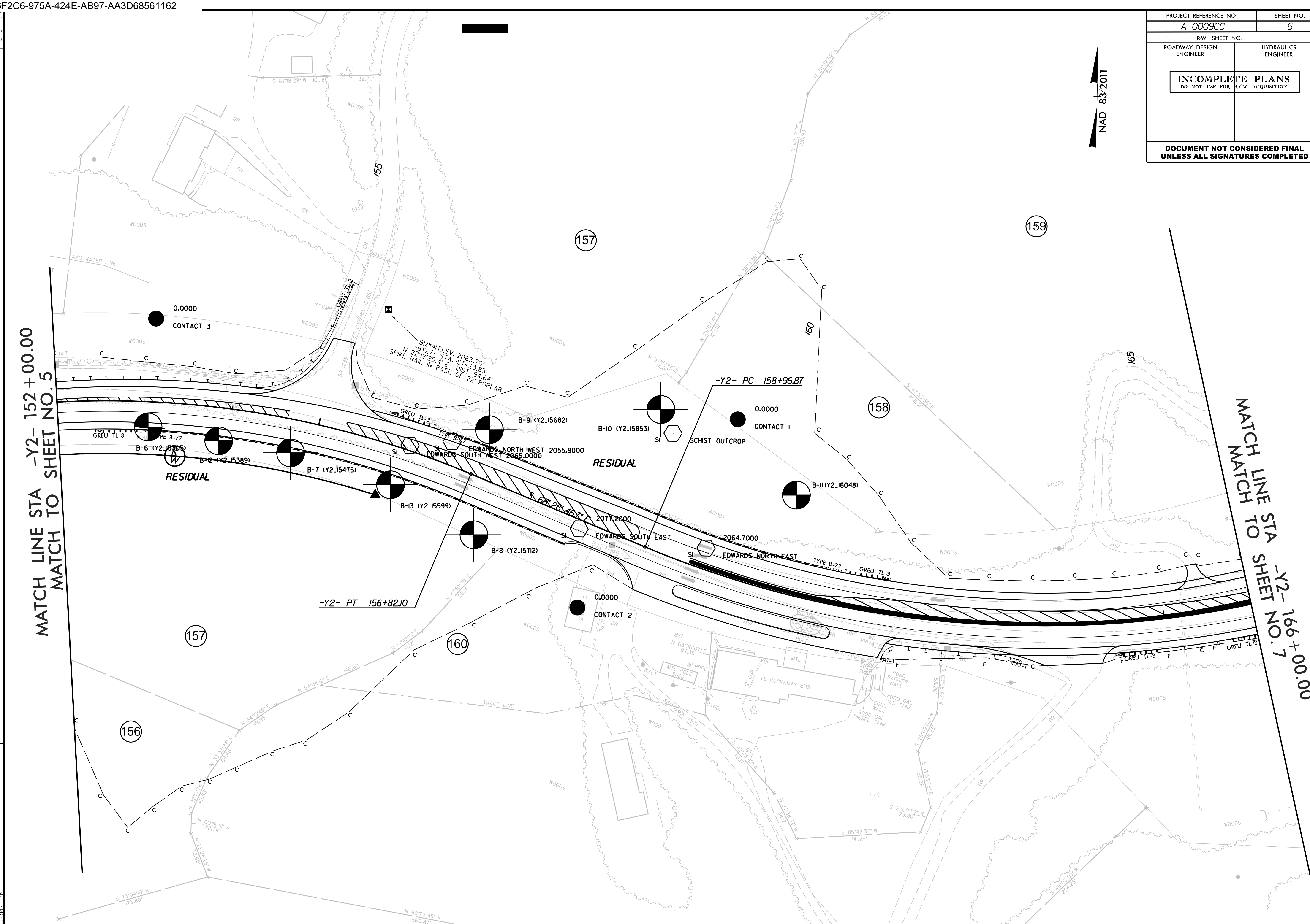
MATCH TO SHEET NO. 4
MATCH LINE STA -Y2- 152+00.00
MATCH TO SHEET NO. 6
-Y2- PC 140+83.47
-Y2- PT 143+78.03
-Y2- PC 146+69.03
N 58° 42' 46.3" E
N 57° 18' 23.3" E
RESIDUAL
154
155
156
157
WOODS
BATH HOUSE
1SF SHOP
1SFD
SEPTIC TANK
DRAIN LINE
GREU TL-3
TYPE B-77
B-3 (Y2_14536)
B-4 (Y2_14690)
B-5 (Y2_15063)
BM#35 ELEV 2036.22
C-BY27- STA. 149+71.00 64' RT.
SPIKE NAIL IN BASE OF 12" DBL POPLAR
SI 0.0000
CONTACT 4
1SF BUS
MTL SHED
GAS PUMP
BOLLARDS
POPLAR HILL (PVT)
BST
CONC
F/O MARKER
GATE
EIP

DocuSign Envelope ID: A996F2C6-975A-424E-AB97-AA3D68561162

PROJECT REFERENCE NO.	SHEET NO.
A-0009CC	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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NAD 83/2011
REVISIONS
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MATCH LINE STA -Y2- 166+00.00
MATCH TO SHEET NO. 7
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CONTACT 3
0.0000
CONTACT 1
0.0000
CONTACT 2
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B-12 (Y2_15389)
B-7 (Y2_15475)
B-13 (Y2_15599)
B-8 (Y2_15712)
B-9 (Y2_15682)
B-10 (Y2_15853)
B-11 (Y2_16048)
RESIDUAL
RESIDUAL
SCHIST OUTCROP
EDWARDS NORTH WEST 2055.9000
EDWARDS SOUTH WEST 2065.0000
EDWARDS SOUTH EAST
2077.2000
EDWARDS NORTH EAST
2064.7000
-Y2- PC 158+96.87
-Y2- PT 156+82.10
BM#4 ELEV. 2063.76'
-BY27- STA. 157+23.85
N 22°12'25.4" E DIST 94.64'
SPIKE NAIL IN BASE OF 22" POPLAR
GREU TL-3
TYPE B-77
WOODS
TRACT LINE
A/G WATER LINE
155
157
158
159
160
156
165

[redacted]

PROJECT REFERENCE NO.	SHEET NO.
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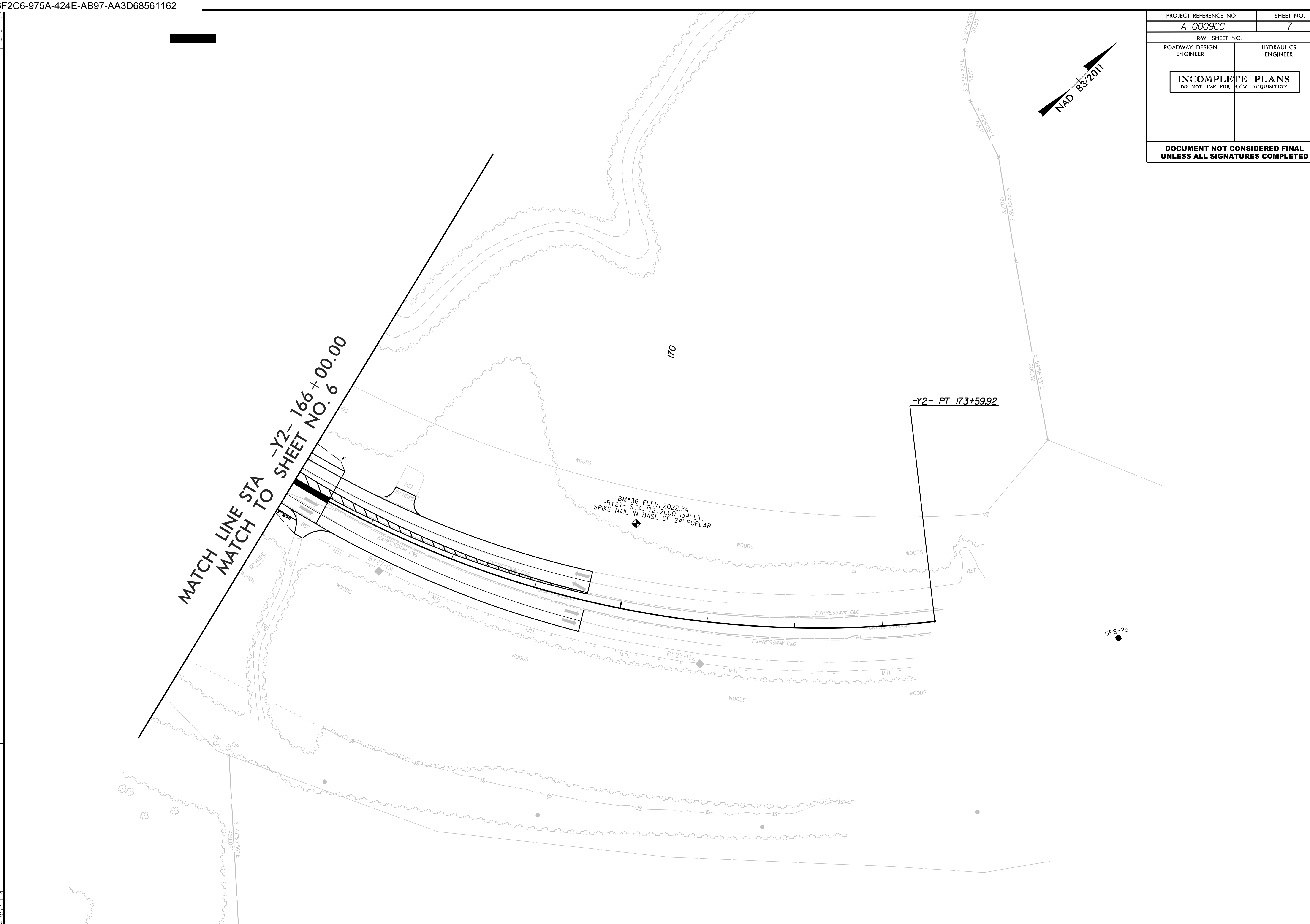
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS



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2/3/2022
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6/23/16

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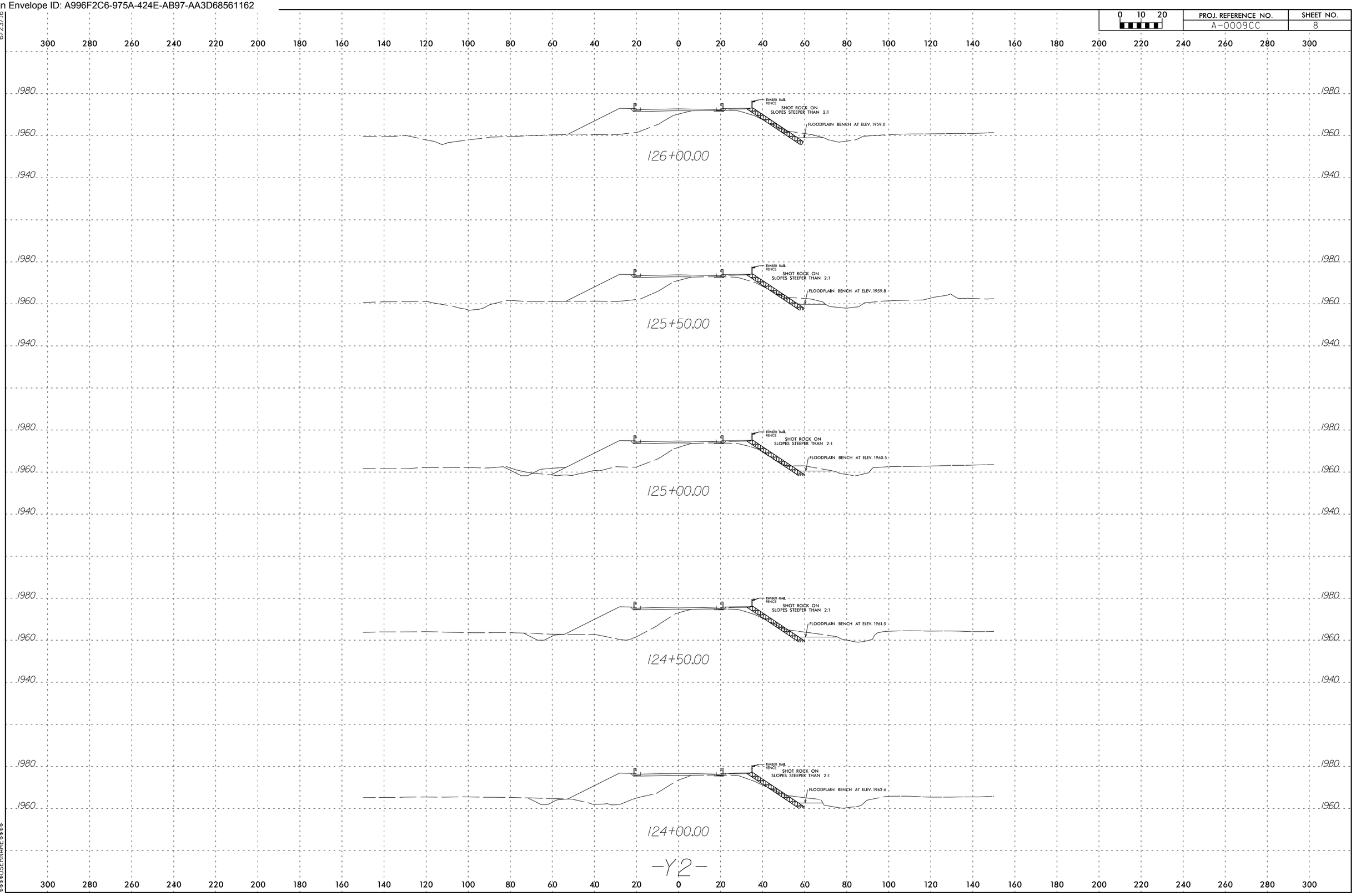

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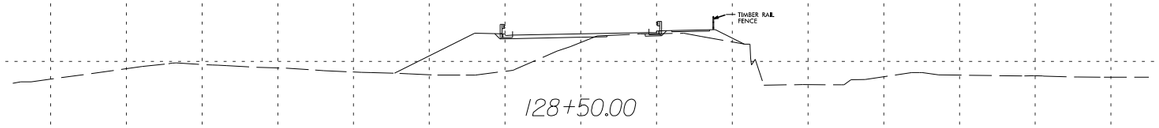
1980
1960
1940



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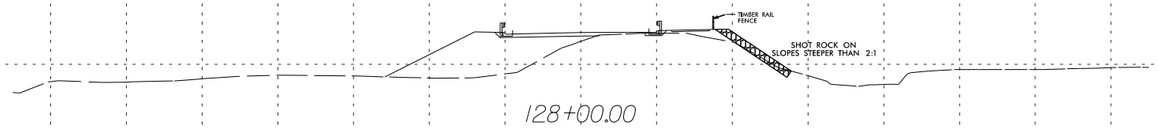

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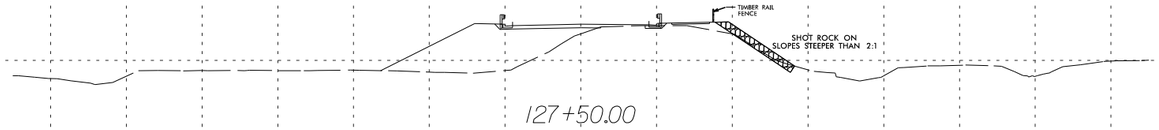

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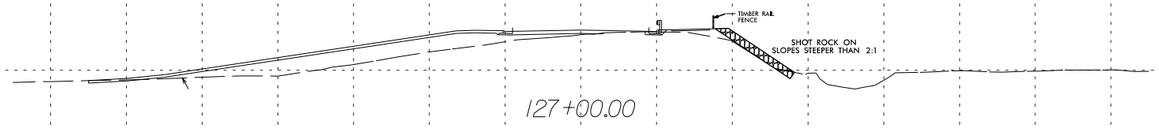

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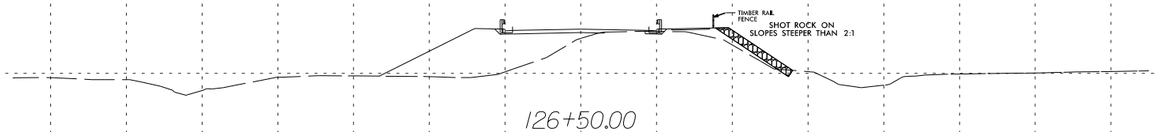

126+50.00

-Y2-

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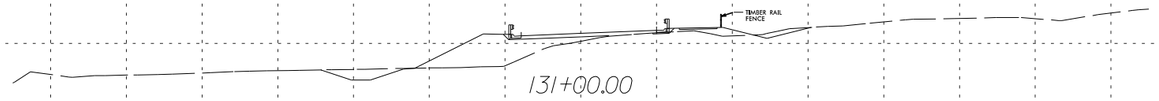
1980
1960
1940



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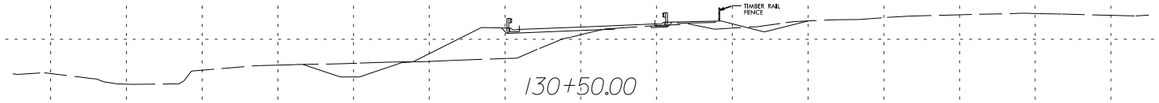

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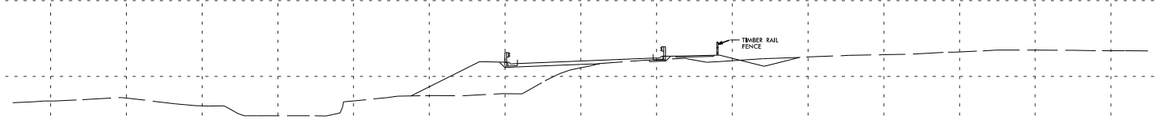

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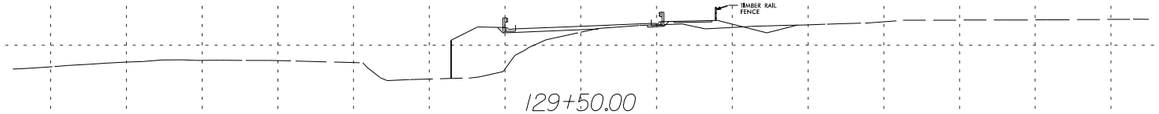

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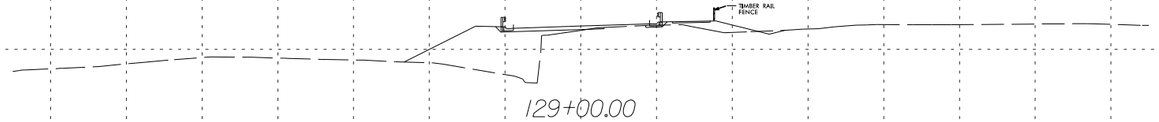

129+00.00

-Y2-

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0 10 20

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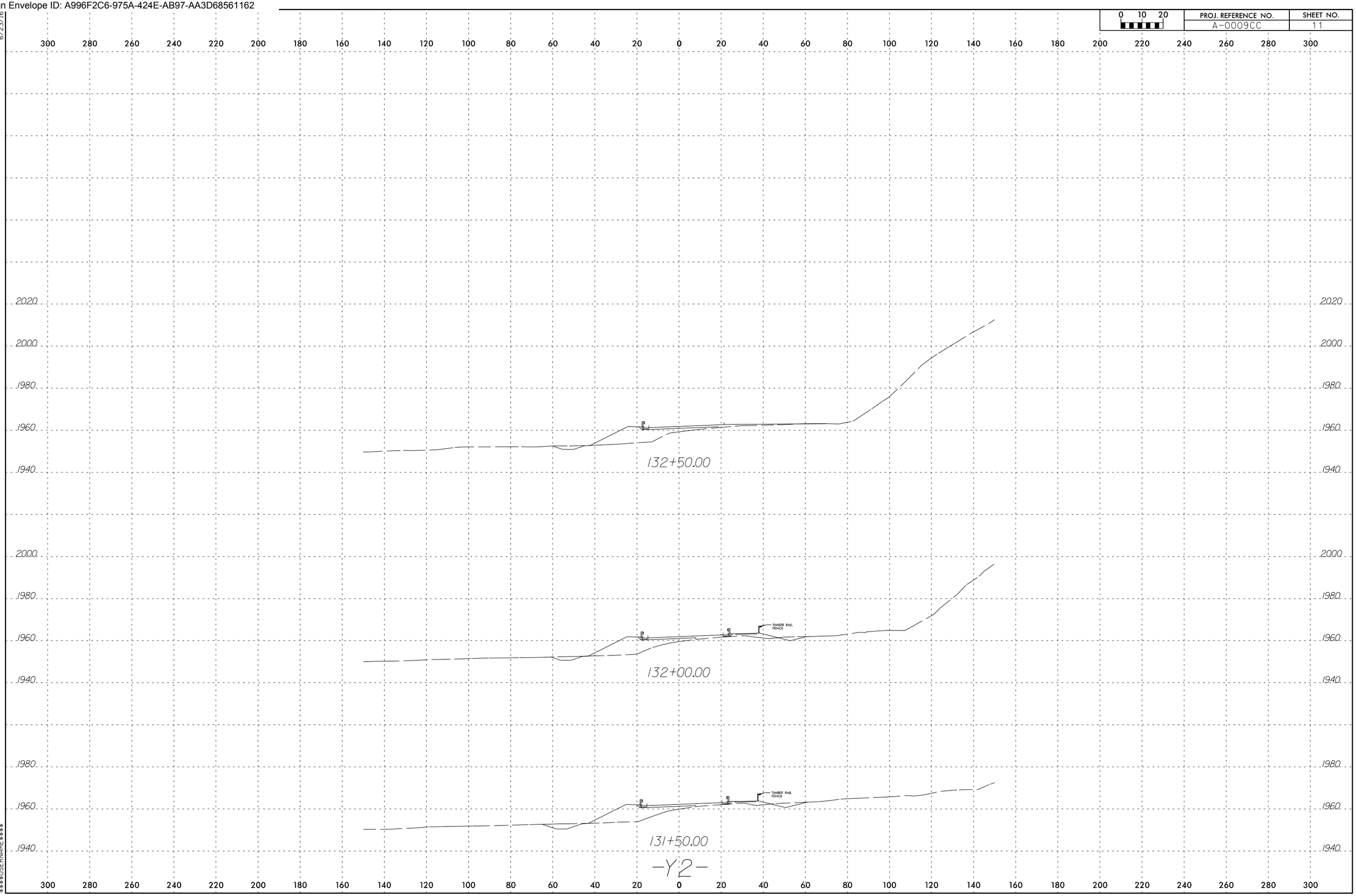

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2060
2040
2020
2000
1980
1960
1940

133+50.00

(SEE 132+50 FOR GRADE)

133+00.00

-Y2-

2060
2040
2020
2000
1980
1960
1940

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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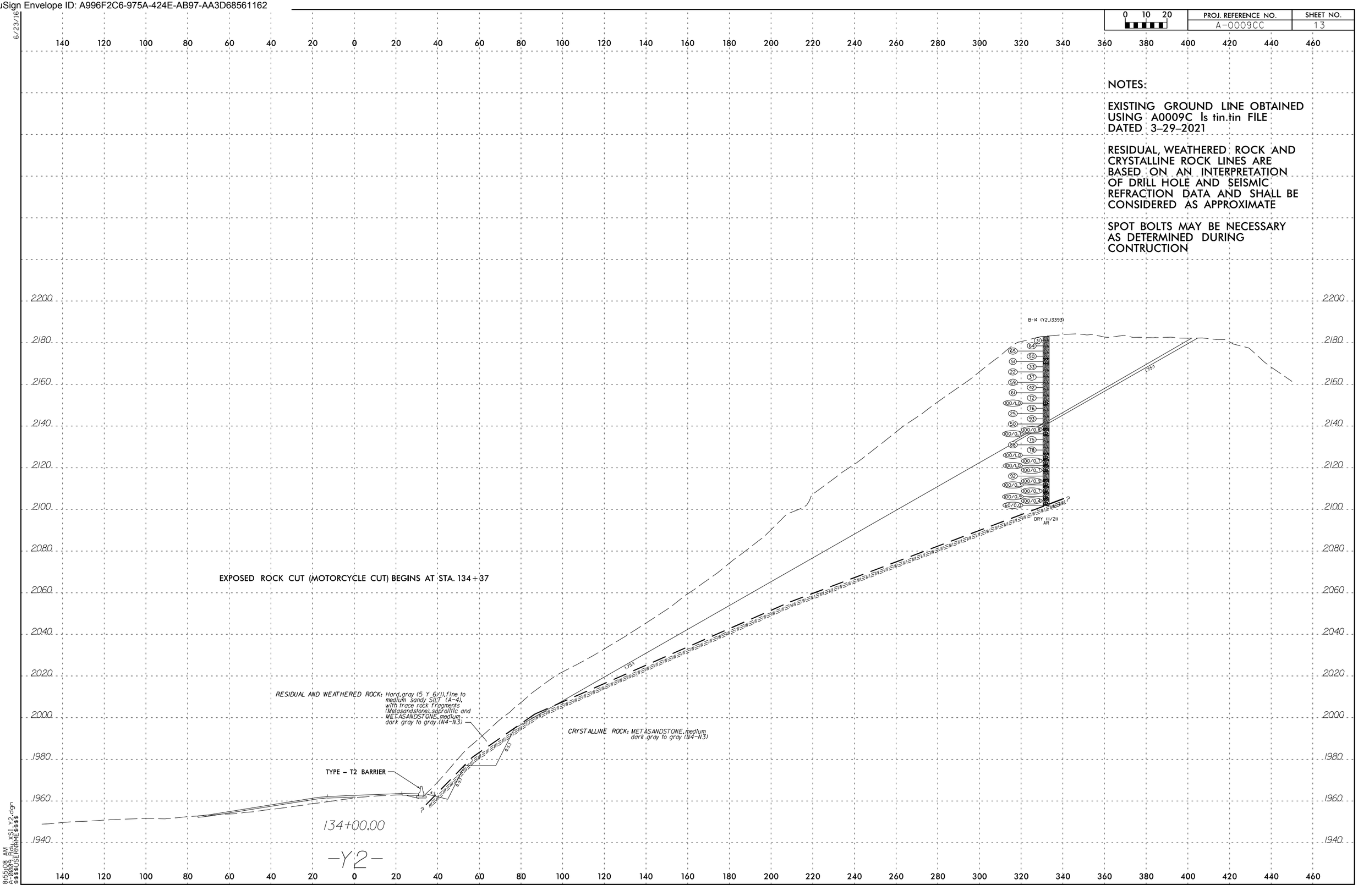
NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



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PROJ. REFERENCE NO.	SHEET NO.
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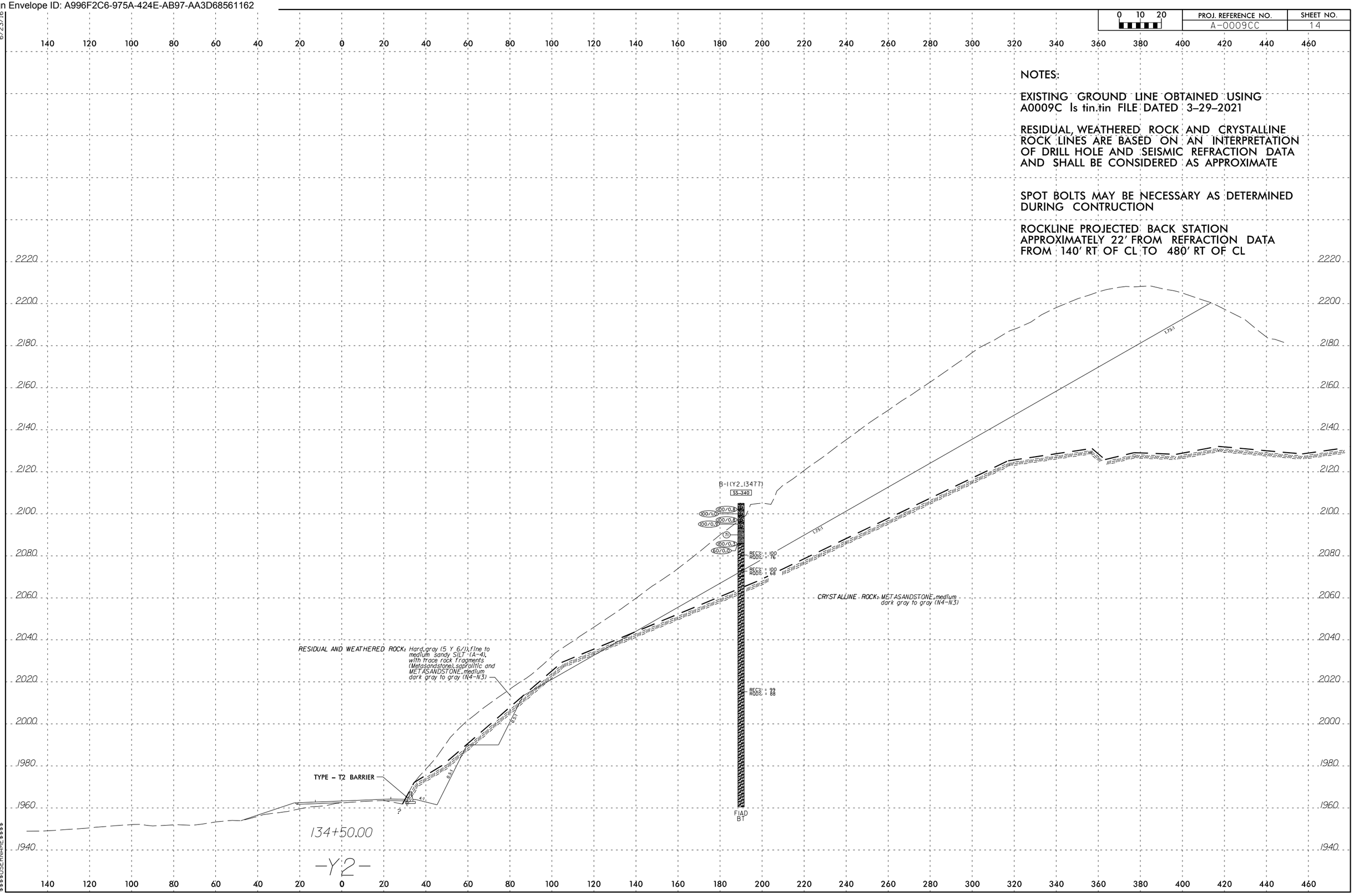
NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

ROCKLINE PROJECTED BACK STATION APPROXIMATELY 22' FROM REFRACTION DATA FROM 140' RT OF CL TO 480' RT OF CL



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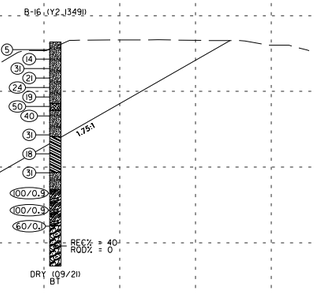
NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



RESIDUAL AND WEATHERED ROCK: Hard, gray (5 Y 6/1), fine to medium sandy SILT (A-4), with trace rock fragments (Metasandstone), saprolitic and METASANDSTONE, medium dark gray to gray (N4-N3)

CRYSTALLINE ROCK: METASANDSTONE, medium dark gray to gray (N4-N3).

TYPE - T2 BARRIER

1.75:1

0.5:1

4:1

135+00.00

-Y2-

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	16

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

B-2 (Y2_13594)
SS-334
20
19
44
37
50/0.0
REC% = 64
RQD% = 31
REC% = 100
RQD% = 38
REC% = 99
RQD% = 85
DRY (11/20)
BT

RESIDUAL: Very stiff to hard, light olive yellow (2.5 Y 5/4) and greenish gray (GLEY 1 6/1), fine sandy SILT (A-4(3)), with iron staining, saprolitic, (Metasiltstone)

CRYSTALLINE ROCK: METASANDSTONE, medium dark gray to gray (N4–N3)

TYPE – T2 BARRIER

135+50.00

–Y2–

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	17

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

RESIDUAL: Very stiff to hard, light olive yellow (2.5 Y 5/4) and greenish gray (GLEY 1,6/1), fine sandy SILT (A-4), with iron staining, saprolitic (Metasiltstone)

CRYSTALLINE ROCK: METASANDSTONE, medium dark gray to gray (N4-N5)

TYPE – T2 BARRIER

136+00.00

–Y2–

6/23/16

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$$$$USERNAME$$$$

6/23/16

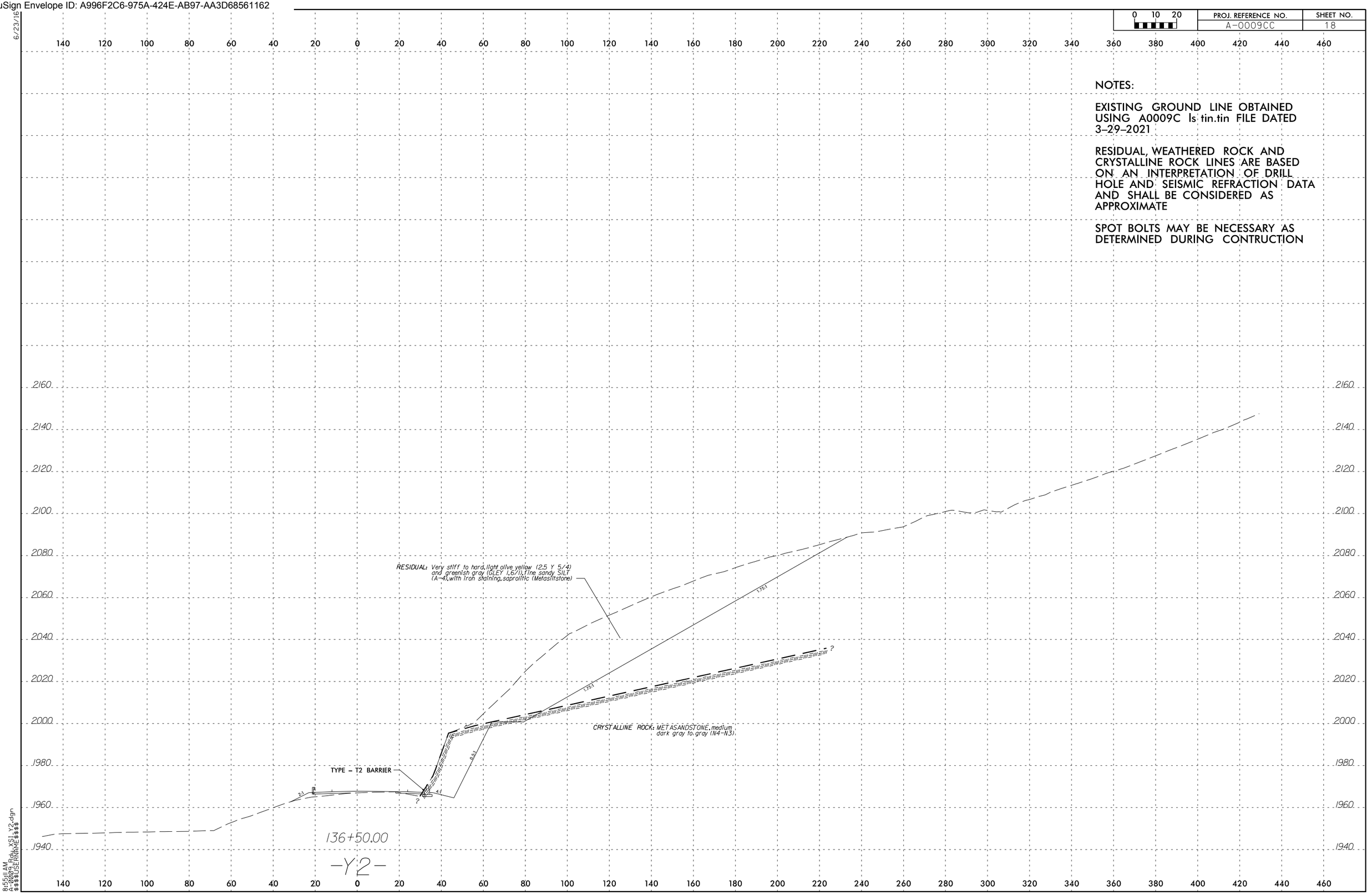
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	18

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



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A1-0009_Rdx_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	19

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

EXPOSED ROCK CUT (MOTORCYCLE CUT) ENDS AT STA. 137+08

RESIDUAL: Very stiff to hard, light olive yellow (2.5 Y 5/4) and greenish gray (GLEY 1,6/1), fine sandy SILT (A-4), with iron staining, saprolitic (Metasiltstone)

CRYSTALLINE ROCK: METASANDSTONE, medium dark gray to gray (N4-N5)

TYPE – T2 BARRIER

137+00.00

–Y2–

8:55:12 AM
A-0009_Rdy_XS1_Y2.dgn
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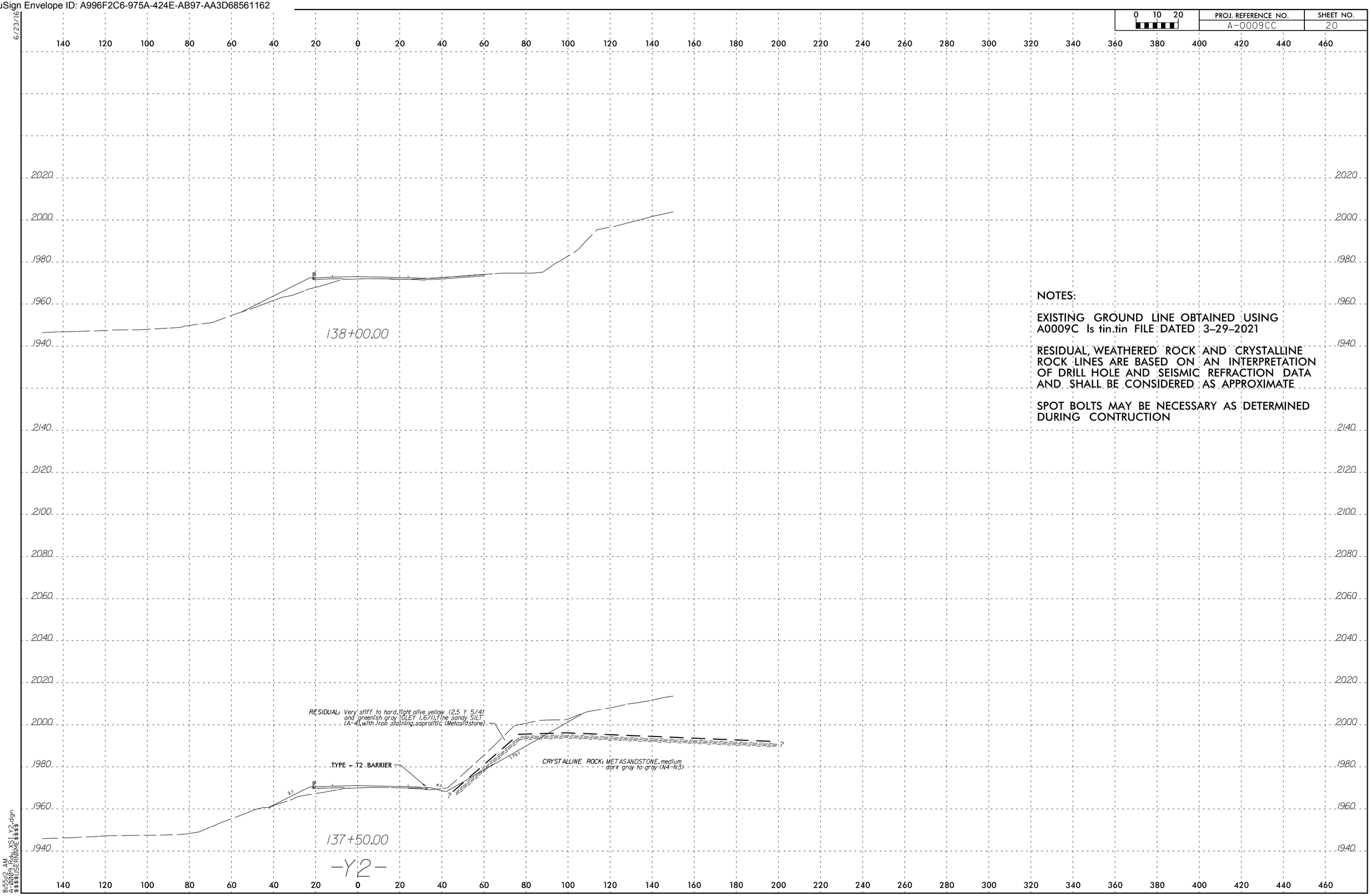
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	20



NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

8:55:12 AM
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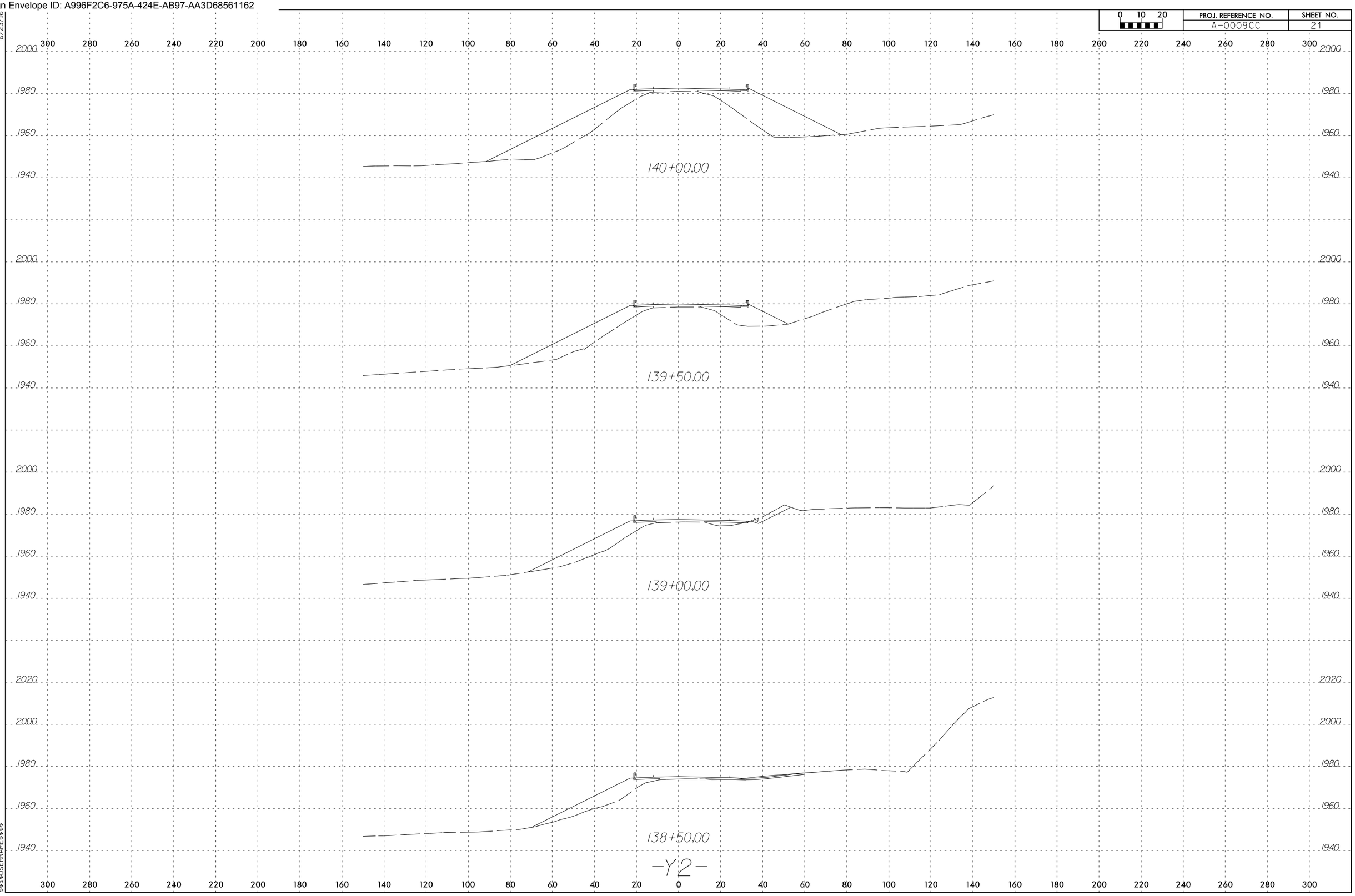
$$$$USERNAME$$$$

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	21



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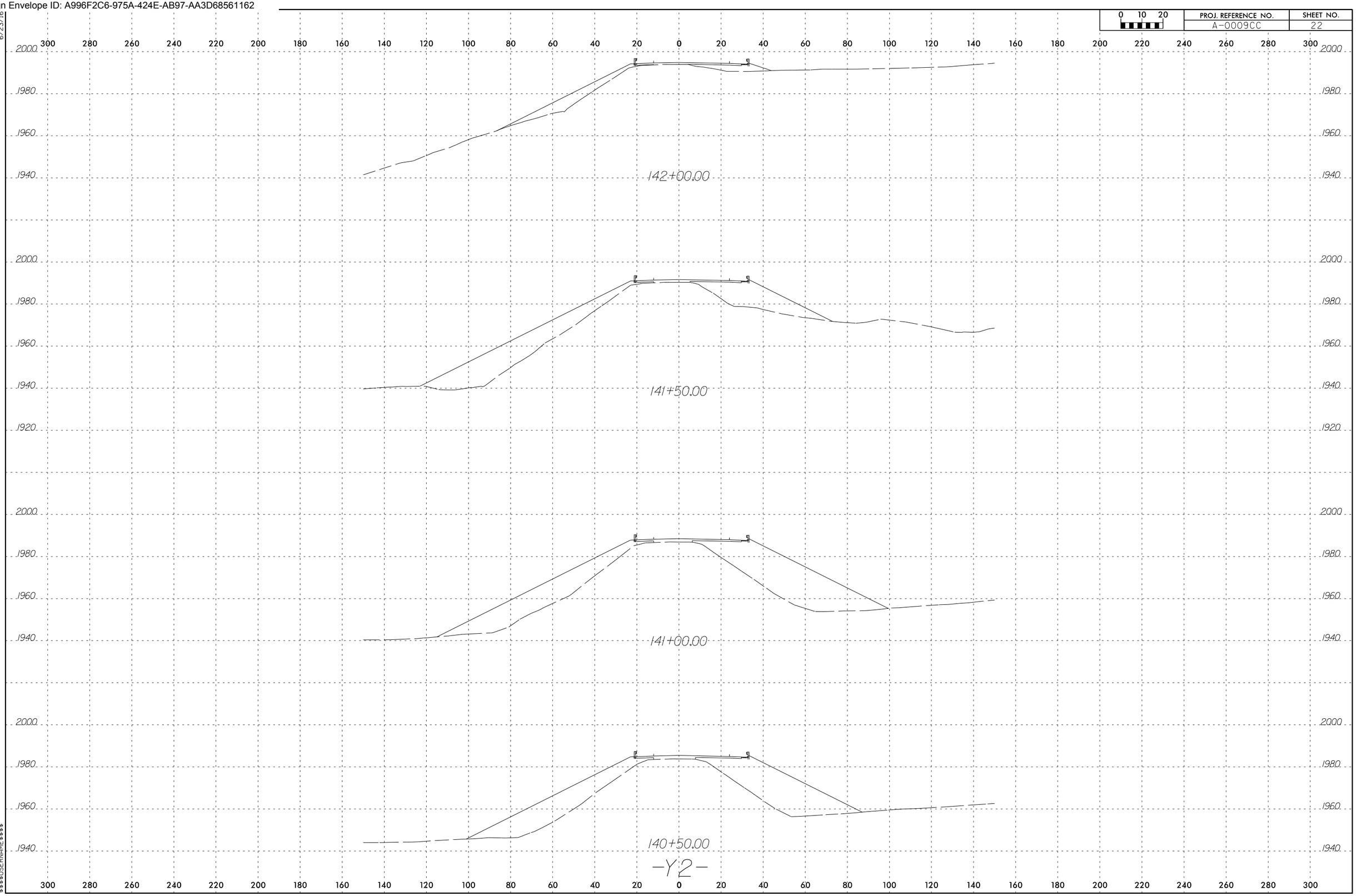
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	22



6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
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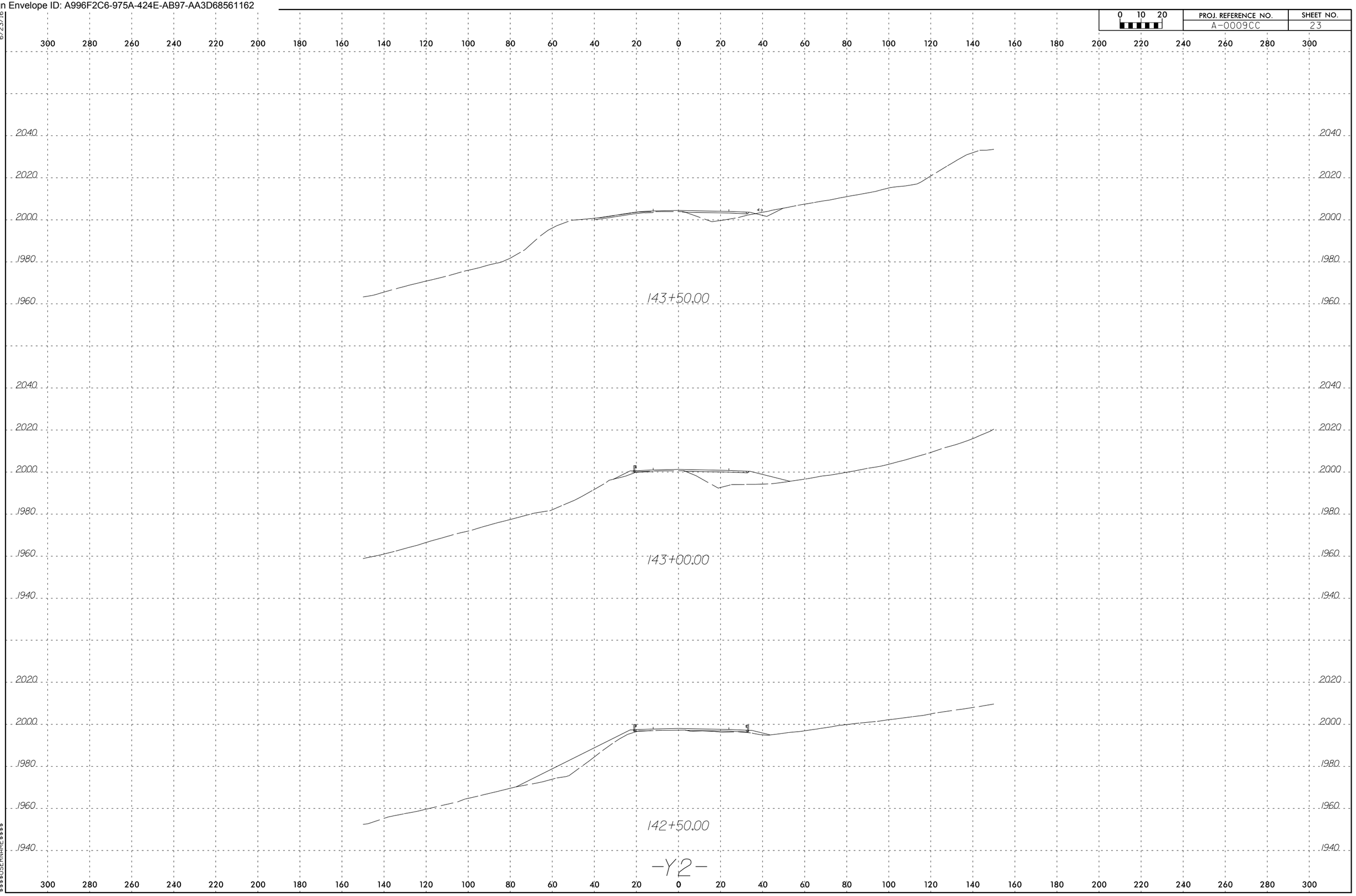

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A-0009_Rdx_XSI_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	24

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2080
2060
2040
2020
2000
1980

144+50.00

144+00.00

-Y2-

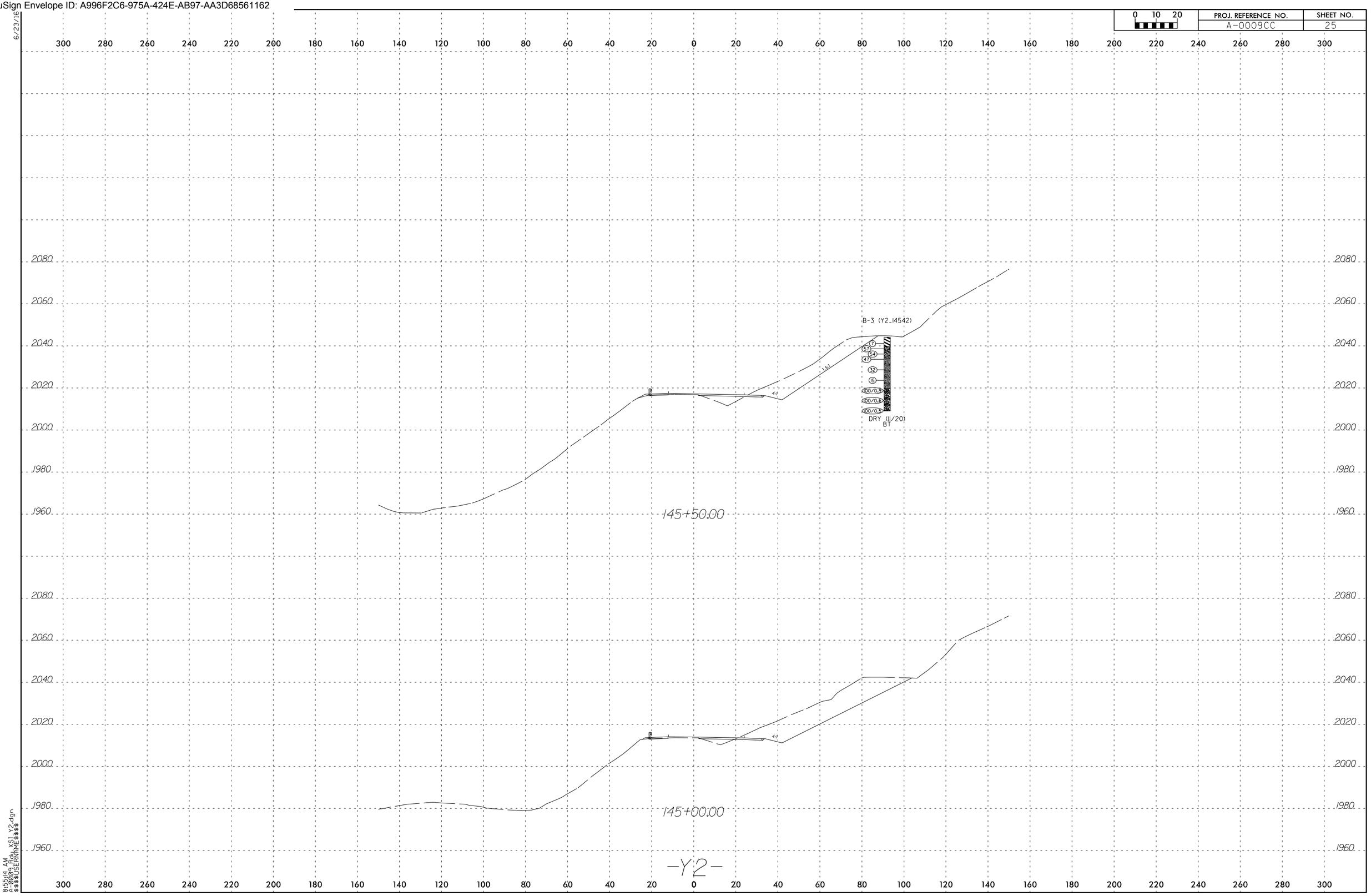
1960

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8:55:14 AM
A-0009_Rdwy_XS1_Y2.dgn
$$$$USERNAME$$$$

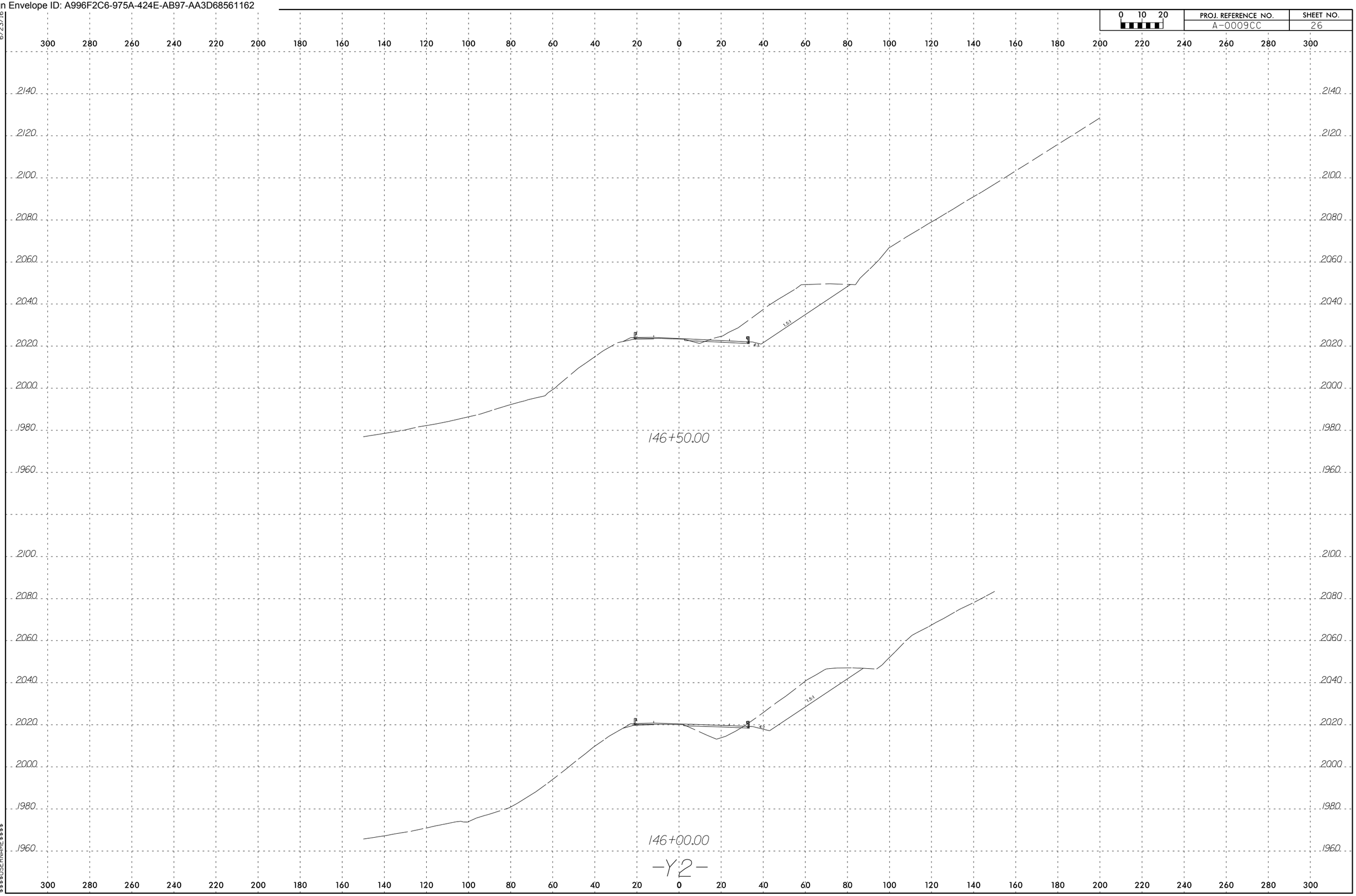
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	25



6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	26



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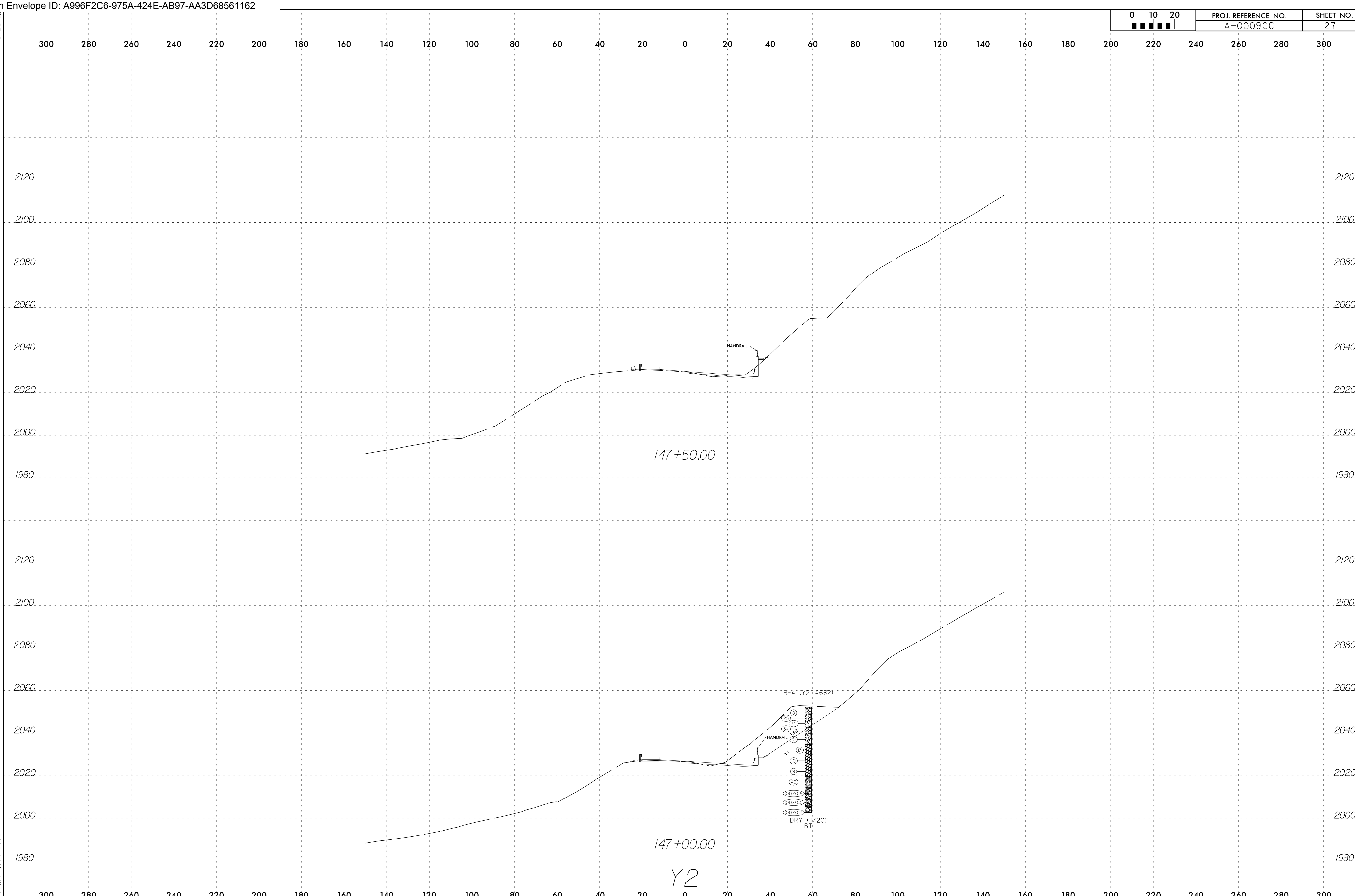
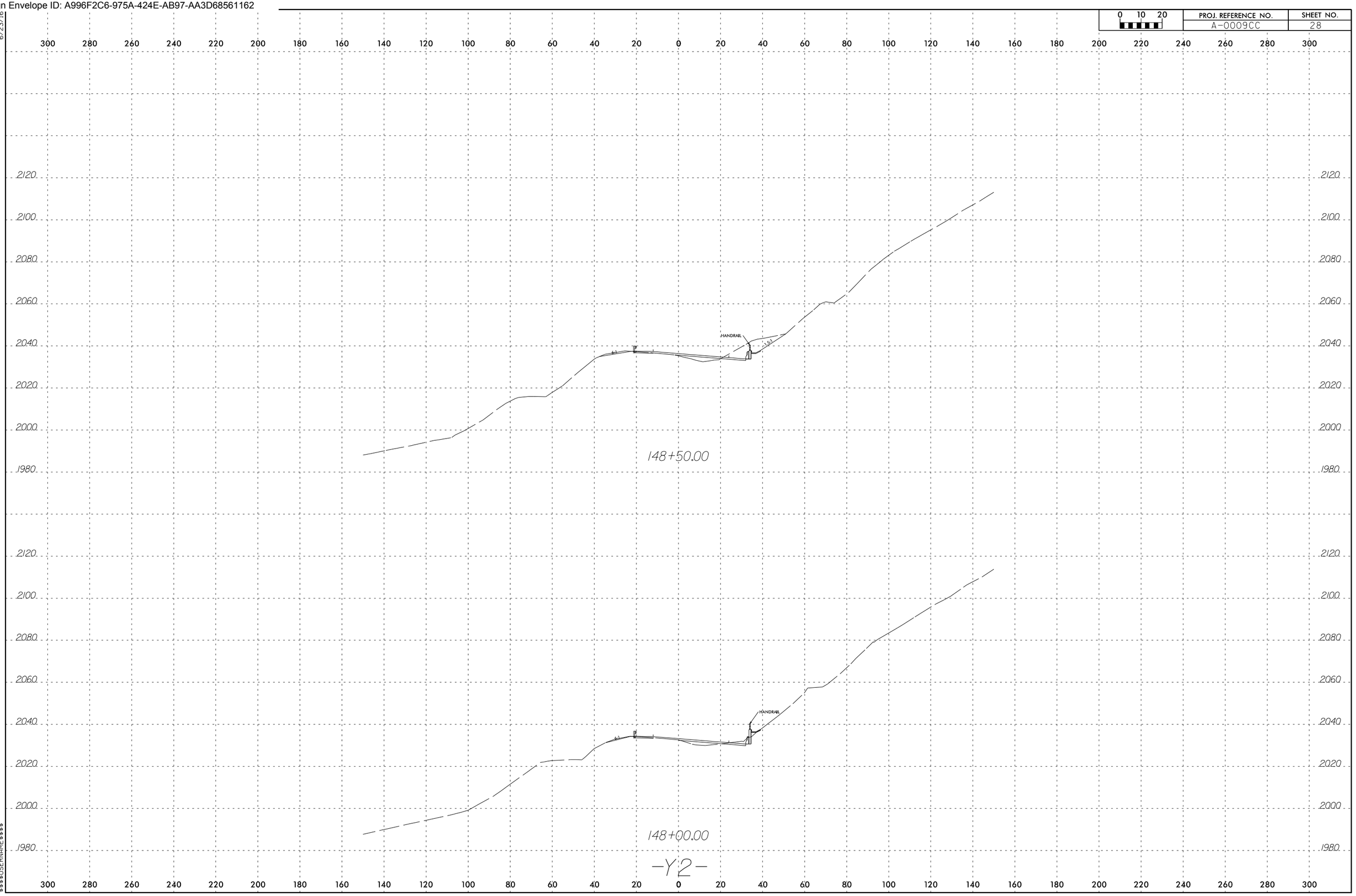
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	27



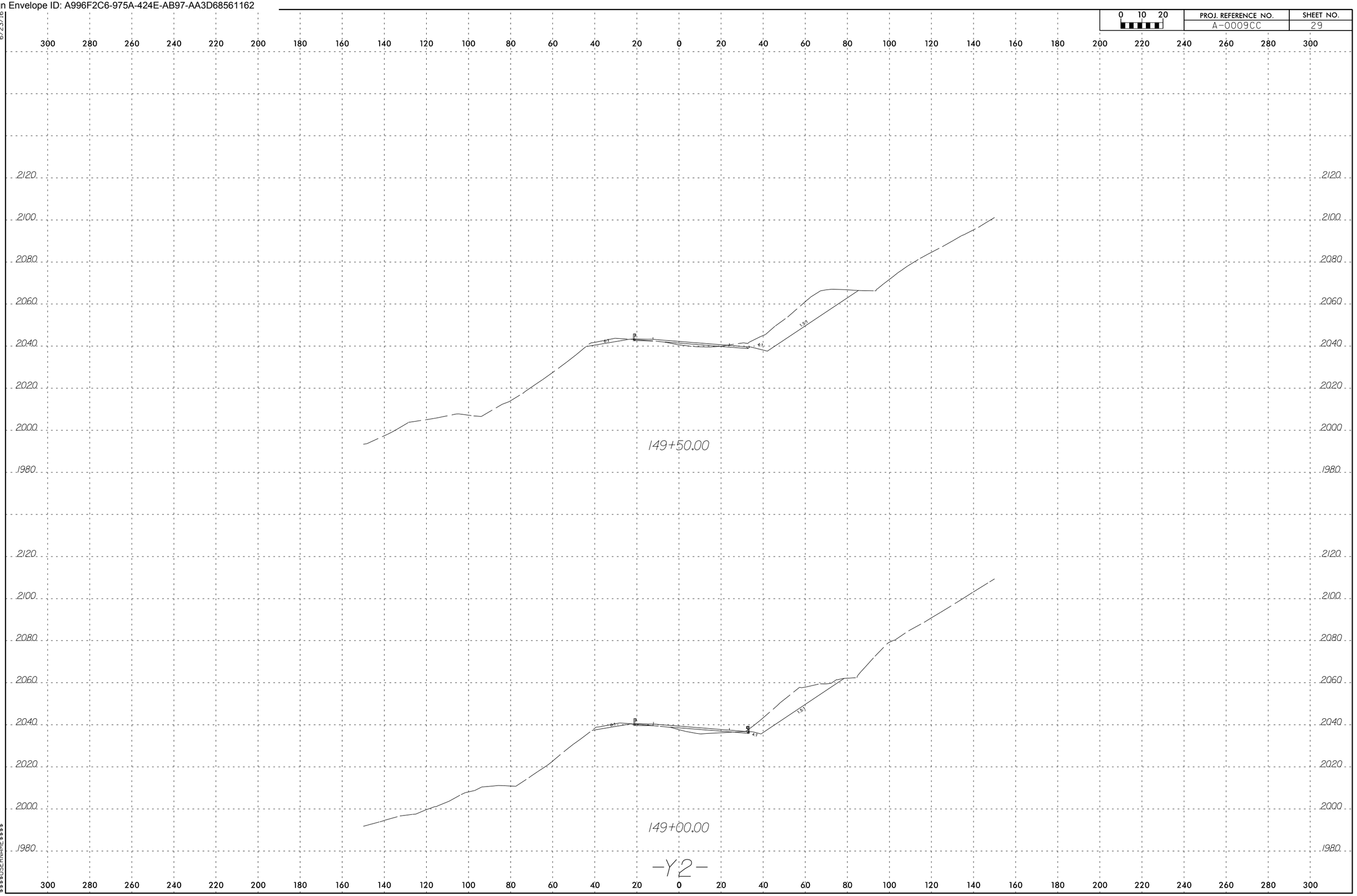
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	28



6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	29



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A-0009_Plot_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
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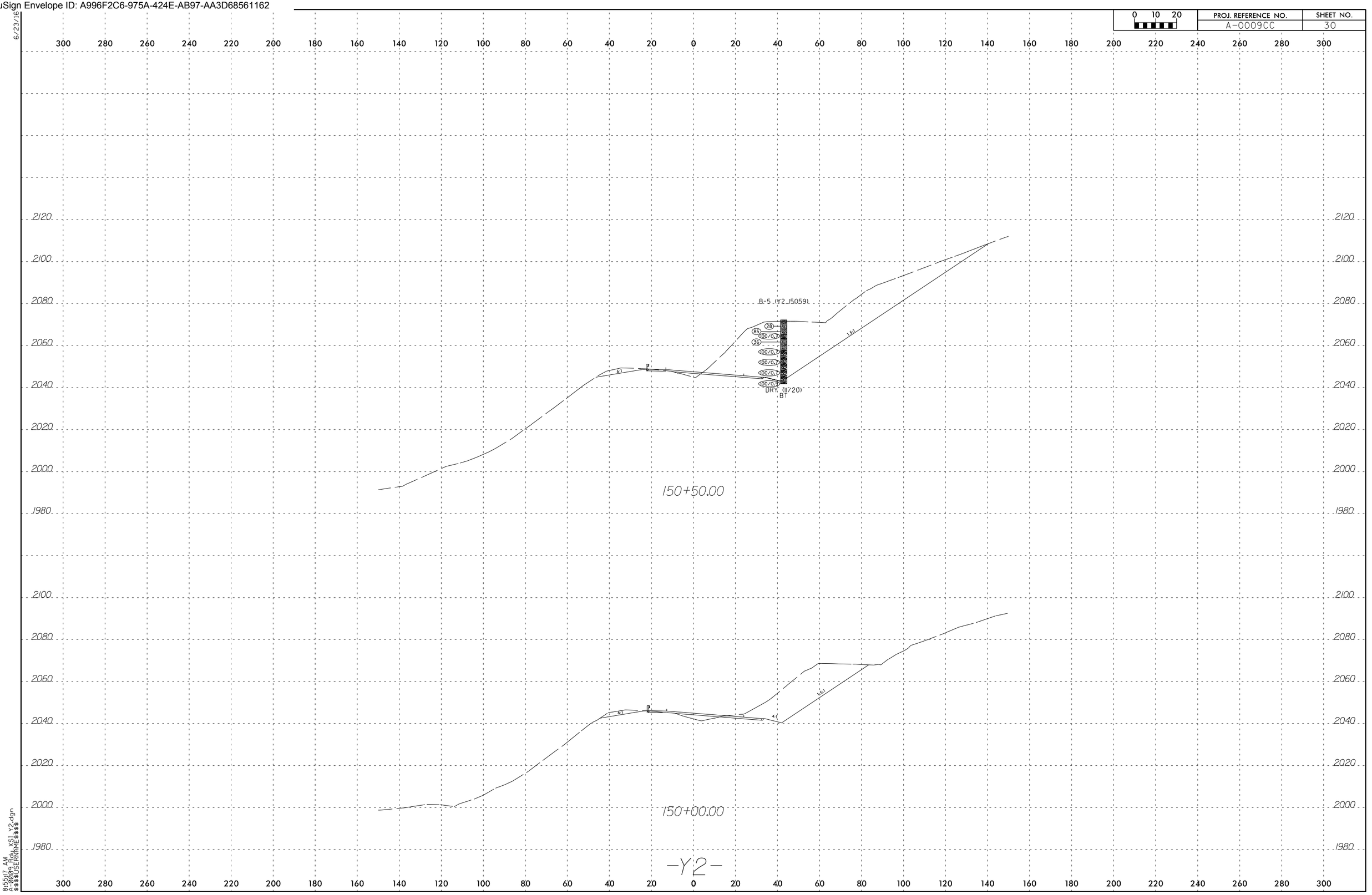

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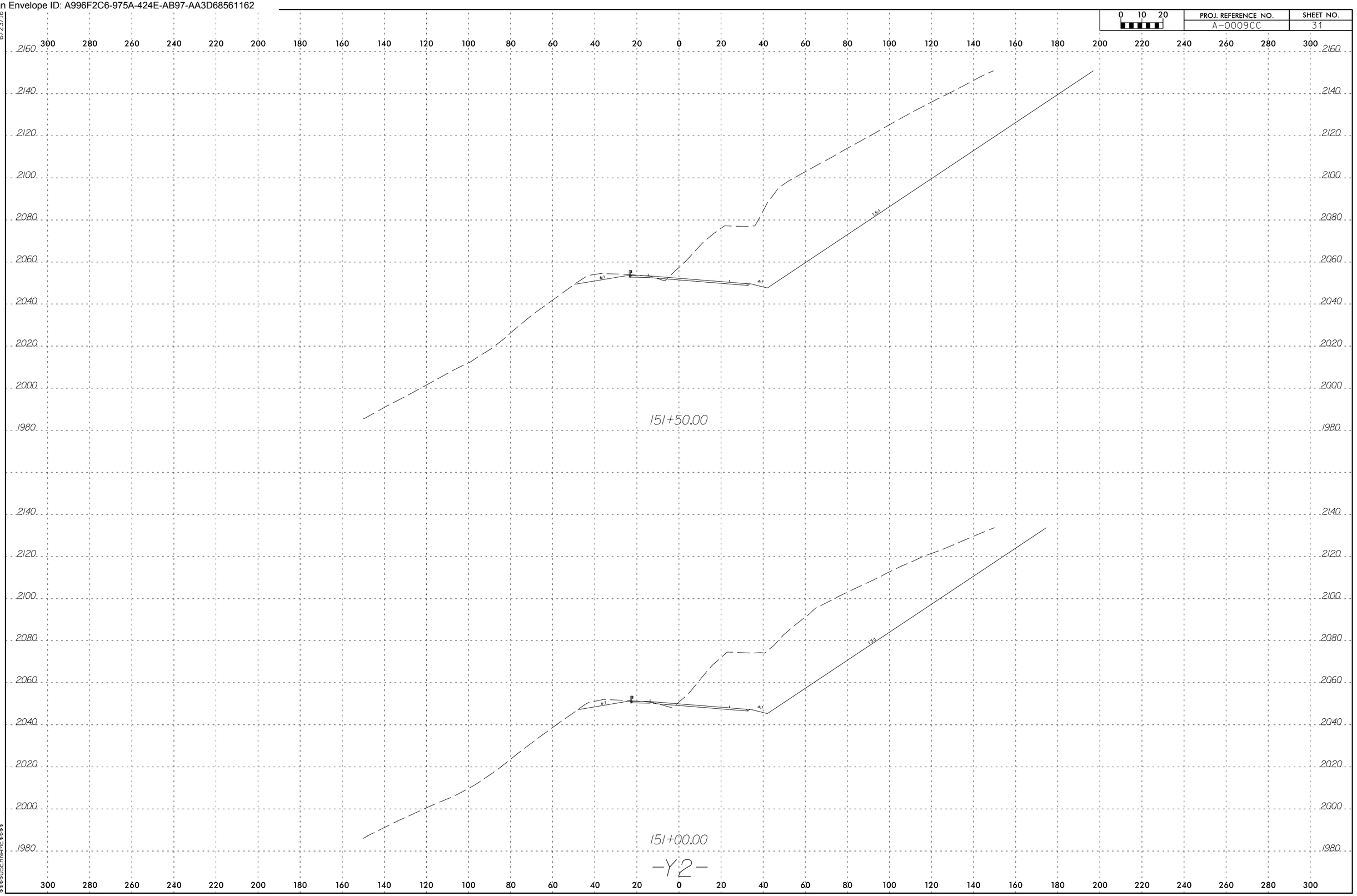
$$$$USERNAME$$$$

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	31



6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	32

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2180
2160
2140
2120
2100
2080
2060
2040
2020
2000
1980

6:1
4:1
1.5:1

152+00.00

-Y2-

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8:55:18 AM
A-0009_Plot_XSLY2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	33

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2200
2180
2160
2140
2120
2100
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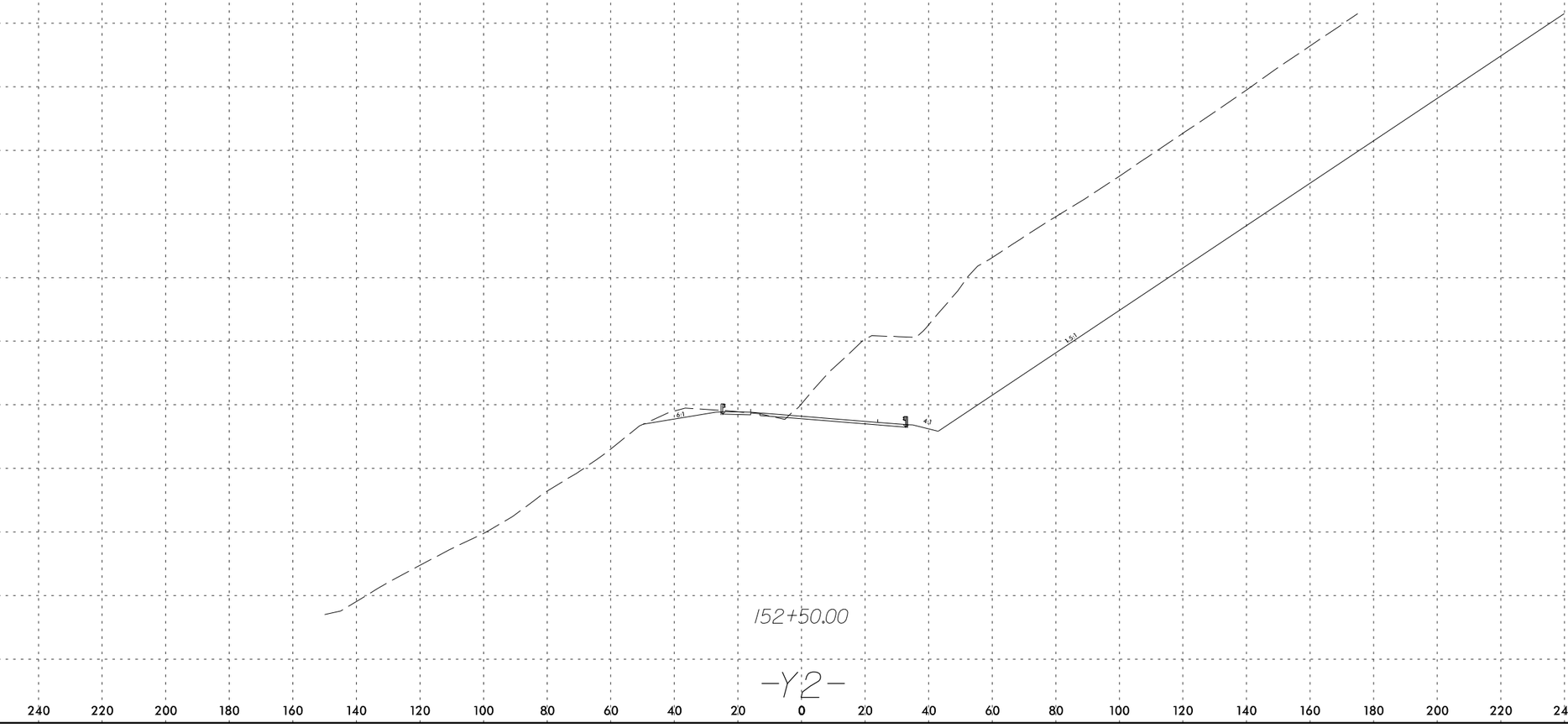
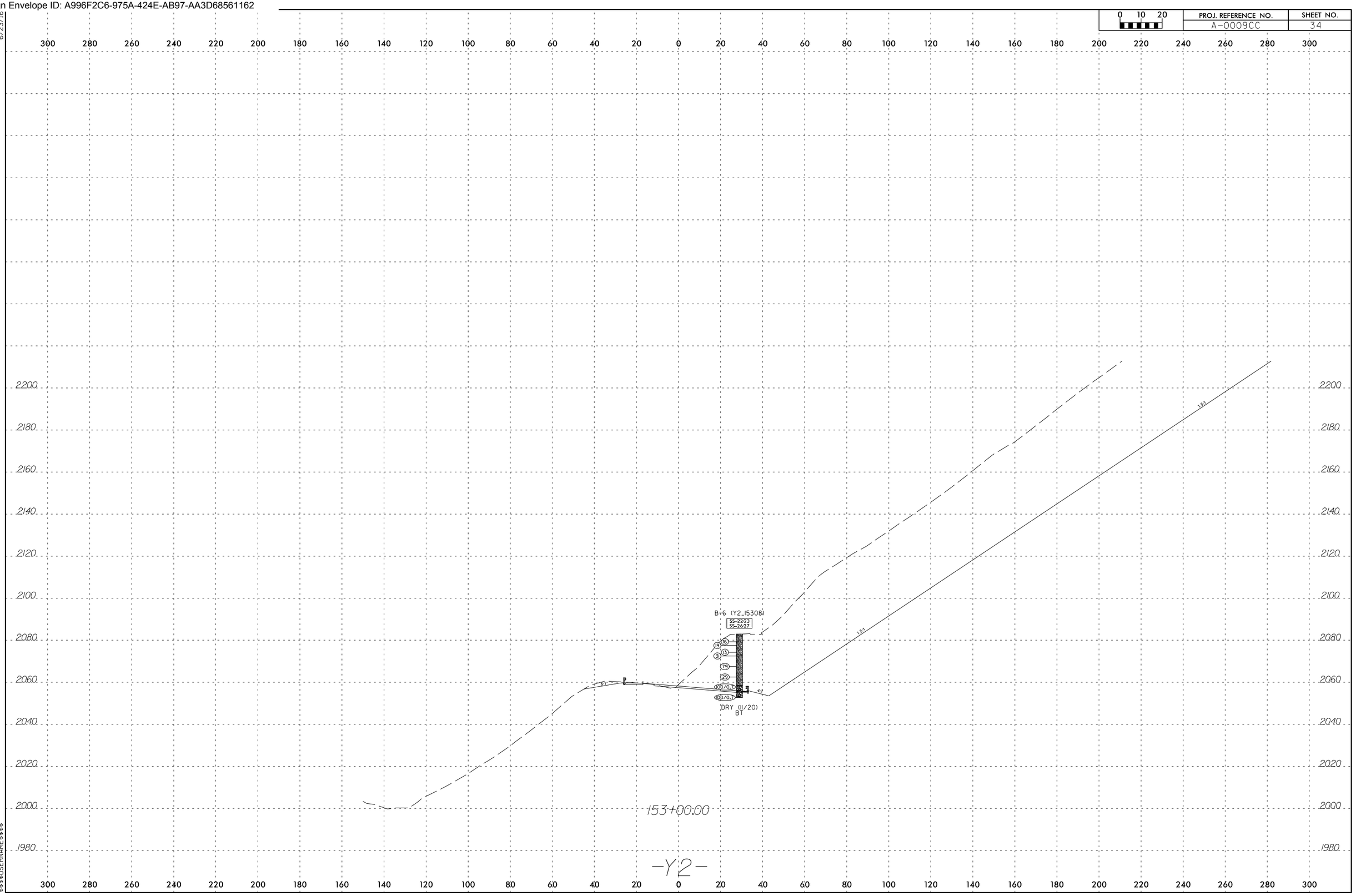
2060
2040
2020
2000
1980



8:55:19 AM
A-0009_Rdx_XSI_Y2.dgn
$$$$USERNAME$$$$

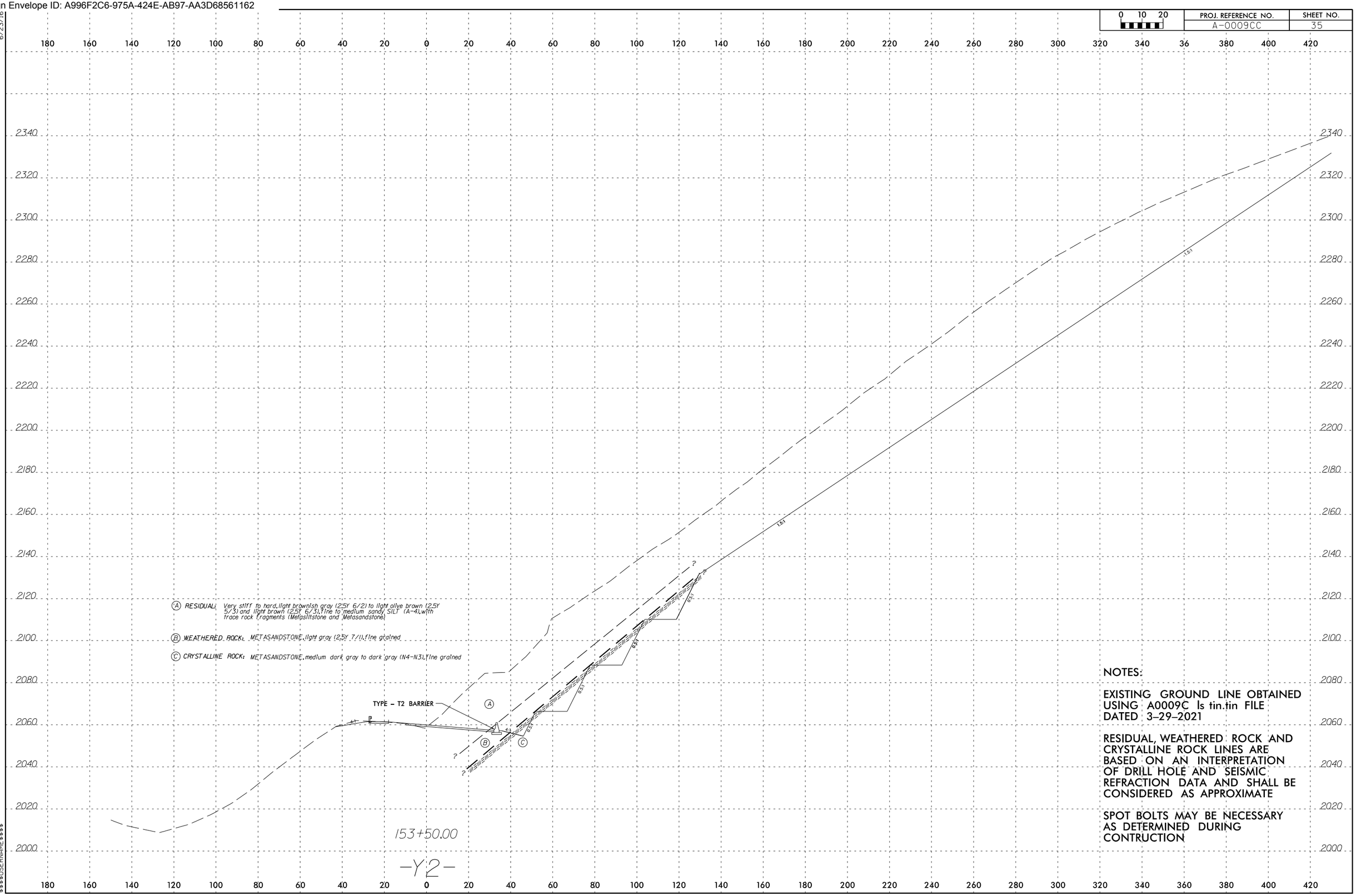
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	34



PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	35

0 10 20



NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

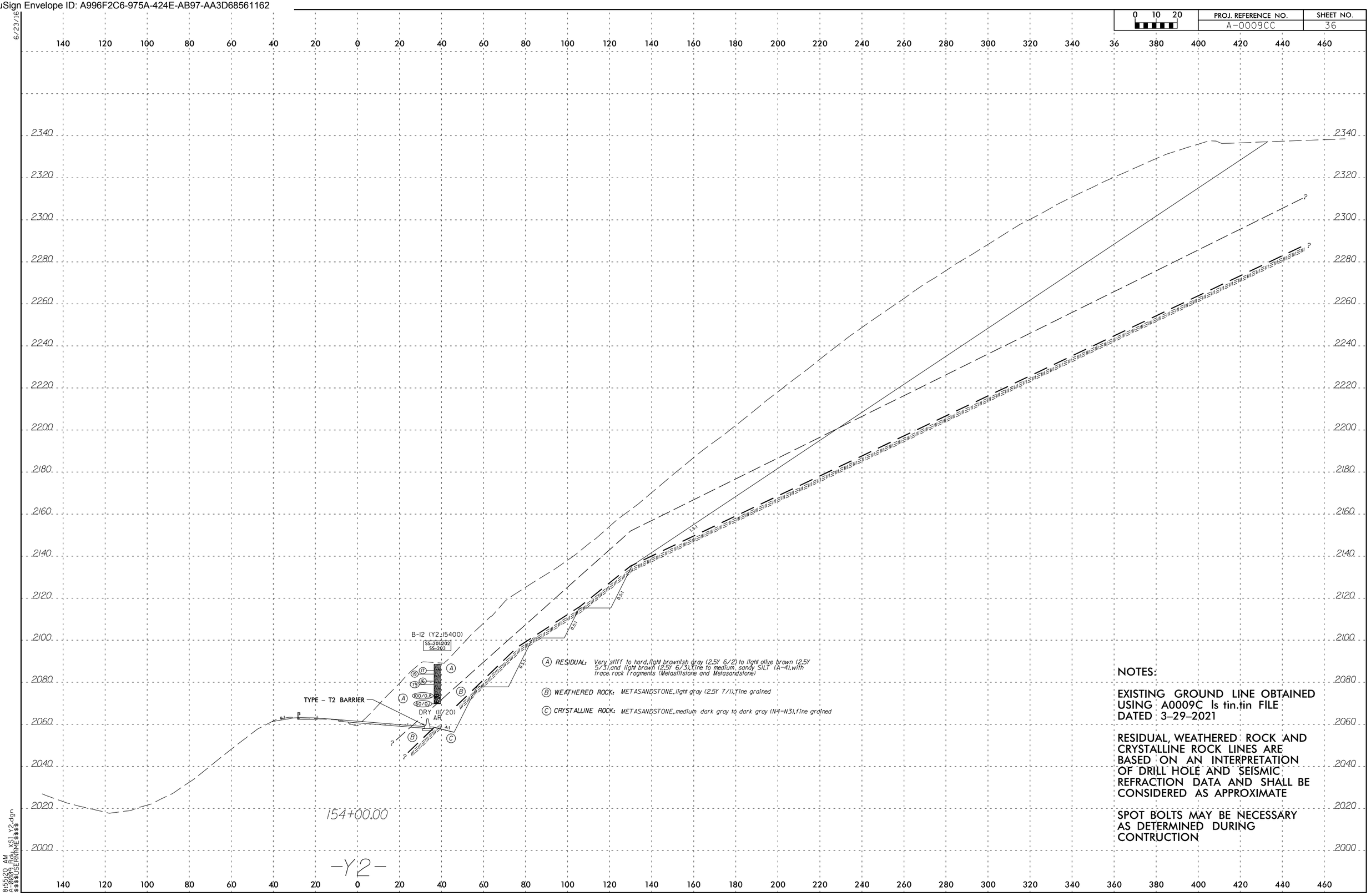
RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

6/23/16

8:55:20 AM
A-0009-Rdx XS1-Y2.dgn
$$$$USERNAME$$$$

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	36



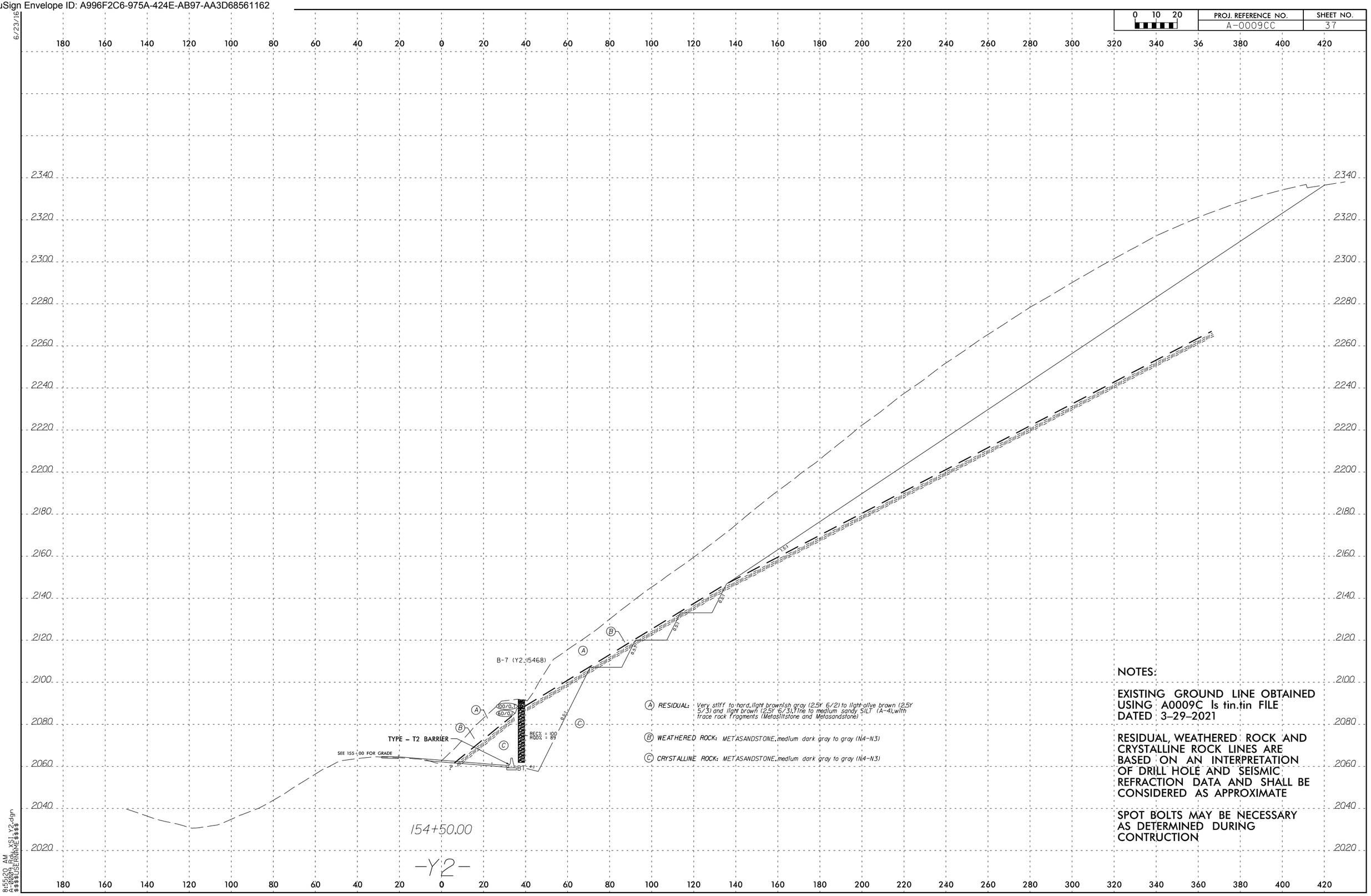
NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	37



NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

6/23/16

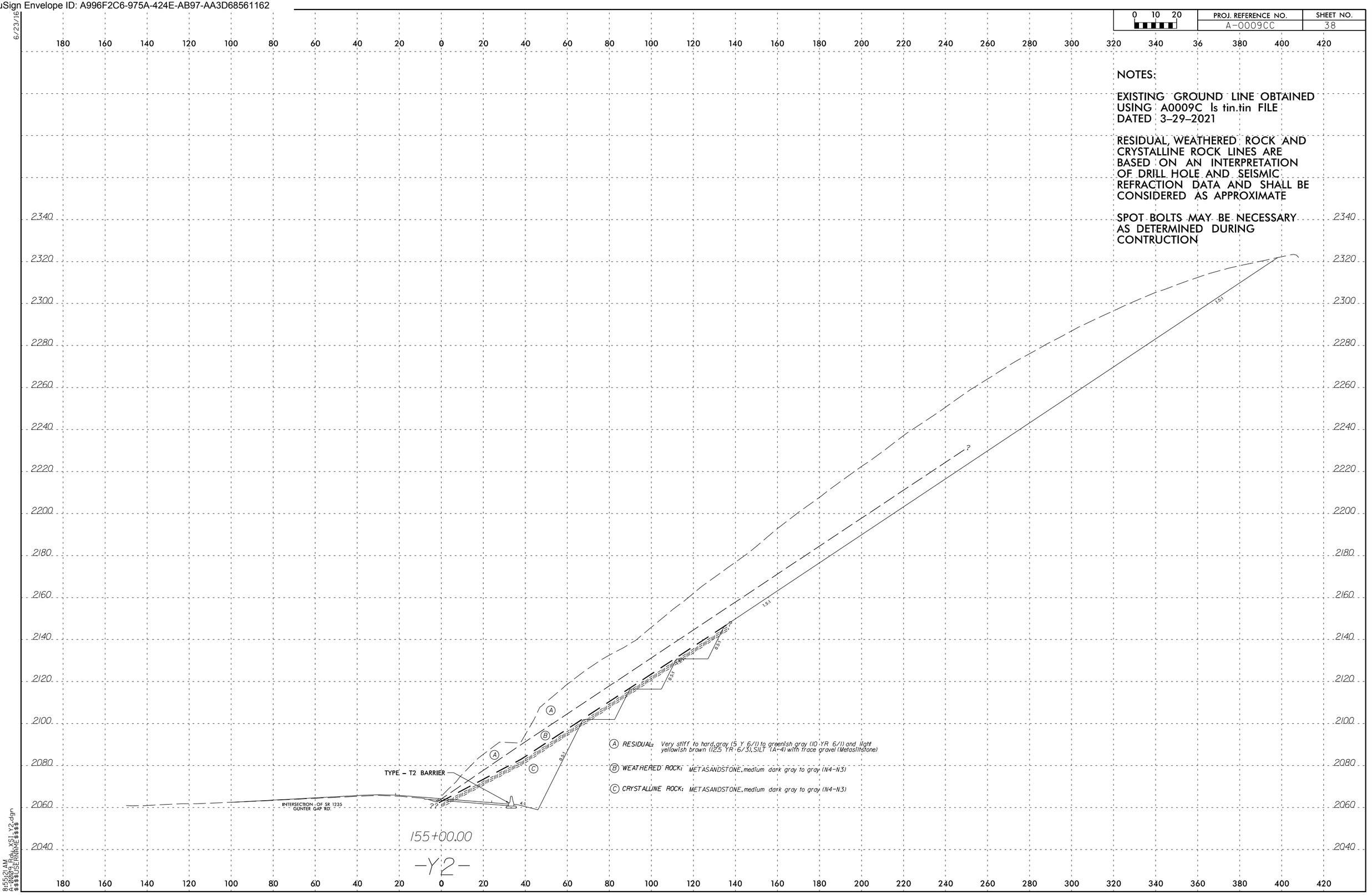
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	38

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



8:55:21 AM
A-0009_Rdx_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

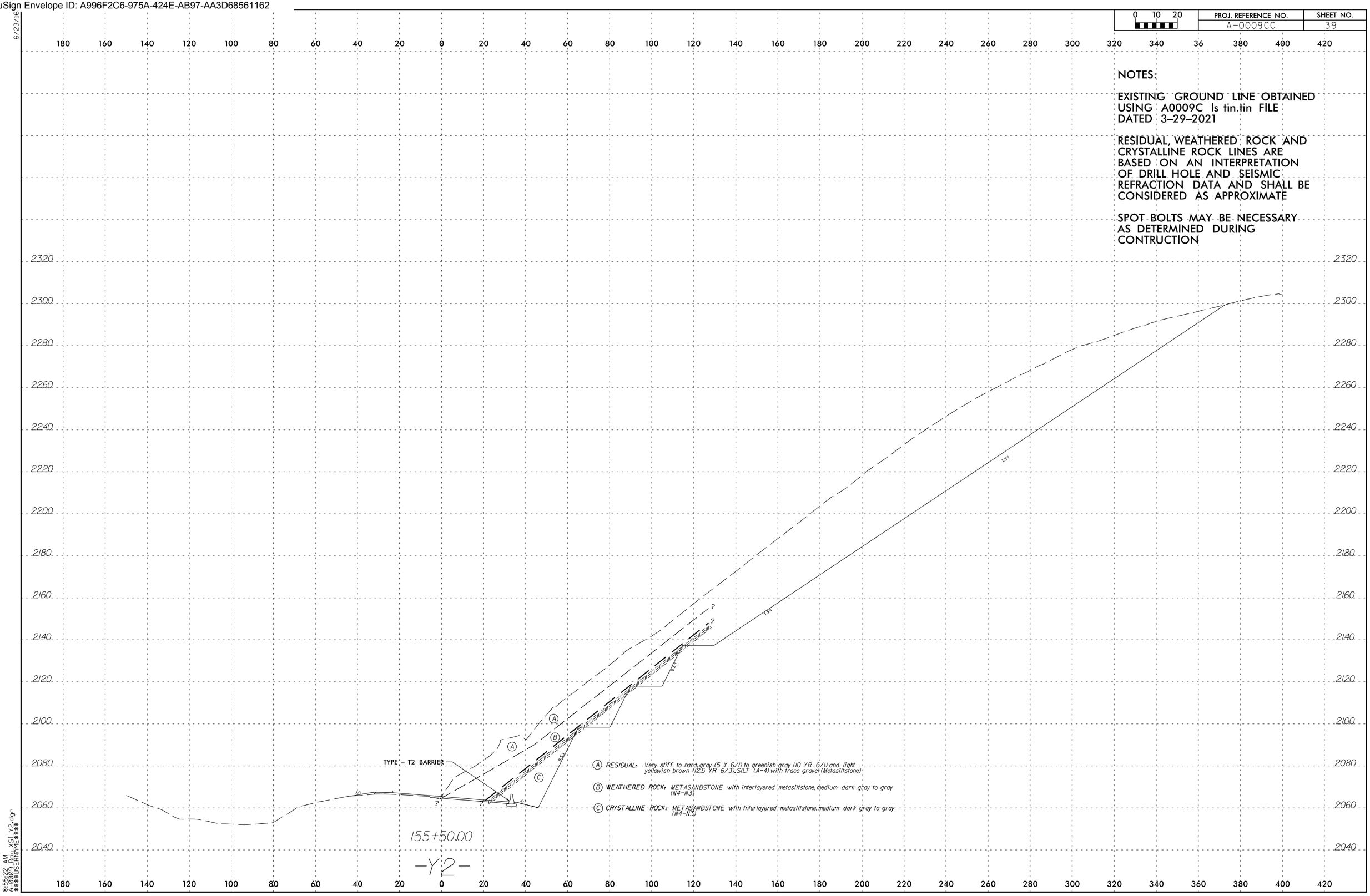
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	39

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



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A-0009_Rdwy_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	40

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

EXPOSED ROCK CUT (EDWARDS NORTH) BEGINS AT STA. 156+49

EXPOSED ROCK CUT (EDWARDS SOUTH) BEGINS AT STA. 156+06

(A) RESIDUAL: Very stiff to hard, gray (5 Y 6/1) to greenish gray (10 YR 6/1) and light yellowish brown (2.5 YR 6/3), SILT (A-4) with trace gravel (Metasiltstone)

(B) WEATHERED ROCK: METASANDSTONE with interlayered metasiltstone, medium dark gray to gray (N4-N3)

(C) CRYSTALLINE ROCK: METASANDSTONE with interlayered metasiltstone, medium dark gray to gray (N4-N3)

B-13 (Y2_15590)

TYPE – T2 BARRIER

REC% = 100
RQD% = 76

DRY (11/20)
BT

156+00.00

–Y2–

8:55:22 AM
A-0009_Rdy_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	41

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

Ⓐ RESIDUAL: Very stiff to hard, gray (5 Y 6/1) to greenish gray (10 YR 6/1) and light yellowish brown (12.5 YR 6/3), SILT (A-4) with trace gravel (Metasiltstone)

Ⓑ WEATHERED ROCK: METASANDSTONE Interlayered with metasiltstone, medium dark gray to gray (N4-N3)

Ⓒ CRYSTALLINE ROCK: METASANDSTONE. Interlayered with metasiltstone, medium dark. gray to gray (N4-N3)

TYPE – T2 BARRIER

156+50.00

–Y2–

8:55:23 AM
A-0009_Rdx_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

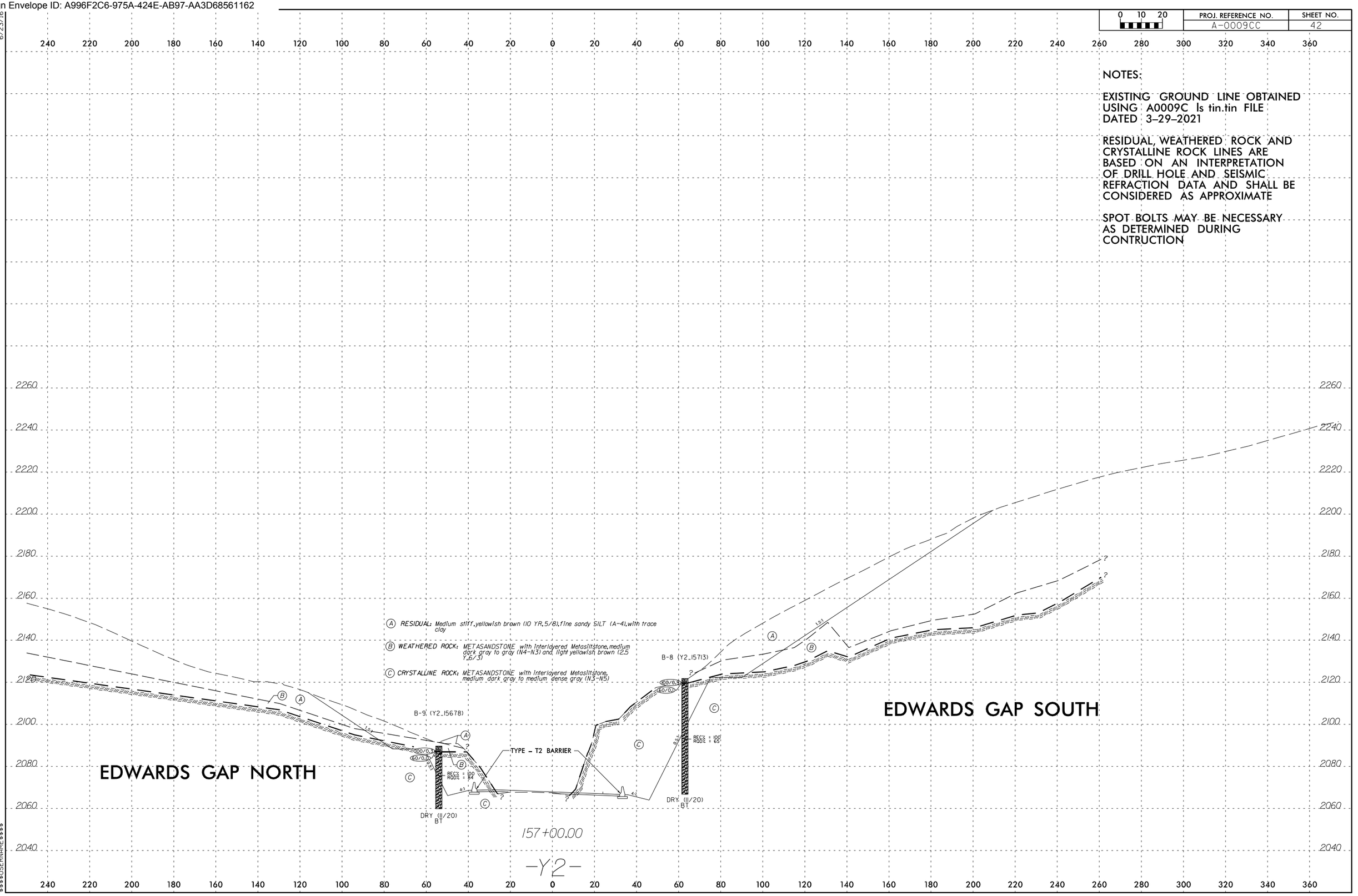
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	42

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



8:55:23 AM
A-0009_Rdx_XSI_Y2.dgn
$$$$USERNAME$$$$

6/23/16

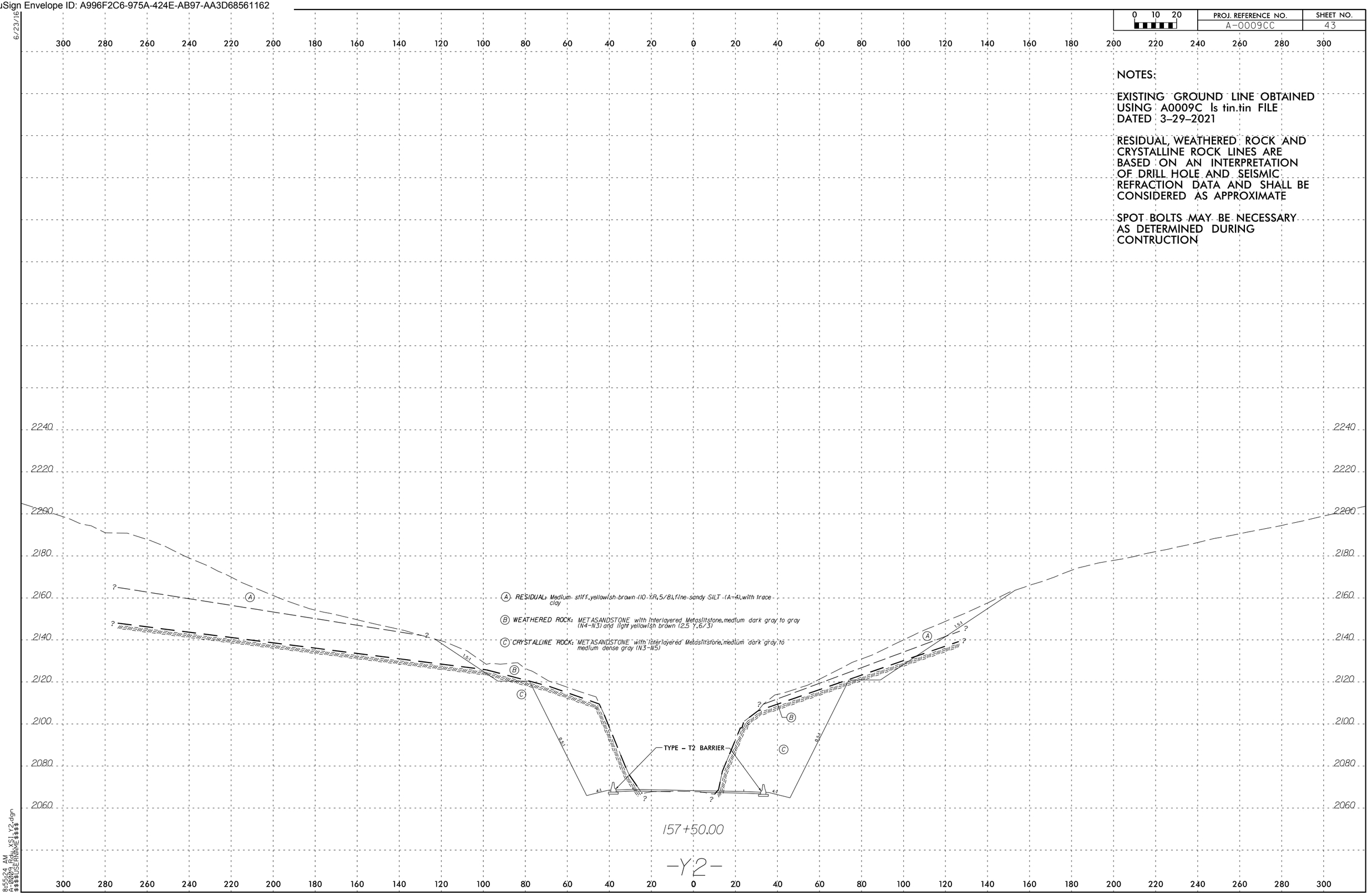
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	43

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



8:55:24 AM
A-0009_Plot_XSLI_Y2.dgn
$$$$USERNAME$$$$

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

EXPOSED ROCK CUT (EDWARDS SOUTH) ENDS AT STA. 158+19

Ⓐ RESIDUAL: Medium stiff to hard,yellowish brown (10 YR 5/8) and brown (10 YR 5/3) to light olive brown (2.5 Y 5/4) fine sandy SILT (A-4),with trace clay

Ⓑ WEATHERED ROCK: SCHIST,moderate yellowish brown (10 YR 5/4) to light olive brown (5 Y 5/6)

METASILTSTONE,yellowish gray (5 Y 15/2) to light olive gray (5 Y 5/2),very severe weathering

Ⓒ CRYSTALLINE ROCK: METASANDSTONE with interlayered Metasiltstone,medium gray to medium dark gray (N4–N6)

TYPE – T2 BARRIER

158+00.00

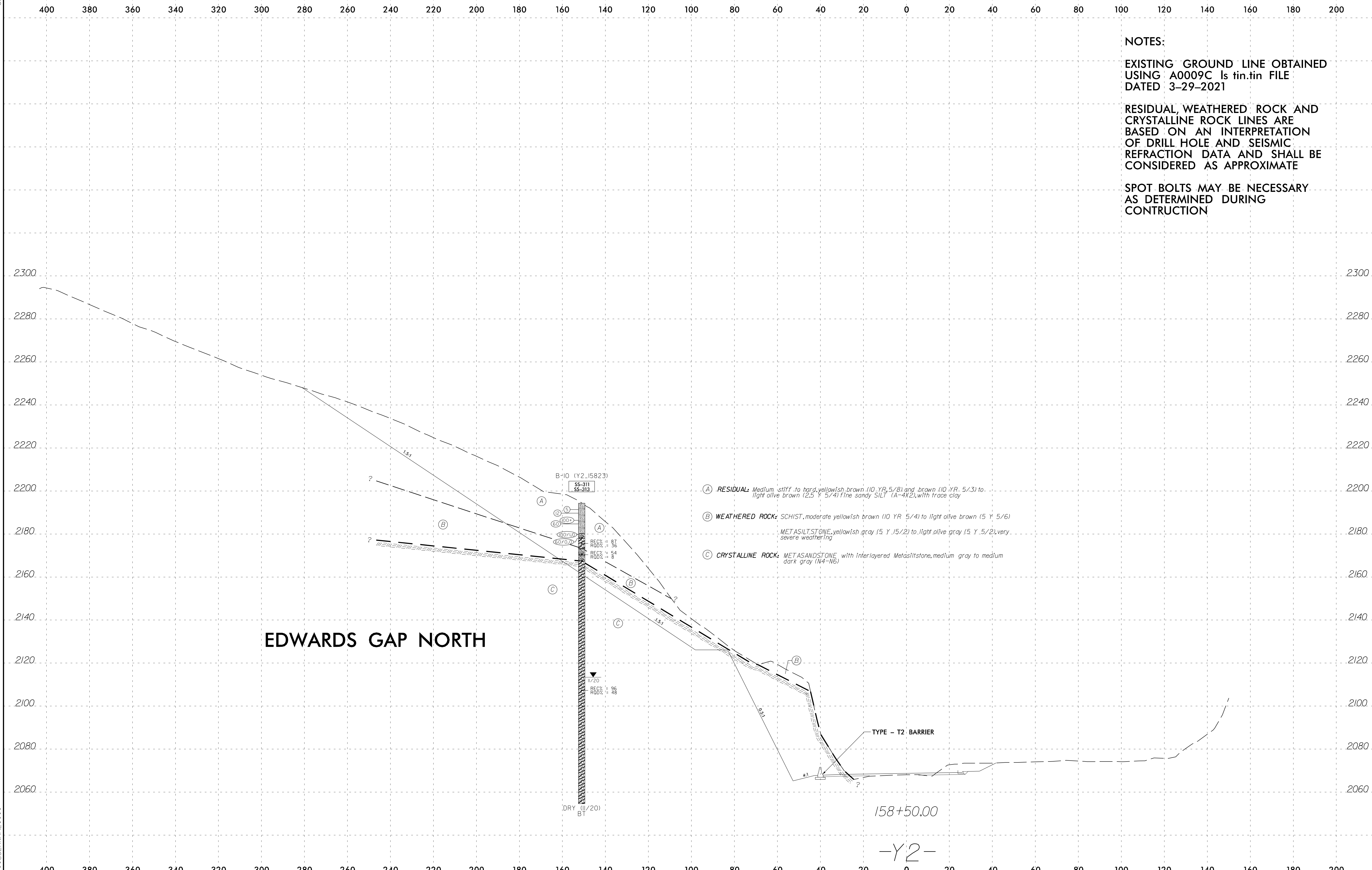
–Y2–

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



0 10 20
B-10 (Y2_15823)
SS-311
SS-313
REC% = 87
RQD% = 36
REC% = 54
RQD% = 8
REC% = 96
RQD% = 48
DRY (11/20)
BT
Ⓐ RESIDUAL: Medium stiff to hard, yellowish brown (10 YR, 5/8) and brown (10 YR 5/3) to light olive brown (2.5 Y 5/4) fine sandy SILT (A-4)(2), with trace clay
Ⓑ WEATHERED ROCK: SCHIST, moderate yellowish brown (10 YR 5/4) to light olive brown (5 Y 5/6)
METASILTSTONE, yellowish gray (5 Y 15/2) to light olive gray (5 Y 5/2), very severe weathering
Ⓒ CRYSTALLINE ROCK: METASANDSTONE with interlayered Metasiltstone, medium gray to medium dark gray (N4-N6)
EDWARDS GAP NORTH
TYPE - T2 BARRIER
158+50.00
-Y2-

6/23/16

0 10 20

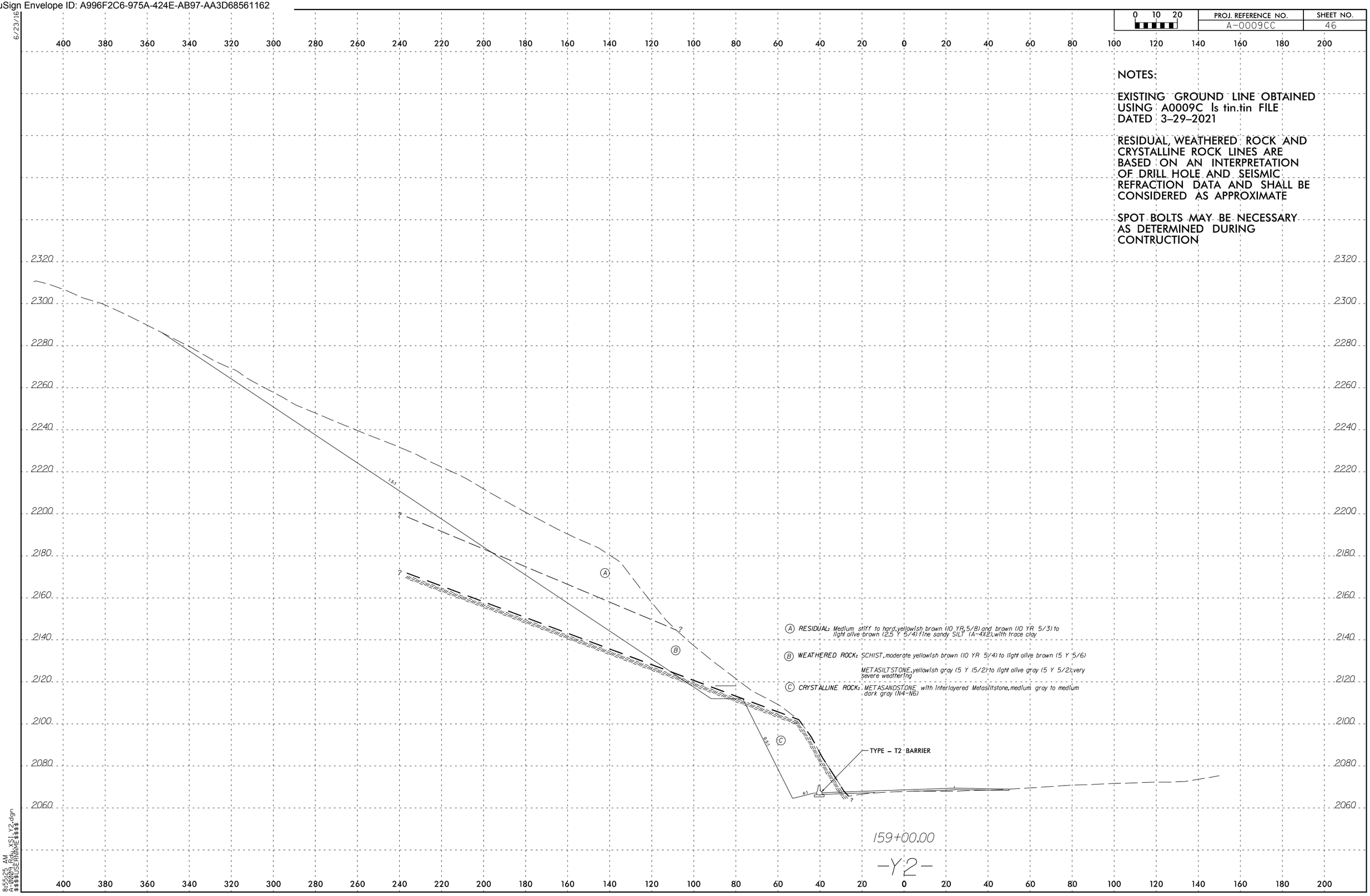
PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	46

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



8:55:25 AM
A-0009_Rd_XS1_Y2.dgn
$$$$USERNAME$$$$

6/23/16

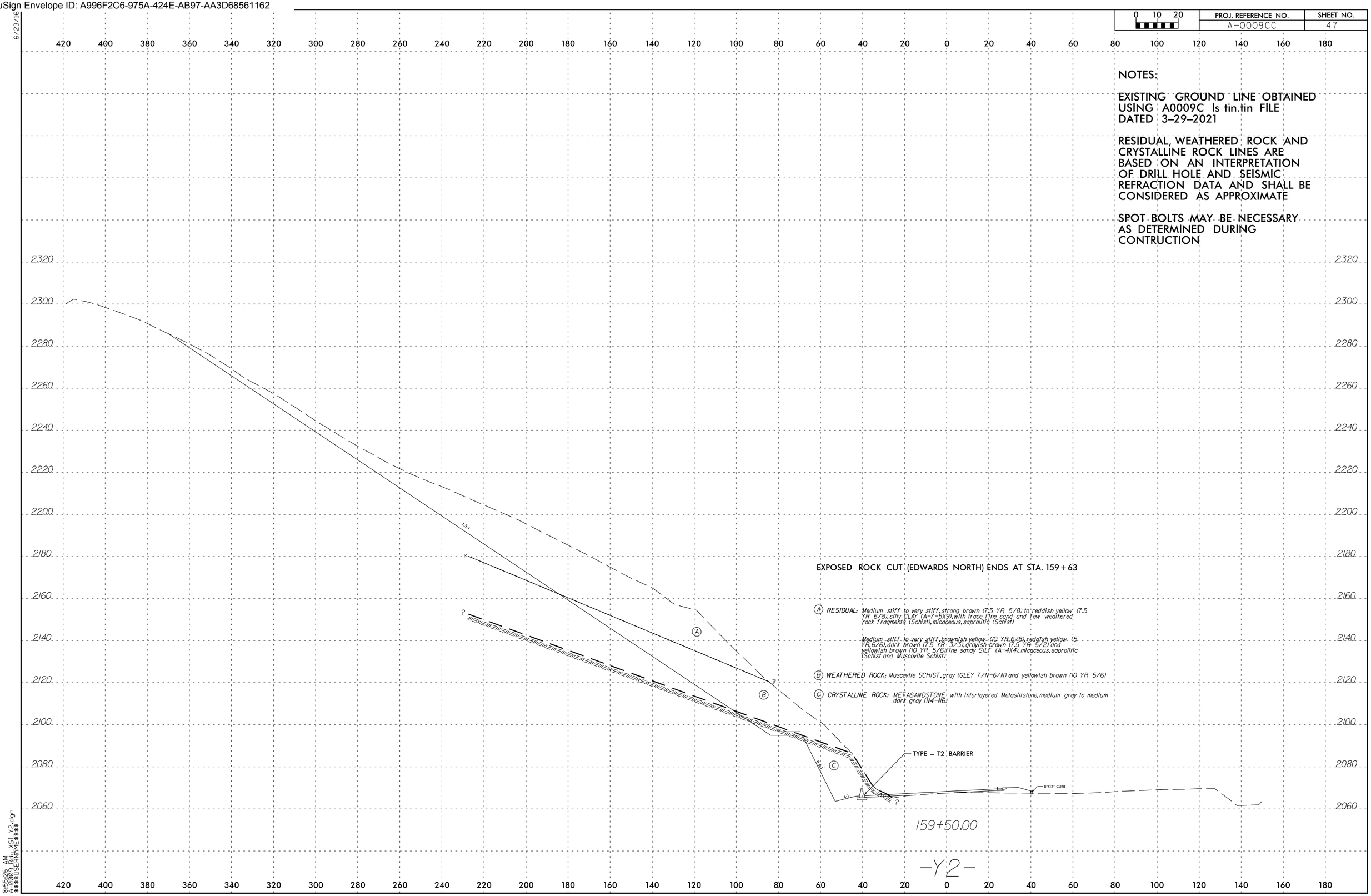
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	47

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



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$$$$USERNAME$$$$

6/23/16

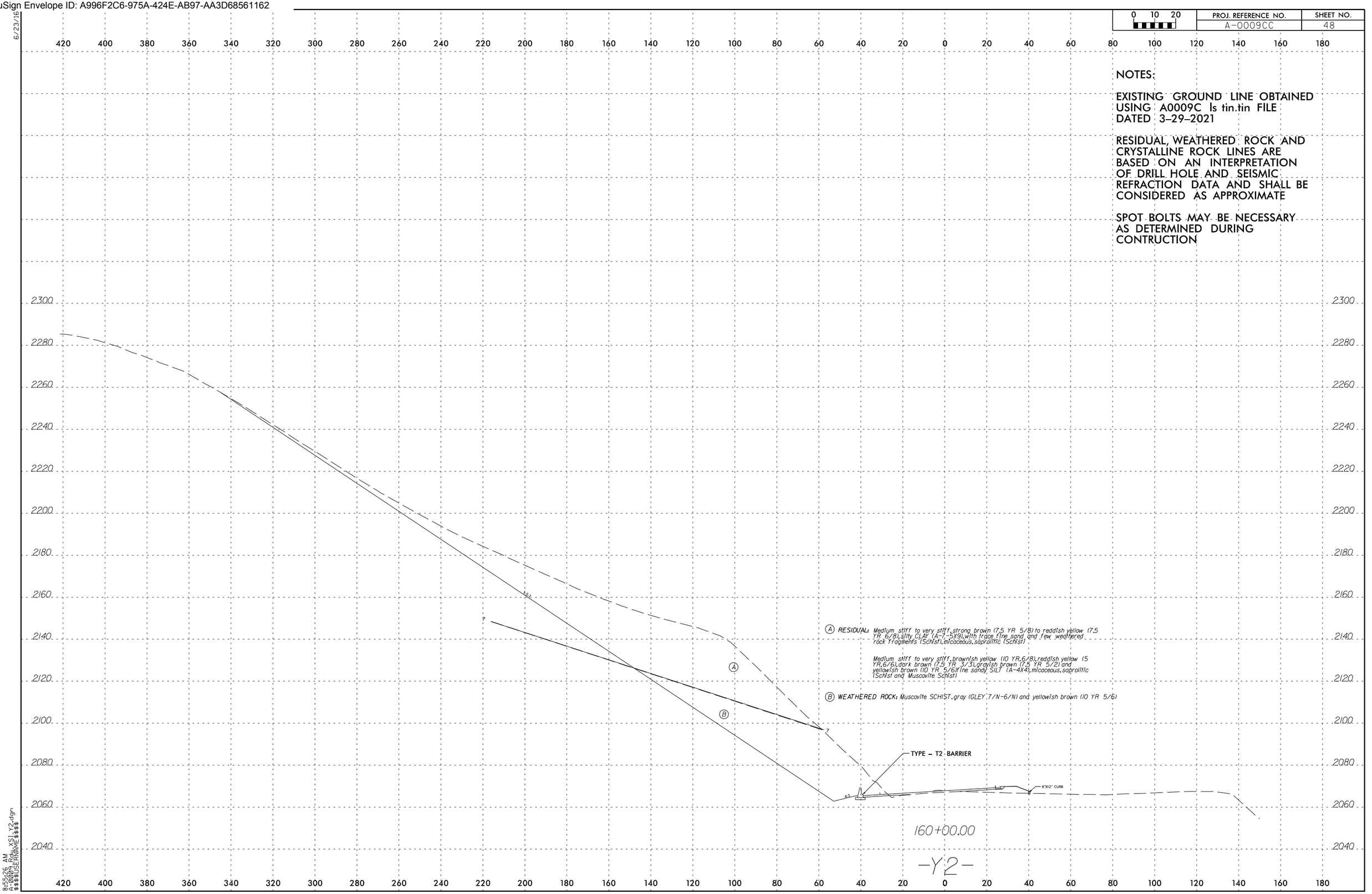
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	48

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION



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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	49

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3–29–2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

B-11(Y2_16084)

SS-318
SS-322

(A) RESIDUAL: Medium stiff to very stiff,strong brown (7.5 YR 5/8) to reddish yellow (7.5 YR 6/8),silty CLAY (A-7-5(9),with trace fine sand and few weathered rock fragments (Schist),micaceous,saprolitic (Schist)

Medium stiff to very stiff,brownish yellow (10 YR,6/8),reddish yellow (5 YR,6/6),dark brown (7.5 YR 3/3),grayish brown (7.5 YR 5/2) and yellowish brown (10 YR 5/6)Fine Sandy SILT (A-4(4),micaceous,sdp,olitic (Schist and, Muscovite Schist)

(B) WEATHERED ROCK: Muscovite SCHIST,gray (GLEY 7/N-6/N) and ,yellowish brown (10 YR 5/6)

TYPE – T2 BARRIER

8"X12" CURB

DRY (11/20)
BT

160+50.00

-Y2-

8:55:27 AM
A-0009_Plot_XSLi_Y2.dgn
$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	50

NOTES:

EXISTING GROUND LINE OBTAINED USING A0009C ls tin.tin FILE DATED 3-29-2021

RESIDUAL, WEATHERED ROCK AND CRYSTALLINE ROCK LINES ARE BASED ON AN INTERPRETATION OF DRILL HOLE AND SEISMIC REFRACTION DATA AND SHALL BE CONSIDERED AS APPROXIMATE

SPOT BOLTS MAY BE NECESSARY AS DETERMINED DURING CONTRUCTION

(A) RESIDUAL: Medium stiff to very stiff, strong brown (7.5 YR 5/8) to reddish yellow (7.5 YR 6/8), silty CLAY (A-7-5)(9), with trace fine sand and few weathered rock fragments (Schist), micaceous, saprolitic (Schist)

Medium stiff to very stiff, brownish yellow (10 YR, 6/8), reddish yellow (5 YR, 6/6), dark brown (7.5 YR 3/3), grayish brown (7.5 YR 5/2) and yellowish brown (10 YR 5/6) fine sandy SILT (A-4)(4), micaceous, saprolitic (Schist and Muscovite Schist)

(B) WEATHERED ROCK: Muscovite SCHIST, gray (GLEY 7/N-6/N) and yellowish brown (10 YR 5/6)

1.75:1

TYPE - T2 BARRIER

8"X12" CURB

161+00.00

-Y2-

8:55:28 AM
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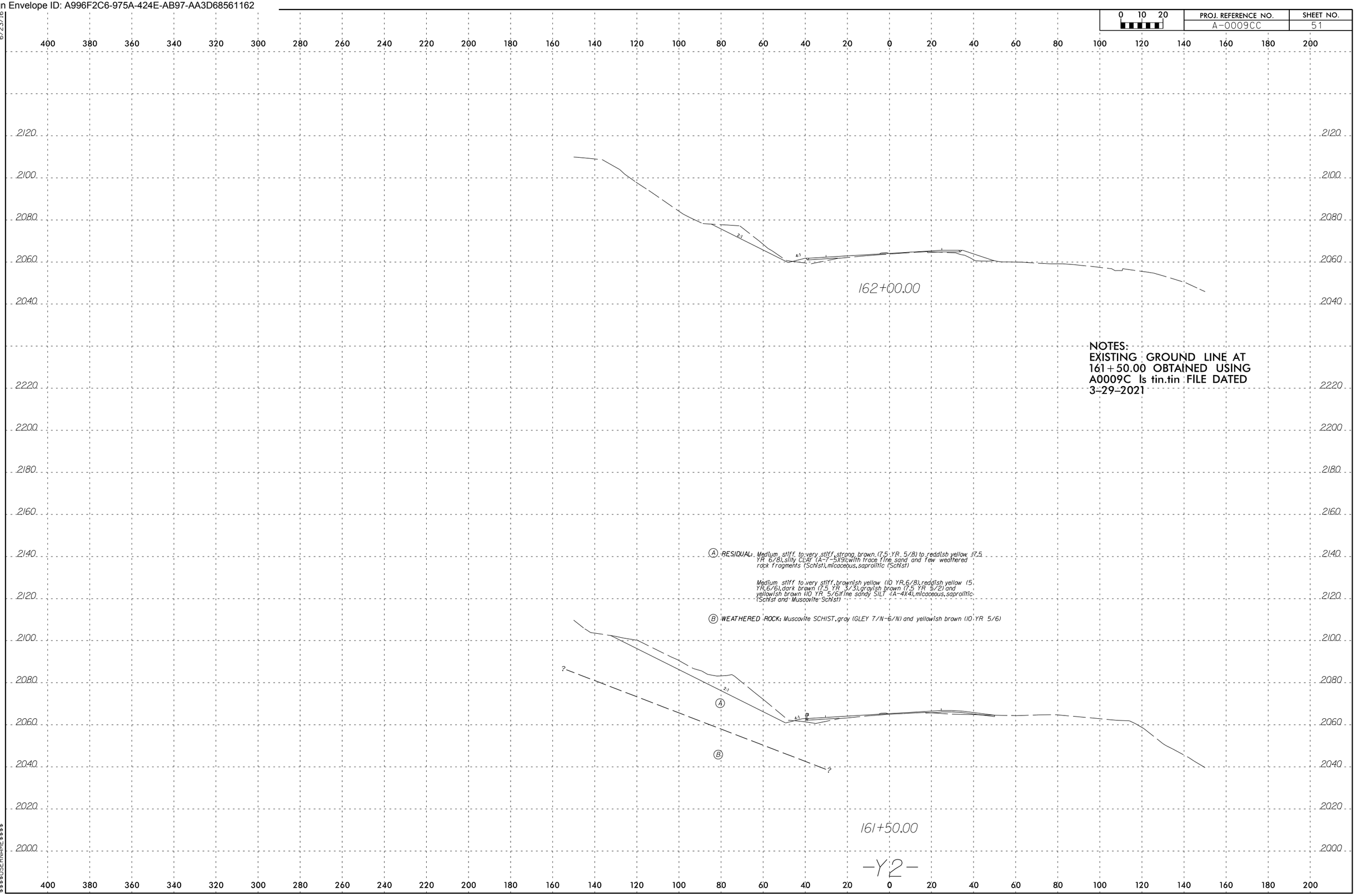
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	51



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6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	52

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2100
2080
2060
2040

SEE 164+00 FOR GRADE

4:1 4:1 4:1

163+50.00

2120
2100
2080
2060
2040

4:1 4:1 4:1

163+00.00

2120
2100
2080
2060
2040

4:1 4:1

162+50.00

-Y2-

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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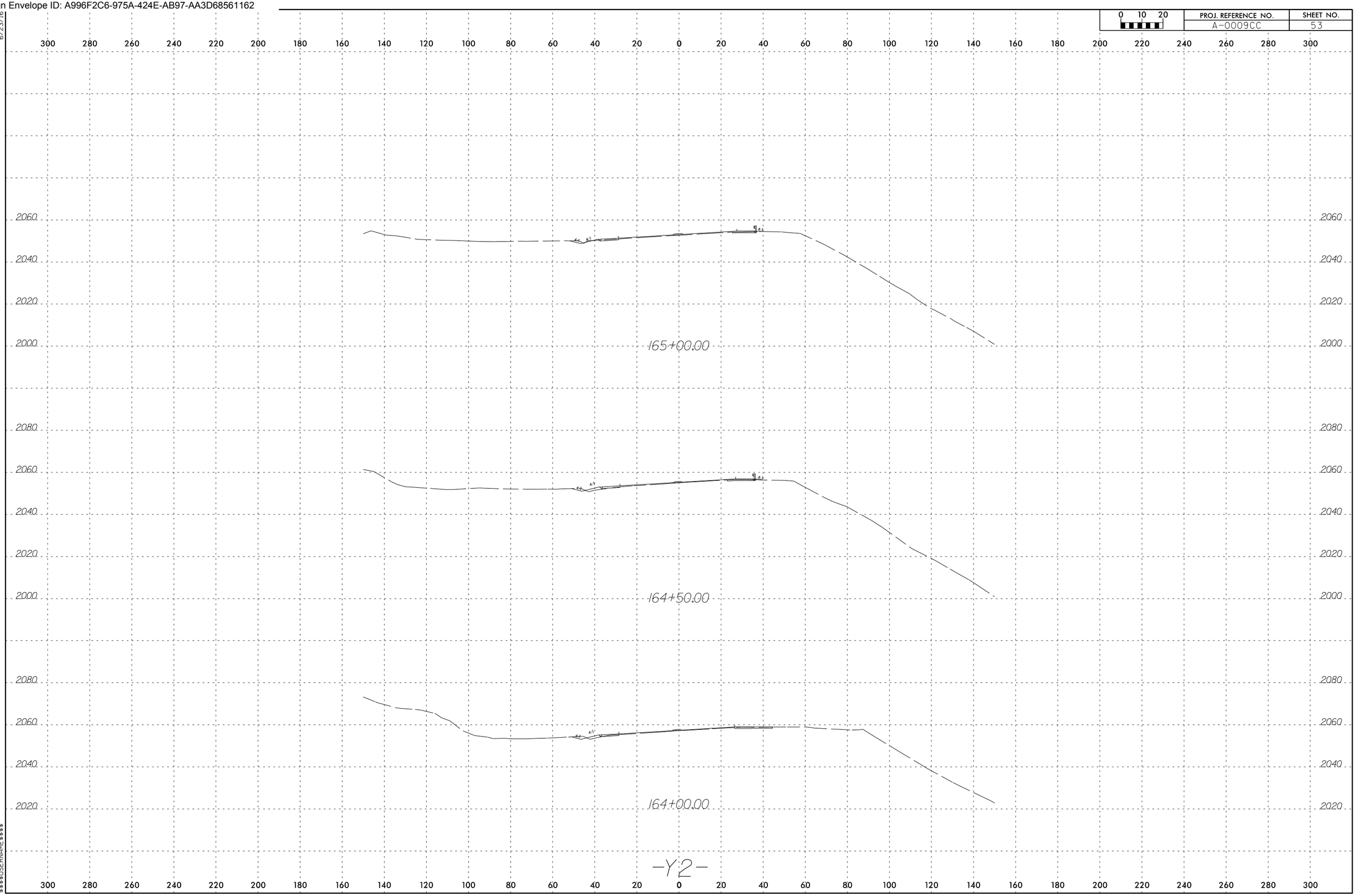
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	53



6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	54

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2100
2080
2060
2040
2020
2000

166+00.00

165+50.00

165+35.00

-Y2-

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8:55:30 AM
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$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	55

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2060
2040
2020
2000
2080
2060
2040
2020
2100
2080
2060
2040
2020

167+00.00

166+50.00

166+35.00

-Y2-

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8:55:30 AM
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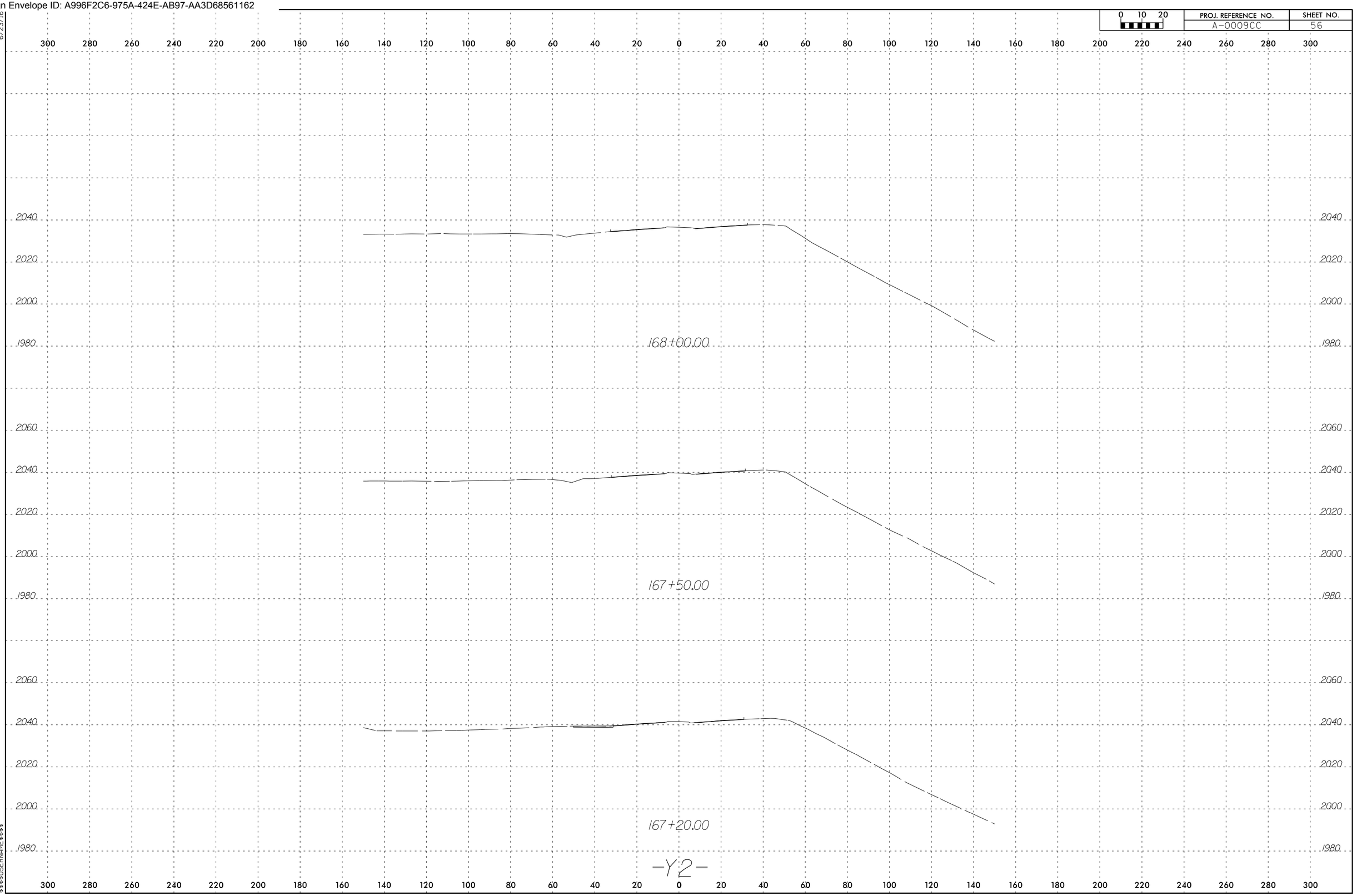
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	56



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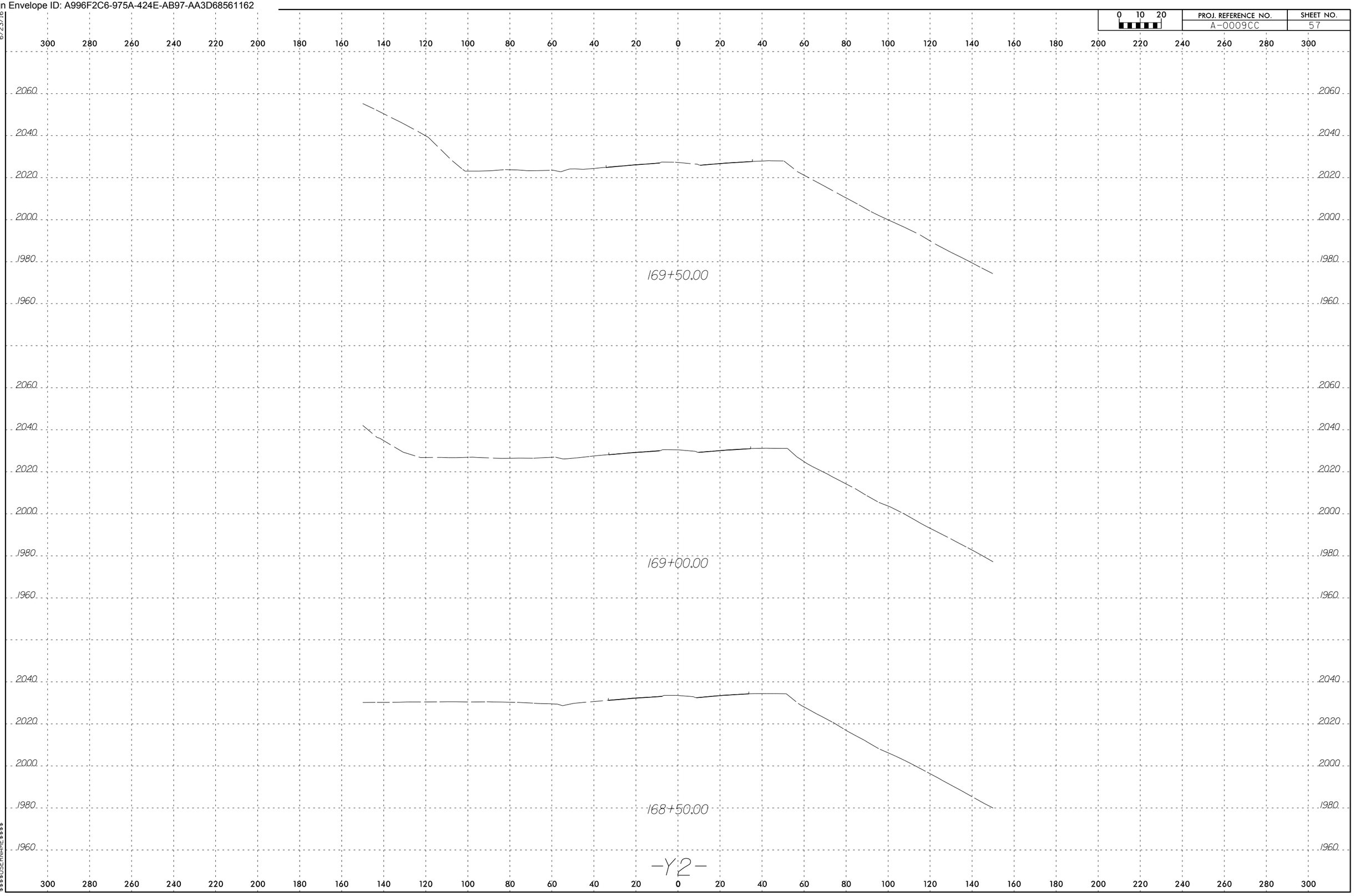
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	57



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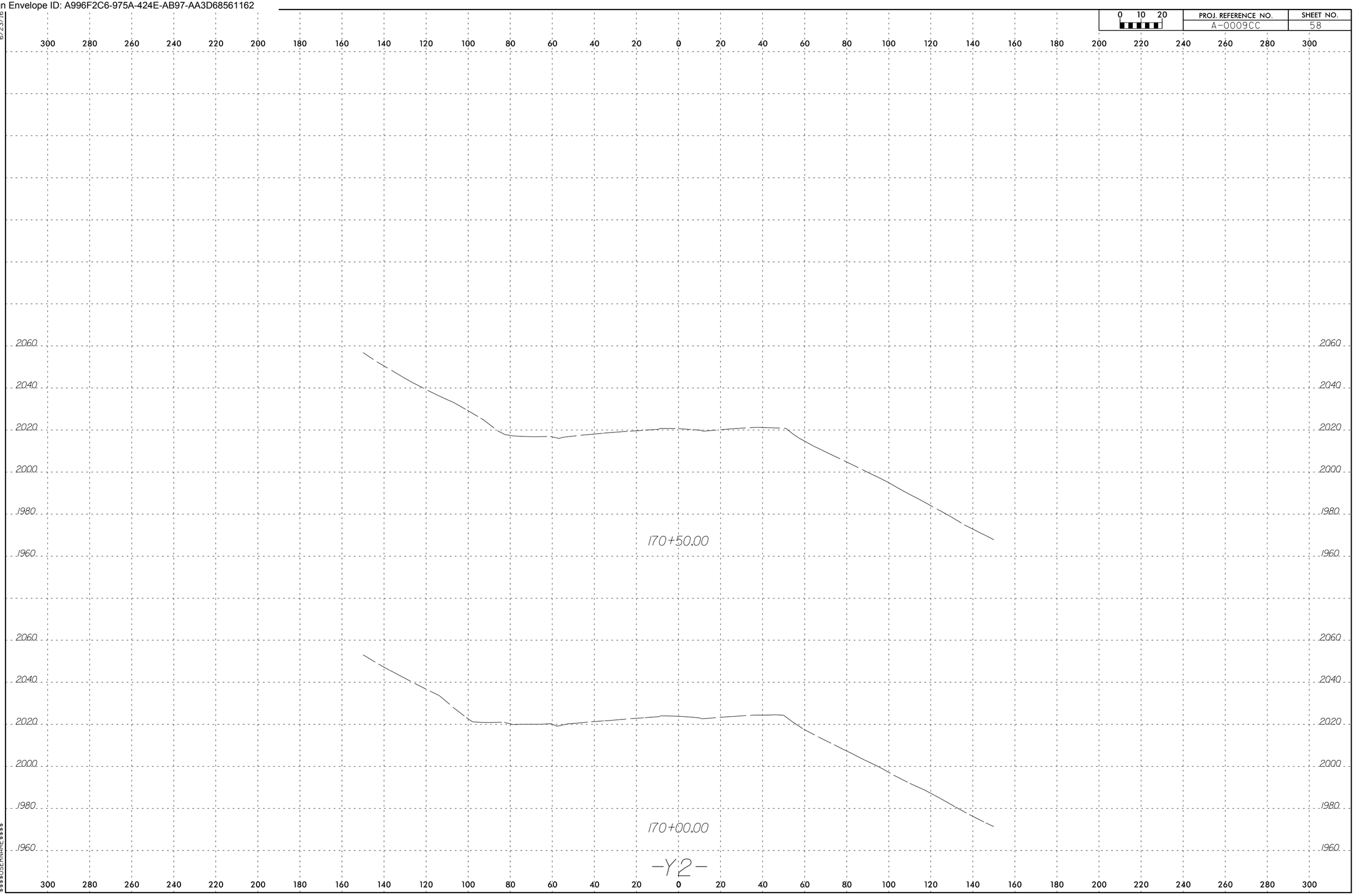
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	A-0009CC	58



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$$$$USERNAME$$$$

6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
A-0009CC	59

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

2080
2060
2040
2020
2000
1980
1960

171+50.00

171+00.00

-Y2-

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

8:55:32 AM
A-0009_Rdx_XS1_Y2.dgn
$$$$USERNAME$$$$

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**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)
2105										2,105.0 GROUND SURFACE 0.0
										2,104.7 **RESIDUAL** 0.3 Reddish orange, CLAY (A-6)
	2,102.9	2.1	47	43/0.3		100/0.8				**WEATHERED ROCK** Metasandstone with interlayered Metasiltstone , medium gray (N5) with reddish yellow (5 YR 6/8), CLAY (A-7) and Iron Oxide staining on fractures
	2,101.0	4.0	60	40/0.5						
2100						100/1.0				
	2,097.9	7.1	68	32/0.3						
	2,096.0	9.0				100/0.8				
			50	50/0.4						Very light gray (N8) with grayish red (10 R 4/2)
2095						100/0.9				
										2,093.0 **RESIDUAL** 12.0 Very dense, grey (5 Y 6/1), fine to medium silty SAND (A-2-4), with trace rock fragments (Metasandstone), saprolitic
	2,091.0	14.0	29	47	24	71	SS-340	M		
2090										
										2,087.7 **WEATHERED ROCK** 17.3 Metasandstone with interlayered Metasiltstone, very light gray (N8), fine to medium grained
	2,086.0	19.0	100/0.3			100/0.3				2,085.5 **CRYSTALLINE ROCK** 19.5
	2,085.5	19.5	60/0.0			60/0.0				Metasiltstone with interlayered Metasandstone and Muscovite Schist, medium gray (N5), very fine to fine grained, moderately hard, moderate weathering, CLAY (A-7) on fractures Close fracture spacing, very thinly to thinly bedded (70-80°), with biotite porphyroblasts 2.0" Quartz vein
2085										
2080							RS-B-1-1a			Acid-Base Lab Test Sample (B-1-1a: 26.7-27.0')
2075							RS-B-1-2t			2,075.2 29.8 Muscovite Schist with interlayered Metasiltstone, very fine to medium grained, moderate to slight weathering, moderately hard, close fracture spacing, very thinly to thinly bedded (70-80°) Petrographic Section Sample (B-1-2t: 30.0-30.2')
2070										2,070.2 34.8 Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts
2065										

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**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
2065						Match Line				Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)*
2060										Thickly laminated to very thinly bedded (70°)
2055										
2050										Very close to close fracture spacing, thickly laminated to very thinly bedded (70°)
2045										Very slight to slight weathering, close fractures, thinly to thickly bedded
2040										Thinly bedded Thickly laminated to very thinly bedded (70°) Thinly bedded Thickly laminated to very thinly bedded (70°) 0.8' core loss at top of Run 11 due to broken core bit stuck on rock, used PVC tricone bit to break up broken core bit to continue drilling.
2035										
2030							RS-B-1-3a			Thickly bedded Acid-Base Lab Test Sample (B-1-3a: 71.9-72.2')
2025							RS-B-1-4t			Petrographic Section Sample (B-1-4t: 75.8-76.2') Thinly bedded (70°)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**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
2025						Match Line				
										Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)*
2020										Thickly bedded 0.5" Quartz vein
										Moderately close to wide fracture spacing, very thinly to thinly bedded (70°)
2015										
2010										
2005										
							RS-B-1-5a RS-B-1-6t			Acid-Base Lab Test Sample (B-1-5a: 102.4-102.6') Petrographic Section Sample (B-1-6t: 102.6-102.9')
2000										Thickly bedded
1995										
1990										Close fracture spacing, very thinly bedded (70°) Moderately close to wide fracture spacing, thickly bedded
										1.0" Quartz vein Thinly bedded (60-70°)
1985										

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**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
1985						Match Line				
										Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)*
1980										
1975										
1970										
1965							RS-B-1-7a RS-B-1-8t			Acid-Base Lab Test Sample (B-1-7a: 140.3-140.5') Petrographic Section Sample (B-1-8t: 140.5-140.8')
		1,960.5								144.5 Boring Terminated at Elevation 1,960.5 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone). Many mechanical fractures due to chatter that began at 54.8 ft and continued until termination at 144.5 ft bgs. Chatter continued after core bit was replaced.

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.3 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2085.5											Begin Coring @ 19.5 ft
2085	2,085.5 2,085.2	19.5 19.8	0.3	1:17/0.3	(0.3) 100%	(0.0) 0%		(10.3) 100%	(7.8) 76%		**CRYSTALLINE ROCK** Metasiltstone with interlayered Metasandstone and Muscovite Schist, medium gray (N5), very fine to fine grained, moderately hard, moderate weathering, CLAY (A-7) on fractures Close fracture spacing, very thinly to thinly bedded (70-80°), with biotite porphyroblasts
			5.0	3:43 4:27	(5.0) 100%	(3.3) 66%					
				4:42 5:15 5:26							2.0" Quartz vein
2080	2,080.2	24.8	5.0	4:03	(5.0) 100%	(4.5) 90%					
				5:03 3:12 2:40 3:44			RS-B-1-1a				Acid-Base Lab Test Sample (B-1-1a: 26.7-27.0')
2075	2,075.2	29.8	5.0	3:33	(5.0) 100%	(3.4) 68%	RS-B-1-2t	(5.0) 100%	(3.4) 68%		2,075.2 29.8 Muscovite Schist with interlayered Metasiltstone, very fine to medium grained, moderate to slight weathering, moderately hard, close fracture spacing, very thinly to thinly bedded (70-80°) Petrographic Section Sample (B-1-2t: 30.0-30.2')
				3:32 3:05 3:01 3:27							
2070	2,070.2	34.8	5.0	6:22	(5.0) 100%	(4.5) 90%		(108.5) 99%	(96.0) 88%		2,070.2 34.8 Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts
				5:35 3:45 4:43 1:44							
2065	2,065.2	39.8	5.0	3:18	(5.0) 100%	(4.4) 88%					
				3:15 4:00 3:43 4:55							
2060	2,060.2	44.8	5.0	5:32	(5.0) 100%	(3.9) 78%					
				3:37 4:16 4:39 4:06							
2055	2,055.2	49.8	5.0	3:06	(5.0) 100%	(4.5) 90%					
				3:11 3:15 2:50 3:28							
2050	2,050.2	54.8	5.0	4:38	(5.0) 100%	(2.9) 58%					Thickly laminated to very thinly bedded (70°)
				4:25 2:33 3:05 3:41							Very close to close fracture spacing, thickly laminated to very thinly bedded (70°)

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.3 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2045.5											Begin Coring @ 59.5 ft
2045	2,045.2	59.8	5.0	3:12	(5.0) 100%	(4.5) 90%					Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)* Very slight to slight weathering, close fractures, thinly to thickly bedded
				4:29 6:08 2:45 4:00							Thinly bedded Thickly laminated to very thinly bedded (70°)
2040	2,040.2	64.8	5.0	4:47	(4.2) 84%	(1.6) 32%					Thinly bedded Thickly laminated to very thinly bedded (70°) 0.8' core loss at top of Run 11 due to broken core bit stuck on rock, used PVC tricone bit to break up broken core bit to continue drilling.
				3:46 4:14 5:47 3:54							
2035	2,035.2	69.8	5.0	4:00	(5.0) 100%	(4.3) 86%					Thickly bedded
				3:46 6:15 5:14 4:57			RS-B-1-3a				Acid-Base Lab Test Sample (B-1-3a: 71.9-72.2')
2030	2,030.2	74.8	5.0	4:30	(5.0) 100%	(4.4) 88%	RS-B-1-4t				Petrographic Section Sample (B-1-4t: 75.8-76.2')
				3:00 2:53 5:27 6:51							Thinly bedded (70°)
2025	2,025.2	79.8	5.0	3:53	(5.0) 100%	(4.7) 94%					Thickly bedded
				5:27 4:37 5:45 4:52							0.5" Quartz vein
2020	2,020.2	84.8	5.0	5:04	(5.0) 100%	(5.0) 100%					Moderately close to wide fracture spacing, very thinly to thinly bedded (70°)
				6:01 4:40 4:22 4:08							
2015	2,015.2	89.8	5.0	3:59	(4.8) 96%	(4.3) 86%					
				3:45 3:34 4:37 10:09							
2010	2,010.2	94.8	5.0	2:36	(5.0) 100%	(4.8) 96%					
				4:30 3:43 4:29 5:56							

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.3 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2005.5											Continued from previous page
2005	2,005.2	99.8	5.0	3:46	(5.0) 100%	(4.8) 96%					Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)*
				4:36							
				3:36							
				3:31			RS-B-1-5a				Acid-Base Lab Test Sample (B-1-5a: 102.4-102.6')
				5:15			RS-B-1-6t				Petrographic Section Sample (B-1-6t: 102.6-102.9')
2000	2,000.2	104.8	5.0	4:07	(5.0) 100%	(5.0) 100%					
				3:20							
				3:59							Thickly bedded
				3:21							
				3:37							
1995	1,995.2	109.8	5.0	3:50	(5.0) 100%	(4.4) 88%					
				3:01							
				2:58							
				3:33							Close fracture spacing, very thinly bedded (70°)
				3:09							Moderately close to wide fracture spacing, thickly bedded
1990	1,990.2	114.8	5.0	4:01	(5.0) 100%	(4.1) 82%					
				4:28							
				6:09							1.0" Quartz vein
				5:36							Thinly bedded (60-70°)
				5:59							
1985	1,985.2	119.8	5.0	4:30/0.7	(4.7) 94%	(4.7) 94%					
				3:32							
				2:55							
				3:33							
				2:47							
	1,980.5	124.5									
1980	1,980.2	124.8	5.0	3:52	(4.9) 98%	(4.4) 88%					
				3:23							
				3:18							
				3:41							
	1,975.5	129.5		3:56							
1975			5.0	5:59	(5.0) 100%	(5.0) 100%					
				5:36							
				4:59							
				6:04							
	1,970.5	134.5		5:54							
1970			5.0	5:48	(5.0) 100%	(5.0) 100%					
				2:59							
				5:4							
				3:13							
	1,965.5	139.5		4:24							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-1 (Y2_13465)	**STATION** 134+65	**OFFSET** 190 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.0 ft	**TOTAL DEPTH** 144.5 ft	**NORTHING** 622,952	**EASTING** 605,779	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/30/20	**COMP. DATE** 11/30/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.3 ft			

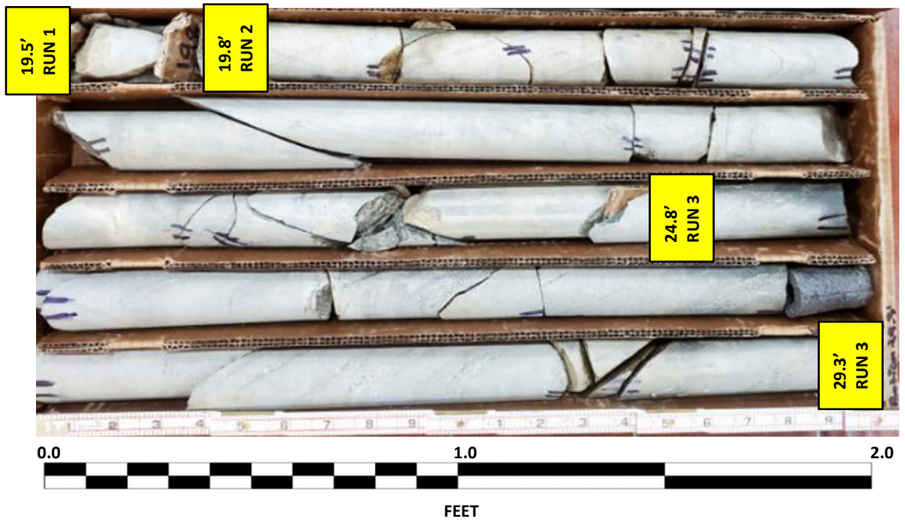
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
1965.5											Continued from previous page
1965			5.0	3:32	(4.9) 98%	(4.8) 96%					Metasandstone with interlayed Metasiltstone and trace Muscovite Schist, medium gray (N5) with very light gray (N8), fine grained, slight to moderate weathering, hard, close fracture spacing, thinly to thickly bedded (60-70°), with biotite porhyroblasts *(continued)*
				2:46			RS-B-1-7a				Acid-Base Lab Test Sample (B-1-7a: 140.3-140.5')
				3:30			RS-B-1-8t				Petrographic Section Sample (B-1-8t: 140.5-140.8')
				4:48							
				2:36							
	1,960.5	144.5									Boring Terminated at Elevation 1,960.5 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).
											Many mechanical fractures due to chatter that began at 54.8 ft and continued until termination at 144.5 ft bgs. Chatter continued after core bit was replaced.

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

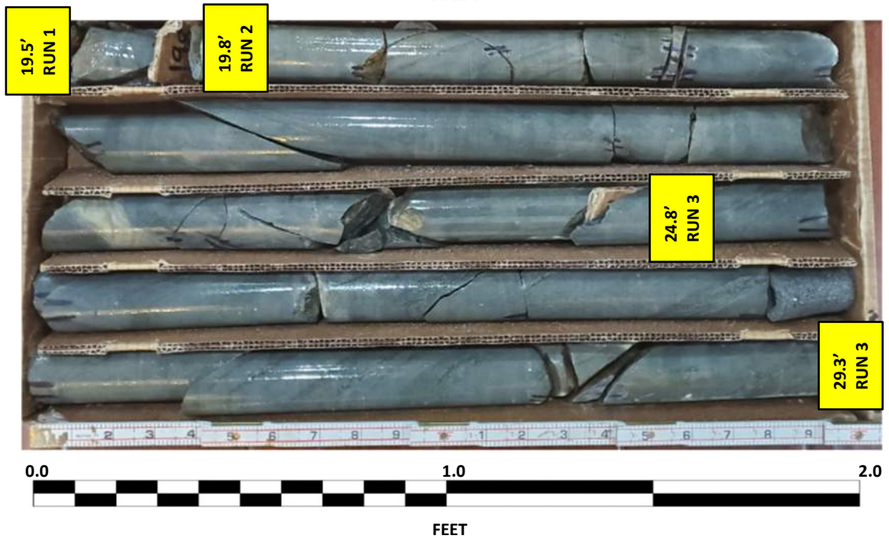
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 1 of 14: 19.5 – 29.3 FEET
DRY

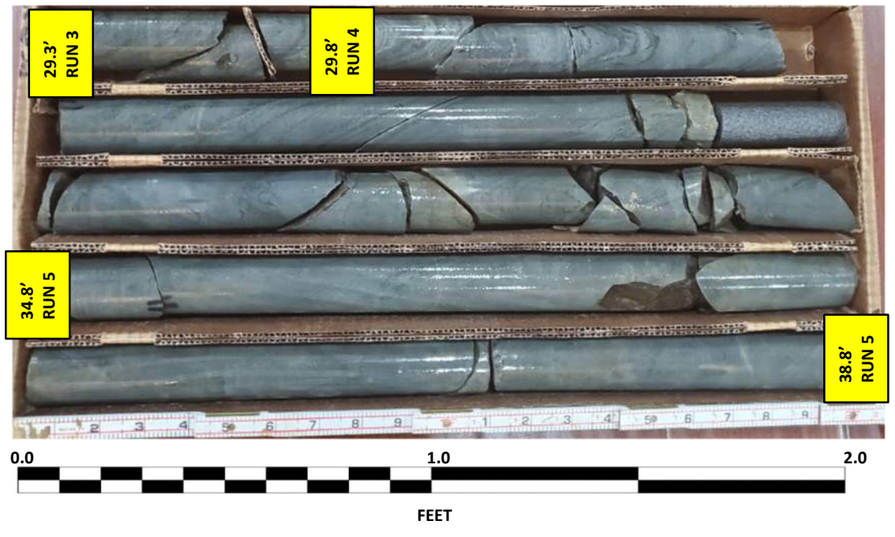


A-0009C – B-1 (Y2_13465)
Box 2 of 14: 29.3 – 38.8 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 1 of 14: 19.5 – 29.3 FEET
WET



A-0009C – B-1 (Y2_13465)
Box 2 of 14: 29.3 – 38.8 FEET
WET

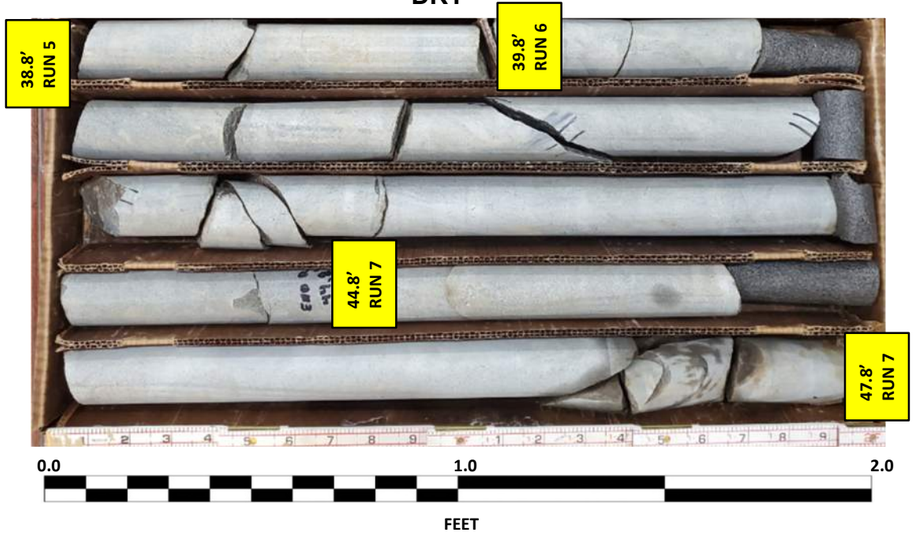


CORE PHOTOGRAPHIC RECORD

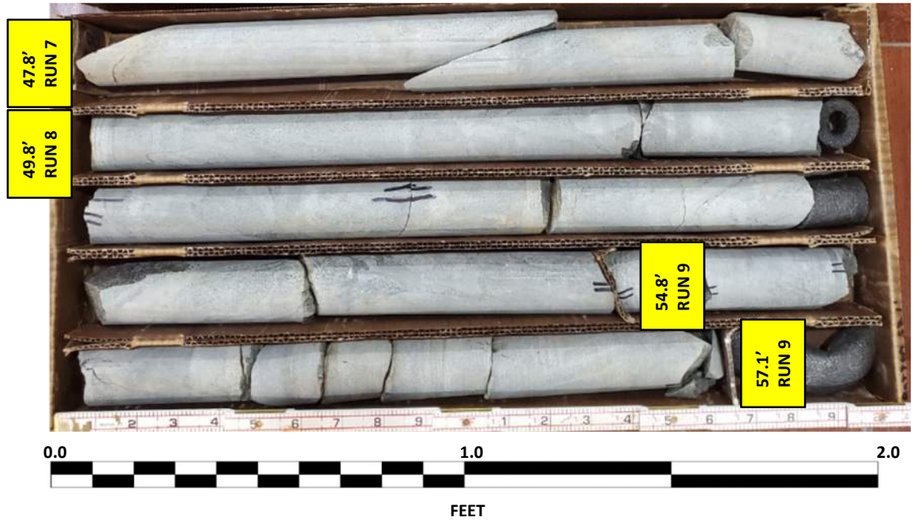
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 3 of 14: 38.8 – 47.8 FEET
DRY

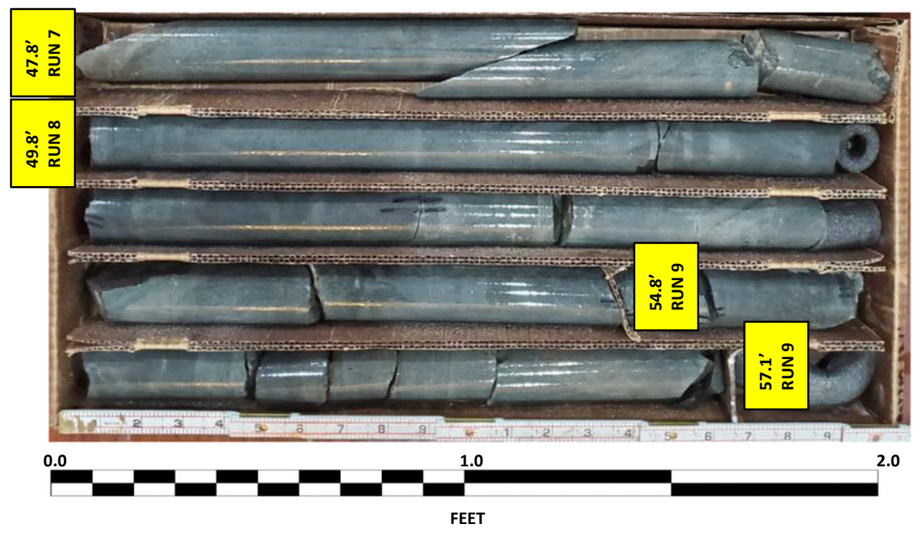


A-0009C – B-1 (Y2_13465)
Box 4 of 14: 47.8 – 57.1 FEET
DRY



A-0009C – B-1 (Y2_13465)
Box 3 of 14: 38.8 – 47.8 FEET
WET

A-0009C – B-1 (Y2_13465)
Box 4 of 14: 47.8 – 57.1 FEET
WET

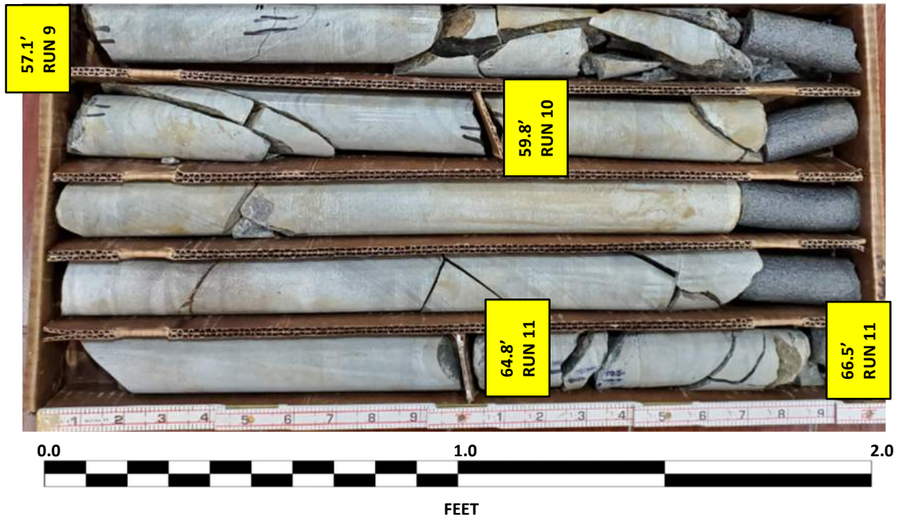


CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

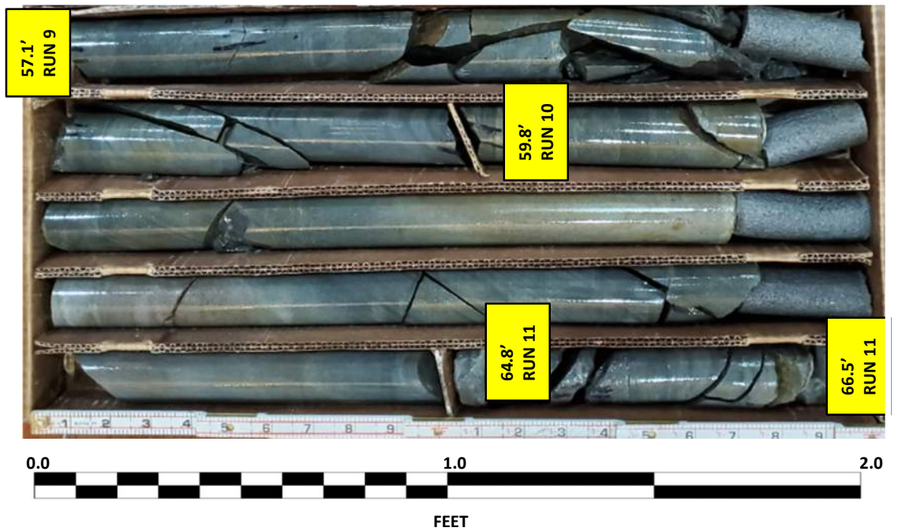
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 5 of 14: 57.1 – 66.5 FEET
DRY

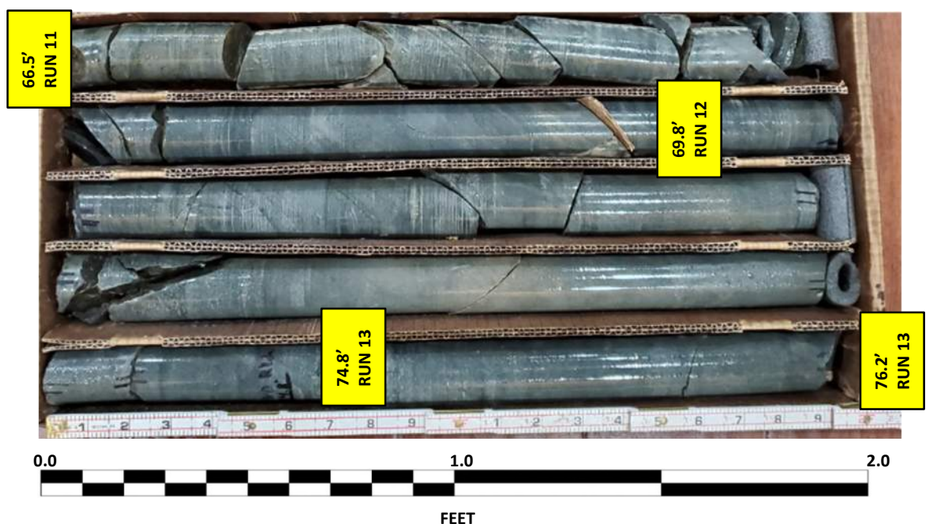


A-0009C – B-1 (Y2_13465)
Box 6 of 14: 66.5 – 76.2 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 5 of 14: 57.1 – 66.5 FEET
WET



A-0009C – B-1 (Y2_13465)
Box 6 of 14: 66.5 – 76.2 FEET
WET

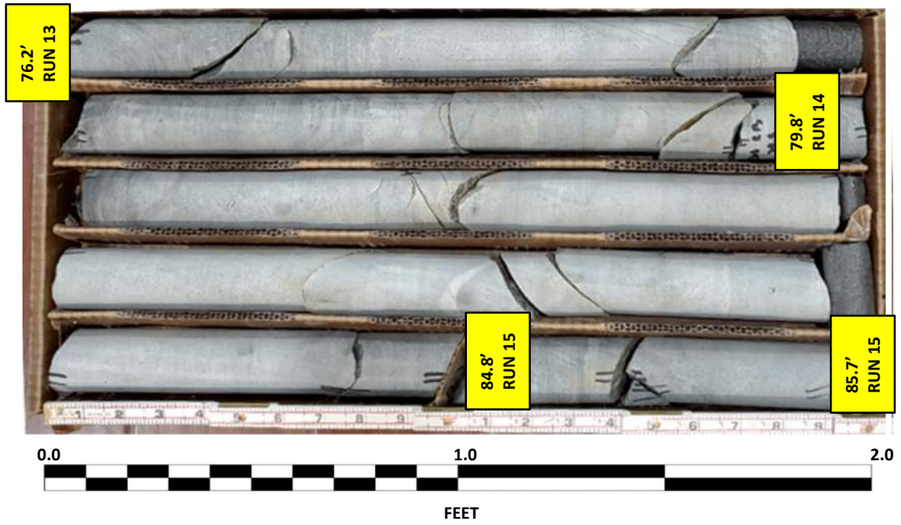


CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

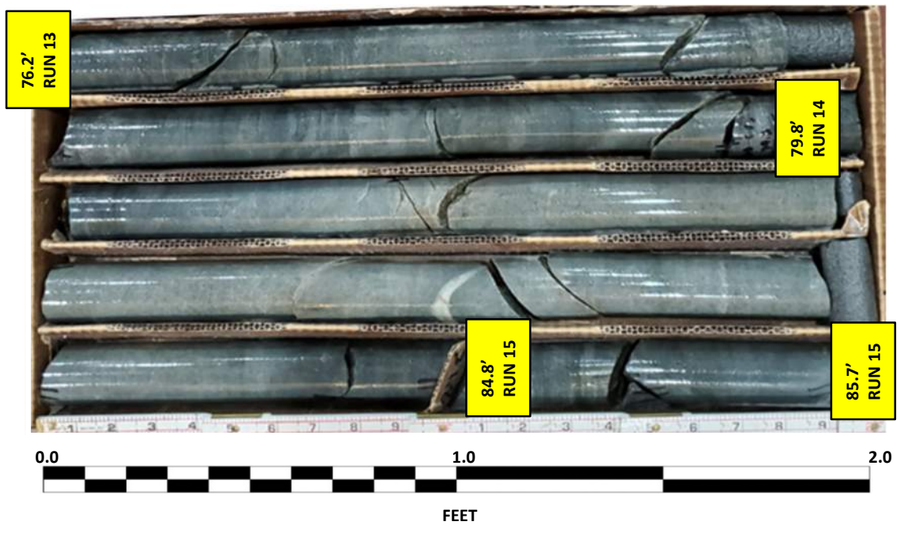
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 7 of 14: 76.2 – 85.7 FEET
DRY



A-0009C – B-1 (Y2_13465)
Box 8 of 14: 85.7 – 94.7 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 7 of 14: 76.2 – 85.7 FEET
WET



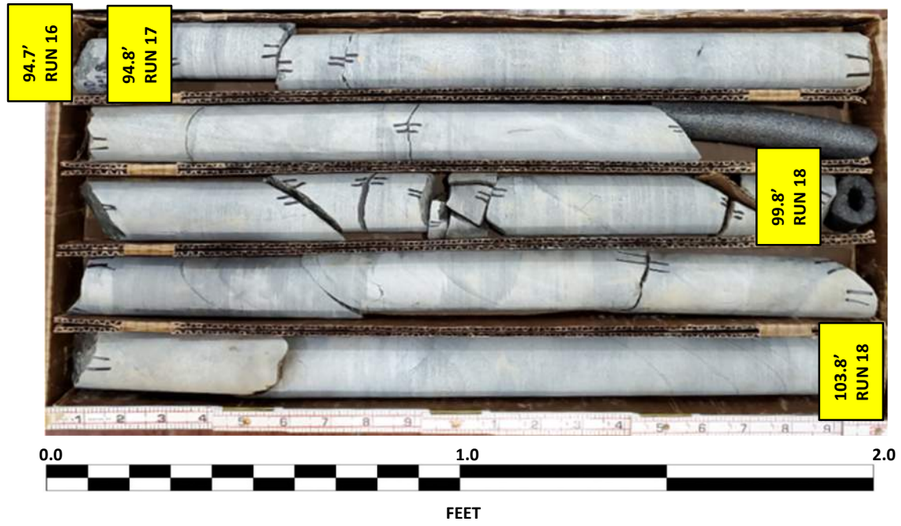
A-0009C – B-1 (Y2_13465)
Box 8 of 14: 85.7 – 94.7 FEET
WET

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

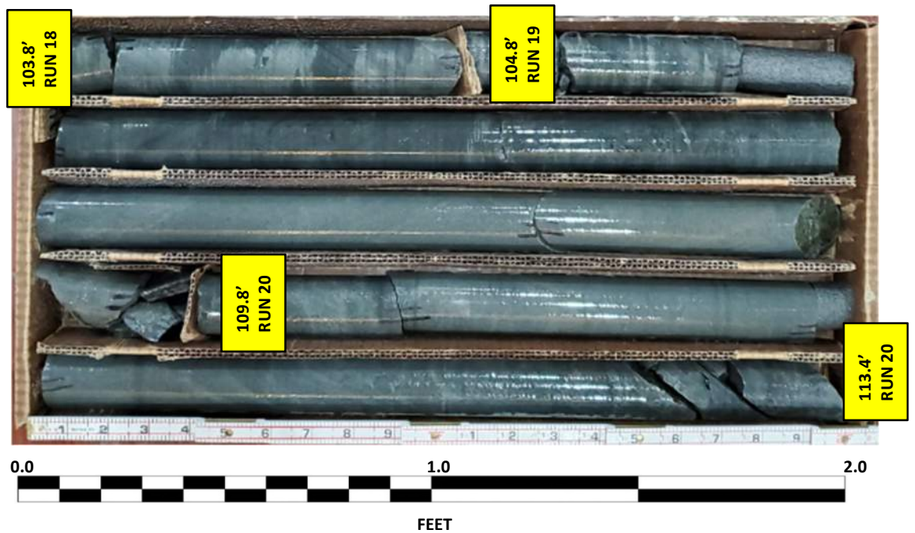
A-0009C – B-1 (Y2_13465)
Box 9 of 14: 94.7 – 103.8 FEET
DRY



A-0009C – B-1 (Y2_13465)
Box 10 of 14: 103.8 – 113.4 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 9 of 14: 94.7 – 103.8 FEET
WET

A-0009C – B-1 (Y2_13465)
Box 10 of 14: 103.8 – 113.4 FEET
WET

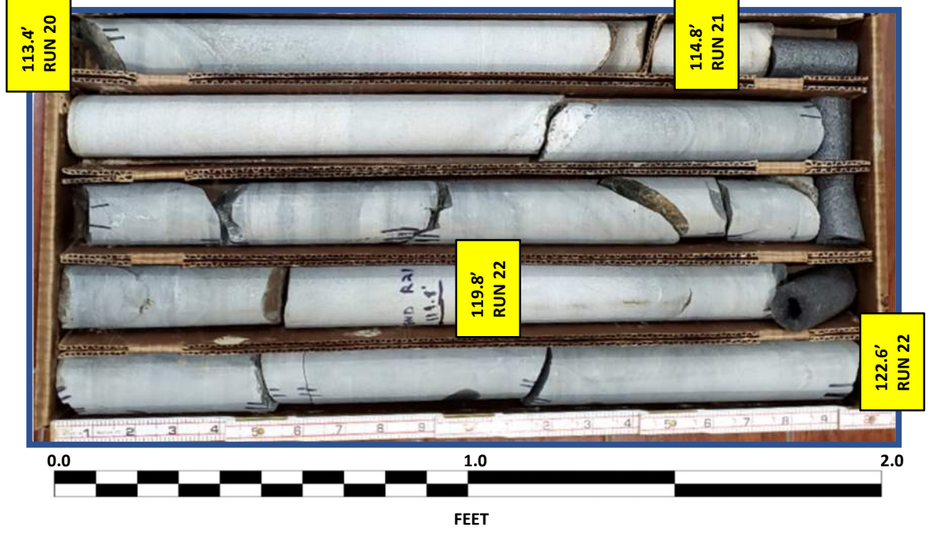


CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

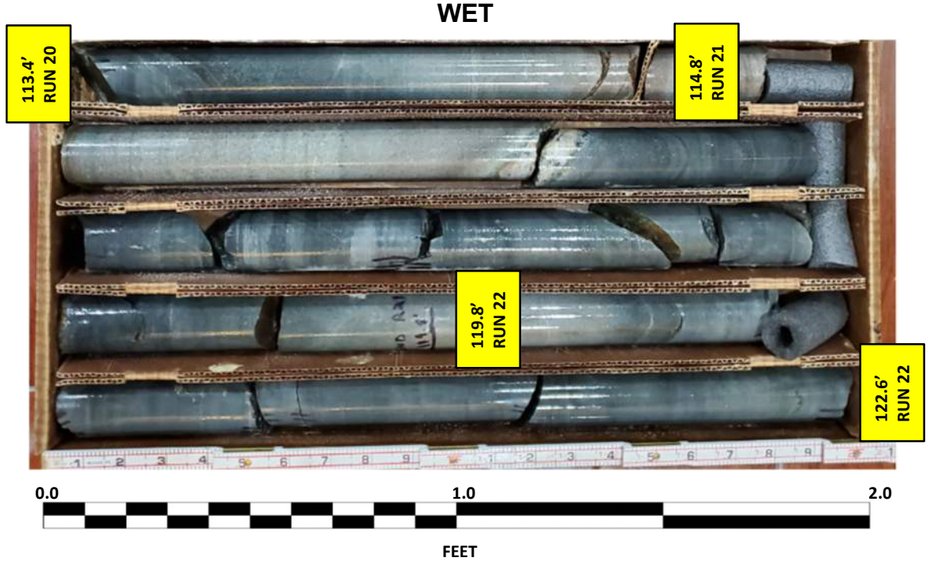
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 11 of 14: 113.4 – 122.6 FEET
DRY



A-0009C – B-1 (Y2_13465)
Box 12 of 14: 122.6 – 132.5 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 11 of 14: 113.4 – 122.6 FEET
WET



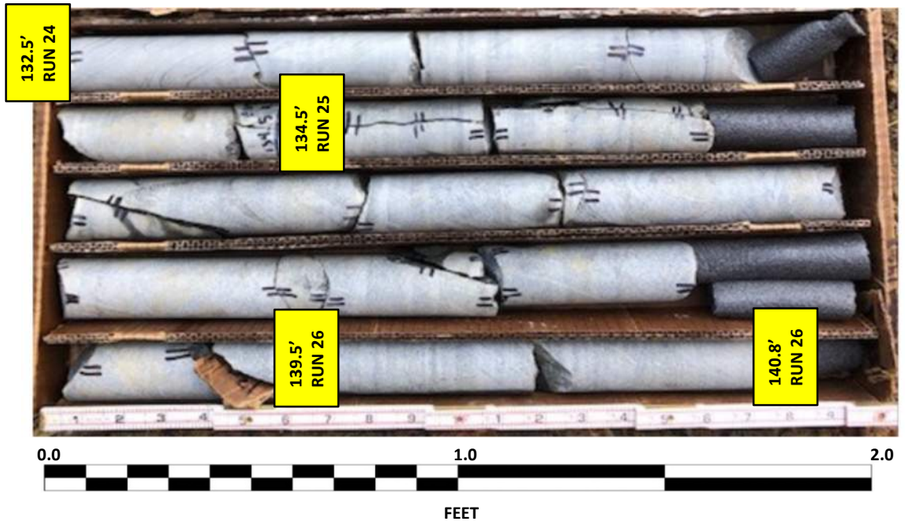
A-0009C – B-1 (Y2_13465)
Box 12 of 14: 122.6 – 132.5 FEET
WET

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

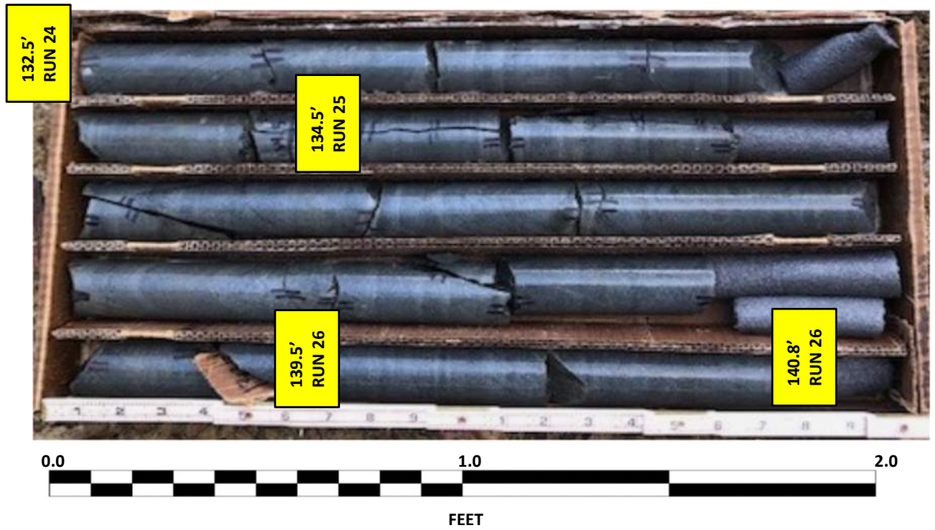
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-1 (Y2_13465)
Box 13 of 14: 132.5 – 140.8 FEET
DRY



A-0009C – B-1 (Y2_13465)
Box 14 of 14: 140.8 – 144.5 FEET
DRY

A-0009C – B-1 (Y2_13465)
Box 13 of 14: 132.5 – 140.8 FEET
WET



A-0009C – B-1 (Y2_13465)
Box 14 of 14: 140.8 – 144.5 FEET
WET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**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)
2110										
										2,105.8 GROUND SURFACE 0.0
2105										**RESIDUAL** Very stiff, light olive yellow (2.5 Y 5/4), fine sandy SILT (A-4), with iron staining, saprolitic (Metasiltstone)
	2,101.8	4.0	7	7	13	20		M		
2100										
	2,098.6	7.2	6	9	10	19		M		Very stiff, greenish gray (GLEY 1, 6/1)
	2,096.8	9.0	13	21	23	44		M		Hard
2095										
	2,091.8	14.0	21	12	25	37	SS-334	M		
2090										
	2,086.8	19.0	60/0.0			60/0.0				2,088.5 17.3 **CRYSTALLINE ROCK** Metasandstone, light gray (N7) 2,086.8 19.0 Metasandstone with interlayered Metasiltstone , Medium light gray to medium gray (N6-5) very fine to fine grained, severely weathered, moderately hard to hard, very close fracture spacing Thickly laminated to very thinly bedded (70 to 80°), with Iron and Manganese Oxide staining Very fine grained, medium hard, very close to close fracture spacing, thinly to thickly laminated (70 to 80°)
2085										
2080										
2075										
										2,071.4 34.4
2070										

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**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
2070						Match Line				
2065										
2060										
							RS-B-2-1a RS-B-2-2t			
2055										
2050										
2045										
2040										
2035										
2030										

Metasiltstone with interlayered Metasandstone and Muscovite Schist , medium light gray to medium gray (N6-5) with light olive gray (5Y 5/2), very fine to medium grained, moderately severe to moderate weathering, moderately hard to hard, close fracture spacing, thickly laminated to thinly bedded (70 to 80°), with Iron and Manganese Oxide staining *(continued)*
Very close to close fracture spacing

severely weathered, soft

2,059.5 46.3

Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°)
Acid-Base Lab Test Sample (B-2-1a: 47.0-47.3')
Petrographic Section Sample (B-2-2t: 47.3-47.6')
Thinly to thickly bedded (70 to 80°)

Close fracture spacing

Slight weathering, hard, wide fracture spacing, thickly laminated (70 to 80°)

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**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)
2030						Match Line				
										Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) *(continued)*
										Thinly to thickly bedded
2025										Thickly laminated (70 to 80°)
							RS-B-2-3a			Acid-Base Lab Test Sample (B-2-3a: 81.7-82.1')
							RS-B-2-4t			Petrographic Section Sample (B-2-4t: 82.1-82.3')
										Thinly bedded
2020										Thickly laminated (60 to 70°)
							RS-B-2-5t			Petrographic Section Sample (B-2-5t: 87.9-88.2')
							RS-B-2-6a			Acid-Base Lab Test Sample (B-2-6a: 88.2-88.3')
2015										Thickly laminated to very thinly bedded (70 to 80°)
										Vertical bedding (90°)
										Thickly laminated to very thinly bedded (70 to 80°)
2010										Wide fracture spacing, thickly bedded
2005										Very thinly bedded (70 to 80°)
										Thinly to thickly bedded (70 to 80°)
2000										2.0" Quartz vein
										Thickly laminated to thinly bedded (60 to 70°)
1995										Thickly bedded
										Close to moderately close fracture spacing, few healed quartz veins (<1 mm thickness)
										Thickly laminated (60 to 70°)
										Thickly bedded
1990										2.0" Quartz vein

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**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
1990						Match Line				
										Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) *(continued)*
										Very thinly bedded (70 to 80°)
1985										Moderately close to wide fracture spacing
1980										
1975										Wide fracture spacing
1970										
1965										
							RS-B-2-7a			Acid-Base Lab Test Sample (B-2-7a: 143.5-143.7')
							RS-B-2-8t			Petrographic Section Sample (B-2-8t: 143.7-144.0')
1,961.1		144.7								Boring Terminated at Elevation 1,961.1 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2086.8											Continued from previous page
	2,086.8	19.0	0.4	1:32/0.4	(0.4) 100%	(0.0) 0%		(10.0) 65%	(0.4) 3%		2,086.8 Metasandstone with interlayered Metasiltstone , Medium light gray to medium gray (N6-5) very fine to fine grained, severely weathered, moderately hard to hard, very close fracture spacing Thickly laminated to very thinly bedded (70 to 80°), with Iron and Manganese Oxide staining 19.0
	2,086.4	19.4	5.0	4:16							
2085				4:06	(3.3) 66%	(0.0) 0%					
				4:07							
				3:51							
	2,081.4	24.4		2:45							Very fine grained, medium hard, very close to close fracture spacing, thinly to thickly laminated (70 to 80°)
			5.0	3:45	(2.1) 42%	(0.4) 8%					
2080				2:24							
				3:37							
				2:59							
	2,076.4	29.4		2:42							
			5.0	2:04	(4.2) 84%	(0.0) 0%					
2075				2:20							
				1:47							
				10:25							
	2,071.4	34.4		4:33							2,071.4 34.4
			5.1	2:02	(5.1) 100%	(1.3) 25%		(11.9) 100%	(4.5) 38%		Metasiltstone with interlayered Metasandstone and Muscovite Schist , medium light gray to medium gray (N6-5) with light olive gray (5Y 5/2), very fine to medium grained, moderately severe to moderate weathering, moderately hard to hard, close fracture spacing, thickly laminated to thinly bedded (70 to 80°), with Iron and Manganese Oxide staining
2070				1:36							
				2:15							
				2:47							
				3:21/1.1							
	2,066.3	39.5									Very close to close fracture spacing
			5.0	1:52	(5.0) 100%	(2.0) 40%					
2065				1:56							
				2:03							
				3:07							
	2,061.3	44.5		1:33							
			5.0	3:14	(5.0) 100%	(2.2) 44%					
2060				4:41							
				4:50							2,059.5 46.3
				2:52			RS-B-2-1a RS-B-2-2t	(97.8) 99%	(83.4) 85%		Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) Acid-Base Lab Test Sample (B-2-1a: 47.0-47.3') Petrographic Section Sample (B-2-2t: 47.3-47.6') Thinly to thickly bedded (70 to 80°)
	2,056.3	49.5		2:39							
			5.0	2:38	(4.7) 94%	(3.0) 60%					
2055				2:54							
				2:32							
				3:09							
	2,051.3	54.5		3:48							
			5.0	2:32	(5.0) 100%	(4.7) 94%					Close fracture spacing
2050				2:32							
				2:33							
				2:41							
				3:05							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 125.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2046.8											Continued from previous page
	2,046.3	59.5									Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) *(continued)*
			5.0	2:11	(5.0) 100%	(3.8) 76%					
2045				2:38							
				2:57							
				3:05							
	2,041.3	64.5		2:53							
			5.0	2:47	(5.0) 100%	(4.1) 82%					
2040				2:25							
				2:48							
				2:46							
	2,036.3	69.5		3:27							
			5.0	3:12/1.1	(5.0) 100%	(3.6) 72%					
2035				2:57							
				3:07							
				3:02							
	2,031.3	74.5		3:24							2,031.2 74.6
			5.0	1:17	(5.0) 100%	(4.6) 92%					Slight weathering, hard, wide fracture spacing, thickly laminated (70 to 80°)
2030				1:37							
				1:48							
				1:45							
				3:08							
	2,026.2	79.6									Thinly to thickly bedded
			5.0	2:33	(5.0) 100%	(5.0) 100%					
2025				2:04							Thickly laminated (70 to 80°)
				2:06			RS-B-2-3a				Acid-Base Lab Test Sample (B-2-3a: 81.7-82.1')
				2:08			RS-B-2-4t				Petrographic Section Sample (B-2-4t: 82.1-82.3')
				2:24							Thinly bedded
	2,021.2	84.6									Thickly laminated (60 to 70°)
			5.0	2:01	(5.0) 100%	(5.0) 100%					
2020				2:00							
				2:05							
				2:03			RS-B-2-5t				Petrographic Section Sample (B-2-5t: 87.9-88.2')
				2:17			RS-B-2-6a				Acid-Base Lab Test Sample (B-2-6a: 88.2-88.3')
	2,016.2	89.6									Thickly laminated to very thinly bedded (70 to 80°)
			5.0	2:37	(5.0) 100%	(3.8) 76%					Vertical bedding (90°)
2015				2:05							
				2:30							Thickly laminated to very thinly bedded (70 to 80°)
				2:34							
				2:37							
	2,011.2	94.6									
			5.0	1:53	(5.0) 100%	(3.8) 76%					Wide fracture spacing, thickly bedded
2010				2:50							
				2:50							
				2:42							

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 125.5 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2006.8											Continued from previous page
	2,006.2	99.6		2:45							Very thinly bedded (70 to 80°)
			5.0	2:17	(5.0) 100%	(5.0) 100%					Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) *(continued)*
2005				2:07							
				2:50							Thinly to thickly bedded (70 to 80°)
				2:24							
				2:33							
	2,001.2	104.6									
			5.0	2:37	(4.9) 98%	(4.2) 84%					2.0" Quartz vein
2000				1:52							Thickly laminated to thinly bedded (60 to 70°)
				2:01							
				2:02							
				2:37							
	1,996.2	109.6									
			5.0	22:46	(5.0) 100%	(3.9) 78%					Thickly bedded
1995				2:45							
				3:00							Close to moderately close fracture spacing, few healed quartz veins (<1 mm thickness)
				2:49							Thickly laminated (60 to 70°)
				4:51							Thickly bedded
	1,991.2	114.6									2.0" Quartz vein
			5.0	3:04	(5.0) 100%	(4.4) 88%					
1990				2:37							Very thinly bedded (70 to 80°)
				2:54							
				2:20							
				2:24							Moderately close to wide fracture spacing
	1,986.2	119.6									
			5.0	2:15	(5.0) 100%	(3.9) 78%					
1985				2:27							
				2:43							
				2:30							
				1:47							
	1,981.2	124.6									
			5.0	2:59	(5.0) 100%	(4.8) 96%					
1980				2:48							
				2:57							
				3:00							
				3:39							
	1,976.2	129.6									
			5.0	3:04	(5.0) 100%	(5.0) 100%					Wide fracture spacing
1975				3:36							
				3:27							
				3:07							
				3:32							
	1,971.2	134.6									
			5.0	2:32	(5.0) 100%	(4.9) 98%					
1970				2:46							
				2:31							
				2:17							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-2 (Y2_13569)	**STATION** 135+69	**OFFSET** 184 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,105.8 ft	**TOTAL DEPTH** 144.7 ft	**NORTHING** 623,015	**EASTING** 605,873	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/24/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 125.5 ft		

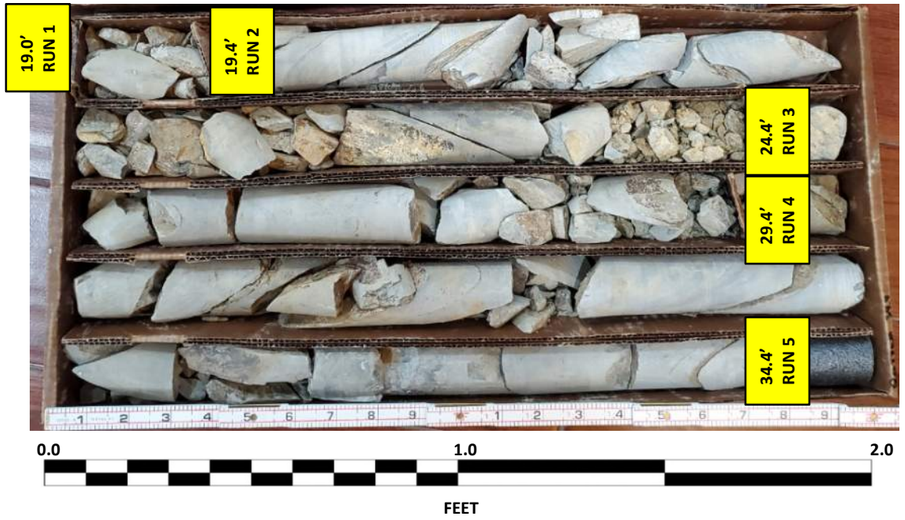
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
1966.8											Continued from previous page
	1,966.2	139.6		2:41							Metasandstone with interlayered Metasiltstone , medium light gray to medium gray (N6-5), very fine to fine grained, moderate to slight weathering, moderately hard to hard, very close to close fracture spacing, thickly laminated to very thinly bedded (70 to 80°) *(continued)*
			5.0	2:07	(5.0) 100%	(4.9) 98%					
1965				2:38							
				3:46							
				3:03							
				3:53/1.1			RS-B-2-7a				Acid-Base Lab Test Sample (B-2-7a: 143.5-143.7')
	1,961.2	144.6					RS-B-2-8t				1,961.1 Petrographic Section Sample (B-2-8t: 143.7-144.0') 144.7
											Boring Terminated at Elevation 1,961.1 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

CORE PHOTOGRAPHIC RECORD

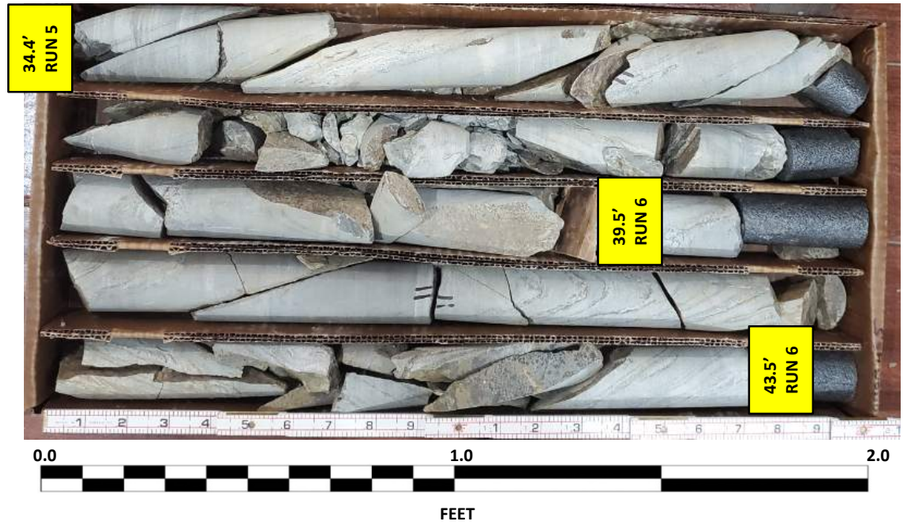
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

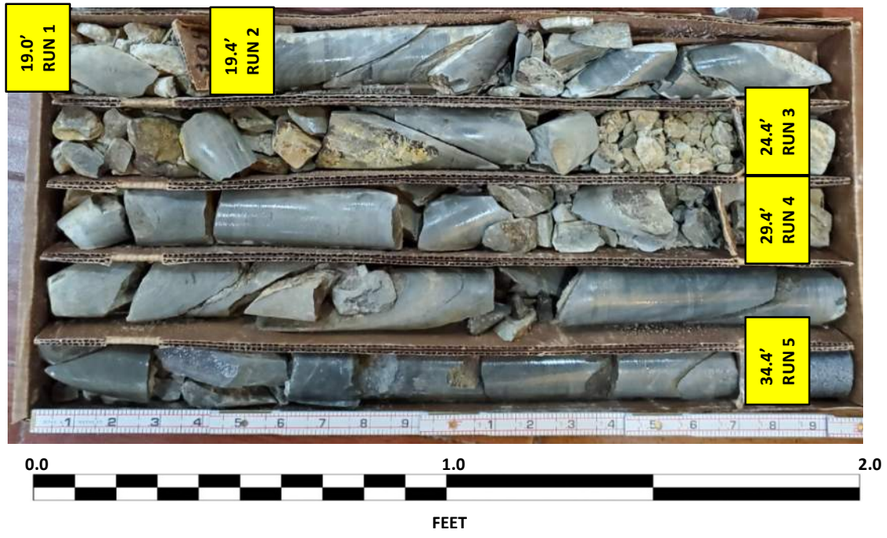
A-0009C – B-2 (Y2_13569)
Box 1 of 13: 19.0 – 34.4 FEET
DRY



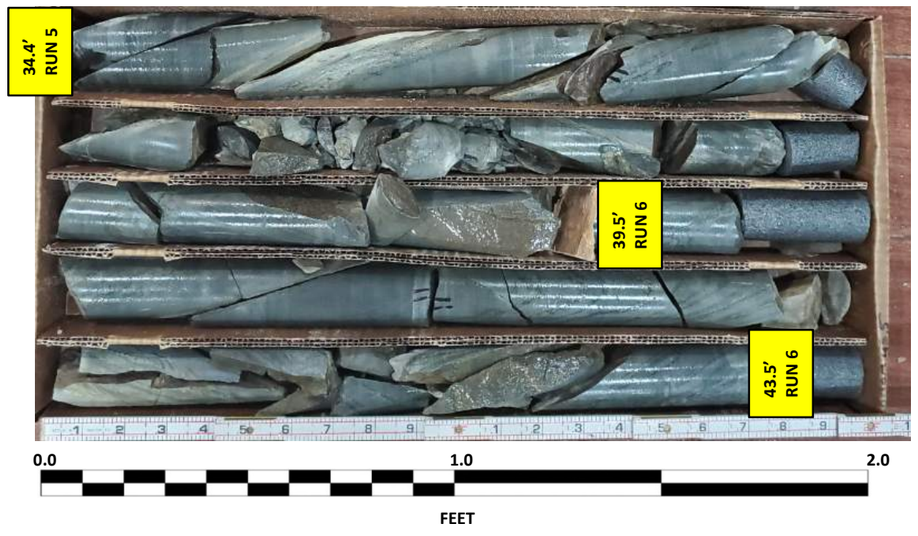
A-0009C – B-2 (Y2_13569)
Box 2 of 13: 34.4 – 43.5 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 1 of 13: 19.0 – 34.4 FEET
WET



A-0009C – B-2 (Y2_13569)
Box 2 of 13: 34.4 – 43.5 FEET
WET



CORE PHOTOGRAPHIC RECORD

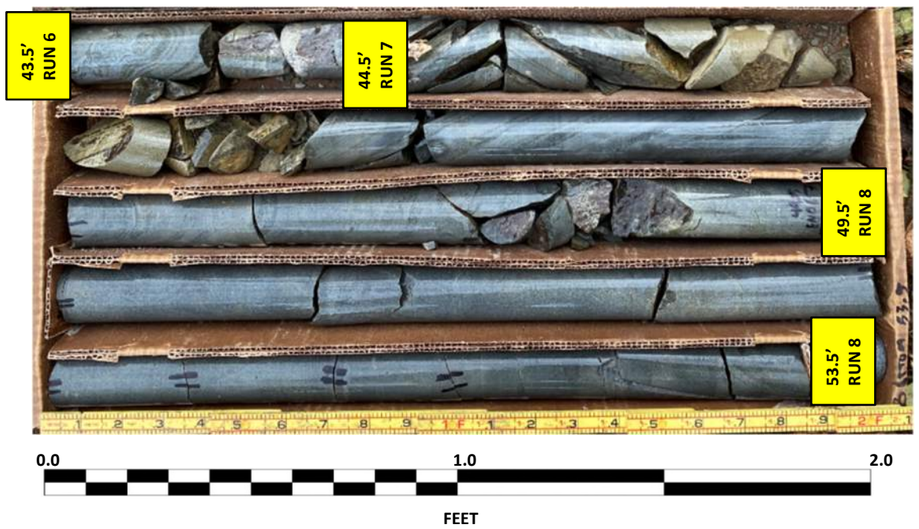
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

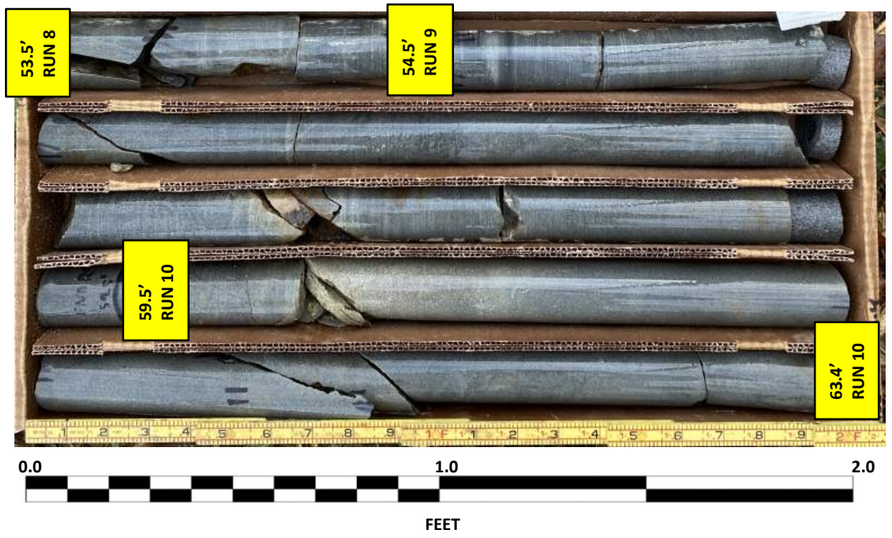
A-0009C – B-2 (Y2_13569)
Box 3 of 13: 43.5 – 53.5 FEET
DRY

A-0009C – B-2 (Y2_13569)
Box 4 of 13: 53.5 – 63.4 FEET
DRY

A-0009C – B-2 (Y2_13569)
Box 3 of 13: 43.5 – 53.5 FEET
WET



A-0009C – B-2 (Y2_13569)
Box 4 of 13: 53.5-63.4 FEET
WET



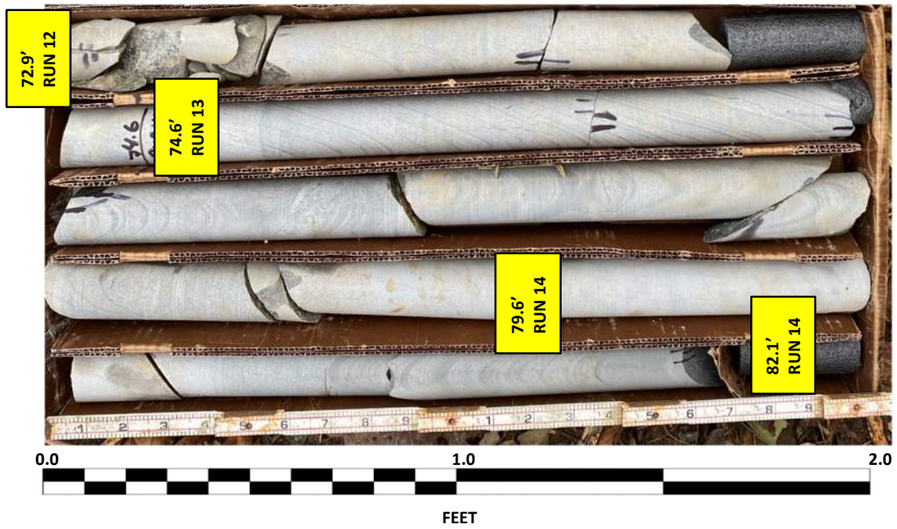
CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

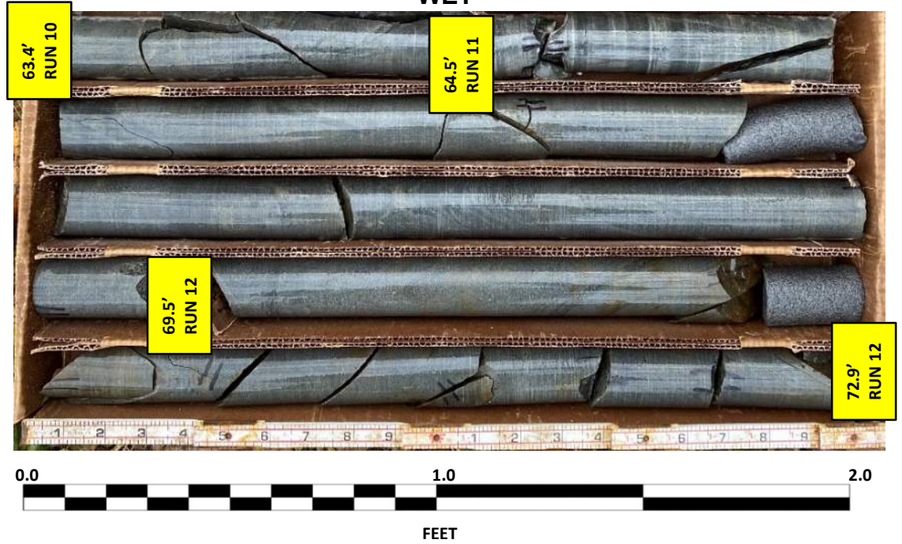
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-2 (Y2_13569)
Box 5 of 13: 63.4 – 72.9 FEET
DRY

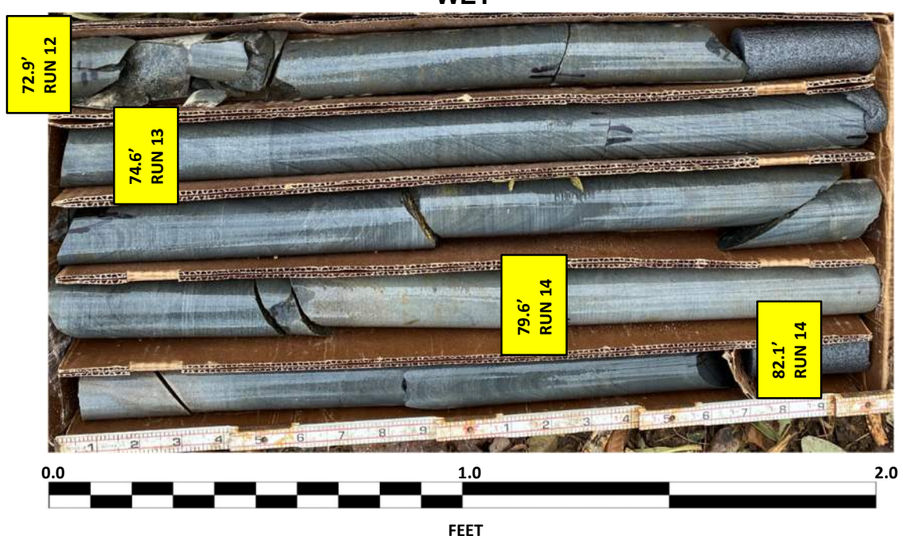
A-0009C – B-2 (Y2_13569)
Box 6 of 13: 72.9 – 82.1 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 5 of 13: 63.4 – 72.9 FEET
WET



A-0009C – B-2 (Y2_13569)
Box 6 of 13: 72.9 – 82.1 FEET
WET



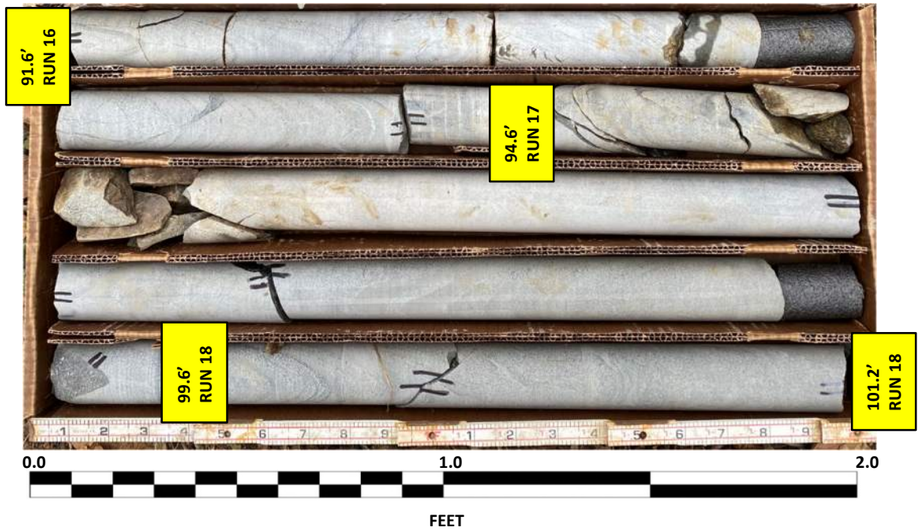
CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

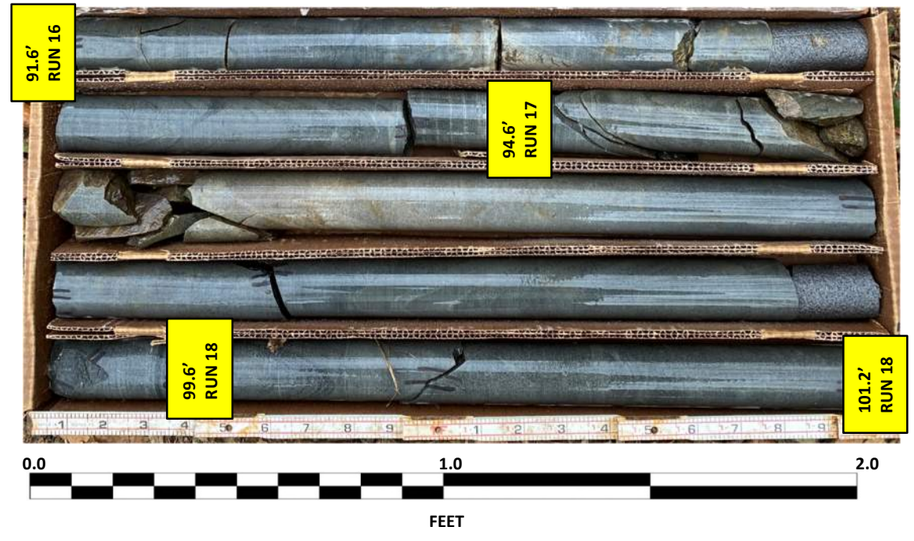
A-0009C – B-2 (Y2_13569)
Box 7 of 13: 82.1 – 91.6 FEET
DRY

A-0009C – B-2 (Y2_13569)
Box 8 of 13: 91.6 – 101.2 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 7 of 13: 82.1 – 91.6 FEET
WET

A-0009C – B-2 (Y2_13569)
Box 8 of 13: 91.6 – 101.2 FEET
WET

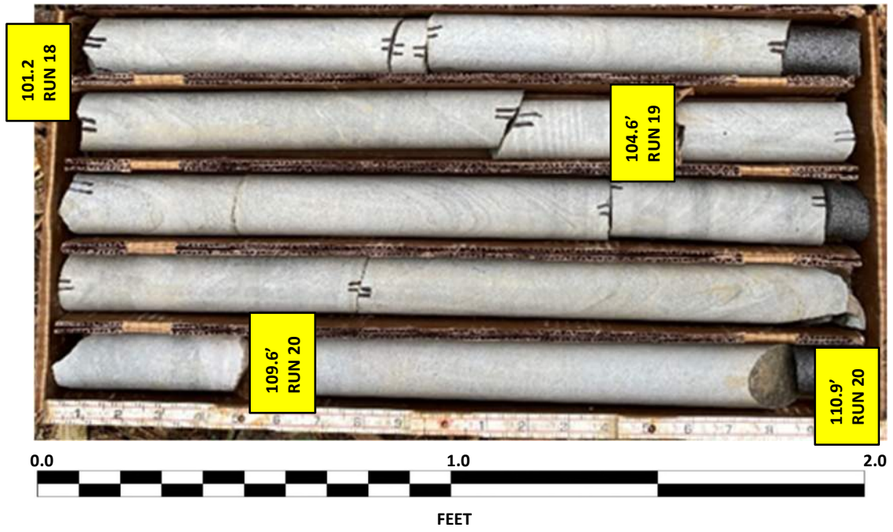


CORE PHOTOGRAPHIC RECORD

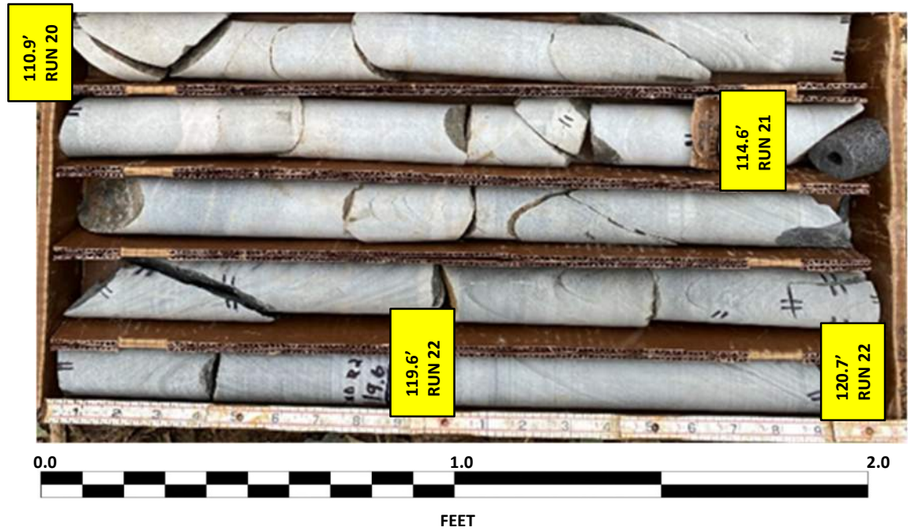
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

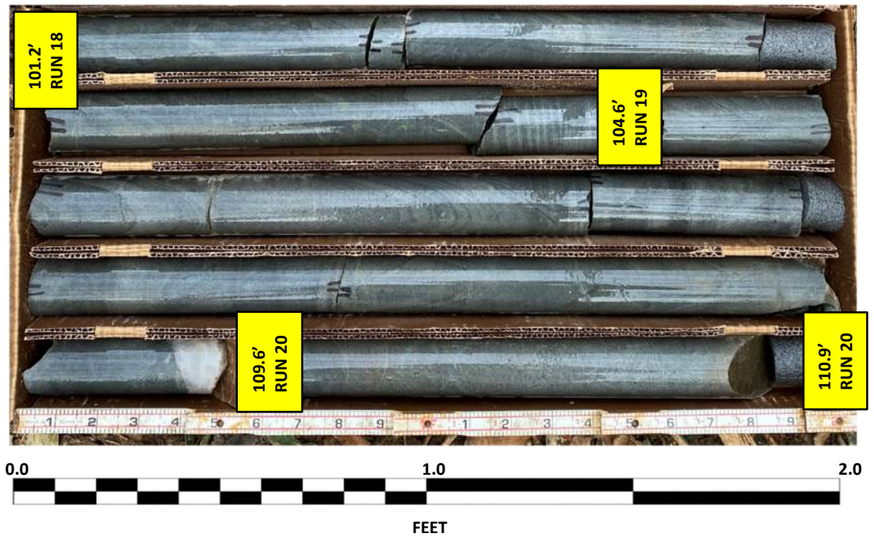
A-0009C – B-2 (Y2_13569)
Box 9 of 13: 101.2 – 110.9 FEET
DRY



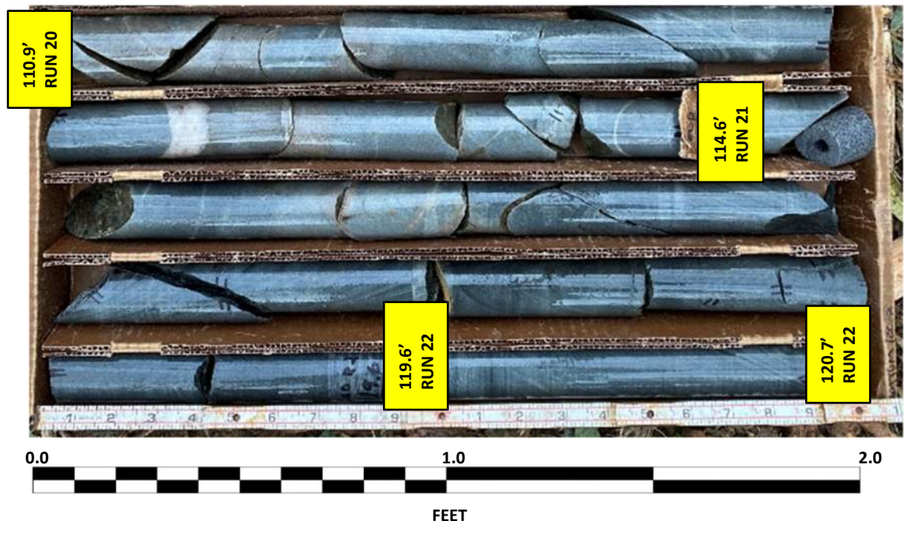
A-0009C – B-2 (Y2_13569)
Box 10 of 13: 110.9 – 120.7 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 9 of 13: 101.2 – 110.9 FEET
WET



A-0009C – B-2 (Y2_13569)
Box 10 of 13: 110.9 – 120.7 FEET
WET

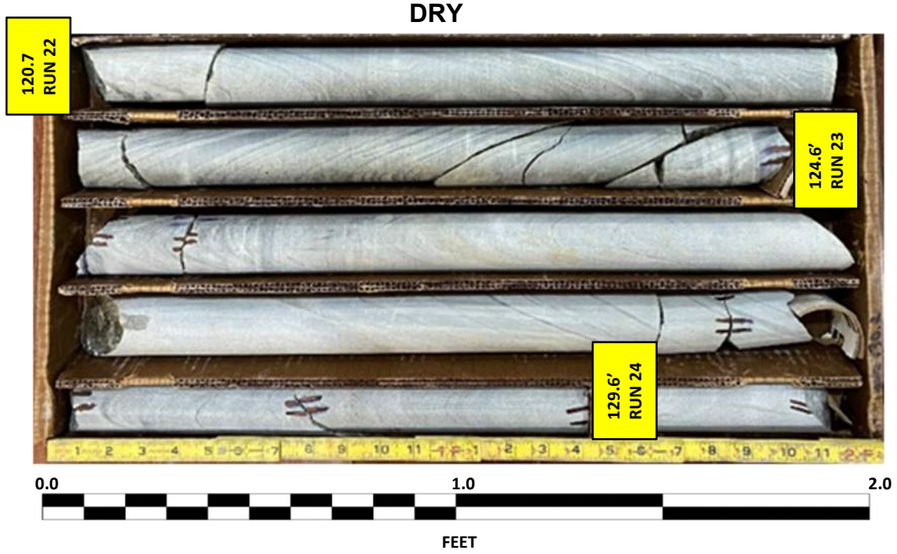


CORE PHOTOGRAPHIC RECORD

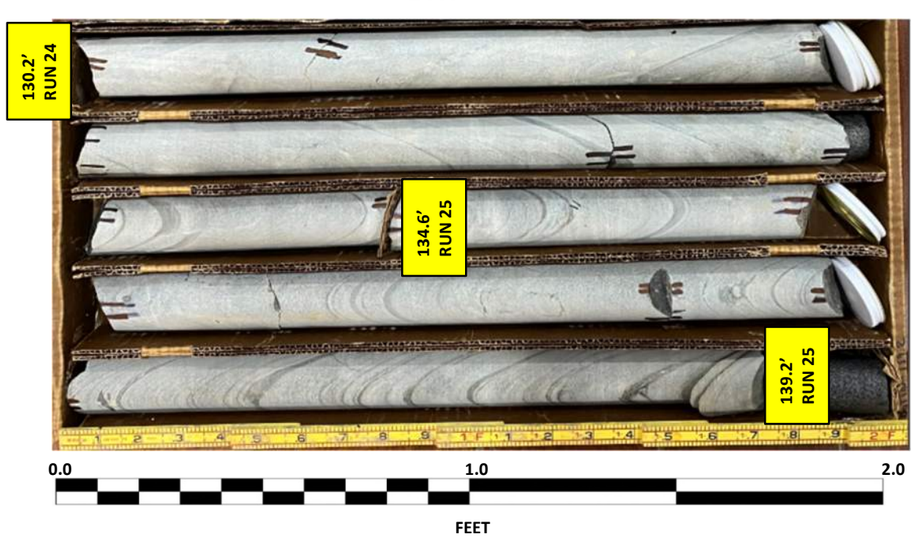
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-2 (Y2_13569)
Box 11 of 13: 120.7 – 130.2 FEET
DRY

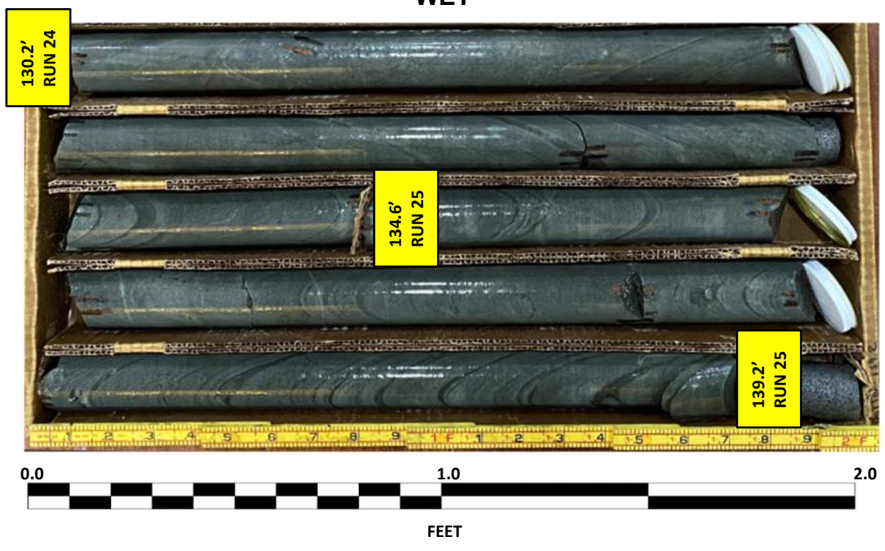


A-0009C – B-2 (Y2_13569)
Box 12 of 13: 130.2 – 139.2 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 11 of 13: 120.7 – 130.2 FEET
WET

A-0009C – B-2 (Y2_13569)
Box 12 of 13: 130.2 – 139.2 FEET
WET

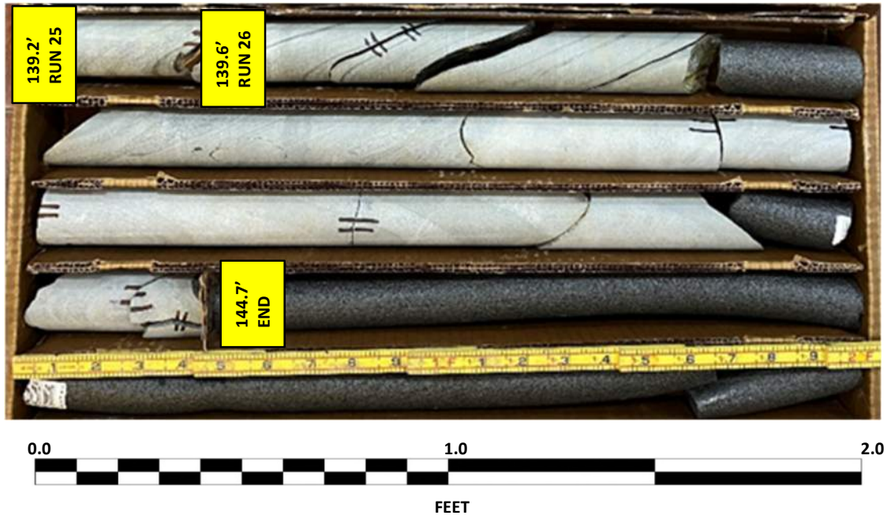


CORE PHOTOGRAPHIC RECORD

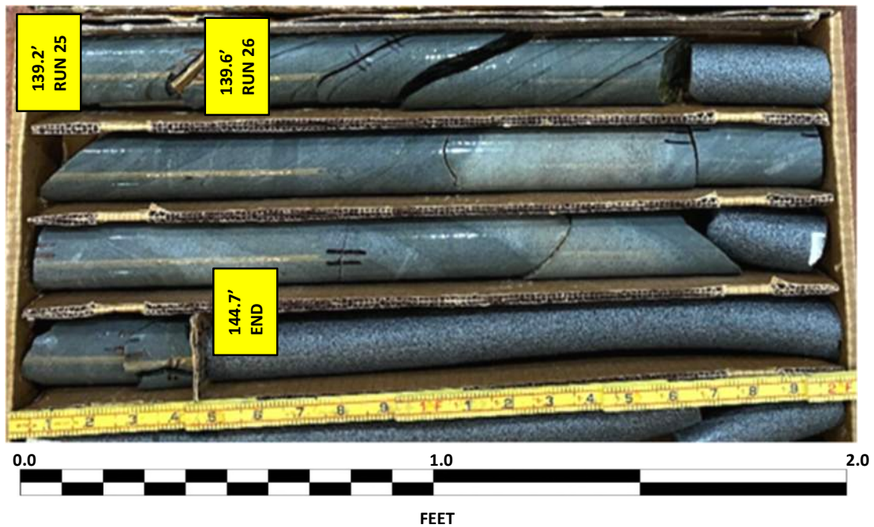
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-2 (Y2_13569)
Box 13 of 13: 139.2 – 144.7 FEET
DRY



A-0009C – B-2 (Y2_13569)
Box 13 of 13: 139.2 – 144.7 FEET
WET



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-3 (Y2_14536)	**STATION** 145+36	**OFFSET** 92 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,044.1 ft	**TOTAL DEPTH** 35.0 ft	**NORTHING** 623,603	**EASTING** 606,650	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/09/20	**COMP. DATE** 11/09/20	**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)
2045										2,044.1 GROUND SURFACE 0.0
	2,042.1	2.0	2	3	4	7		M		**RESIDUAL** Loose, yellowish red (5 YR 5/8) with brownish yellow (10 YR 5/8), silty CLAY (A-7-6), mottled
2040	2,039.6	4.5	16	31	26	57		M		2,039.6 4.5 Very dense, olive yellow (2.5Y 6/6), fine silty SAND (A-2-4), saprolitic
	2,037.1	7.0	7	24	30	54		M		With trace clay (A-7)
2035	2,034.6	9.5	13	22	25	47		M		2,035.1 9.0 Hard, yellowish red (5YR 5/8) with yellowish brown (16 YR 5/8), SILT (A-4)
2030	2,029.6	14.5	5	13	19	32		M		Olive yellow (2.5 Y 6/6), SILT (A-4), contains few gravels (Schist), micaceous
2025	2,024.6	19.5	6	6	9	15		M		Very stiff, light olive brown (2.5Y 5/3)
2020	2,019.6	24.5	37	63/0.4		100/0.9	SS-19			2,021.3 22.8 **WEATHERED ROCK** Schist, light yellowish brown (2.5 Y 6/4) to light olive brown (2.5 Y 5/3) Acid-Base Lab Test Sample (24.5-25.4')
2015	2,014.6	29.5	79	21/0.1		100/0.6				
2010	2,009.6	34.5	100/0.5			100/0.5				2,009.1 35.0 Boring Terminated at Elevation 2,009.1 ft in Weathered Rock (Muscovite Schist).

NCDOT BORE DOUBLE 32572.1F510 DIV ROCK SLOPES_STECOAH .GPJ NC_DOT.GDT 4/15/21

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-4 (Y2_14690)	**STATION** 146+90	**OFFSET** 58 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,052.2 ft	**TOTAL DEPTH** 49.5 ft	**NORTHING** 623,714	**EASTING** 606,760	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/09/20	**COMP. DATE** 11/09/20	**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										
										2,052.2 0.0 GROUND SURFACE
	2,050.5	1.7	3	4	4	8		M		**RESIDUAL** Loose, brownish yellow (10 YR, 6/6) with reddish yellow (5 YR, 6/8), fine silty SAND (A-2-4), saprolitic
2050										
	2,048.0	4.2	18	13	12	25		M		Medium dense, light olive brown (2.5 Y 5/3) and grayish brown (2.5 Y 5/2), with trace gravel (Metasandstone)
	2,045.5	6.7	18	13	17	30		M		Dense
2045										
	2,043.0	9.2	29	33	21	54		M		
2040										
	2,038.0	14.2	4	4	6	10		M		Micaceous
2035										
	2,033.0	19.2	4	5	8	13		M		
2030										
	2,028.0	24.2	4	4	6	10		M		
2025										
	2,023.0	29.2	4	8	1	9		M		
2020										
	2,018.0	34.2	12	19	26	45		M		
2015										
										2,034.7 17.5 Very stiff, light olive brown (2.5 YR 5/4) with reddish yellow (7.5 YR 7/6), silty CLAY (A-6), micaceous
										2,019.7 32.5 Hard, light yellowish brown (2.5 Y 6/3), SILT (A-4), micaceous, saprolitic

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-4 (Y2_14690)	**STATION** 146+90	**OFFSET** 58 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,052.2 ft	**TOTAL DEPTH** 49.5 ft	**NORTHING** 623,714	**EASTING** 606,760	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/09/20	**COMP. DATE** 11/09/20	**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
2015						Match Line				
										2,014.7 37.5 **WEATHERED ROCK** Metasandstone, light yellowish brown (2.5 Y 6/3)
	2,013.0	39.2	15	30	70/0.4	100/0.9				
2010										
	2,008.0	44.2	96	4/0.0		100/0.5				
2005										
	2,003.0	49.2	100/0.3			100/0.3				
										2,002.7 49.5 Boring Terminated at Elevation 2,002.7 ft in Weathered Rock (Metasandstone).

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Gruenberg, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-5 (Y2_15063)	**STATION** 150+63	**OFFSET** 43 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,072.2 ft	**TOTAL DEPTH** 30.4 ft	**NORTHING** 623,858	**EASTING** 607,084	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/10/20	**COMP. DATE** 11/10/20	**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										ELEV. (ft) DEPTH (ft)
										2,072.2 GROUND SURFACE 0.0
										RESIDUAL Very stiff, yellowish brown (10 YR 5/6) to grayish brown (2.5 YR 5/2), SILT(A-4)
2070	2,070.2	2.0	10	13	15	28		M		
	2,067.7	4.5	7	18	67	85		M		Hard
2065	2,065.2	7.0	65	35/0.2		100/0.7				2,065.7 6.5 **WEATHERED ROCK** Schist, grayish brown (2.5 Y 5/2)
	2,062.7	9.5	21	24	12	36		M		2,063.6 8.6 **RESIDUAL** Hard, grayish brown (2.5 Y 5/2), SILT (A-4), saprolitic (Schist)
2060										2,059.4 12.8 **WEATHERED ROCK** Schist, grayish brown (2.5 Y 5/2)
	2,057.7	14.5	52	48/0.2		100/0.7				
2055										
	2,052.7	19.5	55	45/0.2		100/0.7	SS-35			Acid-Base Lab Test Sample (19.5-20.0')
2050										
	2,047.7	24.5	56	44/0.2		100/0.7				
2045										
	2,042.7	29.5	38	62/0.4		100/0.9				2,041.8 30.4 Boring Terminated at Elevation 2,041.8 ft in Weathered Rock (Muscovite Schist).

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-6 (Y2_15305)	**STATION** 153+05	**OFFSET** 29 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,083.0 ft	**TOTAL DEPTH** 30.2 ft	**NORTHING** 623,893	**EASTING** 607,315	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/10/20	**COMP. DATE** 11/10/20	**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										
										2,083.0 GROUND SURFACE 0.0
										RESIDUAL Medium dense, light olive brown (2.5 YR 5/4) to olive yellow (5 Y 6/6), silty SAND (A-2-4)
2080	2,080.3	2.7	5	8	8	16		M		
	2,078.5	4.5	4	8	11	19	SS-23	M		Saprolitic (Metasandstone with Metasiltstone)
2075	2,075.3	7.7	5	6	7	13		M		
	2,073.5	9.5	8	11	20	31		M		Dense, olive gray (5 Y 4/2)
2070										2,071.0 12.0 Hard, gray (5 Y 6/1) to greenish gray (10 YR 6/1), SILT (A-4), contains trace gravel (Metasiltstone)
	2,068.5	14.5	14	37	42	79	SS-26	M		
2065										
	2,063.5	19.5	9	17	12	29		M		Very stiff, light yellowish brown (12.5 YR 6/3)
2060										2,061.0 22.0 **WEATHERED ROCK** Metasiltstone, light gray (5 Y 7/1) to olive gray (5 Y 5/2)
	2,058.5	24.5	50	50/0.2		100/0.7				
2055										
	2,053.5	29.5	75	25/0.2		100/0.7				2,052.8 30.2 Boring Terminated at Elevation 2,052.8 ft in Weathered Rock (Metasiltstone). Encountered 5-inch recovery rock fragment (~1 inch diameter) stuck in shoe between 7.7 and 9.2 ft bgs. Harder drilling encountered from 4.5 to 7.0 ft bgs. Harder drilling and chatter encountered from 19.5 to 21 ft bgs.

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-7 (Y2_15475)	**STATION** 154+75	**OFFSET** 38 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,091.7 ft	**TOTAL DEPTH** 29.8 ft	**NORTHING** 623,867	**EASTING** 607,477	**24 HR.** Caved @ 15.1'
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**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										
										2,091.7 GROUND SURFACE 0.0
2090										**WEATHERED ROCK** Metasandstone, medium dark gray to gray (N4-N3)
	2,089.3	2.4	11	89/0.2		100/0.7				
	2,087.6	4.1	60/0.1			60/0.1				2,087.6 4.1
										2,087.5 4.2 **CRYSTALLINE ROCK** Metasandstone, medium dark gray to gray (N4-N3)
2085										**CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, slight to very slight weathering, hard, close fracture spacing, thinly to thickly bedded (70-80°)
										Very close to close fracture spacing
2080										Close to moderately close fracture spacing
							RS-B-7-1a RS-B-7-2t			Acid-Base Lab Test Sample (B-1-7a: 12.6-12.9') Petrographic Section Sample (B-7-2t: 12.9-13.3')
2075										Wide fracture spacing
										Very thinly to thinly bedded (70-80°)
2070										Close to moderately close fracture spacing
										Wide fracture spacing
2065							RS-B-7-3a RS-B-7-4t			2,061.9 29.8 Acid-Base Lab Test Sample (B-7-3a: 29.3-29.6') Petrographic Section Sample (B-7-4t: 29.6-29.8') Boring Terminated at Elevation 2,061.9 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

NCDOT BORE DOUBLE 32572.1F510 DIV ROCK SLOPES_STECOAH.GPJ NC_DOT.GDT 4/15/21

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-7 (Y2_15475)	**STATION** 154+75	**OFFSET** 38 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,091.7 ft	**TOTAL DEPTH** 29.8 ft	**NORTHING** 623,867	**EASTING** 607,477	**24 HR.** Caved @ 15.1'
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 25.6 ft			

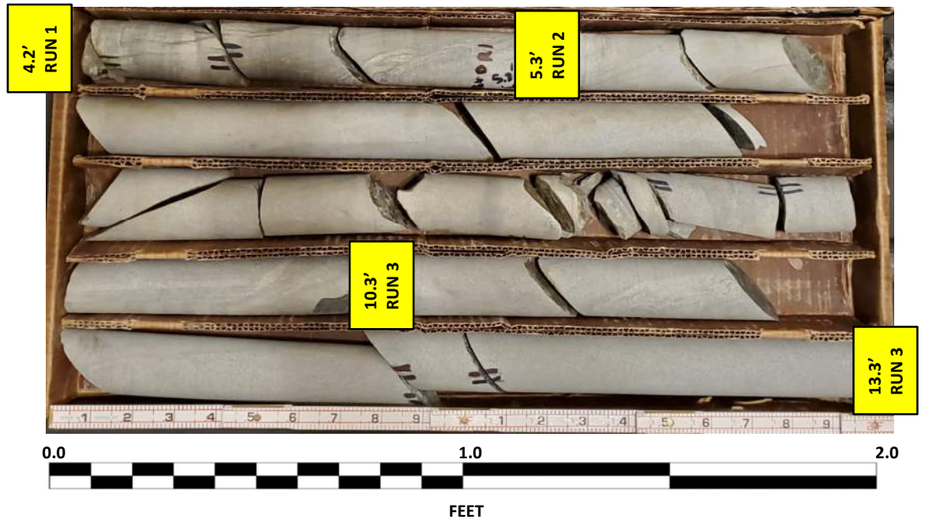
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2087.5											Continued from previous page
	2,087.5	4.2	1.1	8:36/1.1	(1.1) 100%	(1.1) 100%		(25.6) 100%	(22.9) 89%		2,087.5 **CRYSTALLINE ROCK** 4.2 Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, slight to very slight weathering, hard, close fracture spacing, thinly to thickly bedded (70-80°)
	2,086.4	5.3	5.0	5:39	(5.0) 100%	(3.4) 68%					
2085				4:18							
				3:42							
				8:39							
	2,081.4	10.3		3:18							Very close to close fracture spacing
			5.0	2:30	(5.0) 100%	(5.0) 100%					Close to moderately close fracture spacing
2080				2:00							
				2:21			RS-B-7-1a				Acid-Base Lab Test Sample (B-1-7a: 12.6-12.9')
				2:37			RS-B-7-2t				Petrographic Section Sample (B-7-2t: 12.9-13.3')
				2:38							
	2,076.4	15.3	5.0	3:02	(5.0) 100%	(4.4) 88%					
2075				2:26							
				2:23							Wide fracture spacing
				3:10							Very thinly to thinly bedded (70-80°)
				2:32							
	2,071.4	20.3	5.0	2:36	(5.0) 100%	(4.5) 90%					
2070				2:22							
				2:48							Close to moderately close fracture spacing
				3:29							
				3:35							
	2,066.4	25.3	4.5	2:36	(4.5) 100%	(4.5) 100%					Wide fracture spacing
2065				2:22							
				2:48							
				3:29 3:35/0.5							
	2,061.9	29.8					RS-B-7-3a RS-B-7-4t				2,061.9 29.8 Acid-Base Lab Test Sample (B-7-3a: 29.3-29.6') Petrographic Section Sample (B-7-4t: 29.6-29.8') Boring Terminated at Elevation 2,061.9 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

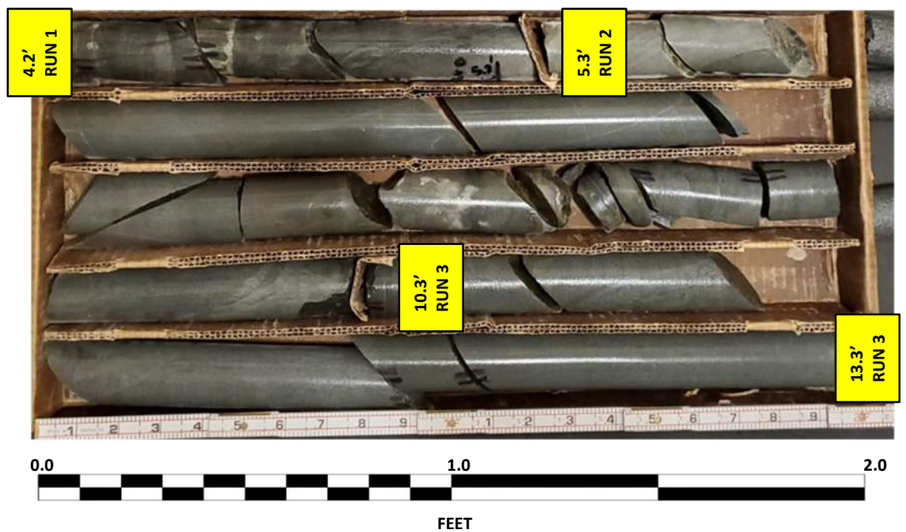
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-7 (Y2_15475)
Box 1 of 3: 4.2 – 13.3 FEET
DRY



A-0009C – B-7 (Y2_15475)
Box 2 of 3: 13.3 – 22.9 FEET
DRY

A-0009C – B-7 (Y2_15475)
Box 1 of 3: 4.2 – 13.3 FEET
WET



A-0009C – B-7 (Y2_15475)
Box 2 of 3: 13.3 – 22.9 FEET
WET

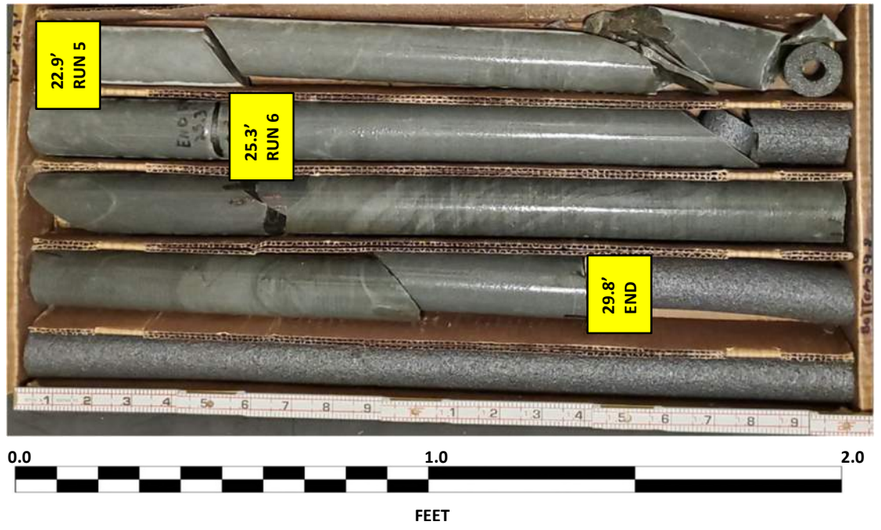
CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-7 (Y2_15475)
Box 3 of 3: 22.9 – 29.8 FEET
DRY

A-0009C – B-7 (Y2_15475)
Box 3 of 3: 22.9 – 29.8 FEET
WET



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-8 (Y2_15712)	**STATION** 157+12	**OFFSET** 63 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,121.8 ft	**TOTAL DEPTH** 55.0 ft	**NORTHING** 623,778	**EASTING** 607,688	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**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)
2125										
										2,121.8 GROUND SURFACE 0.0
	2,120.8	1.0								**WEATHERED ROCK** Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3)
2120			41	59/0.4						
	2,119.3	2.5	60/0.1			100/0.9 60/0.1				2,119.3 2.5 2,119.2 2.6 **CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3) Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, moderate weathering, hard, close fracture spacing, thinly bedded (70-90°) Moderately severe weathering Vertical joint with multiple secondary fractures Very close fracture spacing Very thinly bedded (70-80°) Vertical joint Slight weathering, thickly bedded
2115										
2110										Very thinly bedded 70 to 90° Moderately close fracture spacing, very slight weathering
2105							RS-B-8-1a RS-B-8-2t			Acid-Base Lab Test Sample (B-8-1a: 17.1-17.5') Petrographic Section Sample (B-8-2t: 17.5-17.7') Very close fracture spacing, vertical joint
2100										Close fracture spacing Thinly bedded (60-70°) Thickly laminated (70-80°) Very close fracture spacing, vertical joint
2095										Close fracture spacing Thinly bedded (70-80°)
2090										Thickly bedded
2085										Very close to close fracture spacing, thinly

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						Match Line				bedded (70-80°) Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, moderate weathering, hard, close fracture spacing, thinly bedded (70-90°) *(continued)*
2080										
2075							RS-B-8-3a RS-B-8-4t			Close fracture spacing Acid-Base Lab Test Sample (B-8-3a: 47.7-47.9') Petrographic Section Sample (B-8-4t: 47.9-48.2')
2070										Fault (<5 mm normal-sense displacement)
										2,066.8 0.5" well-rounded conglomerate band (1-2 cm clast diameter) 55.0 Boring Terminated at Elevation 2,066.8 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-8 (Y2_15712)	**STATION** 157+12	**OFFSET** 63 ft RT	**ALIGNMENT** -Y2- / **0 HR.** N/A
COLLAR ELEV. 2,121.8 ft	**TOTAL DEPTH** 55.0 ft	**NORTHING** 623,778	**EASTING** 607,688 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 52.3 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2119.2											Continued from previous page
	2,119.2	2.6	1.7	3:06	(1.6) 94%	(0.7) 41%		(52.2) 100%	(34.3) 65%		ELEV. (ft) 2,119.2 DEPTH (ft) 2.6 Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, moderate weathering, hard, close fracture spacing, thinly bedded (70-90°)
	2,117.5	4.3		1:56/0.7							Moderately severe weathering
			5.0	2:47	(5.0) 100%	(1.3) 26%					Vertical joint with multiple secondary fractures
2115				2:00							
				1:52							
				4:39							
				2:37							Very close fracture spacing Very thinly bedded (70-80°)
	2,112.5	9.3									
			5.2	3:07	(5.2) 100%	(3.7) 71%					Vertical joint
				3:01							
2110				2:29							Slight weathering, thickly bedded
				2:29							
				2:04/1.2							
	2,107.3	14.5									Very thinly bedded 70 to 90°
			5.3	1:58	(5.3) 100%	(3.3) 62%					Moderately close fracture spacing, very slight weathering
				1:54							
2105				1:26							
				2:18			RS-B-8-1a				Acid-Base Lab Test Sample (B-8-1a: 17.1-17.5')
				2:55/1.3			RS-B-8-2t				Petrographic Section Sample (B-8-2t: 17.5-17.7') Very close fracture spacing, vertical joint
	2,102.0	19.8									
			5.0	2:26	(5.0) 100%	(4.7) 94%					Close fracture spacing
				2:46							
2100				1:38							
				2:09							Thinly bedded (60-70°)
				2:03							
	2,097.0	24.8									Thickly laminated (70-80°)
			5.0	1:49	(5.0) 100%	(2.0) 40%					Very close fracture spacing, vertical joint
				1:49							
2095				1:40							
				2:07							
				3:03/1.1							Close fracture spacing
	2,092.0	29.8									Thinly bedded (70-80°)
	2,091.9	29.9	5.1	2:15	(5.1) 100%	(4.4) 86%					
				2:01							
2090				221							
				2:56							Thickly bedded
				2:46/1.1							
	2,086.8	35.0									
			5.0	2:38	(5.0) 100%	(3.3) 66%					Very close to close fracture spacing, thinly bedded (70-80°)
				2:40							
2085				3:52							
				3:28							
				3:28							
	2,081.8	40.0									
			5.0	2:34	(5.0) 100%	(3.0) 60%					
2080				2:46							
				2:42							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-8 (Y2_15712)	**STATION** 157+12	**OFFSET** 63 ft RT	**ALIGNMENT** -Y2- / **0 HR.** N/A
COLLAR ELEV. 2,121.8 ft	**TOTAL DEPTH** 55.0 ft	**NORTHING** 623,778	**EASTING** 607,688 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 52.3 ft		

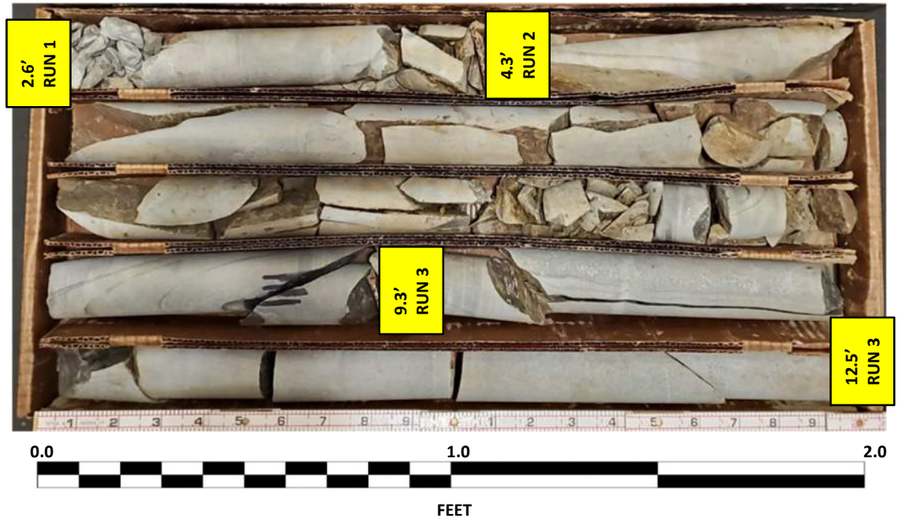
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2079.2											Continued from previous page
				2:11							Metasandstone with interlayered Metasiltstone, medium dark gray to gray (N4-N3), very fine to medium grained, moderate weathering, hard, close fracture spacing, thinly bedded (70-90°) *(continued)*
				2:20							
	2,076.8	45.0									
			5.0	2:29	(5.0) 100%	(4.7) 94%					Close fracture spacing
2075				1:56							
				2:17							
				1:57			RS-B-8-3a				Acid-Base Lab Test Sample (B-8-3a: 47.7-47.9')
				2:25			RS-B-8-4t				Petrographic Section Sample (B-8-4t: 47.9-48.2')
	2,071.8	50.0									
			5.0	2:36	(5.0) 100%	(3.2) 64%					
				2:09							
2070				1:56							Fault (<5 mm normal-sense displacement)
				2:11							
				2:17							
	2,066.8	55.0									2,066.8 0.5" well-rounded conglomerate band (1-2 cm clast diameter) 55.0
				2:03							Boring Terminated at Elevation 2,066.8 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

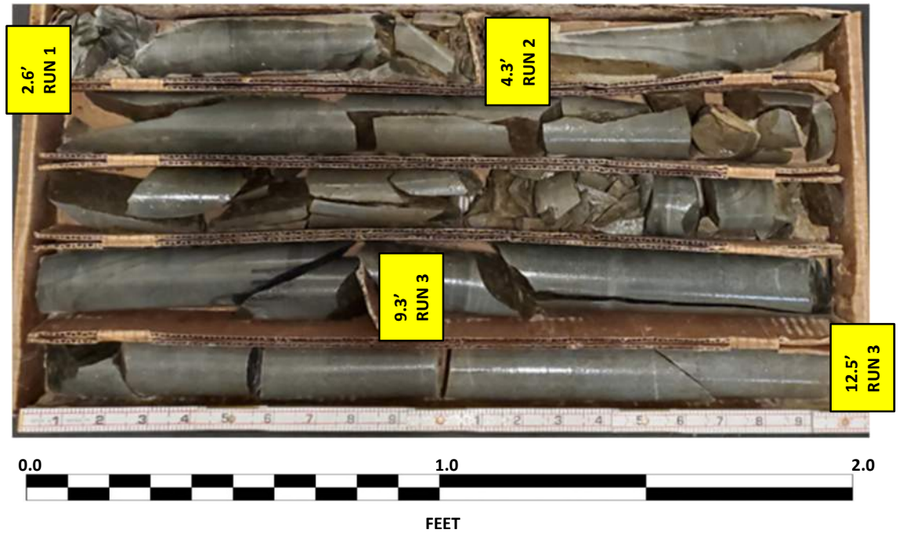
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-8 (Y2_15712)
Box 1 of 6: 2.6 – 12.5 FEET
DRY

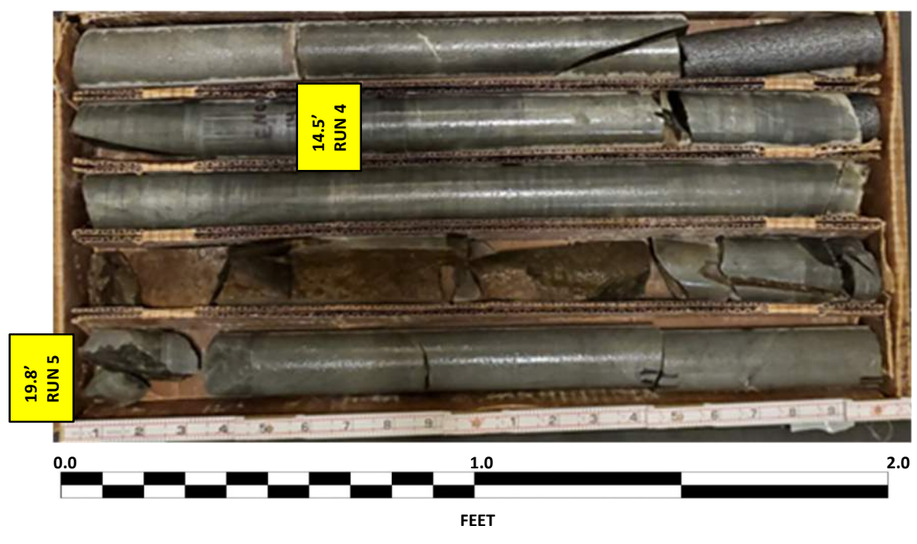


A-0009C – B-8 (Y2_15712)
Box 2 of 6: 12.5 – 21.8 FEET
DRY

A-0009C – B-8 (Y2_15712)
Box 1 of 6 2.6 – 12.5 FEET
WET



A-0009C – B-8 (Y2_15712)
Box 2 of 6: 12.5 – 21.8 FEET
WET

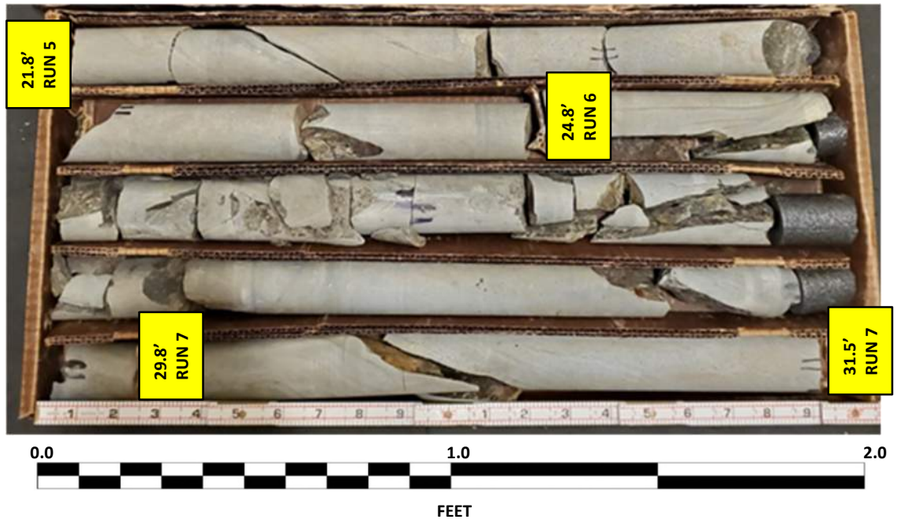


CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

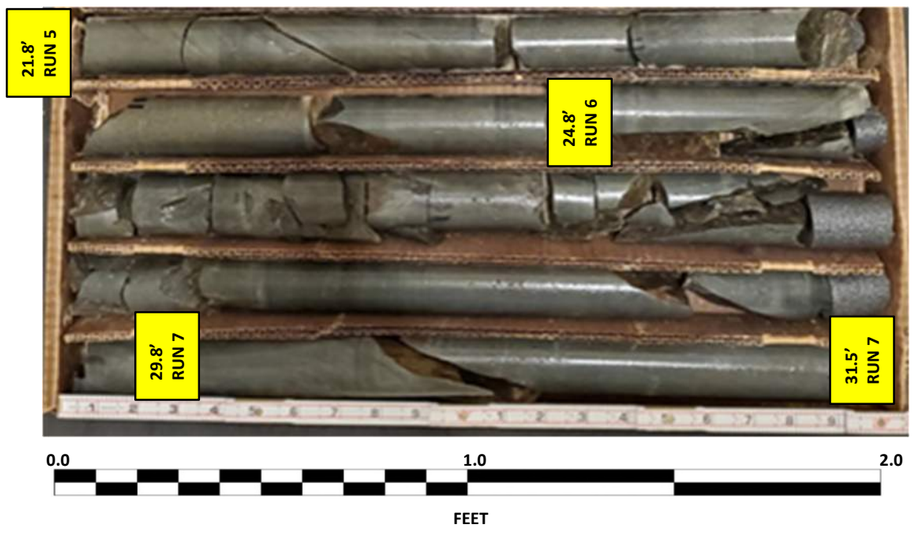
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-8 (Y2_15712)
Box 3 of 6: 21.8 – 31.5 FEET
DRY

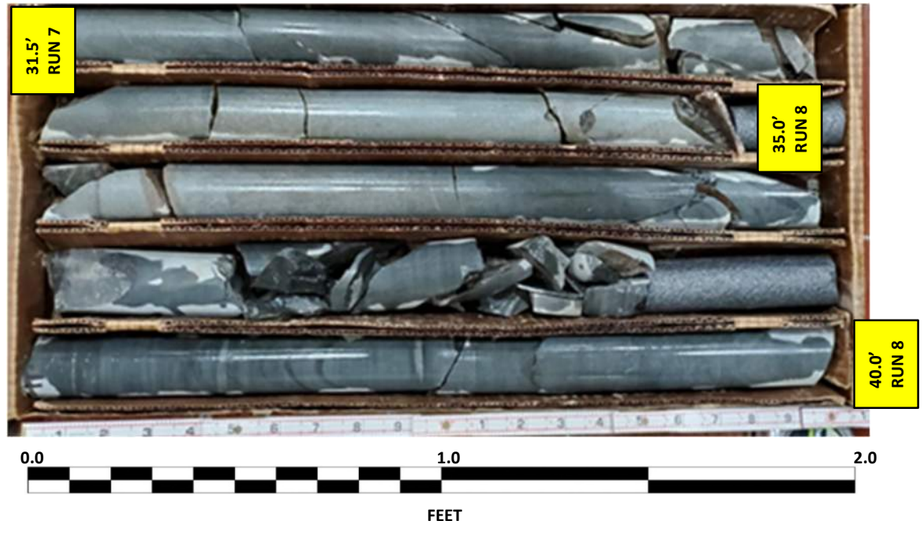


A-0009C – B-8 (Y2_15712)
Box 4 of 6: 31.5 – 40.0 FEET
DRY

A-0009C – B-8 (Y2_15712)
Box 3 of 6: 21.8 – 31.5 FEET
WET



A-0009C – B-8 (Y2_15712)
Box 4 of 6: 31.5 – 40.0 FEET
WET



CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

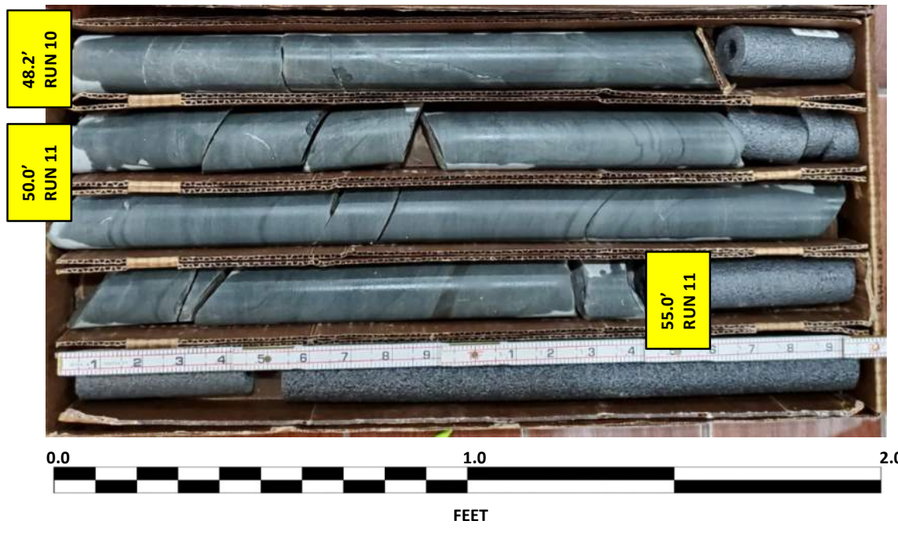
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-8 (Y2_15712)
Box 5 of 6: 40.0 – 48.2 FEET
DRY

A-0009C – B-8 (Y2_15712)
Box 6 of 6: 48.2 – 50.0 FEET
DRY

A-0009C – B-8 (Y2_15712)
Box 5 of 6: 40.0 – 48.2 FEET
WET

A-0009C – B-8 (Y2_15712)
Box 6 of 6: 48.2 – 50.0 FEET
WET



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-9 (Y2_15682)	**STATION** 156+82	**OFFSET** 54 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,089.7 ft	**TOTAL DEPTH** 29.8 ft	**NORTHING** 623,898	**EASTING** 607,703	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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										2,089.7 GROUND SURFACE	0.0
	2,087.6	2.1	100/0.3							**WEATHERED ROCK** Metasandstone, gray (2.5 Y 6/1) to light yellowish brown (2.5 Y, 6/3)	
	2,086.9	2.8	60/0.0			100/0.3 60/0.0				2,087.1 **CRYSTALLINE ROCK**	2.6
2085										2,086.0 Metasandstone, medium gray to medium dense gray (N4-N5)	3.7
										Metasandstone, medium gray to medium dense gray (N4-N5), fine to medium grained, slight weathering, hard, close fracture spacing, thinly bedded (70-80°) 1.0" Quartz vein Close fracture spacing Moderately close fracture spacing Close fracture spacing	
2080										Moderately close fracture spacing	
							RS-B-9-1a RS-B-9-2t			Close fracture spacing Acid-Base Lab Test Sample (B-9-1a: 10.8-11.2') Petrographic Section Sample (B-9-4t: 11.2-11.4')	
2075											
2070										Moderately close fracture spacing	
										2.5" Quartz vein	
2065										Close fracture spacing	
										Moderate weathering	
2060							RS-B-9-3a RS-B-9-4t			Slight weathering, moderately close fracture spacing Acid-Base Lab Test Sample (B-9-3a: 28.4-28.7') Petrographic Section Sample (B-9-2t: 28.7-29.1')	
										2,059.9 Boring Terminated at Elevation 2,059.9 ft in Crystalline Rock (Metasandstone).	29.8
										Hard drilling from 0 to 2.1 ft bgs.	

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-9 (Y2_15682)	**STATION** 156+82	**OFFSET** 54 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,089.7 ft	**TOTAL DEPTH** 29.8 ft	**NORTHING** 623,898	**EASTING** 607,703	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 26.1 ft			

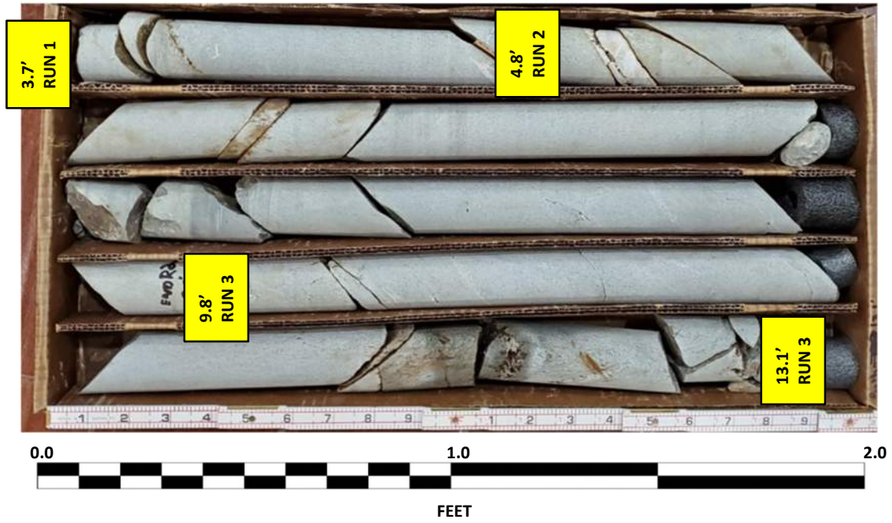
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
2086											Continued from previous page	
2085	2,086.0	3.7	1.1	3:07	(1.1) 100%	(0.8) 73%		(26.1) 100%	(21.9) 84%		2,086.0 Metasandstone, medium gray to medium dense gray (N4-N5), fine to medium grained, slight weathering, hard, close fracture spacing, thinly bedded (70-80°) 1.0" Quartz vein Close fracture spacing	3.7
	2,084.9	4.8	5.0	0:30/0.1 4:01 2:27	(5.0) 100%	(3.7) 74%					Moderately close fracture spacing	
				2:48 2:54							Close fracture spacing	
2080	2,079.9	9.8		2:52							Moderately close fracture spacing	
			5.0	3:05 3:22 2:18 2:15 2:08	(5.0) 100%	(4.4) 88%	RS-B-9-1a RS-B-9-2t				Close fracture spacing Acid-Base Lab Test Sample (B-9-1a: 10.8-11.2') Petrographic Section Sample (B-9-4t: 11.2-11.4')	
2075	2,074.9	14.8										
			5.0	2:30 1:52 1:51 2:07 2:40	(5.0) 100%	(4.5) 90%					Moderately close fracture spacing	
2070	2,069.9	19.8									2.5" Quartz vein	
			5.0	2:03 2:59 4:22 4:30 4:19	(5.0) 100%	(4.8) 96%					Close fracture spacing	
2065	2,064.9	24.8									Moderate weathering	
			5.0	3:41 2:41 3:53 3:14 3:42	(5.0) 100%	(3.7) 74%	RS-B-9-3a RS-B-9-4t				Slight weathering, moderately close fracture spacing Acid-Base Lab Test Sample (B-9-3a: 28.4-28.7') Petrographic Section Sample (B-9-2t: 28.7-29.1')	
2060	2,059.9	29.8									2,059.9 Boring Terminated at Elevation 2,059.9 ft in Crystalline Rock (Metasandstone).	29.8
											Hard drilling from 0 to 2.1 ft bgs.	

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

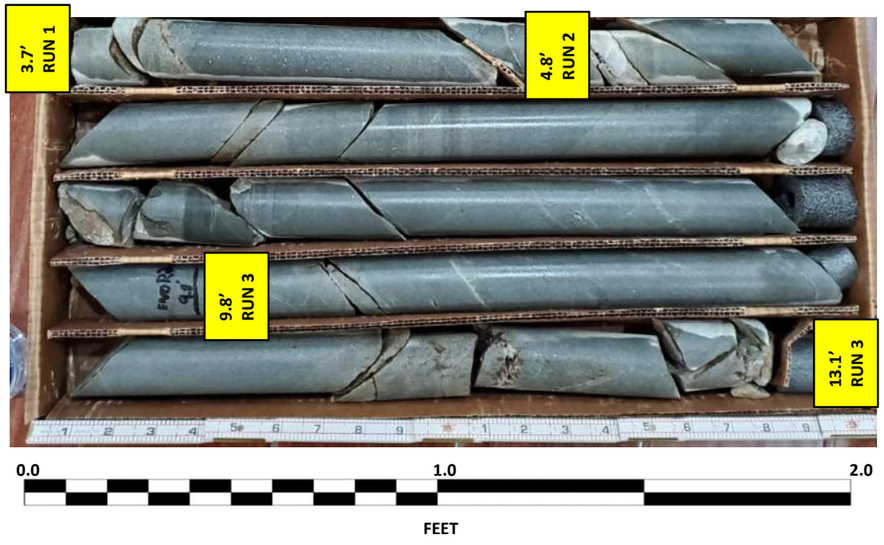
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-9 (Y2_15682)
Box 1 of 3: 3.7 – 13.1 FEET
DRY



A-0009C – B-9 (Y2_15682)
Box 2 of 3: 13.1 – 22.7 FEET
DRY

A-0009C – B-9 (Y2_15682)
Box 1 of 3: 3.7 – 13.1 FEET
WET



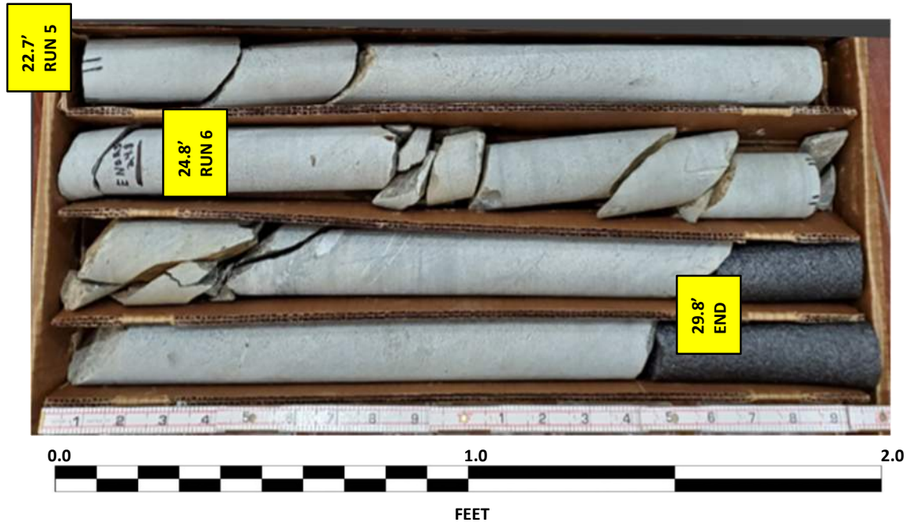
A-0009C – B-9 (Y2_15682)
Box 2 of 3: 13.1 – 22.7 FEET
WET

CORE PHOTOGRAPHIC RECORD

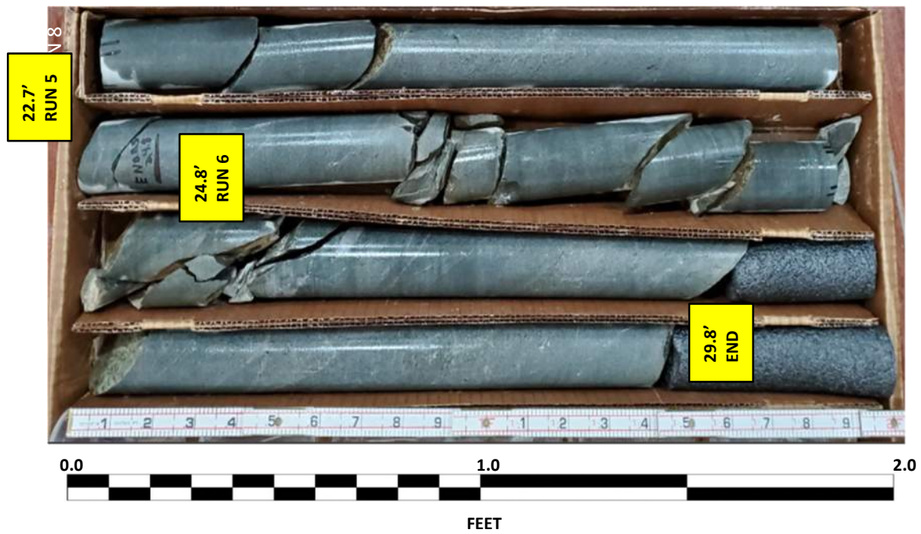
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-9 (Y2_15682)
Box 3 of 3: 22.7 – 29.8 FEET
DRY



A-0009C – B-9 (Y2_15682)
Box 3 of 3: 22.7 – 29.8 FEET
WET



GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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))
2195										
										2,194.3 / 0.0 GROUND SURFACE
	2,192.4	1.9	1	3	2	5		M		**RESIDUAL** Medium stiff, yellowish brown (10 YR, 5/8), fine sandy SILT (A-4), with trace clay
	2,190.7	3.6								2,190.8 / 3.5
2190			4	5	7	12		M		Medium dense, yellowish brown (10 YR 5/8), fine silty SAND (A-2-4)
	2,187.4	6.9	17	53	95			M		Very dense, brown (10 YR 5/3) to light olive brown (2.5 Y 5/4), with trace tock fragments (Schist)
	2,185.7	8.6								
2185			20	24	36	60	SS-313	M		
										2,182.4 / 11.9 **WEATHERED ROCK** Schist, moderate yellowish brown (10 YR 5/4) to light olive brown (5 Y 5/6)
	2,180.7	13.6								
2180			21	25	75/0.5	100/1.0				
	2,178.0	16.3								2,178.6 / 15.7
			60/0.0			60/0.0				2,178.0 / 16.3 **CRYSTALLINE ROCK** Metasandstone, medium gray to medium dark gray (N4-N6)
2175										Metasandstone, fine to medium grained, medium gray to medium dark gray (N4-6), slight weathering, hard, close fracture spacing, thinly to thickly bedded
										2,173.3 / 21.0 **WEATHERED ROCK** Metasiltstone, yellowish gray (5 Y 15/2) to light olive gray (5 Y 5/2), very severe weathering
2170										
										2,167.4 / 26.9 **CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures Very close to close fracture spacing, thickly to very thickly bedded
2165										
2160										
2155						RS-B-10-2t				Acid-Base Lab Test Sample (B-10-1a: 38.2-38.4')

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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
2155						Match Line				Petrographic Section Sample (B-10-2t: 38.4-38.8') **CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)*
2150										
2145										
2140										
2135							RS-B-10-4t			Acid-Base Lab Test Sample (B-10-3a: 57.3-57.5') Petrographic Section Sample (B-10-4t: 57.5-57.5')
2130										2.5" Quartz - K-Feldspar Vein, minor high-angle faulting (brecciated) 4.5" Quartz vein
2125										
2120										1.5" Quartz vein with minor K-Fendlspar
2115										

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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						Match Line				
										CRYSTALLINE ROCK Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)*
2110										
2105										
										0.75" Quartz vein
2100										
										Moderately severe weathering
2095							RS-B-10-6t			Moderate weathering Acid-Base Lab Test Sample (B-10-5a: 99.1-99.5') Petrographic Section Sample (B-10-6t: 99.5-99.7')
2090										
2085										0.25" Quartz vein 0.5" Quartz vein 0.25" Quartz vein
2080										
2075										

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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						Match Line				
										CRYSTALLINE ROCK Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)*
2070										
2065										Very severe to complete weathering (A-1-B), very close fracture spacing
										Moderate weathering, close fracture spacing
2060										Very severe to complete weathering (A-1-B), very close fracture spacing Moderate weathering, close fracture spacing
2055							RS-B-10-8t			Acid-Base Lab Test Sample (B-10-7a: 137.8-138.1') Petrographic Section Sample (B-10-8t: 138.1-138.3')
		139.7								2,054.6 Boring Terminated at Elevation 2,054.6 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 123.4 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2178											Begin Coring @ 16.3 ft
	2,178.0	16.3	3.0	2:58	(2.9) 97%	(1.4) 47%		(4.1) 87%	(1.7) 36%		2,178.0 ELEV. (ft) **CRYSTALLINE ROCK** 16.3 DEPTH (ft) Metasandstone, fine to medium grained, medium gray to medium dark gray (N4-6), slight weathering, hard, close fracture spacing, thinly to thickly bedded
				3:21							
2175	2,175.0	19.3		3:05							
			5.0	3:20	(3.6) 72%	(0.8) 16%					
				1:26							
				1:50							
				1:43							
2170	2,170.0	24.3		1:54							2,173.3 21.0
			5.0	5:06	(3.8) 76%	(0.4) 8%		(3.2) 54%	(0.5) 8%		**WEATHERED ROCK** Metasiltstone, yellowish gray (5 Y 15/2) to light olive gray (5 Y 5/2), very severe weathering
				4:26							
				4:33							
				2:34							
2165	2,165.0	29.3		2:18							2,167.4 26.9
			5.0	2:04	(5.0) 100%	(1.2) 24%		(108.1) 96%	(53.9) 48%		**CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures Very close to close fracture spacing, thickly to very thickly bedded
				2:32							
				2:51							
				2:53							
2160	2,160.0	34.3		2:25							
			5.0	3:28	(5.0) 100%	(3.3) 66%					
				3:11							
				3:36							
				2:45							
2155	2,155.0	39.3		2:43			RS-B-10-2t				Acid-Base Lab Test Sample (B-10-1a: 38.2-38.4') Petrographic Section Sample (B-10-2t: 38.4-38.8')
			5.0	4:09	(5.0) 100%	(1.3) 26%					
				4:27							
				3:52							
				3:42							
2150	2,150.0	44.3		4:15							
			5.1	3:38	(5.1) 100%	(3.7) 73%					
				3:57							
				4:02							
				4:22							
2145	2,144.9	49.4		4:47/1.1							
			5.0	3:00	(5.0) 100%	(2.2) 44%					
				3:37							
				4:14							
				5:00							
2140	2,139.9	54.4		3:47							
			5.0	2:41	(5.0) 100%	(2.6) 52%					
				2:57							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah			**GROUND WTR (ft)**
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 123.4 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2138											Begin Coring @ 56.3 ft
				2:41							**CRYSTALLINE ROCK** Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)* Acid-Base Lab Test Sample (B-10-3a: 57.3-57.5') Petrographic Section Sample (B-10-4t: 57.5-57.5')
				3:40			RS-B-10-4t				
2135	2,134.9	59.4		3:11							
			5.0	2:43	(5.0) 100%	(1.8) 36%					
				2:36							
				2:24							
				3:27							
2130	2,129.9	64.4		4:44							
			5.1	3:25	(5.1) 100%	(0.8) 16%					2.5" Quartz - K-Feldspar Vein, minor high-angle faulting (brecciated)
				4:00							
				4:00							4.5" Quartz vein
				4:32							
2125	2,124.8	69.5		5:58/1.1							
			5.1	3:50	(5.1) 100%	(2.1) 41%					
				2:35							
				2:29							
				3:05							
2120	2,119.7	74.6		3:24/1.1							1.5" Quartz vein with minor K-Fendlspar
			5.0	2:44	(2.0) 40%	(0.5) 10%					
				2:13							
				1:57							
				3:06							
2115	2,114.7	79.6		3:25							
			5.0	2:06	(5.0) 100%	(3.0) 60%					
				2:26							
				2:29							
				2:39							
2110	2,109.7	84.6		2:31							
			5.1	3:11	(5.1) 100%	(4.3) 84%					
				3:02							
				2:31							
				2:27							
2105	2,104.6	89.7		2:27/1.1							
			5.0	2:25	(5.0) 100%	(3.0) 60%					
				2:48							
				2:39							0.75" Quartz vein
				2:22							
2100	2,099.6	94.7		2:37							
			5.0	4:59	(5.0) 100%	(1.2) 24%					Moderately severe weathering
				3:51							

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.		
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**	
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.**	N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.**	Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic		
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**SURFACE WATER DEPTH** N/A		
CORE SIZE NQ	**TOTAL RUN** 123.4 ft				

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
2098											Continued from previous page
				3:33							**CRYSTALLINE ROCK**
				3:58							Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)*
2095				3:18							Moderate weathering
	2,094.6	99.7					RS-B-10-6t				Acid-Base Lab Test Sample (B-10-5a: 99.1-99.5')
			5.0	2:34	(5.0) 100%	(3.3) 66%					Petrographic Section Sample (B-10-6t: 99.5-99.7')
				2:33							
				2:40							
				2:35							
2090				2:47							
	2,089.6	104.7									
			5.0	2:22	(5.0) 100%	(3.7) 74%					
				2:16							
				2:19							
				2:42							
2085				3:01							0.25" Quartz vein
	2,084.6	109.7									0.5" Quartz vein
			5.0	2:30	(5.0) 100%	(3.7) 74%					0.25" Quartz vein
				2:26							
				1:42							
				2:08							
2080				2:29							
	2,079.6	114.7									
			5.0	1:40	(5.0) 100%	(4.0) 80%					
				1:57							
				1:36							
				2:07							
2075				2:05							
	2,074.6	119.7									
			5.0	2:01	(5.0) 100%	(3.1) 62%					
				1:42							
				1:20							
				2:15							
2070				2:10							
	2,069.6	124.7									
			5.0	2:18	(4.5) 90%	(0.4) 8%					
				2:13							
				2:14							Very severe to complete weathering (a-1-B), very close fracture spacing
				3:27							
2065				4:33							Moderate weathering, close fracture spacing
	2,064.6	129.7									
			5.0	1:43	(4.4) 88%	(0.4) 8%					
				1:43							
				1:39							
				5:06							Very severe to complete weathering (A-1-B), very close fracture spacing
2060				2:14							Moderate weathering, close fracture spacing
	2,059.6	134.7									
			5.0	3:39	(5.0) 100%	(4.1) 82%					
				3:08							

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.		
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**	
BORING NO. B-10 (Y2_15853)	**STATION** 158+53	**OFFSET** 151 ft LT	**ALIGNMENT** -Y2-	**0 HR.**	N/A
COLLAR ELEV. 2,194.3 ft	**TOTAL DEPTH** 139.7 ft	**NORTHING** 623,925	**EASTING** 607,898	**24 HR.**	Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic		
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**SURFACE WATER DEPTH** N/A		
CORE SIZE NQ	**TOTAL RUN** 123.4 ft				

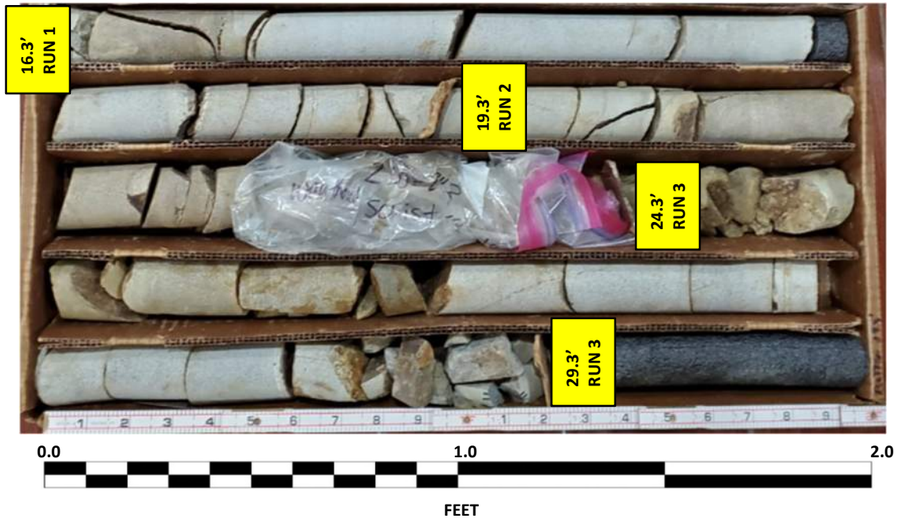
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2058											Continued from previous page
				3:32							**CRYSTALLINE ROCK**
				3:58			RS-B-10-8t				Metasandstone with interlayered Metasiltstone, fine grained, medium gray to medium dark gray (N4-6), hard, moderate to slight weathering, close fracture spacing, many healed fractures *(continued)*
2055				3:11							Acid-Base Lab Test Sample (B-10-7a: 137.8-138.1')
	2,054.6	139.7									Petrographic Section Sample (B-10-8t: 138.1-138.3')
											2,054.6 139.7
											Boring Terminated at Elevation 2,054.6 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

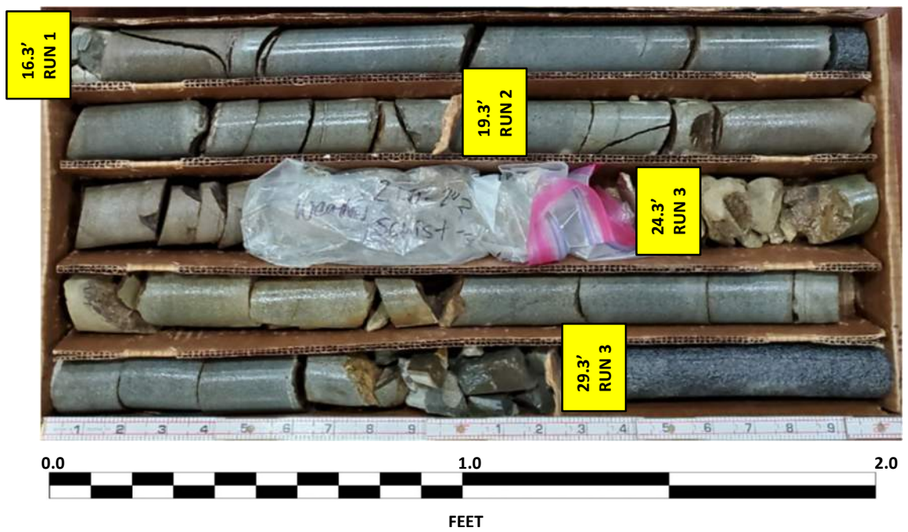
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-10 (Y2_15853)
Box 1 of 13: 16.3 – 29.3 FEET
DRY

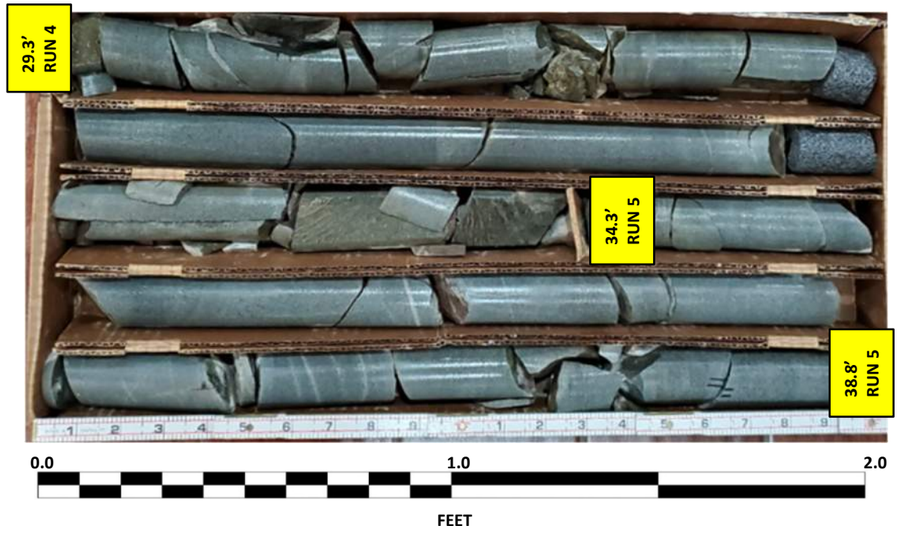


A-0009C – B-10 (Y2_15853)
Box 2 of 13: 29.3 – 38.8 FEET
DRY

A-0009C – B-10 (Y2_15853)
Box 1 of 13: 16.3 – 29.3 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 2 of 13: 34.4 – 38.8 FEET
WET

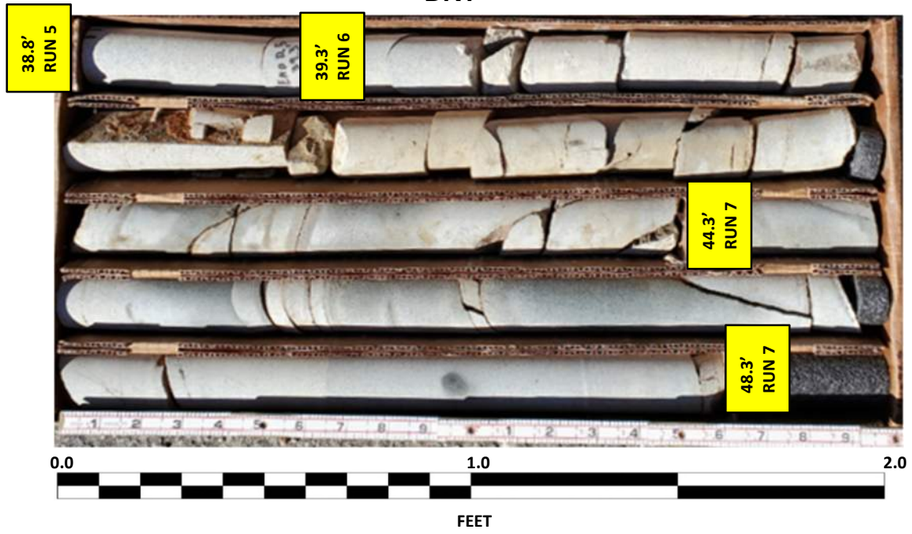


CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

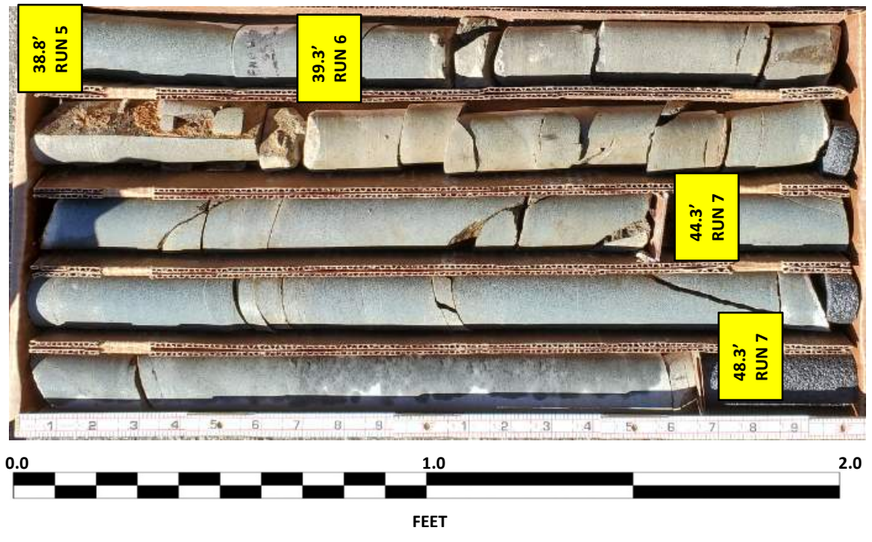
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-10 (Y2_15853)
Box 3 of 13: 38.8 – 48.3 FEET
DRY

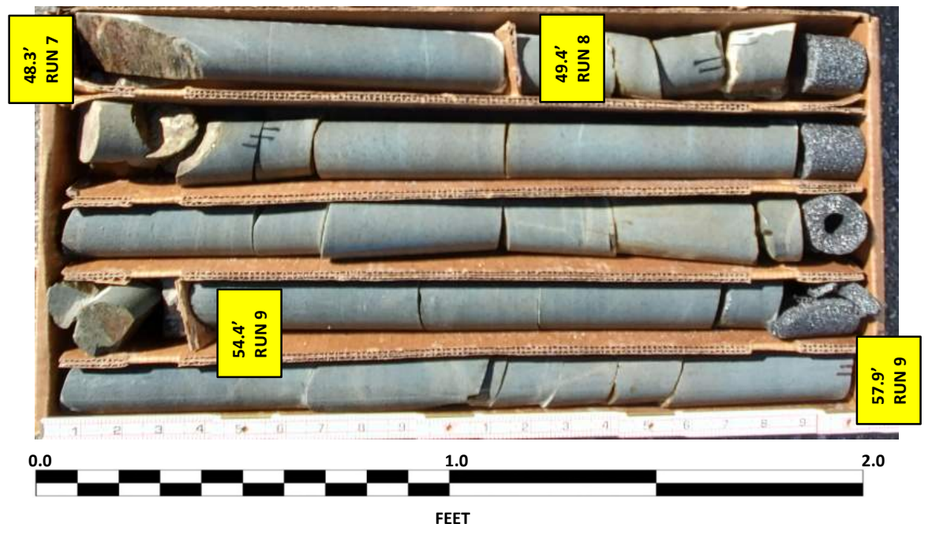


A-0009C – B-10 (Y2_15853)
Box 4 of 13: 48.3 – 57.9 FEET
DRY

A-0009C – B-10 (Y2_15853)
Box 3 of 13: 38.8 – 48.3 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 4 of 13: 48.3 – 57.9 FEET
WET

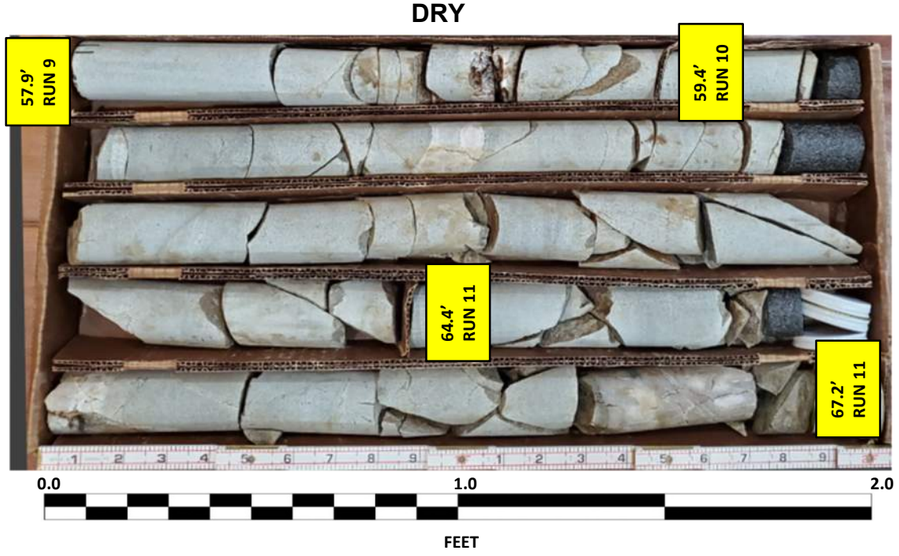


CORE PHOTOGRAPHIC RECORD

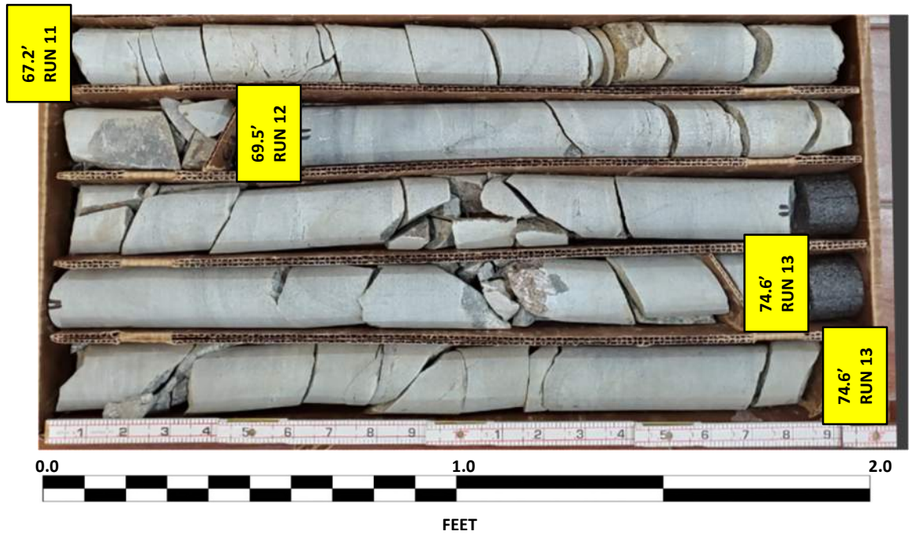
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

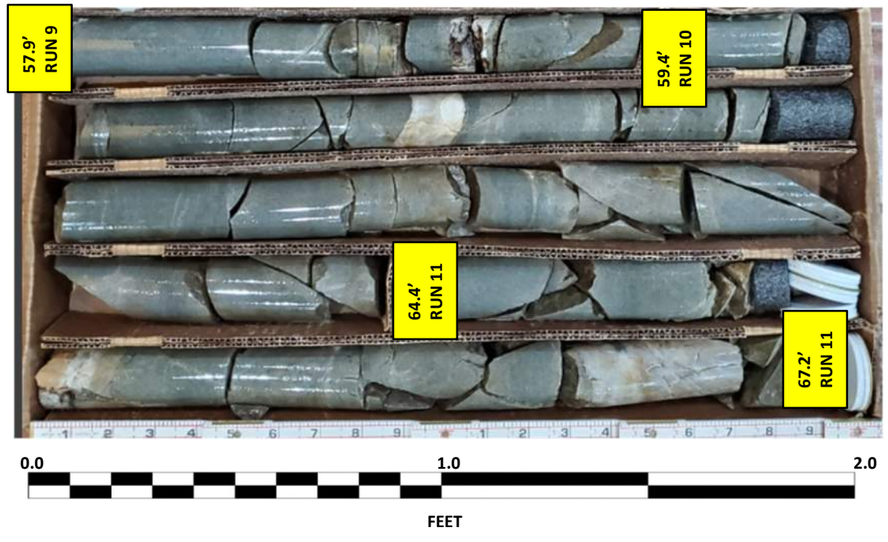
A-0009C – B-10 (Y2_15853)
Box 5 of 13: 57.9 – 67.2 FEET
DRY



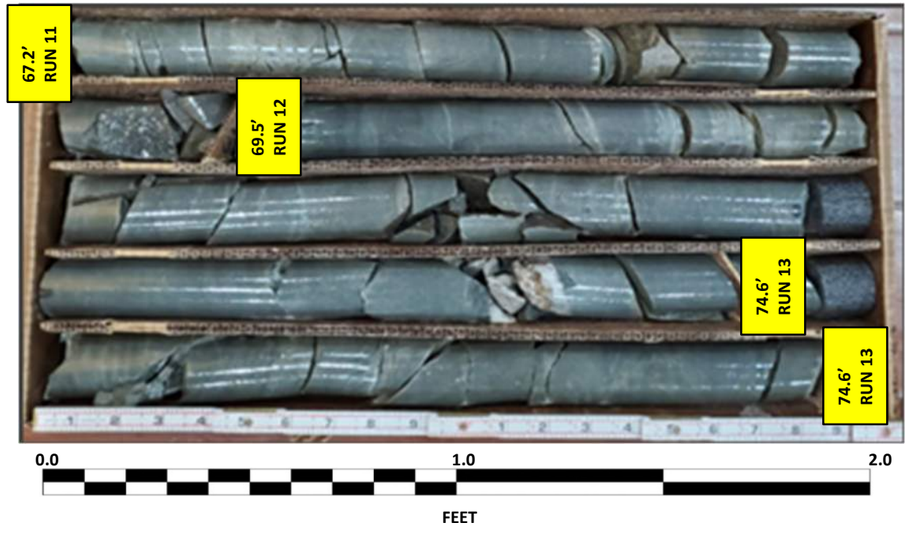
A-0009C – B-10 (Y2_15853)
Box 6 of 13: 67.2 – 76.7 FEET
DRY



A-0009C – B-10 (Y2_15853)
Box 5 of 13: 57.9 – 67.2 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 6 of 13: 67.2 – 76.7 FEET
WET



CORE PHOTOGRAPHIC RECORD

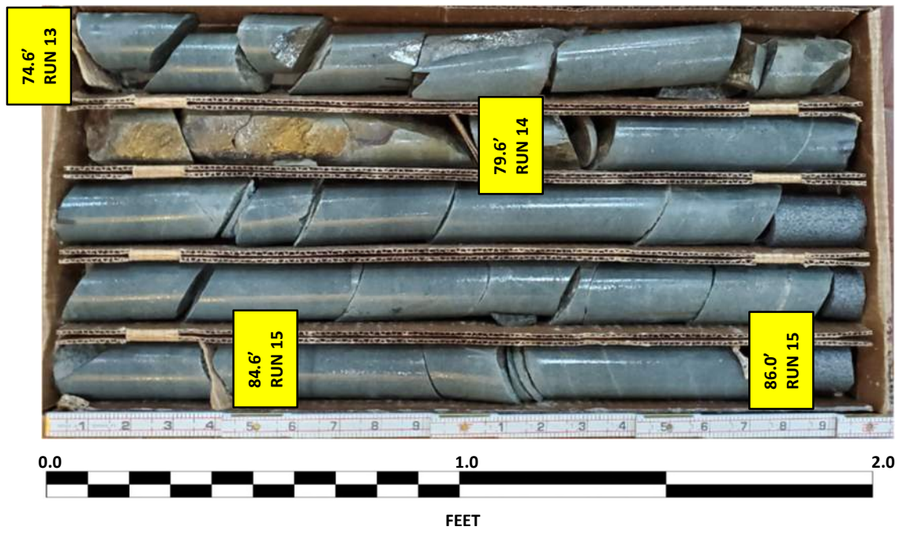
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

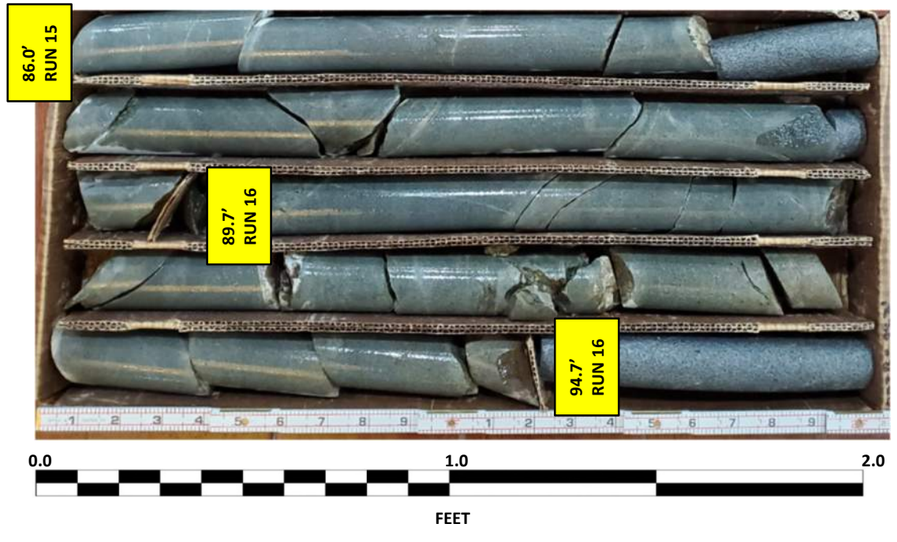
A-0009C – B-10 (Y2_15853)
Box 7 of 13: 76.7 – 86.0 FEET
DRY

A-0009C – B-10 (Y2_15853)
Box 8 of 13: 86.0 – 94.7 FEET
DRY

A-0009C – B-10 (Y2_15853)
Box 7 of 13: 76.7 – 86.0 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 8 of 13: 86.0 – 94.7 FEET
WET



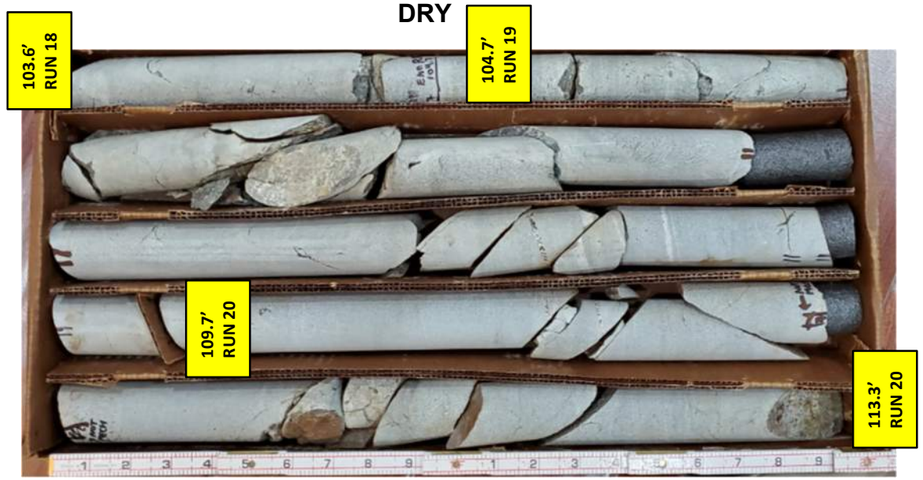
CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

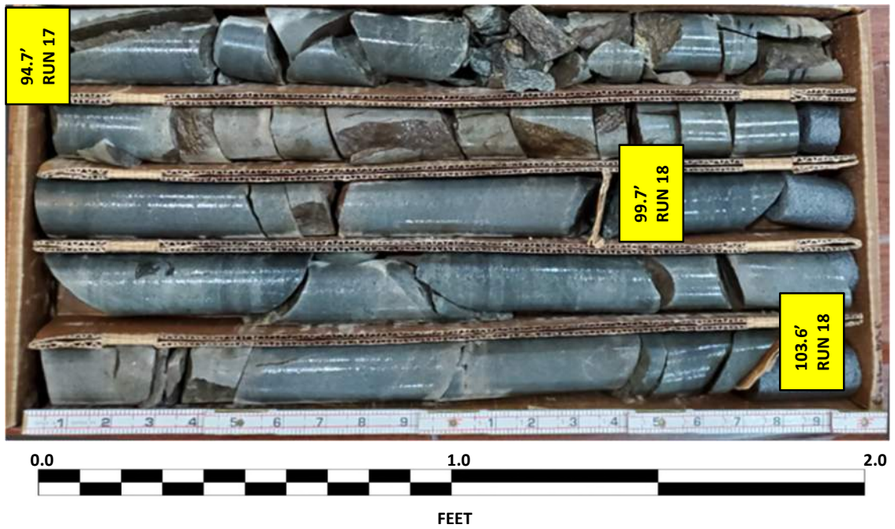
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-10 (Y2_15853)
Box 9 of 13: 94.7 – 103.6 FEET
DRY

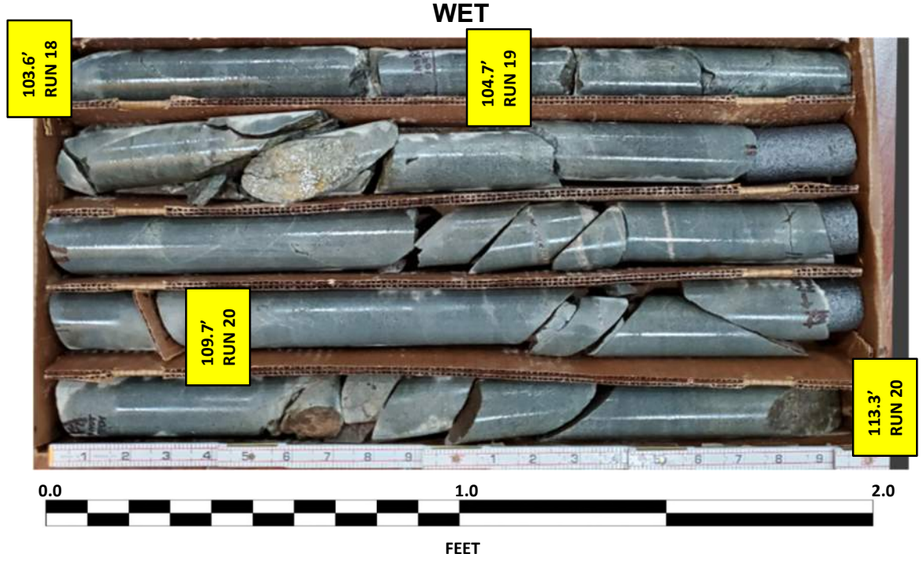
A-0009C – B-10 (Y2_15853)
Box 10 of 13: 103.6 – 113.3 FEET
DRY



A-0009C – B-10 (Y2_15853)
Box 9 of 13: 94.7 – 103.6 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 10 of 13: 103.6 – 113.3 FEET
WET



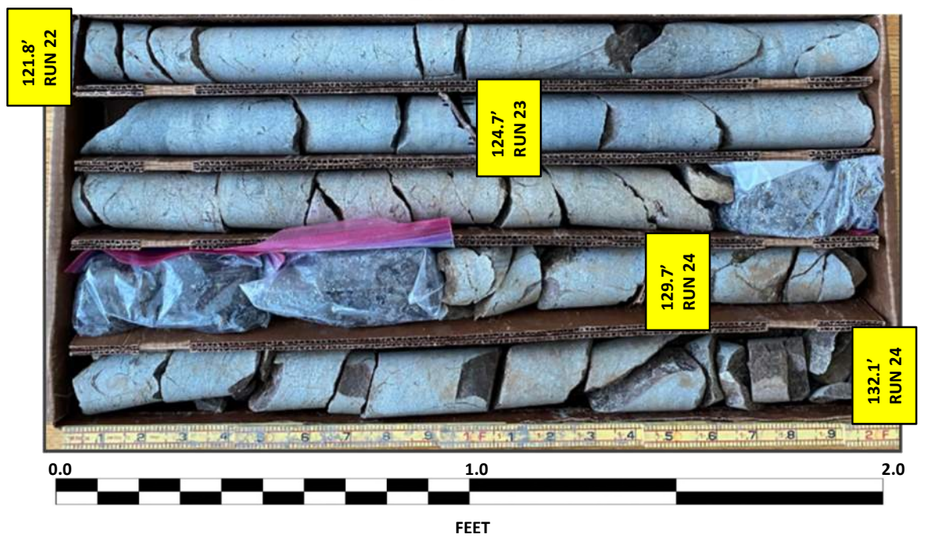
CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

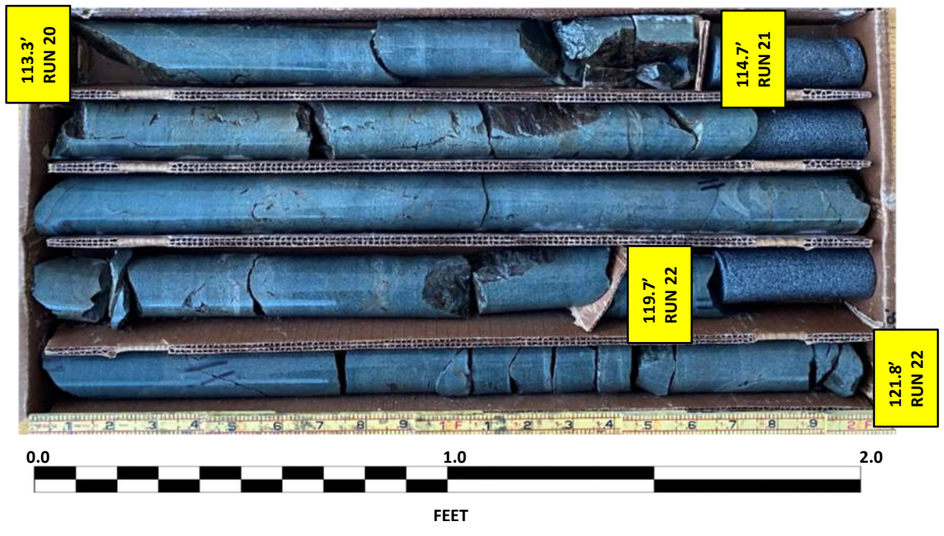
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-10 (Y2_15853)
Box 11 of 13: 113.3 – 121.8 FEET
DRY

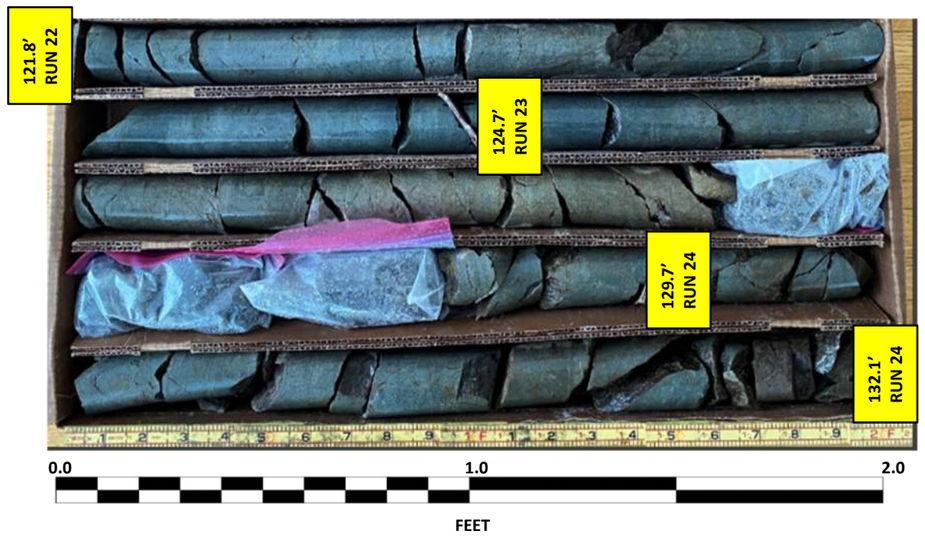
A-0009C – B-10 (Y2_15853)
Box 12 of 13: 121.8 – 132.1 FEET
DRY



A-0009C – B-10 (Y2_15853)
Box 11 of 13: 113.3 – 121.8 FEET
WET



A-0009C – B-10 (Y2_15853)
Box 12 of 13: 121.8 – 132.1 FEET
WET



CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-10 (Y2_15853)
Box 13 of 13: 132.1 – 139.7 FEET
DRY

A-0009C – B-10 (Y2_15853)
Box 13 of 13: 132.1 – 139.7 FEET
WET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-11 (Y2_16048)	**STATION** 160+48	**OFFSET** 112 ft LT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,126.9 ft	**TOTAL DEPTH** 64.8 ft	**NORTHING** 623,831	**EASTING** 608,054	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/19/20	**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))
2130										
										2,126.9 — 0.0 — GROUND SURFACE
										RESIDUAL Medium stiff, strong brown (7.5 YR 5/8) to reddish yellow (7.5 YR 6/8), silty CLAY (A-7-6), with trace fine sand
2125	2,125.4	1.5	2	2	3	5		M		
	2,123.6	3.3	2	2	4	6		M		
2120	2,120.4	6.5	5	12	8					
	2,118.6	8.3	3	4	7	20 / 11		M		Very stiff, with few weathered rock fragments (Schist)
							SS-318	M		2,118.7 — 8.2 — Stiff, strong brown (7.5 YR 5/8) to reddish yellow, (7.5 YR 6/8), SILT (A-4), trace very fine sand, micaceous, saprolitic (Schist)
2115	2,113.6	13.3	3	3	4	7		M		2,113.4 — 13.5 — Loose, brownish yellow (10 YR, 6/8) with reddish yellow (5 YR, 6/6) and dark brown (7.5 YR 3/3), fine silty SAND (A-2-4), micaceous, saprolitic (Schist)
2110	2,108.6	18.3	3	4	4	8		M		
2105	2,103.6	23.3	4	7	13	20		M		Medium dense
2100	2,098.6	28.3	7	12	15					
						27	SS-322	M		
2095	2,093.6	33.3	6	7	8					2,095.3 — 31.6 — Very stiff, grayish brown (7.5 YR 5/2) to yellowish brown (10 YR 5/6), SILT (A-4), with trace fine sand, micaceous, saprolitic (Muscovite Schist)
2090						15		M		

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-11 (Y2_16048)	**STATION** 160+48	**OFFSET** 112 ft LT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,126.9 ft	**TOTAL DEPTH** 64.8 ft	**NORTHING** 623,831	**EASTING** 608,054	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/19/20	**COMP. DATE** 11/19/20	**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						Match Line				
	2,088.6	38.3	7	8	11	19		M		Very stiff, grayish brown (7.5 YR 5/2) to yellowish brown (10 YR 5/6), SILT (A-4), with trace fine sand, micaceous, saprolitic (Muscovite Schist) *(continued)*
2085	2,083.6	43.3	9	11	13	24		M		
2080	2,078.6	48.3	30	70/0.4		100/0.9	SS-326			2,080.4 — 46.5 — **WEATHERED ROCK** Muscovite Schist, gray (GLEY 7/N-6/N) and yellowish brown (10 YR 5/6) Acid-Base Lab Test Sample (48.3-49.2')
2075	2,073.6	53.3	16	31	53	84		M		2,075.6 — 51.3 — **RESIDUAL** Very hard, gray (GLEY 7/N-6/N) with yellowish brown (10 YR 5,6), SILT (A-4), micaceous, saprolitic (Muscovite Schist)
2070	2,068.6	58.3	34	66/0.4		100/0.9				2,070.9 — 56.0 — **WEATHERED ROCK** Muscovite Schist, gray (GLEY 7/N-6/N) and yellowish brown (10 YR 5/6)
2065	2,063.6	63.3	23	35	54	89		M		2,065.7 — 61.2 — **RESIDUAL** Very hard, gray (G/EY 7/N-6/N) with yellowish brown (10 YR 5,6), SILT (A-4), micaceous, saprolitic (Muscovite Schist)
										2,062.1 — 64.8 — Boring Terminated at Elevation 2,062.1 ft in Residual Soil (SILT).

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-12 (Y2_15389)	**STATION** 153+89	**OFFSET** 38 ft RT	**ALIGNMENT** -Y2-	**0 HR.** Dry
COLLAR ELEV. 2,088.6 ft	**TOTAL DEPTH** 18.8 ft	**NORTHING** 623,879	**EASTING** 607,395	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 11/16/20	**COMP. DATE** 11/16/20	**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										2,088.6 GROUND SURFACE 0.0
	2,086.6	2.0	4	2	15	17		M		**RESIDUAL** Very stiff, light brownish gray (2.5Y 6/2) to light olive brown (2.5Y 5/3) SILT (A-4), with trace rock fragments (Metasiltstone and Metasandstone)
2085	2,084.9	3.7	9	9	10	19	SS-201	M		2,085.0 3.6 Very stiff, light brown (2.5Y 6/3), silty CLAY (A-7-6), with trace rock fragments (Metasandstone)
	2,081.6	7.0	4	7	9	16		M		
2080	2,079.9	8.7	20	34	45	79	SS-203	M		2,080.0 8.6 Very dense, light olive brown (2.5Y 5/3), fine to medium silty SAND (A-2-4), with trace rock fragments (Metasandstone)
2075	2,074.9	13.7	19	67	33/0.3	100/0.8				2,074.6 14.0 **WEATHERED ROCK** Metasandstone, light gray (2.5Y 7/1), fine grained
2070	2,069.9	18.7	60/0.1			60/0.1				2,069.9 18.7 2,069.8 18.8 **CRYSTALLINE ROCK** Metasandstone, medium dark gray to dark gray (N4-N3), fine grained Boring Terminated at Elevation 2,069.8 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-13 (Y2_15599)	**STATION** 155+99	**OFFSET** 44 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,096.3 ft	**TOTAL DEPTH** 44.9 ft	**NORTHING** 623,833	**EASTING** 607,592	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**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										
										2,096.3 GROUND SURFACE 0.0
										RESIDUAL Hard, light olive brown (2.5 Y 5/3), SILT (A-4), with trace gravel
2095	2,094.6	1.7	8	10	12	22		W		
	2,092.8	3.5	41	59/0.1		100/0.6				2,092.9 3.4
	2,091.9	4.4	60/0.1			60/0.1				2,091.9 Metasandstone, light olive brown (2.5 Y 5/3) 4.4
										2,091.8 4.5
2090										**CRYSTALLINE ROCK** Metasandstone, Medium dark gray to dark gray (N4-N3)
										Metasandstone with interlayered Metasiltstone, medium dark gray to dark gray (N4-N3), fine grained, very slight weathering, hard, close fracture spacing, very thinly bedded (40-50°)
2085										Very thinly bedded to thinly bedded (60 to 70°)
2080										
2075										Very close fracture spacing, very thinly bedded (40 to 50°) Moderately close fracture spacing, very thinly to thinly bedded (70 to 90°)
2070										Wide fracture spacing
2065							RS-B-13-1a RS-B-13-2t			Close fracture spacing, very thinly to thinly bedded (40 to 45° with crenulation cleavage) Close to moderately close fracture spacing, very thinly to thinly bedded (70 to 90°) Acid-Base Lab Test Sample (B-13-1a: 30.6-31.0') Petrographic Section Sample (B-13-2t: 31.0-31.4')
2060										Close fracture spacing, very thinly bedded (60 to 90°), with crenulation cleavage

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
2060						Match Line				Metasandstone with interlayered Metasiltstone, medium dark gray to dark gray (N4-N3), fine grained, very slight weathering, hard, close fracture spacing, very thinly bedded (40-50°) *(continued)*
2055							RS-B-13-3a RS-B-13-4t			Moderately close fracture spacing, very thinly bedded to thinly bedded (40 to 60° with crenulation cleavage) Acid-Base Lab Test Sample (B-13-3a: 42.7-42.9') Petrographic Section Sample (B-13-4t: 42.9-43.3)
										2,051.4 44.9
										Boring Terminated at Elevation 2,051.4 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-13 (Y2_15599)	**STATION** 155+99	**OFFSET** 44 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,096.3 ft	**TOTAL DEPTH** 44.9 ft	**NORTHING** 623,833	**EASTING** 607,592	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 40.8 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2092.2											Continued from previous page
	2,092.2	4.1	0.7	2:03/0.7	(0.4)	(0.0)					ELEV. (ft) 2,091.9 DEPTH (ft) 4.4
	2,091.5	4.8		N=60/0.1	57%	0%		(40.5)	(30.8)		**WEATHERED ROCK** *(continued)* 2,091.8 4.5
			5.0	2:56	(5.0)	(2.4)		100%	76%		**CRYSTALLINE ROCK**
2090				2:48	100%	48%					Metasandstone with interlayered Metasiltstone, medium dark gray to dark gray (N4-N3), fine grained, very slight weathering, hard, close fracture spacing, very thinly bedded (40-50°)
				1:45							
				2:11							
				2:13							
	2,086.5	9.8									
			4.9	1:45	(4.9)	(1.9)					Very thinly bedded to thinly bedded (60 to 70°)
2085				1:39	100%	39%					
				1:37							
				1:53							
				2:45/0.9							
	2,081.6	14.7									
			5.0	2:20	(5.0)	(3.4)					
2080				2:02	100%	68%					
				2:00							
				1:57							
				1:48							
	2,076.6	19.7									Very close fracture spacing, very thinly bedded (40 to 50°)
			5.0	2:01	(5.0)	(4.8)					Moderately close fracture spacing, very thinly to thinly bedded (70 to 90°)
2075				1:46	100%	96%					
				1:48							
				2:00							
				2:09							
	2,071.6	24.7									
			5.2	2:00	(5.2)	(4.5)					Wide fracture spacing
2070				1:33	100%	87%					
				1:46							
				1:45							Close fracture spacing, very thinly to thinly bedded (40 to 45° with crenulation cleavage)
				1:50/1.2							
	2,066.4	29.9									
			5.0	1:14	(5.0)	(4.4)	RS-B-13-1a				Close to moderately close fracture spacing, very thinly to thinly bedded (70 to 90°)
2065				1:11	100%	88%	RS-B-13-2t				Acid-Base Lab Test Sample (B-13-1a: 30.6-31.0')
				1:14							Petrographic Section Sample (B-13-2t: 31.0-31.4')
				1:28							
				1:34							
	2,061.4	34.9									
			5.0	1:51	(5.0)	(4.4)					Close fracture spacing, very thinly bedded (60 to 90°), with crenulation cleavage
2060				1:56	100%	88%					
				1:52							
				1:51							
				1:55							
	2,056.4	39.9									
			5.0	1:55	(5.0)	(5.0)					Moderately close fracture spacing, very thinly bedded to thinly bedded (40 to 60° with crenulation cleavage)
2055				3:00	100%	100%					
				2:00							
				1:54			RS-B-13-3a				Acid-Base Lab Test Sample (B-13-3a: 42.7-42.9')
							RS-B-13-4t				Petrographic Section Sample (B-13-4t: 42.9-43.3)

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-13 (Y2_15599)	**STATION** 155+99	**OFFSET** 44 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,096.3 ft	**TOTAL DEPTH** 44.9 ft	**NORTHING** 623,833	**EASTING** 607,592	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CAT0071 DIEDRICH D-50 83% 07/21/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 11/12/20	**COMP. DATE** 11/12/20	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 40.8 ft			

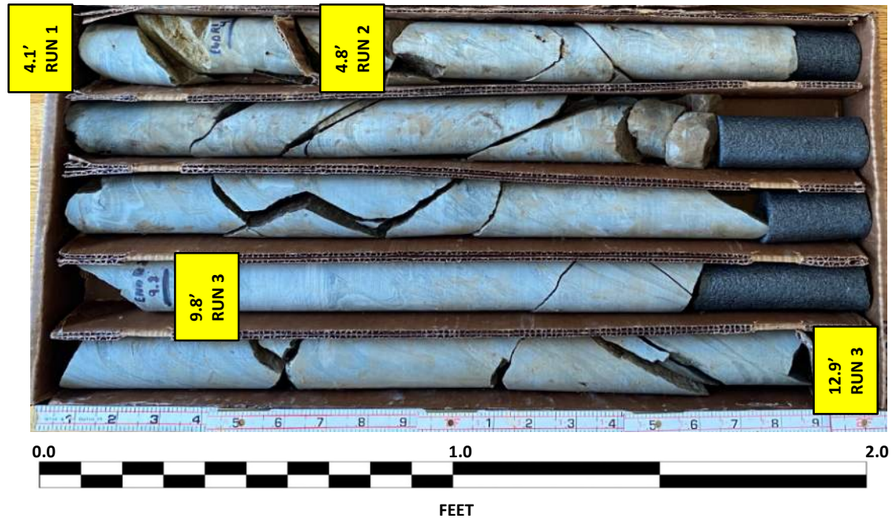
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2052.2											Continued from previous page
	2,051.4	44.9		1:42							2,051.4 44.9
											Boring Terminated at Elevation 2,051.4 ft in Crystalline Rock (Metasandstone with interlayered Metasiltstone).

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

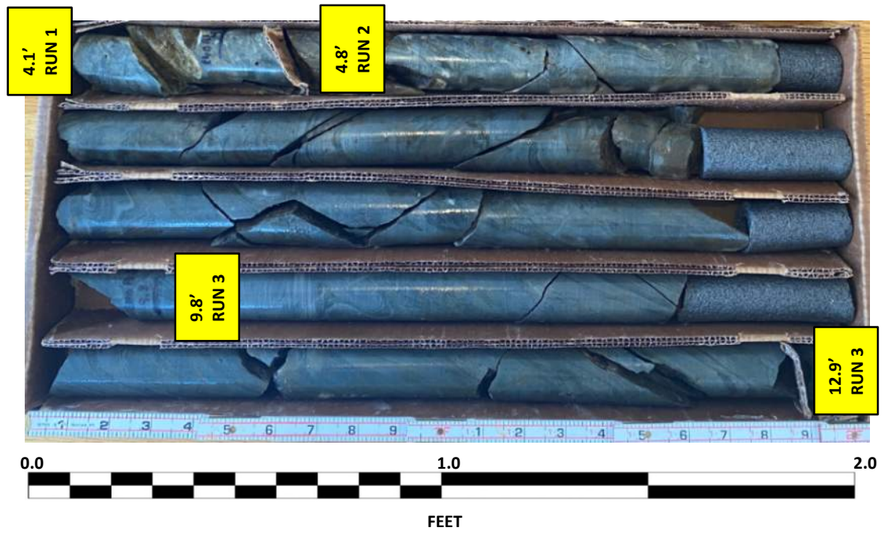
Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-13 (Y2_15599)
Box 1 of 5: 4.1 – 12.9 FEET
DRY



A-0009C – B-13 (Y2_15599)
Box 2 of 5: 12.9 – 22.0 FEET
DRY

A-0009C – B-13 (Y2_15599)
Box 1 of 5: 4.1 – 12.9 FEET
WET



A-0009C – B-13 (Y2_15599)
Box 2 of 5: 12.5 – 22.0 FEET
WET

CORE PHOTOGRAPHIC RECORD

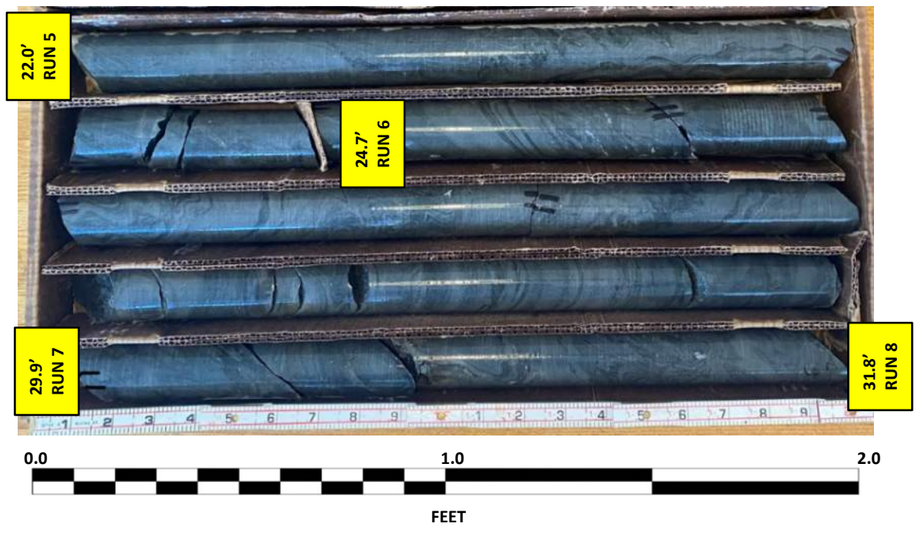
32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

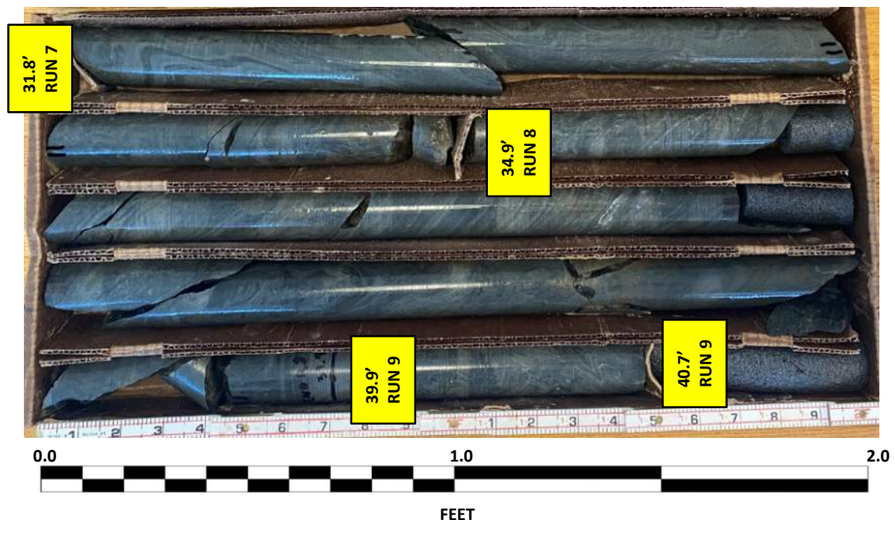
A-0009C – B-13 (Y2_15599)
Box 3 of 5: 22.0 – 31.8 FEET
DRY

A-0009C – B-13 (Y2_15599)
Box 4 of 5: 31.8 – 40.7 FEET
DRY

A-0009C – B-13 (Y2_15599)
Box 3 of 5: 22.0 – 31.8 FEET
WET



A-0009C – B-13 (Y2_15599)
Box 4 of 5: 31.8 – 40.7 FEET
WET



CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-13 (Y2_15599)
Box 5 of 5: 40.7 – 44.9 FEET
DRY

A-0009C – B-13 (Y2_15599)
Box 5 of 5: 40.7 – 44.9 FEET
WET

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-14 (Y2_13393)	**STATION** 133+93	**OFFSET** 332 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,183.0 ft	**TOTAL DEPTH** 81.2 ft	**NORTHING** 622,786	**EASTING** 605,764	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 09/07/21	**COMP. DATE** 09/08/21	**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)
2185										
										2,183.0 GROUND SURFACE 0.0
	2,182.0	1.0	11	14	17	31		D		**RESIDUAL** Hard, gray (5 Y 6/1) with light olive brown (2.5 Y 5/3), f sandy SILT (A-4), with trace to little orange clay, contains trace rock fragments (Metasiltstone), saprolitic
2180	2,179.5	3.5	11	21	43	64		D		
	2,177.0	6.0	22	19	46	65		D		
2175	2,174.5	8.5	30	28	22	50		D		
	2,172.0	11.0	10	24	27	51		D		2,172.5 10.5 Very dense, gray (5Y 6/1), f silty SAND (A-2-4), contains little rock fragments (Metasandstone with Metasiltstone), saprolitic
2170	2,169.5	13.5	17	17	16	33		D		2,170.0 13.0 Very stiff to hard, gray (5 Y 6/1) with dark brown (7.5 Y 3/4) and yellowish red (5 YR 5/6), f sandy SILT (A-4), with trace to little clay, contains trace rock fragments (Metasiltstone with Metasandstone)
	2,167.0	16.0	16	11	11	22		D		
2165	2,164.5	18.5	26	19	18	37		D		
	2,162.0	21.0	18	19	40	59		D		
2160	2,159.5	23.5	17	18	24	42		D		
	2,157.0	26.0	19	22	39	61		D		
2155	2,154.5	28.5	21	30	42	72		D		
	2,152.0	31.0	40	51	49/0.5	100/1.0		D		2,152.0 31.0 **WEATHERED ROCK** Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE
2150	2,149.5	33.5	22	36	40	76		D		2,150.0 33.0 **RESIDUAL** Very stiff to hard, gray (5 Y 6/1), light brown (7.5 YR 6/3), and dark brown (7.5 YR 3/4), SILT (A-4), with trace to little f sand and trace yellowish red (5 YR 5/6) clay
	2,147.0	36.0	5	7	18	25		M		
2145										

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-14 (Y2_13393)	**STATION** 133+93	**OFFSET** 332 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,183.0 ft	**TOTAL DEPTH** 81.2 ft	**NORTHING** 622,786	**EASTING** 605,764	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 09/07/21	**COMP. DATE** 09/08/21	**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
2145						Match Line				
	2,144.5	38.5	6	28	65	93		D		**RESIDUAL** Very stiff to hard, gray (5 Y 6/1), light brown (7.5 YR 6/3), and dark brown (7.5 YR 3/4), SILT (A-4), with trace to little f sand and trace yellowish red (5 YR 5/6) clay *(continued)*
2140	2,142.0	41.0	12	18	32	50		D		
	2,139.5	43.5	23	47	53/0.3	100/0.8				
	2,137.0	46.0	71	29/0.2		100/0.7				2,139.0 44.0 **WEATHERED ROCK** Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE
2135	2,134.5	48.5	19	32	43	75		D		2,135.5 47.5 **RESIDUAL** Hard, gray (5 Y 6/1) and light brown (7.5 YR 6/3) SILT (A-4), with trace to little f sand
	2,132.0	51.0	31	38	50	88		D		
2130	2,129.5	53.5	17	29	49	78		D		
	2,127.0	56.0	10	24	76/0.5	100/1.0				2,127.0 56.0 **WEATHERED ROCK** Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE
2125	2,124.5	58.5	26	68	32/0.2	100/0.7				
	2,122.0	61.0	26	41	59/0.5	100/1.0				
2120	2,119.5	63.5	40	60/0.2		100/0.7				
	2,117.0	66.0	29	44	48	92		D		2,118.0 65.0 **RESIDUAL** Hard, gray (5 Y 6/1) and light brown (7.5 YR 6/3) SILT (A-4), with trace to little f sand
2115	2,114.5	68.5	14	86/0.4		100/0.9				2,114.5 68.5 **WEATHERED ROCK** Very light to medium gray (N8 - N5) with light olive gray (5Y 5/2), METASILTSTONE with interlayered METASANDSTONE
	2,112.0	71.0	100/0.3			100/0.3				
2110	2,109.5	73.5	31	69/0.2		100/0.7				
	2,107.0	76.0	33	67/0.4		100/0.9				
2105										

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-14 (Y2_13393)	**STATION** 133+93	**OFFSET** 332 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,183.0 ft	**TOTAL DEPTH** 81.2 ft	**NORTHING** 622,786	**EASTING** 605,764	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers		**HAMMER TYPE** Automatic
DRILLER Odom, C.	**START DATE** 09/07/21	**COMP. DATE** 09/08/21	**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
2105						Match Line				ELEV. (ft) DEPTH (ft)
	2,104.5	78.5	100/0.4			100/0.4				**WEATHERED ROCK** Very light to medium gray (N8 - N5) with light olive gray (5Y 5/2), METASILTSTONE with interlayered METASANDSTONE *(continued)*
	2,102.0	81.0	60/0.0			60/0.0				2,102.0 81.0
	2,101.8	81.2								**CRYSTALLINE ROCK** No Recovery; assumed same as above Boring Terminated at Elevation 2,101.8 ft in Crystalline Rock (Metasiltstone). A.R. at 81.2'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-16 (Y2_13491)	**STATION** 134+91	**OFFSET** 383 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,213.0 ft	**TOTAL DEPTH** 59.1 ft	**NORTHING** 622,800	**EASTING** 605,901	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 09/08/21	**COMP. DATE** 09/08/21	**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)
2215										
										2,213.0 GROUND SURFACE 0.0
	2,212.0	1.0	4	2	3	5		M		**RESIDUAL** Medium stiff to hard, yellowish red (5YR 5/6) and dark brown (7.5YR 3/4), SILT (A-4)
2210										
	2,209.5	3.5	5	5	9	14		D		
	2,207.0	6.0	11	15	16	31		D		
2205										
	2,204.5	8.5	7	10	11	21		D		
	2,202.0	11.0	5	9	15	24		D		
2200										
	2,199.5	13.5	10	9	10	19		D		
	2,197.0	16.0	16	22	28	50		D		2,196.8 16.2
2195										Very dense, light to medium gray (5YR 7/1-6/1), silty SAND (A-2-4), contains trace weathered rock fragments (Metasandstone)
	2,194.5	18.5	18	21	19	40		D		2,195.0 18.0
										Hard, light to medium gray (5YR 7/1-6/1), light brown (7.5YR 6/3), and dark brown (7.5YR 3/4), SILT (A-4), with trace to little clay and f sand
2190										
	2,189.5	23.5	10	14	17	31		M		
										2,188.0 25.0
2185										Very stiff, gray (5YR 6/1), light brown (7.5YR 6/3), and yellowish red (5YR 5/6), silty CLAY (A-6)
	2,184.5	28.5	8	9	9	18		D		
2180										
	2,179.5	33.5	4	11	20	31		D		2,178.6 34.4
2175										Gray (5YR 6/1) and light brown (7.5YR 6/3), SILT (A-4), with trace clay and f sand

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-16 (Y2_13491)	**STATION** 134+91	**OFFSET** 383 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,213.0 ft	**TOTAL DEPTH** 59.1 ft	**NORTHING** 622,800	**EASTING** 605,901	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 09/08/21	**COMP. DATE** 09/08/21	**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
2175						Match Line				
	2,174.5	38.5	30	59	41/0.4	100/0.9				2,174.0 39.0
2170										**WEATHERED ROCK** Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE
	2,169.5	43.5	45	55/0.4		100/0.9				
2165										
	2,164.5	48.5	60/0.1			60/0.1				2,164.5 48.5 2,164.4 48.6
2160										**CRYSTALLINE ROCK** METASILTSTONE **CRYSTALLINE ROCK** Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE, medium to moderately hard, very close fracture spacing, very thinly to thinly bedded
2155										2,153.9 59.1
										Boring Terminated at Elevation 2,153.9 ft in Crystalline Rock (Metasiltstone with interlayered Metasandstone).

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 32572.1 FS10	**TIP** A-0009C	**COUNTY** GRAHAM	**GEOLOGIST** Swafford, C.	
SITE DESCRIPTION Rock Slope Mitigation Design - Future US 74 from Robbinsville to NC 28 in Stecoah				**GROUND WTR (ft)**
BORING NO. B-16 (Y2_13491)	**STATION** 134+91	**OFFSET** 383 ft RT	**ALIGNMENT** -Y2-	**0 HR.** N/A
COLLAR ELEV. 2,213.0 ft	**TOTAL DEPTH** 59.1 ft	**NORTHING** 622,800	**EASTING** 605,901	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE CG20446 Diedrich D50 89% 05/22/2019		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Odom, C.	**START DATE** 09/08/21	**COMP. DATE** 09/08/21	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ	**TOTAL RUN** 10.5 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
2164.4											Begin Coring @ 48.6 ft
	2,164.4	48.6	0.5	4:46/0.5	(0.2) 40%	(0.0) 0%		(4.2) 40%	(0.0) 0%		2,164.4 Very light to medium gray (N8 - N5), METASILTSTONE with interlayered METASANDSTONE, medium to moderately hard, very close fracture spacing, very thinly to thinly bedded 48.6
	2,163.9	49.1	5.0	5:25/1.0							
				5:22/1.0	(2.3) 46%	(0.0) 0%					
				4:08/1.0							
2160				4:41/1.0							
				4:15/1.0							
	2,158.9	54.1	5.0	4:23/1.0	(1.7) 34%	(0.0) 0%					
				4:14/1.0							
				4:29/1.0							
2155				3:56/1.0							
	2,153.9	59.1		4:24/1.0							2,153.9 59.1
											Boring Terminated at Elevation 2,153.9 ft in Crystalline Rock (Metasiltstone with interlayered Metasandstone).

CORE PHOTOGRAPHIC RECORD

32572.1.FS10 (A-0009C)

Future US 74 from Robbinsville to NC 28 in Stecoah

A-0009C – B-16
Box 1 of 1: 48.6 – 59.1 FEET
DRY

A-0009C – B-16
Box 1 of 1: 48.6 – 59.1 FEET
WET