STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6018	1	81

REFERENCE: U-6018

PROJECT: 47163

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY GUILFORD

PROJECT DESCRIPTION WIDENING OF NC62 (LIBERTY RD) FROM EAST OF NC 610 (E. FAIRFIELD RD) TO EAST OF SR 4066 (MODLIN GROVE RD) AND THE REALIGNMENT OF SR 1154 (KERSEY VALLEY RD)

INVENTORY

CONTENTS

LINE	STATION	PLAN
-L-	26+70 - 77+86	4-8
-Y3-	15+43 - 35+36	5,9
-Y5-	16+11 - 17+41	11
-Y6-	10+00 - 23+39	11
-Y8-	11+00 - 17+60	8
-Y9-	10+00 - 26+43	8,11
-RPA-	11+00 - 21+81	7,10
-RPD-	11+00 - 17+73	10
-RAB2-	10+00 - 12+20	11

CROSS SECTIONS

LINE	STATION	SHEET
-L-	28+00	12
-L-	30+00	13
-L-	32+00	14
-L-	34+00	15
-L-	35+00-38+00	16-19
-L-	40+00	20
-L-	42+00	21
-L-	44+00-47+50	22-29
-L-	51+00	30
-L-	62+00	31
-L-	64+00	32
-L-	65+00	33
-L-	66+00	34
-L-	68+00	35
-L-	72+00	36
-L-	75+00	37
-L-	77+00	38
-Y3-	17+50-20+00	39-41
-Y3-	21+00	42
-Y3-	22+00-27+00	43-50
-Y3-	28+00	51
-Y3-	30+00	52
-Y3-	32+00	53
-Y3-	34+00	54
-Y5-	17+00	55
-Y6-	18+50	56
-Y6-	21+50-23+50	57-59
-Y8-	14+00	60
-Y8-	16+00	61
-Y9-	11+00	62
-Y9-	13+00	63
-Y9-	15+00	64
-Y9-	17+00	65
-Y9-	19+00	66
-Y9-	21+00	67
-Y9-	23+00	68
-Y9-	25+00	69
-RPA-	12+00	70
-RPA-	14+00	71
-RPA-	16+00	72
-RPA-	18+00	73
-RPA-	19+50	74
-RPA-	21+50	75
-RPD-	12+00, 15+00	76
-RAB2-	11+00	77

APPENDICES

APPENDIX	TITLE	SHEET
A	SOIL TEST RESULTS	78,79

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

S. WOODS, GIT

TRIGON EXPLORATION LLC

R. TOOTHMAN

W. ALLEN

INVESTIGATED BY S. WOODS, GIT

DRAWN BY E. FERREIRA, EI

CHECKED BY D. BROWN, PE

SUBMITTED BY D. BROWN, PE

DATE AUGUST 2020

NORTH CAROLINA PROFESSIONAL SEAL 028422 ENGINEER DONALD W. BROWN JR.

DocuSigned by:
C06817F5F770411...

9/21/2020

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-6018	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

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

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

CONSISTENCY OR DENSENESS

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

TEXTURE OR GRAIN SIZE

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

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

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

COLOR

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

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

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

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

RECOMMENDATION SYMBOLS

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

ABBREVIATIONS

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

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

EQUIPMENT USED ON SUBJECT PROJECT

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

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

HAMMER TYPE:
- [x] AUTOMATIC
- [ ] MANUAL

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

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

ROCK DESCRIPTION

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

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

WEATHERING

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

ROCK HARDNESS

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

FRACTURE SPACING

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

BEDDING

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

INDURATION

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

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BENCH MARK:

ELEVATION: FEET

NOTES:

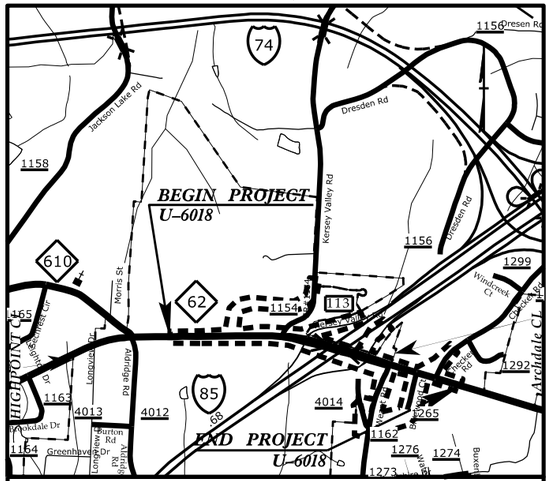
BORING ELEVATIONS GENERATED FROM FILE U6018_IS_TIN_.TIN, DATED 6/4/2019.
HA = HAND AUGER BORING
FIAD = FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

09/08/99

TIP PROJECT: U-6018

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



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

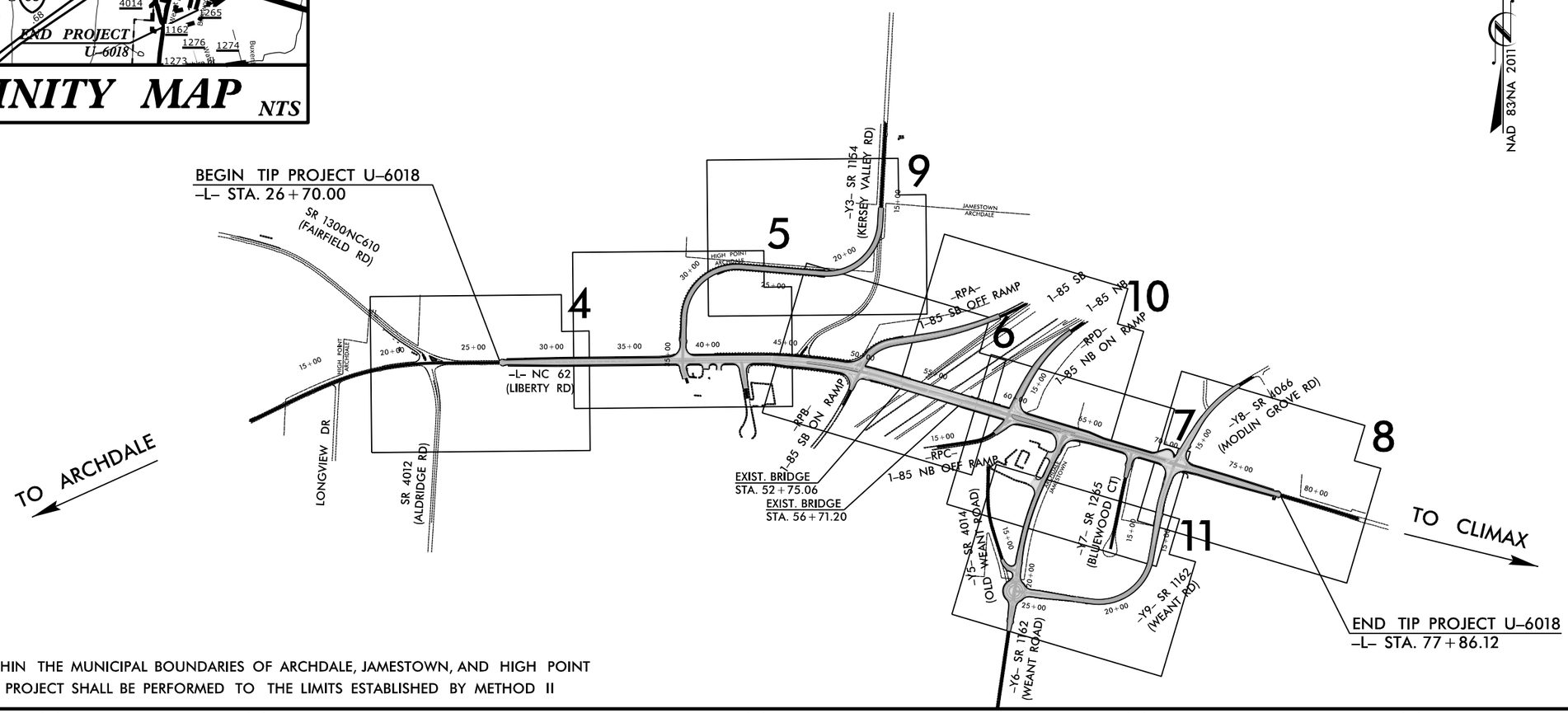
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6018	3	81

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
47163.1.1		

LOCATION: WIDENING OF NC 62 (LIBERTY RD) FROM EAST OF NC 610 (E. FAIRFIELD RD) TO EAST OF SR 4066 (MODLIN GROVE RD) AND THE REALIGNMENT OF SR 1154 (KERSEY VALLEY RD) AND SR 1162 (WEANT RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & SIGNALS

NAD 83NA 2011



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ARCHDALE, JAMESTOWN, AND HIGH POINT
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

CONTRACT:

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2018 = 11,300
ADT 2040 = 12,600
K = 11
D = 55%
T = 6%*
V = 50 MPH
*(TTST 2% + DUALS 4%)

FUNCTION CLASS:
MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-6018 = 0.894 MILES
LENGTH EXIST. STRUCTURE TIP PROJECT U-6018 = 0.075 MILES
TOTAL LENGTH ROADWAY TIP PROJECT U-6018 = 0.969 MILES

NCDOT CONTACT: CHRIS SMITHERMAN, PE
DIV 7 – PROJECT DELIVERY TEAM LEAD
336-487-0075

Prepared In the Office of:
RAMEY KEMP ASSOCIATES
5808 Faringdon Place Raleigh, North Carolina 27609
Phone: 919-872-5115 | www.rameykemp.com | NC License No. C-0910

2018 STANDARD SPECIFICATIONS

JUNE 2020

RIGHT OF WAY DATE:
JUNE 14, 2022

LETTING DATE:

CLAUDETTE M.K. ROQUE, PE
PROJECT ENGINEER

KAYLA M. POULOS, EI
PROJECT DESIGNER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
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SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STEWART

August 25, 2020

STATE PROJECT: 47163.1.1 (U-6018)
COUNTY: Guilford
DESCRIPTION: Widening of NC 62 (Liberty Road) from east of NC 610 (E. Fairfield Road) to east of SR 4066 (Modlin Grove Road) and the realignment of SR 1154 (Kersey Valley Road) and SR 1162 (Weant Road).

SUBJECT: Roadway Subsurface Inventory

Project Description

The proposed project consists of the improvement of NC 62, located within the municipal boundaries of Archdale, Jamestown, and High Point in North Carolina. The total length of the project is approximately 0.97 miles, with 14 alignments as shown in the table below. The project corridor contains a roughly even mixture of developed and undeveloped land, extending through residential areas and woodlands.

Alignment	Description	Stations
-L-	NC 62	26+70± to 77+86.12±
-Y3-	Kersey Valley Road	15+43.44 to 35+36.09±
-Y5-	Old Weant Road	16+11.24 to 17+41.21±
-Y6-	Weant Road	10+00 to 23+39.20±
-Y7-	Bluewood Court	10+00 to 11+71.36±
-Y8-	Modlin Grove Road	11+00 to 17+60.19±
-Y9-	Weant Road	10+00 to 26+42.94±
-RPA-	I-85 SB Off Ramp	11+00 to 21+81.34±
-RPB-	I-85 SB On Ramp	10+00 to 11+32.54±
-RPC-	I-85 NB Off Ramp	10+00 to 11+50±
-RPD-	I-85 NB On Ramp	11+00± to 17+73.21±
-RAB2-	Roundabout	10+00 to 12+19.91±
-DR1-	Driveway	10+00 to 11+30±
-SR1-	Driveway	10+00 to 11+79.03±

Plans call for the improvement of NC 62 (-L-), from approximately 415± feet west of its intersection with E. Fairfield Road to 706± feet east of its intersection with Modlin Grove Road (-Y8-). The improvements include widening the existing roadways, adding curb and gutter on -L- on other Y-lines, and installation of sidewalks. Kersey Valley Road (-Y3-) will be moved to new alignment to intersect NC 62 approximately 760 feet west of its current intersection. The old Kersey Valley Road will be removed. Weant Road (-Y6-) will also be moved to new alignment to shift its intersection with NC 62 approximately 720 feet east of its current intersection. The existing Weant Road (-Y6-) will be left in place, but a roundabout (-RAB2-) will be constructed to connect it to the new Weant Road (-Y9-) and Old Weant Road (-Y5-). The I-85 SBL off-ramp (-RPA-) and the I-85 NBL on-ramp (-RPD-) will also be widened.

A geotechnical field investigation was conducted for this project in March of 2020. Drilling was performed by Trigon Exploration LLC of Greensboro, NC using an ATV-mounted CME-55 drill rig. The drill rig was equipped with an automatic hammer with an efficiency of 87%. All drilling activities were supervised by Stewart personnel.

A total of 36 Standard Penetration Test (SPT) borings and 14 Hand Auger borings were performed for the project. Representative soil samples from select borings were collected in the field for laboratory analysis.

Physiography & Geology

The project site is located in Guilford County, North Carolina, which lies within the Piedmont Geologic Province of North Carolina. The site is part of the Carolina Slate Belt region, which is generally characterized by low grade metamorphosed volcanic rock. Review of the *Geologic Map of Region G, North Carolina (P. Albert Carpenter, 1982)* shows that the site is underlain by the Felsic intrusive complex (icf) of the Precambrian era that is primarily comprised of metamorphosed, felsic igneous rocks, such as granite and diorite.

Soil Properties

Soils encountered at the site include artificial fill, roadway embankment, alluvial, and residual soils.

Artificial fill was encountered on -Y9- consisting of loose Clayey SAND (A-2-6), with a Plasticity Index (PI) of 38 and was wet to moist.

Roadway embankment was encountered in borings along -L-, -RAB2-, -RPA-, -RPD-, -Y5-, AND -Y6-. The material was loose to medium dense Silty SAND (A-2-4) and Clayey SAND (A-2-6) and medium stiff Sandy Lean CLAY (A-2-6) and Fat CLAY (A-7). The samples were moist to wet. Laboratory test samples had PIs of 33 and 40.

Alluvial soil associated with the wetland areas was encountered along -L- and -Y3- with material classified as very loose to medium stiff Silty SAND (A-2-4) and Clayey SAND (A-2-6) and soft Sandy Lean CLAY (A-6). The samples were moist to saturated.

The native residual soils, which are the weathered remains of the parent rock, were encountered in all borings except for borings L_4000 HA, L_4200 HA, L_4400 HA, L_4600 HA, L_5120, L_7210 HA, L_7485 HA, RPA_2130, and RPD_1200. The soils types primarily consist of very loose to very dense, Clayey SAND (A-2-6) and Silty SAND (A-2-4), with lesser amounts of very soft to hard Sandy SILT (A-4), Silty CLAY (A-7), Clayey SILT (A-5), Sandy CLAY (A-6). The samples were moist to saturated. Laboratory test samples had PIs ranging from6 to 40.

Rock Properties

Weathered rock (granite) was encountered in six borings (L_6800, RPA_2130, RPD_1200, Y9_1300, Y9_2300, and Y9_2500) at depths ranging from approximately 2 to 14.4 feet below the current ground surface. The weathered rock ranged in elevation from 801.1 feet and 821.8 feet.

Refusal on hard rock was encountered at one boring location, RPD_1200, at an elevation of 812.6 feet.

Groundwater

Of the 50 borings, groundwater was encountered in 17 during the drilling process, at depths ranging from 0.8 to 7.3 feet below the ground surface (el. 809.1± to 831.6± feet). Twenty-nine of the 50 borings were left open for a 24+ hour stabilization period, after which groundwater was measured in 13 borings at depths ranging from approximately 0.8 to 6.9 feet below the current ground surface (el. 809.1± to 831.6± feet).

Areas of Special Geotechnical Interest

Alluvial Soils

Alluvial soil was encountered along the two alignments as shown below.

Alignment	Station	Offset (ft)
-L-	44+20± to 49+00±	100± RT
-L-	71+40± to 72+40±*	10± RT
-Y3-	22+00± to 26+50±	CL

**Encountered below roadway embankment*

Groundwater

Groundwater was encountered within 6 feet of finished grade in the following locations:

Alignment	Station
-L-	46+00±
-Y3-	23+00± to 26+00±

Artificial Fill

Artificial fill was encountered at the following locations:

Alignment	Station	Offset (ft)
-Y9-	10+50± to 11+45±	CL

Water Wells

Water wells were noted on the plans near the right-of-way at the following location(s):

Alignment	Station	Offset (ft)
-L-	28+75±	192± LT
-L-	37+76±	82± LT
-L-	48+27±	81± LT
-L-	63+82±	132± LT
-L-	64+52±	71± RT
-L-	65+24±	99± LT
-L-	66+06±	83± RT
-L-	73+49±	120± LT
-L-	76+45±	149± RT
-L-	78+35±	103± RT
-L-	79+64± to 79+77±	125± RT
-L-	82+52±	61± RT
-Y3-	13+07±	39± RT
-Y3-	18+24±	95± RT
-Y3-	19+04±	67± RT
-RAB2-	11+12±	66± RT

Items of Interest

USTs, ASTs and gas pumps, or indictors thereof, were noted on the plans near the right-of-way at the following location(s):

Type	Alignment	Station	Offset (ft)
UST	-L-	39+10± to 39+42±	230± RT to 235± RT
UST	-Y3-	16+42±	96± RT
UST	-Y3-	19+41	16± RT
UST	-Y6-	13+30± to 13+95±	115± LT to 220± RT

Ponds and Wetland Locations

Type	Alignment	Station	Offset (ft)
Stream	-L-	31+23±	22± RT
Pond	-L-	45+25± to 46+48±	201± to 322± RT
Wetland	-Y3-	23+65± to 26+60±	20± to 95± RT
Spring/Stream	-Y3-	27+35±	9± RT
Stream	-Y3-	31+00±	138± RT
Wetland	-Y8-	14+42± to 15+96±	20± to 30± RT
Pond	-Y9-	11+00± to 13+75±	65± to 70± LT
Stream	-Y9-	24+05±	CL
Wetland	-Y9-	24+00± to 24+80±	90± to 120± RT

Soil with High Plasticity Indices

Based on laboratory testing, soil at the following locations Were determined to be highly plastic (PI=35 or greater).

Alignment	Station	Offset (ft)
-L-	36+00±	33± LT
-Y3-	19+00±	CL
-Y6-	22+00±	30± RT
-Y9-	19+00±	CL

PROJECT REFERENCE NO.	SHEET NO.
U-6018	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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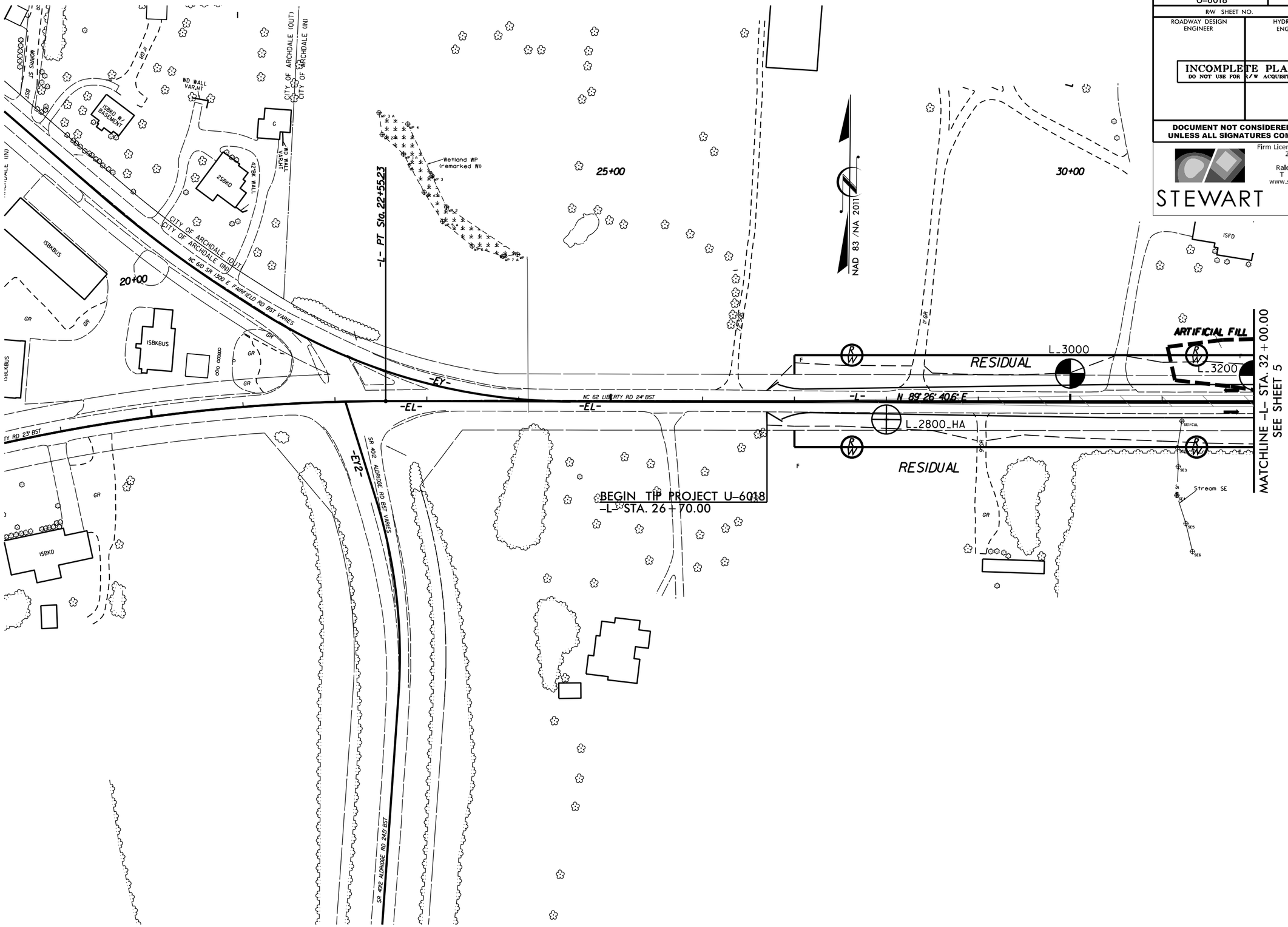

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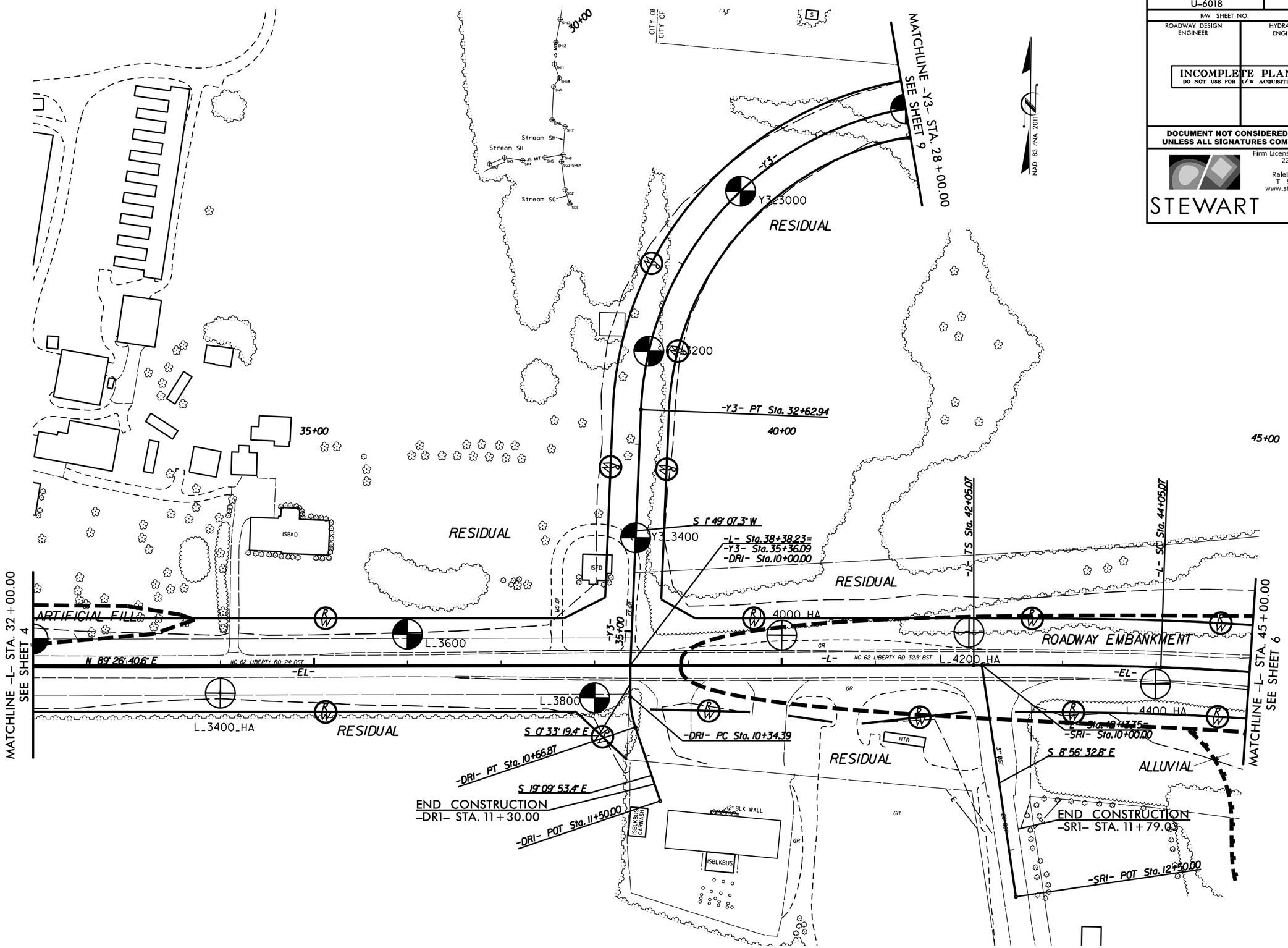

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R/W SHEET NO.	
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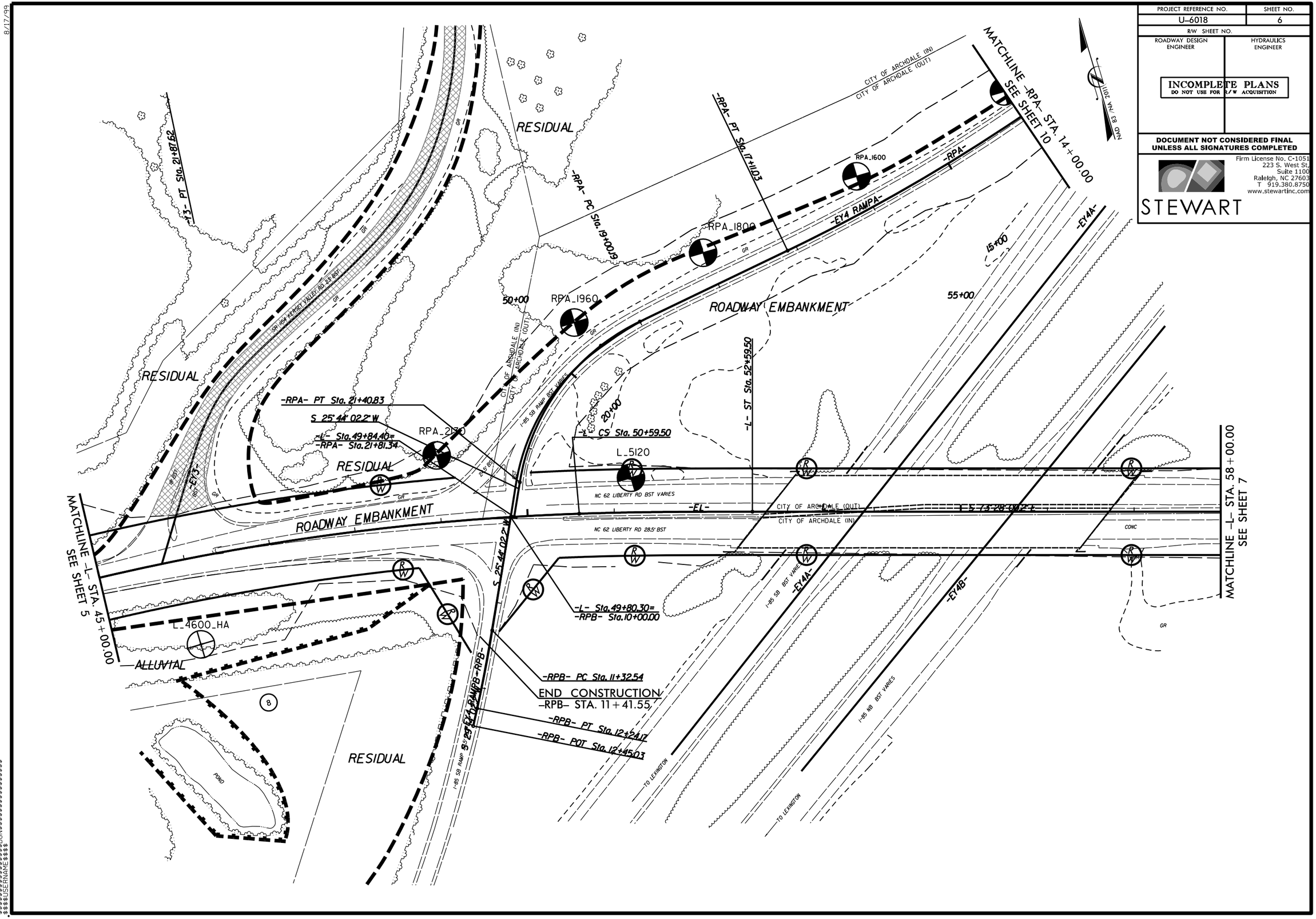

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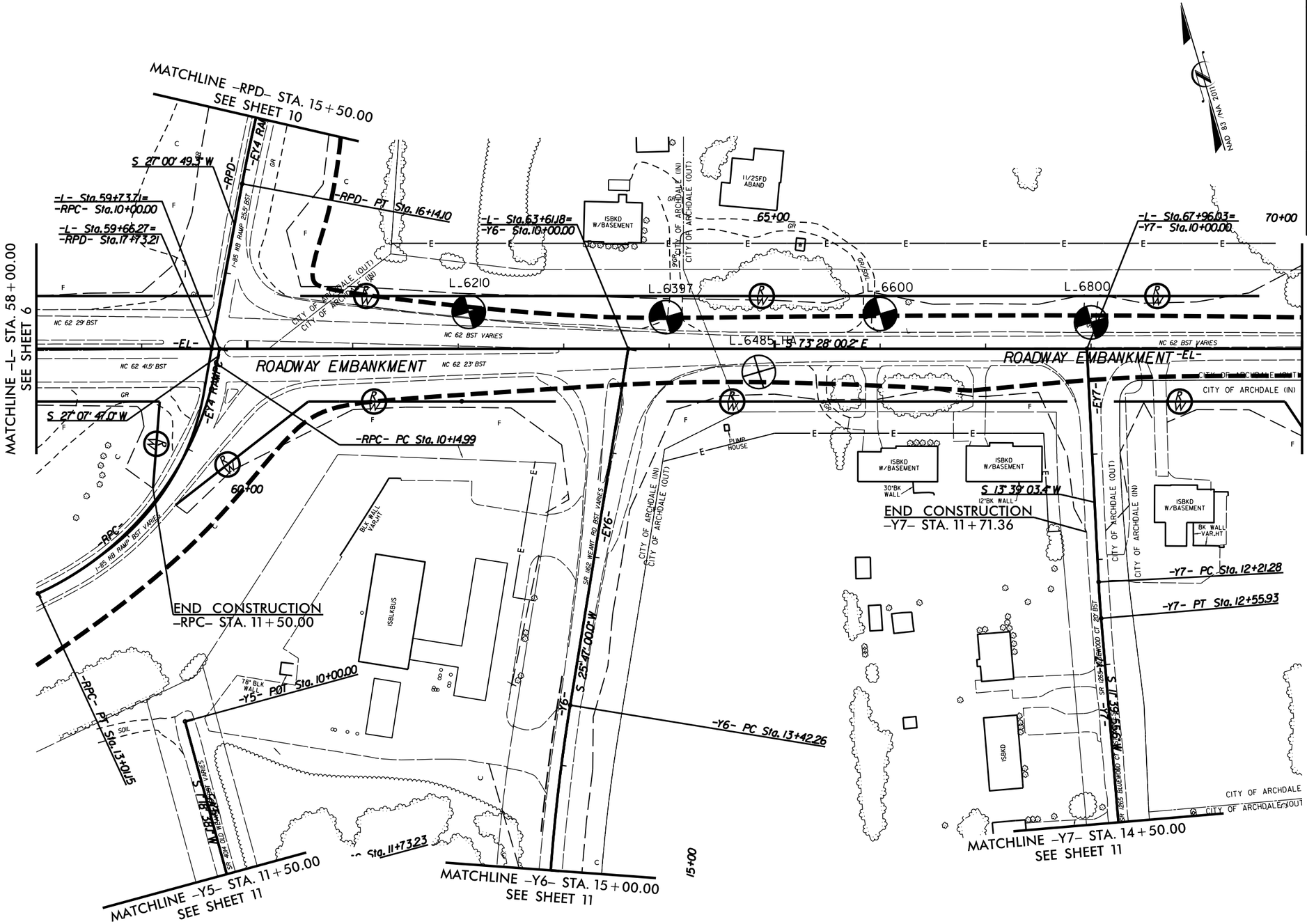

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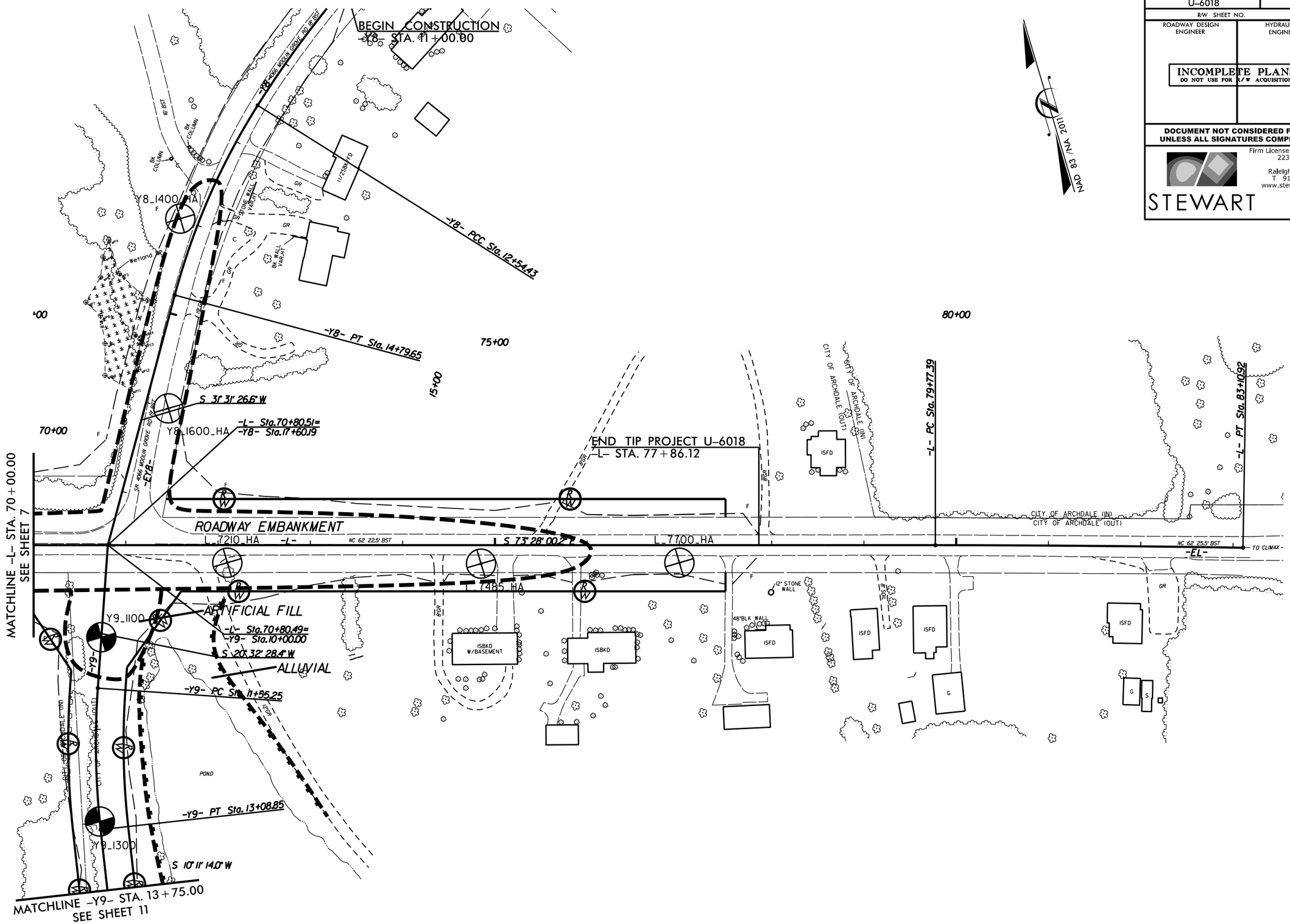

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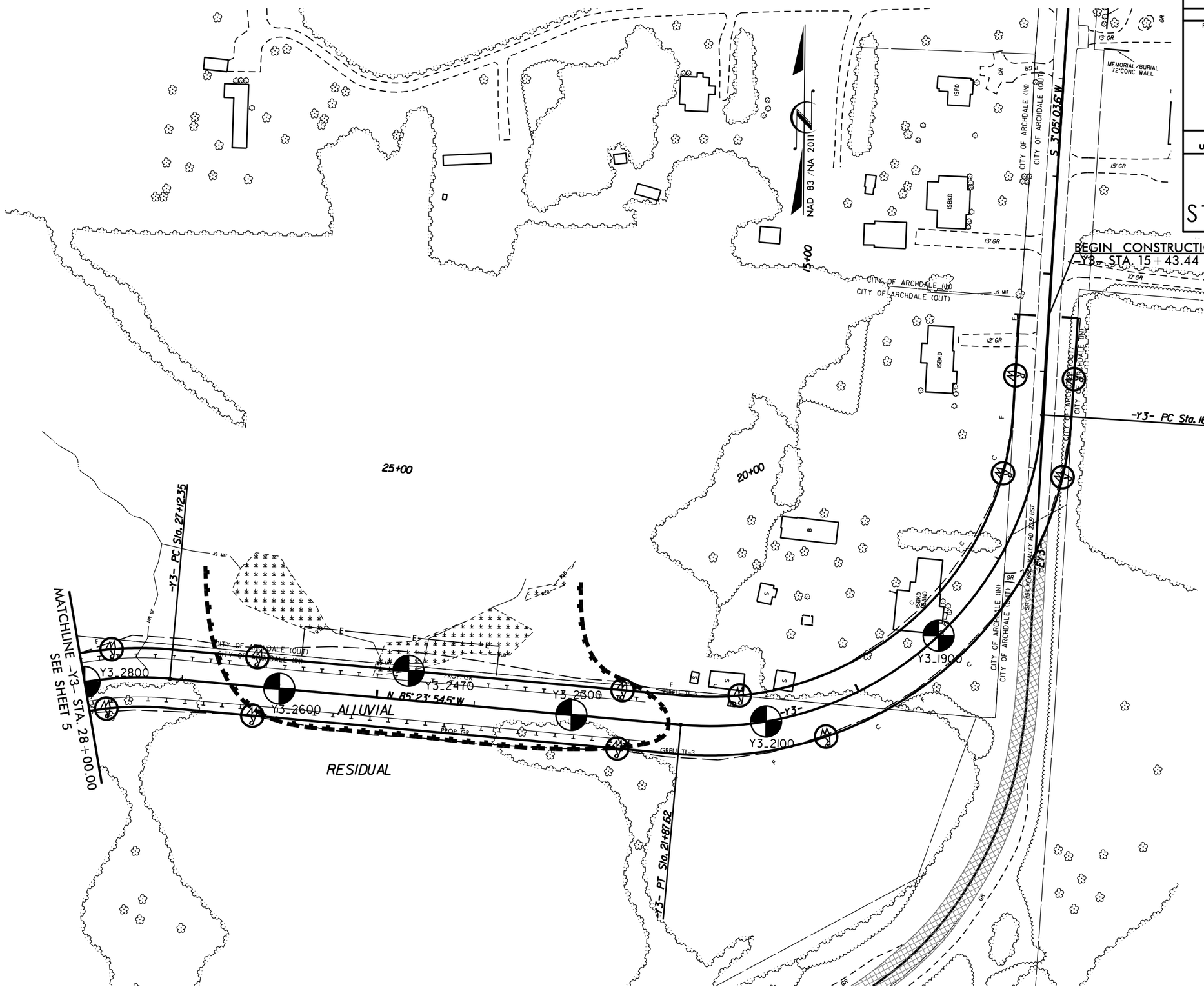

REVISIONS

8/17/99

-RPA-

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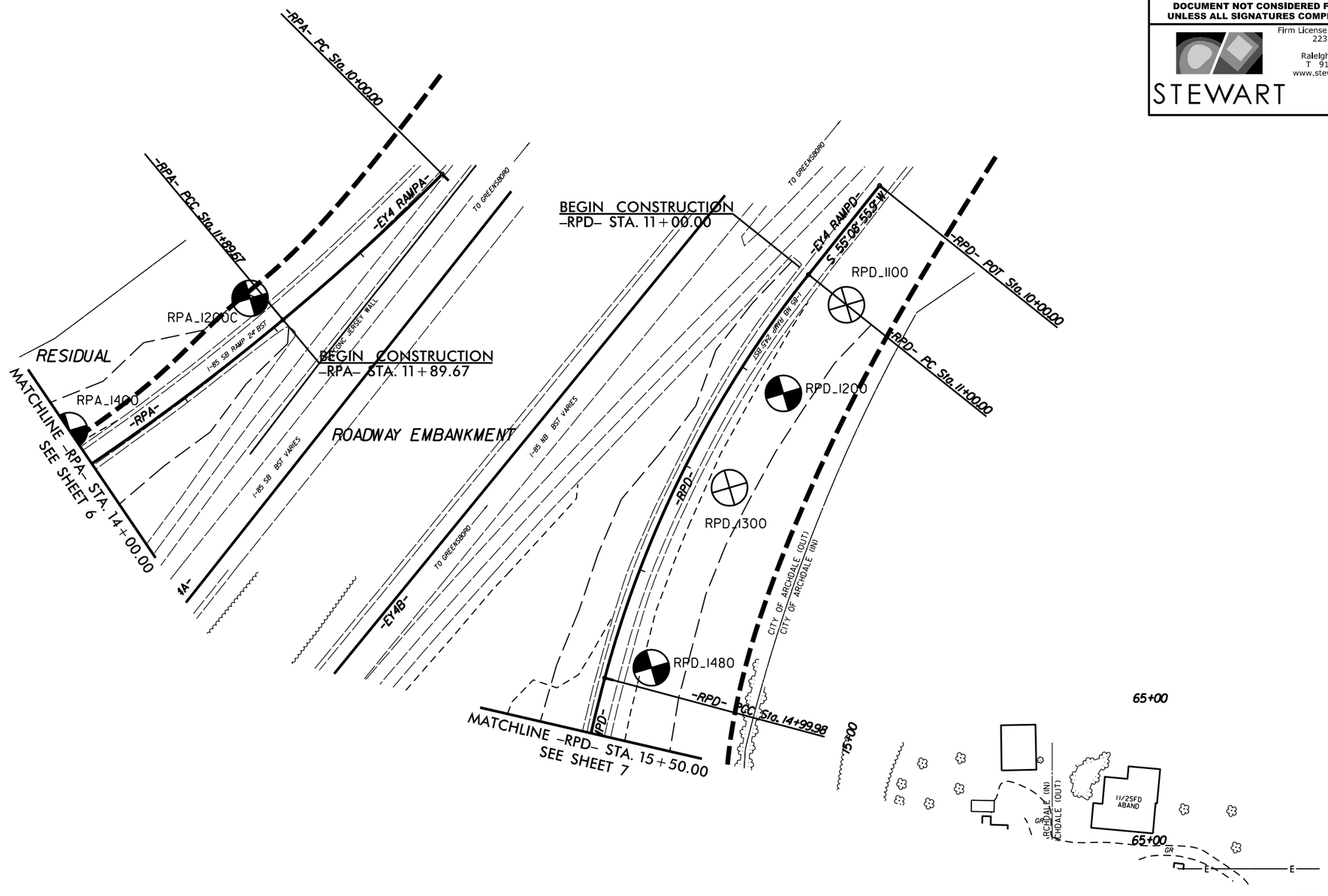

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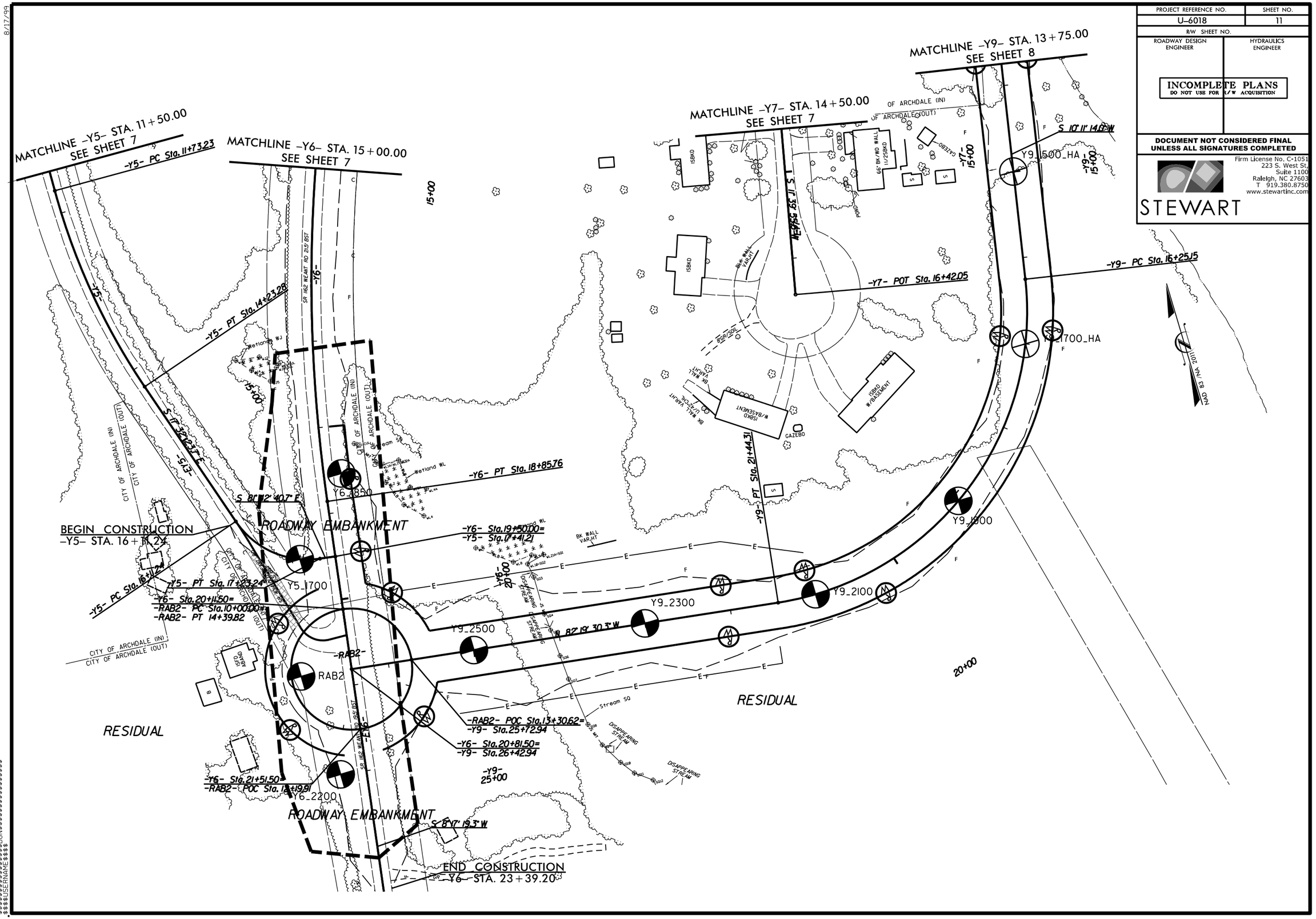

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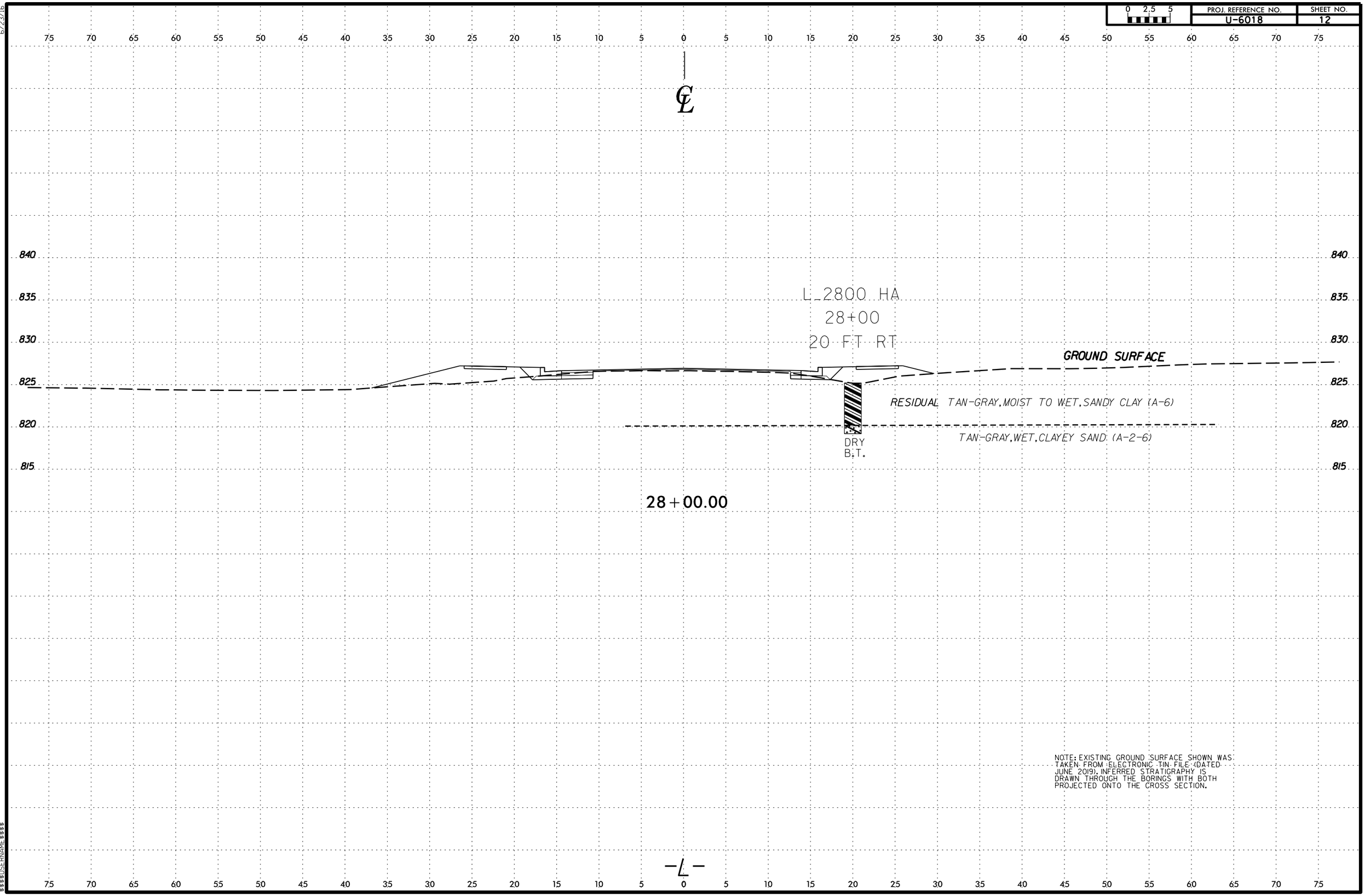

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
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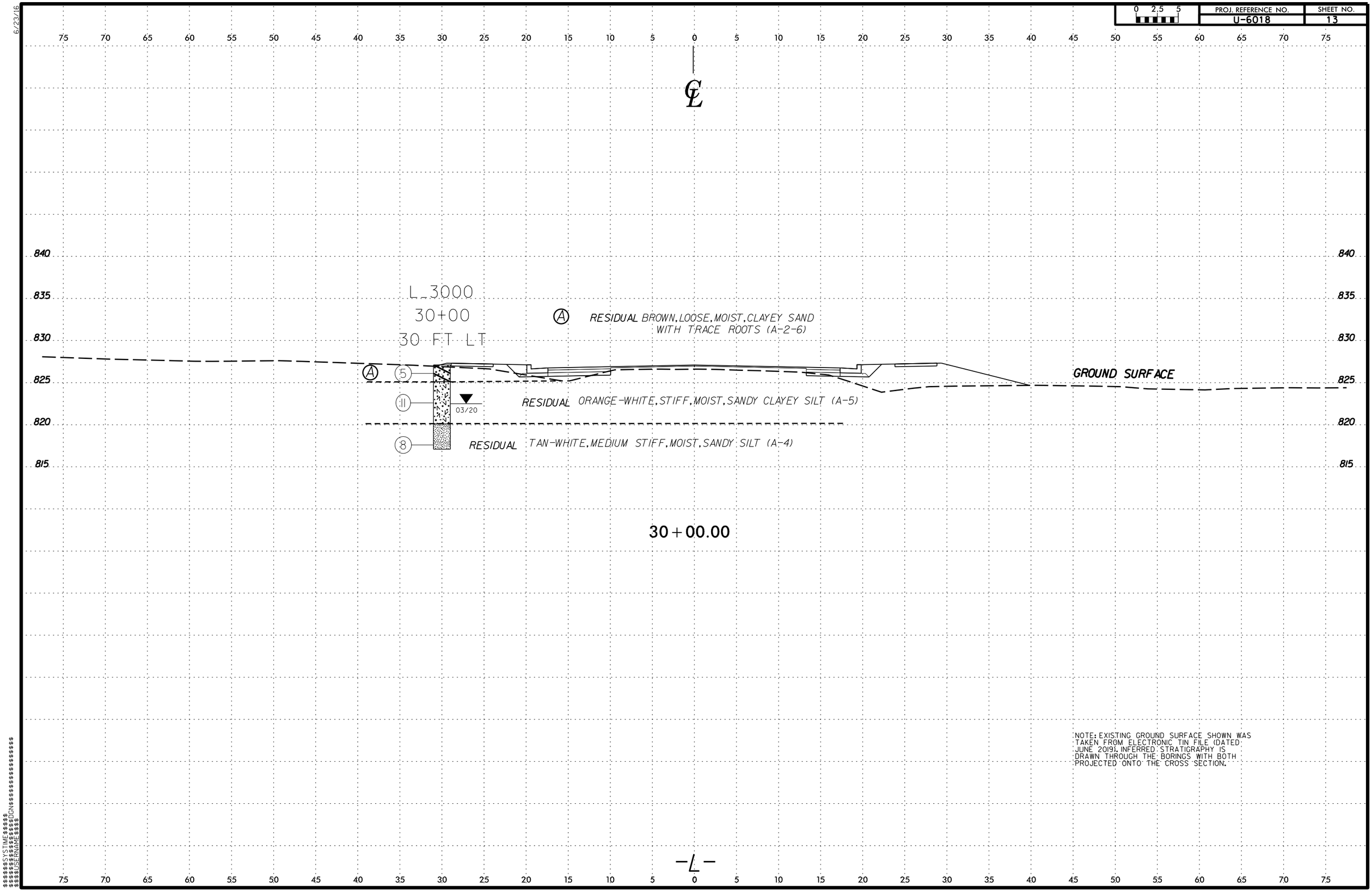

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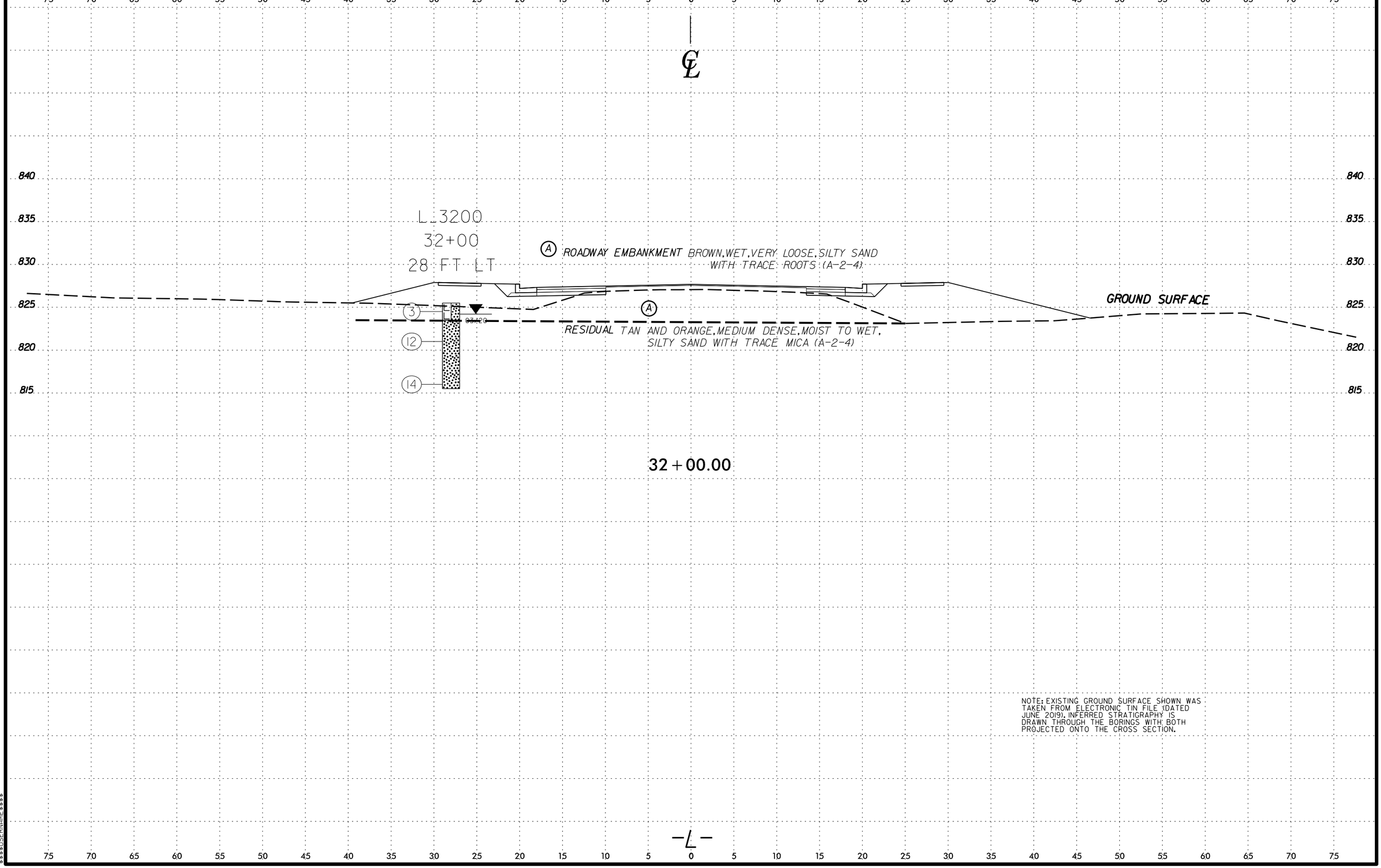

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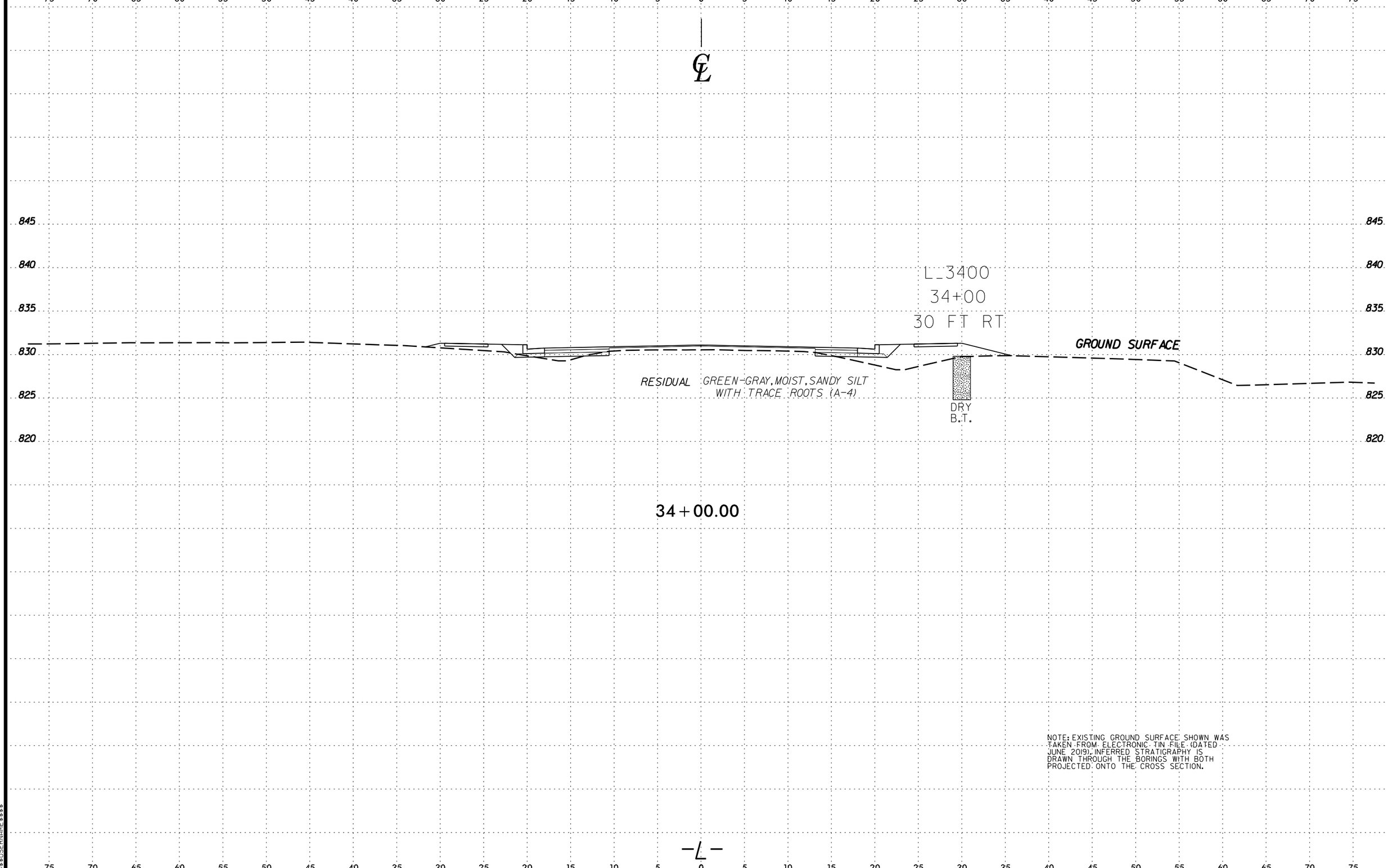

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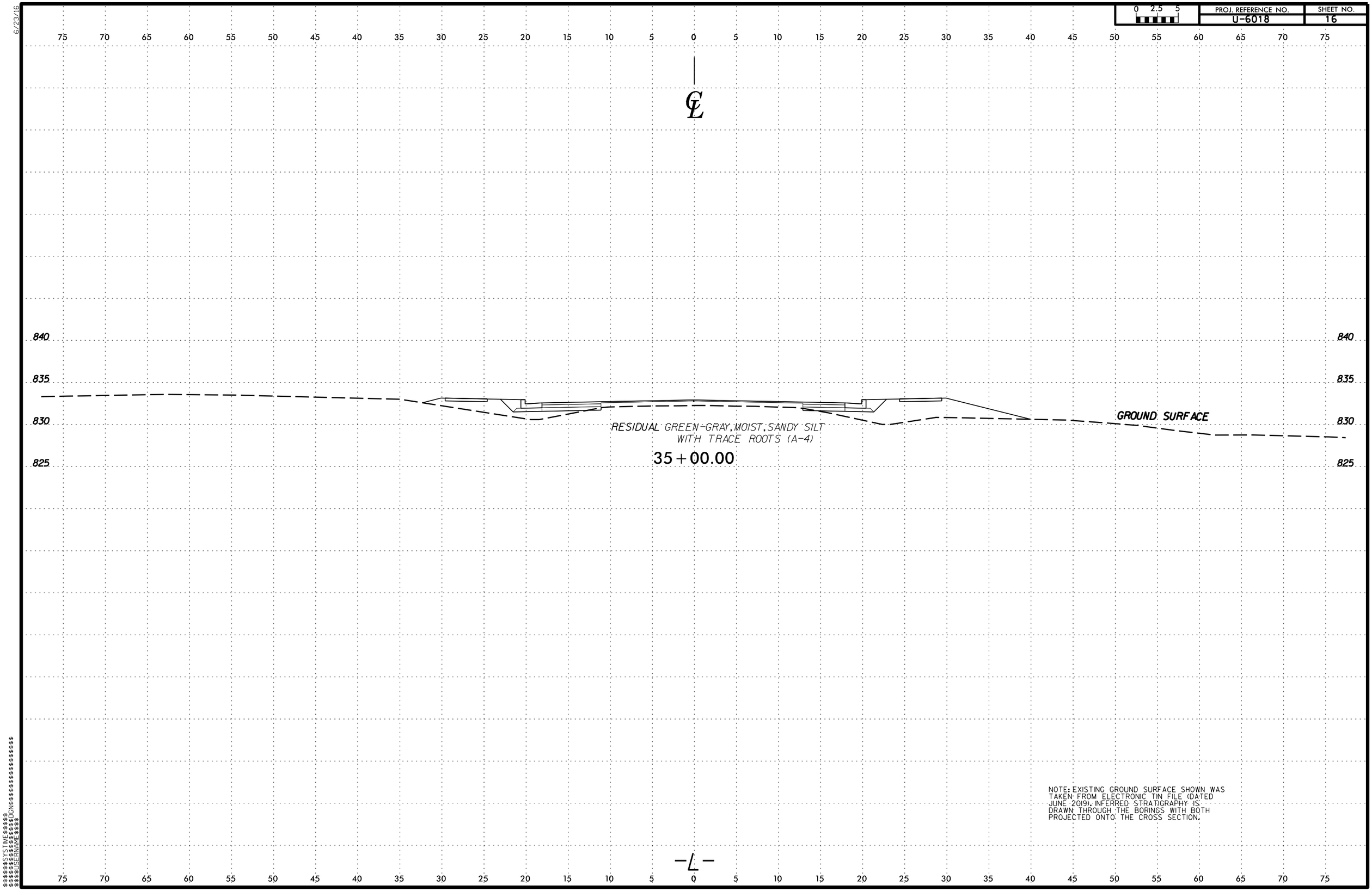

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$$
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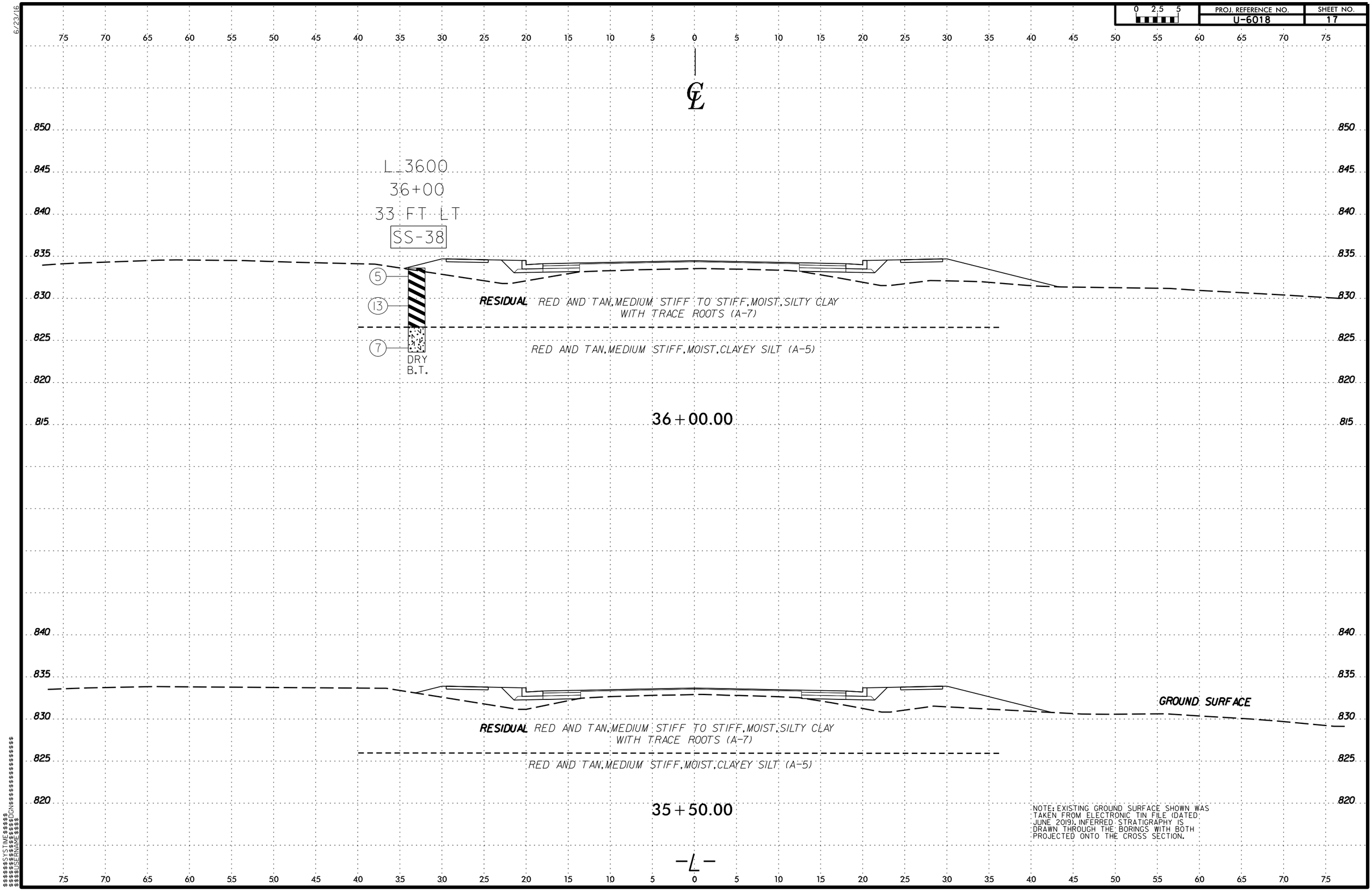

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
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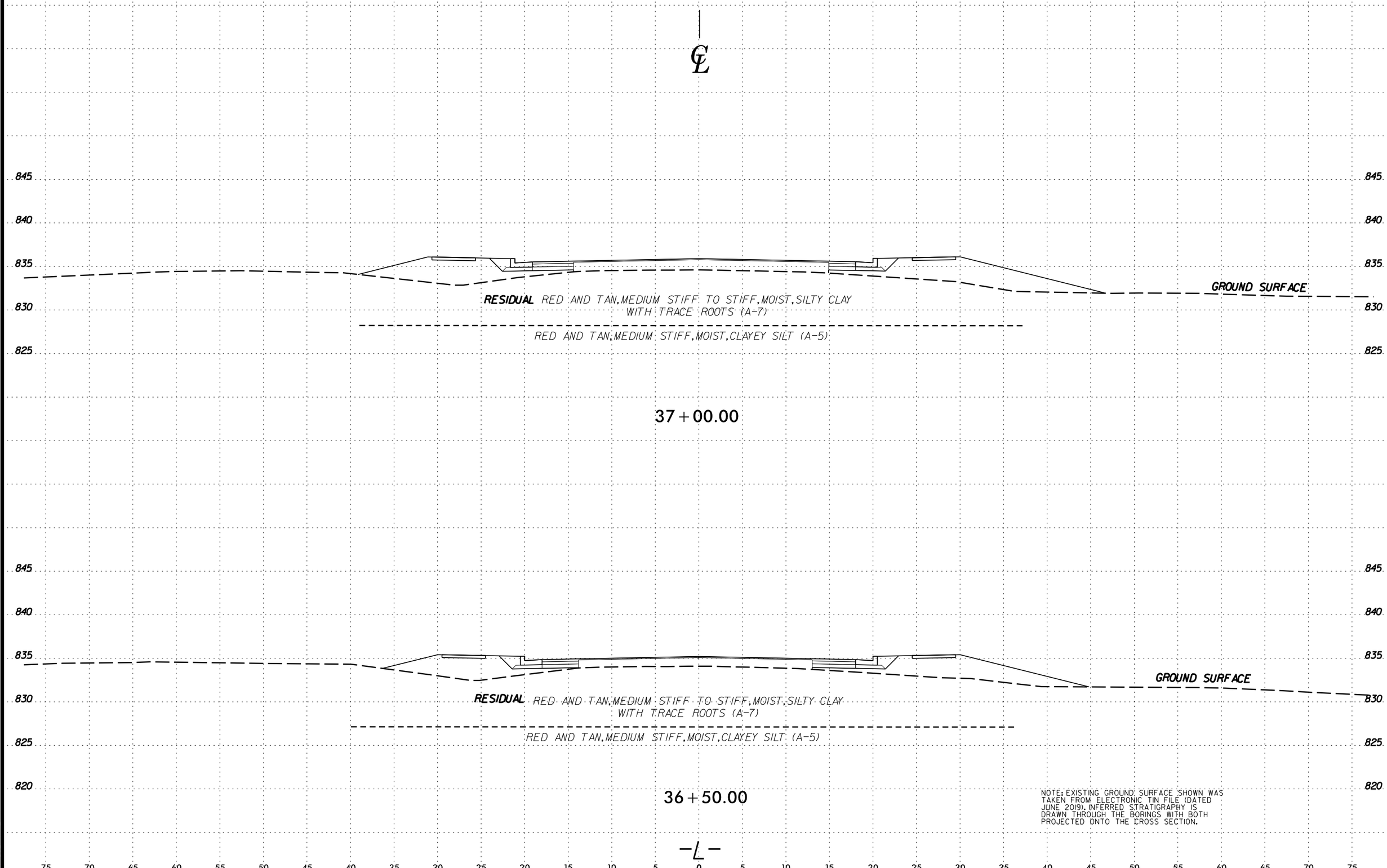
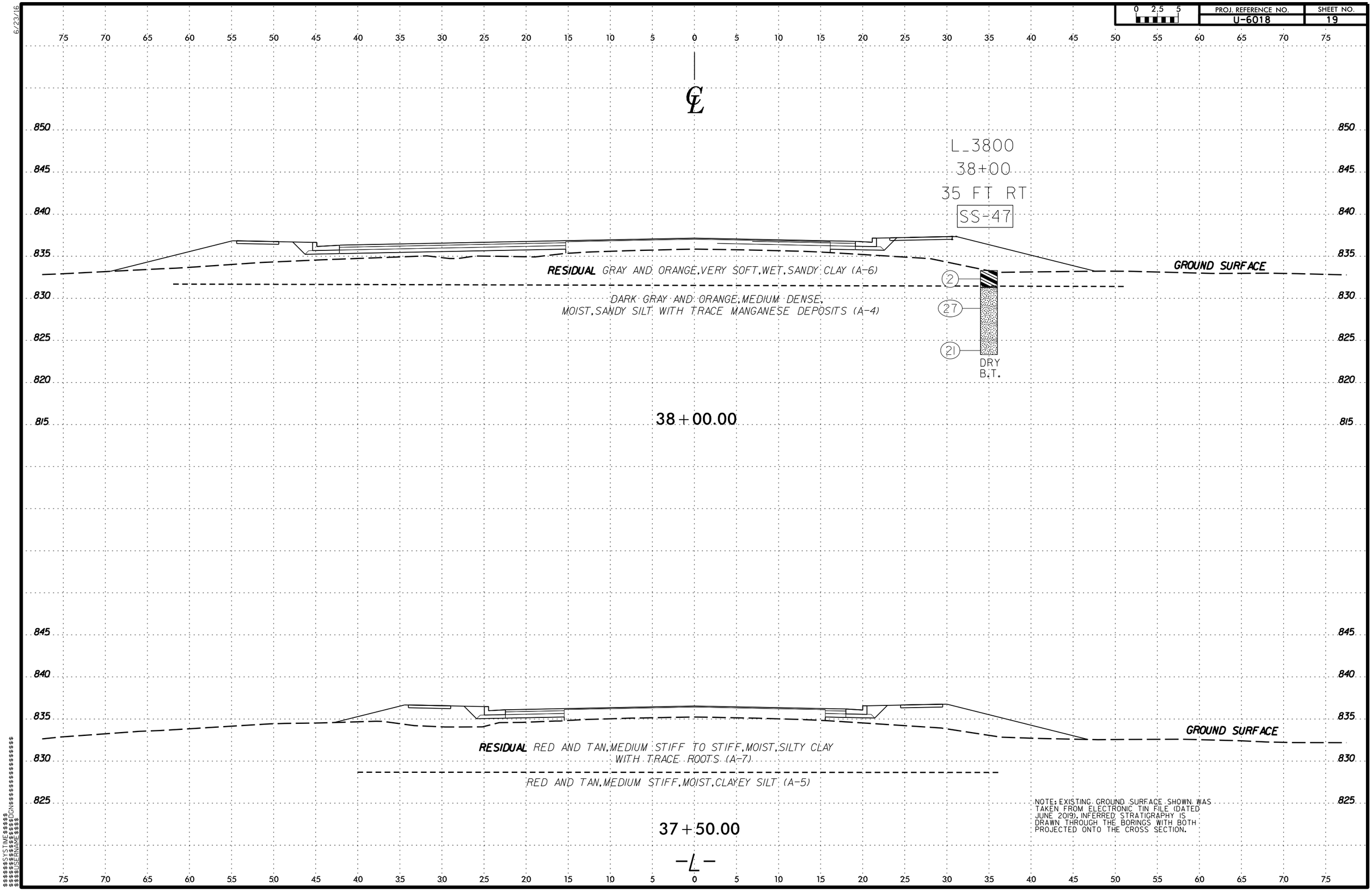


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16

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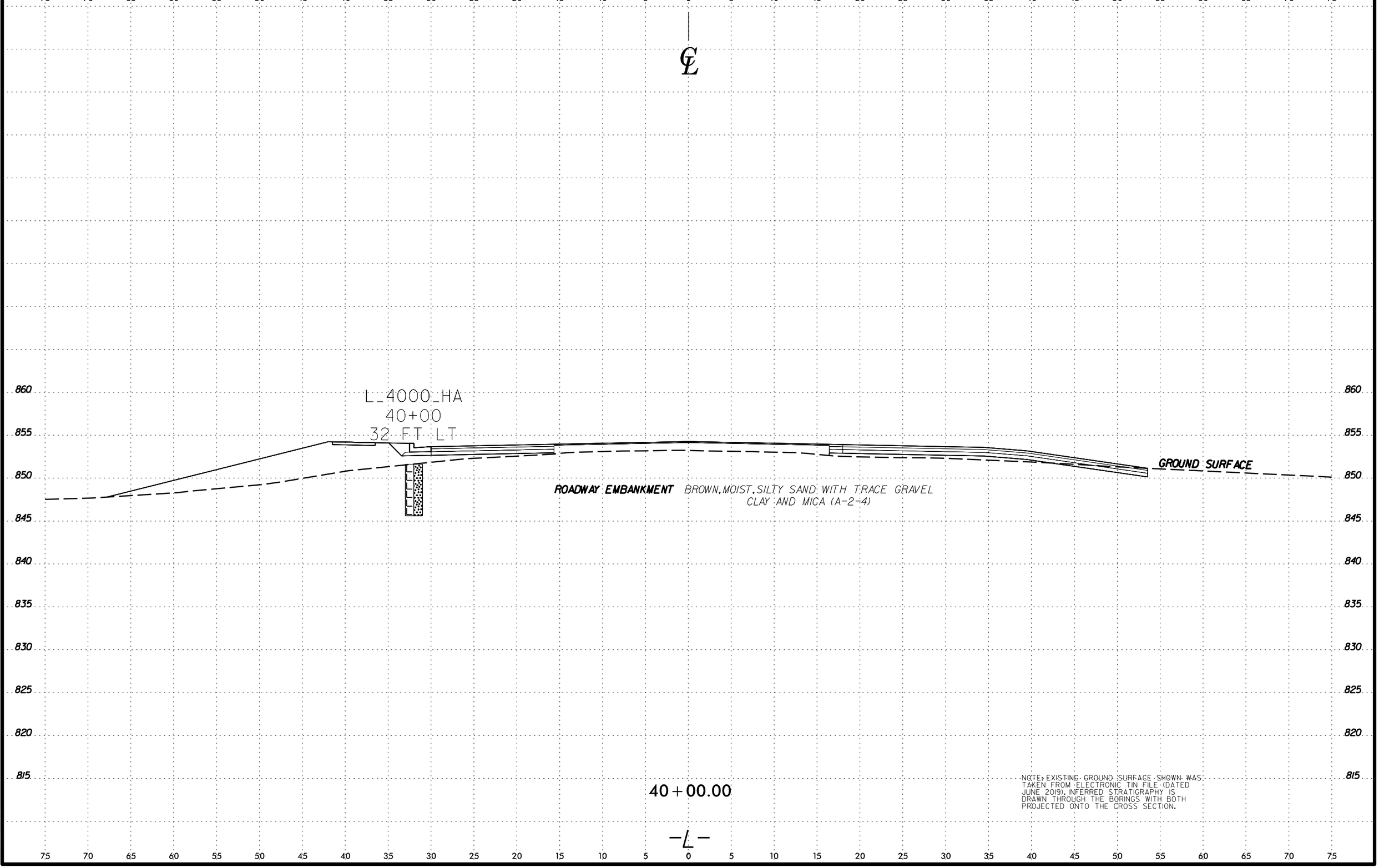
$$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	20

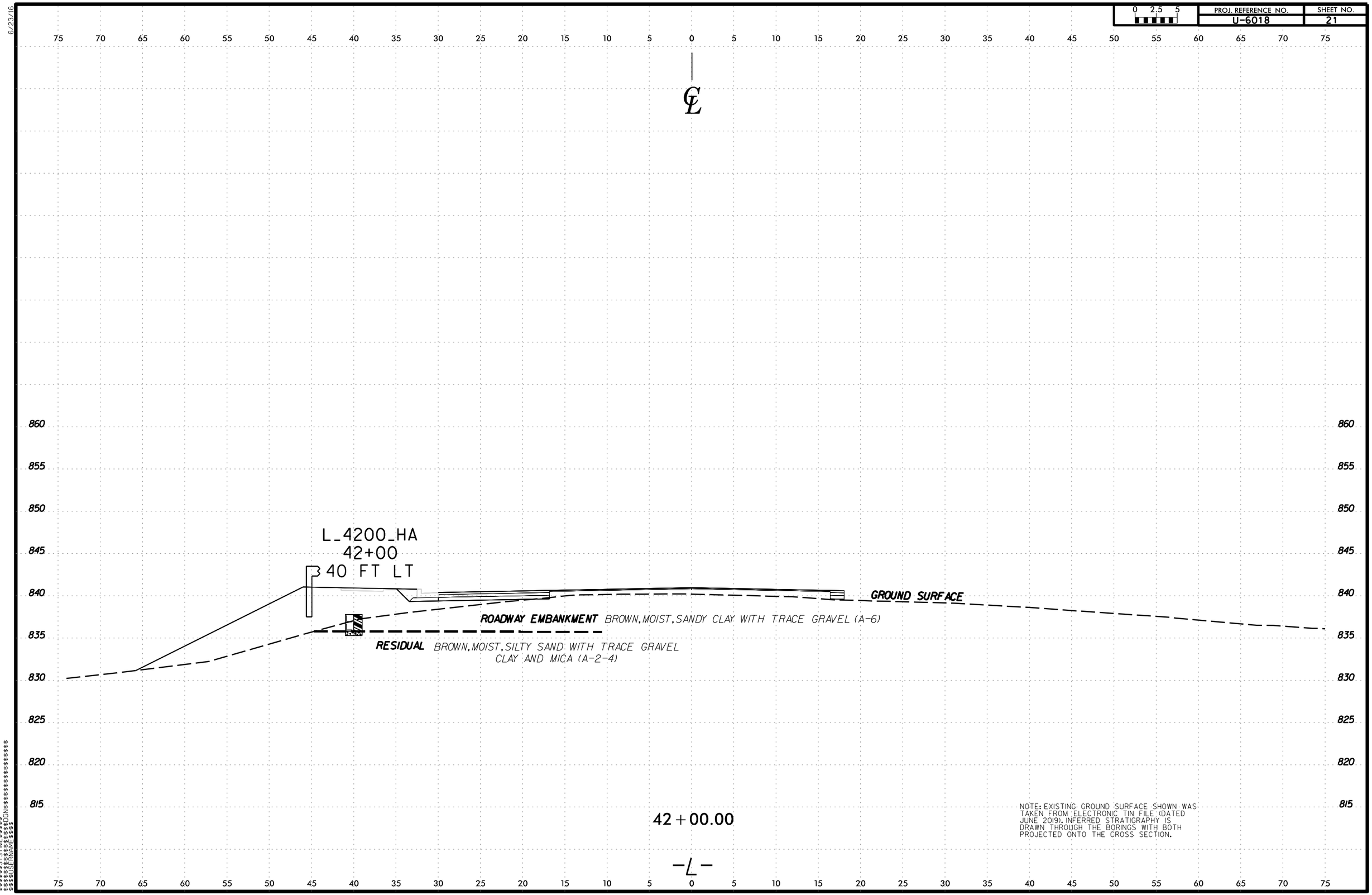


NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	21



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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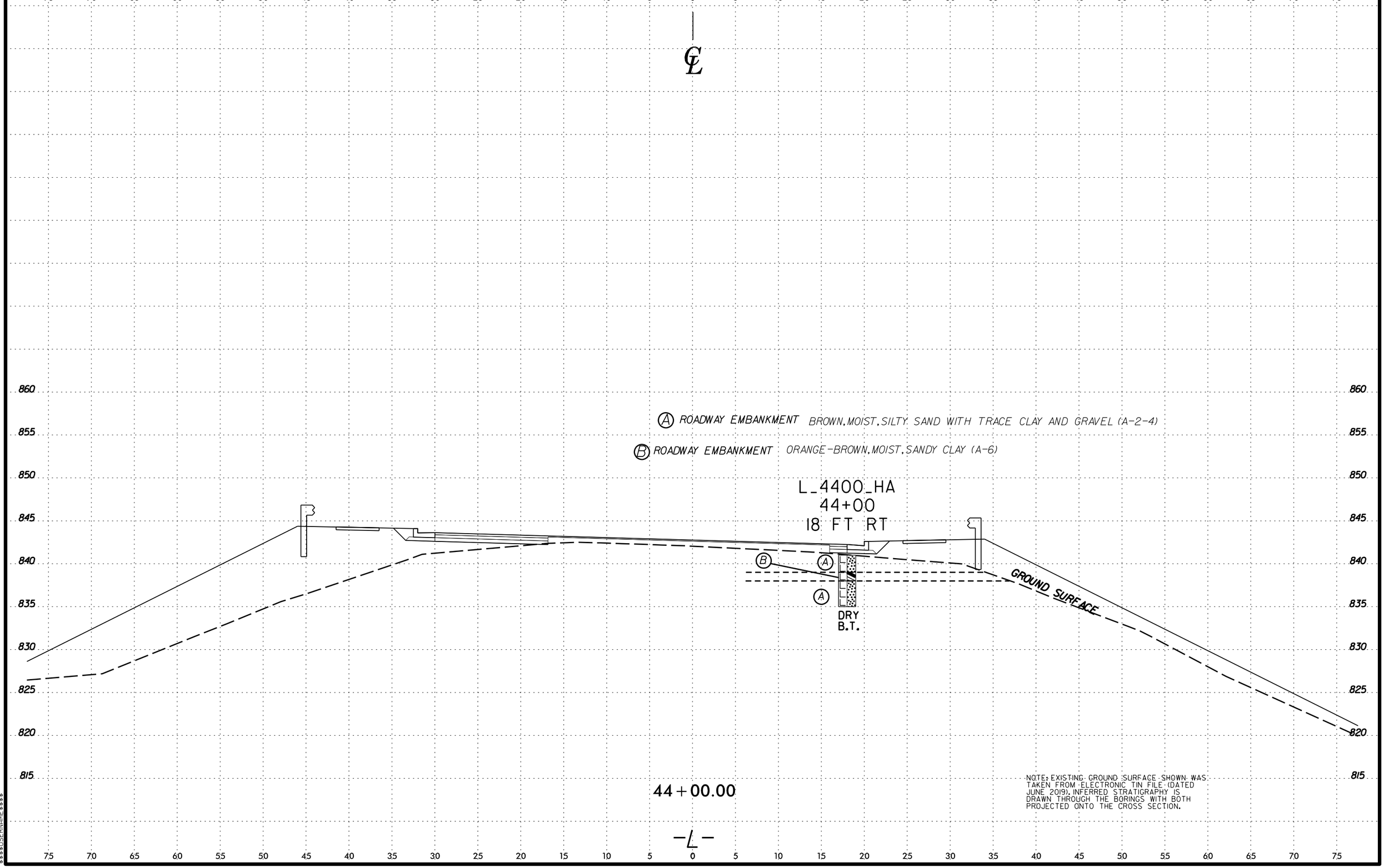
$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
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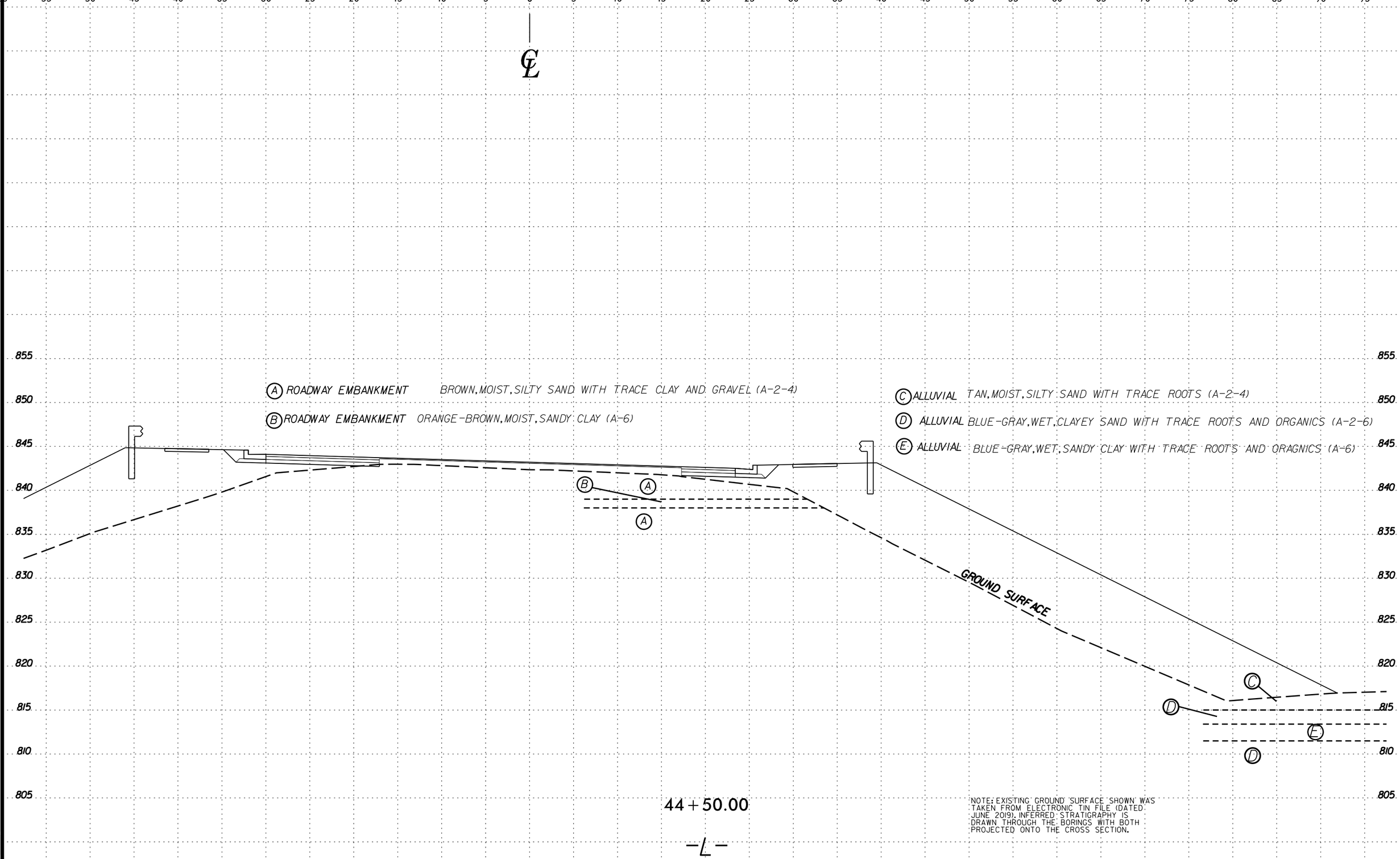
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
U-6018	23

0 2.5 5



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16

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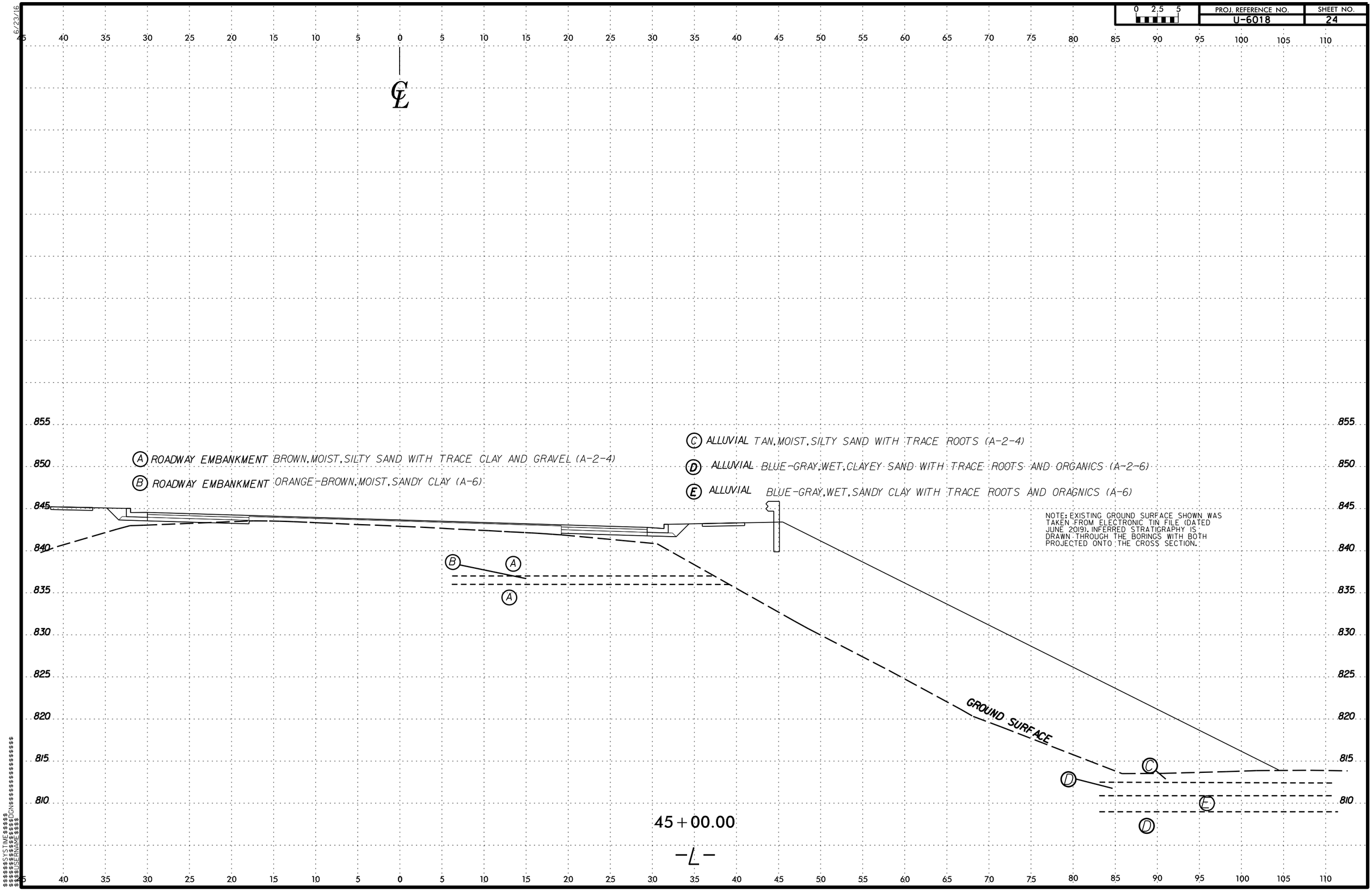

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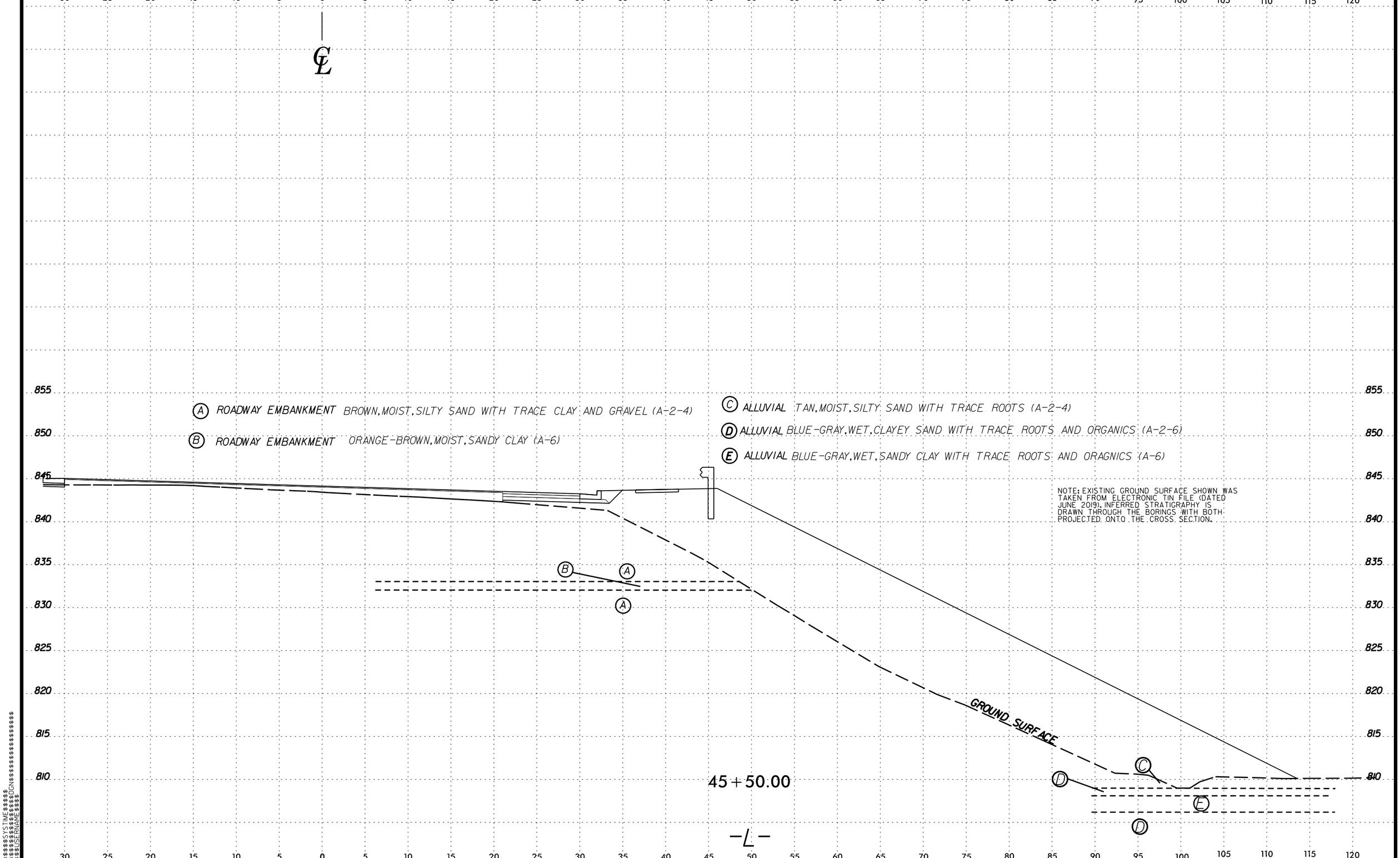

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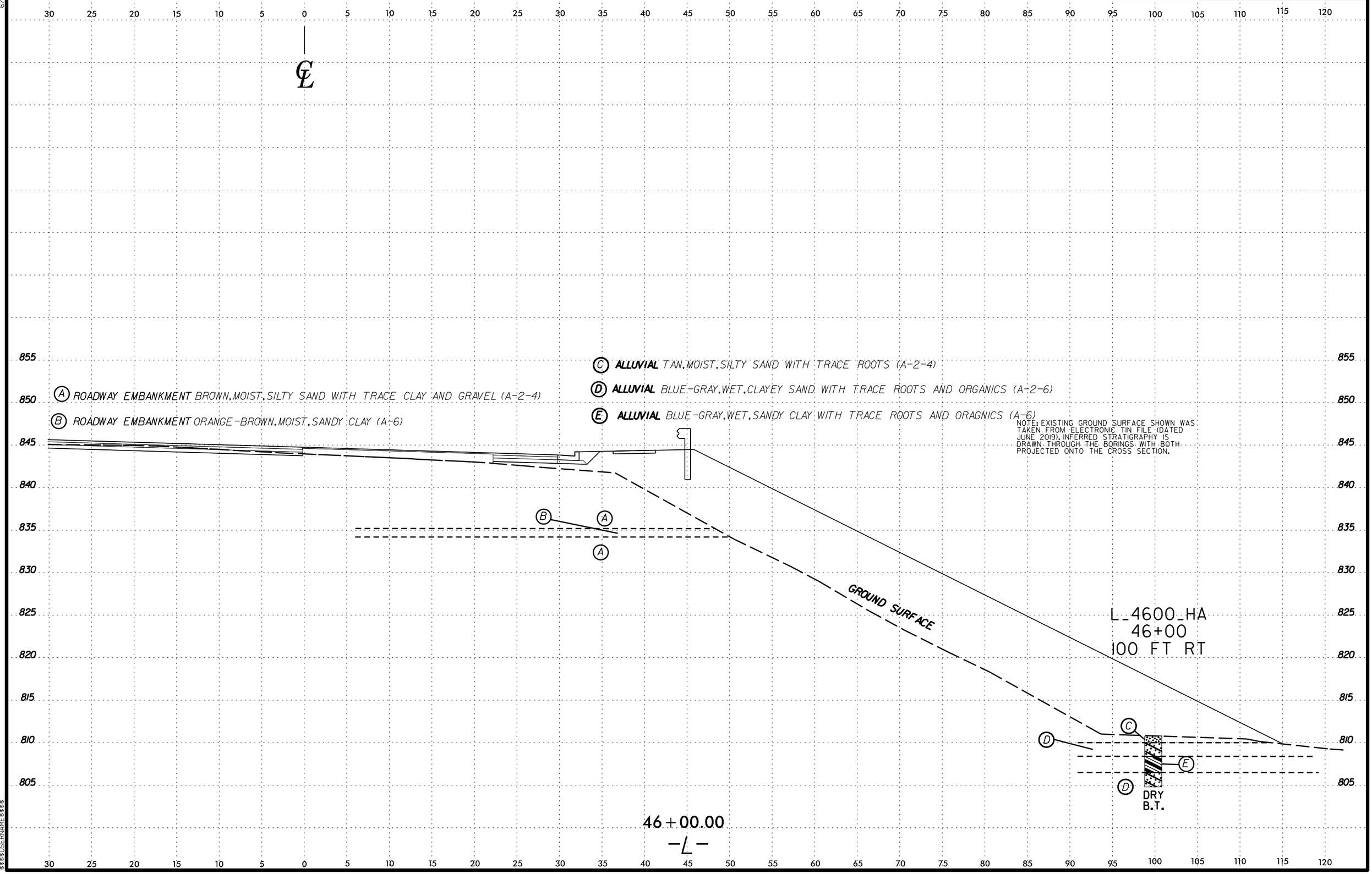

6/23/16
$$$$$$$SYSTIME$$$$$
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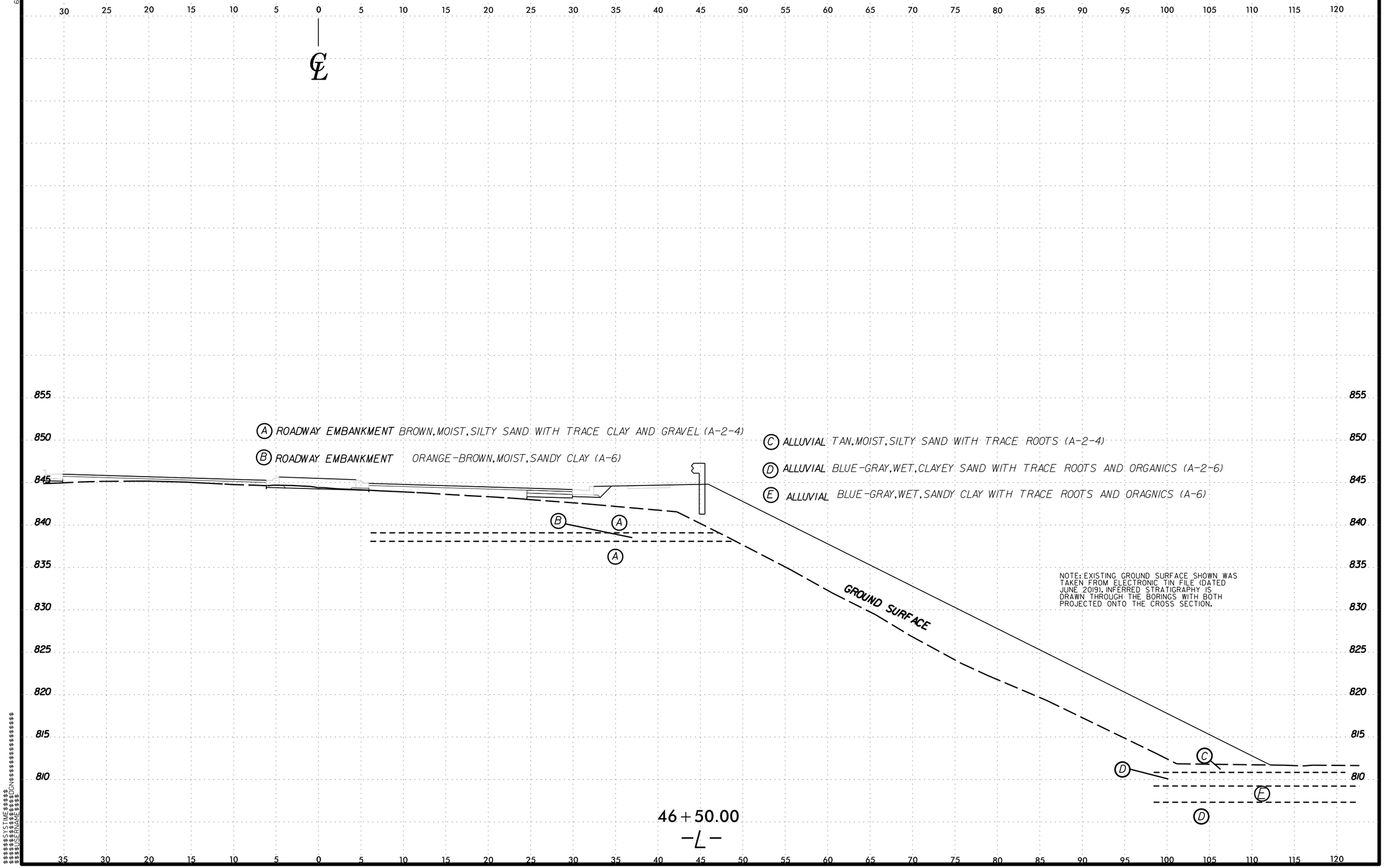
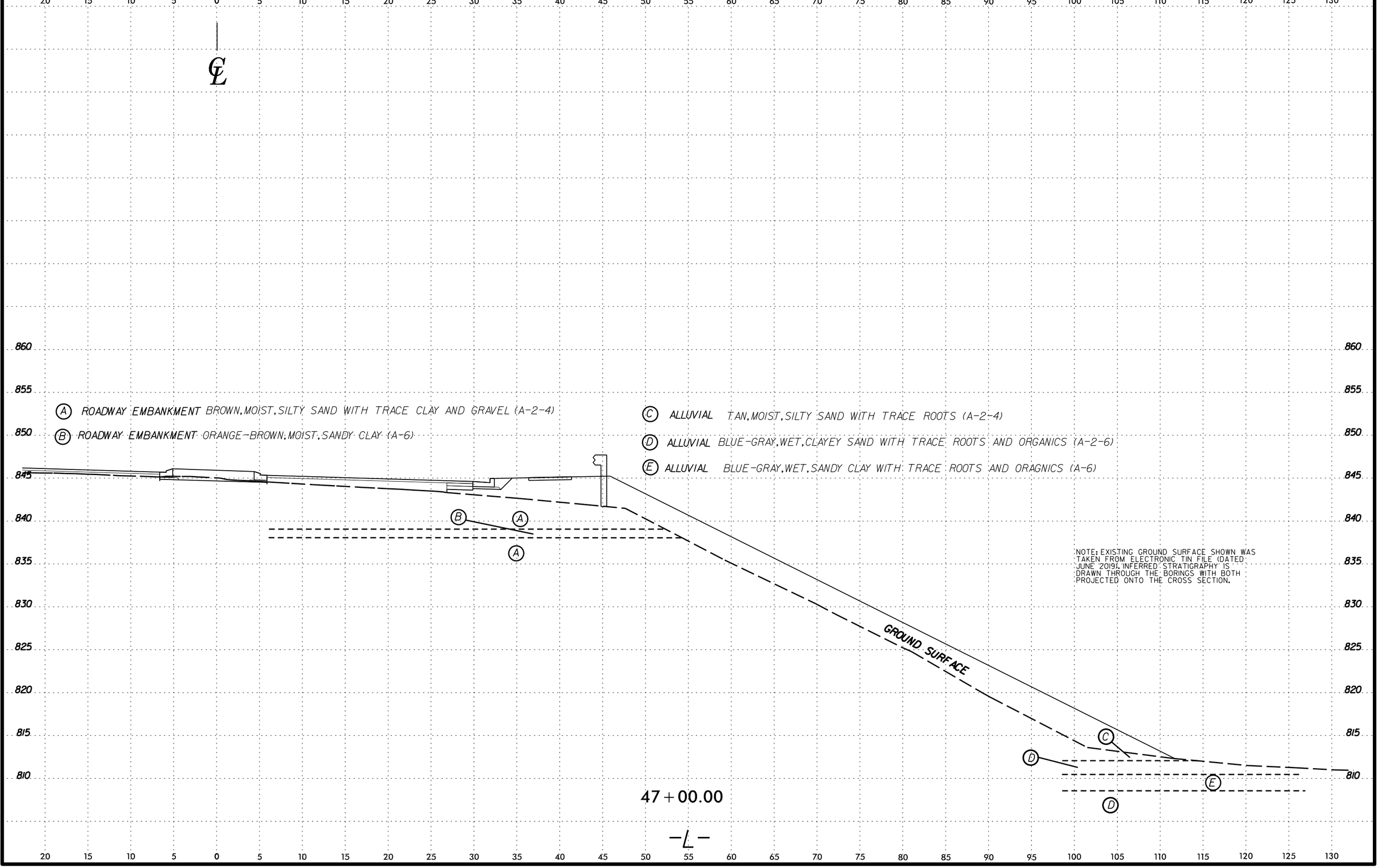
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	27



$$$$STIME$$$$YLE$$$$CUN$$$$SCALE$$$$



6/23/16

$$$$$$$SYSTIME$$$$$$
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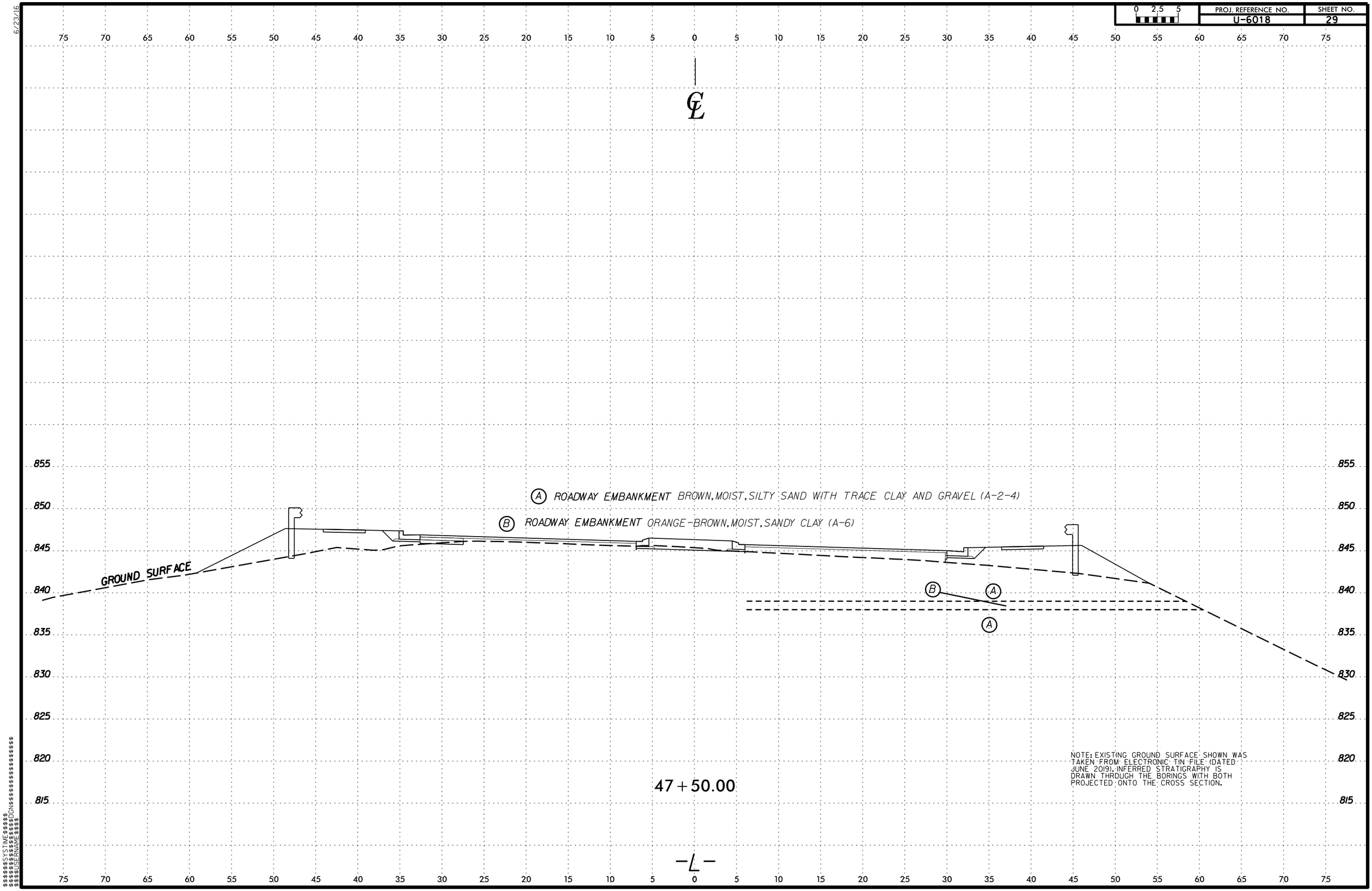
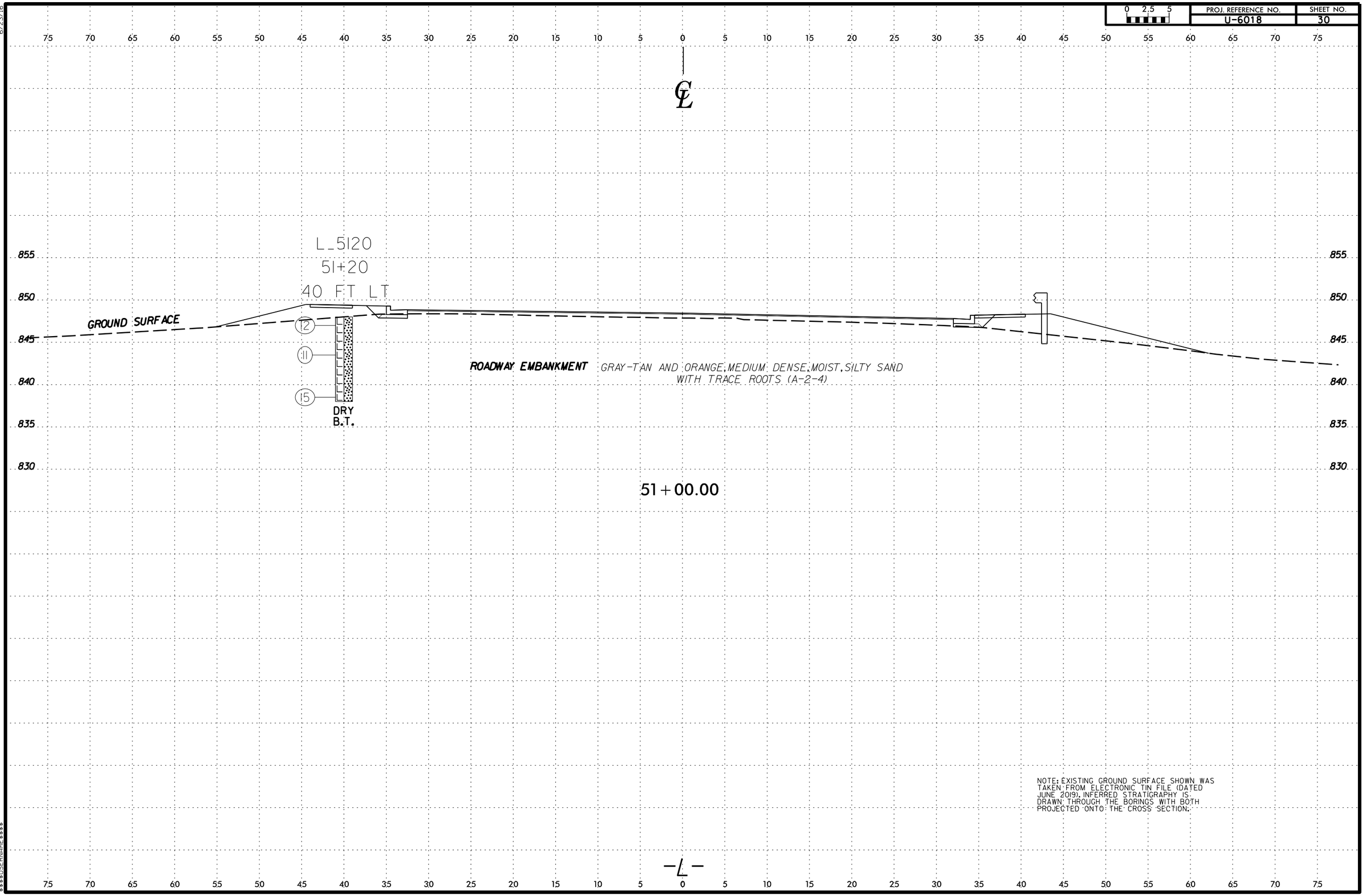
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	29



$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$



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6/23/16
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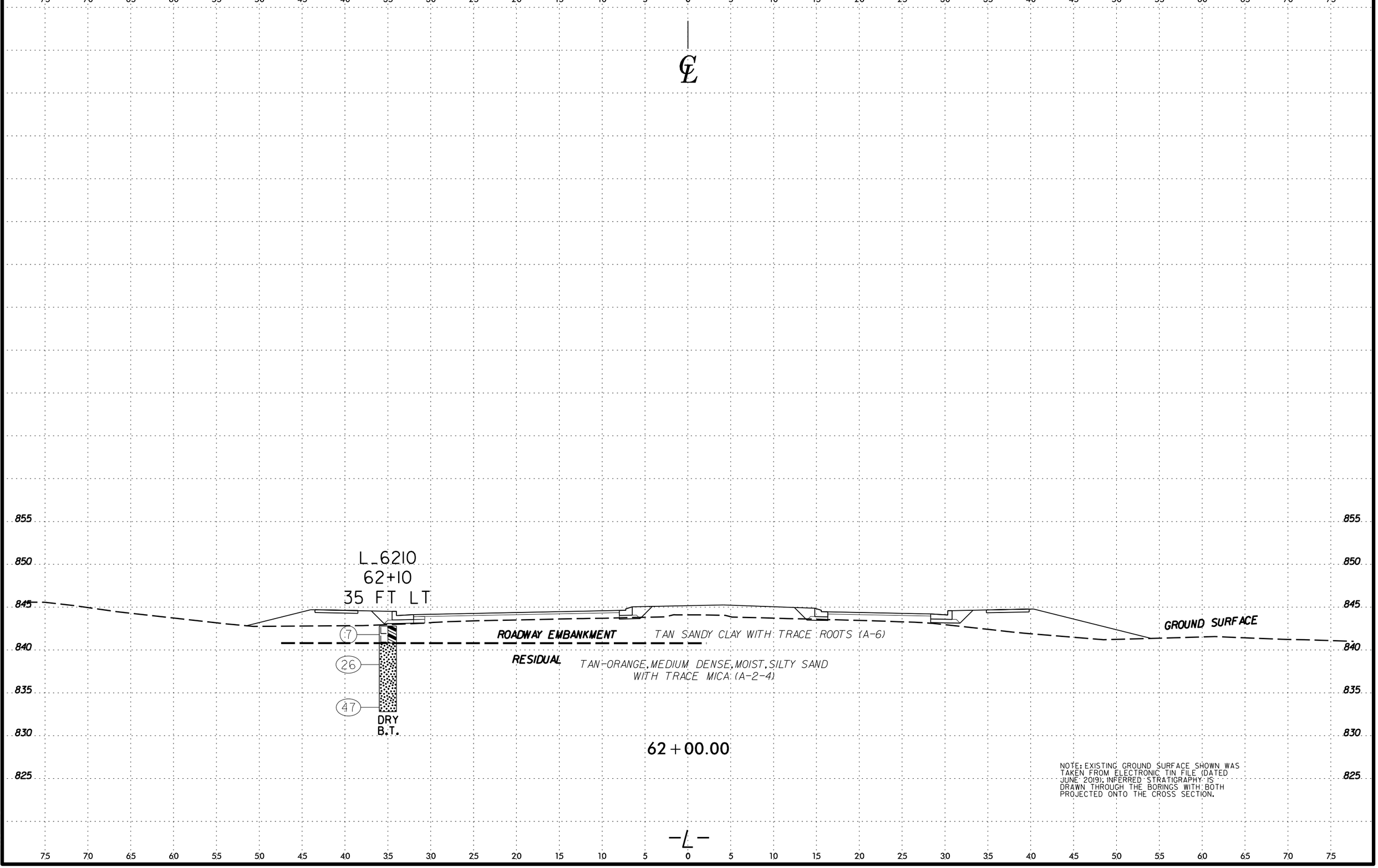
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	31



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$$
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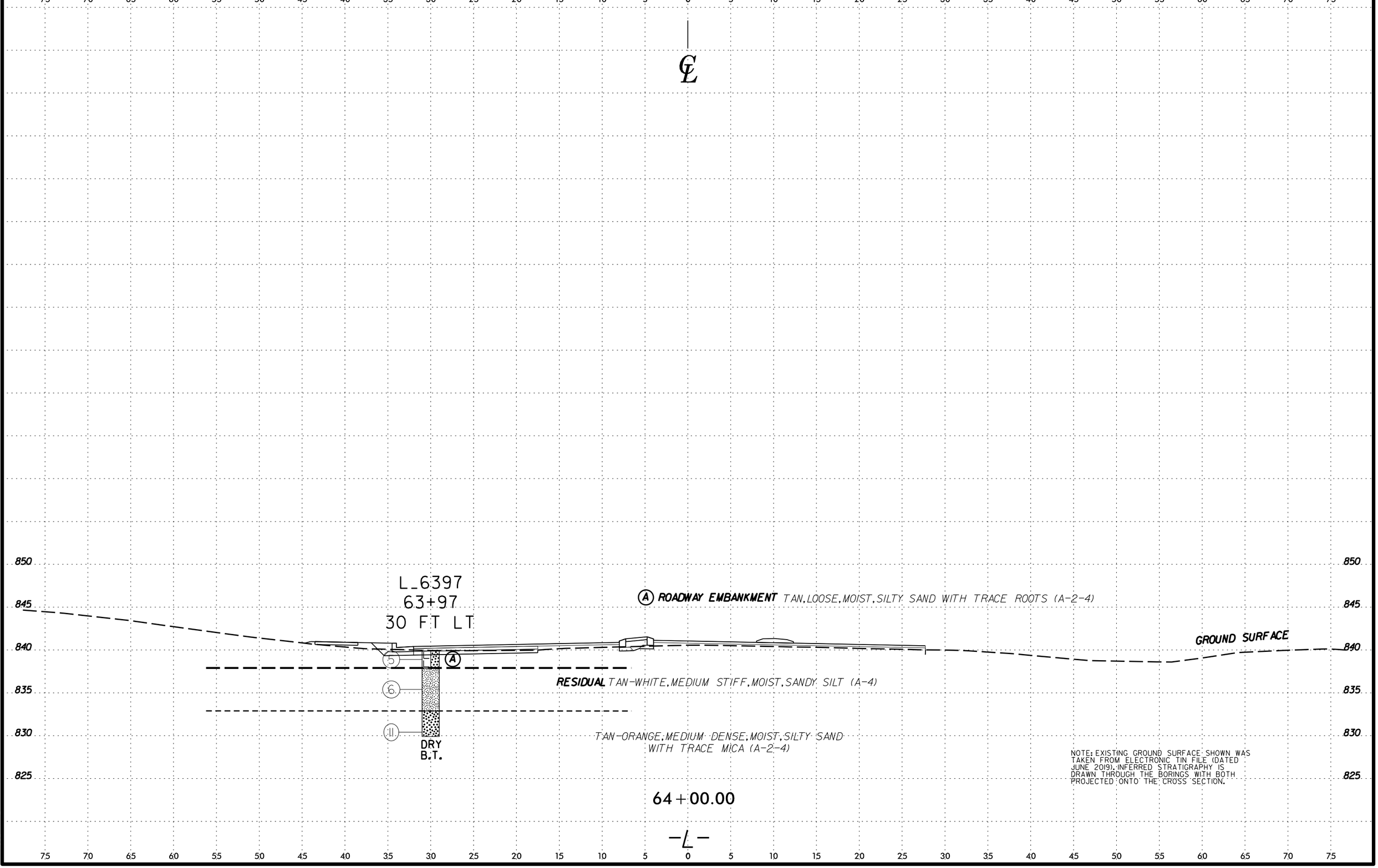
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	32



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$$
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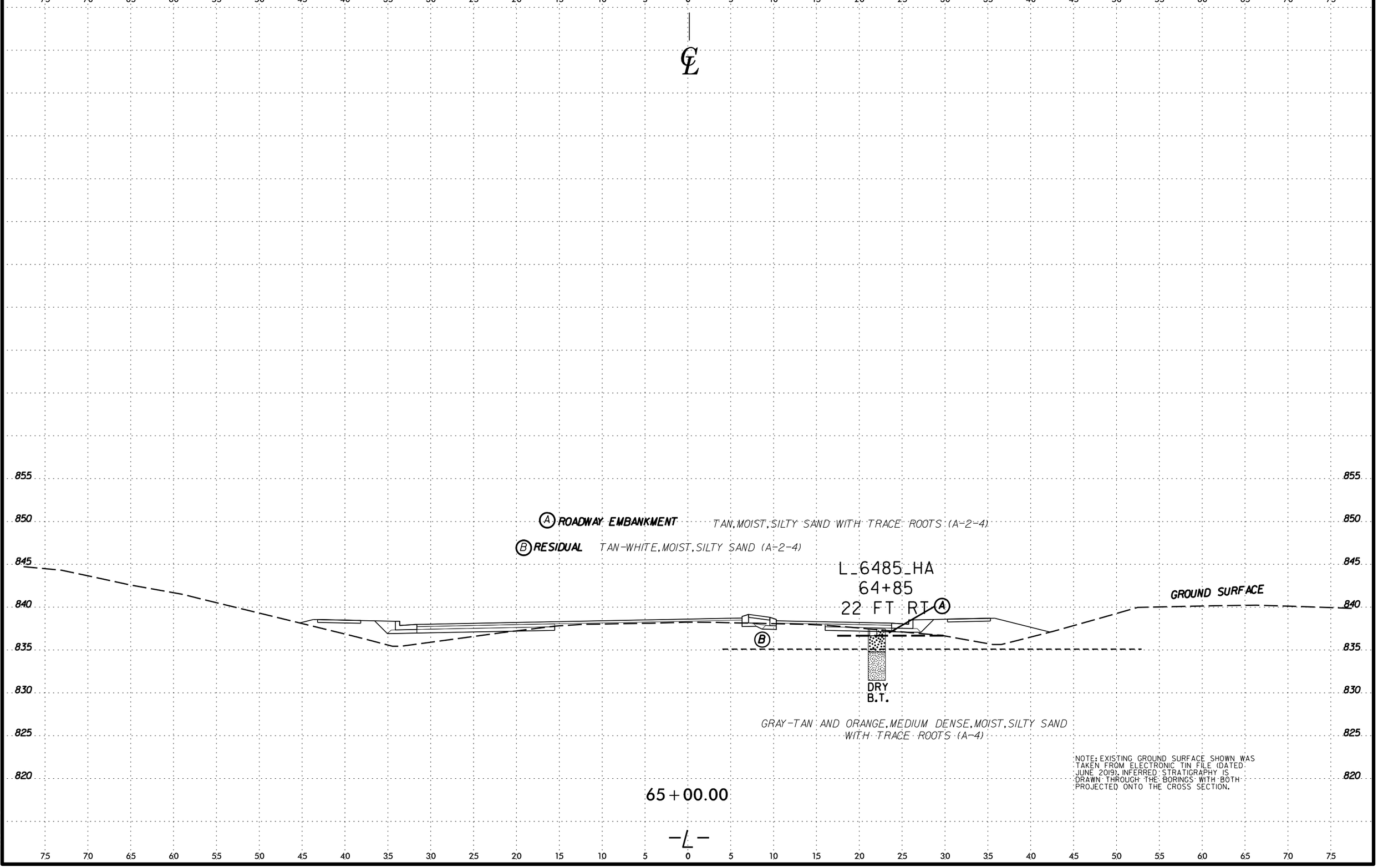
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	33



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$$$$$$$SYSTIME$$$$$
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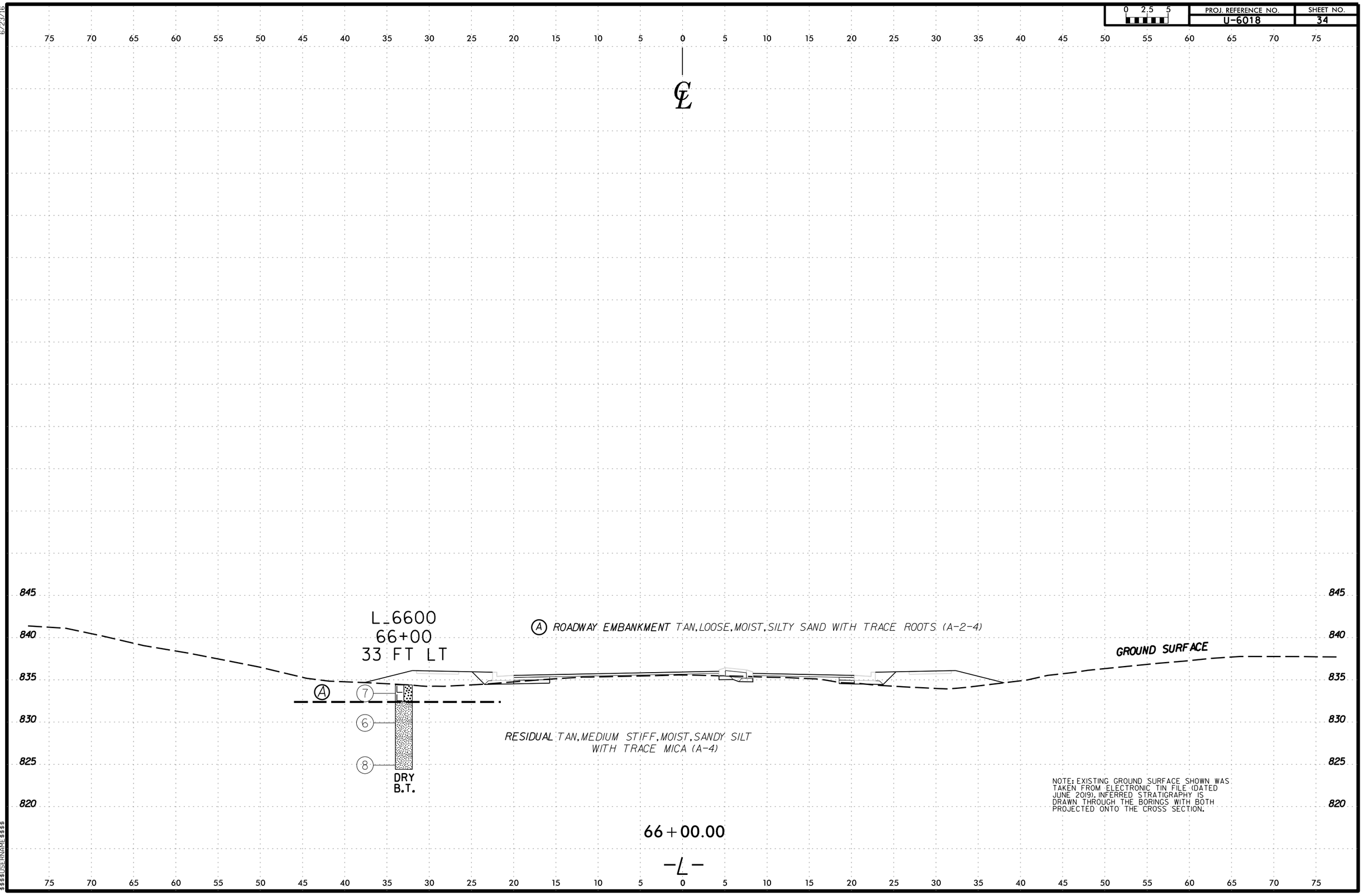
PROJ. REFERENCE NO.	SHEET NO.
U-6018	34

0 2.5 5



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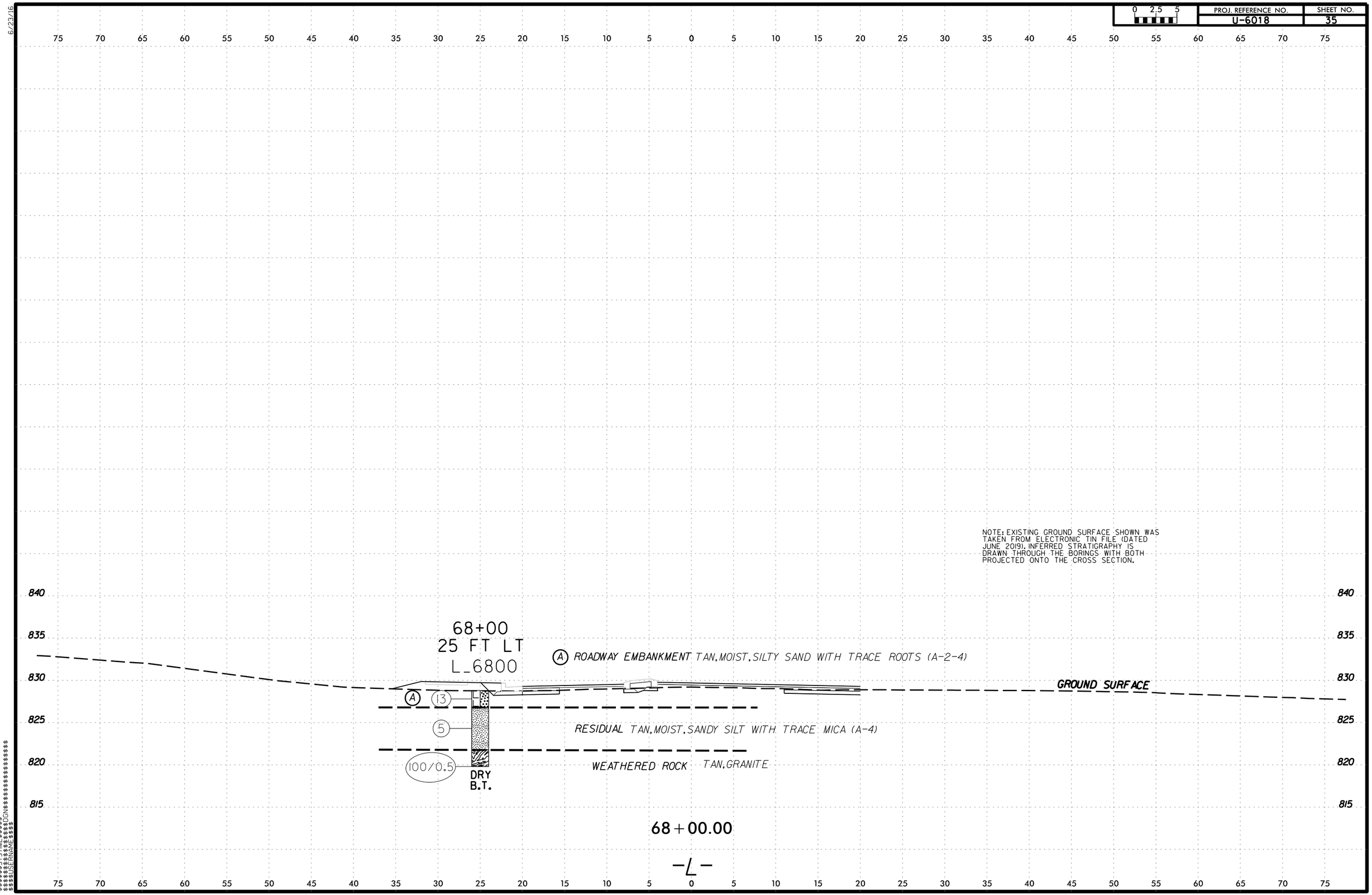
6/23/16

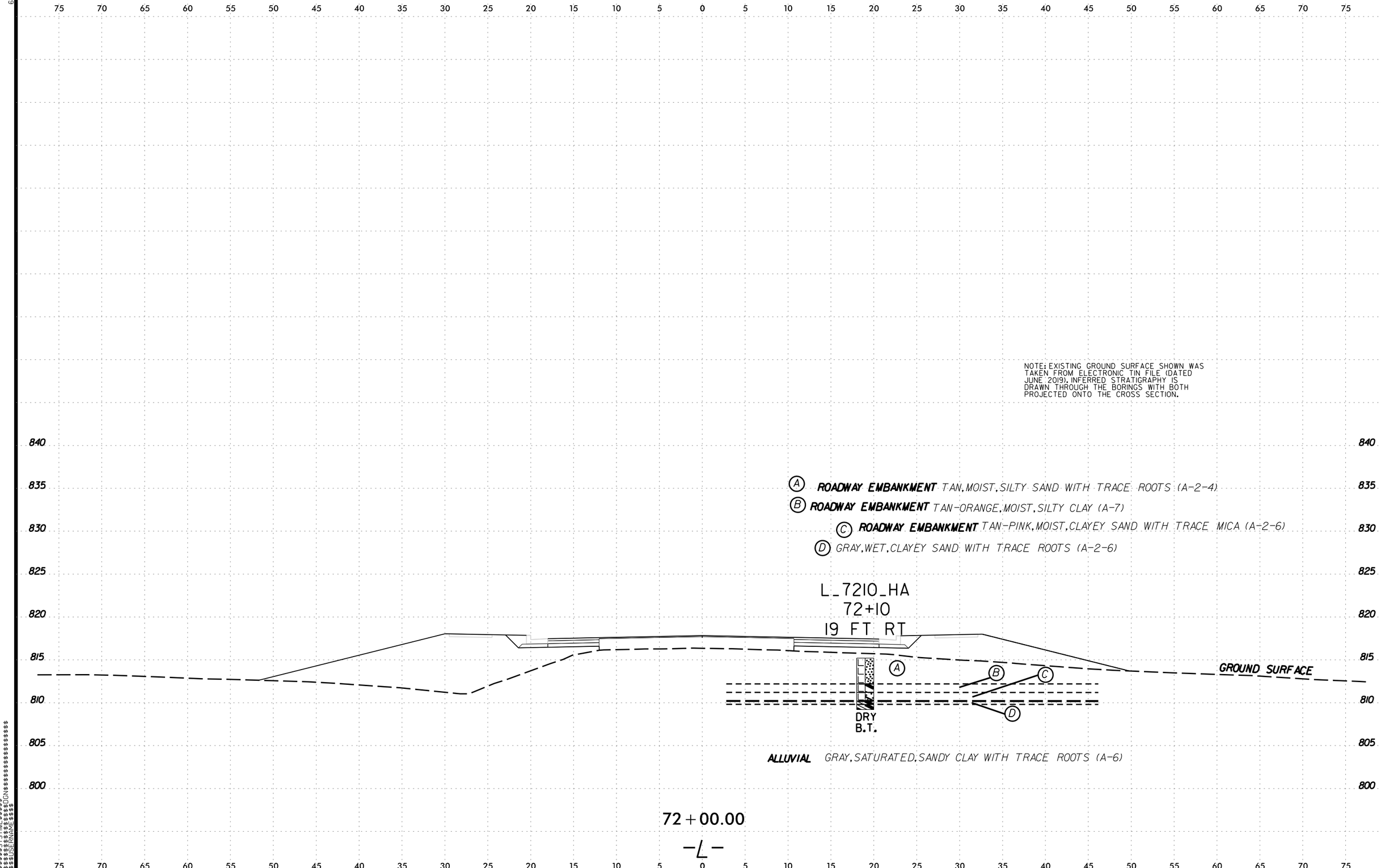
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	35



6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	36

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.



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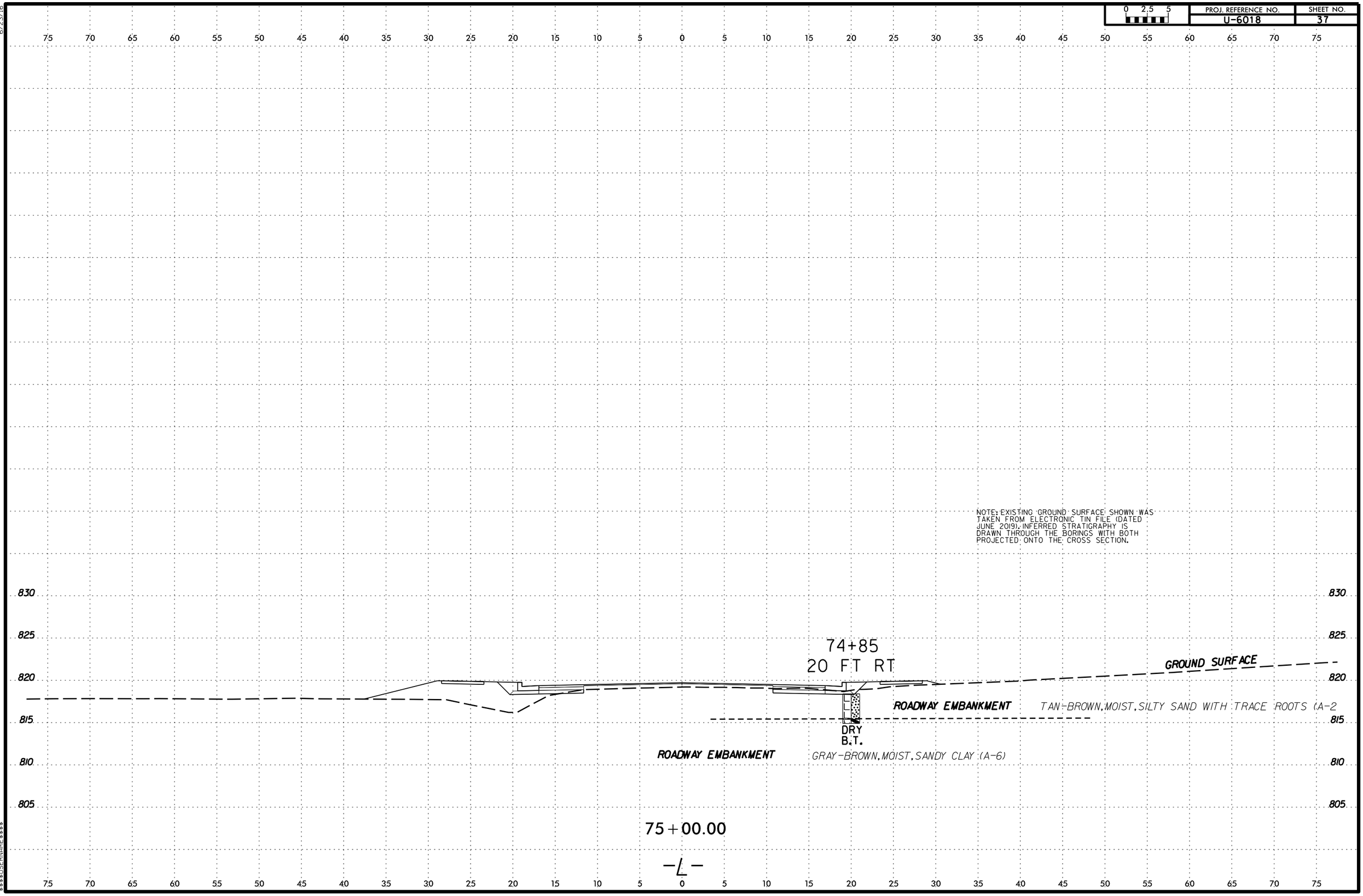
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	37



$$$$$$SYSTIME$$$$$$
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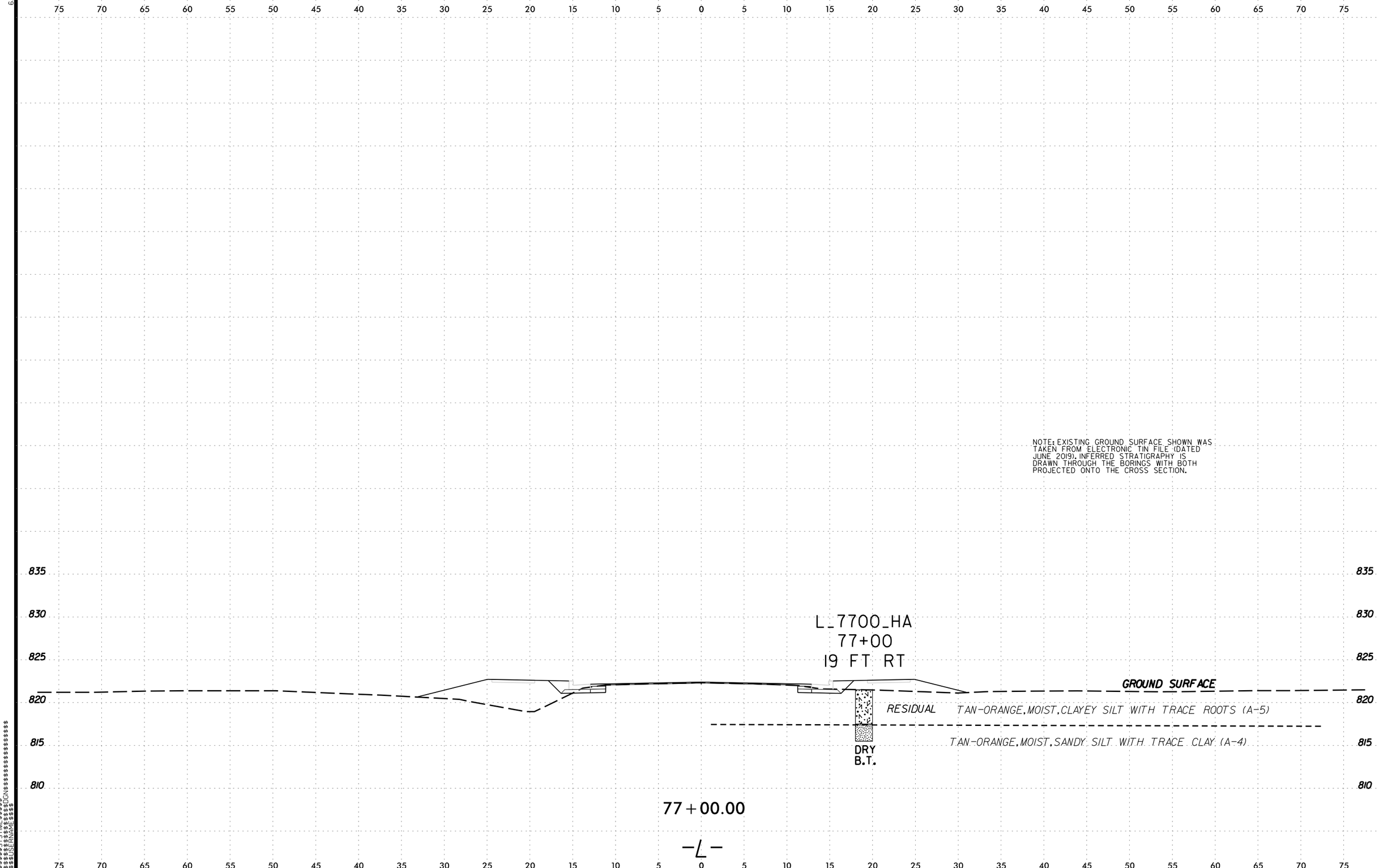
$$$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	38



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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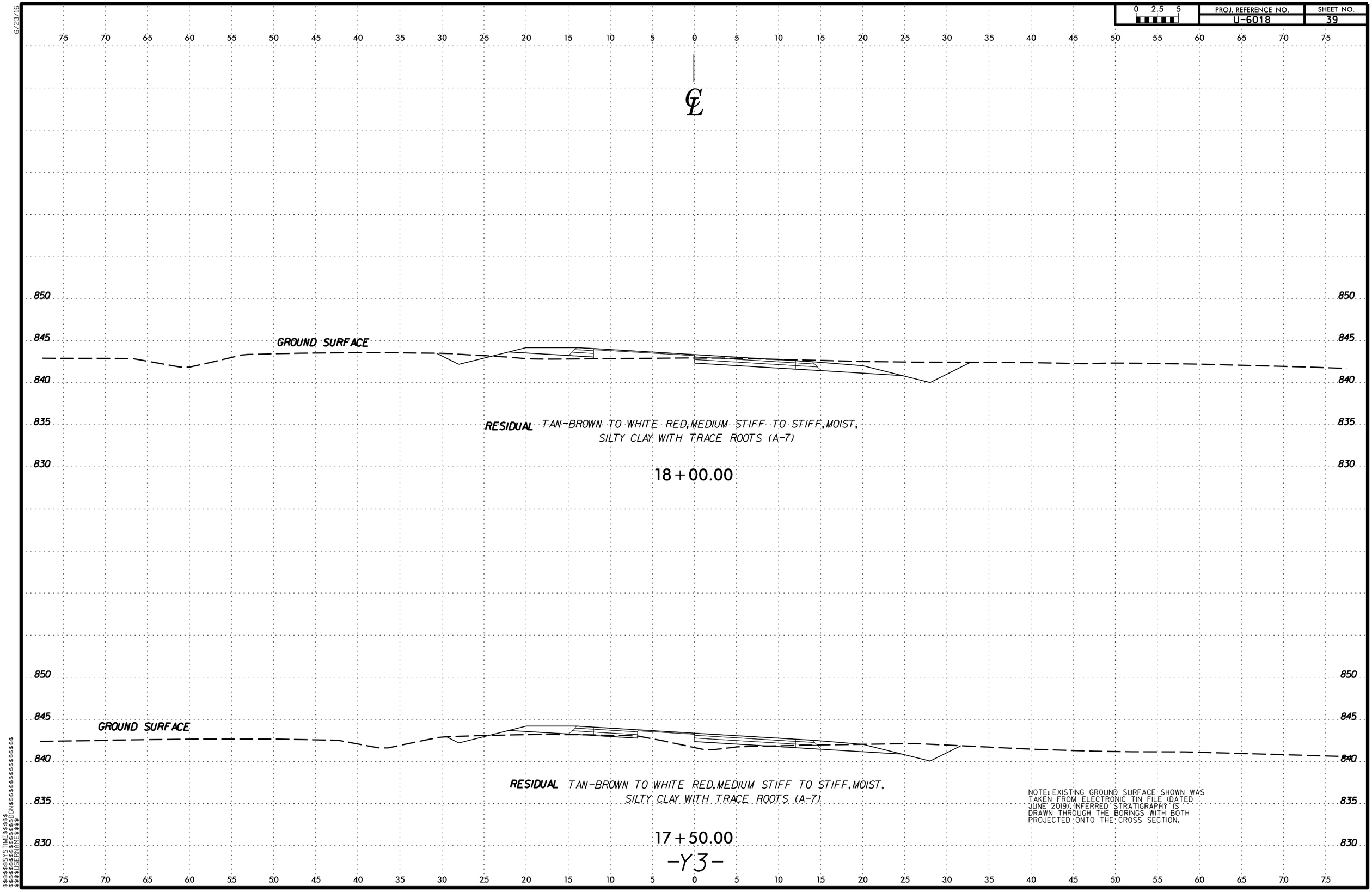
$$$$$$USERNAME$$$$$$



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$$
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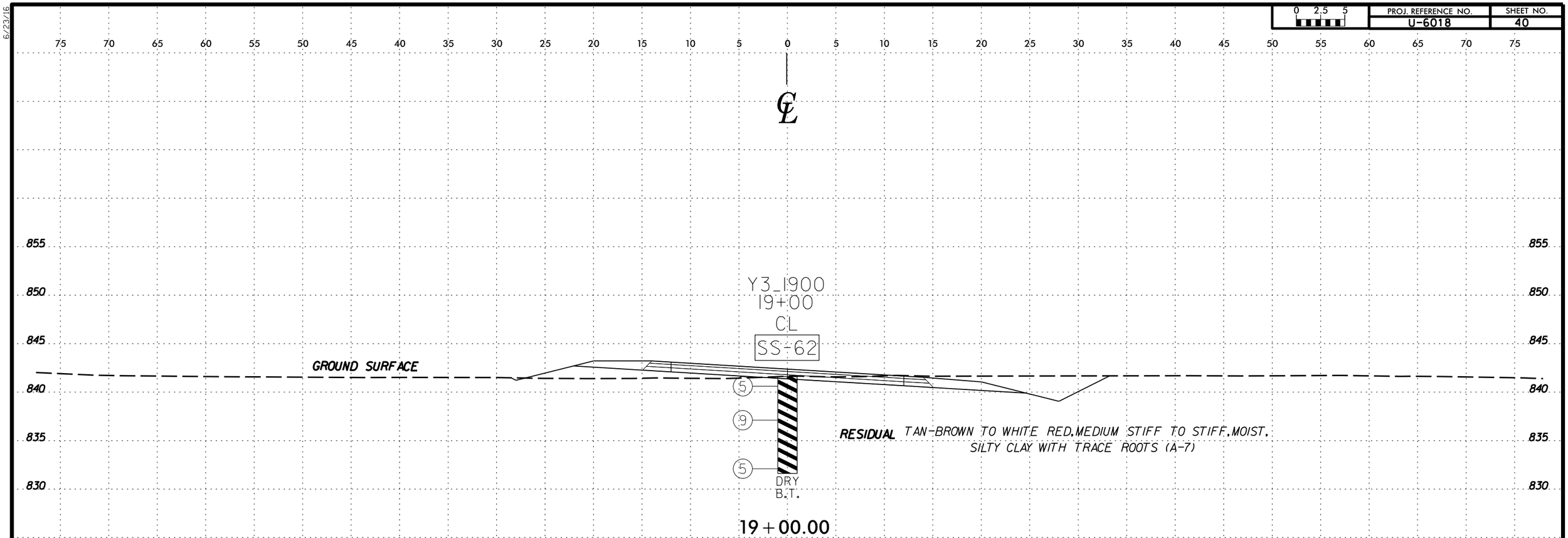

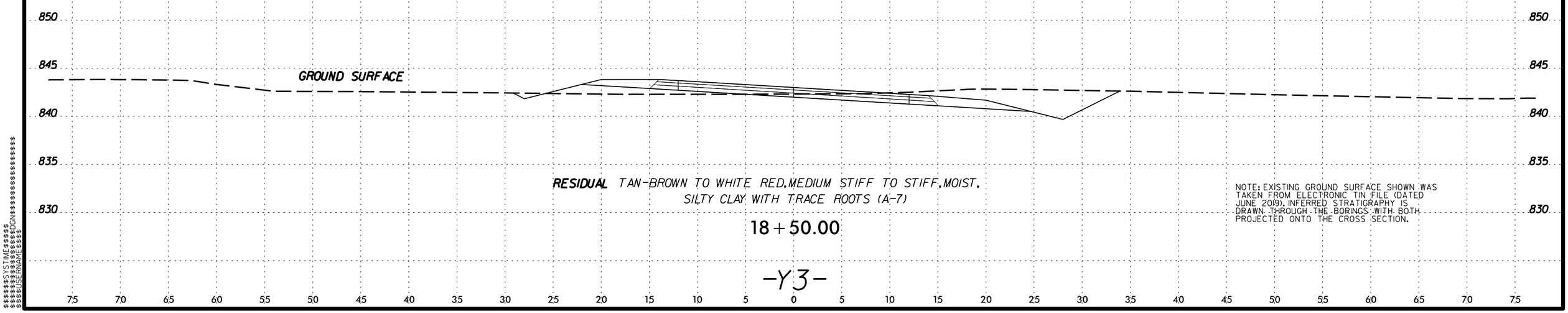

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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6/23/16
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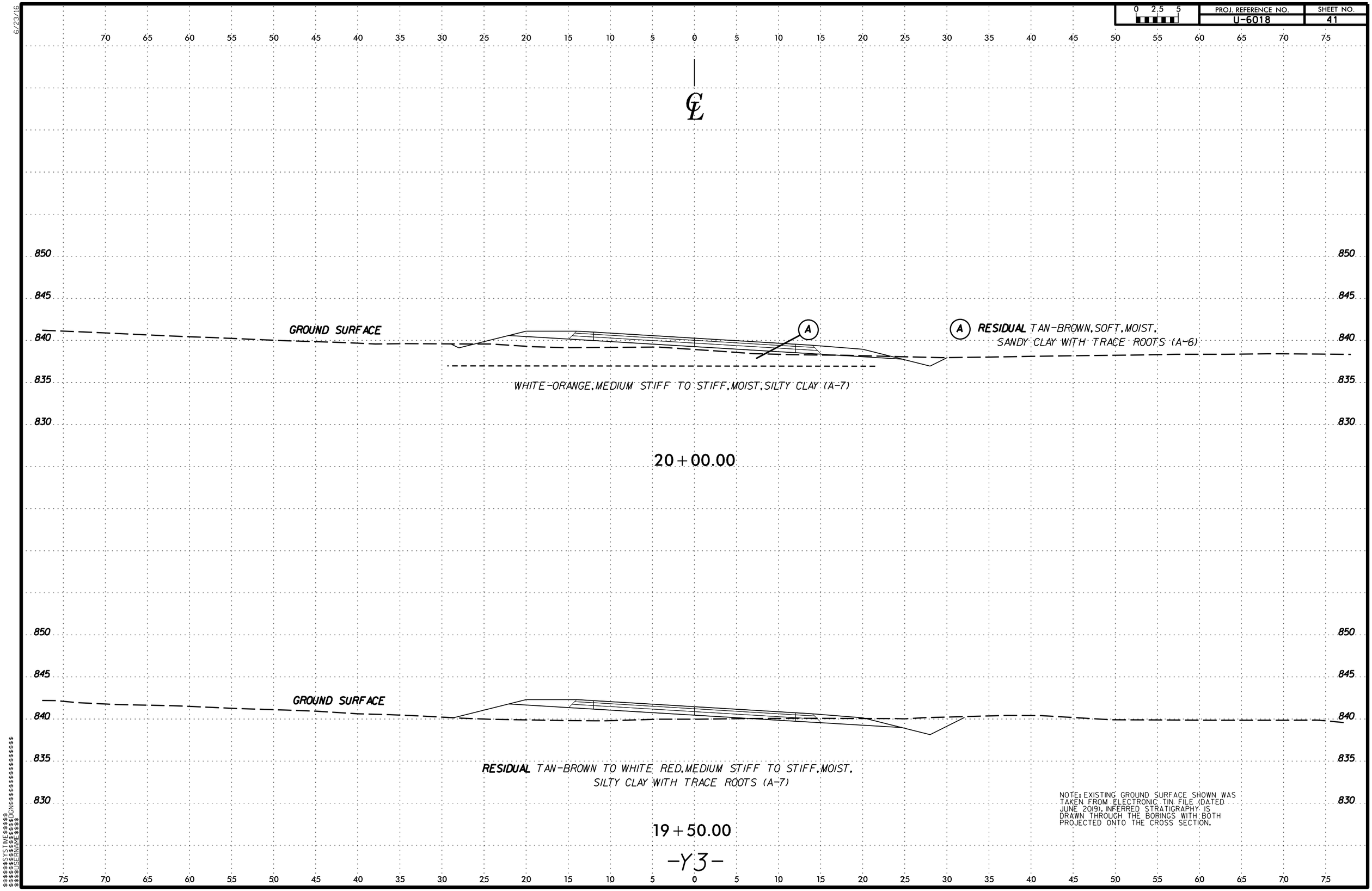

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$$
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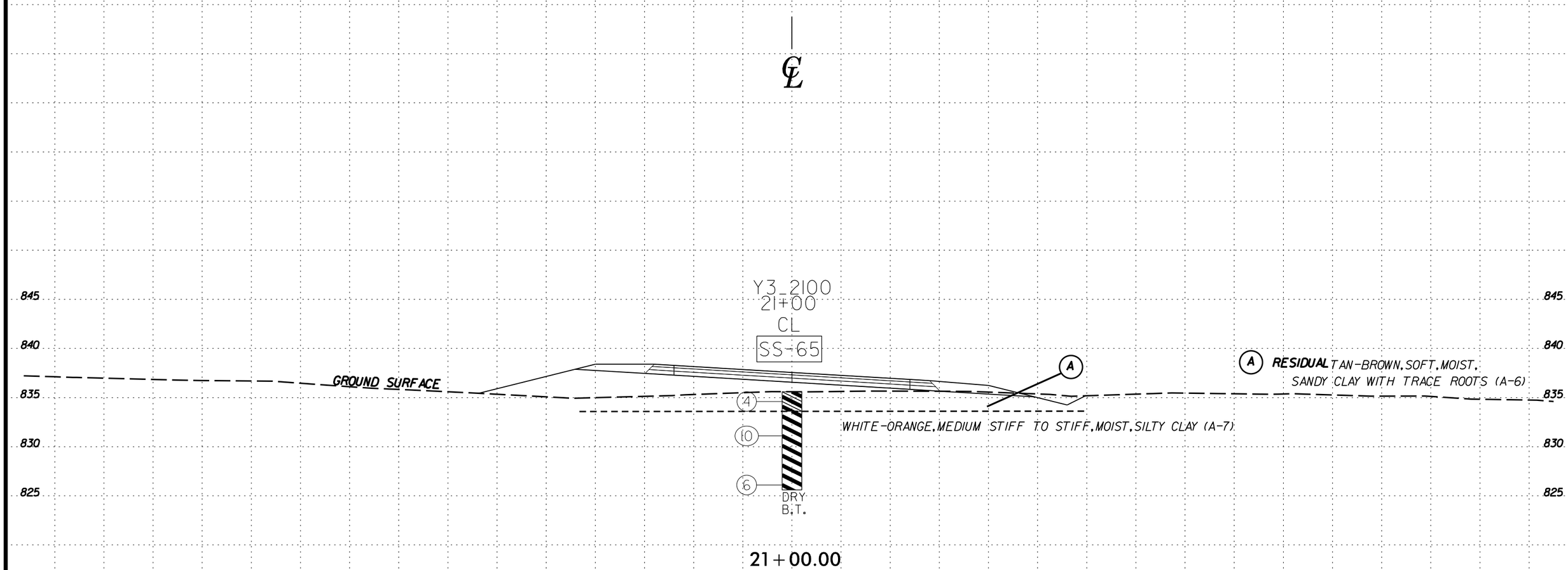

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$$
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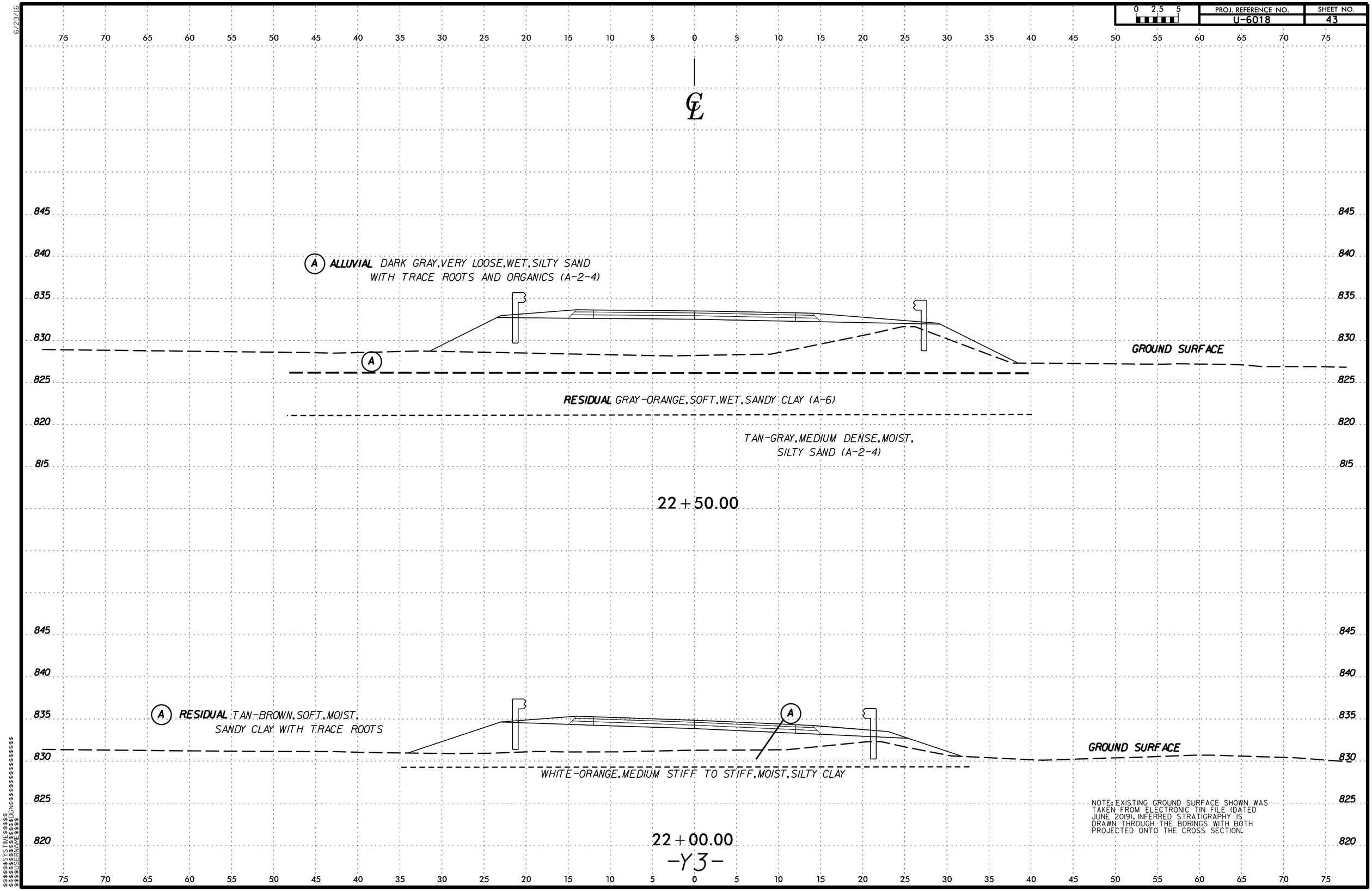
$$$$USERNAME$$$$



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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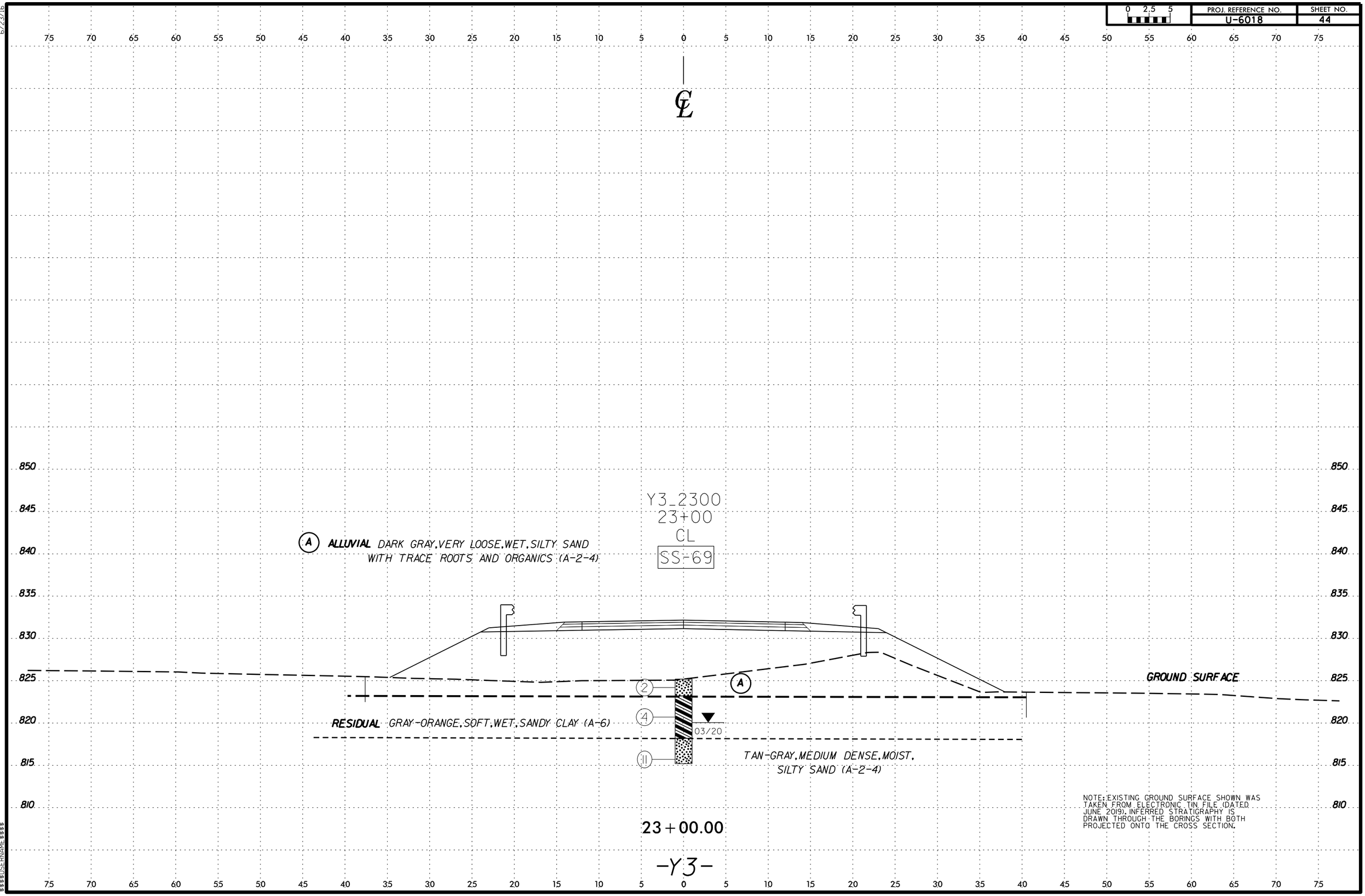
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	44



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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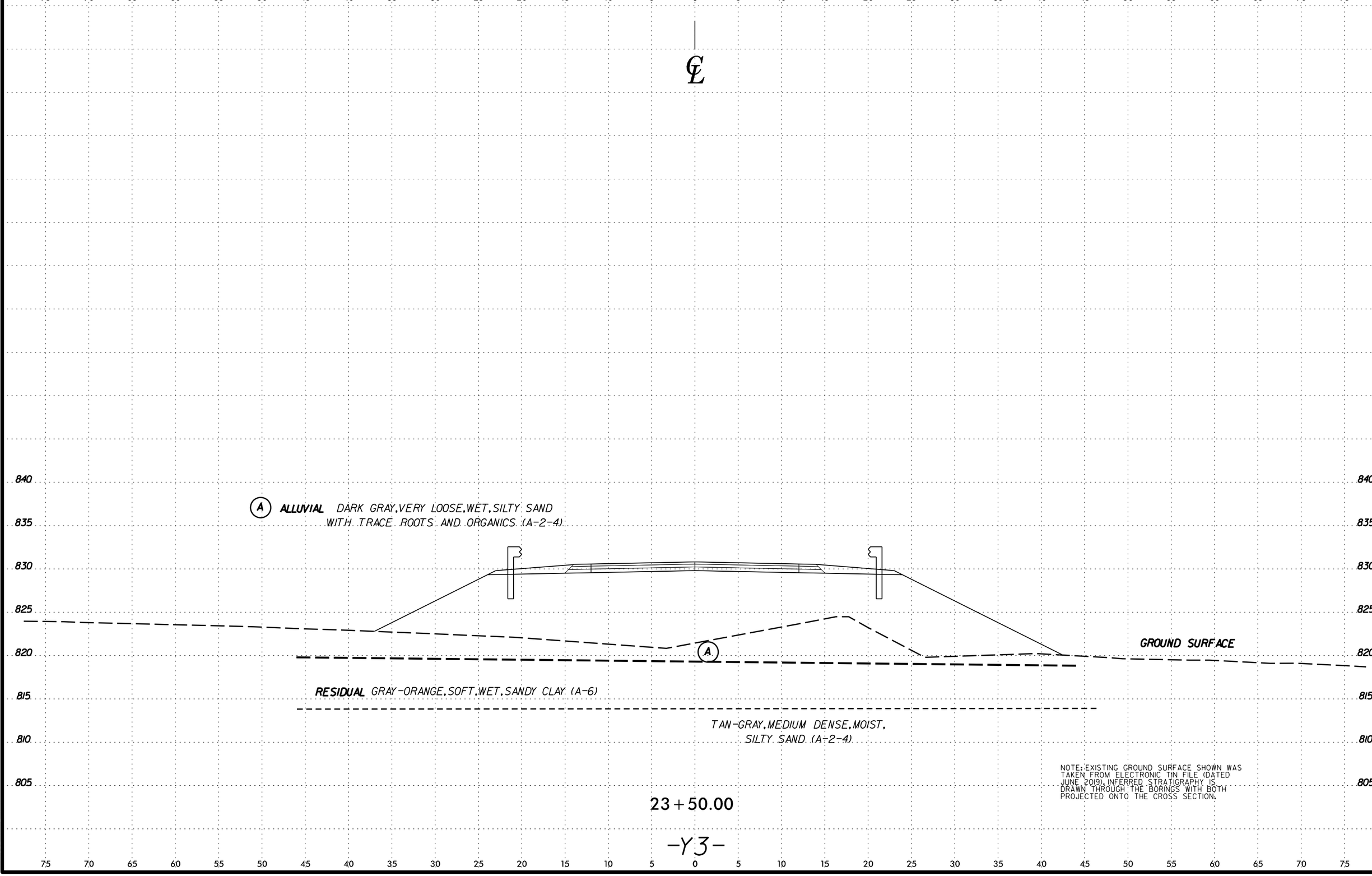

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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$$$$$$$SYSTIME$$$$$$
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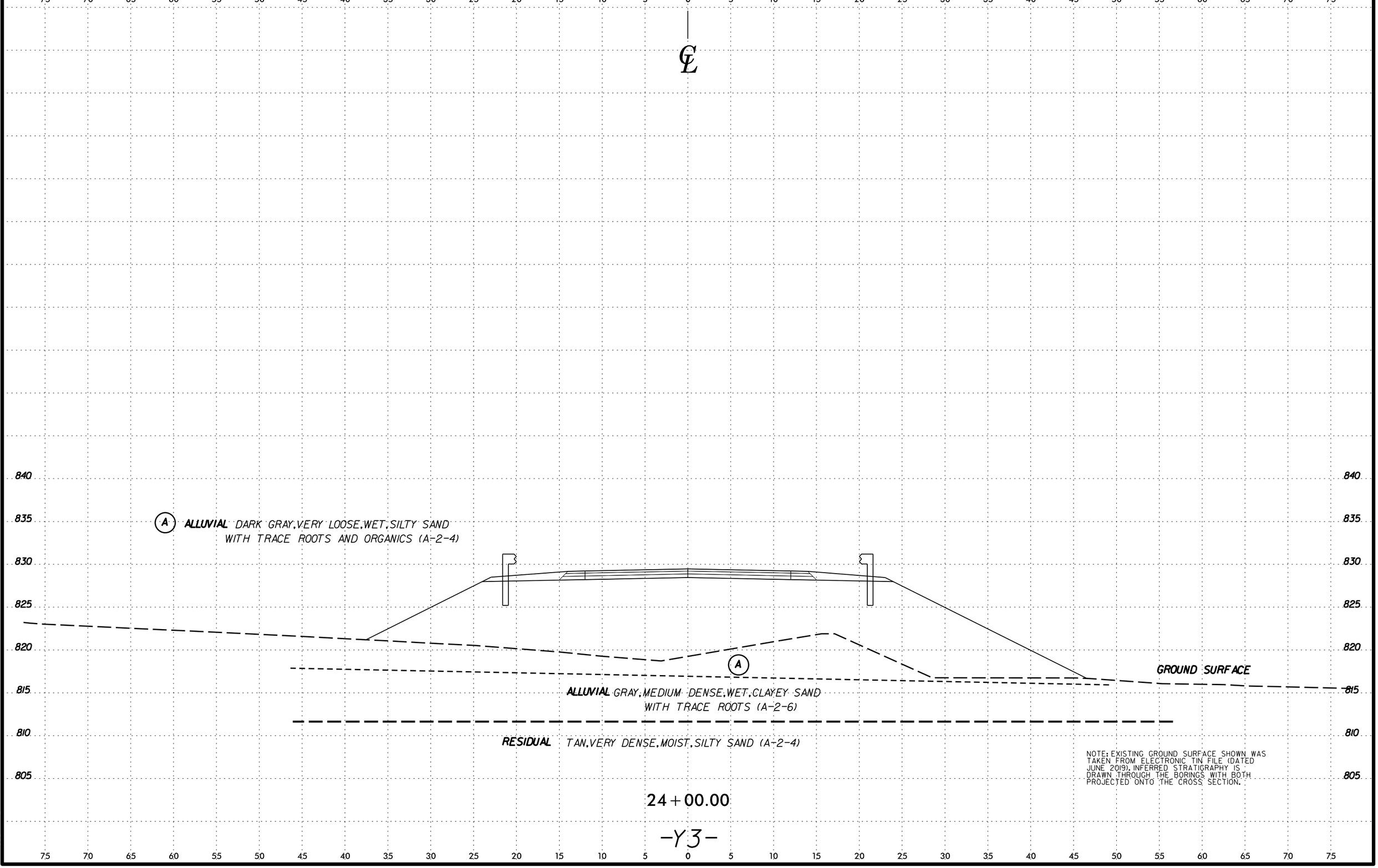
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-6018	46

0 2.5 5



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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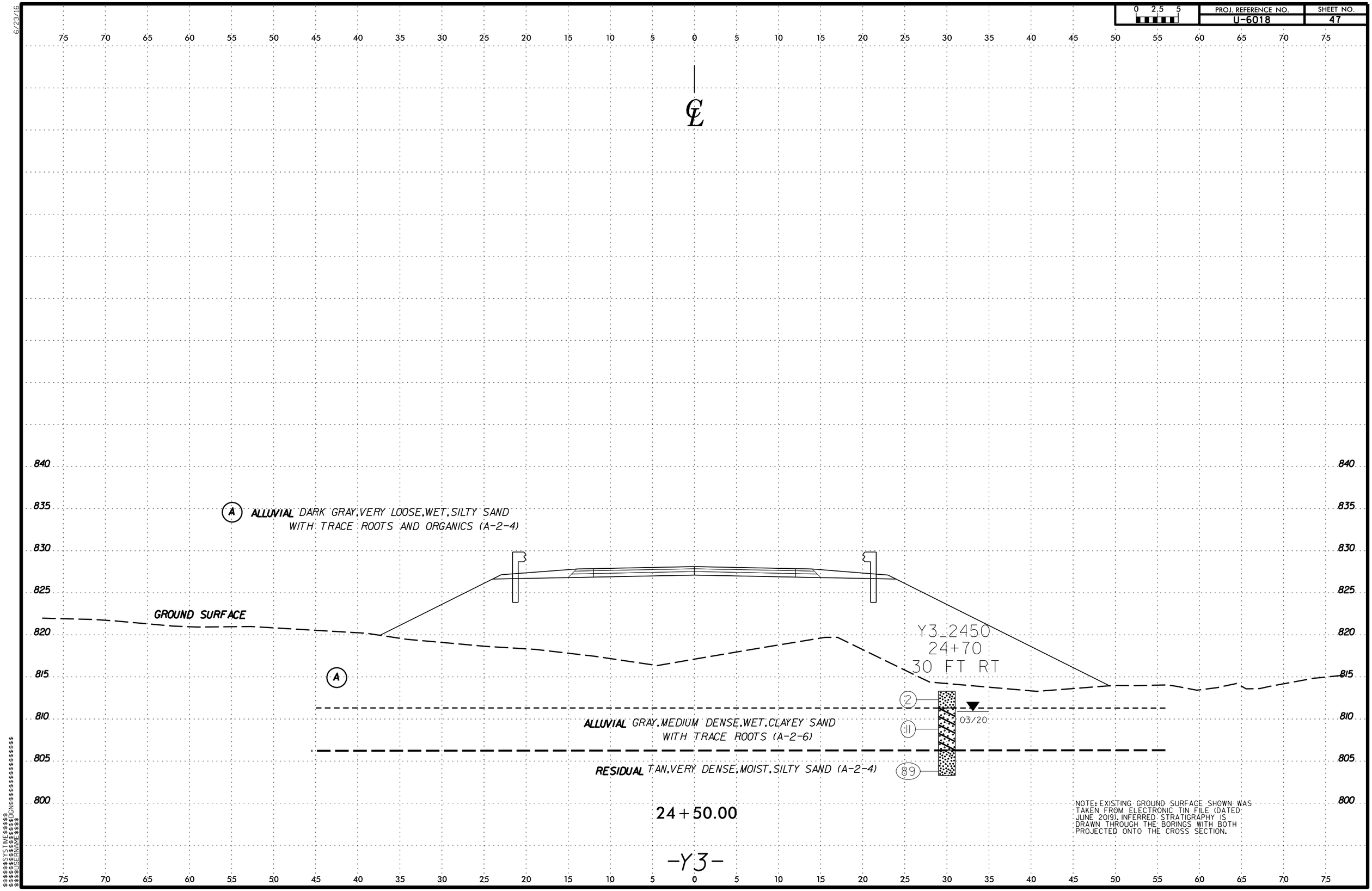
6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	47



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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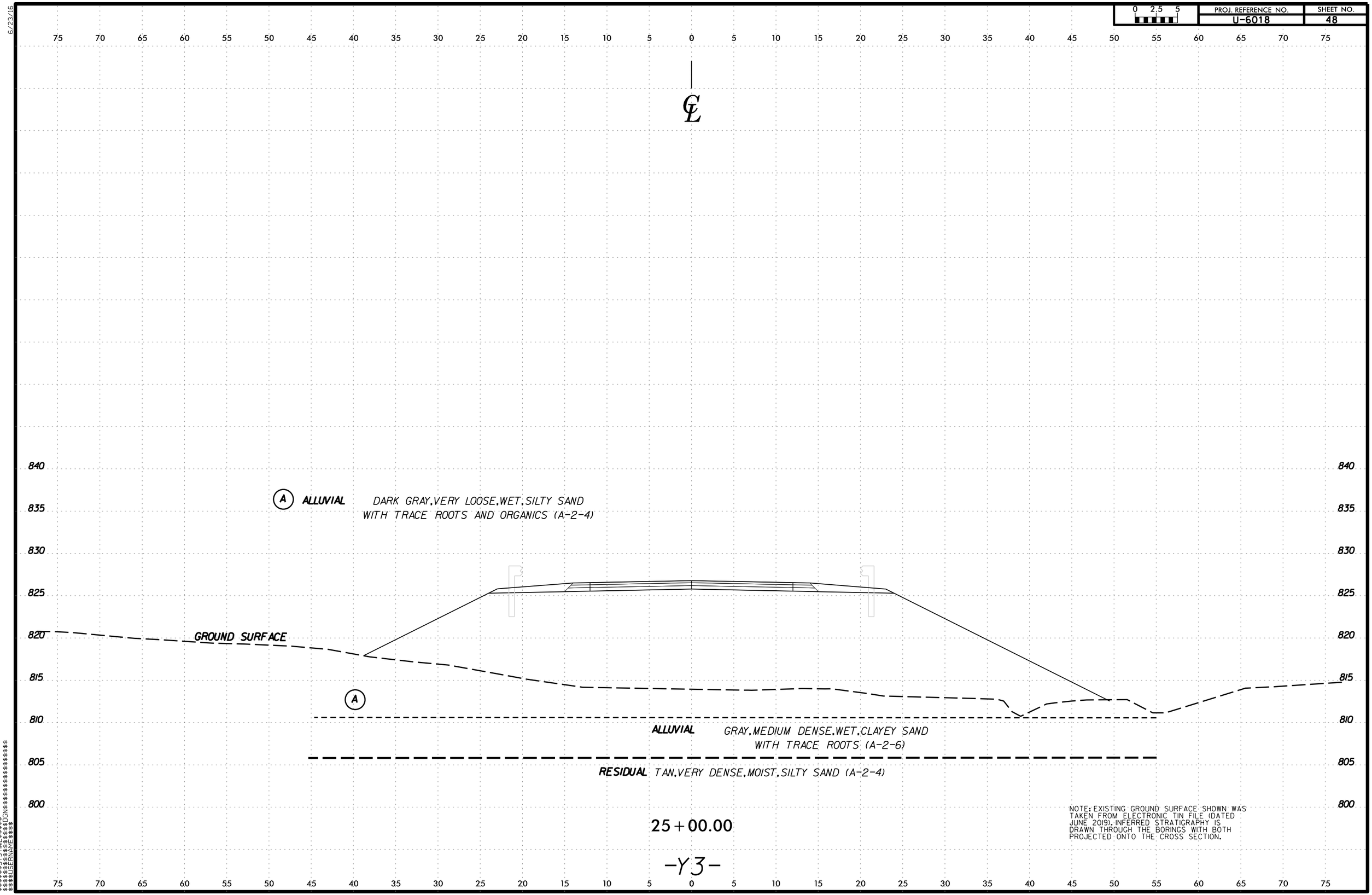
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	48



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$$
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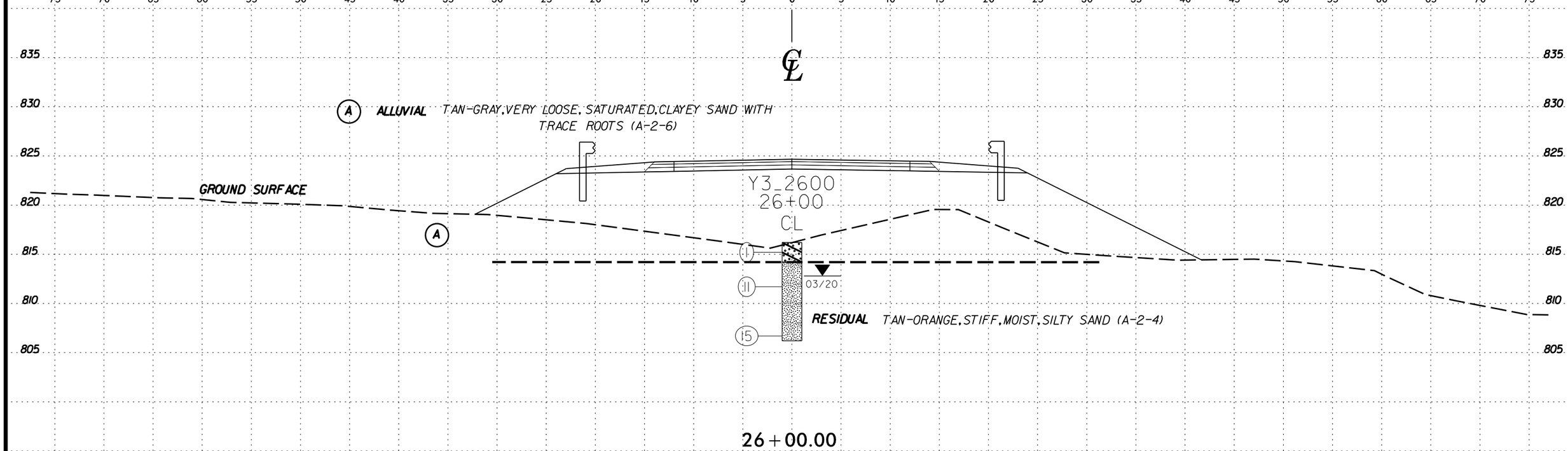
PROJ. REFERENCE NO.	SHEET NO.
U-6018	49



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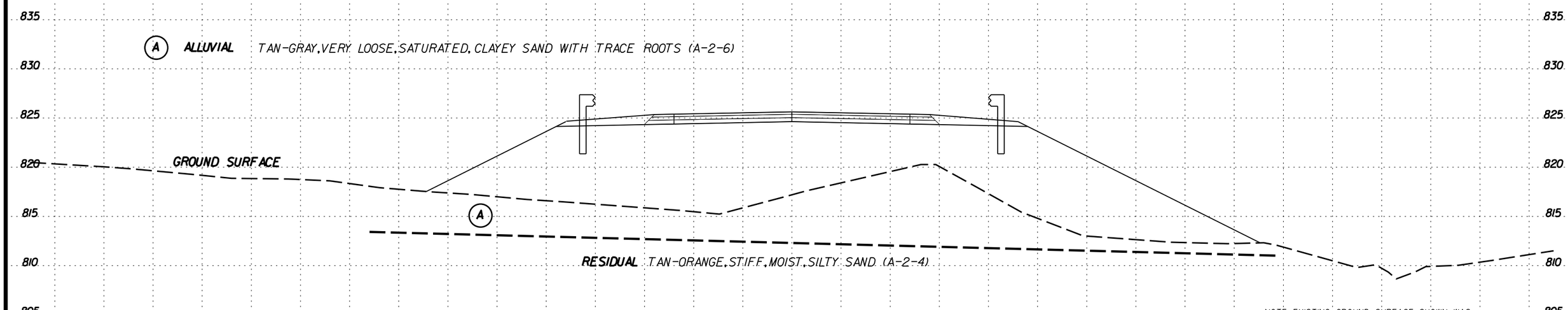

25+50.00

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-Y3-

6/23/16

$$$$$$$SYSTIME$$$$$$
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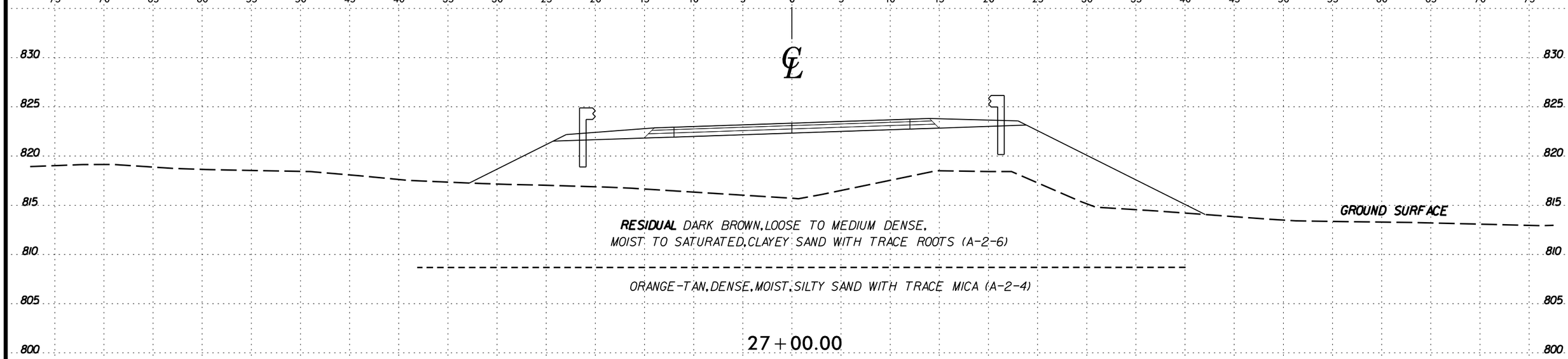

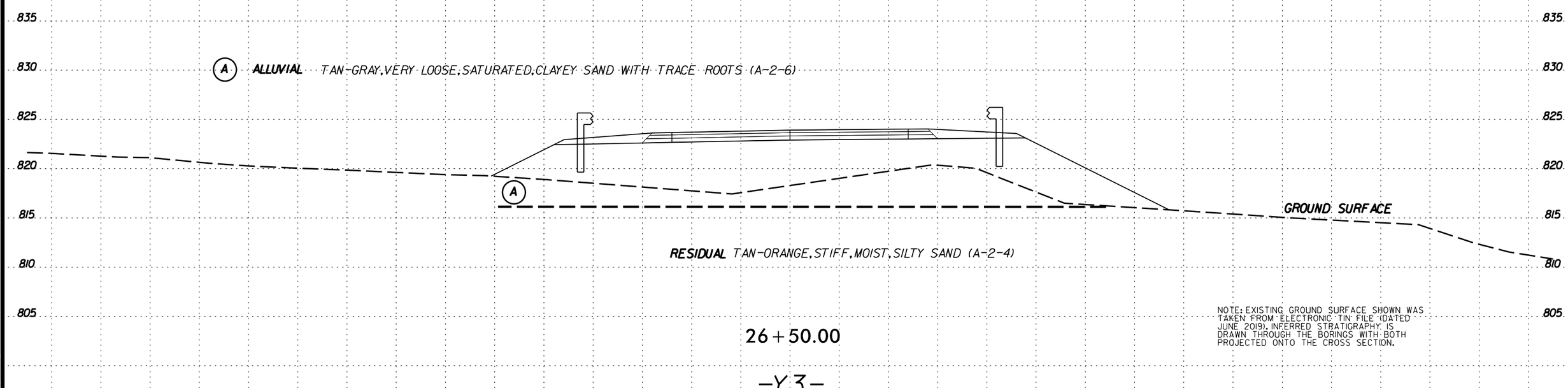

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-Y3-

6/23/16
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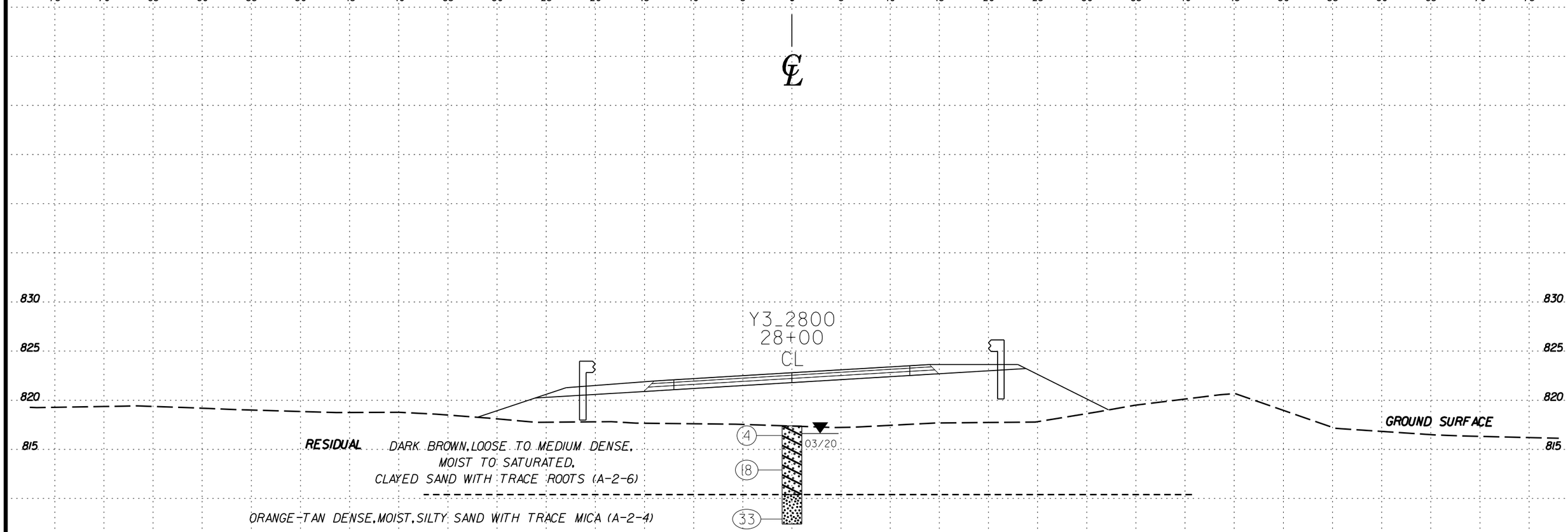

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NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-Y3-

6/23/16
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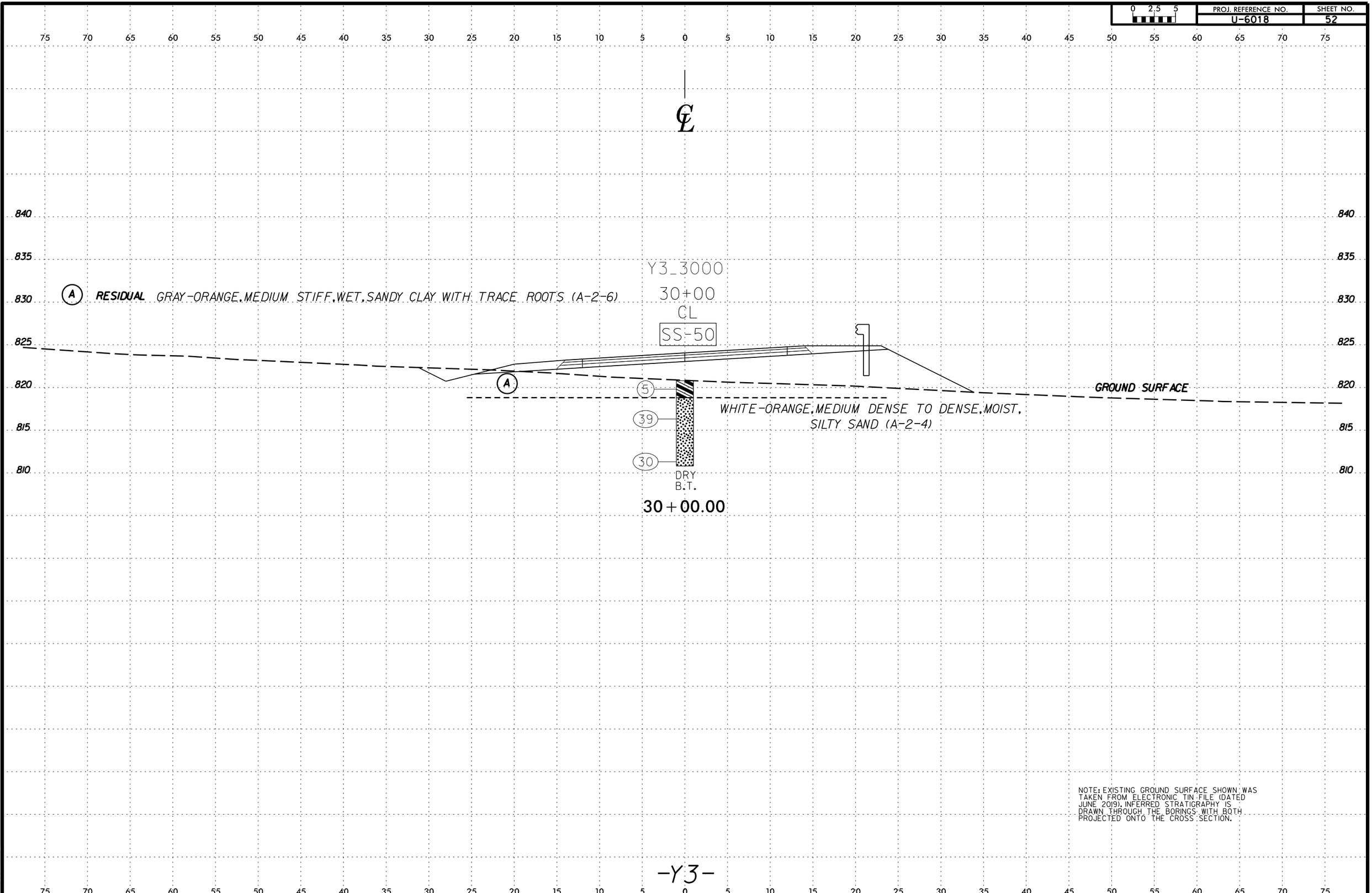

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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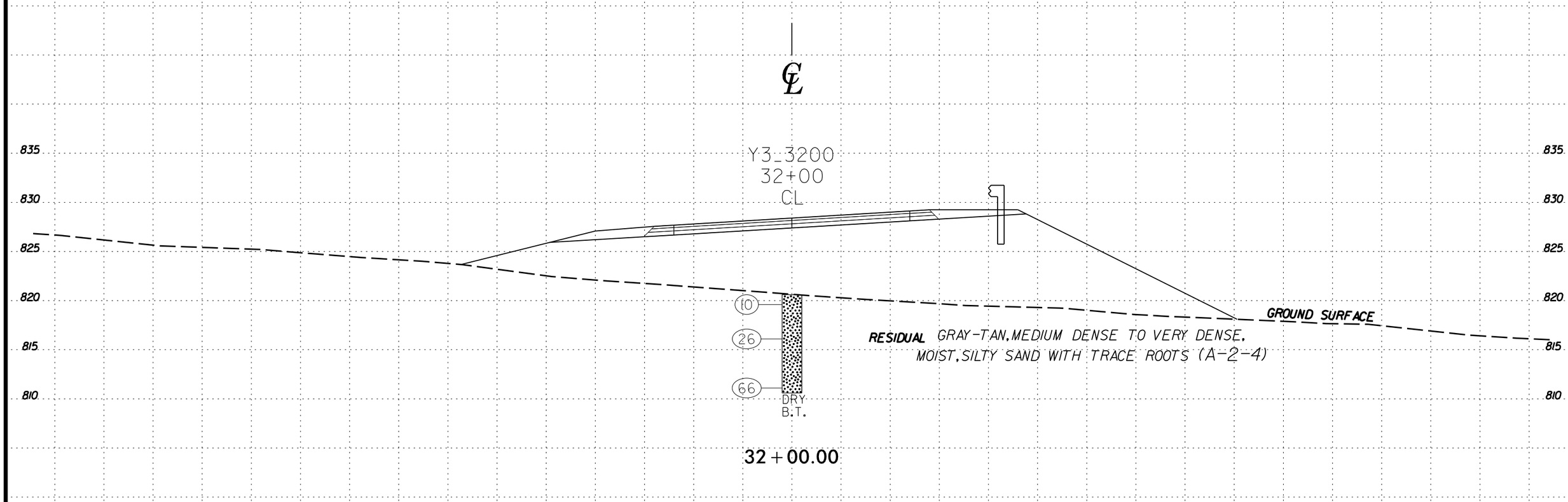
$$$$USERNAME$$$$



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-Y3-

6/23/16
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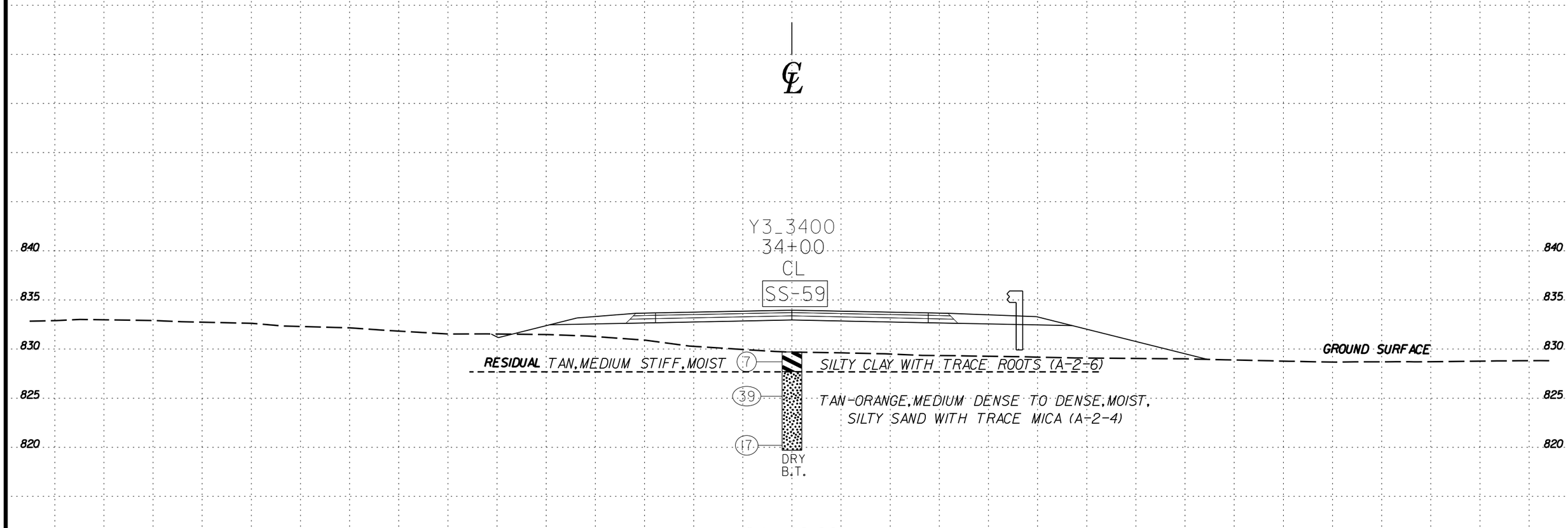

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

-Y3-

6/23/16
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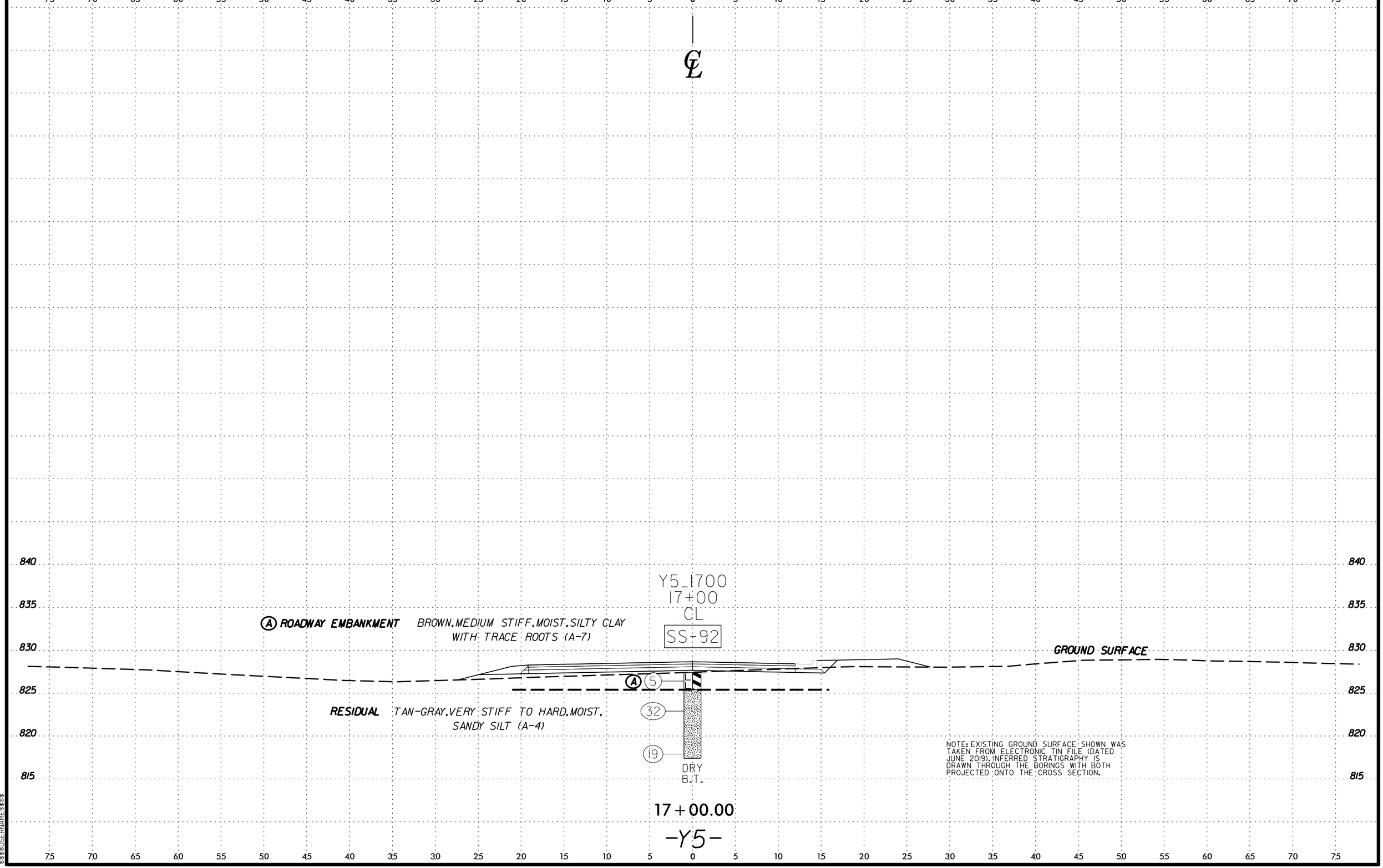
$$$$USERNAME$$$$



6/23/16
$$$$$$$SYSTIME$$$$$
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$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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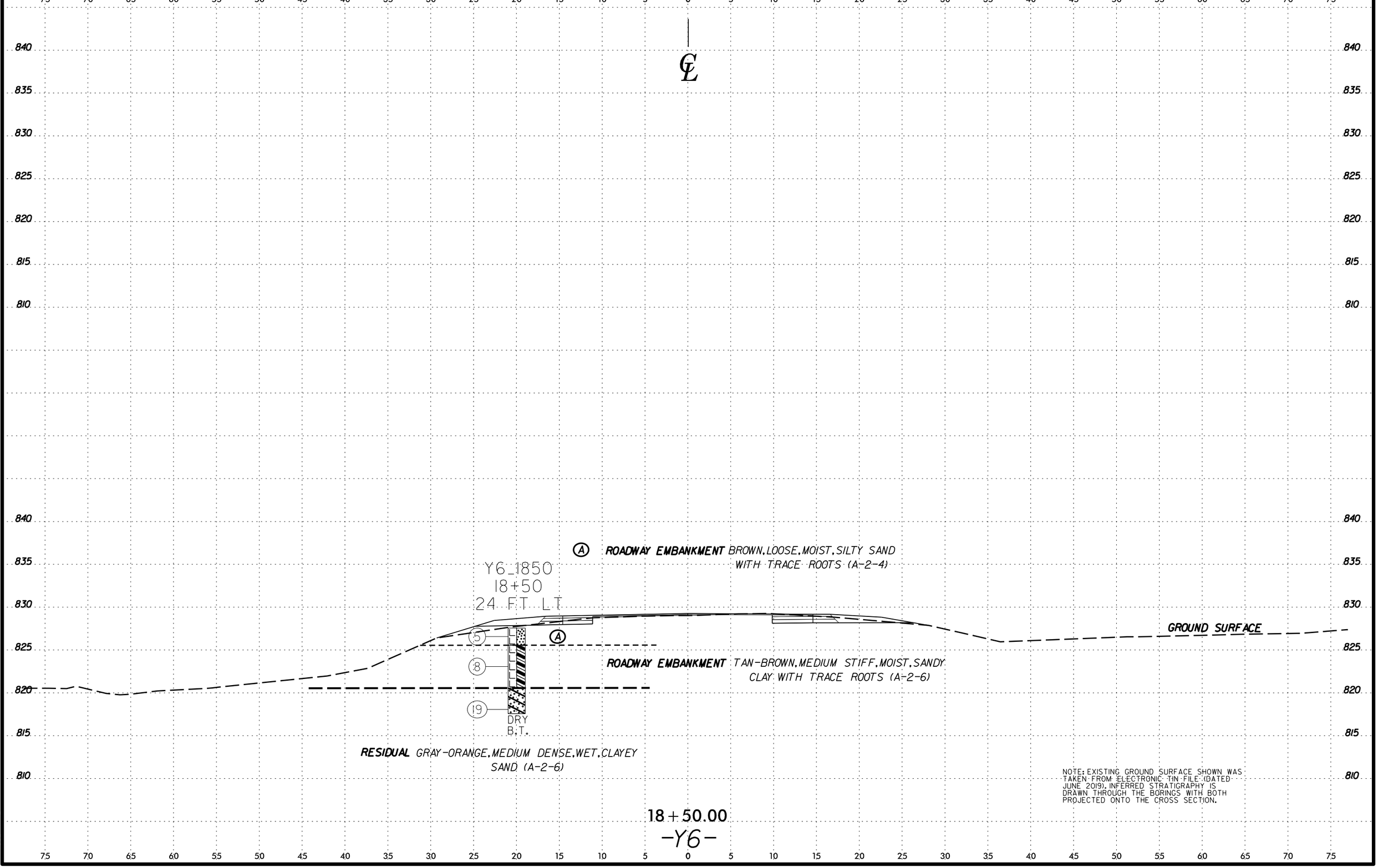

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$$
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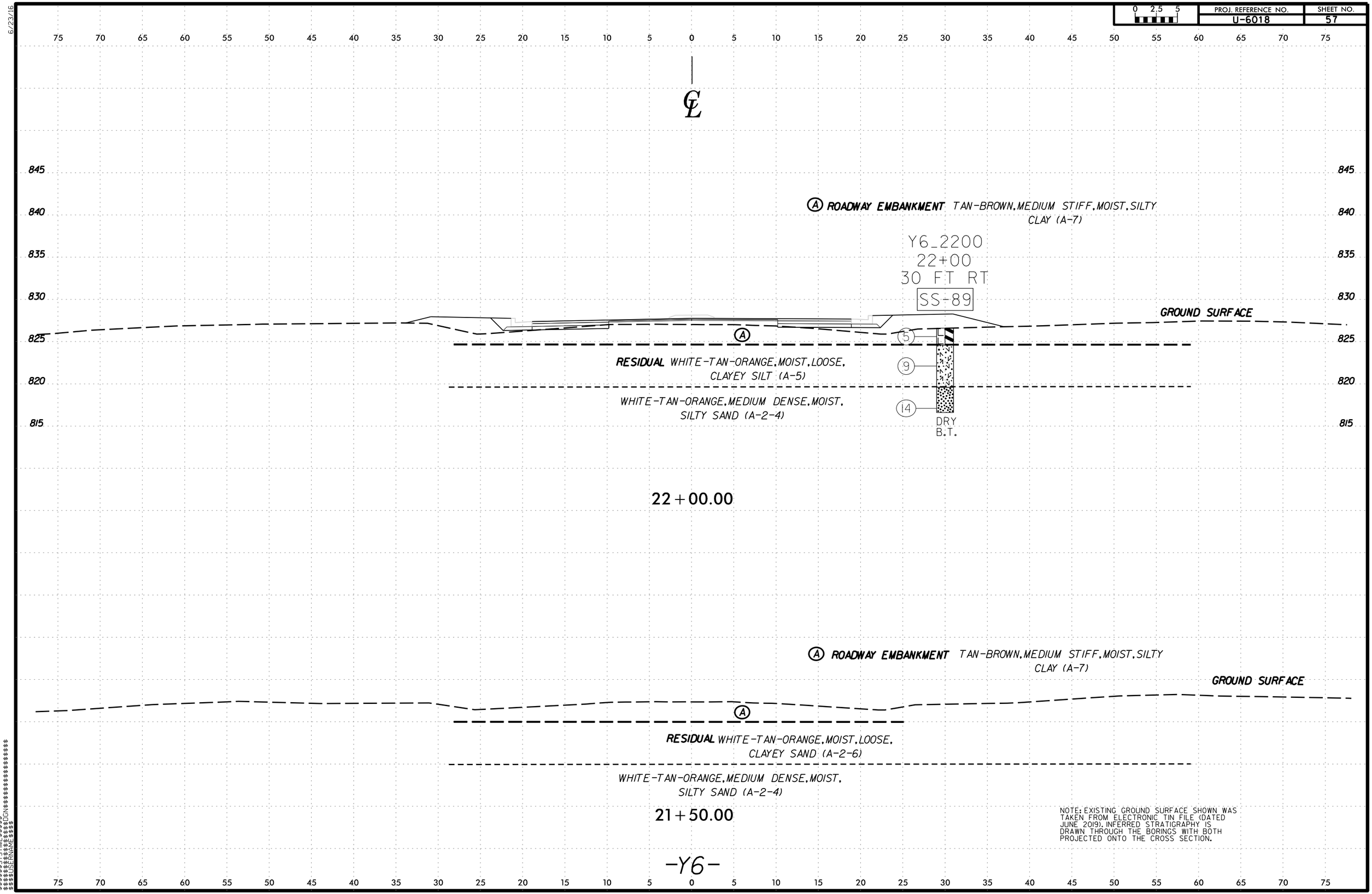

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

6/23/16
$$$$$$$SYSTIME$$$$$
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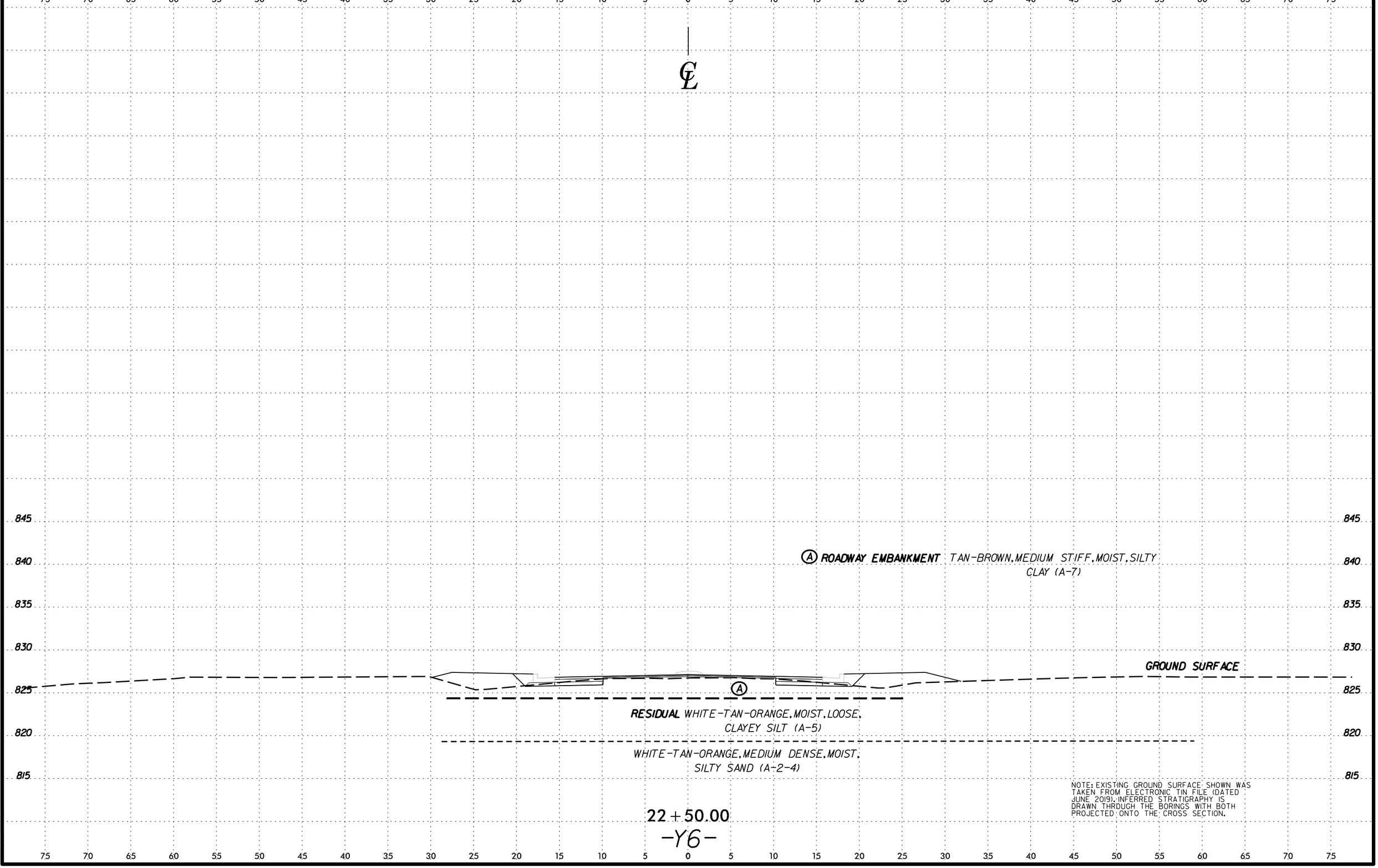
$$$$USERNAME$$$$

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	58



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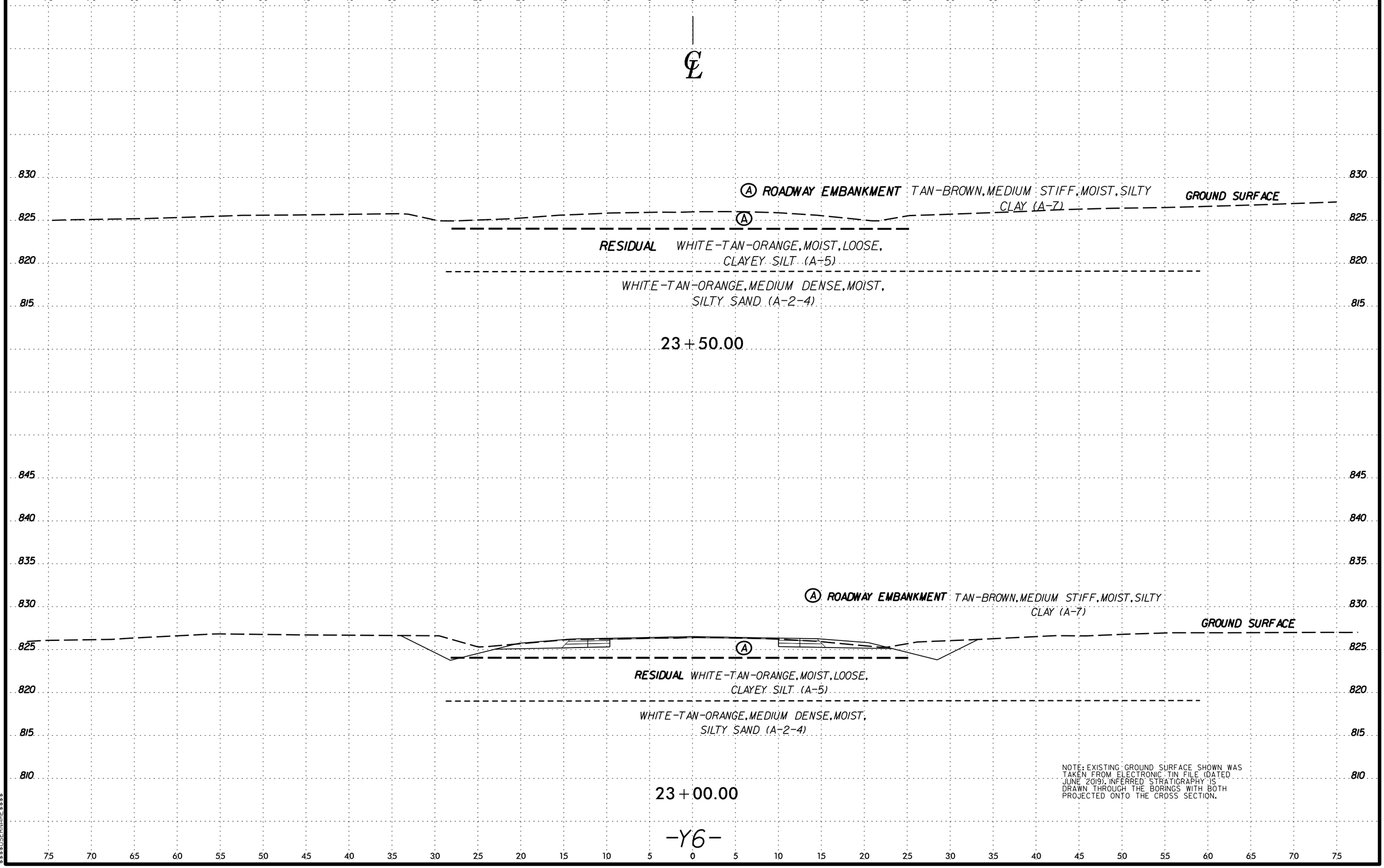

6/23/16

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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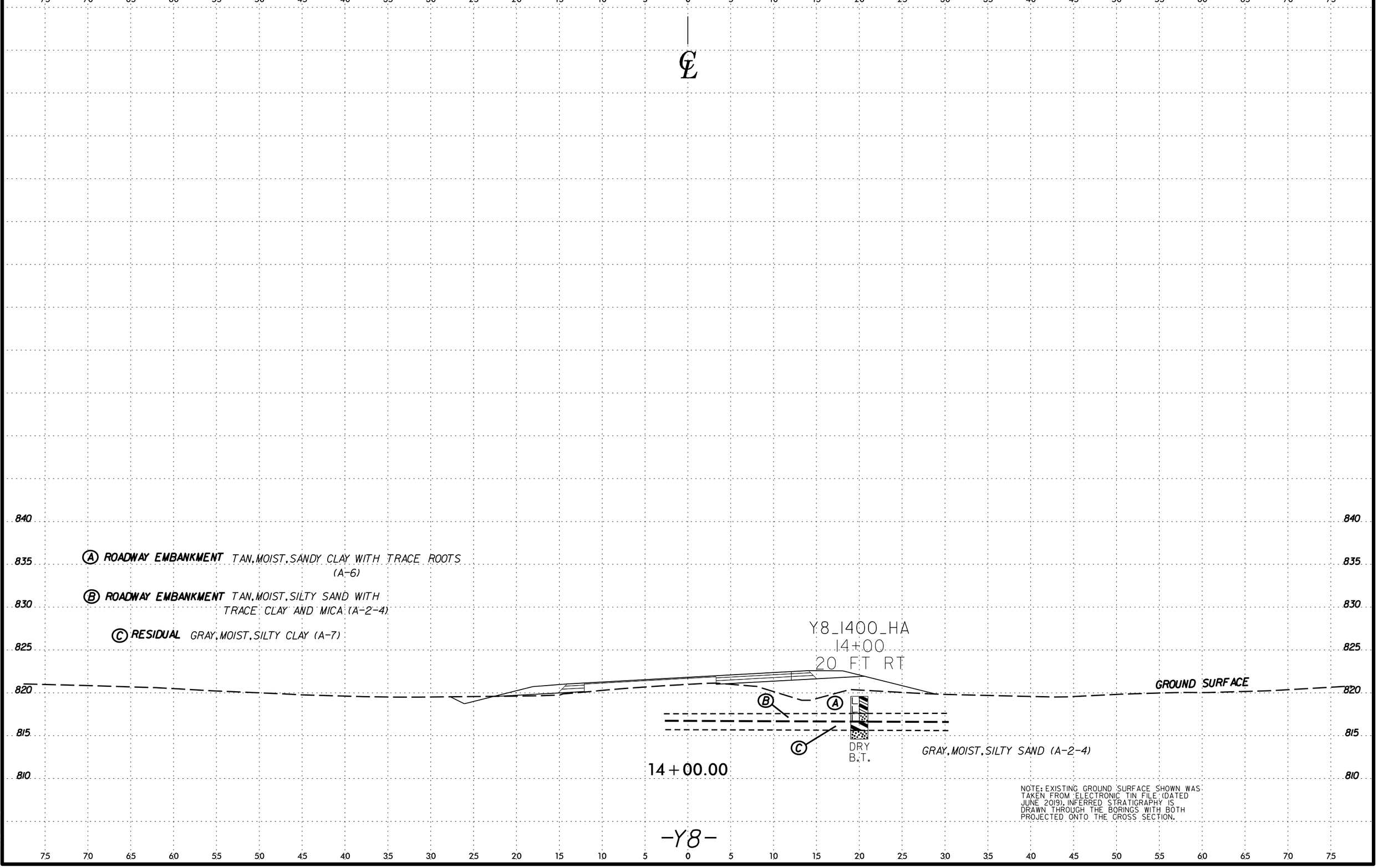

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6/23/16

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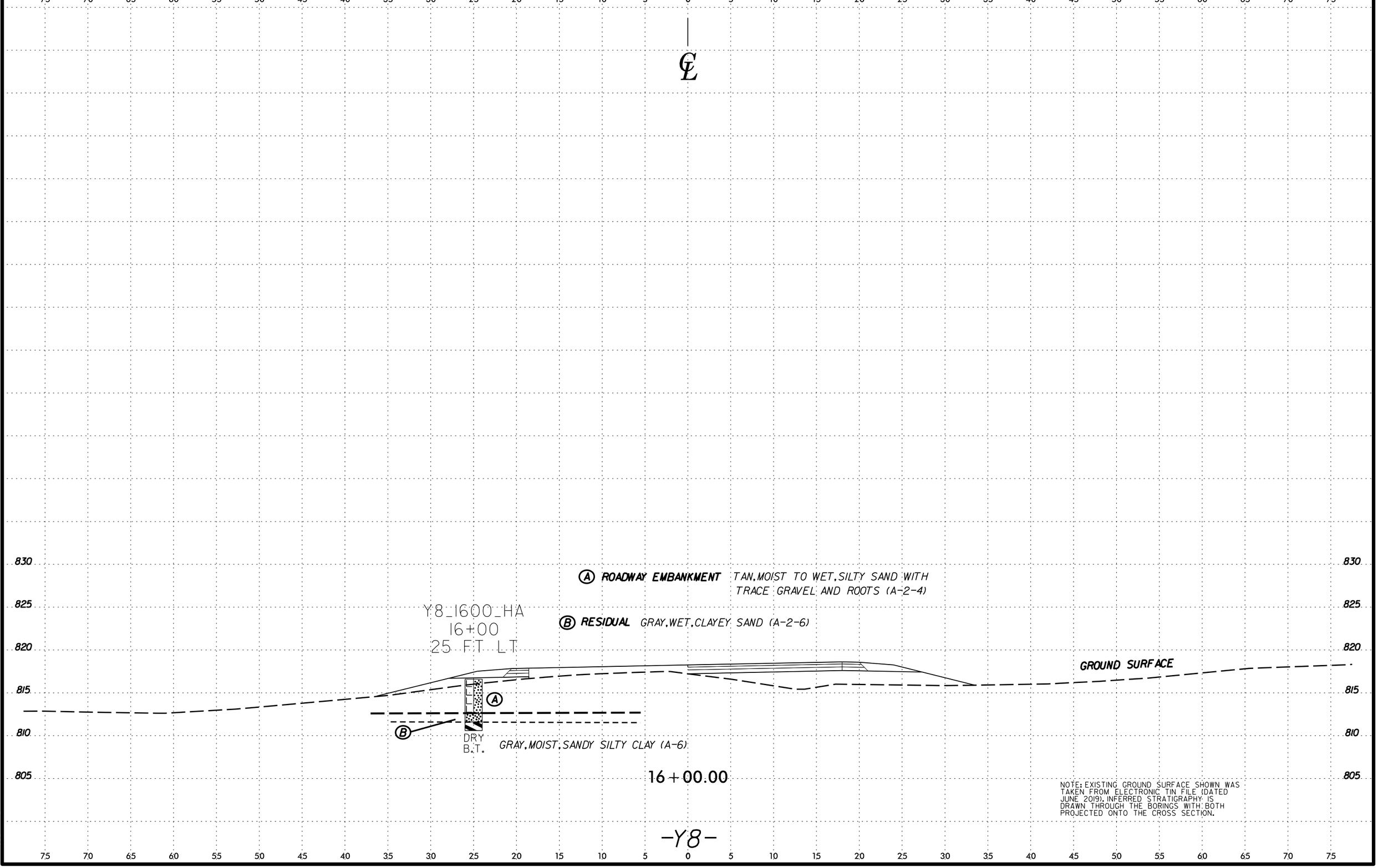

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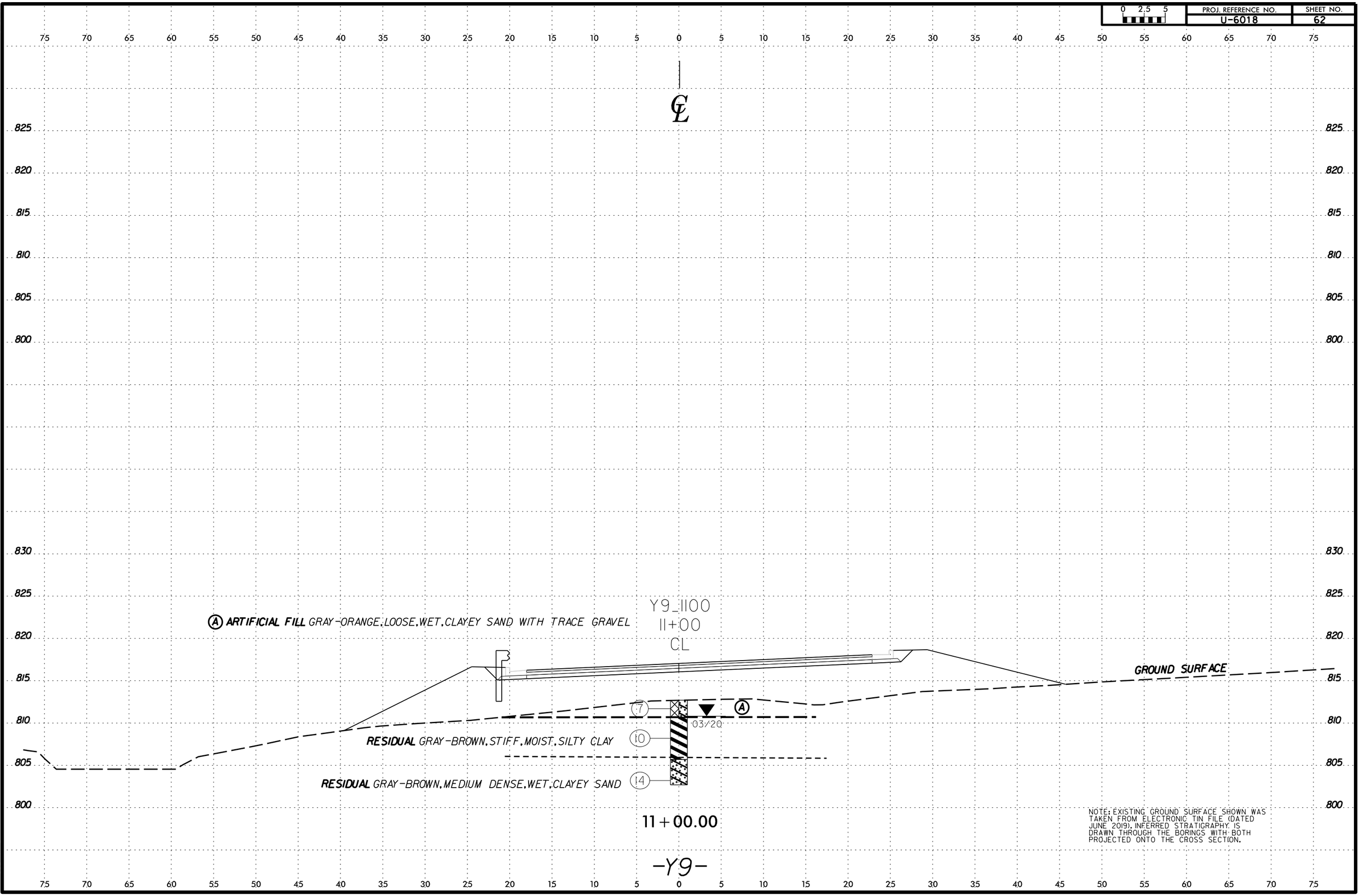

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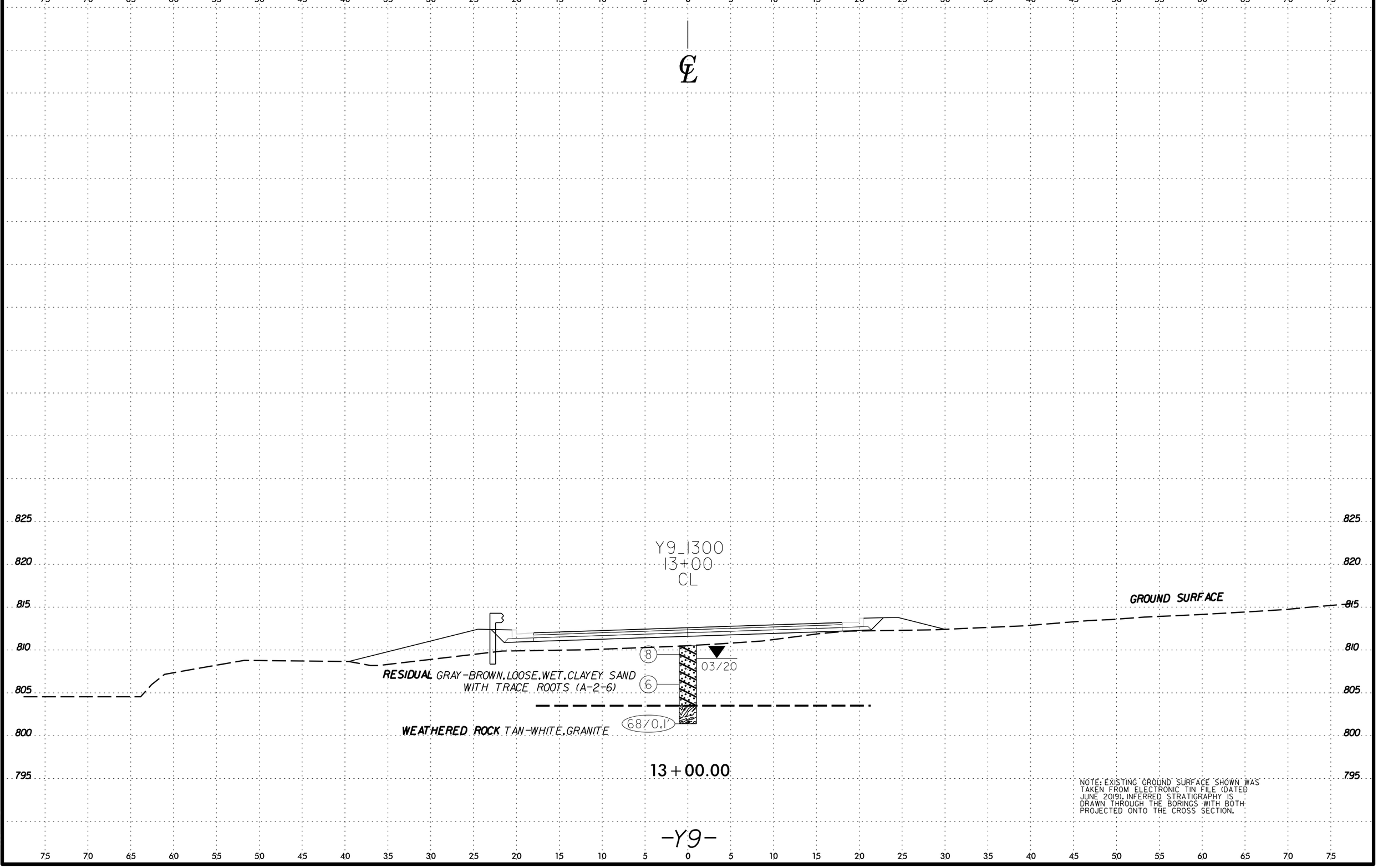
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
U-6018	63

0 2.5 5



NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

$$$$$$$SYSTIME$$$$$$
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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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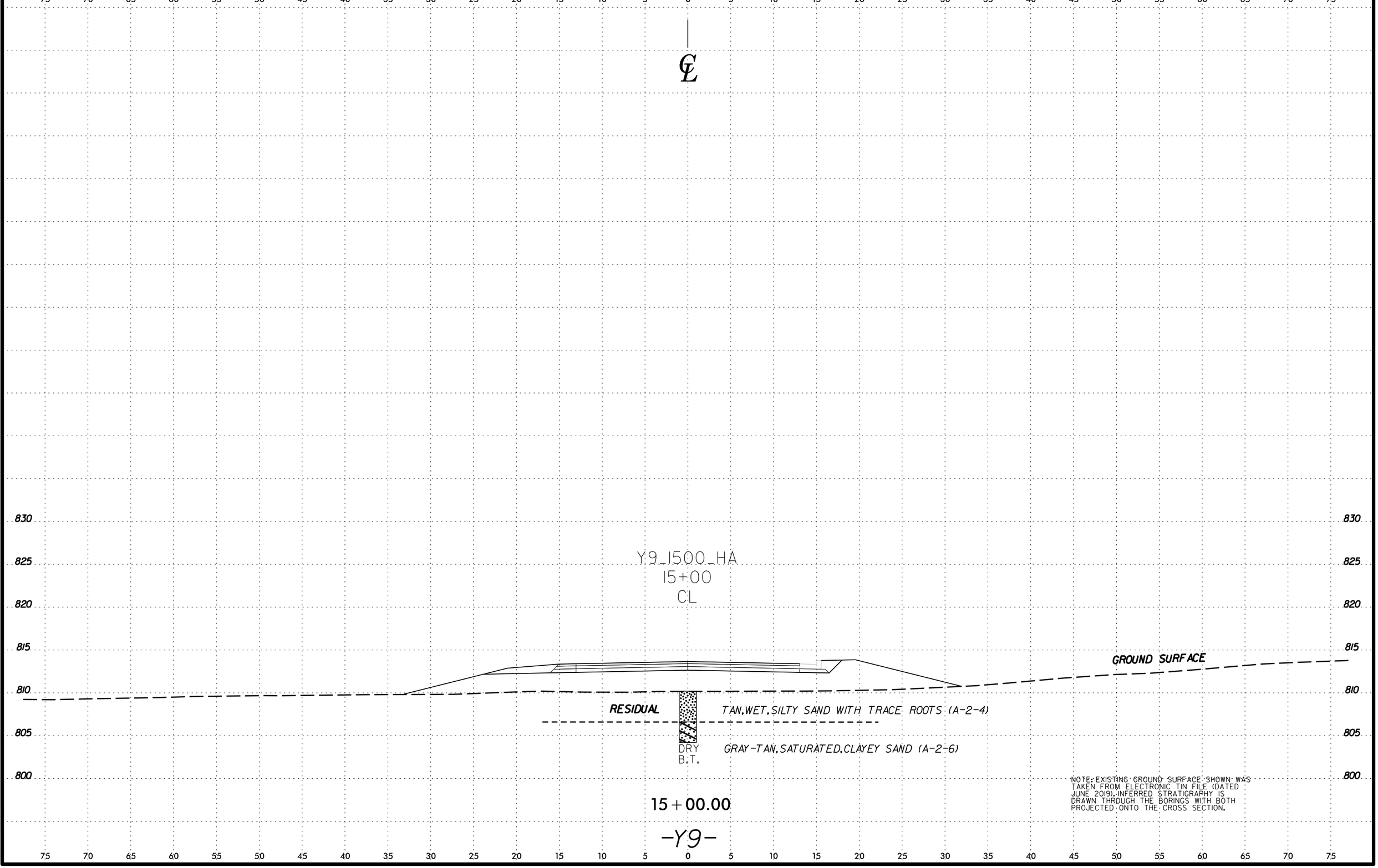

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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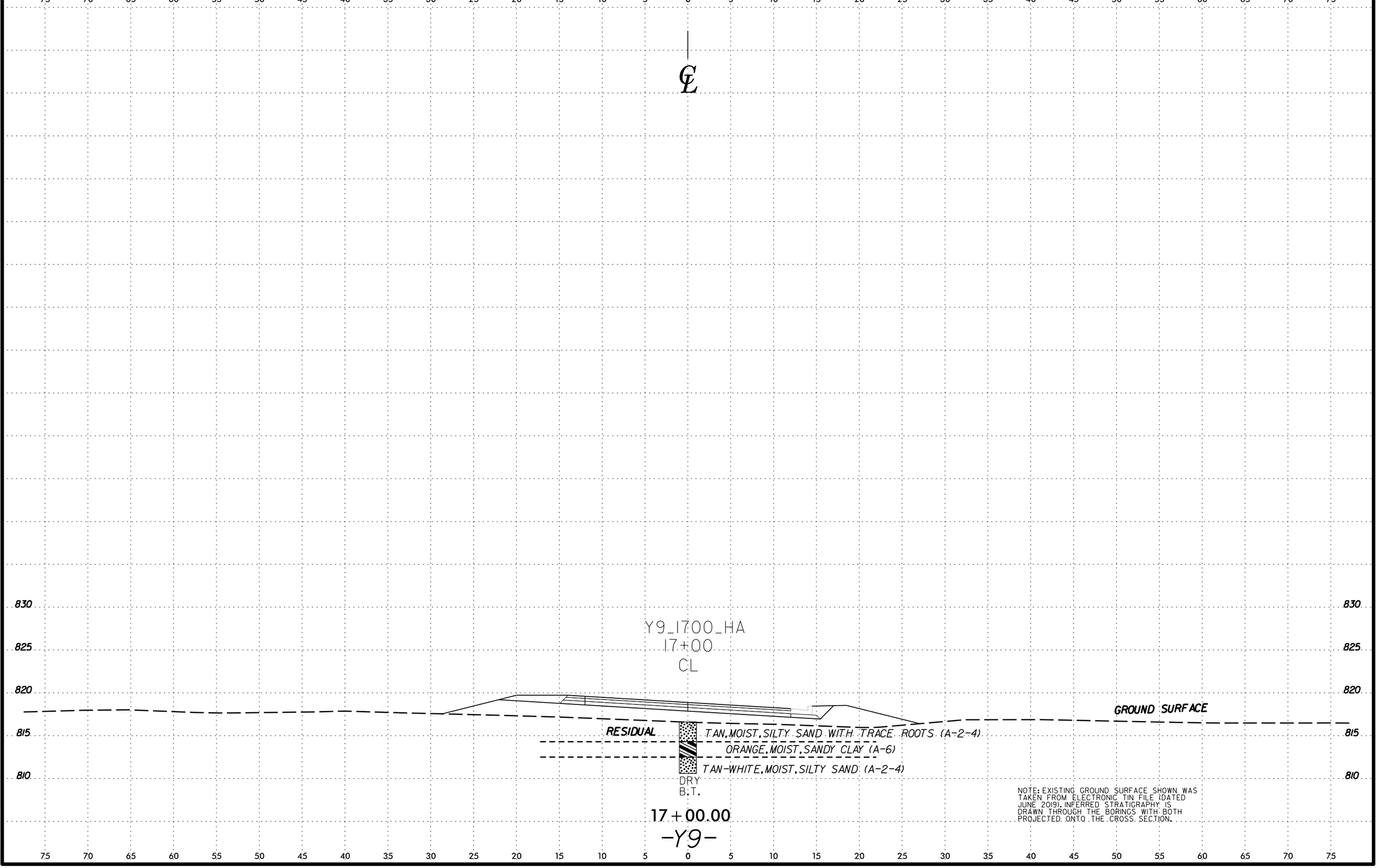

NOTE: EXISTING GROUND SURFACE SHOWN WAS TAKEN FROM ELECTRONIC TIN FILE (DATED JUNE 2019). INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION.

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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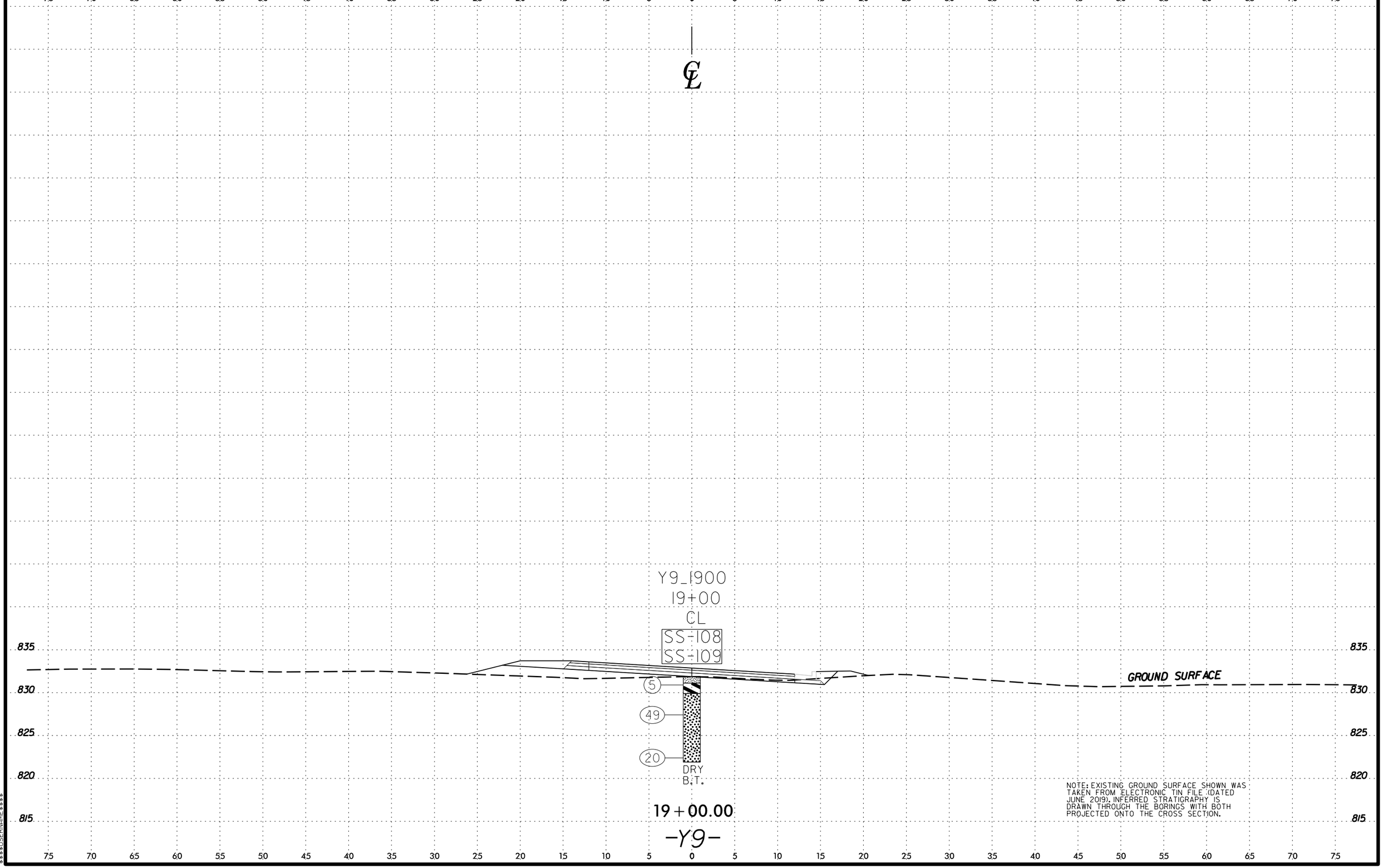

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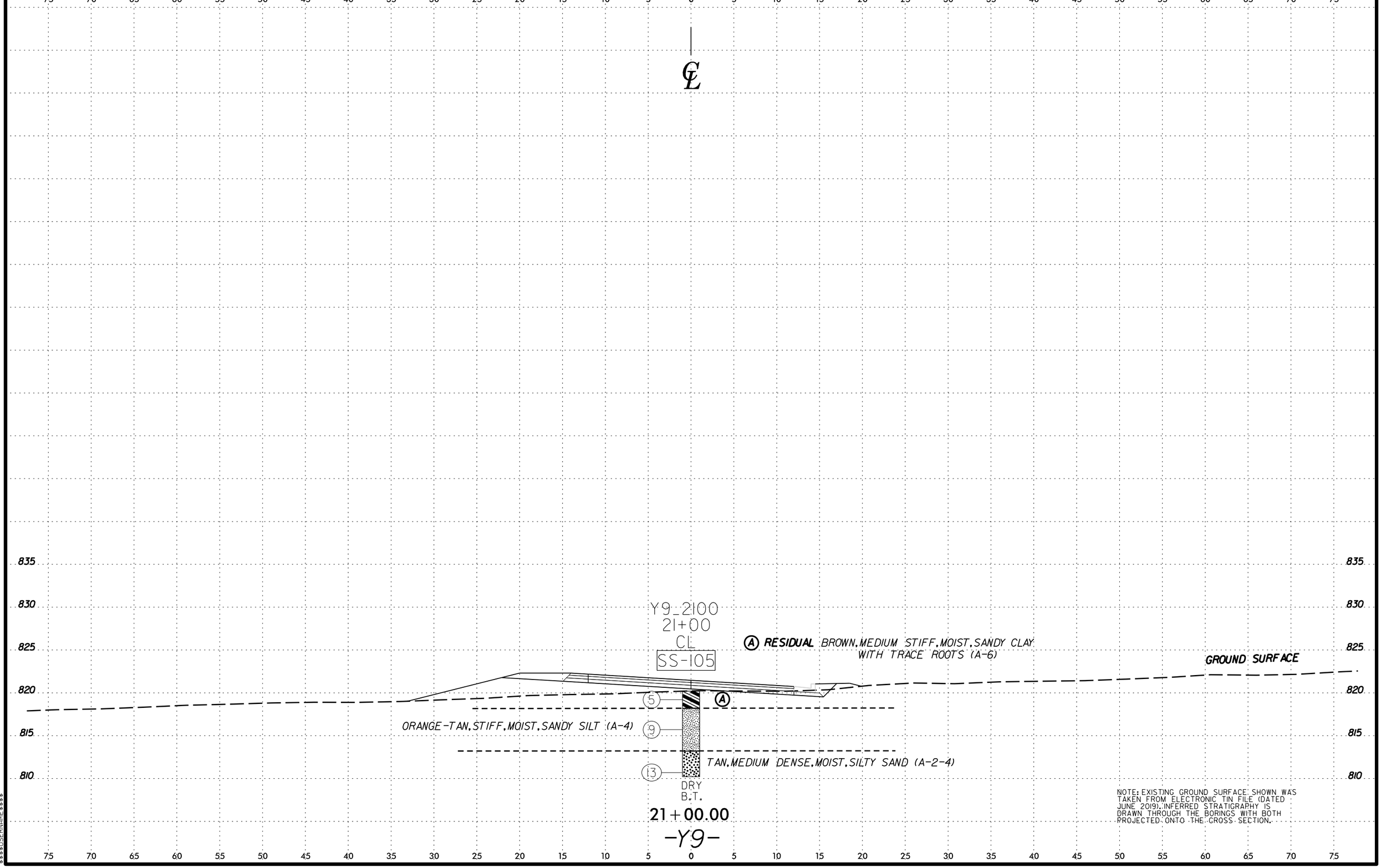
$$$$USERNAME$$$$



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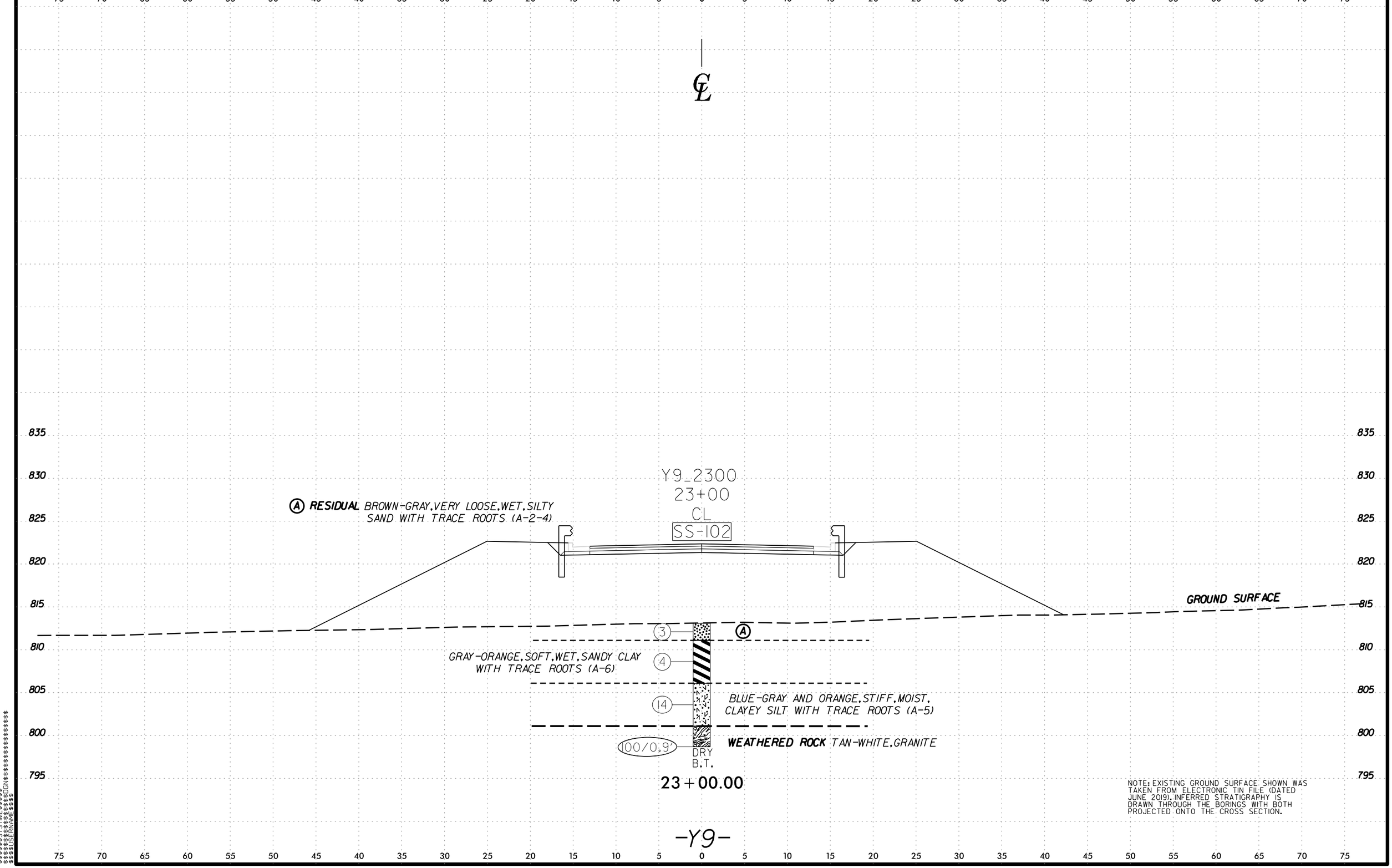

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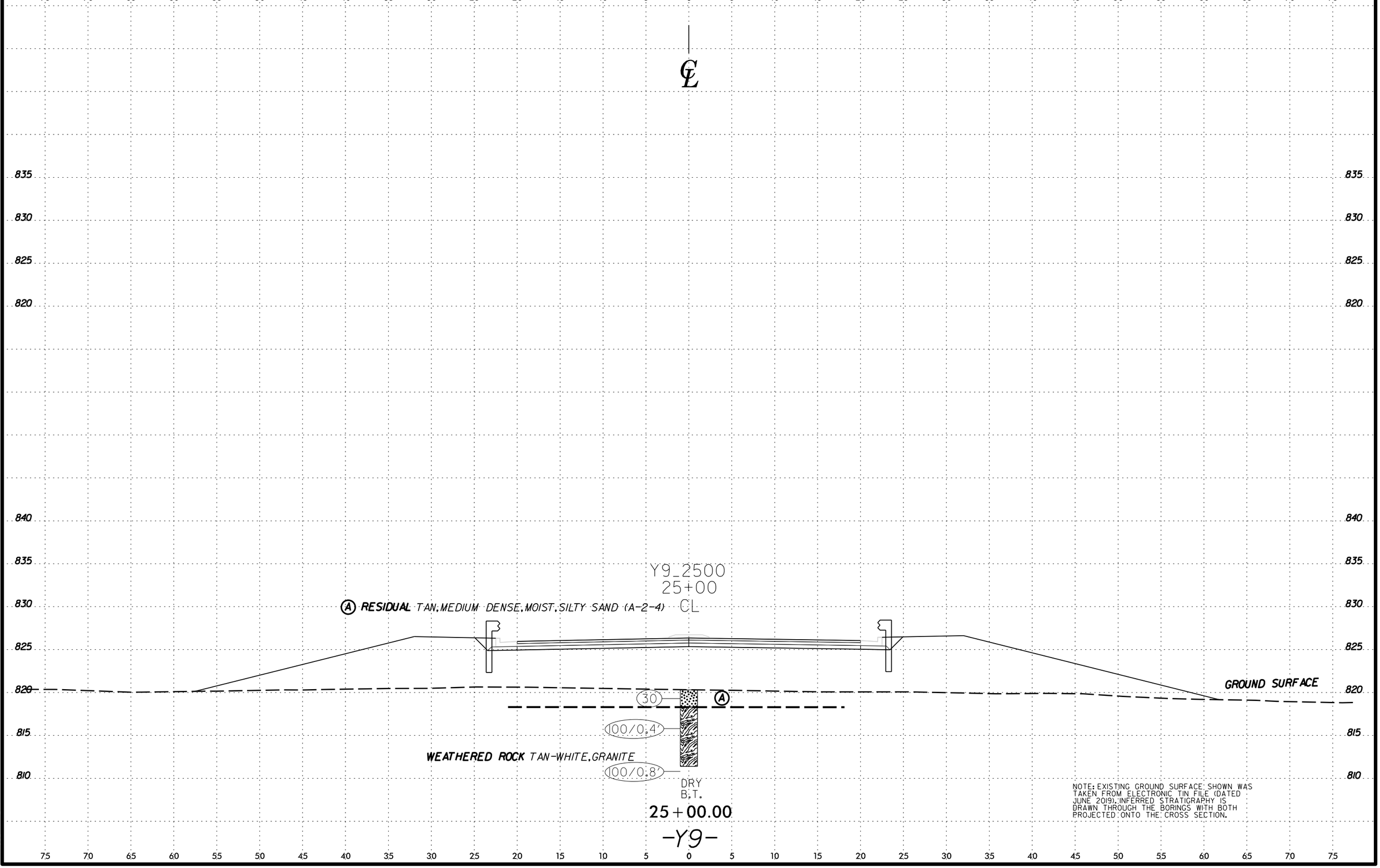

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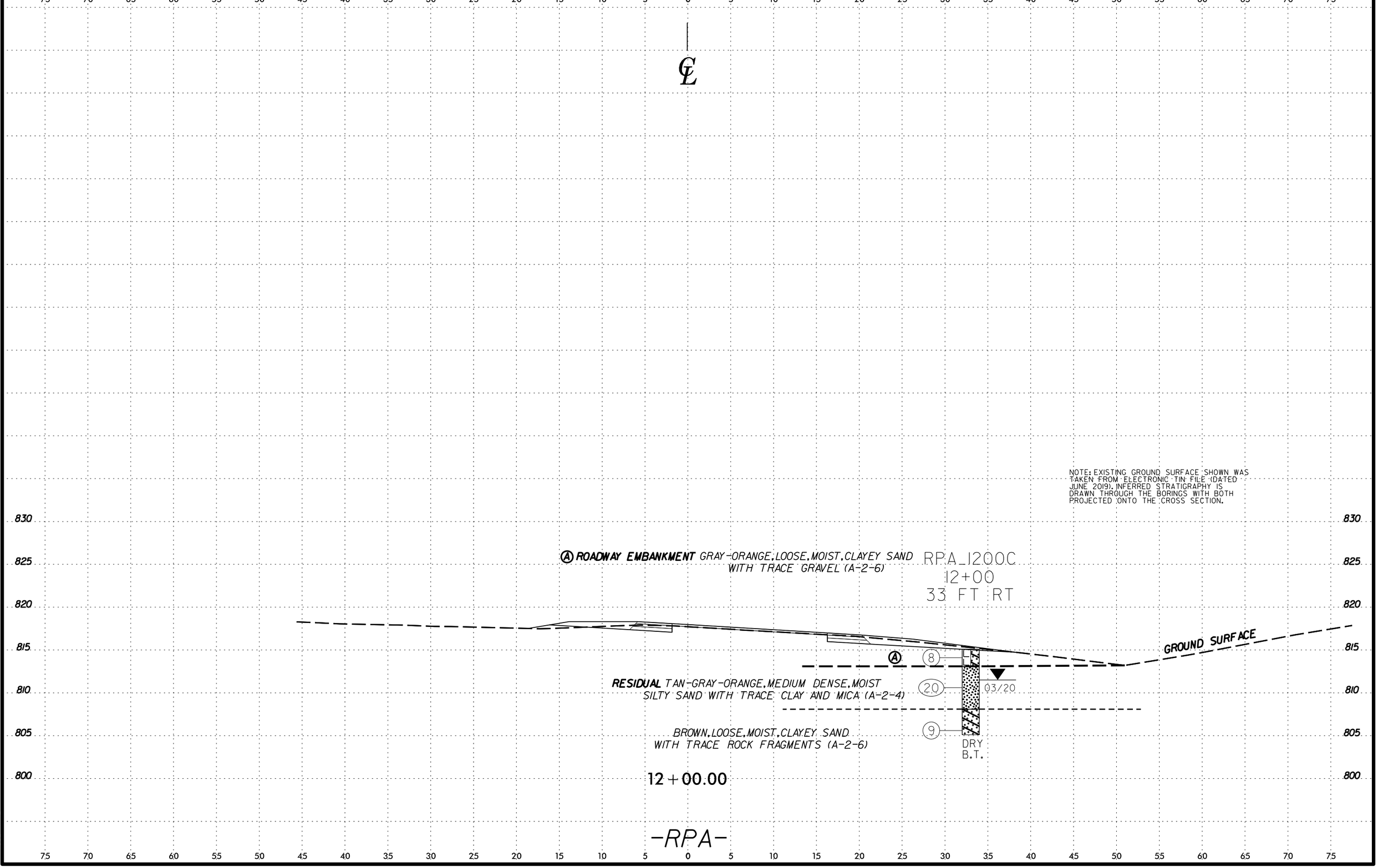

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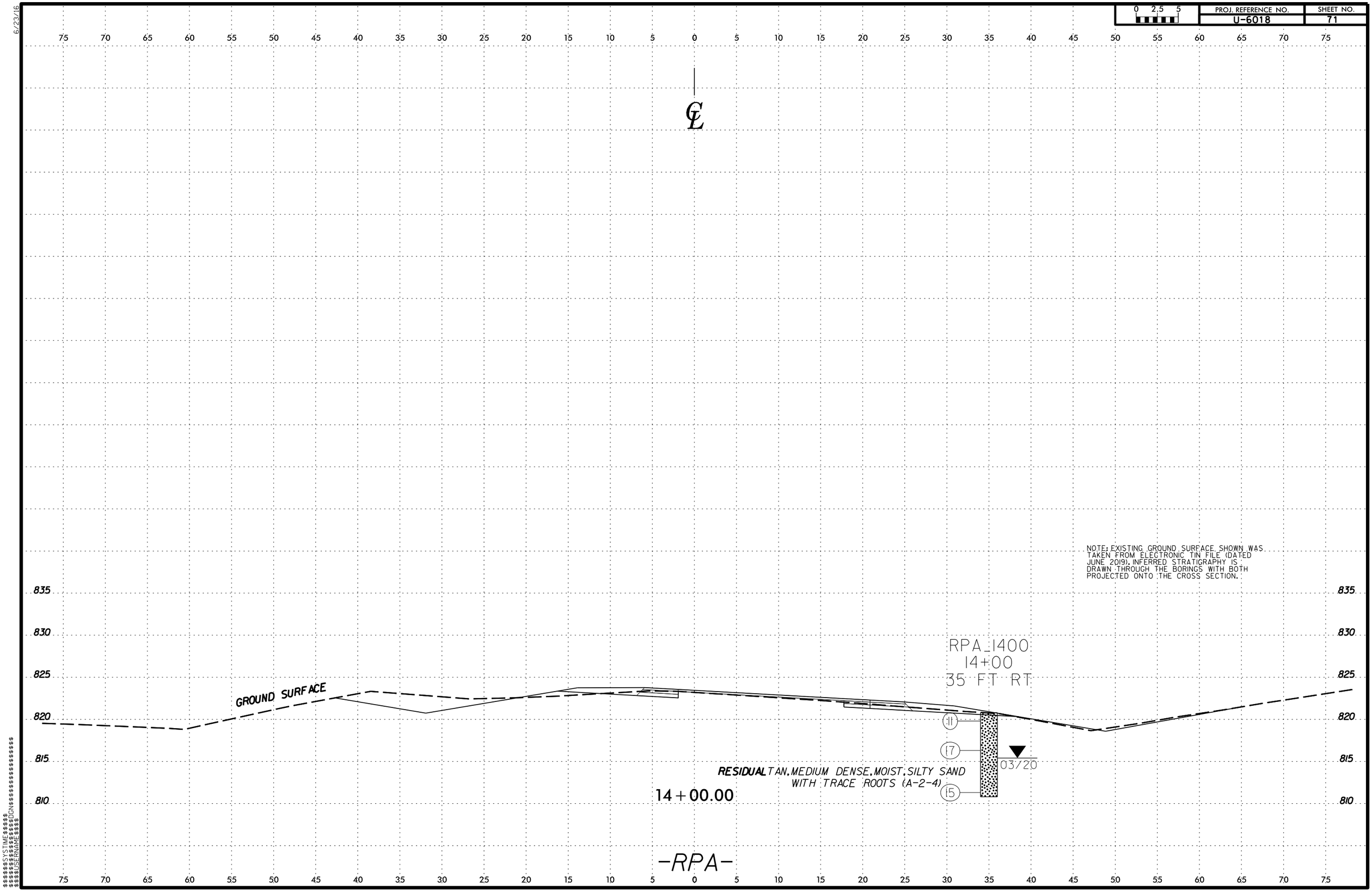

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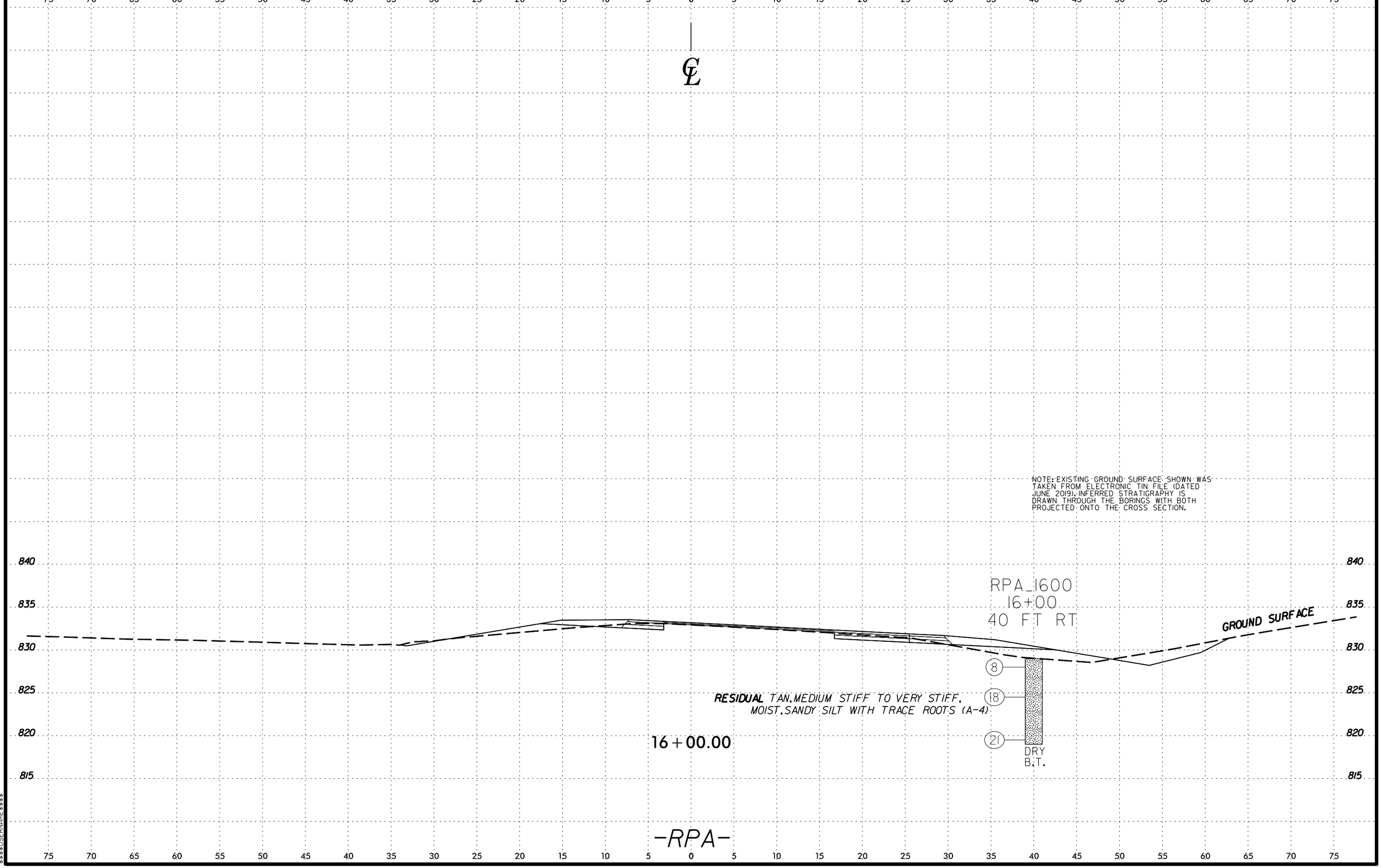
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	U-6018	72



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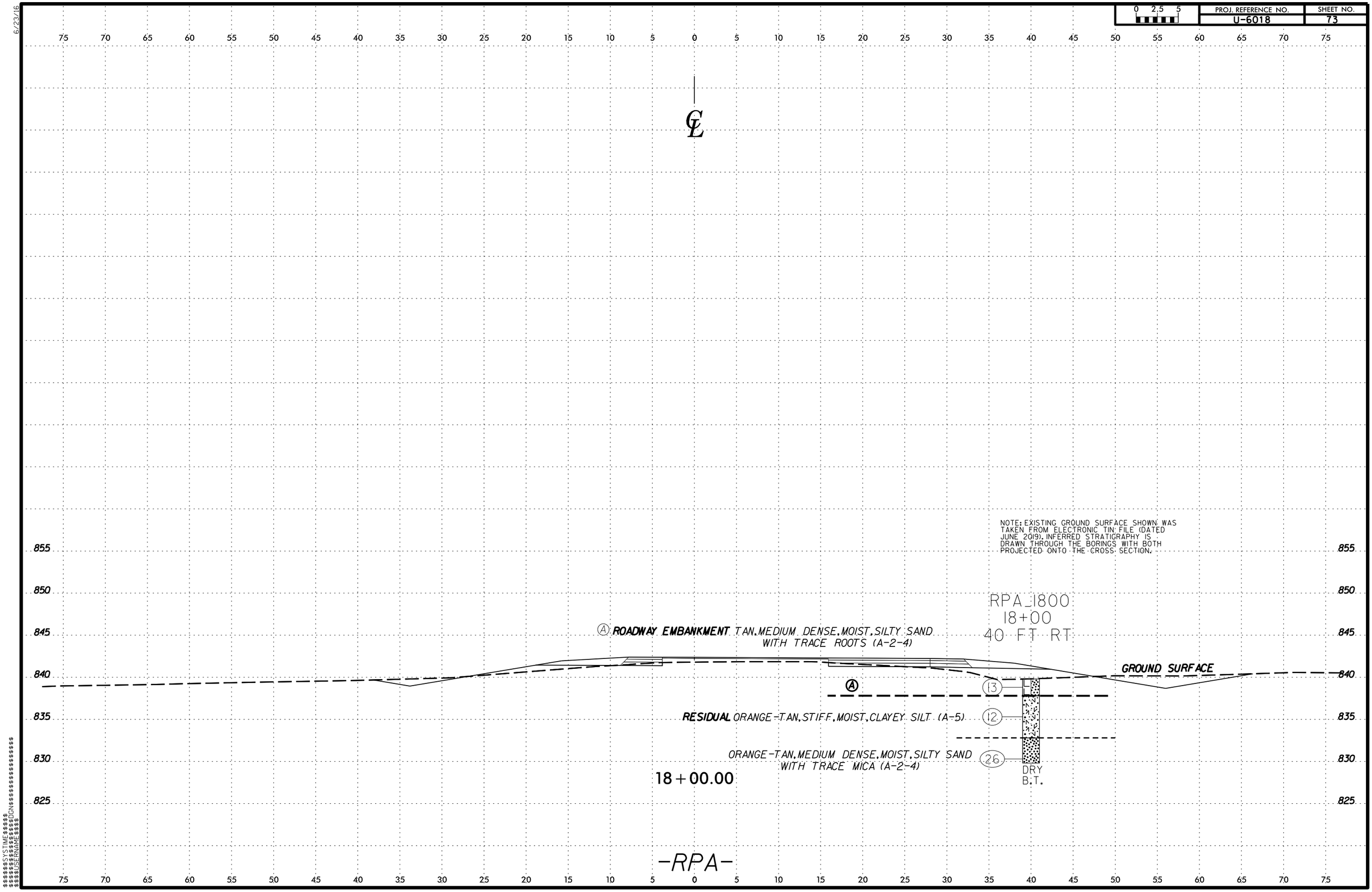

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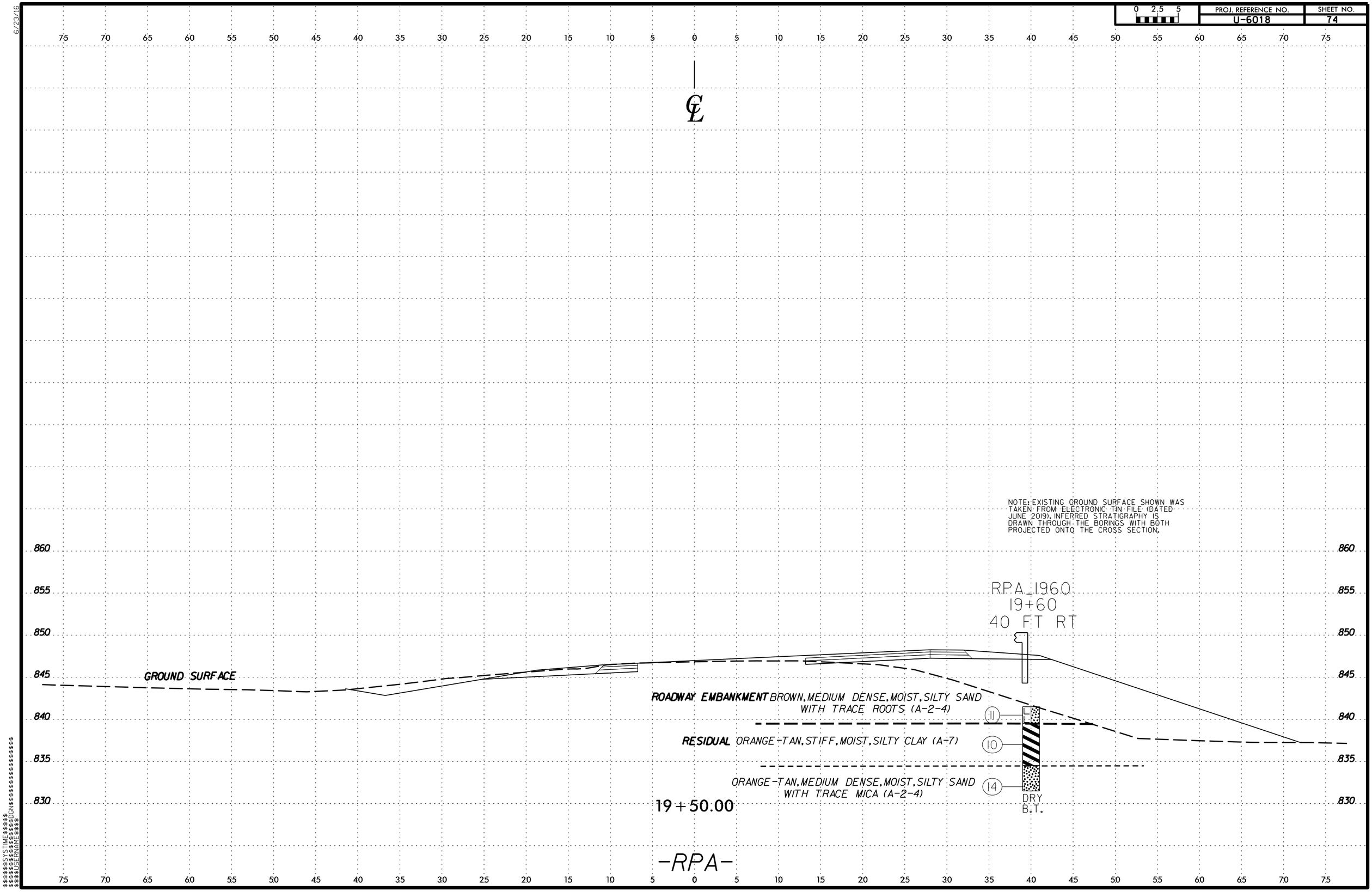

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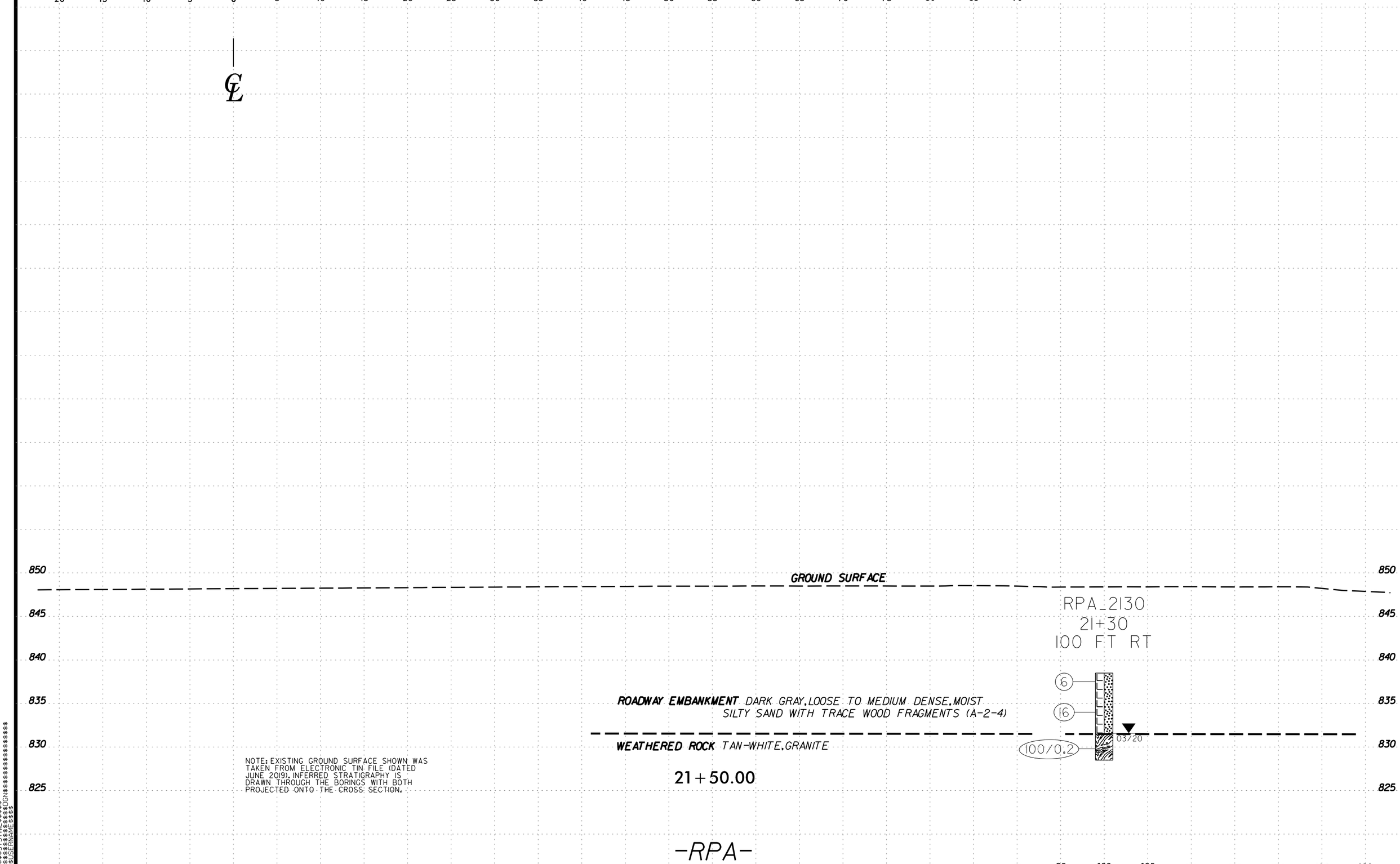

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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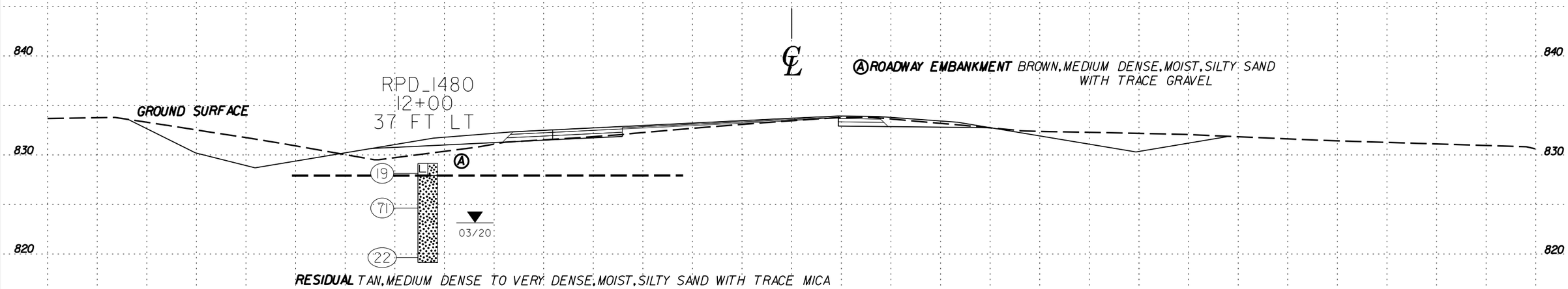
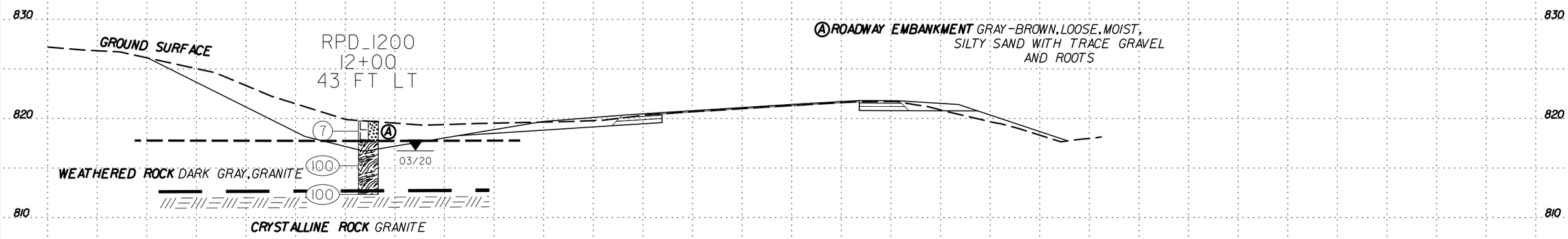


15+00



12+00

-RPD-

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70 60 50 40 30 20 10 0 10 20 30 40

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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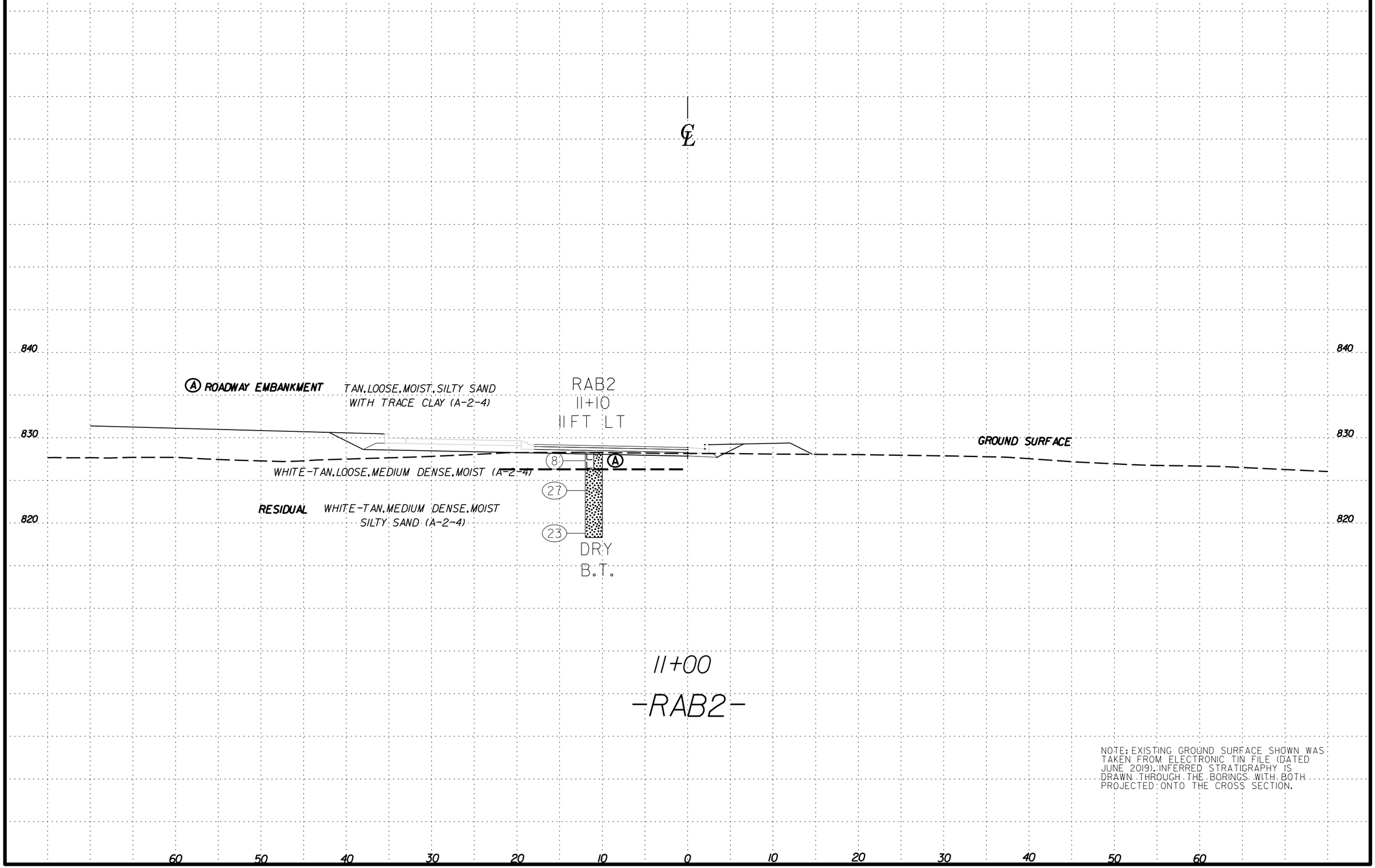

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

APPENDIX A
SOIL TEST RESULTS

SOIL TEST RESULTS

SAMPLE NO.	STATION		DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	% CBR
							C. Sand	F. Sand	Silt	Clay	10	40	200			
SS-38	36+00	-L-	0.2-1.5	A-7-5	75	42	19.7	11.42	9.81	59.06	97.52	85.74	68.91	27.3	-	-
SS-47	38+00	-L-	0.1-1.5	A-6	32	16	23.66	20.97	25.15	30.22	99.53	86.35	60.29	16.1	-	-
SS-50	30+00	-Y3-	0.1-1.5	A-6	27	13	33.35	26.01	9.74	30.9	99.11	80.86	43.8	12.8	-	-
SS-59	34+00	-Y3-	0.2-1.5	A-7-6	42	21	28.31	16.92	10.05	44.72	97.06	80.92	55.27	12.5	-	-
SS-62	19+00	-Y3-	0.2-1.5	A-7-5	68	38	12.62	8.17	14.32	64.89	99.05	92.08	79.65	29.8	-	-
SS-65	21+00	-Y3-	0.2-1.5	A-6	36	19	30.59	16.09	10.89	42.42	99.1	82.19	54.7	12.7	-	-
SS-69	23+00	-Y3-	3.5-5.0	A-6	31	17	26.28	21.97	15.68	36.07	99.65	86.68	55.17	16.2	-	-
SS-89	22+00	-Y6-	0.0-1.5	A-7-6	67	40	19.67	9.92	11.8	58.61	94.37	81.71	68.13	29.6	-	-
SS-92	17+00	-Y5-	0.0-1.5	A-7-6	48	33	13.73	13.36	25.56	47.35	94.79	87.07	71.96	17.3	-	-
SS-102	23+00	-Y9-	3.5-5.0	A-7-6	47	30	24.96	18.08	12.51	44.44	99.78	87.92	59.46	24	-	-
SS-105	21+00	-Y9-	0.2-1.5	A-6	38	14	35.85	22.01	12.04	30.1	92.81	72.87	41.92	16.0	-	-
SS-108	19+00	-Y9-	0.2-0.8	A-4	20	6	36.99	27.94	12.33	22.74	96	74.55	37.86	10.7	-	-
SS-109	19+00	-Y9-	0.8-1.5	A-7-6	56	35	19.17	17.93	9.39	53.5	99.28	88.8	65.44	18.2	-	-
S-2	73+20	-L-	0.7-5.0	A-6	38	19	30.8	21.6	17.1	30.4	95.4	76.8	49.3	7.4	-	-
S-5	34+50	-L-	0.8-5.0	A-2-6	24	12	41.2	26.9	9.4	22.5	97.26	76.1	34.1	23.9	-	-
CBR #1	14+00	-RPA-	1.0-10.0	A-2-4	34	8	42.1	29.8	10.0	18.1	100.0	77.7	32.5	16.6	-	4.5
CBR #2	63+97	-L-	2.0-7.0	A-4	33	7	37.4	29.5	15.2	18.0	98.0	76.5	37.5	19.9	-	2.8
CBR #3	19+00	-Y9-	2.0-10.0	A-4	27	9	33.9	33.4	21.1	11.7	99.0	75.2	36.5	11.2	-	4.7
CBR #4	17+00	-Y5-	2.0-10.0	A-6	38	14	72.4	14.1	1.7	11.8	99.8	95.8	84.5	19.0	-	1.4