

REFERENCE: U-5760

PROJECT: 46381

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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-YILPB-	10+00 - 20+27	5
-YIRPD-	10+00 - 22+94	5
-YILPD-	10+00 - 19+08	5
-Y2-	10+00 - 18+80	6
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APPENDIX	TITLE	SHEETS
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY FORSYTH
PROJECT DESCRIPTION KERNERSVILLE SOUTHERN
LOOP AT US 421/140/NC 150 BUS TO NC 66 (WEST
MOUNTAIN ST.)

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5760	1	100

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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 - 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

J. Mize

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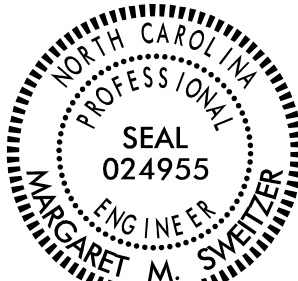
SUBMITTED BY RK&K, LLP

DATE September 2019

Prepared in the Office of:



RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-0112



Witnessed by:

Margaret M. Sweitzer

10/2/2019

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.

U-5760

SHEET NO.

2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																												
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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE. SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE PERCENTAGE OF MATERIAL GROUND WATER MISCELLANEOUS SYMBOLS RECOMMENDATION SYMBOLS ABBREVIATIONS EQUIPMENT USED ON SUBJECT PROJECT										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) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP) WEATHERING FRESH VERY SLIGHT (V SL.) SLIGHT (SL.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE ROCK HARDNESS FRACTURE SPACING BEDDING INDURATION										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 IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: N/A ELEVATION: N/A FEET NOTES: COLLAR ELEVATIONS DETERMINED FROM NCDOT-PROVIDED .TIN FILE ABBREVIATIONS: F.I.A.D. - FILLED IMMEDIATELY AFTER DRILLING																																																																																																																												
SOIL LEGEND AND AASHTO CLASSIFICATION <table><thead><tr><th>GENERAL CLASS.</th><th colspan="5">GRANULAR MATERIALS (≤ 35% PASSING #200)</th><th colspan="5">SILT-CLAY MATERIALS (> 35% PASSING #200)</th><th colspan="5">ORGANIC MATERIALS</th></tr><tr><th>GROUP CLASS.</th><th>A-1</th><th>A-3</th><th colspan="3">A-2</th><th>A-4</th><th>A-5</th><th>A-6</th><th>A-7</th><th>A-1, A-2</th><th>A-4, A-5</th><th colspan="3"></th></tr><tr><th>SYMBOL</th><th>A-1-a</th><th>A-1-b</th><th>A-2-4</th><th>A-2-5</th><th>A-2-6</th><th>A-2-7</th><th></th><th></th><th></th><th>A-7-5, A-7-6</th><th>A-3</th><th>A-6, A-7</th><th></th></tr></thead><tbody><tr><td>% PASSING #10 #40 #200</td><td>50 MX 30 MX 15 MX</td><td>50 MX 25 MX 10 MX</td><td>51 MN 10 MX</td><td>35 MX</td><td>35 MX</td><td>35 MX</td><td>35 MX</td><td>36 MN</td><td>36 MN</td><td>36 MN</td><td>36 MN</td><td>36 MN</td><td></td></tr><tr><td>MATERIAL PASSING #40 LL PI</td><td colspan="2">— 6 MX</td><td>— NP</td><td>40 MX</td><td>41 MN</td><td>40 MX</td><td>41 MN</td><td>40 MX</td><td>41 MN</td><td>40 MX</td><td>41 MN</td><td>41 MN</td><td></td></tr><tr><td>GROUP INDEX</td><td colspan="2">0</td><td colspan="2">0</td><td colspan="2">0</td><td>4 MX</td><td>8 MX</td><td>12 MX</td><td>16 MX</td><td>NO MX</td><td></td><td></td></tr><tr><td>USUAL TYPES OF MAJOR MATERIALS</td><td colspan="2">STONE FRAGS, GRAVEL, AND SAND</td><td colspan="2">FINE SAND</td><td colspan="3">SILTY OR CLAYEY GRAVEL AND SAND</td><td colspan="2">SILTY SOILS</td><td colspan="2">CLAYEY SOILS</td><td></td><td></td></tr><tr><td>GEN. RATING AS SUBGRADE</td><td colspan="5">EXCELLENT TO GOOD</td><td colspan="3">FAIR TO POOR</td><td colspan="2">FAIR TO POOR</td><td>POOR</td><td>UNSATURABLE</td><td></td></tr></tbody></table> PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30										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-4, A-5				SYMBOL	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6	A-3	A-6, A-7		% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX 10 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	36 MN		MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	41 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	UNSATURABLE																															
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PLASTICITY <table><thead><tr><th></th><th>PLASTICITY INDEX (PI)</th><th>DRY STRENGTH</th></tr></thead><tbody><tr><td>NON PLASTIC</td><td>0-5</td><td>VERY LOW</td></tr><tr><td>SLIGHTLY PLASTIC</td><td>6-15</td><td>SLIGHT</td></tr><tr><td>MODERATELY PLASTIC</td><td>16-25</td><td>MEDIUM</td></tr><tr><td>HIGHLY PLASTIC</td><td>26 OR MORE</td><td>HIGH</td></tr></tbody></table>											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																																																																																																																																		
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COLOR DESIGNATORS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.																																																																																																																																																										

DATE: 8-15-14

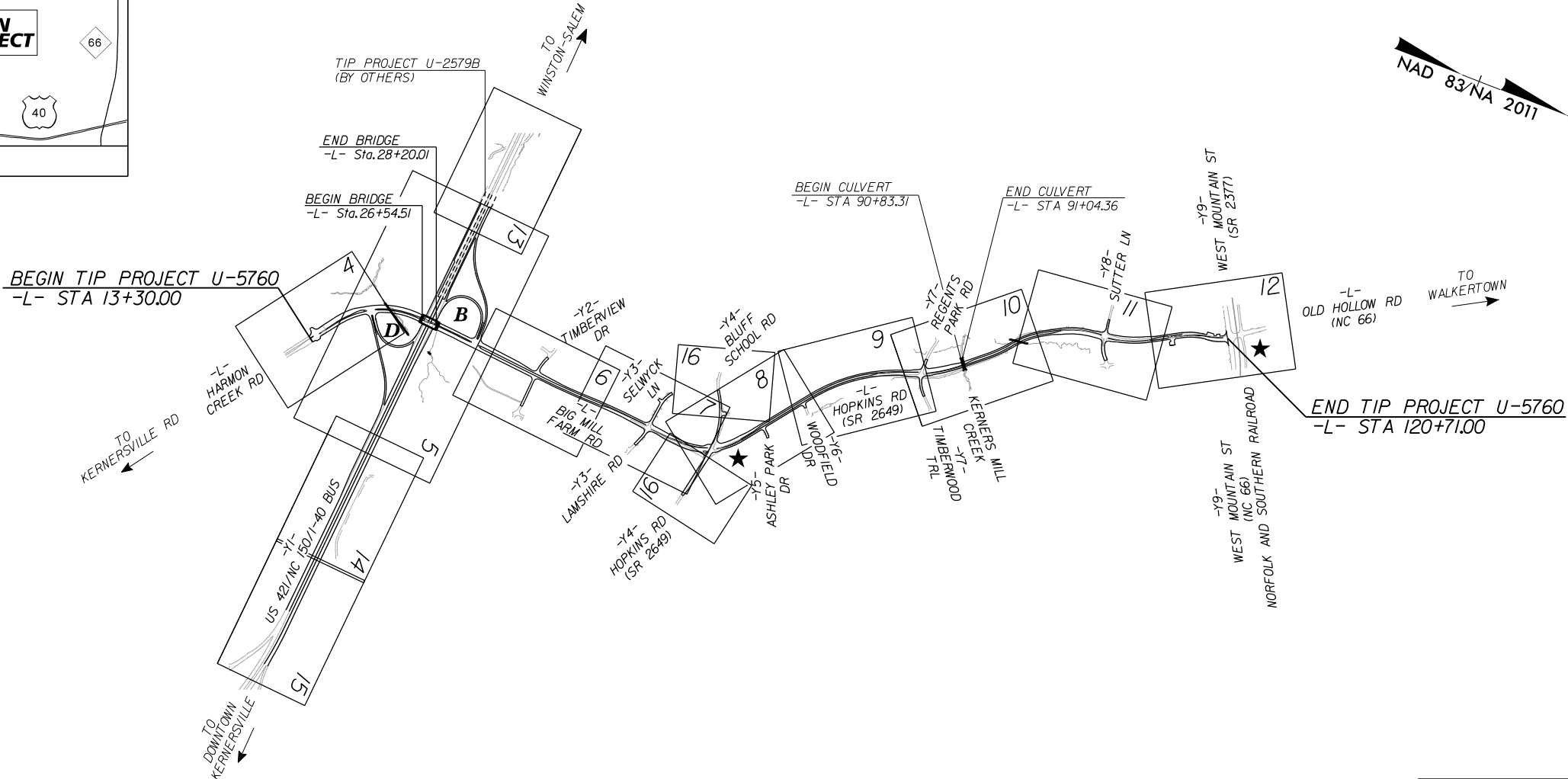
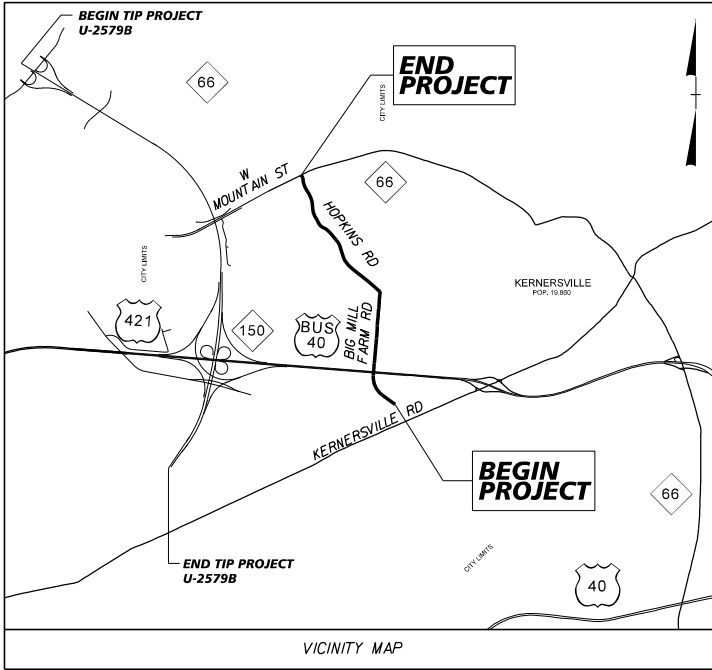
09/08/99

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\$DATE\$

TIP PROJECT: U-5760

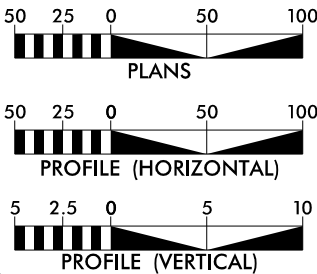
CONTRACT:



★ TRAFFIC SIGNAL

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS LIMITED TO POINTS AS SHOWN ON THE PLANS
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF KERNERSVILLE

GRAPHIC SCALES



DESIGN DATA

AADT 2022 = 10,400
AADT 2040 = 14,900
K = 10%
D = 60%
T = 3%*
V = 50 MPH
* (TTST 1% + DUAL 2%)
FUNCTIONAL CLASSIFICATION:
URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5760 = 2.003 MILES
LENGTH STRUCTURE TIP PROJECT U-5760 = 0.031 MILES
TOTAL LENGTH TIP PROJECT U-5760 = 2.034 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn

NC LICENSE #24110
PRACTICING ENGINEER, S.E. 001
440 SHAW-WORTHY DRIVE, P.O. BOX 1000
RALEIGH, NC 27602

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 17, 2020

LETTING DATE:
APRIL 19, 2022

JEFFREY W. MOORE, P.E.
PROJECT ENGINEER

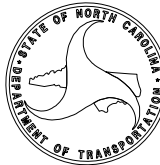
RHODES S. HUNT, P.E.
PROJECT DESIGN ENGINEER

W. AL BLANTON, P.E., P.L.S.
PROJECT TEAM LEAD
NCDOT DIVISION 9

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5760	2A	100
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46381.1.1		P.E.	

APPROVED 25% PLANS

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



September 18, 2019

WBS Number: 46381.1.1
TIP Number: U-5760
County: Forsyth
Description: Kernersville Southern Loop, at US 421/Bus. 40 to NC 66 (West Mountain St.) in Kernersville. Widen Big Mill Farm Rd. and SR 2649 (Hopkins Rd.) and Construct Interchange at US 421/NC150/Bus. 40.

Subject: Roadway Subsurface Inventory Report

PROJECT DESCRIPTION

The proposed project consists of grading, drainage, paving, and construction of signals, culverts, retaining walls, and structures. The proposed project includes widening Big Mill Farm Rd. and SR 2649 (Hopkins Rd.) and connecting Big Mill Farm Rd. to Harmon Creek Rd. via an interchange between US 421 / I 40 Bus. / NC 150 and the new proposed roadway. The proposed project is approximately 2.5 miles long and runs from the intersection of NC 66 and Hopkins Rd. to the existing end of Harmon Creek Rd. via a new bridge over US 421 / I 40 BUS / NC 150.

The geotechnical investigation was performed during June of 2019. A total of 158 borings were investigated. The borings were advanced with an ATV and a track mounted Diedrich D-50 drill rig equipped with automatic hammers, and with hand augers. Representative soil samples were collected from split spoons and soil cuttings for field visual classification and laboratory testing.

The following alignments were investigated. Selected subsurface cross sections of these alignments are included in this report.

<u>Line</u>	<u>Stations (±)</u>
-L-	13+30 – 120+71
-Y1-	41+50 – 97+22
-Y1LPB-	10+00 – 19+87
-Y1RPB-	10+00 – 24+04
-Y1LPD-	10+00 – 18+68
-Y1RPD-	10+00 – 22+54
-Y2-	11+26 – 17+30
-Y3-	10+50 – 17+50
-Y4-	12+00 – 24+55
-Y5-	10+00 – 11+42
-Y7-	12+50 – 16+70

PHYSIOGRAPHY AND GEOLOGY

The proposed project is located in Raleigh Belt metamorphic and igneous rocks. These rocks include Proterozoic to Cambrian-age biotite gneiss and schist and Pennsylvanian to Permian-age granitic rock.

The terrain within the project corridor consists of rolling hills, forests, and existing flattened roadway corridors. Both sides of the proposed project are wooded to varying degrees, with some larger forests that are broken up by residential neighborhoods.

The project is located near the contact between Pennsylvanian to Permian-age (320 – 270 Ma) intrusive felsic igneous rocks and late-Proterozoic to Cambrian-age (1000 – 490 Ma) biotite schist. Local surficial soils are underlain by granite.

Typical residual soil profiles consist of a fine-grained surficial layer of clay, where soil weathering is more advanced. This surficial layer is underlain by coarser, saprolitic soils. The boundary between soil and rock is typically sharp in this area, though the depth at which this transition is located varies greatly across the proposed project. There is an inconsistent transitional zone of weathered rock between soil and crystalline rock that varies in thickness and is frequently absent from the soil profile.

SOIL PROPERTIES

Soils encountered during the geotechnical investigation are separated into four categories based on origin. The origins consist of roadway embankment, artificial fill, alluvial soils, and residual soils.

Roadway Embankment:

Roadway embankment is found throughout the project and generally consists of loose to dense, gravelly, silty, and clayey SAND (A-1-b, A-2-4, A-2-5, A-2-6). Some thin layers of roadway embankment consist of soft to very stiff CLAY (A-7-6). Measured plasticity indices ranged between 12 and 38. The thickness of the encountered roadway embankment ranges from 0 to 25 feet.

Artificial Fill:

Materials interpreted as artificial fill were encountered under and adjacent to shopping centers and houses along the project. Artificial fill encountered in the proposed project consists of very loose to medium dense, silty and clayey SAND (A-2-4, A-2-6, A-2-7). Artificial fill consisting of very soft to stiff, sandy SILT and CLAY (A-5, A-7-6) was also encountered. Measured plasticity indices ranged between 13 and 26. The thickness of the encountered artificial fill ranges from 3 to 26 feet.

Alluvial Soils:

Alluvial soils were encountered immediately surrounding the unnamed branch of Smith Creek that runs under the southern side of the project and the unnamed branch of the Kerner’s Mill Creek that runs under the northern side of the project. Alluvial soils consisting of very loose to medium dense, silty to clayey fine SAND (A-2-4, A-2-6), very soft to soft silty CLAY (A-7-5, A-7-6), and sandy SILT (A-4) with trace to little organic content were encountered. Measured plasticity indices ranged between 13 and 26. The thickness of the encountered alluvial soils ranges from 4 to 8 feet.

Residual Soils:

Residual soils cover much of the project, and they are frequently found underneath other soils. Residual soils of every primary grain size and stiffness/density can be found, though two types of residual soil



appear much more frequently than all others. The first of these two is a saprolitic silty SAND (A-2-4) with relict structures resembling the granite underlying the project area. The second common residual soil is a micaceous silty SAND and sandy SILT (A-2-5, A-5), found throughout the project in thin layers. Measured plasticity indices of residual soils ranged between 0 and 33. The thickness of the residual soils ranges from 4 feet to greater than 28 feet.

ROCK PROPERTIES

Samples of rock taken in this project consist exclusively of rock shards taken from split spoons that encountered refusal and rock shards in drilling cuttings. The rock shards encountered in this project suggest that the primary rock underlying the proposed project is a coarse-grained granite composed primarily of quartz, potassium feldspar, plagioclase feldspar, and biotite. The granite can produce mica when weathered, which can be observed in the residual soil found throughout the project. The elevation of the rock encountered ranged from 920 feet at the highest encountered location to 847 feet.

The project is located near the boundary of Pennsylvanian to Permian-age felsic intrusive rocks and an older (late Proterozoic to Cambrian) biotite schist with small masses of granitic rock, so it is plausible that some portions of the proposed project are instead underlain by biotite schist. In either case, the encountered bedrock is composed of granitoid rocks.

GROUNDWATER

Groundwater was encountered relatively often during the geotechnical investigations. Groundwater elevations ranged from approximately 1 to 36 feet of proposed grade throughout the project.

Groundwater was encountered within six (6) feet of proposed grade in the following locations:

Line	Stations (±)	Offset
-L-	18+75 – 19+25	RT
-L-	88+00 – 90+00	LT
-L-	112+00 – 114+00	LT
-Y1-	46+50 – 47+50	LT
-Y1RPB-	13+00 – 17+00	LT&RT
-Y7-	15+50 – 16+50	RT

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Alluvial Soils: The following areas contain alluvial soils:

Line	Station(s) (±)	Offset
-L-	89+00 – 91+00	LT&RT
-L-	99+00	RT
-Y1-	91+50	LT&RT

Highly Plastic Soils: The following areas contain soils with plasticity indices (PI) greater than 25 within proposed cut sections or greater than 35 within 3-ft of subgrade:

Line	Station(s) (±)	Offset
-L-	32+50 – 34+50	LT&RT
-L-	40+00 – 43+75	LT&RT
-L-	104+00 – 107+50	RT
-L-	74+50 – 76+25	RT
-L-	118+00 – 120+50	LT
-Y1-	85+00 – 86+00	LT
-Y1-	96+25 – 97+00	LT
-Y1LPB-	14+50 – 16+00	LT&RT
-Y1RPD-	10+00 – 12+50	RT
-Y1RPD-	19+00 – 21+25	LT
-Y4-	14+50 – 16+50	LT&RT

Weathered Rock: The following areas contain weathered rock above or within six (6) feet of proposed grade:

Line	Stations (±)	Offset
-Y1-	49+00 – 52+50	LT&RT
-Y1LPB-	12+00 – 16+00	LT&RT
-Y1RPD-	14+00 – 16+00	LT&RT

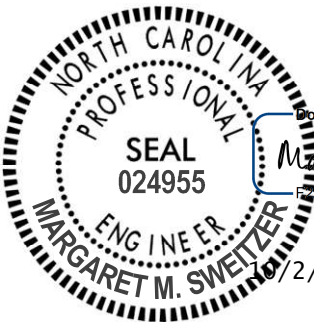
Crystalline Rock: The following areas contain crystalline rock above or within six (6) feet of proposed grade:

Line	Stations (±)	Offset
-Y1-	49+00 – 50+50	LT
-Y1LPB-	12+00 – 16+00	LT&RT
-Y1RPD-	14+00 – 16+00	LT

Prepared by,

Margaret M. Sweitzer, P.E.
Project Manager, Geotechnical
Registered, North Carolina 024955

James W. Mize, G.I.T.
Geologist, Geotechnical



DocuSigned by:
Margaret M. Sweitzer
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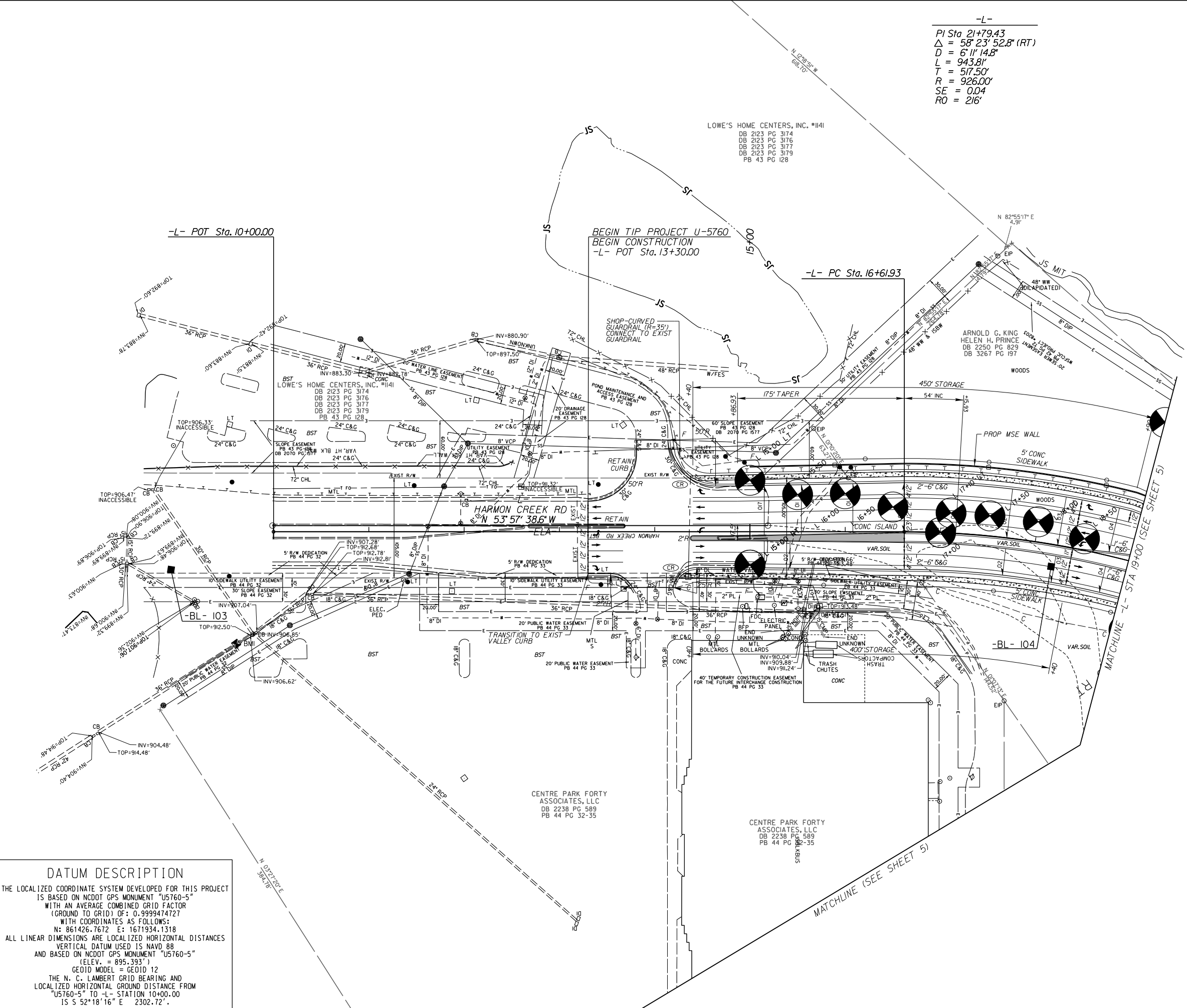
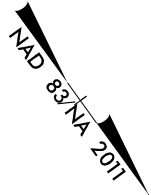
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James W. Mize
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5/14/99

REVISIONS

\$DATE\$

PROJECT REFERENCE NO.		SHEET NO.
U-5760		4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON NCDOT GPS MONUMENT "U5760-5" WITH AN AVERAGE COMBINED GRID FACTOR (GROUND TO GRID) OF: 0.9999474727 WITH COORDINATES AS FOLLOWS:

N: 861426.7672 E: 1671934.1318

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88 AND BASED ON NCDOT GPS MONUMENT "U5760-5" (ELEV. = 895.393') GEOD MODEL = GEOD 12

THE N. C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U5760-5" TO -L- STATION 10+00.00 IS S 52°18'16" E 2302.72'.

RADI DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS)

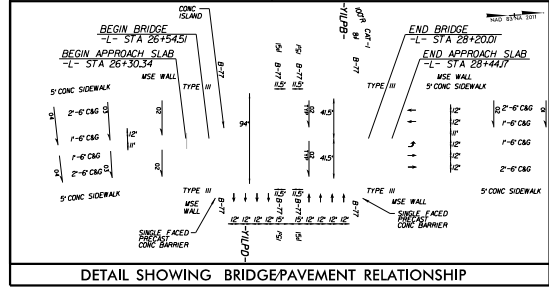
ALL DRIVEWAY RADI ARE 10' UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS)

SEE SHEET 17 FOR -L- PROFILE

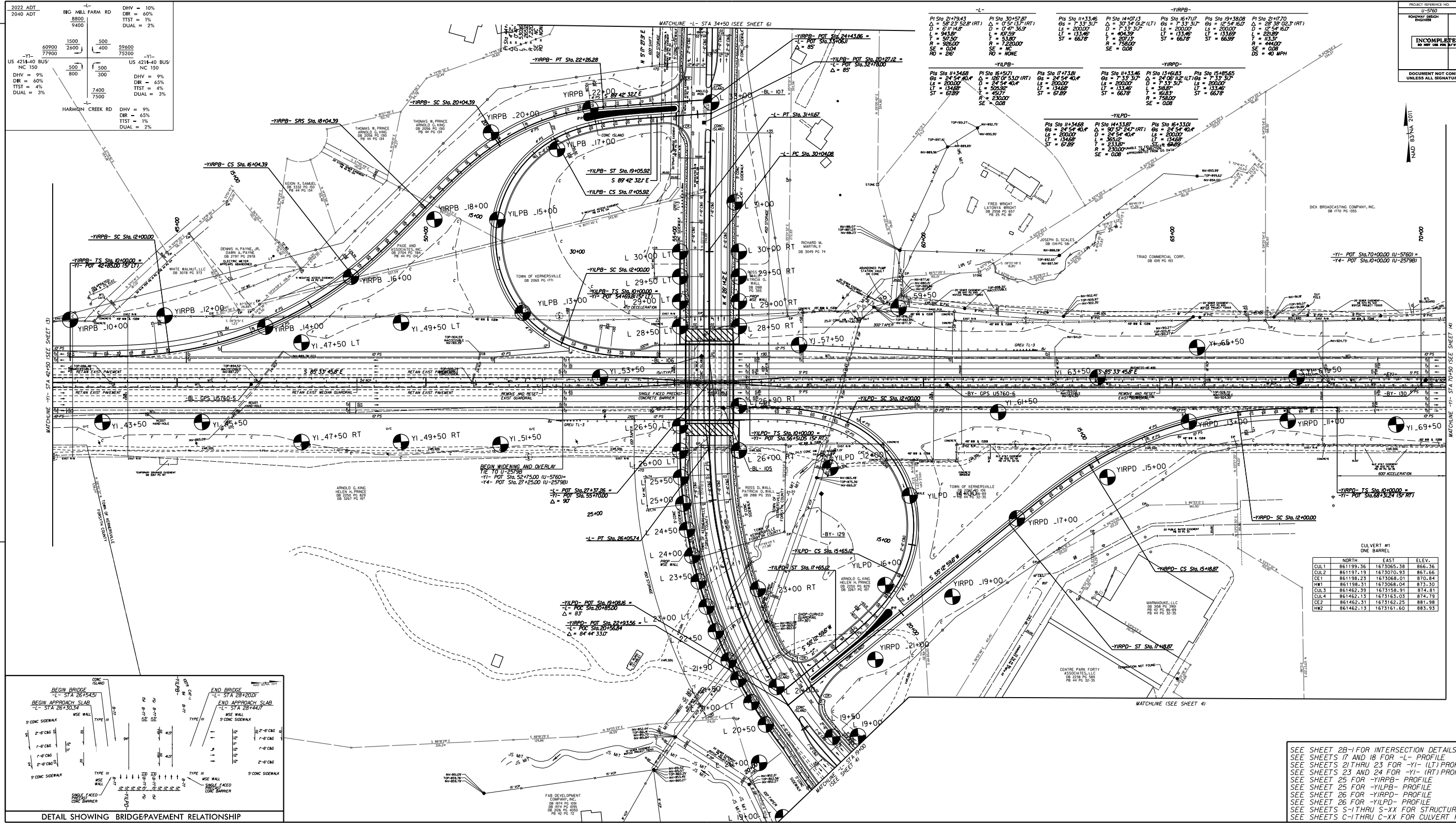
2022 ADT	1500	59600	59600
2040 ADT	2600	400	75200
	8800		
	9400		

US 4214-40 BUS/ NC 150	US 4214-40 BUS/ NC 150
DHV = 9%	DHV = 9%
DR = 60%	DR = 60%
TTST = 4%	TTST = 4%
DUAL = 3%	DUAL = 3%

HARMON CREEK RD	DHV = 9%
	DR = 65%
	TTST = 1%
	DUAL = 2%



\$DATE\$

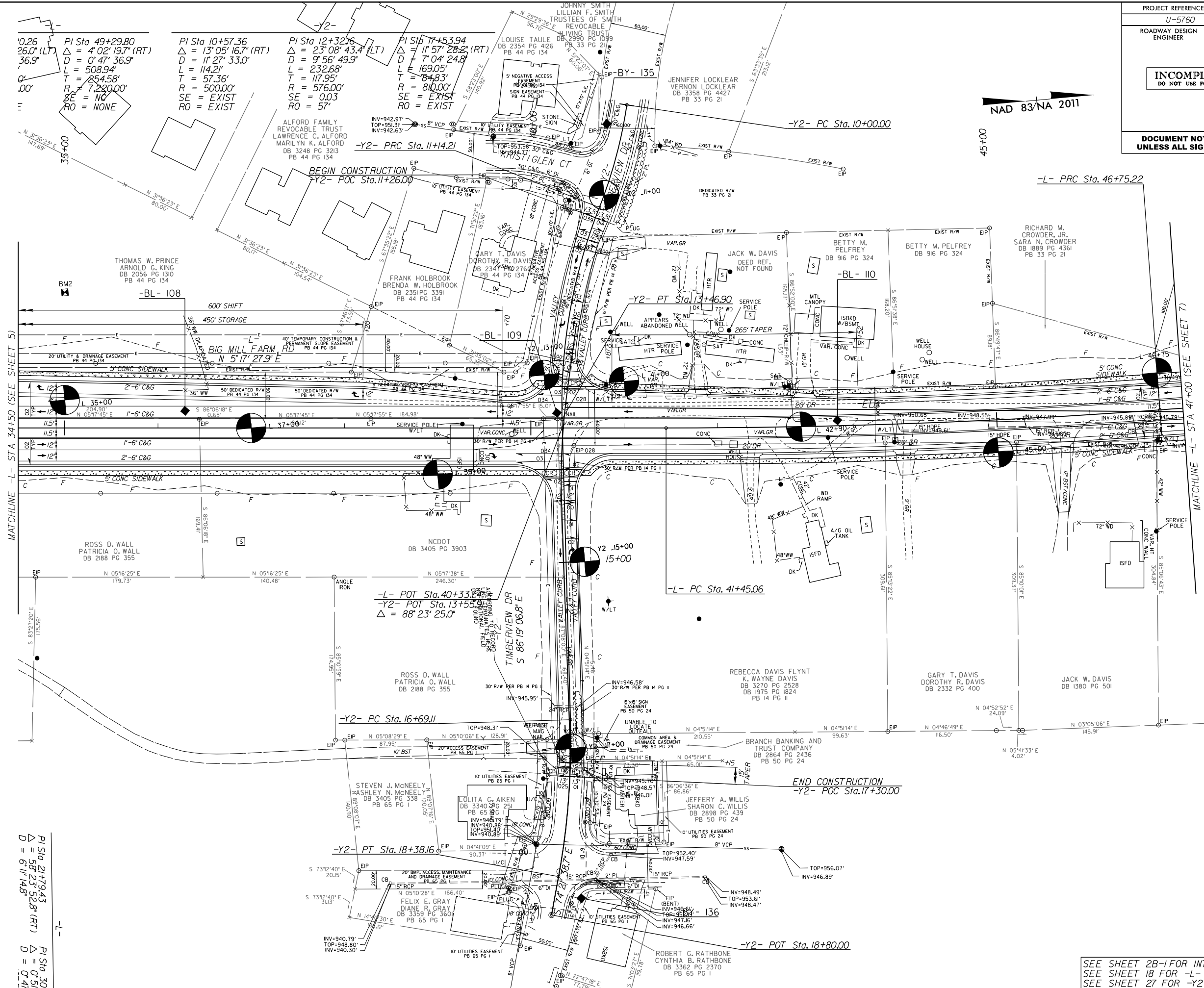


PROJECT REFERENCE NO.	SHEET NO.
U-5760	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

	NORTH	EAST	ELEV.
CULV.1	861199.36	1613065.38	866.36
CULV.2	861197.19	1613070.93	867.66
CULV.3	861198.23	1613068.01	870.84
CULV.4	861198.31	1613068.04	873.30
CULV.5	861198.31	1613068.04	873.30
CULV.6	861198.31	1613068.04	873.30
CULV.7	861198.31	1613068.04	873.30
CULV.8	861198.31	1613068.04	873.30
CULV.9	861198.31	1613068.04	873.30
CULV.10	861198.31	1613068.04	873.30

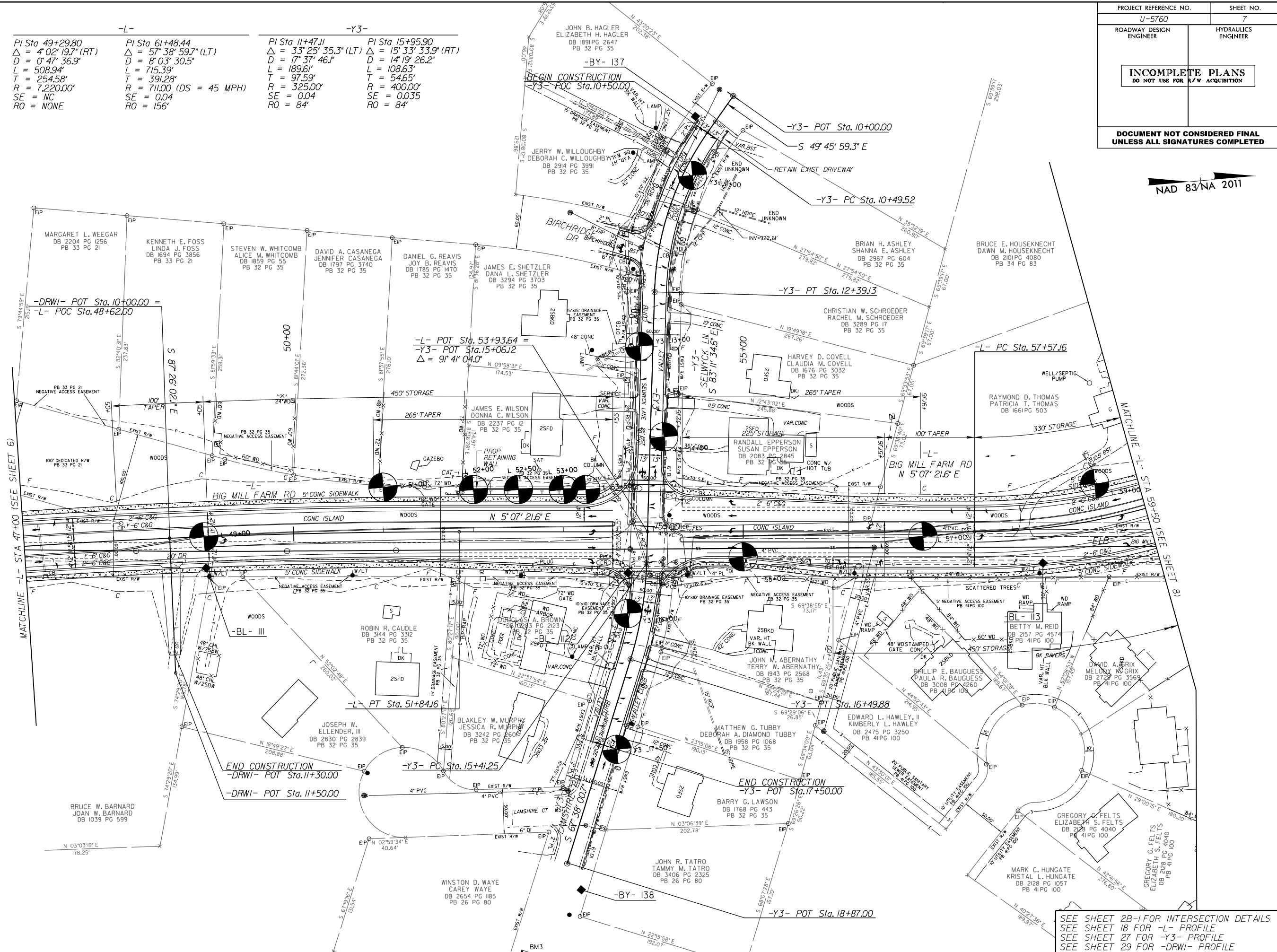
SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE SHEETS 17 AND 18 FOR -L- PROFILE
SEE SHEETS 21THRU 23 FOR -YI- (LT) PROFILE
SEE SHEETS 23 AND 24 FOR -YI- (RT) PROFILE
SEE SHEET 25 FOR -YIRPB- PROFILE
SEE SHEET 25 FOR -YIRPB- PROFILE
SEE SHEET 26 FOR -YIRPD- PROFILE
SEE SHEET 26 FOR -YIRPD- PROFILE
SEE SHEETS S-1THRU S-XX FOR STRUCTURE PLANS
SEE SHEETS C-1THRU C-XX FOR CULVERT PLANS

PROJECT REFERENCE NO.		SHEET NO.
U-5760		6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

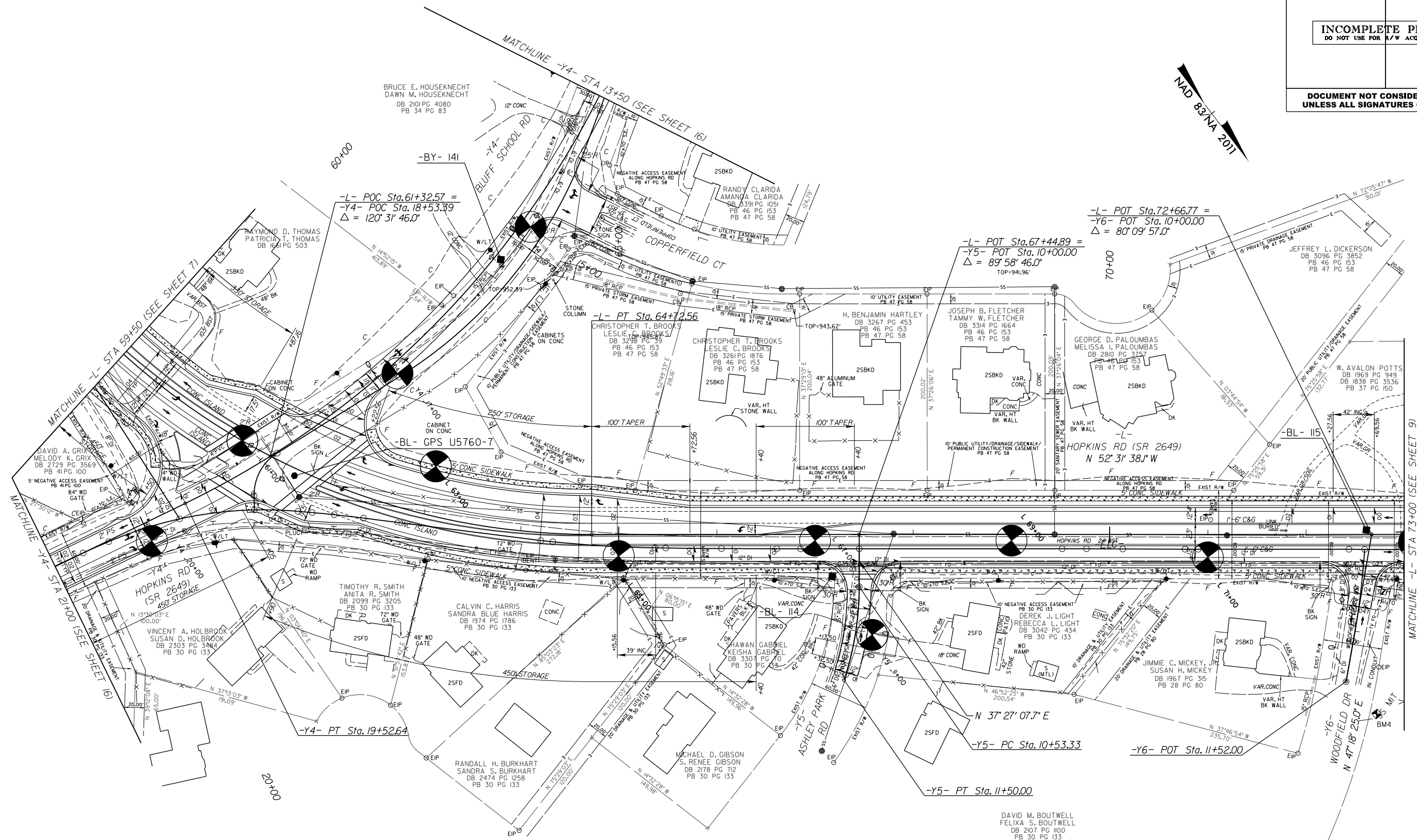


SEE SHEET 2B-1 FOR INTERSECTION DETAIL
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 27 FOR -Y2- PROFILE

-L-		-Y3-	
PI Sta 49+29.80 Δ = 4' 02' 19.7" (RT) D = 0' 47' 36.9" L = 508.94' T = 254.58' R = 7,220.00' SE = NC RO = NONE	PI Sta 61+48.44 Δ = 57' 38' 59.7" (LT) D = 8' 03' 30.5" L = 715.39' T = 391.28' R = 711.00 (DS = 45 MPH) SE = 0.04 RO = 156'	PI Sta 11+47.11 Δ = 33' 25' 35.3" (LT) D = 17' 37' 46.1" L = 189.61' T = 97.59' R = 325.00' SE = 0.04 RO = 84'	PI Sta 15+95.90 Δ = 15' 33' 33.9" (RT) D = 14' 19' 26.2" L = 108.63' T = 54.65' R = 400.00' SE = 0.035 RO = 84'



SEE SHEET 28-I FOR INTERSECTION DETAILS
SEE SHEET 18 FOR -L- PROFILE
SEE SHEET 27 FOR -Y3- PROFILE
SEE SHEET 29 FOR -DRWI- PROFILE



★ TRAFFIC SIGNAL
SEE SHEET 2B-2 FOR INTERSECTION DETAIL
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 28 FOR -Y4- PROFILE
SEE SHEET 28 FOR -Y5- PROFILE
SEE SHEET 28 FOR -Y6- PROFILE

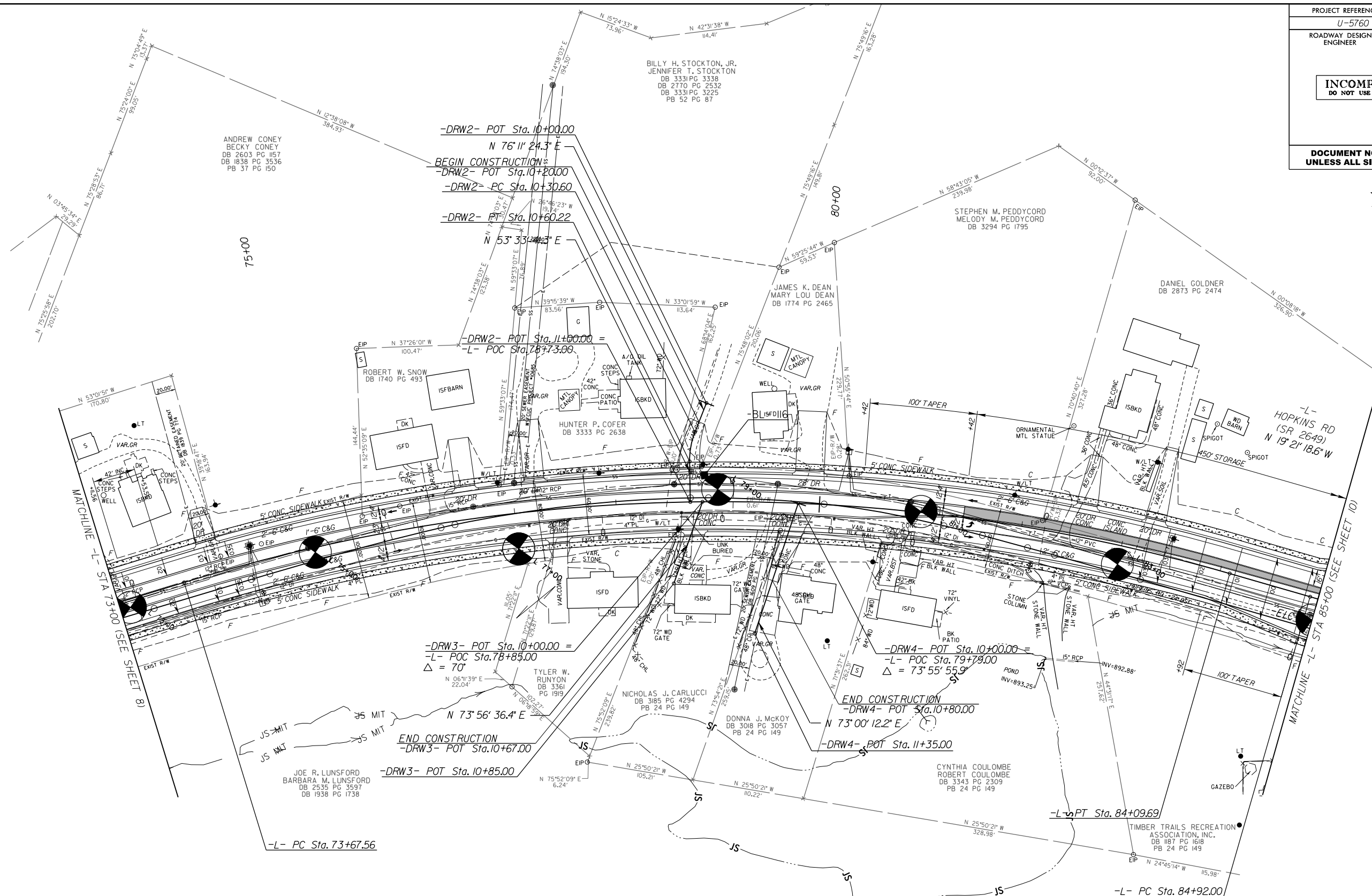
-L-	-Y4-	-Y5-
<i>PI Sta 6I+48.4</i>	<i>PI Sta 16+9.08</i>	<i>PI Sta 1I+02.06</i>
$\Delta = 57^{\circ} 38' 59.7" (LT)$	$\Delta = 43^{\circ} 29' 40.1" (RT)$	$\Delta = 18^{\circ} 27' 42.9" (RT)$
$D = 8^{\circ} 03' 30.5"$	$D = 6^{\circ} 11' 14.8"$	$D = 19^{\circ} 05' 54.9"$
$L = 715.39'$	$L = 702.95'$	$L = 96.73'$
$T = 391.28'$	$T = 369.38'$	$T = 48.79'$
$R = 711.00' (DS = 45 \text{ MPH})$	$R = 926.00'$	$R = 300.00'$
$SE = 0.04$	$SE = 0.04$	$SE = SEE \text{ PLANS}$
$RO = 156'$	$RO = SEE \text{ PLANS}$	$RO = SEE \text{ PLANS}$

REVISIONS

5/14/99

DATE\$

NAD 83/NA 2011



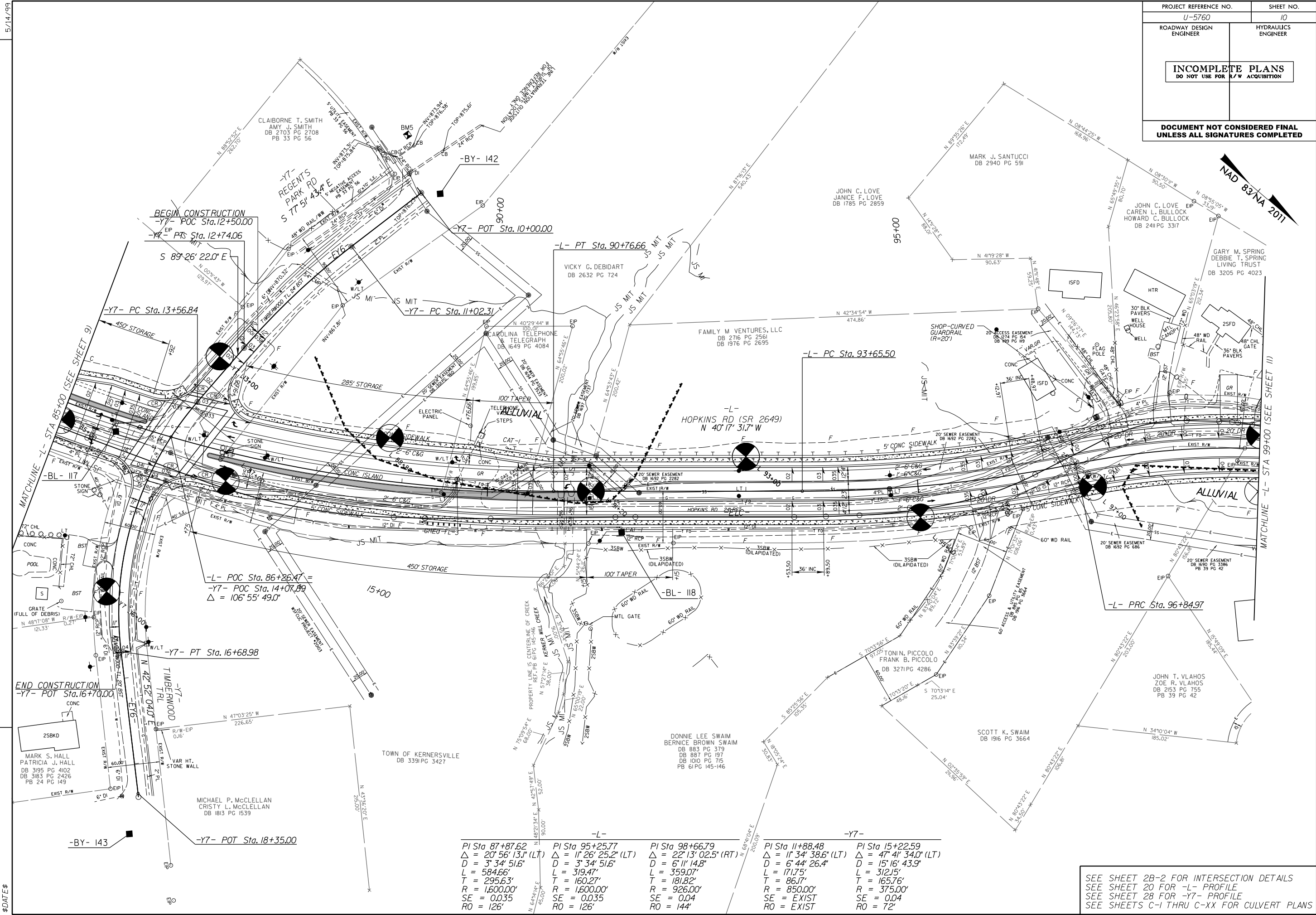
<i>-L-</i>		<i>-DRW2-</i>	
<i>PI Sta</i> 79+03.68	<i>PI Sta</i> 87+87.62	<i>PI Sta</i> 10+45.61	
$\Delta = 33^{\circ} 10' 19.5''$ (RT)	$\Delta = 20^{\circ} 56' 13''$ (LT)	$\Delta = 22^{\circ} 37' 43.0''$ (LT)	
<i>D</i> = 3' 10" 59.2"	<i>D</i> = 3' 34" 51.6"	<i>D</i> = 76' 23" 39.7"	
<i>L</i> = 1,042.13'	<i>L</i> = 584.66'	<i>L</i> = 296.62'	
<i>T</i> = 536.13'	<i>T</i> = 295.63'	<i>T</i> = 150.01'	
<i>R</i> = 1,800.00'	<i>R</i> = 1,600.00'	<i>R</i> = 75.00'	
<i>SE</i> = 0.035	<i>SE</i> = 0.035		
<i>RO</i> = 147'	<i>RO</i> = 126'		

SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 29 FOR -DRW2-, -DRW3-
AND -DRW4- PROFILES

REVISIONS

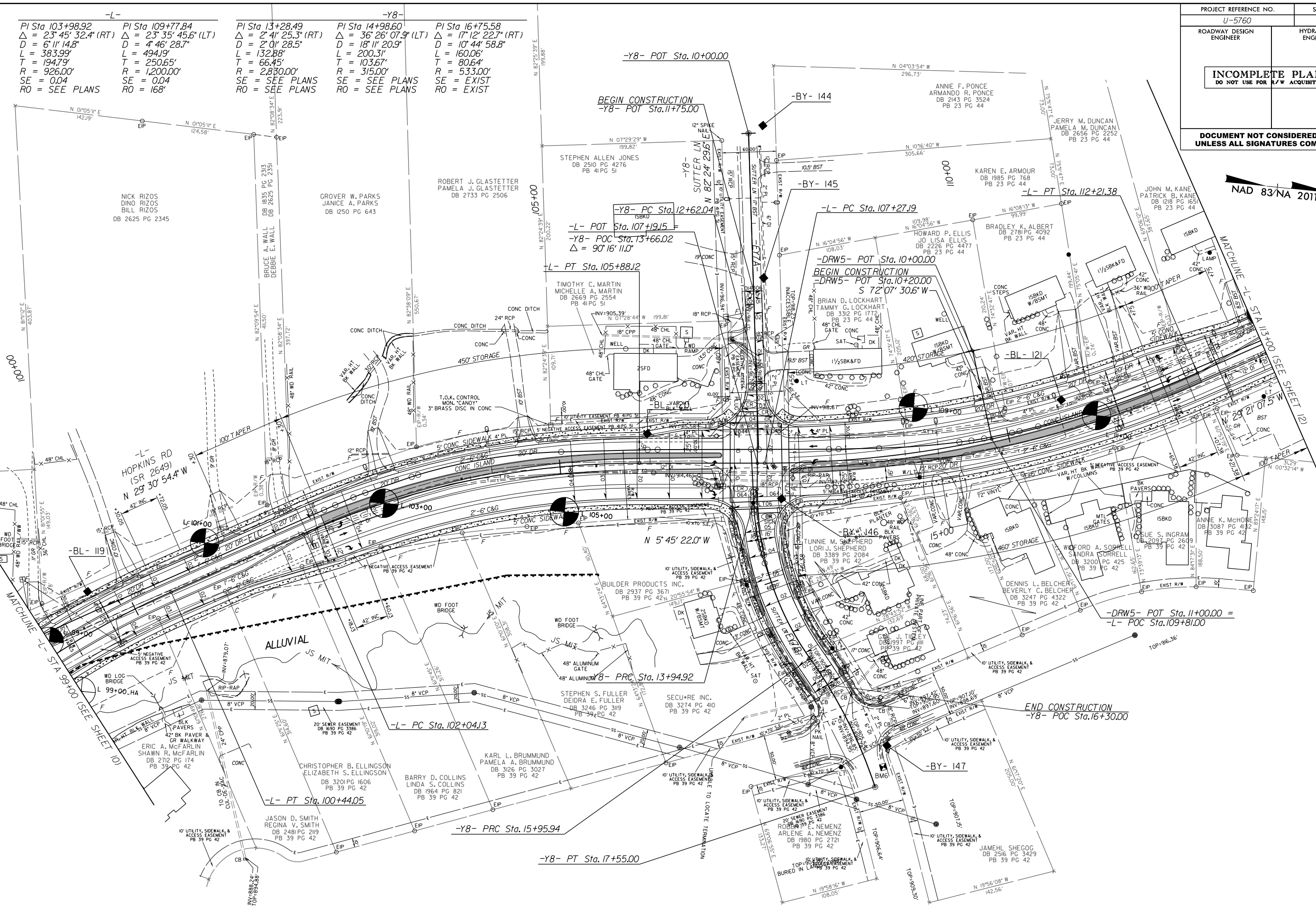
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SEE SHEET 2B-2 FOR INTERSECTION DETAILS
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 28 FOR -Y7- PROFILE
SEE SHEETS C-1 THRU C-XX FOR CULVERT PLANS

PROJECT REFERENCE NO.		SHEET NO.
U-5760		11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



SEE SHEET 28-2 FOR INTERSECTION DETAIL
SEE SHEET 20 FOR -L- PROFILE
SEE SHEET 29 FOR -Y8- & -DRW5- PROFILES

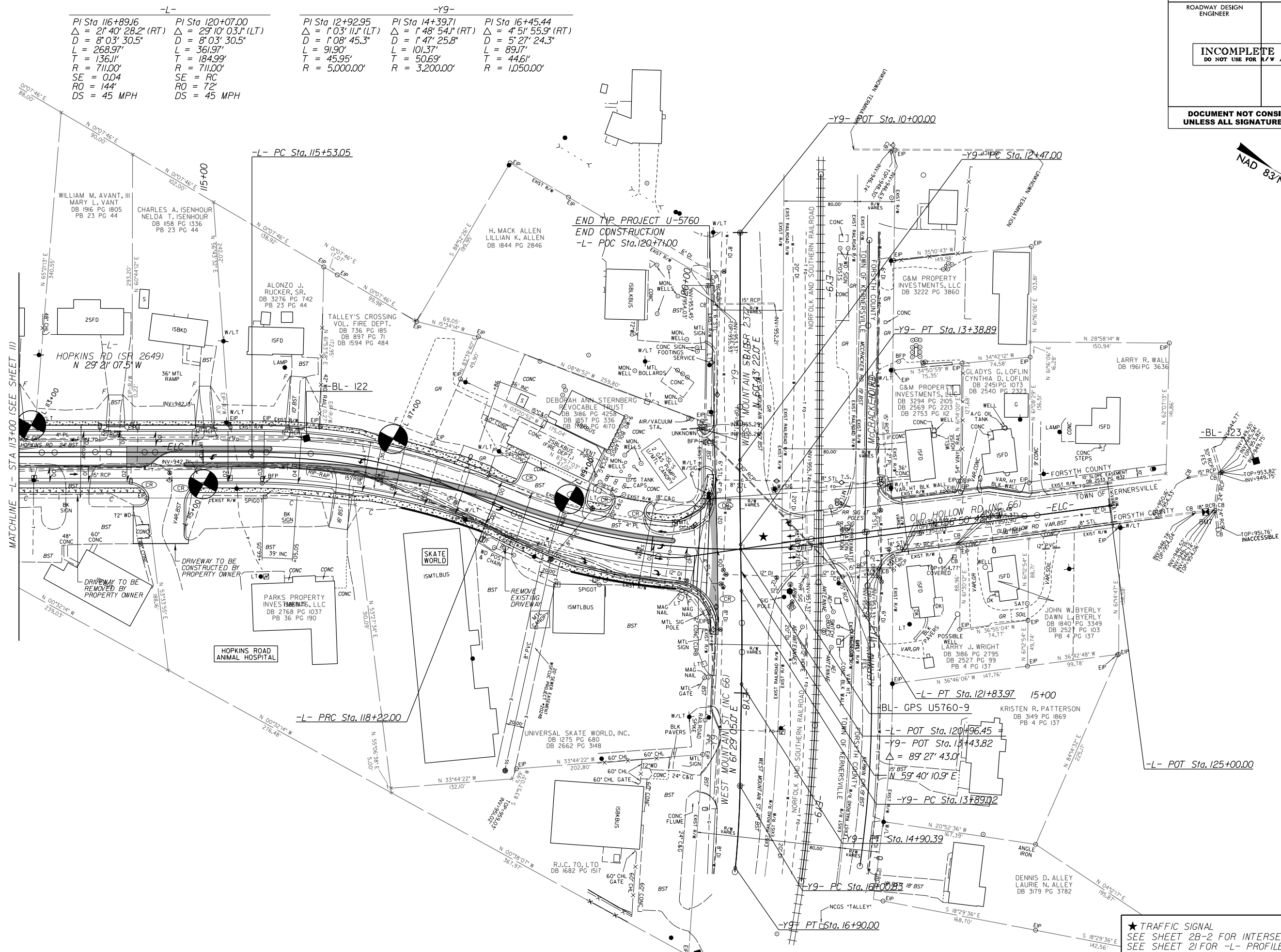
REVISIONS

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DATE\$

NAD 83/NA 2011

5/14/99

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REVISIONS

\$DATE\$

PROJECT REFERENCE NO.
U-5760

ROADWAY DESIGN
ENGINEER

SHEET NO.
13

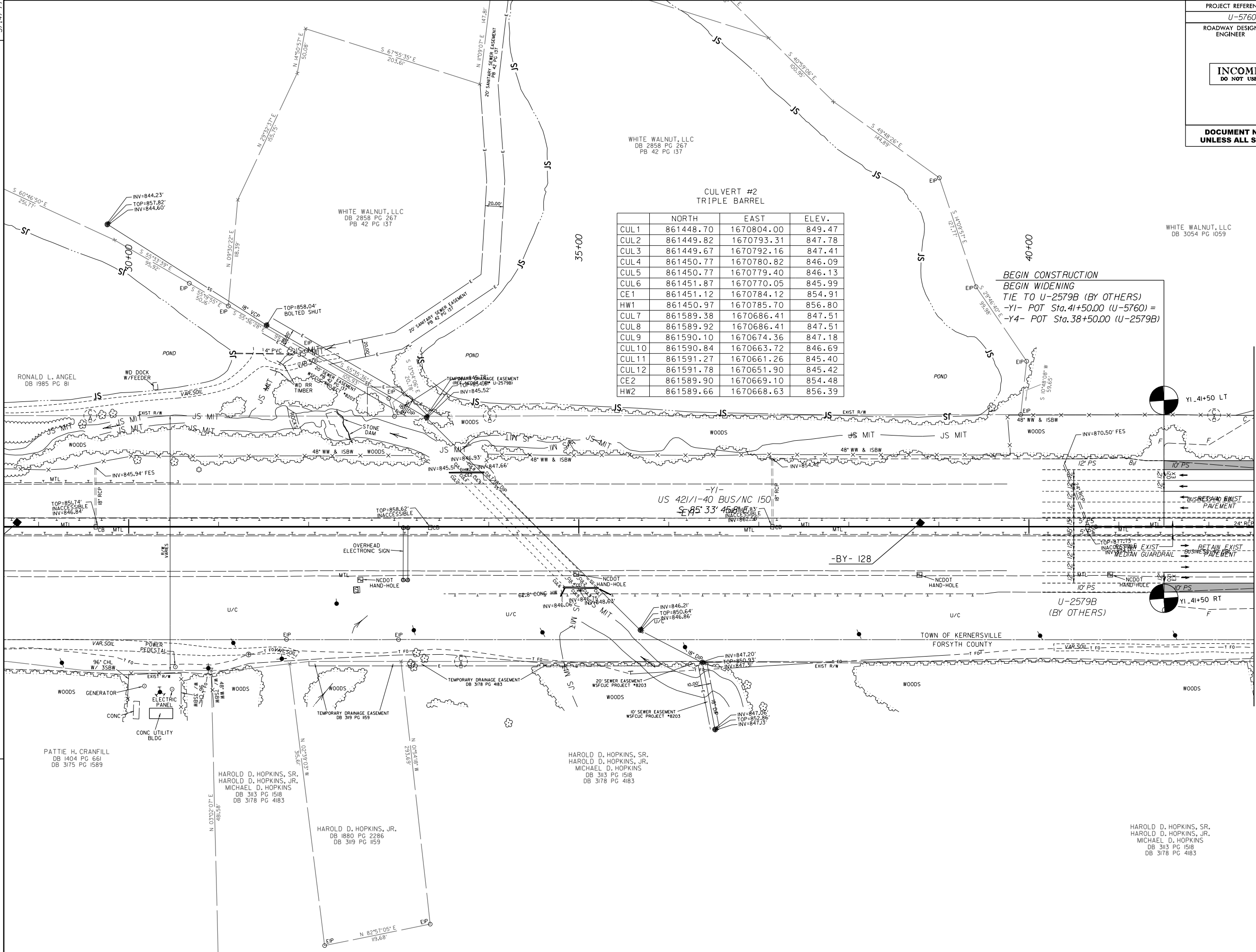
HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
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NAD 83/NA 2011

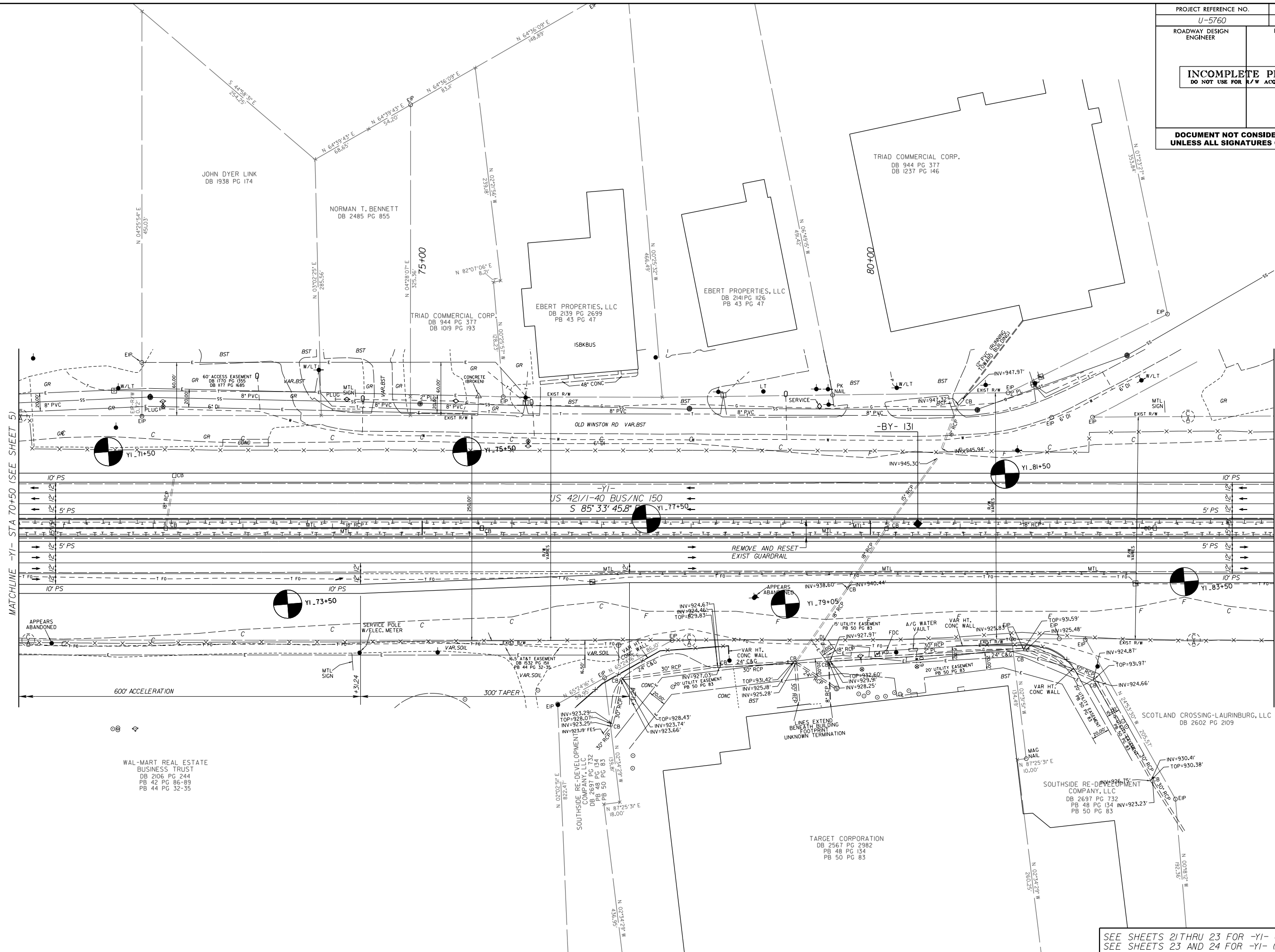
MATCHLINE -YI- STA 42+50 (SEE SHEET 5)



HAROLD D. HOPKINS, SR.
HAROLD D. HOPKINS, JR.
MICHAEL D. HOPKINS
DB 3113 PG 1518
DB 3178 PG 4183

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

2017



SEE SHEETS 21 THRU 23 FOR -YI- (LT) PROFILE
SEE SHEETS 23 AND 24 FOR -YI- (RT) PROFILE

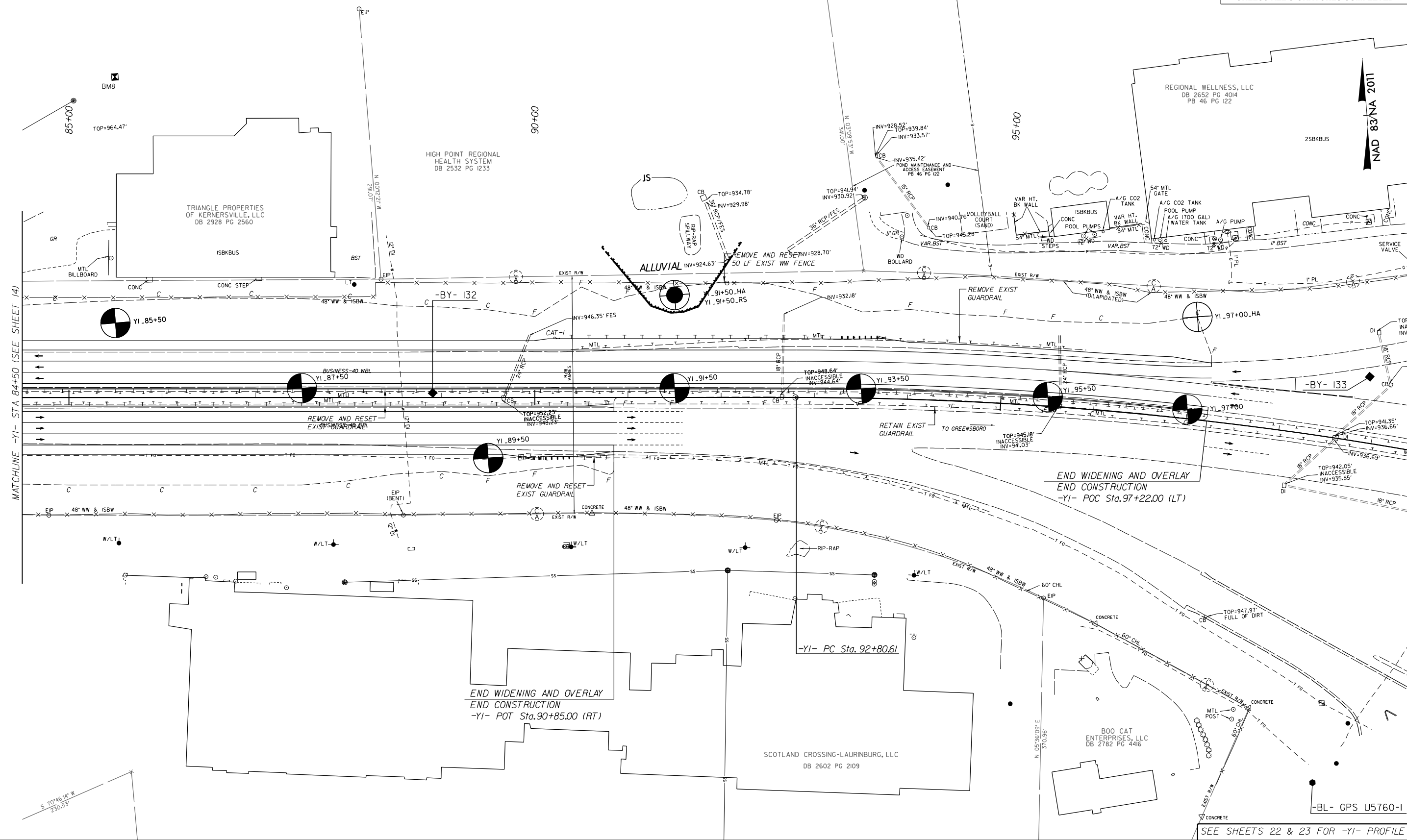
REVISIONS

5/14/99

\$DATE\$

-YI-

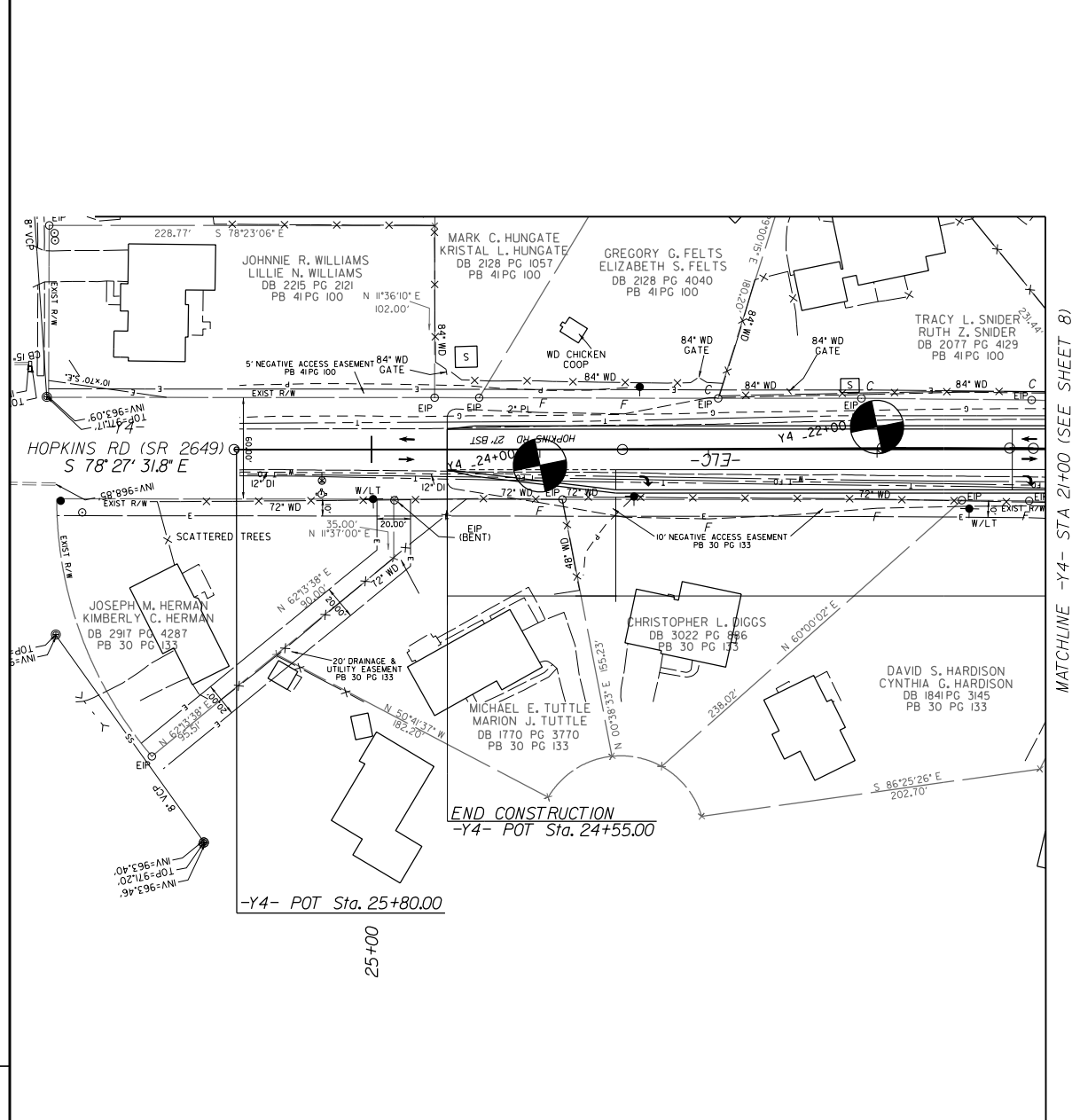
PI Sta 97+75.59
 $\Delta = 14^{\circ} 36' 52.6''$ (RT)
 $D = 1^{\circ} 29' 03.6''$
 $L = 984.58'$
 $T = 494.98'$
 $SE = EXIST$
 $RO = EXIST$



SEE SHEETS 22 & 23 FOR -YI- PROFILE

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
--	--

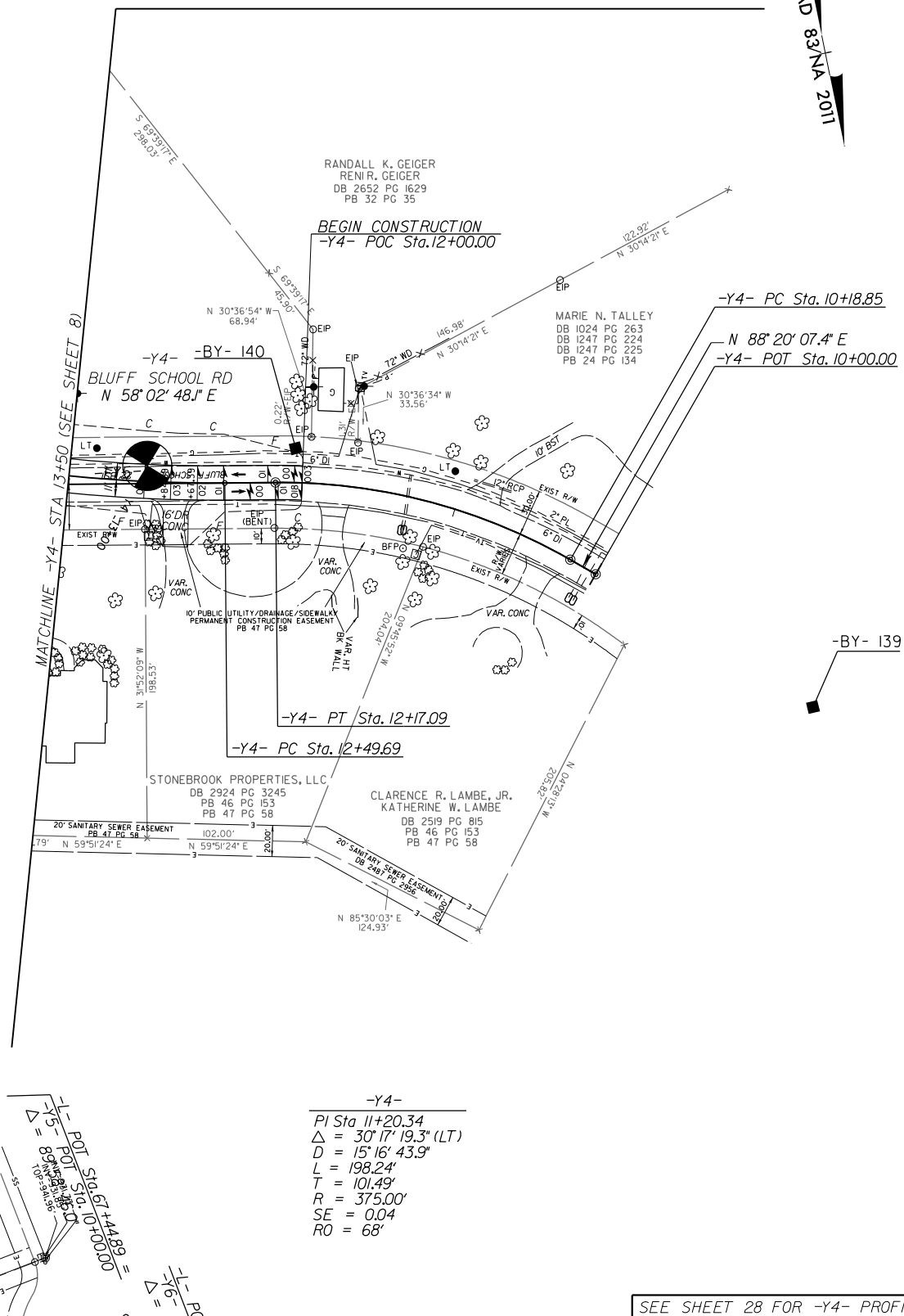
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



NAD 83/NA 2011

MATCHLINE -Y4- STA 21+00 (SEE SHEET 8)

SEE SHEET 28 FOR -Y4- PROFILE

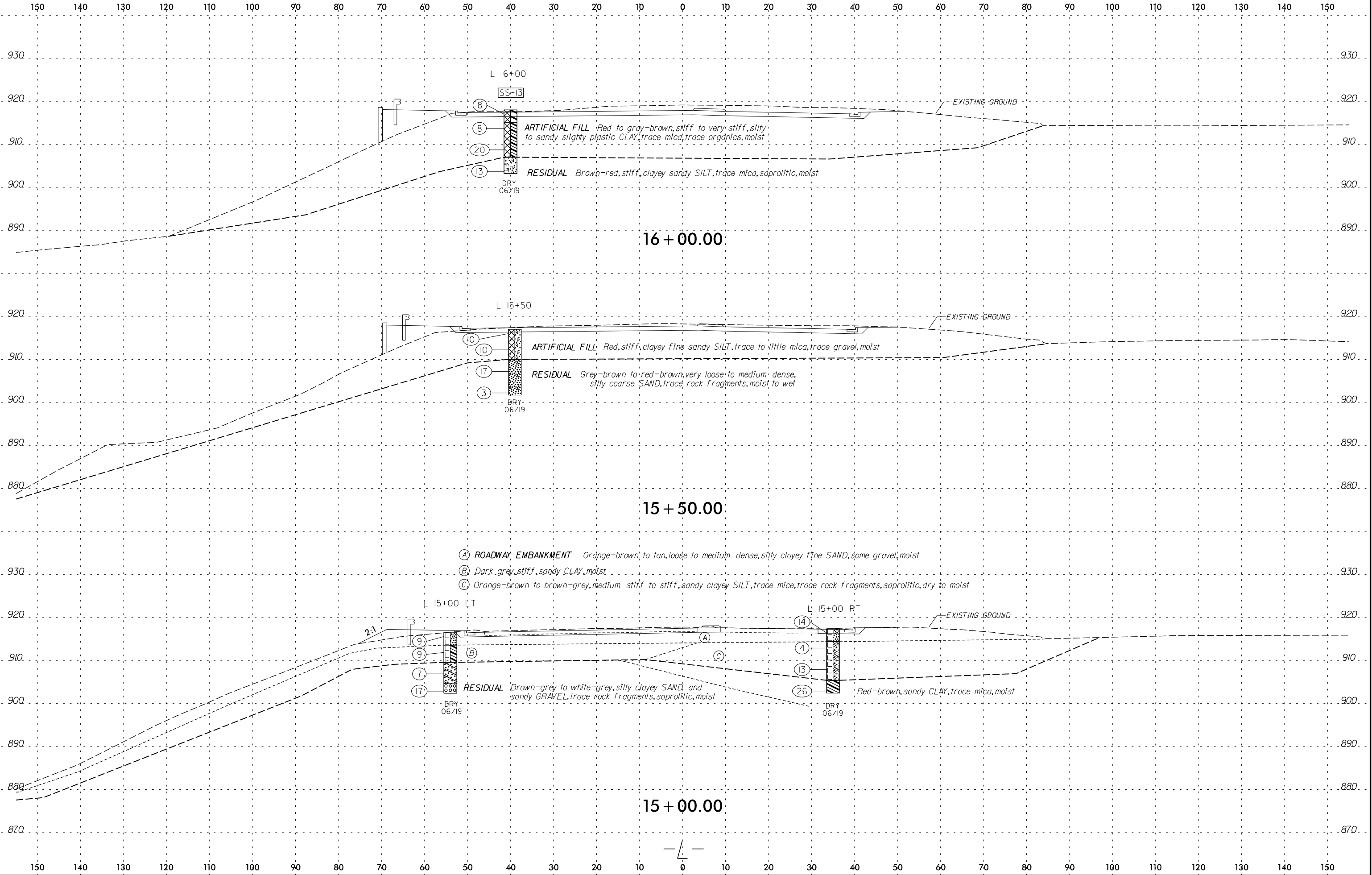


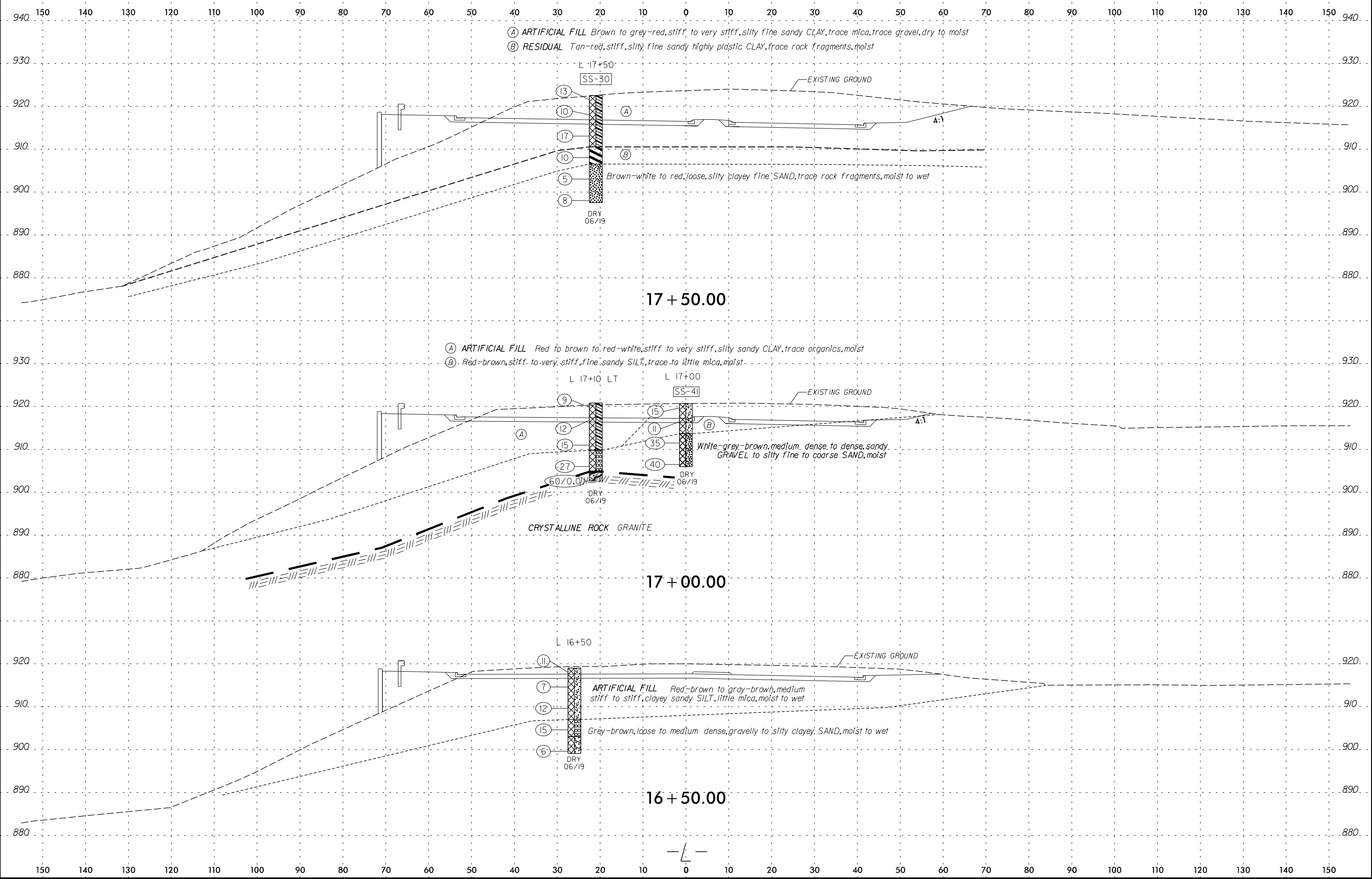
NAD 83/NA 2011

-BY- 139

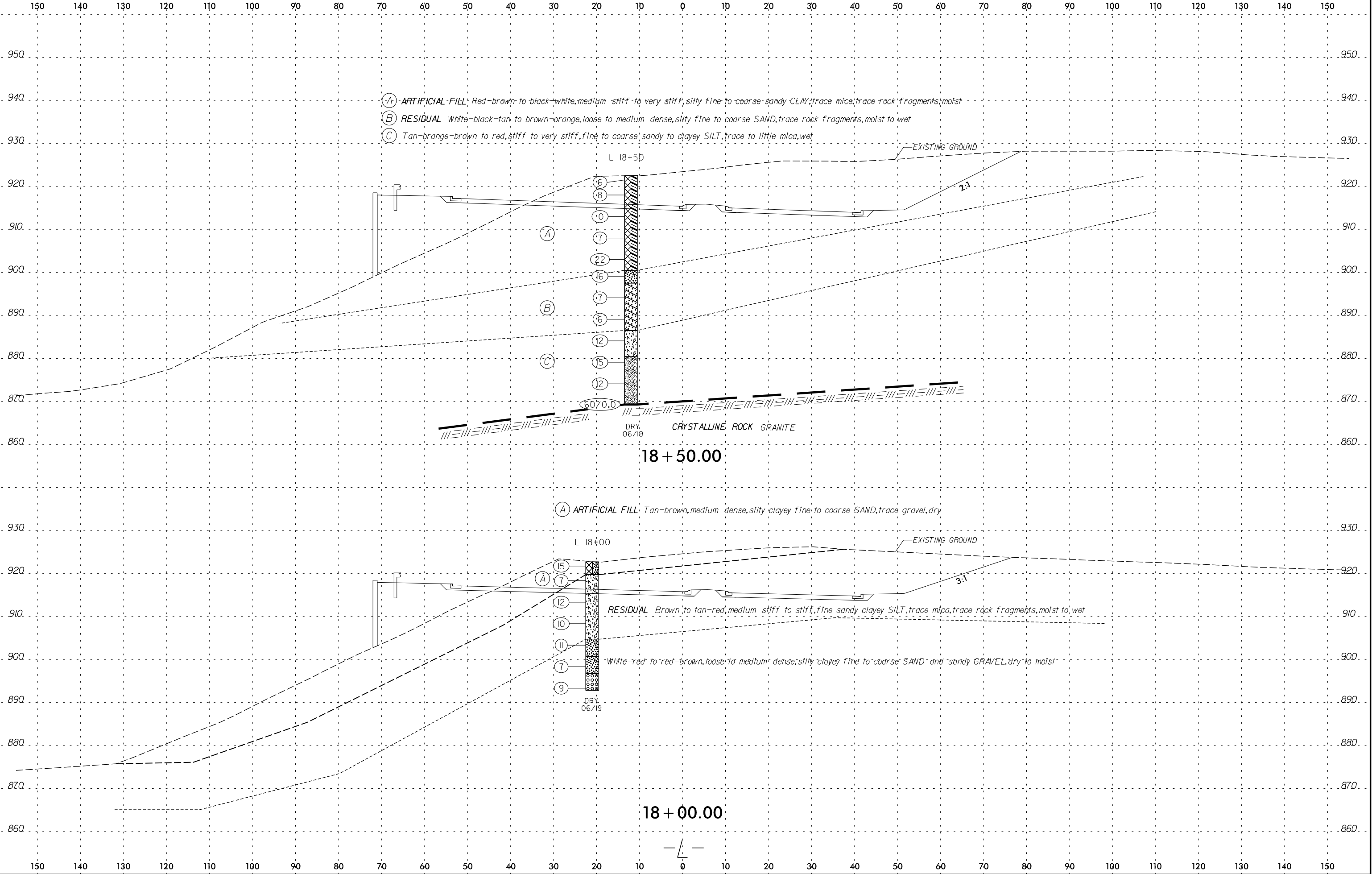
SEE SHEET 28 FOR -Y4- PROFILE

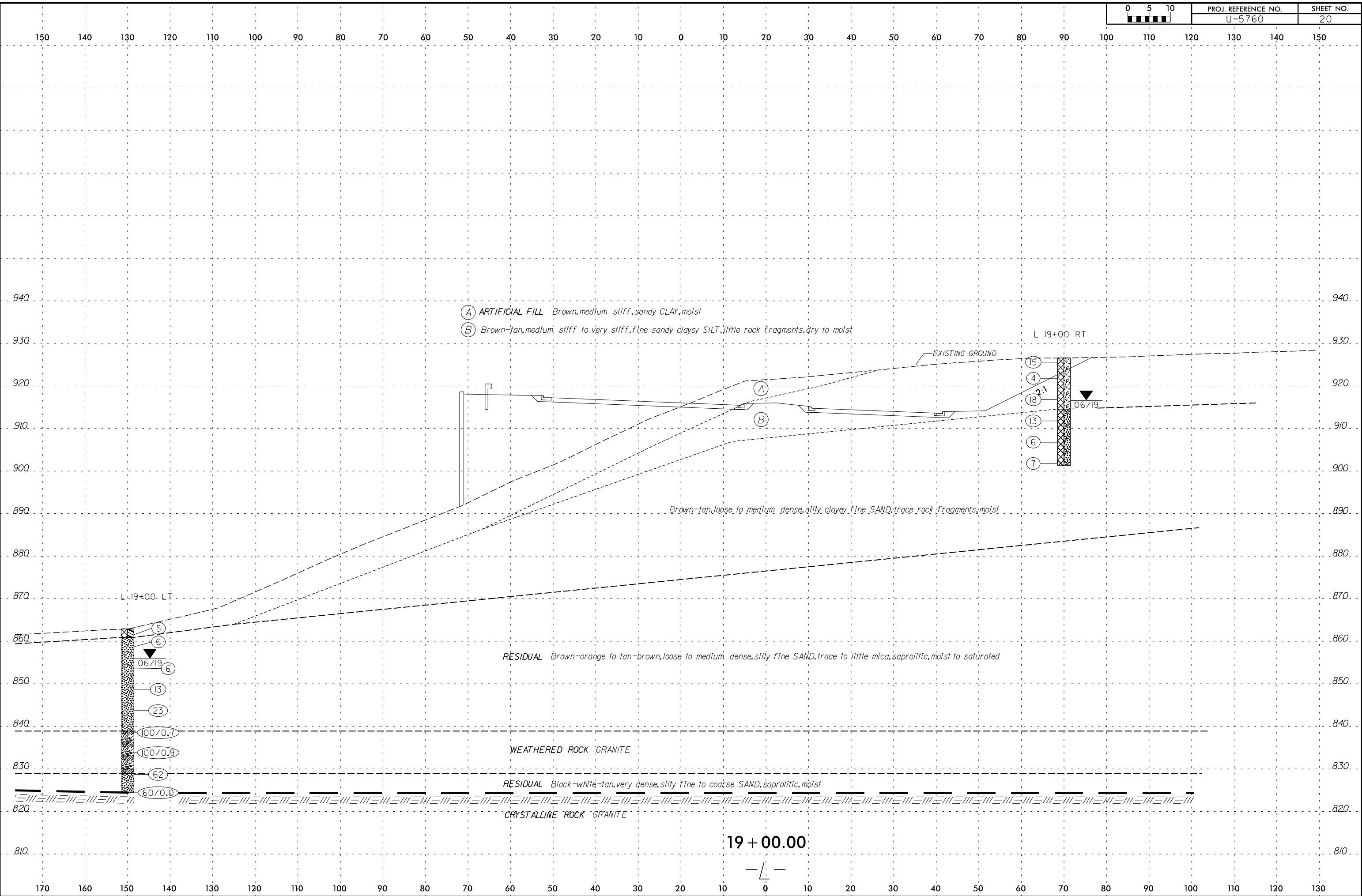
6/23/16



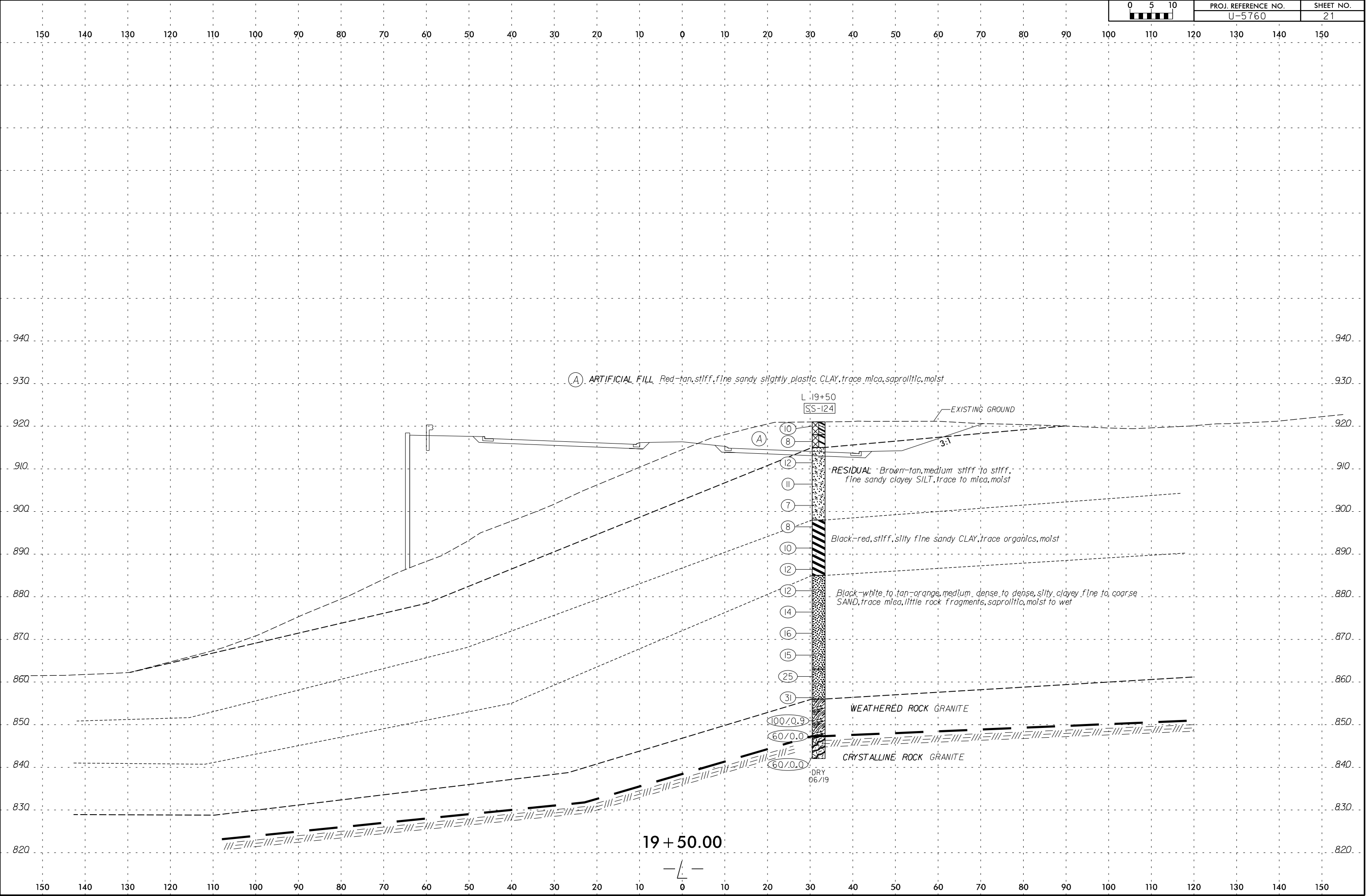


6/23/16

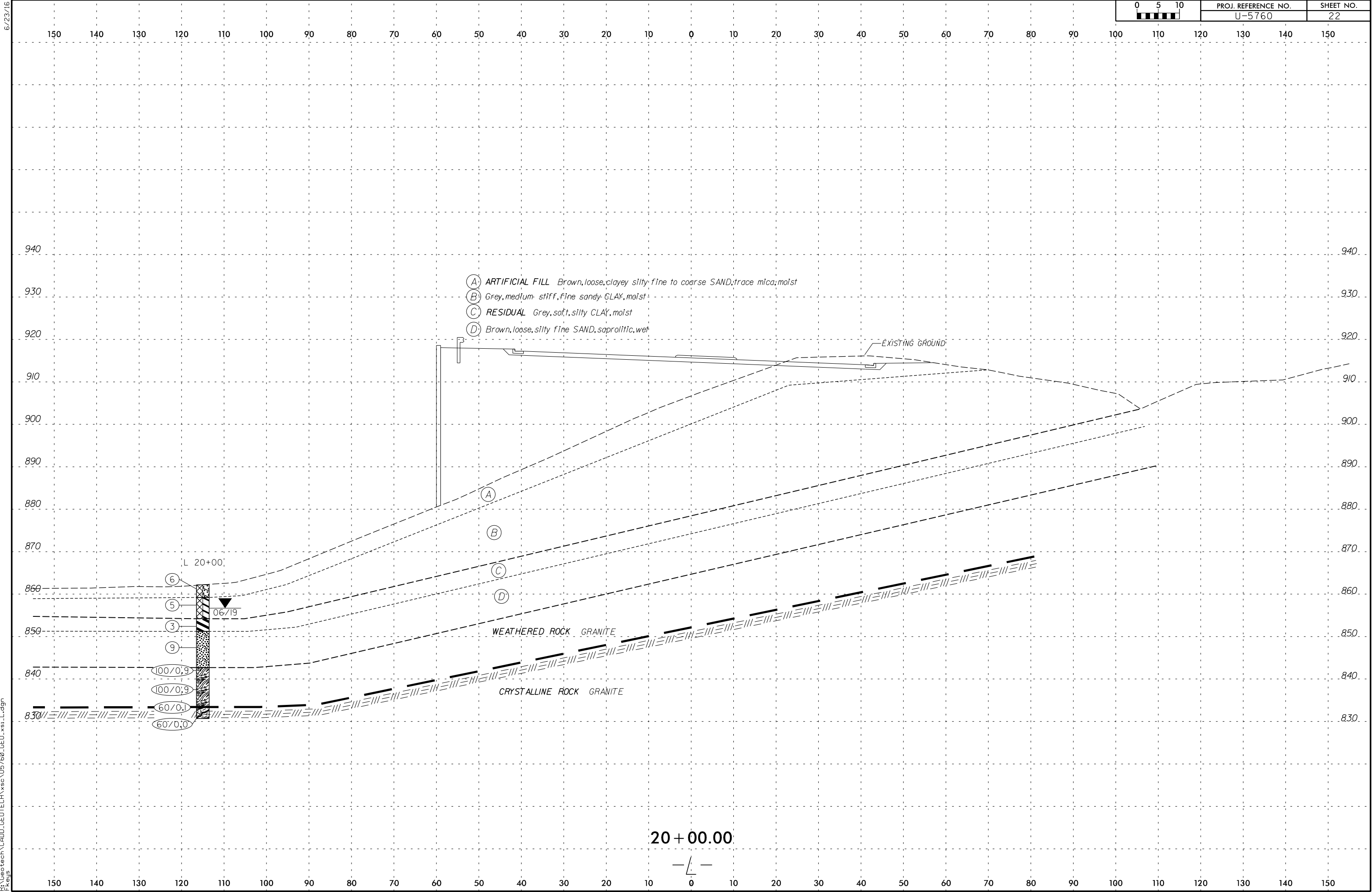


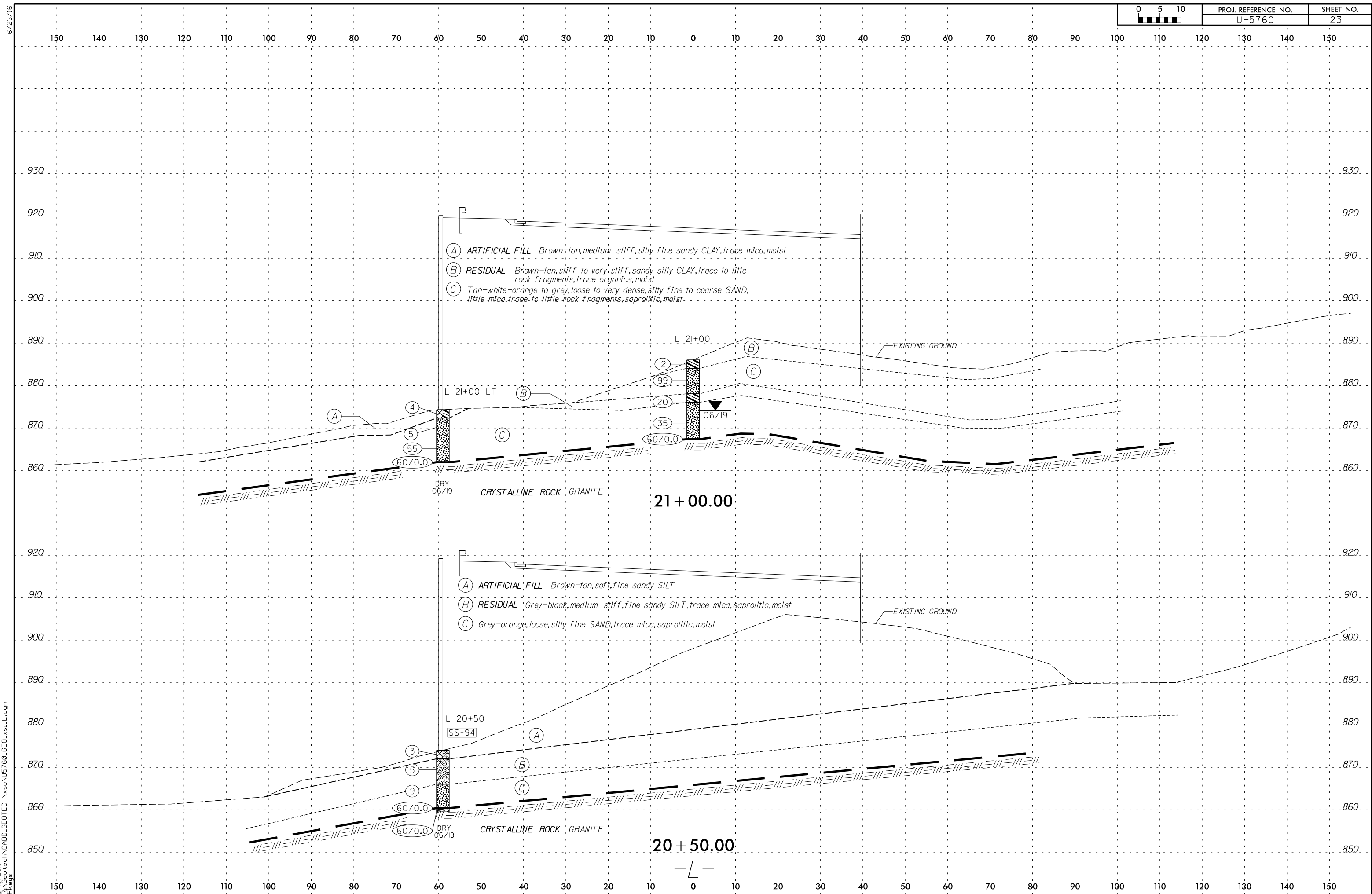


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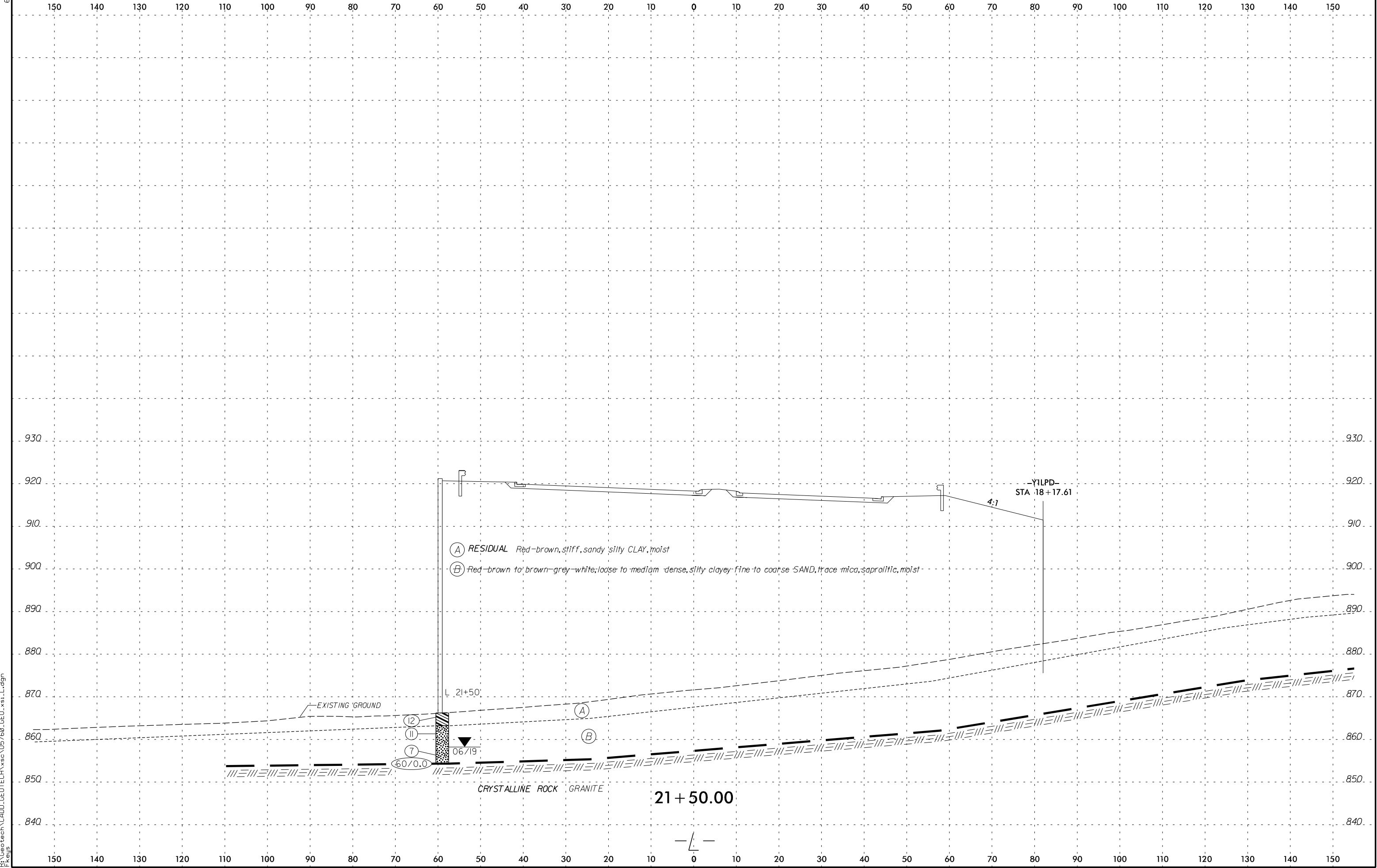


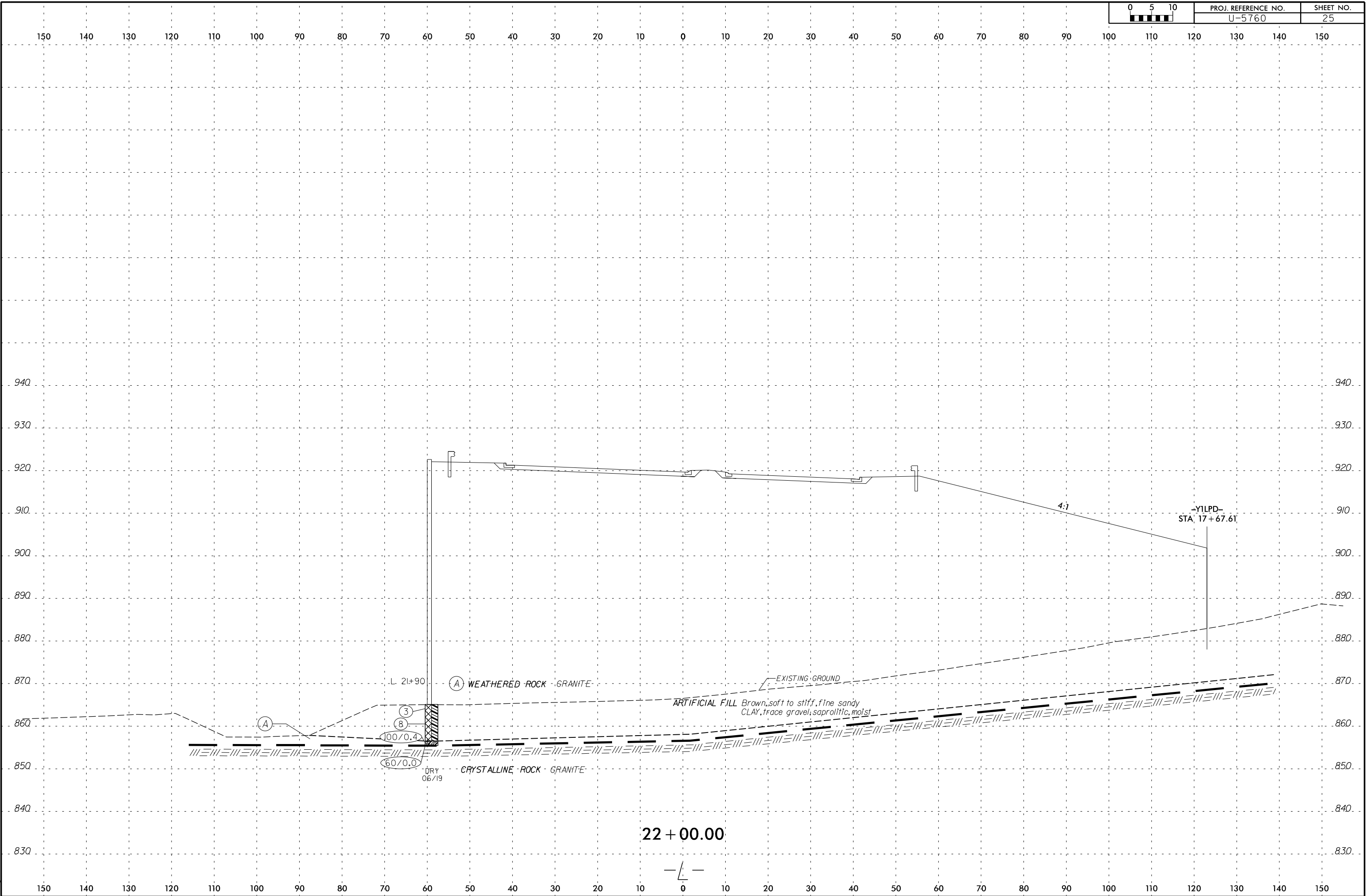
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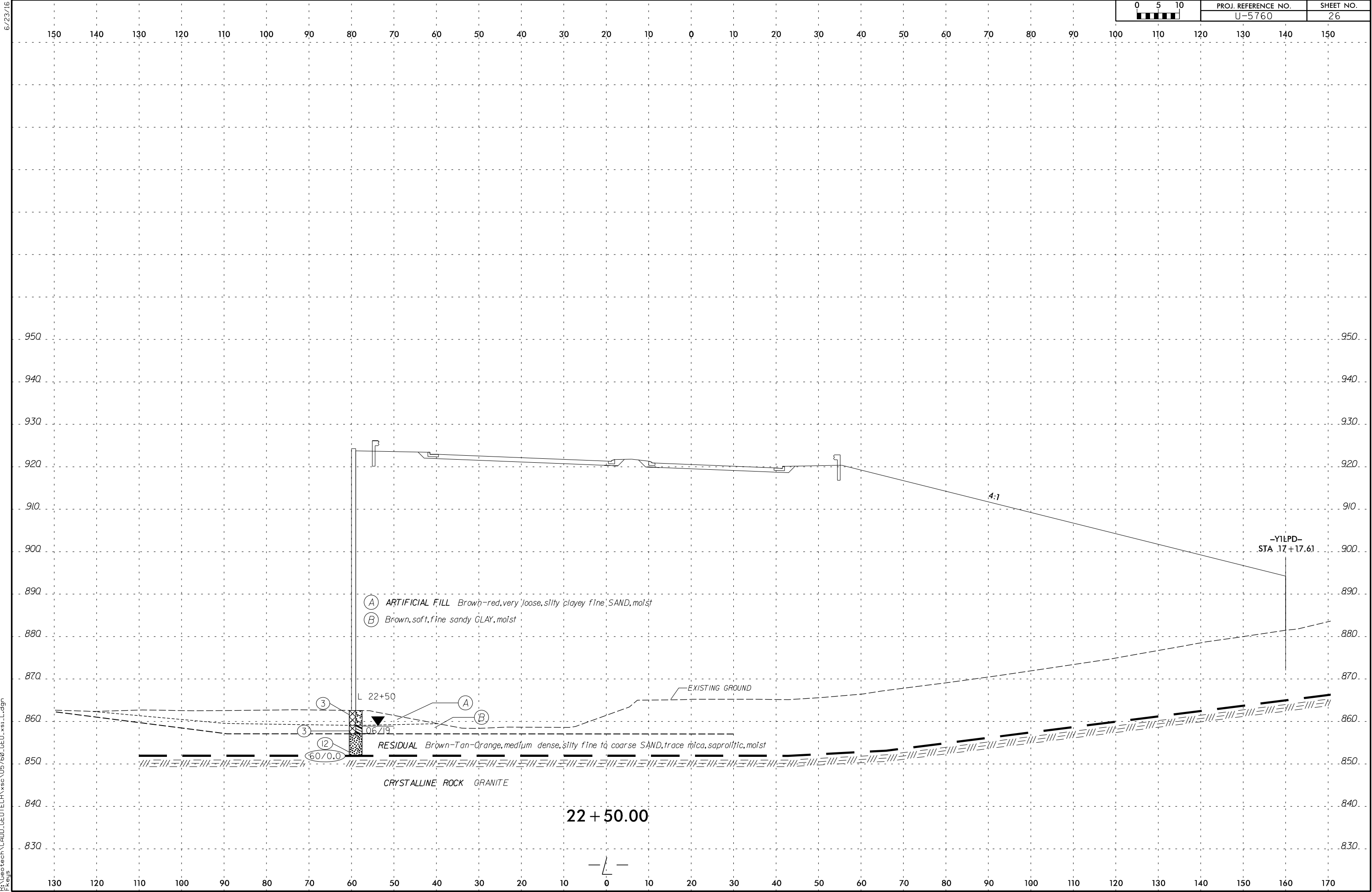


6/23/16

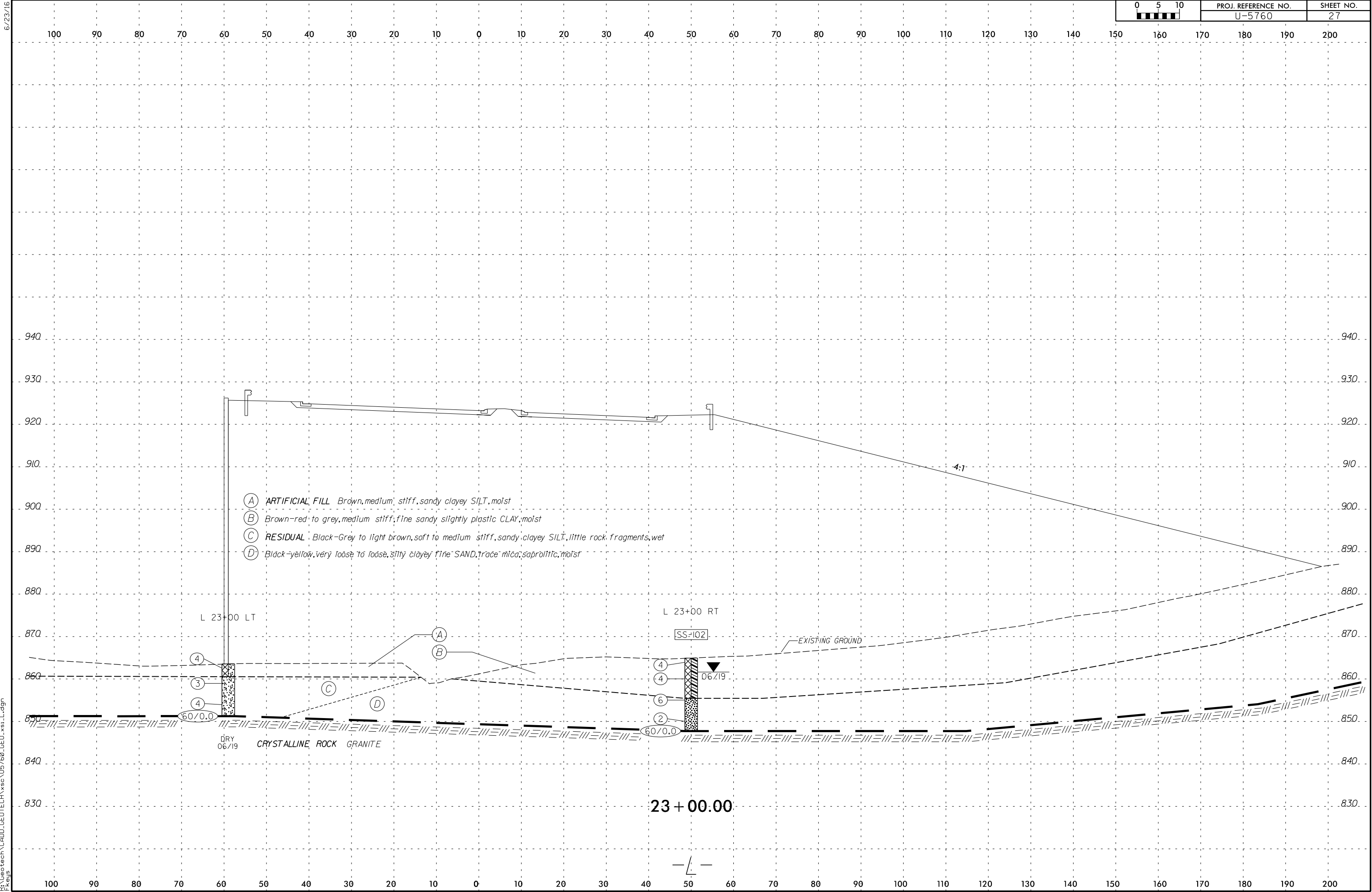




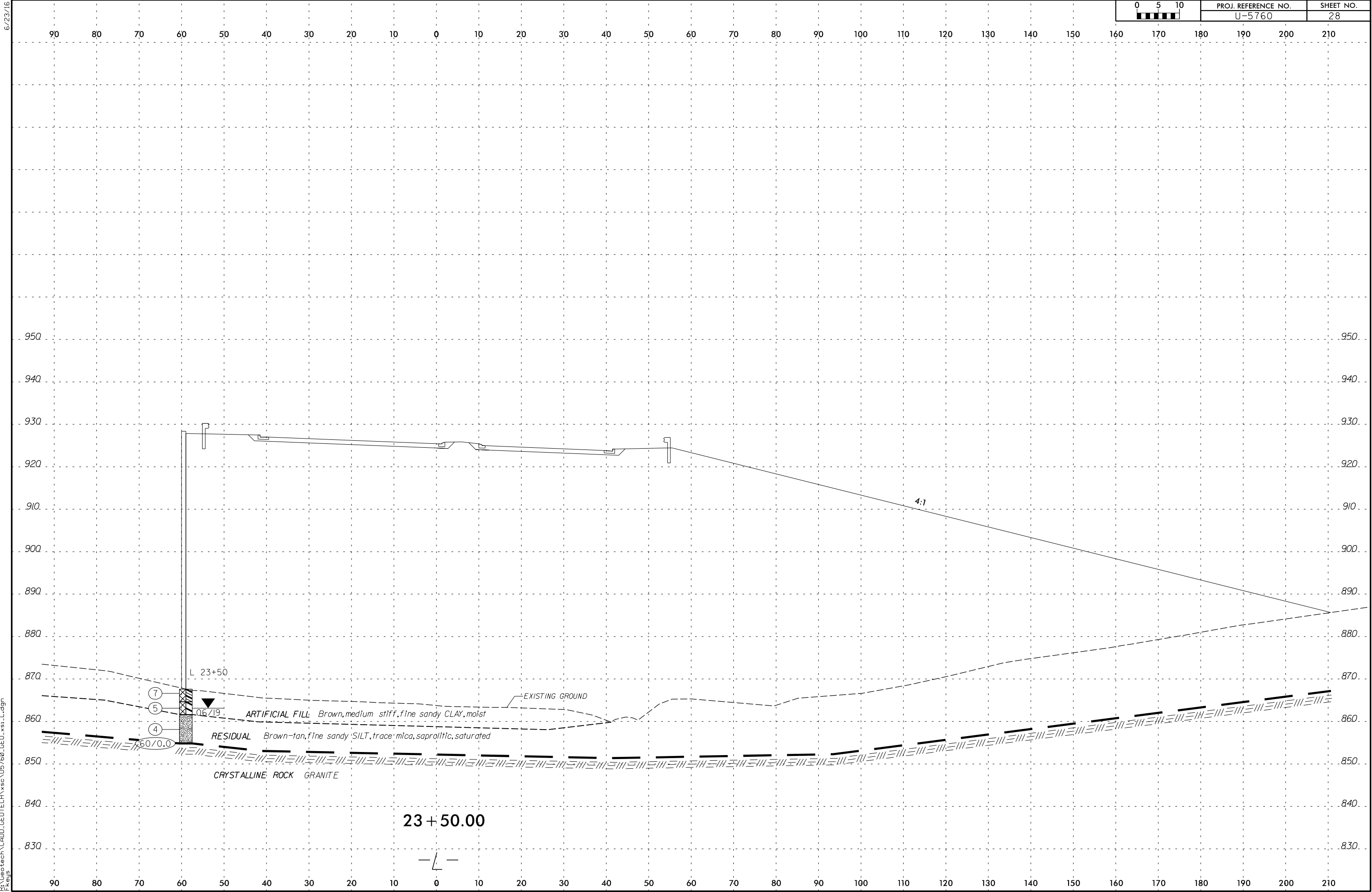
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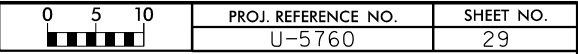


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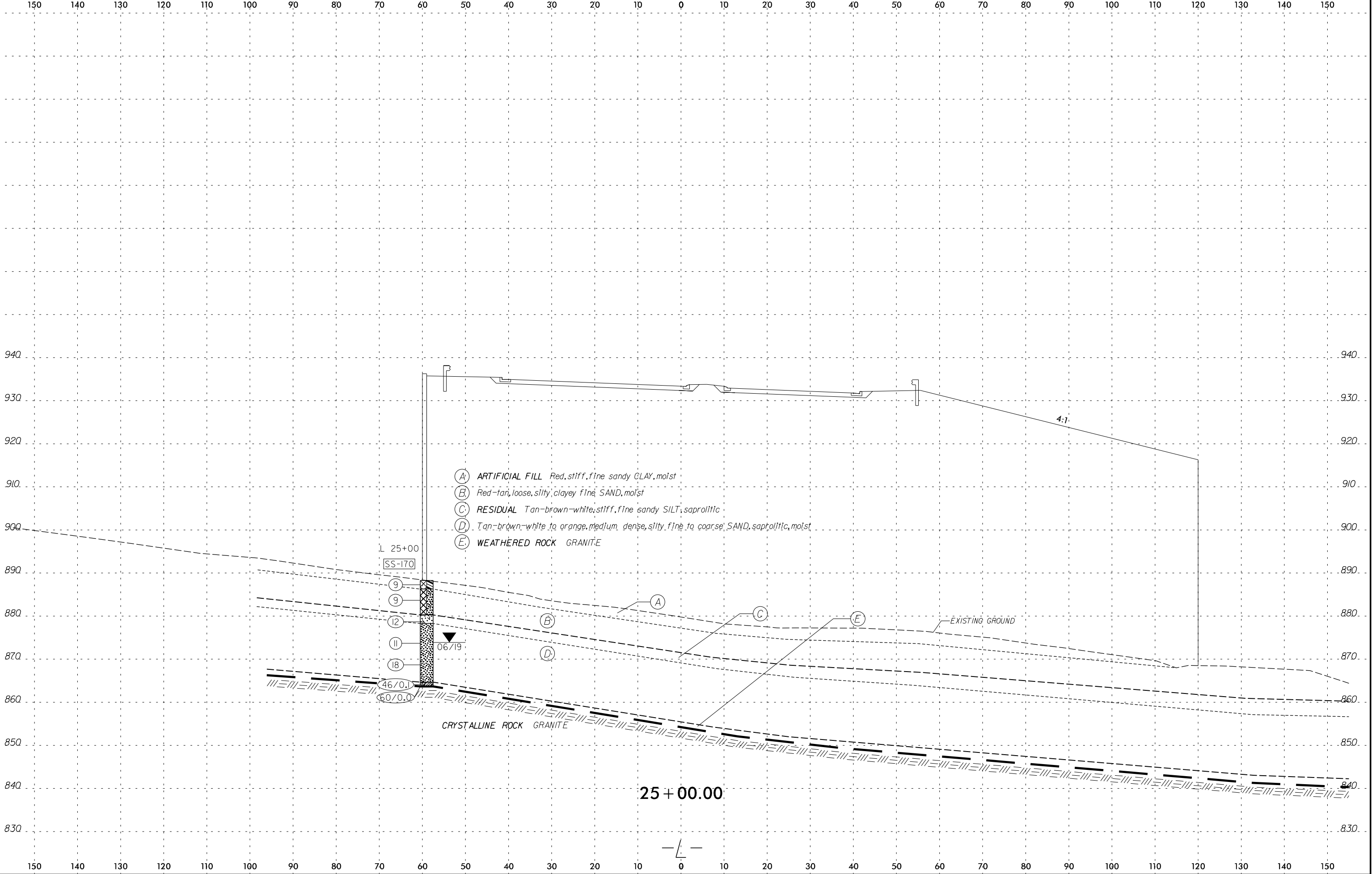


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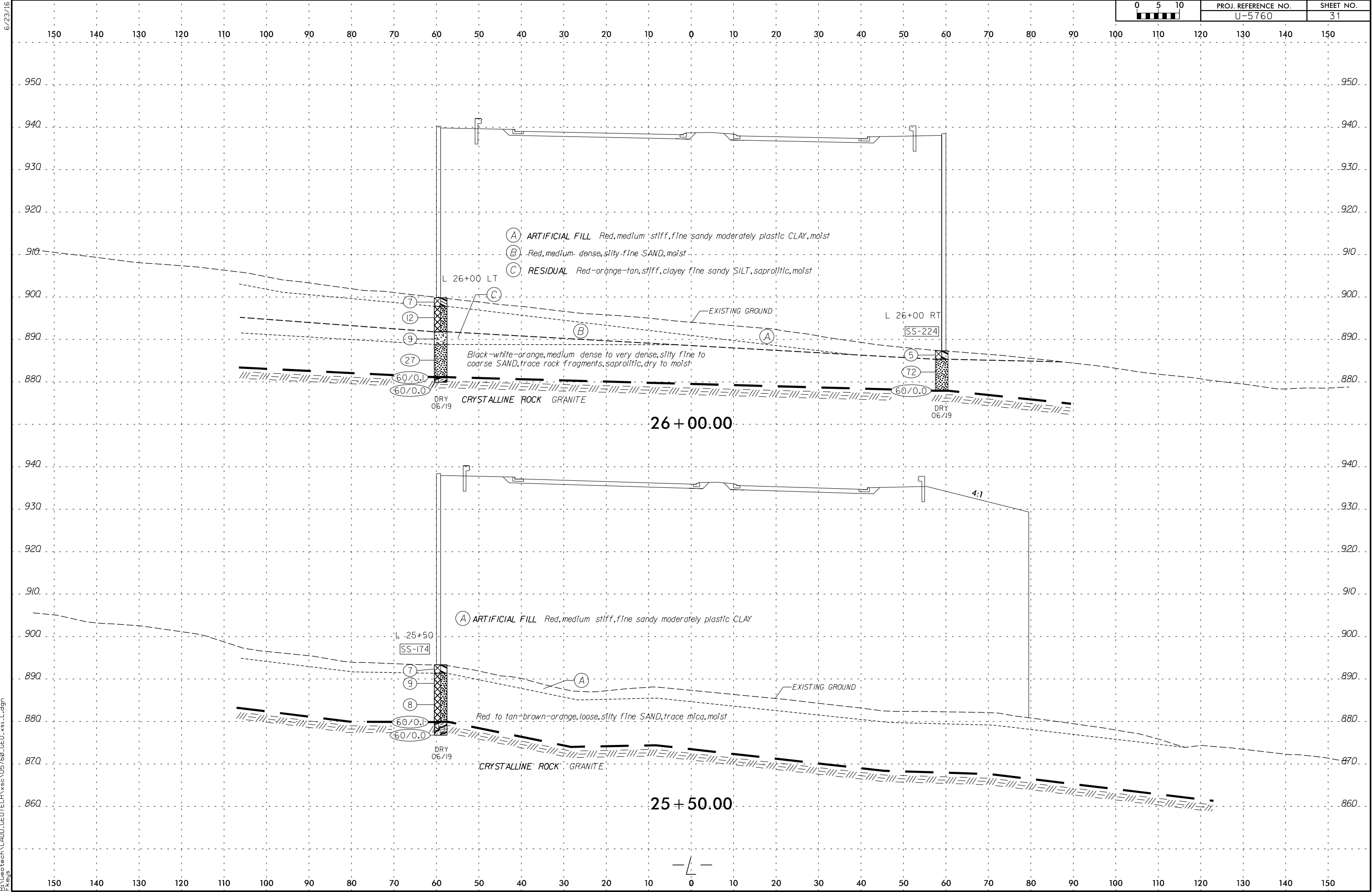




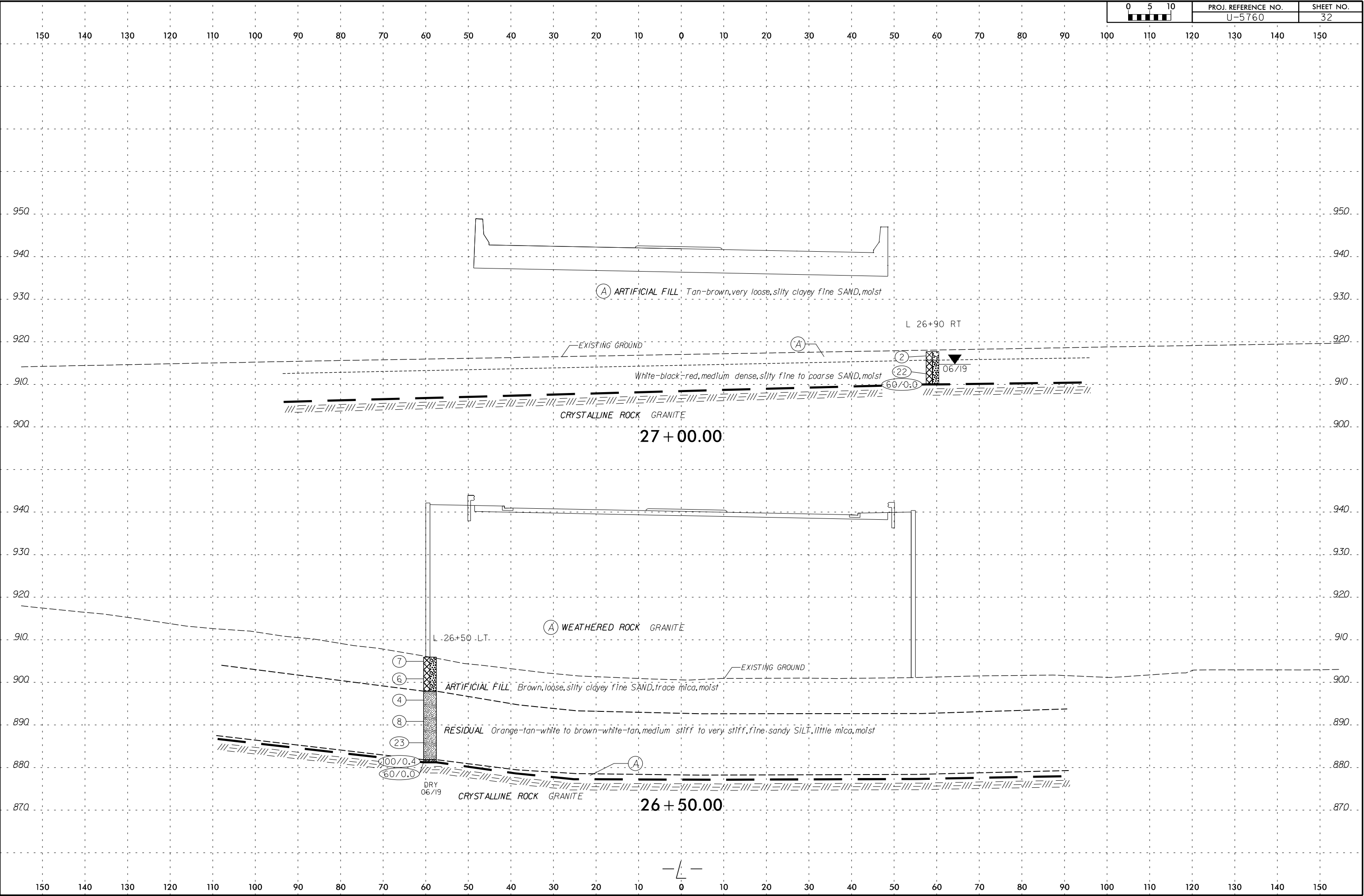
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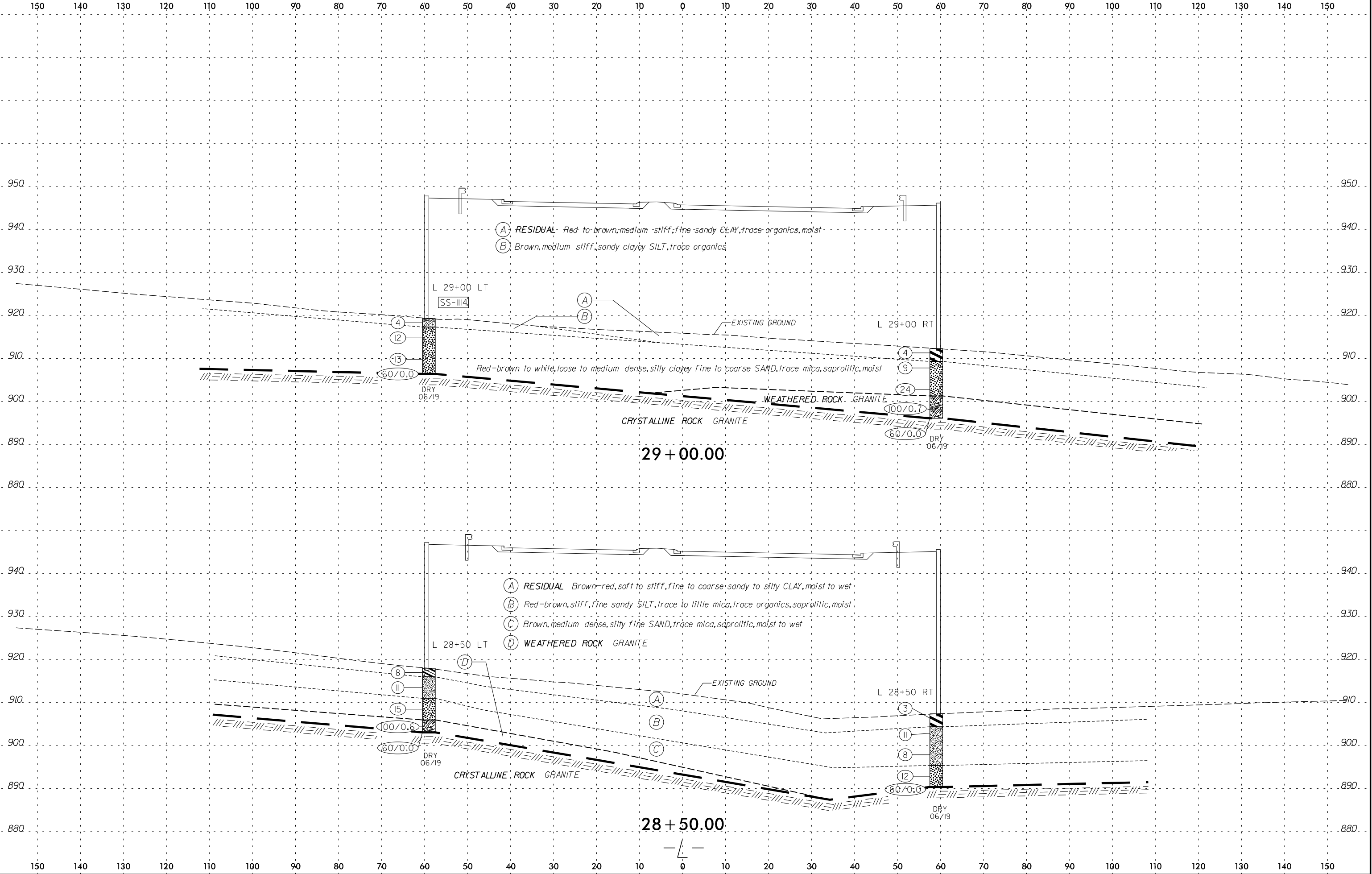
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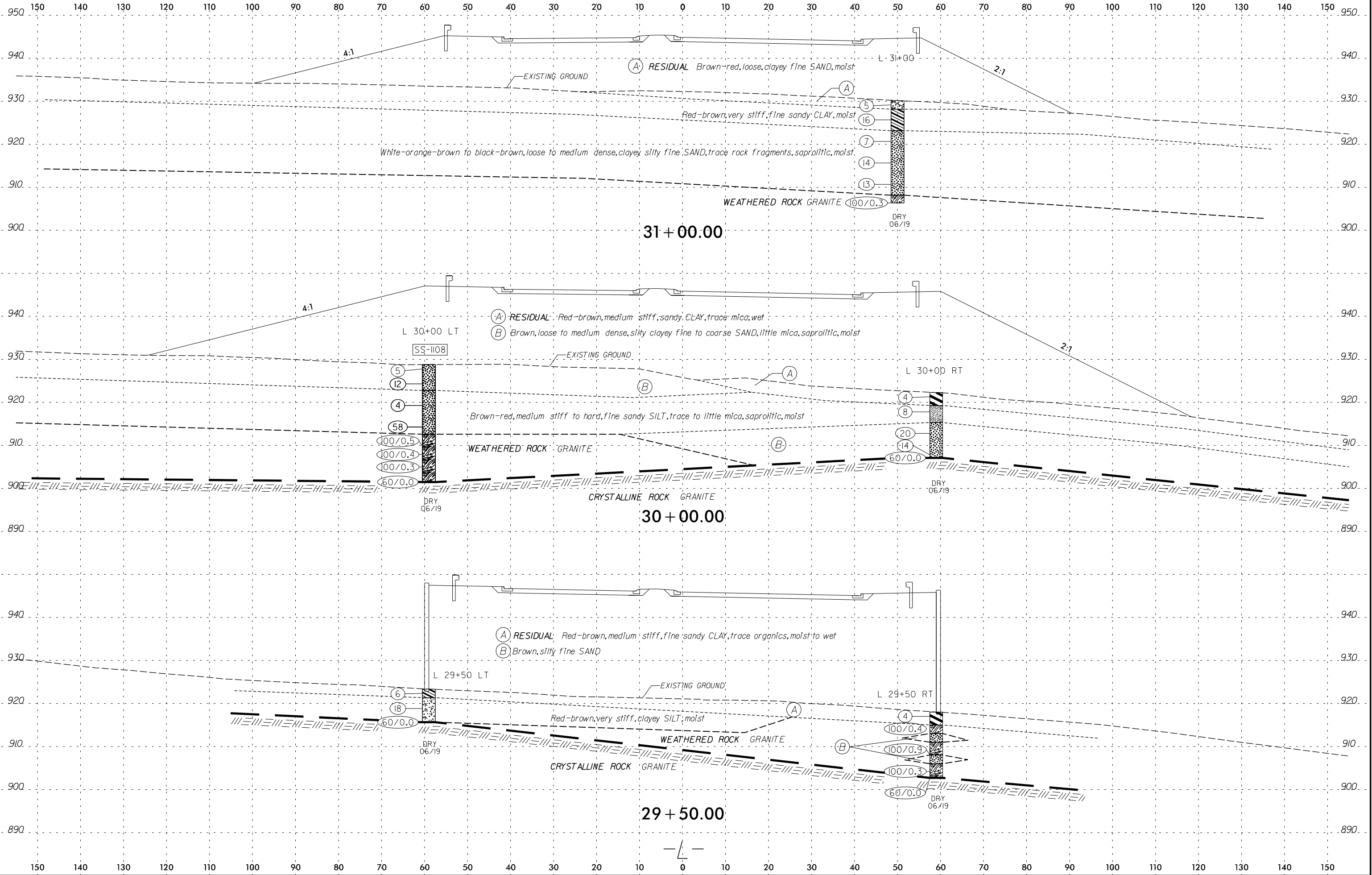
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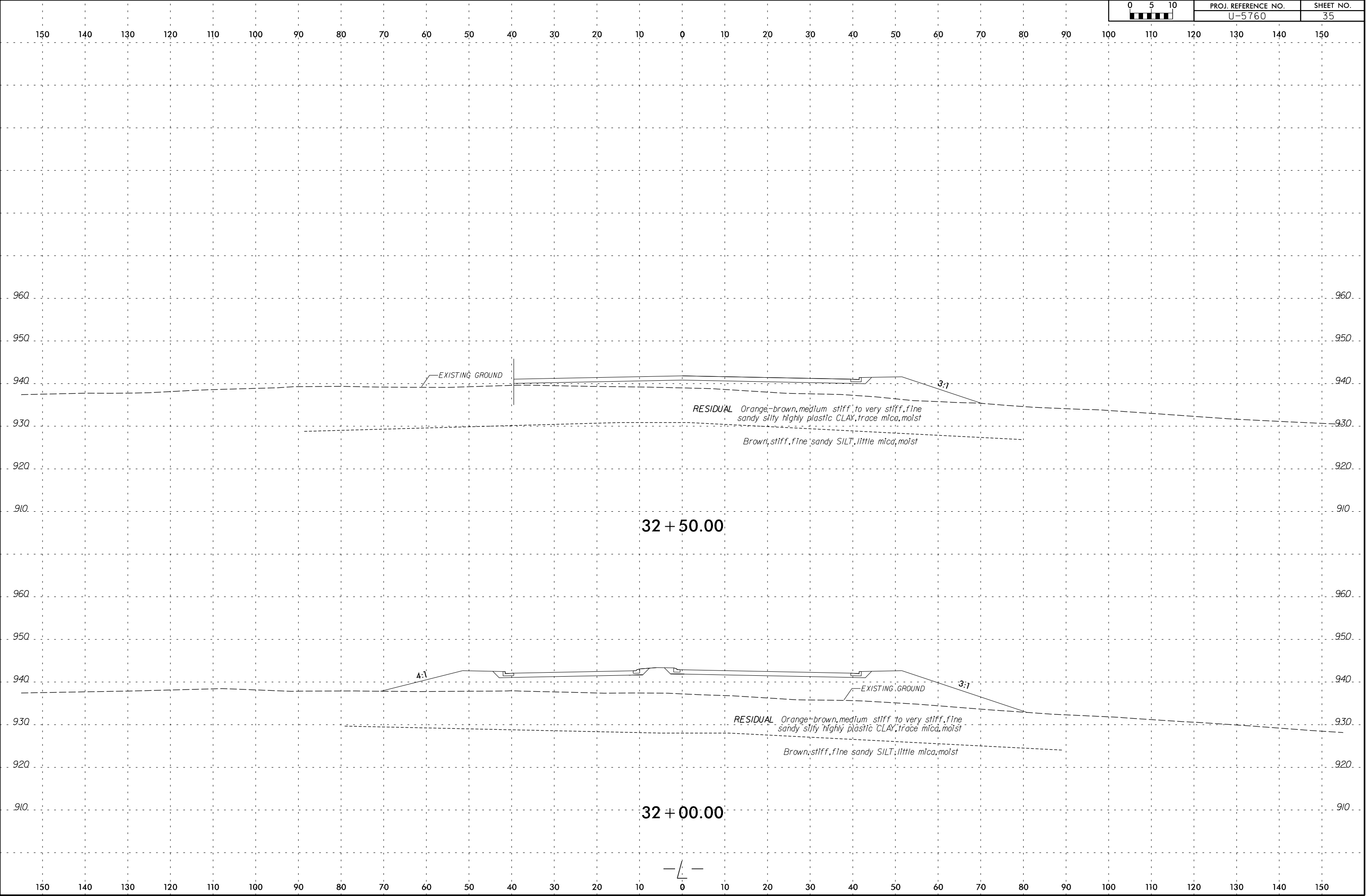
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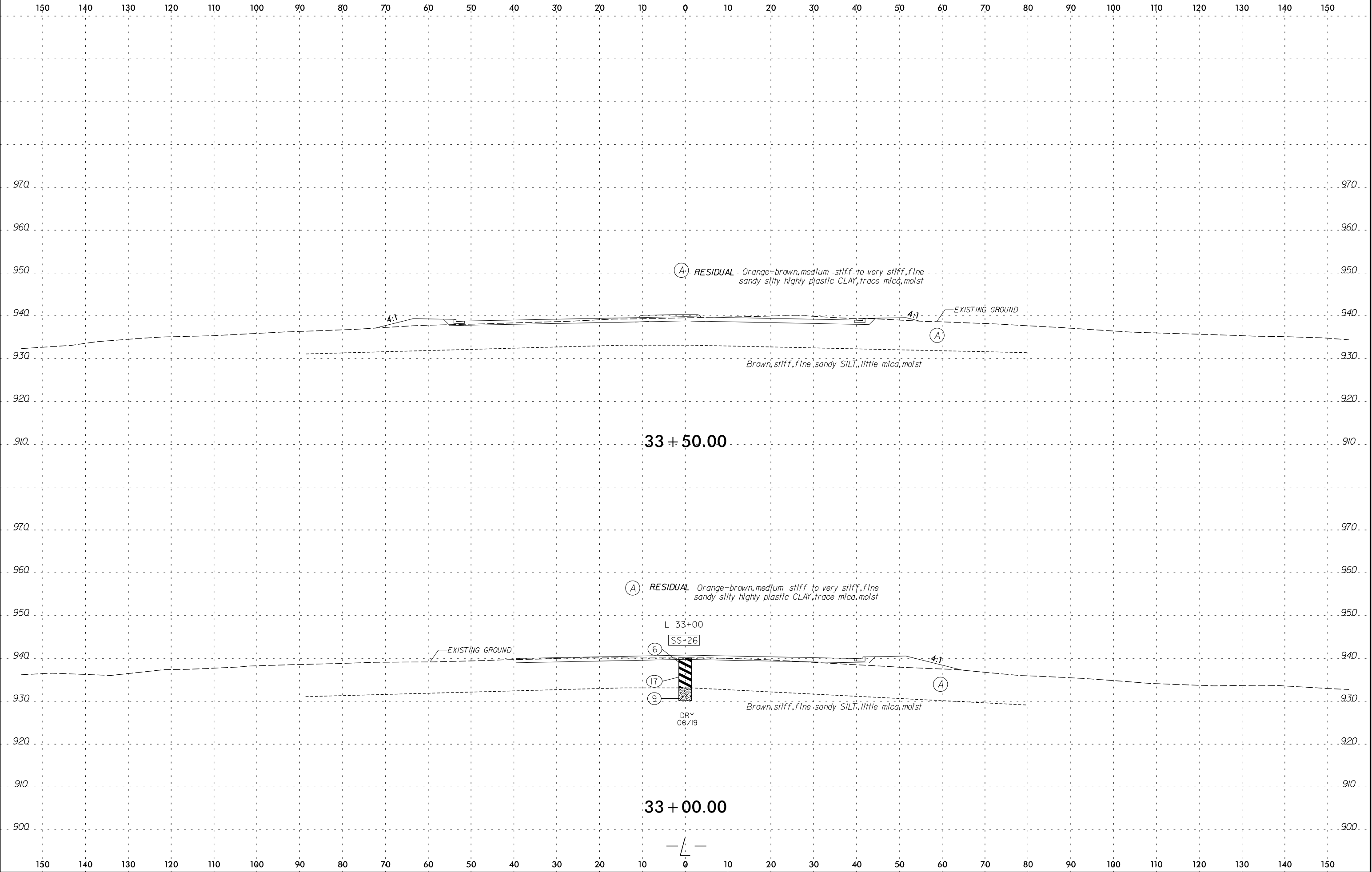
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6/23/16

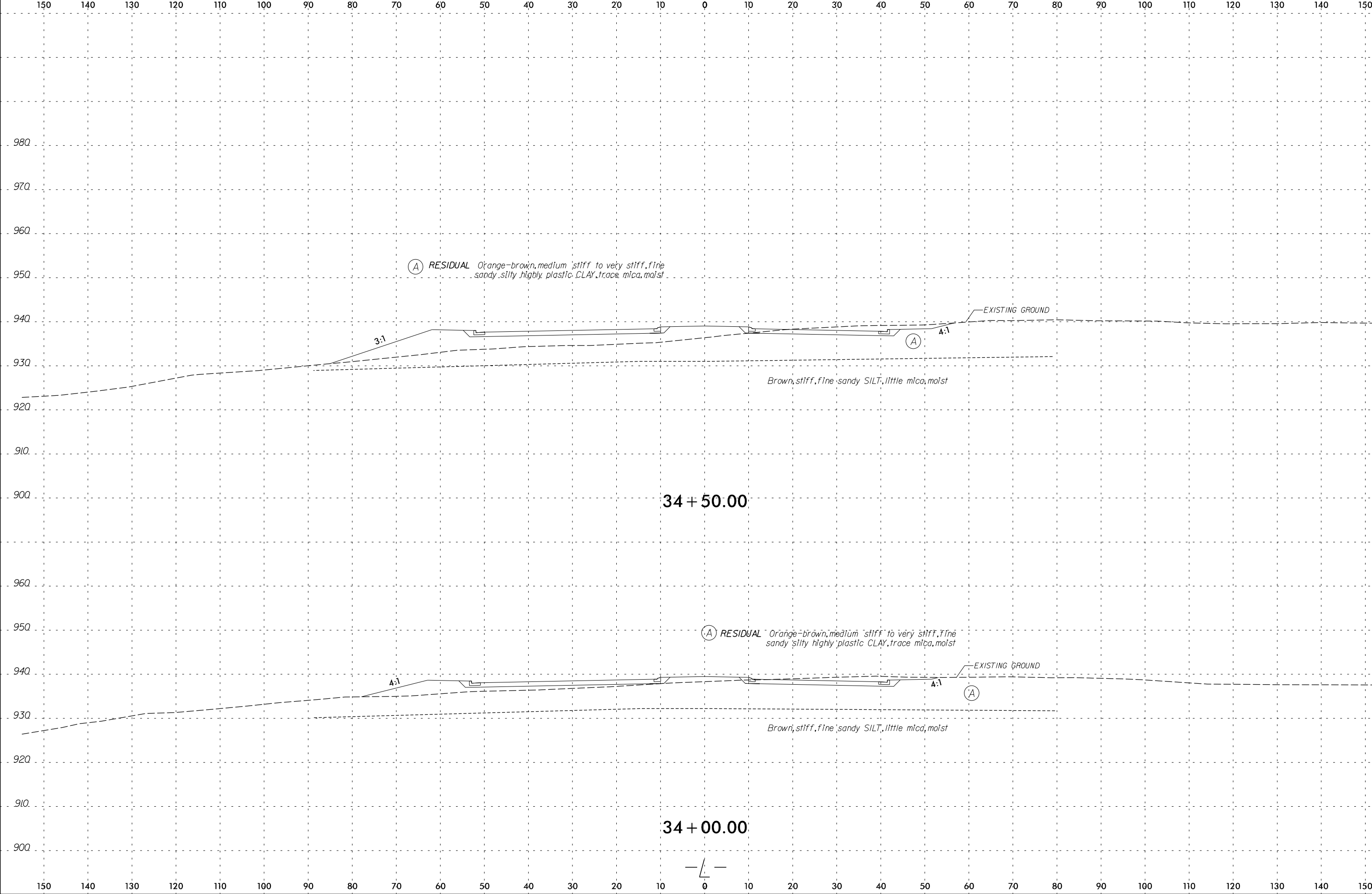


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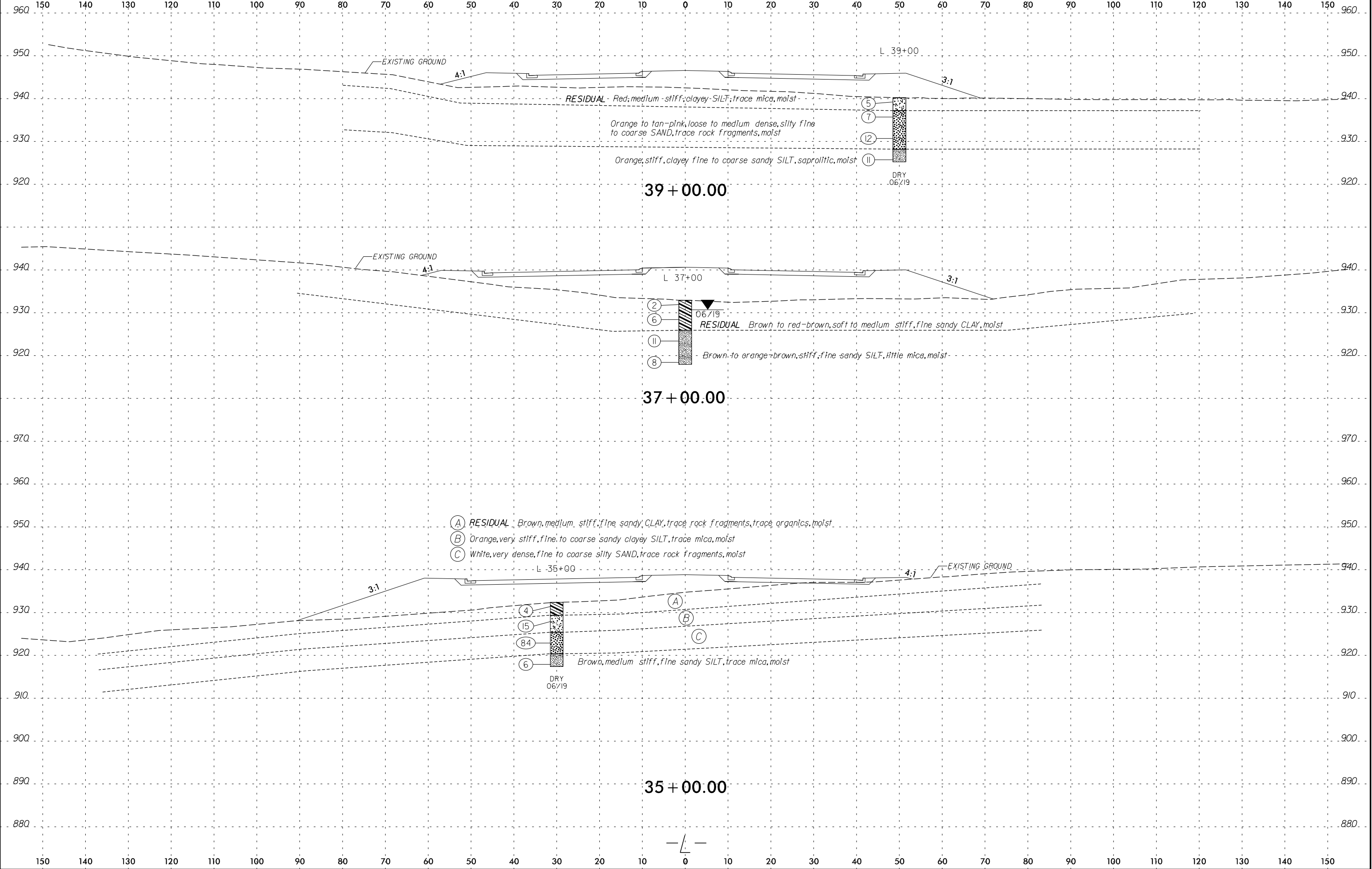


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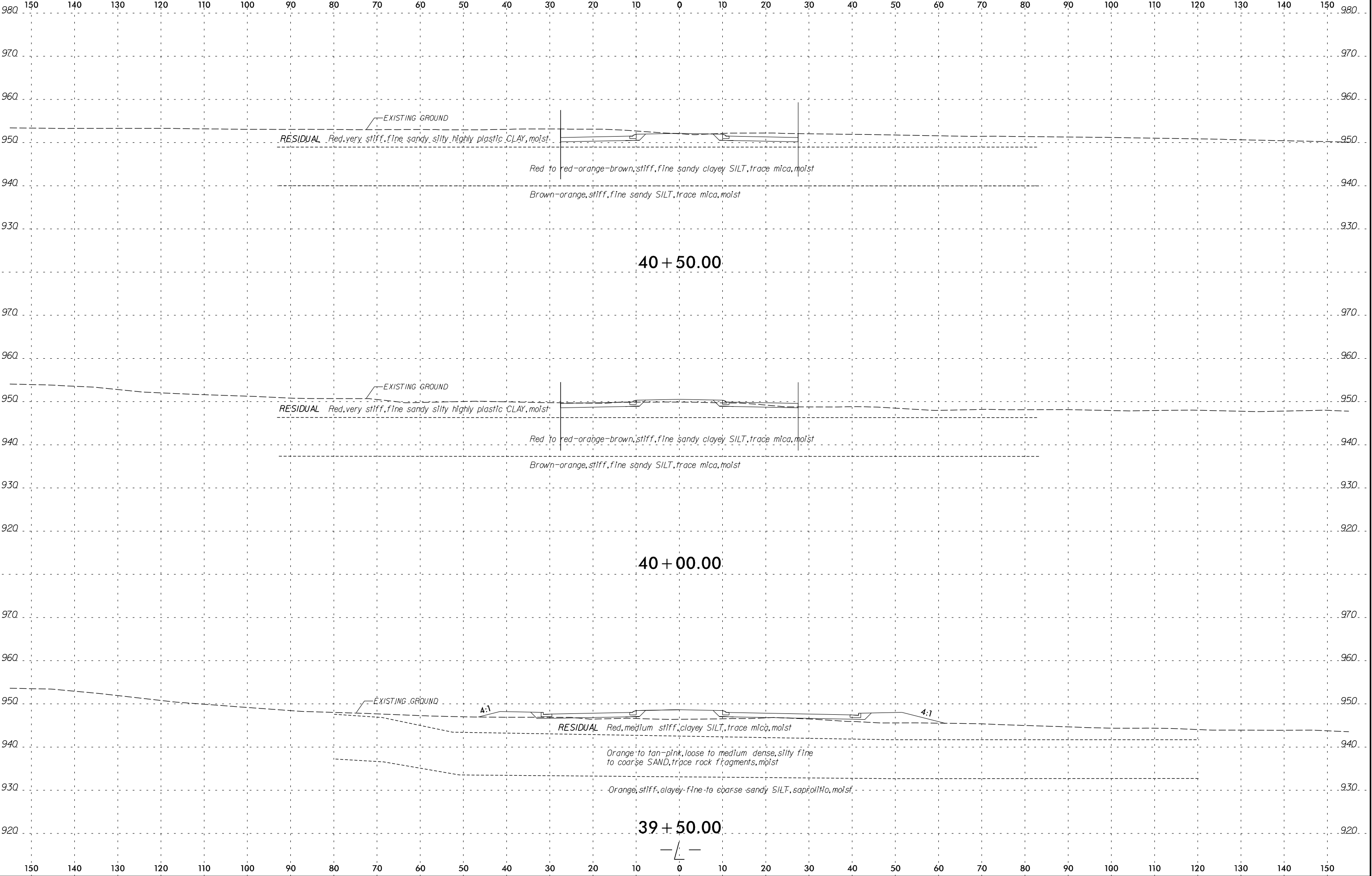
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	U-5760	37



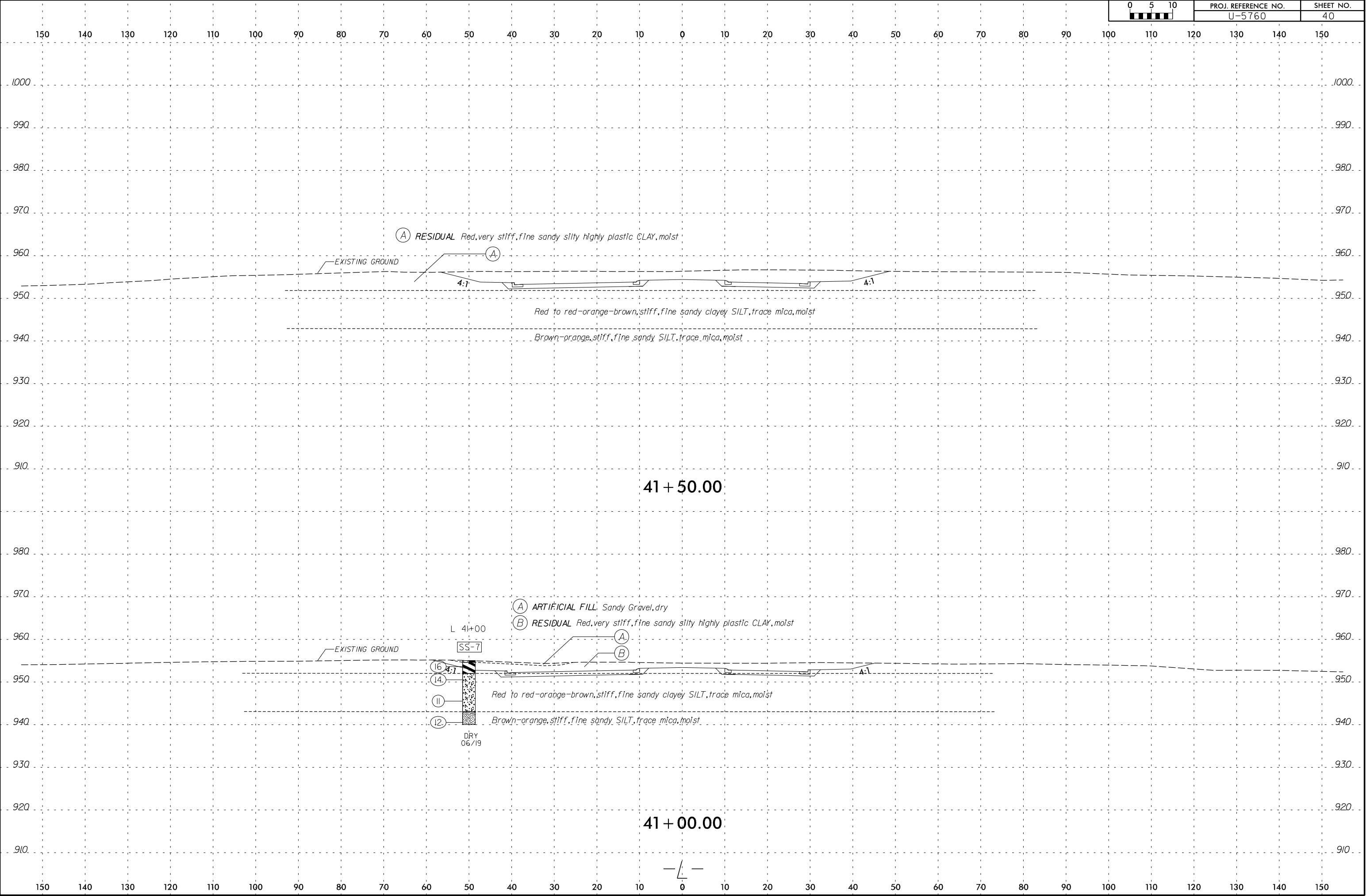
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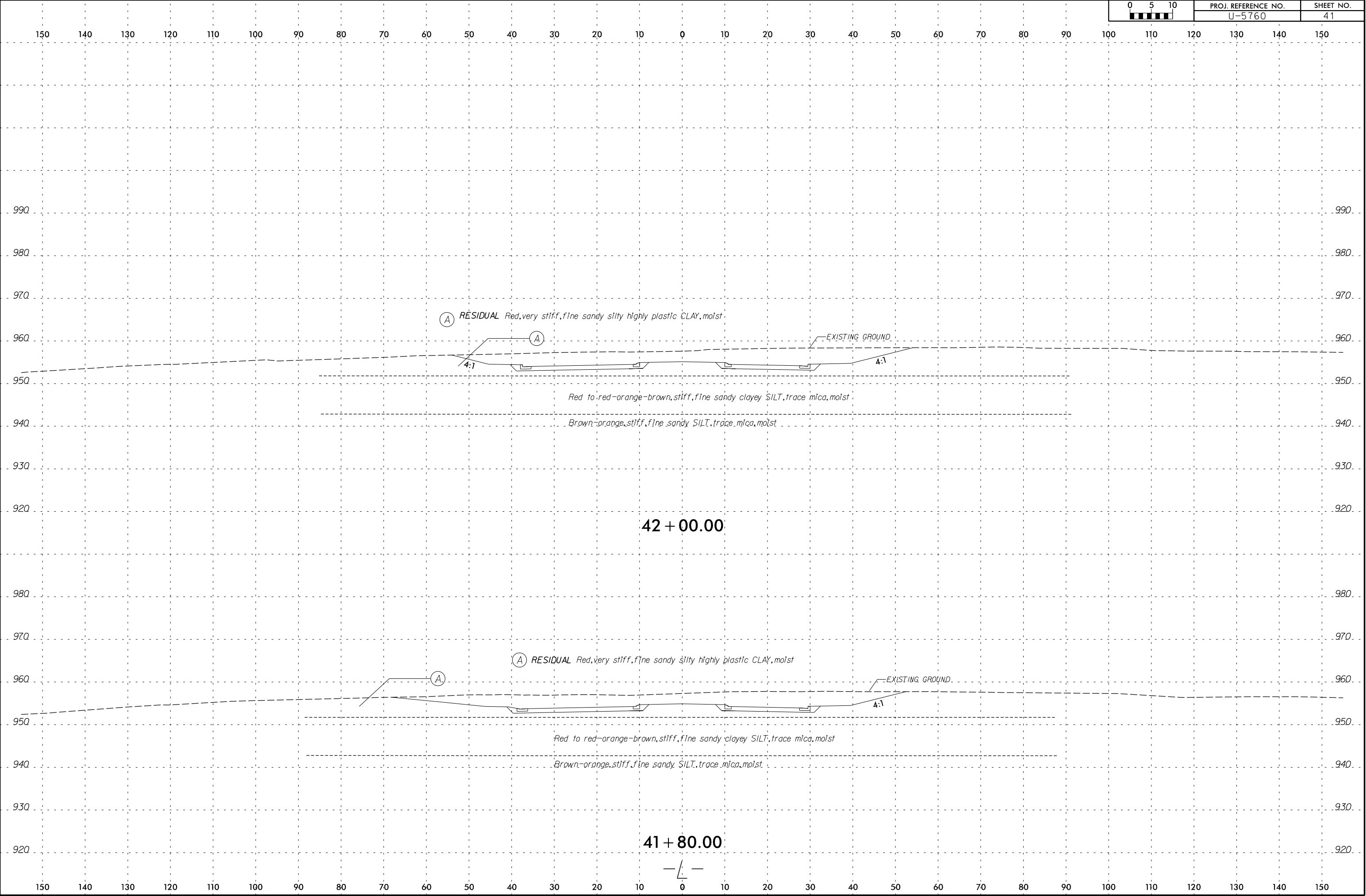
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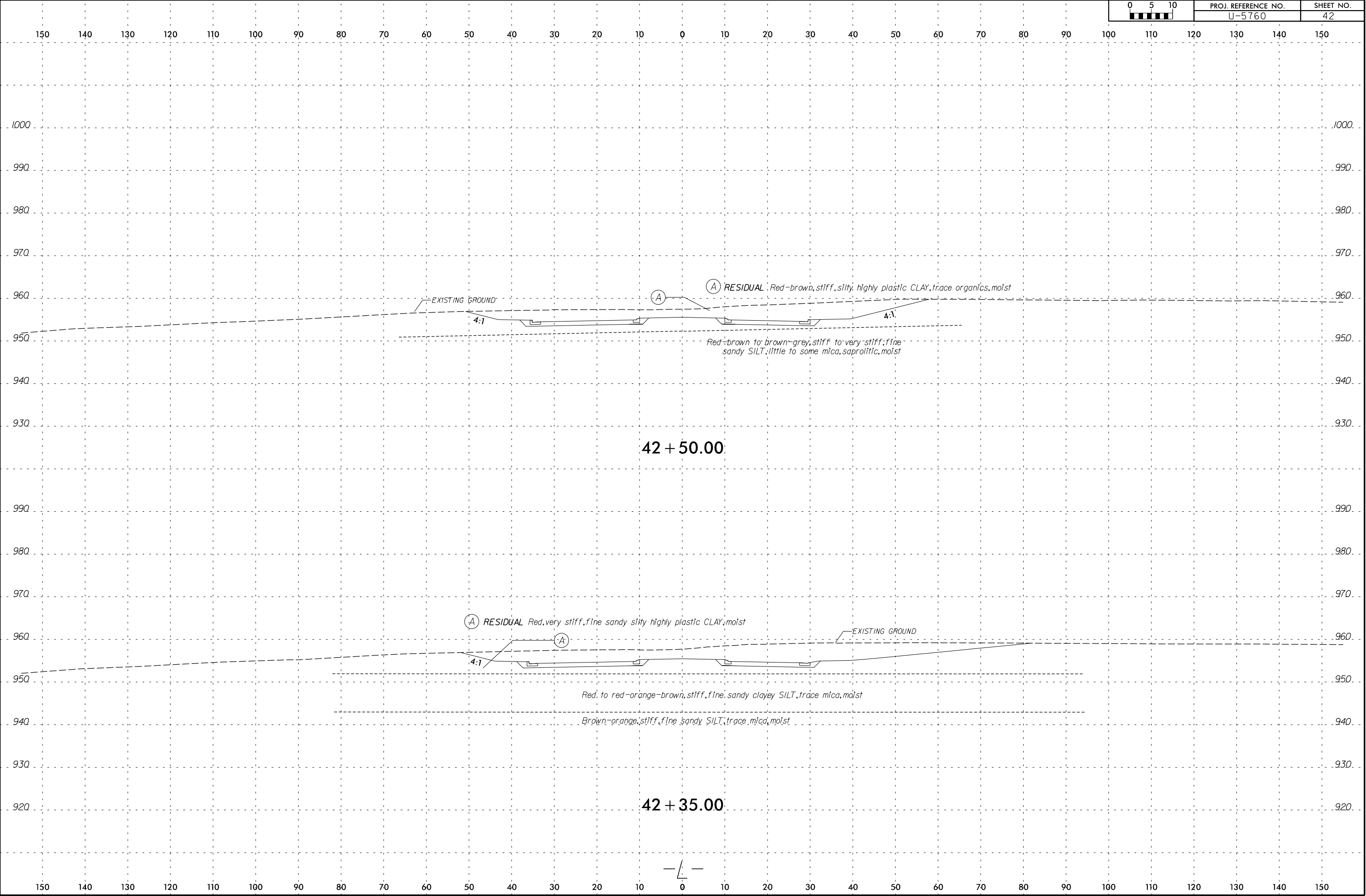
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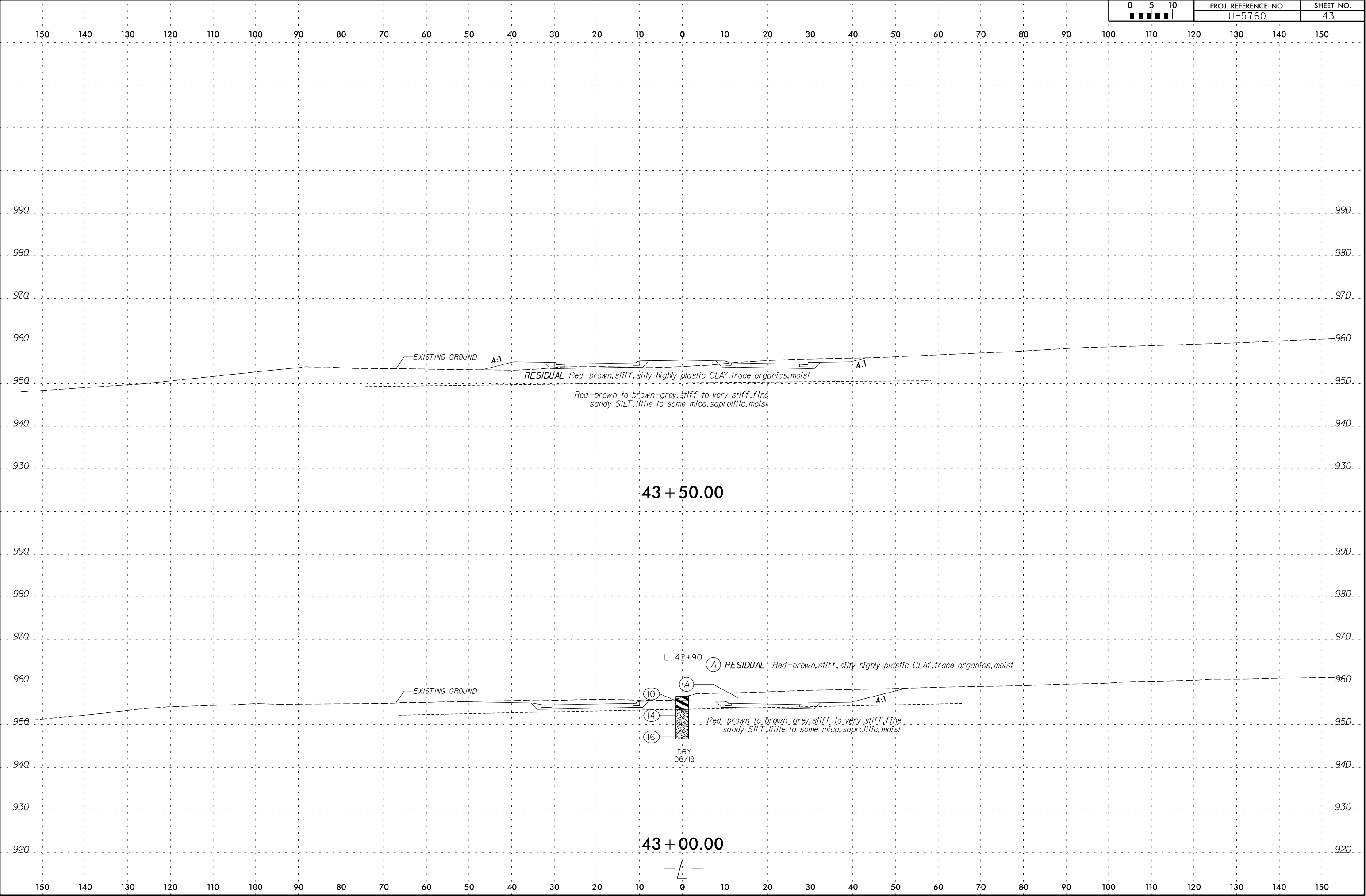
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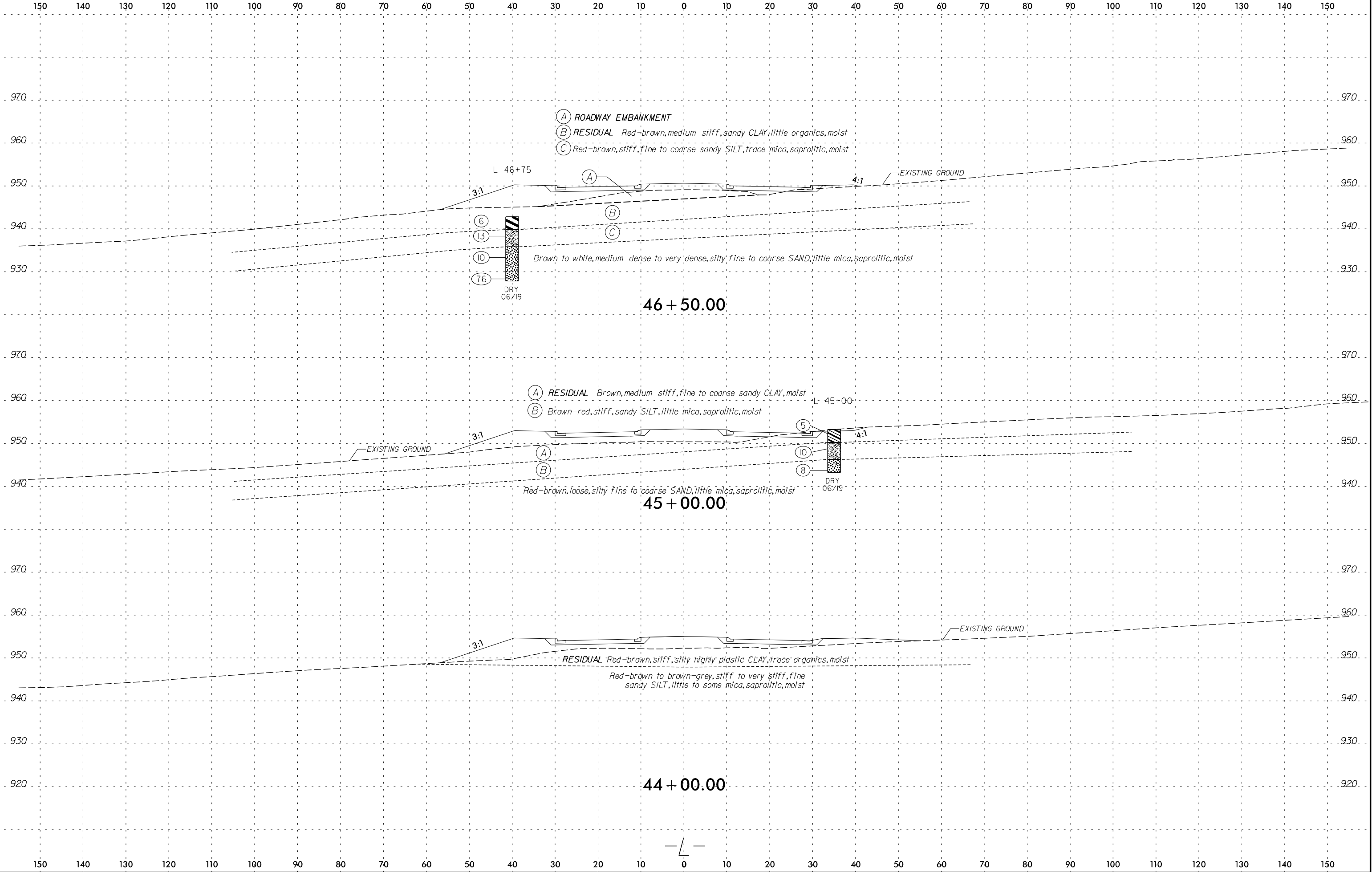
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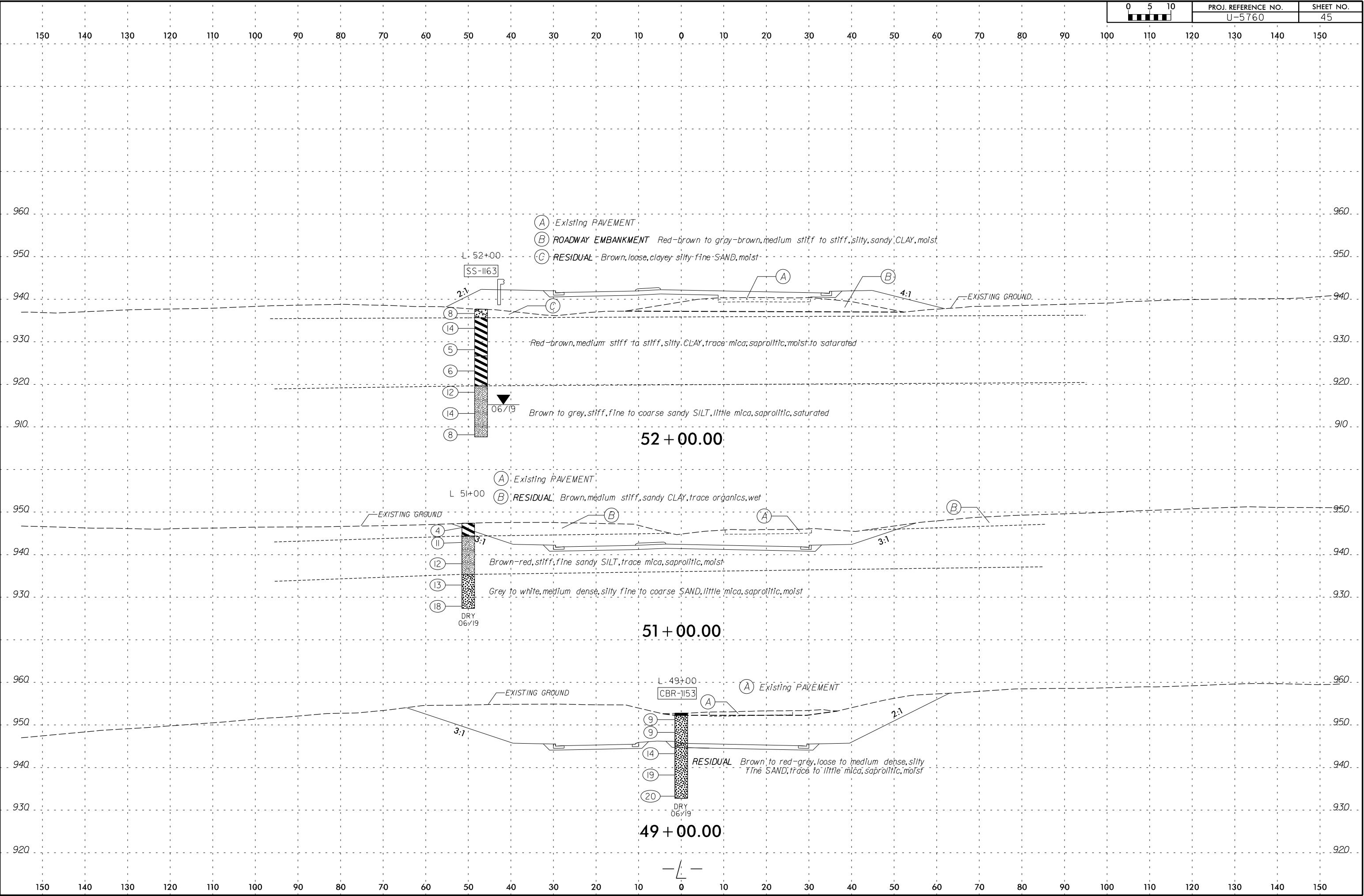
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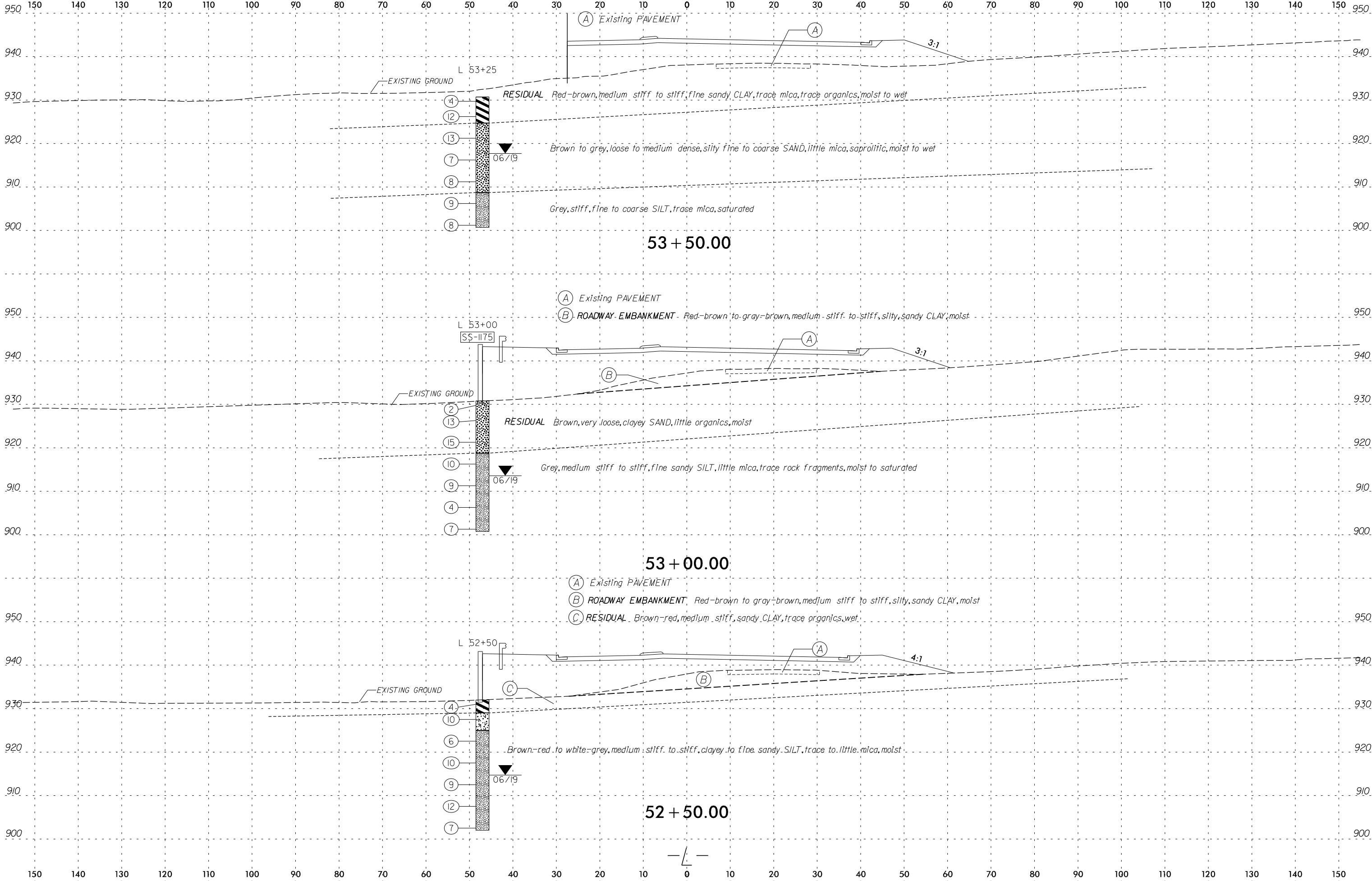


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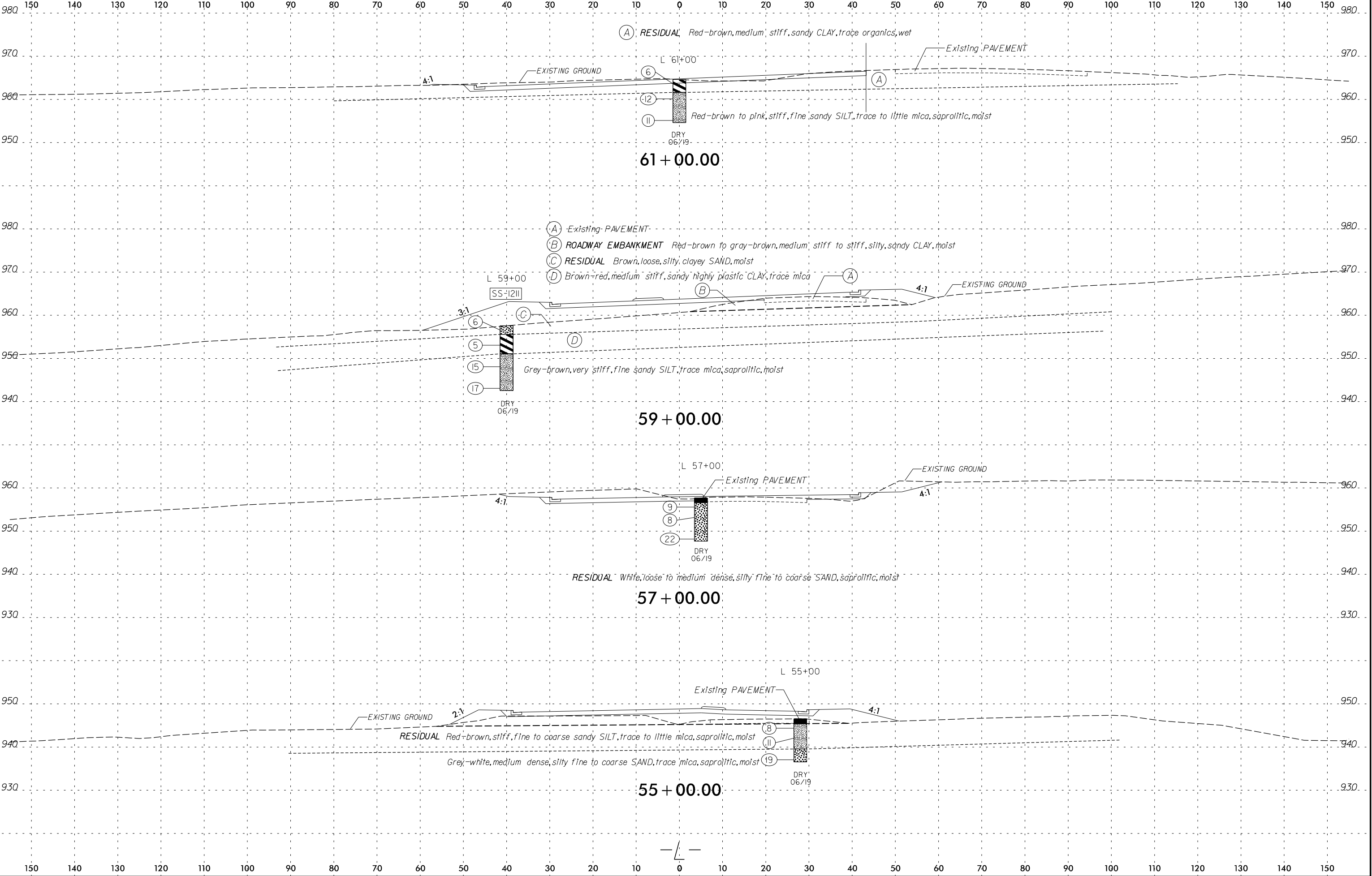


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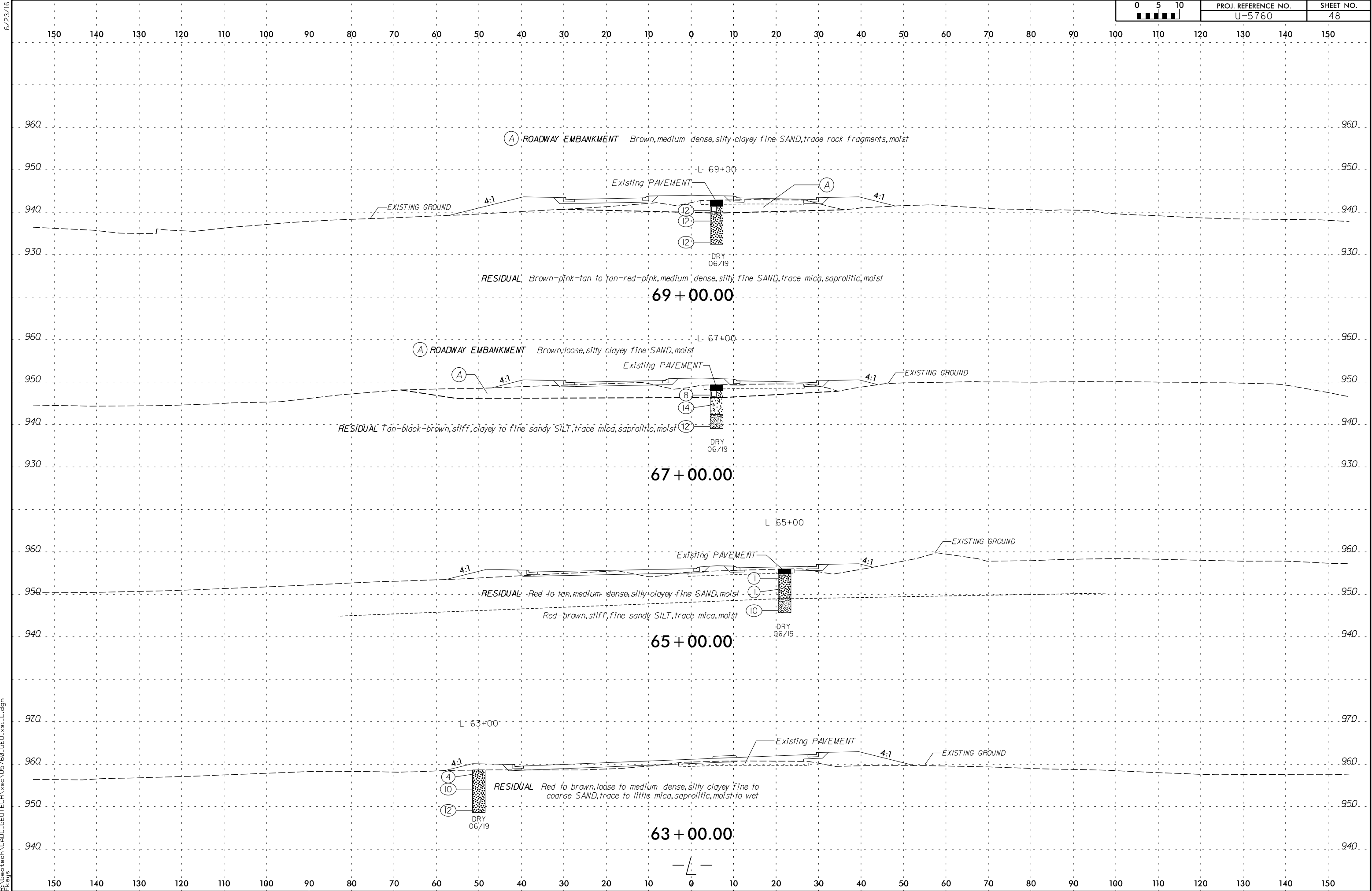




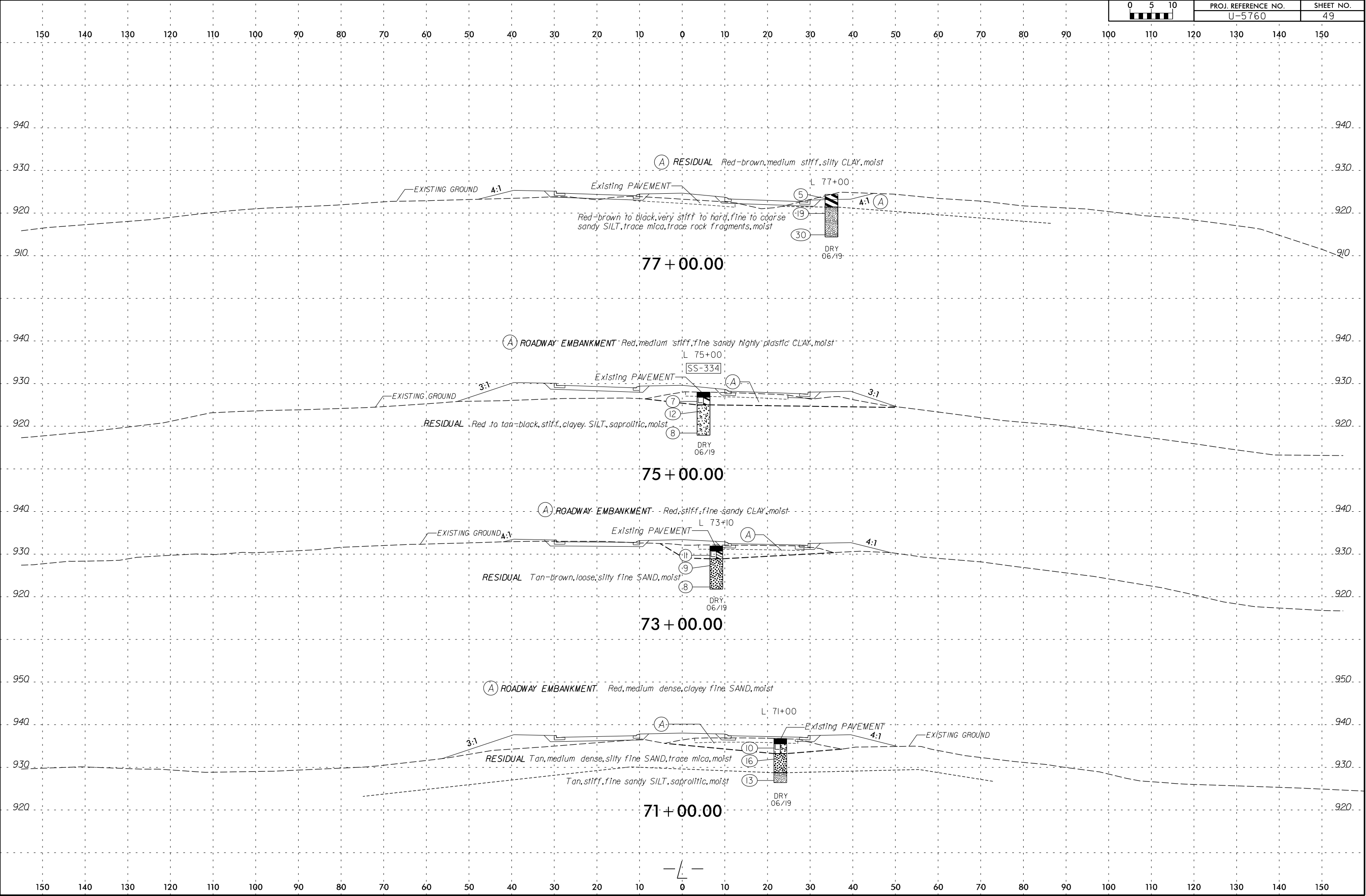
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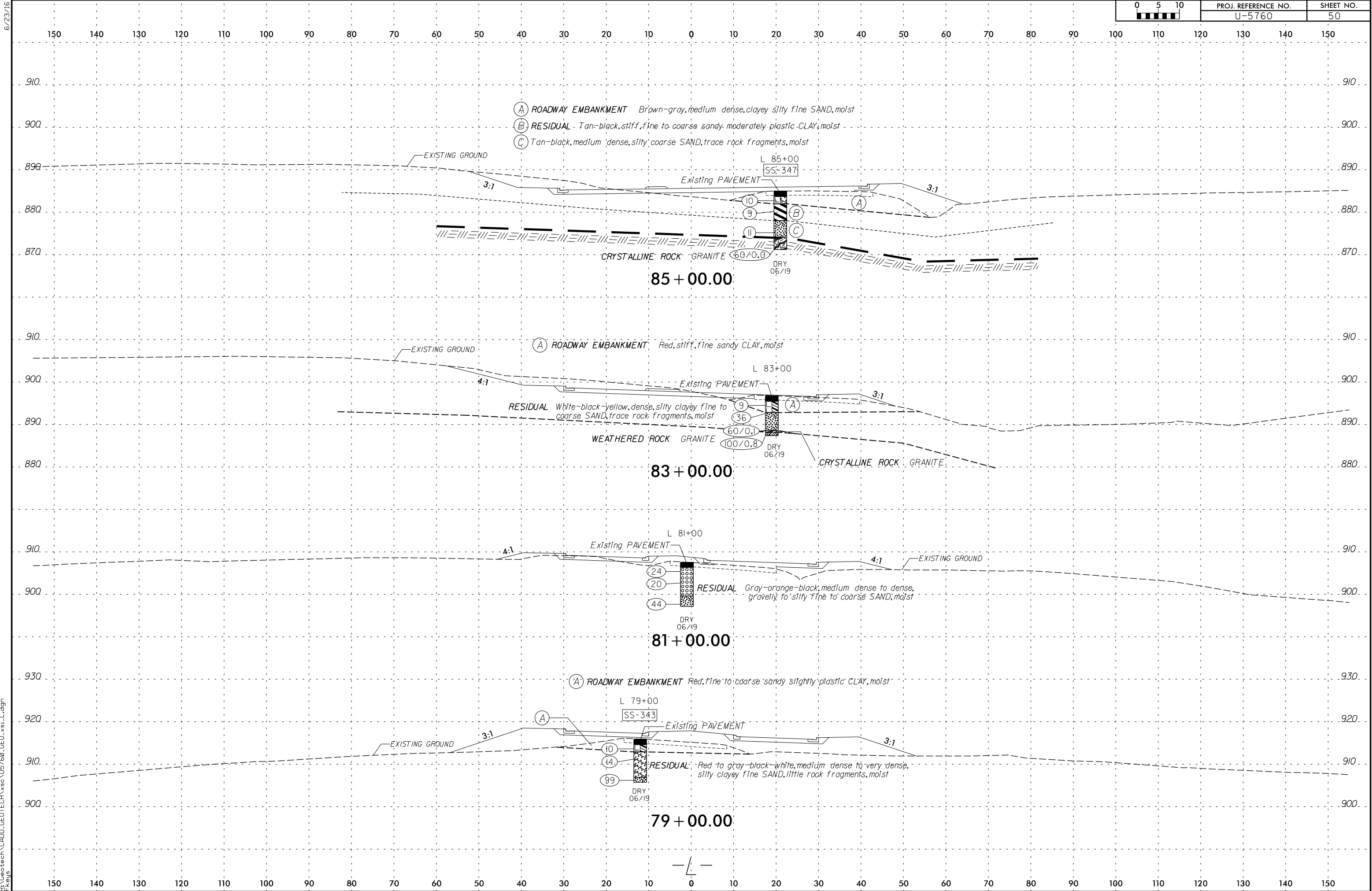
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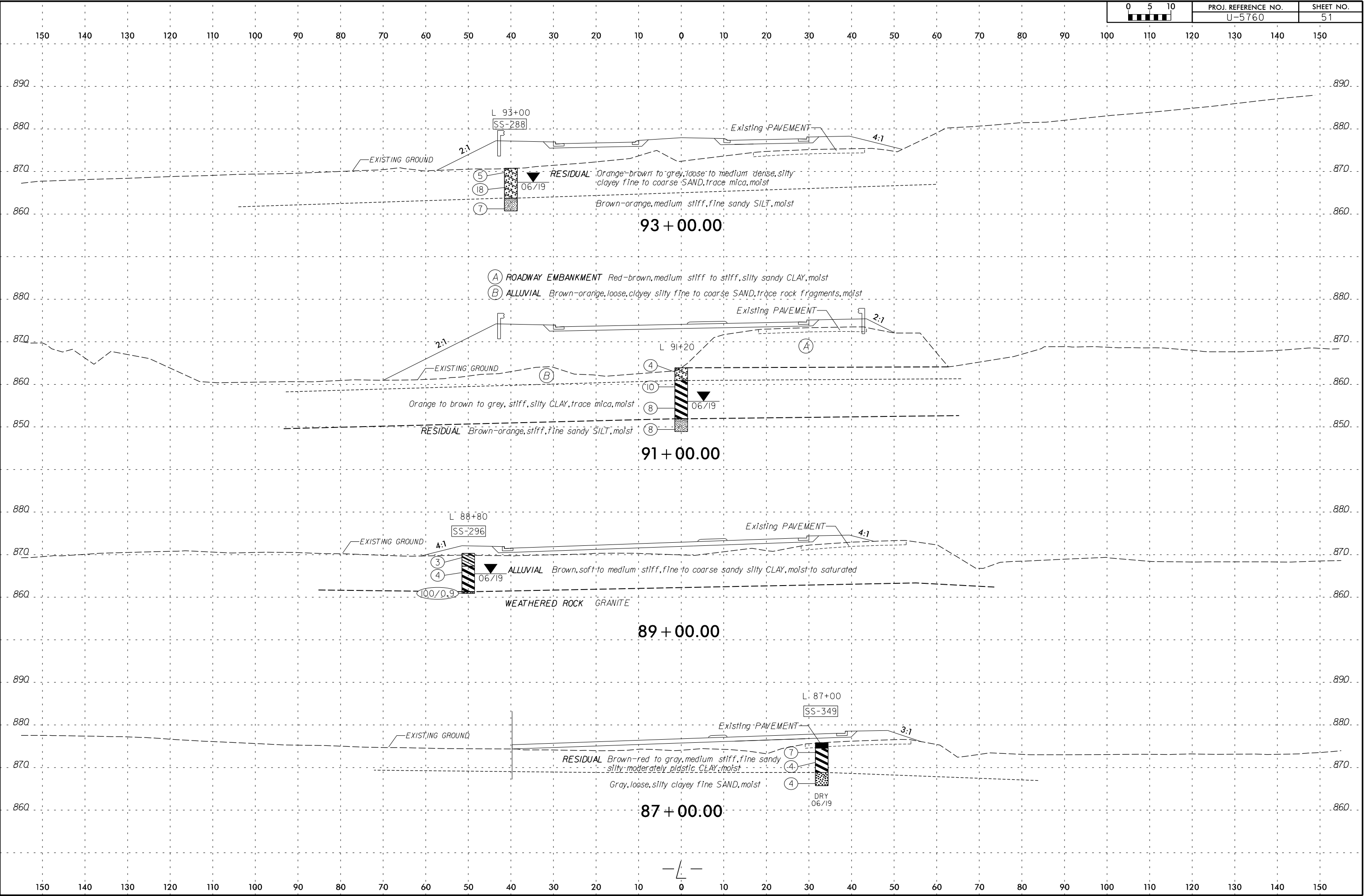
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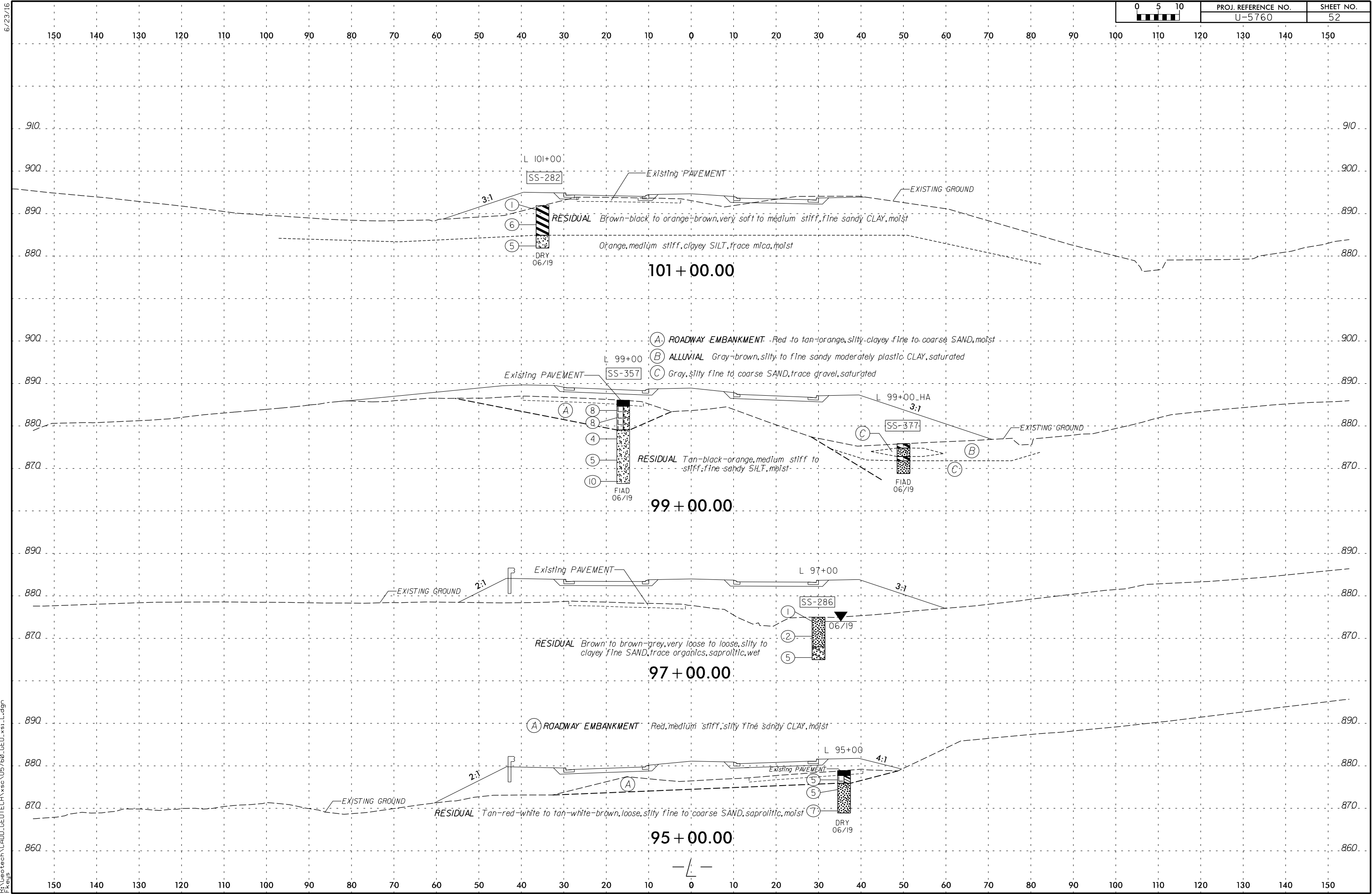
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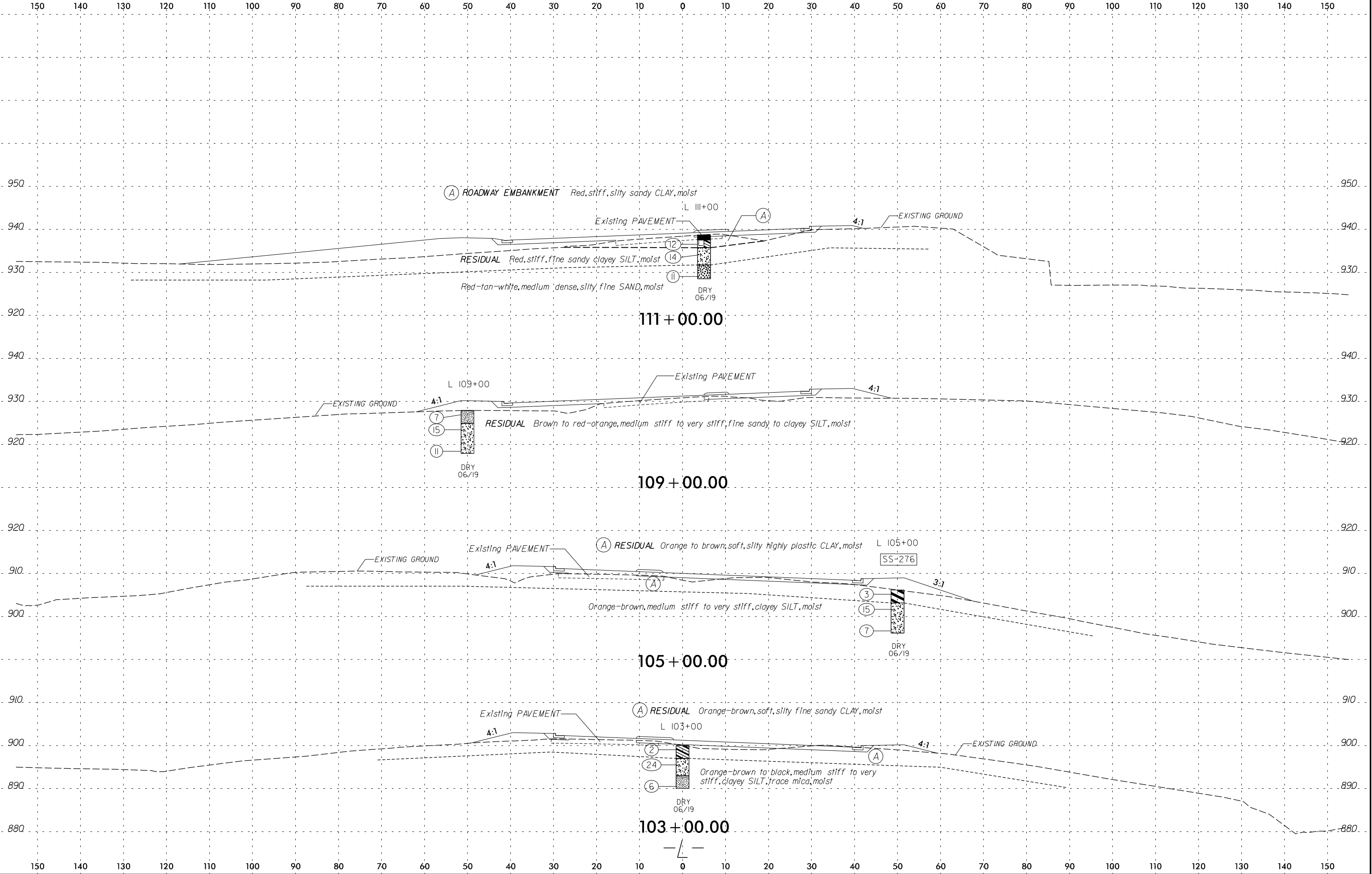
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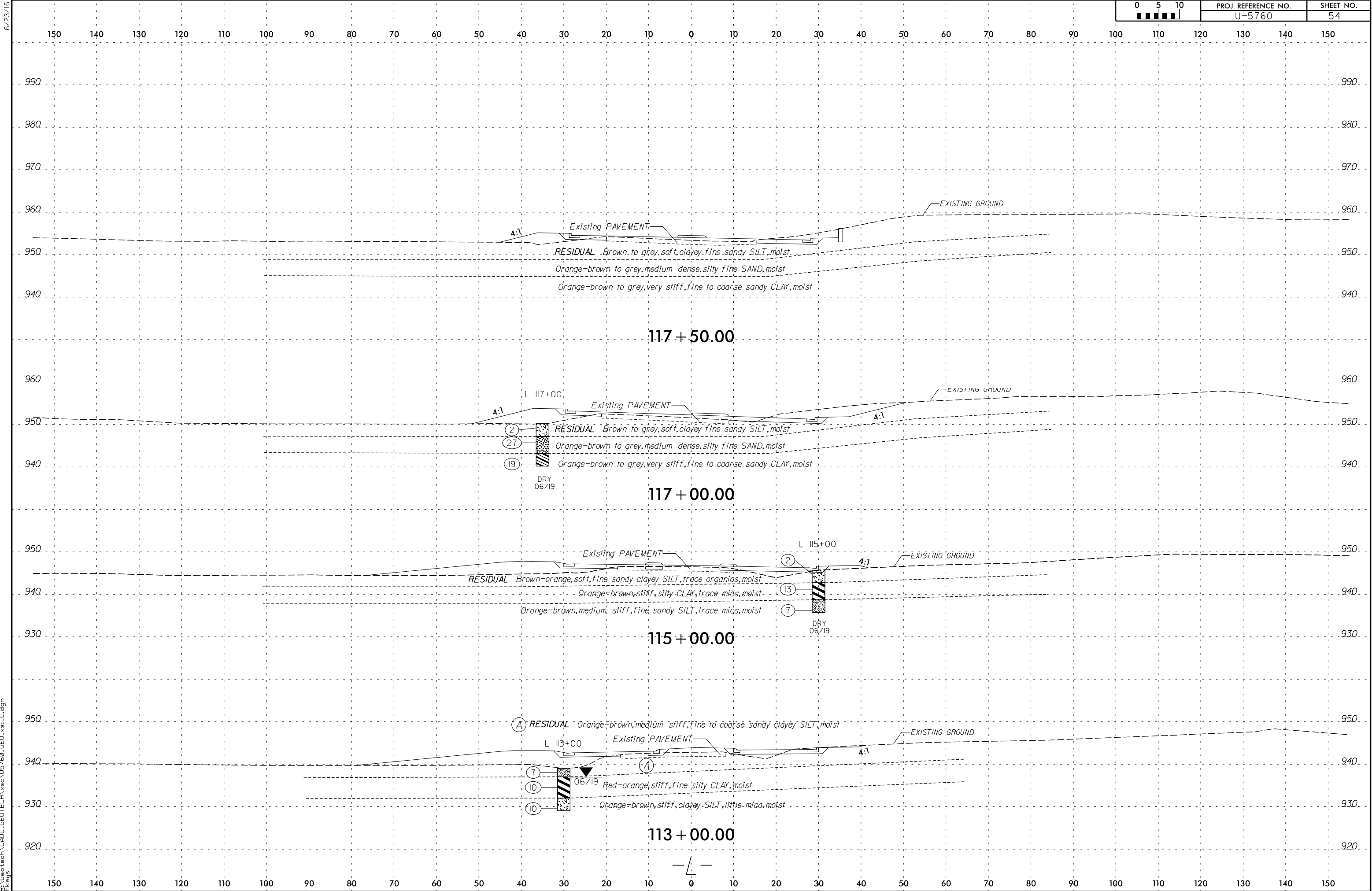
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6/23/16

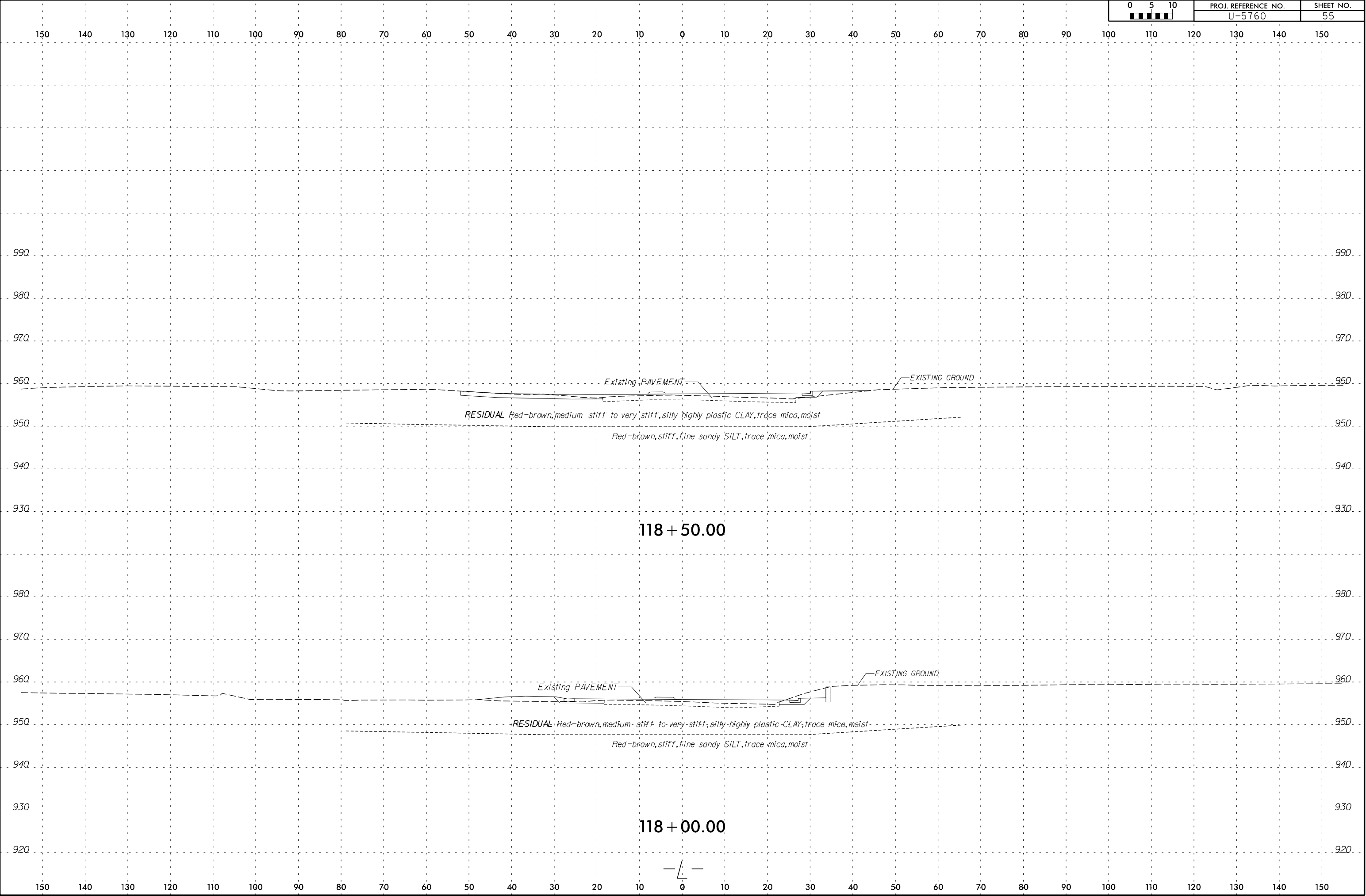


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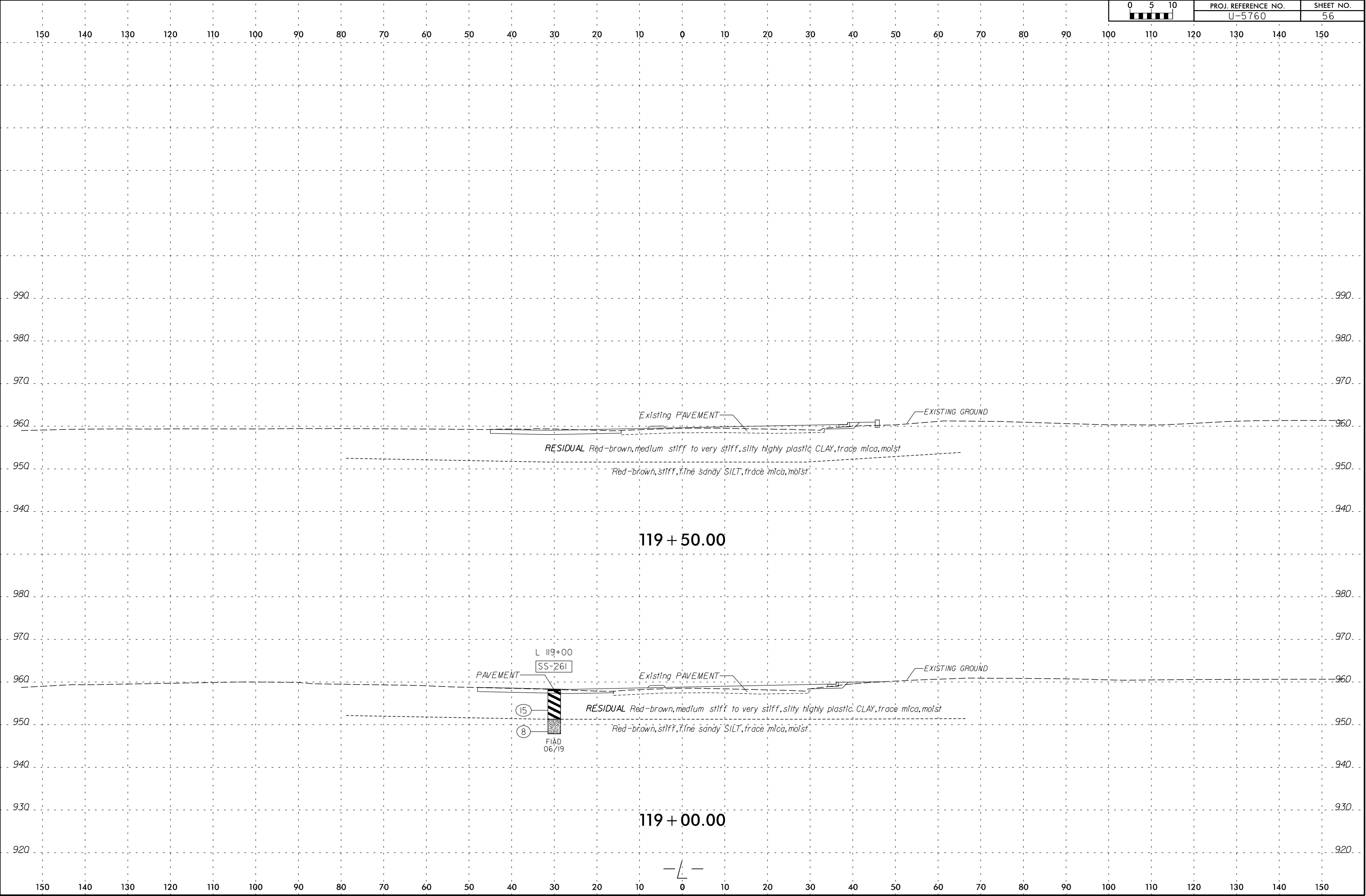


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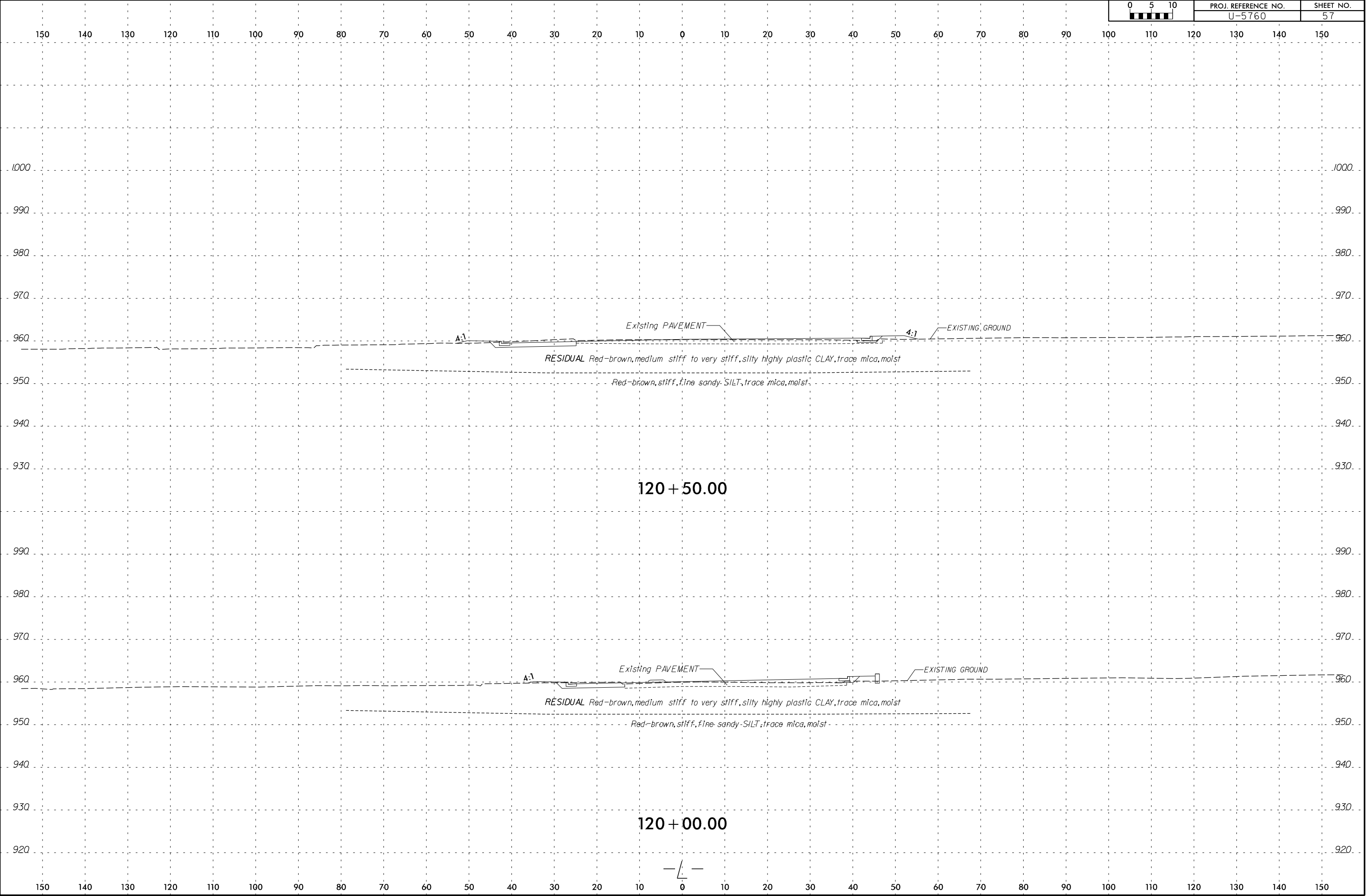
0510	PROJ. REFERENCE NO.	SHEET NO.
	U-5760	55



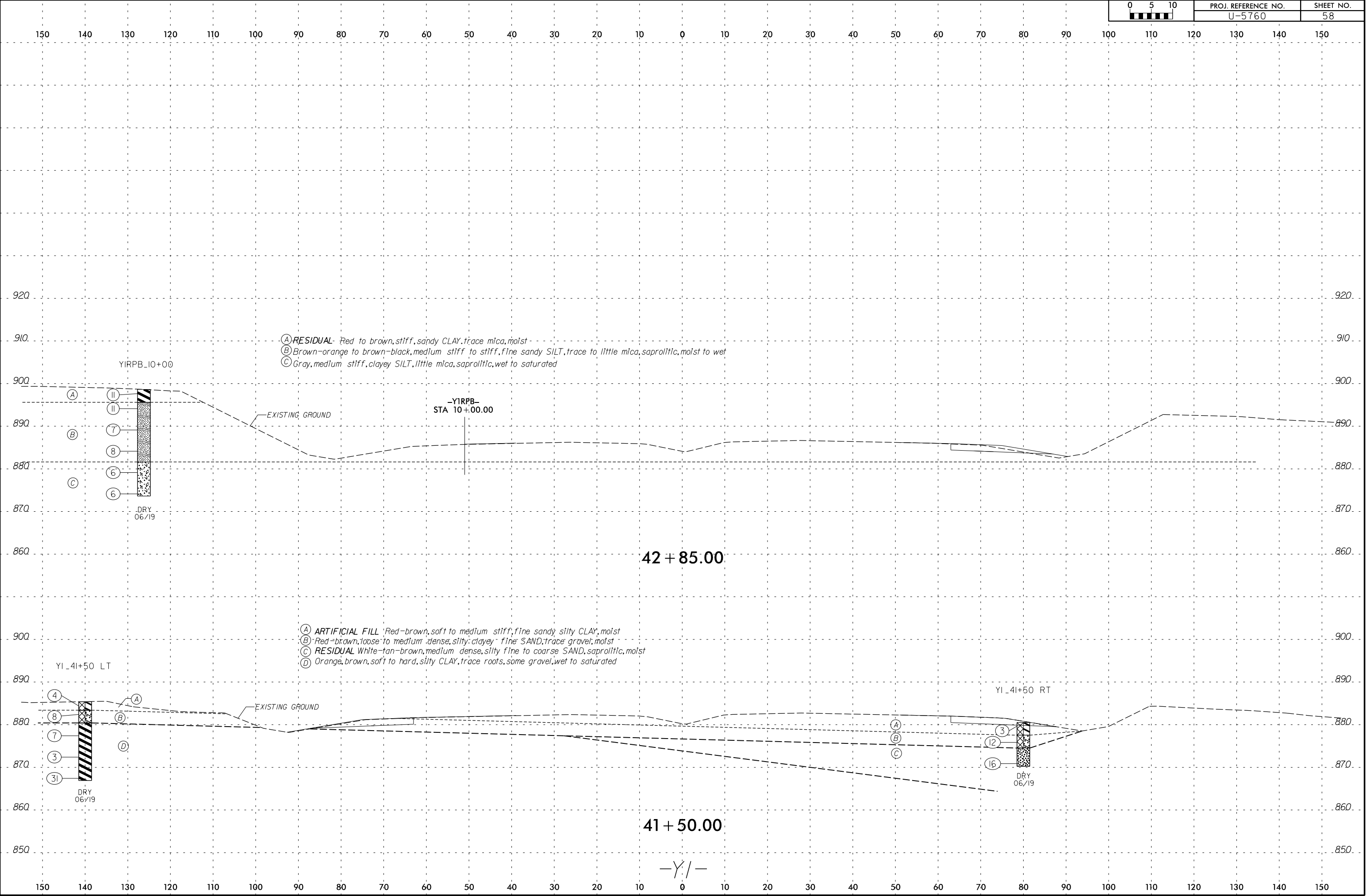
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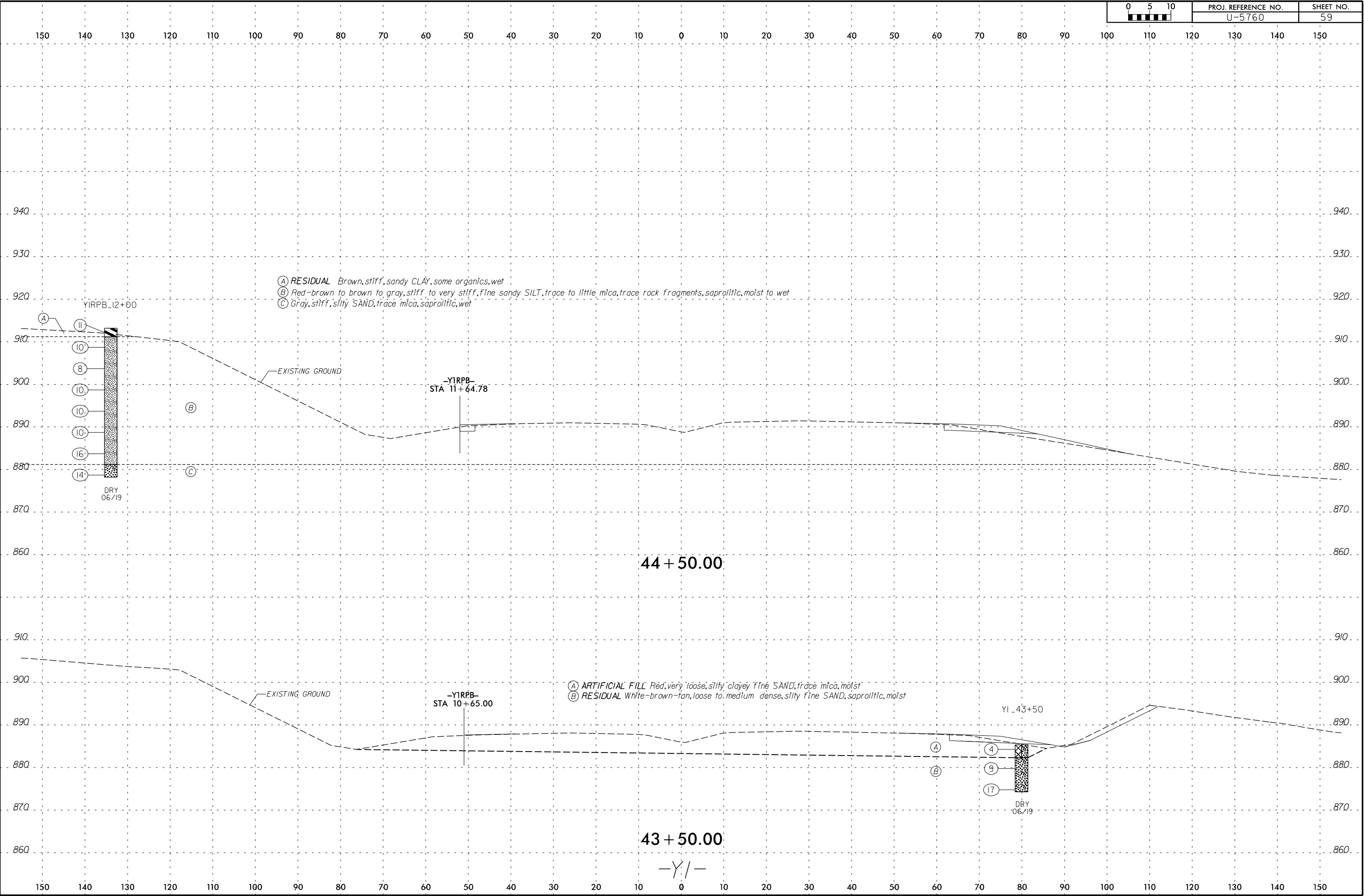
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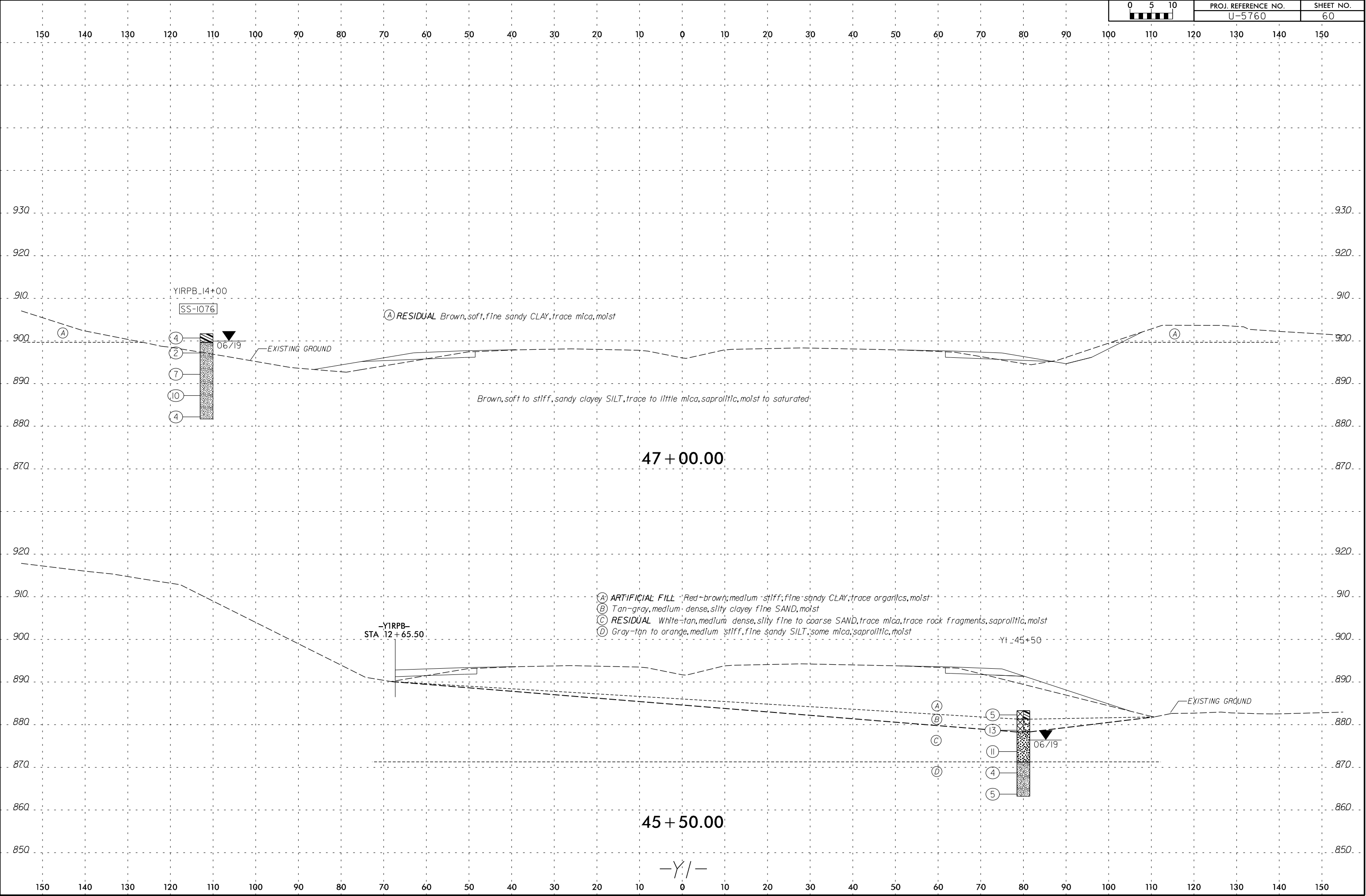
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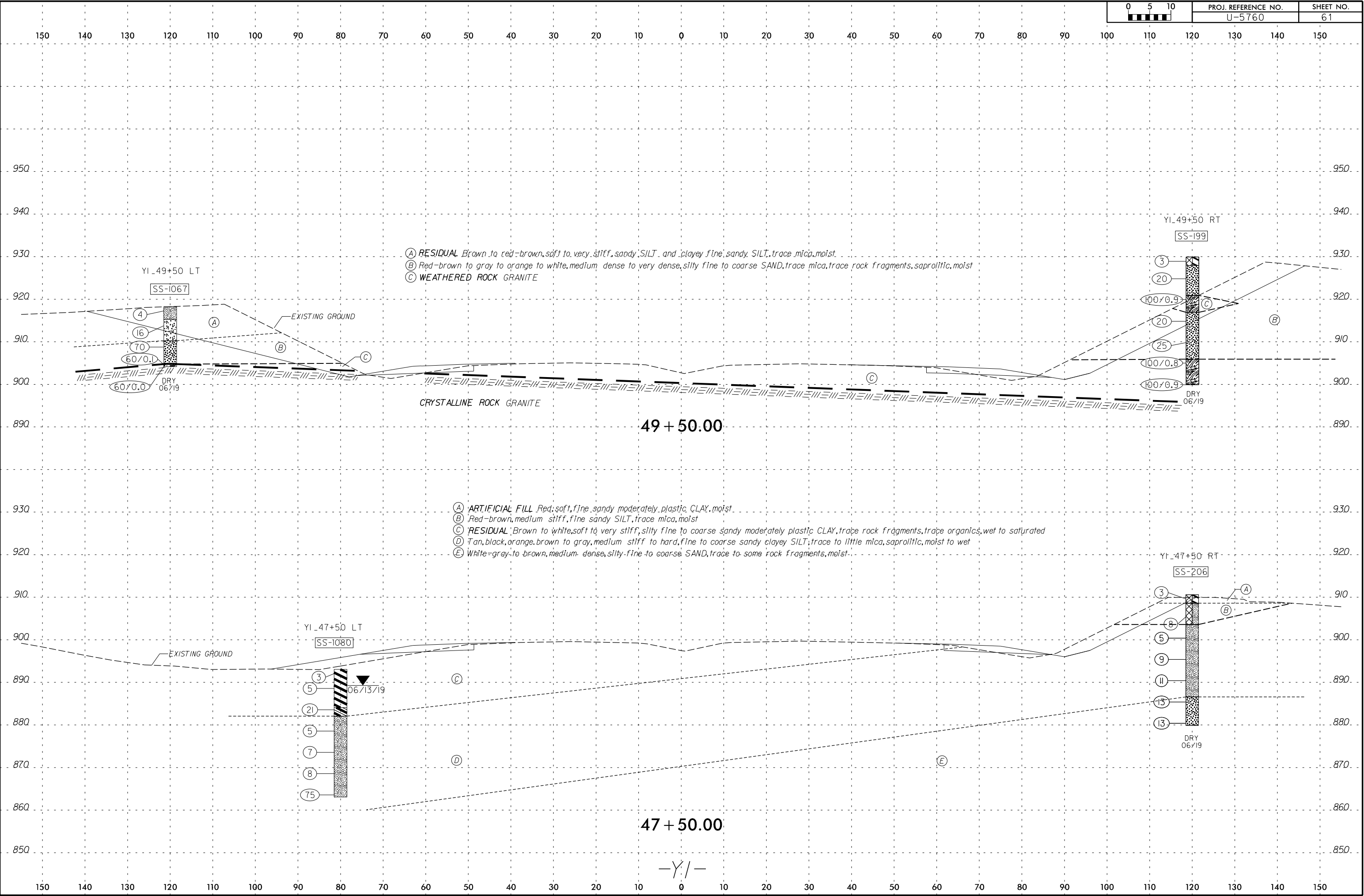
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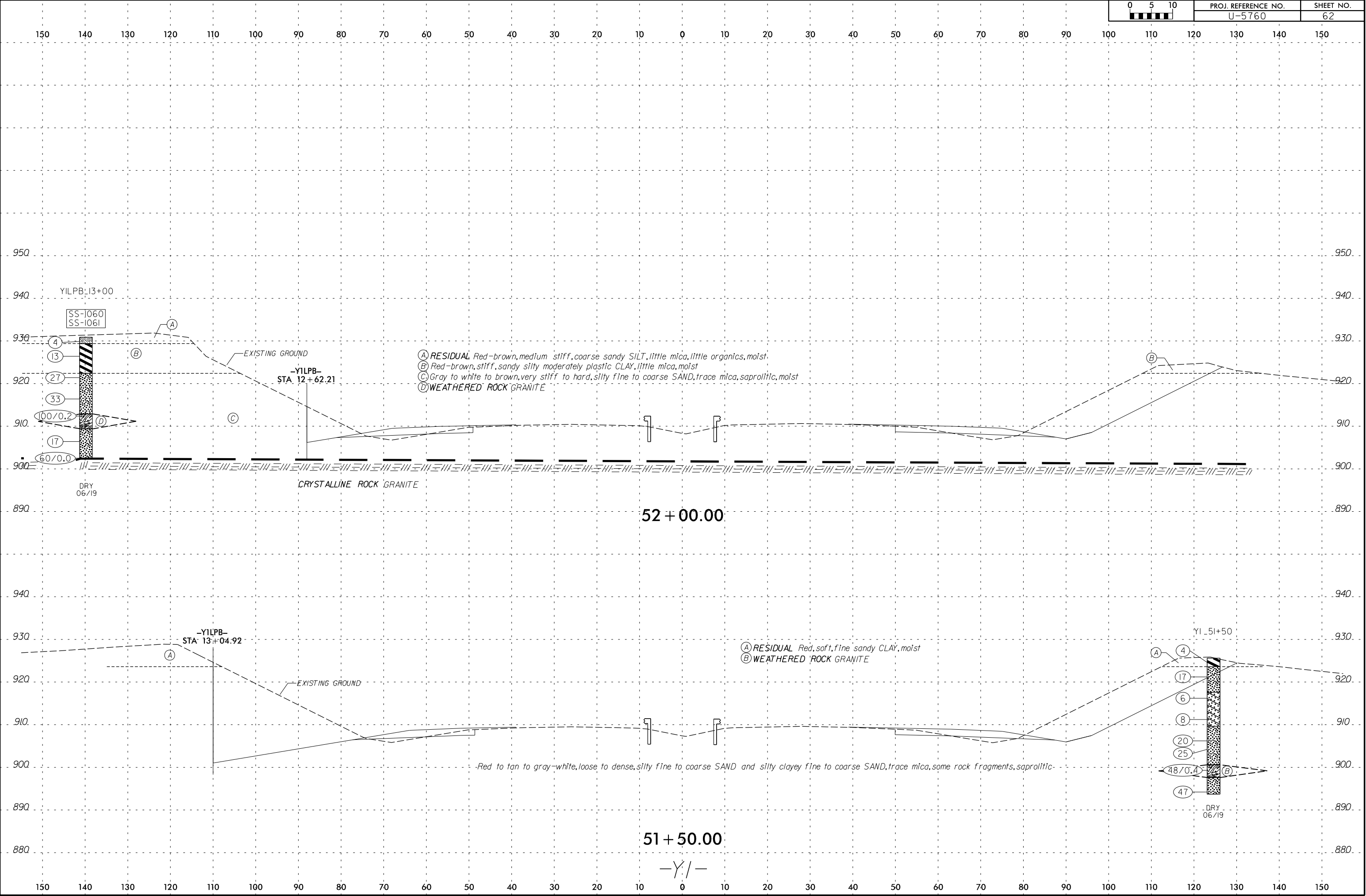
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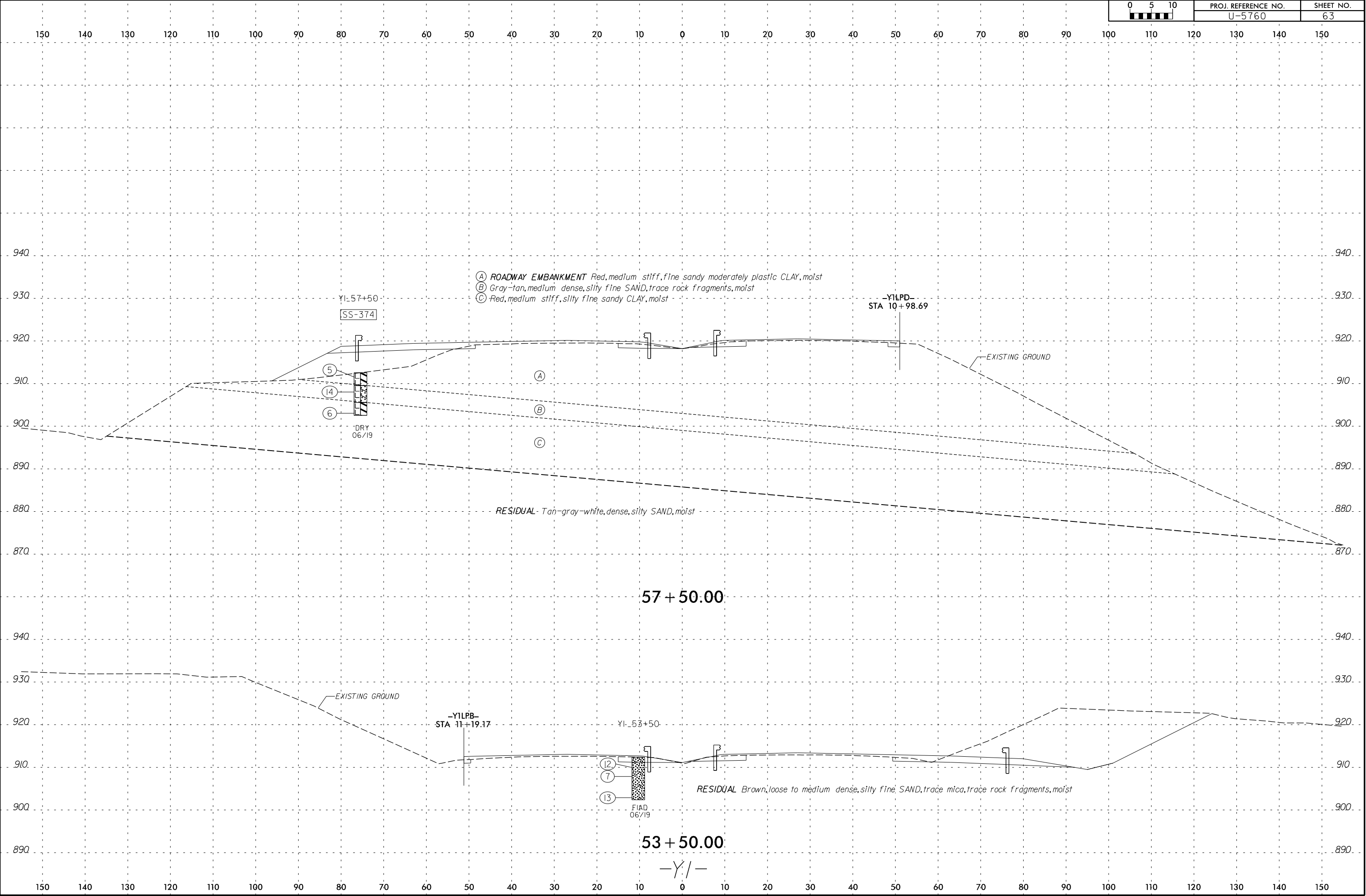
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6/23/16



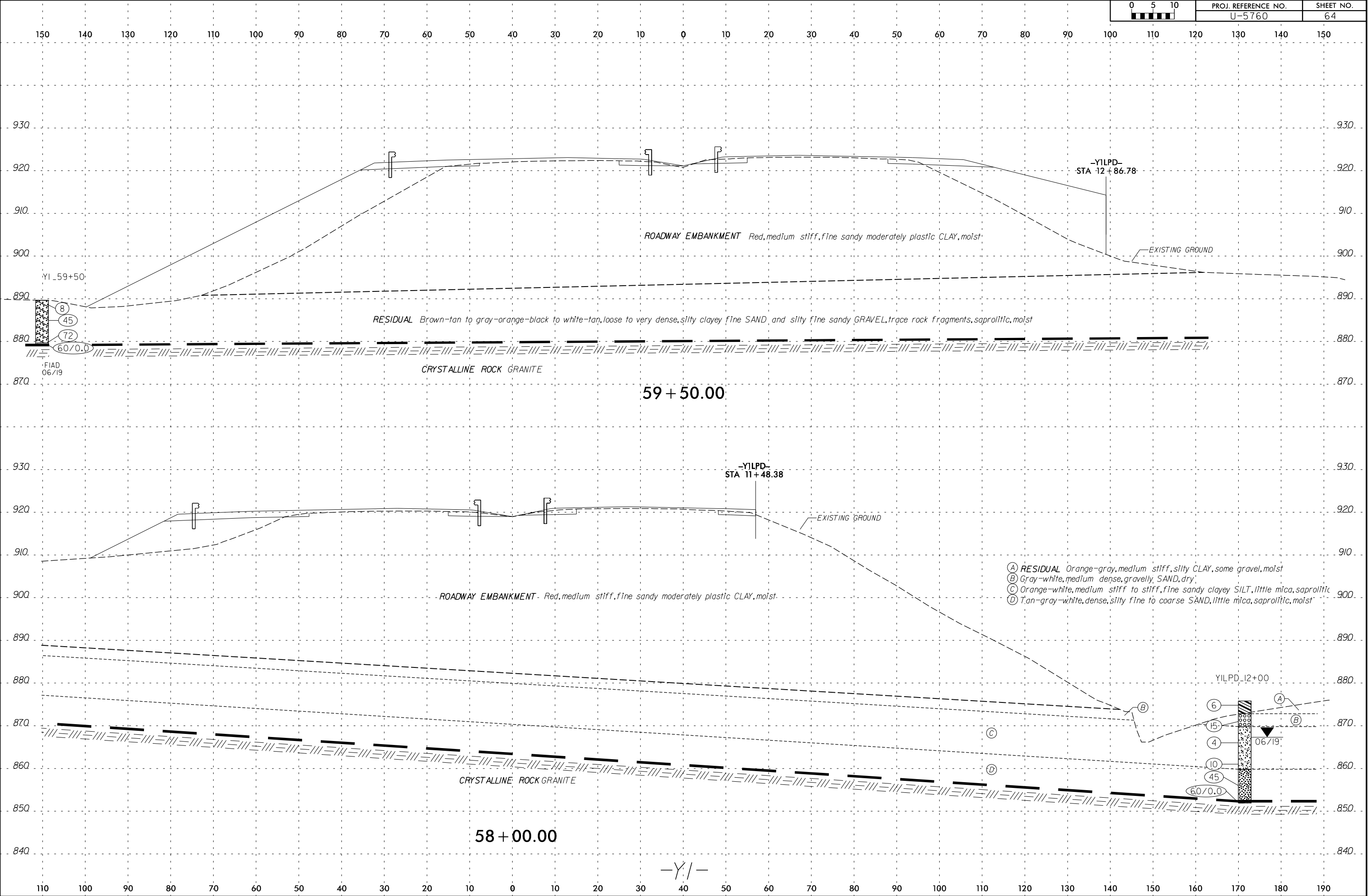
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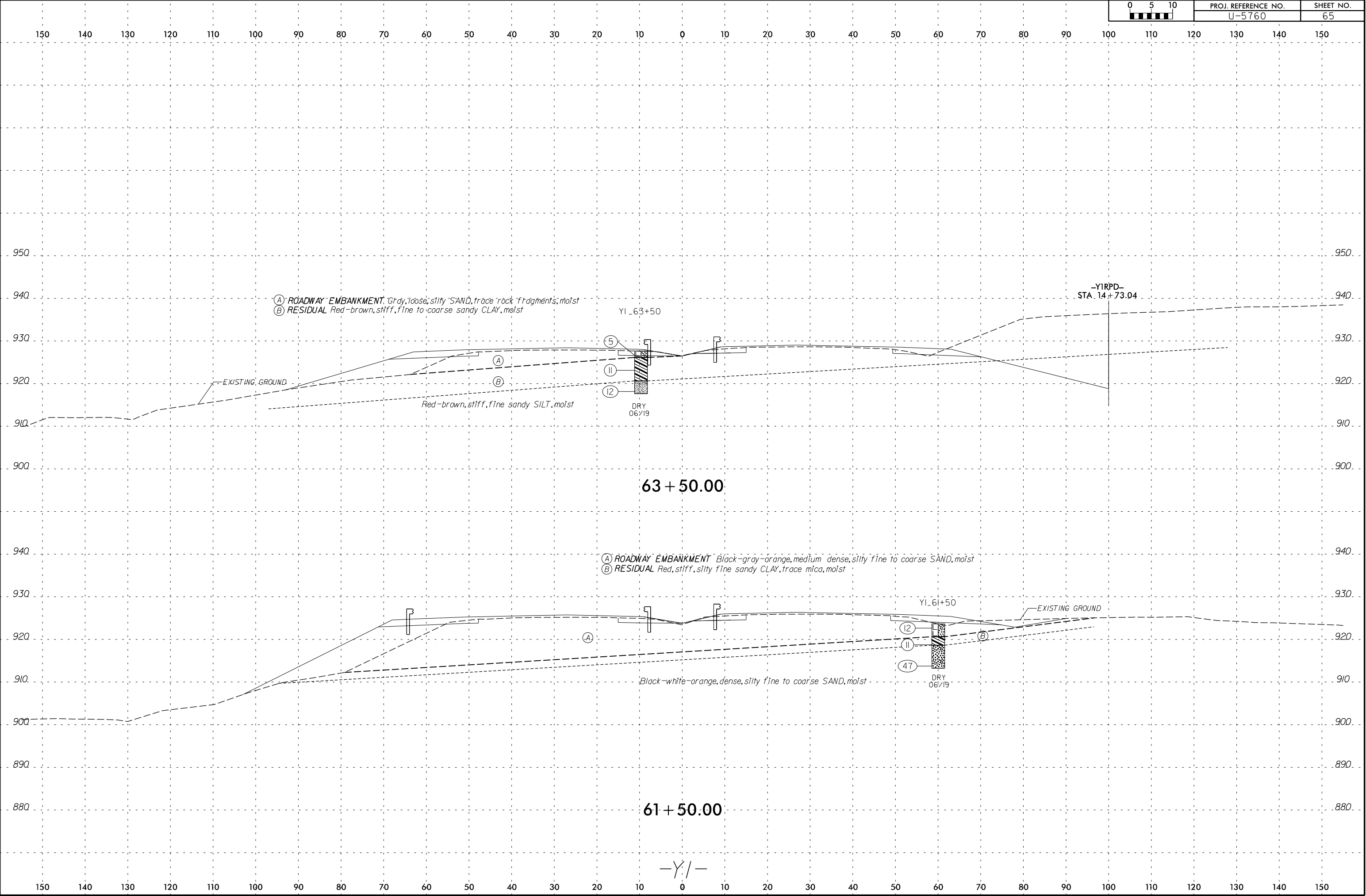
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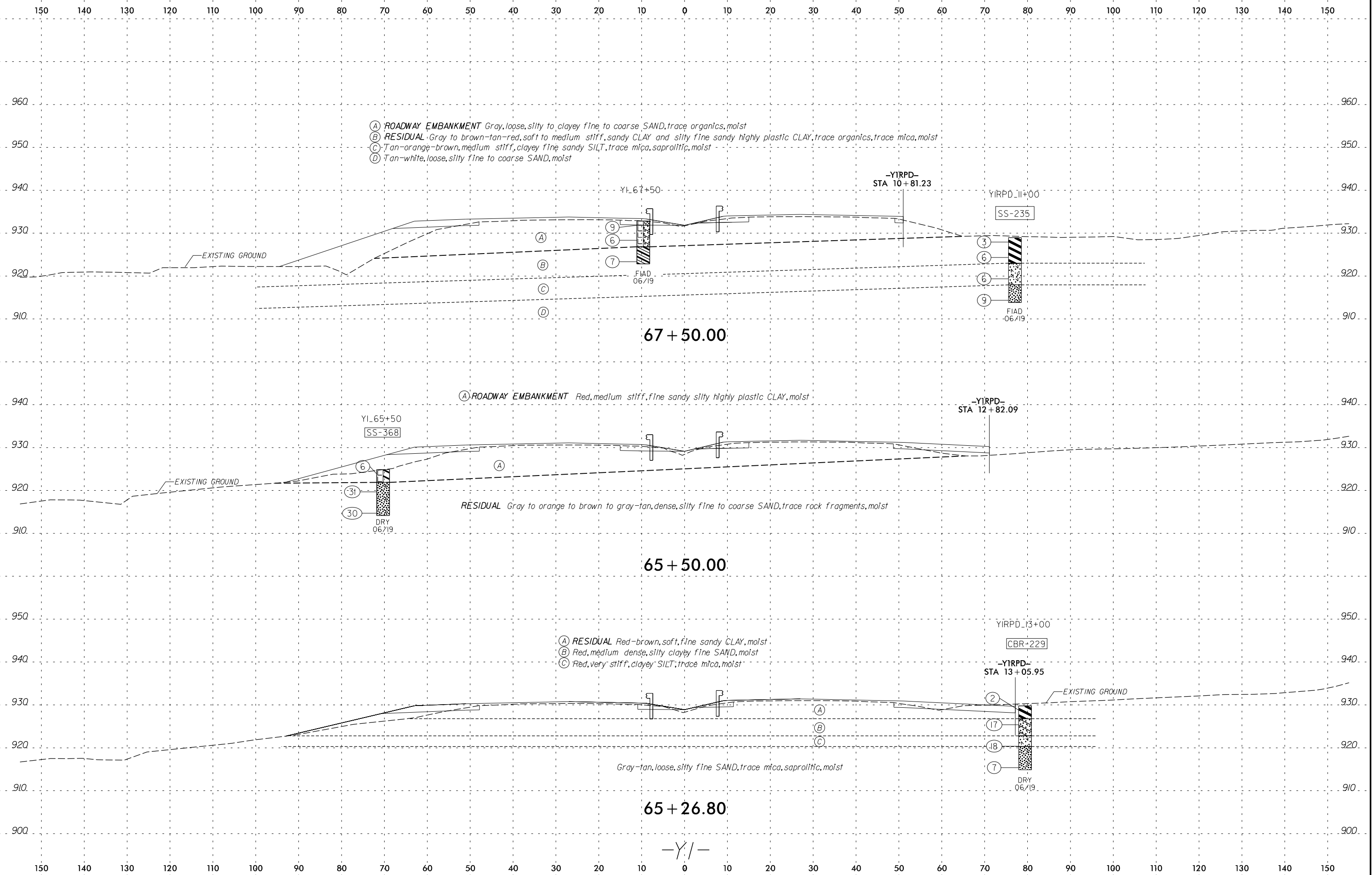
9/18/2019
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	U-5760	64

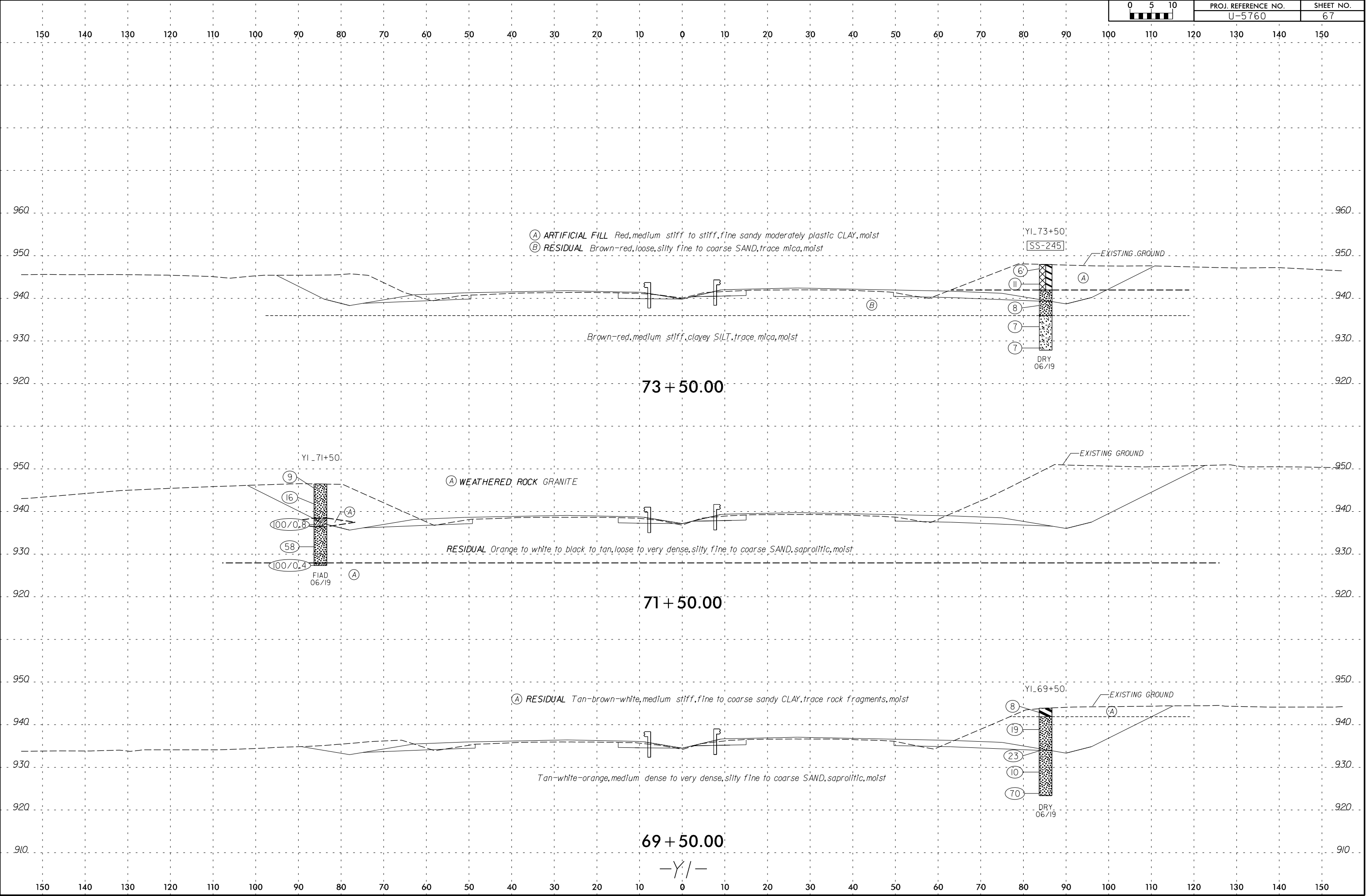


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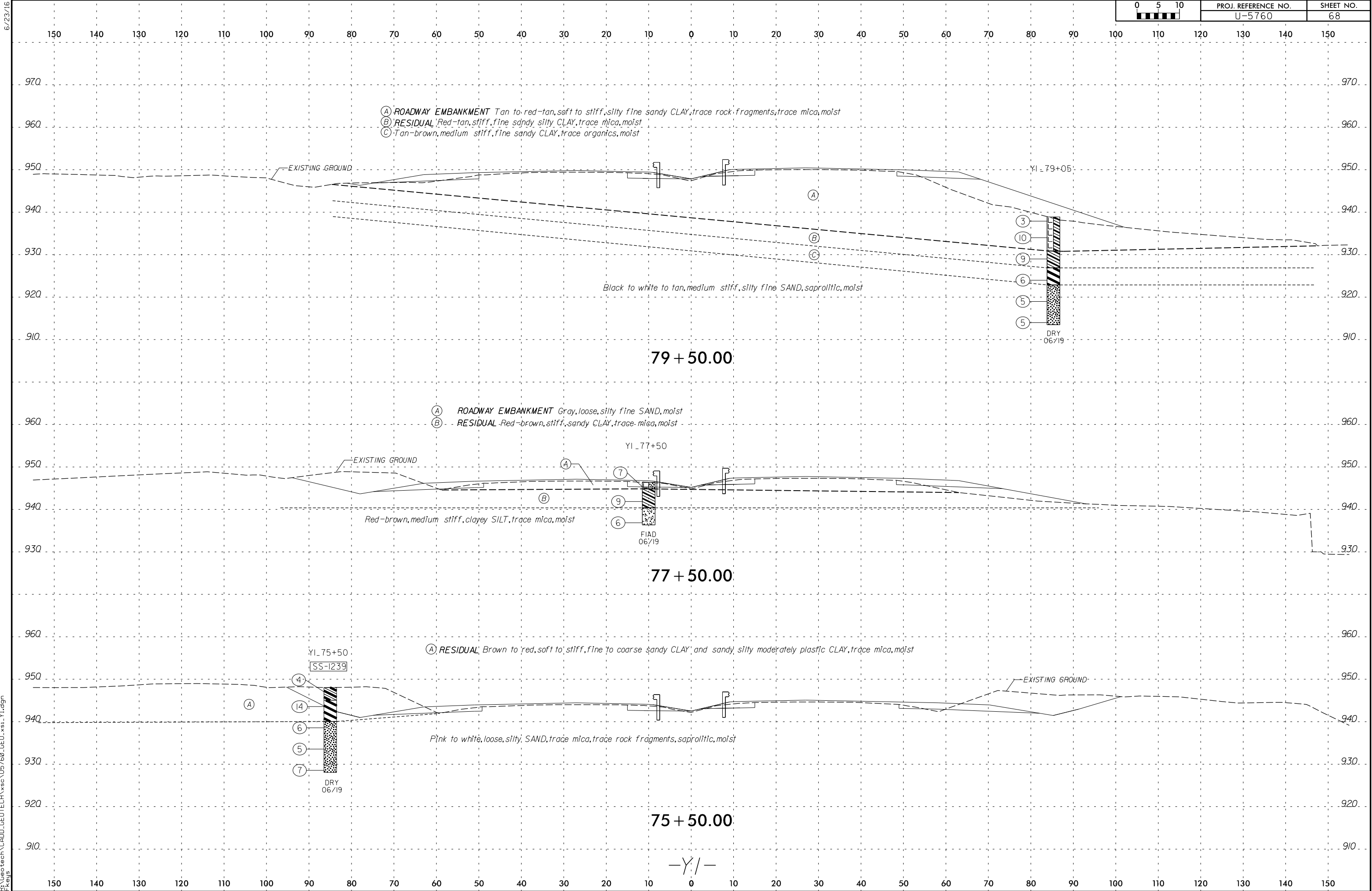




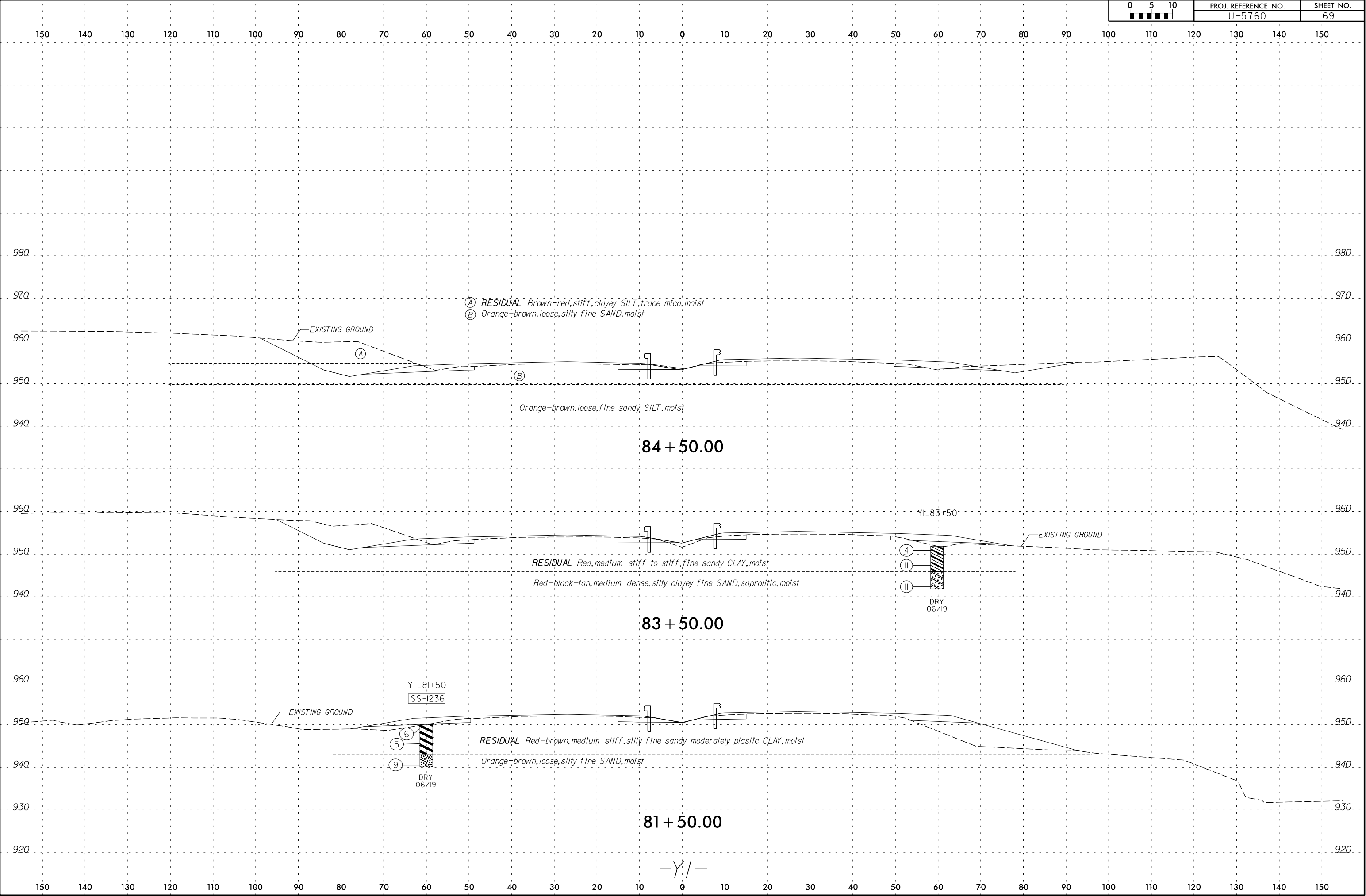
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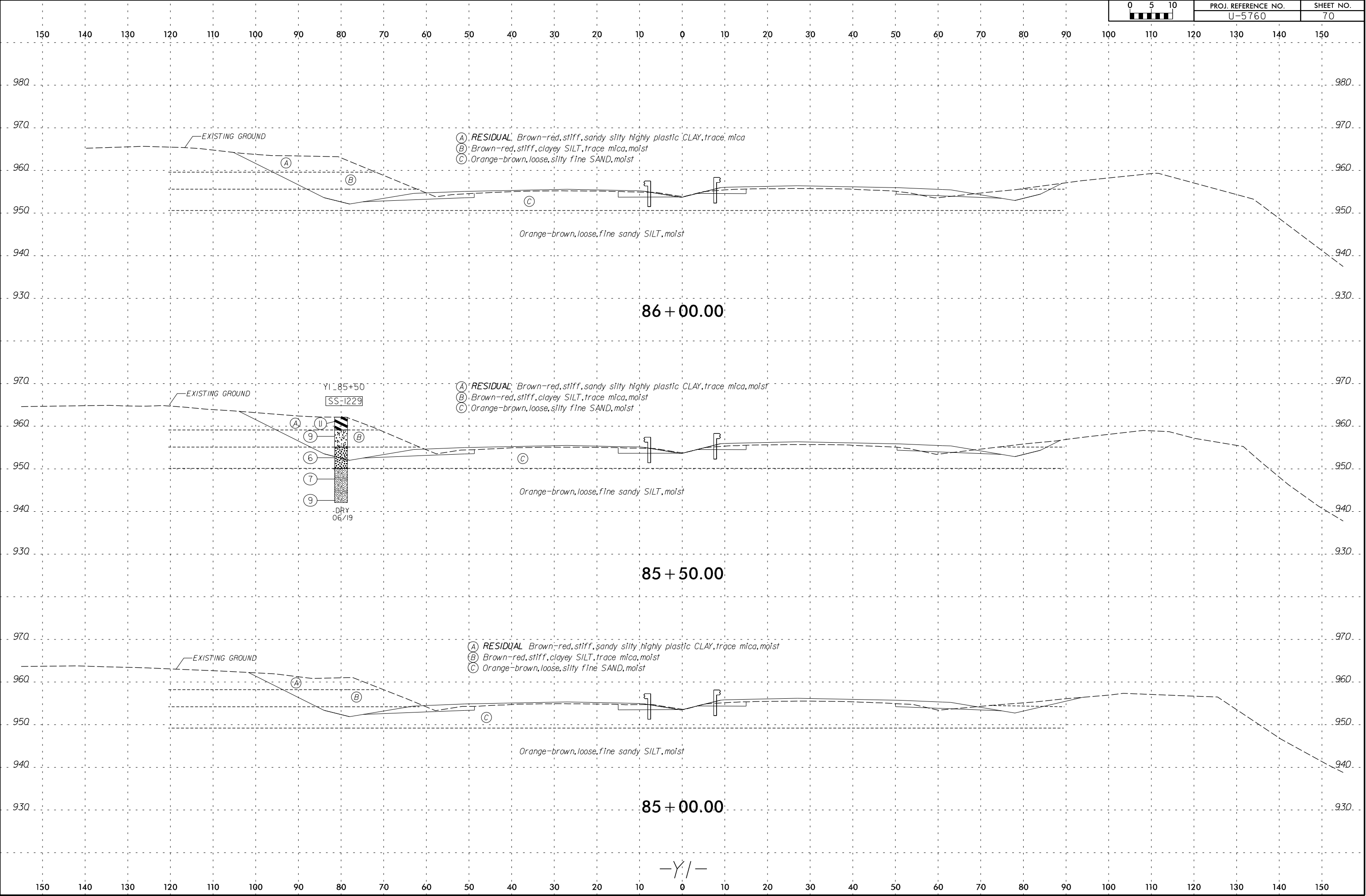
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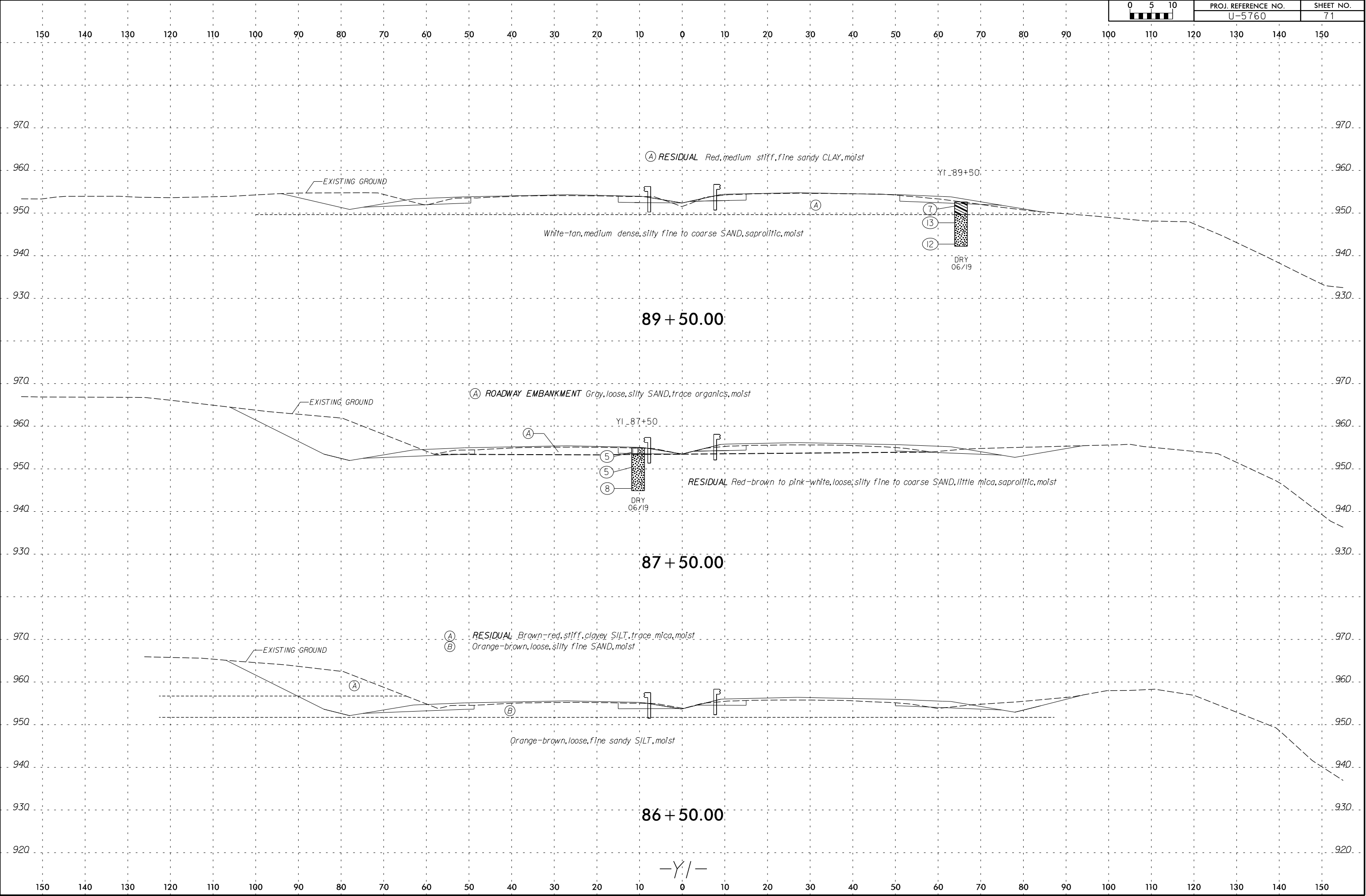
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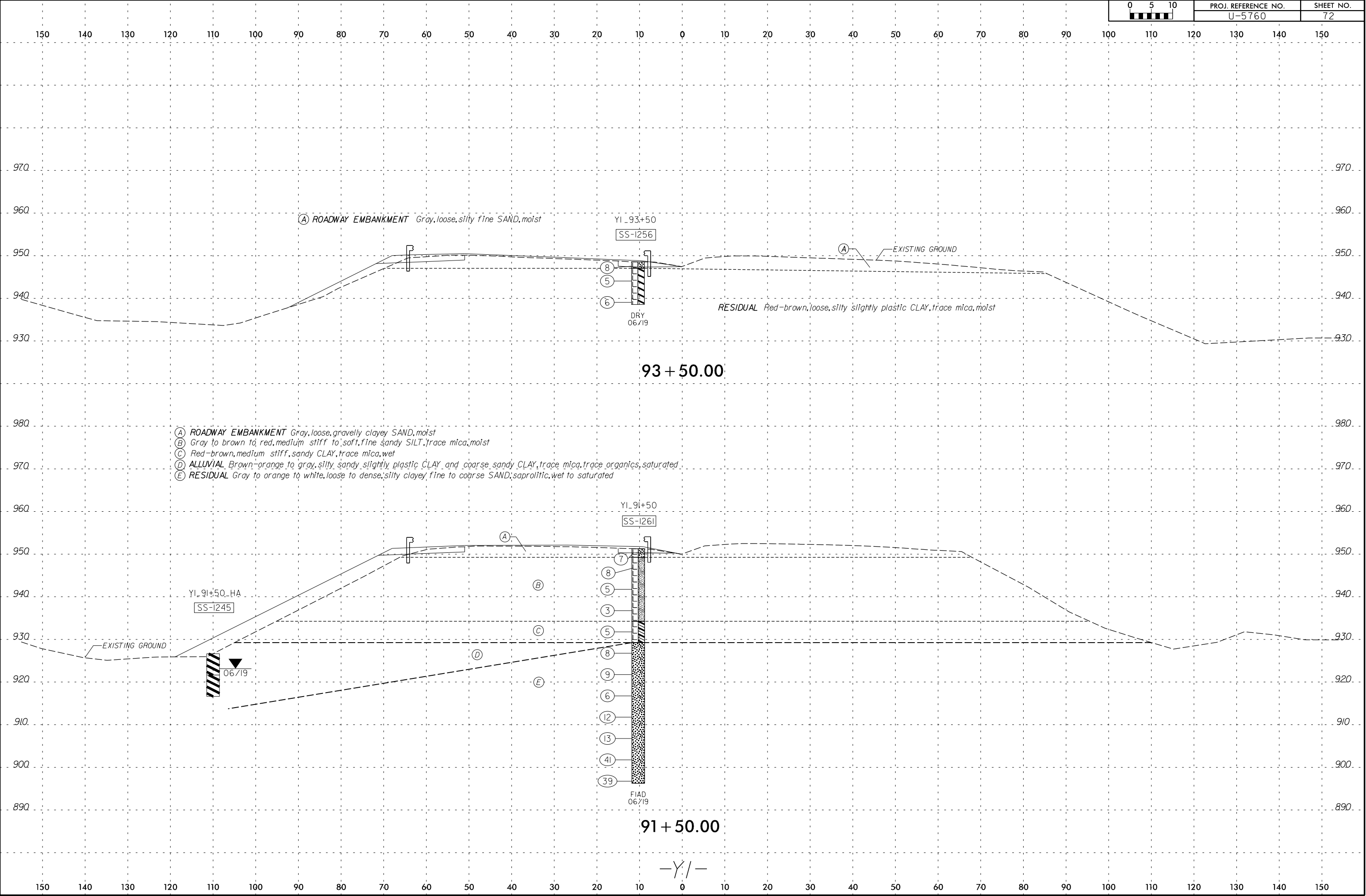
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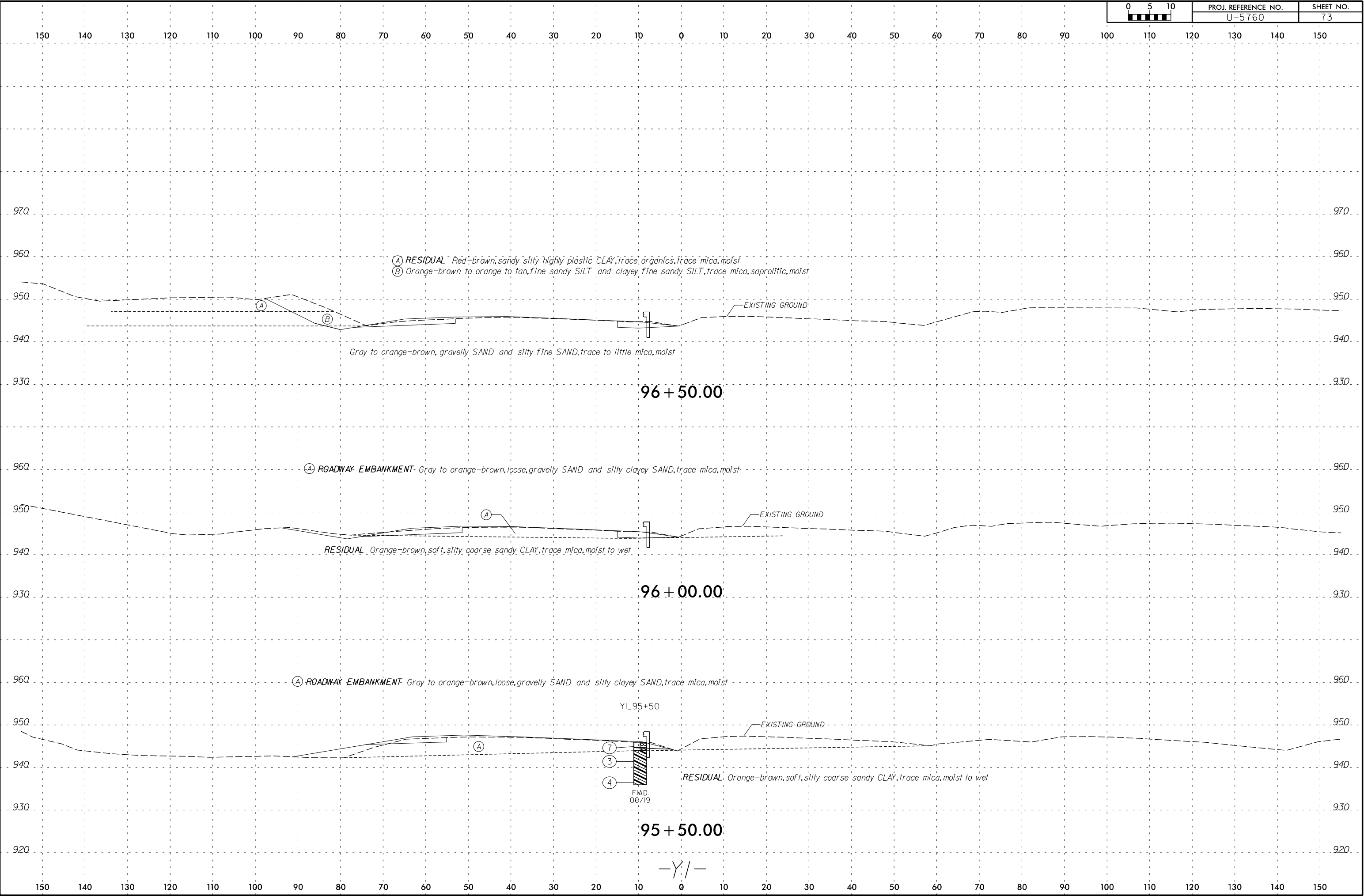
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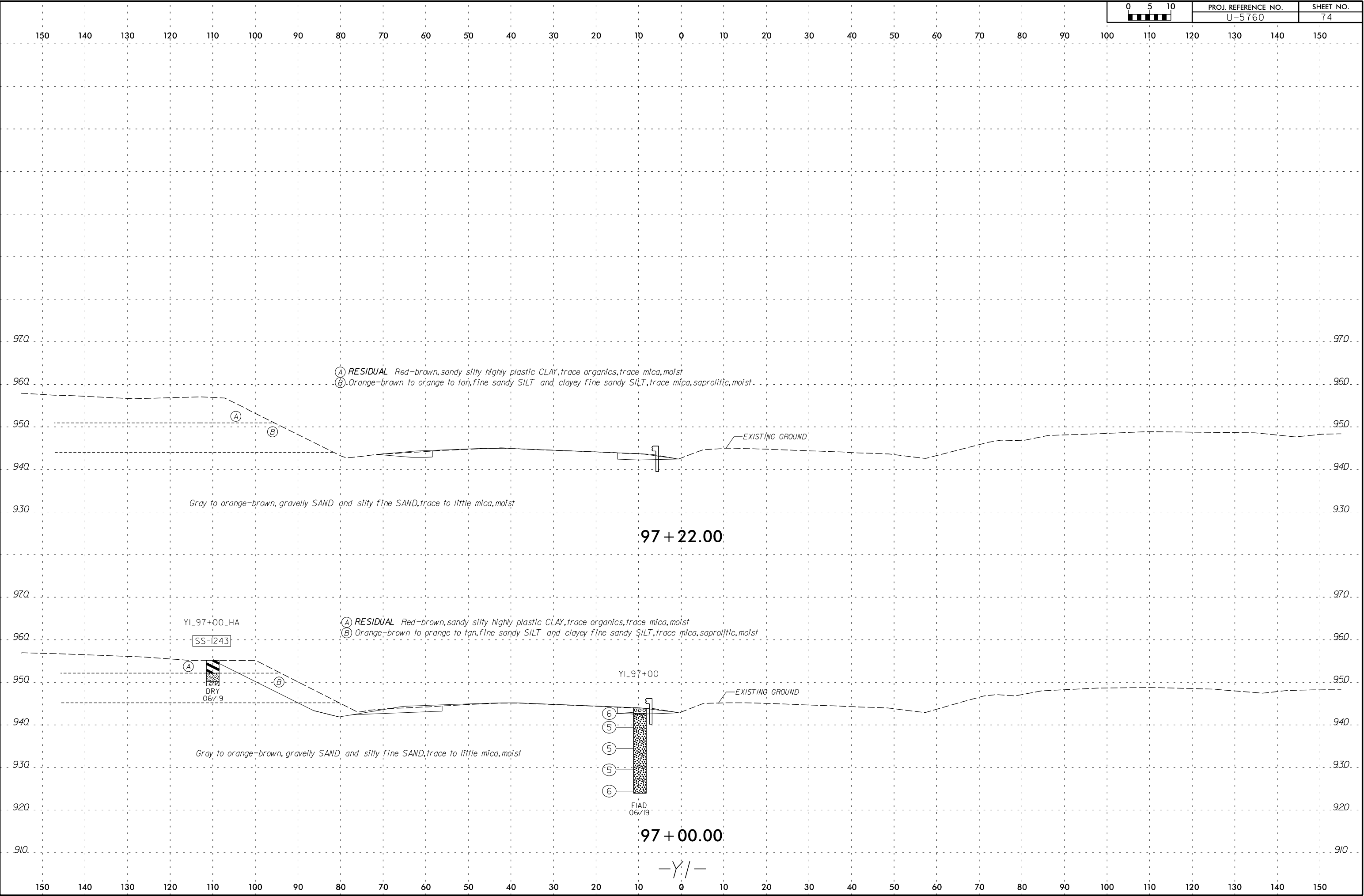
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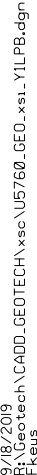


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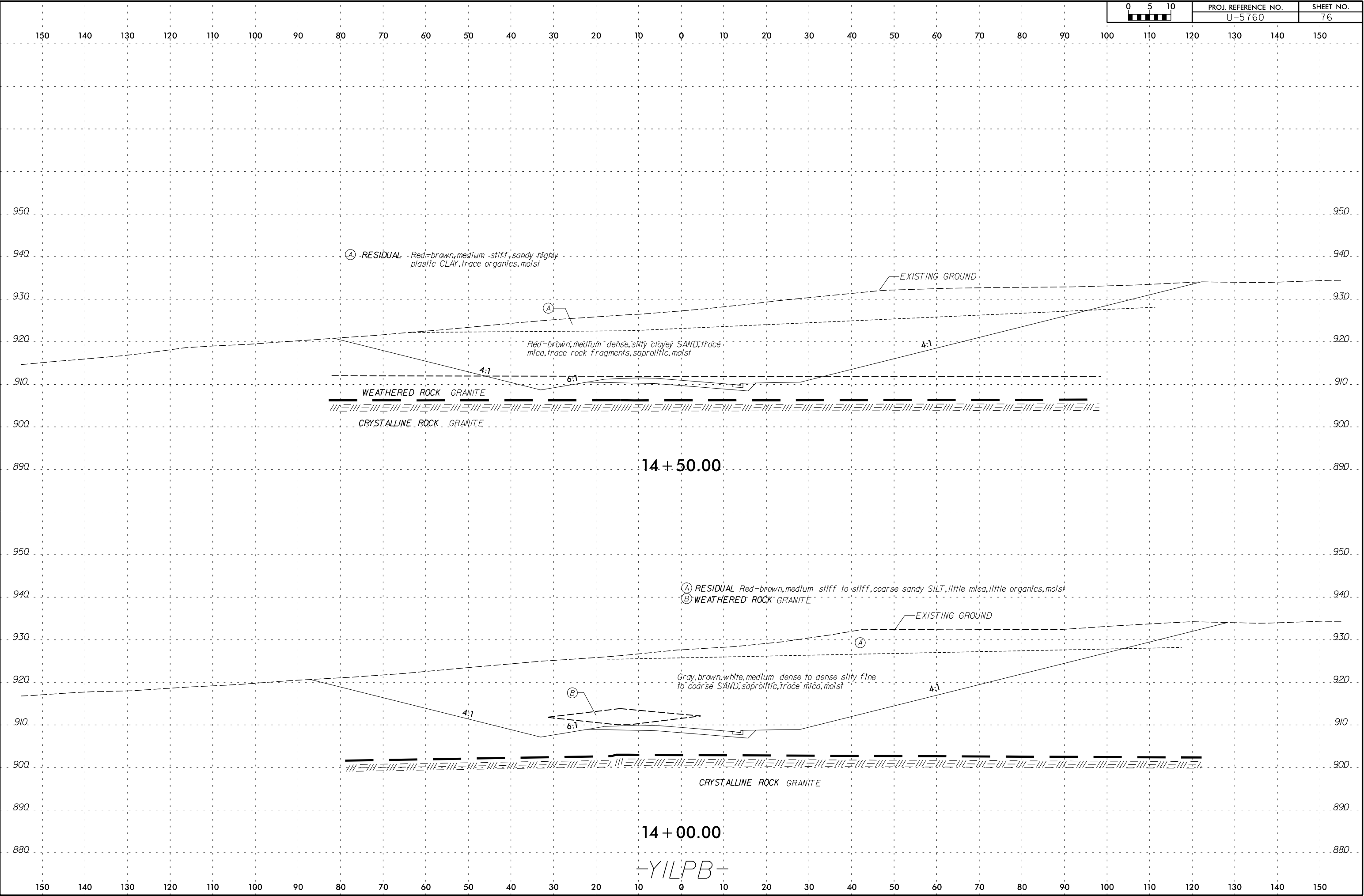


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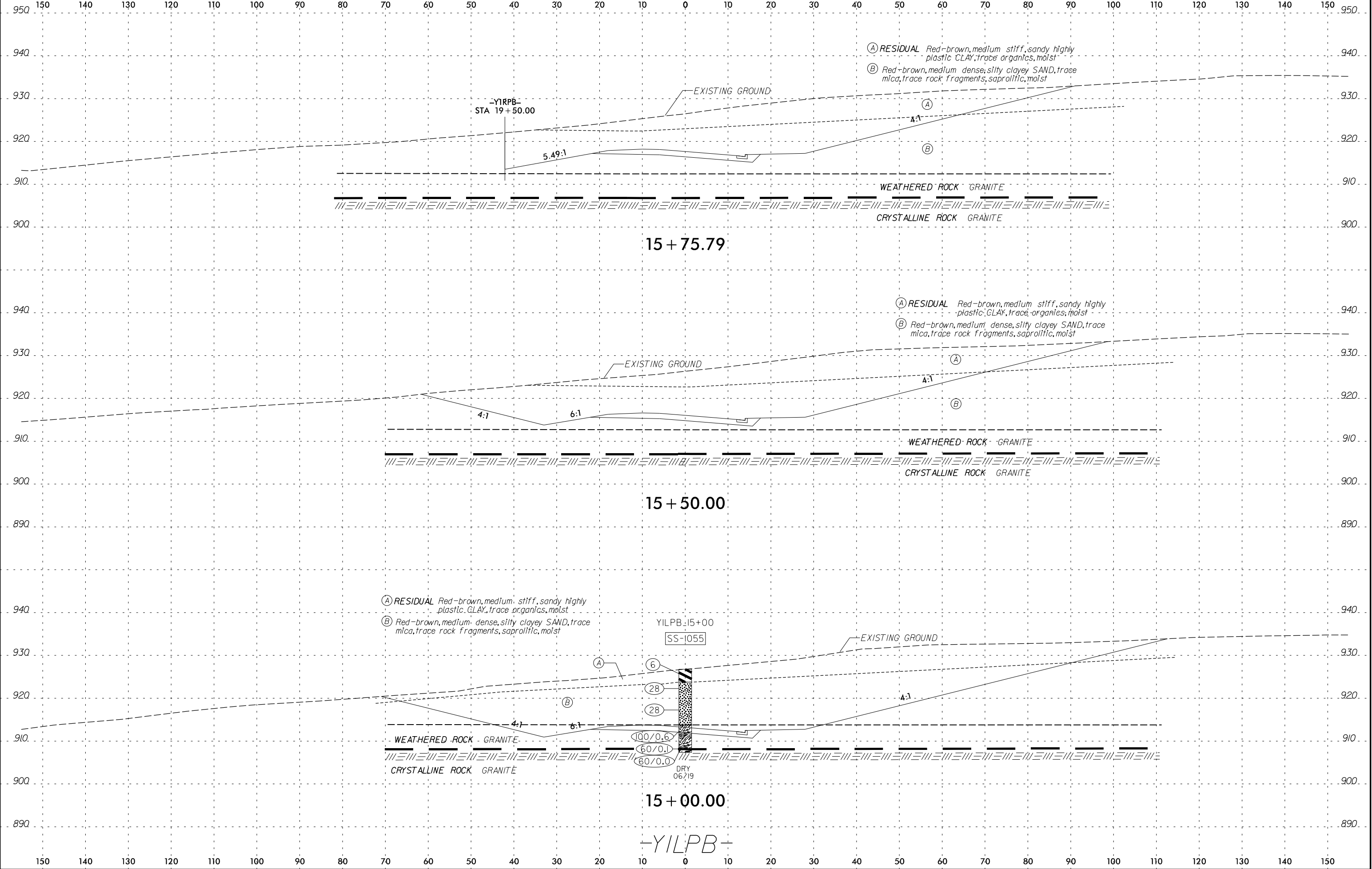




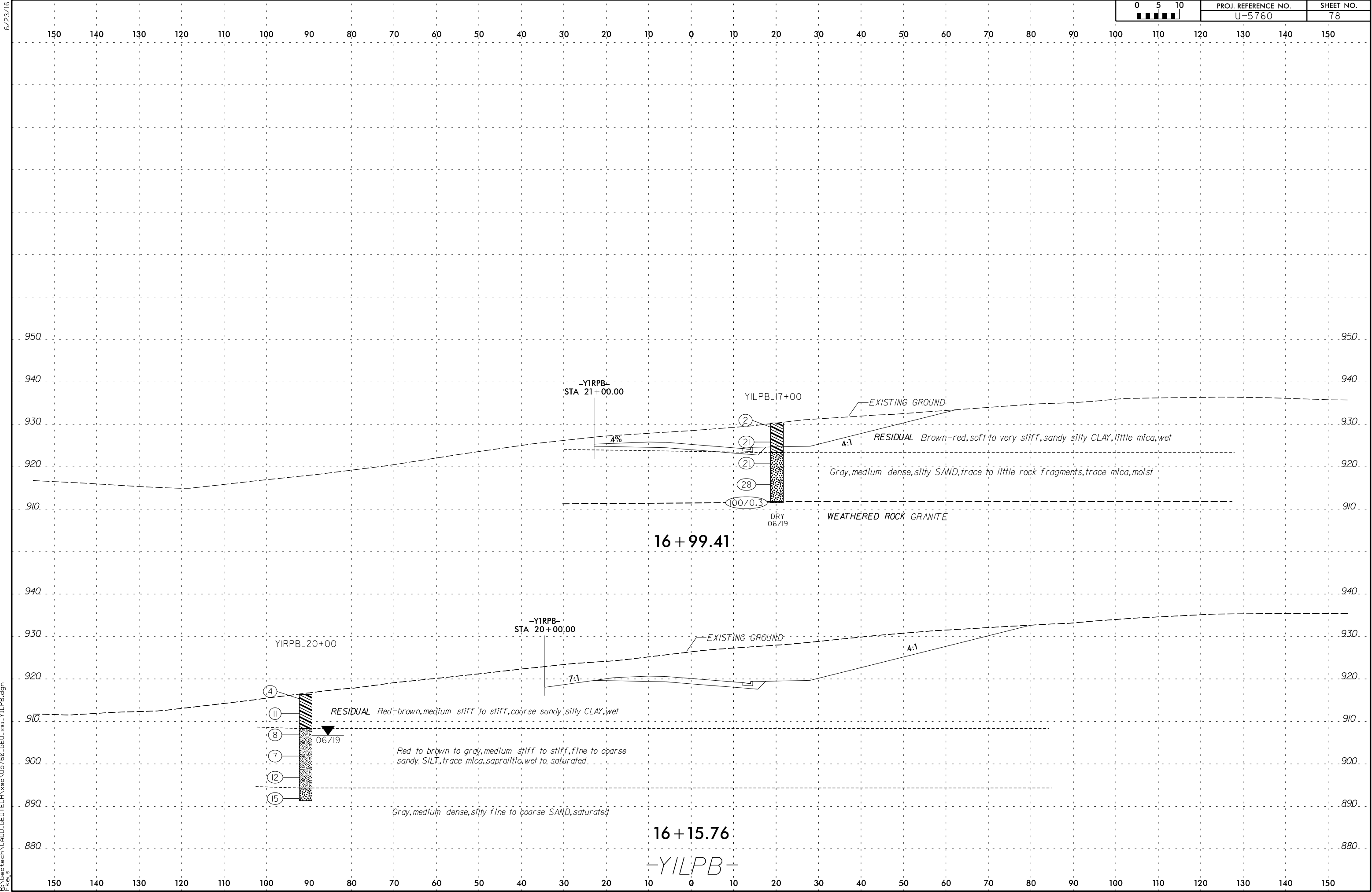
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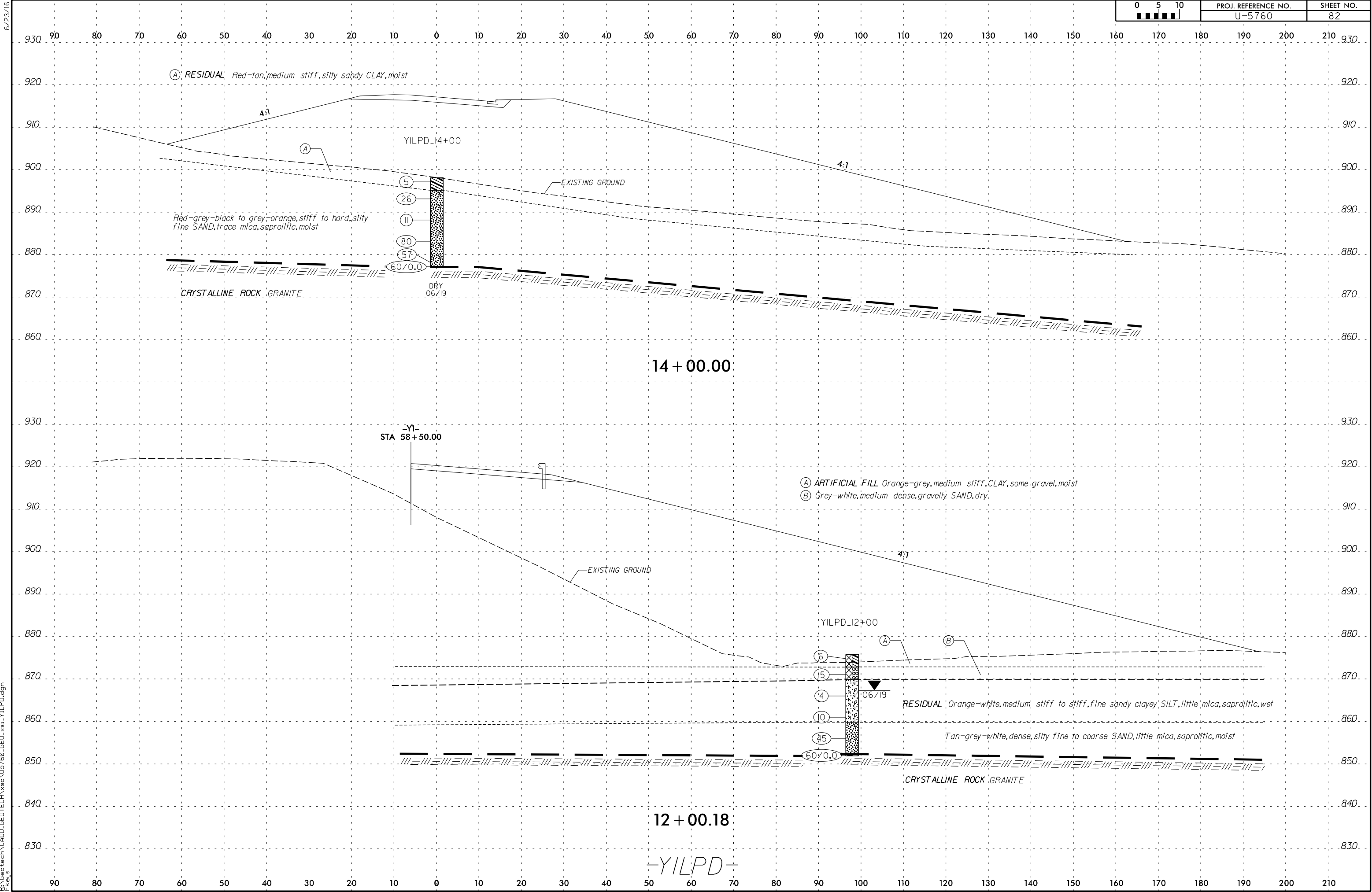
6/23/16



6/23/16



6/23/16



6/23/16

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

940 940

930 930

920 920

910 910

900 900

890 890

880 880

870 870

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

9/18/2019
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-YLRPD-
STA 19+50.00

EXISTING GROUND

4.80:1

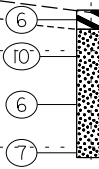
YILPD 16+00

SS-83

A

4:1

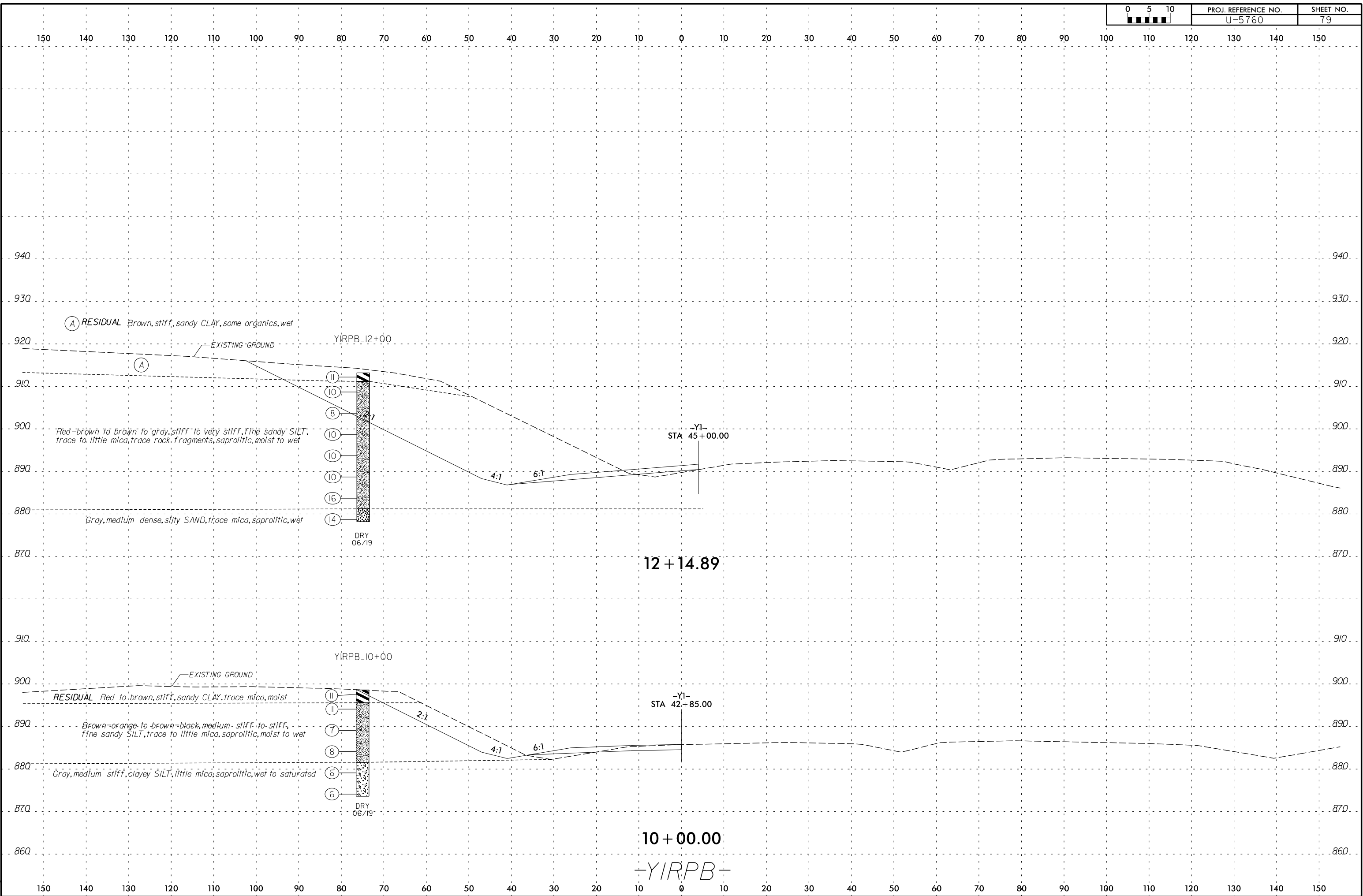
Tan-orange to grey, loose to medium dense, silty
clayey fine to coarse SAND, saprolitic, moist



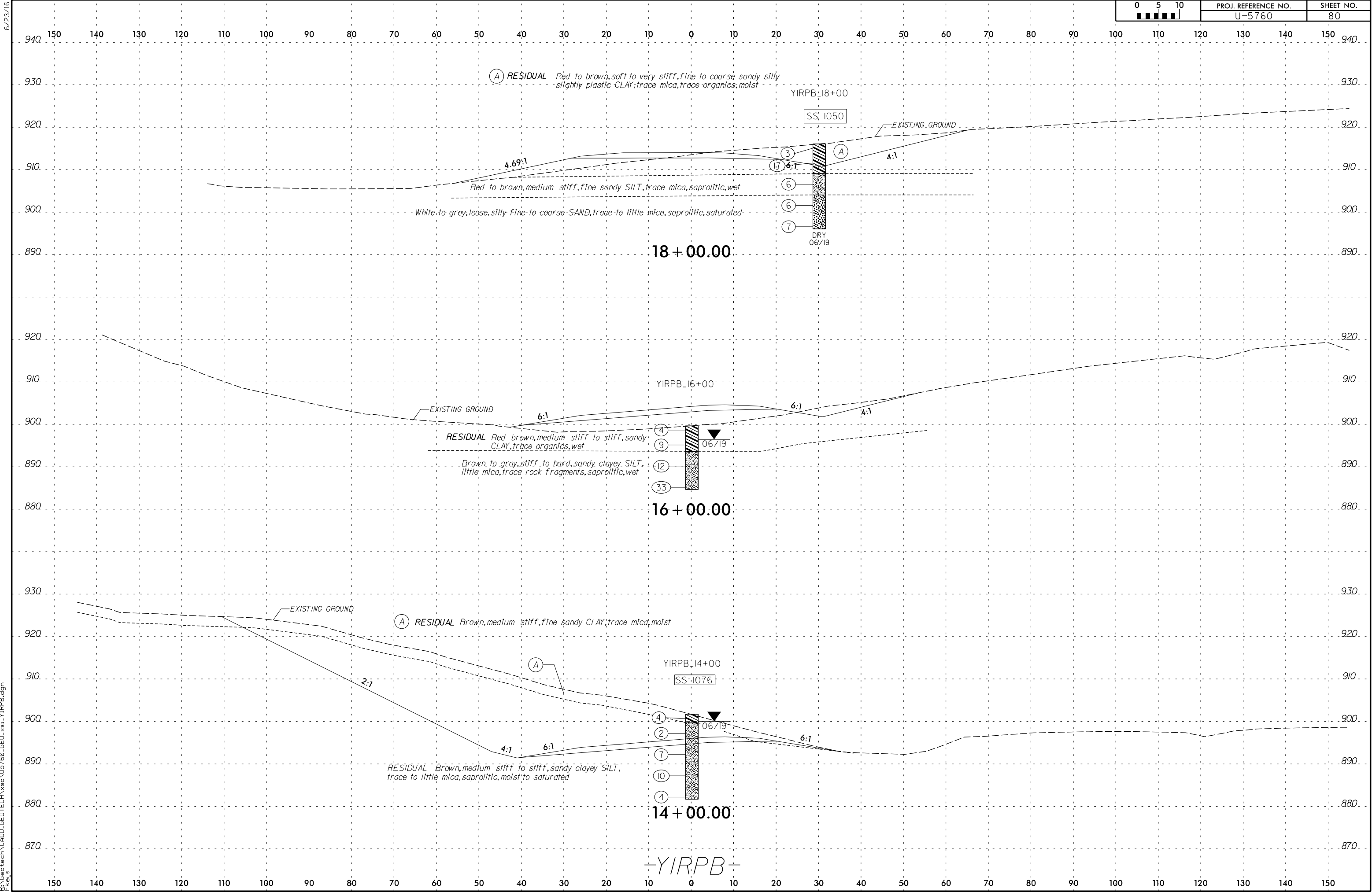
DRY
06/19

15 + 75.27

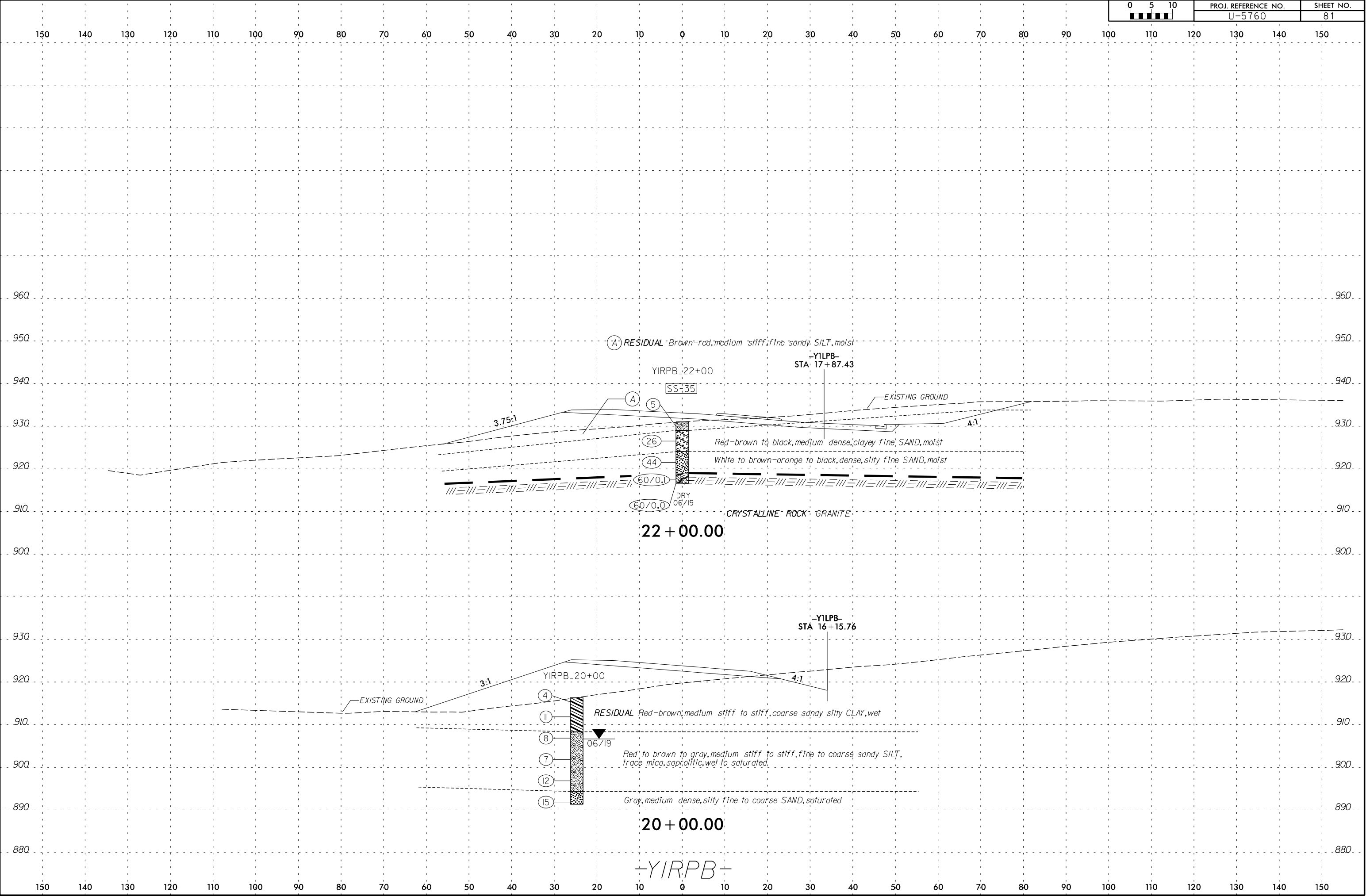
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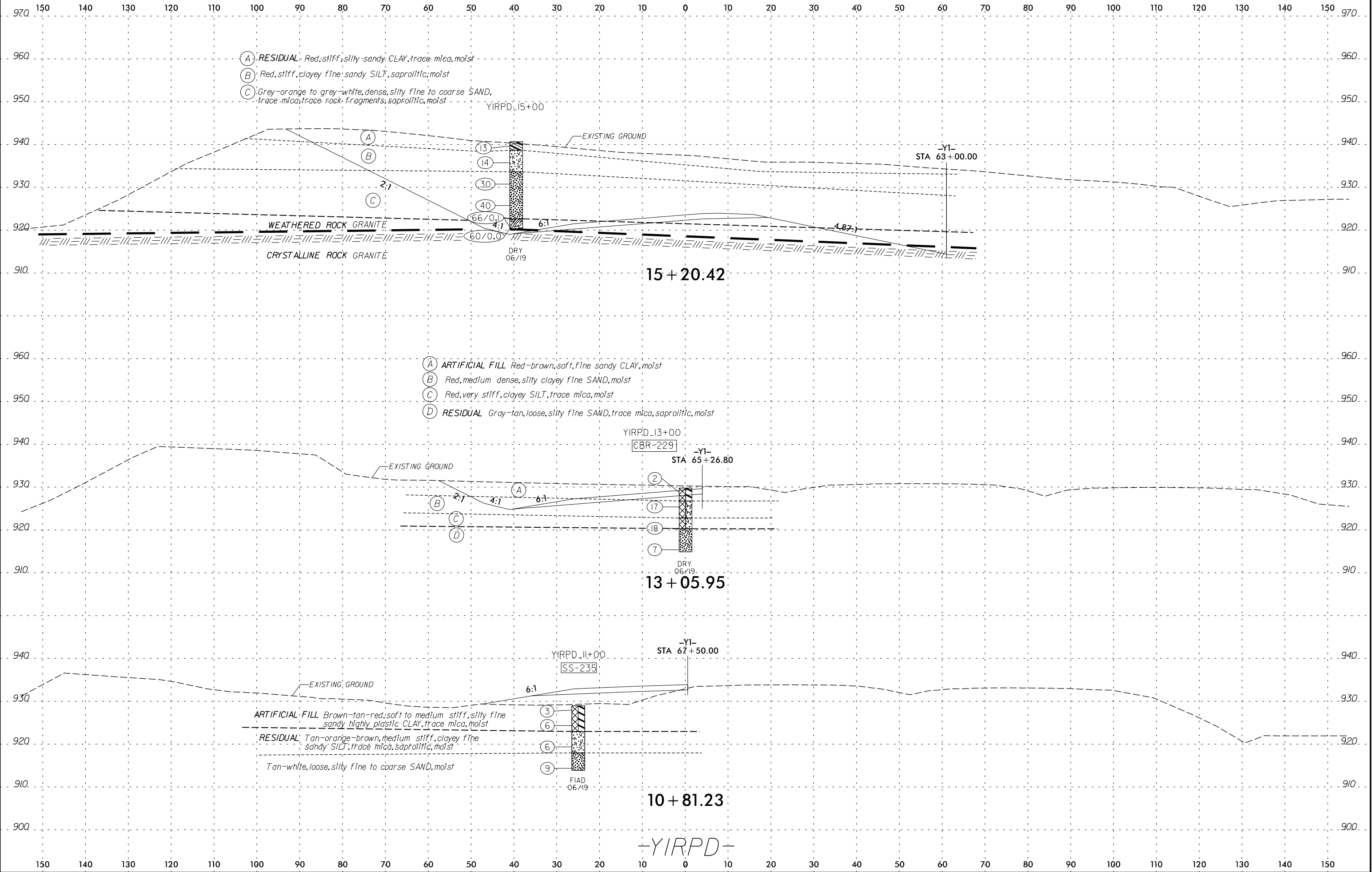
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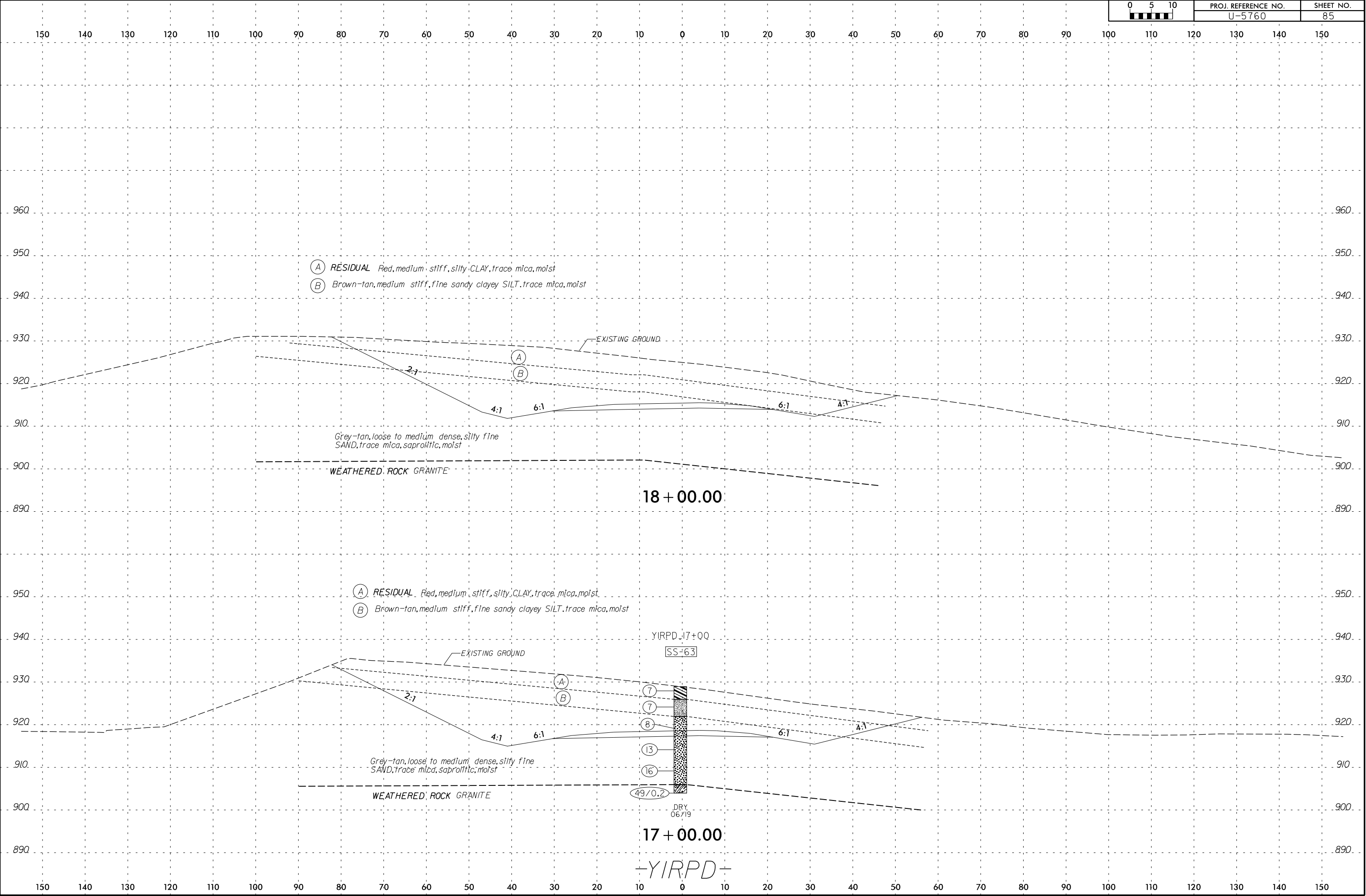
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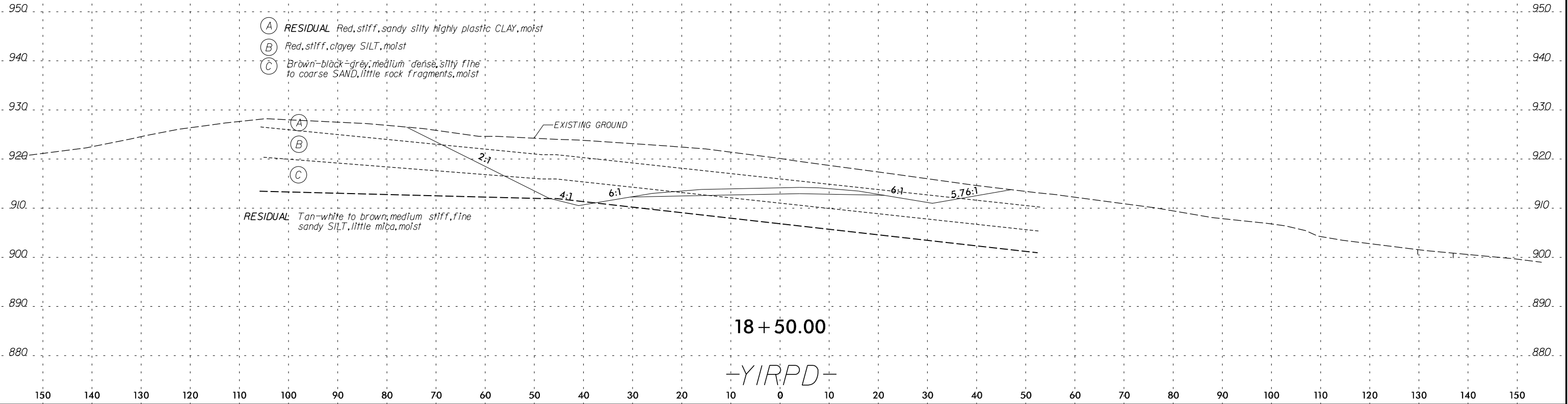
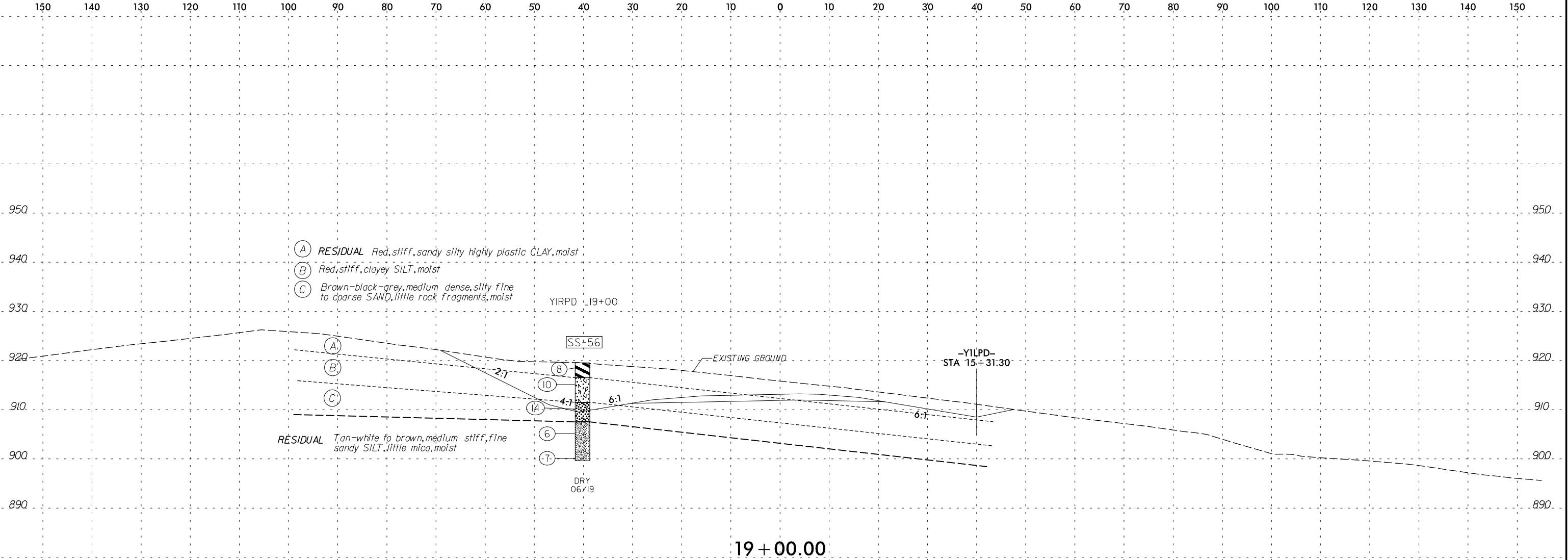
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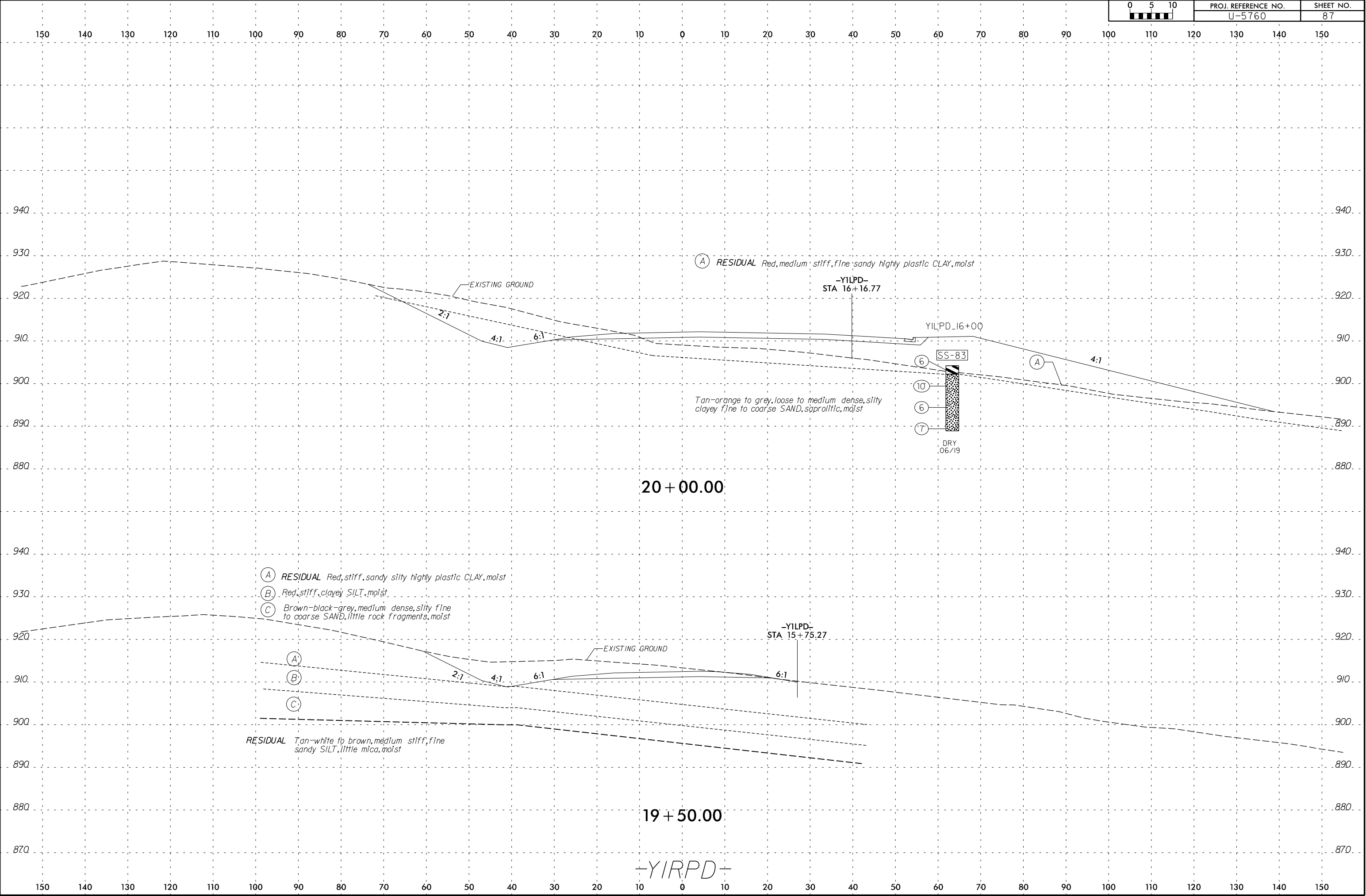
6/23/16



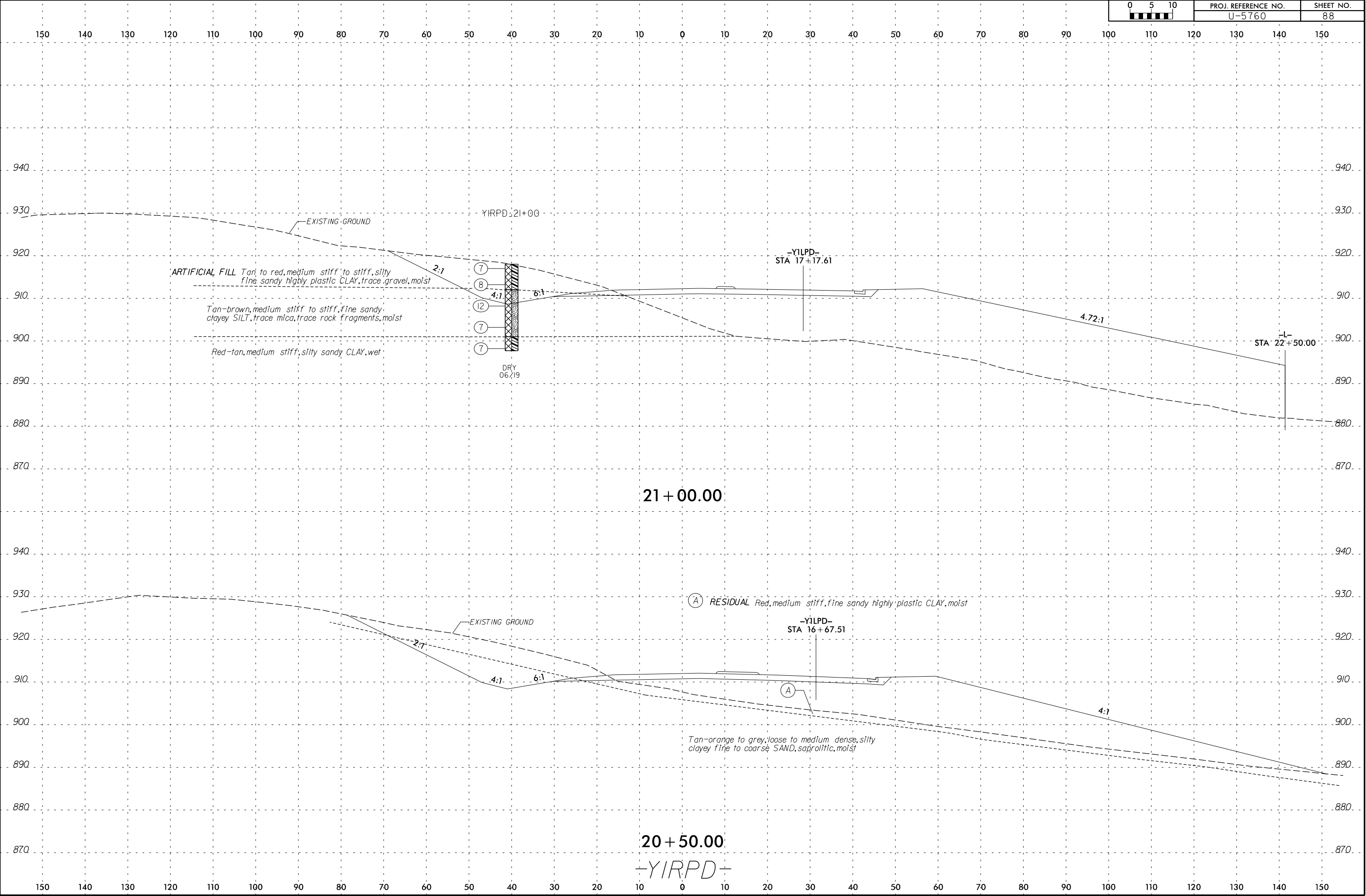
6/23/16



6/23/16

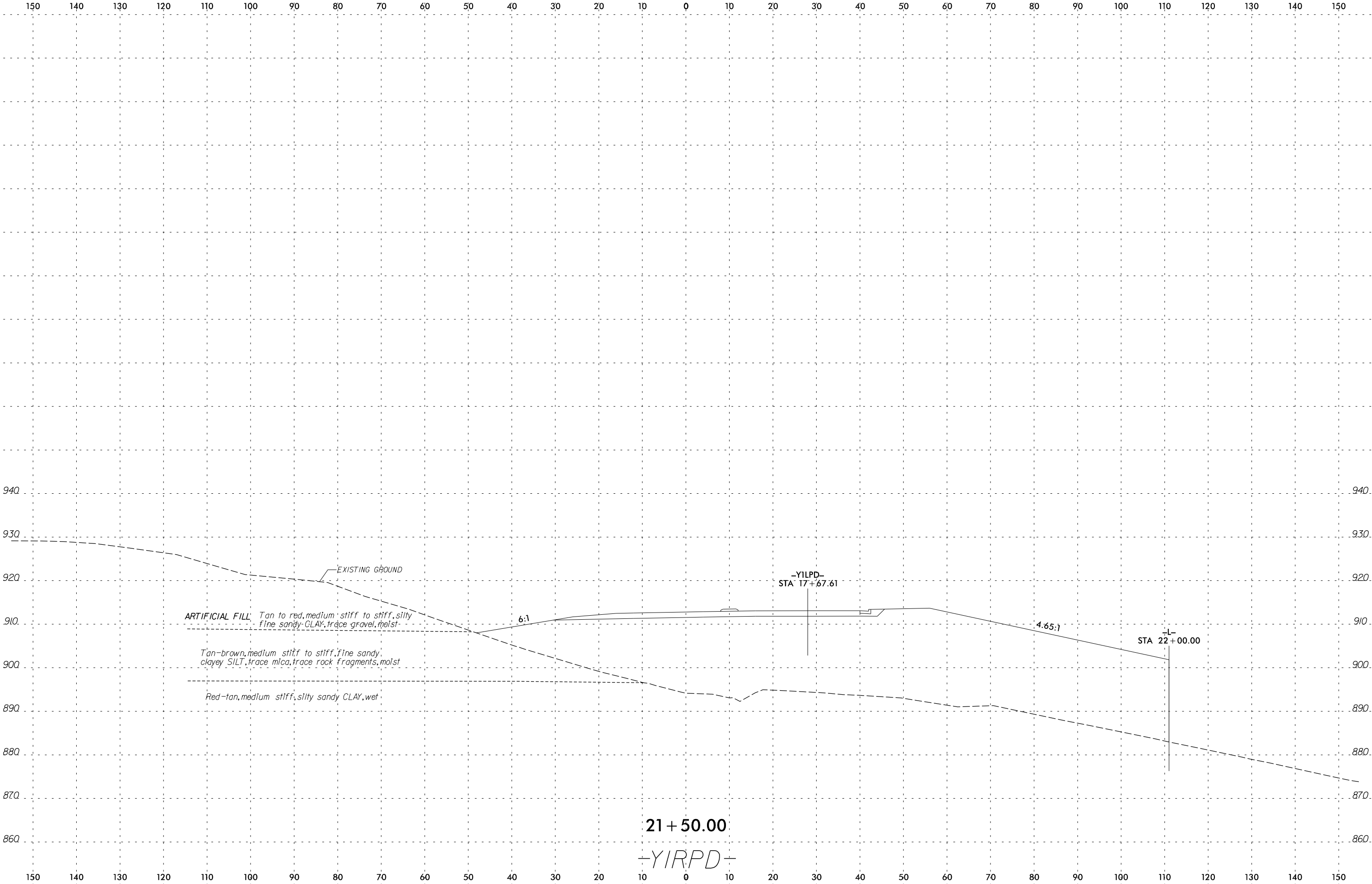


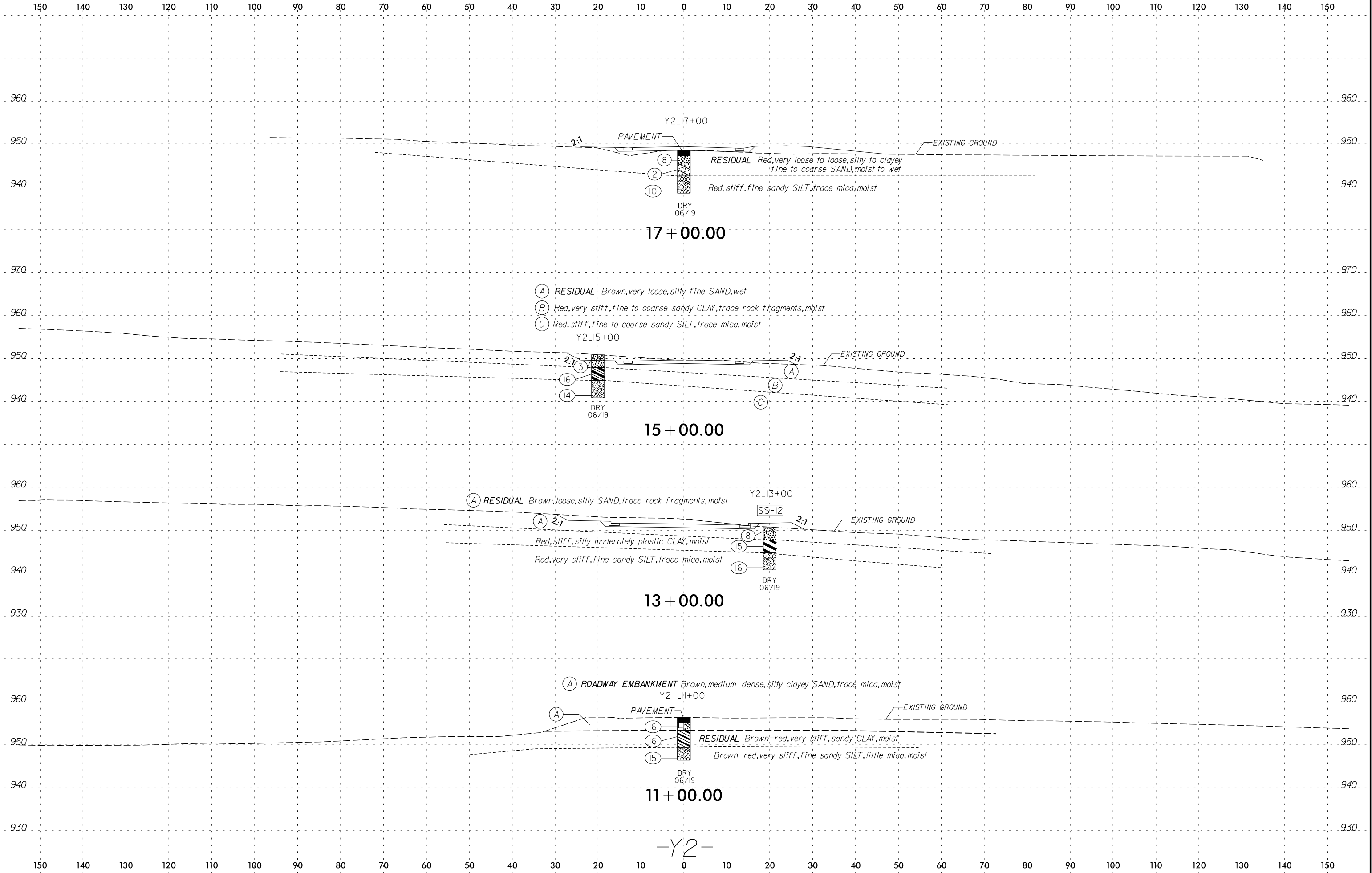
6/23/16



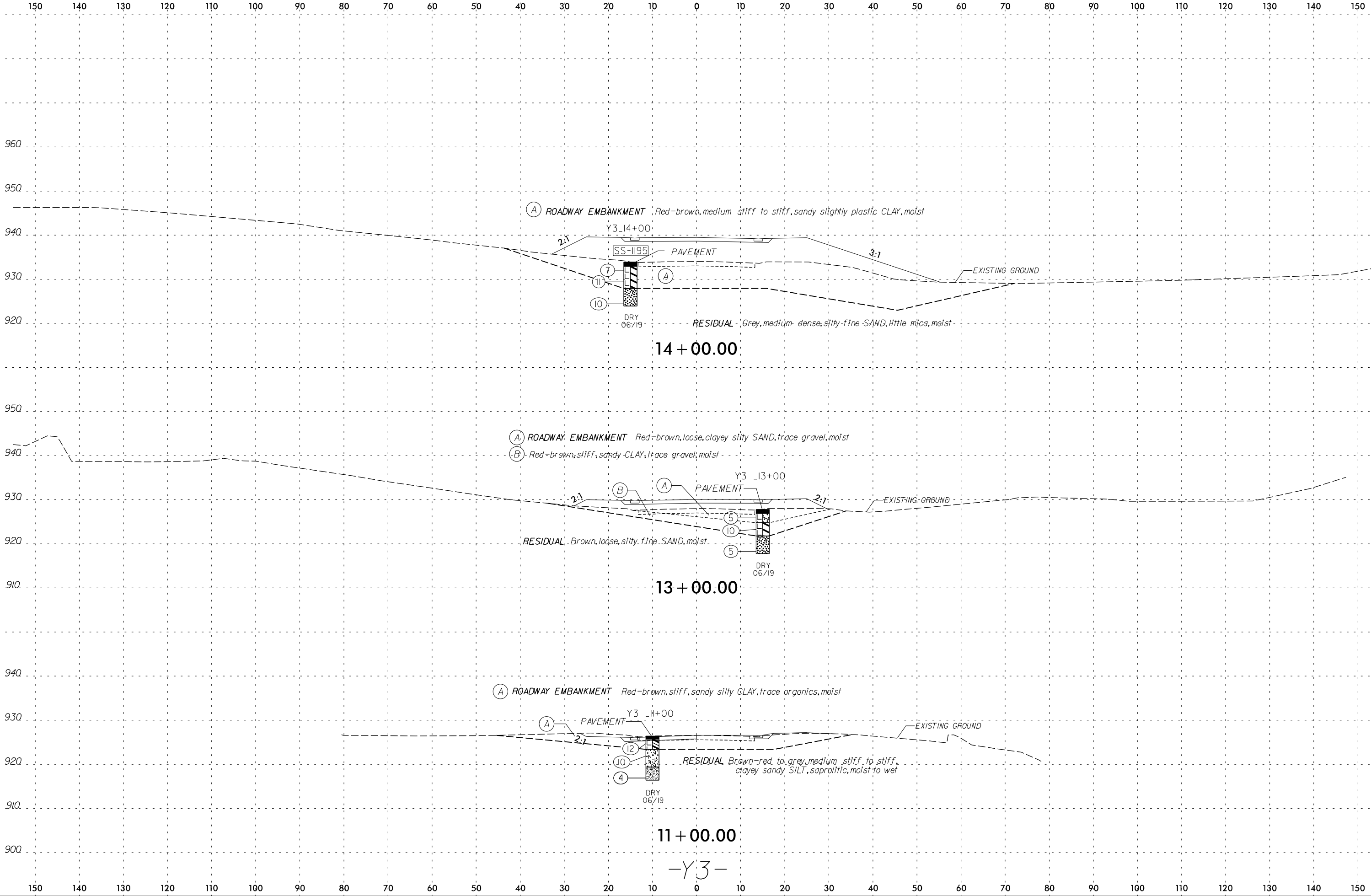
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5760	89

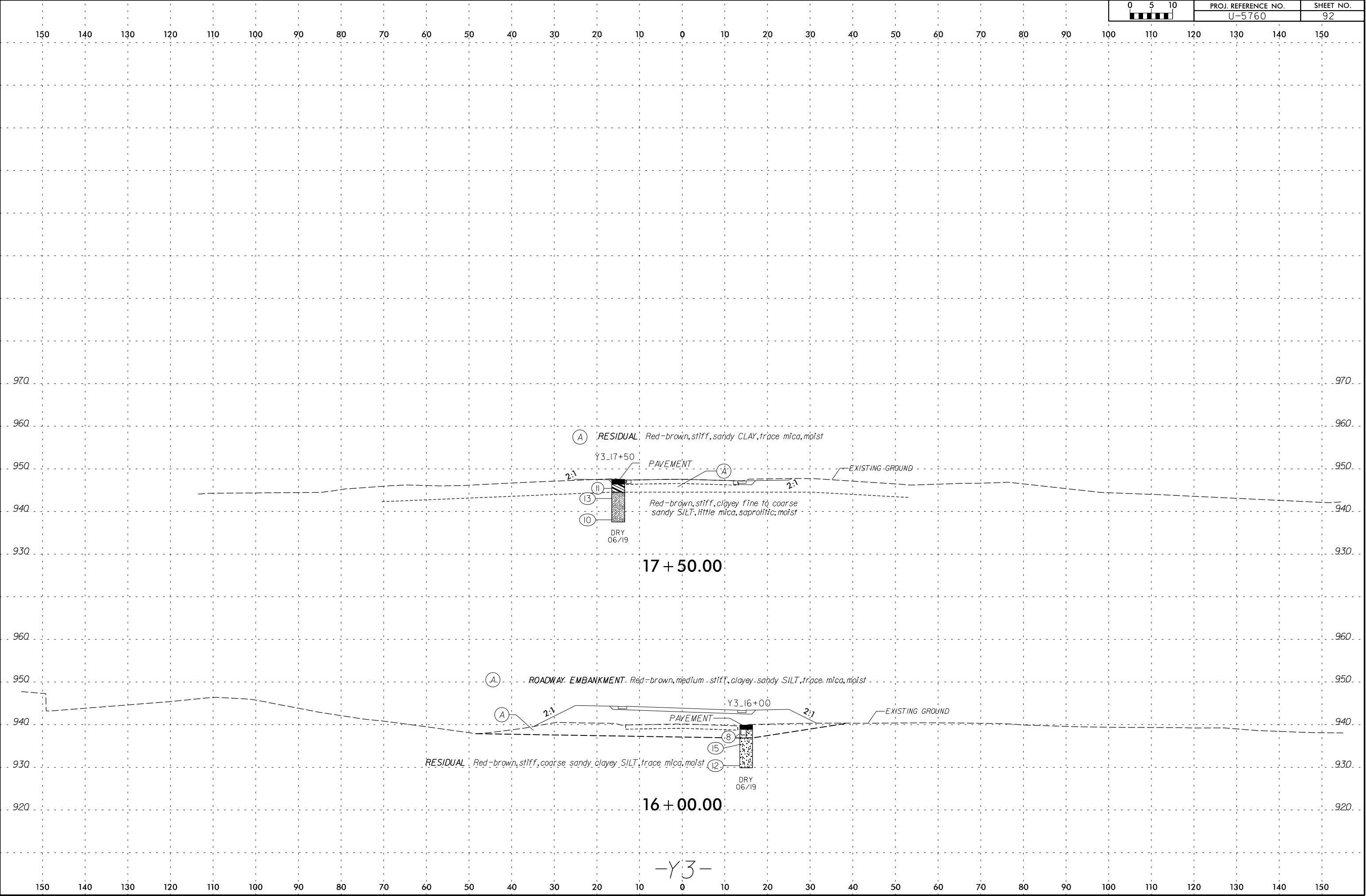




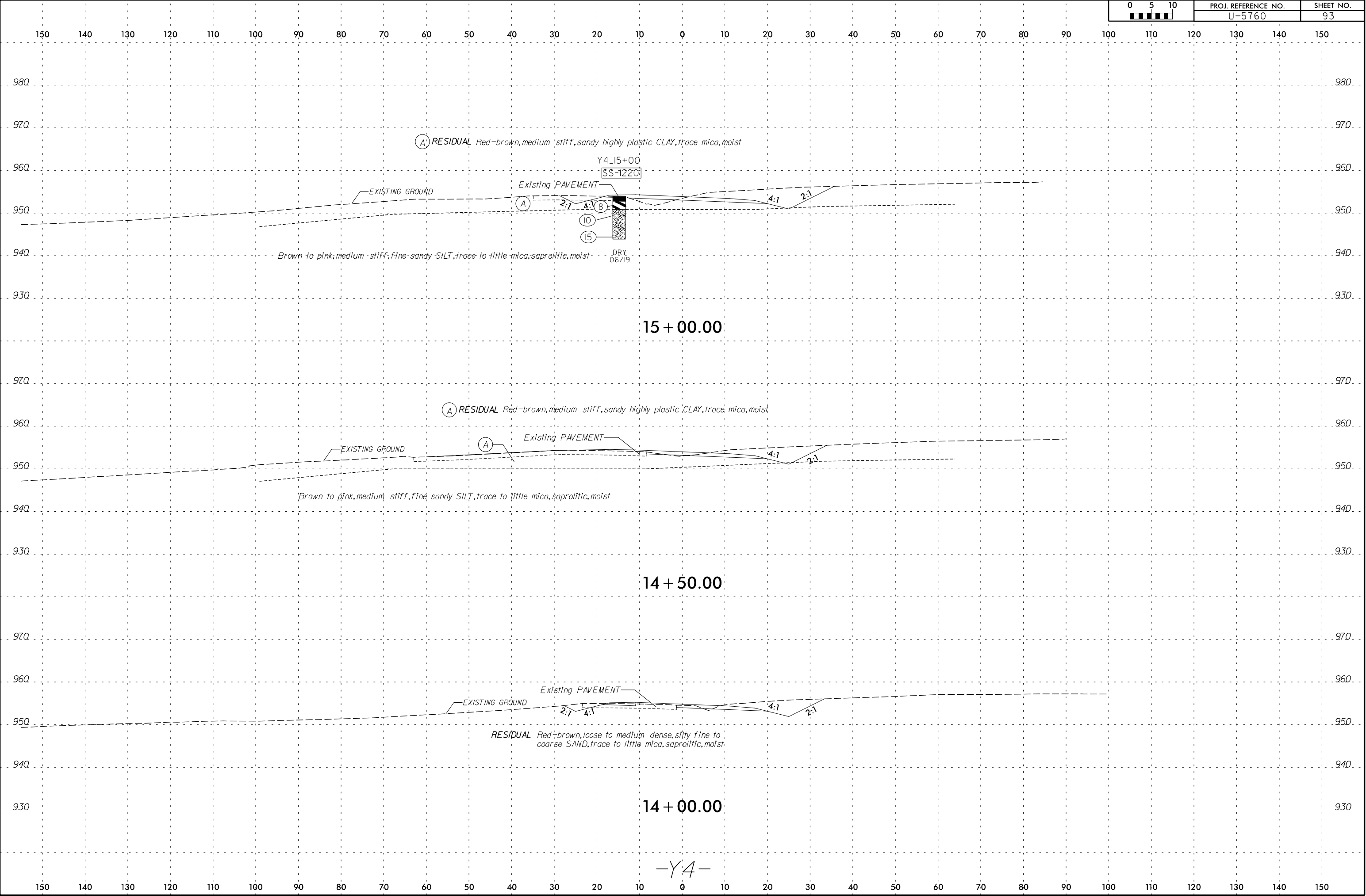
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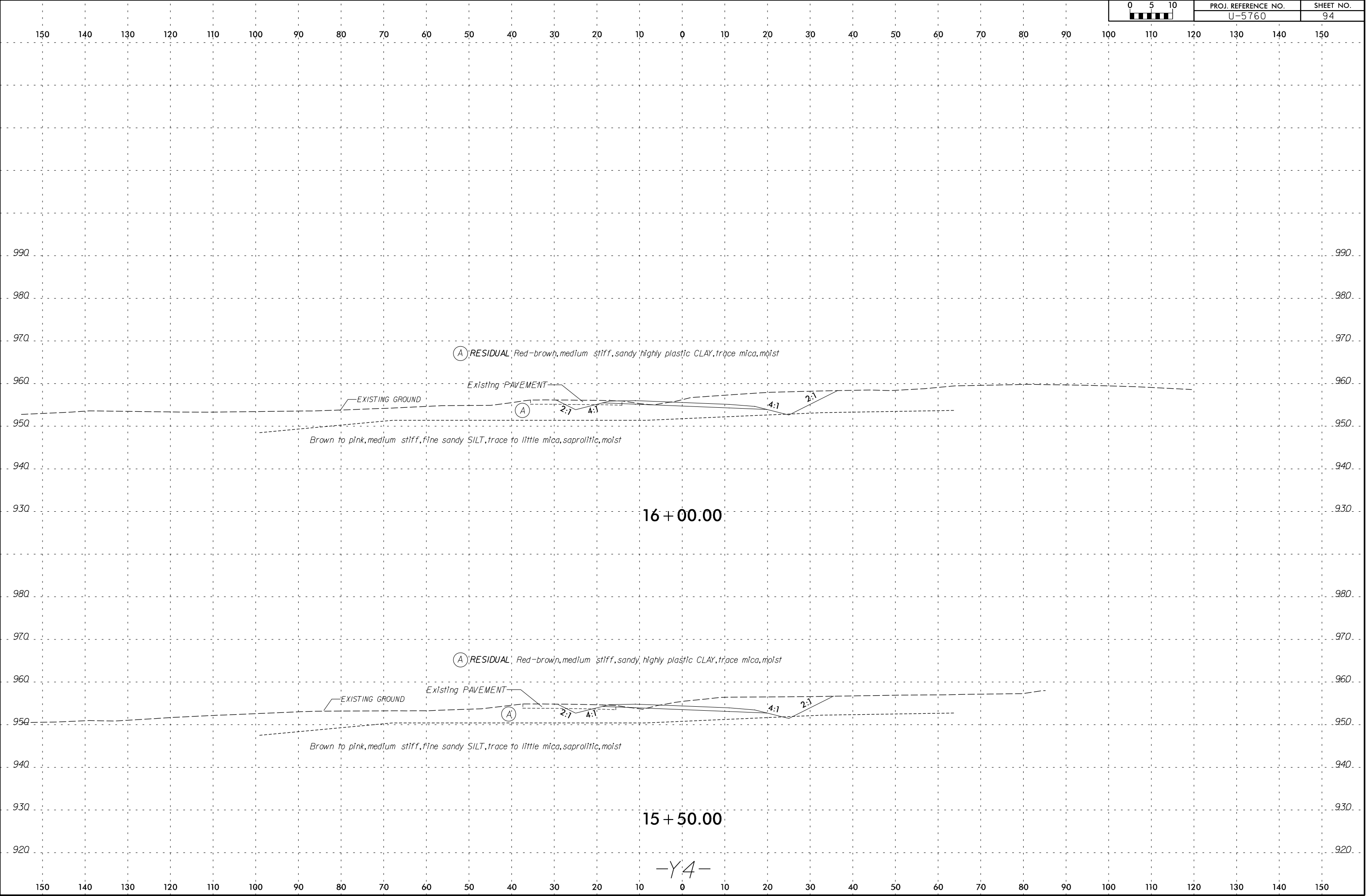
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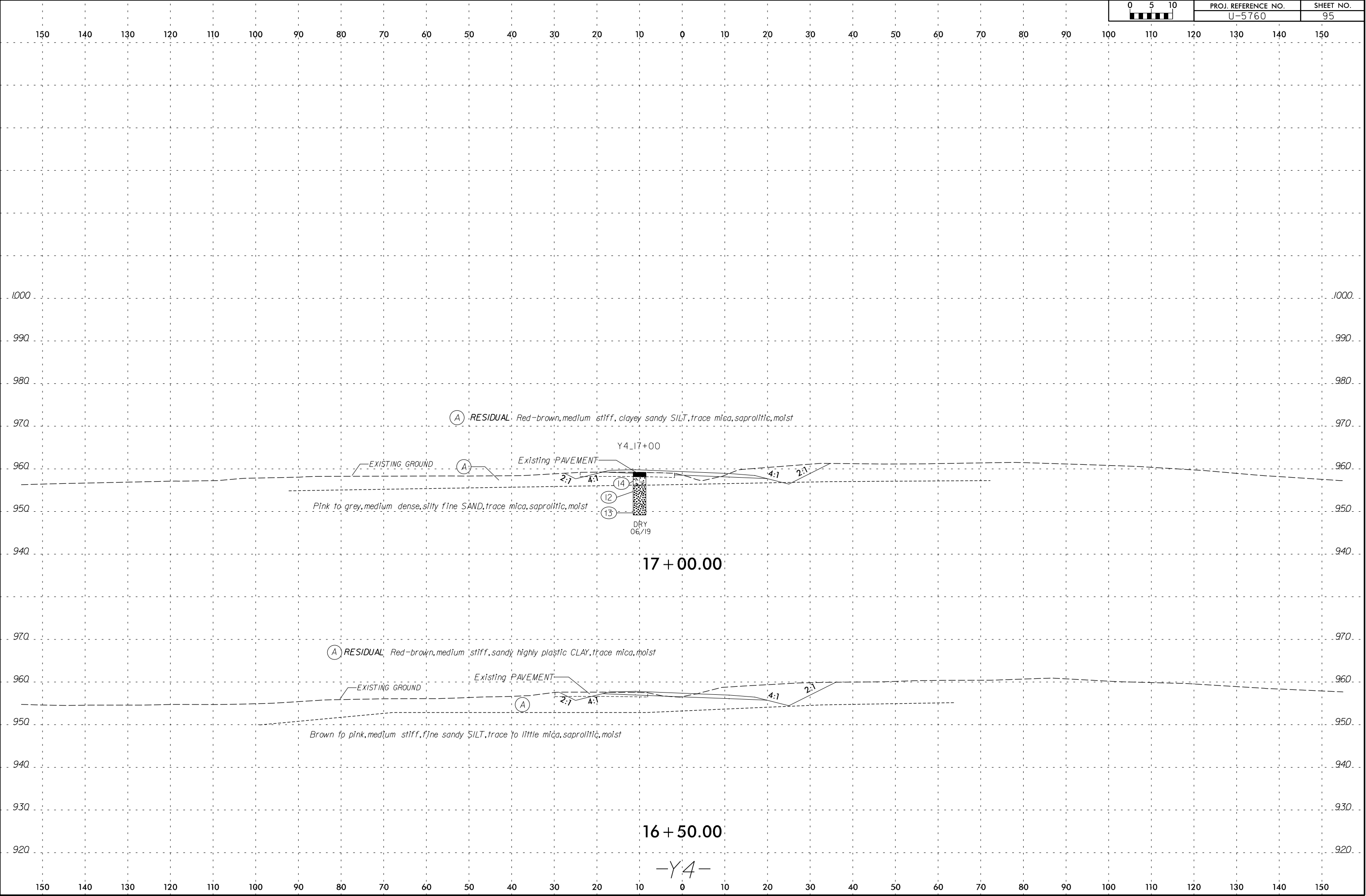
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6/23/16

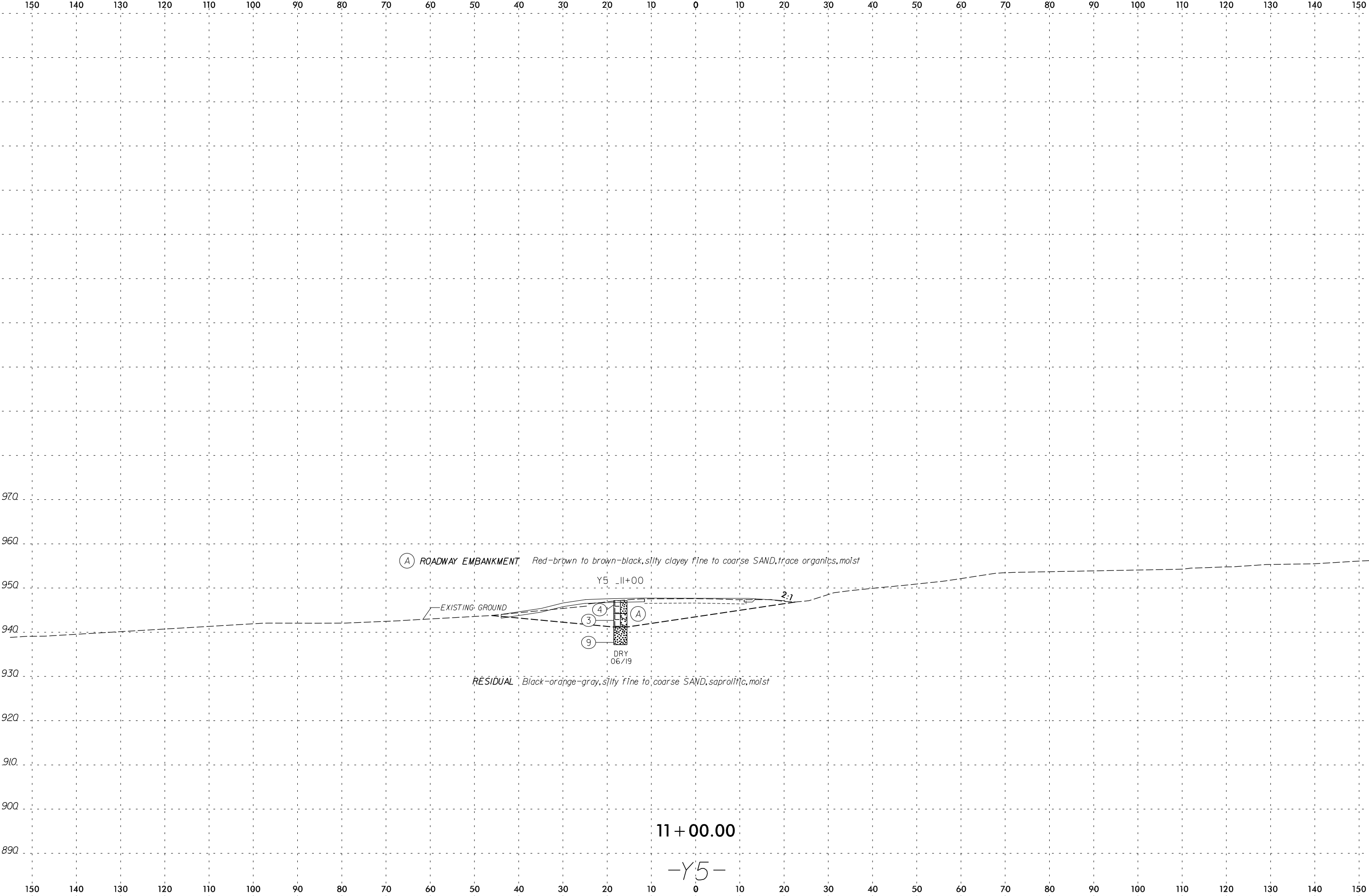


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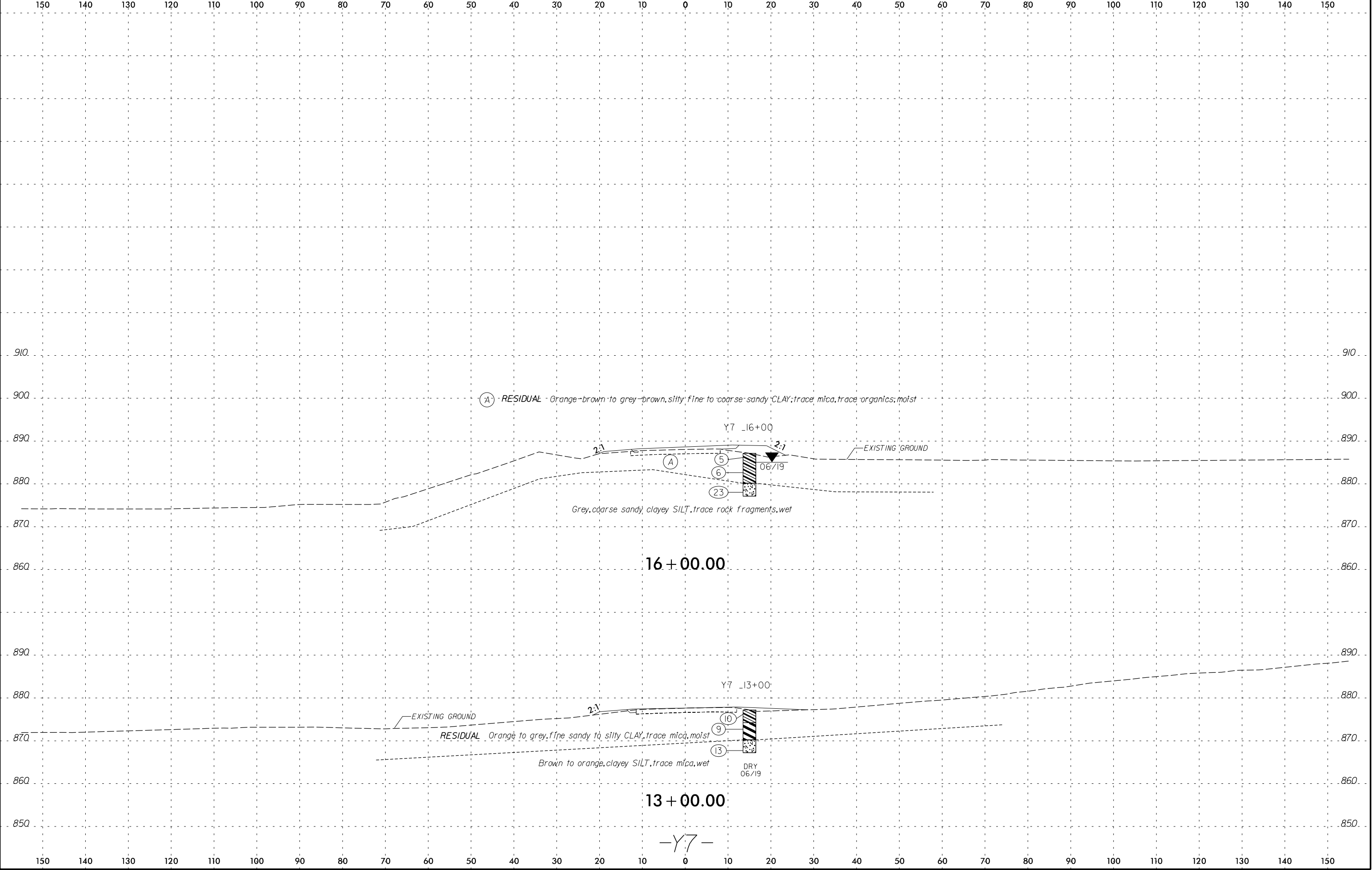


6/23/16

0510	PROJ. REFERENCE NO.	SHEET NO.
	U-5760	96



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SOIL TEST RESULTS																
SAMPLE NO.	LINE	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVE				% MOISTURE
								C. SAND	F. SAND	SILT	CLAY	10	40	60	200	
SS-13	L	16+00	40' LT	0.0-1.5	A-7-5 (8)	51	15	20	27	25	28	99	87	80	58.4	29.1
SS-41	L	17+00	CL	3.2-4.7	A-5 (3)	44	10	28	29	23	20	97	81	70	47.5	21.9
SS-30	L	17+50	21' LT	13.5-15.0	A-7-6 (10)	51	26	28	20	12	40	92	76	67	51.1	28.8
SS-124	L	19+50	32' RT	3.6-5.1	A-7-5 (2)	44	11	35	27	18	20	99	76	65	42.3	26.1
SS-94	L	20+50	59' LT	0.0-1.5	A-4 (1)	33	9	37	27	18	18	98	73	62	40.2	21.3
SS-102	L	23+00	50' RT	3.9-5.1	A-6 (1)	40	12	32	34	12	22	100	79	68	39.2	25
SS-170	L	25+00	59' LT	8.6-10.1	A-5 (0)	44	5	22	43	24	11	99	86	77	43.5	27.7
SS-174	L	25+50	59' LT	0.0-1.5	A-7-6 (8)	46	20	29	19	14	38	97	78	69	53.5	29.5
SS-224	L	26+00	59' RT	0.0-1.5	A-7-6 (11)	50	24	21	25	9	45	100	89	79	56.4	26.1
SS-1114	L	29+00	59' LT	0.0-1.5	A-4 (2)	33	10	35	22	15	28	100	77	65	45.8	19.3
SS-1108	L	30+00	59' LT	8.5-10.0	A-2-5 (0)	54	2	40	40	6	14	100	77	60	24.7	44
SS-26	L	33+00	CL	0.0-1.5	A-7-5 (29)	70	37	17	12	11	60	100	90	84	73.2	38.2
SS-7	L	41+00	50' LT	0.4-1.9	A-7-5 (25)	68	31	18	11	8	63	100	88	82	72.3	34.2
CBR-1153	L	49+00	CL	1.0-8.5	A-2-4 (0)	39	2	39	37	10	14	99	73	60	30	15.1
SS-1163	L	52+00	47' LT	8.5-10.0	A-7-5 (21)	71	13	3	15	44	38	100	98	97	87.6	61.7
SS-1175	L	53+00	47' LT	0.0-1.5	A-2-4 (0)	30	9	44	22	8	26	97	68	55	34.7	24.5
SS-1211	L	59+00	40' LT	3.5-5.0	A-7-5 (18)	63	29	20	20	11	49	99	87	79	62.2	29.1
SS-334	L	75+00	5' RT	1.2-2.7	A-7-6 (22)	60	34	18	16	13	53	99	88	82	67.6	34.8
SS-343	L	79+00	12' LT	1.3-2.8	A-6 (1)	31	11	39	23	6	32	92	67	57	38.3	18
SS-347	L	85+00	21' RT	3.8-5.3	A-7-6 (2)	42	17	44	20	6	30	95	65	53	36.9	16.1
SS-349	L	87+00	33' RT	1.3-2.8	A-7-6 (8)	50	23	31	21	6	42	94	73	65	48.1	28.1
SS-296	L	88+80	50' LT	3.5-5.0	A-7-6 (20)	50	22	9	13	25	53	100	94	91	81.9	37.4
SS-288	L	93+00	40' LT	0.0-1.5	A-2-6 (1)	32	15	44	24	6	26	97	67	55	34	18
SS-286	L	97+00	30' RT	3.5-5.0	A-2-4 (0)	36	5	40	32	11	17	96	71	58	31.5	34.5
SS-357	L	99+00	16' LT	8.1-9.6	A-5 (0)	42	4	20	49	17	14	100	93	80	40	31.6
SS-377	L	99+00	50' RT	0.5-1.0	A-7-6 (13)	63	16	4	40	27	29	100	99	96	65.3	75
SS-282	L	101+00	35' LT	0.0-1.5	A-7-6 (6)	44	19	36	16	14	34	98	72	63	49	24.2
SS-276	L	105+00	50' RT	0.0-1.5	A-7-5 (14)	62	26	24	20	5	51	100	84	76	58.9	27.3
SS-261	L	119+00	30' LT	0.3-1.8	A-7-5 (38)	78	41	12	9	10	69	100	91	88	80.4	38.2
SS-1080	Y1	47+50	80' LT	0.0-1.5	A-7-5 (6)	46	16	29	21	24	26	100	82	71	52.9	35.2
SS-206	Y1	47+50	121' RT	0.0-1.5	A-7-6 (7)	44	16	24	22	13	41	99	83	75	55.8	20
SS-1067	Y1	49+50	120' LT	0.0-1.5	A-4 (2)	24	6	15	17	13	55	95	85	80	67.6	16.8
SS-199	Y1	49+50	120' RT	0.0-1.5	A-7-6 (7)	43	19	25	26	8	41	100	86	75	51.4	24.5
SS-374	Y1	57+50	75' LT	0.0-1.5	A-7-5 (13)	53	23	23	19	11	47	100	85	77	61	30.8
SS-368	Y1	65+50	70' LT	0.0-1.5	A-7-6 (18)	55	27	17	17	9	57	99	89	83	67.8	19
SS-245	Y1	73+50	85' RT	3.6-5.1	A-7-5 (11)	64	18	17	31	9	43	100	91	83	58.9	31.3
SS-1239	Y1	75+50	85' LT	3.5-5.0	A-7-5 (14)	62	23	21	24	13	42	100	89	79	59.8	28.1
SS-1236	Y1	81+50	60' LT	3.5-5.0	A-7-5 (11)	52	17	15	27	15	43	100	94	85	63.3	35
SS-1229	Y1	85+50	80' LT	0.0-1.5	A-7-5 (42)	81	41	8	10	31	51	100	94	92	85.6	31
SS-1245	Y1	91+50	110' LT	0.5-1.0	A-7-5 (6)	44	12	19	30	19	32	100	90	81	56.8	40
SS-1261	Y1	91+50	10' LT	13.5-15.0	A-7-5 (7)	54	15	26	23	15	36	96	79	71	53.8	30.1
SS-1256	Y1	93+50	10' LT	3.5-5.0	A-7-5 (4)	50	11	27	30	15	28	100	83	73	48.5	26.4
SS-1243	Y1	97+00	10' LT	0.5-1.0	A-7-5 (13)	64	26	27	23	12	38	100	83	73	54.7	29.2
SS-1060	Y1LPB	13+00	CL	0.0-1.5	A-4 (1)	25	9	38	21	17	24	94	69	58	41.2	20.9
CBR-1061	Y1LPB	13+00	CL	1.0-8.5	A-7-5 (8)	49	17	25	25	18	32	100	84	75	54.8	21.6
SS-1055	Y1LPB	15+00	CL	0.0-1.5	A-7-6 (17)	56	28	20	17	9	54	99	86	80	64.7	28.9

SOIL TEST RESULTS																
SAMPLE NO.	LINE	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVE				% MOISTURE
								C. SAND	F. SAND	SILT	CLAY	10	40	60	200	
SS-1076	Y1RPB	14+00	CL	3.5-5.0	A-4 (1)	34	9	32	27	17	24	99	79	67	44.7	23.9
SS-1050	Y1RPB	18+00	30' RT	0.0-1.5	A-6 (3)	31	12	31	22	13	34	99	79	68	48.2	16.7
SS-35	Y1RPB	22+00	CL	0.0-1.5	A-4 (0)	27	6	37	27	16	20	90	68	57	36.2	19.6
SS-83	Y1LPD	16+00	220' RT	0.0-1.5	A-7-5 (24)	65	32	16	17	11	56	100	90	84	70.1	30.1
SS-63	Y1RPD	17+00	CL	8.8-10.3	A-2-5 (0)	52	2	36	51	9	4	100	83	64	20.2	20.6
SS-235	Y1RPD	11+00	25' LT	3.6-5.1	A-7-5 (18)	66	29	18	24	5	53	100	90	82	62.1	36.9
CBR-229	Y1RPD	13+00	CL	1.0-8.0	A-7-5 (11)	55	19	26	17	9	48	100	82	74	59	22.5
SS-56	Y1RPD	19+00	40' LT	0.0-1.50	A-7-5 (7)	67	33	38	26	14	22	100	76	62	39.6	23.7
SS-12	Y2	13+00	20' RT	3.5-5.0	A-7-5 (24)	81	20	15	11	16	58	100	88	85	78	38.8
SS-1195	Y3	14+00	15' LT	1.0-2.5	A-7-5 (4)	51	11	30	25	9	36	99	80	70	48.2	25.6
SS-1220	Y4	15+00	10' LT	1.1-2.6	A-7-5 (22)	67	36	22	17	5	56	98	84	77	62.8	37.1

CBR TEST RESULTS											
SAMPLE NO.	LINE	STATION	OFFSET	DEPTH INTERVAL	AASHTO CLASS.	AASHTO T-99		AASHTO T-193			
						MDD (pcf)	OPT (%)	CBR #1		CBR #2	
CBR-1153	L	49+00	CL	1.0-8.5	A-2-4 (0)	105.1	18.3	3.4	4.3	ND	ND
CBR-1061	Y1LPB	13+00	CL	1.0-8.5	A-7-5 (8)	99.6	22.6	8.0	10.1	ND	ND
CBR-229	Y1RPD	13+00	CL	1.0-8.0	A-7-5 (11)	103.3	20.0	9.4	11.2	ND	ND

ND = Not Determined