

REFERENCE: BR-0062

PROJECT: 67062

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 ANSON PROJECT DESCRIPTION BRIDGE NO. 14 OVER SOUTH FORK JONES CREEK ON US 52 INVENTORY

CONTENTS

Table with columns: LINE, STATION, PLAN, PROFILE. Rows: -L-, -DET-, 11+22 - 25+09, 10+36 - 24+30.

CROSS SECTIONS

Table with columns: LINE, STATION, SHEETS. Rows: -DET-, -DET-, 12+50 - 16+62, 17+82 - 23+00.

Table with columns: STATE, STATE PROJECT REFERENCE NO., SHEET NO., TOTAL SHEETS. Values: N.C., BR-0062, 1, 1.

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...

- 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.

PERSONNEL

- J. HOLLAND
R. MAFFIA
M. EDWARDS
BRIDGER DRILLING

INVESTIGATED BY J. HOLLAND
DRAWN BY J. HOLLAND
CHECKED BY J. CRENSHAW
SUBMITTED BY SCHNABEL ENG.
DATE JUNE 2023



DocuSigned by: Jason Holland 06/28/2023
SIGNATURE DATE

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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 (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

Table with columns for GENERAL CLASS., GRANULAR MATERIALS (≤ 35% PASSING #200), SILT-CLAY MATERIALS (> 35% PASSING #200), ORGANIC MATERIALS, and various soil properties like PI, LL, and GROUP INDEX.

CONSISTENCY OR DENSENESS

Table mapping PRIMARY SOIL TYPE (e.g., Generally Granular Material) to COMPACTNESS OR CONSISTENCY and RANGE OF UNCONFINED COMPRESSIVE STRENGTH.

TEXTURE OR GRAIN SIZE

Table showing U.S. STD. SIEVE SIZE (mm) and corresponding BOULDER, COBBLE, GRAVEL, COARSE SAND, FINE SAND, SILT, and CLAY percentages.

SOIL MOISTURE - CORRELATION OF TERMS

Table correlating SOIL MOISTURE SCALE (Atterberg Limits) with FIELD MOISTURE DESCRIPTION and GUIDE FOR FIELD MOISTURE DESCRIPTION.

PLASTICITY

Table showing PLASTICITY INDEX (PI) and DRY STRENGTH for NON PLASTIC, SLIGHTLY PLASTIC, MODERATELY PLASTIC, and HIGHLY PLASTIC soils.

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)

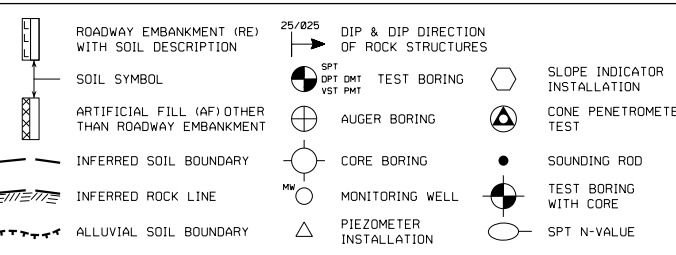
PERCENTAGE OF MATERIAL

Table showing percentages for ORGANIC MATERIAL, GRANULAR SOILS, SILT - CLAY SOILS, and OTHER MATERIAL.

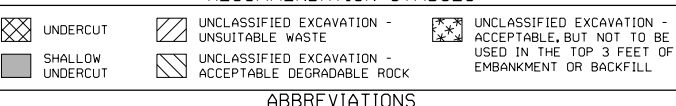
GROUND WATER

Water level symbols and descriptions: WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING, STATIC WATER LEVEL AFTER 24 HOURS, PERCHED WATER, SATURATED ZONE, SPRING OR SEEP.

MISCELLANEOUS SYMBOLS



RECOMMENDATION SYMBOLS



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, 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 - TRIAXIAL REFUSAL, w - MOISTURE CONTENT, V - VERY, VST - VANE SHEAR TEST, WE. - WEATHERED, UNIT WEIGHT, 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

Checklist of equipment used: DRILL UNITS (CME-45C, CME-55, CME-550, VANE SHEAR TEST, PORTABLE HOIST), ADVANCING TOOLS (CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE 2 7/8" STEEL TEETH, TRICONE TUNG-CARB., CORE BIT, 2 1/2" DRAG BIT), HAMMER TYPE (AUTOMATIC, MANUAL), CORE SIZE (-B, -H, -N), HAND TOOLS (POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST, KESSLER DCP)

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:

Table describing WEATHERED ROCK (WR), CRYSTALLINE ROCK (CR), NON-CRYSTALLINE ROCK (NCR), and COASTAL PLAIN SEDIMENTARY ROCK (CP) with their characteristics and SPT values.

WEATHERING

Descriptions of rock weathering: FRESH (crystals bright), VERY SLIGHT (IV SLI), SLIGHT (SLI), MODERATE (MOD), MODERATELY SEVERE (MOD. SEV.), SEVERE (SEV), VERY SEVERE (IV SEV), COMPLETE.

ROCK HARDNESS

Descriptions of rock hardness: VERY HARD (cannot be scratched), HARD (scratched by knife), MODERATELY HARD (scratched by knife or pick), MEDIUM HARD (grooved or gouged), SOFT (grooved or gouged), VERY SOFT (carved with knife).

FRACTURE SPACING

Table mapping fracture spacing terms (VERY WIDE, WIDE, MODERATELY CLOSE, CLOSE, VERY CLOSE) to their corresponding SPACING (MORE THAN 10 FEET, 3 TO 10 FEET, 1 TO 3 FEET, 0.16 TO 1 FOOT, LESS THAN 0.16 FEET).

BEDDING

Table mapping bedding terms (VERY THICKLY BEDDED, THICKLY BEDDED, THINLY BEDDED, VERY THINLY BEDDED, THICKLY LAMINATED, THINLY LAMINATED) to their corresponding THICKNESS (4 FEET, 1.5 - 4 FEET, 0.16 - 1.5 FEET, 0.03 - 0.16 FEET, < 0.008 - 0.03 FEET, < 0.008 FEET).

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. Descriptions: FRIABLE (rubbing with finger), MODERATELY INDURATED (grains separated), INDURATED (difficult to separate), EXTREMELY INDURATED (sharp hammer blows).

TERMS AND DEFINITIONS

DEFINITIONS: ALLUVIUM (ALLUV.) - SOILS TRANSPORTED BY WATER; AQUIFER - WATER BEARING FORMATION; ARENACEOUS - ROCKS FROM SAND; ARGILLACEOUS - CLAY MINERALS; ARTESIAN - GROUND WATER UNDER PRESSURE; CALCAREOUS (CALC.) - CALCIUM CARBONATE; COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL; CORE RECOVERY (REC.) - TOTAL LENGTH OF CORE RECOVERED; DIKE - TABULAR BODY OF IGNEOUS ROCK; DIP - ANGLE OF STRATUM; DIP DIRECTION (DIP AZIMUTH) - DIRECTION OF BEARING; FAULT - FRACTURE ZONE; FISSILE - SPLITTING ALONG PLANES; FLOAT - ROCK FRAGMENTS ON SURFACE; FLOOD PLAIN (FP) - LAND BORDERING A STREAM; FORMATION (FM) - MAPPABLE GEOLOGIC UNIT; JOINT - FRACTURE IN ROCK; LEDGE - SHELF-LIKE RIDGE; LENS - BODY OF SOIL OR ROCK; MOTTLED (MOT.) - IRREGULARLY MARKED; PERCHED WATER - WATER MAINTAINED ABOVE GROUND WATER LEVEL; RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE; ROCK QUALITY DESIGNATION (ROD) - MEASURE OF ROCK QUALITY; SAPROLITE (SAP.) - RESIDUAL SOIL WITH RELIC STRUCTURE; SILL - INTRUSIVE BODY OF IGNEOUS ROCK; SLICKENSIDE - POLISHED AND STRIATED SURFACE; STANDARD PENETRATION TEST (SPT) - NUMBER OF BLOWS; STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA RECOVERED; STRATA ROCK QUALITY DESIGNATION (SROD) - MEASURE OF ROCK QUALITY; TOPSOIL (TS.) - SURFACE SOILS CONTAINING ORGANIC MATTER; BENCH MARK: BM-1(N:416759.314, E:6949.430); ELEVATION: 240.46 FEET

NOTES:

BORING AND GROUND SURFACE ELEVATIONS OBTAINED FROM 'br0062.is.tin.tin' FILE DATED 03/29/2021. CAR - CASING ADVANCER REFUSAL. FIAD - FILLED IMMEDIATELY AFTER DRILLING.

09/08/23

PROJECT: BR-0062

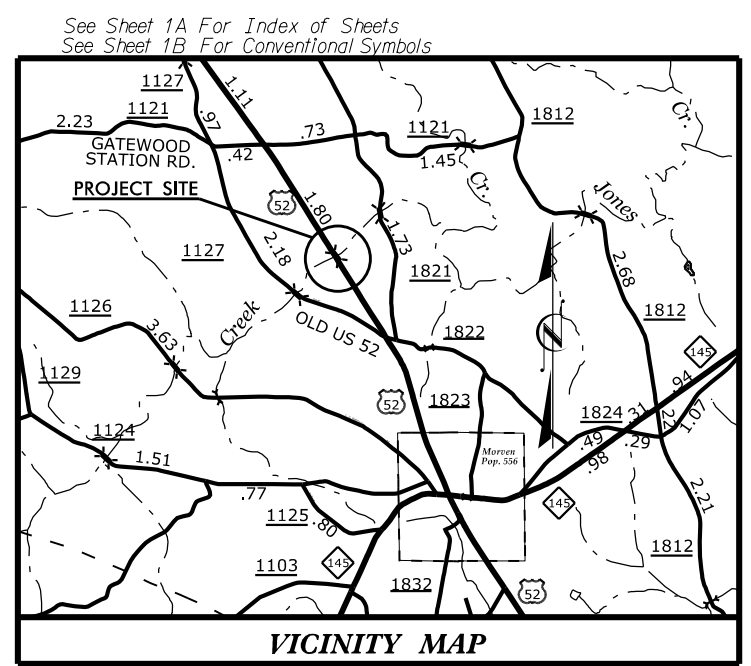
CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ANSON COUNTY

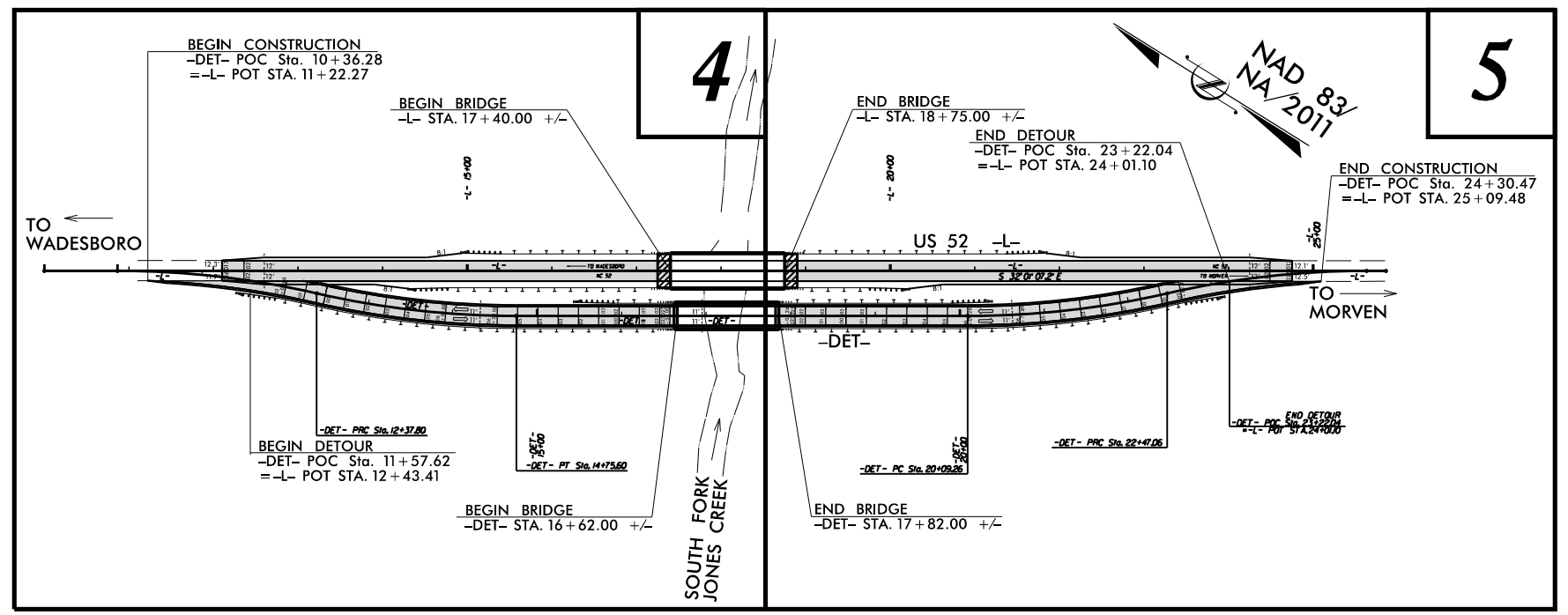
LOCATION: REPLACEMENT OF BRIDGE 030014 OVER SOUTH FORK JONES CREEK ON US 52

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE



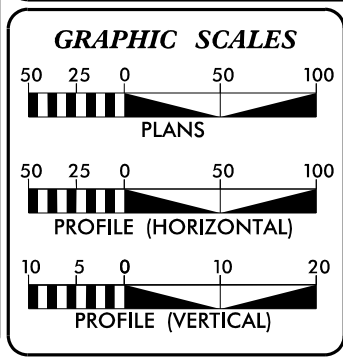
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0062	3	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
67062.1.1		PE	
		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. E-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION			

ROW PLANS



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2024 = 4,110
ADT 2045 = 4,700

K = 8 %
D = 55 %
T = 16 % *
V = 60 MPH

* (TTST = 12% +
DUAL = 4%)
FUNC CLASS =
MINOR ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BR-0062 =	0.214 MILES
LENGTH STRUCTURE PROJECT BR-0062 =	0.026 MILES
TOTAL LENGTH PROJECT BR-0062 =	0.240 MILES

NC DOT CONTACT: GARLAND HAYWOOD, PE
BRIDGE PROGRAM MANAGER - NCDOT DIVISION 10

Prepared for:
DIVISION OF HIGHWAYS
DIVISION TEN
716 West Main Street, Albemarle NC, 28001

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 20, 2023

LETTING DATE: JANUARY 16, 2024

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

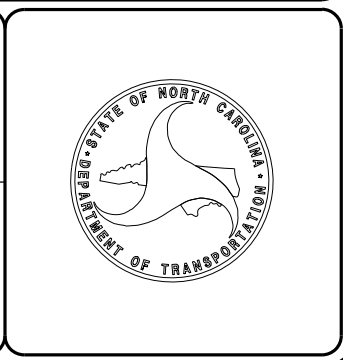
GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

June 19, 2023

STATE PROJECT: 67062.1.1

TIP NUMBER: BR-0062

COUNTY: Anson

DESCRIPTION: BRIDGE NO. 14 OVER SOUTH FORK JONES CREEK ON US-52

SUBJECT: Geotechnical Roadway Inventory Report

Project Description

The project consists of the design and replacement of the existing roadway approach, the design and construction of an onsite detour and bridge, and the design and replacement of the existing bridge. The proposed structure is a 135-foot long, 3 span bridge that will replace Bridge No. 14 on the existing alignment. The proposed alignments and structures are approximately 0.53 miles in total length.

The field investigation was conducted in May of 2023 utilizing a track-mounted CME 45C, trailer-mounted CME-45C, and hand tools. Standard Penetration Tests (SPT) were performed at selected locations. Borings were advanced with a NW casing advancer, as well as a tricone roller bit for mud rotary methods. Rock coring was attempted at 2 interior bent locations, B1-A and B2-A, resulting in no recovery. Hand augers and Dynamic Cone Penetrometer tests were performed at locations where the drill rig could not access. Representative soil samples were collected and forwarded to an approved testing facility for soil quality analysis, moisture content, and AASHTO classification.

The following alignments were investigated:

Line	Station			Length (ft)
-L-	11+22	to	25+09	1,387
-DET-	10+36	to	24+30	1,394
	Total			2,781 feet (~0.53 miles)

Physiography and Geology

The project is located in the Inner Piedmont Physiographic Province. According to the NCGS Geologic map of North Carolina, the project lies in an area where Pennsylvanian to Permian intrusive rocks of the Carolina Slate Belt are present, overlain by weathered residual soils in the shallow subsurface. Saprolitic residual soils were observed beneath alluvial deposits. Topography along the project corridor is gently rolling, with natural ground elevations ranging from approximately 215.0± to 265.0± feet above sea level.

Soil Properties

Soil and rock encountered along the project corridor are divided into five categories based on origin: roadway embankment soils, alluvial soils, residual soils, weathered rock, and crystalline rock.

Roadway embankment soils consisting of soft to hard, sandy and clayey SILT (A-4, A-5) and medium stiff to stiff sandy and silty CLAY (A-6, A-7-5) were encountered along the proposed -L- alignment and stiff, sandy CLAY (A-6) and medium stiff to stiff, sandy and clayey SILT (A-4, A-5) along the proposed -DET- alignment. Tricone refusal was encountered in boulder fill at -L- Sta. 20+82. Soil moistures were typically moist to wet. These soils varied in thickness from 6.0 to 21.0 feet. Within the cohesive roadway embankment soils, moisture content tested was 28%. The plasticity index (PI) within the cohesive soil tested was 3.

Alluvial soils consisting of dense, silty SAND (A-2-4) and stiff, silty CLAY (A-7-6) were encountered along the proposed -L- alignment. Very loose to medium dense, SAND, silty SAND, and clayey SAND (A-3, A-2-4, A-2-6) and very soft to stiff, sandy and silty CLAY (A-6, A-7-5, A-7-6) were encountered along the proposed -DET- alignment. These soils are micaceous, have wood fragments, trace to moderate organic matter, and gravel. These soils varied in thickness from 7.4 to 18.0 feet. Soil moistures were typically moist to saturated. Within the cohesive alluvial soils, moisture contents ranged from 18% to 39%. Plasticity Indices (PI) within the cohesive soils range from 9 to 27.

Residual soils consisting of medium dense to very dense SAND and silty SAND (A-1-b, A-2-4) were encountered along the corridor. These soils are micaceous, saprolitic, and contain rock fragments. These soils varied in thickness from 6.5 to 16.1 feet. Soil moistures were typically moist.

Weathered rock consisting of gray, brown, orange, white, and black, intrusive granites were encountered along the corridor. Auger refusal was noted beneath some of these layers on/in crystalline rock. Top of weathered rock elevations varied from 199.0± feet to 210.3± feet above sea level.

Crystalline rock was identified at some points along the corridor by split spoon refusal. Rock coring was attempted at 2 interior bent locations resulting in no recovery, so no other information could be gathered. Crushed rock fragments observed in the split spoon sampler, and USGS geologic maps, confirm bedrock consists of granite. Top of rock elevation was observed to be 196.0± feet to 205.0± feet above sea level.

Groundwater

Groundwater data was collected in May of 2023, during a time of average precipitation. All borings, except DET_2000SPT-A, which was filled immediately after drilling, were left open for a minimum of 24 hours to equilibrate with the surrounding conditions. Groundwater elevations generally varied with topography and ranged from 237.9 feet to 224.3 feet above sea level.

Areas of Special Geotechnical Interest

A. Alluvial Soils were encountered in the following sections:

Alignment	Begin Station	End Station
-L-	11+22	25+09
-DET-	10+36	24+30

PROJECT REFERENCE NO.	SHEET NO.
BR-0062	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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REVISIONS

8/17/99

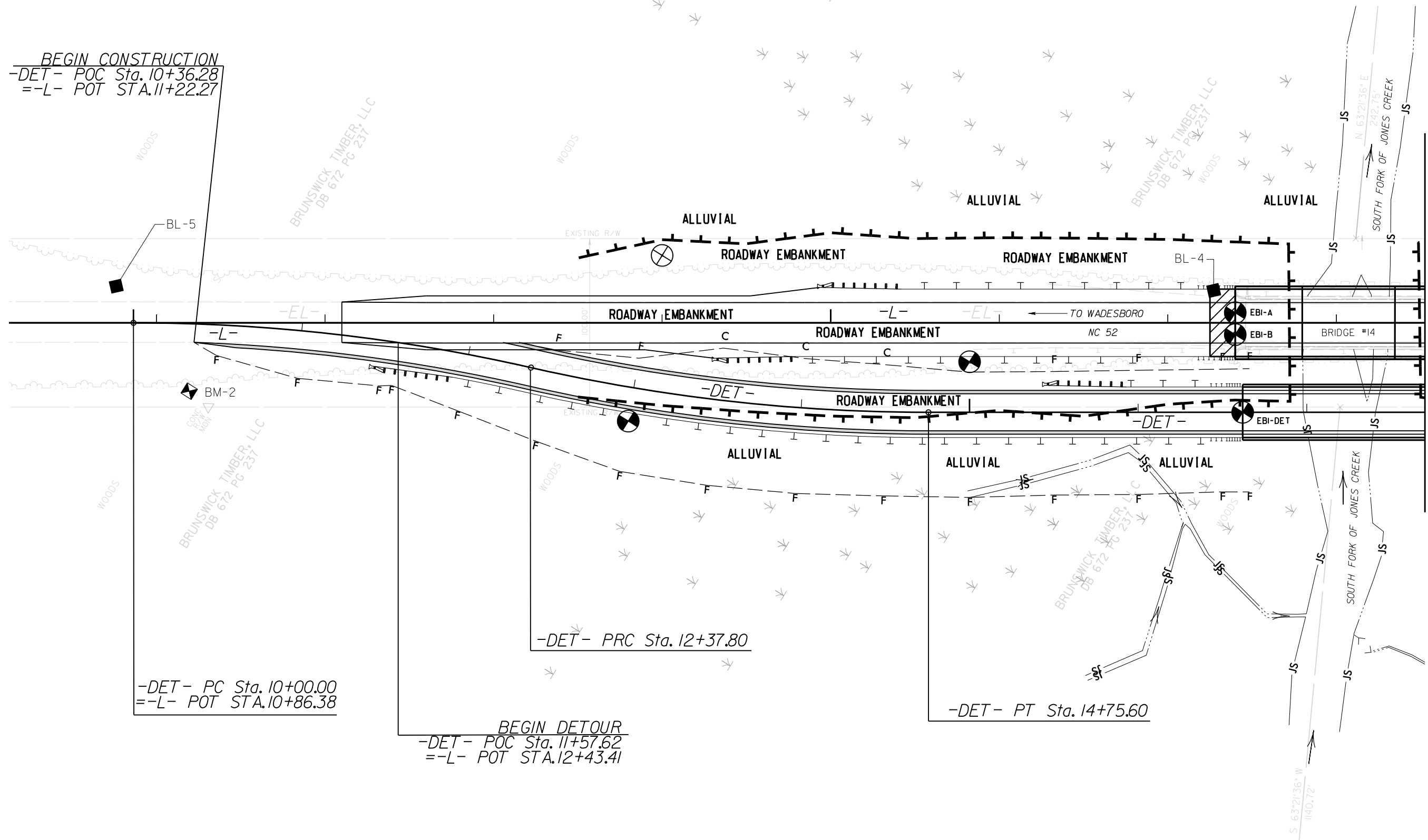
6/16/2023
6/16/2023_GEO_RDY_PSH3.dgn
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BEGIN CONSTRUCTION
-DET- POC Sta. 10+36.28
=-L- POT STA. 11+22.27

-DET- PC Sta. 10+00.00
=-L- POT STA. 10+86.38

BEGIN DETOUR
-DET- POC Sta. 11+57.62
=-L- POT STA. 12+43.41

-DET- PT Sta. 14+75.60



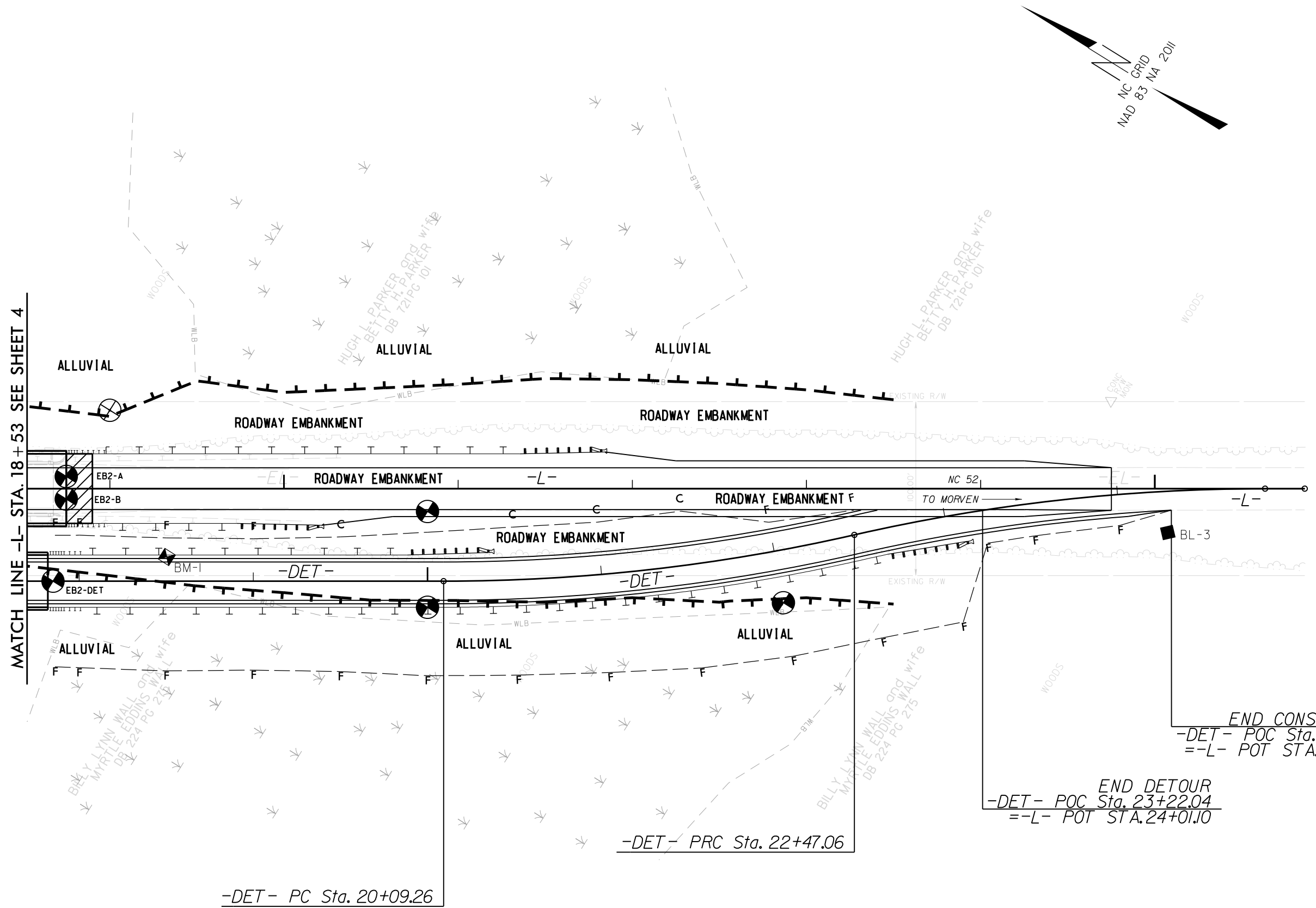
MATCH LINE -L- STA. 18+53 SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
BR-0062	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

8/17/99

6/16/2023
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-DET- PC Sta. 20+09.26

-DET- PRC Sta. 22+47.06

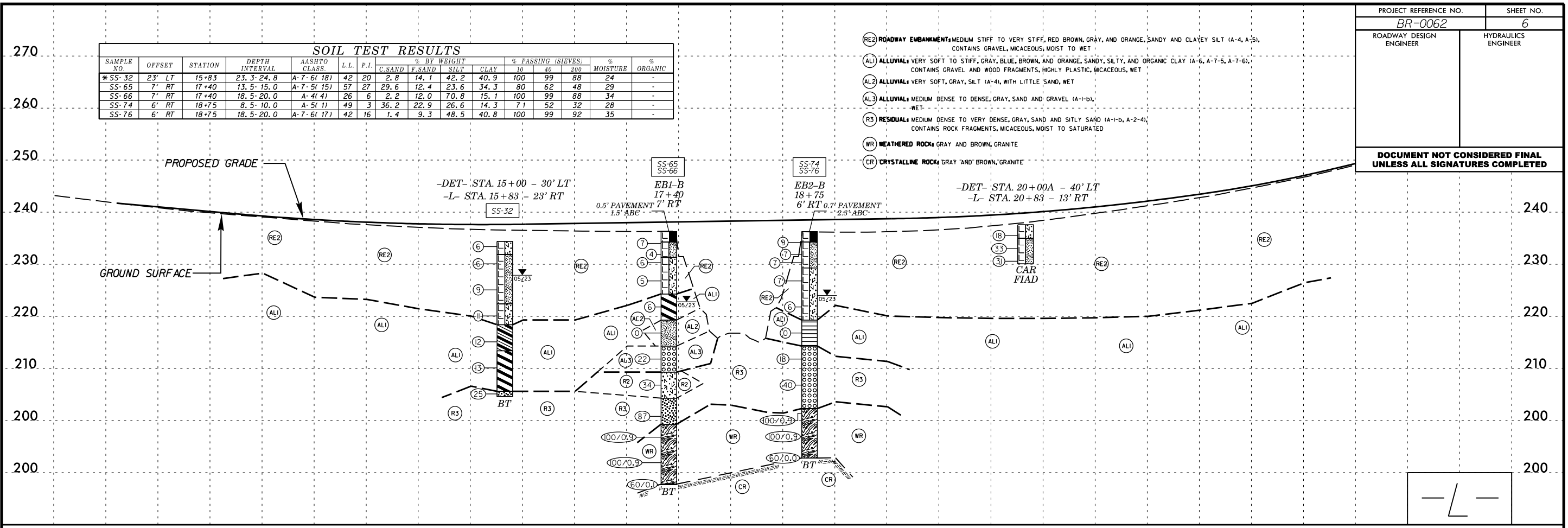
END DETOUR
-DET- POC Sta. 23+22.04
=-L- POT STA. 24+01.10

END CONSTRUCTION
-DET- POC Sta. 24+30.47
=-L- POT STA. 25+09.48

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SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40		
*SS-32	23' LT	15+83	23.5-24.8	A-7-6(18)	42	20	2.8	14.1	42.2	40.9	100	99	88	24
SS-65	7' RT	17+40	13.5-15.0	A-7-5(15)	57	27	29.6	12.4	23.6	34.3	80	62	48	29
SS-66	7' RT	17+40	18.5-20.0	A-4(4)	26	6	2.2	12.0	70.8	15.1	100	99	88	34
SS-74	6' RT	18+75	8.5-10.0	A-5(1)	49	3	36.2	22.9	26.6	14.3	71	52	32	28
SS-76	6' RT	18+75	18.5-20.0	A-7-6(17)	42	16	1.4	9.3	48.5	40.8	100	99	92	35

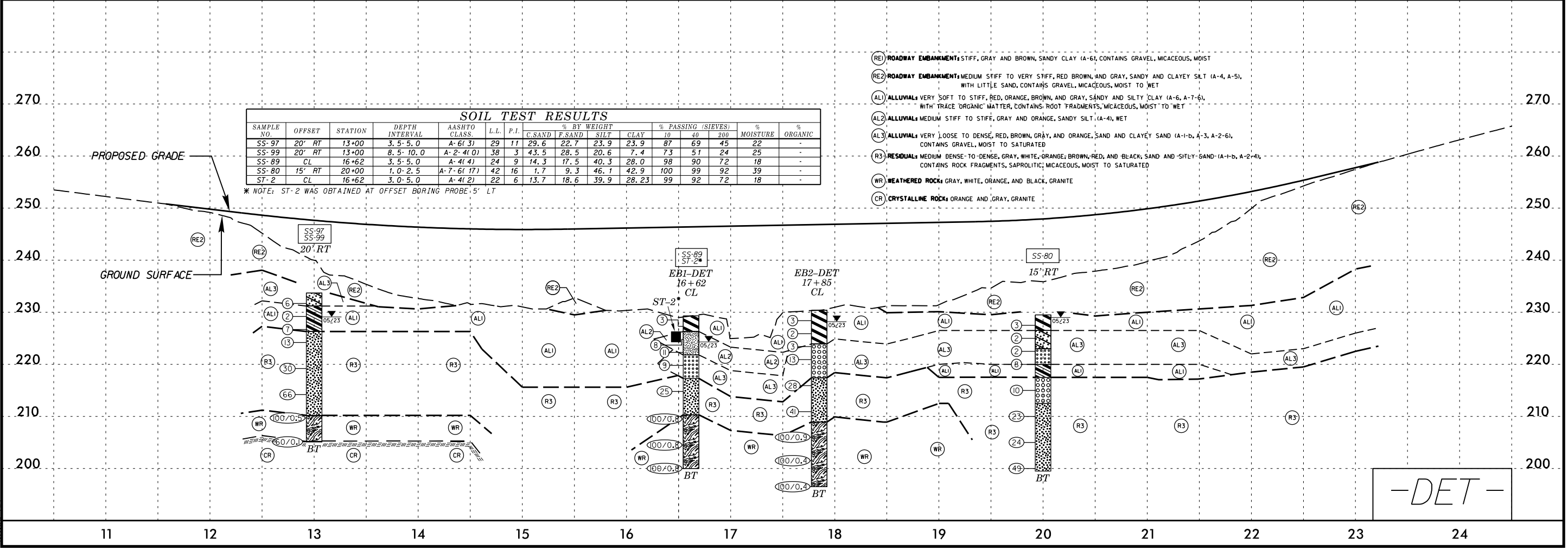
- (RE2) ROADWAY EMBANKMENT: MEDIUM STIFF TO VERY STIFF, RED BROWN, GRAY, AND ORANGE, SANDY AND CLAYEY SILT (A-4, A-5), CONTAINS GRAVEL, MICACEOUS, MOIST TO WET
- (AL1) ALLUVIAL: VERY SOFT TO STIFF, GRAY, BLUE, BROWN, AND ORANGE, SANDY, SILTY, AND ORGANIC CLAY (A-6, A-7-5, A-7-6), CONTAINS GRAVEL AND WOOD FRAGMENTS, HIGHLY PLASTIC, MICACEOUS, WET
- (AL2) ALLUVIAL: VERY SOFT, GRAY, SILT (A-4), WITH LITTLE SAND, WET
- (AL3) ALLUVIAL: MEDIUM DENSE TO DENSE, GRAY, SAND AND GRAVEL (A-1-D), WET
- (R3) RESIDUAL: MEDIUM DENSE TO VERY DENSE, GRAY, SAND AND SILTY SAND (A-1-D, A-2-4), CONTAINS ROCK FRAGMENTS, MICACEOUS, MOIST TO SATURATED
- (WR) WEATHERED ROCK: GRAY AND BROWN, GRANITE
- (CR) CRYSTALLINE ROCK: GRAY AND BROWN, GRANITE



SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40		
SS-97	20' RT	13+00	3.5-5.0	A-6(3)	29	11	29.6	22.7	23.9	23.9	87	69	45	22
SS-99	20' RT	13+00	8.5-10.0	A-2-4(0)	38	3	43.5	28.5	20.6	7.4	73	51	24	25
SS-89	CL	16+62	3.5-5.0	A-4(4)	24	9	14.3	17.5	40.3	28.0	98	90	72	18
SS-80	15' RT	20+00	1.0-2.5	A-7-6(17)	42	16	1.7	9.3	46.1	42.9	100	99	92	39
ST-2	CL	16+62	3.0-5.0	A-4(2)	22	6	13.7	18.6	39.9	28.23	99	92	72	18

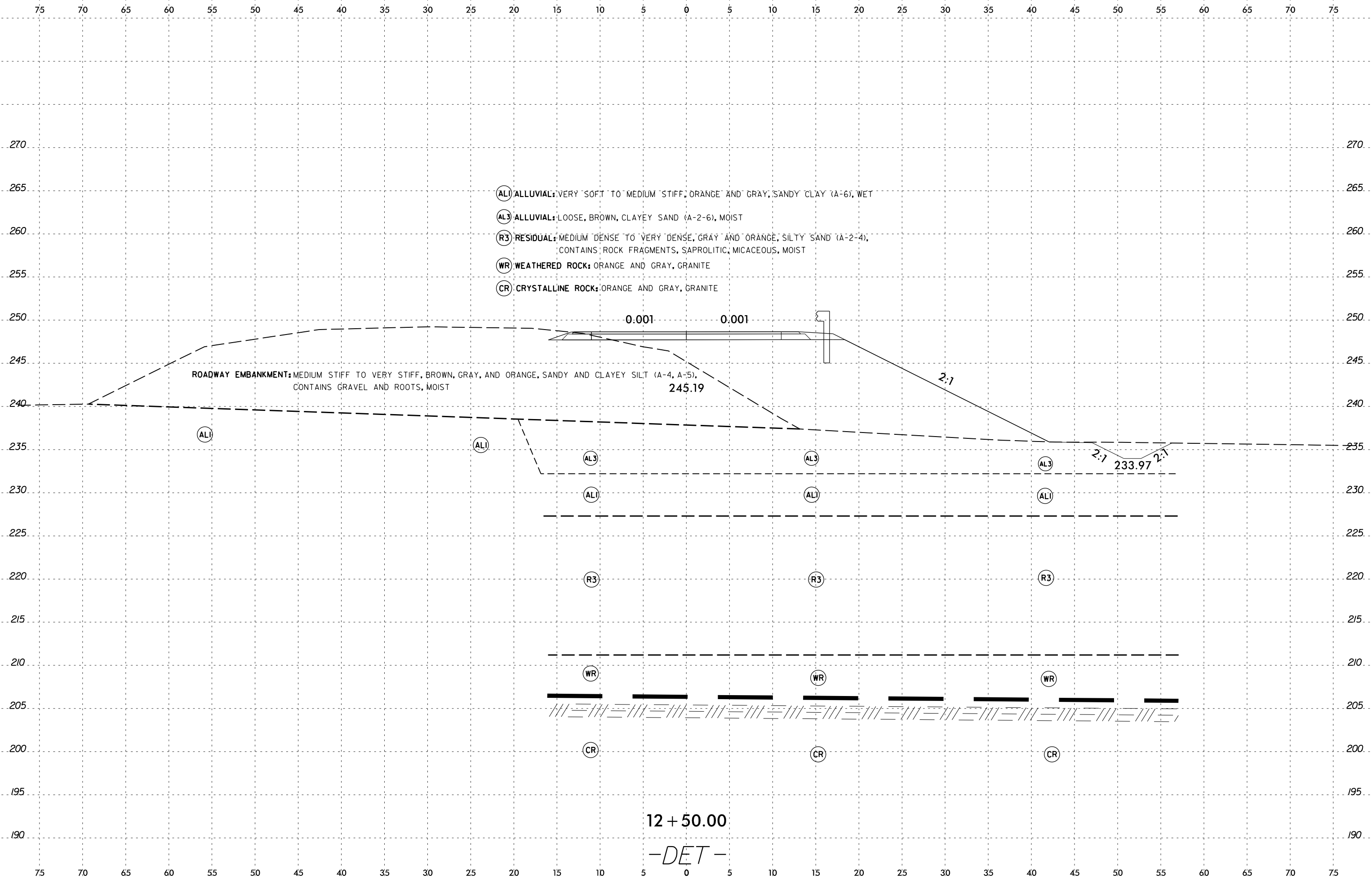
* NOTE: ST-2 WAS OBTAINED AT OFFSET BORING PROBE 15' LT

- (RE1) ROADWAY EMBANKMENT: STIFF, GRAY AND BROWN, SANDY CLAY (A-6), CONTAINS GRAVEL, MICACEOUS, MOIST
- (RE2) ROADWAY EMBANKMENT: MEDIUM STIFF TO VERY STIFF, RED BROWN, AND GRAY, SANDY AND CLAYEY SILT (A-4, A-5), WITH LITTLE SAND, CONTAINS GRAVEL, MICACEOUS, MOIST TO WET
- (AL1) ALLUVIAL: VERY SOFT TO STIFF, RED, ORANGE, BROWN, AND GRAY, SANDY AND SILTY CLAY (A-6, A-7-6), WITH TRACE ORGANIC MATTER, CONTAINS ROOT FRAGMENTS, MICACEOUS, MOIST TO WET
- (AL2) ALLUVIAL: MEDIUM STIFF TO STIFF, GRAY AND ORANGE, SANDY SILT (A-4), WET
- (AL3) ALLUVIAL: VERY LOOSE TO DENSE, RED, BROWN, GRAY, AND ORANGE, SAND AND CLAYEY SAND (A-1-D, A-3, A-2-6), CONTAINS GRAVEL, MOIST TO SATURATED
- (R3) RESIDUAL: MEDIUM DENSE TO DENSE, GRAY, WHITE, ORANGE, BROWN, RED, AND BLACK, SAND AND SILTY SAND (A-1-D, A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST TO SATURATED
- (WR) WEATHERED ROCK: GRAY, WHITE, ORANGE, AND BLACK, GRANITE
- (CR) CRYSTALLINE ROCK: ORANGE AND GRAY, GRANITE



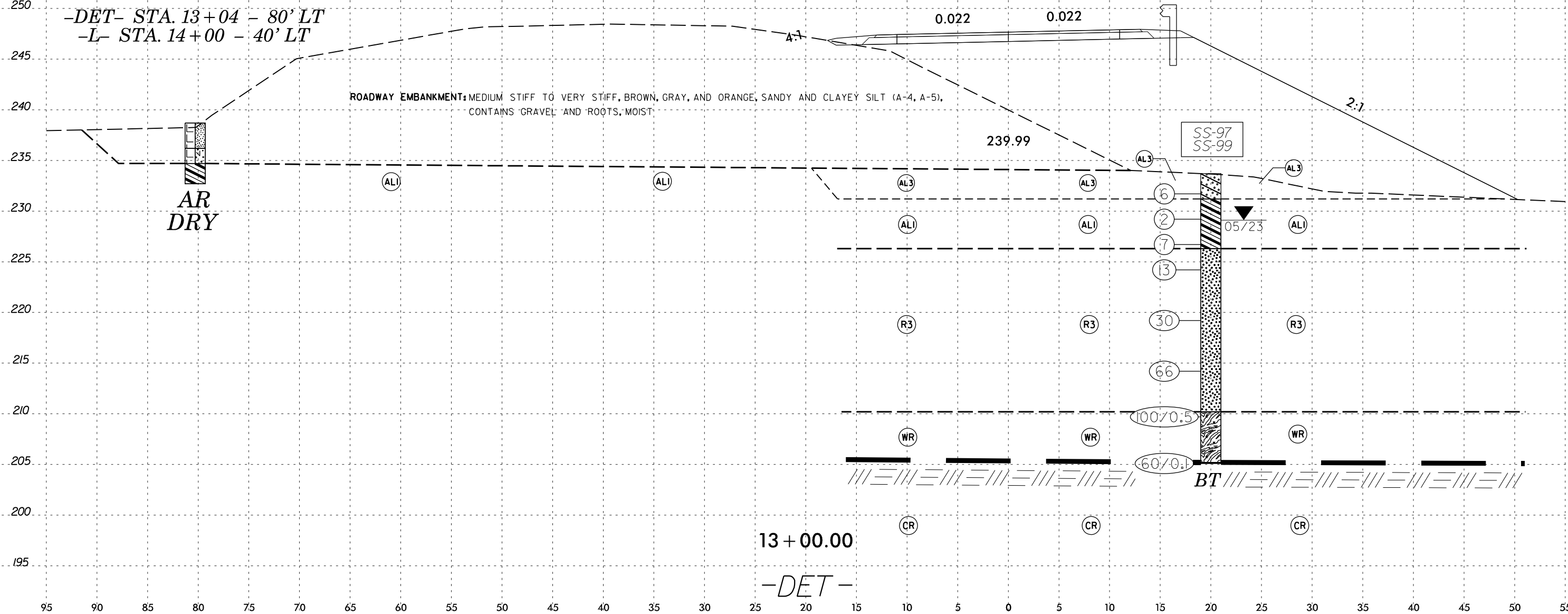
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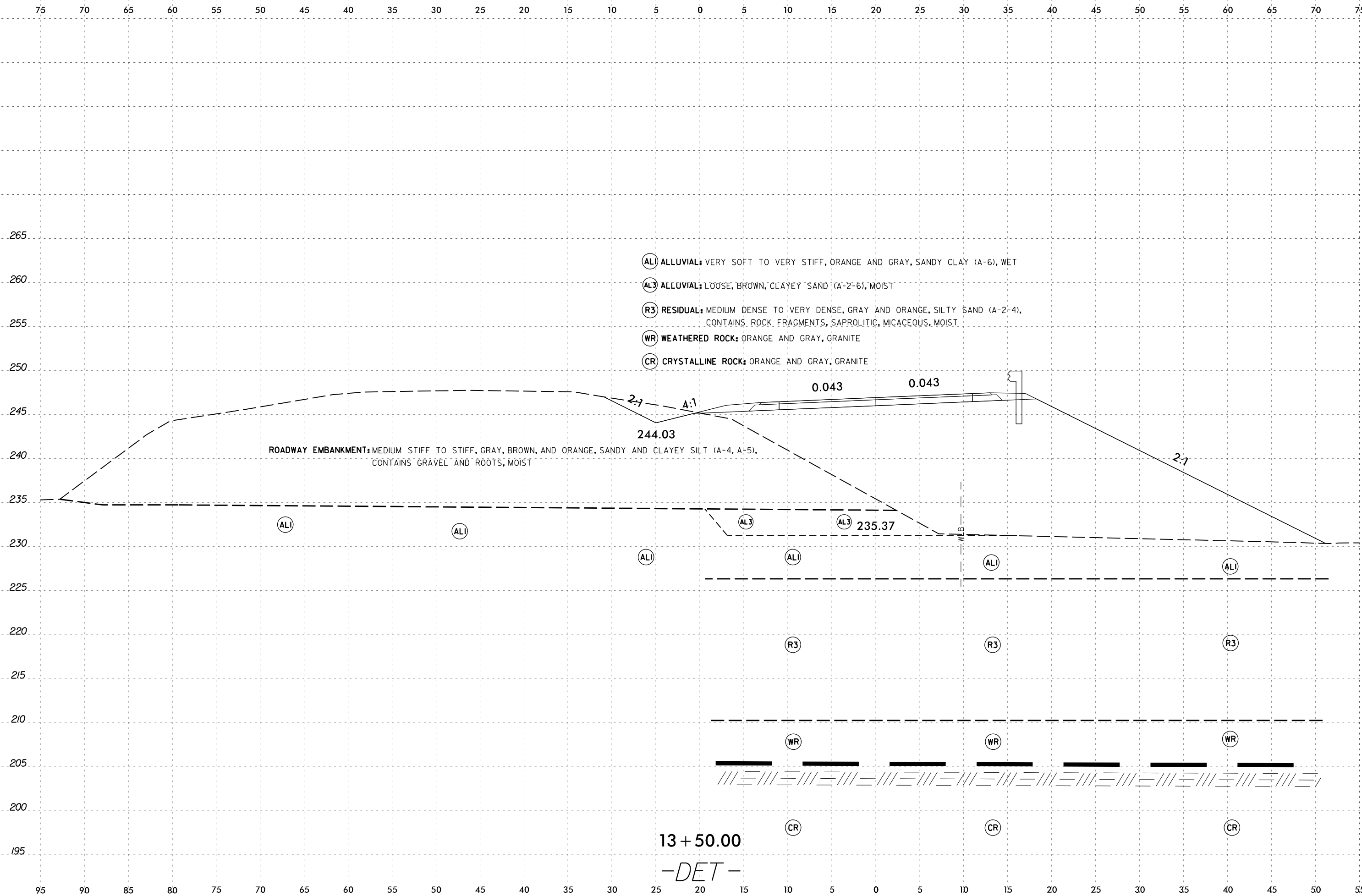
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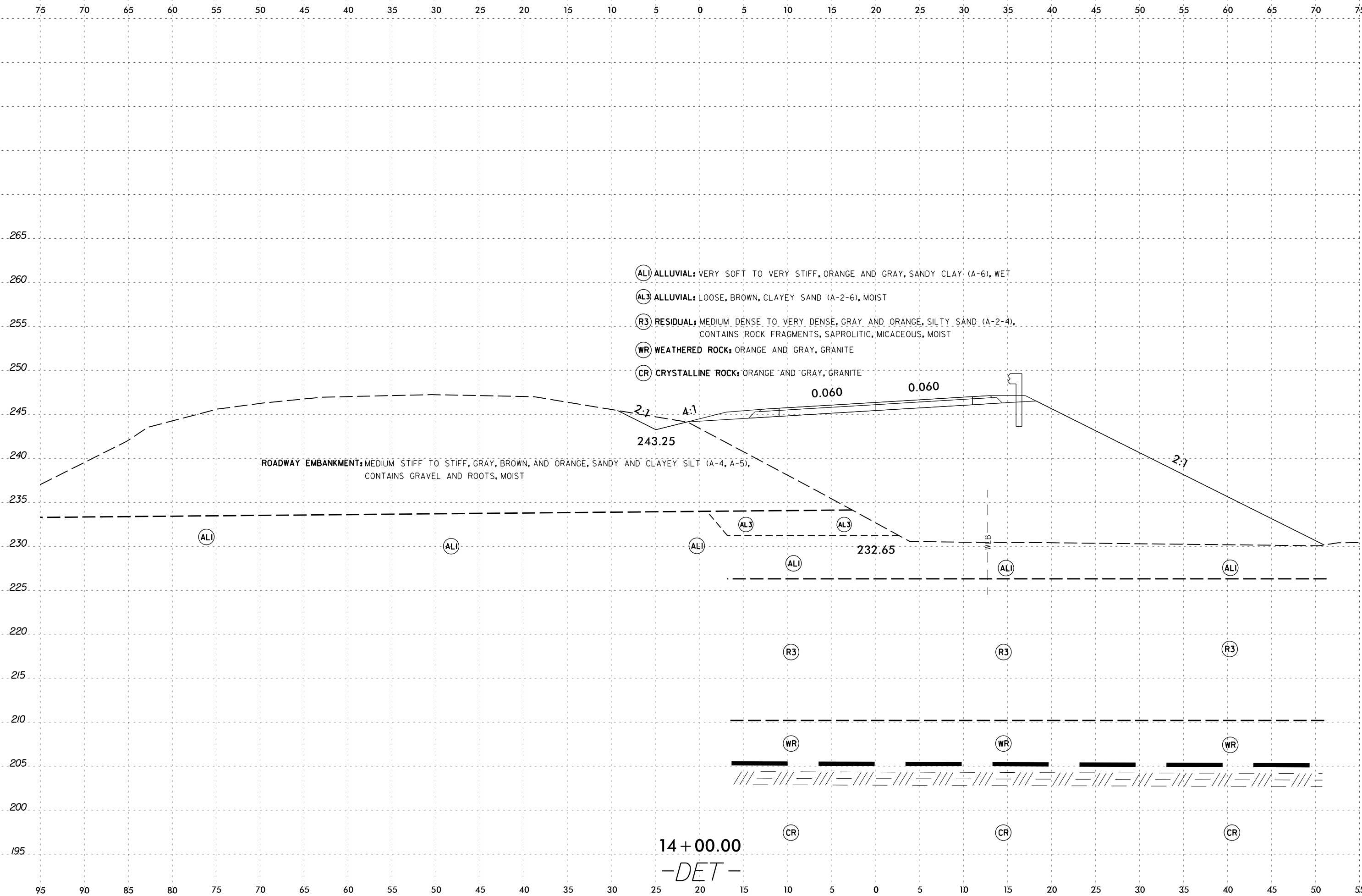


SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-97	20' RT	13+00	3.5-5.0	A-6(3)	29	11	29.6	22.7	23.9	23.9	87	69	45	22	-
SS-99	20' RT	13+00	8.5-10.0	A-2-4(0)	38	3	43.5	28.5	20.6	7.4	73	51	24	25	-

- (AL) ALLUVIAL: VERY SOFT TO VERY STIFF, ORANGE AND GRAY, SANDY CLAY (A-6), WET
- (AL3) ALLUVIAL: LOOSE, BROWN, CLAYEY SAND (A-2-6), MOIST
- (R3) RESIDUAL: MEDIUM DENSE TO VERY DENSE, GRAY AND ORANGE, SILTY SAND (A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST
- (WR) WEATHERED ROCK: ORANGE AND GRAY, GRANITE
- (CR) CRYSTALLINE ROCK: ORANGE AND GRAY, GRANITE

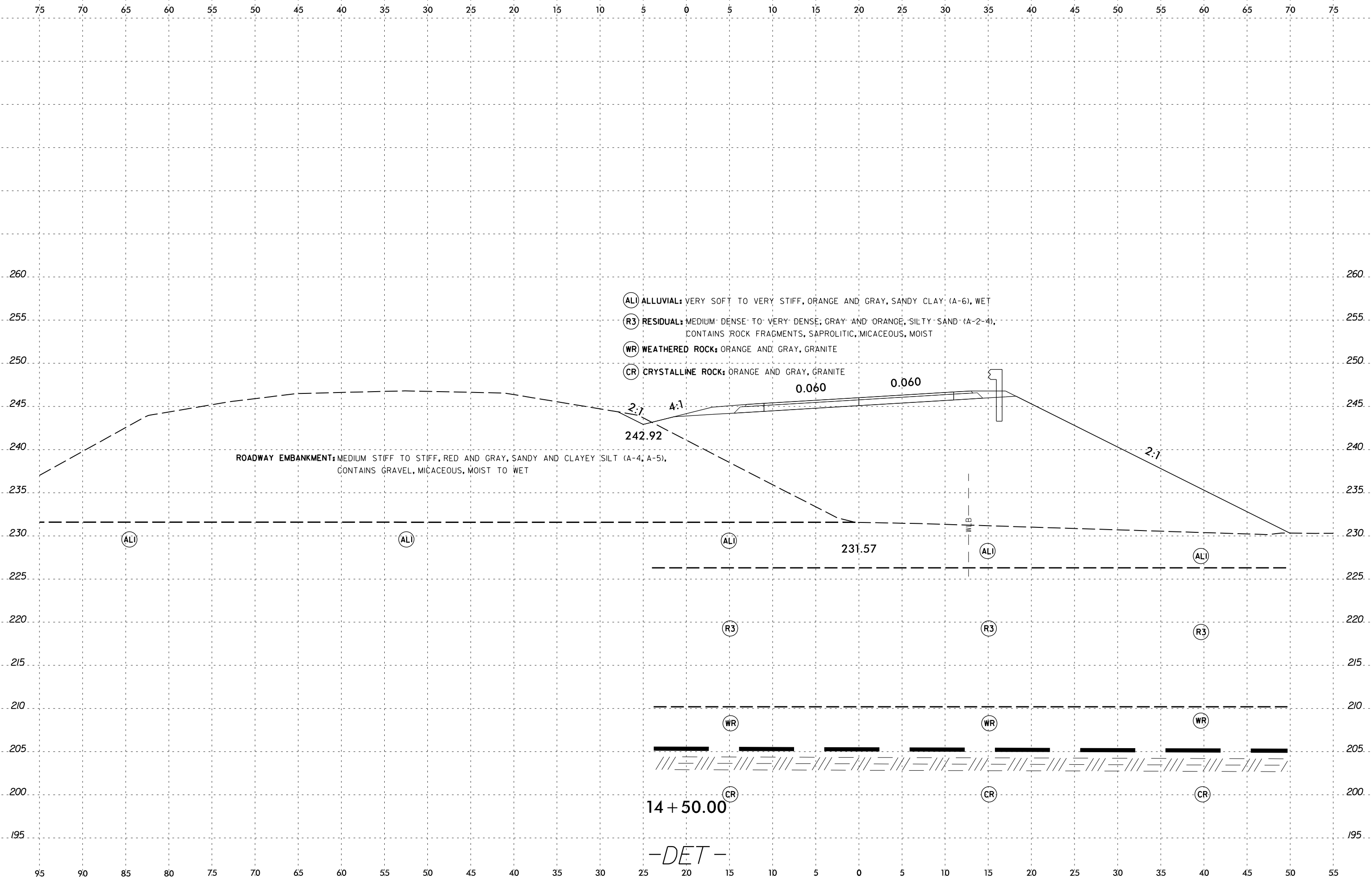




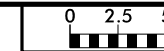


ROADWAY EMBANKMENT: MEDIUM STIFF TO STIFF, GRAY, BROWN, AND ORANGE, SANDY AND CLAYEY SILT (A-4, A-5),
CONTAINS GRAVEL AND ROOTS, MOIST

- (AL1) ALLUVIAL: VERY SOFT TO VERY STIFF, ORANGE AND GRAY, SANDY CLAY (A-6), WET
- (AL3) ALLUVIAL: LOOSE, BROWN, CLAYEY SAND (A-2-6), MOIST
- (R3) RESIDUAL: MEDIUM DENSE TO VERY DENSE, GRAY AND ORANGE, SILTY SAND (A-2-4),
CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST
- (WR) WEATHERED ROCK: ORANGE AND GRAY, GRANITE
- (CR) CRYSTALLINE ROCK: ORANGE AND GRAY, GRANITE



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 BR-0062_GEO_RDY_XPL_DET_1225.rvt
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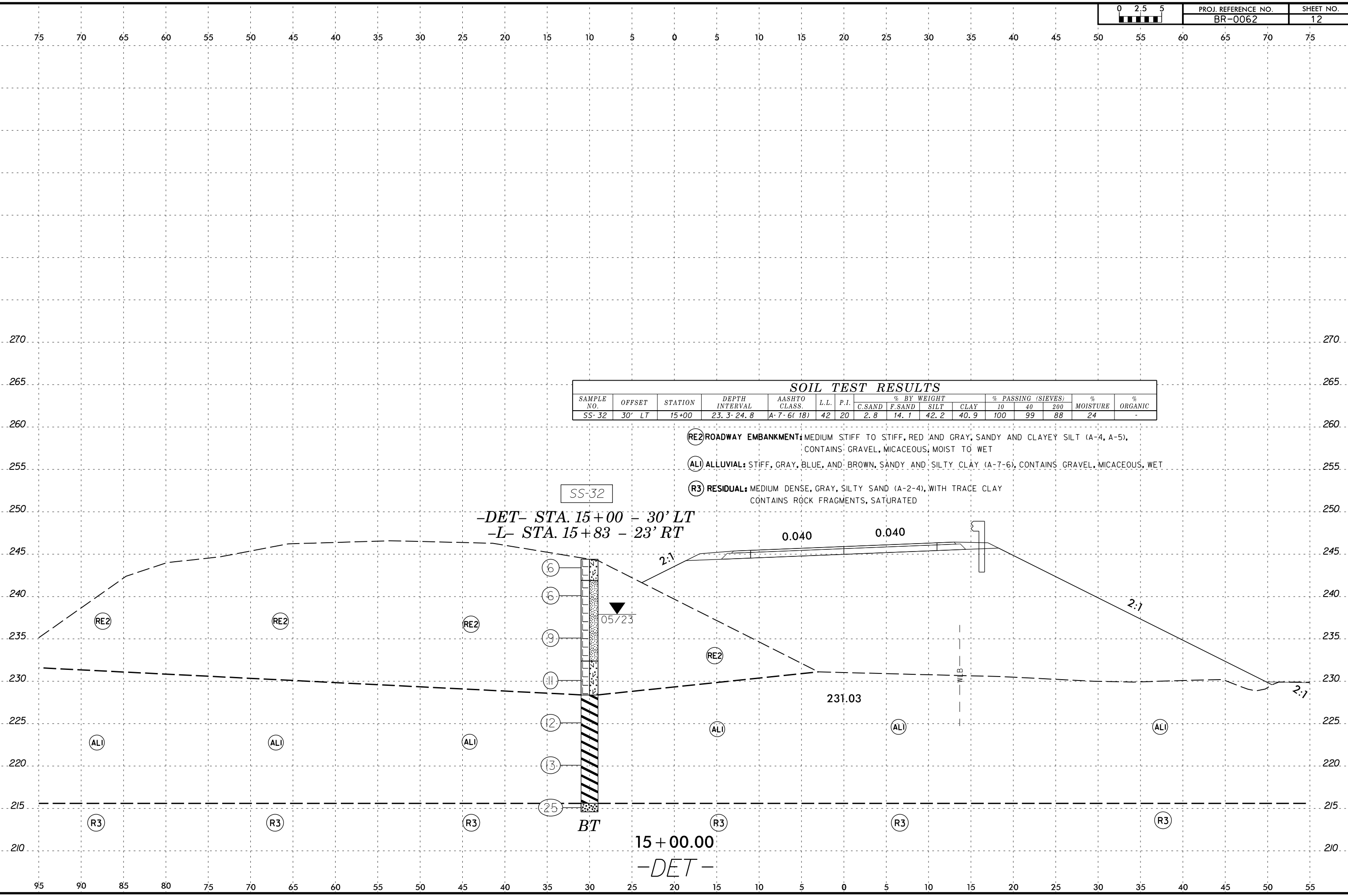


SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-32	30' LT	15+00	23.3-24.8	A-7-6(18)	42	20	2.8	14.1	42.2	40.9	100	99	88	24	-

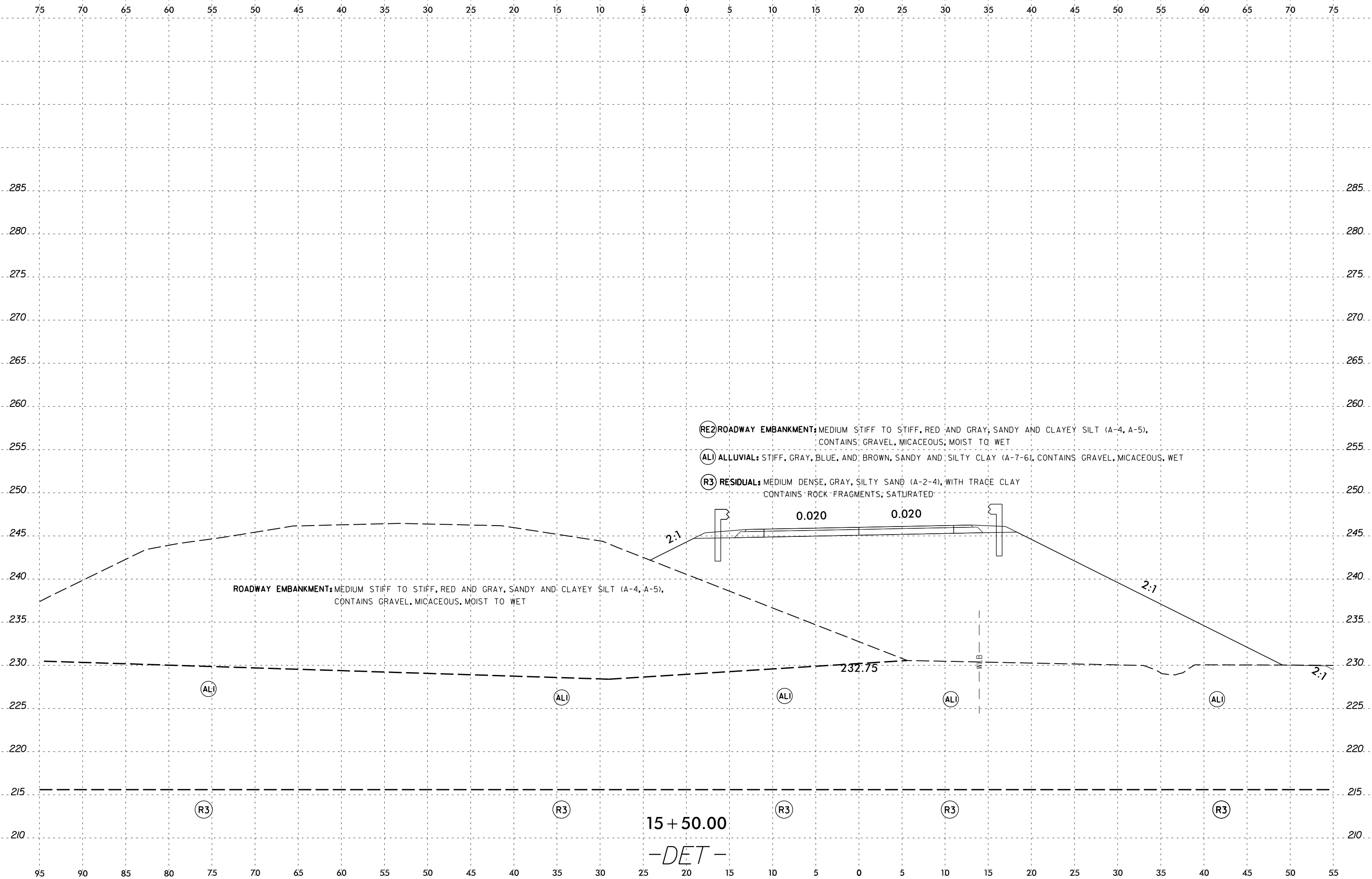
- (RE2) ROADWAY EMBANKMENT:** MEDIUM STIFF TO STIFF, RED AND GRAY, SANDY AND CLAYEY SILT (A-4, A-5), CONTAINS GRAVEL, MICACEOUS, MOIST TO WET
- (ALI) ALLUVIAL:** STIFF, GRAY, BLUE, AND BROWN, SANDY AND SILTY CLAY (A-7-6), CONTAINS GRAVEL, MICACEOUS, WET
- (R3) RESIDUAL:** MEDIUM DENSE, GRAY, SILTY SAND (A-2-4), WITH TRACE CLAY CONTAINS ROCK FRAGMENTS, SATURATED

SS-32

-DET- STA. 15+00 - 30' LT
-L- STA. 15+83 - 23' RT

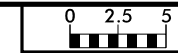


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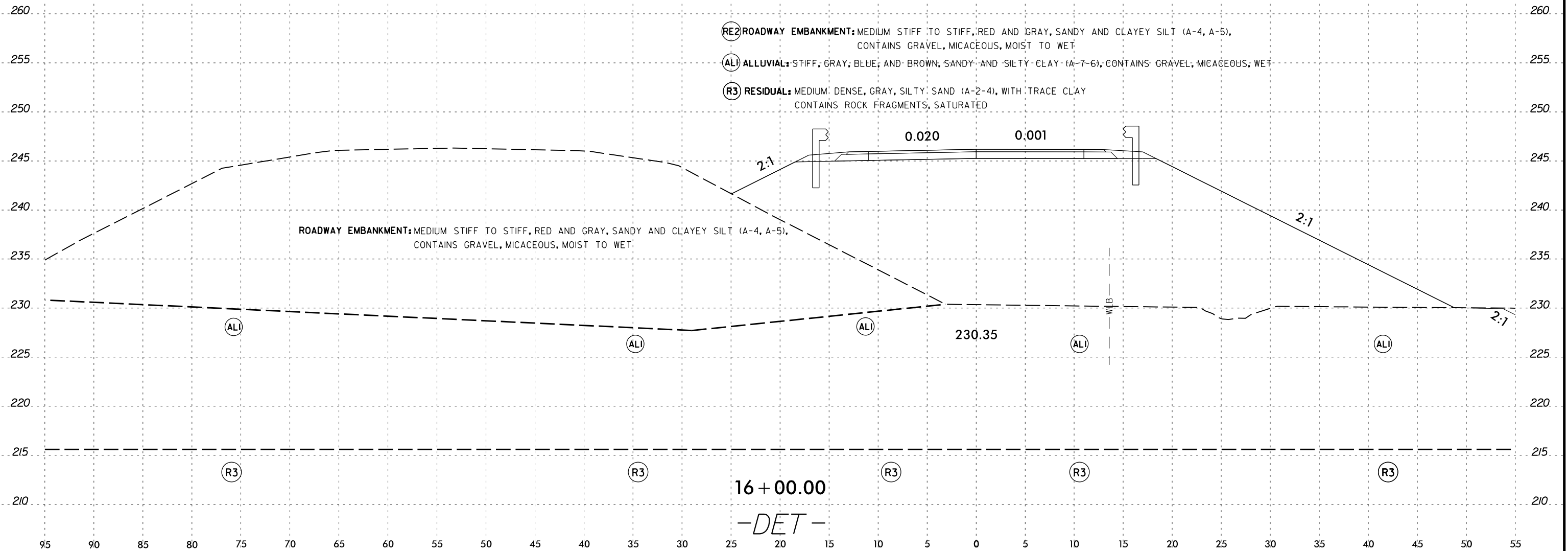


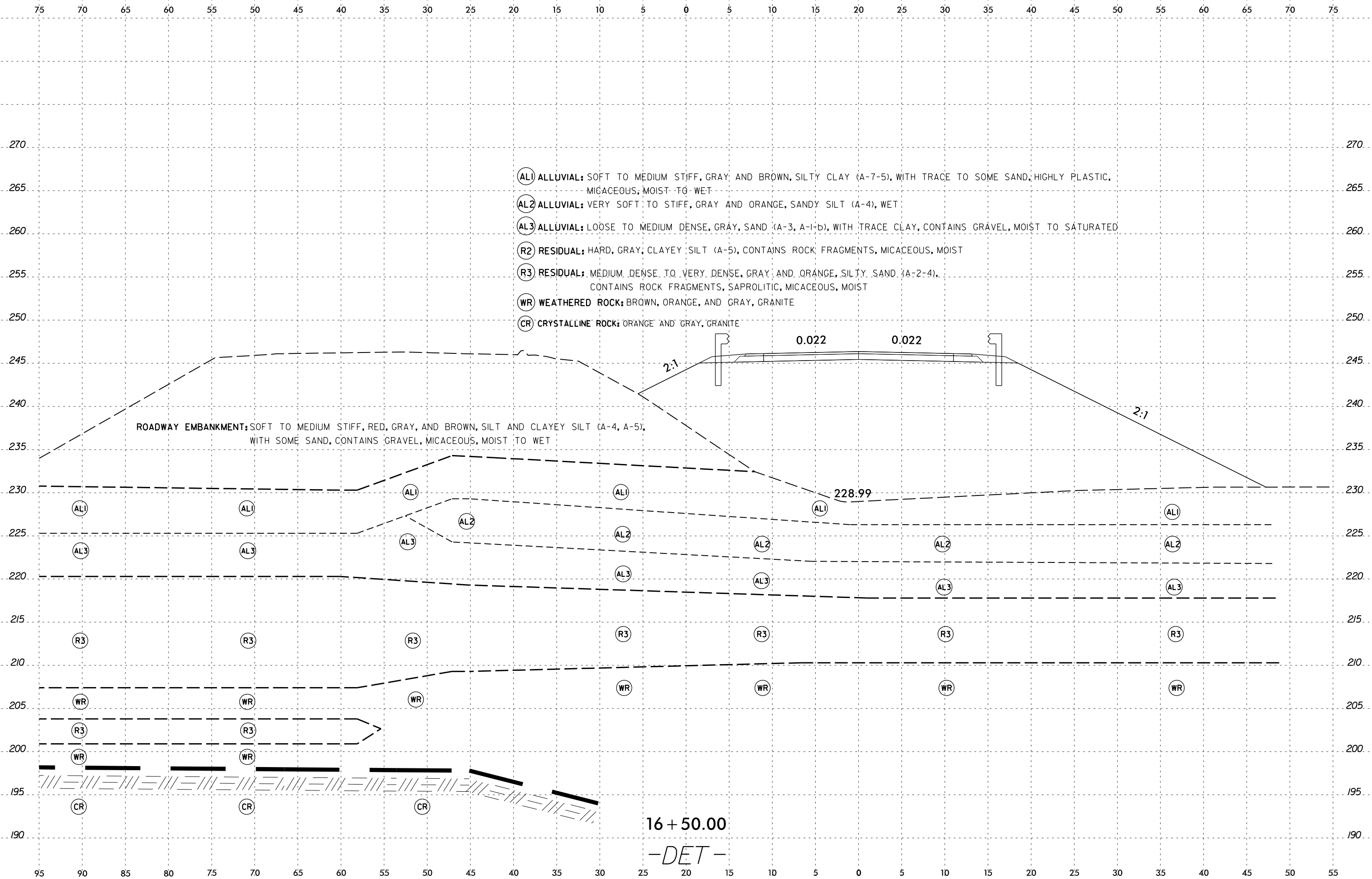
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15 + 50.00
-DET-



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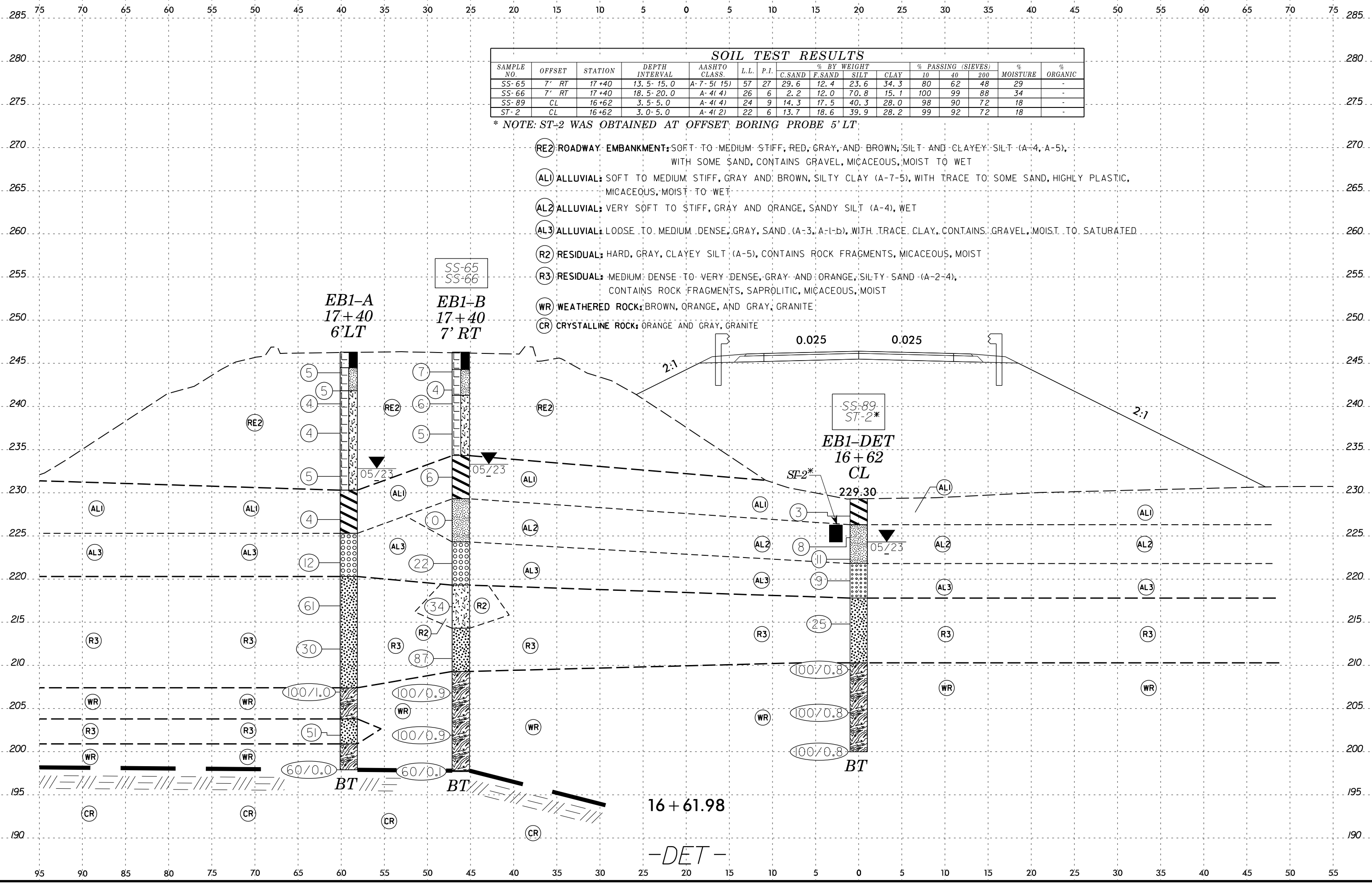
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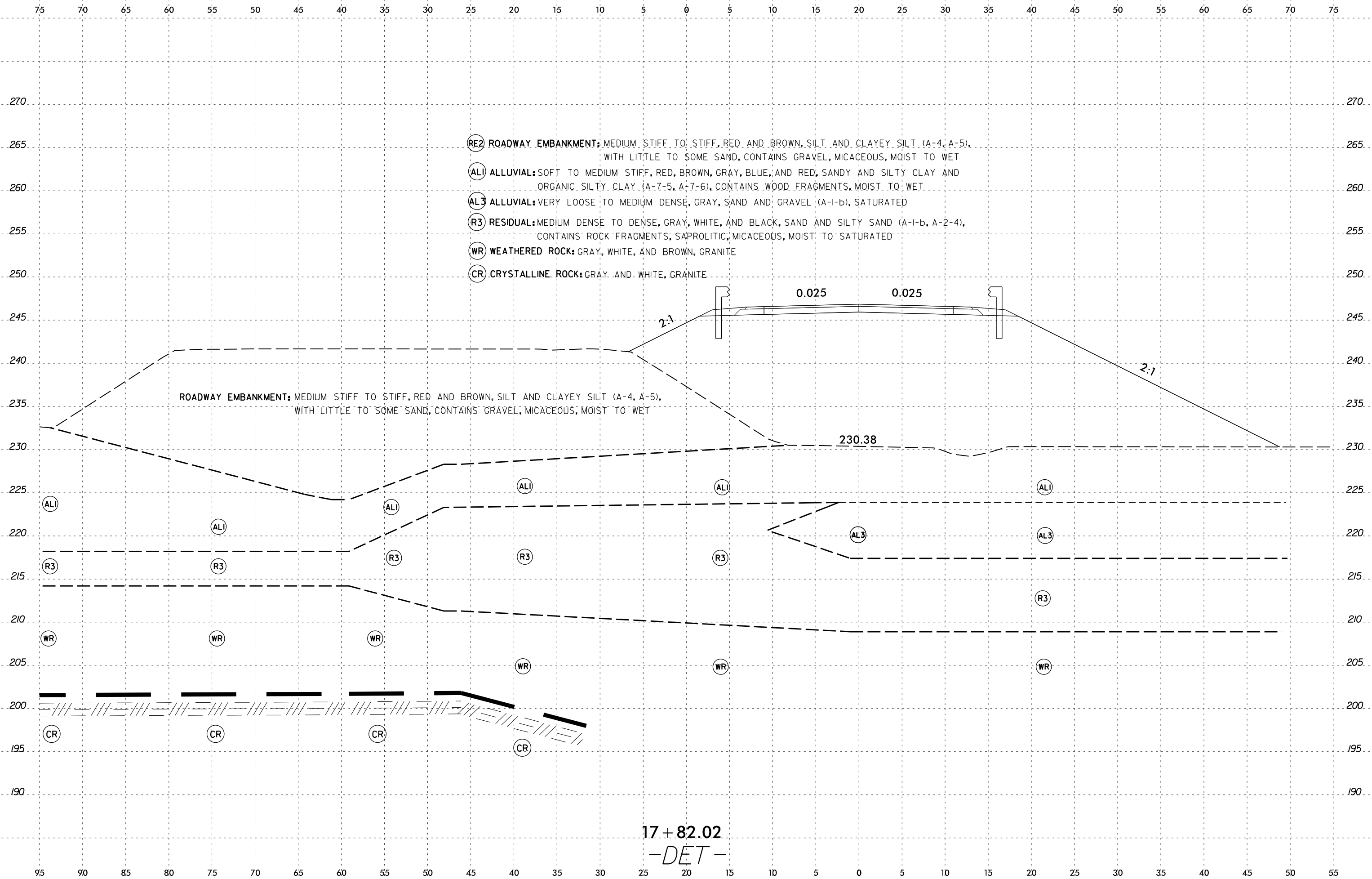
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SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-65	7' RT	17+40	13.5-15.0	A-7-5(15)	57	27	29.6	12.4	23.6	34.3	80	62	48	29	-
SS-66	7' RT	17+40	18.5-20.0	A-4(4)	26	6	2.2	12.0	70.8	15.1	100	99	88	34	-
SS-89	CL	16+62	3.5-5.0	A-4(4)	24	9	14.3	17.5	40.3	28.0	98	90	72	18	-
ST-2	CL	16+62	3.0-5.0	A-4(2)	22	6	13.7	18.6	39.9	28.2	99	92	72	18	-

* NOTE: ST-2 WAS OBTAINED AT OFFSET BORING PROBE 5' LT

- (RE2) ROADWAY EMBANKMENT: SOFT TO MEDIUM STIFF, RED, GRAY, AND BROWN, SILT AND CLAYEY SILT (A-4, A-5), WITH SOME SAND, CONTAINS GRAVEL, MICACEOUS, MOIST TO WET
- (AL1) ALLUVIAL: SOFT TO MEDIUM STIFF, GRAY AND BROWN, SILTY CLAY (A-7-5), WITH TRACE TO SOME SAND, HIGHLY PLASTIC, MICACEOUS, MOIST TO WET
- (AL2) ALLUVIAL: VERY SOFT TO STIFF, GRAY AND ORANGE, SANDY SILT (A-4), WET
- (AL3) ALLUVIAL: LOOSE TO MEDIUM DENSE, GRAY, SAND (A-3, A-1-b), WITH TRACE CLAY, CONTAINS GRAVEL, MOIST TO SATURATED
- (R2) RESIDUAL: HARD, GRAY, CLAYEY SILT (A-5), CONTAINS ROCK FRAGMENTS, MICACEOUS, MOIST
- (R3) RESIDUAL: MEDIUM DENSE TO VERY DENSE, GRAY AND ORANGE, SILTY SAND (A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST
- (WR) WEATHERED ROCK: BROWN, ORANGE, AND GRAY, GRANITE
- (CR) CRYSTALLINE ROCK: ORANGE AND GRAY, GRANITE

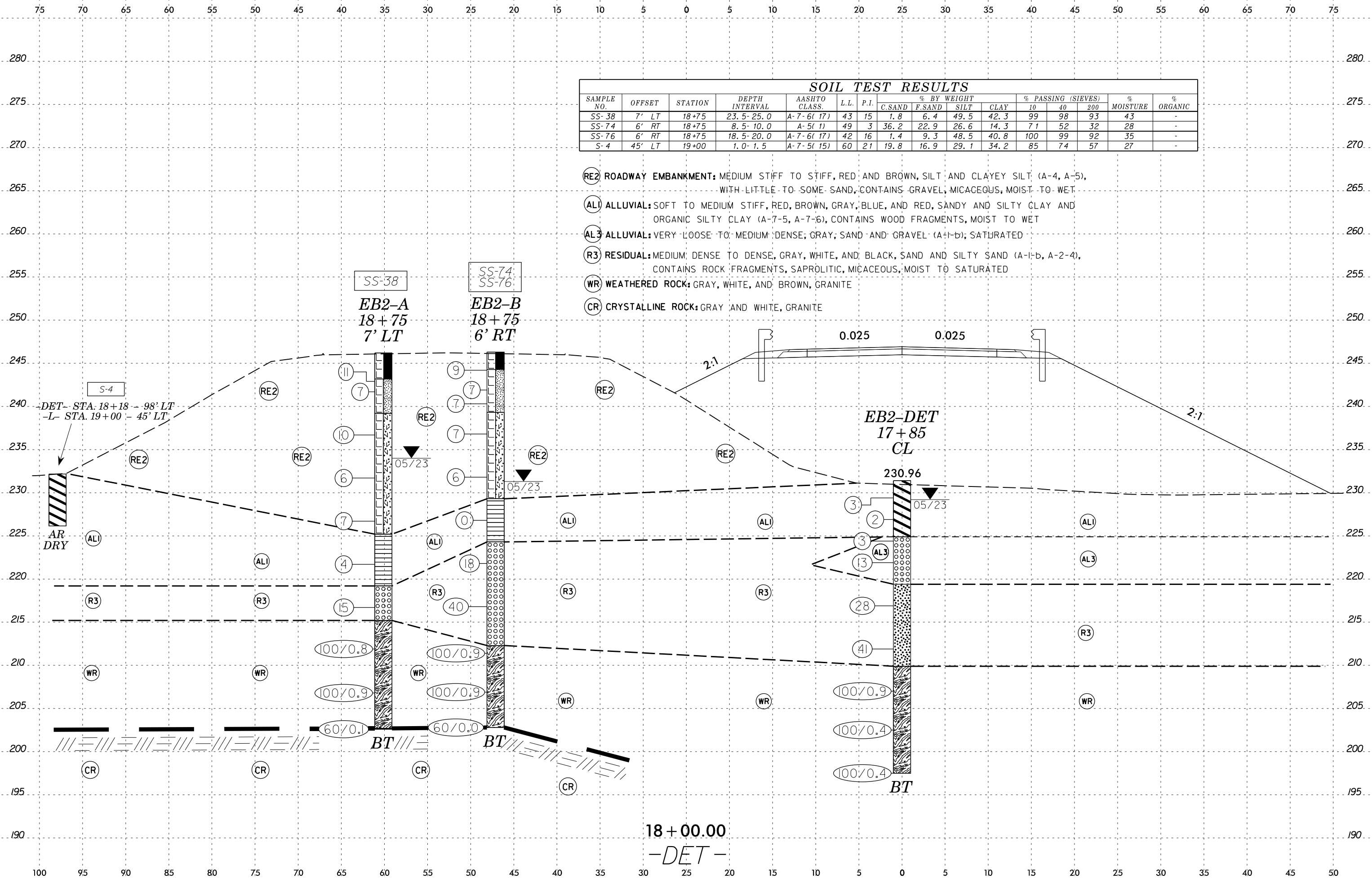




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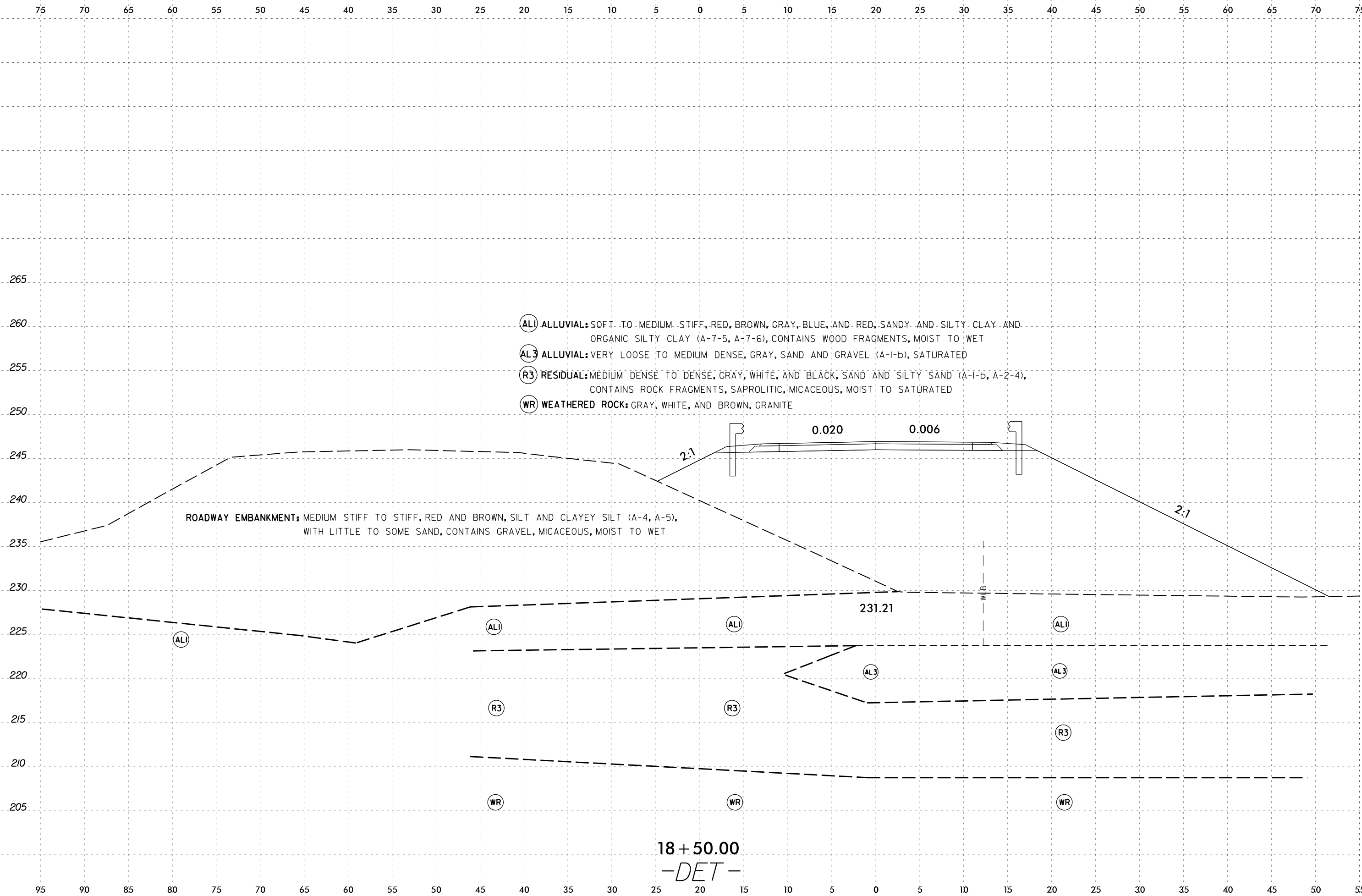
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-38	7' LT	18+75	23.5-25.0	A-7-6(17)	43	15	1.8	6.4	49.5	42.3	99	98	93	43	-
SS-74	6' RT	18+75	8.5-10.0	A-5(1)	49	3	36.2	22.9	26.6	14.3	71	52	32	28	-
SS-76	6' RT	18+75	18.5-20.0	A-7-6(17)	42	16	1.4	9.3	48.5	40.8	100	99	92	35	-
S-4	45' LT	19+00	1.0-1.5	A-7-5(15)	60	21	19.8	16.9	29.1	34.2	85	74	57	27	-

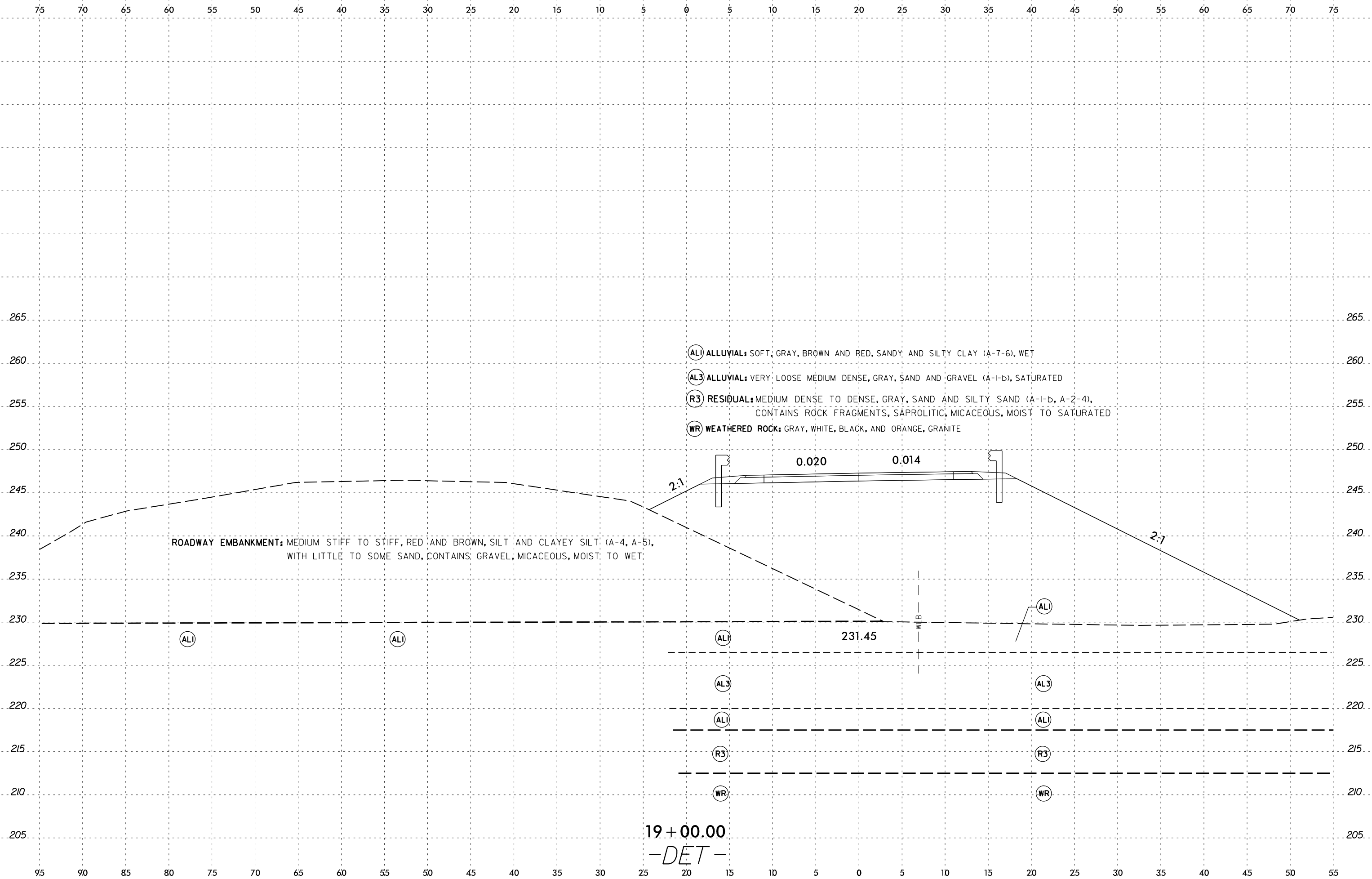
- (RE2) ROADWAY EMBANKMENT: MEDIUM STIFF TO STIFF, RED AND BROWN, SILT AND CLAYEY SILT (A-4, A-5), WITH LITTLE TO SOME SAND, CONTAINS GRAVEL, MICACEOUS, MOIST TO WET
- (AL1) ALLUVIAL: SOFT TO MEDIUM STIFF, RED, BROWN, GRAY, BLUE, AND RED, SANDY AND SILTY CLAY AND ORGANIC SILTY CLAY (A-7-5, A-7-6), CONTAINS WOOD FRAGMENTS, MOIST TO WET
- (AL3) ALLUVIAL: VERY LOOSE TO MEDIUM DENSE, GRAY, SAND AND GRAVEL (A-I-b); SATURATED
- (R3) RESIDUAL: MEDIUM DENSE TO DENSE, GRAY, WHITE, AND BLACK, SAND AND SILTY SAND (A-I-b, A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST TO SATURATED
- (WR) WEATHERED ROCK: GRAY, WHITE, AND BROWN, GRANITE
- (CR) CRYSTALLINE ROCK: GRAY AND WHITE, GRANITE



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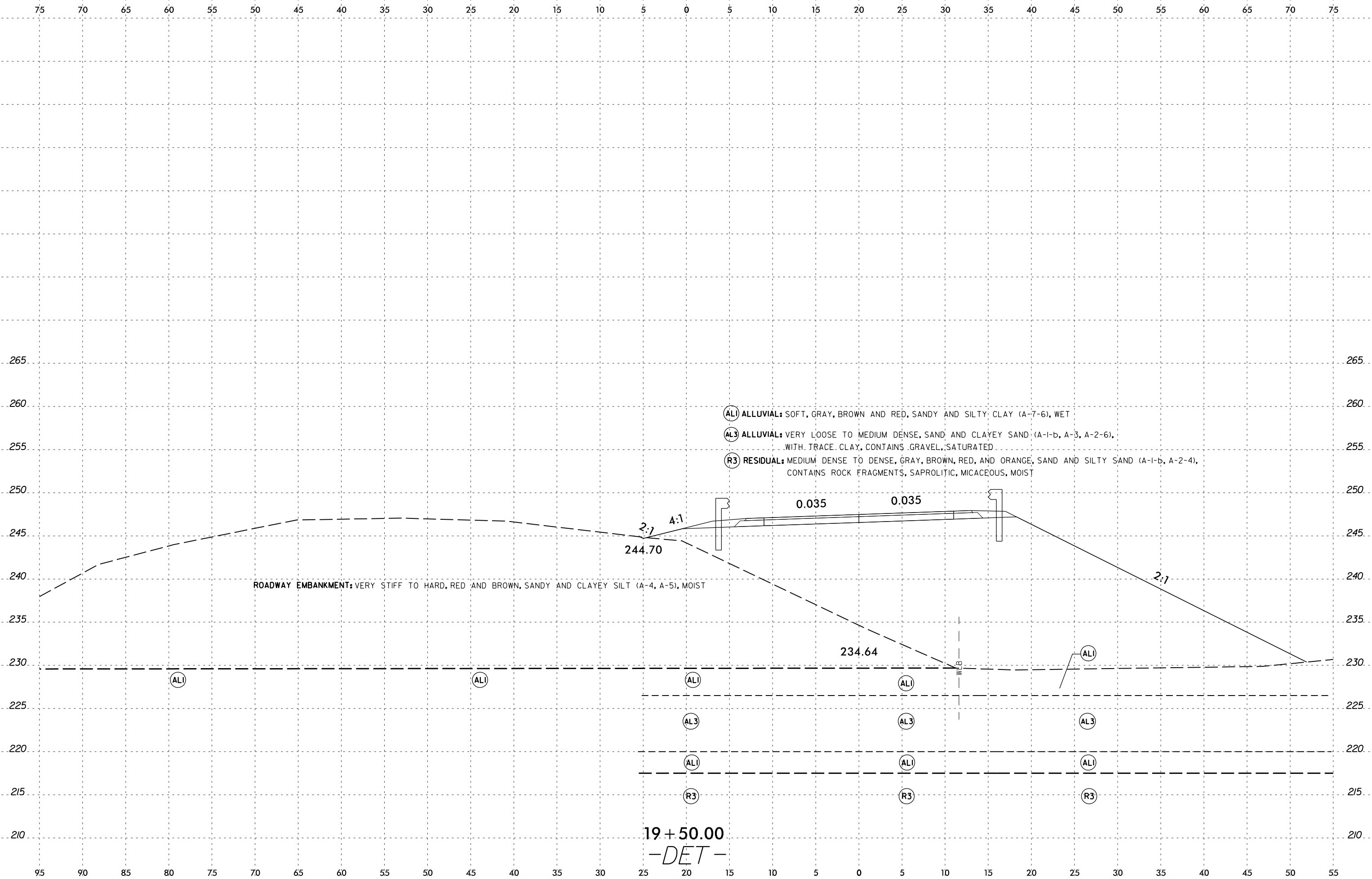
18+00.00
-DET-





ROADWAY EMBANKMENT: MEDIUM STIFF TO STIFF, RED AND BROWN, SILT AND CLAYEY SILT (A-4, A-5), WITH LITTLE TO SOME SAND, CONTAINS GRAVEL, MICACEOUS, MOIST TO WET

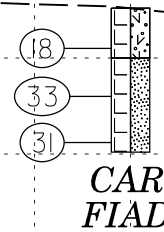
- (ALI) ALLUVIAL:** SOFT, GRAY, BROWN AND RED, SANDY AND SILTY CLAY (A-7-6), WET
- (AL3) ALLUVIAL:** VERY LOOSE MEDIUM DENSE, GRAY, SAND AND GRAVEL (A-1-b), SATURATED
- (R3) RESIDUAL:** MEDIUM DENSE TO DENSE, GRAY, SAND AND SILTY SAND (A-1-b, A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST TO SATURATED
- (WR) WEATHERED ROCK:** GRAY, WHITE, BLACK, AND ORANGE, GRANITE



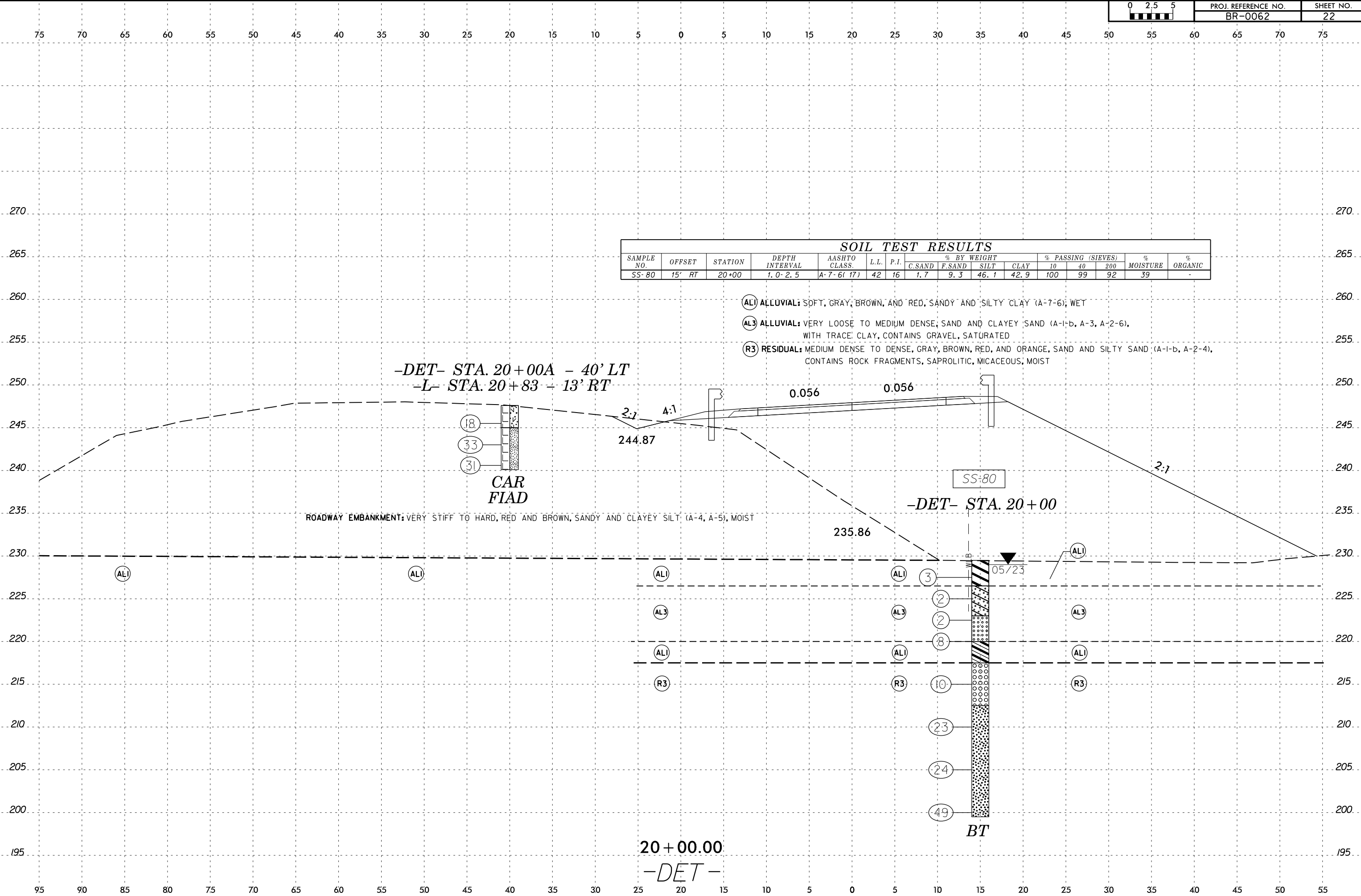
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-80	15' RT	20+00	1.0-2.5	A-7-6(17)	42	16	1.7	9.3	46.1	42.9	100	99	92	39	-

- (AL1) ALLUVIAL: SOFT, GRAY, BROWN, AND RED, SANDY AND SILTY CLAY (A-7-6); WET
- (AL3) ALLUVIAL: VERY LOOSE TO MEDIUM DENSE, SAND AND CLAYEY SAND (A-1-b, A-3, A-2-6), WITH TRACE CLAY, CONTAINS GRAVEL, SATURATED
- (R3) RESIDUAL: MEDIUM DENSE TO DENSE, GRAY, BROWN, RED, AND ORANGE, SAND AND SILTY SAND (A-1-b, A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST

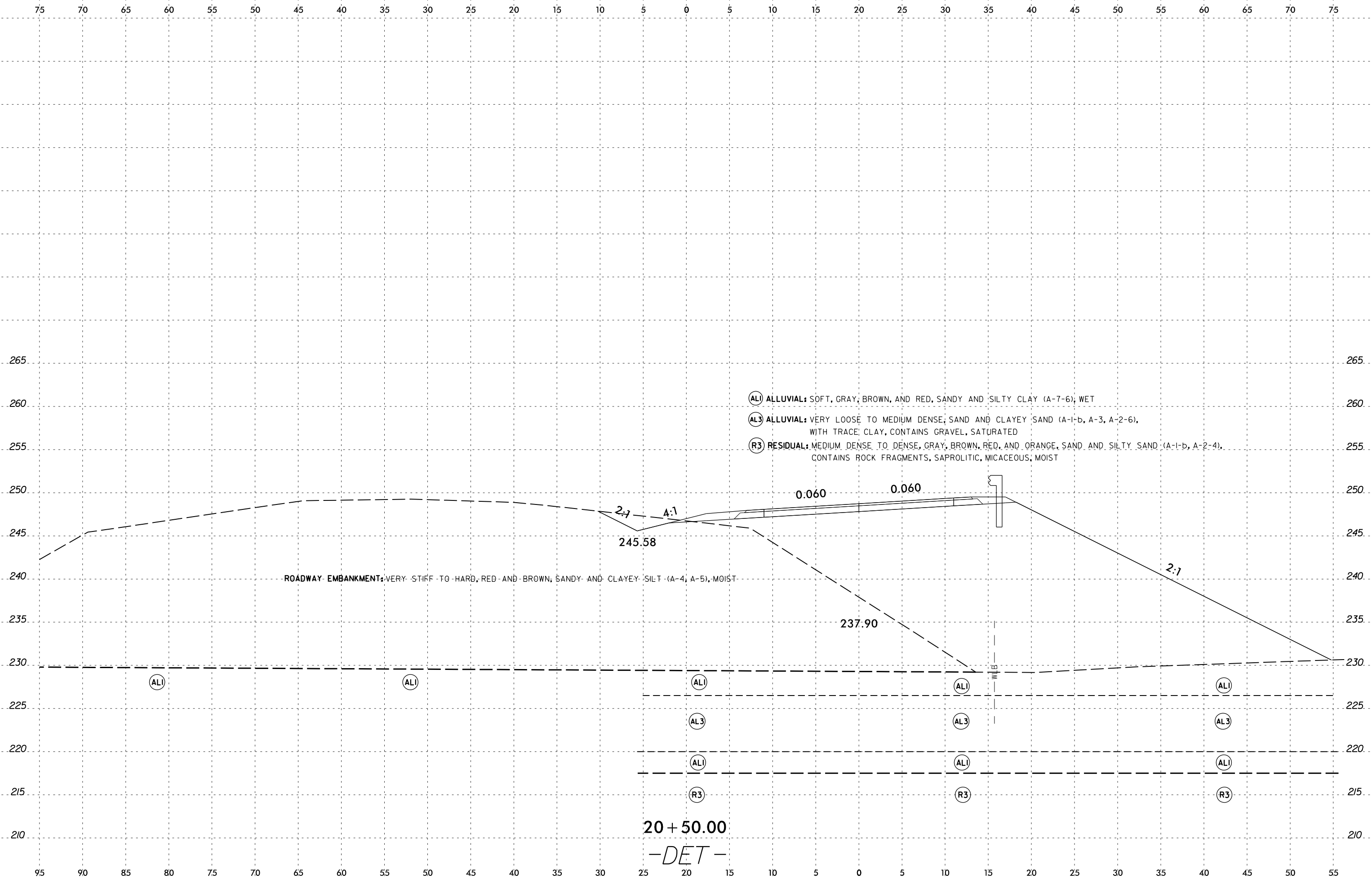
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 -L- STA. 20+83 - 13' RT

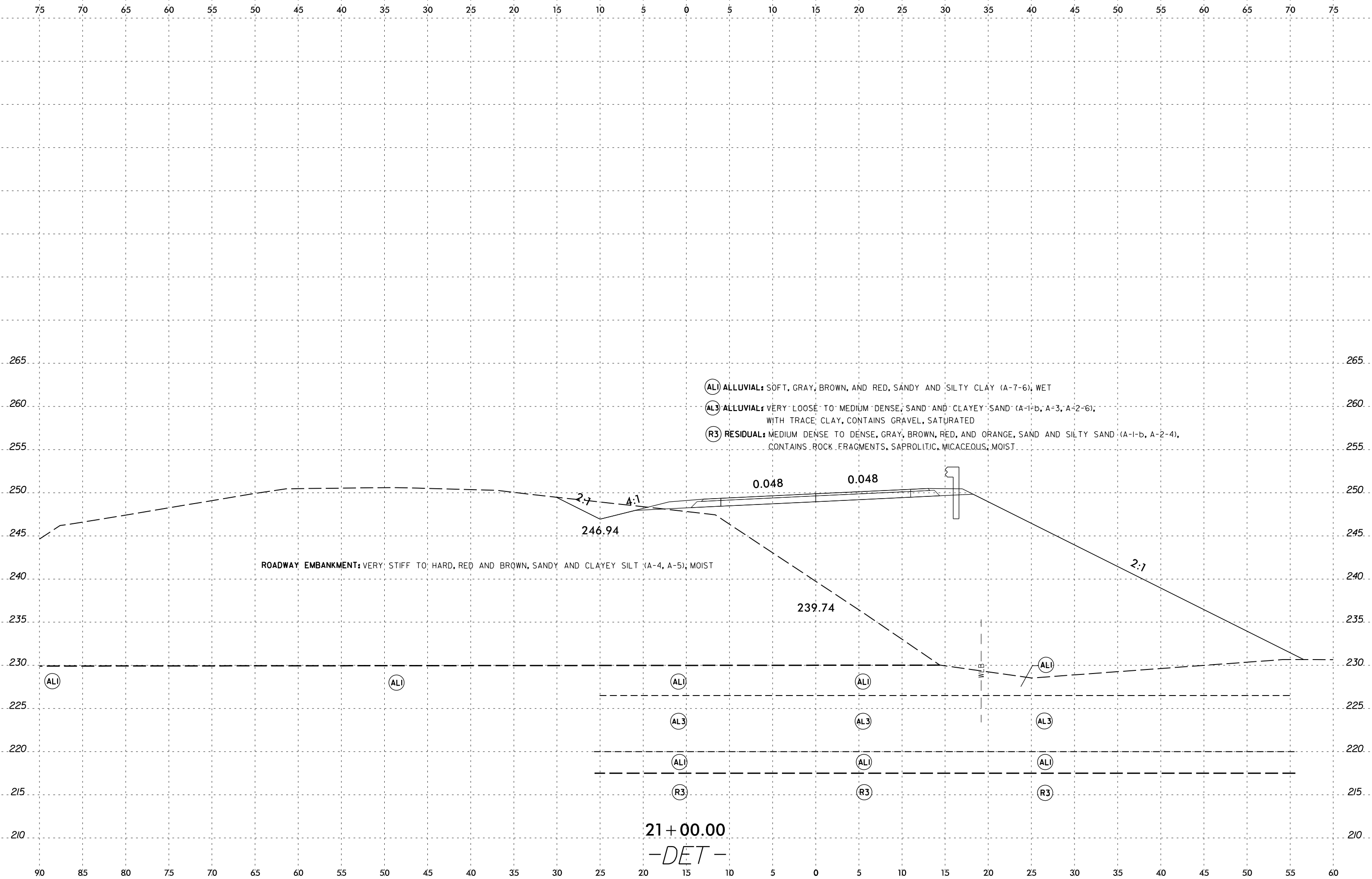


ROADWAY EMBANKMENT: VERY STIFF TO HARD, RED AND BROWN, SANDY AND CLAYEY SILT (A-4, A-5), MOIST



20+00.00
 -DET-



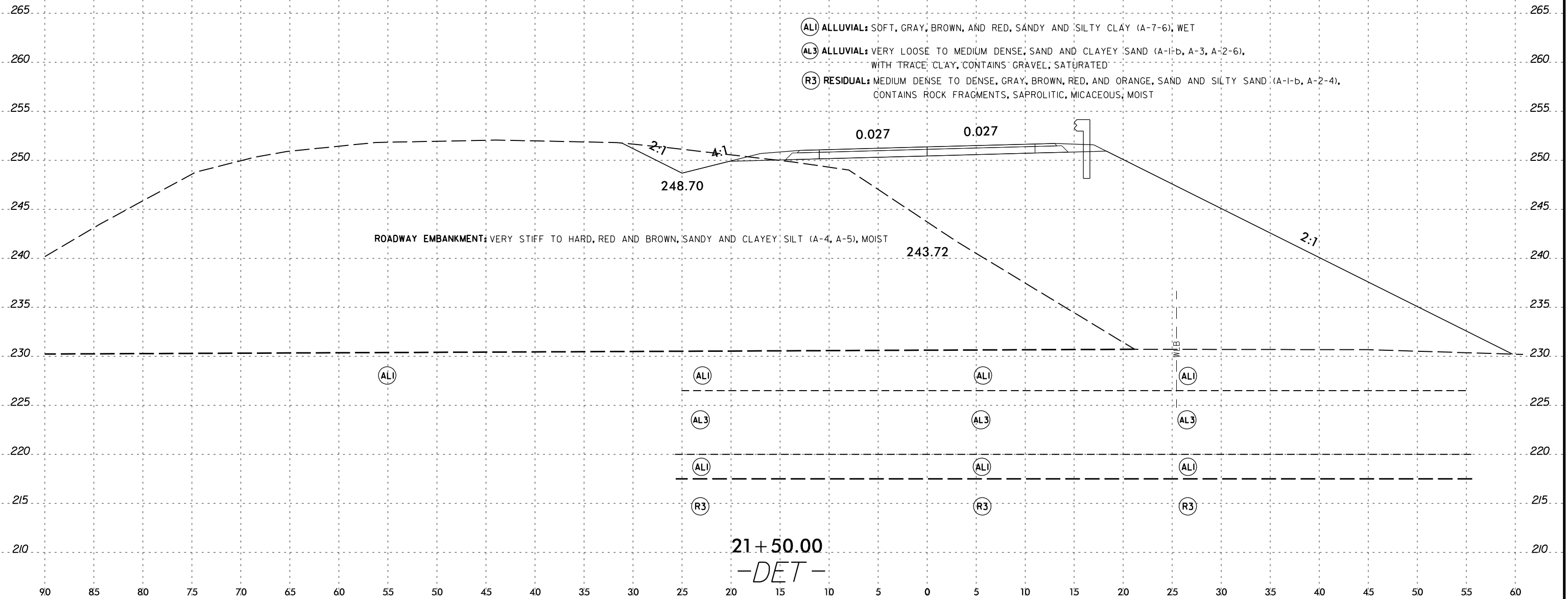


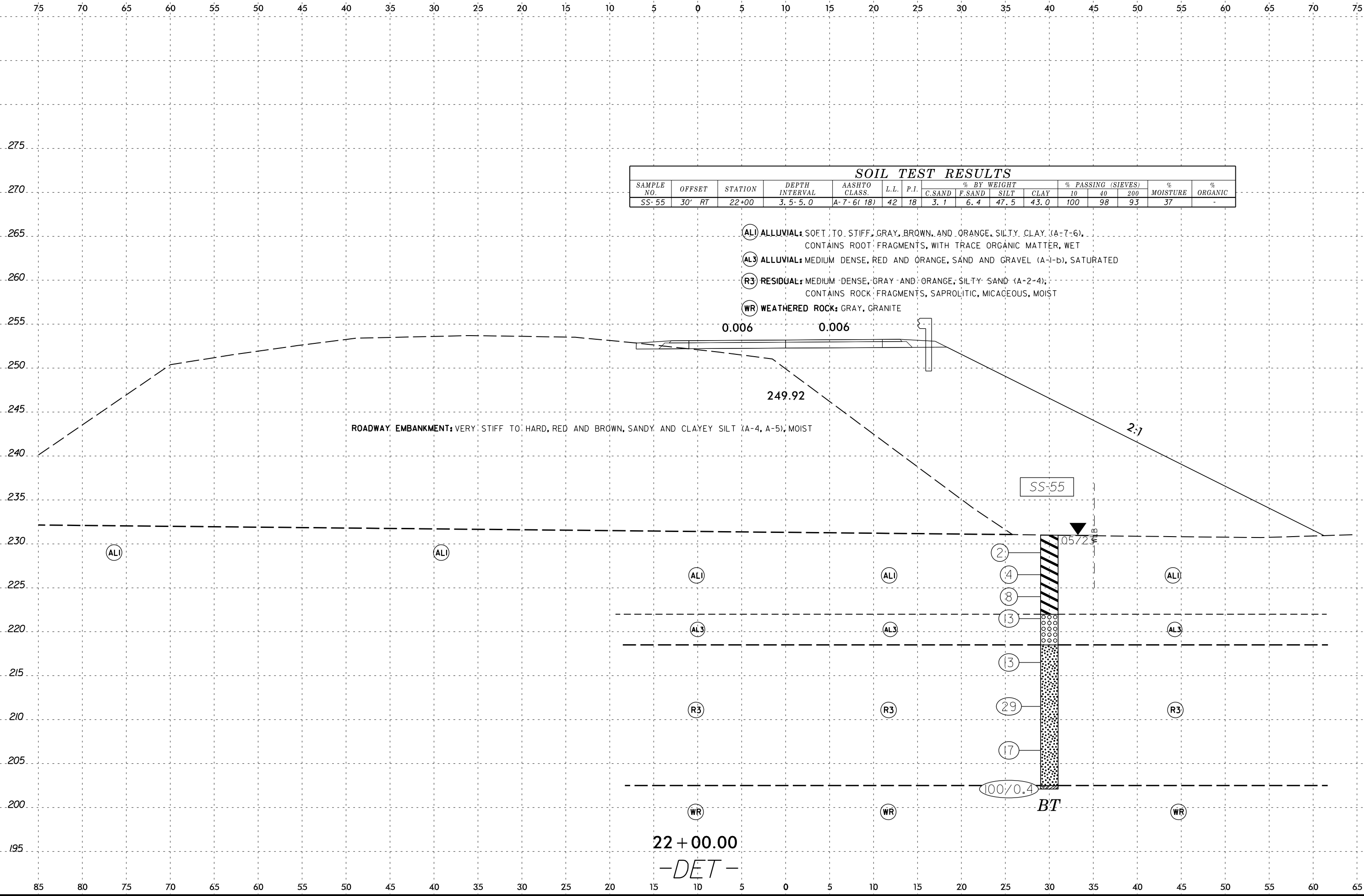
- (ALI) ALLUVIAL: SOFT, GRAY, BROWN, AND RED, SANDY AND SILTY CLAY (A-7-6), WET
- (AL3) ALLUVIAL: VERY LOOSE TO MEDIUM DENSE, SAND AND CLAYEY SAND (A-1-b, A-3, A-2-6), WITH TRACE CLAY, CONTAINS GRAVEL, SATURATED
- (R3) RESIDUAL: MEDIUM DENSE TO DENSE, GRAY, BROWN, RED, AND ORANGE, SAND AND SILTY SAND (A-1-b, A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST

ROADWAY EMBANKMENT: VERY STIFF TO HARD, RED AND BROWN, SANDY AND CLAYEY SILT (A-4, A-5), MOIST

21+00.00
-DET-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75





SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-55	30' RT	22+00	3.5-5.0	A-7-6(18)	42	18	3.1	6.4	47.5	43.0	100	98	93	37	-

(AL1) ALLUVIAL: SOFT TO STIFF, GRAY, BROWN, AND ORANGE, SILTY CLAY (A-7-6), CONTAINS ROOT FRAGMENTS, WITH TRACE ORGANIC MATTER, WET

(AL3) ALLUVIAL: MEDIUM DENSE, RED AND ORANGE, SAND AND GRAVEL (A-1-b), SATURATED

(R3) RESIDUAL: MEDIUM DENSE, GRAY AND ORANGE, SILTY SAND (A-2-4), CONTAINS ROCK FRAGMENTS, SAPROLITIC, MICACEOUS, MOIST

(WR) WEATHERED ROCK: GRAY, GRANITE

ROADWAY EMBANKMENT: VERY STIFF TO HARD, RED AND BROWN, SANDY AND CLAYEY SILT (A-4, A-5), MOIST

