

**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

REFERENCE: B-4593

PROJECT: 38422

SEE SHEET 3 FOR PLAN SHEET LAYOUT  
AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4593	1	16

**CONTENTS**

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>	<u>PROFILE</u>
-L-	11+00 to 26+00	4-5	6
-DET-	10+00 to 24+83	4-5	

**CROSS SECTIONS**

<u>LINE</u>	<u>STATION</u>	<u>SHEETS</u>
-L-	12+00 to 16+00	7-11
-L-	18+00 to 23+00	12-16
-DET-	11+00 to 15+02	7-11
-DET-	17+02 to 21+99	12-16

# ROADWAY SUBSURFACE INVESTIGATION

COUNTY PAMLICO  
PROJECT DESCRIPTION BRIDGE NO. 38 ON -L- (NC 55)  
OVER TRENT CREEK

## INVENTORY - REVISED

**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.N. ZIMARINO  
R.E. SMITH  
J.M. EDMONDSON

INVESTIGATED BY T.C. BOTTOMS  
DRAWN BY T.C. BOTTOMS  
CHECKED BY D.N. ARGENBRIGHT  
SUBMITTED BY D.N. ARGENBRIGHT  
DATE APRIL 2019



DocuSigned by:  
Tyler C. Bottoms 4/18/2019

48A2D3BD08CF446 SIGNATURE DATE

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

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

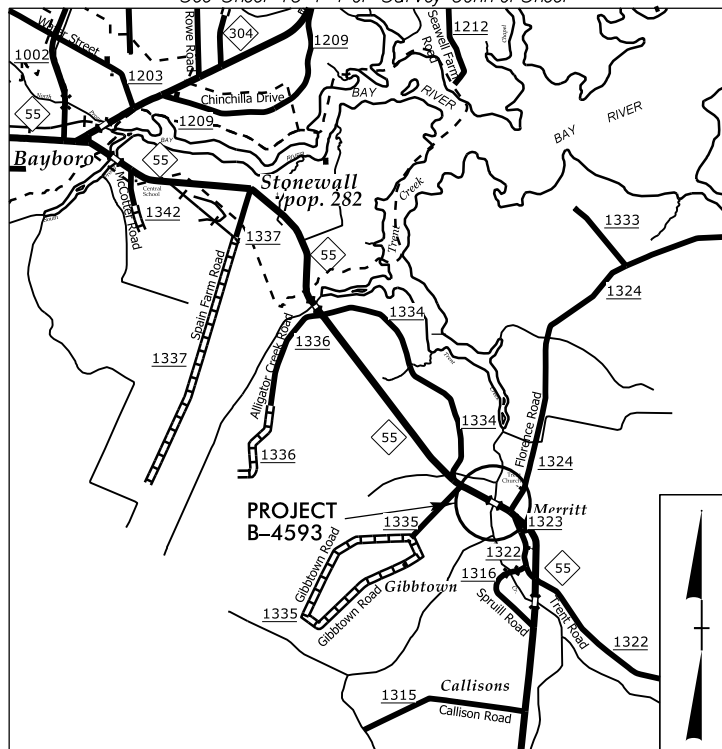
# **SUBSURFACE INVESTIGATION**

## **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.				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:				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 (ROD) - 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 (SROD) - 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.																			
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>				<b>MINERALOGICAL COMPOSITION</b>				<b>WEATHERING</b>																							
GENERAL CLASS. GRANULAR MATERIALS ( $\leq 35\%$ PASSING #200) SILT-CLAY MATERIALS ( $> 35\%$ PASSING #200) ORGANIC MATERIALS				MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.				FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.																							
<b>COMPRESSIONIBILITY</b>				<b>PERCENTAGE OF MATERIAL</b>				<b>GROUND WATER</b>																							
SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50				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				WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP																							
<b>CONSISTENCY OR DENSENESS</b>				<b>MISCELLANEOUS SYMBOLS</b>				<b>ROCK HARDNESS</b>																							
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )				ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION DIP & DIP DIRECTION OF ROCK STRUCTURES SOIL SYMBOL SPT DMT TEST BORING ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING INFERRED SOIL BOUNDARY CORE BORING INFERRED ROCK LINE MONITORING WELL ALLUVIAL SOIL BOUNDARY PIEZOMETER INSTALLATION				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 PIECES 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 FINGER NAIL.				<b>RECOMMENDATION SYMBOLS</b> <b>ABBREVIATIONS</b> AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - COYNE 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 % - UNIT WEIGHT %g - DRY UNIT WEIGHT SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO				<b>TEXTURE OR GRAIN SIZE</b> U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CS. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.) GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005 IN. 12 3				<b>SOIL MOISTURE - CORRELATION OF TERMS</b> SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL - LIQUID LIMIT PL - PLASTIC LIMIT OM - OPTIMUM MOISTURE SHRINKAGE LIMIT SL - SHRINKAGE LIMIT				<b>PLASTICITY</b> NON PLASTIC SLIGHTLY PLASTIC MODERATELY PLASTIC HIGHLY PLASTIC PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW SLIGHT MEDIUM HIGH				<b>COLOR</b> 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.			
<b>EQUIPMENT USED ON SUBJECT PROJECT</b>				<b>FRACTURE SPACING</b>				<b>BEDDING</b>																							
DRILL UNITS: CME-45C CME-55 CME-550 VANE SHEAR TEST PORTABLE HOIST				ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE *STEEL TEETH TRICONE *TUNG-CARB. CORE BIT				HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B H N HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST PUSH PROBE				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				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				BENCH MARK: ELEVATIONS OBTAINED FROM B4593_Is.tin.tin FILE DATED 06/28/2017 ELEVATION: FEET											
<b>INDURATION</b>				<b>INDURATION</b>				<b>INDURATION</b>																							
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.																															
												<b>NOTES:</b> VST = VANE SHEAR TEST																			

09/08/99

See Sheet 1A For Index of Sheets  
 See Sheet 1B For Conventional Plan Sheet Symbols  
 See Sheet 1C-1 For Survey Control Sheet



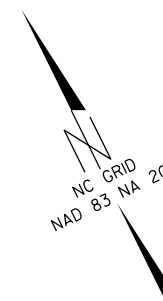
VICINITY MAP

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

**PAMLICO COUNTY**

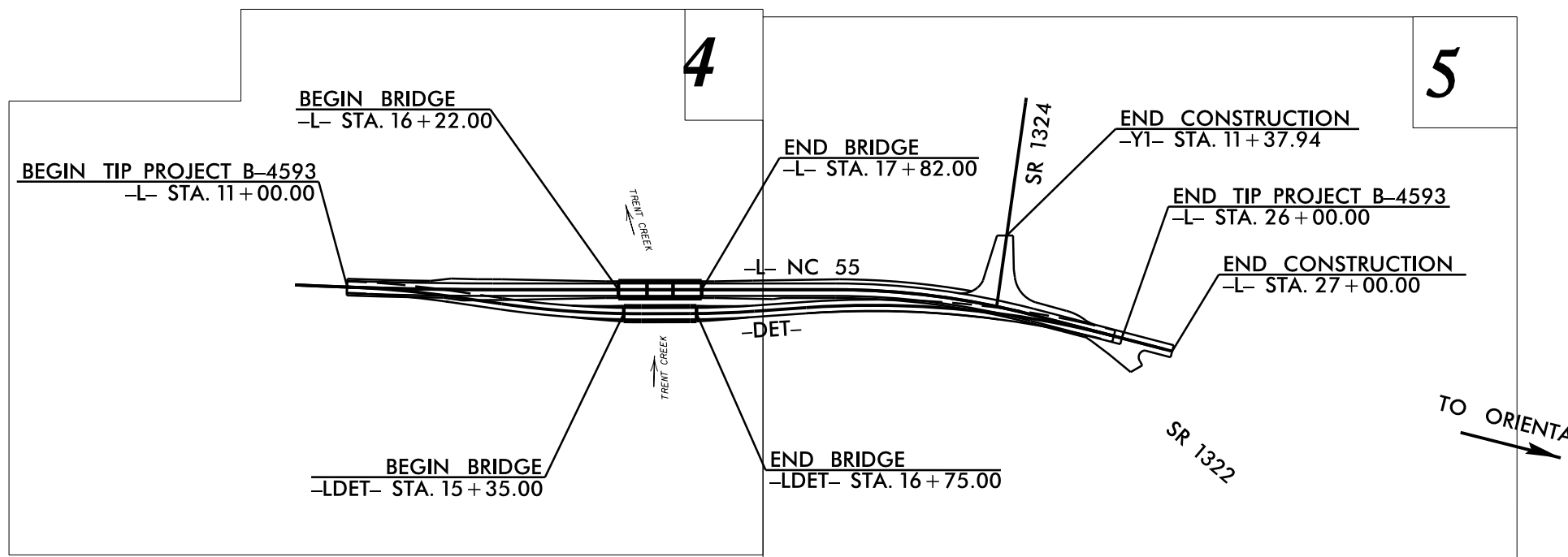
**LOCATION: BRIDGE NO. 38 ON NC 55 OVER TRENT CREEK**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4593	3	16
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38422.1.2	-	PE	
38422.2.1	-	RW, Utilities	
38422.3.1	-	CONST.	

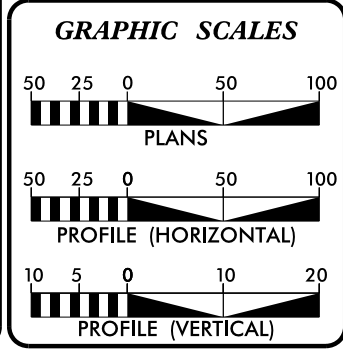


TIP PROJECT: B-4593

CONTRACT: C204217



DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2019 =	5576
ADT 2040 =	8600
K =	8 %
D =	55 %
T =	9 % *
V =	60 MPH
V <sub>DET</sub> =	50 MPH
* TTST =	2% DUAL = 7%
FUNC CLASS =	MAJOR COLLECTOR
	REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4593 =	0.254 MILES
LENGTH STRUCTURE TIP PROJECT B-4593 =	0.030 MILES
TOTAL LENGTH OF TIP PROJECT B-4593 =	0.284 MILES

**NCDOT CONTACT:** DAVID STUTTS, PE

Prepared In the Office of:

504 Meadowland Drive  
 Hillsborough, NC 27278-8551  
 Voice: (919) 732-3883  
 Fax: (919) 732-6776  
 www.summitde.net

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:** NOVEMBER 1, 2018

**LETTING DATE:** JULY 17, 2019

**BRANDON W. JOHNSON, PE**  
 PROJECT ENGINEER

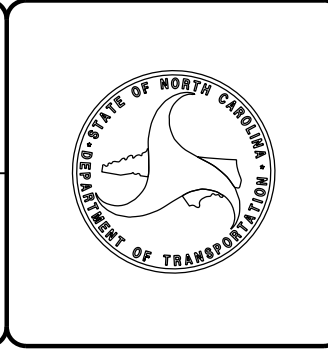
**FAITH E. JAHNKE, PE**  
 PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



11-APR-2019 13:01  
 \\B4593\_rdy\_tsh.dgn  
 \$\$\$\$.USERNAME\$\$\$



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

April 11, 2019

State Project: 38422.1.2 (B-4593)  
F.A. Project: BRSTP-55(34)  
County: Pamlico  
Description: Bridge No. 38 on -L- (NC 55) over Trent Creek  
Subject: Geotechnical Inventory Report - Revised

**Project Description**

This project begins outside of Oriental in Pamlico County, 680 feet southeast of the intersection of Gibbtown Road and NC 55 and extends southeast along NC 55 for approximately 1500 feet across Trent Creek. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork was conducted in February 2018. Hand auger borings and push probes were completed at various offsets along the project corridor. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

The following alignments were investigated. A subsurface profile and selected cross sections of these alignments are included in this report.

<u>Line</u>	<u>Station(±)</u>
-L-	11+00 to 27+00
-DET-	10+00 to 24+83

**Areas of Special Geotechnical Interest**

- 1) The entire project was found to exhibit seasonal high ground water.
- 2) The following sections contain organic soils which have the potential to cause embankment/subgrade and or slope stability problems during construction.

<u>Line</u>	<u>Station(±)</u>
-L-	12+25 to 22+75
-DET-	11+25 to 21+75

**Physiography and Geology**

This project corridor is located within the Coastal Plain Physiographic Province. Topography along the project is nearly flat to gently sloping. Natural ground elevations ranged from -10± to 4± feet above sea level. Existing roadway embankment lies at a maximum elevation of 11± feet.

Surficial soils in this area are generally classified as alluvial.

**Ground Water**

Ground water data was collected in February of 2018. Ground water elevations ranged from 0± to 5± feet above sea level.

**Soils**

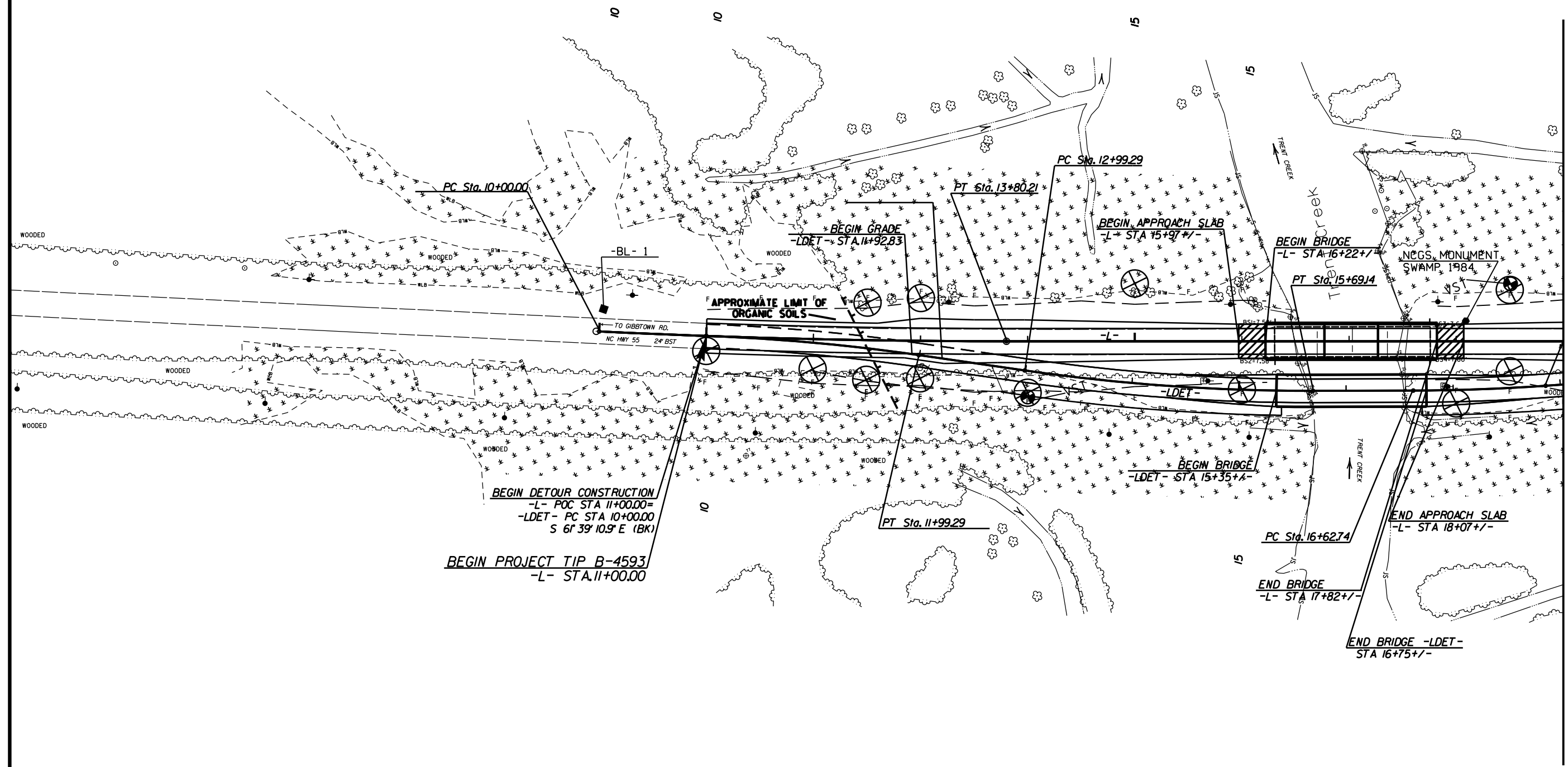
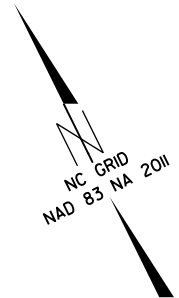
Soils encountered within this project area have been divided into two categories: Roadway Embankment and alluvial.

Roadway embankment soils were found along the existing NC 55 corridor. Where encountered it was composed of 1± to 10± feet of loose to medium dense sand (A-2-4).

Soils identified as alluvial are composed of 2± feet or more of loose to medium dense sand (A-2-4). Organic soils consist of 1± to 11± feet of loose to medium dense trace to moderately organic sand (A-2-4), 3± to 12± feet of soft little to moderately organic silt (A-4), and 1± to 9± feet of soft muck. Moisture samples taken within these organic units returned a natural moisture content ranging from 36% to 410%. Vane Shear Tests were completed at -L- Sta. 14+00 and -L- Sta. 18+50 and returned shear strength (psf) values between 0 and 1963. An overabundance of roots and wood fragments resulted in higher than average shear strength values.

PROJECT REFERENCE NO. <b>B-4593</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

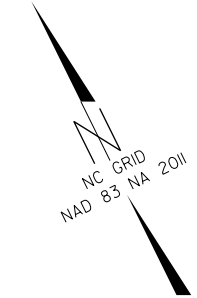
8/17/99



MATCHLINE -L- STA 19 + 00.00 (SEE SHEET 5)

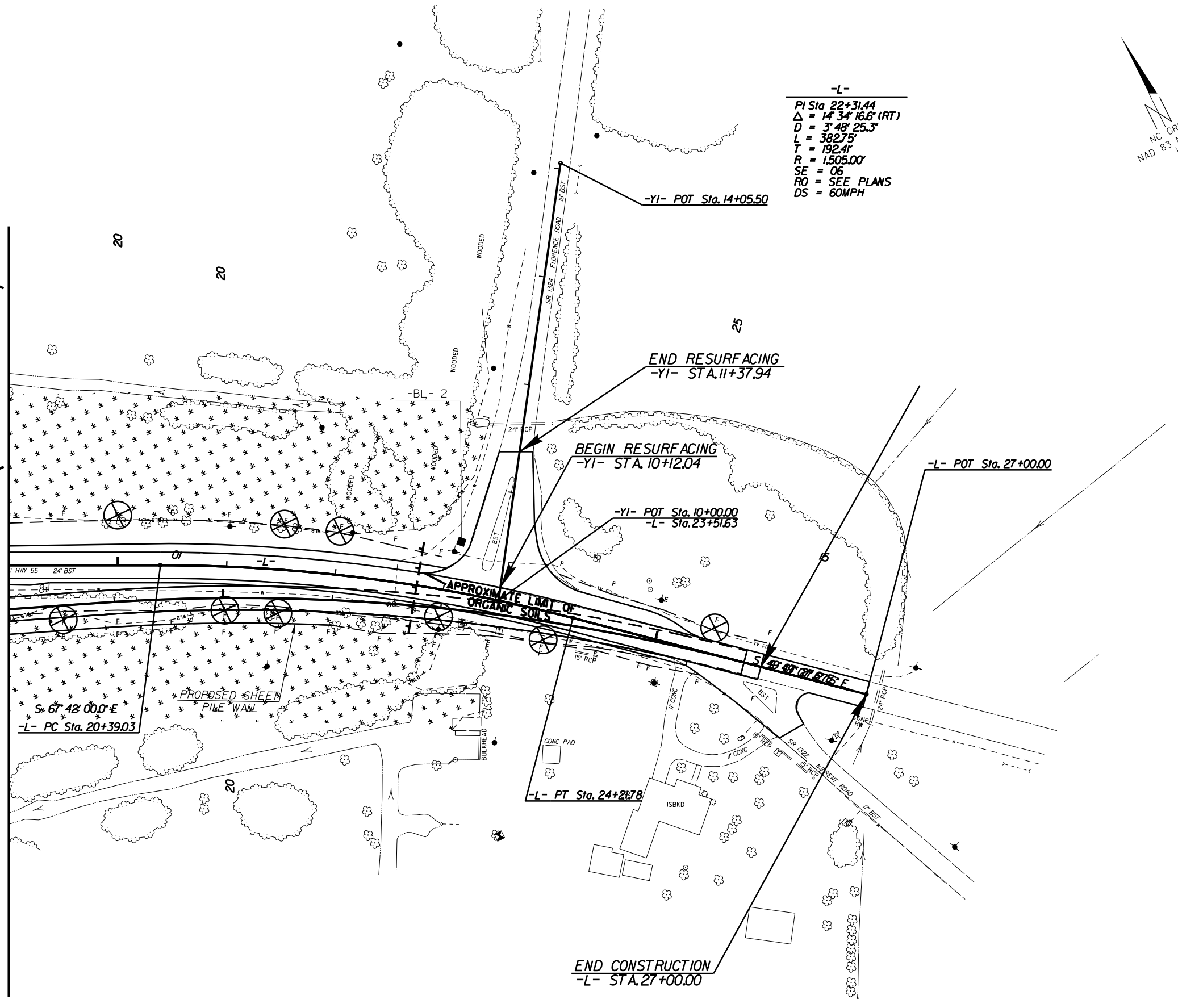
11-APR-2015 10:46  
C:\PROJECTS\B-4593\DRAWINGS

PROJECT REFERENCE NO.	SHEET NO.
B-4593	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-L-  
 PI Sta 22+31.44  
 $\Delta = 14' 34" 16.6'$  (RT)  
 $D = 3' 48" 25.3"$   
 $L = 382.75'$   
 $T = 192.4'$   
 $R = 1,505.00'$   
 $SE = 06$   
 $RO = \text{SEE PLANS}$   
 $DS = 60\text{MPH}$

MATCHLINE -L- STA 19 + 00.00 (SEE SHEET 4)



-YI- POT Sta. 14+05.50

END RESURFACING  
-YI- STA. 11+37.94

BEGIN RESURFACING  
-YI- STA. 10+12.04

-YI- POT Sta. 10+00.00  
-L- Sta. 23+51.63

-L- POT Sta. 27+00.00

APPROXIMATE LIMIT OF  
ORGANIC SOILS

-L- PC Sta. 20+39.03

-L- PT Sta. 24+21.78

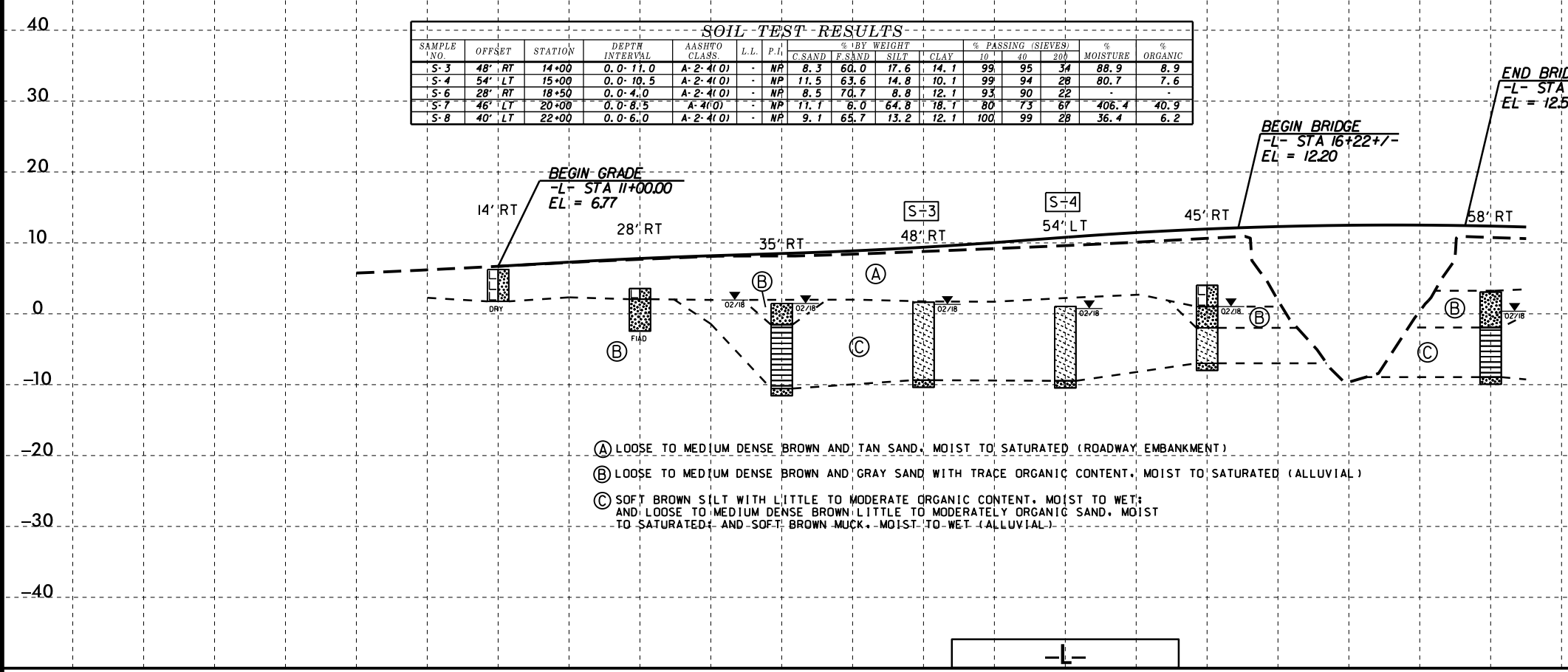
END CONSTRUCTION  
-L- STA. 27+00.00

B/17/99

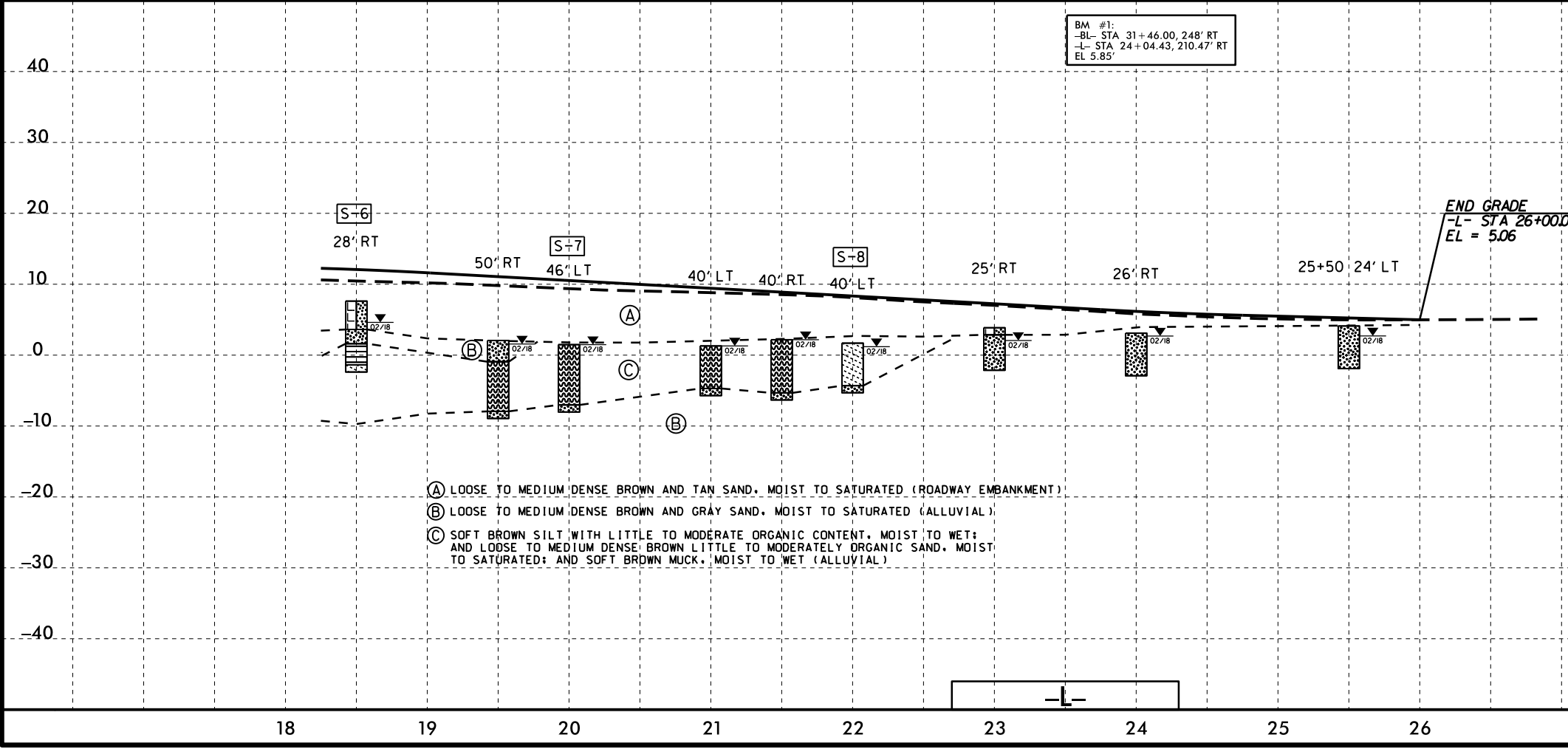
11-APR-2015 10:52  
 C:\PROJECTS\B-4593\DWG\PLAN\PLAN

5/28/99

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		
S-3	48' RT	14+00	0.0-11.0	A-2-4(0)	-	NR	8.3	60.0	17.6	14.1	99	95	34	88.9	8.9
S-4	54' LT	15+00	0.0-10.5	A-2-4(0)	-	NP	11.5	63.6	14.8	10.1	99	94	28	80.7	7.6
S-6	28' RT	18+50	0.0-4.0	A-2-4(0)	-	NR	8.5	70.7	8.8	12.1	93	90	22	-	-
S-7	46' LT	20+00	0.0-8.5	A-4(0)	-	NP	11.1	6.0	64.8	18.1	80	73	67	406.4	40.9
S-8	40' LT	22+00	0.0-6.0	A-2-4(0)	-	NP	9.1	65.7	13.2	12.1	100	99	28	36.4	6.2



VANE SHEAR TESTS			
STATION	OFFSET	DEPTH	SR (psf)
14+00	52' RT	0.5	668
14+00	52' RT	1.0	585
14+00	52' RT	1.5	376
14+00	52' RT	2.0	334
14+00	52' RT	2.5	376
14+00	52' RT	3.0	501
14+00	52' RT	3.5	1128
14+00	52' RT	4.0	793
14+00	52' RT	4.5	793
14+00	52' RT	5.0	752
14+00	52' RT	5.5	1044
14+00	52' RT	6.0	585
14+00	52' RT	6.5	710
14+00	52' RT	7.0	835
14+00	52' RT	7.5	668
14+00	52' RT	8.0	1211
14+00	52' RT	8.5	835
14+00	52' RT	9.0	1796
14+00	52' RT	9.5	877
14+00	52' RT	10.0	1420
14+00	52' RT	10.5	1503
14+00	52' RT	11.0	919



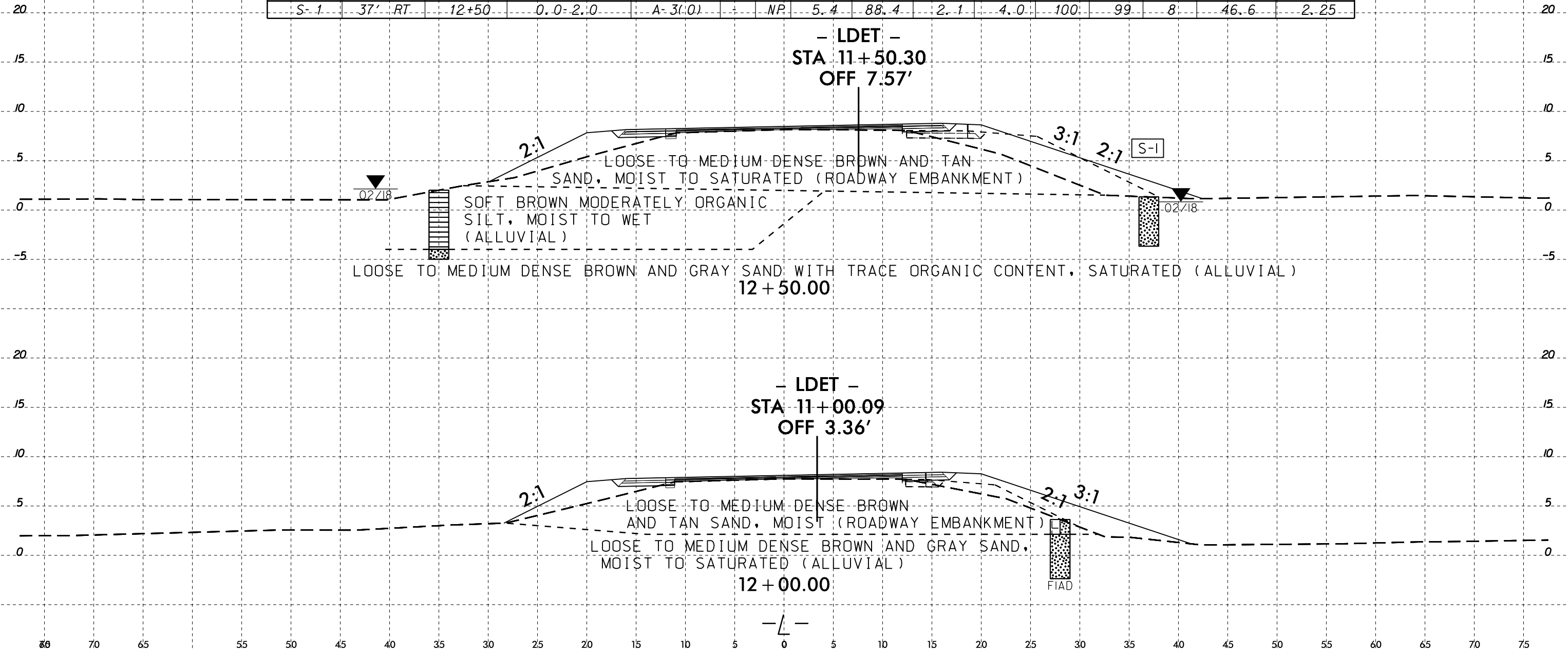
VANE SHEAR TESTS			
STATION	OFFSET	DEPTH	SR (psf)
18+50	55' LT	0.5	42
18+50	55' LT	1.0	167
18+50	55' LT	1.5	0
18+50	55' LT	2.0	42
18+50	55' LT	2.5	251
18+50	55' LT	3.0	125
18+50	55' LT	3.5	1963
18+50	55' LT	4.0	585
18+50	55' LT	4.5	1253
18+50	55' LT	5.0	877
18+50	55' LT	5.5	543
18+50	55' LT	6.0	376
18+50	55' LT	6.5	459
18+50	55' LT	7.0	292
18+50	55' LT	7.5	543
18+50	55' LT	8.0	1754
18+50	55' LT	8.5	334
18+50	55' LT	9.0	501
18+50	55' LT	9.5	376
18+50	55' LT	10.0	585
18+50	55' LT	10.5	209
18+50	55' LT	11.0	710
18+50	55' LT	11.5	167
18+50	55' LT	12.0	960

11-APR-2009 14:02  
\\B45-33-GE001\psr01\_6.dgn



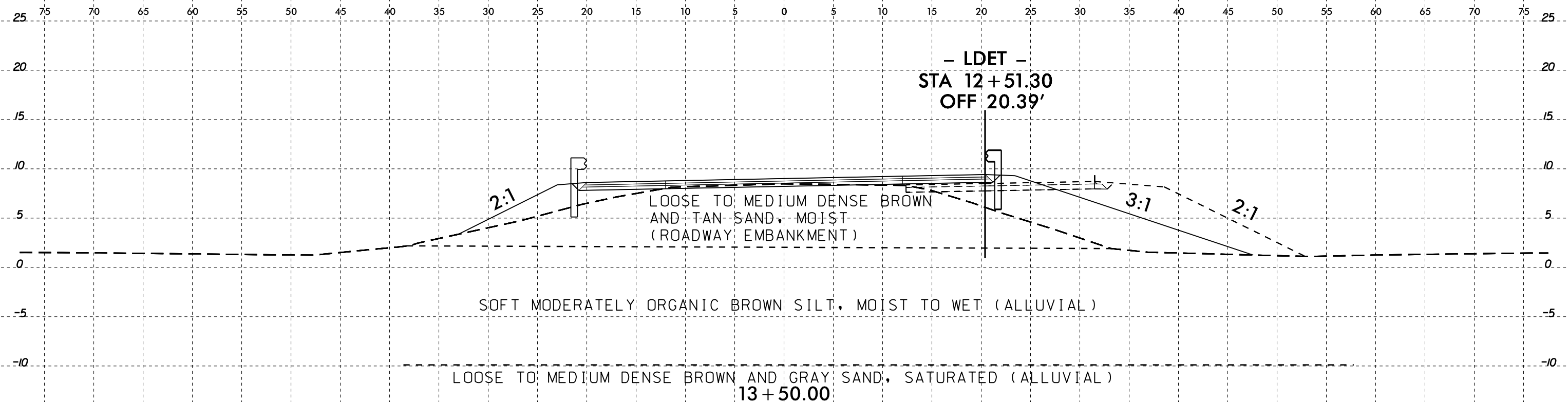
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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		
S-1	37' RT	12+50	0.0-2.0	A-3(0)		NP	5.4	88.4	2.1	4.0	100	99	8	46.6	2.25

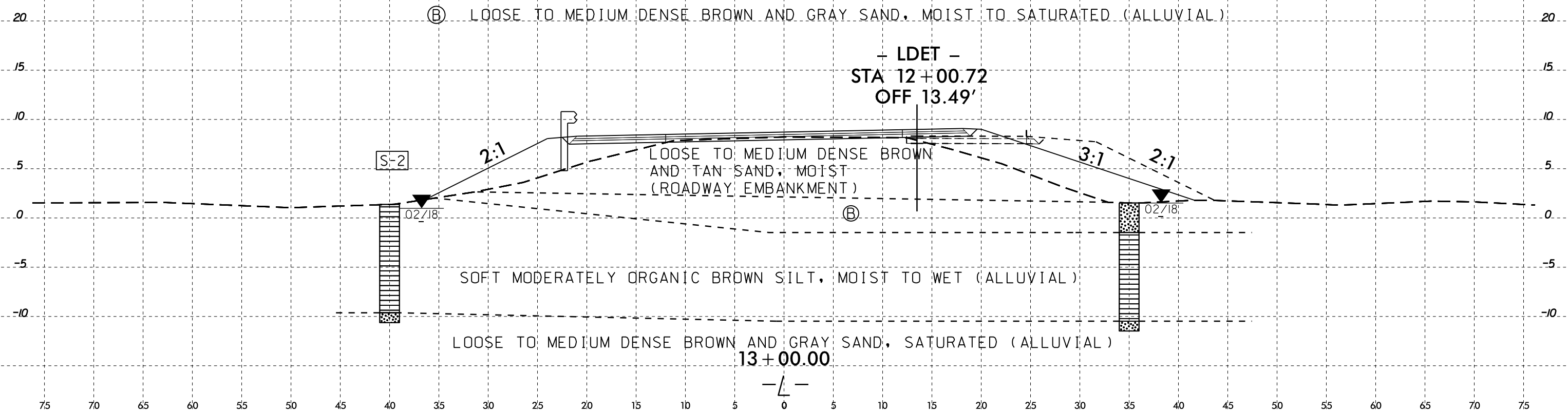


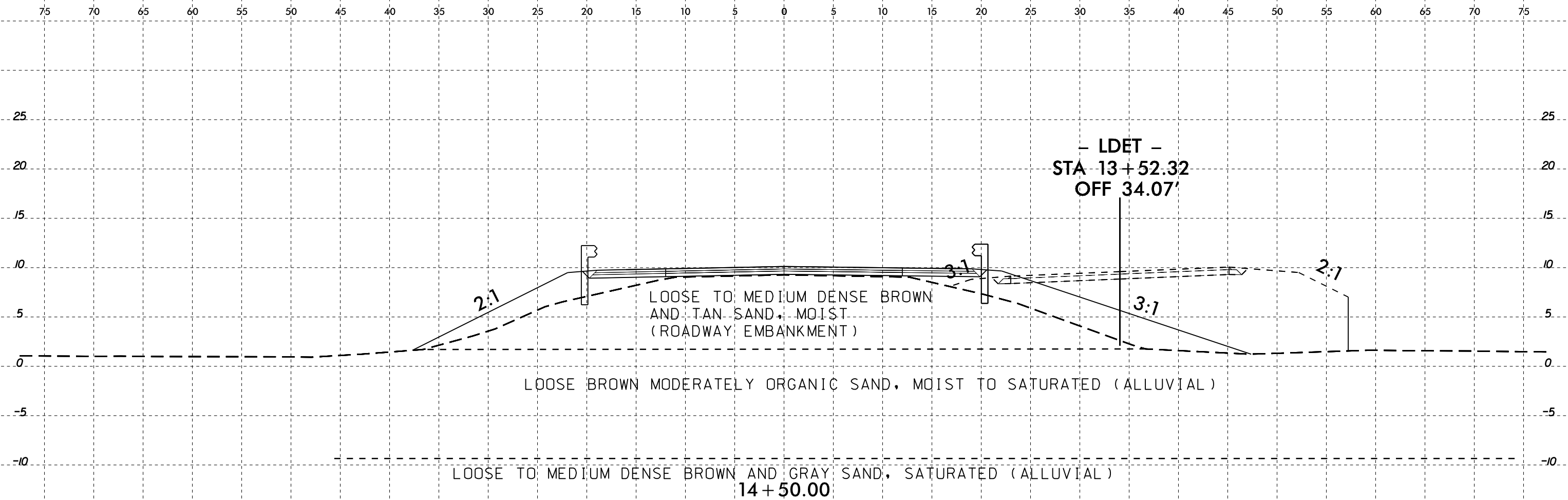
11-APR-2019 10:41  
 S:\PROJECTS\GREENVILLE\_INVESTIGATION\TIP\B4593\_GEO\RDWY\CADD\_GEO\TECH\XSC\B4593\_GEO\_XSI.dgn  
 \$\$\$USERNAME\$\$\$

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		
S-2	40' LT	13+00	0.0-11.0	A-4(0)		NP	10.3	50.6	27.1	12.1	99	94	41	162.3	13.7



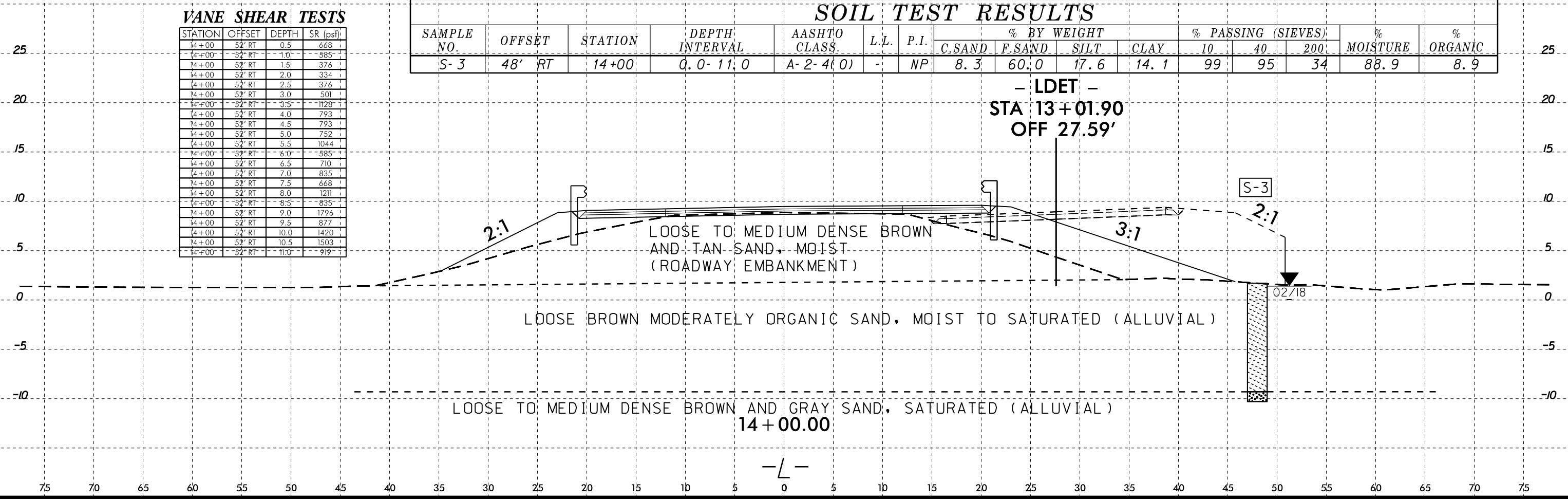


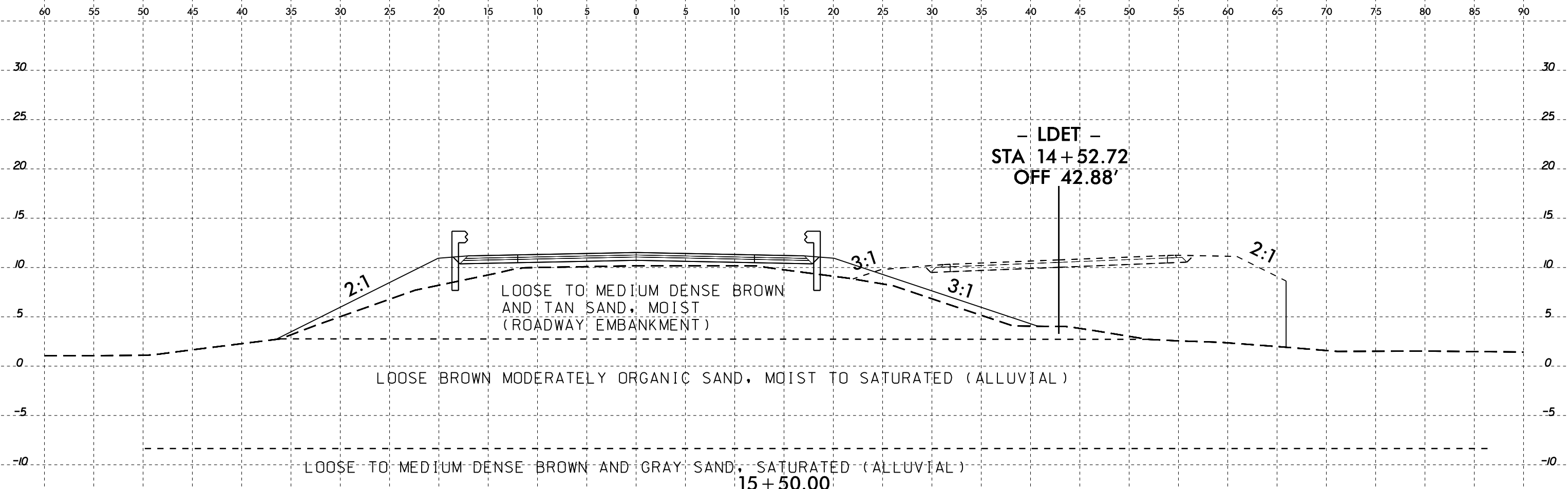
**VANE SHEAR TESTS**

STATION	OFFSET	DEPTH	SR (psf)
14+00	52' RT	0.5	668
14+00	52' RT	1.0	585
14+00	52' RT	1.5	376
14+00	52' RT	2.0	334
14+00	52' RT	2.5	376
14+00	52' RT	3.0	501
14+00	52' RT	3.5	1128
14+00	52' RT	4.0	793
14+00	52' RT	4.9	793
14+00	52' RT	5.0	752
14+00	52' RT	5.5	1044
14+00	52' RT	6.0	585
14+00	52' RT	6.5	710
14+00	52' RT	7.0	835
14+00	52' RT	7.9	668
14+00	52' RT	8.0	1211
14+00	52' RT	8.5	835
14+00	52' RT	9.0	1796
14+00	52' RT	9.5	877
14+00	52' RT	10.0	1420
14+00	52' RT	10.5	1503
14+00	52' RT	11.0	919

**SOIL TEST RESULTS**

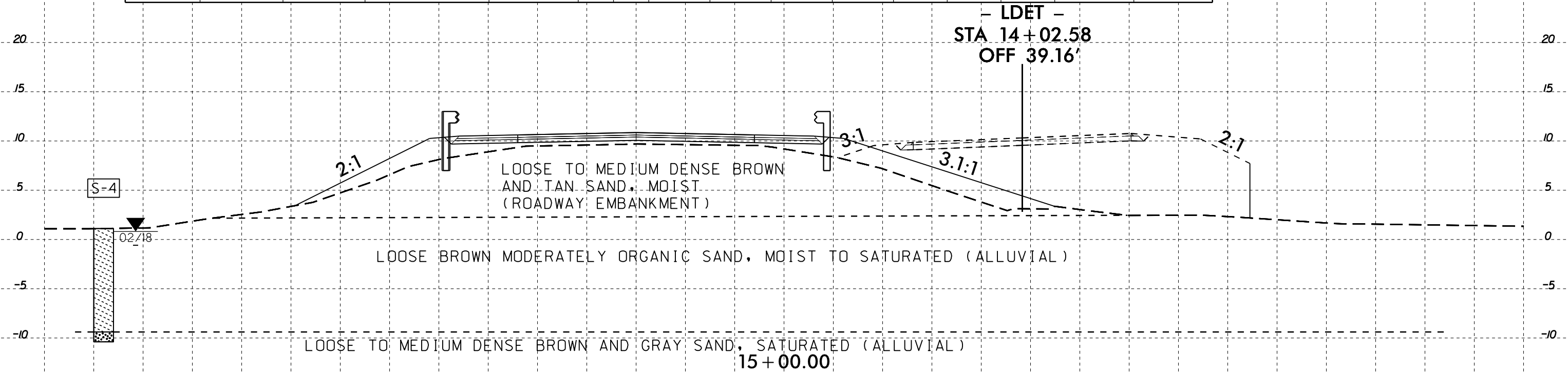
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-3	48' RT	14+00	0.0- 11.0	A-2-4(0)	-	NP	8.3	60.0	17.6	14.1	99	95	34	88.9	8.9



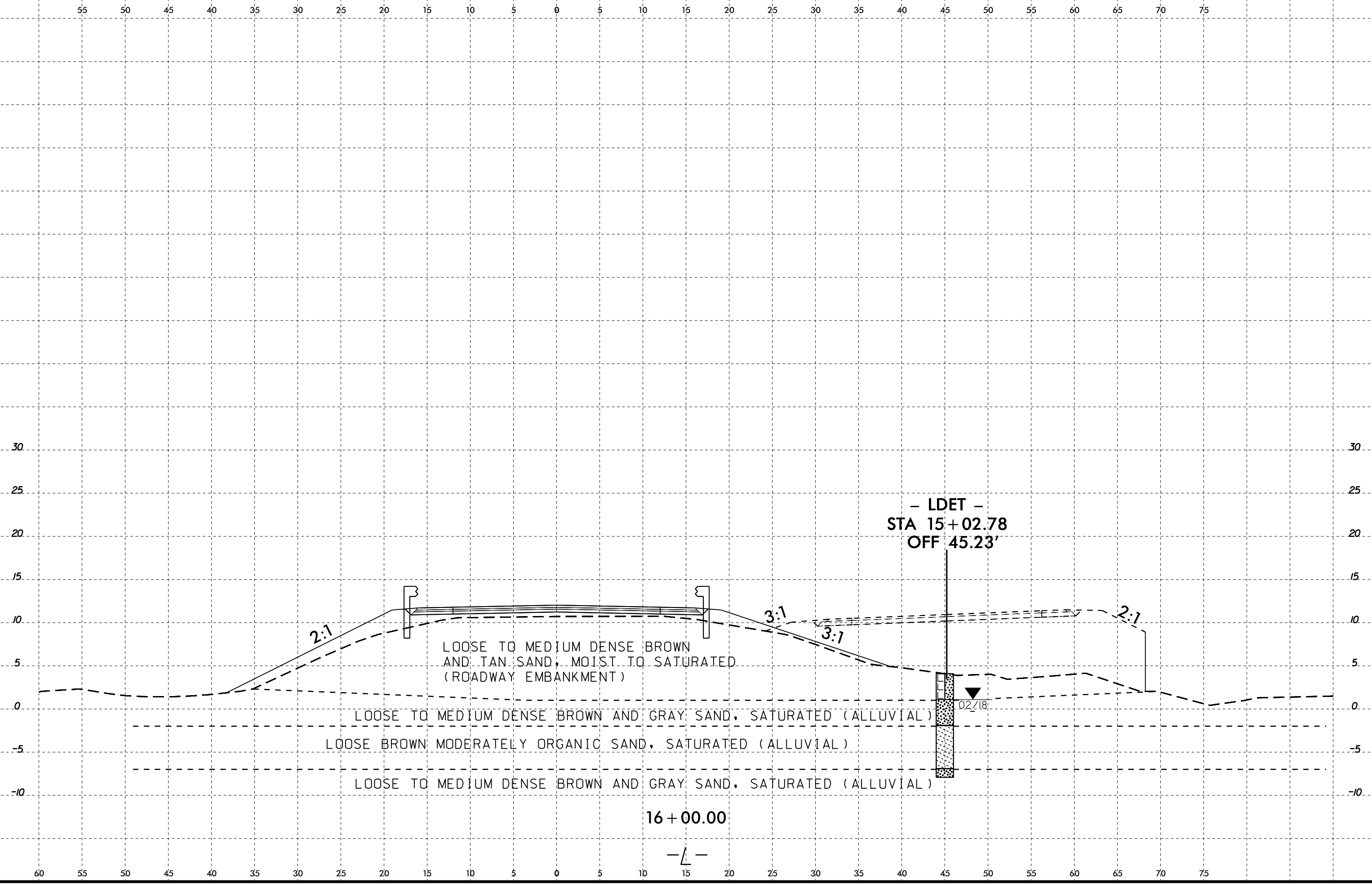


### SOIL TEST RESULTS

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		
S-4	54' LT	15+00	0.0-10.5	A-2-4(0)		NP	11.5	63.6	14.8	10.1	99	94	28	80.7	7.6



-L-



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

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	SR (psf)
18+50'	55' LT	0.5	42
18+50'	55' LT	1.0	167
18+50'	55' LT	1.5	0
18+50'	55' LT	2.0	42
18+50'	55' LT	2.5	251
18+50'	55' LT	3.0	125
18+50'	55' LT	3.5	1963
18+50'	55' LT	4.0	585
18+50'	55' LT	4.5	1253
18+50'	55' LT	5.0	877
18+50'	55' LT	5.5	543
18+50'	55' LT	6.0	376
18+50'	55' LT	6.5	459
18+50'	55' LT	7.0	292
18+50'	55' LT	7.5	543
18+50'	55' LT	8.0	1754
18+50'	55' LT	8.5	384
18+50'	55' LT	9.0	501
18+50'	55' LT	9.5	376
18+50'	55' LT	10.0	585
18+50'	55' LT	10.5	209
18+50'	55' LT	11.0	710
18+50'	55' LT	11.5	167
18+50'	55' LT	12.0	960

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		
S-5	48' LT	18+50	0.0-11.5	A-4(0)	-	NP	15.1	49.7	23.1	12.1	96	90	37	125.9	11.7
S-6	28' RT	18+50	0.0-4.0	A-2-4(0)	-	NP	8.5	70.7	8.8	12.1	93	90	22		

- LDET -  
STA 17+52.83  
OFF 43.55'

Ⓟ LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)

LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST (ROADWAY EMBANKMENT)

SOFT BROWN ORGANIC SILT WITH LITTLE ORGANIC CONTENT, WET; AND LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND WITH LITTLE ORGANIC CONTENT, SATURATED (ALLUVIAL)

LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)  
18+50.00

- LDET -  
STA 17+02.79  
OFF 45.45'

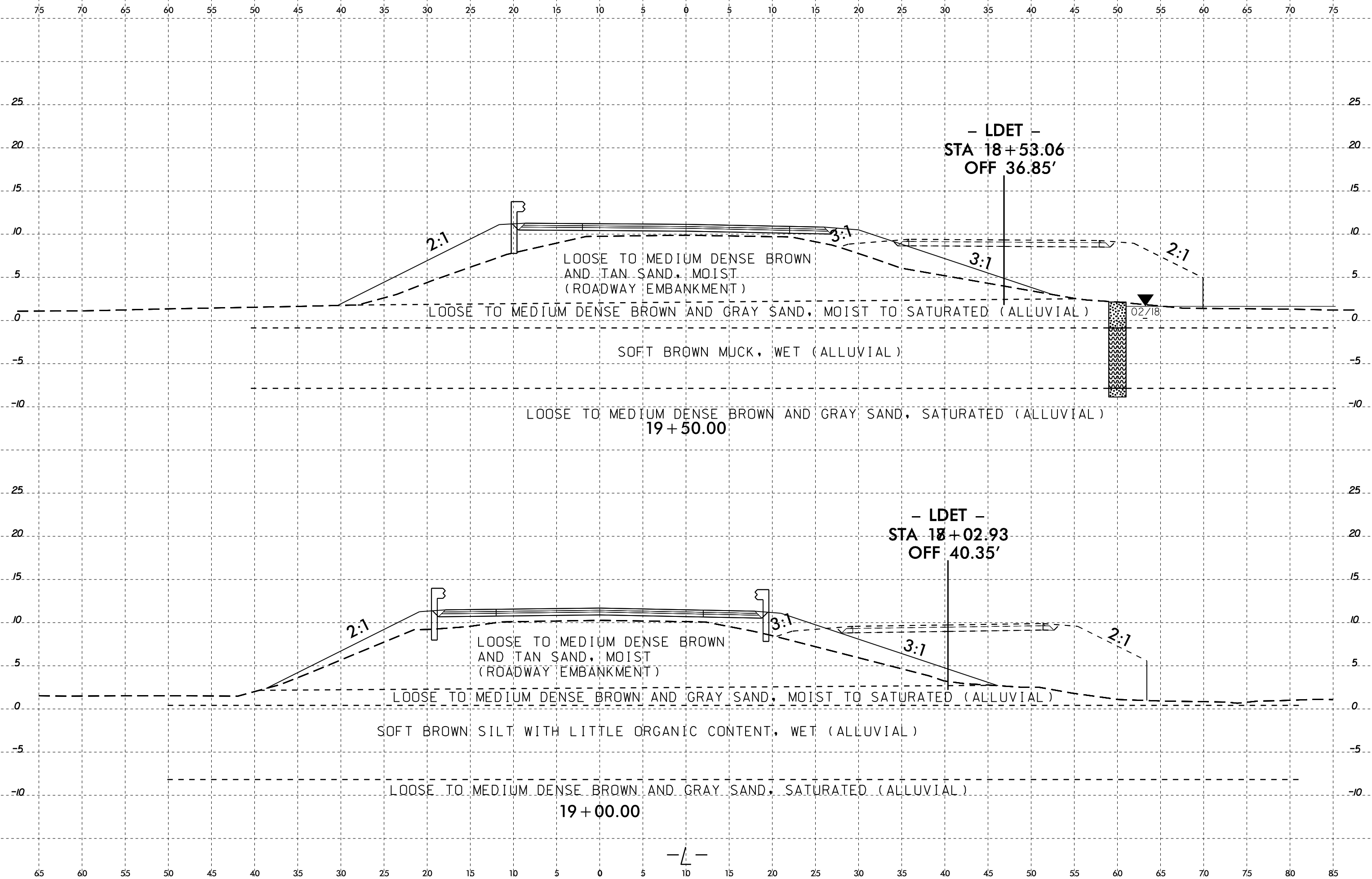
LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST (ROADWAY EMBANKMENT)

LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)

SOFT BROWN SILT WITH LITTLE ORGANIC CONTENT, WET (ALLUVIAL)

LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)  
18+00.00

- L -



- LDET -  
STA 18+53.06  
OFF 36.85'

LOOSE TO MEDIUM DENSE BROWN  
AND TAN SAND, MOIST  
(ROADWAY EMBANKMENT)

LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)

SOFT BROWN MUCK, WET (ALLUVIAL)

LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)  
19+50.00

02/18

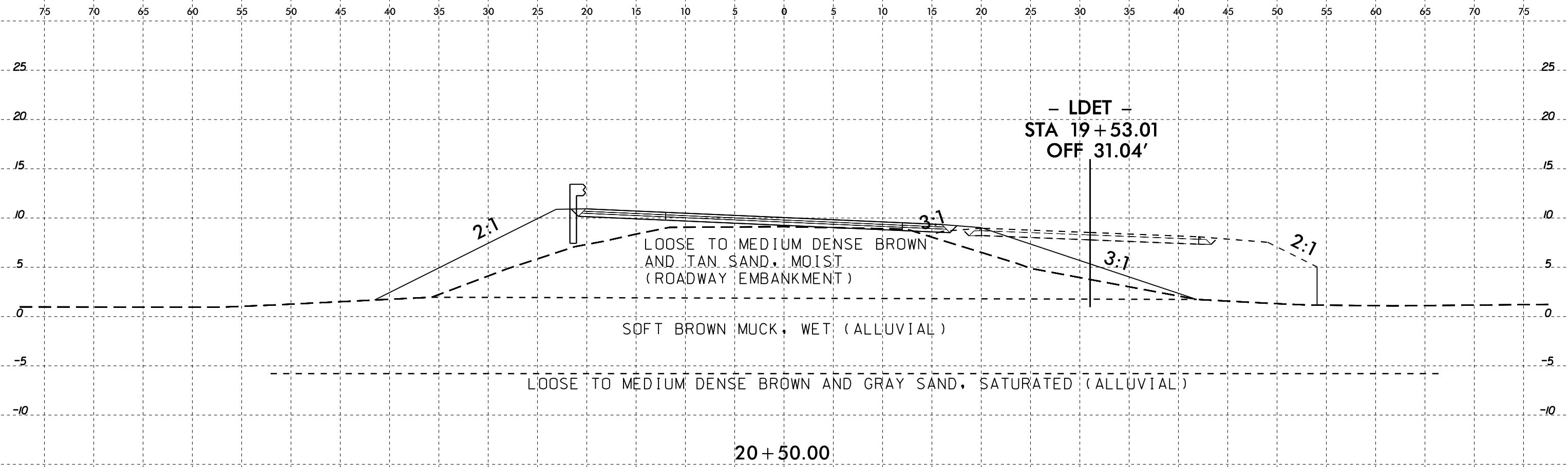
- LDET -  
STA 19+02.93  
OFF 40.35'

LOOSE TO MEDIUM DENSE BROWN  
AND TAN SAND, MOIST  
(ROADWAY EMBANKMENT)

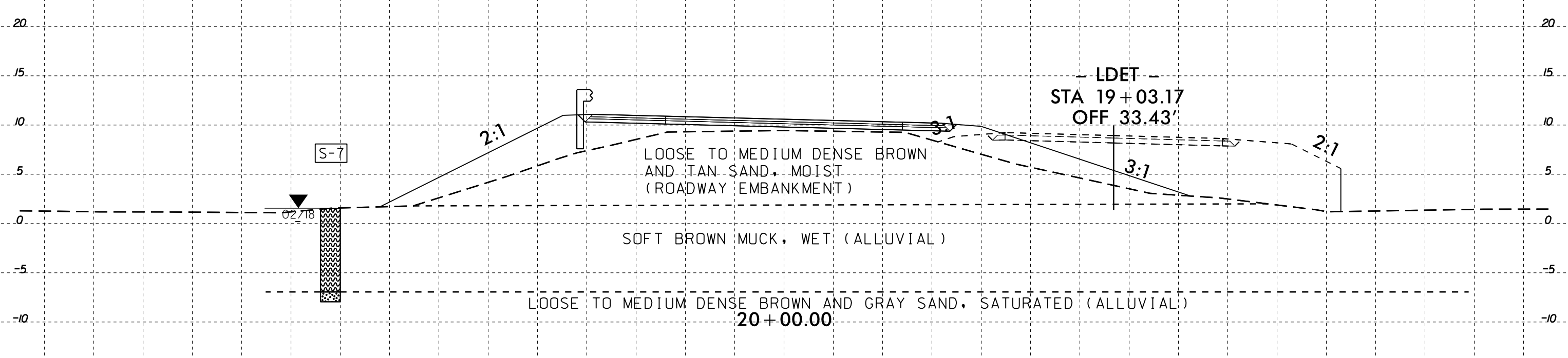
LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)

SOFT BROWN SILT WITH LITTLE ORGANIC CONTENT, WET (ALLUVIAL)

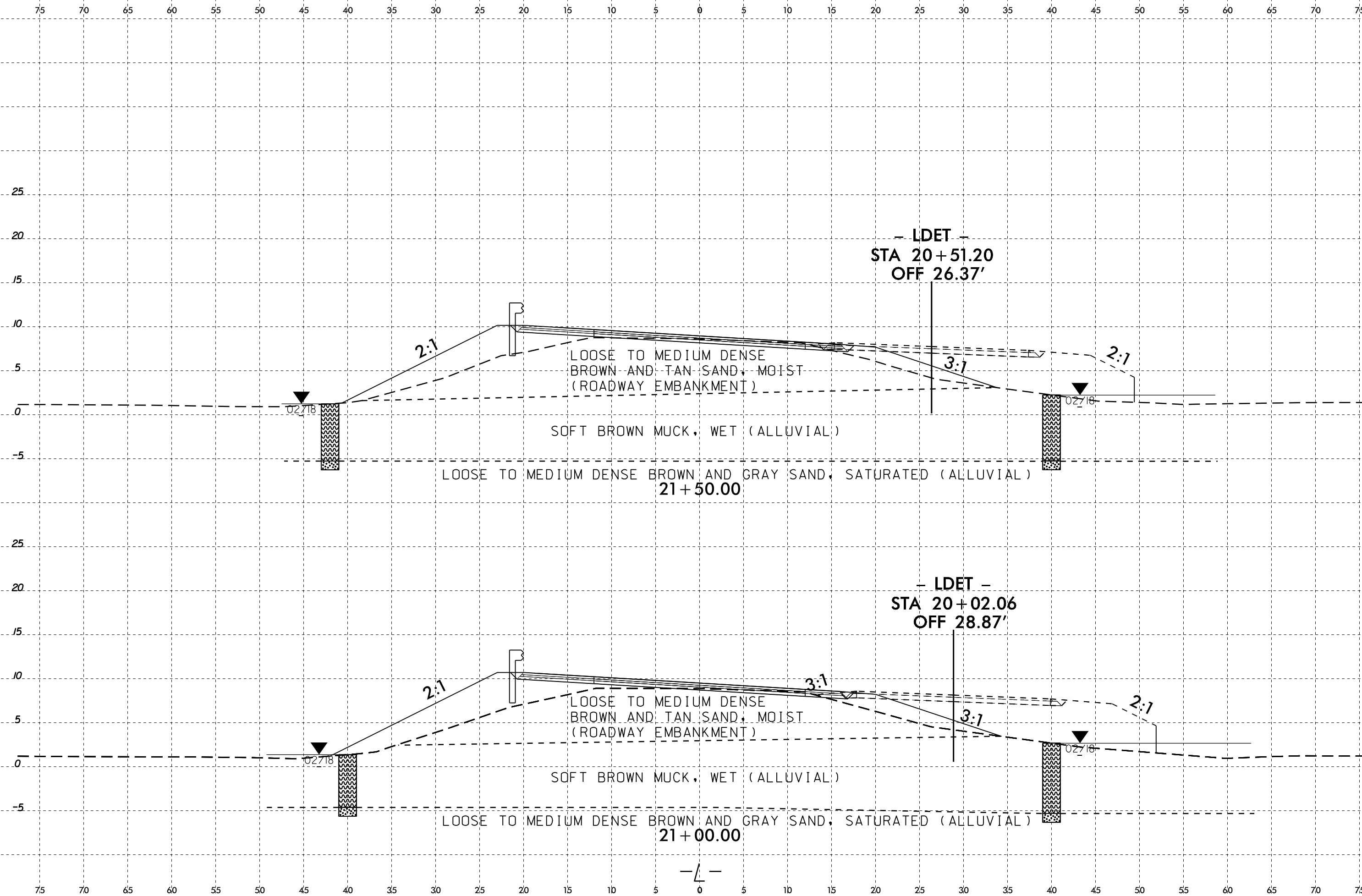
LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)  
19+00.00

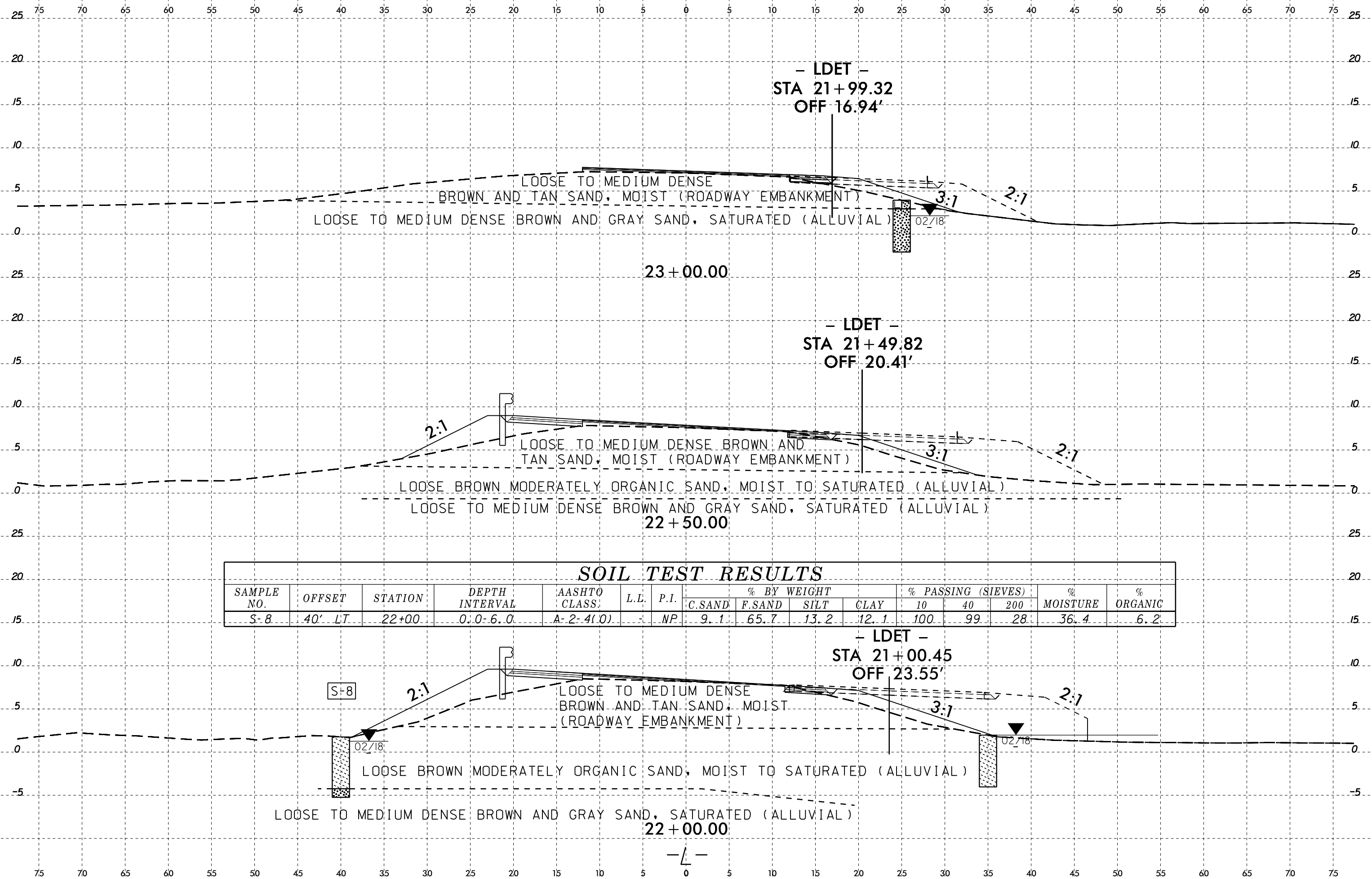


SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-7	46' LT	20+00	0.0-8.5	A-4(0)	-	NP	11.1	6.0	64.8	18.1	80	73	67	406.4	40.9









### 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		
S-8	40' LT	22+00	0.0-6.0	A-2-4(0)		NP	9.1	65.7	13.2	12.1	100	99	28	36.4	6.2