

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

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

CROSS SECTIONS

LINE	STATION	SHEETS
-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**

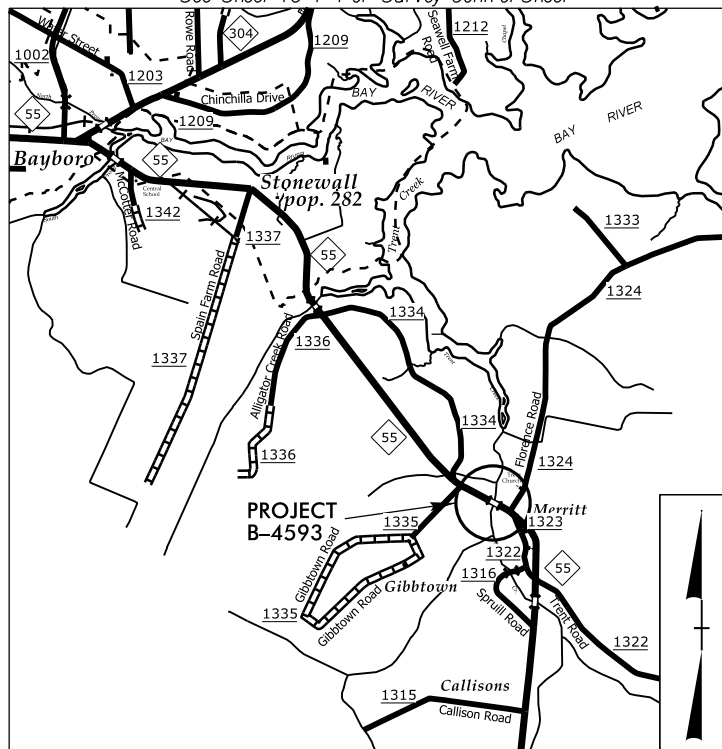
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																																	
<p>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></p>										<p>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.</p>										<p>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:</p>										<p>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 DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (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.</p>																																																																																																																																																																	
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">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>A-1</th> <th>A-1-a</th> <th>A-1-b</th> <th>A-2</th> <th>A-3</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-7-a</th> <th>A-7-b</th> <th>A-1, A-2</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> </tr> </thead> <tbody> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td>A-2</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-3</td> <td>A-4, A-5</td> <td>A-6, A-7</td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>% PASSING #10 #40 #200</td> <td>50 MX 30 MX 15 MX</td> <td>50 MX 25 MX</td> <td>51 MN 35 MX 35 MX</td> <td>40 MX 35 MX</td> <td>41 MN 40 MX 35 MX</td> <td>41 MN 40 MX 35 MX</td> <td>41 MN 40 MX 35 MX</td> <td>40 MN 36 MN 36 MN</td> <td>40 MN 36 MN 36 MN</td> <td>40 MN 36 MN 36 MN</td> <td>40 MN 36 MN 36 MN</td> <td>GRANULAR SOILS</td> <td>SILT-CLAY SOILS</td> <td>MUCK, PEAT</td> <td></td> </tr> <tr> <td>MATERIAL PASSING #40 LL PI</td> <td>-</td> <td>-</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>40 MX 41 MN</td> <td>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td>HIGHLY ORGANIC SOILS</td> <td></td> <td></td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0</td> <td>0</td> <td>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> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS. 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CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</p> <p>MODERATE (MOD.): SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED. SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.</p> <p>MODERATELY SEVERE (MOD. SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i></p> <p>VERY SEVERE (V SEV.): ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i></p> <p>COMPLETE: ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p>									
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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 DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (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.</p>																																																																																																																																																																	
<p style="text-align: center;">TEXTURE OR GRAIN SIZE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <th>4</th> <th>10</th> <th>40</th> <th>60</th> <th>200</th> <th>270</th> </tr> </thead> <tbody> <tr> <td></td> <td>4.76</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> </tr> <tr> <td>BOULDER (BLDR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>COBBLE (COB.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GRAVEL (GR.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>COARSE SAND (CS, SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>FINE SAND (F SD.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SILT (SL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLAY (CL.)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>GRAIN SIZE</td> <td>305</td> <td>75</td> <td>2.0</td> <td>0.25</td> <td>0.05</td> <td>0.005</td> </tr> <tr> <td>MM</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>IN.</td> <td>12</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										U.S. STD. SIEVE SIZE OPENING (MM)	4	10	40	60	200	270		4.76	2.00	0.42	0.25	0.075	0.053	BOULDER (BLDR.)							COBBLE (COB.)							GRAVEL (GR.)							COARSE SAND (CS, SD.)							FINE SAND (F SD.)							SILT (SL.)							CLAY (CL.)							GRAIN SIZE	305	75	2.0	0.25	0.05	0.005	MM							IN.	12	3					<p style="text-align: center;">RECOMMENDATION SYMBOLS</p> <p> UNDERCUT</p> <p> SHALLOW UNDERCUT</p> <p> UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</p> <p> UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</p>										<p style="text-align: center;">ABBREVIATIONS</p> <p>AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - HIGHLY</p>																																																																																							
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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



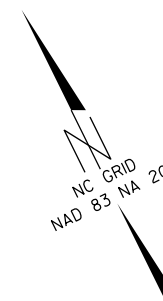
VICINITY MAP

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PAMLICO COUNTY

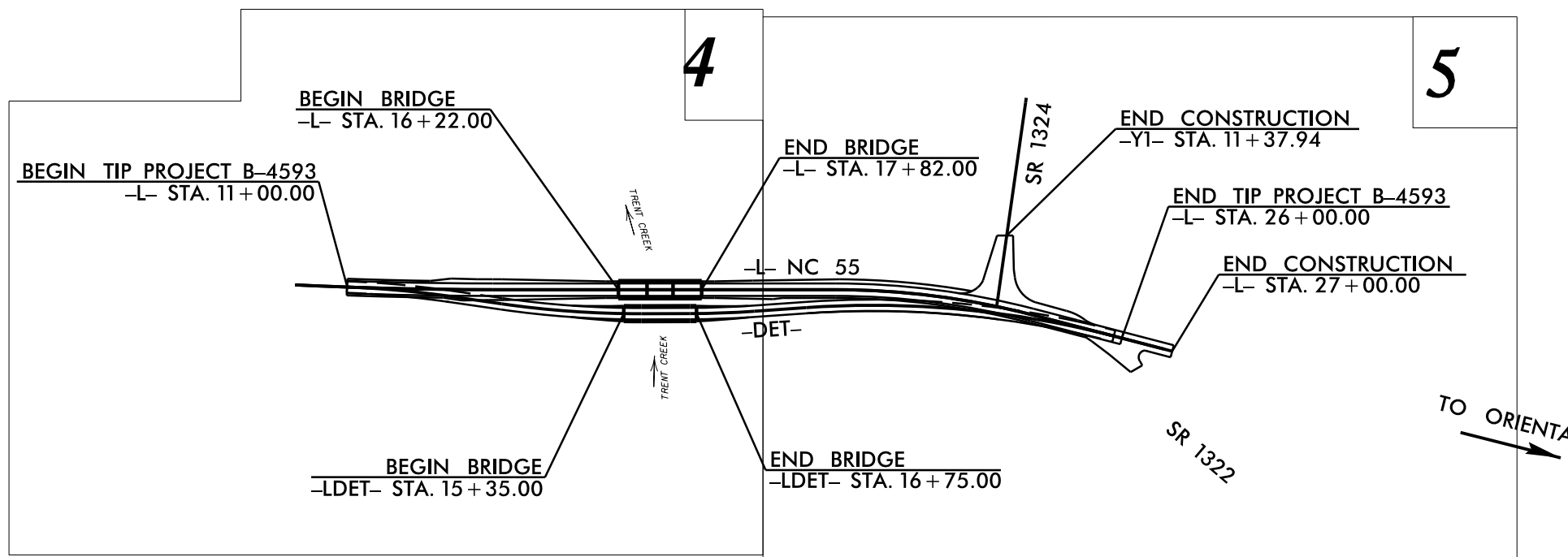
LOCATION: BRIDGE NO. 38 ON NC 55 OVER TRENT CREEK
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE.

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.	



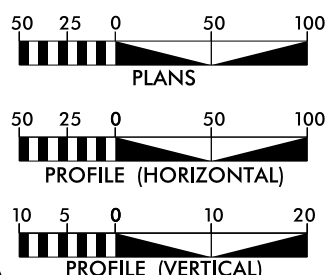
TIP PROJECT: B-4593

CONTRACT: C204217



DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2019 =	5576
ADT 2040 =	8600
K =	8 %
D =	55 %
T =	9 % *
V =	60 MPH
V _{DET} =	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

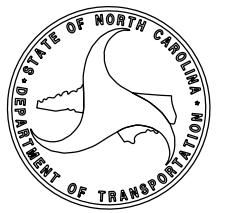
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	BRANDON W. JOHNSON, PE PROJECT ENGINEER
NOVEMBER 1, 2018	
LETTING DATE:	FAITH E. JAHNKE, PE PROJECT DESIGN ENGINEER
JULY 17, 2019	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



11-APR-2019 13:01
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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

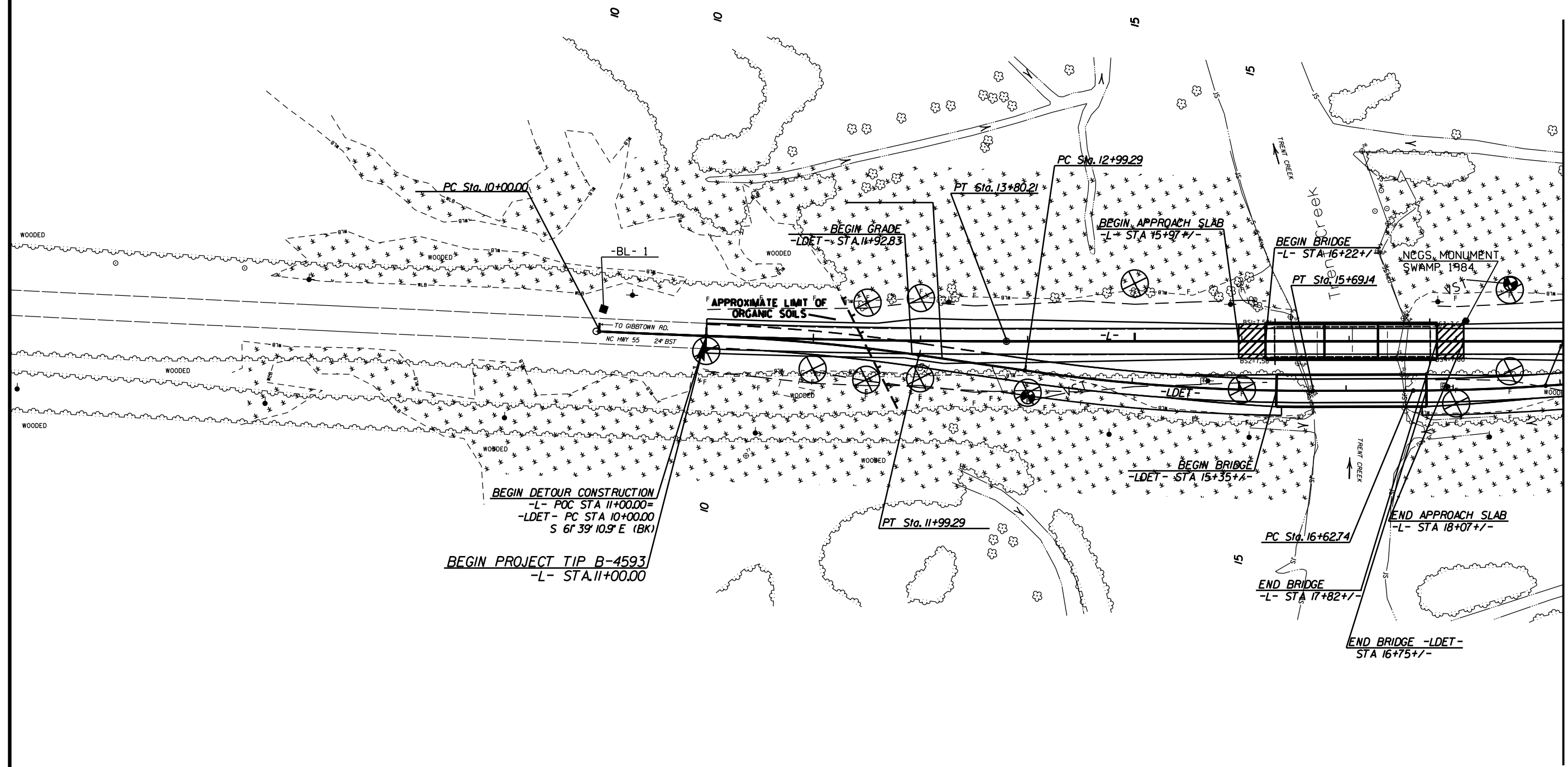
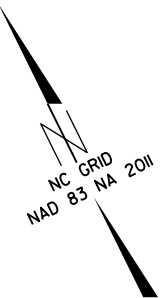
Soils encountered within this project area have been divided into two categories: Roadway Embankment and alluvial.

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.

8/17/99

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

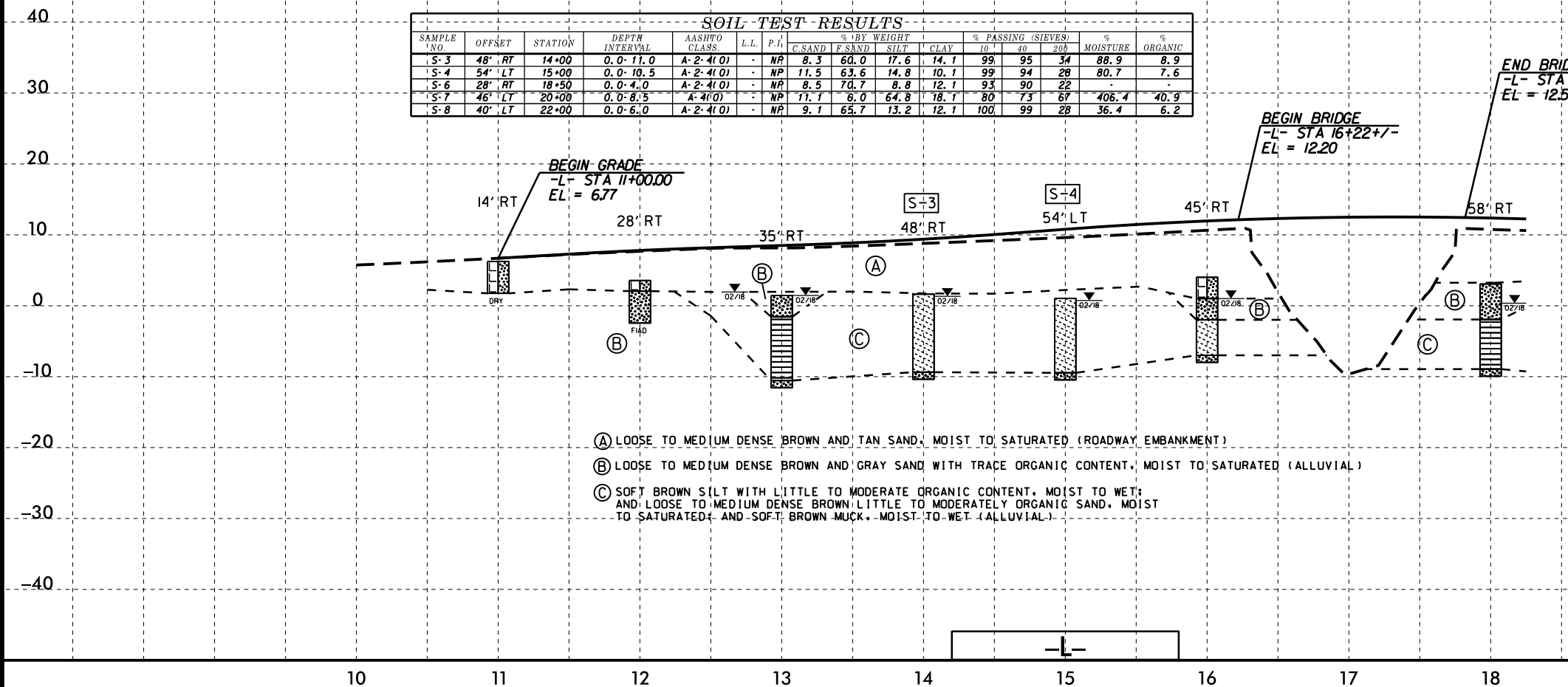


MATCHLINE -L- STA 19 + 00.00 (SEE SHEET 5)

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5/28/99

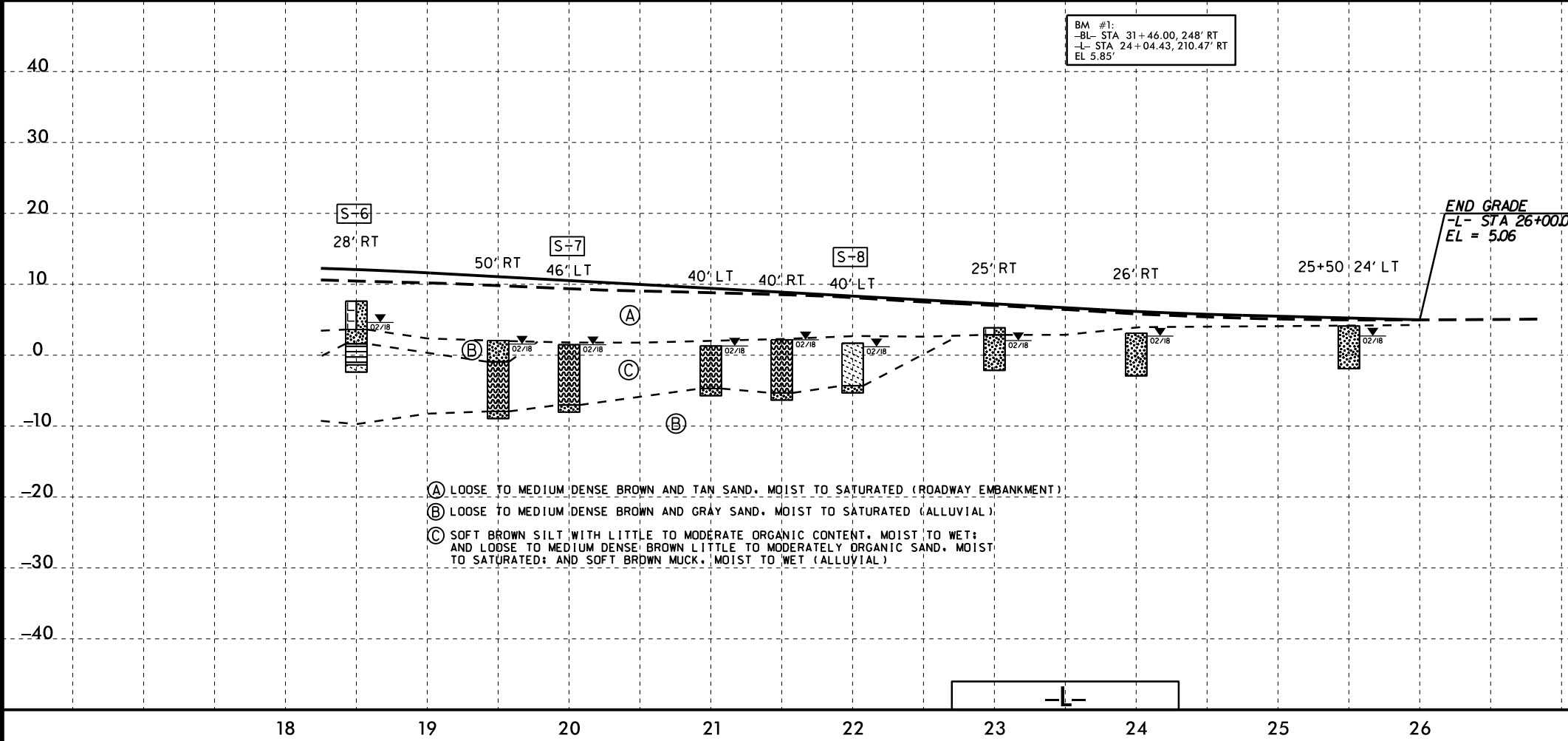
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-3	48' RT	14+00	0.0-11.0	A-2-4(0)	-	NR	8.3	60.0	17.6	14.1	99	95	34	88.9	8.9
S-4	54' LT	15+00	0.0-10.5	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

- (A) LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND WITH TRACE ORGANIC CONTENT, MOIST TO SATURATED (ALLUVIAL)
- (C) SOFT BROWN SILT WITH LITTLE TO MODERATE ORGANIC CONTENT, MOIST TO WET; AND LOOSE TO MEDIUM DENSE BROWN LITTLE TO MODERATELY ORGANIC SAND, MOIST TO SATURATED; AND SOFT BROWN MUCK, MOIST TO WET (ALLUVIAL)

BM #1:
BL- STA 31+46.00, 248' RT
L- STA 24+04.43, 210.47' RT
EL 5.85'



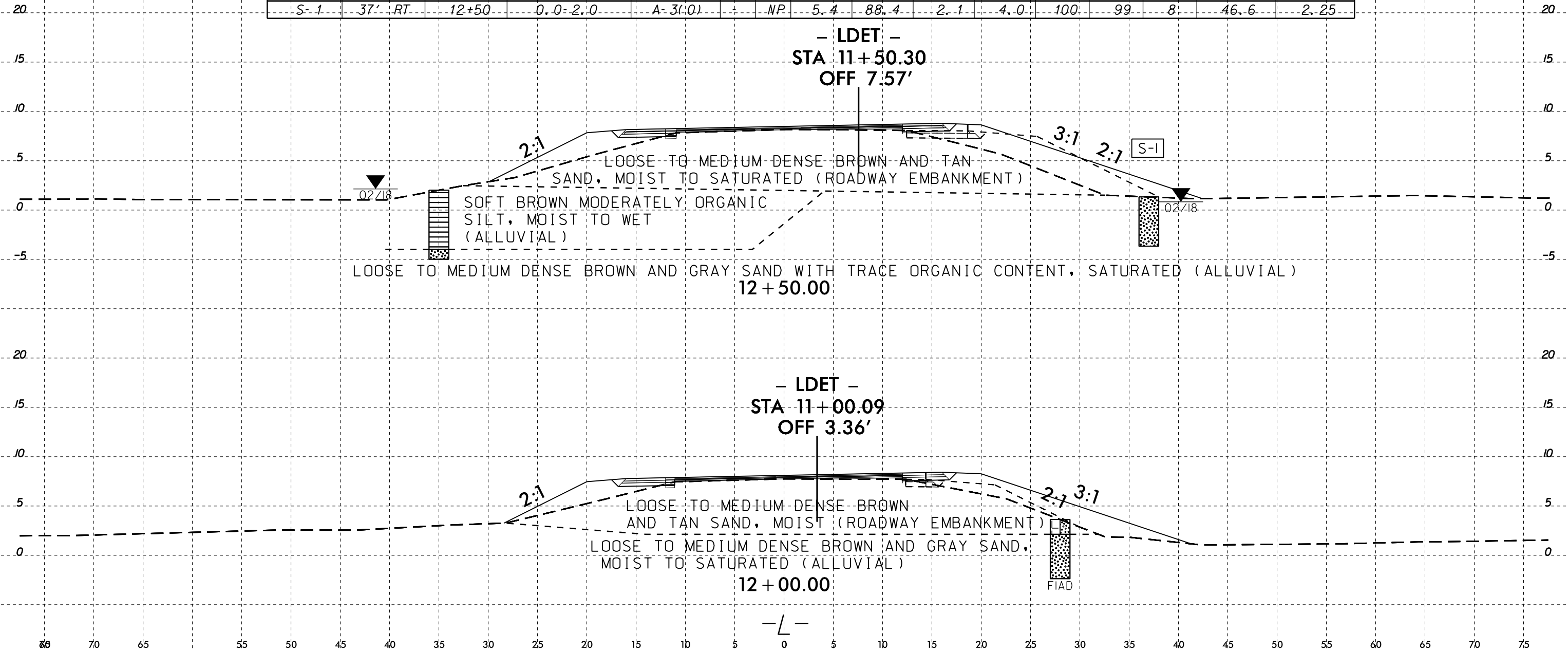
VANE SHEAR TESTS			
STATION	OFFSET	DEPTH	SR (psf)
18+50	55' LT	0.5	42
18+50	55' LT	1.0	167
18+50	55' LT	1.5	0
18+50	55' LT	2.0	42
18+50	55' LT	2.5	251
18+50	55' LT	3.0	125
18+50	55' LT	3.5	1963
18+50	55' LT	4.0	585
18+50	55' LT	4.5	1253
18+50	55' LT	5.0	877
18+50	55' LT	5.5	543
18+50	55' LT	6.0	376
18+50	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

- (A) LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)
- (C) SOFT BROWN SILT WITH LITTLE TO MODERATE ORGANIC CONTENT, MOIST TO WET; AND LOOSE TO MEDIUM DENSE BROWN LITTLE TO MODERATELY ORGANIC SAND, MOIST TO SATURATED; AND SOFT BROWN MUCK, MOIST TO WET (ALLUVIAL)

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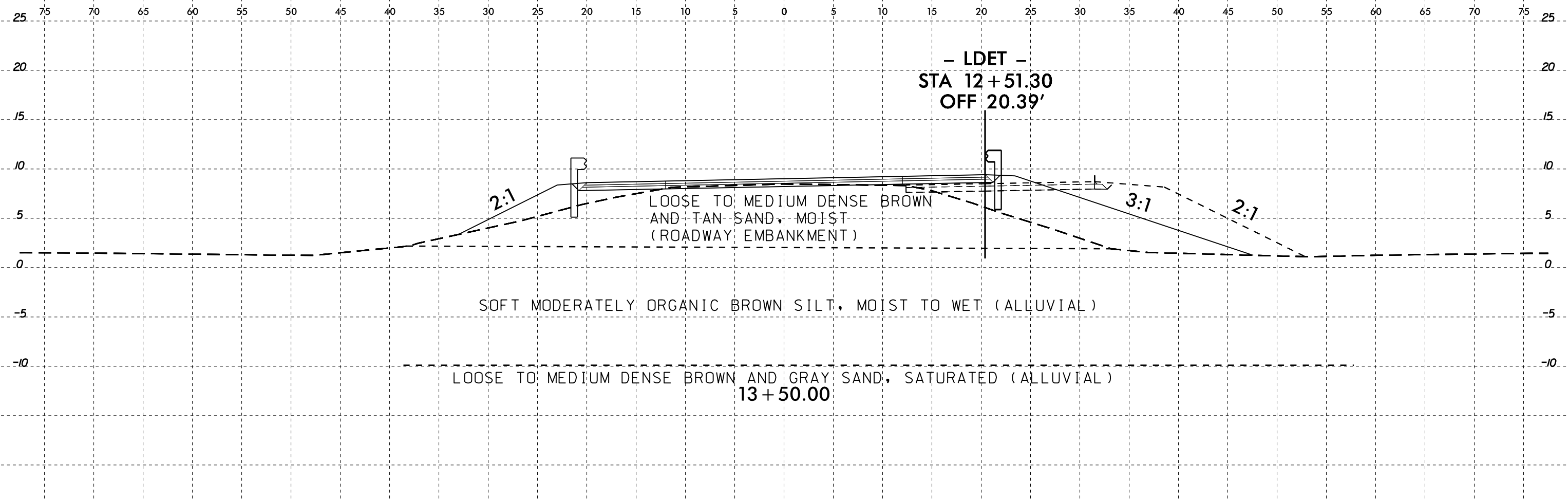
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	37' RT	12+50	0.0-2.0	A-3(0)		NP	5.4	88.4	2.1	4.0	100	99	8	46.6	2.25



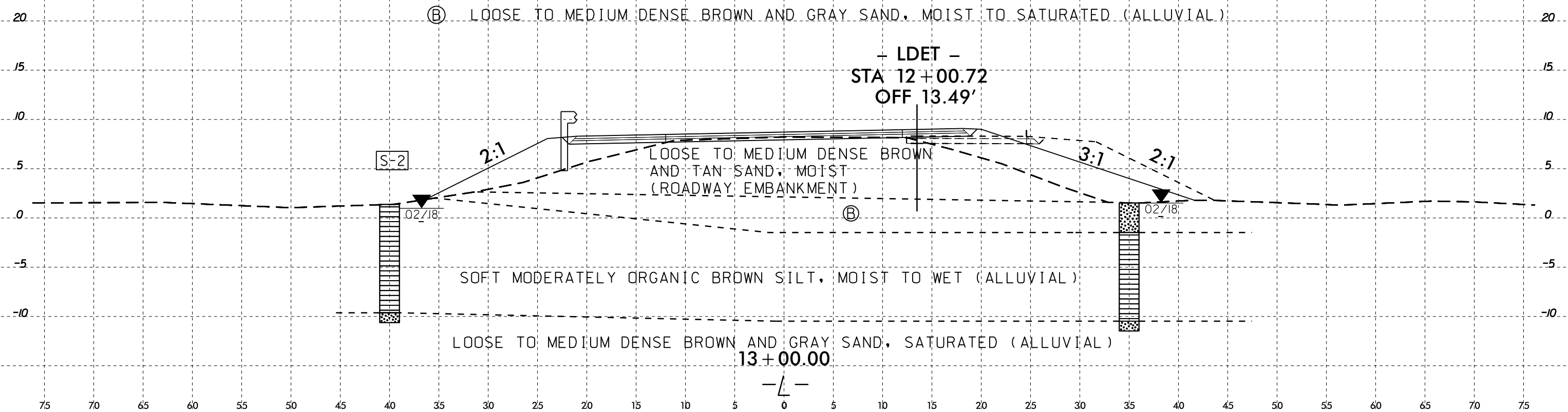
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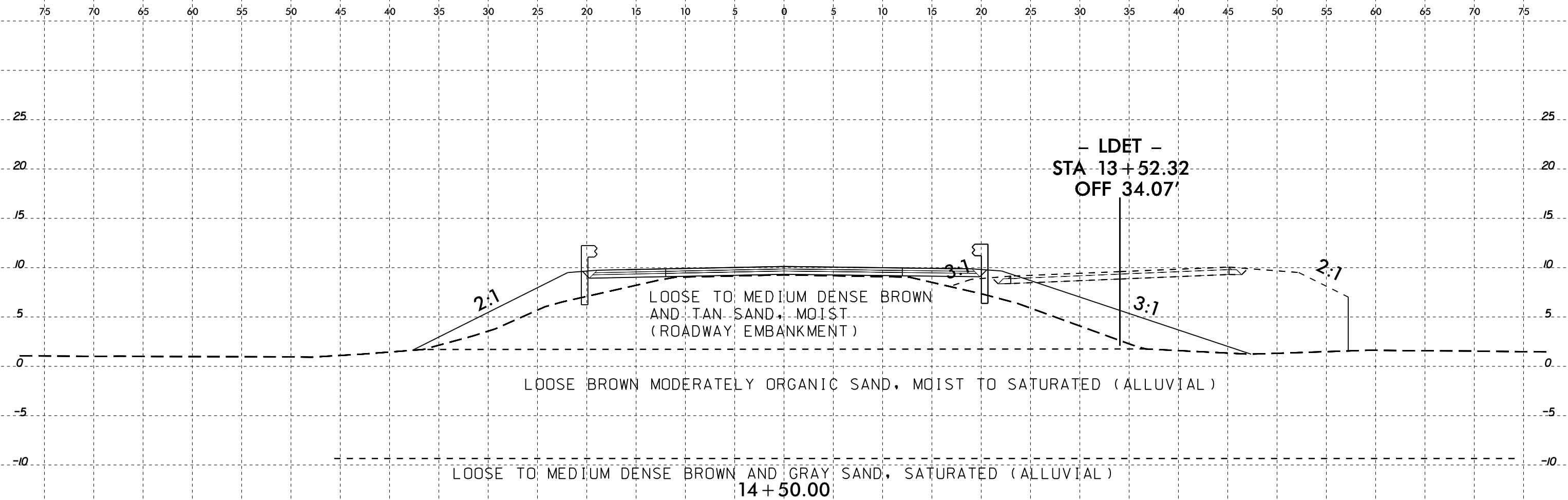
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SOIL TEST RESULTS

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		
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



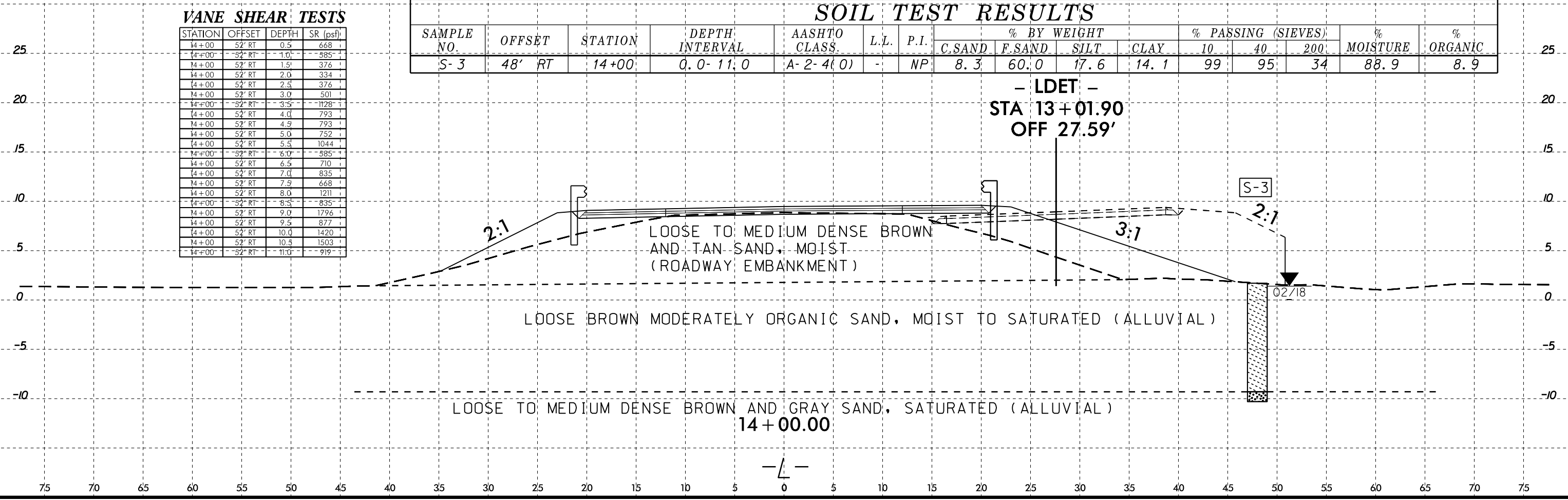


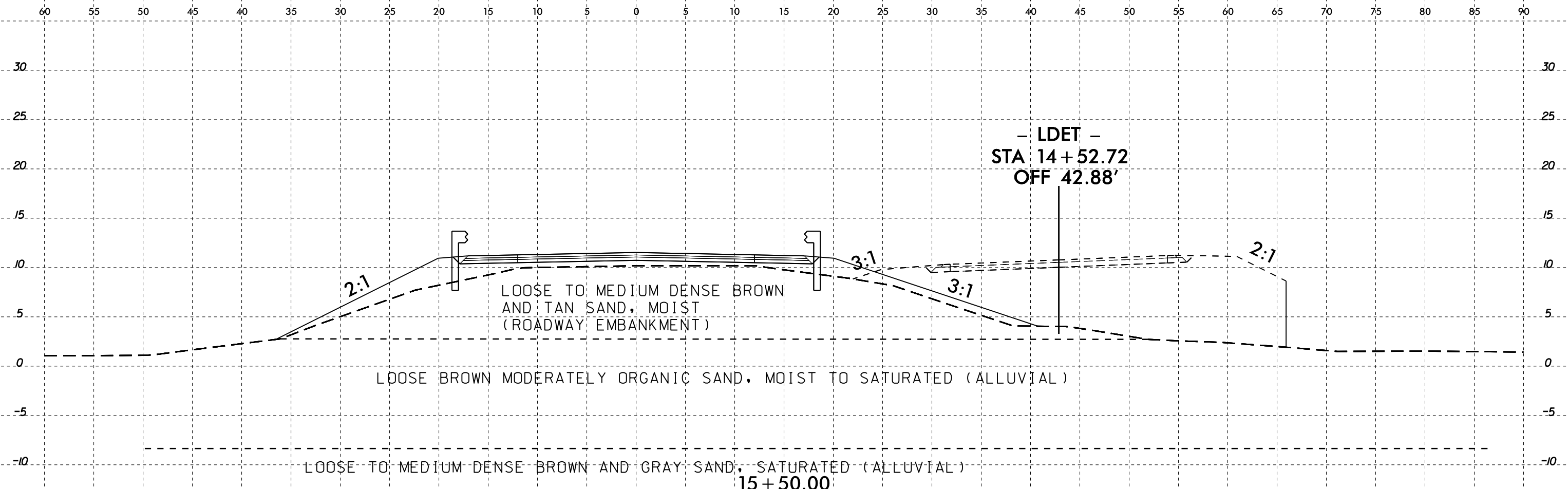
VANE SHEAR TESTS

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

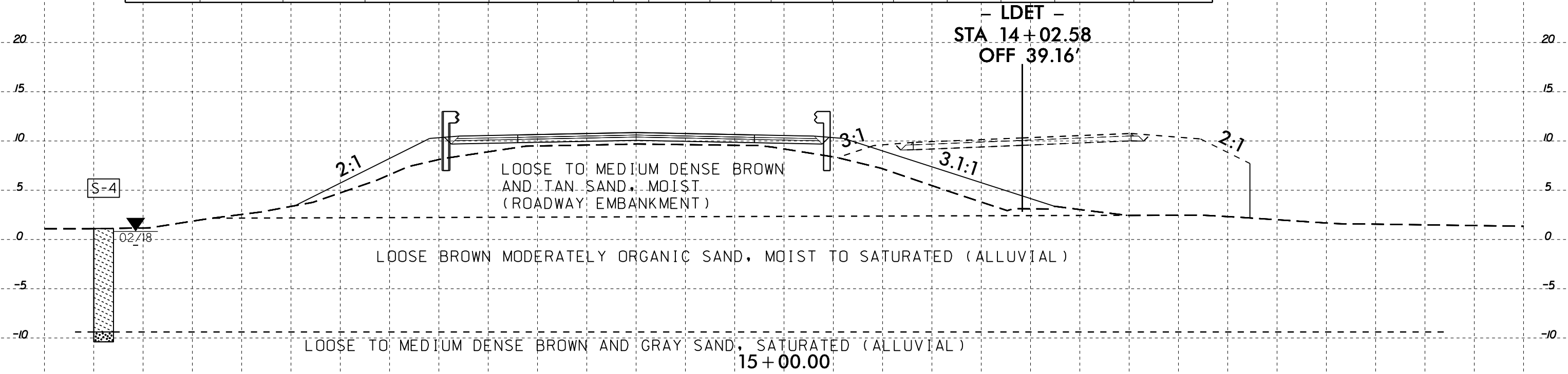
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-3	48' RT	14+00	0.0 - 11.0	A-2-4(0)	-	NP	8.3	60.0	17.6	14.1	99	95	34	88.9	8.9





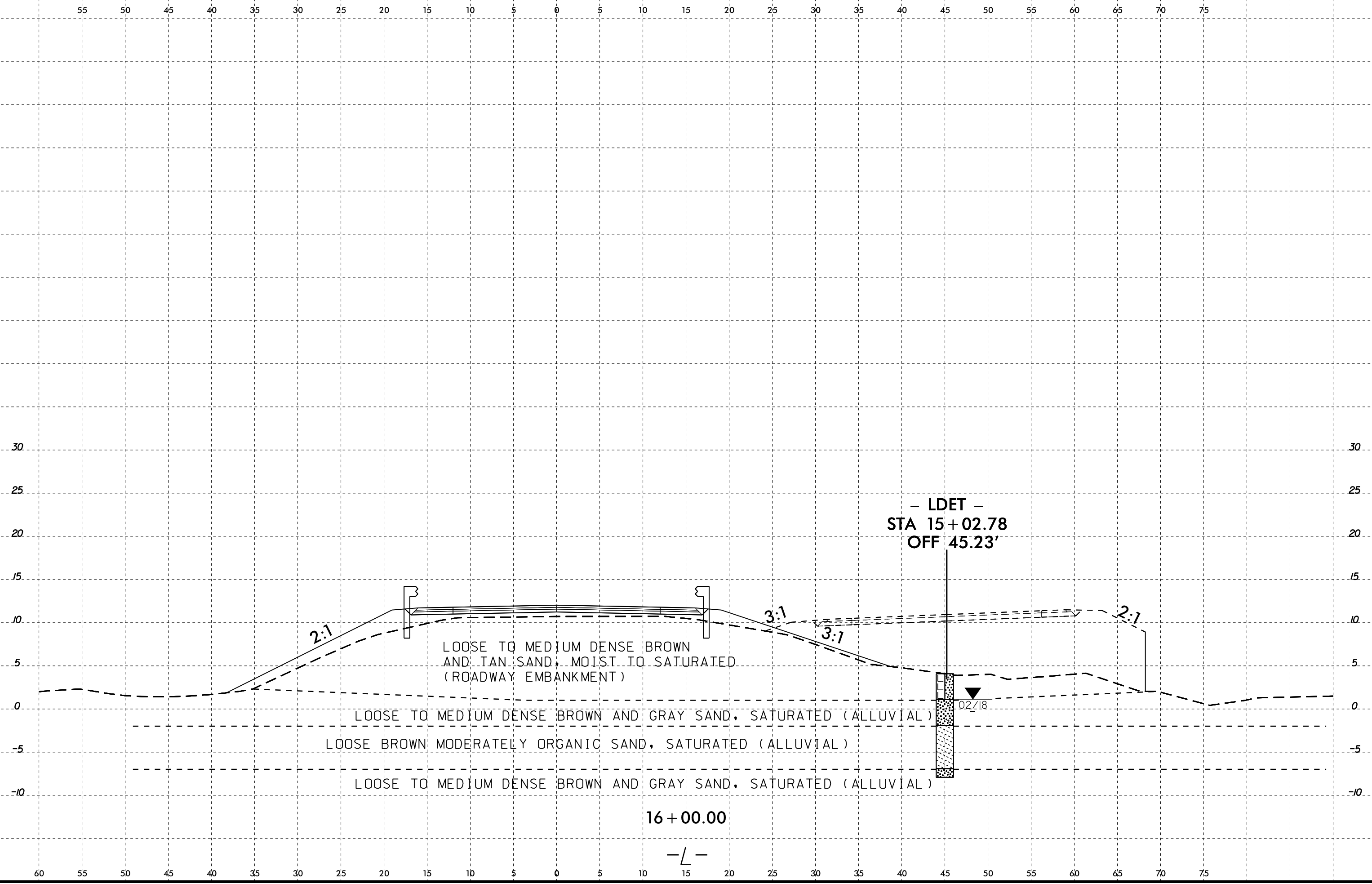
SOIL TEST RESULTS

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



LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)
15+00.00

- 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'

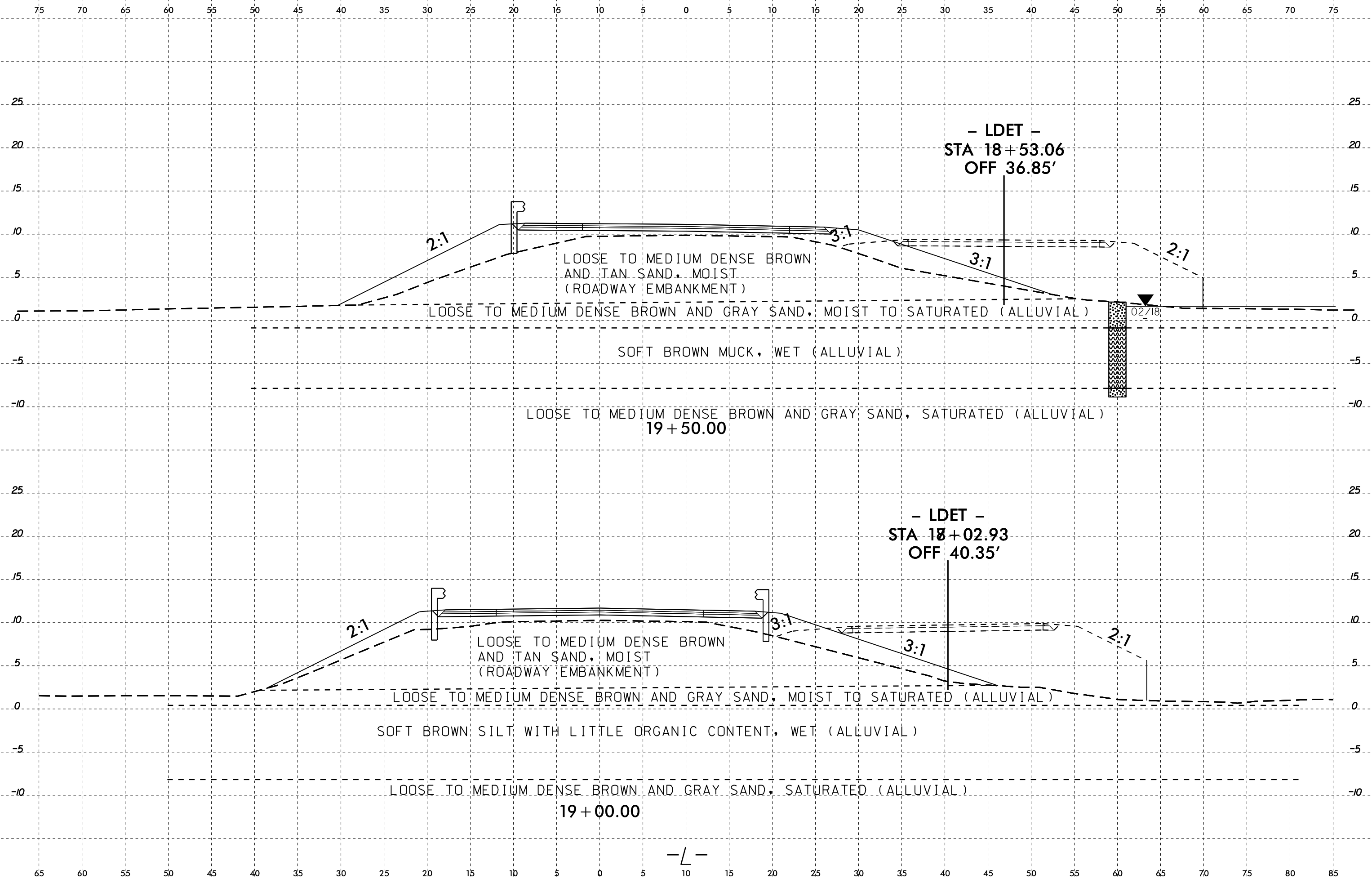
LOOSE TO MEDIUM DENSE BROWN AND TAN SAND, MOIST (ROADWAY EMBANKMENT)

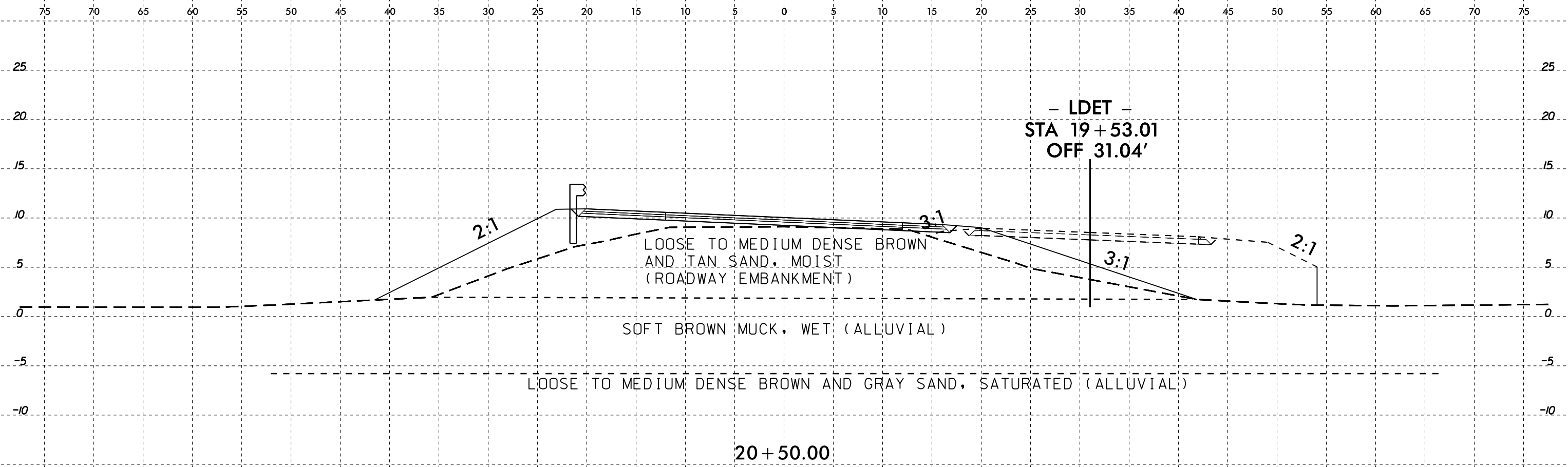
LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (ALLUVIAL)

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

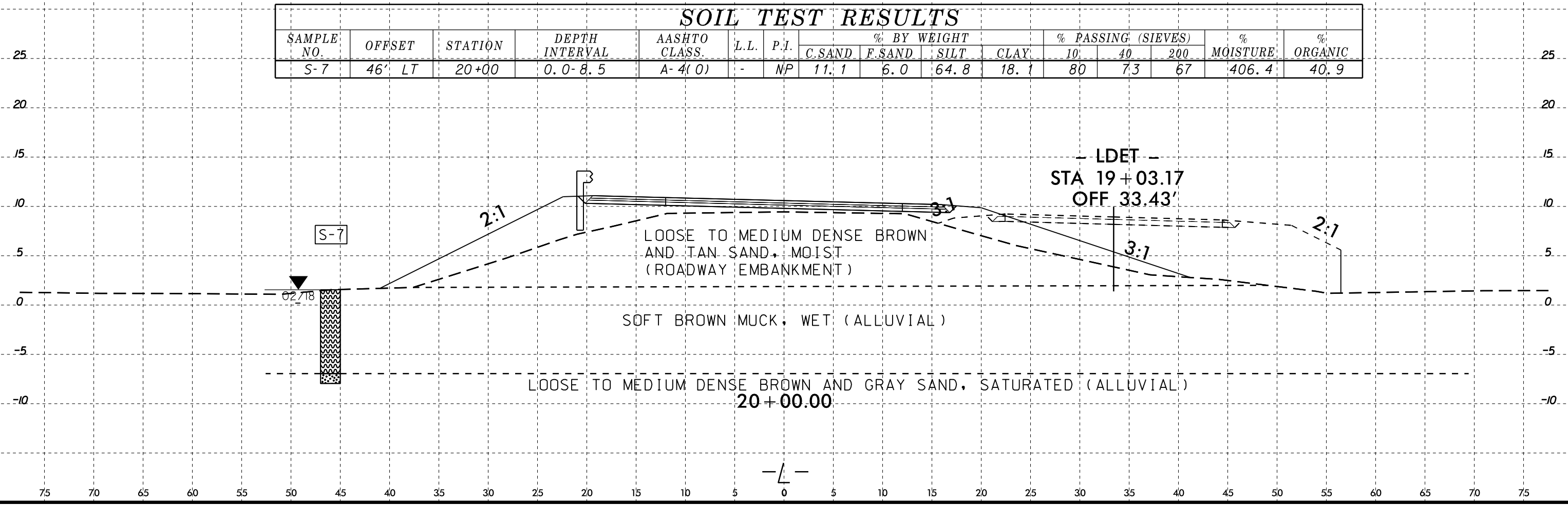
LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, SATURATED (ALLUVIAL)
18+00.00

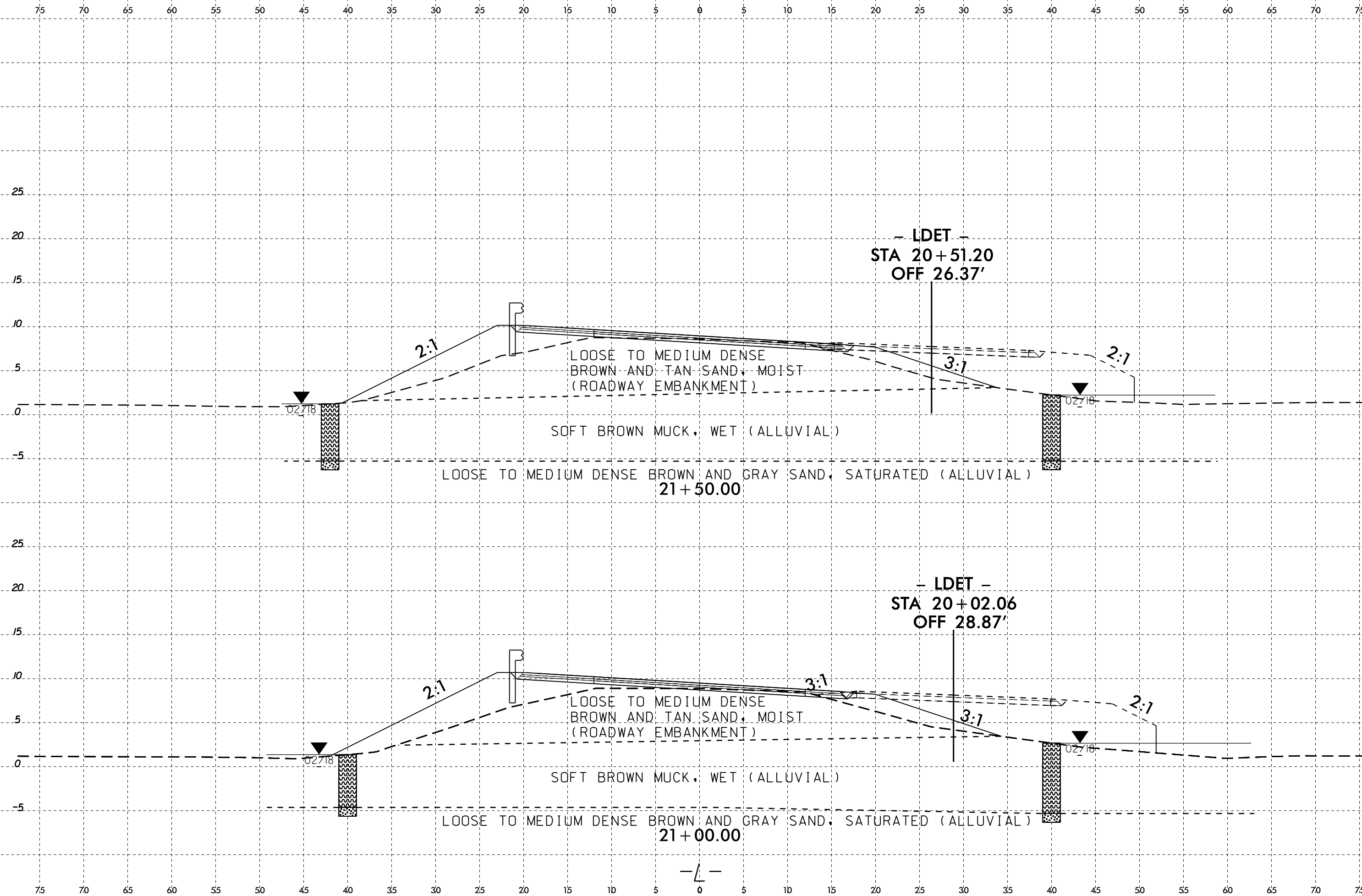
- L -

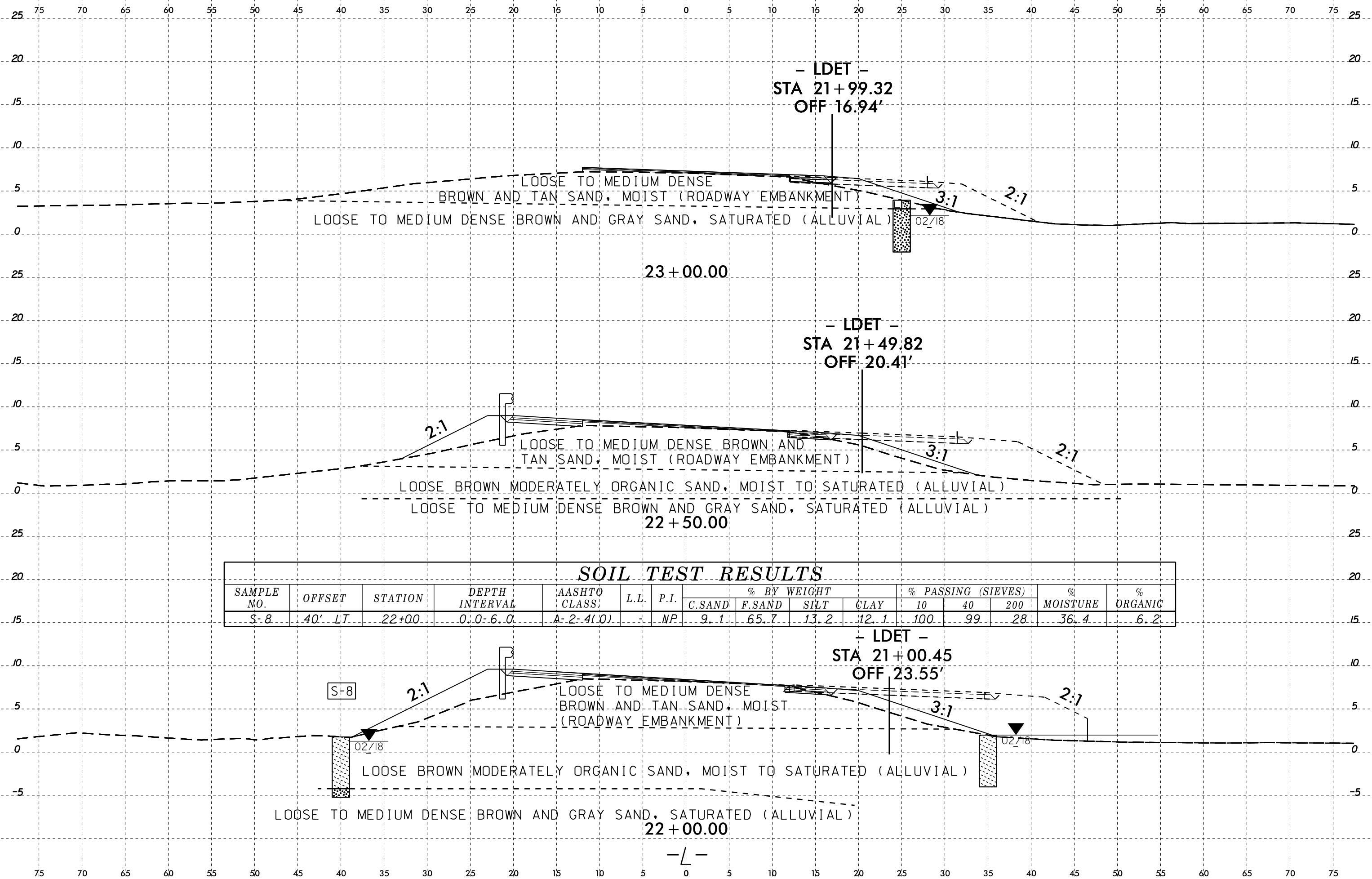




SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-7	46' LT	20+00	0.0-8.5	A-4(0)	-	NP	11.1	6.0	64.8	18.1	80	73	67	406.4	40.9







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