

NOTE: SEE SHEET 2A 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-3611	1	31
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33162.1.1	BRSTP-99(3)	PE	
33162.2.2	BRSTP-99(3)	RW & UTIL	
33162.3.2	BRSTP-99(7)	CONST.	

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	11+50 TO 71+94	4-8	9-11
-DET-	15+25 TO 38+16	4-6	12

CROSS SECTIONS

LINE	STATION	SHEET NO.
-L-	11+50 TO 19+00	13-18
-L-	20+00	19
-L-	22+00	19
-L-	24+00	20
-L-	26+00	20
-L-	60+00 TO 71+50	21-31
-DET-	22+00.07	19
-DET-	24+00.97	20
-DET-	26+03.88	20

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33162.1.1 (B-3611) F.A. PROJ. BRSTP-99(3)
COUNTY BEAUFORT
PROJECT DESCRIPTION BRIDGE NO. 77 OVER PANTEGO CREEK
ON NC 99

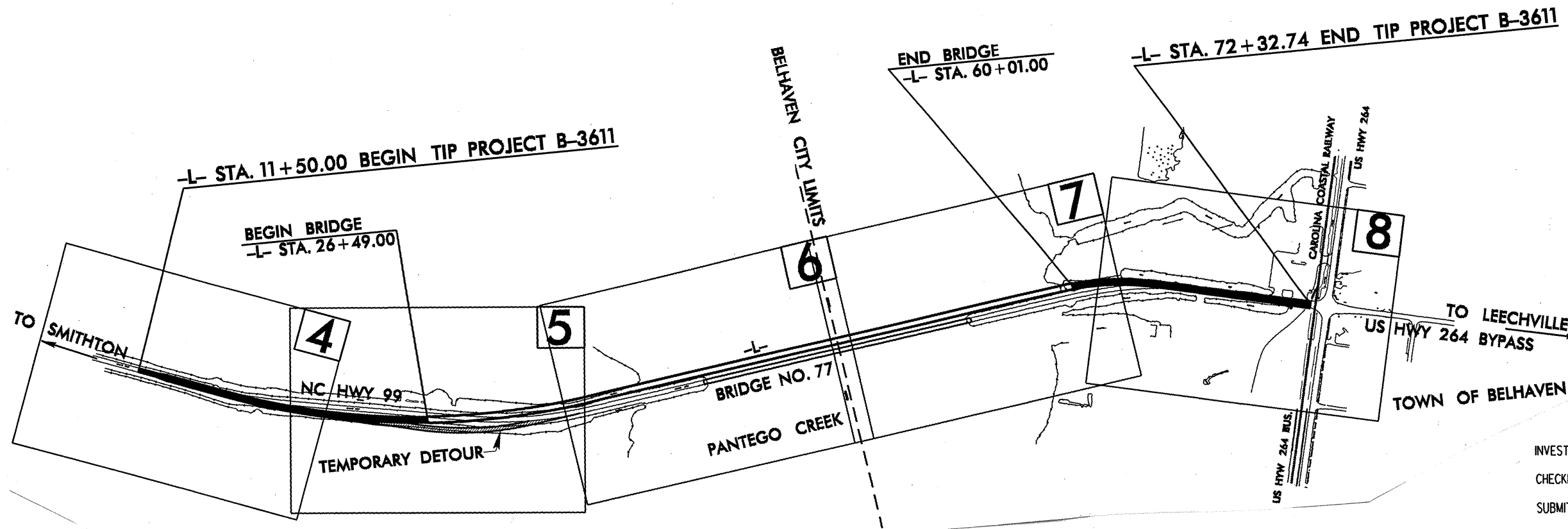
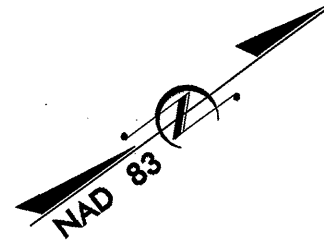
CAUTION NOTICE

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) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE 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 THIS 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.

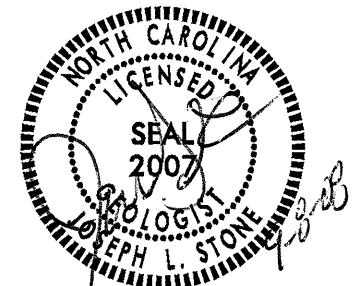
INVENTORY



PERSONNEL

- TCB
- JRS
- WNC
- RES

INVESTIGATED BY JL STONE
CHECKED BY DN ARGENBRIGHT
SUBMITTED BY DN ARGENBRIGHT
DATE SEPTEMBER, 2008



CONTRACT: C202334 ID: B-3611

DRAWN BY: C.P. TURNER, J.L. STONE

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

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 TO BE THE 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 STANDARD PENETRATION TEST (ASSTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, DARK SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTIC, A-7-6</i></p>		<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES 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.</p>		<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. 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, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SCRC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																		
<p>SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1"><thead><tr><th>GENERAL CLASS.</th><th>GRANULAR MATERIALS ($\leq 35\%$ PASSING #200)</th><th>SILT-CLAY MATERIALS ($> 35\%$ PASSING #200)</th><th>ORGANIC MATERIALS</th></tr></thead><tbody><tr><td>GROUP CLASS.</td><td>A-1 A-1-a A-1-b A-3</td><td>A-2 A-2-4 A-2-5 A-2-6 A-2-7</td><td>A-4, A-5 A-6, A-7</td></tr><tr><td>SYMBOL</td><td></td><td></td><td></td></tr><tr><td>% PASSING</td><td>10: 50 MX 20: 30 MX 50 MX 40: 15 MX 25 MX 51 MN</td><td>10: 40 MX 41 MN 20: 30 MX 35 MX 36 MN 40: 10 MX 11 MN 35 MX 36 MN 60: 10 MX 11 MN 36 MN</td><td>GRANULAR SOILS SILT-CLAY SOILS MUCK, PEAT</td></tr><tr><td>LIQUID LIMIT PLASTIC INDEX</td><td>6 MX NP</td><td>40 MX 41 MN 10 MX 11 MN 36 MN</td><td>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER HIGHLY ORGANIC SOILS</td></tr><tr><td>GROUP INDEX</td><td>0 0</td><td>4 MX 8 MX 12 MX 16 MX No MX</td><td></td></tr><tr><td>USUAL TYPES OF MAJOR MATERIALS</td><td>STONE FRAGS., GRAVEL, AND SAND FINE SAND SILTY OR CLAYEY SAND GRAVEL AND SAND</td><td>SILTY SOILS CLAYEY SOILS</td><td></td></tr><tr><td>GENERATING AS A SUBGRADE</td><td>EXCELLENT TO GOOD</td><td>FAIR TO POOR</td><td>FAIR TO POOR POOR UNSUITABLE</td></tr></tbody></table>		GENERAL CLASS.	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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>		<p>WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p> <p>CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p>NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>		<p>WEATHERING</p> <p>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (V SL) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p> <p>SLIGHT (SL) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.</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, YIELDS 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 THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS 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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See Sheet 1-A For Index of Sheets

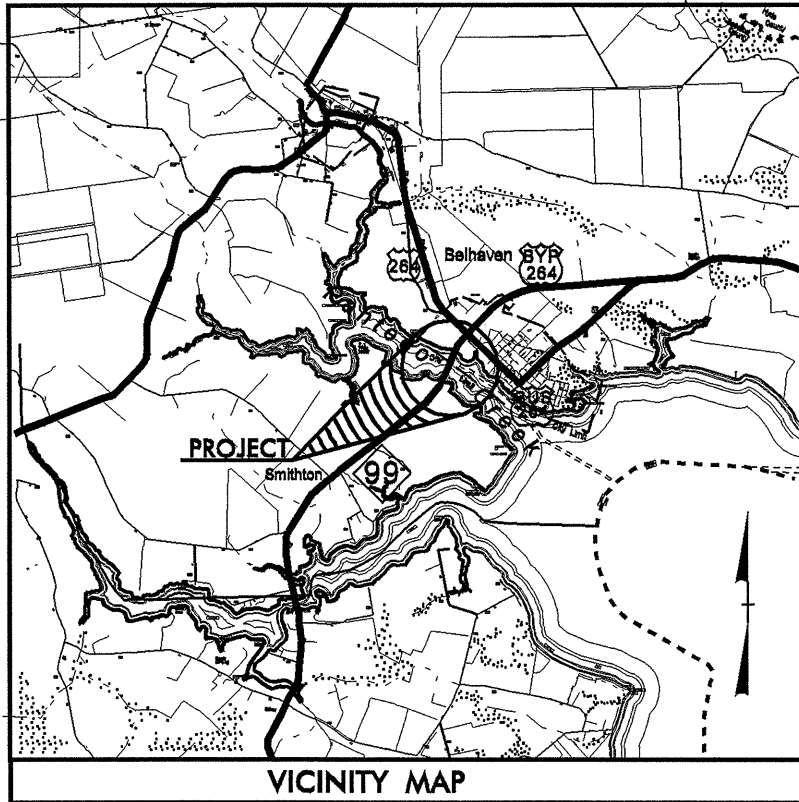
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

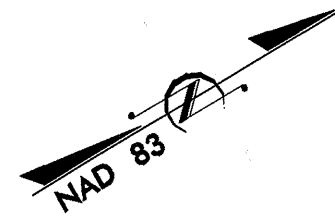
LOCATION: BRIDGE NO. 77 OVER PANTEGO CREEK ON NC 99

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
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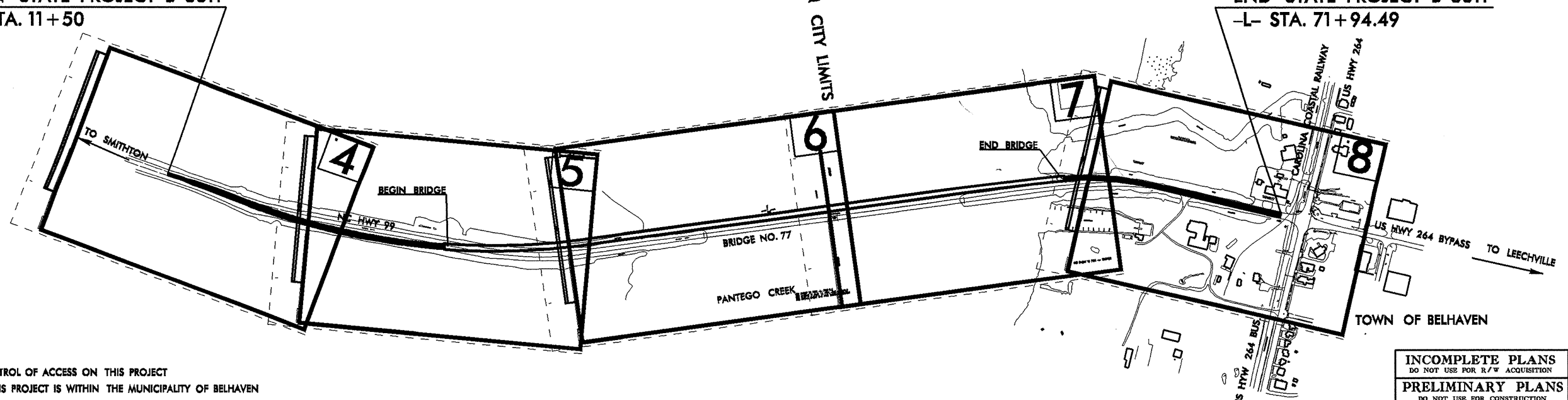


VICINITY MAP



BEGIN STATE PROJECT B-3611
-L- STA. 11+50

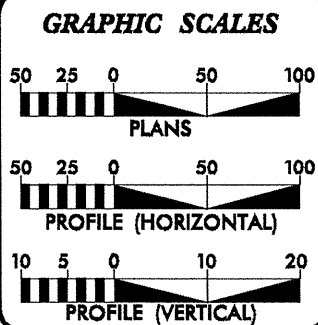
END STATE PROJECT B-3611
-L- STA. 71+94.49



THERE IS NO CONTROL OF ACCESS ON THIS PROJECT
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPALITY OF BELHAVEN
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:



DESIGN DATA

ADT 2007 =	5950
ADT 2030 =	9600
DHV =	10 %
D =	60 %
T =	9 % *
V =	50/40 MPH
* TTST 6	DUAL 3
FUNC. CLASS =	COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3611 =	0.520 Miles
LENGTH STRUCTURE TIP PROJECT B-3611 =	0.625 Miles
TOTAL LENGTH TIP PROJECT B-3611 =	1.145 Miles

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	JIMMY GOODNIGHT, PE PROJECT ENGINEER
JANUARY 16, 2009	
LETTING DATE:	Mark Hussey PROJECT DESIGN ENGINEER
JANUARY 19, 2010	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER P.E.

02-JAN-2008 12:14 I:\proj\greenville_investigation\tip\b3611-geo_rdw\cadd-geo_tech\planproj\b3611-geo_titleandlegend.dgn AT 020226153



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 8, 2008

STATE PROJECT: 33162.1.1 B-3611
F.A. PROJECT: BRSTP-99(3)
COUNTY: Beaufort
DESCRIPTION: Bridge No. 77 over Pantego Creek on NC 99

SUBJECT: Geotechnical Report – Inventory

Project Description

The proposed project is located in Beaufort County along the existing NC 99 crossing over Pantego Creek. Based on the current plans, proposed construction consist of a new crossing just west of the existing structure along with new approaches to accommodate this shift in the alignment. Additionally, a short detour will be constructed along the southern approach.

<u>Line</u>	<u>Station (±)</u>
-L-	11+50 to 71+94
-DET-	15+25 to 38+16

Areas of Special Geotechnical Interest

- 1) The entire project area was found to exhibit seasonal high ground water, or the potential for ground water related construction problems.
- 2) The following section contains organic alluvial soils, which have the potential to cause embankment stability and or long term settlement problems.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

<u>Line</u>	<u>Station (±)</u>
-L-	11+50 to 16+70
-L-	60+00 to 70+95

Physiography and Geology

This project is located in Beaufort County within the Coastal Plain Physiographic Province. Topography along the project is flat with very poor surface drainage. Ground elevations along the project range from -10± feet below sea level along the bed of Pantego Creek to 5± feet above sea level along the existing NC 99 embankment. Surface water along the project flows directly into Pantego Creek.

This area is underlain by recent alluvial sediments.

Ground Water

Ground water data was collected during October 2007 during which period the area experienced much below normal precipitation conditions. Ground water elevations ranged from -2 to 3 feet above sea level. This area is characterized by significant variations in surface water elevations due to wind induced tides.

Soils

Soils encountered during this investigation are classified as alluvial soils and roadway embankment soils.

Alluvial soils are comprised of 1 to 4 feet of very soft to medium stiff silty and sandy clay (A-7-6, A-6) with 4 to 10 feet of loose to medium dense sand (A-2-4, A-3). Representative samples collected within these cohesive alluvial deposits returned natural moisture contents ranging from 19.8 to 59 percent. Also found within these alluvial deposits were 2 to 7 feet of very loose sand with little to moderate amounts of organic matter and very soft moderately organic silty clay. Laboratory analysis of representative samples taken from within these deposits returned organic contents ranging from 3.1 to 13.8 percent organic and a natural moisture content of 57.7 percent.

Soils classified as roadway embankment are composed of 2 to 7 feet of loose to medium dense sand (A-2-4).

Undisturbed Samples

Undisturbed thin wall Shelby Tube samples were collected at the following locations and submitted for testing.

<u>Sample No.</u>	<u>Station</u>	<u>Depth</u>	<u>Test</u>
ST-1	-L- 60+00, 35' LT	9.7-11.7	Consolidation, Triaxial CU
ST-2	-L- 64+00, 8' LT	9.6-11.6	Consolidation, Triaxial CU
ST-3	-L- 12+00, 18' RT	9.6-11.6	Consolidation, Triaxial CU

Prepared by,

Joseph L. Stone, L.G.
Project Geologist

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT: B-3611

COUNTY: Beaufort

DATE: 12/15/2009

COMPILED BY: B. C. Fowler

33 31
SHEET OF SHEETS

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +30%		ROCK	SUITABLE	UNSUIT.	TOTAL
DET 15+25.00	DET 34+20.9602	118				118	22,279		22,279	28,963	28,845				
L 11+50.00	L 26+56.00 (END BENT)	66				66	2,888		2,888	3,754	3,688				
L 59+91.00 (END BENT)	L 72+32.74	56				56	6,289		6,289	8,176	8,120				
SUBTOTAL		240				240	31,456		31,456	40,893	40,653				
SUBTOTAL															
SUBTOTAL															
SUBTOTAL															
TOTAL		240				240	31,456		31,456	40,893	40,653				
MAT. FOR SHLD. CONST.							740		740	962	962				
CAUSEWAY REMOVAL		5,475											5,475		5,475
EXISTING L GRADING		318											318		318
DETOUR REMOVAL		13,631											13,631		13,631
PROJECT TOTAL		19,664				240	32,196		32,196	41,855	41,615		19,424		19,424
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											2,081				
GRAND TOTAL		19,664				240	32,196		32,196	41,855	43,696		19,424		19,424
SAY		19,700									43,700				

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

SELECT MATERIAL, CL. III = 3,200 CUBIC YARDS

UNDERCUT EXCAVATION = 5,000 CUBIC YARDS PER CFI 11/06/2008

DDE = 4,160 CUBIC YARDS

UNDERDRAINS = 200 LINEAR FEET

FABRIC FOR SOIL STABILIZATION = 6,500 SQUARE YARDS

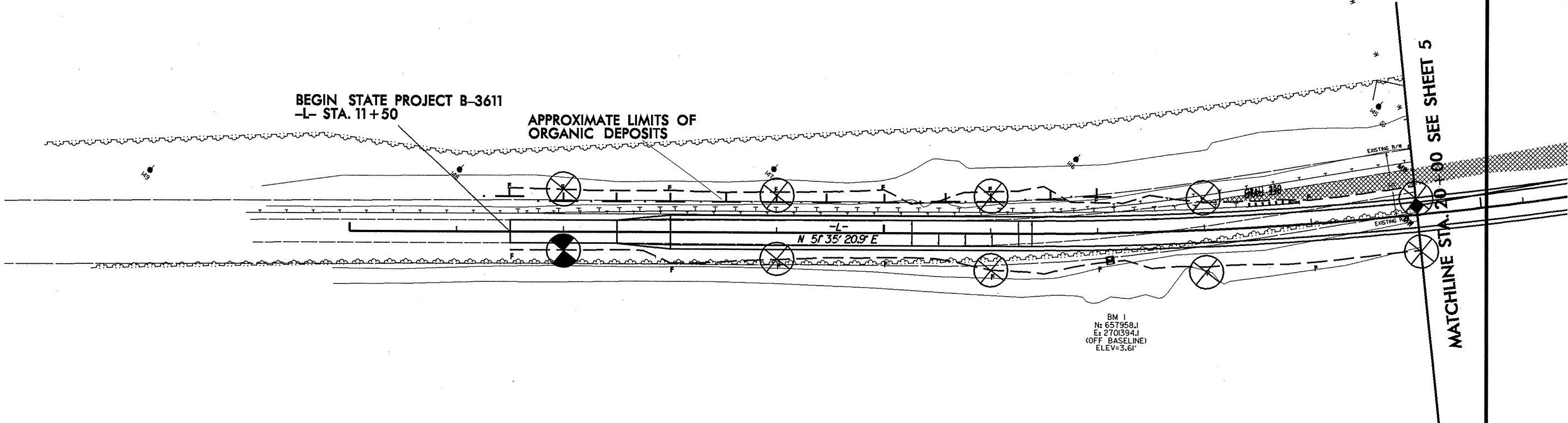
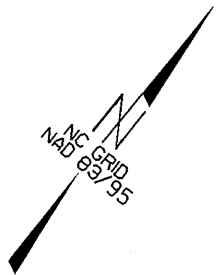
SELECT GRANULAR MATERIAL, CL. III = 5,000 CUBIC YARDS

8/17/99

REVISIONS

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PROJECT REFERENCE NO.		SHEET NO.	
B-3611		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



BM 1
 N: 657958.1
 E: 2701394.1
 (OFF BASELINE)
 ELEV=3.61'

MATCHLINE STA. 20+00 SEE SHEET 5

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 8/17/99

REVISIONS

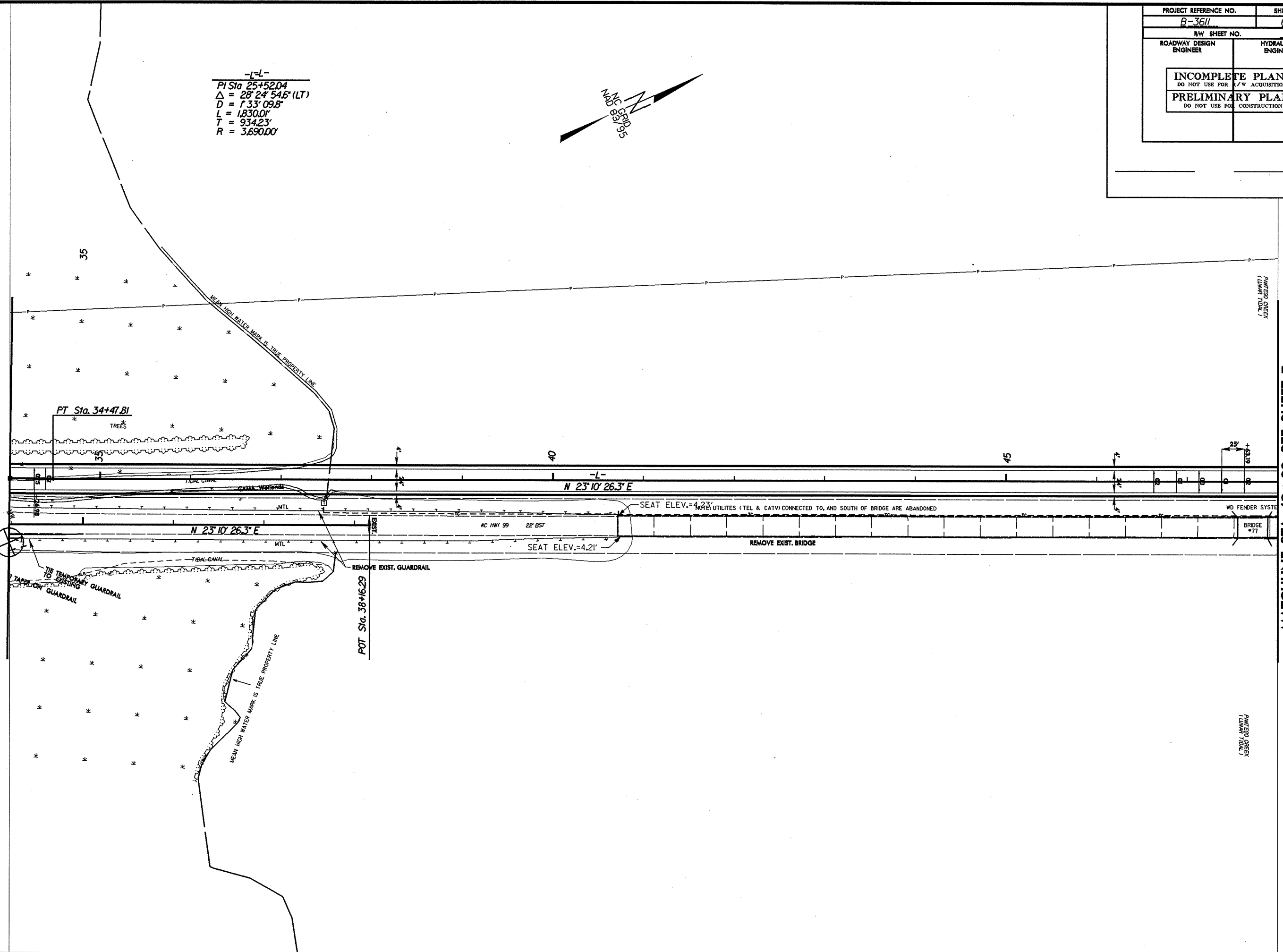
PROJECT REFERENCE NO. B-3611	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-L-
 PI Sta 25+52.04
 $\Delta = 28^\circ 24' 54.6" (LT)$
 $D = 1,333.098'$
 $L = 1,830.01'$
 $T = 934.23'$
 $R = 3,690.00'$



MATCHLINE STA. 34 + 00 SEE SHEET 5

MATCHLINE STA. 48 + 00 SEE SHEET 7



PANTEGO CREEK
(UNIMAT TIDAL)

PANTEGO CREEK
(UNIMAT TIDAL)

NC HWY 99 22' BST

SEAT ELEV. = 4.21'

SEAT ELEV. = 4.22' UTILITIES (TEL & CATV) CONNECTED TO, AND SOUTH OF BRIDGE ARE ABANDONED

WD FENDER SYSTEM

BRIDGE #77

PT Sta. 34+47.81

POT Sta. 38+16.29

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. BRIDGE

35

40

45

25'

+5.19

MEAN HIGH WATER MARK IS TRUE PROPERTY LINE

TIDAL CANAL

TRENCH

TIE TEMPORARY GUARDRAIL TO EXISTING GUARDRAIL

EXIST. GUARDRAIL

REMOVE EXIST. BRIDGE

BRIDGE #77

WD FENDER SYSTEM

UTILITIES (TEL & CATV) CONNECTED TO, AND SOUTH OF BRIDGE ARE ABANDONED

SEAT ELEV. = 4.21'

NC HWY 99 22' BST

N 23° 10' 26.3" E

N 23° 10' 26.3" E

MEAN HIGH WATER MARK IS TRUE PROPERTY LINE

TIDAL CANAL

TRENCH

PT Sta. 34+47.81

POT Sta. 38+16.29

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. BRIDGE

BRIDGE #77

WD FENDER SYSTEM

UTILITIES (TEL & CATV) CONNECTED TO, AND SOUTH OF BRIDGE ARE ABANDONED

SEAT ELEV. = 4.21'

NC HWY 99 22' BST

N 23° 10' 26.3" E

N 23° 10' 26.3" E

MEAN HIGH WATER MARK IS TRUE PROPERTY LINE

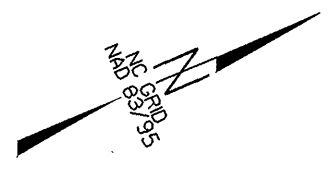
TIDAL CANAL

TRENCH

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REVISIONS

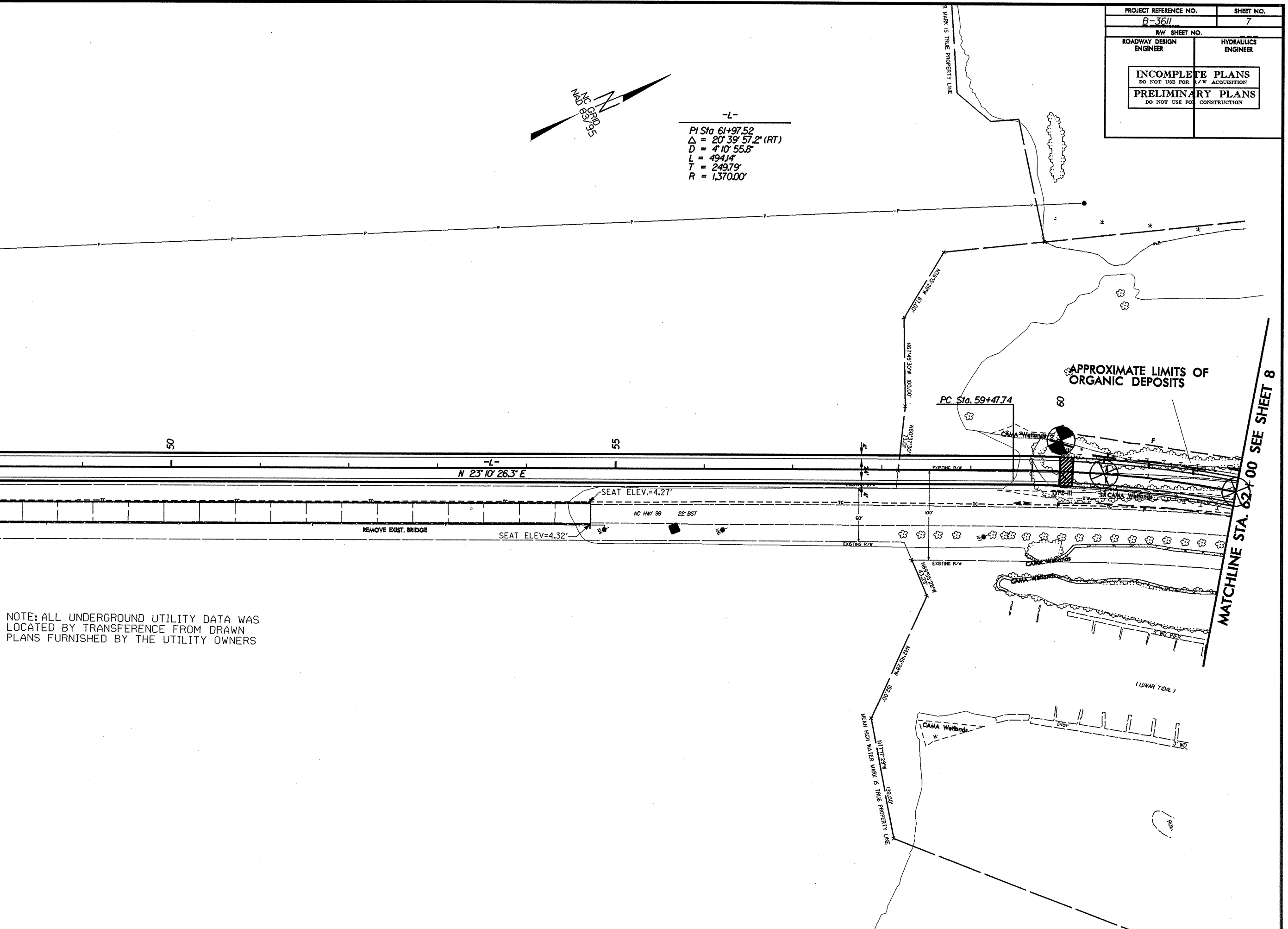
PROJECT REFERENCE NO. B-3611	SHEET NO. 7
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-L-
 PI Sta 61+97.52
 $\Delta = 20^\circ 39' 57.2''$ (RT)
 D = 4' 10" 55.8"
 L = 494.14
 T = 249.79'
 R = 1,370.00'

MATCHLINE STA. 48 + 00 SEE SHEET 6

MATCHLINE STA. 62 + 00 SEE SHEET 8



NOTE: ALL UNDERGROUND UTILITY DATA WAS LOCATED BY TRANSFERENCE FROM DRAWN PLANS FURNISHED BY THE UTILITY OWNERS

8/17/99
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PROJECT REFERENCE NO. B-3611	SHEET NO. 8
RDWY SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

SEE SHEET 11 FOR -L- PROFILE

-L-
 PI Sta 61+97.52
 $\Delta = 20^\circ 39' 57.2" (RT)$
 $D = 410' 55.8"$
 $L = 494.14'$
 $T = 249.79'$
 $R = 1,370.00'$

LUCY B. ROBBINS
 BK 93E - PG 452
 (BEAUFORT CO. COURTHOUSE HAS LOST RECORDS. REFER TO DB 504 - PG 589)

MARGARETTE S. LAUGHINGHOUSE
 DB 921 - PG 525

MARGARETTE S. LAUGHINGHOUSE
 DB 921 - PG 525
 MB 9 - PG 46

PT Sta. 64+41.88

END STATE PROJECT B-3611
 -L- STA. 71+94.49

END STATE PROJECT B-3611
 -L- STA. 74+94.49

APPROXIMATE LIMITS OF ORGANIC DEPOSITS

RIVER MILL INN, INC.
 DB 1006 - PG 324

COASTAL OIL CO.
 DB 579 - PG 555

COASTAL OIL CO.
 DB 587 - PG 286

RONNIE M. FLOWERS, et ux.
 DB 687 - PG 713

NELLIE R. DANIELS &
 DECATOR DANIELS
 DB 366 - PG 55

BLAIR ROBERTSON BEASLEY
 DB 836 - PG 42

COASTAL OIL CO.
 DB 531 - PG 562

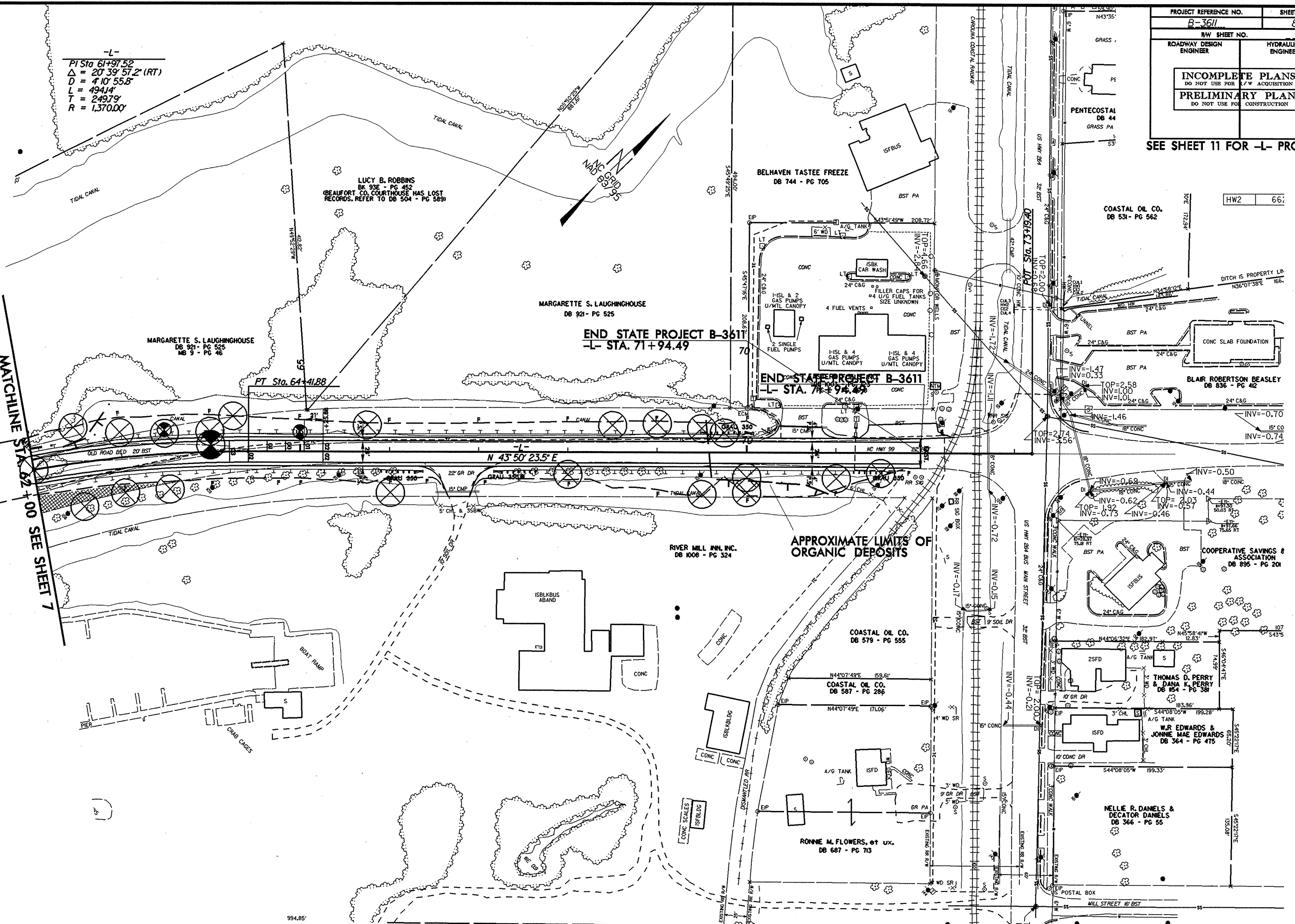
BELHAVEN TASTEE FREEZE
 DB 744 - PG 705

PENTECOSTAL
 DB 44
 GRASS PA

HW2 66:

MATCHLINE STA 62+00 SEE SHEET 7

REVISIONS



994.85'

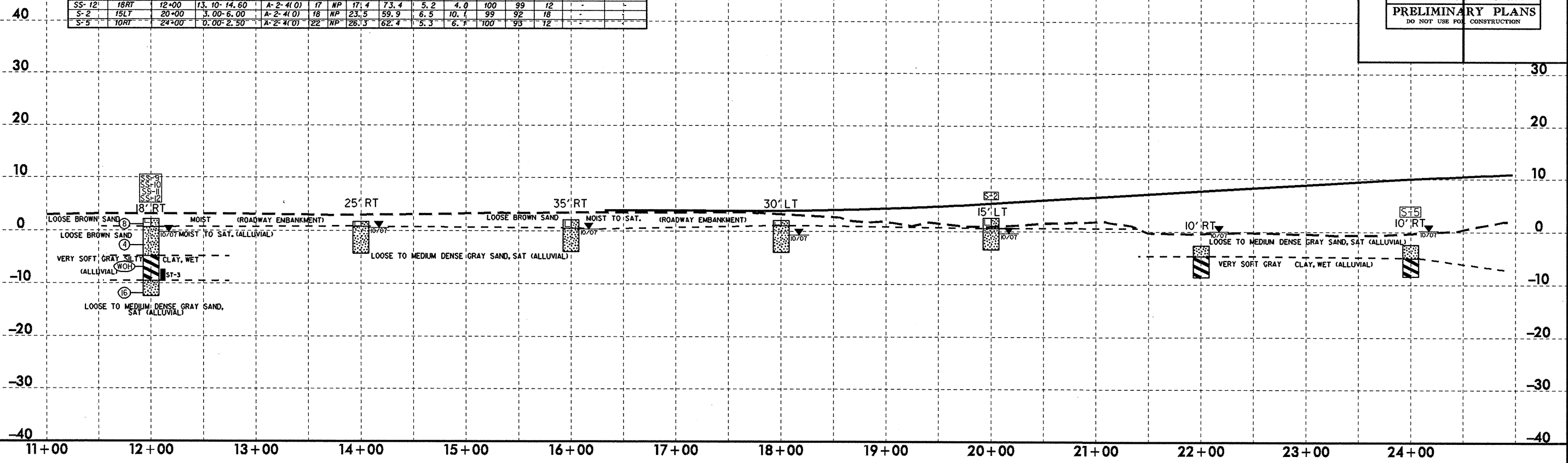
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PROJECT REFERENCE NO.	SHEET NO.
B-3611	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR L/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

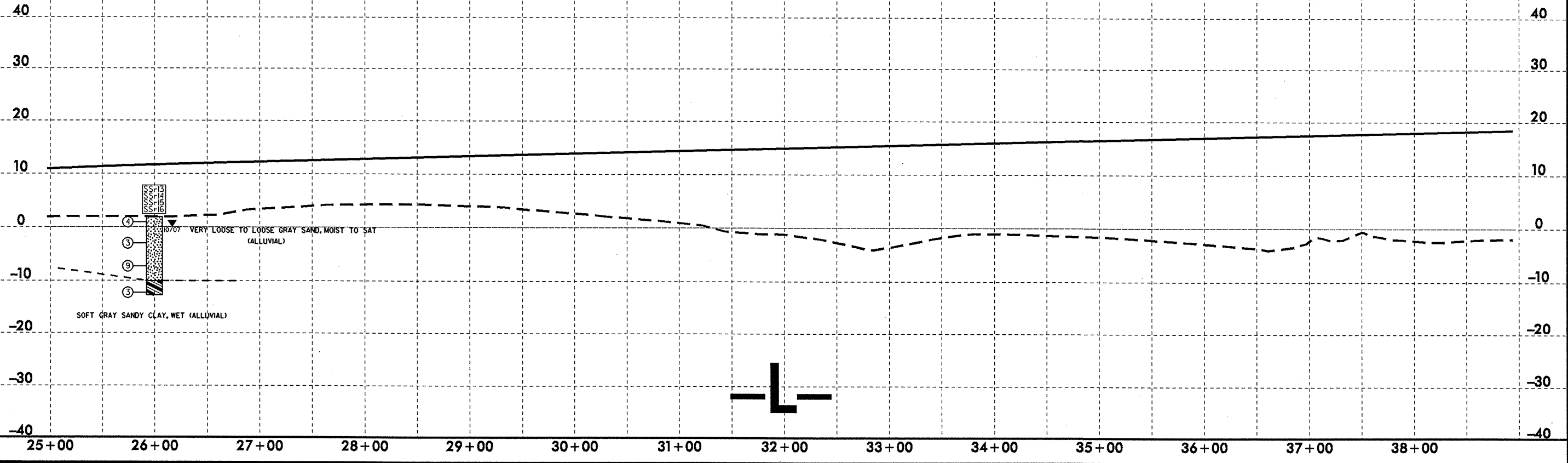
SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASTHO CLASS.	L.L.	P.L.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT + CLAY	10	40	200		
SS-9	18LT	12+00	0.50-1.50	A-2-4(0)	19	3	13.3	54.5	16.0	16.2	99	96	35	-
SS-10	18RT	12+00	4.00-5.50	A-2-4(0)	19	NP	18.2	64.8	6.9	10.1	98	93	18	-
SS-11	18RT	12+00	8.00-9.60	A-7-6(30)	56	32	2.0	13.3	26.1	58.6	100	99	87	-
SS-12	18RT	12+00	13.10-14.60	A-2-4(0)	17	NP	17.4	73.4	5.2	4.0	99	99	12	-
S-2	15LT	20+00	3.00-6.00	A-2-4(0)	18	NP	23.5	59.9	6.5	10.1	99	92	18	-
S-5	10RT	24+00	0.00-2.50	A-2-4(0)	22	NP	26.3	62.4	5.3	6.1	100	95	12	-

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.



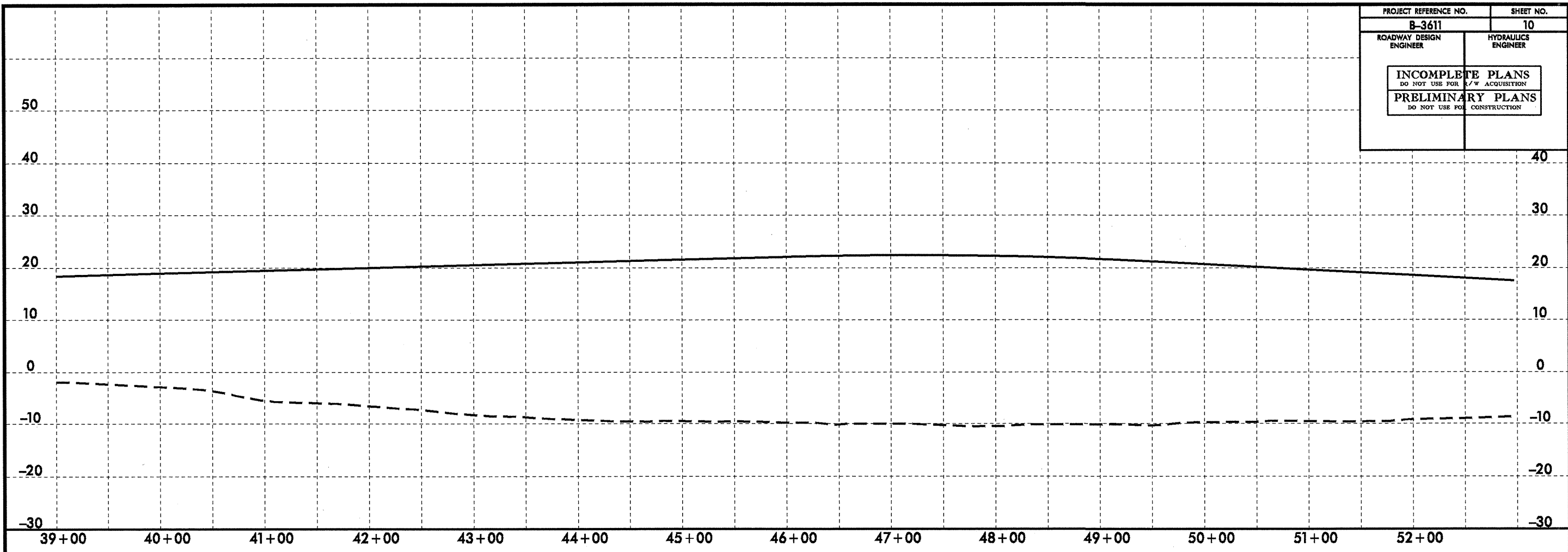
SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASTHO CLASS.	L.L.	P.L.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT + CLAY	10	40	200		
SS-13	CL	26+00	0.50-1.50	A-2-4(0)	22	NP	28.1	59.8	8.7	6.1	100	94	18	-
SS-14	CL	26+00	4.00-5.50	A-2-4(0)	18	NP	40.2	44.0	4.6	11.1	99	82	18	-
SS-15	CL	26+00	8.20-9.70	A-2-4(0)	22	NP	22.6	62.6	5.7	9.1	99	89	20	-
SS-16	CL	26+00	13.20-14.70	A-6(18)	39	18	1.0	10.5	68.3	20.2	100	99	94	-

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.



5/28/199

PROJECT REFERENCE NO. B-3611	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	LABS/TEST CLASS	L.L.	P.L.	% BY WEIGHT				% PASSING (SIZES)		% MOISTURE	% ORGANIC
							CLAY	SAND	SILT	FLUKE	#20	#40		
SS-5	8' LT	64+00	0.50-1.50	A-2-4(O)	16	NP	52.3	54.1	11.9	4.0	100	91	17	-
SS-6	8' LT	64+00	4.00-5.50	A-2-4(O)	18	NP	23.6	60.2	7.9	8.1	100	93	19	-
SS-7	8' LT	64+00	8.10-9.60	A-2-4(O)	34	NP	20.4	52.7	16.6	10.1	99	93	30	-
SS-8	8' LT	64+00	13.10-14.60	A-2-4(O)	17	NP	27.6	153.9	10.1	14.1	100	93	26	-

① VERY SOFT BROWN MODERATELY ORGANIC SILTY CLAY, WET AND VERY LOOSE BROWN SILTY SAND WITH LITTLE ORGANIC MATTER SAT. (ALLUVIAL)

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07

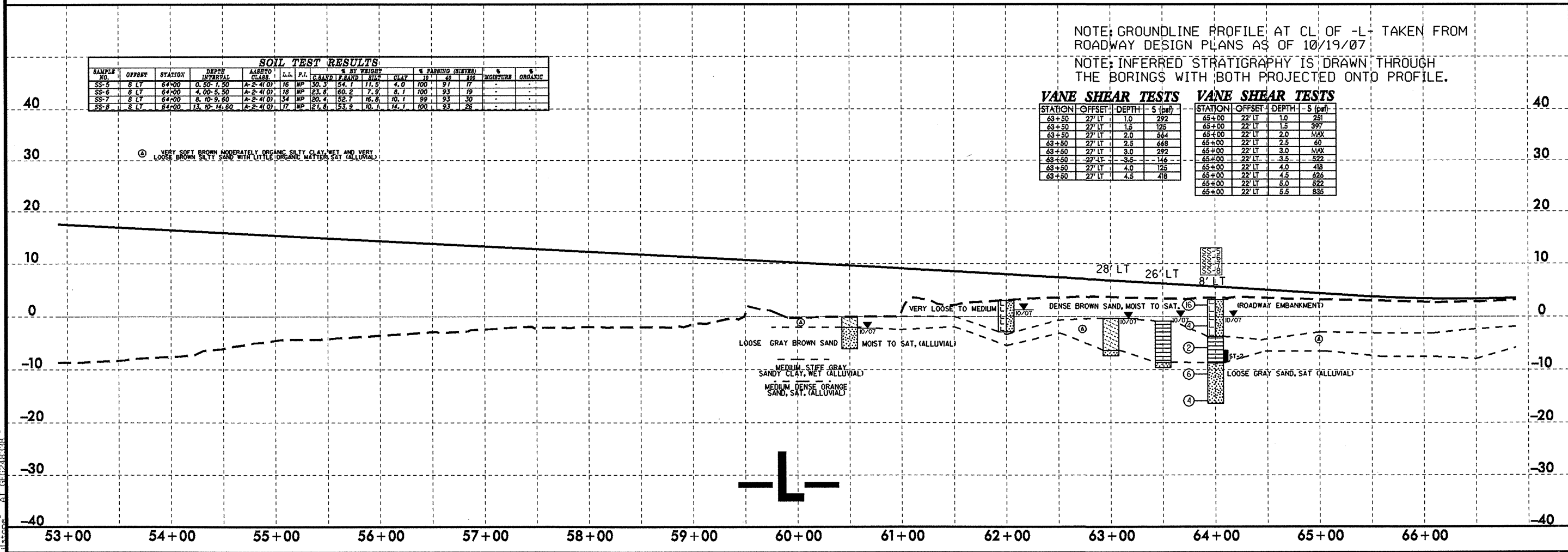
NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
63+50	27' LT	1.0	292
63+50	27' LT	1.5	125
63+50	27' LT	2.0	544
63+50	27' LT	2.5	648
63+50	27' LT	3.0	292
63+50	27' LT	3.5	146
63+50	27' LT	4.0	125
63+50	27' LT	4.5	418

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
65+00	22' LT	1.0	251
65+00	22' LT	1.5	397
65+00	22' LT	2.0	MAX
65+00	22' LT	2.5	60
65+00	22' LT	3.0	MAX
65+00	22' LT	3.5	522
65+00	22' LT	4.0	418
65+00	22' LT	4.5	624
65+00	22' LT	5.0	522
65+00	22' LT	5.5	835



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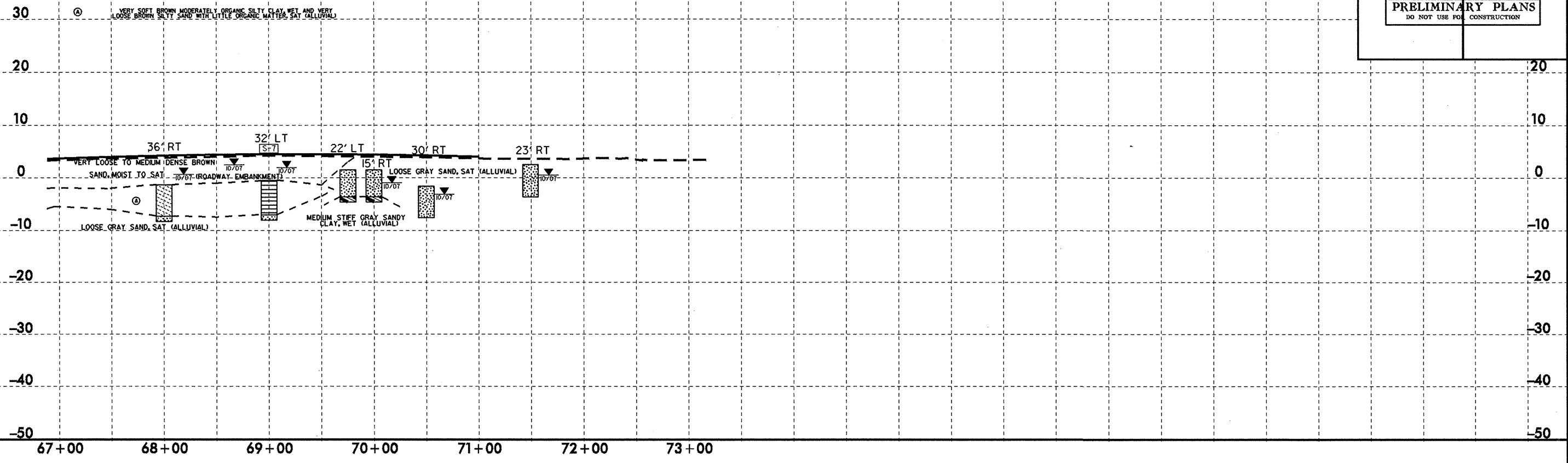
5/28/99

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	10	40	200		
5-7	32' LF	69+00	0:00-6:50	A-7-5(23)	68	21	7.9	12.9	50.9	28.3	100	98	81	13.8	

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

PROJECT REFERENCE NO. B-3611	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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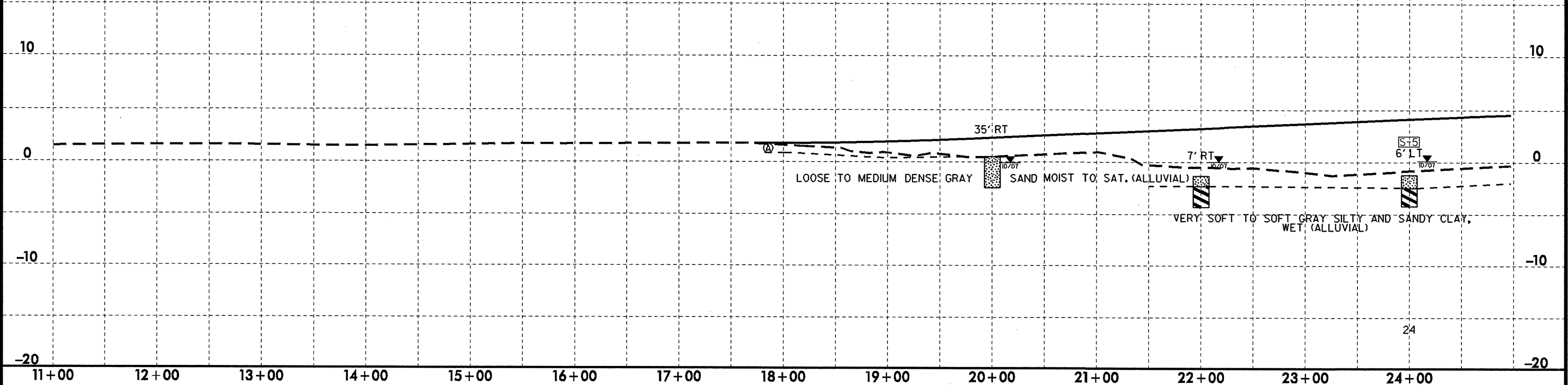
5/28/99

PROJECT REFERENCE NO.		SHEET NO.	
B-3611		12	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

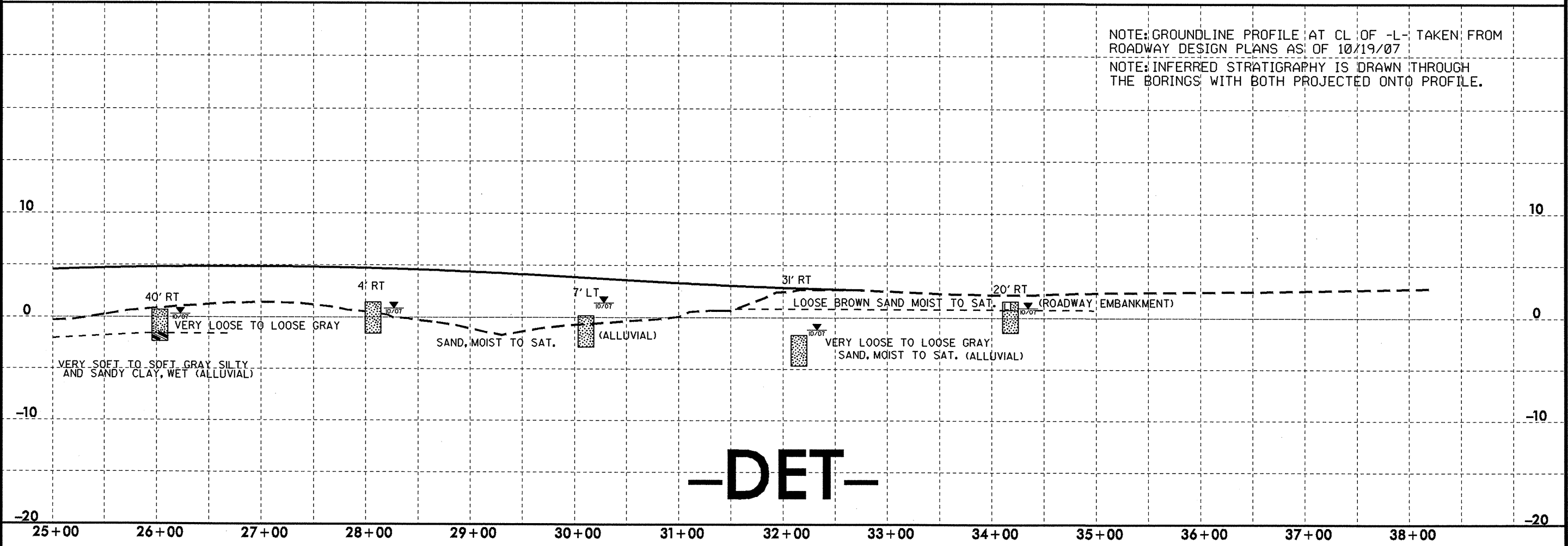
SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	A.ARBTS CLASS	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)		% MOISTURE	% ORGANIC
							G.SAND	F.SAND	SILT	CLAY	#10	#40		
S-5	6' LT	24+00	0.00-2.50'	A-2-4(0)	22	NP	26.3	62.4	5.3	6.1	100	93	12	-

NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07.
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

Ⓐ LOOSE BROWN SAND, MOIST TO SAT (ROADWAY EMBANKMENT)



NOTE: GROUNDLINE PROFILE AT CL OF -L- TAKEN FROM ROADWAY DESIGN PLANS AS OF 10/19/07.
 NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.



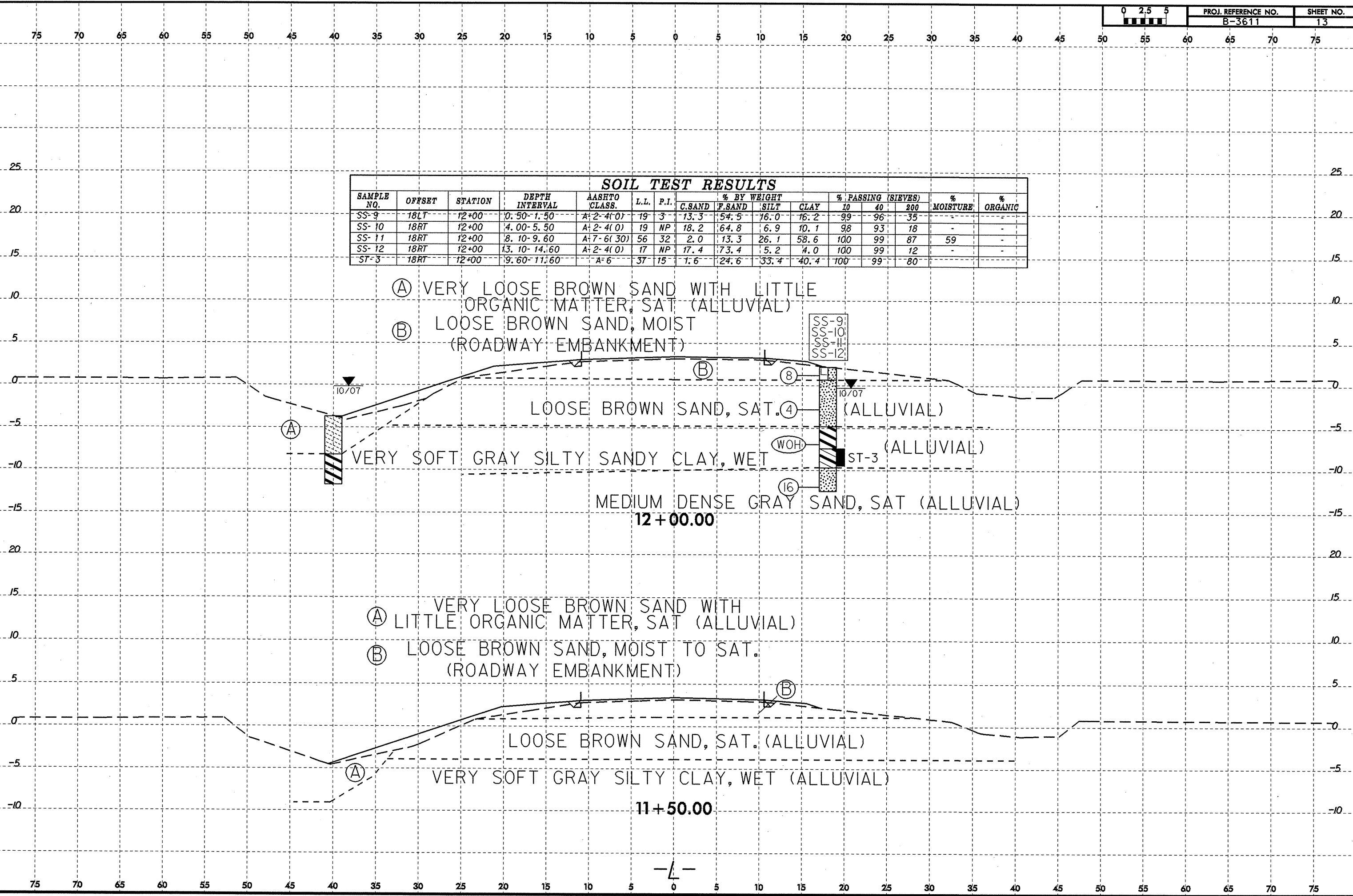
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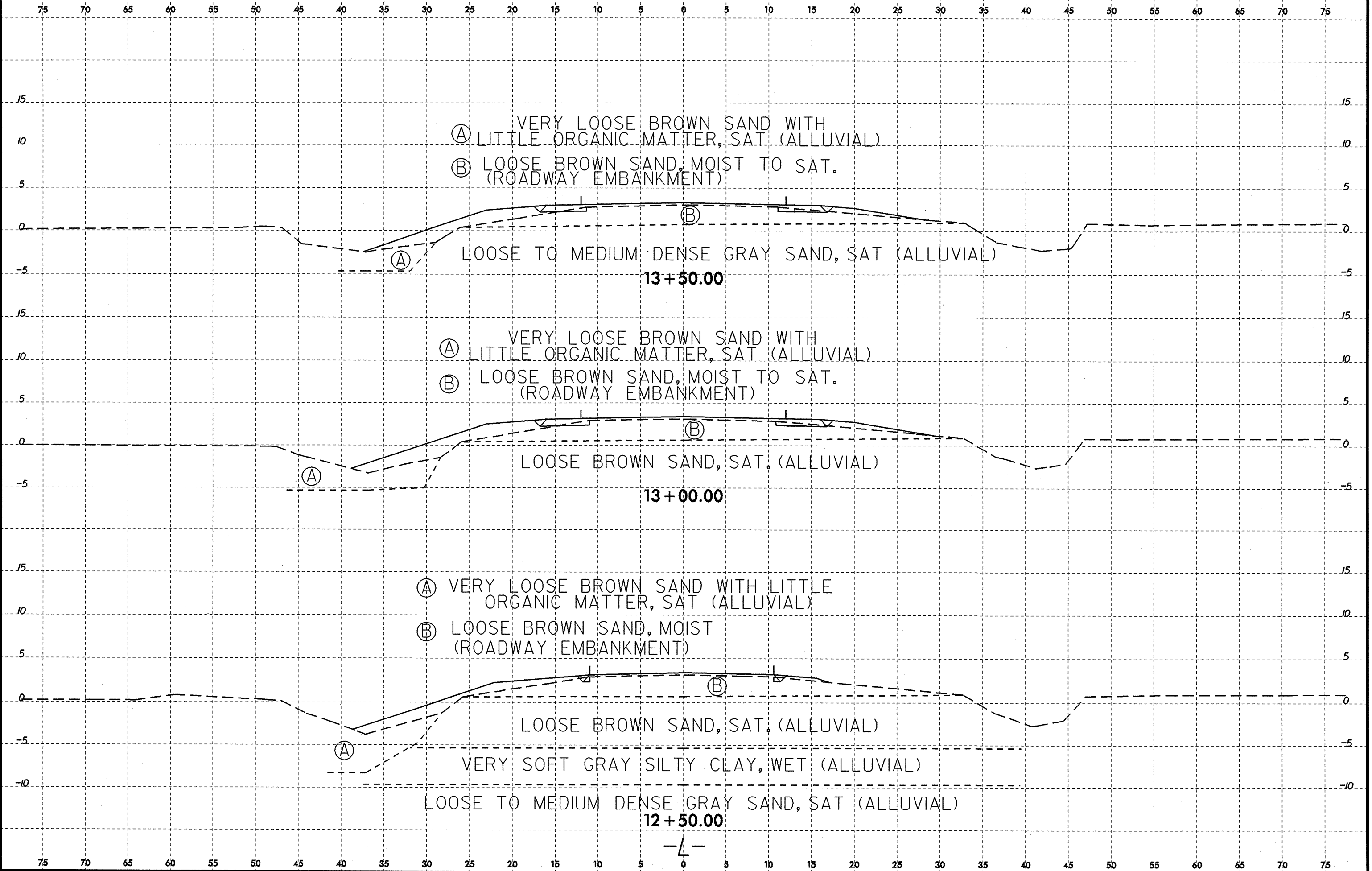
SOIL TEST RESULTS

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-9	18LT	12+00	0.50-1.50	A-2-4(0)	19	3	13.3	54.5	16.0	16.2	99	96	35	-	-
SS-10	18RT	12+00	4.00-5.50	A-2-4(0)	19	NP	18.2	64.8	6.9	10.1	98	93	18	-	-
SS-11	18RT	12+00	8.10-9.60	A-7-6(30)	56	32	2.0	13.3	26.1	58.6	100	99	87	59	-
SS-12	18RT	12+00	13.10-14.60	A-2-4(0)	17	NP	17.4	73.4	5.2	4.0	100	99	12	-	-
ST-3	18RT	12+00	9.60-11.60	A-6	37	15	1.6	24.6	33.4	40.4	100	99	80	-	-

- (A) VERY LOOSE BROWN SAND WITH LITTLE ORGANIC MATTER, SAT (ALLUVIAL)
- (B) LOOSE BROWN SAND, MOIST (ROADWAY EMBANKMENT)

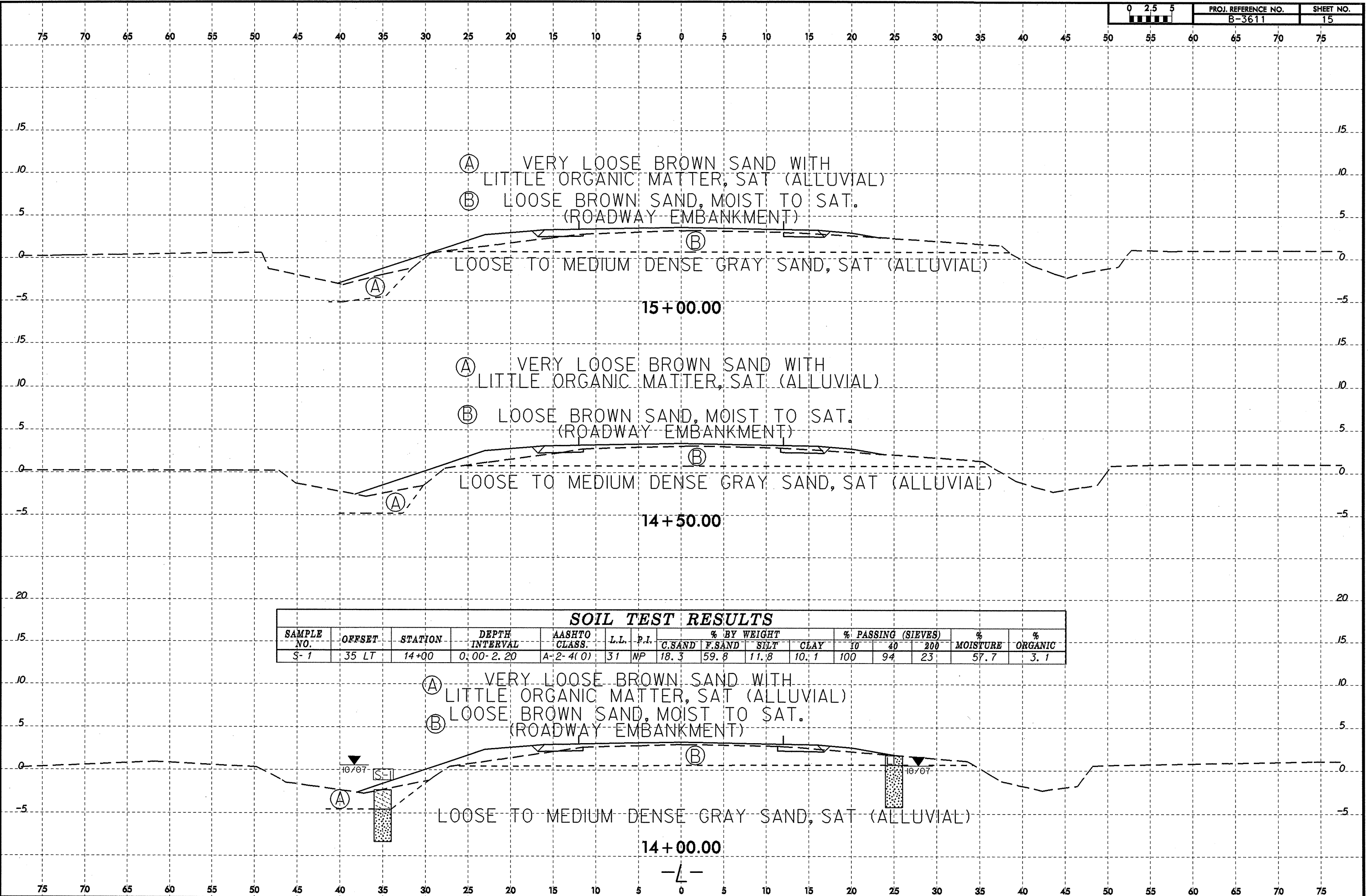


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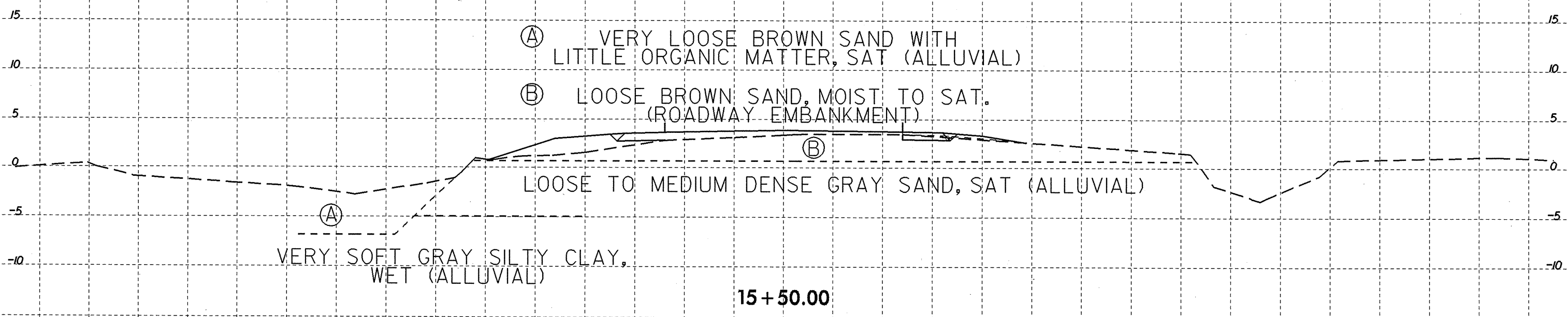
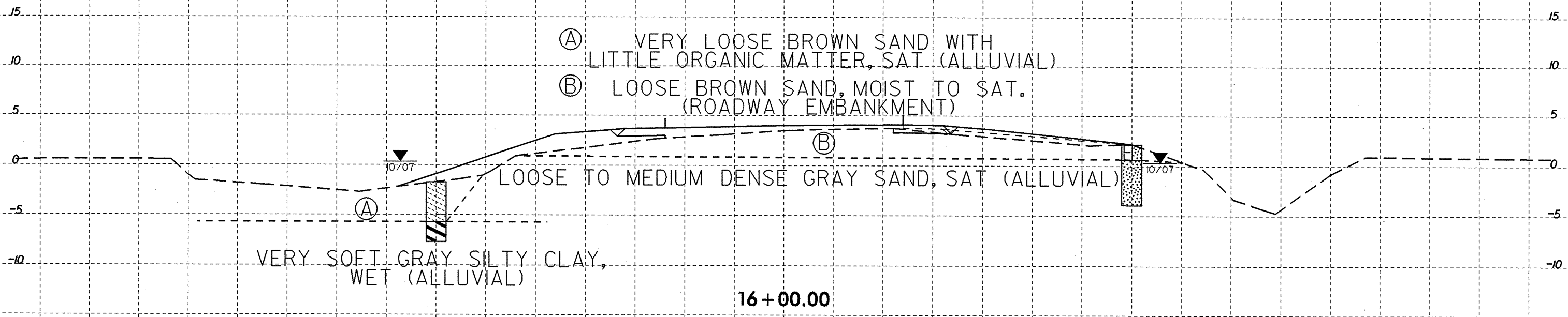
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-1	35 LT	14+00	0.00-2.20	A-2-4(0)	31	NP	18.3	59.8	11.8	10.1	100	94	23	57.7	3.1

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PROJ. REFERENCE NO. B-3611	SHEET NO. 16
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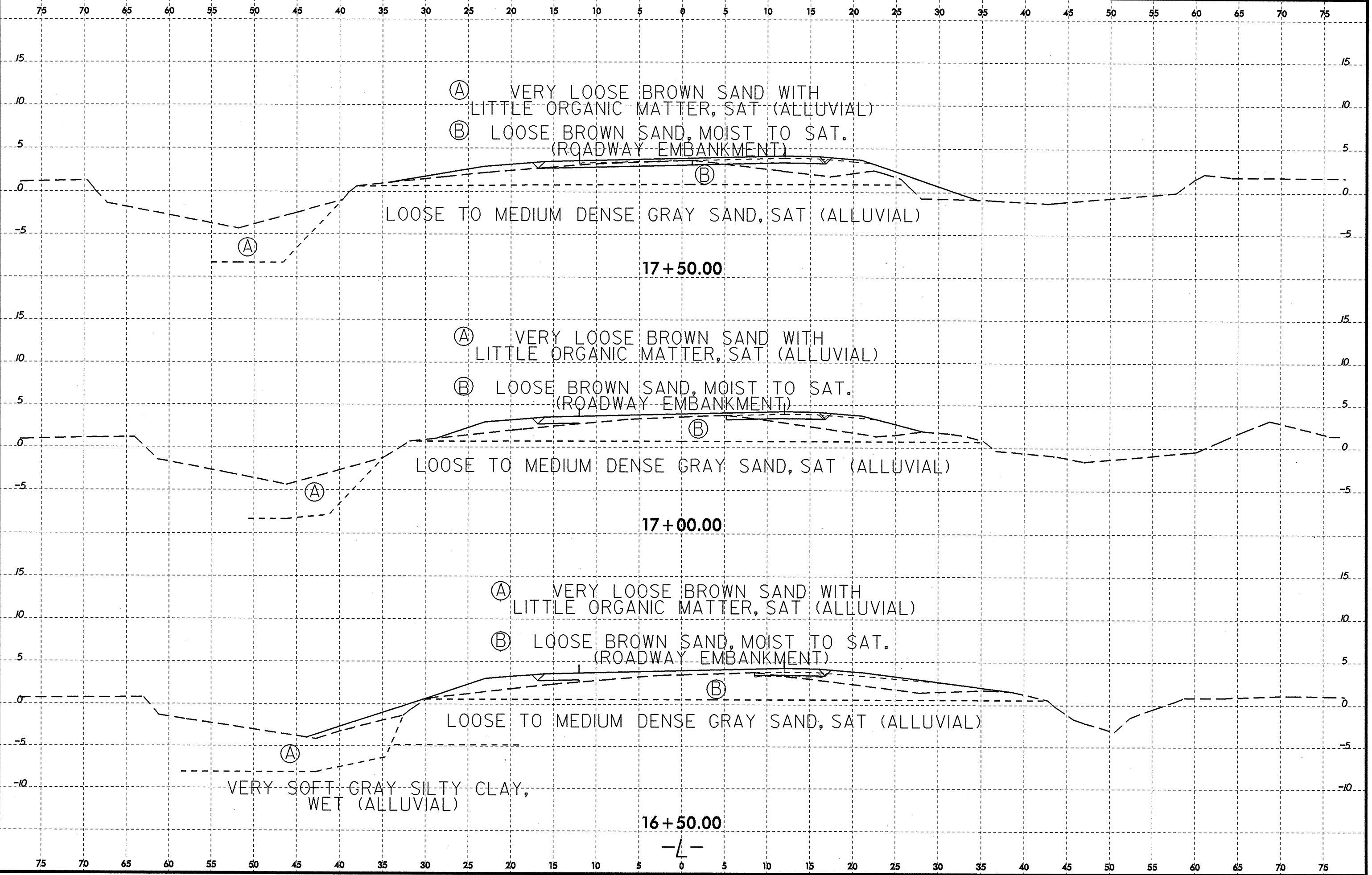
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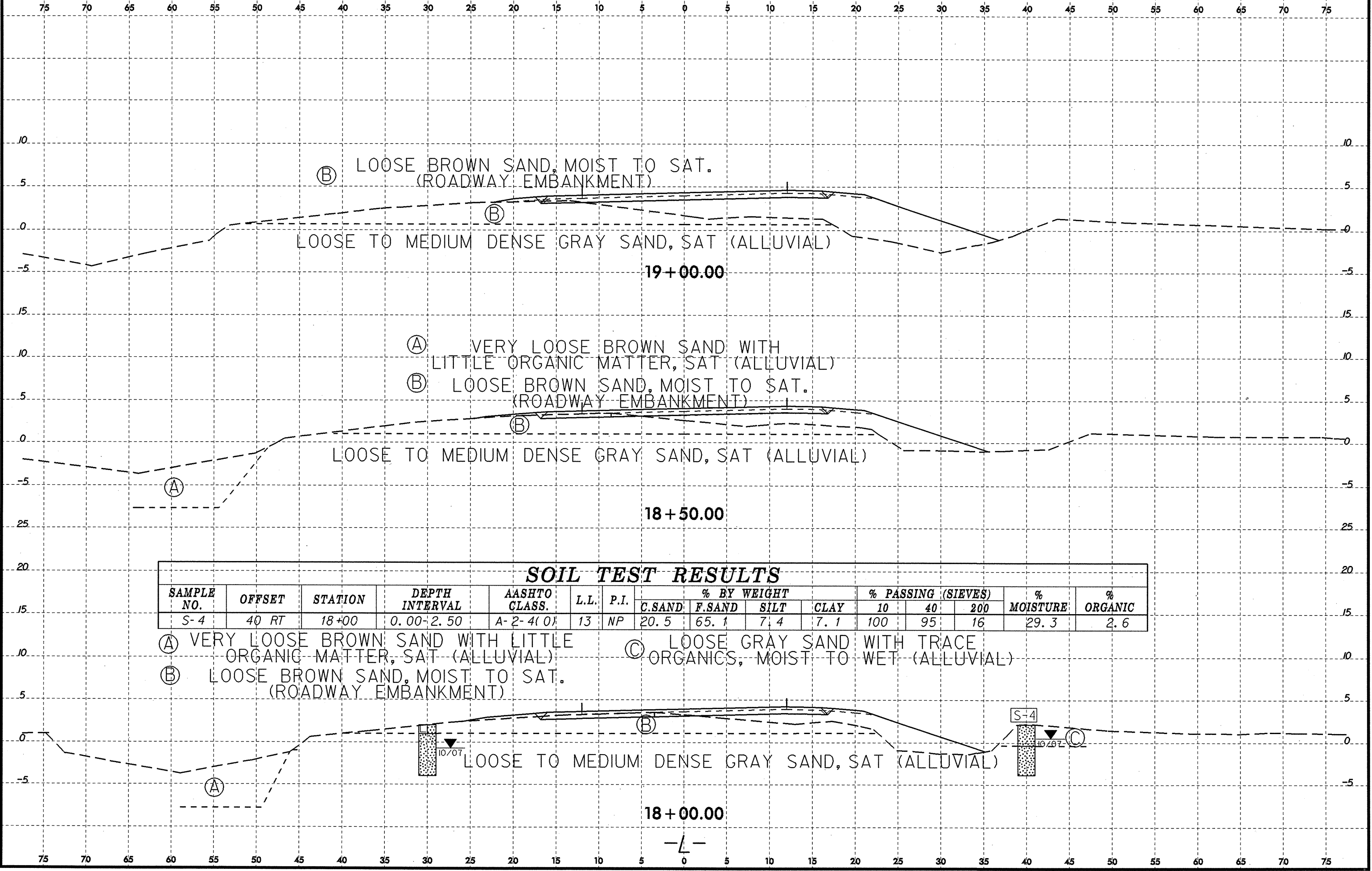
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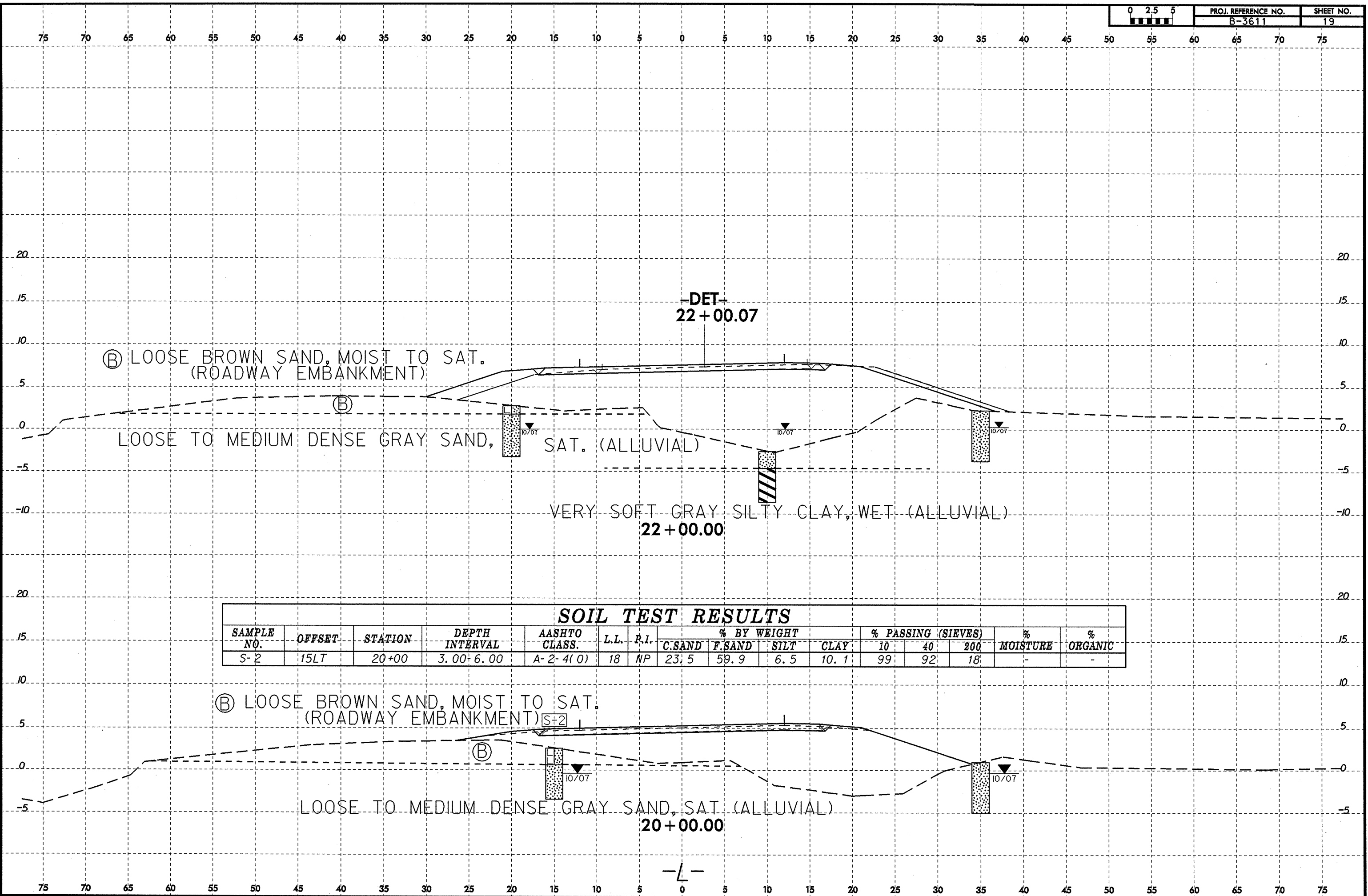
SOIL TEST RESULTS

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-4	40 RT	18+00	0.00-2.50	A-2-4(0)	13	NP	20.5	65.1	7.4	7.1	100	95	16	29.3	2.6

(A) VERY LOOSE BROWN SAND WITH LITTLE ORGANIC MATTER, SAT (ALLUVIAL)
 (B) LOOSE BROWN SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)

(C) LOOSE GRAY SAND WITH TRACE ORGANICS, MOIST TO WET (ALLUVIAL)

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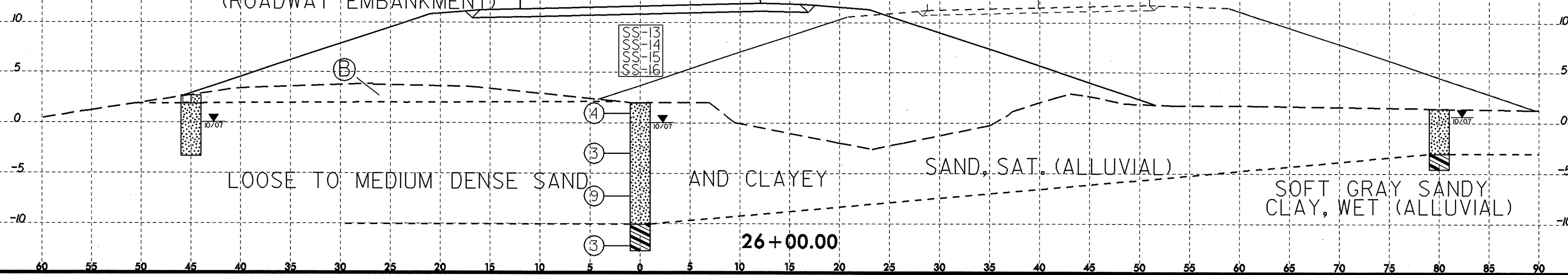
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SOIL TEST RESULTS

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		
SS-13	CL	26+00	0.50-1.50	A-2-4(0)	22	NP	25.7	59.6	8.7	6.1	100	94	16	-	-
SS-14	CL	26+00	4.00-5.50	A-2-4(0)	18	NP	40.2	44.0	4.6	11.1	99	82	18	-	-
SS-15	CL	26+00	8.20-9.70	A-2-4(0)	22	NP	22.6	62.6	5.7	9.1	99	89	20	-	-
SS-16	CL	26+00	13.20-14.70	A-6(18)	39	18	1.0	10.5	68.3	20.2	100	99	94	-	-

LOOSE BROWN SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)

-DET-
26+03.88

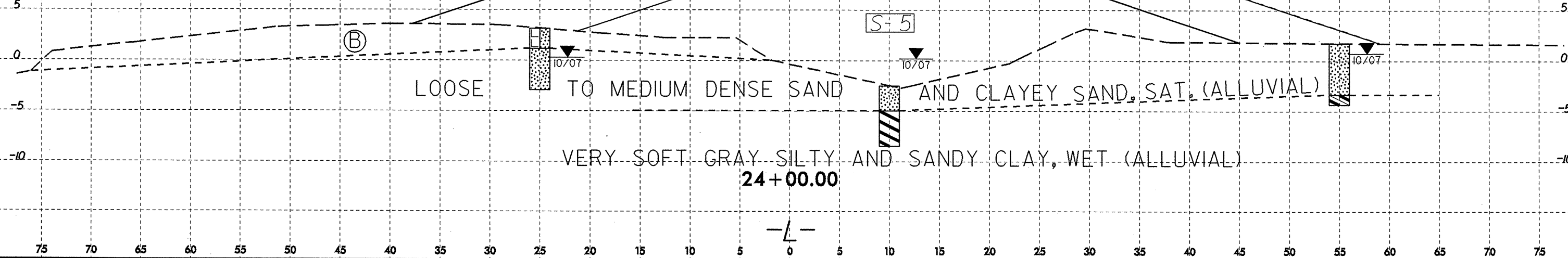


SOIL TEST RESULTS

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	10-RT	24+00	0.00-2.50	A-2-4(0)	22	NP	26.3	62.4	5.3	6.1	100	93	12	-	1.9

-DET-
24+00.97

LOOSE BROWN SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)



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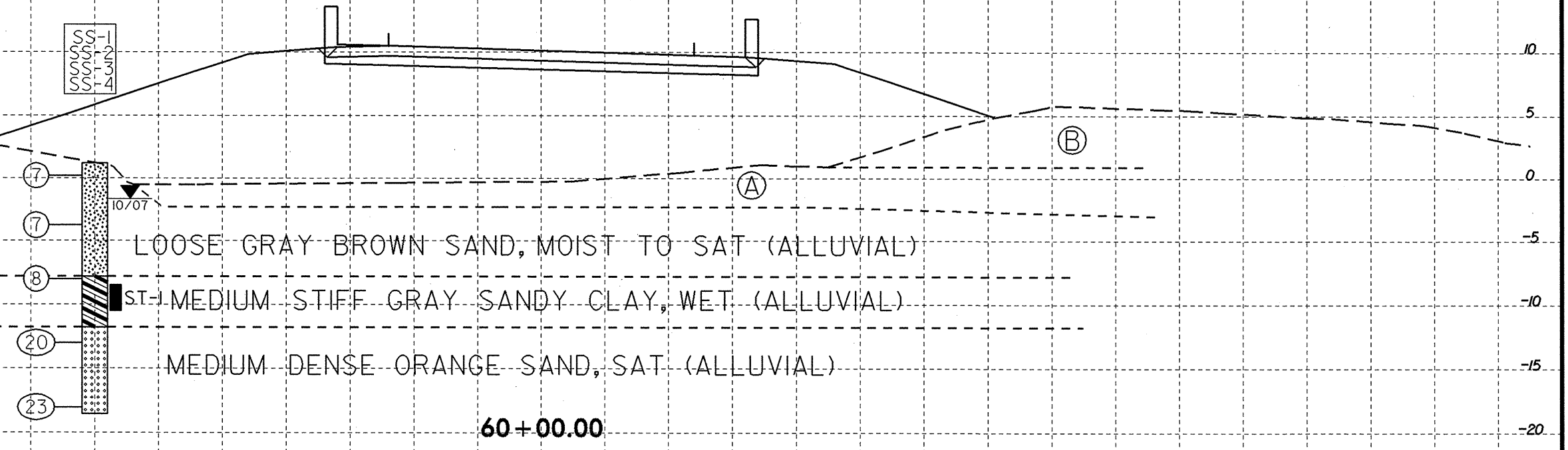
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SOIL TEST RESULTS

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-1	35 LT	60+00	0.50-1.50	A-2-4(0)	17	NP	28.1	53.9	7.9	10.1	100	91	20	-	-
SS-2	35 LT	60+00	4.00-5.50	A-2-4(0)	15	NP	27.9	60.2	7.9	4.0	100	92	13	-	-
SS-3	35 LT	60+00	8.20-9.70	A-6(6)	36	20	9.3	50.1	12.3	28.3	100	97	48	-	-
SS-4	35 LT	60+00	13.20-14.70	A-3(0)	17	NP	44.5	50.8	2.6	2.0	99	82	6	-	-

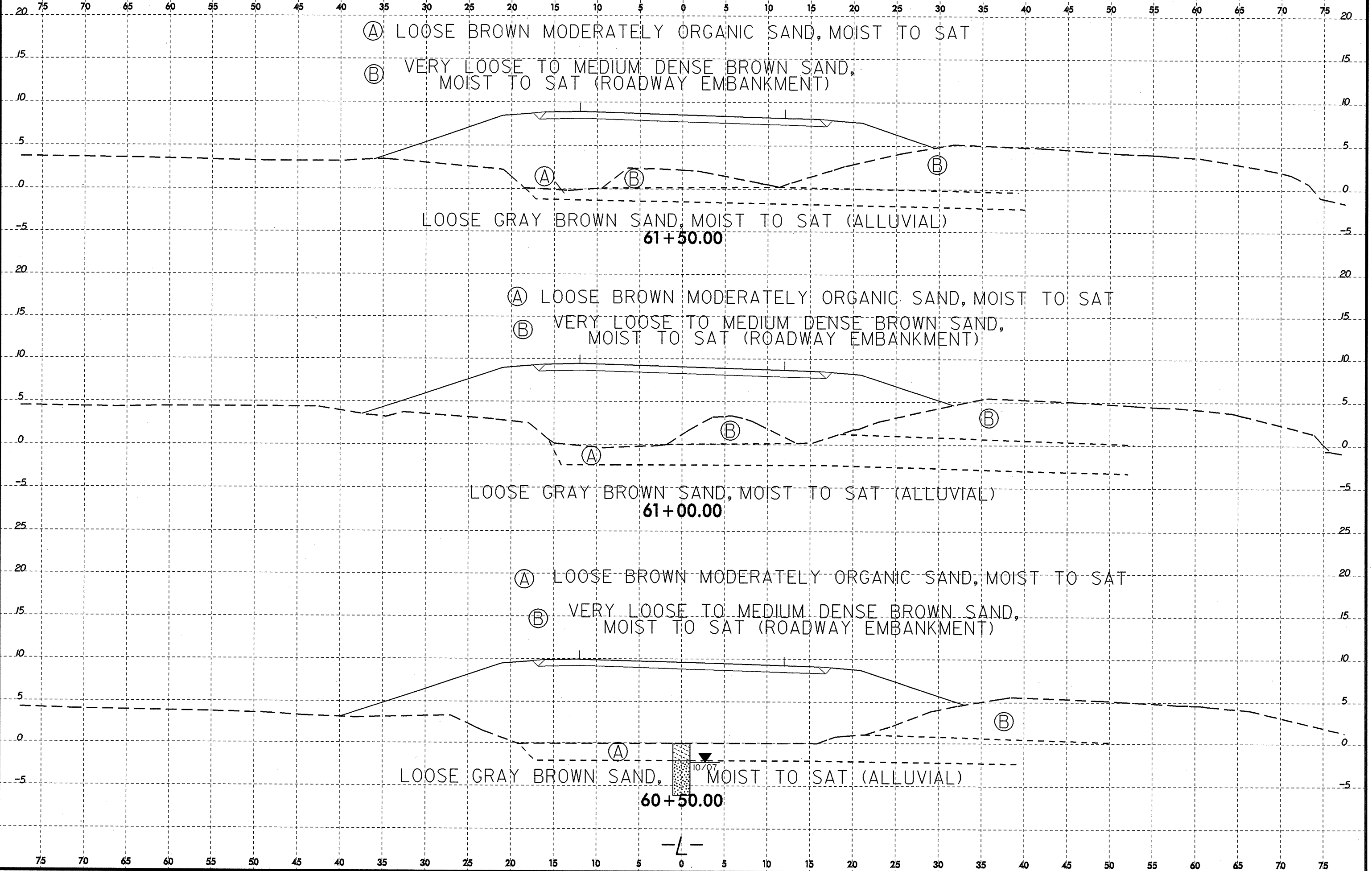
- (A) LOOSE BROWN MODERATELY ORGANIC SAND, MOIST TO SAT
- (B) VERY LOOSE TO MEDIUM DENSE BROWN SAND, MOIST TO SAT (ROADWAY EMBANKMENT)



-L-

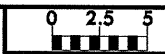
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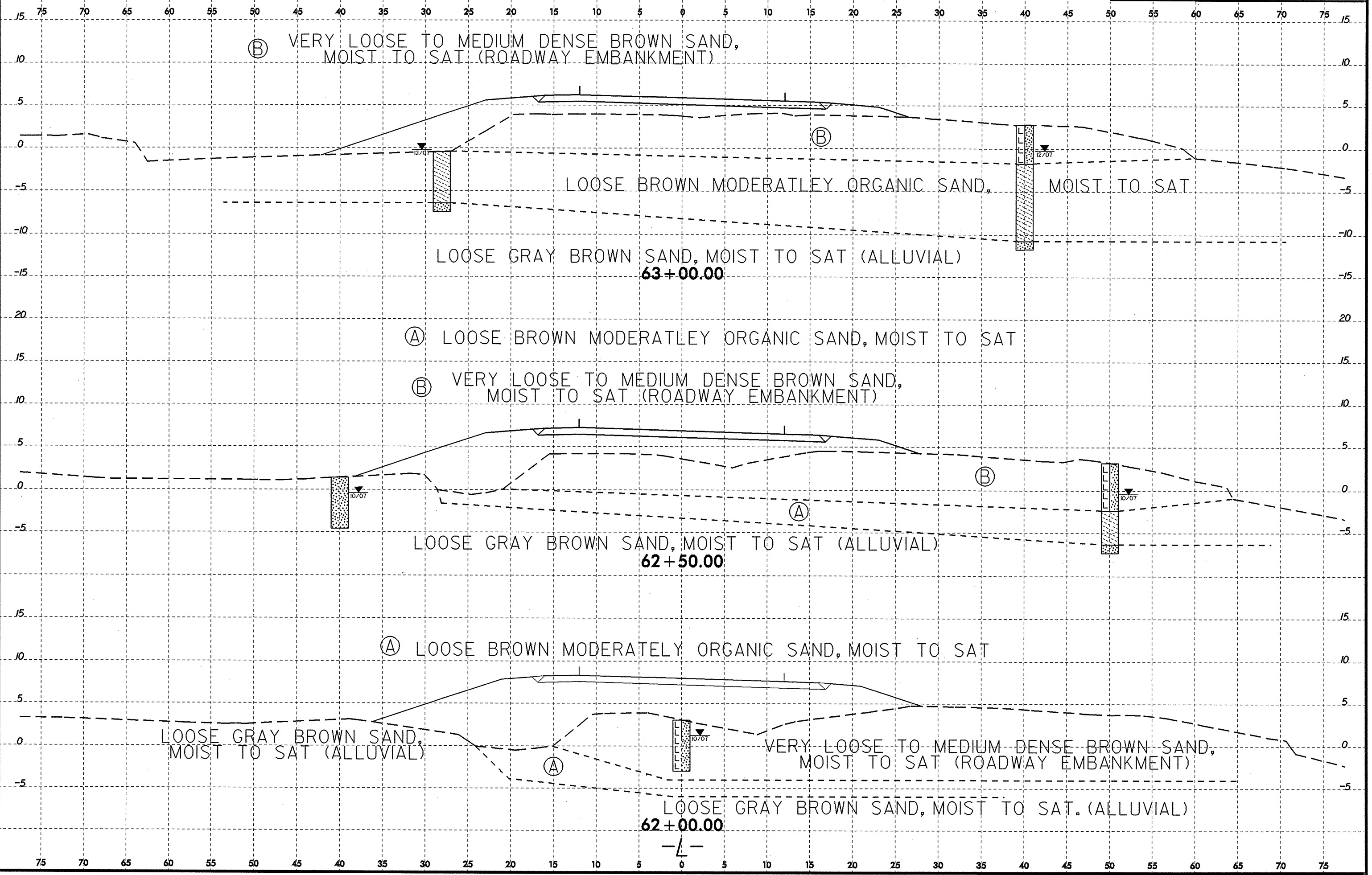


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B-3611	23



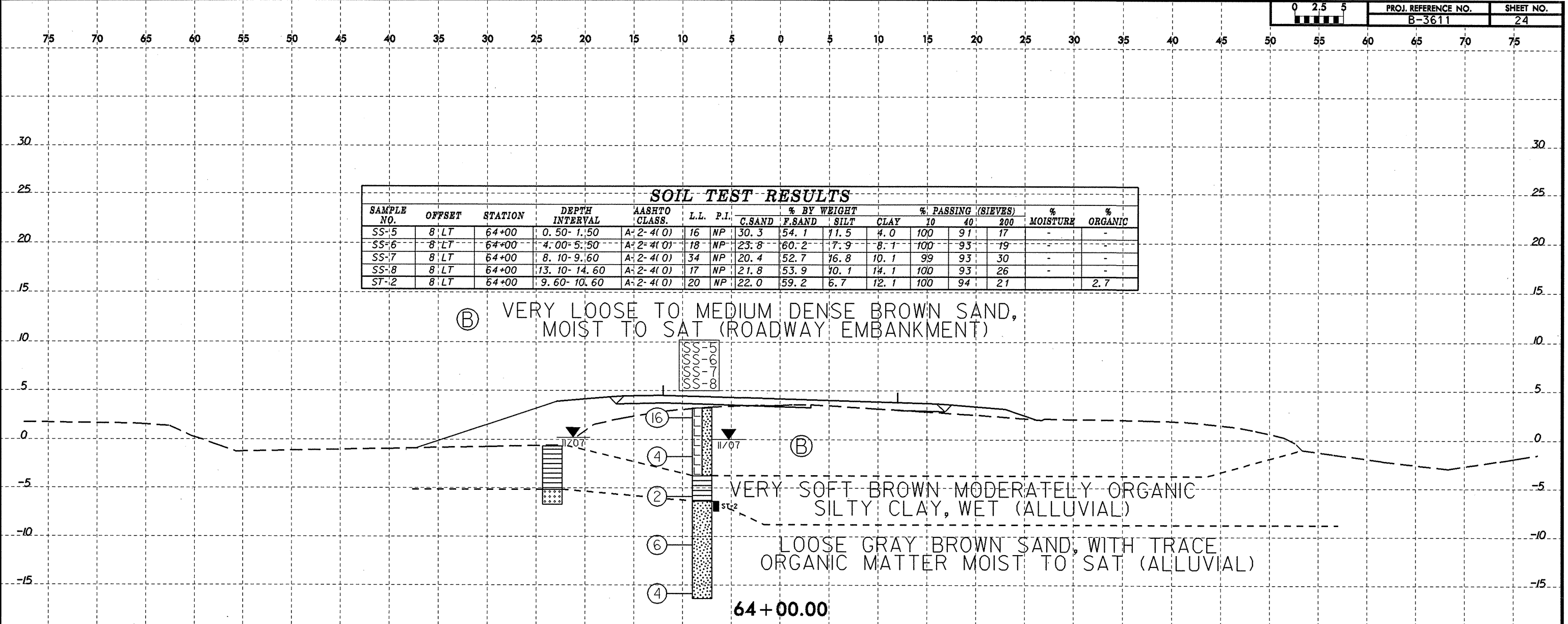
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SOIL TEST RESULTS

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-5	8' LT	64+00	0.50-1.50	A-2-4(0)	16	NP	30.3	54.1	11.5	4.0	100	91	17	-	-
SS-6	8' LT	64+00	4.00-5.50	A-2-4(0)	18	NP	23.8	60.2	7.9	8.1	100	93	19	-	-
SS-7	8' LT	64+00	8.10-9.60	A-2-4(0)	34	NP	20.4	52.7	16.8	10.1	99	93	30	-	-
SS-8	8' LT	64+00	13.10-14.60	A-2-4(0)	17	NP	21.8	53.9	10.1	14.1	100	93	26	-	-
ST-2	8' LT	64+00	9.60-10.60	A-2-4(0)	20	NP	22.0	59.2	6.7	12.1	100	94	21	-	2.7

ⓑ VERY LOOSE TO MEDIUM DENSE BROWN SAND, MOIST TO SAT (ROADWAY EMBANKMENT)

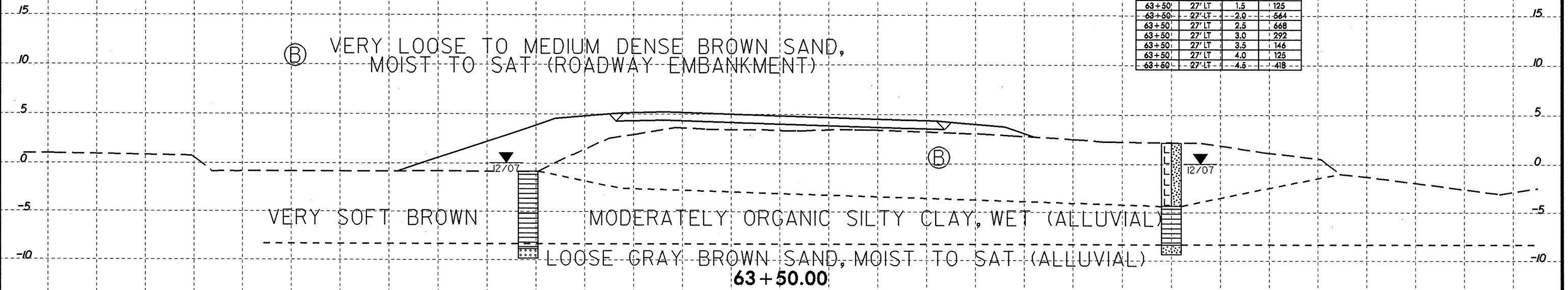


64+00.00

VANE SHEAR TESTS

STATION	OFFSET	DEPTH	S (psf)
63+50	27' LT	1.0	292
63+50	27' LT	1.5	125
63+50	27' LT	2.0	664
63+50	27' LT	2.5	668
63+50	27' LT	3.0	292
63+50	27' LT	3.5	146
63+50	27' LT	4.0	125
63+50	27' LT	4.5	418

ⓑ VERY LOOSE TO MEDIUM DENSE BROWN SAND, MOIST TO SAT (ROADWAY EMBANKMENT)

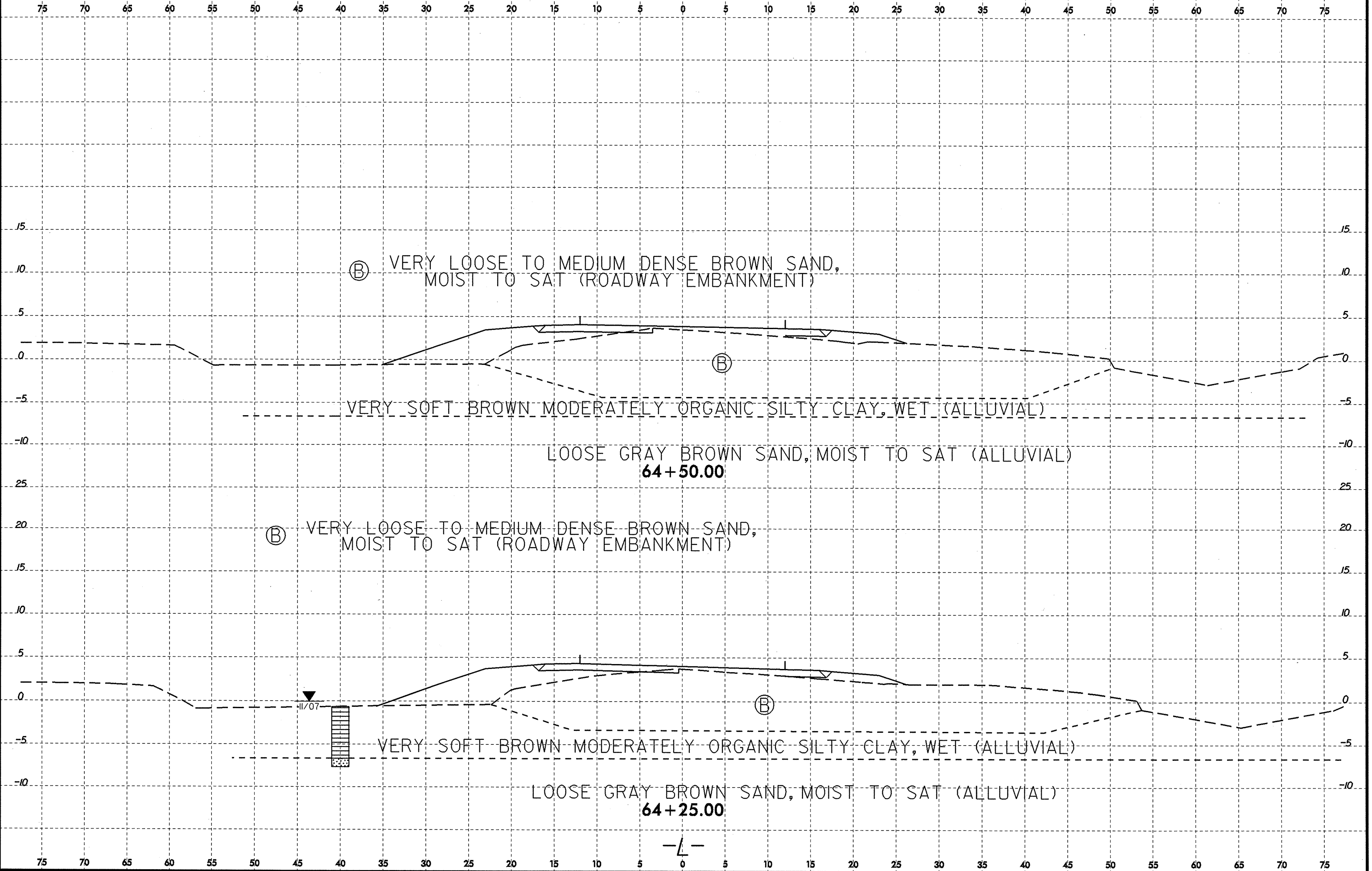


63+50.00

-L-

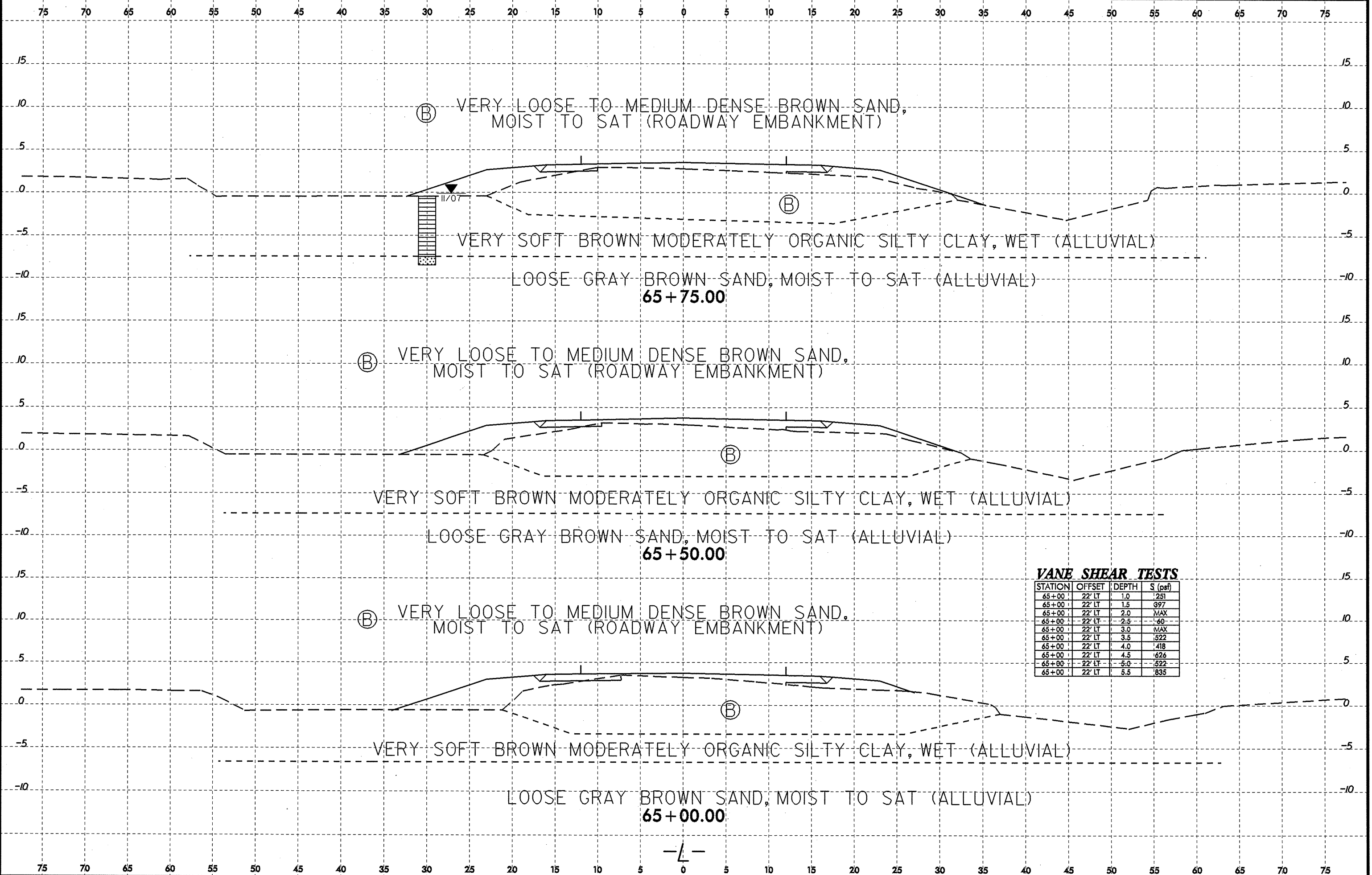
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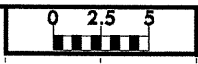


VANE SHEAR TESTS

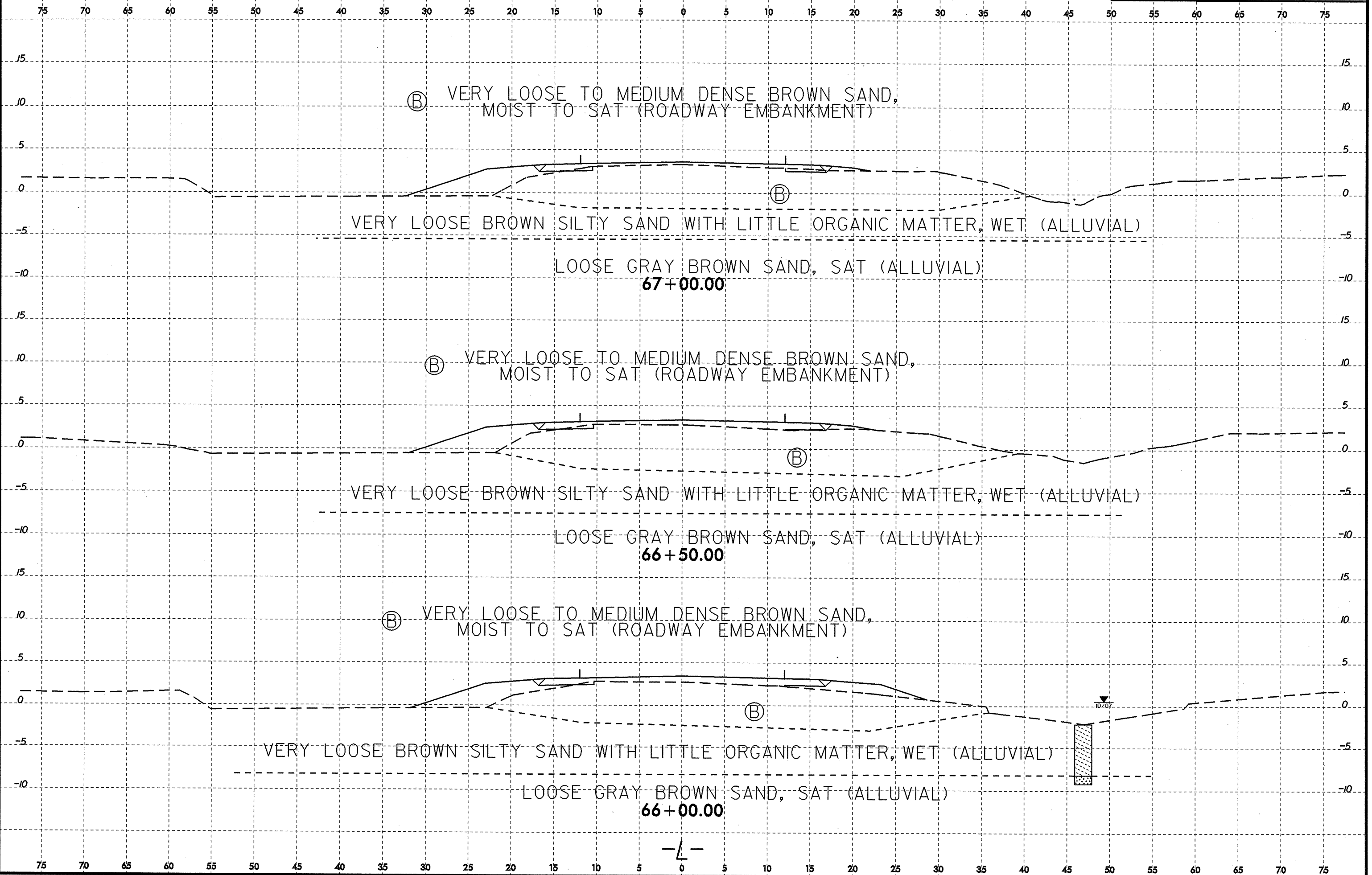
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65+00	22' LT	1.5	397
65+00	22' LT	2.0	MAX
65+00	22' LT	2.5	60
65+00	22' LT	3.0	MAX
65+00	22' LT	3.5	522
65+00	22' LT	4.0	418
65+00	22' LT	4.5	626
65+00	22' LT	5.0	522
65+00	22' LT	5.5	835

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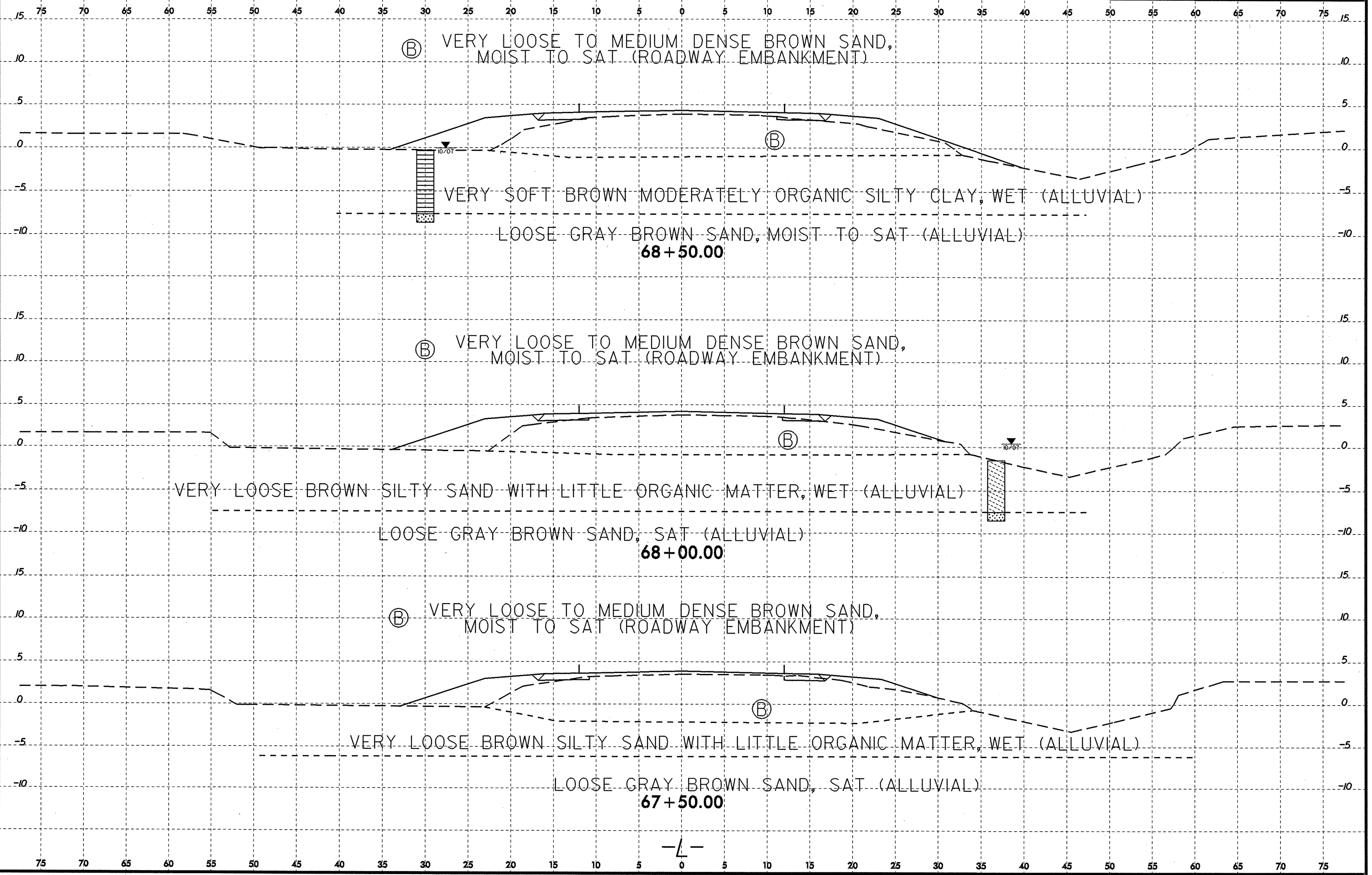


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B-3611	27

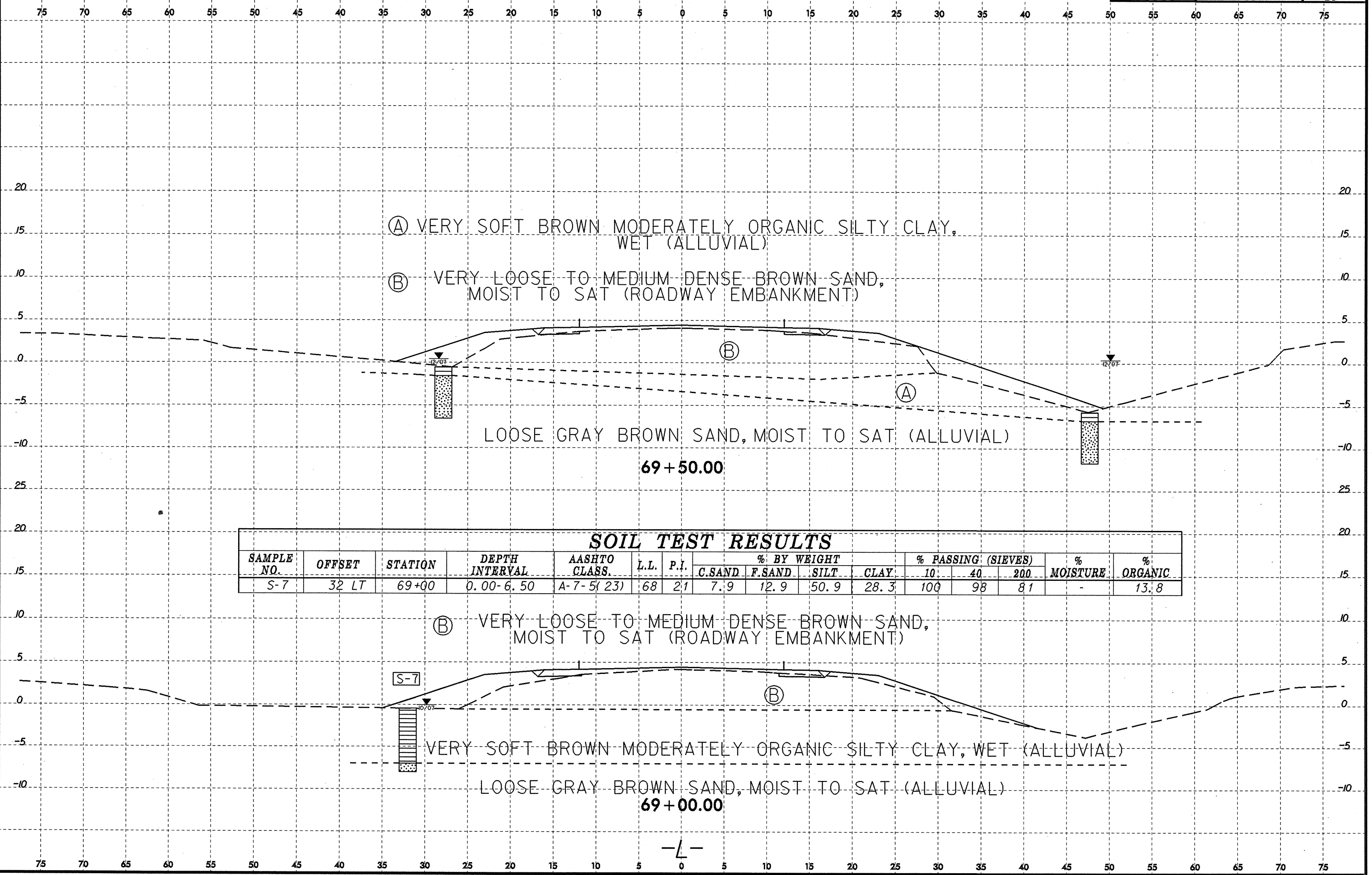


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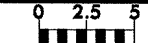
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SOIL TEST RESULTS

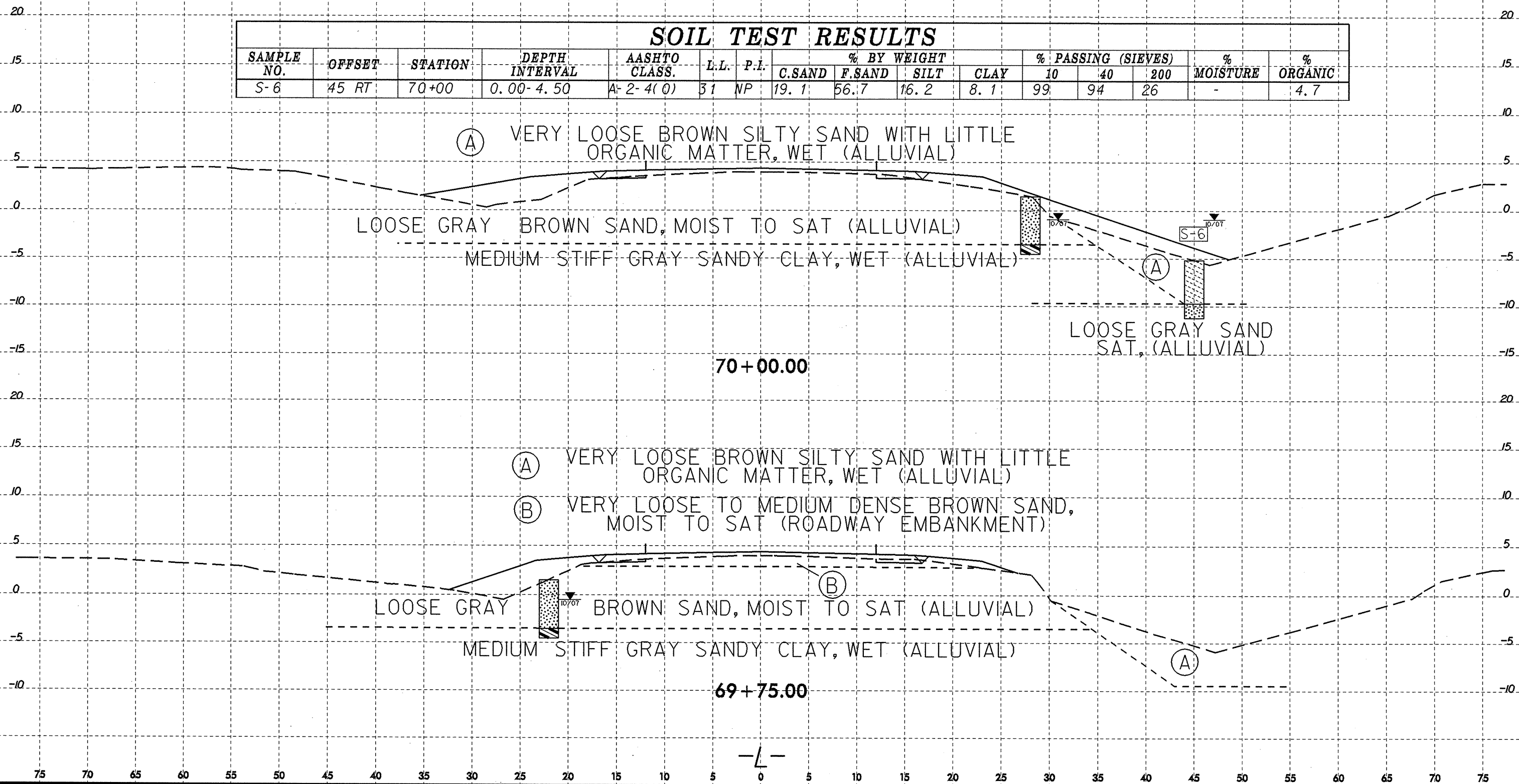
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-7	32 LT	69+00	0.00-6.50	A-7-5(23)	68	21	7.9	12.9	50.9	28.3	100	98	81	-	13.8

8/23/99



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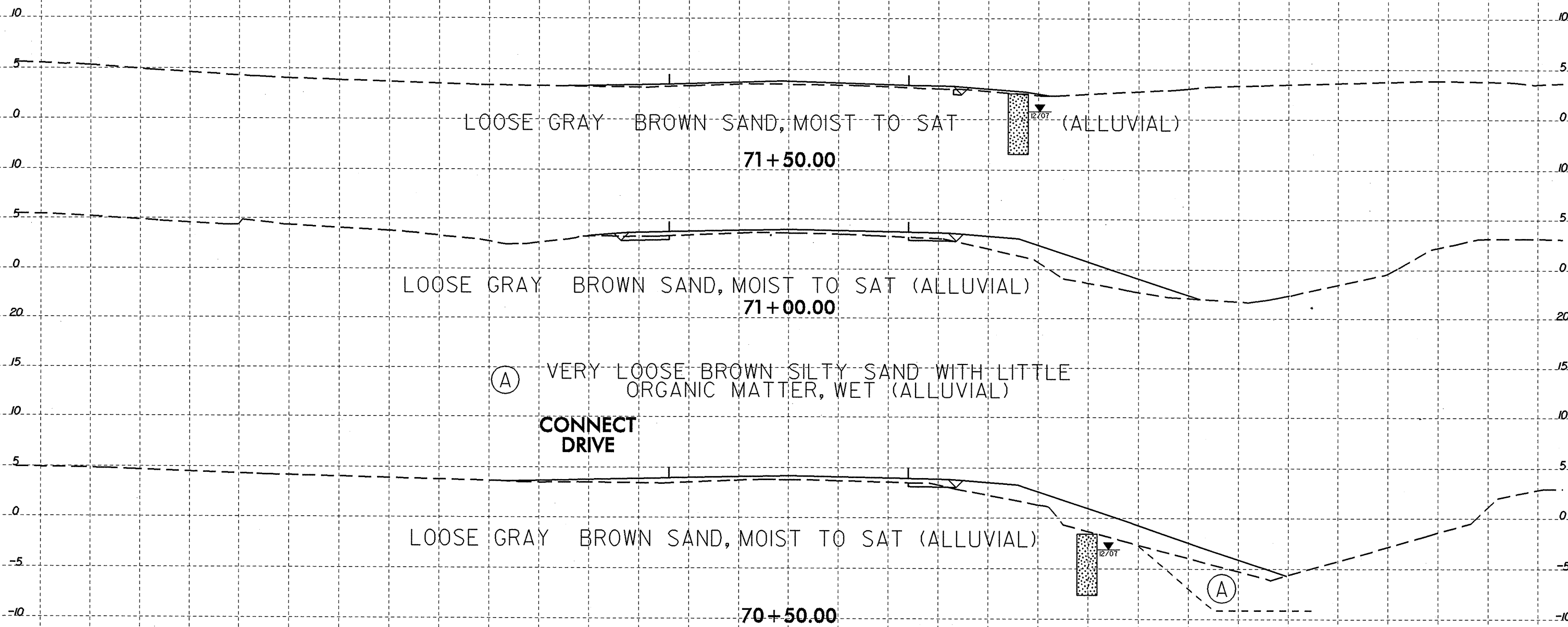
SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.L.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-6	45 RT	70+00	0.00-4.50	A-2-4(0)	31	NP	19.1	56.7	16.2	8.1	99	94	26	-	4.7



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