

**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: U-6223

PROJECT: 49502

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

CONTENTS

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>
-L-	12+00 TO 25+00	4, 5
-L-	40+00 TO 63+65.41	6, 7
-Y1-	10+00 TO 16+50	4
-Y2-	10+00 TO 16+00	6

CROSS SECTIONS

<u>LINE</u>	<u>STATION</u>	<u>SHEETS</u>
-L-	10+00 TO 51+50	8-32
-Y1-	10+00 TO 18+00	33-38
-Y2-	10+00 TO 16+00	39-43

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

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY JOHNSTON
 PROJECT DESCRIPTION SR 1560 (RANCH RD. EXT.)
FROM US 70 BUS/NC 42 TO RANCH RD. NEW
LOCATION EXT. OF RANCH RD.

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6223	1	43

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 1919 TOT-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

N.O. MOORE

D.G. PINTER

R.E. SMITH

C.M. WALKER

J.L. LOVE

INVESTIGATED BY N.O. MOORE

DRAWN BY N.O. MOORE

CHECKED BY N.T. ROBERSON

SUBMITTED BY N.O. MOORE

DATE JUNE 2021



DocuSigned by:
Nicholas O'Neil Moore 7/26/2021
 8636AEA785 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									
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 209, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6									
SOIL LEGEND AND AASHTO CLASSIFICATION									
GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)			SILT-CLAY MATERIALS (> 35% PASSING #200)			ORGANIC MATERIALS		
GROUP CLASS.	A-1	A-3	A-2	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5
SYMBOL	[Pattern]			[Pattern]			[Pattern]		
% PASSING #10 #40 #200	[Table]			[Table]			[Table]		
MATERIAL PASSING #10 #40 #200	[Table]			[Table]			[Table]		
GROUP INDEX	[Table]			[Table]			[Table]		
USUAL TYPES OF MAJOR MATERIALS	[Table]			[Table]			[Table]		
GEN. RATING AS SUBGRADE	[Table]			[Table]			[Table]		
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30									
CONSISTENCY OR DENSENESS									
PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY		RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)		RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)				
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	[Table]		[Table]		[Table]		N/A		
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	[Table]		[Table]		[Table]		[Table]		
TEXTURE OR GRAIN SIZE									
U.S. STD. SIEVE SIZE OPENING (MM)	[Table]		[Table]		[Table]		[Table]		
BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE, SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)			
GRAIN SIZE	[Table]		[Table]		[Table]		[Table]		
SOIL MOISTURE - CORRELATION OF TERMS									
SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION		GUIDE FOR FIELD MOISTURE DESCRIPTION						
LL	[Table]		[Table]						
PL	[Table]		[Table]						
OM	[Table]		[Table]						
SL	[Table]		[Table]						
PLASTICITY									
NON PLASTIC	[Table]		[Table]						
SLIGHTLY PLASTIC	[Table]		[Table]						
MODERATELY PLASTIC	[Table]		[Table]						
HIGHLY PLASTIC	[Table]		[Table]						
COLOR									
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.									

GRADATION									
WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.									
ANGULARITY OF GRAINS									
THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.									
MINERALOGICAL COMPOSITION									
MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.									
COMPRESSIBILITY									
SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50									
PERCENTAGE OF MATERIAL									
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									
GROUND WATER									
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									
MISCELLANEOUS SYMBOLS									
ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE									
RECOMMENDATION SYMBOLS									
UNDERCUT SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK UNCLASSIFIED EXCAVATION - UNACCEPTABLE									
ABBREVIATIONS									
AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, 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. - SILTY, 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									
EQUIPMENT USED ON SUBJECT PROJECT									
DRILL UNITS: <input type="checkbox"/> CME-45C <input checked="" type="checkbox"/> CME-55 <input type="checkbox"/> CME-550 <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> PORTABLE HOIST <input type="checkbox"/> _____ <input type="checkbox"/> _____ ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input checked="" type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG-CARBIDE INSERTS <input type="checkbox"/> CASING <input type="checkbox"/> w/ ADVANCER <input type="checkbox"/> TRICONE _____ * STEEL TEETH <input type="checkbox"/> TRICONE _____ * TUNG.-CARB. <input type="checkbox"/> CORE BIT <input type="checkbox"/> _____ <input type="checkbox"/> _____ HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL CORE SIZE: <input type="checkbox"/> -B _____ <input type="checkbox"/> -H _____ <input type="checkbox"/> -N _____ HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input checked="" type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> _____ <input type="checkbox"/> _____									

ROCK DESCRIPTION									
HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:									
WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.								
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.								
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.								
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.								
WEATHERING									
FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.								
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.								
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.								
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.								
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. IF TESTED, WOULD YIELD SPT REFUSAL.								
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. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF.								
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. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF.								
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.								
ROCK HARDNESS									
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 GROOVED 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 FINGERNAIL.								
FRACTURE SPACING					BEDDING				
TERM	SPACING				TERM	THICKNESS			
VERY WIDE	MORE THAN 10 FEET				VERY THICKLY BEDDED	4 FEET			
WIDE	3 TO 10 FEET				THICKLY BEDDED	1.5 - 4 FEET			
MODERATELY CLOSE	1 TO 3 FEET				THINLY BEDDED	0.16 - 1.5 FEET			
CLOSE	0.16 TO 1 FOOT				VERY THINLY BEDDED	0.03 - 0.16 FEET			
VERY CLOSE	LESS THAN 0.16 FEET				THICKLY LAMINATED	0.008 - 0.03 FEET			
					THINLY LAMINATED	< 0.008 FEET			
INDURATION									
FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.									
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.								

TERMS AND DEFINITIONS									
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 (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.									
BENCH MARK:									
ELEVATION: _____ FEET									
NOTES:									
ROADWAY BORING ELEVATIONS WERE TAKEN FROM TIN FILE U6223.ls.tin.tin DATED 9/2/2020									

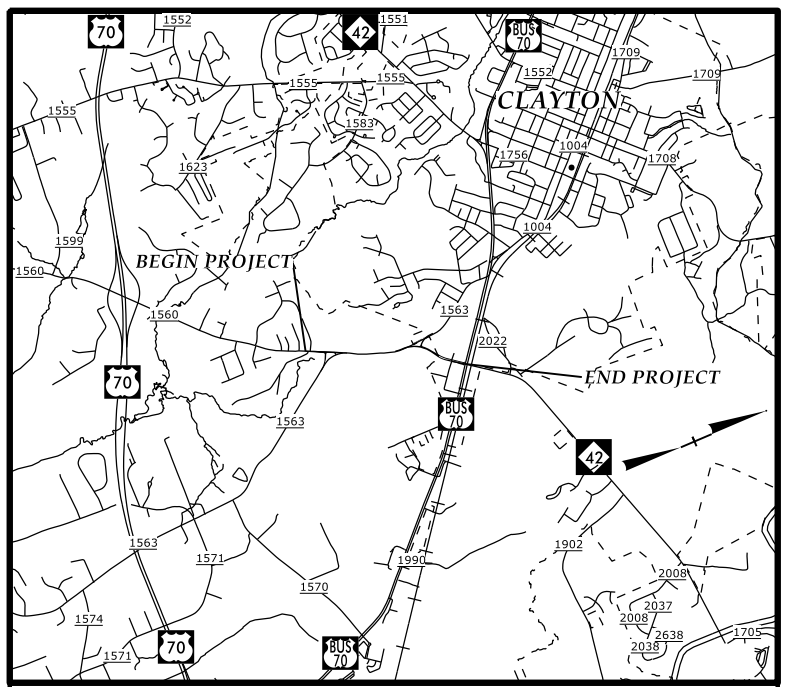
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6223	3	43
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48811.1.1	1560004	PE	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

JOHNSTON COUNTY

LOCATION: NEW LOCATION FROM SR-1560 (RANCH ROAD)
TO THE US-70 BUS & NC-42 INTERSECTION.

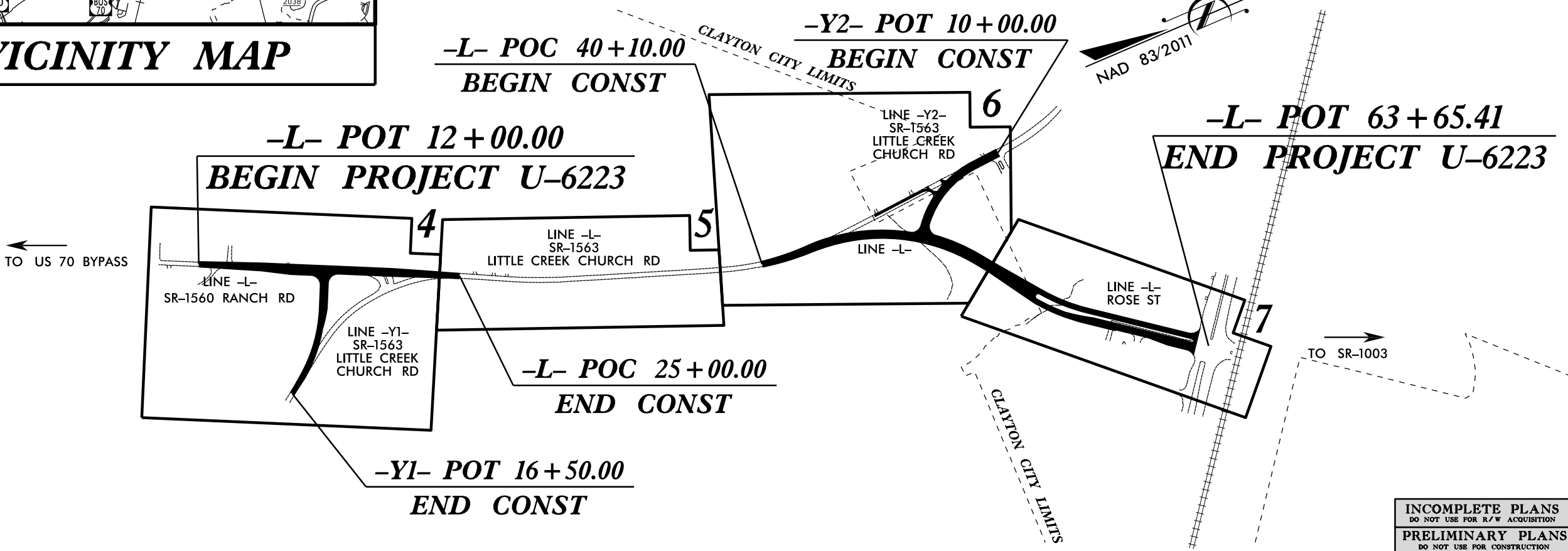
TYPE OF WORK: GRADING, DRAINAGE AND PAVING



VICINITY MAP

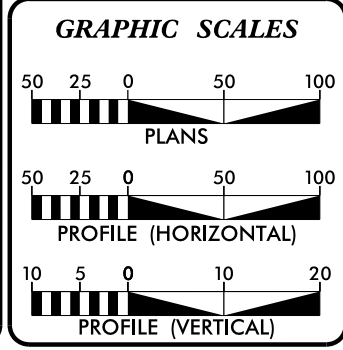
TIP PROJECT: U-6223

CONTRACT:



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD .
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CLAYTON.

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



DESIGN DATA

ADT 2022 =	6300
ADT 2045 =	25800
K =	9 %
D =	55 %
T =	3 % *
V =	50 MPH
* TTST =	1% DUAL = 2%
FUNCTIONAL CLASS	?

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-6223 =	0.692 MILES
TOTAL LENGTH TIP PROJECT U-6223 =	0.692 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
Division 4 DDC
509 Ward Blvd., Wilson NC, 27895

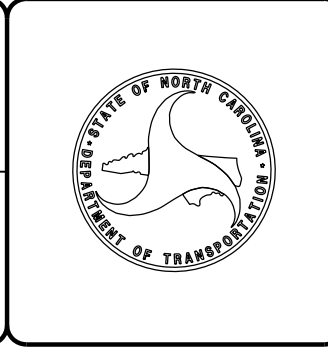
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	KEVIN BOWEN, PE PROJECT ENGINEER
JANUARY 20, 2023	
LETTING DATE:	D.R. ETHRIDGE PROJECT DESIGN ENGINEER
JULY 16, 2024	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



03 JUN 2021 14:36 S:\PROJ\Releash\Investigation\TIP\U6223_GEO_RDWY\CADD_GEOTECH\PlanProf\U-6223_DDC4_TSH.dgn \$\$\$\$USERNAME\$\$\$\$

DDC4

7/2/99



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

June 3, 2021

STATE PROJECT: 49502 (U-6223)
 FEDERAL PROJECT:
 COUNTY: JOHNSTON
 DESCRIPTION: SR 1560 (Ranch Road Extension) from US 70 BUS/NC 42 to Ranch Road in Clayton. New Location Extension of Ranch Road.
 SUBJECT: Geotechnical Report – Inventory

The Geotechnical Engineering Unit has completed a subsurface investigation for this project and presents the following inventory.

Project Description

This project consists of widening SR 1560 (Ranch Road) from north of Crooked Creek Road to intersection of SR 1563 (Little Creek Road) and widening SR 1563 from intersection of SR 1560 to north of Sunnyview Lane. The project also consists of adding Ranch Road Extension from SR 1560 to US 70 BUS/NC 42.

A geotechnical investigation was conducted during September of 2020 through March of 2021. Fifteen hand-auger boring and 19 SPT roadway borings were performed by the Geotechnical Engineering Unit. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit.

The following alignments, totaling 0.907 miles, were investigated. Subsurface plans and cross sections of these alignments are included in this report.

<u>Line</u>	<u>Stations</u>
-L-	12+00 to 25+00
-L-	40+10 to 63+65.41
-Y1-	10+00 to 16+50
-Y2-	10+00 to 16+00

Physiography and Geology

The project is located inside the city limits of the town of Clayton, and within the Coastal Plain and Piedmont physiographic province of North Carolina. Tertiary-aged sands and gravels of terrace deposits

Mailing Address:
 NC DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL ENGINEERING UNIT
 1589 MAIL SERVICE CENTER
 RALEIGH NC 27699-1589

Telephone: 919-707-6850
 Fax: 919-250-4237
 Customer Service: 1-877-368-4968

Website: www.ncdot.gov

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

and upland sediment overlay residual sand and clay. The topography is gently rolling. The widening project consists of a mixture of woods, agriculture land, businesses and residences.

Soils Properties

Soils encountered during this investigation are roadway embankment, artificial fill, alluvial, undivided coastal plain, and residual.

Roadway Embankment soils are present throughout the entire project. These soils primarily consist of red-brown, moist, loose to medium dense silty sand (A-2-4).

Artificial fill soils are only present at the end of the project associated with utility fill. These soils are characterized by orange and red, moist, soft to medium stiff, sandy silt (A-4) and gray, moist, coarse sand (A-1-b).

Alluvial soils are only present in low-lying, wetland areas of the project. These soils are characterized by light gray, wet to saturated, very loose, clayey sand (A-2-6) and light gray, orange, and brown, wet to saturated, soft, sandy clay (A-6). Plastic indices for these soils range from 16 to 17.

Undivided Coastal Plain soils are present throughout the entire project. These soils are characterized by orange-brown, moist, soft to medium stiff, sandy and silty clay (A-6, A-7) and light orange to brown, moist, loose to medium dense, silty sand (A-2-4). Plastic indices for these soils range from 15 to 42.

Residual soils were also encountered throughout the entire project. These soils are characterized by light orange, red, and gray, moist, loose to medium dense, saprolitic, silty sand (A-2-4).

Groundwater

Groundwater measurements were taken during September of 2020 March of 2021 during average rainfall conditions. Groundwater was present in some borings and ranged from 0.0 to 6.7 feet from the ground surface.

Areas of Special Geotechnical Interests

- The following sections were found to contain highly plastic clays:

<u>Line</u>	<u>Stations</u>
-L-	21+25 to 25+50
-L-	49+75 to 54+75
-L-	58+75 to 62+75
-Y1-	11+25 to 16+50
-Y2-	10+00 to 14+75

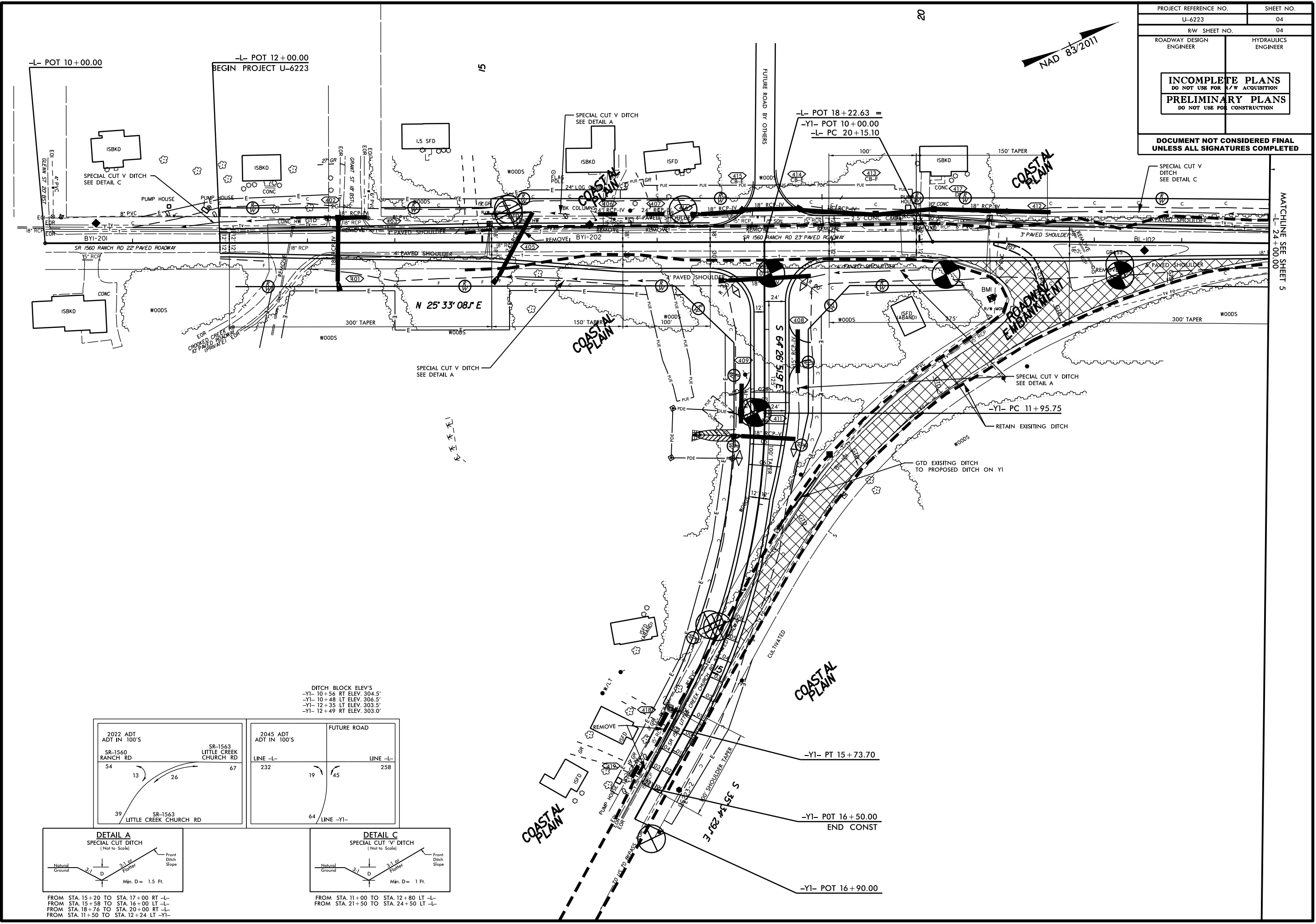
- The following sections were found to contain artificial fill:

<u>Line</u>	<u>Station</u>
-L-	61+80

3. The following sections were found to contain high ground water (6 feet below grade or higher):

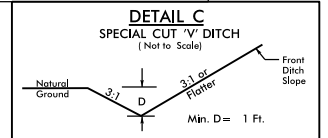
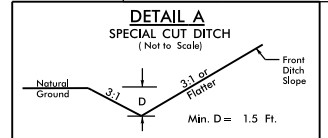
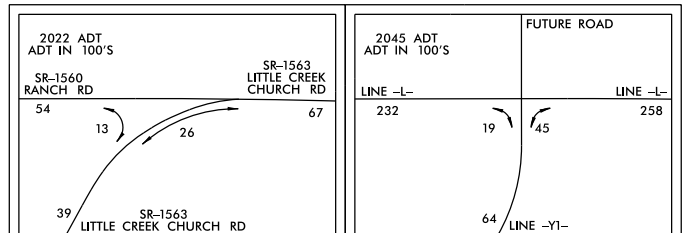
<u>Line</u>	<u>Stations</u>	<u>Offset</u>
-L-	23+75 to 25+00	LT
-L-	41+00 to 55+75	LT and RT
-Y2-	10+00 to 16+00	LT and RT

PROJECT REFERENCE NO.	SHEET NO.
U-6223	04
R/W SHEET NO.	04
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



DITCH BLOCK ELEV'S

-Y1- 10+56 RT ELEV. 304.5'
-Y1- 10+48 LT ELEV. 306.5'
-Y1- 12+35 LT ELEV. 303.5'
-Y1- 12+49 RT ELEV. 303.0'



FROM STA. 15+20 TO STA. 17+00 RT -L-
 FROM STA. 15+58 TO STA. 16+00 LT -L-
 FROM STA. 18+76 TO STA. 20+00 RT -L-
 FROM STA. 11+50 TO STA. 12+24 LT -Y1-

FROM STA. 11+00 TO STA. 12+80 LT -L-
 FROM STA. 21+50 TO STA. 24+50 LT -L-

20-MAY-2021 10:21
 S:\EOD\64104\investigation\TIP\U6223_GEO_RDWY\CADD_GEOTECH\PlanProf\UPDATED FILES 2_23_2021\U-6223_GEO_PSH04.dgn
 \$\$\$USERNAAMES\$\$

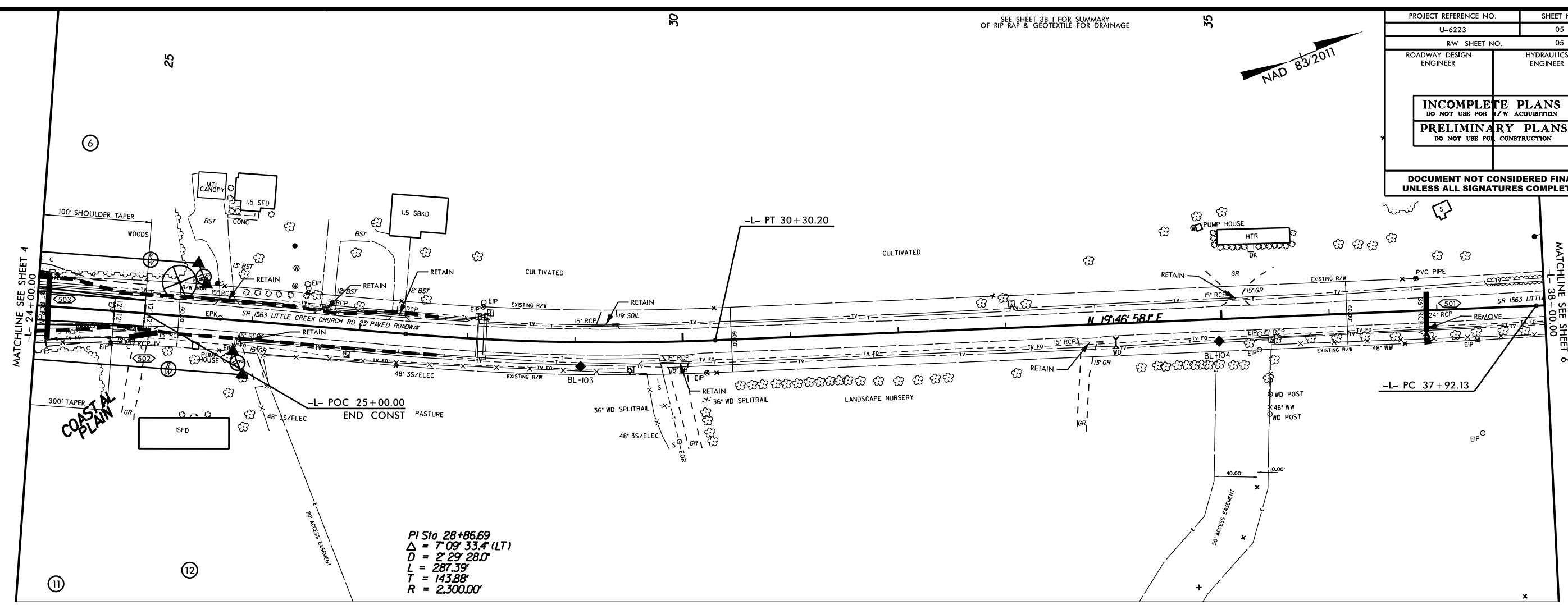
REVISIONS

MATCHLINE SEE SHEET 5
-L- 24+00.00

7/2/99

DDC4

PROJECT REFERENCE NO.	SHEET NO.
U-6223	05
R/W SHEET NO.	05
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

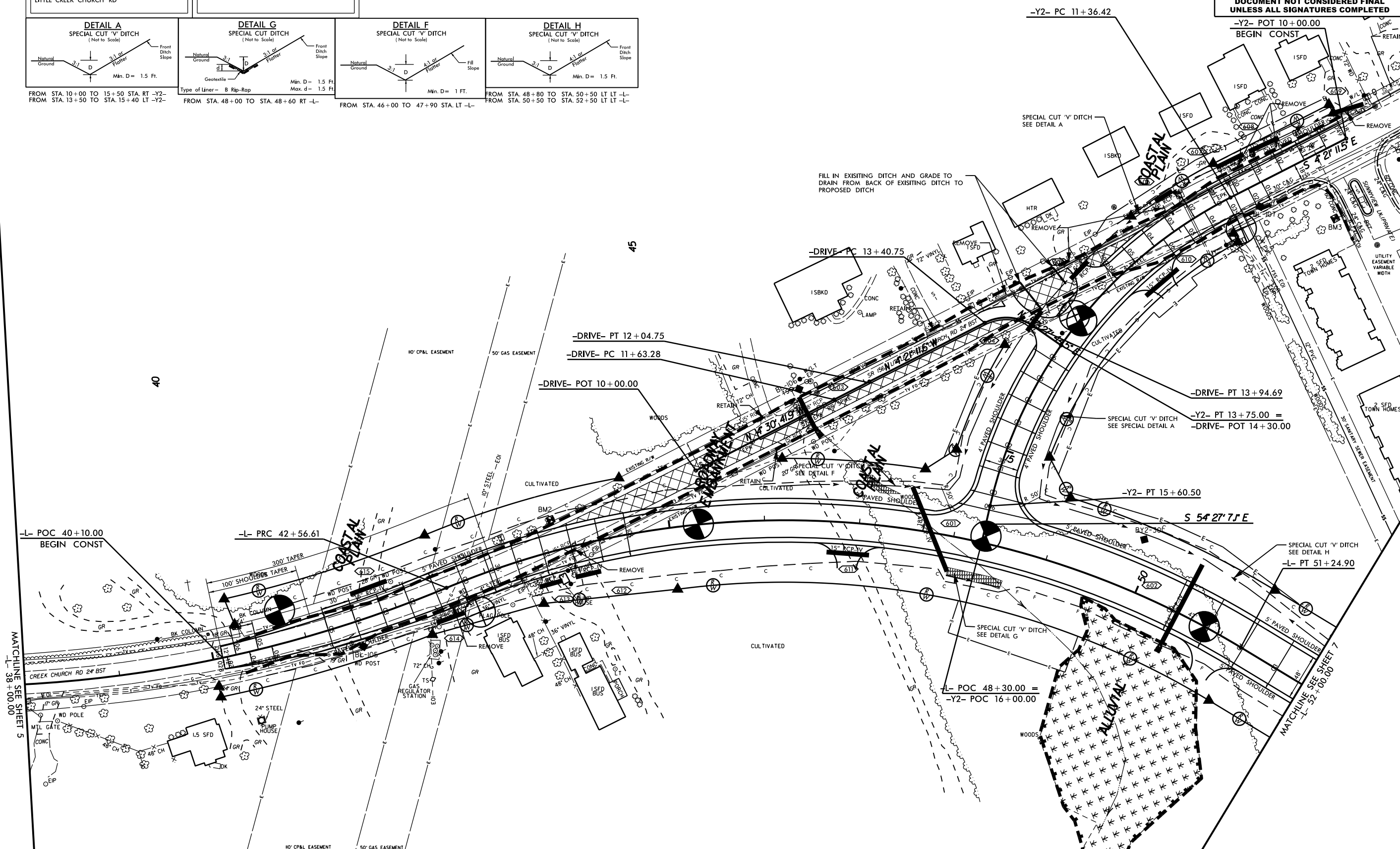
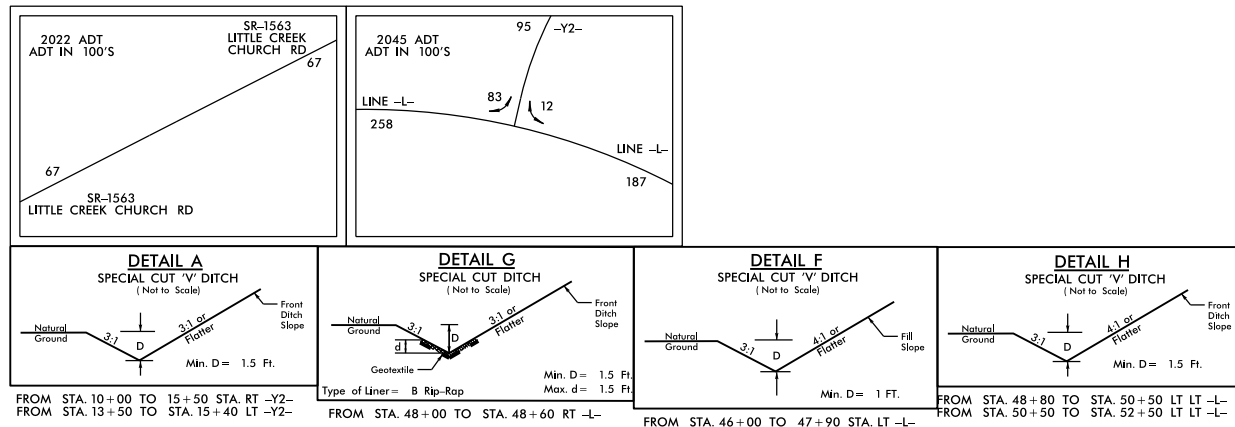


PI Sta 28+86.69
 $\Delta = 7^{\circ}09'33.4''$ (LT)
 $D = 2^{\circ}29'28.0''$
 $L = 287.39'$
 $T = 143.88'$
 $R = 2,300.00'$

REVISIONS

20 MAY 2021 10:19
 S:\EPC\6411\investigation\TIP\U6223_GEO_RDWY\CADD_GEOTECH\PlanProf\UPDATED FILES 2_23_2021\U-6223_GEO_PSH05.dgn
 \$\$\$USERNAME\$\$\$

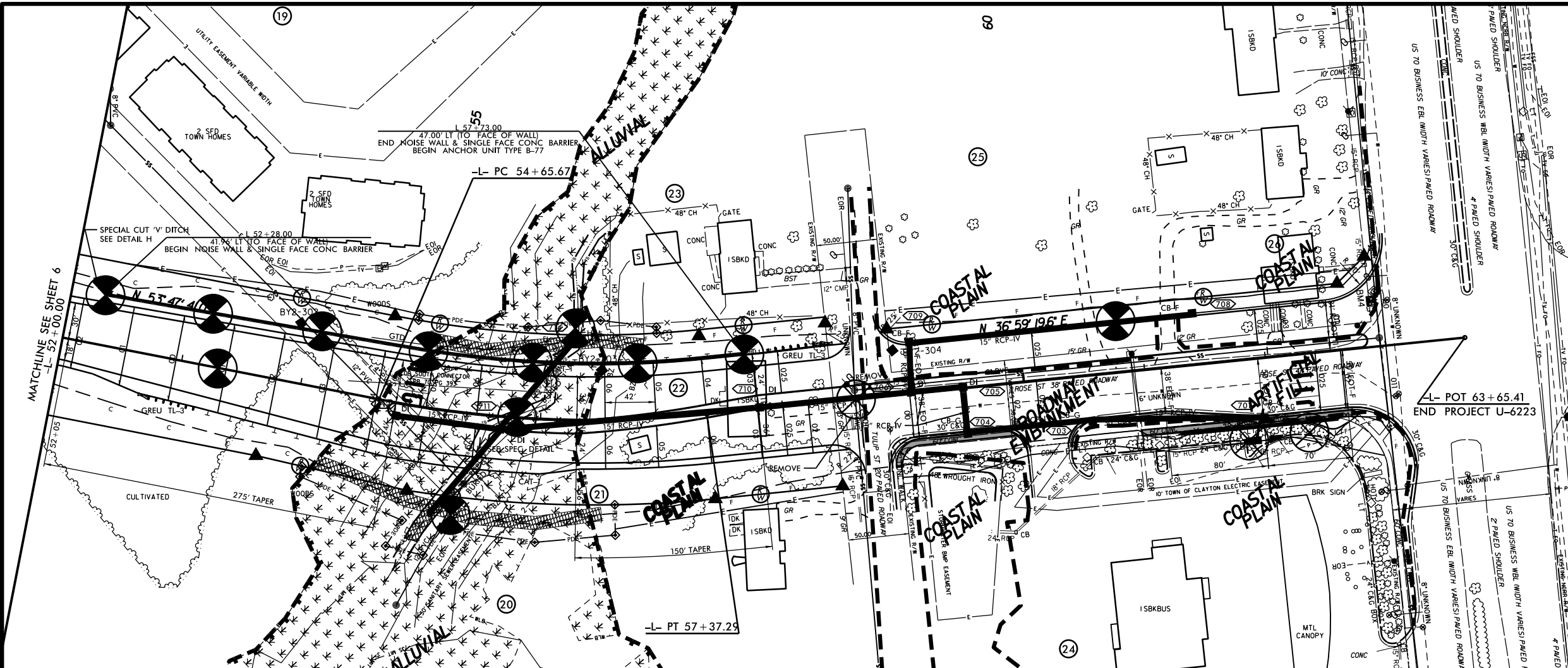
PROJECT REFERENCE NO.	SHEET NO.
U-6223	06
R/W SHEET NO.	06
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

20 MAY 2021 10:00
 S:\EOD\6411\6411.dgn
 S:\SS\USER\WJESSSS

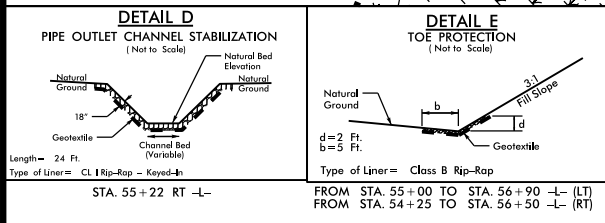
PROJECT REFERENCE NO.	SHEET NO.
U-6223	07
R/W SHEET NO.	07
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NC 42 WB 44' PAVED ROADWAY
 CONC TO SR 1003 BUFFALO RD.
 NC 42 EB 29' PAVED ROADWAY



2022 ADT	401	US-70
2045 ADT	542	
ADT IN 100'S		
ROSE ST	12/46	200/216 NC-42
28/187	6/26	51/111 261/442
	246/417	US-70

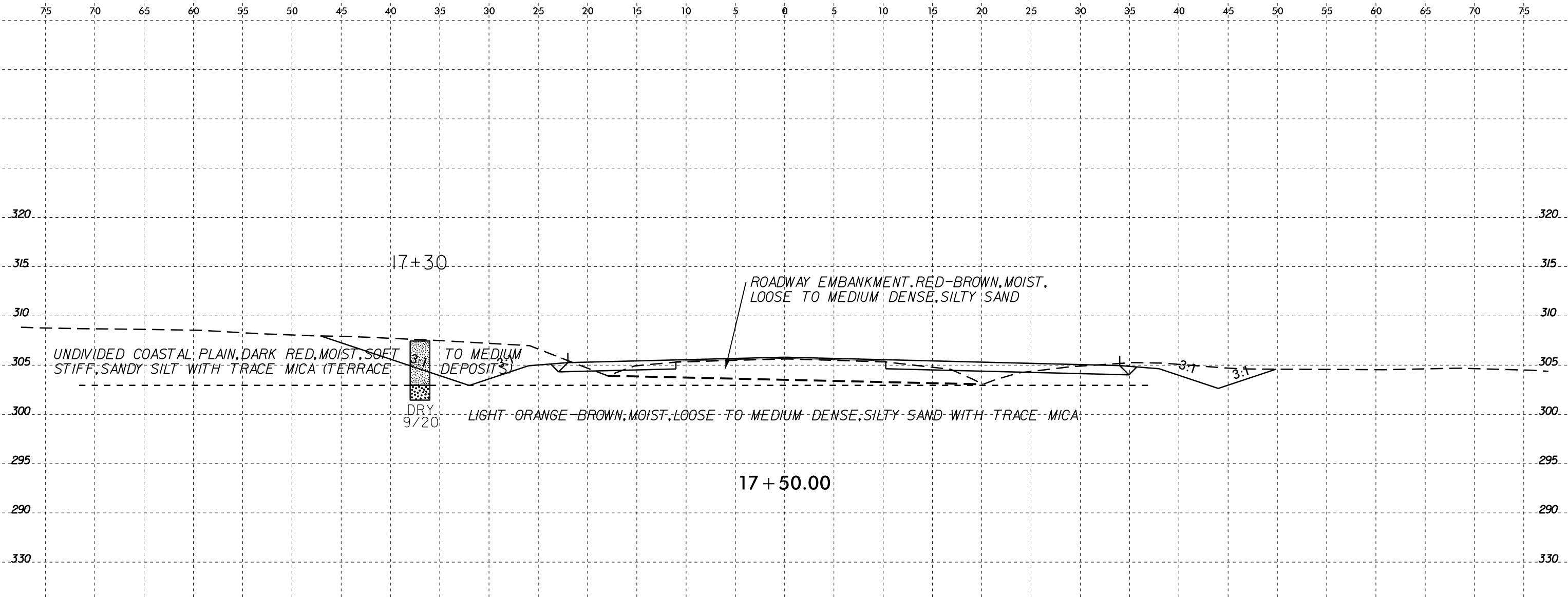


REVISIONS

20 MAY 2021 09:49
 S:\EOD\6411\6411\GIS\U6223_GEO_RDWY\CADD_GEO\RDWY\UPDATED FILES 2_23_2021\U-6223_GEO_PSH07.dgn
 S:\EOD\6411\6411\GIS\U6223_GEO_RDWY\CADD_GEO\RDWY\UPDATED FILES 2_23_2021\U-6223_GEO_PSH07.dgn
 S:\EOD\6411\6411\GIS\U6223_GEO_RDWY\CADD_GEO\RDWY\UPDATED FILES 2_23_2021\U-6223_GEO_PSH07.dgn

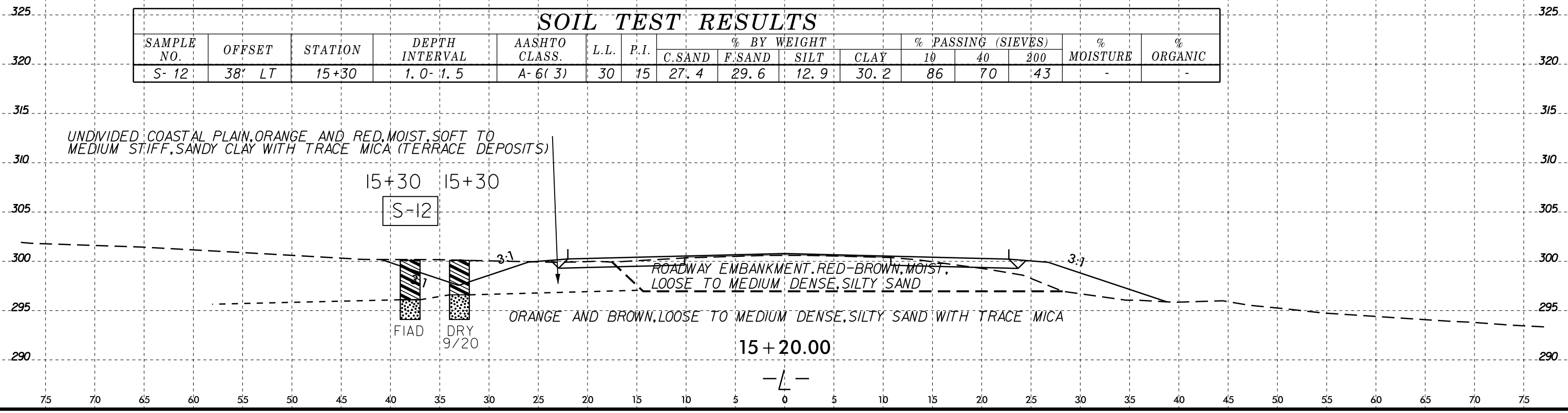
7/2/99

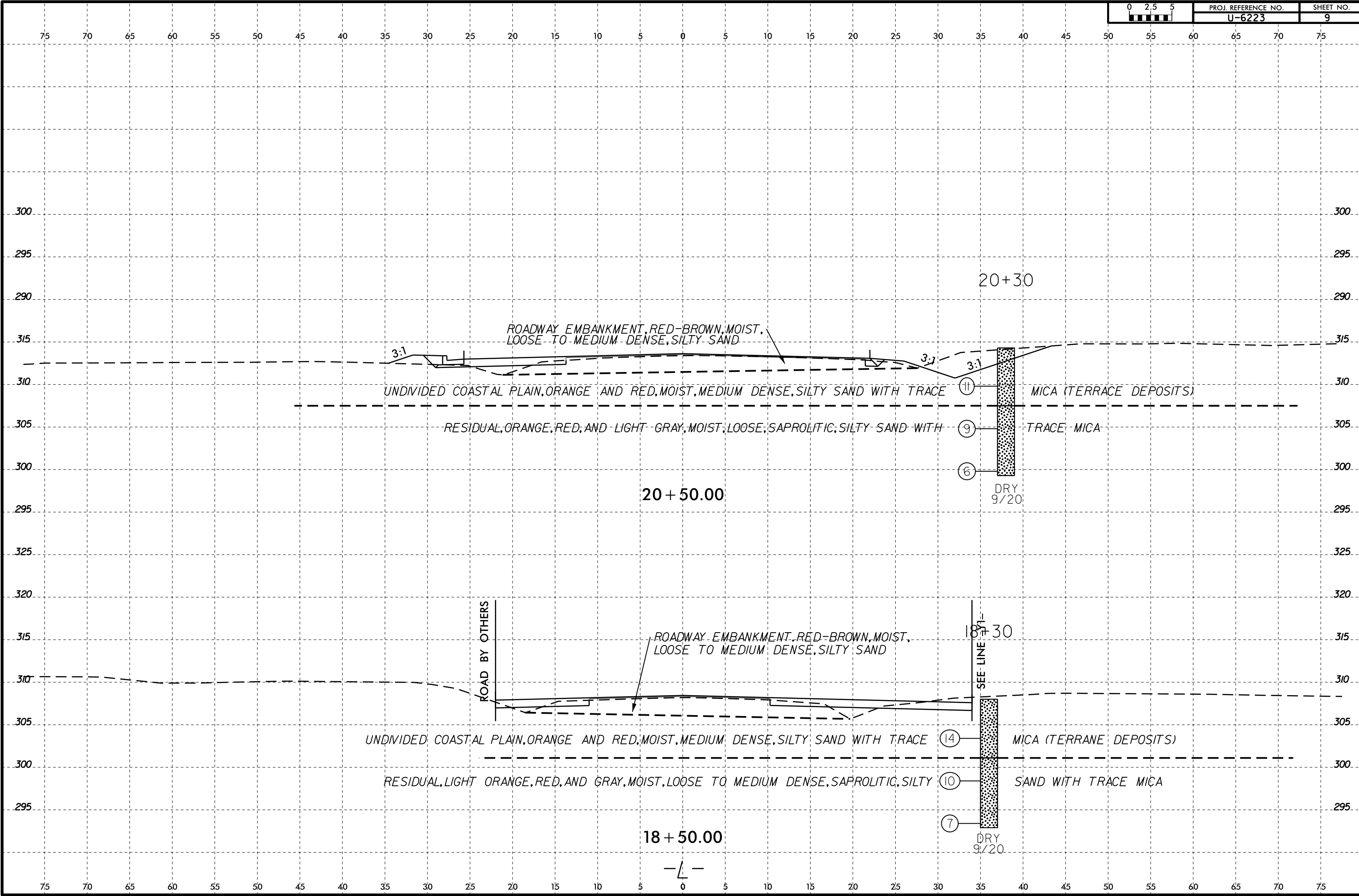
DDC4

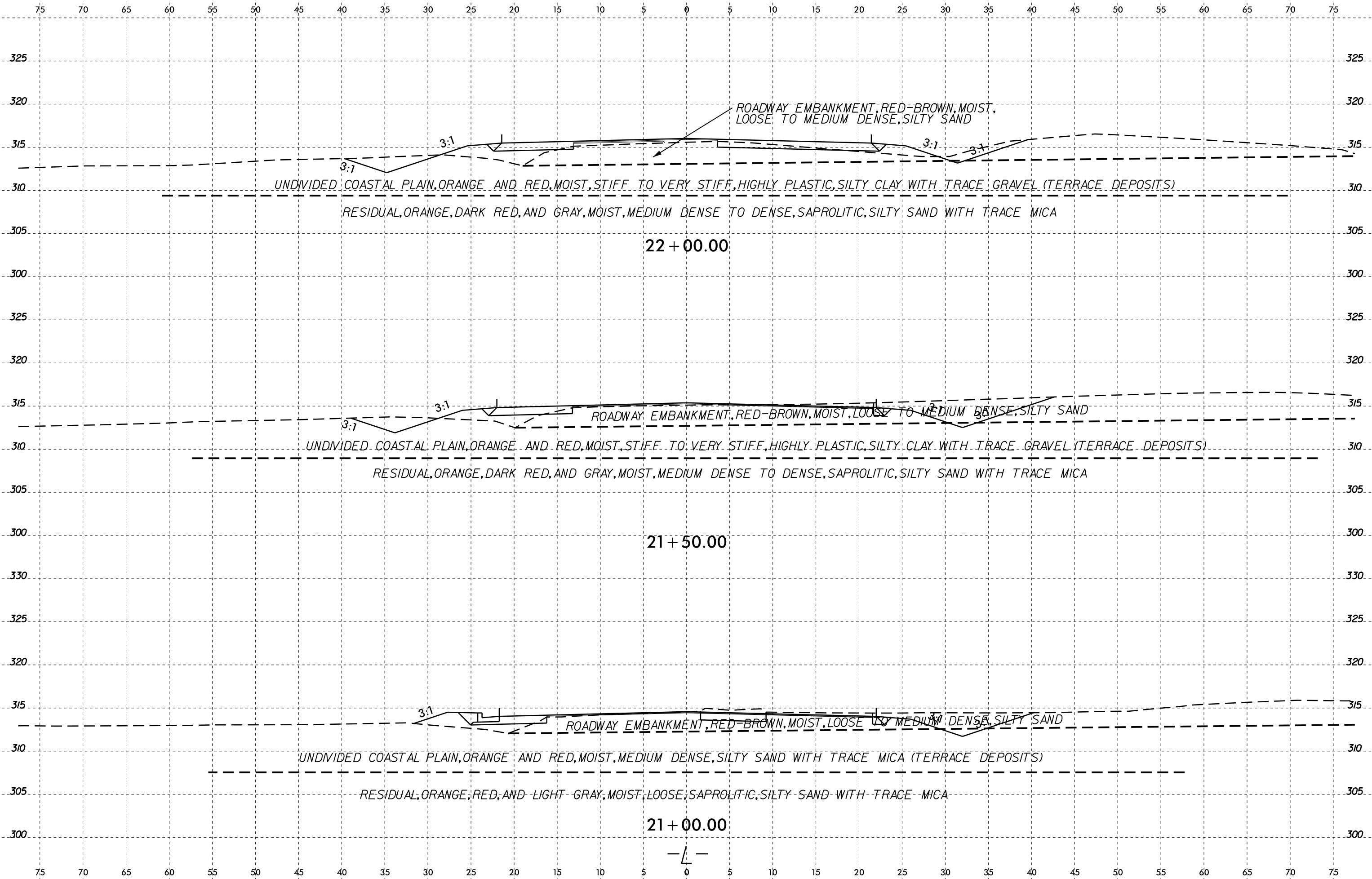


SOIL TEST RESULTS

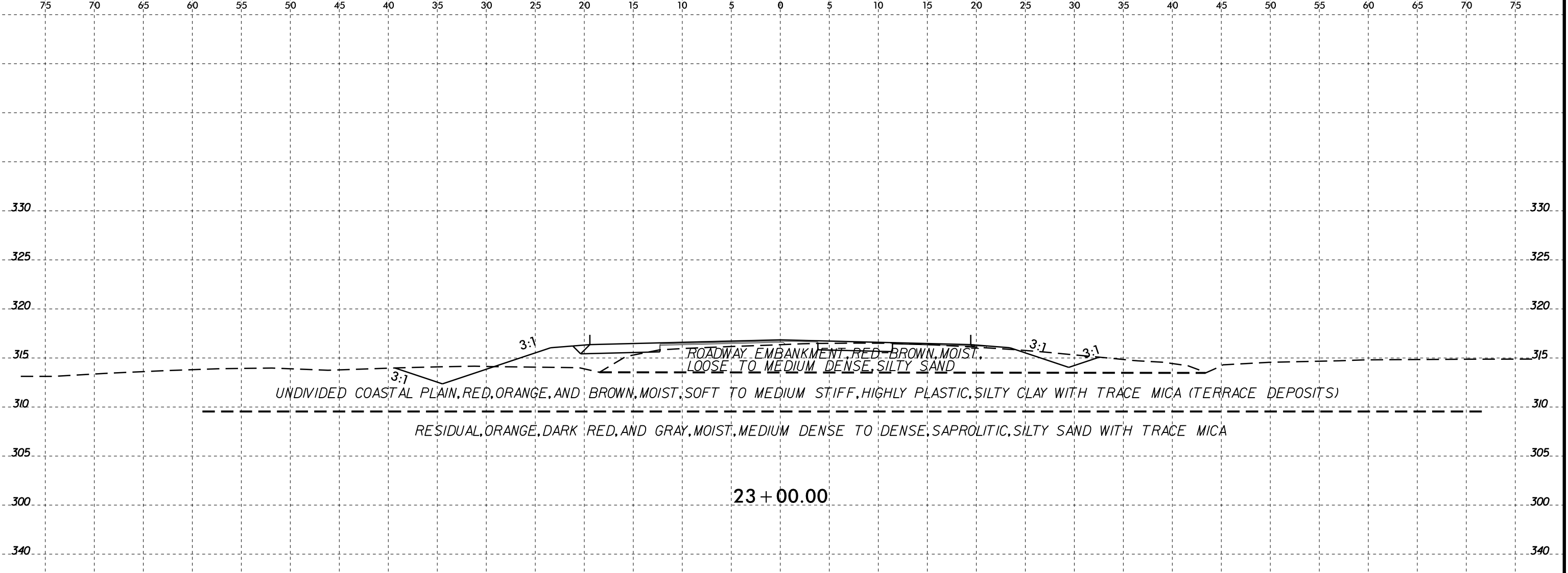
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-12	38' LT	15+30	1.0-1.5	A-6(3)	30	15	27.4	29.6	12.9	30.2	86	70	43	-	-







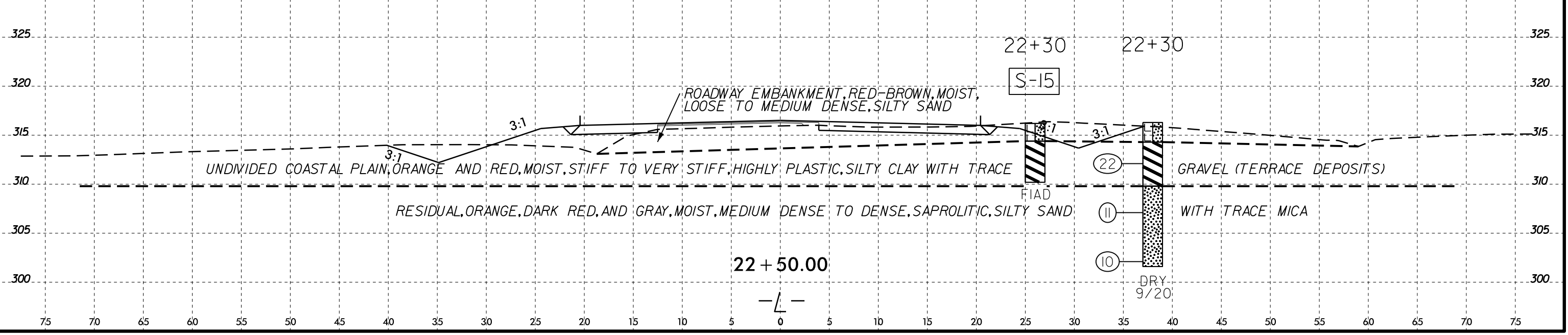
6/23/16 03-JUN-2021 13:26 Investigation\TIP\U6223.GEO.RDWAY\CA00.GEOTECH\asc\UPDATED FILES 2_23_2021\U6223.Geo.L.XSI.dgn



23 + 00.00

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-15	26' RT	22+30	2.0-2.5	A-7-6(23)	62	42	18.3	19.5	5.8	56.3	93	81	61	-	-



22 + 50.00

22+30 22+30

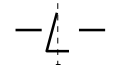
S-15

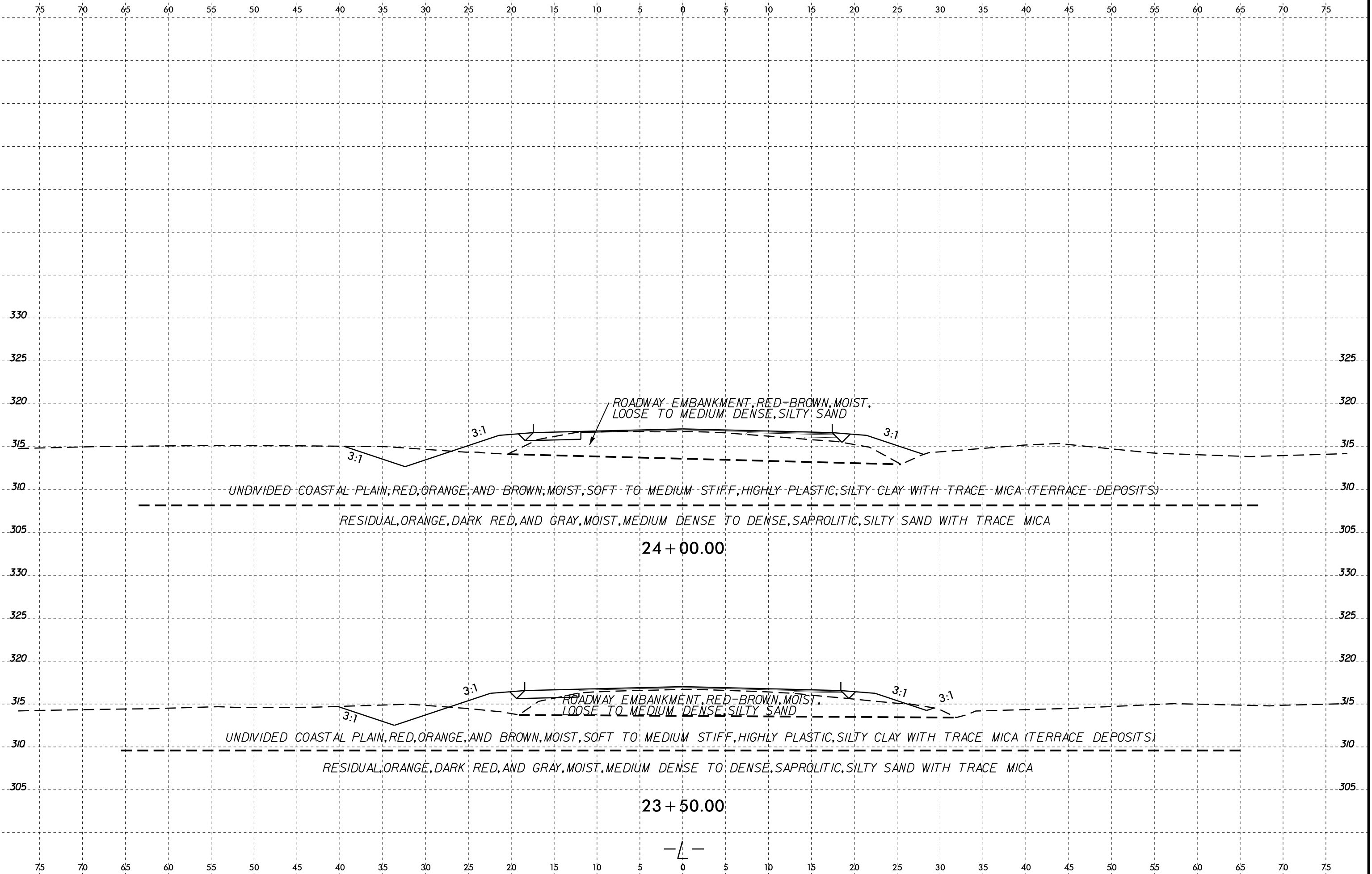
(22)

(11)

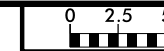
(10)

DRY
9/20





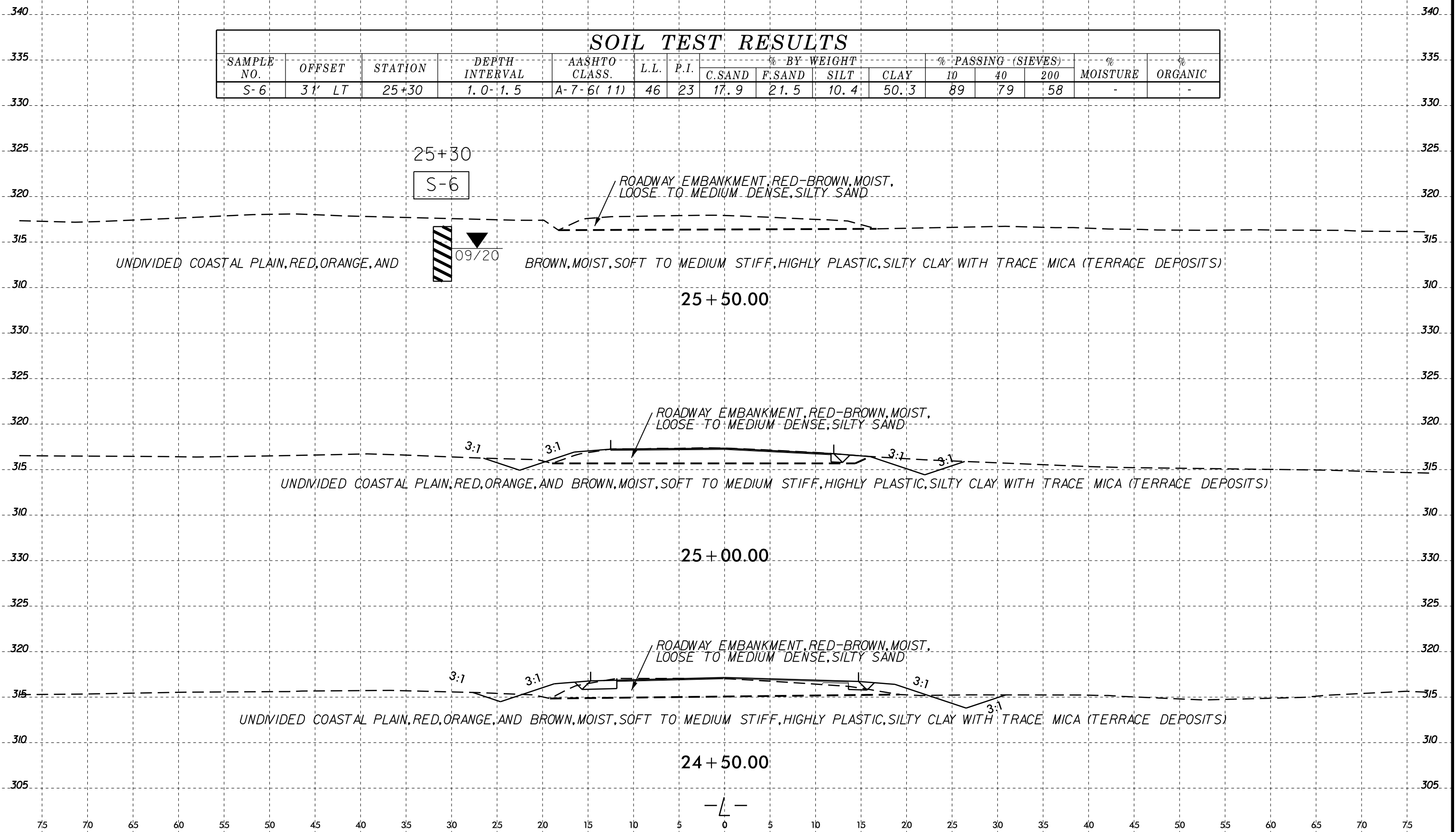
03-JUN-2021 13:26 Investigation\TIP\U6223_GEO_RDWY\CA00_GEOTECH\asc\UPDATED_FILES_2_23_2021\U6223_Geo_L_XSI.dgn
 \$\$\$\$SURFERNAME\$\$\$\$



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-6	31' LT	25+30	1.0-1.5	A-7-6(11)	46	23	17.9	21.5	10.4	50.3	89	79	58	-	-



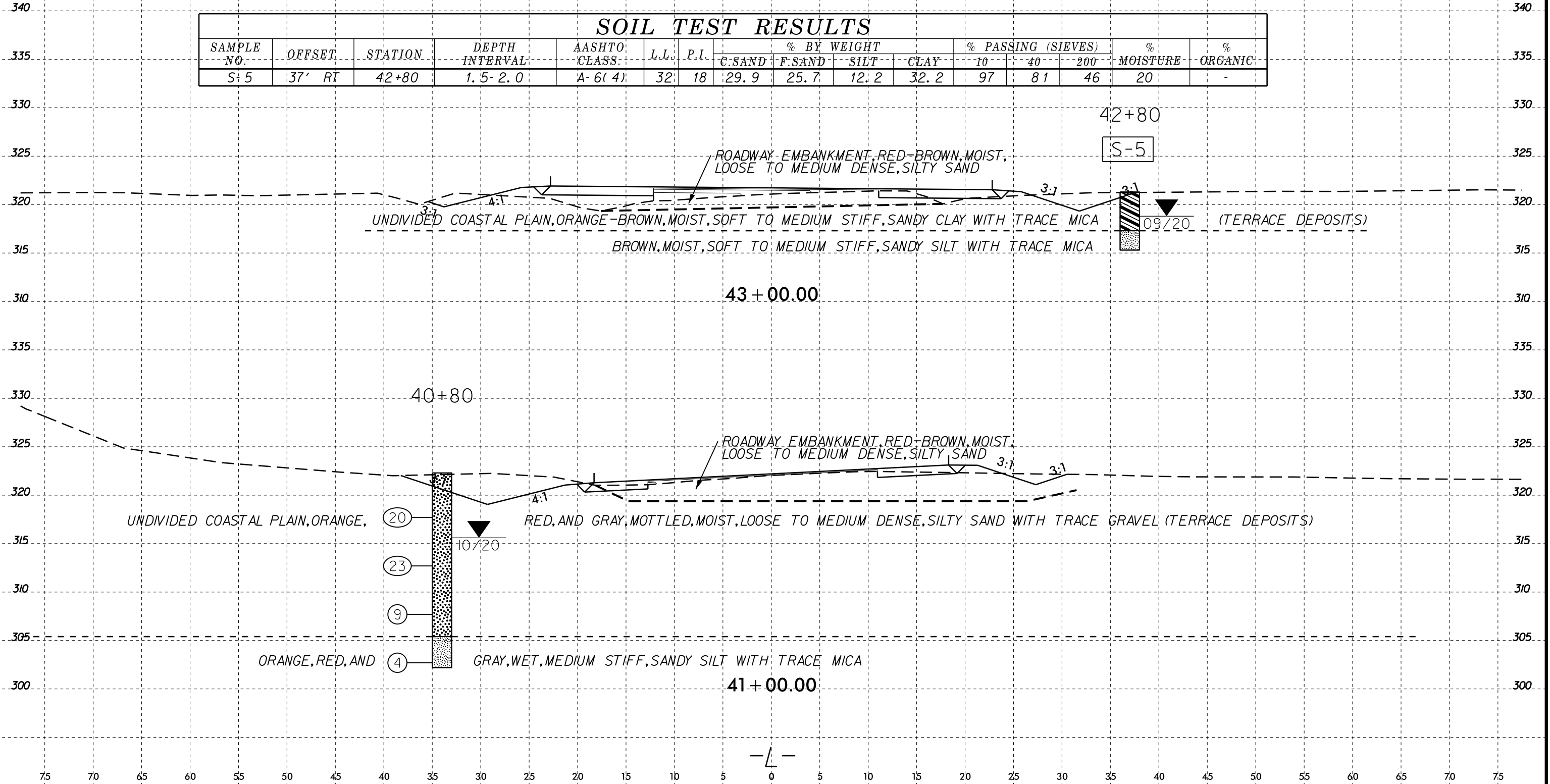
03-JUN-2021 13:26 Investigation\TIP\U6223.GEO.RDWAY\CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn



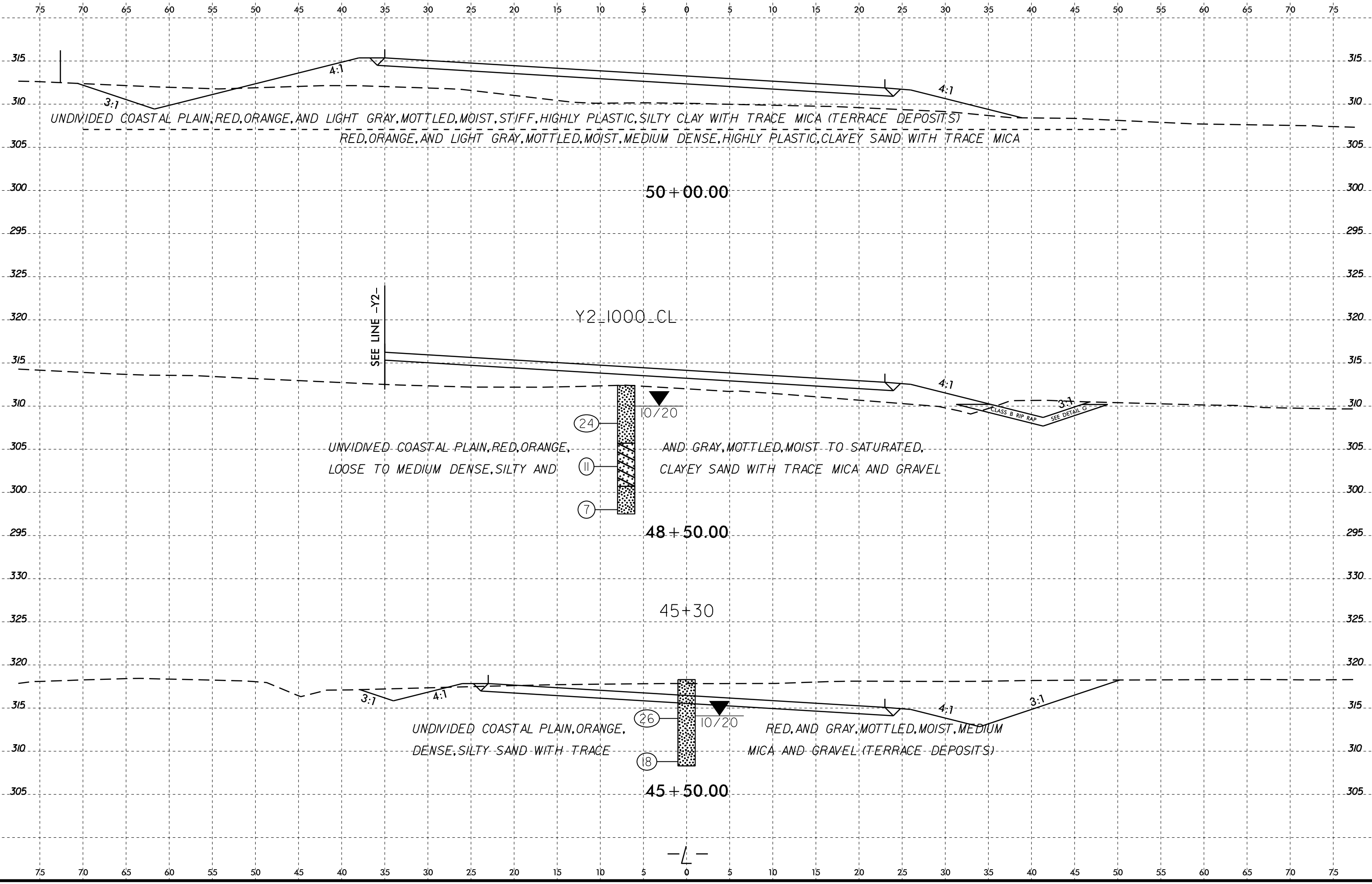
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

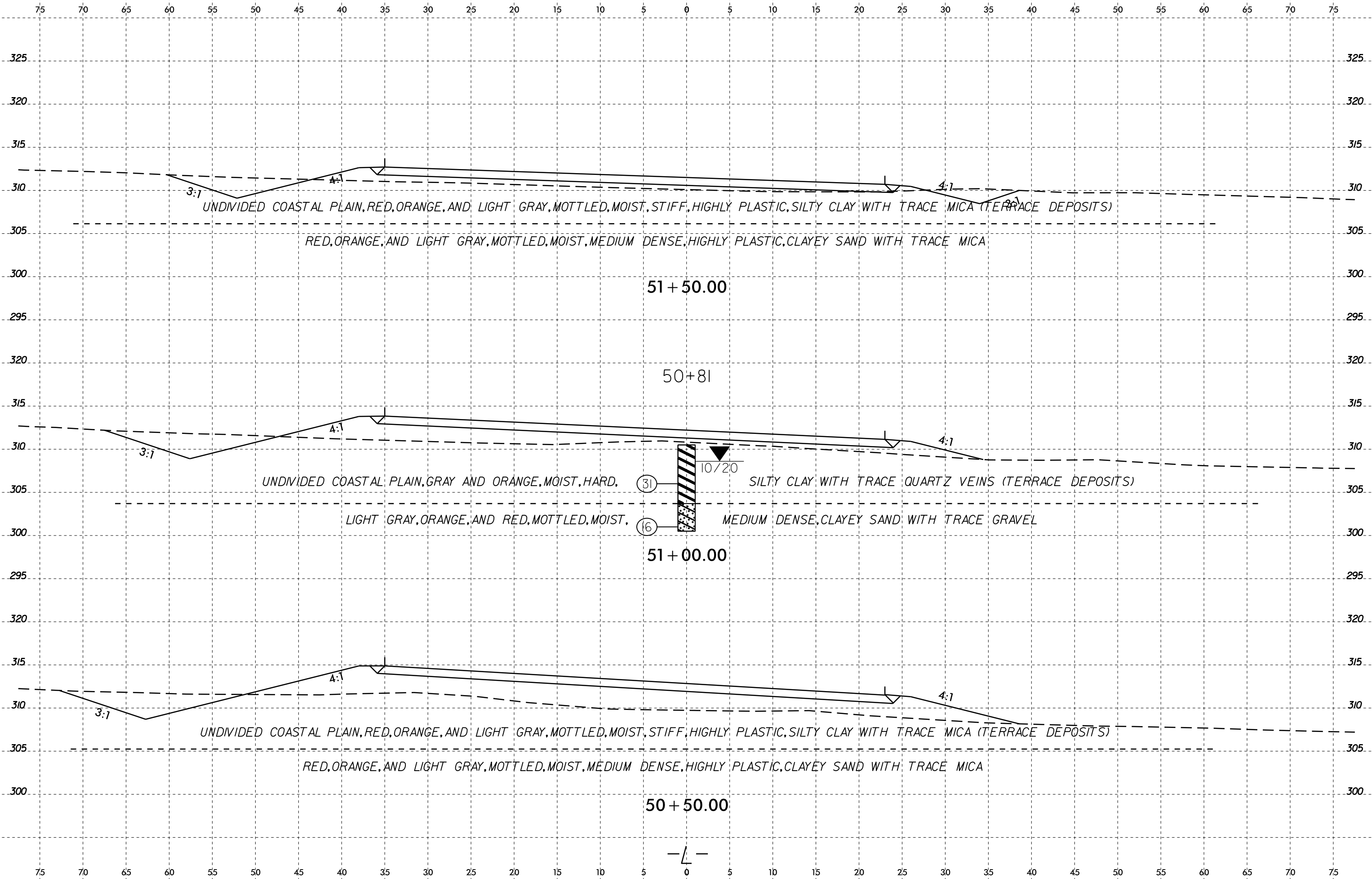
SOIL TEST RESULTS

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-5	37' RT	42+80	1.5-2.0	A-6(4)	32	18	29.9	25.7	12.2	32.2	97	81	46	20	-



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





03-JUN-2021 13:26 Investigation\TIP\U6223_GEO.RD\RD\CA00_GEO\TECH\asc\UPDATED_FILES_2_23_2021\U6223_Geo.L.XSI.dgn

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-17	4' LT	52+28	3.4-4.9'	A-7-6(8)	47	27	39.8	15.5	10.6	34.2	99	74	46	-	-
SS-18	4' LT	52+28	8.4-9.9'	A-2-7(3)	52	28	57.3	11.7	6.9	24.1	97	62	31	-	-
SS-19	4' LT	52+28	13.4-14.9'	A-2-6(0)	38	18	62.9	13.7	5.3	18.1	70	39	18	-	-
SS-20	4' LT	52+28	18.4-19.9'	A-2-6(0)	33	14	76.4	11.1	0.5	12.1	98	37	13	-	-
SS-21	4' LT	52+28	23.4-24.9'	A-2-7(1)	62	33	64.7	7.8	1.3	26.1	69	32	20	-	-

52+28

SS-17
 SS-18
 SS-19
 SS-20
 SS-21

UNDIVIDED COASTAL PLAIN.

3:1

11

03/21

RED, ORANGE, AND LIGHT GRAY, MOTTLED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY WITH TRACE MICA (TERRACE DEPOSITS)

4:1

RED, ORANGE, AND LIGHT

19

GRAY, MOTTLED, MOIST, MEDIUM DENSE, HIGHLY PLASTIC, CLAYEY SAND WITH TRACE MICA

5

1

21

52 + 50.00

UNDIVIDED COASTAL PLAIN, RED, ORANGE, AND LIGHT GRAY, MOTTLED, MOIST, STIFF, HIGHLY PLASTIC, SILTY CLAY WITH TRACE MICA (TERRACE DEPOSITS)

3:1

4:1

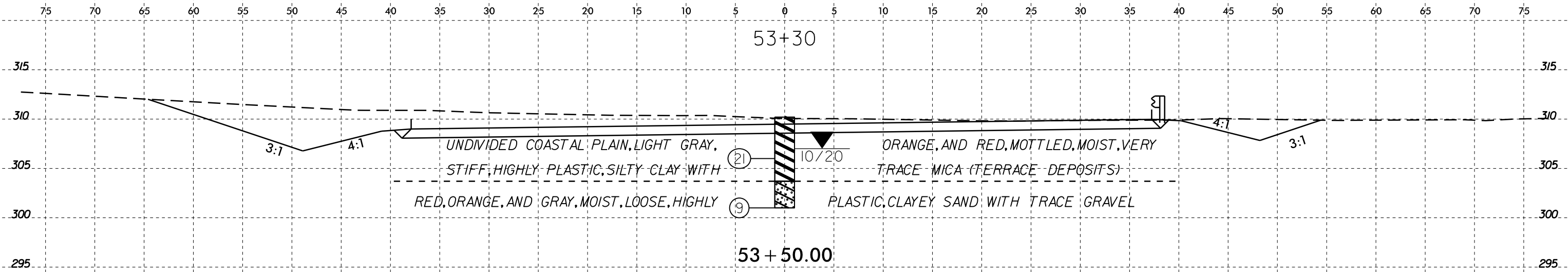
RED, ORANGE, AND LIGHT GRAY, MOTTLED, MOIST, MEDIUM DENSE, HIGHLY PLASTIC, CLAYEY SAND WITH TRACE MICA

4:1

3:1

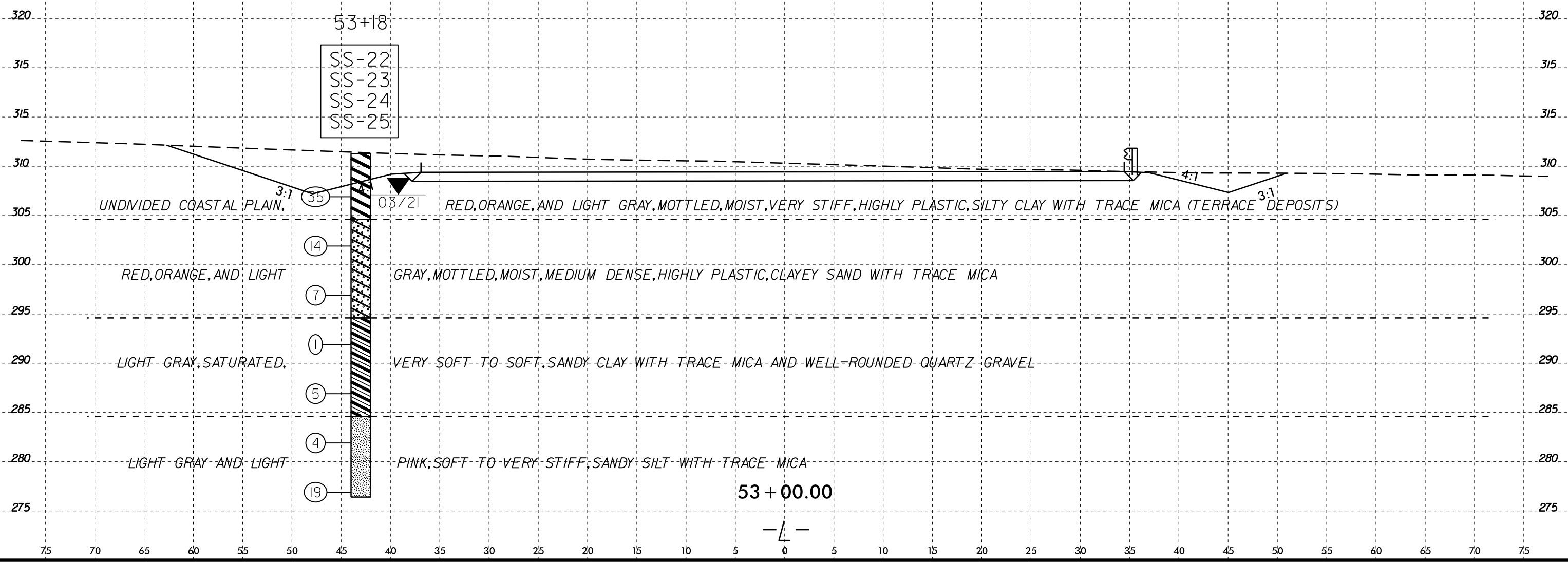
52 + 00.00

-L-

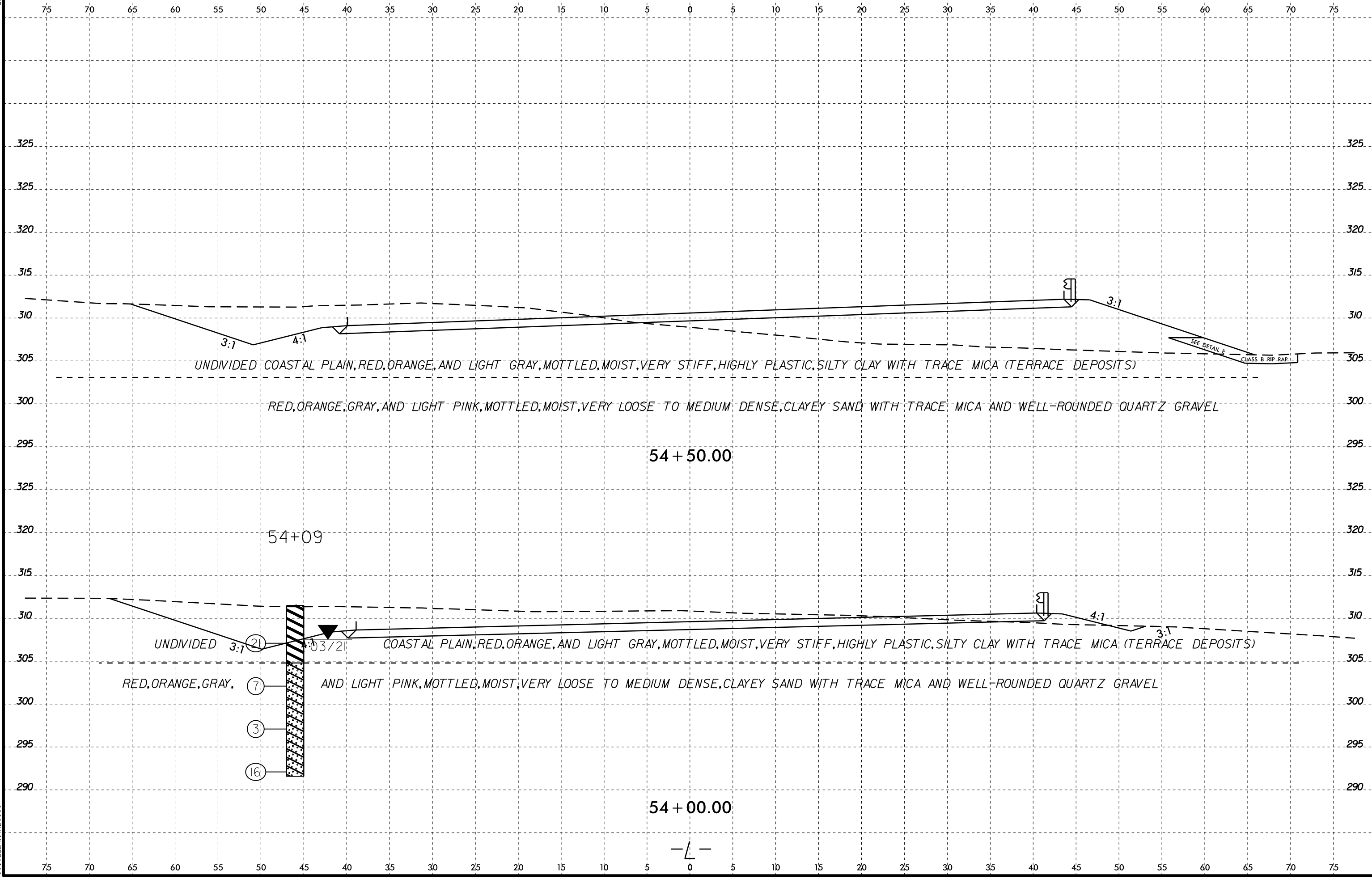


SOIL TEST RESULTS

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-22	43' LT	53+18	3.4-4.9	A-7-6(5)	49	22	46.4	12.3	7.1	34.2	98	68	42	-	-
SS-23	43' LT	53+18	18.4-19.9	A-6(2)	29	15	13.1	47.8	6.9	32.2	100	99	42	-	-
SS-24	43' LT	53+18	28.4-29.9	A-4(0)		NP	7.0	66.3	18.6	8.0	100	98	42	-	-
SS-25	43' LT	53+18	33.4-34.9	A-4(0)		NP	8.8	60.9	22.2	8.0	100	97	46	-	-



6/23/16



03-JUN-2021 13:26 Investigation\TIP\U6223.GEO.RD\MYCADD.GEOTECH\asc\UPDATED_FILES_2_23_2021\U6223.Geo.L.XSI.dgn

54 + 50.00

54+09

54 + 00.00

UNDIVIDED COASTAL PLAIN, RED, ORANGE, AND LIGHT GRAY, MOTTLED, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY WITH TRACE MICA (TERRACE DEPOSITS)

RED, ORANGE, GRAY, AND LIGHT PINK, MOTTLED, MOIST, VERY LOOSE TO MEDIUM DENSE, CLAYEY SAND WITH TRACE MICA AND WELL-ROUNDED QUARTZ GRAVEL

UNDIVIDED 3:1

COASTAL PLAIN, RED, ORANGE, AND LIGHT GRAY, MOTTLED, MOIST, VERY STIFF, HIGHLY PLASTIC, SILTY CLAY WITH TRACE MICA (TERRACE DEPOSITS)

RED, ORANGE, GRAY, 7

AND LIGHT PINK, MOTTLED, MOIST, VERY LOOSE TO MEDIUM DENSE, CLAYEY SAND WITH TRACE MICA AND WELL-ROUNDED QUARTZ GRAVEL

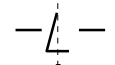
3

16

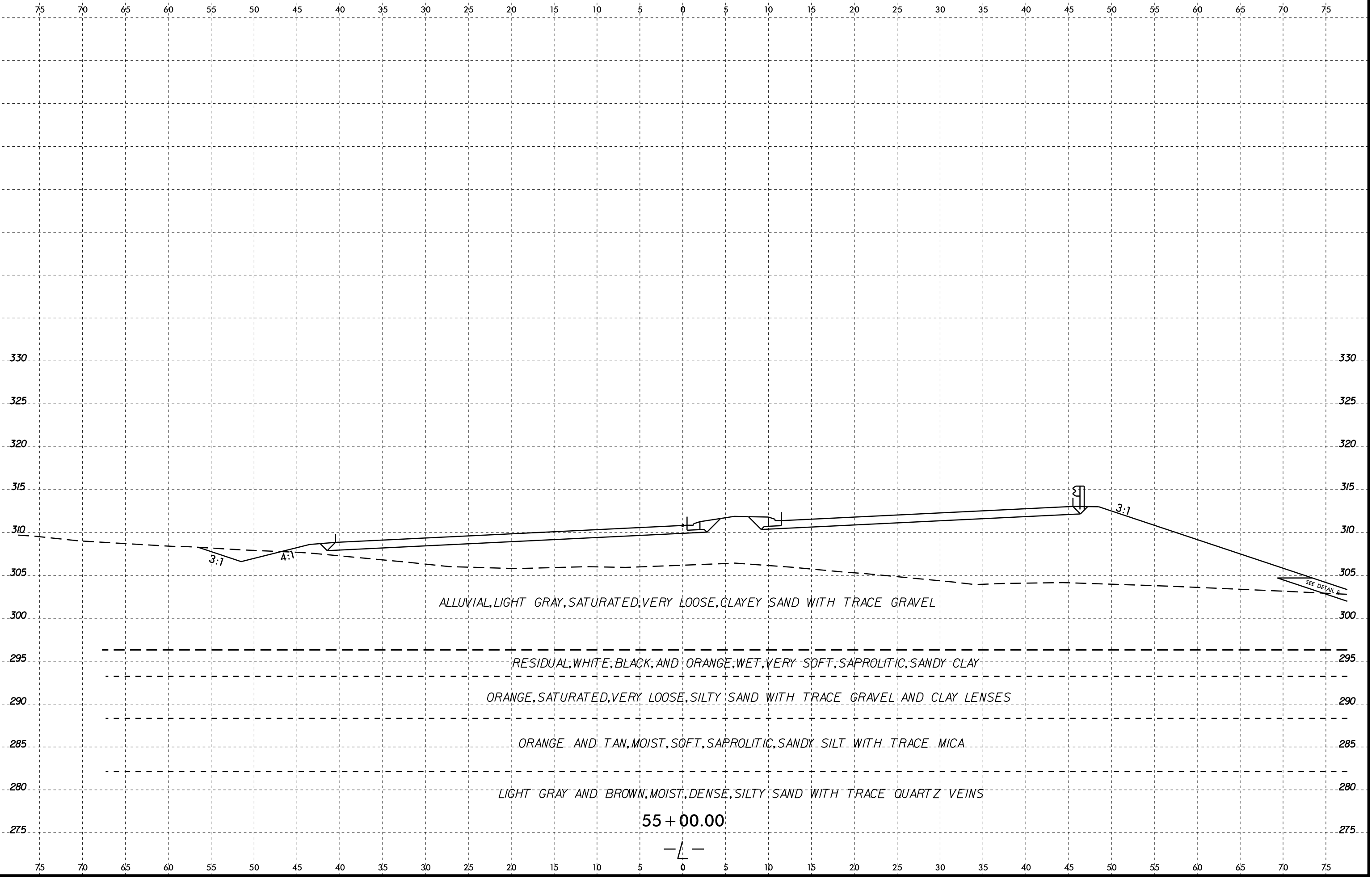
3/21

SEE DETAIL E

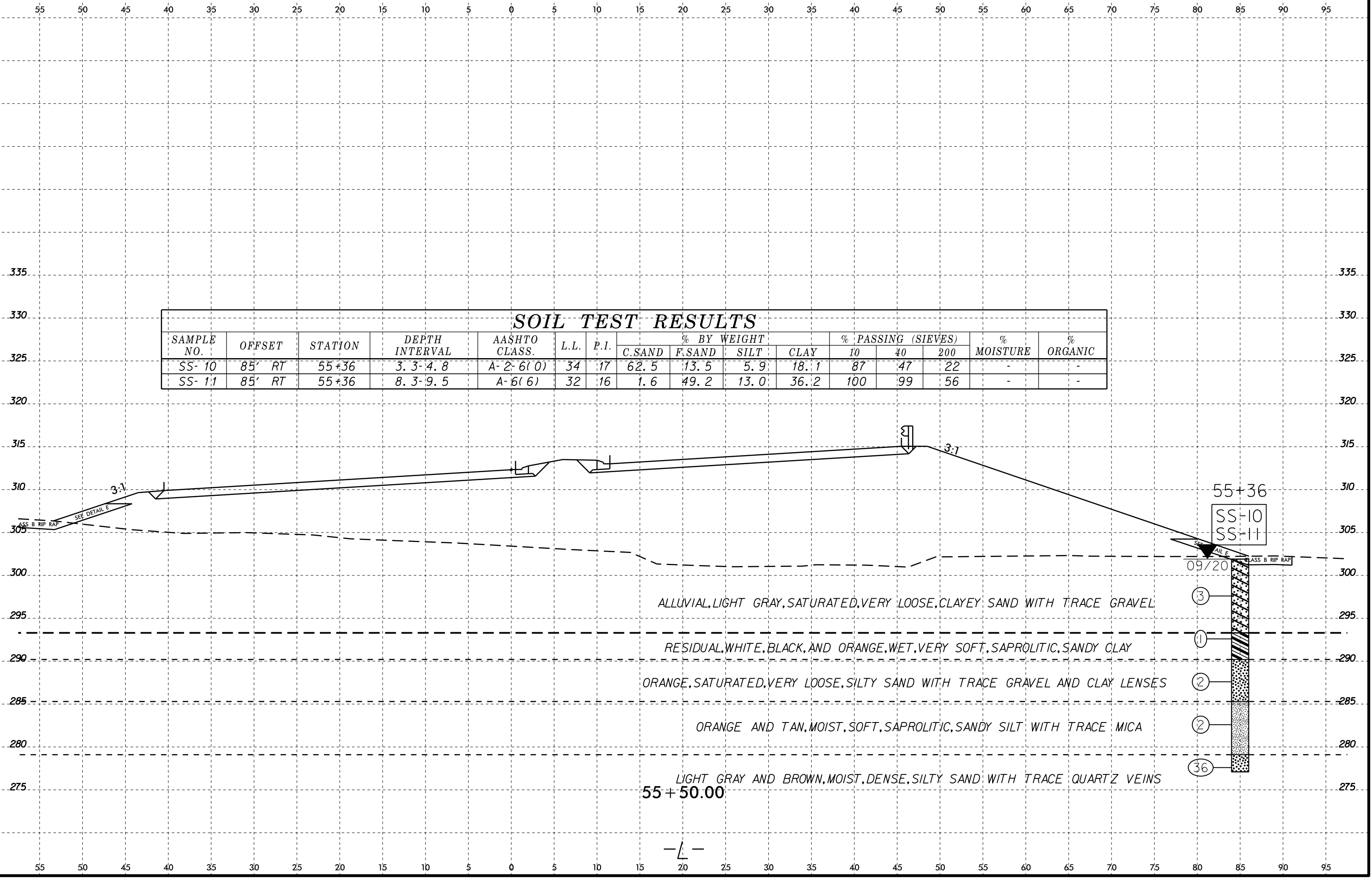
CLASS B RIP RAP



6/23/16
G:\JUN-2021\326 Investigation\TIP\U6223.GEO.RD\Y\CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
\$\$\$\$\$BERRAME\$\$\$\$\$



6/23/16
20-Jul-2021 15:07
C:\P\2021\07\01\Investigation\TIP\U6223.GEO.RD.MY\CA00.GEOTECH\asc\UPDATED FILES 2-23-2021\U6223.Geo.L.XSI.dgn
\$\$\$\$SUBERRNAME\$\$\$\$



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-10	85' RT	55+36	3.3-4.8	A-2-6(0)	34	17	62.5	13.5	5.9	18.1	87	47	22	-	-
SS-11	85' RT	55+36	8.3-9.5	A-6(6)	32	16	1.6	49.2	13.0	36.2	100	99	56	-	-

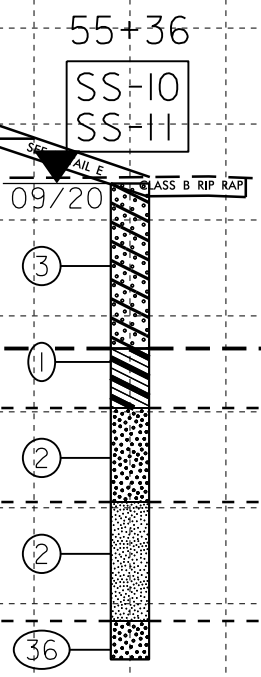
ALLUVIAL, LIGHT GRAY, SATURATED, VERY LOOSE, CLAYEY SAND WITH TRACE GRAVEL

RESIDUAL, WHITE, BLACK, AND ORANGE, WET, VERY SOFT, SAPROLITIC, SANDY CLAY

ORANGE, SATURATED, VERY LOOSE, SILTY SAND WITH TRACE GRAVEL AND CLAY LENSES

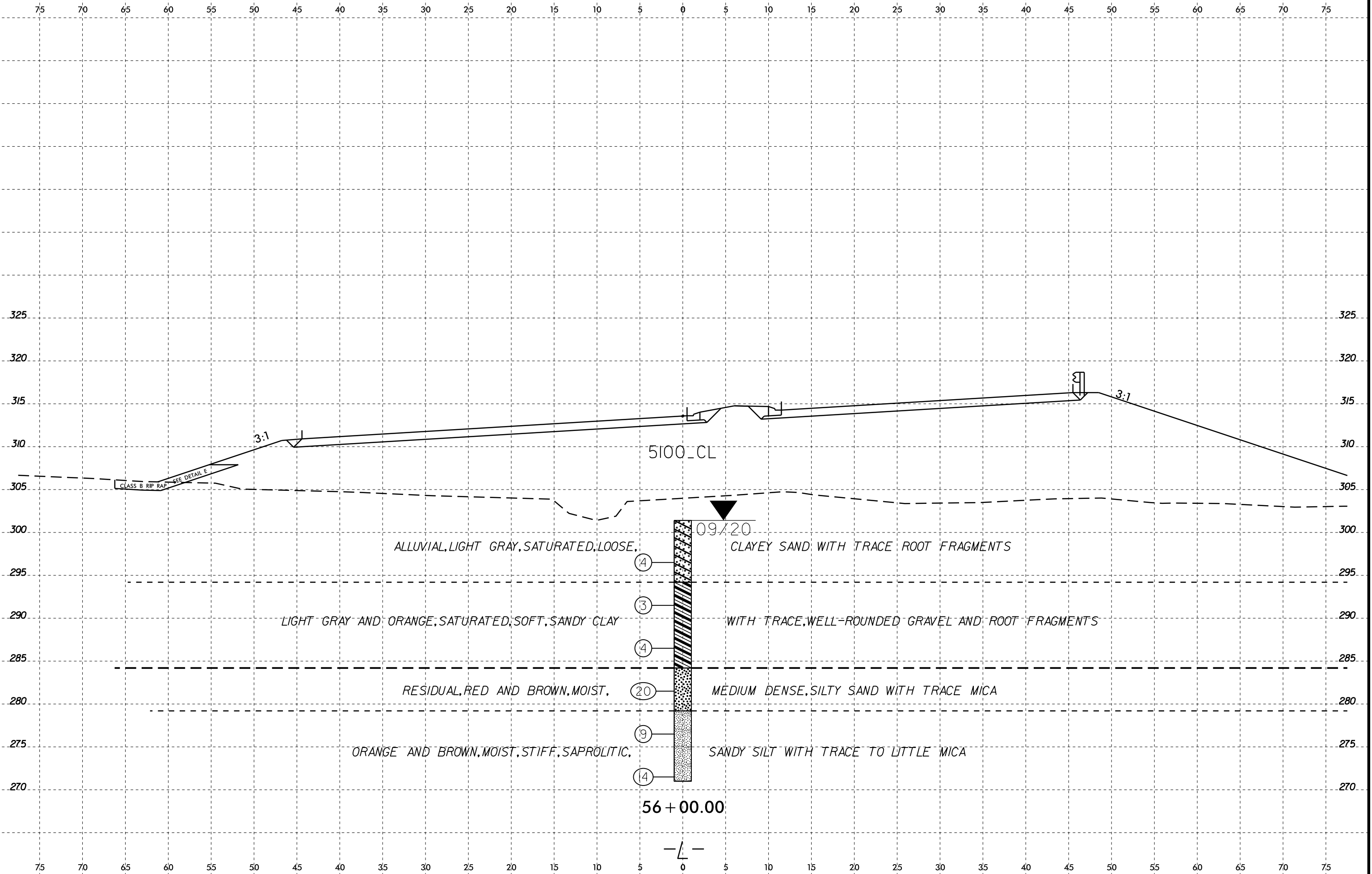
ORANGE AND TAN, MOIST, SOFT, SAPROLITIC, SANDY SILT WITH TRACE MICA

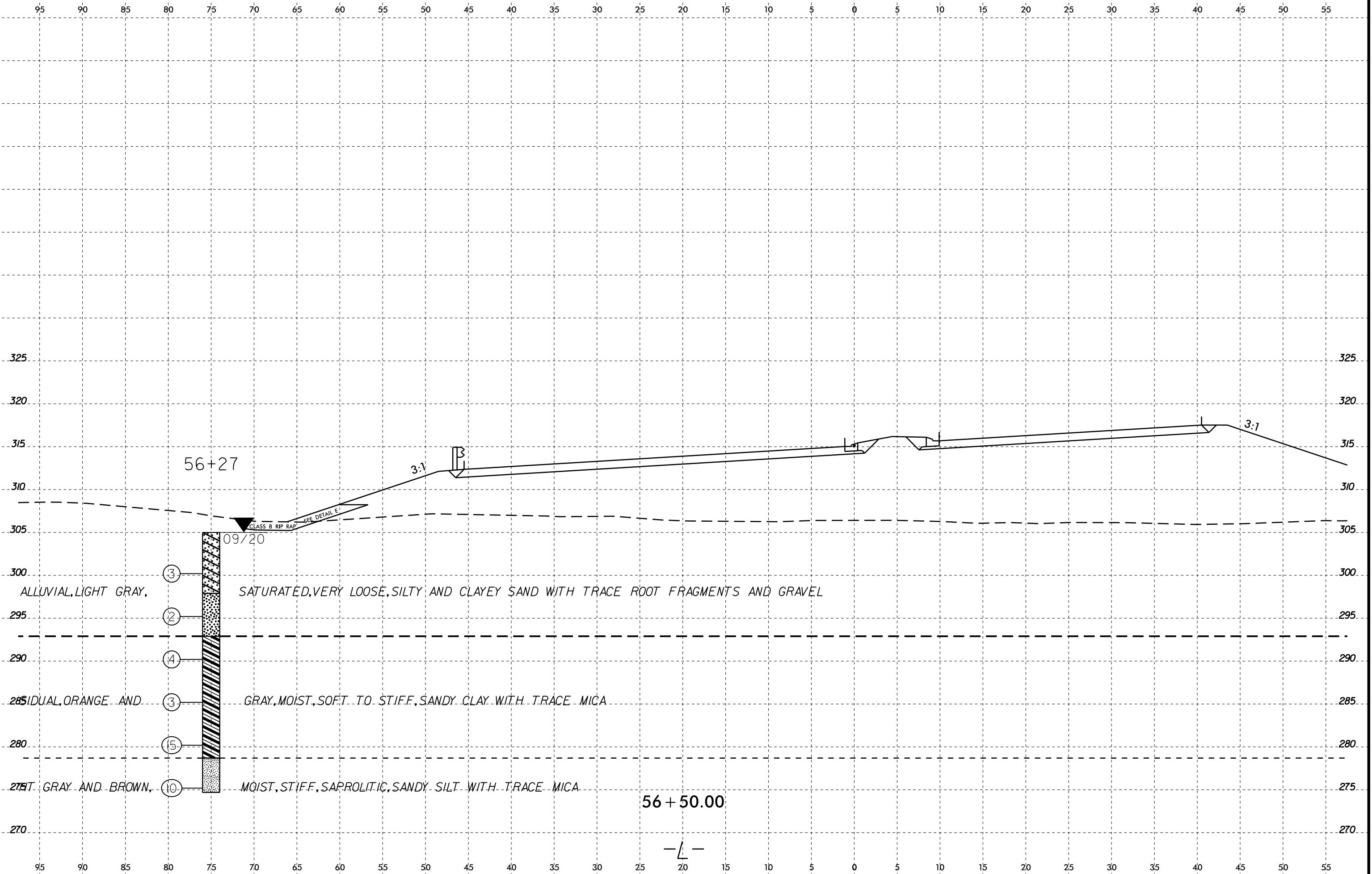
LIGHT GRAY AND BROWN, MOIST, DENSE, SILTY SAND WITH TRACE QUARTZ VEINS



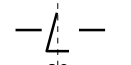
55+50.00

6/23/16
03-JUN-2021 13:37 Investigation\TIP\U6223.GEO.RD\MYCADD.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
S:\P\N\6223\U6223.GEO.RD\MYCADD.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
\$\$\$\$\$BERRAME\$\$\$\$\$





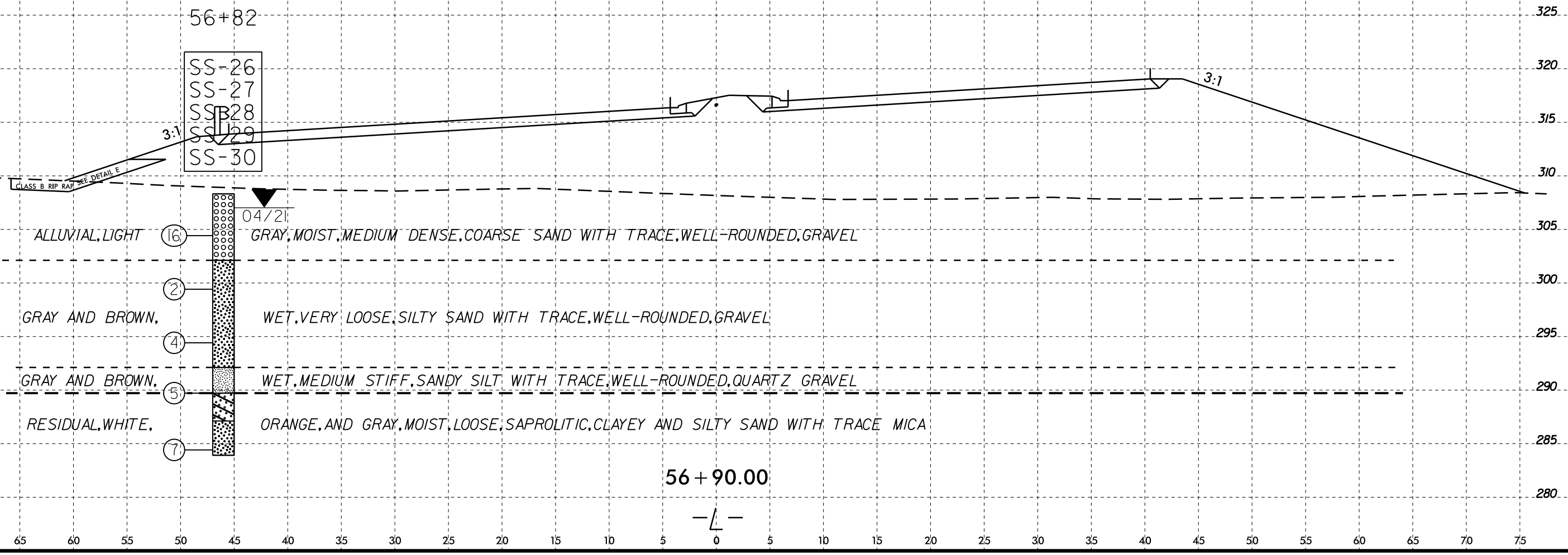
G:\JUN-2021\37 Investigation\TIP\U6223.GEO.RD\MY\CADD.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
 \$\$\$\$SUBERRNAME\$\$\$\$



6/23/16
 G:\JUN-2021\326 Investigation\TIP\U6223.GEO.RD.MY.CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
 \$\$\$\$SUBPROGRAM\$\$\$\$

SOIL TEST RESULTS

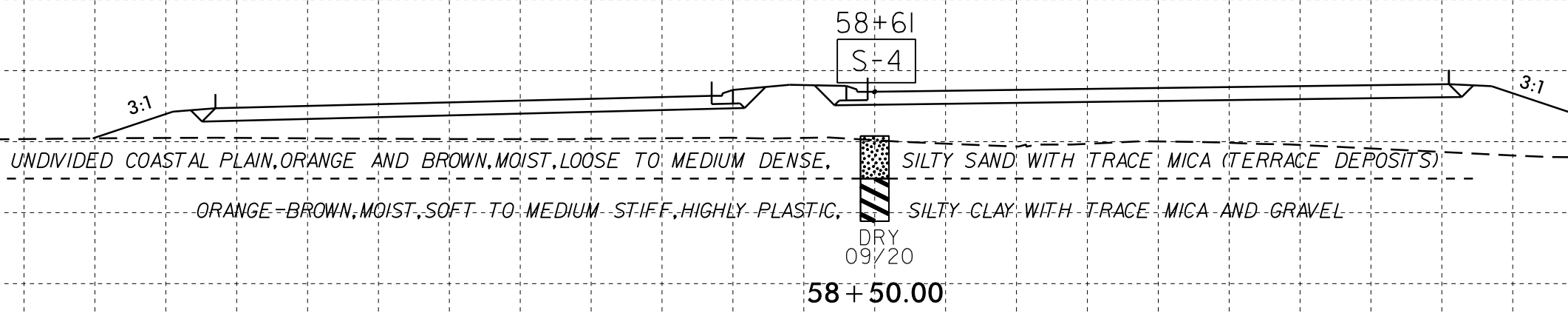
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-26	46' LT	56+82	2.9- 4.4	A-1-b(0)	15	1	59.9	14.1	9.9	16.1	87	46	24	-	-
SS-27	46' LT	56+82	7.9- 9.4	A-2-4(0)	25	9	62.3	17.3	6.3	14.1	96	51	21	-	-
SS-28	46' LT	56+82	17.9- 18.6	A-4(0)		NP	12.3	56.5	21.2	10.1	100	95	43	-	-
SS-29	46' LT	56+82	18.6- 19.4	A-2-6(0)	26	11	53.1	17.7	13.2	16.1	95	60	30	-	-
SS-30	46' LT	56+82	22.9- 24.4	A-2-4(0)		NP	19.3	54.7	16.0	10.1	99	92	35	-	-



6/23/16
03-JUN-2021 13:56 Investigation\TIP\U6223.GEO.RD\MYCADD.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
S:\FRN\04\U6223\U6223.GEO.RD\MYCADD.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn

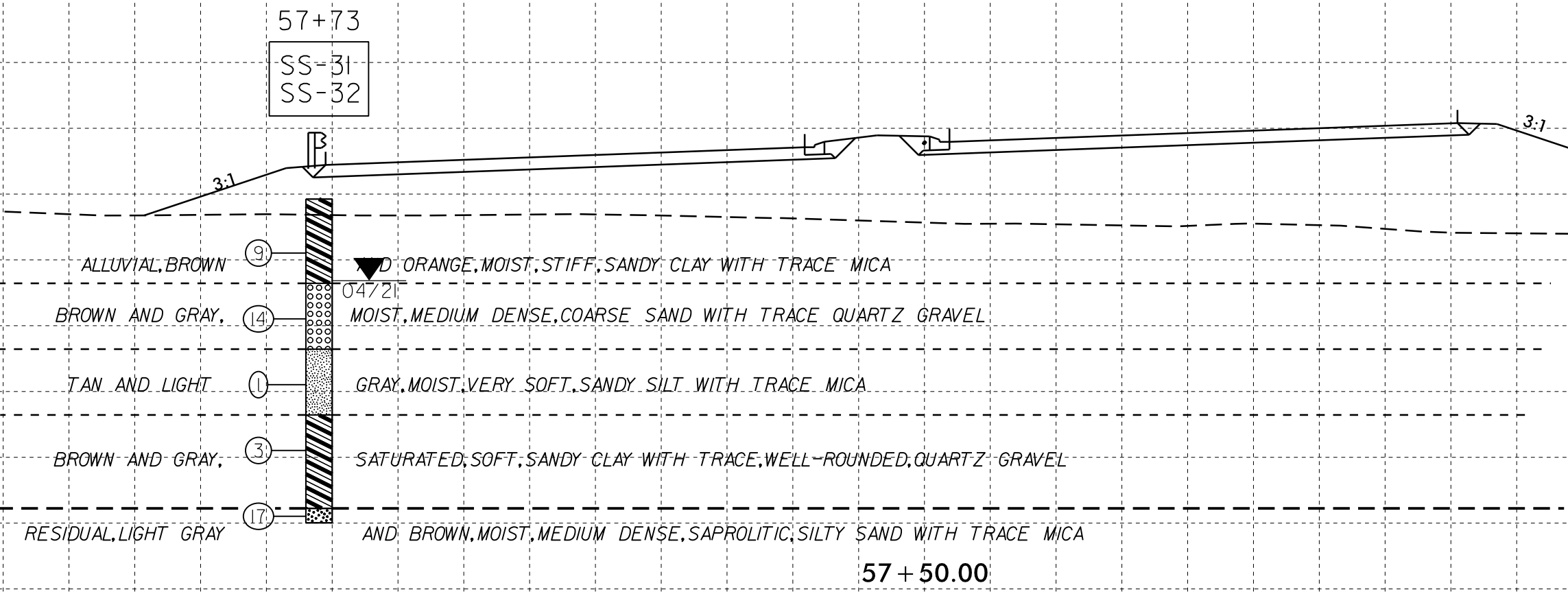
SOIL TEST RESULTS

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	CL	58+61	3.5-4.0	A-7-6(4)	46	23	47.8	9.8	6.1	36.2	90	52	39	-	-

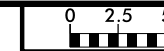


SOIL TEST RESULTS

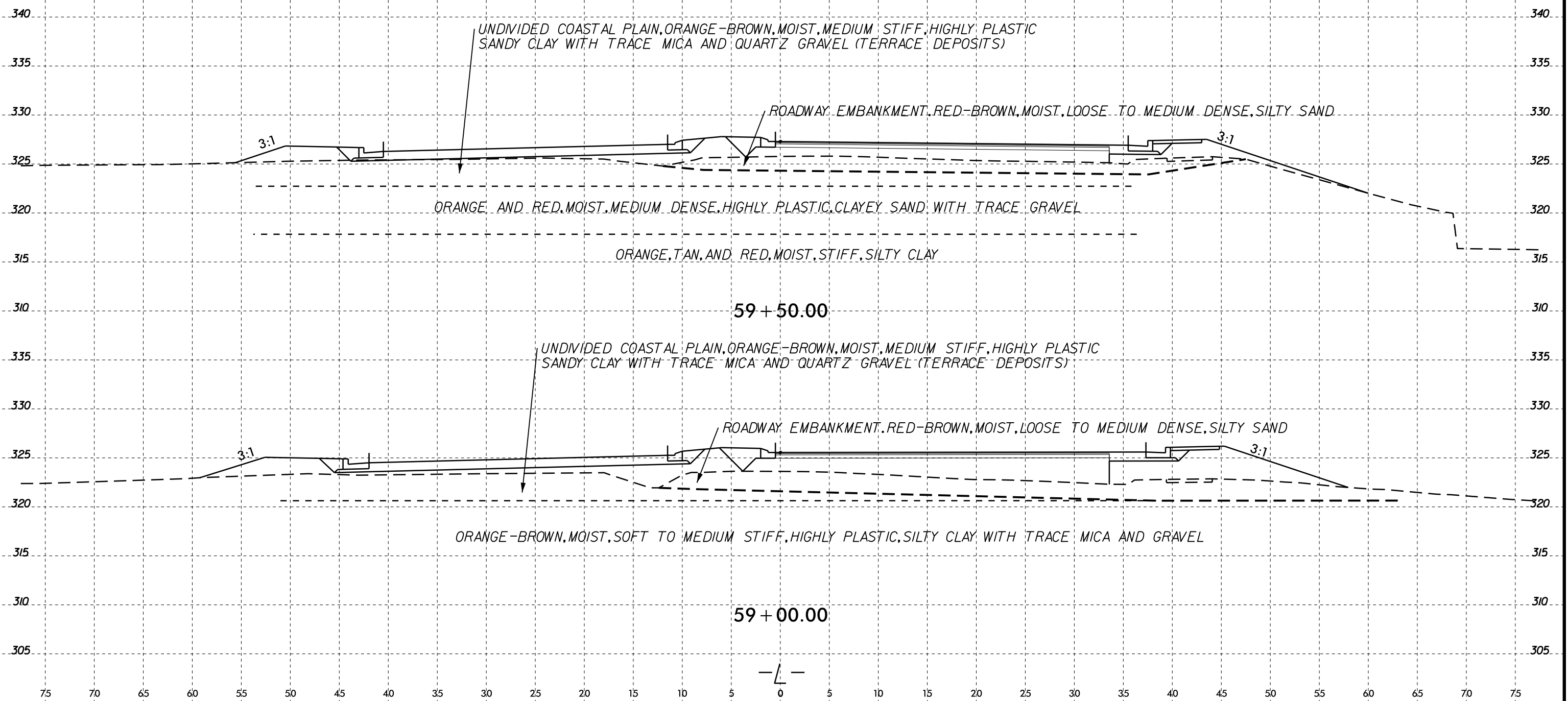
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-31	46' LT	57+73	3.1-4.6	A-6(3)	37	18	40.2	19.9	5.7	34.2	93	67	39	-	-
SS-32	46' LT	57+73	13.1-14.6	A-4(0)	29	7	0.4	67.7	5.7	26.1	100	100	36	-	-



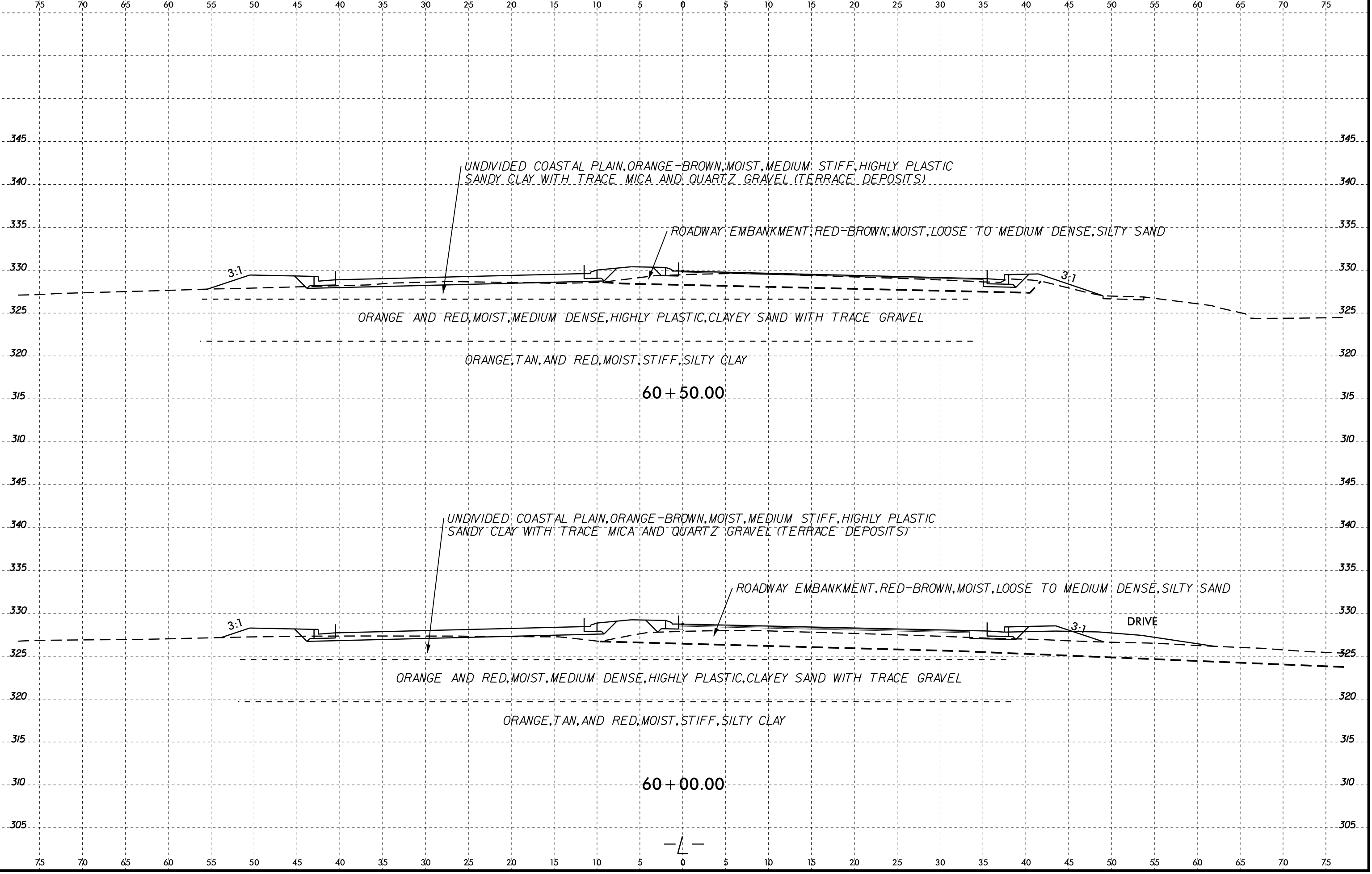
57+50.00



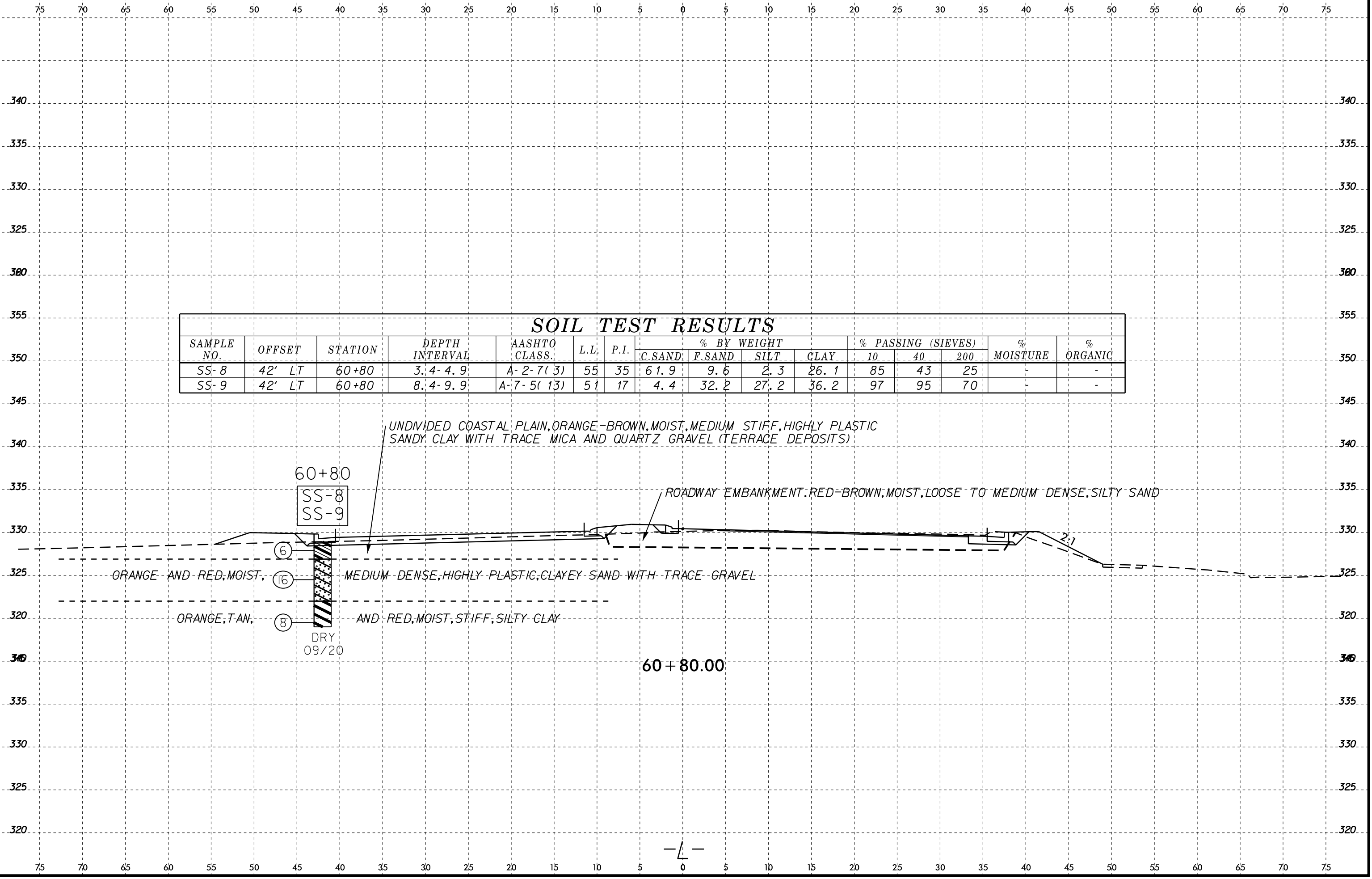
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



6/23/16
G:\JUN-2021\326 Investigation\TIP\U6223.GEO.RD\RD\Y\CA00.GEOTECH\YSC\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
\$\$\$\$\$



6/23/16
03-JUN-2021 13:37 Investigation\TIP\U6223.GEO.RD\Y\CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.L.XSI.dgn
S:\FERRARI\U6223



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-8	42' LT	60+80	3.4-4.9	A-2-7(3)	55	35	61.9	9.6	2.3	26.1	85	43	25	-	-
SS-9	42' LT	60+80	8.4-9.9	A-7-5(13)	51	17	4.4	32.2	27.2	36.2	97	95	70	-	-

60+80
SS-8
SS-9

⑥
⑩
⑧

DRY
09/20

UNDIVIDED COASTAL PLAIN, ORANGE-BROWN, MOIST, MEDIUM STIFF, HIGHLY PLASTIC SANDY CLAY WITH TRACE MICA AND QUARTZ GRAVEL (TERRACE DEPOSITS)

ROADWAY EMBANKMENT, RED-BROWN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

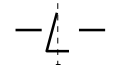
ORANGE AND RED, MOIST,

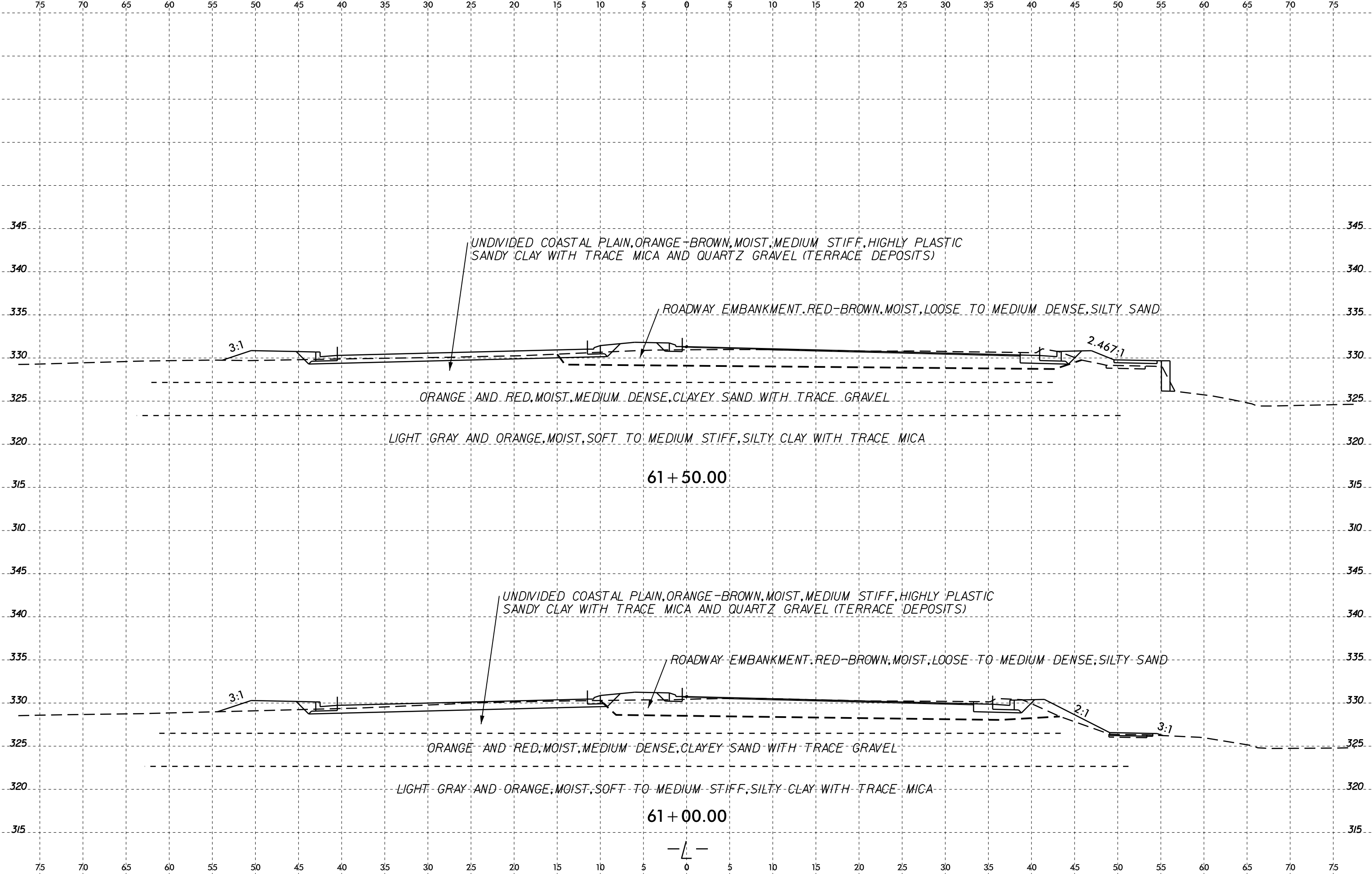
MEDIUM DENSE, HIGHLY PLASTIC, CLAYEY SAND WITH TRACE GRAVEL

ORANGE, TAN,

AND RED, MOIST, STIFF, SILTY CLAY

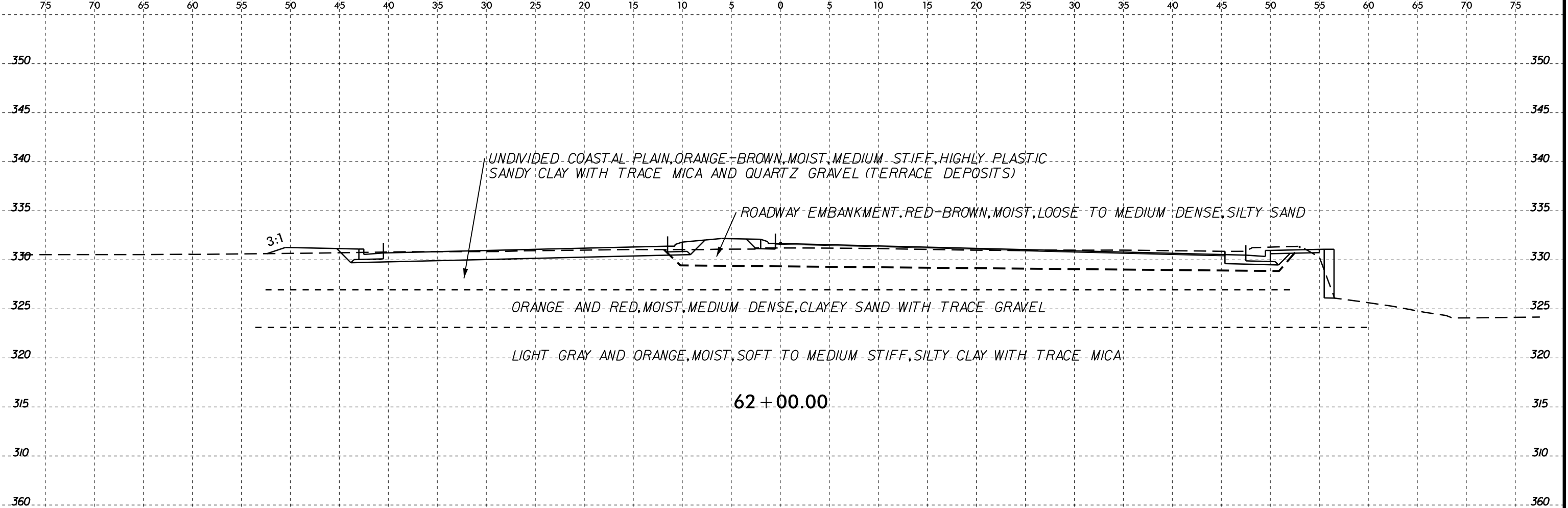
60+80.00





G:\JUN-2021\326 Investigation\TIP\U6223_GEO.RDWAY\CA00_GEO\TECH\asc\UPDATED_FILES_2_23_2021\U6223_Geo_L_XSI.dgn
 \$\$\$\$SUBPROGRAM\$\$\$\$

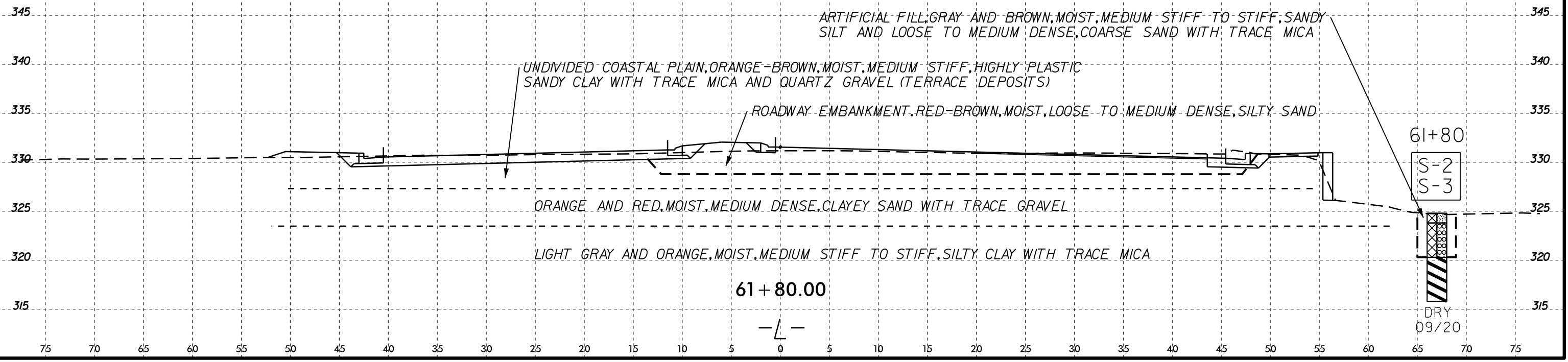
6/23/16
03-JUN-2021 13:26 Investigation\TIP\U6223.GEO.RD\Y\CA00.GEOTECH\asc\UPDATED_FILES_2_23_2021\U6223.Geo.L.XSI.dgn



62 + 00.00

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	55' RT	61+80	1.0-1.5	A-1-b(0)		NP	61.7	26.5	5.7	6.0	84	46	13	-	-
S-3	55' RT	61+80	4.7-5.2	A-7-5(19)	6:1	19	5.4	22.7	37.7	34.2	99	95	79	-	-

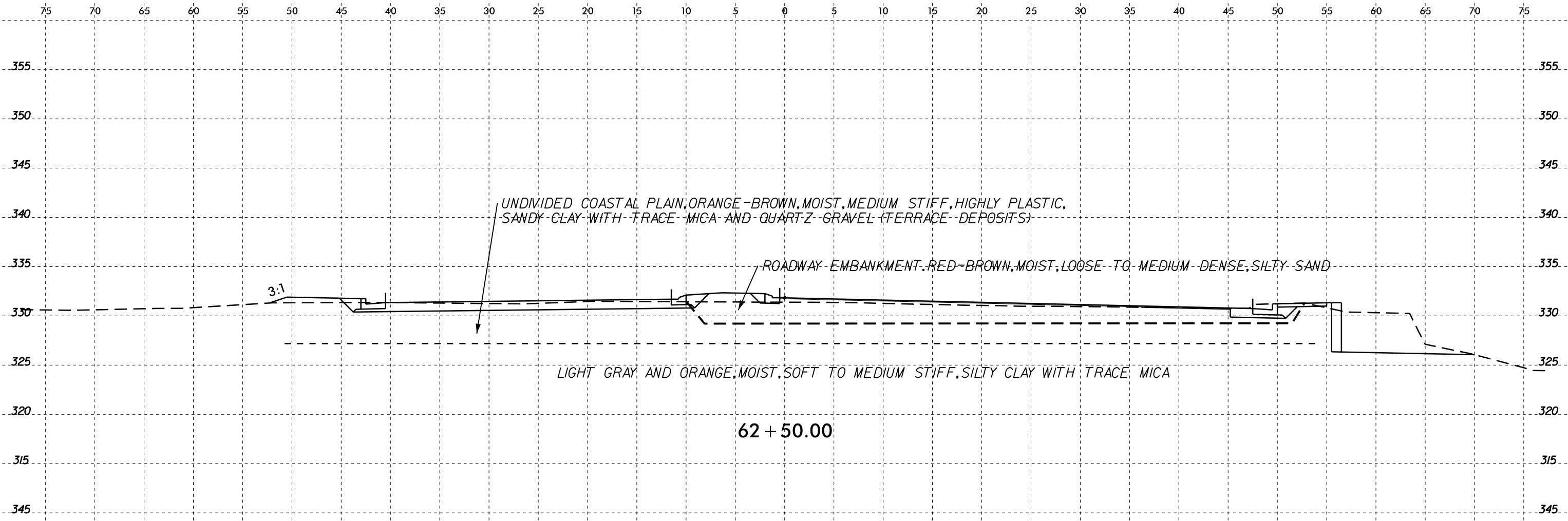


61 + 80.00

61+80

S-2
S-3

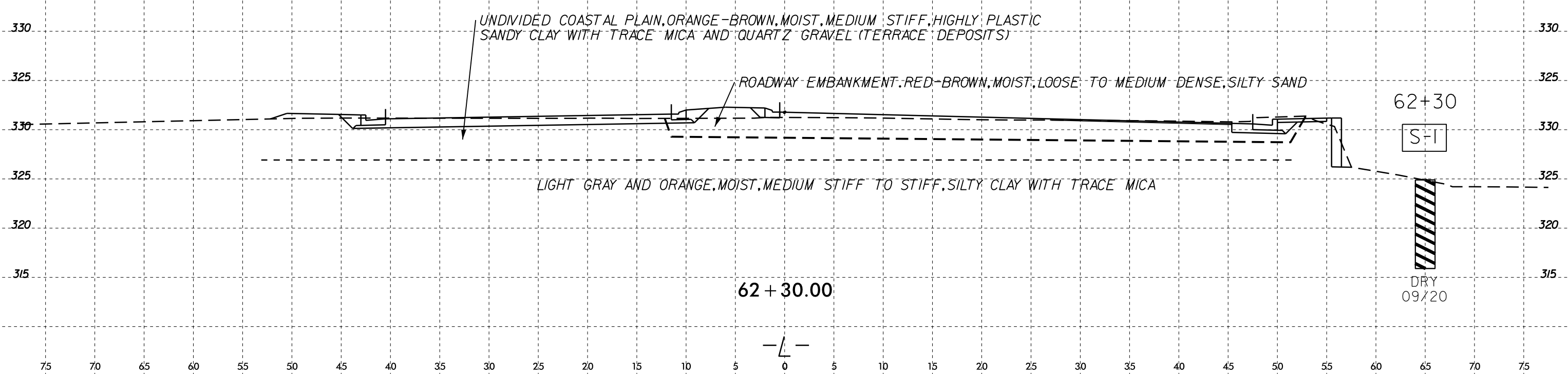
DRY
09/20



62 + 50.00

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	57' RT	62+30	1.0-1.5	A-7-5(22)	74	20	5.6	24.3	27.8	42.2	100	97	77	-	



62 + 30.00

62+30

S-1

DRY
09/20

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

345 345

340 340

335 335

330 330

ROADWAY EMBANKMENT. RED-BROWN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

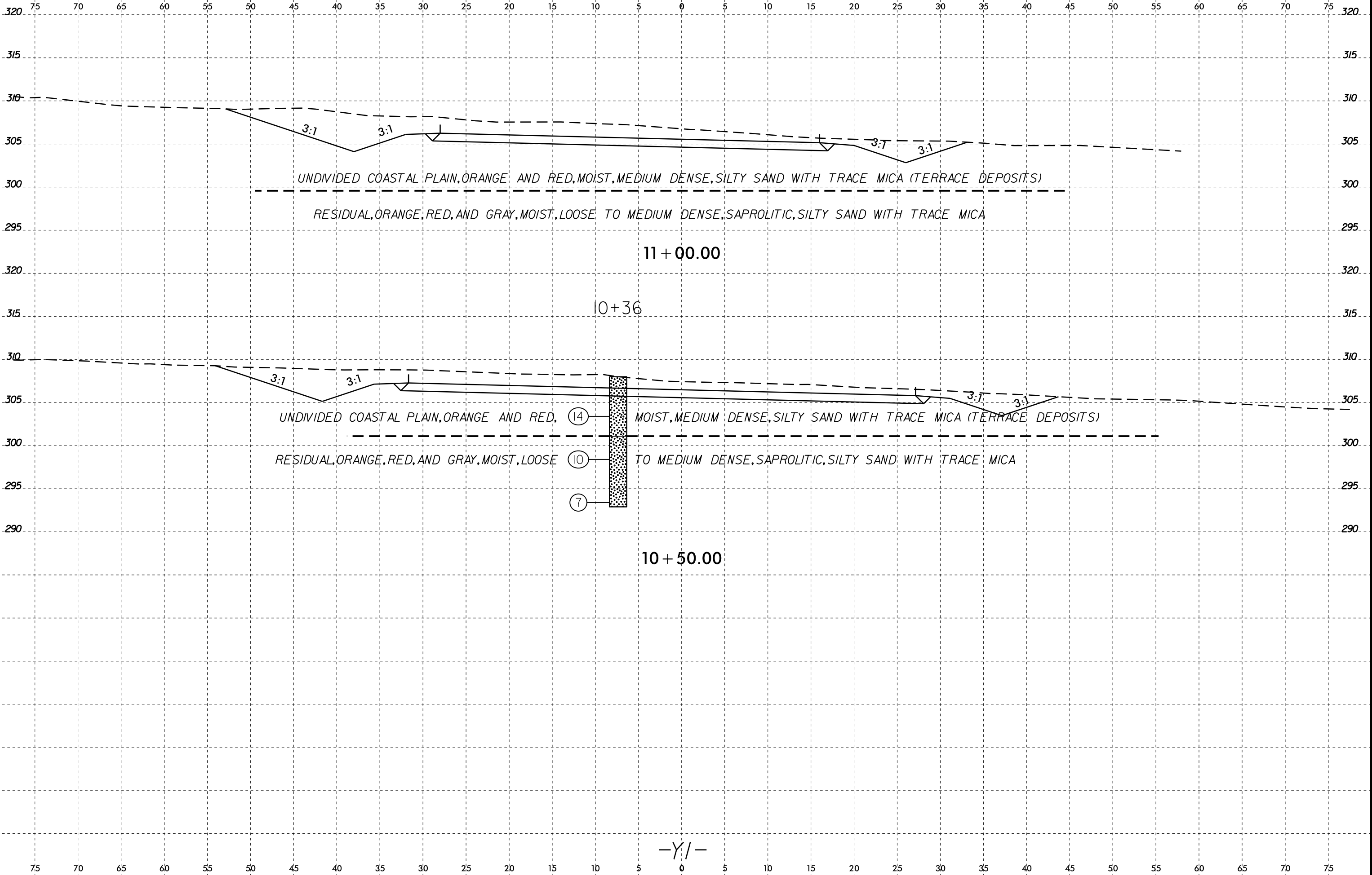
325 325

320 320

315 315

63+00.00

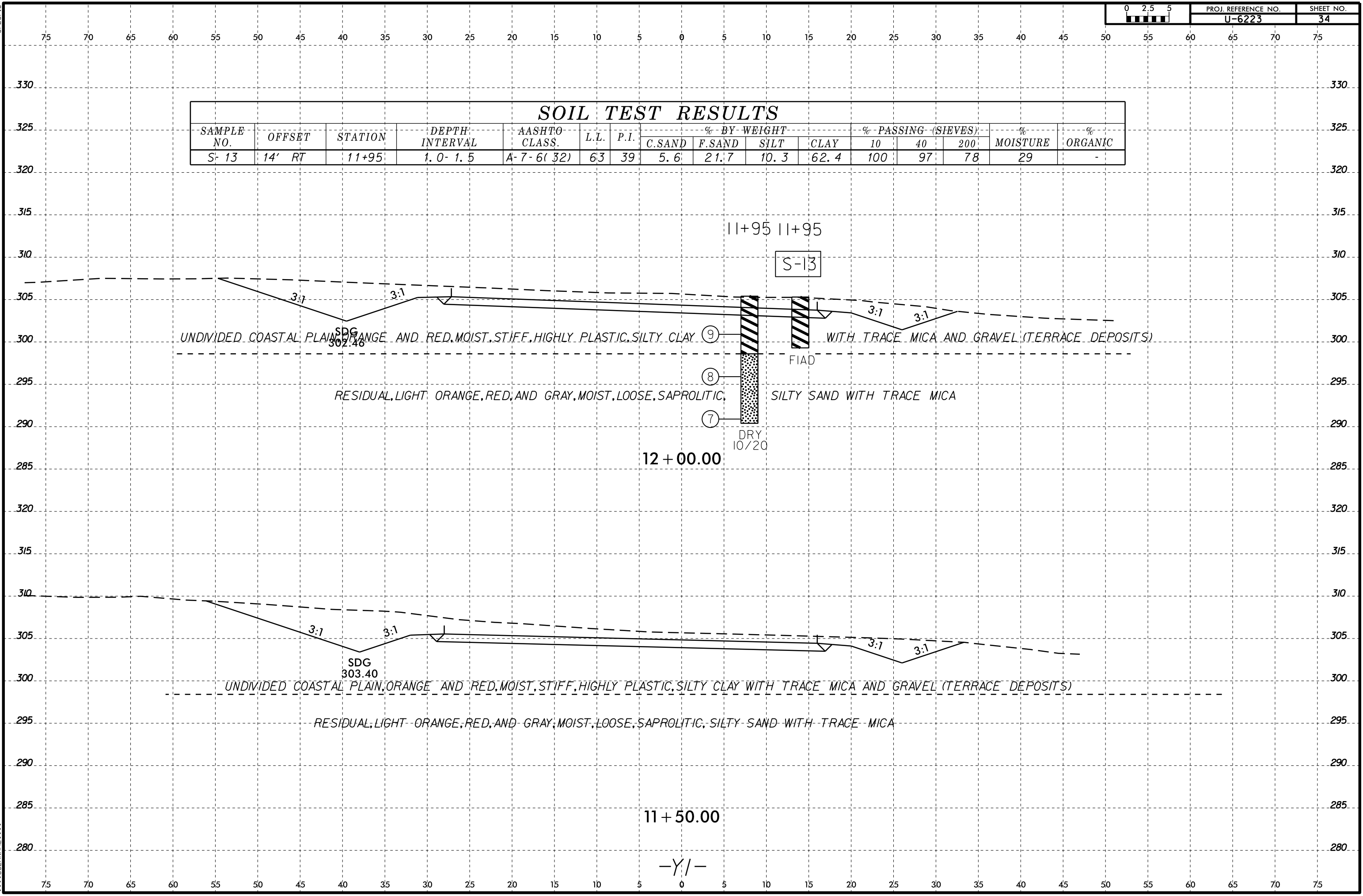


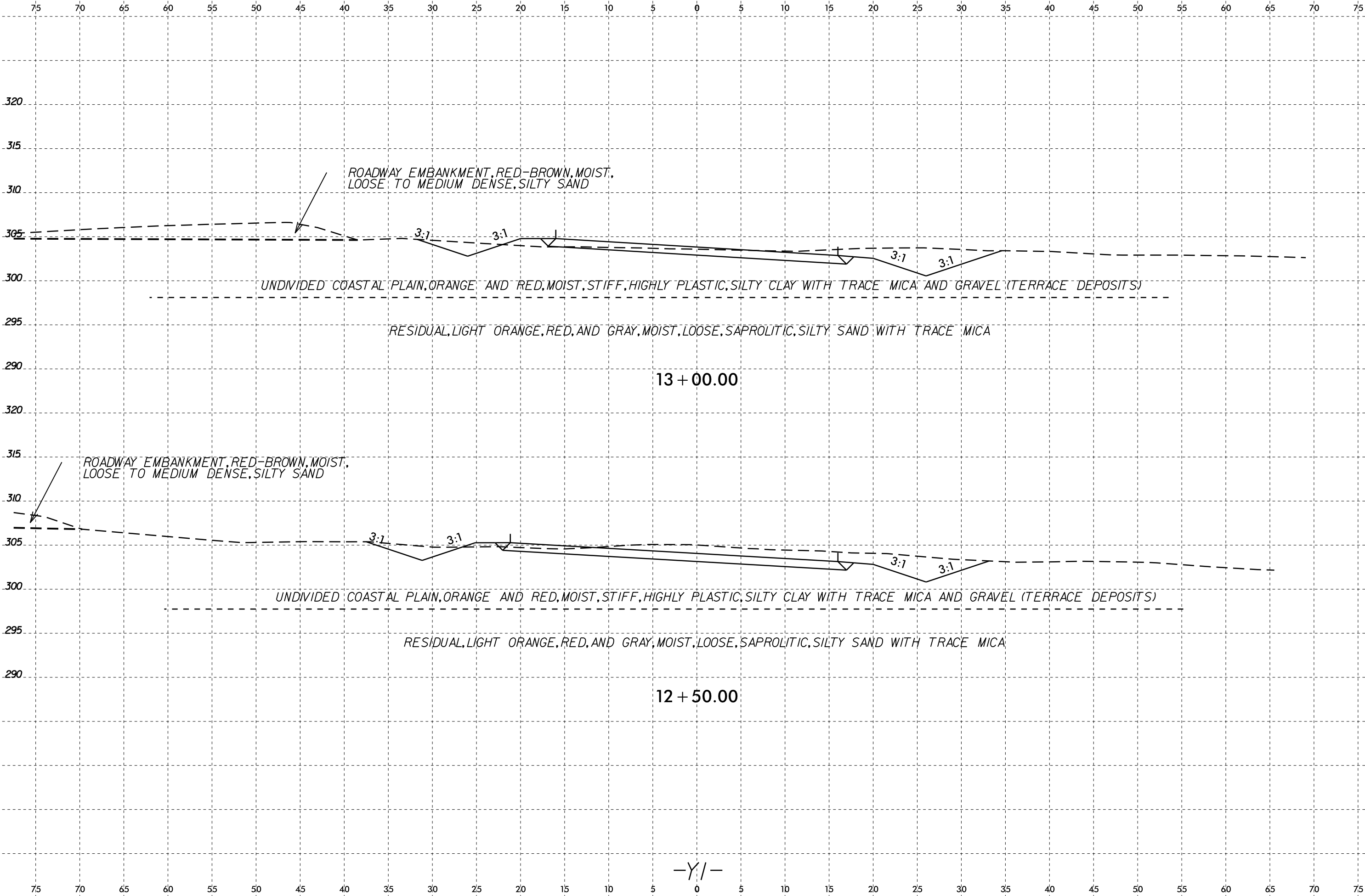


I:\MAY-2021\6-21_Survey\6-21_Investigation\TIP\U6223_GEO.RD\RD\Y\CA00_GEOTECH\asc\UPDATED_FILES_2_23_2021\U6223_Geo.plt_xsi.dgn
 \$\$\$\$SURFERNAME\$\$\$\$

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-13	14' RT	11+95	1.0-1.5	A-7-6(32)	63	39	5.6	21.7	10.3	62.4	100	97	78	29	-

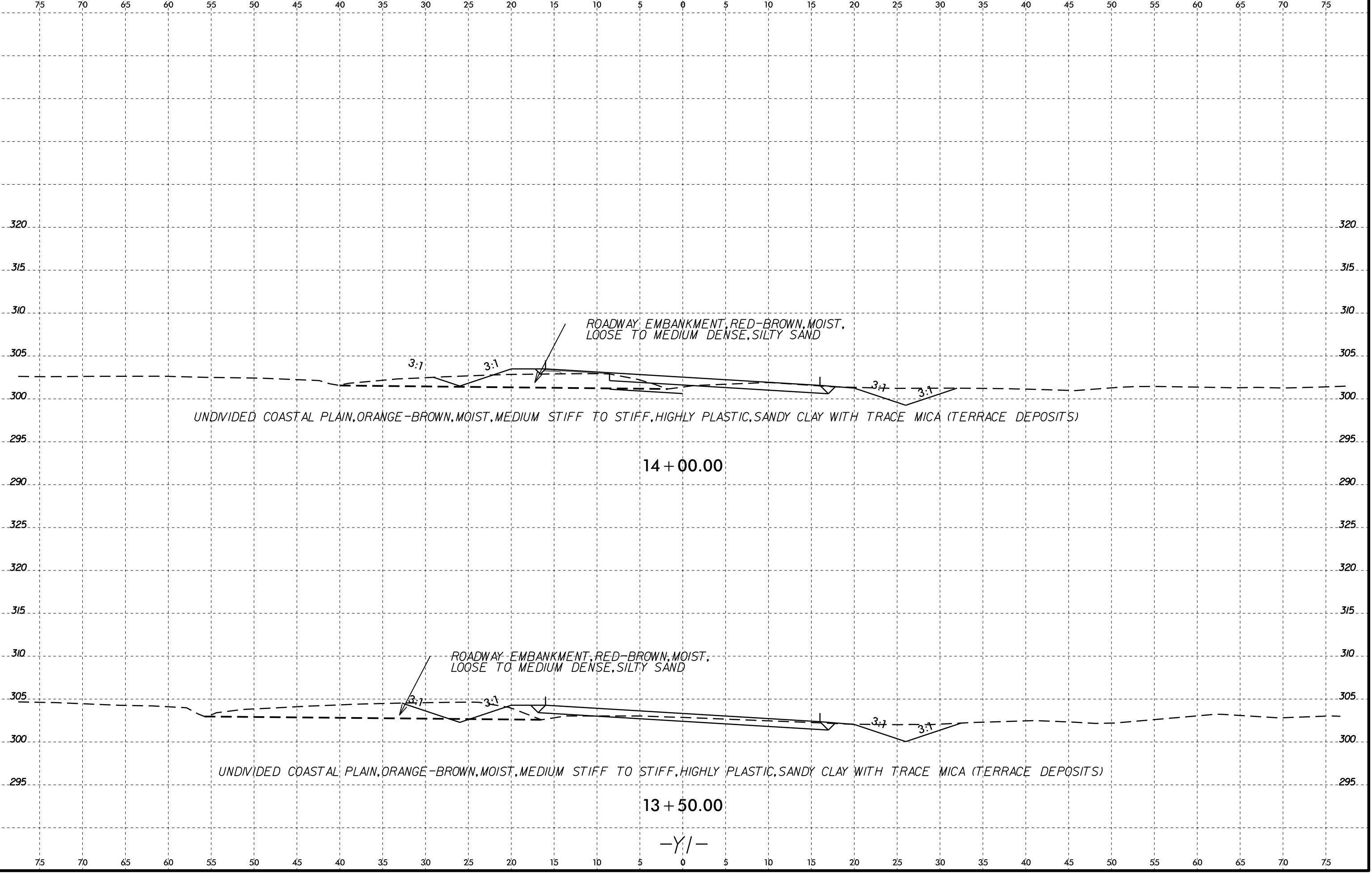




-Y/-

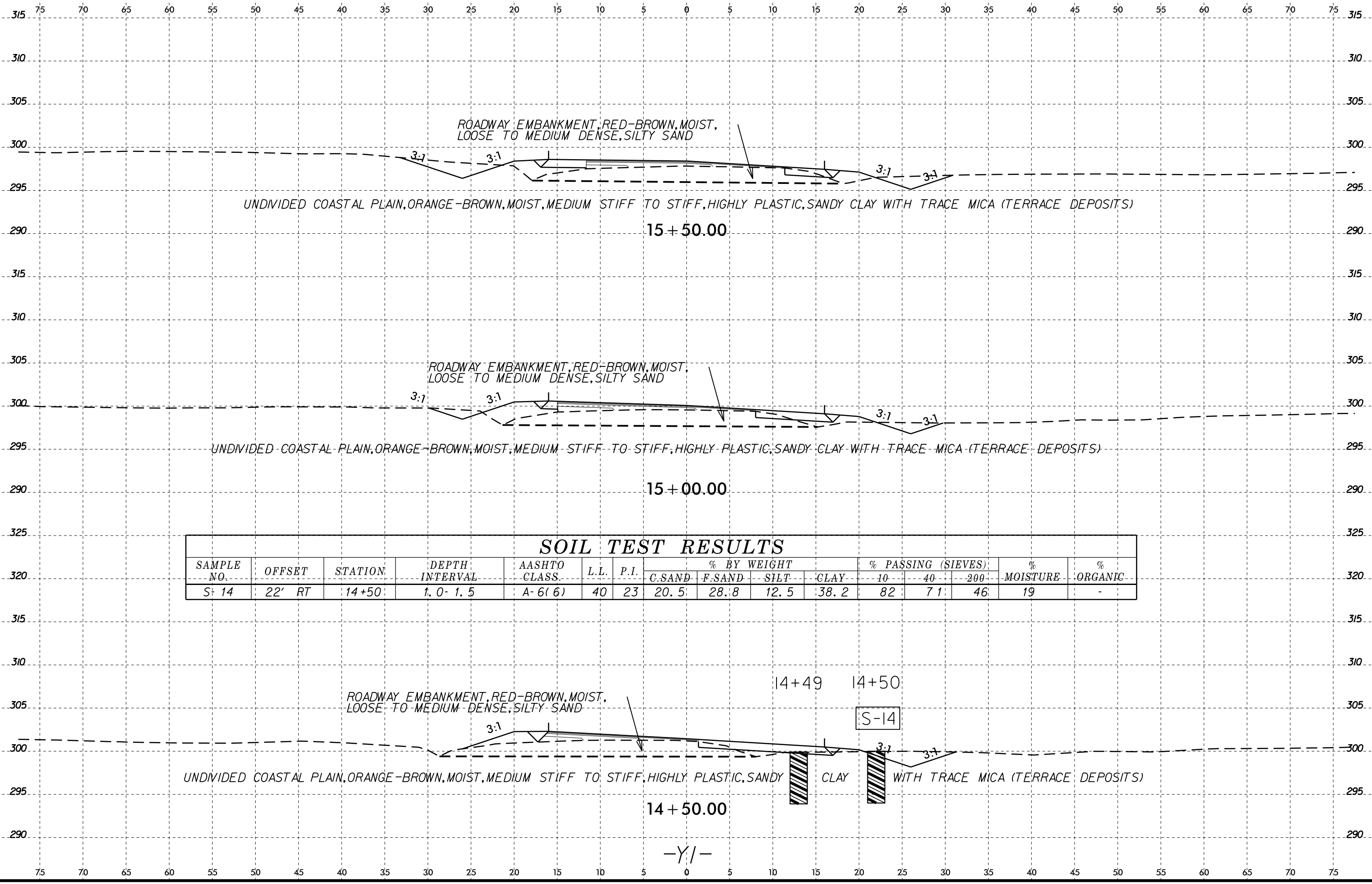
6/23/16
I:\MAY-2021\6-21_S:\PROJECTS\6-21_Investigation\TIP\U6223_GEO_RDMY\CADD_GEOTECH\asc\UPDATED_FILES_2-23-2021\U6223_Geo_jl_xsi.dgn
\$\$\$\$SERIALNAME\$\$\$\$

0 2.5 5		PROJ. REFERENCE NO.	SHEET NO.
[Scale Bar]		U-6223	36

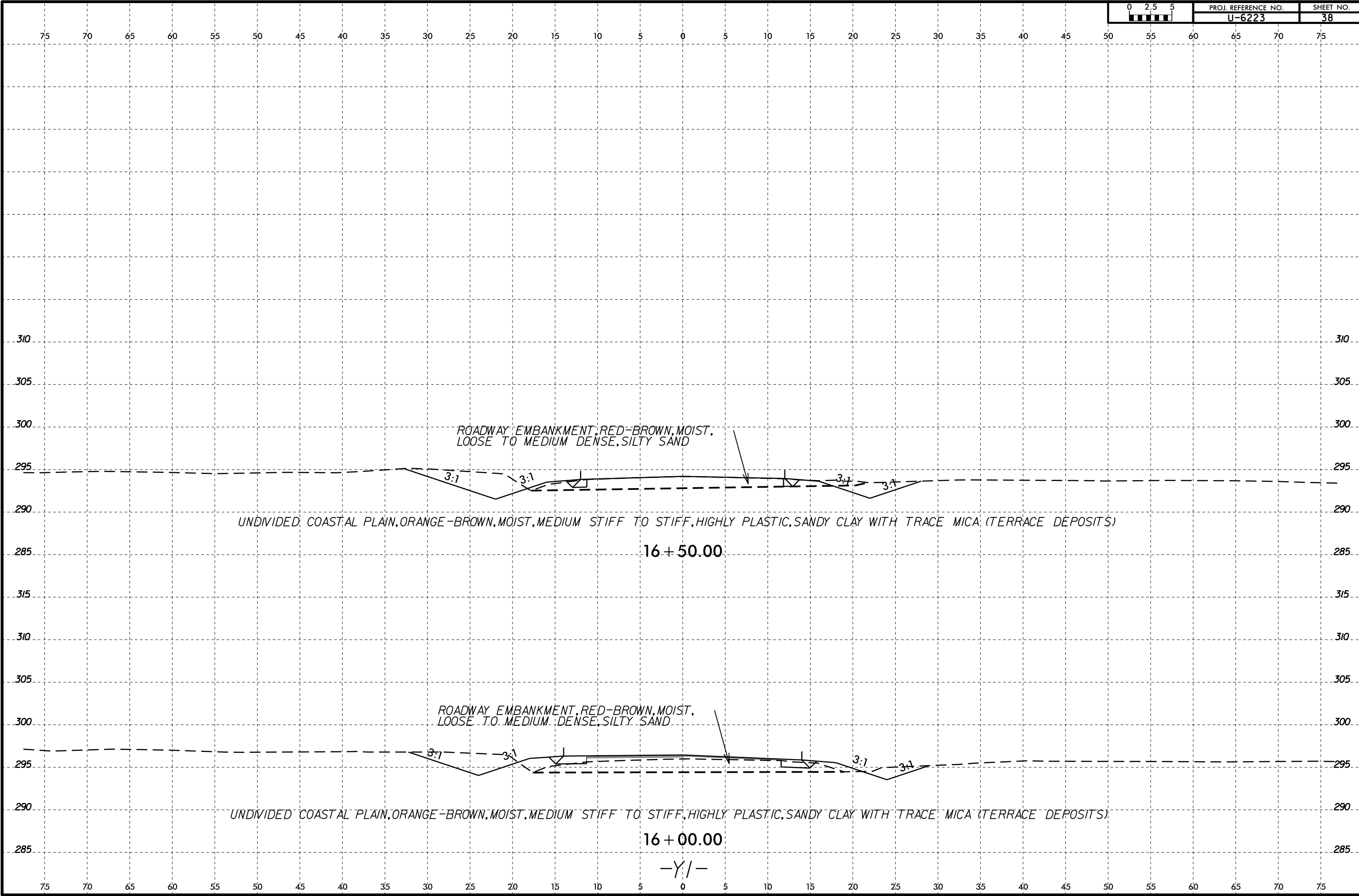


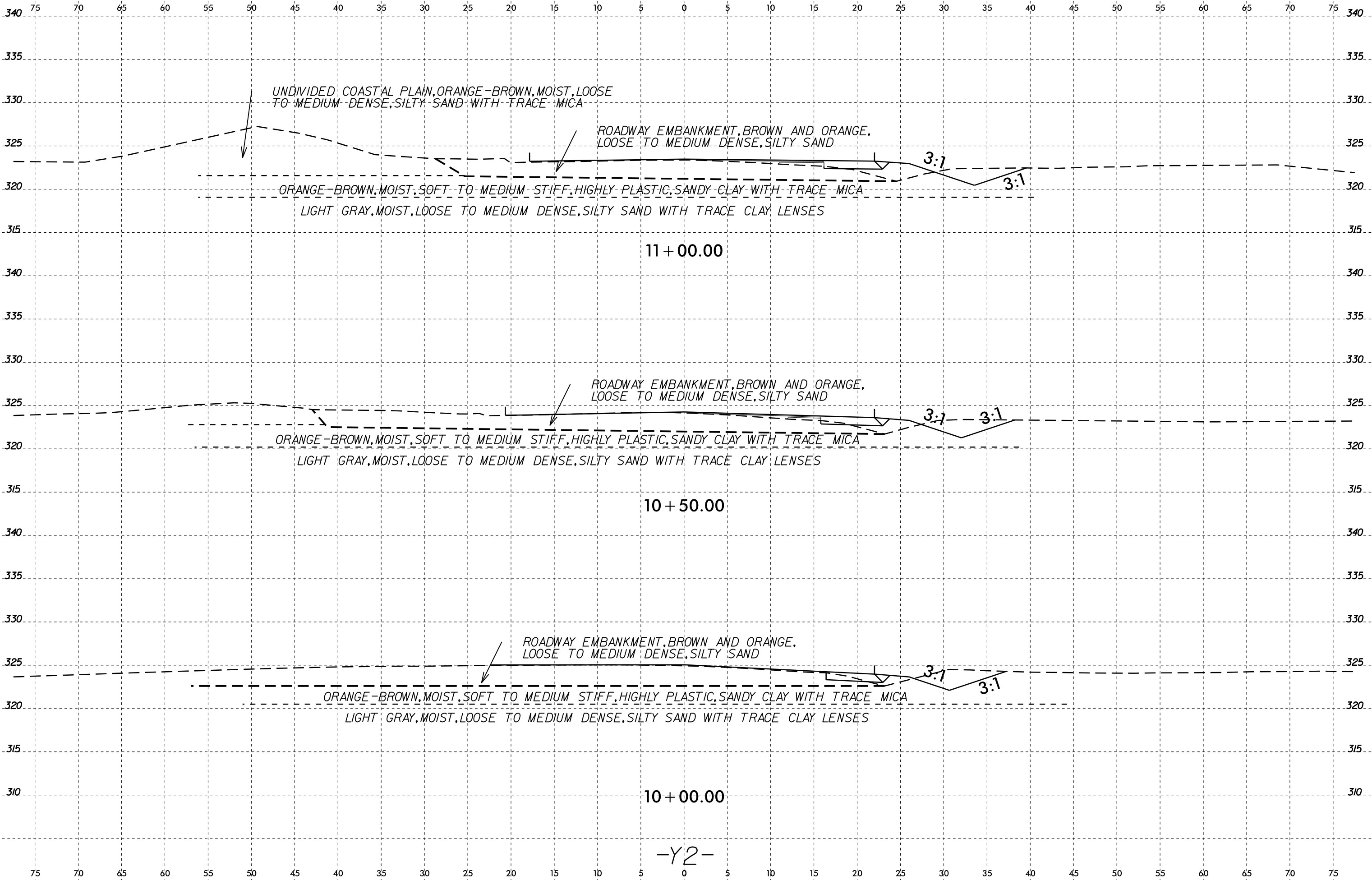
-Y/-

I:\MAY-2021\16-21 - INVESTIGATION\TIP\U6223.GEO.RDWAY\CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo.plt.xsi.dgn
 \$\$\$\$SERIALNAME\$\$\$\$



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-14	22' RT	14+50	1.0 - 1.5	A-6(6)	40	23	20.5	28.8	12.5	38.2	82	71	46	19	-	

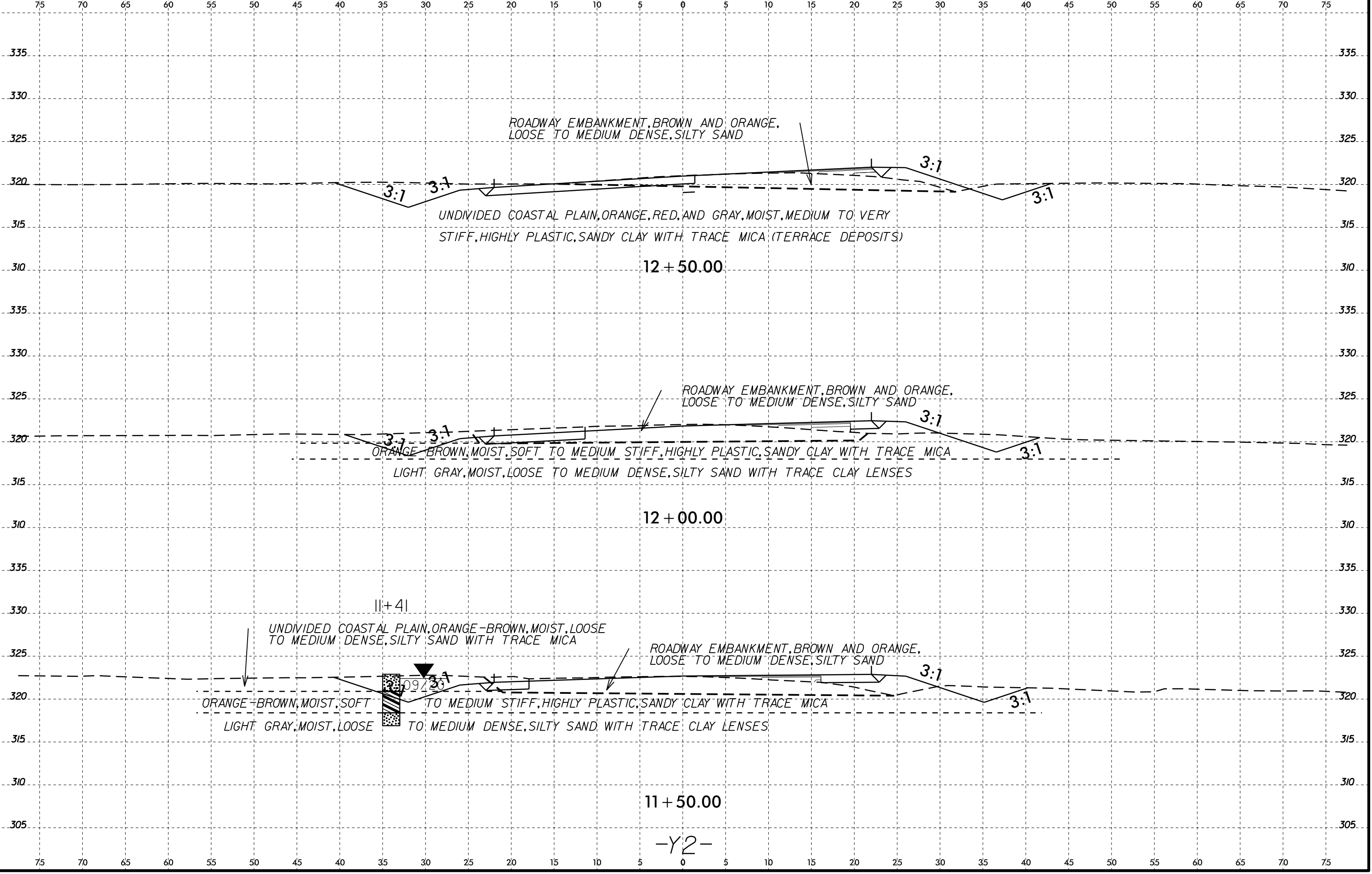




-Y2-

I:\MAY-2021\16-27
 S:\PROJECTS\16-27
 INVESTIGATION\TIP\U6223.GEO.RD.WY\CA00.GEOTECH\ASC\UPDATED FILES 2.23.2021\U6223.Geo.y2.xst.dgn
 \$\$\$SERIALNAME\$\$\$

6/23/16
I:\MAY-2021\16-27
S:\PROJECTS\16-27
INVESTIGATION\TIP\U6223.GEO.RD.MY.CADD.GEOTECH\ASC\UPDATED FILES 2.23.2021\U6223.Geo_j2_xst.dgn
\$\$\$\$\$BERRAME\$\$\$\$\$



ROADWAY EMBANKMENT, BROWN AND ORANGE,
LOOSE TO MEDIUM DENSE, SILTY SAND

UNDIVIDED COASTAL PLAIN, ORANGE, RED, AND GRAY, MOIST, MEDIUM TO VERY
STIFF, HIGHLY PLASTIC, SANDY CLAY WITH TRACE MICA (TERRACE DEPOSITS)

12 + 50.00

ROADWAY EMBANKMENT, BROWN AND ORANGE,
LOOSE TO MEDIUM DENSE, SILTY SAND

ORANGE BROWN, MOIST, SOFT TO MEDIUM STIFF, HIGHLY PLASTIC, SANDY CLAY WITH TRACE MICA
LIGHT GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND WITH TRACE CLAY LENSES

12 + 00.00

UNDIVIDED COASTAL PLAIN, ORANGE-BROWN, MOIST, LOOSE
TO MEDIUM DENSE, SILTY SAND WITH TRACE MICA

ROADWAY EMBANKMENT, BROWN AND ORANGE,
LOOSE TO MEDIUM DENSE, SILTY SAND

ORANGE BROWN, MOIST, SOFT TO MEDIUM STIFF, HIGHLY PLASTIC, SANDY CLAY WITH TRACE MICA
LIGHT GRAY, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND WITH TRACE CLAY LENSES

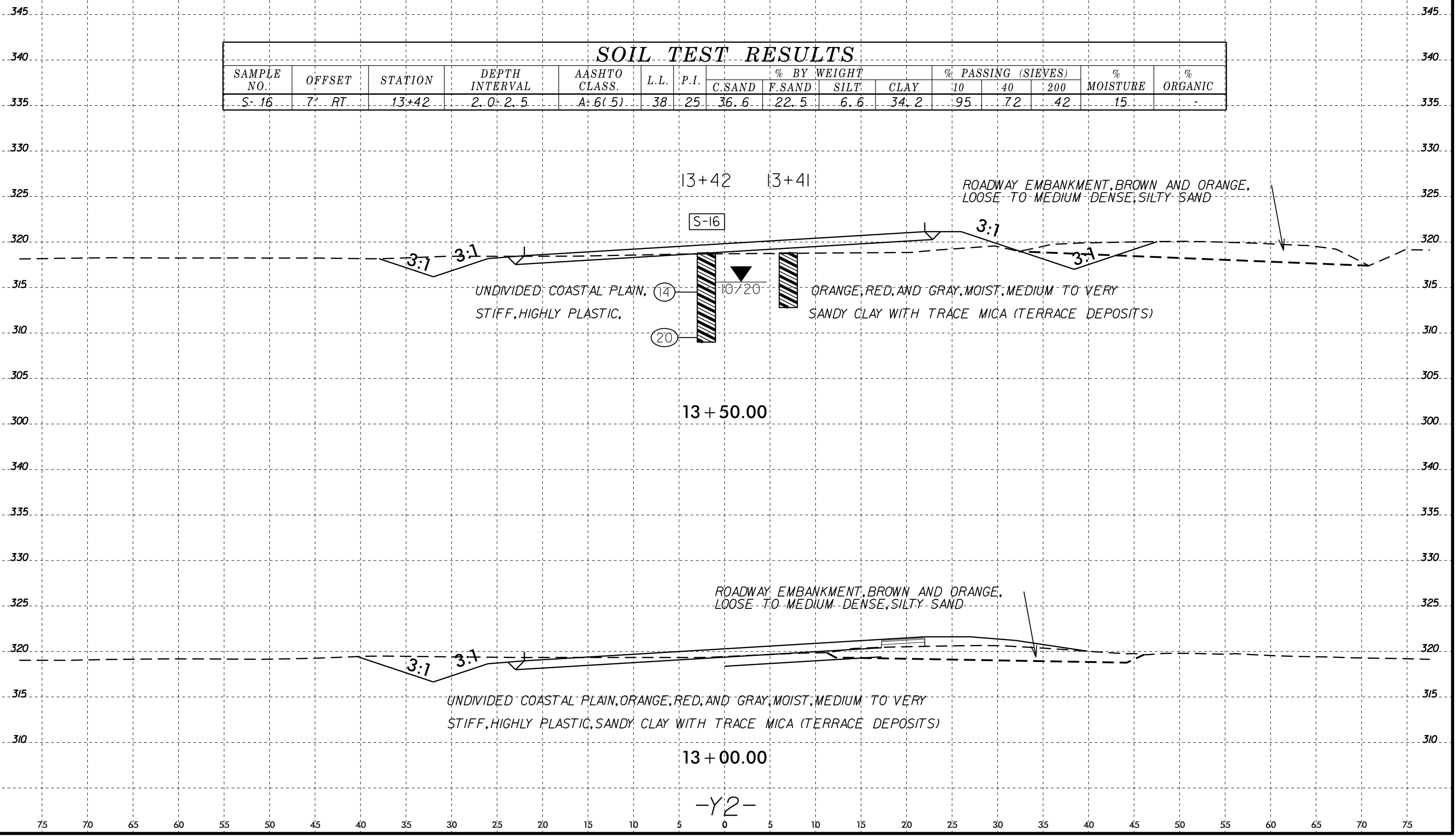
11 + 50.00

-Y2-

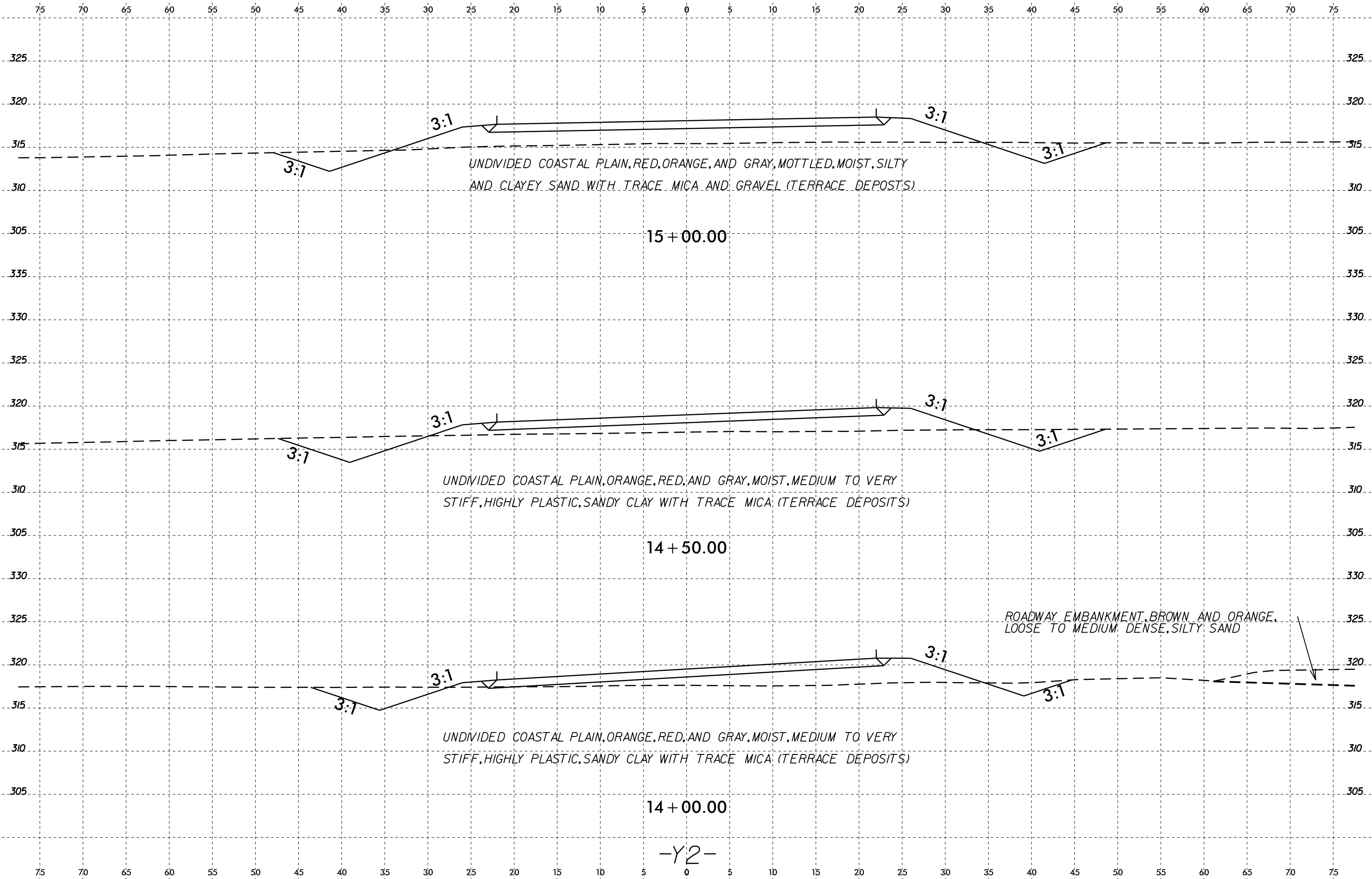
I:\MAY-2021\16-27 - SERVICERAMA - Investigation\TIP\U6223.GEO.RD\Y\CA00.GEOTECH\asc\UPDATED FILES 2.23.2021\U6223.Geo_u2_xst.dgn
 6/23/16

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-16	7' RT	13+42	2.0-2.5	A-6(5)	38	25	36.6	22.5	6.6	34.2	95	72	42	15	-



6/23/16
I:\MAY-2021\6-27
S:\PROJECTS\6-27
GEOLOGICAL INVESTIGATION\TIP\U6223.GEO.RD.MY.CA00.GEOTECH\asc\UPDATED_FILES_2_23_2021\U6223.Geo.plt_xst.dgn
\$\$\$\$\$SERIALNAME\$\$\$\$\$



15+00.00

14+50.00

14+00.00

-Y2-

6/23/16
I:\MAY-2021\6-27
S:\PROJECTS\6-27
\$\$\$SERIALNAME\$\$\$

