

**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: R-5737

PROJECT: 50195

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5737	1	81

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY DAVIDSON
PROJECT DESCRIPTION US 29/US 70/BUSINESS 85 AT
SR 1798 (OLD GREENSBORO ROAD) CONVERT AT-
GRADE INTERSECTION TO INTERCHANGE

INVENTORY

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	12+70 TO 84+60	4-8	
-Y1-	10+00 TO 33+25	7, 9, 10	
-Y2-	10+00 TO 16+00	7, 8	
-Y3-	13+70 TO 33+60	6, 7, 10	II
-Y4-	10+00 TO 25+85	9	
-Y5-	10+00 TO 11+00	4	
-Y6-	10+00 TO 35+32	4	
-RPA-	10+00 TO 23+79	7, 8	
-RPB-	10+00 TO 24+04	6, 7	
-RPC-	10+00 TO 27+14	6, 7	
-RPD-	10+00 TO 23+83	7, 8	

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	26+00 TO 84+50	12-56
-Y1-	10+00 TO 27+50	57-69
-Y2-	10+50 TO 15+50	70-72
-Y2-	24+03 TO 26+06	51, 52
-Y3-	10+41 TO 23+40	20-31
-Y4-	13+50 TO 25+84	73-79
-RPA-	10+06 TO 22+71	41-50
-RPB-	11+30 TO 22+81	26-37
-RPC-	10+00 TO 26+04	23-39
-RPD-	10+29 TO 22+18	41-50

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- 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.
- 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.D. MOHS, LG

W.M. JOHNSON, LG

T.C. MCILROY

SUMMIT

INVESTIGATED BY N.D. MOHS, LG

DRAWN BY N.D. MOHS, LG

CHECKED BY M.D. VALIQUETTE, PE

SUBMITTED BY N.D. MOHS, LG

DATE JANUARY 2019

ICE of
CAROLINAS, PLLC



Designed by:
Nathan Daniel Mohs

35A8C1164EEA400
2/12/2019

SIGNATURE

DATE

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

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS									
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 208, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS CONTAINING ORGANIC MATTER.									
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.									
MINERALOGICAL COMPOSITION										CRYSTALLINE ROCK (CR)										NON-CRYSTALLINE ROCK (NCR)										COASTAL PLAIN SEDIMENTARY ROCK (CP)									
COMPRESSIBILITY										PERCENTAGE OF MATERIAL										WEATHERING										GROUND WATER									
TEXTURE OR GRAIN SIZE										MISCELLANEOUS SYMBOLS										ROCK HARDNESS										RECOMMENDATION SYMBOLS									
CONSISTENCY OR DENSENESS										ABBREVIATIONS										SOIL MOISTURE - CORRELATION OF TERMS										EQUIPMENT USED ON SUBJECT PROJECT									
PLASTICITY										SOIL MOISTURE SCALE (ATTERBERG LIMITS)										FRACTURE SPACING										INDURATION									
COLOR										FIELD MOISTURE DESCRIPTION										BEDDING										NOTES:									
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.										REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE										ELEVATION: FEET										FIAD - FILLED IMMEDIATELY AFTER DRILLING									

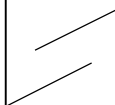

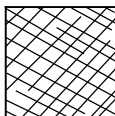
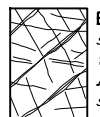




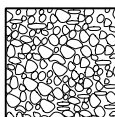

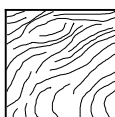



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SUPPLEMENTAL LEGEND, GEOLOGICAL STRENGTH INDEX (GSI) TABLES
FROM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

AASHTO LRFD Figure 10.4.6.4-1 — Determination of GSI for Jointed Rock Mass (Marinos and Hoek, 2000)

AASHTO LRFD Figure 10.4.6.4-2 — Determination of GSI for Tectonically Deformed Heterogeneous Rock Masses (Marinos and Hoek, 2000)

GEOLOGICAL STRENGTH INDEX (GSI) FOR JOINTED ROCKS (Hoek and Marinos, 2000)		SURFACE CONDITIONS					GSI FOR HETEROGENEOUS ROCK MASSES SUCH AS FLYSCH (Marinos, P and Hoek E., 2000)		SURFACE CONDITIONS OF DISCONTINUITIES (Predominantly bedding planes)					
From the lithology, structure and surface conditions of the discontinuities, estimate the average value of GSI. Do not try to be too precise. Quoting a range from 33 to 37 is more realistic than stating that GSI = 35. Note that the table does not apply to structurally controlled failures. Where weak planar structural planes are present in an unfavorable orientation with respect to the excavation face, these will dominate the rock mass behaviour. The shear strength of surfaces in rocks that are prone to deterioration as a result of changes in moisture content will be reduced if water is present. When working with rocks in the fair to very poor categories, a shift to the right may be made for wet conditions. Water pressure is dealt with by effective stress analysis.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	From a description of the lithology, structure and surface conditions (particularly of the bedding planes), choose a box in the chart. Locate the position in the box that corresponds to the condition of the discontinuities and estimate the average value of GSI from the contours. Do not attempt to be too precise. Quoting a range from 33 to 37 is more realistic than giving GSI = 35. Note that the Hoek-Brown criterion does not apply to structurally controlled failures. Where unfavourably oriented continuous weak planar discontinuities are present, these will dominate the behaviour of the rock mass. The strength of some rock masses is reduced by the presence of groundwater and this can be allowed for by a slight shift to the right in the columns for fair, poor and very poor conditions. Water pressure does not change the value of GSI and it is dealt with by using effective stress analysis.		VERY GOOD	GOOD	FAIR	POOR	VERY POOR	
STRUCTURE		DECREASING SURFACE QUALITY →					COMPOSITION AND STRUCTURE							
	INTACT OR MASSIVE - intact rock specimens or massive in situ rock with few widely spaced discontinuities	90			N/A	N/A		70						
	BLOCKY - well interlocked undisturbed rock mass consisting of cubical blocks formed by three intersecting discontinuity sets	80	70					60						
	VERY BLOCKY - interlocked, partially disturbed mass with multi-faceted angular blocks formed by 4 or more joint sets		60	50					50					
	BLOCKY/DISTURBED/SEAMY - folded with angular blocks formed by many intersecting discontinuity sets. Persistence of bedding planes or schistosity			40						40				
	DISINTEGRATED - poorly interlocked, heavily broken rock mass with mixture of angular and rounded rock pieces				30						30			
	LAMINATED/SHEARED - Lack of blockiness due to close spacing of weak schistosity or shear planes					20						20		
						10							10	
		N/A	N/A											10

→ Means deformation after tectonic disturbance

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

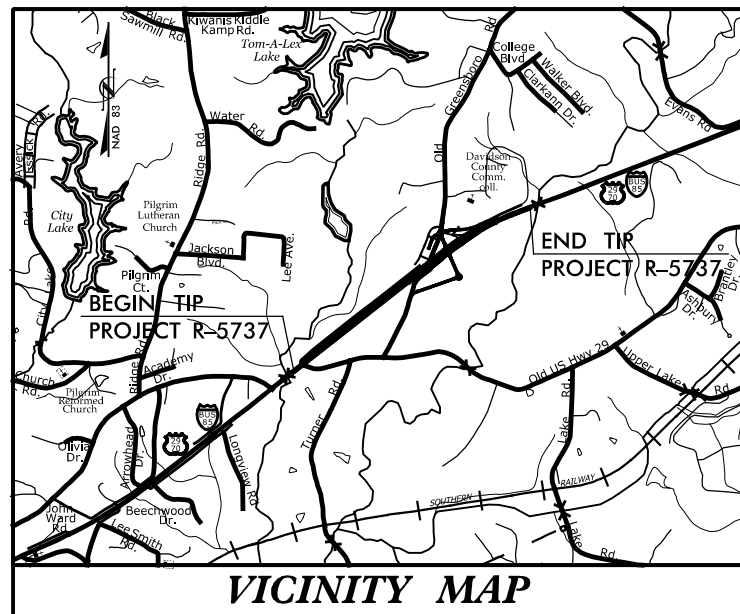
DAVIDSON COUNTY

**LOCATION: CONVERT AT-GRADE INTERSECTION OF
OLD GREENSBORO RD (SR 1798) AND
I-85 BUS/US 29-70 TO INTERCHANGE**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING
AND STRUCTURES**

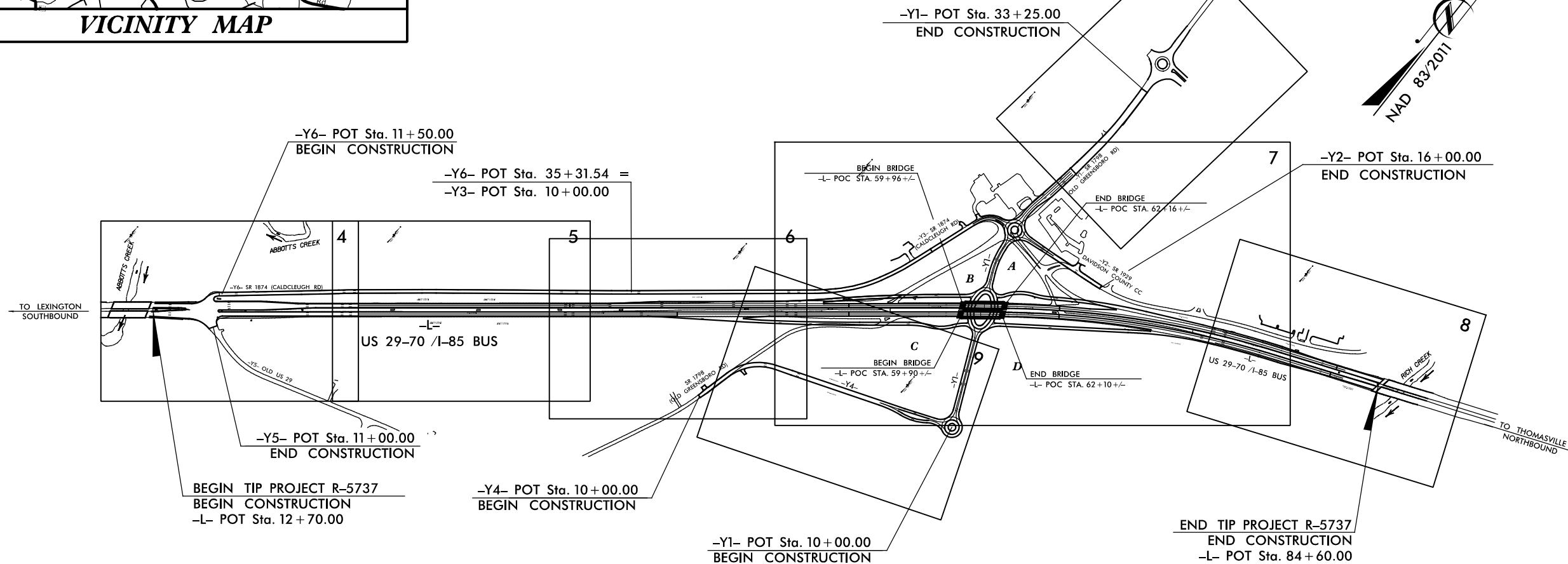
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5737	3	81
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50195.1.1		PE	
50195.2.1		ROW & UTIL.	

75% ROW PLANS

TIP PROJECT: R-5737



VICINITY MAP

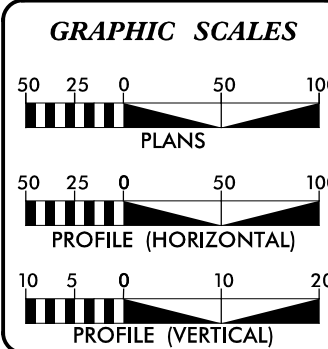


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

NCDOT CONTACT: AL BLANTON, P.E.

CONTRACT:



DESIGN DATA

ADT 2019 =	19300
ADT 2040 =	21400
K =	9 %
D =	60 %
T =	9 % *
V =	60 MPH
* TTST 5% DUAL 4%	
FUNC CLASS =	ARTERIAL
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5737 =	1.320 MILES
LENGTH STRUCTURE TIP PROJECT R-5737 =	0.042 MILES
TOTAL LENGTH TIP PROJECT R-5737 =	1.362 MILES
STRUCTURE LENGTH BASED ON -L- NB STATIONING.	

PLANS PREPARED FOR NCDOT BY:

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-9929

2018 STANDARD SPECIFICATIONS

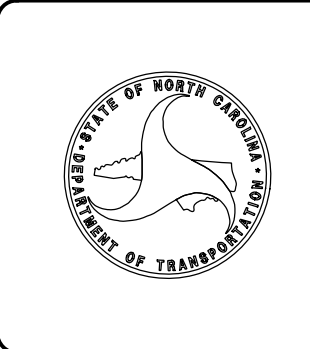
RIGHT OF WAY DATE: AUGUST 18, 2018	DENNIS J. MORY, P.E. PROJECT ENGINEER
LETTING DATE: AUGUST 14, 2019	WILLIAM E. TILLITT, P.E. PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



January 29, 2019

STATE PROJECT: 50195.1.1 (R-5737)
PROJECT ID: 33482
COUNTY: Davidson
DESCRIPTION: US 29/US 70/Business 85 at SR 1798 (Old Greensboro Road) Convert At-Grade Intersection to Interchange
SUBJECT: Geotechnical Report – Inventory

Project Description

This project consists of the converting an at-grade intersection at Old Greensboro Road and I-85 Business (-L-) to an interchange in Davidson County. Old Greensboro Road (-Y1- and -Y4-) will be realigned to pass under I-85 Business with several traffic circles. The existing roadway will be raised to accommodate a new bridge over -Y1-, with ramps and retaining walls. The project begins just north of the bridge on US 29/US 70/Business 85 over Abbott’s Creek and continues for 1.36 miles north to the bridge over Rich Creek. A traffic circle will be added to the intersection of Caldcleugh Road (-Y3-) Davidson County CC Road (-Y2-) and -Y1-. Old US 29 (-Y5-) and Caldcleugh Road (-Y6-) are receiving asphalt overlays.

The geotechnical field investigation was conducted from September to November 2018. Standard Penetration Tests were performed with an ATV-mounted CME-550X with an automatic hammer along the project alignments. Several hand augers were also performed along -L- in areas of shallow cut/fill. Representative soil samples were collected for visual classification in the field and submitted for laboratory analysis by Terracon Inc. in Raleigh, NC.

The following alignments, totaling 4.27 miles, were investigated. Subsurface soil profiles, or cross-sections, of these alignments are included in this report:

<u>Line</u>	<u>Stations</u>	
-L-	12+70	to 84+60
-Y1-	10+00	to 33+25
-Y2-	10+00	to 16+00
-Y3-	13+70	to 33+60
-Y4-	10+00	to 25+85
-Y5-	10+00	to 11+00
-Y6-	10+00	to 35+32
-RPA-	10+00	to 23+79
-RPB-	10+00	to 24+04
-RPC-	10+00	to 27+14
-RPD-	10+00	to 23+83

Physiography and Geology

The project is located in the gently rolling terrain of central North Carolina. The area is mostly wooded with some homes and Davidson County Community College near the project corridor.

Geologically, the project lies within the Charlotte Belt Physiographic Province of central North Carolina. The site is underlain by meta-volcanic rock of Cenozoic age. Central North Carolina has a complex geologic history of terranes and volcanic islands being thrust and accreted onto the ancient north American continent during the formation of Pangea, and subsequent plutonic intrusions into those rocks. Millions of years of erosion has brought us to the present landscape.

The geology of the project area consists of residual soils which are the weathered remains of parent material, crystalline meta-volcanic rock. Weathered rock is also present and is a transitional material between crystalline rock and soil.

Soil Properties

Soils encountered at the project site include roadway embankment and residual soils.

Roadway embankment underlies the existing lanes of I-85 and the surrounding surface roads. The embankment soils range from 1 to 18 feet thick. Where sampled, the embankment soil consists of dry to moist, stiff to very stiff, silty clay, sandy clay and sandy silt (AASHTO classifications of A-7-6, A-6, and A-4), with some loose to medium dense, dry to moist, silty sand (A-2-4). These soils were placed during the during the construction of I-85 Business from nearby borrow sources. Some of the A-7 soils exhibit a PI of 26 or more and are considered to be highly plastic.

Residual soils are found at the ground surface and immediately below the embankment soils. These soils mainly consist of moist, medium stiff to hard, sandy silt, sandy clay, and silty clay (AASHTO classifications of A-4, A-6, and A-7-6, A-6) with significant amounts of loose to very dense, silty sand (A-2-4). Again, some of the A-7 soils exhibit a PI of 26 or more and are considered to be highly plastic.

Rock Properties

Weathered and or crystalline rock were encountered in numerous borings along the project alignment. Weathered rock is identified as material that exhibits N-values of 100 in less than 1 foot of penetration. Contacts between soil and weathered rock were also identified by difficulty of the drill rig augering through the material. Crystalline rock is identified as material that exhibits N-values of 60 with less than 0.1 feet of penetration. Auger refusal was also used to identify this material. Crystalline rock is present in several areas near or above the proposed grade as noted in “Areas of Special Geotechnical Interest”. Weathered rock is considered to be rippable during grading of the site. Crystalline rock may require blasting.

Groundwater

Groundwater was encountered in several borings at varying depths across this project. 0 hour ground water levels range from 3.5 to 48.6 feet below the ground surface. 24 hours ground water levels range from 3.4 to 28.2 feet below the ground surface. Areas of ground water within 6.0 feet of proposed grade are listed in “Areas of Special Geotechnical Interest”. The majority of borings were measured to be dry at the time of drilling.

Areas of Special Geotechnical Interest

1. Highly Plastic Clays: Highly plastic clay (PI>25) were encountered on the project at the following locations:

<u>Line</u>	<u>Stations</u>
-L-	55+25 to 56+25
-L-	70+25 to 73+75
-Y1-	15+25 to 15+75
-Y1-	17+25 to 17+75
-Y1-	18+25 to 20+25

2. High Groundwater: The following areas exhibit groundwater within 6.0 feet of existing ground:

<u>Line</u>	<u>Station</u>
-L-	63+00
-Y4-	19+50

3. High Crystalline Rock: The following areas exhibit crystalline rock within 6.0 feet of proposed grade:

<u>Line</u>	<u>Station</u>
-L-	57+50 to 60+00
-L-	67+50
-Y1-	15+00 to 18+50
-Y4-	21+50 to 24+00

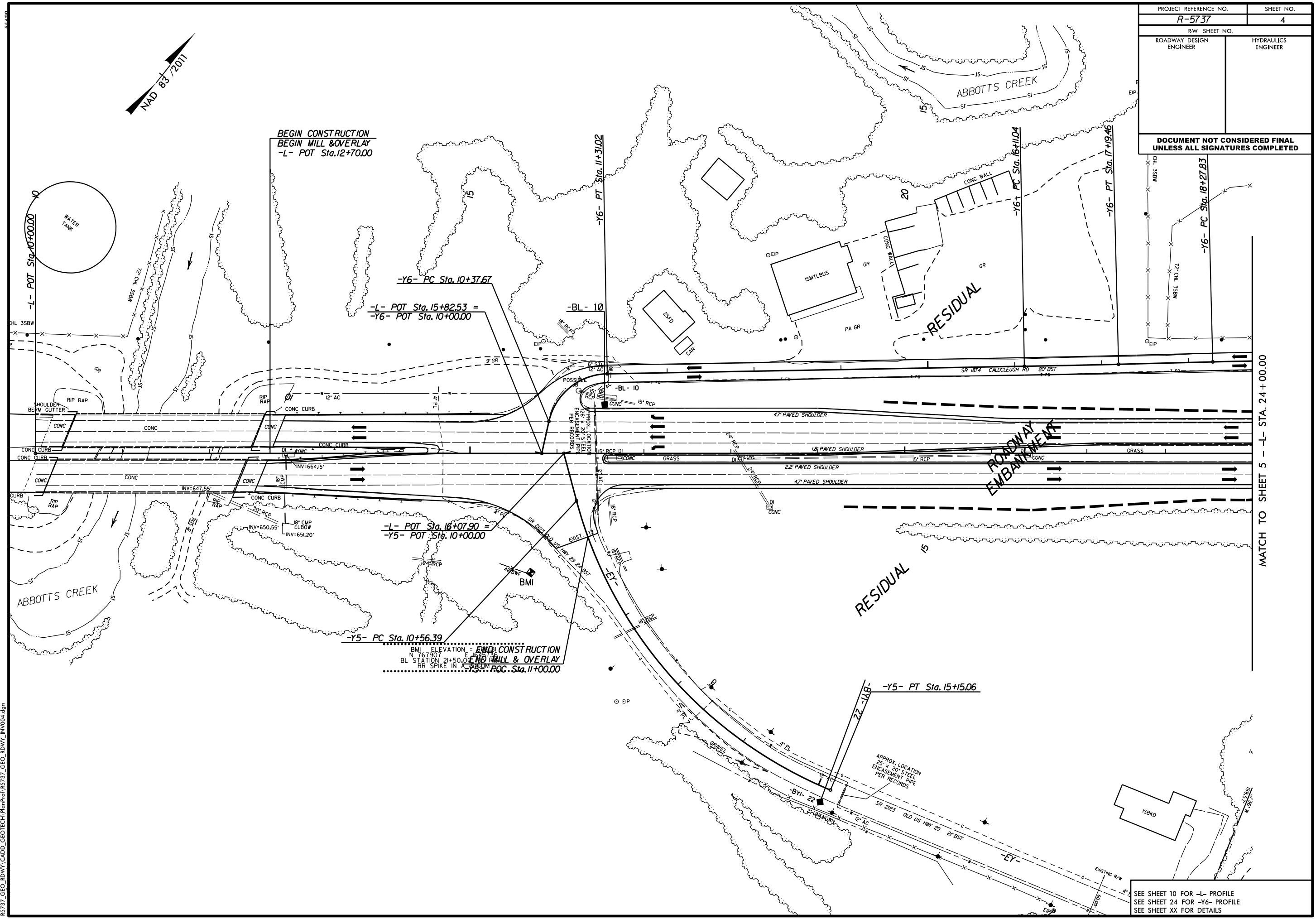
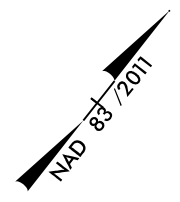
4. Weathered Rock: The following areas exhibit weathered rock within 6.0 feet of proposed grade:

<u>Line</u>	<u>Station</u>
-L-	42+00 to 45+50
-L-	56+50 to 60+00
-L-	67+00 to 68+00
-L-	77+50
-Y1-	10+00
-Y1-	14+50 to 17+50
-Y4-	21+50 to 22+00
-Y4-	23+50

Prepared by,

Nathan Mohs, LG
Engineering Geologist Manager

PROJECT REFERENCE NO. R-5737	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

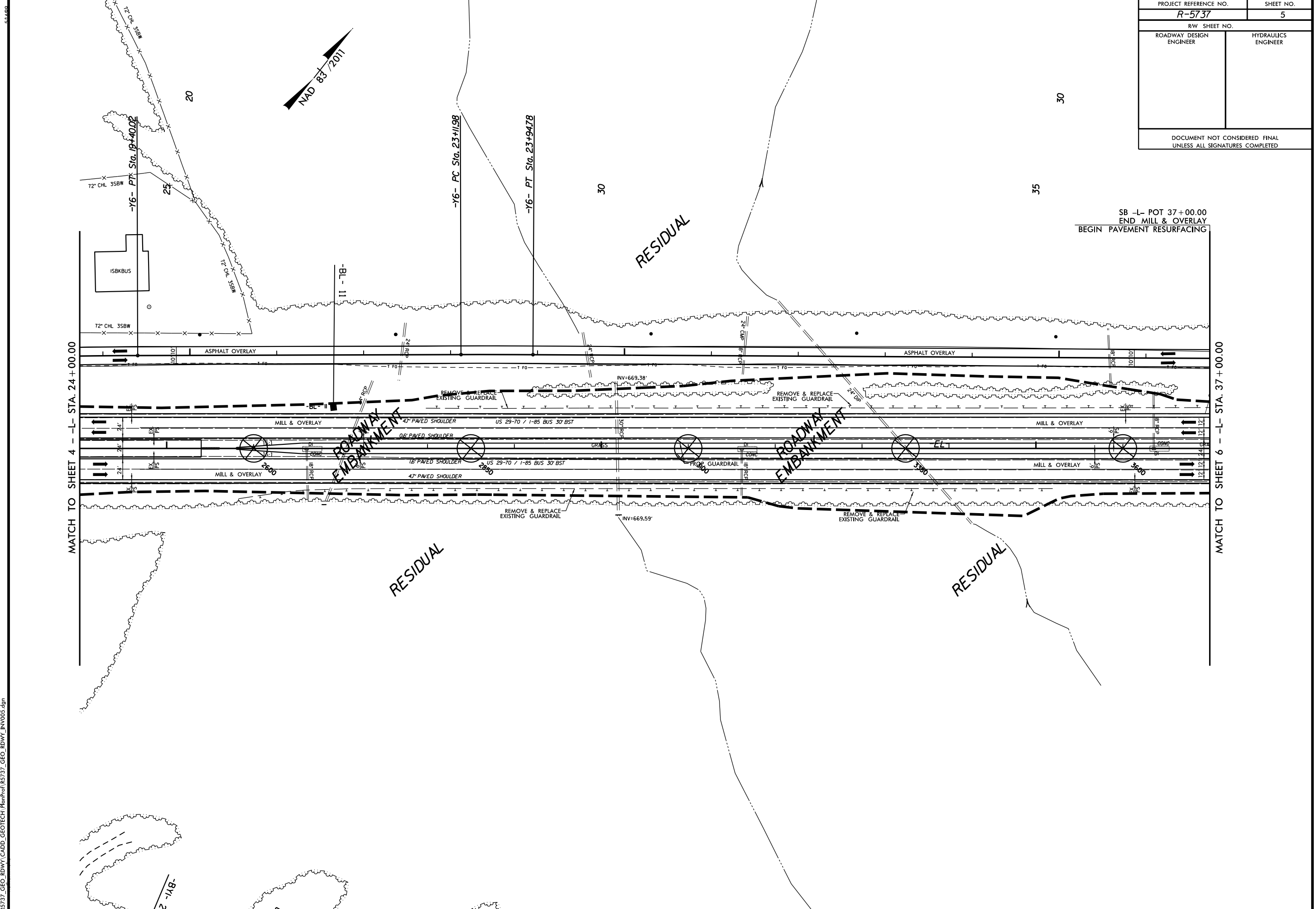


MATCH TO SHEET 5 --L- STA. 24+00.00

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 24 FOR -Y6- PROFILE
SEE SHEET XX FOR DETAILS

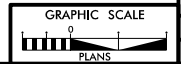
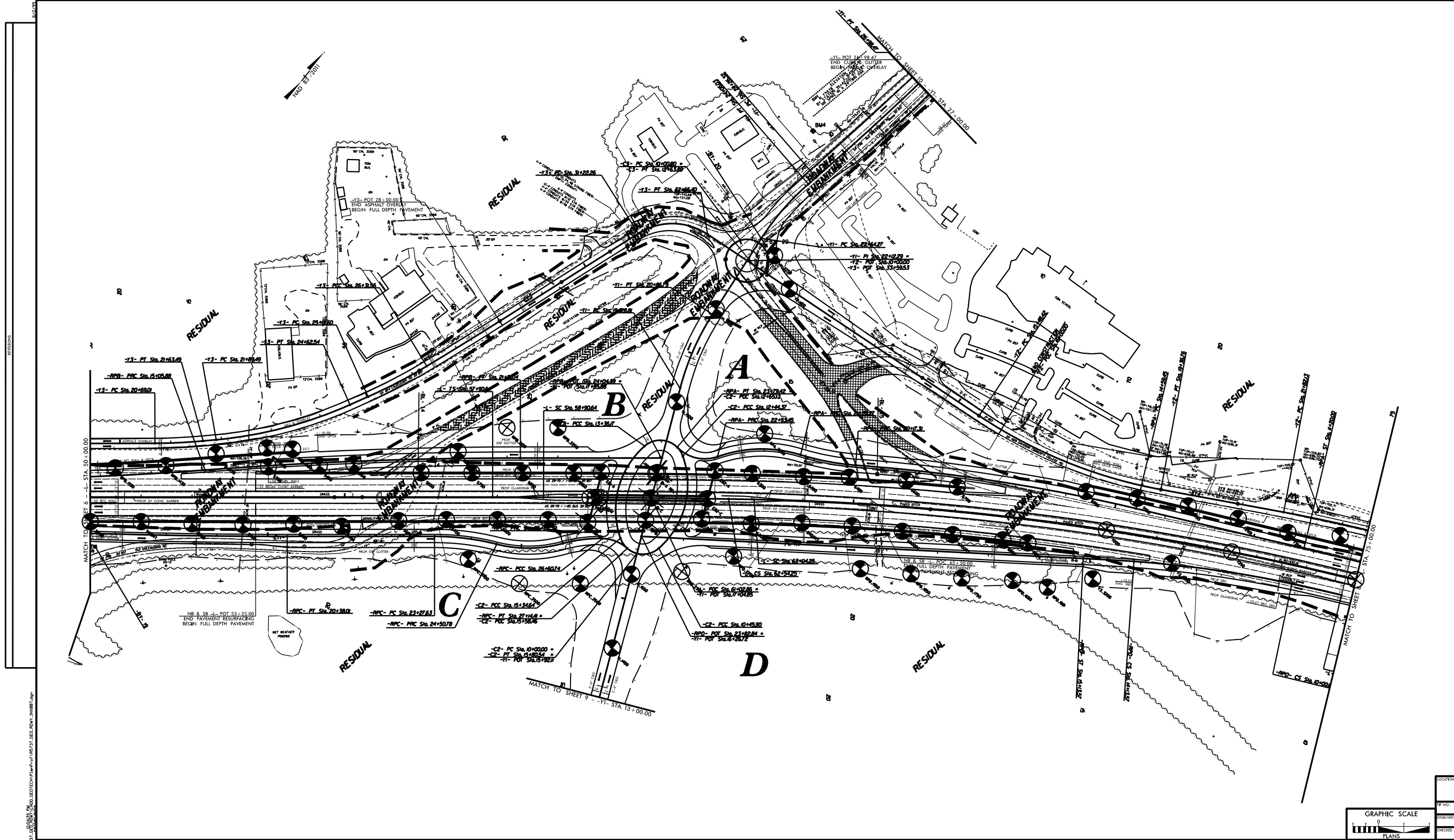
17.04.37 PM
R5737_GEO_RDWY_CADD_PlanProf R5737_GEO_RDWY_INV004.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5737	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



17:04:38 PM
 R5737_GEO_RDWY\CADD_GEOTECH\Plan\Prof\15737_GEO_RDWY_INV005.dgn

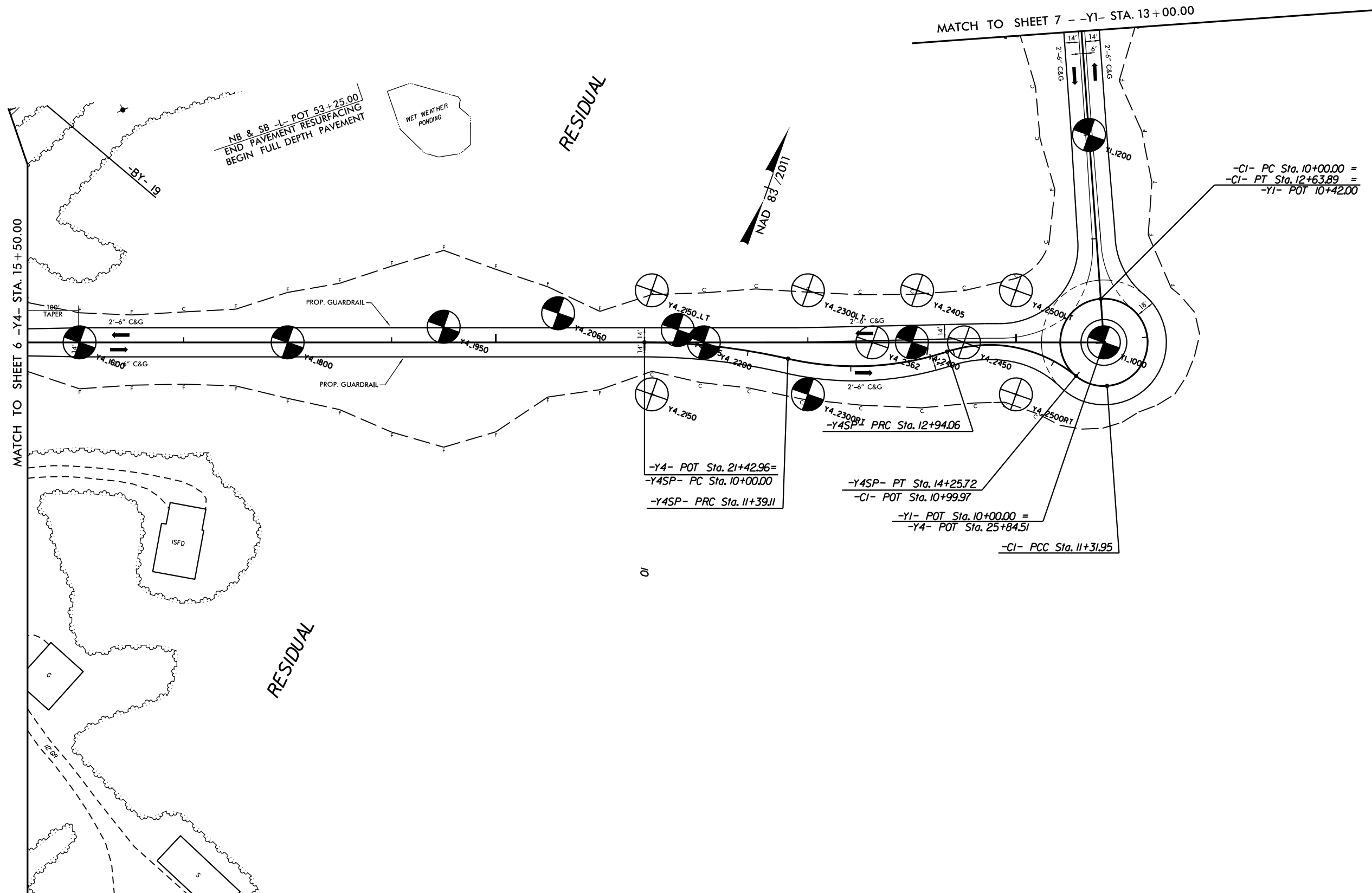
PROJECT REFERENCE NO. 2-274	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULIC ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TRAFFIC DATA	
B 7/78	A 82/82
C 7/7	D 1/2



LOCATION:	
TP NO.:	COUNTY:
DESIGNED BY:	CHECKED BY:
	DATE:

11/27/2013 10:00:00 AM C:\GEOGRAPHIC\2013\20130113\20130113.DWG: 20130113.dwg
 6/1/2014

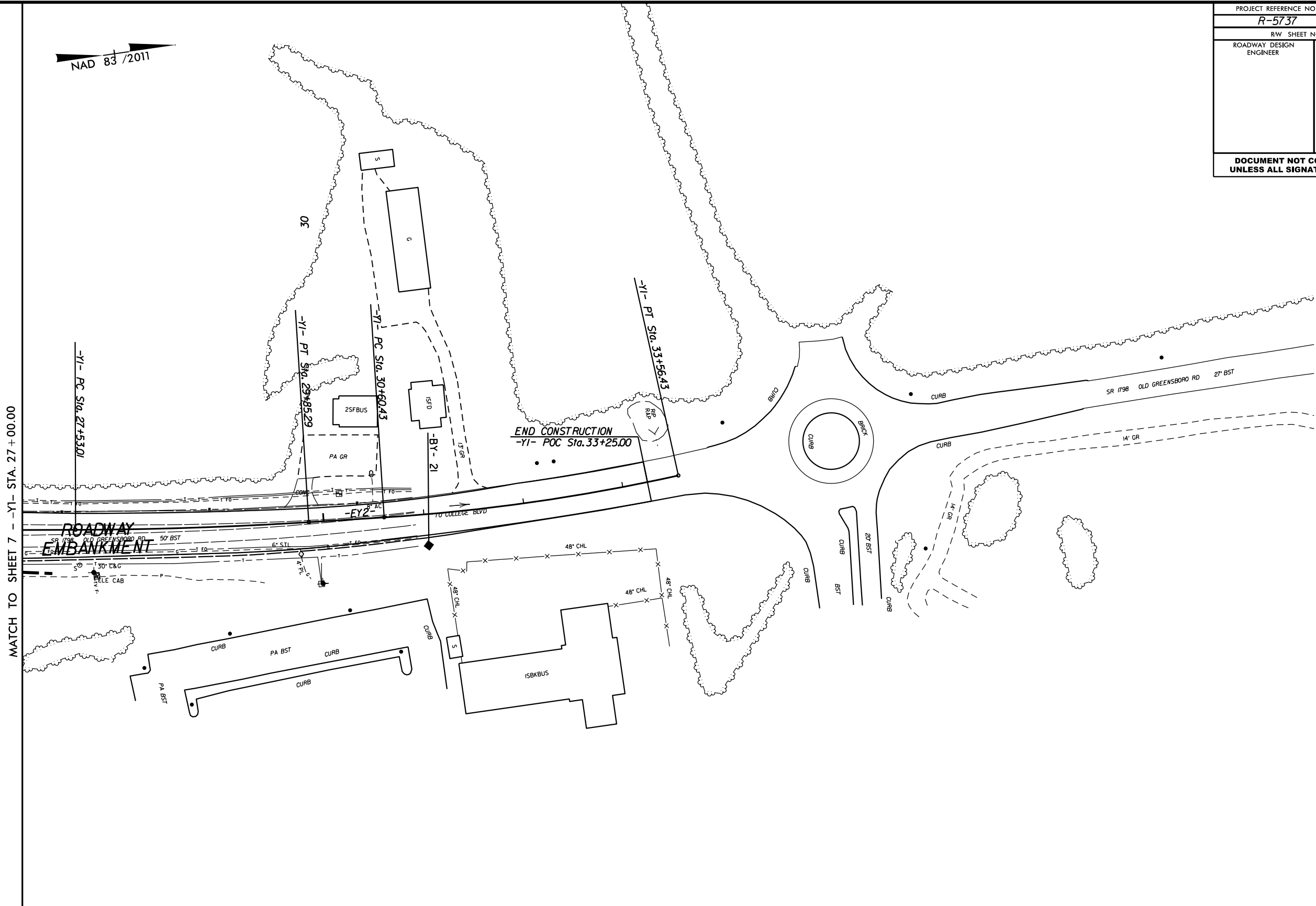
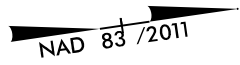
PROJECT REFERENCE NO. R-5737	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



5/14/99
 2:04:41 PM
 C:\37_GEO_RDWY\CADD_GEOTECH\1mPr of \R5737_GEO_RDWY_INV009.dgn

5/14/99

PROJECT REFERENCE NO. R-5737	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH TO SHEET 7 --Y1- STA. 27+00.00

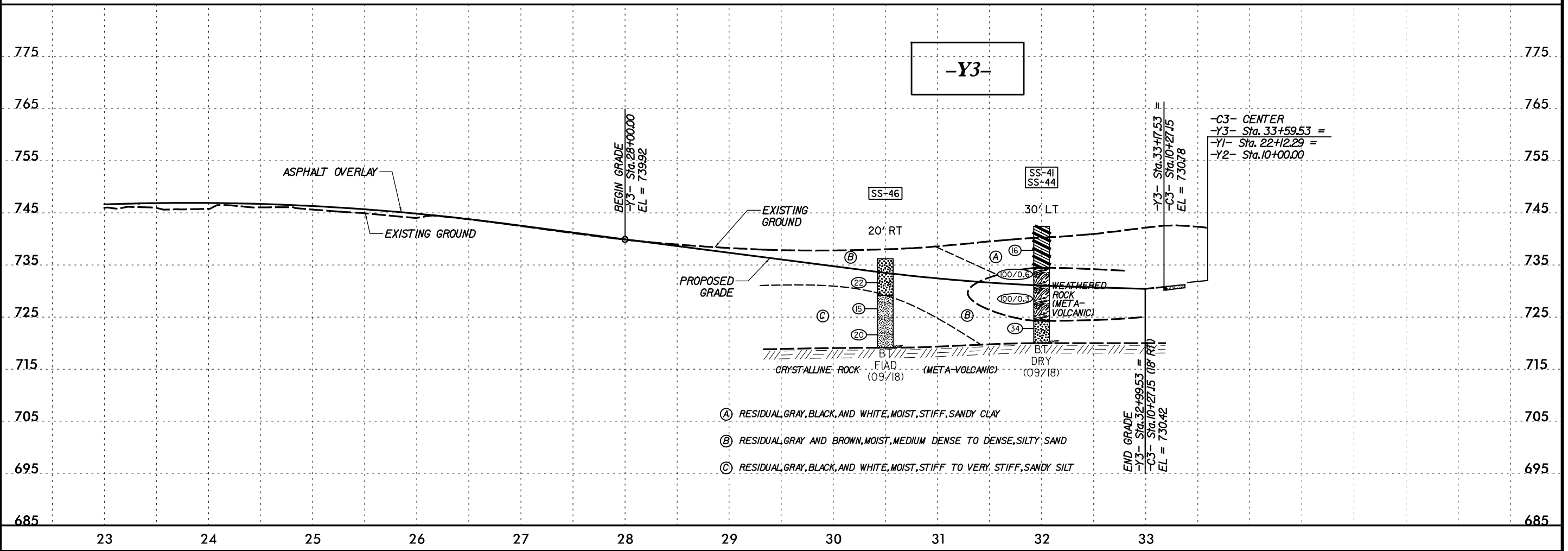
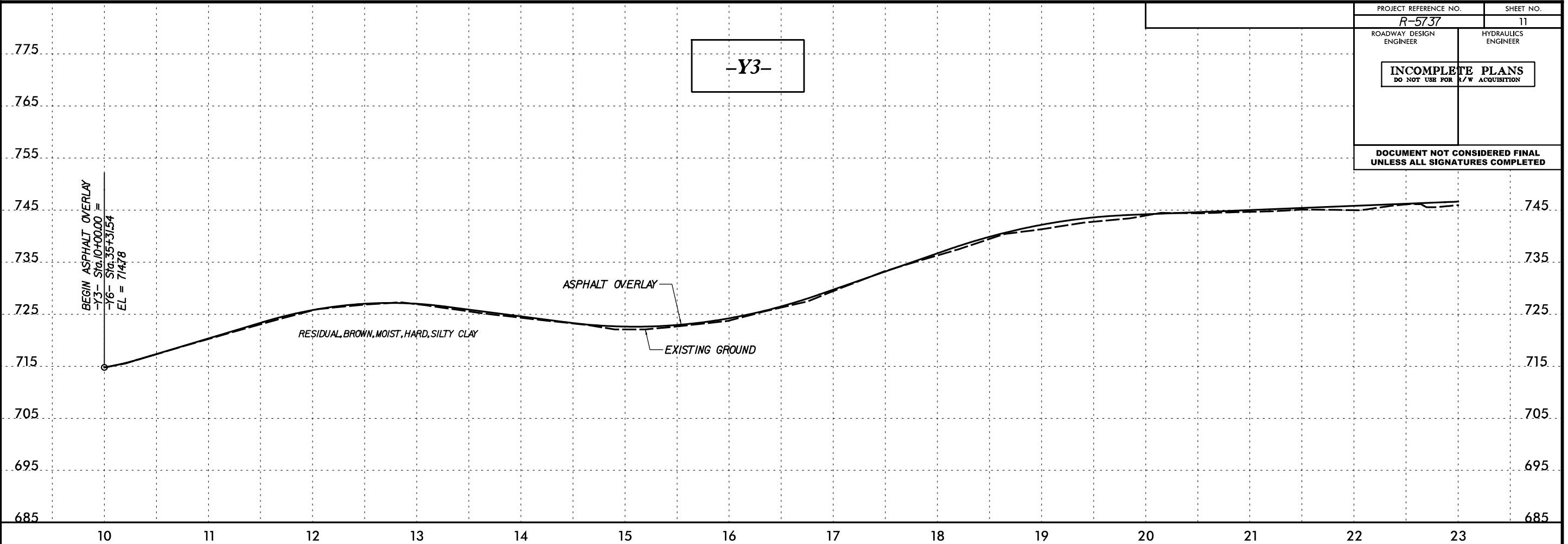
CURVE DATA FOR -Y1-

PI Sta 25+79.99	PI Sta 28+86.76
$\Delta = 2^{\circ} 44' 08.1" (LT)$	$\Delta = 3^{\circ} 30' 08.2" (LT)$
$D = 1^{\circ} 00' 18.7"$	$D = 1^{\circ} 30' 28.0"$
$L = 272.15'$	$L = 232.28'$
$T = 136.10'$	$T = 116.18'$
$R = 5,700.00'$	$R = 3,800.00'$

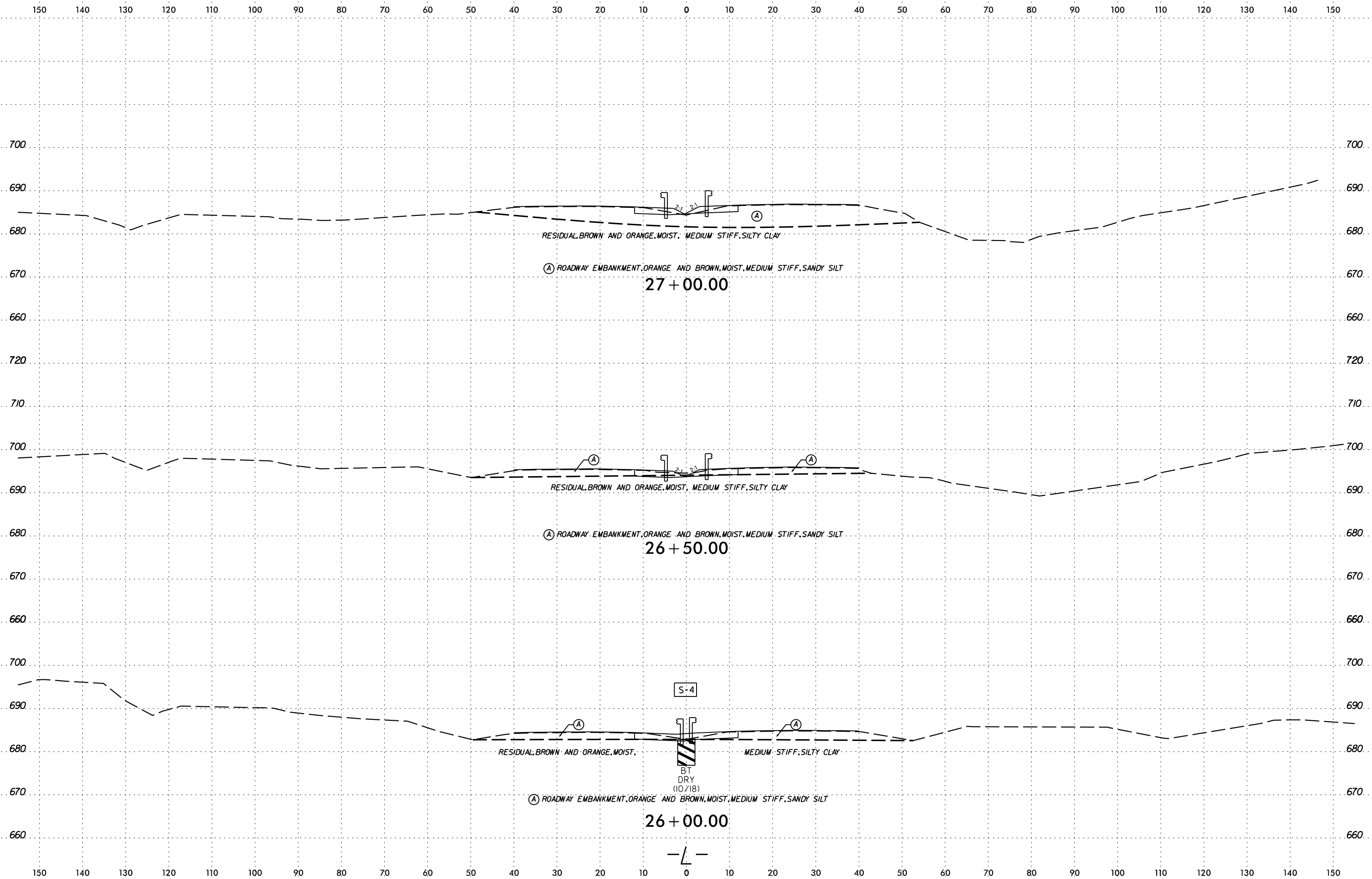
7:04:41PM 737_GEO_RDWY\CADD_GEOTECH\PlanProf\RS5737_GEO_RDWY_INV010.dgn

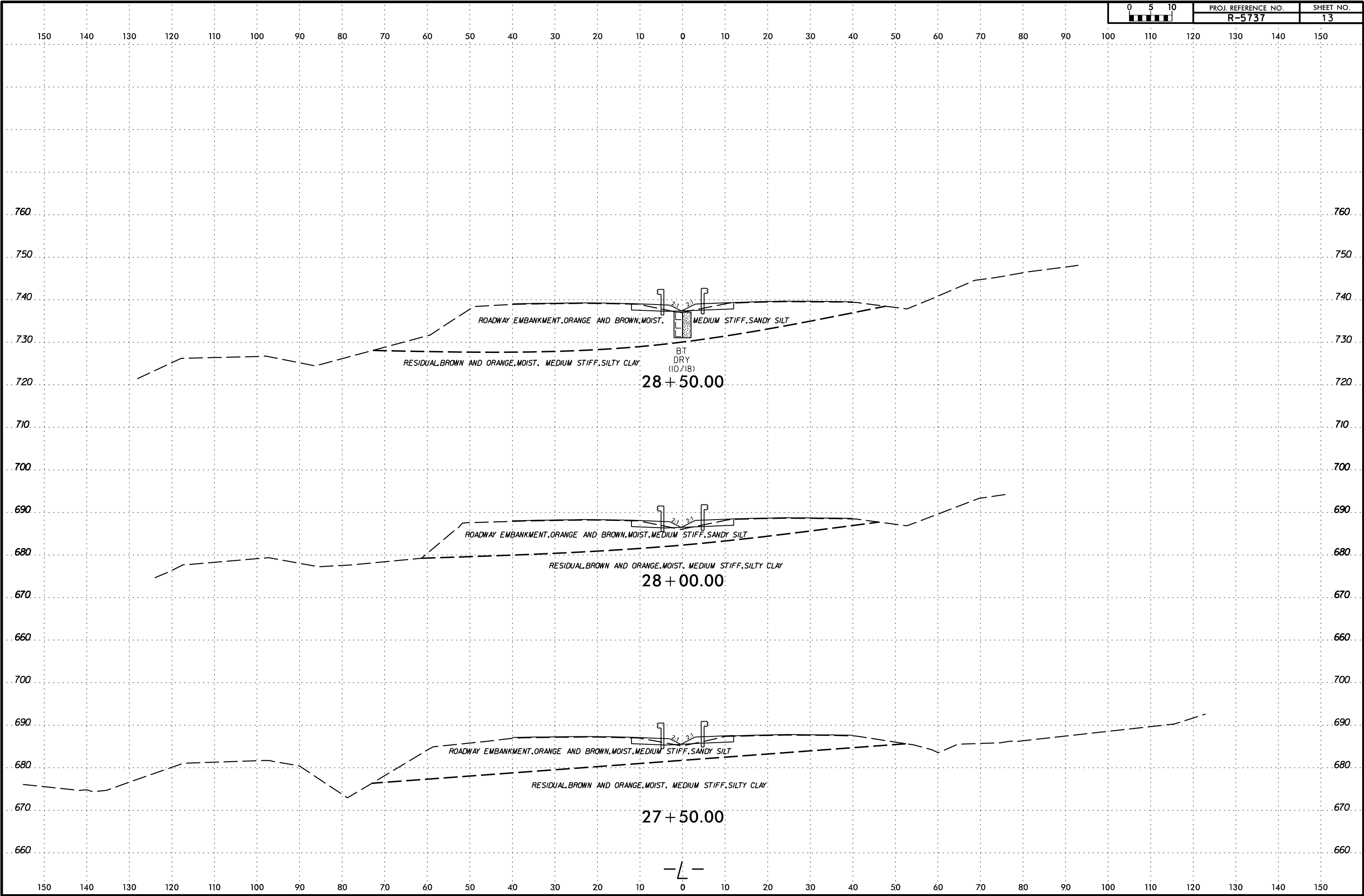
5/28/99

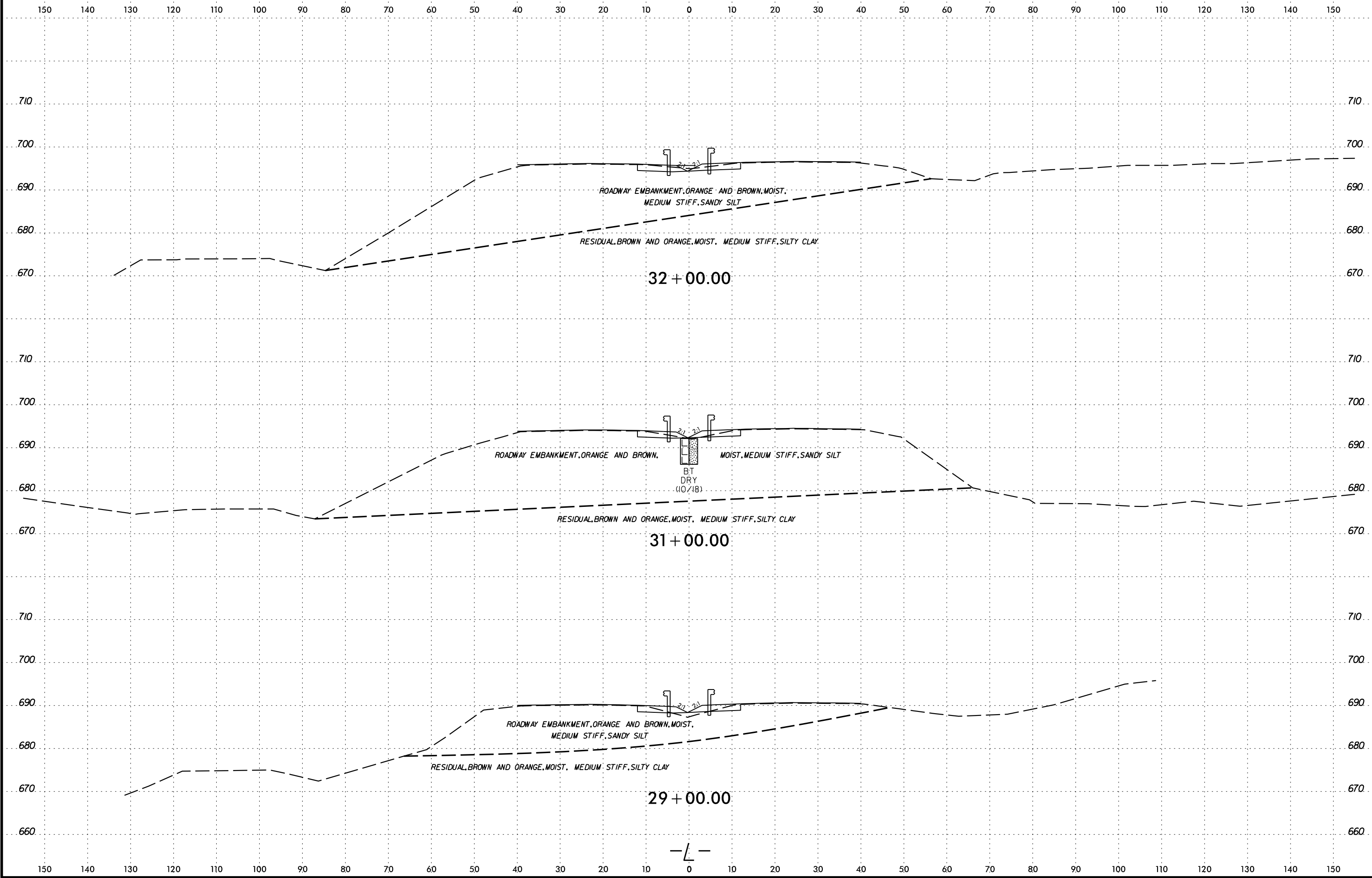
PROJECT REFERENCE NO. R-5737	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

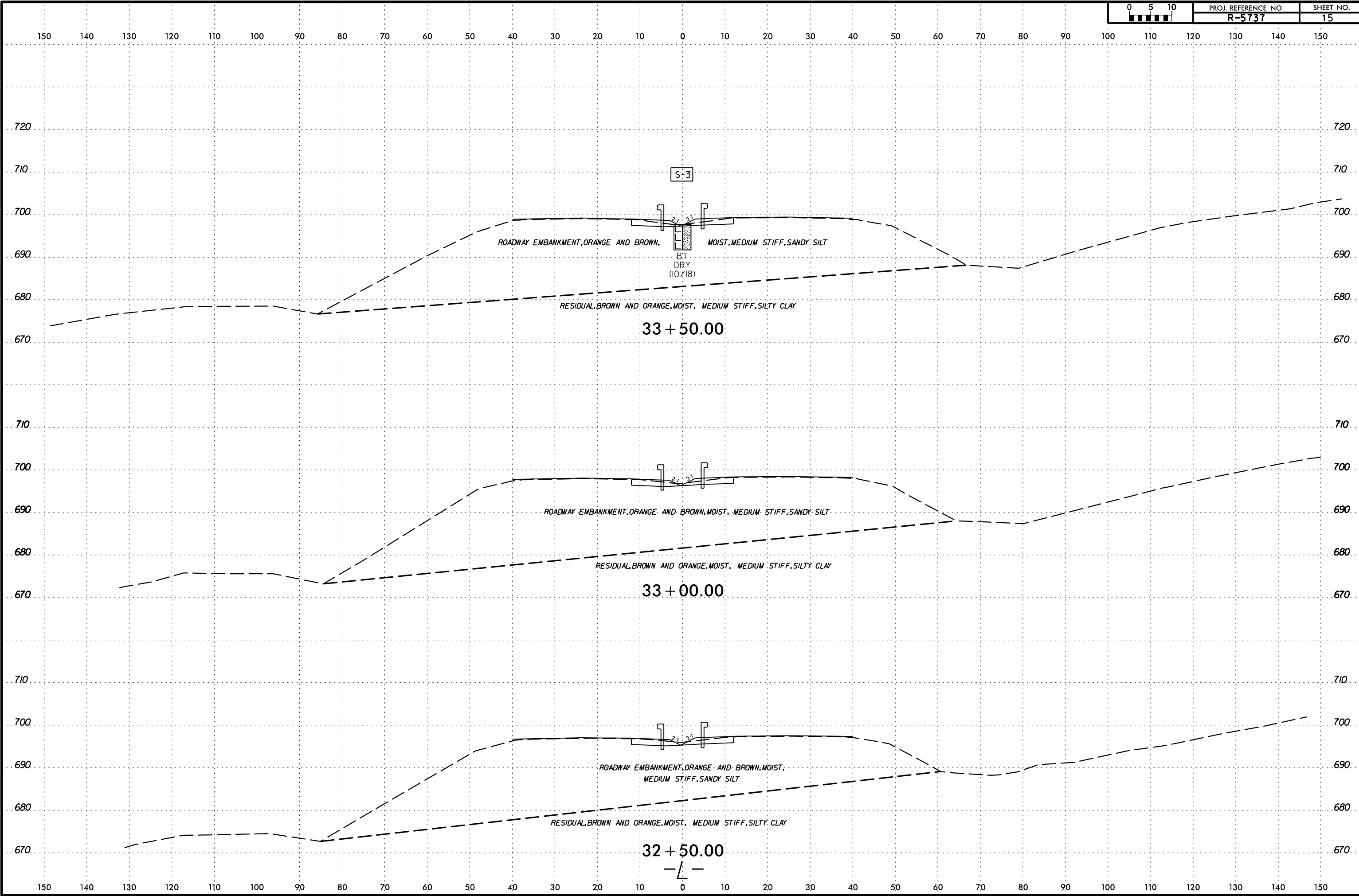


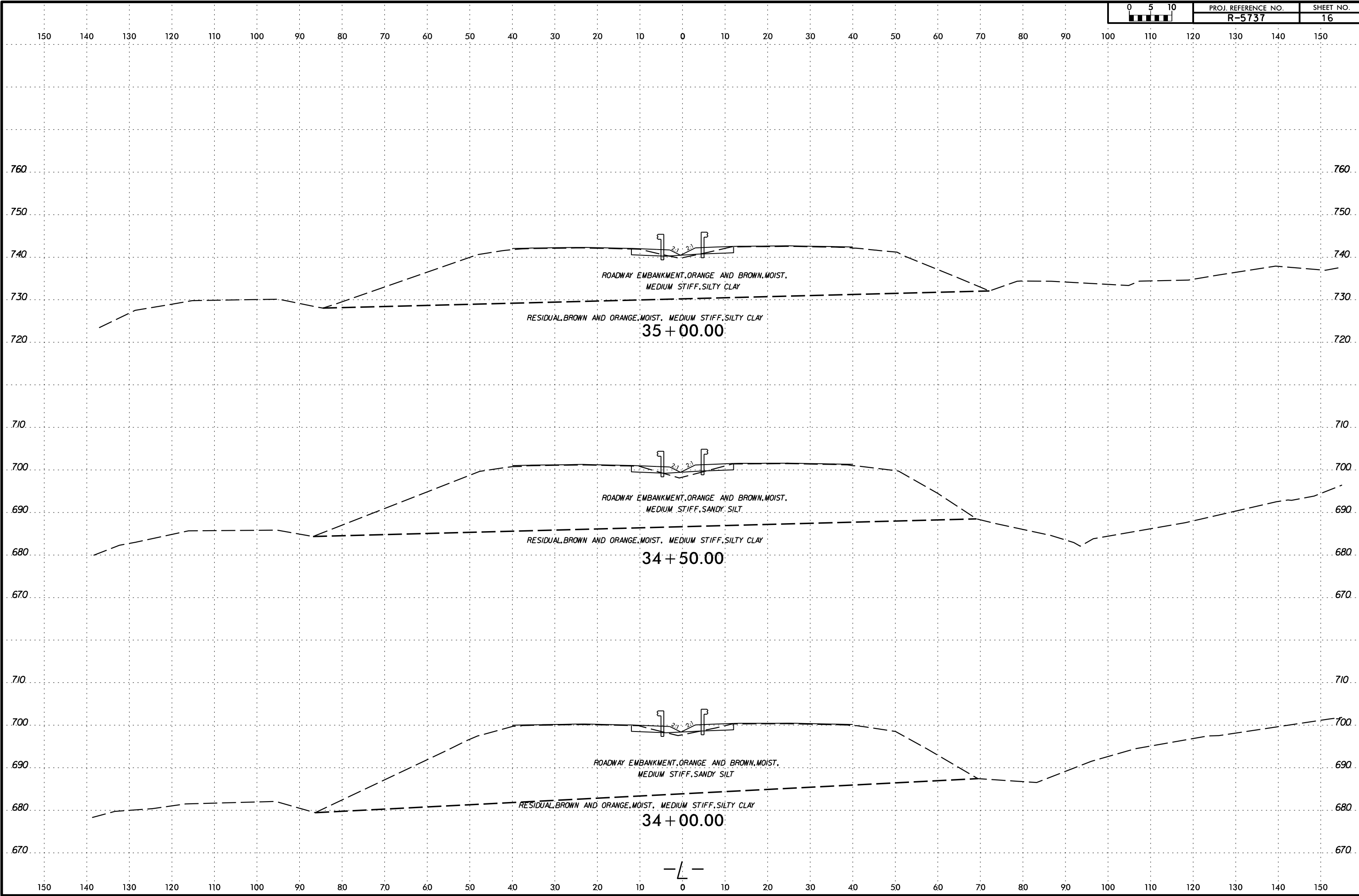
9:53:18 AM
 R:\Projects\18-51\04_R5737_GEO\RDWY\CADD_GEO\TECH\Plan\Pro\185737_GEO_RDWY_PFL_Y3.dgn
 5/28/99

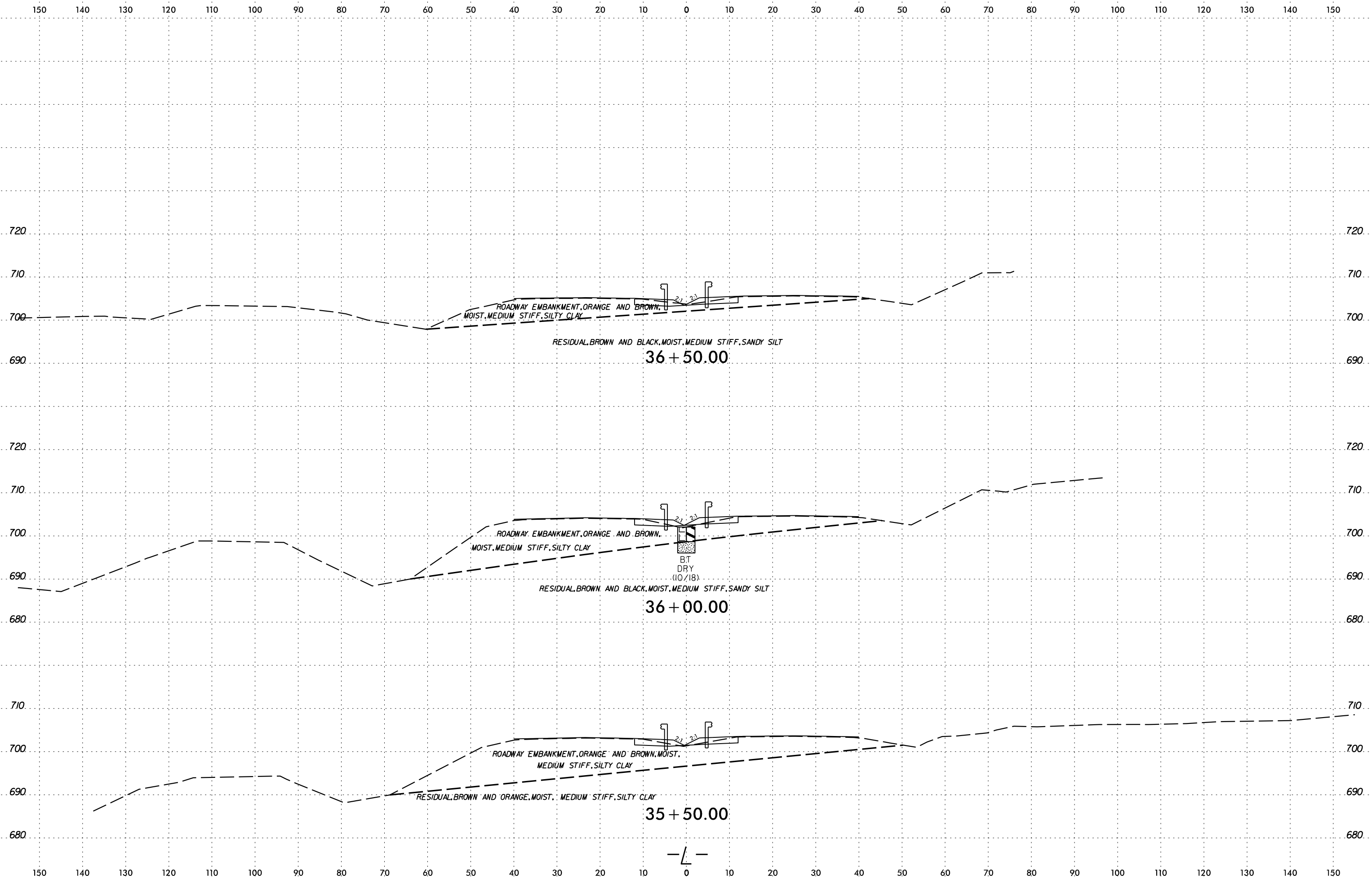




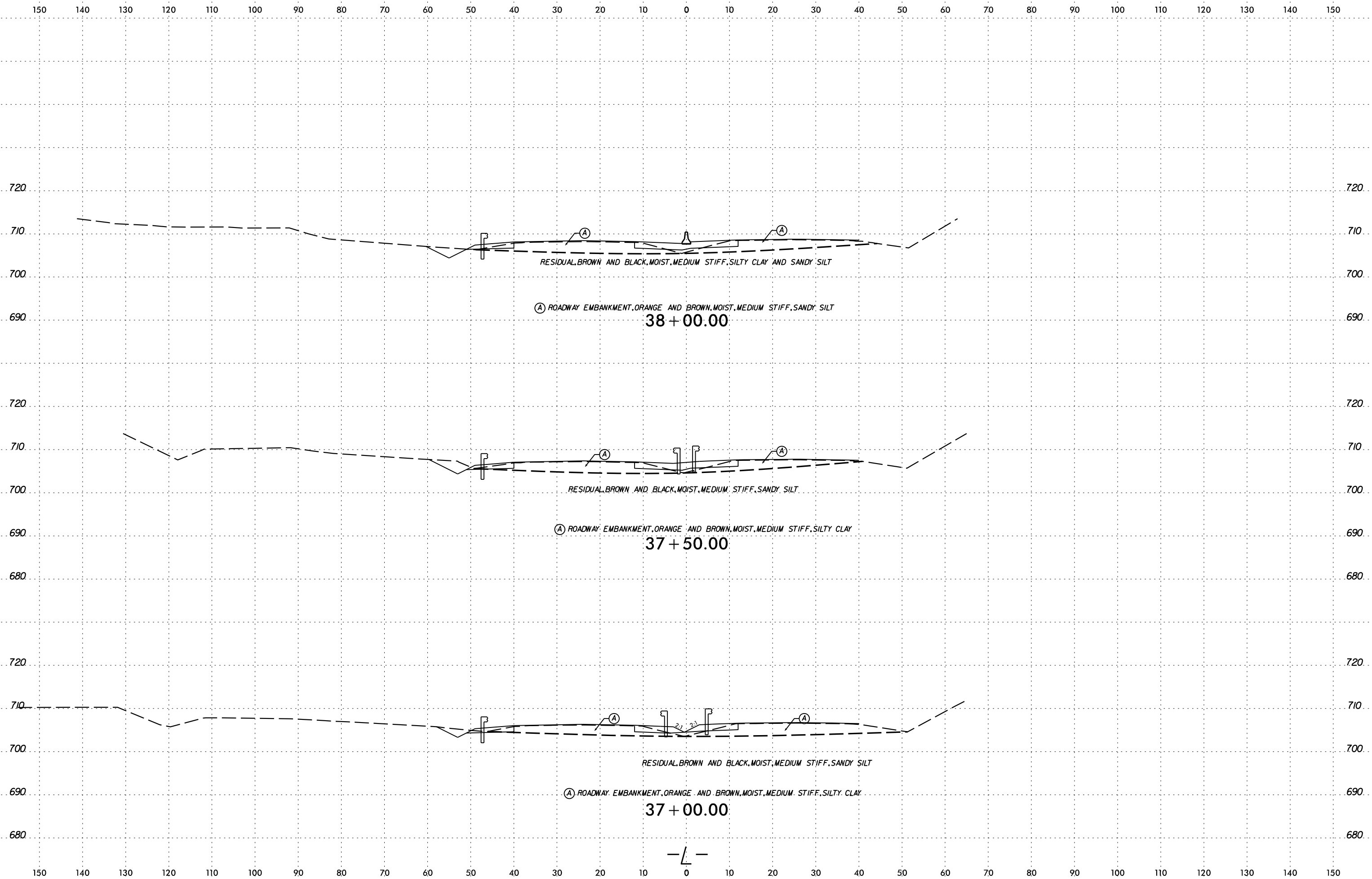


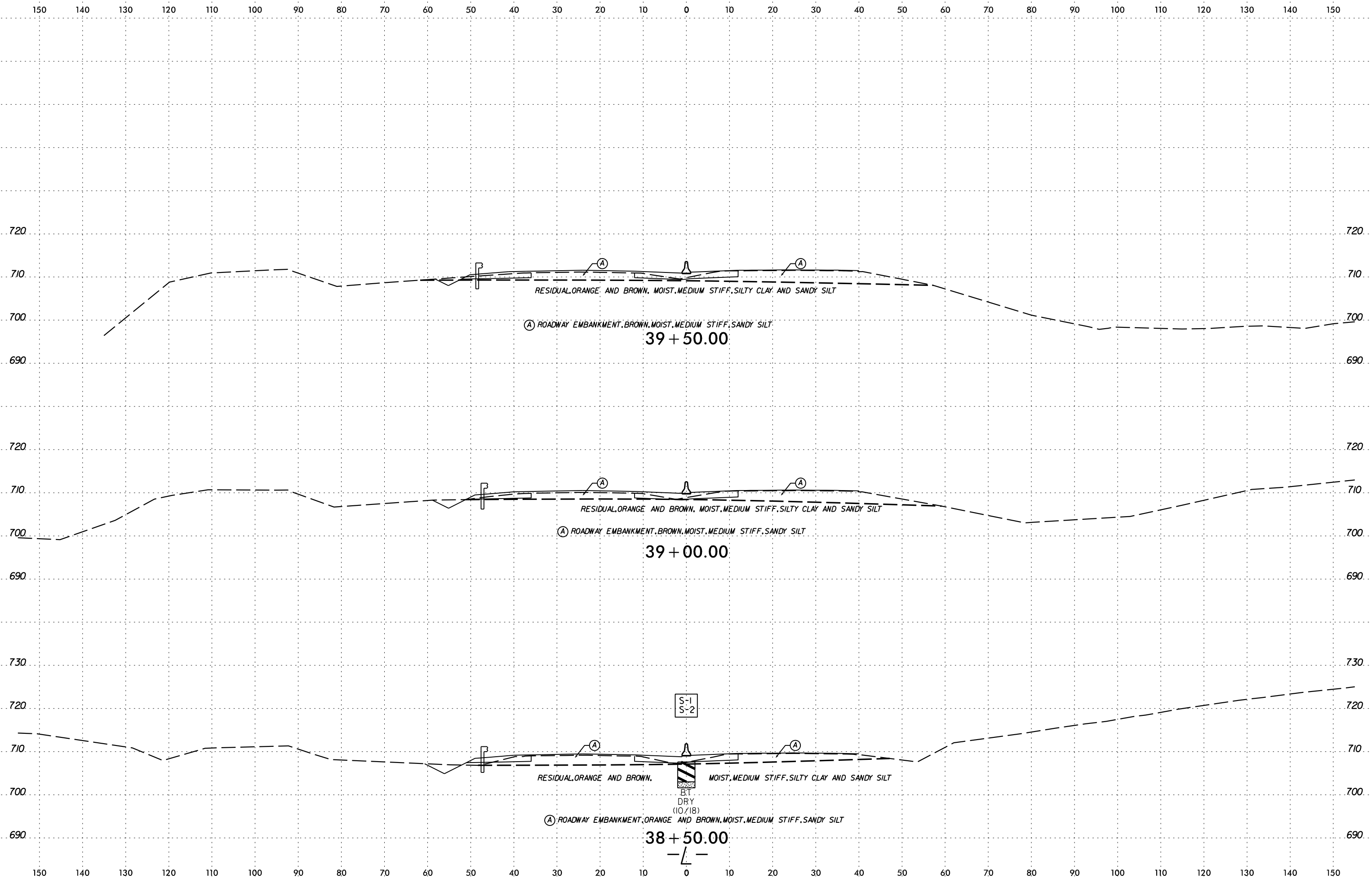






I:\7136 PM
 R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 mether,mls





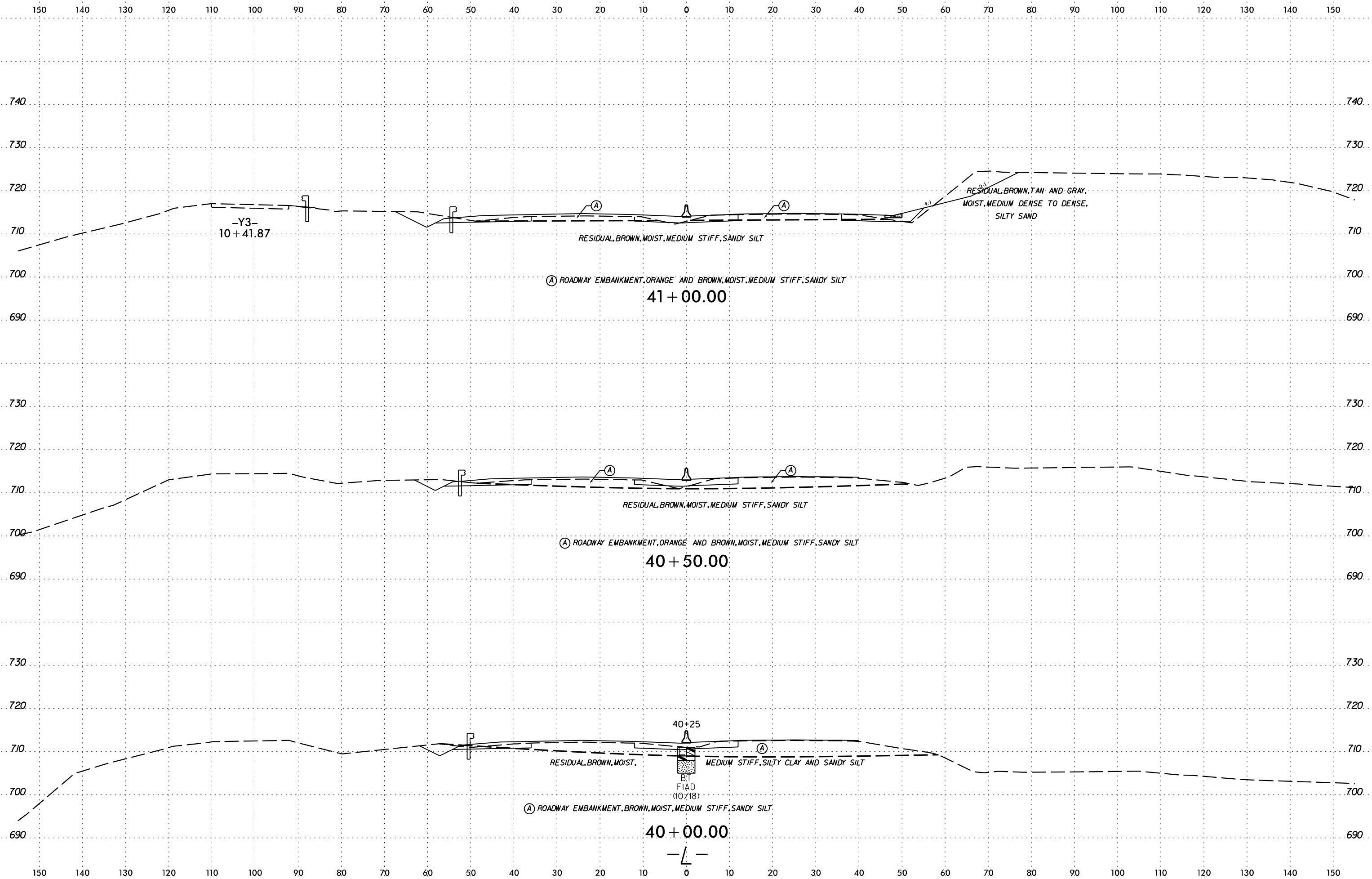
I:\18\36 PM
R:\Projects\18-51\04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois

S-1
S-2

BT
DRY
(10/18)

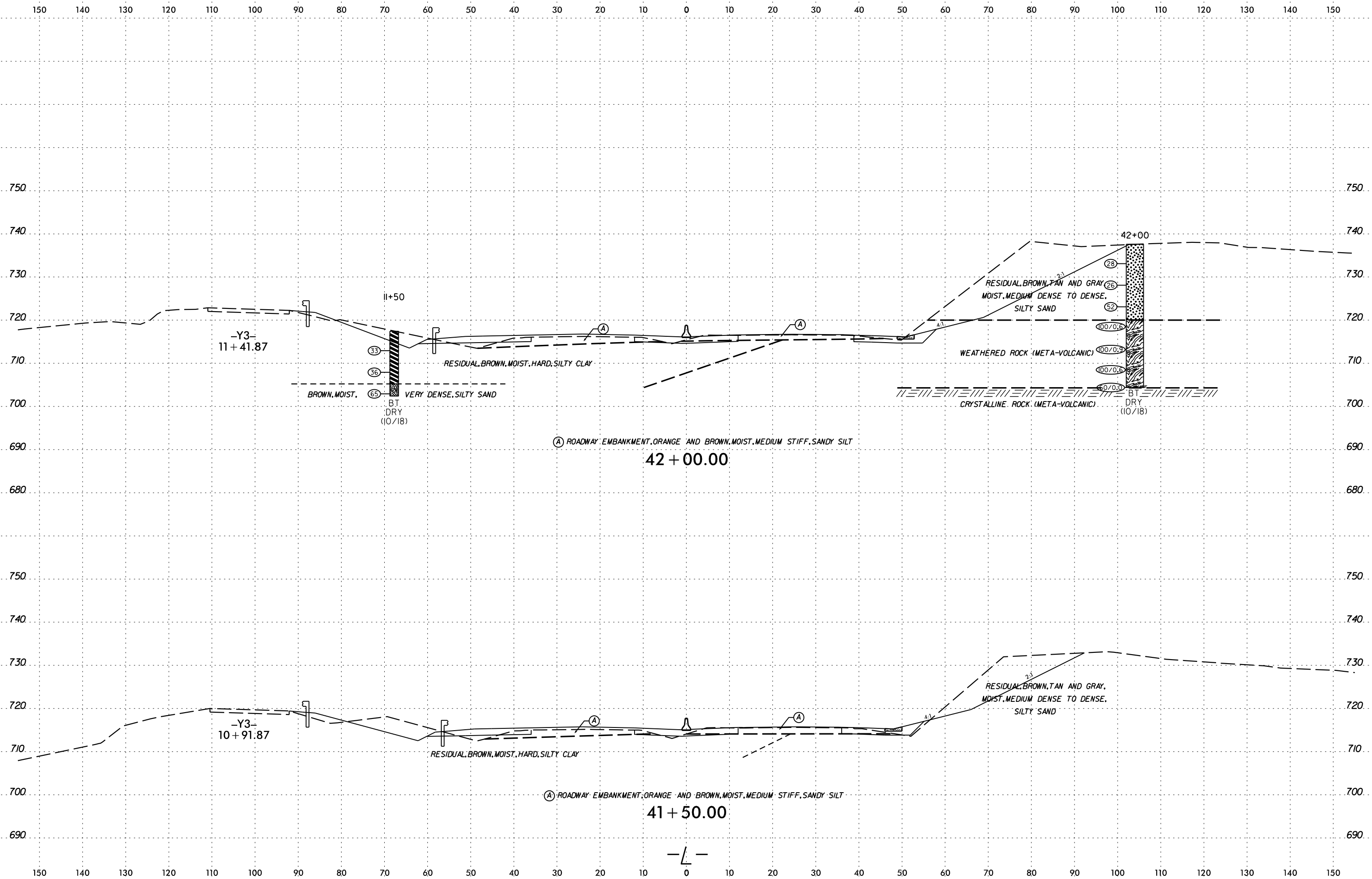
38+50.00

6/23/16



12:19:07 PM
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mols

6/23/16

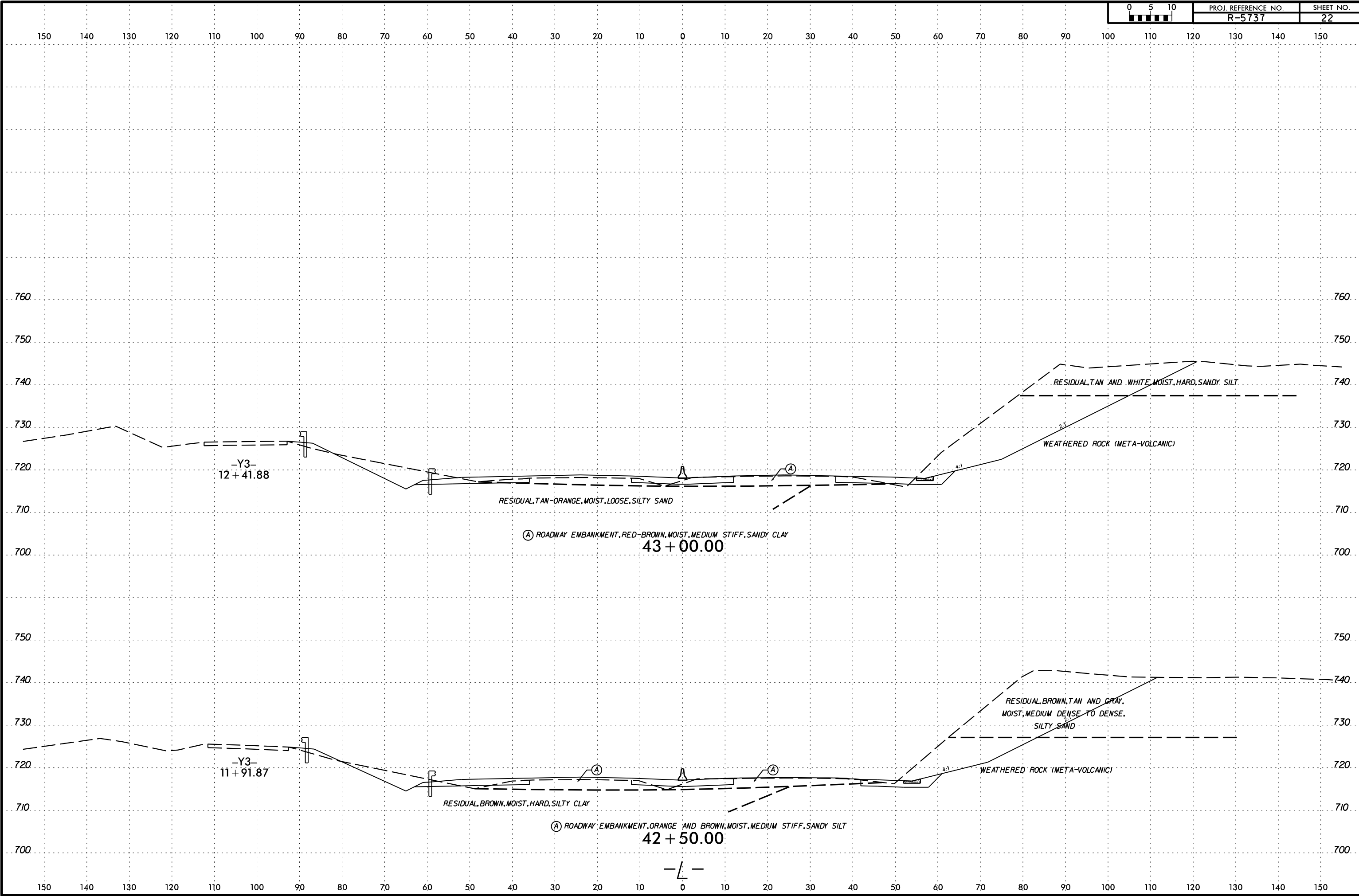


I:\2016 PM RFP Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois

6/23/16

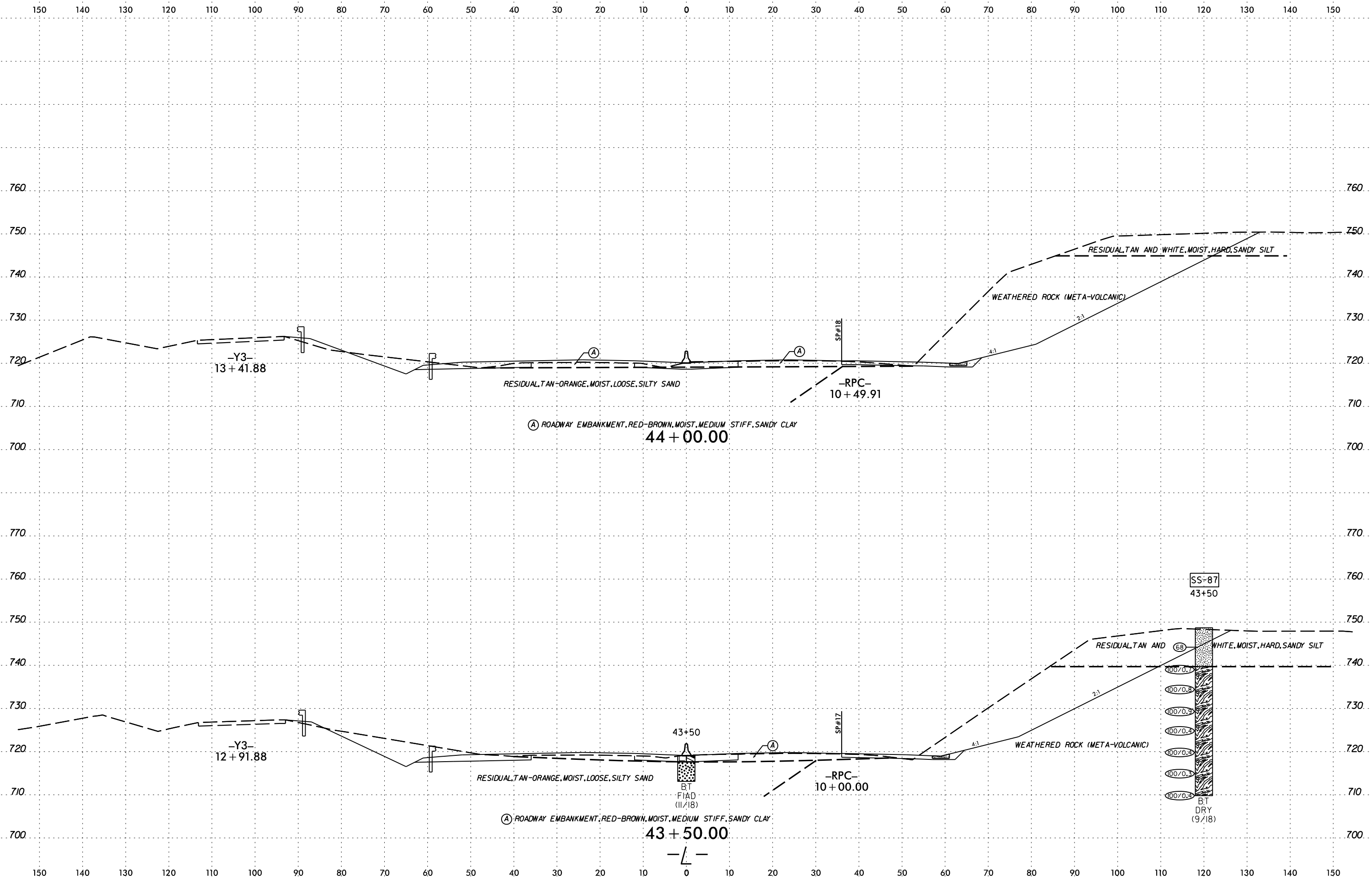


PROJ. REFERENCE NO.	SHEET NO.
R-5737	22

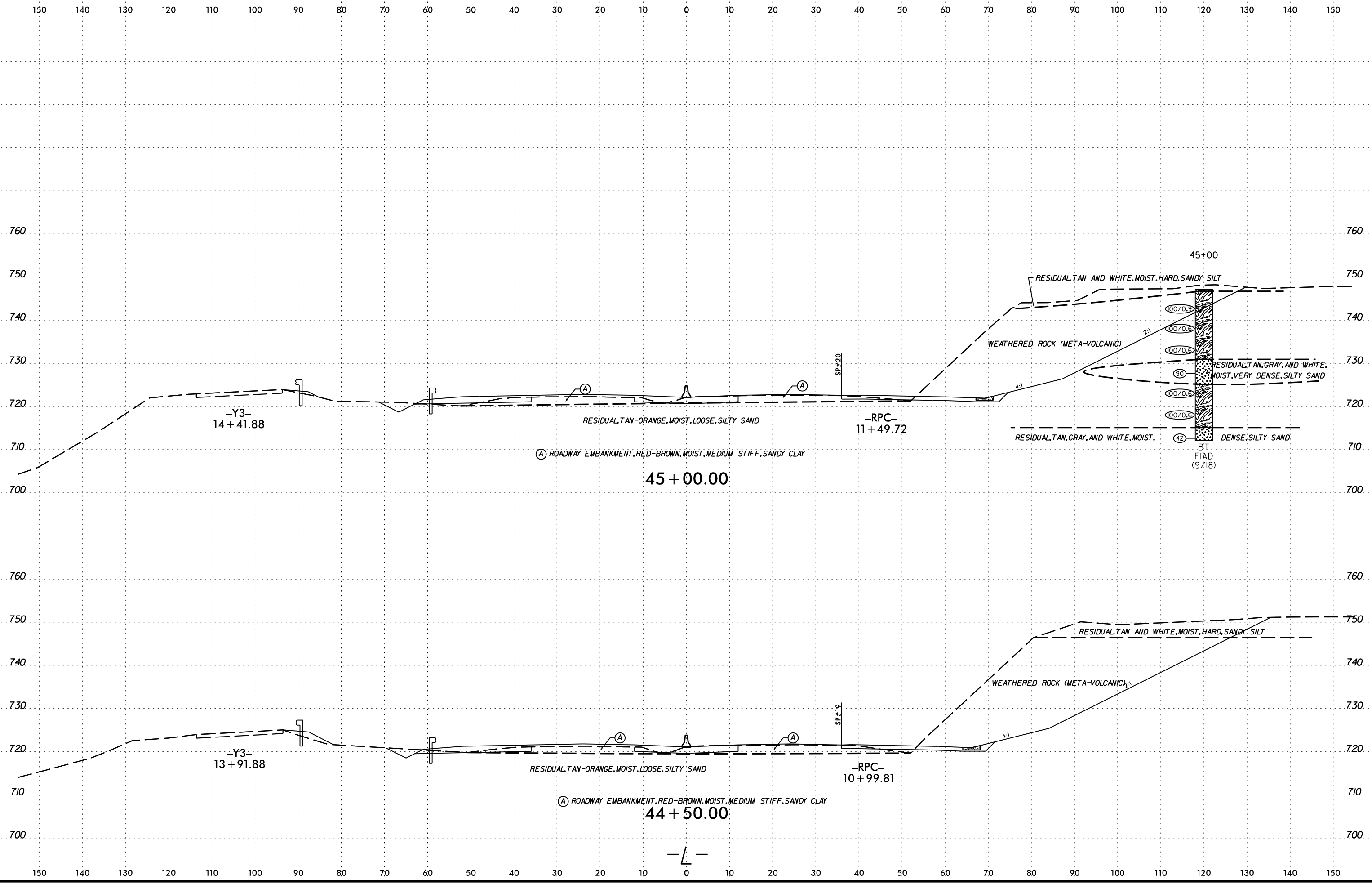


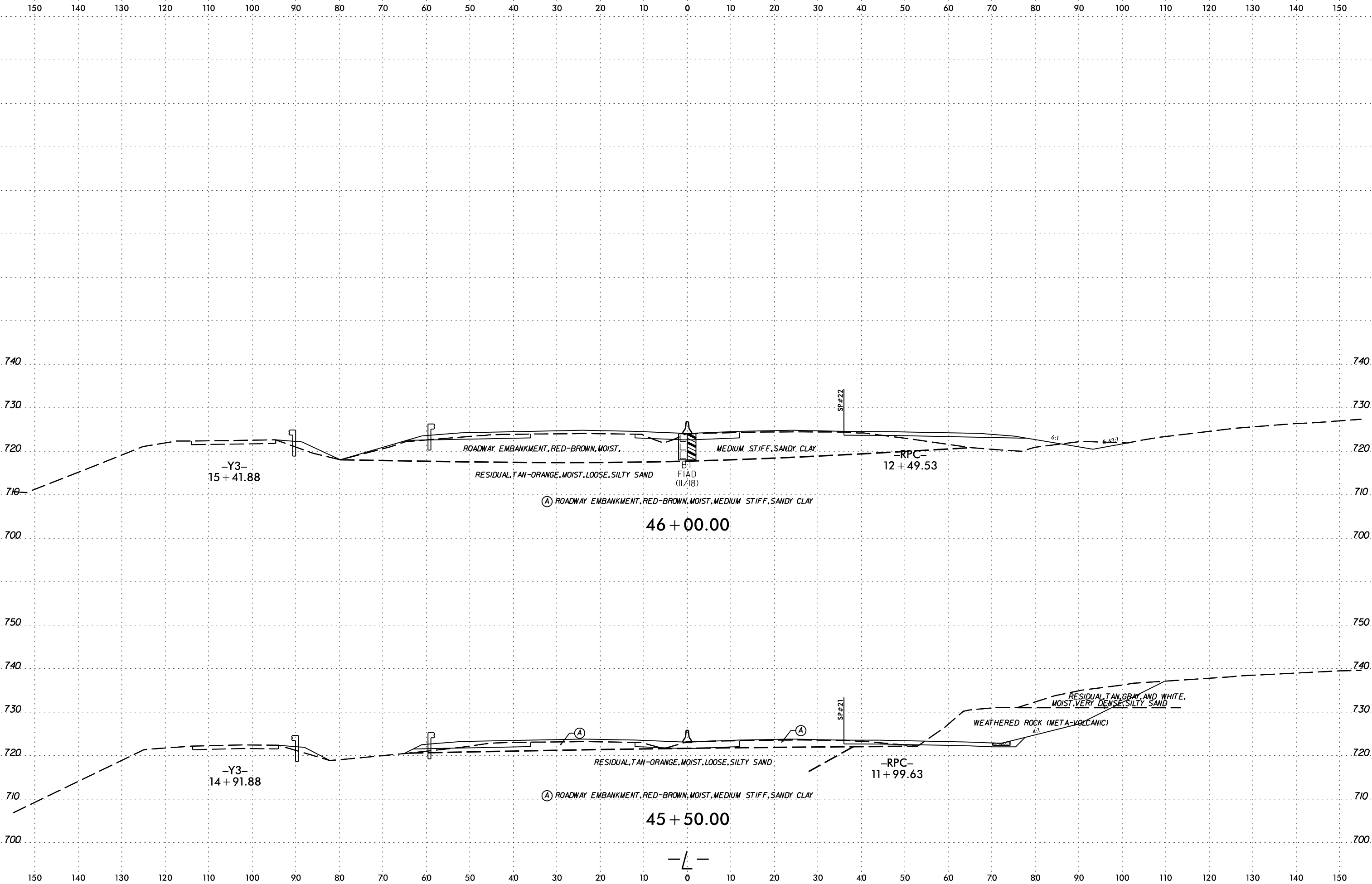
I:\2016 PM
 R:\Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 mether,mois

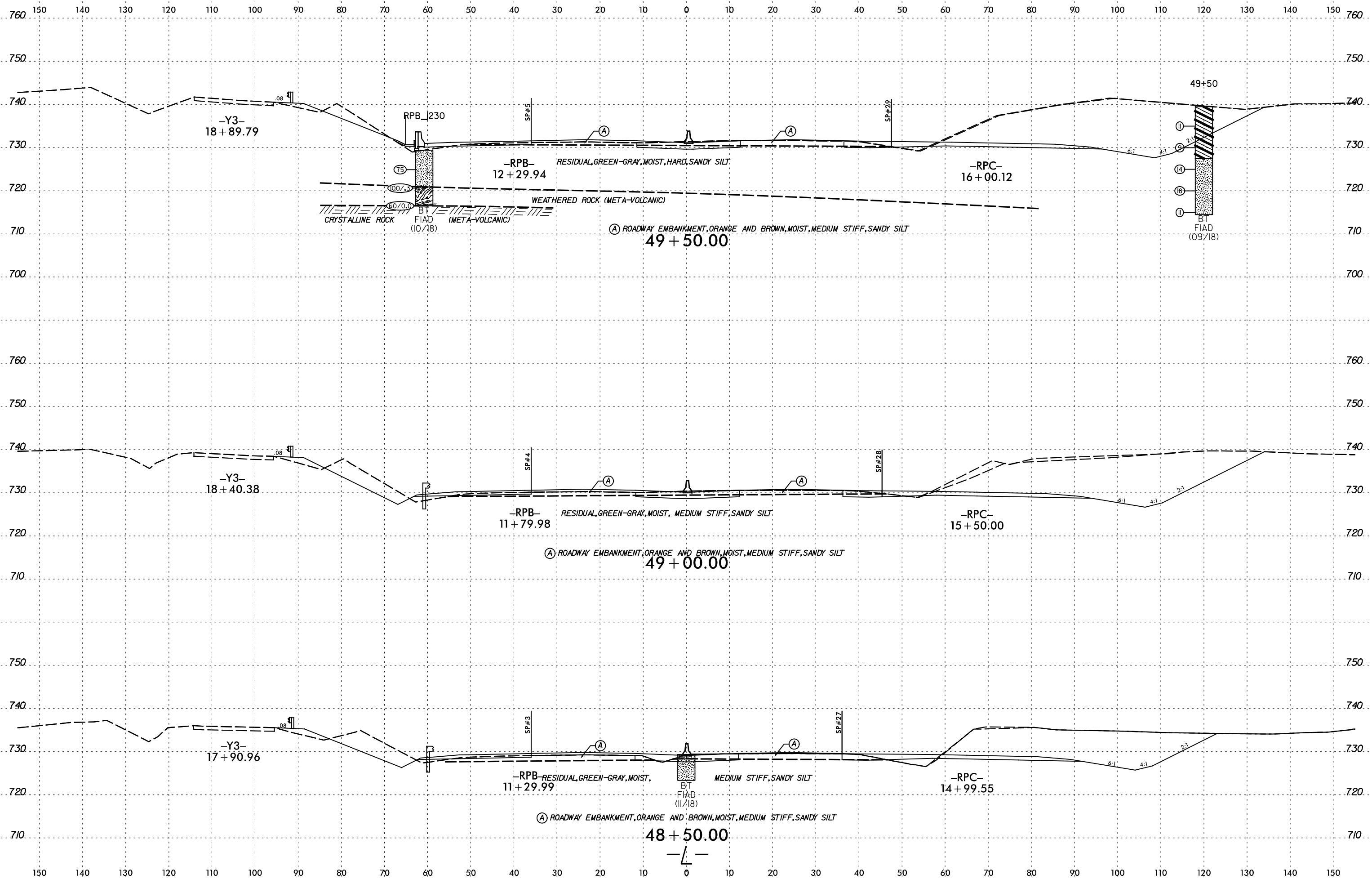
6/23/16



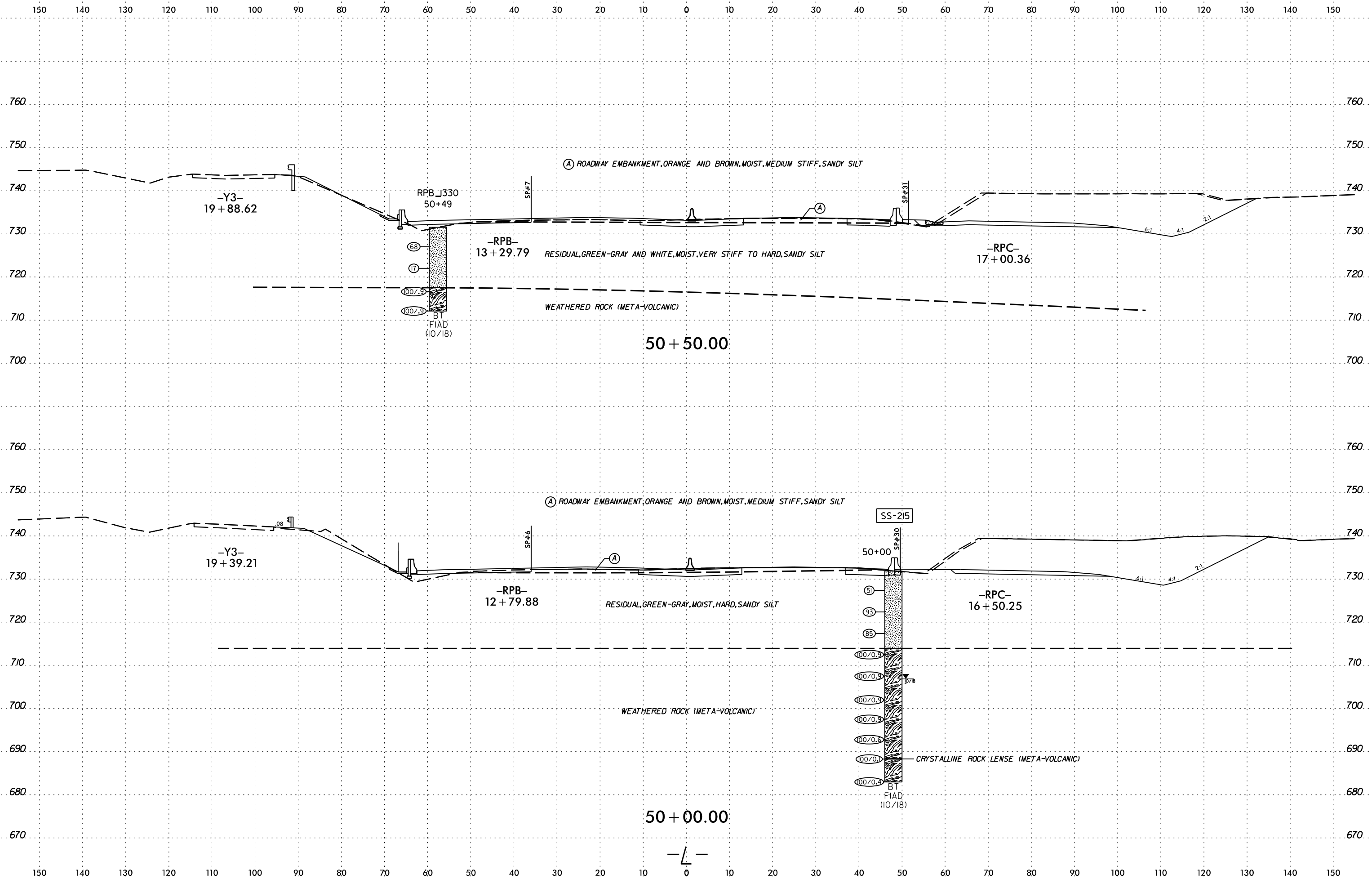
I:\2014 PM
 R:\Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 mether,mois



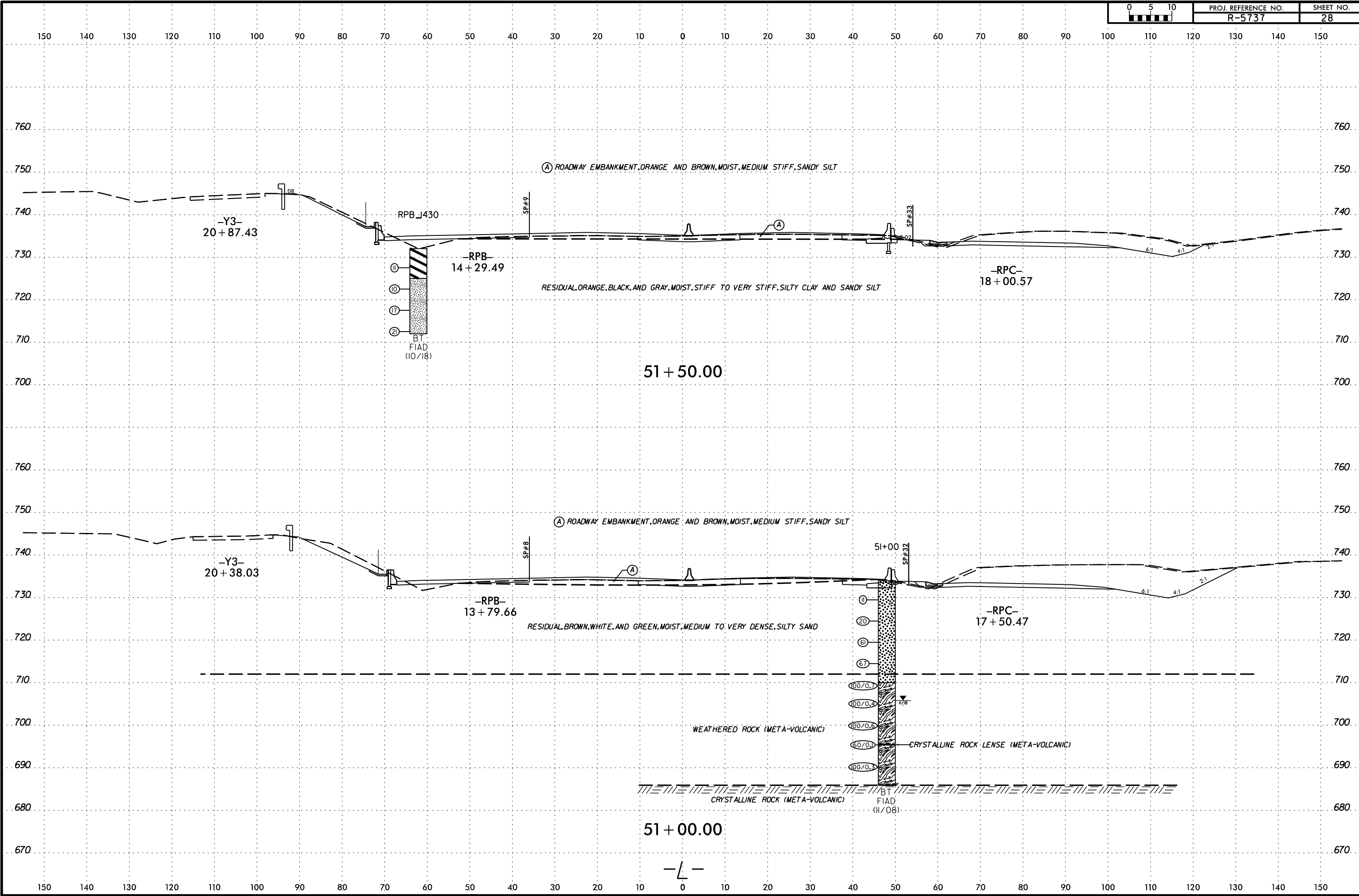


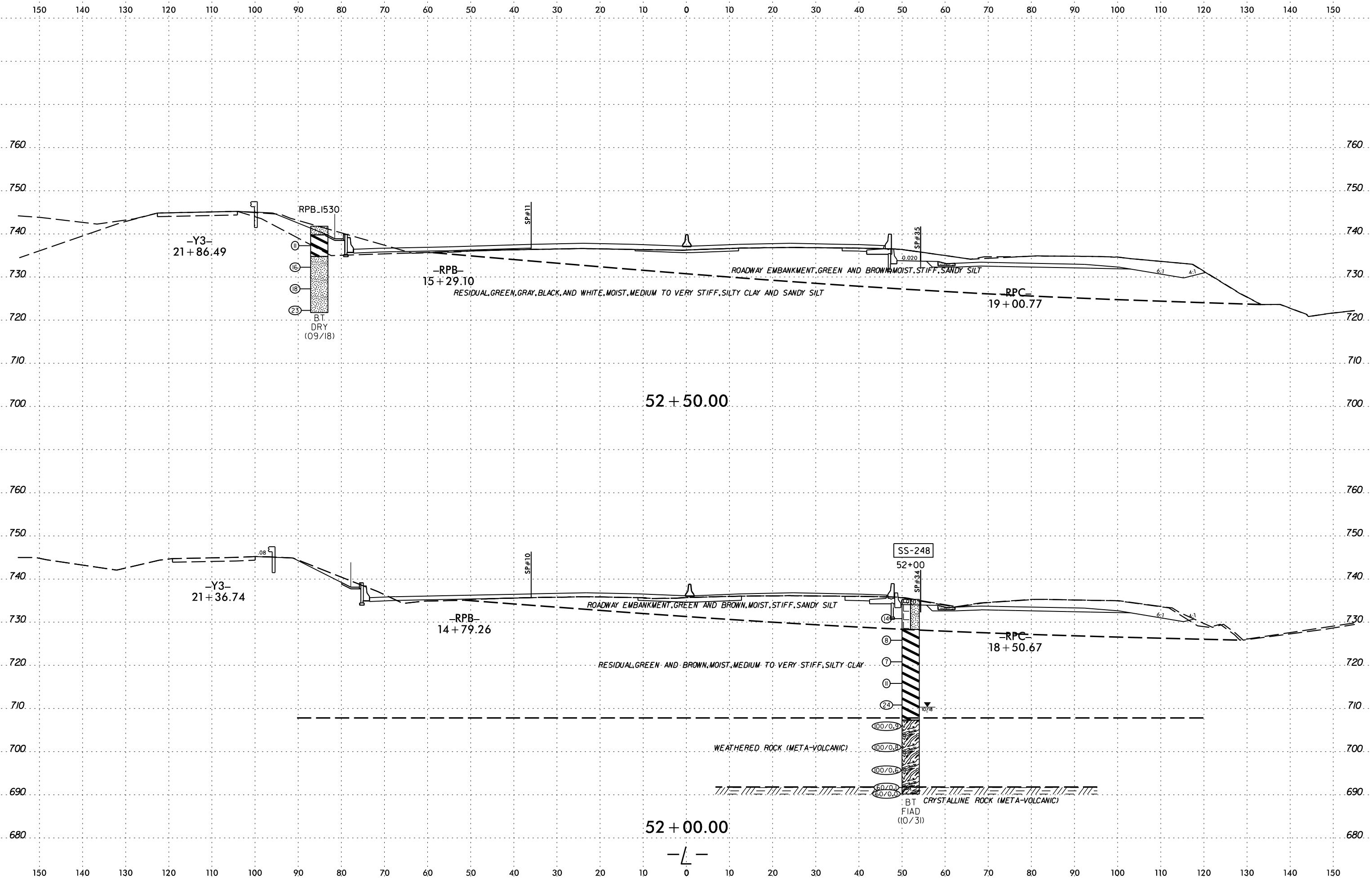


6/23/16

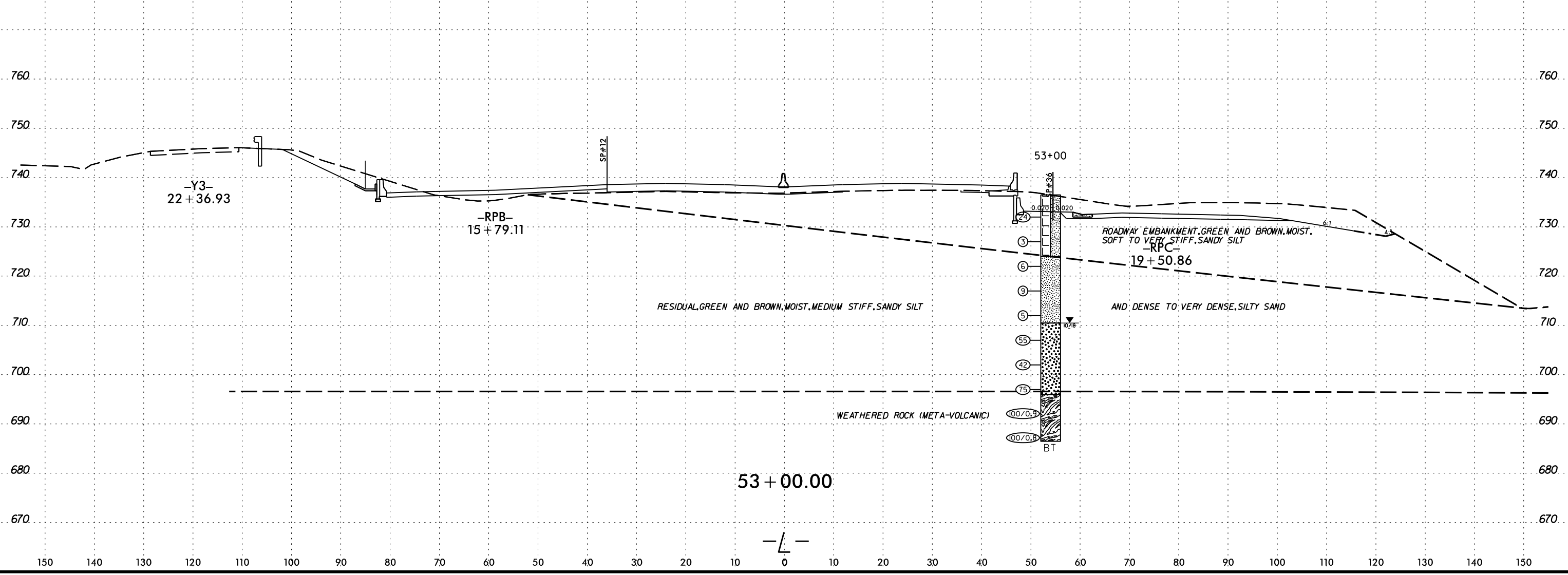
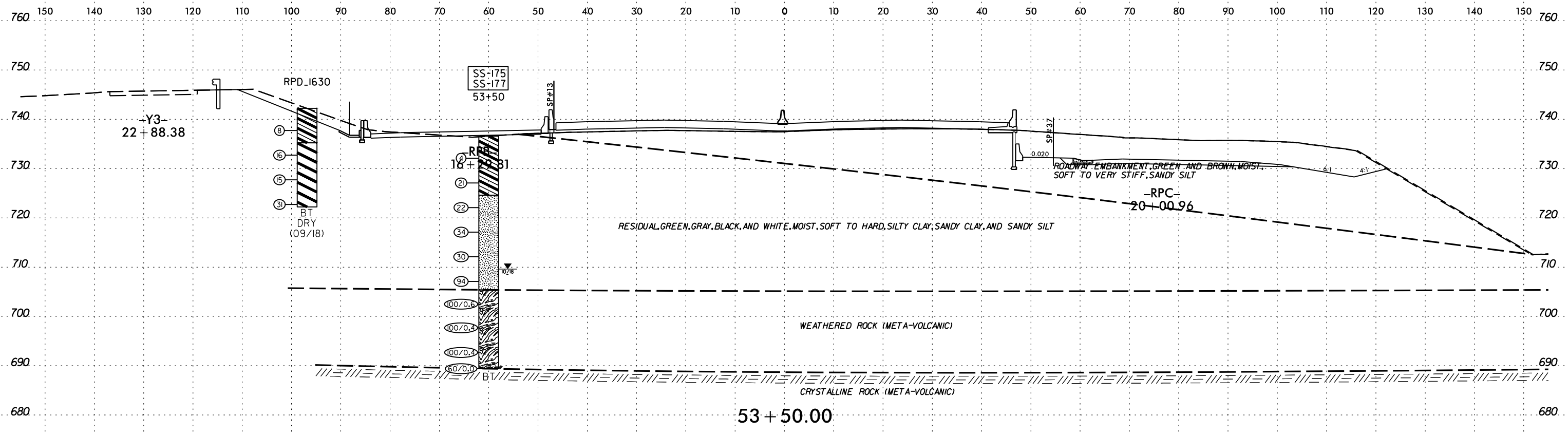


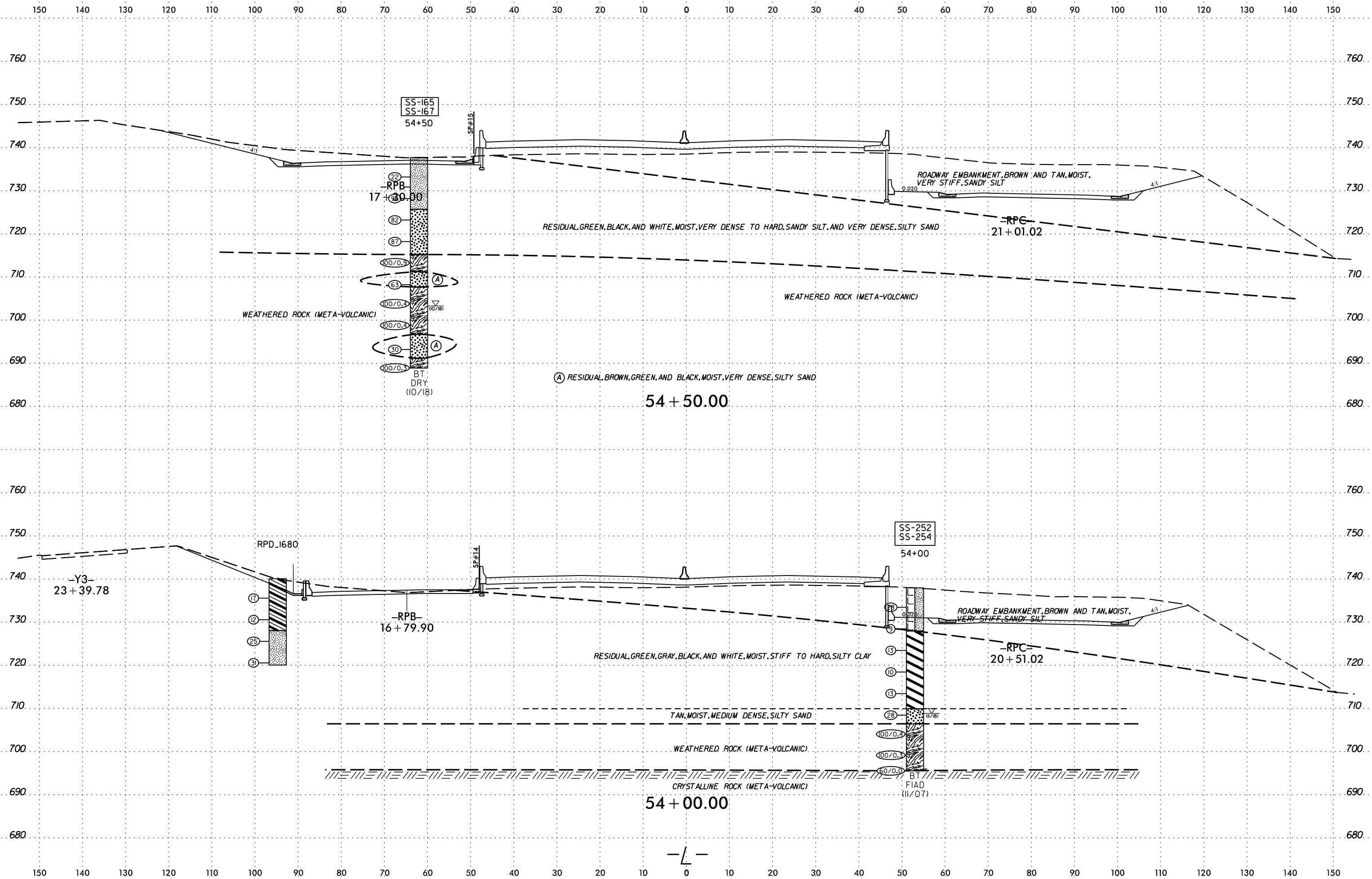
I:\2016\16\04 R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn

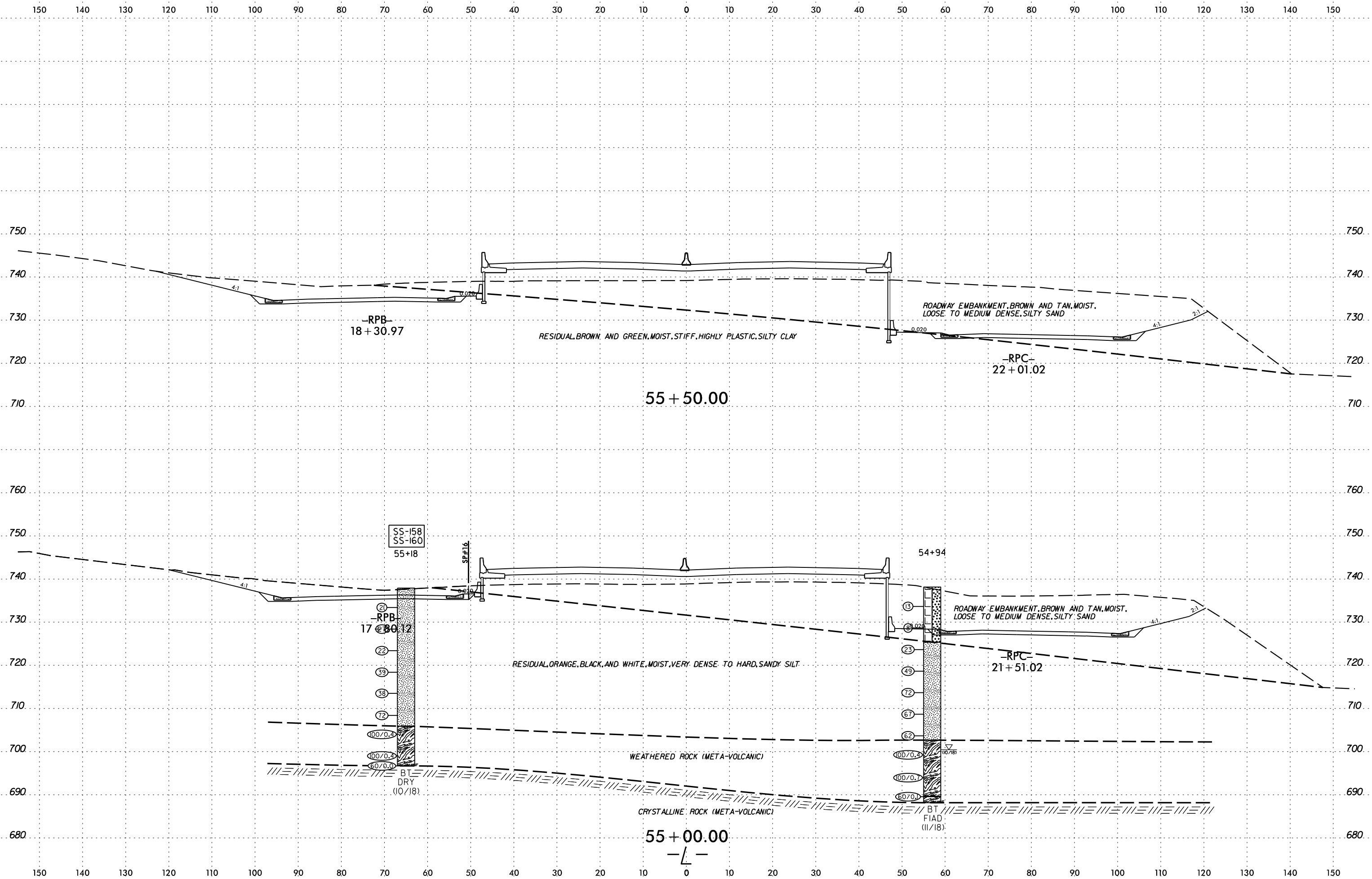




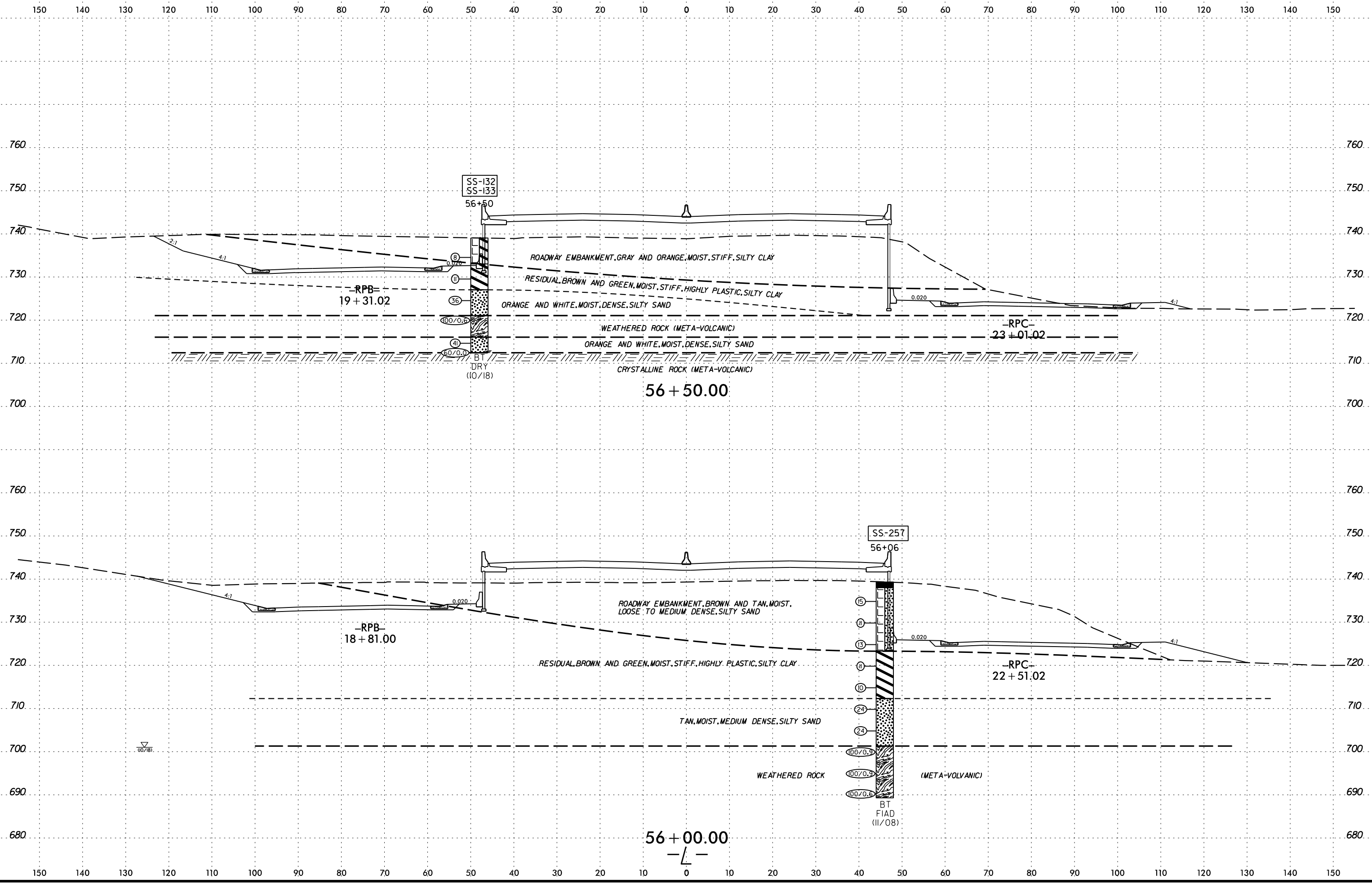
I:\2013\32 PM
 R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 mether,mois



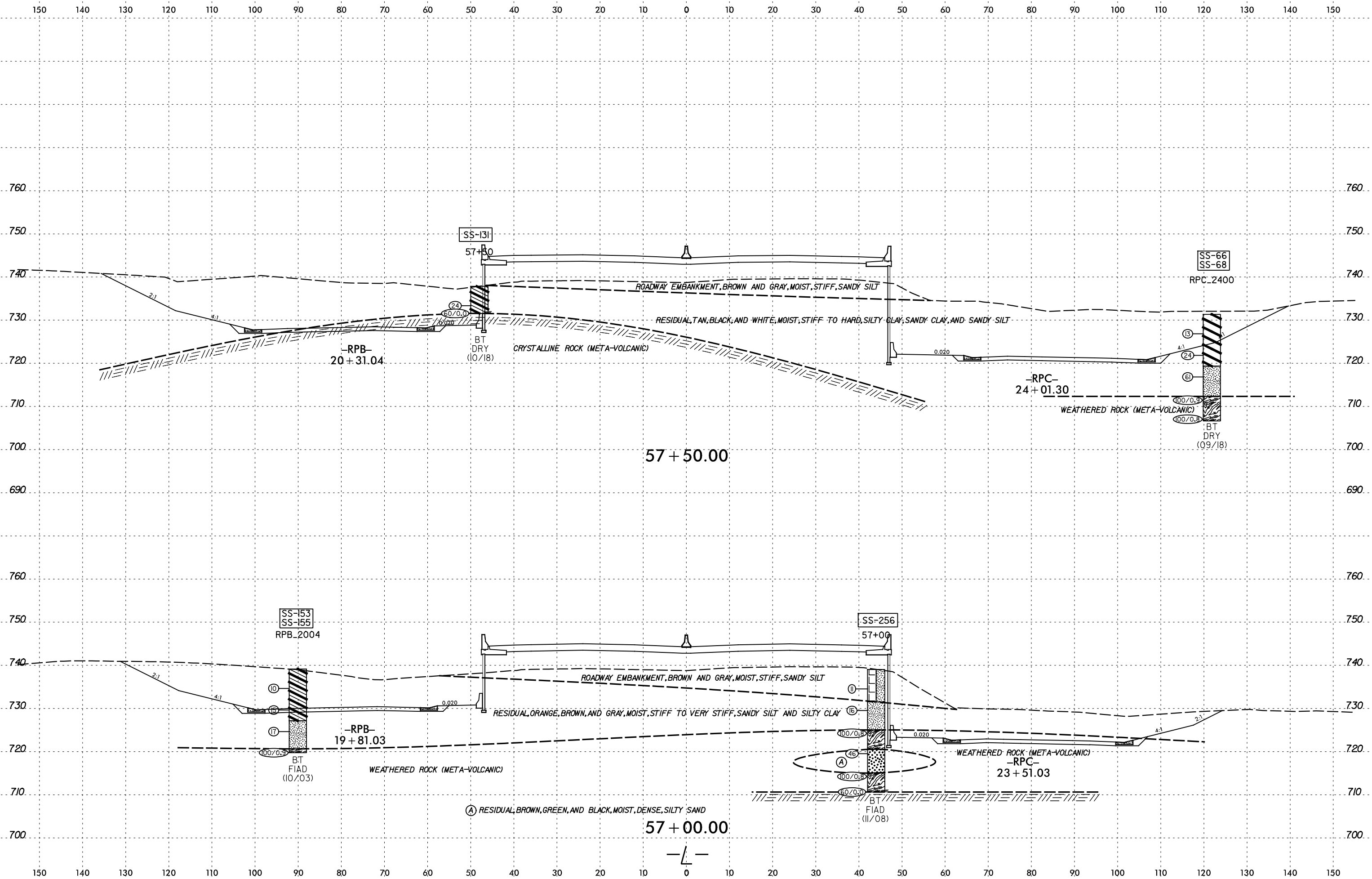


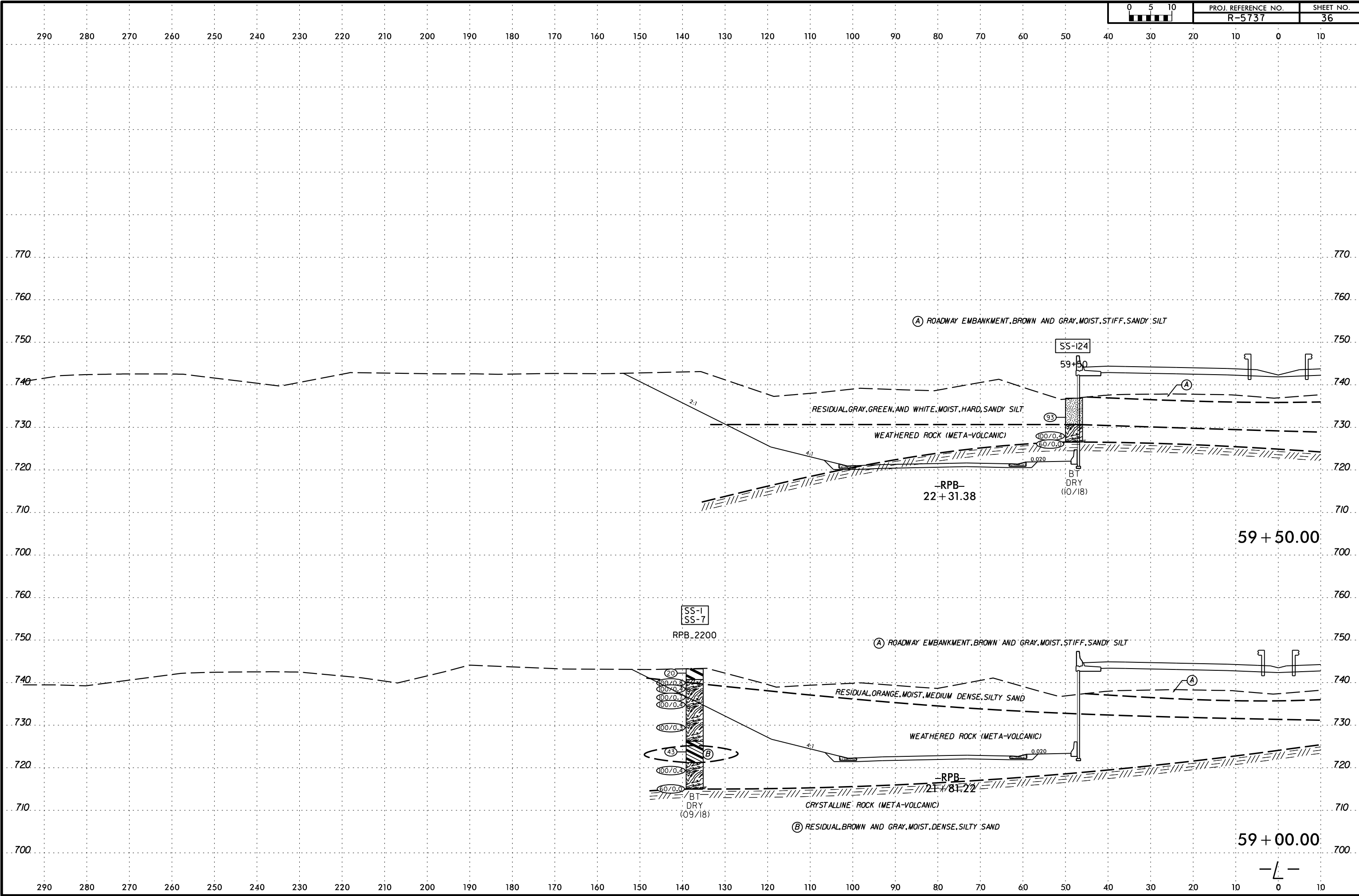


I:\24459_P\Projects\18-51.04_R5737_GEO_RDWY\CADD_GEO\TECH\SS-R5737_GEO_RDWY_XSI.L.dgn

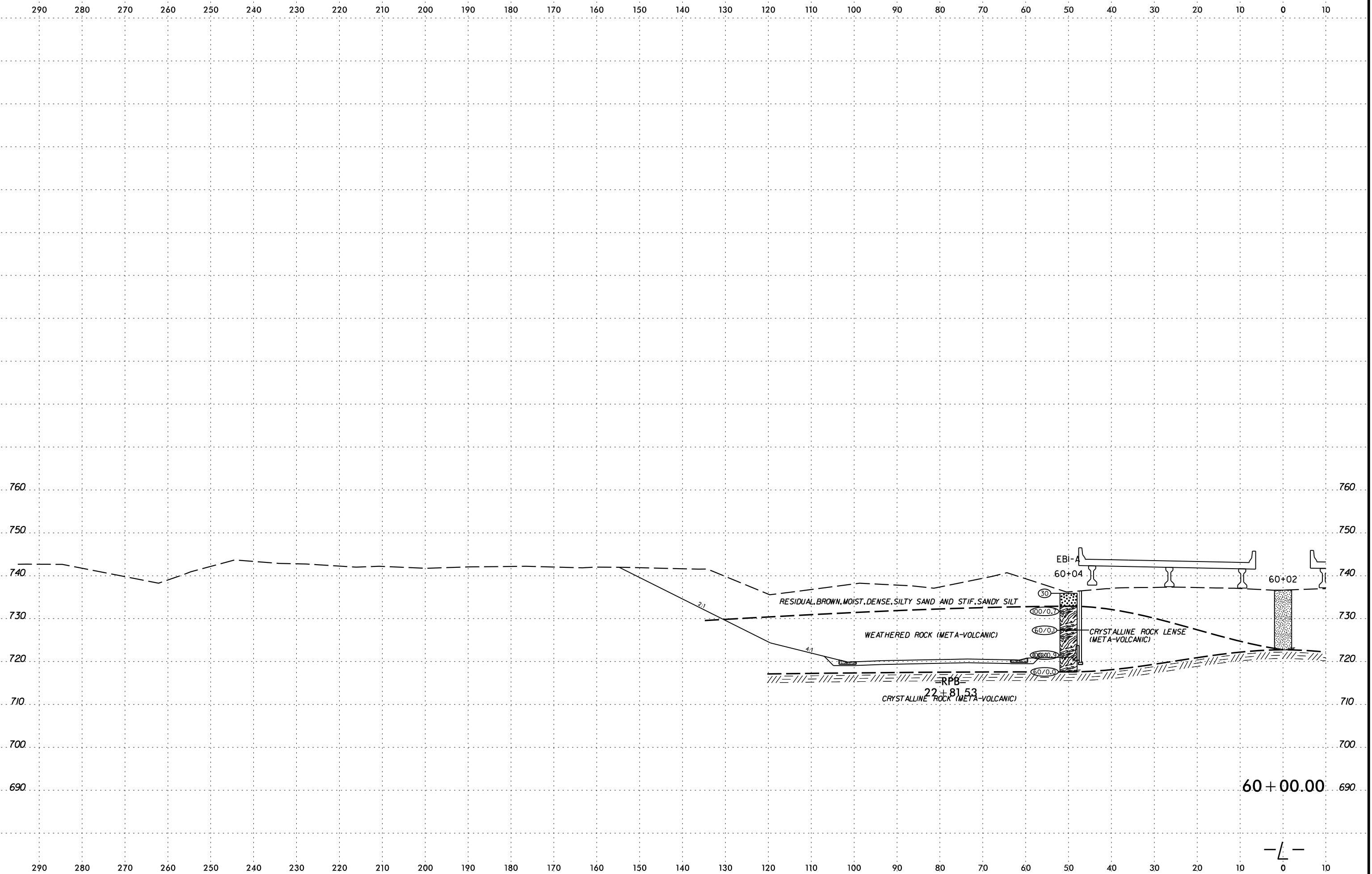


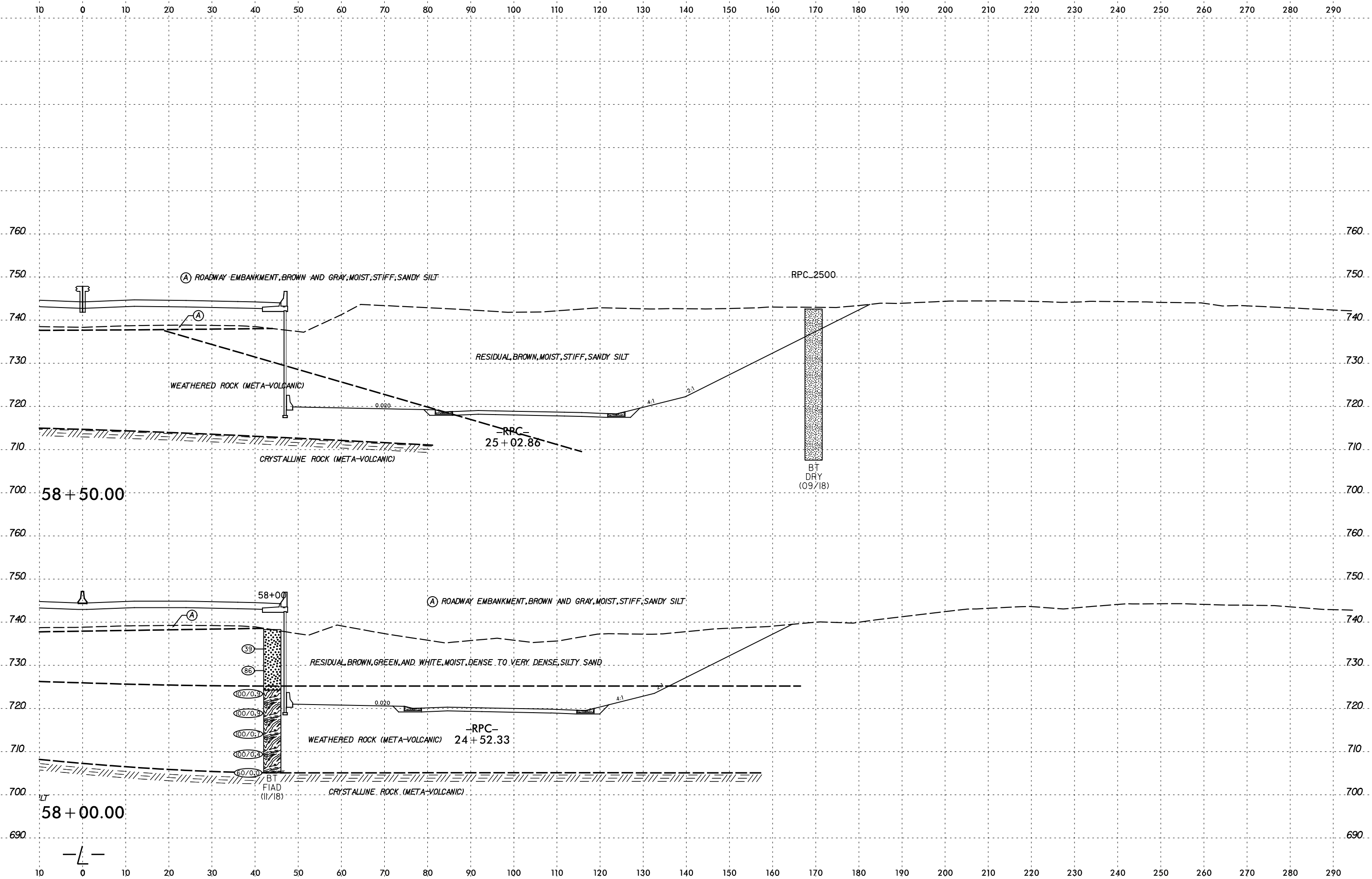
I:\25427 PW
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois



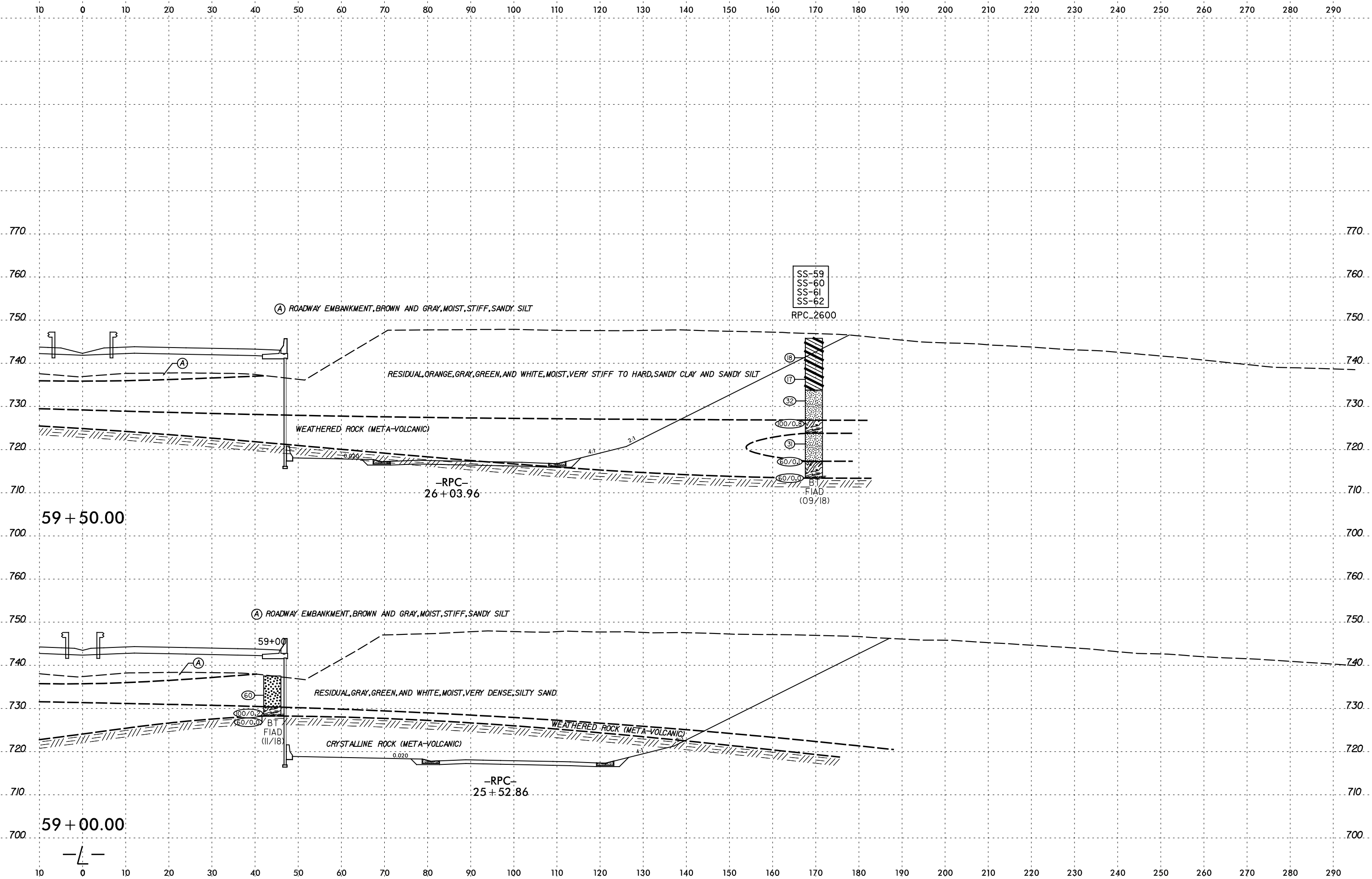


6/23/16
12:27:22 PM
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mols

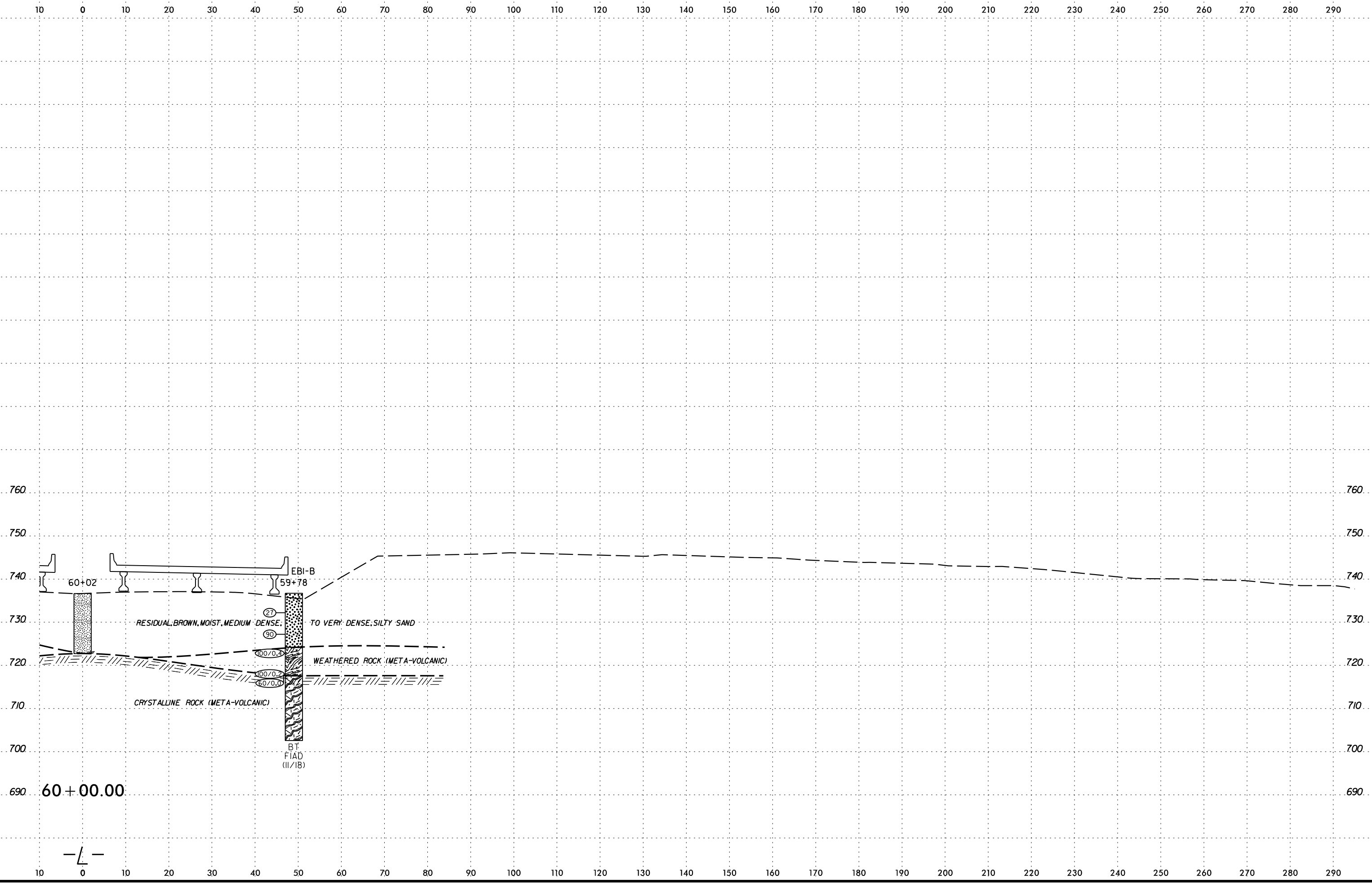




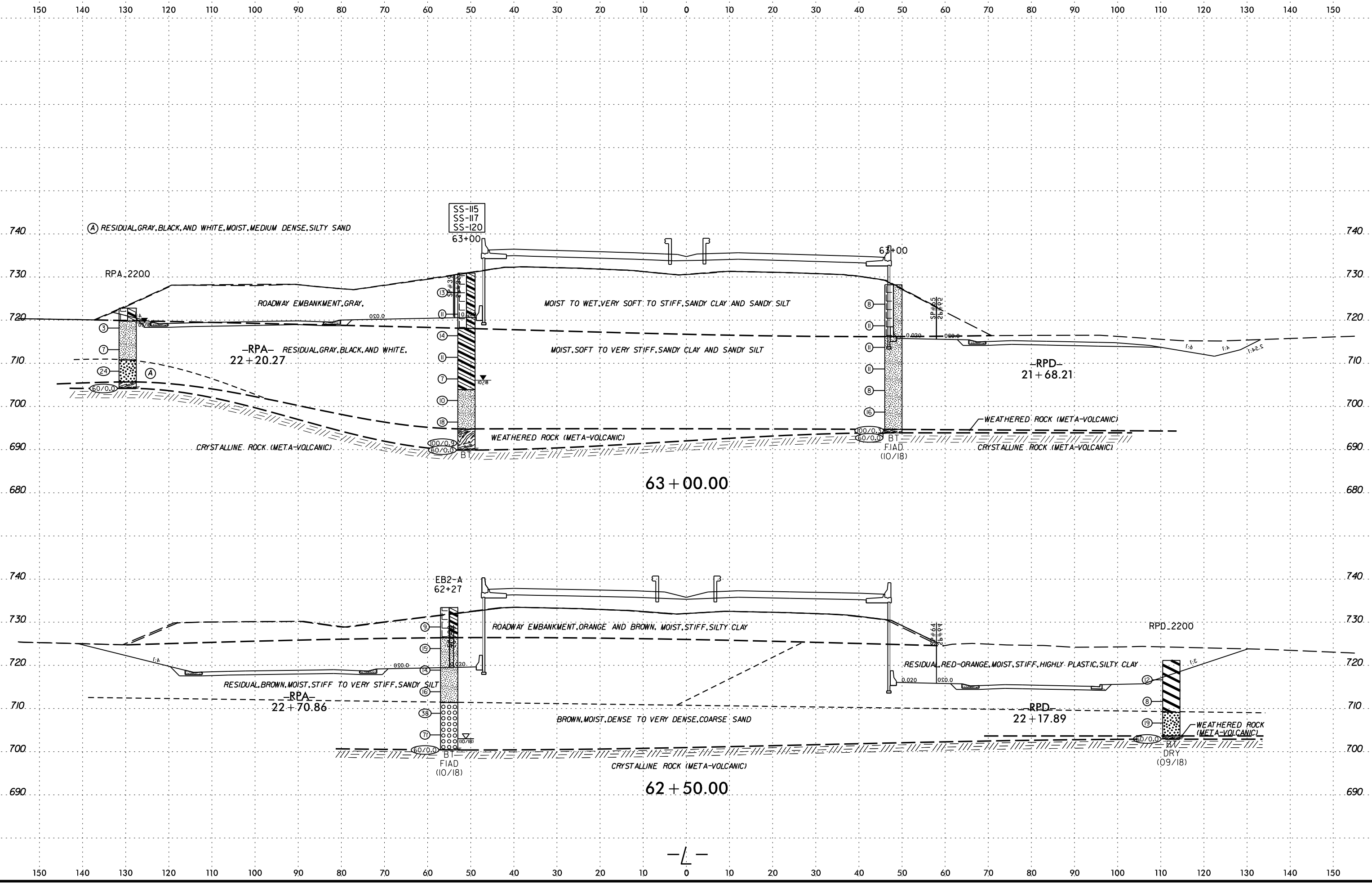
I:\36\02_P\18-51\04_R5737_GEO_RDWY_CADD_GEO\TECH\18-51\04_R5737_GEO_RDWY_XSI.L.dgn



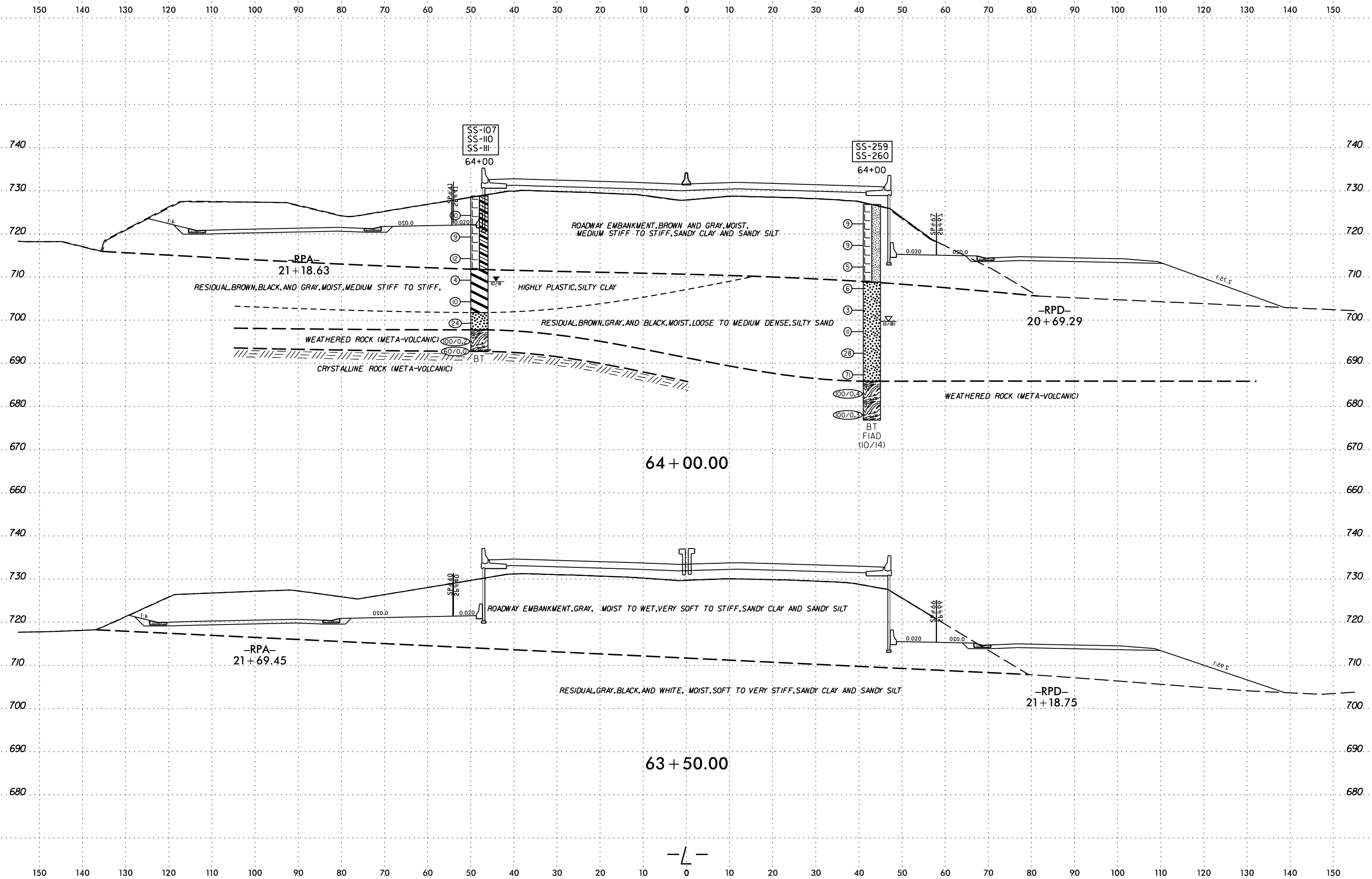
I:\24058_P\18-51-04_R5737_GEO_RDWY_CADD_GEO\TECH\18-51-04_R5737_GEO_RDWY_XSI.L.dgn



I:\233450_PM\Projects\18-51.04_R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 mether,mois



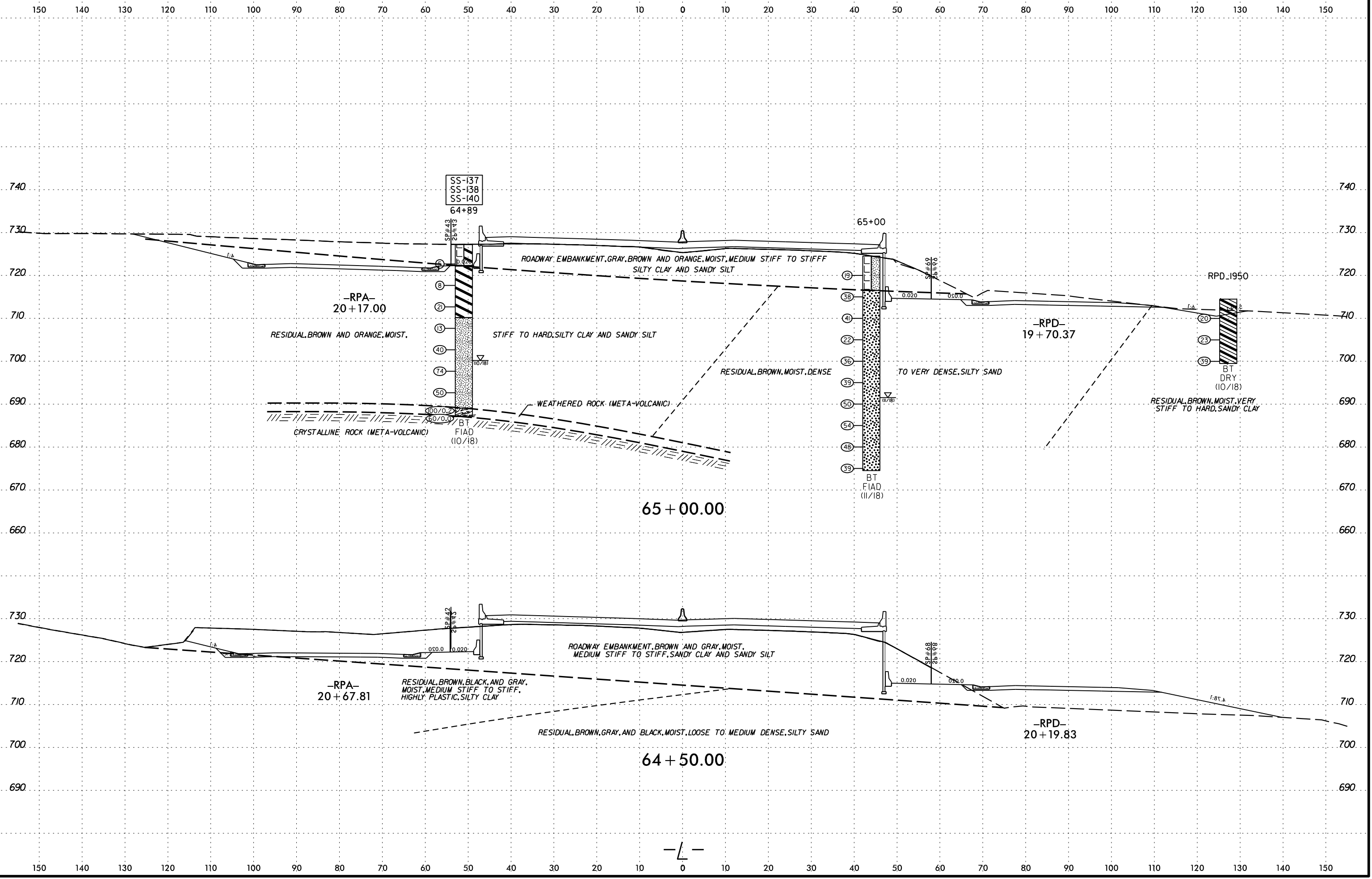
12:34:20 PM
R:\Projects\18-51.04 R5737_GEO\RDWY_XSI.L.dgn
mether,mols



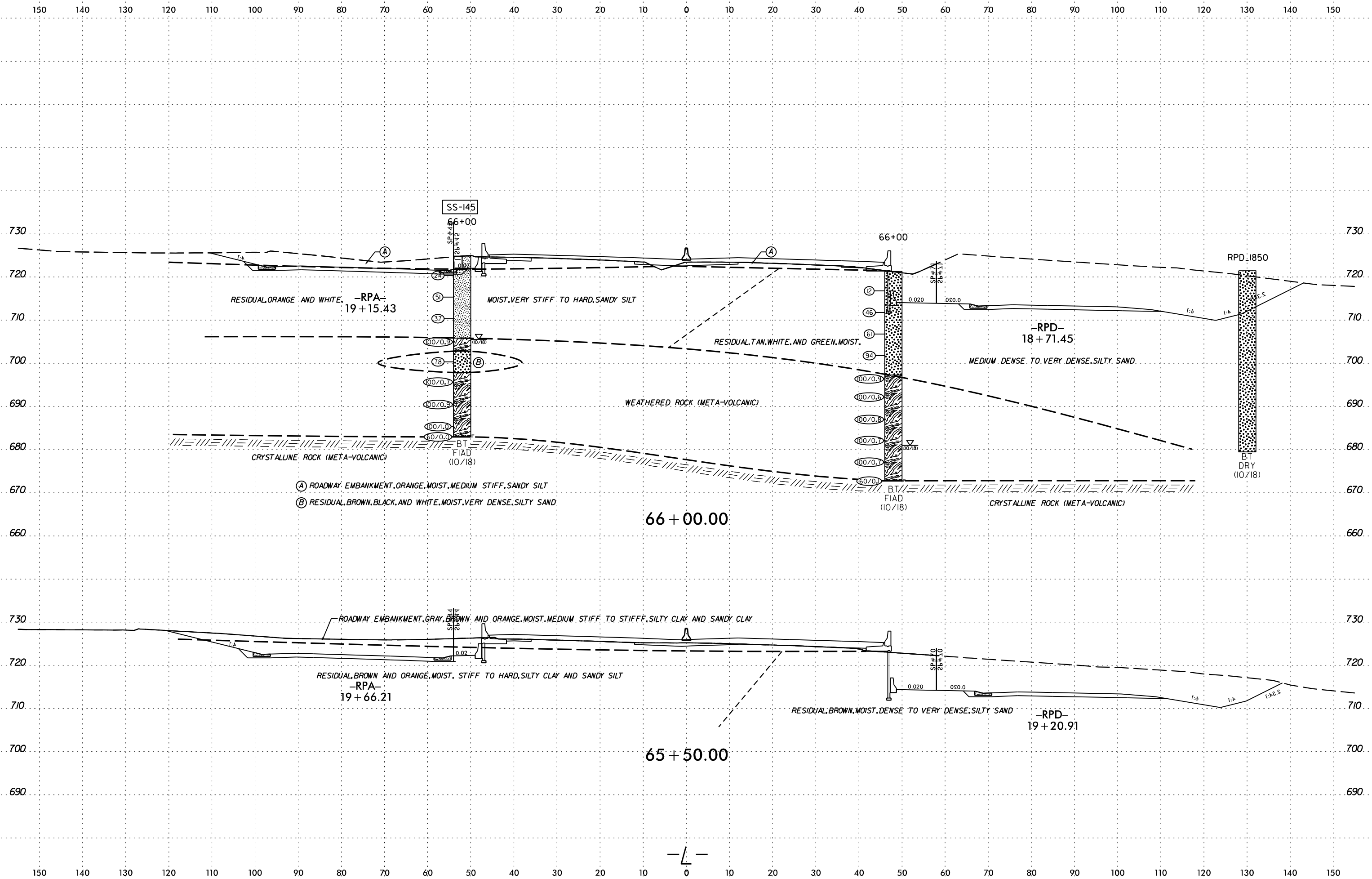
I:\24450 PM
R-5737\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois



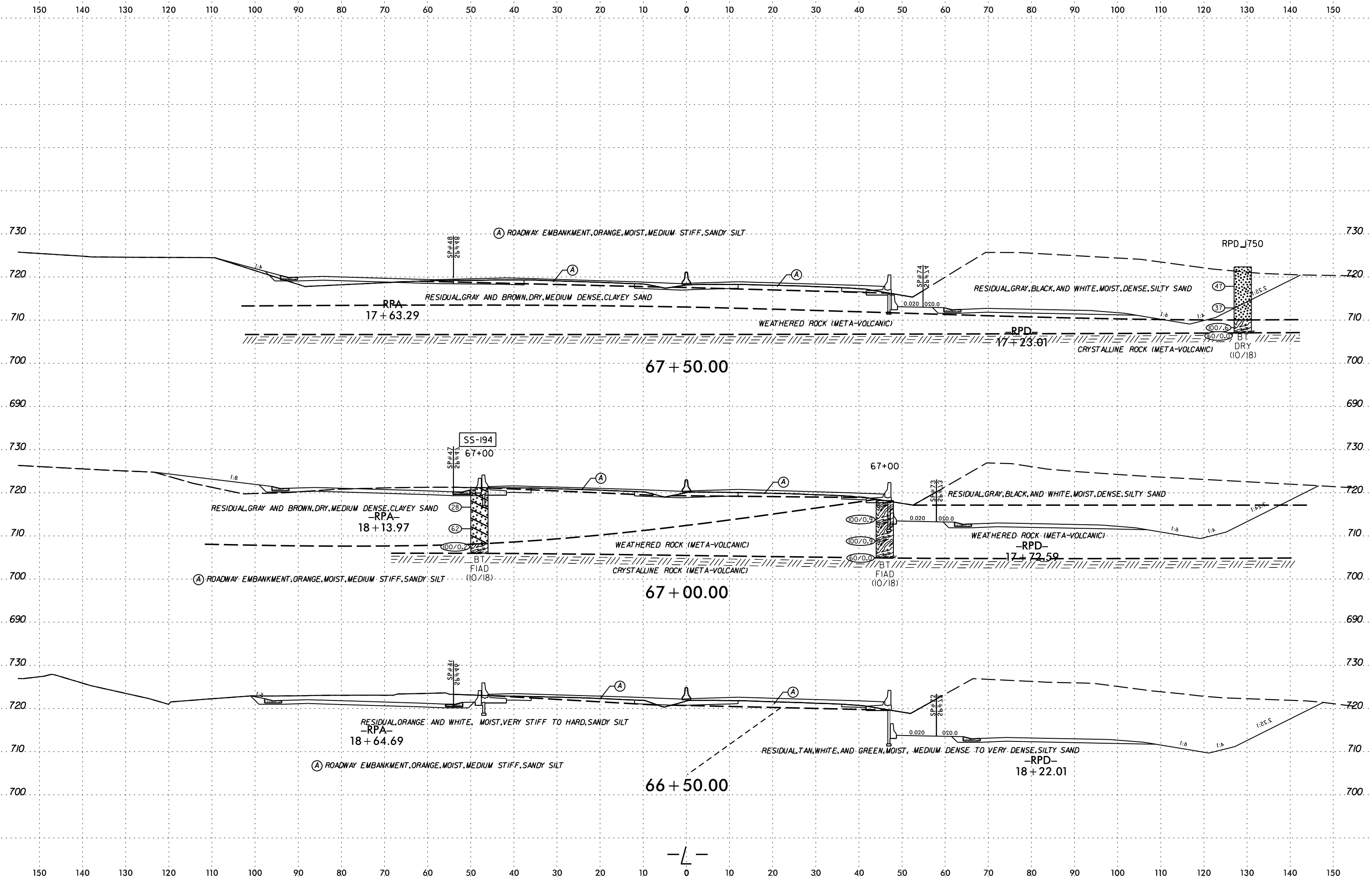
6/23/16



I:\235120_PM\Projects\18-51_04_R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn

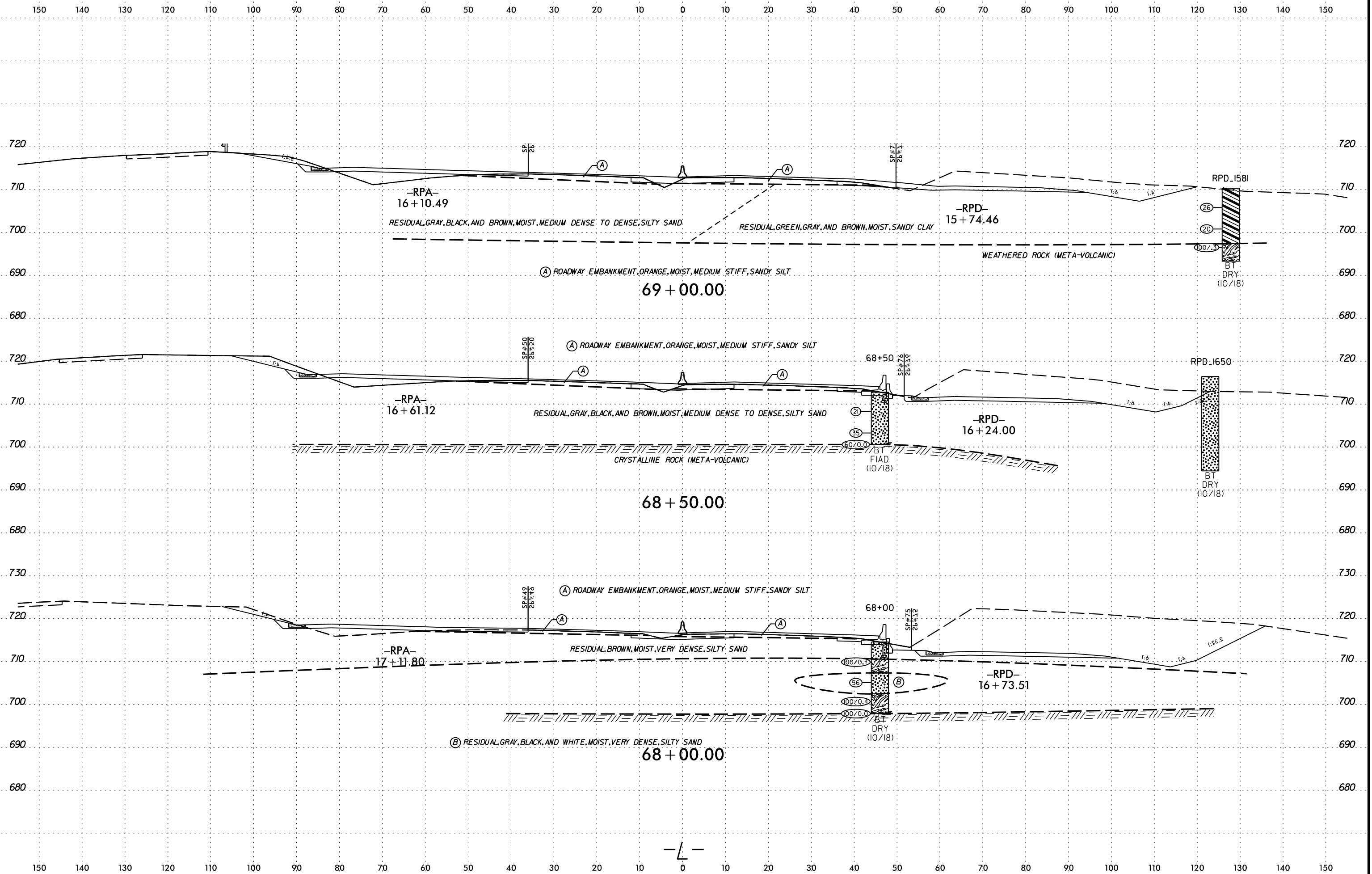


I:\235450_Plan\Projects\18-51.04_R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
 6/23/16 12:35:50 PM
 mether,mois

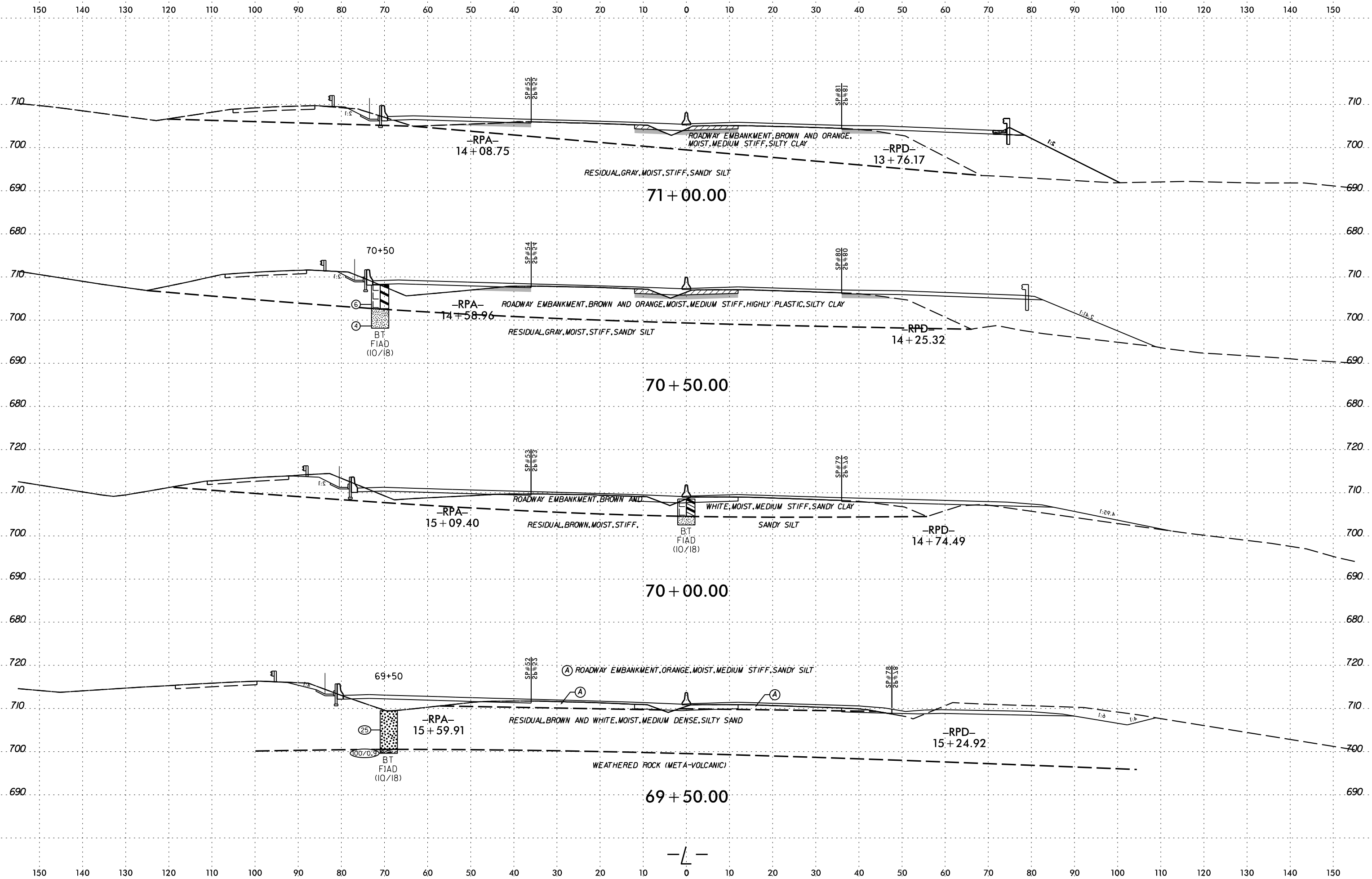


I:\3619 PM
R:\Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\TECH\SS-194\SS-194.dgn
mether,mois

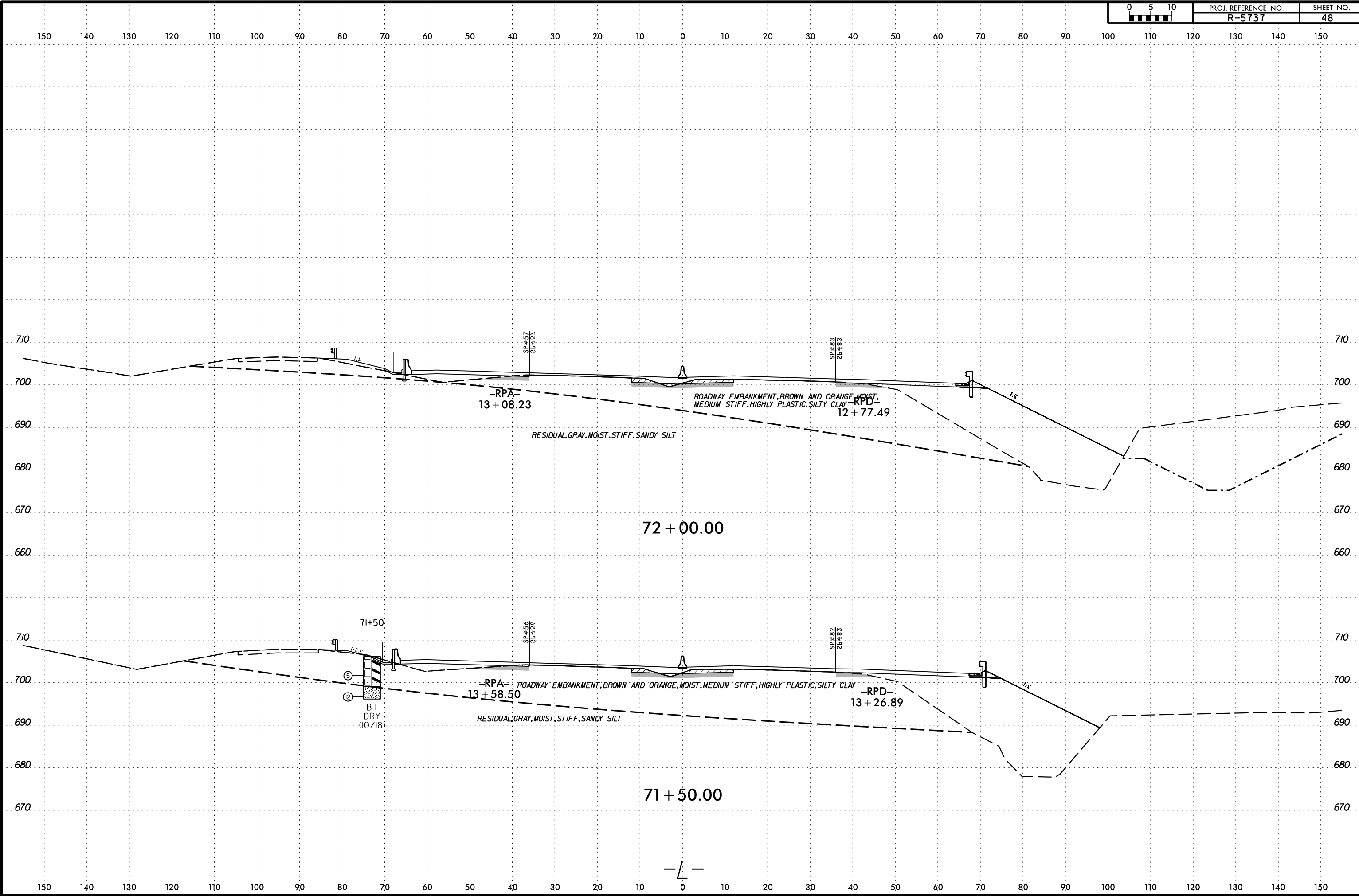
6/23/16

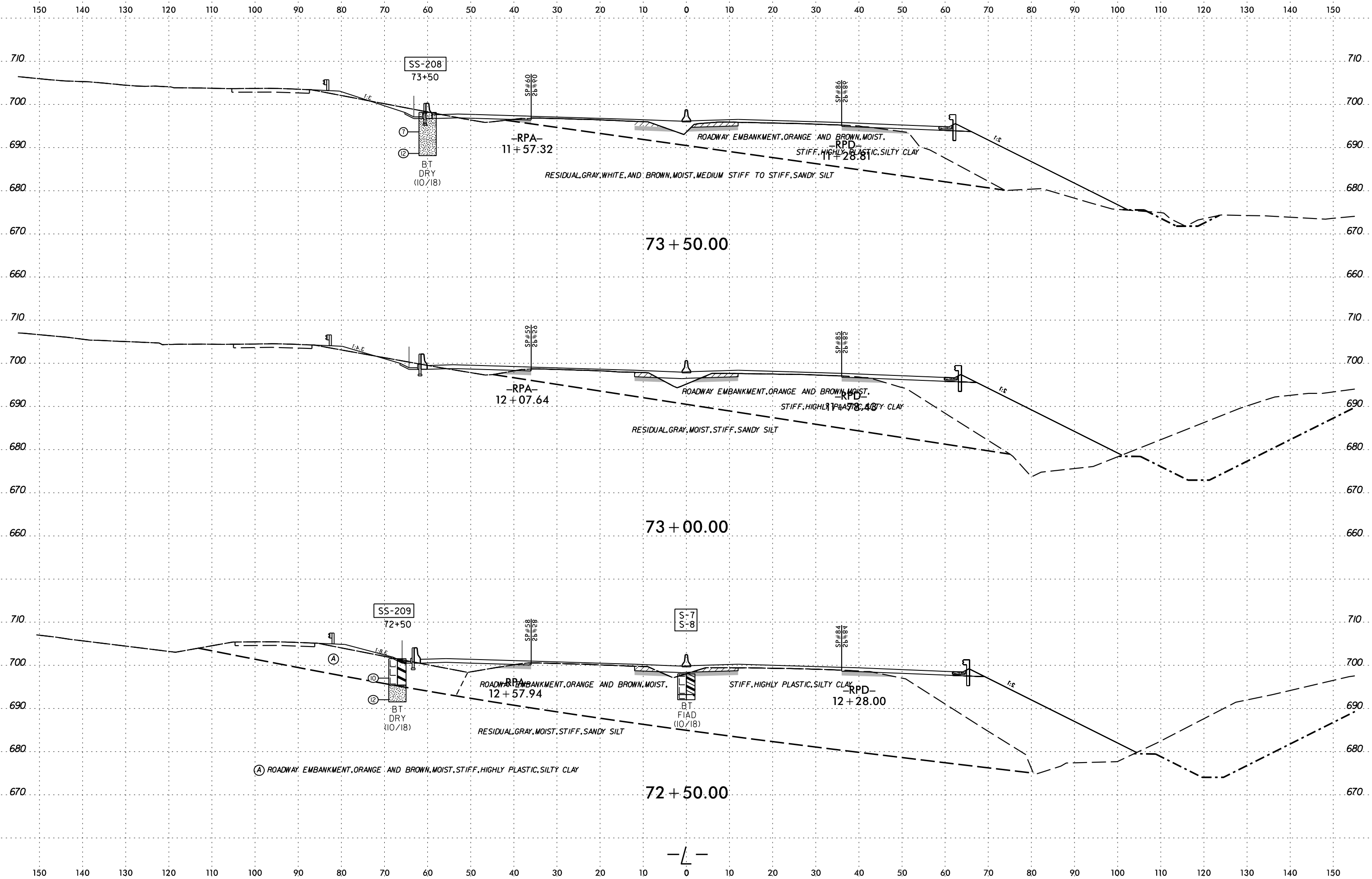


I:\3648 PM
R:\Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,moths

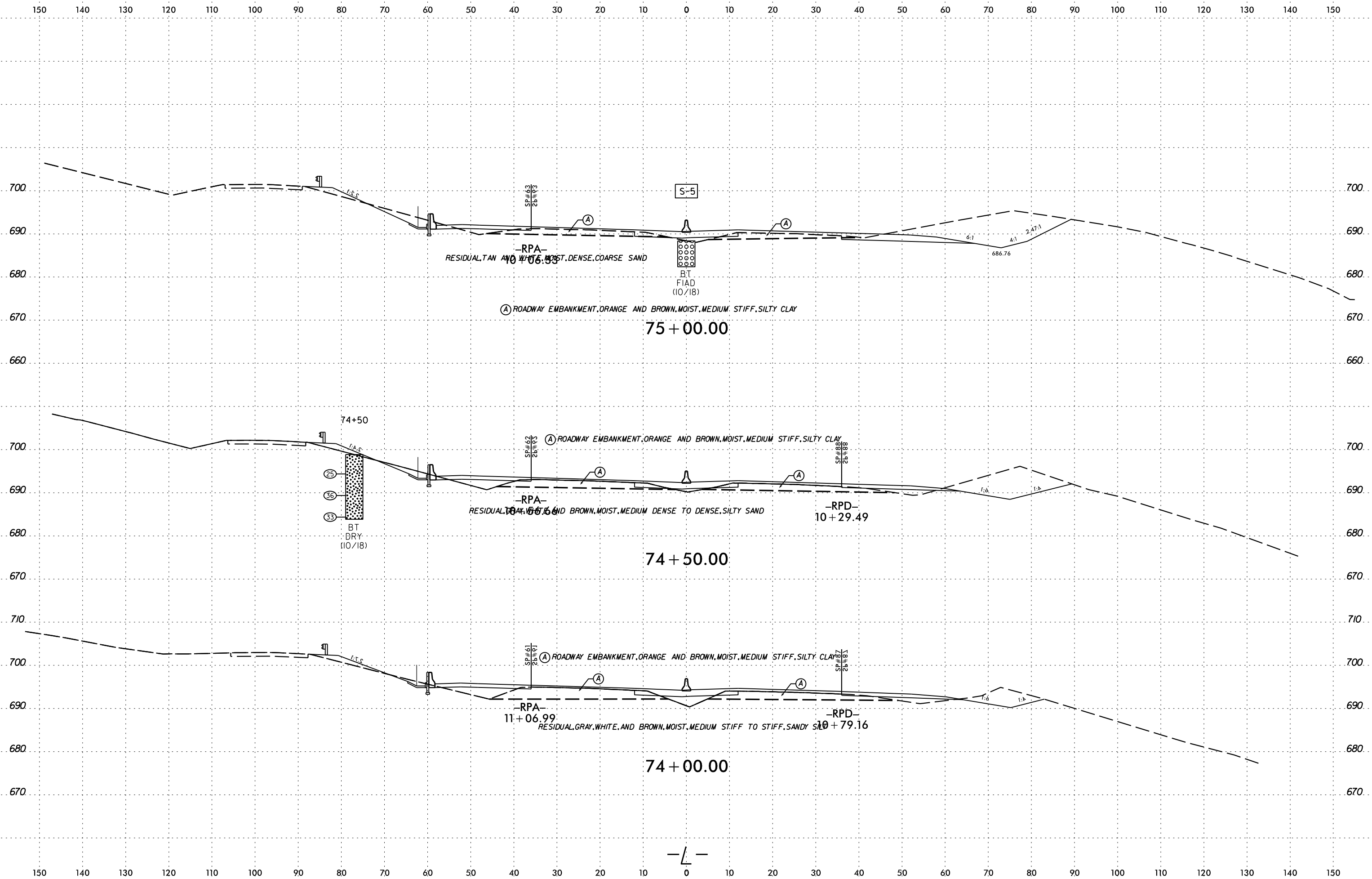


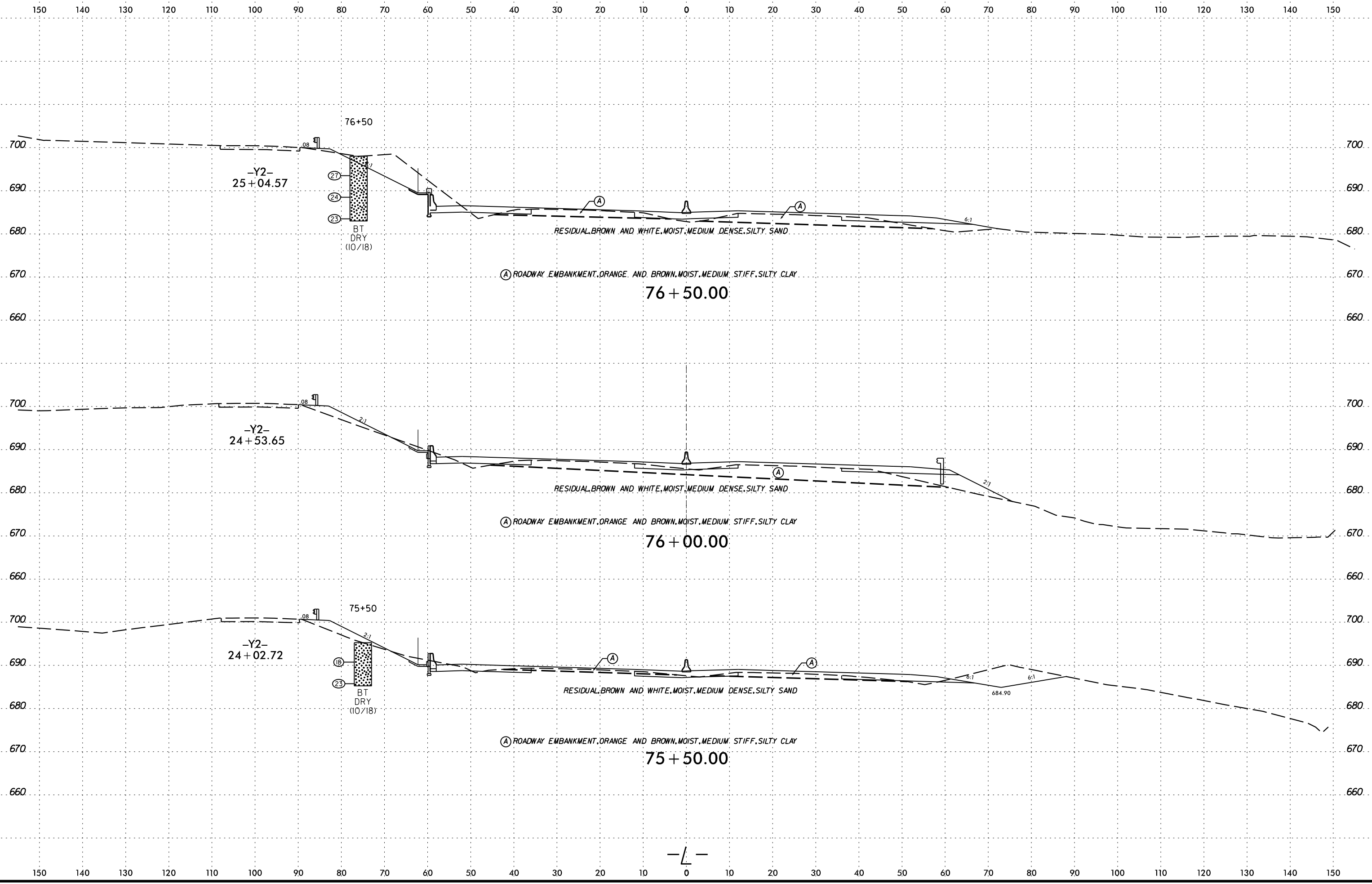
I:\2718 PM
RTP\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois



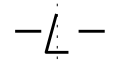


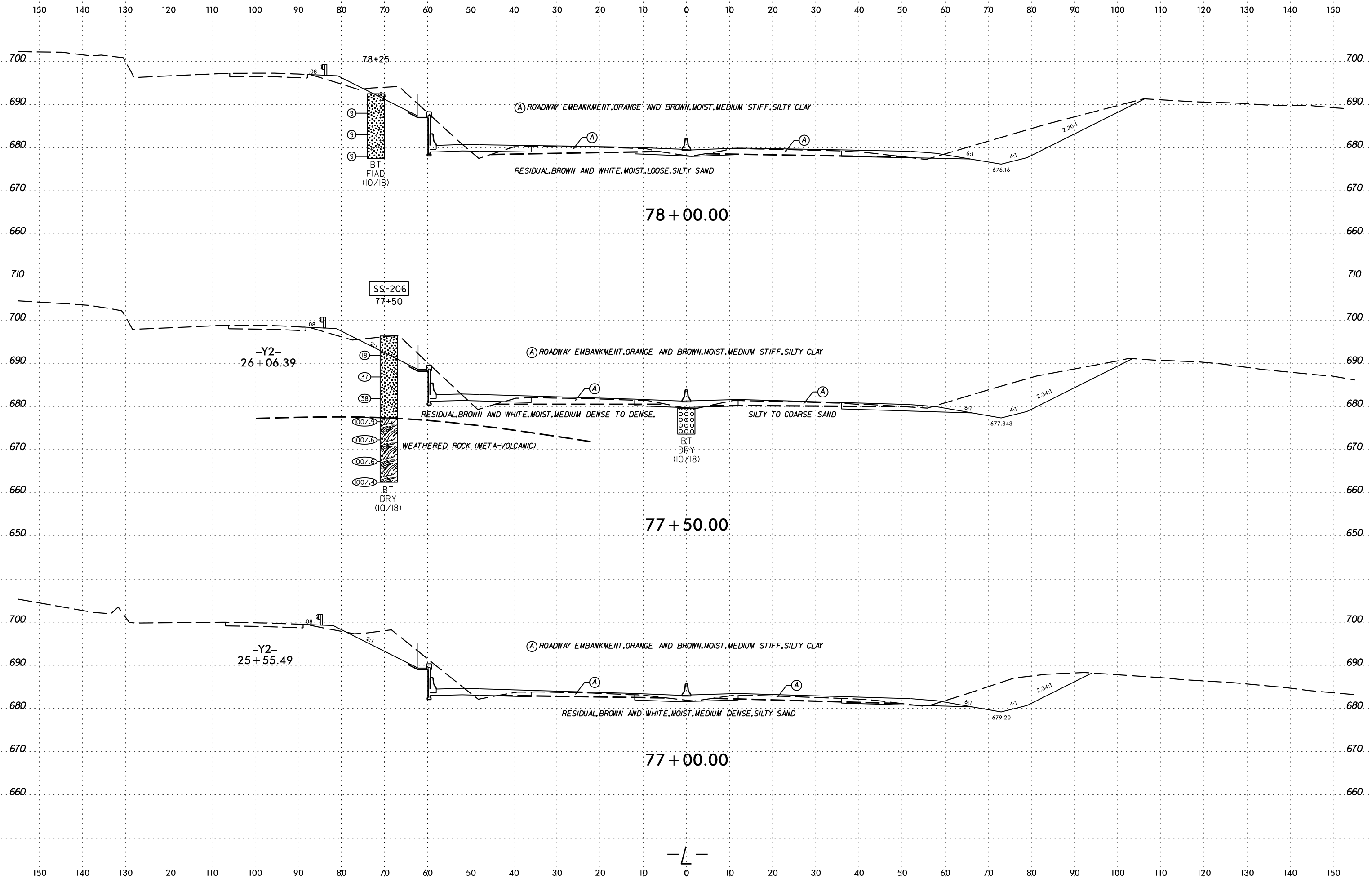
I:\38120 PM
R-5737\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\RDWY_XSI.L.dgn
mether,mois

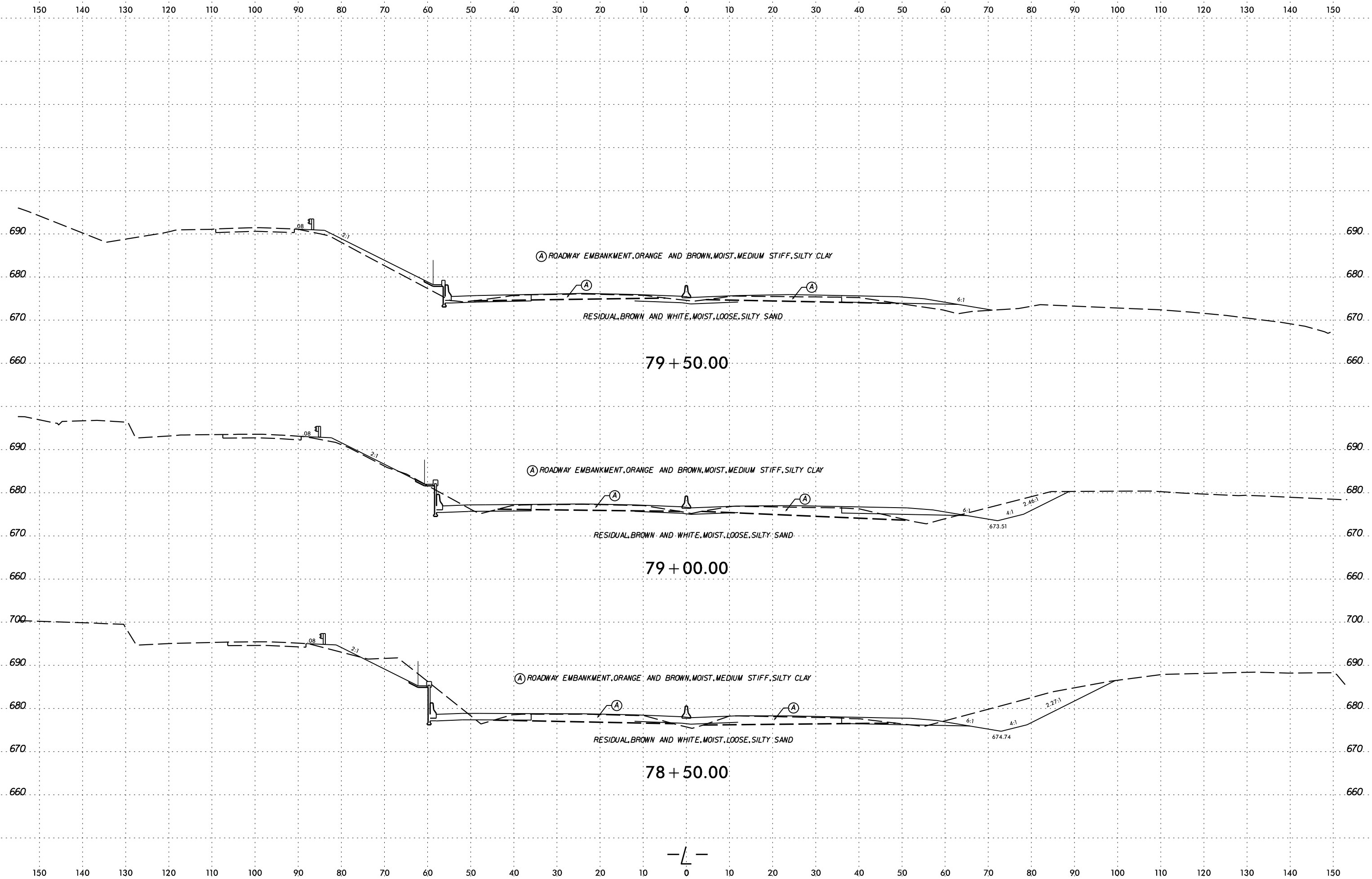


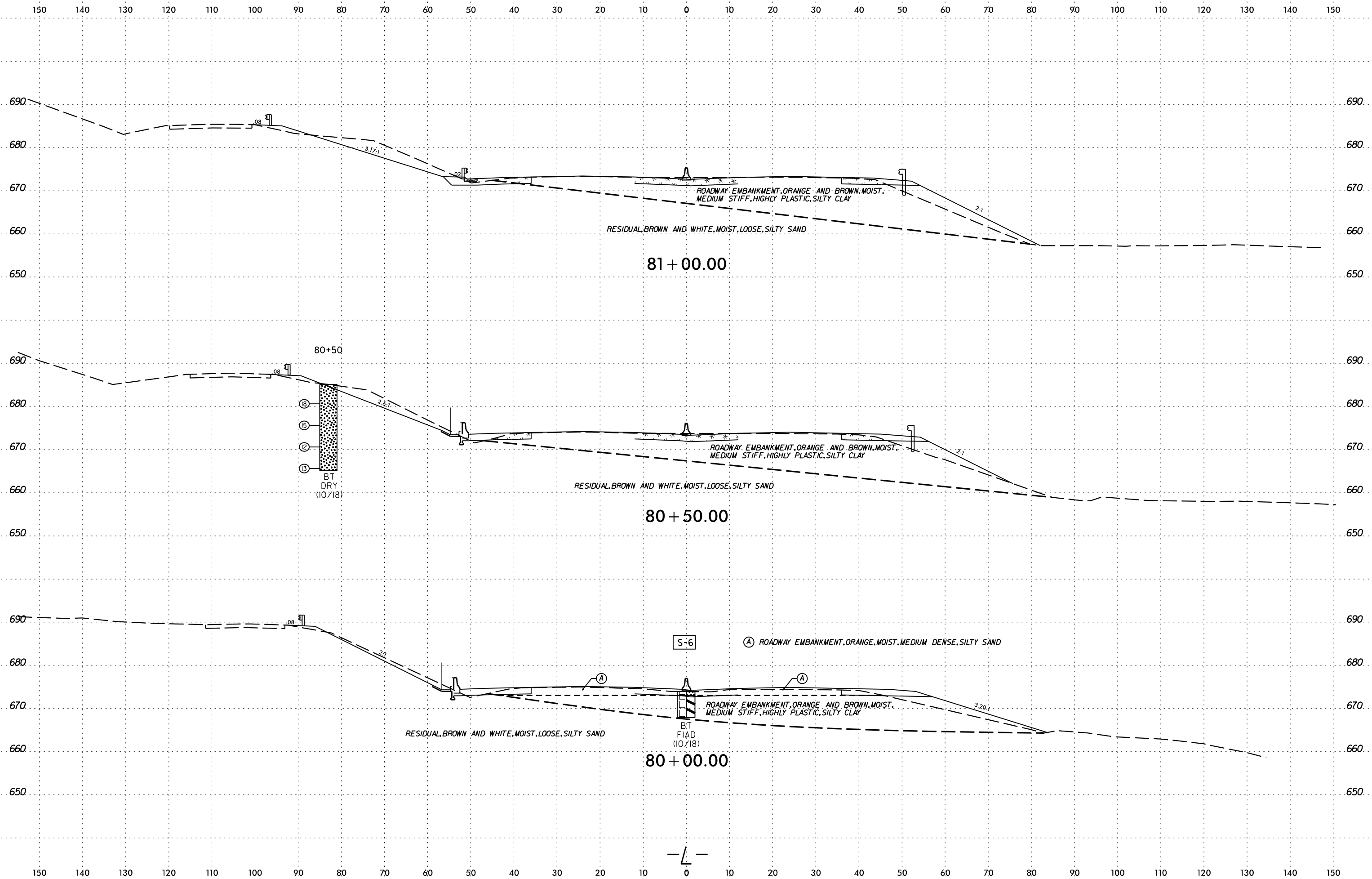


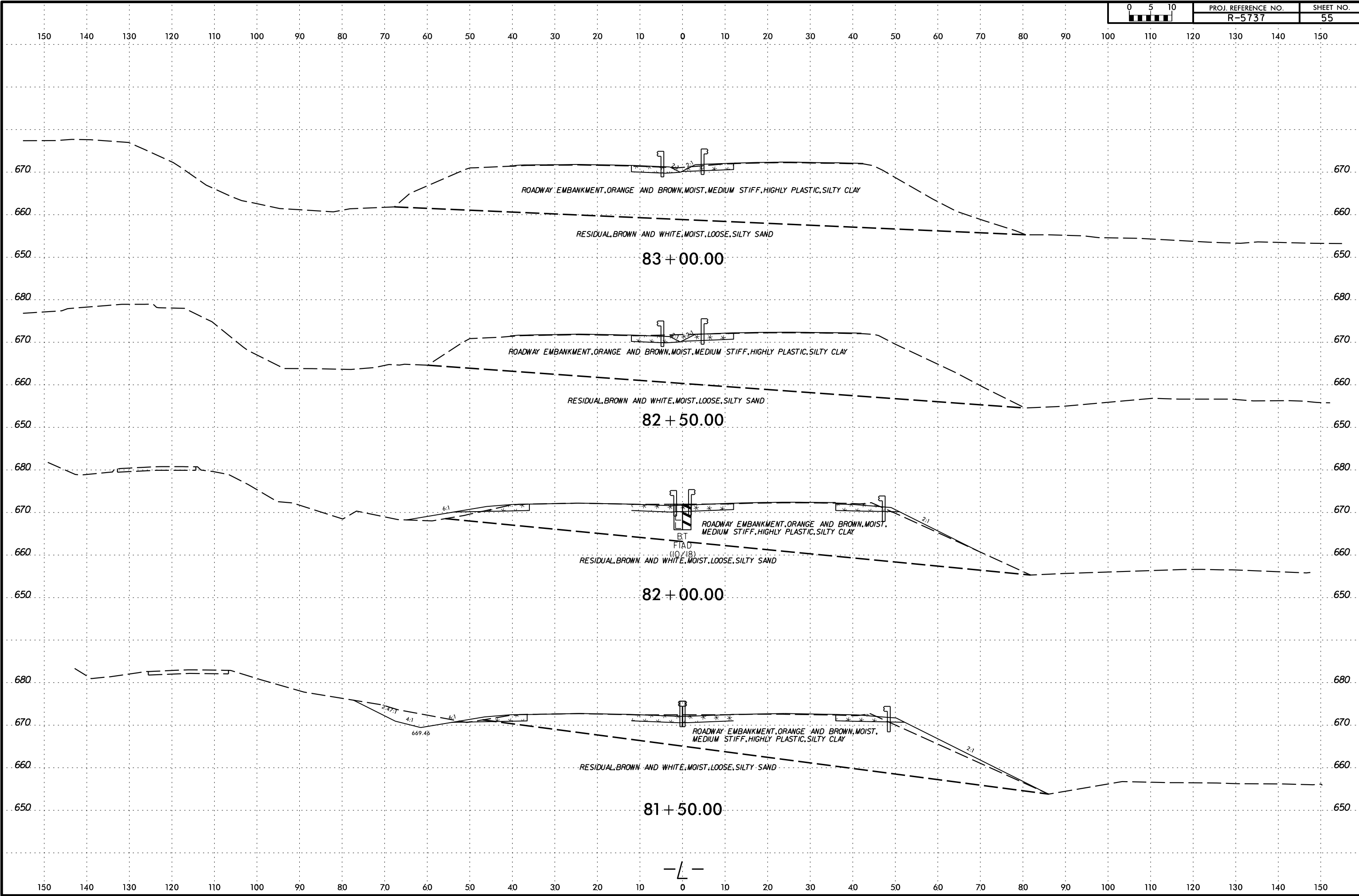
I:\39120 PM
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI.L.dgn
mether,mois

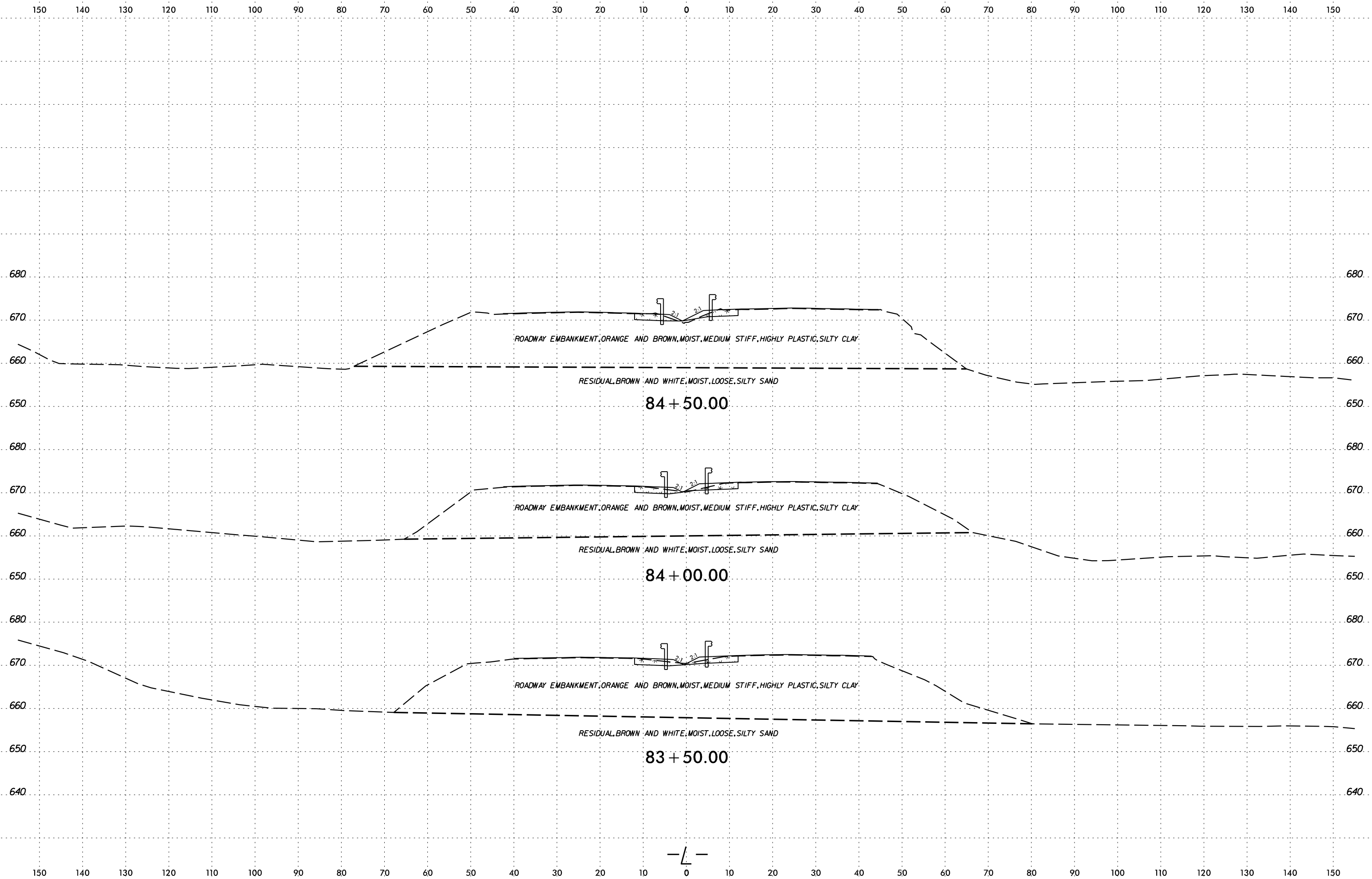


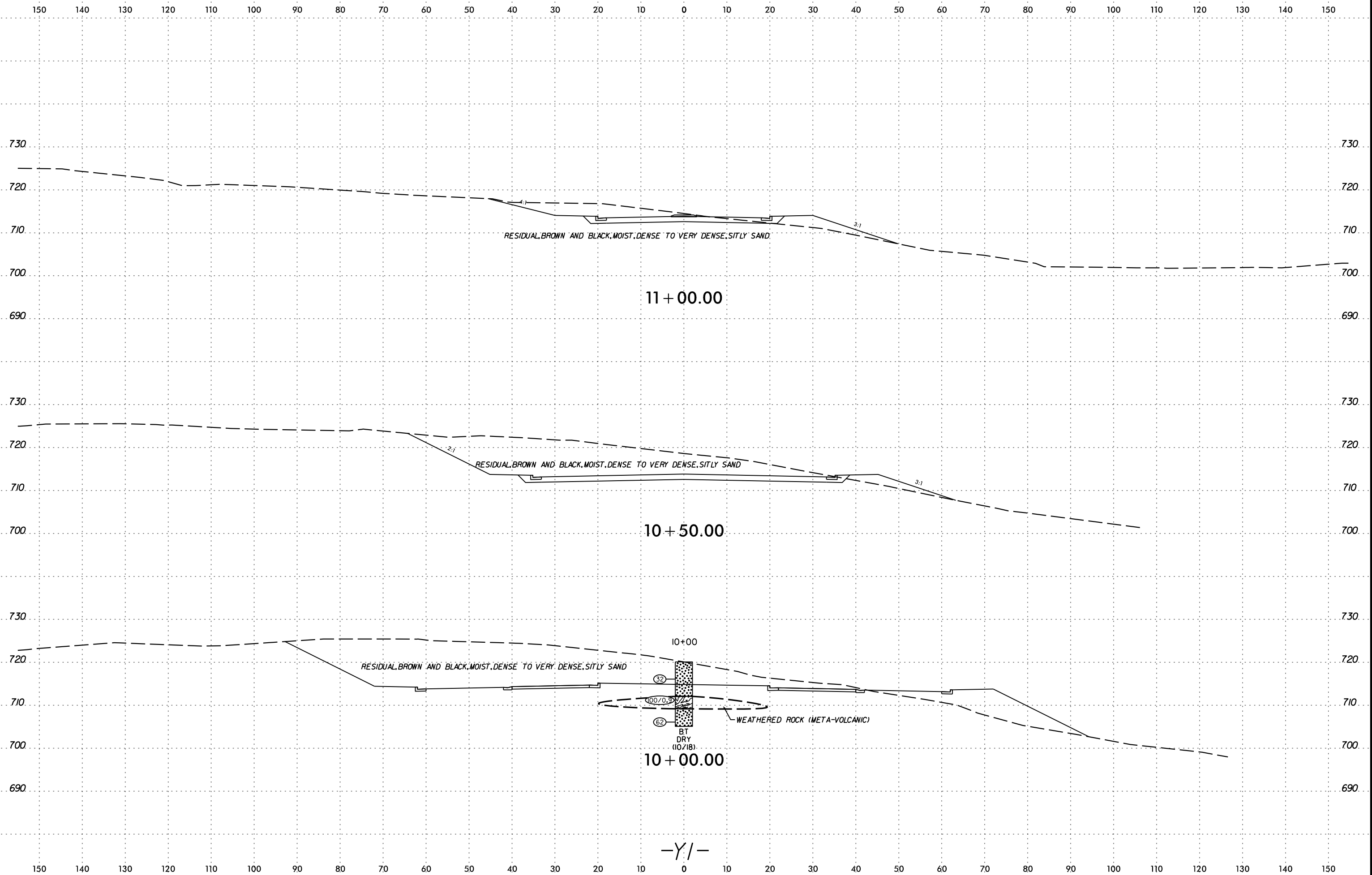












6/23/16 AM
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI_Y1.dgn
mether,mois

11 + 00.00

10 + 50.00

10 + 00.00

-Y/-

RESIDUAL, BROWN AND BLACK, MOIST, DENSE TO VERY DENSE, SILTY SAND

RESIDUAL, BROWN AND BLACK, MOIST, DENSE TO VERY DENSE, SILTY SAND

RESIDUAL, BROWN AND BLACK, MOIST, DENSE TO VERY DENSE, SILTY SAND

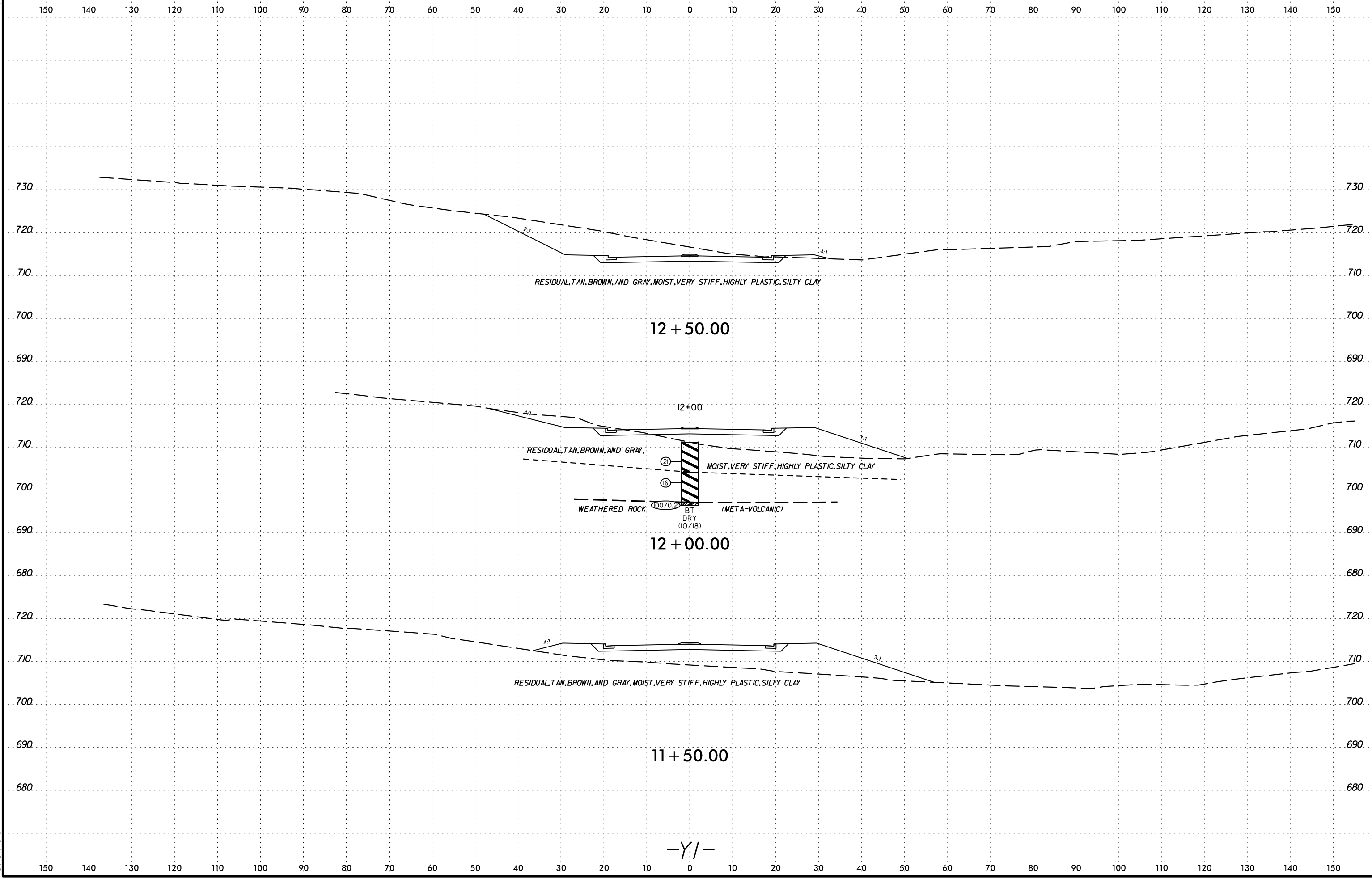
WEATHERED ROCK (META-VOLCANIC)

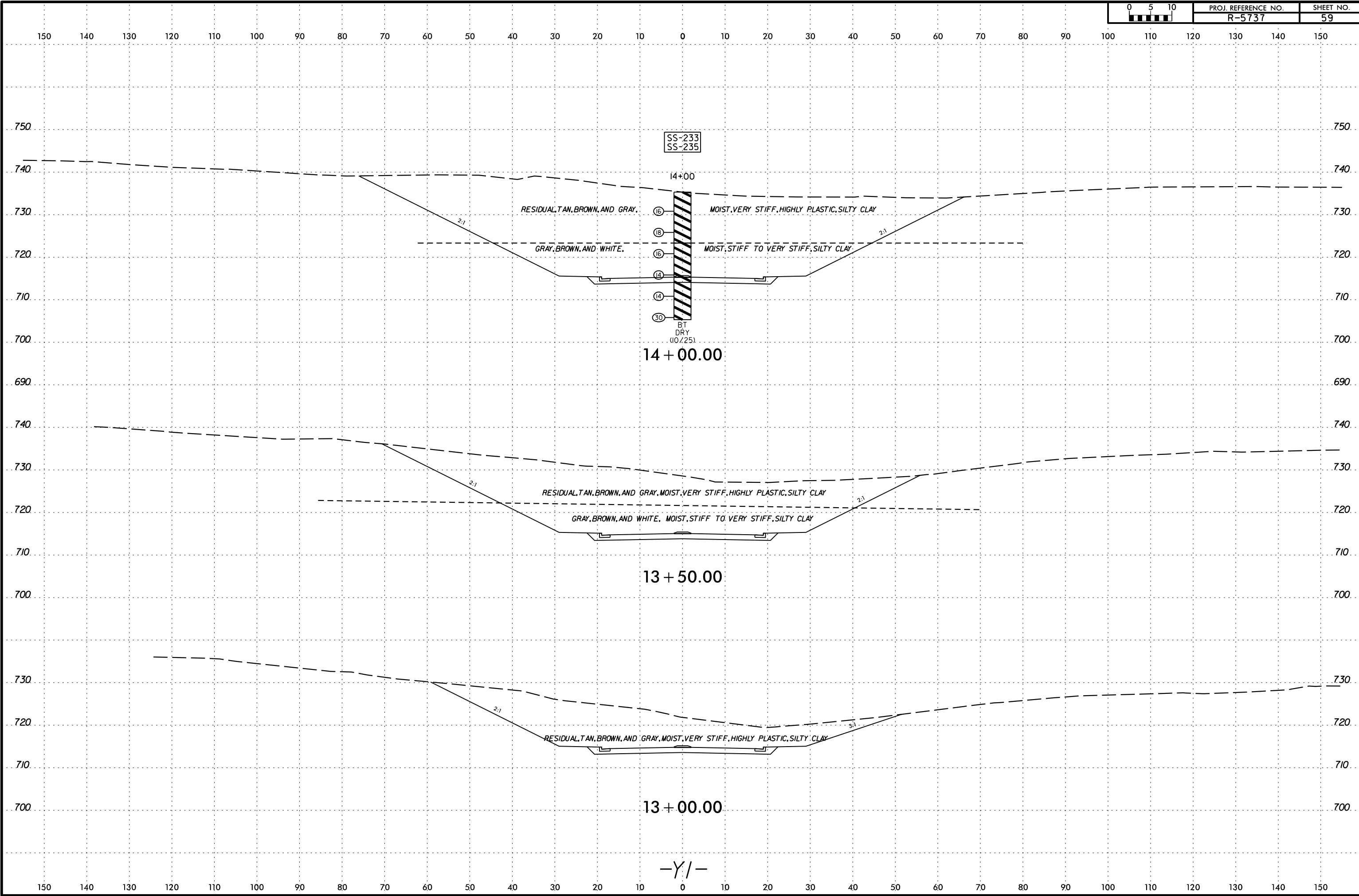
BT
DRY
(10/18)

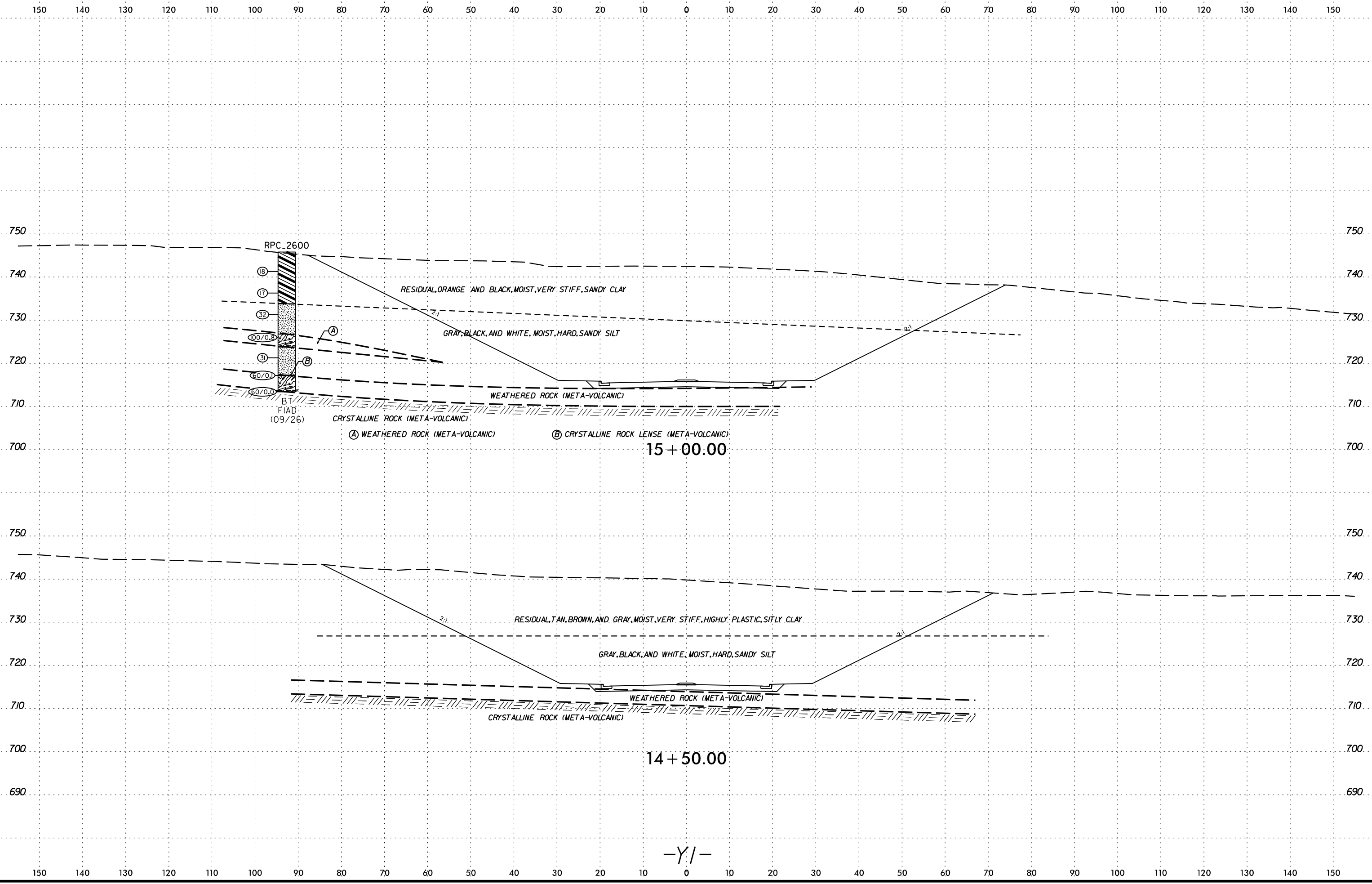
100/0.5

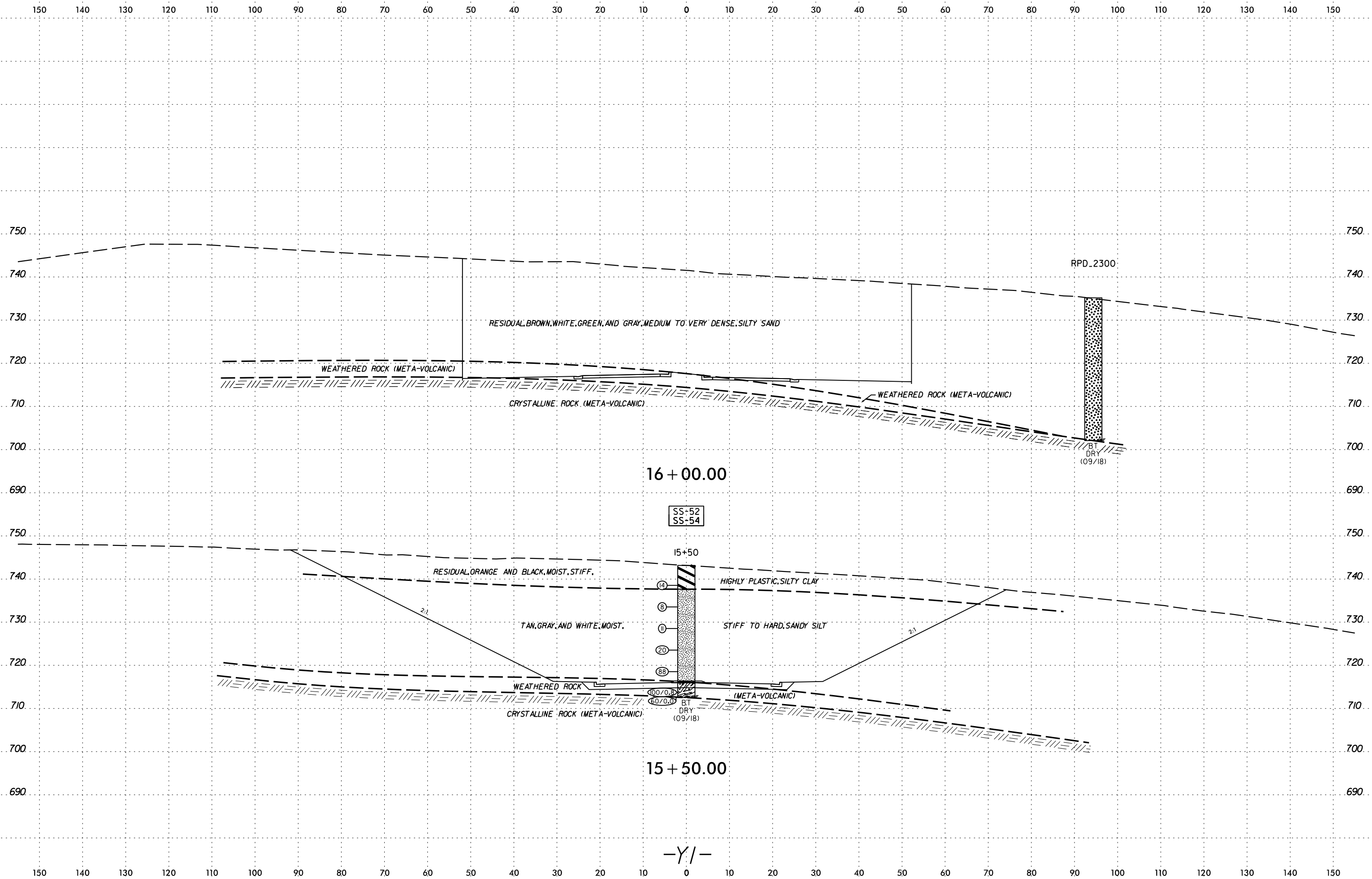
32

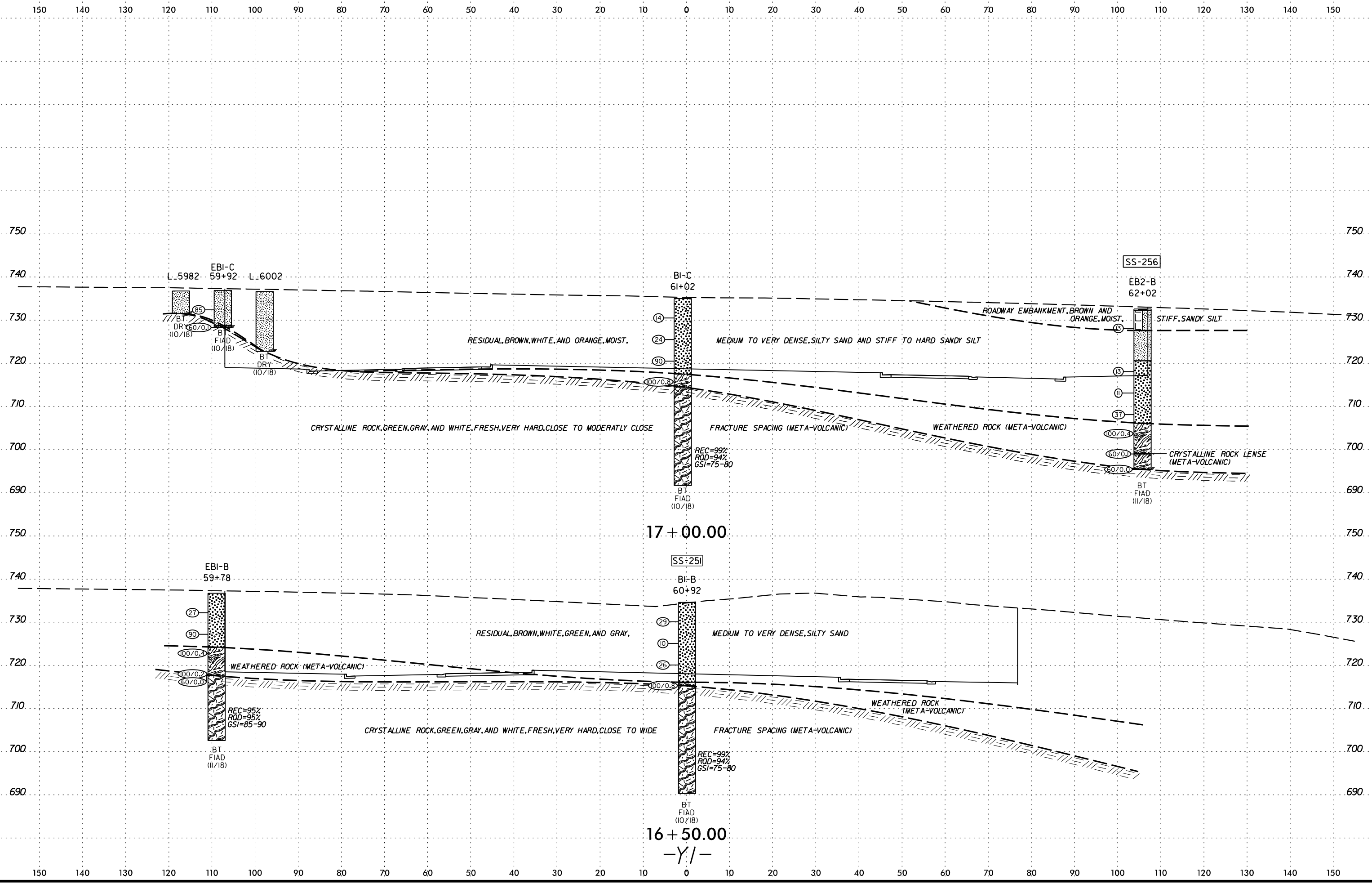
10+00

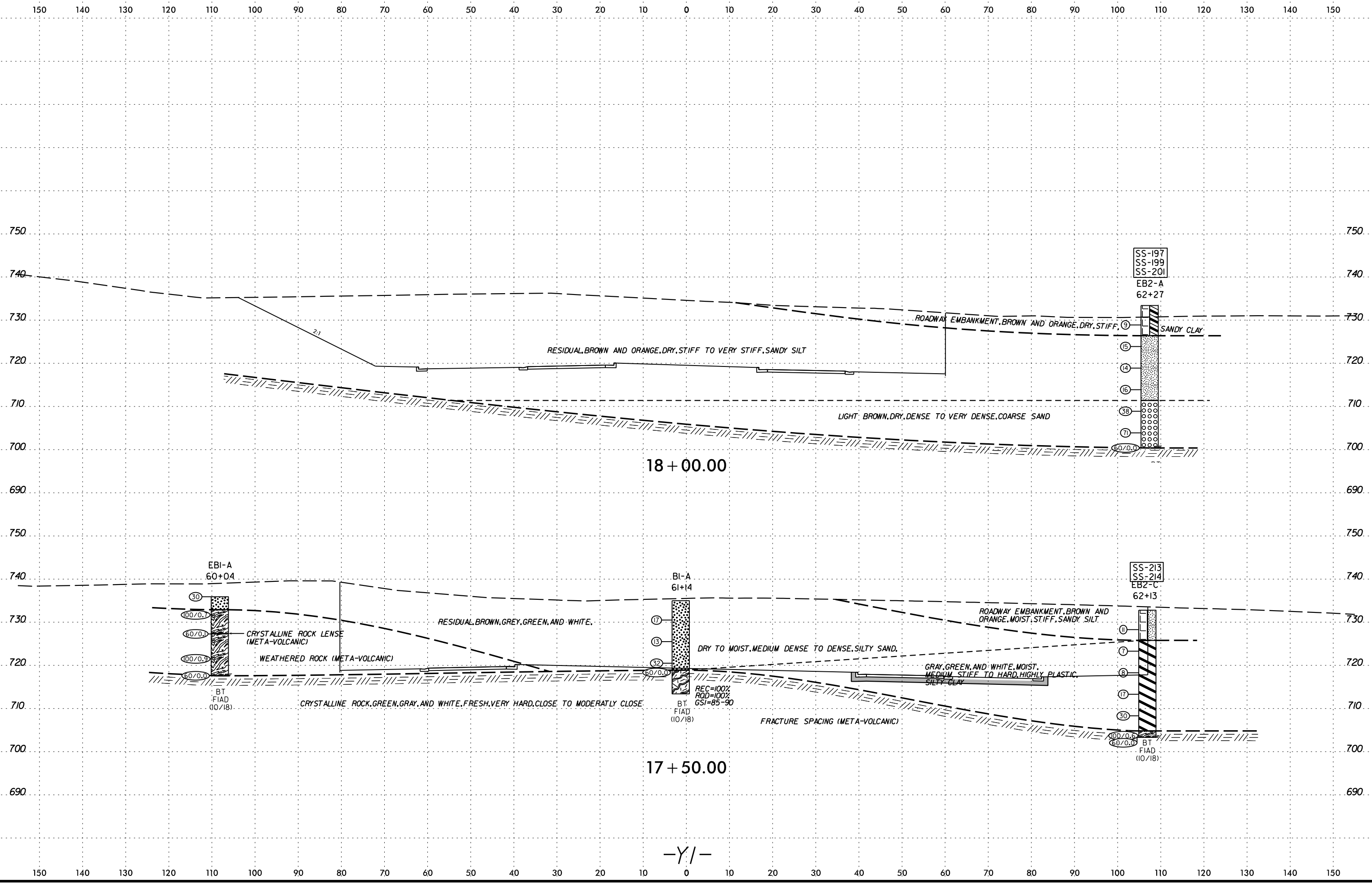






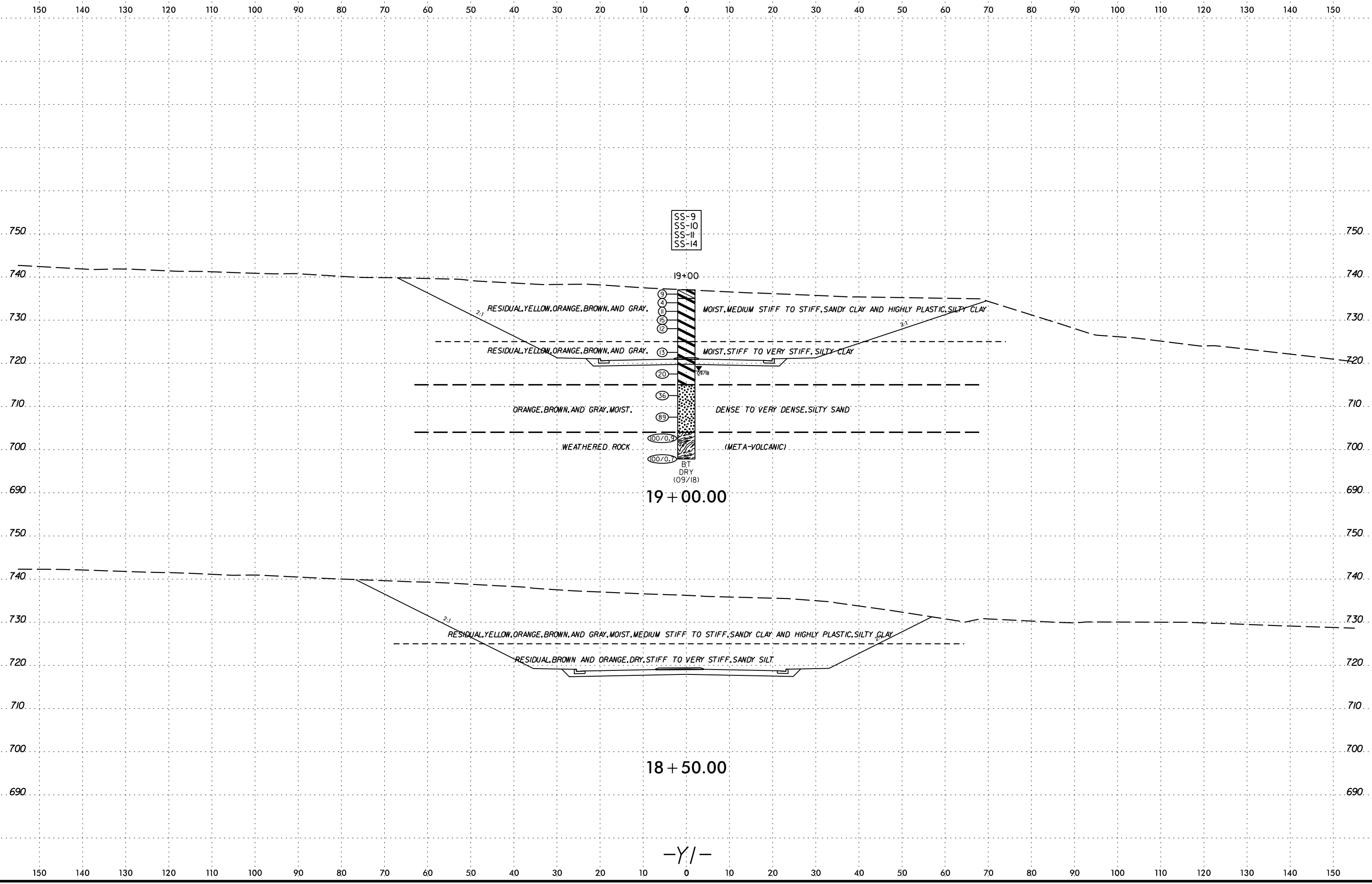


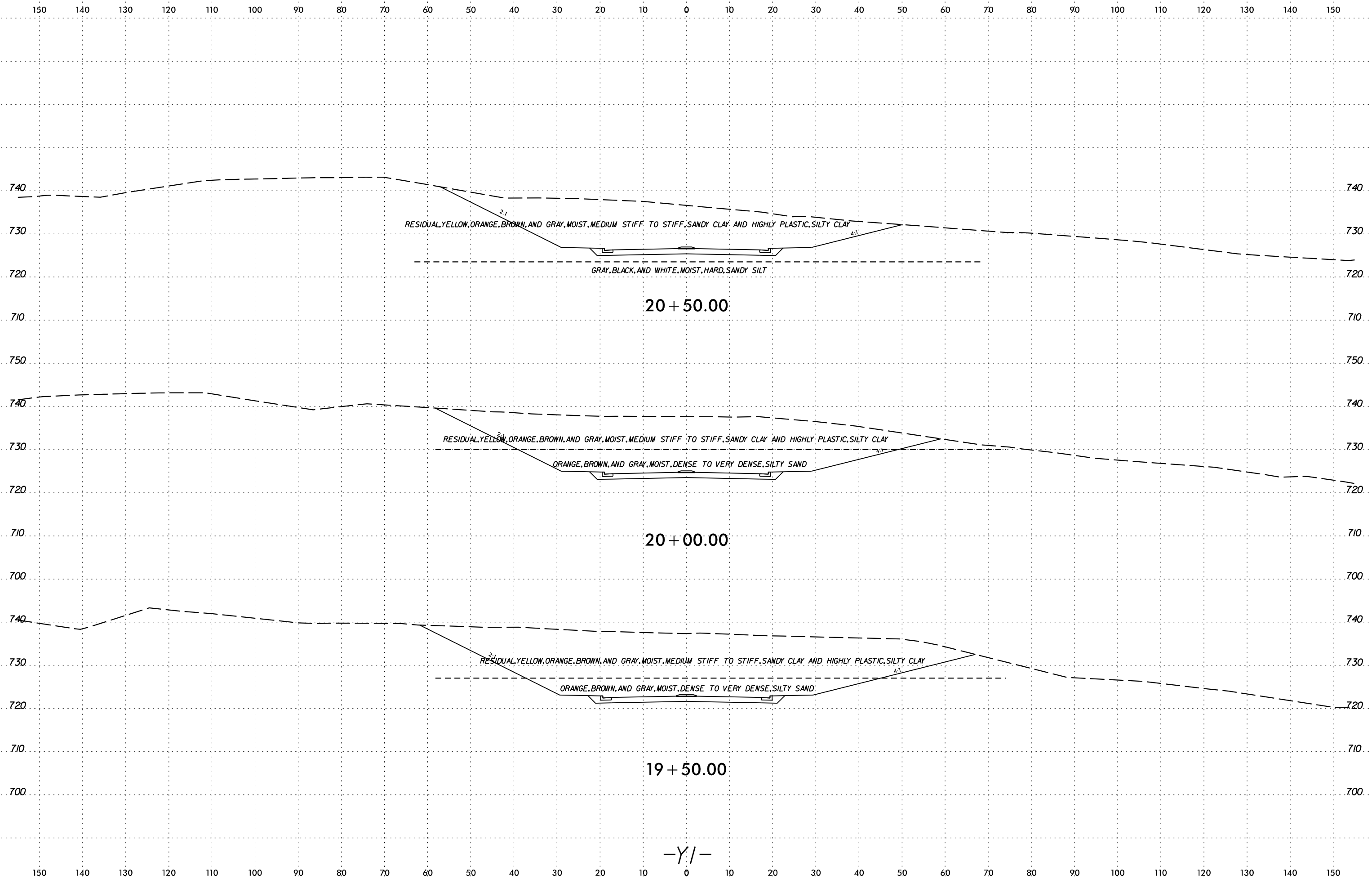


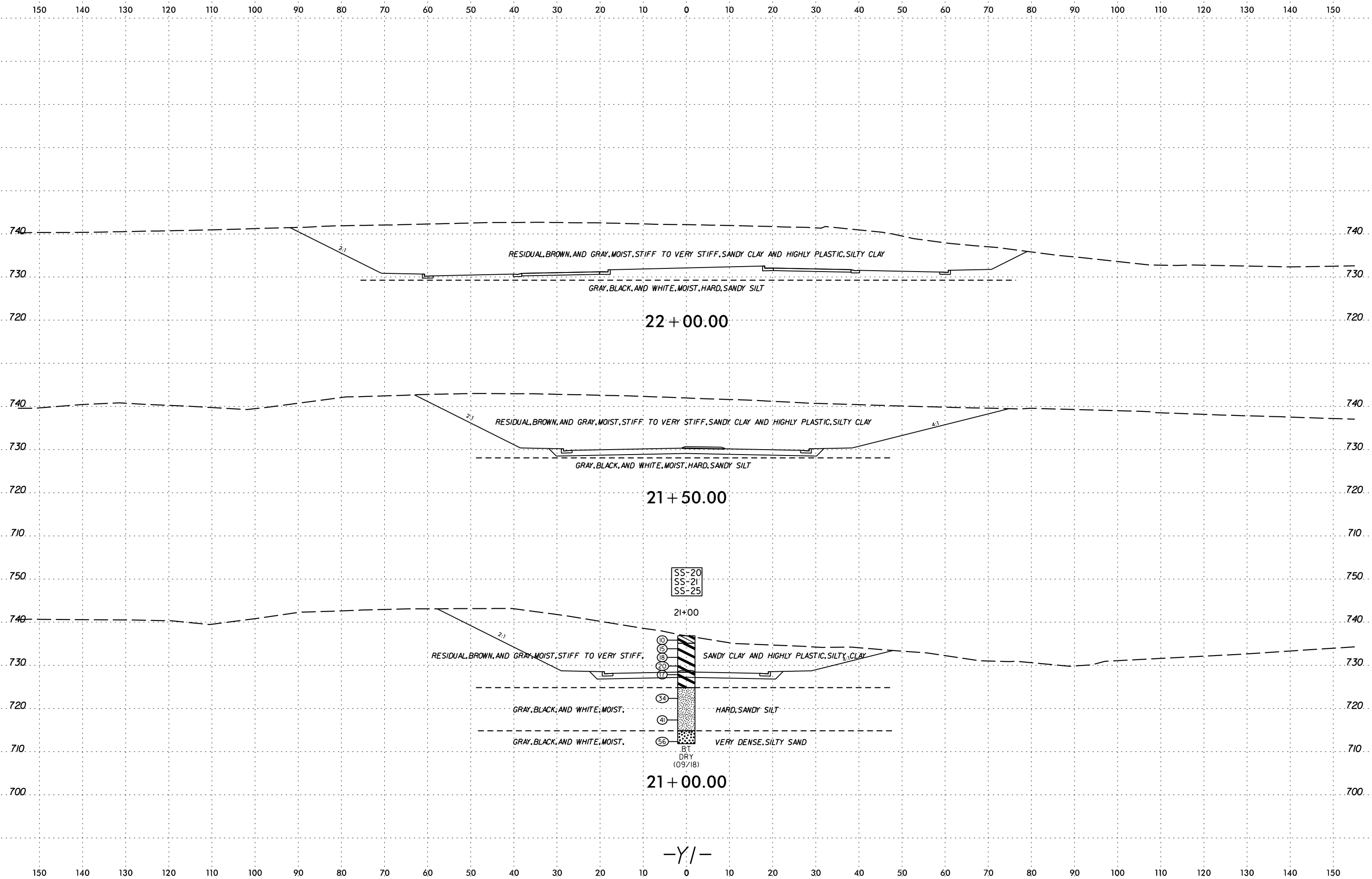


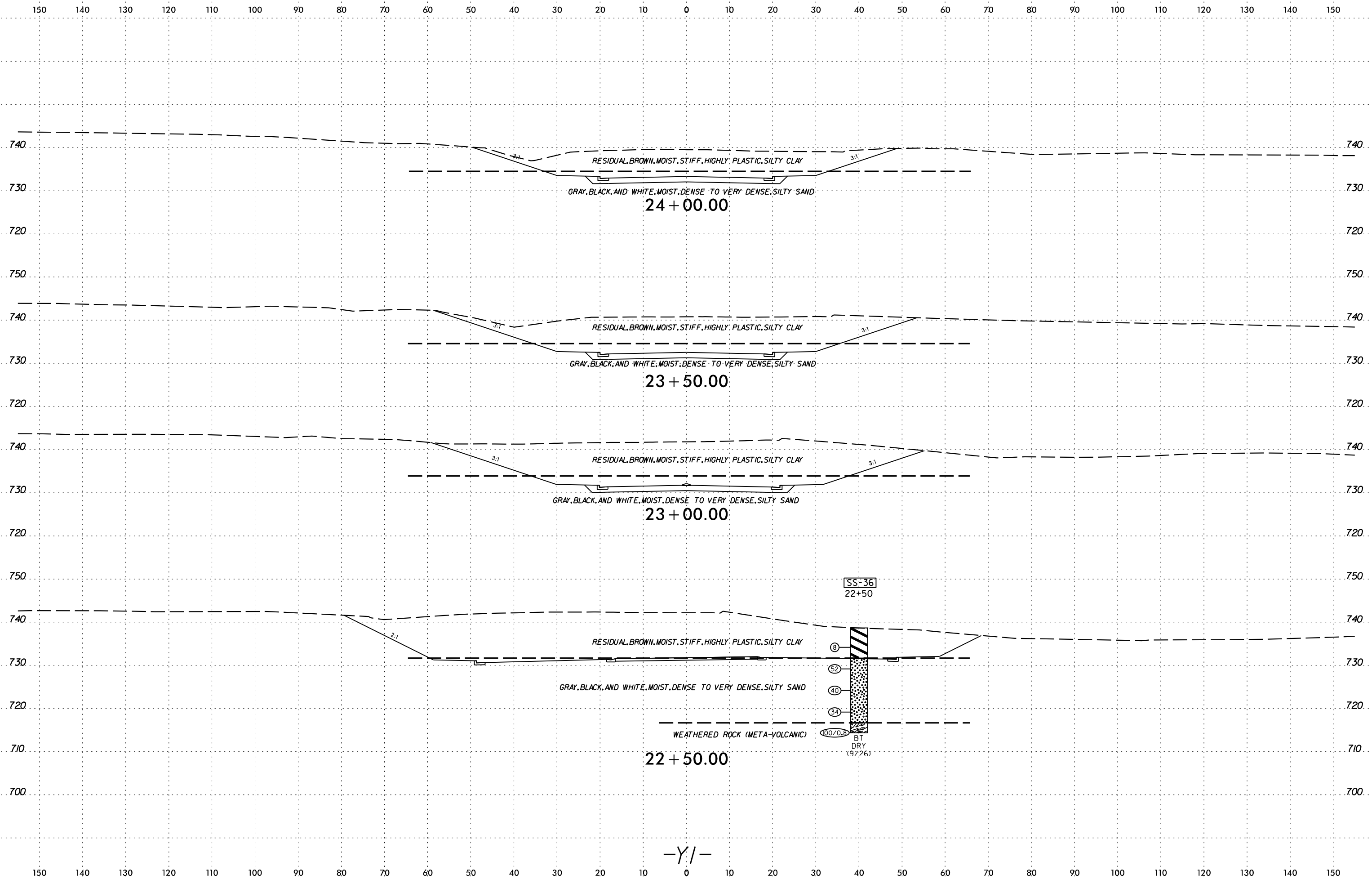
B:\Projects\18-51.04 R5737_GEO_RDWY_CADD_GEO\RDWY_XSI_Y1.dgn

-Y/-



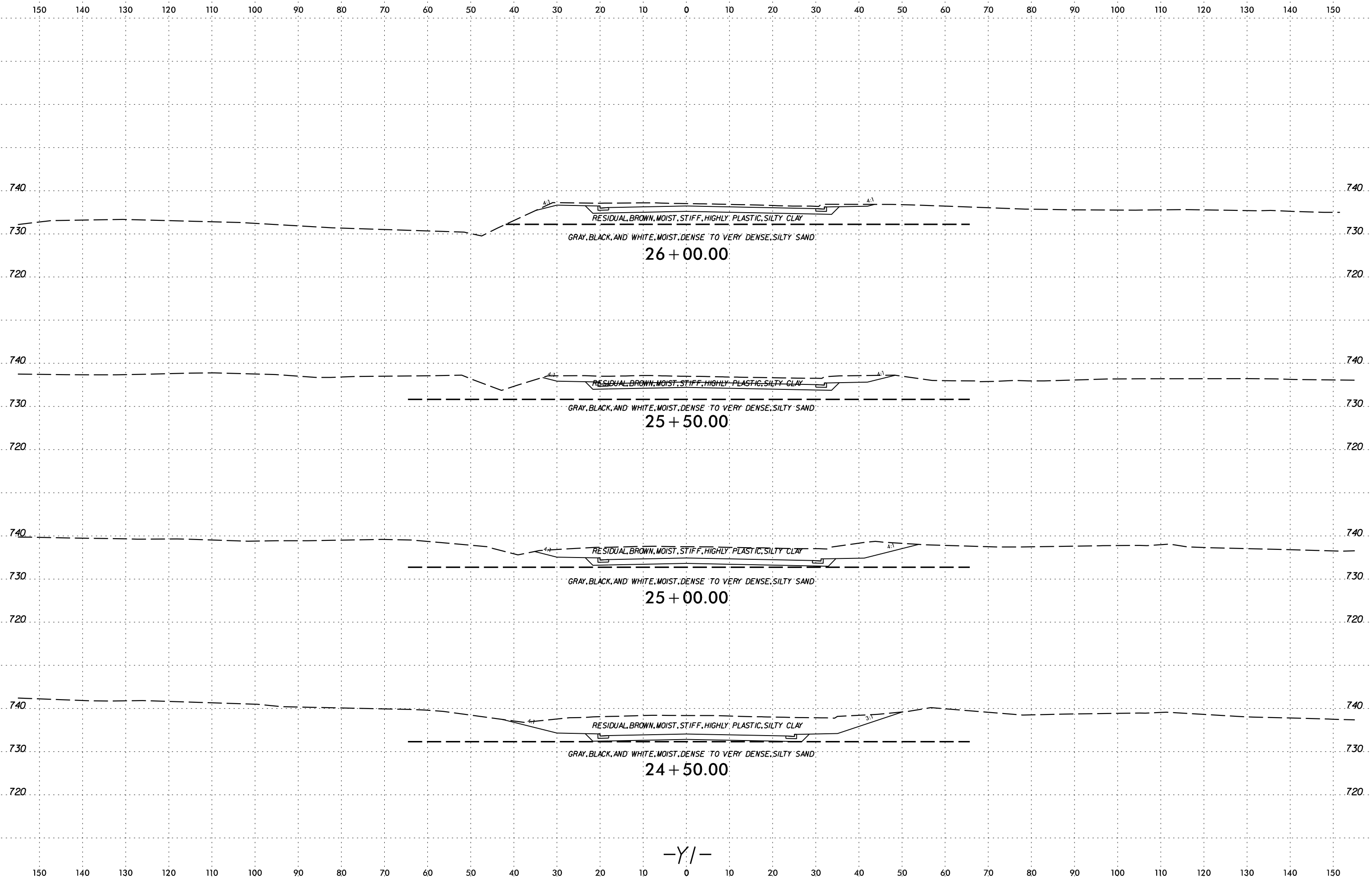




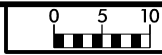


B:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI_11.dgn

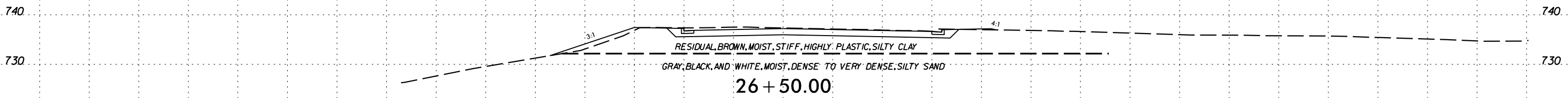
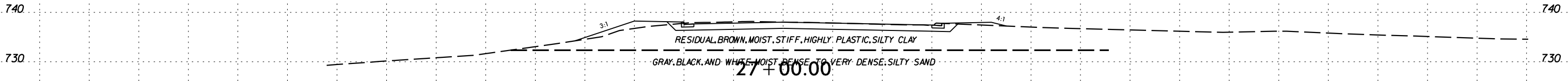
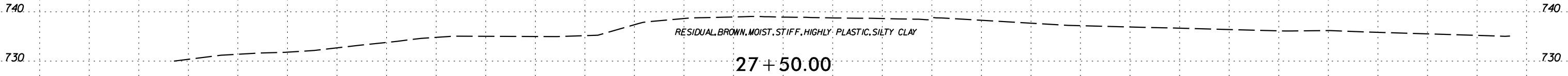
-Y/-



-Y/-



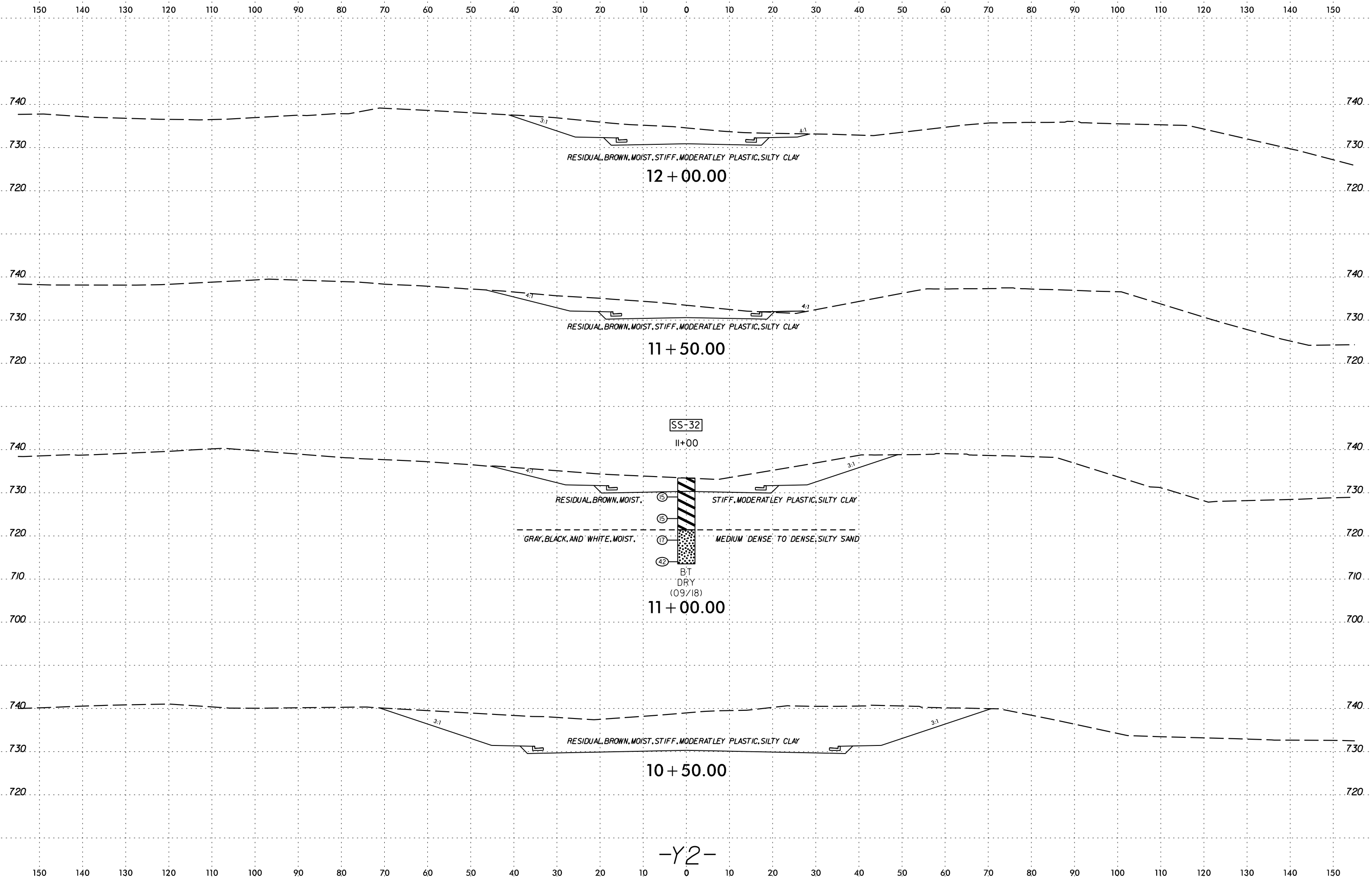
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



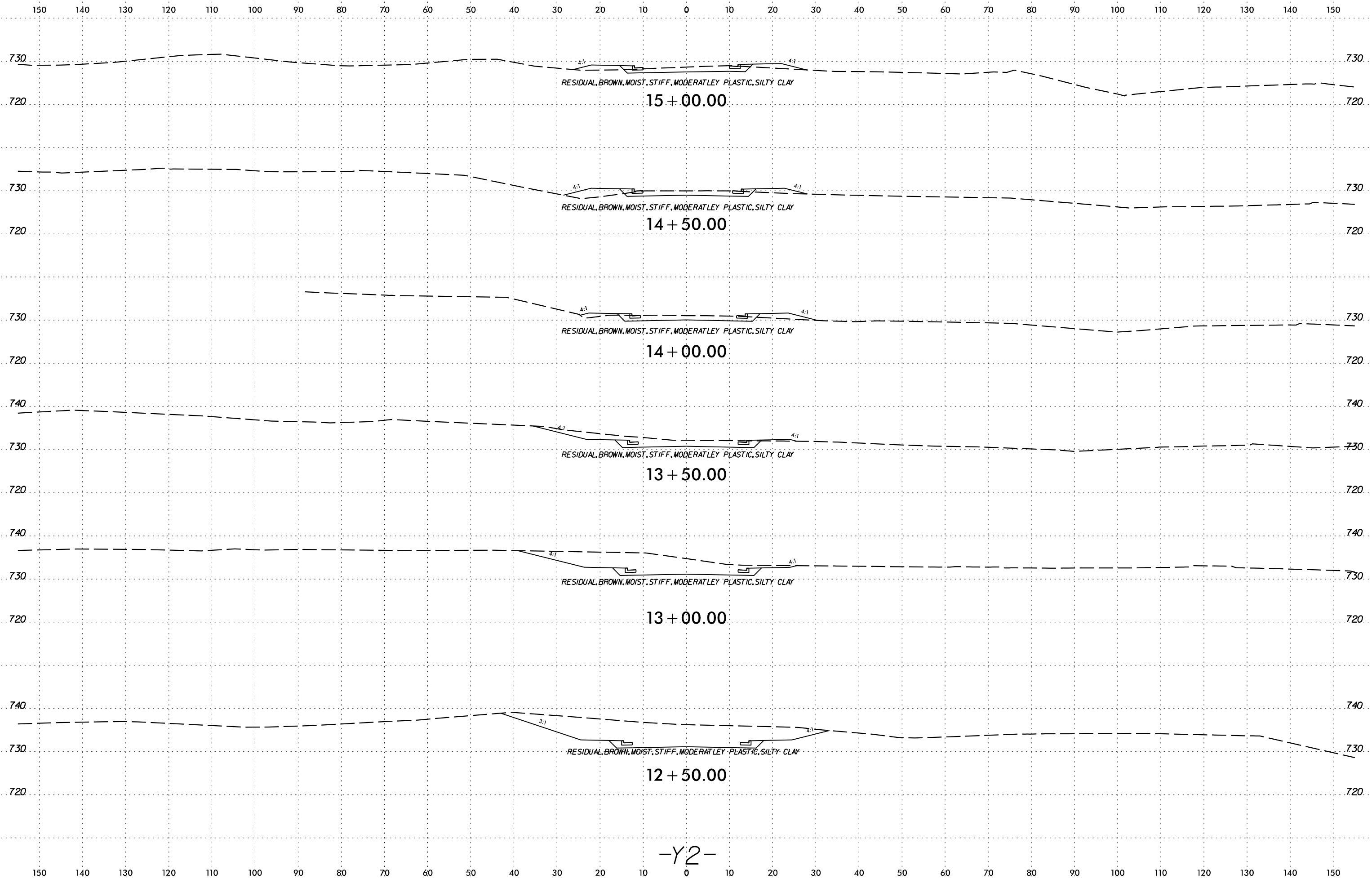
-Y/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

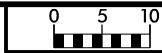
6/23/16



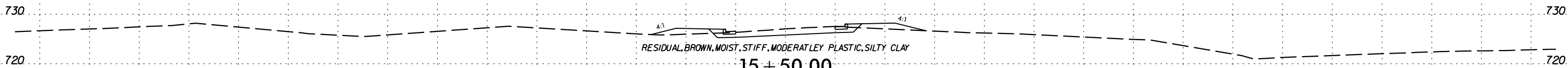
8:23:22 AM
R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI_Y2.dgn
mether,mols



-Y2-



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



15 + 50.00

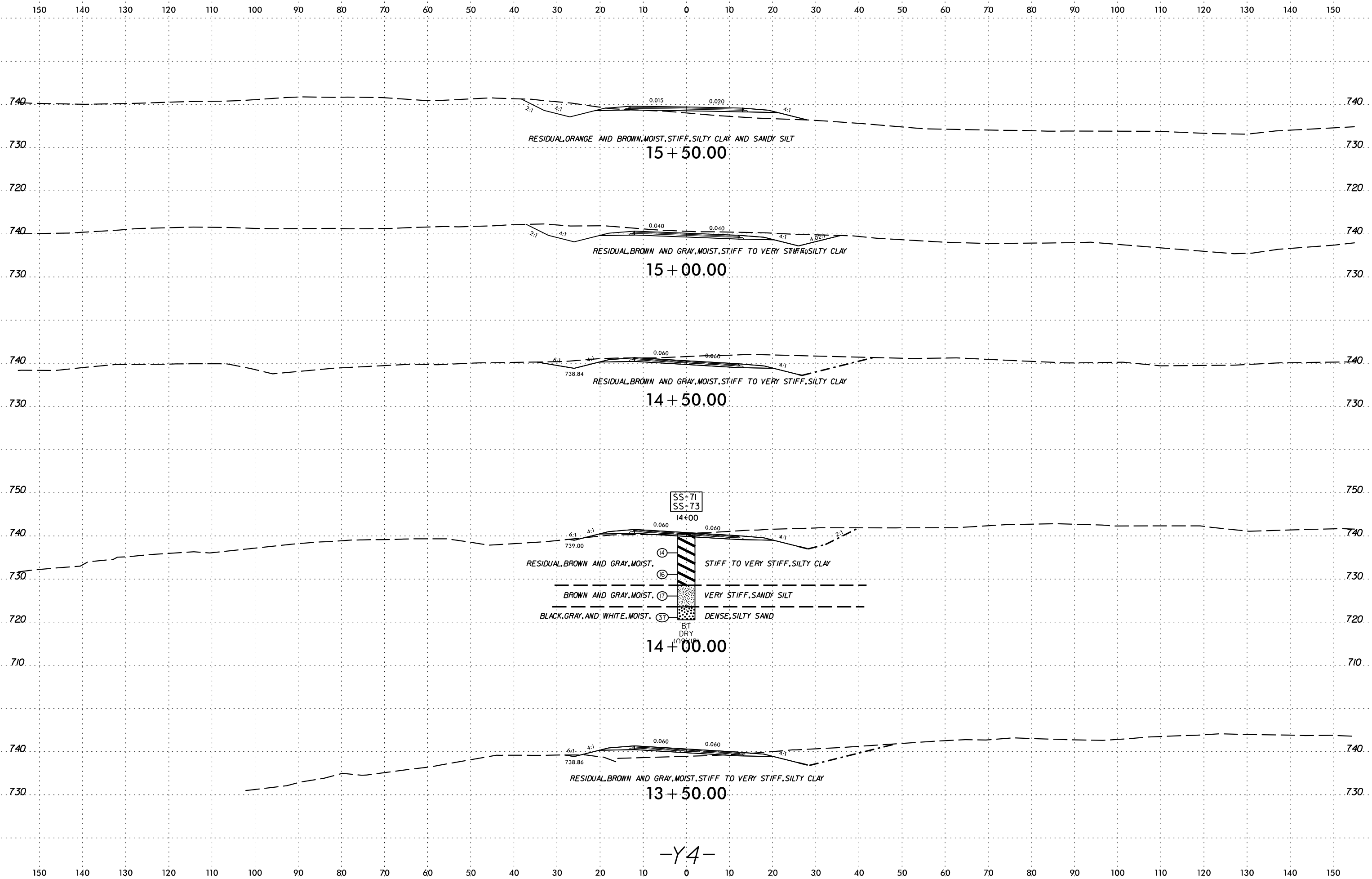
RESIDUAL BROWN, MOIST, STIFF, MODERATELY PLASTIC, SILTY CLAY

4:1

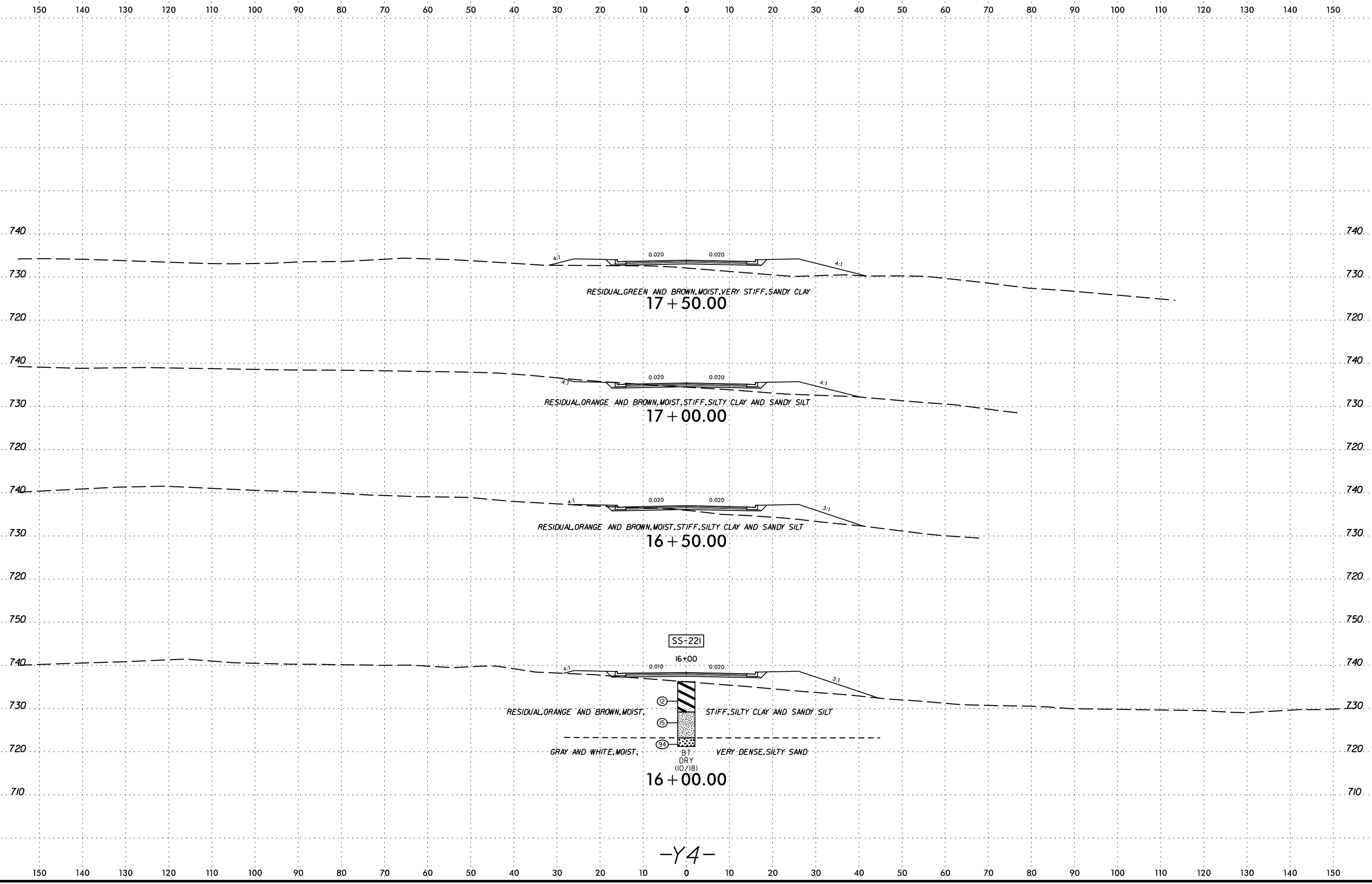
4:1

-Y2-

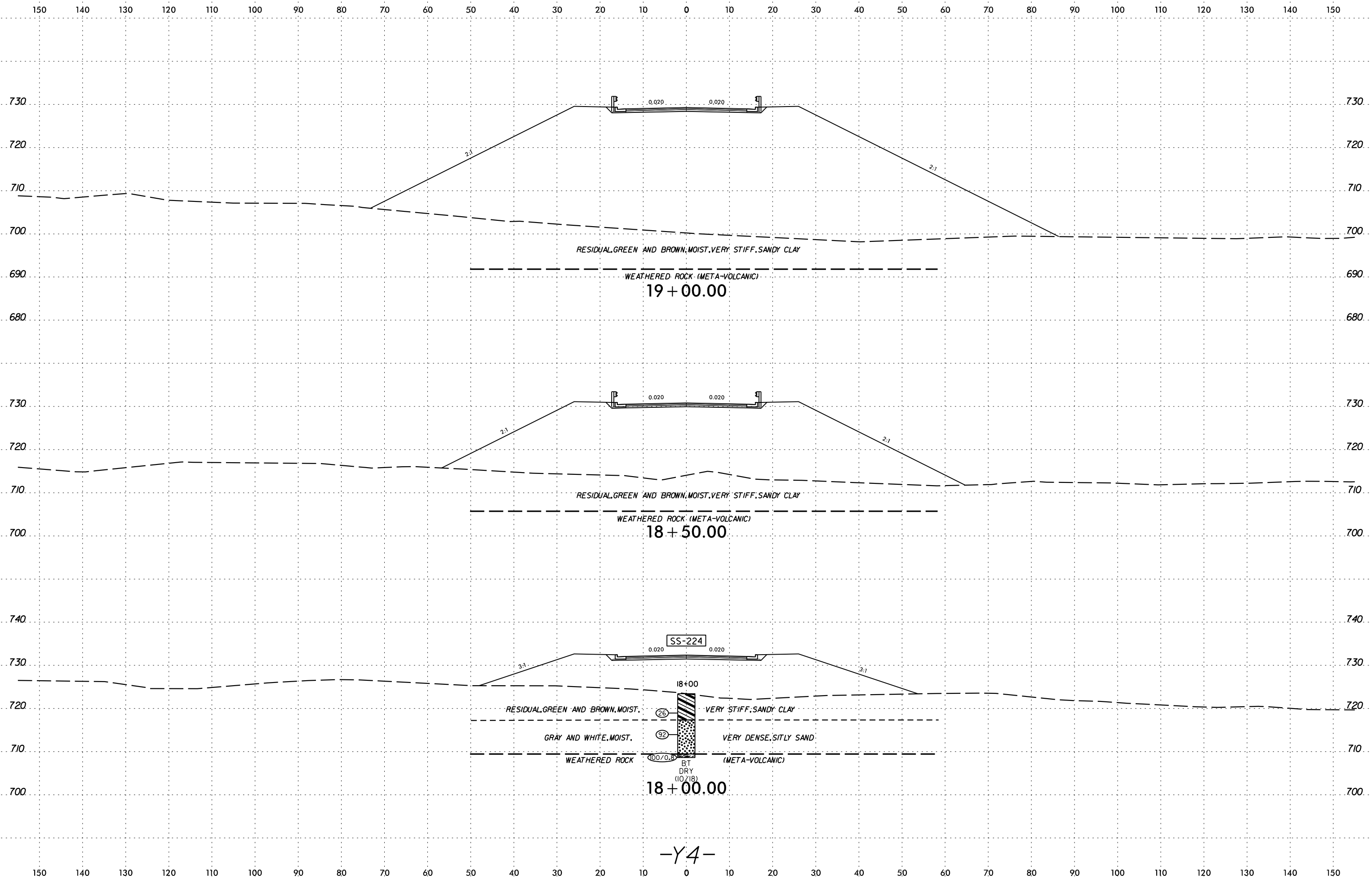
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y4-

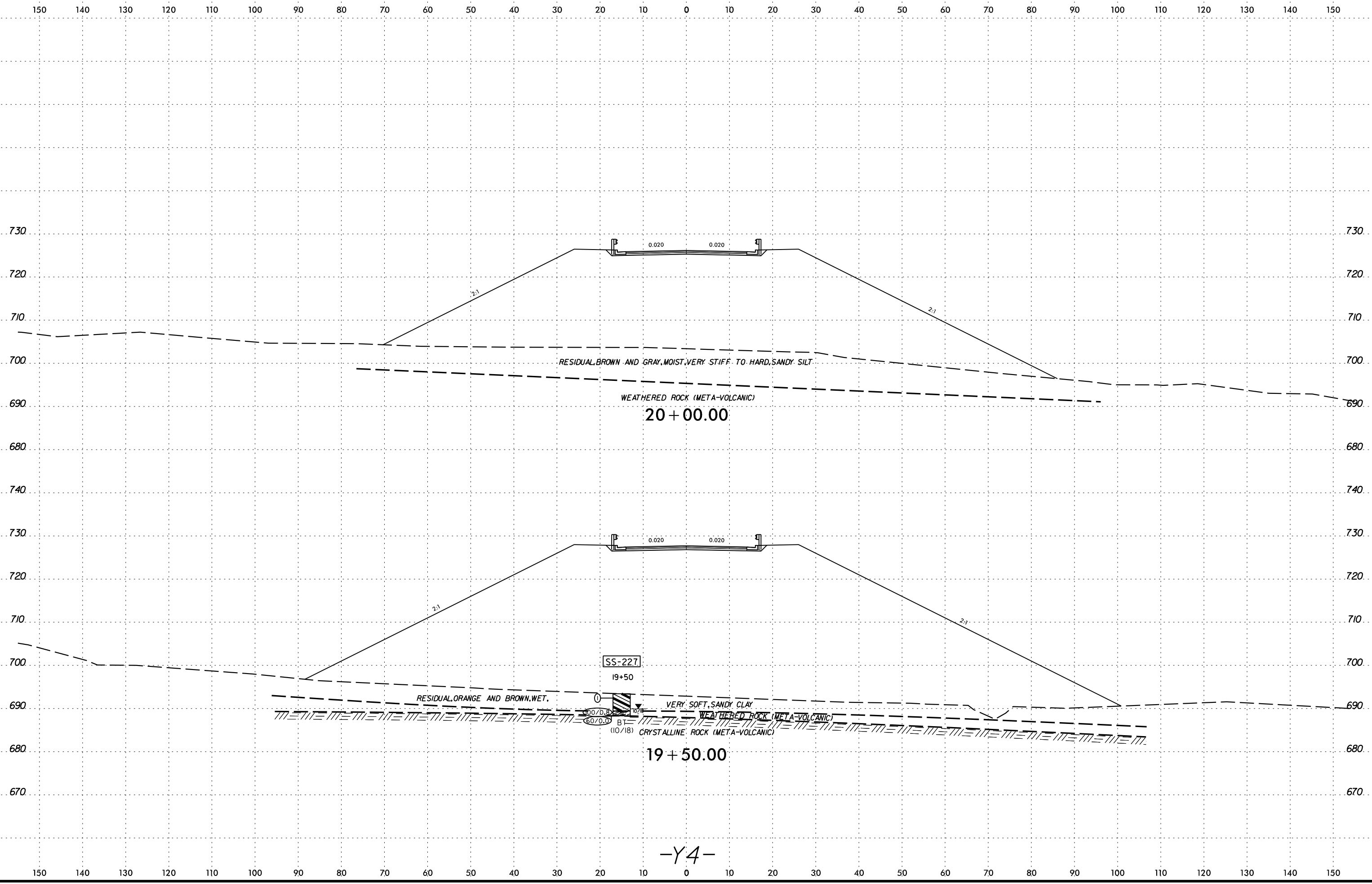


-Y4-

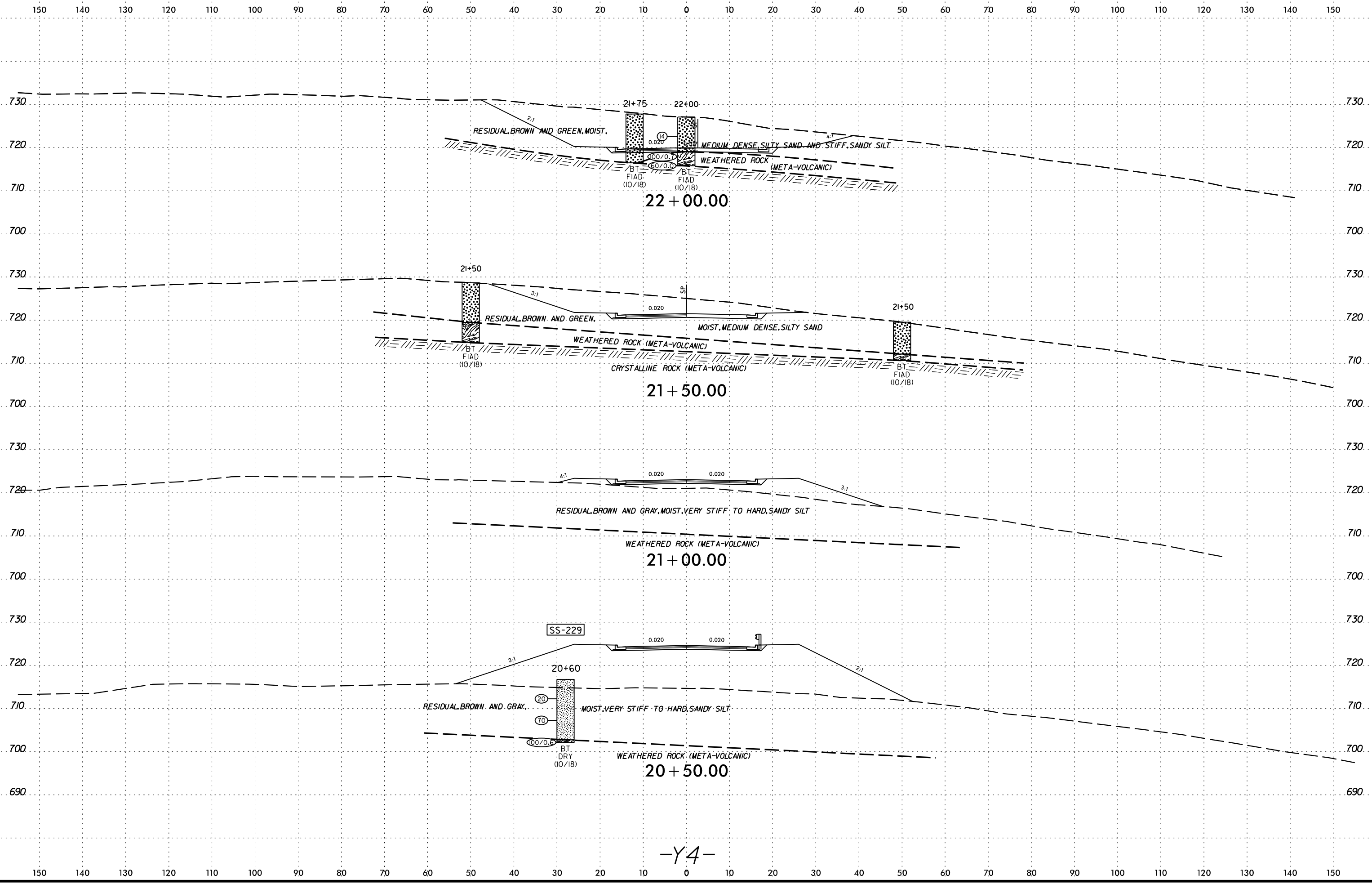


8:23:25 AM R:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SSC\R5737_GEO_RDWY_XSI_V4.dgn

-Y4-

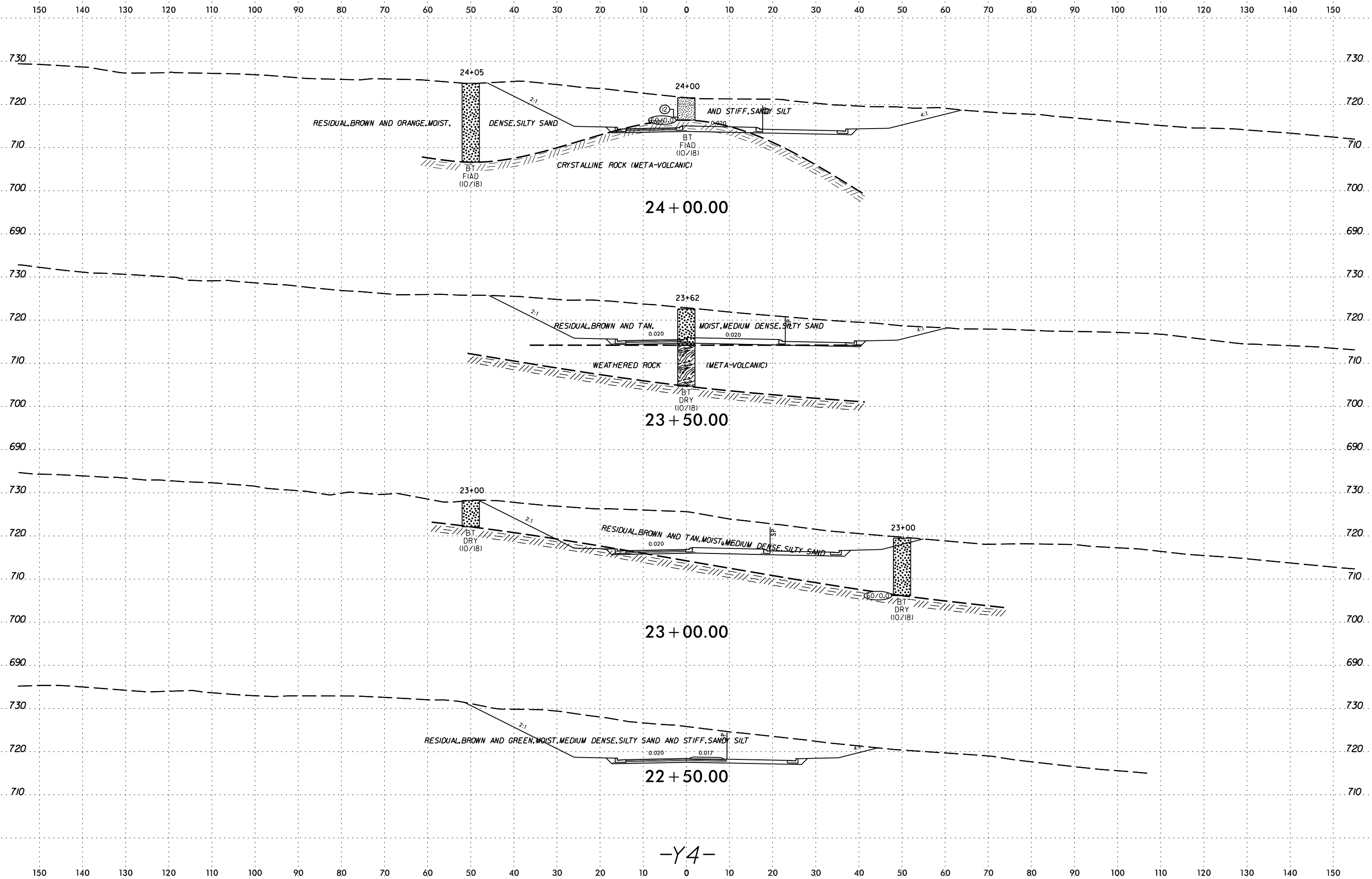


-Y4-

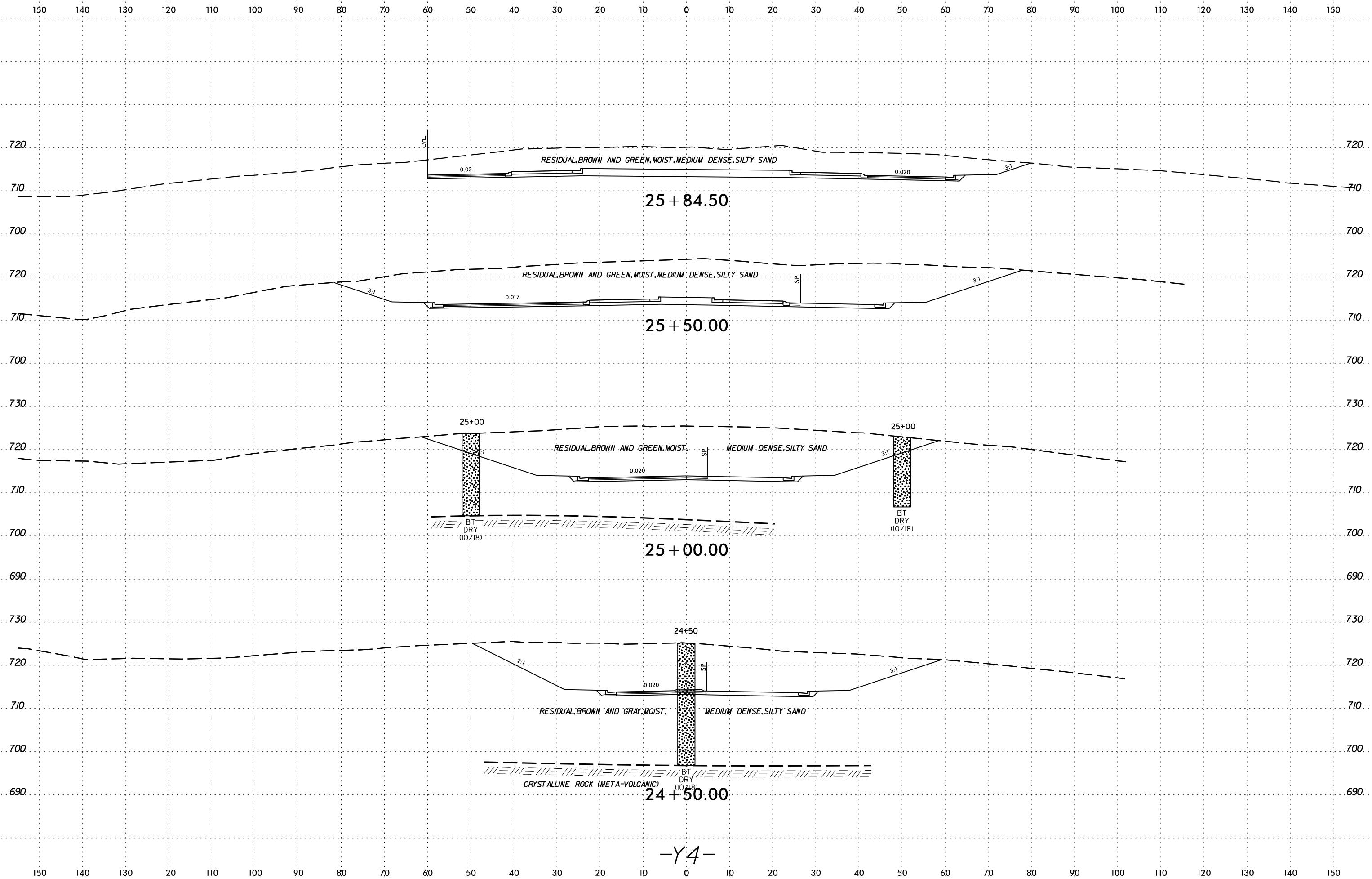


-Y4-

6/23/16



B:\Projects\18-51.04 R5737_GEO_RDWY\CADD_GEO\TECH\SEC\R5737_GEO_RDWY_XSI_V4.dgn



SOIL TEST RESULTS

Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
S-4	-L-	26+00	CL	0.0 - 6.0	A-7-5 (15)	52	18	4.0	35.2	45.6	15.2	0	100	100	73	25.6	--
S-3	-L-	33+50	CL	0.0 - 6.0	A-4 (1)	31	9	32.4	30.7	22.3	14.6	1	94	72	41	21.3	--
S-1	-L-	38+50	CL	2.4 - 3.5	A-7-6 (14)	42	23	8.9	30.1	25.1	35.9	0	100	96	69	20.3	--
S-2	-L-	38+50	CL	4.8 - 5.5	A-4 (0)	24	0	20.7	52.0	17.8	9.5	0	100	91	37	11.0	--
SS-87	-L-	43+50	120' RT	3.5 - 5.0	A-4 (1)	25	9	28.0	31.5	22.1	18.4	4	92	74	43	7.9	--
SS-75	-L-	49+50	120' RT	3.5 - 5.0	A-6 (6)	40	17	17.7	37.2	24.8	20.3	0	100	90	53	17.9	--
SS-77	-L-	49+50	120' RT	13.5 - 15.0	A-4 (0)	32	4	20.0	47.0	24.3	8.7	0	100	90	43	14.0	--
SS-215	-L-	50+00	48' RT	3.5 - 5.0	A-4 (0)	30	8	35.0	30.9	2.0	32.1	0	96	70	40		--
SS-248	-L-	52+00	52' RT	13.5 - 15.0	A-7-6 (12)	41	22	14.8	29.0	27.8	28.4	0	97	87	64		--
SS-175	-L-	53+50	60' LT	3.5 - 5.0	A-6 (4)	34	18	26.0	31.3	24.2	18.5	2	89	73	44	20.3	--
SS-177	-L-	53+50	60' LT	13.5 - 15.0	A-4 (0)	24	0	18.8	51.2	23.6	6.4	0	100	92	40	10.9	--
SS-252	-L-	54+00	53' RT	3.5 - 5.0	A-4 (1)	30	10	28.4	32.7	22.0	16.9	0	95	76	44	9.3	--
SS-254	-L-	54+00	53' RT	13.5 - 15.0	A-7-6 (26)	55	31	3.9	23.4	28.8	43.9	0	100	98	80	29.5	--
SS-165	-L-	54+50	62' LT	3.5 - 5.0	A-4 (0)	29	4	18.2	48.8	24.0	9.0	0	100	90	44	10.0	--
SS-167	-L-	54+50	62' LT	13.5 - 15.0	A-2-4 (0)	25	4	40.0	34.2	18.8	7.0	0	93	66	31	6.3	--
SS-158	-L-	55+18	65' LT	8.5 - 10.0	A-4 (0)	34	6	39.5	26.7	23.2	10.6	0	100	70	40	14.6	--
SS-160	-L-	55+18	65' LT	18.5 - 20.0	A-4 (0)	28	4	22.4	43.0	27.7	6.9	0	99	88	44	11.5	--
SS-257	-L-	56+06	46' RT	18.5 - 20.0	A-7-6 (65)	98	69	7.1	12.2	14.2	66.5	0	100	96	84	37.6	--
SS-132	-L-	56+50	48' LT	3.5 - 5.0	A-7-6 (10)	41	24	20.6	25.5	20.2	33.7	1	91	78	55	19.9	--
SS-133	-L-	56+50	48' LT	8.5 - 10.0	A-7-6 (17)	51	30	11.9	31.7	25.4	31.0	0	100	93	64	26.0	--
SS-256	-L-	57+00	44' RT	3.5 - 5.0	A-4 (0)	28	9	35.8	32.9	20.0	11.3	0	98	72	38	9.8	--
SS-131	-L-	57+50	48' LT	3.5 - 5.0	A-6 (4)	37	13	18.5	37.0	24.7	19.8	1	92	81	51	16.6	--
SS-124	-L-	59+50	48' LT	3.5 - 5.0	A-4 (0)	22	0	17.8	51.3	24.8	6.1	0	100	91	42	21.1	--
SS-251	-L-	60+92	44' RT	3.5 - 5.0	A-2-4 (0)	23	NP	53.5	26.1	9.6	10.8	1	90	52	22	8.1	--
SS-213	-L-	62+13	CL	8.5 - 10.0	A-7-6 (41)	68	42	2.9	15.8	35.0	46.3	0	100	98	88	36.8	--
SS-214	-L-	62+13	CL	18.5 - 20.0	A-4 (0)	29	2	6.7	55.6	27.0	10.7	0	100	98	52	14.3	--
SS-197	-L-	62+13	CL	3.5 - 5.0	A-6 (9)	40	21	14.6	36.1	24.8	24.5	0	96	88	56	18.9	--
SS-199	-L-	62+13	CL	13.5 - 15.0	A-4 (0)	29	0	7.2	53.4	25.7	13.7	0	100	98	51	12.7	--
SS-201	-L-	62+13	CL	23.5 - 25.0	A-1-b (0)	21	0	54.0	28.4	10.7	6.9	3	82	49	18	4.8	--
SS-115	-L-	63+00	51' LT	3.5 - 5	A-6 (6)	34	18	18.3	37.5	24.9	19.3	1	96	86	51	37.6	--
SS-117	-L-	63+00	51' LT	13.5 - 15.0	A-6 (6)	31	16	20.1	26.5	25.5	27.9	1	94	80	56	28.1	--
SS-120	-L-	63+00	51' LT	28.5 - 30.0	A-4 (0)	35	6	27.6	42.8	23.6	6.0	0	98	82	38	38.6	--
SS-107	-L-	64+00	48' LT	3.5 - 5.0	A-6 (3)	34	15	20.7	38.7	23.2	17.4	1	94	82	46	29.8	--
SS-110	-L-	64+00	48' LT	18.5 - 20.0	A-7-6 (11)	43	26	17.8	24.8	24.4	33.0	2	90	78	57	34.7	--
SS-111	-L-	64+00	48' LT	23.5 - 25.0	A-7-6 (50)	84	57	5.2	19.1	19.0	56.7	1	99	96	80	55.3	--
SS-259	-L-	64+00	43' RT	3.5 - 5.0	A-4 (1)	32	10	28.7	36.6	19.7	15.0	3	90	73	39		--
SS-260	-L-	64+00	43' RT	23.5 - 25.0	A-4 (0)	20	NP	19.6	37.5	26.3	16.6	1	95	82	50		--
SS-137	-L-	64+89	51' LT	3.5 - 5.0	A-7-6 (12)	44	24	12.8	33.8	28.4	25.0	1	98	90	61	23.9	--
SS-138	-L-	64+89	51' LT	8.5 - 10.0	A-7-6 (11)	45	24	16.5	30.1	23.7	29.7	2	95	84	57	22.7	--
SS-140	-L-	64+89	51' LT	18.5 - 20.0	A-4 (0)	31	7	20.7	48.0	22.1	9.2	0	97	88	39	18.7	--
SS-145	-L-	66+00	52' LT	3.5 - 5.0	A-4 (2)	34	6	9.6	48.6	33.1	8.7	0	100	97	56	14.3	--
SS-194	-L-	67+00	48' RT	3.5 - 5.0	A-2-6 (0)	38	17	49.6	19.2	17.0	14.2	14	73	43	26	13.1	--
S-7	-L-	72+50	CL	0.0 - 4.8	A-6 (4)	36	17	28.3	28.4	20.5	22.8	1	88	71	44	17.2	--
S-8	-L-	72+50	CL	4.8 - 6.0	A-7-6 (29)	59	37	4.7	25.9	20.4	49.0	0	100	98	76	34.2	--
SS-209	-L-	72+50	67' LT	3.5 - 5.0	A-7-6 (26)	58	33	5.8	23.3	22.9	48.0	0	100	97	76	30.0	--
SS-208	-L-	73+50	CL	3.5 - 5.0	A-4 (1)	33	6	16.2	46.5	28.6	8.7	0	100	94	47	16.3	--
S-5	-L-	75+00	CL	0.0 - 6.0	A-1-b (0)	24	0	56.2	24.9	13.3	5.6	1	82	47	19	11.3	--
SS-106	-L-	77+50	75' LT	3.5 - 5.0	A-2-4 (0)	32	5	36.8	30.8	23.6	8.8	0	89	65	35	12.2	--
S-6	-L-	80+00	CL	1.0 - 6.0	A-7-6 (17)	54	30	18.6	20.6	24.9	35.9	1	96	83	63	30.8	--

SOIL TEST RESULTS

Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
SS-233	-Y1-	14+00	CL	3.5 - 5.0	A-7-6 (27)	57	35	7.4	25.2	27.0	40.4	0	100	95	76	--	
SS-235	-Y1-	14+00	CL	13.5 - 15.0	A-7-5 (8)	45	13	9.8	38.4	34.4	17.4	0	100	95	65	--	
SS-52	-Y1-	15+50	CL	3.6 - 5.1	A-7-5 (32)	71	40	9.6	19.8	27.9	42.7	0	100	95	75	30.9	
SS-54	-Y1-	15+50	CL	13.6 - 15.1	A-4 (2)	36	10	13.7	49.1	24.1	13.1	0	100	95	48	10.5	
SS-9	-Y1-	19+00	CL	0.0 - 1.5	A-6 (6)	39	21	24.7	27.9	19.8	27.6	1	85	71	46	13.5	
SS-10	-Y1-	19+00	CL	2.0 - 3.5	A-7-6 (13)	49	30	19.6	21.5	19.8	39.1	1	87	74	56	19.0	
SS-11	-Y1-	19+00	CL	4 - 5.5	A-7-6 (24)	58	38	6.6	28.9	22.5	42.0	6	91	88	67	22.1	
SS-14	-Y1-	19+00	CL	13.5 - 15.0	A-7-5 (6)	42	11	5.6	45.7	35.8	12.9	0	100	98	63	18.1	
SS-20	-Y1-	21+00	CL	0.0 - 1.5	A-6 (3)	28	12	18.5	32.8	25.5	23.2	3	92	79	53	12.2	
SS-21	-Y1-	21+00	CL	2.0 - 3.5	A-7-6 (16)	46	28	10.1	33.4	25.8	30.7	0	100	94	65	18.4	
SS-25	-Y1-	21+00	CL	13.5 - 15.0	A-4 (0)	20	0	20.9	47.7	22.3	9.1	0	100	90	42	7.0	
SS-36	-Y1-	22+50	40' RT	3.5 - 5.0	A-7-6 (20)	50	32	12.1	26.0	18.4	43.5	0	98	90	68	19.2	
SS-32	-Y2-	11+00	CL	3.4 - 4.9	A-7-6 (12)	44	25	9.7	39.8	23.9	26.6	0	100	97	59	17.0	
SS-46	-Y3-	30+50	20' RT	8.6 - 10.1	A-4 (1)	26	10	28.4	36.9	23.2	11.5	0	99	81	43	10.8	
SS-41	-Y3-	32+00	30' LT	3.6 - 5.1	A-6 (4)	30	16	24.8	37.7	19.2	18.3	0	99	85	46	8.6	
SS-44	-Y3-	32+00	30' LT	18.6 - 20.1	A-2-4 (0)	27	7	35.6	30.9	24.4	9.1	36	54	40	22	7.4	
SS-71	-Y4-	14+00	CL	3.5 - 5.0	A-7-6 (14)	46	22	6.4	36.2	29.5	27.9	0	100	97	68	14.4	
SS-73	-Y4-	14+00	CL	13.5 - 15.0	A-4 (0)	32	3	12.9	48.7	28.6	9.8	0	100	94	50	14.5	
SS-221	-Y4-	16+00	CL	3.5 - 5.0	A-7-6 (11)	42	23	20.8	23.1	21.3	34.8	1	97	83	59	--	
SS-224	-Y4-	18+00	CL	3.5 - 5.0	A-6 (4)	29	13	12.6	45.3	20.6	21.5	0	100	94	52	--	
SS-227	-Y4-	19+50	15' LT	0.0 - 1.5	A-6 (10)	38	17	12.4	28.4	33.4	25.8	0	99	91	67	--	
SS-229	-Y4-	20+60	28' LT	3.5 - 5.0	A-4 (2)	30	9	17.4	44.3	21.3	17.0	0	100	93	48	--	
SS-29	-RPA-	22+00	30' RT	8.6 - 10.1	A-4 (2)	35	8	10.8	51.5	25.5	12.2	0	100	97	50	28.9	
SS-192	-RPB-	12+30	8' RT	3.5 - 5.0	A-4 (0)	23	0	12.0	50.7	28.6	8.7	0	100	95	51	8.0	
SS-188	-RPB-	13+30	15' LT	3.5 - 5.0	A-4 (0)	23	0	15.5	46.0	30.8	7.7	0	100	92	51	7.1	
SS-184	-RPB-	14+30	14' LT	3.5 - 5.0	A-7-6 (19)	51	26	6.3	28.0	31.4	34.3	0	100	98	73	30.5	
SS-185	-RPB-	14+30	14' LT	8.5 - 10.0	A-4 (3)	38	9	9.7	49.4	27.9	13.0	0	100	97	52	15.8	
S-107	-RPB-	15+30	30' LT	0.0 - 1.5	A-4 (1)	26	8	11.9	40.7	31.0	16.4	9	82	78	49	10.6	
SS-103	-RPB-	15+30	30' LT	3.5 - 10.0	A-7-6 (15)	47	27	13.2	30.5	29.6	26.7	0	99	93	64	27.5	
SS-105	-RPB-	15+30	30' LT	13.5 - 15.0	A-4 (0)	30	4	19.2	48.8	22.6	9.4	0	100	90	43	15.4	
SS-99	-RPB-	16+30	35' LT	3.5 - 5.0	A-6 (3)	33	17	31.7	26.9	12.7	28.7	1	88	67	41	18.6	
SS-100	-RPB-	16+30	35' LT	8.5 - 10.0	A-7-6 (11)	45	19	7.7	39.7	33.4	19.2	0	100	97	65	25.2	
SS-95	-RPB-	16+80	30' LT	3.5 - 5.0	A-6 (12)	40	21	8.5	36.6	32.4	22.5	0	100	96	65	23.0	
SS-153	-RPB-	20+04	14' LT	3.5 - 5.0	A-6 (5)	32	17	20.3	31.5	20.1	28.1	4	93	81	51	17.6	
SS-155	-RPB-	20+04	14' LT	13.5 - 15.0	A-4 (1)	30	7	16.8	46.7	19.3	17.2	0	99	92	45	15.9	
SS-1	-RPB-	26+00	60' LT	3.5 - 5.0	A-2-4 (0)	29	7	38.2	29.2	17.2	15.4	0	86	62	33	5.7	
SS-7	-RPB-	26+00	60' LT	18.5 - 20.0	A-2-6 (0)	30	12	46.2	24.7	13.5	15.6	5	79	51	27	7.4	
SS-97	-RPB-	16+80	30' LT	13.5 - 15.0	A-4 (2)	31	8	13.2	47.2	31.1	8.5	0	100	94	52	22.7	
SS-66	-RPC-	24+00	40' RT	3.5 - 5.0	A-7-6 (11)	41	22	11.6	32.2	26.4	29.8	3	96	91	61	20.0	
SS-68	-RPC-	24+00	40' RT	13.5 - 15.0	A-4 (0)	21	0	22.1	50.7	20.9	6.3	0	99	91	36	7.2	
SS-59	-RPC-	26+00	85' RT	3.5 - 5.0	A-6 (8)	35	19	11.6	37.0	25.1	26.3	0	100	94	60	17.1	
SS-61	-RPC-	26+00	85' RT	13.5 - 15.0	A-4 (0)	21	0	21.7	46.2	23.9	8.2	0	99	87	42	6.1	
SS-63	-RPC-	26+00	85' RT	23.5 - 25.0	A-4 (0)	21	0	21.4	48.3	22.9	7.4	0	100	89	41	5.9	
SS-60	-RPC-	26+00	85' RT	8.5 - 10.0	A-6 (8)	35	19	14.8	37.7	27.1	20.4	0	100	92	57	22.1	
SS-48	-RPD-	22+00	30' LT	3.5 - 5.0	A-7-6 (18)	60	35	21.8	17.9	16.0	44.3	1	92	77	58	18.5	
SS-243	-RPD-	19+50	42' LT	3.5 - 5.0	A-6 (3)	35	13	15.1	46.1	20.6	18.2	0	100	93	48	--	
SS-241	-RPD-	15+81	60' LT	3.5 - 5.0	A-6 (13)	37	21	3.8	36.1	27.2	32.9	0	100	99	70	--	