

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.	W-5516	1	48

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	15+50.00 - 141+70.00	4 - 14	15 - 24

CROSS SECTIONS

LINE	STATION	SHEETS
-L-	35+00.00 - 139+50.00	25 - 47

**ROADWAY
SUBSURFACE INVESTIGATION**

COUNTY Rowan
PROJECT DESCRIPTION Old Beatty Ford Road (SR1210) from
West of Bostian Road Intersection to Lentz Road

INVENTORY

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

Z. BRUCE

A. WILDER

B. MASSEY

INVESTIGATED BY M. GRAGG

DRAWN BY T. STIVERS

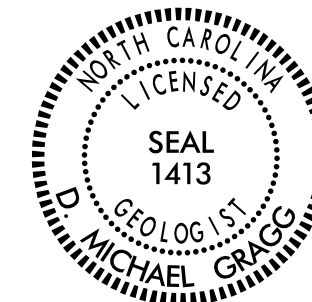
CHECKED BY K. BUSSEY

SUBMITTED BY HDR | ICA

DATE APRIL 2015

REFERENCE: W-5516

PROJECT: 44105



DocuSigned by:
D. Michael Gragg 6/8/2015
SIGNATURE DATE



DocuSigned by:
Kenneth R. Bussey, Jr. 6/8/2015
SIGNATURE DATE

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																																																																																																																																																																																																																																																																					
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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.																																																																																																																																																																																																																																																																																																		
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See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROW PLANS
rev. OCT. 22, 2014

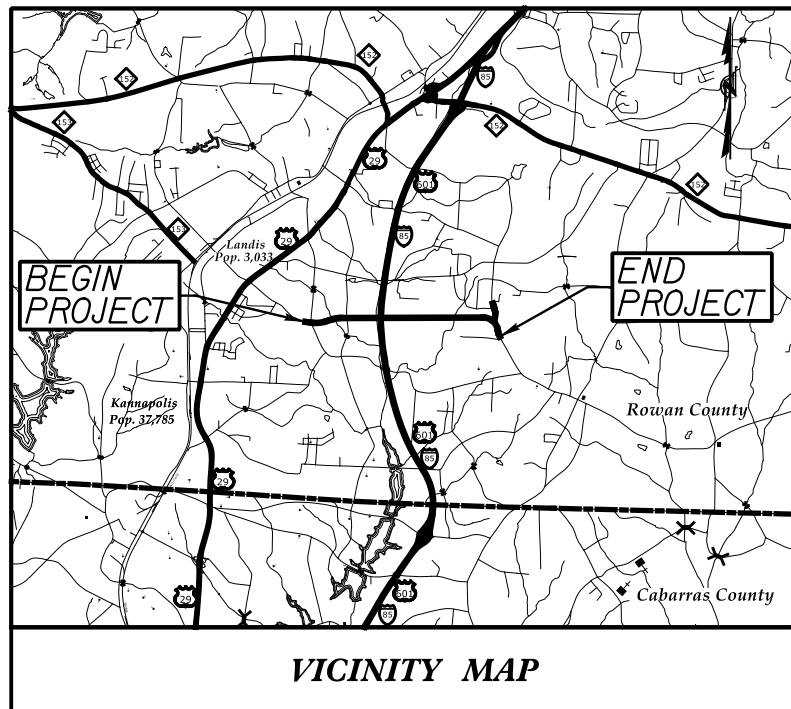
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5516	3	48
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44105.1.FD	HSIP-1221(18)	PE	

ROWAN COUNTY

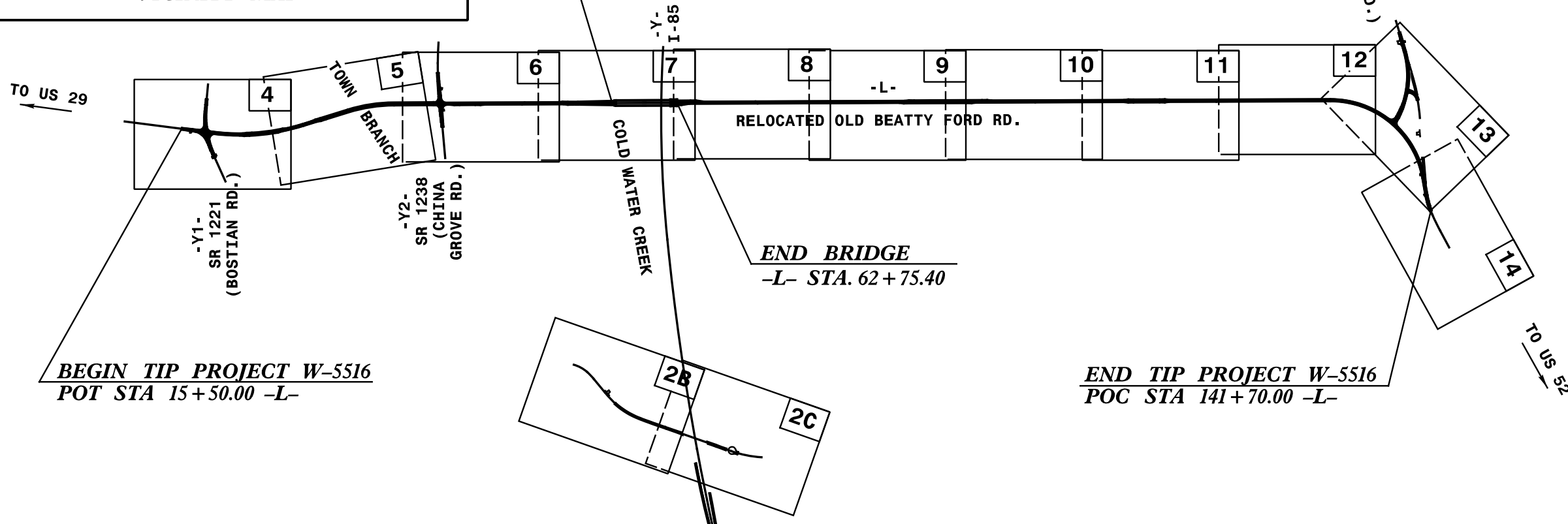
LOCATION: OLD BEATTY FORD ROAD FROM WEST OF BOSTIAN ROAD INTERSECTION TO LENTZ ROAD

TYPE OF WORK: GRADING, PAVING, DRAINAGE, TRAFFIC CONTROL, SIGNING PAVEMENT MARKINGS AND STRUCTURES

TIP PROJECT: W-5516



BEGIN BRIDGE
-L- STA. 57+45.40



END BRIDGE
-L- STA. 62+75.40

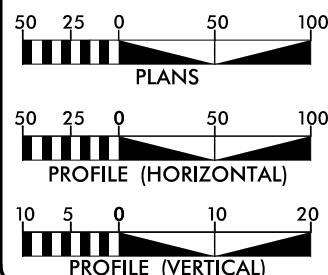
NCDOT CONTACT: BRETT ABERNATHY, PE
DIVISION 9 PROJECT MANAGER

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT =
ADT =
DHV = %
D = %
T = % *
V = 50 MPH
* TTST = DUAL
FUNC CLASS = COLLECTOR REGIONAL
TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT W-5516 = 2.290 MILE
LENGTH STRUCTURE TIP PROJECT W-5516 = 0.100 MILE
TOTAL LENGTH TIP PROJECT W-5516 = 2.390 MILE

Prepared for the North Carolina Department of Transportation in the office of:



2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 16, 2014

LETTING DATE:
SEPTEMBER 15, 2015

DAVID C. WALLER, PE
PROJECT ENGINEER

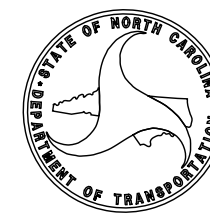
HENRY BARE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.





March 28, 2015

WBS NUMBER: 44105.1.FD1
 TIP NUMBER: W-5516
 F.A. NUMBER: HSIP-1221(18)
 COUNTY: Rowan
 DESCRIPTION: Realignment of Old Beatty Ford Road from West of Bostian Road Intersection to Lentz Road

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

The project is located in southwestern Rowan County, North Carolina. This project consists of the realignment of 2.39 miles of Old Beatty Ford Road (-L-), realignment of 0.11 miles of Bostian Road (-Y1-), realignment of 0.10 miles of China Grove Road (-Y2-), constructing a grade separation over I-85, realignment/reconstruction of 0.17 miles of existing Lentz Road (-Y3-) and demolition/pavement removal of 0.23 miles of existing Old Beatty Ford Road (-SAC_ALN-).

A CME 45 drill rig with an automatic hammer was used for the geotechnical investigation during December 2014 and January 2015. At selected locations standard penetration tests (SPT) were performed and rock core samples extracted for laboratory analysis by HDR | ICA.

The following alignment, totaling 2.39 miles of roadway, was investigated. Profiles and cross sections of this alignment are included within this report.

<u>LINE</u>	<u>STATIONS</u>
-L-	15+50.00 to 141+70.00

AREAS OF SPECIAL GEOTECHNICAL INTEREST

High Plasticity Soils: The following intervals, encountered during the subsurface investigation, possessed soils with plasticity indices in excess of 25.

<u>LINE</u>	<u>STATIONS</u>	<u>OFFSETS</u>
-L-	55+50 to 57+00	LT to CL
-L-	61+00 to 62+50	LT to RT
-L-	71+00 to 74+50	LT to RT
-L-	104+00 to 105+50	LT to RT
-L-	136+50 to 141+70	LT to RT

Wet or Saturated Soils: Soils with natural moisture contents in excess of the liquid limit or excessively high moisture contents were encountered at the following locations:

<u>LINE</u>	<u>STATIONS</u>	<u>OFFSETS</u>
-L-	31+00 to 32+00	LT to RT

-L-	57+00 to 59+00	LT to RT
-L-	61+50 to 62+55	LT to RT
-L-	78+00	LT
-L-	103+50 to 104+50	RT
-L-	108+00 to 108+50	LT to RT

Alluvial Soils: The following locations were found to have very soft to soft alluvial soils.

<u>LINE</u>	<u>STATIONS</u>	<u>OFFSETS</u>
-L-	31+00 to 32+50	LT to RT
-L-	57+00 to 59+50	LT to RT
-L-	107+50 to 108+50	LT to RT

Crystalline Rock above proposed grade: The following locations were found to intercept crystalline rock above the proposed roadway grade.

<u>LINE</u>	<u>STATIONS</u>	<u>OFFSETS</u>
-L-	64+50 to 68+00	LT to RT
-L-	73+50 to 75+50	LT
-L-	75+50 to 77+50	LT to RT
-L-	93+50 to 95+00	LT to RT
-L-	95+50 to 97+50	LT
-L-	103+00 to 105+50	LT

PHYSIOGRAPHY AND GEOLOGY

The project is located in the Piedmont Physiographic Province. The project corridor is comprised of subdivision lots and wooded tracts. The general topography of the site consists of relatively flat hill tops, moderately to steeply sloping hillsides, a relatively narrow floodplain and steep sided secondary drainage courses along or dissecting the proposed -L-, alignment.

Geologically, the project is located within the Charlotte Litho-tectonic Belt (*Geologic Map of North Carolina, 1985; Geologic Map of the Charlotte 1° X 2° Quadrangle, North Carolina and South Carolina*) within units described as felsic metavolcanic rock with intrusive plutonic bodies. The metavolcanic stratigraphic units are considered Late Proterozoic Era while intrusive plutons are considered Silurian/Devonian to Pennsylvanian/Permian. The overlying residual soils are the product of the physical and chemical weathering of these underlying crystalline rocks.

SOIL PROPERTIES

Soils encountered during this investigation are separated into five (5) categories based on origin. The origins consist of roadway embankment, alluvial soils, residual soils, weathered rock, and crystalline rock.

Roadway embankment was encountered along the -L- alignment immediately east of Cold Water Creek and underlying I-85 within borings advanced for the bridge investigation. Materials encountered consist of moist to wet, stiff to very stiff, silty to sandy, tan, brown, orange, gray, black and white, medium plasticity clay with rock fragments (A-7-5, A-7-6) and moist, very dense, tan, gray, black, orange, brown, green, red, white, poorly graded to silty sand with rock fragments (A-1-b). Plasticity indices ranged from 23 to 26 (A-7-5, A-7-6). Penetrated thickness ranged from 4.4 feet to 14.4 feet.

Alluvial soils are present along the existing -L- alignment at Cold Water Creek and at the culvert site, Station 108+15. The alluvial soils thickness is interpreted to range from 4.8 feet to 7.5 feet consisting of moist to saturated,

soft, brown, tan-orange, finely sandy, silty clay (A-7-5) and medium stiff, tan, brown, black, medium stiff finely sandy silt (A-4). A plasticity index range of 4 to 26 was reported for the alluvial soils.

Residual soils are present along and throughout the proposed -L- alignment and are derived from the weathering of the underlying metamorphic and plutonic rock. Typically residual soils were recognized at the surface and penetrated to total boring depth or to interception of weathered rock. In only two (2) borings were residual soils overlain by roadway embankment or alluvium. A large portion of the residual soils consisted of dry to moist, stiff to hard, tan-orange-red, black, gray, white, brown, slightly micaceous, saprolitic, finely to coarsely sandy silt with some rock fragments (A-4). Less frequent residual soils consisted of dry to wet, stiff to very stiff, tan, white, gray, orange, tan, green, red, medium to high plasticity, silty clay (A-7-5 and A-7-6) and dry to moist, medium dense to dense, tan, gray, black, orange, yellow-white, saprolitic, fine to coarse grain silty sand (A-2-4). Limited strata consisting of dry, very dense, white, green and tan, clayey rock fragments and/or sand (A-2-6) and dry, very stiff, saprolitic sandy, silty clay (A-6) were reported. The plasticity indices for residual soils ranged from non-plastic to 9 (A-4, A-2-4), 13 to 29 (A-7-5, A-7-6) and 12 to 13 (A-2-6, A-6).

Weathered rock, determined by SPT, was encountered throughout the proposed -L- alignment, with the exception of intervals Station 77+00 to Station 86+00 and Station 117+00 to the end of project, at elevations ranging from 786.9 feet to 688.6 feet (MSL) however lower elevations at the top of weathered rock were encountered beneath the proposed bridge.. The weathered rock consists of metatuff (metavolcanic rock) or granite. Isolated weathered rock seams were encountered within and surrounded by residual soils between elevations 771.2 feet and 697.6 feet (MSL) immediately east of I-85 and extending 2000 feet further east.

Advanced borings intercepted crystalline rock throughout the proposed -L- alignment at elevations ranging from 783.2 feet to 695.7 feet (MSL). Advanced borings suggest crystalline rock will be encountered above grade as described in the Areas of Special Geotechnical Interest discussed above. Where cored crystalline consists of slight to moderately weathered granite containing thin to thick seams of severely to completely weathered granite or moderate to moderately severe weathered metatuff with seams of severely to very severely weathered metatuff. Discontinuity measurements of 0°-20°, 30°-40° and 60°-90° and very close to close spacing were reported.

GROUNDWATER

Groundwater level measurements were performed within forty one (41) advanced borings where dry conditions were recorded immediately after drilling, after a 24 hour stabilization period or both where borehole conditions allowed. Attempts to acquire 24 hour measurements were thwarted by collapse of the boreholes therefore not allowing passage to the final boring depths. Four (4) boring measurements recorded elevation levels of 725.8 feet (L_7300), 757.9 (L_7500), 754.9 feet (L_8905_L) and 759.7 feet (L_10200_L) after the stabilization period. Twenty four (24) hour measurements, from five (5) borings advanced during the structure subsurface investigation for the bridge over Cold Water Creek, recorded an elevation range of 658.2 feet to 653.9 feet (MSL). This data as well as the bridge subsurface interpretation within the Cold Water Creek floodplain is included to clarify and enhance an interval where centerline profile boring information was limited.

Prepared by,



DocuSigned by:
Kenneth R. Bussey, Jr.
22A188C7B3D7442...

6/8/2015

Kenneth R. Bussey, Jr., PE
Project Engineer

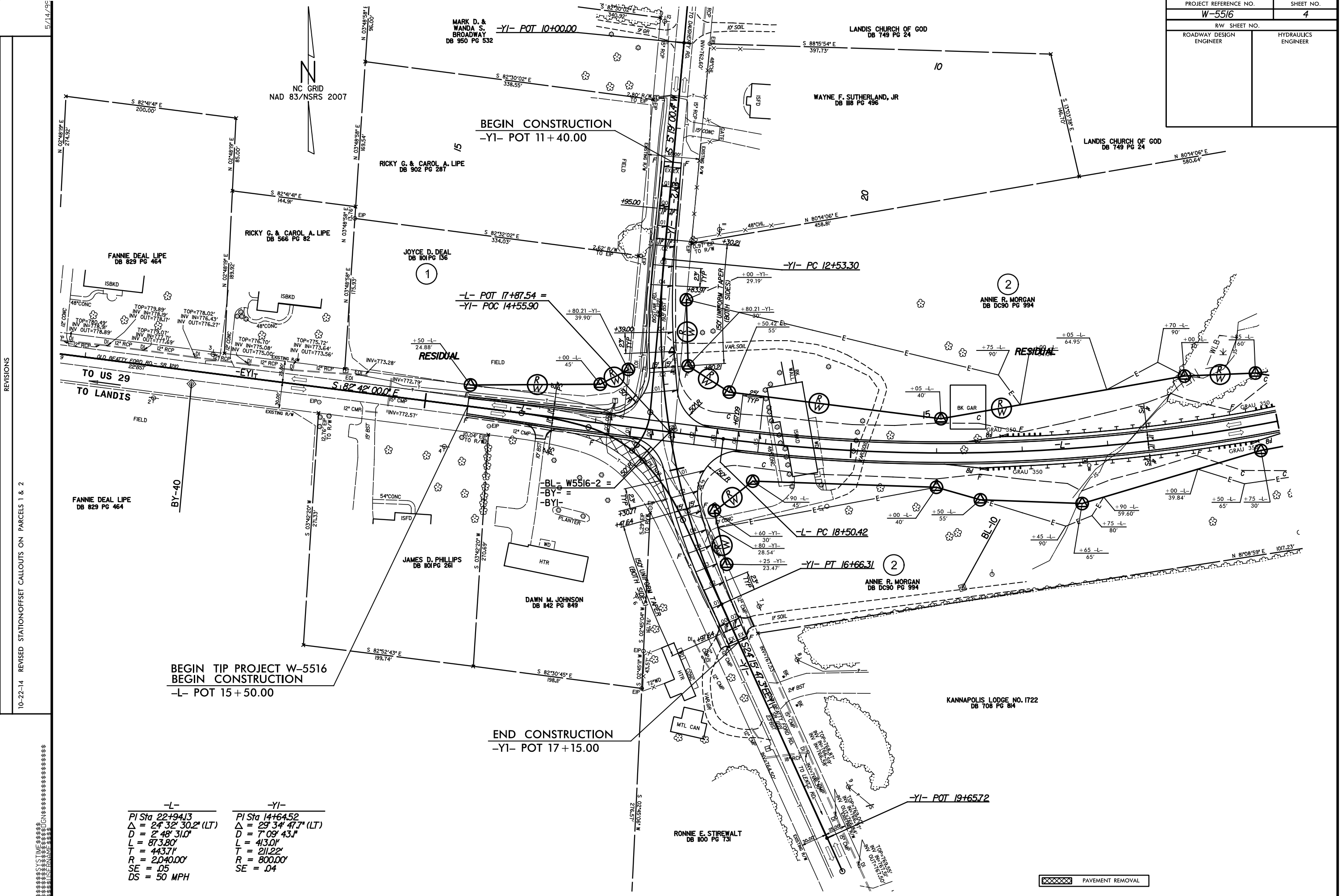


DocuSigned by:
D. Michael Gragg
B67B5CEBC21A460...

6/8/2015

D. Michael Gragg, LG
Senior Project Geologist

PROJECT REFERENCE NO.		SHEET NO.	
W-5516		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

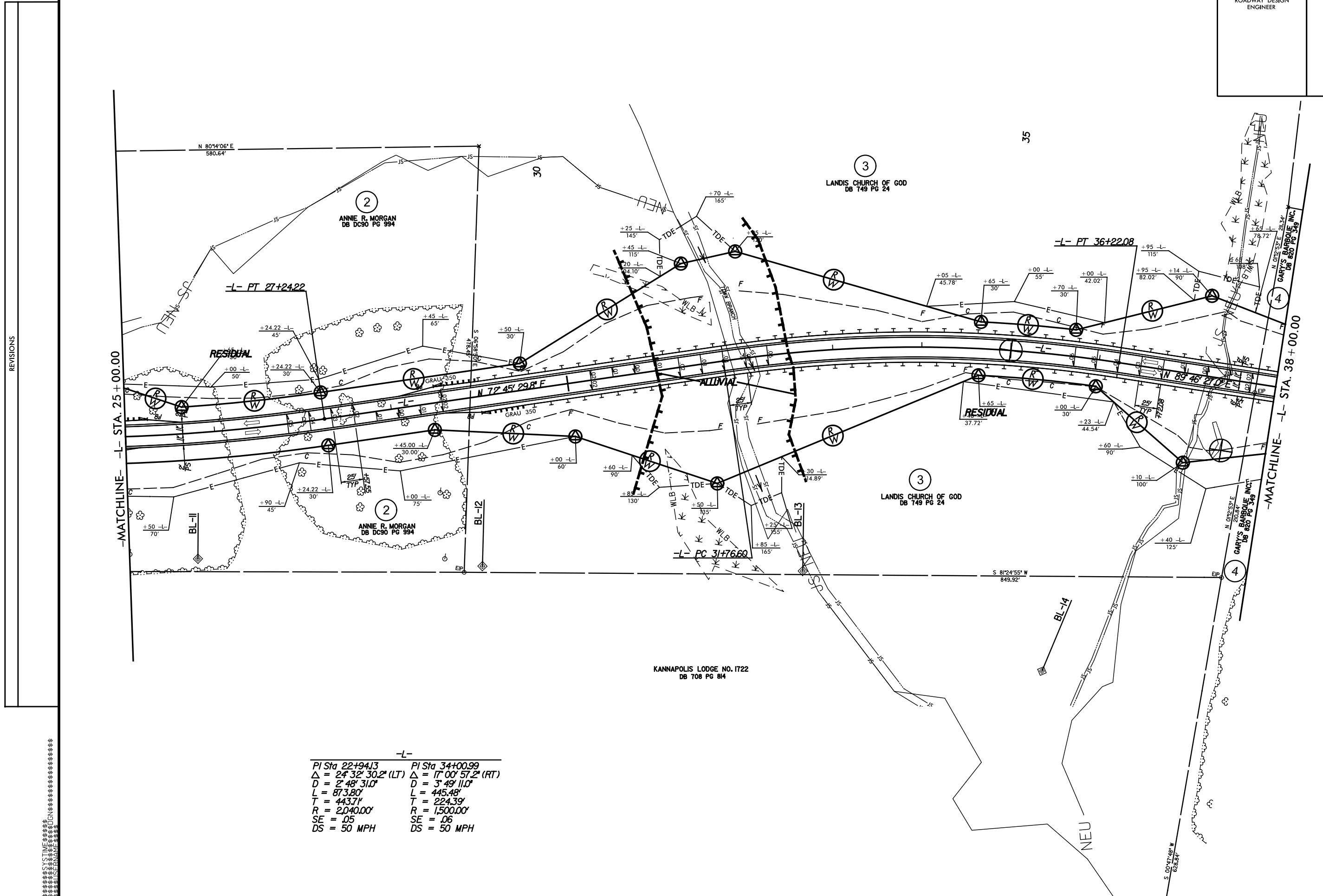


10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCELS 1 & 2

-L-	-YI-
PI Sta 22+94.13	PI Sta 14+64.52
$\Delta = 24^{\circ} 32' 30.2''$ (LT)	$\Delta = 29^{\circ} 34' 47.7''$ (LT)
D = 2' 48' 31.0"	D = 7' 09' 43.1"
L = 873.80'	L = 413.01'
T = 443.71'	T = 211.22'
R = 2,040.00'	R = 800.00'
SE = .05	SE = .04
DS = 50 MPH	

PAVEMENT REMOVAL

PROJECT REFERENCE NO. W-5516		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	



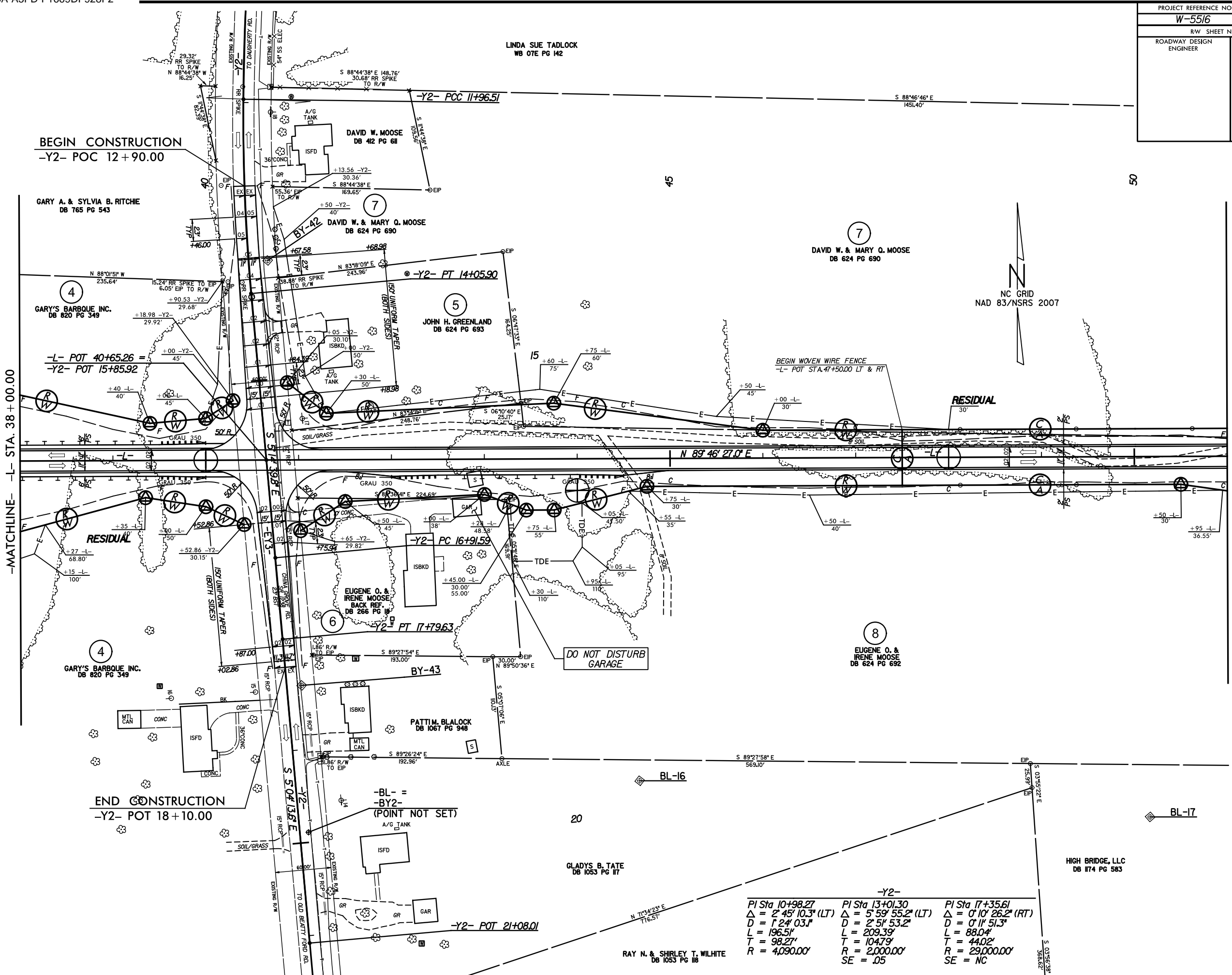
REVISIONS

5/14/20

-L-	
PI Sta 22+94.13	PI Sta 34+00.99
$\Delta = 2^\circ 32' 30.2''$ (LT)	$\Delta = 17^\circ 00' 57.2''$ (RT)
$D = 2^\circ 48' 31.0''$	$D = 3^\circ 49' 11.0''$
$L = 873.80'$	$L = 445.48'$
$T = 443.71'$	$T = 224.39'$
$R = 2,040.00'$	$R = 1,500.00'$
$SE = .05$	$SE = .06$
$DS = 50$ MPH	$DS = 50$ MPH

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PROJECT REFERENCE NO.	SHEET NO.
W-5516	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-Y2-		
PI Sta 10+98.27	PI Sta 13+01.30	PI Sta 17+35.61
$\Delta = 2' 45" 10.3" (LT)$	$\Delta = 5' 59" 55.2" (LT)$	$\Delta = 0' 10" 26.2" (RT)$
$D = 1' 24" 03.1"$	$D = 2' 51" 53.2"$	$D = 0' 11" 51.3"$
$L = 196.51'$	$L = 209.39'$	$L = 88.04'$
$T = 98.27'$	$T = 104.79'$	$T = 44.02'$
$R = 4,090.00'$	$R = 2,000.00'$	$R = 29,000.00'$
	$SE = .05$	$SE = NC$

10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCELS 4, 5, 6 & 8

5/14/20

SYSTEMS DESIGN

5/14/20

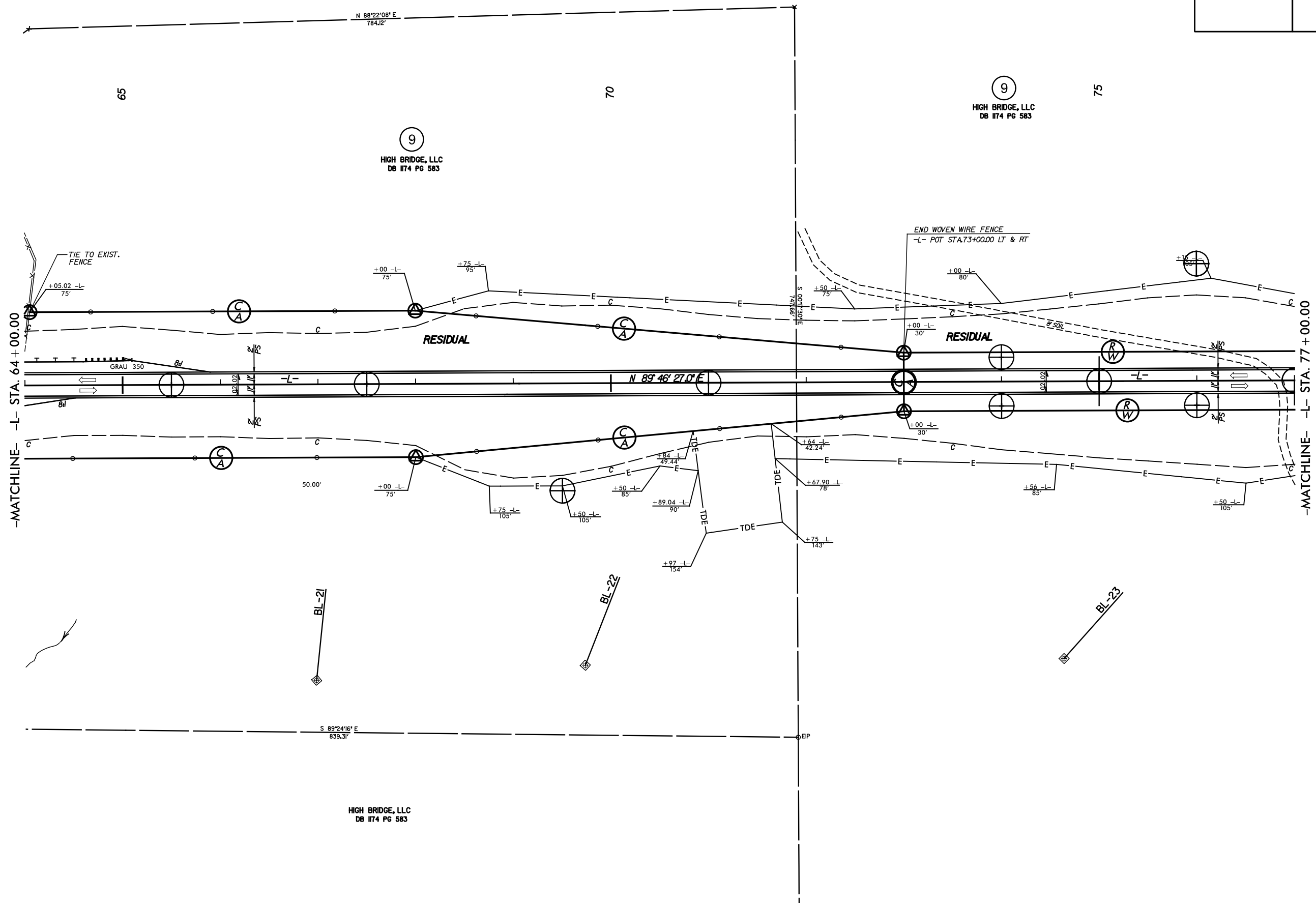
PROJECT REFERENCE NO.		SHEET NO.	
W-5516		8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

HIGH BRIDGE, LLC
DB 174 PG 583

9
HIGH BRIDGE, LLC
DB 174 PG 583

9
HIGH BRIDGE, LLC
DB 174 PG 583

HIGH BRIDGE, LLC
DB 174 PG 583



REVISIONS

10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCEL 9

DATE: 10/22/14
BY: [Signature]
CHECKED: [Signature]
SCALE: AS SHOWN
PROJECT: [Signature]

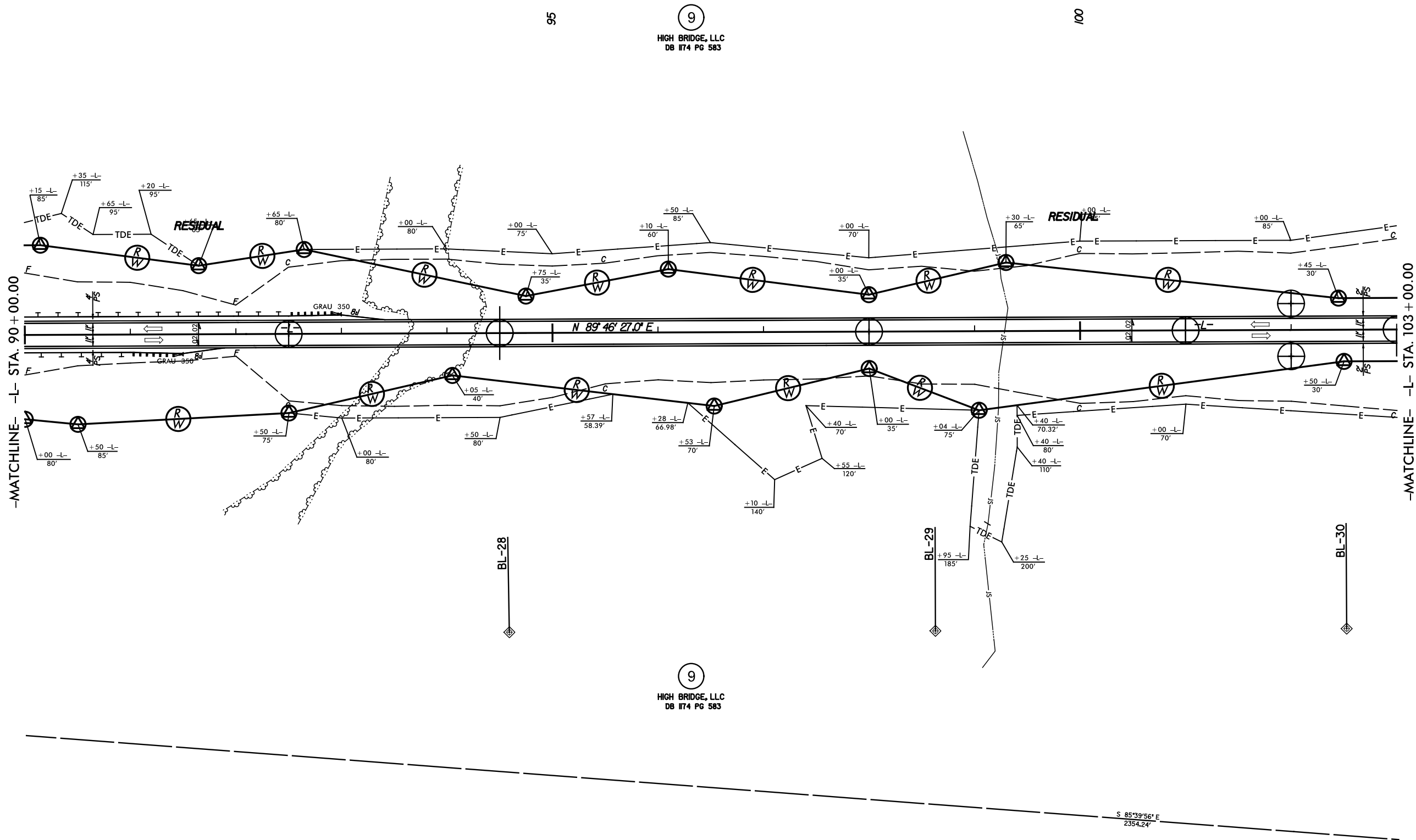
5/14/20

PROJECT REFERENCE NO.		SHEET NO.	
W-5516		10	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

REVISIONS

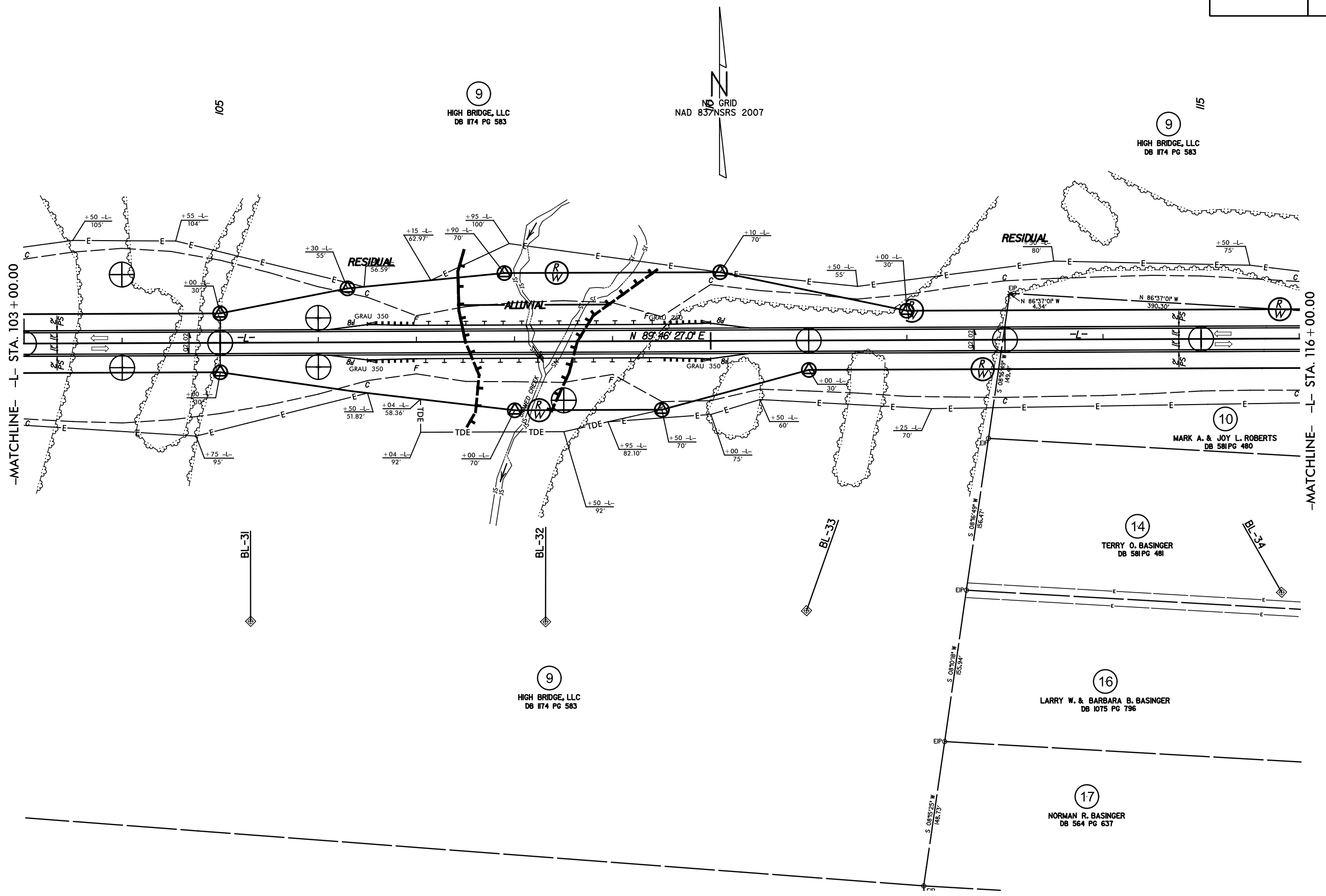
10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCEL 9

SYSTEMS DESIGN CONSULTANTS, INC.



5.14.20

PROJECT REFERENCE NO.		SHEET NO.	
W-5516		11	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	



9
HIGH BRIDGE, LLC
DB 1174 PG 583

NAD 83 NSRS 2007

9
HIGH BRIDGE, LLC
DB 1174 PG 583

10
MARK A. & JOY L. ROBERTS
DB 581 PG 480

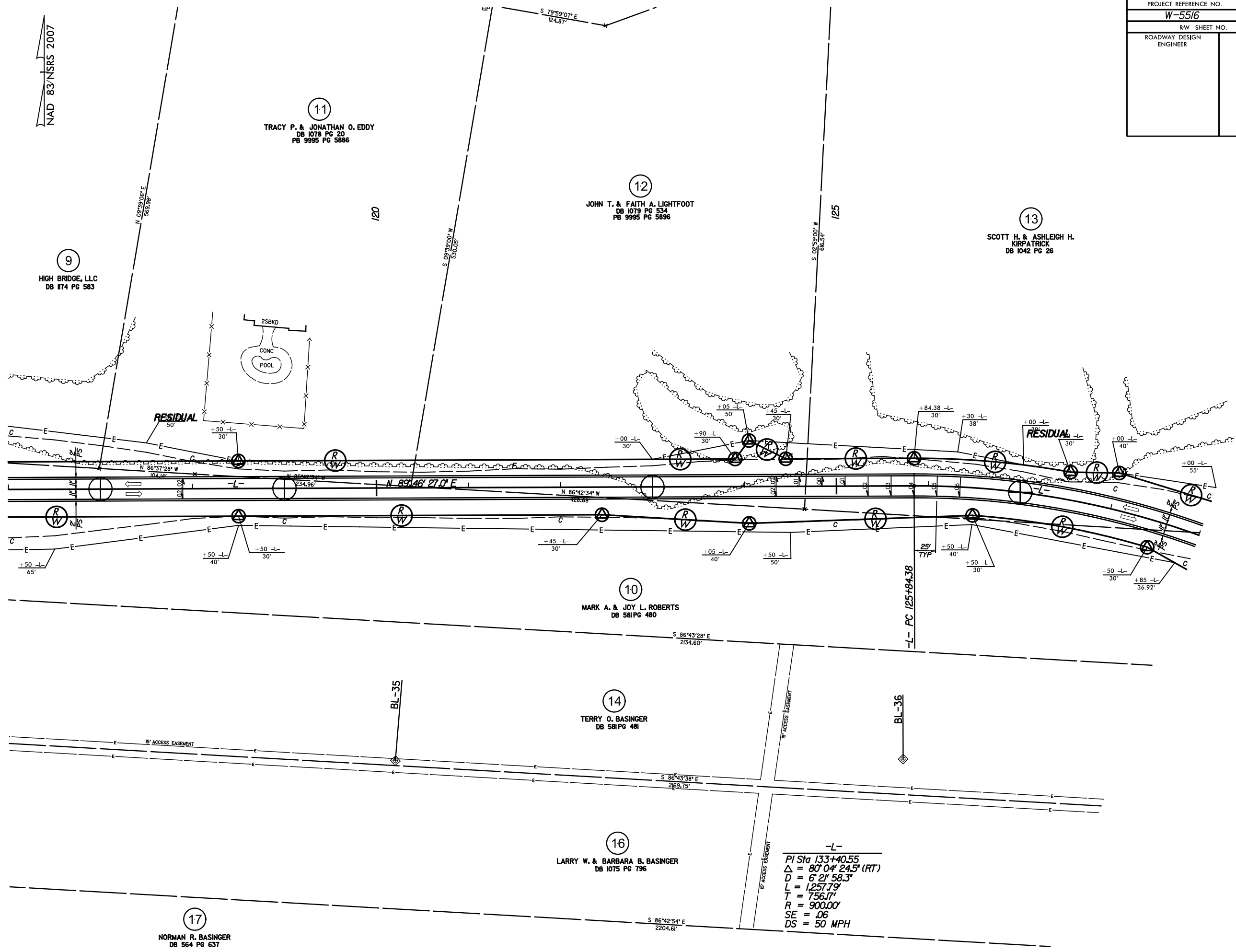
14
TERRY O. BASINGER
DB 581 PG 481

16
LARRY W. & BARBARA B. BASINGER
DB 1075 PG 796

17
NORMAN R. BASINGER
DB 564 PG 637

STATIONING
103+00.00
103+10.00
103+20.00
103+30.00
103+40.00
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103+80.00
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115+90.00
116+00.00

PROJECT REFERENCE NO.	SHEET NO.
W-5516	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



REVISIONS

10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCEL 10

5/14/2007
NAD 83/NSRS 2007

-L-

PI Sta 133+40.55
 $\Delta = 80^{\circ}04'24.5''$ (RT)
 $D = 6^{\circ}21'58.3''$
 $L = 1257.79'$
 $T = 756.17'$
 $R = 900.00'$
 $SE = .06$
 $DS = 50$ MPH

17
 NORMAN R. BASINGER
 DB 564 PG 637

16
 LARRY W. & BARBARA B. BASINGER
 DB 1075 PG 796

14
 TERRY O. BASINGER
 DB 581 PG 481

10
 MARK A. & JOY L. ROBERTS
 DB 581 PG 480

13
 SCOTT H. & ASHLEIGH H. KIRPATRICK
 DB 1042 PG 26

12
 JOHN T. & FAITH A. LIGHTFOOT
 DB 1079 PG 534
 PB 9995 PG 5896

11
 TRACY P. & JONATHAN O. EDDY
 DB 1078 PG 20
 PB 9995 PG 5886

9
 HIGH BRIDGE, LLC
 DB 174 PG 583

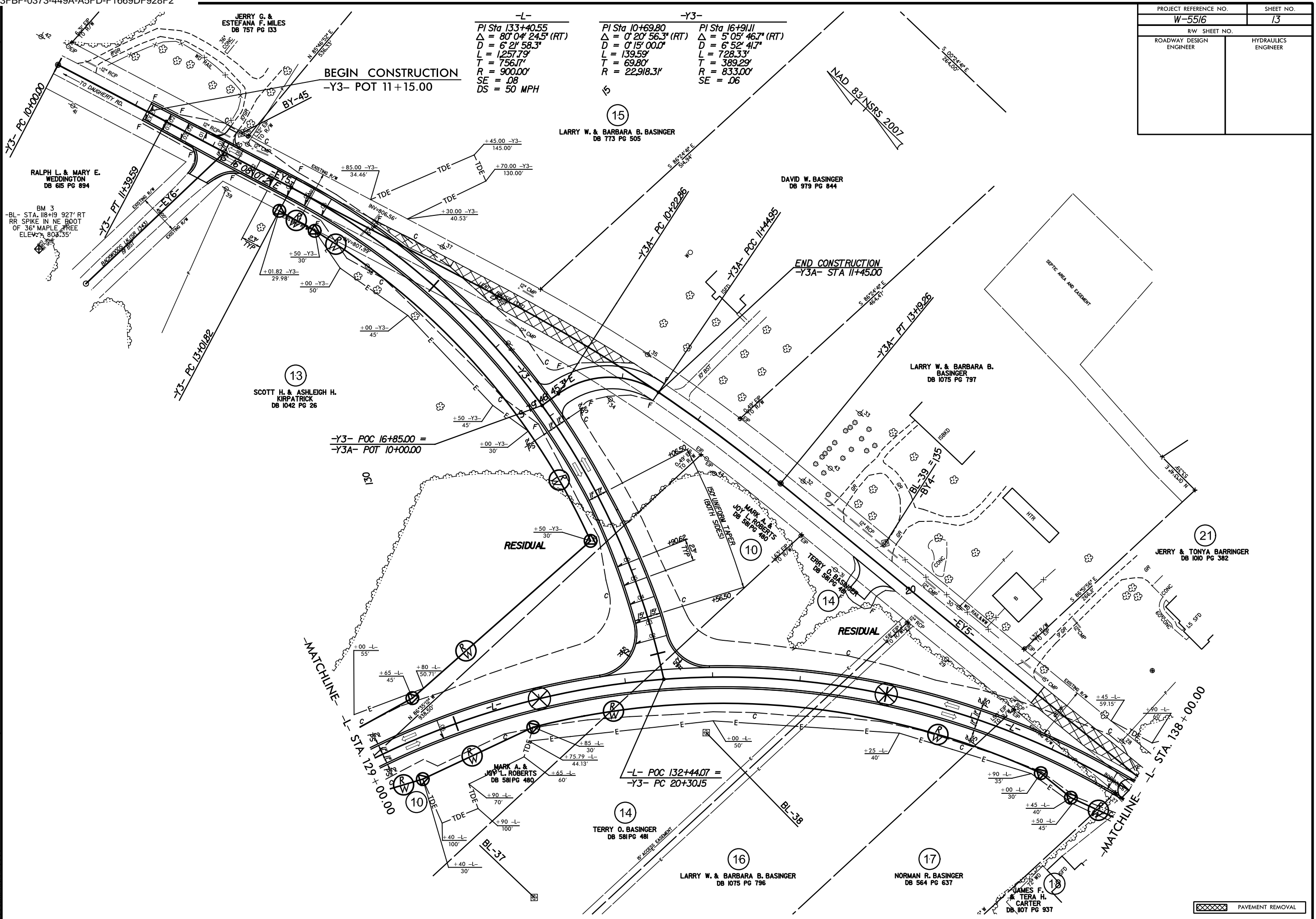
PROJECT REFERENCE NO. W-5516		SHEET NO. 13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

-L-
 PI Sta 133+40.55
 $\Delta = 80^{\circ} 04' 24.5''$ (RT)
 D = 6' 21' 58.3"
 L = 1257.79'
 T = 756.17'
 R = 900.00'
 SE = .08
 DS = 50 MPH

-Y3-
 PI Sta 10+69.80
 $\Delta = 0^{\circ} 20' 56.3''$ (RT)
 D = 0' 15' 00.0"
 L = 139.59'
 T = 69.80'
 R = 22918.31'

-Y3-
 PI Sta 16+91.11
 $\Delta = 5^{\circ} 05' 46.7''$ (RT)
 D = 6' 52' 41.7"
 L = 728.33'
 T = 389.29'
 R = 833.00'
 SE = .06

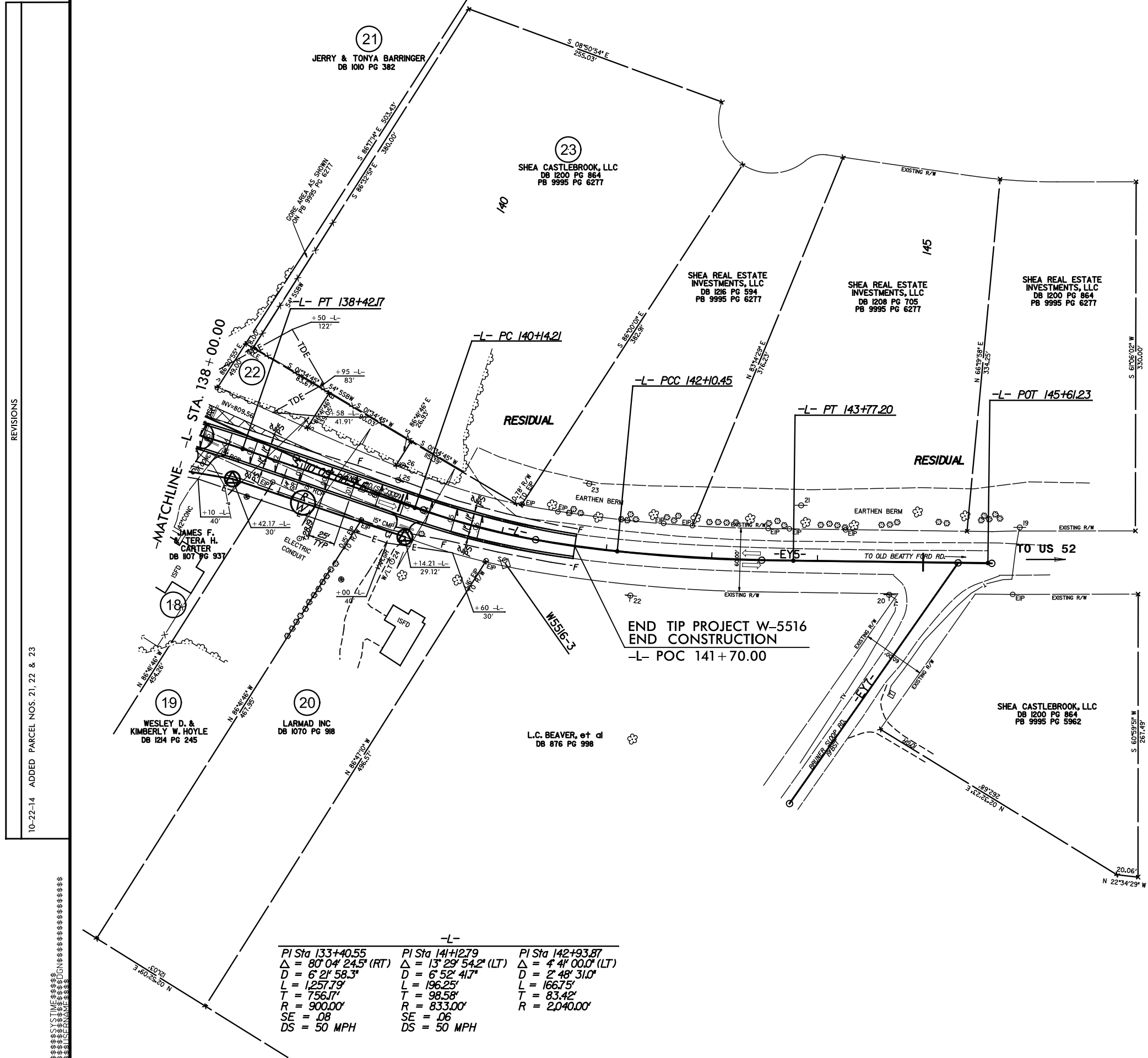
REVISIONS
 10-22-14 REVISED STATION/OFFSET CALLOUTS ON PARCEL 10, ADDED PARCEL NO. 21



PAVEMENT REMOVAL

PROJECT REFERENCE NO.		SHEET NO.	
W-5516		14	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

NAD 83/NSRS 2007



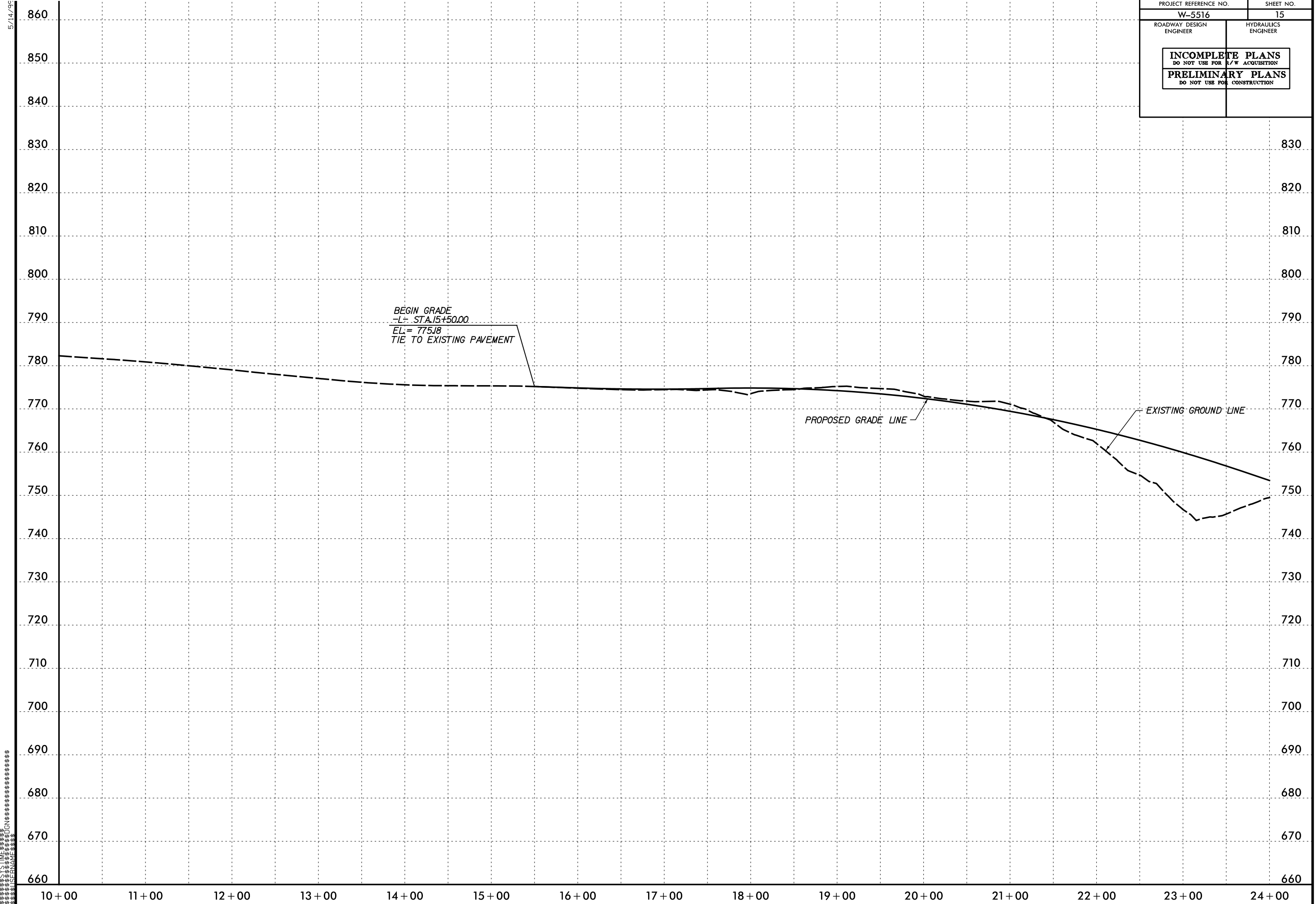
-L-		
PI Sta 133+40.55	PI Sta 141+2.79	PI Sta 142+93.87
Δ = 80° 04' 24.5" (RT)	Δ = 13° 29' 54.2" (LT)	Δ = 4° 41' 00.0" (LT)
D = 6' 21' 58.3"	D = 6' 52' 41.7"	D = 2' 48' 31.0"
L = 1257.79'	L = 196.25'	L = 166.75'
T = 756.17'	T = 98.58'	T = 83.42'
R = 900.00'	R = 833.00'	R = 2,040.00'
SE = .08	SE = .06	
DS = 50 MPH	DS = 50 MPH	

REVISIONS
 10-22-14 ADDED PARCEL NOS. 21, 22 & 23

PAVEMENT REMOVAL

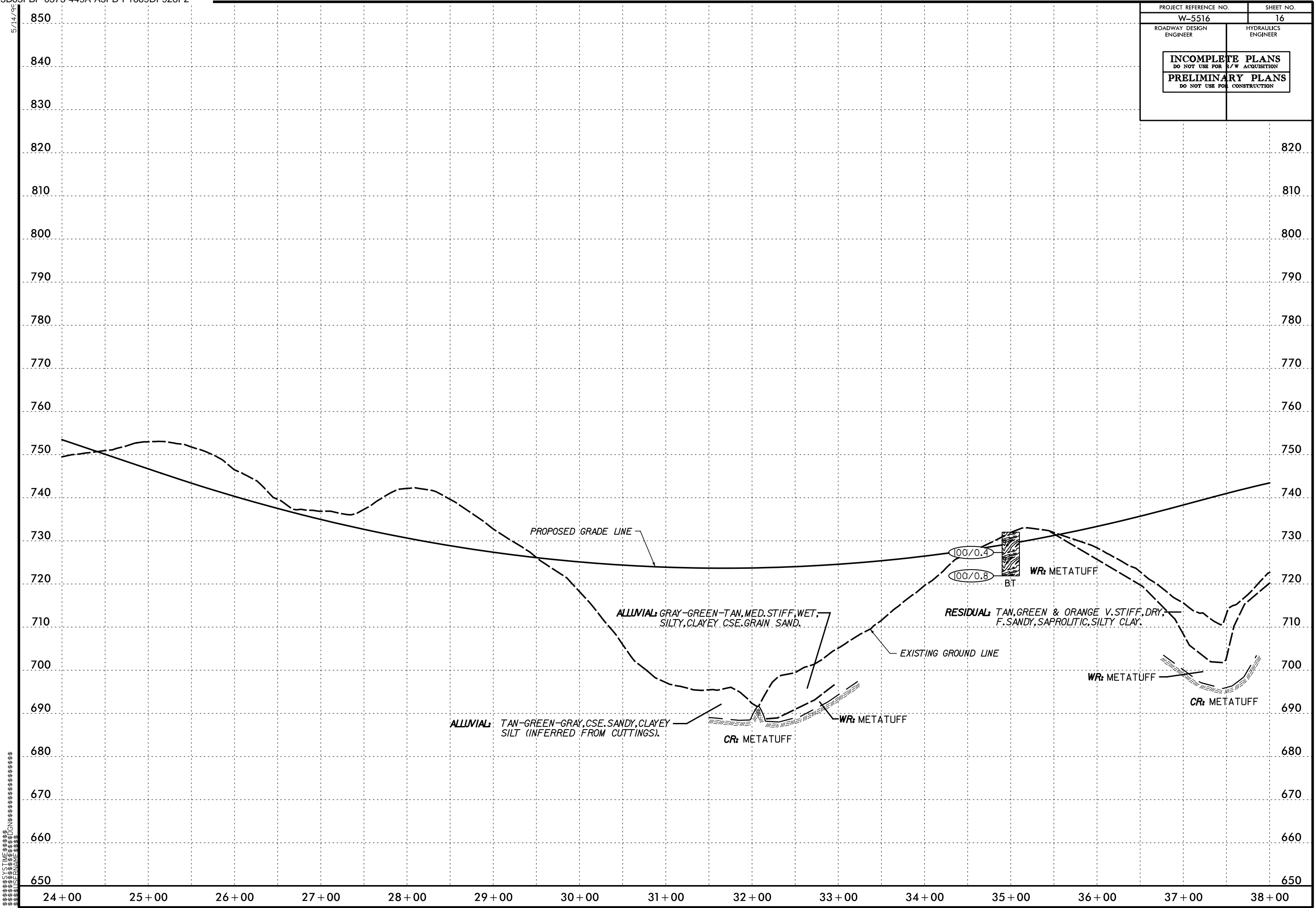
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PROJECT REFERENCE NO.		SHEET NO.	
W-5516		15	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

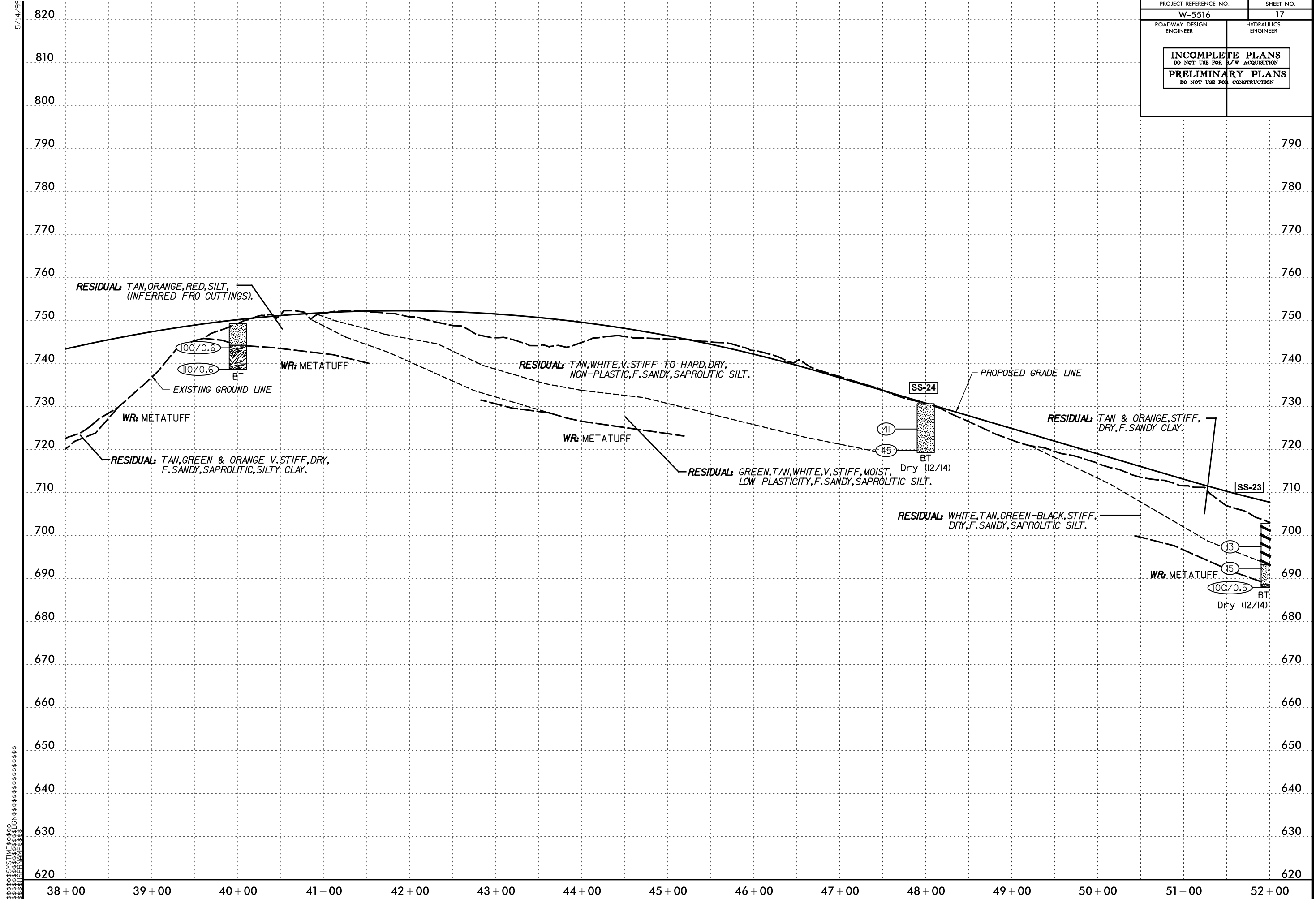


SYSTEMS DESIGN

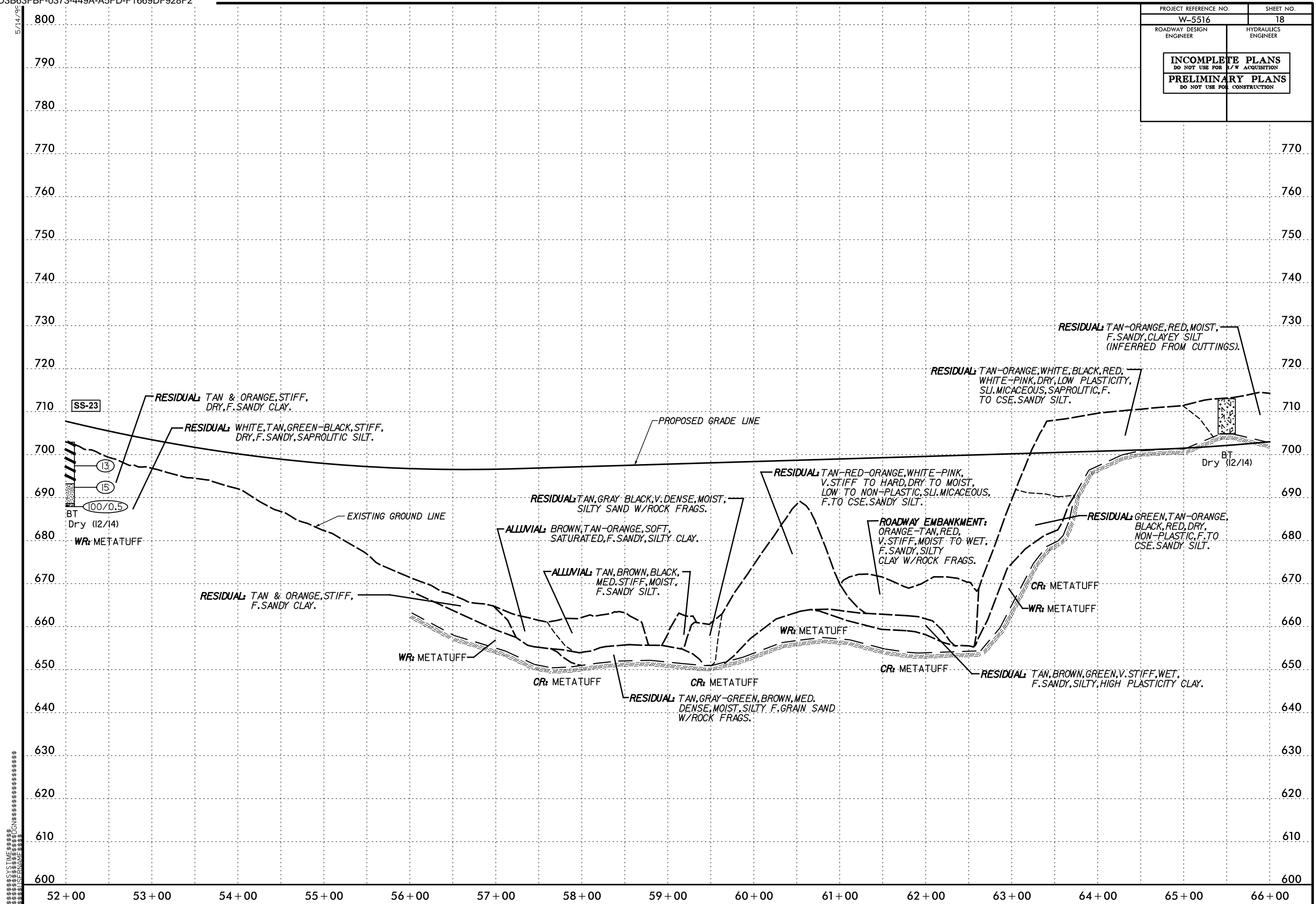
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W-5516	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PROJECT REFERENCE NO.	SHEET NO.
W-5516	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



PROJECT REFERENCE NO.	SHEET NO.
W-5516	18
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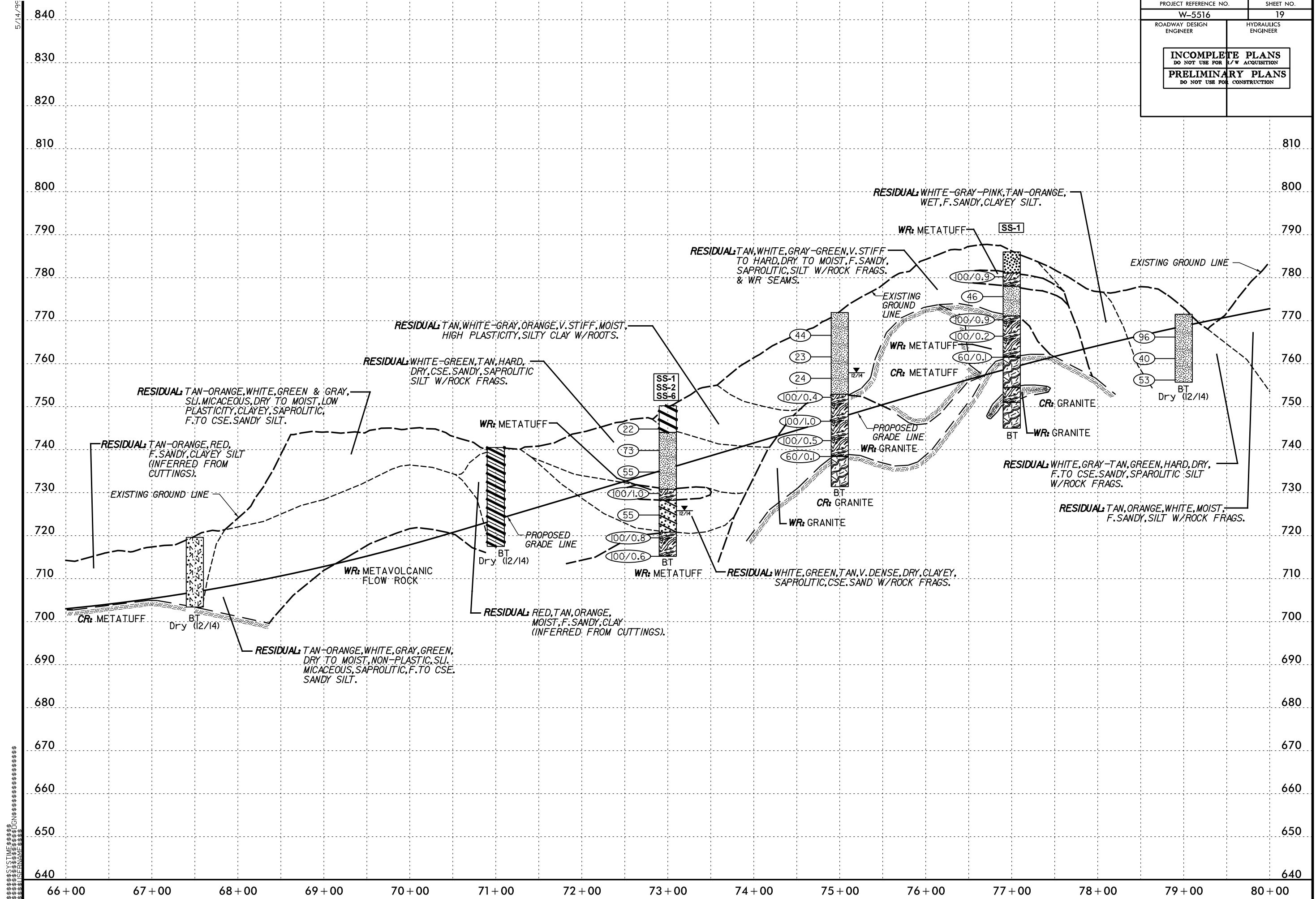


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SYSTEMS DESIGN

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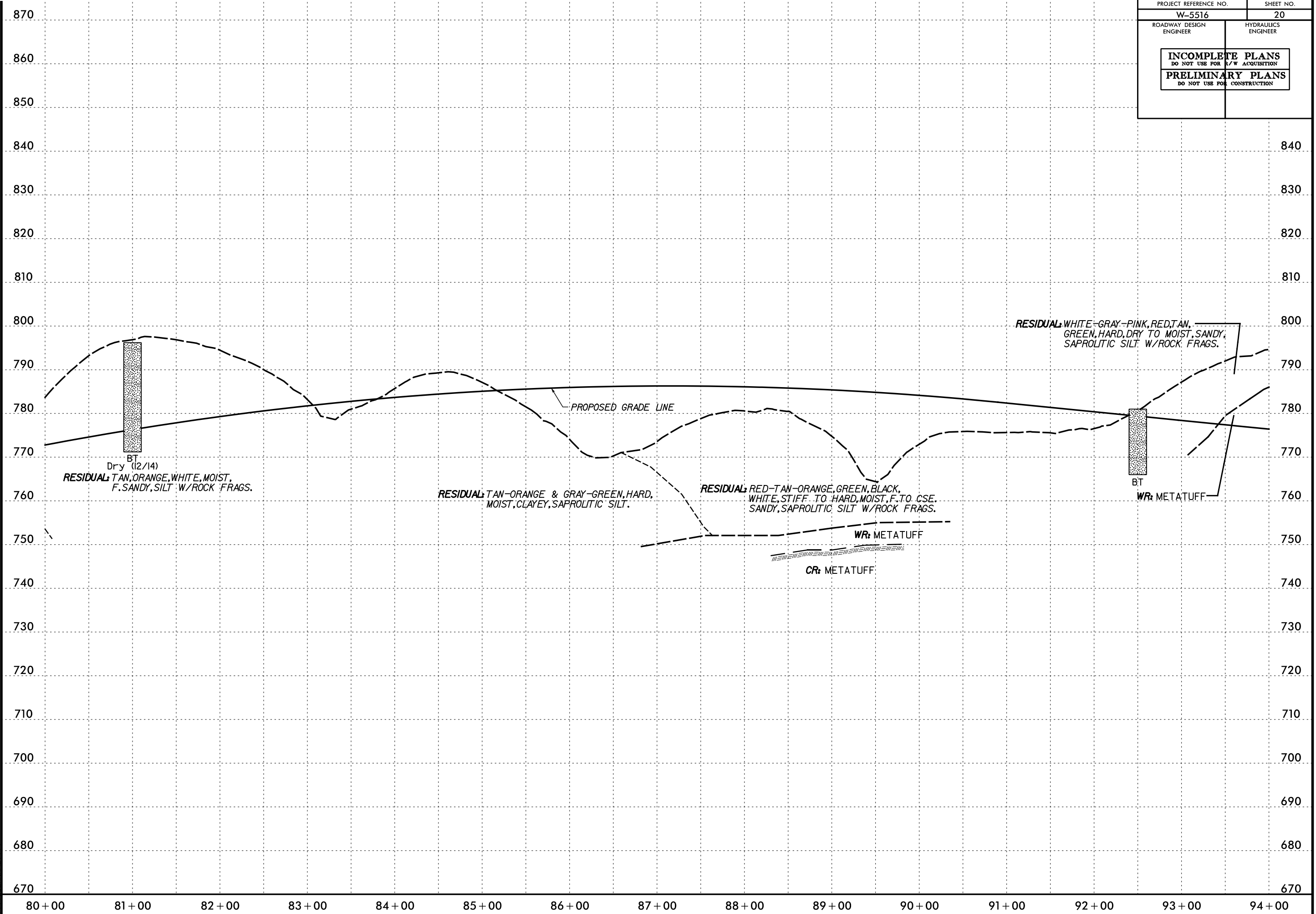
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W-5516	19
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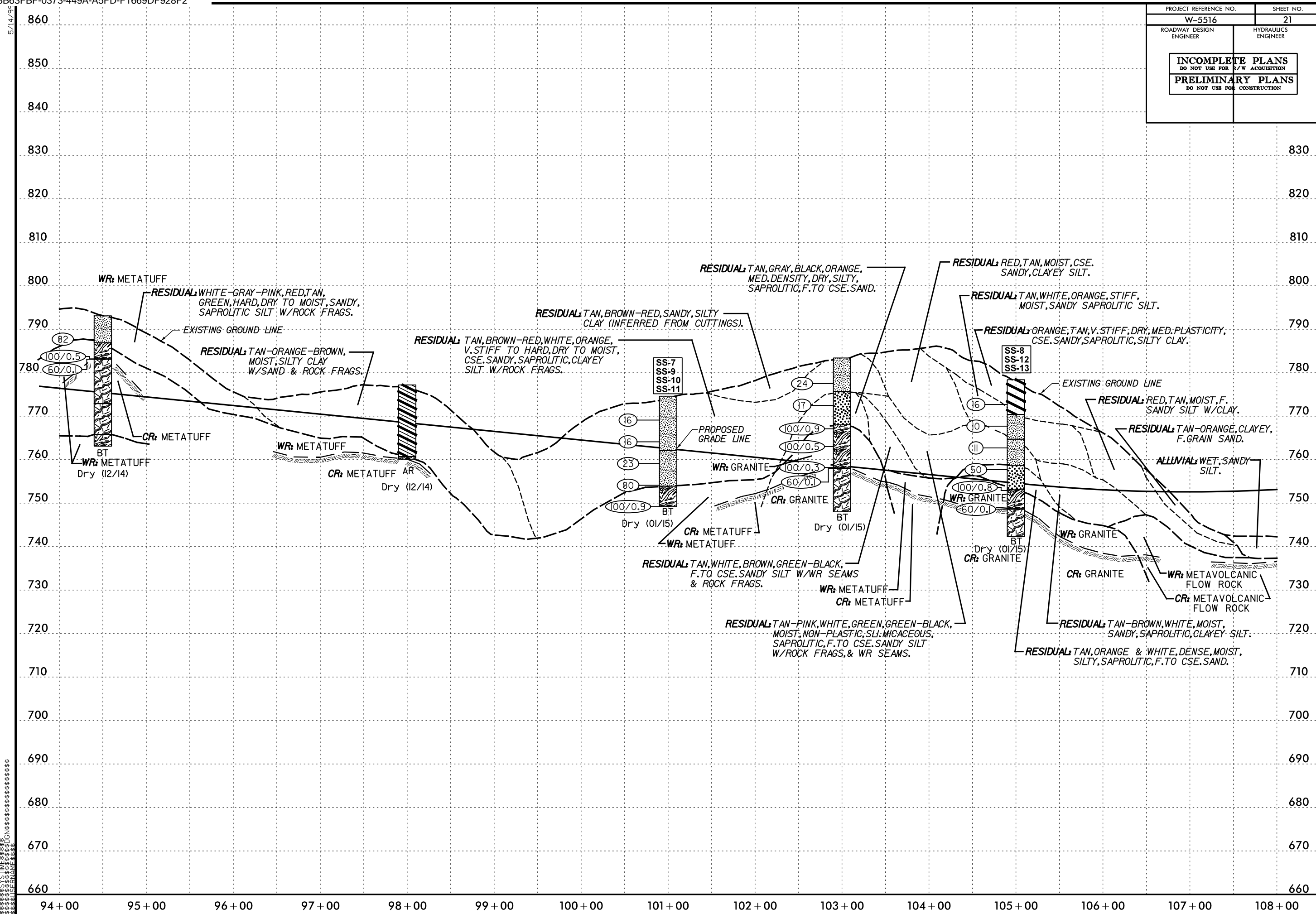
SYSTEMS TIME DGN

5/14/98
SYSTEMS DESIGN GROUP

PROJECT REFERENCE NO.	SHEET NO.
W-5516	20
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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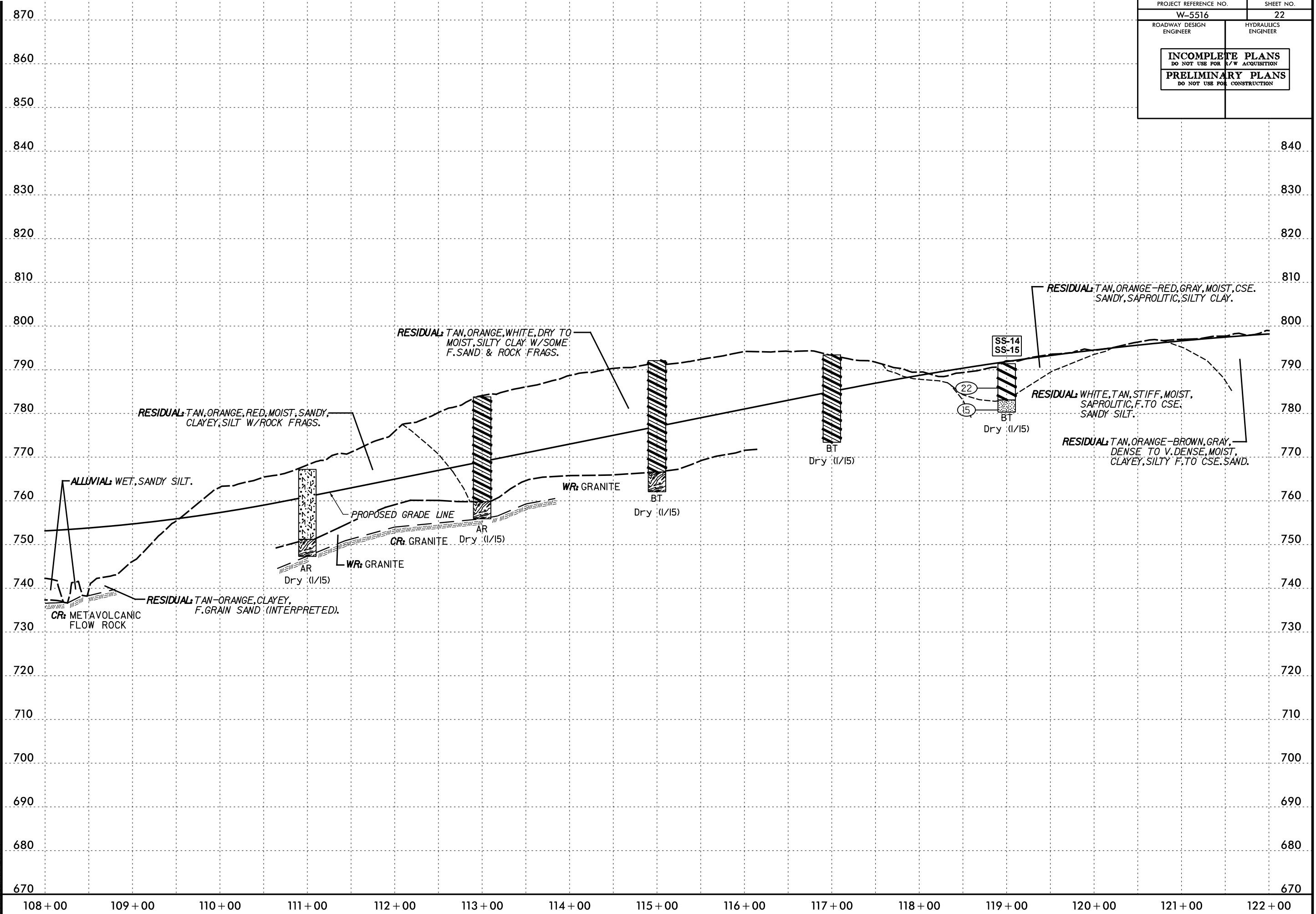
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SYSTEMS TIME DESIGN GROUP
 5/14/98

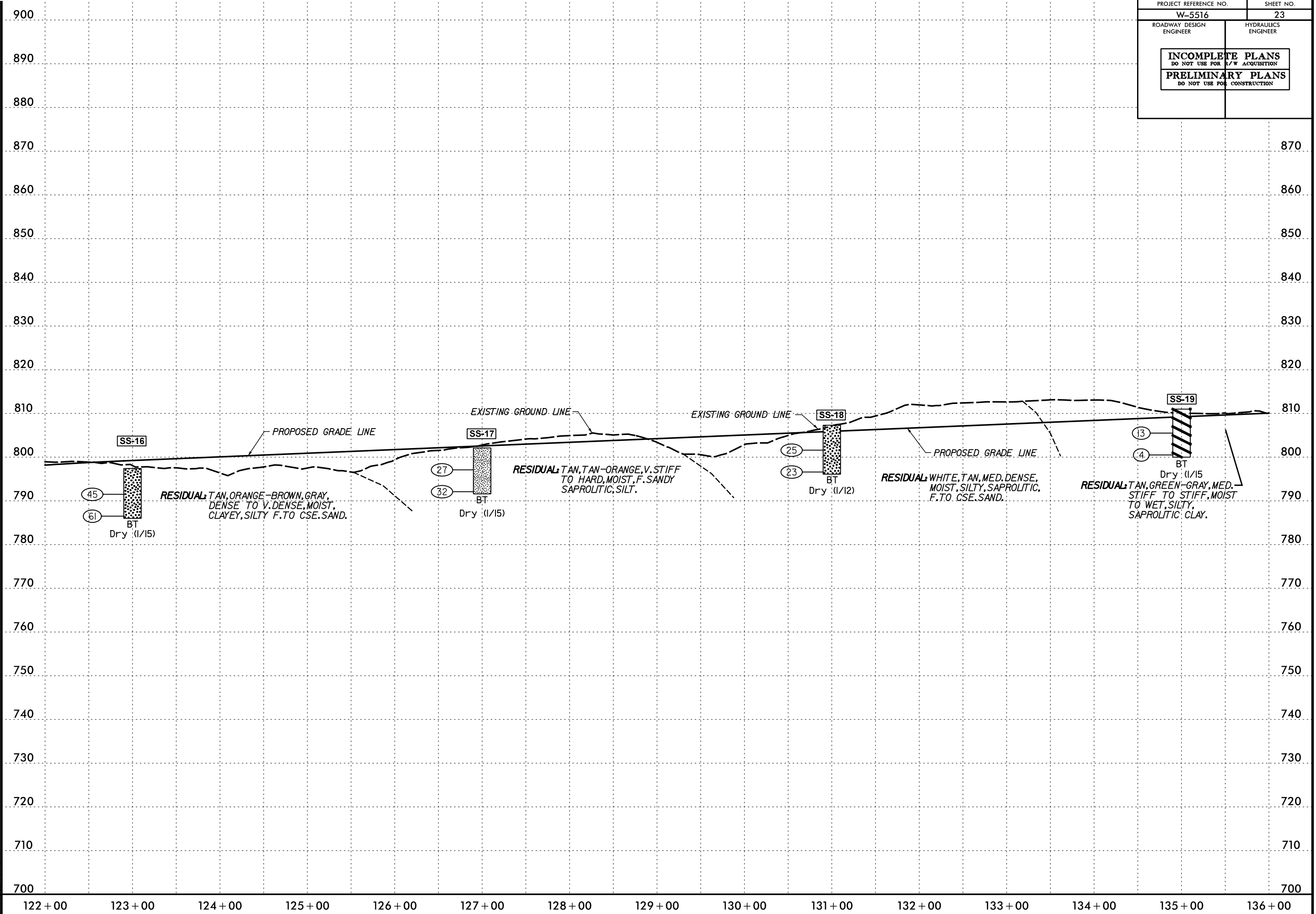
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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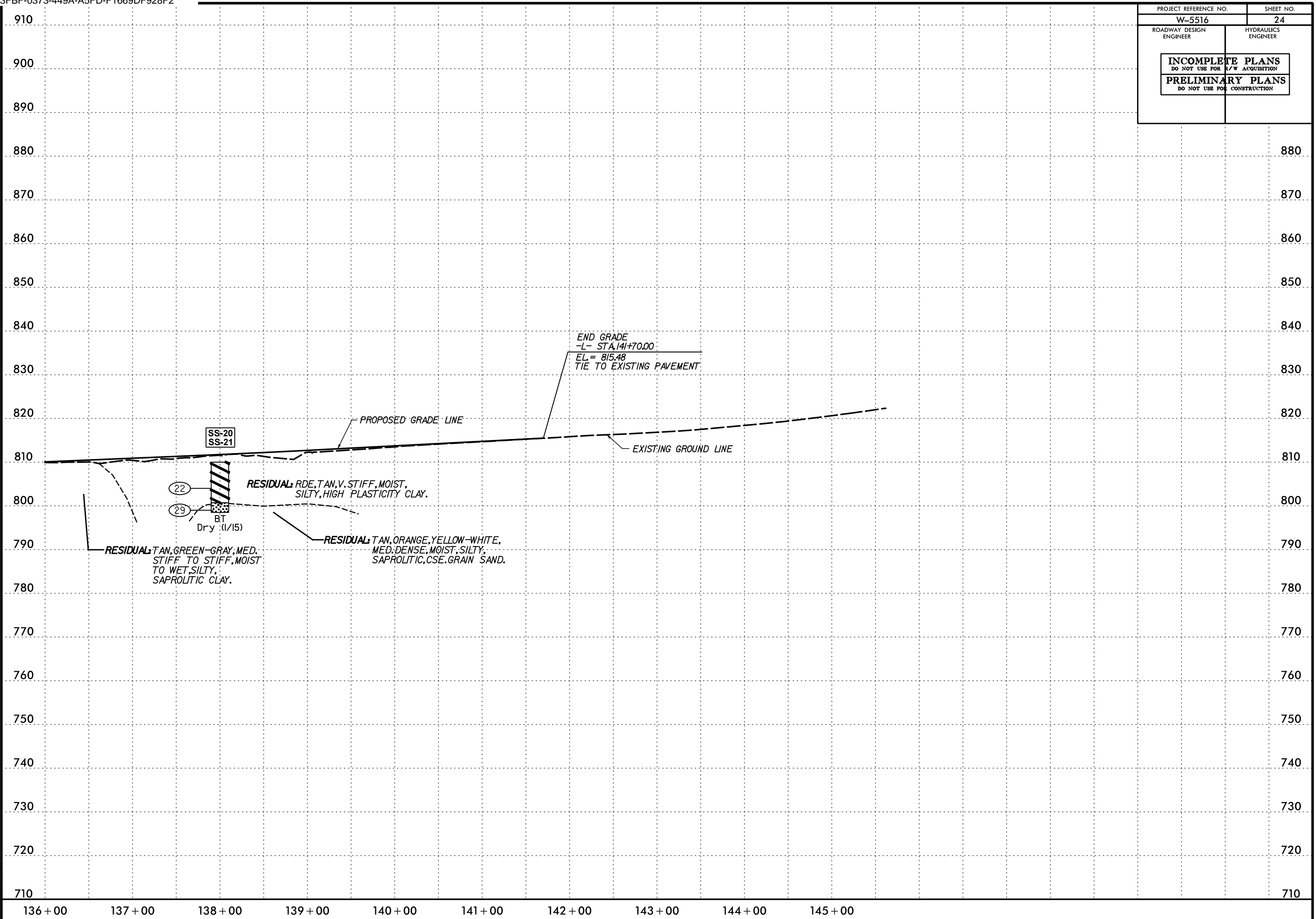
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SYSTEMS DESIGN GROUP

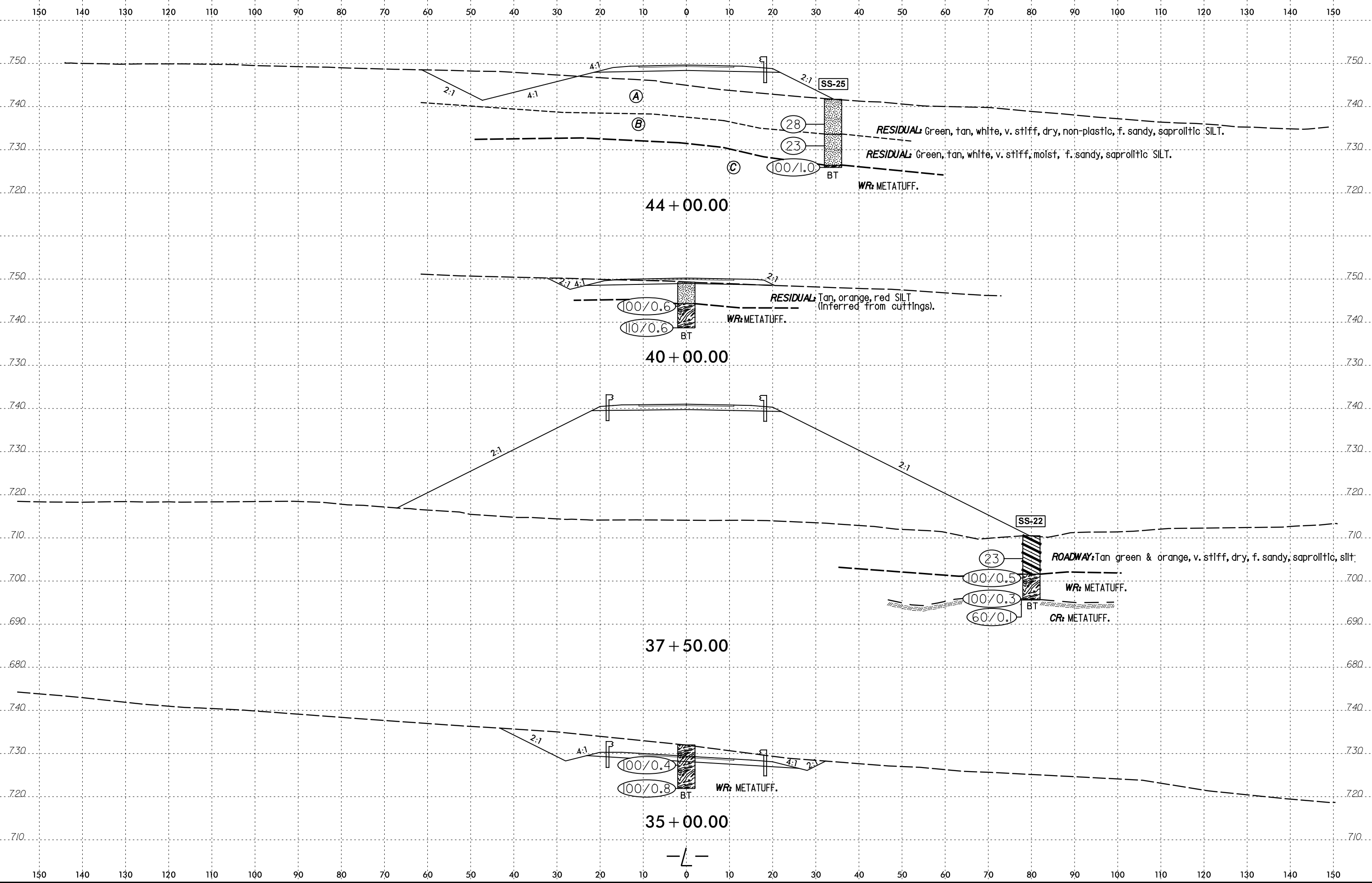
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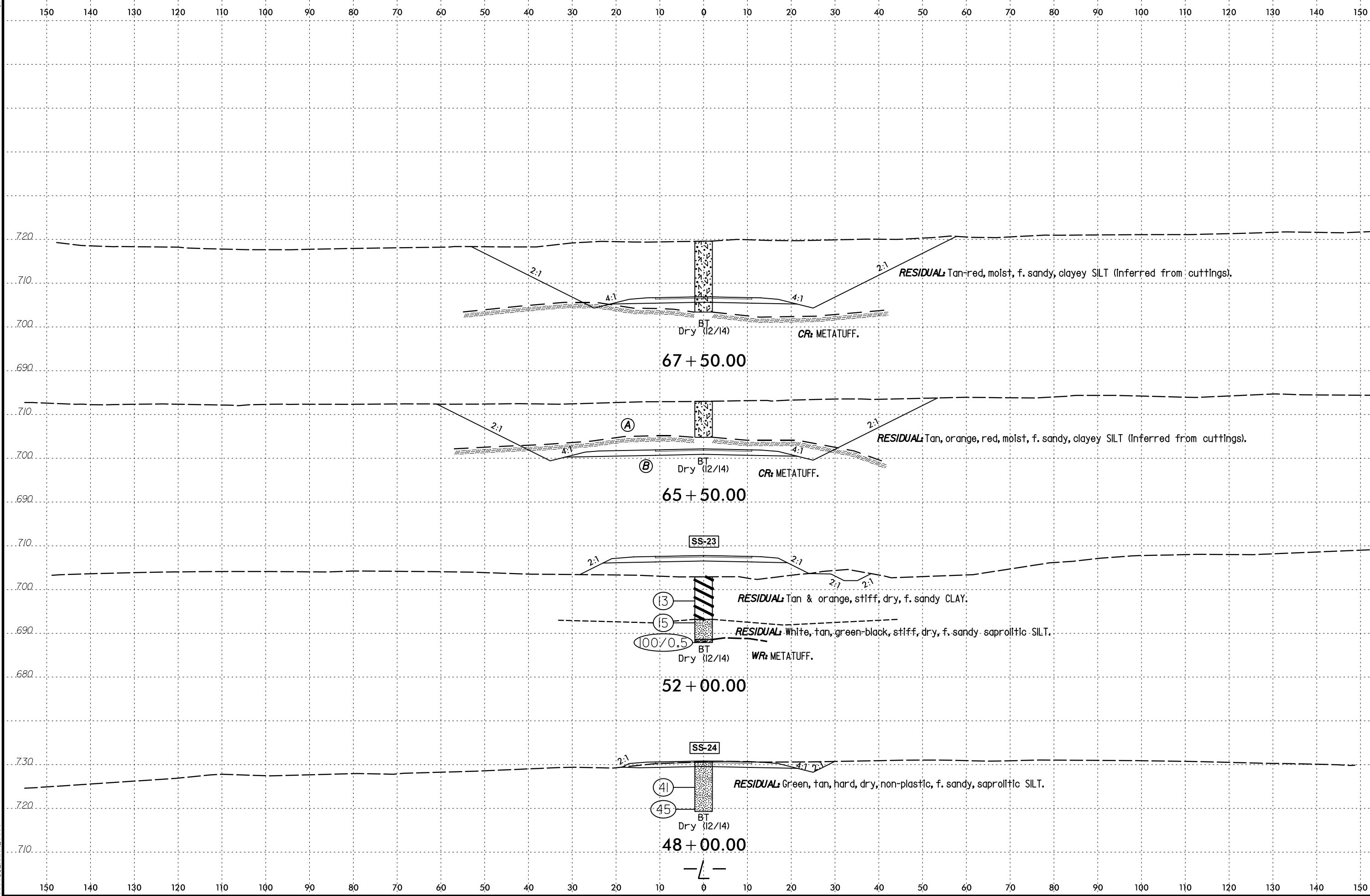


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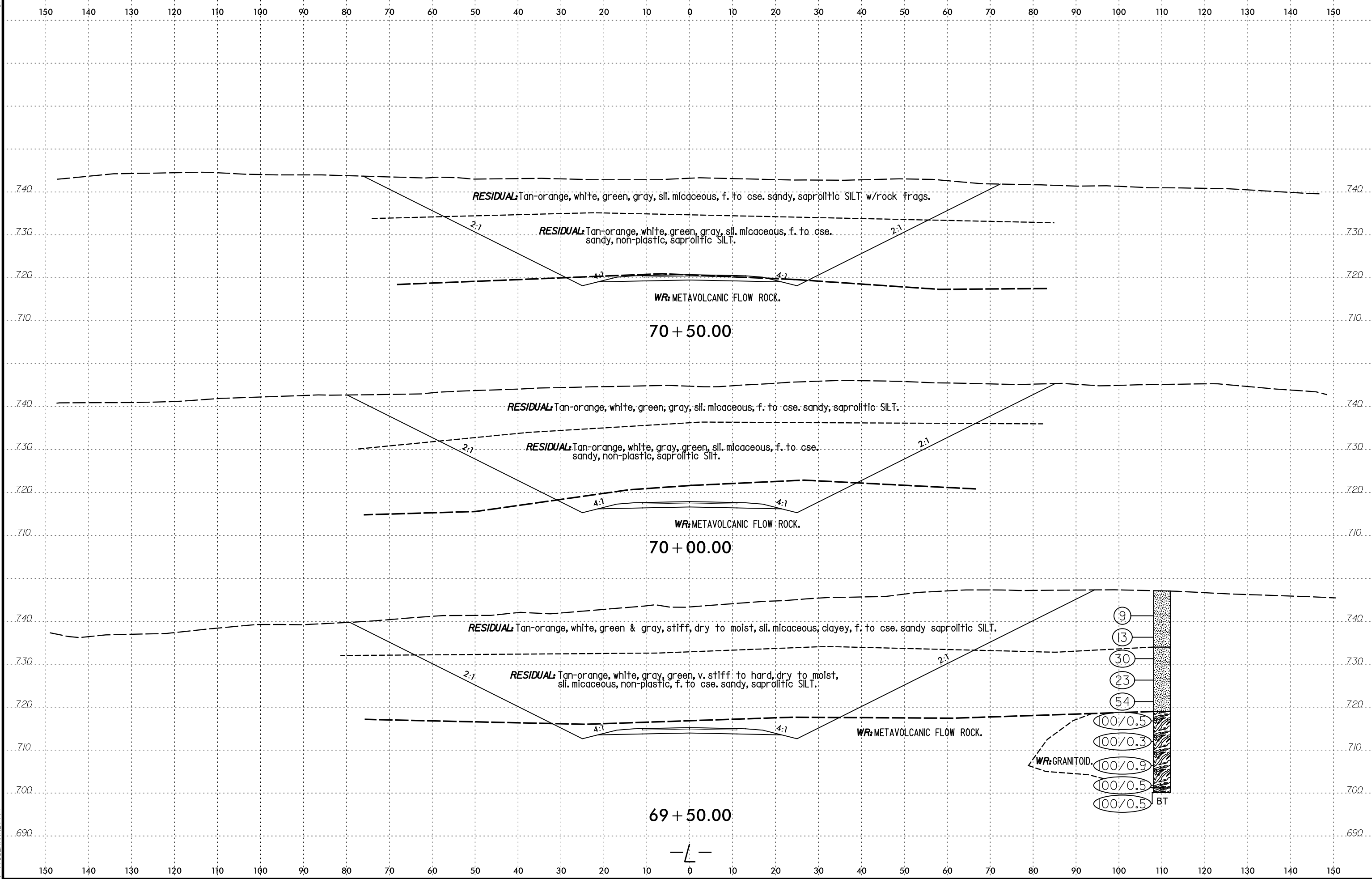
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W-5516	24
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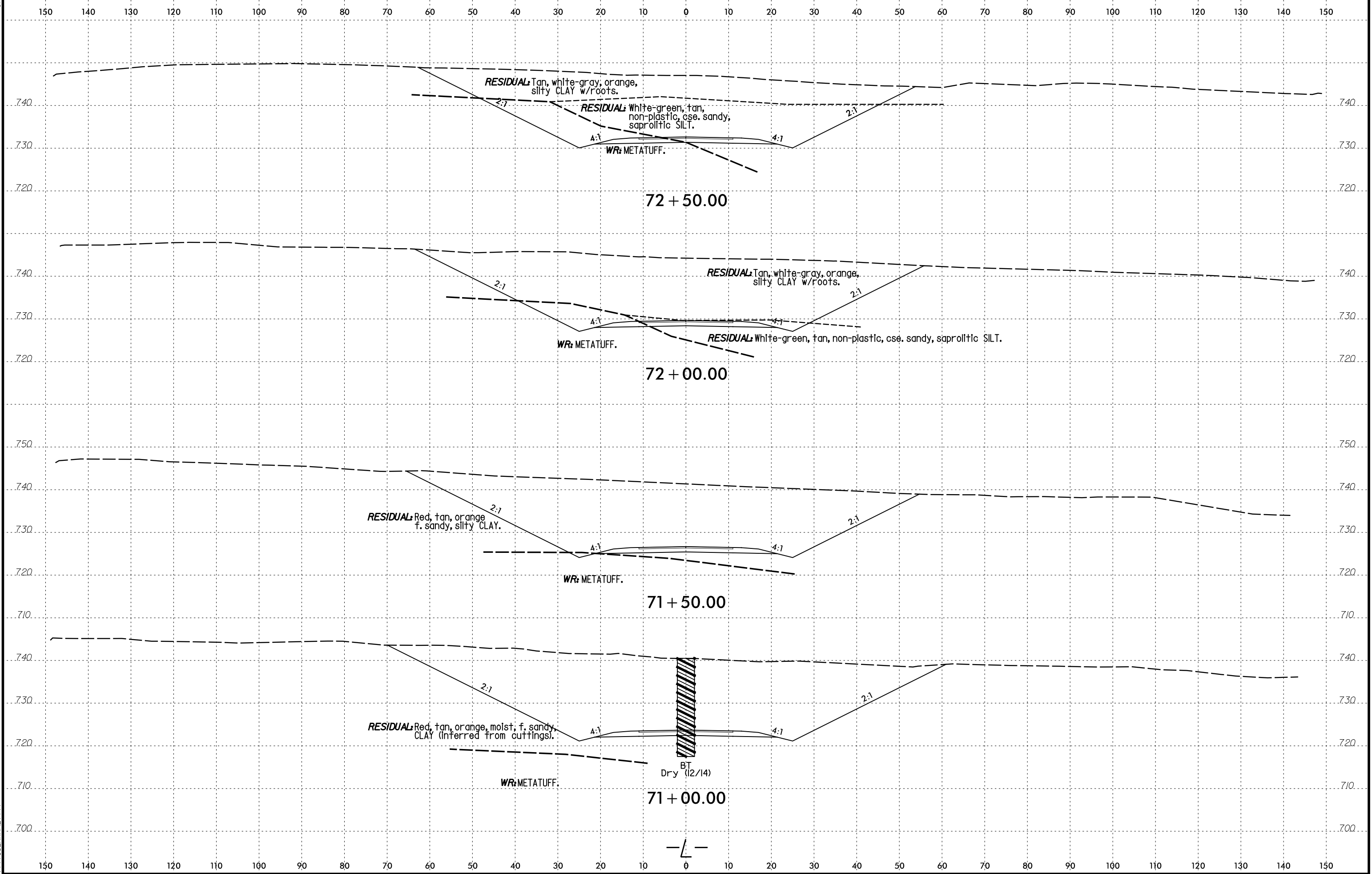




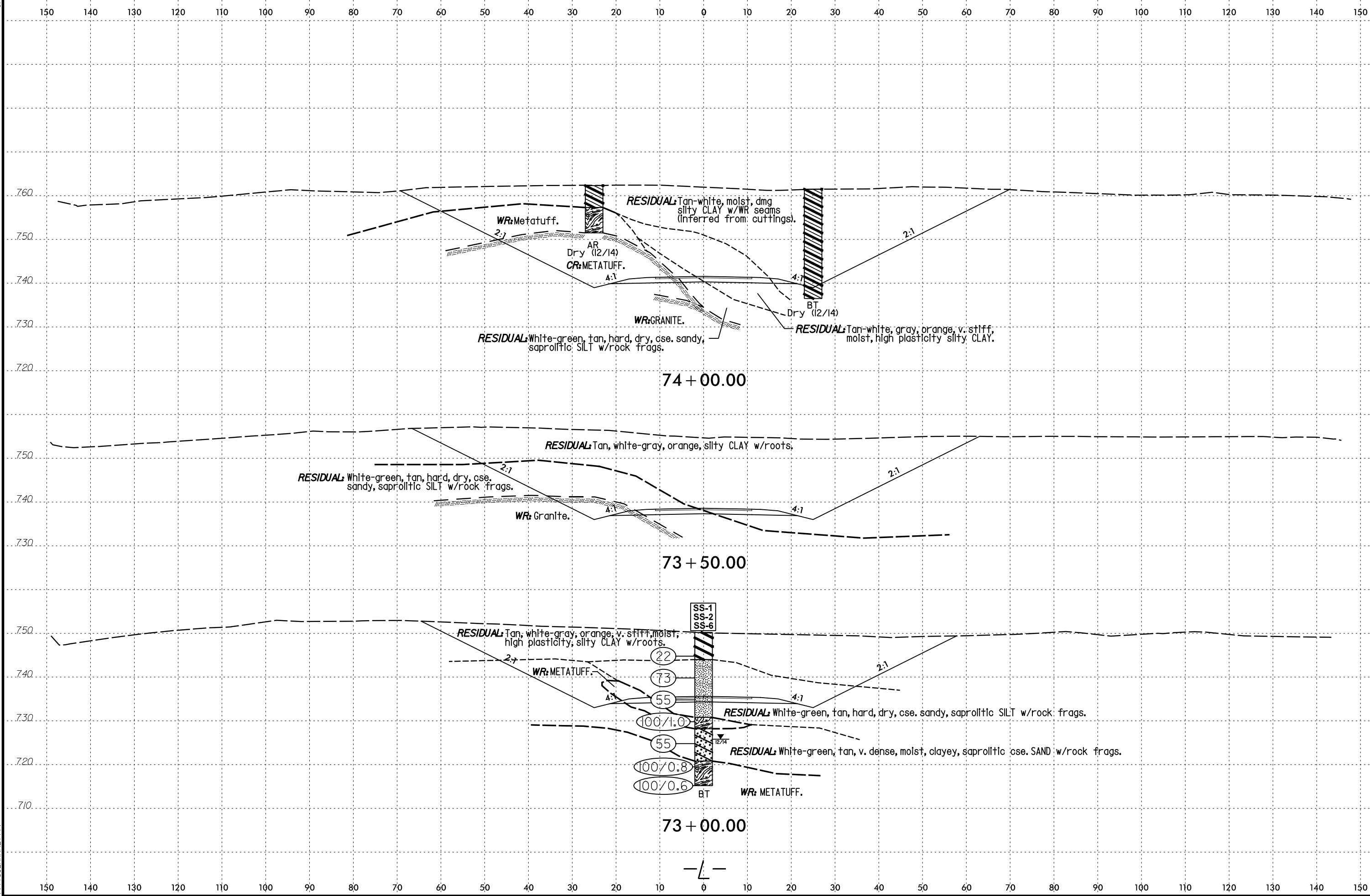


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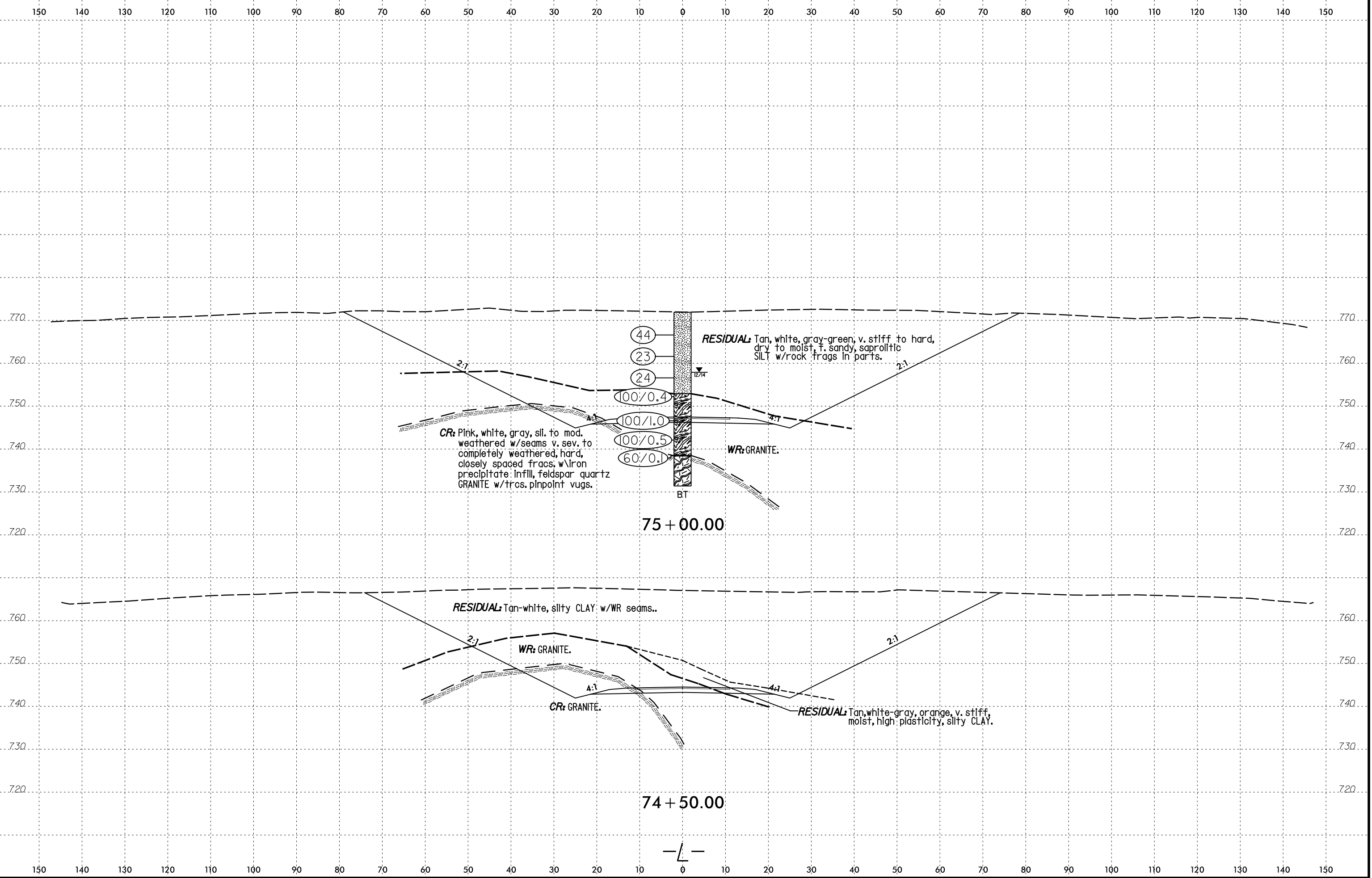




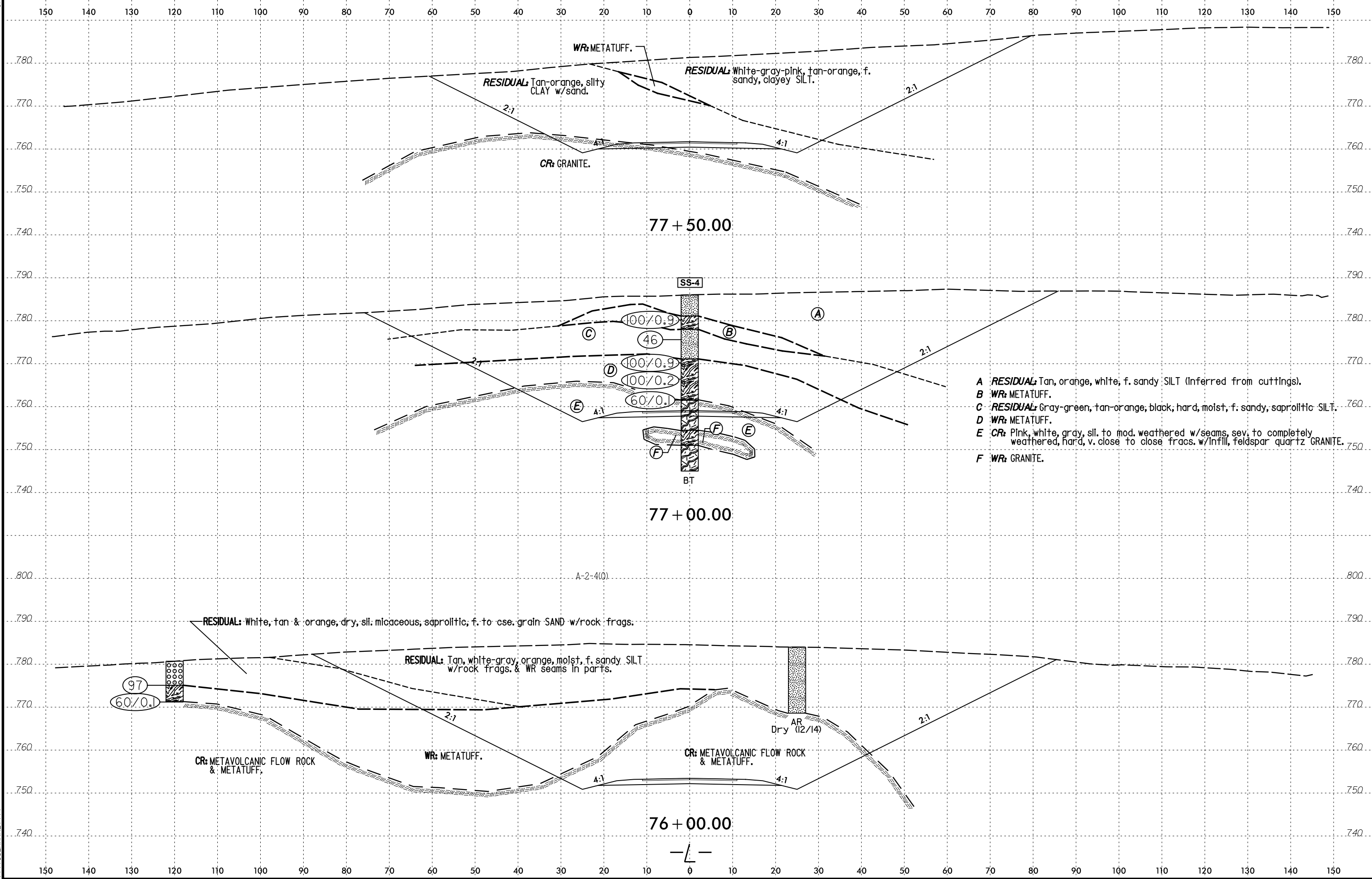
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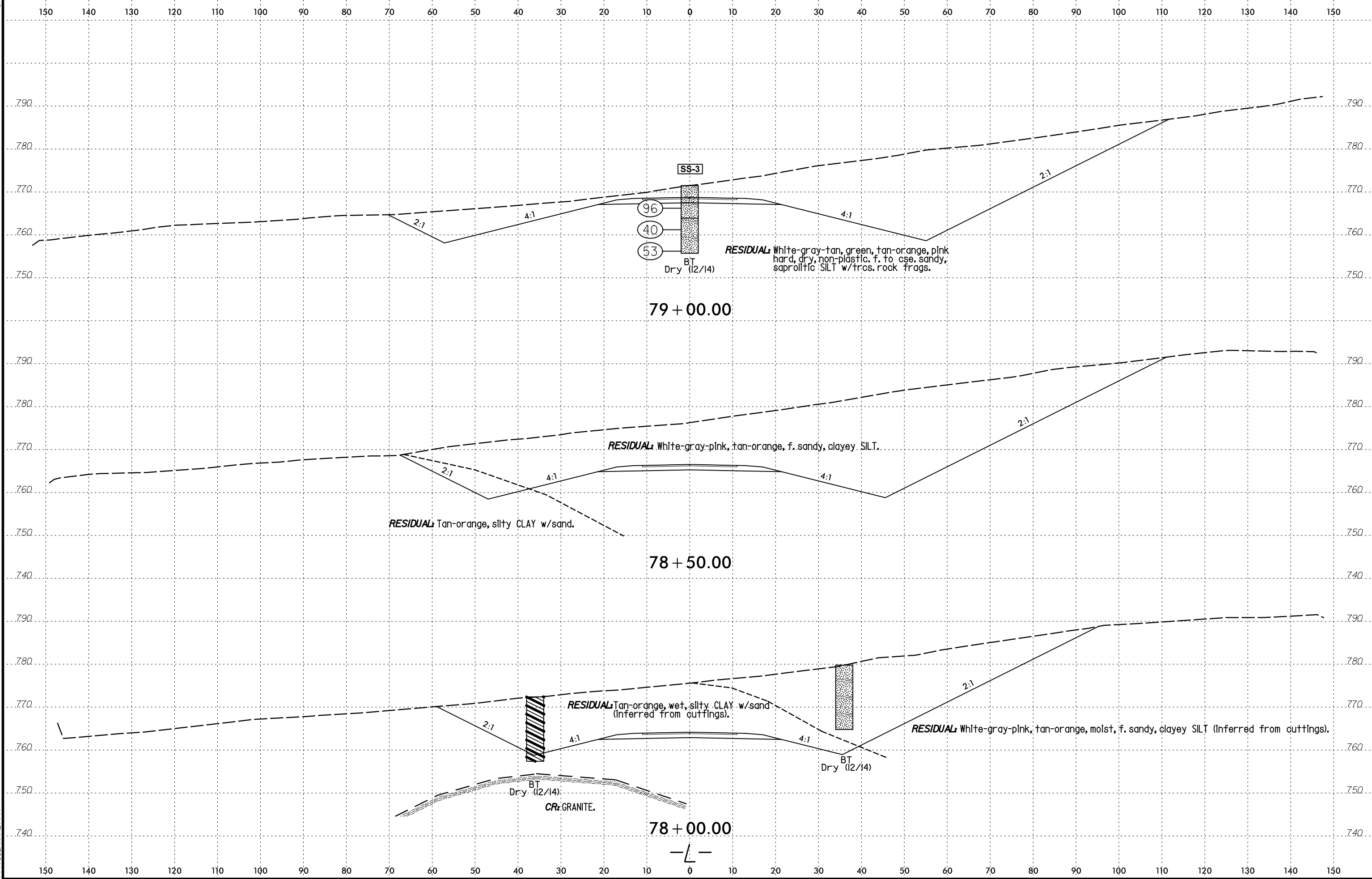


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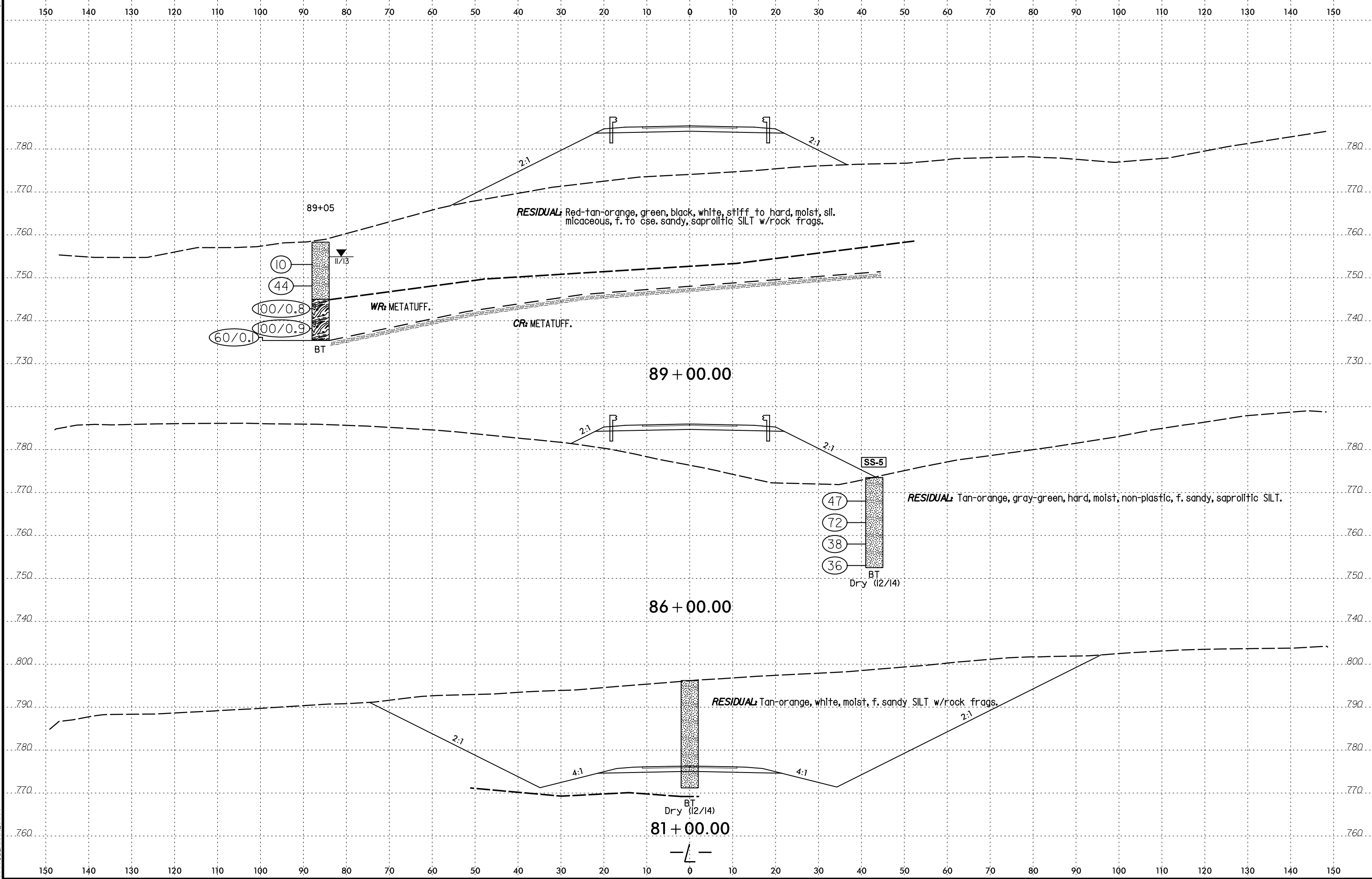


- A **RESIDUAL:** Tan, orange, white, f. sandy SILT (Inferred from cuttings).
- B **WR:** METATUFF.
- C **RESIDUAL:** Gray-green, tan-orange, black, hard, moist, f. sandy, saprolitic SILT.
- D **WR:** METATUFF.
- E **CR:** Pink, white, gray, sl. to mod. weathered w/seams, sev. to completely weathered, hard, v. close to close frags. w/Infill, feldspar quartz GRANITE.
- F **WR:** GRANITE.

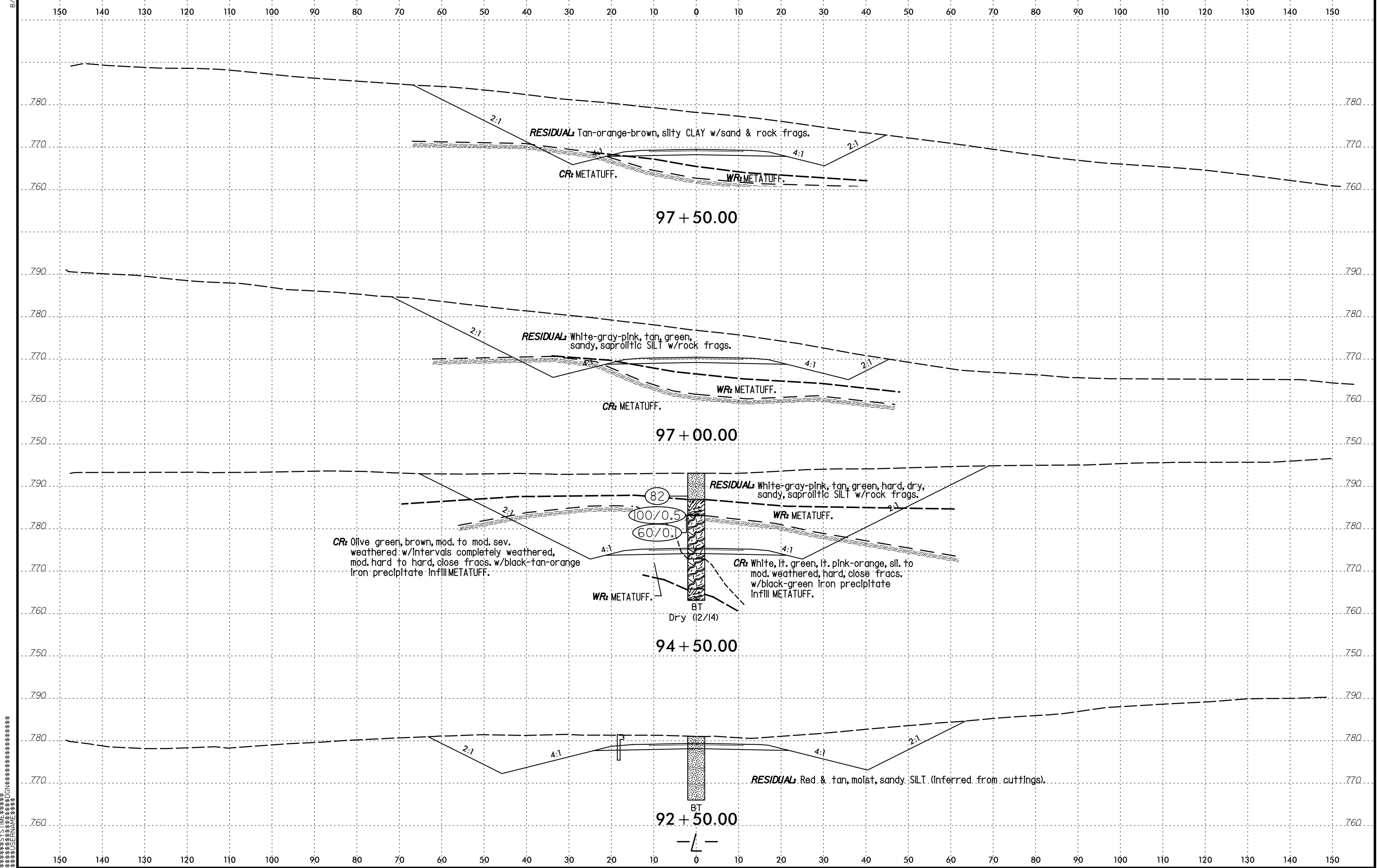
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8/23/09



97 + 50.00

97 + 00.00

94 + 50.00

92 + 50.00

RESIDUAL: Tan-orange-brown, silty CLAY w/sand & rock frags.

CR: METATUFF.

WR: METATUFF.

RESIDUAL: White-gray-pink, tan, green, sandy, saprolitic SILT w/rock frags.

CR: METATUFF.

WR: METATUFF.

RESIDUAL: White-gray-pink, tan, green, hard, dry, sandy, saprolitic SILT w/rock frags.

WR: METATUFF.

CR: Olive green, brown, mod. to mod. sev. weathered w/Intervals completely weathered, mod. hard to hard, close frags. w/black-tan-orange iron precipitate infill METATUFF.

CR: White, lt. green, lt. pink-orange, sil. to mod. weathered, hard, close frags. w/black-green iron precipitate infill METATUFF.

WR: METATUFF.

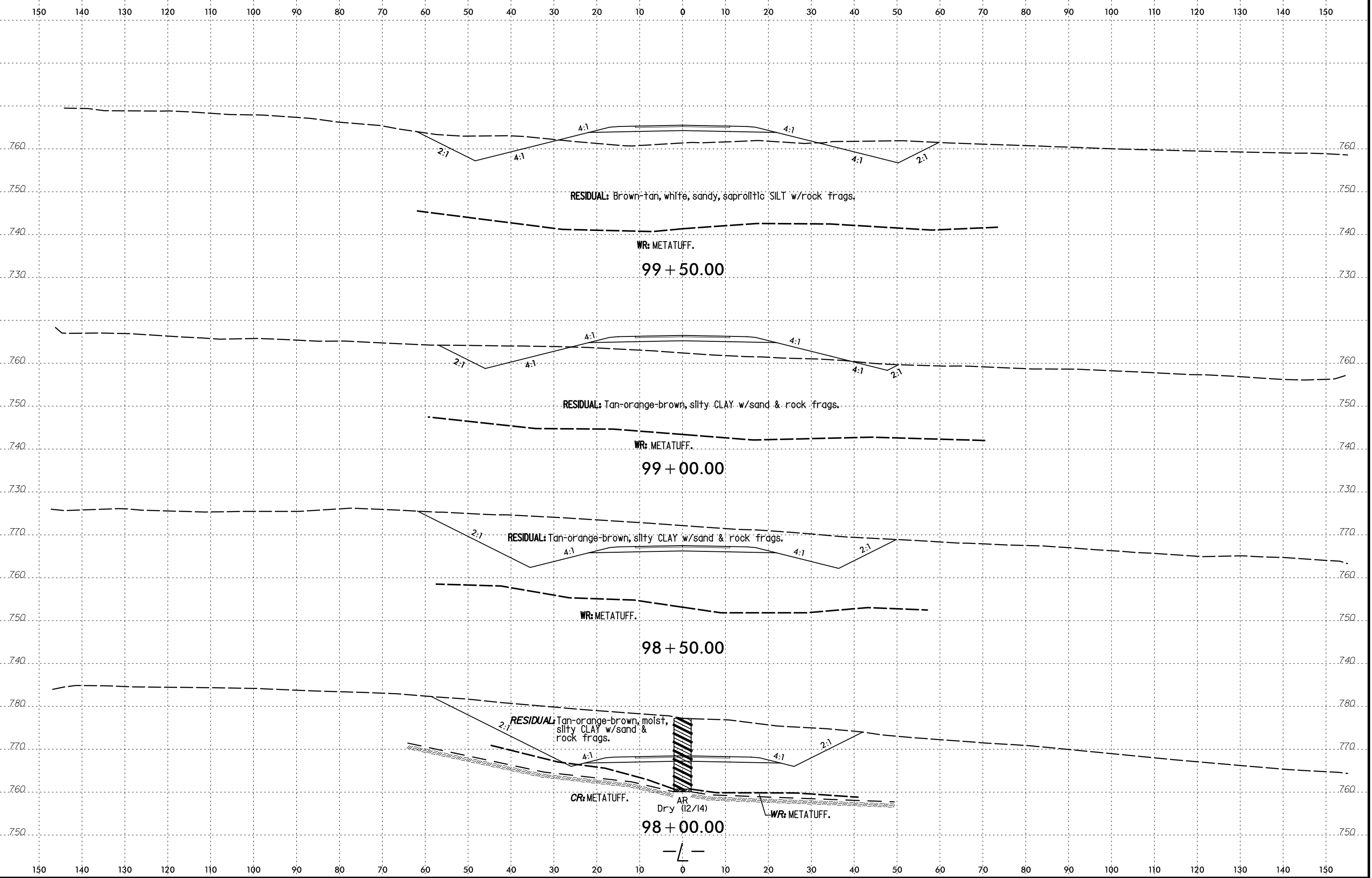
BT Dry (12/14)

RESIDUAL: Red & tan, moist, sandy SILT (Inferred from cuttings).

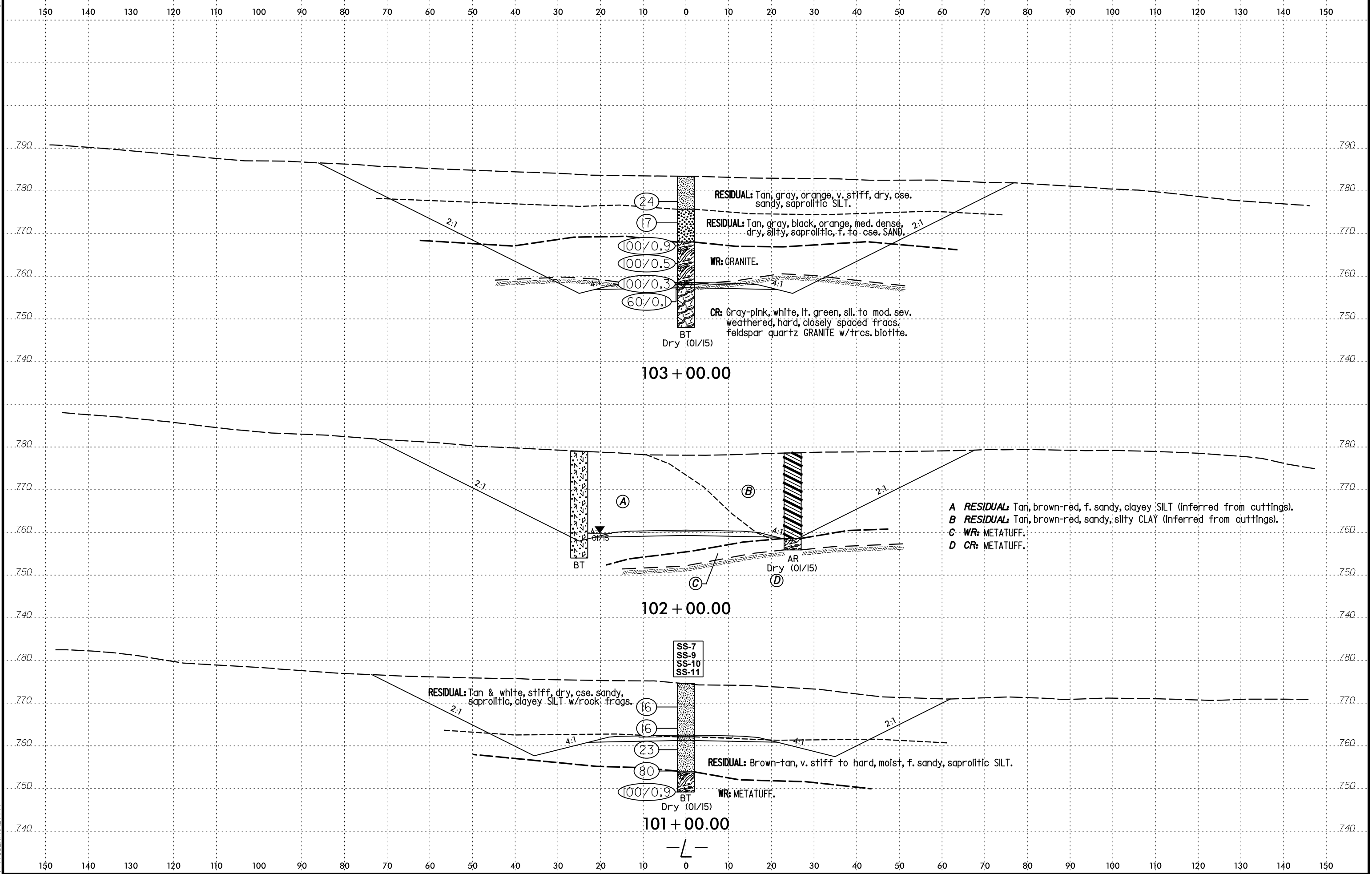
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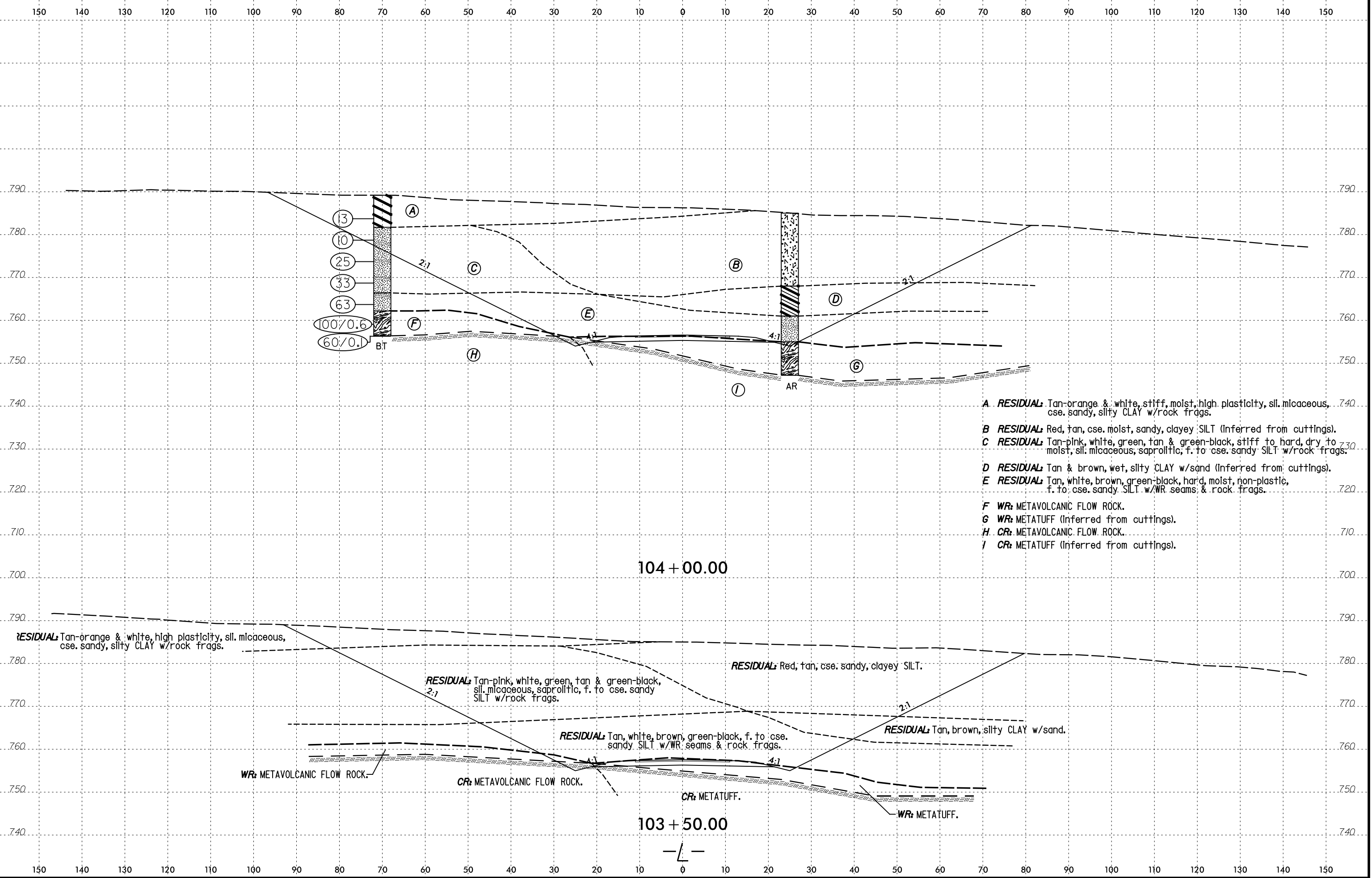
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[Vertical Text]



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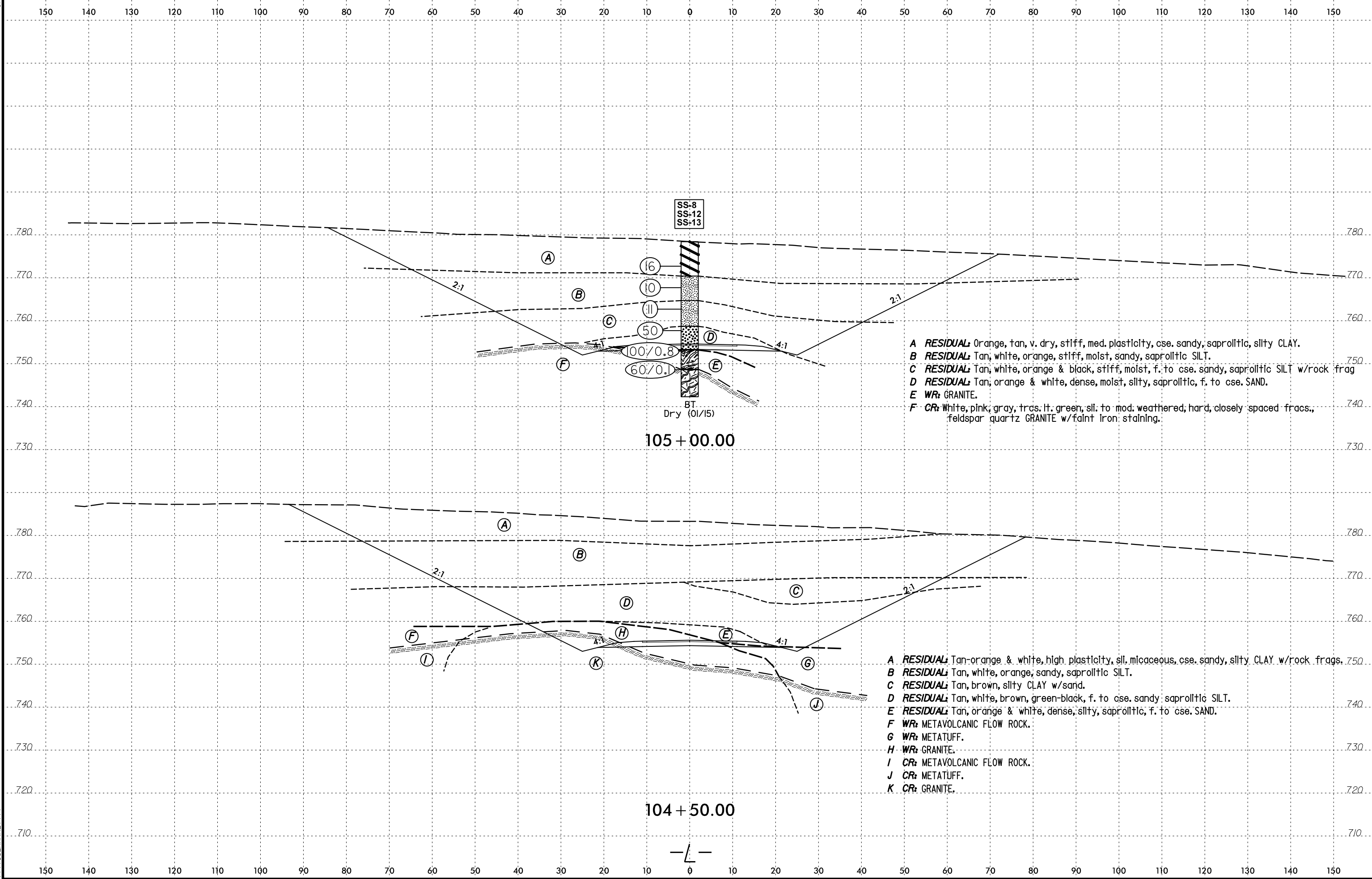
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- (63)
- (100/0.6)
- (60/0.1)

- A RESIDUAL:** Tan-orange & white, stiff, moist, high plasticity, sil. micaceous, cse. sandy, silty CLAY w/rock frags.
- B RESIDUAL:** Red, tan, cse. moist, sandy, clayey SILT (Inferred from cuttings).
- C RESIDUAL:** Tan-pink, white, green, tan & green-black, stiff to hard, dry to moist, sil. micaceous, saprolitic, f. to cse. sandy SILT w/rock frags.
- D RESIDUAL:** Tan & brown, wet, silty CLAY w/sand (Inferred from cuttings).
- E RESIDUAL:** Tan, white, brown, green-black, hard, moist, non-plastic, f. to cse. sandy SILT w/WR seams & rock frags.
- F WR:** METAVOLCANIC FLOW ROCK.
- G WR:** METATUFF (Inferred from cuttings).
- H CR:** METAVOLCANIC FLOW ROCK.
- I CR:** METATUFF (Inferred from cuttings).

104 + 00.00

103 + 50.00

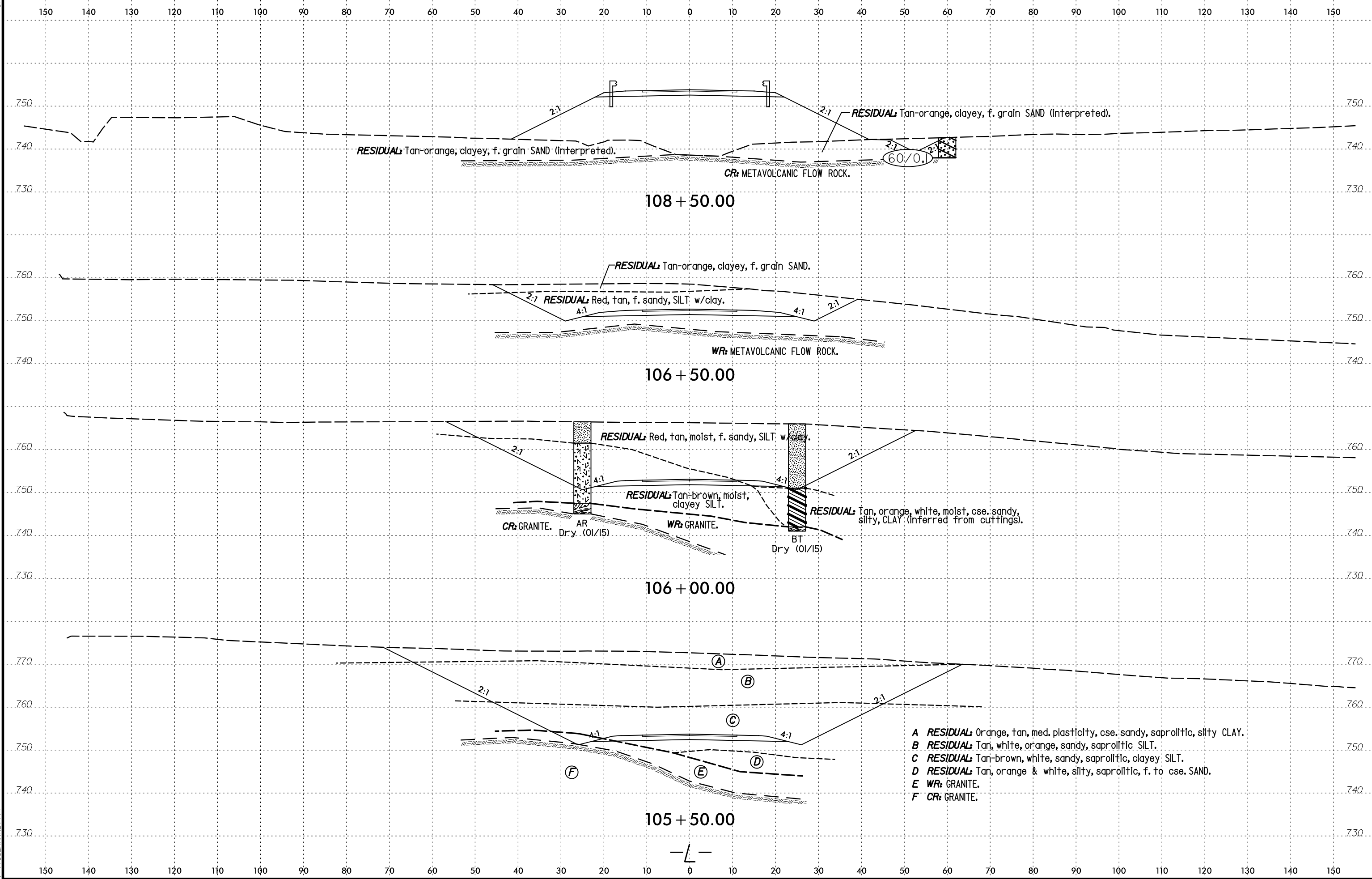


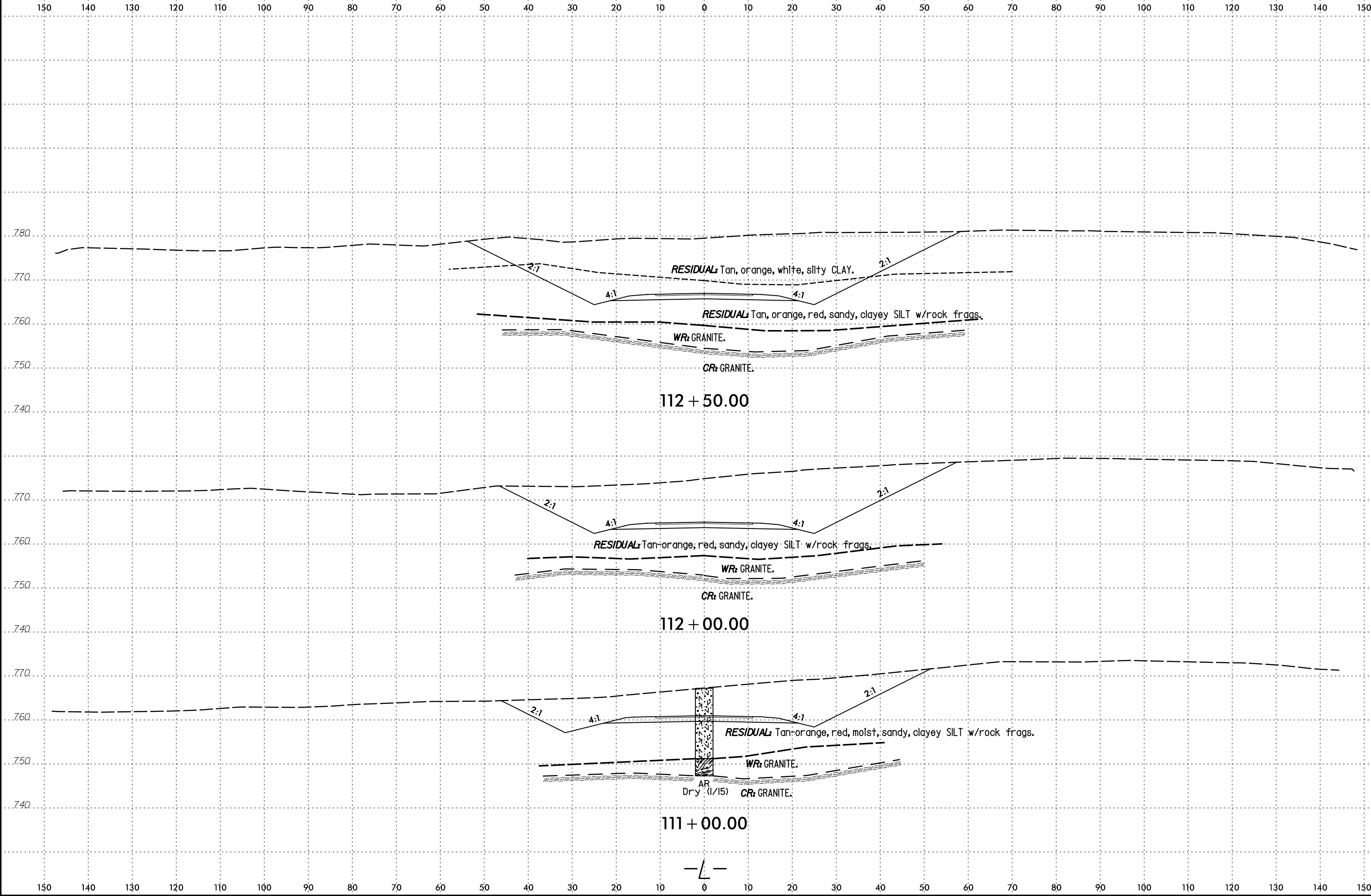
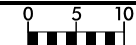


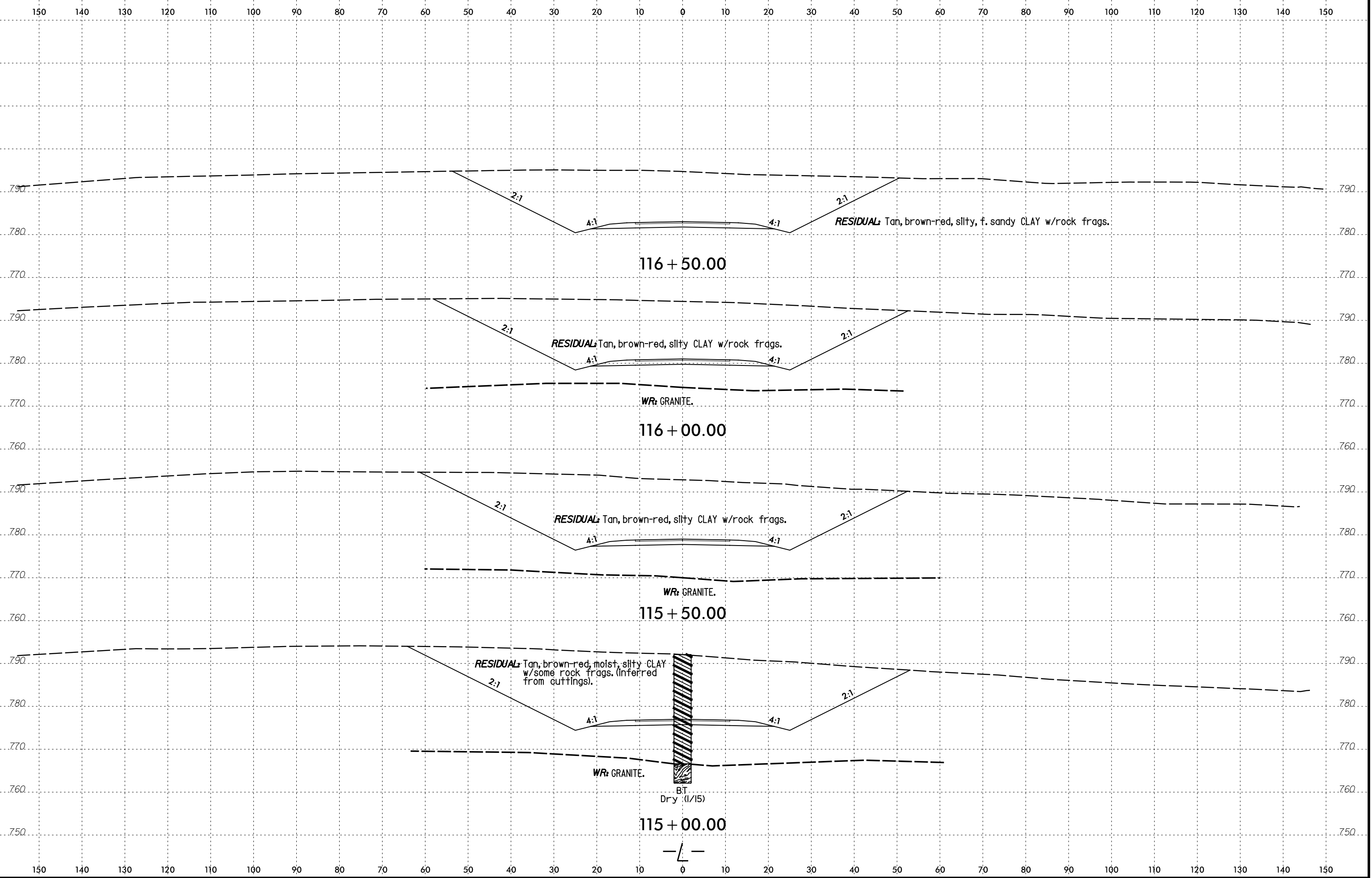
- A RESIDUAL:** Orange, tan, v. dry, stiff, med. plasticity, cse. sandy, saprolitic, silty CLAY.
- B RESIDUAL:** Tan, white, orange, stiff, moist, sandy, saprolitic SILT.
- C RESIDUAL:** Tan, white, orange & black, stiff, moist, f. to cse. sandy, saprolitic SILT w/rock frag
- D RESIDUAL:** Tan, orange & white, dense, moist, silty, saprolitic, f. to cse. SAND.
- E WR:** GRANITE.
- F CR:** White, pink, gray, trcs. lt: green, sl: to mod. weathered, hard, closely spaced frags., feldspar quartz GRANITE w/faint Iron staining.

- A RESIDUAL:** Tan-orange & white, high plasticity, sl. micaceous, cse. sandy, silty CLAY w/rock frags.
- B RESIDUAL:** Tan, white, orange, sandy, saprolitic SILT.
- C RESIDUAL:** Tan, brown, silty CLAY w/sand.
- D RESIDUAL:** Tan, white, brown, green-black, f. to cse. sandy saprolitic SILT.
- E RESIDUAL:** Tan, orange & white, dense, silty, saprolitic, f. to cse. SAND.
- F WR:** METAVOLCANIC FLOW ROCK.
- G WR:** METATUFF.
- H WR:** GRANITE.
- I CR:** METAVOLCANIC FLOW ROCK.
- J CR:** METATUFF.
- K CR:** GRANITE.

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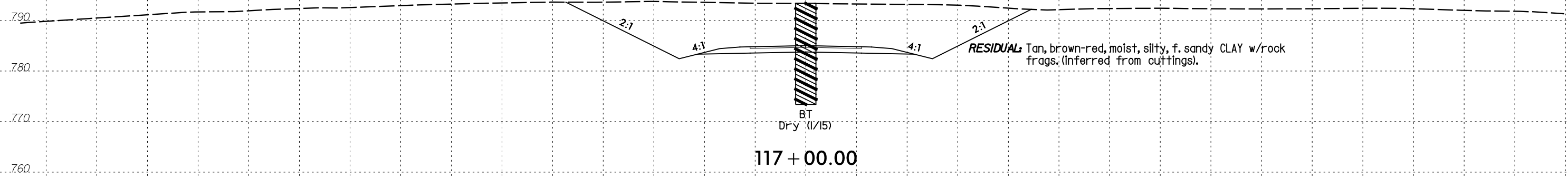
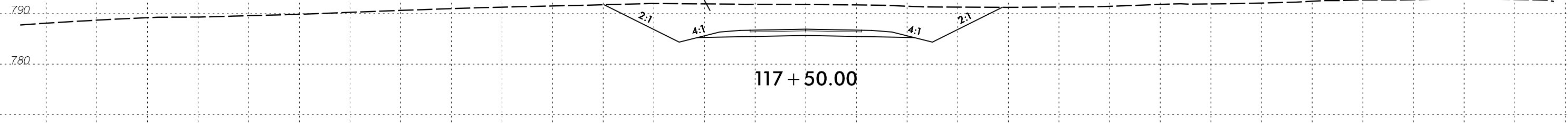
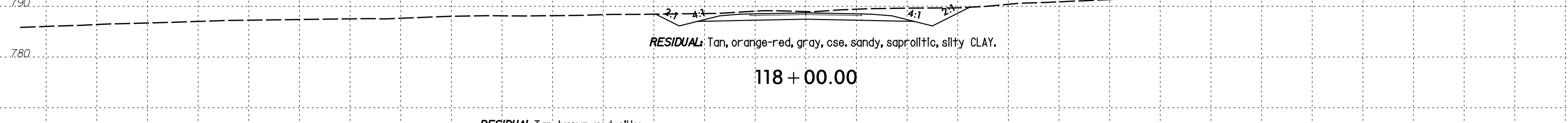
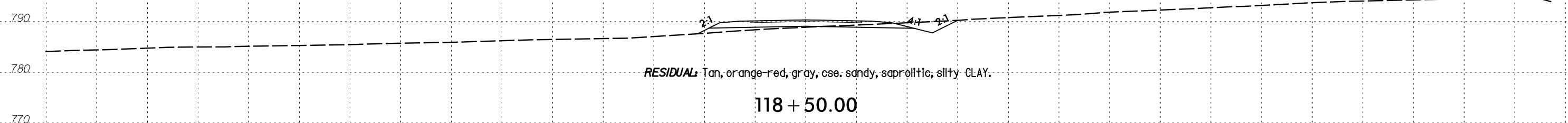
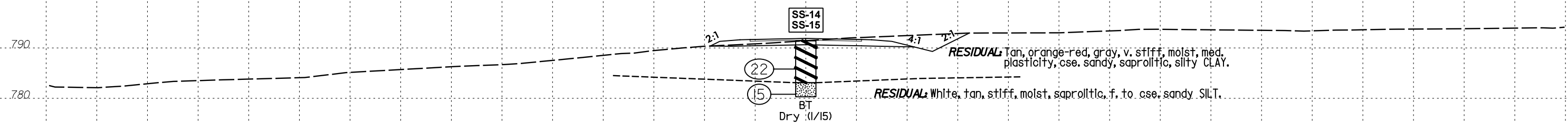






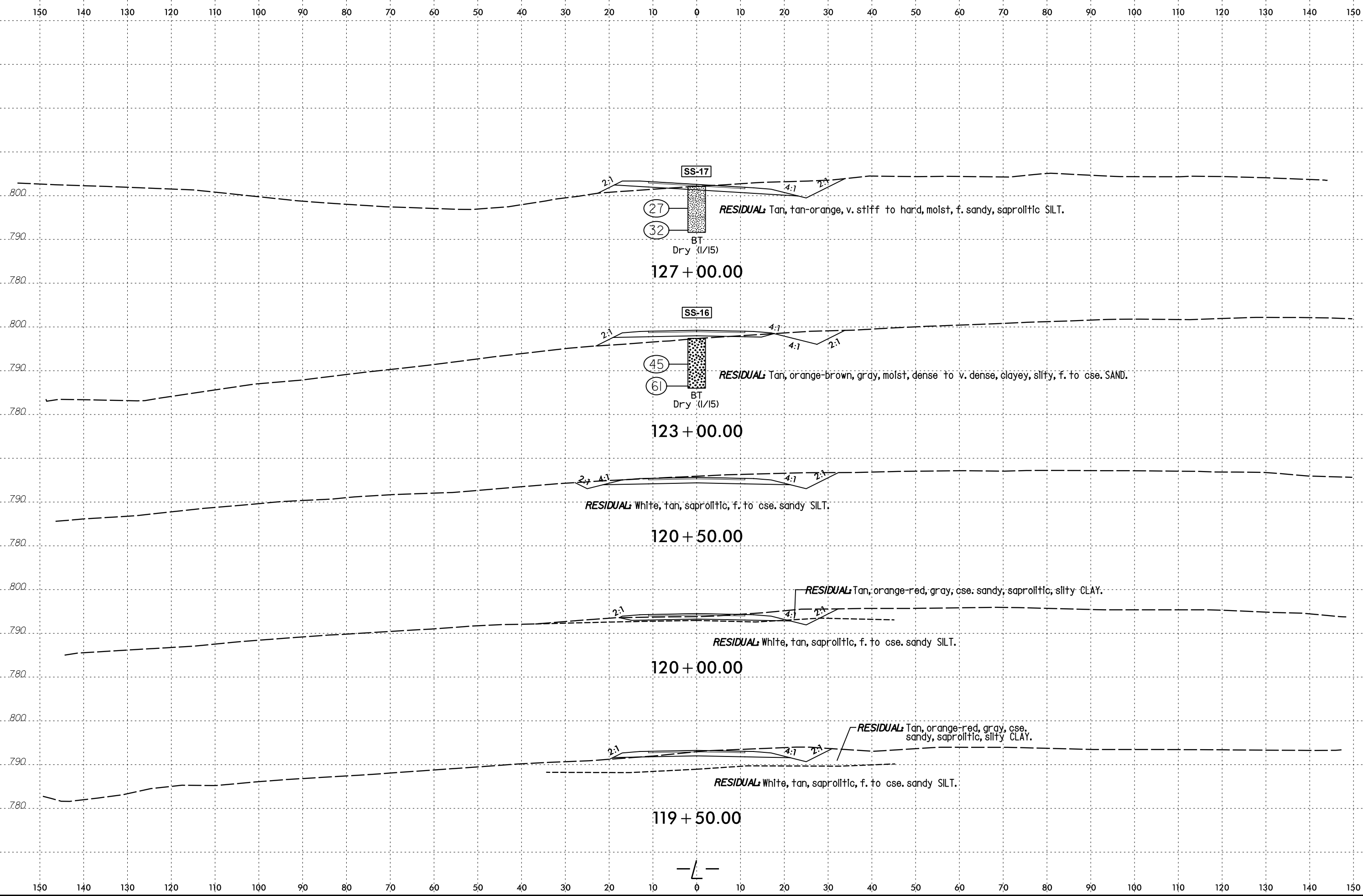
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SS-17

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BT

Dry (1/15)

127 + 00.00

RESIDUAL: Tan, tan-orange, v. stiff to hard, moist, f. sandy, saprolitic SILT.

SS-16

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BT

Dry (1/15)

123 + 00.00

RESIDUAL: Tan, orange-brown, gray, moist, dense to v. dense, clayey, silty, f. to cse. SAND.

RESIDUAL: White, tan, saprolitic, f. to cse. sandy SILT.

120 + 50.00

RESIDUAL: Tan, orange-red, gray, cse. sandy, saprolitic, silty CLAY.

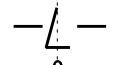
RESIDUAL: White, tan, saprolitic, f. to cse. sandy SILT.

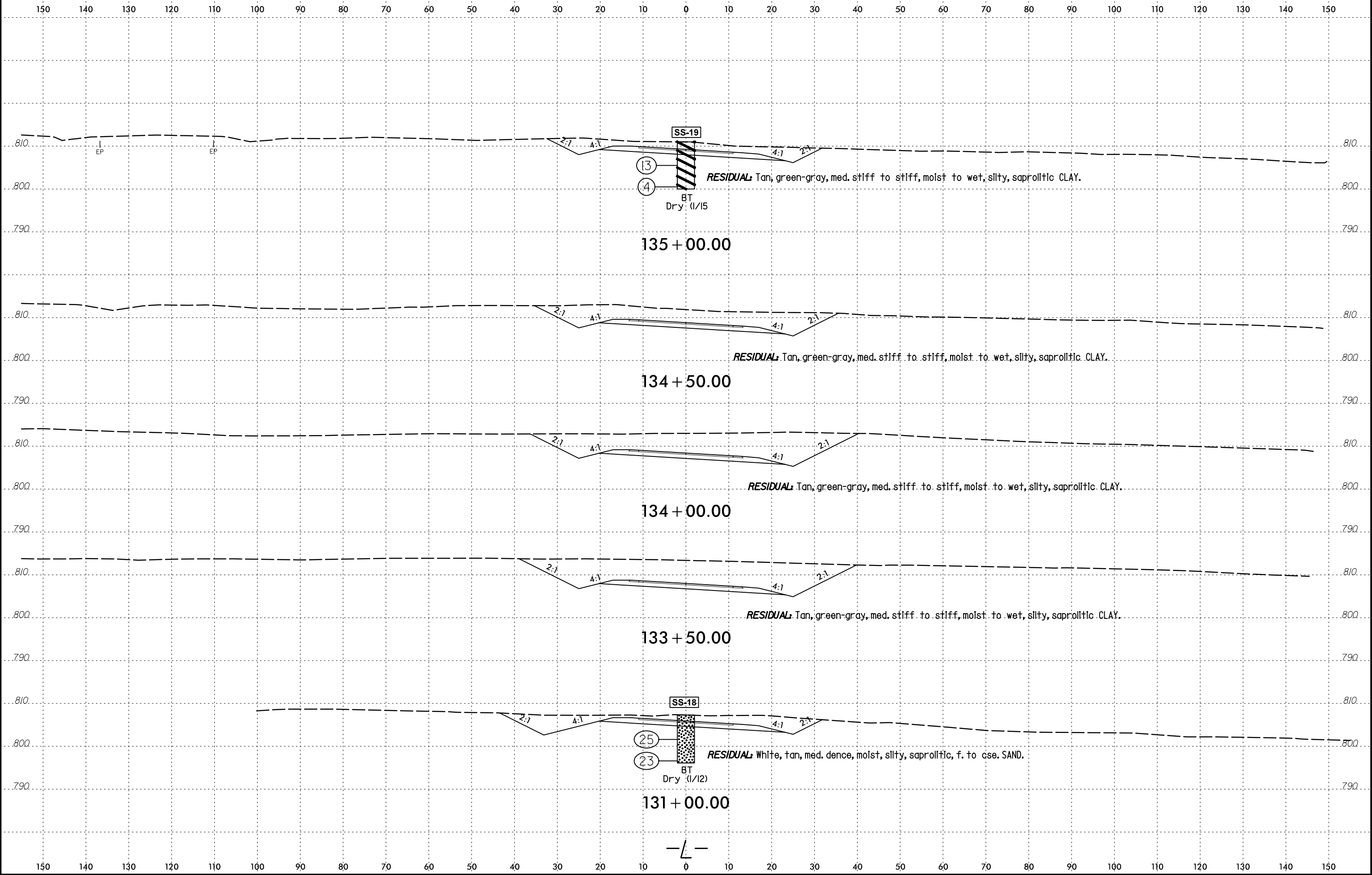
120 + 00.00

RESIDUAL: Tan, orange-red, gray, cse. sandy, saprolitic, silty CLAY.

RESIDUAL: White, tan, saprolitic, f. to cse. sandy SILT.

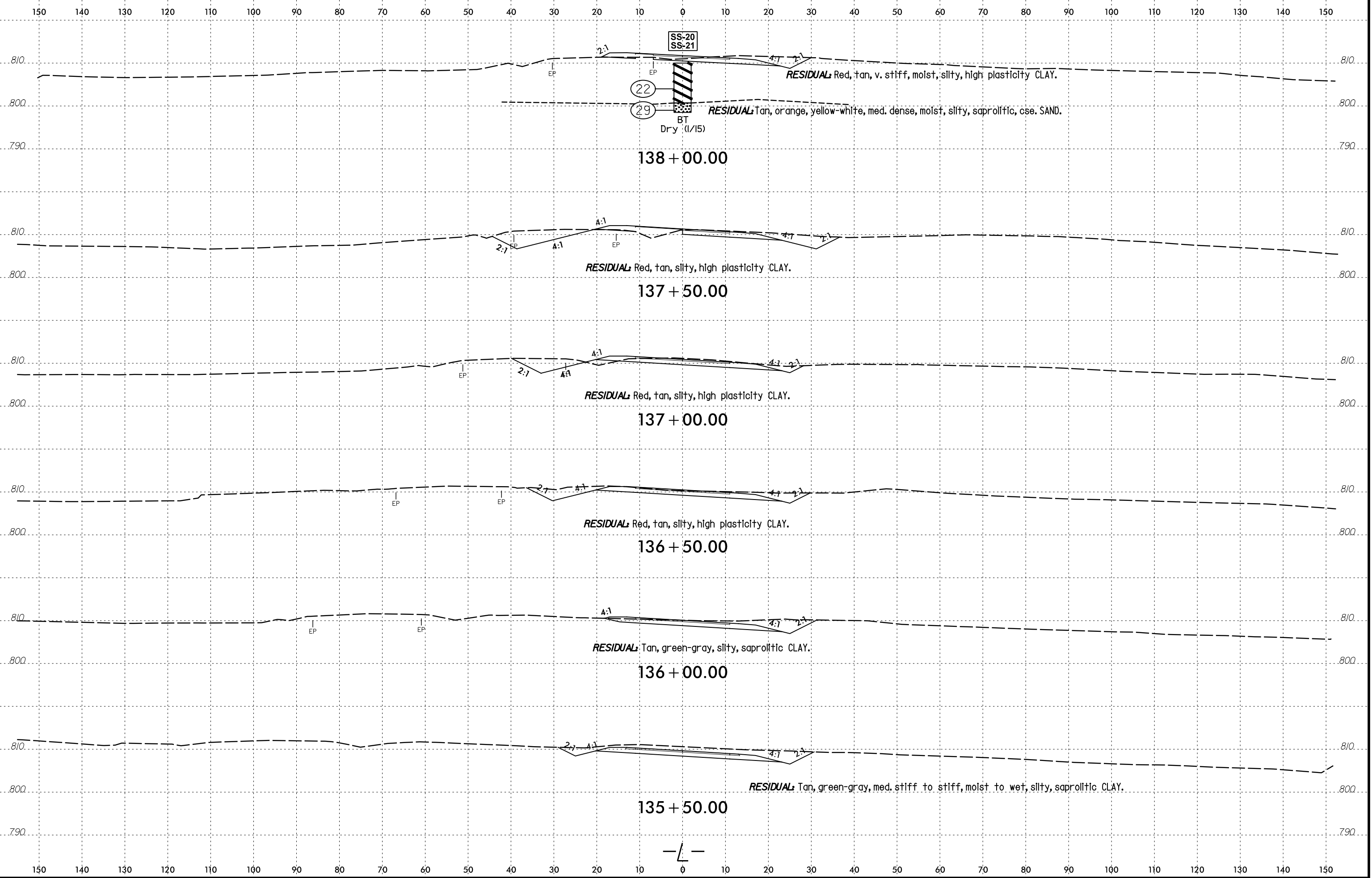
119 + 50.00

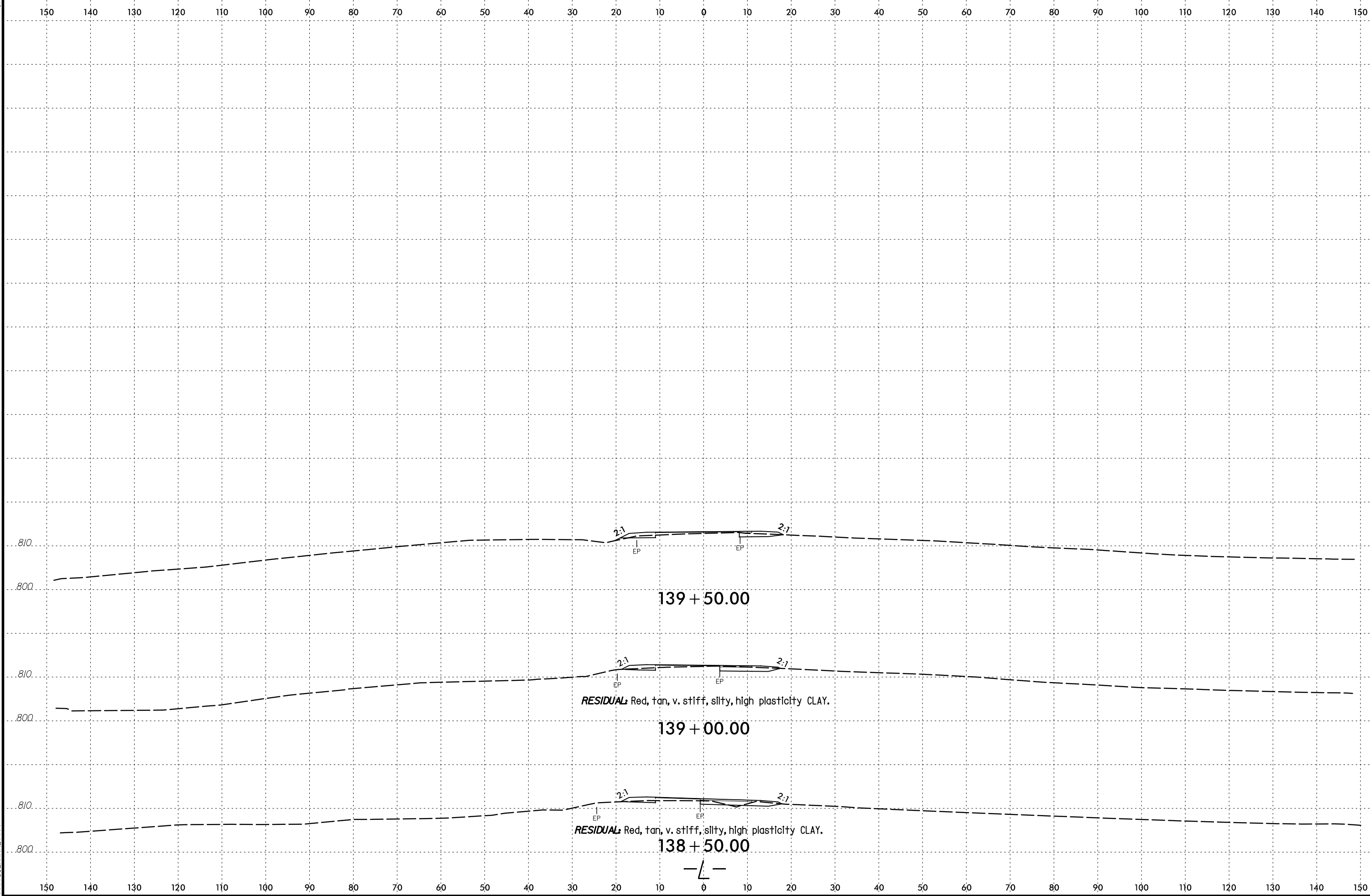




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PROJECT REFERENCE NO.		SHEET NO.	
W-5516		48	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	CL	73+00	4.4-5.9	A-7-5(36)	67	29	1.7	4.8	39.9	53.6	100.0	98.9	95.5	32.3	-
SS-2	CL	73+00	9.4-10.9	A-4(0)	27	2	39.8	19.9	28.3	12	92.0	64.0	42.6	10.6	-
SS-3	CL	79+00	9.3-10.8	A-4(1)	34	9	23.7	22.9	35.3	18	68.1	55.5	41.9	14.7	-
SS-4	CL	77+00	9.4-10.9	A-4(3)	32	2	2	19.6	67.5	10.9	99.9	98.9	86.1	17.8	-
SS-5	43' RT	86+00	14.5-16.0	A-4(4)	38	5	12.7	28	45.3	14	99.9	95.1	67.8	25.4	-
SS-6	CL	73+00	24.4-25.9	A-2-6(0)	28	12	48	15.6	16.4	20	46.4	28.6	18.9	15.0	-
SS-7	CL	101+00	4.5-6.0	A-4(4)	39	9	25	15.9	33.1	26.1	89.2	70.5	56.1	13.9	-
SS-8	CL	105+00	4.7-6.2	A-7-5(13)	54	23	27.3	8.6	24	40.2	91.0	69.3	60.3	19.3	-
SS-9	CL	101+00	9.5-11.0	A-4(1)	37	10	29.6	21.7	23.8	25	70.5	54.5	37.9	18.3	-
SS-10	CL	101+00	14.5-16.0	A-4(4)	40	4	8.6	23.5	48.7	19.2	94.6	89.9	70.9	25.3	-
SS-11	CL	101+00	19.5-21.0	A-4(5)	39	6	5.5	26.8	58.6	9.1	100.0	97.4	77.4	14.5	-
SS-12	CL	105+00	9.7-11.2	A-4(4)	39	6	14.5	21.4	40	24	89.5	79.8	63.4	26.4	-
SS-13	CL	105+00	19.7-21.2	A-2-4(0)	25	1	41	27.1	24	8	92.4	64.5	34.0	11.2	-
SS-14	CL	119+00	4.6-6.1	A-7-6(4)	51	24	52.7	11	19.2	17.1	93.9	50.2	36.8	22.9	-
SS-15	CL	119+00	9.6-11.1	A-4(0)	35	4	33.1	22.12	30.9	14	85.3	64.4	42.1	17.4	-
SS-16	CL	123+00	9.9-11.4	A-2-4(0)	22	2	51	23.2	17.9	7.9	91.4	54.3	27.8	10.5	-
SS-17	CL	127+00	9.0-10.5	A-4(3)	35	4	5.7	30.8	51.9	11.7	99.6	96.9	73.2	16.5	-
SS-18	62' LT	32+17	4.1-5.6	A-2-6(0)	30	12	29.2	30.1	20.7	20	71.6	57.4	35.0	18.7	-
SS-19	CL	135+00	9.5-11.0	A-7-5(17)	54	13	3.1	12.6	68.1	16.2	100.0	98.0	89.8	40.8	-
SS-20	CL	138+00	5.0-6.5	A-7-5(32)	63	29	6.1	5.5	26.9	61.4	99.8	95.4	89.8	28.6	-
SS-21	CL	138+00	10.0-11.5	A-2-4(0)	28	1	52.8	19.4	19.9	7.9	95.8	55.1	31.5	11.7	-
SS-22	80' RT	37+50	4.3-5.8	A-6(6)	33	13	10.2	30.3	30.8	28.7	89.2	84.4	63.2	10.6	-
SS-23	CL	52+00	4.5-6.0	A-7-5(15)	47	15	1.5	28	44.9	25.6	100.0	99.4	83.2	21.2	-
SS-24	CL	48+00	9.9-11.4	A-4(0)	30	NP	21	44.2	28.8	5.9	96.2	82.5	46.2	12.3	-
SS-25	34' RT	44+00	9.8-11.3	A-4(3)	38	6	4.6	51.2	34.3	9.9	99.8	98.4	58.2	22.2	-

REVISIONS

\$\$\$\$\$SYTIME\$\$\$\$\$DGN\$\$\$\$\$