

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4643	1	11
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38451.1.1	BRNHS-49(22)	P.E.	
38451.2.1	BRNHS-0049(22)	RW & UTIL	
38451.3.1	BRNHS-0049(22)	CONST.	

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	22+00 THRU 43+50	4-5	6	7-10
SAMPLE RESULTS				11

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 38451.1.1 (B-4643) F.A. PROJ. BRNHS-49(22)
COUNTY STANLY
PROJECT DESCRIPTION BRIDGE #24 AND APPROACHES ON NC 49
OVER CURL TAIL CREEK

INVENTORY

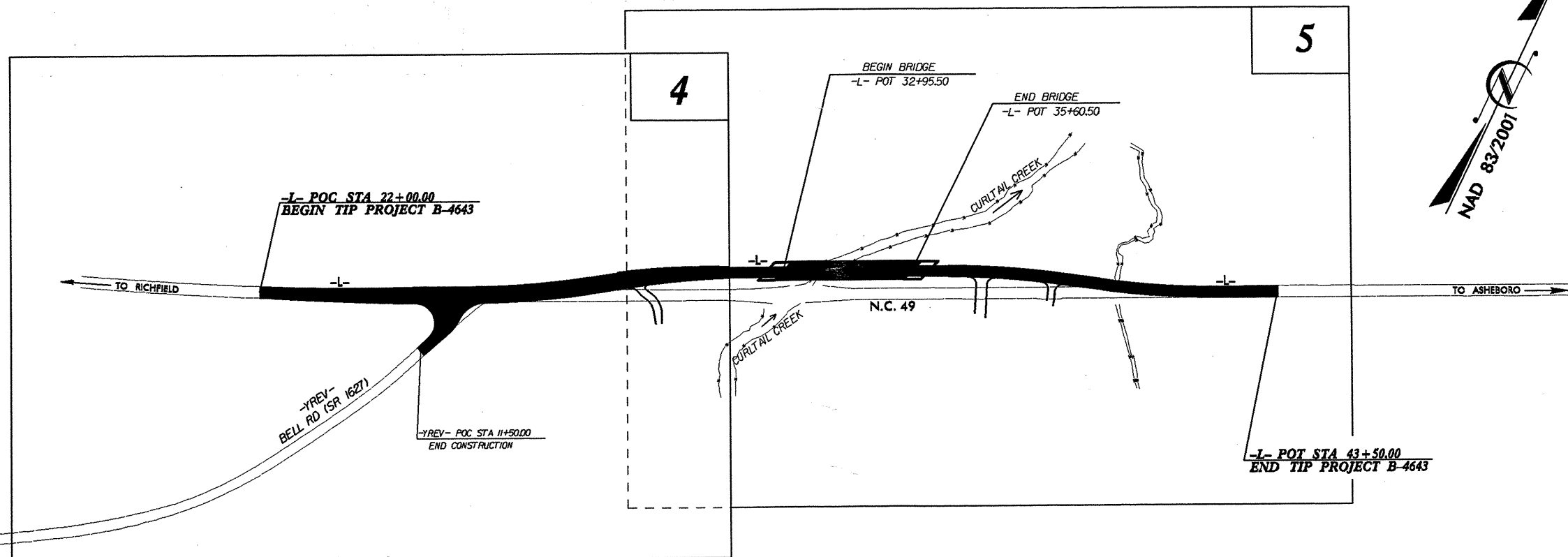
CAUTION NOTICE

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CONTRACT: C203156 ID: B-4643



PERSONNEL

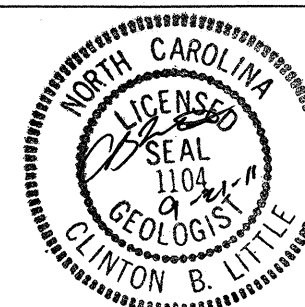
J. K. STICKNEY
C. L. SMITH
M. L. SMITH
A. C. SMITH

INVESTIGATED BY J. P. ROGERS

CHECKED BY C. B. LITTLE

SUBMITTED BY C. B. LITTLE

DATE SEPTEMBER, 2011



DRAWN BY: J. E. ROLFSMEYER/J.P. ROGERS

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

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

STATION	STATION	EXCAVATION (Cubic Yards)					EMBANKMENT (Cubic Yards)				BORROW C.Y.	WASTE (CUBIC Yards)					
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +20%		ROCK	SUITABLE	UNSUIT.	TOTAL		
PHASE ONE																	
-L- 22+00.00	32+95.50	3,370				3,370	3,418		3,418	4,102	732						
-L- 35+60.50	43+50.00	165				165	6,490		6,490	7,788	7,623						
SUBTOTAL		3,535				3,535	9,908		9,908	11,890	8,355						
PHASE TWO																	
-L- 22+50	33+00	349				349	502		502	602	253						
-L- 33+50	43+50	4,190				4,190	224		224	269				3,921			3,921
-YREV-10+18.00	11+50.00	108				108	77		77	92				16			16
SUBTOTAL		4,647				4,647	803		803	964	253			3,937			3,937
SUBTOTAL																	
SUBTOTAL																	
SUBTOTAL																	
TOTAL		8,182				8,182	10,711		10,711	12,853	8,608			3,937			3,937
LOSS DUE TO CLEARING & GRUBBING		-600				-600					600						
ESTMATED SHOULDER MATERIAL							1,122		1,122	1,346	1,346						
PROJECT TOTAL		7,582				7,582	11,833		11,833	14,200	10,554			3,937			3,937
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											528						
GRAND TOTAL		7,582				7,582	11,833		11,833	14,200	11,082			3,937			3,937
SAY		8,000									11,500						
CLASS IV SUBGRADE STABILIZATION = 1,000 TONS																	
GEOTEXTILE FOR SOIL STABILIZATION = 2,000 SY																	
ESTIMATED SHALLOW UNDERCUT = 500 CY																	
ESTIMATED UNDERCUT = 700 CY																	
SELECT GRANULAR MATERIAL = 500 CY																	
EST. DRAINAGE DITCH EXCAVATION = 739 CY																	

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



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PURDUE
GOVERNOR

Eugene A. Conti, Jr.
SECRETARY

September 16, 2011

STATE PROJECT: 38451.1.1 (B-4643)
FEDERAL PROJECT: BRNHS - 49(22)
COUNTY: Stanly
DESCRIPTION: Bridge No. 24 and approaches on NC 49 over Curl Tail creek.
SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

This project is located in northern Stanly County near the town of Richfield. This report addresses the relocation of the existing -L- line (NC 49) and includes the approaches for a new Bridge No. 24. In addition, the existing Bell Road (SR 1627)/ NC 49 intersection will be re-aligned to accommodate the northern shift in the -L- (NC 49) line. Due to this northern shift in the proposed roadway, existing NC 49 will serve as the on-site detour during the construction phase of this project. The following alignments were investigated:

- L- Station 22+00.00 to 43+50.00 (0.41 miles)
- YREV- Station 10+00.00 to 11+50.00 (0.03 miles)

The total length of lines investigated is 0.44 miles (2300.00 feet).

This project was initially scoped as a PDEA investigation in 2008. The final field investigation was conducted in July 2011. All borings performed on this project were conducted with a CME-550X drill machine with an automatic hammer. Standard Penetration Tests were conducted at each boring location utilizing hollow stem augers. All soil samples taken during the investigations were submitted to the Materials and Tests Unit for laboratory analysis.

MAILING ADDRESS:
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RALEIGH NC 27699-1589

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WEBSITE: WWW.DOH.DOT.STATE.NC.US

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

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Non-Crystalline Rock: Non-crystalline rock was encountered within six feet of proposed grade in the following cut section:

<u>Line</u>	<u>Station</u>	<u>Offset</u>
-L-	28+00 to 30+00	Left

According to the NC Geological map, the rock in this area is classified as metamudstone and meta-argillite of the Carolina Slate Belt. Curl Tail creek flows directly on this rock within the project corridor. Please refer to the cross-sections in the attached inventory report for a graphical depiction of this area.

Alluvial Soils: Alluvial deposits encountered within the project corridor are up to six feet thick. These soils are associated with the Curl Tail Creek; which serves as the primary drainage outlet for this project. On the western side of Curl Tail creek, the deposits are thickest and consist of very loose silty sand (A-2-4). Thinner layers of silty clay (A-7) were encountered on the eastern side of Curl Tail creek. The maximum proposed roadway fill height over these deposits is approximately 11'.

SOIL PROPERTIES

Residual Soils

All residual soils on the project are derived from the metamudstone and argillite (CZmd) rocks encountered within the project corridor. The dominant residual soil type encountered is sandy silt (A-4). Based on the laboratory analysis performed at the Materials and Tests Unit, these silts were found to have a low plasticity (6<P.I. <15).

Respectfully submitted,

John P. Rogers
Project Geological Engineer

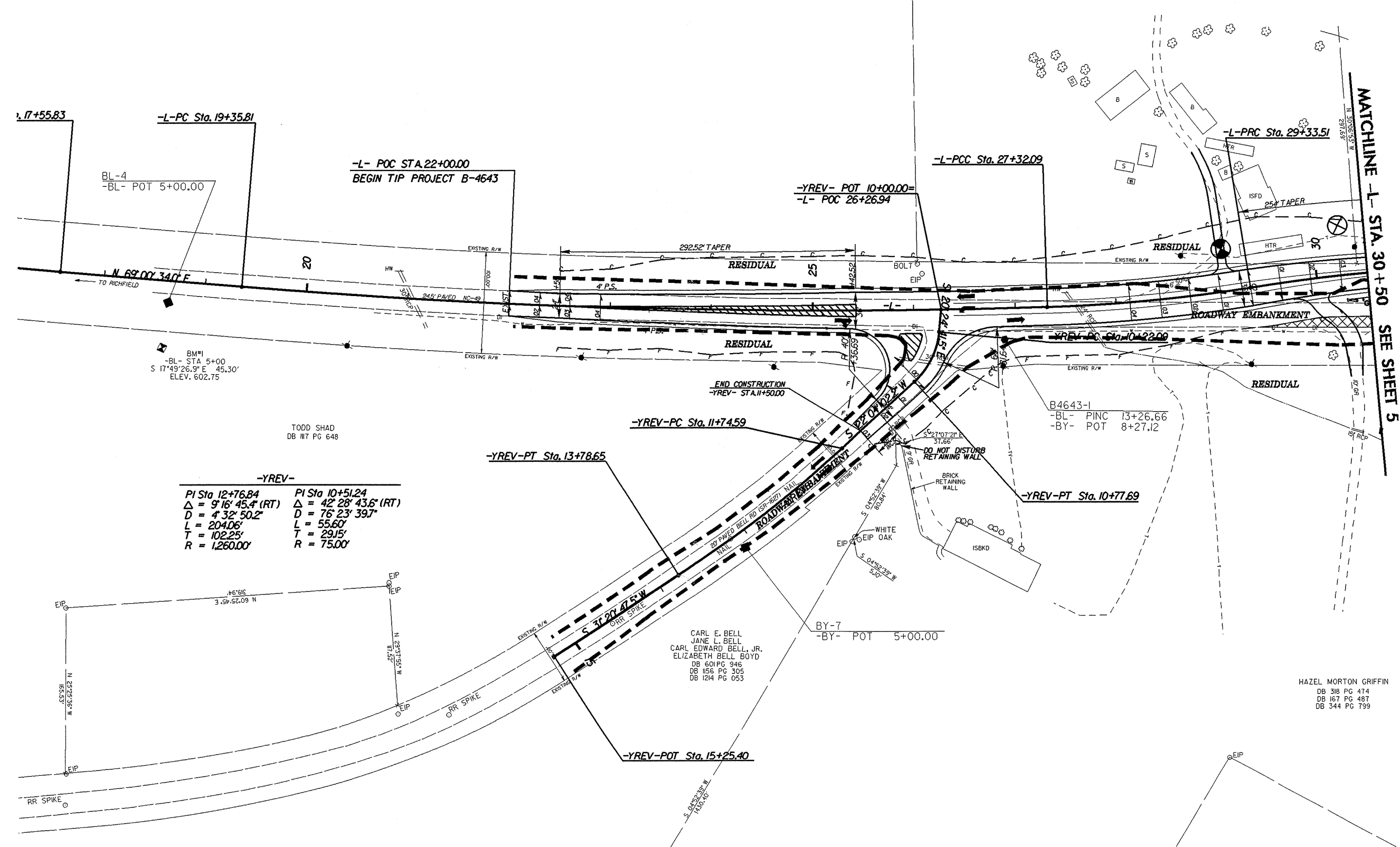
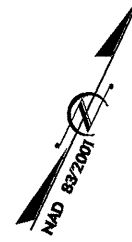
PROJECT REFERENCE NO. B-4643	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

DONNIE G. SMITH
DORIS E. SMITH
DB 354 PG 810

-L-

PI Sta 23+34.40 Δ = 6° 36' 43.6" (LT) D = 0° 49' 49.3" L = 796.28' T = 398.58' R = 6,900.00' e = SEE PLAN	PI Sta 28+32.94 Δ = 7° 26' 42.8" (LT) D = 3° 41' 47.4" L = 201.41' T = 100.85' R = 1,550.00' e = SEE PLAN	PI Sta 30+59.72 Δ = 9° 18' 38.4" (RT) D = 3° 41' 47.4" L = 251.88' T = 126.22' R = 1,550.00' e = SEE PLAN
-----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------

TODD SHAD
DB 117 PG 648



BM#1
-BL- STA 5+00
S 17°49'26.9\" E 45.30'
ELEV. 602.75

TODD SHAD
DB 117 PG 648

-YREV-

PI Sta 12+76.84 Δ = 9° 16' 45.4" (RT) D = 4° 32' 50.2" L = 204.06' T = 102.25' R = 1,260.00'	PI Sta 10+51.24 Δ = 42° 28' 43.6" (RT) D = 76° 23' 39.7" L = 55.60' T = 29.15' R = 75.00'
-------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------

CARL E. BELL
JANE L. BELL
CARL EDWARD BELL, JR.
ELIZABETH BELL BOYD
DB 601 PG 946
DB 1156 PG 305
DB 1214 PG 053

HAZEL MORTON GRIFFIN
DB 318 PG 474
DB 167 PG 487
DB 344 PG 799

MATCHLINE -L- STA. 30+50 SEE SHEET 5

REVISIONS

8/17/99

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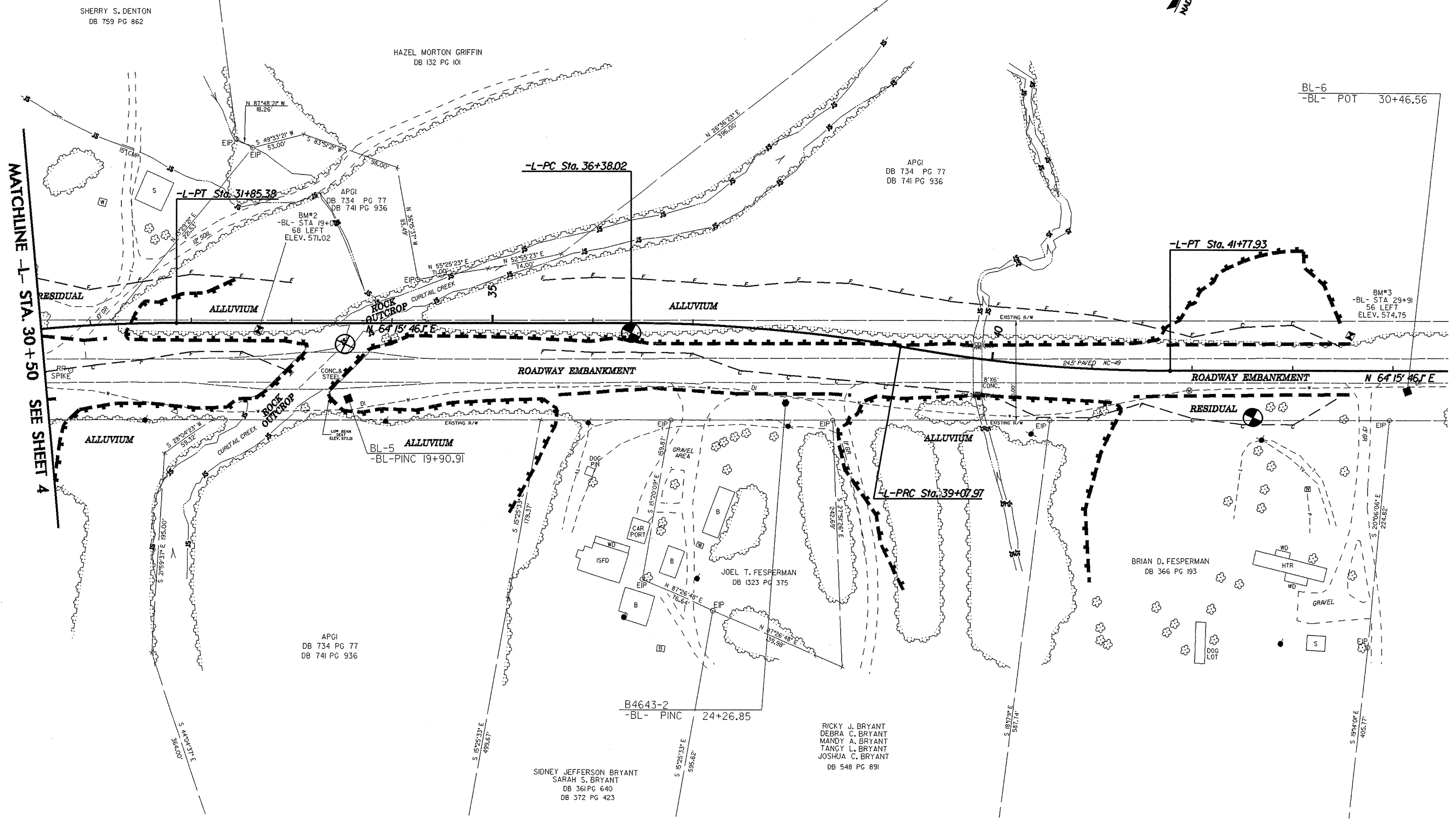
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PROJECT REFERENCE NO. B-4643	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



-L-		
PI Sta 30+59.72	PI Sta 37+73.34	PI Sta 40+43.29
$\Delta = 9' 18'' 38.4''$ (RT)	$\Delta = 9' 58'' 43.9''$ (RT)	$\Delta = 9' 58'' 43.9''$ (LT)
D = 3' 41' 47.4"	D = 3' 41' 47.4"	D = 3' 41' 47.4"
L = 251.88'	L = 269.95'	L = 269.95'
T = 126.22'	T = 135.32'	T = 135.32'
R = 1,550.00'	R = 1,550.00'	R = 1,550.00'
e = SEE PLAN	e = SEE PLAN	e = SEE PLAN

MATCHLINE -L- STA. 30 + 50 SEE SHEET 4



BL-6
-BL- POT 30+46.56

BM#3
-BL- STA 29+91
56' LEFT
ELEV. 574.75

BL-5 ALLUVIUM
-BL-PINC 19+90.91

B4643-2
-BL- PINC 24+26.85

SIDNEY JEFFERSON BRYANT
SARAH S. BRYANT
DB 361 PG 640
DB 372 PG 423

RICKY J. BRYANT
DEBRA C. BRYANT
MANDY A. BRYANT
TANGY L. BRYANT
JOSHUA C. BRYANT
DB 548 PG 891

BRIAN D. FESPERMAN
DB 366 PG 193

JOEL T. FESPERMAN
DB 1323 PG 375

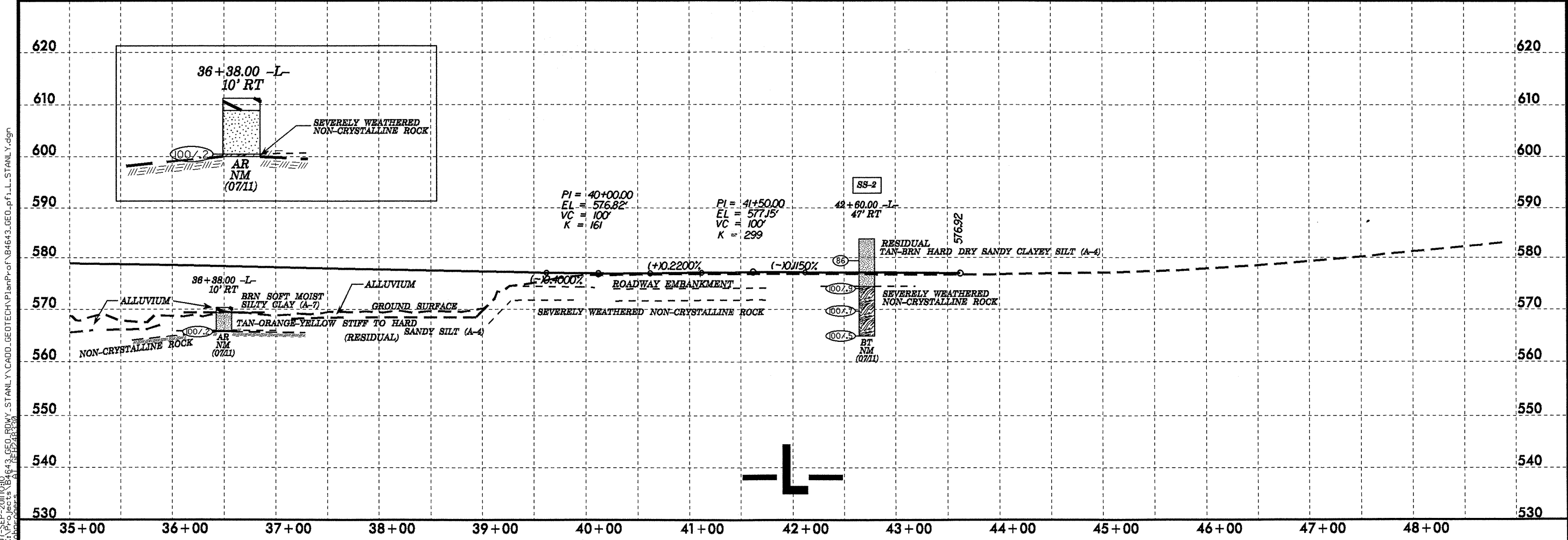
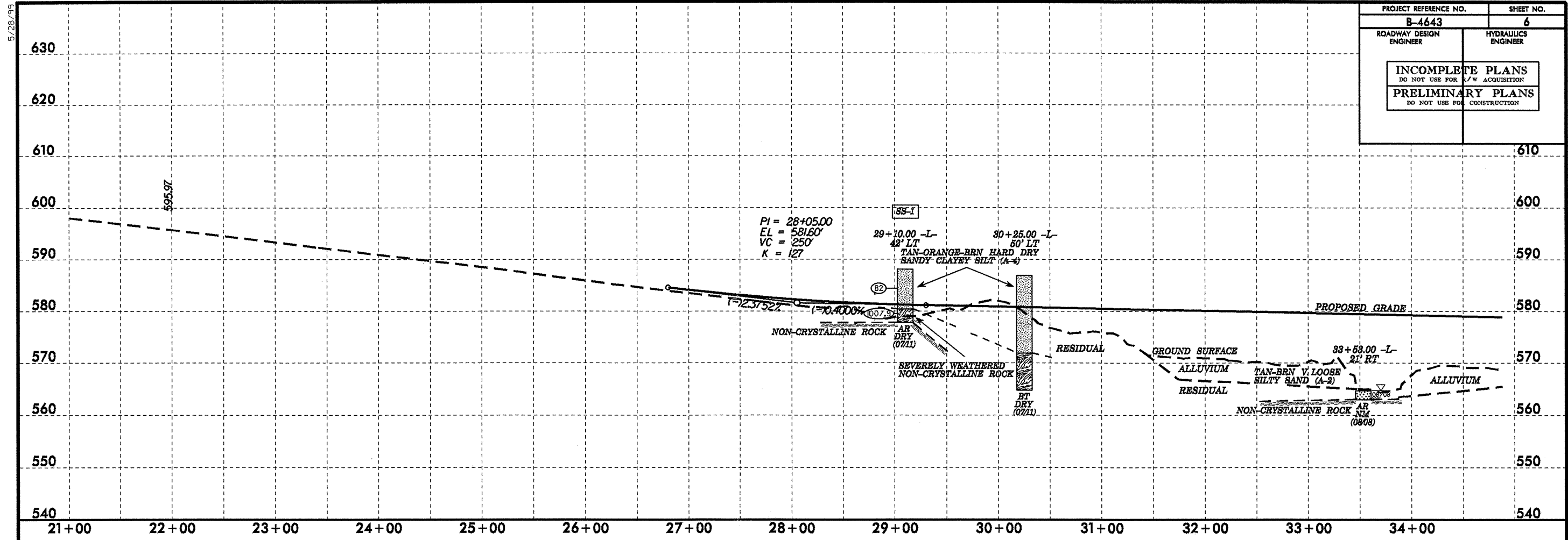
SHERRY S. DENTON
DB 759 PG 862

HAZEL MORTON GRIFFIN
DB 132 PG 101

APGI
DB 734 PG 77
DB 741 PG 936

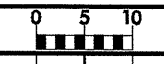
APGI
DB 734 PG 77
DB 741 PG 936

PROJECT REFERENCE NO. B-4643	SHEET NO. 6
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INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



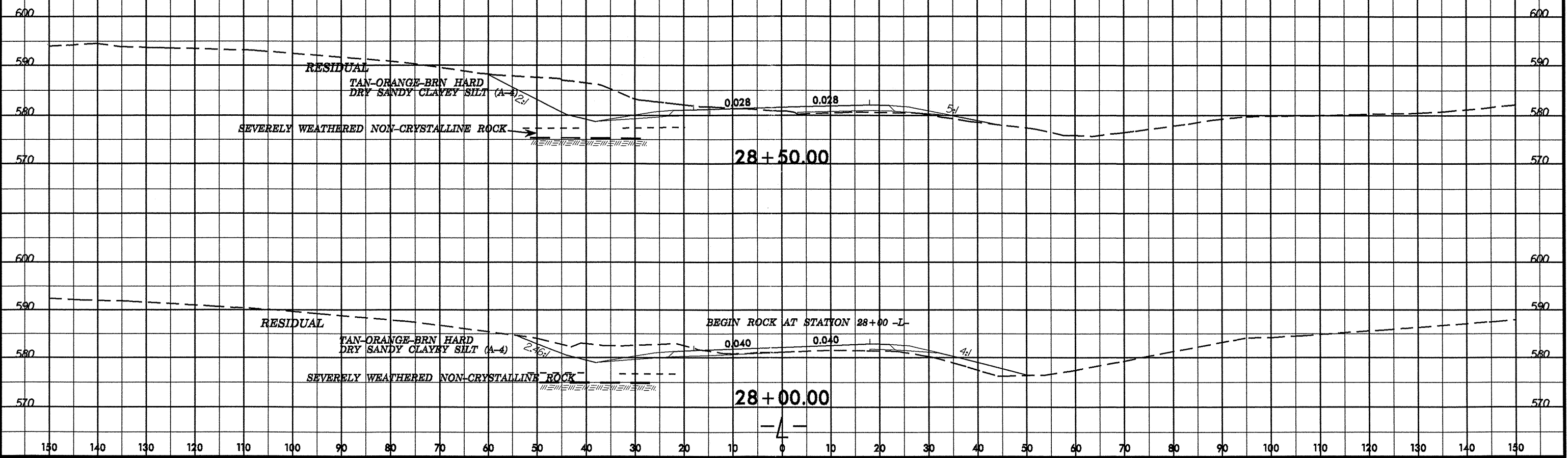
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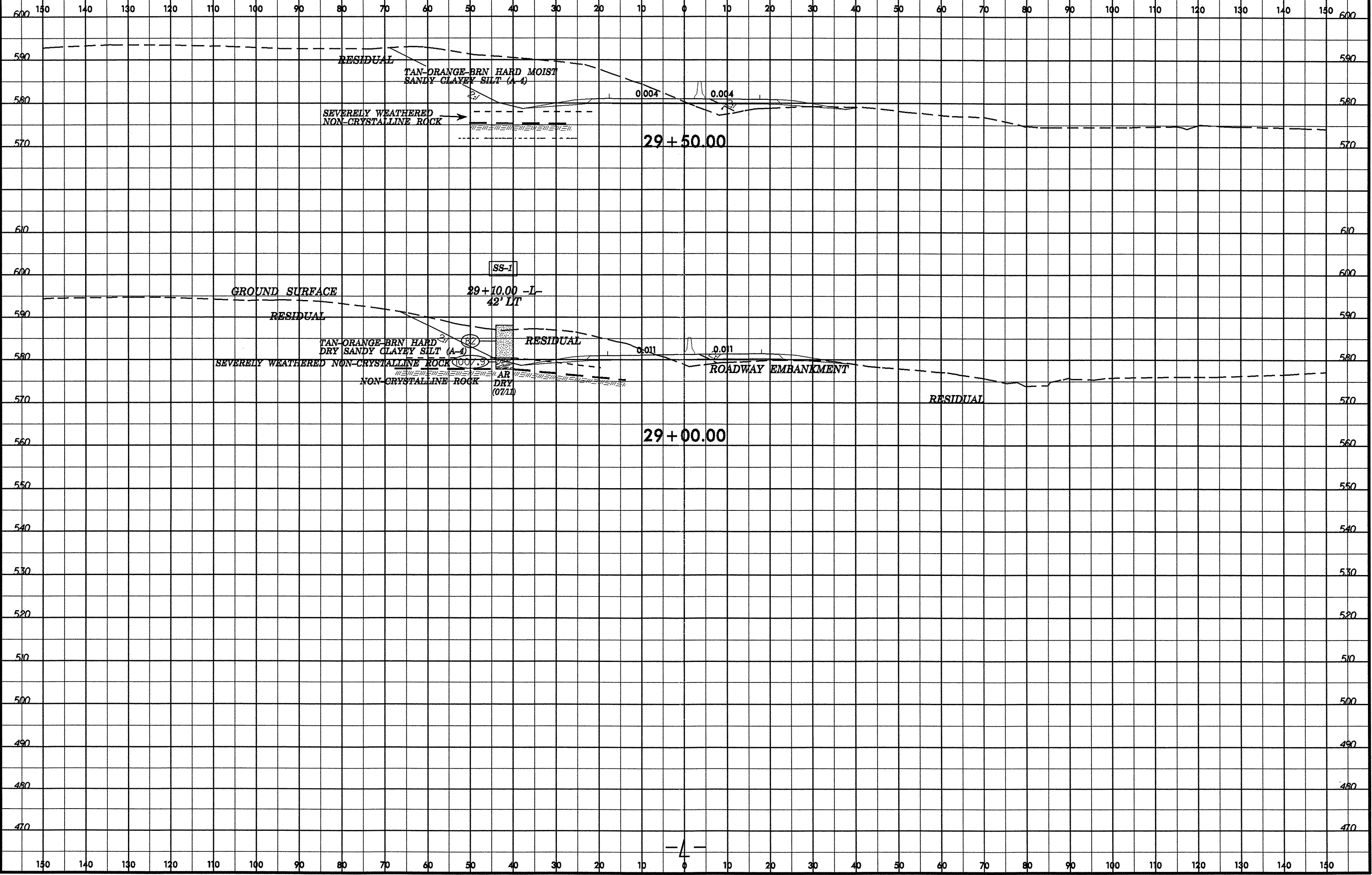
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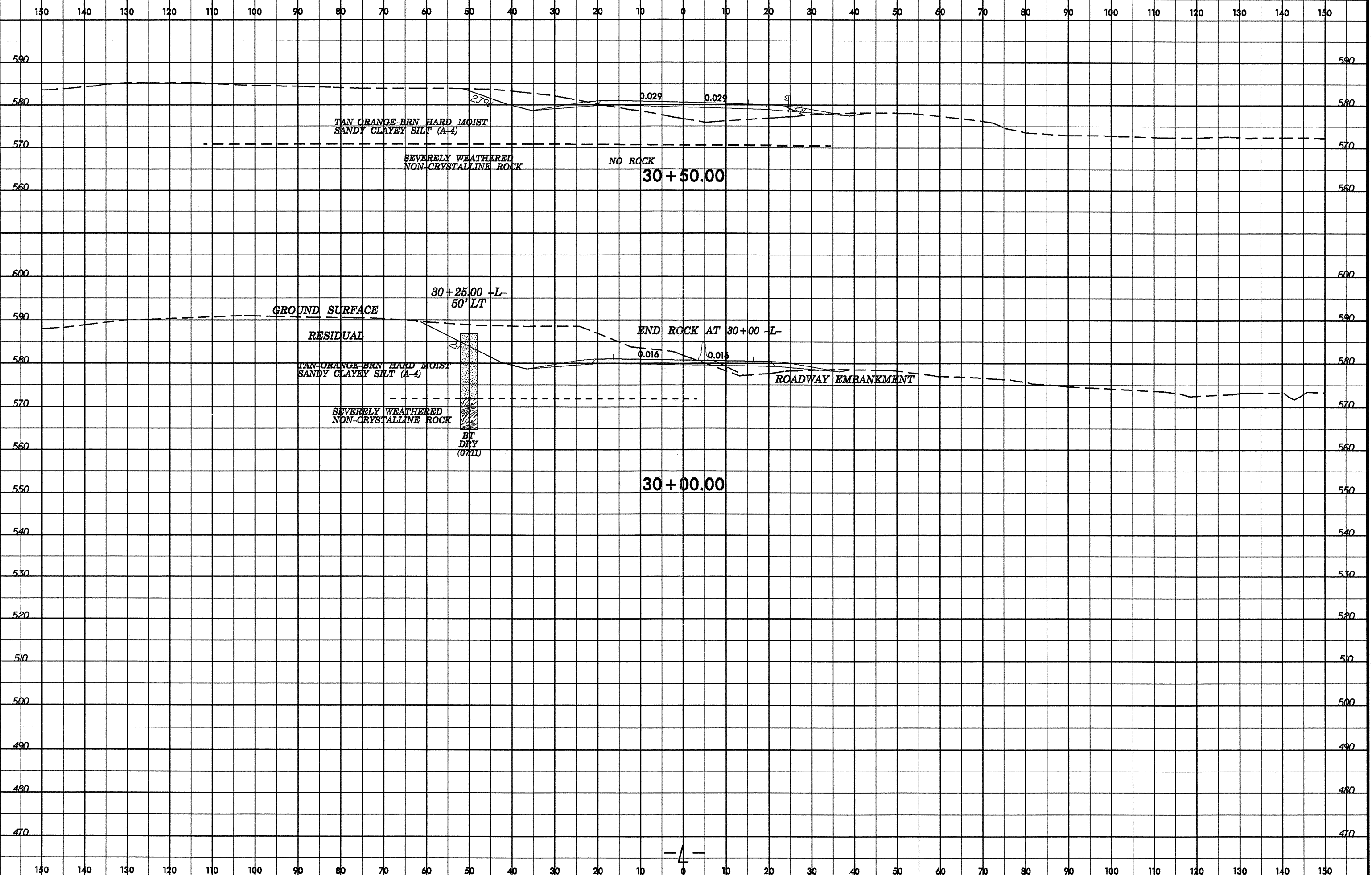
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PROJ. REFERENCE NO. B4643	SHEET NO. 4
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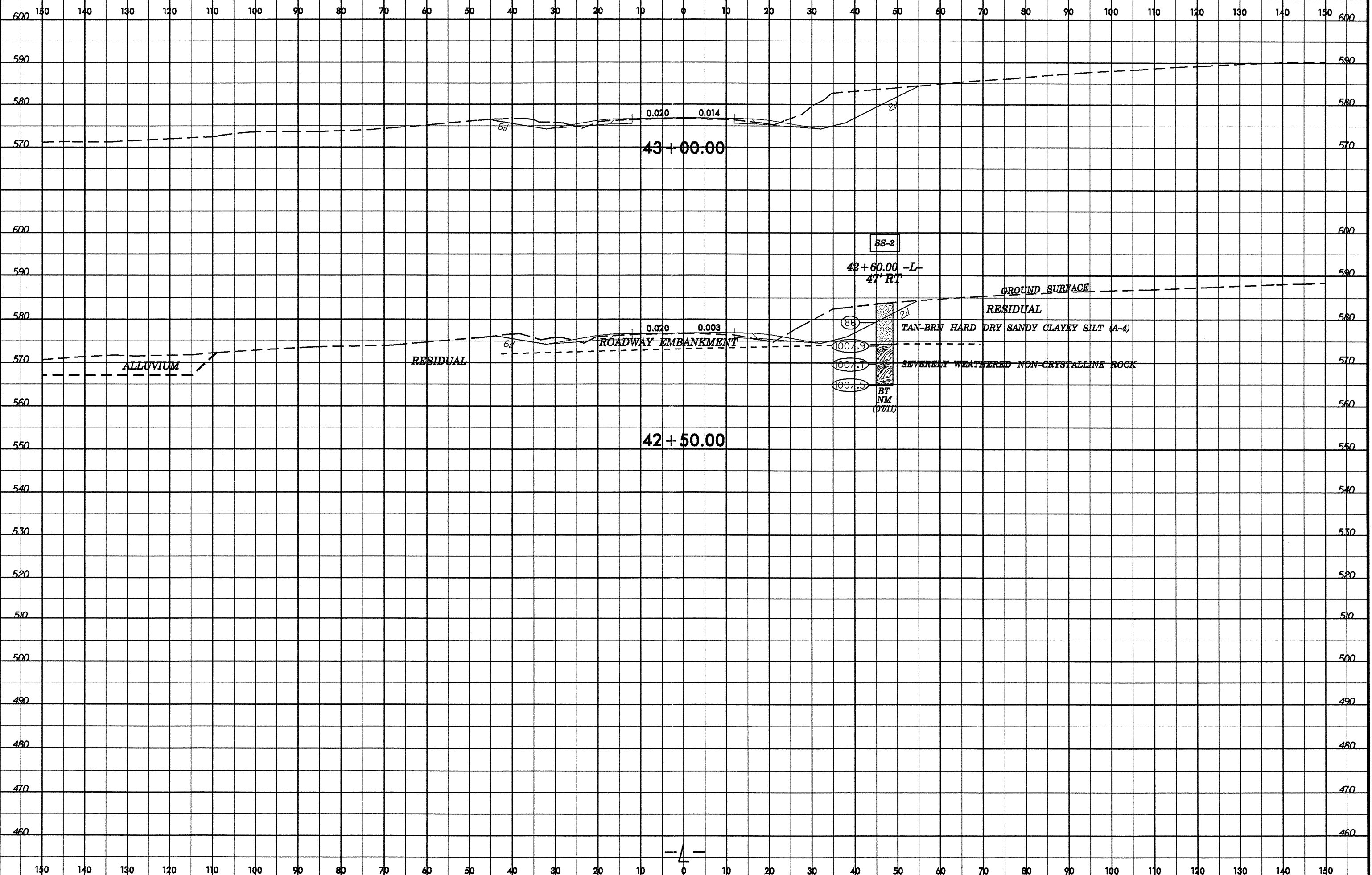


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PROJ. REFERENCE NO. B4643 SHEET NO. 10



43+00.00

42+50.00

SS-2

42+60.00 -L-
47' RT

GROUND SURFACE

RESIDUAL

TAN-BRN HARD DRY SANDY CLAYEY SILT (A-4)

SEVERELY WEATHERED NON-CRYSTALLINE ROCK

BT
NM
(0711)

0.020 0.003

0.020 0.014

ALLUVIUM

RESIDUAL

ROADWAY EMBANKMENT

-4-

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11/11

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	42 LT	29+10	3.30-4.30	A-4(8)	40	10	17.4	9.1	28.9	44.5	100	87	76	-	-
SS-2	47 RT	42+60	3.90-4.90	A-4(8)	39	9	12.8	6.7	25.9	54.7	100	92	82	-	-