

REFERENCE: U-4902D

PROJECT: 40238

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.	U-4902D	1	18

CONTENTS

LINE	STATION	PLAN	PROFILE
L	202+50 TO 288+00	4-10	11-17
Y28A	10+00 TO 11+25	4	18
Y29	13+00 TO 17+10	6	18
Y30	10+00 TO 11+75	6	18
Y31	11+25 TO 12+50	7	18
Y32	11+50 TO 13+02	7	18
Y33	11+65 TO 12+50	8	18

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY NEW HANOVER
PROJECT DESCRIPTION US 17 BUSINESS (MARKET ST.)
FROM LENDIRE ROAD TO MARSH OAKS DRIVE

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:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

- LINDSAY PUGH
- COREY FUTRAL
- T. TRIANTIS
- W.J. MILLER, CWC
- MICHAEL D. MASON

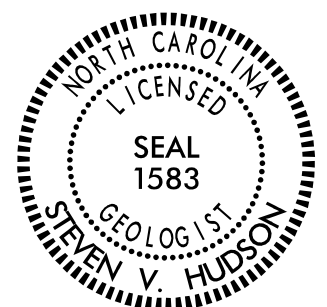
INVESTIGATED BY CATLIN

DRAWN BY DAVID MCPHERSON

CHECKED BY STEVEN V. HUDSON

SUBMITTED BY STEVEN V. HUDSON

DATE MAY 2016



DocuSigned by:
Steve Hudson 5/31/2016

62EED88181E445E
SIGNATURE DATE

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

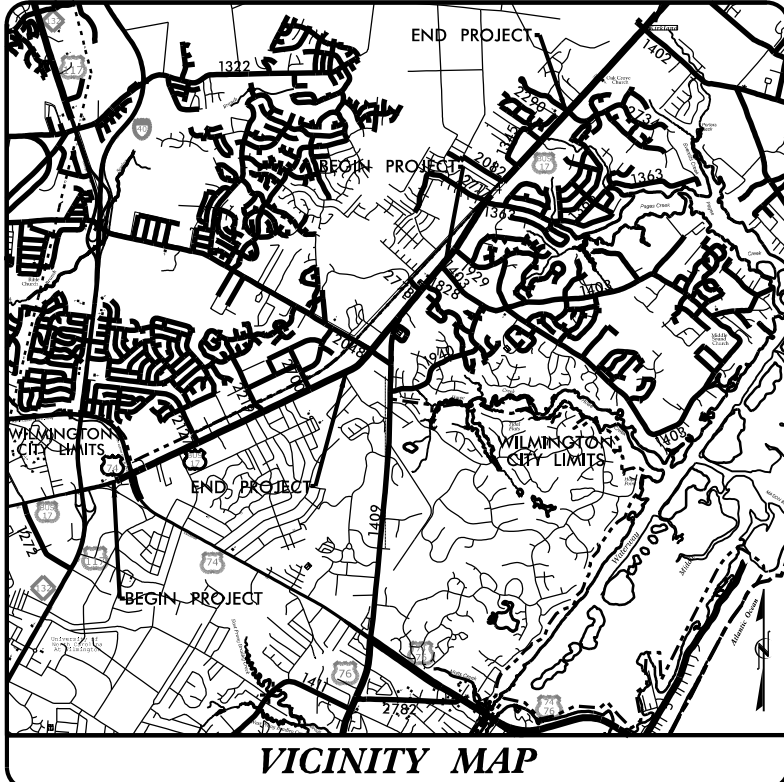
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

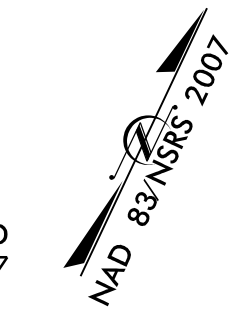
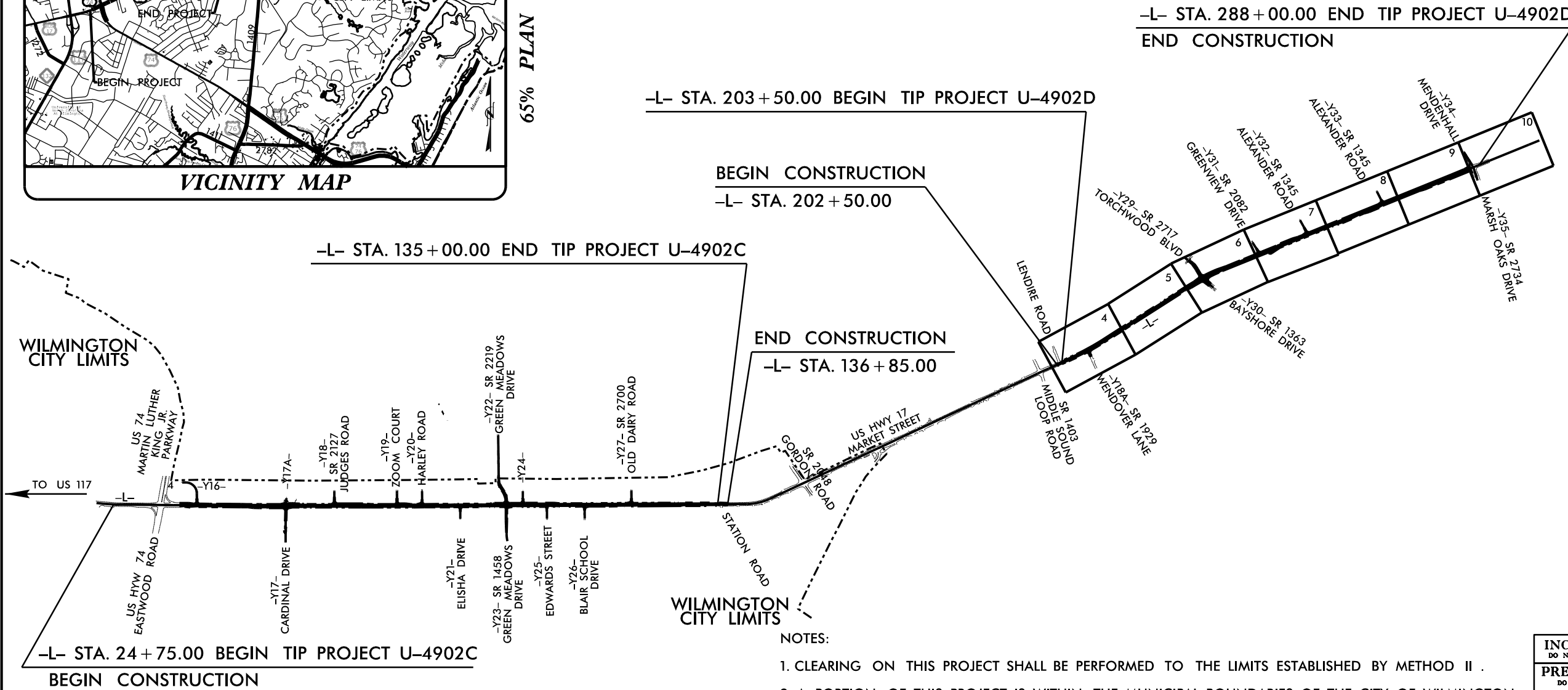
**LOCATION: MARKET STREET FROM JUST WEST OF US 74
(MLK PARKWAY) TO WEST OF STATION ROAD
AND WEST OF WENDOVER LN TO MARSH OAKS DR**
TYPE OF WORK: GRADING, PAVING, AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4902D	3	18
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40238.1.1			

TIP PROJECT: U-4902D



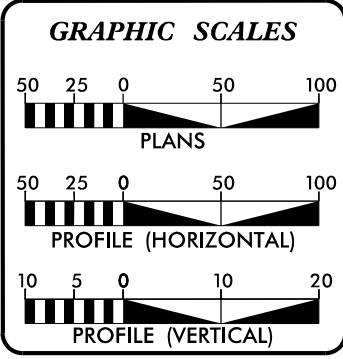
65% PLAN SUBMITTAL



- NOTES:
- CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II .
 - A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF WILMINGTON.

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

CONTRACT:



DESIGN DATA

ADT 2008 =	52,900
ADT 2035 =	66,000
K =	11 %
D =	55 %
T =	6 % *
V =	50 MPH
* TTST = 2% DUAL 4%	
FUNC CLASS = PRINCIPAL ARTERIAL	
REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT U-4902CD =	3.688 MILES
TOTAL LENGTH OF T.I.P. PROJECT U-4902CD =	3.688 MILES
ALL LENGTH BASED ON -L- CENTERLINE	

Prepared In the Office of:
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Raleigh NC, 27609

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 10, 2015

LETTING DATE:
AUGUST 16, 2016

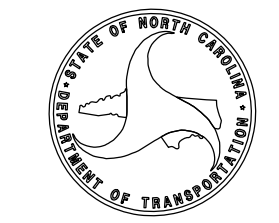
DAVID BASS, PE PROJECT ENGINEER
TRACE HOWELL, EI PROJECT DESIGN ENGINEER
DAVID LEONARD, PE NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



25-MAY-2016 08:39 S:\wpmktg\PROJECT\2016\216032 NCDOT MARKET STREET (U4902D)\Lendire Rd. to Marsh Oaks\U4902D.GEO_RDWY\CADD_GEO\TECH\Site&Sub\U4902C.GEO_rdy_tsh.dgn

STATE PROJECT: 40238.1.4 (U-4902D)
 F.A. PROJECT: NHS-0017(76)
 COUNTY: NEW HANOVER
 DESCRIPTION: US 17 Business (Market Street) from Lendire Road to Marsh Oaks Drive
 SUBJECT: Geotechnical Inventory Report

1988 (NGVD88). All measurements were recorded and reported in United States Survey Feet (US Ft).

The following alignments were investigated. Plan sheets, subsurface profiles, and selected cross sections of the alignment are included in this report.

<u>Line</u>	<u>Station (±)</u>
-L-	202+50 to 288+00
-Y28A-	10+00 to 11+25
-Y29-	13+00 to 17+10
-Y30-	10+00 to 11+75
-Y31-	11+25 to 12+50
-Y32-	11+50 to 13+02
-Y33-	11+65 to 12+50

PROJECT DESCRIPTION

The proposed project is located in New Hanover County just north of the city of Wilmington. The proposed roadway will consist of widening existing US 17 Business (Market Street).

A geotechnical field investigation was conducted by CATLIN Engineers and Scientists (CATLIN) personnel in March through May 2016. Standard penetration test borings were advanced using hollow-stem augers under the direct supervision of a North Carolina Licensed Well Contractor with a Central Mine Equipment (CME) CME 45B drilling rig and a Diedrich D-50 drilling rig equipped with an automatic hammer. Standard penetration testing was conducted in general accordance with American Society for Testing and Materials (ASTM) D-1586-84, "Penetration Test and Split Barrel Sampling of Soils" or American Association of State Highway and Transportation Officials (AASHTO) Standard Method T206-81. Hand auger borings were advanced across the entire project site to augment the SPT data. A total of 50 borings totaling roughly 355 vertical feet were advanced during this investigation.

The project reportedly will consist of 1.734 miles of roadway widening.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

- 1) GROUNDWATER: Groundwater within six (6) feet of natural ground was noted at the following sections:

<u>Line</u>	<u>Station (±)</u>
-L-	202+50 to 224+00
-L-	226+00 to 254+00
-L-	272+00 to 288+00
-Y28A-	10+00 to 11+25
-Y29-	13+00 to 17+10
-Y30-	10+00 to 11+75
-Y31-	11+25 to 12+50
-Y32-	11+50 to 13+02

- 2) COHESIVE SOILS: Clay or cohesive soils which may have the potential to cause embankment/subgrade and or slope stability problems during construction was encountered at the following sections of the project:

<u>Line</u>	<u>Station ±</u>
-L-	220+14 to 221+40

Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by CATLIN Geotechnical Laboratory in Wilmington, North Carolina. Samples were prepared and analyzed in accordance with one or more of the following AASHTO Standards as modified by NCDOT:

- T 87-86 (Dry Preparation of Disturbed Soil)
- T 88-93 (Particle Size Analysis)
- T 89-94 (Liquid Limit)
- T 90-94 (Plastic Limit)
- T 265-93 (Soil Moisture Content)
- T 267 (Organic Content)

CATLIN personnel used Global Positioning System (GPS) technology to locate all borings. All horizontal locations were recorded to the nearest foot and are presented in the North Carolina State Plane (NCSP), North American Datum 1983 (NAD 83). Vertical control was measured to the nearest 0.1 foot and referenced to the National Geodetic Vertical Datum

- 3) **ORGANIC SOILS:** Organic material that may cause construction related issues was identified at the following sections on the project:

<u>Line</u>	<u>Station ±</u>
-L-	202+50 to 204+03
-L-	208+00 to 209+50
-L-	221+29 to 222+40
-L-	242+00 to 244+60
-L-	271+00 to 275+00
-L-	280+40 to 281+70
-Y28A-	10+00 to 11+25

- 4) **WATER WELLS:** No water wells were identified within the proposed construction limits. Water supply wells may be present along the project corridors that were not detected.

PHYSIOGRAPHY AND GEOLOGY

The project is located within the eastern most portion of the North Carolina Coastal Plain physiographic province. Geology in the vicinity of Wilmington is dominated by Undifferentiated Coastal Plain (U.C.P.) materials which are noted as Quaternary Surficial Deposits on the Geologic Map of North Carolina. Coastal Plain materials are described as sand, clay, gravel, and peat deposits which were deposited in marine, fluvial, eolian, and lacustrine environments. Sediments of the Castle Hayne and Peedee Formations are reported to underlay the U.C.P. deposits in the vicinity of Wilmington.

Land use in the area is primarily commercial and residential. The land surface in the project vicinity is dominated by flat terrain typical of coastal environments with land surface elevations ranging from approximately 25 to 47 feet. Numerous underground and overhead utilities exist in the vicinity of the proposed project. The project is primarily drained by surficial runoff to stormwater systems and drainage ditches.

GROUNDWATER

Groundwater data was collected from open boreholes, where possible, during the field investigation conducted between March and May 2016

Measured groundwater elevations (24 hour measurements) ranged from elevation 22.5 feet to 42.5 feet with an average elevation of 34.8 feet. Twenty-four hour depth to groundwater measurements ranged from 1.5 feet to 6.4 feet below existing land surface (BLS), with an average depth to water of 3.7 feet. Formational material in which groundwater was typically observed was found to be predominantly silty sand material with an assumed moderate permeability.

SOIL PROPERTIES

Soils encountered at the project site include roadway embankment and undifferentiated coastal plain sediments.

Roadway embankment soils were identified beneath and adjacent to existing roadways and consist of loose to medium dense, sand and silty sand (A-3 and A-2-4).

The dominant U.C.P. material encountered consisted of very loose to medium dense sand to silty sand (A-3 and A-2-4). The sand was encountered from land surface, or below the roadway embankment to a depth of at least 12 feet BLS (depth of deepest borings). A small amount of highly plastic clay, silt, and organic sands were encountered at the previously described locations.

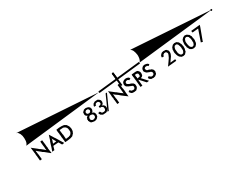
Material within the identified organic soil area was described as very loose, dark brown to black, highly organic (15.2% to 18.9%) sand to silty fine sand with little (3.1% to 6.8%) organics.

Prepared by,
Steven V. Hudson, L.G.
Project Geologist



5/31/2016

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BEGIN TIP PROJECT U-4902D
-L- POT STA. 203 + 50.00
END TIP PROJECT U-4751
-YI- POT STA 83 + 14.00

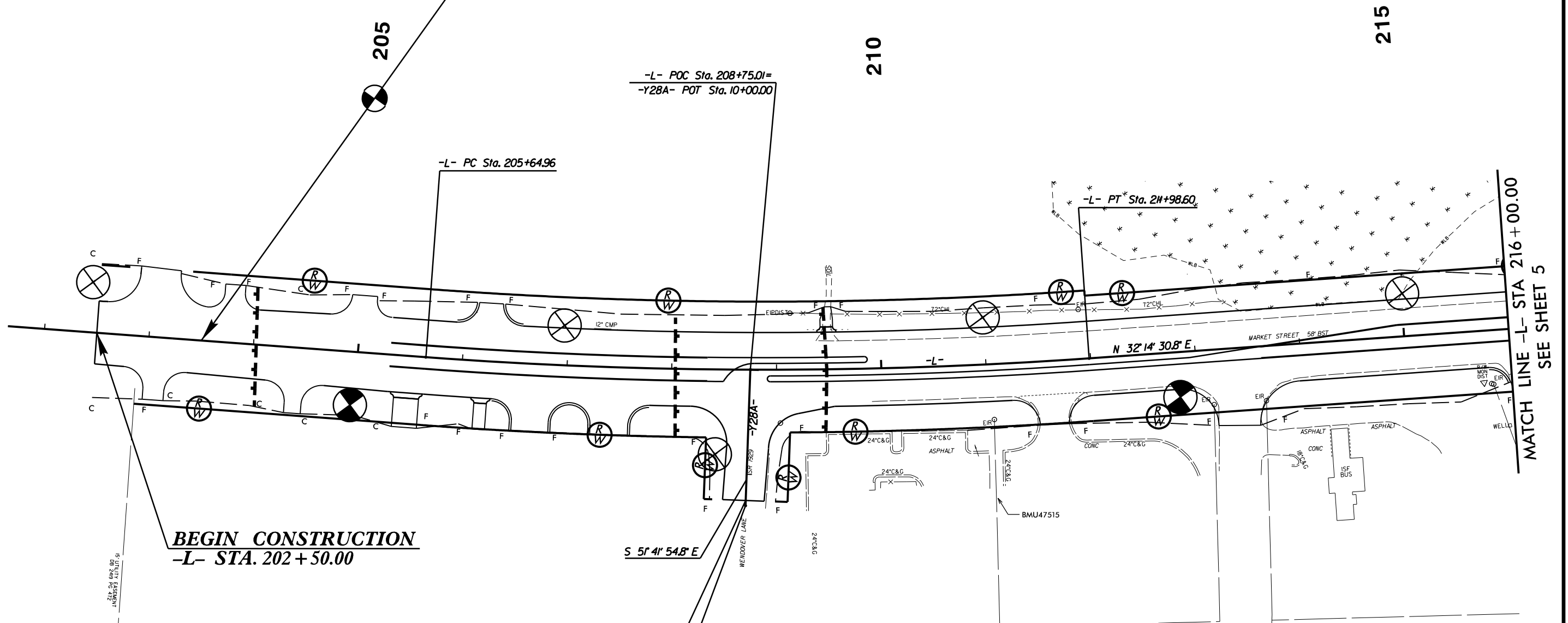
215

210

-L- POC Sta. 208+75.01=
 -Y28A- POT Sta. 10+00.00

-L- PC Sta. 205+64.96

-L- PT Sta. 211+98.60



BEGIN CONSTRUCTION
-L- STA. 202 + 50.00

END CONSTRUCTION
-Y28A- POT Sta. 11+25.00
-Y28A- POT Sta. 11+30.00

-L-
 PI Sta 208+82.33
 $\Delta = 8^{\circ} 15' 04''$ (LT)
 D = 118' 07.8"
 L = 633.64'
 T = 317.37'
 R = 4,400.00'

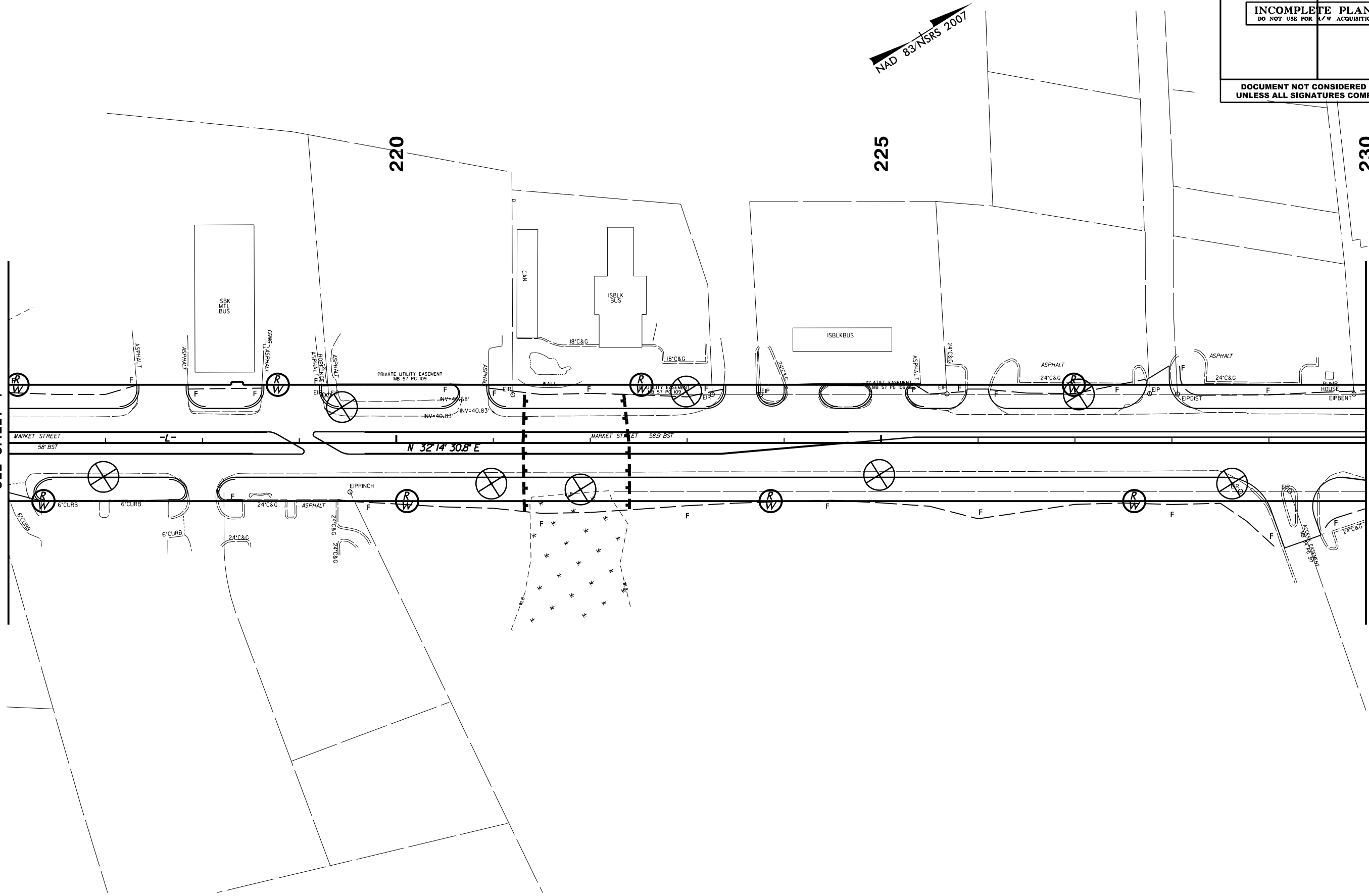
MATCH LINE -L- STA 216 + 00.00
 SEE SHEET 5

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 8/17/99
 REVISIONS

REVISIONS

PROJECT REFERENCE NO. U-4902D	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCH LINE -L- STA 216 + 00.00
 SEE SHEET 4



MATCH LINE -L- STA 230 + 00.00
 SEE SHEET 6

PROJECT REFERENCE NO. U-4902D	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-Y29-
 PI Sta 13+97.39
 $\Delta = 25^{\circ} 33' 01.3''$ (RT)
 $D = 10^{\circ} 56' 03.5''$
 $L = 233.67'$
 $T = 118.81'$
 $R = 524.00'$

BEGIN CONSTRUCTION
 -Y29- POC STA 13+00.00

-L- POT STA 233+34.80 =
 -Y29- POT STA 17+10.51

-Y29- PT Sta. 15+12.25

MATCH LINE -L- 230+00.00
SEE SHEET 5

-L- PC Sta. 230+13.66

-L- POT STA 233+36.89 =
 -Y30- POT STA 10+00.00

END CONSTRUCTION
 -L- -Y30- POT STA 11+75.00

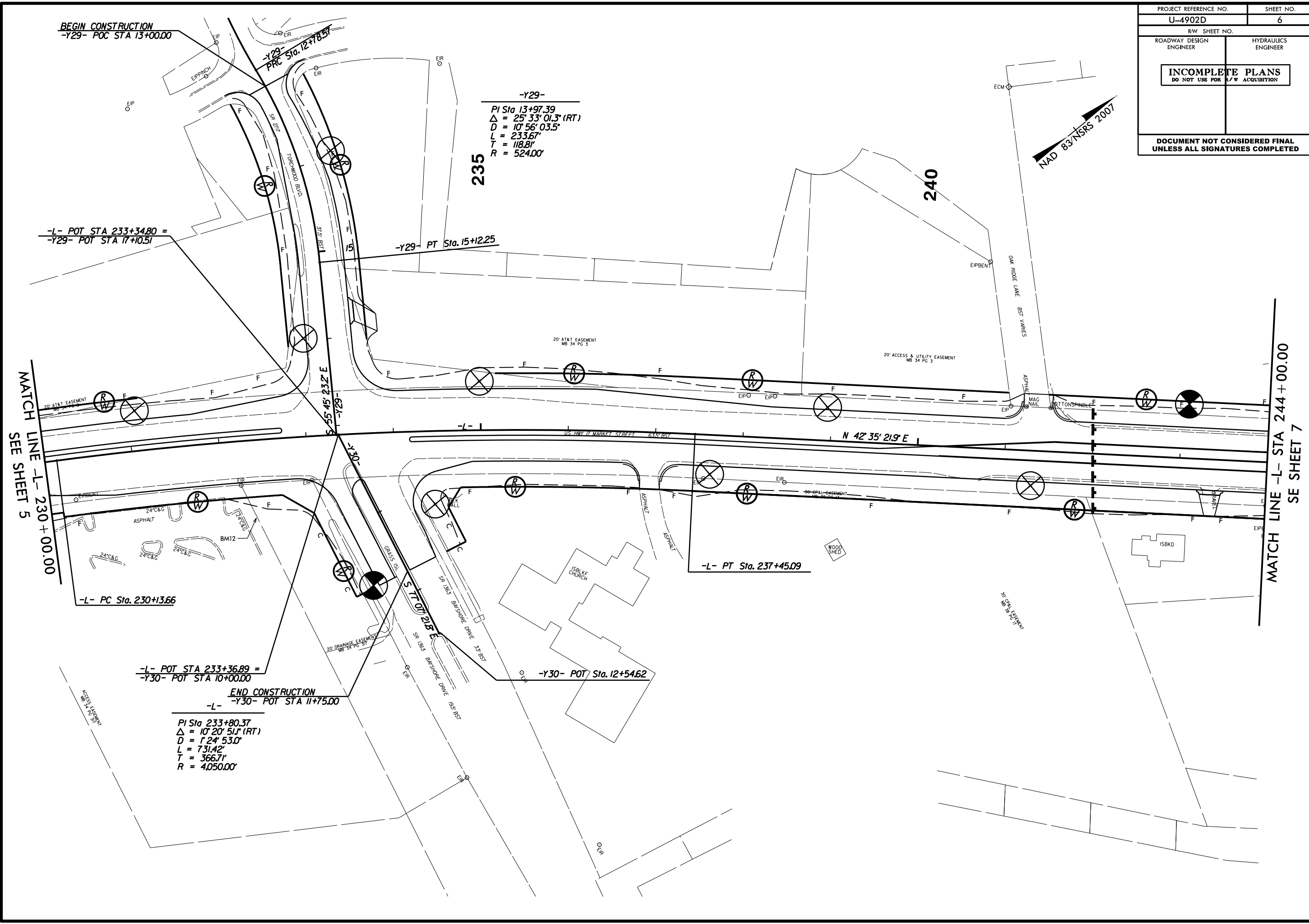
PI Sta 233+80.37
 $\Delta = 10^{\circ} 20' 51.1''$ (RT)
 $D = 1^{\circ} 24' 53.0''$
 $L = 731.42'$
 $T = 366.71'$
 $R = 4050.00'$

-Y30- POT Sta. 12+54.62

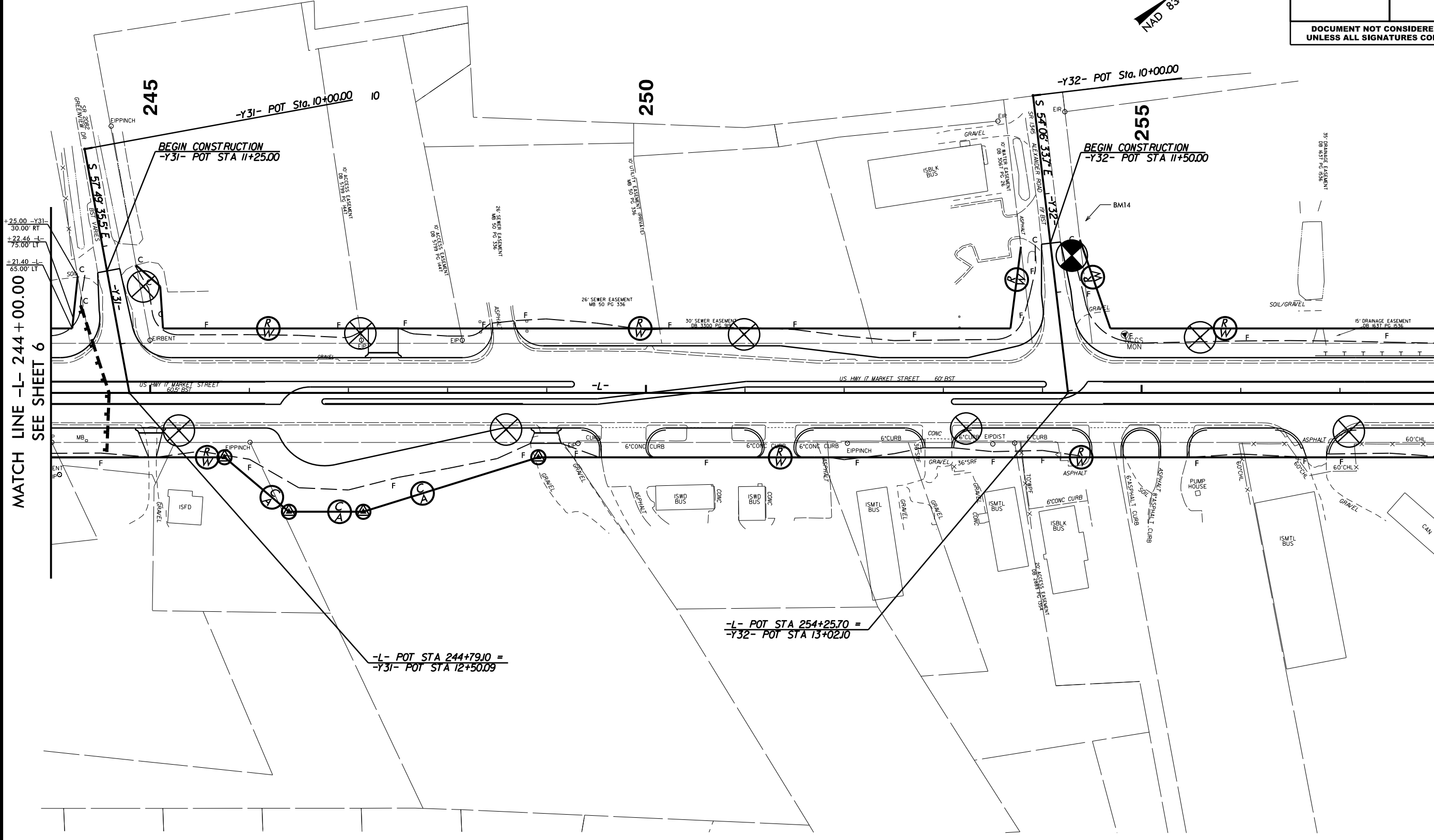
-L- PT Sta. 237+45.09

MATCH LINE -L- STA 244+00.00
SEE SHEET 7

8/17/99
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 REVISIONS
 216932 NCDDOT MARKET STREET U4902D.GEO.FDW\Y\CADD_GEO\TECH\Site\Sub\U4902D_GEO_psh_06.dgn



PROJECT REFERENCE NO.	SHEET NO.
U-4902D	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE -L- 244 + 00.00
 SEE SHEET 6

MATCH LINE -L- 258 + 00.00
 SEE SHEET 8

-L- POT STA 244+79.10 =
 -Y31- POT STA 12+50.09

-L- POT STA 254+25.70 =
 -Y32- POT STA 13+02.10

245
 -Y31- POT Sta. 10+00.00
 10

250

-Y32- POT Sta. 10+00.00

255

BEGIN CONSTRUCTION
 -Y32- POT STA 11+50.00

BEGIN CONSTRUCTION
 -Y31- POT STA 11+25.00

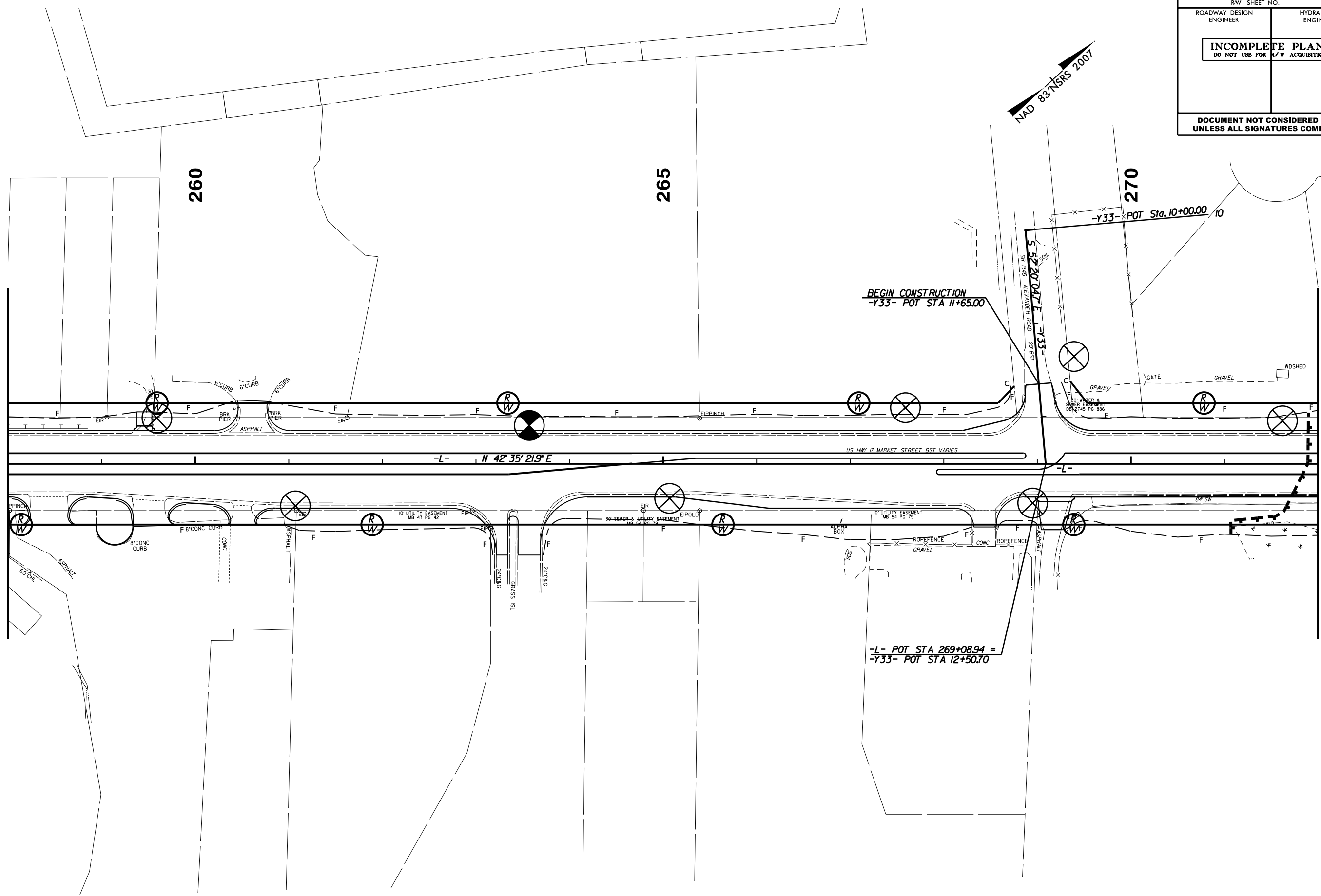
REVISIONS

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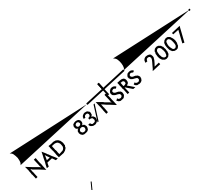
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PROJECT REFERENCE NO. U-4902D	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCH LINE -L- STA 258 + 00.00
 SEE SHEET 7



MATCH LINE -L- STA 272 + 00.00
 SEE SHEET 9



BEGIN CONSTRUCTION
 -Y33- POT STA 11+65.00

-L- POT STA 269+08.94 =
 -Y33- POT STA 12+50.70

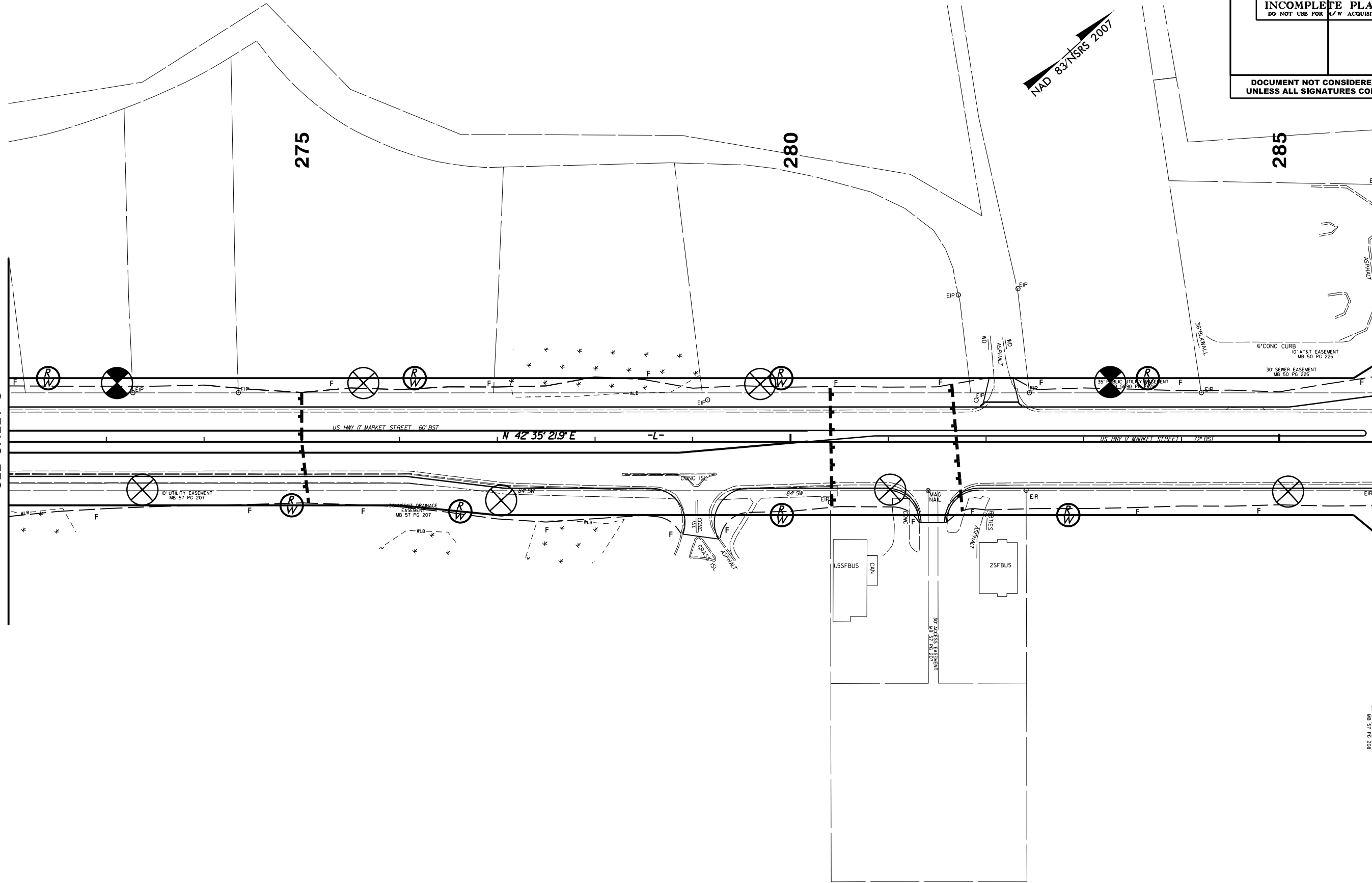
-L- N 42° 35' 21.9" E

US HWY 17 MARKET STREET BST VARIES

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 8/17/99

REVISIONS

MATCH LINE -L- STA 272 + 00.00
 SEE SHEET 8



MATCH LINE -L- STA 286 + 00.00
 SEE SHEET 10

PROJECT REFERENCE NO. U-4902D		SHEET NO. 9	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



20' UTILITY EASEMENT
 MB 57 PG 208

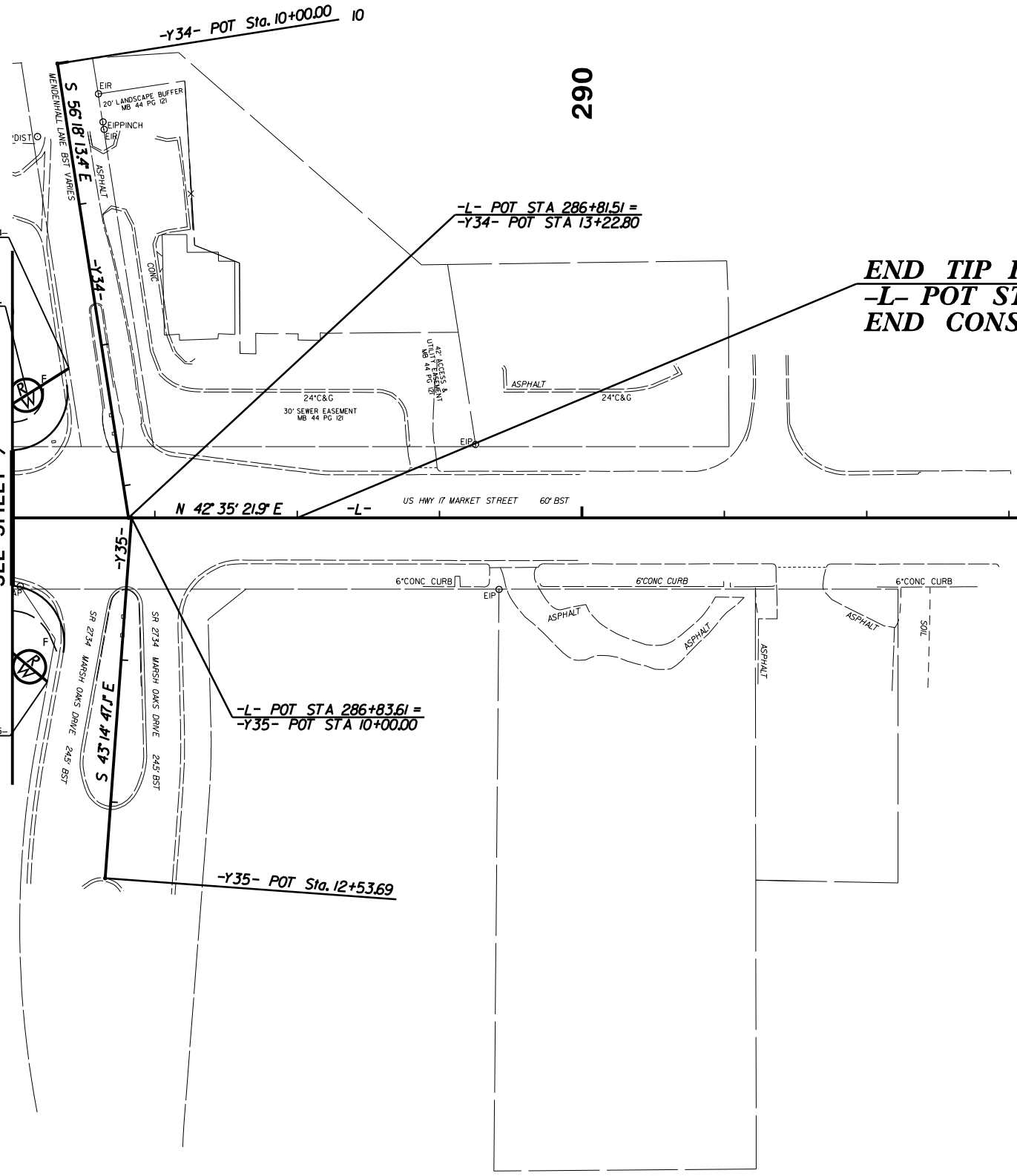
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U-4902D	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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 8/17/99

REVISIONS

MATCH LINE -L- STA 286 + 00.00
 SEE SHEET 9



END TIP PROJECT U-4902D
-L- POT STA. 288 + 00.00
END CONSTRUCTION

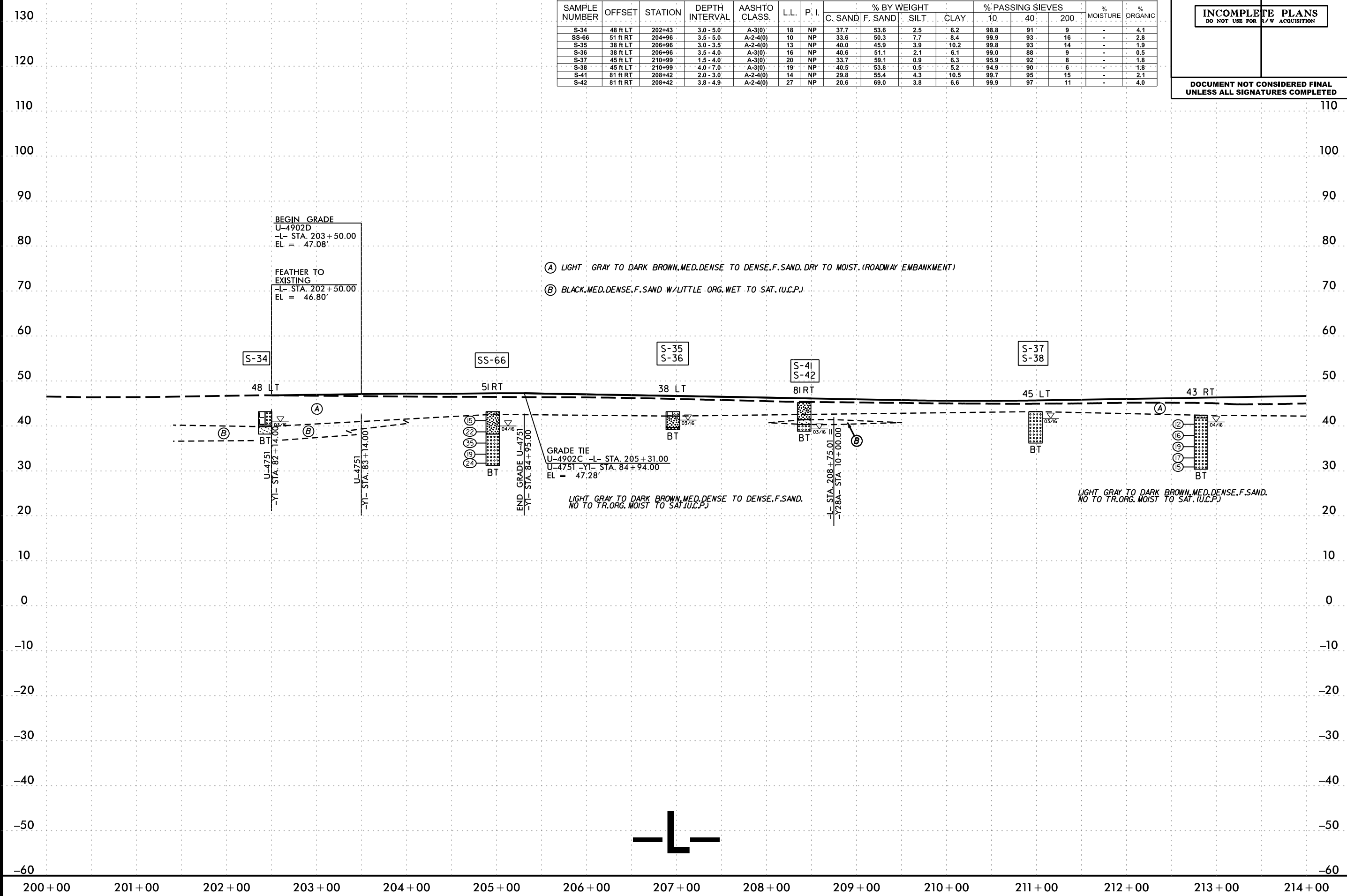
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295

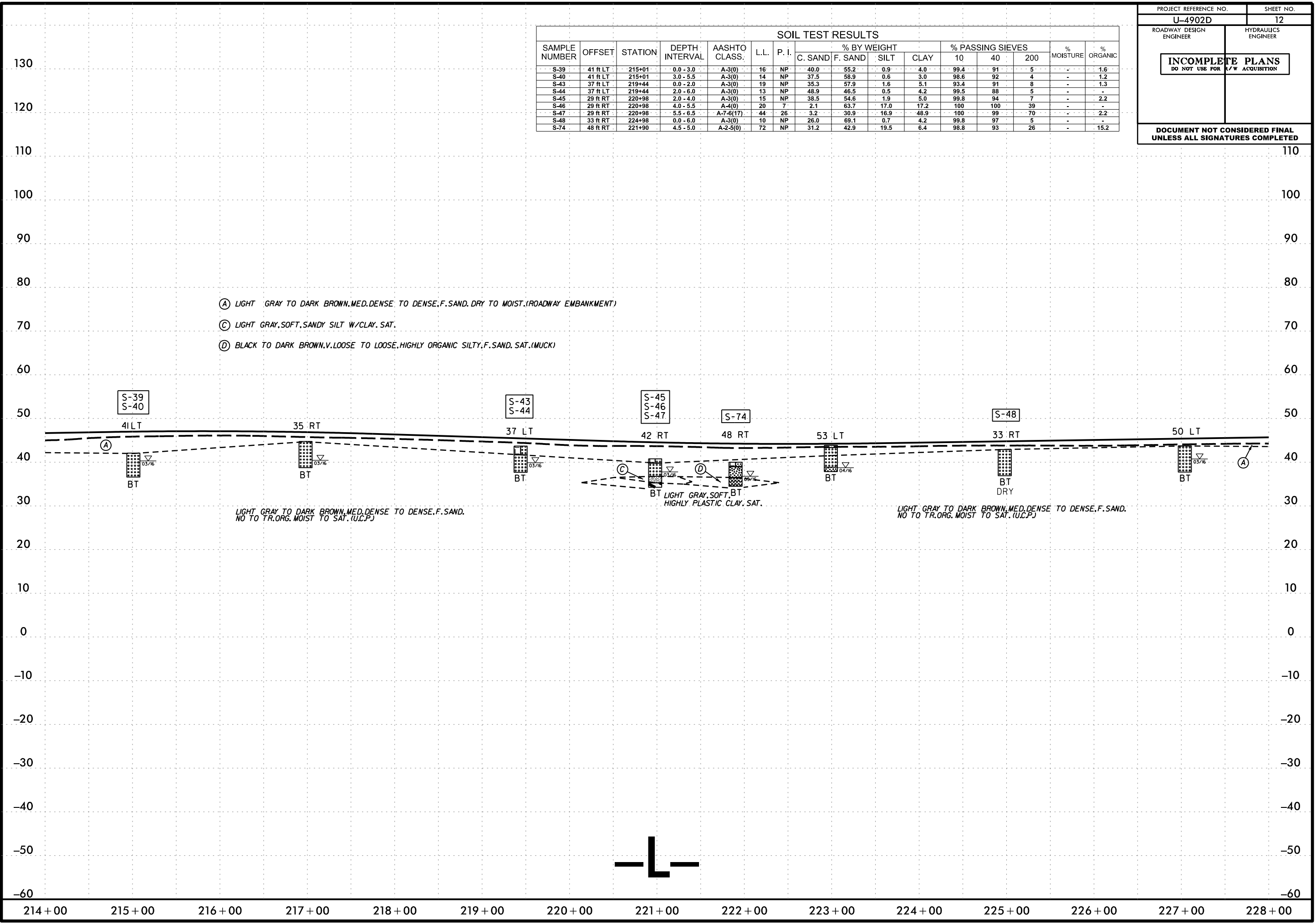
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PROJECT REFERENCE NO.	SHEET NO.
U-4902D	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-34	48 ft LT	202+43	3.0 - 5.0	A-3(0)	18	NP	37.7	53.6	2.5	6.2	98.8	91	9	-	4.1
SS-66	51 ft RT	204+96	3.5 - 5.0	A-2-4(0)	10	NP	33.6	50.3	7.7	8.4	99.9	93	16	-	2.8
S-35	38 ft LT	206+96	3.0 - 3.5	A-2-4(0)	13	NP	40.0	45.9	3.9	10.2	99.8	93	14	-	1.9
S-36	38 ft LT	206+96	3.5 - 4.0	A-3(0)	16	NP	40.6	51.1	2.1	6.1	99.0	88	9	-	0.5
S-37	45 ft LT	210+99	1.5 - 4.0	A-3(0)	20	NP	33.7	59.1	0.9	6.3	95.9	92	8	-	1.8
S-38	45 ft LT	210+99	4.0 - 7.0	A-3(0)	19	NP	40.5	53.8	0.5	5.2	94.9	90	6	-	1.8
S-41	81 ft RT	208+42	2.0 - 3.0	A-2-4(0)	14	NP	29.8	55.4	4.3	10.5	99.7	95	15	-	2.1
S-42	81 ft RT	208+42	3.8 - 4.9	A-2-4(0)	27	NP	20.6	69.0	3.8	6.6	99.9	97	11	-	4.0

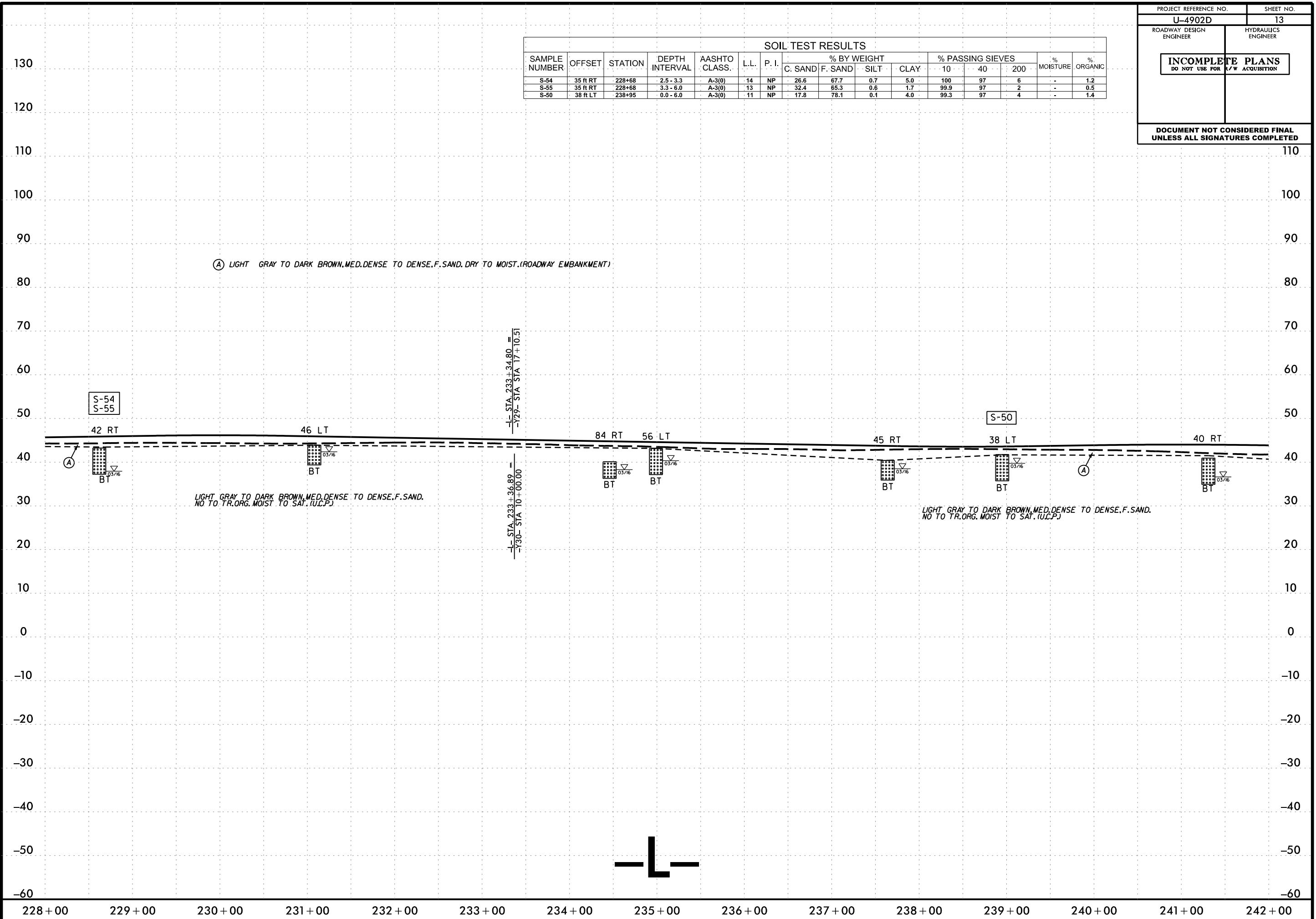


SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
							S-39	41 ft LT	215+01	0.0 - 3.0	A-3(0)	16	NP		
S-40	41 ft LT	215+01	3.0 - 5.5	A-3(0)	14	NP	37.5	58.9	0.6	3.0	98.6	92	4	-	1.2
S-43	37 ft LT	219+44	0.0 - 2.0	A-3(0)	19	NP	35.3	57.9	1.6	5.1	93.4	91	8	-	1.3
S-44	37 ft LT	219+44	2.0 - 6.0	A-3(0)	13	NP	48.9	46.5	0.5	4.2	99.5	88	5	-	-
S-45	29 ft RT	220+98	2.0 - 4.0	A-3(0)	15	NP	38.5	54.6	1.9	5.0	99.8	94	7	-	2.2
S-46	29 ft RT	220+98	4.0 - 5.5	A-4(0)	20	7	2.1	63.7	17.0	17.2	100	100	39	-	-
S-47	29 ft RT	220+98	5.5 - 6.5	A-7-6(17)	44	26	3.2	30.9	16.9	48.9	100	99	70	-	2.2
S-48	33 ft RT	224+98	0.0 - 6.0	A-3(0)	10	NP	26.0	69.1	0.7	4.2	99.8	97	5	-	-
S-74	48 ft RT	221+90	4.5 - 5.0	A-2-5(0)	72	NP	31.2	42.9	19.5	6.4	98.8	93	26	-	15.2



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 5/14/99

SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-54	35 ft RT	228+68	2.5 - 3.3	A-3(0)	14	NP	26.6	67.7	0.7	5.0	100	97	6	-	1.2
S-55	35 ft RT	228+68	3.3 - 6.0	A-3(0)	13	NP	32.4	65.3	0.6	1.7	99.9	97	2	-	0.5
S-50	38 ft LT	238+95	0.0 - 6.0	A-3(0)	11	NP	17.8	78.1	0.1	4.0	99.3	97	4	-	1.4



(A) LIGHT GRAY TO DARK BROWN, MED. DENSE TO DENSE, F. SAND, DRY TO MOIST. (ROADWAY EMBANKMENT)

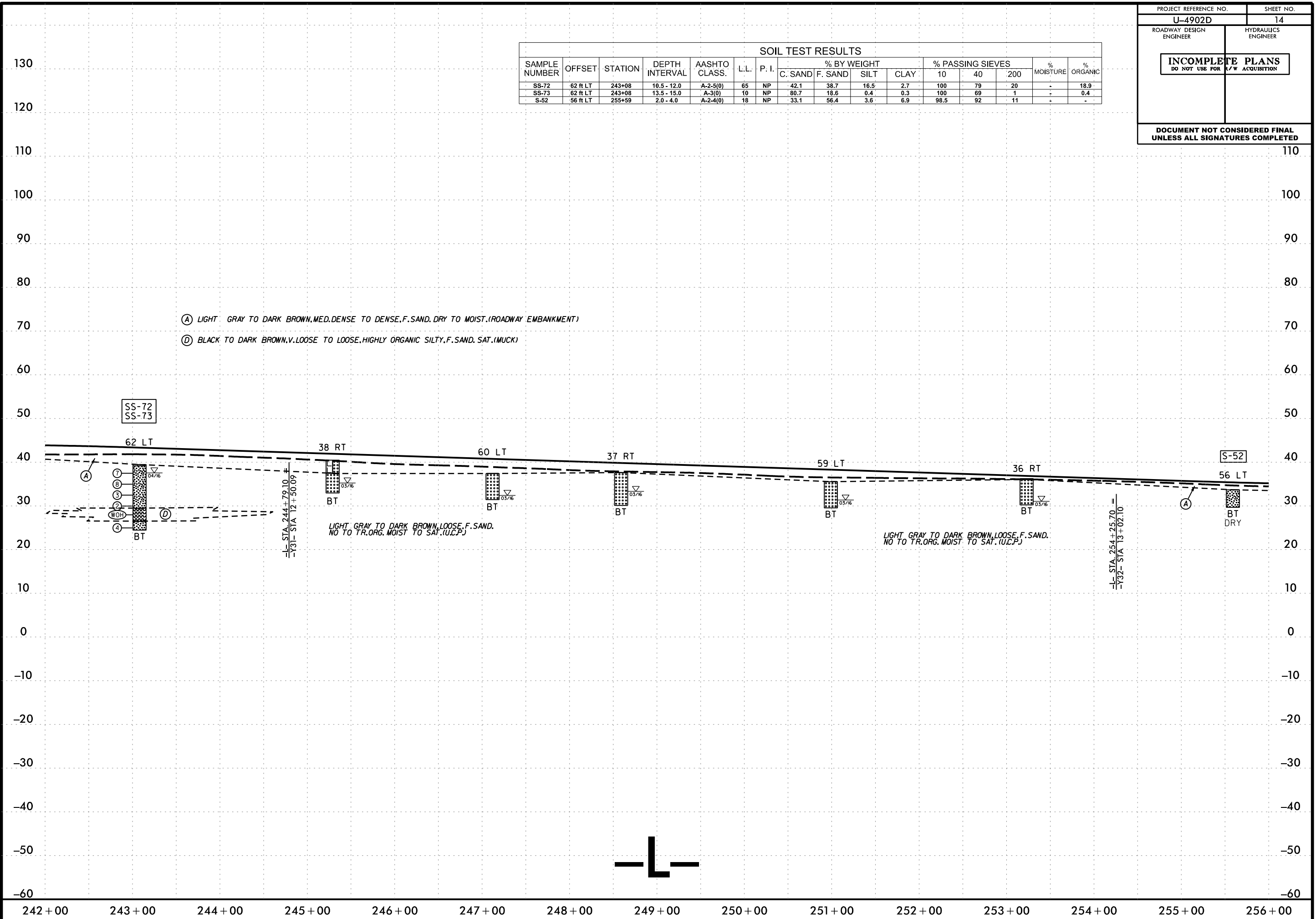
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NO TO TR. ORG. MOIST TO SAT. (U.C.P.)

LIGHT GRAY TO DARK BROWN, MED. DENSE TO DENSE, F. SAND.
NO TO TR. ORG. MOIST TO SAT. (U.C.P.)

-1- STA. 233+34.80 =
 -1- STA. 233+36.89 =
 -1- STA. 233+34.80 =
 -1- STA. 233+36.89 =
 -1- STA. 233+34.80 =
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 AT SITE VISITATION

SAMPLE NUMBER	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-72	62 ft LT	243+08	10.5 - 12.0	A-2-5(0)	65	NP	42.1	38.7	16.5	2.7	100	79	20	-	18.9
SS-73	62 ft LT	243+08	13.5 - 15.0	A-3(0)	10	NP	80.7	18.6	0.4	0.3	100	69	1	-	0.4
S-52	56 ft LT	255+59	2.0 - 4.0	A-2-4(0)	18	NP	33.1	56.4	3.6	6.9	98.5	92	11	-	-



Ⓐ LIGHT GRAY TO DARK BROWN, MED. DENSE TO DENSE, F. SAND, DRY TO MOIST. (ROADWAY EMBANKMENT)
 Ⓓ BLACK TO DARK BROWN, V. LOOSE TO LOOSE, HIGHLY ORGANIC SILTY, F. SAND, SAT. (MUCK)

SS-72
SS-73

62 LT

38 RT

60 LT

37 RT

59 LT

36 RT

S-52

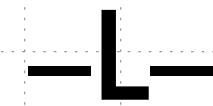
56 LT

— STA. 244+79.10 #
— Y31— STA 12 + 50.09

LIGHT GRAY TO DARK BROWN, LOOSE, F. SAND.
NO TO TR.ORG. MOIST TO SAT. (U.C.P.)

LIGHT GRAY TO DARK BROWN, LOOSE, F. SAND.
NO TO TR.ORG. MOIST TO SAT. (U.C.P.)

— STA. 254+25.70 #
— Y32— STA 13 + 02.10

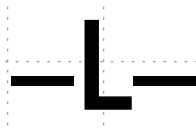
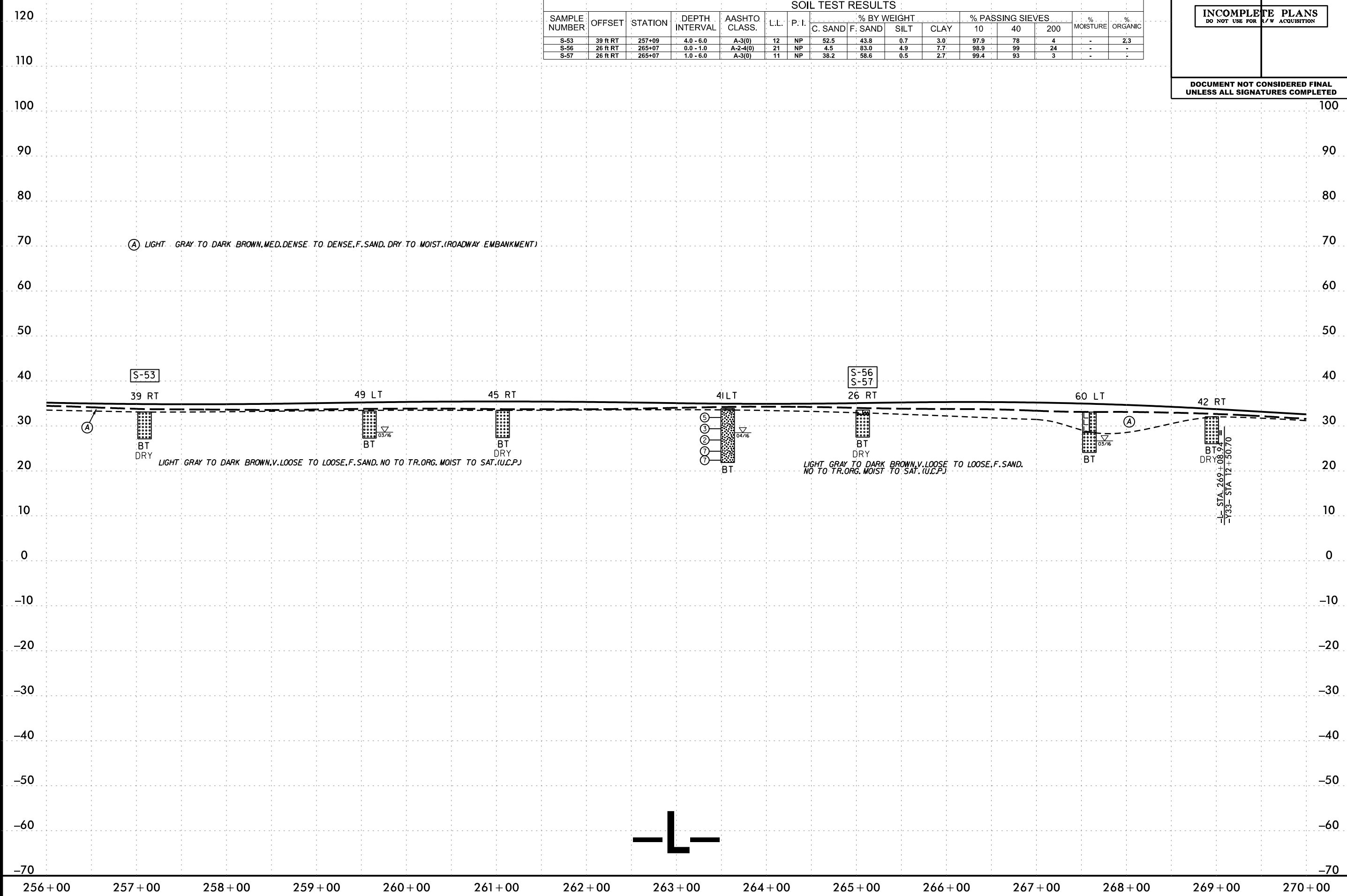


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 AT SITE PERMITS ONLY

25-MAY-2016 08:33
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 5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

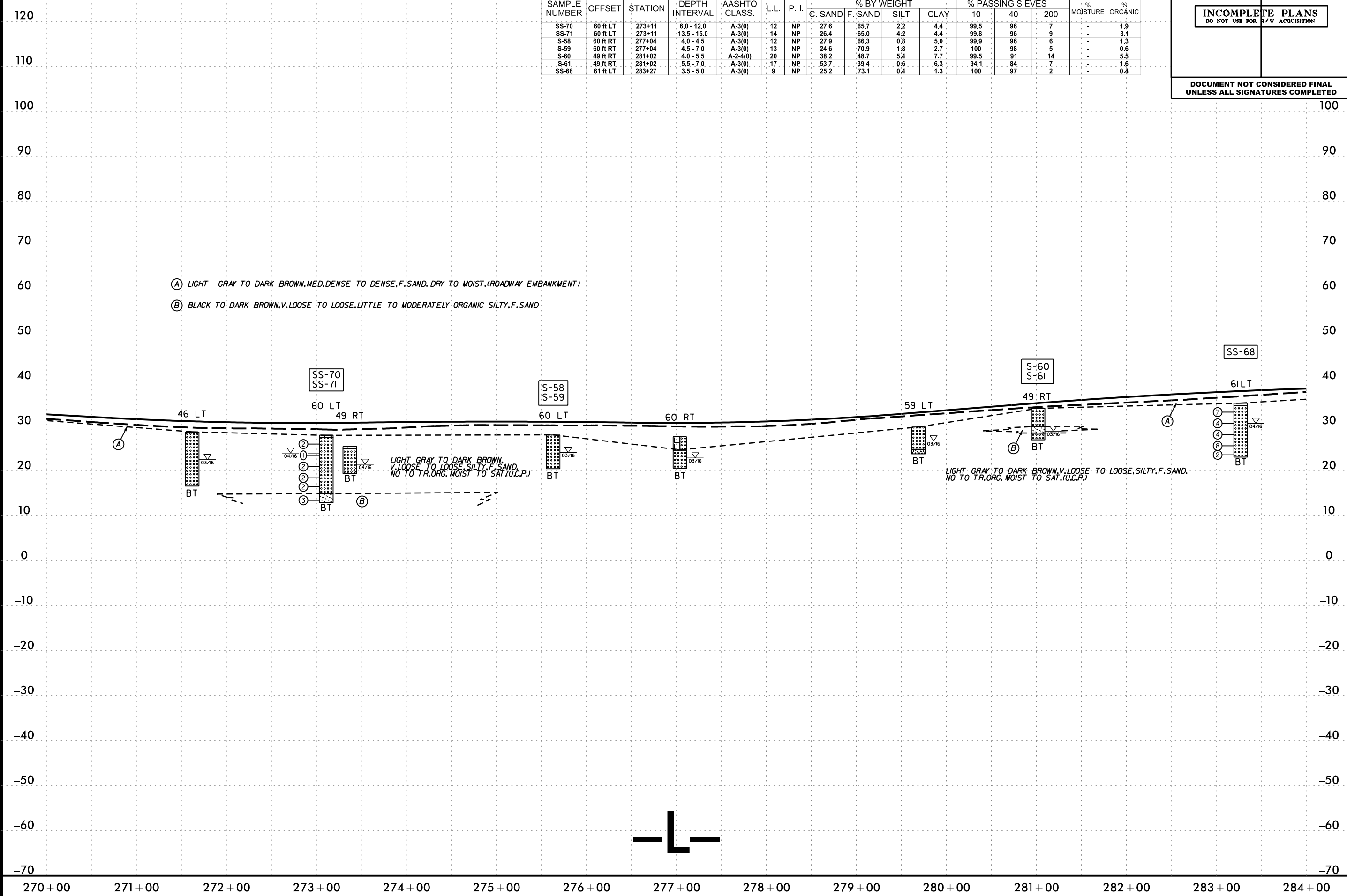
SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-53	39 ft RT	257+09	4.0 - 6.0	A-3(0)	12	NP	52.5	43.8	0.7	3.0	97.9	78	4	-	2.3
S-56	26 ft RT	265+07	0.0 - 1.0	A-2-4(0)	21	NP	4.5	83.0	4.9	7.7	98.9	99	24	-	-
S-57	26 ft RT	265+07	1.0 - 6.0	A-3(0)	11	NP	38.2	58.6	0.5	2.7	99.4	93	3	-	-



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 5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

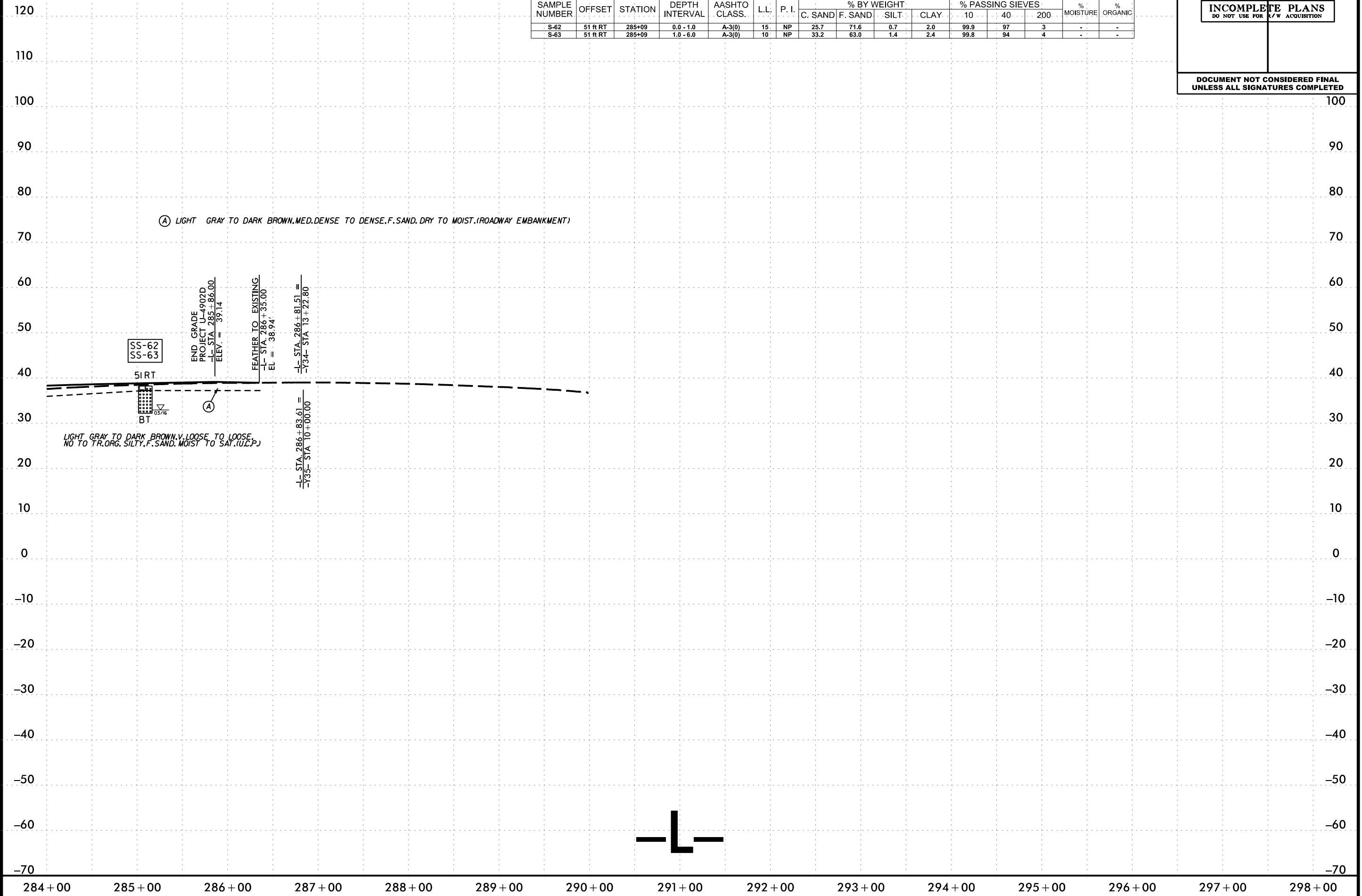
SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
							SS-70	60 R LT	273+11	6.0 - 12.0	A-3(0)	12	NP		
SS-71	60 R LT	273+11	13.5 - 15.0	A-3(0)	14	NP	26.4	65.0	4.2	4.4	99.8	96	9	-	3.1
S-58	60 R RT	277+04	4.0 - 4.5	A-3(0)	12	NP	27.9	66.3	0.8	5.0	99.9	96	6	-	1.3
S-59	60 R RT	277+04	4.5 - 7.0	A-3(0)	13	NP	24.6	70.9	1.8	2.7	100	98	5	-	0.6
S-60	49 R RT	281+02	4.0 - 5.5	A-2-4(0)	20	NP	38.2	48.7	5.4	7.7	99.5	91	14	-	5.5
S-61	49 R RT	281+02	5.5 - 7.0	A-3(0)	17	NP	53.7	39.4	0.6	6.3	94.1	84	7	-	1.6
SS-68	61 R LT	283+27	3.5 - 5.0	A-3(0)	9	NP	25.2	73.1	0.4	1.3	100	97	2	-	0.4



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 AT SITE PERMITS ONLY

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

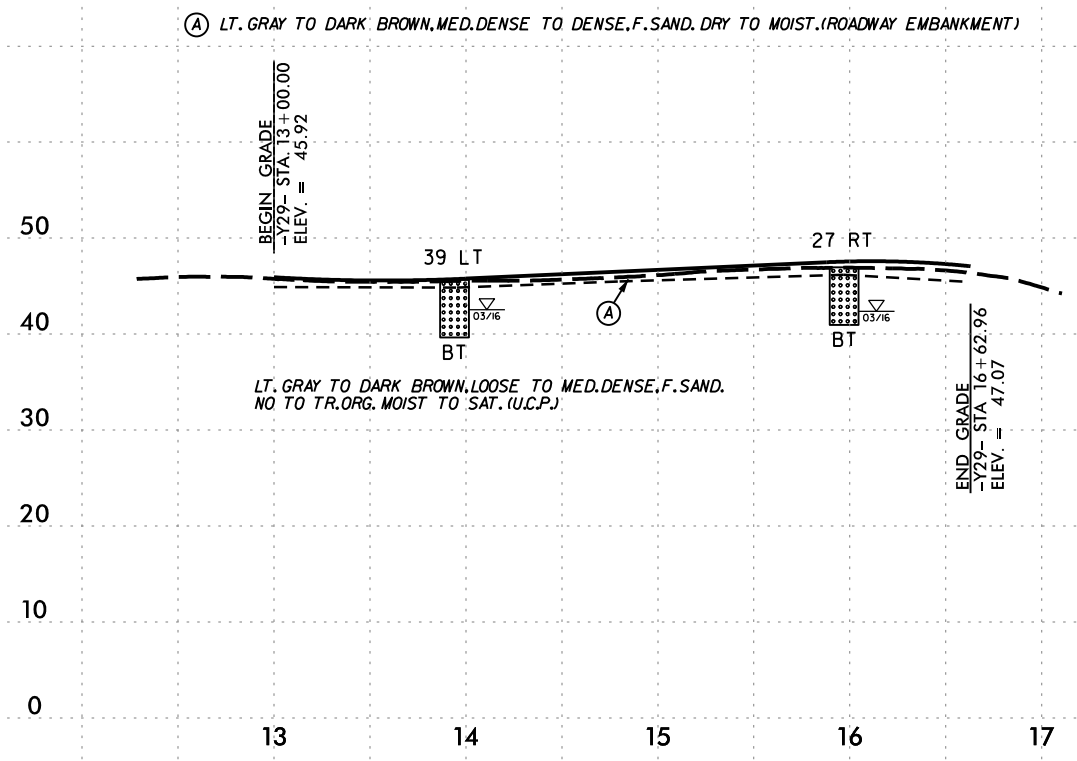
SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-62	51 ft RT	285+09	0.0 - 1.0	A-3(0)	15	NP	25.7	71.6	0.7	2.0	99.9	97	3	-	-
S-63	51 ft RT	285+09	1.0 - 6.0	A-3(0)	10	NP	33.2	63.0	1.4	2.4	99.8	94	4	-	-



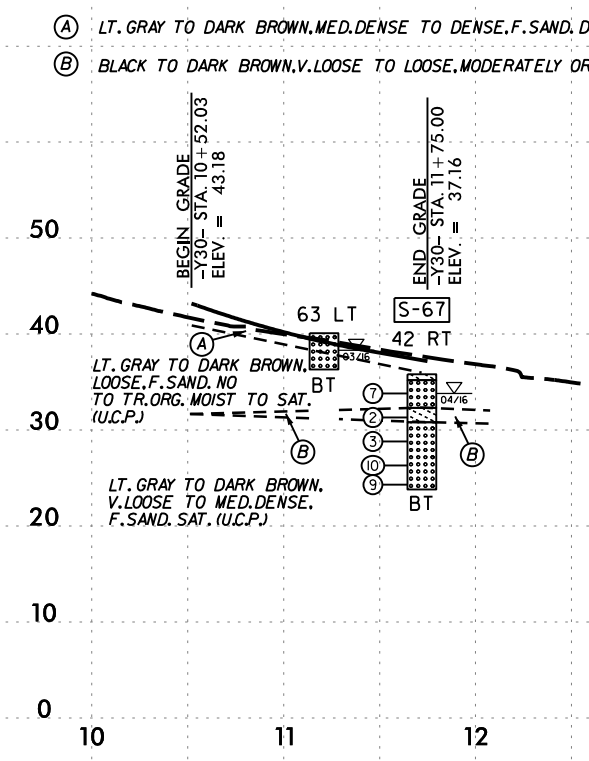
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 AT SITE VISITATION

SAMPLE NUMBER	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-67	42 ft RT	11+72	3.5 - 5.0	A-2-4(0)	31	NP	20.0	60.5	12.8	6.7	97.1	96	20	-	6.8
SS-69	20 ft LT	11+65	6.0 - 7.5	A-3(0)	10	NP	39.5	55.9	2.3	2.3	98.8	85	5	-	1.0
S-41	31 ft RT	10+82	2.0 - 3.0	A-2-4(0)	14	NP	29.8	55.4	4.3	10.5	99.7	95	15	-	2.1
S-42	31 ft RT	10+82	3.8 - 4.9	A-2-4(0)	27	NP	20.6	69.0	3.8	6.6	99.9	97	11	-	4.0

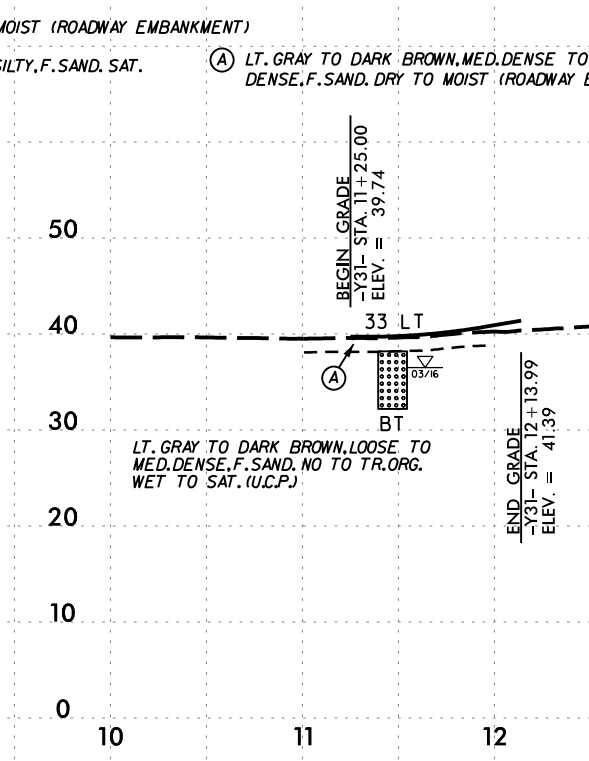
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



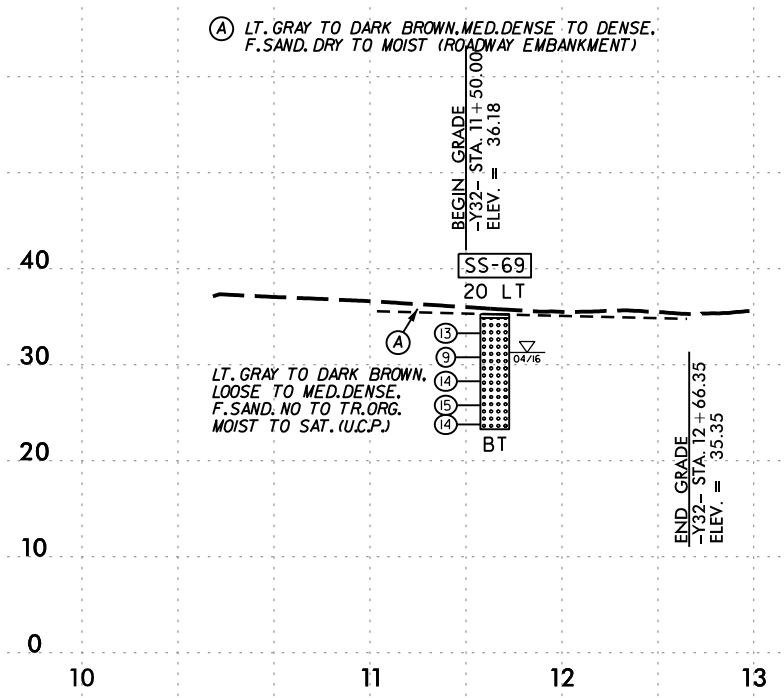
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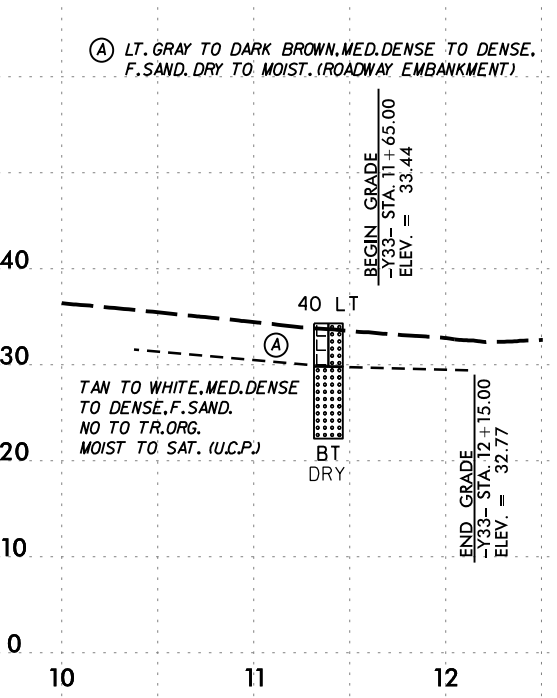
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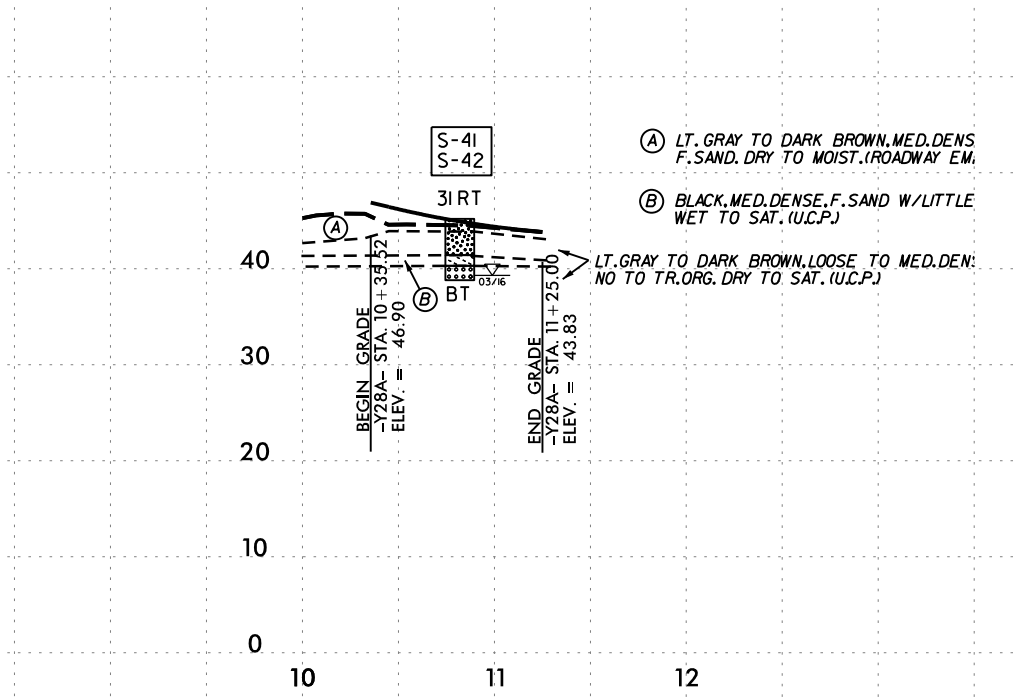
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-Y32-



-Y33-



-Y28A-