

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	35781.1.2 (U-3315)	1	14

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

**ROADWAY**  
**SUBSURFACE INVESTIGATION**

**CONTENTS**

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PROJ. REFERENCE NO. 35781.1.2 F.A. PROJ. HPPSTP-0220(53)

COUNTY PIIT

PROJECT DESCRIPTION STANTONSBURG ROAD - TENTH STREET

CONNECTOR

FROM US 13 / NC 11 (MEMORIAL DRIVE) TO SR 1702 (EVANS STREET)

**INVENTORY**

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. 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, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU IN-PLACE TEST DATA CAN BE RELED 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 DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, OR THE 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.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS 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.

ID: U-3315

CONTRACT:

PERSONNEL

A. NASH

R. DENTON, II

M. ALEXANDER

DRAWN BY M. ALEXANDER

DRAWN BY \_\_\_\_\_

INVESTIGATED BY TERRACON CONSULTANTS

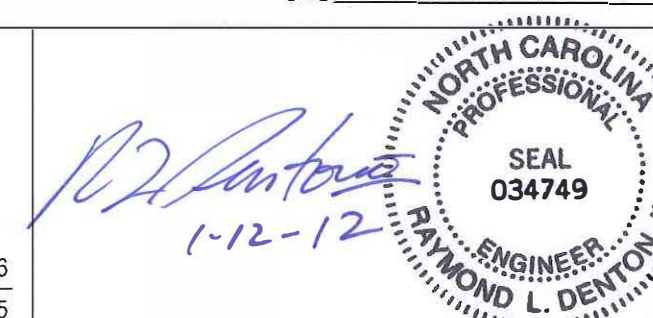
CHECKED BY R. DENTON, II

SUBMITTED BY TERRACON CONSULTANTS

DATE January 12, 2012

**Terracon**  
Consulting Engineers and Scientists

5240 GREEN'S DAIRY ROAD RALEIGH, NC 27616  
PH. (919) 873-2211 FAX. (919) 873-9555



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

PROJECT REFERENCE NO. 35781.12 (U-3315)	SHEET NO. 2
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**SUBSURFACE INVESTIGATION**

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS	
SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STIFF, GRN, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6		WELL-GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED). GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, 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 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS: WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR)  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR)  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CP)  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		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, 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 (ROQ) - 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 60 BLOWS. STRATA CORE RECOVERY (SCREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROQ) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.	
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b> GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS GROUP CLASS. A-1, A-1-a, A-1-b, A-2, A-2-4, A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-7-5, A-7-6, A-1, A-2, A-3, A-4, A-5, A-6, A-7 SYMBOL		<b>MINERALOGICAL COMPOSITION</b> MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		<b>WEATHERING</b> FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SL.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SL.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES &gt; 100 BPF</i> VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES &lt; 100 BPF</i> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		<b>PERCENTAGE OF MATERIAL</b> ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	
<b>PERCENTAGE OF MATERIAL</b> GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE		<b>GROUND WATER</b> 		<b>MISCELLANEOUS SYMBOLS</b> 		<b>ROCK HARDNESS</b> VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.	
<b>CONSISTENCY OR DENSENESS</b> PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> ) GENERALLY GRANULAR MATERIAL (NON-COHESIVE) VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE <4 4 TO 10 10 TO 30 30 TO 50 >50 N/A GENERALLY SILT-CLAY MATERIAL (COHESIVE) VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD <2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30 <0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4		<b>ABBREVIATIONS</b> AR - AUGER REFUSAL MED. - MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA - MICAEOUS WEA. - WEATHERED CL. - CLAY MOD. - MODERATELY U - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC U <sub>d</sub> - DRY UNIT WEIGHT CSE. - COARSE PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DMT - DILATOMETER TEST SAP. - SAPROLITIC S - BULK DPT - DYNAMIC PENETRATION TEST SD. - SAND, SANDY ST - SHELBY TUBE e - VOID RATIO F - FINE SS - SPLIT SPOON F - FINE FOSS. - FOSSILIFEROUS SL. - SILT, SILTY RS - ROCK FRACT. - FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS. - FRAGMENTS w - MOISTURE CONTENT CBR - CALIFORNIA BEARING RATIO HI. - HIGHLY V - VERY		<b>TEXTURE OR GRAIN SIZE</b> U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.00 0.42 0.25 0.075 0.053 BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F SD.) SILT (SL.) CLAY (CL.) GRAIN SIZE MM 305 75 2.0 0.25 0.05 0.005 IN. 12 3			
<b>SOIL MOISTURE - CORRELATION OF TERMS</b> SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LIQUID LIMIT (LL) LIQUID LIMIT (PI) PLASTIC LIMIT (PL) - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE		<b>EQUIPMENT USED ON SUBJECT PROJECT</b> DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG.-CARBIDE INSERTS CASING W/ ADVANCER TRICONE STEEL TEETH TRICONE TUNG.-CARB. CORE BIT HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B N H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST		<b>FRACTURE SPACING</b> TERM SPACING THICKNESS VERY WIDE MORE THAN 10 FEET > 4 FEET WIDE 3 TO 10 FEET 1.5 - 4 FEET MODERATELY CLOSE 1 TO 3 FEET 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FEET 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET		<b>BEDDING</b> TERM THICKNESS VERY THICKLY BEDDED > 4 FEET THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	
<b>PLASTICITY</b> PLASTICITY INDEX (PI) DRY STRENGTH NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH		<b>INDURATION</b> FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		<b>BENCH MARK:</b> ELEVATION: FT. NOTES:			
<b>COLOR</b> 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.							

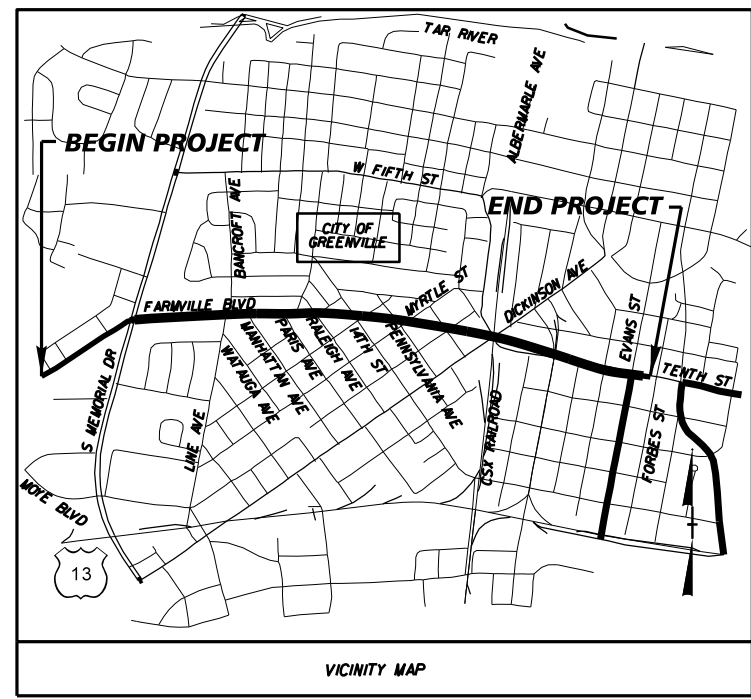
**TIP PROJECT: U-3315**

SEE SHEET 1 FOR INDEX OF SHEETS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

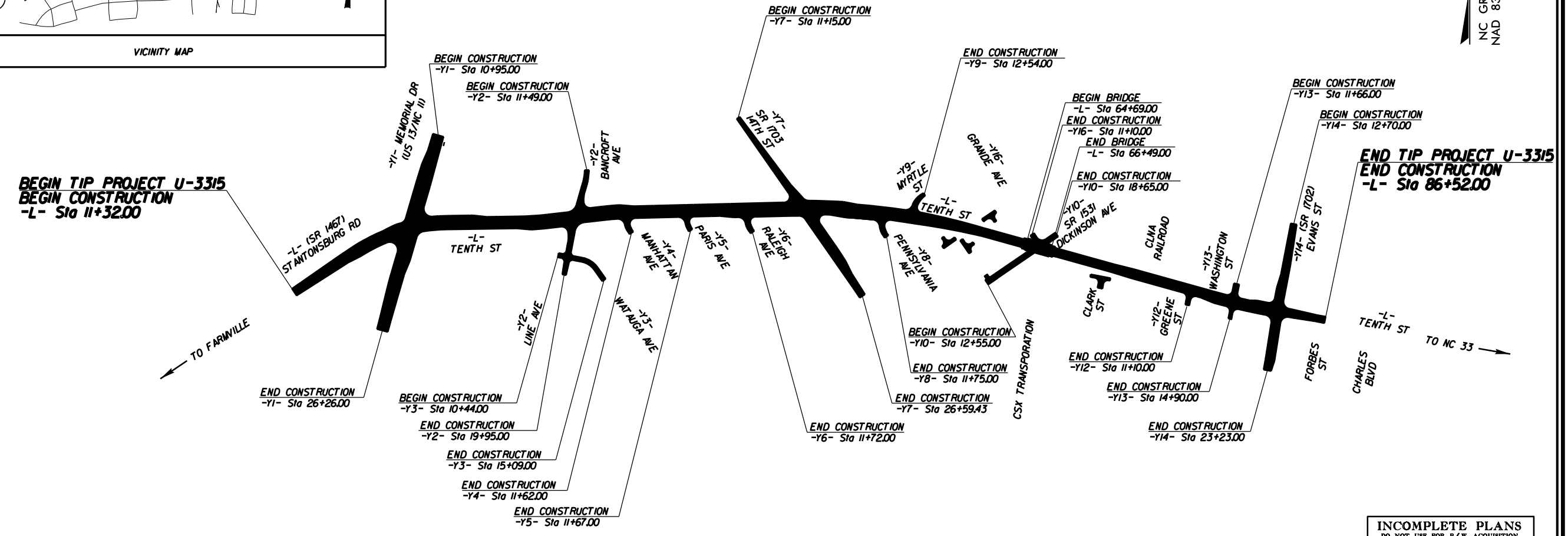
**PITT COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3315	2A	14
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35781.1.2	HPPSTP-0220(53)	P.E.	



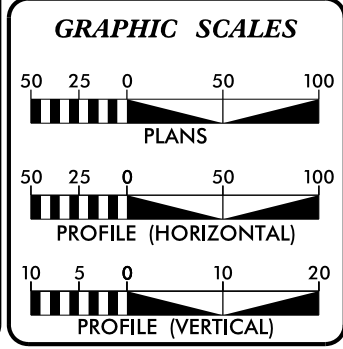
**LOCATION:** STANTONSBURG ROAD - TENTH STREET CONNECTOR  
FROM US 13/NC 11 (MEMORIAL DRIVE) TO SR 1702 (EVANS STREET)

**TYPE OF WORK:** GRADING, DRAINAGE, PAVING, SIGNING, SIGNALS, AND STRUCTURES



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_  
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENVILLE

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



**DESIGN DATA**

ADT 2014	=	19,800 VPD
ADT 2034	=	25,700 VPD
DHV	=	9%
D	=	60%
T	=	8% *
V	=	40 mph
* (TTST 4% + DUAL 4%)		
FUNCTIONAL CLASSIFICATION: URBAN ARTERIAL SUB-REGIONAL TIER		

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-3315	=	1.390 MILES
LENGTH STRUCTURE TIP PROJECT U-3315	=	0.034 MILES
TOTAL LENGTH TIP PROJECT U-3315	=	1.424 MILES

2012 STANDARD SPECIFICATIONS	_____
RIGHT OF WAY DATE:	_____
	JUNE 19, 2012
LETTING DATE:	_____
	JUNE 17, 2014

**HYDRAULICS ENGINEER**

\_\_\_\_\_  
P.E.  
SIGNATURE:  
ROADWAY DESIGN ENGINEER

\_\_\_\_\_  
P.E.  
SIGNATURE:

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

\_\_\_\_\_  
P.E.  
STATE HIGHWAY DESIGN ENGINEER

\$DATE\$ \$FILE\$

**CONTRACT:**



<b>Project Reference No.</b>	<b>Sheet No.</b>
35781.1.2 (U-3315)	3

January 12, 2012



State of N.C. Department of Transportation  
 Division of Highways  
 Geotechnical Engineering Unit  
 1589 Mail Service Center  
 Raleigh, North Carolina 27699-1589

Attn: Mr. Mohammed Mulla, PE

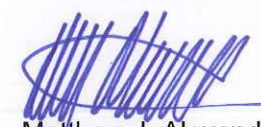
Re: **Geotechnical Report - Recommendations**  
 10<sup>th</sup> Street Connector Project  
 Pitt County, North Carolina  
 Project No. 35781.1.2  
 TIP No. U-3315  
 Fed Aid No. HPPSTP-0220(53)  
 Contract ID 7000012163  
 Terracon Project No. 70115058


Dear Mr. Mulla,

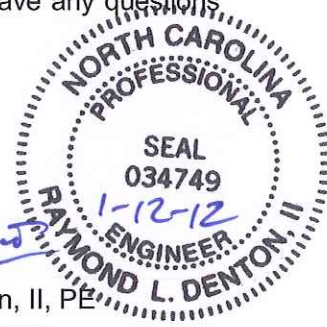
Terracon Consultants, Inc. (Terracon) has completed the geotechnical subsurface exploration for the roadway portion of the above referenced project. This report details the areas investigated, methods used to perform our investigation, subsurface materials encountered, and summarizes our lab testing.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, please contact us.

Sincerely,  
**Terracon Consultants, Inc.**

  
 Matthew J. Alexander, EI  
 Geotechnical Staff Professional

  
 Raymond L. Denton, II, PE  
 Geotechnical Manager



**Project Description**

The proposed 10<sup>th</sup> Street Connector project includes the construction of approximately 1.4 miles of four-lane roadway between US 13 / NC 11 (Memorial Drive) and SR 1702 (Evans Street) in Pitt County. This project will consist primarily of the construction of four-lane divided highway with turn lanes and medians. From the intersection of US 13 / US 11 and Farmville Boulevard to 14<sup>th</sup> Street (SR 1703) the roadway will be constructed south of existing Farmville Boulevard. After the project crosses 14<sup>th</sup> Street (SR 1703) the roadway will be constructed over an area that is currently occupied by residences and businesses until it ties into existing 10<sup>th</sup> Street near its intersection with Pitt Street. The remainder of the roadway will include widening and resurfacing of 10<sup>th</sup> Street. Several secondary roads will be realigned to accommodate construction of the connector road. Additionally, the project includes a 180 foot single span bridge over the CSX Railroad near -L- Station 65+00 and the associated back-to-back and abutment MSE walls.

Terracon's field investigation was performed from November to December of 2011. The soil borings were advanced by hand auger. The subsurface materials encountered in our borings were classified in the field and representative samples were collected and transported to our laboratory in Raleigh for further testing and evaluation.

The following alignment was investigated by performing borings at approximately 300 foot intervals. Subsurface profiles of this alignment are included in this report.

<u>Line</u>	<u>Station</u>
-L-	11+32 to 86+52

**Areas of Special Geotechnical Interest**

1) Highly plastic clays (PI>25) were encountered within or near 3' of proposed subgrade at the following location:

<u>Line</u>	<u>Station</u>
-L-	57+00 to 59+50

2) Artificial fill was encountered at the following locations:

<u>Line</u>	<u>Station</u>
-L-	73+38 to 73+85



<b>Project Reference No.</b>	<b>Sheet No.</b>
35781.1.2 (U-3315)	3A

3) The following sections were found to exhibit ground water within or near 6 feet below proposed grade:

<u>Line</u>	<u>Station</u>
-L-	18+00 to 24+00
-L-	33+00 to 39+50
-L-	46+50 to 59+50

Seasonal high ground water tables may actually be deeper or shallower than indicated above depending on actual climatic conditions.

### **Physiography and Geology**

The project corridor is located within the Coastal Plain Physiographic Province. Topography along the project varies from nearly flat to moderately sloping and exhibits good surface drainage. Elevations along the project range from 45 to 75 feet.

The project corridor is underlain by the Yorktown Formation. The soils of this formation are typically characterized by fossiliferous clay with varying amounts of fine-grained sand. Shell material is commonly concentrated in lenses.

### **Ground Water**

Ground water data was collected during November and December 2011, during a time of normal precipitation. Ground water elevations, where encountered, ranged from 55 to 65 feet along the project corridor.

### **Soils**

Soils within the project area include artificial fill and Undivided Coastal Plain soils. No alluvial soils were encountered within the project corridor.

Artificial fill was encountered in the soil boring advanced at -L- Station 73+36. The artificial fill is likely associated with the adjacent railroad line. The artificial fill consists of silty fine to coarse sand (A-1-b).

Deeper formational soils in the area belong to the Yorktown Formation. However, our borings encountered Undivided Coastal Plain soils composed of silty to clayey fine sands (A-2-4, A-2-6) and fine sandy clays (A-6, A-7-6). The clay soils are generally present at depths of 3 feet or greater below the existing site grades.

PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

-L-  
 PI Sta 20+02.56  
 Δ = 32' 48" 45.7' (RT)  
 D = 4' 46" 28.7'  
 T = 687.23'  
 R = 353.32'  
 DS > 1200.00'  
 SE = 55 MPH  
 RS = 0.03  
 R0 = 156'

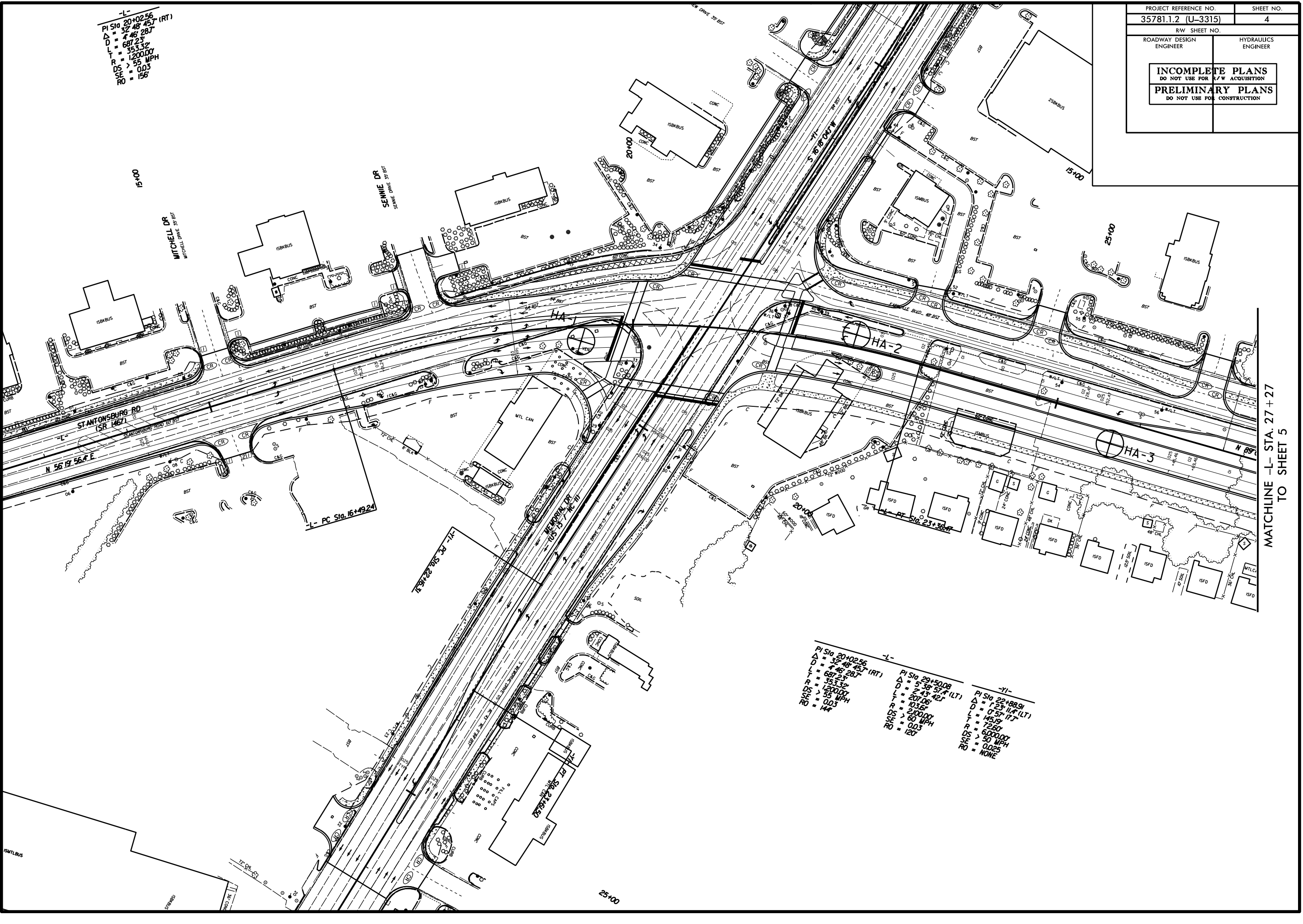
-L-  
 PI Sta 20+02.56  
 Δ = 32' 48" 45.7' (RT)  
 D = 4' 46" 28.7'  
 T = 687.23'  
 R = 353.32'  
 DS > 1200.00'  
 SE = 55 MPH  
 RS = 0.03  
 R0 = 144'

-L-  
 PI Sta 29+50.08  
 Δ = 5' 39" 57.4' (LT)  
 D = 2' 43" 42.7'  
 T = 207.06'  
 R = 103.67'  
 DS > 2000.00'  
 SE = 60 MPH  
 RS = 0.03  
 R0 = 120'

-YI-  
 PI Sta 22+88.91  
 Δ = 0' 57" 17.7' (LT)  
 D = 14.19'  
 T = 72.80'  
 R = 6.00000'  
 DS > 50 MPH  
 SE = 0.025  
 R0 = NONE

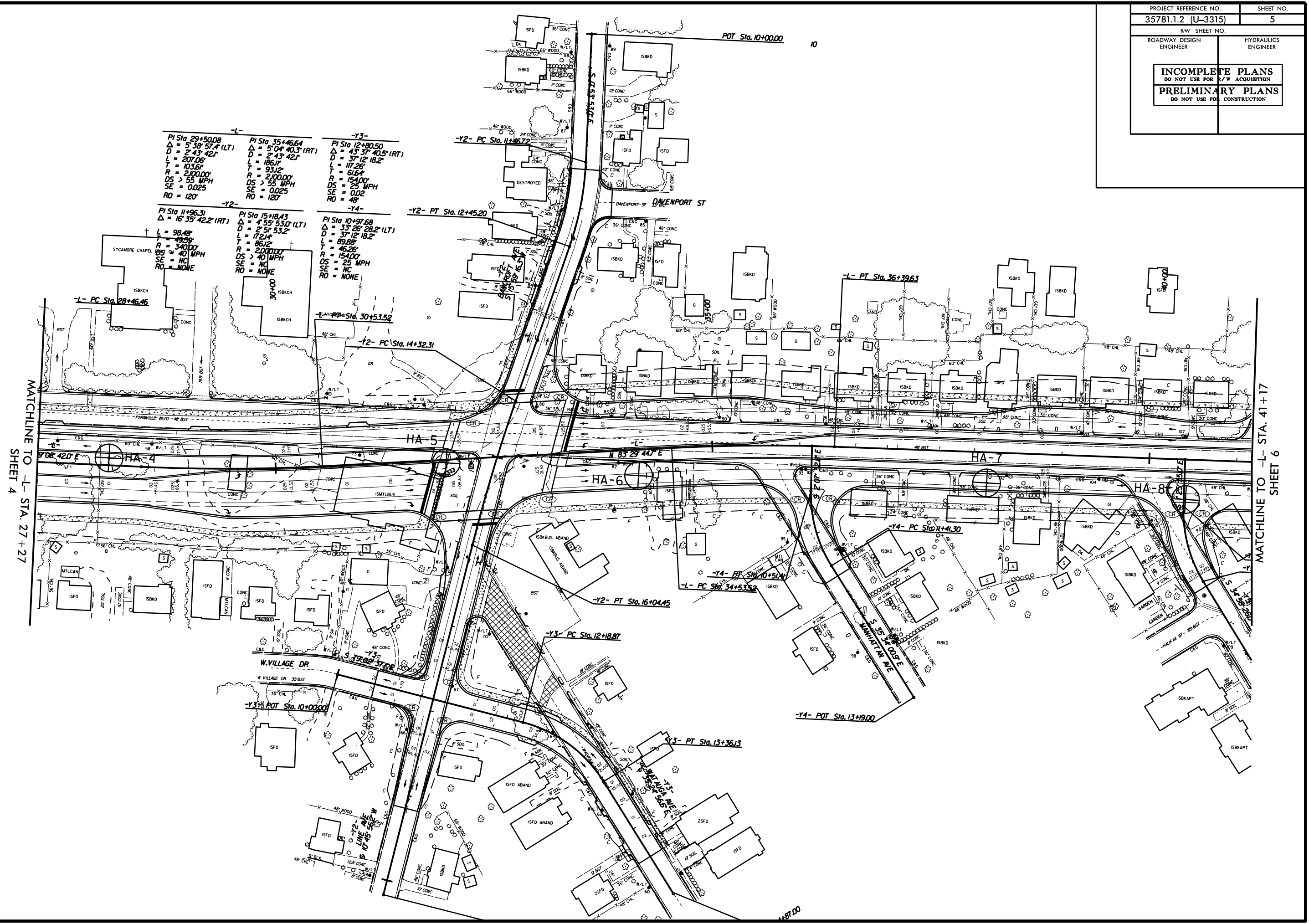
MATCHLINE -L- STA. 27 + 27  
TO SHEET 5

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PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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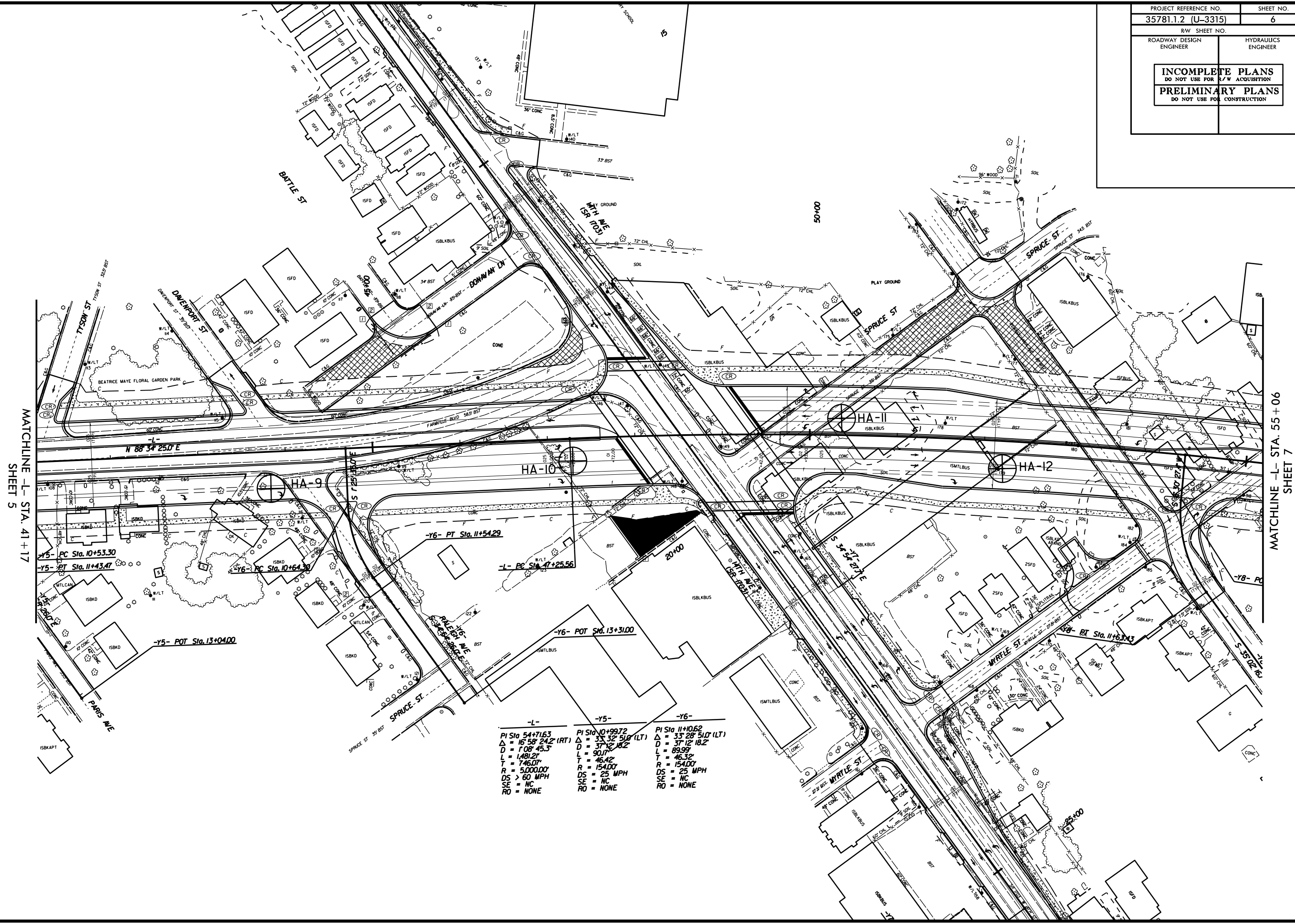


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MATCHLINE TO -L- STA. 27 + 27  
 SHEET 4

MATCHLINE TO -L- STA. 41 + 17  
 SHEET 6

PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



MATCHLINE -L- STA. 41+17  
SHEET 5

MATCHLINE -L- STA. 55+06  
SHEET 7

-L-	-Y5-	-Y6-
PI Sta 54+71.63	PI Sta 10+99.72	PI Sta 11+10.62
$\Delta = 16^\circ 58' 24.2''$ (RT)	$\Delta = 33^\circ 32' 51.0''$ (LT)	$\Delta = 33^\circ 28' 51.0''$ (LT)
D = 108' 45.3"	D = 37' 12' 18.2"	D = 37' 12' 18.2"
L = 1481.2'	L = 90.7'	L = 89.99'
T = 746.0'	T = 46.42'	T = 46.33'
R = 5,000.00'	R = 154.00'	R = 154.00'
DS > 60 MPH	DS = 25 MPH	DS = 25 MPH
SE = NC	SE = NC	SE = NC
RO = NONE	RO = NONE	RO = NONE

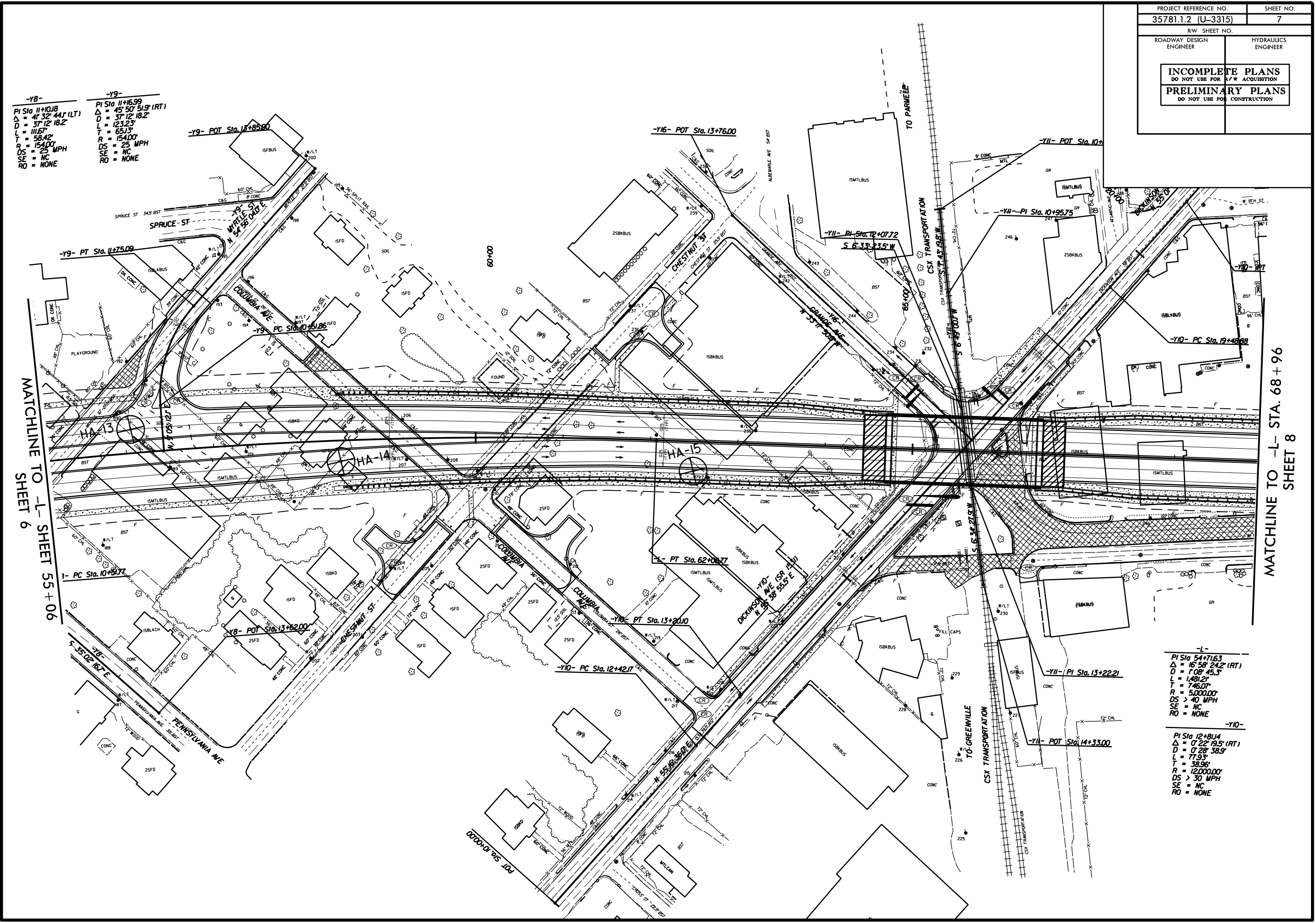
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PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

**-Y8-**  
 PI Sta 11+01.8  
 $\Delta = 41^{\circ} 32' 44"$  (LT)  
 $D = 37' 12" 18.2'$   
 $L = 116.7'$   
 $T = 58.42'$   
 $R = 154.00'$   
 $DS = 25$  MPH  
 $SE = NC$   
 $RO = NONE$

**-Y9-**  
 PI Sta 11+16.99  
 $\Delta = 45^{\circ} 50' 51.9"$  (RT)  
 $D = 37' 12" 18.2'$   
 $L = 123.23'$   
 $T = 65.13'$   
 $R = 154.00'$   
 $DS = 25$  MPH  
 $SE = NC$   
 $RO = NONE$



MATCHLINE TO -L- SHEET 55+06  
SHEET 6

MATCHLINE TO -L- STA. 68+96  
SHEET 8

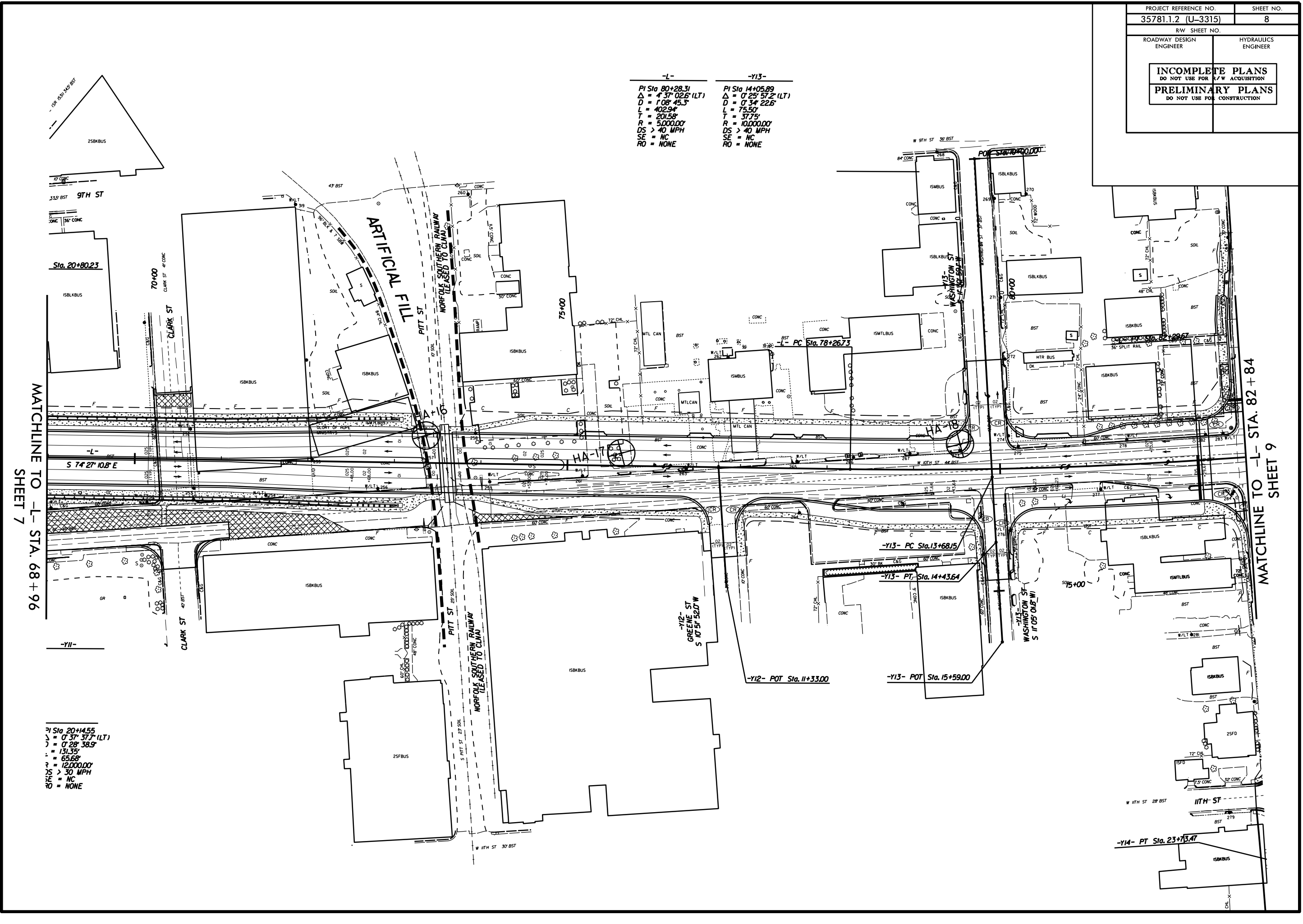
**-L-**  
 PI Sta 54+71.63  
 $\Delta = 15^{\circ} 58' 24.2"$  (RT)  
 $D = 1' 08" 45.3'$   
 $L = 1481.2'$   
 $T = 746.07'$   
 $R = 5000.00'$   
 $DS > 40$  MPH  
 $SE = NC$   
 $RO = NONE$

**-Y10-**  
 PI Sta 12+81.4  
 $\Delta = 0^{\circ} 22' 19.5"$  (RT)  
 $D = 0' 28" 38.9'$   
 $L = 77.93'$   
 $T = 38.98'$   
 $R = 12000.00'$   
 $DS > 30$  MPH  
 $SE = NC$   
 $RO = NONE$

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PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

-L-	-Y13-
PI Sta 80+28.31	PI Sta 14+05.89
$\Delta = 4^{\circ} 37' 02.6"$ (LT)	$\Delta = 0^{\circ} 25' 57.2"$ (LT)
D = 108' 45.3'	D = 0' 34' 22.6"
L = 402.94'	L = 75.50'
T = 201.58'	T = 37.75'
R = 5,000.00'	R = 10,000.00'
DS > 40 MPH	DS > 40 MPH
SE = NC	SE = NC
RO = NONE	RO = NONE



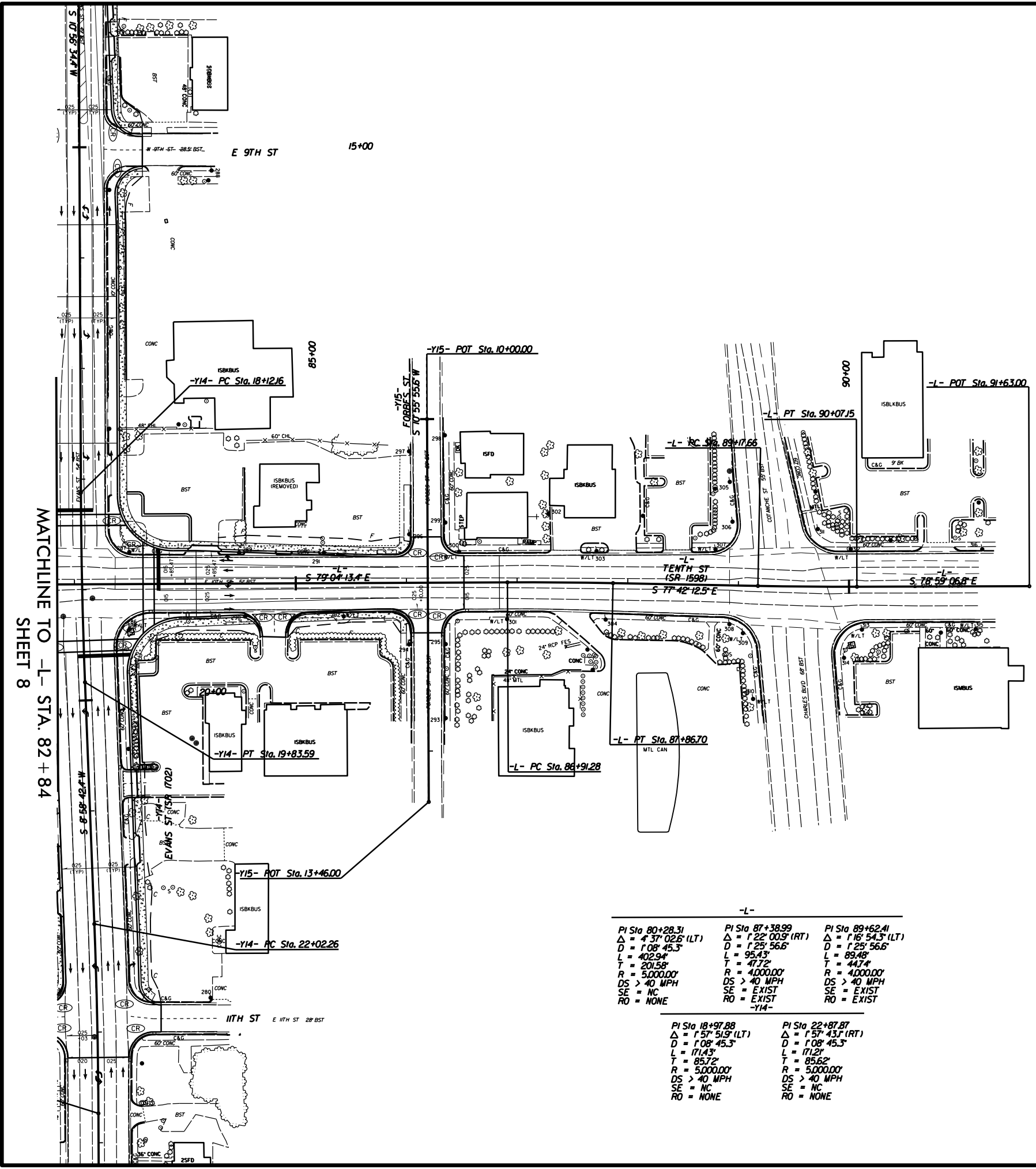
MATCHLINE TO -L- STA. 68+96  
SHEET 7

MATCHLINE TO -L- STA. 82+84  
SHEET 9

PI Sta 20+14.55
$\Delta = 0^{\circ} 37' 37.7"$ (LT)
D = 0' 28' 38.9"
L = 131.35'
T = 65.68'
R = 12,000.00'
DS > 30 MPH
SE = NC
RO = NONE

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PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION <b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



MATCHLINE TO -L- STA. 82 + 84  
SHEET 8

-L-		
PI Sta 80+28.31 $\Delta = 4^{\circ} 37' 02.6\"$ (LT) D = 1'08' 45.3" L = 402.94' T = 201.58' R = 5,000.00' DS > 40 MPH SE = NC RO = NONE	PI Sta 87+38.99 $\Delta = 1^{\circ} 22' 00.9\"$ (RT) D = 1'25' 56.6" L = 95.43' T = 47.72' R = 4,000.00' DS > 40 MPH SE = EXIST RO = EXIST	PI Sta 89+52.41 $\Delta = 1^{\circ} 16' 54.3\"$ (LT) D = 1'25' 56.6" L = 89.48' T = 44.74' R = 4,000.00' DS > 40 MPH SE = EXIST RO = EXIST
-Y14-		
PI Sta 18+97.88 $\Delta = 1^{\circ} 57' 51.9\"$ (LT) D = 1'08' 45.3" L = 171.43' T = 85.72' R = 5,000.00' DS > 40 MPH SE = NC RO = NONE	PI Sta 22+87.87 $\Delta = 1^{\circ} 57' 43\"$ (RT) D = 1'08' 45.3" L = 171.21' T = 85.62' R = 5,000.00' DS > 40 MPH SE = NC RO = NONE	

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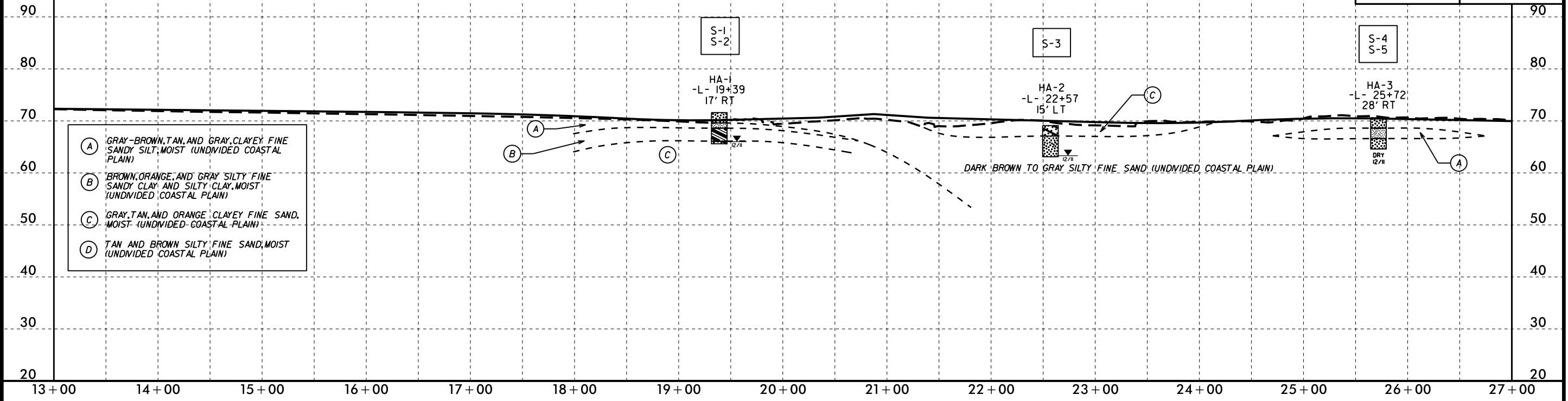
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PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

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		
S-1	17 RT	19+39	1.0 - 2.0	A-2-4 (0)	15	NP	7.4	61.4	15.3	15.9	99	97	35	--	--
S-2	17 RT	19+39	2.0 - 3.0	A-4 (0)	22	10	5.6	53.8	16.7	23.9	100	99	44	--	--
S-3	15 LT	22+57	2.0 - 3.0	A-2-4 (0)	14	NP	27.2	50.0	9.3	13.5	94	80	24	--	--
S-4	28 RT	25+72	3.0 - 4.0	A-4 (0)	20	6	6.4	58.1	15.6	19.9	100	99	38	--	--
S-5	28 RT	25+72	5.0 - 6.0	A-2-4 (0)	17	NP	6.0	67.3	11.8	14.9	100	99	30	--	--

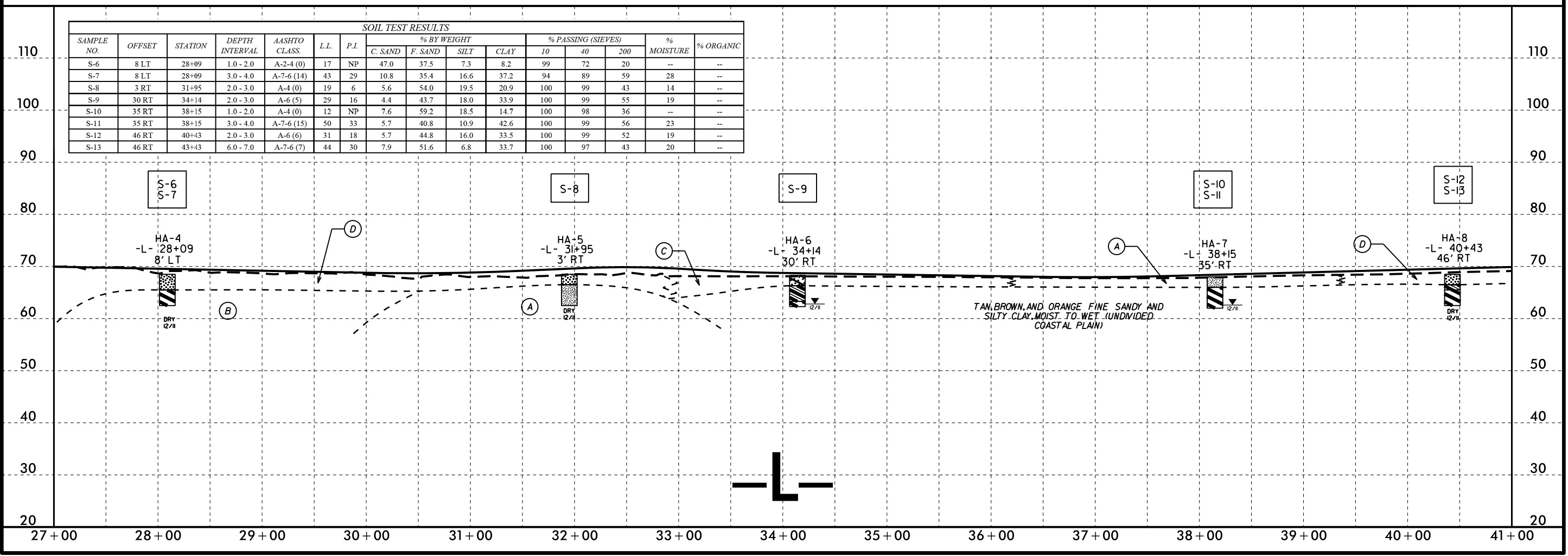
**LEGEND**  
 - - - - - EXISTING GROUND LINE  
 ——— PROPOSED GRADE LINE

- (A) GRAY-BROWN, TAN, AND GRAY, CLAYEY FINE SANDY SILT, MOIST (UNDIVIDED COASTAL PLAIN)
- (B) BROWN, ORANGE, AND GRAY SILTY FINE SANDY CLAY AND SILTY CLAY, MOIST (UNDIVIDED COASTAL PLAIN)
- (C) GRAY, TAN, AND ORANGE CLAYEY FINE SAND, MOIST (UNDIVIDED COASTAL PLAIN)
- (D) TAN AND BROWN SILTY FINE SAND, MOIST (UNDIVIDED COASTAL PLAIN)



SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-6	8 LT	28+09	1.0 - 2.0	A-2-4 (0)	17	NP	47.0	37.5	7.3	8.2	99	72	20	--	--
S-7	8 LT	28+09	3.0 - 4.0	A-7-6 (14)	43	29	10.8	35.4	16.6	37.2	94	89	59	28	--
S-8	3 RT	31+95	2.0 - 3.0	A-4 (0)	19	6	5.6	54.0	19.5	20.9	100	99	43	14	--
S-9	30 RT	34+14	2.0 - 3.0	A-6 (5)	29	16	4.4	43.7	18.0	33.9	100	99	55	19	--
S-10	35 RT	38+15	1.0 - 2.0	A-4 (0)	12	NP	7.6	59.2	18.5	14.7	100	98	36	--	--
S-11	35 RT	38+15	3.0 - 4.0	A-7-6 (15)	50	33	5.7	40.8	10.9	42.6	100	99	56	23	--
S-12	46 RT	40+43	2.0 - 3.0	A-6 (6)	31	18	5.7	44.8	16.0	33.5	100	99	52	19	--
S-13	46 RT	43+43	6.0 - 7.0	A-7-6 (7)	44	30	7.9	51.6	6.8	33.7	100	97	43	20	--

TAN, BROWN, AND ORANGE FINE SANDY AND SILTY CLAY, MOIST TO WET (UNDIVIDED COASTAL PLAIN)



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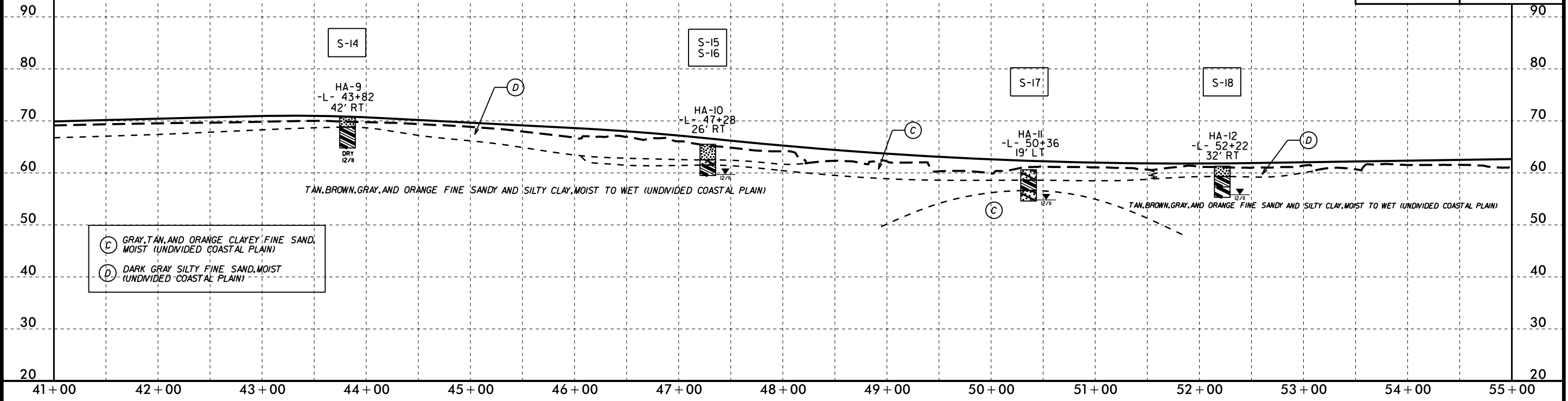
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-14	42 RT	43+82	2.0 - 3.0	A-6 (3)	26	13	4.7	51.1	17.4	26.8	100	99	47	--	--
S-15	26 RT	47+28	1.0 - 2.0	A-2-4 (0)	13	NP	7.9	63.0	16.0	13.1	98	95	32	--	--
S-16	26 RT	47+28	5.0 - 6.0	A-6 (2)	28	14	4.8	55.3	13.0	26.9	100	99	44	19	--
S-17	19 LT	50+36	2.0 - 3.0	A-6 (11)	39	25	3.7	42.5	14.5	39.3	100	99	58	24	--
S-18	32 RT	52+22	3.0 - 4.0	A-6 (10)	37	23	1.4	41.1	17.3	40.2	99	98	60	22	--

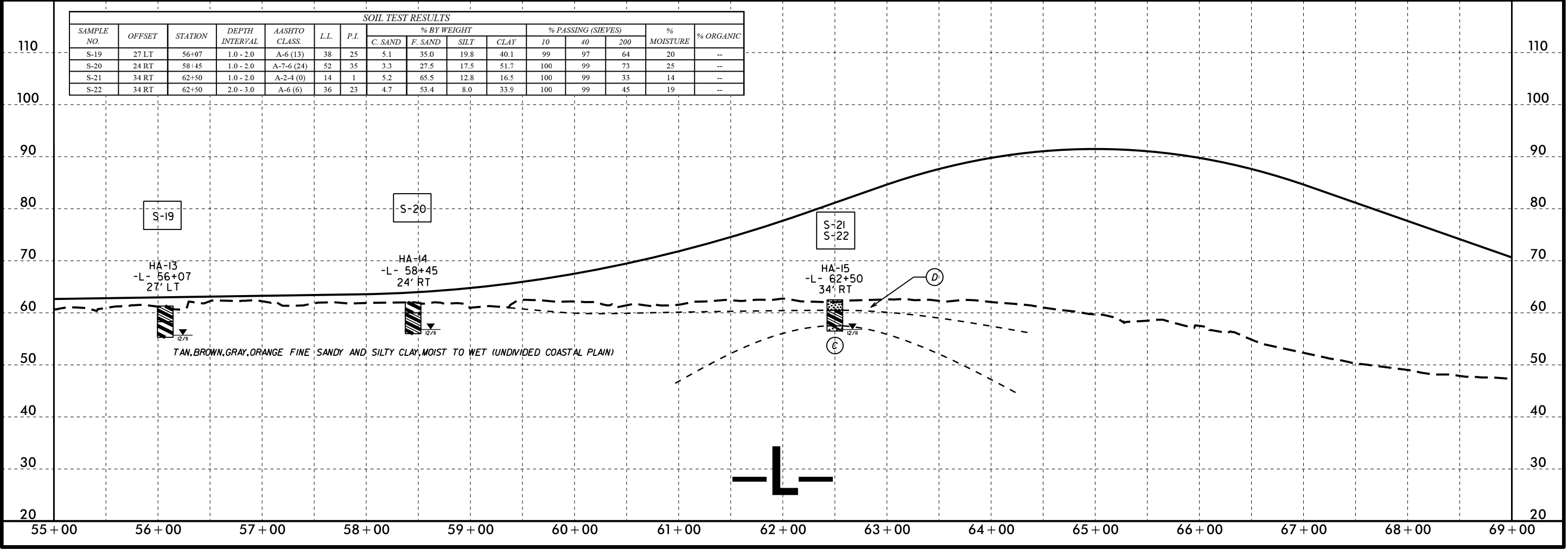
**LEGEND**

--- EXISTING GROUND LINE  
 - - - - - PROPOSED GRADE LINE

PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> 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		
S-19	27 LT	56+07	1.0 - 2.0	A-6 (13)	38	25	5.1	35.0	19.8	40.1	99	97	64	20	--
S-20	24 RT	58+45	1.0 - 2.0	A-7-6 (24)	52	35	3.3	27.5	17.5	51.7	100	99	73	25	--
S-21	34 RT	62+50	1.0 - 2.0	A-2-4 (0)	14	1	5.2	65.5	12.8	16.5	100	99	33	14	--
S-22	34 RT	62+50	2.0 - 3.0	A-6 (6)	36	23	4.7	53.4	8.0	33.9	100	99	45	19	--



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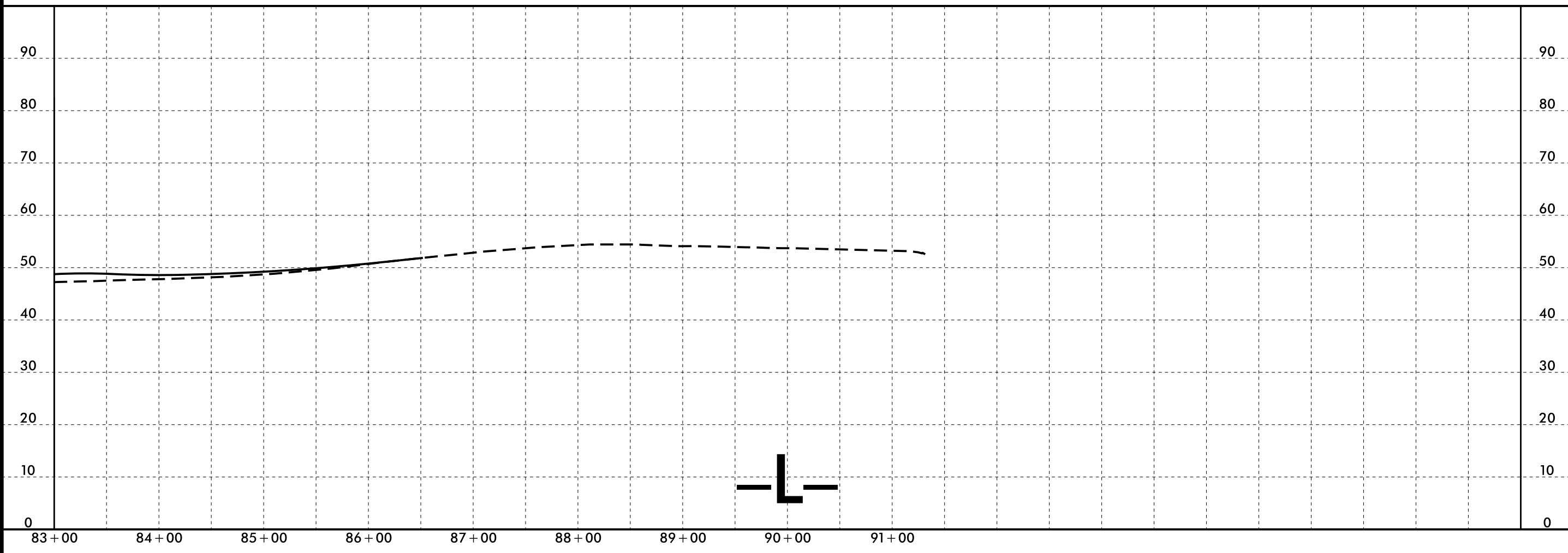
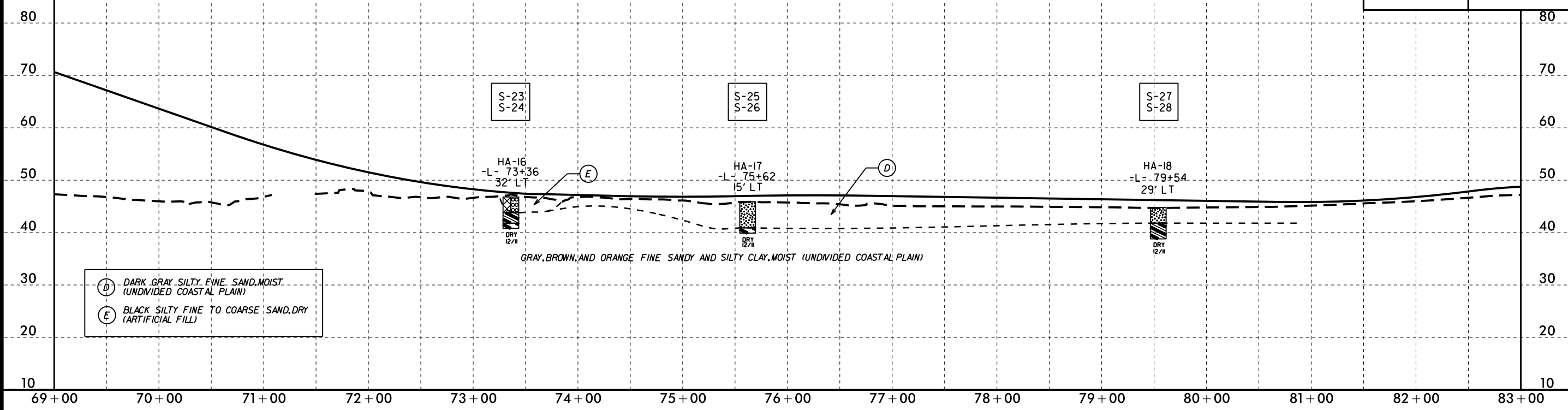
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-23	32 LT	73+36	2.0 - 3.0	A-1-b (0)	28	NP	42.8	32.6	12.7	11.9	68	47	19	--	--
S-24	32 LT	73+36	4.0 - 5.0	A-6 (2)	28	12	10.8	51.7	16.7	20.8	100	96	45	19	--
S-25	15 LT	75+62	1.0 - 2.0	A-2-4 (0)	21	NP	25.2	58.6	9.5	6.7	99	89	20	--	--
S-26	15 LT	75+62	3.0 - 4.0	A-2-4 (0)	18	NP	17.5	69.4	5.9	7.2	100	95	17	--	--
S-27	29 LT	79+54	1.0 - 2.0	A-2-4 (0)	22	6	12.9	58.4	10.9	17.8	98	93	33	--	--
S-28	29 LT	79+54	3.0 - 4.0	A-6 (4)	39	25	6.5	48.5	10.9	34.1	100	98	50	22	--

**LEGEND**

--- EXISTING GROUND LINE  
 - - - PROPOSED GRADE LINE

PROJECT REFERENCE NO. 35781.1.2 (U-3315)	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	



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