REFERENCE: U-5312

PROJECT: 45446

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

CONTENTS

CROSS SECTIONS

APPENDICES

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *WILKES*

PROJECT DESCRIPTION *US 421 FROM NC 16 TO US 421 BUSINESS IN WILKESBORO*

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5312	1	67

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

TRIGON EXPLORATION

LANE, R.W.

INVESTIGATED BY *FALCON ENG.*

DRAWN BY *HILL, M.J.*

CHECKED BY *HUNSBERGER, W.S.*

SUBMITTED BY *FALCON ENG.*

DATE *OCTOBER 2021*

NORTH CAROLINA PROFESSIONAL SEAL 36283 ENGINEER W. SCOTT HUNSBERGER

DocuSigned by:
W. Scott Hunsberger 10/7/2021
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SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5312	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
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 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	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				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

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.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

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

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT, DPT, DMT, VST, PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] MOBILE B-57
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [ ] -N _____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [X] HAND AUGER
- [X] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

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 YEILD 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.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	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 (SLI.)	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. *IF TESTED, WOULD YIELD SPT REFUSAL*
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. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
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.

ROCK HARDNESS

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 FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

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

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF 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.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - 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.

BENCH MARK:
BORING ELEVATIONS TAKEN FROM MULTIPLE .TIN FILES
DATED 09/15-09/22 2018 ELEVATION: _ FEET

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 1-XX-17

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	OF
N.C.	U-5312	2A	66
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45446.1.1	NHS-0421(072)	PE	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

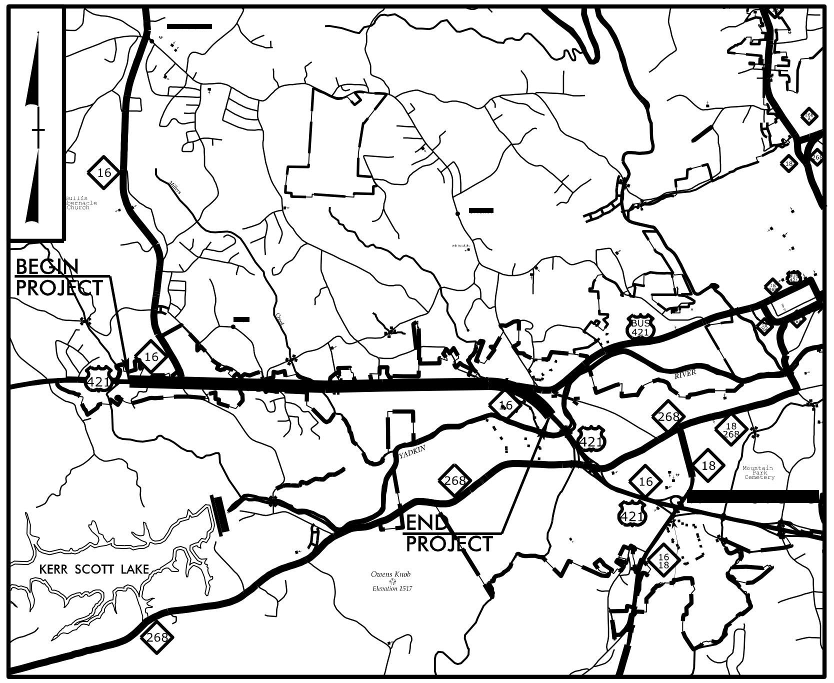
WILKES COUNTY

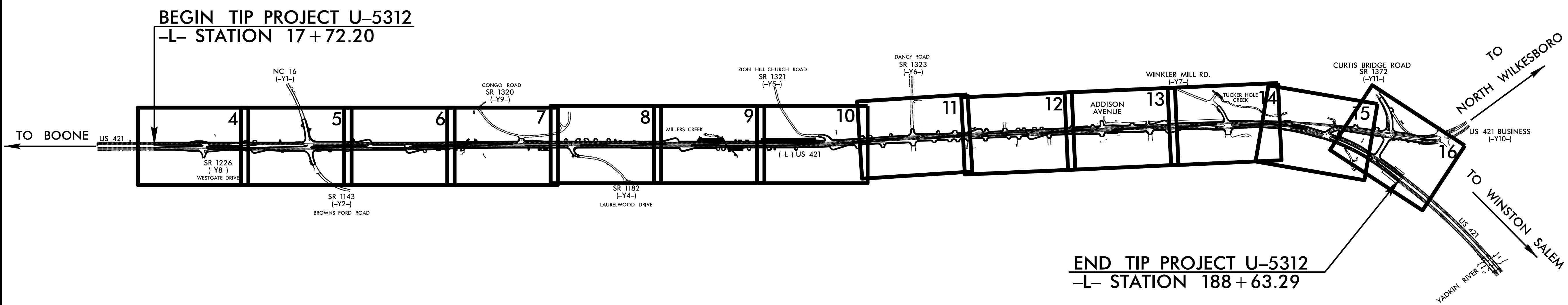
LOCATION: US 421 FROM NC 16 TO US 421 BUSINESS IN WILKESBORO

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

25% PLANS

NAD 83/ NSRS 2007





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

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF WILKESBORO

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2020 = 37,000
ADT 2040 = 41,900
K = 8 %
D = 55 %
T = 5 % *
V = 55 MPH
* TTST = 2% DUAL 3%
FUNC CLASS = ARTERIAL

STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5312 = 3.237 MILES
TOTAL LENGTH TIP PROJECT U-5312 = 3.237 MILES

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

vhb Venture I 940 Main Campus Drive, Suite 500 Raleigh, NC 27606 NC License No. C-3705

SUNGATE DESIGN GROUP, P.A.

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 28, 2018

LETTING DATE: FEBRUARY 18, 2020

Jimmy Goodnight, PE
PROJECT ENGINEER

Mark Hussey
PROJECT DESIGN ENGINEER

NCDOT CONTACT: Dean Ledbetter, PE
Division Planning Engineer

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TIP PROJECT: U-5312

CONTRACT: 45446

26-NOV-2018 15:17
T:\Projects\2017\GI7038.00 VHB U-5312 (US-421) Superstreet in Wilkes County\U5312_GEO_RDWY\CADD_GEOTECH\PlanProf\U5312_GEO_tsh.dgn
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Roadway Subsurface Investigation Report - Inventory

US 421 From NC 16 to US 421 Business In Wilkesboro
Wilkes County, North Carolina
WBS: 45446.1.1 TIP: U-5312
Falcon Project No.: G17038.00

Prepared for:
VHB
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

Submitted by:
Falcon Engineering, Inc.
1210 Trinity Road, Suite 110
Cary, North Carolina 27513
(919) 871-0800
www.falconengineers.com

October 7, 2021

WBS: 45446.1.1
TIP: U-5312
COUNTY: Wilkes
DESCRIPTION: US 421 From NC 16 to US 421 Business in Wilkesboro
SUBJECT: Roadway Subsurface Investigation – Inventory

PROJECT DESCRIPTION

This project consists of 3.2 miles of proposed new grading, realignment, and widening along US 421 in Wilkes County. A portion of US 421 Business from NC 16 to US 421 will be converted to a superstreet including turn lane and intersection improvements and the addition of U-turn bulbs. Tie-ins and minor improvements to Y-lines and small drives are also included.

Included in this project are one (1) extension of an existing reinforced box culvert facilitating water crossings along the mainline, and three (3) retaining wall along -L-.

The investigation was conducted between February 13th, and April 9th, 2018 in general accordance with the Scope of Services, dated March 29, 2017. The recommendations provided in this report are based solely on our site reconnaissance, soil test borings and laboratory test data, engineering evaluation of these data, and generally accepted soil and foundation engineering practices and principles.

A total of forty (40) Standard Penetration Test (SPT) borings, one (1) auger probe, one (1) hand auger and two (2) rod soundings were performed for the proposed roadway alignments and retaining walls. All mechanical borings were drilled using a Mobil B-57 ATV rig equipped with 2 ¼-inch inside diameter hollow-stem augers, and SPT testing was performed with an automatic hammer. Representative soil samples, collected with a split-barrel sampler or hand auger, were selected for laboratory testing to verify visual field classifications. In addition, bulk samples were collected for standard Proctor compaction and California Bearing Ratio (CBR) testing. At thirty-five (35) locations along the existing roadway, existing pavements were cored, measured, and Dual Mass Dynamic Cone Penetrometer (DCP) testing completed on the subgrade to depths of up to three feet to correlate in-situ CBR values. The dual mass DCP used is manufactured by Kessler Soils Engineering Products, Inc. CBR values were estimated using software provided by the manufacturer which utilizes correlations established by the Army Corps of Engineers Waterways Experiment Station.

The following alignments, totaling approximately 3.7 miles were explicitly investigated. Other minor Y-lines and driveways are included on the project but improvements are not anticipated to be significant enough to warrant investigation.

Alignment	Station (ft)
-L- (US 421)	17+72.20—188+63.29
-Y10- (US 421 Business)	10+00.00—25+21.39
-Y11- (Curtis Bridge Road)	10+00.00—19+27.63

AREAS OF SPECIAL GEOTECHNICAL INTEREST

I. Shallow ground water was measured within the following area and may cause groundwater related stability problems during construction:

Alignment	Station (ft)
-Y10-	20+46

Shallow ground water is likely to exist elsewhere on the site between borings in proximity to natural waterways.

II. Alluvial soils were encountered near the following locations. The potential for shallow groundwater and wet, soft or organic soils should be anticipated at these locations:

Alignment	Station (ft)
-L-	180+36

Isolated alluvial soils are likely to exist elsewhere on the site between borings in proximity to natural waterways.

III. Roadway Embankment associated with existing roadways was encountered at the following locations:

Alignment	Station (ft)
-L-	31+48
-L-	45+01 – 52+92
-L-	62+29
-L-	109+75 – 129+76
-Y11-	12+99

IV. Artificial fill associated with commercial development was encountered at the following location:

Alignment	Station (ft)
-Y11-	11+23

V. Shallow rock within 6 feet of proposed subgrade elevation was encountered at the following location:

Alignment	Station (ft)
-L-	155+27

PHYSIOGRAPHY AND GEOLOGY

The project site is in the Inner Piedmont Belt Physiographic Province of North Carolina. According to the ***Geologic Map of North Carolina*** (1985), the site is underlain by three major rock types in the Inner Piedmont Belt Physiographic Province. The site transitions from west to east across Banded Gneiss (**CZbb**), Metagraywacke, Amphibiolite and Kyanite Schist (**CZmal**) and Biotite Gneiss and Schist (**CZbg**). All three are of the Cambrian/Late Proterozoic Period.

The Banded Gneiss (**CZbb**) is noted as being interlayered with calc-silicate rock, metaconglomerate, amphibiolite, sillimanite-mica schist, and granitic rock. The Metagraywacke, Amphibiolite and Kyanite Schist (**CZmal**) is noted to consist of metagraywacke (biotite gneiss) interlayered and gradational with amphibiolite and kyanite schist; minor ultramafic and granitic rock. The Biotite Gneiss and Schist (**CZbg**) is noted to consist of biotite gneiss and schist – inequigranular, with locally abundant potassic feldspar and garnet; interlayered and gradational with calc-silicate rock, sillimanite-mica schist, mica schist and amphibolite and contains small masses of granitic rock.

Existing site topography is typical of North Carolina's Foothills Region. The Foothills Region is a portion of the Western Piedmont that approaches the Mountain Region. Terrain is typically more rugged than the majority of the Piedmont, but with less overall elevation change than the Mountain Region. Topography along the project is generally rolling, with steeper ravines in the vicinity of streams or existing roadway cuts. The existing ground surface generally grades downward in the upstation direction, with elevations ranging from a high of around 1254 feet to a low of around 995 feet.

Existing land use is a mix of agriculture, residential, industrial, and commercial, with the majority of the project corridor developed with commercial properties.

SOIL PROPERTIES

A variety of soils were encountered along the project, including existing roadway embankments, artificial fill, alluvial deposits, residual soils, weathered rock and crystalline rock. Areas where soils at the ground surface are of a unique origin (i.e. not residual soils) are approximately delineated on the boring location plans based on subsurface conditions encountered in nearby borings, and various topographical, vegetative, or other visual surface features.

Topsoil and rootmat was encountered in grassy, brushy, and wooded areas ranging in thickness from 0.1 to 0.5 feet, and typically on the order of 0.3 feet.

Artificial Fill soils were encountered at the ground surface beneath thin layers of topsoil. These consist of 2 to 10 feet of dry to moist, soft to stiff, sandy clay (A-6).

Roadway Embankment soils were encountered at the ground surface adjacent to existing roadways. These consist of 1.5 to 35 feet of dry to moist, loose to medium dense, silty and clean sands (A-1-a, A-1-b, A-2-4, A-2-5) and dry to wet, very soft to hard, sandy and clayey silts and sandy clays (A-4, A-5, A-6).

Alluvial soils were encountered at the ground surface near the historic floodplains of natural waterways. These soils extended to depths of up to approximately 4 feet and consist of moist to wet, soft, clayey silts (A-5) and loose, clayey sands (A-2-6) with trace amounts of organic material.

Residual soils were encountered at the ground surface, or beneath artificial fill, roadway embankments or alluvial deposits. These soils consist of dry to moist, loose to very dense, clean, clayey and silty sands (A-1-b, A-2-4 and A-2-6) and soft to very stiff, sandy clay and silt, clayey silt, and silty clays (A-4, A-5, A-6, A-7).

Weathered Rock (WR) is a very hard material with properties intermediate of soil and rock. WR is classified as having an N-value of greater than 100 blows per one foot. WR encountered on the project generally consists of tan and white metamorphosed granitic rock.

Crystalline Rock, in the form of metamorphosed granitic rock, was encountered beneath weathered rock or residual soils at various locations throughout the site. Isolated rock outcrops were noted at several locations in existing roadway cuts throughout the project corridor. Where Crystalline Rock was encountered above the proposed subgrade elevation, auger probes were performed to help approximate the size and expanse of the rock above the proposed cut elevation. Crystalline Rock is classified as material that yields auger refusal or SPT refusal (blow count of 60/0.0 or 60/0.1 feet.)

GROUNDWATER PROPERTIES

Groundwater levels were measured at the time of boring completion, and in many cases after a waiting period of at least 24 hours. Borings drilled within and in close proximity to existing roadways, and within residential or commercial areas likely to see pedestrian traffic were backfilled immediately after completion due to safety considerations.

Groundwater levels across the site were generally deep, with the exception of areas near streams and existing low, wet areas.

ADDITIONAL LABORATORY TESTING

The following bulk samples were obtained:

Sample	Location	Depth (ft)	Test
BS-1	154+76, 76’ RT, -L-	3.5-8.5	California Bearing Ratio, Standard Proctor
BS-2	11+51, 23’ RT, -WALL1-	13.5-31.5	California Bearing Ratio, Standard Proctor

Classification test results for bulk samples are included in the subsurface profiles and cross sections and Standard Proctor and California Bearing Ratio (CBR) data is attached in the Appendix.

CLOSING

Falcon appreciates the opportunity to have provided our geotechnical engineering services for the above referenced project. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

FALCON ENGINEERING, INC.

Report Prepared By:

W. Scott Hunsberger, PE
Geotechnical Engineer

Report Reviewed By:

Jeremy R. Hamm, PE
Geotechnical Engineering Manager

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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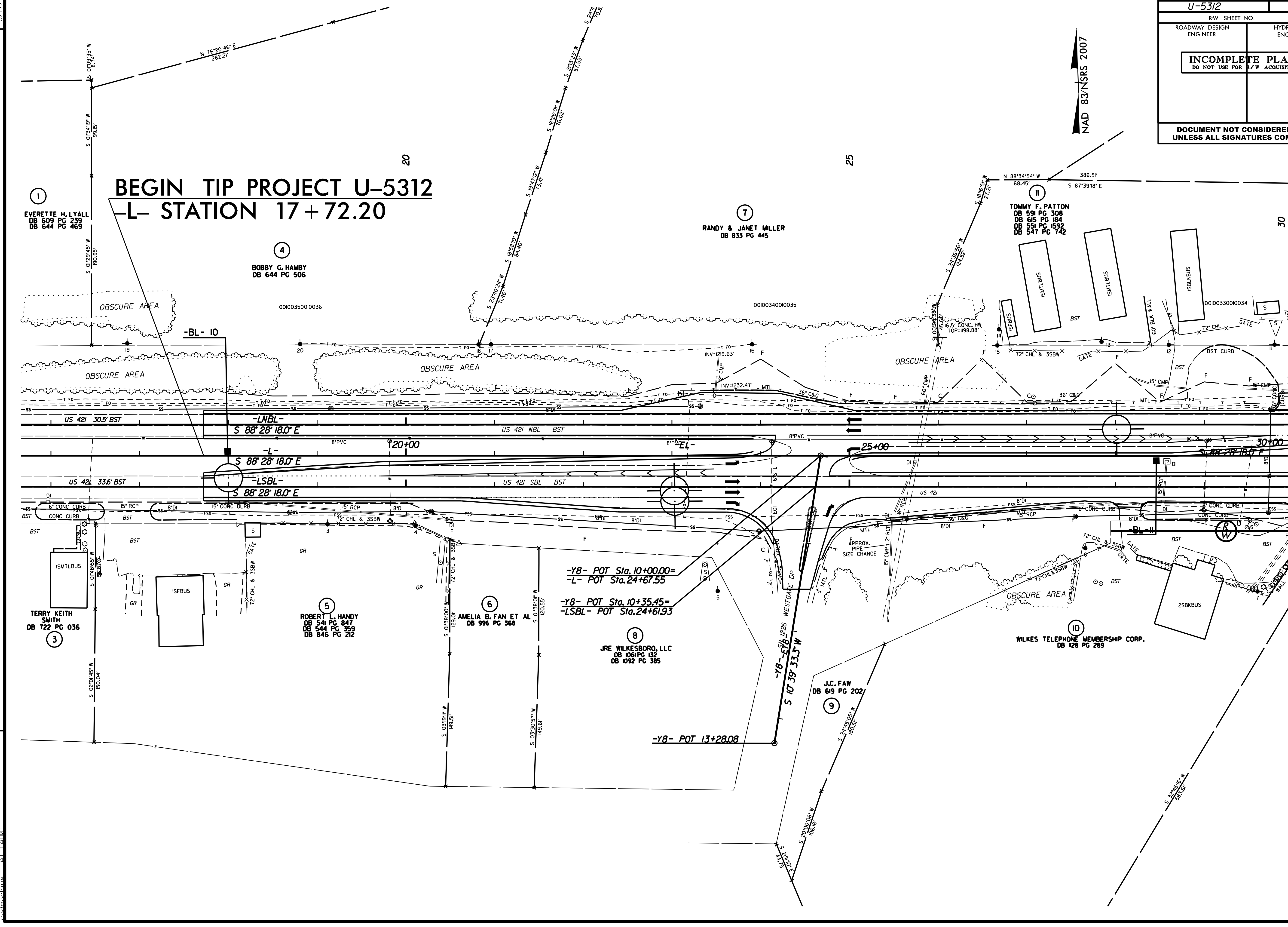
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BEGIN TIP PROJECT U-5312
-L- STATION 17+72.20
NAD 83/NSRS 2007
MATCHLINE -L- STATION 30+00 SEE SHEET 5
EVERETTE H. LYALL
DB 609 PG 239
DB 644 PG 469
BOBBY G. HAMBY
DB 644 PG 506
RANDY & JANET MILLER
DB 833 PG 445
TOMMY F. PATTON
DB 591 PG 308
DB 615 PG 184
DB 551 PG 1592
DB 547 PG 742
TERRY KEITH SMITH
DB 722 PG 036
ROBERT L. HANDY
DB 541 PG 847
DB 544 PG 359
DB 846 PG 212
AMELIA B. FAN ET AL
DB 996 PG 368
JRE WILKESBORO, LLC
DB 1061 PG 132
DB 1092 PG 385
J.C. FAW
DB 619 PG 202
WILKES TELEPHONE MEMBERSHIP CORP.
DB 128 PG 289
-LNBL- S 88° 28' 18.0" E
-L- S 88° 28' 18.0" E
-LSBL- S 88° 28' 18.0" E
-BL- 10
-BL- 11
US 421 NBL BST
US 421 SBL BST
-Y8- POT Sta. 10+00.00= -L- POT Sta. 24+67.55
-Y8- POT Sta. 10+35.45= -LSBL- POT Sta. 24+61.93
-Y8- POT 13+28.08
-Y8- S 10° 39' 33.3" W
WESTGATE DR
OBSCURE AREA

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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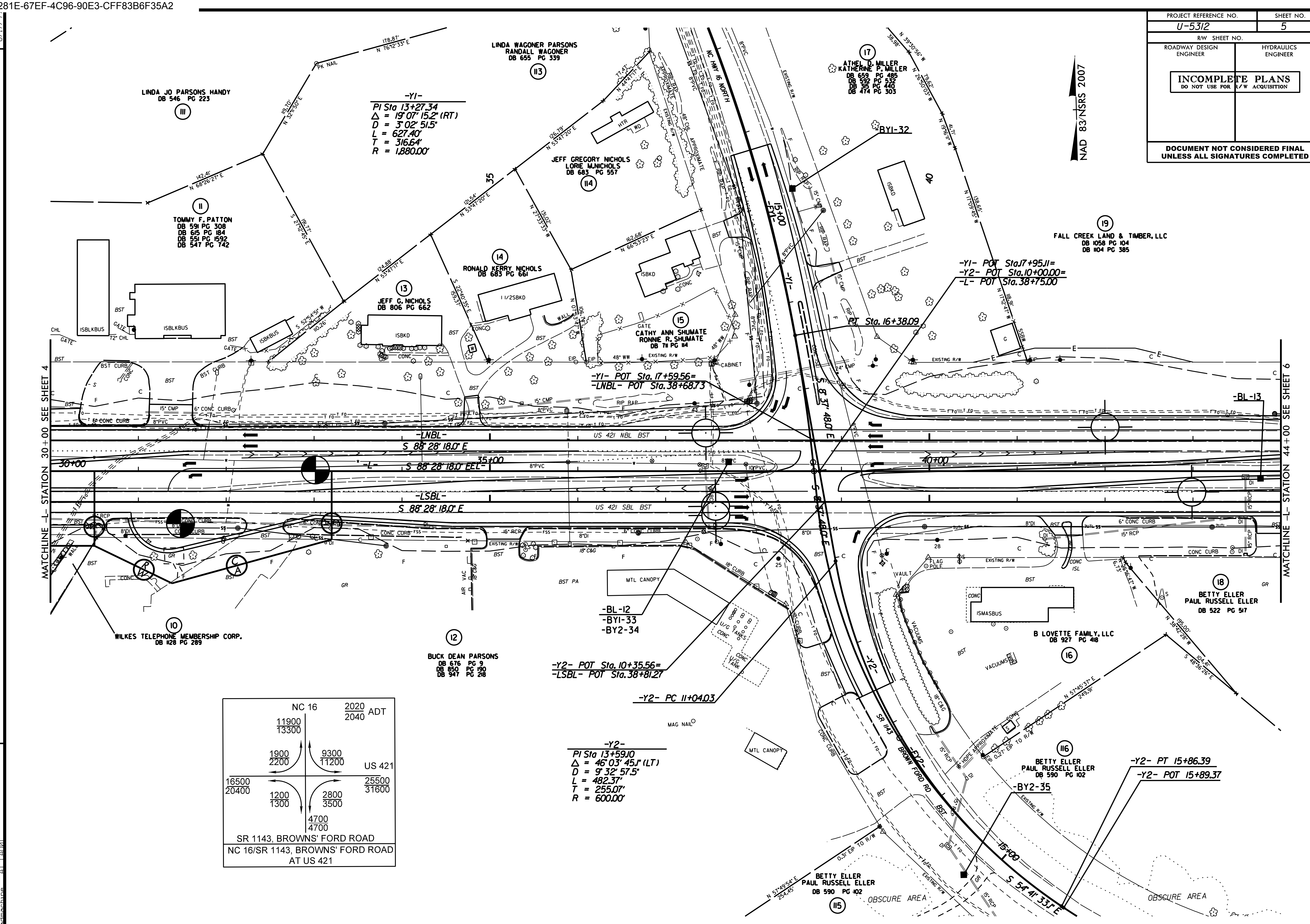

NAD 83/NSRS 2007
LINDA WAGONER PARSONS
RANDALL WAGONER
DB 655 PG 339
113
LINDA JO PARSONS HANDY
DB 546 PG 223
111
-Y1-
PI Sta 13+27.34
Δ = 19° 07' 15.2" (RT)
D = 3° 02' 51.5"
L = 627.40'
T = 316.64'
R = 1,880.00'
JEFF GREGORY NICHOLS
LORIE M. NICHOLS
DB 683 PG 557
114
ATHEL D. MILLER
KATHERINE P. MILLER
DB 659 PG 485
DB 592 PG 532
DB 315 PG 440
DB 474 PG 303
17
BY1-32
TOMMY F. PATTON
DB 591 PG 308
DB 615 PG 184
DB 551 PG 1592
DB 547 PG 742
11
RONALD KERRY NICHOLS
DB 683 PG 661
14
FALL CREEK LAND & TIMBER, LLC
DB 1058 PG 104
DB 1104 PG 385
19
JEFF G. NICHOLS
DB 806 PG 662
13
CATHY ANN SHUMATE
RONNIE R. SHUMATE
DB 711 PG 114
15
-Y1- POT Sta17+95.11=
-Y2- POT Sta.10+00.00=
-L- POT Sta.38+75.00
PT Sta. 16+38.09
-Y1- POT Sta. 17+59.56=
-LNBL- POT Sta.38+68.73
NC HWY 16 NORTH
MATCHLINE -L- STATION 30+00 SEE SHEET 4
MATCHLINE -L- STATION 44+00 SEE SHEET 6
-LNBL-
S 88° 28' 18.0" E
US 421 NBL BST
-L-
S 88° 28' 18.0" E
-LSBL-
S 88° 28' 18.0" E
US 421 SBL BST
-BL-13
30+00
35+00
40+00
S 8° 37' 48.0" E
-BL-12
-BY1-33
-BY2-34
WILKES TELEPHONE MEMBERSHIP CORP.
DB 1128 PG 289
10
BUCK DEAN PARSONS
DB 676 PG 9
DB 850 PG 190
DB 947 PG 218
12
-Y2- POT Sta. 10+35.56=
-LSBL- POT Sta.38+81.27
-Y2- PC 11+04.03
B LOVETTE FAMILY, LLC
DB 927 PG 418
16
BETTY ELLER
PAUL RUSSELL ELLER
DB 522 PG 517
18
MTL CANOPY
SR 1143 BROWN FORD RD
-Y2-
PI Sta 13+59.10
Δ = 46° 03' 45.1" (LT)
D = 9° 32' 57.5"
L = 482.37'
T = 255.07'
R = 600.00'
BETTY ELLER
PAUL RUSSELL ELLER
DB 590 PG 102
116
-BY2-35
-Y2- PT 15+86.39
-Y2- POT 15+89.37
BETTY ELLER
PAUL RUSSELL ELLER
DB 590 PG 102
115
S 54° 41' 33.1" E
OBSCURE AREA
NC 16
2020
2040 ADT
11900
13300
1900
2200
9300
11200
US 421
16500
20400
25500
31600
1200
1300
2800
3500
4700
4700
SR 1143, BROWNS' FORD ROAD
NC 16/SR 1143, BROWNS' FORD ROAD AT US 421
REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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-L-

PI Sta 53+30.89
Δ = 1° 22' 42.0" (LT)
D = 0° 08' 48.9"
L = 938.21'
T = 469.13'
R = 39,000.00'

PI Sta 62+67.58
Δ = 1° 22' 26.0" (RT)
D = 0° 08' 48.9"
L = 935.17'
T = 467.61'
R = 39,000.00'

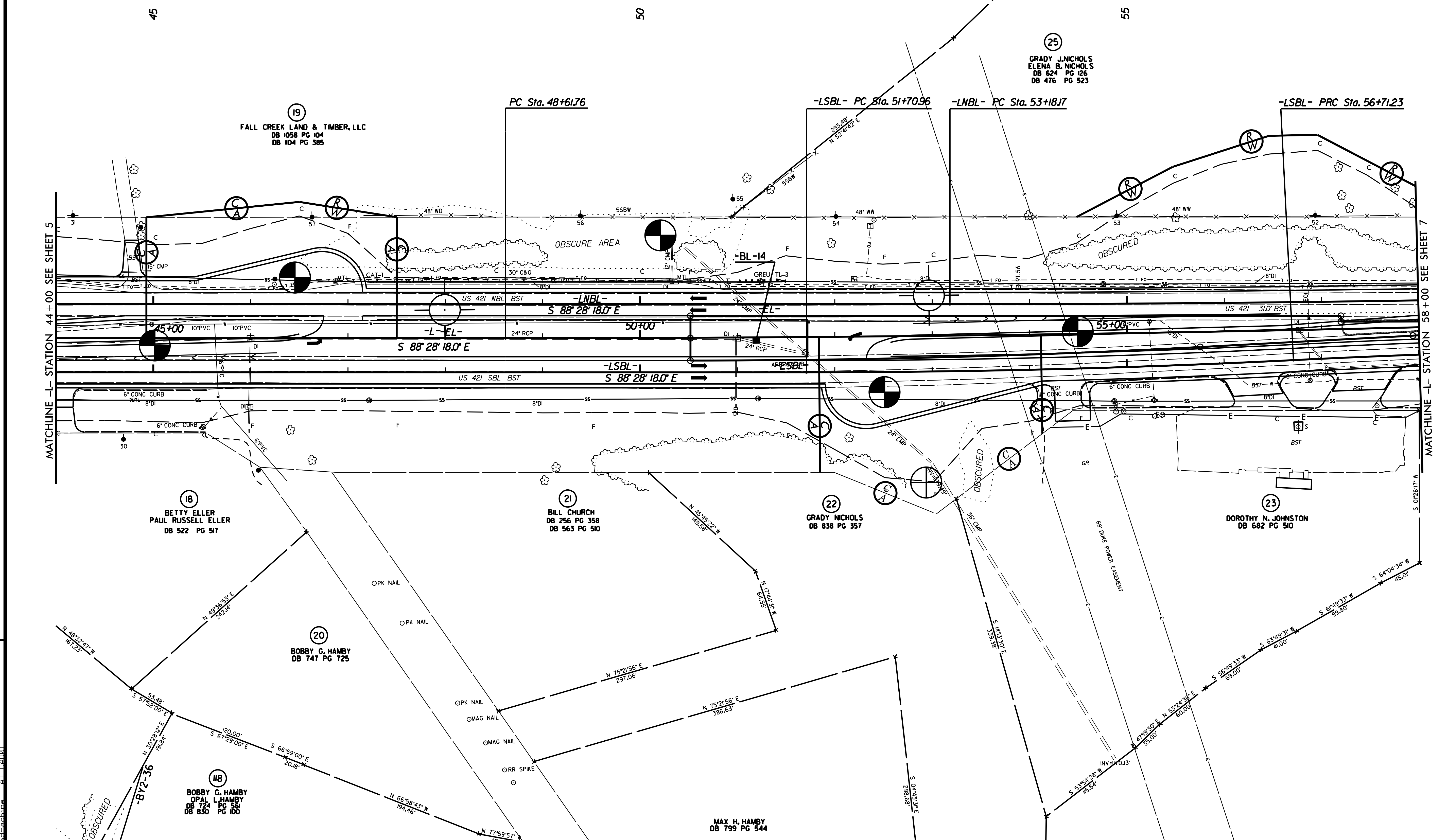
-LSBL-

PI Sta 54+21.15
Δ = 2° 51' 58.7" (LT)
D = 0° 34' 22.6"
L = 500.26'
T = 250.18'
R = 10,000.00'

PI Sta 58+23.53
Δ = 1° 44' 42.3" (RT)
D = 0° 34' 22.6"
L = 304.58'
T = 152.30'
R = 10,000.00'

-LNBL-

PI Sta 56+11.72
Δ = 1° 07' 16.4" (LT)
D = 0° 11' 27.5"
L = 587.06'
T = 293.54'
R = 30,000.00'



NAD 83/NSRS 2007
MATCHLINE -L- STATION 44+00 SEE SHEET 5
MATCHLINE -L- STATION 58+00 SEE SHEET 7
PC Sta. 48+61.76
-LSBL- PC Sta. 51+70.96
-LNBL- PC Sta. 53+18.17
-LSBL- PRC Sta. 56+71.23
19
FALL CREEK LAND & TIMBER, LLC
DB 1058 PG 104
DB 1104 PG 385
25
GRADY J. NICHOLS
ELENA B. NICHOLS
DB 624 PG 126
DB 476 PG 523
OBSCURE AREA
OBSCURED
-BL-14
US 421 NBL BST
-LNBL-
S 88° 28' 18.0" E
-L- -EL-
S 88° 28' 18.0" E
-LSBL-
S 88° 28' 18.0" E
US 421 SBL BST
US 421 31.0' BST
45+00
50+00
55+00
18
BETTY ELLER
PAUL RUSSELL ELLER
DB 522 PG 517
21
BILL CHURCH
DB 256 PG 358
DB 563 PG 510
22
GRADY NICHOLS
DB 838 PG 357
23
DOROTHY N. JOHNSTON
DB 682 PG 510
20
BOBBY G. HAMBY
DB 747 PG 725
118
BOBBY G. HAMBY
OPAL L. HAMBY
DB 724 PG 561
DB 830 PG 100
MAX H. HAMBY
DB 799 PG 544
-BY2-36
68' DUKE POWER EASEMENT

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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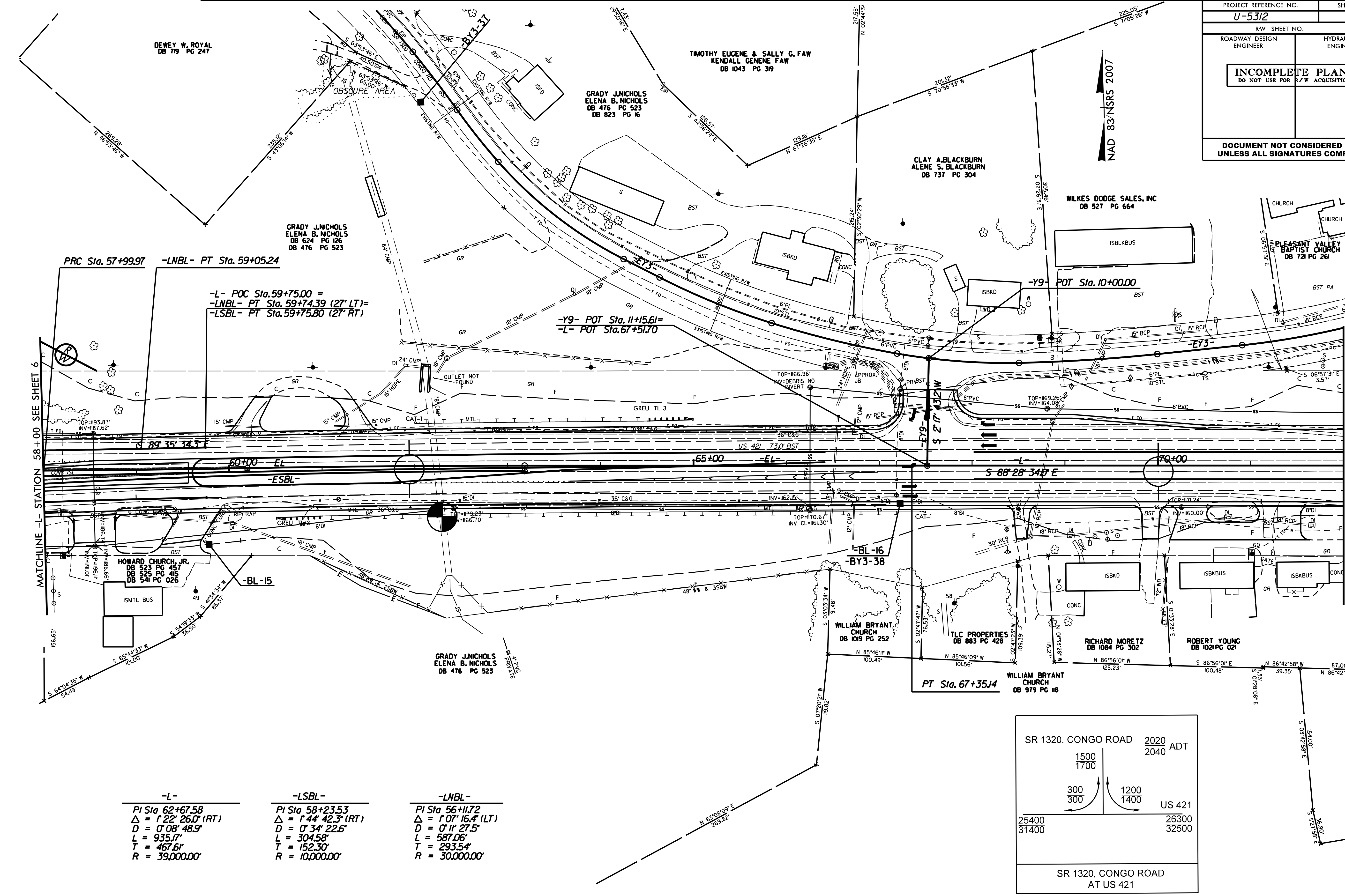
REVISIONS

8/17/99



NAD 83/NSRS 2007
DEWEY W. ROYAL
DB 719 PG 247
TIMOTHY EUGENE & SALLY G. FAW
KENDALL GENENE FAW
DB 1043 PG 319
GRADY J. NICHOLS
ELENA B. NICHOLS
DB 476 PG 523
DB 823 PG 16
CLAY A. BLACKBURN
ALENE S. BLACKBURN
DB 737 PG 304
WILKES DODGE SALES, INC
DB 527 PG 664
PLEASANT VALLEY BAPTIST CHURCH
DB 721 PG 261
GRADY J. NICHOLS
ELENA B. NICHOLS
DB 624 PG 126
DB 476 PG 523
OBSCURE AREA
-BY3-37
PRC Sta. 57+99.97
-LNBL- PT Sta. 59+05.24
-L- POC Sta. 59+75.00 =
-LNBL- PT Sta. 59+74.39 (27' LT)=
-LSBL- PT Sta. 59+75.80 (27' RT)
-Y9- POT Sta. 11+15.61=
-L- POT Sta. 67+51.70
-Y9- POT Sta. 10+00.00
-EY3-
-EY9-
S 2° 17' 32" W
MATCHLINE -L- STATION 58+00 SEE SHEET 6
MATCHLINE -L- STATION 72+00 SEE SHEET 8
S 89° 35' 34.3" E
S 88° 28' 34.0" E
60+00 -EL-
65+00 -EL-
70+00
-ESBL-
-L-
US 421 73.0' BST
GREU TL-3
-BL-15
-BL-16
-BY3-38
HOWARD CHURCH, JR.
DB 523 PG 457
DB 525 PG 415
DB 541 PG 026
GRADY J. NICHOLS
ELENA B. NICHOLS
DB 476 PG 523
WILLIAM BRYANT CHURCH
DB 1019 PG 252
TLC PROPERTIES
DB 883 PG 428
WILLIAM BRYANT CHURCH
DB 979 PG 118
RICHARD MORETZ
DB 1084 PG 302
ROBERT YOUNG
DB 1021 PG 021
PT Sta. 67+35.14
SR 1320, CONGO ROAD
2020/2040 ADT
1500/1700
300/300
1200/1400
US 421
25400/31400
26300/32500
SR 1320, CONGO ROAD AT US 421

-L-	-LSBL-	-LNBL-
PI Sta 62+67.58	PI Sta 58+23.53	PI Sta 56+11.72
Δ = 1° 22' 26.0" (RT)	Δ = 1° 44' 42.3" (RT)	Δ = 1° 07' 16.4" (LT)
D = 0° 08' 48.9"	D = 0° 34' 22.6"	D = 0° 11' 27.5"
L = 935.17'	L = 304.58'	L = 587.06'
T = 467.61'	T = 152.30'	T = 293.54'
R = 39,000.00'	R = 10,000.00'	R = 30,000.00'

24-AUG-2018 09:50
T:_Projects\2017\G17038.00 VHB U-5312 (US-421) Superstreet in Wilkes County\U5312_GEO_RDWY\CADD_GEOTECH\PlanProf\U5312_geo_psh07.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5312	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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NAD 83/NSRS 2007

REVISIONS 8/17/99

MATCHLINE -L- STATION 72+00 SEE SHEET 7

MATCHLINE -L- STATION 86+00 SEE SHEET 9

-BY3-40
RICHARD CARROLL
DB 1080 PG 29

-BY3-39

ROBERT GENE PERRY
BETTY JANE PERRY
DB 1149 PG 148

UNKNOWN

PLEASANT VALLEY BAPTIST CHURCH
DB 721 PG 269

S & S PROPERTIES OF WILKES, LLC
DB 1168 PG 205

REY PETROLEUM, LLC
DB 1082 PG 462

-BY4-41
-BL-17

BOBBY H. ELLER
DB 1146 PG 040

-BL-18

PREMIER PROPERTY HOLDINGS, LLC
DB 1116 PG 284

-Y4- POT Sta.10+00.00 =
-L- POT Sta.74+30.49

-Y4- PC 10+37.43

-Y4- PT 12+08.63

-Y4- POT 13+98.43

-Y4-
PI Sta 11+41.27
Δ = 81° 44' 27.0" (LT)
D = 47° 44' 47.3"
L = 171.20'
T = 103.84'
R = 120.00'

SR 1182 LAUREL WOOD DR

S 80°13'01.6" E

S 88°28'34.0" E

US 421 (GRW) BST

NORTH CAROLINA DEPT. OF TRANS.
DB 823 PG 119

ROBERT YOUNG
DB 1021 PG 021

THAD MALTBA
RACHEL D. MALTBA
DB 323 PG 110

GENEVA T. BROWN
DB 1106 PG 384

PEGGY B. REAVIS
DB 758 PG 456
PB 5 PG 77

DOLLY S. PREVETTE
JOHN S. PREVETTE
DB 381 PG 517
DB 1145 PG 1

JERRY L. LAMBERT
KATE H. LAMBERT
DB 498 PG 203
DB 536 PG 954
PB 5 PG 77

LYNN ST. CLAIR
DIXIE ST. CLAIR
DB 1053 PG 48

NORTH CAROLINA DEPT. OF TRANS.
DB 627 PG 455
PG 452

ANTHONY B. ELLIS
KIMBERLY B. ELLIS
DB 880 PG 107

MATHEW S. MILLER
DB 999 PG 313

ZENNA L. GREENE(LIFE ESTATE)
DB 1005 PG 376
DB 260 PG 244

-BY4-43

OBSCURED

PROJECT REFERENCE NO.	SHEET NO.
U-5312	9

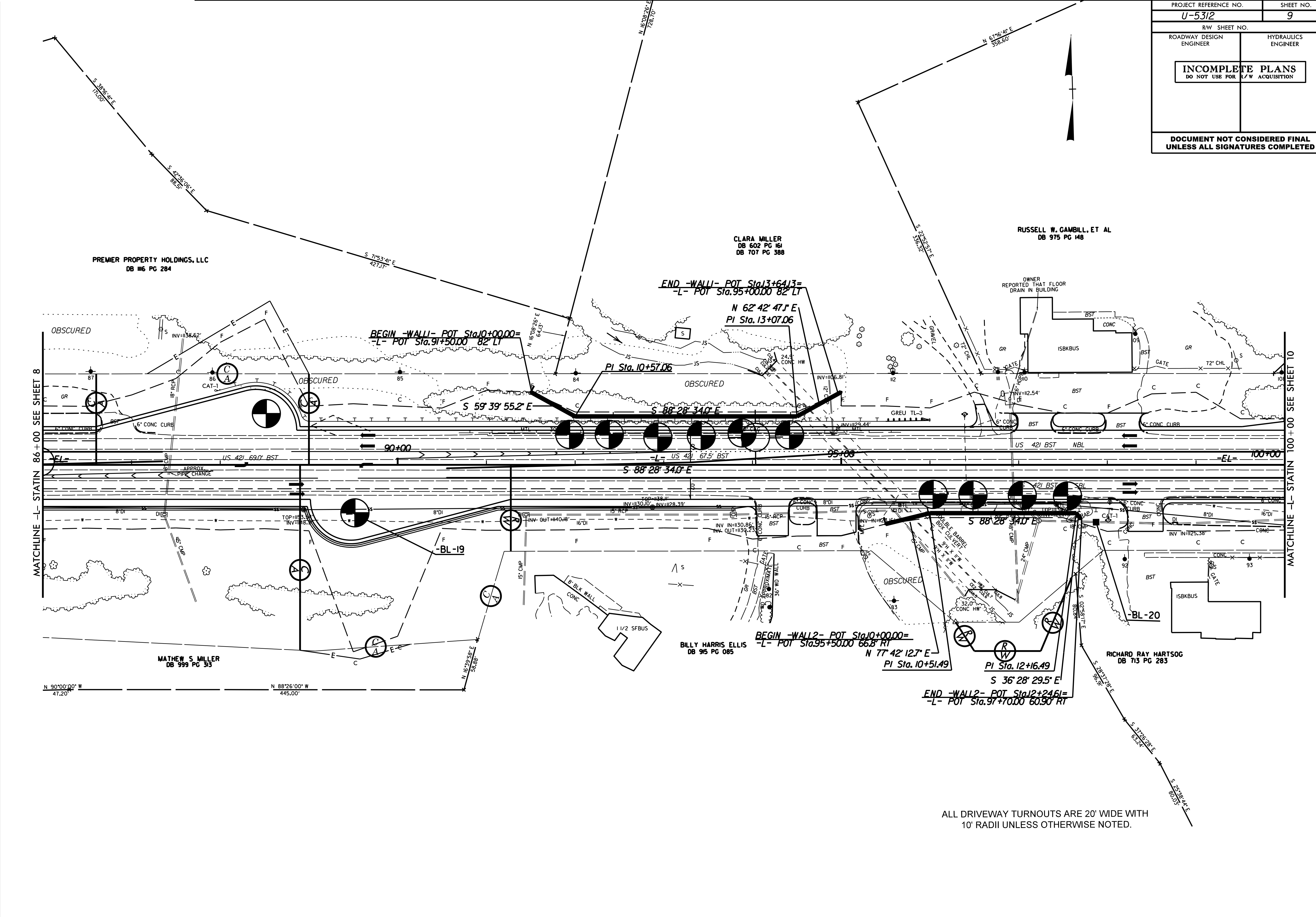
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PREMIER PROPERTY HOLDINGS, LLC
DB 1116 PG 284
CLARA MILLER
DB 602 PG 161
DB 707 PG 388
RUSSELL W. GAMBILL, ET AL
DB 975 PG 148
OWNER REPORTED THAT FLOOR DRAIN IN BUILDING
END -WALL1- POT Sta.13+64.13=
-L- POT Sta.95+00.00 82' LT
N 62° 42' 47.5" E
PI Sta. 13+07.06
BEGIN -WALL1- POT Sta.10+00.00=
-L- POT Sta.91+50.00 82' LT
PI Sta. 10+57.06
S 59° 39' 55.2" E
S 88° 28' 34.0" E
MATCHLINE -L- STATIN 86+00 SEE SHEET 8
MATCHLINE -L- STATIN 100+00 SEE SHEET 10
US 421 69.0' BST
US 421 67.5' BST
US 421 BST NBL
90+00
95+00
100+00
-EL-
-L-
-BL-19
-BL-20
OBSCURED
ISBKBUS
1 1/2 SFBUS
MATHEW S MILLER
DB 999 PG 313
BILLY HARRIS ELLIS
DB 915 PG 085
RICHARD RAY HARTSOG
DB 713 PG 283
BEGIN -WALL2- POT Sta.10+00.00=
-L- POT Sta.95+50.00 66.8' RT
N 77° 42' 12.7" E
PI Sta. 10+51.49
PI Sta. 12+16.49
S 36° 28' 29.5" E
END -WALL2- POT Sta.12+24.61=
-L- POT Sta.97+70.00 60.90' RT
N 90°00'00" W 47.20'
N 88°26'00" W 445.00'

ALL DRIVEWAY TURNOUTS ARE 20' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

REVISIONS

8/17/99

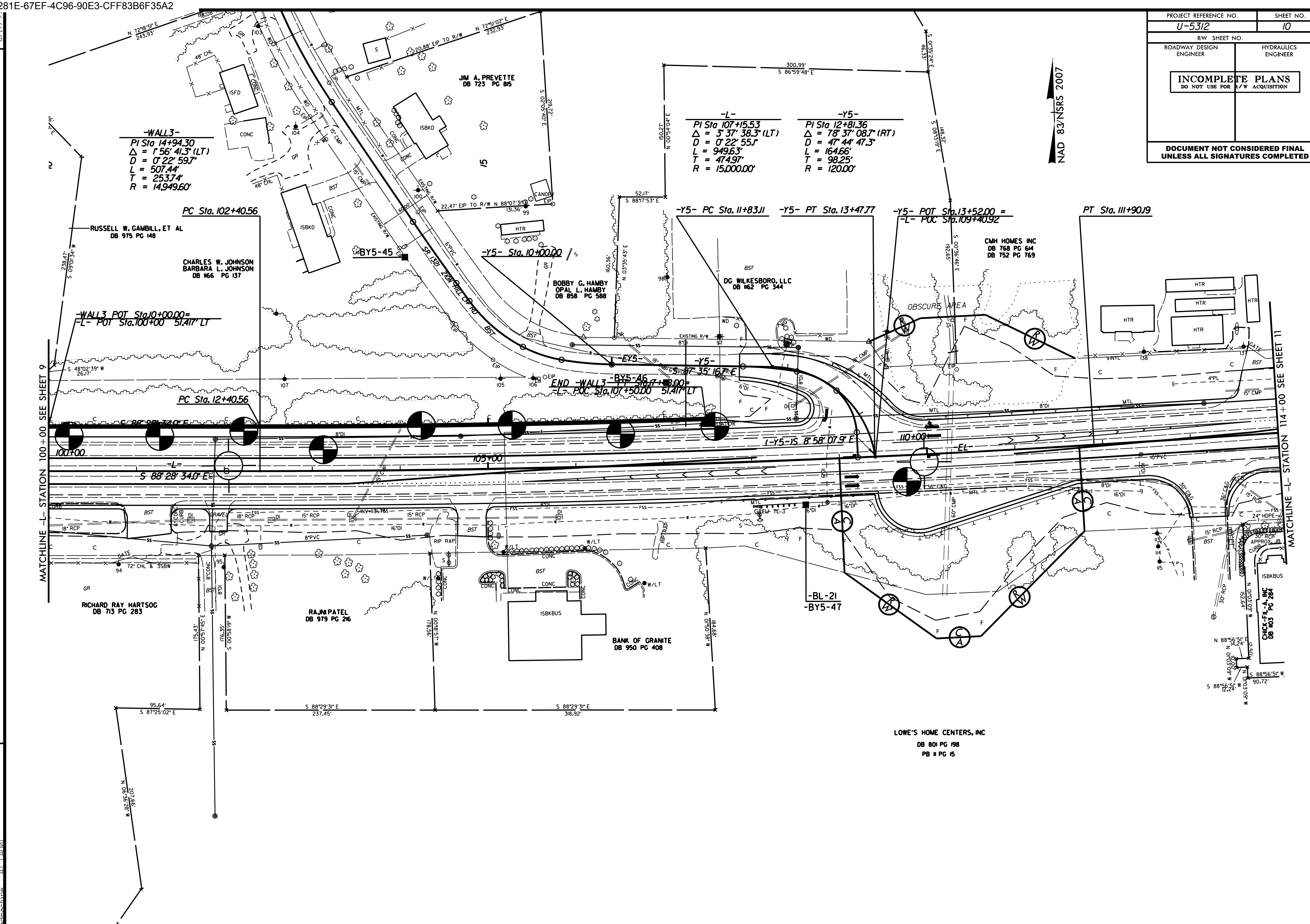
PROJECT REFERENCE NO.	SHEET NO.
U-5312	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NAD 83/NSRS 2007
-WALL3-
PI Sta 14+94.30
Δ = 1°56' 41.3" (LT)
D = 0°22' 59.7"
L = 507.44'
T = 253.74'
R = 14,949.60'
-L-
PI Sta 107+15.53
Δ = 3°37' 38.3" (LT)
D = 0°22' 55.1"
L = 949.63'
T = 474.97'
R = 15,000.00'
-Y5-
PI Sta 12+81.36
Δ = 78°37' 08.7" (RT)
D = 47°44' 47.3"
L = 164.66'
T = 98.25'
R = 120.00'
JIM A. PREVETTE
DB 723 PG 815
RUSSELL W. GAMBILL, ET AL
DB 975 PG 148
CHARLES W. JOHNSON
BARBARA L. JOHNSON
DB 1166 PG 137
BOBBY G. HAMBY
OPAL L. HAMBY
DB 858 PG 588
DG WILKESBORO, LLC
DB 1162 PG 344
CMH HOMES INC
DB 768 PG 614
DB 752 PG 769
PC Sta. 102+40.56
-Y5- PC Sta. 11+83.11
-Y5- PT Sta. 13+47.77
-Y5- POT Sta. 13+52.00 =
-L- POC Sta. 109+40.92
PT Sta. 111+90.19
-Y5- Sta. 10+00.00
-WALL3 POT Sta10+00.00=
-L- POT Sta.100+00 51.417' LT
END -WALL3
-L- POC Sta.107+50.00 51.417' LT
PC Sta. 12+40.56
BY5-45
-BY5-46
-BL-21
-BY5-47
SR 1321 ZION HILL CH RD
OBSCURE AREA
S 88°28' 34.0" E
-L-
-EL-
MATCHLINE -L- STATION 100+00 SEE SHEET 9
MATCHLINE -L- STATION 114+00 SEE SHEET 11
RICHARD RAY HARTSOG
DB 713 PG 283
RAJNI PATEL
DB 979 PG 216
BANK OF GRANITE
DB 950 PG 408
LOWE'S HOME CENTERS, INC
DB 801 PG 198
PB 11 PG 15
CHICK-FIL-A, INC
DB 1103 PG 284

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5312	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

-L-
PI Sta 121+21.89
Δ = 1° 02' 55.9" (RT)
D = 0° 22' 55.1"
L = 274.59'
T = 137.30'
R = 15,000.00'

-Y6- Sta. 10+00.00

-Y6- POT Sta.11+81.82 =
-L- POT Sta.120+64.65

BEGIN CONSTRUCTION
-Y6- STA. 10+55.85

PC Sta. 119+84.60

PT Sta. 122+59.19

-BL- GPS U5312-3
-BY6-48

-BL-22

MATCHLINE -L- STATION 114+00 SEE SHEET 10

MATCHLINE -L- STATION 128+00 SEE SHEET 12

CMH HOMES INC
DB 768 PG 64
DB 752 PG 769

J. C. FAW
DB 647 PG 497
DB 826 PG 485

J. C. FAW
DB 744 PG 531
PB II PG 229

ELITE HOLDINGS, LLC
DB 865 PG 324
PB II PG 229

CMRI, INC
DB 1156 PG 339
PB II PG 229

CHICK-FIL-A, INC
DB 1103 PG 284

MURPHY OIL USA, INC
DB 1098 PG 143
PB II PG 15

LOWE'S HOME CENTERS, INC
DB 801 PG 198
PB II PG 15

WILKES NISSAN, LLC
DB 1140 PG 183

J.C. FAW
DB 714 PG 203

ISMASBUS

OBSCURE AREA

DANCY RD SR 1323

KENNEDY ST

US 421 NBL

US 421 SBL

US 421 79.0' BST

SR 1323, DANCY ROAD	2020 / 2040 ADT
3800 / 4200	
2200 / 2600	1400 / 1500
US 421	
26300 / 32500	27900 / 31600
1800 / 3300	4200 / 3500
6200 / 6900	
LOWES DRIVEWAY	

SR 1323, DANCY ROAD/LOWES DRIVE AT US 421

REVISIONS

8/17/99

24-AUG-2018 09:57
U:\Projects\U5312_GI7038.00 VHB U-5312 (US-421 Superstreet in Wilkes County\U5312.GEO.RDWY\CADD.GEOTECH\PlanProf\U5312.geo.psh11.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5312	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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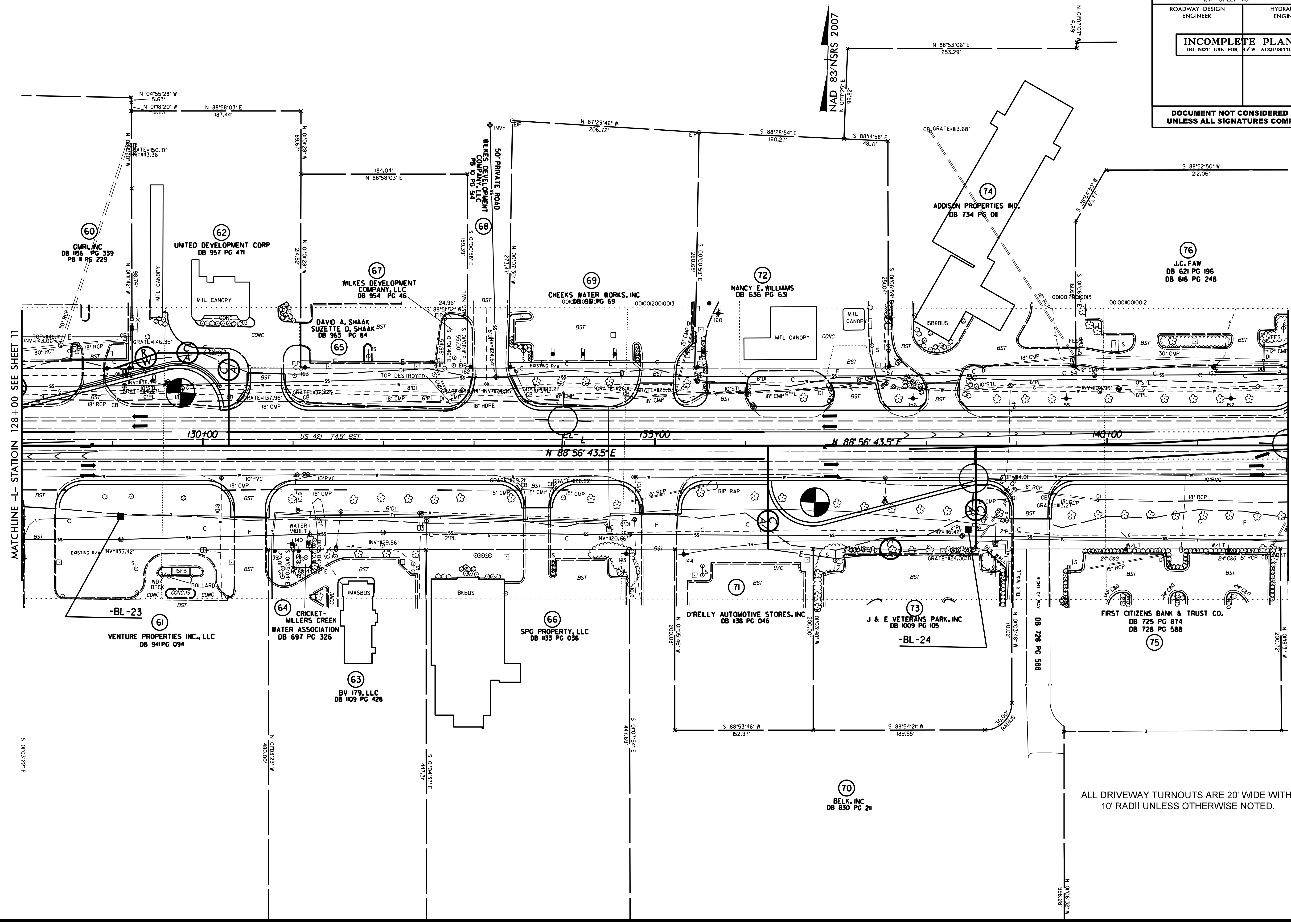

NAD 83/NSRS 2007
MATCHLINE -L- STATION 128+00 SEE SHEET 11
MATCHLINE -L- STATION 142+00 SEE SHEET 13
130+00
135+00
140+00
US 421 74.5' BST
N 88°56'43.5" E
-L-
-BL-23
-BL-24
GMRI, INC
DB 1156 PG 339
PB 11 PG 229
UNITED DEVELOPMENT CORP
DB 957 PG 471
WILKES DEVELOPMENT COMPANY, LLC
DB 954 PG 46
DAVID A. SHAAK
SUZETTE D. SHAAK
DB 963 PG 84
50' PRIVATE ROAD
WILKES DEVELOPMENT COMPANY, LLC
PB 10 PG 94
CHEEKS WATER WORKS, INC
DB 931 PG 69
NANCY E. WILLIAMS
DB 636 PG 631
ADDISON PROPERTIES INC.
DB 734 PG 011
J.C. FAW
DB 621 PG 196
DB 616 PG 248
VENTURE PROPERTIES INC., LLC
DB 941 PG 094
CRICKET-MILLERS CREEK WATER ASSOCIATION
DB 697 PG 326
BV 179, LLC
DB 1109 PG 428
SPG PROPERTY, LLC
DB 1133 PG 036
O'REILLY AUTOMOTIVE STORES, INC
DB 1138 PG 046
J & E VETERANS PARK, INC
DB 1009 PG 105
FIRST CITIZENS BANK & TRUST CO.
DB 725 PG 874
DB 728 PG 588
BELK, INC
DB 830 PG 211
DB 728 PG 588
MTL CANOPY
WATER VAULT
BLK WALL
RIP RAP

ALL DRIVEWAY TURNOUTS ARE 20' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOWES FOOD DRIVEWAY	2020 / 2040 ADT
4400 / 4900	
700 / 800	3000 / 3400
	US 421
27900 / 31600	31600 / 35700
3000 / 3400	4400 / 4900
8100 / 9000	
WALMART DRIVEWAY	
LOWES FOOD DRIVE/WALMART DRIVE AT US 421	

NAD 83/NSRS 2007

-L-
PI Sta 156+85.53
Δ = 0°59'24.4" (RT)
D = 0°06'15.0"
L = 950.44'
T = 475.23'
R = 55,000.00'

MATCHLINE -L- STATION 142+00 SEE SHEET 12

MATCHLINE -L- STATION 156+00 SEE SHEET 14

REVISIONS 8/17/99

J.C. FAW DB 621 PG 196

TKC CXXXIV, LLC DB 1114 PG 408 PB 11 PG 124

DE LIANG YANG XIU QING LI DB 1129 PG 131

J.C. FAW DB 621 PG 196 DB 683 PG 795 DB 743 PG 407

MCDONALDS CORP. DB 707 PG 075

J. C. FAW DB 621 PG 196

JAMES CLAYTON FAW SANDRA H. FAW DB 1158 PG 62

H V W, LLC COLLETT & ASSOCIATES, INC DB 804 PG 259

EDWIN J. SWOPE DB 1151 PG 502

FIRST UNION NATIONAL BANK OF NC DB 721 PG 065

ROBERT W. RAASCH HEATHER J. RAASCH DB 1156 PG 176

COLE PM WILKESBORO, LLC DB 1147 PG 199

WAL-MART REAL ESTATE BUSINESS, TRUST DB 1111 PG 208

HORNE PROPERTIES, INC PB 10 PG 111

WAL-MART REAL ESTATE BUSINESS, TRUST DB 1111 PG 208

-BL-25

-BL-26

ALL DRIVEWAY TURNOUTS ARE 20' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED.

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	14

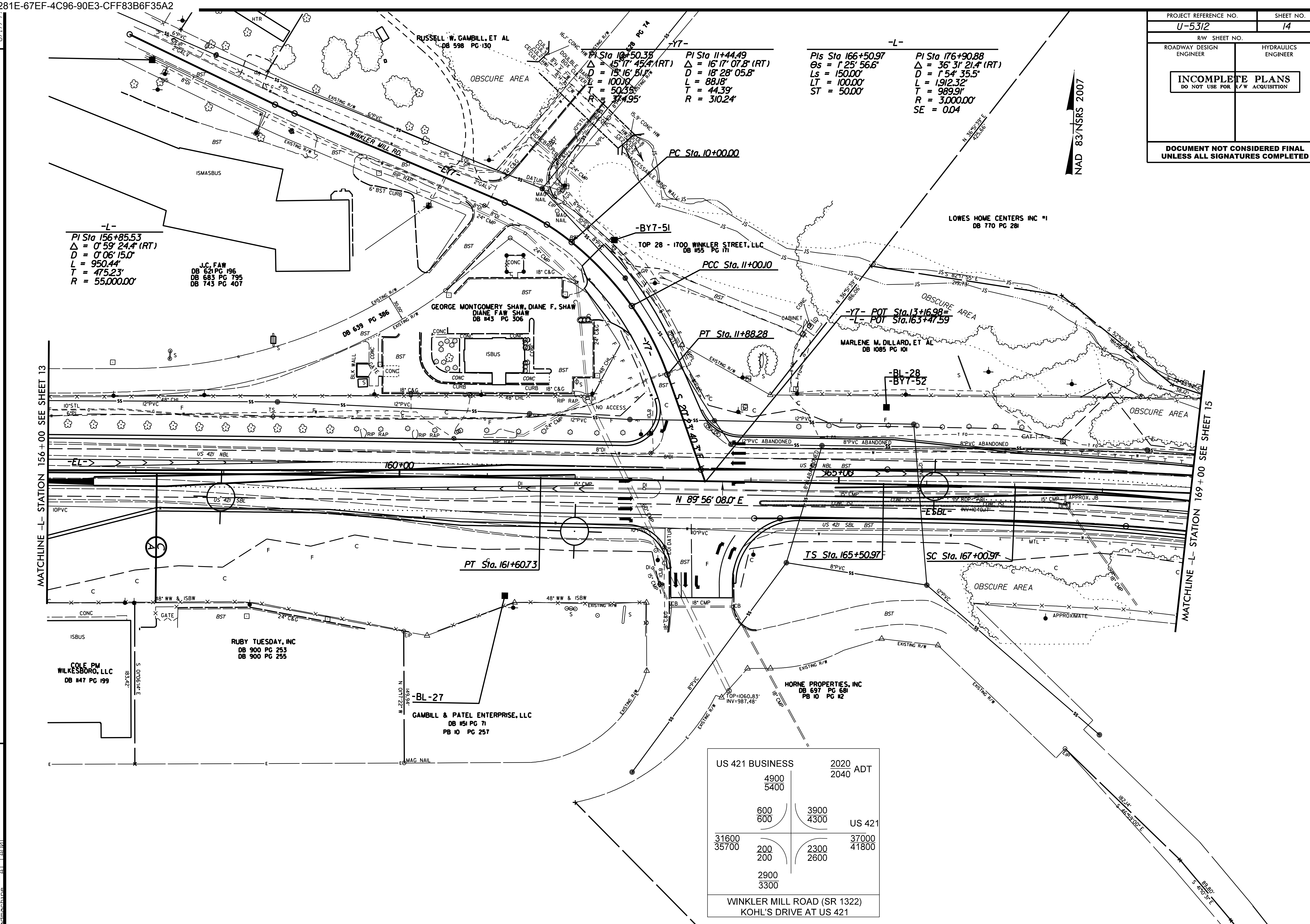
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



RUSSELL W. GAMBILL, ET AL
DB 598 PG 130
-Y7-
PI Sta 10+50.35
Δ = 15° 17' 45.4" (RT)
D = 15° 16' 51.1"
L = 100.10'
T = 50.35'
R = 374.95'
PI Sta 11+44.49
Δ = 16° 17' 07.8" (RT)
D = 18° 28' 05.8"
L = 88.18'
T = 44.39'
R = 310.24'
-L-
PIs Sta 166+50.97
θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
PI Sta 176+90.88
Δ = 36° 31' 21.4" (RT)
D = 1° 54' 35.5"
L = 1,912.32'
T = 989.91'
R = 3,000.00'
SE = 0.04
NAD 83/NSRS 2007
OBSCURE AREA
WINKLER MILL RD.
PC Sta. 10+00.00
-BY7-51
TOP 28 - 1700 WINKLER STREET, LLC
DB 1155 PG 171
PCC Sta. 11+00.10
LOWES HOME CENTERS INC #1
DB 770 PG 281
-L-
PI Sta 156+85.53
Δ = 0° 59' 24.4" (RT)
D = 0° 06' 15.0"
L = 950.44'
T = 475.23'
R = 55,000.00'
J.C. FAW
DB 621 PG 196
DB 683 PG 795
DB 743 PG 407
ISMASBUS
GEORGE MONTGOMERY SHAW, DIANE F. SHAW
DIANE FAW SHAW
DB 1143 PG 306
ISBUS
-Y7- POT Sta. 13+16.98=
-L- POT Sta. 163+47.59
PT Sta. 11+88.28
MARLENE M. DILLARD, ET AL
DB 1085 PG 101
-BL-28
-BY7-52
MATCHLINE -L- STATION 156+00 SEE SHEET 13
MATCHLINE -L- STATION 169+00 SEE SHEET 15
US 421 NBL
US 421 SBL
160+00
165+00
N 89° 56' 08.0" E
-ESBL-
PT Sta. 161+60.73
TS Sta. 165+50.97
SC Sta. 167+00.97
RUBY TUESDAY, INC
DB 900 PG 253
DB 900 PG 255
COLE PM WILKESBORO, LLC
DB 1147 PG 199
-BL-27
GAMBILL & PATEL ENTERPRISE, LLC
DB 1151 PG 71
PB 10 PG 257
HORNE PROPERTIES, INC
DB 697 PG 681
PB 10 PG 112
US 421 BUSINESS
2020 / 2040 ADT
4900 / 5400
600 / 600
3900 / 4300
US 421
31600 / 35700
37000 / 41800
200 / 200
2300 / 2600
2900 / 3300
WINKLER MILL ROAD (SR 1322)
KOHL'S DRIVE AT US 421

REVISIONS

8/17/99

Superstreet in Wilkes County\U5312_GEO_RDWY\CADD_GEOTECH\PlanProf\U5312-geo-psh14.dgn

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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REVISIONS

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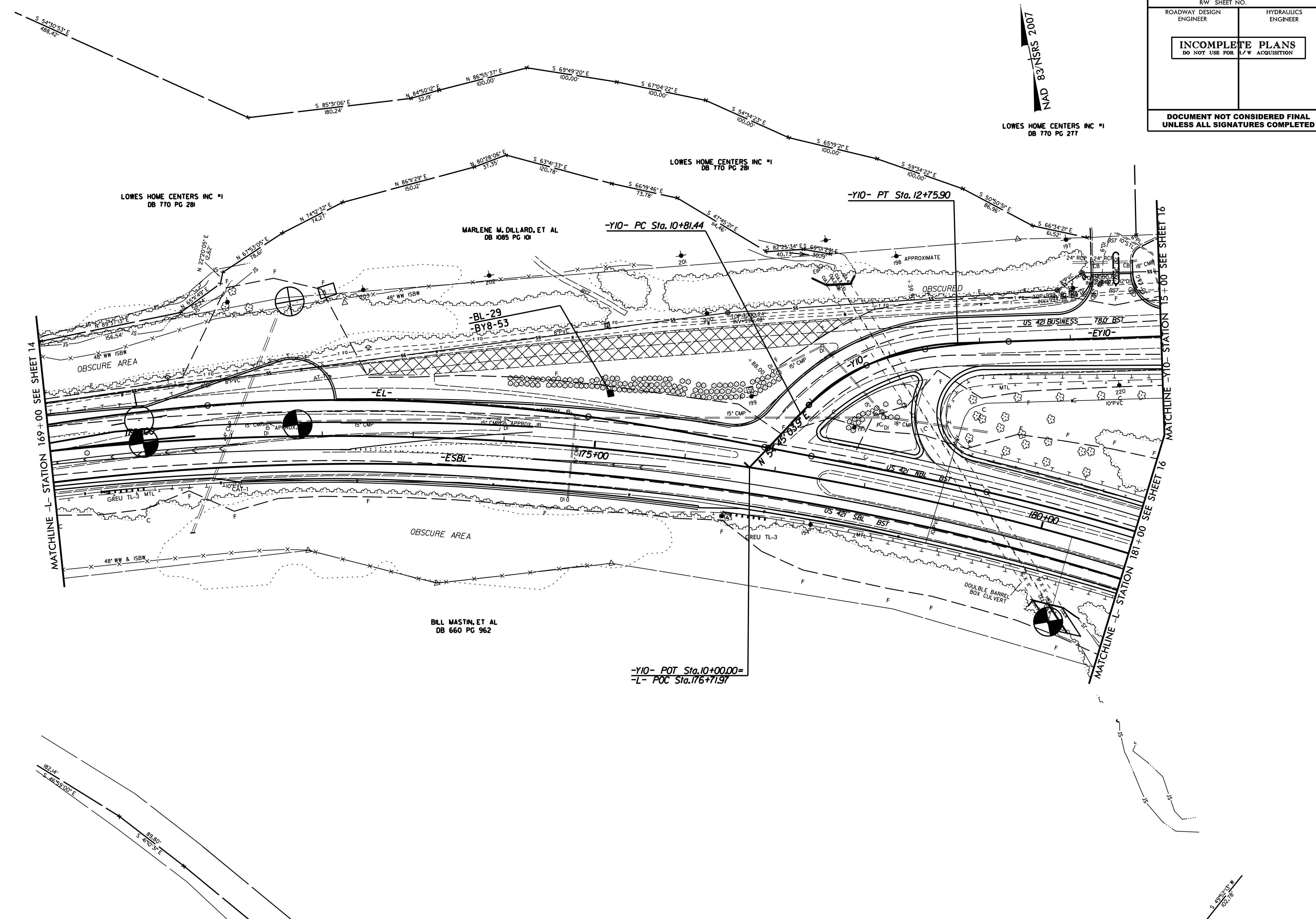

NAD 83/NSRS 2007
LOWES HOME CENTERS INC #1
DB 770 PG 277
LOWES HOME CENTERS INC #1
DB 770 PG 281
LOWES HOME CENTERS INC #1
DB 770 PG 281
MARLENE M. DILLARD, ET AL
DB 1085 PG 101
BILL MASTIN, ET AL
DB 660 PG 962
-Y10- PT Sta. 12+75.90
-Y10- PC Sta. 10+81.44
-BL-29
-BY8-53
-EL-
-ESBL-
-EY10-
-Y10-
175+00
180+00
US 421 BUSINESS 78.0' BST
US 421 NBL BST
US 421 SBL BST
OBSCURE AREA
OBSCURE AREA
OBSCURED
48" WW ISBW
48" WW & ISBW
GREU TL-3 MTL
GREU TL-3
DOUBLE BARREL BOX CULVERT
APPROXIMATE
MATCHLINE -L- STATION 169+00 SEE SHEET 14
MATCHLINE -Y10- STATION 15+00 SEE SHEET 16
MATCHLINE -L- STATION 181+00 SEE SHEET 16
-Y10- POT Sta. 10+00.00=
-L- POC Sta. 176+71.97
S 54°30'53" E 488.42'
S 85°31'06" E 180.24'
N 84°50'12" E 32.19'
N 86°55'37" E 100.00'
S 69°49'20" E 100.00'
S 67°04'22" E 100.00'
S 54°34'23" E 100.00'
S 65°19'21" E 100.00'
S 59°34'22" E 100.00'
S 50°50'51" E 86.96'
S 66°34'21" E 61.52'
N 80°28'06" E 37.35'
S 63°41'33" E 120.78'
N 86°11'29" E 150.12'
S 66°19'46" E 73.78'
N 74°13'32" E 74.21'
S 47°45'21" E 114.46'
N 67°53'05" E 78.61'
S 82°25'34" E 40.73'
S 69°01'29" E 30.19'
N 22°20'05" E 12.62'
S 89°37'13" E 156.54'
S 46°59'00" E 182.14'
S 41°10'31" E 89.80'
S 49°52'13" W 102.78'

04-OCT-2021 09:23
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PROJECT REFERENCE NO.	SHEET NO.
U-5312	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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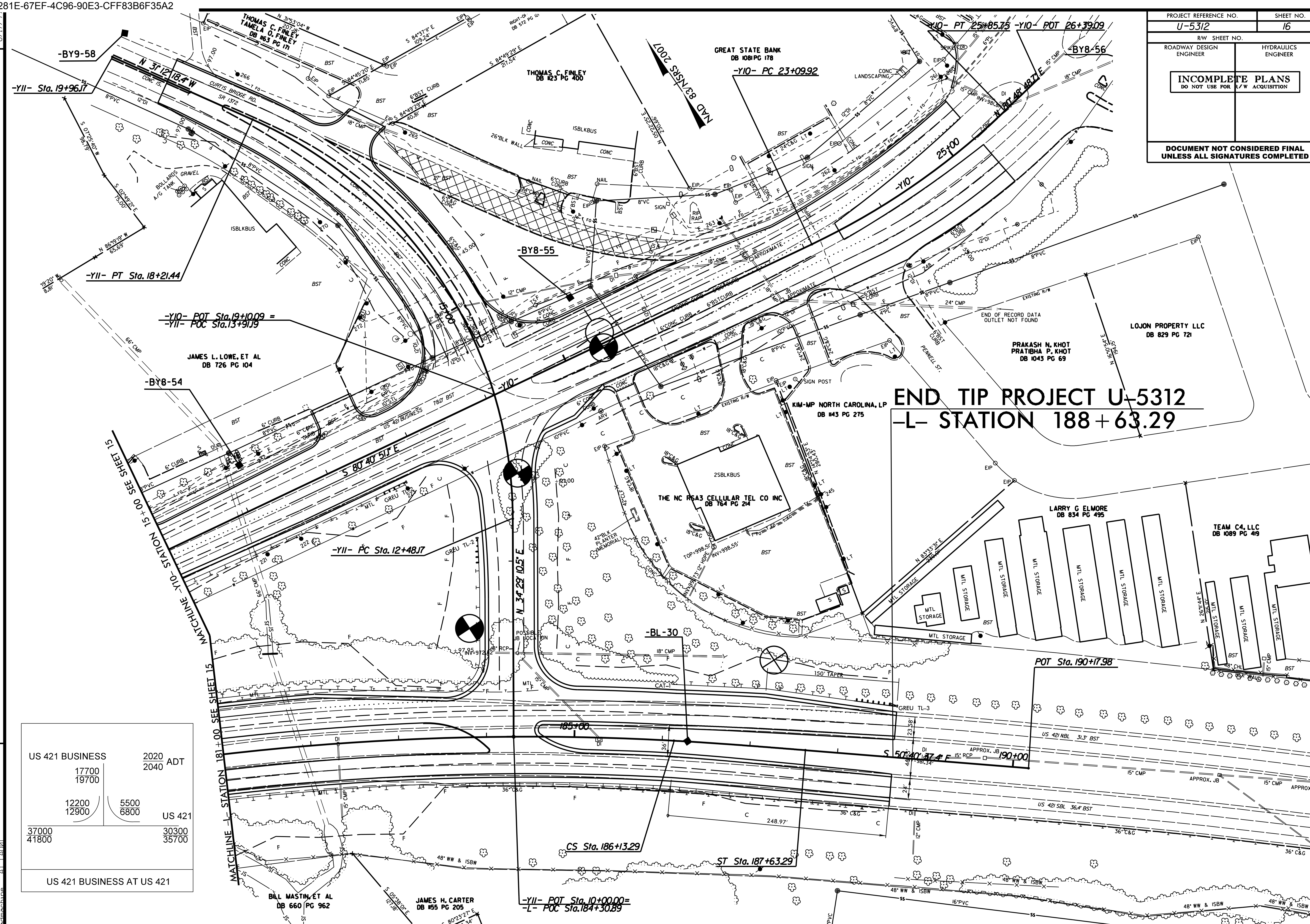

END TIP PROJECT U-5312
-L- STATION 188+63.29
NAD 83/NSRS 2007
-BY9-58
-BY8-56
-BY8-55
-BY8-54
-BL-30
-Y11- Sta. 19+96.17
-Y11- PT Sta. 18+21.44
-Y10- POT Sta. 19+10.09 =
-Y11- POC Sta. 13+91.19
-Y11- PC Sta. 12+48.17
-Y10- PT 25+85.75
-Y10- POT 26+39.09
-Y10- PC 23+09.92
POT Sta. 190+17.98
CS Sta. 186+13.29
ST Sta. 187+63.29
-Y11- POT Sta. 10+00.00=
-L- POC Sta. 184+30.89
MATCHLINE -Y10- STATION 15+00 SEE SHEET 15
MATCHLINE -L- STATION 181+00 SEE SHEET 15
THOMAS C. FINLEY
TAMELA C. FINLEY
DB 1163 PG 171
THOMAS C. FINLEY
DB 1123 PG 400
GREAT STATE BANK
DB 1081 PG 178
JAMES L. LOWE, ET AL
DB 726 PG 104
LOJON PROPERTY LLC
DB 829 PG 721
PRAKASH N. KHOT
PRATIBHA P. KHOT
DB 1043 PG 69
KIM-MP NORTH CAROLINA, LP
DB 1143 PG 275
THE NC RSA3 CELLULAR TEL CO INC
DB 764 PG 214
LARRY G ELMORE
DB 834 PG 495
TEAM C4, LLC
DB 1089 PG 419
BILL MASTIN, ET AL
DB 660 PG 962
JAMES H. CARTER
DB 1155 PG 205
CURTIS BRIDGE RD.
SR 1372
US 421 BUSINESS
PENNELL ST.
US 421 NBL
US 421 SBL
S 80°40'51.1" E
N 34°29'10.5" E
S 50°40'37.4" E
N 31°12'18.4" W
END OF RECORD DATA
OUTLET NOT FOUND
150' TAPER
248.97'

US 421 BUSINESS		2020 / 2040 ADT
17700 / 19700		
12200 / 12900	5500 / 6800	US 421
37000 / 41800		30300 / 35700

US 421 BUSINESS AT US 421

REVISIONS

04-OCT-2021 09:25
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8/17/99

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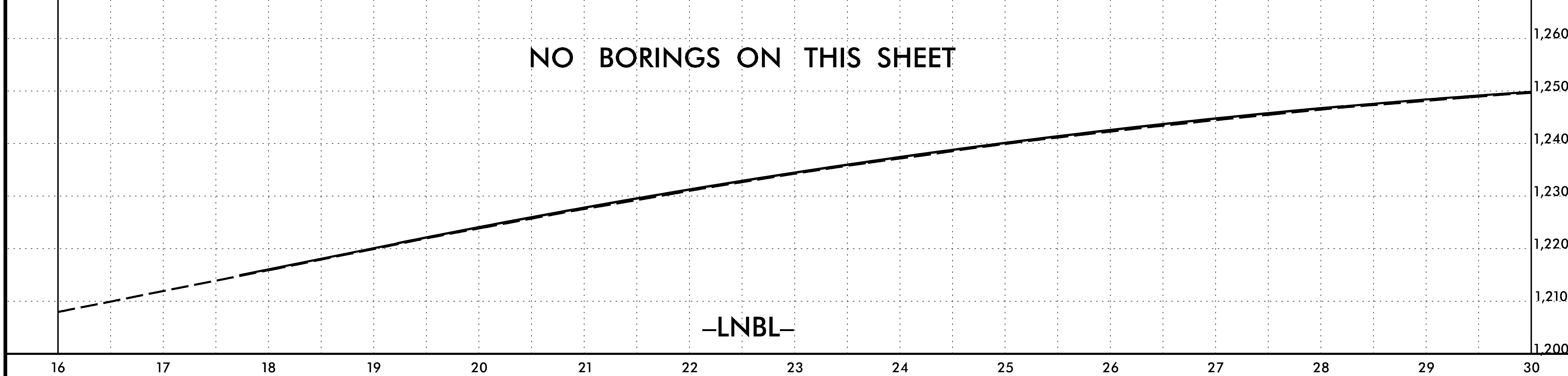
PROJECT REFERENCE NO.	SHEET NO.
U-5312	17

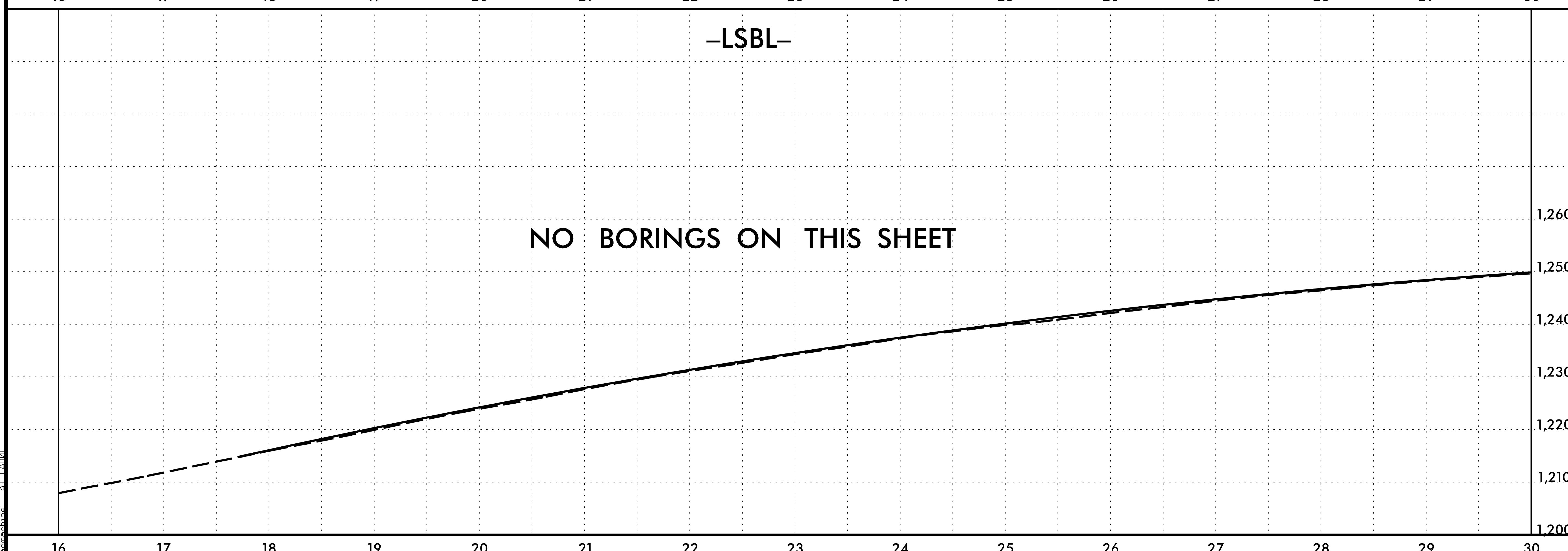
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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PROJECT REFERENCE NO.	SHEET NO.
U-5312	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

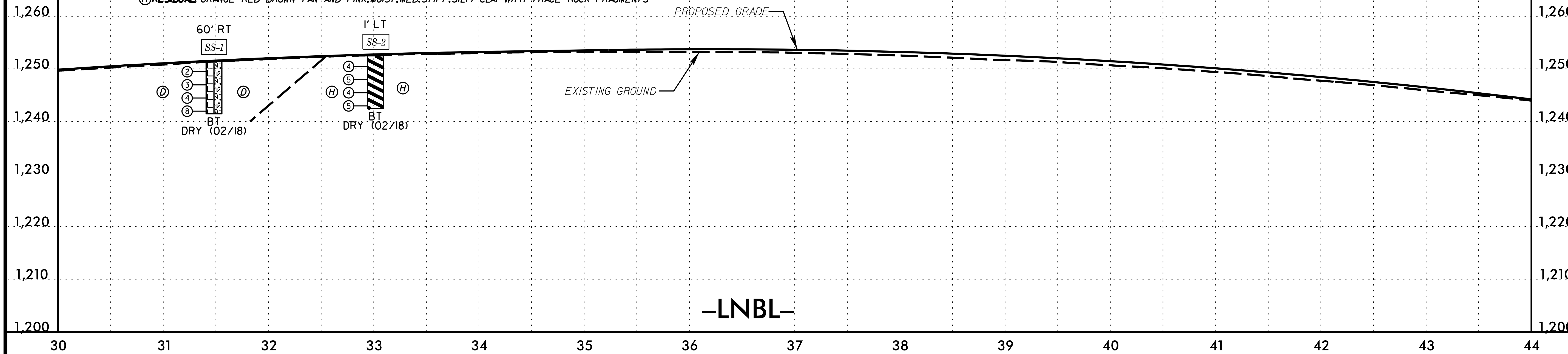
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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	60 FT RT	31+48	1.0'-2.5'	A-5	44	9	-	-	-	-	86	79	57	28.1	-
SS-2	1 FT LT	33+02	1.0'-2.5'	A-7-5	71	14	-	-	-	-	100	98	70	40.3	-

(D) **ROADWAY EMBANKMENT:** ORANGE, MOIST, SOFT TO MED. STIFF, CLAYEY SILT

(H) **RESIDUAL:** ORANGE RED BROWN TAN AND PINK, MOIST, MED. STIFF, SILTY CLAY WITH TRACE ROCK FRAGMENTS



-LSBL-

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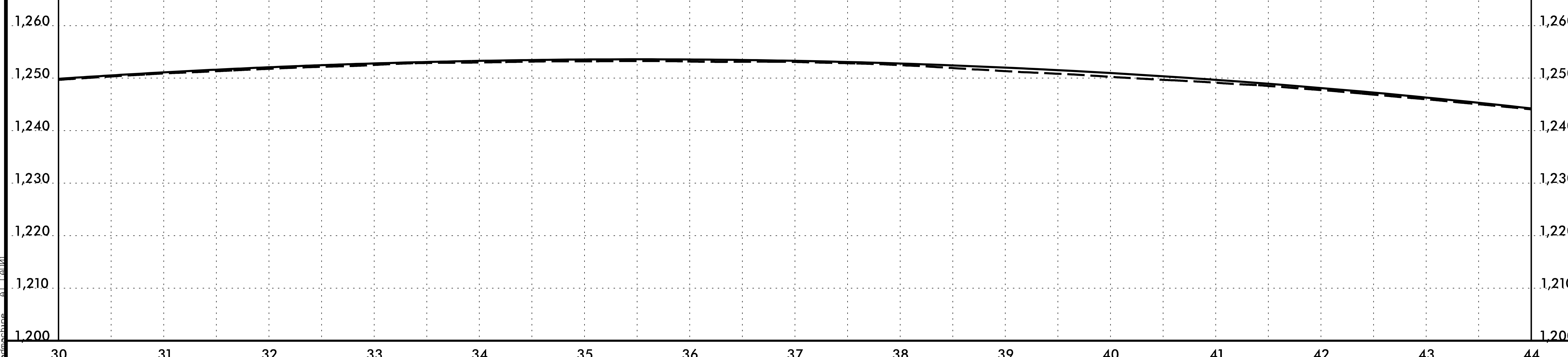


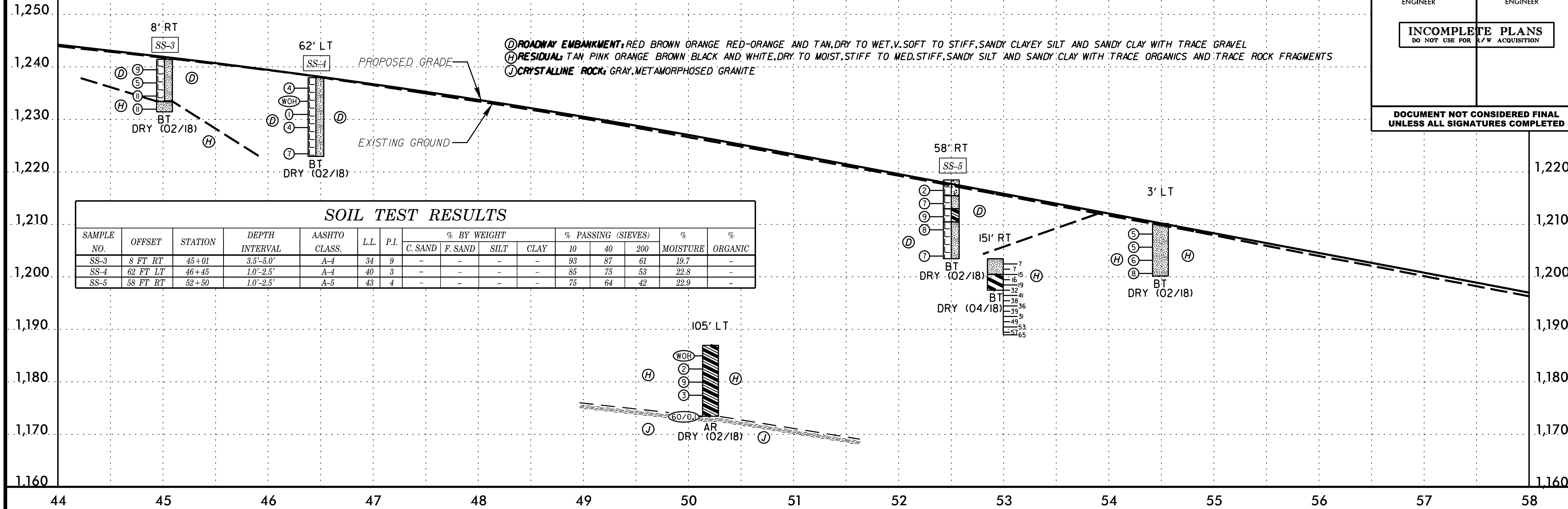
PROJECT REFERENCE NO.	SHEET NO.
U-5312	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-LNBL-

(D) **ROADWAY EMBANKMENT:** RED BROWN ORANGE RED-ORANGE AND TAN, DRY TO WET, V. SOFT TO STIFF, SANDY CLAYEY SILT AND SANDY CLAY WITH TRACE GRAVEL
(H) **RESIDUAL:** TAN PINK ORANGE BROWN BLACK AND WHITE, DRY TO MOIST, STIFF TO MED. STIFF, SANDY SILT AND SANDY CLAY WITH TRACE ORGANICS AND TRACE ROCK FRAGMENTS
(J) **CRYSTALLINE ROCK:** GRAY, METAMORPHOSED GRANITE

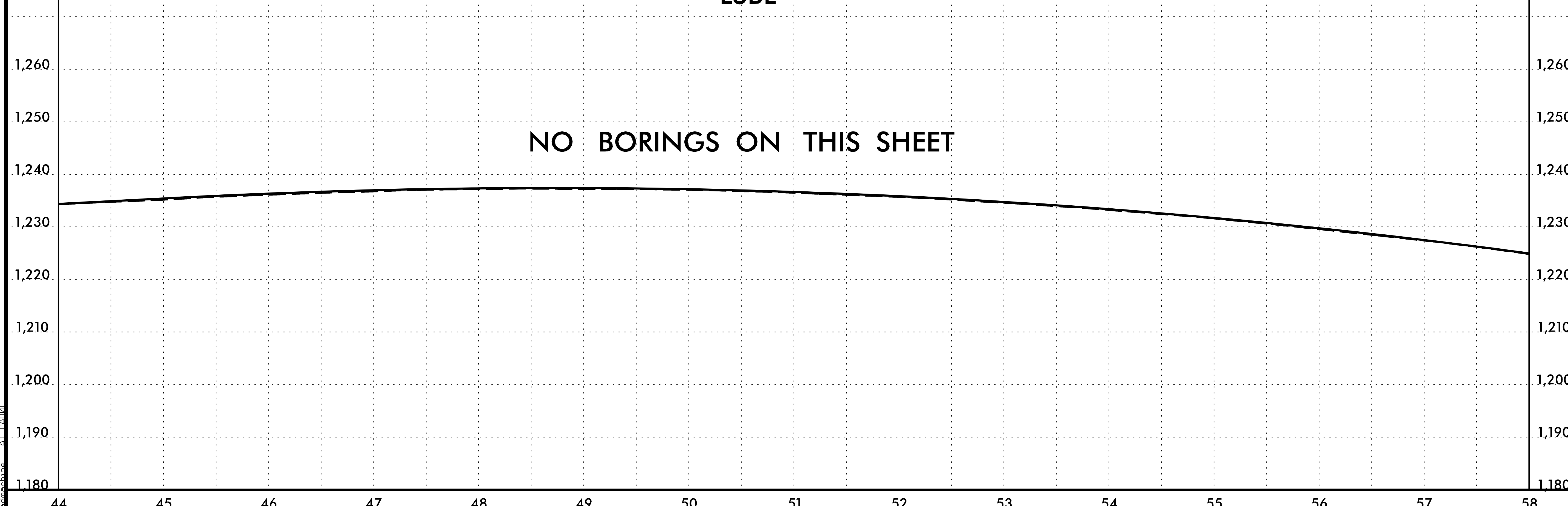


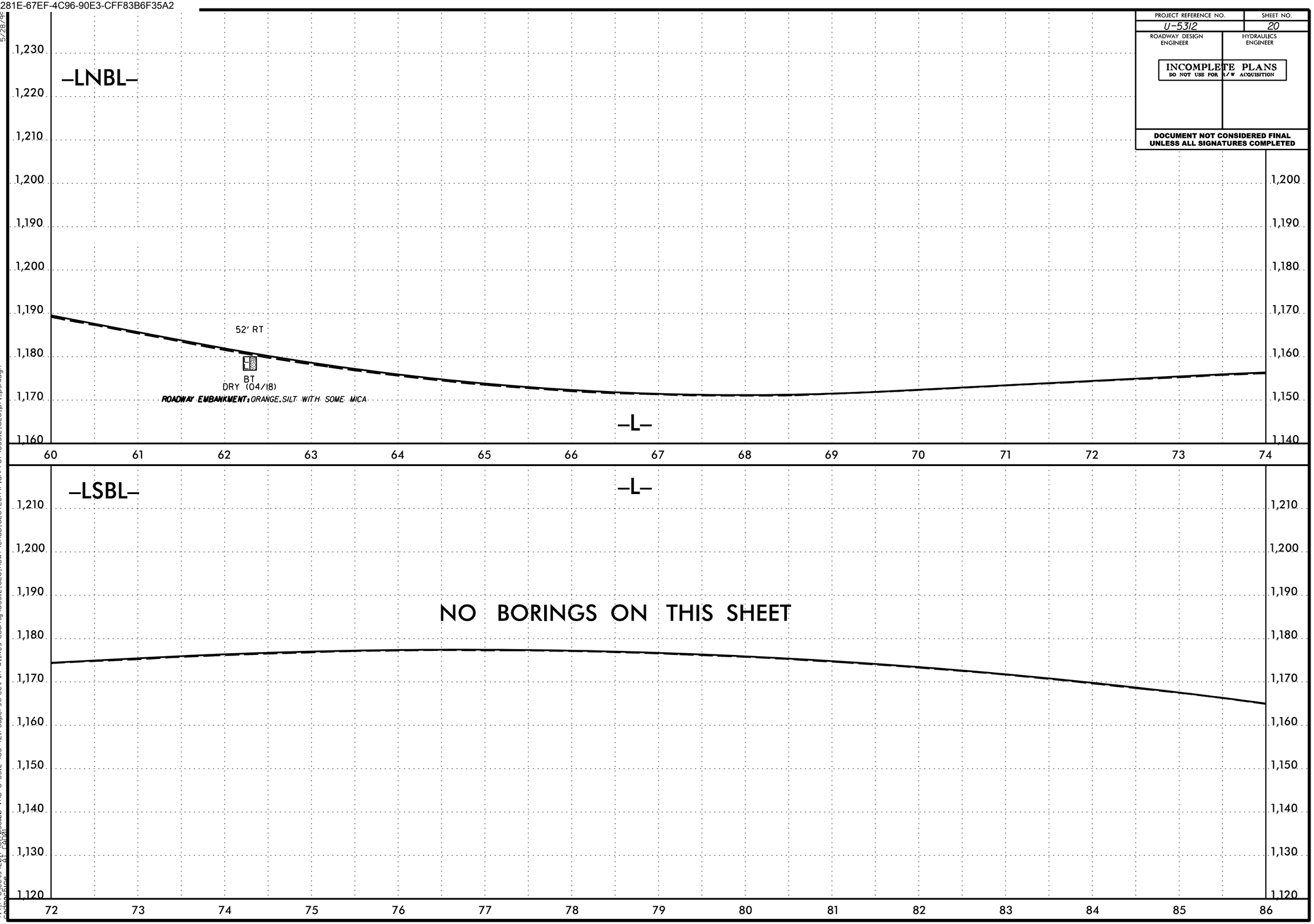
SOIL TEST RESULTS

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-3	8 FT RT	45+01	3.5'-5.0'	A-4	34	9	-	-	-	-	93	87	61	19.7	-
SS-4	62 FT LT	46+45	1.0'-2.5'	A-4	40	3	-	-	-	-	85	75	53	22.8	-
SS-5	58 FT RT	52+50	1.0'-2.5'	A-5	43	4	-	-	-	-	75	64	42	22.9	-

-LSBL-

NO BORINGS ON THIS SHEET





PROJECT REFERENCE NO.	SHEET NO.
U-5312	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
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NO BORINGS ON THIS SHEET

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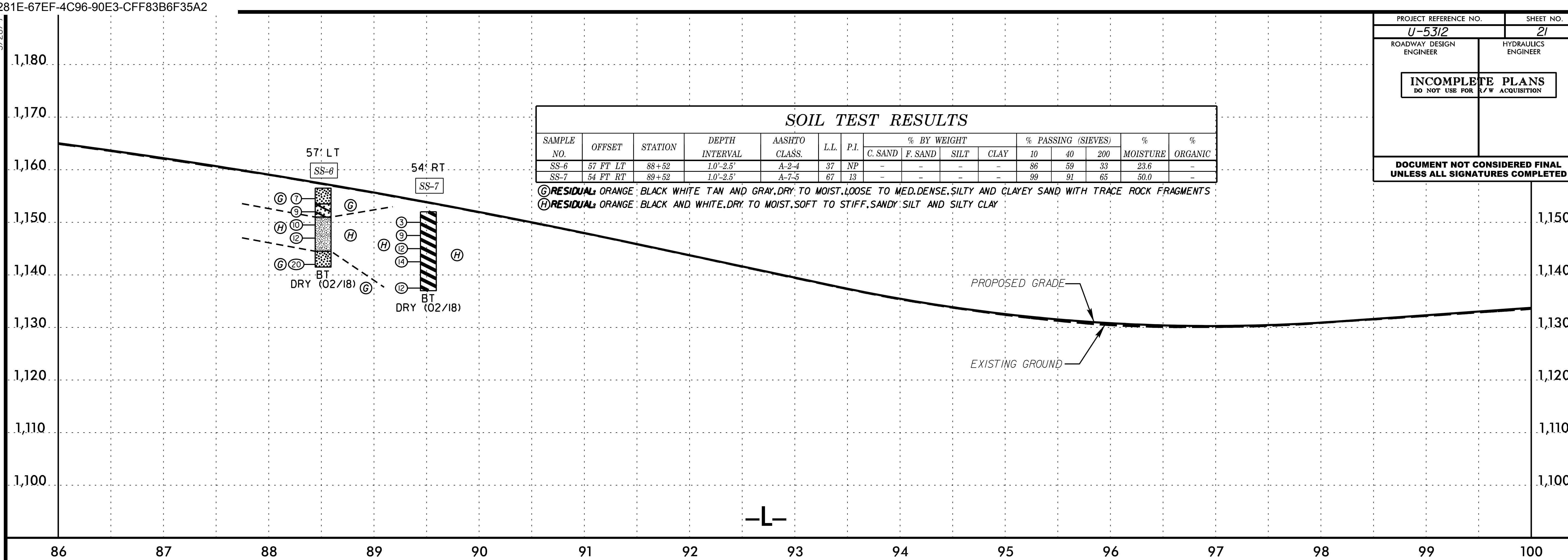
PROJECT REFERENCE NO.	SHEET NO.
U-5312	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

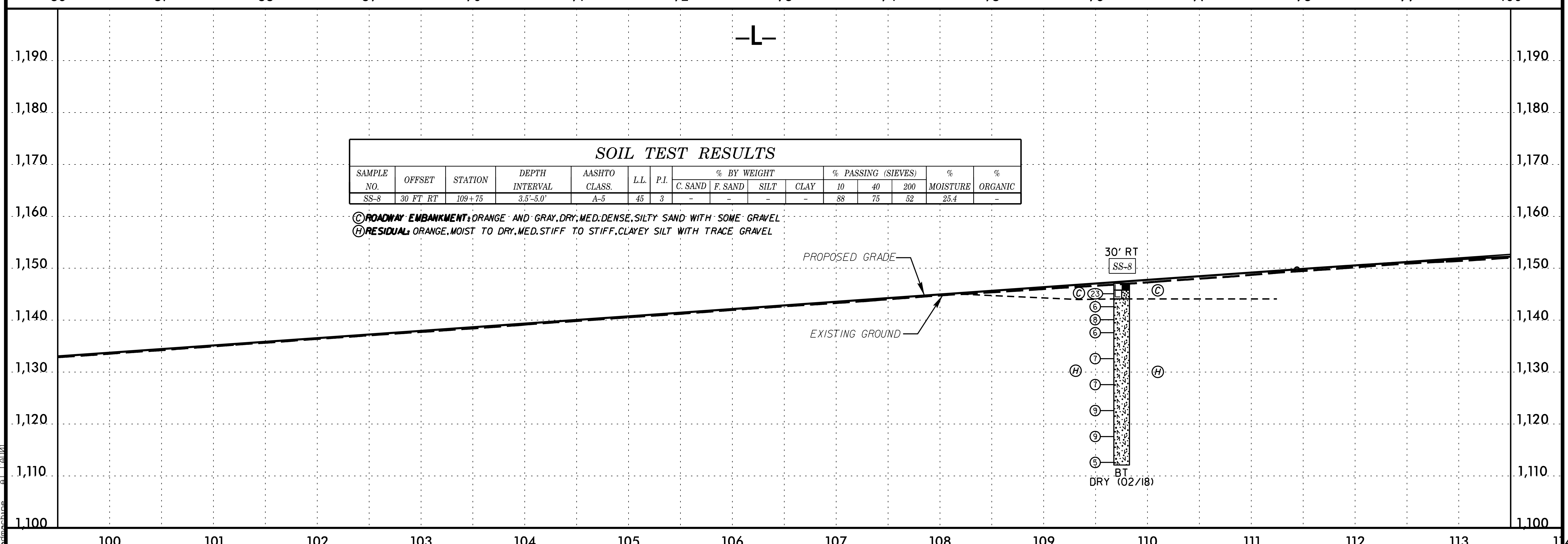


SOIL TEST RESULTS

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-6	57 FT LT	88+52	1.0'-2.5'	A-2-4	37	NP	-	-	-	-	86	59	33	23.6	-
SS-7	54 FT RT	89+52	1.0'-2.5'	A-7-5	67	13	-	-	-	-	99	91	65	50.0	-

Ⓖ **RESIDUAL:** ORANGE BLACK WHITE TAN AND GRAY,DRY TO MOIST,LOOSE TO MED.DENSE,SILTY AND CLAYEY SAND WITH TRACE ROCK FRAGMENTS

Ⓗ **RESIDUAL:** ORANGE BLACK AND WHITE,DRY TO MOIST,SOFT TO STIFF,SANDY SILT AND SILTY CLAY



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-8	30 FT RT	109+75	3.5'-5.0'	A-5	45	3	-	-	-	-	88	75	52	25.4	-

Ⓒ **ROADWAY EMBANKMENT:** ORANGE AND GRAY,DRY,MED.DENSE,SILTY SAND WITH SOME GRAVEL

Ⓗ **RESIDUAL:** ORANGE,MOIST TO DRY,MED.STIFF TO STIFF,CLAYEY SILT WITH TRACE GRAVEL

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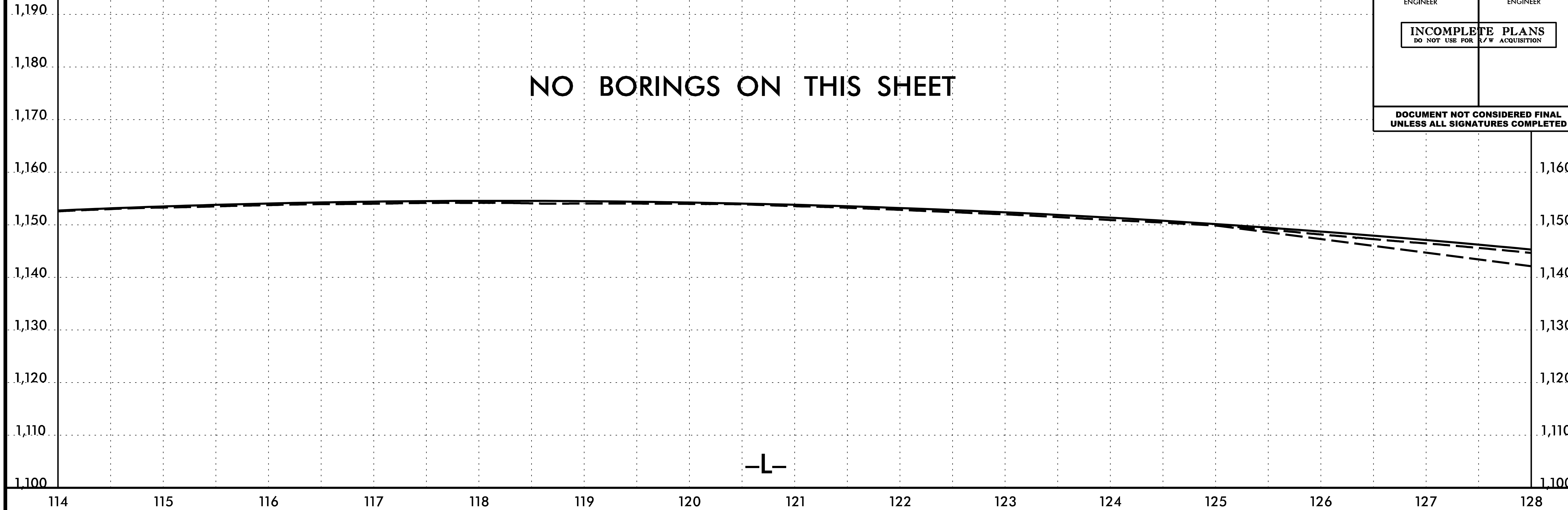
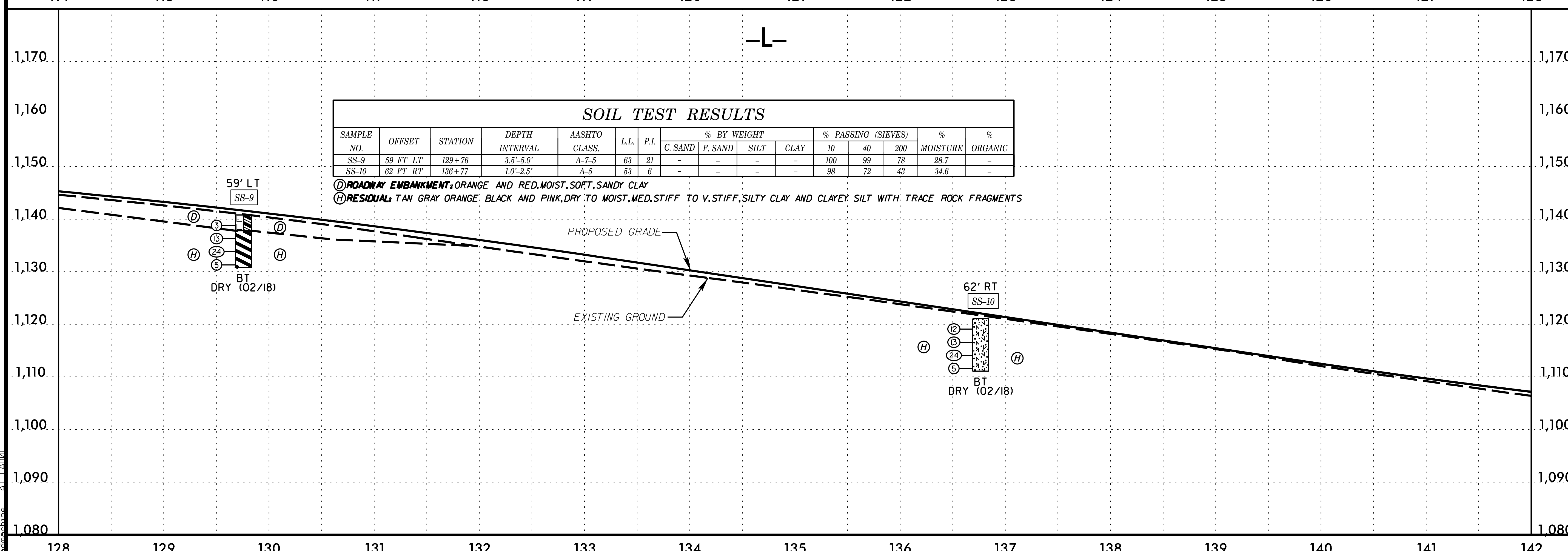
5/28/99

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NO BORINGS ON THIS SHEET





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-9	59 FT LT	129+76	3.5'-5.0'	A-7-5	63	21	-	-	-	-	100	99	78	28.7	-
SS-10	62 FT RT	136+77	1.0'-2.5'	A-5	53	6	-	-	-	-	98	72	43	34.6	-

(D) **ROADWAY EMBANKMENT:** ORANGE AND RED,MOIST,SOFT,SANDY CLAY

(H) **RESIDUAL:** TAN GRAY ORANGE BLACK AND PINK,DRY TO MOIST,MED.STIFF TO V.STIFF,SILTY CLAY AND CLAYEY SILT WITH TRACE ROCK FRAGMENTS

PROJECT REFERENCE NO.	SHEET NO.
U-5312	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

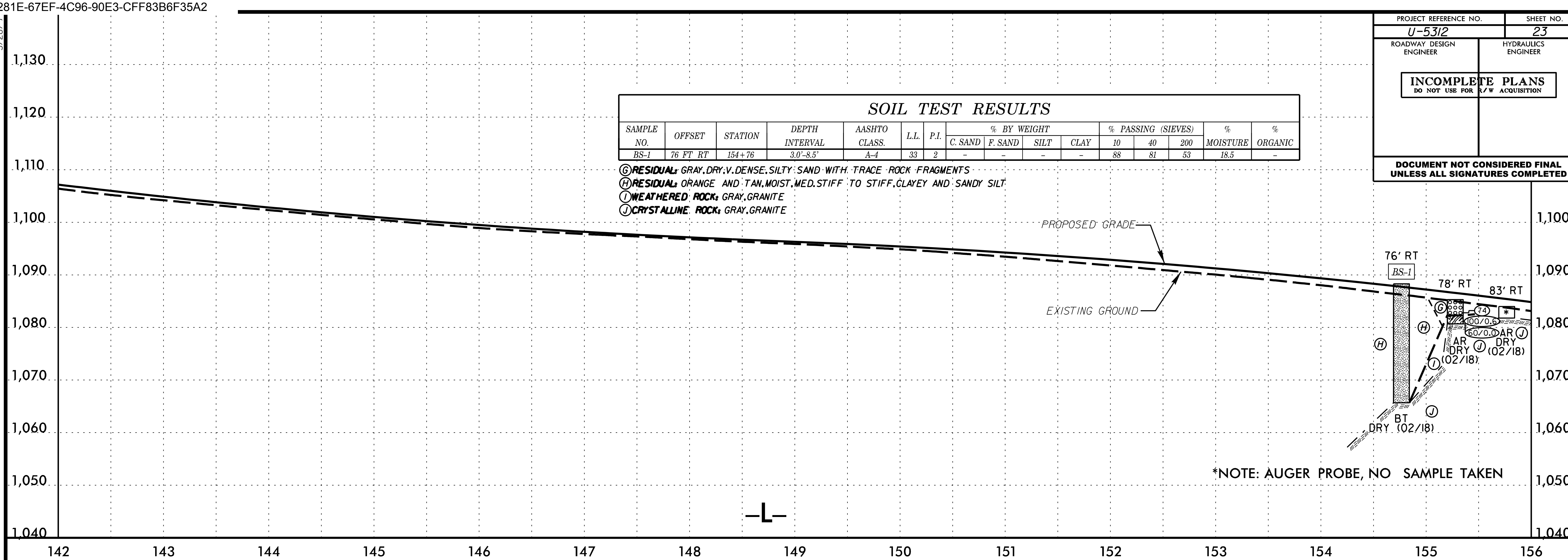
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

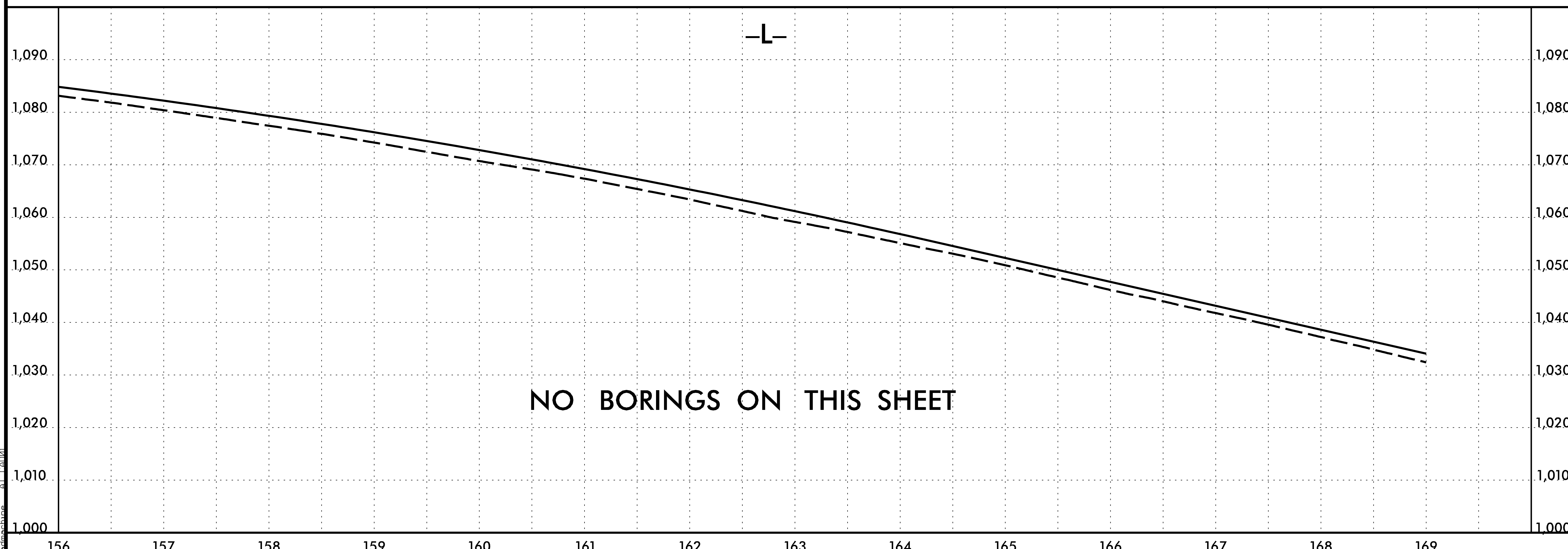
SOIL TEST RESULTS

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		
BS-1	76 FT RT	154+76	3.0'-8.5'	A-4	33	2	-	-	-	-	88	81	53	18.5	-

(G) **RESIDUAL:** GRAY,DRY,V.DENSE,SILTY SAND WITH TRACE ROCK FRAGMENTS
(H) **RESIDUAL:** ORANGE AND TAN,MOIST,MED.STIFF TO STIFF,CLAYEY AND SANDY SILT
(I) **WEATHERED ROCK:** GRAY,GRANITE
(J) **CRYSTALLINE ROCK:** GRAY,GRANITE



*NOTE: AUGER PROBE, NO SAMPLE TAKEN



NO BORINGS ON THIS SHEET

PROJECT REFERENCE NO.	SHEET NO.
U-5312	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

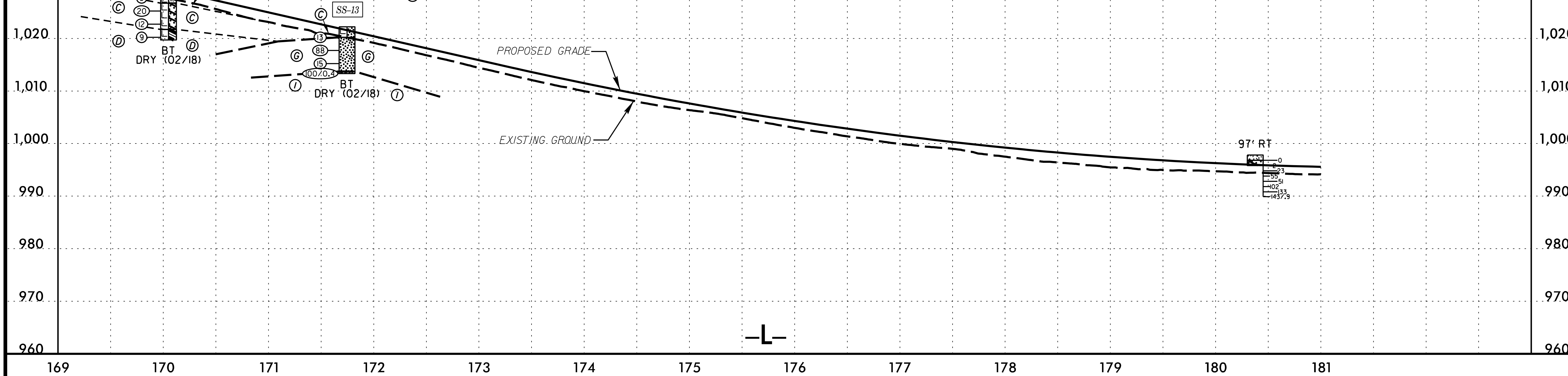
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

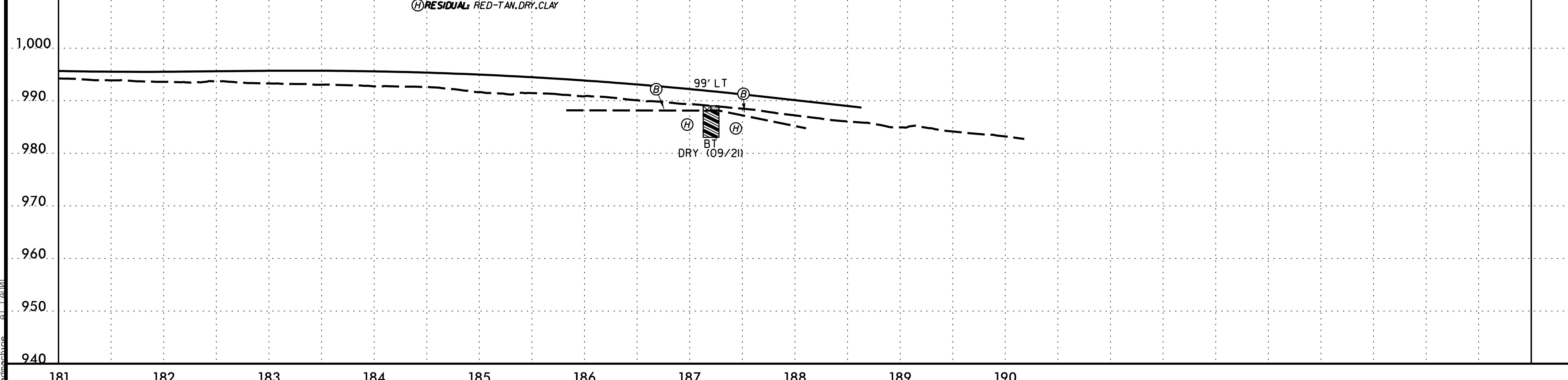
SOIL TEST RESULTS

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-12	CL	170+03	1.0'-2.5'	A-4	31	2	-	-	-	-	86	70	47	21.2	-
SS-13	13 FT LT	171+73	1.0'-2.5'	A-2-5	42	4	-	-	-	-	78	60	35	3.0	-

(C) **ROADWAY EMBANKMENT:** BROWN AND ORANGE, DRY TO MOIST, MED. DENSE, CLAYEY AND SILTY SAND
(D) **ROADWAY EMBANKMENT:** ORANGE AND RED, MOIST, SOFT TO STIFF, SANDY CLAY AND SILT
(G) **RESIDUAL:** GRAY TAN AND WHITE, DRY, V. DENSE, SILTY SAND WITH HIGHLY MICACEOUS
(I) **WEATHERED ROCK:** GRAY AND WHITE, GRANITE



(B) **ARTIFICIAL FILL:** BROWN, DRY, SILT
(H) **RESIDUAL:** RED-TAN, DRY, CLAY

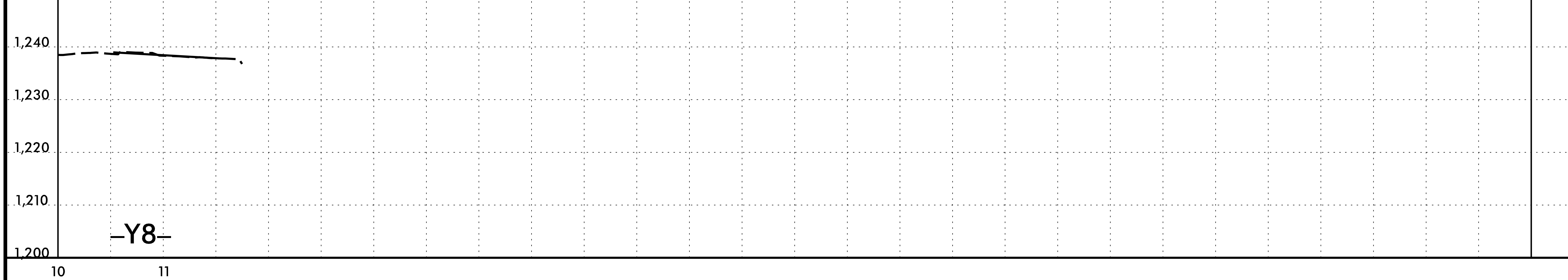


PROJECT REFERENCE NO.	SHEET NO.
U-5312	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

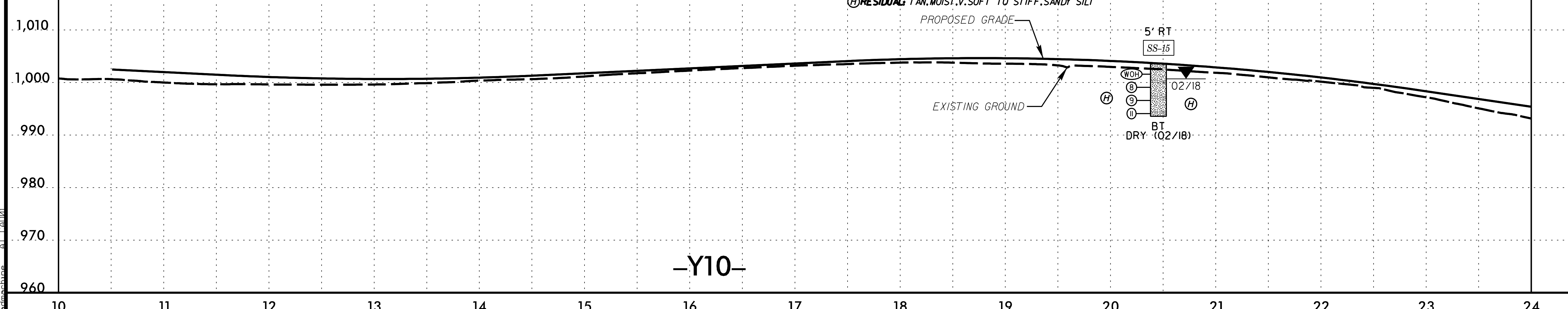
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NO BORINGS ON THIS SHEET



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-15	5 FT RT	20+46	1.0'-2.5'	A-4	35	NP	-	-	-	-	96	69	42	25.7	-

(H) **RESIDUAL:** TAN, MOIST, V.SOFT TO STIFF, SANDY SILT



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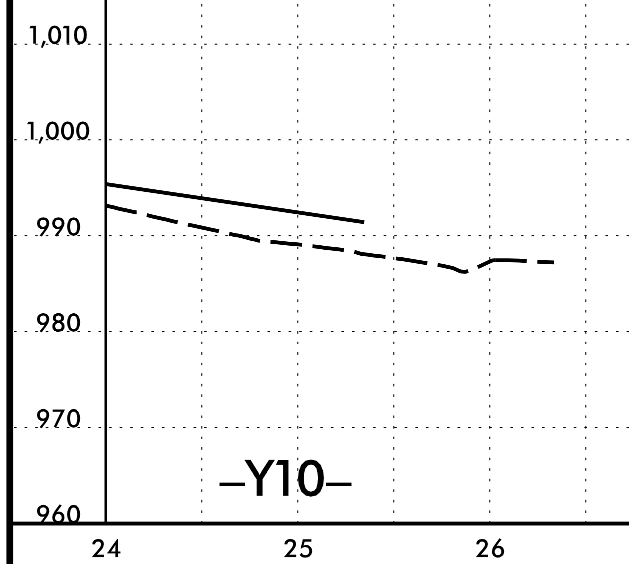
PROJECT REFERENCE NO.	SHEET NO.
U-5312	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NO BORINGS ON THIS SHEET

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PROJECT REFERENCE NO.	SHEET NO.
U-5312	27

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

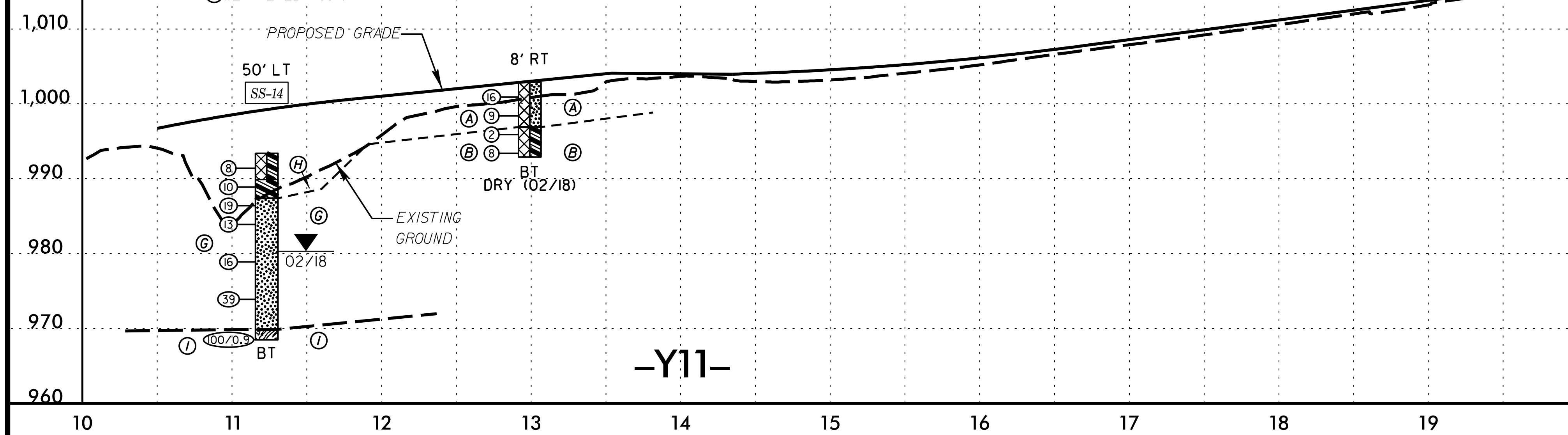
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

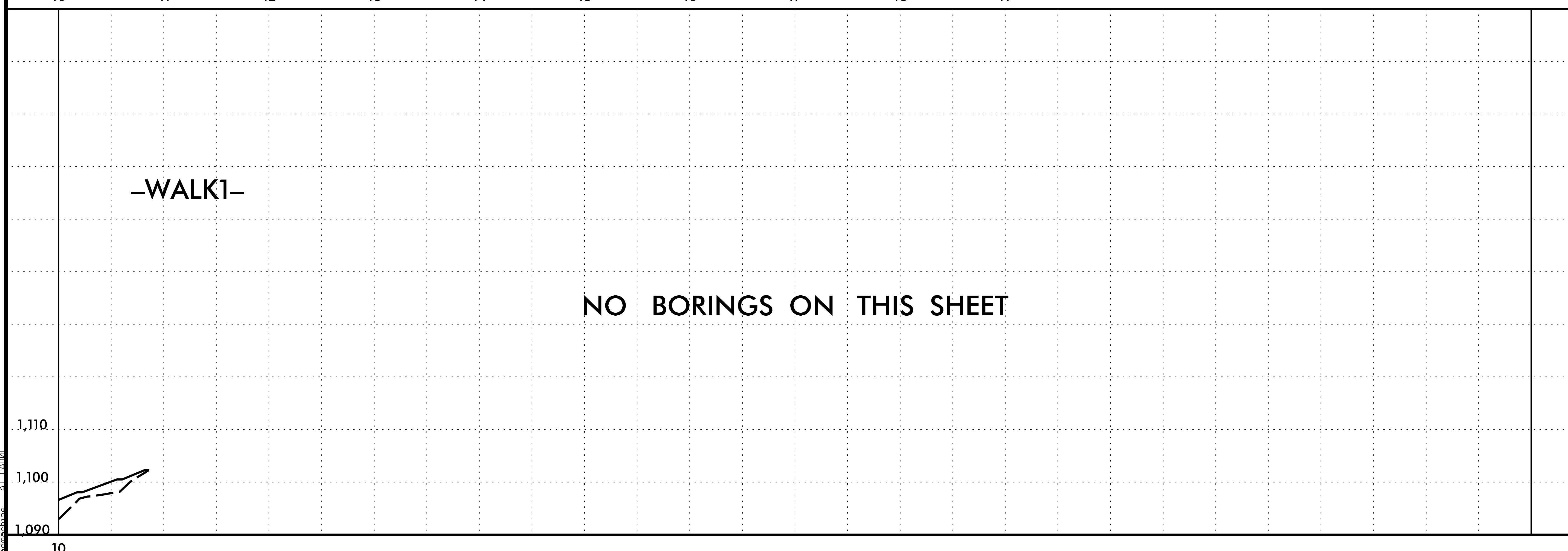
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT: C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES): 10	40	200	% MOISTURE	% ORGANIC
SS-14	50 FT LT	11+23	1.0'-2.5'	A-6	38	12	-	-	-	-	92	86	60	5.1	-

(A) **ARTIFICIAL FILL:** TAN, MOIST, LOOSE TO MED. DENSE, SILTY SAND
(B) **ARTIFICIAL FILL:** BROWN RED AND ORANGE, DRY TO MOIST, SOFT TO STIFF, SANDY CLAY
(G) **RESIDUAL:** TAN AND BLACK, MOIST, MED. DENSE TO DENSE, SILTY SAND
(H) **RESIDUAL:** TAN, MOIST, STIFF, SANDY CLAY
(I) **WEATHERED ROCK:** TAN AND BLACK, GRANITE





THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

PROJECT REFERENCE NO.	SHEET NO.
U-5312	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

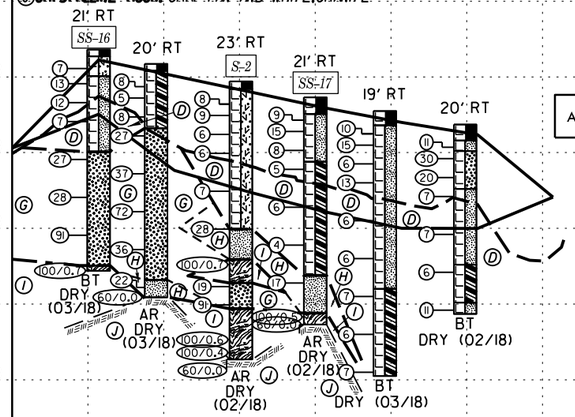
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-16	21 FT RT	10+57	1.0'-3.0	A-5	43	6	–	–	–	–	98	93	72	26.0	–
S-2	23 FT RT	11+51	13.5'-18.5'	A-5	47	9	–	–	–	–	81	75	58	20.9	–
SS-17	21 FT RT	12+00	2.0'-3.5'	A-4	38	3	–	–	–	–	97	86	46	23.3	–

(C) **ROADWAY EMBANKMENT:** BROWN AND ORANGE, DRY, MED. DENSE, SILTY SAND
(D) **ROADWAY EMBANKMENT:** ORANGE GRAY BROWN AND WHITE, DRY TO MOIST, MED. STIFF TO STIFF, SANDY AND CLAYEY SILT AND SANDY CLAY WITH MICA AND TRACE GRAVEL
(G) **RESIDUAL:** TAN GRAY AND WHITE, DRY, MED. DENSE TO V. DENSE, SILTY SAND, WITH LITTLE ROCK FRAGMENTS
(H) **RESIDUAL:** TAN-ORANGE TAN AND WHITE, DRY TO MOIST, V. STIFF, SILT AND SANDY SILT WITH SOME ROCK FRAGMENTS
(I) **WEATHERED ROCK:** GRAY TAN AND WHITE, GRANITE
(J) **CRYSTALLINE ROCK:** GRAY TAN AND WHITE, GRANITE



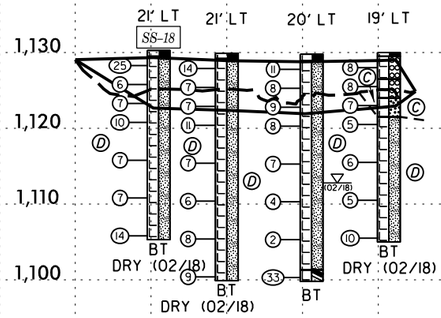
APPROXIMATE WALL FACE AREA = 3,338 SQ. FT.

APPROXIMATE WALL FACE AREA = 1,040 SQ. FT.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-18	21 FT LT	10+55	3.5'-5.0'	A-4	38	NP	–	–	–	–	97	86	52	23.2	–

(C) **ROADWAY EMBANKMENT:** GRAY TAN AND BROWN, DRY, LOOSE, SAND AND SILTY SAND WITH SOME GRAVEL
(D) **ROADWAY EMBANKMENT:** ORANGE TAN TAN-ORANGE AND BROWN, DRY TO MOIST, SOFT TO HARD, SILT AND SANDY SILT WITH TRACE GRAVEL

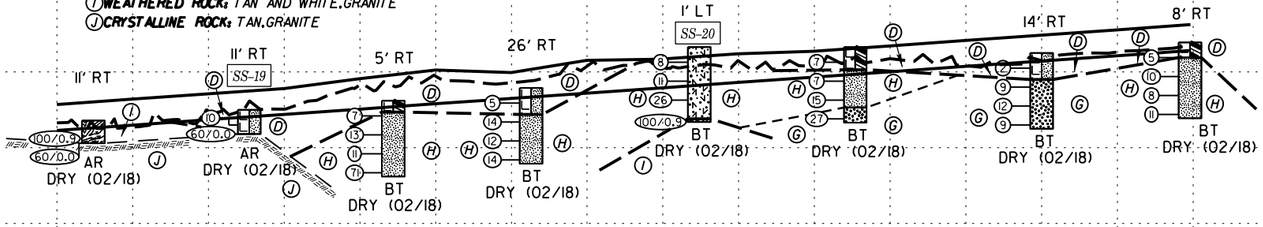


APPROXIMATE WALL FACE AREA = 2,746 SQ. FT.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-19	11 FT RT	11+27	1.0'-2.5'	A-4	35	1	–	–	–	–	75	62	38	16.7	–
SS-20	1 FT LT	14+24	1.0'-2.5'	A-5	42	NP	–	–	–	–	88	67	38	21.8	–

(D) **ROADWAY EMBANKMENT:** ORANGE BROWN RED AND TAN, MOIST, MED. STIFF TO STIFF, SANDY SILT AND SANDY CLAY WITH TRACE ASPHALT FRAGMENTS
(G) **RESIDUAL:** GRAY TAN AND WHITE, DRY, DENSE, SILTY SAND
(H) **RESIDUAL:** ORANGE TAN BROWN GRAY WHITE AND BLACK, DRY TO MOIST, MED. STIFF TO HARD, SANDY SILT
(I) **WEATHERED ROCK:** TAN AND WHITE, GRANITE
(J) **CRYSTALLINE ROCK:** TAN, GRANITE



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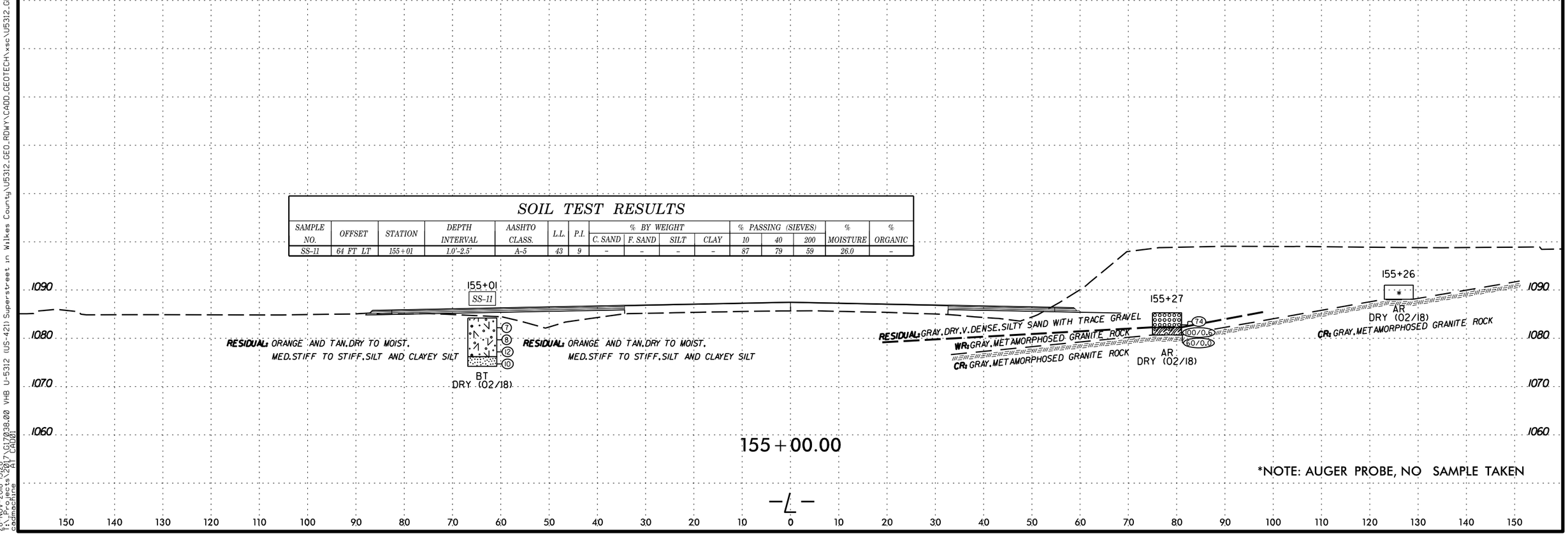
5/28/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5312	29

SOIL TEST RESULTS

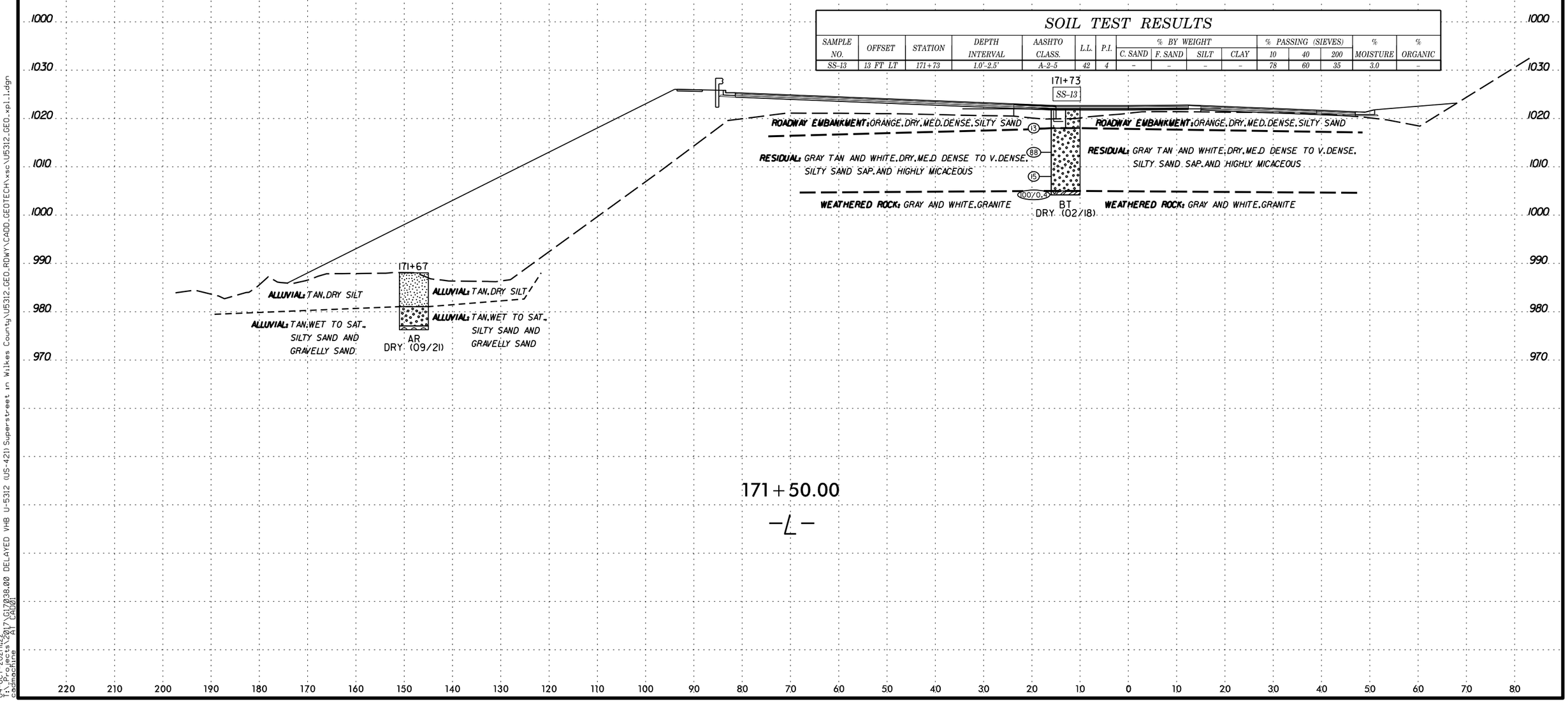
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-11	64 FT LT	155+01	1.0'-2.5'	A-5	43	9	–	–	–	–	87	79	59	26.0	–



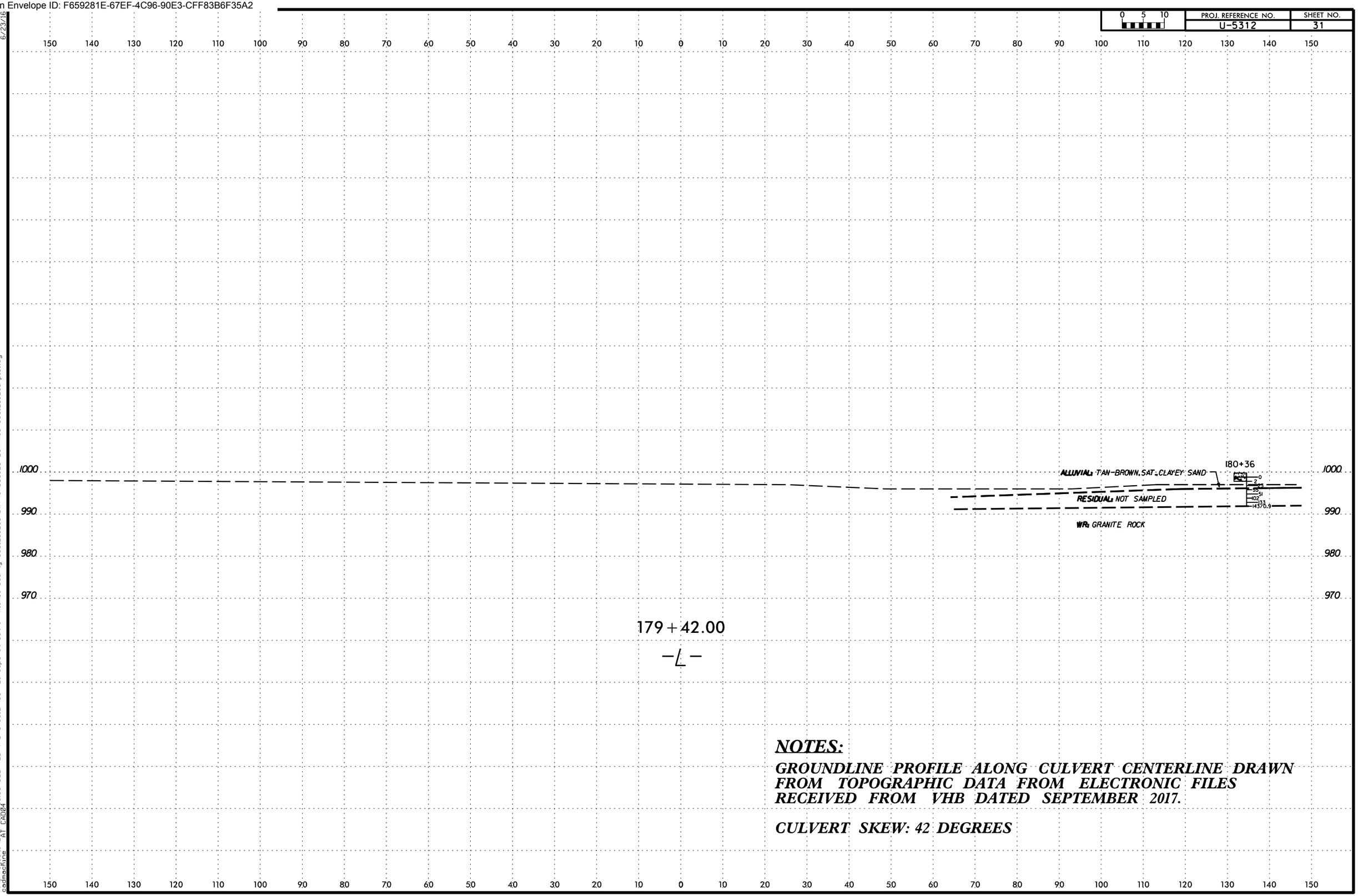
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5312	30

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-13	13 FT LT	171+73	1.0'-2.5'	A-2-5	42	4	–	–	–	–	78	60	35	3.0	–



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-5312	31



NOTES:

GROUNDLINE PROFILE ALONG CULVERT CENTERLINE DRAWN FROM TOPOGRAPHIC DATA FROM ELECTRONIC FILES RECEIVED FROM VHB DATED SEPTEMBER 2017.

CULVERT SKEW: 42 DEGREES

07-OCT-2021 16:05
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cadmachine AT CA004

PROJECT REFERENCE NO.	SHEET NO.
U–5312	32

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
PAVEMENT INVESTIGATION RESULTS

REFERENCE: U–5732

PROJECT: 45446

DS
WSH 10/7/2021
INITIALS DATE

Falcon Engineering, Inc. 1210 Trinity Road, Suite 110 Raleigh, NC 27607

PAVEMENT SECTION AND SUBGRADE CONDITION SUMMARY

US 421 FROM NC 16 TO US 421 BUSINESS IN WILKESBORO

WILKES COUNTY, NORTH CAROLINA

TIP No.: U-5312 WBS No. 45446.1 Falcon Project No.: G17038.00

TEST LOCATION				PAVEMENT SECTION THICKNESS (INCHES)			SUBGRADE	
ALIGNMENT	LANE	STATION	OFFSET	HMA	AGGREGATE BASE	TOTAL	IN-SITU CBR	NOTES
-L-	EB, OTL	23+03	51' RT	0.80	0.80	1.60	10	Voids in base
-L-	EB,OTL	37+57	50' RT	0.90	0.80	1.70	11	Voids in base
-L-	WB, OTL	42+00	50' LT	1.50	1.00	2.50	9	Base deteriorated and delaminated. *See note below
-L-	EB, OTL	115+05	36' RT	0.90	0.80	1.70	7	Base delaminated
-L-	WB, OSL	121+48	27' LT	14.00	0.00	14.00	6	Base horizontally cracked
-L-	WB, OTL	127+53	41' LT	5.00	6.00	11.00	11	-
-L-	EB, OTL	138+52	36' RT	11.00	11.00	22.00	7	-
-L-	EB, OTL	145+01	36' RT	12.00	7.00	19.00	12	-
-L-	WB, OTL	147+06	36' LT	10.00	0.00	10.00	4	-
-L-	EB, OTL	151+01	36' RT	7.00	3.00	10.00	16	-
-L-	EB, OTL	162+00	60' RT	7.00	7.00	14.00	8	-
-L-	EB, ISL	18+00	24' RT	11.00	0.00	11.00	8	-
-L-	EB, OSL	23+02	40' RT	7.00	14.00	21.00	11	-
-L-	WB, ISL	28+01	30' LT	15.00	14.00	29.00	11	Large voids in base
-L-	WB, OSL	37+46	43' LT	19.00	15.00	34.00	7	Voids and delamination in mid-section. *See note below
-L-	EB, OSL	37+57	40' RT	8.00	7.00	15.00	11	-
-L-	EB, ISL	42+99	24' RT	7.00	17.00	24.00	11	-
-L-	EB, ISL	42+99	24' RT	7.00	17.00	24.00	11	-
-L-	WB, ISL	48+00	29' LT	17.00	7.00	24.00	10	-
-L-	WB, OSL	52+97	42' LT	25.00	11.00	36.00	5	Multiple delaminations. *See note below
-L-	CTL	61+94	CL	14.00	7.00	21.00	3	Voids in base
-L-	EB, ISL	70+01	7' RT	10.00	11.00	21.00	8	Voids in base
-L-	EB, OSL	77+98	25' RT	10.00	12.00	22.00	12	Voids in base
-L-	CTL	85+97	3' LT	20.00	14.00	34.00	15	Voids in mid-section. *See note below
-L-	WB, OSL	94+03	31' LT	19.00	5.00	24.00	13	Delaminaion in mid-section. *See note below
-L-	WB, ISL	102+05	6' LT	6.00	24.00	30.00	12	Some voids in mid-section of core
-L-	EB, ISL	109+96	9' RT	10.00	10.00	20.00	24	-
-L-	EB, OTL	118+05	30' RT	12.00	19.00	31.00	6	Some voids in mid-section of core. *See note below
-L-	WB, ISL	125+98	13' LT	13.00	12.00	25.00	11	Thin layers of voids in base
-L-	WB, OSL	133+98	28' LT	7.00	12.00	19.00	7	-
-L-	CTL	141+99	2' LT	12.00	6.00	18.00	3	*See note below
-L-	EB, ISL	150+02	9' RT	10.00	6.00	16.00	8	-
-L-	EB, OSL	157+97	26' RT	7.00	14.00	21.00	10	-
-L-	WB, ITL	166+09	1' RT	17.00	0.00	17.00	11	-
-L-	WB, ISL	170+00	25' LT	10.00	14.00	24.00	8	-
-Y10-	WB, ITL	20+49	13' LT	14.00	7.00	21.00	15	-
REPRESENTATIVE AVERAGE				10.6	8.4	19	10	-

LEGEND: EB - EASTBOUND, WB - WESTBOUND, OSL - OUTSIDE LANE, ISL - INSIDE LANE, CTL - CENTRAL TURN LANE, OTL - OUTSIDE TURN LANE, ITL - INSIDE TURN LANE

*Note: Most cores generally display increasing aggregate size with depth, i.e. indicative of base course, intermediate course and surface course. The cores noted above do not. Cores vary from a consistent mix, to appearance of old surface layers overlain by base or intermediate mixes and new surface mix.

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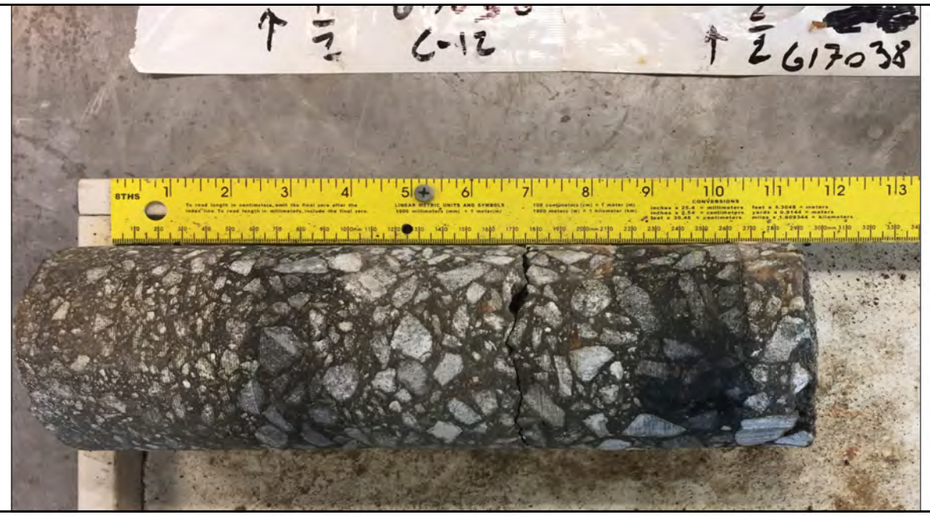

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PAVEMENT CORE - L_18+00_25RT

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PAVEMENT CORE - L_23+03_40RT

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PAVEMENT CORE - L_23+03_51RT

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PAVEMENT CORE - L_28+01_30LT

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PAVEMENT CORE PHOTOGRAPHS

US 421 FROM NC 16 TO US 421 BUSINESS
WILKES / WILKESBORO, NORTH CAROLINA
WBS NO.:45446.1.1 | TIP NO.: U-5312
FALCON PROJECT NO.: G17038.01

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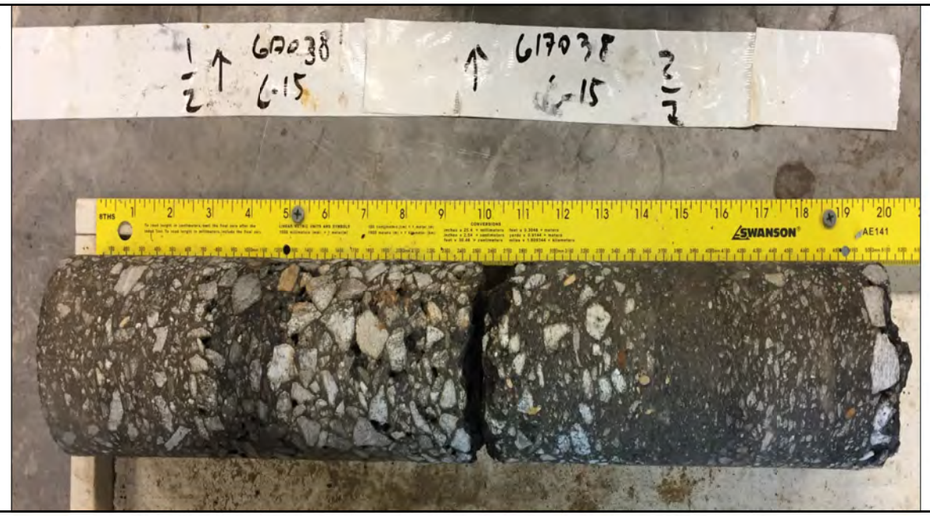

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PAVEMENT CORE - L_37+46_43RT

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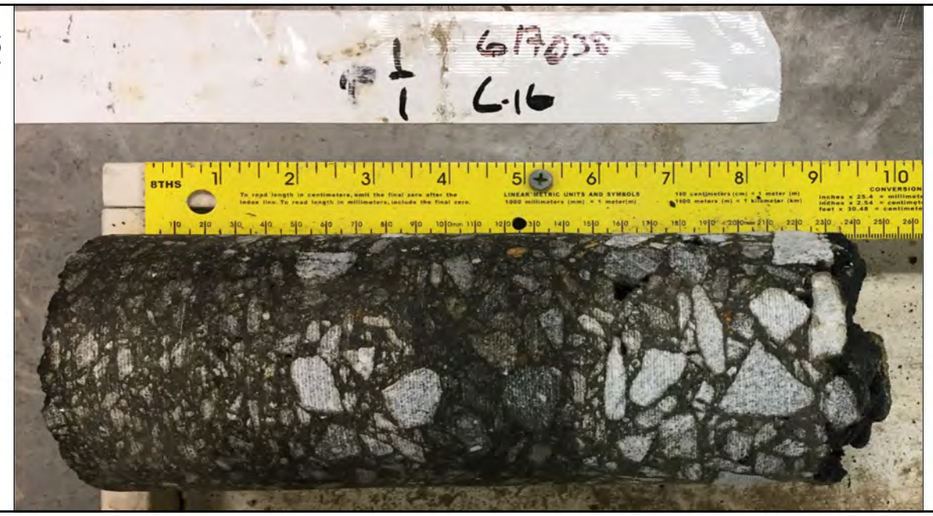

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PAVEMENT CORE - L_37+57_40RT

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PAVEMENT CORE - L_37+57_50RT

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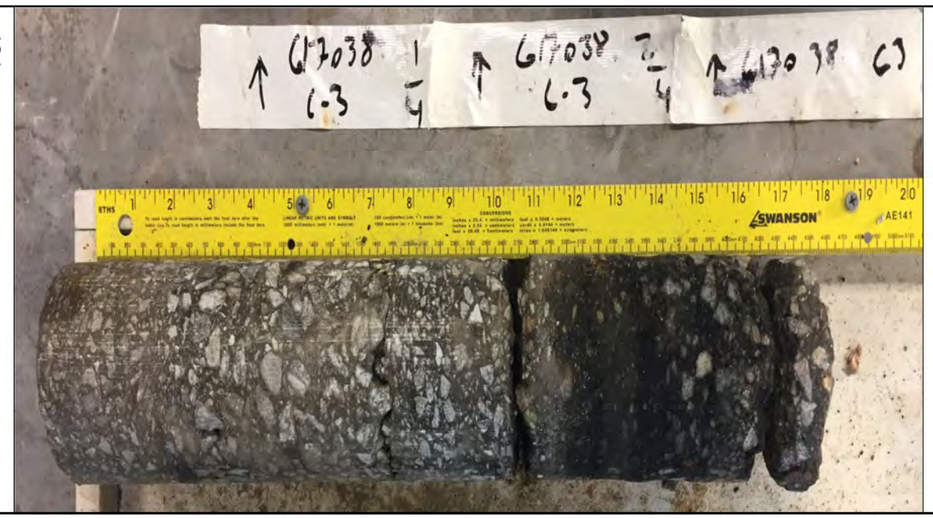

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PAVEMENT CORE - L_42+00_50LT

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US 421 FROM NC 16 TO US 421 BUSINESS
WILKES / WILKESBORO, NORTH CAROLINA
WBS NO.:45446.1.1 | TIP NO.: U-5312
FALCON PROJECT NO.: G17038.01

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PAVEMENT CORE - L_42+99_24RT

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PAVEMENT CORE - L_48+00_29RT

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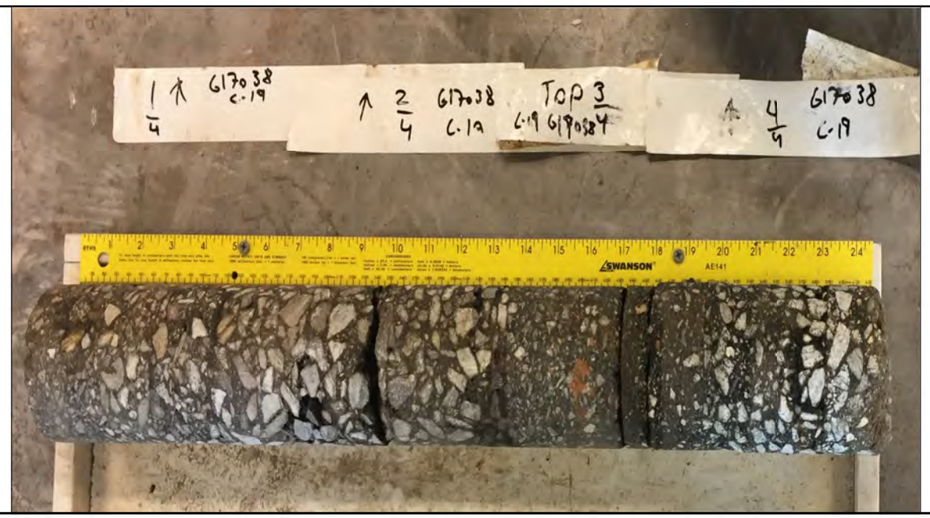

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PAVEMENT CORE - L_52+97_42RT

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PAVEMENT CORE - L_61+94

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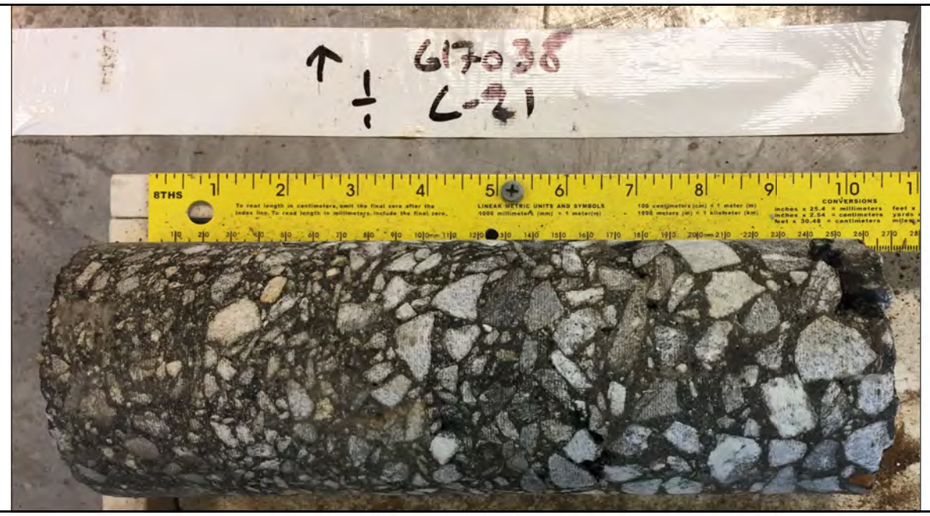

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PAVEMENT CORE - L_70+01_7RT

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PAVEMENT CORE - L_77+98_25RT

TOP

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PAVEMENT CORE - L_85+97_3LT

TOP

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PAVEMENT CORE - L_94+03_31LT

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FALCON PROJECT NO.: G17038.01

TOP

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PAVEMENT CORE - L_102+05_6LT

TOP

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PAVEMENT CORE - L_109+96_8RT

TOP

BOTTOM

PAVEMENT CORE - L_115+04_36RT

TOP

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PAVEMENT CORE - L_118+05_30RT

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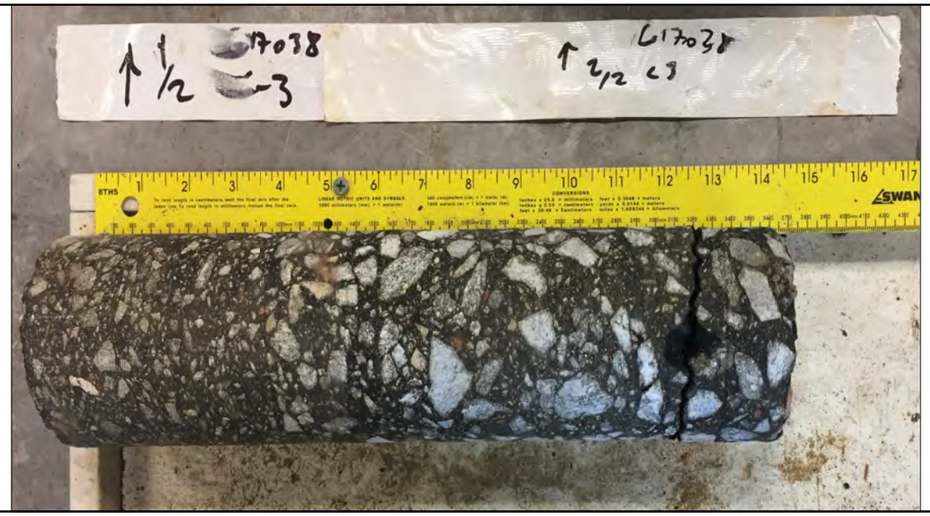

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PAVEMENT CORE - L_121+48_27LT

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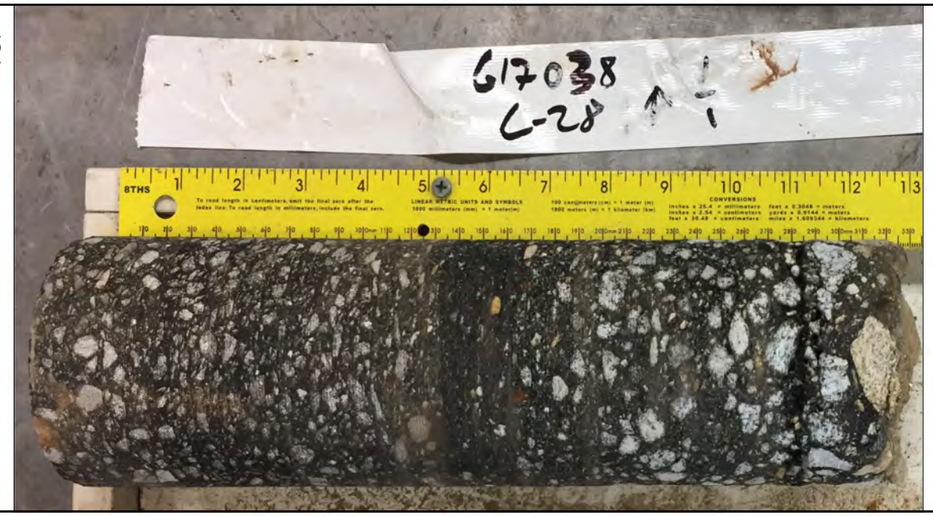

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PAVEMENT CORE - L_125+98_13LT

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PAVEMENT CORE - L_127+53_41LT

TOP

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PAVEMENT CORE - L_133+98_28LT

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WBS NO.:45446.1.1 | TIP NO.: U-5312
FALCON PROJECT NO.: G17038.01

TOP

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PAVEMENT CORE - L_138+52_36RT

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PAVEMENT CORE - L_141+99_2LT

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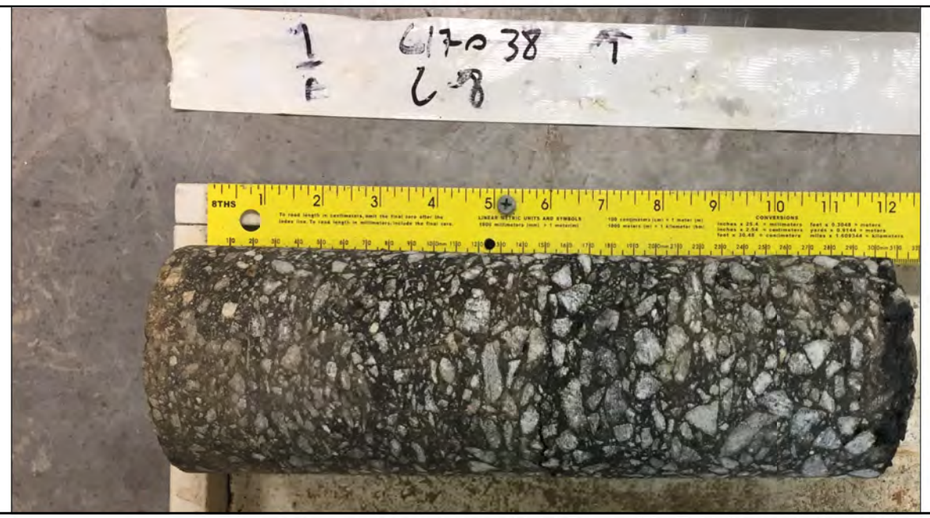

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PAVEMENT CORE - L_145+01_36RT

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PAVEMENT CORE - L_147+06_36LT

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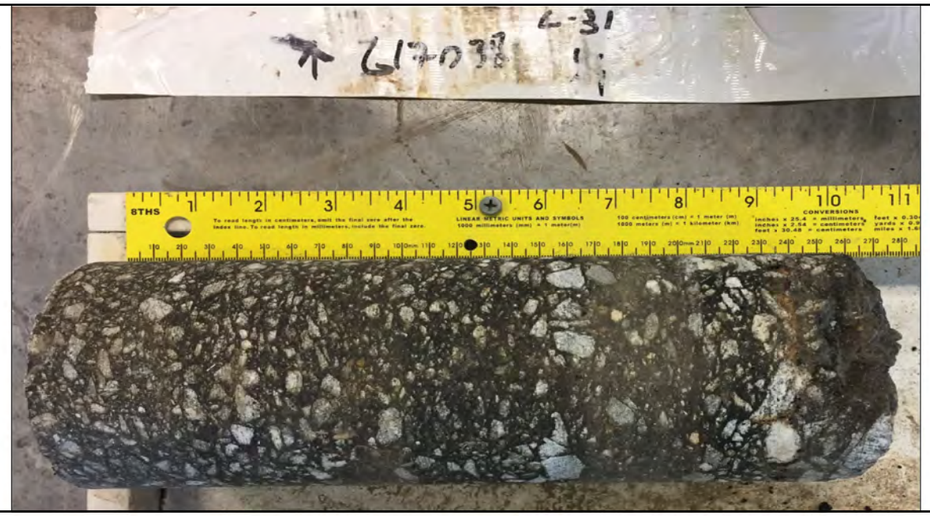

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PAVEMENT CORE - L_150-+02_9RT

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PAVEMENT CORE - L_152+01_36RT

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PAVEMENT CORE - L_157+97_26RT

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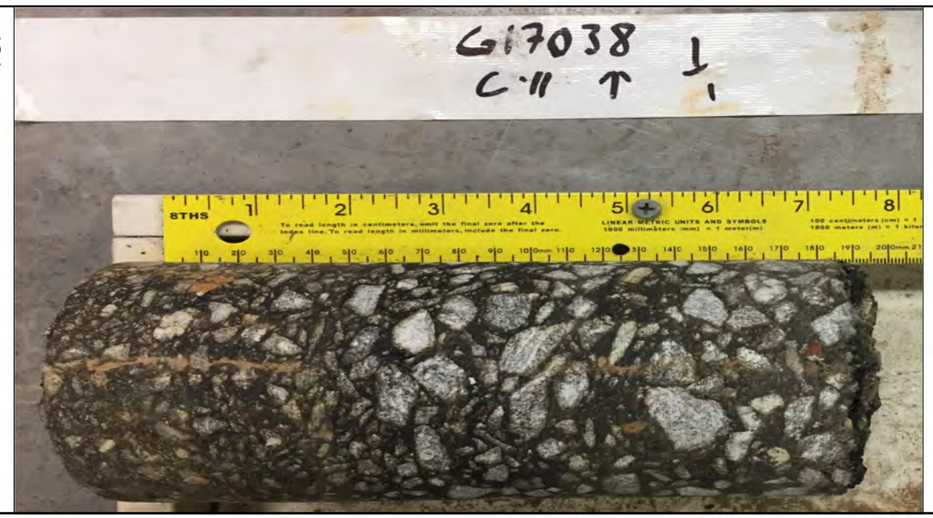

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PAVEMENT CORE - L_162+00_60RT

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PAVEMENT CORE PHOTOGRAPHS

US 421 FROM NC 16 TO US 421 BUSINESS
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WBS NO.:45446.1.1 | TIP NO.: U-5312
FALCON PROJECT NO.: G17038.01

TOP

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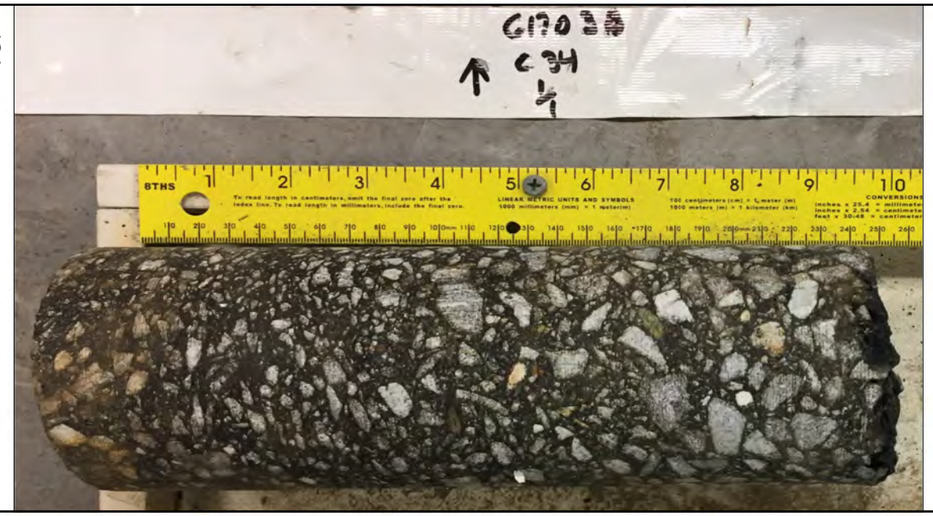
PAVEMENT CORE - L_166+09_1RT

TOP



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PAVEMENT CORE - L_170+00_25LT

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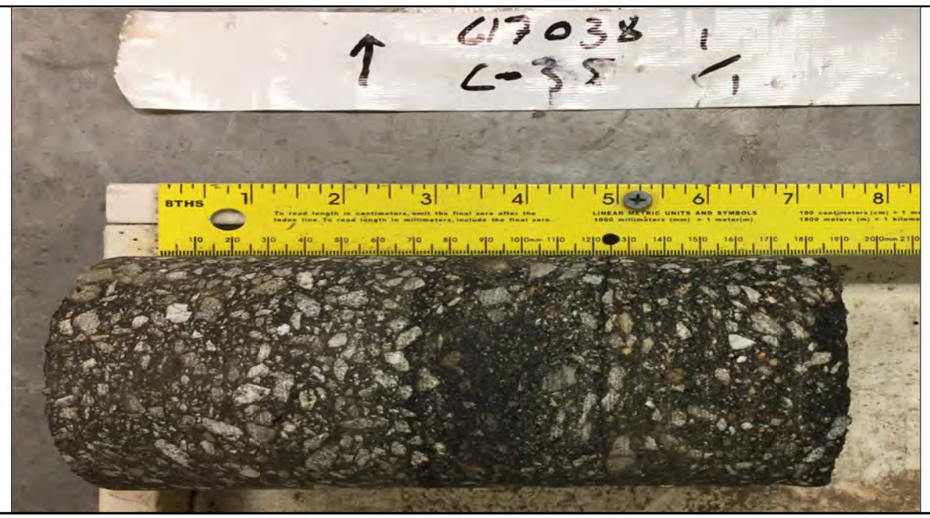

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PAVEMENT CORE - Y10_20+49_13LT

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US 421 FROM NC 16 TO US 421 BUSINESS
WILKES / WILKESBORO, NORTH CAROLINA
WBS NO.:45446.1.1 | TIP NO.: U-5312
FALCON PROJECT NO.: G17038.01

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 8-Mar-18

Location: L_1800_25RT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	51	1
1	60	1
3	70	1
5	94	1
5	142	1
2	182	1
1	204	1
1	225	1
2	268	1
2	317	1
2	379	1
2	431	1
2	510	1
1	545	1
1	564	1
2	603	1
2	614	1
3	628	1
5	645	1
11	708	1
10	752	1
11	764	1
20	795	1
20	804	1
20	808	1
20	810	1
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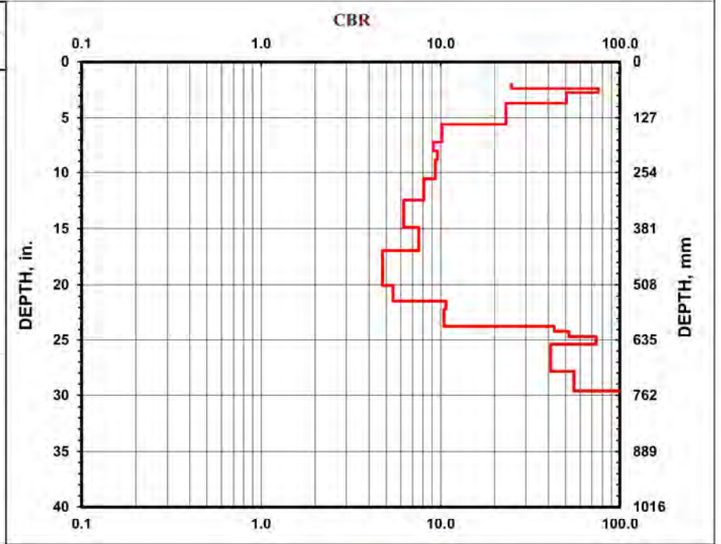

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 8-Mar-18

Location: L_23+03_40RT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
1	70	1
1	91	1
2	115	1
2	131	1
3	153	1
5	191	1
5	232	1
5	276	1
6	334	1
5	388	1
3	426	1
3	462	1
3	508	1
3	552	1
3	586	1
3	614	1
3	647	1
3	682	1
3	711	1
3	735	1
3	757	1
5	799	1
5	841	1
5	893	1
3	934	1
3	990	1
2	1027	1
2	1056	1
2	1070	1
3	1085	1
5	1116	1
6	1164	1
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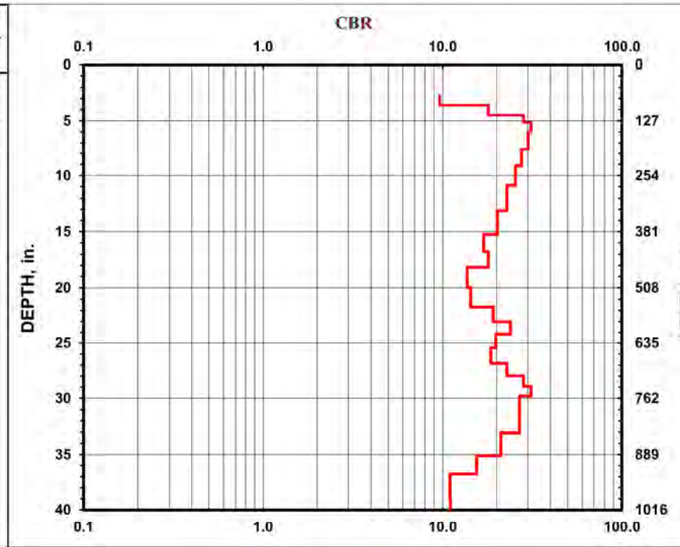

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_23+03_51RT
Date: 8-Mar-18
Soil Type(s): CL

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	30	1
1	40	1
3	50	1
5	71	1
6	119	1
3	147	1
3	173	1
4	201	1
5	222	1
5	250	1
5	284	1
5	323	1
5	374	1
3	418	1
3	477	1
2	520	1
2	550	1
2	581	1
2	615	1
2	646	1
2	680	1
2	714	1
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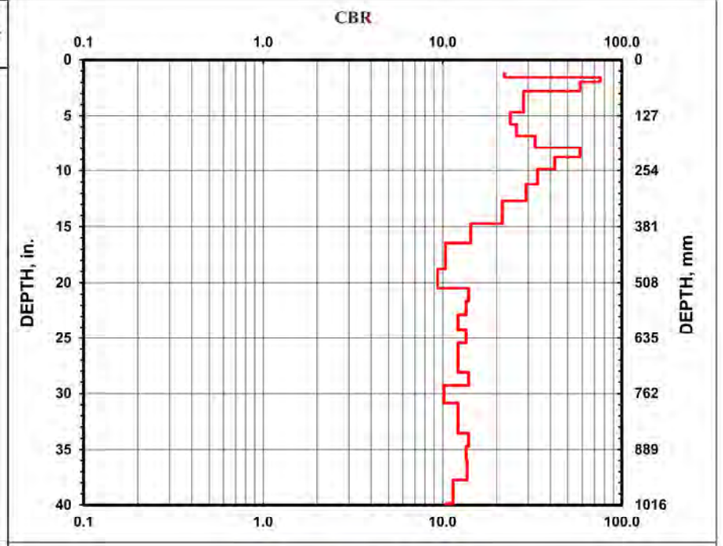

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_28+01_30LT
Date: 7-Mar-18
Soil Type(s): Clay (A-6)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	256	1
1	283	1
1	299	1
2	339	1
2	380	1
2	429	1
2	473	1
2	504	1
2	533	1
2	562	1
2	591	1
2	610	1
3	639	1
3	672	1
3	706	1
3	735	1
3	761	1
3	794	1
3	830	1
3	866	1
3	896	1
3	929	1
3	956	1
3	972	1
3	991	1
5	1046	1
5	1105	1
3	1139	1
3	1168	1
2	1183	1
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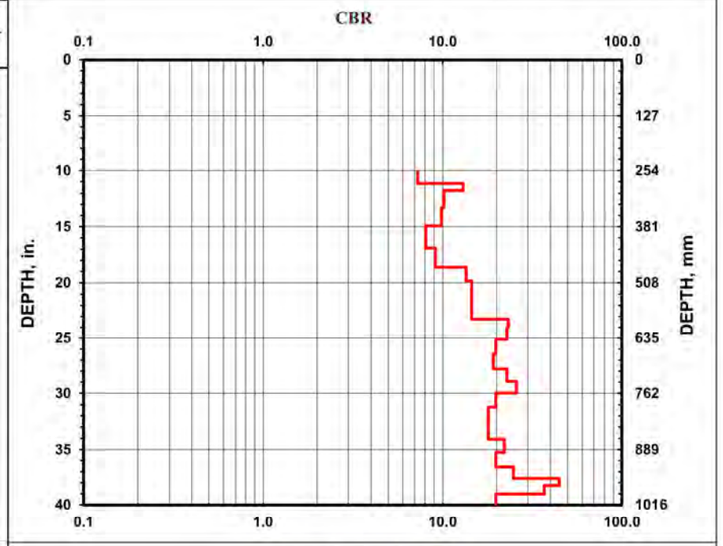

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_37+46_43RT
Date: 7-Mar-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	360	1
1	385	1
1	410	1
1	430	1
2	470	1
2	524	1
2	566	1
2	632	1
1	660	1
1	679	1
2	714	1
2	754	1
2	798	1
2	855	1
1	879	1
1	904	1
1	928	1
1	951	1
1	976	1
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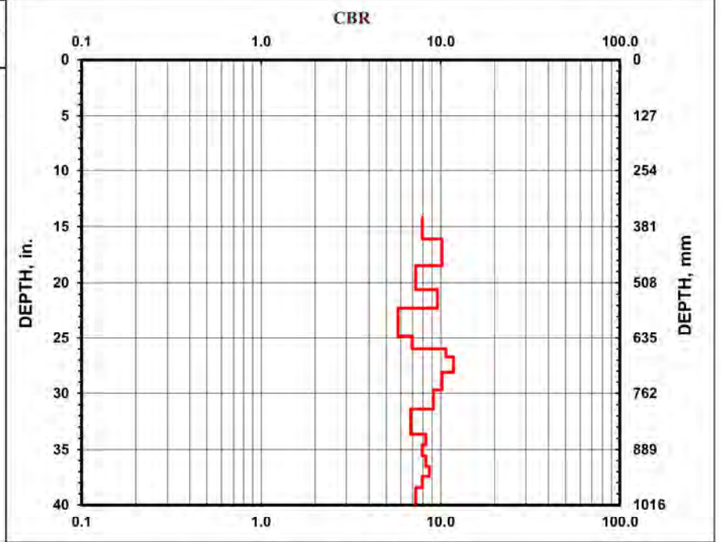


DCP TEST DATA

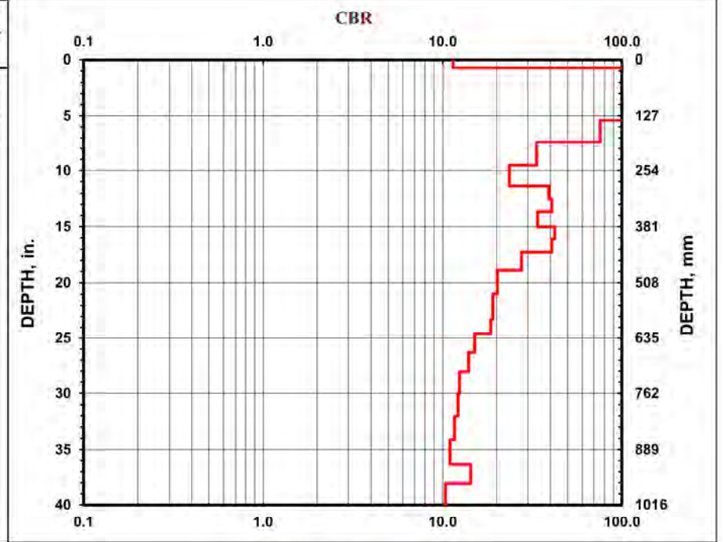
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_37+57_40RT
Date: 7-Mar-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	18	1
3	24	1
10	44	1
15	58	1
20	65	1
25	85	1
25	103	1
25	137	1
15	187	1
8	242	1
5	289	1
5	319	1
5	348	1
5	382	1
5	410	1
5	439	1
5	480	1
5	534	1
5	591	1
3	626	1
3	668	1
3	713	1
3	763	1
3	814	1
3	867	1
3	923	1
3	967	1
3	1026	1
1	1045	1
2	1083	1
2	1121	1
2	1153	1
2	1187	1
		1
		1
		1
		1
		1
		1
		1
		1
		1



DCP TEST DATA

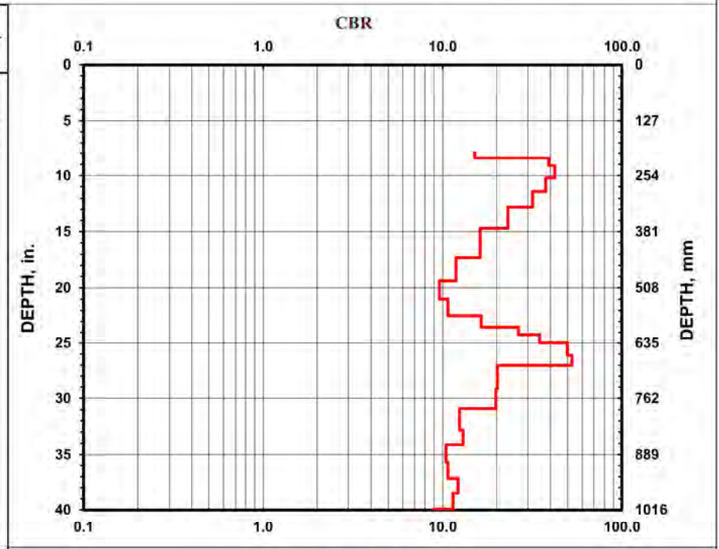
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 7-Mar-18
Location: L_37+57_50RT **Soil Type(s):** CL

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	199	1
1	213	1
3	231	1
5	259	1
5	290	1
5	326	1
5	374	1
5	440	1
3	492	1
2	534	1
2	572	1
2	598	1
2	615	1
3	635	1
6	664	1
5	687	1
5	741	1
4	785	1
3	835	1
2	867	1
2	906	1
2	944	1
2	978	1
2	1014	1
2	1059	1
1	1080	1
1	1102	1
1	1125	1
1	1149	1
1	1171	1
1	1193	1



DCP TEST DATA

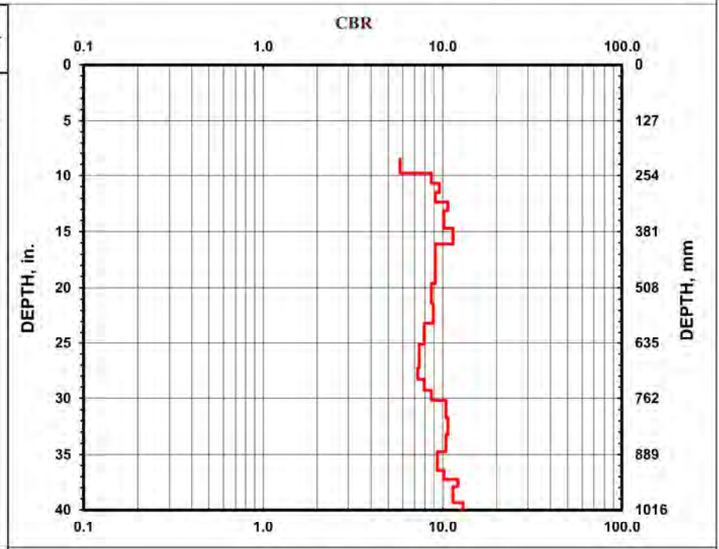
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 7-Mar-18
Location: L_42+00_50LT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	216	1
1	249	1
1	272	1
1	293	1
1	315	1
1	334	1
2	374	1
2	410	1
2	454	1
2	498	1
2	544	1
2	589	1
2	639	1
2	692	1
1	719	1
1	744	1
1	767	1
2	806	1
2	844	1
2	883	1
2	926	1
1	946	1
1	963	1
2	999	1
2	1031	1
2	1058	1
2	1058	1
2	1084	1
2	1110	1
2	1137	1
2	1167	1
2	1194	1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 7-Mar-18

Location: L_42+99_24RT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	140	1
1	168	1
1	190	1
2	226	1
2	256	1
3	307	1
2	341	1
2	378	1
2	422	1
2	454	1
2	487	1
3	539	1
3	583	1
3	621	1
3	666	1
3	713	1
3	758	1
3	800	1
3	843	1
3	883	1
3	932	1
2	971	1
1	990	1
1	1005	1
1	1020	1
2	1050	1
2	1092	1
2	1116	1
2	1153	1
2	1184	1
1	1197	1
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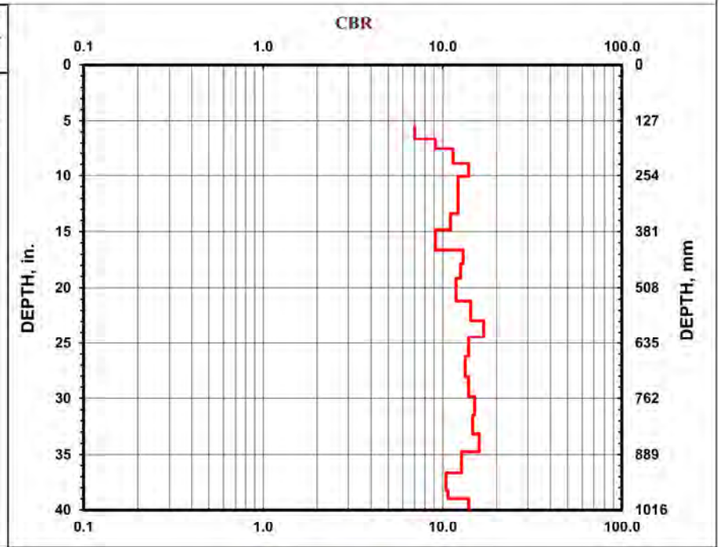

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 7-Mar-18

Location: L_48+00_29RT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	11	1
1	12	1
3	19	1
5	43	1
10	73	1
10	100	1
15	132	1
15	166	1
15	243	1
5	302	1
3	340	1
3	379	1
3	444	1
2	483	1
2	519	1
2	554	1
2	583	1
2	617	1
2	656	1
2	693	1
2	726	1
2	752	1
2	777	1
3	813	1
3	865	1
3	898	1
3	954	1
2	1008	1
1	1041	1
1	1074	1
1	1105	1
1	1132	1
1	1156	1
1	1180	1
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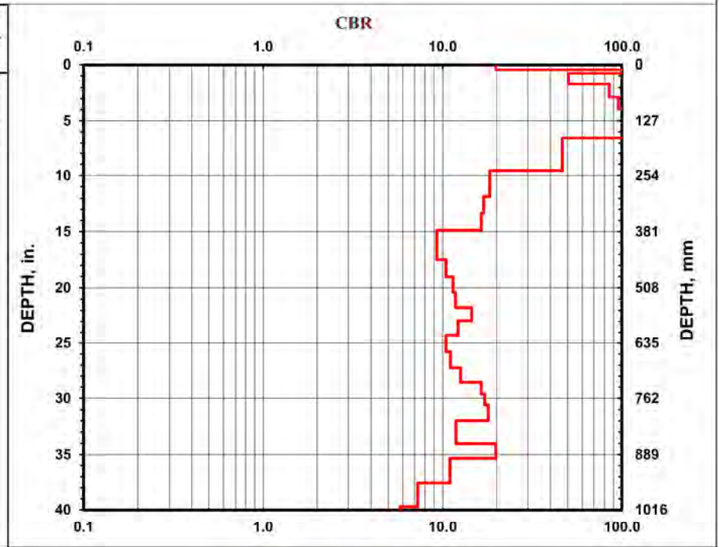
		1
		1
		1
		1
		1



DCP TEST DATA

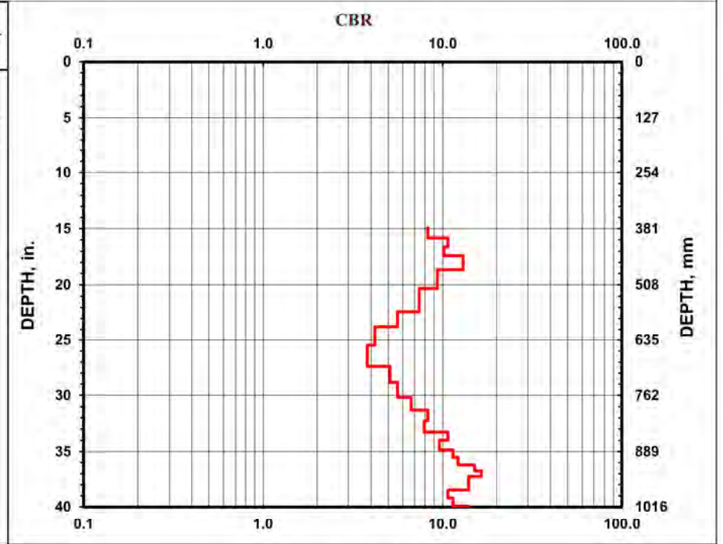
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_52+97_42RT
Date: 5-Mar-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ● CL
- ○ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	379	1
1	403	1
1	422	1
1	442	1
2	474	1
2	517	1
2	570	1
1	604	1
1	648	1
1	696	1
1	733	1
1	767	1
1	796	1
1	820	1
1	845	1
1	864	1
1	885	1
1	903	1
1	920	1
1	934	1
1	947	1
1	962	1
1	977	1
1	996	1
1	1014	1
1	1029	1
1	1043	1
1	1058	1
1	1076	1
1	1095	1
1	1115	1
1	1137	1
1	1158	1
1	1175	1
1	1188	1



DCP TEST DATA

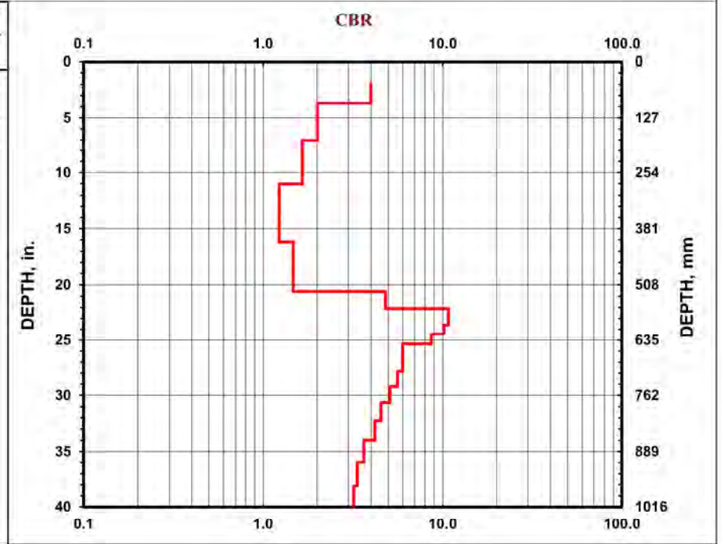
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_61+94
Date: 5-Mar-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	48	1
1	94	1
1	179	1
1	280	1
1	412	1
1	524	1
1	563	1
1	582	1
1	601	1
1	621	1
1	644	1
1	676	1
1	708	1
1	742	1
1	779	1
1	820	1
1	864	1
1	914	1
1	968	1
1	1024	1
1	1075	1
1	1139	1
1	1177	1
1	1198	1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_70+01_7RT
Date: 5-Mar-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	14	1
1	23	1
3	41	1
5	73	1
5	113	1
5	169	1
3	226	1
2	270	1
1	295	1
1	318	1
1	343	1
1	371	1
1	399	1
1	429	1
1	460	1
1	495	1
1	529	1
1	550	1
1	566	1
1	579	1
3	603	1
3	619	1
5	649	1
5	677	1
7	723	1
5	773	1
3	806	1
3	838	1
3	854	1
5	821	1
5	903	1
5	952	1
5	1003	1
3	1034	1
3	1067	1
3	1105	1
3	1149	1
3	1196	1
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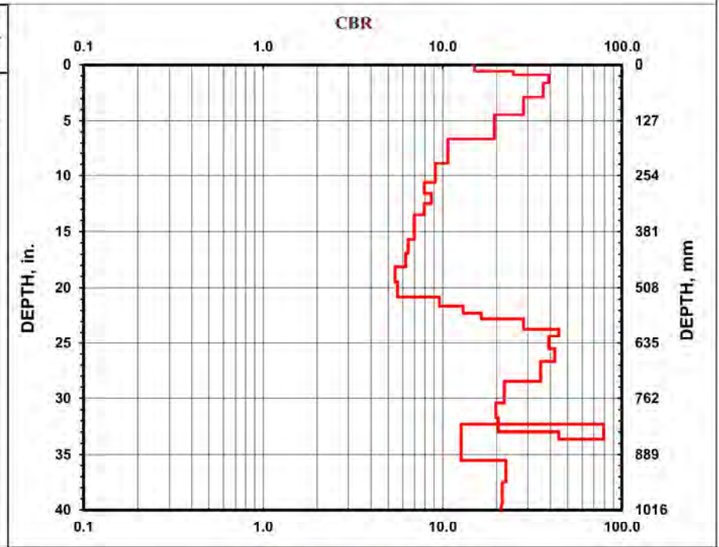
		1
		1
		1



DCP TEST DATA

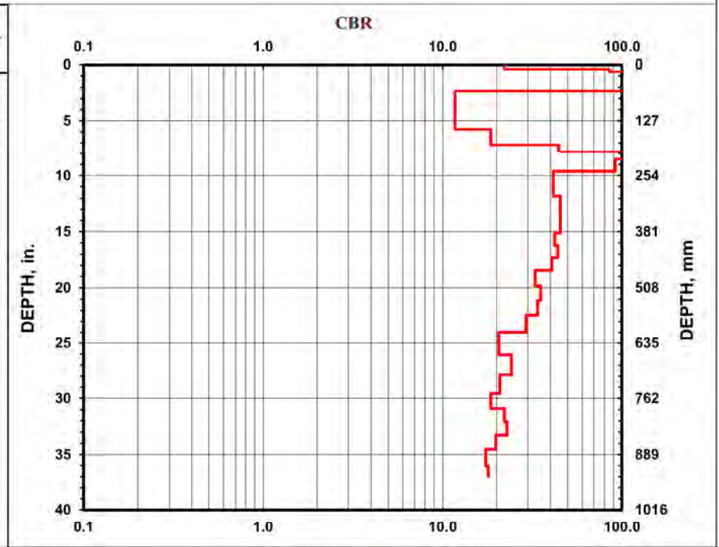
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_77+98_25RT
Date: 5-Mar-18
Soil Type(s): Clay (A-6)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	10	1
2	16	1
3	21	1
5	26	1
10	50	1
6	59	1
5	147	1
3	182	1
3	198	1
3	205	1
5	216	1
10	244	1
10	301	1
8	343	1
8	385	1
5	413	1
5	440	1
5	469	1
5	504	1
5	537	1
5	571	1
5	610	1
5	663	1
5	709	1
4	751	1
3	786	1
3	816	1
3	845	1
3	878	1
3	915	1
1	927	1
1	939	1
		1
		1
		1
		1
		1
		1
		1
		1
		1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_85+97_3LT
Date: 5-Mar-18
Soil Type(s): Silty Sand (A-2-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	308	1
1	318	1
3	333	1
5	354	1
7	374	1
10	401	1
10	428	1
10	448	1
10	471	1
15	507	1
15	547	1
15	589	1
15	625	1
15	668	1
15	726	1
10	765	1
7	798	1
5	819	1
10	865	1
10	904	1
10	929	1
10	955	1
10	986	1
10	1013	1
10	1044	1
10	1071	1
10	1099	1
10	1128	1
10	1154	1
10	1179	1
8	1204	1
		1
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		1
		1
		1
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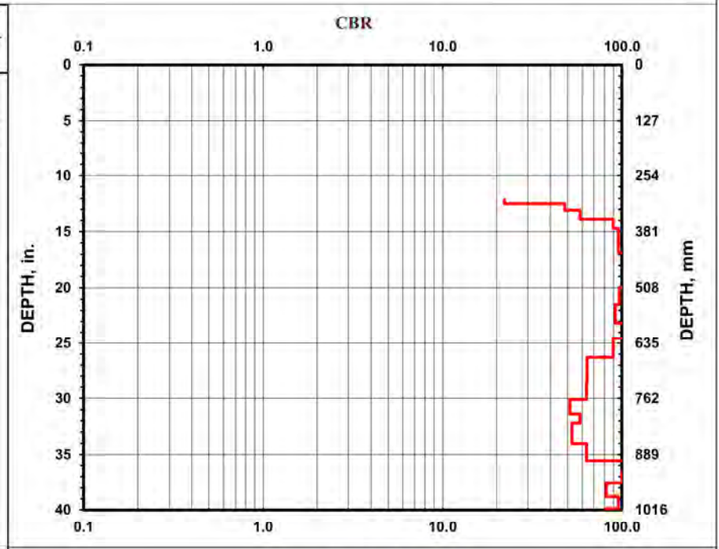
		1
		1
		1
		1
		1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_94+03_31LT
Date: 2-Mar-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	49	1
1	57	1
1	62	1
3	71	1
5	87	1
10	108	1
15	128	1
15	150	1
15	181	1
10	215	1
5	249	1
3	283	1
3	323	1
2	355	1
2	386	1
2	423	1
1	443	1
1	462	1
1	481	1
1	499	1
1	515	1
1	531	1
1	544	1
1	553	1
2	564	1
10	602	1
4	637	1
3	666	1
3	702	1
3	740	1
4	772	1
6	804	1
6	839	1
6	874	1
6	903	1
3	927	1
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		1
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		1
		1
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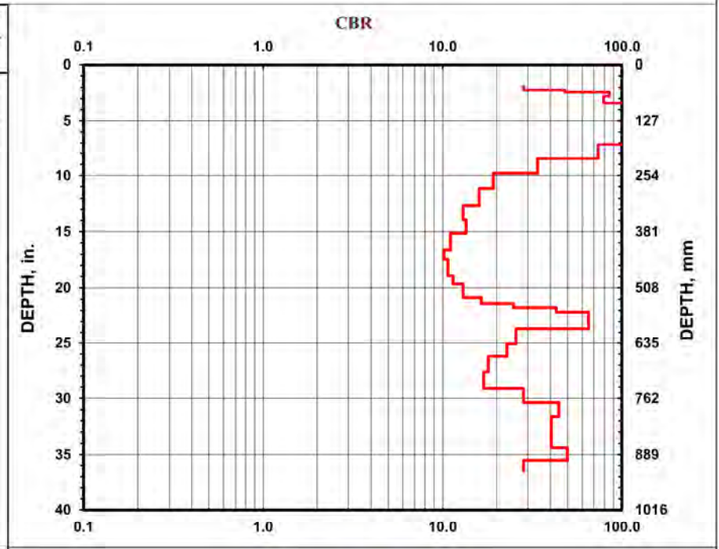

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_102+05_6LT
Date: 22-Feb-18
Soil Type(s): Sandy Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	190	1
1	229	1
1	253	1
1	270	1
1	283	1
1	297	1
1	309	1
1	321	1
1	335	1
2	368	1
2	392	1
2	414	1
2	437	1
2	466	1
2	500	1
2	528	1
2	557	1
2	581	1
2	609	1
2	633	1
2	656	1
2	680	1
2	705	1
2	727	1
2	752	1
2	777	1
2	803	1
2	825	1
2	853	1
2	877	1
2	908	1
2	939	1
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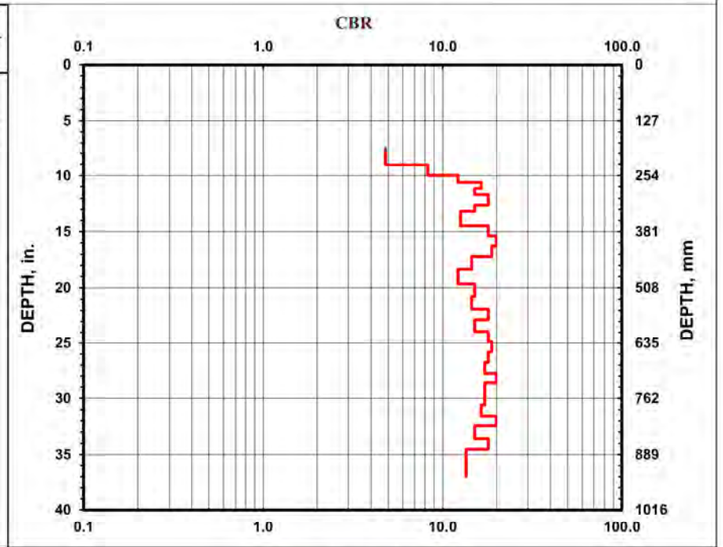

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_109+96_8RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
5	11	1
5	21	1
10	57	1
15	112	1
4	142	1
5	213	1
3	235	1
3	285	1
3	327	1
3	380	1
2	436	1
1	470	1
1	511	1
1	548	1
1	576	1
1	605	1
1	640	1
1	676	1
1	712	1
1	751	1
1	786	1
1	823	1
1	857	1
1	894	1
1	932	1
		1
		1
		1
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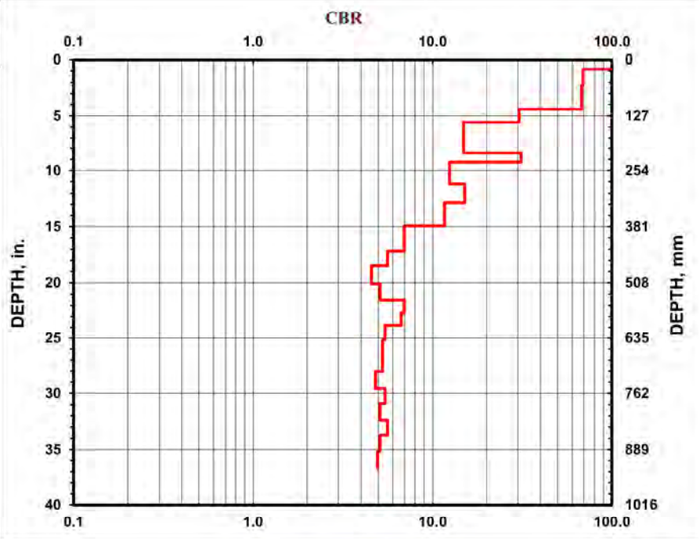


DCP TEST DATA

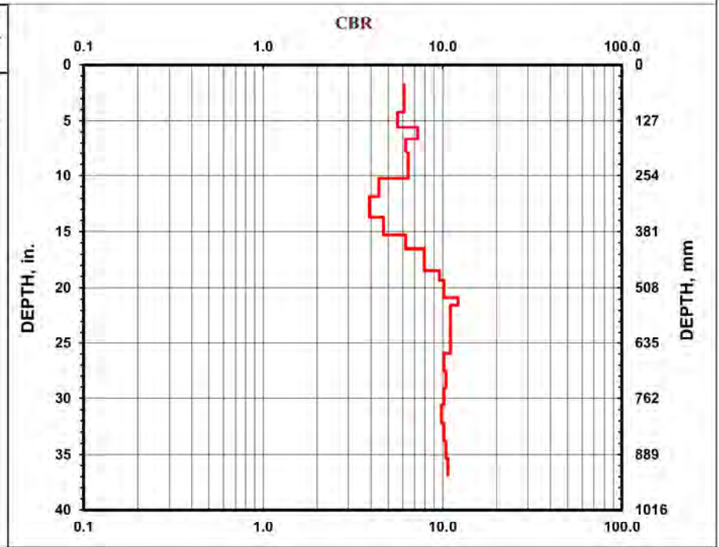
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_115+04_36RT
Date: 19-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	45	1
2	108	1
1	142	1
1	169	1
1	200	1
1	230	1
1	260	1
1	302	1
1	349	1
1	389	1
1	420	1
1	445	1
1	470	1
1	491	1
1	511	1
1	531	1
1	548	1
2	585	1
2	622	1
2	659	1
2	699	1
2	738	1
2	778	1
2	819	1
2	859	1
2	898	1
2	936	1



DCP TEST DATA

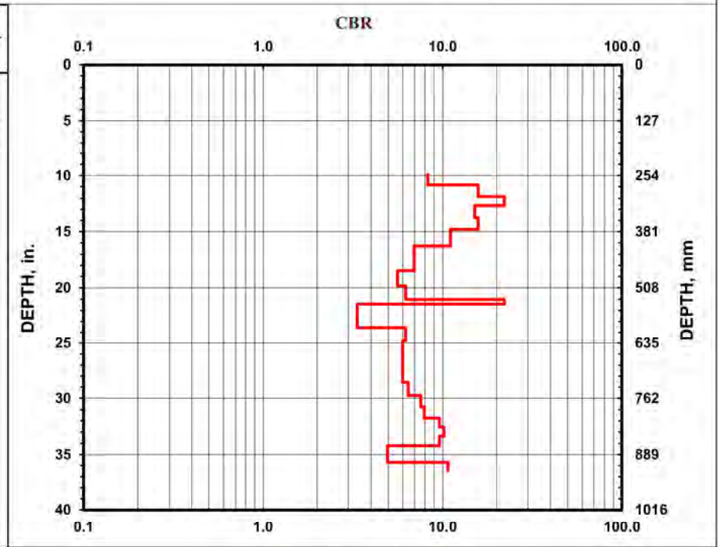
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_118+05_30RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	251	1
1	275	1
2	302	1
2	322	1
2	350	1
2	377	1
2	414	1
2	470	1
1	504	1
1	535	1
1	545	1
1	599	1
1	630	1
1	662	1
1	694	1
1	726	1
1	756	1
1	782	1
1	807	1
1	828	1
1	848	1
1	869	1
1	907	1
1	926	1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_121+48_27LT
Date: 21-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	36	1
1	72	1
1	109	1
1	152	1
1	188	1
1	216	1
1	242	1
1	266	1
1	293	1
1	317	1
1	344	1
1	373	1
1	403	1
1	434	1
1	461	1
1	487	1
1	514	1
1	540	1
1	571	1
1	602	1
1	636	1
1	670	1
1	705	1
1	743	1
1	782	1
1	816	1
1	849	1
1	883	1
1	915	1
		1
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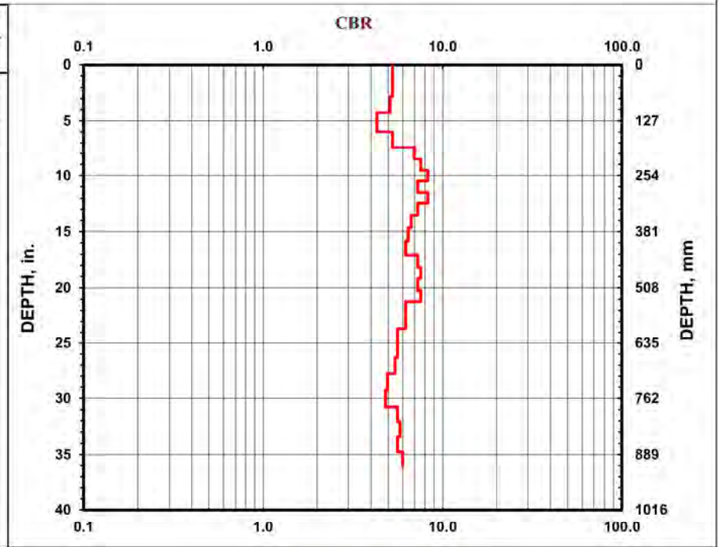

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_125+98_13LT
Date: 21-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	149	1
1	205	1
1	233	1
1	256	1
1	271	1
1	283	1
1	289	1
3	307	1
5	316	1
6	331	1
10	382	1
10	436	1
5	495	1
5	563	1
3	597	1
3	628	1
3	657	1
3	687	1
3	716	1
3	744	1
3	772	1
3	803	1
3	831	1
3	852	1
3	877	1
3	896	1
3	919	1
2	932	1
		1
		1
		1
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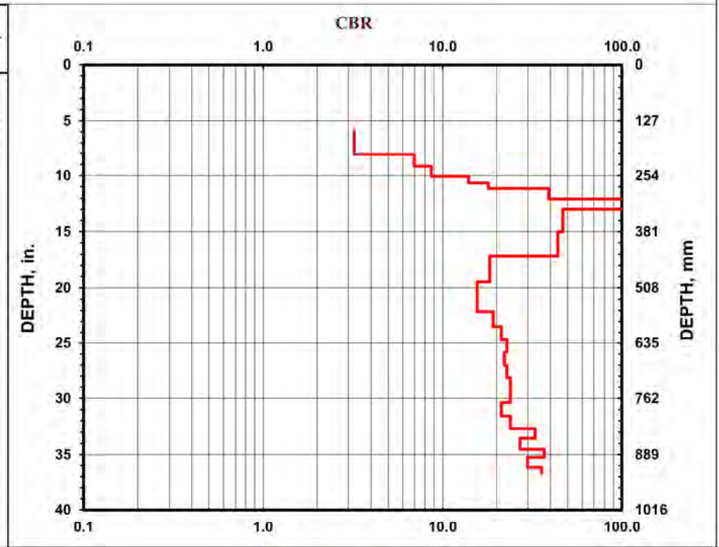

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 21-Feb-18
Location: L_127+53_41LT **Soil Type(s):** Sandy Clay (A-6)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	34	1
1	43	1
1	60	1
1	79	1
2	110	1
2	147	1
2	181	1
2	212	1
2	248	1
2	282	1
2	320	1
2	358	1
2	396	1
2	429	1
2	460	1
2	488	1
2	517	1
2	546	1
2	575	1
2	606	1
2	631	1
2	649	1
2	669	1
2	692	1
2	719	1
2	748	1
2	775	1
2	802	1
2	826	1
2	851	1
2	874	1
2	895	1
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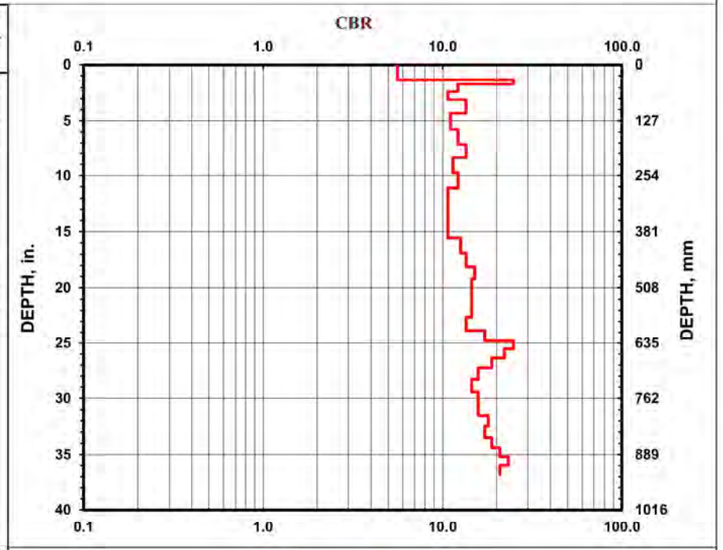

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 1-Mar-18
Location: L_133+98_28LT **Soil Type(s):** Clay (A-6)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	49	1
1	98	1
1	126	1
1	152	1
1	176	1
1	202	1
1	237	1
1	280	1
1	315	1
1	332	1
1	349	1
1	370	1
1	398	1
1	433	1
1	460	1
1	485	1
1	497	1
1	524	1
1	546	1
1	566	1
1	581	1
1	602	1
1	616	1
2	642	1
2	660	1
2	678	1
2	698	1
2	725	1
2	745	1
2	760	1
2	787	1
2	817	1
2	848	1
2	876	1
2	902	1
2	924	1
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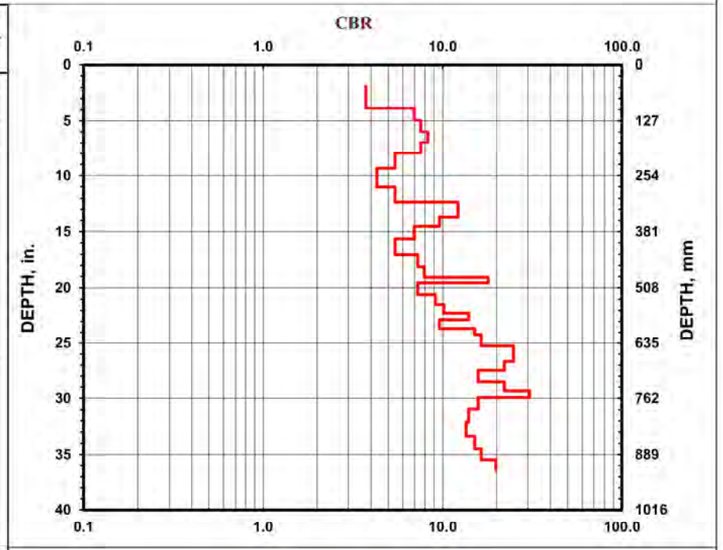


DCP TEST DATA

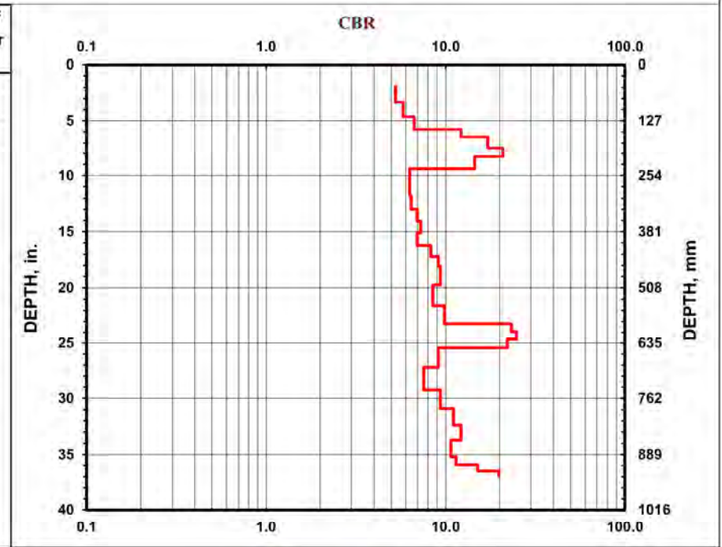
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_138+52_36RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	49	1
1	85	1
1	118	1
1	147	1
1	164	1
2	189	1
2	210	1
2	239	1
2	300	1
1	330	1
1	358	1
1	385	1
1	413	1
1	437	1
1	459	1
2	502	1
2	549	1
2	590	1
2	609	1
2	627	1
2	647	1
2	691	1
2	743	1
2	786	1
2	823	1
2	857	1
2	895	1
1	913	1
1	927	1
1	938	1



DCP TEST DATA

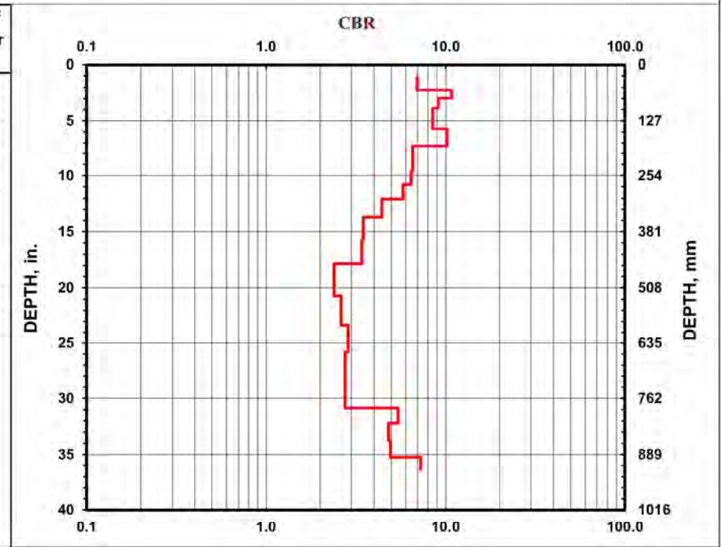
File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_141+99_2LT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer
- ○ 10.1 lbs.
- ● 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	29	1
1	57	1
1	76	1
1	98	1
2	145	1
2	185	1
2	244	1
1	274	1
1	307	1
1	349	1
1	401	1
1	454	1
1	527	1
1	594	1
1	656	1
1	720	1
1	784	1
1	819	1
1	858	1
1	896	1
1	923	1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_145+01_36RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	46	1
1	79	1
1	106	1
1	122	1
1	134	1
2	150	1
3	162	1
5	196	1
5	231	1
5	269	1
5	306	1
5	330	1
5	360	1
5	383	1
5	412	1
5	460	1
3	500	1
3	530	1
3	560	1
3	584	1
3	604	1
3	629	1
3	658	1
3	688	1
3	712	1
3	743	1
3	777	1
3	812	1
3	840	1
3	868	1
3	893	1
3	920	1
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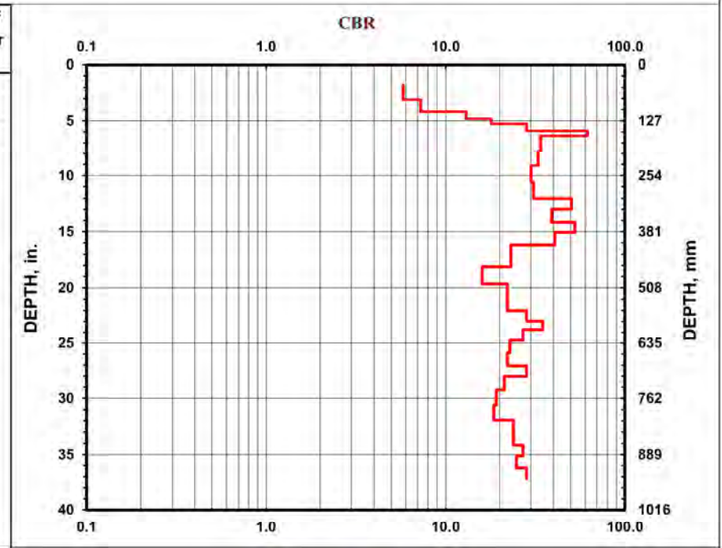

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_147+06_36LT
Date: 21-Feb-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ● 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ● All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	20	1
1	64	1
1	102	1
1	129	1
1	165	1
1	208	1
1	251	1
1	295	1
1	342	1
1	404	1
1	472	1
1	560	1
1	648	1
1	742	1
1	815	1
1	876	1
1	940	1
		1
		1
		1
		1
		1
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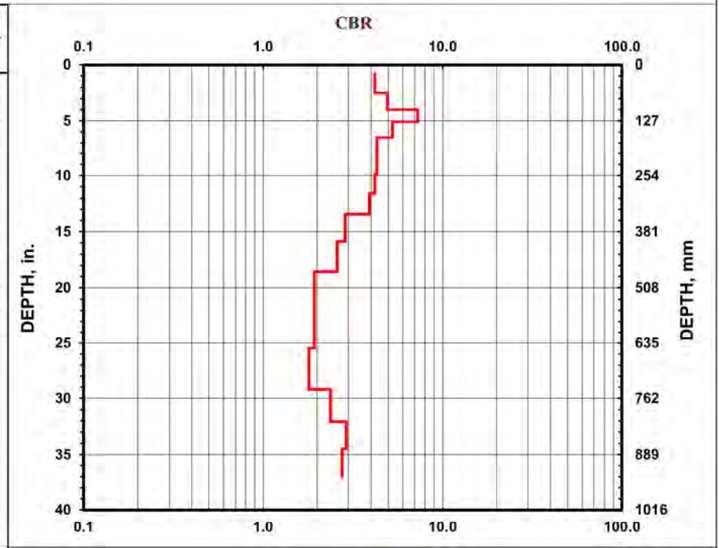

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_150+02_9RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs, ◉ 17.6 lbs, ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	15	1
1	23	1
1	29	1
2	40	1
2	52	1
5	82	1
5	105	1
5	129	1
5	179	1
3	225	1
2	258	1
2	293	1
2	335	1
2	390	1
1	414	1
1	435	1
1	457	1
1	484	1
1	510	1
1	534	1
1	562	1
1	592	1
1	617	1
1	636	1
2	684	1
2	738	1
1	764	1
1	788	1
1	822	1
1	847	1
1	870	1
1	891	1
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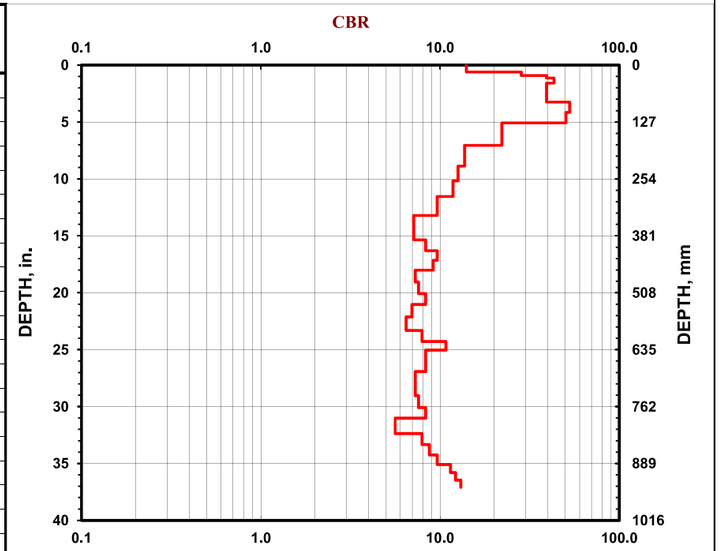
		1
		1
		1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.*
Location: L_152+01_36RT
Date: 20-Feb-18
Soil Type(s): Silt (A-4)

Hammer: ○ 10.1 lbs. ◉ 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	13	1
1	21	1
3	35	1
5	62	1
5	84	1
8	117	1
8	150	1
8	183	1
8	212	1
10	244	1
10	270	1
10	295	1
15	336	1
15	376	1
10	406	1
10	433	1
15	473	1
15	513	1
15	556	1
15	605	1
15	672	1
5	712	1
5	749	1
5	780	1
5	792	1
10	821	1
10	845	1
10	866	1
10	885	1
10	906	1
10	930	1
3	937	1
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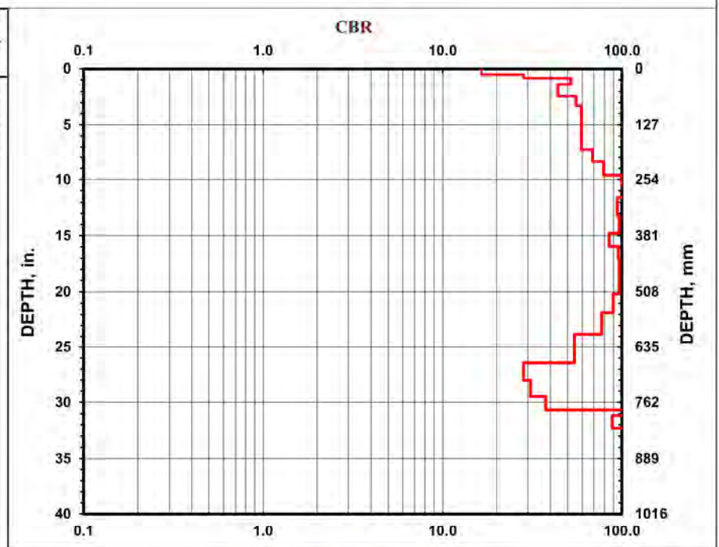

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 20-Feb-18
Location: L_157+97_26RT **Soil Type(s):** Sandy Clay (A-6)

Hammer: ○ 10.1 lbs, ◉ 17.6 lbs, ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	164	1
1	193	1
1	220	1
1	227	1
1	245	1
1	264	1
1	289	1
2	324	1
2	367	1
2	404	1
2	434	1
5	465	1
10	481	1
20	486	1
25	491	1
25	496	1
		1
		1
		1
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		1
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		1
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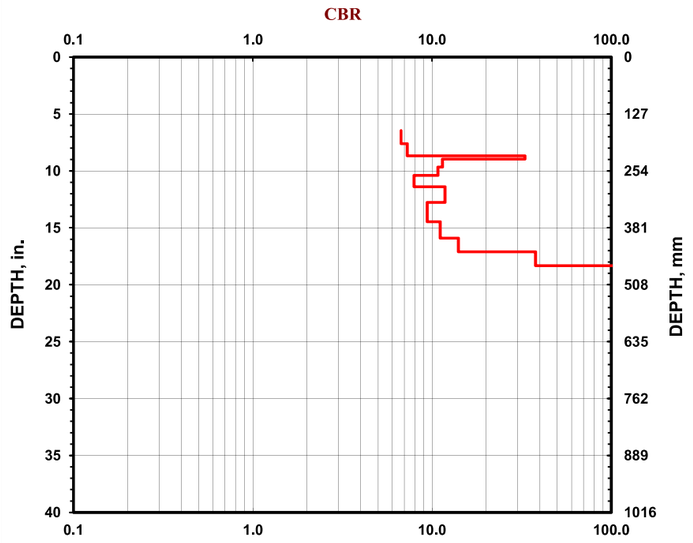

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 20-Feb-18
Location: L_162+00_60RT **Soil Type(s):** Sandy Clay (A-6)

Hammer: ○ 10.1 lbs. ◉ 17.6 lbs. ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
1	60	1
1	85	1
1	106	1
1	130	1
1	161	1
1	189	1
1	224	1
1	265	1
1	309	1
1	354	1
1	382	1
1	406	1
1	435	1
1	457	1
1	477	1
1	499	1
1	522	1
1	542	1
1	560	1
1	579	1
1	600	1
1	623	1
1	645	1
1	667	1
1	685	1
1	707	1
1	728	1
1	749	1
1	771	1
1	793	1
1	814	1
1	835	1
1	854	1
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1	906	1
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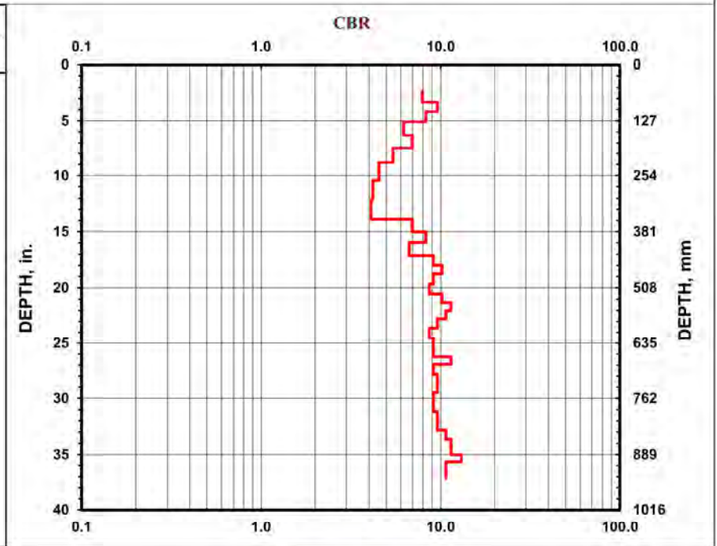
		1
		1



DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 21-Feb-18

Location: L_166+09_1RT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs, ◉ 17.6 lbs, ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	1
2	21	1
3	53	1
4	101	1
4	141	1
5	194	1
4	248	1
2	280	1
2	317	1
2	360	1
2	399	1
2	436	1
2	470	1
2	509	1
2	549	1
2	586	1
2	617	1
2	642	1
2	664	1
3	687	1
3	715	1
3	740	1
3	767	1
3	795	1
3	823	1
3	851	1
3	877	1
3	901	1
3	924	1
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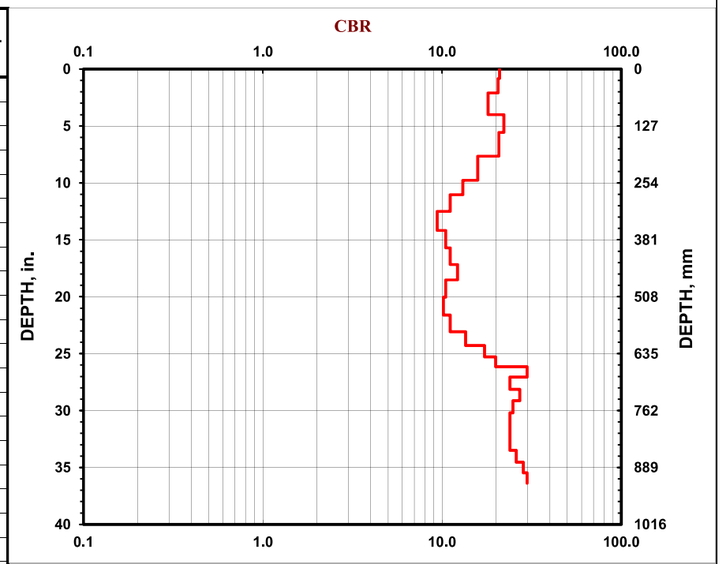

DCP TEST DATA

File Name: G17038

Project: *US-421 Superstreet Wilkes Co.* **Date:** 21-Feb-18

Location: L_170+00_25LT **Soil Type(s):** Silt (A-4)

Hammer: ○ 10.1 lbs, ◉ 17.6 lbs, ○ Both hammers used

Soil Type: ○ CH ○ CL ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	84	1
1	113	1
1	150	1
1	172	1
1	198	1
1	225	1
1	250	1
1	278	1
1	304	1
1	335	1
1	371	1
1	400	1
1	413	1
1	437	1
1	447	1
1	460	1
2	483	1
3	515	1
3	546	1
3	588	1
2	621	1
2	649	1
2	664	1
3	675	1
5	677	1
15	678	1
25	687	1
25	688	1
		1
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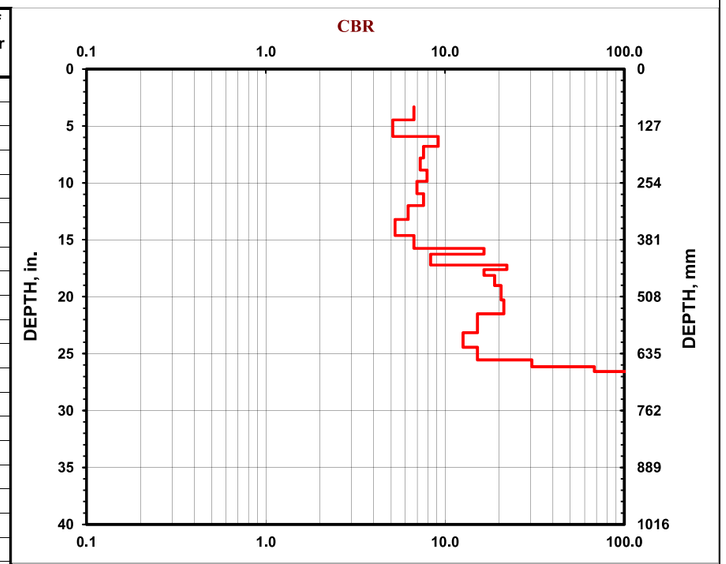


DCP TEST DATA

File Name: G17038

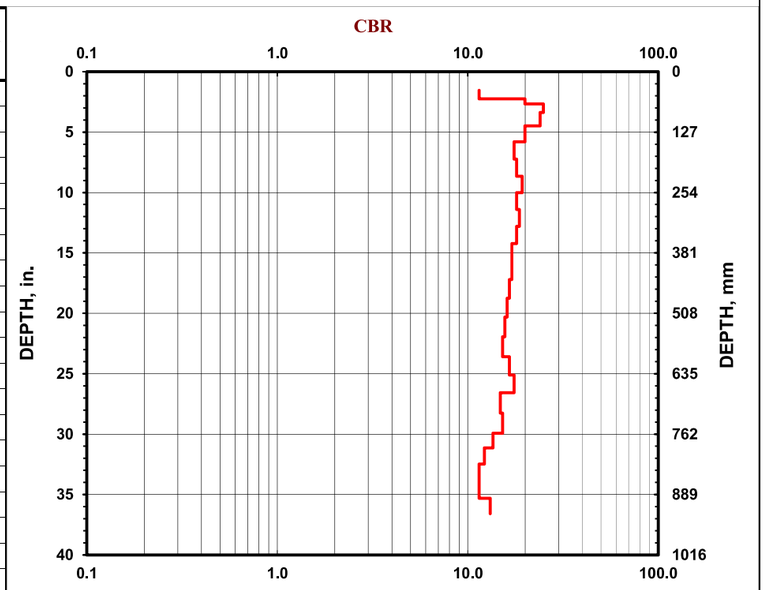
Project: *US-421 Superstreet Wilkes Co.* **Date:** 22-Feb-18

Location: Y10_20+49_13' LT **Soil Type(s):** Silty Sand (A-2-4)

Hammer
- ○ 10.1 lbs.
- ◉ 17.6 lbs.
- ○ Both hammers used

Soil Type
- ○ CH
- ○ CL
- ◉ All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	39	1
1	57	1
1	68	1
2	86	1
3	114	1
3	147	1
3	184	1
3	220	1
3	254	1
3	290	1
3	325	1
3	361	1
3	399	1
3	437	1
3	476	1
3	516	1
3	557	1
3	599	1
3	638	1
3	675	1
3	718	1
3	760	1
2	791	1
2	825	1
2	861	1
2	897	1
2	929	1



PROJECT REFERENCE NO.	SHEET NO.
U–5312	61

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
LABORATORY RESULTS

REFERENCE: U–5732

PROJECT: 45446

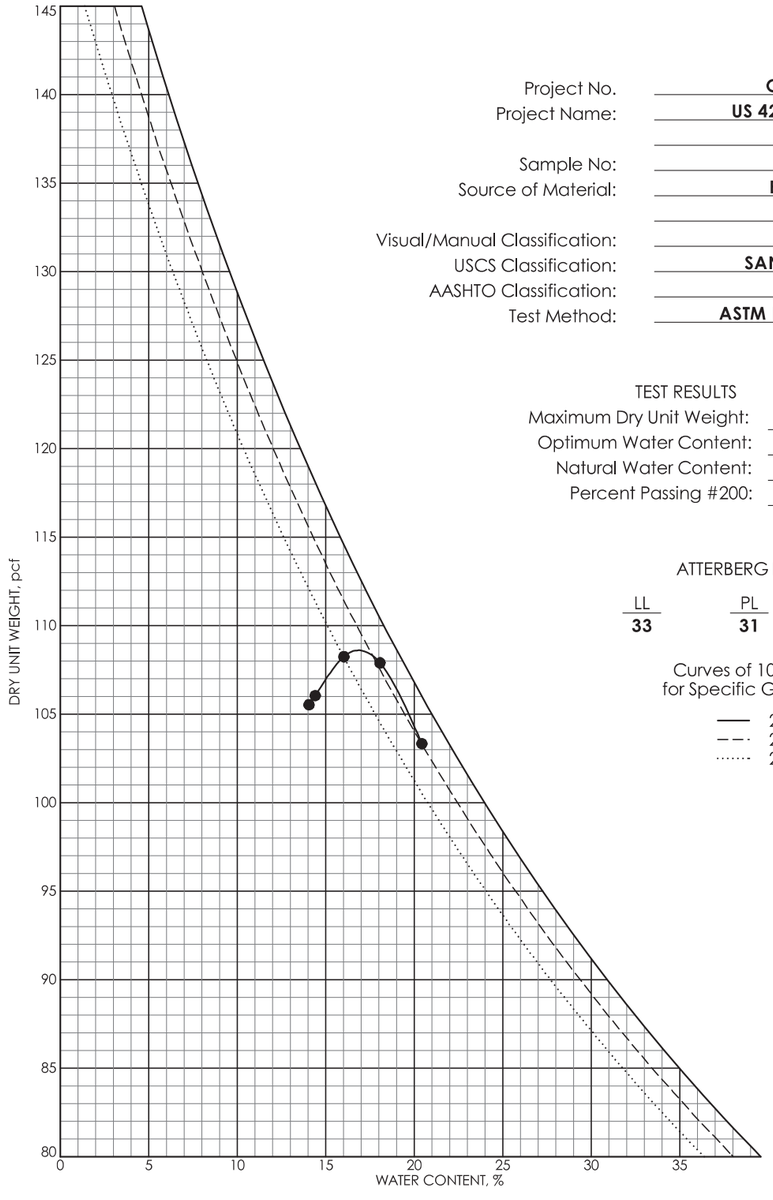
DS
WSH 10/7/2021
INITIALS DATE

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800
www.falconengineers.com

LABORATORY COMPACTION TEST RESULTS

5/16/2018



Project No.	**G17038.00**
Project Name:	**US 421 Superstreet**
Sample No:	**BS-1**
Source of Material:	**B-16 AP-4**
Visual/Manual Classification:	
USCS Classification:	**SANDY SILT(ML)**
AASHTO Classification:	**A-4**
Test Method:	**ASTM D698 Method B**

TEST RESULTS

Maximum Dry Unit Weight:	**108.6 PCF**
Optimum Water Content:	**16.9 %**
Natural Water Content:	**18.5 %**
Percent Passing #200:	**53.2 %**

ATTERBERG LIMITS

LL	PL	PI
33	**31**	**2**

Curves of 100% Saturation for Specific Gravity Equal to:

—— 2.6
– – – 2.5
····· 2.4

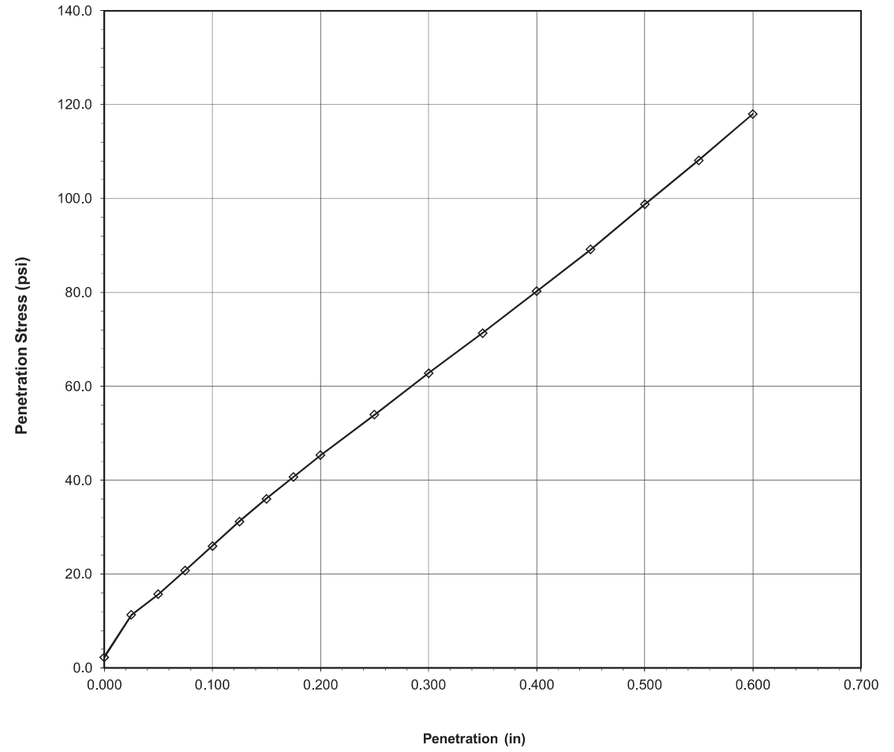
SINGLE POINT CBR TEST

ASTM D 1883-16

Client	Falcon Engineering	Boring No.	B-16 AP-A
Client Reference	G17038.00	Depth(ft.)	3.5-8.5
Project No.	R-2018-136-001	Sample No.	BS-1
Lab ID	R-2018-136-001-001	Visual Description	BROWN SANDY CLAY

CBR VALUE (0.1") 2.6 %
CBR VALUE (0.2") 3.0 %

Penetration Stress vs. Penetration



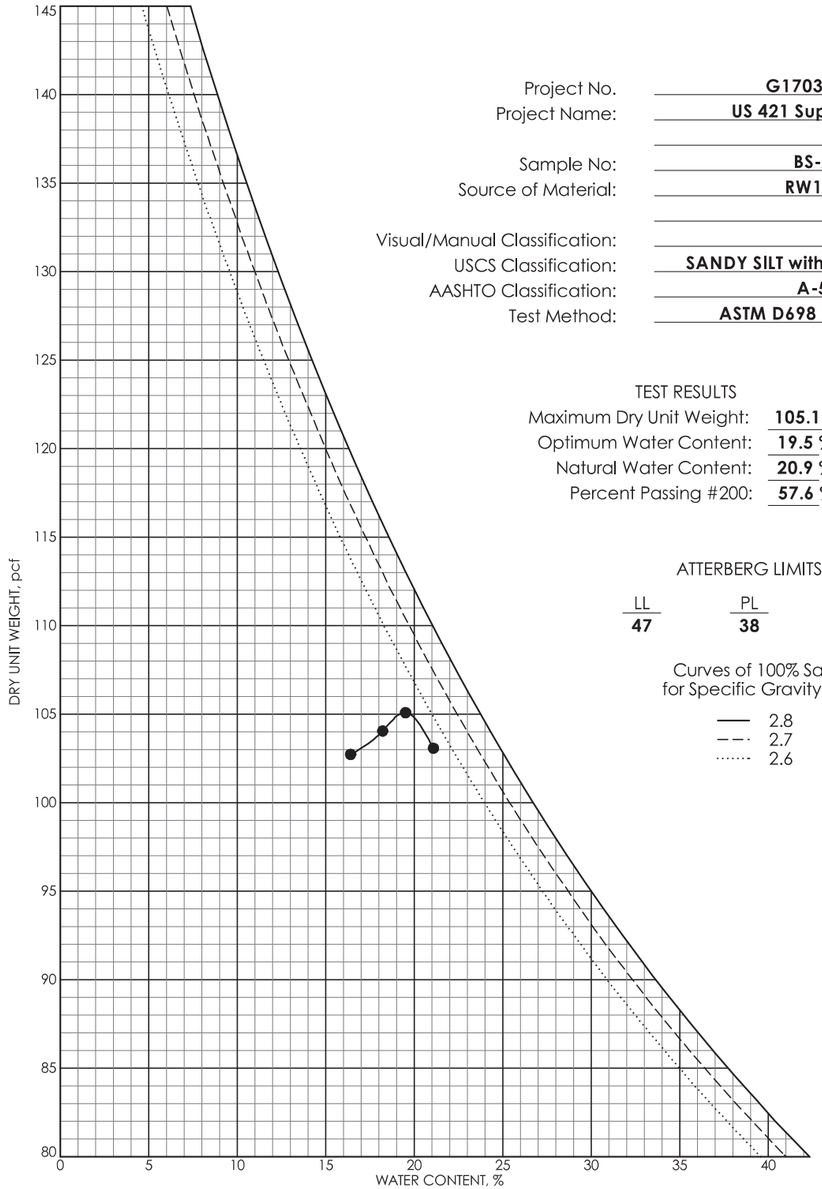
Tested By APG *Date* 5/17/18 *Approved By* MPS *Date* 5/22/18

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

PHONE: 919.871.0800
www.falconengineers.com

LABORATORY COMPACTION TEST RESULTS

5/16/2018



Project No.	**G17038.00**
Project Name:	**US 421 Superstreet**
Sample No:	**BS-2**
Source of Material:	**RW1-3**
Visual/Manual Classification:	
USCS Classification:	**SANDY SILT with GRAVEL(ML)**
AASHTO Classification:	**A-5**
Test Method:	**ASTM D698 Method B**

TEST RESULTS

Maximum Dry Unit Weight:	**105.1 PCF**
Optimum Water Content:	**19.5 %**
Natural Water Content:	**20.9 %**
Percent Passing #200:	**57.6 %**

ATTERBERG LIMITS

LL	PL	PI
47	**38**	**9**

Curves of 100% Saturation for Specific Gravity Equal to:

—— 2.8
– – – 2.7
····· 2.6

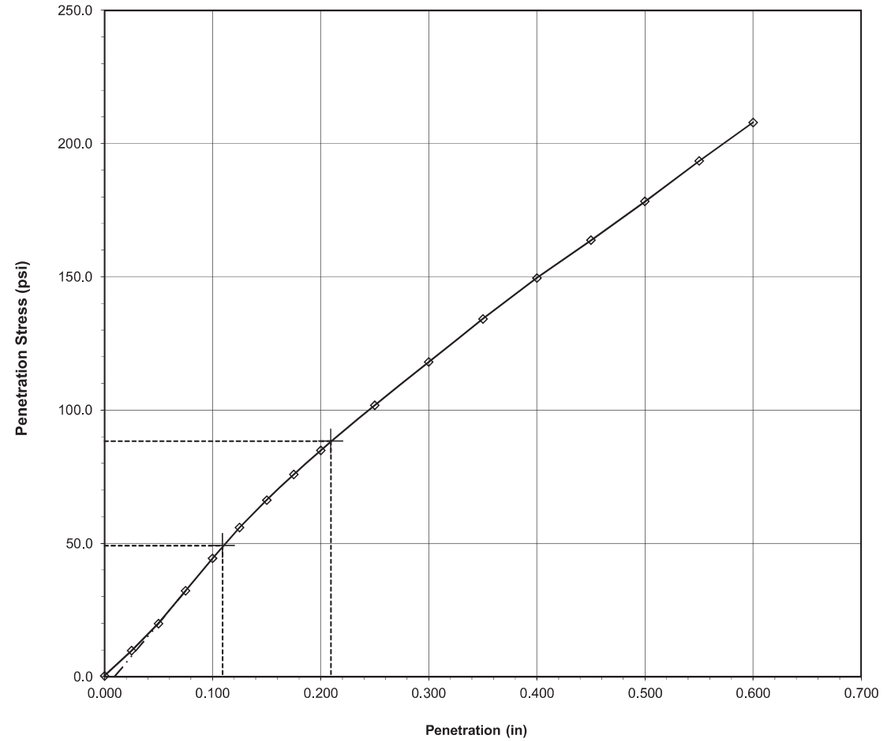
SINGLE POINT CBR TEST

ASTM D 1883-16

Client	Falcon Engineering	Boring No.	RW1-3
Client Reference	G17038.00	Depth(ft.)	18.5-31.5
Project No.	R-2018-136-001	Sample No.	BS-2
Lab ID	R-2018-136-001-002	Visual Description	RED/BROWN SANDY CLAY

CBR VALUE (0.1")	**4.4 %**
CBR VALUE (0.2")	**5.7 %**
CORRECTED CBR VALUE (0.1")	**4.9 %**
CORRECTED CBR VALUE (0.2")	**5.9 %**

Penetration Stress vs. Penetration



Tested By APG *Date* 5/17/18 *Approved By* MPS *Date* 5/22/18

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