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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2530B	1	131

REFERENCE: R-2530B

PROJECT: 34446

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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-Y11-	10+00 - 12+75	20	49
-Y12-	10+00 - 16+72	22	50
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CROSS SECTIONS

LINE	STATION	SHEETS
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-L-	111+00	60
-L-	120+00	61
-L-	123+00 - 126+50	62-69
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-L-	185+00 - 194+50	75-90
-L-	201+50 - 203+00	91-94
-L-	274+00	95
-L-	278+00	96
-L-	298+50 - 299+50	97-99
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *STANLY*

PROJECT DESCRIPTION *NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER*

INVENTORY

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

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

PERSONNEL

GOODNIGHT, D. J.

HPC

INVESTIGATED BY *DJG*

DRAWN BY *HUNSBERGER, W. S.*

CHECKED BY *HAMM, J. R.*

SUBMITTED BY *FALCON*

DATE *APRIL 2017*

NORTH CAROLINA PROFESSIONAL SEAL 36283 ENGINEER W. SCOTT HUNSBERGER

DocuSigned by:
W. Scott Hunsberger
EA39AB9EDF5845A...

4/25/2017

SIGNATURE DATE

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PROJECT REFERENCE NO.	SHEET NO.
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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 EXCAVATION
- 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
- [X] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] DIEDRICH D-50
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B _____ [ ] -H _____
- [X] -N Q2

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 COLLECTED USING "r2530b_ls_tin.tin"
DATED 9/28/16. ELEVATION: FEET

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING

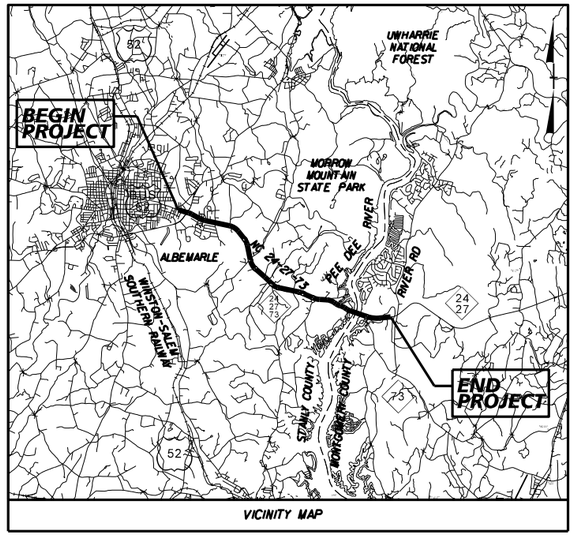
DATE: 8-15-14

09/08/99

TIP PROJECT: R-2530B/B-4974

CONTRACT: C203751

$DATE$



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2530B/B-4974	3	131

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34446.1.6	BRSTP-0024(33)	P.E.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

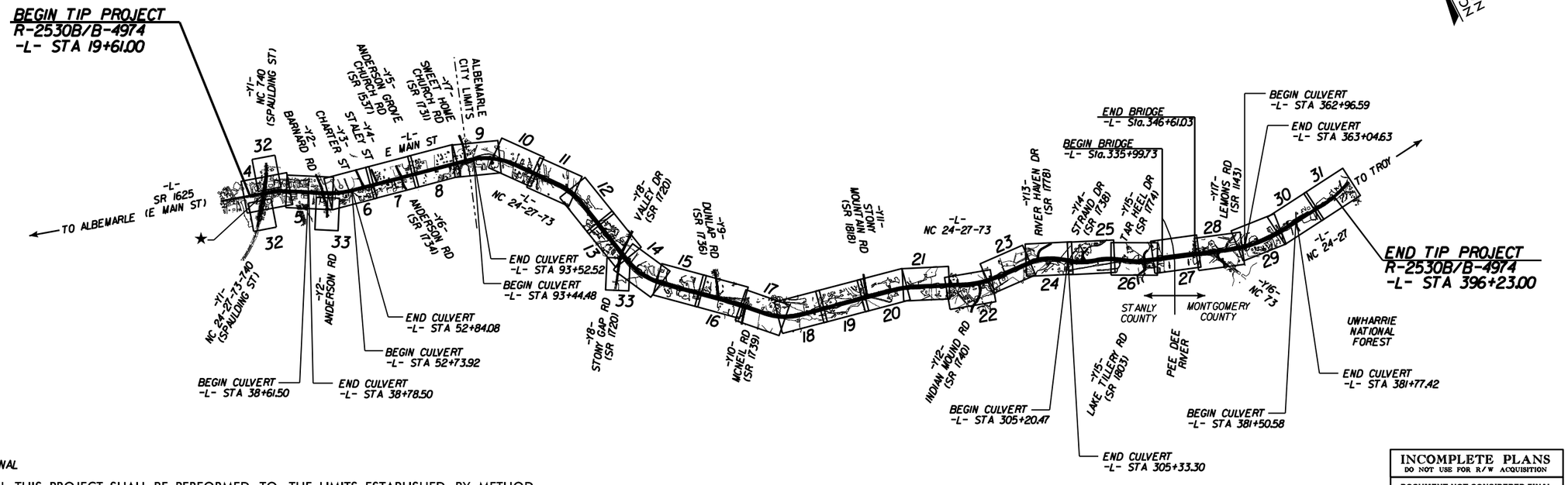
STANLY & MONTGOMERY COUNTIES

APPROVED 25% PLANS

LOCATION: *NC 24–27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER*

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

NC NAD 83'95



★ *TRAFFIC SIGNAL*

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ___
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF ALBEMARLE

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

AADT 2019 = 16,400
AADT 2039 = 21,500
K = 9%
D = 55%
T = 10%*
V = 50/60 MPH
* (TTST 4% + DUAL 6%)
FUNCTIONAL CLASSIFICATION: URBAN/RURAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2530B /B-4974 = 6.932 MILES
LENGTH STRUCTURE TIP PROJECT R-2530B /B-4974 = 0.201 MILES
TOTAL LENGTH TIP PROJECT R-2530B /B-4974 = 7.133 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn
© 2016
NC LICENSE #F-0102
P.O. BOX 33068
RALEIGH, NORTH CAROLINA 27636
PHONE: (919) 677-2000

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 19, 2017

LETTING DATE:
MARCH 19, 2019

JEFFREY W. MOORE, P.E.
PROJECT ENGINEER

RHODES S. HUNT, EIT
PROJECT DESIGN ENGINEER

THAD DUNCAN, P.E.
PROJECT DESIGN ENGINEER
NCDOT ROADWAY DESIGN ENGINEERING COORDINATION SECTION

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

Roadway Subsurface Investigation Report - Inventory

NC 24-27 From NC 740 in Albemarle to East of the Pee Dee River
Stanly and Montgomery Counties, North Carolina
WBS: 34446.1.6 TIP: R-2530B
Falcon Project No.: G16056.00

Prepared for:
NCDOT Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, NC 27699-1589

Submitted by:
Falcon Engineering, Inc.
1210 Trinity Road, Suite 110
Raleigh, North Carolina 27607
(919) 871-0800
www.falconengineers.com

April 23, 2017

WBS:	34446.1.6
TIP:	R-2530B
Project ID:	29226
COUNTY:	Stanly
DESCRIPTION:	NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
SUBJECT:	Roadway Subsurface Investigation – Inventory

PROJECT DESCRIPTION

This project consists of 7.1 miles of proposed new roadway, realignment, and widening in Stanly and Montgomery Counties. An additional two lanes of new roadway will be constructed parallel to the existing two lane US 24-27. NC 73 will be realigned at the intersection with NC 24-27 east of the Pee Dee River. Multiple side streets and attached drives will be widened, realigned, or graded at various locations.

Included in this project are three culverts on alignment -L- over small creeks and waterways and a bridge structure along -L- over the Pee Dee River. The culvert structures were investigated as a part of this investigation. The bridge structure was not investigated as a part of this investigation.

The investigation was conducted between October 19, 2016 and February 13, 2017 in general accordance with our Proposal to Provide Geotechnical Engineering Services, dated October 28, 2016. 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 one hundred and ninety-one (191) Standard Penetration Test (SPT) borings, one hundred (100) auger probe and two (2) hand auger borings were drilled for the proposed roadway alignments. All mechanical borings were drilled using a CME-550X ATV or Diedrich D-50 Track drill 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.

The following alignments, totaling approximately 7.8 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- (NC 24-27)	19+61.00—396+23.00
-Y8- (Stony Gap Rd)	10+00.00—27+09.00
-Y11- (Stony Mountain Rd)	10+00.00—12+75.00
-Y12- (Indian Mound Rd)	10+00.00—16+72.00
-Y16- (NC 73)	10+00.00—16+05.54
-DRW14-	10+00.00—11+30.00
-DRW15-	10+00.00—11+25.00

AREAS OF SPECIAL GEOTECHNICAL INTEREST

I. The following locations contain highly plastic soils with plasticity indices (PI) greater than 25 within 3 feet of proposed subgrade elevations:

Alignment	Station (ft)
-L-	123+00 to 125+00
-L-	174+50 to 179+00
-L-	185+00 to 188+00
-L-	189+25 to 193+75

II. The following locations contain very soft to soft/very loose soils with an N-value less than 4 near the ground surface:

Alignment	Station (ft)
-L-	36+00
-L-	66+00
-L-	112+00

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

Alignment	Station (ft)
-L-	34+00
-L-	52+74
-L-	93+45
-L-	238+00
-L-	293+70
-L-	305+35

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

Alignment	Station (ft)
-L-	116+00
-L-	305+35
-L-	363+00

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

V. Artificial fill was encountered at the following locations:

Alignment	Station (ft)
30+00	30+00
32+00 to 41+00	32+00 to 41+00
46+00	46+00
66+00	66+00
96+00	96+00
104+00	104+00
142+00	142+00
286+00	286+00
293+70 to 296+00	293+70 to 296+00

PHYSIOGRAPHY AND GEOLOGY

The project site is in the Carolina Slate Belt Physiographic Province of North Carolina. According to the ***Geologic Map of North Carolina*** (1985), the site is underlain by three major geologic units in the Carolina Slate Belt Physiographic Provence. The site transitions from west to east across the Floyd Church Formation (**CZmd3**), two units of the Cid Formation (**CZmd2** and **CZfv2**) and the Tillery Formation (**CZmd1**). These units are all of the Cambrian/Late Proterozoic Period. In addition, the ***Geologic Map of the Albemarle Quadrangle, North Carolina*** indicates linear intrusions consisting of Rhyolite dikes (porphyritic rhyolite composed of phenochrysts of orthoclase, oligoclase, and beta quartz in an aphanitic groundmass) and Gabbro sills (horneblende gabbro, sometimes amygdaloidal). These materials form the majority of the notable outcrops and exposed bedrock in roadway cuts which observed along the alignment.

The Floyd Church, Cid and Tillery formations are noted to consist of Metamudstone and Meta-Argillite, thin to thick bedded, bedding plane and axial-planar cleavage common, interbedded with metasandstone, metaconglomerate and metavolcanic rock. A felsic metavolcanic portion of the Cid Formation (**CZfv2**) crosses the central portion of the project site and is noted to consist of Felsic Metavolcanic Rock, metamorphosed dactic to rhyolitic flows and tuffs, light gray to greenish gray, interbedded with mafic and intermediate metavolcanic rock, meta-argillite and metamudstone.

Existing site topography is typical of North Carolina's foothills region. The site lies along the southern portion of the Uwharrie Mountains, an ancient mountain range that has been heavily eroded to elevations not exceeding 1,200 feet. While not comparable to larger ranges in the mountain region of North Carolina, the terrain in this area is more rugged than the surrounding piedmont terrain. The corridor begins from near the center of the Town of Albemarle, and various residential and commercial properties border the corridor. As the corridor progresses westward, bordering properties become gradually more agricultural and/or undeveloped and wooded in nature. The corridor crosses Lake Tillery (an impoundment of the Pee Dee River) between approximate stations 335+00 and 347+00, before reaching the eastern project terminus around 4,900 feet beyond the eastern bank of the Lake. Topography generally grades upward in either direction away from Lake Tillery.

SOIL PROPERTIES

A variety of soils were encountered along the project, including existing roadway embankments, alluvial deposits, residual soils, weathered rock and crystalline and non-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 1.0 feet, and typically on the order of 0.4 to 0.7 feet.

Cultivated soils were in agricultural lands ranging in thickness from 0.3 to 1.2 feet, and typically on the order of 0.8 feet. These soils consist of wet, silty sand (A-2-4) and sandy silt (A-4) with organic staining and some vegetative matter from recent crops.

Artificial Fill soils were encountered at the ground surface beneath and adjacent to existing roadways. These consist of 3 to 10 feet of moist, loose to medium dense, silty sand (A-2-4) and moist, very soft to very stiff, sandy silt and sandy and silty clay (A-4, A-5, A-6, A-7).

Roadway Embankment soils were encountered at the ground surface beneath and adjacent to existing roadways. These consist of 3 to 17 feet of moist, loose to medium dense, silty sand (A-2-4) and moist, soft to very stiff, sandy silt (A-4 and A-5).

Alluvial soils were encountered at the ground surface near the historic floodplains of natural waterways and presumably extend beneath nearby roadway embankments at the locations encountered. These soils extended to depths of up to approximately 4 feet and consist of moist to wet, medium soft to stiff sandy silt (A-4) 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 saturated, very loose to very dense, clayey and silty sand (A-2-6, A-2-7,A-2-4, A-2-5) and very soft to hard, 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 gray weathered metamudstone or metavolcanic rock.

Non-Crystalline rock, in the form of metamudstone and metavolcanic rock, and Crystalline Rock, in the form of Gabbro, was encountered beneath weathered rock, residual soils, or alluvial soils at various locations throughout the site, and is visible in various outcrops and cut exposures along the corridor. Surficial rock exposures are approximately mapped on the boring location plans, including strike and dip measurements where discernable.

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 livestock areas were backfilled immediately after completion due to safety considerations.

The project crosses small streams and tributaries as well as roadway drainage ditches. Groundwater was observed at shallow depths near these streams and in low lying areas. Detailed groundwater measurements are included in the attached subsurface profiles and cross sections, and noted areas of shallow groundwater are included in the Areas of Special Geotechnical Interest earlier in this report.

ADDITIONAL LABORATORY TESTING

The following bulk samples were obtained:

Sample	Location	Depth (ft)	Test
BS-1	78+00, 20’ RT, -L-	1 – 6.0	California Bearing Ratio, Standard Proctor
BS-2	188+00, 5’RT, -L-	1 – 13.0	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:

DocuSigned by:
W. Scott Hunsberger
EA39AB9EDF5845A...

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Geotechnical Engineer

Report Reviewed By:

DocuSigned by:
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Geotechnical Engineering Manager

Investigated By:

DocuSigned by:
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Engineering Geologist

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	4

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

REVISIONS

$DATE$

NC GRID NAD 83/95

MATCHLINE -Y1- STA 16+00 (SEE SHEET 32)

-Y1- PT Sta. 17+84.52

-L- POT Sta. 24+13.01 =
-Y1- POT Sta. 20+02.06
Δ = 110°28'34"

-L- PC Sta. 26+25.08

S 73° 25' 41.0" E

RALEIGH HWY 36' BST

PARKWAY DR 15' BST

25' BST

35' BST

20+00

25+00

30+00

30" RCP

8" CONC WTR

BM 3

W/L T SIG L T

EXISTING R/W

ECM

BL-12

NC 24/27/74 L WIDEN BY BST

L 2800.30RT L 2850.30RT L 2900.30RT L 3000.35RT L 3050.35RT L 3100.35RT L 3150.35RT L 3200.35RT

R 2000.35RT

R2530B-2

S 37° 02' 52.8" W

MATCHLINE -Y1- STA 24+00 (SEE SHEET 32)

MATCHLINE -L- STA 32+00 (SEE SHEET 51)

-L- PT Sta. 31+34.82

S 60° 40' 27.2" E

BST CONC GR ATM CANOPY TC

-L-	
PI Sta	28+81.01
Δ	= 12° 45' 13.8" (RT)
D	= 2° 30' 07.2"
L	= 509.75'
T	= 255.93'
R	= 2,290.00'
SE	= 0.03
RO	= 150'

-Y1-	
PI Sta	14+21.57
Δ	= 13° 55' 57.9" (RT)
D	= 1° 54' 35.5"
L	= 729.52'
T	= 366.57'
R	= 3,000.00'
SE	= 0.03
RO	= 138'

★ TRAFFIC SIGNAL

RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS)

ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS)

SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE SHEET 34 FOR -L- PROFILE
SEE SHEETS 50 & 51 FOR -Y1- PROFILE

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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REVISIONS

5/14/99

$DATE$

MATCHLINE -L- STA 32+00 (SEE SHEET 4)

MATCHLINE -L- STA 46+00 (SEE SHEET 6)

MATCHLINE -Y2- STA 21+00 (SEE SHEET 33)

NAD 83/99

S 3°05'05.0" W

S 60°40'27.2" E

S 29°19'23.4" W

S 19°19'32.8" W

-DRWI- POT Sta. 10+00.00 =
-L- POT Sta. 32+62.66
Δ = 90°

-DRWI- POT Sta. 11+00.00

-Y2- PC Sta. 14+34.07

-Y2- PT Sta. 15+85.16

-L- POT Sta. 43+26.00 =
-Y2- POT Sta. 16+37.13
Δ = 80°

-L- PC Sta. 44+33.71

-Y2- PC Sta. 16+87.90

-Y2- PRC Sta. 19+03.87

35+00 | 40+00 | 45+00 | 15+00

CHURCH ISMTL | ISMTLBUS | ISBKBUS | ISBLKBUS | ISFBUS | MTL CAN | SOIL & GR | GR | CONC | TC | 72" CHL & 3SBW | 96" CHL | 72" WD CONC | 48" RCP | WD WELL | IN CONDUIT | 1 GAS-10,000 GAL 1 GAS-8,000 GAL 1 DIESEL-8,000 GAL | 4 GAS PUMPS U/MTL CANOPY | MON WELL | MASOLEUM | BANKARD RD | SR 1852 | 60' | 66' | EXIST. SR 1852 | 87"x63" ERCP | 2SMTLBUS | ISFD | 30" RCP | BLK WALL | 96" BLK WALL | UNKNOWN DESTINATION DIRECTION ONL PIPE | INV=562.31' | BM#5 | WLB | CR | W/L T | L 3400.30RT | L 3400.20RT | L 4200.5RT | L 4600.15RT | L 4400 CL | BY3-52 | CEM

-L-	-Y2-		
PI Sta 48+87.11	PI Sta 15+10.12	PI Sta 17+97.39	PI Sta 20+60.23
Δ = 17° 11' 17.8" (LT)	Δ = 16° 14' 27.8" (RT)	Δ = 23° 12' 55.3" (LT)	Δ = 32° 42' 01.5" (RT)
D = 1° 54' 35.5"	D = 10° 44' 58.8"	D = 10° 44' 58.8"	D = 10° 44' 58.8"
L = 899.98'	L = 151.08'	L = 215.96'	L = 304.20'
T = 453.39'	T = 76.05'	T = 109.48'	T = 156.37'
R = 3,000.00'	R = 533.00'	R = 533.00'	R = 533.00'
SE = 0.03	SE = 0.04	SE = 0.04	SE = 0.04
RO = 150'	RO = 84'	RO = 108'	RO = 84'

SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE SHEET 34 FOR -L- PROFILE
SEE SHEET 51 FOR -Y2- PROFILE
SEE SHEET 55 FOR -DRWI- PROFILE

CE1	582911.01	1654979.28	553.50
HW1	582910.69	1654979.09	555.18
CUL3	582858.86	1654964.91	547.83
CUL4	582857.73	1654970.61	547.86
CE2	582858.31	1654967.75	553.83
HW2	582858.53	1654967.82	555.41

-L-
PI Sta 48+87.11
Δ = 17° 11' 17.8" (LT)
D = 1° 54' 35.5"
L = 899.98'
T = 453.39'
R = 3,000.00'
SE = 0.03
RO = 150'

-L- PT Sta. 53+33.69

S 77° 51' 45.0" E

S 69° 41.0' W

50+00

55+00

15+00

-L- POT Sta. 56+76.42
-Y3- POT Sta. 16+43.00
Δ = 79°51'26"

MATCHLINE -L- STA 46+00 (SEE SHEET 5)

MATCHLINE -L- STA 59+50 (SEE SHEET 7)

NC 24/27/73 N MAIN ST 36' BST

L 4790.30RT
L 4995.35RT
L 5274.25RT
L 5400.20RT
L 5600.20RT
L 5810.20RT

ISBKD
ISF BUS
ISBLK BUS
ISFBUS
2SF&BKD
ISFD
ISBLK BUS (ABAND)
BST
HTR
MTL CAN
CONC
ROCK ISL
FLAG POLE
BLK HW
42" RCP
36" RCP
30" RCP
10" RCP
72" WD
72" CMP
84" CHL
SDW & GR
GR
W/L
W/LT
CR
F
JS
SS
G
S
LT
W
BM #10

20' EASEMENT PER DB 19 PG 15
5' TRANSMISSION MATERIAL UNKNOWN
8' TRANSMISSION MATERIAL UNKNOWN

CHAPTER ST 21' BST
30' BST

NC GRID NAD 83/95

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CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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5/14/99

$DATE$

SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 51 FOR -Y3- PROFILE

REVISIONS 5/14/99

$DATE$

MATCHLINE -L- STA 59+50 (SEE SHEET 6)

MATCHLINE -L- STA 73+50 (SEE SHEET 8)

-Y4- POT Sta. 10+00.00

-Y5- POT Sta. 10+00.00

-L- POT Sta. 69+43.63 =
-Y5- POT Sta. 14+36.00
Δ = 77°50'52"

S 2° 41' 55.0" W

S 0° 00' 53.0" E

S 77° 51' 45.0" E

S 77° 51' 45.0" E

S 12° 08' 15.0" W

S 13° 34' 39.1" W

S 44° 07' 11.5" E

60+00

65+00

70+00

R2530B-3

BY6-56

BY6-57

BY7-58

NC GRID NAD 83

-L- POT Sta. 61+35.65
-Y4- POT Sta. 15+10.00
Δ = 80°39'40"

-DRW2- POT Sta. 10+00.00 =
-L- POT Sta. 64+60.00
Δ = 90°

-DRW2- POT Sta. 11+50.00

-L- POT Sta. 69+37.86 =
-Y6- POT Sta. 10+00.00
Δ = 91°26'24"

-Y6- PC Sta. 11+42.93

-Y6- PT Sta. 14+08.81

-Y6- POT Sta. 14+24.00

-Y6-
PI Sta 12+78.52
Δ = 27° 41' 50.2" (LT)
D = 10° 25' 02.7"
L = 265.87'
T = 135.59'
R = 550.00'
SE = 0.04
RO = 84'

SEE SHEET 2B-1 & 2B-2 FOR INTERSECTION DETAILS
SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 51 FOR -Y4- PROFILE
SEE SHEET 52 FOR -Y5- & -Y6- PROFILES
SEE SHEET 55 FOR -DRW2- PROFILE

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P.O. BOX 33068 • RALEIGH, N.C. 27636-3068	R-2530B/B-4974	8
RIGHT-OF-WAY REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.		

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REVISIONS

5/14/99

$DATE$

NC GRID NAD 83/95

MATCHLINE -L- STA 73+50 (SEE SHEET 7)

MATCHLINE -L- STA 87+75 (SEE SHEET 9)

75+00

80+00

85+00

S 77° 51' 45.0" E

S 12° 08' 15.0" W

S 22° 44' 39.7" W

-DRW4- POT Sta. 10+00.00 =
-L- POT Sta. 87+50.82
Δ = 90°

-DRW3- POT Sta. 10+00.00 =
-L- POT Sta. 80+60.60
Δ = 90°

-DRW3- POT Sta. 11+25.00

-DRW4- PC Sta. 10+70.48

-DRW4- PT Sta. 10+98.24

-DRW4- POT Sta. 11+15.00

-DRW4-
PI Sta. 10+84.40
Δ = 10° 36' 16.3" (RT)
D = 38° 11' 49.9"
L = 27.76'
T = 13.92'
R = 150.00'

R2530B-4

L 7400 20RT
L 7600 20RT
L 7800 20RT
L 8000 20RT
L 8200 20RT
L 8400 20RT
L 8600 20RT

NC 24/27/73 24' BST

SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 55 FOR -DRW3- & -DRW4- PROFILES

REVISIONS

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$DATE$

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/96

-Y7- PT Sta. 15+83.72

15+00

90+00

95+00

100+00

BEGIN CULVERT
-L- STA 93+44.48

1 @ 6' X 6' RCBC

END CULVERT
-L- STA 93+52.52

-DRW6- POT Sta. 10+00.00

-DRW6- POT Sta. 11+50.00 =
-L- POC Sta. 99+95.00
Δ = 90°

-DRW5- POT Sta. 10+00.00 =
-L- POC Sta. 99+57.00
Δ = 90°

CUT EXPOSURE

S 77° 51' 45.0" E

S 19° 26' 12.0" W

S 33° 30' 19.2" W

S 32° 33' 16.4" W

-L- PC Sta. 91+40.97

-L- POT Sta. 90+77.27 =
-Y7- POT Sta. 18+70.00
Δ = 97°17'57"

-DRW5- POT Sta. 12+00.00

MATCHLINE -L- STA 87+75 (SEE SHEET 8)

MATCHLINE -L- STA 101+00 (SEE SHEET 10)

L 9000.20RT
L 9200.20RT
L 9345.15RT
L 9600.20RT
L 9750.40RT
L 9800.20RT
L 9850.40RT
L 9900.40RT
L 9950.35RT
L 10000.15RT
L 10050.40RT
L 10100.40

-Y7-	
PI Sta	14+05.83
Δ	= 15° 21' 44.1" (RT)
D	= 4° 17' 30.5"
L	= 357.94'
T	= 180.05'
R	= 1,335.00'
SE	= EXIST
RO	= EXIST

-L-	
PI Sta	99+56.26
Δ	= 39° 11' 36.6" (RT)
D	= 2° 30' 07.2"
L	= 1,566.49'
T	= 815.29'
R	= 2,290.00'
SE	= 0.03
RO	= 150'

SEE SHEET 2B-2 FOR INTERSECTION DETAILS
SEE SHEET 36 FOR -L- PROFILE
SEE SHEET 52 FOR -Y7- PROFILE
SEE SHEET 55 FOR -DRW5- PROFILE
SEE SHEET 55 FOR -DRW6- PROFILE

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83'95

REVISIONS

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$DATE$

-L- PT Sta. 107+07.46

105+00

110+00

-DRW7- POT Sta. 10+00.00

S 51° 19' 51.6" W

S 38° 40' 08.4" E

CUT EXPOSURE

ROADWAY EMBANKMENT

OUTCROP

MATCHLINE -L- STA 101+00 (SEE SHEET 9)

MATCHLINE -L- STA 114+00 (SEE SHEET 11)

-L-
PI Sta 99+56.26
Δ = 39° 11' 36.6" (RT)
D = 2° 30' 07.2"
L = 1,566.49'
T = 815.29'
R = 2,290.00'
SE = 0.03
RO = 150'

-DRW7- POT Sta. 11+20.00
-L- POT Sta. 111+81.00
Δ = 90°

MTL CANOPY
ISMTLBUS
ISBLKBUS
ISFD
2SFD
2SFBUS
2SMTLBUS
BLK FOUNDATION
BLK WALL
MTL CAN
ROCK WALL
SOIL
GR
CONC
ECM
POWER METER

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 56 FOR -DRW7- PROFILE

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	11

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

MATCHLINE -L- STA 114+00 (SEE SHEET 10)

115+00

120+00

125+00

10+00

-L- TS Sta. 121+27.90

S 38° 40' 08.4" E

-DRW8- POT Sta. 10+00.00

-DRW8- PC Sta. 10+50.43

-DRW8- PT Sta. 11+02.61

S 18° 45' 05.2" W

-L- SC Sta. 124+07.90

S 58° 36' 35.5" W

-DRW8- PT Sta. 11+58.00 =
-L- POC Sta. 125+15.00
Δ = 90°

MATCHLINE -L- STA 127+50 (SEE SHEET 12)

ALLUVIAL

12" PVC

POND

ROCK WALL

ISFD

GAZEBO

BLK WALL

CONC FOUNDATION

CONC

W/L

NC 24/27/73 25' BST

-L-		-DRW8-
PIs Sta 123+14.62	PI Sta 127+28.81	PI Sta 10+77.62
θs = 4° 07' 26.8"	Δ = 18° 44' 14.7" (RT)	Δ = 39° 51' 30.6" (RT)
Ls = 280.00'	D = 2° 56' 44.9"	D = 76° 23' 39.7"
LT = 186.72'	L = 636.07'	L = 52.17'
ST = 93.38'	T = 320.90'	T = 27.19'
	R = 1,945.00'	R = 75.00'
	SE = 0.07	

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 56 FOR -DRW8- PROFILE

$DATE$

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83-95

REVISIONS

5/14/99

$DATE$

-L- ST Sta. 133+23.98

130+00

135+00

140+00

S 11° 41' 00.0" E

POND

R2530B_SL

BM=18

-L- CS Sta. 130+43.98

MATCHLINE -L- STA 127+50 (SEE SHEET 11)

MATCHLINE -L- STA 141+00 (SEE SHEET 13)

ISBKO

CONC

WD CANOPY

-L-

PIs Sta 123+14.62	PI Sta 127+28.81	PIs Sta 131+37.36
θs = 4° 07' 26.8"	Δ = 18° 44' 14.7" (RT)	θs = 4° 07' 26.8"
Ls = 280.00'	D = 2° 56' 44.9"	Ls = 280.00'
LT = 186.72'	L = 636.07'	LT = 186.72'
ST = 93.38'	T = 320.90'	ST = 93.38'
	R = 1,945.00'	
	SE = 0.07	

SEE SHEET 38 FOR -L- PROFILE

REVISIONS

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	13

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83'95

-Y8- PT Sta. 14+44.34

-L- TS Sta. 154+34.90

S 52° 27' 38.0" W

S 11° 41' 00.0" E

-L- POT Sta. 153+07.95 =
-Y8- POT Sta. 18+05.16
Δ = 64°08'38"

-Y8- PC Sta. 18+71.83

-Y8- PRC Sta. 20+91.02

MATCHLINE -L- STA 141+00 (SEE SHEET 12)

MATCHLINE -L- STA 155+00 (SEE SHEET 14)

MATCHLINE -Y8- STA 21+00 (SEE SHEET 33)

-Y8-

PI Sta 12+48.42	PI Sta 19+82.72	PI Sta 23+96.30
Δ = 1° 57' 33.9" (LT)	Δ = 21° 23' 41.2" (LT)	Δ = 4° 17' 24.9" (RT)
D = 0° 30' 00.0"	D = 9° 45' 38.8"	D = 0° 42' 10.9"
L = 391.88'	L = 219.19'	L = 610.26'
T = 195.96'	T = 110.89'	T = 305.27'
R = 11,459.16'	R = 587.00'	R = 8,150.00'
SE = NC	SE = 0.04	SE = NC
RO = NONE	RO = 96'	RO = NONE

SEE SHEET 2B-2 FOR INTERSECTION DETAILS
SEE SHEET 38 FOR -L- PROFILE
SEE SHEET 52 FOR -Y8- PROFILE

REVISIONS

5/14/99

-DRW9-
PI Sta 10+48.93
Δ = 13° 55' 05.7" (RT)
D = 22° 55' 05.9"
L = 607.3'
T = 305.2'
R = 250.00'

-L-
PIs Sta 155+94.92
Θs = 2° 57' 48.9"
Ls = 240.00'
LT = 160.02'
ST = 80.02'

-L-
PI Sta 163+10.12
Δ = 30° 37' 29.5" (LT)
D = 2° 28' 10.7"
L = 1,240.05'
T = 635.22'
R = 2,320.00'
SE = 0.06

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CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

-L- SC Sta. 156+74.90

-DRW9- POT Sta. 10+00.00

-DRW9- PC Sta. 10+18.42

-DRW9- PT Sta. 10+79.15

-DRW9- POT Sta. 11+80.00 =
-L- POC Sta. 167+59.00
Δ = 90°

S 34° 39' 41" W

S 48° 34' 46.8" W

MATCHLINE -L- STA 155+00 (SEE SHEET 13)

MATCHLINE -L- STA 168+50 (SEE SHEET 15)

MATCHLINE (SEE SHEET 33)

160+00

165+00

10+00

ISBKD

POND

DOCK

MTL CAN

6" HDPE

8" SOIL

24" RCP

15" RCP

18" RCP

8" DR

36" CONC

L_15800_40RT

L_16400_40RT

L_16600_40RT

BL-26

SEE SHEET 39 FOR -L- PROFILE
SEE SHEET 56 FOR -DRW9- PROFILE

$DATE$

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	15

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

$DATE$

NC GRID NAD 8395

MATCHLINE -L- STA 168+50 (SEE SHEET 14)

MATCHLINE -L- STA 182+50 (SEE SHEET 16)

-L- ST Sta. 171+54.95

-L- CS Sta. 169+14.95

S 48° 14' 07.2" E

170+00

175+00

180+00

POND

SOIL

ARBOR

ISFD

W/LT

BLDG

36" CONC

12" PVC

NC 24/27/73 26' BST

RM#41

6" CONC CURB

BST

ISBK&BLK BUS

48" CONC

ISBKD

BK WALL

MTL CAN

CONC

L_17000_40RT

L_17200_40RT

L_17400_40RT

L_17600_30RT

L_17800_30RT

L_18000_25RT

L_18200_40RT

-L-

PI Sta 163+10.12	PIs Sta 169+94.97
Δ = 30° 37' 29.5" (LT)	Θs = 2° 57' 48.9"
D = 2° 28' 10.7"	Ls = 240.00'
L = 1,240.05'	LT = 160.02'
T = 635.22'	ST = 80.02'
R = 2,320.00'	
SE = 0.06	

SEE SHEET 39 FOR -L- PROFILE

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CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	16

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8375

MATCHLINE -L- STA 182+50 (SEE SHEET 15)

MATCHLINE -L- STA 196+50 (SEE SHEET 17)

15+00

185+00

190+00

195+00

BY11-64

-Y9- PT Sta. 17+20.88

-L- PC Sta. 189+69.57

S 22° 01' 23.0" W

S 48° 14' 07.2" E

-L- POT Sta. 188+57.90 =
-Y9- POT Sta. 19+52.00
Δ = 70°15'30"

BOULDERS

BOULDERS

ABANDONED SOIL ROAD BED

POND

BM=26

NC 24/21/13 26' BST

L_18400_25RT
L_18600_25RT
L_18750_7RT
L_18850_70RT
L_18850_5RT
L_18750_70RT
L_18850_70RT
L_18900_80RT
L_18900_30RT
L_18950_30RT
L_19000_30RT
L_19000_63RT
L_19000_75RT
L_19200_30RT
L_19350_25RT
L_19400_25RT
L_19400_75RT
L_19450_25RT
L_19450_75RT
L_19500_60RT
L_19600_25RT

BL-29

ISBKD

ISFD (ABAND)

MTL CAN

MTL CAN

HTR

DK

MTL CAN

LCONC

CONC

SOIL & GR

W/L

GUY

G

S

W (ABAND)

-Y9-	
PI Sta	14+58.60
Δ	6° 41' 11.9" (RT)
D	1° 16' 23.7"
L	525.17'
T	262.88'
R	4,500.00'
SE	= NC
RO	= NONE

-L-	
PI Sta	193+63.29
Δ	3° 55' 18.3" (RT)
D	0° 29' 53.6"
L	787.15'
T	393.73'
R	11,500.00'
SE	= NC
RO	= NONE

SEE SHEET 2B-2 FOR INTERSECTION DETAILS
SEE SHEET 40 FOR -L- PROFILE
SEE SHEET 53 FOR -Y9- PROFILE

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

MATCHLINE -L- STA 196+50 (SEE SHEET 16)

MATCHLINE -L- STA 210+00 (SEE SHEET 18)

-L- PT Sta. 197+56.71

S 44° 18' 48.9" E

R2530B-8

200+00

205+00

BY13-66

BM#28

BM#29

ISBKD

ISBLKBUS

ISFD

HTR

DK

CONC

BST

GR

F

C

S

G

B

ASH RD

30' R/W BY MAINTENANCE

II' GR

9' GR

8' GR

REMAINDER SOIL ROAD RED

30' RCT

-L- POT Sta. 197+69.10 =
-Y10- POT Sta. 10+00.00
Δ = 82°52'26"

-L- TS Sta. 203+20.18

-L- SC Sta. 206+00.18

ROADWAY EMBANKMENT

SR 1739 MONEIL RD

EXISTING R/W

S 38° 33' 37.0" W

BY12-65

12' CONC

50'-0"

FLAG POLE

60' CONC

15BKD

15+00

L_20060_25RT
L_20100_25RT
L_20150_25RT
L_20200_25RT
L_20250_25RT
L_20300_25RT
L_20350_25RT
L_20400_25RT
L_20800_30RT
L_20100_70RT
L_20150_70RT
L_20200_70RT
L_20250_70RT
L_20300_70RT

BL-30

8" SOIL

9" SOIL

-L-

PIs Sta 205+06.90	PI Sta 210+41.13
θs = 4° 07' 26.8"	Δ = 25° 32' 49.4" (LT)
Ls = 280.00'	D = 2° 56' 44.9"
LT = 186.72'	L = 867.24'
ST = 93.38'	T = 440.95'
	R = 1,945.00'
	SE = 0.07

$DATE$

5/14/99

REVISIONS

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

ABANDONED BST & SOIL ROAD BED

-L- CS Sta. 214+67.42

215+00

220+00

MATCHLINE -L- STA 210+00 (SEE SHEET 17)

MATCHLINE -L- STA 223+50 (SEE SHEET 19)

CUT EXPOSURE

S 78°06'32" E

-L-

PI Sta 210+41.13	PIs Sta 215+60.80
Δ = 25° 32' 49.4" (LT)	Θs = 4° 07' 26.8"
D = 2° 56' 44.9"	Ls = 280.00'
L = 867.24'	LT = 186.72'
T = 440.95'	ST = 93.38'
R = 1,945.00'	
SE = 0.07	

-L- ST Sta. 217+47.42

L_21400_30RT
L_21600_25RT
L_21810_36RT
L_22000_25RT
L_22200_25RT
BL-31
BL-32
BM 30

NC 24/27/13 BST
MTL
24" RCP
10" RCP
POND
ISFD
RUINS
BLK WALLS
CONC
GR
ALONG
LW ST
JS MH
WLB

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	19

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RIGHT-OF-WAY REV.

CONST. REV.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

NC GRID NAD 83/95

MATCHLINE -L- STA 223+50 (SEE SHEET 18)

MATCHLINE -L- STA 237+00 (SEE SHEET 20)

225+00

230+00

235+00

S 78° 06' 32.0" E

BL - 33

CUT EXPOSURE

ISFD

POND

48" RCP

L_22400_25RT

L_22600_25RT

L_22800_CL

L_23000_25RT

L_23200_25RT

L_23400_15RT

L_23600_10RT

$DATE$

69	1668169.23
04	1668169.65

418.55
421.57
423.14

5/14/99

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	20

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

MATCHLINE -L- STA 237+00 (SEE SHEET 19)

MATCHLINE -L- STA 251+00 (SEE SHEET 21)

S 17° 32' 19.0" W

S 78° 06' 32.0" E

240+00

245+00

250+00

15+00

STONY MOUNTAIN RD

SR 1818

6" PVC

6" DIST

60.0'

Y1

500' DELT

BL-34

BL-35

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

EXISTING R/W

L_23800_5RT

L_24000_25RT

L_24200_25RT

L_24400_25RT

L_24600_25RT

L_25000_25LT

L_24800_25RT

-L- POT Sta. 238+36.90 =
-Y11- POT Sta. 17+59.00
Δ = 95°38'51"

-L- SC Sta. 248+66.65

-L- TS Sta. 246+66.65

-L-

PIs Sta 247+99.99	PI Sta 250+85.55
Θs = 1° 56' 08.4"	Δ = 8° 27' 32.0" (RT)
Ls = 200.00'	D = 1° 56' 08.4"
LT = 133.34'	L = 437.00'
ST = 66.67'	T = 218.90'
	R = 2,960.00'
	SE = 0.05

$DATE$

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	21

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

REVISIONS

NC GRID NAD 8395

-L- CS Sta. 253+03.65

255+00

260+00

S 65° 46' 43.1" E

POND

BL-1

MATCHLINE -L- STA 251+00 (SEE SHEET 20)

MATCHLINE -L- STA 265+00 (SEE SHEET 22)

-L- ST Sta. 255+03.65

25200_25LT

L 25400

L 25600_25LT

L 25800_25LT

L 26000_25LT

L 26200_10LT

L 26400_10LT

NC 24/27/73 25' BST

24" HDPE

9' GR

ISFD

H1R

-L-

PI Sta 250+85.55	PIs Sta 253+70.33
Δ = 8° 27' 32.0" (RT)	θs = 1° 56' 08.4"
D = 1° 56' 08.4"	Ls = 200.00'
L = 437.00'	LT = 133.34'
T = 218.90'	ST = 66.67'
R = 2,960.00'	
SE = 0.05	

$DATE$

REVISIONS

5/14/99

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 83/95

MATCHLINE -L- STA 265+00 (SEE SHEET 21)

MATCHLINE -L- STA 278+50 (SEE SHEET 23)

-DRW10- POT Sta. 10+00.00

-DRW11- POT Sta. 9+80.00

-DRW11- PC Sta. 10+07.89

-DRW11- PT Sta. 10+37.45

-DRW10- POT Sta. 11+80.00 =
-L- POT Sta. 265+70.50
Δ = 90°

-L- SC Sta. 271+13.79

-L- POC Sta. 275+00.39 =
-Y12- POT Sta. 10+00.00
Δ = 90°

-DRW12- POT Sta. 10+00.00 =
-L- POC Sta. 272+99.00
Δ = 90°

-L- TS Sta. 269+13.79

-DRW11- POT Sta. 11+55.00 =
-L- POT Sta. 268+12.00
Δ = 90°

-DRW12- POT Sta. 11+25.00

-Y12- PC Sta. 11+29.00

-Y12- PT Sta. 16+25.19

-Y12- PC Sta. 17+39.93

S 24° 13' 16.9" W

S 12° 55' 52.4" W

S 65° 46' 43.1" E

S 18° 42' 02.2" W

S 14° 48' 08.5" W

S 63° 14' 03.7" W

10+00

270+00

275+00

15+00

L_26600_25LT

L_26800_25LT

L_27000_30LT

L_27200_25LT

L_27350_25LT

L_27400_26LT

L_27400_75LT

L_27450_25LT

L_27600_10LT

L_27750_35LT

L_27800_75LT

L_27850_25LT

Y12_1200_25RT

Y12_1400_25RT

-L-

Pls Sta 270+47.13
θs = 1° 56' 08.4"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

Pl Sta 275+61.79
Δ = 17° 12' 46.2" (LT)
D = 1° 56' 08.4"
L = 889.25'
T = 448.00'
R = 2,960.00'
SE = 0.05

-DRW11-

Pl Sta 10+22.72
Δ = 11° 17' 24.4" (RT)
D = 38° 11' 49.9"
L = 29.56'
T = 14.83'
R = 150.00'

-Y12-

Pl Sta 13+93.01
Δ = 48° 25' 55.1" (RT)
D = 9° 45' 38.8"
L = 496.19'
T = 264.01'
R = 587.00'
SE = 0.04
RO = 96'
DS = 45 MPH

Pl Sta 18+72.97
Δ = 25° 00' 17.4" (LT)
D = 9° 32' 57.5"
L = 261.85'
T = 133.04'
R = 600.00'
SE = EXISTING
RO = EXISTING
DS = 45 MPH

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	23

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

$DATE$

NC GRID NAD 8395

MATCHLINE -L- STA 278+50 (SEE SHEET 22)

MATCHLINE -L- STA 292+50 (SEE SHEET 24)

280+00

285+00

290+00

-L- CS Sta. 280+03.03

-L- ST Sta. 282+03.03

-L- PC Sta. 291+90.59

S 86° 51' 46.2" E

S 6° 57' 04.0" W

-DRW13- POT Sta. 11+30.00 =
-L- POC Sta. 279+06.00
Δ = 90°

R2530B-9

-L-

PI Sta 275+61.79	PIs Sta 280+69.71	PI Sta 297+61.04
Δ = 17° 12' 46.2" (LT)	Θs = 1° 56' 08.4"	Δ = 32° 41' 31.2" (RT)
D = 1° 56' 08.4"	Ls = 200.00'	D = 2° 56' 44.9"
L = 889.25'	LT = 133.34'	L = 1,109.78'
T = 448.00'	ST = 66.67'	T = 570.45'
R = 2,960.00'		R = 1,945.00'
SE = 0.05		SE = 0.07
		R0 = 294'

L_28000_20LT
L_28200_30LT
L_28400_30LT
L_28600_30LT
L_28800_30LT
L_28850_20LT
L_28950_20LT

NC 24/27/73 24' BST

60.0' EXISTING R/W

6" CONC CURB

ISF BUS

ISMTL BUS

CONC

POND

INV=386.63'

INV=387.38'

12" HDPE

12" PVC

12" SCH

12" SOIL

9" SOIL

BST

GR

JS

ISFD

LT

Kimley»Horn ©2018	PROJECT REFERENCE NO.	SHEET NO.
P.O. BOX 33068 • RALEIGH, N.C. 27636-3068	R-2530B/B-4974	24
RIGHT-OF-WAY REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CONST. REV.		

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

$DATE$

-Y13- PC Sta. 13+44.69

-Y13- POT Sta. 10+00.00

S 87° 24' 20.8" W

SR 1178 RIVER NIWEN RD

45.0' EXISTING R/W

BY17-71

-Y13- PCC Sta. 14+81.19

-Y13- PT Sta. 16+73.82

-L- PT Sta. 303+00.37

NC NAD 83/99 Grid

295+00

300+00

305+00

15+00

R2530B-10

S 23° 47' 54.3" W

S 54° 10' 14.9" E

L_29600_30LT

L_29750_30LT

L_29800_35LT

L_29850_30LT

L_29900_30LT

L_29950_30LT

L_30000_25LT

L_30050_30LT

L_30100_30LT

L_30200_30LT

L_30250_30LT

L_30300_30LT

L_30350_30LT

L_30400_25LT

L_30450_25LT

L_30500_25LT

L_30600

L_29850_80LT

L_29900_80LT

L_29950_80LT

L_30050_80LT

L_30100_80LT

L_30200_80LT

L_30400_75LT

L_29370_20LT

30" RCP

NC 24/27/173 24" BST

ALLUVIAL

POND

BM#38

MATCHLINE -L- STA 292+50 (SEE SHEET 23)

MATCHLINE -L- STA 306+00 (SEE SHEET 25)

-L- POC Sta. 295+52.50 = -Y13- POT Sta. 17+58.00
Δ = 100°

-Y13-		-L-
PI Sta 14+15.00	PI Sta 15+79.73	PI Sta 297+61.04
Δ = 33° 51' 30.3" (LT)	Δ = 29° 44' 55.4" (LT)	Δ = 32° 41' 31.2" (RT)
D = 24° 48' 12.1"	D = 15° 26' 37.0"	D = 2° 56' 44.9"
L = 136.51'	L = 192.63'	L = 1,109.78'
T = 70.31'	T = 98.54'	T = 570.45'
R = 231.00'	R = 371.00'	R = 1,945.00'
SE = EXISTING	SE = 0.04	SE = 0.07
RO = EXISTING	RO = 84'	RO = 294'
DS = 25 MPH	DS = 35 MPH	

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REVISIONS

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$DATE$

NC GRID NAD 83/95

-Y14- PRC Sta. 11+57.37

-Y14- POT Sta. 10+00.00

S 58° 24' 55.5" W -Y14- (SR 1774) FOX RD

-Y14- PC Sta. 10+81.47

-DRW14- POT Sta. 10+00.00 = -L- POC Sta. 306+49.00
Δ = 90°

S 35° 49' 45" W

-L- PC Sta. 306+92.37

-Y14- (SR 1738) STRAND DR

-Y14- PT Sta. 13+14.26

S 26° 24' 00.1" W

MATCHLINE -L- STA 306+00 (SEE SHEET 24)

MATCHLINE -L- STA 320+00 (SEE SHEET 26)

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

OUTCROP

-L- POC Sta. 310+00.94 = -Y14- POT Sta. 15+03.00
Δ = 90°

-L- PRC Sta. 314+19.17

-Y14-	
PI Sta 11+20.10	PI Sta 12+43.38
Δ = 26° 21' 20.1" (RT)	Δ = 58° 22' 15.6" (LT)
D = 34° 43' 29.0"	D = 37° 12' 18.2"
L = 75.90'	L = 156.89'
T = 38.63'	T = 86.02'
R = 165.00'	R = 154.00'
SE = EXISTING	SE = 0.04
RO = EXISTING	RO = 72'
DS = 25 MPH	DS = 25 MPH

-L-	
PI Sta 310+60.39	PI Sta 317+58.99
Δ = 22° 12' 33.6" (LT)	Δ = 19° 49' 14.4" (RT)
D = 3° 03' 20.8"	D = 2° 56' 44.9"
L = 726.80'	L = 672.84'
T = 368.02'	T = 339.82'
R = 1,875.00'	R = 1,945.00'
SE = 0.07	SE = 0.07
RO = 294'	RO = 294'

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS
5/14/99
$DATE$

-L- PT Sta. 320+92.01

-DRW15- POT Sta. 10+00.00 =
-L- POC Sta. 322+34.00
Δ = 90°

S 33° 26' 25.9" W

325+00

-L- PC Sta. 325+62.41

S 56° 33' 34.1" E

100' CONCORD TELEPHONE COMPANY R/W

60' CONCORD TELEPHONE COMPANY R/W

-Y15- POT Sta. 10+00.00

-Y15- PC Sta. 10+49.53

330+00

-L- POC Sta. 330+19.33 =
-Y15- POT Sta. 13+89.86
Δ = 90°

-Y15- PT Sta. 12+65.67

-L- PT Sta. 330+26.60

S 80° 10' 54.2" W

S 70° 44' 38.4" E

SR 1774 TAR HEEL DR

BY20-75

NC GRID NAD 83/95

MATCHLINE -L- STA 320+00 (SEE SHEET 25)

MATCHLINE -L- STA 333+50 (SEE SHEET 27)

CUT EXPOSURE

ROADWAY EMBANKMENT

L_32900_25LT
L_32900_30LT
L_32600_35LT
L_32800_40LT
L_32979_55LT
L_33200_10LT

NC 24/27/73 27' BST

SR 1803 LAKE TILLERY RD

BL-43

-DRW15- POT Sta. 11+30.00

-Y15- PC Sta. 15+57.72

S 15° 28' 40.9" W

15+00

ISFD

BY21-76

-Y15- PT Sta. 17+66.14

-Y15- POT Sta. 18+74.00

S 80° 42' 59.0" W

R/W SHOWN ON MB 5 PG

-L-		-Y15-	
PI Sta 317+58.99	PI Sta 327+95.70	PI Sta 11+68.99	PI Sta 16+73.13
Δ = 19° 49' 14.4" (RT)	Δ = 14° 11' 04.3" (LT)	Δ = 60° 42' 13.3" (LT)	Δ = 61° 14' 18.1" (RT)
D = 2° 56' 44.9"	D = 3° 03' 20.8"	D = 28° 05' 10.2"	D = 29° 22' 56.8"
L = 672.84'	L = 464.19'	L = 216.13'	L = 208.42'
T = 339.82'	T = 233.29'	T = 119.46'	T = 115.41'
R = 1,945.00'	R = 1,875.00'	R = 204.00'	R = 195.00'
SE = 0.07	SE = 0.07	SE = 0.04	SE = 0.04
RO = 294'	RO = 294'	RO = 72'	RO = 72'
		DS = 25 MPH	DS = 25 MPH

REVISIONS

5/14/99

$DATE$

MATCHLINE -L- STA 333+50 (SEE SHEET 26)

335+00

340+00

345+00

PEE DEE RIVER

STANLY COUNTY
MONTGOMERY COUNTY

S 70° 44' 38.4" E

EXISTING R/W

ECM

33400 15LT

175.00

WD DOCK

WD WALL

ISFD

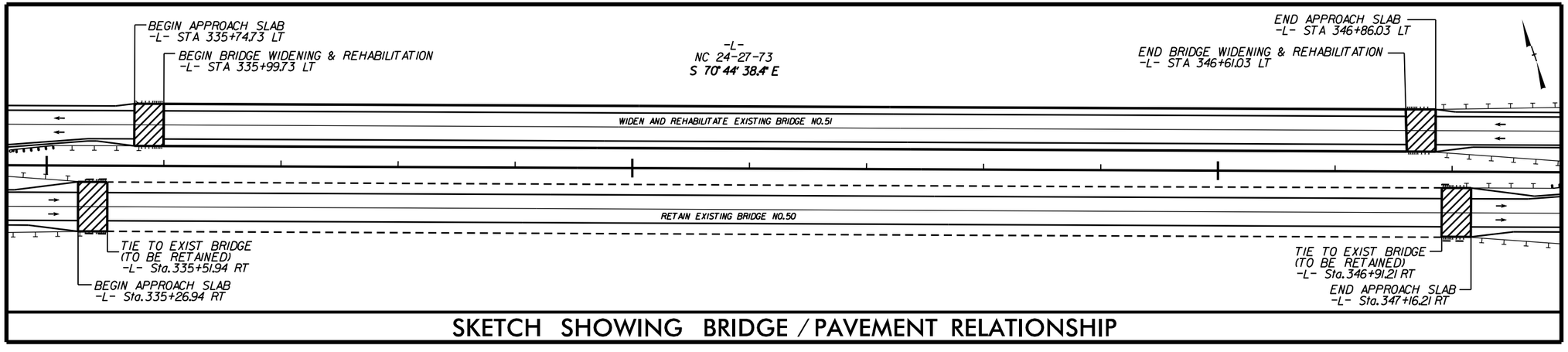
25FD

DK

WD

MATCHLINE -L- STA 347+50 (SEE SHEET 28)

GRID
NAD 83/95
NC



SKETCH SHOWING BRIDGE / PAVEMENT RELATIONSHIP

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	27

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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REVISIONS 5/14/99

$DATE$

MATCHLINE -L- STA 347+50 (SEE SHEET 27)

MATCHLINE -L- STA 361+50 (SEE SHEET 29)

-DRW16- POT Sta. 10+00.00

-DRW16- PC Sta. 10+40.25

-DRW16- PT Sta. 10+95.58

S 82° 39' 41.4" W

350+00

-Y17- POT Sta. 10+00.00

-Y17- PC Sta. 10+04.38

355+00

-Y17- PT Sta. 11+12.62

S 34° 38' 18.3" W

-L- TS Sta. 355+91.00

-L- SC Sta. 357+91.00

S 59° 26' 39.5" W

360+00

GRID NAD 83

ROADWAY EMBANKMENT

ROADWAY EMBANKMENT

L_35090_55RT

L_35200_45RT

L_35340_30RT

L_35600_30RT

L_35800_20RT

L_36050_20RT

WLI_35575

WLI_35625

WLI_35675

WLI_35725

WLI_35775

WLI_35825

WLI_35875

WLI_35925

WLI_35975

S 19° 15' 21.6" W

-DRW16- POT Sta. 11+90.00 =
-L- POT Sta. 349+72.00
Δ = 90°

-L- POT Sta. 353+90.00 =
-Y16- POT Sta. 10+00.00
Δ = 90°

-Y16- PC Sta. 11+01.69

-Y16- PT Sta. 13+66.92

Y16_1400_44RT

Y16_1600_35RT

-Y16- POT Sta. 16+20.00

-Y17- POT Sta. 12+20.00 =
-L- POT Sta. 356+84.00
Δ = 105° 39' 16.9"

S 29° 08' 23.5" E

BM=52

-L-
PIs Sta 357+24.34
Θs = 1° 15' 33.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 367+14.43
Δ = 22° 56' 41.5" (LT)
D = 1° 15' 33.3"
L = 1,822.11'
T = 923.43'
R = 4,550.00'
SE = 0.04

-Y16-
PI Sta 12+42.80
Δ = 48° 23' 45.1" (LT)
D = 18° 14' 49.4"
L = 265.23'
T = 141.10'
R = 314.00'
SE = 0.04
RO = 108°
DS = 35 MPH

-Y17-
PI Sta 10+59.36
Δ = 24° 48' 21.6" (LT)
D = 22° 55' 05.9"
L = 108.24'
T = 54.98'
R = 250.00'

-DRW16-
PI Sta 10+71.13
Δ = 6° 3' 24" 19.9" (LT)
D = 114° 35' 29.6"
L = 55.33'
T = 30.88'
R = 50.00'

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	29

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

$DATE$

NC GRID NAD 83/95

-DRW17- POT Sta. 10+00.00

-DRW17- POT Sta. 11+50.00 =
-L- POT Sta. 367+47.00
Δ = 90°

BM01 ELEVATION = 306.28
N 568164 E 1680799
BL STATION 370+88.00 69 LEFT
RR SPIKE IN BASE OF 20 INCH MAPLE

365+00

370+00

S 5° 57' 30.1" W

MATCHLINE -L- STA 361+50 (SEE SHEET 28)

MATCHLINE -L- STA 375+00 (SEE SHEET 30)

EXISTING R/W

CONC HW

BST

CONC

I/S

I/S BWDS

H/R

W/LT

12" CONC

ISFD

ISBKD

WOODS

SOLID WIRE

BL-46

BL-47

LP

G

S

L_36400_30LT

L_36600_30LT

L_36800_30LT

L_37000_30LT

L_37200_30LT

L_37400_30LT

L_36380_30RT

CAROLINA POWER AND LIGHT

50.00'

ALUVIAL

-L-
PI Sta. 367+14.43
Δ = 22° 56' 41.5" (LT)
D = 1° 15' 33.3"
L = 1,822.11'
T = 923.43'
R = 4,550.00'
SE = 0.04

5/14/99

REVISIONS

$DATE$

-L-
PI Sta 367+14.43
Δ = 22° 56' 41.5" (LT)
D = 1° 15' 33.3"
L = 1,822.11'
T = 923.43'
R = 4,550.00'
SE = 0.04

PIs Sta 376+79.78
Θs = 1° 15' 33.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-WBL-
PI Sta 12+87.13
Δ = 6° 39' 10.8" (RT)
D = 1° 09' 35.4"
L = 573.62'
T = 287.13'
R = 4,940.00'
SE = RC
RO = 48'
DS = 50 MPH

PI Sta 18+90.68
Δ = 6° 39' 10.8" (LT)
D = 1° 03' 01.2"
L = 633.42'
T = 317.07'
R = 5,455.00'
SE = RC
RO = 48'
DS = 50 MPH

NC GRID NAD 8395

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RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

380+00
10+00
385+00
15+00

-L- CS Sta. 376+13.11
-WBL- PC Sta. 10+00.00 =
-L- POT Sta. 380+39.50 (35' LT)
-DRW18- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-DRW18- POT Sta. 10+25.00
-WBL- PRC Sta. 15+73.62
END PAVEMENT
-L- STA 386+54.70 LT
-L-
NC 24-27
N 83° 47' 33.4" E
-L-
NC 24-27
MATCHLINE -L- STA 375+00 (SEE SHEET 29)
MATCHLINE -L- STA 389+00 (SEE SHEET 31)
-L- ST Sta. 378+13.11
S 6° 12' 26.6" E
-DRW18- POT Sta. 11+50.00 =
-L- POT Sta. 378+74.00
Δ = 90°
BEGIN CULVERT
-L- STA 381+50.58
2 @ 10' x 7' RCBC
END CULVERT
-L- STA 381+77.42
CUT EXPOSURE
*GRAVEL PARKING
AREA U/C
I/S MTL BUS
ISFD BUS
MTL CAN
WD
HTR
TWP
PROP GUARDRAIL
CAT-I
BL-80
WOODS
EXISTING R/W
4' PS
2' PS
12' DR
14' DR
16' DR
15.0' GR
33.0' GR
26.0' GR
36.0' GR
12' BST
24' BST

CULVERT #1
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	568245.56	1681781.19	307.92
CUL2	568246.50	1681792.31	307.95
CUL3	568246.60	1681793.18	307.96
CUL4	568247.46	1681804.04	308.00
CE1	568246.19	1681786.73	315.00
HW1	568247.30	1681798.00	317.13
CUL5	568135.78	1681732.95	307.71
CUL6	568136.79	1681744.30	307.71
CUL7	568136.98	1681744.94	307.67
CUL8	568138.21	1681756.32	307.70
CE2	568136.71	1681738.98	314.70
HW2	568137.59	1681744.59	316.84

-L-		-WBL-
PI Sta 392+91.16	PI Sta 398+43.27	PI Sta 18+90.68
Δ = 1° 00' 02.4" (LT)	Δ = 11° 28' 22.1" (LT)	Δ = 6° 39' 10.8" (LT)
D = 1° 03' 25.6"	D = 2° 04' 33.4"	D = 1° 03' 01.2"
L = 94.66'	L = 841.68'	L = 633.42'
T = 47.33'	T = 424.13'	T = 317.07'
R = 5,420.00'	R = 2,760.00'	R = 5,455.00'
SE = 0.03	SE = 0.03	SE = RC
RO = 1.26°	RO = 2.10°	RO = 4.8°
		DS = 50 MPH

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PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	31

RIGHT-OF-WAY REV.
CONST. REV.

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS
5/14/99

$DATE$

MATCHLINE -L- STA 389+00 (SEE SHEET 30)

NC GRID
NAD 83/95

-L- PC Sta. 392+43.82
-L- PT Sta. 393+38.49
-L- PC Sta. 394+19.14
-L- POT Sta. 402+93.00
-L- PT Sta. 402+60.82
-WBL- PT Sta. 22+07.04 =
-L- POC Sta. 392+43.84 (35' RT)
END TIP PROJECT R-2530B/B-4974
END CONSTRUCTION
-L- POC Sta. 396+23.00

-L-
NC 24-27

BM#2 ELEVATION = 350.59
N 568466 E 1683342
BL STATION 396+68.00 94' LEFT
RR SPIKE IN BASE OF 30 INCH MAPLE

N 65° 19' 08.9" E

NC 24 / 27 24' BST
BL-82
EXISTING R/W
JURISDICTIONAL STREAM
WOODS
STONE WALL
ISFD BUS
ISBLK BUS
I 1/2SFD BUS
CANOPY
48" WD.
W/LT
CB
18" CONC
2 - 7' x 5' CONC
RIVER RD 22' BST
18' BST
TWP
-81

5/14/99

REVISIONS

-Y1-
PI Sta 14+21.57
Δ = 13° 55' 57.9" (RT)
D = 1° 54' 35.5"
L = 729.52'
T = 366.57'
R = 3,000.00'
SE = 0.03
RO = 138'

-Y1- POT Sta. 10+00.00

-Y1- PC Sta. 10+55.00

NC GRID NAD 8395

10+00

EXISTING R/W

BM#2

CONC

8" TCP

BST

SS

FSS

EOI

HILCO ST 20' BST

24" C&G

30" C&G

6" CONC CURB

12' MPE

ISFBUS

MTL CAN

CONC

EXIST

10' R

BEGIN CONSTRUCTION
-Y1- POT Sta.13+22.00

BY11-48

2'-6" C&G

CONC ISLAND

28' DR

20' DR

24' DR

SIZE AND MATERIAL UNKNOWN

PL EQUALS R/W

WD CANOPY

-Y1-
(NC 740)
SPAULDING ST

ISMTLBUS

15+00

MATCHLINE -Y1- STA 16+00 (SEE SHEET 4)

6" BST CURB

MATCHLINE -Y1- STA 24+00 (SEE SHEET 4)

-Y1-
NC 24-27-73-740
S 37° 02' 52.8" W

ISBKBUS

BLK WALL

TC

25+00

MONO CONC ISLAND

5' R

50' R

75' R

-Y2-49

18" C&G

34" BST

END CONSTRUCTION
-Y1- POT Sta.28+90.00

30+00

-Y1- POT Sta. 31+00.00

$DATE$

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RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	32

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

REVISIONS

$DATE$

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P.O. BOX 33068 • RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2530B/B-4974	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC GRID NAD 8395

MATCHLINE -Y2- STA 21+00 (SEE SHEET 5)

-Y2- ANDERSON RD S 28° 48' 39.0" W

-Y2- PT Sta. 22+08.07

BY4-54

POST RD

23' BST

20' BST

BST

EXIST

END CONSTRUCTION
-Y2- POC Sta. 23+41.00

-Y2- PC Sta. 23+34.28

6" TRANSMISSION MATERIAL UNKNOWN

3" TRANSMISSION MATERIAL UNKNOWN

-Y2- PT Sta. 24+67.00

BM#7

-Y2-

PI Sta 20+60.23	PI Sta 24+00.74
Δ = 32° 42' 01.5" (RT)	Δ = 7° 36' 16.5" (RT)
D = 10° 44' 58.8"	D = 5° 43' 46.5"
L = 304.20'	L = 132.72'
T = 156.37'	T = 66.46'
R = 533.00'	R = 1,000.00'
SE = 0.04	SE = EXIST
RO = 84'	RO = EXIST

MATCHLINE -Y8- STA 21+00 (SEE SHEET 13)

Y8_2000_CL

Y8_2050_15R

BY10

MATCHLINE (SEE SHEET 14)

-Y8-
PI Sta 23+96.30
Δ = 4° 17' 24.9" (RT)
D = 0° 42' 10.9"
L = 610.26'
T = 305.27'
R = 8,150.00'
SE = NC
RO = NONE

Y8_2000_CL

STONE LAID BY

25+00

EXISTING R/W

-Y8- PT Sta. 27+01.29

50' R/W

30' GR

10' BST

15' RCP

BY10-63

S 35° 21' 21.7" W

-Y8- POT Sta. 28+50.00

60.00'

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

BEGIN GRADE
-L- STA 19+61.00
ELEV = 595.52'
TIE TO EXIST PAVEMENT

-L- STA 24+13.01 =
-Y1- STA 20+02.06
ELEV = 582.52'

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	30' RT	32+00 -L-	1.0' - 2.5'	A-6 (3)	38	12	20	8	26	46	65	55	48	16	-
SS-2	35' RT	30+00 -L-	3.5' - 5.0'	A-6 (2)	39	14	27	9	22	42	60	47	40	23	-

(C) **ARTIFICIAL FILL:** RED TAN GRAY AND BROWN, MOIST, SOFT TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(F) **RESIDUAL:** RED TAN AND GRAY, MOIST, STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN AND BROWN, MOIST TO WET, MEDIUM DENSE, SILTY CLAYEY SAND
(H) **WEATHERED ROCK:** GRAY AND TAN, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** GRAY AND TAN, METAMUDSTONE

SS-2 SS-1

35' RT 30' RT 30' RT 30' RT 35' RT 35' RT 35' RT 30' RT 30' RT 30' RT 20' RT

BT DRY (12/16) BT DRY (12/16) AR DRY (02/17) AR DRY (02/17) AR DRY (12/16) AR DRY (02/17) AR DRY (02/17) BT DRY (02/17) AR DRY (12/16) BT DRY (12/16)

5/28/99

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Cadence Admin

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L- STA 43+26.00 =
-Y2- STA 16+37.13
ELEV = 566.15'

-L- STA 56+76.42 =
-Y3- STA 16+43.00
ELEV = 563.12'

-L- STA 61+35.65 =
-Y4- STA 15+10.00
ELEV = 575.06'

SS-3 SS-4 SS-5

PROP CULVERT
2 @ 7' X 6' RCBC

PROP CULVERT
1 @ 8' X 7' RCBC

6' RT 20' RT 5' RT 30' RT 15' RT 25' RT

BT DRY (12/16) AR DRY (12/16)

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-3	CL	44+00 -L-	1.0' - 2.5'	A-7-6 (20)	47	18	4	3	22	71	99	97	94	25	-
SS-4	15' RT	49+95 -L-	1.0' - 2.5'	A-7-5 (29)	55	24	1	1	23	75	100	99	98	25	-
SS-5	20' RT	62+00 -L-	1.0' - 2.5'	A-7-5 (11)	61	29	13	5	18	64	62	56	52	20	-

(C) **ARTIFICIAL FILL:** TAN, MOIST, SOFT TO STIFF, SANDY SILT
(D) **ARTIFICIAL FILL:** BROWN, MOIST, SILTY SAND
(F) **RESIDUAL:** RED AND TAN, MOIST, MEDIUM STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN AND GRAY, WET, DENSE, SILTY SAND
(H) **WEATHERED ROCK:** GRAY RED AND TAN, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN, METAMUDSTONE

600 590 580 570 560 550 540 530 520 510
38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00 51+00 52+00

610 600 590 580 570 560 550 540 530 520
52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00 66+00

5/28/99
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Coding Page A1_GEO1_8

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

-L- STA 69+37.86 =
-Y6- STA 10+00.00
ELEV = 588.36'

-L- STA 69+43.63 =
-Y5- STA 14+36.00
ELEV = 588.44'

SS-6,7
BS-1

20' RT

BT
DRY (12/16)

AR
DRY (12/16)

-L- STA 90+77.27 =
-Y7- STA 18+70.00
ELEV = 550.23'

DS = 50 MPH

15' RT

PROP CULVERT
1 @ 6'X 6' RCBC

AR
DRY (12/16)

Ⓒ **ARTIFICIAL FILL:** TAN, MOIST, SOFT TO MEDIUM STIFF, SANDY SILT
Ⓕ **RESIDUAL:** RED GRAY AND TAN, MOIST, MEDIUM STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
Ⓖ **RESIDUAL:** TAN BROWN AND GRAY, MOIST TO WET, LOOSE TO VERY DENSE, SILTY SAND
Ⓗ **WEATHERED ROCK:** GRAY RED AND TAN, METATUFF AND METAMUDSTONE
Ⓘ **NON-CRYSTALLINE ROCK:** GRAY, METATUFF AND METAMUDSTONE

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-6	20' RT	78+00 -L-	1.0' - 2.5'	A-7-6 (12)	44	17	13	5	23	59	85	76	71	27	–
SS-7	20' RT	78+00 -L-	3.5' - 5.0'	A-7-5 (12)	42	11	7	5	33	55	99	94	88	24	–
BS-1	20' RT	78+00	1.0' - 6.0'	A-2-5 (0)	20	19	12	4	18	66	96	87	82	23	–

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/28/99

-L-

RS-1 SS-8 — RS-2 SS-12 — SS-9,10,11 — SS-14,15 — RS-3 SS-13 — SS-16,17

DS = 55 MPH

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-8	15' RT	100+00 -L-	1.0' - 2.5'	A-4 (4)	32	9	10	17	3	50	75	69	64	14	-
SS-9	35' LT	102+00 -L-	1.0' - 2.5'	A-2-6 (0)	38	14	19	13	23	45	41	36	29	12	-
SS-10	25' LT	102+00 -L-	6.0' - 7.5'	A-7-6 (4)	41	20	22	16	28	34	61	51	40	21	-
SS-11	25' LT	102+00 -L-	8.5' - 10.0'	A-6 (2)	38	19	25	14	24	37	58	46	37	19	-
SS-12	25' LT	106+00 -L-	1.0' - 2.5'	A-2-4 (0)	31	7	27	23	26	24	45	36	25	15	-
SS-13	25' LT	110+00 -L-	1.0' - 2.5	A-6 (6)	38	15	12	7	28	53	69	62	57	16	-
SS-14	25' LT	112+00 -L-	1.0' - 2.5'	A-6 (10)	36	14	6	3	40	51	85	80	76	16	-
SS-15	25' LT	112+00 -L-	3.5' - 5.0'	A-4 (5)	36	7	12	20	39	29	95	88	70	16	-
SS-16	20' LT	122+00 -L-	1.0' - 2.5'	A-7-5 (13)	47	15	12	8	28	52	94	86	77	21	-
SS-17	20' LT	122+00 -L-	3.5' - 5.0'	A-7-5 (21)	61	17	5	10	31	54	99	96	87	41	-

(A) **ROADWAY EMBANKMENT:** TAN BROWN AND GRAY, MOIST, MEDIUM STIFF TO STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

(B) **ROADWAY EMBANKMENT:** TAN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

(C) **ARTIFICIAL FILL:** TAN AND BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAYEY SILT

(E) **ALLUVIAL:** TAN AND BROWN, MOIST, HARD, SANDY SILT

(F) **RESIDUAL:** TAN RED BROWN ORANGE AND GRAY, DRY TO WET, STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT

(G) **RESIDUAL:** TAN RED AND BROWN, DRY TO MOIST, MEDIUM DENSE TO VERY DENSE, SILTY CLAYEY SAND

(H) **WEATHERED ROCK:** TAN GRAY AND ORANGE, METATUFF METAVOLCANIC ROCK AND METAMUDSTONE

(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METATUFF METAVOLCANIC ROCK AND METAMUDSTONE

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

SS-18

SS-19,20,21

80' LT
50' LT
50' LT
50' LT
50' LT
70' RT
70' RT
70' RT
25' LT
25' LT
25' LT
25' LT
30' LT
30' LT
30' LT
30' LT
30' LT
30' LT
20' LT

DRY (02/17)
AR (02/17)
BT
CT
DRY (11/16)
AR (11/16)

620 610 600 590 580 570 560 550 540 530

122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00 133+00 134+00 135+00 136+00

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	50 LT	124+50 -L-	1.0' - 2.5'	A-7-5 (64)	89	53	1	2	17	80	100	99	88	33	-
SS-19	60 RT	126+00 -L-	1.0' - 2.5'	A-7-5 (42)	68	35	1	1	22	76	99	99	98	27	-
SS-20	60 RT	126+00 -L-	3.5' - 5.0	A-7-5 (15)	46	16	10	10	40	40	100	93	83	23	-
SS-21	60 RT	126+00 -L-	6.0' - 7.5'	A-7-5(17)	48	18	8	10	34	48	99	94	84	18	-

(C) **ARTIFICIAL FILL:** TAN, MOIST, VERY STIFF, SANDY SILT
(F) **RESIDUAL:** RED, TAN, GRAY, AND BROWN, DRY TO MOIST, STIFF TO HARD, SANDY SILTY CLAY AND SANDY, CLAYEY SILT
(H) **WEATHERED ROCK:** TAN GRAY AND ORANGE, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

30' LT
30' LT
30' LT
30' LT
30' LT
25' LT
20' LT

AR DRY (11/16)
BT DRY (11/16)

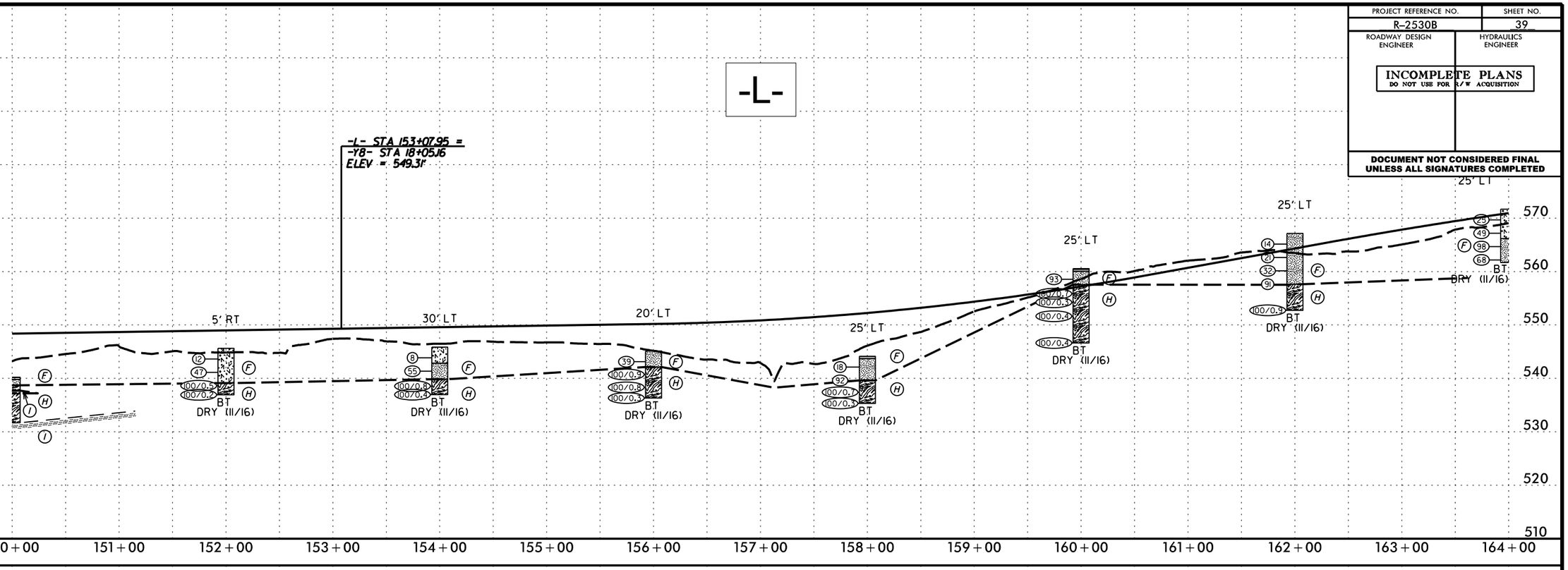
600 590 580 570 560 550 540 530 520 510

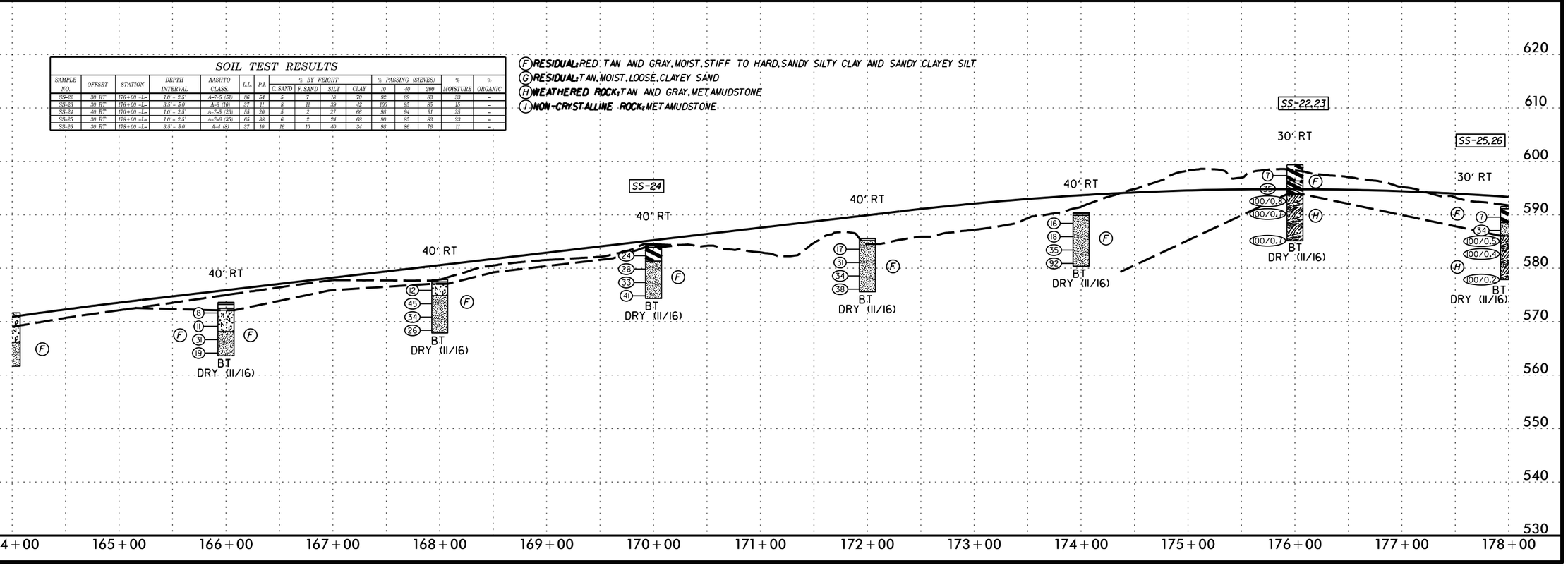
136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00 146+00 147+00 148+00 149+00 150+00

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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-22	30' RT	176+00 -L-	1.0' - 2.5'	A-7-5 (51)	86	54	5	7	15	73	92	89	83	33	–
SS-23	30' RT	176+00 -L-	3.5' - 5.0'	A-6 (10)	37	11	8	11	39	42	100	95	85	15	–
SS-24	40' RT	170+00 -L-	1.0' - 2.5'	A-7-5 (23)	55	20	5	2	27	66	98	94	91	25	–
SS-25	30' RT	178+00 -L-	1.0' - 2.5'	A-7-6 (35)	65	38	6	2	24	68	90	85	83	23	–
SS-26	30' RT	178+00 -L-	3.5' - 5.0'	A-4 (8)	37	10	16	10	40	34	98	86	76	11	–

(F) **RESIDUAL:** RED, TAN AND GRAY, MOIST, STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN, MOIST, LOOSE, CLAYEY SAND
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** METAMUDSTONE

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

(A) **ROADWAY EMBANKMENT:** TAN, MOIST, MEDIUM STIFF, SANDY SILTY CLAY
(F) **RESIDUAL:** RED TAN AND GRAY, MOIST, SOFT TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN AND BROWN, MOIST, LOOSE TO VERY DENSE, SILTY CLAYEY SAND
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE AND METASANDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE AND METASANDSTONE

-L- STA 188+57.90 = -Y9- STA 19+52.00
ELEV = 598.46'

-L-

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-27	25' RT	180+00 -L-	1.0' - 2.5'	A-6 (11)	34	11	2	3	45	50	99	97	94	25	–
SS-28	25' RT	180+00 -L-	3.5' - 5.0'	A-1-b (0)	27	6	46	9	20	25	38	23	18	6	–
SS-29	25' RT	186+00 -L-	1.0' - 2.5'	A-7-6 (34)	56	36	5	9	32	54	98	95	88	22	–
SS-30	60' RT	120+00 -L-	2.5' - 3.0'	A-7-6 (31)	54	30	3	4	36	57	98	96	92	30	–
SS-31	5' RT	188+00 -L-	1.0' - 2.5	A-6 (8)	40	12	9	19	35	37	91	86	71	19	–
SS-32	30' RT	190+00 -L-	1.0' - 2.5'	A-7-5 (57)	62	52	3	4	39	54	99	97	93	34	–
SS-33	30' RT	190+00 -L-	6.0' - 7.5'	A-7-6 (11)	49	20	18	24	30	28	98	88	62	28	–
SS-34	30' RT	190+00 -L-	8.5' - 10.0'	A-6 (3)	37	12	26	28	24	22	89	74	46	20	–
SS-35	30' RT	192+00 -L-	1.0' - 2.5'	A-7-5 (45)	82	40	2	11	18	69	100	99	90	40	–
SS-36	30' RT	192+00 -L-	6.0' - 7.5'	A-2-5 (11)	63	19	2	18	40	40	100	99	86	–	–
SS-37	30' RT	192+00 -L-	13.5' - 15.0'	A-7-5 (11)	44	11	1	26	47	26	100	100	82	37	–
BS-2	5' RT	188+00 -L-	1.0' - 13.0'	A-6 (2)	30	11	27	19	24	30	75	60	45	6	–

SS-27,28 · 25' RT · 40' RT · SS-29 · 25' RT · 25' RT · SS-31 · BS-2 · 5' RT · 7' RT · 5' RT · SS-32,33,34 · 30' RT · 30' RT · 30' RT · 30' RT · SS-35,36,37 · 30' RT

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-38	25' RT	194+00 -L-	1.0' - 2.5	A-7-5 (16)	44	14	3	7	34	56	100	100	82	37	–
SS-39	25' RT	194+00 -L-	6.0' - 7.5'	A-7 (10)	38	10	6	9	38	47	96	92	85	19	–
SS-40	25' RT	196+00 -L-	1.0' - 2.5'	A-7-5 (22)	54	19	5	3	85	7	99	96	92	25	–
SS-41	25' RT	196+00 -L-	8.5' - 10.0'	A-4 (10)	39	8	3	7	44	16	100	98	92	19	–
SS-42	30' RT	198+00 -L-	1.0' - 2.5'	A-7-6 (15)	47	19	11	4	28	57	88	80	76	26	–
SS-43	30' RT	198+00 -L-	3.5' - 5.0'	A-2-6	41	21	10	5	29	56	79	72	68	19	–
SS-44	25' RT	200+00 -L-	1.0' - 2.5'	A-4 (3)	36	10	23	8	33	36	74	61	53	10	–
SS-45	25' RT	202+00 -L-	1.0' - 2.5'	A-6 (3)	36	14	14	15	33	38	58	52	44	17	–
SS-46	25' RT	204+00 -L-	1.0' - 2.5'	A-7-6 (11)	45	16	13	6	29	52	84	75	69	22	–
SS-47	25' RT	204+00 -L-	6.0' - 7.5'	A-4 (6)	35	7	11	5	41	40	98	90	81	14	–
SS-48	25' RT	206+00 -L-	1.0' - 2.5'	A-7-6 (9)	41	15	19	6	31	44	87	73	67	17	–

-L- STA 197+69.10 = -Y10- STA 10+00.00
ELEV = 580.37'

SS-38.39 · 25' RT · 25' RT · 25' RT · 60' RT · SS-40.41 · 25' RT · SS-42.43 · 30' RT · SS-44 · 25' RT · 70' RT · RS-4 · SS-45 · 25' RT · 25' RT · 25' RT · 25' RT · SS-46,47 · DS = 50 MPH · 25' RT · SS-48

630 620 610 600 590 580 570 560 550 540

178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00 187+00 188+00 189+00 190+00 191+00 192+00

192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00

5/28/99

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User: jgoodwin
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PROJECT REFERENCE NO.	SHEET NO.
R-2530B	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

30' RT

30' RT

30' RT

25' RT

25' RT

25' RT

25' RT

36' RT

25' RT

25' RT

SS-49

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) #10	#40	#200	% MOISTURE	% ORGANIC
SS-49	25' RT	230+00 -L-	1.0' - 2.5'	A-7-6 (28)	54	27	3	5	31	61	98	96	91	29	-

(A) **ROADWAY EMBANKMENT:** RED, MOIST, STIFF TO VERY STIFF, SANDY CLAYEY SILT
(F) **RESIDUAL:** RED, TAN, BROWN, AND GRAY, MOIST, STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN AND BROWN, MOIST, DENSE TO VERY DENSE, CLAYEY SILTY SAND
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** GRAY, METAMUDSTONE

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

-L- STA 238+36.90 =
-Y11- STA 17+59.00
ELEV = 429.78'

SS-50
25' RT

15' RT

10' RT

5' RT

25' RT

SS-51
25' RT

25' RT

25' RT

BT
DRY (11/16)

AR
DRY (12/16)

AR
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

AR
DRY (11/16)

BT
DRY (11/16)

232+00 233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00 243+00 244+00 245+00 246+00

480 470 460 450 440 430 420 410 400 390

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-50	25' RT	232+00 -L-	1.0' - 2.5'	A-2-6 (23)	47	26	5	7	33	55	96	92	86	25	-
SS-51	25' RT	242+00 -L-	1.0' - 2.5'	A-7-6 (10)	44	15	15	5	27	53	83	73	67	22	-
SS-52	25' RT	248+00 -L-	3.5' - 5.0'	A-2-5 (13)	47	11	7	6	42	45	100	95	88	18	-

(F) **RESIDUAL:** RED TAN BROWN AND GRAY, MOIST, SOFT TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN GRAY RED AND BROWN, MOIST, DENSE TO VERY DENSE, SILTY CLAYEY SAND
(H) **WEATHERED ROCK:** TAN GRAY BROWN AND RED, METAMUDSTONE AND METASANDSTONE
(I) **NON-CRYSTALLINE ROCK:** GRAY, METAMUDSTONE AND METASANDSTONE

SS-52
25' RT

25' LT

25' LT

25' LT

25' LT

25' LT

DS = 50 MPH

25' LT

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

246+00 247+00 248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00 257+00 258+00 259+00 260+00

470 460 450 440 430 420 410 400 390 380

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PROJECT REFERENCE NO.	SHEET NO.
R-2530B	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

-L- STA 275+00.39 =
-Y12- STA 10+00.00
ELEV = 411.53'

DS = 50 MPH

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-53	25' LT	274+00 -L-	3.5' - 5.0'	A-6 (4)	38	14	25	7	32	36	73	57	51	6	–
SS-54	10' LT	276+00 -L-	1.0' - 2.5'	A-7-5 (29)	56	26	5	2	35	58	99	95	93	18	–
SS-55	25' LT	278+00 -L-	3.5' - 5.0'	A-5 (11)	41	9	7	5	56	32	100	95	90	12	–
SS-56	25' LT	280+00 -L-	3.5' - 5.0'	A-5 (11)	41	10	7	8	56	29	100	96	87	17	–
SS-57	30' LT	282+00 -L-	3.5' - 5.0'	A-4 (8)	38	9	12	8	52	28	100	91	83	16	–
SS-58	30' LT	284+00 -L-	1.0' - 2.5'	A-4 (7)	38	8	11	7	54	28	93	86	78	15	–

(A) **ROADWAY EMBANKMENT:** RED AND TAN, MOIST, STIFF, SANDY CLAYEY SILT
(F) **RESIDUAL:** RED TAN AND GRAY, DRY TO MOIST, STIFF TO HARD, SANDY CLAYEY SILT
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

-L- STA 295+52.50 =
-Y13- STA 17+58.00
ELEV = 346.51'

-L- STA 310+00.94 =
-Y14- STA 15+03.00
ELEV = 337.19'

(A) **ROADWAY EMBANKMENT:** TAN RED GRAY AND BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(B) **ROADWAY EMBANKMENT:** TAN AND BROWN, MOIST, LOOSE TO DENSE, CLAYEY SILTY SAND
(C) **ARTIFICIAL FILL:** BROWN TAN AND RED, MOIST TO WET, SOFT TO MEDIUM STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(E) **ALLUVIAL:** BROWN, MOIST, HARD, SILTY SAND
(F) **RESIDUAL:** TAN AND BROWN, MOIST, STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) **RESIDUAL:** TAN, MOIST, DENSE TO VERY DENSE, SILTY SAND
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE AND METATUFF
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE AND METATUFF

DS = 50 MPH

PROP CULVERT
1@ 9'X 7' RCBC

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-59	20' LT	289+50 -L-	1.0' - 2.5'	A-7-6 (22)	51	25	12	4	31	53	98	89	83	23	-
SS-60	25' LT	300+00 -L-	3.5' - 5.0'	A-4 (4)	35	5	10	7	50	33	91	54	78	13	-
SS-61	30' LT	302+00 -L-	6.0' - 7.5'	A-4 (8)	40	8	10	10	52	28	100	94	83	14	-

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PROJECT REFERENCE NO.	SHEET NO.
R-2530B	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

DS = 50 MPH

DS = 50 MPH

DS = 25 MPH

DS = 35 MPH

25' LT

25' LT

25' LT

25' LT

35' LT

40'

65 LT

10' LT

15' LT

SS-62.63

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (11/16)

BT
DRY (10/16)

BT
DRY (10/16)

BT
DRY (10/16)

BT
DRY (10/16)

BT
DRY (10/16)

BT
DRY (10/16)

END GRADE -L-
BEGIN GRADE -L LT-
-L- STA 315+93.00 (23' LT)
ELEV = 378.9

-L LT- STA 330+19.33
-Y15- STA 13+66.86
ELEV = 358.48'

-L RT- STA 330+19.33 =
-Y15- STA 14+12.86
ELEV = 360.25'

PROPOSED GRADE -L RT-

PROPOSED GRADE -L LT-

END GRADE -L RT-
-L- STA 335+51.94 (23' RT)
ELEV = 328.50'
TIE TO EXIST BRIDGE NO.50

RETAIN EXIST BRIDE NO.50

BEGIN BRIDGE L LT
-L- STA 335+99.73 (23' LT)
ELEV = 320.84'

EXISTING BRIDGE NO.51

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-62	35' LT	326+00 -L-	1.0' - 2.5'	A-4 (3)	34	9	21	7	38	34	74	61	54	13	-
SS-63	35' LT	326+00 -L-	6.0' - 7.5'	A-6 (1)	37	14	22	7	39	32	51	42	32	8	-

(A) ROADWAY EMBANKMENT: TAN AND RED, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAYEY SILT
(F) RESIDUAL: TAN RED AND BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) RESIDUAL: RED AND TAN, MOIST, LOOSE TO VERY DENSE, SILTY SAND
(H) WEATHERED ROCK: TAN AND GREENISH TAN, METAMUDSTONE, METASANDSTONE OR METATUFF

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PROJECT REFERENCE NO.	SHEET NO.
R-2530B	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

BEGIN GRADE -L_RT-
-L- STA 346+91.21 (23' RT)
ELEV = 323.25'
TIE TO EXIST BRIDGE NO.50

END BRIDGE -L_LT- =
-L- STA 346+61.03 (23' LT)
ELEV = 321.05'

PROPOSED GRADE -L_RT-

PROPOSED GRADE -L_LT-

-L_RT- STA 353+90.00 =
-Y16- STA 10+23.00
ELEV = 318.04'

END GRADE -L_LT-
BEGIN GRADE -L-
-L- STA 357+70.00 (23' LT)
ELEV = 307.37'

55' RT
45' RT
30' RT
20' RT

29 68 40 48 (F) BT DRY (10/16)
24 74 100/0.7 100/0.3 (A) (F) (H) BT DRY (10/16)
78 100/0.6 100/0.7 100/0.3 (F) (H) BT DRY (10/16)
50 64 83 100/0.9 BT DRY (10/16)

344+00 345+00 346+00 347+00 348+00 349+00 350+00 351+00 352+00 353+00 354+00 355+00 356+00 357+00 358+00

(A) ROADWAY EMBANKMENT: TAN AND RED, MOIST, SOFT TO VERY STIFF, SANDY CLAYEY SILT
(E) ALLUVIAL: TAN AND GRAY, WET, MEDIUM STIFF, SANDY SILTY CLAY
(F) RESIDUAL: TAN AND RED, MOIST, VERY STIFF TO HARD, SANDY SILTY CLAY AND SANDY CLAYEY SILT
(G) RESIDUAL: TAN AND RED, MOIST, MEDIUM DENSE, CLAYEY SAND
(H) WEATHERED ROCK: TAN AND RED, METAMUDSTONE
(I) NON-CRYSTALLINE ROCK: TAN AND GRAY, METAMUDSTONE

GRADE -L_RT-
GRADE -L-
ST A 357+70.00 (23' RT)
= 307.37

20' RT
30' RT
30' LT

F H BT DRY (10/16)
15 8 55 100/0.3 (A) (F) (H) BT DRY (10/16)
17 10 6 7 3 5 79 100/0.3 (A) (E) (F) (H) BT DRY (10/16)
PROP CULVERT 1 @ 6' X 6' RCBC
8 18 100/0.8 60/0.1 (F) (G) (H) (I) AR DRY (10/16)
16 24 69 42 BT DRY (10/16)
19 18 25 100/0.7 100/0.8 100/0.5 (F) (H) BT DRY (10/16)
10 19 19 23 22 28 (F) BT DRY (10/16)
17 43 100/0.8 100/0.9 BT DRY (10/16)

358+00 359+00 360+00 361+00 362+00 363+00 364+00 365+00 366+00 367+00 368+00 369+00 370+00 371+00 372+00

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(F) **RESIDUAL:** RED TAN AND BROWN, DRY TO WET, SOFT TO HARD, SANDY SILTY CLAY AND SANDY SILT
(G) **RESIDUAL:** RED BROWN AND TAN, MOIST, MEDIUM DENSE, CLAYEY SAND AND SILTY SAND
(H) **WEATHERED ROCK:** TAN GRAY AND BROWN, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE
(J) **CRYSTALLINE ROCK:** TAN GREEN AND GRAY, META VOLCANIC ROCK

-L-

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

30' LT
14 / 33 / 60 / 77
BT
DRY (10/16)

35' LT, -L-
3 / 33 / 100/0.6 / 100/0.4 / 100/0.2 / 60/0.1
AR
DRY (10/16)

25' LT
100/0.5 / 95 / 100/0.8 / 100/0.4
BT
DRY (10/16)

30' LT
100/0.7 / 100/0.7 / 100/0.4 / 60/0.1
AR
DRY (10/16)

29' LT
PROP CULVERT
2 @ 10' X 7' RCBC
16 / 100/0.8 / 60/0.1
AR
DRY (10/16)

53' LT
13 / 39 / 58/0.2 / 75/0.4 / 100/0.3
BT
DRY (10/16)

10' LT
60/0.1
AR
DRY (01/17)

10' LT
100/0.9 / 100/0.8 / 60/0.0
AR
DRY (01/17)

5' RT
77
BT
DRY (10/16)

5' RT
100/0.3
BT
DRY (01/17)

4' RT
92
BT
DRY (01/17)

5' RT
100/0.5 / 100/0.5 / 60/0.1
AR
DRY (01/17)

5' RT
11 / 100/0.8 / 100/0.5 / 60/0.1
AR
DRY (01/17)

5' RT
60/0.1
AR
DRY (01/17)

54' RT
12 / 31 / 51 / 100/0.5
BT
DRY (01/17)

10' RT
13 / 44 / 100/0.1 / 100/0.4
BT
DRY (01/17)

END GRADE
-L- STA 396+23.00
ELEV = 353.05'
TIE TO EXIST PAVEMENT

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PROJECT REFERENCE NO.	SHEET NO.
R-2530B	48
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-64	CL	20+00 -Y8-	1.0' - 2.5'	A-7-6 (30)	54	29	2	2	30	66	96	95	93	21	-
SS-65	CL	20+00 -Y8-	3.5' - 5.0'	A-7-5 (17)	46	13	1	1	45	53	100	99	98	12	-

Y8

BEGIN GRADE
-Y8- STA 13+68.00
ELEV = 540.45'
TIE TO EXIST PAVEMENT

-Y8- STA 17+79.60 =
-L- STA 152+96.81 (23' LT)
ELEV = 549.27'

END GRADE
-Y8- STA 17+52.93 =
-L- STA 152+85.18 (47' LT)
ELEV = 548.76'

-Y8- STA 18+30.72 =
-L- STA 153+19.10 (23' RT)
ELEV = 549.34'

BEGIN GRADE
-Y8- STA 18+57.39 =
-L- STA 153+30.73 (47' RT)
ELEV = 548.89'

33' RT
22' RT
SS-64,65
15' RT

100/0.2 BT DRY (02/17)
60/0.0 AR DRY (02/17)
100/0.8
60/0.0 J AR DRY (11/16)
100/0.3 BT DRY (02/17)
15 55 85 86
14 40 100/0.1 100/0.4 100/0.2 57 BT DRY (11/16)

(G) RESIDUAL: TAN, MOIST, HARD, SANDY CLAYEY SILT AND F. SANDY SILT
(I) WEATHERED ROCK: TAN, MET AMUDSTONE
(J) NON-CRYSTALLINE ROCK: TAN AND GRAY, MET AMUDSTONE

END GRADE
-Y8- STA 27+06.00
ELEV = 575.63'
TIE TO EXIST PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Y11

-Y11- STA 17+35.89 =
-L- STA 238+39.17 (23' LT)
ELEV = 429.78'

END GRADE
-Y11- STA 17+11.77 =
-L- STA 238+41.55 (47' LT)
ELEV = 429.31'

BEGIN GRADE
-Y11- STA 12+75.00
ELEV = 463.63'
TIE TO EXIST PAVEMENT

25' LT

51
100/0.9
100/0.8
100/0.4
100/0.5
100/0.2
BT
DRY (12/16)

(G) RESIDUAL: TAN, MOIST, HARD, SANDY SILT
(I) WEATHERED ROCK: TAN, METAMUDSTONE

490 480 470 460 450 440 430 420 410 400

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Y12

-Y12- STA 10+23.00 =
-L- STA 275+00.39 (23' RT)
ELEV = 411.53'

BEGIN GRADE
-Y12- STA 10+47.00 =
-L- STA 275+00.39 (47' RT)
ELEV = 412.73'

END GRADE
-Y12- STA 16+72.00
ELEV = 414.54'
TIE TO EXIST PAVEMENT

25' RT

25' RT

CULTIVATED SOIL

BT
100/0.9

BT
DRY (12/16)
100/0.9
100/0.5
100/0.4
100/0.4

(A) **ROADWAY EMBANKMENT:** RED TAN GRAY AND BROWN, MOIST TO WET, SOFT TO STIFF, SANDY SILT
(G) **RESIDUAL:** TAN AND GRAY, MOIST, HARD, F. SANDY SILT
(I) **WEATHERED ROCK:** TAN, META MUDSTONE

450 440 430 420 410 400 390 380 370 360

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

5/28/99
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Coordinate System: NAD 1983 (2011) NC FIPS 3200 (Feet)

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y16- STA 10+23.00 =
-L_RT- STA 353+90.00
ELEV = 318.04'

BEGIN GRADE
-Y16- STA 10+47.00 =
-L_RT- STA 353+90.00 (24' RT)
ELEV = 317.56'

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS	LL	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-66	35' RT	16+00 -Y16-	1.0' - 2.5'	A-7-6 (35)	58	30	0	1	54	45	100	100	99	25	-
SS-67	35' RT	16+00 -Y16-	6.0' - 7.5'	A-7-5 (18)	50	14	2	3	57	38	100	99	96	21	-

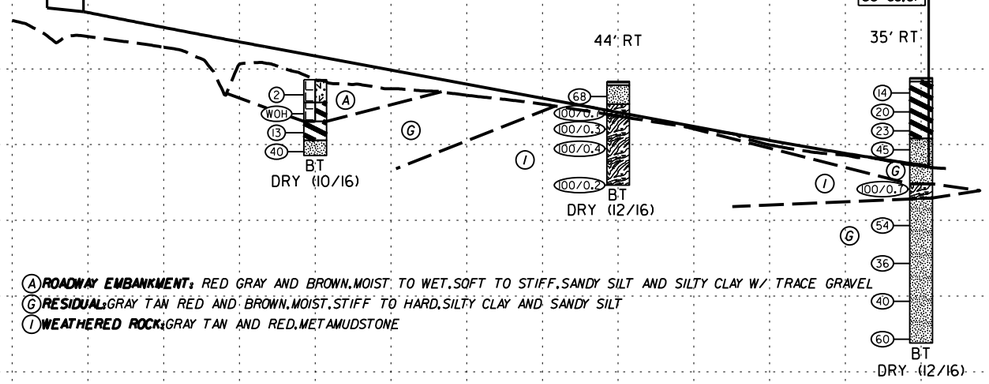
Y16

END GRADE
-Y16- STA 16+05.00
ELEV = 297.16'
TIE TO EXIST PAVEMENT

SS-66.67

44' RT

35' RT



(A) **ROADWAY EMBANKMENT:** RED GRAY AND BROWN, MOIST TO WET, SOFT TO STIFF, SANDY SILT AND SILTY CLAY W/ TRACE GRAVEL
(G) **RESIDUAL:** GRAY TAN RED AND BROWN, MOIST, STIFF TO HARD, SILTY CLAY AND SANDY SILT
(I) **WEATHERED ROCK:** GRAY TAN AND RED, METAMUDSTONE

350 340 330 320 310 300 290 280 270 260

10+00 11+00 12+00 13+00 14+00 15+00 16+00

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

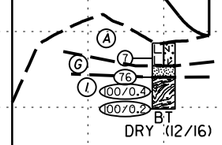
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRW14

-DRW14- STA 10+21.00 =
-L- STA 306+49.00 (21' RT)
ELEV = 323.10'

BEGIN GRADE
-DRW14- STA 10+51.00 =
-L- STA 306+49.00 (51' RT)
ELEV = 324.19'

END GRADE
-DRW14- STA 11+30.00
ELEV = 309.46'
TIE TO EXIST
PAVEMENT



(A) **ROADWAY EMBANKMENT:** TAN AND BROWN, MOIST, MED. STIFF, SILTY CLAY W/ TRACE GRAVEL
(G) **RESIDUAL:** TAN, MOIST, HARD, SANDY SILT W/ TRACE ROCK FRAGMENTS
(I) **WEATHERED ROCK:** GRAY AND TAN, METAMUDSTONE

360 350 340 330 320 310 300 290 280 270

10+00 11+00

PROJECT REFERENCE NO.	SHEET NO.
R-2530B	53
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-68	CL -DRW15-	11+00	1.0' - 2.5'	A-6 (7)	35	15	19	27	39	15	99	88	60	20	-

DRW15

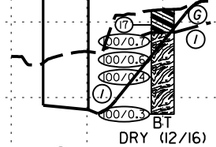
SS-68

-DRW15- STA 10+21.00 =
-L- STA 322+34.00 (21' RT)
ELEV = 398.99'

BEGIN GRADE
-DRW15- STA 10+51.00 =
-L- STA 322+34.00 (51' RT)
ELEV = 398.39'

END GRADE
-DRW15- STA 11+25.00
ELEV = 412.68'
TIE TO EXIST PAVEMENT

SS-68



(G) RESIDUAL: BROWN AND TAN, MOIST, V. STIFF, SANDY CLAY
(I) WEATHERED ROCK: TAN, METAMUDSTONE

450 440 430 420 410 400 390 380 370 360

10+00 11+00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	54

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430

RESIDUAL: TAN, SANDY SILT

WEATHERED ROCK: TAN, METAVOLCANIC ROCK

50/0.1

BT

DRY (02/17)

NON-CRYSTALLINE ROCK: TAN AND GRAY, METAVOLCANIC ROCK

98+50.00

$-L-$

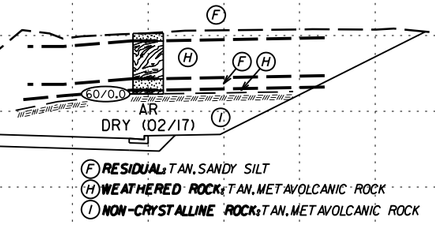
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
U-2530B	55

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430



(F) **RESIDUAL:** TAN, SANDY SILT
(H) **WEATHERED ROCK:** TAN, METAVOLCANIC ROCK
(I) **NON-CRYSTALLINE ROCK:** TAN, METAVOLCANIC ROCK

99+00.00

$-L-$

PROJ. REFERENCE NO.	SHEET NO.
U-2530B	56

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

590
580
570
560
550
540
530

(60/0.0)

RESIDUAL: TAN-RED, SANDY SILT

WEATHERED ROCK: TAN, METAVOLCANIC ROCK

AR
DRY (02/17)

NON-CRYSTALLINE ROCK: TAN, METAVOLCANIC ROCK

99+50.00

-L-

6/23/16

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cadmachine
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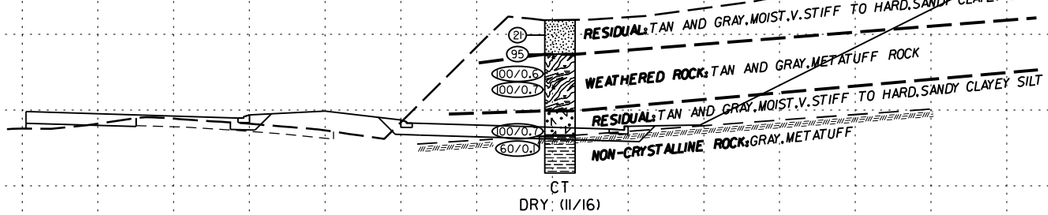
R2530B_GEO_RDWY\CADD_GEOTECH\xsc\B5687_Geo_xsLL_ROCK.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	57

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440



CT
DRY (11/16)

100+00.00
−L−

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	58

L_10050_40RT
DRY (02/17)

RESIDUAL: TAN, SANDY SILT

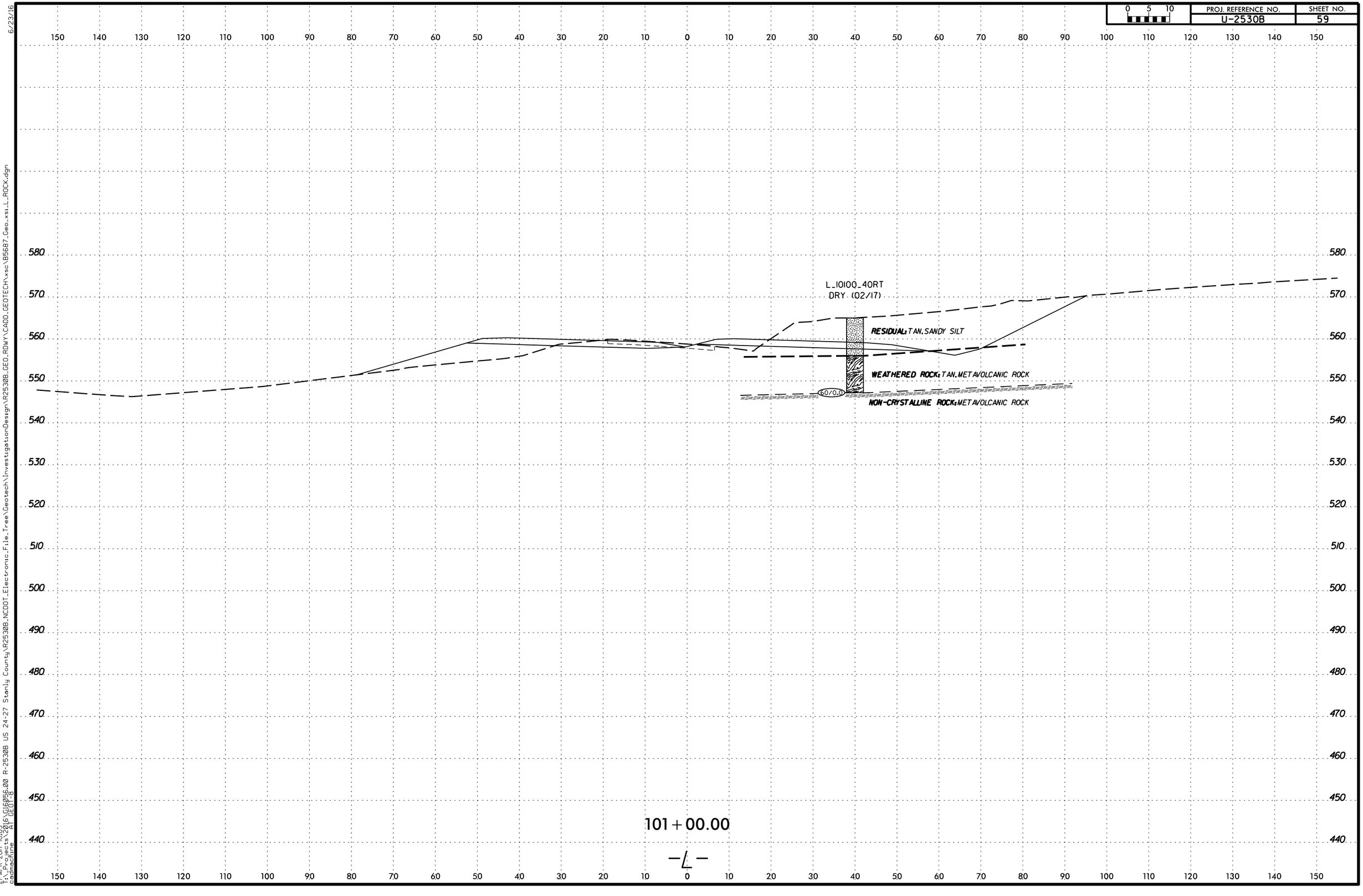
WEATHERED ROCK: TAN, METAVOLCANIC ROCK

50/0.0

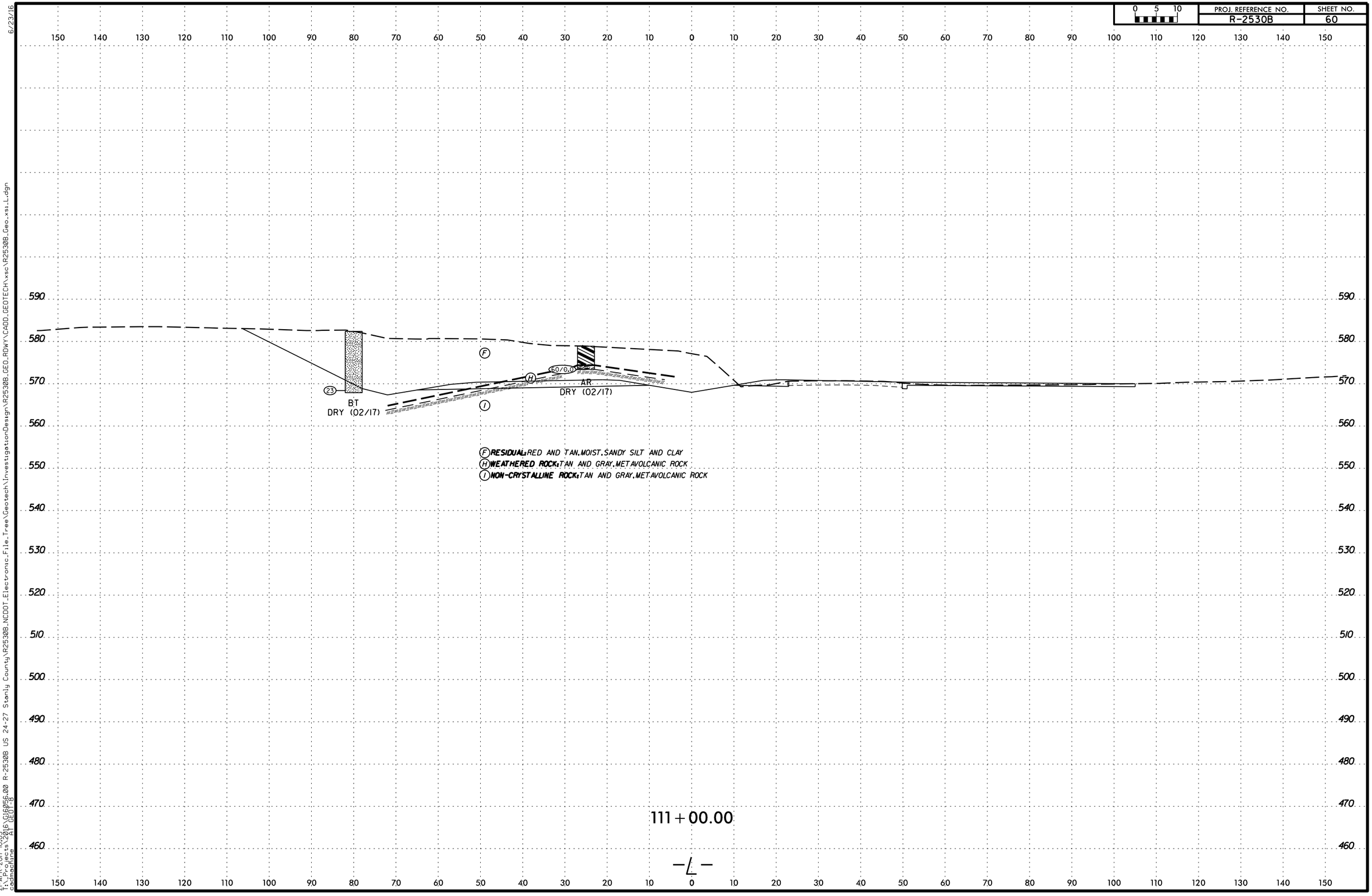
NON-CRYSTALLINE ROCK: GRAY AND TAN, METAVOLCANIC ROCK

100+50.00

—L—

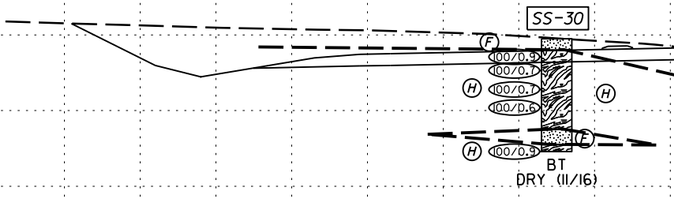


0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	60



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-30	60' RT	120+00 -L-	2.5' - 3.0	A-7-6 (31)	54	30	3	4	36	57	98	96	92	30	-



(F) **RESIDUAL:** TAN AND GRAY, MOIST TO WET, SOFT TO HARD, SANDY SILT AND SILTY CLAY
(H) **WEATHERED ROCK:** GRAY AND BROWN, METAMUDSTONE

120+00.00

-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	62

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620
610
600
590
580
570
560
550
540
530
520
510
500
490
480

RESIDUAL: TAN AND BROWN, MOIST, SANDY SILT

WEATHERED ROCK: TAN AND GRAY, METAVOLCANIC ROCK (50/0)

NON-CRYSTALLINE ROCK: GRAY, METAVOLCANIC ROCK

BT
DRY (02/17)

123+00.00
—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	63

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490

RESIDUAL: RED-BROWN, MOIST, SILTY CLAY

RESIDUAL: BROWN, MOIST, SILTY SAND

94

BT
DRY (02/17)

WEATHERED ROCK: BROWN, METAVOLCANIC ROCK

123+50.00

$-L-$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	64

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630
620
610
600
590
580
570
560
550
540
530
520
510
500
490

RESIDUAL: RED-BROWN, MOIST, SILTY CLAY

WEATHERED ROCK: GRAY, WET, VOLCANIC ROCK

RESIDUAL: BROWN, MOIST, SILTY SAND

WEATHERED ROCK: GRAY, WET, VOLCANIC ROCK

NON-CRYSTALLINE ROCK: GRAY, METAVOLCANIC ROCK

60/0.0

AR

DRY (02/17)

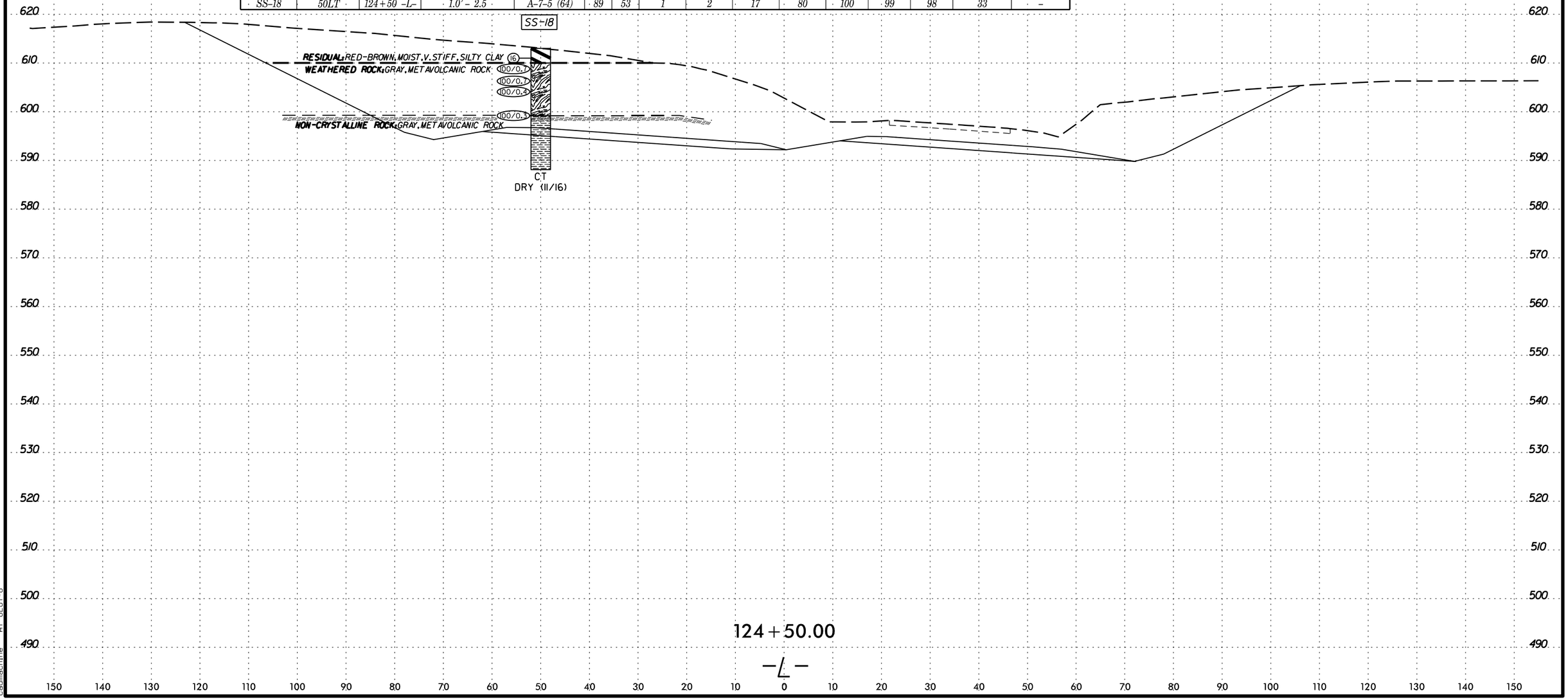
124+00.00

$-\underline{L}-$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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-18	50LT	124+50 -L-	1.0' – 2.5	A-7-5 (64)	89	53	1	2	17	80	100	99	98	33	–



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	66

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620
610
600
590
580
570
560
550
540
530
520
510
500
490

-DRW8-

RESIDUAL: TAN, MOIST, SANDY SILT

WEATHERED ROCK: TAN AND GRAY, METAVOLCANIC ROCK

NON-CRYSTALLINE ROCK: GRAY, METAVOLCANIC ROCK

60/0.0

AR

DRY (02/17)

125+00.00

-L-

6/23/16

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A1 DEOT-8

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	67

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490

(F) **RESIDUAL:** BROWN, MOIST, SANDY SILT
(H) **WEATHERED ROCK:** TAN AND GRAY, METAVOLCANIC ROCK
(I) **NON-CRYSTALLINE ROCK:** GRAY, METAVOLCANIC

(F) (H) (I) 60/0.1 BT DRY (02/17)

(F) (H) (I) 60/0.1 BT DRY (02/17)

125+50.00

—L—

6/23/16

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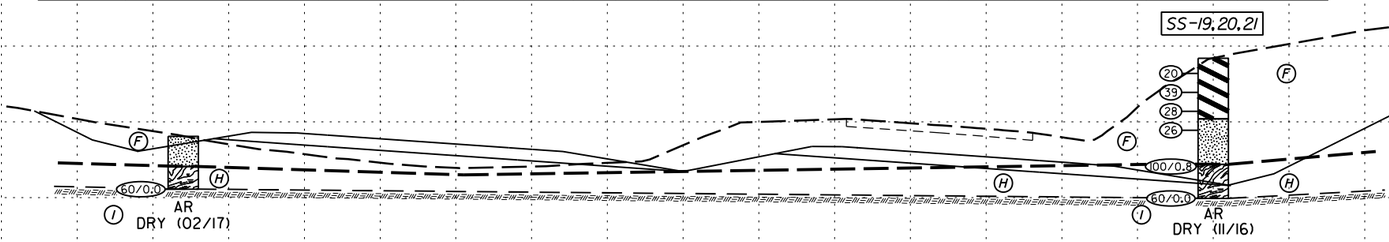
caddmachine
A1 GE01-8

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	68

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-19	60 RT	126+00 -L-	1.0' - 2.5'	A-7-5 (42)	68	35	1	1	22	76	99	99	98	27	-
SS-20	60 RT	126+00 -L-	3.5' - 5.0	A-7-5 (15)	46	16	10	10	40	40	100	93	83	23	-
SS-21	60 RT	126+00 -L-	6.0' - 7.5'	A-7-5(17)	48	18	8	10	34	48	99	94	84	18	-



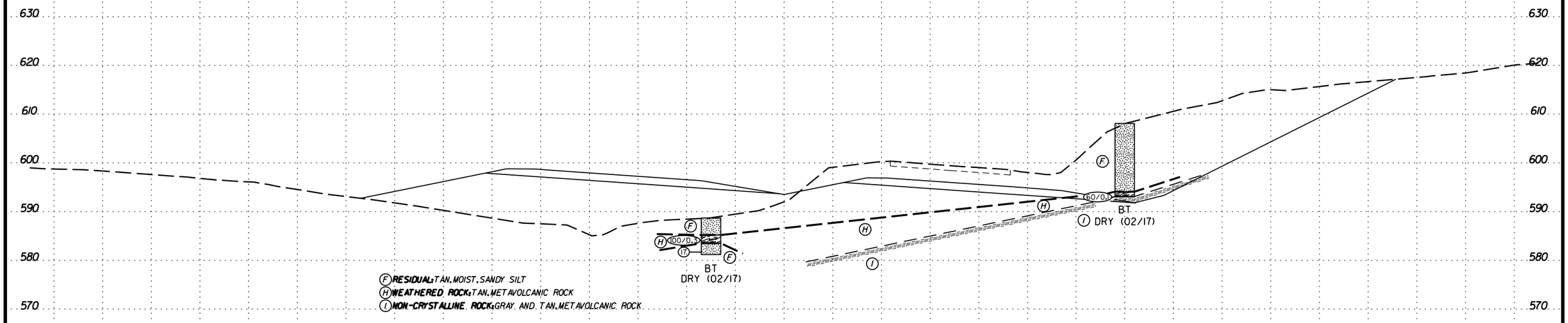
(F) **RESIDUAL**: RED AND TAN, MOIST, V. STIFF TO HARD, SANDY SILT AND SILTY CLAY
(H) **WEATHERED ROCK**: TAN, WET ASANDSTONE
(I) **NON-CRYSTALLINE ROCK**: TAN, WET ASANDSTONE

126+00.00
-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	69

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480



126 + 50.00

—L—

6/23/16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

610
600
590
580

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY AND SANDY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

175 + 50.00

610
600
590
580

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY AND SANDY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

175 + 00.00

610
600
590
580

RESIDUAL: RED AND TAN, MOIST, V. STIFF TO HARD, SANDY SILT

174 + 50.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	71

610 600 590 610 600 590 580 610 600 590 580 570 560 550 540 530 520 510 500 490

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY AND SANDY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

177 + 00.00

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY AND SANDY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

176 + 50.00

SS-22.23

7 35 100/0.8 100/0.7 100/0.7

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY AND SANDY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

BT
DRY (11/16)

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-22	30' RT	176+00 -L-	1.0' - 2.5	A-7-5 (51)	86	54	5	7	18	70	92	89	93	33	-
SS-23	30' RT	176+00 -L-	3.5' - 5.0'	A-6 (10)	35	11	8	11	39	42	100	95	85	15	-

176 + 00.00
-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	72

6/23/16

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

600

590

580

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY CLAY AND SANDY SILT

WEATHERED ROCK: TAN, METAMUDSTONE

177 + 50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

600

590

580

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cadmachine
A1 GEOT-8

0 5 10

179+00.00

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY CLAY AND SANDY SILT
WEATHERED ROCK: TAN, METAMUDSTONE

178+50.00

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY CLAY AND SANDY SILT
WEATHERED ROCK: TAN, METAMUDSTONE

SS-25,26

7
34
100/0.5
100/0.4
100/0.2

RESIDUAL: TAN, MOIST, MED. STIFF TO HARD, SILTY CLAY AND SANDY SILT
WEATHERED ROCK: TAN, METAMUDSTONE

BT
DRY (11/16)

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-25	30' RT	178+00 -L-	1.0' - 2.5'	A-7-6 (35)	65	38	6	2	24	68	90	85	83	23	-
SS-26	30' RT	178+00 -L-	3.5' - 5.0'	A-4 (8)	37	10	16	10	40	34	98	86	76	11	-

178+00.00

-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	74

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

600 590 580 570 560 550 540 530 520 510 500 490 480 600 590 580 570

RESIDUAL: TAN, MOIST, MED. STIFF, SANDY CLAY

RESIDUAL: TAN, MOIST, V. DENSE, SILTY SAND

WEATHERED ROCK: TAN, MET AMUDSTONE

179 + 50.00

-L-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

600 590 580 570

6/23/16

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cadmachine
A1 GEOT-8

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	75

610 600 590 580

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

RESIDUAL: BROWN, MOIST, V. DENSE, SILTY SAND

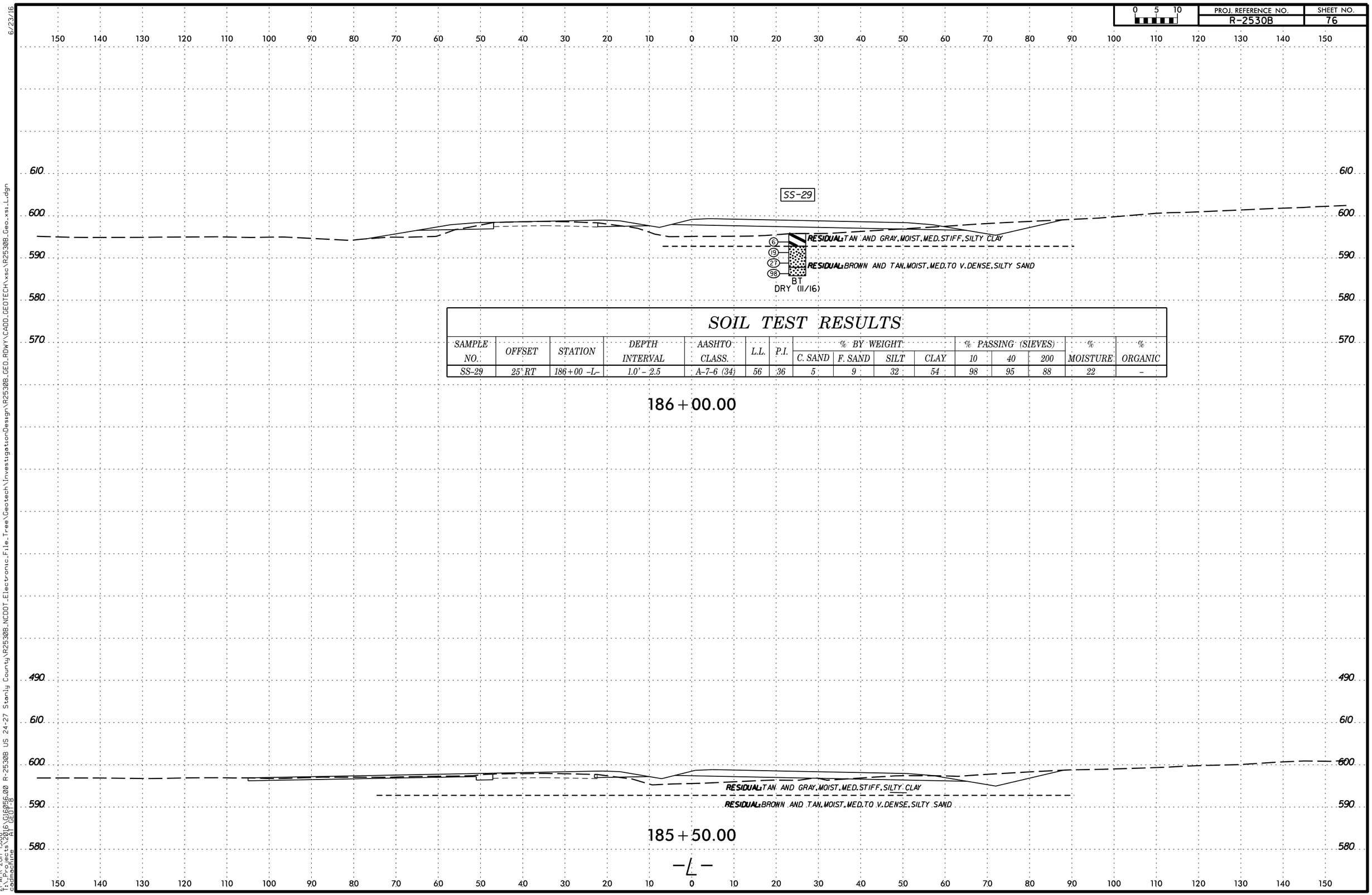
WEATHERED ROCK: TAN, MET. A SANDSTONE

185+00.00

$-L-$

610 600 590 580

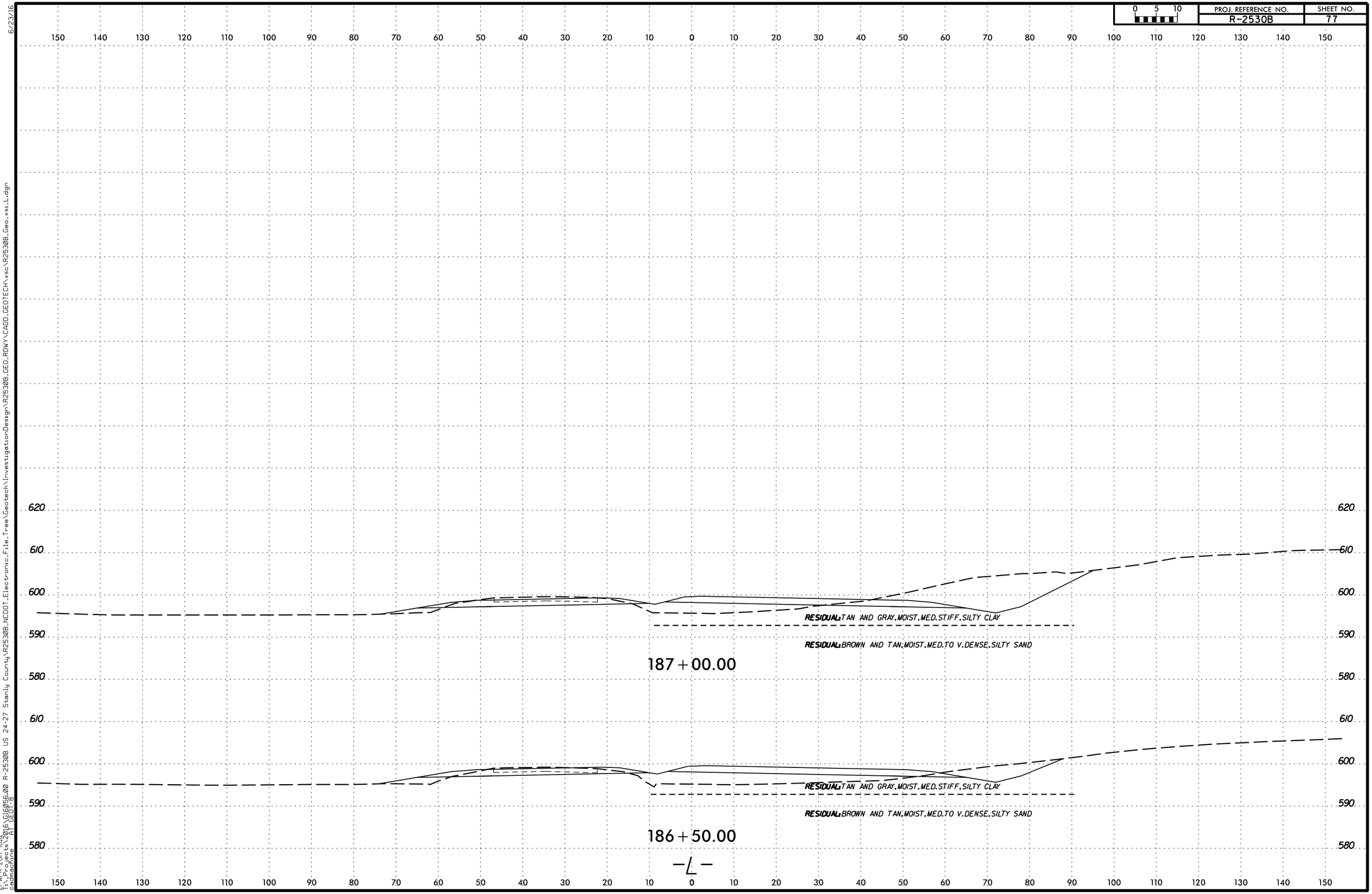
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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-29	25' RT	186+00 -L-	1.0' - 2.5	A-7-6 (34)	56	36	5	9	32	54	98	95	88	22	-

0 5 10



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	78

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490

(82) BT
DRY (02/17)

RESIDUAL: TAN, MOIST, HARD, SANDY SILT AND SILTY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE

(44) BT
DRY (02/17)

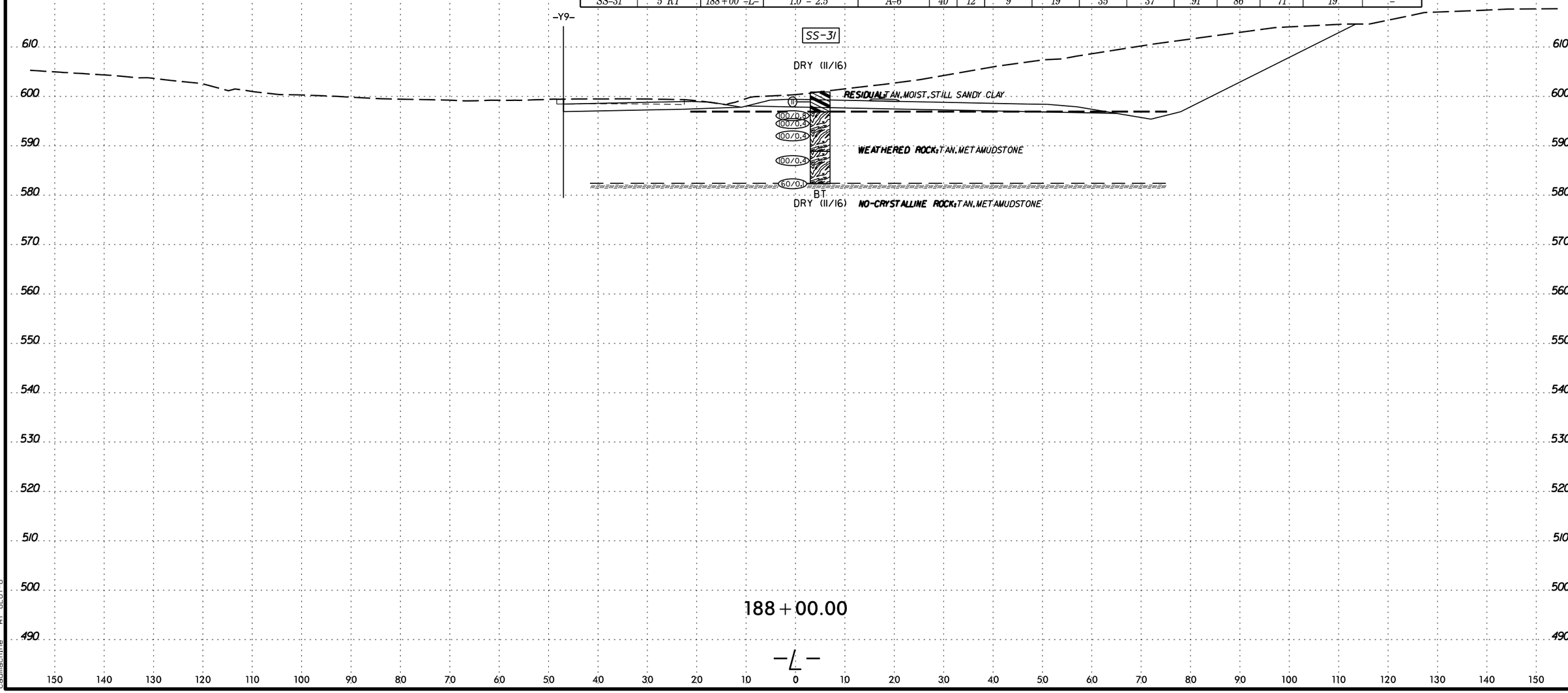
187+50.00

$-L-$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	79

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-31	5' RT	188+00 -L-	1.0' - 2.5'	A-6	40	12	9	19	35	37	91	86	71	19	-



PROJ. REFERENCE NO.	SHEET NO.
R-2530B	80

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490

-Y9-

<50/0.0"
AR
DRY (12/16)

<50/0.0"
AR
DRY (12/16)

(F) **RESIDUAL:** TAN, MOIST, STILL SANDY CLAY
(H) **WEATHERED ROCK:** TAN, METAMUDSTONE
(I) **NO-CRYSTALLINE ROCK:** TAN, METAMUDSTONE

188+50.00

-L-

6/23/16

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	81

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490

RESIDUAL: TAN, SANDY, SILT

WEATHERED ROCK: TAN, METAMUDSTONE

100/0.5
BT
DRY (12/16)

100/0.2
BT
DRY (12/16)

189+00.00

$-L-$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

630 620 610 600 590 580 570 560 550 540 530 520 510 500 490

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	82

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490

(F) **RESIDUAL:** RED-TAN, SANDY SILT AND SILTY CLAY
(H) **WEATHERED ROCK:** TAN, METAMUDSTONE

100/0.3
BT
DRY (12/16)

100/0.3
BT
DRY (12/16)

189+50.00

—L—

6/23/16

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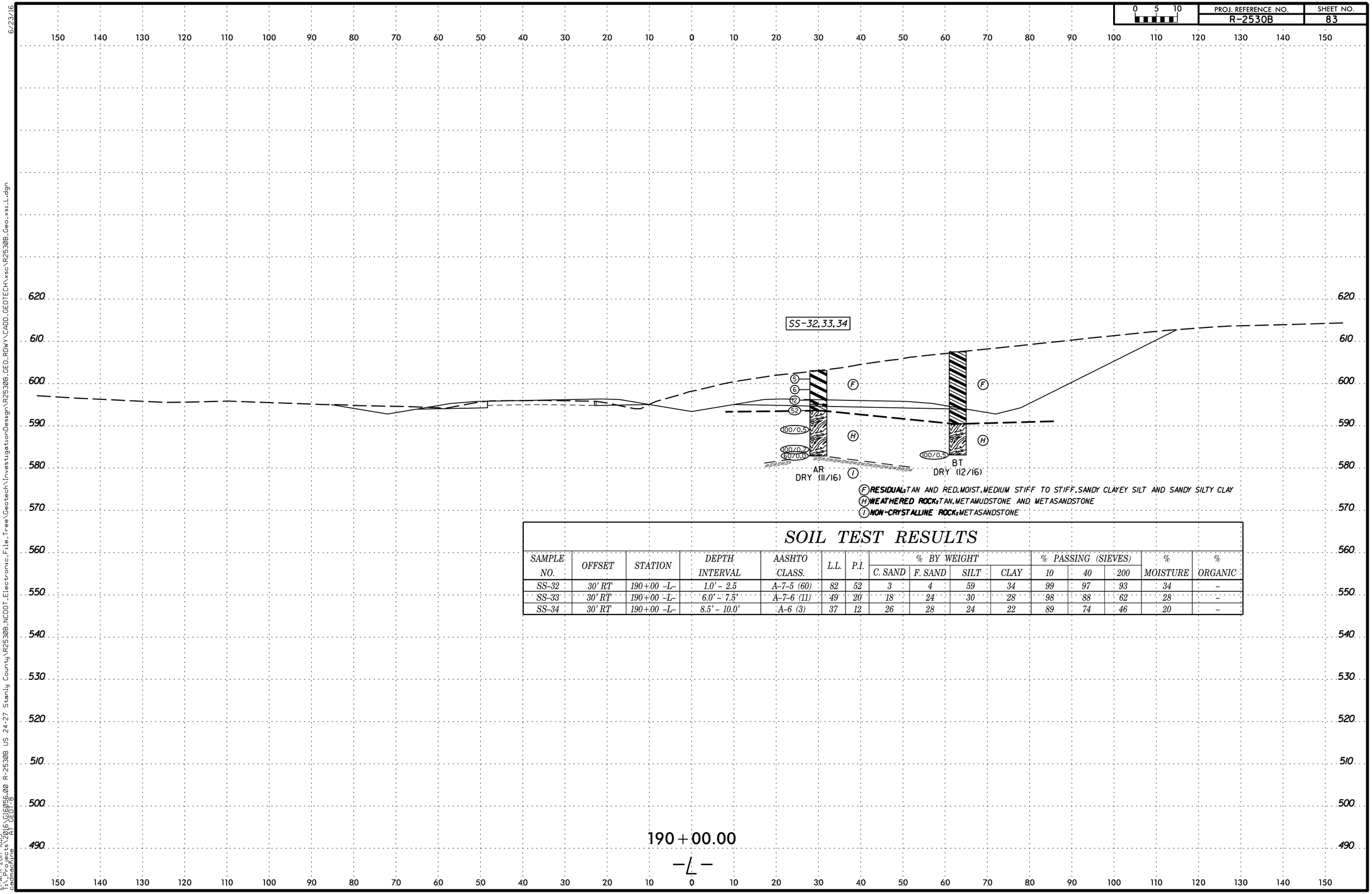

(F) **RESIDUAL:** TAN AND RED, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAYEY SILT AND SANDY SILTY CLAY
(H) **WEATHERED ROCK:** TAN, METAMUDSTONE AND METASANDSTONE
(I) **NON-CRYSTALLINE ROCK:** METASANDSTONE

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-32	30' RT	190+00 -L-	1.0' - 2.5	A-7-5 (60)	82	52	3	4	59	34	99	97	93	34	-
SS-33	30' RT	190+00 -L-	6.0' - 7.5'	A-7-6 (11)	49	20	18	24	30	28	98	88	62	28	-
SS-34	30' RT	190+00 -L-	8.5' - 10.0'	A-6 (3)	37	12	26	28	24	22	89	74	46	20	-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	84

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490

RESIDUAL: RED-TAN, SILTY CLAY

WEATHERED ROCK: TAN AND GRAY, METAMUDSTONE

RESIDUAL: TAN, SANDY SILT

WEATHERED ROCK: TAN AND GRAY, METAMUDSTONE

100/0.2

BT

DRY (12/16)

190+40.00

$-\underline{L}-$

6/23/16

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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570

RESIDUAL: RED AND TAN, MOIST, STIFF TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

RESIDUAL: RED AND TAN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK: TAN, METASANDSTONE

191+50.00

620 610 600 590 580 570

RESIDUAL: RED AND TAN, MOIST, STIFF TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

RESIDUAL: RED AND TAN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK: TAN, METASANDSTONE

191+00.00

620 610 600 590 580

RESIDUAL: TAN RED, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAYEY SILT AND SANDY SILTY CLAY

WEATHERED ROCK: TAN, METAMUDSTONE AND METASANDSTONE

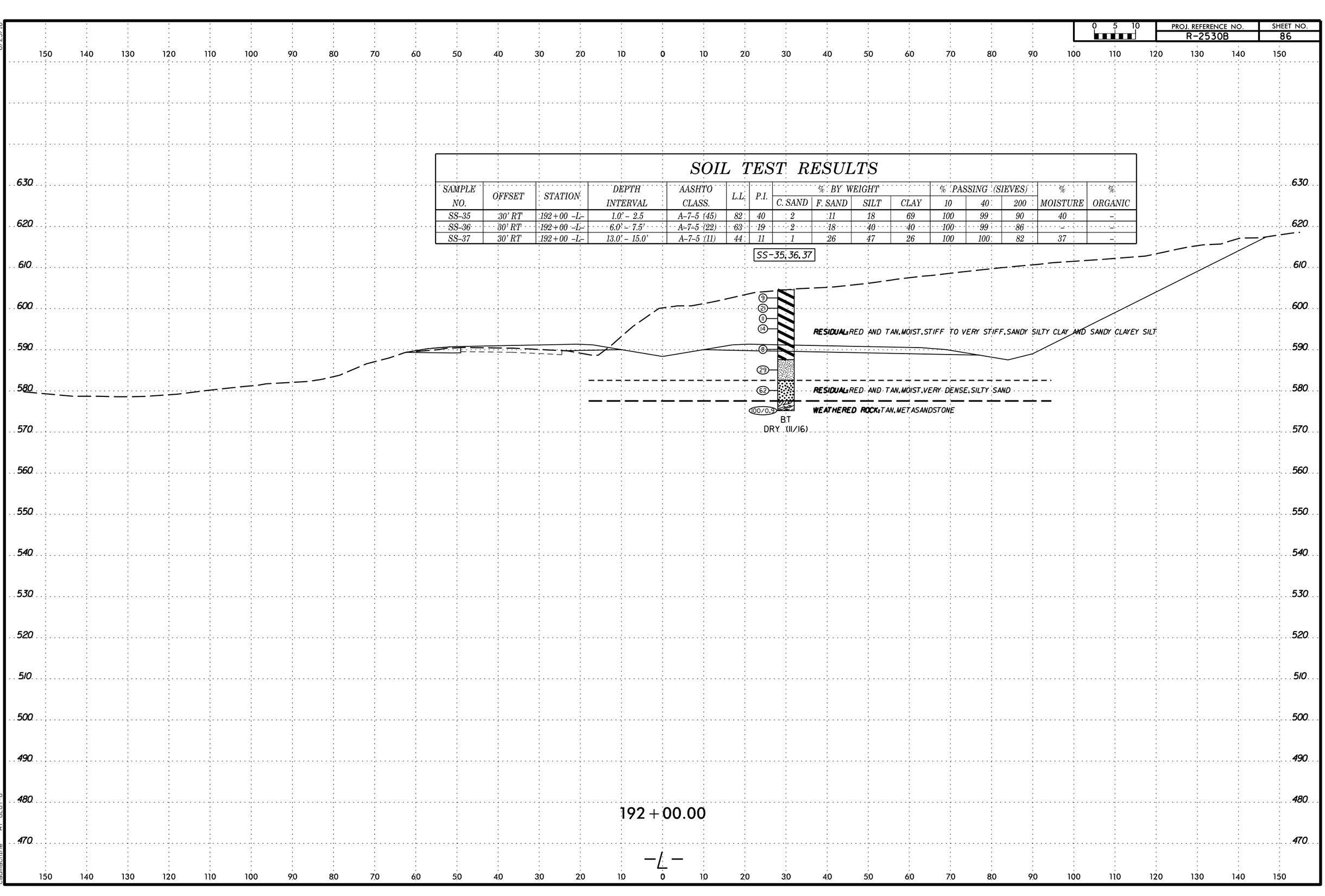
190+50.00

NON-CRYSTALLINE ROCK: METASANDSTONE

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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-35	30' RT	192+00 -L-	1.0' - 2.5	A-7-5 (45)	82	40	2	11	18	69	100	99	90	40	-
SS-36	30' RT	192+00 -L-	6.0' - 7.5'	A-7-5 (22)	63	19	2	18	40	40	100	99	86	-	-
SS-37	30' RT	192+00 -L-	13.0' - 15.0'	A-7-5 (11)	44	11	1	26	47	26	100	100	82	37	-



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	87

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620
610
600
590
580
570

193+00.00

RESIDUAL: RED AND TAN, MOIST, STIFF TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

RESIDUAL: RED AND TAN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK: TAN, METASANDSTONE

192+50.00

RESIDUAL: RED AND TAN, MOIST, STIFF TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

RESIDUAL: RED AND TAN, MOIST, VERY DENSE, SILTY SAND

WEATHERED ROCK: TAN, METASANDSTONE

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	88

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470

RESIDUAL: RED AND TAN, MOIST, STIFF TO VERY STIFF, SANDY SILTY CLAY AND SANDY CLAYEY SILT

36

BT
DRY (12/16)

193+50.00
-L-

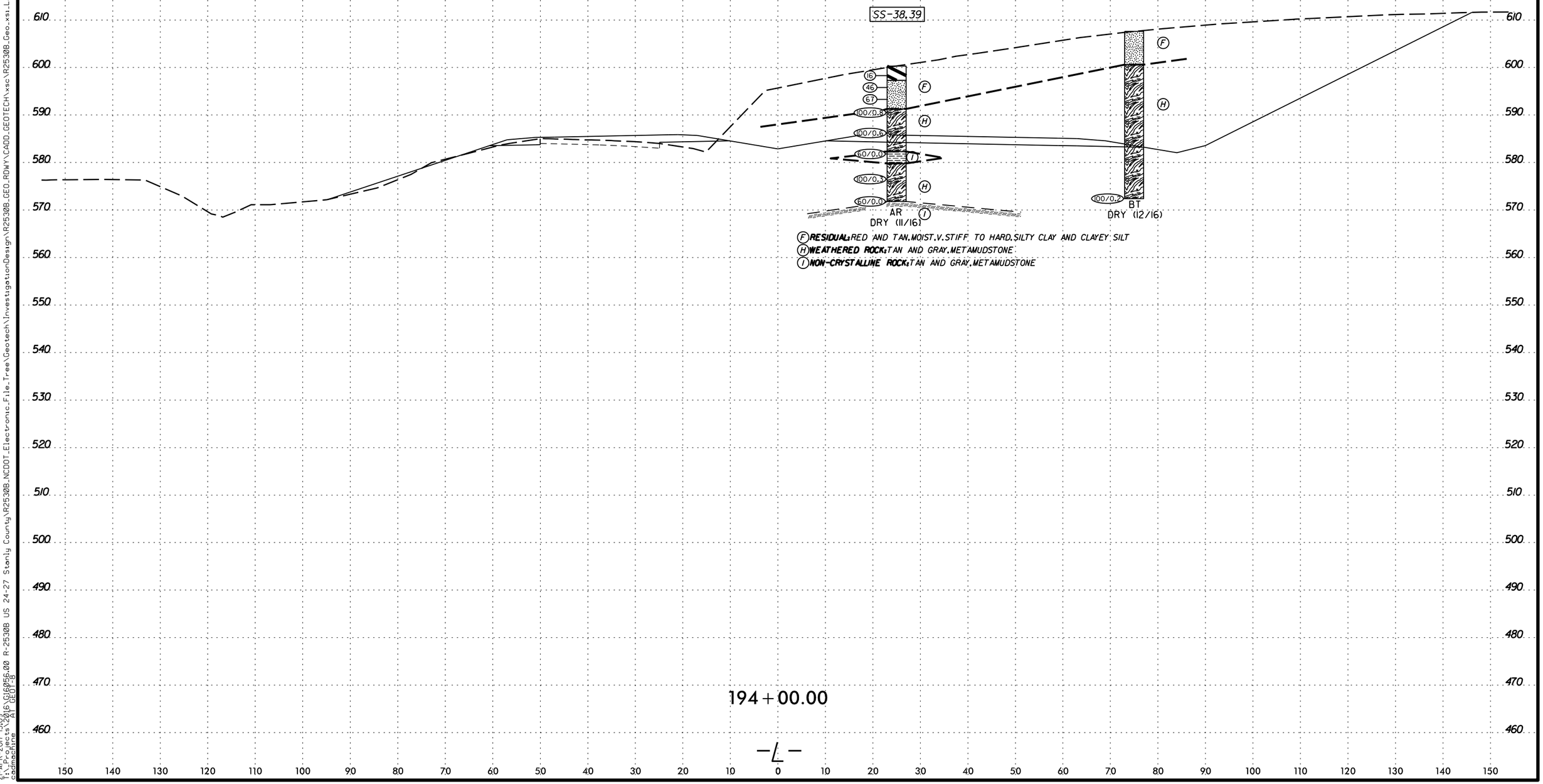
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	89

0 5 10

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-38	25' RT	194+00 -L-	1.0' - 2.5'	A-7-5 (16)	44	14	3	7	34	56	100	97	93	27	-
SS-39	25' RT	194+00 -L-	6.0' - 7.5'	A-4	18	10	6	9	38	47	96	82	85	19	-



(F) **RESIDUAL:** RED AND TAN, MOIST, V. STIFF TO HARD, SILTY CLAY AND CLAYEY SILT

(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE

(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

194+00.00

-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	90

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460

37 BT DRY (12/16)

100/0.4 BT DRY (12/16)

(F) **RESIDUAL:** RED AND RED, SANDY SILT AND SANDY SILTY CLAY

(H) **WEATHERED ROCK:** TAN, MET. AMUDSTONE

194+50.00

$-\underline{L}-$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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A1 GEOT-8

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	91

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

570
600
590
580
570
560
550
540
530
520
510
500
490
480

100/0.4
BT
DRY (12/16)

60/0.1
AR
DRY (12/16)

(F) RESIDUAL: TAN, SANDY SILT
(H) WEATHERED ROCK: TAN, METAMUDSTONE
(I) NON-CRYSTALLINE ROCK: TAN, METAMUDSTONE

201+50.00

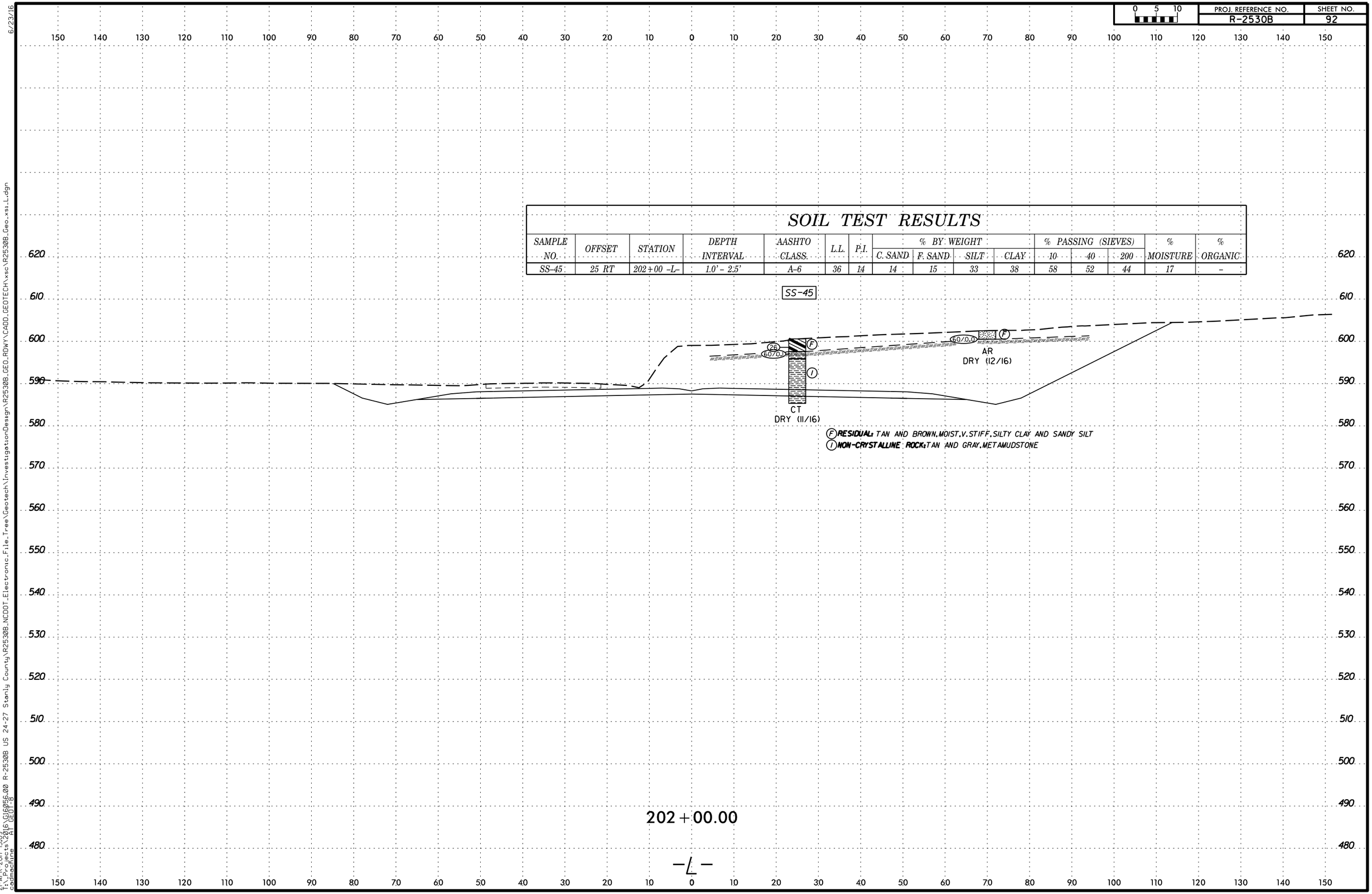
—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	92

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-45	25 RT	202+00 -L-	1.0' - 2.5'	A-6	36	14	14	15	33	38	58	52	44	17	-



(F) **RESIDUAL:** TAN AND BROWN, MOIST, V. STIFF, SILTY CLAY AND SANDY SILT

(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

202+00.00

-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	93

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490 480

100/0.2
60/0.0
AR
DRY (12/16)
(H)
(I)

60/0.0
AR
DRY (12/16)
(H)
(I)

(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

202+50.00

$-\underline{L}-$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	94

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

620 610 600 590 580 570 560 550 540 530 520 510 500 490 480

60/0.0
AR
DRY (12/16)

100/0.2
BT
DRY (12/16)

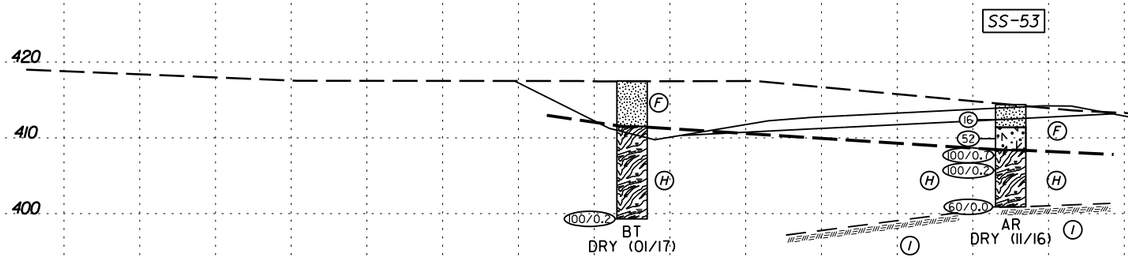
(F) **RESIDUAL:** RED AND TAN CLAYEY SILT AND SILTY CLAY
(H) **WEATHERED ROCK:** TAN AND GRAY METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY METAMUDSTONE

203+00.00

—L—

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-53	25' LT	274+00 -L-	3.5' - 5.0'	A-6	38	14	25	7	32	36	73	57	51	6	-



(F) **RESIDUAL:** TAN AND GRAY, MOIST, V. STIFF TO HARD, SANDY SILT AND SANDY CLAY
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

274+00.00

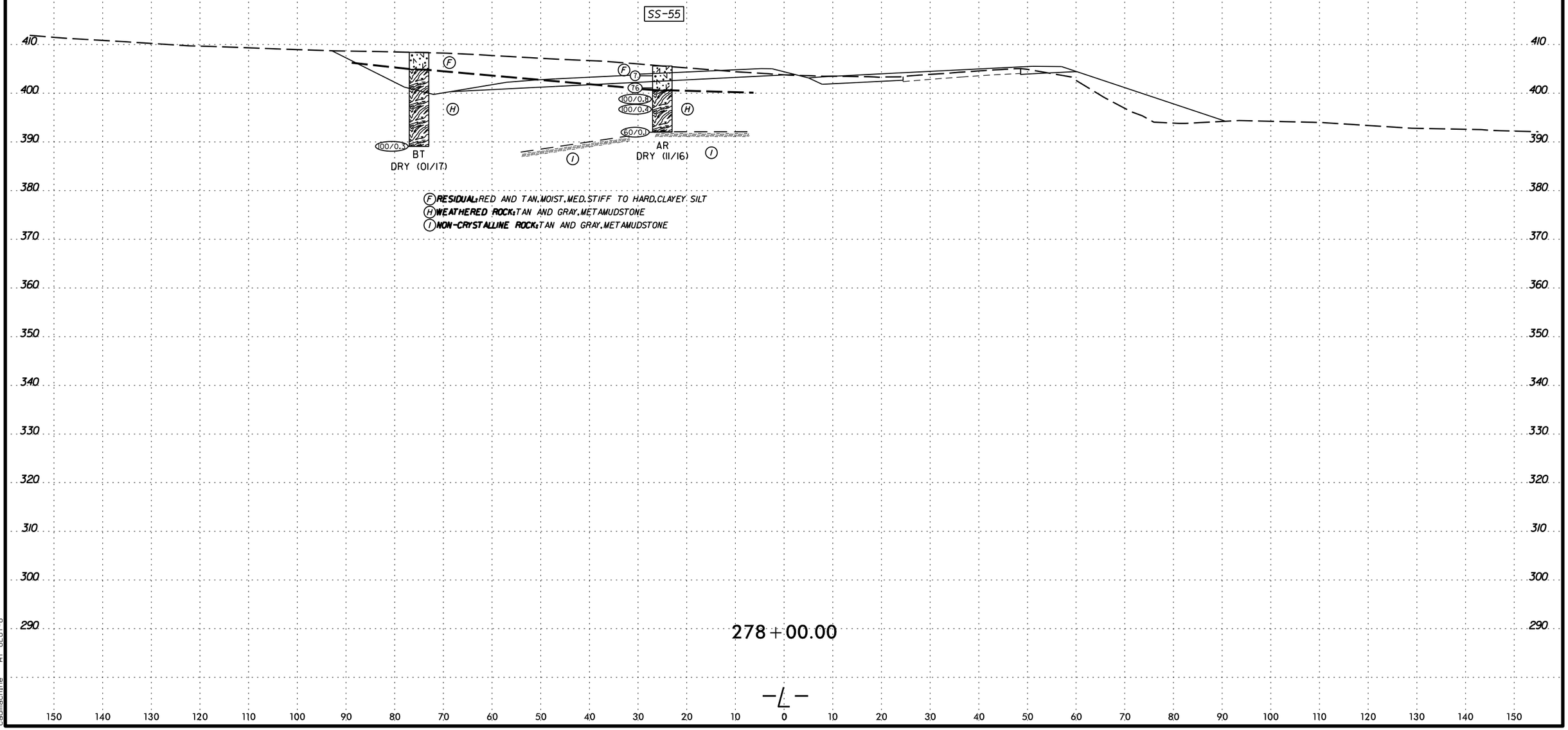
-L-

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	96

0 5 10

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-55	25' LT	278+00 -L-	3.5' - 5.0'	A-5	41	9	7	5	56	32	100	95	90	12	-

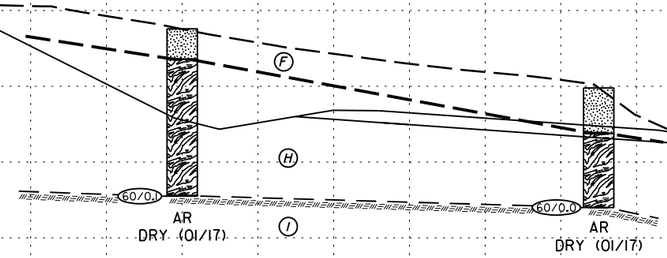


(F) **RESIDUAL:** RED AND TAN, MOIST, MED. STIFF TO HARD, CLAYEY SILT
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210



(F) **RESIDUAL:** TAN, SANDY SILT
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

298+50.00

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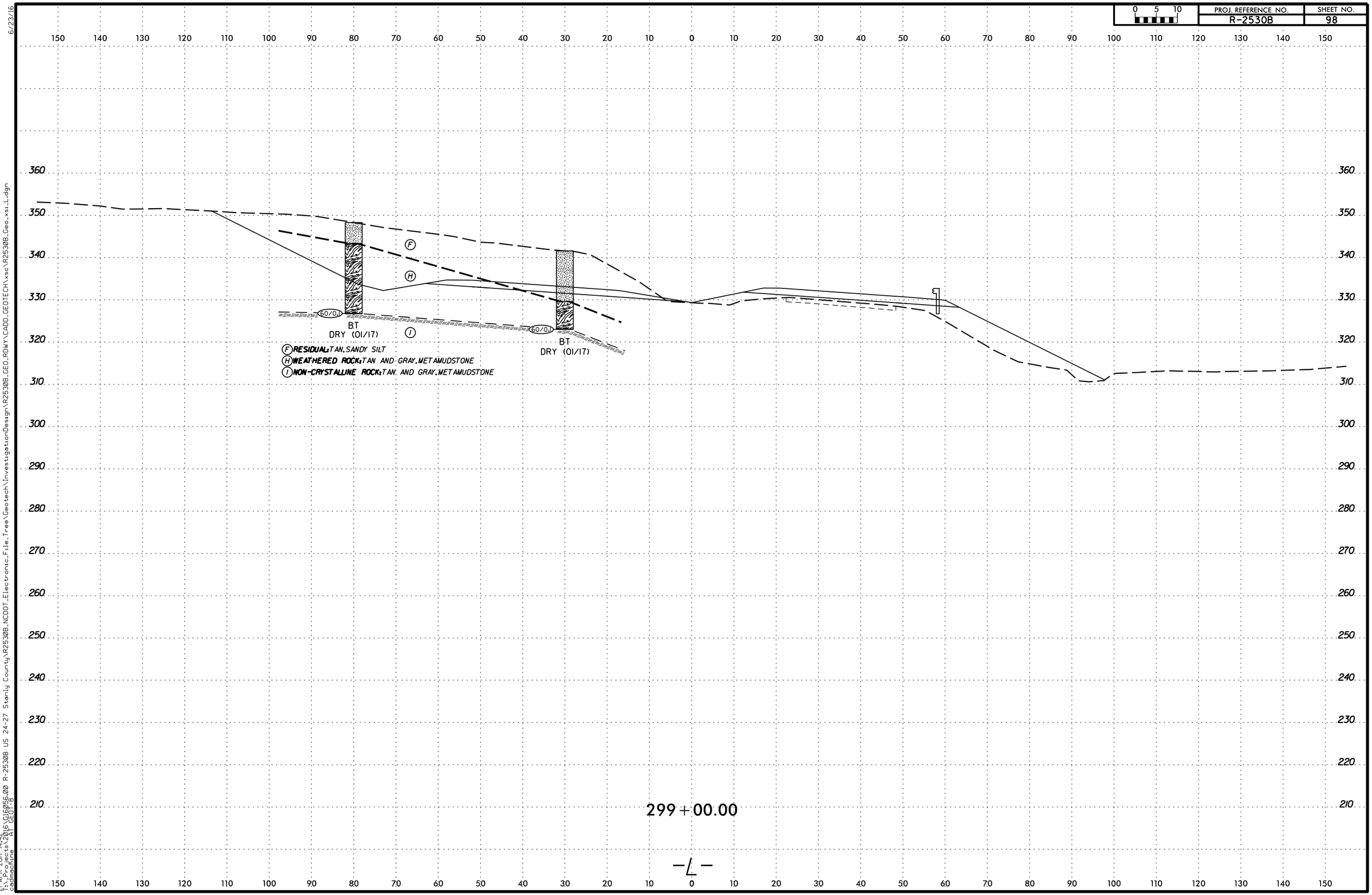
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	98



PROJ. REFERENCE NO.	SHEET NO.
R-2530B	99

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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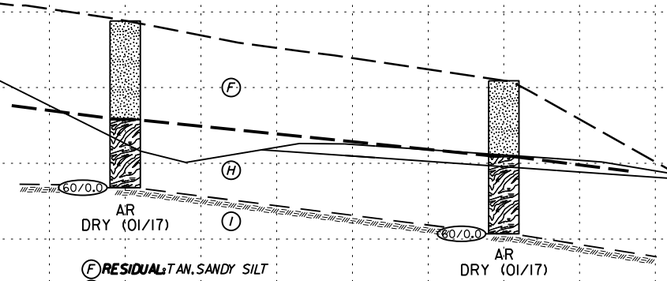

299+50.00

$-\underline{L}-$

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	100

0 5 10

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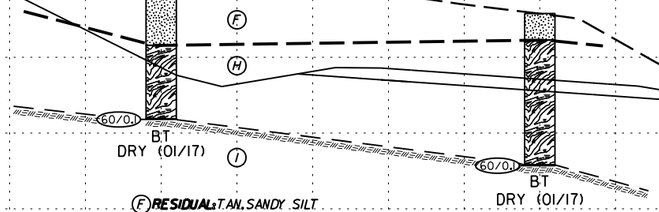
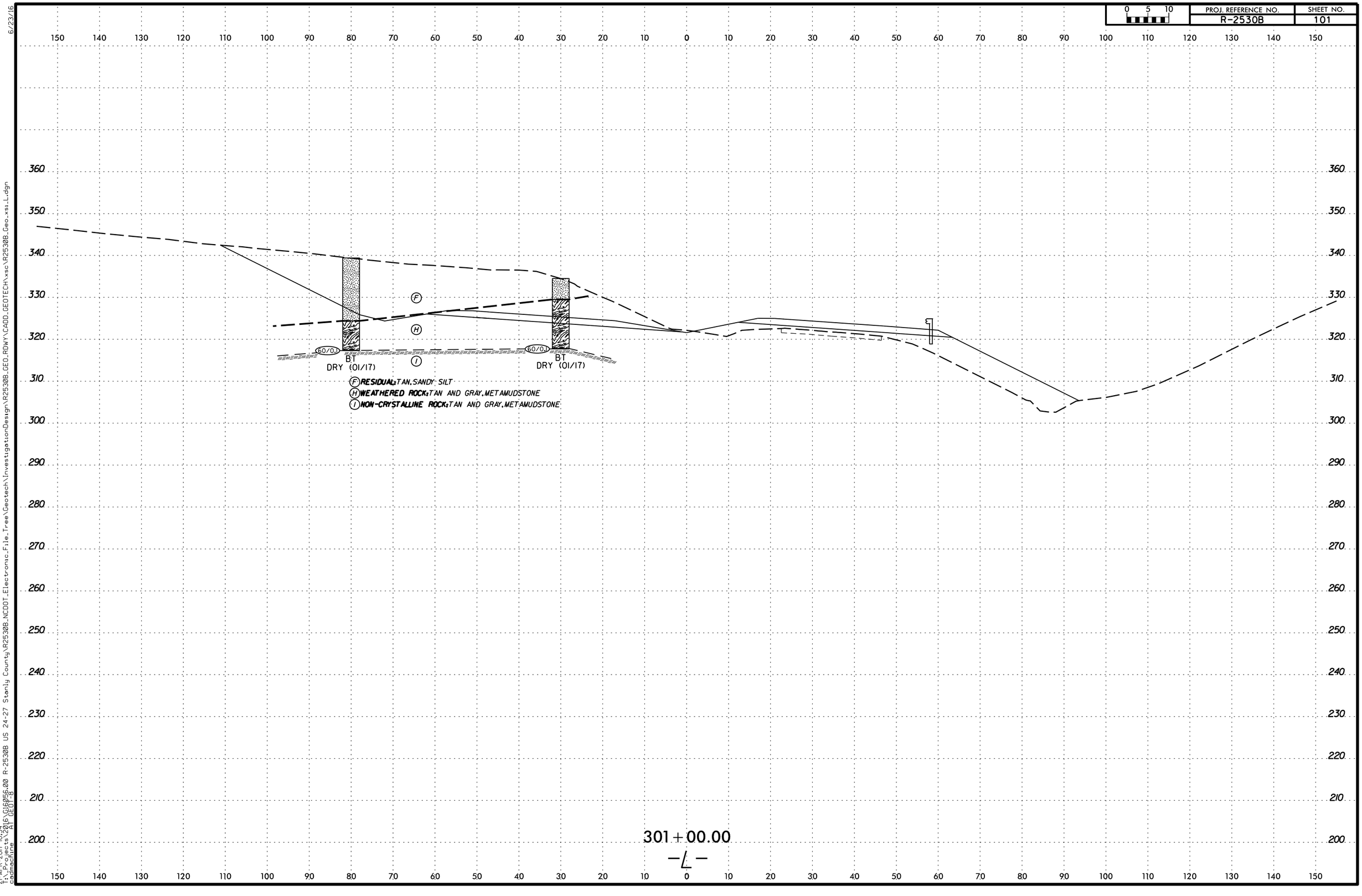
360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200



(F) **RESIDUAL:** TAN, SANDY SILT
(H) **WEATHERED ROCK:** TAN AND GRAY, METAMUDSTONE
(I) **NON-CRYSTALLINE ROCK:** TAN AND GRAY, METAMUDSTONE

300+50.00
$-\underline{L}-$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2530B	101



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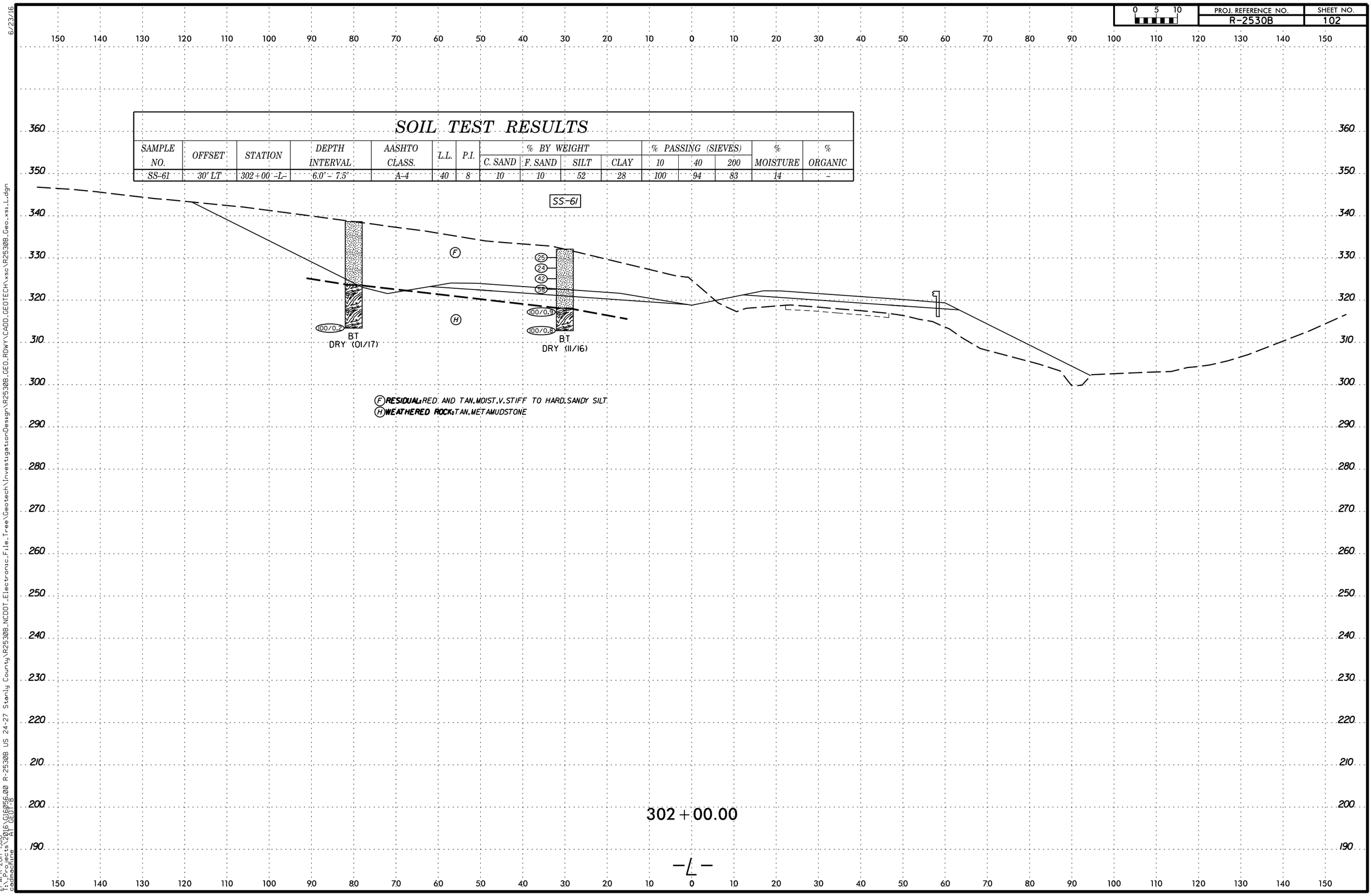
cadmachine
A1 GEOT-8

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-61	30' LT	302+00 -L-	6.0' - 7.5'	A-4	40	8	10	10	52	28	100	94	83	14	-



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cadmachine
A1 GEOT-8
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-2530B	103

0 5 10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190

BT
DRY (01/17)

100/0.3

BT
DRY (11/16)

64
100/0.9
100/0.6
100/0.6
100/0.4

(F) **RESIDUAL**: TAN, MOIST, HARD, SANDY SILT
(H) **WEATHERED ROCK**: TAN, WET MUDSTONE

304+00.00
—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16
21-APR-2017 10:34
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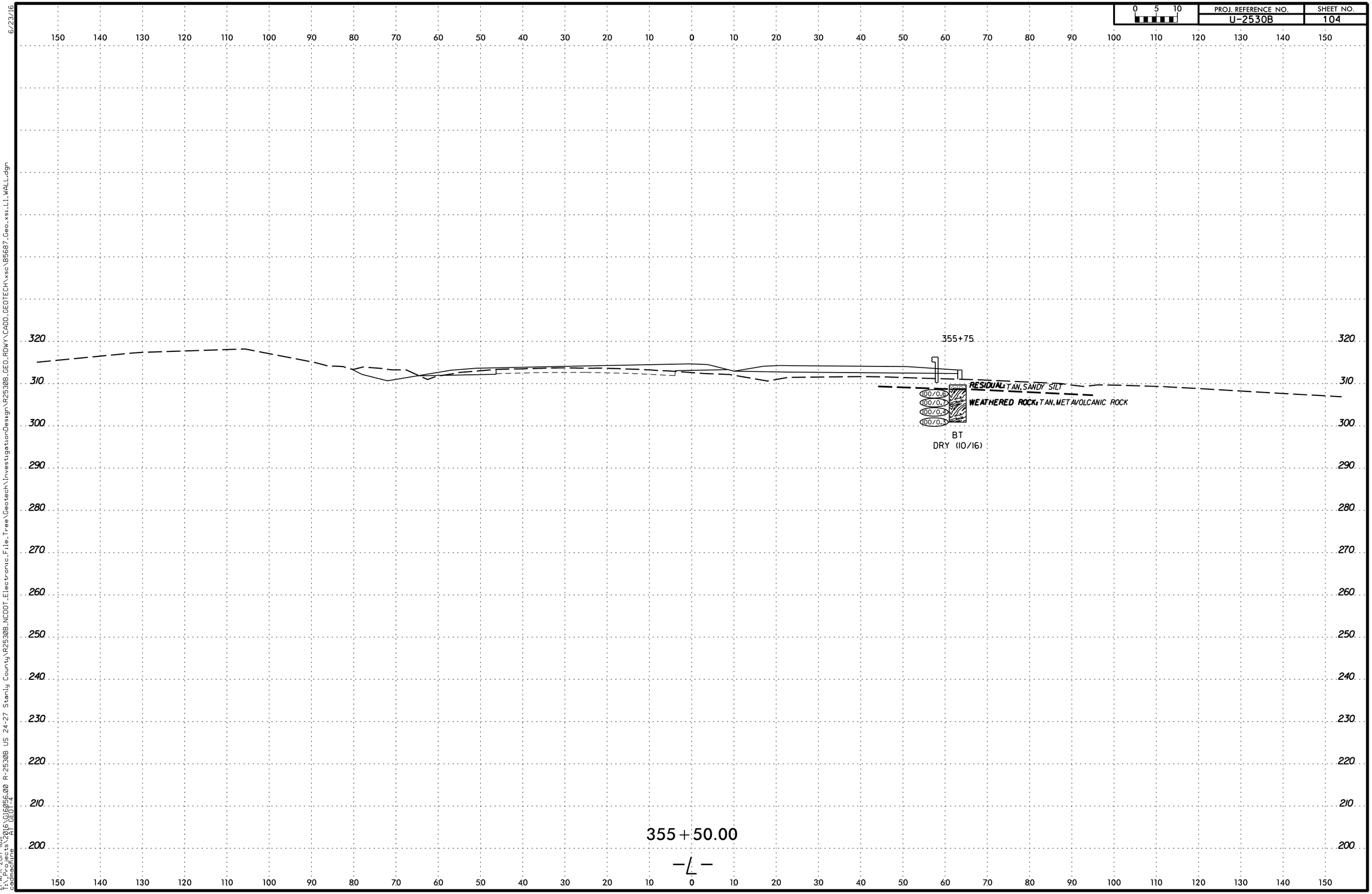
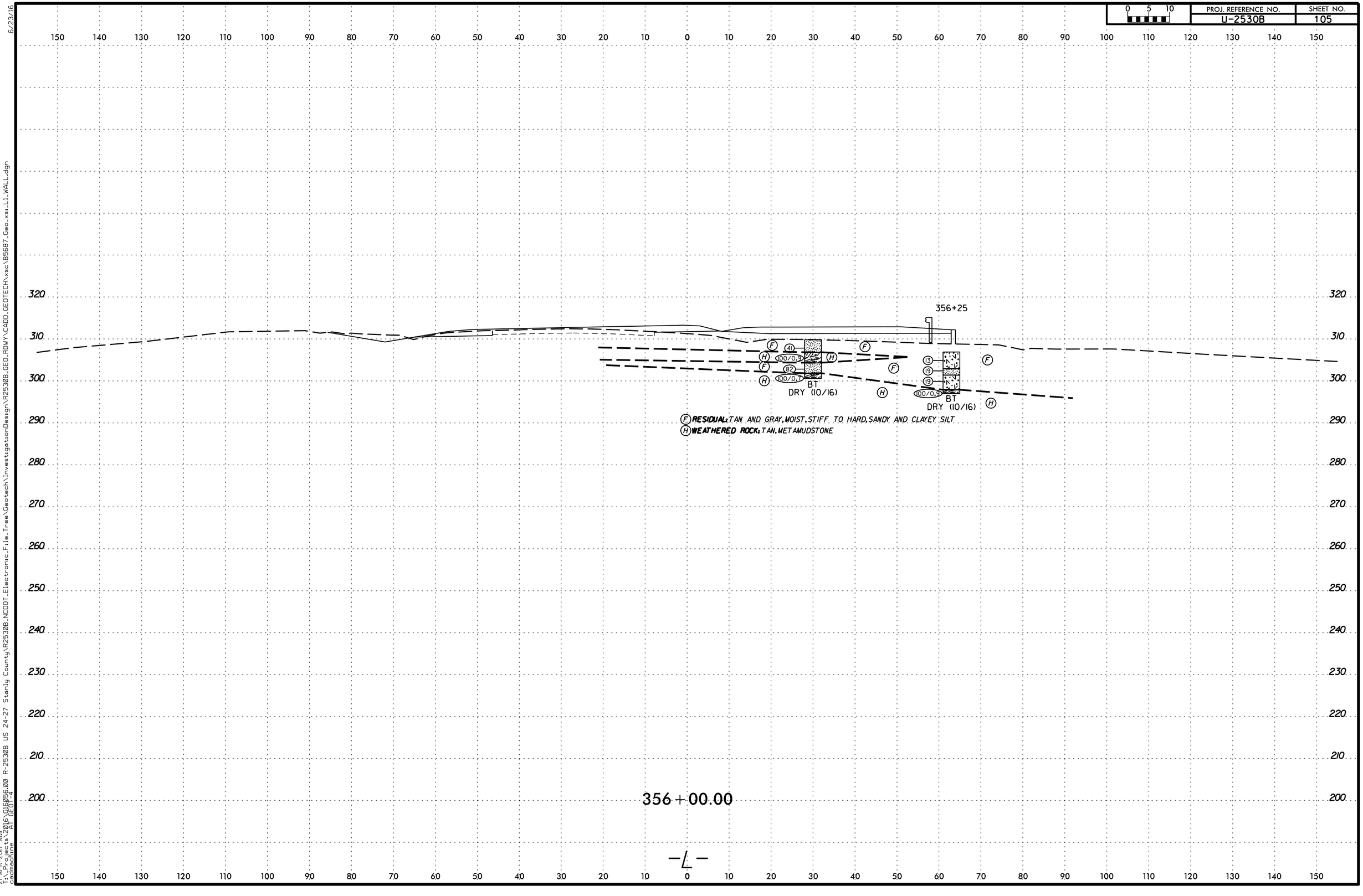
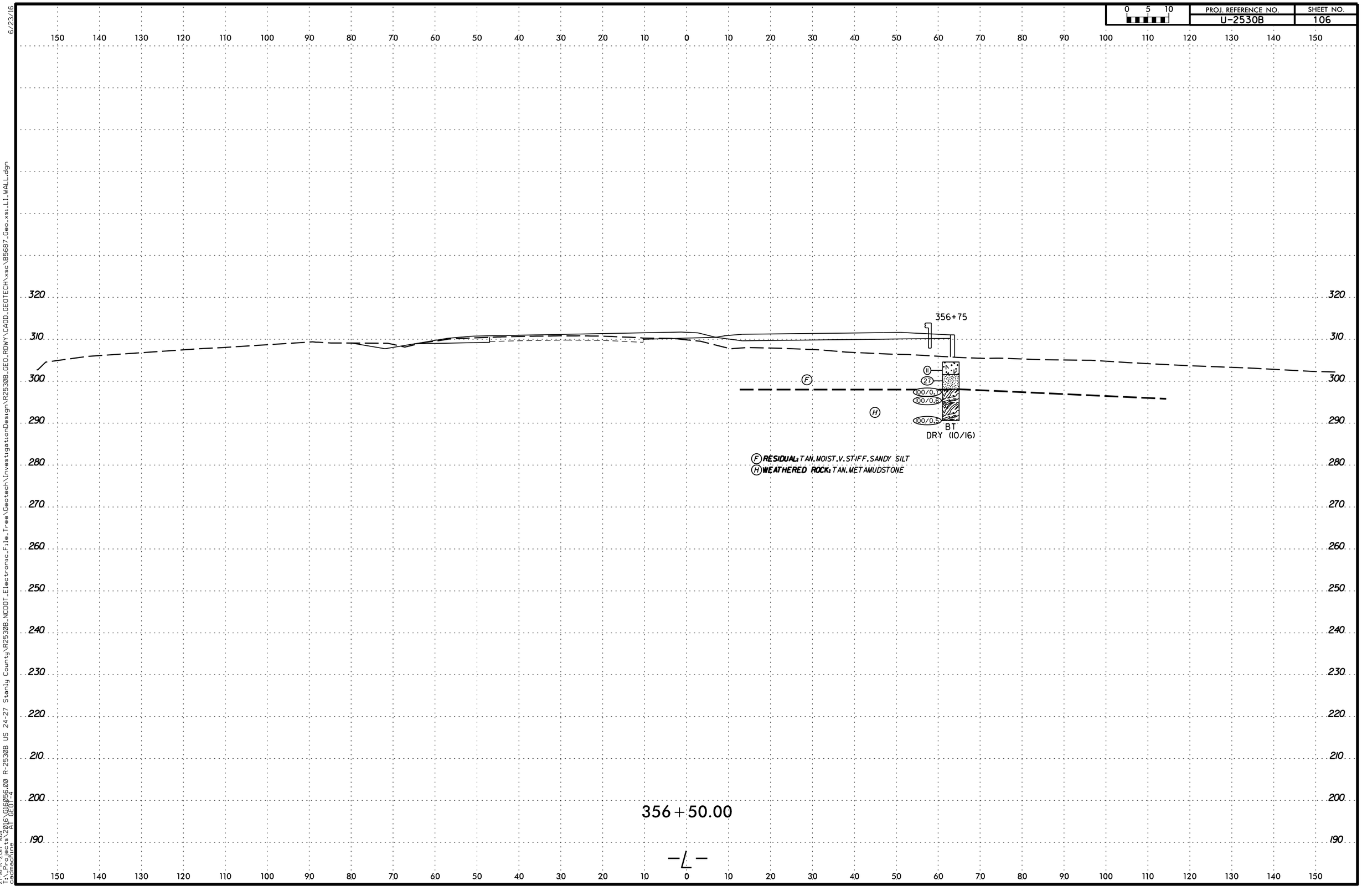
cadmachine
A1 GEOT-8







0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	107

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

320 310 300 290 280 270 260 250 240 230 220 210 200 190

357+25

8 11 10 55 100/0.1 100/0.3

F H

BT

DRY (10/16)

(F) **RESIDUAL:** TAN, MOIST, STIFF TO HARD, SANDY SILT

(H) **WEATHERED ROCK:** TAN, WET MUDSTONE

357+00.00

—L—

6/23/16

2:\APR-2017 16\I6056.00 R-2530B US 24-27 Stanly County\R2530B_GEO_RDWY\CADD_GEOTECH\xsc\B5687_Geo_xsi_LI_WALL.dgn

Plotted: 2017-04-12 07:16:16 AM
Created: 2016-10-31 08:10:10 AM
by: cadmachine
AT DEOT-4

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	108

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

320 310 300 290 280 270 260 250 240 230 220 210 200 190

357+75

22
27
59
59
100/0.9
100/0.2

BT
DRY (10/16)

RESIDUAL: TAN, MOIST, V. STIFF TO HARD, SANDY SILT

WEATHERED ROCK: TAN, METAMUDSTONE

357+70.00

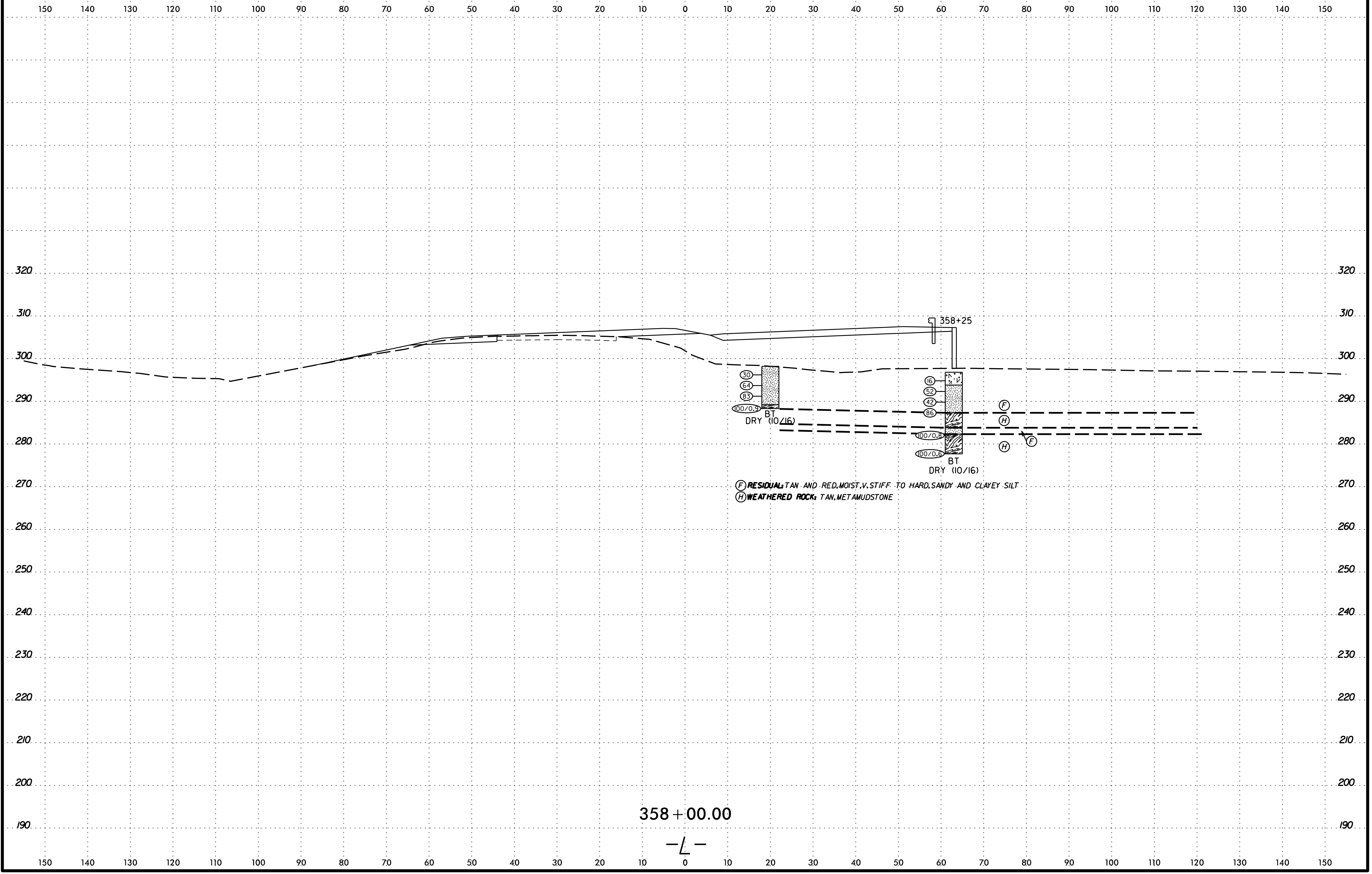
—L—

6/23/16

2:\APP-2017 16\2
I:\Projects\2016\G16056.00 R-2530B US 24-27 Stanly County\R2530B_NCDOT_Electronic_File_Tree\Geotech\Investi
cadmachine
A1 GE01-4

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
U-2530B	109



Ⓕ **RESIDUAL:** TAN AND RED, MOIST, V. STIFF TO HARD, SANDY AND CLAYEY SILT

Ⓗ **WEATHERED ROCK:** TAN, METAMUDSTONE

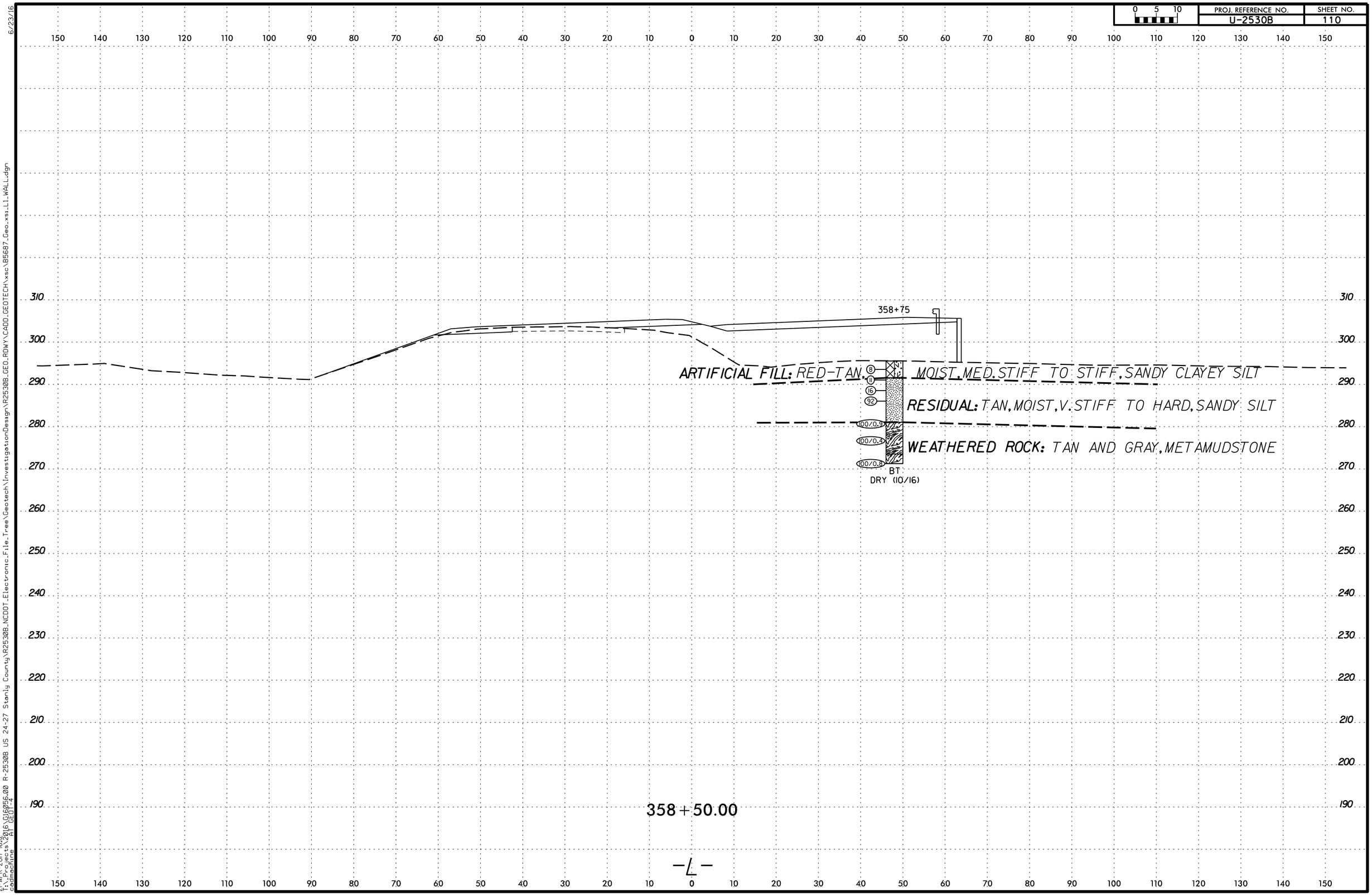
358+00.00

-L-

6/23/16

21-APR-2017 16:12
T:_Projects\2016\G16056.00 R-2530B US 24-27 Stanly County\R2530B_NCDOT_Electronic_File_Tree\Geotech\InvestigationDesign\R2530B_GEO_RDWY\CADD_GEOTECH\xsc\B5687_Geo_xsi_L1_WALL.dgn
cadmachine AT GEOT-4

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	110



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2530B	111

359+25

ARTIFICIAL FILL: RED-TAN AND TAN, MOIST, M. STIFF SANDY CLAYEY SILT

RESIDUAL: TAN AND BROWN, MOIST, V. STIFF TO H

WEATHERED ROCK: TAN, METAMUDSTONE

BT

359+00.00

—L—

359+75

RESIDUAL: TAN, MOIST, M. STIFF TO HARD, SANDY SILT

WEATHERED ROCK: TAN AND GRAY, METAMUDSTONE

7
32
36
100/0.4
100/0.6
100/0.7
100/0.7
50/0.0

10/16

AR

359+50.00

$-\underline{L}-$

PROJECT REFERENCE NO.	SHEET NO.
R–2530B	113

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX A
CORE LOGS AND PHOTOGRAPHS

REFERENCE: R–2530B

PROJECT: 34446

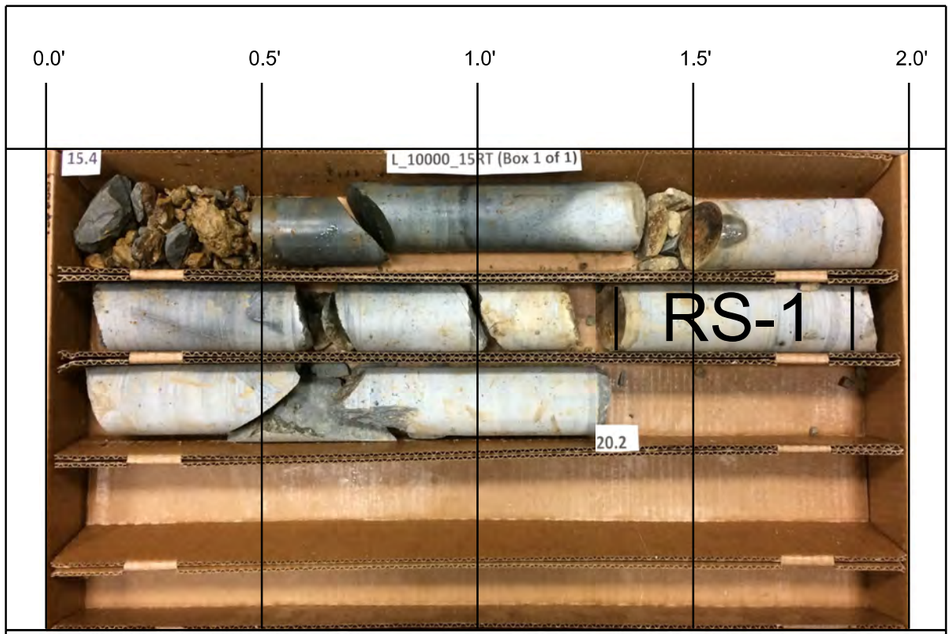
DS
WSH
INITIALS

4/25/2017
DATE

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34446.1.6	**TIP** R-2530B	**COUNTY** STANLY	**GEOLOGIST** Goodnight, D
SITE DESCRIPTION NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER			**GROUND WTR (ft)**
BORING NO. L_10000_15RT	**STATION** 100+00	**OFFSET** 31 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 20.2 ft	**NORTHING** 581,694	**EASTING** 1,659,506	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE HPC2473 CME-550 92% 12/09/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 11/30/16	**COMP. DATE** 11/30/16	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 4.8 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											Begin Coring @ 15.4 ft
		15.4	4.8	1:49/1.0 1:40/1.0 1:44/1.0 1:41/1.0 1:29/0.8	(4.6) 96%	(3.8) 79%	RS-1	(4.6) 96%	(3.8) 79%		(4.6) (3.8) **NON-CRYSTALLINE ROCK** 96% 79% GRAY, SLIGHT TO VERY SLIGHTLY WEATHERED, HARD, VERY CLOSE TO CLOSELY FRACTURED, METATUFF *(continued)* ELEV. (ft) DEPTH (ft)
		20.2									20.2 Boring Terminated at Depth 20.2 ft IN: NCR META MUDSTONE



BORING L_10000_15RT, BOX 1 OF 1, 15.4 FEET TO 20.2 FEET.

0 4" 8"
INCHES

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

ROCK CORE PHOTOS

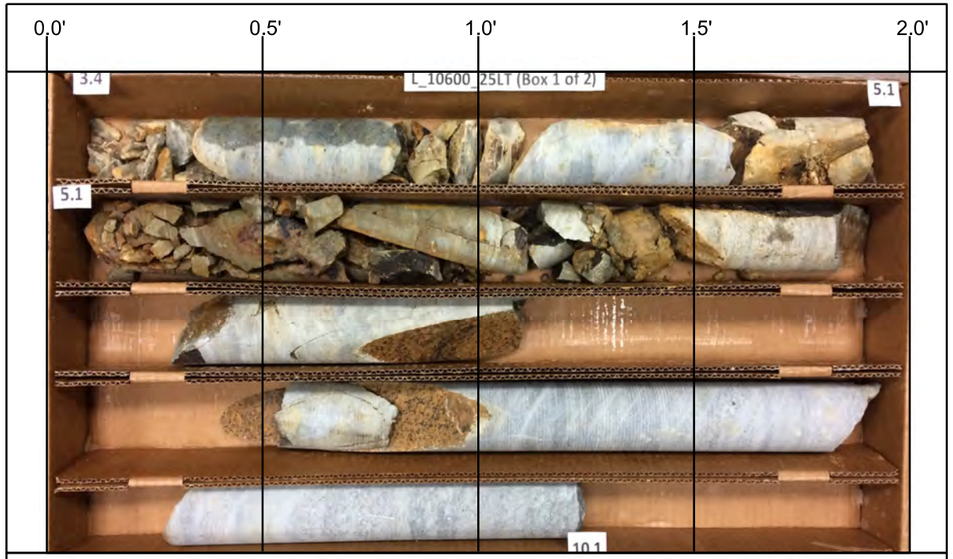
NC 24-27 FROM 740 IN ALBEMARLE TO
EAST OF THE PEE DEE RIVER
STANLY AND MONTGOMERY COUNTIES
WBS: 34446.1.6 & TIP: R-2530B
FALCON PROJECT NO. G16056.00

NCDOT CORE DOUBLE R2530B_GEO_BORINGS.GPJ NC_DOT.GDT 3/3/17

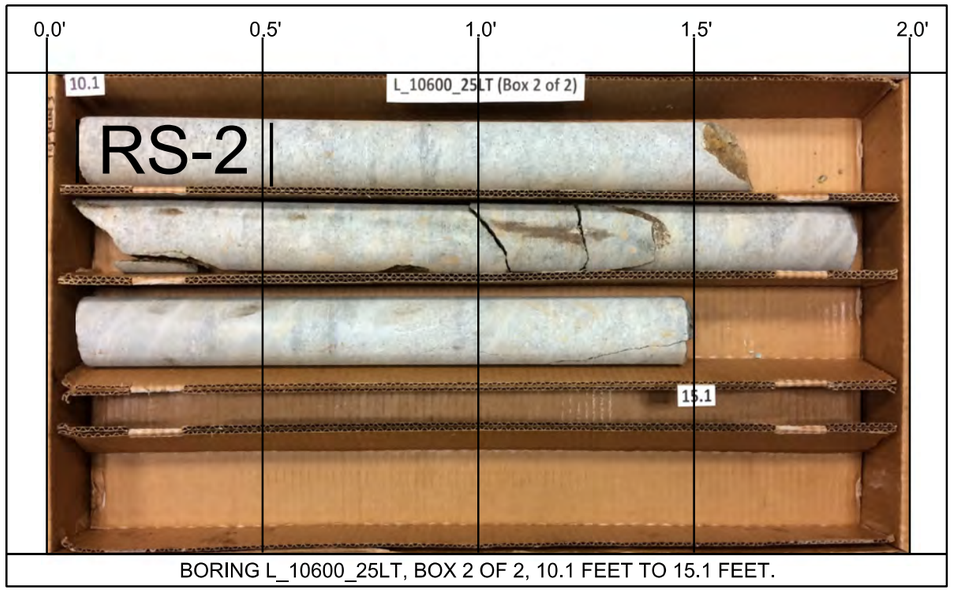
GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34446.1.6	**TIP** R-2530B	**COUNTY** STANLY	**GEOLOGIST** Goodnight, D
SITE DESCRIPTION NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER			**GROUND WTR (ft)**
BORING NO. L_10600_25LT	**STATION** 106+00	**OFFSET** 25 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.1 ft	**NORTHING** 5,813,443	**EASTING** 1,659,992 / **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE HPC2473 CME-550 92% 12/09/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 11/30/16	**COMP. DATE** 11/30/16	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 11.7 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											Begin Coring @ 3.4 ft
		3.4 5.1	1.7	2:05/1.0 2:52/0.7	(1.6) 94%	(0.0) 0%		(3.0) 176%	(0.0) 0%		**NON-CRYSTALLINE ROCK** 3.4 GRAY AND TAN, MODERATE TO MODERATELY SEVERELY WEATHERED, MODERATELY HARD TO HARD, V. CLOSE TO CLOSELY FRACTURED, METATUFF 5.1
		10.1	5.0	2:34/1.0 1:54/1.0 2:14/1.0 1:29/1.0 1:32/1.0	(4.9) 98%	(2.9) 58%		(8.5) 85%	(7.4) 74%		GRAY AND TAN, SLIGHT TO VERY SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE TO CLOSELY FRACTURED, METATUFF
		15.1	5.0	1:34/1.0 2:11/1.0 1:41/1.0 2:22/1.0 3:29/1.0	(5.0) 100%	(4.5) 90%	RS-2				15.1 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Depth 15.1 ft IN: NCR META MUDSTONE



BORING L_10600_25LT, BOX 1 OF 2, 3.4 FEET TO 10.1 FEET.



BORING L_10600_25LT, BOX 2 OF 2, 10.1 FEET TO 15.1 FEET.

0 4" 8"
INCHES

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

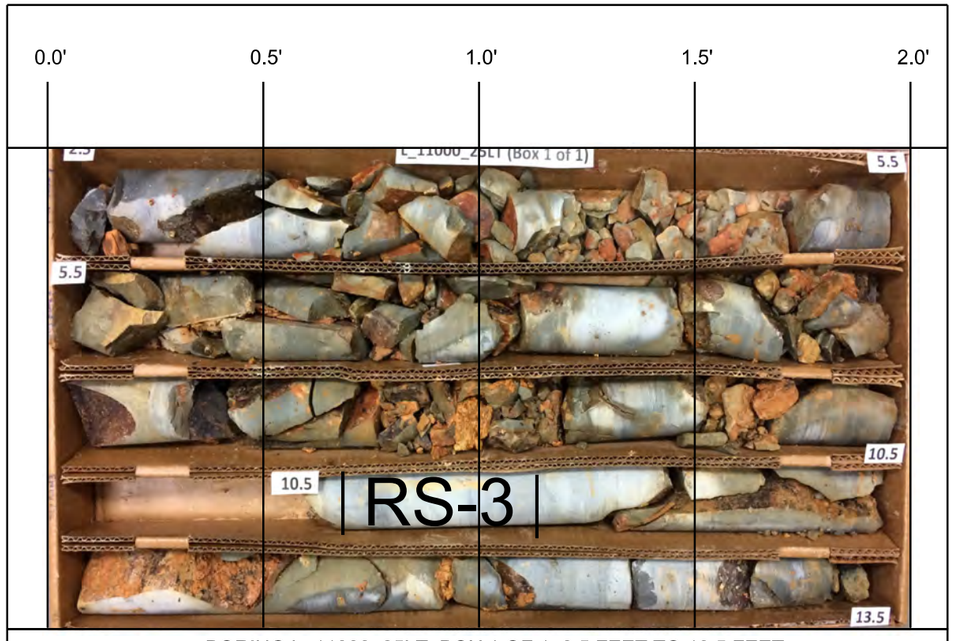
ROCK CORE PHOTOS

NC 24-27 FROM 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER
STANLY AND MONTGOMERY COUNTIES
WBS: 34446.1.6 & TIP: R-2530B
FALCON PROJECT NO. G16056.00

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34446.1.6	**TIP** R-2530B	**COUNTY** STANLY	**GEOLOGIST** Goodnight, D	
SITE DESCRIPTION NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER				**GROUND WTR (ft)**
BORING NO. L_11000_25LT	**STATION** 110+00	**OFFSET** 25 ft LT	**ALIGNMENT** -L-	**0 HR.**
COLLAR ELEV. N/A	**TOTAL DEPTH** 13.5 ft	**NORTHING** 581,032	**EASTING** 1,660,245	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE HPC2473 CME-550 92% 12/09/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/29/16	**COMP. DATE** 11/29/16	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ2	**TOTAL RUN** 11.0 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft) DEPTH (ft)
		2.5	3.0	2:20/1.0 1:54/1.0 2:08/1.0	(1.7) 57%	(0.0) 0%		(8.5) 77%	(1.4) 13%		**NON-CRYSTALLINE ROCK** GRAY AND TAN, MODERATE TO MODERATELY SEVERE WEATHERING, MODERATELY HARD TO HARD, V. CLOSE TO CLOSELY FRACTURED, METATUFF
		5.5									
			5.0	2:26/1.0 1:53/1.0 1:54/1.0 1:40/1.0 3:08/1.0	(3.9) 78%	(0.3) 6%					
		10.5									
			3.0	1:43/1.0 1:32/1.0 1:56/1.0	(2.9) 97%	(1.1) 37%	RS-3				
		13.5									Boring Terminated at Depth 13.5 ft IN: NCR META MUDSTONE



BORING L_11000_25LT, BOX 1 OF 1, 2.5 FEET TO 13.5 FEET.

0 4" 8"
INCHES

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

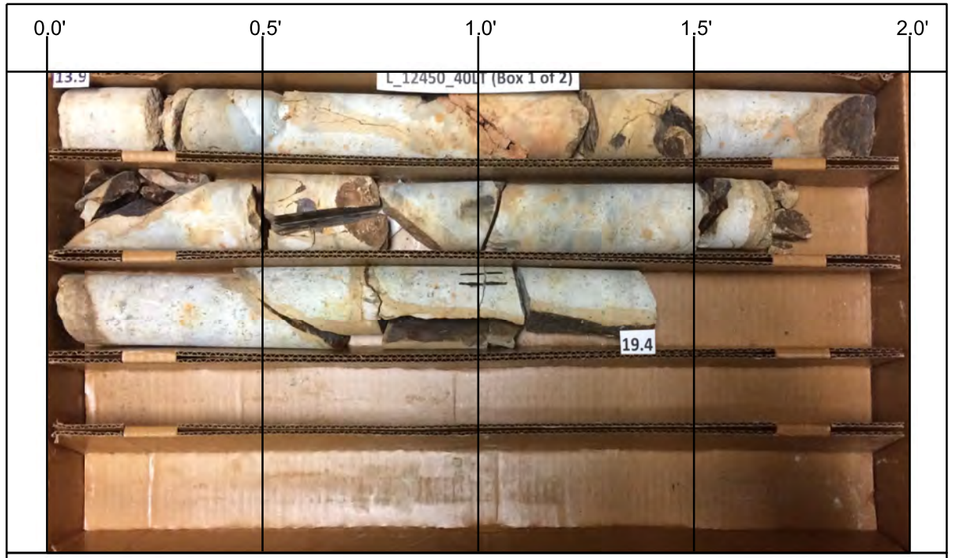
ROCK CORE PHOTOS

NC 24-27 FROM 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER
STANLY AND MONTGOMERY COUNTIES
WBS: 34446.1.8 & TIP: R-2530B
FALCON PROJECT NO. G16056.00

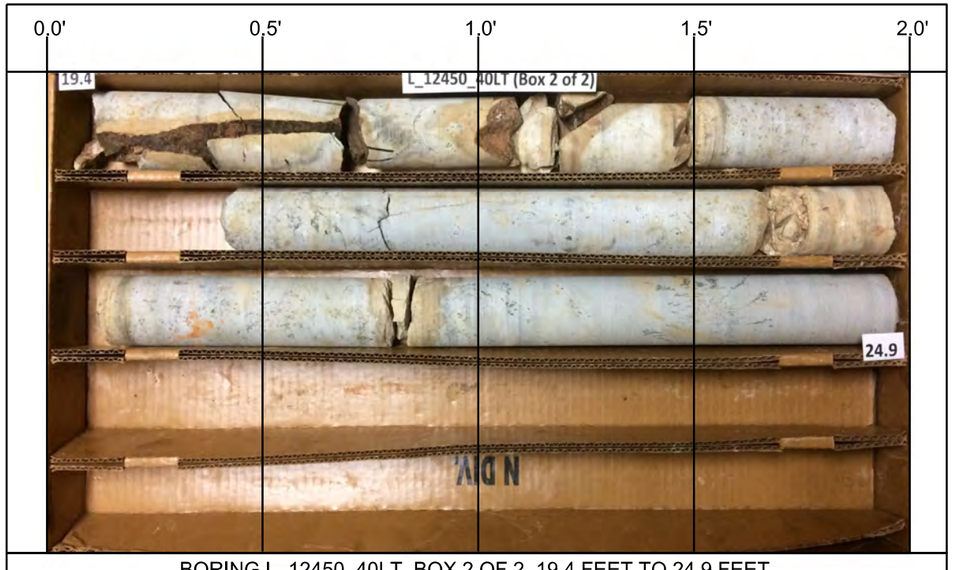
GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34446.1.6	**TIP** R-2530B	**COUNTY** STANLY	**GEOLOGIST** Goodnight, D
SITE DESCRIPTION NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER			**GROUND WTR (ft)**
BORING NO. L_12450_50LT	**STATION** 124+50	**OFFSET** 50 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 24.9 ft	**NORTHING** 579,906	**EASTING** 1,661,164	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE HPC2473 CME-550 92% 12/09/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 11/21/16	**COMP. DATE** 11/23/16	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ2	**TOTAL RUN** 11.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
											ELEV. (ft) DEPTH (ft)
											Begin Coring @ 13.9 ft
		13.9	5.5	2:26/1.0 2:32/1.0 2:38/1.0 3:45/1.0 2:30/1.0 -/0.5	(4.9) 89%	(2.0) 36%		(10.3) 94%	(6.6) 60%		LIGHT GRAY, MODERATE TO SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE TO CLOSELY FRACTURED, METAVOLCANIC ROCK *(continued)*
		19.4	5.5	1:57/1.0 1:39/1.0 1:43/1.0 2:13/1.0 1:58/1.0 -/0.5	(5.4) 98%	(4.6) 84%					24.9
		24.9									Boring Terminated at Depth 24.9 ft



BORING L_12450_40LT, BOX 1 OF 2, 13.9 FEET TO 19.4 FEET.



BORING L_12450_40LT, BOX 2 OF 2, 19.4 FEET TO 24.9 FEET.

0 4" 8"
INCHES

FALCON ENGINEERING
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

ROCK CORE PHOTOS

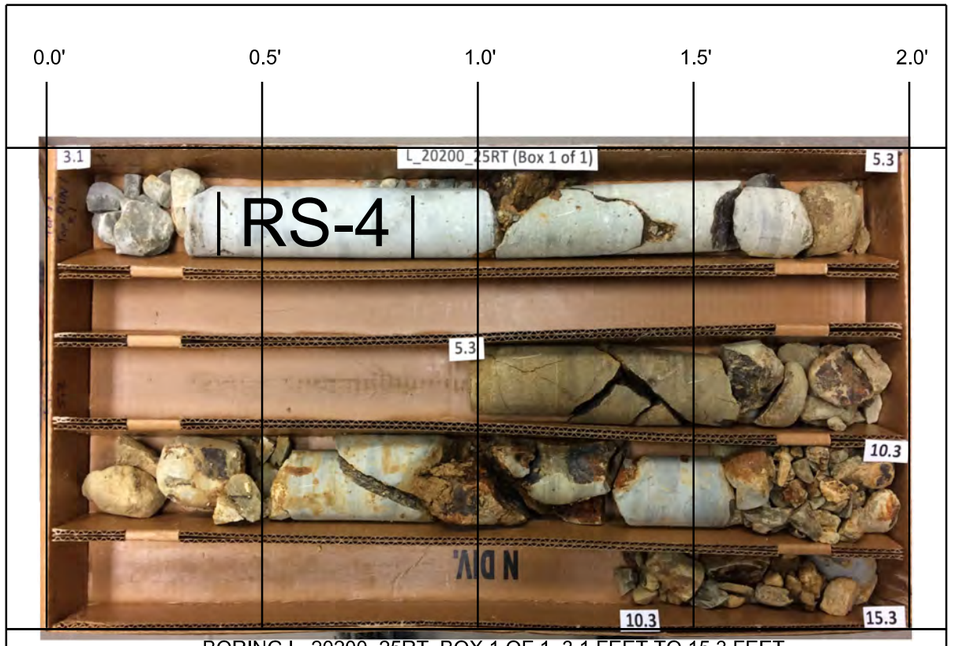
NC 24-27 FROM 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER
STANLY AND MONTGOMERY COUNTIES
WBS: 34446.1.6 & TIP: R-2530B
FALCON PROJECT NO. G16056.00

NCDOT CORE DOUBLE R2530B_GEO_BORINGS.GPJ NC_DOT.GDT 3/3/17

GEOTECHNICAL BORING REPORT
CORE LOG

WBS 34446.1.6	**TIP** R-2530B	**COUNTY** STANLY	**GEOLOGIST** Goodnight, D	
SITE DESCRIPTION NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER				**GROUND WTR (ft)**
BORING NO. L_20200_25RT	**STATION** 202+00	**OFFSET** 25 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. N/A	**TOTAL DEPTH** 15.4 ft	**NORTHING** 573,454	**EASTING** 1,664,914	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE HPC2473 CME-550 92% 12/09/2015		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic	
DRILLER Contract Driller	**START DATE** 11/14/16	**COMP. DATE** 11/14/16	**SURFACE WATER DEPTH** N/A	
CORE SIZE NQ2	**TOTAL RUN** 12.2 ft			

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
		3.1	2.2	2:21/1.0 2:17/1.0	(1.8) 82%	(0.8) 36%	RS-4	(1.6) 100%	(0.8) 50%		**NON-CRYSTALLINE ROCK** LT. GRAY, MODERATELY WEATHERED, HARD, CLOSELY FRACTURED, METAMUDSTONE *(continued)*
		5.3		0:39/0.2							4.7
			5.0	4:30/1.0 3:26/1.0 2:43/1.0 3:17/1.0 4:04/1.0	(3.1) 62%	(0.3) 6%		(3.6) 34%	(0.3) 3%		LT. GRAY AND TAN, MODERATELY SEVERELY WEATHERED, MODERATELY TO MEDIUM HARD, V. CLOSELY TO CLOSELY FRACTURED, METAMUDSTONE
		10.3									
			5.0	1:41/1.0 2:54/1.0 3:01/1.0 2:57/1.0 4:00/1.0	(0.3) 6%	(0.0) 0%					
		15.3									15.3
											Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Depth 15.4 ft ON: NCR META MUDSTONE



BORING L_20200_25RT, BOX 1 OF 1, 3.1 FEET TO 15.3 FEET.

0 4" 8"
INCHES

FALCON ENGINEERING
FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
PHONE: 919.871.0800
FAX: 919.871.0803

ROCK CORE PHOTOS

NC 24-27 FROM 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER
STANLY AND MONTGOMERY COUNTIES
WBS: 34446.1.6 & TIP: R-2530B
FALCON PROJECT NO. G16056.00

PROJECT REFERENCE NO.	SHEET NO.
R–2530B	119

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

APPENDIX B
LABORATORY RESULTS

REFERENCE: R–2530B

PROJECT: 34446

DS
WSH 4/25/2017
INITIALS DATE

FALCON ENGINEERING

LABORATORY TEST RESULTS

February 21, 2017

NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Stanly County, North Carolina
Project: 34446.1.6 (R-2530B)
Falcon Engineering Project No.: G16056.00

SAMPLE			DEPTH	AASHTO	ATTERBERG LIMITS		% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	In-situ Bulk Density	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	(%)	PCF	ORGANIC
SS-1	30RT	32+00 -L-	1.0-2.5	A-6 (3)	38	12	20	8	26	46	65	55	48	16	-	-
SS-2	35RT	30+00 -L-	3.5-5.0	A-6 (2)	39	14	27	9	22	42	60	47	40	23	-	-
SS-3	CL	44+00 -L-	1.0-2.5	A-7-6 (20)	47	18	4	3	22	71	99	97	94	25	-	-
SS-4	15RT	49+95 -L-	1.0-2.5	A-7-5 (29)	55	24	1	1	23	75	100	99	98	31	-	-
SS-5	20RT	62+00 -L-	1.0-2.5	A-7-5 (12)	61	29	13	5	18	64	62	56	52	20	-	-
SS-6	20RT	78+00 -L-	1.0-2.5	A-7-6 (12)	44	17	13	5	23	59	85	76	71	27	-	-
SS-7	20RT	78+00 -L-	3.5-5.0	A-7-5 (12)	42	11	7	5	33	55	99	94	88	24	-	-
SS-8	15RT	100+00 -L-	1.0-2.5	A-4 (4)	32	9	10	7	33	50	75	69	64	14	-	-
SS-9	25LT	102+00 -L-	1.0-2.5	A-2-6 (0)	38	14	19	13	23	45	41	36	29	12	-	-
SS-10	25LT	102+00 -L-	6.0-7.5	A-7-6 (4)	41	20	22	16	28	34	61	51	40	21	-	-
SS-11	25LT	102+00 -L-	8.5-10.0	A-6 (2)	38	19	25	14	24	37	58	46	37	19	-	-
SS-12	25LT	106+00 -L-	1.0-2.5	A-2-4 (0)	31	7	27	23	26	24	45	36	25	15	-	-
SS-13	25LT	110+00 -L-	1.0-2.5	A-6 (6)	38	15	12	7	28	53	69	62	57	16	-	-
SS-14	25LT	112+00 -L-	1.0-2.5	A-6 (10)	36	14	6	3	40	51	85	80	78	16	-	-
SS-15	25LT	112+00 -L-	3.5-5.0	A-4 (5)	36	7	12	20	39	29	95	88	70	16	-	-
SS-16	20LT	122+00 -L-	1.0-2.5	A-7-5 (13)	47	15	12	8	28	52	94	86	77	21	-	-
SS-17	20LT	122+00 -L-	3.5-5.0	A-7-5 (21)	61	17	5	10	31	54	99	96	87	41	-	-
SS-18	50LT	124+50 -L-	1.0-2.5	A-7-5 (64)	89	53	1	2	17	80	100	99	98	33	-	-
SS-19	60RT	126+00 -L-	1.0-2.5	A-7-5 (42)	68	35	1	1	22	76	99	99	98	27	-	-
SS-20	60RT	126+00 -L-	3.5-5.0	A-7-5 (15)	46	16	10	10	40	40	100	93	83	23	-	-
SS-21	60RT	126+00 -L-	6.0-7.5	A-7-5 (17)	48	18	8	10	34	48	99	94	84	18	-	-
SS-22	30RT	176+00 -L-	1.0-2.5	A-7-5 (51)	86	54	5	7	18	70	92	89	83	33	-	-
SS-23	30RT	176+00 -L-	3.5-5.0	A-6 (10)	37	11	8	11	39	42	100	95	85	15	-	-
SS-24	40RT	170+00 -L-	1.0-2.5	A-7-5 (23)	55	20	5	2	27	66	98	94	91	25	-	-
SS-25	30RT	178+00 -L-	1.0-2.5	A-7-6 (35)	65	38	6	2	24	68	90	85	83	23	-	-

Signature: John Dailly

NCDOT No.: 105-03-0803

Notes: LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index (LL - PL)

FALCON ENGINEERING

LABORATORY TEST RESULTS

February 21, 2017

NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Stanly County, North Carolina
Project: 34446.1.6 (R-2530B)
Falcon Engineering Project No.: G16056.00

SAMPLE			DEPTH	AASHTO	ATTERBERG LIMITS		% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	In-situ Bulk Density	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	(%)	PCF	ORGANIC
SS-26	30RT	178+00 -L-	3.5-5.0	A-4 (8)	37	10	16	10	40	34	98	86	76	11	-	-
SS-27	25RT	180+00 -L-	1.0-2.5	A-6 (11)	34	11	2	3	45	50	99	97	94	25	-	-
SS-28	25RT	180+00 -L-	3.5-5.0	A-1-b (0)	27	6	46	9	20	25	38	23	18	6	-	-
SS-29	25RT	186+00 -L-	1.0-2.5	A-7-6 (34)	56	36	5	9	32	54	98	95	88	22	-	-
SS-30	60RT	120+00 -L-	2.5-3.0	A-7-6 (31)	54	30	3	4	36	57	98	96	92	30	-	-
SS-31	5RT	188+00 -L-	1.0-2.5	A-6 (8)	40	12	9	19	35	37	91	86	71	19	-	-
SS-32	30RT	190+00 -L-	1.0-2.5	A-7-5 (57)	82	52	3	4	59	34	99	97	93	34	-	-
SS-33	30RT	190+00 -L-	6.0-7.5	A-7-6 (11)	49	20	18	24	30	28	98	88	62	28	-	-
SS-34	30RT	190+00 -L-	8.5-10.0	A-6 (3)	37	12	26	28	24	22	89	74	46	20	-	-
SS-35	30RT	192+00 -L-	1.0-2.5	A-7-5 (45)	82	40	2	11	18	69	100	99	90	40	-	-
SS-36	30RT	192+00 -L-	6.0-7.5	A-7-5 (22)	63	19	2	18	40	40	100	99	86	-	-	-
SS-37	30RT	192+00 -L-	13.5-15.0	A-7-5 (11)	44	11	1	26	47	26	100	100	82	37	-	-
SS-38	25RT	194+00 -L-	1.0-2.5	A-7-5 (16)	44	14	3	7	34	56	100	97	93	27	-	-
SS-39	25RT	194+00 -L-	6.0-7.5	A-4 (10)	38	10	6	9	38	47	96	92	85	19	-	-
SS-40	25RT	196+00 -L-	1.0-2.5	A-7-5 (22)	54	19	5	3	85	7	99	96	92	25	-	-
SS-41	25RT	196+00 -L-	8.5-10.0	A-4 (10)	39	8	3	7	44	46	100	98	92	19	-	-
SS-42	30RT	198+00 -L-	1.0-2.5	A-7-6 (15)	47	19	11	4	28	57	88	80	76	26	-	-
SS-43	30RT	198+00 -L-	3.5-5.0	A-7-6 (13)	44	21	10	5	29	56	79	72	68	19	-	-
SS-44	25RT	200+00 -L-	1.0-2.5	A-4 (3)	36	10	23	8	33	36	74	61	53	10	-	-
SS-45	25RT	202+00 -L-	1.0-2.5	A-6 (3)	36	14	14	15	33	38	58	52	44	17	-	-
SS-46	25RT	204+00 -L-	1.0-2.5	A-7-6 (11)	45	16	13	6	29	52	84	75	69	22	-	-
SS-47	25RT	204+00 -L-	6.0-7.5	A-4 (6)	35	7	11	8	41	40	98	90	81	14	-	-
SS-48	25RT	206+00 -L-	1.0-2.5	A-7-6 (9)	41	15	19	6	31	44	87	73	67	17	-	-
SS-49	25RT	230+00 -L-	1.0-2.5	A-7-6 (28)	54	27	3	5	31	61	98	96	91	29	-	-
SS-50	25RT	232+00 -L-	1.0-2.5	A-7-6 (23)	47	26	5	7	33	55	96	92	86	25	-	-

Signature: John Dailly

NCDOT No.: 105-03-0803

Notes: LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index (LL - PL)

FALCON ENGINEERING

LABORATORY TEST RESULTS

February 21, 2017

NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Stanly County, North Carolina
Project: 34446.1.6 (R-2530B)
Falcon Engineering Project No.: G16056.00

SAMPLE			DEPTH	AASHTO	ATTERBERG LIMITS		% BY WEIGHT				% PASSING (SIEVES)			MOISTURE	In-situ Bulk Density	%
NO.	OFFSET	STATION	INTERVAL	CLASS.	L.L.	P.I.	C.SAND	F.SAND	SILT	CLAY	10	40	200	(%)	PCF	ORGANIC
SS-51	25RT	242+00 -L-	1.0-2.5	A-7-6 (10)	44	15	15	5	27	53	83	73	67	22	-	-
SS-52	25RT	248+00 -L-	3.5-5.0	A-7-5 (13)	47	11	7	6	42	45	100	95	88	18	-	-
SS-53	25LT	274+00 -L-	3.5-5.0	A-6 (4)	38	14	25	7	32	36	73	57	51	6	-	-
SS-54	10LT	276+00 -L-	1.0-2.5	A-7-5 (29)	56	26	5	2	35	58	99	95	93	18	-	-
SS-55	25LT	278+00 -L-	3.5-5.0	A-5 (11)	41	9	7	5	56	32	100	95	90	12	-	-
SS-56	25LT	280+00 -L-	3.5-5.0	A-5 (11)	41	10	7	8	56	29	100	96	87	17	-	-
SS-57	30LT	282+00 -L-	3.5-5.0	A-4 (8)	38	9	12	8	52	28	100	91	83	16	-	-
SS-58	30LT	288+00 -L-	1.0-2.5	A-4 (7)	38	8	11	7	54	28	93	86	78	15	-	-
SS-59	20LT	289+50 -L-	1.0-2.5	A-7-6 (22)	51	25	12	4	31	53	98	89	83	23	-	-
SS-60	25LT	300+00 -L-	3.5-5.0	A-4 (4)	35	5	10	7	50	33	91	84	78	13	-	-
SS-61	30LT	302+00 -L-	6.0-7.5	A-4 (8)	40	8	10	10	52	28	100	94	83	14	-	-
SS-62	35LT	326+00 -L-	1.0-2.5	A-4 (3)	34	9	21	7	38	34	74	61	54	13	-	-
SS-63	35LT	326+00 -L-	6.0-7.5	A-6 (1)	37	14	22	7	39	32	51	42	37	8	-	-
SS-64	CL	20+00 -Y8-	1.0-2.5	A-7-6 (30)	54	29	2	2	30	66	96	95	93	21	-	-
SS-65	CL	20+00 -Y8-	3.5-5.0	A-7-5 (17)	46	13	1	1	45	53	100	99	98	12	-	-
SS-66	35RT	16+00 -Y16-	1.0-2.5	A-7-6 (35)	58	30	0	1	34	65	100	100	99	25	-	-
SS-67	35RT	16+00 -Y16-	6.0-7.5	A-7-5 (18)	50	14	2	3	57	38	100	99	96	21	-	-
SS-68	CL	11+00 -DRW15-	1.0-2.5	A-6 (7)	35	15	19	27	39	15	99	88	60	20	-	-
BS-1	20RT	78+00	1-6	A-7-5 (18)	49	19	12	4	18	66	96	87	82	23	-	-
BS-2	5RT	188+00	1-13	A-6 (2)	30	11	27	19	24	30	75	60	45	6	-	-

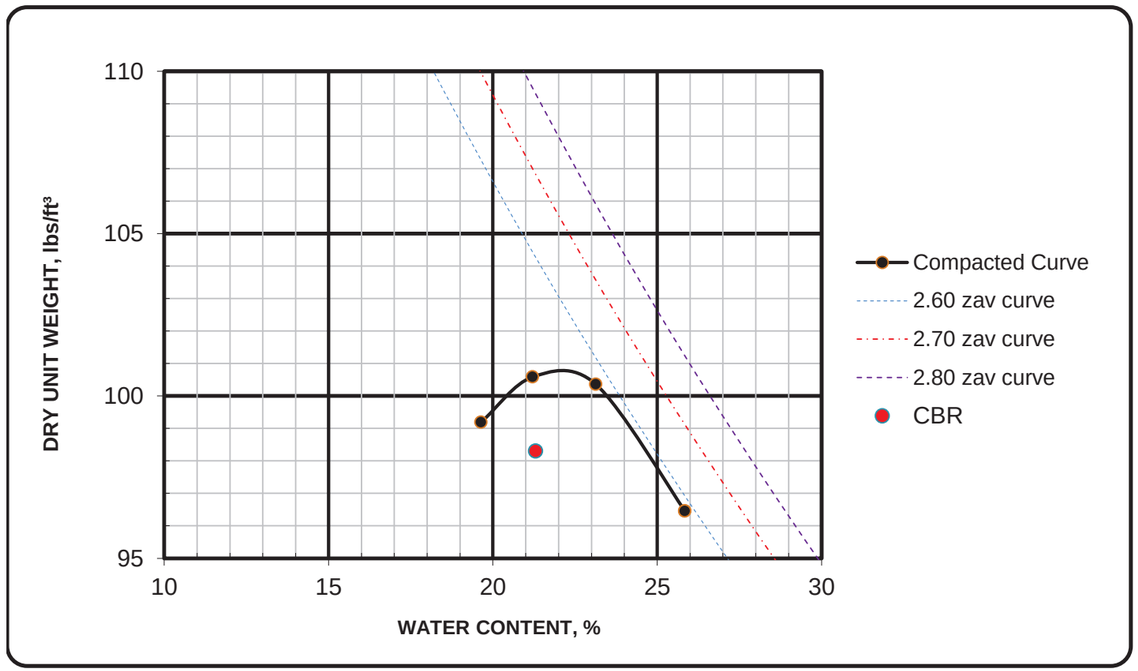
Signature: John Dailly

NCDOT No.: 105-03-0803

Notes:
LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index (LL - PL)

REPORT OF MOISTURE-DENSITY RELATIONS OF SOILS
USING A 5.5-LB RAMMER AND A 12-IN. DROP
Performed in general accordance with AASHTO T 99, Method C
February 21, 2017

PROJECT NAME: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
PROJECT NUMBER: G16056.00
SAMPLE IDENTIFICATION: BS-1: STA 78+00 -L- 20RT, 1-6'
VISUAL DESCRIPTION: Brown red sandy silty clay



MAXIMUM DENSITY, lbs/ft³: 100.7
OPTIMUM MOISTURE CONTENT, %: 22.1

AS-RECEIVED WATER CONTENT: 23
LIQUID LIMIT: 49
PLASTIC LIMIT: 30
PLASTICITY INDEX: 19
PERCENT FINER NO. 200 82
AASHTO CLASSIFICATION: A-7-5 (18)

REMARKS: NCDOT Project: 34446.1.6 (R-2530B)

Document ID: BS-1 Laboratory Compaction

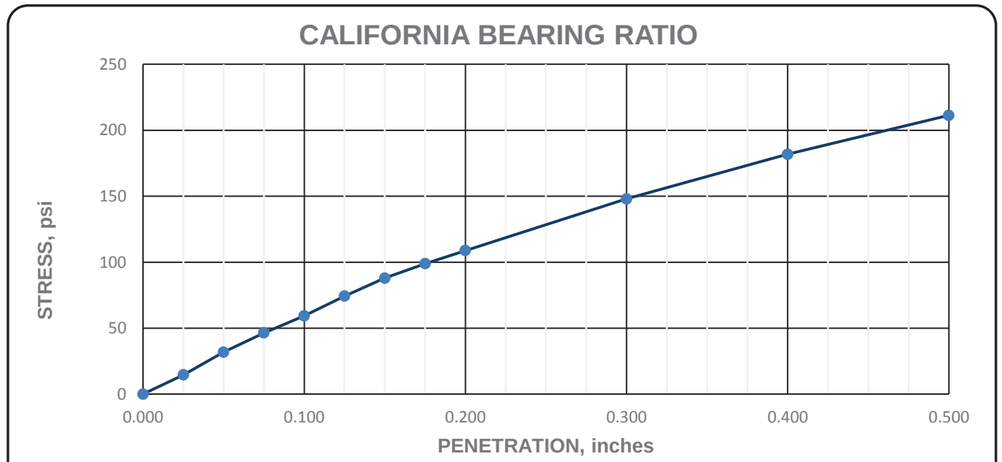
REVIEWED BY: John Dailly

Falcon Engineering 1210 Trinity Road Suite 110 Raleigh, NC 27607
Telephone: 919-871-0800 Fax: 919-871-0803 www.falconengineers.com

February 21, 2017

REPORT OF CALIFORNIA BEARING RATIO (CBR)
AASHTO T 193

PROJECT NAME: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
PROJECT NUMBER: G16056.00
SAMPLE IDENTIFICATION: BS-1: STA 78+00 -L- 20RT, 1-6'



Bearing Ratio: at 0.1 inches of penetration: 5.9
at 0.2 inches of penetration: 7.3

Compaction Method: AASHTO T 99
Maximum Dry Unit Weight, lbs/ft^3: 100.7
Optimum Water Content, %: 22.1
Compacted Dry Unit Weight, lbs/ft^3: 98.3
Compacted Water Content, %: 21.3
Compaction Percentage: 97.6
Water Content, Top one-inch after test, %: 30.6

Surcharge, lbs: 10
Immersion period, hours: 96
Swell, %: 1.3

Remarks: Soaked specimen
NCDOT Project: 34446.1.6 (R-2530B)

Reviewed by: John Dailly

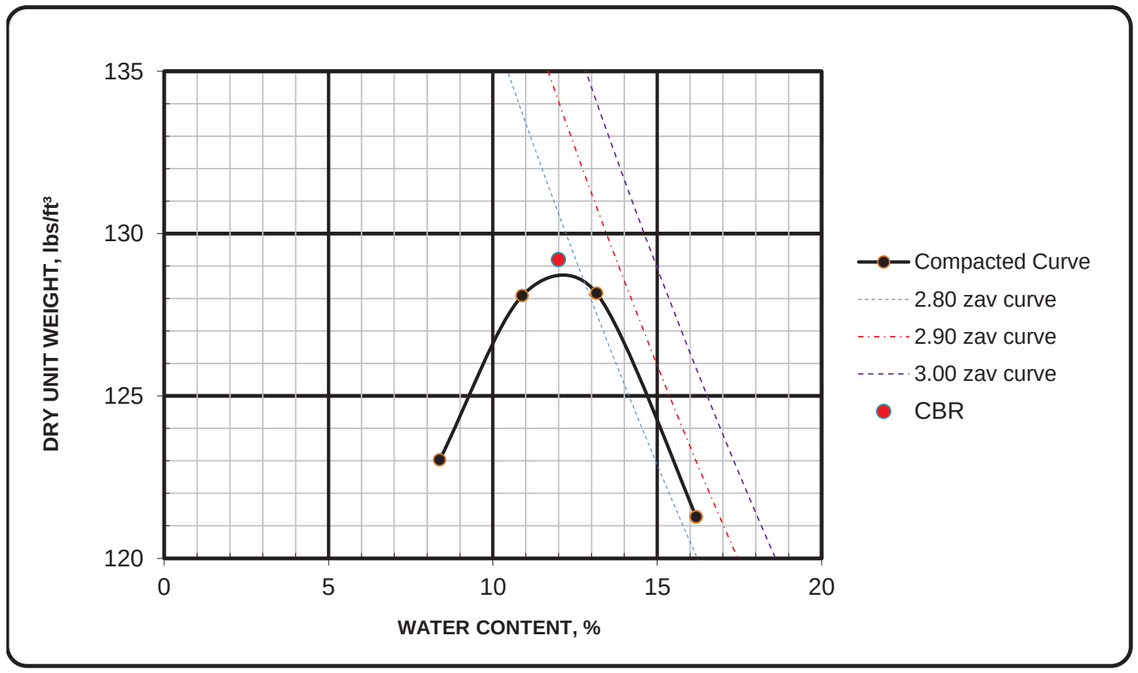
Document ID: BS-1 California Bearing Ratio

Falcon Engineering 1210 Trinity Rd. Suite 110 Raleigh, NC 27607
Telephone: 919-871-0800 Fax: 919-871-0803 www.falconengineers.com

REPORT OF MOISTURE-DENSITY RELATIONS OF SOILS
USING A 5.5-LB RAMMER AND A 12-IN. DROP
Performed in general accordance with AASHTO T 99, Method C
February 21, 2017

FALCON ENGINEERING

PROJECT NAME: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
PROJECT NUMBER: G16056.00
SAMPLE IDENTIFICATION: BS-2: STA 188+00 -L- 5RT, 1-13'
VISUAL DESCRIPTION: Brown silty clayey sand



MAXIMUM DENSITY, lbs/ft³: 128.8
OPTIMUM MOISTURE CONTENT, %: 12.2

AS-RECEIVED WATER CONTENT: 6
LIQUID LIMIT: 30
PLASTIC LIMIT: 19
PLASTICITY INDEX: 11
PERCENT FINER NO. 200 45
AASHTO CLASSIFICATION: A-6 (2)

REMARKS: NCDOT Project: 34446.1.6 (R-2530B)

REVIEWED BY: John Dailly

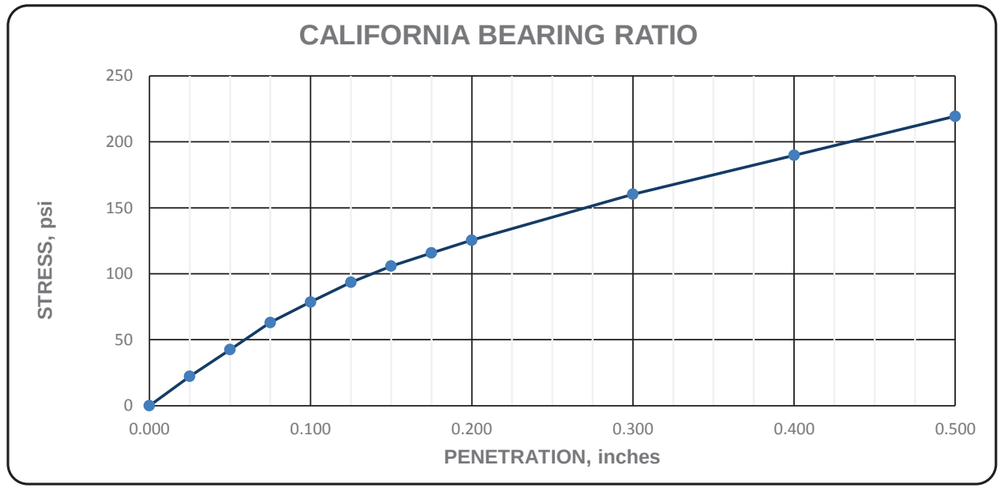
Document ID: BS-2 Laboratory Compaction

February 21, 2017

FALCON ENGINEERING

REPORT OF CALIFORNIA BEARING RATIO (CBR)
AASHTO T 193

PROJECT NAME: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
PROJECT NUMBER: G16056.00
SAMPLE IDENTIFICATION: BS-2: STA 188+00 -L- 5RT, 1-13'



Bearing Ratio: at 0.1 inches of penetration: 7.9
at 0.2 inches of penetration: 8.4

Compaction Method: AASHTO T 99, AASHTO T 193: 5.1.1
Maximum Dry Unit Weight, lbs/ft^3: 128.8
Optimum Water Content, %: 12.2
Compacted Dry Unit Weight, lbs/ft^3: 129.2
Compacted Water Content, %: 12.0
Compaction Percentage: 100.3
Water Content, Top one-inch after test, %: 14.8

Surcharge, lbs: 10
Immersion period, hours: 97
Swell, %: 0.7

Remarks: Soaked specimen
NCDOT Project: 34446.1.6 (R-2530B)

Reviewed by: John Dailly

Document ID: BS-2 California Bearing Ratio

FALCON ENGINEERING 1210 TRINITY ROAD, SUITE 110, RALEIGH, NORTH CAROLINA 27607

SUMMARY OF ROCK CORE TEST RESULTS

NC 24-27 FROM NC 740 IN ALBEMARLE TO EAST OF THE PEE DEE RIVER

WBS: 34446.1.1, TIP NO.: R-2530B

STANLY COUNTY, NORTH CAROLINA

FALCON ENGINEERING, INC. PROJECT NO: G16056.00

Sample No.	Boring	Station	Offset	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (ft)	Diameter (ft)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)	Young's Modulus @ 50% Strain or Less (PSI)	Geological Strength Index (GSI)
RS-1	L_10000_15RT	100+00	15' RT	18.3-18.8	Metatuff	CZfv2	79%	4.15	1.85	170.8	24,230	2,481,700	65
RS-2	L_10600_25LT	106+00	25' LT	10.1-10.6	Metatuff	CZfv2	74%	4.26	1.86	175.6	20,790	1,650,750	65
RS-3	L_11000_25LT	110+00	25' LT	10.5-11.0	Metatuff	CZfv2	13%	4.14	1.86	172.2	21,290	3,622,500	30
RS-4	L_20200_25RT	202+00	25' RT	3.3-3.8	Metamudstone	CZfv2	3%	4.50	1.86	182.7	15,210	1,723,500	20

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

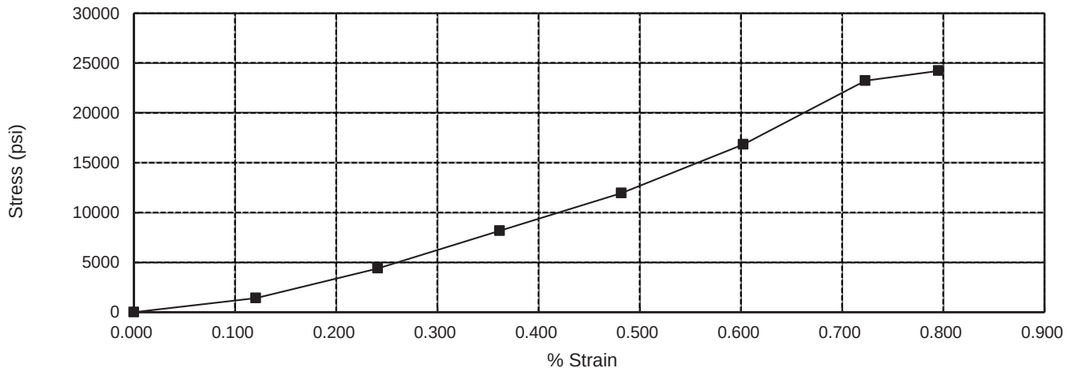
Performed in General Accordance with ASTM D7012

Project Name: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Project Number: G16056-00
Sample ID.: RS-1
Location: STA 100+00 -L- 15RT
Depth (ft): 18.3-18.8

Length (in.): 4.15
Diameter (in.): 1.85
Area (in²): 2.688
L/D 2.24
Unit Weight (pcf): 170.8

Compressive Strength (psi): 24230
Time to Failure, mins:sec: 12:55

Deflection (in.)	Strain (%)	Load (lbf)	Compressive Strength (psi)	Young's Modulus (psi)
0.000	0.000	0	0	
0.005	0.120	3810	1420	1,178,600
0.010	0.241	11840	4400	1,826,000
0.015	0.361	21969	8170	2,260,367
0.020	0.482	32140	11960	2,481,700
0.025	0.602	45270	16840	2,795,440
0.030	0.723	62430	23230	3,213,483
0.033	0.795	65140	24230	3,047,106



*Young's modulus is calculated using the secant modulus at each data point per Figure 2 (C) in ASMTM D 7012

NCDOT CERT No. 105-03-0803

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

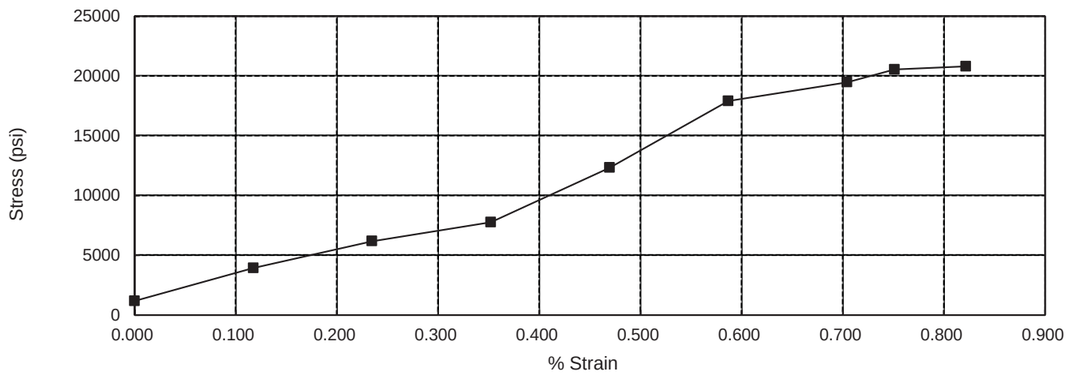
Performed in General Accordance with ASTM D7012

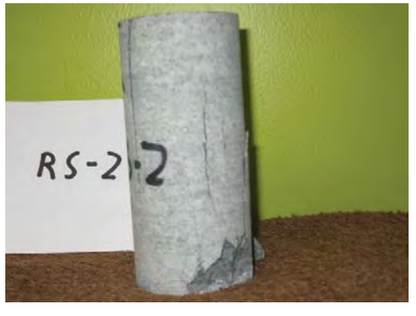
Project Name: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Project Number: G16056-00
Sample ID.: RS-2
Location: STA 1060+00 -L- 25LT
Depth (ft): 10.1-10.6

Length (in.): 4.26
Diameter (in.): 1.86
Area (in²): 2.717
L/D 2.29
Unit Weight (pcf): 175.6

Compressive Strength (psi): 20790
Time to Failure, mins:sec: 9:45

Deflection (in.)	Strain (%)	Load (lbf)	Compressive Strength (psi)	Young's Modulus (psi)
0.000	0.000	0	0	
0.005	0.117	3190	1170	996,840
0.010	0.235	10640	3920	1,669,920
0.015	0.352	16760	6170	1,752,280
0.020	0.469	21050	7750	1,650,750
0.025	0.587	33480	12320	2,099,328
0.030	0.704	48650	17900	2,541,800
0.032	0.751	52910	19470	2,591,944
0.035	0.822	55780	20530	2,498,794
0.037	0.869	56500	20790	2,393,659





*Young's modulus is calculated using the secant modulus at each data point per Figure 2 (C) in ASMTM D 7012

NCDOT CERT No. 105-03-0803

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

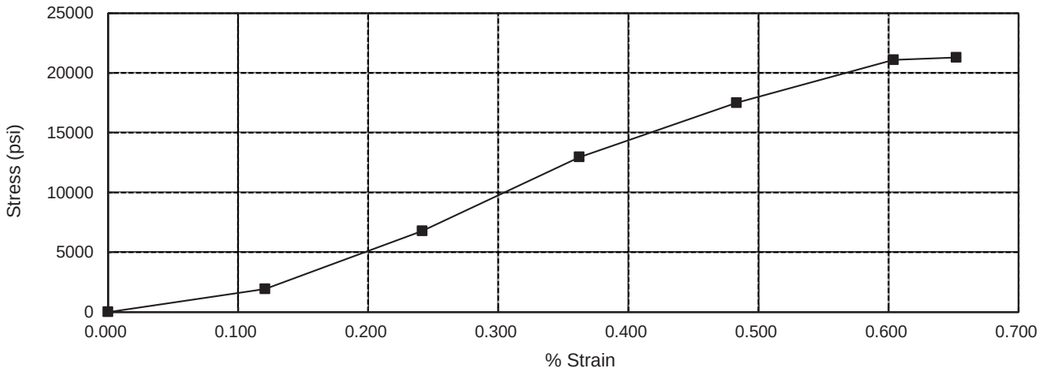
Performed in General Accordance with ASTM D7012

Project Name: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Project Number: G16056-00
Sample ID.: RS-3
Location: STA 110+00 -L- 25LT
Depth (ft): 10.5-11.0

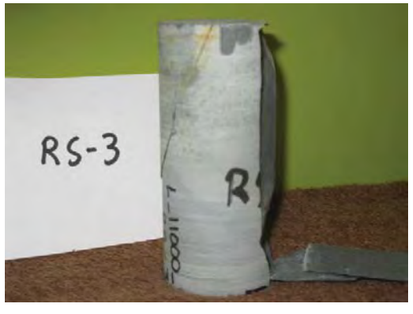
Length (in.): 4.14
Diameter (in.): 1.86
Area (in²): 2.717
L/D 2.23
Unit Weight (pcf): 172.2

Compressive Strength (psi): 21290
Time to Failure, mins:sec: 11:35

Deflection (in.)	Strain (%)	Load (lbf)	Compressive Strength (psi)	Young's Modulus (psi)
0.000	0.000	0	0	
0.005	0.121	5250	1930	1,598,040
0.010	0.242	18430	6780	2,806,920
0.015	0.362	35210	12960	3,576,960
0.020	0.483	47540	17500	3,622,500
0.025	0.604	57310	21090	3,492,504
0.027	0.652	57850	21290	3,264,467



*Young's modulus is calculated using the secant modulus at each data point per Figure 2 (C) in ASMTM D 7012



John Dailly NCDOT CERT No. 105-03-0803

UNIAXIAL COMPRESSIVE STRENGTH OF INTACT ROCK CORE SPECIMENS

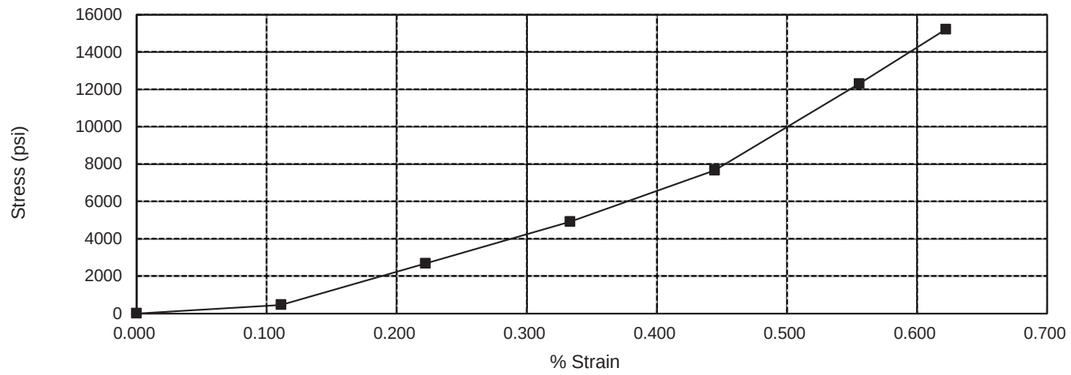
Performed in General Accordance with ASTM D7012

Project Name: NC 24-27 from NC 740 in Albemarle to East of the Pee Dee River
Project Number: G16056-00
Sample ID.: RS-4
Location: STA 202+00 -L- 25RT
Depth (ft): 3.3-3.8

Length (in.): 4.50
Diameter (in.): 1.86
Area (in²): 2.717
L/D 2.42
Unit Weight (pcf): 182.7

Compressive Strength (psi): 15210
Time to Failure, mins:sec: 8:30

Deflection (in.)	Strain (%)	Load (lbf)	Compressive Strength (psi)	Young's Modulus (psi)
0.000	0.000	0	0	
0.005	0.111	1260	460	414,000
0.010	0.222	7270	2680	1,206,000
0.015	0.333	13350	4910	1,473,000
0.020	0.444	20810	7660	1,723,500
0.025	0.556	33420	12300	2,214,000
0.028	0.622	41320	15210	2,444,464



*Young's modulus is calculated using the secant modulus at each data point per Figure 2 (C) in ASMTM D 7012

John Dailly NCDOT CERT No. 105-03-0803