CONTRACT: C203163 ID: R-3432

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

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LINE	STATION	PLAN	PROFILE
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-Y9A-	10+00 TO 12+70	11	22
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-Y10-	18+62 TO 32+38	4,15	23
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 35501.1.1 (R-3432) F.A. PROJ. ____

COUNTY BRUNSWICK

PROJECT DESCRIPTION SR 1163 (OLD GEORGETOWN ROAD EXTENSION) FROM SR 1184 (OCEAN ISLE BEACH ROAD) TO NC 179

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3432	1	28

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35501.1.1		P.E.
35501.2.1		R/W,UTL.
35501.3.D1		CONST.

CAUTION NOTICE

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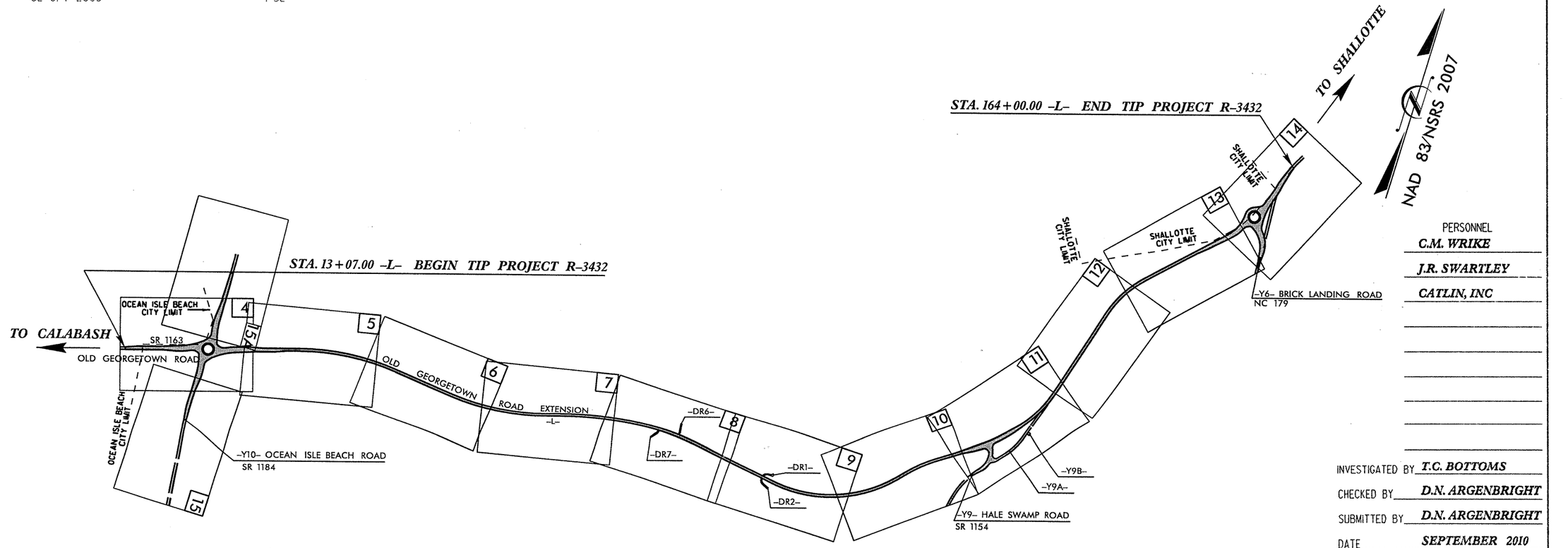

PERSONNEL
C.M. WRIKE
J.R. SWARTLEY
CATLIN, INC

INVESTIGATED BY T.C. BOTTOMS
CHECKED BY D.N. ARGENBRIGHT
SUBMITTED BY D.N. ARGENBRIGHT
DATE SEPTEMBER 2010

NORTH CAROLINA LICENSED SEAL 2240 GEOLOGIST TYLER C. BOTTOMS
9/16/10

DRAWN BY: C.P. TURNER, T.C. BOTTOMS

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PROJECT REFERENCE NO.	SHEET NO.
R-3432	2 OF 28

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 TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, 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
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
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 A 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/FT²)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

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	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

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.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

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 WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 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 W/ CORE
- SPT N-VALUE
- (REF) — SPT REFUSAL

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:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45B
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

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

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 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, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS 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 FEET
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 THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

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, 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:

ELEVATION: FT.

NOTES:

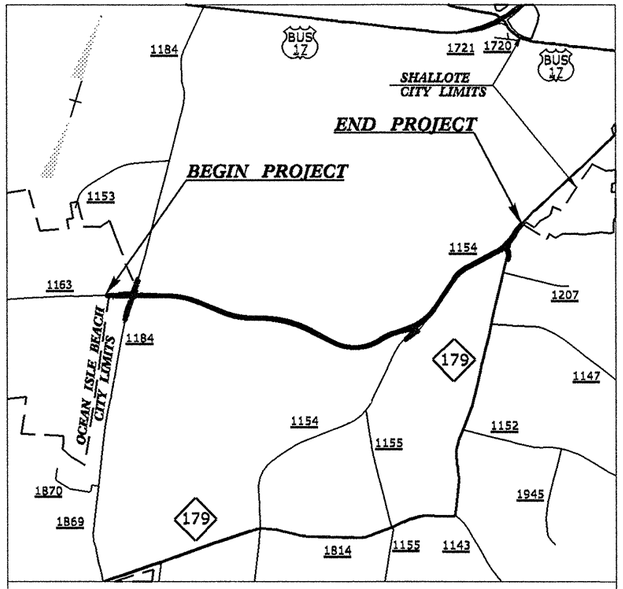
APPROXIMATE LIMIT OF ORGANIC SOILS

REVISED 09/23/09

TIP PROJECT: R-3432

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3432	2A	28

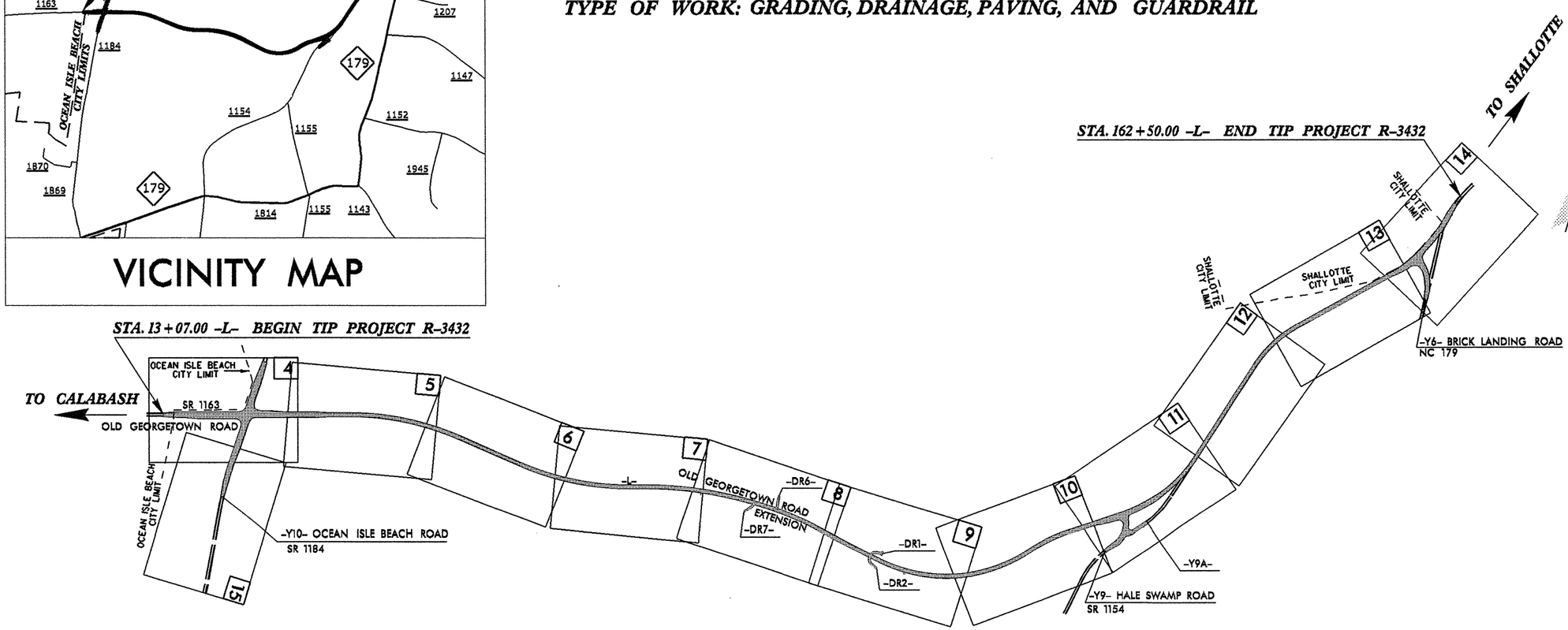
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35501.1.1		P.E.

LOCATION: SR 1163 (OLD GEORGETOWN ROAD EXTENSION) FROM SR 1184 (OCEAN ISLE BEACH ROAD) TO NC 179

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND GUARDRAIL

STA. 13+07.00 –L– BEGIN TIP PROJECT R-3432

STA. 162+50.00 –L– END TIP PROJECT R-3432



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF OCEAN ISLE BEACH AND SHALLOTTE.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISED BY METHOD _____.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 7,312
ADT 2033 = 12,592
DHV = 55 %
D = 13 %
T = 3 % *
V = 60 MPH
* TTST 1 % + DUAL 2 %
FUNC. CLASS. = COLLECTOR
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3432 = 2.830 MILES
TOTAL LENGTH TIP PROJECT R-3432 = 2.830 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 16, 2011

LETTING DATE: JUNE 18, 2013

BRENDA MOORE, PE
PROJECT ENGINEER

THAD F. DUNCAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

July 19, 2010

STATE PROJECT: 35501.1.1 (R-3432)
F.A. PROJECT: N/A
COUNTY: Brunswick
DESCRIPTION: SR 1163 (Old Georgetown Road Extension) From SR 1184 (Ocean Isle Beach Road) To NC 179

SUBJECT: Geotechnical Inventory

Project Description

This project begins approximately 900 feet west of Ocean Isle Beach Road along Old Georgetown Road and extends generally east to northeast about 2.8 miles to Shallotte City Limits. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork was conducted in May 2010. Standard Penetration Test borings were advanced with a CME 45-B drill machine with an automatic hammer. Cone Penetration Test borings were completed with a 10 ton digital subtraction cone mounted on an ATV. Hand auger borings were also completed. Representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

The following alignments were investigated. Subsurface profiles of these alignments are included in this report.

Line	Station(±)
-L-	13+07 to 162+50
-Y6-	10+00 to 15+06
-Y9-	10+00 to 14+42
-Y9A-	10+00 to 12+70
-Y9B-	10+22 to 10+70
-Y10-	18+62 to 32+38
-DR1-	10+00 to 11+37
-DR2-	10+00 to 11+63
-DR6-	10+00 to 11+46
-DR7-	10+00 to 11+40

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237

WEBSITE: WWW.NCDOT.ORG/DOH

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

Areas of Special Geotechnical Interest

1) The following sections contain cohesive soils which have the potential to cause embankment/subgrade stability and/or long term settlement problems.

Line	Station(±)
-L-	49+50 to 50+50
-L-	84+50 to 95+50
-L-	157+50 to 158+50
-Y9-	11+50 to 12+25
-Y9A-	10+00 to 10+50
-Y10-	26+50 to 27+50
-DR1-	10+90 to 11+37
-DR2-	10+00 to 11+63

2) The following sections contain organic soils which have the potential to cause embankment/subgrade stability and/or long term settlement problems.

Line	Station(±)
-L-	115+60 to 126+40
-L-	157+75 to 160+35

3) The entire project was found to exhibit seasonal high ground water.

4) Artificial fill encountered from -L- Sta. 85+28 to 88+28 is acceptable for embankment construction but must be removed and placed to achieve acceptable density.

5) One pond is located within the project limits and is located as follows.

Line	Station(±)	Location
-L-	99+18 to 99+30	Left Side

Physiography and Geology

This project corridor is located within the Coastal Plain Physiographic Province. Topography along the project is nearly flat to gently sloping. Natural ground elevations ranged from 25± to 56± feet above sea level

Surficial soils in this area are generally classified as undivided coastal plain sediments and are underlain by the Peedee Formation.

Ground Water

Ground water data was collected during a time of normal precipitation. Ground water elevations ranged from 26± to 50± feet above sea level.

Soils

Soils within this project area have been divided into four categories; roadway embankment, artificial fill, undivided coastal plain soils, and soils belonging to the Peedee Formation.

Soils identified as roadway embankment are comprised of 1± to 8± feet of loose to medium dense sand (A-3). These soils were encountered along the existing Ocean Isle Beach Road and associated intersecting roads along the project.

Soils identified as artificial fill are comprised of 1± to 10± feet of loose gray sand (A-2-4). These soils are localized to an area along the -L- alignment at the intersection of lines -DR1- and -DR2-.

Soils classified as undivided coastal plain are comprised of 1± to 16± feet of very loose to dense sand and clayey sand (A-1-b, A-2-4, A-3), medium dense to dense sand with trace to moderate amounts of organic content (A-3), and soft to medium stiff sandy silt, sandy clay, and silty clay (A-4, A-6, A-7-6). Organic samples contained 2.5% to 6.2% organic matter.

Soils belonging to the Peedee Formation are comprised of 8± or more feet of very soft calcareous sandstone.

Respectfully Submitted,

Tyler Bottoms, L.G.
Project Engineering Geologist

3B

PROJECT: R-3432 COUNTY: Brunswick DATE: 7/15/2011 COMPILED BY: GSB SHEET 1 OF 2 SHEETS

Volumes in Cubic Yards

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +25%		ROCK	SUITABLE	UNSUIT.	TOTAL
-L- STA. 13+07	-L- STA. 43+00	4,685				4,685	20,549		20,549	25,686	21,001				
-L- STA. 43+00	-L- STA. 73+00	604				604	44,525		44,525	55,656	55,052				
-L- STA. 73+00	-L- STA. 103+00	7,651		2,444		7,651	70,780		70,780	88,475	80,824			2,444	2,444
-L- STA.103+00	-L- STA. 133+00	7,039				7,039	35,162		35,162	43,953	36,914				
-L- STA 133+00	-L- STA 164+00	11,656				11,656	3,490		3,490	4,363			7,293		7,293
	SUBTOTAL	31,635		2,444		31,635	174,506		174,506	218,133	193,791		7,293	2,444	9,737
-Y6- STA 10+50	-Y6- STA 15+00	1,881				1,881	107		107	134			1,747		1,747
-Y9- STA 10+53.62	-Y9- STA 14+42	526				526	2,644		2,644	3,305	2,779				
-Y9A- STA 10+81.94	-Y9A- STA 16+50	333				333	594		594	743	410				
-Y9B- STA 10+09.46	-Y9B- STA 10+44.46	82				82							82		82
-Y10- STA. 15+00	-Y10- 22+97.27	2,814				2,814	1,038		1,038	1,298			1,516		1,516
-Y10- STA 25+03.26	-Y10- STA 33+88	5,096				5,096	3,196		3,196	3,995			1,101		1,101
	SUBTOTAL	10,732				10,732	7,579		7,579	9,475	3,189		4,446		4,446
-DR1- STA 10+00	-DR1- STA 11+21.34			51			261		261	326	326			51	51
-DR2- STA 10+16.04	-DR2- STA 11+63.32	80		126		80	350		350	438	358			126	126
-DR6- STA. 10+00	-DR6- STA. 11+30.89						989		989	1,236	1,236				
-DR7- STA . 10+16	-DR7- STA. 11+40						776		776	970	970				
	SUBTOTAL	80		177		80	2,376		2,376	2,970	2,890			177	177
	SUBTOTAL														
TOTAL		42,447		2,621		42,447	184,461		184,461	230,578	199,870		11,739	2,621	14,360
MATERIAL FOR SHOULDER CONSTRUCTION							4,800		4,800	6,000	6,000				
ADDITIONAL UNDERCUT				1,300			1,300		1,300	1,625	1,625			1,300	1,300
WASTE IN LIEU OF BORROW											-11,739		-11,739		-11,739
PROJECT TOTAL		42,447		3,921		42,447	190,561		190,561	238,203	195,756			3,921	3,921
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											9,788				
GRAND TOTAL		42,447		3,921		42,447	190,561		190,561	238,203	205,544			3,921	3,921
SAY		42,500		3,950							205,600				

PER GEOTECH RECOMMENDATION, ESTIMATED 500 CUBIC YARDS OF SHALLOW UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

DDE = 12,519 CUBIC YARDS

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

3C

Volumes in Cubic Yards

PROJECT: R-3432 | COUNTY: Brunswick | DATE: 7/15/2011 | COMPILED BY: GSB | SHEET 2 OF 2 SHEETS

STATION	STATION	EXCAVATION TOTAL UNCLASS.	EXCAVATION ROCK	EXCAVATION UNDERCUT	EXCAVATION UNSUIT. UNCLASS.	EXCAVATION SUITABLE UNCLASS.	EMBANKMENT TOTAL	EMBANKMENT ROCK	EMBANKMENT EARTH	EMBANKMENT EMBANK. +25%	BORROW	WASTE ROCK	WASTE SUITABLE	WASTE UNSUIT.	WASTE TOTAL
TOTALS		42,447		2,621		42,447	184,461		184,461	230,578	199,870		11,739	2,621	14,360
ADJ. FOR ALTERNATE PAV'T DESIGN		-2,893				-2,893	12,216		12,216	15,270	15,270		-2,893		-2,893
MATERIAL FOR SHOULDER CONSTRUCTION							2,680		2,680	3,350	3,350				
ADDITIONAL UNDERCUT				1,300			1,300		1,300	1,625	1,625			1,300	1,300
WASTE IN LIEU OF BORROW											-8,846		-8,846		-8,846
PROJECT TOTAL		39,554		3,921		39,554	200,657		200,657	250,823	211,269			3,921	3,921
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											10,563				
GRAND TOTAL		39,554		3,921		39,554					221,832			3,921	3,921
SAY		39,600		3,950							221,900				

PER GEOTECH RECOMMENDATION, ESTIMATED 500 CUBIC YARDS OF SHALLOW UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

DDE = 12,519 CUBIC YARDS

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

PROJECT REFERENCE NO.	SHEET NO.
R-3432	4

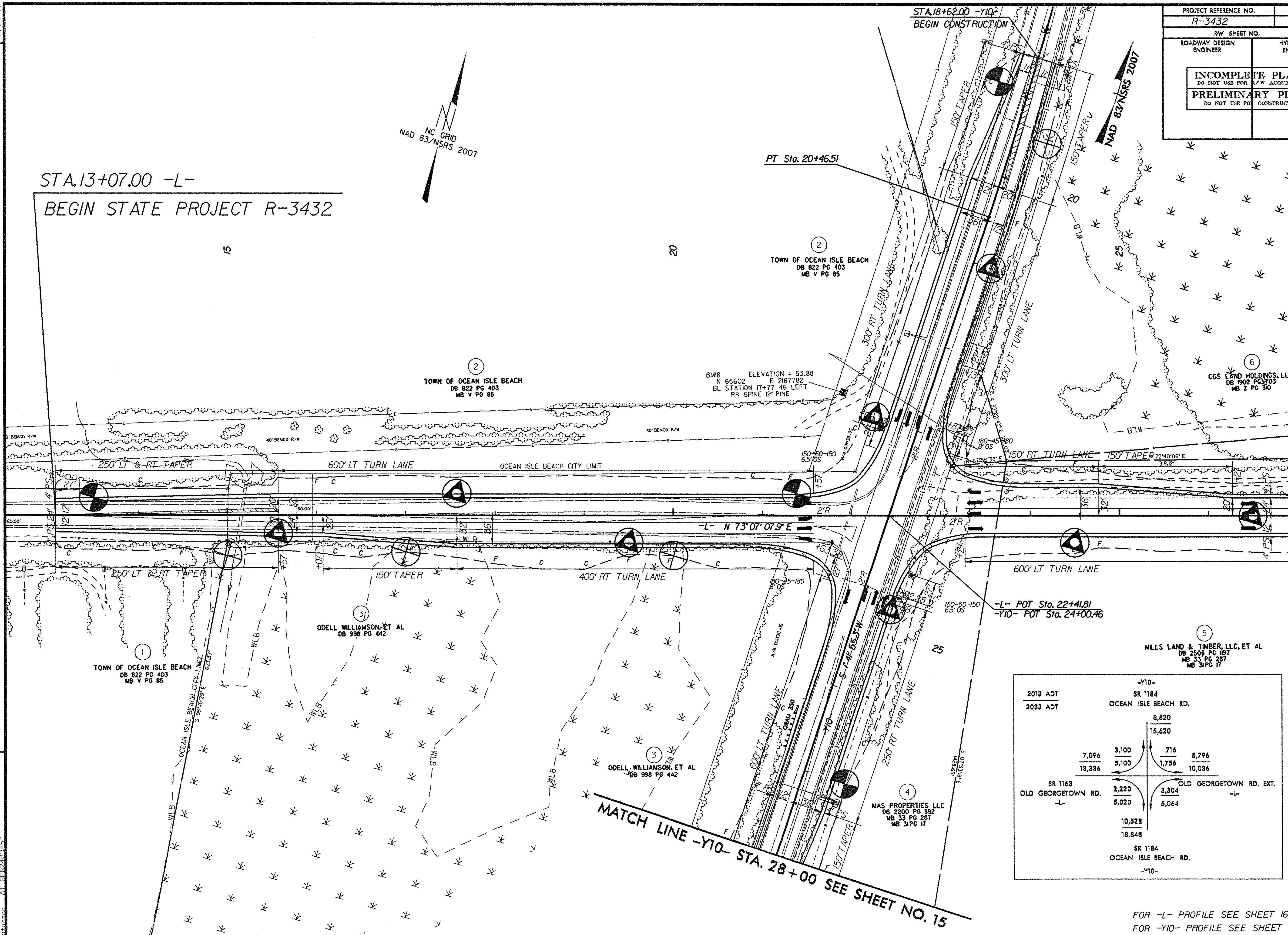
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



STA.13+07.00 -L-
BEGIN STATE PROJECT R-3432
NC GRID
NAD 83/NSRS 2007
STA.18+62.00 -Y10-
BEGIN CONSTRUCTION
NAD 83/NSRS 2007
PT Sta. 20+46.51
TOWN OF OCEAN ISLE BEACH
DB 822 PG 403
MB V PG 85
BM18 ELEVATION = 53.88
N 65602 E 2167782
BL STATION 17+77 46 LEFT
RR SPIKE 12' PINE
CGS LAND HOLDINGS, LLC
DB 1902 PG 703
MB Z PG 310
250' LT & RT TAPER
600' LT TURN LANE
OCEAN ISLE BEACH CITY LIMIT
150' RT TURN LANE
150' TAPER
300' RT TURN LANE
300' LT TURN LANE
150' TAPER
-L- N 73°07'07.9" E
150' TAPER
400' RT TURN LANE
600' LT TURN LANE
-L- POT Sta. 22+41.81
-Y10- POT Sta. 24+00.46
ODELL WILLIAMSON, ET AL
DB 998 PG 442
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 1197
MB 33 PG 287
MB 31 PG 17
MAS PROPERTIES LLC
DB 2200 PG 992
MB 33 PG 287
MB 31 PG 17
600' LT TURN LANE
250' RT TURN LANE
150' TAPER
MATCH LINE -L- STA. 27+00.00 SEE SHEET NO. 5
MATCH LINE -Y10- STA. 28+00 SEE SHEET NO. 15
2013 ADT
2033 ADT
-Y10-
SR 1184
OCEAN ISLE BEACH RD.
8,820
15,620
7,096
13,336
3,100
5,100
716
1,756
5,796
10,036
SR 1163
OLD GEORGETOWN RD.
-L-
2,220
5,020
3,304
5,064
OLD GEORGETOWN RD. EXT.
-L-
10,528
18,848
SR 1184
OCEAN ISLE BEACH RD.
-Y10-

FOR -L- PROFILE SEE SHEET 16
FOR -Y10- PROFILE SEE SHEET 21

REVISIONS

8/17/99

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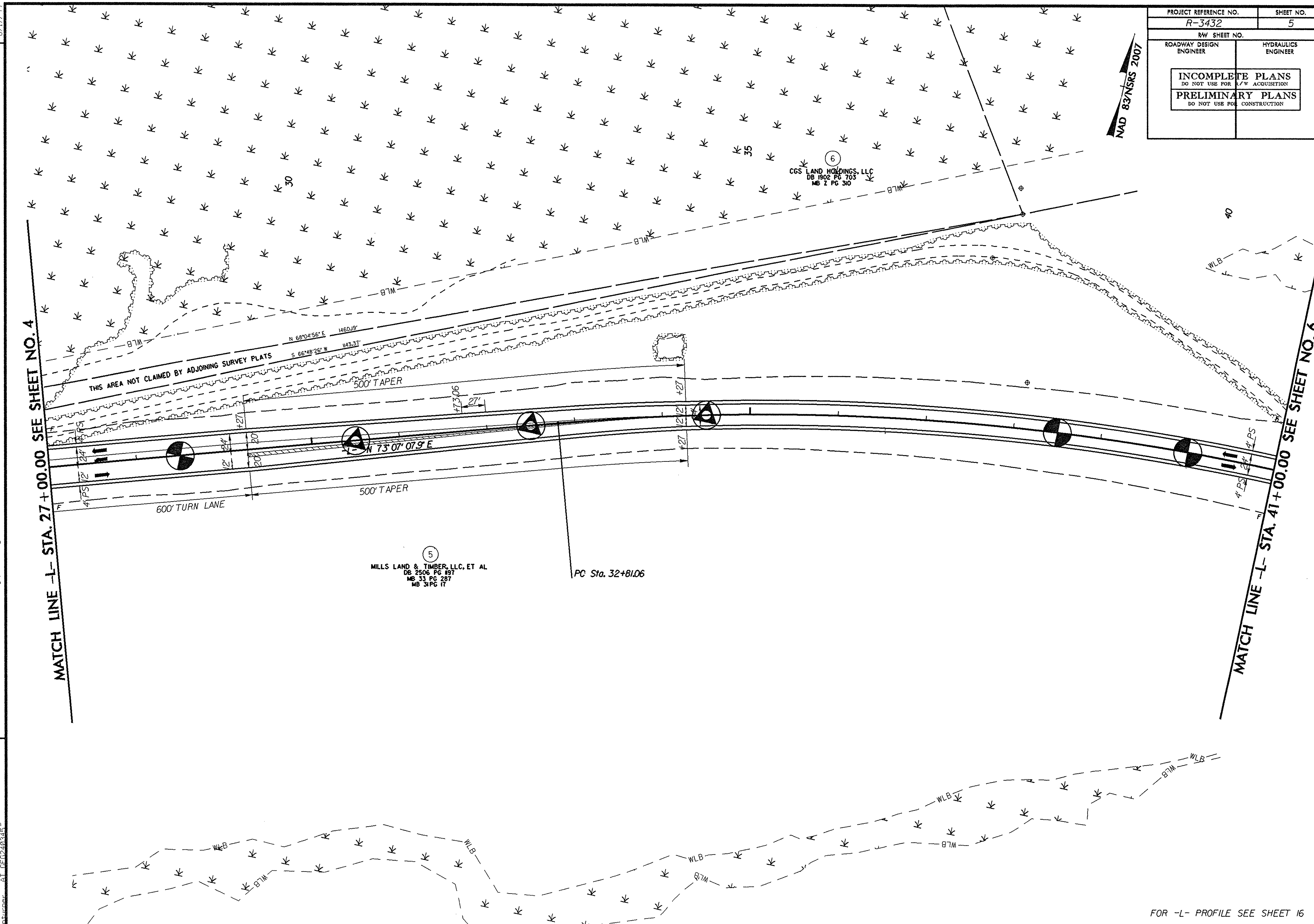
PROJECT REFERENCE NO.	SHEET NO.
R-3432	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE SEE SHEET 16

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8/17/99

REVISIONS

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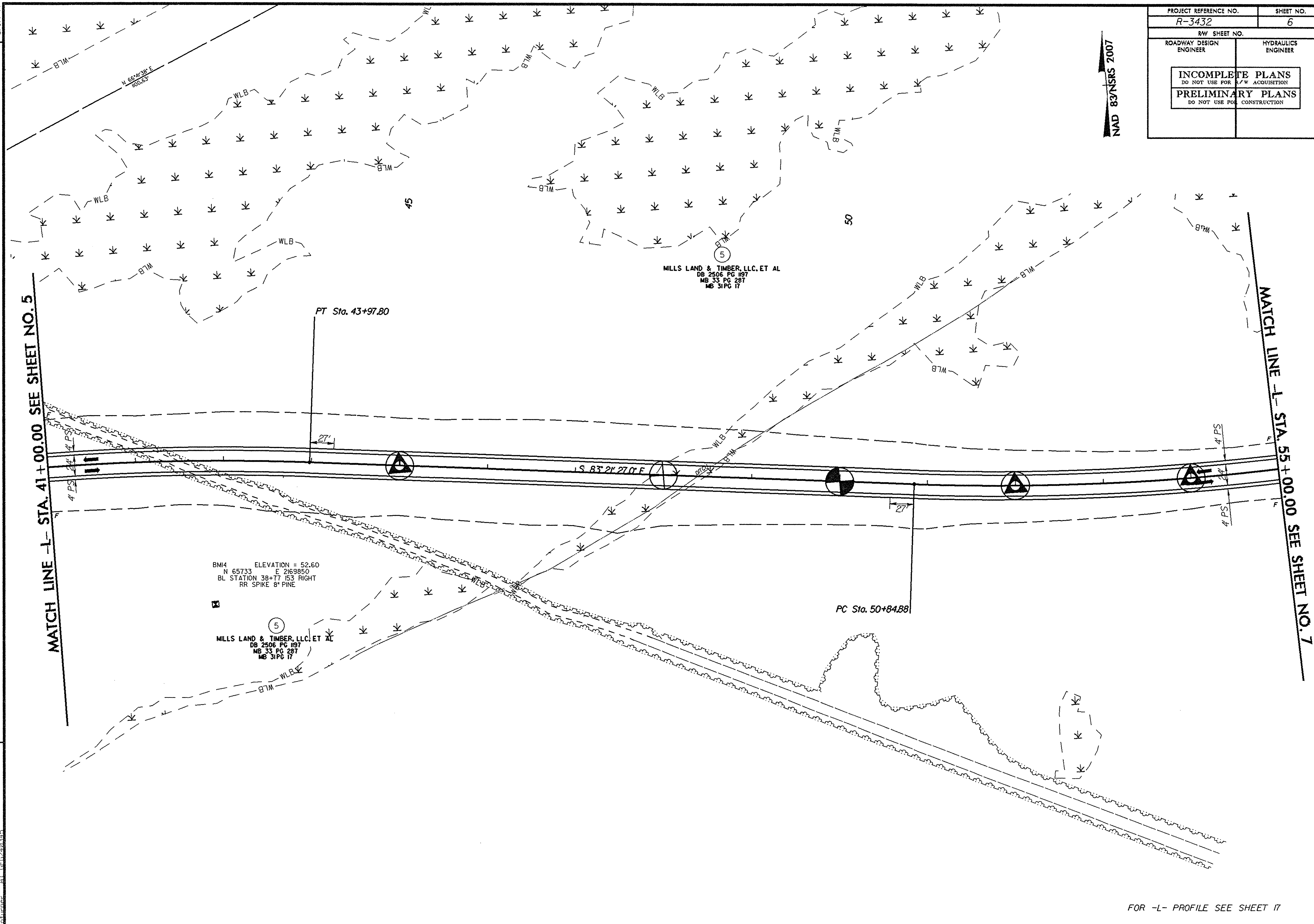
coturner AT GEG240345

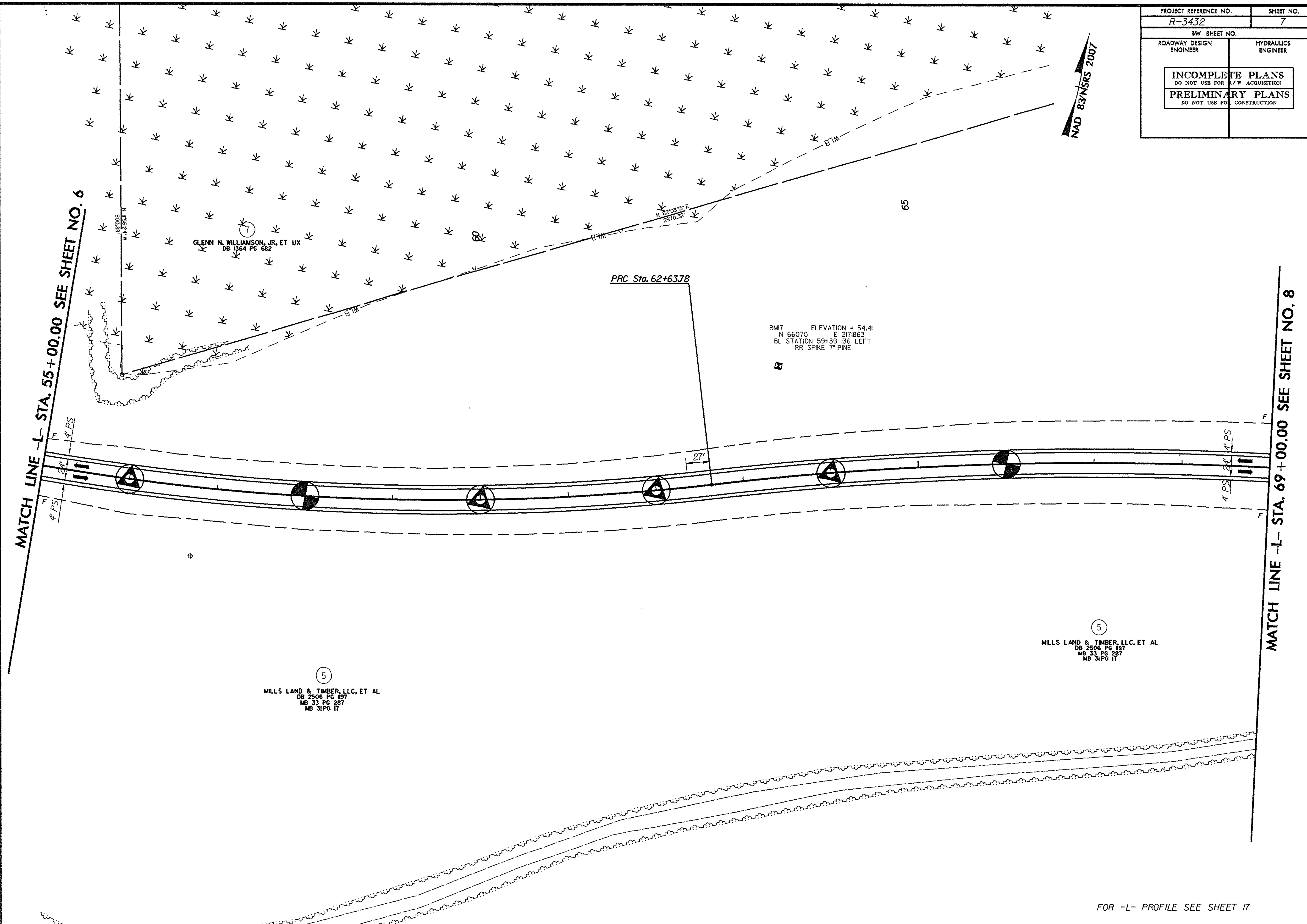


PROJECT REFERENCE NO.
R-3432
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/NSRS 2007
MATCH LINE -L- STA. 41+00.00 SEE SHEET NO. 5
MATCH LINE -L- STA. 55+00.00 SEE SHEET NO. 7
PT Sta. 43+97.80
PC Sta. 50+84.88
S 83°21'27.0" E
27'
4' PS
24'
WLB
45
50
5
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 1197
MB 33 PG 287
MB 31 PG 17
BM14 ELEVATION = 52.60
N 65733 E 2169850
BL STATION 38+77 153 RIGHT
RR SPIKE 8" PINE
FOR -L- PROFILE SEE SHEET 17

PROJECT REFERENCE NO.	SHEET NO.
R-3432	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/NSRS 2007
MATCH LINE -L- STA. 55+00.00 SEE SHEET NO. 6
MATCH LINE -L- STA. 69+00.00 SEE SHEET NO. 8
GLENN N. WILLIAMSON, JR., ET UX
DB 1364 PG 682
PRC Sta. 62+63.78
BM17 ELEVATION = 54.41
N 66070 E 2171863
BL STATION 59+39 136 LEFT
RR SPIKE 7" PINE
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 1197
MB 33 PG 287
MB 31 PG 17
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 1197
MB 33 PG 287
MB 31 PG 17
27'
4' PS
24'
60
65
FOR -L- PROFILE SEE SHEET 17

REVISIONS

8/17/99

19-JUL-2010 08:06
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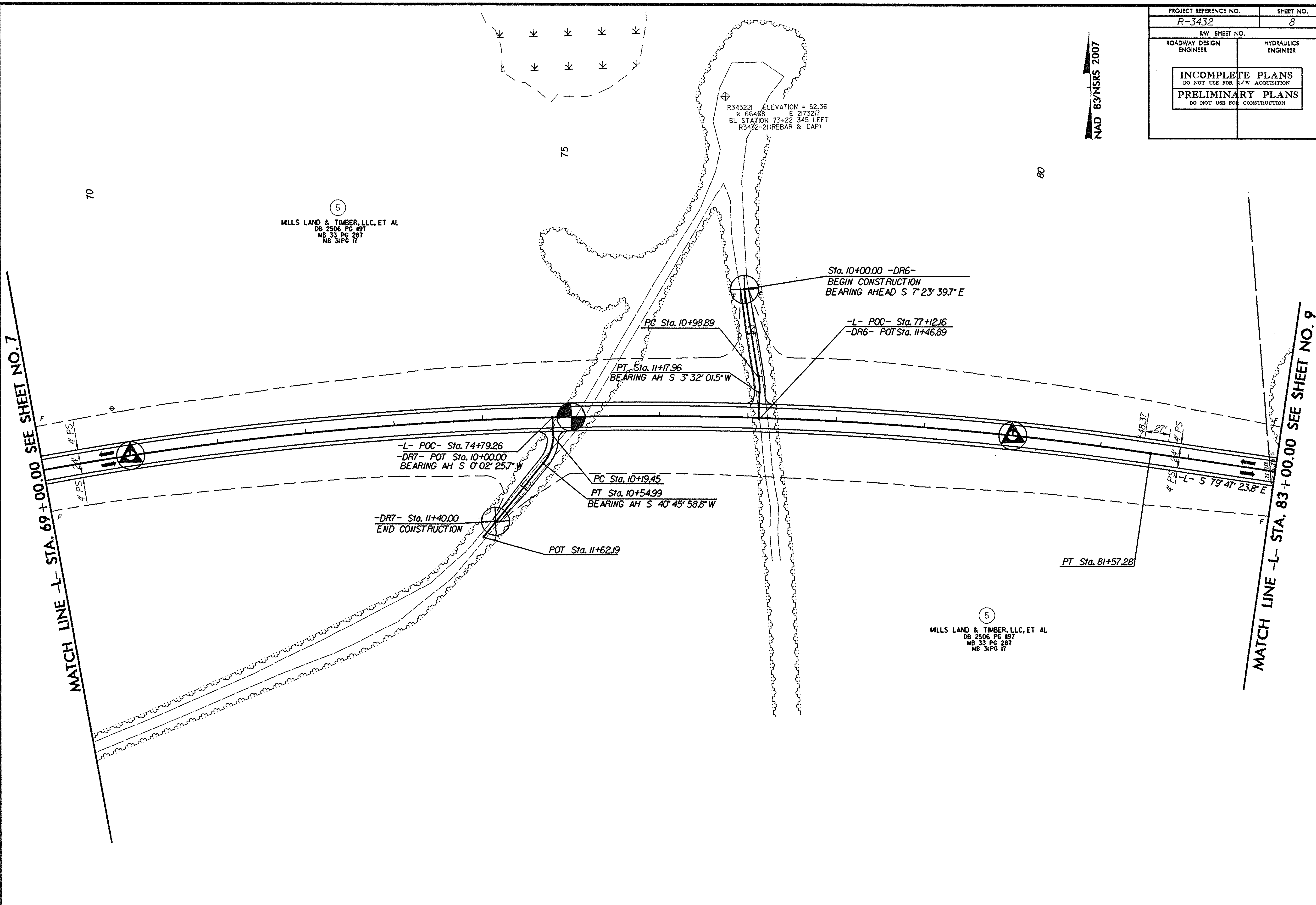
PROJECT REFERENCE NO.	SHEET NO.
R-3432	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION


NAD 83/NSRS 2007
R343221 ELEVATION = 52.36
N 66488 E 2173217
BL STATION 73+22 345 LEFT
R3432-21 (REBAR & CAP)
75
70
80
5
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 197
MB 33 PG 287
MB 31 PG 17
Sta. 10+00.00 -DR6-
BEGIN CONSTRUCTION
BEARING AHEAD S 7° 23' 39.7" E
PC Sta. 10+98.89
-L- POC- Sta. 77+12.16
-DR6- POT Sta. 11+46.89
PT Sta. 11+17.96
BEARING AH S 3° 32' 01.5" W
-L- POC- Sta. 74+79.26
-DR7- POT Sta. 10+00.00
BEARING AH S 0° 02' 25.7" W
PC Sta. 10+19.45
PT Sta. 10+54.99
BEARING AH S 40° 45' 58.8" W
-DR7- Sta. 11+40.00
END CONSTRUCTION
POT Sta. 11+62.19
PT Sta. 81+57.28
-L- S 79° 47' 23.8" E
4' PS
24'
27'
48.37
MATCH LINE -L- STA. 69+00.00 SEE SHEET NO. 7
MATCH LINE -L- STA. 83+00.00 SEE SHEET NO. 9
MILLS LAND & TIMBER, LLC, ET AL
DB 2506 PG 197
MB 33 PG 287
MB 31 PG 17

REVISIONS

8/17/99

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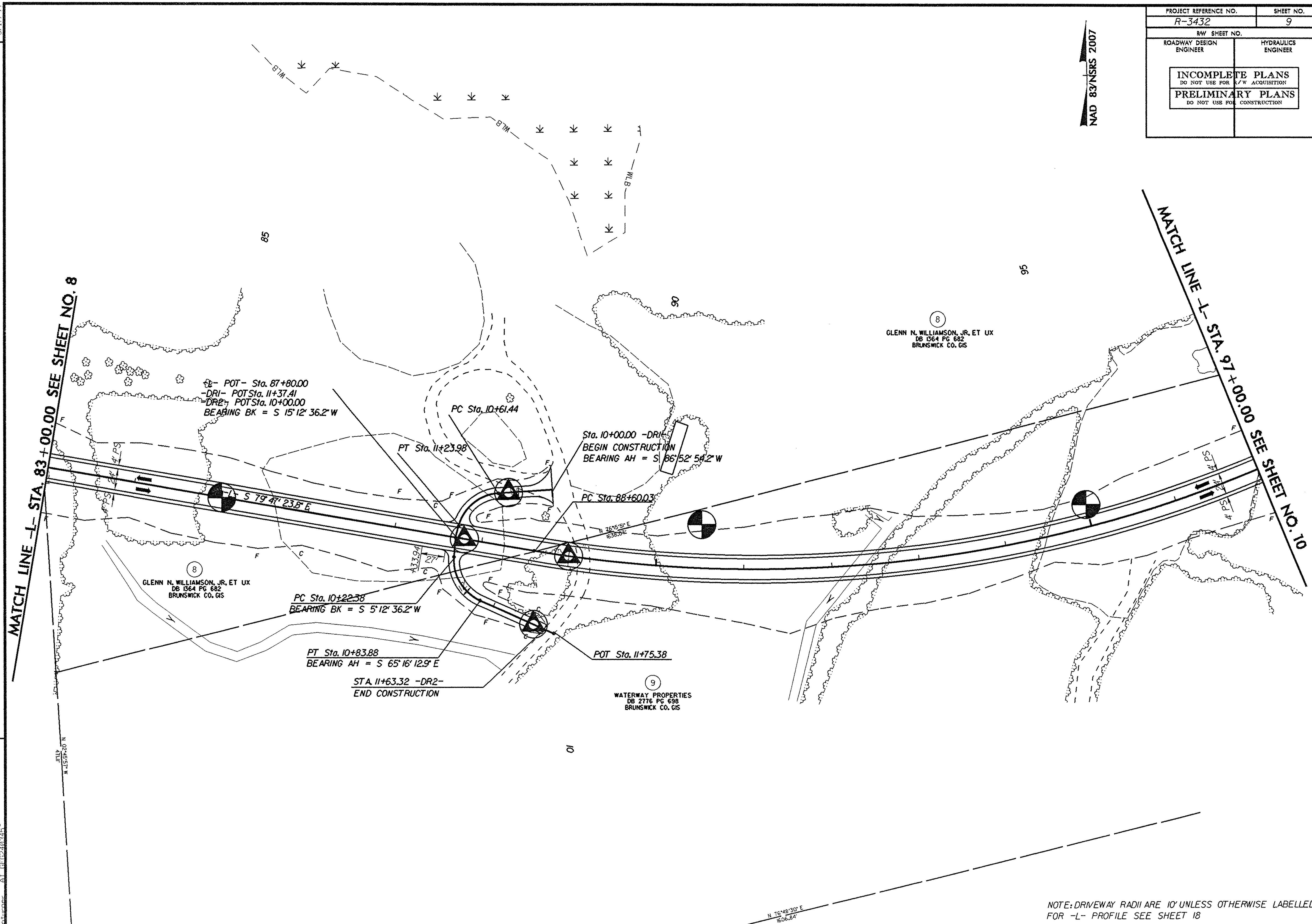
FOR -L- PROFILE SEE SHEET 18


PROJECT REFERENCE NO. R-3432
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/NSRS 2007
MATCH LINE -L- STA. 83+00.00 SEE SHEET NO. 8
MATCH LINE -L- STA. 97+00.00 SEE SHEET NO. 10
-L- POT- Sta. 87+80.00
-DR1- POT Sta. 11+37.41
-DR2- POT Sta. 10+00.00
BEARING BK = S 15°12' 36.2" W
PC Sta. 10+61.44
PT Sta. 11+23.98
Sta. 10+00.00 -DR1-
BEGIN CONSTRUCTION
BEARING AH = S 86°52' 54.2" W
PC Sta. 88+60.03
S 79°47' 23.8" E
PC Sta. 10+22.38
BEARING BK = S 5°12' 36.2" W
PT Sta. 10+83.88
BEARING AH = S 65°16' 12.9" E
STA. 11+63.32 -DR2-
END CONSTRUCTION
POT Sta. 11+75.38
GLENN N. WILLIAMSON, JR. ET UX
DB 1364 PG 682
BRUNSWICK CO. GIS
WATERWAY PROPERTIES
DB 2776 PG 698
BRUNSWICK CO. GIS
NOTE: DRIVEWAY RADII ARE 10' UNLESS OTHERWISE LABELLED.
FOR -L- PROFILE SEE SHEET 18

REVISIONS

8/17/99

19-JUL-2010 08:07
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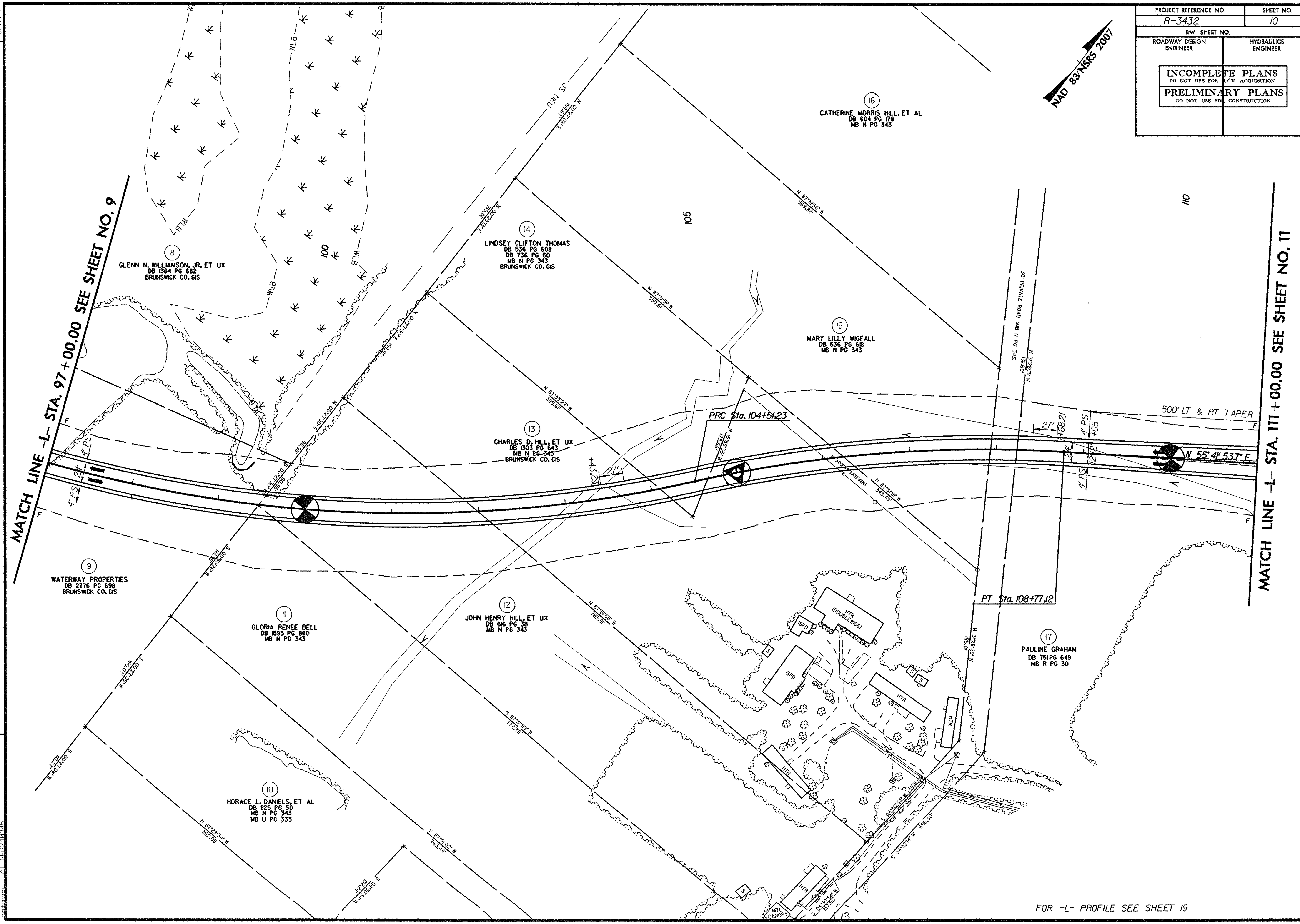

REVISIONS

8/17/99

19-JUL-2010 08:07
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PROJECT REFERENCE NO.	SHEET NO.
R-3432	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

3/17/99

REVISIONS

2013 ADT
2033 ADT

OLD GEORGETOWN RD. EXT. -L-: 5,796 / 10,036 — 320 / 1,120 — 2,156 / 4,796
OLD GEORGETOWN RD. EXT. -L-: 7,312 / 12,592 — 1,836 / 3,676

SR 1154
HALE SWAMP RD.
-Y9-

NAD 83/NSRS 2007

NC GRID
NAD 83/NSRS 2007

MATCH LINE -L- STA. 111+00.00 SEE SHEET NO. 10

MATCH LINE -L- STA. 125+00.00 SEE SHEET NO. 12

(17) PAULINE GRAHAM
DB 751 PG 649
MB R PG 30

(23) SHEFFIELD SEAFOOD & GROCERY, INC
DB 1503 PG 859
MB R PG 90

(22) LISA E. LITTLE
DB 704 PG 259
MB 1 PG 59

(21) MICHAEL E. WRIGHT
DB 751 PG 651

(20) BLUEBERRY PROPERTIES, INC.
DB 948 PG 195
MB S PG 236
MB II PG 15

(18) PAULINE GRAHAM
DB 751 PG 649
MB R PG 30

(19) MINE REE JOHNSON
DB 954 PG 368

BM26 ELEVATION = 50.72
N 67683 E 2177016
BL STATION 118+70.89 LEFT
RR SPIKE 8" PINE

PC Sta. 114+00.86
-L- POC Sta. 114+82.06
-Y9- POT Sta. 10+00.00
PT Sta. 124+36.79
PRC Sta. 13+43.58
PC Sta. 10+01.07
POT Sta. 10+00.00
BEARING = AH
N 66° 52' 38.9" W
PC Sta. 10+24.40
-Y9- POT Sta. 10+22.24
BEGIN CONST.
-Y9- POC Sta. 11+87.68
-Y9A- POT Sta. 10+00.00
-Y9A- POC Sta. 14+66.00
-Y9B- POT Sta. 10+70.00
PT Sta. 10+81.94
PC Sta. 12+15.87
STA. 12+70.00 -Y9A-
END CONSTRUCTION
PT Sta. 15+67.72
POT Sta. 17+37.99
STA.14+42.00 -Y9-
END CONSTRUCTION

APPROXIMATE LIMIT OF ORGAINC DEPOSITS

500' LT & RT TAPER
250' LT TURN LANE
150' TAPER
100' RT TURN LANE
250' RT TURN LANE
150' TAPER
50' TAPER
TES

N 4° 53' 37" E -L-
N 16° 01' 54" E
N 17° 49' 09" E
N 40° 19' 36.6" E
N 66° 52' 38.9" W
S 17° 30' 43" W 146.53'
30' PROPOSED EASEMENT DB 954 PG 368
S 17° 58' 08" W 101.02'
S 17° 30' 43" W 139.99'
S 15° 07' 38" E 101.38'
S 67° 29' 38" E 95.14'
S 74° 25' 37" W 38.20'
S 17° 49' 09" W 146.98'
N 17° 49' 09" E 106.85'

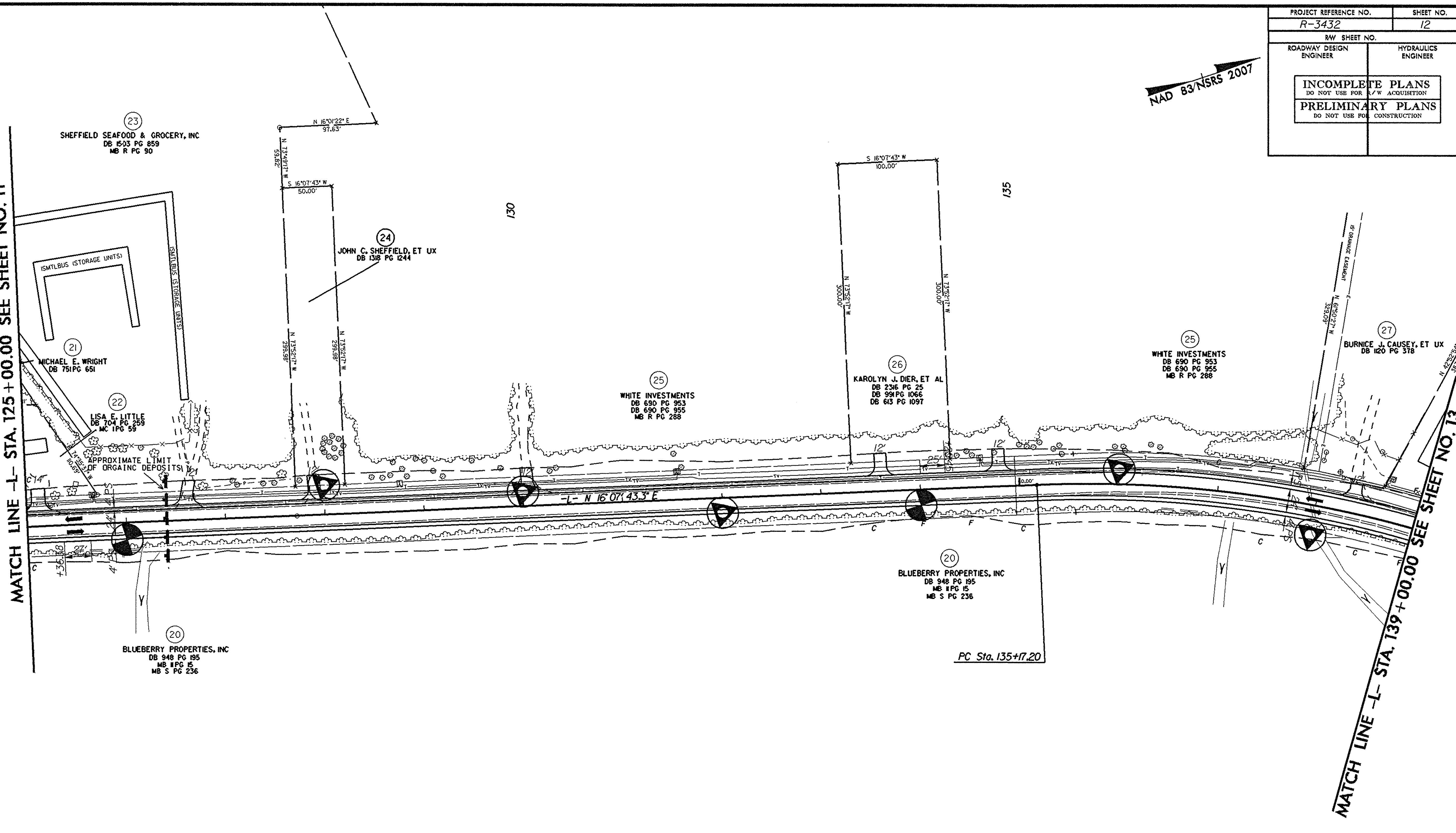
115
120

FOR -L- PROFILE SEE SHEET 19
FOR -Y9- PROFILE SEE SHEET 22
FOR -Y9A- PROFILE SEE SHEET 22
FOR -Y9B- PROFILE SEE SHEET 22

PROJECT REFERENCE NO.	SHEET NO.
R-3432	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/NSRS 2007
MATCH LINE -L- STA. 125+00.00 SEE SHEET NO. 11
MATCH LINE -L- STA. 139+00.00 SEE SHEET NO. 13
23
SHEFFIELD SEAFOOD & GROCERY, INC
DB 1503 PG 859
MB R PG 90
SMTLBUS (STORAGE UNITS)
21
MICHAEL E. WRIGHT
DB 751 PG 651
22
LISA E. LITTLE
DB 704 PG 259
MC 1 PG 59
APPROXIMATE LIMIT OF ORGAINC DEPOSITS
N 16°01'22" E
97.63'
S 16°07'43" W
50.00'
24
JOHN C. SHEFFIELD, ET UX
DB 1318 PG 1244
130
135
25
WHITE INVESTMENTS
DB 690 PG 953
DB 690 PG 955
MB R PG 288
S 16°07'43" W
100.00'
26
KAROLYN J. DIER, ET AL
DB 2316 PG 25
DB 991 PG 1066
DB 613 PG 1097
27
BURNICE J. CAUSEY, ET UX
DB 1120 PG 378
-L- N 16°07'43.3" E
20
BLUEBERRY PROPERTIES, INC
DB 948 PG 195
MB 11 PG 15
MB S PG 236
PC Sta. 135+17.20

NOTE: DRIVEWAY RADII ARE 10' UNLESS OTHERWISE LABELLED.
FOR -L- PROFILE SEE SHEET 20

REVISIONS

8/17/99

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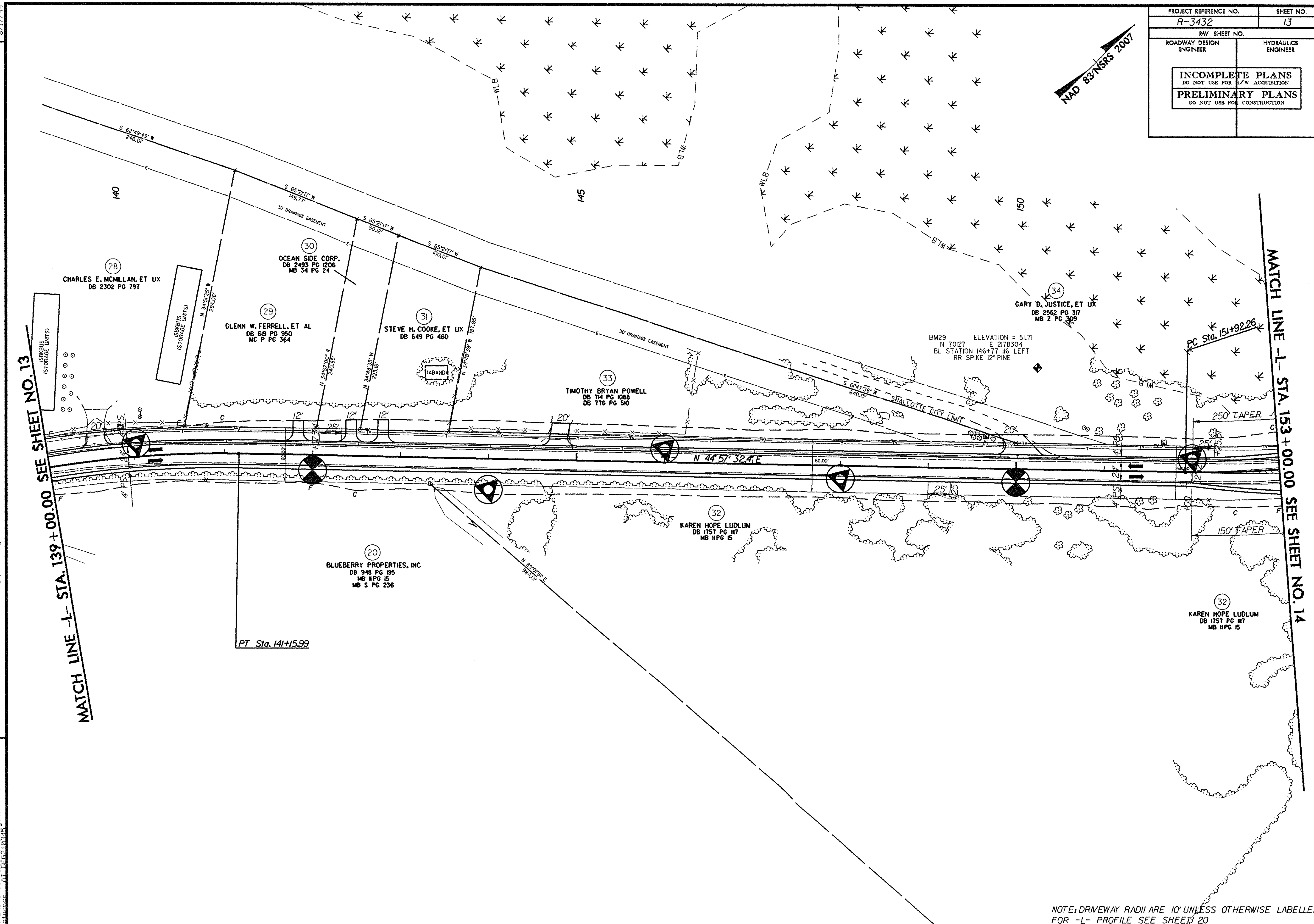
PROJECT REFERENCE NO.	SHEET NO.
R-3432	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION



NAD 83/NSRS 2007
MATCH LINE -L- STA. 139+00.00 SEE SHEET NO. 13
MATCH LINE -L- STA. 153+00.00 SEE SHEET NO. 14
140
145
150
WLB
S 62°49'49" W 246.01'
S 65°21'17" W 149.77'
S 65°21'17" W 50.12'
S 65°21'17" W 100.01'
30' DRAINAGE EASEMENT
28
CHARLES E. MCMILLAN, ET UX
DB 2302 PG 797
ISBKBUS (STORAGE UNITS)
30
OCEAN SIDE CORP.
DB 2493 PG 1206
MB 34 PG 24
29
GLENN W. FERRELL, ET AL
DB 619 PG 950
MC P PG 364
31
STEVE H. COOKE, ET UX
DB 649 PG 460
(ABAND)
33
TIMOTHY BRYAN POWELL
DB 714 PG 1088
DB 776 PG 510
34
GARY D. JUSTICE, ET UX
DB 2552 PG 317
MB 2 PG 309
BM29 ELEVATION = 51.71
N 70127 E 2178304
BL STATION 146+77 116 LEFT
RR SPIKE 12" PINE
SHALLOTTE CITY LIMIT
PC Sta. 151+92.26
250' TAPER
150' TAPER
N 44°57'32.4" E
20
BLUEBERRY PROPERTIES, INC
DB 948 PG 195
MB 11 PG 15
MB S PG 236
32
KAREN HOPE LUDLUM
DB 1757 PG 117
MB 11 PG 15
PT Sta. 141+15.99
N 85°01'51" E 986.13'

NOTE: DRIVEWAY RADII ARE 10' UNLESS OTHERWISE LABELLED.
FOR -L- PROFILE SEE SHEET 20

REVISIONS

8/17/99

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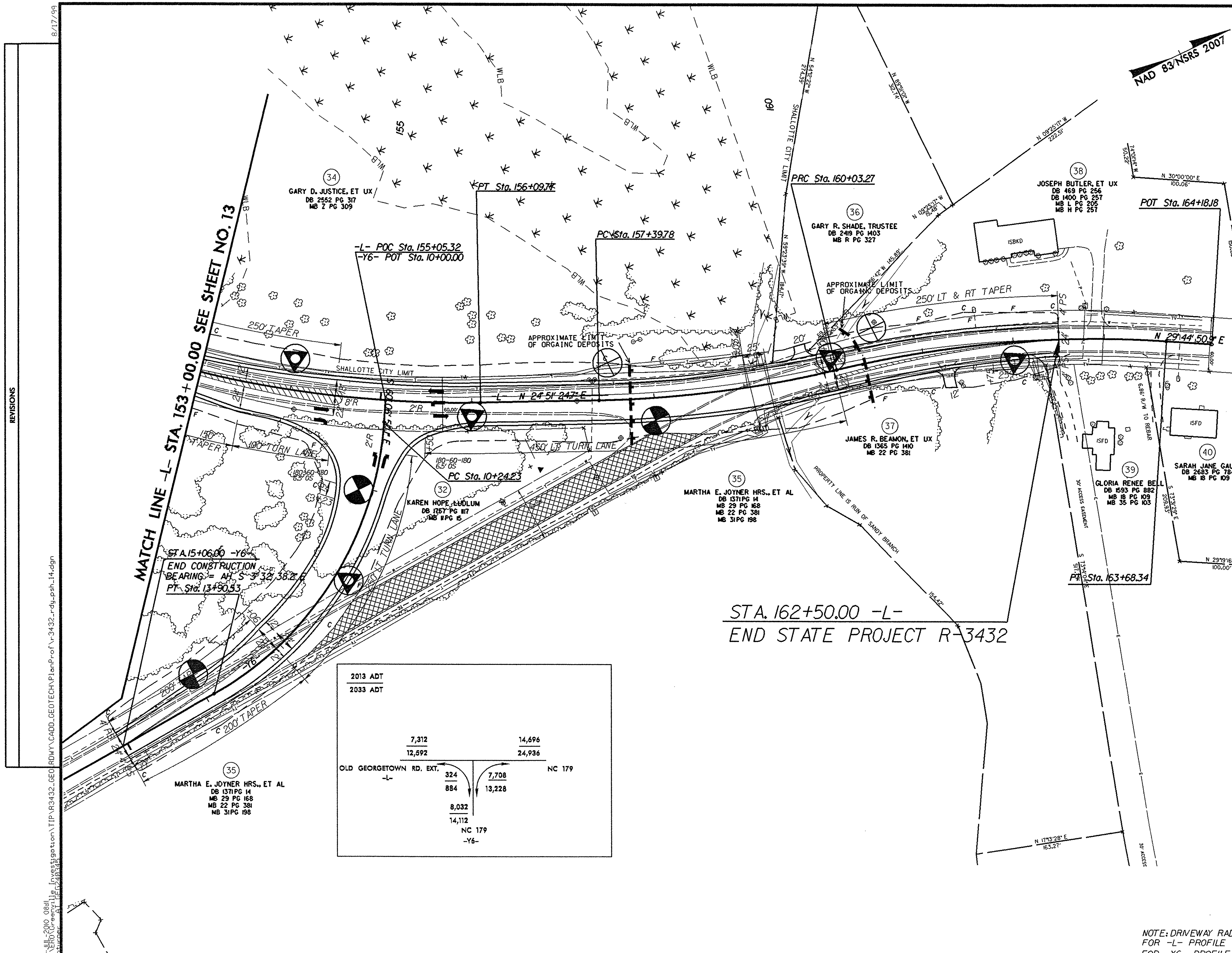
PROJECT REFERENCE NO.	SHEET NO.
R-3432	14

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



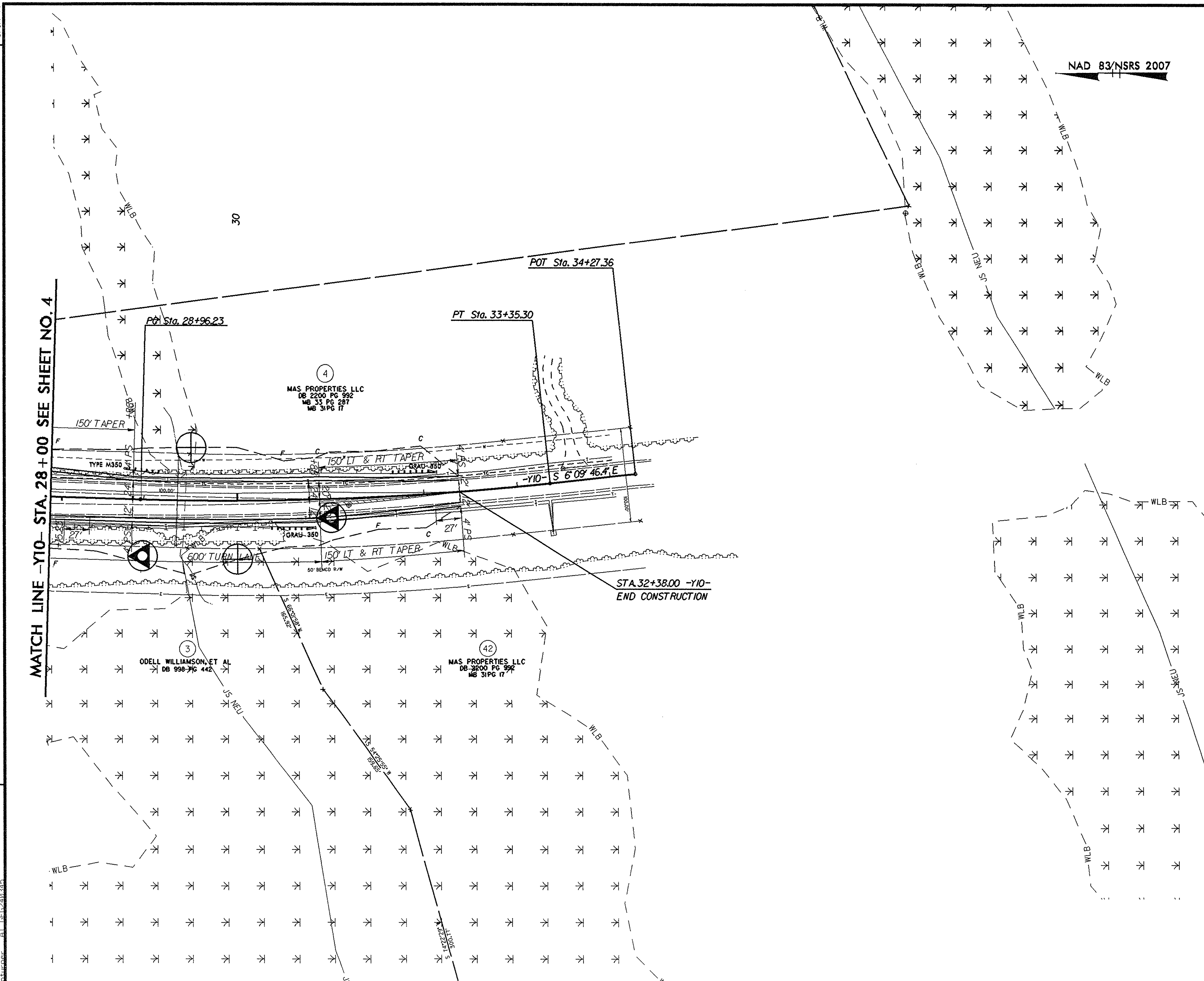
NAD 83/NSRS 2007
MATCH LINE -L- STA. 153+00.00 SEE SHEET NO. 13
GARY D. JUSTICE, ET UX
DB 2552 PG 317
MB Z PG 309
PT Sta. 156+09.74
-L- POC Sta. 155+05.32
-Y6- POT Sta. 10+00.00
PC Sta. 157+39.78
PRC Sta. 160+03.27
GARY R. SHADE, TRUSTEE
DB 2419 PG 1403
MB R PG 327
JOSEPH BUTLER, ET UX
DB 469 PG 256
DB 1400 PG 257
MB L PG 205
MB H PG 257
POT Sta. 164+18.18
SHALLOTTE CITY LIMIT
APPROXIMATE LIMIT OF ORGAINC DEPOSITS
250' TAPER
250' LT & RT TAPER
N 24°51' 24.7" E
N 29°44' 50.9" E
150' TAPER
100' TURN LANE
450' LT TURN LANE
PC Sta. 10+24.23
KAREN HOPE LUDLUM
DB 1757 PG 1117
MB 11 PG 15
MARTHA E. JOYNER HRS., ET AL
DB 1371 PG 14
MB 29 PG 168
MB 22 PG 381
MB 31 PG 198
JAMES R. BEAMON, ET UX
DB 1365 PG 1410
MB 22 PG 381
GLORIA RENEE BELL
DB 1593 PG 882
MB 18 PG 109
MB 35 PG 103
SARAH JANE GAUSE
DB 2683 PG 784
MB 18 PG 109
PROPERTY LINE IS RUN OF SANDY BRANCH
PT Sta. 163+68.34
STA. 15+06.00 -Y6-
END CONSTRUCTION
BEARING = AH S 3°32' 38.2" E
PT Sta. 13+90.53
STA. 162+50.00 -L-
END STATE PROJECT R-3432
200' TAPER
2013 ADT
2033 ADT
OLD GEORGETOWN RD. EXT.
-L-
NC 179
-Y6-
7,312
12,592
14,696
24,936
324
884
7,708
13,228
8,032
14,112
REVISIONS

NOTE: DRIVEWAY RADII ARE 10' UNLESS OTHERWISE LABELLED.
FOR -L- PROFILE SEE SHEET 21
FOR -Y6- PROFILE SEE SHEET 22

PROJECT REFERENCE NO.	SHEET NO.
R-3432	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

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FOR -Y10- PROFILE SEE SHEET 21

PROJECT REFERENCE NO.	SHEET NO.
R-3432	16

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

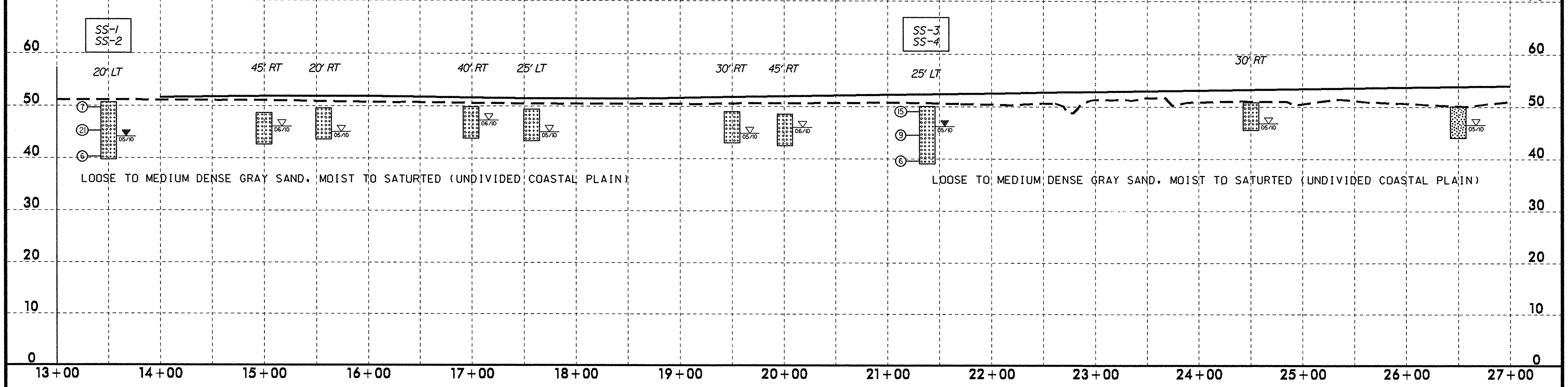
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

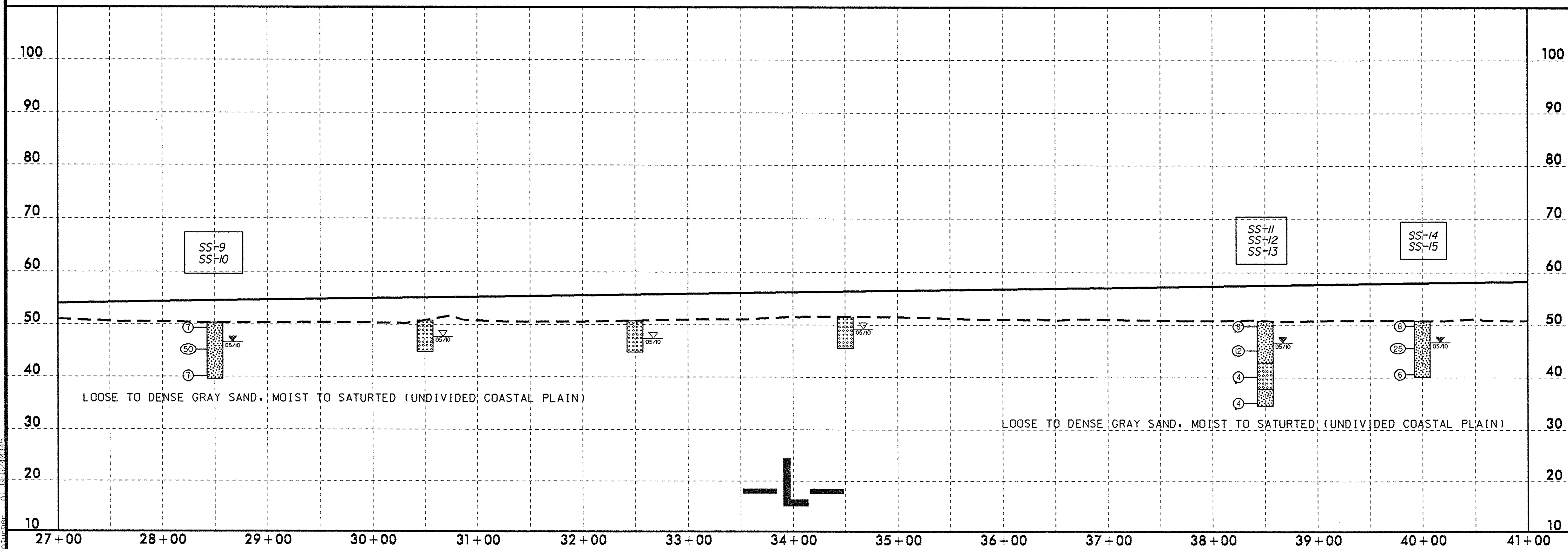
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

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	20 LT	13+50	1.0-1.5	A-3(0)	18	NP	55.6	36.9	3.4	4.0	100	74	8	-	-
SS-2	20 LT	13+50	9.4-10.9	A-3(0)	28	NP	47.1	45.1	3.7	4.0	99	72	8	-	-
SS-3	25 LT	21+38	1.0-1.5	A-3(0)	17	NP	53.7	38.6	1.6	6.1	100	77	8	-	-
SS-4	25 LT	21+38	9.5-11.0	A-3(0)	22	NP	4.4	90.3	1.2	4.0	100	98	6	-	-
SS-9	CL	28+50	1.0-1.5	A-2-4(0)	18	NP	38.1	41.0	6.8	14.1	100	86	21	-	-
SS-10	CL	28+50	9.2-10.7	A-2-4(0)	21	NP	13.5	67.4	4.9	14.1	99	93	19	-	-
SS-11	CL	38+50	1.0-1.5	A-2-4(0)	14	NP	45.8	38.1	6.0	10.1	100	86	16	-	-
SS-12	CL	38+50	9.7-11.2	A-3(0)	20	NP	14.5	83.4	0.1	2.0	99	90	2	-	-
SS-13	CL	38+50	14.7-16.2	A-2-4(0)	19	NP	27.0	54.1	8.8	10.1	99	88	22	-	-
SS-14	CL	40+00	1.0-1.5	A-2-4(0)	18	NP	50.3	32.3	5.3	12.1	100	81	18	-	-
SS-15	CL	40+00	9.3-10.8	A-2-4(0)	26	NP	13.3	67.0	7.6	12.1	100	91	20	-	-





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PROJECT REFERENCE NO.	SHEET NO.
R-3432	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

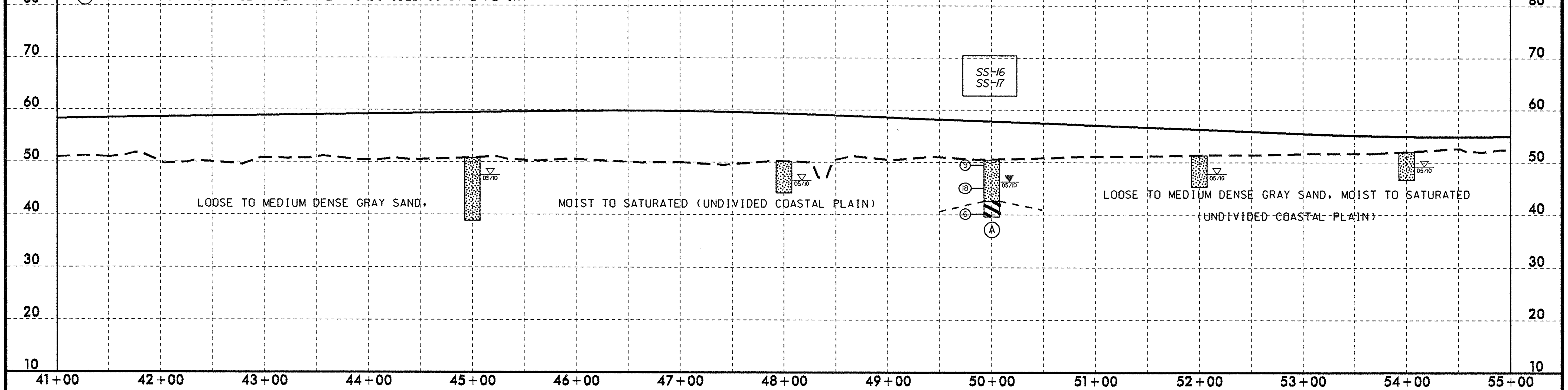
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

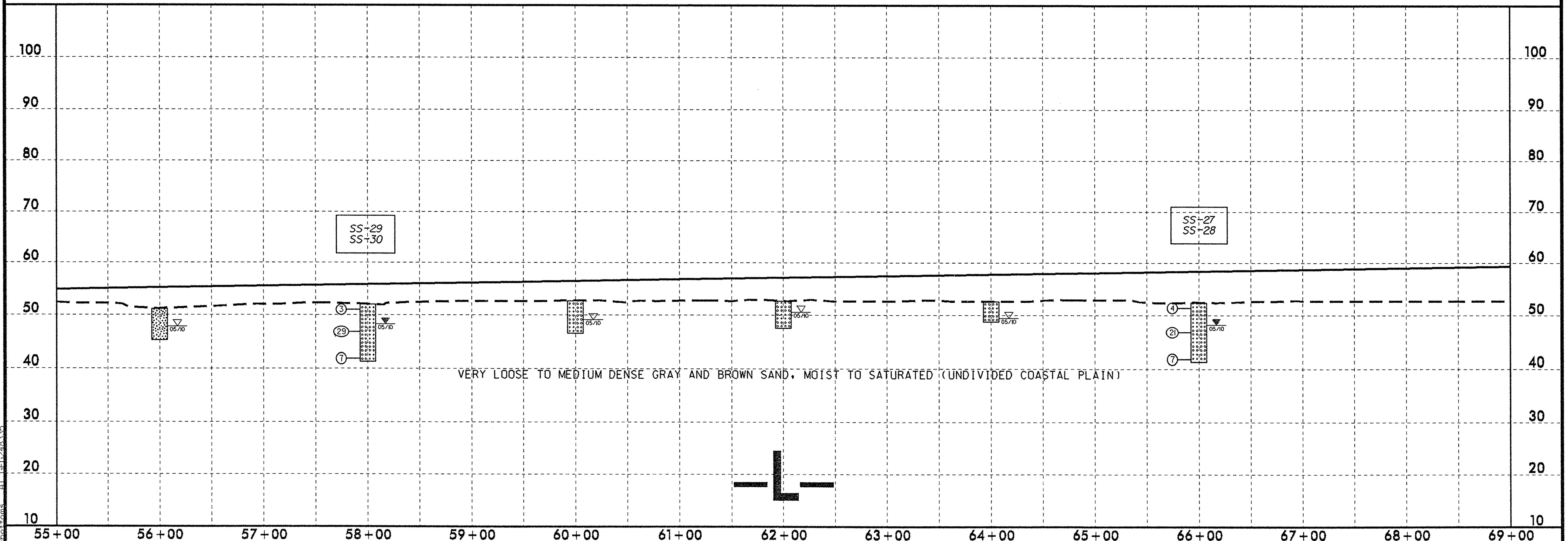
5/28/99

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-16	CL	50+00	1.0-1.5	A-2-4(0)	14	NP	52.5	29.3	6.2	12.1	100	77	19	-	-
SS-17	CL	50+00	9.4-10.9	A-7-6(17)	42	22	2.4	20.4	22.7	54.5	100	99	78	-	-
SS-29	CL	58+00	1.0-1.5	A-3(0)	18	NP	47.0	44.2	4.7	4.0	100	88	9	-	-
SS-30	CL	58+00	4.3-5.8	A-3(0)	30	NP	54.7	37.9	5.3	2.0	100	71	9	-	-
SS-27	CL	66+00	1.0-1.5	A-3(0)	19	NP	44.4	53.3	0.3	2.0	100	86	3	-	-
SS-28	CL	66+00	4.7-6.2	A-3(0)	26	NP	50.5	42.0	5.5	2.0	100	77	9	-	-

(A) MEDIUM STIFF GRAY SILTY CLAY, WET (UNDIVIDED COASTAL PLAIN)





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PROJECT REFERENCE NO.	SHEET NO.
R-3432	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

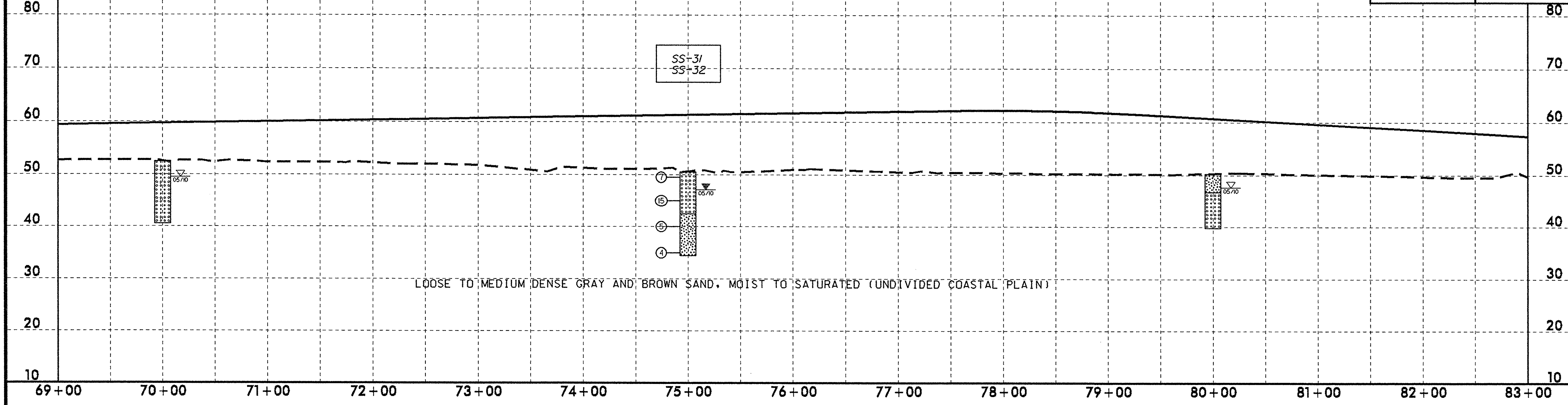
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

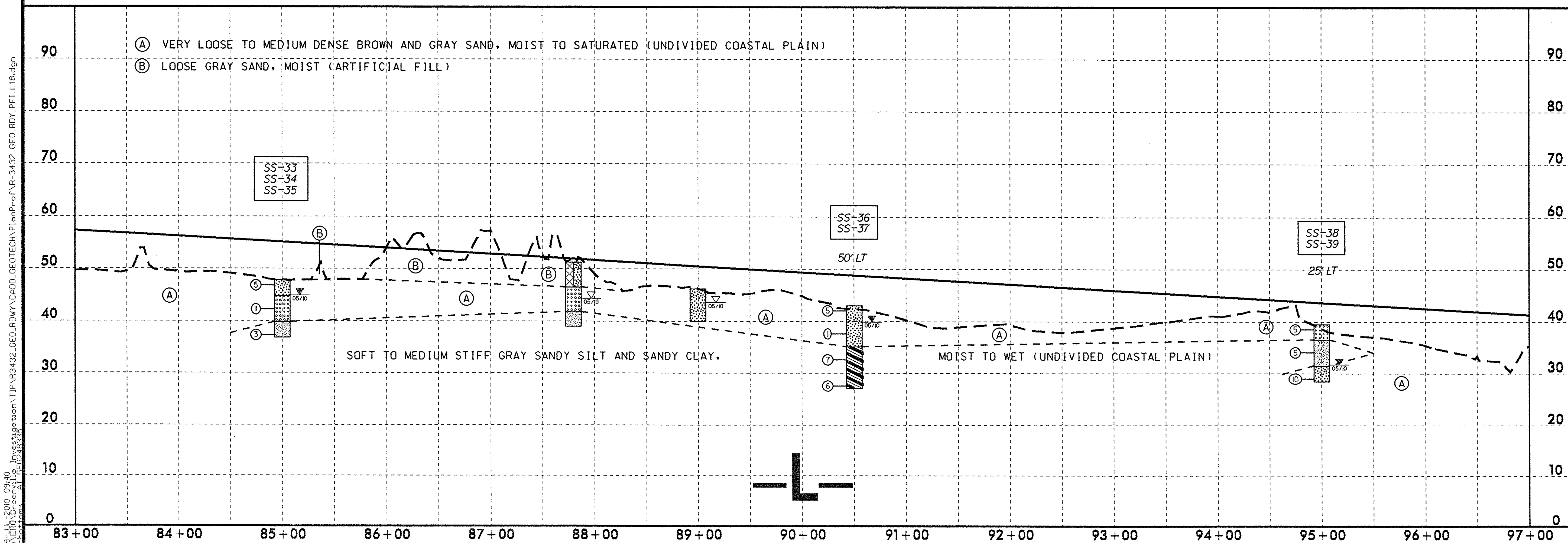
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

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-31	CL	75+00	4.5-6.0	A-3(0)	29	NP	35.5	56.7	5.8	2.0	100	85	9	-	-
SS-32	CL	75+00	14.5-16.0	A-2-4(0)	19	NP	34.3	44.8	10.8	10.1	100	77	26	-	-
SS-33	CL	85+00	1.0-1.5	A-2-4(0)	15	NP	37.1	51.3	5.5	6.1	100	88	12	-	-
SS-34	CL	85+00	4.5-6.0	A-3(0)	28	NP	41.3	51.6	3.0	4.0	100	78	8	-	-
SS-35	CL	85+00	9.5-11.0	A-4(0)	23	9	7.9	55.6	12.3	24.2	100	97	38	-	-
SS-36	50 LT	90+50	4.5-6.0	A-2-4(0)	29	NP	4.8	81.9	5.2	8.1	100	97	14	-	-
SS-37	50 LT	90+50	14.5-16.0	A-6(1)	26	12	31.3	29.6	14.9	24.2	99	82	42	-	-
SS-38	25 LT	95+00	1.0-1.5	A-3(0)	19	NP	26.6	67.9	3.4	2.0	100	88	6	-	-
SS-39	25 LT	95+00	4.5-6.0	A-4(0)	24	9	31.9	31.0	14.9	22.2	100	77	39	-	-





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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-3432	19

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SOIL TEST RESULTS

SAMPLE NO.	DESCRIPT.	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-40	CL	100+00	4.5-6.0	A-3(0)	18	NP	35.9	57.9	2.2	4.0	100	82	7	-	-
SS-45	CL	110+00	1.0-1.5	A-3(0)	22	NP	30.6	63.5	1.8	4.0	100	90	6	-	-
SS-46	CL	110+00	4.4-5.9	A-2-4(0)	28	NP	21.2	64.7	6.0	8.1	100	92	15	-	-
SS-47	CL	110+00	9.4-10.9	A-2-4(0)	21	NP	20.6	64.5	4.8	10.1	100	92	16	-	-
SS-41	CL	117+50	4.5-6.0	A-3(0)	29	NP	17.3	73.5	3.1	6.0	100	94	10	-	-
SS-42	CL	117+50	9.5-11.0	A-3(0)	24	NP	9.1	86.3	0.6	4.0	100	95	5	-	-

Ⓐ VERY SOFT GRAY CALCAREOUS SANDSTONE, SATURATED (PEEDEE FORMATION)

SS-40

SS-45
SS-46
SS-47

VERY LOOSE TO LOOSE GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

VERY LOOSE TO LOOSE GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

Ⓑ VERY LOOSE TO MEDIUM DENSE TAN SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

Ⓒ DENSE BROWN MODERATELY ORGANIC SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

SS-41
SS-42

15' LT

15' LT

VERY LOOSE TO MEDIUM DENSE TAN SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

PROJECT REFERENCE NO.	SHEET NO.
R-3432	20

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

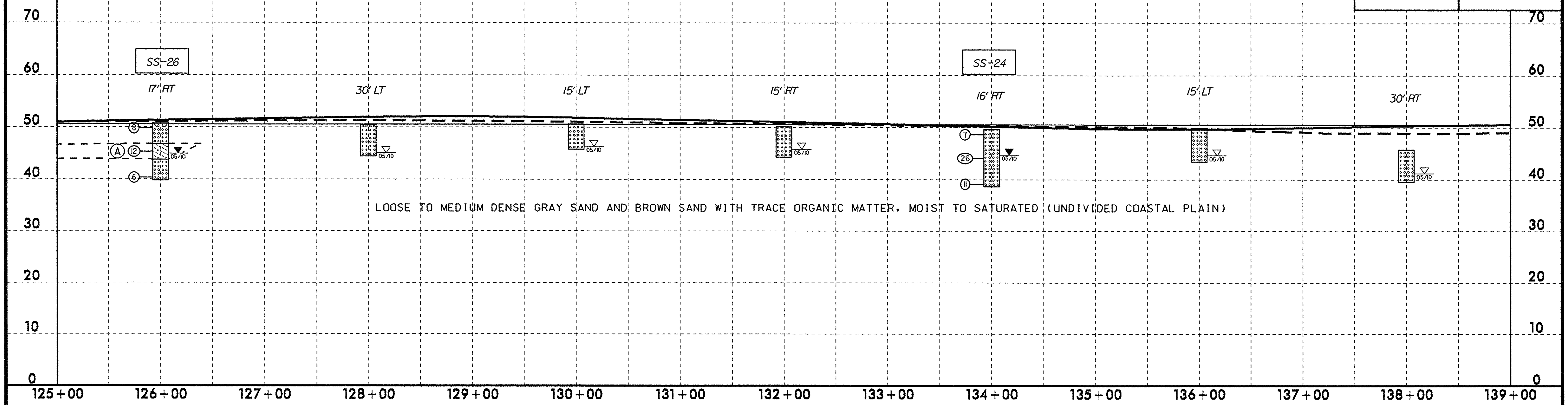
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

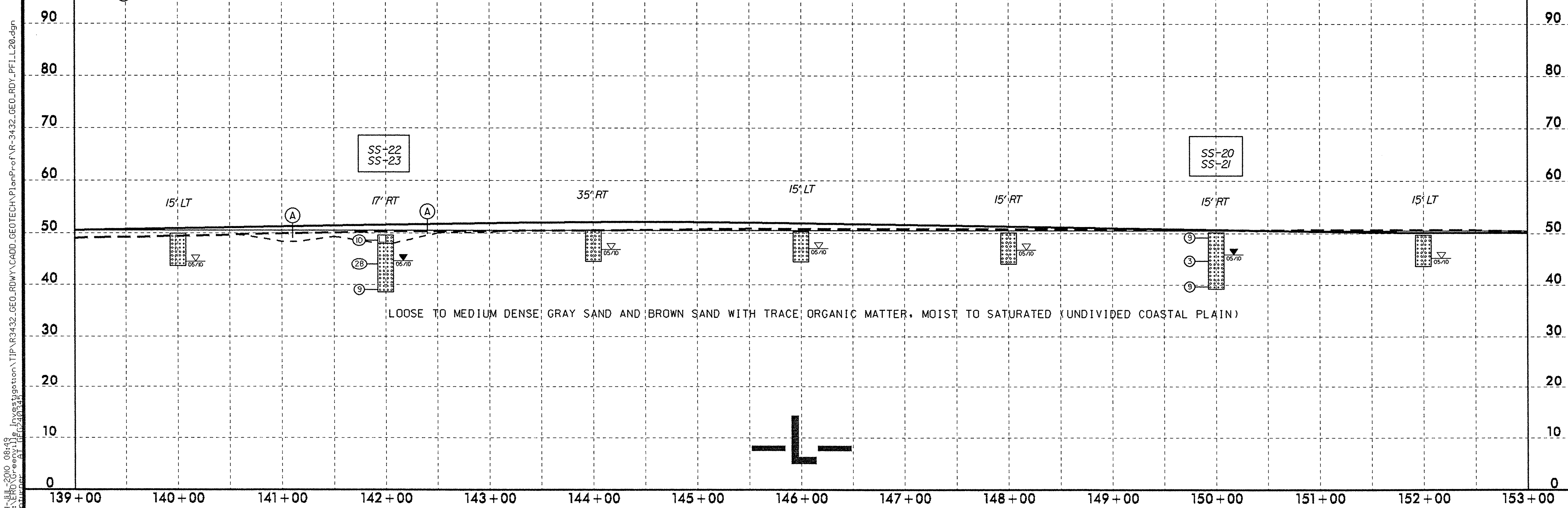
SOIL TEST RESULTS

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-26	17 RT	126+00	4.5-6.0	-	-	-	-	-	-	-	-	-	-	-	6.2
SS-24	16 RT	134+00	1.0-1.5	A-3(0)	22	NP	52.8	40.2	2.9	4.0	100	82	7	-	2.6
SS-22	17 RT	142+00	1.0-1.5	A-3(0)	19	NP	51.2	40.5	4.2	4.0	100	82	9	-	
SS-23	17 RT	142+00	9.5-11.0	A-3(0)	24	NP	7.4	85.7	2.9	4.0	100	96	7	-	
SS-20	15 RT	150+00	1.0-1.5	A-3(0)	22	NP	55.5	41.7	2.8	0.0	100	83	3	-	
~~SS-21~~	~~15 RT~~	~~150+00~~	~~4.5-6.0~~	~~A-3(0)~~	~~30~~	~~NP~~	~~58.6~~	~~36.1~~	~~4.3~~	~~1.0~~	~~99~~	~~75~~	~~6~~		~~2.5~~

(A) MEDIUM DENSE BROWN MODERATELY ORGANIC SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)



(A) MEDIUM DENSE GRAY SAND, MOIST (ROADWAY EMBANKMENT)



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PROJECT REFERENCE NO.	SHEET NO.
R-3432	21

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

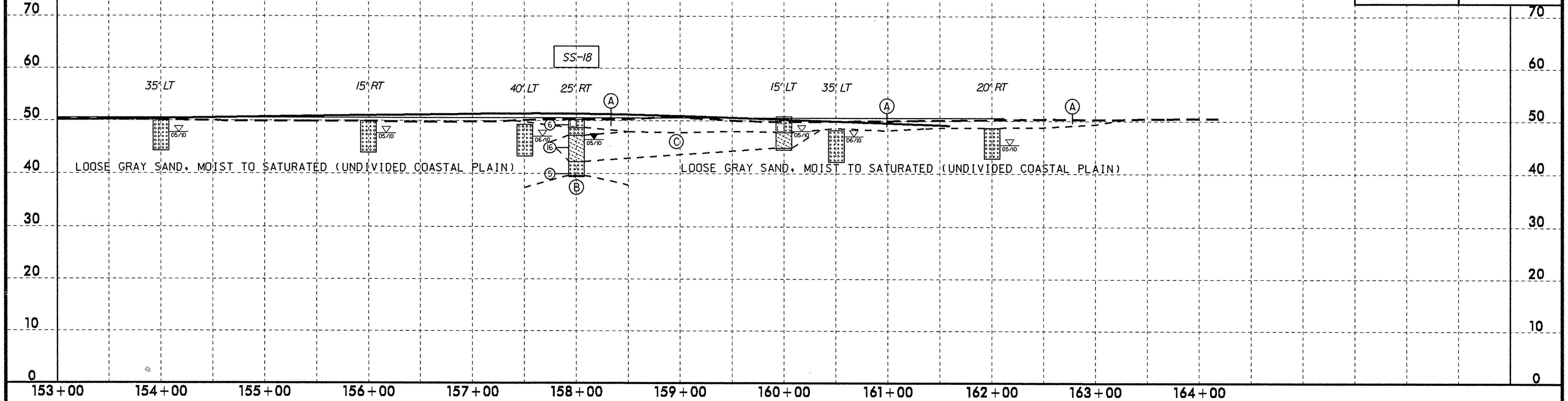
SOIL TEST RESULTS

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- 18	25 RT	158+00	1.0- 1.5	A- 3(0)	22	NP	57.8	36.8	2.4	3.0	100	71	6	-	5.0

(A) LOOSE GRAY SAND, MOIST (ROADWAY EMBANKMENT)

(B) MEDIUM STIFF GRAY SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)

(C) MEDIUM DENSE BROWN SAND WITH LITTLE ORGANIC MATTER, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)



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PROJECT REFERENCE NO.	SHEET NO.
R-3432	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

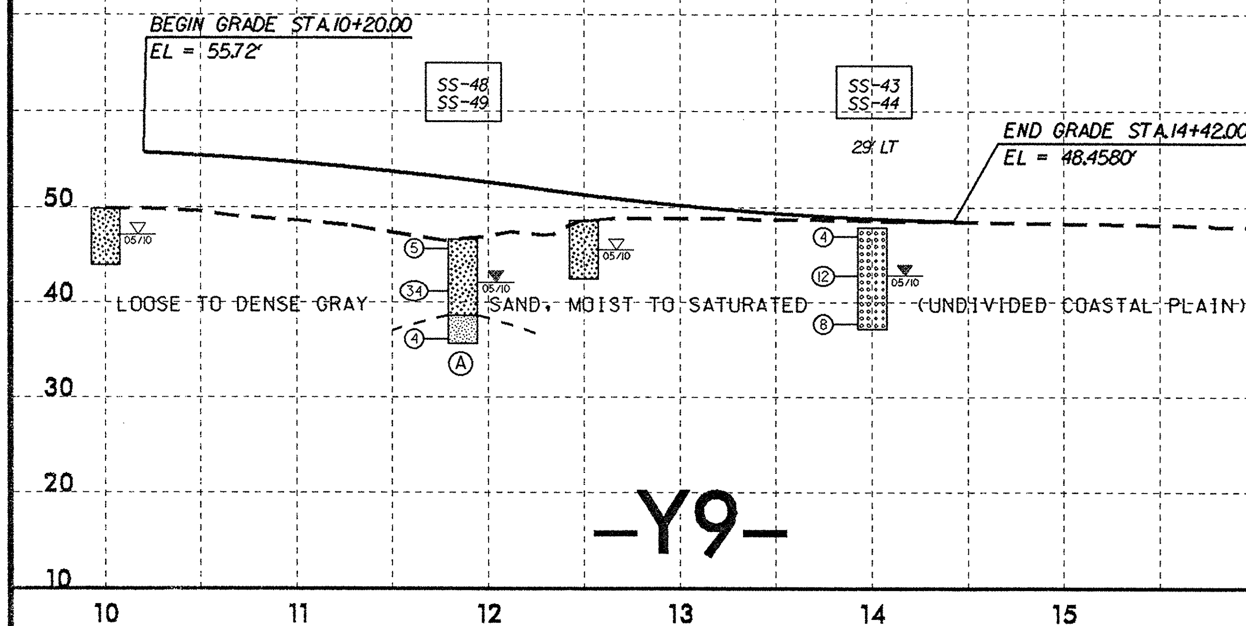
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

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-48	CL	11+87	1.0-1.5	A-2-4(0)	16	NP	31.0	52.0	8.9	8.1	100	88	18	-	-
SS-49	CL	11+87	9.5-11.0	A-4(0)	24	8	1.6	58.1	14.1	26.2	100	99	41	-	-
SS-43	29 LT	14+00	1.0-1.5	A-3(0)	18	NP	47.6	43.5	2.8	6.0	100	80	9	-	-
SS-44	29 LT	14+00	9.2-10.7	A-3(0)	26	NP	7.1	91.1	1.8	0.0	99	95	2	-	-

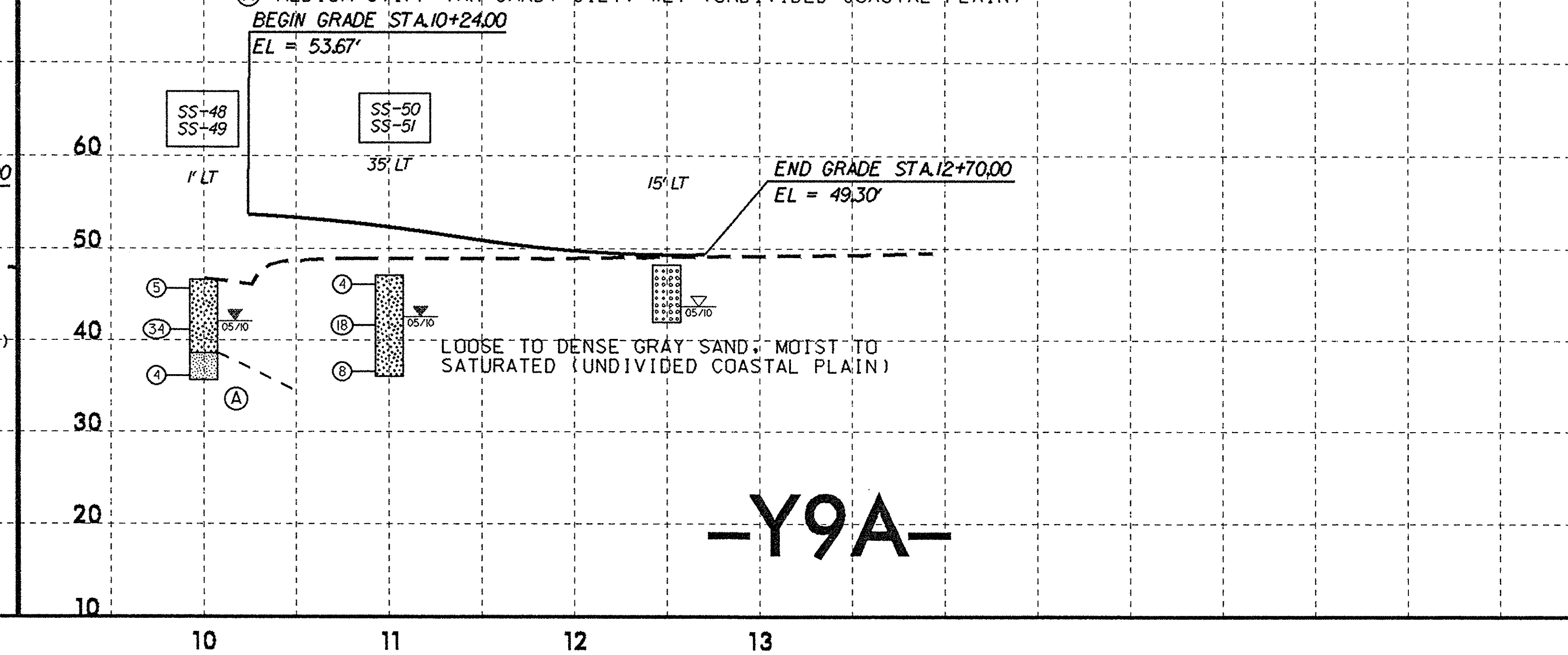
Ⓐ MEDIUM STIFF TAN SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)



SOIL TEST RESULTS

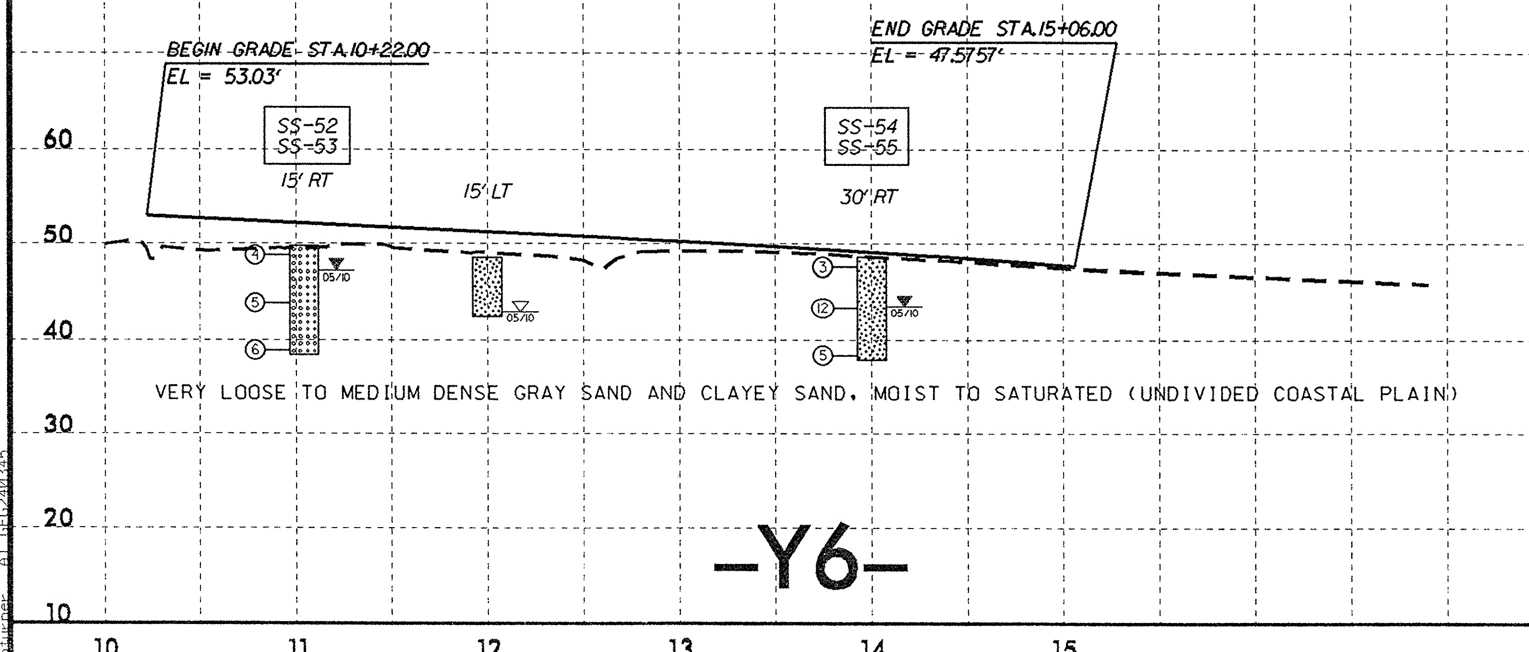
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-48	1 LT	10+00	1.0-1.5	A-2-4(0)	16	NP	31.0	52.0	8.9	8.1	100	88	18	-	-
SS-49	1 LT	10+00	9.5-11.0	A-4(0)	24	8	1.6	58.1	14.1	26.2	100	99	41	-	-
SS-50	35 LT	11+00	1.0-1.5	A-2-4(0)	26	NP	25.2	52.6	16.1	6.0	100	91	23	-	-
SS-51	35 LT	11+00	9.5-11.0	A-2-4(0)	27	NP	6.5	70.4	7.1	16.1	98	94	23	-	-

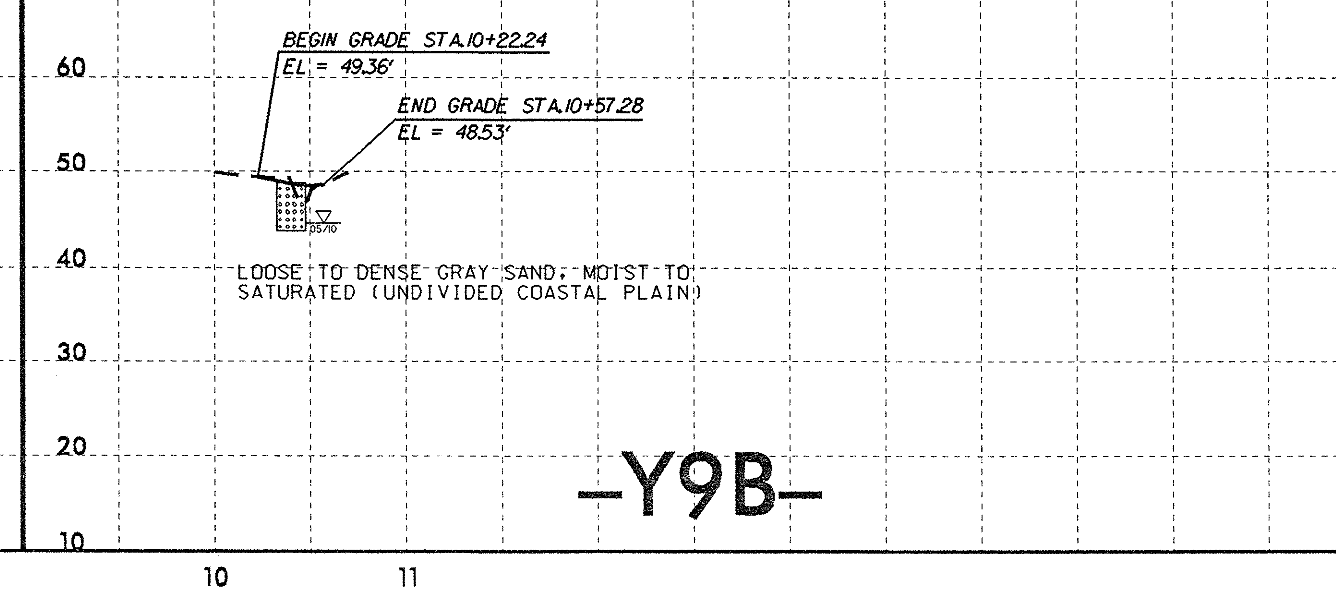
Ⓐ MEDIUM STIFF TAN SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-52	15 RT	11+04	1.0-1.5	A-3(0)	22	NP	54.4	44.4	1.2	0.0	100	84	2	-	-
SS-53	15 RT	11+04	9.8-11.3	A-3(0)	27	NP	49.8	46.4	3.8	0.0	100	71	4	-	-
SS-54	30 RT	14+00	1.0-1.5	A-2-4(0)	21	NP	45.6	40.9	5.4	8.1	100	86	14	-	-
SS-55	30 RT	14+00	9.1-10.6	A-2-4(0)	23	3	2.8	73.2	3.8	20.2	100	99	29	-	-





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PROJECT REFERENCE NO.	SHEET NO.
R-3432	23

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

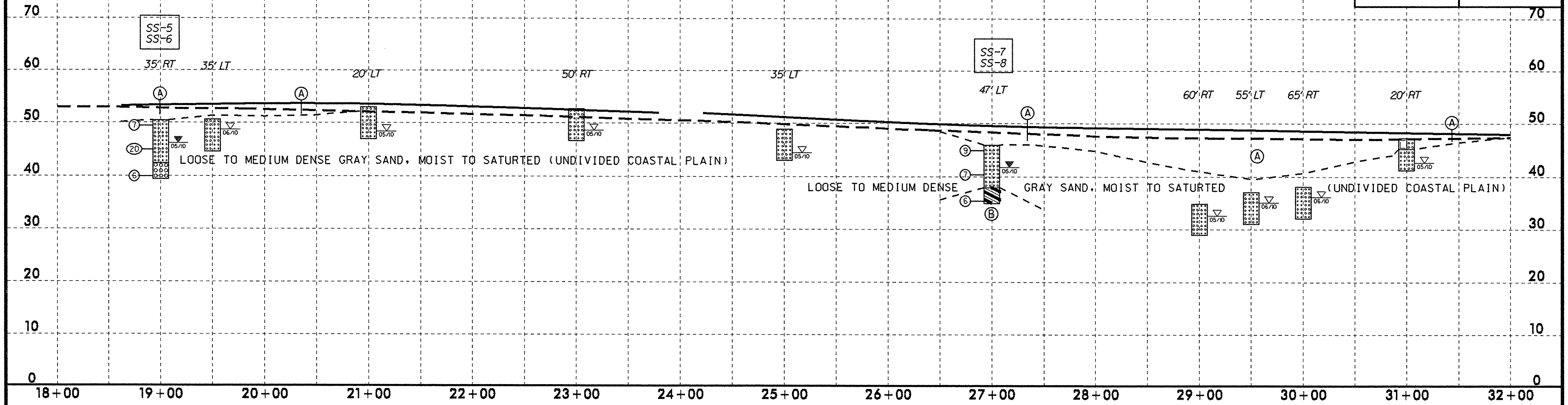
5/28/99

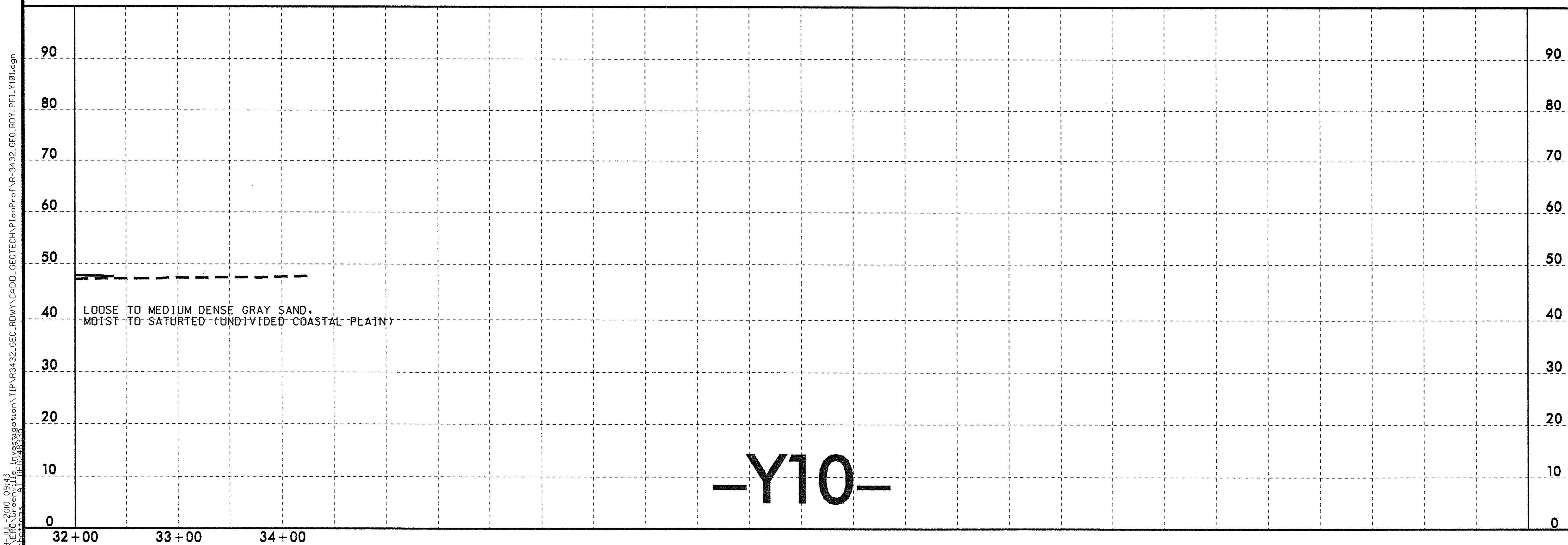
SOIL TEST RESULTS

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-5	35 RT	19+00	1.0-1.5	A-3(0)	18	NP	54.3	37.0	3.6	5.0	100	75	9	-	-
SS-6	35 RT	19+00	9.5-11.0	A-1-b(0)	25	NP	59.6	38.0	1.3	1.0	93	41	2	-	-
SS-7	47 LT	27+00	1.0-1.5	A-3(0)	18	NP	48.3	48.6	2.0	1.0	100	84	4	-	-
SS-8	47 LT	27+00	9.5-11.0	A-6(2)	25	12	4.6	53.1	14.0	28.3	100	98	43	-	-

(A) MEDIUM DENSE GRAY SAND, MOIST (ROADWAY EMBANKMENT)

(B) MEDIUM STIFF GRAY SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)





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PROJECT REFERENCE NO.	SHEET NO.
R-3432	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

5/28/99

Ⓐ VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

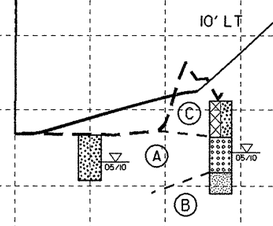
Ⓑ SOFT TO MEDIUM STIFF GRAY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)

Ⓒ LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)

BEGIN GRADE STA.10+00.00
EL = 46.83'

END GRADE STA.11+21.34
EL = 52.49'

10' LT



60 50 40 30 20 10

10 11

-DR1-

Ⓐ VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

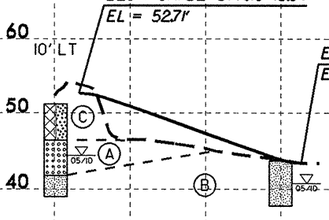
Ⓑ SOFT TO MEDIUM STIFF GRAY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

Ⓒ LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)

BEGIN GRADE STA.10+16.04
EL = 52.71'

END GRADE STA.11+63.32
EL = 43.40'

10' LT



60 50 40 30 20 10

10 11

-DR2-

BEGIN GRADE STA.10+00.00
EL = 51.57'

END GRADE STA.11+30.89
EL = 63.14'

LOOSE TO MEDIUM DENSE GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

60 50 40 30

10 11

-DR6-

SOIL TEST RESULTS

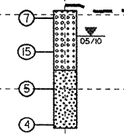
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVE)			% MOISTURE	% ORGANIC
							G.RAND	F.RAND	SILT	CLAY	10	40	200		
SS-31	20 LT	10+00	4.5-6.0	A-3(0)	29	NP	35.5	56.7	5.8	2.0	100	85	9	-	-
SS-32	20 LT	10+00	14.5-16.0	A-2-4(0)	19	NP	34.3	44.8	10.8	10.1	100	77	26	-	-

BEGIN GRADE STA.10+16.00
EL = 61.64'

SS-31
SS-32

20' LT

END GRADE STA.11+40.00
EL = 50.48'



LOOSE TO MEDIUM DENSE GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)

60 50 40 30

10 11

-DR7-

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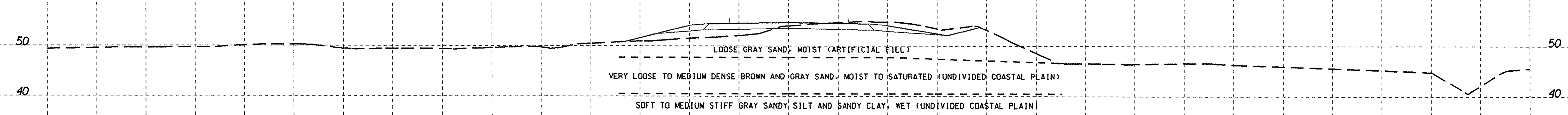
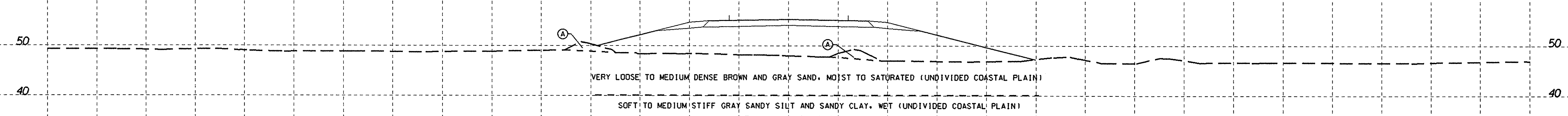
rchristians



86+00.00

Ⓐ LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)



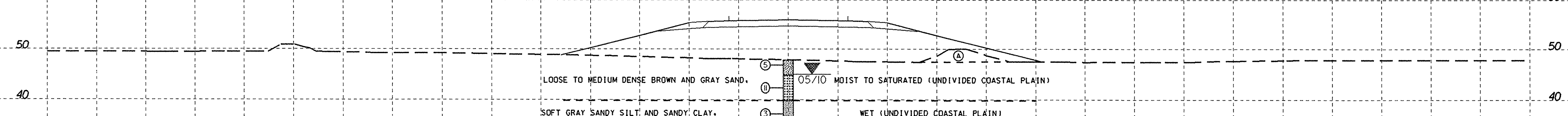
85+50.00

SOIL TEST RESULTS

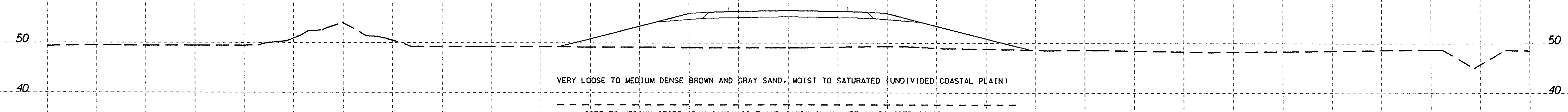
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-33	CL	85+00	1.0-1.5	A-2-4(0)	15	NP	37.1	51.3	5.5	6.1	100	88	12	-	-
SS-34	CL	85+00	4.5-6.0	A-3(0)	28	NP	41.3	51.6	3.0	4.0	100	78	8	-	-
SS-35	CL	85+00	9.5-11.0	A-4(0)	23	9	7.9	55.6	12.3	24.2	100	97	38	-	-

Ⓐ LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)

SS-33
SS-34
SS-35



85+00.00

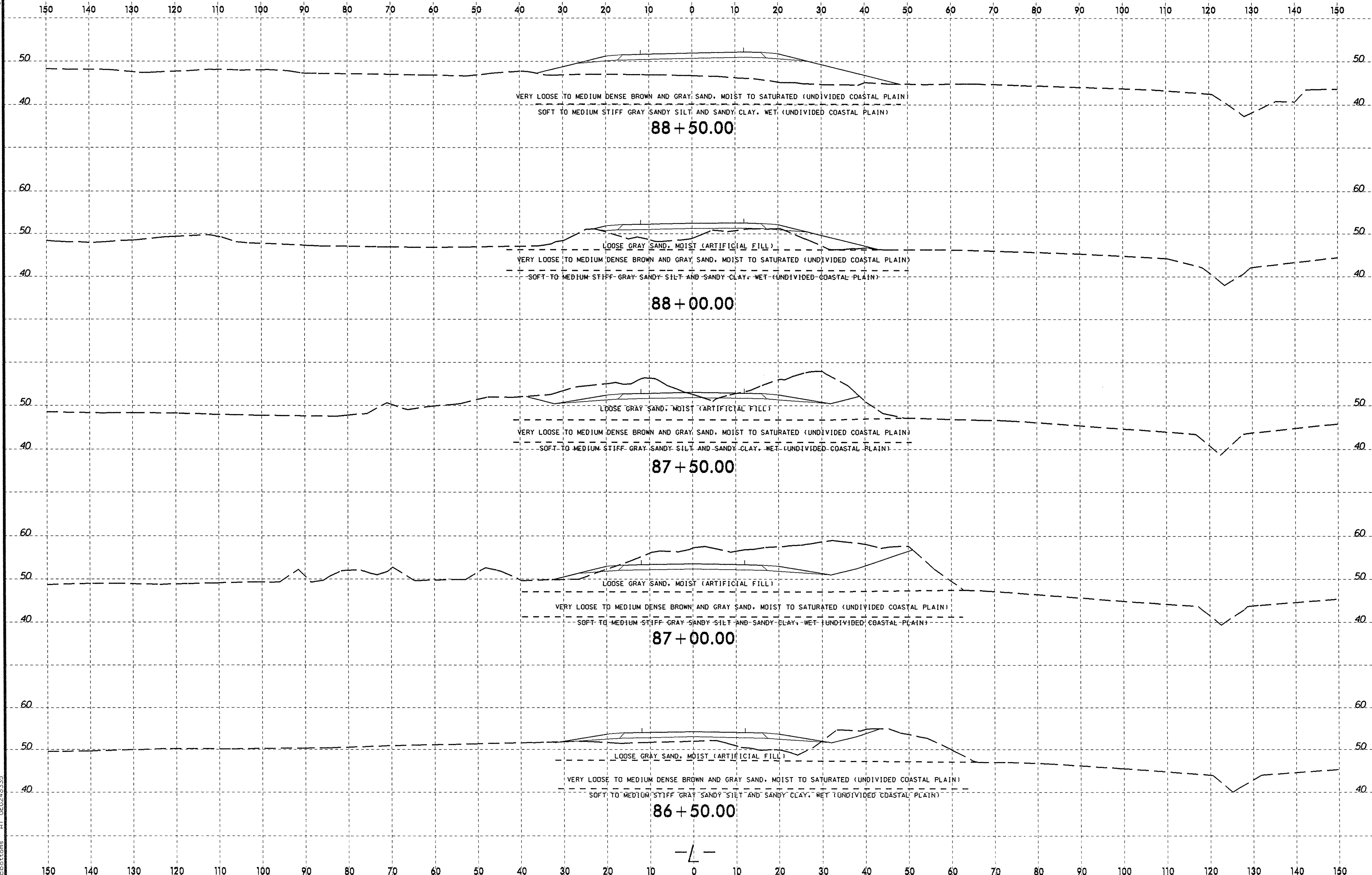


84+50.00

-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-3432	26



0 5 10
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT AND SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)
88+50.00
LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT AND SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)
88+00.00
LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT AND SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)
87+50.00
LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT AND SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)
87+00.00
LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT AND SANDY CLAY, WET (UNDIVIDED COASTAL PLAIN)
86+50.00
-L-

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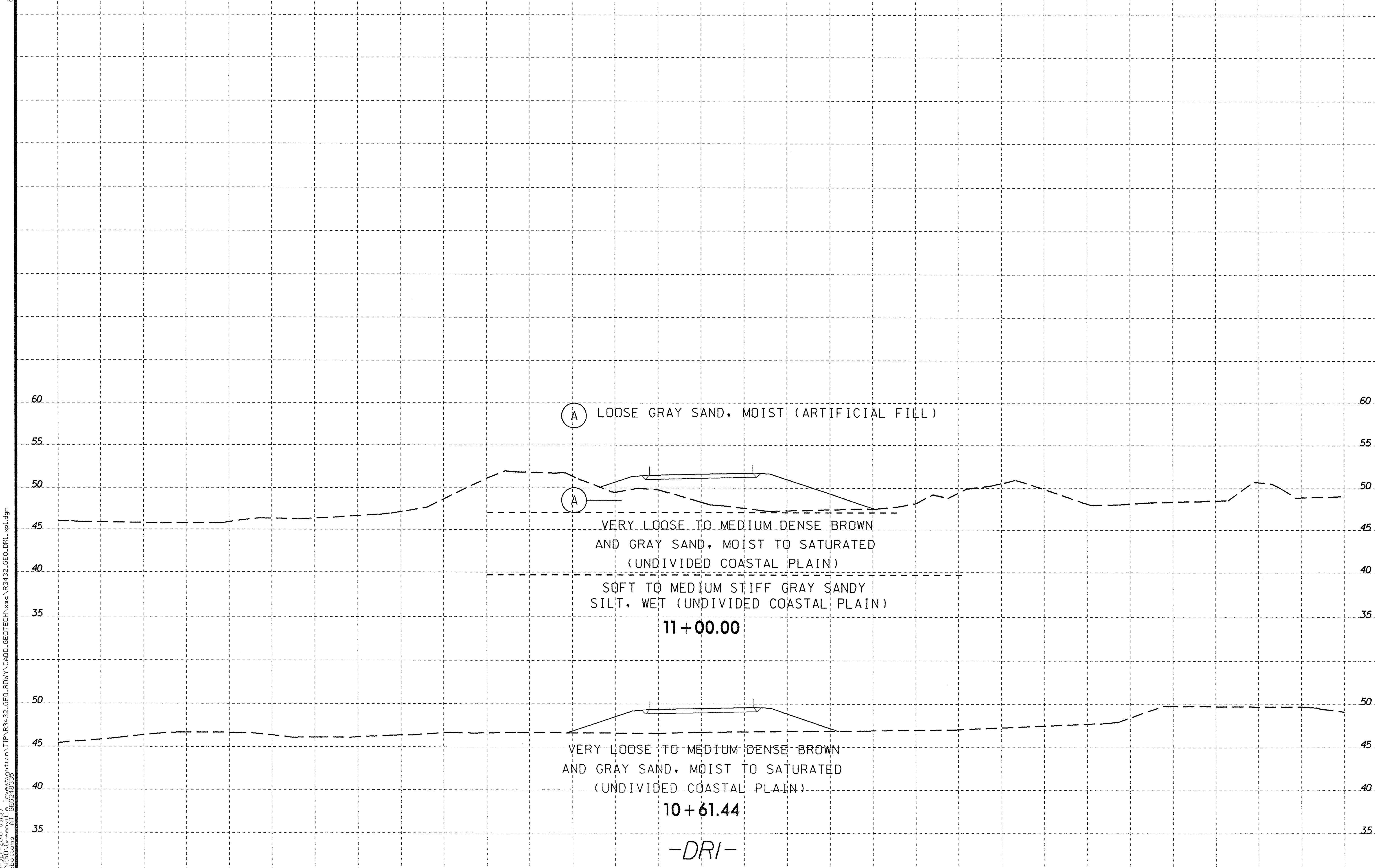
	R-3432	27

8/23/99



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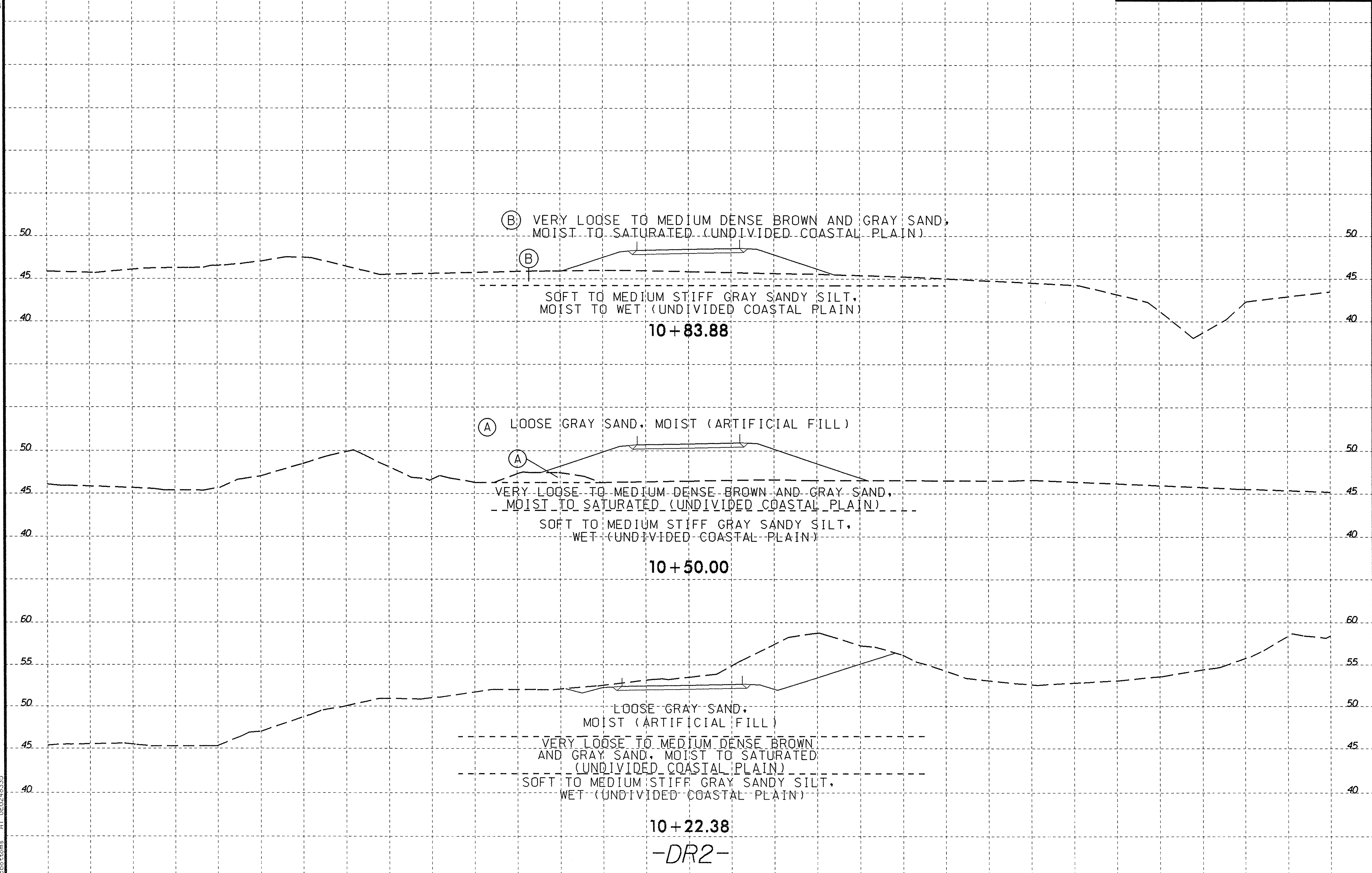
PROJ. REFERENCE NO.	SHEET NO.
R-3432	28


0 2.5 5
50
45
40
(B) VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
(B)
SOFT TO MEDIUM STIFF GRAY SANDY SILT, MOIST TO WET (UNDIVIDED COASTAL PLAIN)
10+83.88
(A) LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
(A)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)
10+50.00
60
55
50
45
40
LOOSE GRAY SAND, MOIST (ARTIFICIAL FILL)
VERY LOOSE TO MEDIUM DENSE BROWN AND GRAY SAND, MOIST TO SATURATED (UNDIVIDED COASTAL PLAIN)
SOFT TO MEDIUM STIFF GRAY SANDY SILT, WET (UNDIVIDED COASTAL PLAIN)
10+22.38
-DR2-

PROJECT REFERENCE NO.	SHEET NO.
R-3432	APPENDIX 1

APPENDIX 1

NOTE: SOIL DESCRIPTIONS MAY NOT AGREE WITH WHAT IS SHOWN ON THE ATTACHED PROFILE AND CROSS SECTION SHEETS.

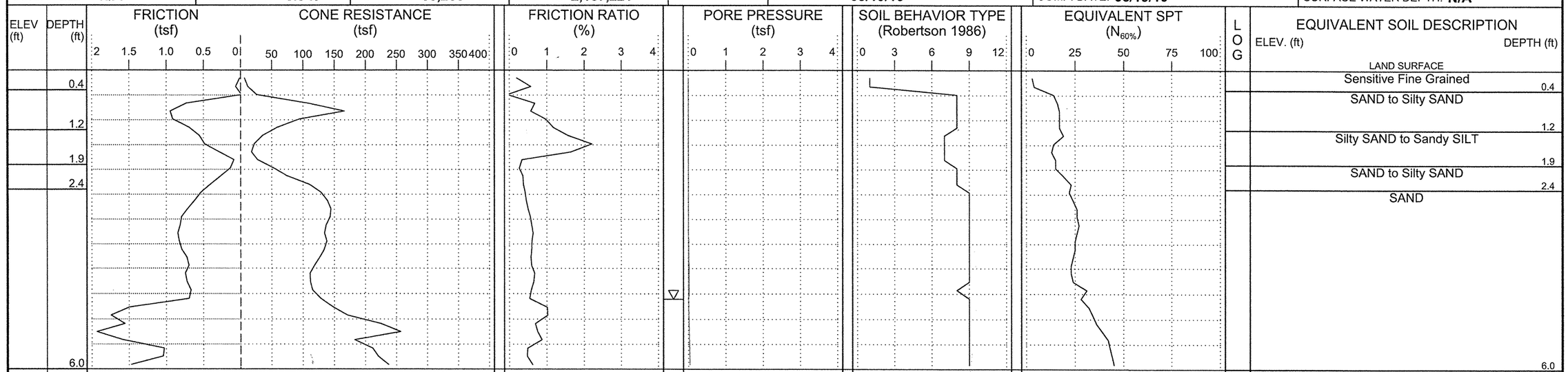
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	1	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-15+57**	STATION: **15+57**	OFFSET: **20ft RT**	ALIGNMENT: **-L-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,266**	EASTING: **2,167,221**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained — 0.4

SAND to Silty SAND — 1.2

Silty SAND to Sandy SILT — 1.9

SAND to Silty SAND — 2.4

SAND — 6.0

Boring Terminated at Depth 6.0 ft in SAND

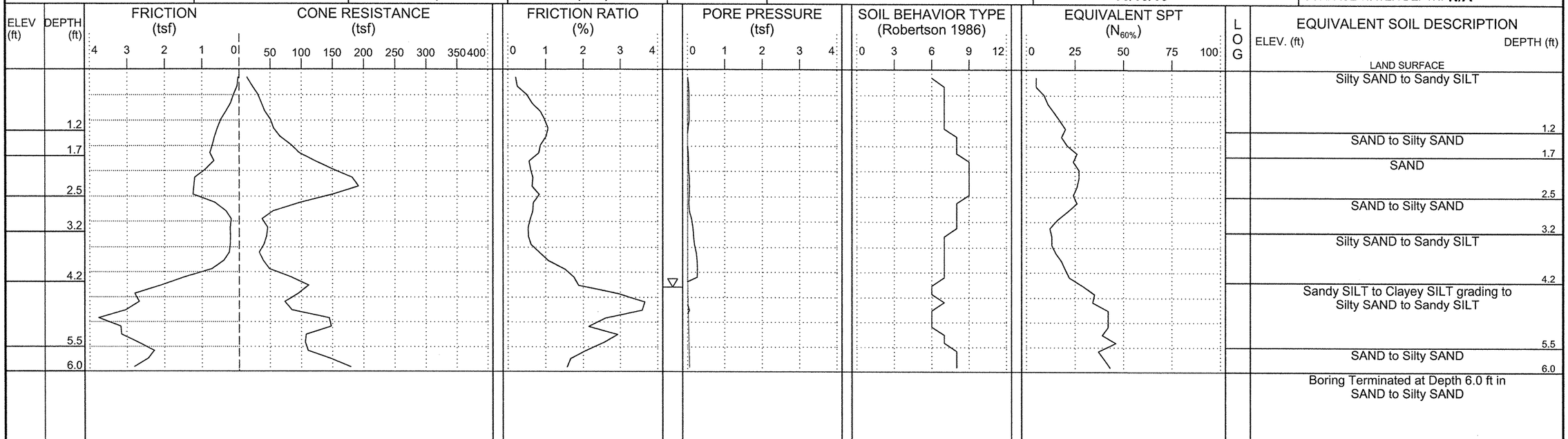
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	2	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-17+57**	STATION: **17+57**	OFFSET: **25ft LT**	ALIGNMENT: **-L-**	0 HR. **4.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,367**	EASTING: **2,167,400**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Silty SAND to Sandy SILT — 1.2

SAND to Silty SAND — 1.7

SAND — 2.5

SAND to Silty SAND — 3.2

Silty SAND to Sandy SILT — 4.2

Sandy SILT to Clayey SILT grading to Silty SAND to Sandy SILT — 5.5

SAND to Silty SAND — 6.0

Boring Terminated at Depth 6.0 ft in SAND to Silty SAND

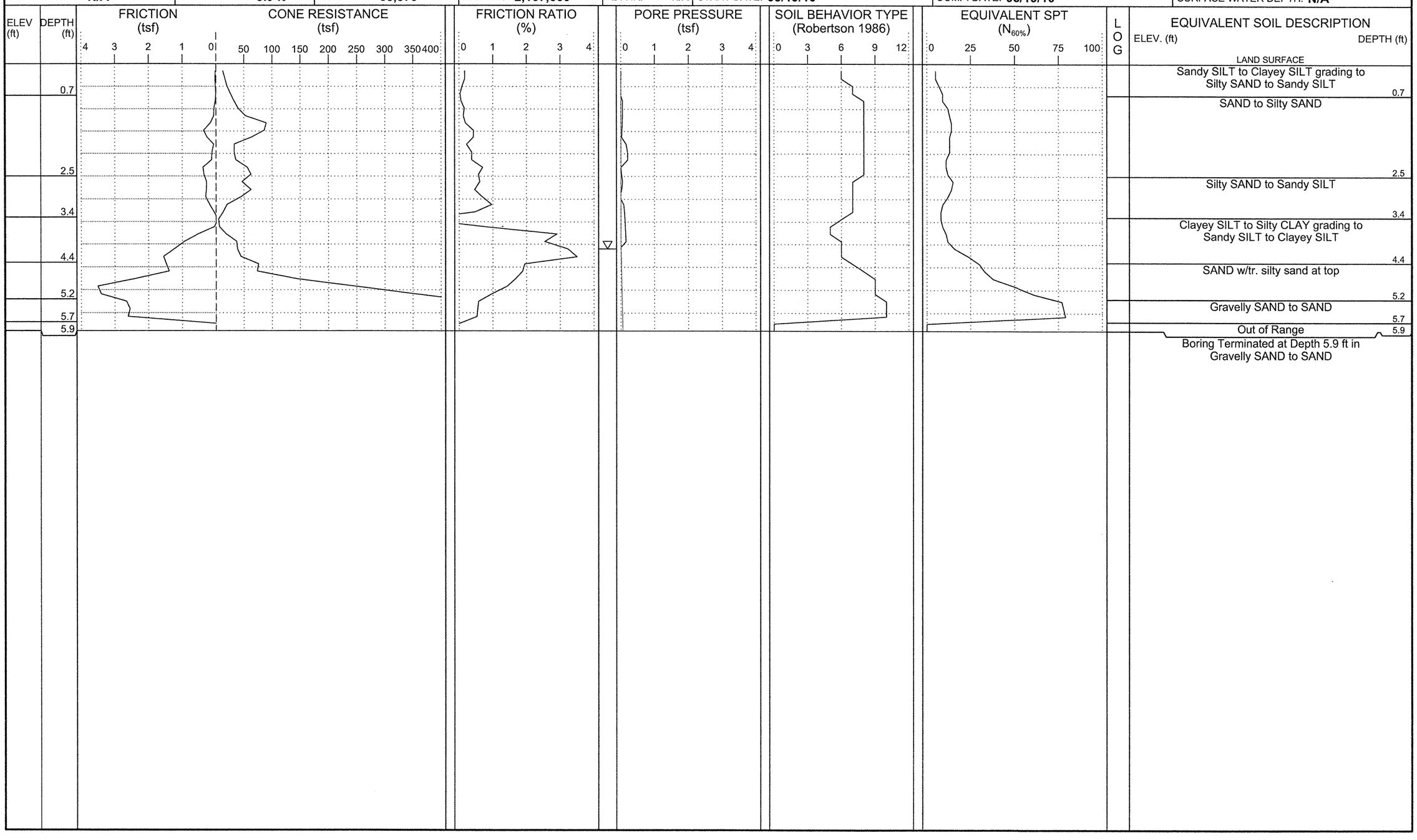
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	3	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-19+50**	STATION: **19+50**	OFFSET: **30ft RT**	ALIGNMENT: **-L-**	0 HR. **4.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.9 ft**	NORTHING: **65,370**	EASTING: **2,167,600**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT grading to Silty SAND to Sandy SILT — 0.7

SAND to Silty SAND — 2.5

Silty SAND to Sandy SILT — 3.4

Clayey SILT to Silty CLAY grading to Sandy SILT to Clayey SILT — 4.4

SAND w/tr. silty sand at top — 5.2

Gravelly SAND to SAND — 5.7

Out of Range — 5.9

Boring Terminated at Depth 5.9 ft in Gravelly SAND to SAND

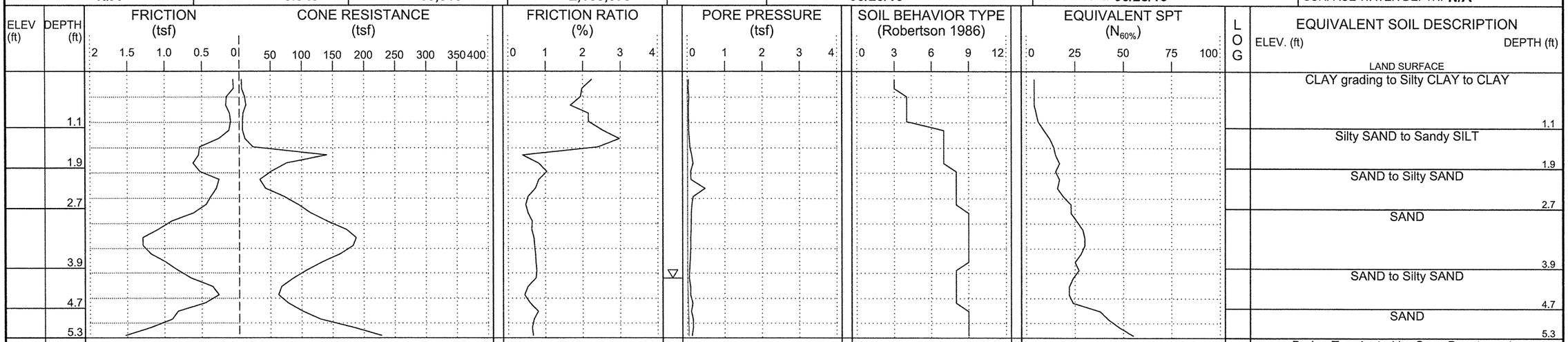
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	4	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-24+50**	STATION: **24+50**	OFFSET: **30ft RT**	ALIGNMENT: **-L-**	0 HR. **4.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.3 ft**	NORTHING: **65,516**	EASTING: **2,168,079**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



LOG

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

CLAY grading to Silty CLAY to CLAY — 1.1

Silty SAND to Sandy SILT — 1.9

SAND to Silty SAND — 2.7

SAND — 3.9

SAND to Silty SAND — 4.7

SAND — 5.3

Boring Terminated by Cone Penetrometer
Test Refusal at Depth 5.3 ft in SAND

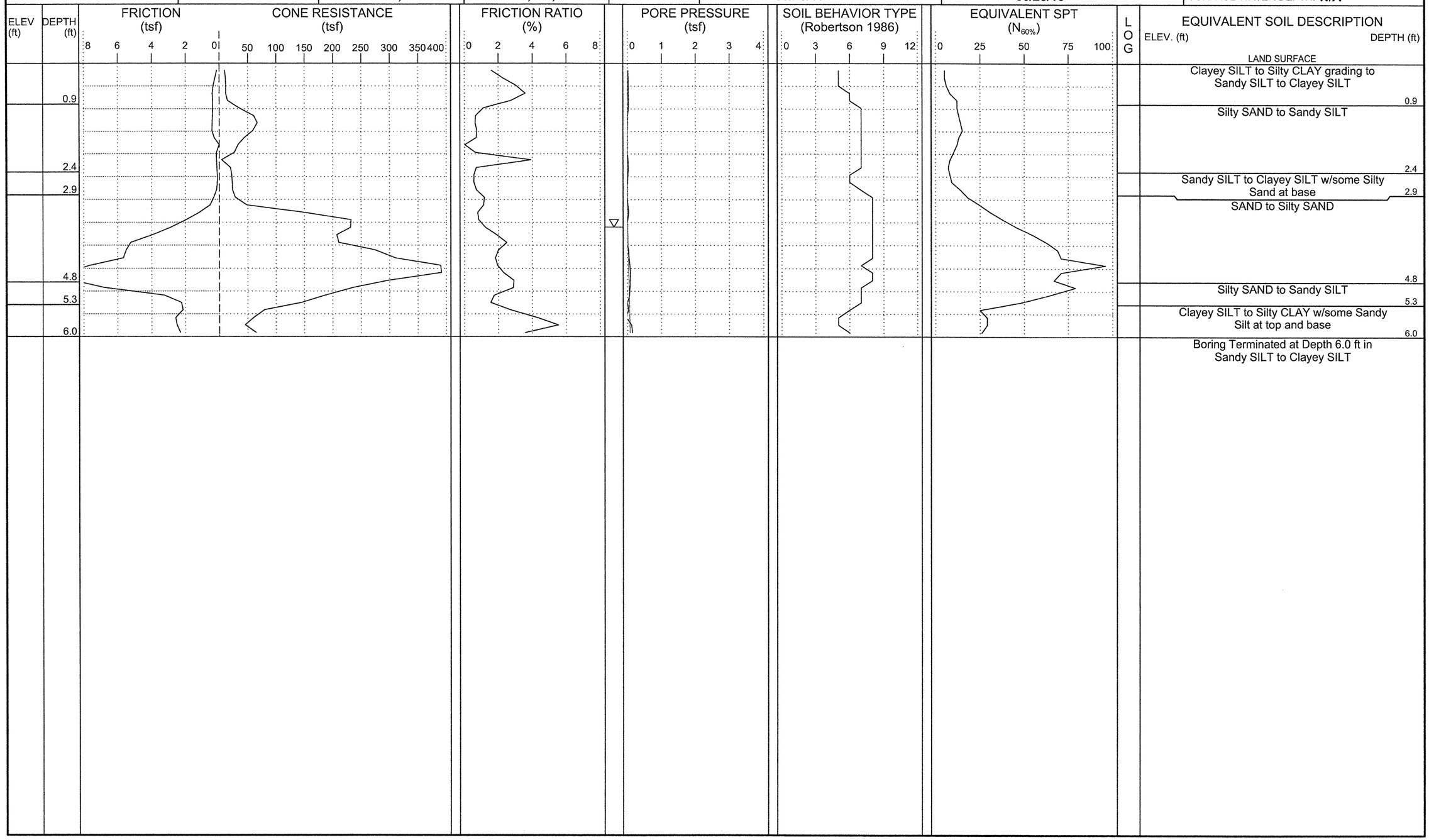
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	5	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-26+50**	STATION: **26+50**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,602**	EASTING: **2,168,262**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Clayey SILT to Silty CLAY grading to Sandy SILT to Clayey SILT — 0.9

Silty SAND to Sandy SILT — 2.4

Sandy SILT to Clayey SILT w/some Silty Sand at base — 2.9

SAND to Silty SAND — 4.8

Silty SAND to Sandy SILT — 5.3

Clayey SILT to Silty CLAY w/some Sandy Silt at top and base — 6.0

Boring Terminated at Depth 6.0 ft in Sandy SILT to Clayey SILT

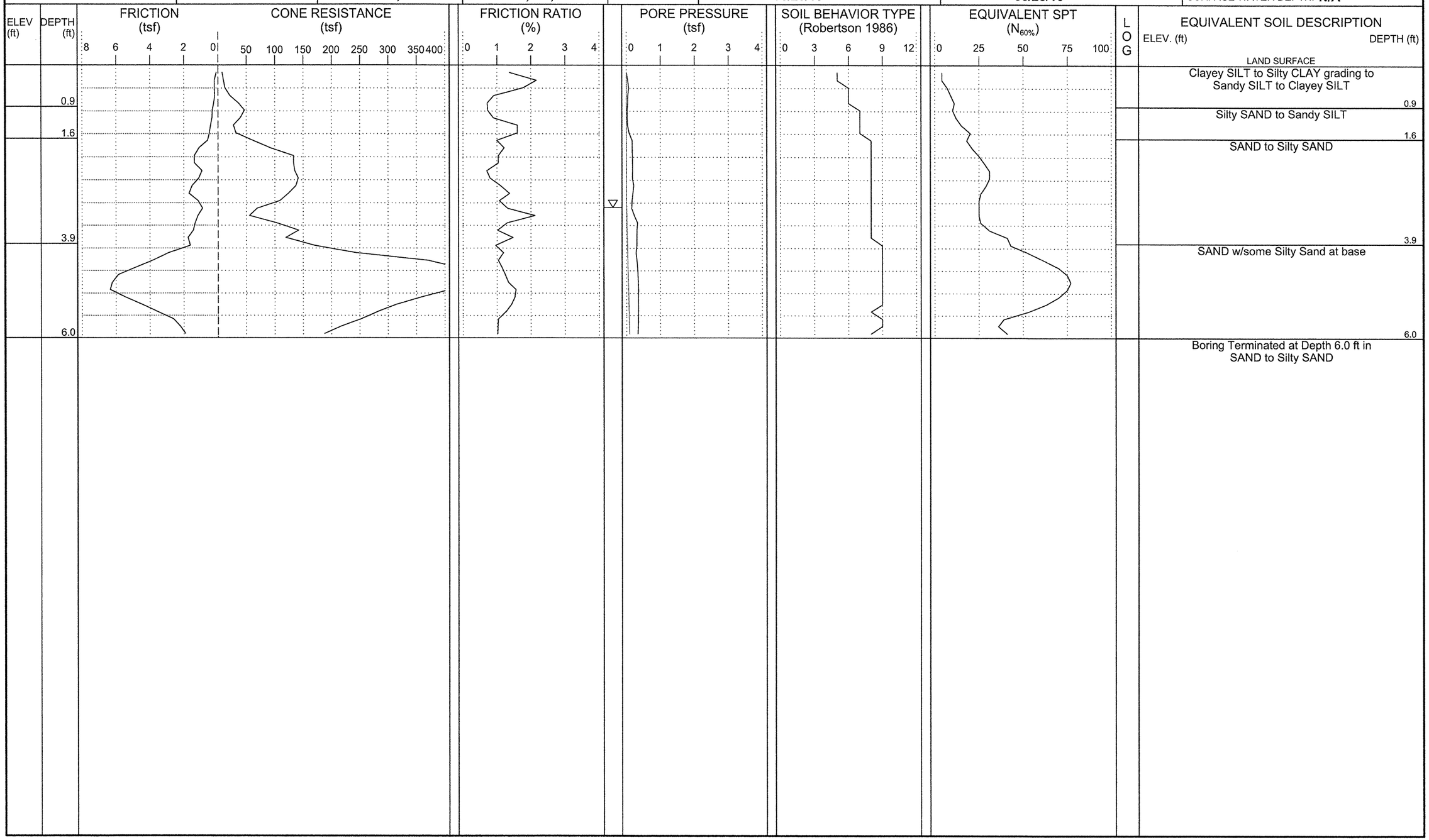
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	6	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-30+50**	STATION: **30+50**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,719**	EASTING: **2,168,644**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



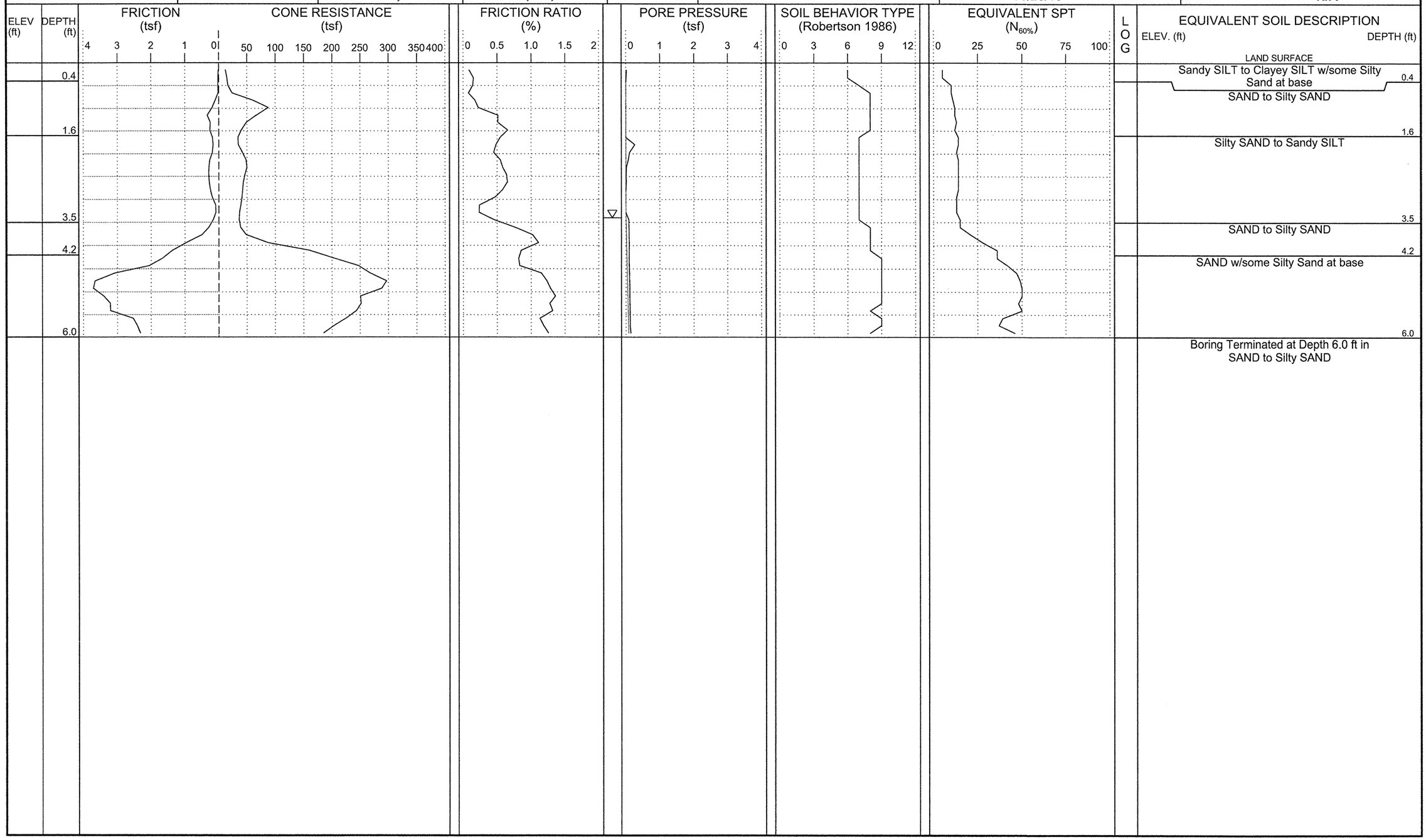
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	7	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-32+50**	STATION: **32+50**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,777**	EASTING: **2,168,836**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



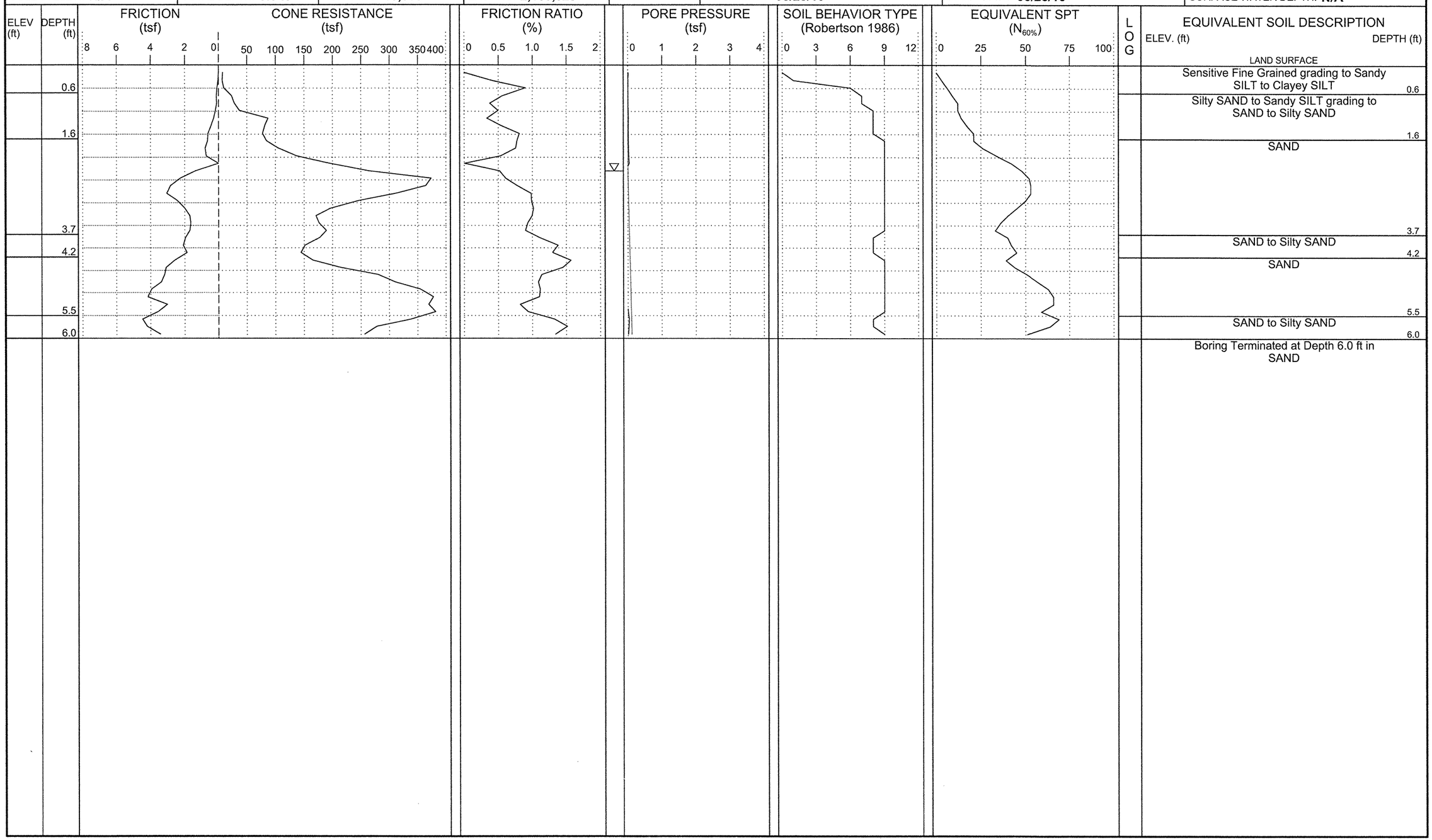
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	8	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-34+50**	STATION: **34+50**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,830**	EASTING: **2,169,029**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



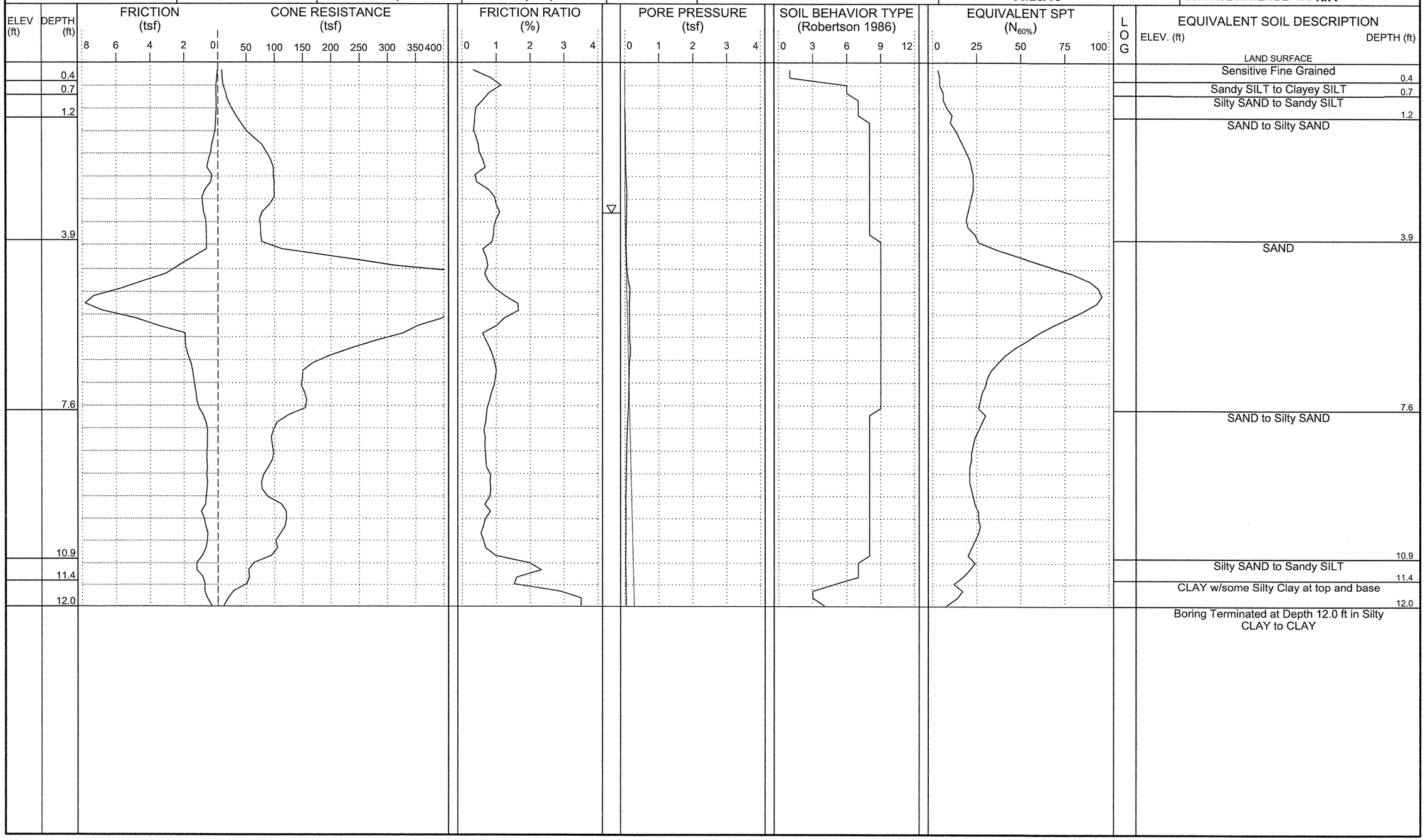
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	9	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-45+00**	STATION: **45+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **12.0 ft**	NORTHING: **65,873**	EASTING: **2,170,071**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



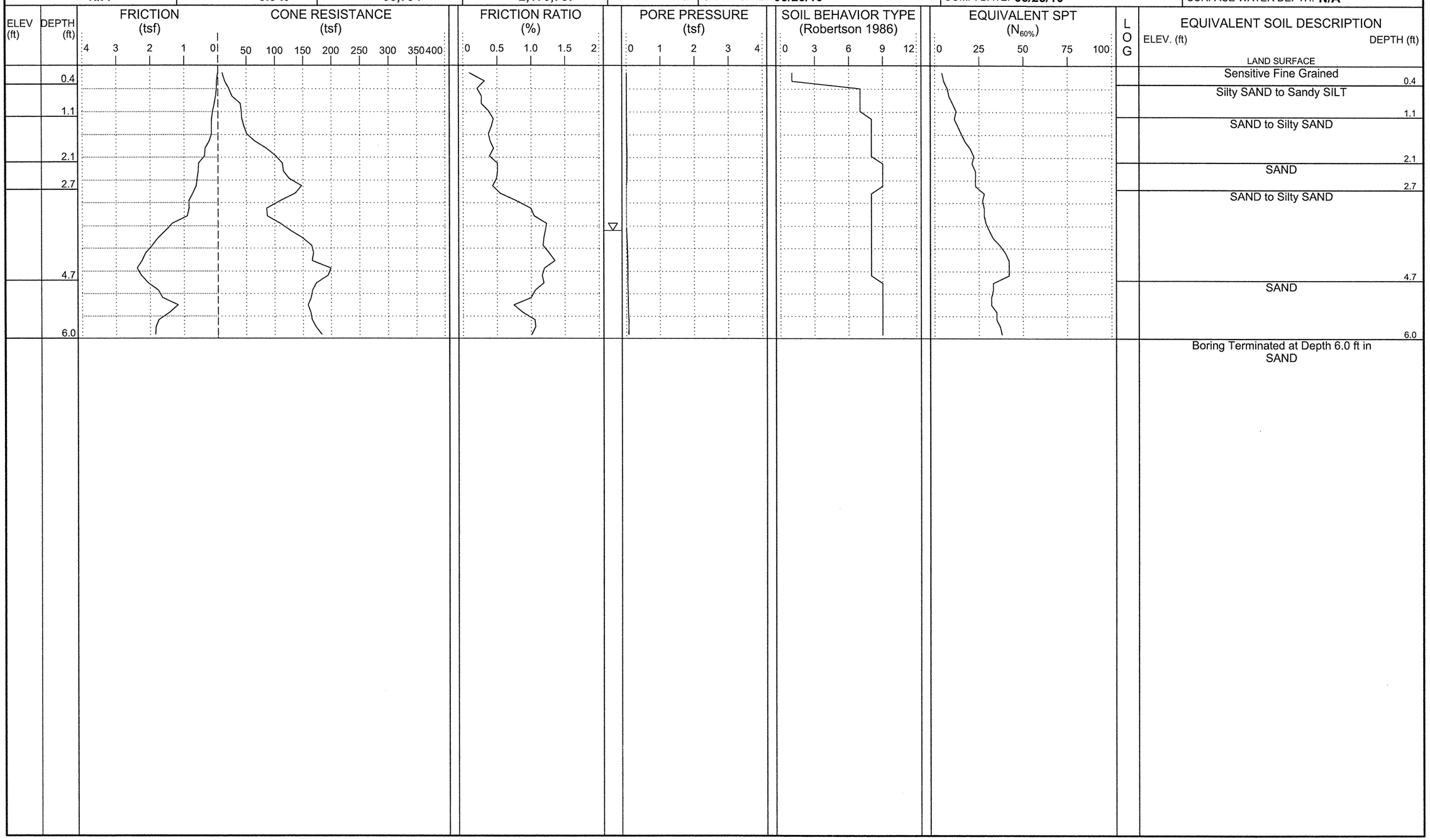
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	10	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-52+00**	STATION: **52+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,794**	EASTING: **2,170,767**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



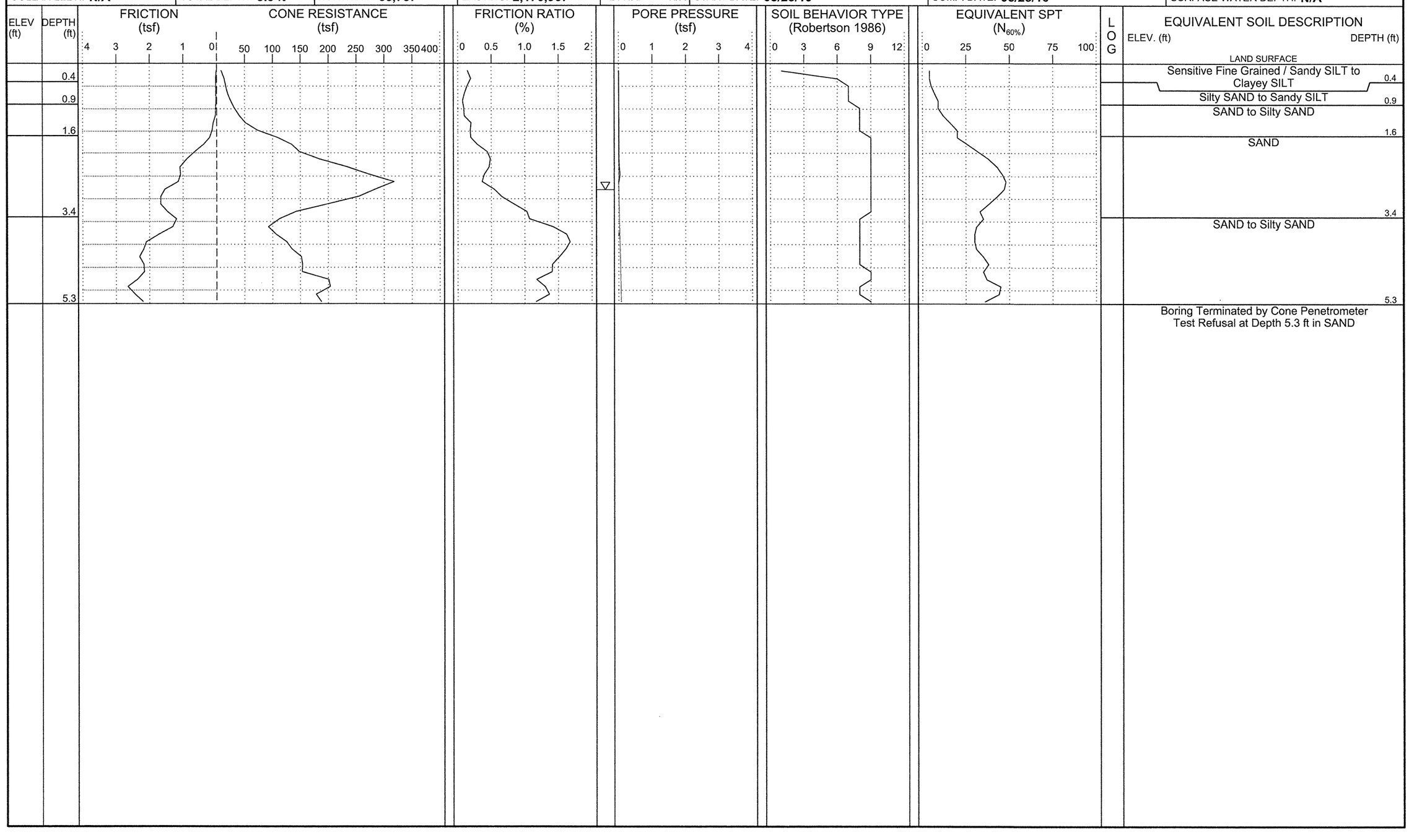
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	11	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-54+00**	STATION: **54+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.8**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.3 ft**	NORTHING: **65,787**	EASTING: **2,170,967**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained / Sandy SILT to Clayey SILT — 0.4

Silty SAND to Sandy SILT — 0.9

SAND to Silty SAND — 1.6

SAND — 3.4

SAND to Silty SAND — 5.3

Boring Terminated by Cone Penetrometer Test Refusal at Depth 5.3 ft in SAND

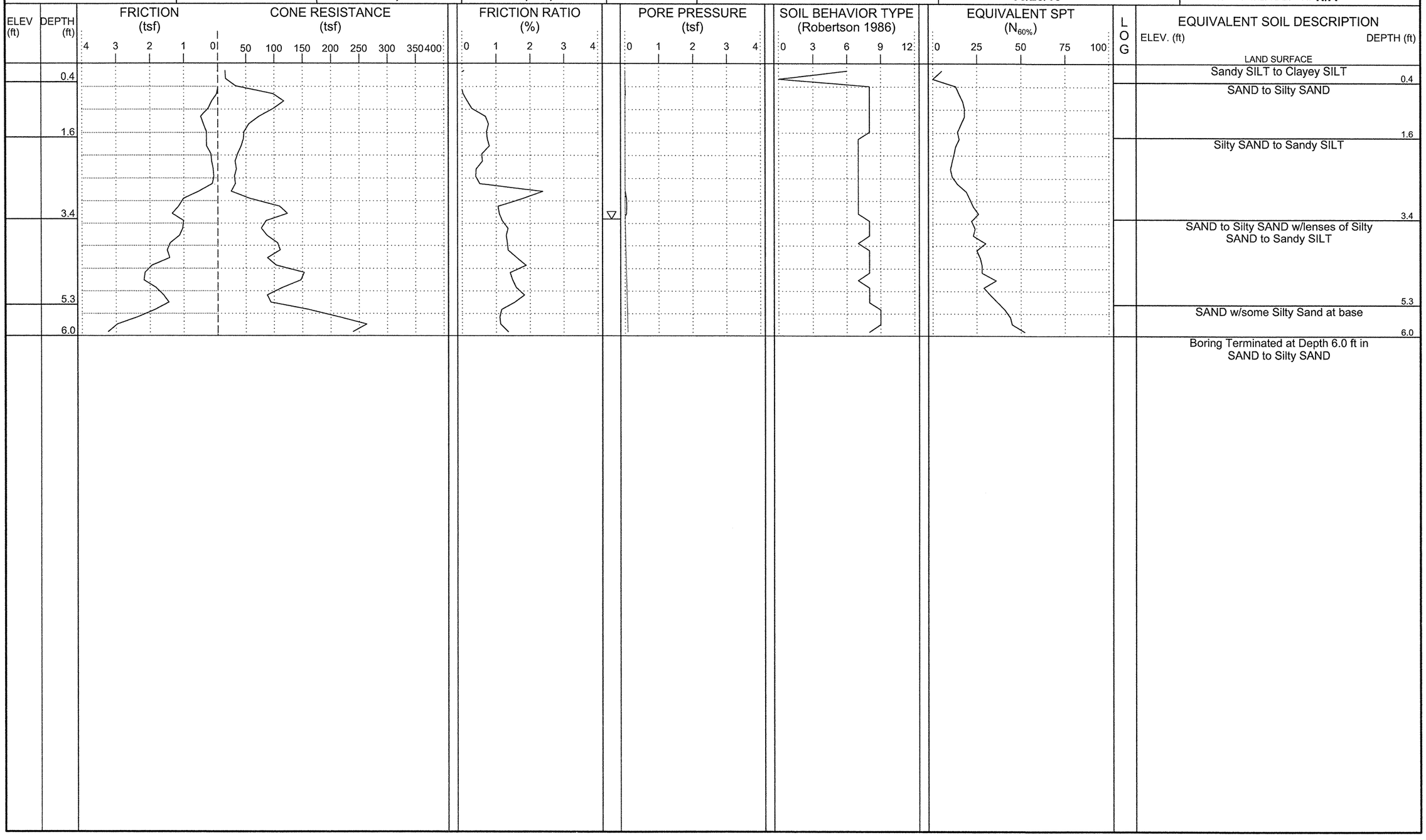
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	12	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-56+00**	STATION: **56+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,794**	EASTING: **2,171,167**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



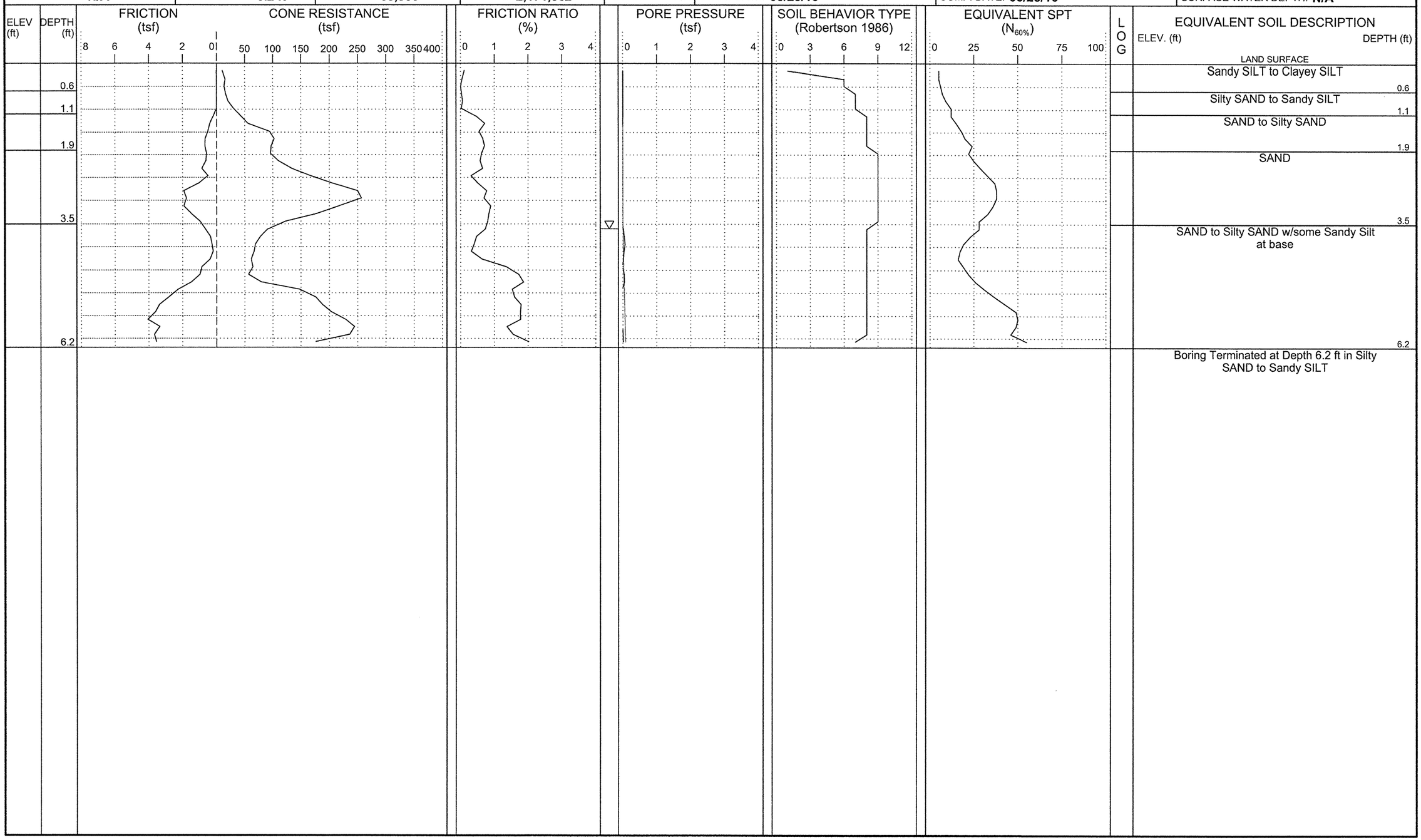
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	13	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-60+00**	STATION: **60+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.2 ft**	NORTHING: **65,853**	EASTING: **2,171,562**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



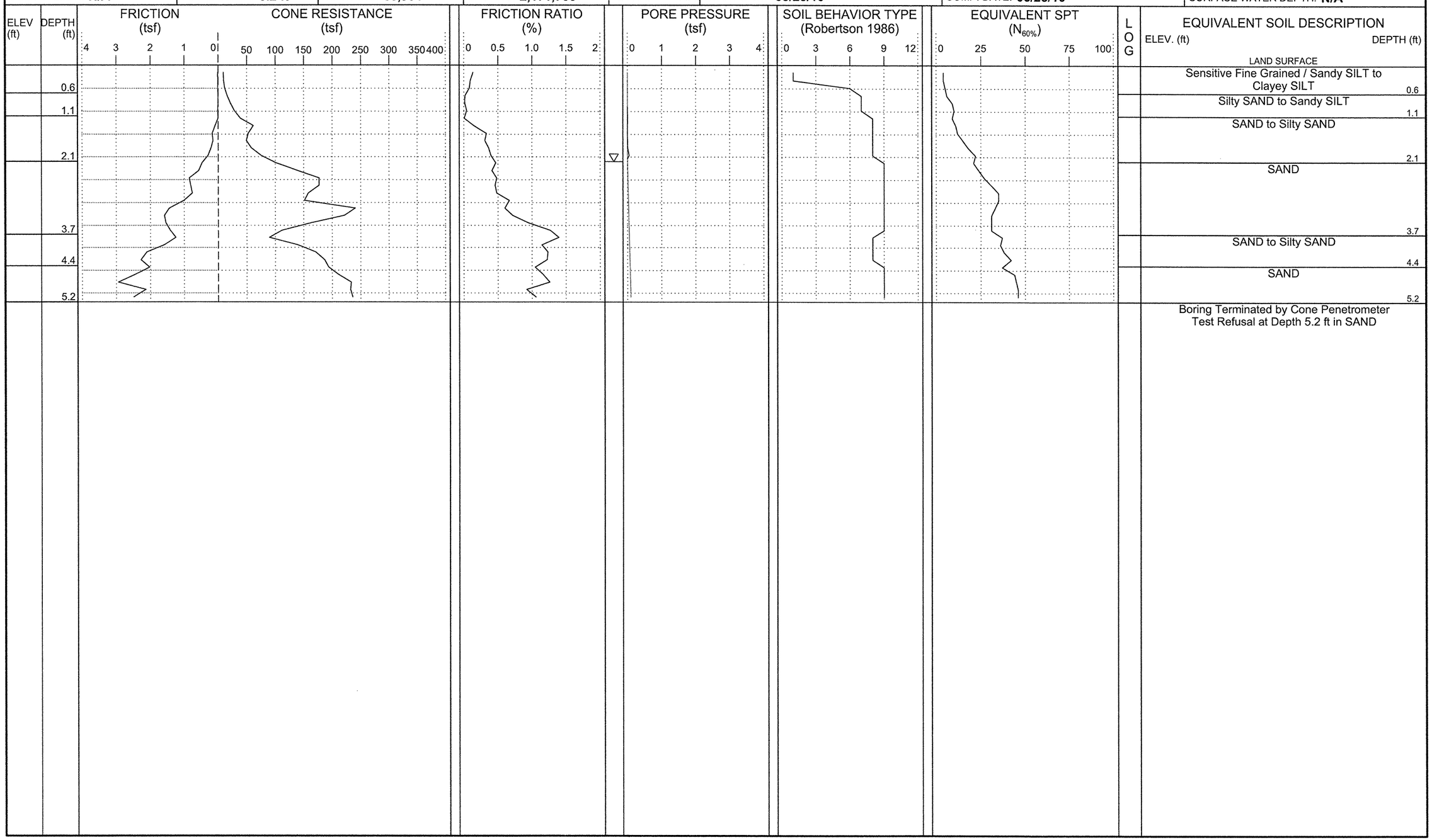
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	14	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-62+00**	STATION: **62+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.2 ft**	NORTHING: **65,904**	EASTING: **2,171,755**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained / Sandy SILT to Clayey SILT — 0.6

Silty SAND to Sandy SILT — 1.1

SAND to Silty SAND — 2.1

SAND — 3.7

SAND to Silty SAND — 4.4

SAND — 5.2

Boring Terminated by Cone Penetrometer Test Refusal at Depth 5.2 ft in SAND

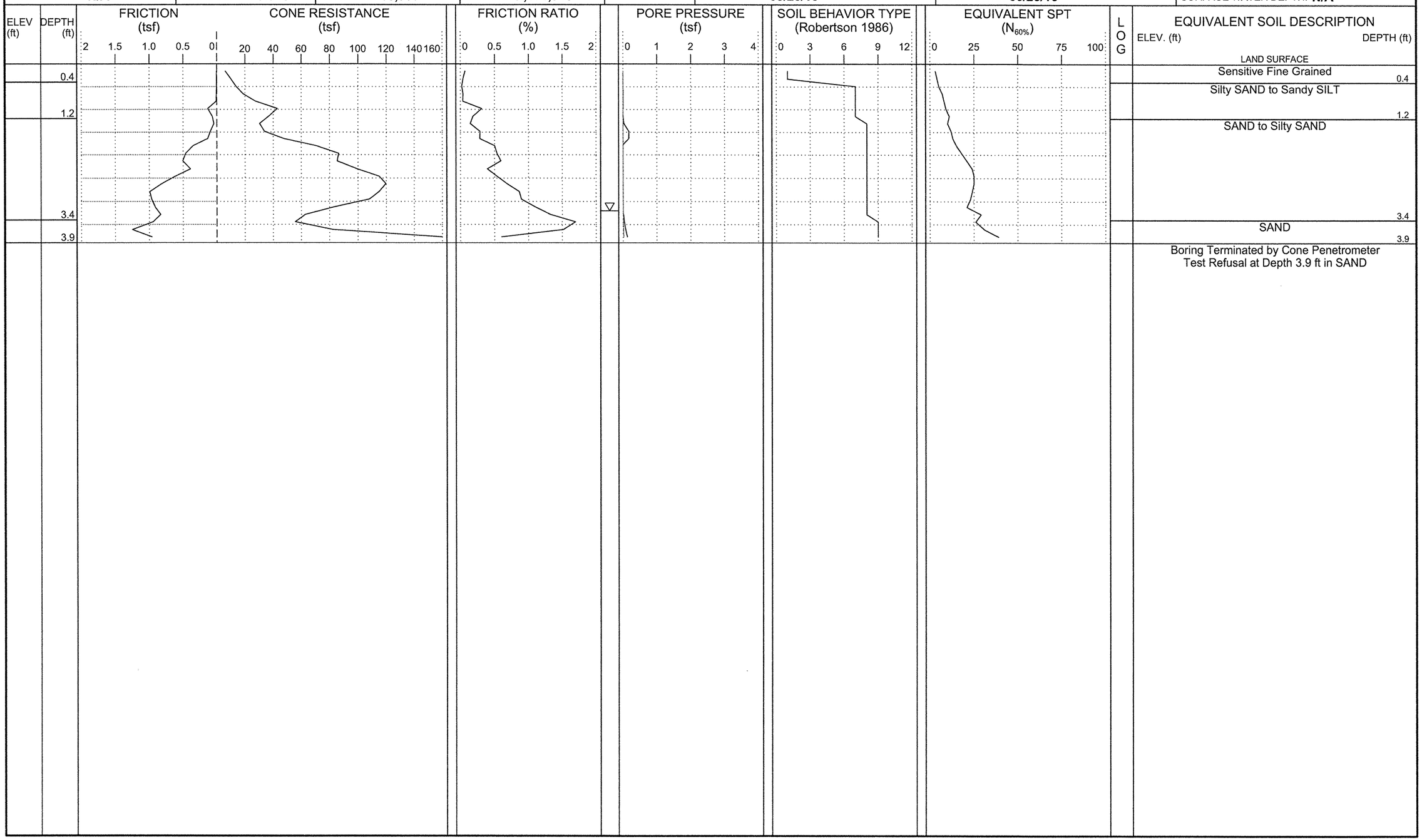
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	15	52

CATLIN #: 210046

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-64+00**	STATION: **64+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.2**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **3.9 ft**	NORTHING: **65,963**	EASTING: **2,171,946**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained — 0.4

Silty SAND to Sandy SILT — 1.2

SAND to Silty SAND — 3.4

SAND — 3.9

Boring Terminated by Cone Penetrometer
Test Refusal at Depth 3.9 ft in SAND

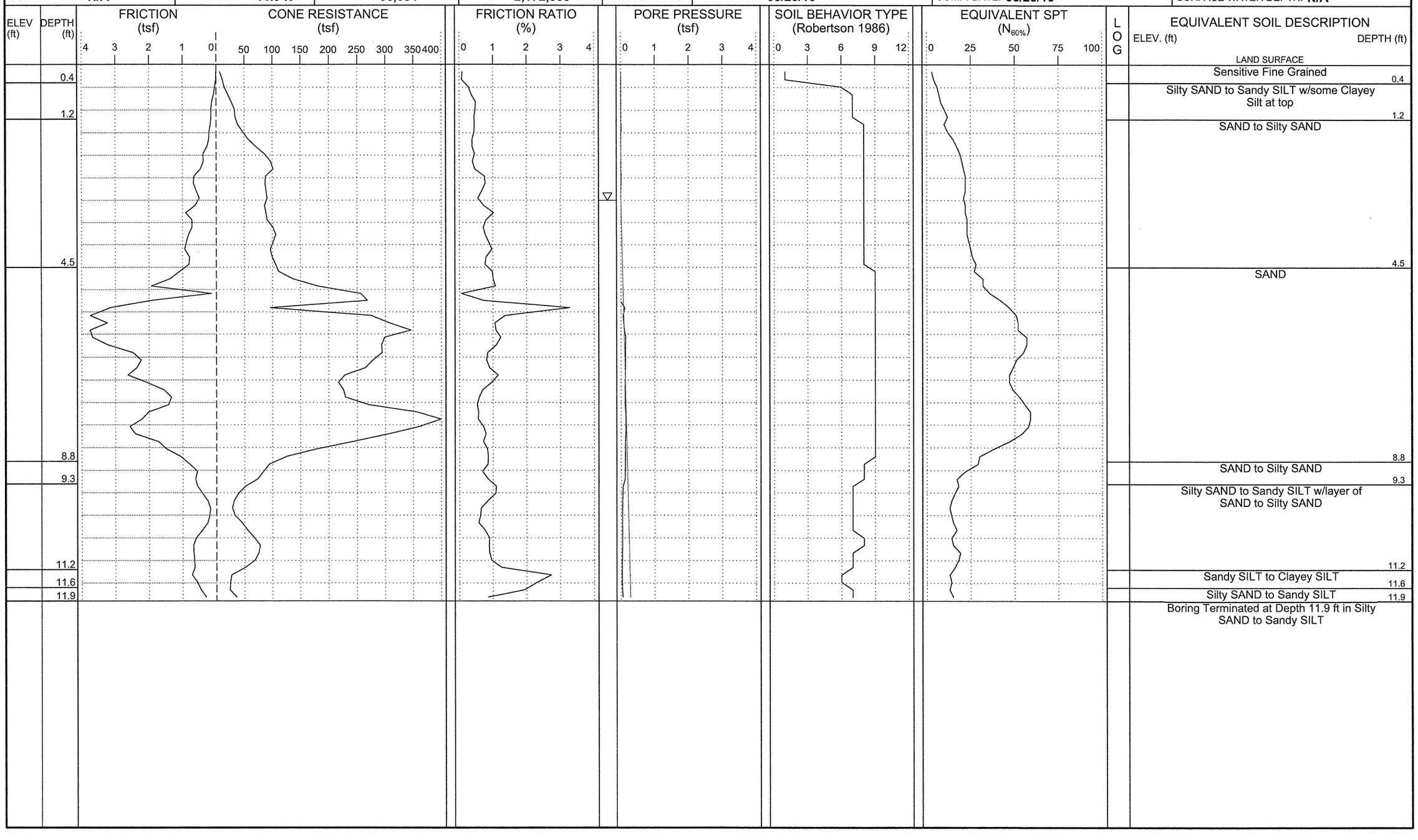
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	16	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-70+00**	STATION: **70+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.0**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **11.9 ft**	NORTHING: **66,084**	EASTING: **2,172,533**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



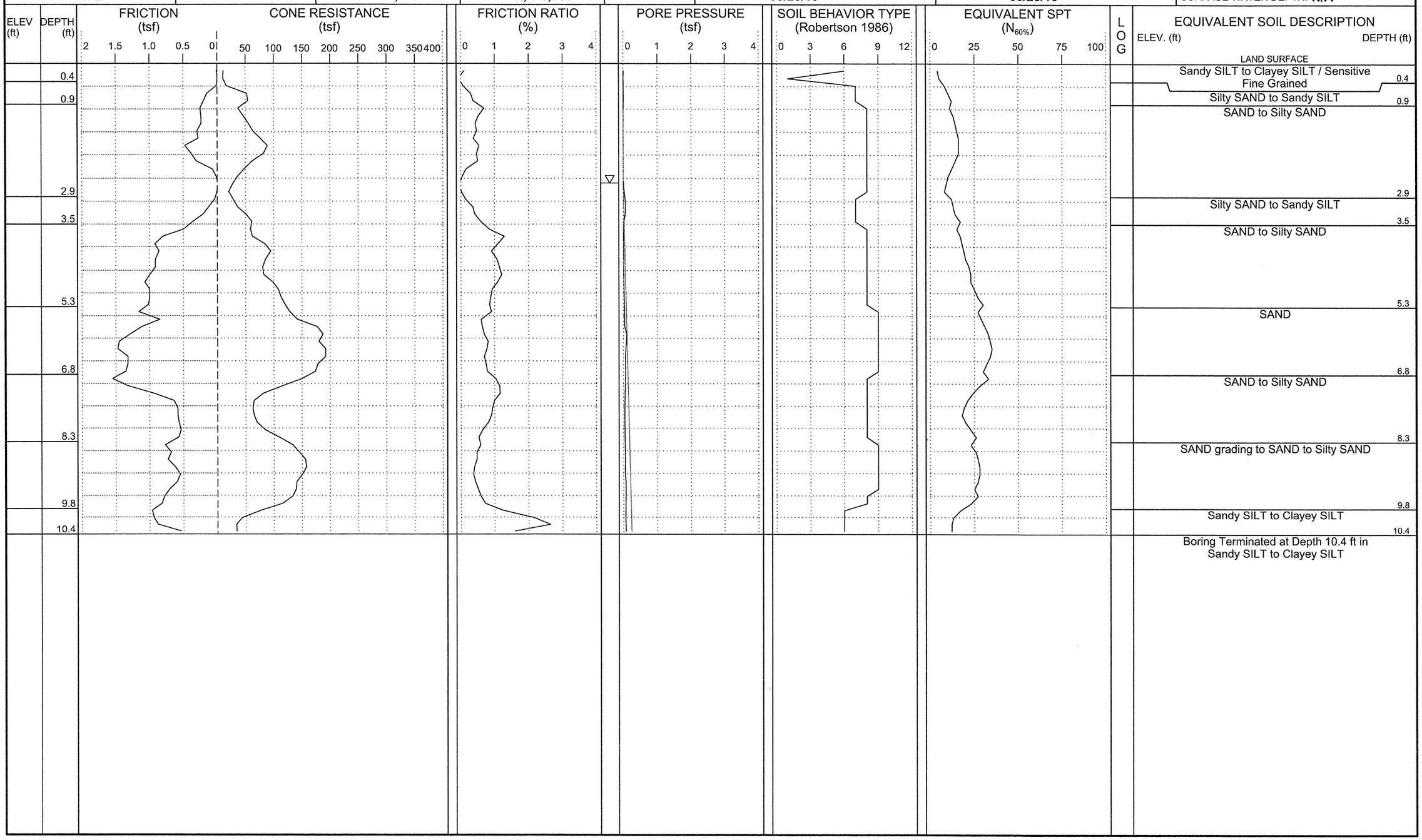
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	17	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-80+00**	STATION: **80+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **10.4 ft**	NORTHING: **66,078**	EASTING: **2,173,530**	24 HR. **N/A**	START DATE: **05/25/10**	COMP. DATE: **05/25/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT / Sensitive Fine Grained — 0.4

Silty SAND to Sandy SILT — 0.9

SAND to Silty SAND — 2.9

Silty SAND to Sandy SILT — 3.5

SAND to Silty SAND — 5.3

SAND — 6.8

SAND to Silty SAND — 8.3

SAND grading to SAND to Silty SAND — 9.8

Sandy SILT to Clayey SILT — 10.4

Boring Terminated at Depth 10.4 ft in Sandy SILT to Clayey SILT

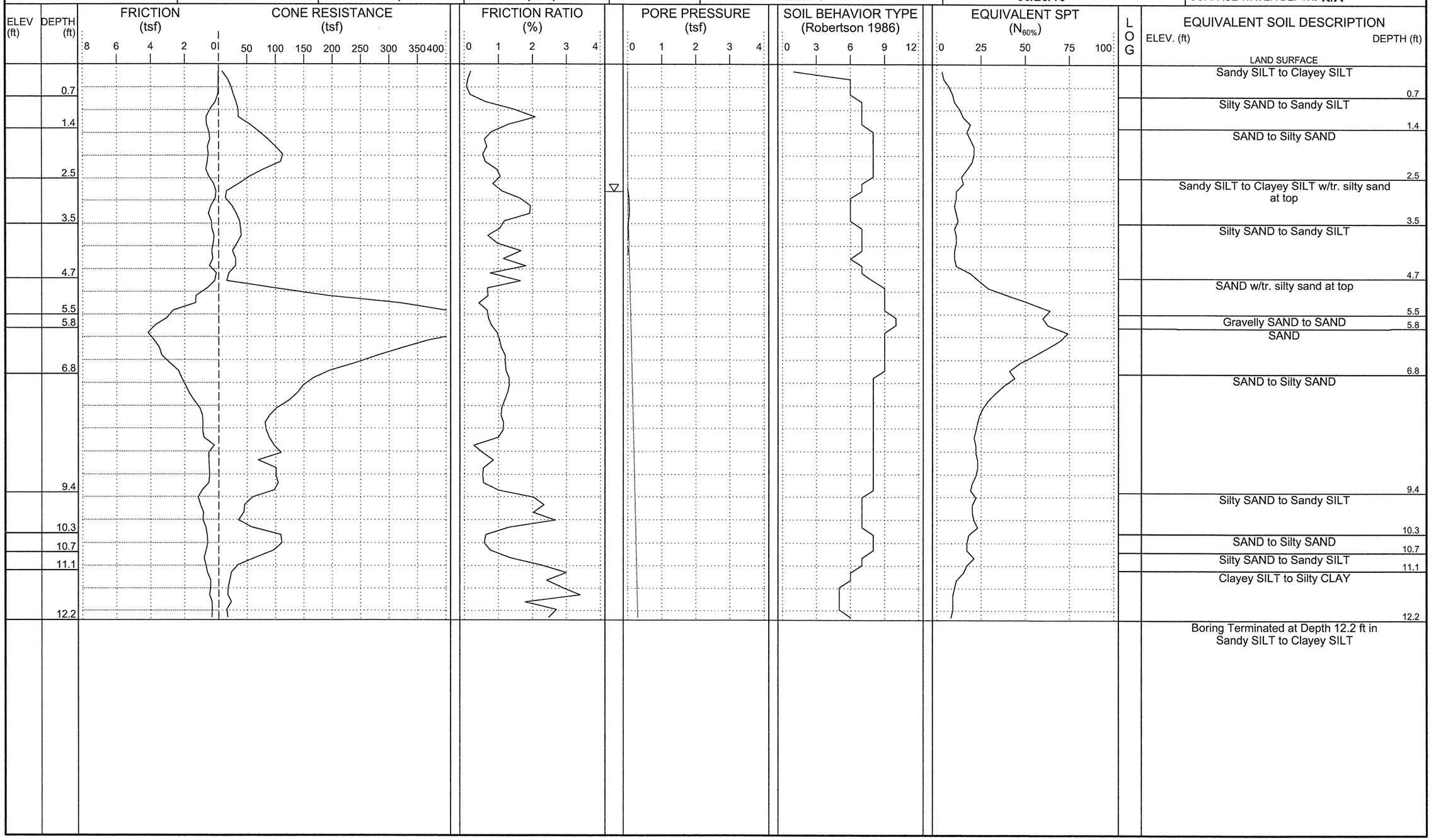
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	18	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-87+80**	STATION: **87+80**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.8**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **12.2 ft**	NORTHING: **65,945**	EASTING: **2,174,289**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



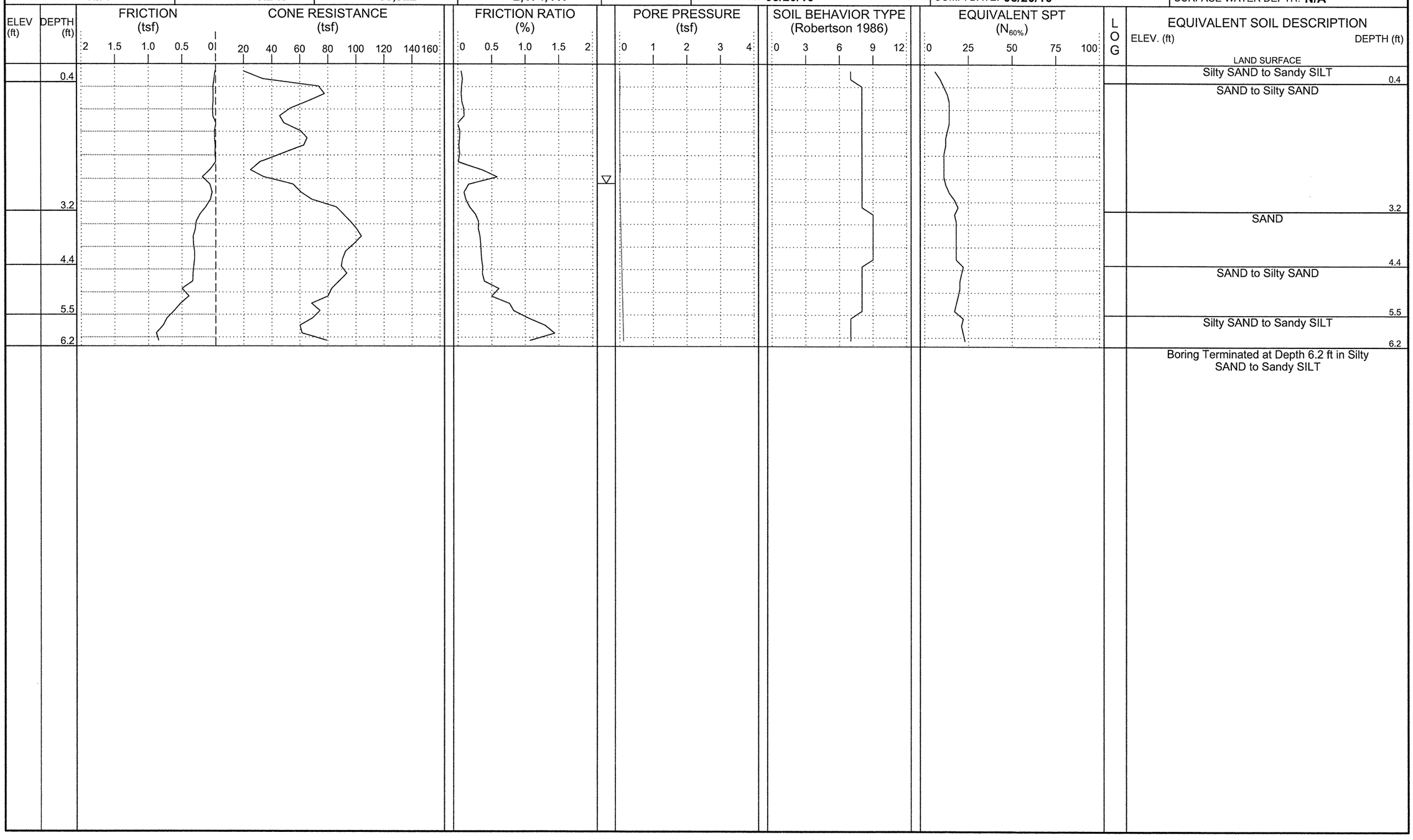
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	19	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-89+00**	STATION: **89+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.2 ft**	NORTHING: **65,922**	EASTING: **2,174,417**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Silty SAND to Sandy SILT — 0.4

SAND to Silty SAND — 3.2

SAND — 4.4

SAND to Silty SAND — 5.5

Silty SAND to Sandy SILT — 6.2

Boring Terminated at Depth 6.2 ft in Silty SAND to Sandy SILT

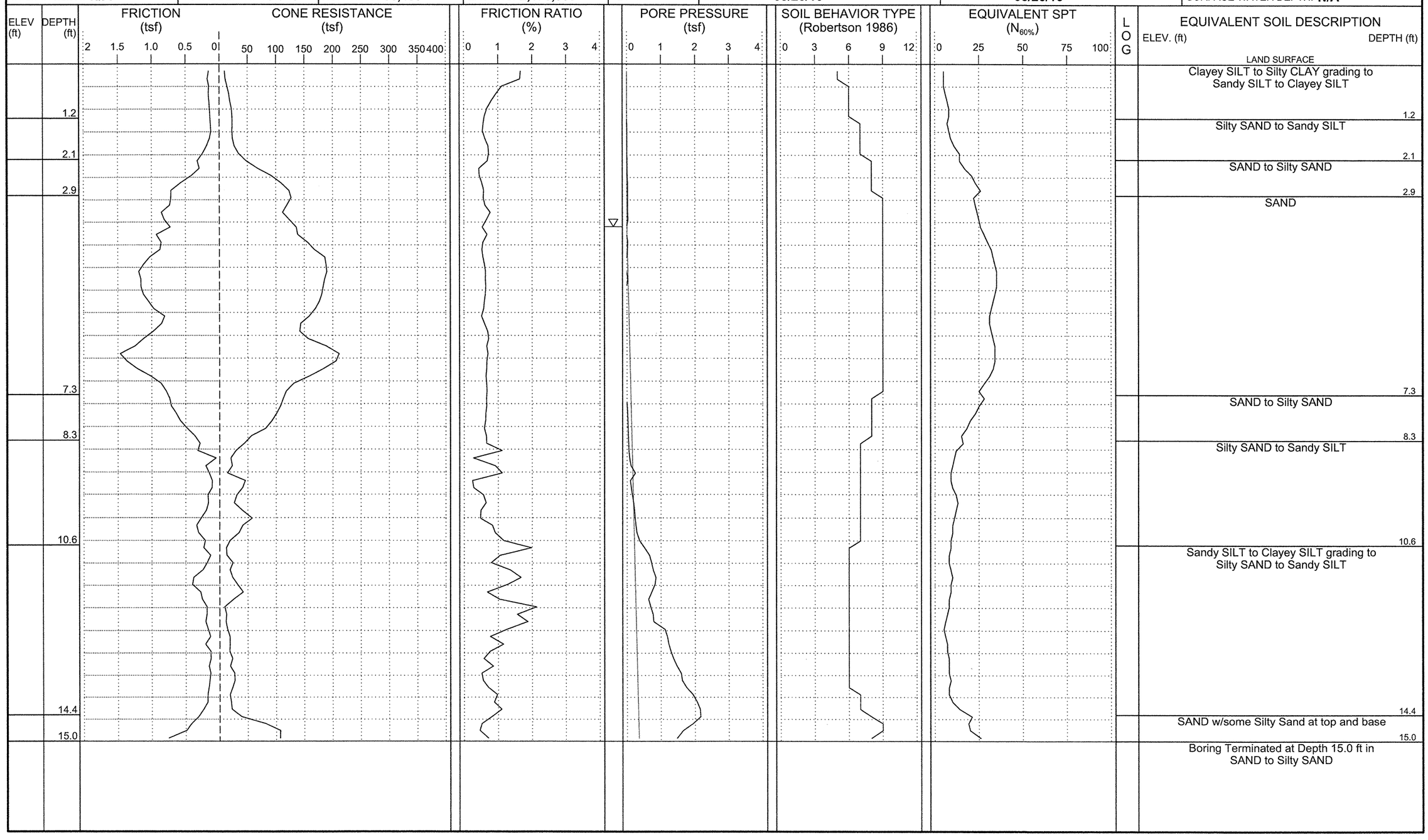
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	20	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-105+00**	STATION: **105+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **15.0 ft**	NORTHING: **66,489**	EASTING: **2,175,833**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Clayey SILT to Silty CLAY grading to Sandy SILT to Clayey SILT — 1.2

Silty SAND to Sandy SILT — 2.1

SAND to Silty SAND — 2.9

SAND — 7.3

SAND to Silty SAND — 8.3

Silty SAND to Sandy SILT — 10.6

Sandy SILT to Clayey SILT grading to Silty SAND to Sandy SILT — 14.4

SAND w/some Silty Sand at top and base — 15.0

Boring Terminated at Depth 15.0 ft in SAND to Silty SAND

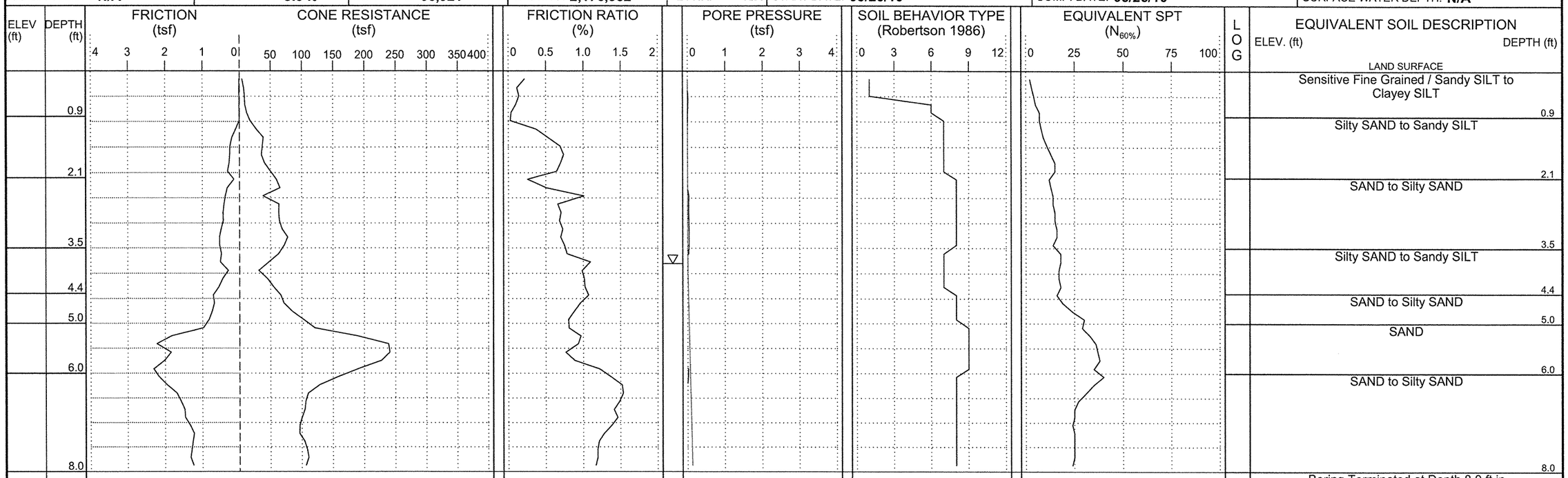
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	21	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-112+00**	STATION: **112+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.8**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **8.0 ft**	NORTHING: **66,921**	EASTING: **2,176,382**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



L O G

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained / Sandy SILT to Clayey SILT — 0.9

Silty SAND to Sandy SILT — 2.1

SAND to Silty SAND — 3.5

Silty SAND to Sandy SILT — 4.4

SAND to Silty SAND — 5.0

SAND — 6.0

SAND to Silty SAND — 8.0

Boring Terminated at Depth 8.0 ft in SAND to Silty SAND

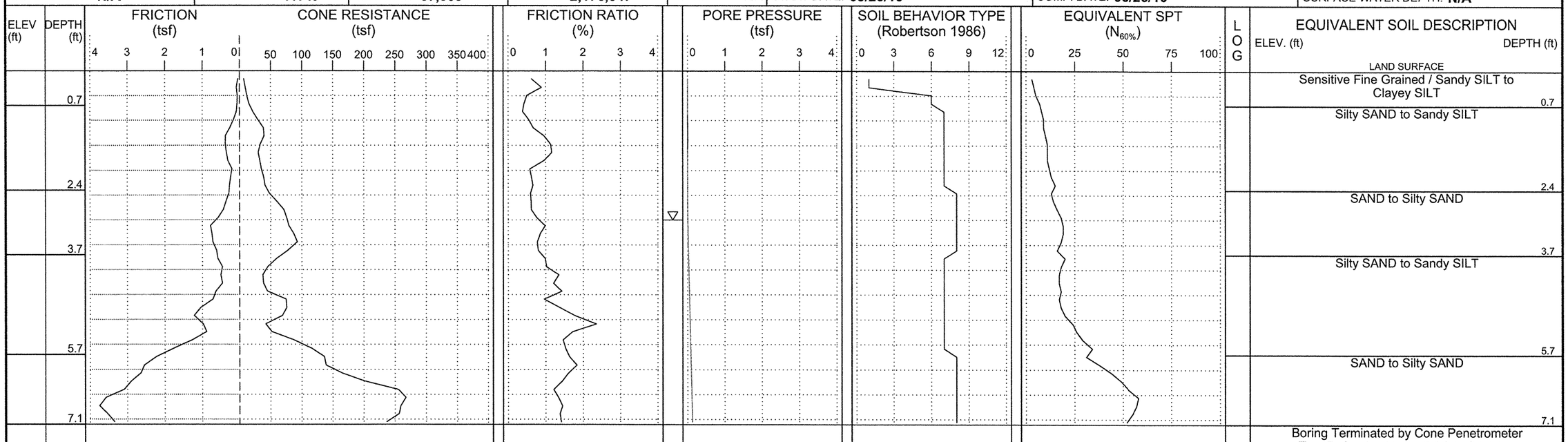
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	22	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-114+00**	STATION: **114+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **3.0**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **7.1 ft**	NORTHING: **67,033**	EASTING: **2,176,547**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained / Sandy SILT to Clayey SILT — 0.7

Silty SAND to Sandy SILT — 2.4

SAND to Silty SAND — 3.7

Silty SAND to Sandy SILT — 5.7

SAND to Silty SAND — 7.1

Boring Terminated by Cone Penetrometer Test Refusal at Depth 7.1 ft in SAND to Silty SAND

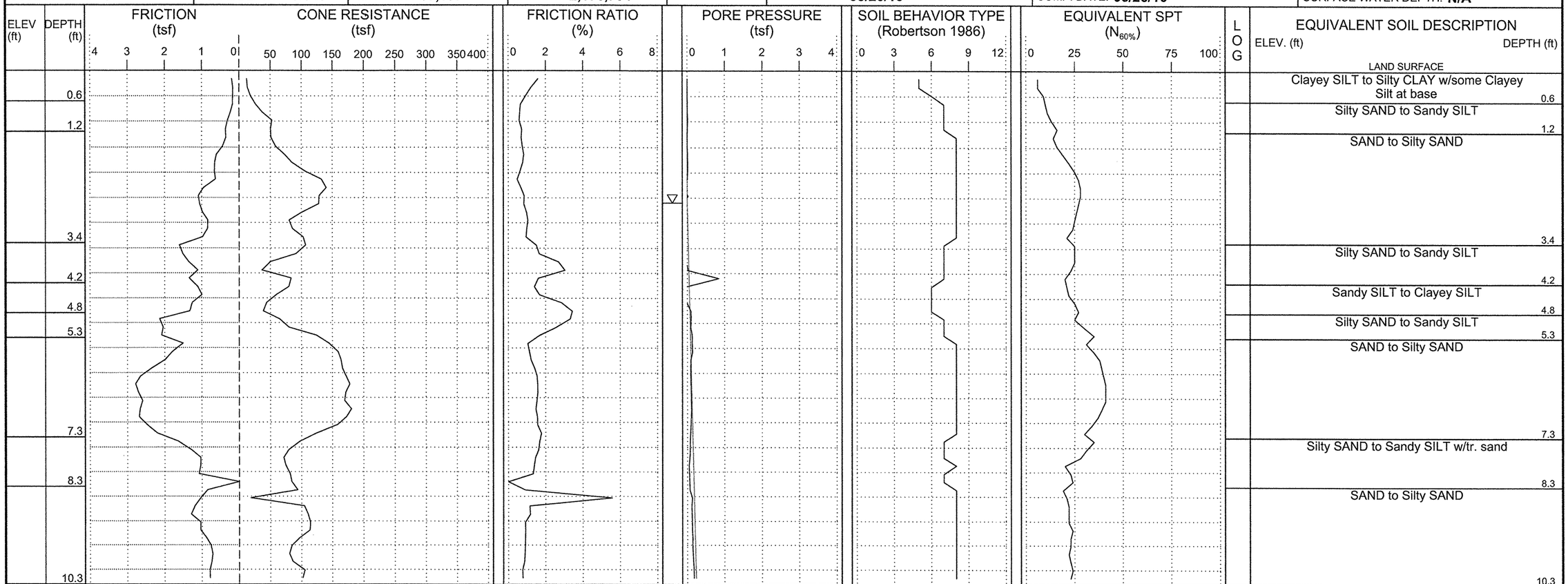
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	23	52

CATLIN #: 210046

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **L-116+00**	STATION: **116+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **2.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **10.3 ft**	NORTHING: **67,157**	EASTING: **2,176,704**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Clayey SILT to Silty CLAY w/some Clayey Silt at base — 0.6

Silty SAND to Sandy SILT — 1.2

SAND to Silty SAND — 3.4

Silty SAND to Sandy SILT — 4.2

Sandy SILT to Clayey SILT — 4.8

Silty SAND to Sandy SILT — 5.3

SAND to Silty SAND — 7.3

Silty SAND to Sandy SILT w/tr. sand — 8.3

SAND to Silty SAND — 10.3

Boring Terminated at Depth 10.3 ft in SAND to Silty SAND

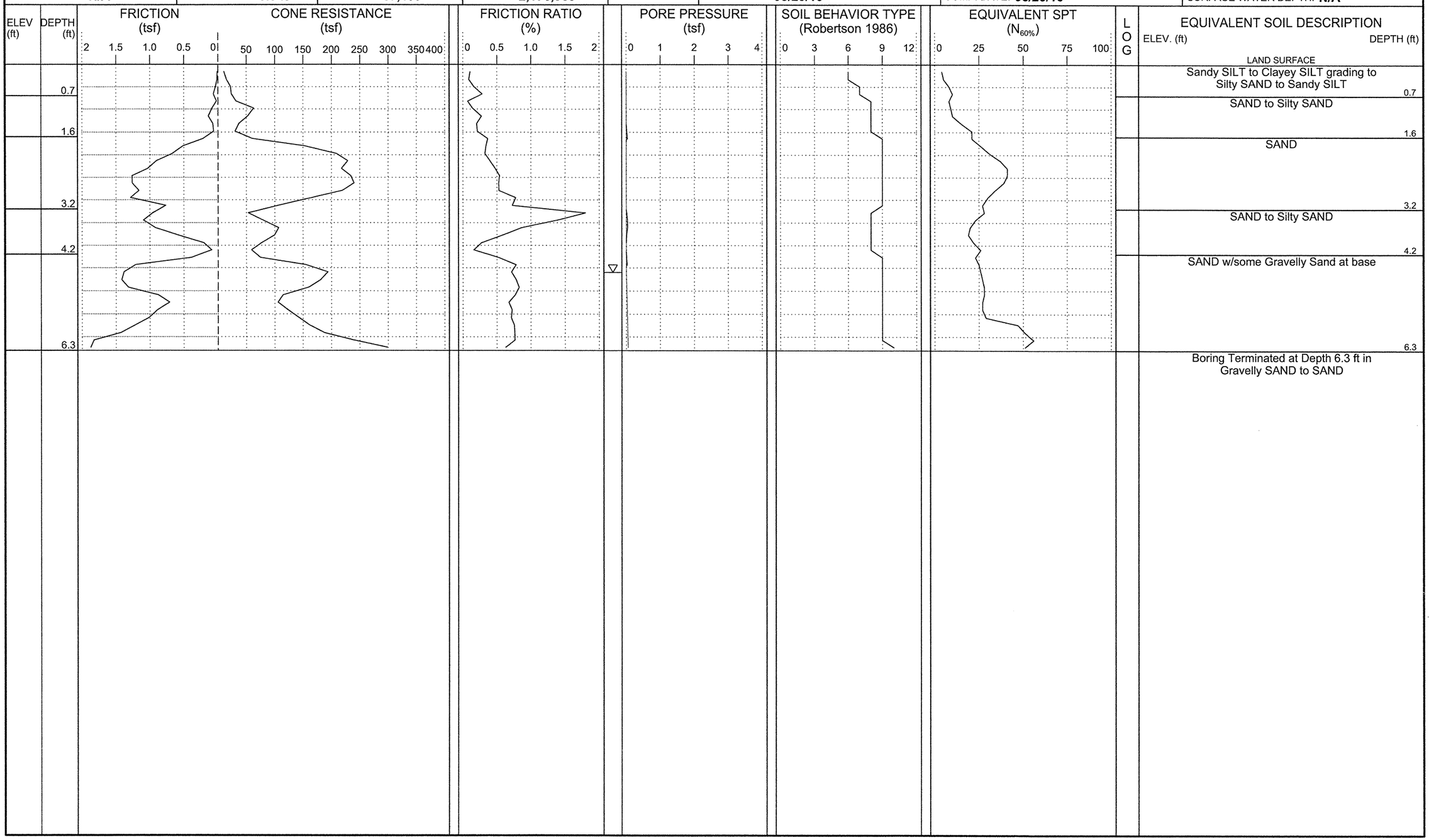
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	24	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-120+00**	STATION: **120+00**	OFFSET: **0ft CL**	ALIGNMENT: **-L-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.3 ft**	NORTHING: **67,460**	EASTING: **2,176,963**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



LOG

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT grading to Silty SAND to Sandy SILT — 0.7

SAND to Silty SAND — 1.6

SAND — 3.2

SAND to Silty SAND — 4.2

SAND w/some Gravelly Sand at base — 6.3

Boring Terminated at Depth 6.3 ft in Gravelly SAND to SAND

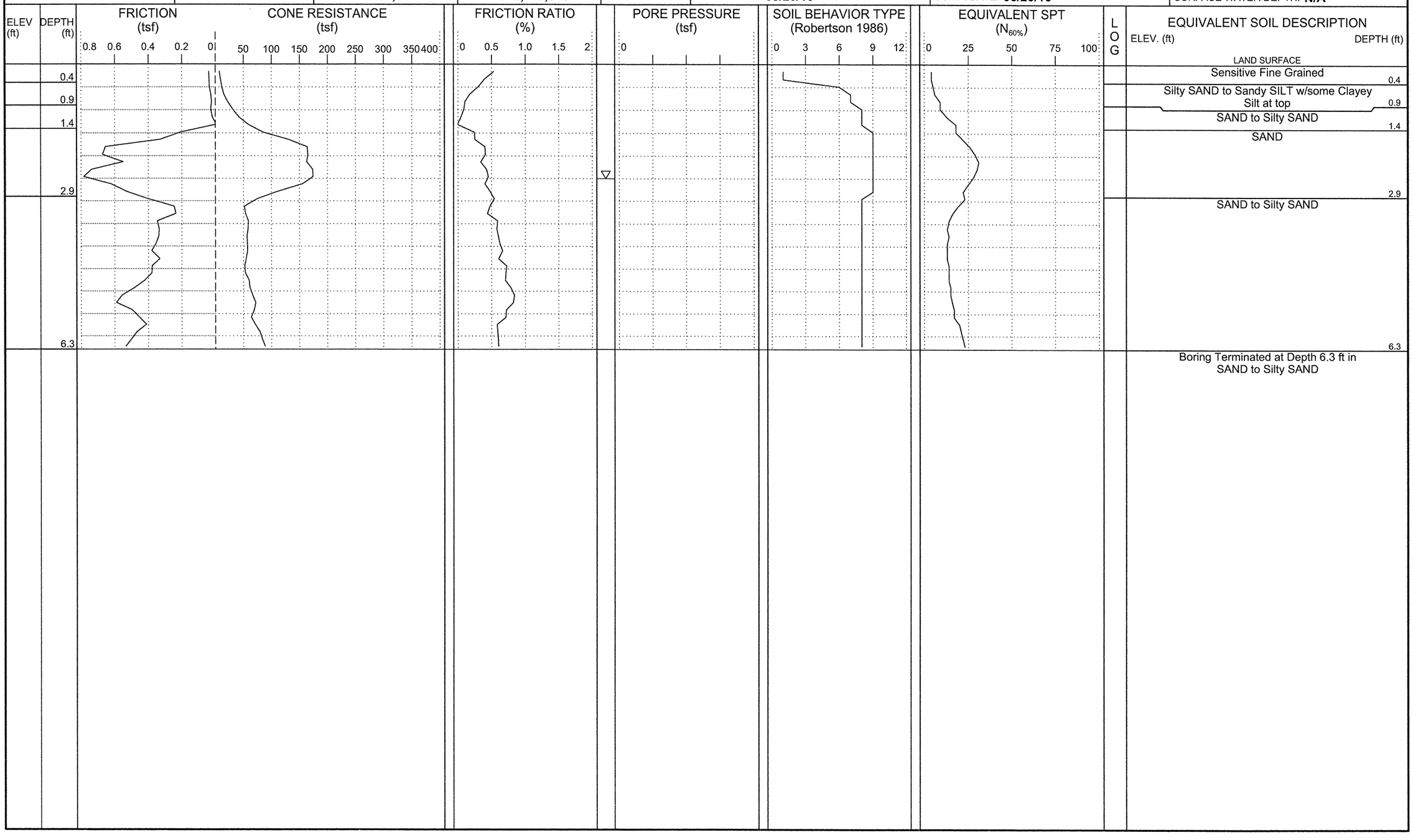
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	25	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-122+00**	STATION: **122+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **2.5**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.3 ft**	NORTHING: **67,641**	EASTING: **2,177,046**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



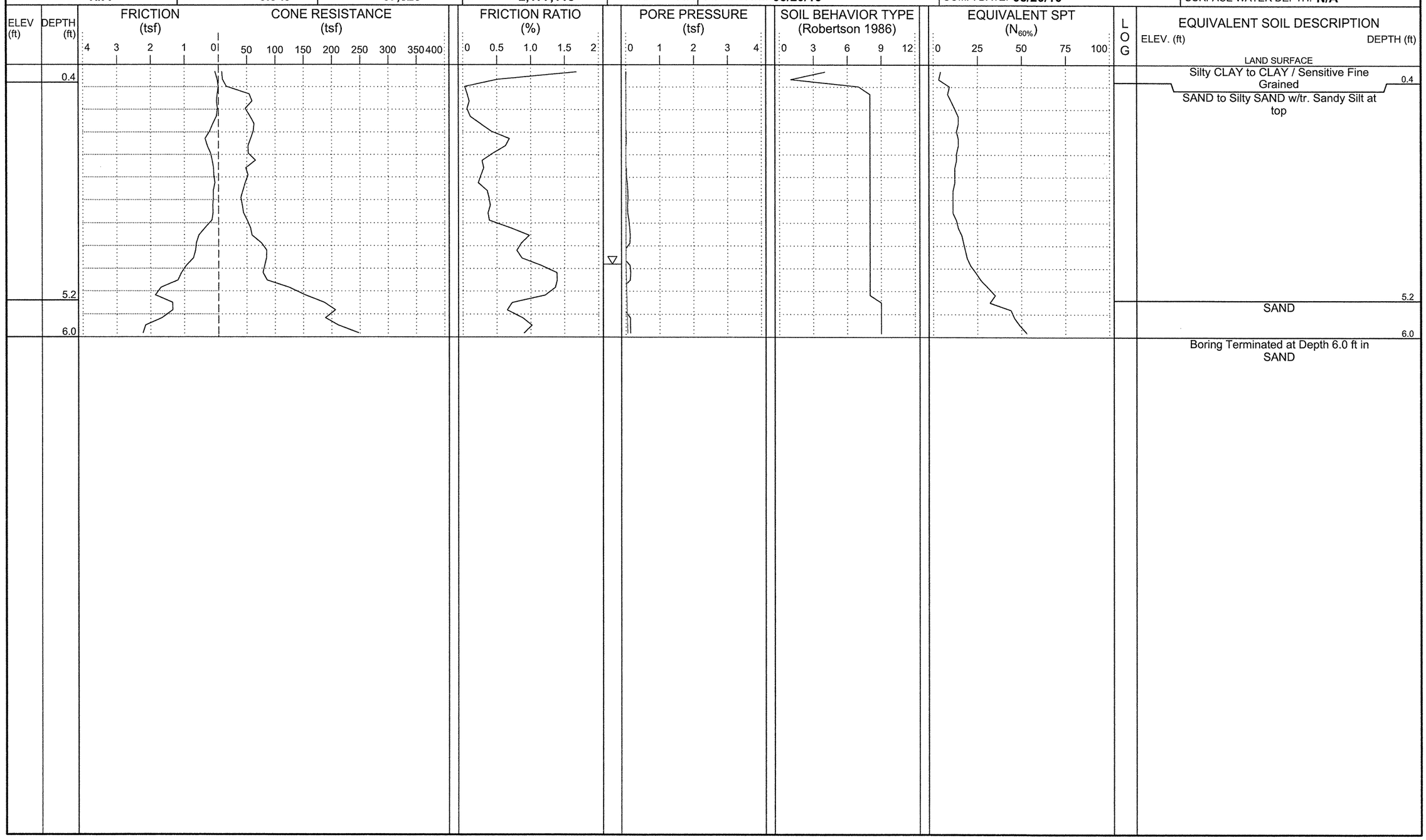
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	26	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-124+00**	STATION: **124+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **4.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **67,825**	EASTING: **2,177,118**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



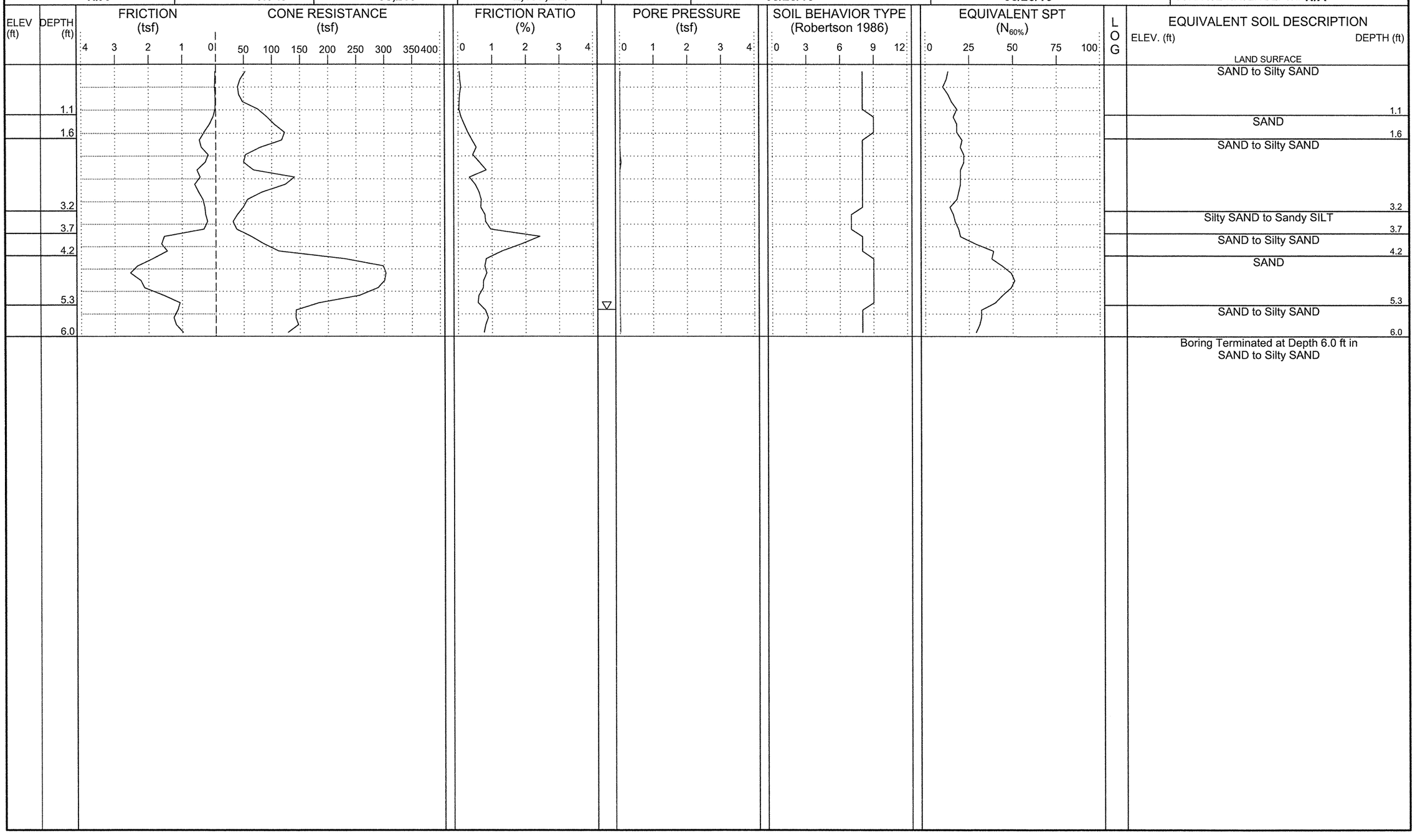
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	27	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-128+00**	STATION: **128+00**	OFFSET: **30ft LT**	ALIGNMENT: **-L-**	0 HR. **5.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **68,213**	EASTING: **2,177,216**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



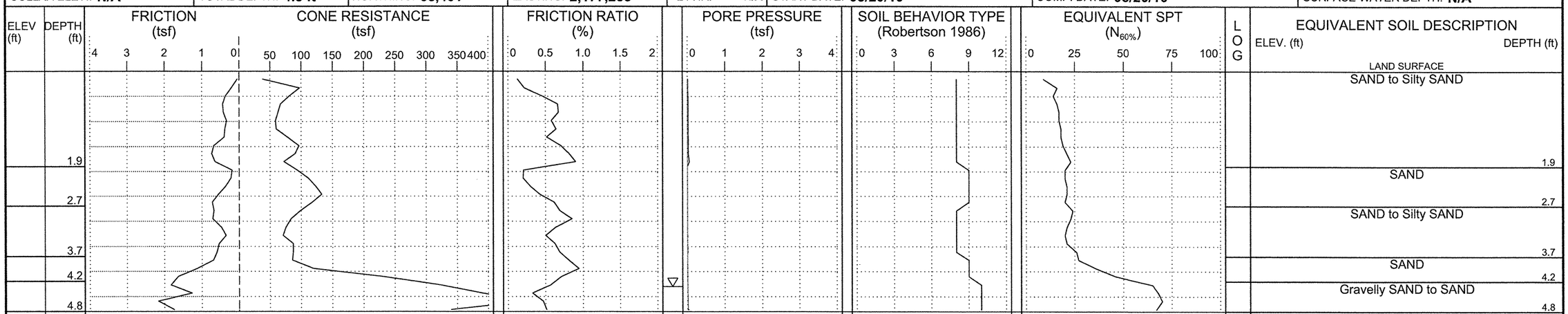
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	28	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-130+00**	STATION: **130+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **4.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **4.8 ft**	NORTHING: **68,401**	EASTING: **2,177,285**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

SAND to Silty SAND — 1.9

SAND — 2.7

SAND to Silty SAND — 3.7

SAND — 4.2

Gravelly SAND to SAND — 4.8

Boring Terminated by Cone Penetrometer
Test Refusal at Depth 4.8 ft in Gravelly
SAND to SAND

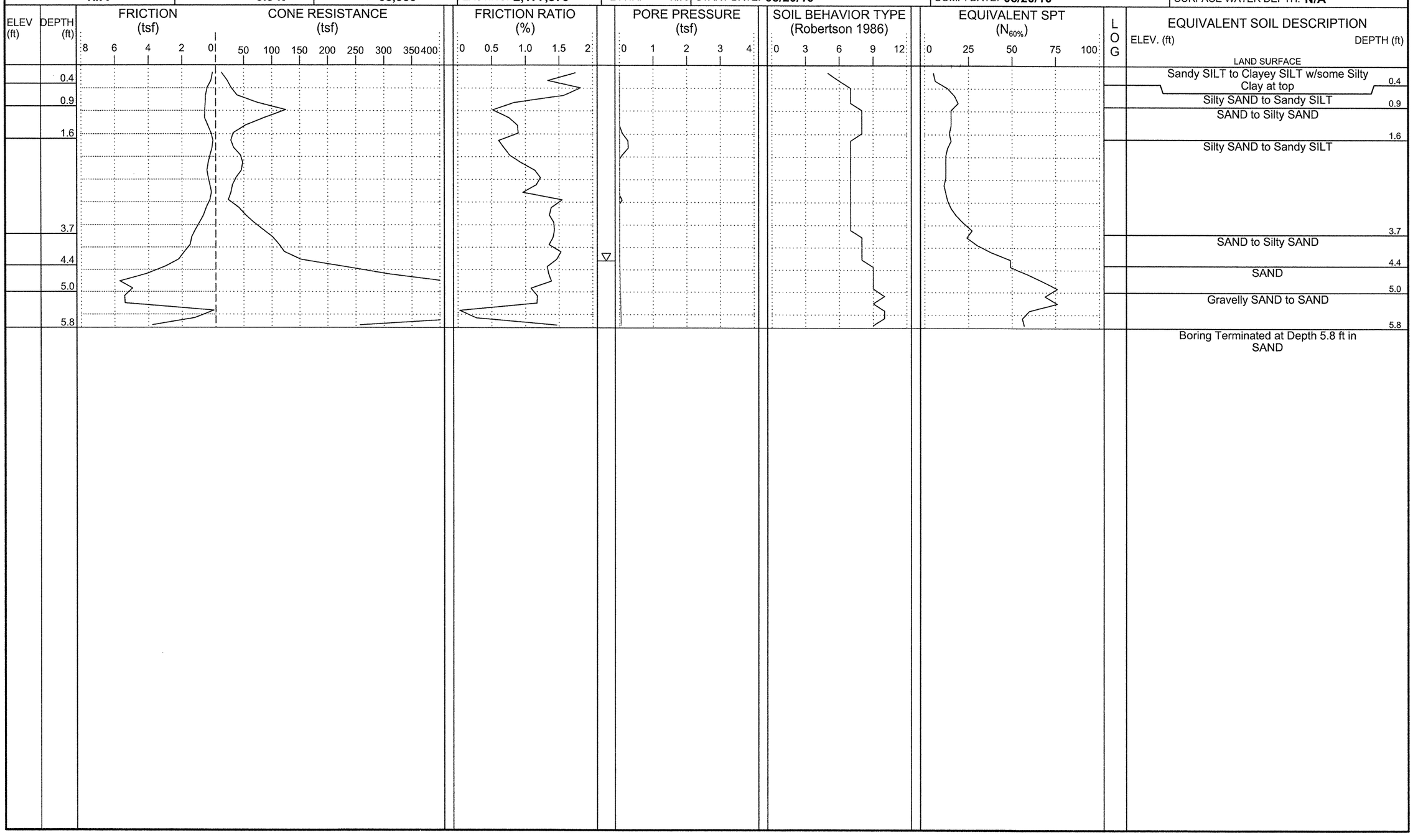
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	29	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-132+00**	STATION: **132+00**	OFFSET: **15ft RT**	ALIGNMENT: **-L-**	0 HR. **4.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.8 ft**	NORTHING: **68,585**	EASTING: **2,177,370**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



LOG

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT w/some Silty Clay at top — 0.4

Silty SAND to Sandy SILT — 0.9

SAND to Silty SAND — 1.6

Silty SAND to Sandy SILT — 3.7

SAND to Silty SAND — 4.4

SAND — 5.0

Gravelly SAND to SAND — 5.8

Boring Terminated at Depth 5.8 ft in SAND

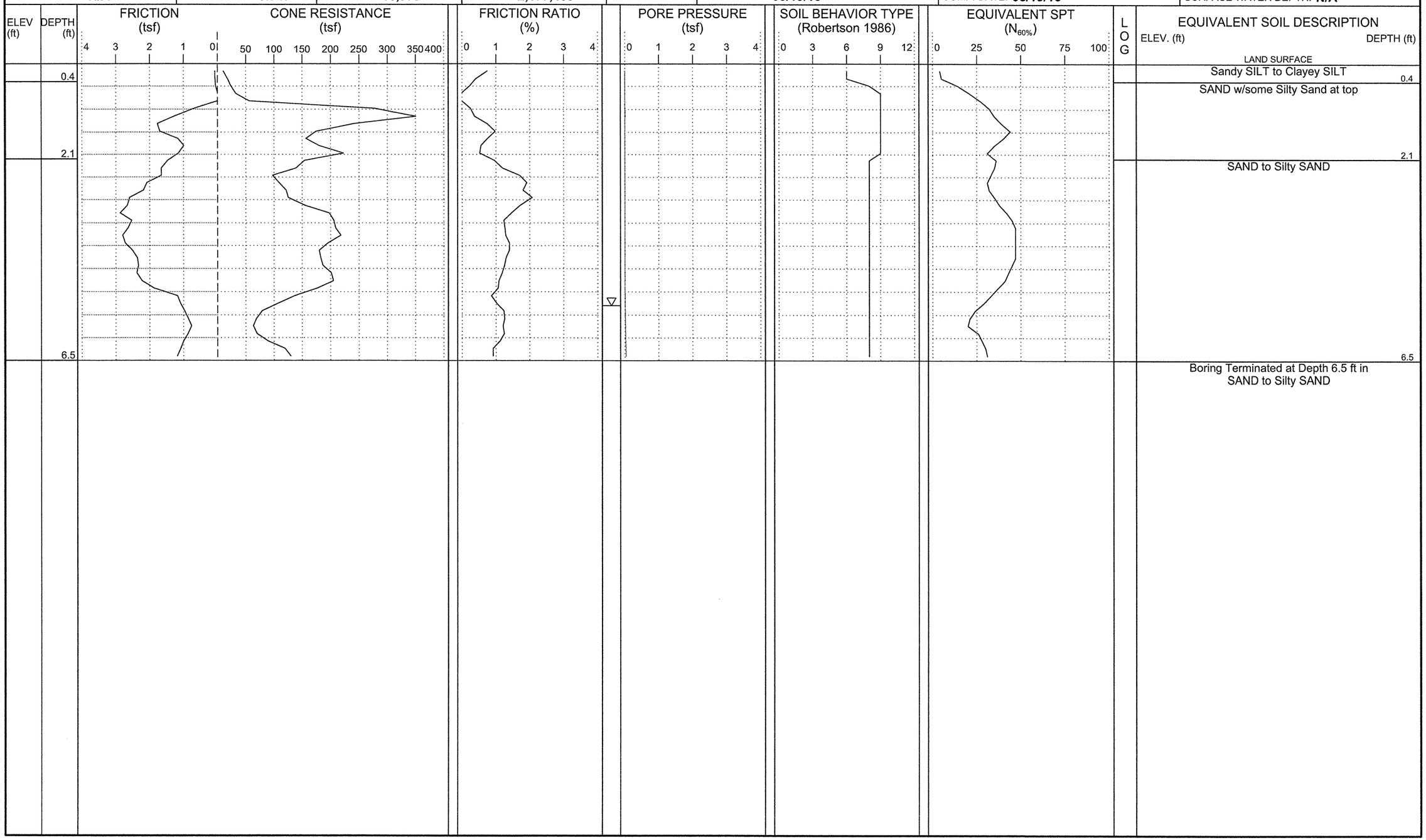
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	30	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-136+00**	STATION: **136+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **5.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.5 ft**	NORTHING: **68,978**	EASTING: **2,177,455**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



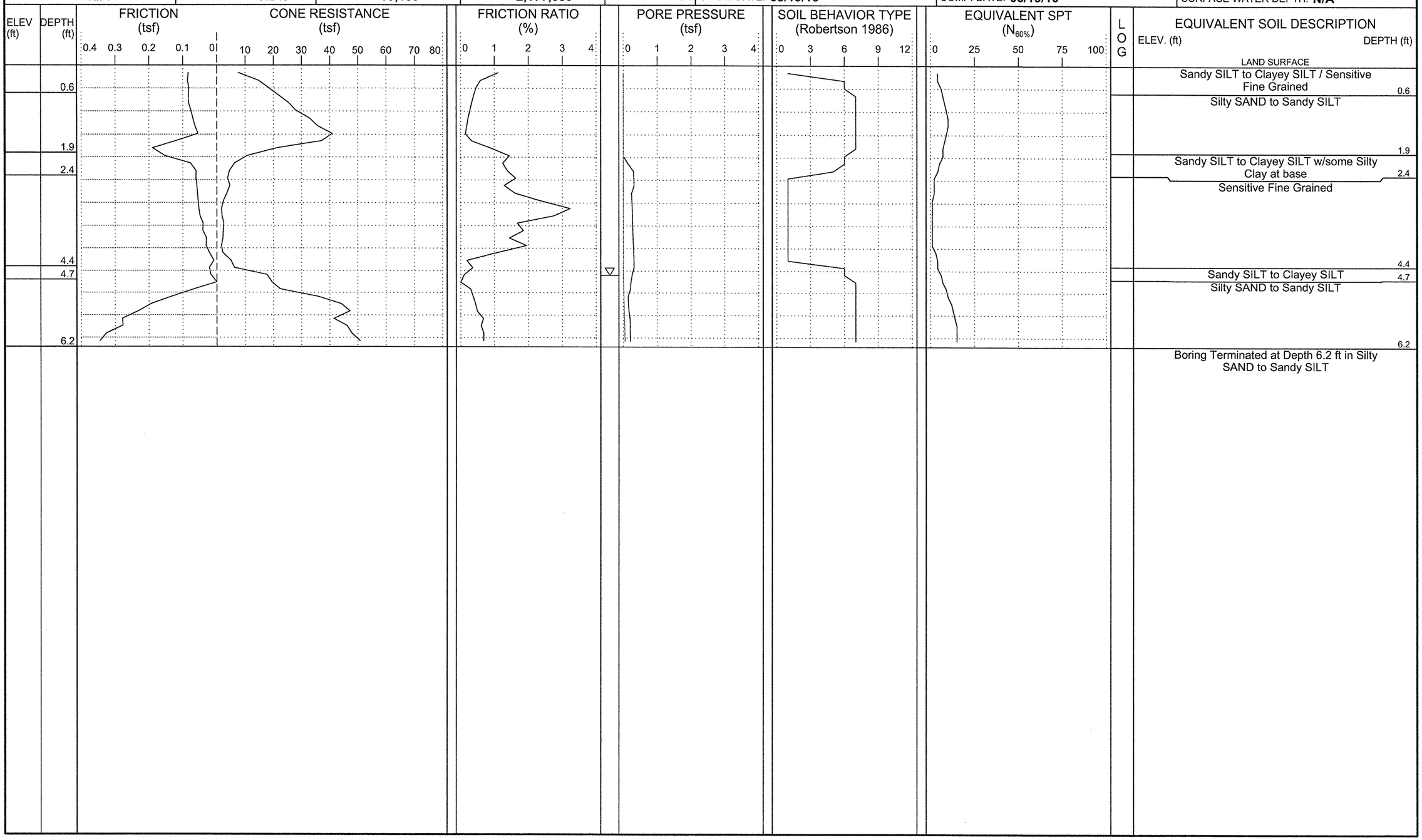
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	31	52

CATLIN #: 210046

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-138+00**	STATION: **138+00**	OFFSET: **30ft RT**	ALIGNMENT: **-L-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.2 ft**	NORTHING: **69,139**	EASTING: **2,177,580**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



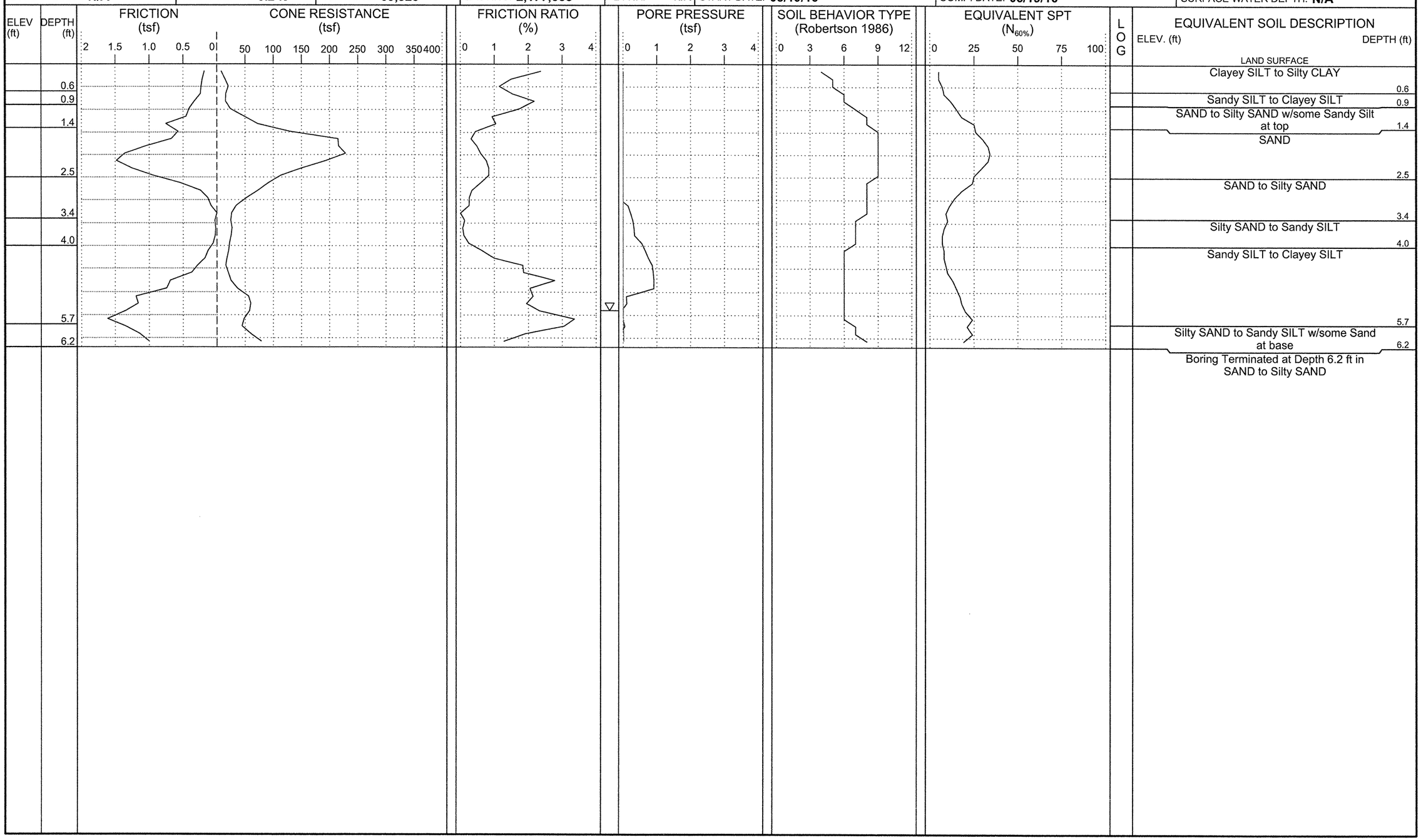
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	32	52

CATLIN #: 210046

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-140+00**	STATION: **140+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **5.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.2 ft**	NORTHING: **69,328**	EASTING: **2,177,655**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Clayey SILT to Silty CLAY — 0.6

Sandy SILT to Clayey SILT — 0.9

SAND to Silty SAND w/some Sandy Silt at top — 1.4

SAND — 2.5

SAND to Silty SAND — 3.4

Silty SAND to Sandy SILT — 4.0

Sandy SILT to Clayey SILT — 5.7

Silty SAND to Sandy SILT w/some Sand at base — 6.2

Boring Terminated at Depth 6.2 ft in SAND to Silty SAND

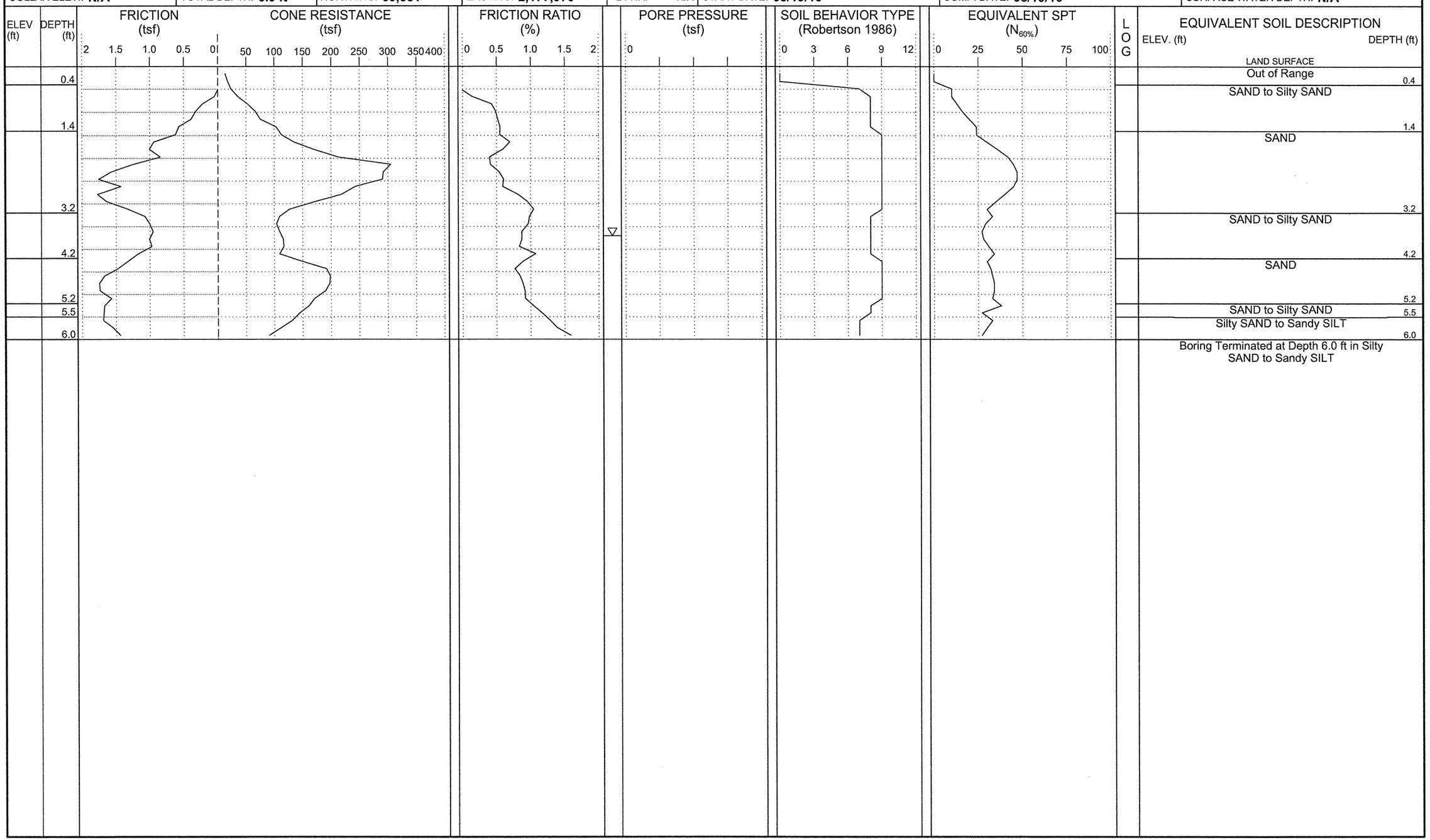
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	33	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-144+00**	STATION: **144+00**	OFFSET: **35ft RT**	ALIGNMENT: **-L-**	0 HR. **3.7**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **69,581**	EASTING: **2,177,970**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



LOG	EQUIVALENT SOIL DESCRIPTION	ELEV. (ft) / DEPTH (ft)
	LAND SURFACE	
	Out of Range	0.4
	SAND to Silty SAND	1.4
	SAND	3.2
	SAND to Silty SAND	4.2
	SAND	5.2
	SAND to Silty SAND	5.5
	Silty SAND to Sandy SILT	6.0
	Boring Terminated at Depth 6.0 ft in Silty SAND to Sandy SILT	

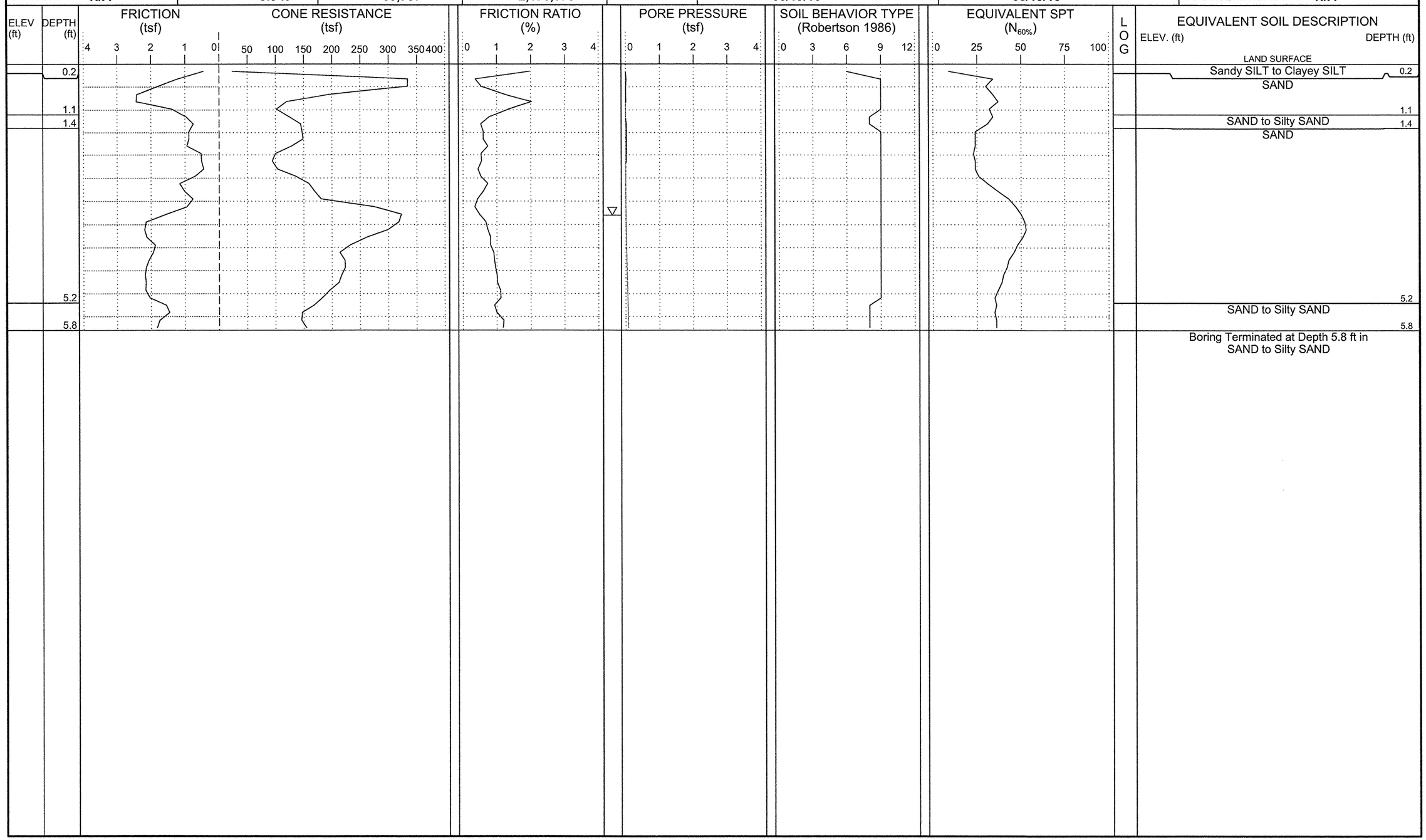
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	34	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-146+00**	STATION: **146+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **3.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.8 ft**	NORTHING: **69,757**	EASTING: **2,178,076**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



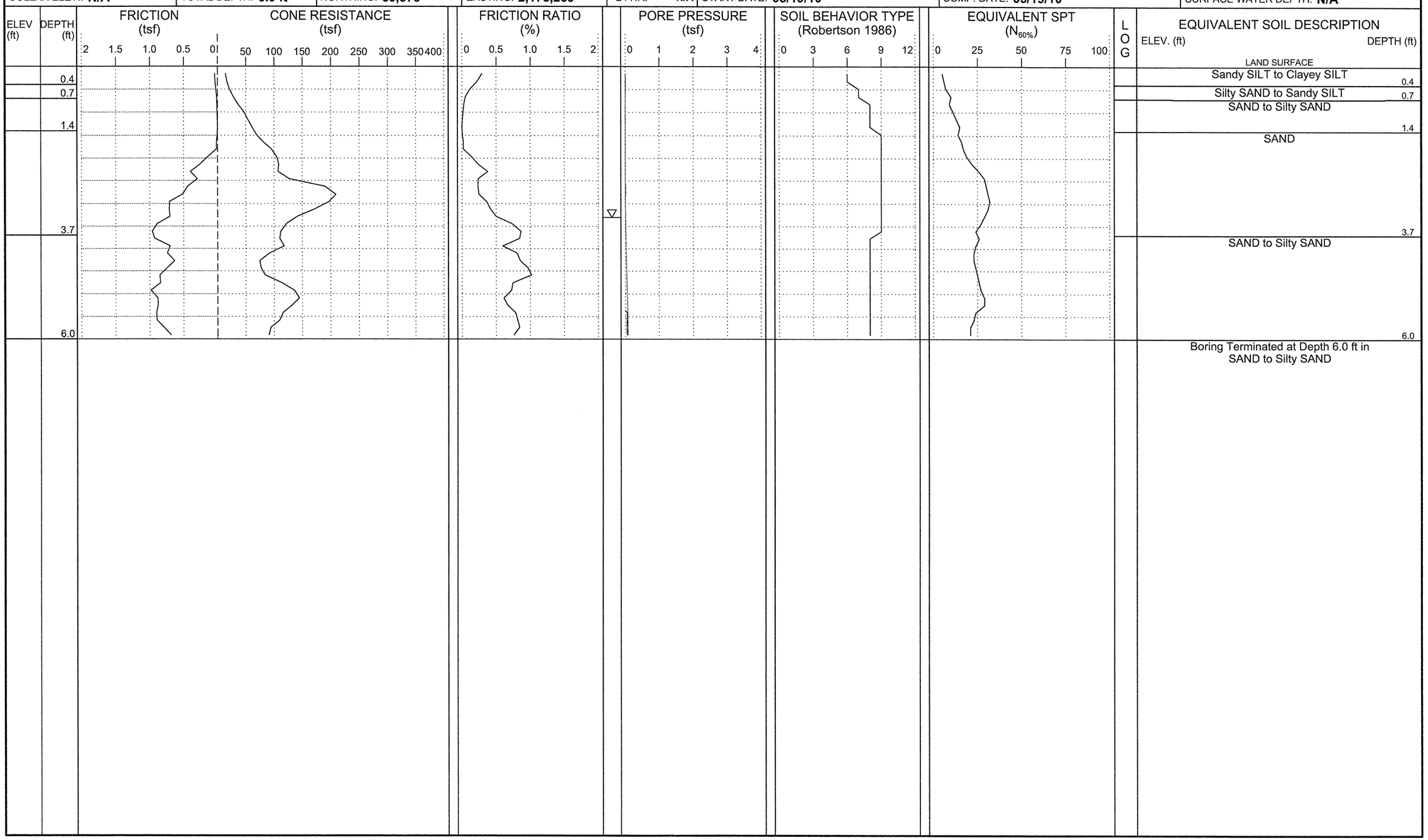
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	35	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-148+00**	STATION: **148+00**	OFFSET: **15ft RT**	ALIGNMENT: **-L-**	0 HR. **3.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **69,878**	EASTING: **2,178,239**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT — 0.4

Silty SAND to Sandy SILT — 0.7

SAND to Silty SAND — 1.4

SAND — 3.7

SAND to Silty SAND — 6.0

Boring Terminated at Depth 6.0 ft in SAND to Silty SAND

NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	36	52

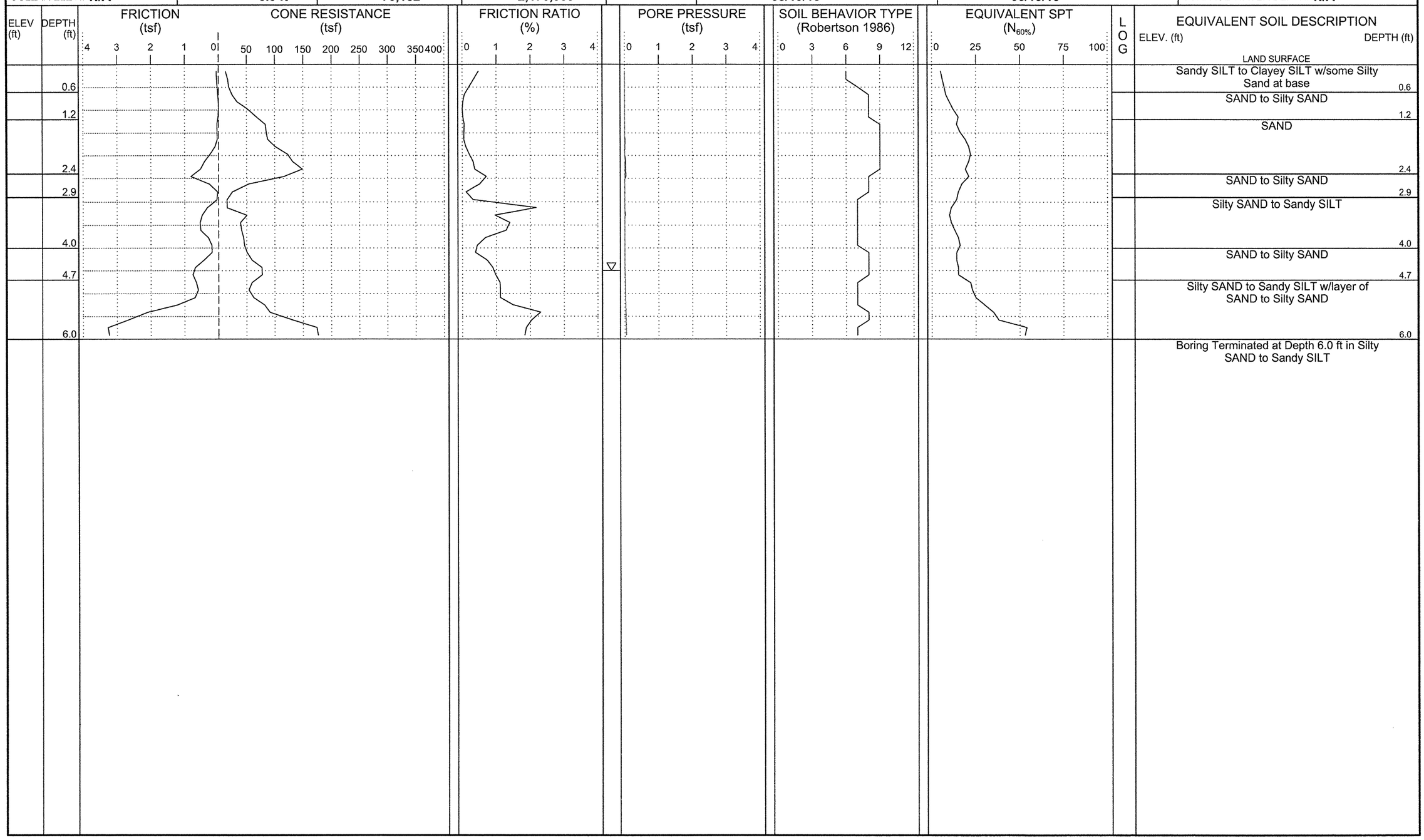
CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1** | ID.: **R-3432** | COUNTY: **Brunswick** | GEOLOGIST: **Steven V. Hudson** | DRILL MACHINE: **Hogentogler Track** | MAX. DOWN PRESSURE: **10 Ton**

SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179** | GROUND WTR (ft) | DRILL METHOD: **CPT** | CONE TYPE: **1.44 Vertek Piezocone** | DRILLER: **Ronald Stewart**

BORING NO.: **L-152+00** | STATION: **152+00** | OFFSET: **15ft LT** | ALIGNMENT: **-L-** | 0 HR. **4.5** | ROD TYPE: **Pre-strung** | CONE ID: **DSA0866** | TECHNICIAN: **M.A.D.**

COLLAR ELEV.: **N/A** | TOTAL DEPTH: **6.0 ft** | NORTHING: **70,182** | EASTING: **2,178,500** | 24 HR. **N/A** | START DATE: **05/19/10** | COMP. DATE: **05/19/10** | SURFACE WATER DEPTH: **N/A**



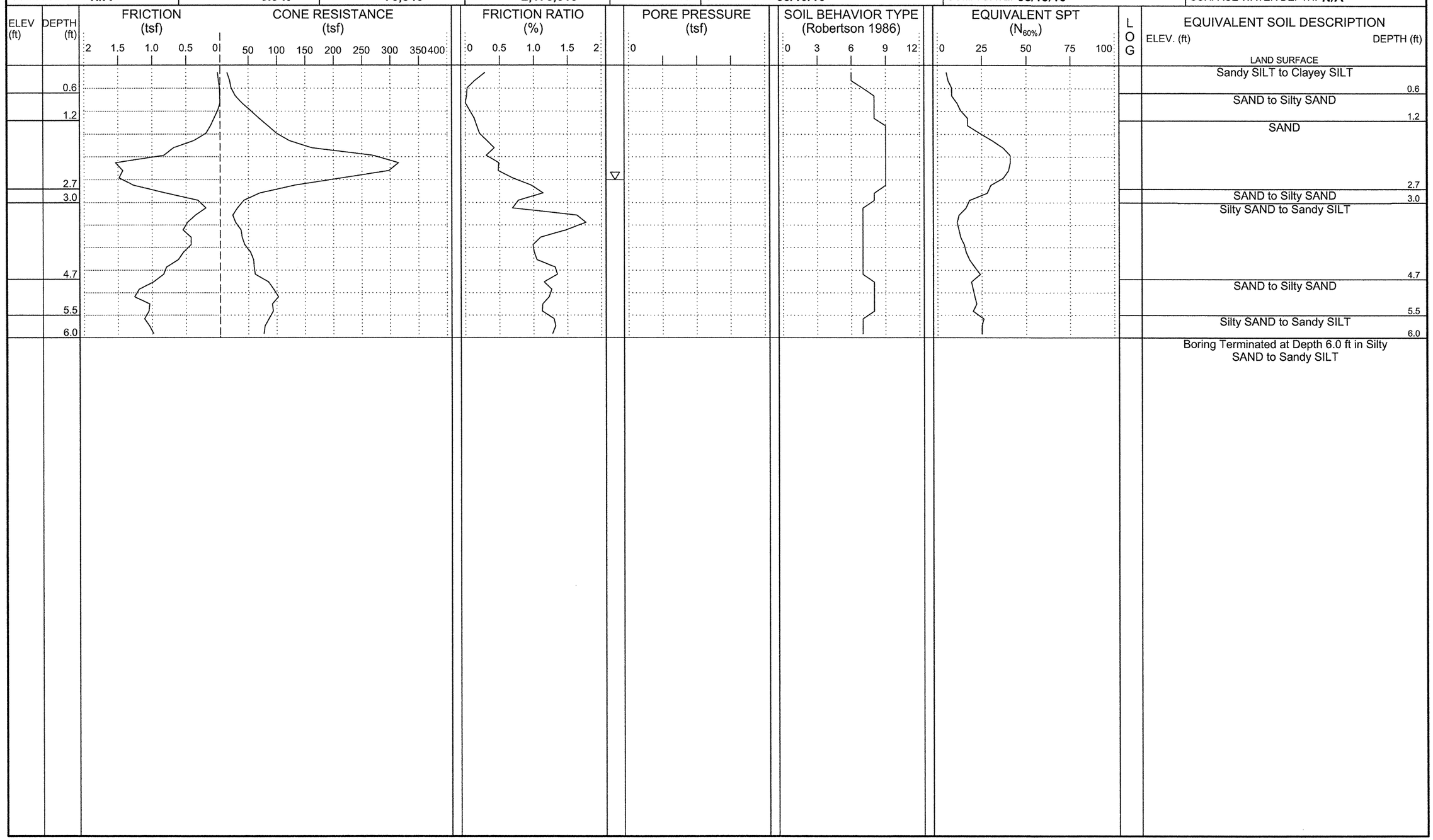
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	37	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-154+00**	STATION: **154+00**	OFFSET: **35ft LT**	ALIGNMENT: **-L-**	0 HR. **2.5**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **70,345**	EASTING: **2,178,610**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



LOG

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT — 0.6

SAND to Silty SAND — 1.2

SAND — 2.7

SAND to Silty SAND — 3.0

Silty SAND to Sandy SILT — 4.7

SAND to Silty SAND — 5.5

Silty SAND to Sandy SILT — 6.0

Boring Terminated at Depth 6.0 ft in Silty SAND to Sandy SILT

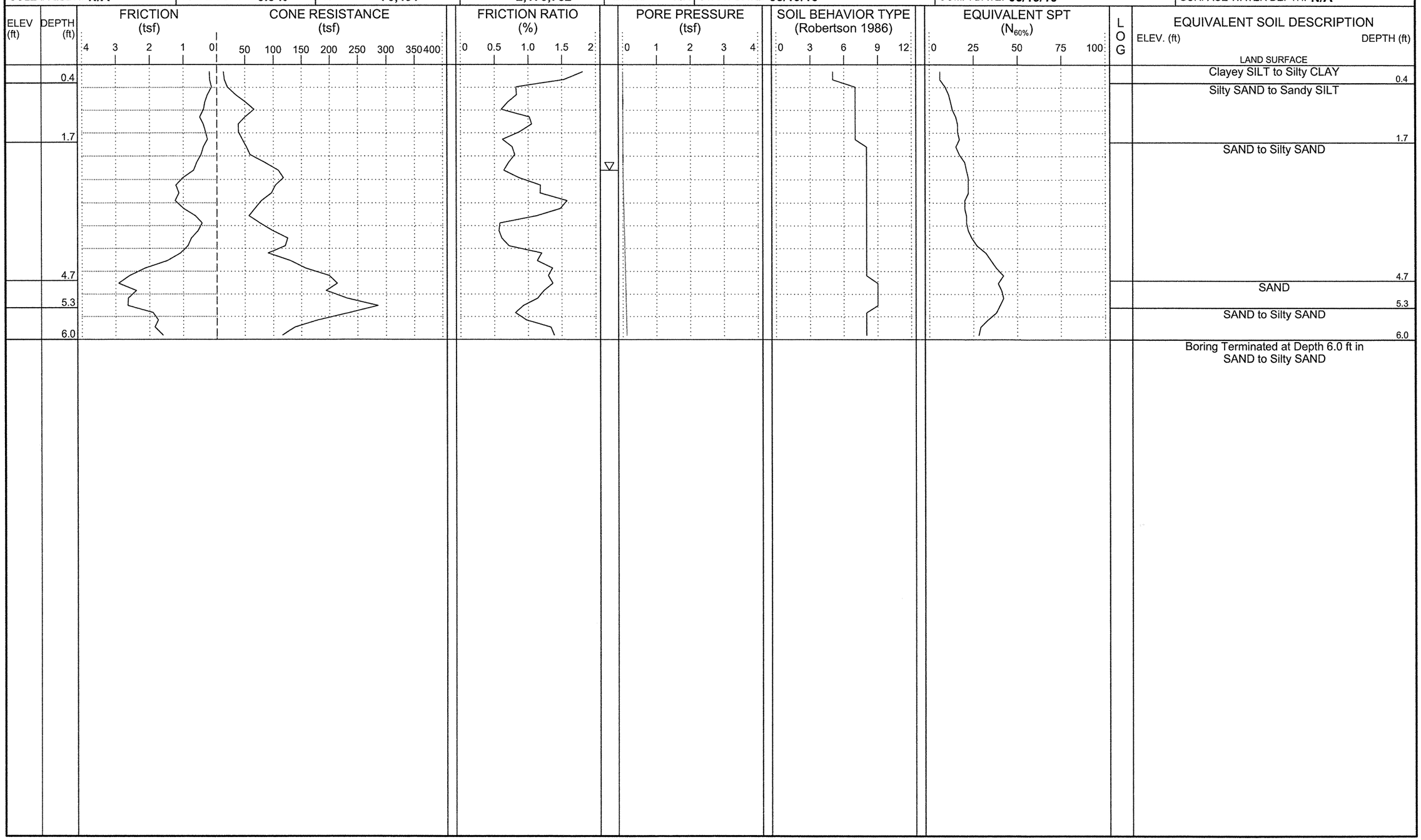
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	38	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-156+00**	STATION: **156+00**	OFFSET: **15ft RT**	ALIGNMENT: **-L-**	0 HR. **2.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **70,491**	EASTING: **2,178,752**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



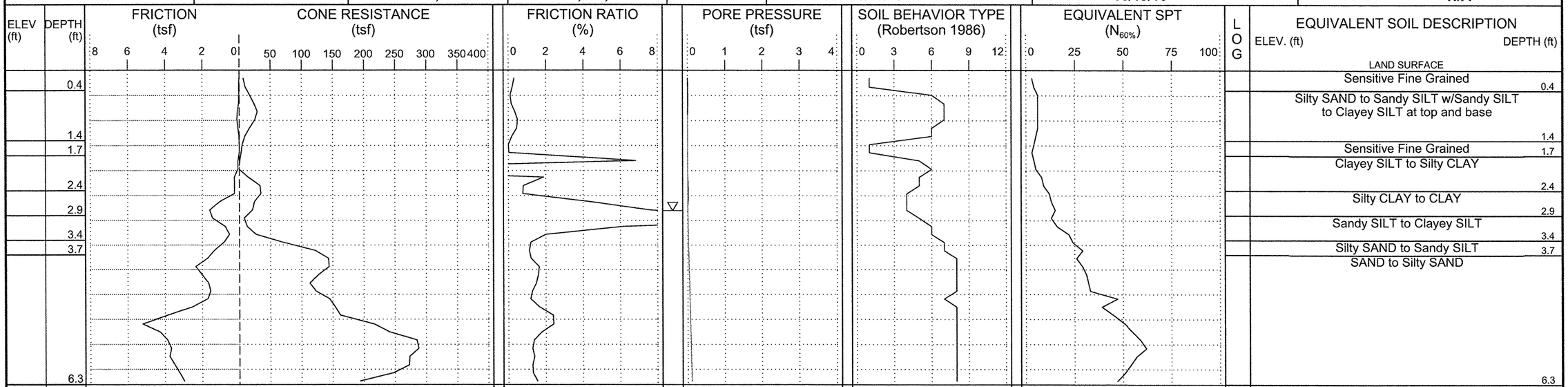
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	39	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-160+00**	STATION: **160+00**	OFFSET: **15ft LT**	ALIGNMENT: **-L-**	0 HR. **2.8**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.3 ft**	NORTHING: **70,874**	EASTING: **2,178,866**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



LOG

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained — 0.4

Silty SAND to Sandy SILT w/Sandy SILT to Clayey SILT at top and base — 1.4

Sensitive Fine Grained — 1.7

Clayey SILT to Silty CLAY — 2.4

Silty CLAY to CLAY — 2.9

Sandy SILT to Clayey SILT — 3.4

Silty SAND to Sandy SILT — 3.7

SAND to Silty SAND — 6.3

Boring Terminated at Depth 6.3 ft in SAND to Silty SAND

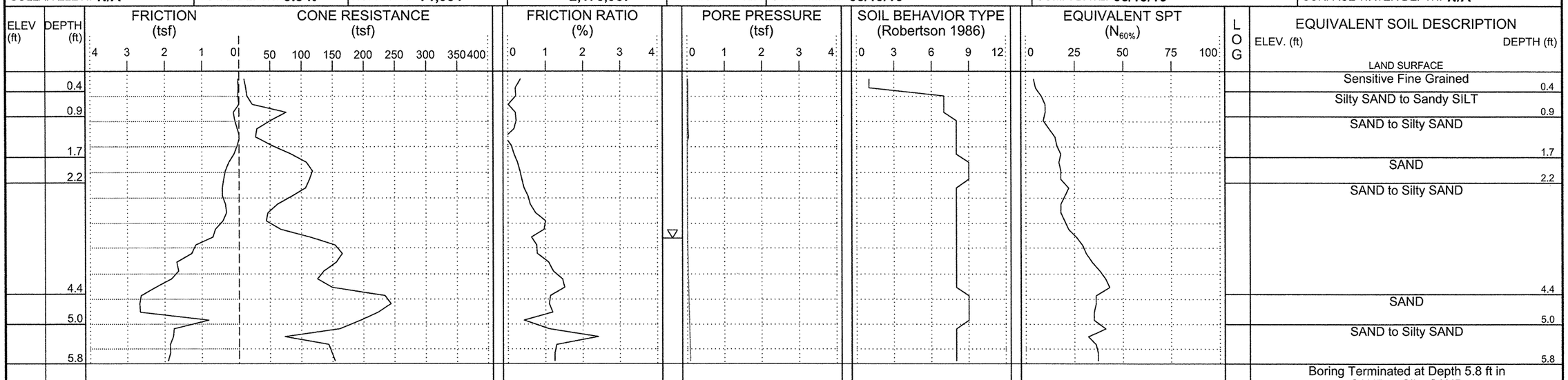
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	40	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **L-162+00**	STATION: **162+00**	OFFSET: **20ft RT**	ALIGNMENT: **-L-**	0 HR. **3.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.8 ft**	NORTHING: **71,054**	EASTING: **2,178,957**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sensitive Fine Grained — 0.4

Silty SAND to Sandy SILT — 0.9

SAND to Silty SAND — 1.7

SAND — 2.2

SAND to Silty SAND — 4.4

SAND — 5.0

SAND to Silty SAND — 5.8

Boring Terminated at Depth 5.8 ft in SAND to Silty SAND

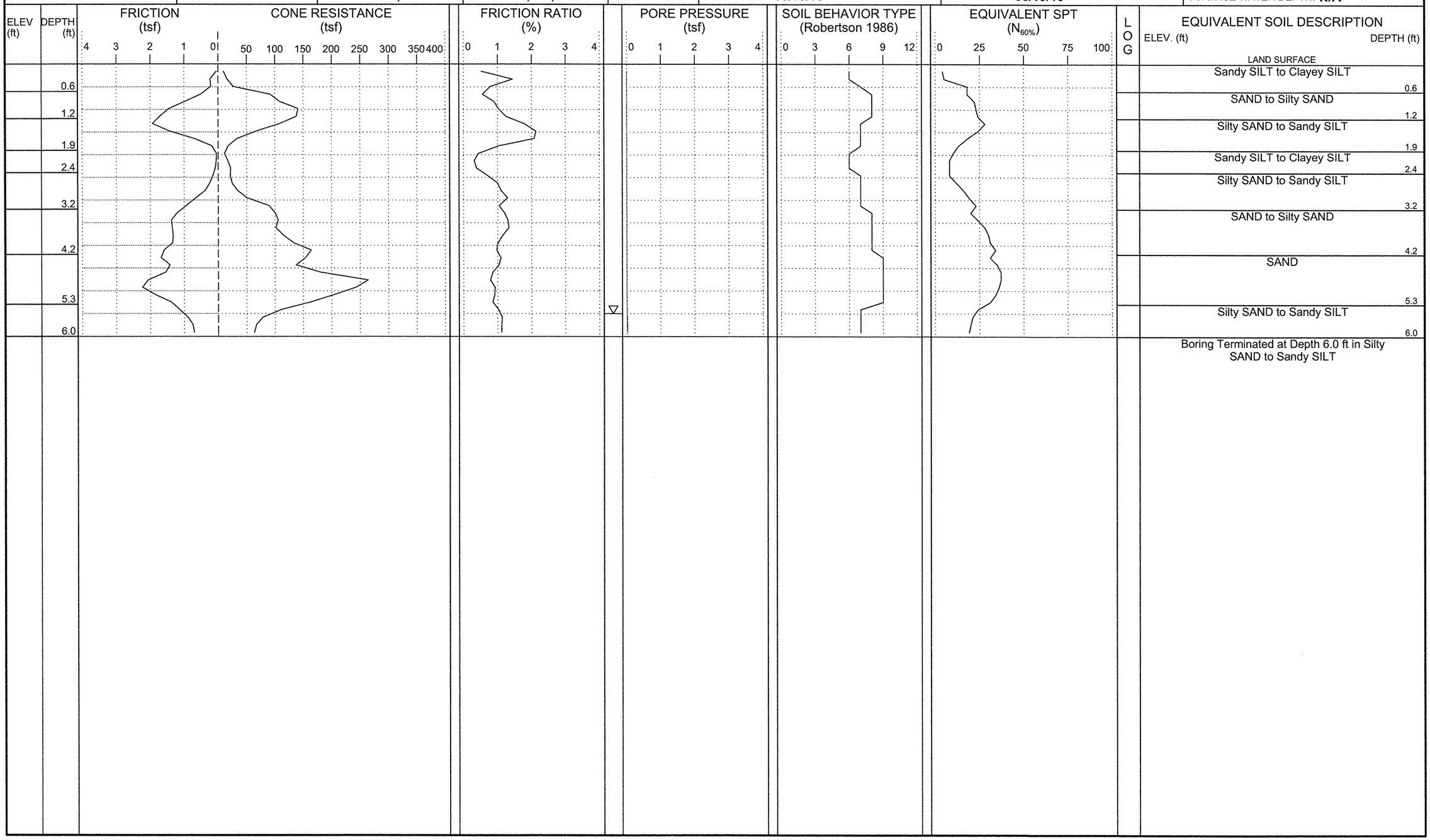
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	41	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y6-12+00**	STATION: **12+00**	OFFSET: **15ft LT**	ALIGNMENT: **-Y6-**	0 HR. **5.5**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **70,290**	EASTING: **2,178,855**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT — 0.6

SAND to Silty SAND — 1.2

Silty SAND to Sandy SILT — 1.9

Sandy SILT to Clayey SILT — 2.4

Silty SAND to Sandy SILT — 3.2

SAND to Silty SAND — 4.2

SAND — 5.3

Silty SAND to Sandy SILT — 6.0

Boring Terminated at Depth 6.0 ft in Silty SAND to Sandy SILT

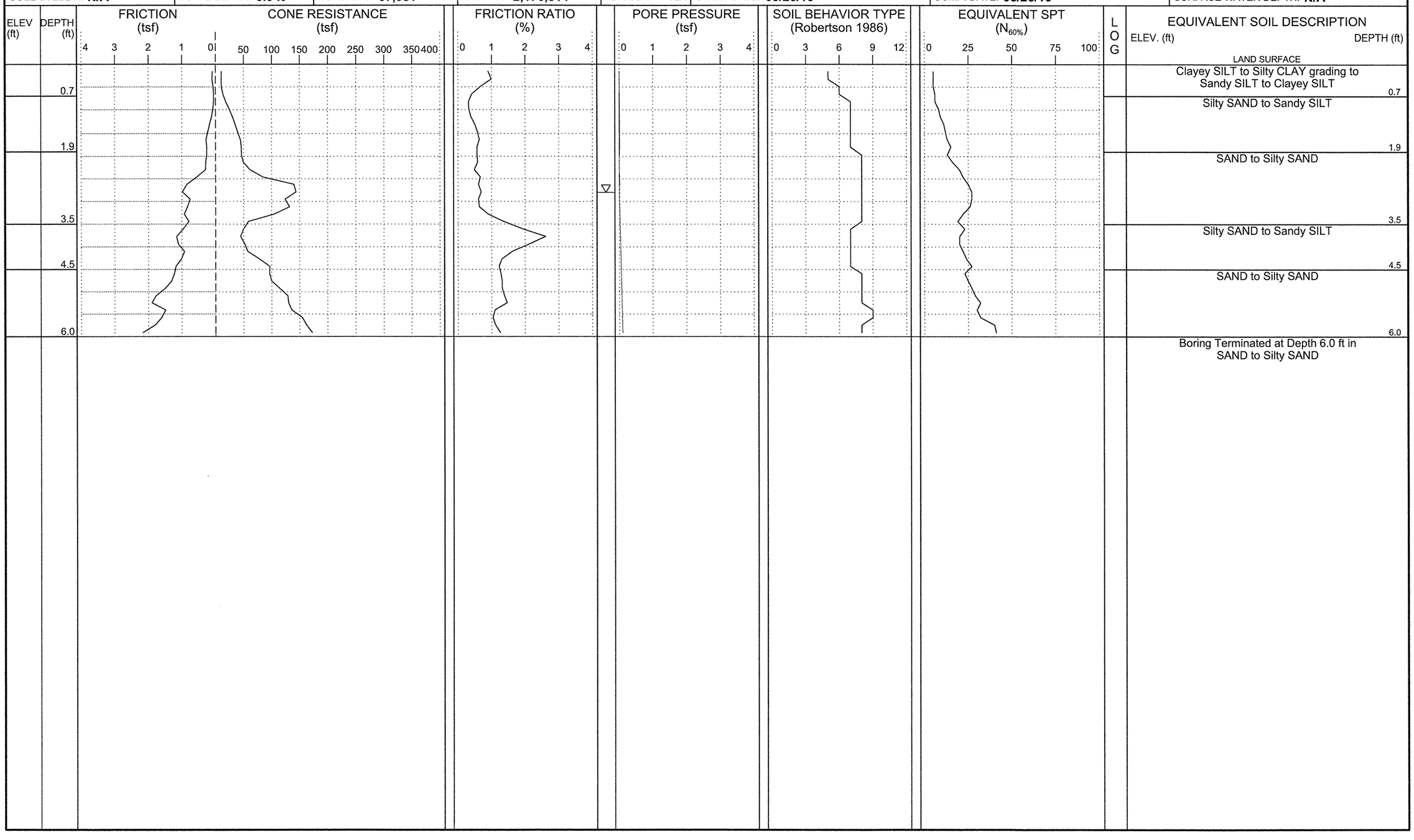
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	42	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **Y9-10+00**	STATION: **10+00**	OFFSET: **0ft CL**	ALIGNMENT: **-Y9-**	0 HR. **2.8**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **67,081**	EASTING: **2,176,614**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



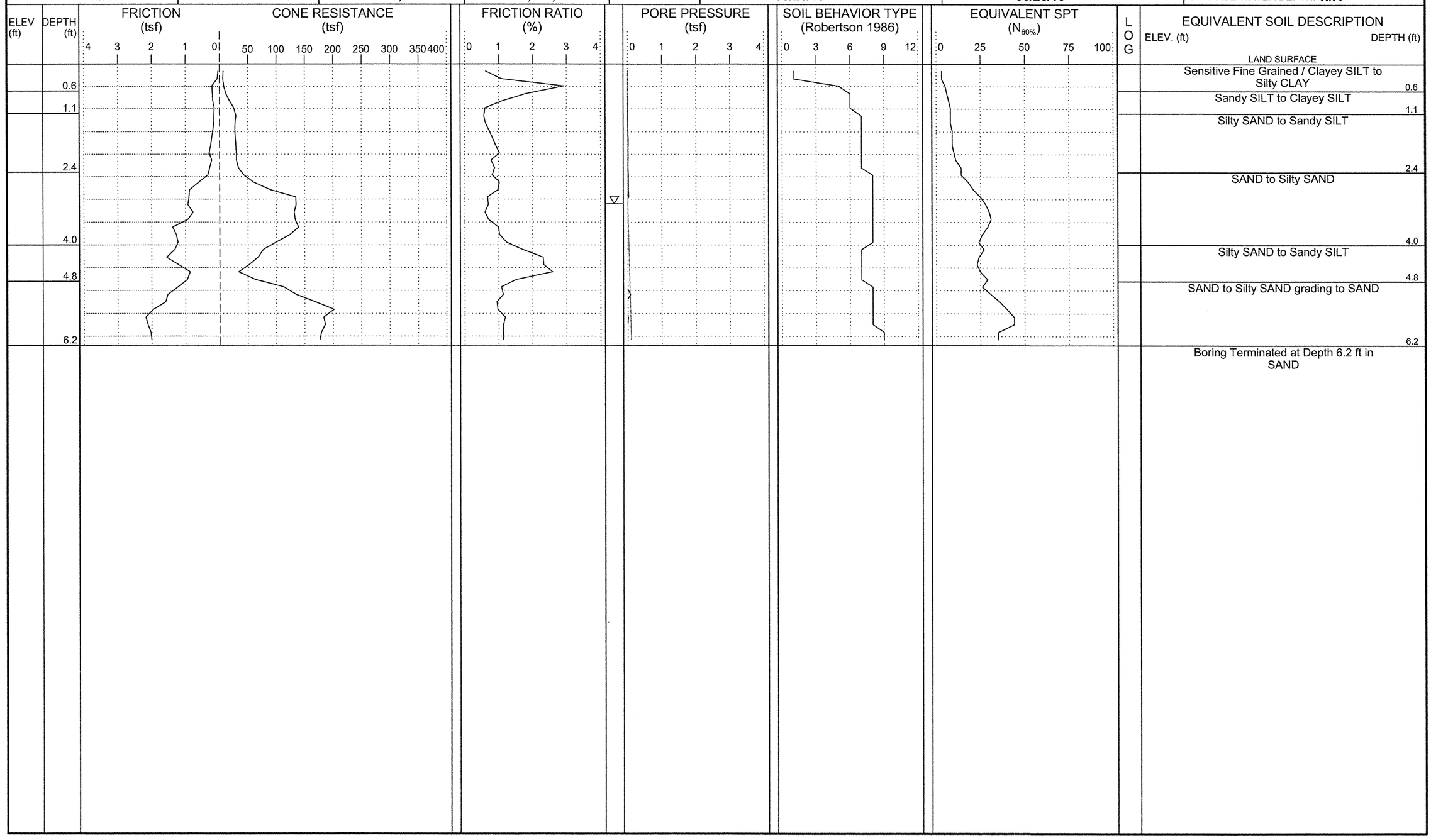
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	43	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **Y9-12+50**	STATION: **12+50**	OFFSET: **0ft CL**	ALIGNMENT: **-Y9-**	0 HR. **3.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.2 ft**	NORTHING: **66,845**	EASTING: **2,176,651**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



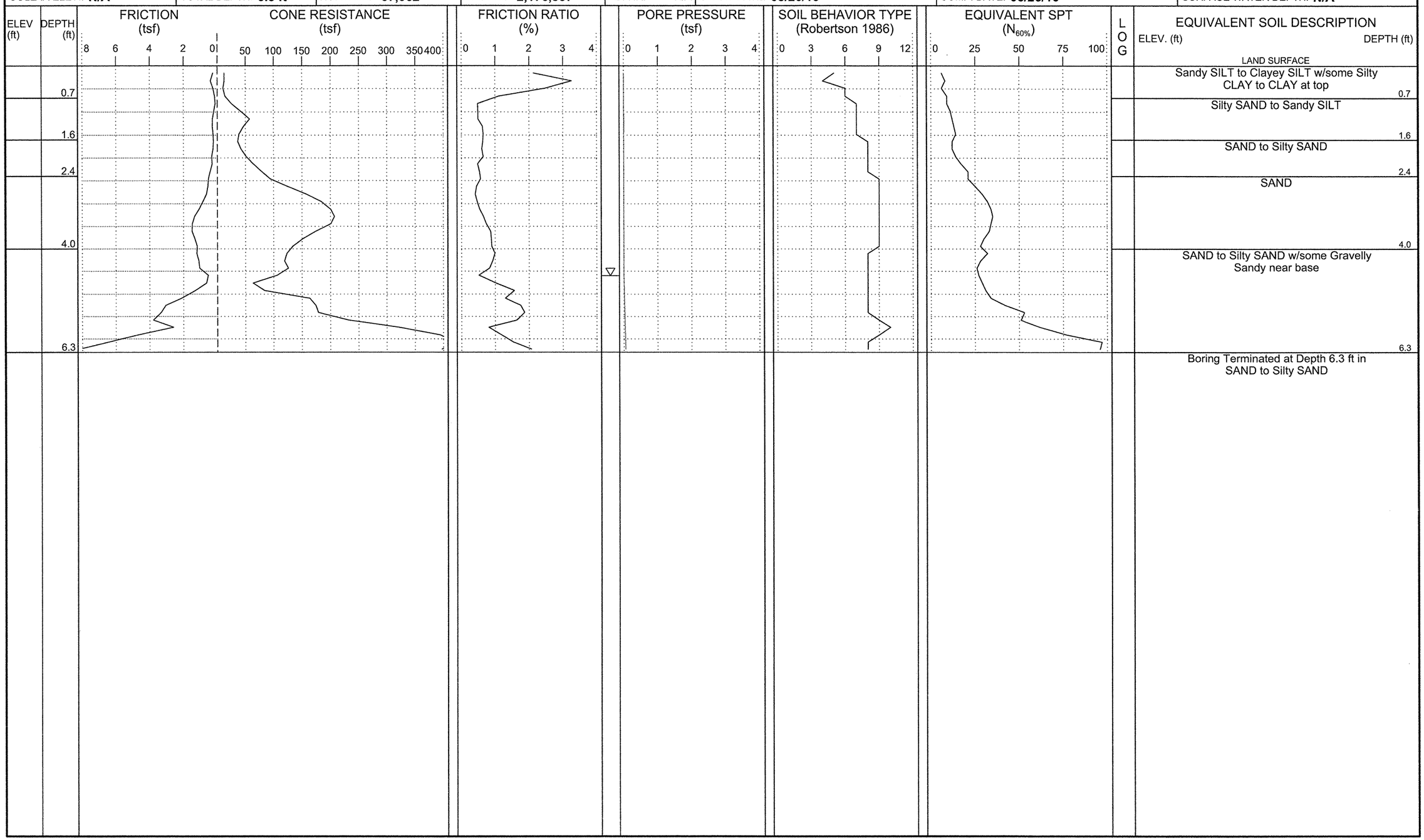
NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	44	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Jeff Stewart**
BORING NO.: **Y9A-12+50**	STATION: **12+50**	OFFSET: **15ft LT**	ALIGNMENT: **-Y9A-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0867**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.3 ft**	NORTHING: **67,062**	EASTING: **2,176,837**	24 HR. **N/A**	START DATE: **05/26/10**	COMP. DATE: **05/26/10**	SURFACE WATER DEPTH: **N/A**



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CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	45	52

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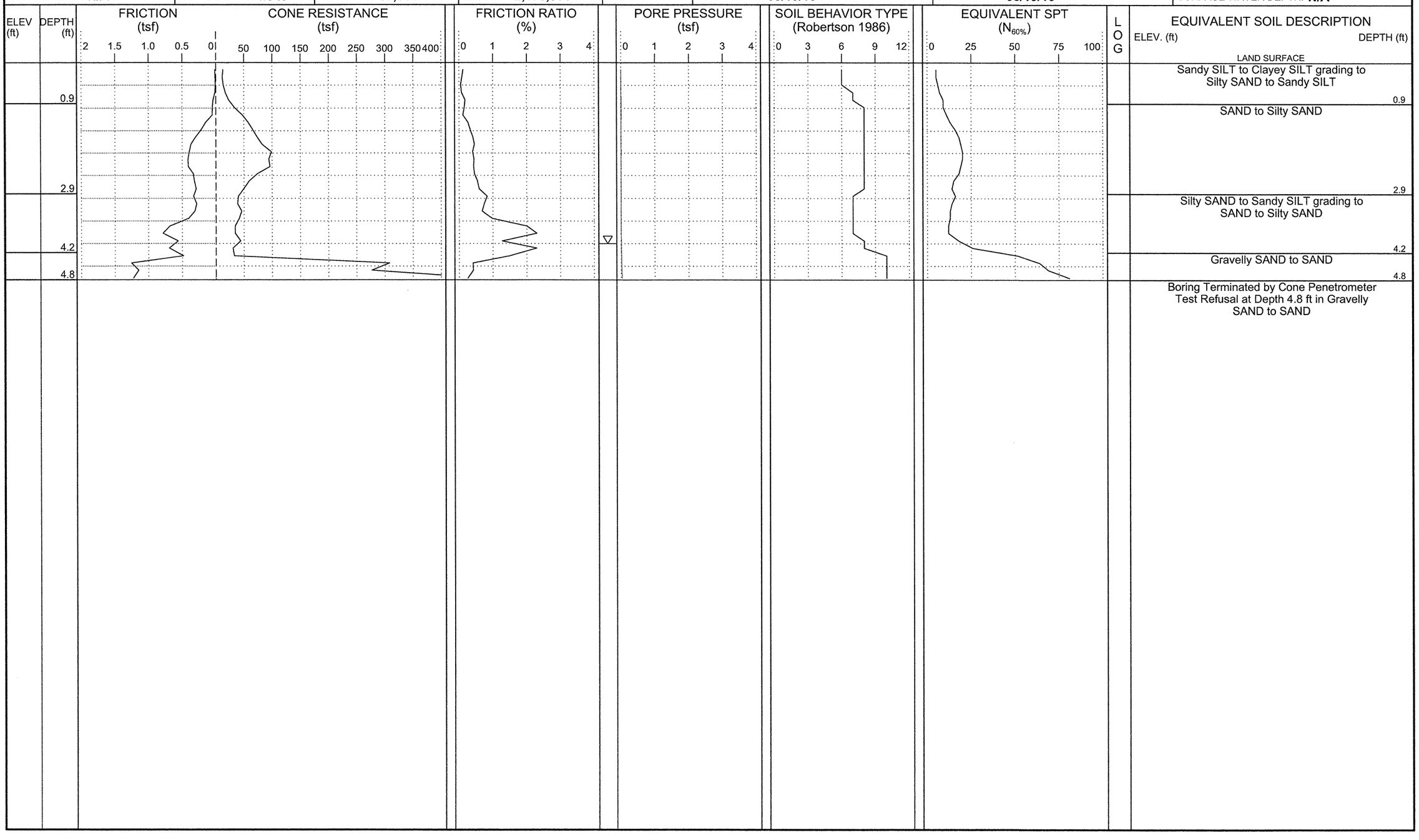
PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y9B-10+40**	STATION: **10+40**	OFFSET: **0ft CL**	ALIGNMENT: **-Y9B-**	0 HR. **4.0**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **4.8 ft**	NORTHING: **67,081**	EASTING: **2,176,614**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



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ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	46	52

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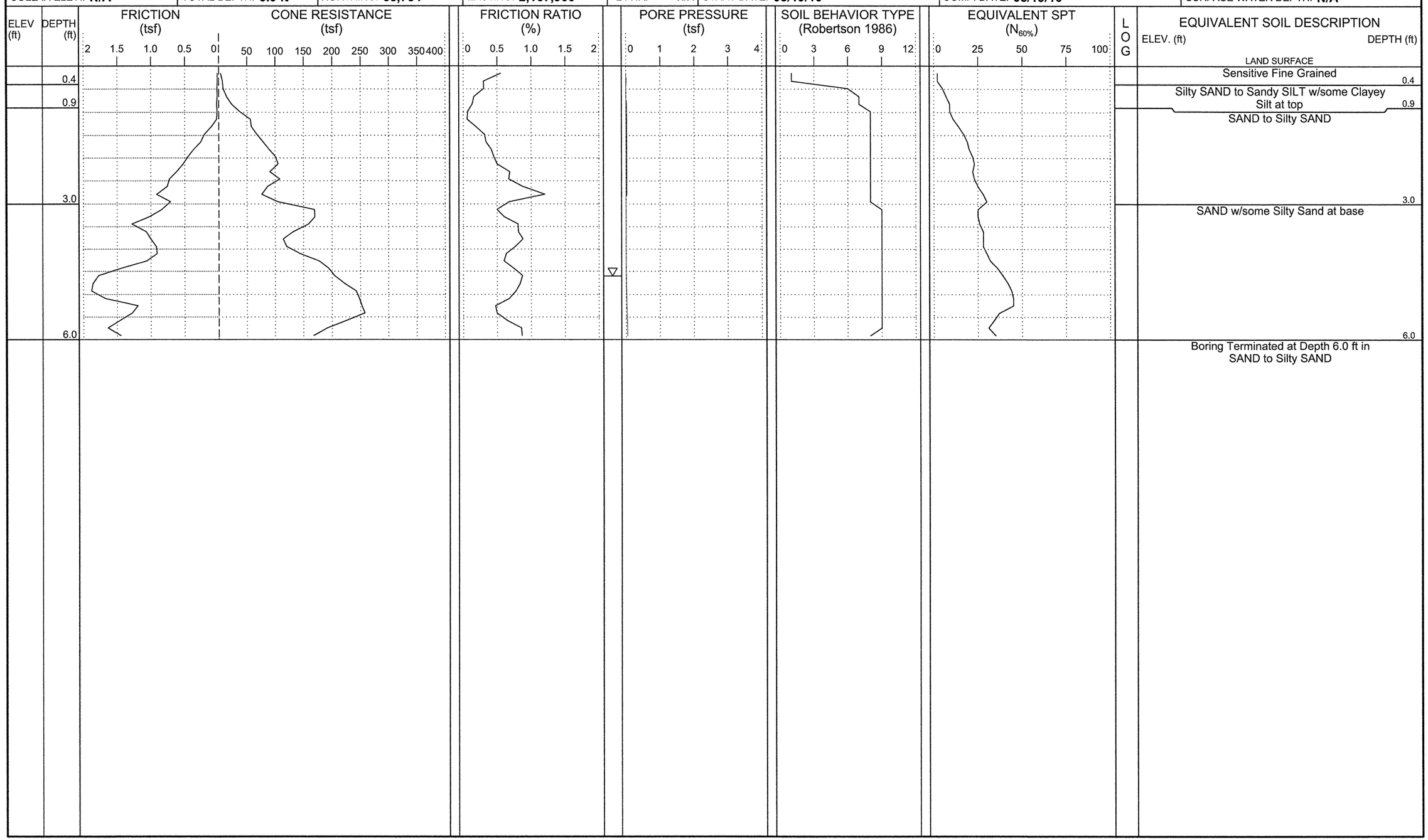
PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y10-21+00**	STATION: **21+00**	OFFSET: **20ft LT**	ALIGNMENT: **-Y10-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,784**	EASTING: **2,167,900**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



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ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	47	52

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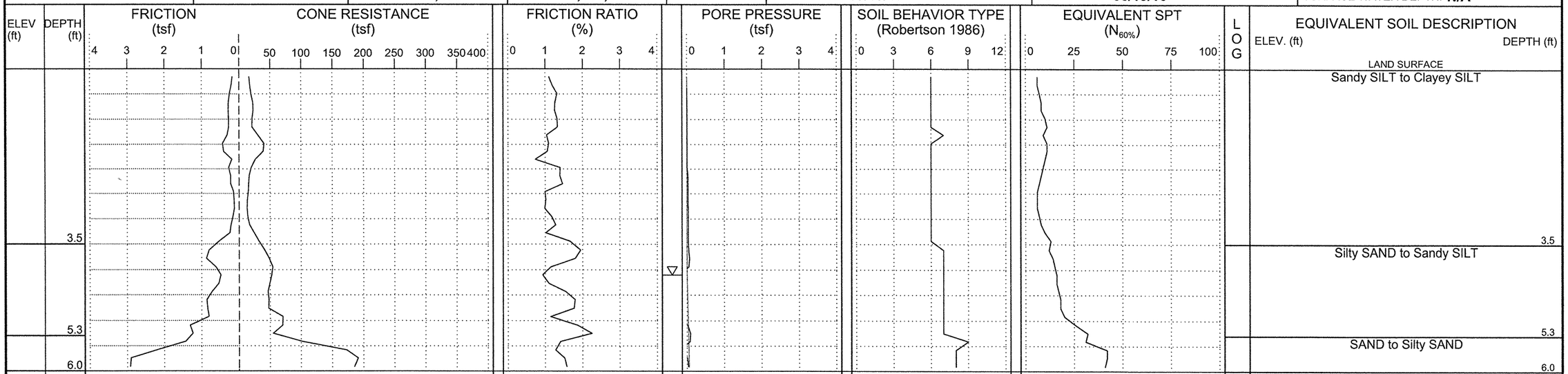
PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y10-23+00**	STATION: **23+00**	OFFSET: **50ft RT**	ALIGNMENT: **-Y10-**	0 HR. **4.1**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,586**	EASTING: **2,167,824**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT

3.5

Silty SAND to Sandy SILT

5.3

SAND to Silty SAND

6.0

Boring Terminated at Depth 6.0 ft in SAND to Silty SAND

NCDOT GEOTECHNICAL ENGINEERING UNIT

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ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	48	52

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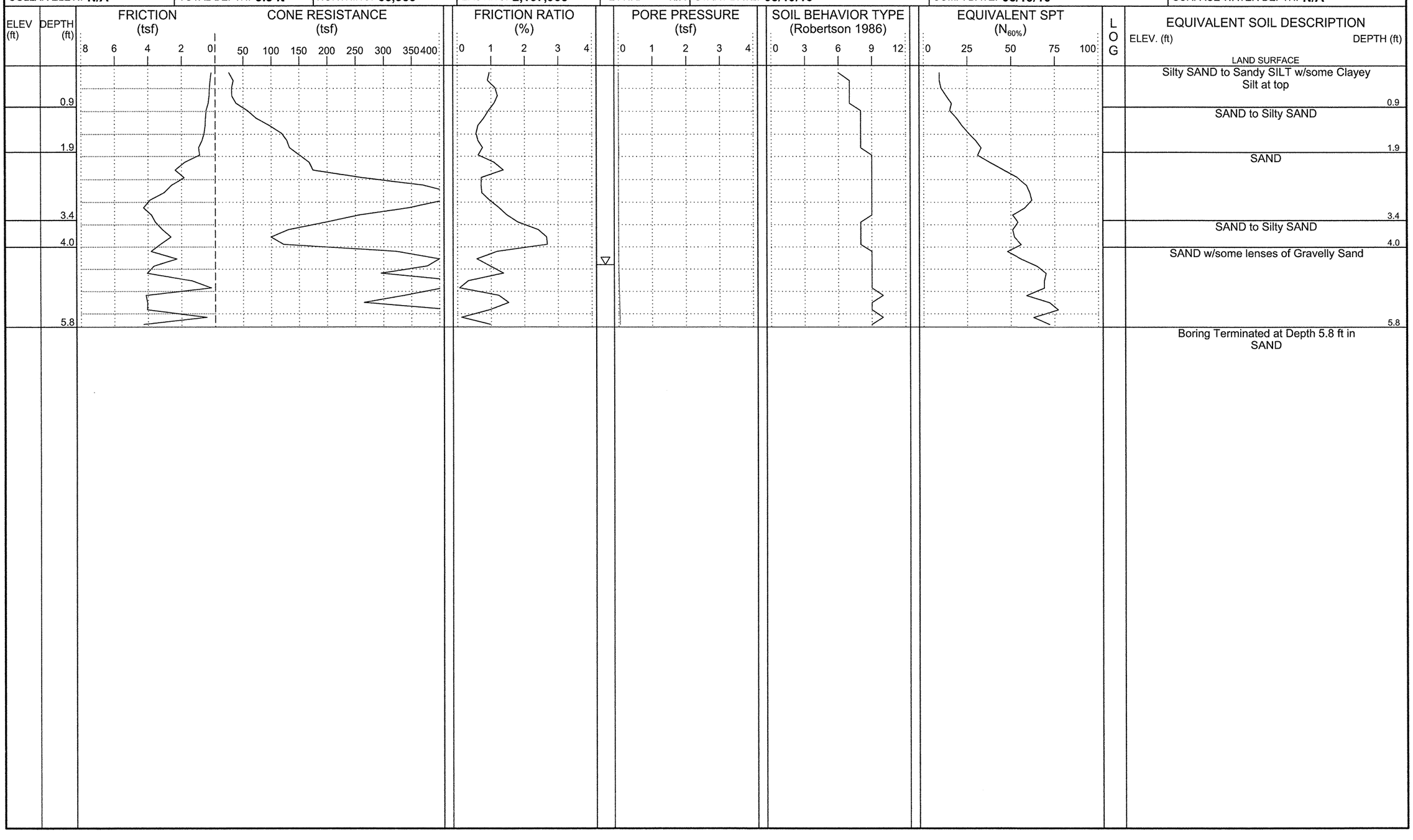
PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y10-25+00**	STATION: **25+00**	OFFSET: **35ft LT**	ALIGNMENT: **-Y10-**	0 HR. **4.4**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **5.8 ft**	NORTHING: **65,383**	EASTING: **2,167,903**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



NCDOT GEOTECHNICAL ENGINEERING UNIT

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ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	49	52

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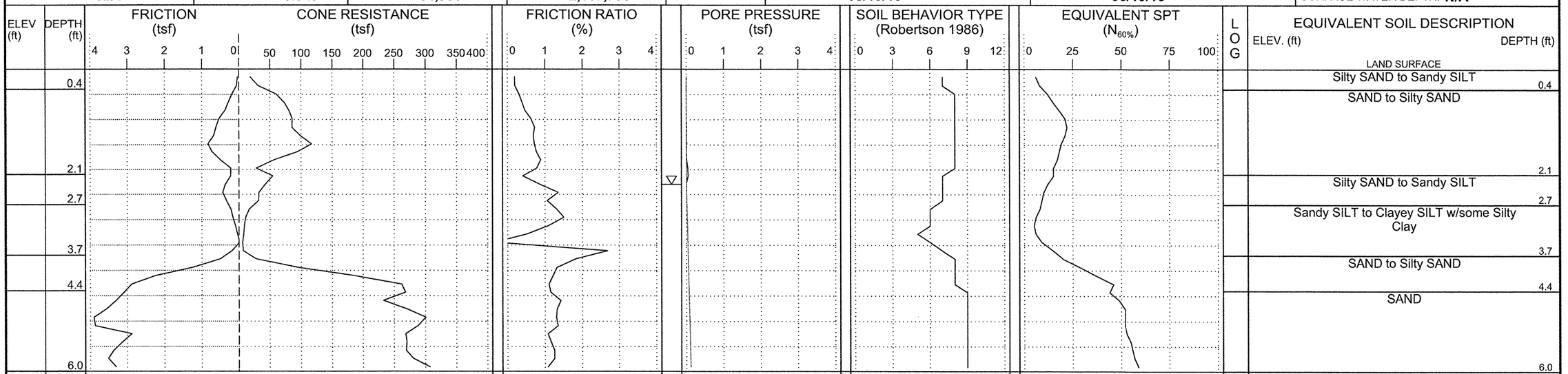
PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y10-29+00**	STATION: **29+00**	OFFSET: **60ft RT**	ALIGNMENT: **-Y10-**	0 HR. **2.3**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **64,986**	EASTING: **2,167,796**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



L O G

EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Silty SAND to Sandy SILT — 0.4

SAND to Silty SAND — 2.1

Silty SAND to Sandy SILT — 2.7

Sandy SILT to Clayey SILT w/some Silty Clay — 3.7

SAND to Silty SAND — 4.4

SAND — 6.0

Boring Terminated at Depth 6.0 ft in SAND

NCDOT GEOTECHNICAL ENGINEERING UNIT

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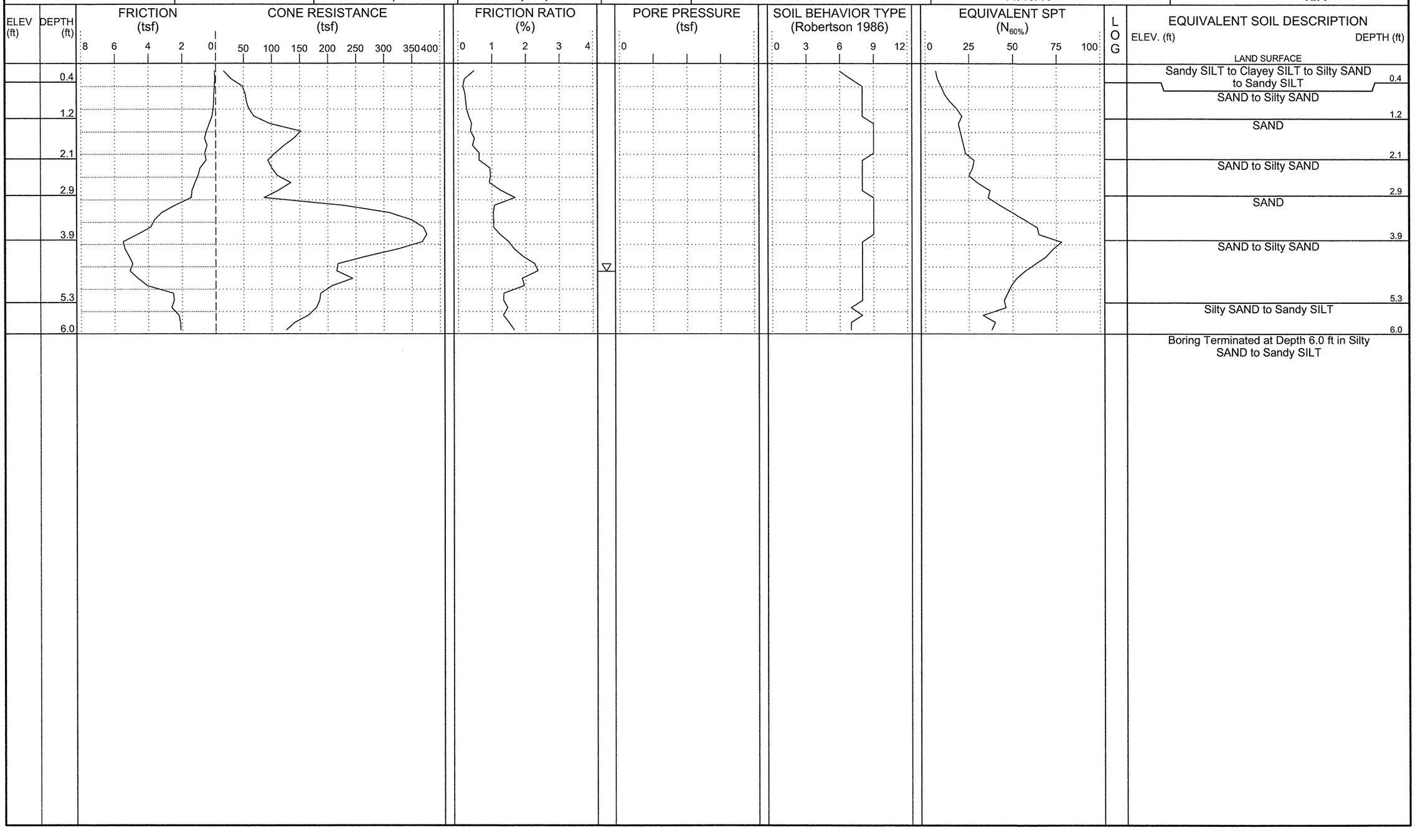
ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	50	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **Y10-31+00**	STATION: **31+00**	OFFSET: **20ft RT**	ALIGNMENT: **-Y10-**	0 HR. **4.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **64,784**	EASTING: **2,167,837**	24 HR. **N/A**	START DATE: **05/19/10**	COMP. DATE: **05/19/10**	SURFACE WATER DEPTH: **N/A**



EQUIVALENT SOIL DESCRIPTION

ELEV. (ft) DEPTH (ft)

LAND SURFACE

Sandy SILT to Clayey SILT to Silty SAND to Sandy SILT — 0.4

SAND to Silty SAND — 1.2

SAND — 2.1

SAND to Silty SAND — 2.9

SAND — 3.9

SAND to Silty SAND — 5.3

Silty SAND to Sandy SILT — 6.0

Boring Terminated at Depth 6.0 ft in Silty SAND to Sandy SILT

NCDOT GEOTECHNICAL ENGINEERING UNIT

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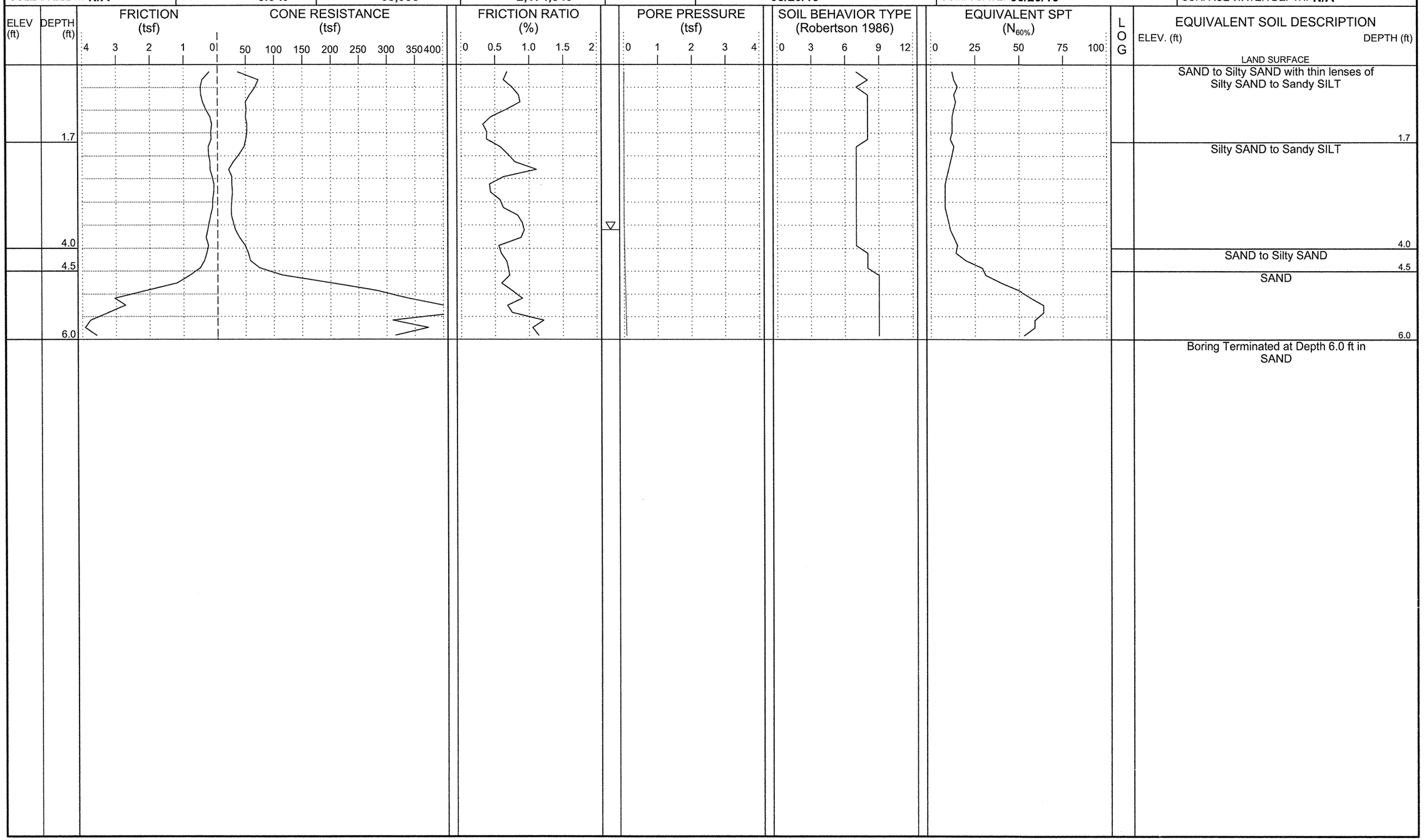
ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	51	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **DR1-10+50**	STATION: **10+50**	OFFSET: **0ft CL**	ALIGNMENT: **-DR1-**	0 HR. **3.6**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,995**	EASTING: **2,174,349**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**



NCDOT GEOTECHNICAL ENGINEERING UNIT

CATLIN Engineers and Scientists

ID	WBS ELEMENT	SHEET NO.	TOTAL SHEETS
R-3432	35501.1.1	52	52

CATLIN #: 210046 PAGE 1 of 1

PROJECT NO.: **35501.1.1**	ID.: **R-3432**	COUNTY: **Brunswick**	GEOLOGIST: **Steven V. Hudson**	DRILL MACHINE: **Hogentogler Track**	MAX. DOWN PRESSURE: **10 Ton**	
SITE DESCRIPTION: **SR 1163 (Old Georgetown Rd. Extension) from SR 1184 (Ocean Isle Bch. Rd.) to NC 179**			GROUND WTR (ft)	DRILL METHOD: **CPT**	CONE TYPE: **1.44 Vertek Piezocone**	DRILLER: **Ronald Stewart**
BORING NO.: **DR2-11+50**	STATION: **11+50**	OFFSET: **0ft CL**	ALIGNMENT: **-DR2-**	0 HR. **3.0**	ROD TYPE: **Pre-strung**	CONE ID: **DSA0866**	TECHNICIAN: **M.A.D.**
COLLAR ELEV.: **N/A**	TOTAL DEPTH: **6.0 ft**	NORTHING: **65,845**	EASTING: **2,174,376**	24 HR. **N/A**	START DATE: **05/20/10**	COMP. DATE: **05/20/10**	SURFACE WATER DEPTH: **N/A**