PROJECT: B-2500A

CONTRACT: C203171

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

CONTENTS

LINE	STATION	PLAN	PROFILE
-L-	3083+00 TO 3207+37	4-14	4-14
-DET-	3076+53 TO 3215+10	15-25	15-25
-XI-	3157+01 TO 3161+57	26	26
-X2-	3179+58 TO 3185+13	27	27
-X3-	3159+00 TO 3163+51	26,28	26,28
-X4-	3178+46 TO 3182+19	27,29	27,29
-X5-	3159+00 TO 3162+37	28	28

CROSS SECTIONS	STATION	SHEET
-L-	3087+00	30
-L-	3090+00	30
-L-	3095+00	31
-L-	3100+00	31
-L-	3105+00	32
-L-	3110+00	32
-L-	3112+50 TO 3116+50	33-37
-L-	3120+00	37
-L-	3125+00	38
-L-	3130+00	38
-L-	3135+50 TO 3136+00	39

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

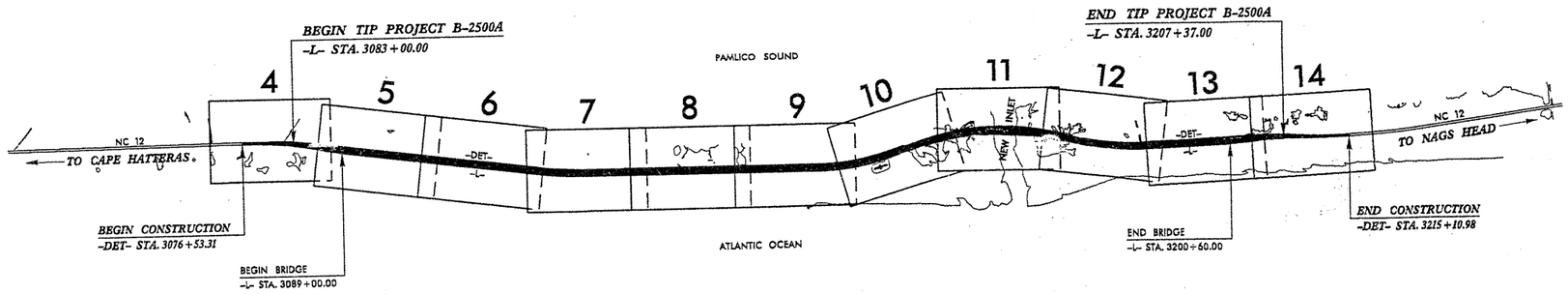
ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 13201.1028025 F.A. PROJ. _____

COUNTY DARE

PROJECT DESCRIPTION NC HWY 12 OVER PEA ISLAND BREACH

INVENTORY



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2500A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32635.1.6		P.E.
32635.2.2	BRNHF-0012(55)	UTIL.
32635.3.6	BRNHF-0012(55)	CONST.

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PERSONNEL

J.R. SWARTLEY

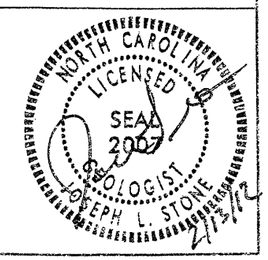
J.M. EDMONDSON

INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE FEBRUARY 2012



DRAWN BY: C.P. TURNER

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PROJECT REFERENCE NO.	SHEET NO.
13201.1028025	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED 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	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 ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>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
- ☐ CME-45C
- ☐ CME-550
- ☐ PORTABLE HOIST
- ☐ _____
- ☐ _____

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

HAMMER TYPE:
- ☐ AUTOMATIC ☐ MANUAL

CORE SIZE:
- ☐ -B_____
- ☐ -N_____
- ☐ -H_____

HAND TOOLS:
- ☐ POST HOLE DIGGER
- ☒ HAND AUGER
- ☐ SOUNDING ROD
- ☐ VANE SHEAR TEST
- ☐ _____

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:

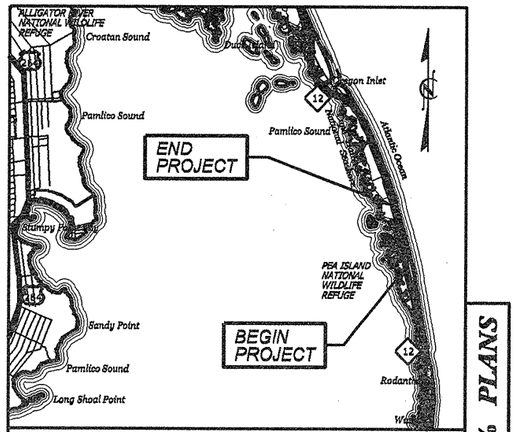
APPROXIMATE LIMIT OF ORGANIC SOILS

REVISED 09/23/09

CONTRACT: PROJECT: NC 12 PEA ISLAND BREACH

90% PLANS
$DATE$

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet



90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	13201.1028025	2A	39

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
13201.1028025		P.E.

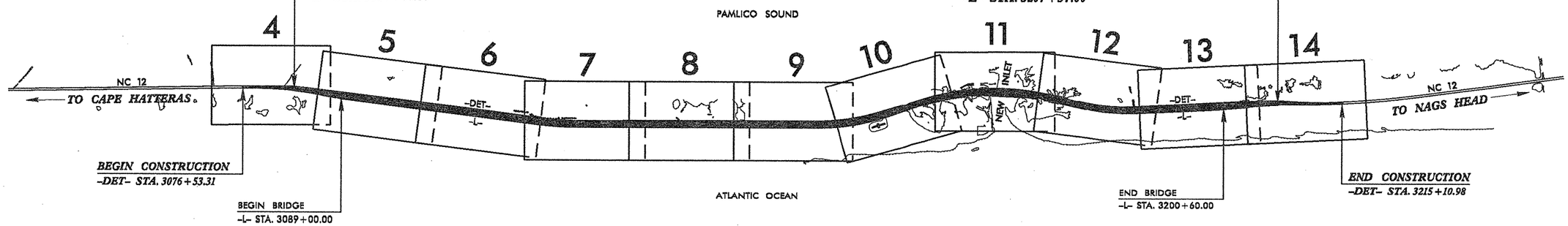
LOCATION: NC HWY 12 OVER PEA ISLAND BREACH

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

NAD 83 / NSRS 2007

BEGIN PROJECT NC 12 PEA ISLAND BREACH
-L- STA. 3083+00.00

END PROJECT NC 12 PEA ISLAND BREACH
-L- STA. 3207+37.00



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 2012 = 7,300
ADT 2032 = 10,900
DHV = N/A
D = N/A
T = 6%
V = 60 MPH
FUNC. CLASSIFICATION: COLLECTOR
T = 1% TTST+5% DUALS REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT = 0.241 MILES

LENGTH OF STRUCTURE TIP PROJECT = 2.114 MILES

TOTAL LENGTH OF TIP PROJECT = 2.355 MILES

NCDOT CONTACT: DOUG TAYLOR, PE
Asst. Unit Head, Roadway Design

PLANS PREPARED FOR THE NCDOT BY:
STV/RALPH WHITEHEAD ASSOCIATES, INC.
1000 West Morehead St., Ste. 200, Charlotte NC, 28208
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: AUGUST 14, 2012

JOHN N. JOHNSON, PE
PROJECT ENGINEER

JOSEPH A. FREEMAN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

February 13, 2012

STATE PROJECT: 13201.1028025
F.A. PROJECT: N/A
COUNTY: Dare
DESCRIPTION: NC 12 over Pea Island Breach

SUBJECT: Geotechnical Inventory Report

Project Description

This project begins along NC 12 approximately 3.5 miles north of Rodanthe in Dare County, and extends northward approximately 2.6 miles. This geotechnical investigation was confined to the areas of proposed construction.

Fieldwork was conducted in January and February of 2012. Hand auger borings were completed at various offsets along the project corridor. 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 and selected cross sections of these alignments are included in this report.

Line	Station(±)
-L-	3083+00 to 3207+37
-DET-	3076+53 to 3215+10
-X1-	3157+01 to 3161+57
-X2-	3179+58 to 3185+13
-X3-	3159+00 to 3163+51
-X4-	3178+46 to 3182+19
-X5-	3159+00 to 3162+37

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

TELEPHONE: 919-707-6850
FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

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

Areas of Special Geotechnical Interest

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

2) The following section contains organic soils associated with marsh deposits found within the project area. These soils have the potential to cause embankment/subgrade and or slope stability problems during construction.

Line	Station(±)
-DET-	3112+85 to 3116+23

3) The following section contains organic soils found within an existing ditch running parallel to NC 12. These soils have the potential to cause embankment/subgrade and or slope stability problems during construction.

Line	Station(±)
-DET-	3087+27 to 3135+70

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 -8± below sea level in the channel of New Inlet to 7± feet above sea level.

Surficial soils in this area are generally classified as undivided coastal plain sediments.

Ground Water

Ground water data was collected in January and February of 2012, during a time of normal precipitation. Ground water elevations ranged from sea level to 4± feet above sea level.

Soils

Soils encountered within this project area have been divided into two categories, undivided coastal plain soils, and roadway embankment.

Soils classified as undivided coastal plain are comprised of 6 or more feet of loose to dense sand (A-3), and less than 1 foot of soft brown muck.

Roadway embankment was encountered along NC 12. It is comprised of up to 8± feet of dense sand (A-3).

Respectfully Submitted,

Joseph L. Stone, L.G.
Project Engineering Geologist

PROJECT: **B-2500A** COUNTY: **Dare**

Volumes in Cubic Yards

DATE: **1/16/13** COMPILED BY: **STV**

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +30%		ROCK	SUITABLE	UNSUIT.	TOTAL
Temporary Widening															
-DET- 3113+00.00	-DET- 3121+93.40	75				75	46		46	60			15		15
-DET- 3144+93.40	-DET- 3158+27.42	163				163	309		309	402	239				
-DET- 3160+34.57	-DET- 3162+86.51	21				21	23		23	30	9				
-DET- 3184+25.56	-DET- 3195+16.97	258				258	19		19	25			233		233
	SUBTOTAL	517				517	397		397	517	248		248		248
Temporary Detour															
-DET- 3076+53.31	-DET- 3106+53.31	27				27	4,004		4,004	5,206	5,179				
-DET- 3106+53.31	-DET- 3136+46.71	133		52	50	83	2,703		2,703	3,514	3,431			102	102
-DET- 3136+46.71	-DET- 3166+34.87	387				387	2,287		2,287	2,974	2,587				
-DET- 3166+34.87	-DET- 3169+12.70 Begin Bridge	29				29	187		187	244	215				
-X1- 3157+01.57	-X1- 3161+57.48	91				91	109		109	142	51				
	SUBTOTAL	667		52	50	617	9,290		9,290	12,080	11,463			102	102
Temporary Detour															
-DET- 3175+74.74 End Bridge	-DET- 3205+68.69	937				937	1,436		1,436	1,867	930				
-DET- 3205+68.69	-DET- 3214+79.47	444				444	240		240	312			132		132
-X2- 3179+58.32	-X2- 3185+13.93	143				143	277		277	361	218				
	SUBTOTAL	1,524				1,524	1,953		1,953	2,540	1,148		132		132
Cross Over															
-X3- 3159+00.00	-X3- 3163+51.20	225				225	214		214	279	54				
-X4- 3178+46.41	-X4- 3182+19.84	245				245	108		108	141			104		104
	SUBTOTAL	470				470	322		322	420	54		104		104
Cross Over															
-X5- 3159+00.00	-X5- 3162+41.31	176				176	53		53	69			107		107
	SUBTOTAL	176				176	53		53	69			107		107
Permanent Road															
-L- 3083+00.00	-L- 3089+00.00 Begin Bridge	28				28	2,340		2,340	3,042	3,014				
	SUBTOTAL	28				28	2,340		2,340	3,042	3,014				
Permanent Road															
-L- 3200+60.00 End Bridge	-L- 3207+37.00	7				7	2,685		2,685	3,491	3,484				
	SUBTOTAL	7				7	2,685		2,685	3,491	3,484				
	SHEET TOTAL	3,389		52	50	3,339	17,040		17,040	22,159	19,411		591	102	693

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.

Volumes in Cubic Yards

PROJECT: **B-2500A** COUNTY: **Dare** DATE: **1/16/13** COMPILED BY: **STV** **SHEET 2 OF 3 SHEETS**

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +30%		ROCK	SUITABLE	UNSUIT.	TOTAL
Temporary Widening Removal															
-DET- 3113+00.00	-DET- 3121+93.40	60				60	58		58	75	15				
-DET- 3144+93.40	-DET- 3158+27.42	402				402	125		125	163			239		239
-DET- 3160+34.57	-DET- 3162+86.51	30				30	16		16	21			9		9
-DET- 3184+25.56	-DET- 3195+16.97	25				25	198		198	258	233				
	SUBTOTAL	517				517	398		398	517	248		248		248
Temporary Detour Removal															
-DET- 3076+53.31	-DET- 3106+53.31	5,206				5,206	21		21	27			5,179		5,179
-DET- 3106+53.31	-DET- 3136+46.71	3,514				3,514	64		64	83			3,431		3,431
-DET- 3136+46.71	-DET- 3166+34.87	2,974				2,974	298		298	387			2,587		2,587
-DET- 3166+34.87	-DET- 3169+12.70 Begin Bridge	244				244	22		22	29			215		215
-X1- 3157+01.57	-X1- 3161+57.48	142				142	70		70	91			51		51
	SUBTOTAL	12,080				12,080	475		475	617			11,463		11,463
Temporary Detour Removal															
-DET- 3175+74.74 End Bridge	-DET- 3205+68.69	1,867				1,867	721		721	937			930		930
-DET- 3205+68.69	-DET- 3214+79.47	312				312	342		342	444	132				
-X2- 3179+58.32	-X2- 3185+13.93	361				361	110		110	143			218		218
	SUBTOTAL	2,540				2,540	1,172		1,172	1,524	132		1,148		1,148
Cross Over Removal															
-X3- 3159+00.00	-X3- 3163+51.20	279				279	173		173	225			54		54
-X4- 3178+46.41	-X4- 3182+19.84	141				141	188		188	245	104				
	SUBTOTAL	420				420	362		362	470	104		54		54
Cross Over															
-X5- 3159+00.00	-X5- 3162+41.31	69				69	135		135	176	107				
	SUBTOTAL	69				69	135		135	176	107				
	SHEET TOTAL	15,626				15,626	2,542		2,542	3,304	591		12,913		12,913

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.

3.D

Volumes in Cubic Yards

PROJECT: **B-2500A** COUNTY: Dare DATE: **1/16/13** COMPILED BY: **STV** **SHEET 3 OF 3 SHEETS**

STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
		TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. +30%		ROCK	SUITABLE	UNSUIT.	TOTAL
	TOTAL FROM SHEET 1	3,389		52	50	3,339	17,040		17,040	22,159	19,411		591	102	693
	TOTAL FROM SHEET 2	15,626				15,626	2,542		2,542	3,304	591		12,913		12,913
TOTAL		19,015		52	50	18,965	19,582		19,582	25,463	20,002		13,504	102	13,606
MATERIAL FOR SHOULDER CONSTRUCTION							1,362		1,362	1,771	1,771				
LOSS DUE TO CLEARING & GRUBBING															
ADDITIONAL UNDERCUT				2,600			2,600		2,600	3,380	3,380			2,600	2,600
ROCK WASTE TO REPLACE BORROW															
ADJUST FOR ROCK WASTE															
WASTE IN LIEU OF BORROW											-1,182		-1,182		-1,182
PROJECT TOTAL		19,015		2,652	50	18,965	23,544		23,544	30,614	23,971		12,322	2,702	15,024
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT											1,199				
GRAND TOTAL		19,015		2,652	50	18,965	23,544		23,544	30,614	25,170		12,322	2,702	15,024
SAY		19,100									25,200				

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.

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
1320IJ028025	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 / NSRS 2007

-L- PC Sta. 3075+66.74
-DET- POT Sta. 3075+66.74

BEGIN CONSTRUCTION
-L- POC STA. 3076+56.17

UNITED STATES OF AMERICA

BEGIN PROJECT NC 12 PEA ISLAND BREACH
-L- POC STA. 3083+00.00

PCC Sta. 3081+82.30

PCC Sta. 3086+37.31

N 13° 01' 28.7" W

30' BST

18" CMP

NC 12

-DET-

-L-

EXIST R/W

MATCHLINE -L- STA 3087+00 (SHEET 5)

SEE SHEET 2-D FOR DETOUR

UNITED STATES OF AMERICA

-L- CURVE DATA

PI Sta 3078+78.75	PI Sta 3084+12.54	PI Sta 3087+67.38
Δ = 5° 26' 37.2" (RT)	Δ = 6° 26' 45.1" (RT)	Δ = 3° 43' 29.5" (LT)
D = 0° 52' 53.3"	D = 1° 25' 56.6"	D = 1° 25' 56.6"
L = 617.56'	L = 450.01'	L = 260.04'
T = 309.01'	T = 225.24'	T = 130.07'
R = 6,500.00'	R = 4,000.00'	R = 4,000.00'
	e = 4.0%	e = 4.0%
	RUNOFF = 107.00'	RUNOFF = 107.00'

-L-

BEGIN PROJECT NC 12 PEA ISLAND BREACH
-L- STA. 3083+00.00
ELEV = 2.59'

PROPOSED GRADE
8' RT

8' RT

EXISTING GROUND

02/12

LOOSE TO DENSE GRAY SAND, MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3074 3075 3076 3077 3078 3079 3080 3081 3082 3083 3084 3085 3086 3087

$FILE$

$DATE$

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
I320IJ028025	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -L- STA 3087+00 (SHEET 4)

MATCHLINE -L- STA 3100+00 (SHEET 6)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

BEGIN APPROACH SLAB
-L- Sta. 3088+76.00

PROPOSED RETAINING WALL & CONC BARRIER

+00.00
74.22'

BEGIN RETAINING WALL & CONC BARRIER
-L- Sta. 3087+50.00

EXIST R/W

PT Sta. 3086+97.35

+30.90'

BEGIN BRIDGE
-L- Sta. 3089+00.00

+00.00
78.00'

+00.00
74.90'

3095

-DET-

WLB

6'M

T FO

30' BST

NC 12

N 8° 51' 36.0" W

12'

20'

8' PS

88.46

26@9"A
TYP.

B-77

EXIST R/W

BEGIN RETAINING WALL & CONC BARRIER
-L- Sta. 3087+50.00

+50.00
33.74' & 38.74'

PROPOSED RETAINING WALL & CONC BARRIER

-L- CURVE DATA

PI Sta 3087+67.38
Δ = 3° 43' 29.5" (LT)
D = 1° 25' 56.6"
L = 260.04'
T = 130.07'
R = 4,000.00'
e = 4.0%
RUNOFF = 107.00'

SEE SHEET 2-E FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

BEGIN BRIDGE
-L- STA. 3089+00.00

8' RT

02/12

EXISTING GROUND

LOOSE TO DENSE, GRAY SAND, MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3087 3088 3089 3090 3091 3092 3093 3094 3095 3096 3097 3098 3099 3100

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 NSRS 2007

MATCHLINE -L- STA 3100+00 (SHEET 5)

MATCHLINE -L- STA 3113+00 (SHEET 7)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

3105

3110

APPROXIMATE LIMIT OF ORGANIC SOILS

EXIST R/W

-DET-

30' BST

N 4°51'36.0" W

NC 12

20'

20'

26.67% TYP.

SEE SHEET 2-F FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50 40 30 20 10 0 -10 -20 -30

3100 3101 3102 3103 3104 3105 3106 3107 3108 3109 3110 3111 3112 3113

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 / NSRS 2007

MATCHLINE -L- STA 3113+00 (SHEET 6)

MATCHLINE -L- STA 3126+00 (SHEET 8)

PC Sta. 3113+06.16

+06.16
74.00'

PT Sta. 3119+19.04

+19.07
74.00'

APPROXIMATE LIMIT OF ORGANIC SOILS

UNITED STATES OF AMERICA

3115

3120

3125

-DET-

30' BST

NC 12

N 12° 07' 54.6" W

EXIST. R/W

26.67' TYP.

-L- CURVE DATA

PI Sta 3116+13.01
Δ = 7° 16' 18.6" (LT)
D = 1° 11' 11.4"
L = 612.89'
T = 306.85'
R = 4,829.00'
e = 3.0%
RUNOFF = 80'

UNITED STATES OF AMERICA

SEE SHEET 2-G FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50
40
30
20
10
0
-10
-20
-30

3113 3114 3115 3116 3117 3118 3119 3120 3121 3122 3123 3124 3125 3126

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201028025	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 / NSRS 2007

MATCHLINE -L- STA 3126+00 (SHEET 7)

MATCHLINE -L- STA 3139+00 (SHEET 9)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

3150

3135

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

BST

DET

24" CMP

30' BST

N 12° 07' 54.6" W

NC 12

20'

20'

20'

20'

SEE SHEET 2-H FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50
40
30
20
10
0
-10
-20
-30

3126 3127 3128 3129 3130 3131 3132 3133 3134 3135 3136 3137 3138 3139

$FILE$

$DATE$

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

-L- CURVE DATA

PI Sta 3153+71.98
Δ = 21°01'55.2" (LT)
D = 1.59°/120'
L = 1058.65'
T = 535.35'
R = 2,884.00'
e = 4.5%
RUNOFF = 120.00'

NAD 83 NSRS 2007

MATCHLINE -L- STA 3139+00 (SHEET 8)

MATCHLINE -L- STA 3152+00 (SHEET 10)

UNITED STATES OF AMERICA

3140 3145 3150

PC Sta. 3148+36.63

R=5,729.62
74.00'

-DET-

T-FO

30' BST

N 12°07'54.6"W

NC 12

EXIST R/W

10.5' 12' 11' 10' 11' 12' 10.5'

20'

UNITED STATES OF AMERICA

10+53.20

26.67'
11.93'

SEE SHEET 2-I FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50 40 30 20 10 0 -10 -20 -30

3139 3140 3141 3142 3143 3144 3145 3146 3147 3148 3149 3150 3151 3152

$FILE$

$DATE$

-L- CURVE DATA	
PI Sta 3153+71.98	PI Sta 3170+92.51
Δ = 21° 01' 55.2" (LT)	Δ = 38° 18' 45.6" (RT)
D = 1° 59' 12.0"	D = 1° 59' 12.0"
L = 1,058.65'	L = 1,928.48'
T = 535.35'	T = 1,001.85'
R = 2,884.00'	R = 2,884.00'
e = 4.5%	e = 4.5%
RUNOFF = 120.00'	RUNOFF = 120.00'

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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201028025	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -L- STA 3152+00 (SHEET 9)

MATCHLINE -L- STA 3165+00 (SHEET 11)

PT Sta. 3158+95.28

PC Sta. 3160+90.66

3155

3160

UNITED STATES OF AMERICA

+00.00
72.93' & 77.94'
+20.56
74.00'

+00.00
62.48' & 67.49'

+36.70
54.51'

+50.00
44.62' & 49.63'

-DET-

EXIST R/W

FIBER OPTICS SPLICE BOX

T FO

30' BST

NC 12

N 33°09'49.8" W

+05.00
36.95' & 41.96'

+85.31

26.67'
TYP.

+31.69
55.37'

BST

CURB

CURB

UNITED STATES OF AMERICA

SEE SHEET 2-J FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

315500

EXISTING GROUND

50
40
30
20
10
0
-10
-20
-30

3152 3153 3154 3155 3156 3157 3158 3159 3160 3161 3162 3163 3164 3165

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
1320IJ028025	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-L- CURVE DATA

PI Sta 3170+92.51
Δ = 38° 18' 45.6" (RT)
D = 1° 59' 12.0"
L = 1,928.48'
T = 1,001.85'
R = 2,884.00'
e = 4.5%
RUNOFF = 120.00'

NAD 83 NSRS 2007

MATCHLINE -L- STA 3165+00 (SHEET 10)

MATCHLINE -L- STA 3178+00 (SHEET 12)

UNITED STATES OF AMERICA

NEW INLET

-L-
NC 12

-DET-

CONC

30' BST

ABOVE GRD TANK

ISBKD

3170

3175

+30.00
70.41' & 75.41'

+00.00
66.64' & 71.64'

SEE SHEET 2-K FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50
40
30
20
10
0
-10
-20
-30

3165 3166 3167 3168 3169 3170 3171 3172 3173 3174 3175 3176 3177 3178

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

-L- CURVE DATA	
PI Sta 3110+92.51	PI Sta 3185+28.08
Δ = 38° 18' 45.6" (RT)	Δ = 20° 00' 57.9" (LT)
D = 1° 59' 12.0"	D = 1° 59' 12.0"
L = 1,928.48'	L = 1,007.52'
T = 1,001.85'	T = 508.94'
R = 2,884.00'	R = 2,884.00'
e = 4.5%	e = 4.5%
RUNOFF = 120.00'	RUNOFF = 120.00'

NAD 83 NSRS 2007

MATCHLINE -L- STA 3178+00 (SHEET 11)

MATCHLINE -L- STA 3191+00 (SHEET 13)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

3180 PRC Sta. 3180+19.19

3185

3190 PT Sta. 3190+26.65

-L- NC 12

-DET-

FIBER OPTICS SPLICE BOX

30' BST

EXIST R/W

GATE

+53.13 70.19'

+90.00 42.22'

+00.00 65.48'

+75.00 68.83'

+25.00 60.02'

+19.67 50.09'

+50.00 42.78' & 47.73'

+50.00 69.45' & 74.45'

+72.58 78.51'

+25.00 79.00' & 84.00'

26.67' TYP.

SEE SHEET 2-L FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

50 40 30 20 10 0 -10 -20 -30

3178 3179 3180 3181 3182 3183 3184 3185 3186 3187 3188 3189 3190 3191

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
I320IJ028025	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
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Charlotte, NC 28208
NC License Number F-0991

-L- CURVE DATA	
PI Sta 3202+47.89	PI Sta 3205+64.56
Δ = 3° 28' 37.9" (LT)	Δ = 5° 35' 28.7" (RT)
D = 1° 25' 56.6"	D = 1° 25' 56.6"
L = 242.75'	L = 390.35'
T = 121.41'	T = 195.33'
R = 4,000.00'	R = 4,000.00'
e = 4.0%	e = 4.0%
RUNOFF = 107.00'	RUNOFF = 107.00'

NAD 83 / NSRS 2007

MATCHLINE -L- STA 3191+00 (SHEET 12)

MATCHLINE -L- STA 3204+00 (SHEET 14)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

3195

3200

+00.00
84.00'

+50.00
74.00'

EXIST R/W

-DET-

END APPROACH SLAB
-L- Sta. 3200+84.00

END BRIDGE
-L- Sta. 3200+60.00

PC Sta. 3201+26.48

PROPOSED RETAINING WALL & CONC BARRIER

END RETAINING WALL & CONC BARRIER
-L- Sta. 3202+50.00

PRC Sta. 3203+69.23

+56.10
67.52'

26.67' TYP.

T FO

30' BST

N 14° 52' 02.1" W

NC 12

+33.32

+55.36

+52.29

+80.23

+50.00
32.92' & 37.93'

+80.00
39.11' & 44.12'

+49.86
42.30'

SEE SHEET 2-M FOR DETOUR

-L-

PROPOSED GRADE

BRIDGE

EXISTING GROUND

END BRIDGE
-L- STA. 3200+60.00

30' RT

27' RT

LOOSE TO DENSE GRAY SAND, MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

50
40
30
20
10
0
-10
-20
-30

3191 3192 3193 3194 3195 3196 3197 3198 3199 3200 3201 3202 3203 3204

$FILE$

$DATE$

STV/ Ralph Whitehead Associates, Inc.
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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
1320IJ028025	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -L- STA 3204+00 (SHEET 13)

3205 +00.00 59.94' & 64.94'

PCC Sta. 3207+59.58

+75.00 59.78'

PRC Sta. 3209+31.00

+00.00 49.95'

3210

UNITED STATES OF AMERICA

3215

END CONSTRUCTION
-L- POC STA. 3215+42.66

-L- POC Sta. 3217+78.27 =
-DET- POC Sta. 3217+46.73

EXIST R/W

-DET-

-L-
NC 12

T FO

30' BST

26.67' TYP.

4' PS

+28.00

26.67' TYP.

EXIST R/W

END PROJECT NC 12 PEA ISLAND BREACH
-L- POC STA. 3207+37.00

UNITED STATES OF AMERICA

EXIST R/W

-L- CURVE DATA

PI Sta 3205+64.56	PI Sta 3208+45.29	PI Sta 3217+33.43
Δ = 5° 35' 28.7" (RT)	Δ = 0° 51' 25.3" (RT)	Δ = 8° 00' 38.4" (LT)
D = 1° 25' 56.6"	D = 0° 29' 59.9"	D = 0° 29' 59.9"
L = 390.35'	L = 171.42'	L = 1,602.25'
T = 195.33'	T = 85.71'	T = 802.43'
R = 4,000.00'	R = 11,460.00'	R = 11,460.00'
e = 4.0%		
RUNOFF = 107.00'		

SEE SHEET 2-N FOR DETOUR

-L-

50 40 30 20 10 0 -10 -20 -30

END PROJECT NC 12 PEA ISLAND BREACH
-L- STA. 3207+37.00
ELEV = 4.65'

27' RT

37' LT

PROPOSED GRADE

02/12

02/12

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

3204 3205 3206 3207 3208 3209 3210 3211 3212 3213 3214 3215 3216 3217

$FILE$

$DATE$

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD: 83 NSRS 2007

-DET- POT Sta. 3075+66.74
-L- PC Sta. 3075+69.74

UNITED STATES OF AMERICA

3080

PC Sta. 3081+07.65

+00.00
49.58' & 54.58'

21.3' TYP.

PCC Sta. 3083+49.11

24.3' TYP.

PT Sta. 3084+91.35

3085

+89.35
58.69'

+00.00
63.60'

-DET-

-L- NC 12

N 13° 01' 28.7" W

30' BST

18" CMP

EXIST R/W

BEGIN DETOUR CONSTRUCTION
-DET- POT STA. 3076+33.31

UNITED STATES OF AMERICA

BEGIN TEMP. CONC BARRIER
-DET- Sta. 3082+00.00, 14.00' RT

TEMP. CONCRETE BARRIER

N 4° 51' 36.0" W

STA 3087+00

+00.00
41.76' & 46.76'

MATCHLINE -DET- STA 3087+00 (SHEET 2-E)

SEE SHEET 4 FOR PLAN

-DET- CURVE DATA

PI Sta 3082+28.53	PI Sta 3084+20.23
Δ = 6°55' 02.6" (RT)	Δ = 1°14' 50.1" (RT)
D = 2°51' 53.2"	D = 0°52' 36.8"
L = 241.46'	L = 142.24'
T = 120.88'	T = 71.12'
R = 2,000.00'	R = 6,534.00'
e = 4.0%	e = 2.5%
RUNOFF = 85.20'	RUNOFF = 53.25'

-DET-

BEGIN GRADE
-DET- STA. 3079+44.56
ELEV = 2.83'

PROPOSED GRADE

13' LT

8' RT

8' RT

02/12

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3074 3075 3076 3077 3078 3079 3080 3081 3082 3083 3084 3085 3086 3087

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201.1028025	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NC License Number F-0991

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3087+00 (SHEET 2-D)

MATCHLINE -DET- STA 3100+00 (SHEET 2-F)

UNITED STATES OF AMERICA

-DET-

N 4° 51' 30.0" W

TEMP. CONCRETE BARRIER

30' BST

NC 12

EXIST R/W

+00.00
74.22'

+00.00
79.00'

+00.00
74.00'

+50.00
33.74' & 38.74'

8' PS

1' PS

SEE SHEET 5 FOR PLAN

-DET-

Ⓐ SOFT BROWN MUCK, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

8' RT 7' RT 24' RT 7' RT 6' RT

PROPOSED GRADE

EXISTING GROUND

LOOSE TO DENSE GRAY, SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

50 40 30 20 10 0 -10 -20 -30

3087 3088 3089 3090 3091 3092 3093 3094 3095 3096 3097 3098 3099 3100

$FILE$

$DATE$

STV/ Ralph Whitehead Associates, Inc.
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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -DET- 3100+00 (SHEET 2-E)

MATCHLINE -DET- STA 3113+00 (SHEET 2-G)

UNITED STATES OF AMERICA

3105

3110

APPROXIMATE LIMIT OF ORGANIC SOILS

-DET-

-L- STA 3107+00.00

30' BST

TEMP. CONCRETE BARRIER

NC 12

EXIST R/W

100.00'

8' PS

UNITED STATES OF AMERICA

SEE SHEET 6 FOR PLAN

-DET-

Ⓐ SOFT BROWN MUCK, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

4' RT

PROPOSED GRADE

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

02/12

02/12

50 40 30 20 10 0 -10 -20 -30

3100 3101 3102 3103 3104 3105 3106 3107 3108 3109 3110 3111 3112 3113

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
1320IJ028025	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 / NSRS 2007

MATCHLINE -DET- STA 3113+00 (SHEET 2-F)

MATCHLINE -DET- STA 3126+00 (SHEET 2-H)

PC Sta. 3113+06.16

PT Sta. 3119+12.45

UNITED STATES OF AMERICA

APPROXIMATE LIMIT OF ORGANIC SOILS

-DET-

N 12° 07' 54" E

30' BST

TEMP. CONCRETE BARRIER

NC 12

EXIST R/W

8' PS

100.00'

74.00'

+19.07

+29.65

21.3' TYP.

3115

3120

3125

-DET- CURVE DATA

PI Sta 3116+09.71
Δ = 7° 16' 18.6" (LT)
D = 1° 11' 57.9"
L = 606.29'
T = 303.55'
R = 4777.00'
e = 2.5%
RUNOFF = 53.25'

UNITED STATES OF AMERICA

SEE SHEET 7 FOR PLAN

-DET-

Ⓐ SOFT BROWN MUCK, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

PROPOSED GRADE

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

50 40 30 20 10 0 -10 -20 -30

3113 3114 3115 3116 3117 3118 3119 3120 3121 3122 3123 3124 3125 3126

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3126+00 (SHEET 2-G)

MATCHLINE -DET- STA 3139+00 (SHEET 2-I)

UNITED STATES OF AMERICA

3130

3135

213' TYP.

+1065

BST

-DET-

N 12° 07' 46" W

8' PS

100.00'

EXIST R/W

30' BST

TEMP. CONCRETE BARRIER

NC 12

UNITED STATES OF AMERICA

SEE SHEET 8 FOR PLAN

-DET-

Ⓐ SOFT BROWN MUCK, MOIST TO WET (UNDIVIDED COASTAL PLAIN)

PROPOSED GRADE

4' RT 3' LT

02/12

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3126 3127 3128 3129 3130 3131 3132 3133 3134 3135 3136 3137 3138 3139

$FILE$

$DATE$

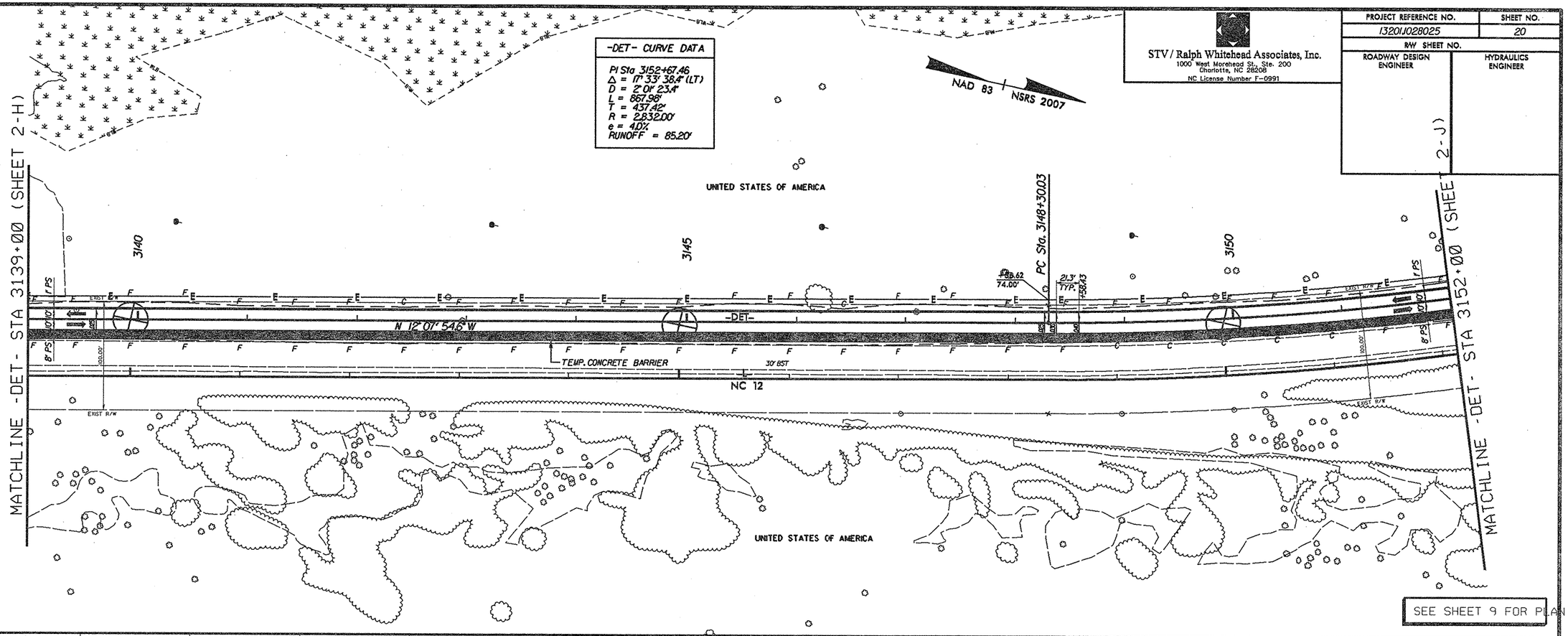
PROJECT REFERENCE NO.	SHEET NO.
13201J028025	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

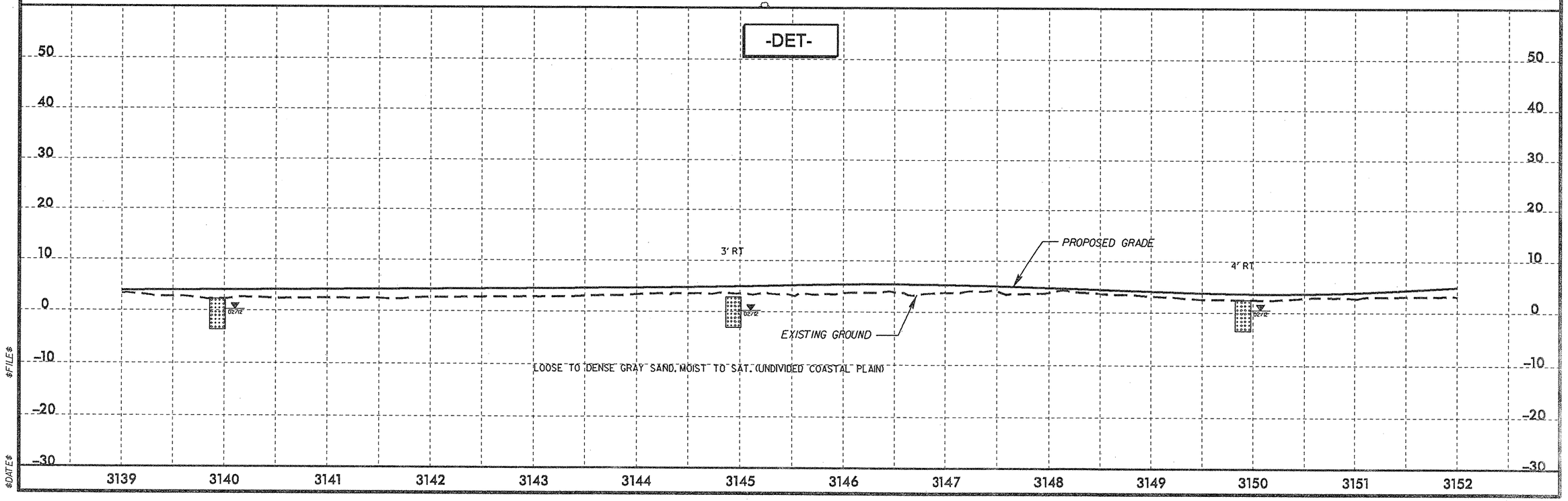
STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

-DET- CURVE DATA

PI Sta 3152+67.46
Δ = 17° 33' 38.4" (LT)
D = 2° 01' 23.4"
L = 867.98'
T = 437.42'
R = 2,832.00'
e = 4.0%
RUNOFF = 85.20'

NAD 83 / NSRS 2007





-DET- CURVE DATA			
PI Sta 3152+67.46	PI Sta 3159+66.56	PI Sta 3160+95.24	PI Sta 3164+05.24
Δ = 11° 33' 38.4" (LT)	Δ = 29° 49' 07.5" (RT)	Δ = 29° 12' 15.4" (LT)	Δ = 8° 44' 28.2" (RT)
D = 2° 01' 23.4"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 1° 46' 04.2"
L = 867.98'	L = 130.11'	L = 127.43'	L = 494.45'
T = 437.42'	T = 66.56'	T = 65.13'	T = 247.7'
R = 2,832.00'	R = 250.00'	R = 250.00'	R = 3,241.00'
e = 4.0%	e = 4.0%	e = 4.0%	e = 2.5%
RUNOFF = 85.20'	RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 39.33'

-XI- CURVE DATA		
PI Sta 3157+68.03	PI Sta 3158+97.93	PI Sta 3161+40.11
Δ = 29° 46' 20.5" (RT)	Δ = 29° 46' 19.7" (LT)	Δ = 0° 36' 51.5" (RT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 1° 46' 04.2"
L = 129.91'	L = 129.91'	L = 34.75'
T = 66.46'	T = 66.45'	T = 17.37'
R = 250.00'	R = 250.00'	R = 3,241.00'
e = 4.0%	e = 4.0%	e = 2.5%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 39.33'

STV / Ralph Whitehead Associates, Inc.
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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3152+00 (SHEET 2-I)

MATCHLINE -DET- STA 3165+00 (SHEET 2-K)

-DET- N 29° 41' 33.0" W

-XI- N 29° 41' 38.3" W

PC Sta. 3156+98.02

PT Sta. 3156+98.02

PC Sta. 3159+00.00

PRC Sta. 3160+30.11

PRC Sta. 3161+57.54

PC Sta. 3157+01.57

PRC Sta. 3159+31.48

PT Sta. 3159+61.38

PC Sta. 3161+22.83

PT Sta. 3161+57.48

3155

3160

NC 12

BEGIN TEMP. CONC BARRIER -DET- Sta. 3159+95.13, 141.90' LT

BEGIN SHORING -XI- Sta. 3159+18.00

TEMP. CONCRETE BARRIER

TEMP. SHORING

FIBER OPTICS SPLICE BOX

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

+00.00 72.93' & 77.94'

+20.56 74.00'

+00.00 62.48' & 67.49'

+36.70 54.51'

+50.00 44.62' & 49.63'

+05.00 36.95' & 41.96'

+35.00 55.37' & 60.48'

213' TYP.

157.3' TYP.

185.84'

473.78'

103.33'

8" PS

18" PS

30" BST

EXIST R/W

SEE SHEET 10 FOR PLAN

-DET-

PROPOSED GRADE

EXISTING GROUND

6' LT

29' RT

7' RT

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

50 40 30 20 10 0 -10 -20 -30

3152 3153 3154 3155 3156 3157 3158 3159 3160 3161 3162 3163 3164 3165

$FILE$

$DATE$

-DET- CURVE DATA				
PI Sta 3164+05.24	PI Sta 3167+22.57	PI Sta 3168+61.99	PI Sta 3176+62.23	PI Sta 3178+10.07
Δ = 6° 44' 28.2" (RT)	Δ = 8° 29' 52.9" (LT)	Δ = 19° 36' 02.3" (RT)	Δ = 16° 21' 34.5" (RT)	Δ = 6° 57' 10.3" (LT)
D = 1° 45' 04.2"	D = 6° 01' 52.5"	D = 14° 19' 26.2"	D = 14° 19' 26.2"	D = 3° 49' 11.0"
L = 494.45'	L = 140.90'	L = 136.84'	L = 114.21'	L = 182.03'
T = 247.71'	T = 70.58'	T = 69.09'	T = 57.50'	T = 91.12'
R = 3,241.00'	R = 950.00'	R = 400.00'	R = 400.00'	R = 1,500.00'
e = 2.5%	e = 3.0%	e = 4.0%	e = 4.0%	e = 2.5%
RUNOFF = 39.33'	RUNOFF = 47.19'	RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 39.33'

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201028025	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3165+00 (SHEET 2-J)

MATCHLINE -DET- STA 3178+00 (SHEET 2-L)

UNITED STATES OF AMERICA

NEW INLET

TEMP. CONCRETE BARRIER

NC 12

-DET- N 9° 14' 03.7" W

END TEMP. CONC BARRIER
-DET- Sta. 3169+35.90, 14.00' LT & RT

BEGIN TEMP. CONC BARRIER
-DET- Sta. 3176+01.28, 14.00' LT & RT

TEMP. SHORING
+00.00
70.68' & 76.41'

END SHORING
(TIE TO EXIST SHORING)
-DET- Sta. 3168+29.59

BEGIN SHORING
(TIE TO EXIST SHORING)
-DET- Sta. 3176+86.57

TEMP. SHORING
+00.00
66.64' & 71.64'

PRC Sta. 3166+51.89

PRC Sta. 3167+92.83

PT Sta. 3169+29.73

PC Sta. 3176+01.73

PRC Sta. 3177+18.54

ISBKD

157.3' TYP.

30' BST

145.0'

100.00'

6" PS

SOIL

T FO

SEE SHEET 11 FOR PLAN

-DET-

Ⓐ DENSE GRAY SAND, MOIST (ROADWAY EMBANKMENT)

8' RT

5' RT

PROPOSED GRADE

EXIST BRIDGE

50' LT

3' RT

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

50
40
30
20
10
0
-10
-20
-30

3165 3166 3167 3168 3169 3170 3171 3172 3173 3174 3175 3176 3177 3178

$FILE$

$DATE$

-DET- CURVE DATA			
PI Sta 3178+10.07	PI Sta 3180+24.82	PI Sta 3181+53.90	PI Sta 3185+80.79
Δ = 6° 57' 10.3" (LT)	Δ = 29° 47' 20.0" (LT)	Δ = 29° 24' 17.8" (RT)	Δ = 14° 39' 21.0" (LT)
D = 3° 49' 11.0"	D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 2° 01' 23.4"
L = 182.03'	L = 129.98'	L = 128.30'	L = 724.40'
T = 91.12'	T = 66.49'	T = 65.60'	T = 364.19'
R = 1,500.00'	R = 250.00'	R = 250.00'	R = 2,832.00'
e = 2.5%	e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 39.33'	RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 85.20'

-X2- CURVE DATA	
PI Sta 3183+22.26	PI Sta 3184+55.07
Δ = 33° 49' 43.7" (LT)	Δ = 27° 31' 22.1" (RT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 147.61'	L = 120.09'
T = 76.02'	T = 61.23'
R = 250.00'	R = 250.00'
e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'

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1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3178+00 (SHEET 2-K)

MATCHLINE -DET- STA 3191+00 (SHEET 2-M)

PT Sta. 3179+09.97

PRC Sta. 3180+88.30

END TEMP. CONC. BARRIER -DET- Sta. 3181+22.93, 14.00' LT

PRC Sta. 3182+86.60

UNITED STATES OF AMERICA

PT Sta. 3189+41.01

+90.00 42.22'

+00.00 65.48'

+75.00 68.83'

+25.00 60.02'

+50.00 69.45' & 74.45'

+72.58 78.61'

+25.00 79.00' & 84.00'

TEMP. CONCRETE BARRIER

15.73' TYP.

21.3' TYP.

FIBER OPTICS SPLICE BOX

-DET-

N 10° 10' 21" E

N 14° 52' 02" W

30' BST

NC 12

TEMP. CONCRETE BARRIER

+53.13 70.19'

TEMP. SHORING

PC Sta. 3179+58.92

+19.67 80.09'

15.73' TYP.

+50.00 42.78' & 47.78'

END SHORING -X2- Sta. 3182+90.00

PRC Sta. 3183+93.84

PT Sta. 3185+15.93

UNITED STATES OF AMERICA

SEE SHEET 12 FOR PLAN

-DET-

4' RT

8' RT

64' RT

PROPOSED GRADE

1' LT

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

EXISTING GROUND

50 40 30 20 10 0 -10 -20 -30

3178 3179 3180 3181 3182 3183 3184 3185 3186 3187 3188 3189 3190 3191

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

NAD 83 / NSRS 2007

MATCHLINE -DET- STA 3191+00 (SHEET 2-L)

MATCHLINE -DET- STA 3204+00 (SHEET 2-N)

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

3195

3200

+00.00
84.00'

+50.00
74.00'

PC Sta. 3203+19.07

+56.10
67.52'

-DET-

N 14° 52' 02" W

TEMP. CONCRETE BARRIER

30' BST

NC 12

EXIST R/W

100.00'

+50.00
32.92' & 37.93'

+80.00
39.11' & 44.12'

+49.86
42.30'

-DET- CURVE DATA

PI Sta 3204+79.61
Δ = 1° 36' 02.2" (RT)
D = 0° 29' 54.7"
L = 321.07'
T = 160.55'
R = 11,493.00'
e = 2.5%
RUNOFF = 53.25'

SEE SHEET 13 FOR PLAN

-DET-

PROPOSED GRADE

30' RT

27' RT

EXISTING GROUND

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

02/12

50
40
30
20
10
0
-10
-20
-30

3191 3192 3193 3194 3195 3196 3197 3198 3199 3200 3201 3202 3203 3204

$FILE$

$DATE$

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201.028025	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

MATCHLINE -DET- STA 3204+00 (SHEET 2-M)

3205 3210 3215

PCC Sta. 3206+40.14

PRC Sta. 3208+14.34

UNITED STATES OF AMERICA

+00.00 59.94' & 64.94'

21.5' TYP.

+40.74

21.3' TYP.

+28.14

+75.00 59.78'

+00.00 49.95'

-DET- PCC Sta. 3217+46.73 =
-L- POC Sta. 3217+78.27

EXIST R/W

-DET-

-L-

NC 12

TEMP. CONCRETE BARRIER

END TEMP. CONC BARRIER
-DET- Sta. 3207+15.00, 14.00' RT

T FO

30' BST

UNITED STATES OF AMERICA

END DETOUR CONSTRUCTION
-DET- POC STA. 3215+10.98

SEE SHEET 14 FOR PLAN

-DET- CURVE DATA

PI Sta 3204+79.61	PI Sta 3207+27.30	PI Sta 3212+81.27	PI Sta 3221+24.35
Δ = 1° 36' 02.2" (RT)	Δ = 4° 59' 26.2" (RT)	Δ = 1° 51' 22.1" (LT)	Δ = 3° 46' 28.5" (LT)
D = 0° 29' 54.7"	D = 2° 51' 53.2"	D = 0° 50' 33.3"	D = 0° 29' 59.9"
L = 321.07'	L = 174.21'	L = 932.39'	L = 754.97'
T = 160.55'	T = 87.16'	T = 466.92'	T = 377.62'
R = 11,493.00'	R = 2,000.00'	R = 6,800.00'	R = 11,460.00'
e = 2.5%	e = 4.0%	e = 2.5%	e = 2.5%
RUNOFF = 53.25'	RUNOFF = 85.20'	RUNOFF = 53.25'	RUNOFF = 53.25'

-DET-

END GRADE
-DET- STA. 3211+31.22
ELEV = 4.49'

1' RT

PROPOSED GRADE

19' LT

23' LT

02/12

LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

EXISTING GROUND

50 40 30 20 10 0 -10 -20 -30

3204 3205 3206 3207 3208 3209 3210 3211 3212 3213 3214 3215 3216 3217

$FILE$

$DATE$

-X1- CURVE DATA		
PI Sta 3157+68.03	PI Sta 3158+97.93	PI Sta 3161+40.11
Δ = 29° 46' 20.5" (RT)	Δ = 29° 46' 19.7" (LT)	Δ = 0° 36' 51.5" (RT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"	D = 1° 46' 04.2"
L = 129.91'	L = 129.91'	L = 347.75'
T = 66.46'	T = 66.45'	T = 17.37'
R = 250.00'	R = 250.00'	R = 3,241.00'
e = 4.0%	e = 4.0%	e = 2.5%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 39.33'

-X3- CURVE DATA		
PI Sta 3161+29.70	PI Sta 3162+03.42	PI Sta 3163+04.38
Δ = 0° 38' 28.4" (RT)	Δ = 40° 24' 44.6" (RT)	Δ = 37° 07' 27.4" (LT)
D = 1° 43' 57.2"	D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 37.01'	L = 105.80'	L = 97.19'
T = 18.51'	T = 55.21'	T = 50.37'
R = 3,307.00'	R = 150.00'	R = 150.00'
e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 62.92'

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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

POT Sta. 3159+00.00
PC Sta. 3161+11.20
PCC Sta. 3161+48.21
PRC Sta. 3162+45.01
PC Sta. 3157+01.57
PRC Sta. 3158+37.48
PT Sta. 3159+61.38
PC Sta. 3161+22.73
PT Sta. 3161+57.48
PT Sta. 3163+51.20
UNITED STATES OF AMERICA
UNITED STATES OF AMERICA
-X3-
-X1-
N 29° 41' 33.8" W
N 29° 41' 38.3" W
NAD '83
NGRS '2007
FIBER OPTICS SPLICE BOX
NC 12
DET.
EXIST R/W
30' BST
CURB
BST
SOIL
ISLAND

-X1-

BEGIN GRADE
-X1- STA. 3157+01.57
ELEV = 3.97'

END GRADE
-X1- STA. 3161+57.48
ELEV = 4.69'

PROPOSED GRADE
EXISTING GROUND
61' LT
20' RT
LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

-X3-

BEGIN GRADE
-X3- STA. 3159+00.00
ELEV = 4.95'

END GRADE
-X3- STA. 3163+51.20
ELEV = 3.77'

5' RT
86' RT
PROPOSED GRADE
EXISTING GROUND
LOOSE TO DENSE GRAY SAND, MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3157 3158 3159 3160 3161 3162 3163 3164

$FILE$
$DATE$

-X4- CURVE DATA		
PI Sta 3179+01.82	PI Sta 3180+04.90	PI Sta 3182+10.35
Δ = 40° 33' 00.6" (LT)	Δ = 38° 27' 57.9" (RT)	Δ = 0° 23' 02.3" (LT)
D = 38° 11' 49.9"	D = 38° 11' 49.9"	D = 2° 01' 23.4"
L = 106.16'	L = 100.70'	L = 18.98'
T = 55.41'	T = 52.33'	T = 9.49'
R = 150.00'	R = 150.00'	R = 2,832.00'
e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 62.92'

-X2- CURVE DATA	
PI Sta 3183+22.26	PI Sta 3184+55.07
Δ = 33° 49' 43.7" (LT)	Δ = 27° 31' 22.1" (RT)
D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 147.61'	L = 120.09'
T = 76.02'	T = 61.23'
R = 250.00'	R = 250.00'
e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'

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PROJECT REFERENCE NO.	SHEET NO.
13201J028025	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

UNITED STATES OF AMERICA

NC 12

EXIST R/W

100.00'

CONC

DET

MTL

FIBER OPTICS

T/O

30' BST

-X4- N 0°10'21"E

-X2- N 0°10'21"E

PC Sta. 3178+46.41

PC Sta. 3179+58.32

PT Sta. 3180+53.27

PC Sta. 3182+00.86

PT Sta. 3182+19.84

PC Sta. 3182+52.24

PRC Sta. 3183+93.24

PT Sta. 3185+13.93

UNITED STATES OF AMERICA

-X2-

BEGIN GRADE
-X2- STA. 3179+58.32
ELEV = 5.10'

END GRADE
-X2- STA. 3185+13.93
ELEV = 5.25'

8' RT

2' LT

PROPOSED GRADE

3' LT

EXISTING GROUND

02/12

LOOSE TO DENSE GRAY SAND,
MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

-X4-

BEGIN GRADE
-X4- STA. 3178+46.41
ELEV = 4.57'

END GRADE
-X4- STA. 3182+19.84
ELEV = 5.25'

5' RT

44' RT

PROPOSED GRADE

EXISTING GROUND

LOOSE TO DENSE GRAY SAND,
MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3179 3180 3181 3182 3183 3184 3185

3177 3178 3179 3180 3181 3182 3183

$FILE$

$DATE$

-X3- CURVE DATA		
PI Sta 3161+29.70	PI Sta 3162+03.42	PI Sta 3163+04.38
Δ = 0° 38' 28.4" (RT)	Δ = 40° 24' 44.6" (RT)	Δ = 37° 01' 27.4" (LT)
D = 1° 43' 57.2"	D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 31.04'	L = 105.80'	L = 97.19'
T = 18.51'	T = 55.21'	T = 50.37'
R = 3,307.00'	R = 150.00'	R = 150.00'
e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 62.92'

-X5- CURVE DATA	
PI Sta 3160+94.10	PI Sta 3161+94.22
Δ = 39° 22' 40.4" (RT)	Δ = 37° 21' 26.2" (LT)
D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 103.09'	L = 97.80'
T = 53.68'	T = 50.71'
R = 150.00'	R = 150.00'
e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'

STV/ Ralph Whitehead Associates, Inc.
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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
13201J028025	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD '83
NSRS '2007

POT Sta. 3159+00.00
PC Sta. 3161+11.20
PCC Sta. 3161+48.21
PRC Sta. 3162+54.01
PRC Sta. 3161+43.54
POT Sta. 3159+00.00
PC Sta. 3160+80.42
PT Sta. 3162+41.31
PT Sta. 3163+51.20

UNITED STATES OF AMERICA
UNITED STATES OF AMERICA

-DET-
-L-
-X5-
N 29° 41' 33.0" W
NC 12
EXIST R/W
100.00'
30' BST
BST
CURB
FIBER OPTICS SPLICE BOX
SOIL
EXIST R/W
200.00'
ISBKD

-X3-

BEGIN GRADE
-X3- STA. 3159+00.00
ELEV. = 4.95'

END GRADE
-X3- STA. 3163+51.20
ELEV. = 3.77'

5' RT
86' RT
PROPOSED GRADE
EXISTING GROUND
02/12
LOOSE TO DENSE GRAY SAND,
MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30
3159 3160 3161 3162 3163 3164

-X5-

BEGIN GRADE
-X5- STA. 3159+00.00
ELEV. = 4.95'

END GRADE
-X5- STA. 3162+37.07
ELEV. = 4.16'

5' RT
75' RT
PROPOSED GRADE
EXISTING GROUND
02/12
LOOSE TO DENSE GRAY SAND,
MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30
3159 3160 3161 3162 3163

$FILE$
$DATE$

-X4- CURVE DATA		
PI Sta 3179+01.82	PI Sta 3180+04.90	PI Sta 3182+10.35
Δ = 40° 33' 00.6" (LT)	Δ = 38° 27' 57.9" (RT)	Δ = 0° 23' 02.3" (LT)
D = 38° 11' 49.9"	D = 38° 11' 49.9"	D = 2° 01' 23.4"
L = 106.16'	L = 100.70'	L = 18.98'
T = 55.41'	T = 52.33'	T = 9.49'
R = 150.00'	R = 150.00'	R = 2,832.00'
e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 62.92'

-X6- CURVE DATA		
PI Sta 3179+39.53	PI Sta 3180+25.72	PI Sta 3181+22.27
Δ = 2° 56' 41.2" (LT)	Δ = 35° 14' 50.2" (LT)	Δ = 38° 11' 31.5" (RT)
D = 3° 49' 11.0"	D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 77.09'	L = 92.28'	L = 99.99'
T = 38.56'	T = 47.65'	T = 51.93'
R = 1,500.00'	R = 150.00'	R = 150.00'
e = 4.0%	e = 4.0%	e = 4.0%
RUNOFF = 62.92'	RUNOFF = 62.92'	RUNOFF = 62.92'

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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
1320IJ028025	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83 NSRS 2007

UNITED STATES OF AMERICA

UNITED STATES OF AMERICA

NC 12

NC 12

-DET-

-DET-

-X4-

-X6-

PRC Sta. 3179+52.87

PT Sta. 3180+53.27

PC Sta. 3182+00.86

PT Sta. 3182+19.84

PC Sta. 3178+46.41

PC Sta. 3179+00.91

PCC Sta. 3179+18.06

PRC Sta. 3180+70.34

PT Sta. 3181+70.33

EXIST R/W

EXIST R/W

100.00'

100.00'

CONC

MTL

30' BST

FO

T FO

OHU

OHP

UGT

UGP

G/W

W/L

M/L

E

F

C

-X4-

BEGIN GRADE
-X4- STA. 3178+46.41
ELEV = 4.57'

END GRADE
-X4- STA. 3182+19.84
ELEV = 5.25'

5' RT

44' RT

PROPOSED GRADE

EXISTING GROUND

027/2

LOOSE TO DENSE GRAY SAND,
MOIST TO SAT. (UNDIVIDED COASTAL PLAIN)

50 40 30 20 10 0 -10 -20 -30

3178 3179 3180 3181 3182 3183

-X6-

50 40 30 20 10 0 -10 -20 -30

3178 3179 3180 3181 3182 3183

$FILE$

$DATE$

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	30

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

DET
3090+00.00

10 5 0 -5 -10 -15

EXRW

3:1

Ⓐ SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

Ⓐ

02/12

02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

10 5 0 -5 -10 -15

3090+00.00

DET
3087+02.41

10 5 0 -5 -10

EXRW

3:1

3:1

4:1

02/12

02/12

LOOSE TO DENSE GRAY SAND, MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

10 5 0 -5 -10

3087+00.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

13-FEB-2012 09:04
c:\EPD\GreenAr1 (DEJ05540)
cn:\users\

I:\Investigation\TIP\B2500_GEO_RDWY\CADD_GEOTECH\xsc\B2500_GEO_RDY_L_xs1.dgn

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	31

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

DET
3100+00.00

EXRW

SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

Ⓐ

Ⓐ

02/12 02/12 02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

10 5 0 -5 -10 -15

3100+00.00

DET
3095+00.00

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

3:1

Ⓐ

02/12 02/12 02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

10 5 0 -5 -10 -15

3095+00.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

13-FEB-2012 09:04
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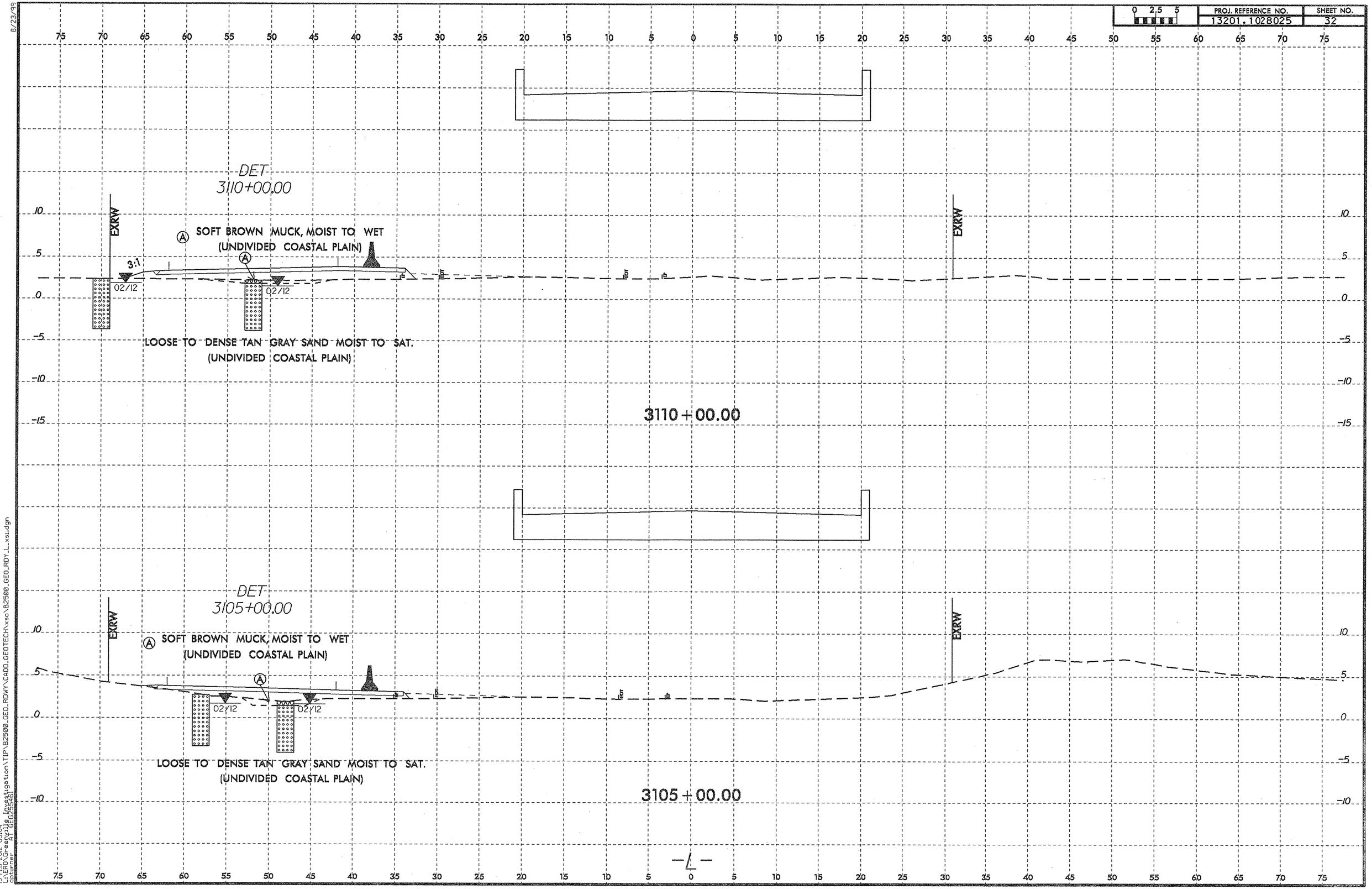
Driver: Default Driver
Cell Library: GEOCELLS

8/23/99

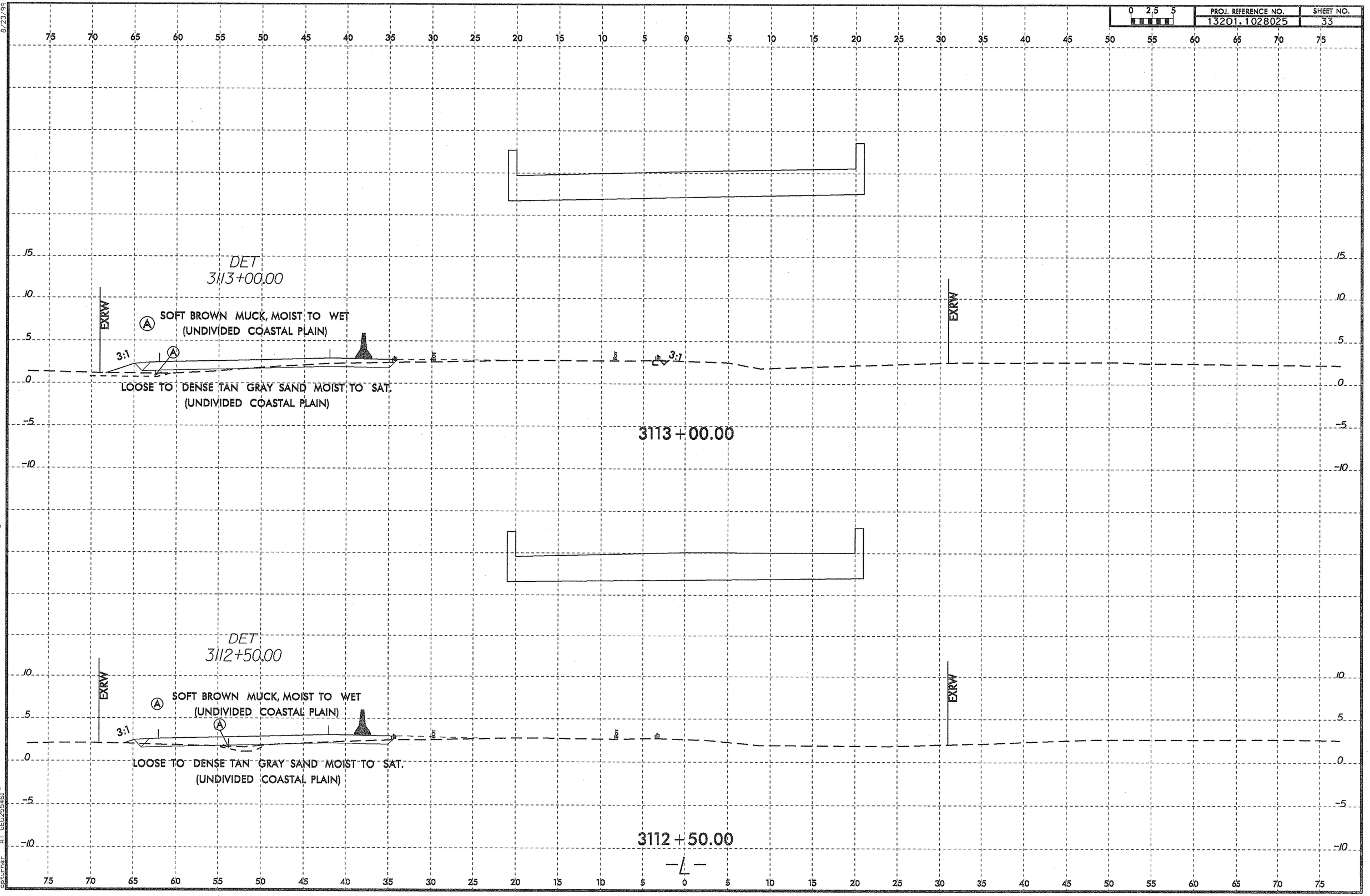
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	32



13-FEB-2012 09:04
L:\ERO\Design\Investigation\TIP\B25000.GEO_RDWY\CADD.GEOTECH\xsc\B2500_GEO_RDY_L_xs1.dgn
cshumaker (Carlos Shumaker)

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	33



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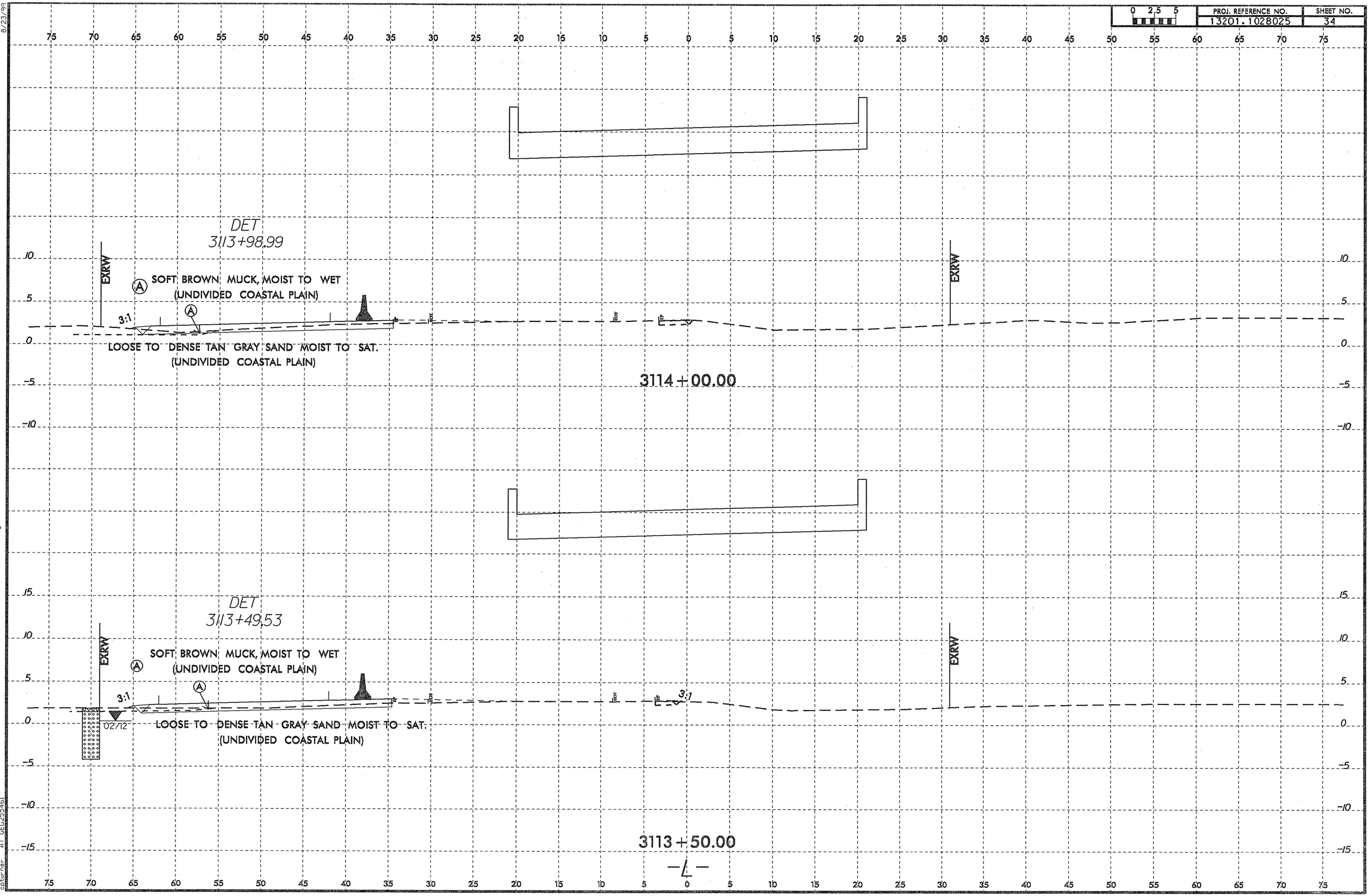
cbruner (Bentley Systems)

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	34



13-FEB-2012 09:05
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(Customer Name)

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	35

DET
3114+97.92

SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

3:1

02/12

02/12

02/12

3:1

EXRW

3115+00.00

DET
3114+48.45

SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

EXRW

3:1

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EXRW

3114+50.00

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Level:1-3 Design
Coturner

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8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	36

DET
3115+96.84

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

Ⓐ

3:1

02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

3:1 3:1

EXRW

3:1

3116+00.00

DET
3115+47.38

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

Ⓐ

3:1

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

3:1 3:1

EXRW

3:1

3115+50.00
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Active DGN: "B2500_GEO_RDY_L_xsi.dgn"

8/23/99

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	13201.1028025	37

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

15 10 5 0 −5 −10 −15

DET
3119+93.40

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET

3:1

Ⓐ

02/12 02/12 02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
UNDIVIDED COASTAL PLAIN)

3120+00.00

EXRW

3:1

20 15 10 5 0 −5 −10

DET
3116+46.30

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET
(UNDIVIDED COASTAL PLAIN)

3:1

Ⓐ

3:1 3:1

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
(UNDIVIDED COASTAL PLAIN)

3116+50.00

EXRW

3:1

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A1" DEG2455461

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
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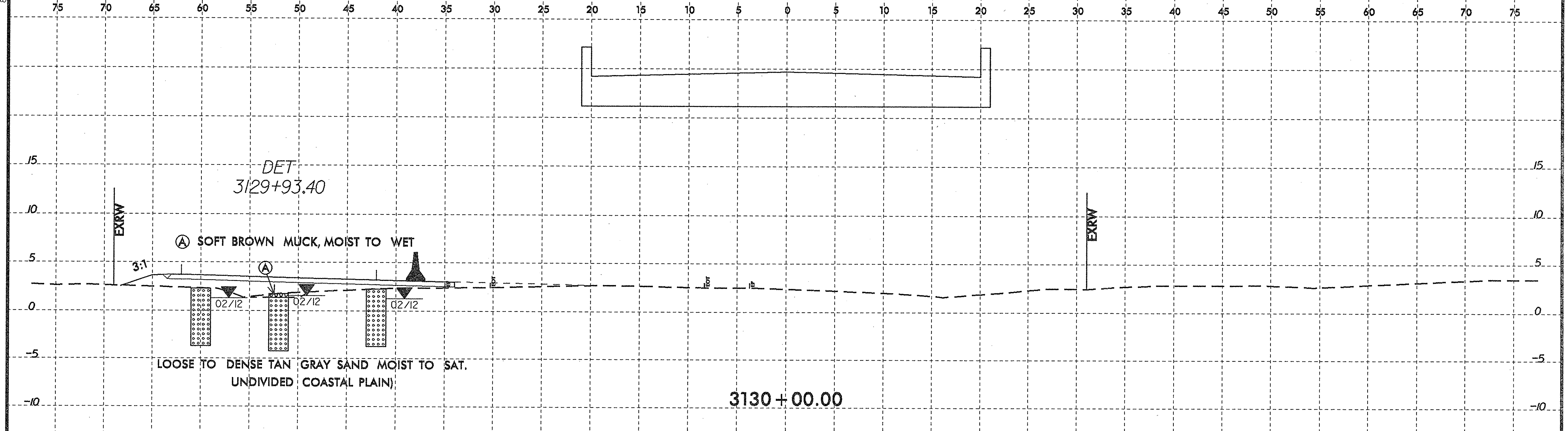
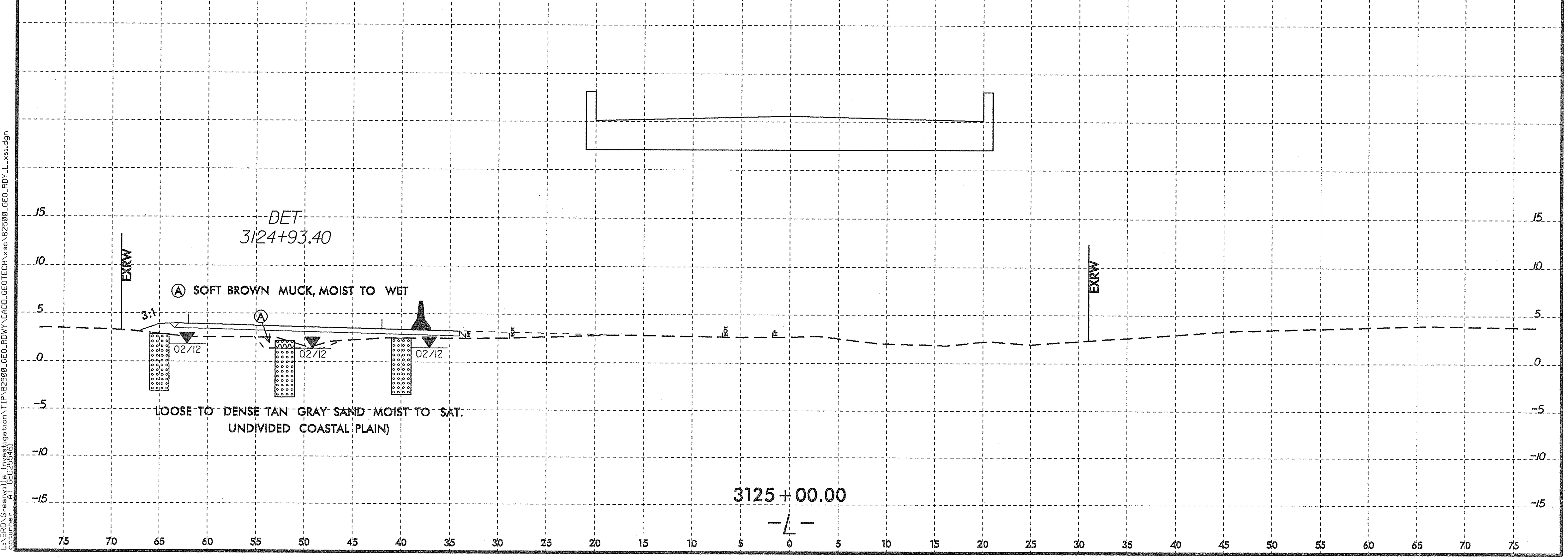


3130+00.00



3125+00.00

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PROJ. REFERENCE NO.	SHEET NO.
13201.1028025	39

0 2.5 5

DET
3135+93.40

EXRW

3:1

02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
UNDIVIDED COASTAL PLAIN)

3136+00.00

EXRW

DET
3135+43.40

EXRW

Ⓐ SOFT BROWN MUCK, MOIST TO WET

3:1

Ⓐ

02/12

02/12

02/12

LOOSE TO DENSE TAN GRAY SAND MOIST TO SAT.
UNDIVIDED COASTAL PLAIN)

3135+50.00
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DGN: DEG25548