CONTRACT: C202028

ID: U-2519DA

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

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

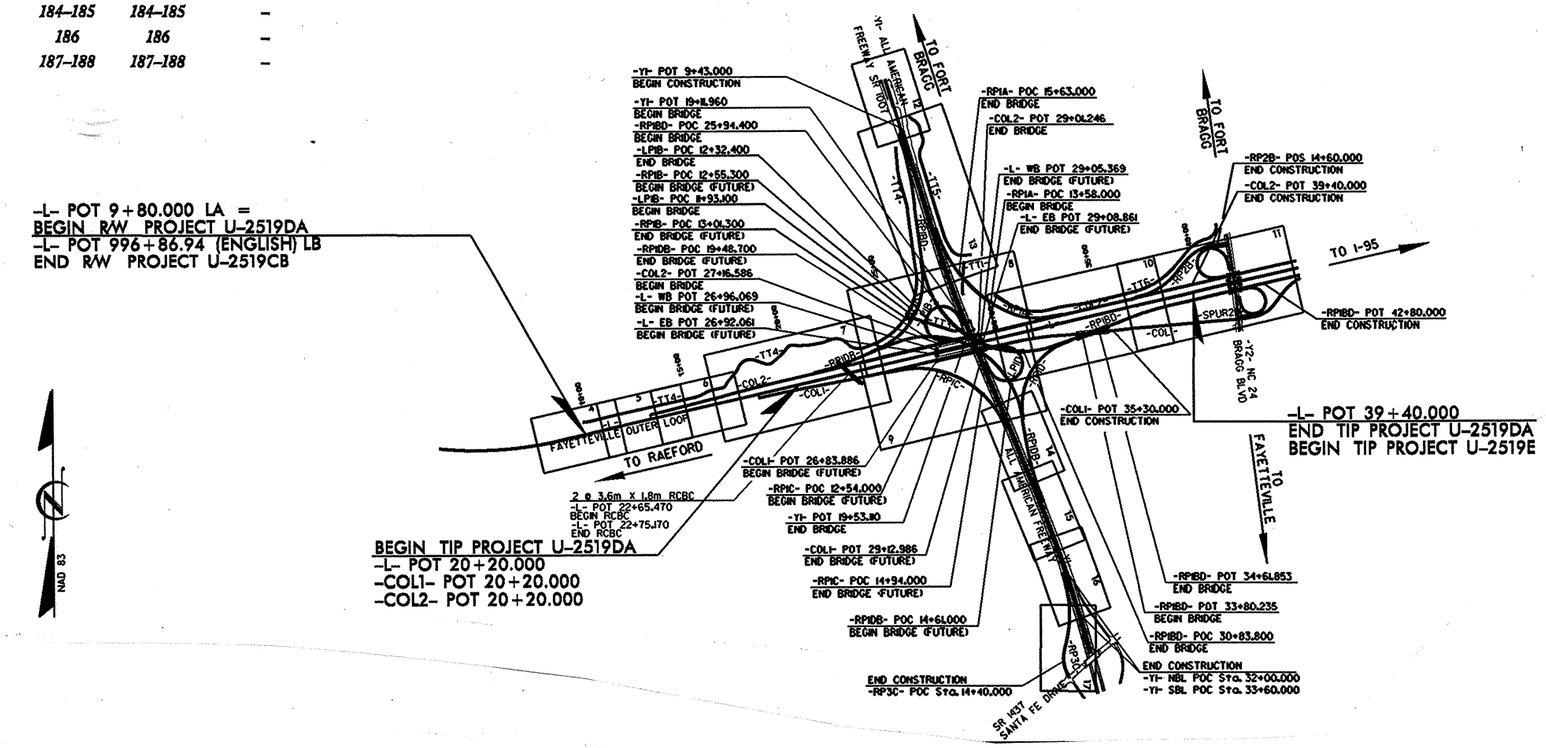
ROADWAY SUBSURFACE INVESTIGATION

STATE PROJ. 34817.1.2 I.D. U-2519DA F.A. PROJ. DPR-0100(001)

COUNTY CUMBERLAND

PROJECT DESCRIPTION FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)

INVENTORY



METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519DA	1	188

STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION
34817.1.2	NHF-DPR-0100(001)	PE
34817.2.4	NHF-100(9)	R/W and UTIL
34817.3.12	NHF-0100(21)	CONST

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INVESTIGATED BY C.A. YOUNGBLOOD

CHECKED BY N.T. ROBERSON

SUBMITTED BY N.T. ROBERSON

DATE OCTOBER 2007

NORTH CAROLINA LICENSED SEAL 1959 GEOLOGIST CHERYL A. YOUNGBLOOD

10/24/07

DRAWN BY: T.T. WALKER, F.W. RACEY, JR., C.D. CZAJKA

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ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
U-2519DA	34817.1.2	2	188

METRIC

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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER 30 cm ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND 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 PLASTIC INDEX	6 MX		N.P.	40 MX 10 MX	41 MN 10 MX	40 MX 41 MN 11 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX	8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

P.I. OF A-7-5 ≤ L.L. - 30 ; P.I. OF A-7-6 ≥ L.L. - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (kN/m^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<25 25 TO 50 50 TO 100 100 TO 200 200 TO 400 >400

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.0	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F. SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12"	3"				

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
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, YEL-BRN, 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 ARE 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 30
MODERATELY COMPRESSIBLE	LIQUID LIMIT 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT- CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
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 SEEPAGE

MISCELLANEOUS SYMBOLS

ROADWAY EMBANKMENT WITH SOIL DESCRIPTION

SOIL SYMBOL

ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS

INFERRED SOIL BOUNDARIES

INFERRED ROCK LINE

ALLUVIAL SOIL BOUNDARY

25/025 DIP/DIP DIRECTION OF ROCK STRUCTURES

SOUNDING ROD

SPT CPT DPT DMT VST PMT TEST BORING

AUGER BORING

CORE BORING

MONITORING WELL

PIEZOMETER INSTALLATION

SLOPE INDICATOR INSTALLATION

SPT N-VALUE

REF SPT REFUSAL

SAMPLE DESIGNATIONS

S- BULK SAMPLE

SS- SPLIT SPOON SAMPLE

ST- SHELBY TUBE SAMPLE

RS- ROCK SAMPLE

RT- RECOMPACTED TRIAXIAL SAMPLE

CBR - CBR SAMPLE

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
FRAGS. - FRAGMENTS
MED. - MEDIUM
PMT - PRESSUREMETER TEST
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT
V. - VERY
VST - VANE SHEAR TEST

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B- ___
- [ ] BK-51
- [X] CME-45B MARSH BUGGY
- [X] CME-550
- [X] CME-45C TRACK
- [X] CME-550 TRACK
- [X] CME-55 SKID

ADVANCING TOOLS:
- [ ] CLAY BITS
- [X] 152 mm CONTINUOUS FLIGHT AUGER
- [X] 203 mm HOLLOW AUGERS
- [X] HARD FACED FINGER BITS
- [X] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____ mm STEEL TEETH
- [ ] TRICONE _____ mm TUNG.-CARB.
- [ ] CORE BIT
- [X] 76.2mm DRAG BIT

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

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

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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 2.5 cm PER 50 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 FOLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER 30 cm.
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 2.5 cm. 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 ROCKS 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 BLOWS PER 30 cm.*
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 BLOWS PER 30 cm.*
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 GEOLOGISTS 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 6 mm DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGISTS PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 1 mm DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 25 mm MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGISTS PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL CENTIMETERS 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 25 mm OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 3 m
WIDE	1 TO 3 m
MODERATELY CLOSE	30 TO 100 cm
CLOSE	5 TO 30 cm
VERY CLOSE	LESS THAN 5 cm

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 1 m
THICKLY BEDDED	0.5 - 1 m
THINLY BEDDED	0.05 - 0.5 m
VERY THINLY BEDDED	10 - 50 mm
THICKLY LAMINATED	2.5 - 10 mm
THINLY LAMINATED	< 2.5 mm

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 WHICH 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 IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH 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) OF A 63.5 kg HAMMER FALLING 0.76 METERS REQUIRED TO PRODUCE A PENETRATION OF 30 cm INTO SOIL WITH A 5 cm OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 2.5 cm PENETRATION WITH 50 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: XXX
XXX
XXX ELEVATION: XXX

NOTES:

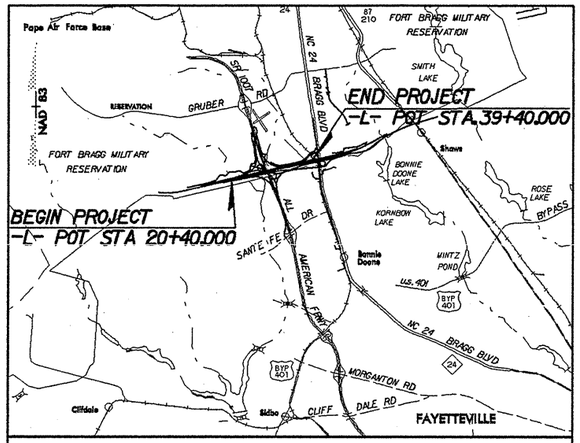
REVISED 09/15/00

TIP PROJECT: U-2519DA

PROJECT: 34817.2.4

FILE: $FILE$ $TIME$
DATE: $DATE$

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO WEST OF NC 24 (BRAGG BOULEVARD)

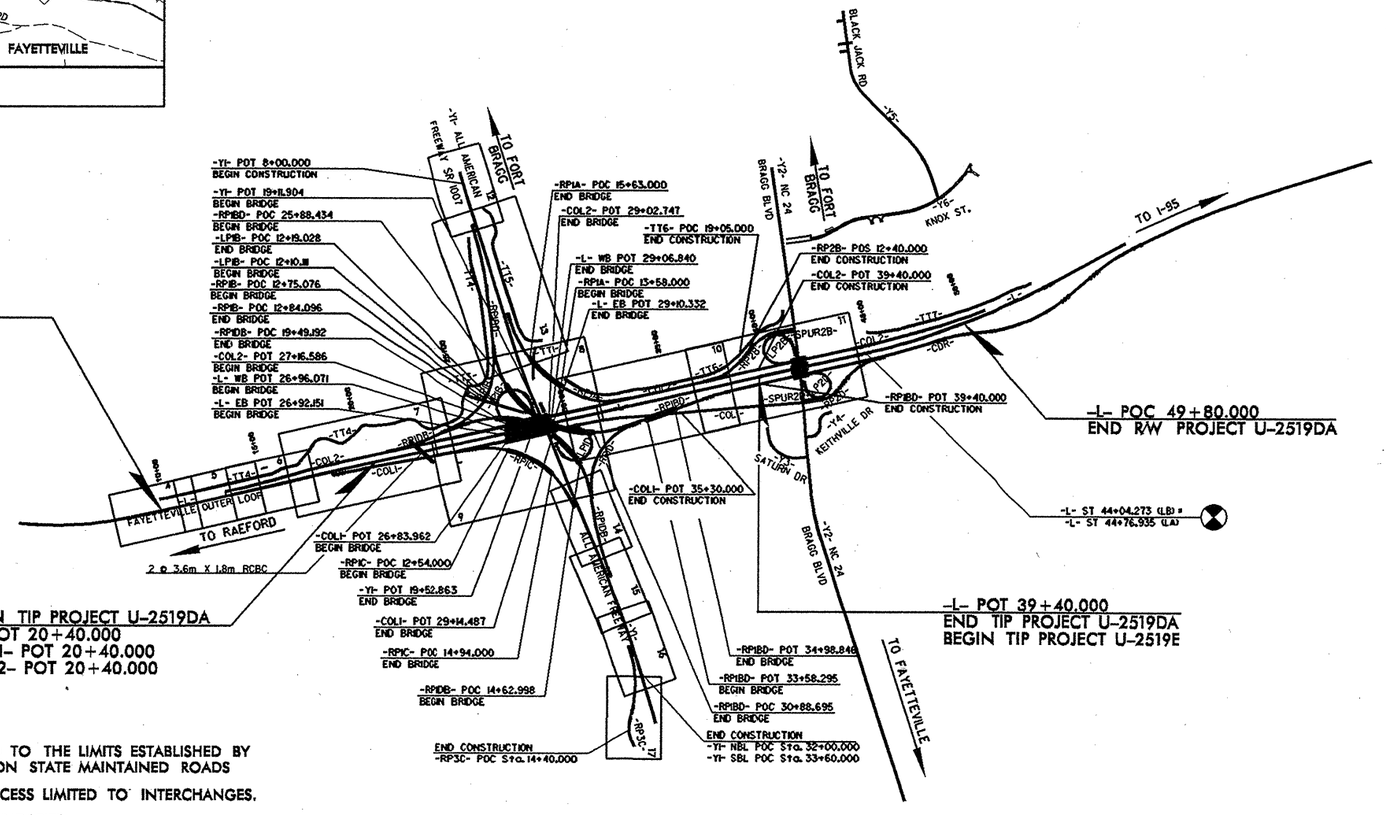
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS, & SIGNING

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND/OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519DA	2A	188

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34817.1.2	NHF-DPR-0100(001)	P.E.
34817.2.4	NHF-100(9)	R/W and Utilities



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II ON FORT BRAGG ROADS, METHOD III ON STATE MAINTAINED ROADS

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALE

PLANS (5 0 10)

PROFILE (HORIZONTAL) (5 0 10)

PROFILE (VERTICAL) (1 0 2)

DESIGN DATA

ADT 2007 = 27300
ADT 2030 = 66200
DHV = 9 %
D = 55 %
T = 12 %
(DUALS 8 %, TTST 4 %)
V = 110 km/h

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2519DA	1.667	KM.
LENGTH STRUCTURES TIP PROJECT U-2519DA	0.233	KM.
TOTAL LENGTH TIP PROJECT U-2519DA	1.900	KM.

NOTE: EB LANE BRIDGE STATIONING USED TO DETERMINE LENGTH OF STRUCTURES

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

PREPARED FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 19, 2006

LETTING DATE: MAY 19, 2009

NCDOT CONTACT: CATHY S. HOUSER, P.E. — *ROADWAY DESIGN - PROJECT ENGINEER*

DENNIS J. MORY, P.E. — *PROJECT ENGINEER*

HENRY W. BARE — *PROJECT DESIGN ENGINEER*

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 1, 2007

STATE PROJECT: 34817.1.2 (U-2519DA)
FEDERAL PROJECT: NHF-DPR-0100(1)
COUNTY: Cumberland

DESCRIPTION: Fayetteville Outer Loop from east of SR 1415 to west of NC 24 (Bragg Blvd.)

SUBJECT: Geotechnical Report –Inventory

Project Description

The project consists of constructing a four lane divided facility on new location for the Fayetteville Outer Loop (-L-). The project begins east of SR 1415 and extends east for 2.96 kilometers to west of NC 24 (Bragg Blvd.)

A geotechnical investigation was originally conducted in August, September and October, 1998 and additional borings were performed in August and October, 2000 and again in November and December, 2005. Borings were advanced utilizing an ATV-mounted CME-550, two track rigs; one mounted with CME-45C and the other mounted with CME-550, a skid mounted CME-55 and a marsh buggy mounted CME-45B drill machines with automatic and manual hammers and a hand auger. Standard Penetration Tests were performed at selected locations and additional borings were advanced using continuous flight augers. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit or by Froehling & Robertson, Inc. The following alignments were investigated

Line	Station(±)
-L-	9+80 to 39+40
-COL1-	18+20.586 to 40+75.5
-COL2-	12+99.474 to 39+40
-RP1DB-	8+86.127 to 25+02.083
-RP1BD-	17+72.399 to 40+00
-RP1A-	10+00 to18+07.437

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.DOH.DOT.STATE.NC.US

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

Line	Station (±)
-RP1B-	10+00 to 15+39.350
-RP1C-	10+00 to 17+01.928
-RP1D-	10+00 to 14+86.961
-LP1B-	10+00 to 14+68.808
-LP1D-	10+00 to 14+68.808
-RP2B-	10+00 to 12+40
-RP3C-	10+00 to 15+07.685
-Y1-	8+00 to 35+80
-TT1-	10+00 to 11+61.707
-TT3-	10+00 to 13+42.324
-TT4-	10+00 to 35+68.068
-TT5-	10+00 to 17+88.776
-TT6-	10+00 to 18+40

Areas of Special Geotechnical Interest

1) Plastic and Highly Plastic Clays: Plastic clays and clayey sands with plasticity indices above 20 were encountered on the project at the following intervals

Line	Station (±)
-L-	9+80 to 14+48.5
-L-	16+88 to 17+99
-L-	22+21 to 23+42.5
-L-	24+62.4 to 25+23.2
-COL1-	19+91 to 20+94
-COL2-	13+58 to 14+25
-COL2-	17+02.5 to 18+47
-RP1BD-	22+38.5 to 23+91.5
-RP1A-	16+10 to18+07.437
-RP1D-	12+59.5 to 14+19
-RP3C-	10+00 to 13+20
-TT3-	11+53.4 to 12+58.9
-TT4-	10+99 to 13+07
-TT4-	17+28.8 to 17+92.2
-TT4-	31+29 to 34+02
-TT4-	35+12 to 35+67.360
-TT6-	20+84.8 to 22+06.5

Clay materials encountered in the Cape Fear Formation are generally moderately to highly plastic.

2) Organic Soils: The following sections contain organic soils that were encountered on the project.

Line	Station (±)
-L-	15+22 to 15+57
-L-	21+86.5 to 23+46
-L-	27+08 to 29+15
-L-	31+20 to 32+76
-COL1-	22+06 to 23+80
-COL1-	32+75 to 32+86
-COL2-	15+60.7 to 15+72
-COL2-	21+99.6 to 22+53.3
-COL2-	27+27 to 29+09
-COL2-	30+23 to 31+72
-RP1DB-	23+11 to 24+09
-RP1BD-	27+41 to 28+08.5
-RP1BD-	32+60 to 33+38.4
-RP1D-	14+32 to 14+86.961
-LP1B-	14+20.5 to 14+68.808

3) Groundwater: The following areas exhibit a high water table, seasonal high ground water or the potential for groundwater related construction problems

Line	Station (±)
-L-	15+22 to 15+57
-L-	21+86.5 to 23+46
-L-	31+20 to 32+76
-COL1-	22+25 to 23+80
-COL1-	32+39 to 32+89
-COL2-	21+37 to 23+25
-COL2-	30+40 to 31+00
-RP1BD-	23+05 to 24+66
-RP1BD-	32+86 to 33+32
-TT3-	10+83 to 13+42.324
-TT4-	16+26 to 16+59
-TT5-	15+46 to 15+89

4) Monitoring Wells: USGS monitoring wells were found within the proposed right of way at the following stations

Line	Station (±) and Offset m.(±)
-RP1A-	USGS MW#16: 10+48.6, 21.2m RT.
-RP1A-	USGS MW#7: 12+61.9, 27.5m LT.
-RP1A-	USGS MW#6: 12+65.7, 27.9m LT.
-RP1A-	USGSMW#5: 13+59.7, 59.0m RT.

Other wells may be present along the project corridor that were not detected

5) Debris: Concrete debris were located within the right of way at the following stations

Line	Station (±)
-L-	9+85, 18m Lt.
-L-	9+91, 22m Lt.
-L-	10+74, 16.5m Rt.
-L-	10+74, 21.0m Rt.
-L-	10+99, 1.5m Lt.
-L-	10+99, 3.0m Rt.
-L-	11+03, 5.5m Lt.
-L-	11+08, 9.8m Rt.
-L-	11+27, 25m Lt.
-L-	11+28, 42m Lt.

6) Old Building Foundations: Remnant concrete building foundations, concrete drainage channel, in/above ground metal pipes and underground metal bunkers were found within the proposed right of way between the following stations

Line	Station (±)
-L-	9+80 to 15+40

The building foundation are shown on the plan view at approximate locations. They were mapped by F&R's field personnel using ground survey provided by NCDOT Location and Surveys Unit and historic plan sheets and utility maps provided by Fort Bragg.

7) Abandoned Sewer Lines: Abandoned sanitary sewer lines with manholes were found within the proposed right of right at the following stations

Line	Station (±)
-L-	10+22.0, 34.5m Lt.
-L-	11+46.0, 35.0m Lt.
-L-	12+68.0, 37.0m Lt.
-L-	13+80.0, 31.0m Lt.
-L-	15+18.0, 76.5m Lt.

Physiography and Geology

The project is located in the flat to gently rolling terrain of the Coastal Plain Physiographic Province. Land use along the project corridor consists of Fort Bragg Military Reservation, homes and woods. Geologically, the project located within the Middendorf Formation underlain by the Cape Fear Formation, both formations are Upper Cretaceous in age. The formations are derived from the multiple transgressions and regressions of sea level. Soils are derived from coastal plain sediments. Beaver Creek, Big Branch Creek and an unnamed tributary of the Cape Fear River Basin drain the project.

Soil Properties

Soils encountered at the project site include artificial fill, roadway embankment, alluvial and coastal plain sediments that include the Middendorf and Cape Fear Formations.

Artificial Fill soils are present along the existing "soil tank trails" on Fort Bragg Military Reservation. These soils consist of tan to red brown, dry, very loose to medium dense, silty sand (A-2-4).

Roadway Embankment soils are present along the existing All American Freeway. These soils primarily consist of tan, orange to red, dry to moist, medium dense to dense, fine, silty and clayey sand (A-3, A-2-4, A-2-6) and stiff, silty clay (A-7-6).

Alluvial deposits are located within Beaver Creek, Big Branch Creek, unnamed creek and unnamed tributaries and wetland areas that traverse the project. These soils are primarily gray to black, moist to saturated, very loose to loose, fine, silty and clayey sand (A-3, A-2-4, A-2-6) with little to moderate organic matter and soft, sandy silt (A-4), sandy and silty clay (A-6, A-7-6) with high plasticity and little to high organic content.

Middendorf Formation soils occur at or near the ground surface along the entire project. They are comprised of tan, gray, and red-brown, dry to saturated, very loose to dense, silty, clayey, fine to coarse sand (A-2-4, A-2-6, A-3, A-1-b) and red-brown, tan to gray, dry to saturated, soft to very stiff, sandy and silty clay (A-6, A-7-6) with low to high plastic indices. Lesser amounts of tan-gray, moist to wet, very soft to soft, sandy silt (A-4) are also present.

Cape Fear Formation soils underlie the Middendorf Formation and consist of gray and tan, dry to wet, very stiff to hard, sandy and silty clay, low to highly plastic (A-6, A-7-6) and gray, moist, medium dense to very dense, clayey and silty sand (A-2-6, A-2-4).

Ground Water

Groundwater was encountered in approximately one third of the borings throughout the project. Areas that exhibit high groundwater are listed in "Areas of Special Geotechnical Interest"

Culvert

A double 3.6m x 1.8m RCBC and four 1200mm RCP will be constructed at -L- 22+70.32. The new culvert will direct the flow of Big Branch Creek across the project on a skew of 55 degrees. There were three standard penetration tests performed on or near the culvert alignment. Alluvial soils were encountered consisting of gray to black, wet to saturated, very loose, fine, silty and clayey sands (A-3, A-2-4, A-2-6) and very soft to soft, sandy silt (A-4) and sandy and silty clays (A-6, A-7-6) with organic content. Coastal Plain soil underlies the alluvial soils and consist of gray, tan and red, dry to saturated, very loose to medium dense, fine, silty sand (A-3, A-2-4) and gray-tan, dry to wet, stiff to very stiff, sandy and silt clay (A-6, A-7-6) of the Middendorf Formation.

A single 1.8m x 1.8m RCBC will be constructed at -L- 30+73, 67.3m Lt. and -RP1A- 12+36.4, 29.8m Lt. This new culvert will direct the flow of a unnamed tributary to Beaver Creek between the -L- and -RP1A- alignments. There were three standard penetration tests performed near the culvert alignment. Alluvial soils were encountered consisting of black and brown, wet to saturated, very loose to loose, silty sand (A-2-4) with organic matter. Coastal Plain soils underlie the alluvial soils and consist of tan, gray and red, moist to saturated, loose to medium dense, coarse, clayey sand (A-1-b, A-2-6) and tan and gray, moist to saturated, medium stiff to hard, sandy and silty clay (A-6, A-7-6).

Prepared by,
Cheryl A. Youngblood, L.G.
Project Geological Engineer

UNDISTRUBED SAMPLES

The following "Shelby" tube samples was taken to provide data for the in-situ strength of the soil.

Sample No.	Location	Depth (m.)	Test
ST-1	-RP1BD-: 35+78, 19.2m Rt,	4.50-5.11	Triaxial CU
ST-2	-RP1BD-: 35+50, 5.0m Rt.	2.50-2.88	Triaxial CU
ST-3	-RP1BD- 32+54, 6.5m Rt.	4.61-5.23	Triaxial CU

EARTHWORK BALANCE SHEET

3C

Project: U-2519DA

County: CUMBERLAND

Computed By: CMKR

STATION	UNCLASSIFIED EXCAVATION				UNDERCUT EXCAV.	EMBANKMENT			TOTAL EMB. + 25%	BORROW	WASTE		
	TOTAL	SUITABLE EARTH	ROCK	UNSUITABLE EARTH		TOTAL	EARTH	ROCK			SUITABLE	ROCK	UNSUITABLE
SUMMARY #1													
-L- 20+40.000 TO -L- 26+92.151 (BRIDGE)	9,409	8,244		1,165	9,156	288,980	288,980		361,225	352,981	0		10,321
-RP1DB- 19+48.700 (BRIDGE) TO -RP1DB- 23+90.574	581	581				80,159	80,159		100,199	99,618	0		0
-RP1B- 13+02.124 TO -RP1B- 14+53.283	433	433				11,640	11,640		14,550	14,117	0		0
-RP1C- 11+32.636 TO -RP1C- 12+54.000	0	0				14,680	14,680		18,350	18,350	0		0
-LP1B- 10+89.657 TO -LP1B- 11+93.100 (BRIDGE)	110	110				21,782	21,782		27,228	27,118	0		0
-LP1B- 12+32.400 (BRIDGE) TO -LP1B- 14+12.799	8,901	8,901				5,275	5,275		6,594	0	2,307		0
-TT4- 17+06.175 TO -TT4- 27+20.000	224	224				4,492	4,492		5,615	5,391	0		0
SUBTOTAL: SUMMARY #1	19,658	18,493	0	1,165	9,156	427,008	427,008	0	533,761	517,575	2,307	0	10,321
SUMMARY #2													
-L- 29+10.332 (BRIDGE) TO -L- 39+40.000	23,026	23,026			6,324	516,108	516,108		645,135	622,109	0		6,324
-COL1- 30+40.000 TO -COL1- 35+30.000	2,976	2,976			436	77,247	77,247		96,559	93,583	0		436
-RP1BD- 30+83.800 (BRIDGE) TO -RP1BD- 33+80.235 (BRIDGE)	0	0			2,932	158,830	158,830		198,538	198,538	0		2,932
-RP1BD- 34+61.853 (BRIDGE) TO -RP1BD- 39+40.000	0	0				62,508	62,508		78,135	78,135	0		0
-RP1A- 11+16.392 TO -RP1A- 13+58.000	0	0				51,789	51,789		64,736	64,736	0		0
-TT6- 10+00.000 TO -TT6- 18+48.673	38	38				1,758	1,758		2,198	2,160	0		0
-RP2B- 10+78.525 TO -RP2B- 12+40.000	0	0				8,208	8,208		10,260	10,260	0		0
SUBTOTAL: SUMMARY #2	26,040	26,040	0	0	9,692	876,448	876,448	0	1,095,561	1,069,521	0	0	9,692
SUMMARY #3													
-Y1- 9+43.000 TO -Y1- 19+11.810 LT. (BRIDGE)	4,194	4,194				5,341	5,341		6,676	2,482	0		0
-Y1- 9+67.474 TO -Y1- 19+11.810 RT. (BRIDGE)	15,140	15,140				4,573	4,573		5,716	0	9,424		0
-RP1BD- 20+25.588 TO -RP1BD- 25+94.000 (BRIDGE)	27,928	16,572		11,356	587	12,184	12,184		15,230	0	1,342		11,943
-RP1A- 15+63.000 (BRIDGE) TO -RP1A- 16+87.284	7,560	2,816		4,744	524	1,306	1,306		1,633	0	1,183		5,268
-RP1B- 10+76.394 TO -RP1B- 12+57.165 (BRIDGE)	4,086	4,086				1,983	1,983		2,479	0	1,607		0
-TT1- 10+00.000 TO -TT1- 11+61.707	266	266				130	130		163	0	103		0
-TT3- 10+62.339 TO -TT3- 13+25.057	32,428	32,428				54	54		68	0	32,360		0
-TT4- 27+20.000 TO -TT4- 35+68.068	315	315				1,937	1,937		2,421	2,106	0		0
-TT5- 11+90.000 TO -TT5- 17+88.776	1,121	1,121				1,297	1,297		1,621	500	0		0
SUBTOTAL: SUMMARY #3	93,038	76,938	0	16,100	1,111	28,805	28,805	0	36,007	5,088	46,019	0	17,211
SUMMARY #4													
-Y1- 19+56.000 (BRIDGE) TO -Y1- 30+00.000 LT.	24,269	24,269				8,224	8,224		10,280	0	13,989		0
-Y1- 19+56.000 (BRIDGE) TO -Y1- 30+00.000 RT.	3,437	3,437				20,897	20,897		26,121	22,684	0		0
-RP1DB- 10+96.266 TO -RP1DB- 14+61.000 (BRIDGE)	16,848	16,848				41,274	41,274		51,593	34,745	0		0
-RP1C- 14+94.000 (BRIDGE) TO -RP1C- 16+10.268	0	0				13,091	13,091		16,364	16,364	0		0
-RP1D- 10+56.603 TO -RP1D- 13+99.357	14	14				72,032	72,032		90,040	90,026	0		0
-LP1D- 10+80.823 TO -LP1D- 14+04.723	161,959	161,959				8,847	8,847		11,059	0	150,900		0
SUBTOTAL: SUMMARY #4	206,527	206,527	0	0	0	164,365	164,365	0	205,457	163,819	164,889	0	0
SUMMARY #5													
-Y1- 30+00.000 TO -Y1- 32+00.000 LT.	509	509				19	19		24	0	485		0
-Y1- 30+00.000 TO -Y1- 33+60.000 RT.	1,798	1,798				480	480		600	0	1,198		0
-RP3C- 11+44.632 TO -RP3C- 14+40.000	382	382				779	779		974	592	0		0
SUBTOTAL: SUMMARY #5	2,689	2,689	0	0	0	1,278	1,278	0	1,598	592	1,683	0	0

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.

Note: Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

EARTHWORK BALANCE SHEET

Project: U-2519DA

County: CUMBERLAND

3D

STATION	UNCLASSIFIED EXCAVATION				UNDERCUT EXCAV.	EMBANKMENT			TOTAL EMB. + 25%	BORROW	WASTE		
	TOTAL	SUITABLE EARTH	ROCK	UNSUITABLE		TOTAL	EARTH	ROCK 0%			SUITABLE EARTH	ROCK	UNSUIT.
SUBTOTAL (SUMMARIES 1-5)	347,952	330,687	0	17,265	19,959	1,497,904	1,497,904	0	1,872,384	1,756,595	214,898	0	37,224
SHOULDER MATERIAL						15,500	15,500		19,375	19,375			
LOSS DUE CLEARING & GRUBBING	(6,500)	(6,500)								6,500			
GRADE POINT UNDERCUT					1,000				0	0			1,000
ADDITIONAL UNDERCUT EXCAVATION					7,000				0	0			7,000
WASTE TO BE USED IN LIEU OF BORROW										(214,898)	(214,898)		
CHIPPED TIRES TO BE USED IN LIEU OF BORROW										(18,130)			
PROJECT TOTAL	341,452	324,187	0	17,265	27,959	1,513,404	1,513,404	0	1,891,759	1,549,442	0	0	45,224
ESTIMATE 5% TO REPLACE TOPSOIL IN BORROW PITS										77,472			
GRAND TOTAL	341,452	324,187	0	17,265	27,959	1,513,404	1,513,404	0	1,891,759	1,626,914	0	0	45,224
SAY	341,500				28,000					1,627,000			
CL IV SUBGRADE STABILIZATION = 1200 mtons													
SHALLOW UNDERCUT = 600 m^3													
DRAINAGE DITCH EXCAVATION = 4660 m^3													
SELECT GRANULAR MATERIAL = 28,700 m^3													
PAVEMENT STRUCTURE VOLUME = 14,900 m^3													

NOTE: EARTH TO BE DISPLACED BY ROCK TO BE SWELLED BY 0%

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.

Note: Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

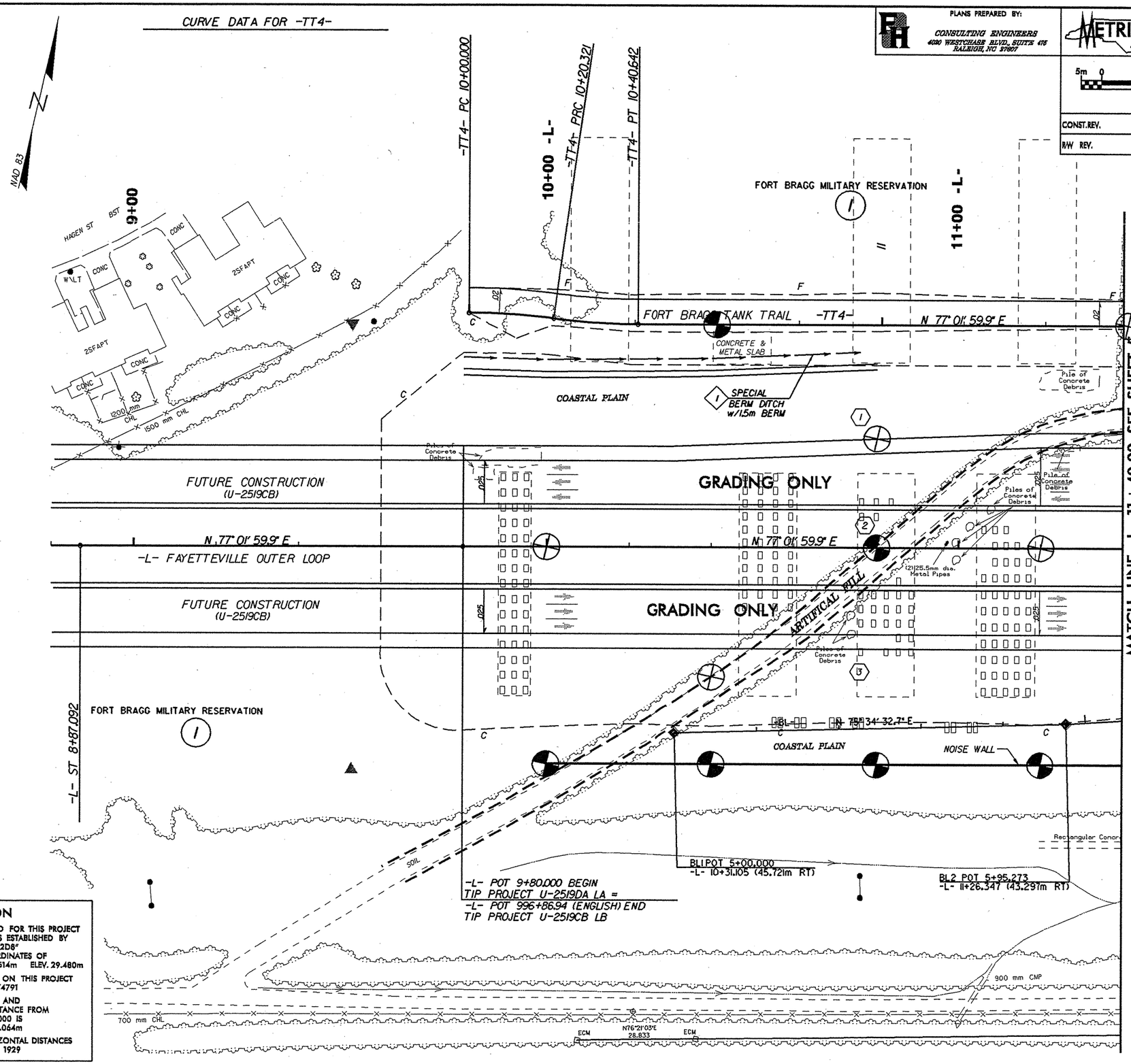
PLANS PREPARED BY:
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

METRIC

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CONST.REV.
R/W REV.



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT GPS FOR MONUMENT "X2D8" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 154,807.5364m EASTING: 625,333.9514m ELEV. 29.480m

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874791

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "X2D8" TO -L- STATION 9+80.000 IS S 74°-34'-18.5" W 15,854.064m

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 1929

FILE: $FILES
DATE: $DATE$ $TIME$

SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 85-89 FOR -TT4- PROFILE

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4030 WESTCHASE BLVD, SUITE 476
RALEIGH, NC 27607

METRIC
5m 0 10m

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	5
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

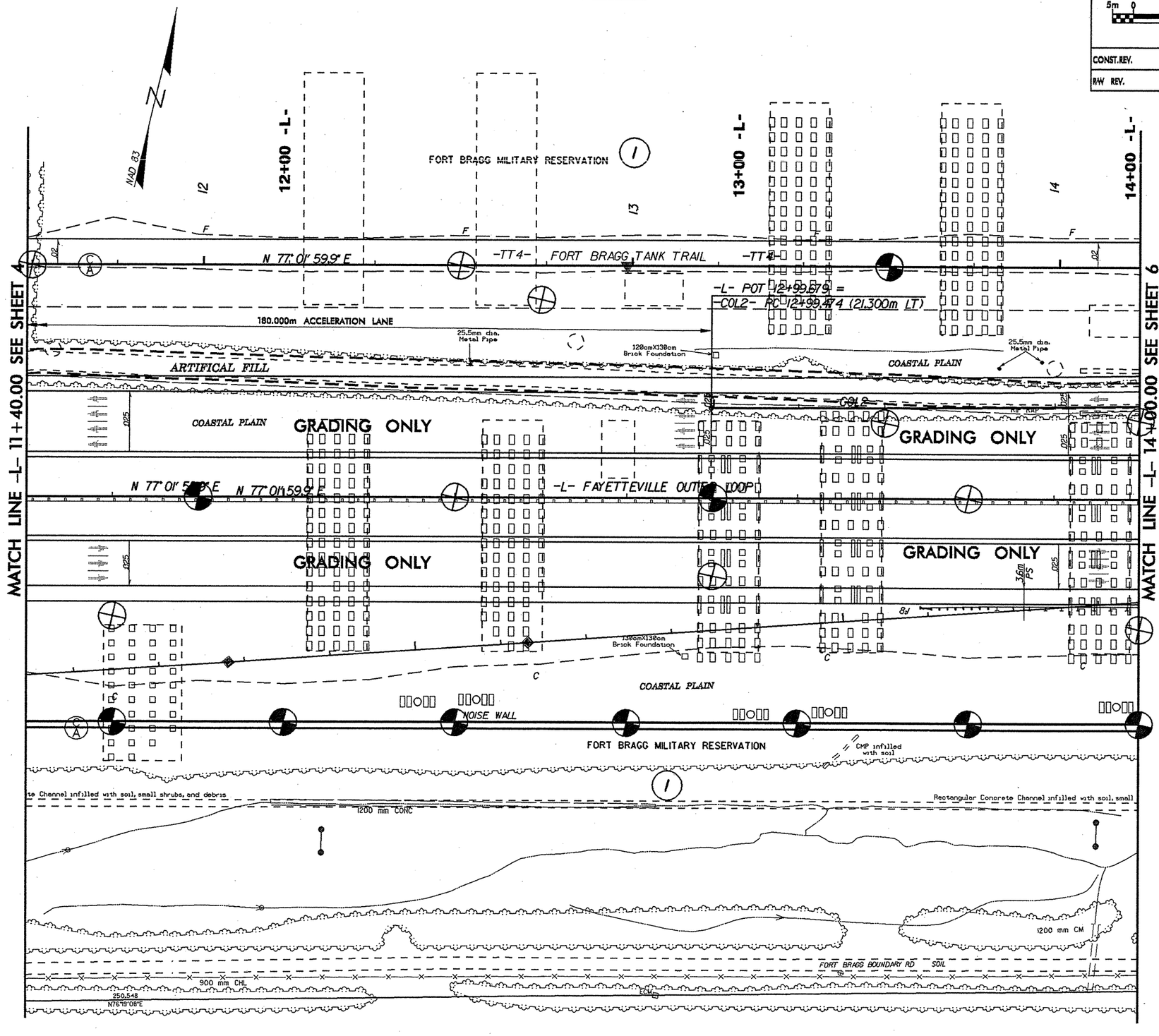
CONST.REV.

R/W REV.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

CURVE DATA FOR -COL2-



SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 42-47 FOR -COL2- PROFILE
SEE SHEETS 85-89 FOR -TT4- PROFILE

FILE: SFILES STIMES
DATE: $DATES

PLANS PREPARED BY:
CONSULTING ENGINEERS
4030 WESTCHASE BLVD, SUITE 475
RALEIGH, NC 27607

METRIC
5m 0 10m

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CONST. REV.
R/W REV.

CURVE DATA FOR -TT4-

CURVE DATA FOR -COL2-

FORT BRAGG MILITARY RESERVATION

-TT4- PT 16+38.885

-TT4- PRC 15+91.251

-TT4- PC 15+43.617

15+00 -L-

16+00 -L-

+60.000 -L-
55.000m LT
(180.45')

N 77° 59.9" E

-TT4-

FORT BRAGG TANK TRAIL

PROP 1.5m CHL
PROP R/W

55.000m (180.45')

300mm dia. CMP

COASTAL PLAIN

3.6m FDPS

Concrete "V" Ditch

ARTIFICIAL FILL

-COL2-

GRADING ONLY

BEGIN FUT. SHLD
BERM GUTTER +27

-COL2- PT 15+80.113

8:1 CAT -L-

FUT. SHLD. BERM GUTTER

SOIL

ALLUVIAL

90.000m TAPER

-COL2- PC 16+48.234

GUARDRAIL

-COL2- N 74° 43' 58.7" E

ARTIFICAL FILL

GRADING ONLY

MATCH LINE -L- 14+00.00 SEE SHEET 5

MATCH LINE -L- 16+60.00 SEE SHEET 7

N 77° 01' 59.9" E

CABLE GUIDERAIL

-L- FAYETTEVILLE OUTER LOOP

N 73° 00' 10.4" E

COASTAL PLAIN

ALLUVIAL

GRADING ONLY

BEG SHLD BERM GUTTER +40

END SHLD
BERM GUTTER +80

GUARDRAIL

NOISE WALL

+42.840 -L-
27.900m RT

+23.200 -L-
53.500m RT

51mm dia. Metal Pipe

BEGIN NOISE WALL
-L- 14+35.649 33.638m RT
1.2m WW
1-S-BW

BL5 POT 9+58.507
-L- 14+66.766 46.188m RT

PROP 1.2m WW 1-S-BW
PROP R/W

+30.000 -L-
55.000m RT

+20.000 -L-
53.500m RT
BEG FENCE

+30.000 -L-
55.000m RT
(180.45')

+00.000 -L-

END NOISE WALL 55.000m RT
-WALL N1- 14+46.200 =
-L- 14+41.178 39.155m RT

+18.568 -L-
36.703m RT
END FENCE

Rectangular Concrete Channel infilled with soil, small shrubs, and debris

FORT BRAGG MILITARY RESERVATION

BEGIN NOISE WALL
-L- 15+89.167 27.900m RT
+05.305 -L-
36.739m RT

END NOISE WALL
-L- 15+88.909 32.320m RT

COASTAL PLAIN

N76°19'39"E
316.007

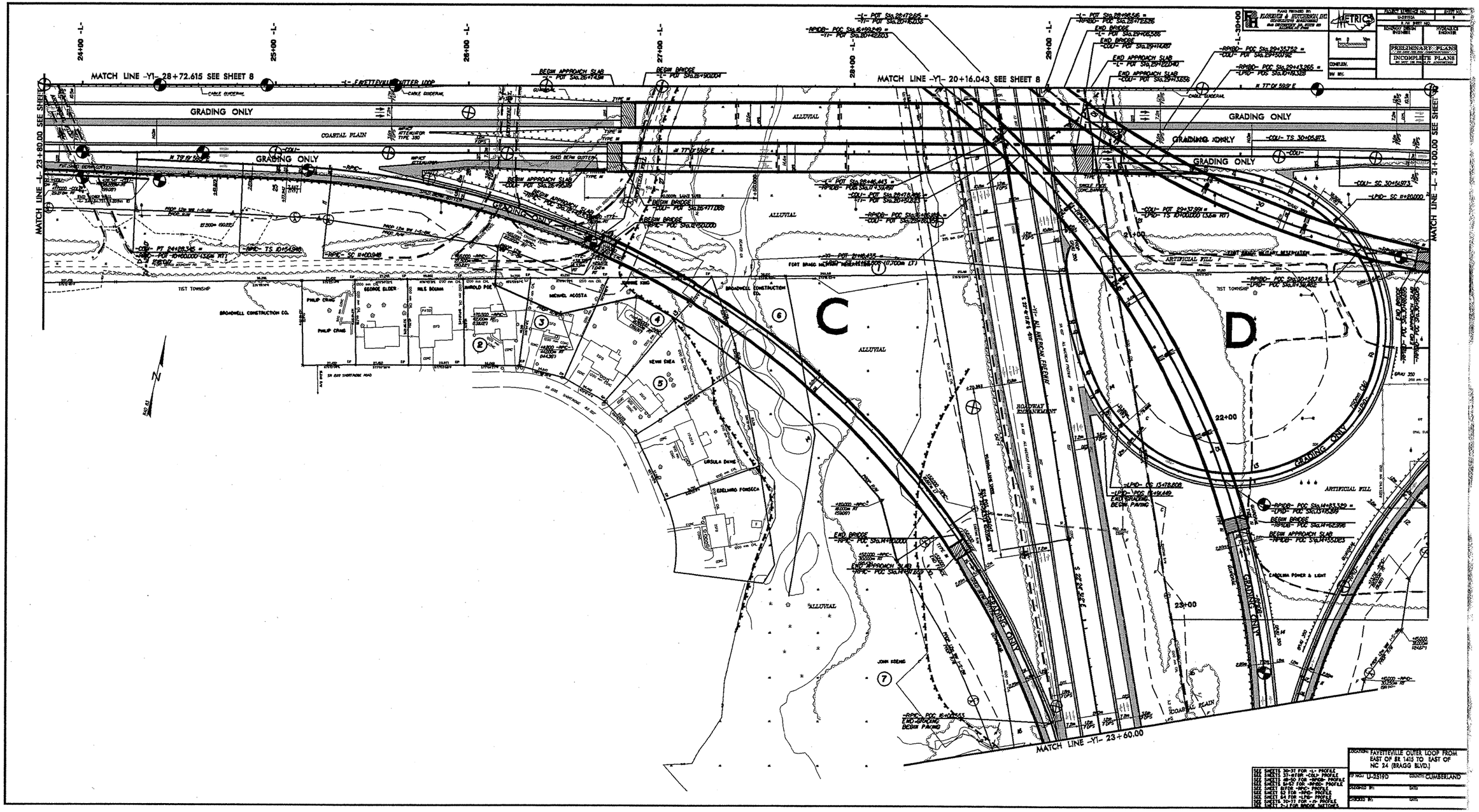
ECM

SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 42-47 FOR -COL2- PROFILE
SEE SHEETS 85-89 FOR -TT4- PROFILE

FILE: $FILES
DATE: $DATES
STAMPS

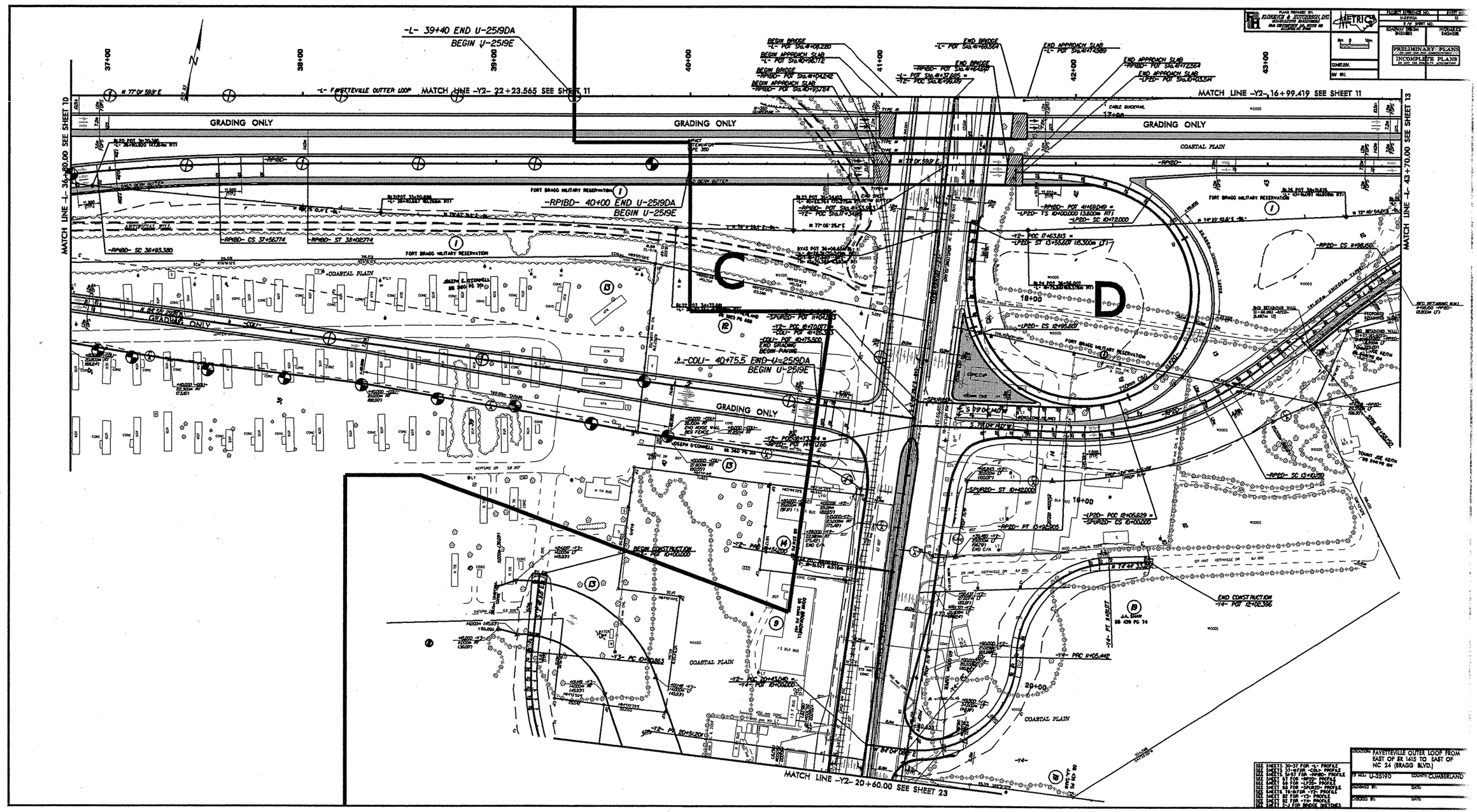
PLANS PREPARED BY:
CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. U-2519DA
SHEET NO. 7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 37-41 FOR -COL- PROFILE
SEE SHEETS 42-47 FOR -COL2- PROFILE
SEE SHEETS 48-50 FOR -RP1DB- PROFILE
-TT4- PRC 18+16.555
-TT4- PT 19+01.659
-TT4- PC 20+43.520
-TT4- PRC 20+93.055
-TT4- PRC 21+19.158
-TT4- PC 19+51.935
-TT4- PT 19+94.719
-TT4- PC 16+82.883
-TT4- PC 17+57.259
-TT4- PT 17+20.460
-TT4- PRC 17+06.175
-TT4- PRC 23+69.895
FORT BRAGG TANK TRAIL
ARTIFICIAL FILL
ALLUVIAL
COASTAL PLAIN
FORT BRAGG MILITARY RESERVATION
-COL2- POT 21+08.668 =
-RP1DB- ST 25+02.083 (3.600m LT)
-RP1DB- CS 24+58.083
-COL2- PT 19+28.873
17+00 -L-
18+00 -L-
19+00 -L-
20+00 -L-
21+00 -L-
22+00 -L-
23+00 -L-
GRADING ONLY
-COL2-
N 77° 01' 59.9" E
-L- FAYETTEVILLE OUTER LOOP
CABLE GUIDERAIL
-COU-
N 79° 20' 00.1" E
NOISE WALL
GUARDRAIL
PROP R/W
-L- POT 18+20.900 =
-COU- TS 18+20.586 (17.700m RT)
-COU- SC 18+80.586
-COU- PT 19+90.888
-COU- PC 22+88.043
MATCH LINE -L- 16+60.00 SEE SHEET 6
MATCH LINE -L- 23+80.00 SEE SHEET 8
MATCH LINE -L- 23+80.00 SEE SHEET 9
FORT BRAGG BOUNDARY RD
900 mm CHL
1050 mm CONC
750 mm CONC
LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
TIP NO.: U-2519D
COUNTY: CUMBERLAND
DESIGNED BY:
DATE:
CHECKED BY:
DATE:

PLANS PREPARED BY: FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. U-2519DA
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 42-47 FOR -COL2- PROFILE
SEE SHEETS 48-50 FOR -RPIDB- PROFILE
SEE SHEET 60 FOR -RPIB- PROFILE
SEE SHEET 63 FOR -LPIB- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE
SEE SHEET 84 FOR -TT1- PROFILE
SEE SHEET 85 FOR -TT3- PROFILE
SEE SHEETS 86-89 FOR -TT4 PROFILE
SEE SHEET 2-3 FOR BRIDGE SKETCHES
MATCH LINE -Y1- 16+60.00
MATCH LINE -L- 23+80.00 SEE SHEET 7
MATCH LINE -L- 31+00.00 SEE SHEET 10
MATCH LINE -Y1- 20+16.043 SEE SHEET 9
ROADWAY EMBANKMENT
-Y1- ALL AMERICAN FREEWAY
FORT BRAGG SECURITY ROAD
FORT BRAGG MILITARY RESERVATION
FORT BRAGG TANK TRAIL
-L- FAYETTEVILLE OUTER LOOP
GRADING ONLY
COASTAL PLAIN
ALLUVIAL
B
A
-TT4- PCC 26+75.10
-TT4- PRC 27+84.542
-TT4- PC 27+91.368
-TT4- PT 26+91.368
-TT3- POT 10+00.000 =
-TT4- POT 27+21.368
PCSta.10+35.481
PTSta.10+46.629
-TT4- PRC 26+59.481
-TT4- PCC 25+88.777
-RPIDB- POT 22+11.268 =
-RPIB- ST 15+39.350 (3.600m RT)
-TT4- PC 25+27.454
-RPIB- CS 14+87.350
-RPIDB- ST 21+23.586
-RPIDB- CS 20+77.586
-LPIB- CS Sta.13+78.808
-LPIB- SC Sta.11+20.000
PTSta.13+13.244
PCSta.12+86.223
-COL2- POT Sta.26+07.843 =
-LPIB- TS Sta.10+00.000 (3.6m LT)
-COL2- POT 27+10.645
-RPIA- POC 15+34.492 =
-TT1- POC 10+50.794
-TT1- PC 11+40.423
-TT1- PT 11+61.707
-TT6- POT 10+00.000
-TT6- PC 10+76.749
-Y1- PT 18+76.481
-Y1- POT Sta.19+15.641 =
-LPIB- ST Sta.14+68.808 (2.700m RT)
-RPIA- SC 12+47.143
END FENCE
BEAVER CR
VBT-7
VBT-8
CABLE GUIDERAIL
GUARDRAIL
17+00
18+00
19+00
20+00
24+00 -L-
25+00 -L-
26+00 -L-
28+00 -L-
29+00 -L-
30+00 -L-
LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
TIP NO.: U-2519D
COUNTY: CUMBERLAND
DESIGNED BY:
DATE:
CHECKED BY:
DATE:


MATCH LINE -Y1- 28+72.615 SEE SHEET 8
MATCH LINE -Y1- 20+16.043 SEE SHEET 8
MATCH LINE -L- 23+80.00 SEE SHEET
MATCH LINE -L- 31+00.00 SEE SHEET
MATCH LINE -Y1- 23+60.00
GRADING ONLY
COASTAL PLAIN
ALLUVIAL
ARTIFICIAL FILL
C
D
24+00 -L-
25+00 -L-
26+00 -L-
27+00 -L-
28+00 -L-
29+00 -L-
22+00
23+00
PRELIMINARY PLANS
INCOMPLETE PLANS
METRIC
LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
TIP NO.: U-2519D
COUNTY: CUMBERLAND

CURVE DATA FOR -RP1A-
CURVE DATA FOR -COL1-
CURVE DATA FOR -RP1BD-
CURVE DATA FOR -RP1D-
CURVE DATA FOR -TT6-
PLANS PREPARED BY: FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS
METRIC
U-2519DA
PRELIMINARY PLANS
INCOMPLETE PLANS
SEE SHEET 2-K FOR BRIDGE SKETCHES
SEE SHEET 2-AD FOR WALL DETAILS
MATCH LINE -L- 31+00.00 SEE SHEET 8
MATCH LINE -L- 31+00.00 SEE SHEET 9
MATCH LINE -L- 36+80.00 SEE SHEET 11
MATCH LINE -L- 36+80.00 SEE SHEET 12
NAD 83
COASTAL PLAIN
ALLUVIAL
ARTIFICIAL FILL
GRADING ONLY
32+00 -L-
33+00 -L-
34+00 -L-
35+00 -L-
36+00 -L-
-RP1A- CS 12+17.143
-TT6- PRC 12+82.517
-TT6- PRC 14+09.126
-TT6- PT 14+63.552
-TT6- PC 15+89.272
-RP1A- SC 11+19.732
-RP1A- TS 10+44.732
POT 8+15.532
POT 12+61.985
POT 12+85.285
POT 13+34.981
POT 14+06.922
POT 14+38.535
-COL2- POT 33+15.912 = -RP1A- POT 10+00.000 (3.6m LT)
-COL2- POT 36+61.696 = -RP2B- ST 10+00.000 (3.6m LT)
END SHLD BERM GUTTER
CABLE GUIDERAIL
-L- FAYETTEVILLE OUTER LOOP
FORT BRAGG MILITARY RESERVATION
-COL1- CS 32+47.010
-COL1- ST 32+93.010
-RP1BD- CS 32+19.096
-RP1BD- ST
END BRIDGE -RP1BD- POT Sta.34+98.846
END APPROACH SLAB -RP1BD- POT Sta.35+06.466
-COL1- POT Sta.34+25.491 =
BEGIN BRIDGE -RP1BD- POT Sta.33+58.295
BEGIN APPROACH SLAB -RP1BD- POT Sta.33+50.675
-RP1BD- POT 33+21.938 = -RP1D- ST 14+85.961 (3.6m RT)
-RP1D- CS 14+31.561
-RP1BD- TS 36+47.380
FORT BRAGG BOUNDARY RD
DON BROADWELL DB 2586 PG 497
JOSEPH E. O'CONNELL DB 380 PG 301
HTR
CONC
LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
TIP NO.: U-2519D
COUNTY: CUMBERLAND
DESIGNED BY:
CHECKED BY:
DATE:

PLANS PREPARED BY: FLORENCE & HUTCHESON, INC. CONSULTING ENGINEERS
METRIC
PROJECT REFERENCE NO. U-2519DA
SHEET NO. 11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SEE SHEETS 30-37 FOR -L- PROFILE
SEE SHEETS 42-47 FOR -COL2- PROFILE
SEE SHEET 66 FOR -RP2B- PROFILE
SEE SHEET 66 FOR -LP2B- PROFILE
SEE SHEET 66 FOR -SPUR2B- PROFILE
SEE SHEETS 78-81 FOR -Y2- PROFILE
SEE SHEETS 92-93 FOR -TT6- PROFILE
SEE SHEET 2-J FOR BRIDGE SKETCHES
CONSTR.
RW REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
MATCH LINE -Y2- 13+40.00 SEE SHEET 22
ALLUVIAL
COASTAL PLAIN
WOODS
14+00
18+00
A
B
-TT6- PRC 21+27.457
-TT6- POT 22+23.796
-SPUR2B- ST 10+75.000
-RP2B- PT 14+74.789
-Y2- POT 15+07.062 = -RP2B- POT 15+34.480
-Y2- POT 15+19.684 = -SPUR2B- POT 11+21.777
-Y2- PC 16+19.296
-Y2- POC 16+37.281 =
-LP2B- SC 10+90.000
-COL2- POT 41+02.206 =
-LP2B- ST 10+00.000 (3.6m LT.)
-Y2- BRAGG BLVD.
40+00 -L-
42+00 -L-
43+00 -L-
FORT BRAGG MILITARY RESERVATION
RR SPUR
-TT6- 18+40 END U-2519DA
BEGIN U-2519E
-RP2B- 12+40 END U-2519DA
BEGIN U-2519E
-COL2- 39+40 END U-2519DA
BEGIN U-2519E
-L- 39+40 END U-2519DA
BEGIN U-2519E
-TT6-
-RP2B-
-COL2-
GRADING ONLY
-L- FAYETTEVILLE OUTER LOOP
MATCH LINE -L- 36+80.00 SEE SHEET 10
MATCH LINE -Y2- 16+99.419 SEE SHEET 12
MATCH LINE -L- 43+70.00 SEE SHEET 13
BEGIN APPROACH SLAB -COL2- POT Sta. 41+03.465
BEGIN BRIDGE -COL2- POT Sta. 41+11.246
-L- POT Sta. 41+37.685 = -Y2- POC Sta. 16+99.419
BEGIN BRIDGE -L- POT Sta. 41+08.220
BEGIN APPROACH SLAB -L- POT Sta. 41+01.646
END APPROACH SLAB -COL2- POT Sta. 41+79.502
END APPROACH SLAB -L- POT Sta. 41+77.350
END BRIDGE -L- POT Sta. 41+68.564
END BRIDGE -COL2- POT Sta. 41+71.466
-COL2- POT Sta. 41+41.257 = -Y2- POC Sta. 16+63.940
CURVE DATA FOR -TT6-
CURVE DATA FOR -LP2B-
CURVE DATA FOR -RP2B-
CURVE DATA FOR -SPUR2B-
LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
TIP NO. U-2519D
COUNTY: CUMBERLAND
DESIGNED BY:
DATE:
CHECKED BY:
DATE:



-L- 39+40 END U-2519DA
BEGIN U-2519E
MATCH LINE -Y2- 22+23.565 SEE SHEET 11
MATCH LINE -Y2- 16+99.419 SEE SHEET 11
MATCH LINE -L- 36+80.00 SEE SHEET 10
MATCH LINE -L- 43+70.00 SEE SHEET 13
MATCH LINE -Y2- 20+60.00 SEE SHEET 23
GRADING ONLY
COASTAL PLAIN
FORT BRAGG MILITARY RESERVATION
-RPIBD- 40+00 END U-2519DA
BEGIN U-2519E
-COLI- 40+75.5 END U-2519DA
BEGIN U-2519E
C
D
END CONSTRUCTION
PRELIMINARY PLANS
INCOMPLETE PLANS
FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)
U-2519D
CUMBERLAND

PLANS PREPARED BY: FLORENCE & HUTCHESON, INC. ENGINEERS & SURVEYORS

METRIC

PROJECT REFERENCE NO. U-2519A | SHEET NO. 13

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS NOT FOR CONSTRUCTION INCOMPLETE PLANS NO RIGHT OF WAY ACQUISITION

CONFLICTS

NW BRK.

MATCH LINE -Y1- 9+50.00 SEE SHEET 14

MATCH LINE -Y1- 16+60.00 SEE SHEET 8

-TT5- PT 1025749

-TT5- PC 1026.42

-TT5- S 62°58'38.2" E

-TT5- PRC 1175751

-TT5- PT 12+25.000

-Y1- POT 14+00.00 LT

-RPIA- SF 8+00.434 (87.00m LT)

-TT5- PC 15+48.843

-TT5- PT 15+55.637

-TT5- POT 17+88.716

-TT5- PT 17+47.94

-TT5- PC 18+29.258

-Y1- PC 15+46.109

POT 18+29.00

POT 18+53.521

S 62°58'38.2" E

S 11°01'00.4" E

S 11°01'00.4" E

-Y1- ALL AMERICAN FREEWAY ROADWAY EMBANKMENT

S 62°58'38.2" E

S 62°58'38.2" E

S 4°53'38.2" E

S 4°53'38.2" E

-RPBD- SC 15+48.388

-RPBD- SF 9+92.388 (87.00m RT)

-RPBD- CS 20+17.123

-RPBD- ST 21+17.123

-RPBD- TS 23+47.709

-RPIB- POT 10+00.000 (5.800m RT) Δ=2°-19'-00"

-RPBD- SC 24+20.709

-RPIB- TS 01+41.862

-RPIB- POC 10+88.768

-RPIB- SC 10+93.862

-TT4- PCC 29+29.758

-TT4- PT 29+94.325

-TT4- PC 32+69.146

-TT4- PT 32+90.710

-TT4- PRC 34+26.168

-TT4- PT 34+34.275

-TT4- PRC 34+68.588

-Y1- POT 9+45.64 LT

-RPBD- SF 9+92.388 (87.00m RT)

COASTAL PLAIN

ALLUVIAL

FORT BRAGG MILITARY RESERVATION

FORT BRAGG SECURITY ROAD

ROADWAY EMBANKMENT

GUARDRAIL

DITCH

EXISTING R/W

PROPOSED GRADING

LOCATION: FAYETTEVILLE OUTER LOOP FROM EAST OF SR 1415 TO EAST OF NC 24 (BRAGG BLVD.)

TIP NO.: U-2519D | COUNTY: CUMBERLAND

DESIGNED BY: | DATE:

CHECKED BY: | DATE:

SEE SHEETS 51-57 FOR -RPBD- PROFILE
SEE SHEETS 58-59 FOR -RPIA- PROFILE
SEE SHEET 60 FOR -RPIB- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE
SEE SHEET 85 FOR -TT5- PROFILE
SEE SHEETS 86-90 FOR -TT4- PROFILE
SEE SHEETS 30-31 FOR -TT5- PROFILE

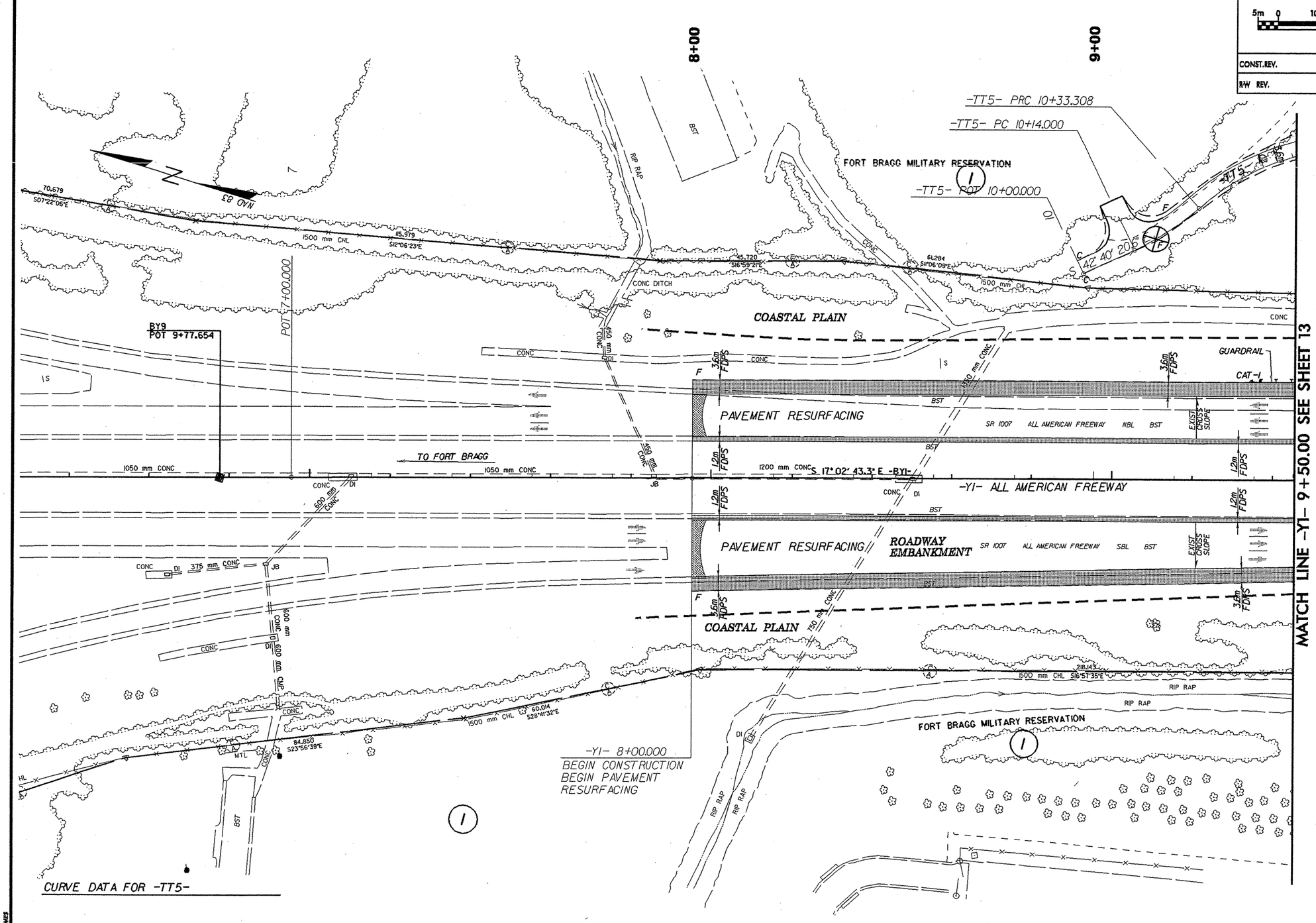
PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

METRIC

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CONST.REV.
R/W REV.



CURVE DATA FOR -TT5-

SEE SHEETS 71-77 FOR -Y1- PROFILE
SEE SHEETS 90-91 FOR -TT5- PROFILE

FILE: $FILES
DATE: $DATES
$TIMES

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4030 WESTCHASE BLVD., SUITE 476
RALEIGH, NC 27607

METRIC
5m 0 10m

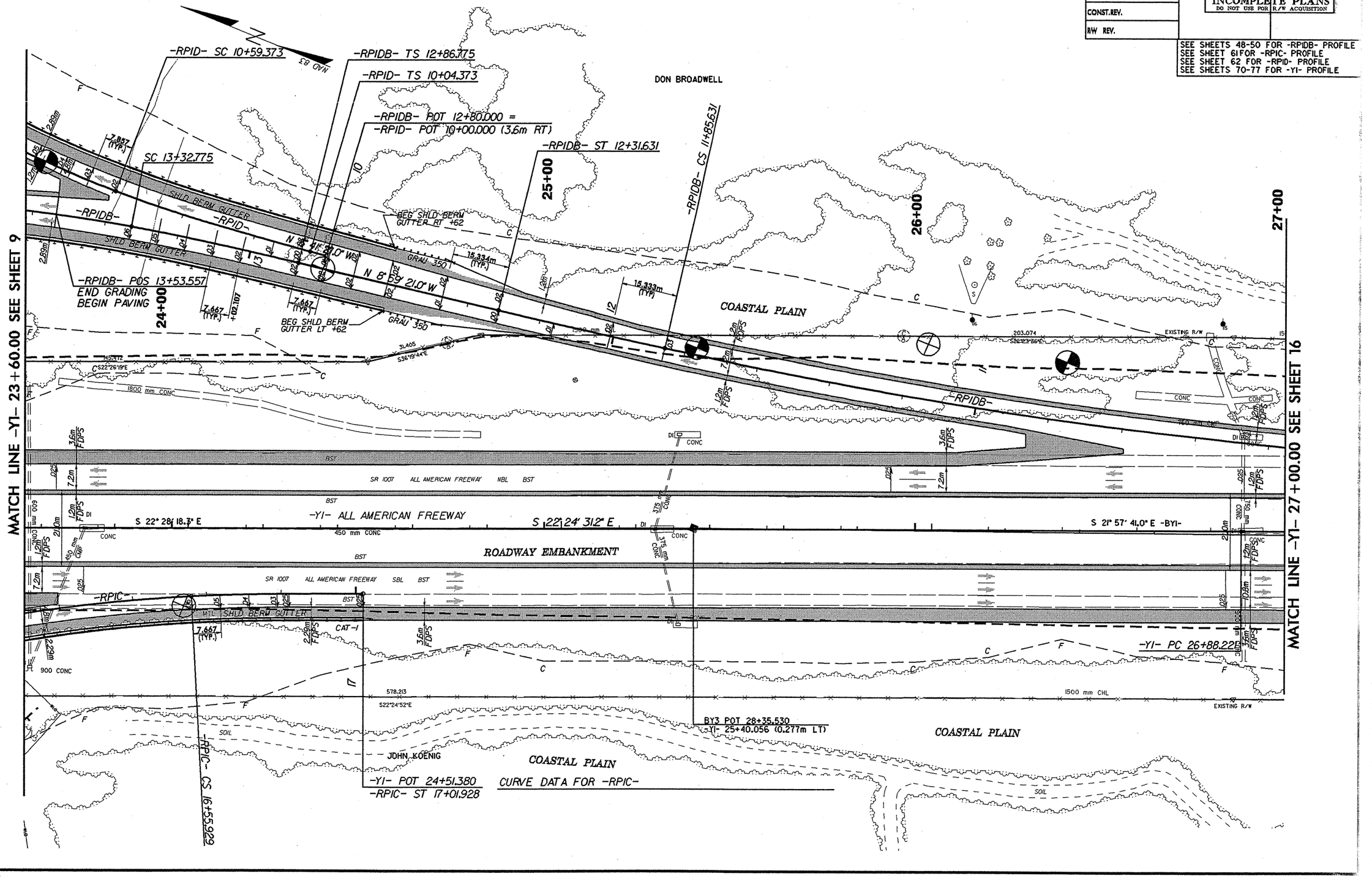
CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

SEE SHEETS 48-50 FOR -RPIDB- PROFILE
SEE SHEET 61 FOR -RPIC- PROFILE
SEE SHEET 62 FOR -RPID- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE



FILE: SFILES
DATE: $DATES $TIMES

CURVE DATA FOR -Y1-

CURVE DATA FOR -RPIDB-

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4080 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

METRIC

5m 0 10m

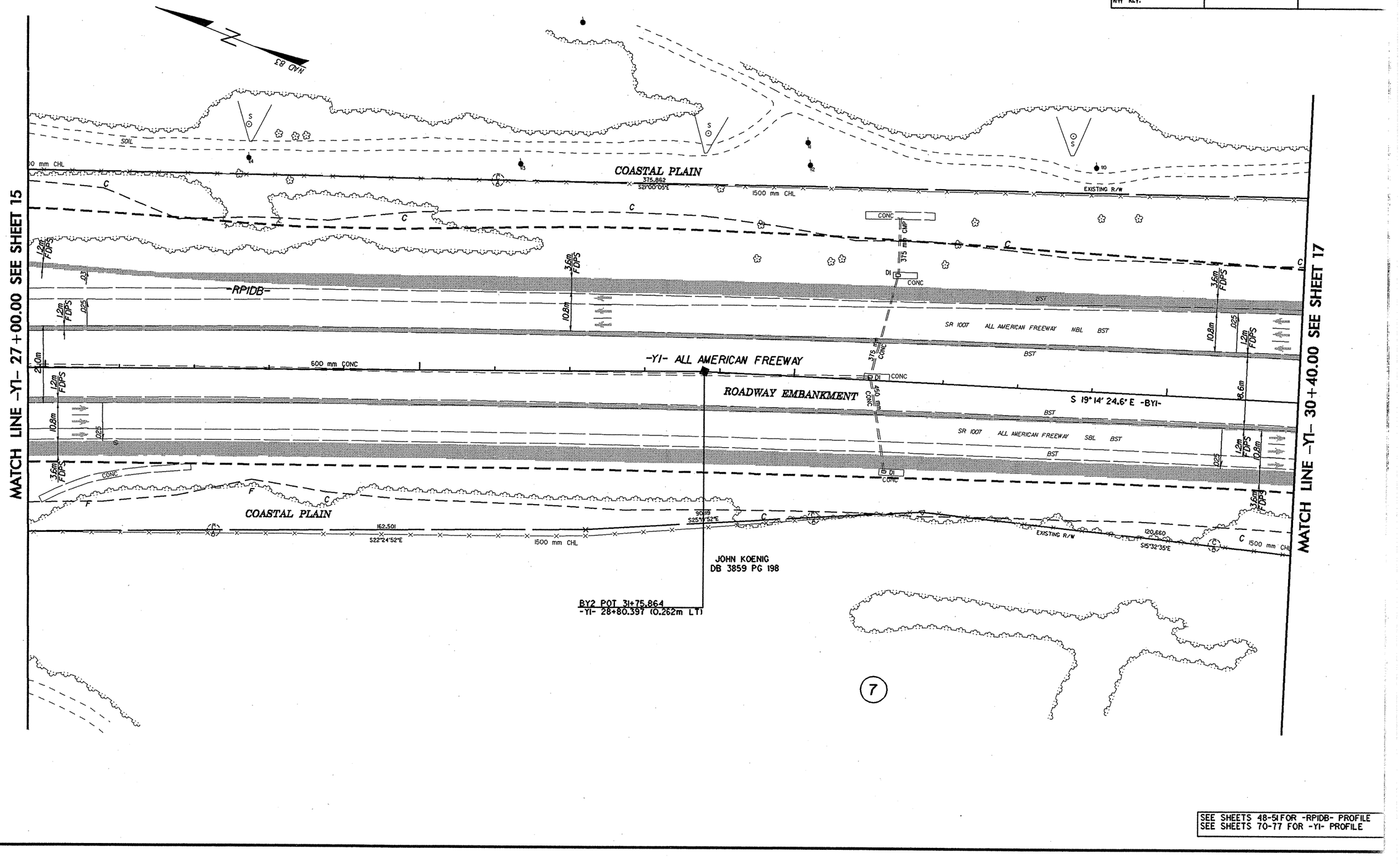
CONST.REV.

R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



SEE SHEETS 48-51 FOR -RPIDB- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE

FILE: STYLES
DATE: STYLES

CURVE DATA FOR -Y1-

PI Sta 31+34.716
Δ = 7° 18' 35.1" (RT)
L = 891.779
T = 446.495
R = 6,990.000
Se = 0.025

CURVE DATA FOR -RP3C-

PIs Sta 10+38.608
Θs = 0° 14' 47.1"
Θs = 3° 16' 26.9"
Ls = 60.000
LT = 38.608
ST = 21.408

PI Sta 11+76.412
Δ = 25° 00' 16.9" (RT)
L = 229.118
T = 116.412
R = 525.000
Se = 0.06

PIs Sta 13+09.124
Θs = 3° 16' 26.6"
Ls = 60.000
LT = 40.007
ST = 20.006

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

METRIC

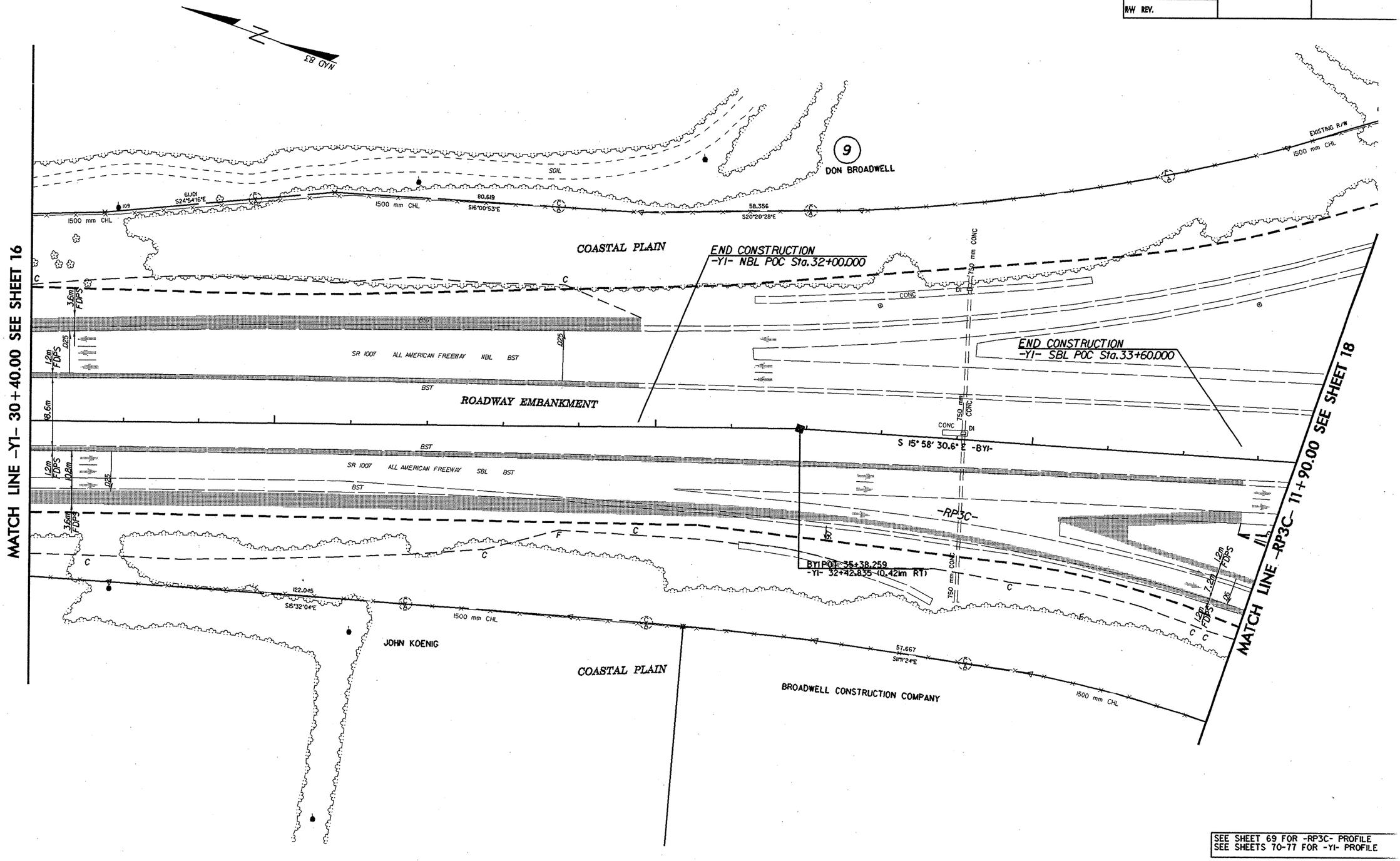
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5m 0 10m

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

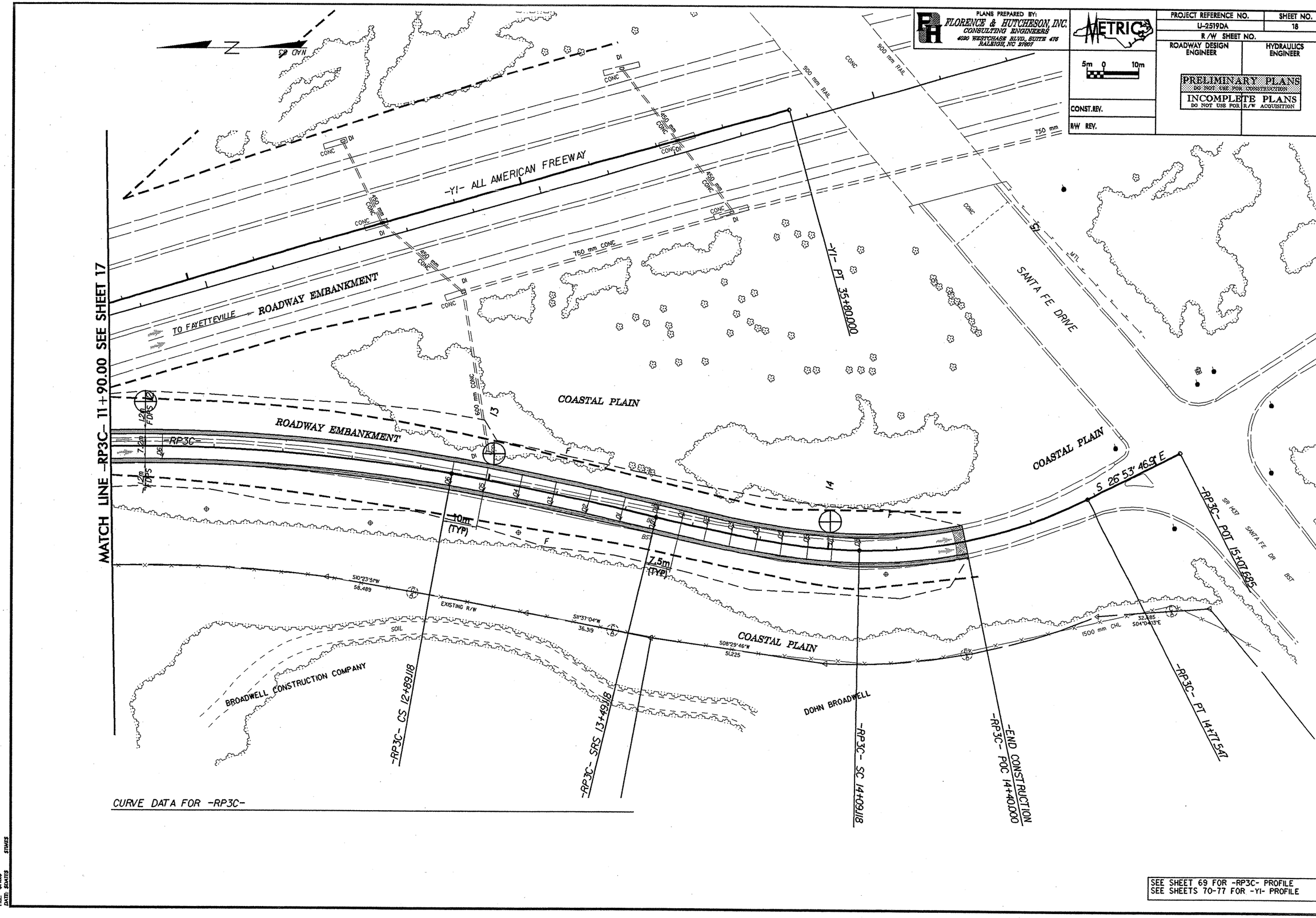
CONST.REV.

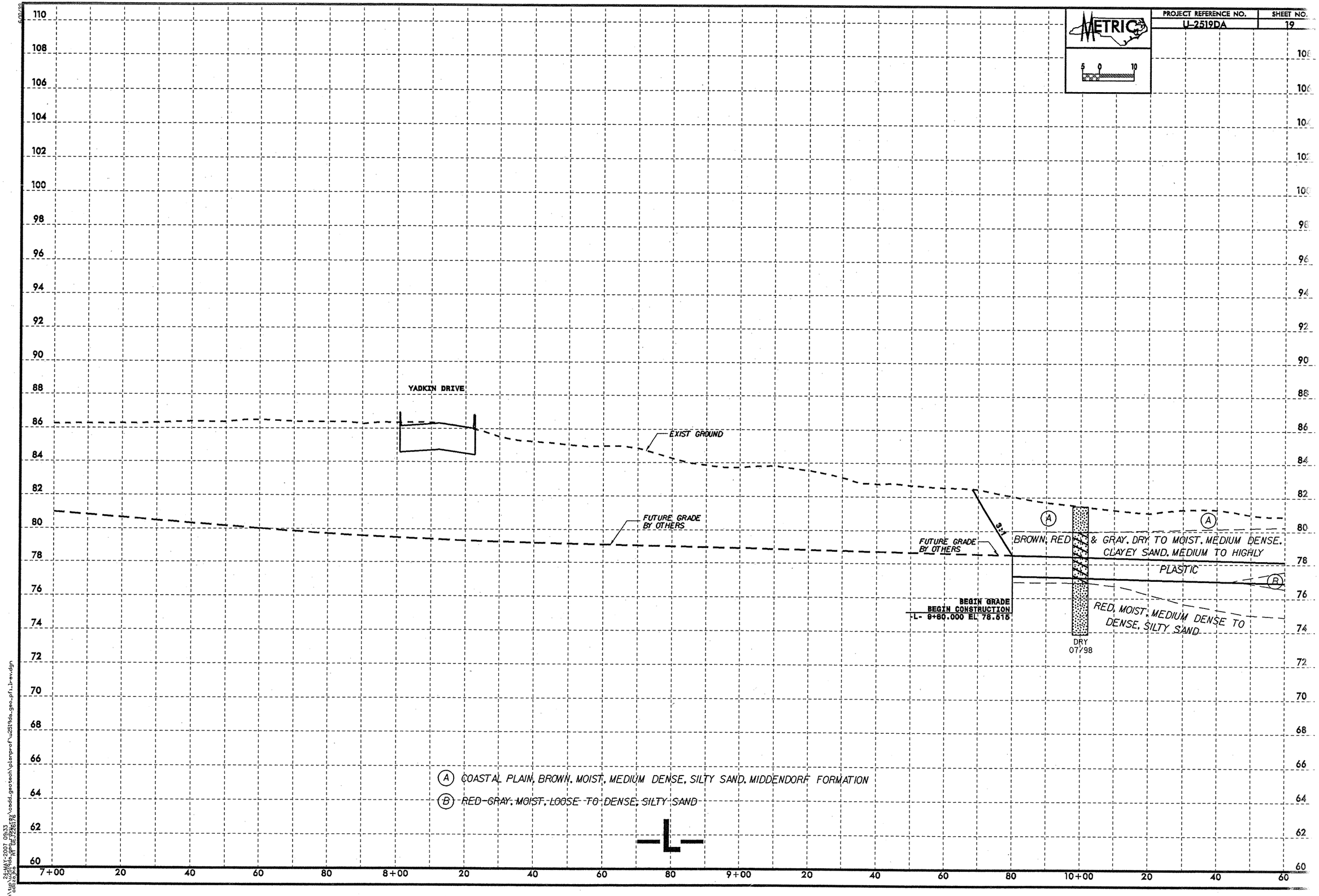
R/W REV.



SEE SHEET 69 FOR -RP3C- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE

FILE: $FILES
DATE: $DATE$ $TIME$


PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607
METRIC
5m 0 10m
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
18
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
N
NAD 83
-Y1- ALL AMERICAN FREEWAY
TO FAYETTEVILLE
ROADWAY EMBANKMENT
ROADWAY EMBANKMENT
COASTAL PLAIN
COASTAL PLAIN
COASTAL PLAIN
SANTA FE DRIVE
-Y1- PT 35+80.000
900 mm RAIL
750 mm CONC
600 mm CONC
450 mm CONC
-RP3C-
10m (TYP)
7.5m (TYP)
S 26°53'46.9" E
-RP3C- POT 15+07.685
SR 1437 SANTA FE DR BST
1500 mm CHL
S10°23'51"W 58.489
EXISTING R/W
S11°37'04"W 36.319
S08°29'46"W 51.225
S04°04'13"E 32.685
SOIL
BROADWELL CONSTRUCTION COMPANY
DOHN BROADWELL
-RP3C- CS 12+89.118
-RP3C- SRS 13+49.118
-RP3C- SC 14+09.118
-END CONSTRUCTION
-RP3C- POC 14+40.000
-RP3C- PT 14+77.547
MATCH LINE -RP3C- 11+90.00 SEE SHEET 17
CURVE DATA FOR -RP3C-
SEE SHEET 69 FOR -RP3C- PROFILE
SEE SHEETS 70-77 FOR -Y1- PROFILE



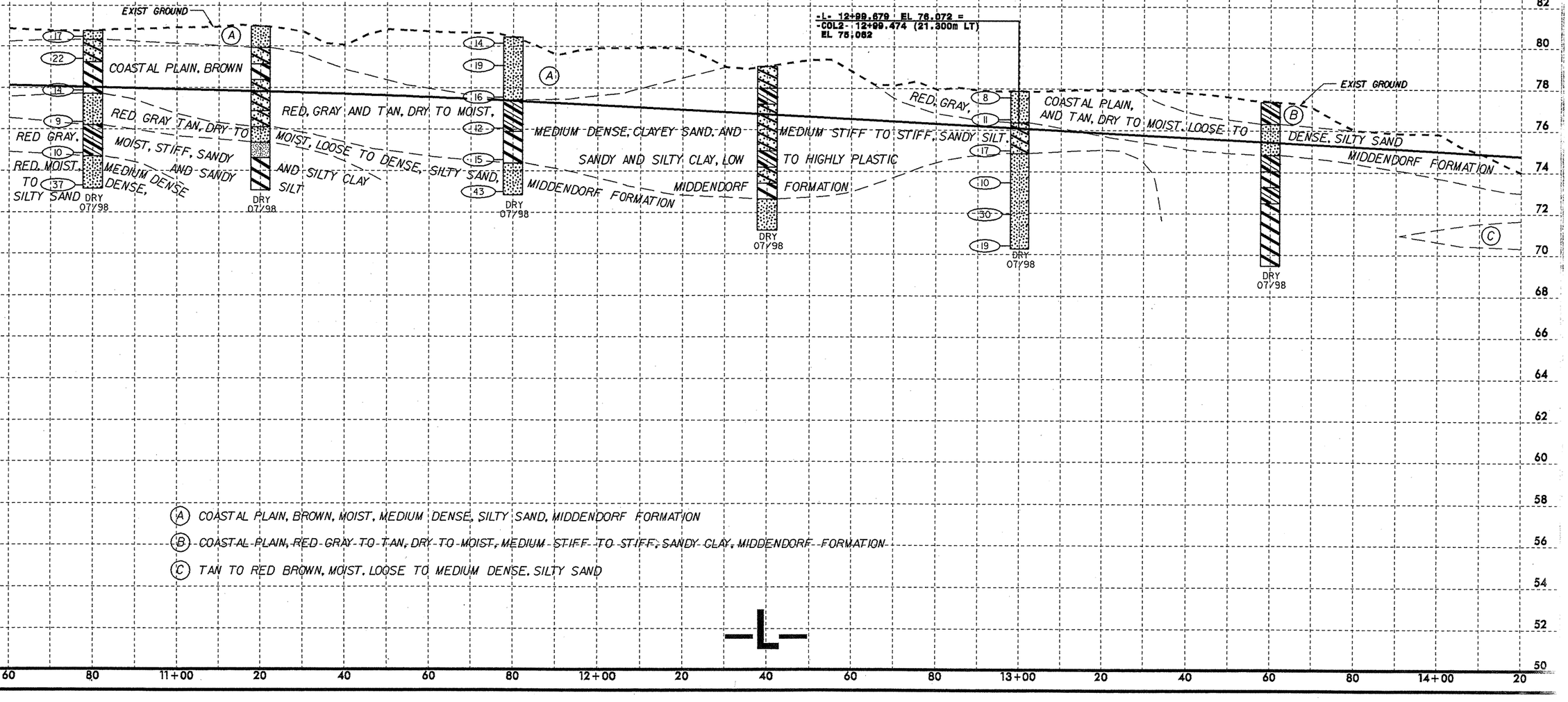
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
19
YADKIN DRIVE
EXIST GROUND
FUTURE GRADE BY OTHERS
FUTURE GRADE BY OTHERS
3:1
BROWN, RED & GRAY, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND, MEDIUM TO HIGHLY PLASTIC
RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
BEGIN GRADE
BEGIN CONSTRUCTION
-L- 9+80.000 EL 78.515
DRY
07/98
A COASTAL PLAIN, BROWN, MOIST, MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
B RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND
-L-
7+00
8+00
9+00
10+00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
RT-4	CL	10+60.0	0.60-0.90	A-2-4(0)	21	NP	37.4	45.6	3.1	13.9	100.0	82.1	18.4	-	-
RT-5	CL	10+70.0	0.90-1.50	A-7-6(11)	51	29	27.7	21.6	6.5	44.2	100.0	84.9	51.4	-	-
CBR-2	1.50m LT.	10+80.0	2.50-3.40	A-7-6(9)	56	34	36.3	23.7	0.8	39.2	100.0	79.7	43.1	15.5	-
S-1	CL	11+20.0	0.00-1.07	A-2-4(0)	25	5	48.7	27.2	9.1	15.0	98.9	71.7	26.2	8.1	-
S-2	CL	11+20.0	1.07-1.83	A-2-7(3)	49	24	43.6	22.1	7.0	27.3	99.0	72.8	36.1	13.8	-
S-3	CL	11+20.0	1.83-2.59	A-7-6(12)	62	33	33.3	21.3	6.4	39.0	100.0	81.0	48.3	17.3	-
S-4	CL	11+20.0	2.59-3.35	A-2-7(4)	48	29	42.5	25.3	8.8	23.4	100.0	76.0	34.6	15.3	-
S-5	CL	11+20.0	3.35-4.11	A-2-7(4)	45	25	34.3	32.8	4.6	28.3	100.0	83.0	36.6	16.7	-
S-6	CL	11+20.0	4.11-4.88	A-2-6(1)	34	15	41.0	30.9	5.3	22.8	99.7	79.0	31.9	13.6	-
S-7	CL	11+20.0	4.88-5.64	A-2-4(0)	27	5	27.0	45.5	6.1	21.4	100.0	87.9	33.2	14.4	-
S-8	CL	11+20.0	5.64-6.40	A-4(2)	33	10	15.3	45.5	12.7	26.5	99.3	91.1	45.6	22.8	-
S-9	CL	11+20.0	6.40-7.16	A-7-6(16)	55	30	18.3	25.1	12.6	44.0	100.0	91.0	59.9	26.5	-
S-10	CL	11+20.0	7.16-7.92	A-7-6(12)	53	30	28.7	20.2	13.6	37.5	99.8	84.1	51.7	24.1	-
CBR-3	0.61m RT.	11+20.0	2.50-3.50	A-2-4(0)	30	9	57.4	22.8	4.5	15.3	99.5	63.8	21.6	9.6	-

*NOTE: CBR'S & RT'S WERE TAKEN FROM OFFSET BORINGS.

S-1
S-2
S-3
S-4
S-5
S-6
S-7
S-8
S-9
S-10



(A) COASTAL PLAIN, BROWN, MOIST, MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION

(B) COASTAL PLAIN, RED-GRAY-TO-TAN, DRY-TO-MOIST, MEDIUM-STIFF-TO-STIFF, SANDY-CLAY, MIDDENDORF-FORMATION

(C) TAN TO RED BROWN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

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bgoldman

HAND TOOLS

*METRIC TONS

TEST NO.	STATION (-L-)	OFFSET	DEPTH INTERVAL	N_C	SHEAR STRENGTH *(TSF)	SOIL TYPE
VST-5	15+25.0	9.14m RT.	0.46		902	SAND
	15+25.0	9.14m RT.	0.61		656	SAND
	15+25.0	9.14m RT.	0.76		451	CLAY
	15+25.0	9.14m RT.	0.91		533	SAND
VST-3	15+30.0	4.57m RT.	0.46		656	SAND
	15+30.0	4.57m RT.	0.61		676	CLAY
	15+30.0	4.57m RT.	0.76		779	CLAY
	15+30.0	4.57m RT.	0.91		820	CLAY
	15+30.0	4.57m RT.	1.06		1271	SAND
	15+30.0	4.57m RT.	1.22		X	SAND
	15+30.0	4.57m RT.	1.37		861	CLAY
	15+30.0	4.57m RT.	1.52		533	SDY. CLAY
	15+30.0	4.57m RT.	1.68		492	CLAY
	15+30.0	4.57m RT.	1.83		451	CLAY
VST-6	15+30.0	16.20m RT.	0.46		328	SAND
	15+30.0	16.20m RT.	0.61		492	SAND
	15+30.0	16.20m RT.	0.76		615	SDY. CLAY
	15+30.0	16.20m RT.	0.91		574	SDY. CLAY
	15+30.0	16.20m RT.	1.06		615	SDY. CLAY
	15+30.0	16.20m RT.	1.22		1107	SAND
	15+30.0	16.20m RT.	1.37		656	CLAY
	15+30.0	16.20m RT.	1.52		902	CLAY
	15+30.0	16.20m RT.	1.68		1004	SDY. CLAY
	15+30.0	16.20m RT.	1.83		1189	CLAY
	15+30.0	16.20m RT.	1.83		1230	CLAY
VST-1	15+36.0	3.00m LT.	0.46		287	ORG. SILT
	15+36.0	3.00m LT.	0.61		492	SAND
	15+36.0	3.00m LT.	0.76		512	SAND
	15+36.0	3.00m LT.	0.91		492	SDY. CLAY
	15+36.0	3.00m LT.	1.06		266	MUCK
	15+36.0	3.00m LT.	1.22		656	CLAY
	15+36.0	3.00m LT.	1.37		574	CLAY
VST-2	15+50.0	7.30m LT.	0.61		1763	SAND
	15+50.0	7.30m LT.	0.91		1435	SAND
	15+50.0	7.30m LT.	1.06		635	CLAY
	15+50.0	7.30m LT.	1.30		574	MUCK
	15+50.0	7.30m LT.	1.37		820	SDY. MUCK
	15+50.0	7.30m LT.	1.52		574	MUCK
	15+50.0	7.30m LT.	1.68		943	SDY. CLAY
	15+50.0	7.30m LT.	1.83		1107	SDY. CLAY
	15+50.0	7.30m LT.	1.98		820	SDY. CLAY

HAND TOOLS

*METRIC TONS

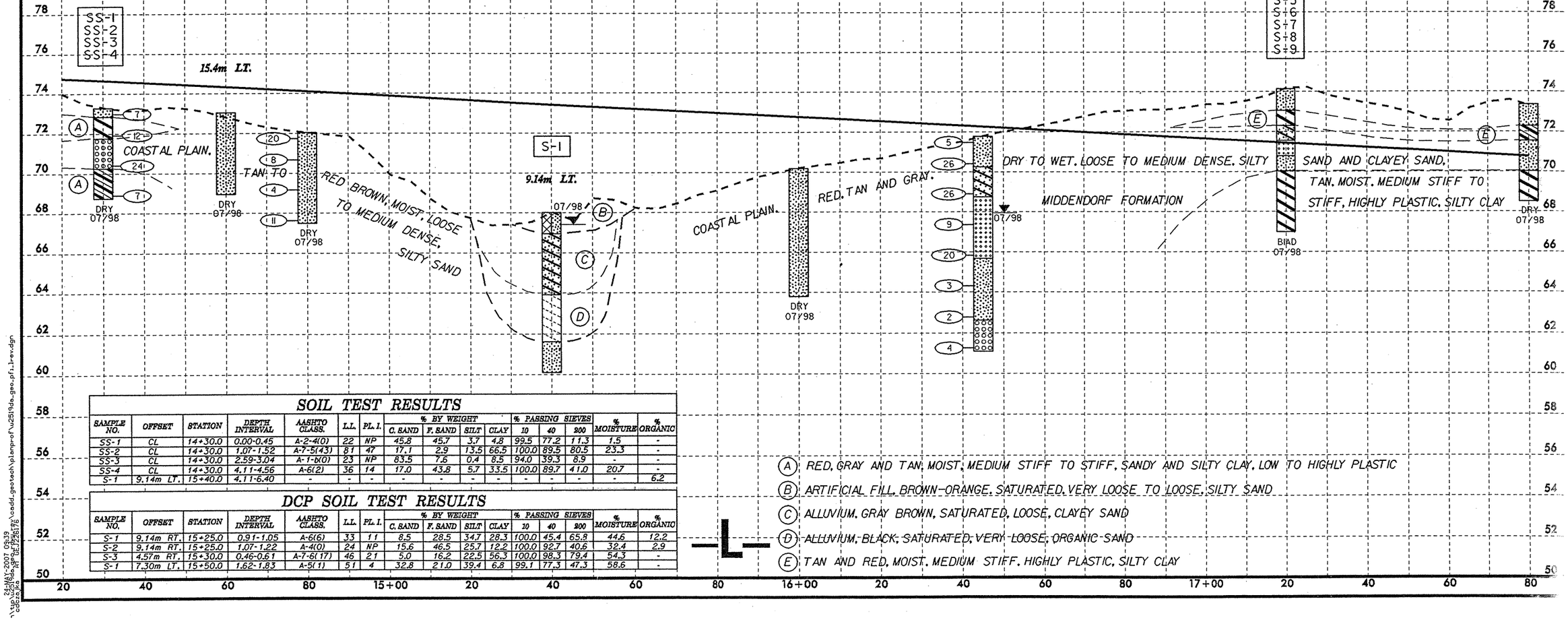
TEST NO.	STATION (-L-)	OFFSET	DEPTH INTERVAL	N_C	SHEAR STRENGTH *(TSF)	SOIL TYPE
VST-4	15+30.0	27.00m RT.	0.46		492	CLAY
	15+30.0	27.00m RT.	0.61		328	CLAY
	15+30.0	27.00m RT.	0.76		820	SAND
	15+30.0	27.00m RT.	0.91		287	SDY. CLAY
	15+30.0	27.00m RT.	1.06		1127	SDY. CLAY
	15+30.0	27.00m RT.	1.22		1394	SAND
DCP-5	15+25.0	9.14m RT.	0.00	WOH		A-3
	15+25.0	9.14m RT.	0.25	1.5		A-3
	15+25.0	9.14m RT.	0.50	WOH		A-3
	15+25.0	9.14m RT.	1.00	WOH		A-6
DCP-4	15+27.0	27.00m RT.	0.00	1.0		A-2-4
	15+27.0	27.00m RT.	0.25	1.5		A-2-4
	15+27.0	27.00m RT.	0.50	WOH		X
DCP-3	15+30.0	4.57m RT.	0.00	1.0		A-3
	15+30.0	4.57m RT.	0.25	WOH		A-7-6
DCP-6	15+30.0	16.20m RT.	0.00	WOH		A-2-4
	15+30.0	16.20m RT.	0.25	1.0		A-3
	15+30.0	16.20m RT.	0.50	1.0		A-3
	15+30.0	16.20m RT.	1.00	2.0		A-3
DCP-1	15+44.0	CL	0.00	WOH		A-4
	15+44.0	CL	0.25	2.0		A-7-6
	15+44.0	CL	0.50	WOH		A-2-4
	15+44.0	CL	1.00	WOH		X
	15+44.0	CL	1.50	11.0		X
DCP-2	15+50.0	7.30m LT.	0.00	1.5		A-2-4
	15+50.0	7.30m LT.	0.25	4.0		A-2-4
	15+50.0	7.30m LT.	0.50	5.5		A-6
	15+50.0	7.30m LT.	1.00	WOH		A-7-6
	15+50.0	7.30m LT.	1.50	2.0		A-2-6
	15+50.0	7.30m LT.	2.00	9.5		X
	15+50.0	7.30m LT.	2.25	23.5		X

X-UNABLE TO RECOVER SAMPLE IN HAND AUGER DUE TO SATURATED SOIL.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
*RT-2	1.00m RT.	17+19.5	2.50-2.70	A-7-6(26)	63	36	16.2	13.1	14.1	56.6	100.0	92.0	72.0	-	-
RT-6	1.00m RT.	17+19.5	5.49-6.10	A-7-6(14)	59	35	20.8	19.3	10.2	49.7	99.9	88.2	60.4	-	-
S-1	CL	17+20.0	0.03-1.07	A-2-4(0)	23	2	37.1	37.4	5.5	20.0	99.8	79.7	29.0	10.2	-
S-2	CL	17+20.0	1.07-1.83	A-7-6(14)	57	33	25.5	24.6	7.8	42.1	100.0	85.3	53.3	17.7	-
S-3	CL	17+20.0	1.83-2.59	A-2-6(1)	36	14	36.8	32.0	6.1	25.1	100.0	79.6	35.6	12.2	-
S-4	CL	17+20.0	2.59-3.35	A-3(0)	20	NP	45.7	46.2	2.2	5.9	99.0	82.9	8.8	-	-
S-5	CL	17+20.0	3.35-4.11	A-2-4(0)	19	NP	73.4	16.2	3.8	6.6	98.8	53.4	11.1	13.8	-
S-6	CL	17+20.0	4.11-4.88	A-7-6(6)	51	26	39.9	20.0	8.1	32.0	100.0	75.8	41.2	21.5	-
S-7	CL	17+20.0	4.88-5.64	A-7-5(15)	56	32	25.4	20.9	9.6	44.1	100.0	87.8	55.3	23.4	-
S-8	CL	17+20.0	5.64-6.40	A-7-6(18)	58	36	21.5	22.4	8.3	47.8	100.0	88.5	58.0	22.4	-
S-9	CL	17+20.0	6.40-7.16	A-7-6(20)	58	35	20.2	19.9	11.3	48.6	100.0	89.5	61.9	25.9	-
RT-4	CL	17+20.0	0.60-0.90	A-2-4(0)	21	NP	37.4	45.6	3.1	13.9	100.0	82.1	18.4	-	-
RT-5	CL	17+20.0	0.90-1.50	A-7-6(11)	51	29	27.7	21.6	6.5	44.2	100.0	84.9	51.4	-	-
CBR-1	19.80m RT.	17+39.0	4.40-5.60	A-2-6(1)	37	16	28.6	37.7	4.4	29.3	99.8	85.9	33.9	18.6	-

NOTE: RT'S 4,5 & 6 BULK SAMPLES TAKEN AT SEVERAL DEPTHS IN ORDER TO OBTAIN ENOUGH MATERIAL TO TEST.



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	CL	14+30.0	0.00-0.45	A-2-4(0)	22	NP	45.8	45.7	3.7	4.8	99.5	77.2	11.3	1.5	-
SS-2	CL	14+30.0	1.07-1.52	A-7-5(43)	81	47	17.1	2.9	13.5	66.5	100.0	89.5	80.5	23.3	-
SS-3	CL	14+30.0	2.59-3.04	A-1-b(0)	23	NP	83.5	7.6	0.4	8.5	94.0	39.3	8.9	-	-
SS-4	CL	14+30.0	4.11-4.56	A-6(2)	36	14	17.0	43.8	5.7	33.5	100.0	89.7	41.0	20.7	-
S-1	9.14m LT.	15+40.0	4.11-6.40	-	-	-	-	-	-	-	-	-	-	-	6.2

DCP SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
S-1	9.14m RT.	15+25.0	0.91-1.05	A-6(6)	33	11	8.5	28.5	34.7	28.3	100.0	45.4	65.8	44.6	12.2
S-2	9.14m RT.	15+25.0	1.07-1.22	A-4(0)	24	NP	15.6	46.5	25.7	12.2	100.0	92.7	40.6	32.4	2.9
S-3	4.57m RT.	15+30.0	0.46-0.61	A-7-6(17)	46	21	5.0	16.2	22.5	56.3	100.0	98.3	79.4	54.3	-
S-1	7.30m LT.	15+50.0	1.62-1.83	A-5(11)	51	4	32.8	21.0	39.4	6.8	99.1	77.3	47.3	58.6	-

(A) RED, GRAY AND TAN, MOIST, MEDIUM STIFF TO STIFF, SANDY AND SILTY CLAY, LOW TO HIGHLY PLASTIC

(B) ARTIFICIAL FILL, BROWN-ORANGE, SATURATED, VERY LOOSE TO LOOSE, SILTY SAND

(C) ALLUVIUM, GRAY BROWN, SATURATED, LOOSE, CLAYEY SAND

(D) ALLUVIUM, BLACK, SATURATED, VERY LOOSE, ORGANIC SAND

(E) TAN AND RED, MOIST, MEDIUM STIFF, HIGHLY PLASTIC, SILTY CLAY

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PROJECT REFERENCE NO. U-2519DA | SHEET NO. 22

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PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	23

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	CL	22+42.3	0.00-0.45	A-6(5)	38	19	37.0	18.3	2.0	42.7	99.5	77.1	44.8	29.8	-
SS-1	CL	22+81.0	0.00-0.45	A-7-5(18)	56	22	16.1	9.1	16.7	58.1	100.0	95.2	75.2	87.7	-
SS-1	CL	23+11.4	0.00-0.45	A-7-5(7)	44	18	21.4	26.8	10.0	41.8	100.0	90.2	52.1	55.0	-
S-1	CL	23+80.0	0.06-1.07	A-2-6(0)	36	11	62.9	13.4	0.8	22.9	83.1	38.9	21.2	7.4	-
S-2	CL	23+80.0	1.07-1.83	A-2-4(0)	31	10	72.9	10.3	2.1	14.7	95.4	45.9	16.6	12.3	-
S-3	CL	23+80.0	1.83-2.59	A-1-b(0)	26	4	79.2	9.0	0.0	11.8	96.8	39.1	11.9	-	-
S-4	CL	23+80.0	2.59-3.35	A-1-b(0)	23	2	78.2	9.1	2.0	10.7	98.5	41.0	13.4	-	-
S-5	CL	23+80.0	3.35-4.11	A-1-b(0)	23	3	71.5	12.0	6.1	10.4	98.8	46.3	17.3	-	-
S-6	CL	23+80.0	4.11-4.88	A-1-b(0)	26	6	72.4	15.6	0.1	11.9	98.2	47.5	12.8	-	-
S-7	CL	23+80.0	4.88-5.64	A-1-b(0)	26	5	74.0	12.9	2.8	10.3	98.5	42.6	14.0	-	-
S-8	CL	23+80.0	5.64-6.40	A-1-b(0)	24	3	71.2	16.2	3.2	9.4	98.6	45.9	13.5	-	-
S-9	CL	23+80.0	6.40-7.16	A-2-4(0)	20	NP	68.5	18.7	3.2	9.6	99.2	51.1	14.0	27.1	-
SS-1	CL	24+96.0	3.04-3.49	A-6(13)	40	21	13.8	15.4	26.0	44.8	100.0	91.2	71.3	25.9	-

(A) ALLUVIUM, BLACK, WET, VERY LOOSE, ORGANIC, SAND

(B) ALLUVIUM, GRAY, WET TO SATURATED, VERY SOFT, SANDY AND SILTY CLAY

(C) ALLUVIUM, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT

(D) TAN, GRAY & RED, WET TO SATURATED, VERY SOFT, HIGHLY PLASTIC, SILTY CLAY WITH ALTERNATING SAND LAYERS

S-1
S-2
S-3
S-4
S-5
S-6
S-7
S-8
S-9

EXIST GROUND

07/98

COASTAL PLAIN, RED GRAY TO SAT., VERY LOOSE TO MEDIUM DENSE, COARSE SAND,

TAN, DRY TO GRAY-TAN, DRY TO WET, SANDY AND SILTY CLAY, SILTY SAND, FINE AND MIDDENDORF FORMATION

10/98

SS-1

ALLUVIUM, GRAY, WET TO MEDIUM DENSE, F. SILTY SAND

STIFF TO VERY STIFF, COASTAL PLAIN

SAT., VERY LOOSE TO LOOSE WITH GRAVEL, GRAY, TAN AND

RED, DRY TO WET, VERY LOOSE TO DENSE, SILTY SAND, CLAYEY SAND, FINE AND COARSE SAND, WITH GRAVEL AND ALTERNATING CLAY LAYERS,

COASTAL PLAIN, GRAY - TO HARD, SANDY CLAYEY SAND

TAN, DRY TO WET, STIFF CLAY AND MEDIUM DENSE, CAPE FEAR FORMATION

BIAD 07/98

MIDDENDORF FORMATION

COASTAL PLAIN, GRAY AND TAN, MOIST, STIFF TO V. STIFF, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND

CAPE FEAR FORMATION

22+00 20 40 60 80 23+00 20 40 60 80 24+00 20 40 60 80 25+00

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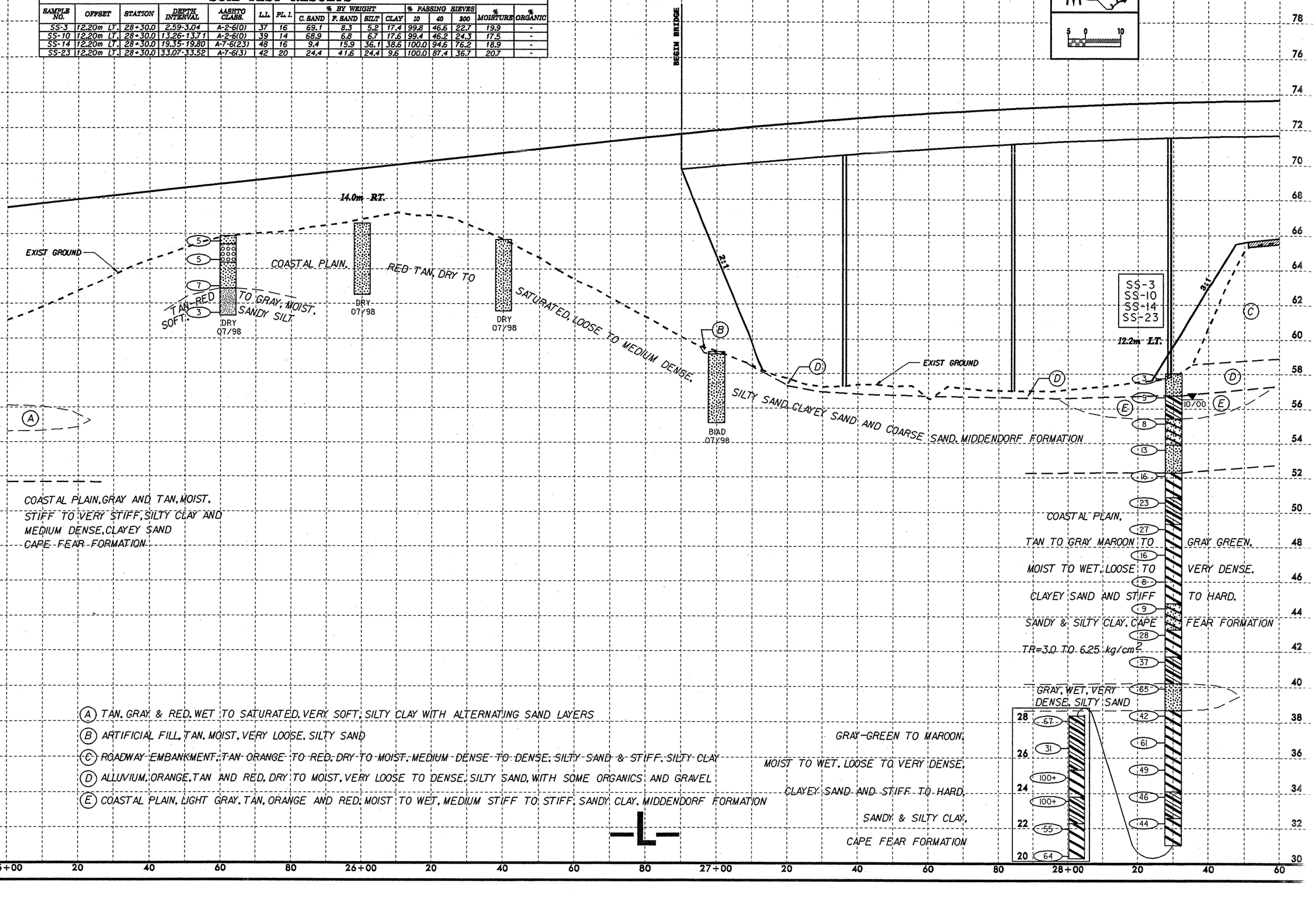
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	24

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-3	12.20m LT.	28+30.0	2.59-3.04	A-2-6(0)	37	16	69.1	8.3	5.2	17.4	99.8	46.6	22.7	19.9	-
SS-10	12.20m LT.	28+30.0	13.26-13.71	A-2-6(0)	39	14	68.9	6.8	6.7	17.6	99.4	46.2	24.3	17.5	-
SS-14	12.20m LT.	28+30.0	19.35-19.80	A-7-6(23)	48	16	9.4	15.9	36.1	38.6	100.0	94.6	76.2	18.9	-
SS-23	12.20m LT.	28+30.0	33.07-33.52	A-7-6(3)	42	20	24.4	41.6	24.4	9.6	100.0	87.4	36.7	20.7	-



(A) TAN, GRAY & RED, WET TO SATURATED, VERY SOFT, SILTY CLAY WITH ALTERNATING SAND LAYERS

(B) ARTIFICIAL FILL, TAN, MOIST, VERY LOOSE, SILTY SAND

(C) ROADWAY EMBANKMENT, TAN ORANGE TO RED, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY SAND & STIFF, SILTY CLAY

(D) ALLUVIUM, ORANGE, TAN AND RED, DRY TO MOIST, VERY LOOSE TO DENSE, SILTY SAND, WITH SOME ORGANICS AND GRAVEL

(E) COASTAL PLAIN, LIGHT GRAY, TAN, ORANGE AND RED, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY CLAY, MIDDENDORF FORMATION

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6/10/93

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	25

METRIC

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-5	24.60m LT.	28+67.5	5.64-6.09	A-2-4(0)	28	20	70.6	9.6	5.5	14.3	96.8	44.2	19.4	9.1	-
SS-9	24.60m LT.	28+67.5	11.73-12.18	A-7-6(31)	57	22	4.2	12.4	20.4	63.0	100.0	97.9	83.8	20.2	-
SS-16	24.60m LT.	28+67.5	22.40-22.85	A-7-6(20)	65	25	9.0	7.9	13.4	69.7	100.0	94.3	83.6	25.9	-
SS-21	24.60m LT.	28+67.5	30.02-30.47	A-7-6(15)	57	27	20.1	25.9	32.6	21.4	100.0	88.4	56.7	24.2	-
SS-25	24.60m LT.	28+67.5	36.11-36.56	A-2-6(0)	30	15	45.0	30.0	21.2	3.8	99.6	72.4	26.6	11.6	-

SS-5
SS-9
SS-16
SS-21
SS-25

24.6m LT.

END BRIDGE

-Y1- 8BL (MEOP)
EL 65.851

-L- 28+72.615 =
-Y1- 20+16.038

-Y1- NBL (MEOP)
EL 65.738

1.5:1

13.7m LT.

EXIST GROUND

5.5m RT.

(A) ROADWAY EMBANKMENT, TAN ORANGE TO RED, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY SAND & STIFF, SILTY CLAY

(B) ALLUVIUM, ORANGE, TAN AND RED, DRY TO MOIST, VERY LOOSE TO DENSE, SILTY SAND, WITH SOME ORGANICS AND GRAVEL

(C) ALLUVIUM, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT, WITH WOOD FRAGMENTS

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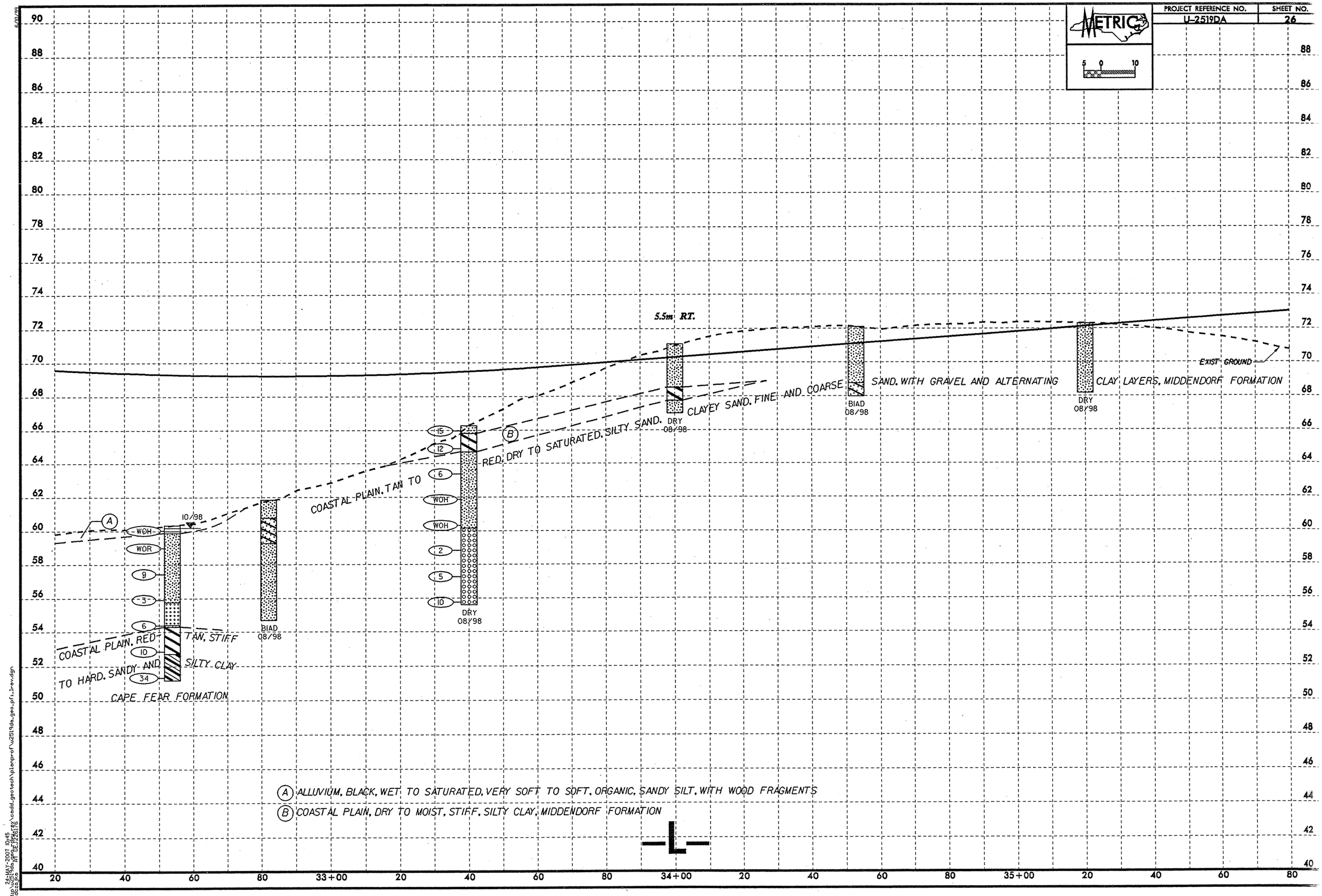
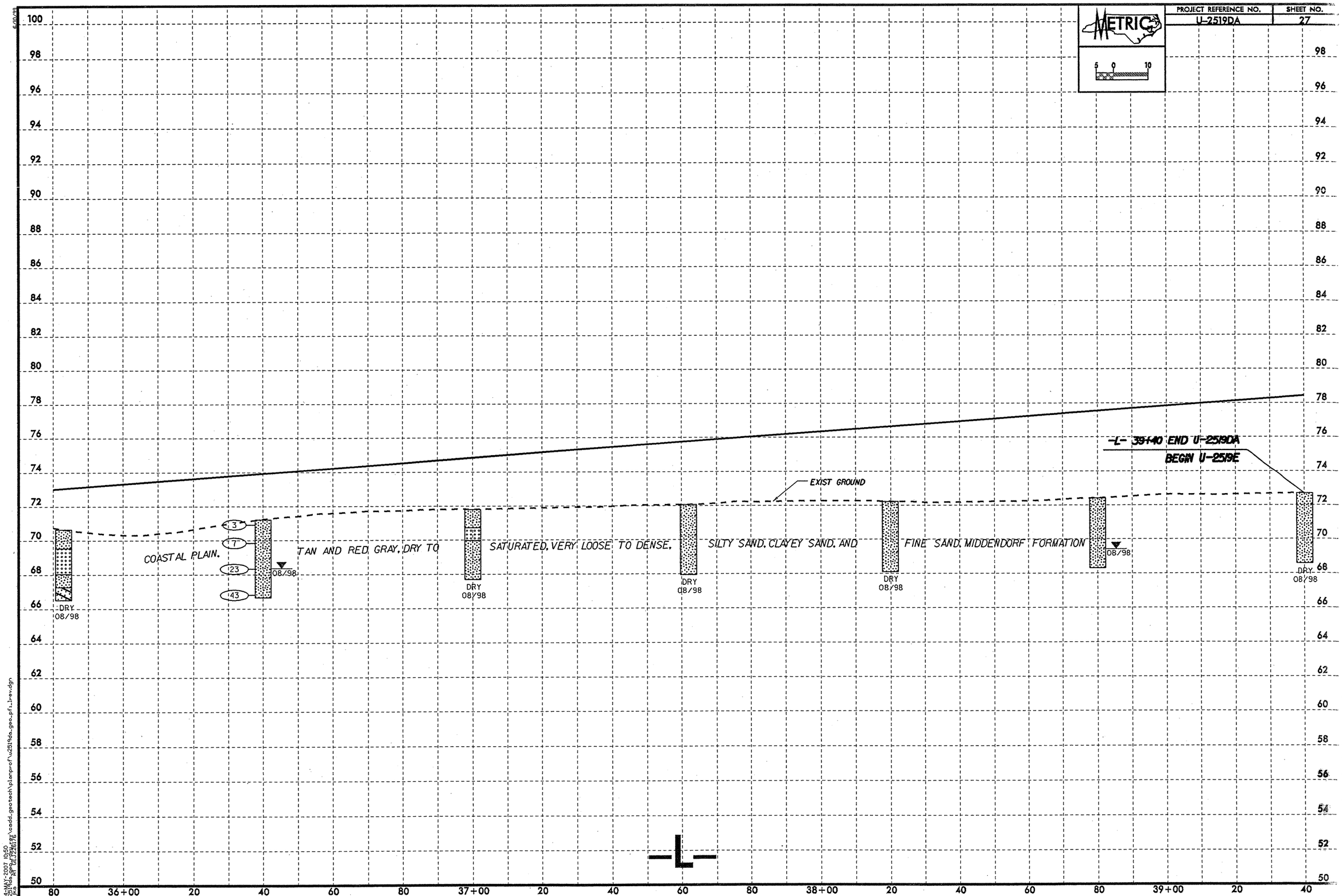


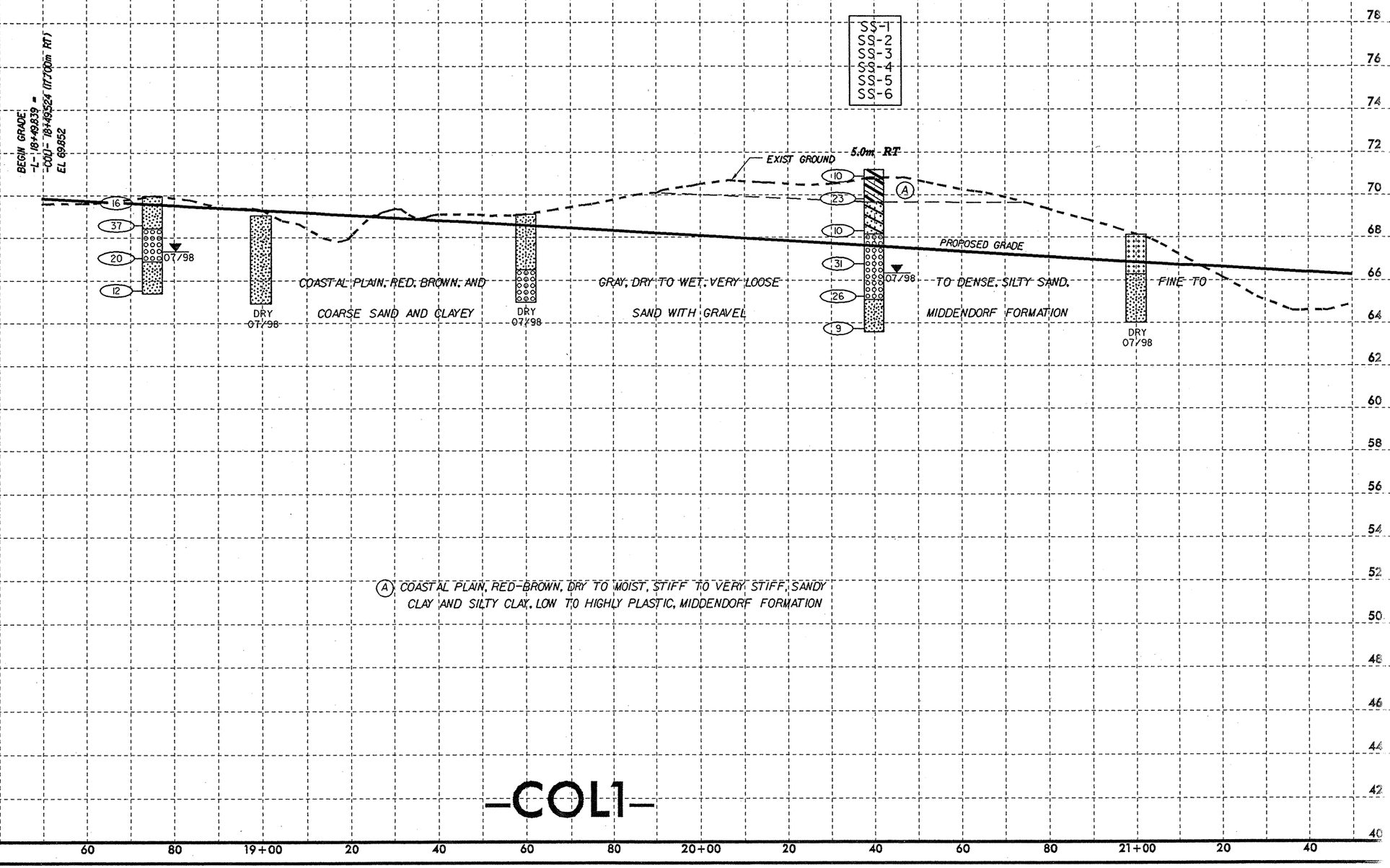
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
26
5.5m RT.
EXIST GROUND
COASTAL PLAIN, TAN TO RED, DRY TO SATURATED, SILTY SAND, CLAYEY SAND, FINE AND COARSE SAND, WITH GRAVEL AND ALTERNATING CLAY LAYERS, MIDDENDORF FORMATION
COASTAL PLAIN, RED TO HARD, SANDY AND TAN, STIFF SILTY CLAY
CAPE FEAR FORMATION
10/98
BIAD 08/98
DRY 08/98
WOH
WOR
A ALLUVIUM, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT, WITH WOOD FRAGMENTS
B COASTAL PLAIN, DRY TO MOIST, STIFF, SILTY CLAY, MIDDENDORF FORMATION
-L-
33+00
34+00
35+00



METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
27
-L- 39+40 END U-2519DA
BEGIN U-2519E
EXIST GROUND
COASTAL PLAIN. TAN AND RED GRAY, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, CLAYEY SAND, AND FINE SAND, MIDDENDORF FORMATION
3
7
23
43
08/98
DRY
-L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	5.00m RT.	20+40.0	0.00-0.45	A-7-6(10)	50	28	16.5	38.0	9.7	35.8	100.0	93.2	49.1	16.7	-
SS-2	5.00m RT.	20+40.0	1.07-1.52	A-6(4)	36	14	21.5	31.0	9.1	38.4	100.0	88.5	51.2	10.1	-
SS-3	5.00m RT.	20+40.0	2.59-3.04	A-2-6(1)	33	15	24.9	48.4	2.8	23.9	99.8	89.2	34.3	14.0	-
SS-4	5.00m RT.	20+40.0	4.11-4.56	A-1-b(0)	24	NP	71.1	16.6	8.1	4.2	89.6	39.2	12.3	-	-
SS-5	5.00m RT.	20+40.0	5.64-6.09	A-1-b(0)	19	NP	85.0	7.2	3.5	4.3	94.6	18.4	8.4	-	-
SS-6	5.00m RT.	20+40.0	7.16-7.61	A-2-4(0)	23	NP	48.8	37.6	9.5	4.1	100.0	69.2	15.4	17.2	-



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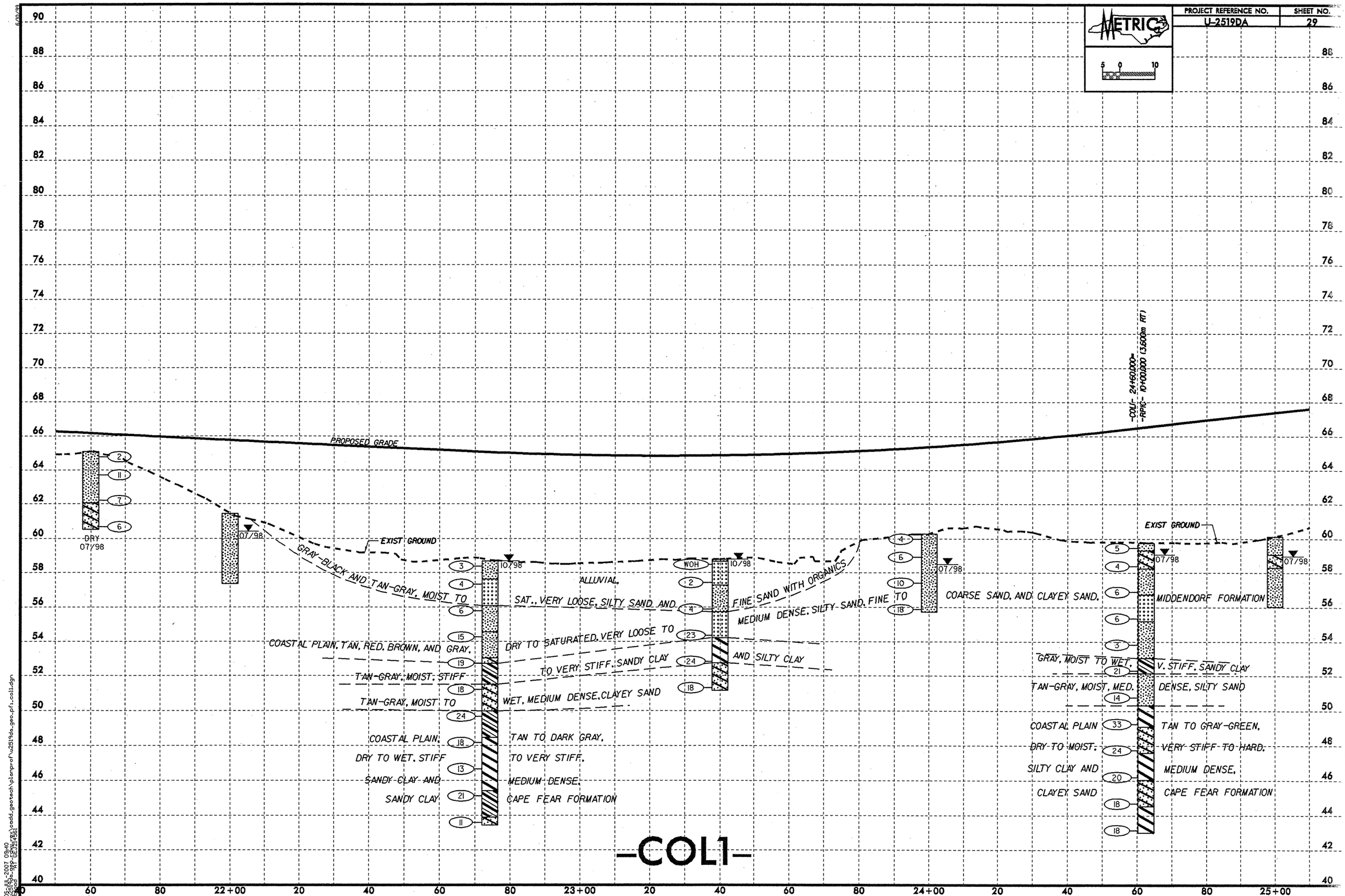
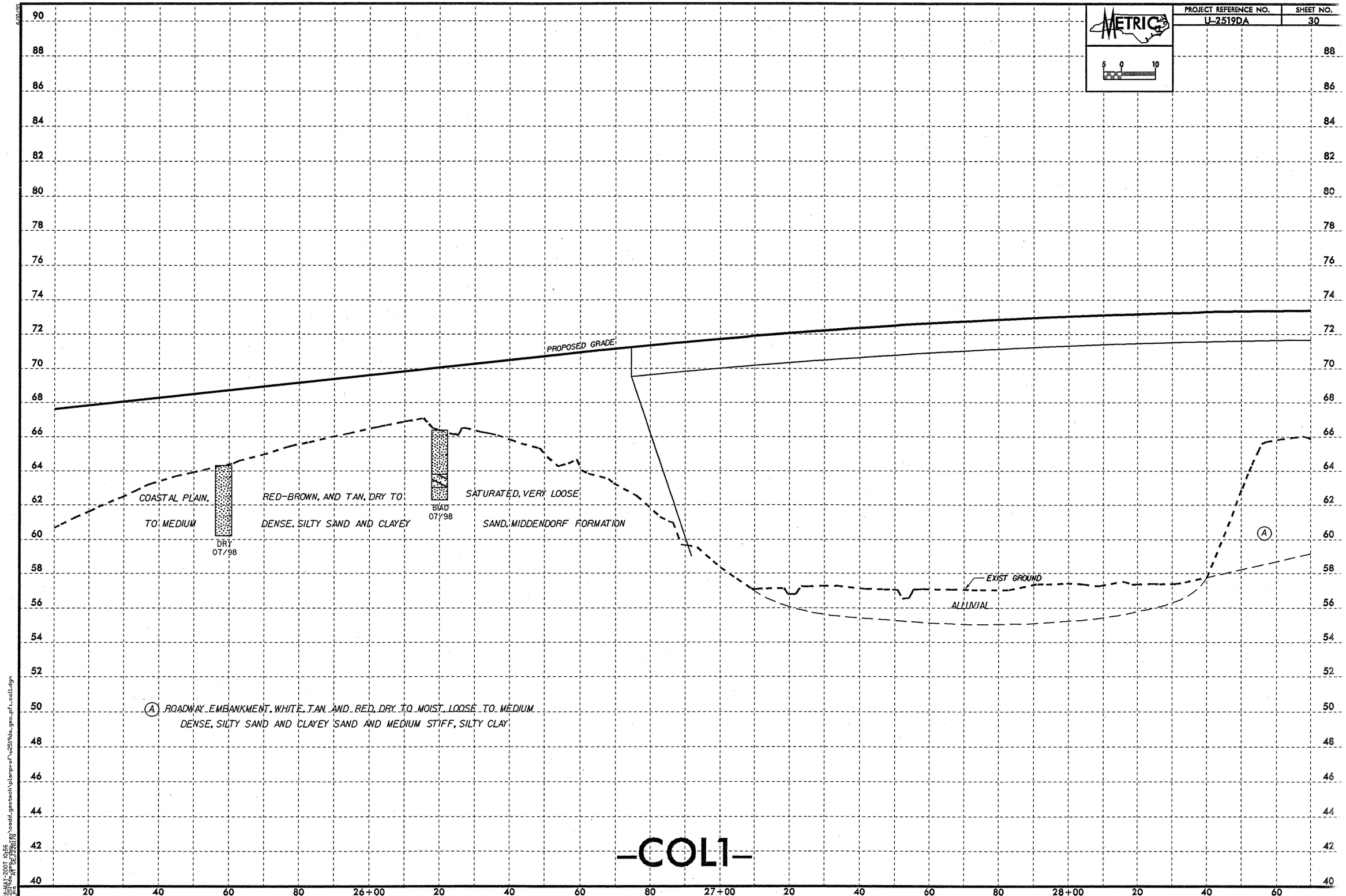


METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
29
5 0 10
PROPOSED GRADE
EXIST GROUND
-COL1- 24+60.000=
-RPIC- 10+00.000 (3.600m RT)
DRY
07/98
10/98
GRAY-BLACK AND TAN-GRAY, MOIST TO
ALLUVIAL,
SAT., VERY LOOSE, SILTY SAND AND
FINE SAND WITH ORGANICS
MEDIUM DENSE, SILTY SAND, FINE TO
COARSE SAND, AND CLAYEY SAND,
MIDDENDORF FORMATION
COASTAL PLAIN, TAN, RED, BROWN, AND GRAY,
DRY TO SATURATED, VERY LOOSE TO
TO VERY STIFF, SANDY CLAY
AND SILTY CLAY
TAN-GRAY, MOIST, STIFF
TAN-GRAY, MOIST TO
WET, MEDIUM DENSE, CLAYEY SAND
COASTAL PLAIN,
DRY TO WET, STIFF
SANDY CLAY AND
SANDY CLAY
TAN TO DARK GRAY,
TO VERY STIFF,
MEDIUM DENSE,
CAPE FEAR FORMATION
GRAY, MOIST TO WET,
V. STIFF, SANDY CLAY
TAN-GRAY, MOIST, MED.
DENSE, SILTY SAND
COASTAL PLAIN
DRY TO MOIST,
SILTY CLAY AND
CLAYEY SAND
TAN TO GRAY-GREEN,
VERY STIFF TO HARD,
MEDIUM DENSE,
CAPE FEAR FORMATION
-COL1-
22+00
23+00
24+00
25+00



METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
30
5 0 10
PROPOSED GRADE
COASTAL PLAIN, TO MEDIUM
RED-BROWN, AND TAN, DRY TO DENSE, SILTY SAND AND CLAYEY
SATURATED, VERY LOOSE SAND, MIDDENDORF FORMATION
DRY 07/98
BIAD 07/98
EXIST GROUND
ALLUVIAL
A
A ROADWAY EMBANKMENT, WHITE, TAN AND RED, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND AND CLAYEY SAND AND MEDIUM STIFF, SILTY CLAY
-COL1-
90
88
86
84
82
80
78
76
74
72
70
68
66
64
62
60
58
56
54
52
50
48
46
44
42
40
20
40
60
80
26+00
20
40
60
80
27+00
20
40
60
80
28+00
20
40
60

METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	31

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-2	49.00m LT.	29+06.0	1.07-1.52	A-6(3)	39	19	41.5	23.3	6.6	28.6	100.0	75.7	38.1	-	-
SS-3	49.00m LT.	29+06.0	2.59-3.04	A-3(0)	26	NP	58.9	35.2	4.3	1.6	100.0	79.3	6.4	-	-
SS-4	49.00m LT.	29+06.0	4.11-4.56	A-2-4(0)	27	8	46.6	30.3	6.2	16.9	99.4	72.2	24.4	-	-
SS-5	49.00m LT.	29+06.0	5.64-6.09	A-1-b(0)	25	NP	76.7	16.6	1.2	5.5	97.1	49.9	6.7	-	-
SS-6	49.00m LT.	29+06.0	7.16-7.61	A-1-b(0)	25	NP	79.7	13.3	3.6	3.4	100.0	40.5	7.4	-	-
SS-7	49.00m LT.	29+06.0	8.69-9.14	A-7-6(13)	46	25	8.3	34.2	10.9	46.6	100.0	97.4	62.6	-	-
SS-8	49.00m LT.	29+06.0	10.21-10.66	A-2-7(1)	44	23	56.7	14.0	1.6	27.7	99.4	61.7	30.1	-	-
SS-9	49.00m LT.	29+06.0	11.73-12.18	A-7-6(11)	41	25	26.7	18.3	8.7	46.3	100.0	83.5	58.0	-	-
SS-10	49.00m LT.	29+06.0	13.26-13.71	A-7-6(4)	47	29	52.0	11.6	1.6	34.8	98.2	65.8	36.5	-	-
SS-11	49.00m LT.	29+06.0	14.78-15.23	A-7-6(24)	49	29	6.6	16.3	14.9	62.2	100.0	96.1	80.5	-	-
SS-12	49.00m LT.	29+06.0	16.31-16.76	A-6(2)	32	18	40.9	24.8	11.7	22.6	99.4	76.6	36.8	-	-
SS-13	49.00m LT.	29+06.0	17.83-18.28	A-7-6(30)	56	41	10.4	18.7	10.7	60.2	99.8	94.6	74.7	-	-

-RPIDB- 16486.82 EL 83.016 ≠
-COLI- 28486.355 EL 73.386

SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10
SS-11
SS-12
SS-13

49.0m LT

-RPIDB- 29435.752
EL 82.433 ≠
-COLI- 29450.793
EL 73.216

-COLI- 29437.991 ≠
-LPID- 10400.000 13.600m RT

PROPOSED GRADE

EXIST GROUND

DRY 08/98

DRY 08/98

8.0m RT

DRY 08/98

08/98

RED-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY

COASTAL PLAIN, TAN-GRAY TO RED-BROWN, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY SAND

FINE TO COARSE SAND, MIDDENDORF FORMATION

GRAY, MOIST, STIFF, SILTY CLAY

RED, MOIST TO WET, DENSE, SILTY SAND

GRAY-TAN, MOIST, HARD, SILTY CLAY

GRAY, MOIST, VERY STIFF, SANDY CLAY

BROWN TO VERY STIFF TO SILTY CLAY

DARK GRAY, MOIST TO WET, HARD, SANDY CLAY AND CAPE FEAR FORMATION

(A) ROADWAY EMBANKMENT, WHITE, TAN AND RED, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND, FINE SAND AND CLAYEY SAND AND MEDIUM STIFF, SILTY CLAY

(B) COASTAL PLAIN, GRAY-TAN, MOIST TO WET, VERY STIFF, SANDY CLAY AND SILTY CLAY, HIGHLY PLASTIC

(C) GRAY-TAN, MOIST TO SATURATED, MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC

(D) TAN, MOIST, MEDIUM STIFF, SANDY CLAY

(E) ALLUVIAL, BROWN TO GRAY, WET, LOOSE, SILTY AND CLAYEY SAND

-COL1-

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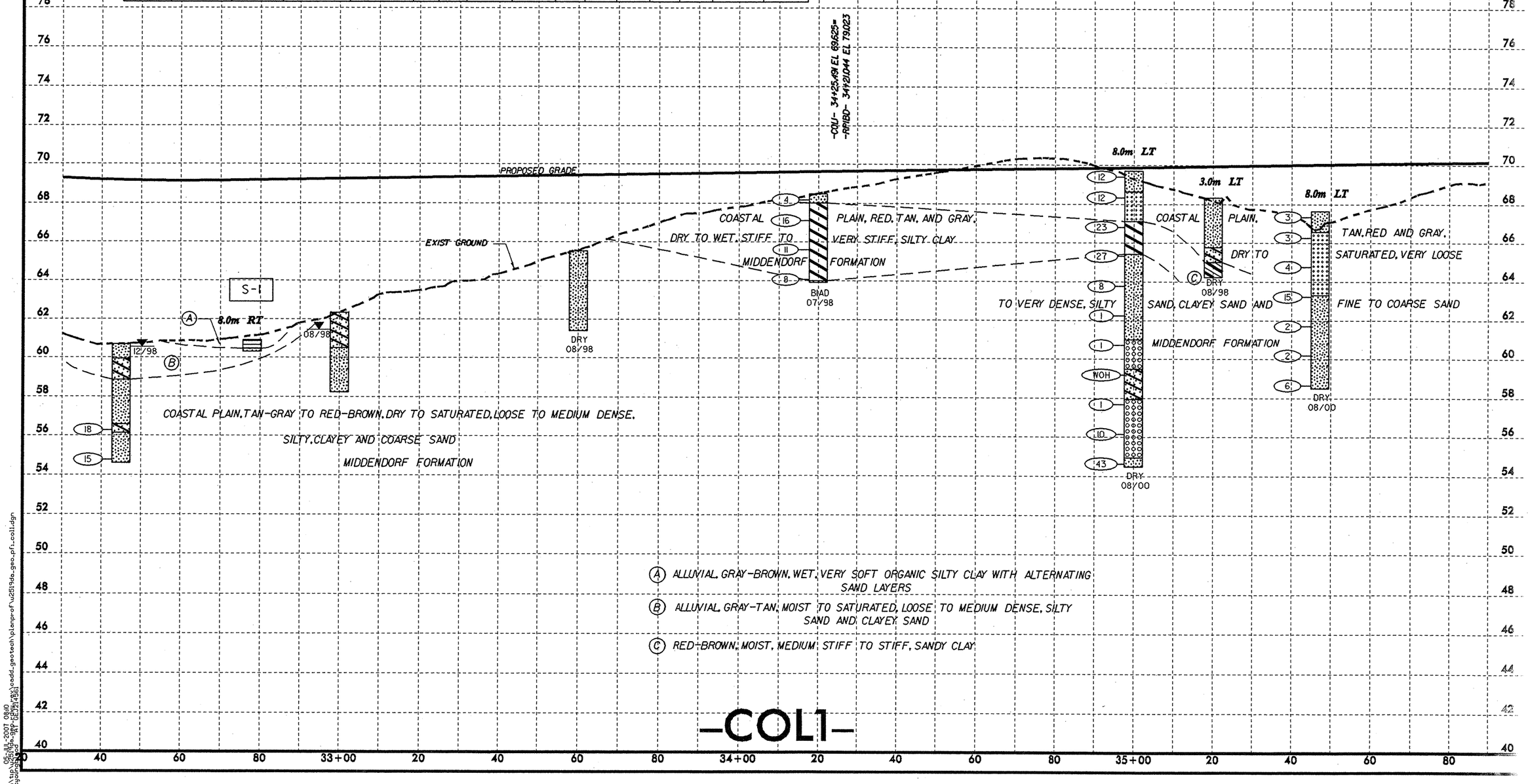
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	32

METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. 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
S-1	8.00m RT.	32+78.0	0.00-0.51	-	-	-	-	-	-	-	-	-	-	-	15.7



(A) ALLUVIAL, GRAY-BROWN, WET, VERY SOFT ORGANIC SILTY CLAY WITH ALTERNATING SAND LAYERS

(B) ALLUVIAL, GRAY-TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND AND CLAYEY SAND

(C) RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY

-COL1-

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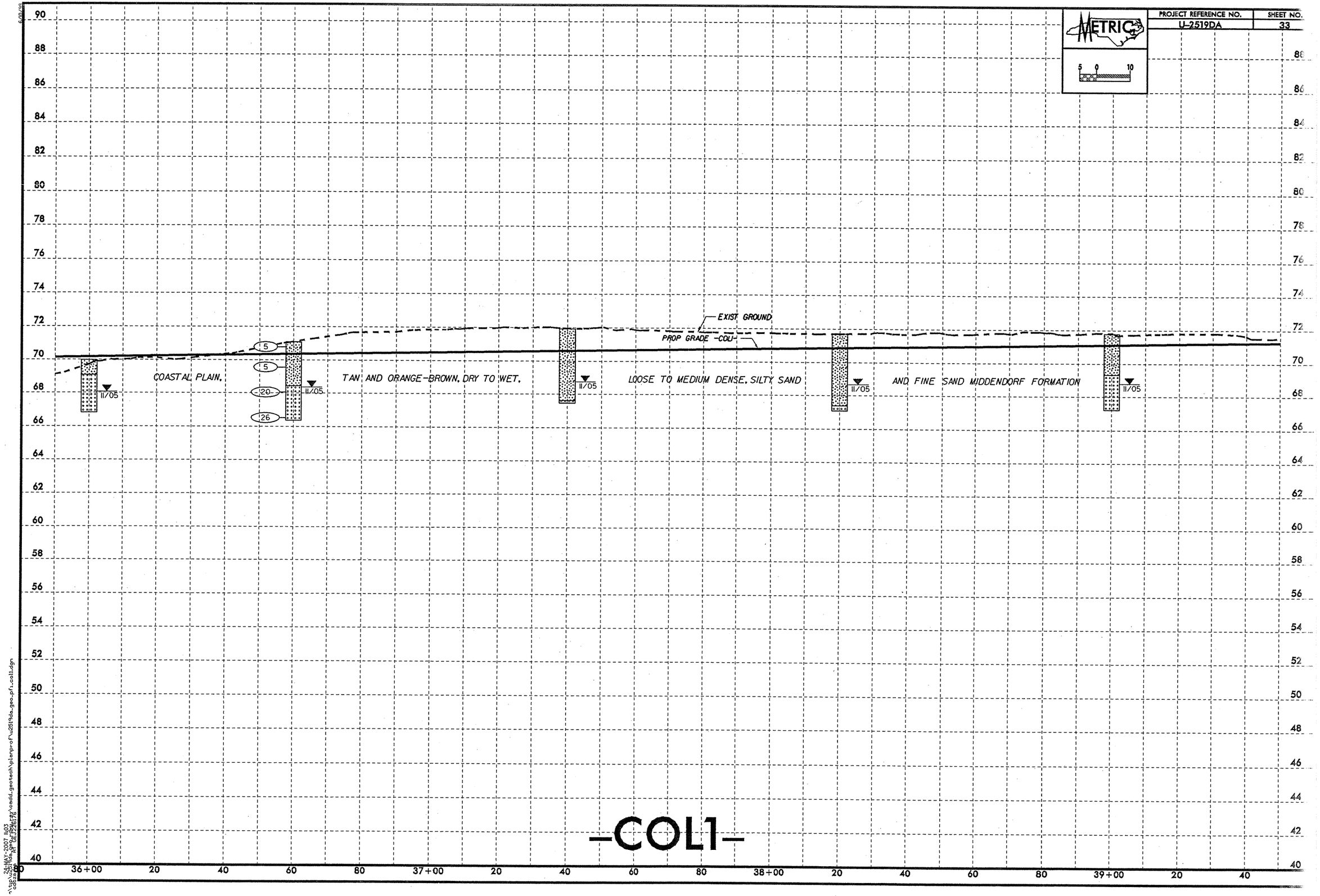


METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
33
5 0 10
EXIST GROUND
PROP GRADE -COL1-
COASTAL PLAIN,
TAN AND ORANGE-BROWN, DRY TO WET,
LOOSE TO MEDIUM DENSE, SILTY SAND
AND FINE SAND MIDDENDORF FORMATION
5
5
20
26
11/05
-COL1-
90
88
86
84
82
80
78
76
74
72
70
68
66
64
62
60
58
56
54
52
50
48
46
44
42
40
36+00
20
40
60
80
37+00
20
40
60
80
38+00
20
40
60
80
39+00
20
40

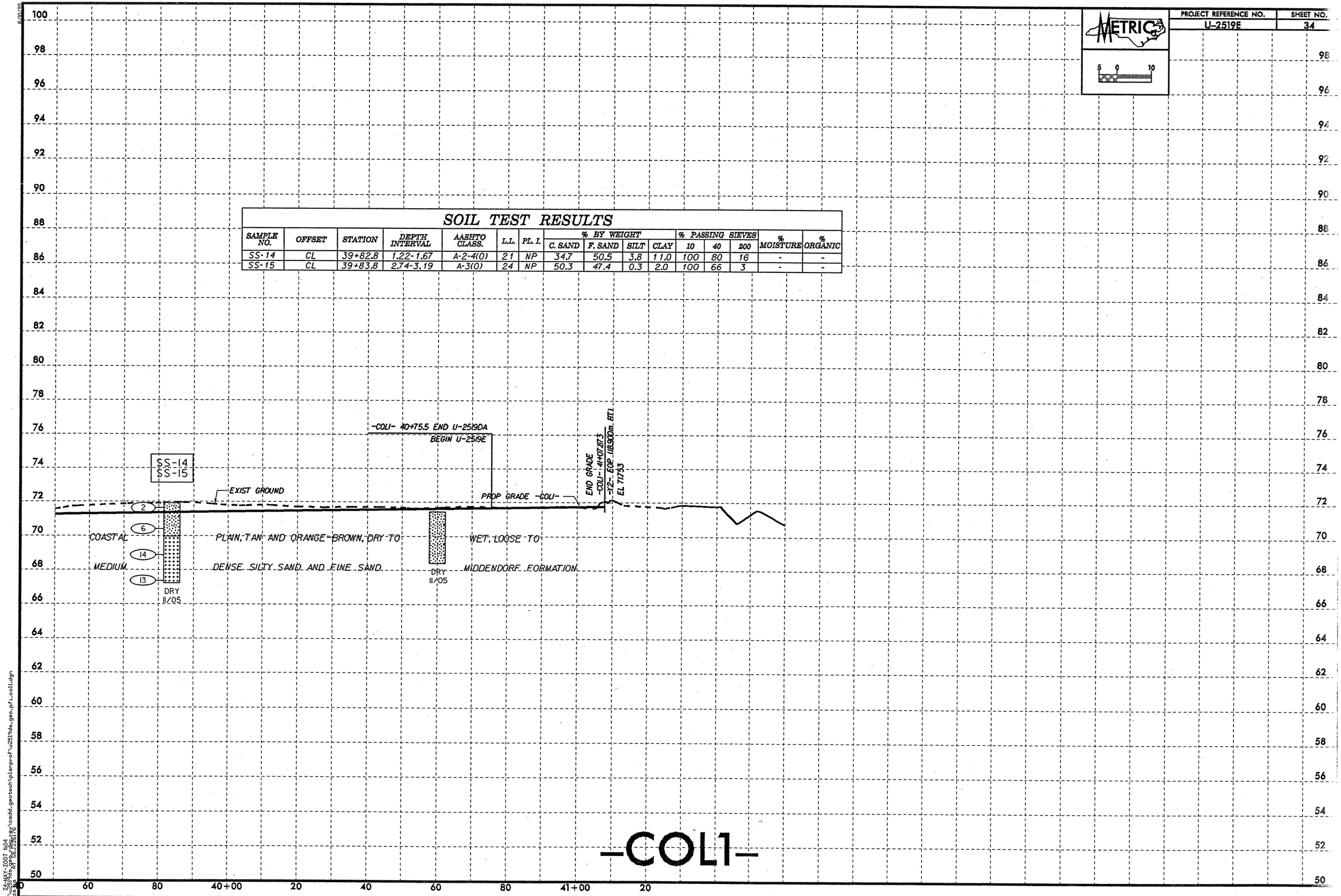
PROJECT REFERENCE NO.	SHEET NO.
U-2519E	34

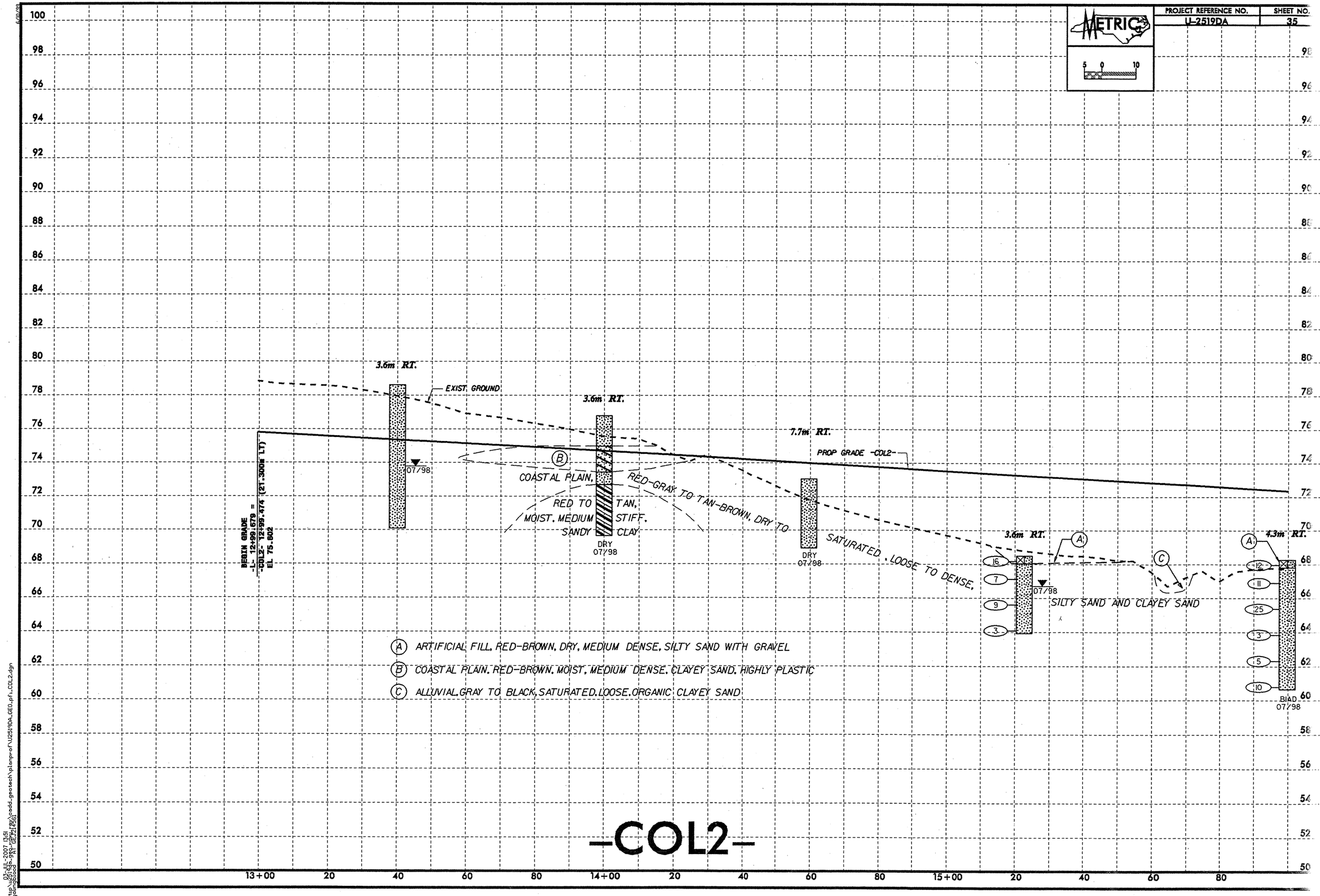
METRIC

5 0 10

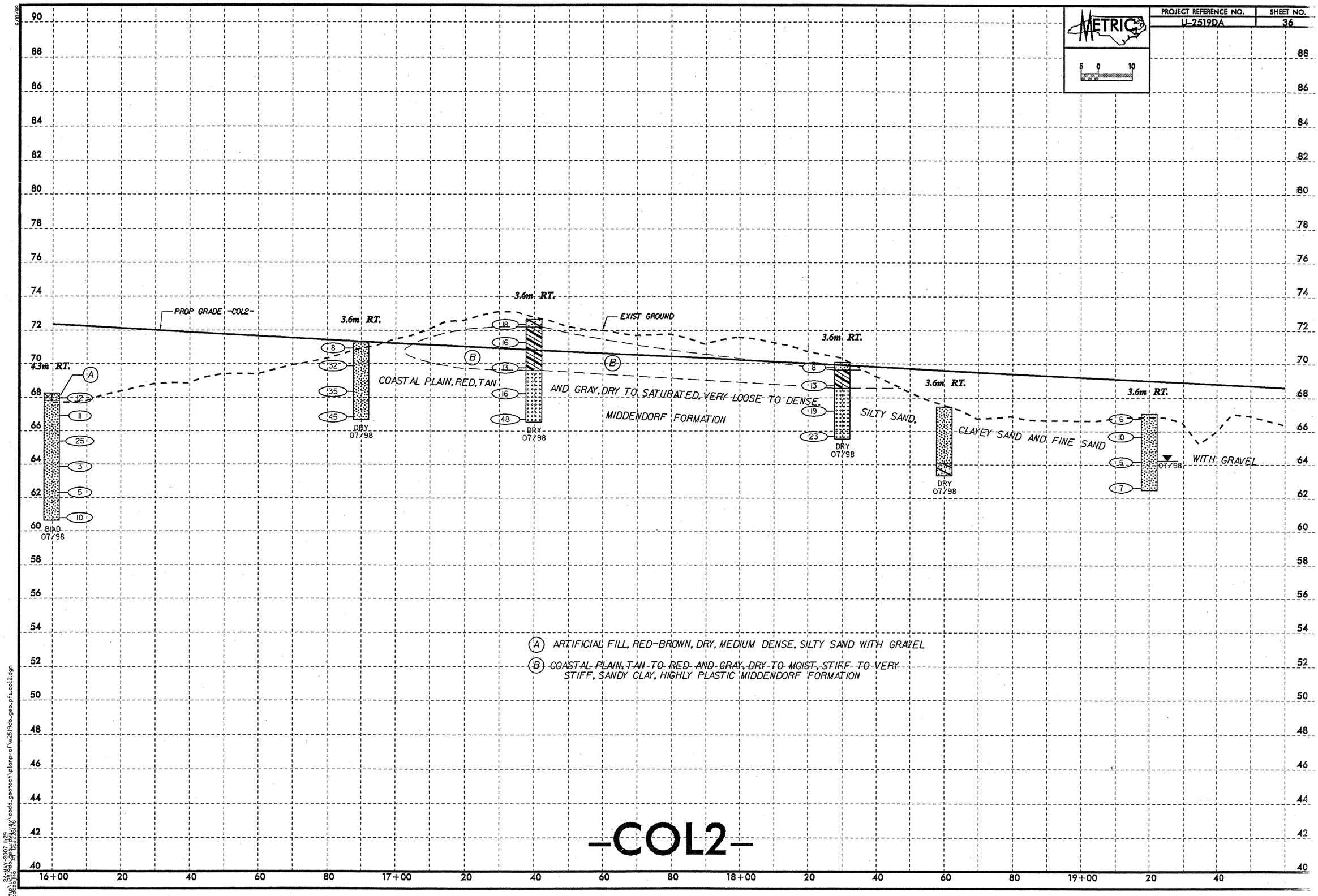
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-14	CL	39+82.8	1.22-1.67	A-2-4(0)	21	NP	34.7	50.5	3.8	11.0	100	80	16	-	-
SS-15	CL	39+83.8	2.74-3.19	A-3(0)	24	NP	50.3	47.4	0.3	2.0	100	66	3	-	-





METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
35
5 0 10
3.6m RT.
EXIST. GROUND
3.6m RT.
7.7m RT.
PROP GRADE -COL2-
07/98
COASTAL PLAIN, RED TO TAN, MOIST, MEDIUM STIFF, SANDY CLAY
DRY 07/98
RED-GRAY TO TAN-BROWN, DRY TO SATURATED, LOOSE TO DENSE,
DRY 07/98
3.6m RT.
4.3m RT.
07/98
SILTY SAND AND CLAYEY SAND
BIAD 07/98
BEGIN GRADE -L- 12+99.679 = -COL2- 12+99.474 (21.300m LT) EL 75.802
A ARTIFICIAL FILL, RED-BROWN, DRY, MEDIUM DENSE, SILTY SAND WITH GRAVEL
B COASTAL PLAIN, RED-BROWN, MOIST, MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC
C ALLUVIAL, GRAY TO BLACK, SATURATED, LOOSE, ORGANIC CLAYEY SAND
-COL2-
13+00
14+00
15+00



METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
36
PROP GRADE -COL2-
EXIST GROUND
4.3m RT.
3.6m RT.
3.6m RT.
3.6m RT.
3.6m RT.
3.6m RT.
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, CLAYEY SAND AND FINE SAND WITH GRAVEL
MIDDENDORF FORMATION
BIAD 07/98
DRY 07/98
DRY 07/98
DRY 07/98
DRY 07/98
07/98
A ARTIFICIAL FILL, RED-BROWN, DRY, MEDIUM DENSE, SILTY SAND WITH GRAVEL
B COASTAL PLAIN, TAN TO RED AND GRAY, DRY TO MOIST, STIFF TO VERY STIFF, SANDY CLAY, HIGHLY PLASTIC MIDDENDORF FORMATION
-COL2-
16+00
17+00
18+00
19+00

METRIC

5 0 10

PROF GRADE -COL2-

-COL2- 21+08.668 EL 67.097 =
-RP1DB- 25+02.083 (3.600m LT)
EL 67.007

3.6m RT.

DRY
07/98

3.6m RT.

DRY
07/98

3.3m RT.

07/98

EXIST GROUND

3.6m RT.

11/98

2
4
3
22
5

3.6m RT.

12/98

WOH
7
WOH
5
6
18

3.6m RT.

11/98

4
1
1
2
10
2
11
25

COASTAL PLAIN, TAN-RED AND GRAY, DRY TO SATURATED, LOOSE TO MEDIUM MIDDENDORF FORMATION

DENSE, SILTY AND COARSE SAND

GRAY-TAN, MOIST, VERY STIFF TO HARD, SILTY CLAY

GRAY TO TAN, MOIST TO WET, MEDIUM CAPE FEAR FORMATION

ALLUVIAL, GRAY AND BLACK, MOIST TO MEDIUM DENSE, SILTY WITH ALTERNATING SILT LAYERS

WET, VERY LOOSE TO SAND AND FINE SAND, CLAY AND ORGANIC

DENSE, CLAYEY SAND & COARSE SAND

(A) ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT, ORGANIC, SILTY CLAY

(B) ALLUVIAL, GRAY-TAN, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, SANDY CLAY AND SILTY CLAY

(C) TAN, MOIST, MEDIUM DENSE, FINE SAND WITH ALTERNATING ORGANIC LAYERS

(D) COASTAL PLAIN, TAN TO GRAY RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY SAND, CLAYEY SAND AND FINE SAND, MIDDENDORF FORMATION

(E) GRAY, RED AND TAN, MOIST, VERY STIFF TO HARD, SILTY CLAY

-COL2-

90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40

60 80 20+00 20 40 60 80 21+00 20 40 60 80 22+00 20 40 60 80 23+00

6/10/98

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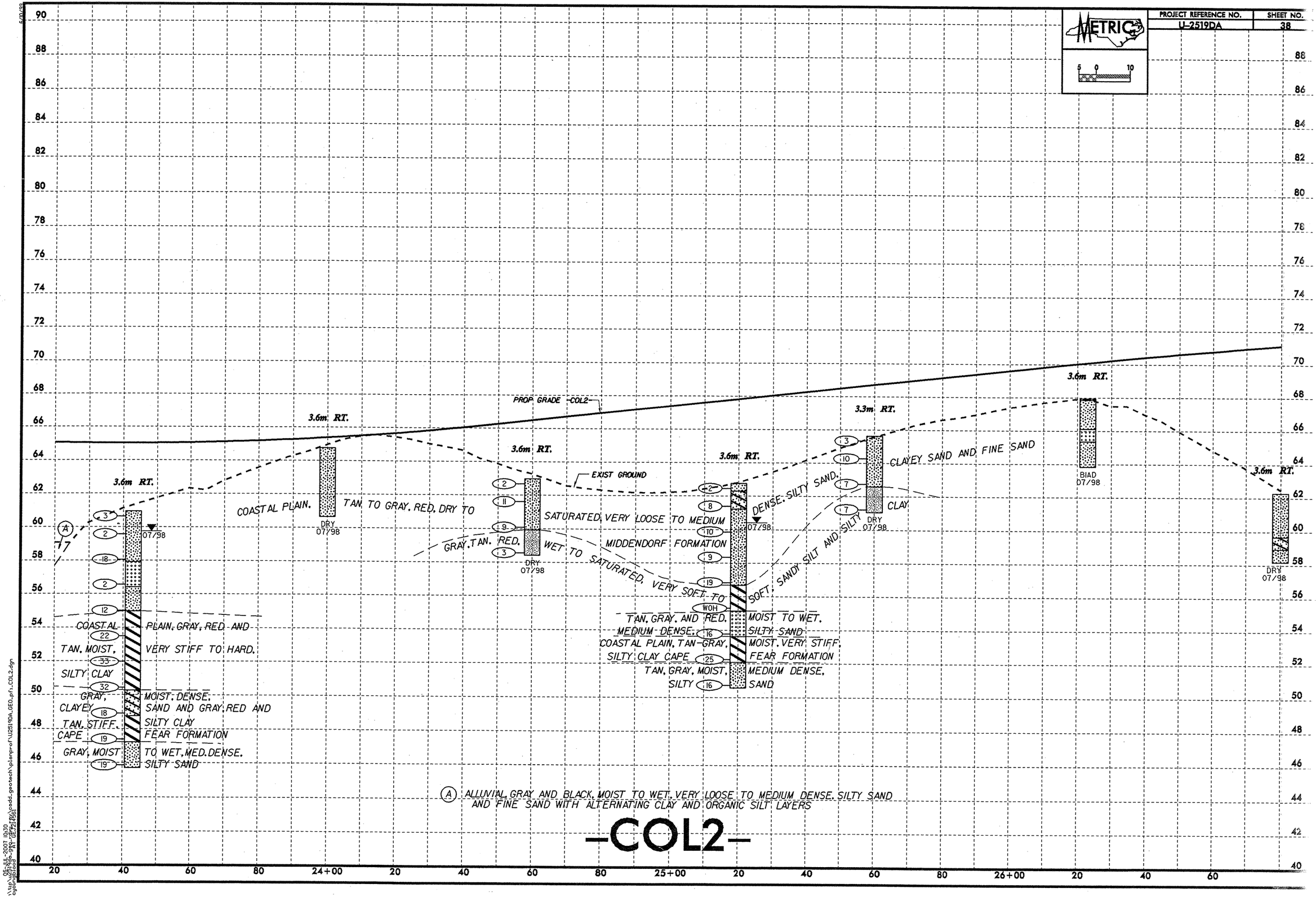
METRIC

5 0 10



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AT GEOPAK

-COL2- 28+07.243 EL 72.600=
-LP1B- 10+00.000 (3.600m LT)
EL 72.510

BEGIN BRIDGE

END BRIDGE

PROP GRADE -COL2-

SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10
SS-11
SS-12
SS-13
SS-14
SS-15
SS-16
SS-17

-COL2- 28+66.746 EL 73.183 =
-Y1- 19+80.253

SS-5
SS-9
SS-16
SS-21
SS-25

2:1

1.5:1

3:1

3.6m RT.

21.6m RT.

10.7m RT.

23.1m RT.

21.6m RT.

3.6m RT.

3.6m RT.

ROADWAY EMBANKMENT.
RED, DRY TO MOIST, MEDIUM
DENSE TO DENSE, SILTY SAND AND
STIFF, SILTY CLAY

EXIST GROUND @ ℄

DRY
07/98
06/98
10/00
09/00
05/98
08/98
08/98

COASTAL PLAIN.
TO DENSE, GREEN.
TO HARD. CAPE FEAR FORMATION

SILTY SAND, MOIST TO WET.
SANDY CLAY AND SILTY CLAY

FINE AND COARSE SAND
LOOSE TO HARD

RED-BROWN, TAN, AND GRAY, DRY TO SATURATED, LOOSE
COASTAL PALIN, TAN TO GRAY AND MAROON TO GRAY-
DENSE, CLAYEY SAND AND MEDIUM STIFF

-COL2-

Ⓐ ALLUVIAL, ORANGE, TAN, AND RED, DRY TO MOIST, VERY LOOSE TO DENSE, SILTY SAND WITH SOME ORGANICS AND GRAVEL

Ⓑ COASTAL PLAIN, LIGHT GRAY, TAN, ORANGE AND RED, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY CLAY, MIDDENDORF FORMATION

Ⓒ TAN AND GRAY, MOIST, STIFF, SANDY CLAY

Ⓓ GRAY, WET, VERY DENSE, SILTY SAND

Ⓔ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND

HAND TOOLS

*METRIC TONS

TEST NO.	STATION (-COL2-)	OFFSET	DEPTH INTERVAL	N_C	SHEAR STRENGTH *(T/M²)	SOIL TYPE
VST-7	30+00.0	34.00m LT.	0.30		410	MUCK
	30+00.0	34.00m LT.	0.46		820	SDY. MUCK
	30+00.0	34.00m LT.	0.61		615	SDY. MUCK
	30+00.0	34.00m LT.	0.76		127.1	SAND
	30+00.0	34.00m LT.	0.91		151.7	SAND
VST-8	30+28.0	16.00m LT.	0.46		205	MUCK
	30+28.0	16.00m LT.	0.61		205	MUCK
	30+28.0	16.00m LT.	0.76		164	MUCK
	30+28.0	16.00m LT.	0.91		123	MUCK
	30+28.0	16.00m LT.	1.06		492	CLAY
	30+28.0	16.00m LT.	1.22		369	CLAY
DCP-7	30+28.0	16.00m LT.	0.00	1		MUCK
	30+28.0	16.00m LT.	0.25	WOH		MUCK
	30+28.0	16.00m LT.	1.00	WOH		MUCK
	30+28.0	16.00m LT.	1.50	10		X

X-UNABLE TO RECOVER SAMPLE IN HAND AUGER DUE TO SATURATED SOIL.

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-2	21.60m RT.	26+90.0	1.07-1.52	A-2-4(0)	31	8	67.6	16.3	3.7	12.4	97.8	47.2	17.0	7.9	-
SS-3	21.60m RT.	26+90.0	2.59-3.04	A-2-4(0)	29	10	72.7	8.7	5.9	12.7	97.0	41.3	18.8	7.0	-
SS-4	21.60m RT.	26+90.0	4.11-4.56	A-2-4(0)	23	NP	30.0	58.6	0.5	10.9	93.2	70.0	13.5	17.4	-
SS-5	21.60m RT.	26+90.0	5.64-6.09	A-6(7)	36	19	27.2	19.2	17.4	36.2	97.2	77.4	55.4	13.2	-
SS-6	21.60m RT.	26+90.0	7.16-7.61	A-2-6(0)	38	20	84.2	5.3	0.4	10.1	98.3	30.0	10.5	20.8	-
SS-7	21.60m RT.	26+90.0	8.69-9.14	A-1-b(0)	22	2	88.0	5.8	1.9	4.3	94.7	21.2	6.3	-	-
SS-8	21.60m RT.	26+90.0	10.21-10.66	A-7-6(13)	41	23	11.6	26.1	18.8	43.5	100.0	93.8	66.7	13.4	-
SS-9	21.60m RT.	26+90.0	11.73-12.18	A-2-7(1)	42	25	54.3	17.2	4.6	23.9	98.9	66.2	29.1	14.3	-
SS-10	21.60m RT.	26+90.0	13.26-13.71	A-2-6(0)	39	22	64.0	10.0	4.1	21.9	96.8	48.6	26.0	15.9	-
SS-11	21.60m RT.	26+90.0	14.78-15.23	A-2-6(3)	38	23	40.1	25.3	4.1	30.5	99.1	74.7	35.4	13.3	-
SS-12	21.60m RT.	26+90.0	16.31-16.76	A-2-6(0)	34	20	64.4	12.7	3.2	19.7	97.7	51.9	23.1	15.0	-
SS-13	21.60m RT.	26+90.0	17.83-18.28	A-2-6(1)	33	19	49.4	19.1	4.4	27.1	99.5	69.1	32.7	14.3	-
SS-14	21.60m RT.	26+90.0	19.35-19.80	A-2-7(0)	53	38	71.8	7.9	4.2	16.1	96.6	38.3	20.4	17.4	-
SS-15	21.60m RT.	26+90.0	20.88-21.33	A-6(6)	29	15	15.3	30.7	43.1	10.9	100.0	91.1	61.9	14.2	-
SS-16	21.60m RT.	26+90.0	22.40-22.85	A-2-6(0)	36	15	70.7	16.9	1.1	11.3	99.3	51.9	14.0	17.2	-
SS-17	21.60m RT.	26+90.0	23.93-24.38	A-7-6(24)	51	33	7.3	17.4	28.7	46.6	93.5	90.0	74.8	15.0	-

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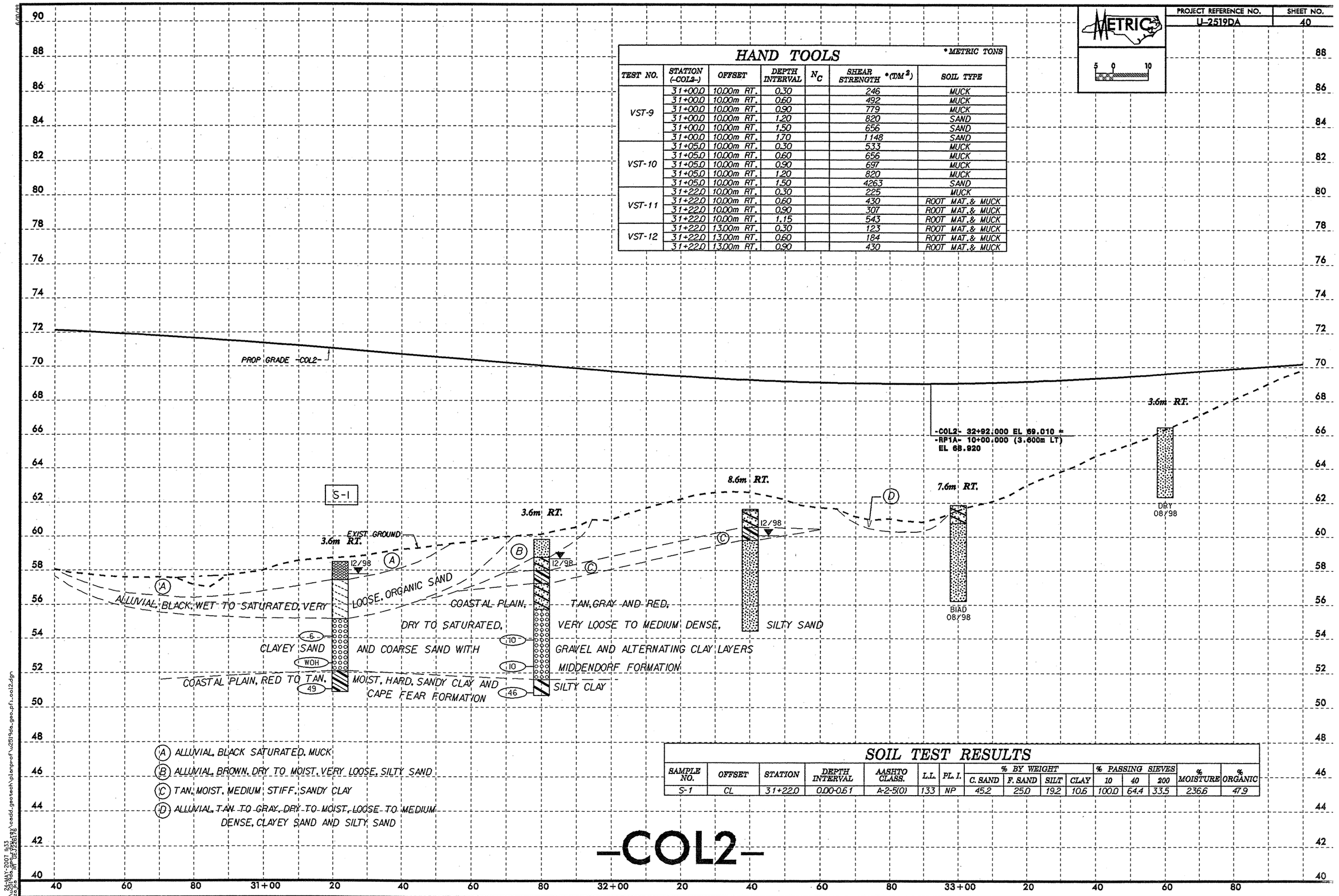
HAND TOOLS

*METRIC TONS

TEST NO.	STATION (-COL2-)	OFFSET	DEPTH INTERVAL	N_C	SHEAR STRENGTH *(TM²)	SOIL TYPE
VST-9	31+00.0	10.00m RT.	0.30		246	MUCK
	31+00.0	10.00m RT.	0.60		492	MUCK
	31+00.0	10.00m RT.	0.90		779	MUCK
	31+00.0	10.00m RT.	1.20		820	SAND
	31+00.0	10.00m RT.	1.50		656	SAND
	31+00.0	10.00m RT.	1.70		1148	SAND
VST-10	31+05.0	10.00m RT.	0.30		533	MUCK
	31+05.0	10.00m RT.	0.60		656	MUCK
	31+05.0	10.00m RT.	0.90		697	MUCK
	31+05.0	10.00m RT.	1.20		820	MUCK
	31+05.0	10.00m RT.	1.50		4263	SAND
VST-11	31+22.0	10.00m RT.	0.30		225	MUCK
	31+22.0	10.00m RT.	0.60		430	ROOT MAT.& MUCK
	31+22.0	10.00m RT.	0.90		307	ROOT MAT.& MUCK
	31+22.0	10.00m RT.	1.15		543	ROOT MAT.& MUCK
VST-12	31+22.0	13.00m RT.	0.30		123	ROOT MAT.& MUCK
	31+22.0	13.00m RT.	0.60		184	ROOT MAT.& MUCK
	31+22.0	13.00m RT.	0.90		430	ROOT MAT.& MUCK



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	CL	31+22.0	0.00-0.61	A-2-5(0)	133	NP	45.2	25.0	19.2	10.6	100.0	64.4	33.5	236.6	47.9

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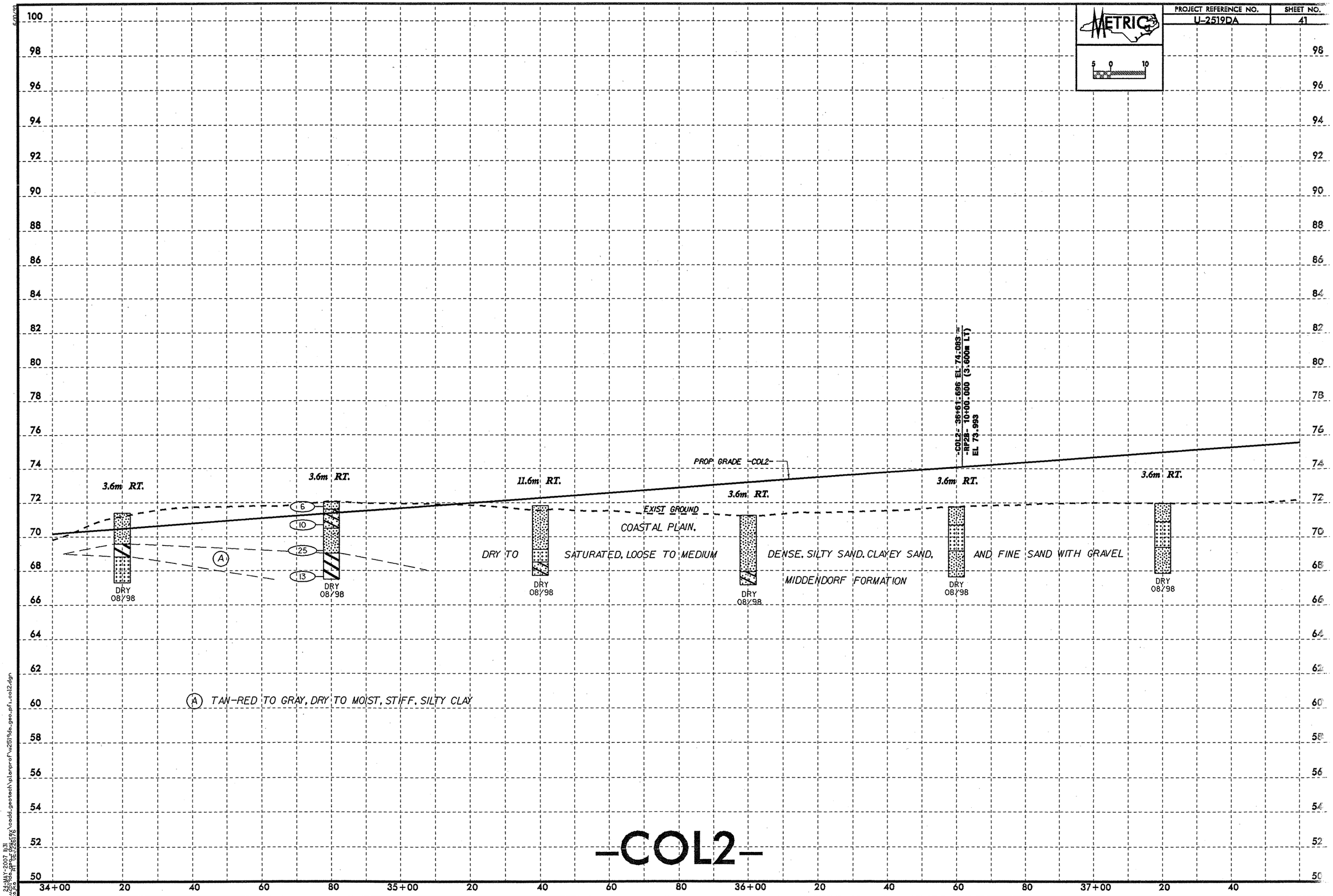
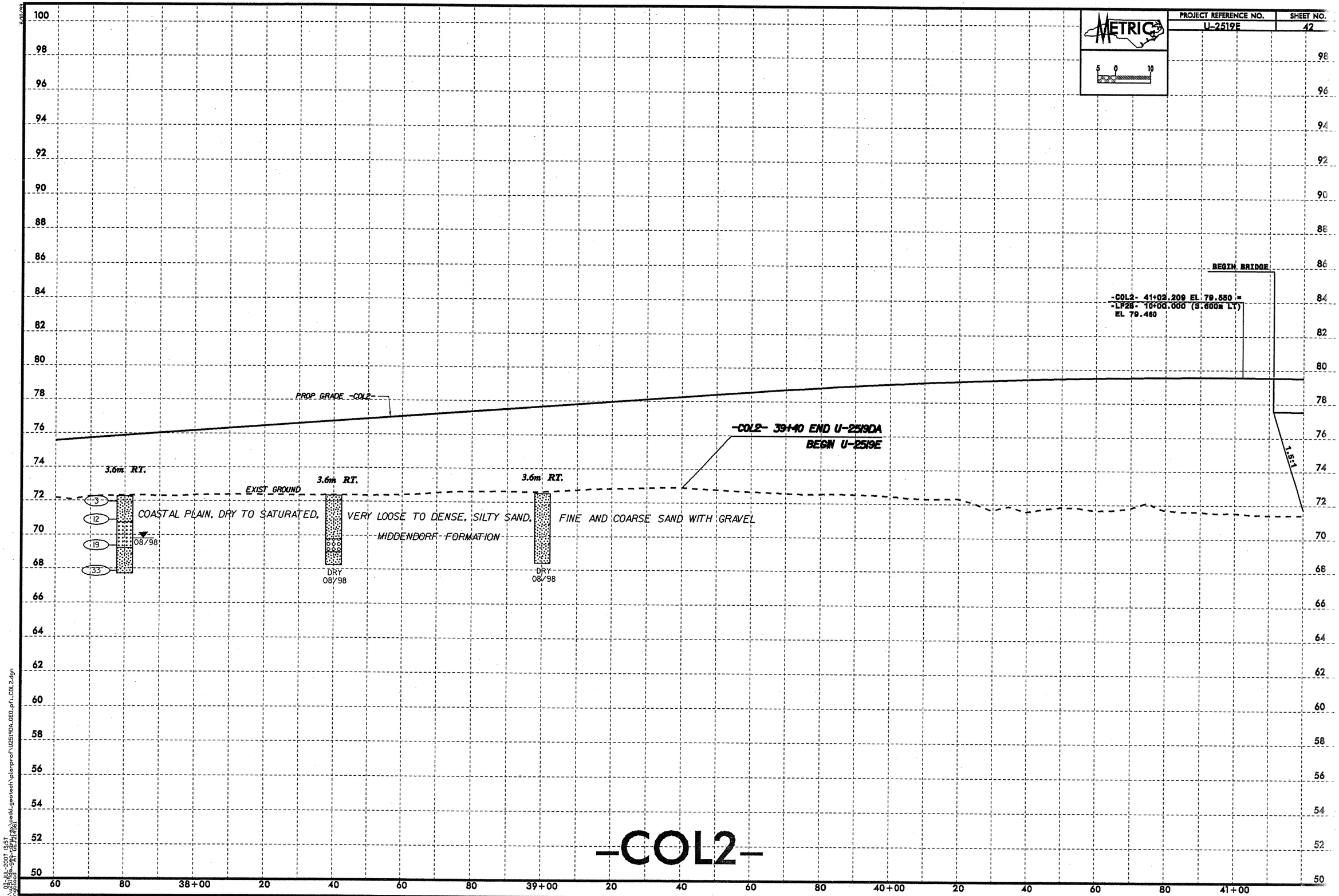
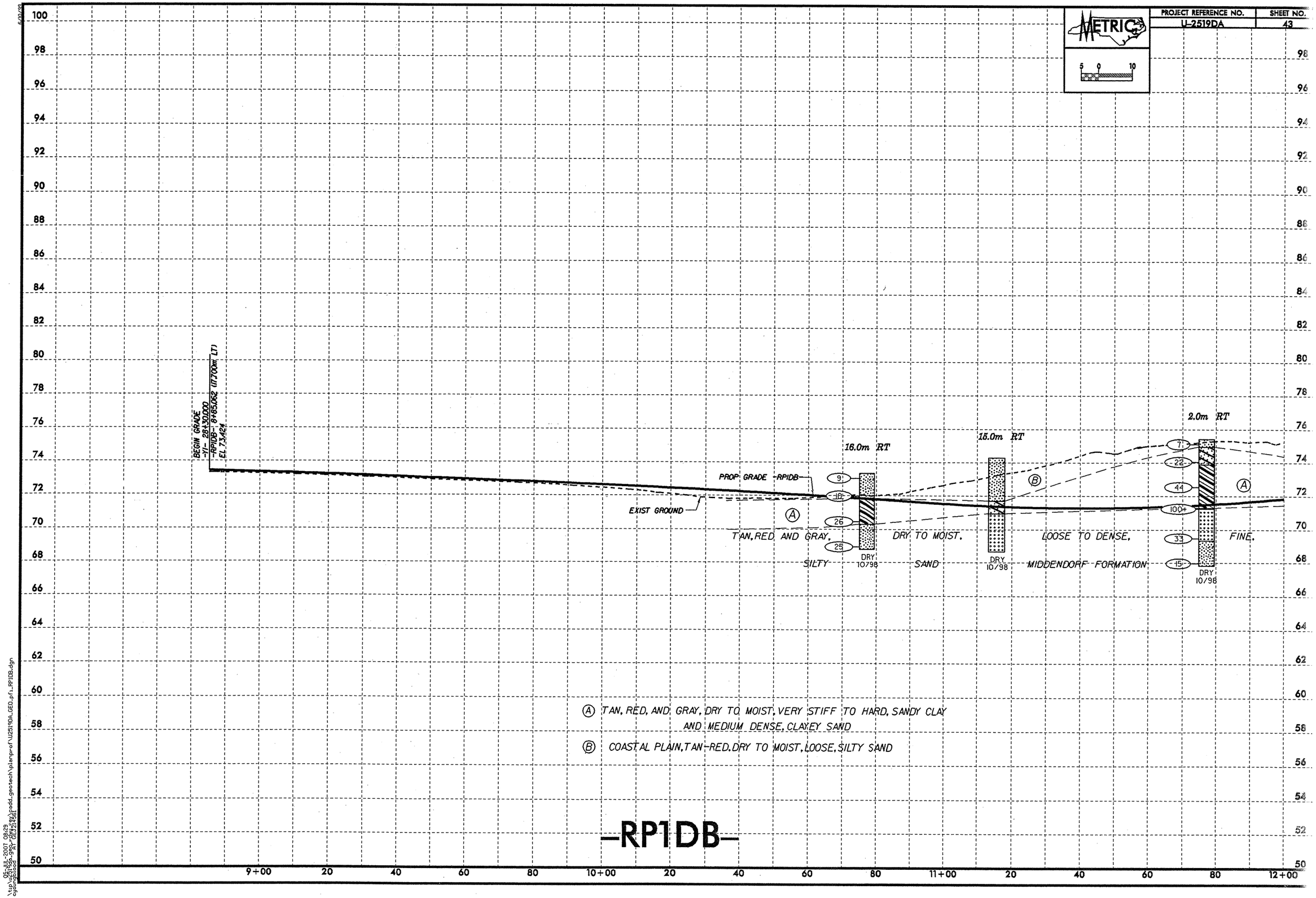


METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
41
5 0 10
100
98
96
94
92
90
88
86
84
82
80
78
76
74
72
70
68
66
64
62
60
58
56
54
52
50
34+00
20
40
60
80
35+00
20
40
60
80
36+00
20
40
60
80
37+00
20
40
-COL2- 36+61.696 EL 74.083 =
-RP2B- 10+00.000 (3.600m LT)
EL 73.993
PROP GRADE -COL2-
EXIST GROUND
3.6m RT.
3.6m RT.
11.6m RT.
3.6m RT.
3.6m RT.
3.6m RT.
6
10
25
13
A
DRY 08/98
DRY 08/98
DRY 08/98
DRY 08/98
DRY 08/98
DRY 08/98
COASTAL PLAIN.
DRY TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY SAND, CLAYEY SAND, AND FINE SAND WITH GRAVEL
MIDDENDORF FORMATION
A TAN-RED TO GRAY, DRY TO MOIST, STIFF, SILTY CLAY
-COL2-



METRIC
PROJECT REFERENCE NO.
U-2519E
SHEET NO.
42
BEGIN BRIDGE
-COL2- 41+02.209 EL 79.550 =
-LP2B- 10+00.000 (3.600m LT)
EL 79.460
PROP GRADE -COL2-
-COL2- 39+40 END U-2519DA
BEGIN U-2519E
1.5:1
3.6m RT.
3.6m RT.
3.6m RT.
EXIST GROUND
COASTAL PLAIN, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, FINE AND COARSE SAND WITH GRAVEL
MIDDENDORF FORMATION
3
12
19
33
08/98
DRY
08/98
DRY
08/98
-COL2-



METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
43
BEGIN GRADE
-Y1- 28+30.000
-RP1DB- 8+85.062 (17.700m LT)
EL 73.424
PROP GRADE -RP1DB
EXIST GROUND
16.0m RT
15.0m RT
2.0m RT
TAN, RED AND GRAY, SILTY
DRY TO MOIST, SAND
LOOSE TO DENSE, MIDDENDORF FORMATION
FINE.
DRY 10/98
DRY 10/98
DRY 10/98
Ⓐ TAN, RED, AND GRAY, DRY TO MOIST, VERY STIFF TO HARD, SANDY CLAY AND MEDIUM DENSE, CLAYEY SAND
Ⓑ COASTAL PLAIN, TAN-RED, DRY TO MOIST, LOOSE, SILTY SAND
-RP1DB-
9+00
10+00
11+00
12+00

METRIC 5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	% MOISTURE	% ORGANIC
S-121	CL	12+80.0	1.00-1.45	A-3(0)	22	NP	19.0	72.9	2.0	6.0	100	95	9	-	-
SS-124	CL	13+80.0	2.81-3.26	A-7-6(11)	43	22	18.1	24.1	15.5	42.3	99	88	62	-	-
ST-2	16.46m RT.	14+65.7	17.83-18.44	A-7-6(20)	42	19	0.6	15.0	35.7	48.7	100.0	99.5	94.2	25.8	-
SS-2	16.00m RT.	14+66.0	1.07-1.52	A-2-6(0)	31	12	43.5	29.6	3.1	23.8	93.2	66.7	27.9	18.0	-
SS-3	16.00m RT.	14+66.0	2.59-3.04	A-3(0)	22	NP	66.5	26.7	2.9	3.9	100.0	55.0	7.6	-	-
SS-4	16.00m RT.	14+66.0	4.11-4.56	A-3(0)	25	NP	54.0	42.6	1.5	1.9	100.0	53.5	4.0	-	-
SS-5	16.00m RT.	14+66.0	5.64-6.09	A-4(0)	24	2	16.3	54.5	12.8	16.4	98.4	88.9	36.2	23.9	-
SS-6	16.00m RT.	14+66.0	7.16-7.61	A-3(0)	24	NP	26.9	68.9	1.1	3.1	100.0	92.1	11.6	-	-
SS-7	16.00m RT.	14+66.0	8.69-9.14	A-1-b(0)	22	NP	75.8	16.9	4.5	2.8	99.2	44.8	8.4	-	-
SS-8	16.00m RT.	14+66.0	10.21-10.66	A-2-4(0)	22	NP	44.2	41.4	2.9	11.5	100.0	80.6	15.6	24.5	-
SS-9	16.00m RT.	14+66.0	11.73-12.18	A-2-4(0)	23	NP	46.0	35.8	5.5	12.7	95.0	74.6	19.7	21.9	-
SS-10	16.00m RT.	14+66.0	13.26-13.71	A-2-4(0)	22	1	61.7	21.3	4.0	13.0	99.0	67.6	17.6	24.9	-
SS-11	16.00m RT.	14+66.0	14.96-15.23	A-6(3)	29	13	11.9	43.3	8.1	36.7	99.5	94.5	47.7	29.1	-
SS-12	16.00m RT.	14+66.0	16.31-16.76	A-1-b(0)	24	NP	86.7	8.1	2.1	3.1	99.8	38.3	5.8	-	-
SS-13	16.00m RT.	14+66.0	17.83-18.28	A-6(14)	35	15	1.5	18.3	37.4	42.8	100.0	99.1	90.8	29.9	-
SS-14	16.00m RT.	14+66.0	19.35-19.80	A-1-b(0)	27	NP	83.3	9.8	0.8	6.1	99.9	35.0	7.7	-	-
SS-15	16.00m RT.	14+66.0	20.88-21.33	A-7-6(26)	51	29	4.7	13.9	15.2	66.2	100.0	97.9	84.2	27.0	-
SS-16	16.00m RT.	14+66.0	22.40-22.85	A-2-4(0)	20	10	44.0	26.7	1.7	27.6	100.0	81.5	30.6	24.2	-
SS-17	16.00m RT.	14+66.0	23.93-24.37	A-7-6(17)	51	30	23.4	15.8	7.6	53.2	100.0	87.1	63.1	16.8	-

SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10
SS-11
SS-12
SS-13
SS-14
SS-15
SS-16
SS-17

-RPIDB- 12+80.000
-RPID- 10+00.000 (3.600m RT)

PROP GRADE -RPIDB-

16.0m RT

-RPIDB- 14+83.329 EL 78.893 =
-LPID- 13+45.891 EL 67.304

EXIST GROUND

S-121

SS-124

COASTAL PLAIN, ORANGE, BROWN AND WHITE, DRY TO WET.
VERY LOOSE TO MEDIUM DENSE, FINE SAND

DRY
11/05

MIDDENDORF FORMATION

(A) TAN, RED AND GRAY, DRY, HARD, SANDY CLAY WITH SANDY SILT LAYERS

(B) PINK GRAY, MOIST, STIFF TO MEDIUM STIFF, SILTY CLAY

(C) ARTIFICIAL FILL, TAN-RED-BROWN, MOIST, LOOSE, FINE TO COARSE AND CLAYEY SAND

12/05

05/98

COASTAL PLAIN, TAN AND RED, DRY TO SATURATED, LOOSE TO VERY DENSE, SILTY, FINE TO COARSE SAND, MIDDENDORF FORMATION

RED, GRAY, WET, SOFT, SANDY CLAY
TAN, SATURATED, MEDIUM DENSE, SAND
GRAY, WET, SOFT SANDY CLAY
TAN, SATURATED MEDIUM DENSE, SAND
TAN, MOIST, MEDIUM STIFF, SILTY CLAY
TAN, WET, MEDIUM DENSE, SILTY SAND

TAN-GRAY, MOIST, HARD, SILTY CLAY, CAPE FEAR FORMATION

-RP1DB-

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ogundblood
$$$$ AT GE12195E

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	45

METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL	I	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	% MOISTURE	% ORGANIC
SS-3	CL	17+60.0	2.59-3.04	A-2-6(0)	37	16		69.1	8.3	5.2	17.4	99.8	46.6	22.7	19.9	-
SS-10	CL	17+60.0	13.26-13.71	A-2-6(0)	39	14		68.9	6.8	6.7	17.6	99.4	46.2	24.3	17.5	-
SS-14	CL	17+60.0	19.35-19.80	A-7-6(23)	48	16		9.4	15.9	36.1	38.6	100.0	94.8	76.2	18.9	-
SS-23	CL	17+60.0	33.07-33.52	A-7-6(3)	42	20		24.4	41.6	24.4	9.5	100.0	87.4	36.7	20.7	-

PROP. GRADE -RPIDB-

-Y1- (NBL MEOP)

-RPIBD- 28+33.089 EL 83.078 -

-Y1- 16+59.247

-Y1- (SBL MEOP)

-RPIBD- 19+24.951

COASTAL PLAIN,
GRAY AND TAN, MOIST TO WET, VERY
LOOSE TO MEDIUM DENSE, FINE TO COARSE SAND
MIDDENDORF FORMATION

ROADWAY EMBANKMENT

SS-3
SS-10
SS-14
SS-23

EXIST GROUND

Ⓐ ALLUVIAL, ORANGE, DRY TO MOIST, VERY LOOSE TO LOOSE, SILTY SAND

Ⓑ COASTAL PLAIN, GRAY, TAN AND ORANGE, MOIST, MED. STIFF, SANDY CLAY MIDDENDORF FORMATION

10/00

TAN, GRAY TO RED-BROWN, MOIST TO SATURATED,
LOOSE TO MEDIUM DENSE, CLAYEY TO COARSE SAND,
MIDDENDORF FORMATION

GRAY TO GREEN-GRAY, MOIST, MEDIUM STIFF TO HARD
SANDY AND SILTY CLAY AND LOOSE TO MEDIUM DENSE
CLAYEY AND SILTY SAND
CAPE FEAR FORMATION

	Ⓐ	Ⓑ
38	65	3
36	42	9
34	61	8
32	49	13
30	46	16
28	44	23
26	67	27
24	3	16
22	100+	8
	100+	9
	55	28
	64	37

-RP1DB-

90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40

60 80 16+00 20 40 60 80 17+00 20 40 60 80 18+00 20 40 60 80 19+00 20

6/AUG/08

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cshannon1558

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	46

METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-2	CL	19+40.0	1.07-1.52	A-1-b(0)	20	NP	86.3	7.1	4.9	1.7	98.2	26.1	7.0	-	-
SS-3	CL	19+40.0	2.59-3.04	A-2-4(0)	24	2	58.2	24.1	8.2	9.5	98.2	60.8	27.0	9.4	-
SS-4	CL	19+40.0	4.11-4.56	A-2-4(0)	24	NP	23.8	66.1	2.3	7.8	100.0	91.9	11.7	19.0	-
SS-5	CL	19+40.0	5.64-6.09	A-2-4(0)	22	3	65.9	16.0	7.7	10.4	96.2	52.9	19.5	16.1	-
SS-6	CL	19+40.0	7.16-7.61	A-2-4(0)	24	4	64.1	17.3	8.8	9.8	96.9	54.3	21.1	14.3	-
SS-7	CL	19+40.0	8.69-9.14	A-1-b(0)	19	NP	88.6	6.6	2.8	2.0	98.0	22.8	5.5	-	-
SS-8	CL	19+40.0	10.21-10.66	A-1-b(0)	23	NP	85.0	8.0	1.6	5.4	83.4	18.1	6.4	-	-
SS-9	CL	19+40.0	11.73-12.18	A-2-4(0)	21	NP	5.9	81.4	1.1	11.6	100.0	99.4	13.5	18.9	-
SS-10	CL	19+40.0	13.26-13.71	A-3(0)	23	NP	69.0	25.2	3.8	2.0	99.0	66.1	6.1	-	-
SS-11	CL	19+40.0	14.78-15.23	A-1-b(0)	25	NP	89.1	5.8	3.1	2.0	99.0	21.0	5.6	-	-
SS-12	CL	19+40.0	16.31-16.76	A-2-7(3)	43	23	50.4	14.2	1.2	34.2	97.5	66.1	35.1	16.6	-
SS-13	CL	19+40.0	17.83-18.28	A-7-6(23)	47	25	4.7	10.2	22.8	62.3	100.0	97.3	87.7	17.9	-
SS-14	CL	19+40.0	19.35-19.80	A-6(3)	36	20	53.9	9.5	4.3	32.3	100.0	72.7	37.6	14.6	-
SS-15	CL	19+40.0	20.88-21.33	A-6(2)	31	18	32.5	30.9	10.4	26.2	99.6	83.1	38.6	12.4	-
SS-16	CL	19+40.0	22.40-22.85	A-2-6(0)	36	19	68.2	9.9	3.4	18.5	98.2	54.1	22.0	18.7	-

SS-2 SS-9
SS-3 SS-10
SS-4 SS-11
SS-5 SS-12
SS-6 SS-13
SS-7 SS-14
SS-8 SS-15
SS-16

-RP1BD- 19+24.93' EL. 79.05' -LP1D- 11+41.30' EL. 71.00'

PROP GRADE -RP1DB-

-RP1DB- 22+17.26'
-RP1B- 15+39.350 (3.600m RT)

16.4m RT

EXIST GROUND

DRY 07/98

DRY 07/98

DRY 07/98

BIAD 07/98

06/98

07/98

RED TO BROWN, DRY TO MOIST, VERY STIFF TO HARD, SANDY AND SILTY CLAY TO CLAYEY COARSE SAND AND LOOSE TO MEDIUM DENSE CLAYEY SAND

COASTAL PLAIN, GRAY TO GREEN-GRAY, MOIST, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY AND LOOSE TO MEDIUM DENSE CLAYEY SAND

CAPE FEAR FORMATION

COASTAL PLAIN, SATURATED, VERY LOOSE TO DENSE, MIDDEDORF FORMATION

COASTAL PLAIN, GRAY TO GREEN-GRAY, MOIST, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY AND LOOSE TO MEDIUM DENSE CLAYEY SAND

CAPE FEAR FORMATION

Ⓐ RED, GRAY AND TAN, MOIST, VERY STIFF, SANDY CLAY

-RP1DB-

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RP 0&2 25876
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RP 0&2 25876
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METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	CL	23+00.0	0.00-0.45	A-2-4(0)	17	NP	48.7	34.7	8.3	8.3	93.5	62.6	18.8	10.8	-
SS-2	CL	23+00.0	1.07-1.52	A-2-7(0)	47	25	63.8	8.0	4.9	23.3	97.8	45.9	27.3	12.1	-
SS-3	CL	23+00.0	2.59-3.04	A-2-4(0)	20	NP	23.8	64.8	4.7	6.7	99.7	92.9	14.2	25.4	-
SS-4	CL	23+00.0	4.11-4.56	A-3(0)	23	NP	77.0	17.4	3.3	2.3	99.2	64.1	6.0	-	-
SS-5	CL	23+00.0	5.64-6.09	A-6(10)	37	21	0.8	43.2	18.0	38.0	100.0	99.8	62.6	17.5	-
SS-6	CL	23+00.0	7.16-7.61	A-2-4(0)	28	10	34.3	36.2	17.6	11.9	100.0	80.3	32.6	14.4	-
SS-7	CL	23+00.0	8.69-9.14	A-2-4(0)	21	2	49.1	28.0	10.6	12.3	98.9	64.3	26.4	16.2	-
SS-8	CL	23+00.0	10.21-10.66	A-2-6(0)	30	13	44.8	24.5	5.0	25.7	100.0	84.9	51.5	16.4	-
SS-9	CL	23+00.0	11.73-12.18	A-7-6(28)	51	32	7.2	12.0	31.1	49.7	100.0	95.7	83.7	20.3	-
SS-10	CL	23+00.0	13.26-13.71	A-2-6(0)	29	13	47.9	22.6	20.0	9.5	98.9	67.1	31.5	11.6	-
ST-2	1.50m RT.	23+68.0	0.00-0.60	A-2-4(0)	24	NP	48.7	33.5	11.7	6.1	100.0	76.0	20.0	-	-
ST-3(1)	9.00m LT.	23+77.0	0.00-0.60	A-2-4(0)	24	1	36.1	33.2	22.7	8.1	100.0	83.0	35.0	-	-
ST-3(2)	9.00m LT.	23+77.0	0.00-0.60	A-7-5(25)	61	28	12.5	9.9	35.3	42.3	100.0	93.0	79.0	-	-
ST-3(3)	9.00m LT.	23+77.0	0.00-0.60	A-6(2)	28	12	30.8	29.0	20.0	20.1	100.0	85.0	44.0	-	-
ST-1	23.00m RT.	24+09.0	0.00-0.60	A-4(0)	22	5	30.1	36.2	15.6	18.2	99.0	85.0	37.0	-	-

HAND TOOLS

*METRIC TONS

TEST NO.	STATION (-L-)	OFFSET	DEPTH INTERVAL	N'C	SHEAR STRENGTH *(TON/FT²)	SOIL TYPE
VST-16	23+55.0	2.13m LT.	0.30		1558	CLAY
	23+55.0	2.13m LT.	0.60		902	CLAY
	23+55.0	2.13m LT.	0.90		902	CLAY
	23+55.0	2.13m LT.	1.20		738	CLAY
	23+55.0	2.13m LT.	1.50		1394	CLAY
	23+55.0	2.13m LT.	1.80		2337	CLAY
	23+55.0	2.13m LT.	2.10		1640	CLAY
	23+55.0	2.13m LT.	2.40		3689	SAND
VST-17	24+03.0	10.40m RT.	0.60		1845	CLAY
	24+03.0	10.40m RT.	0.90		1312	CLAY
	24+03.0	10.40m RT.	1.20		2542	CLAY
	24+03.0	10.40m RT.	1.50		3443	SAND
VST-18	24+18.0	28.00m RT.	0.30		492	CLAY
	24+18.0	28.00m RT.	0.60		574	CLAY
	24+18.0	28.00m RT.	0.90		902	SDY. CLAY
	24+18.0	28.00m RT.	1.20		1640	SDY. CLAY
	24+18.0	28.00m RT.	1.50		2214	SAND
VST-19	24+26.9	CL	0.60		2542	SDY. CLAY
	24+26.9	CL	0.90		4427	SDY. CLAY

SS-1
SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10

END GRADE -CL2- 2+08.668
-RP1DB- 25+02.083
EL 66.720

PROP GRADE -RP1DB-

EXIST GROUND

7.9m LT
07/98
10/98

1.0m LT
10/98

7.8m LT
11/98

GRAY TO TAN, MOIST SANDY AND SILTY CLAY — CAPE FEAR

COASTAL PLAIN. TO SATURATED, MEDIUM STIFF TO HARD. AND MEDIUM DENSE, CLAYEY AND SILTY SAND FORMATION

Ⓐ ALLUVIAL, BLACK AND GRAY, SATURATED, VERY SOFT, HIGHLY ORGANIC, SILTY CLAY

Ⓑ ALLUVIAL, RED-TAN, MOIST TO SATURATED, LOOSE, CLAYEY AND SILTY SAND

Ⓒ COASTAL PLAIN, RED TO BROWN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, CLAYEY TO COARSE SAND; MIDDENDORF FORMATION

Ⓓ RED-GRAY, MOIST TO WET, VERY STIFF, SANDY CLAY

Ⓔ ALLUVIAL, GRAY-TAN, MOIST TO WET, SOFT TO MEDIUM STIFF, SANDY SILT; SANDY AND SILTY CLAY

-RP1DB-

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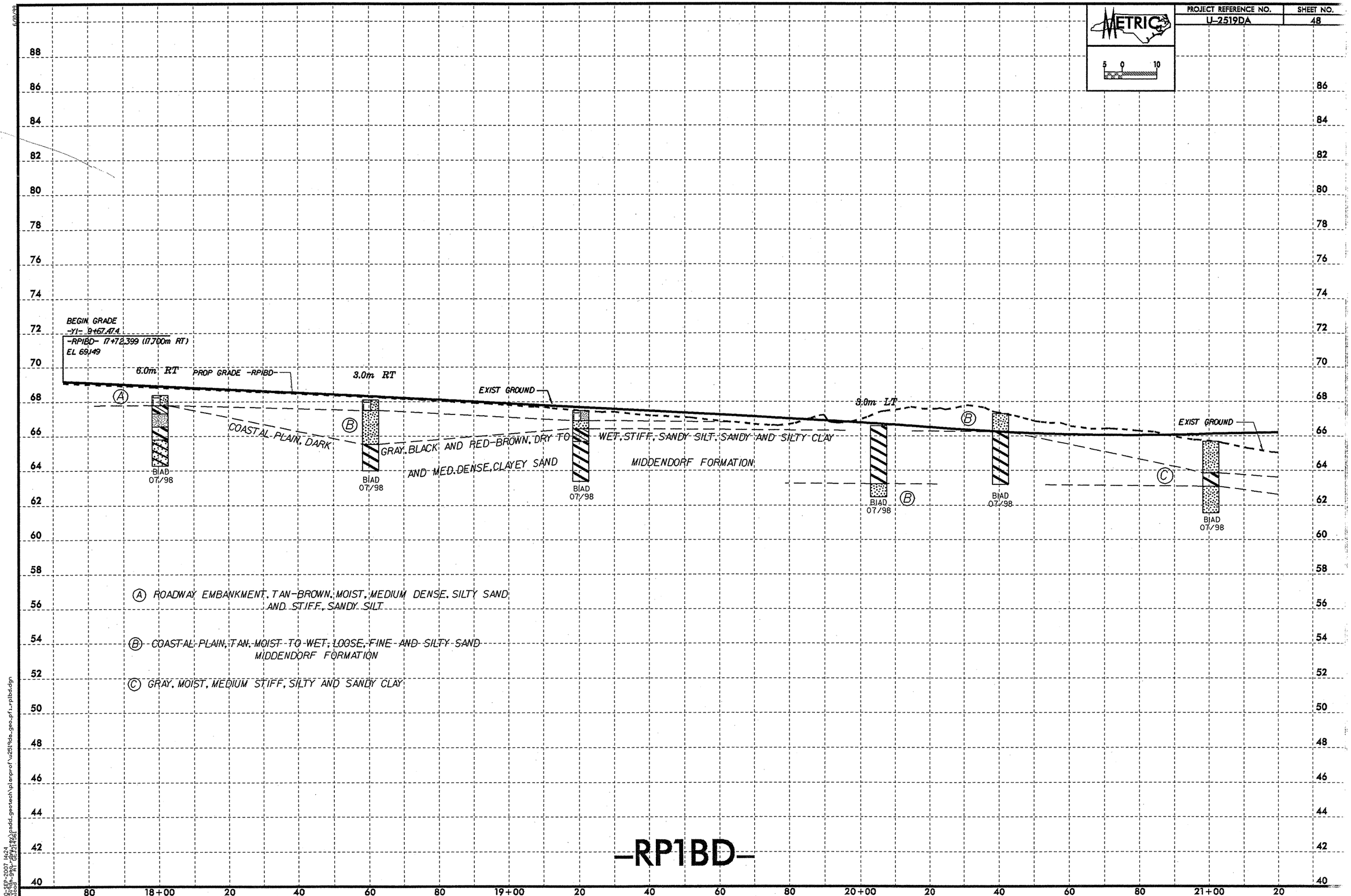
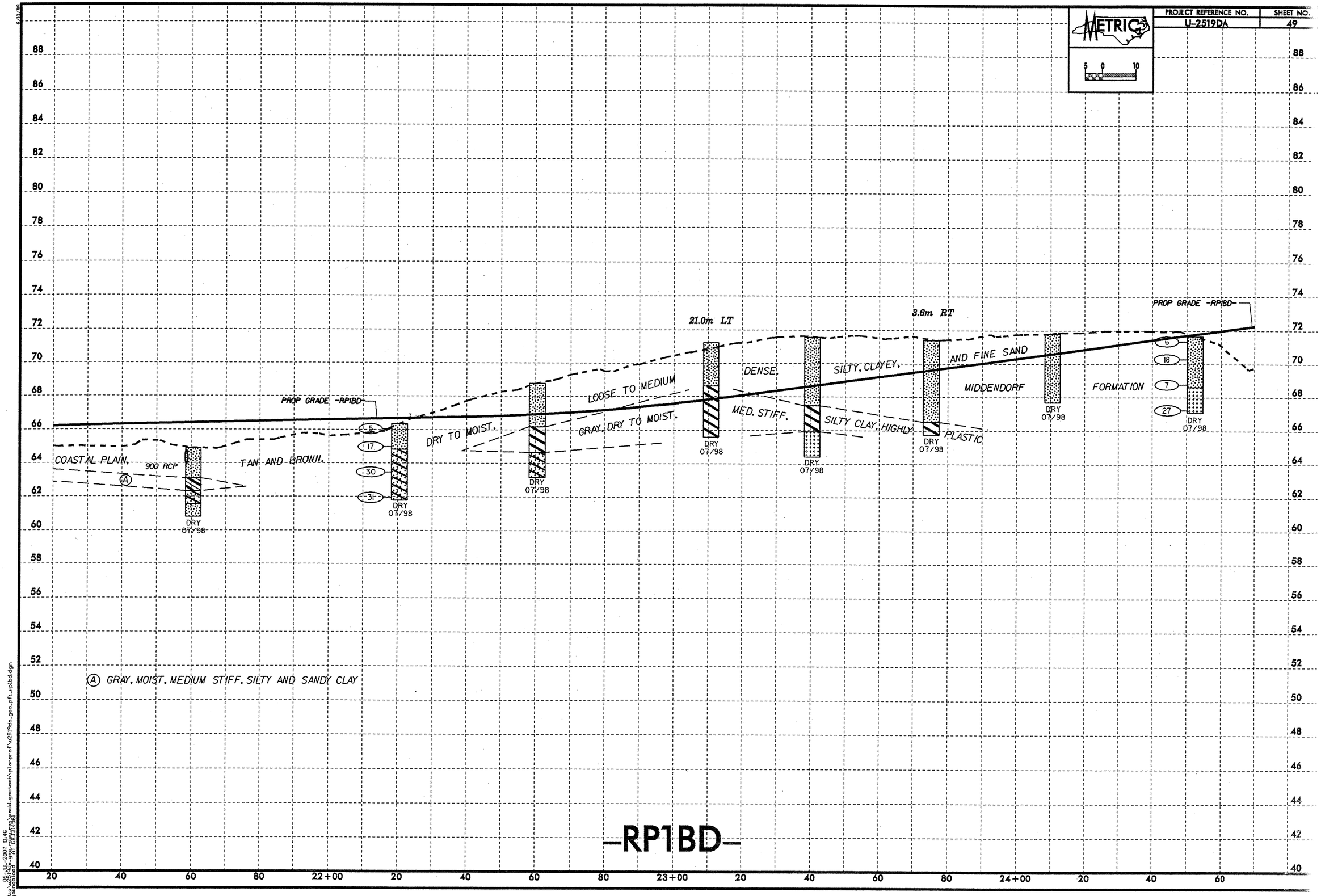


METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
48
BEGIN GRADE
-Y1- 9+67.474
-RPIBD- 17+72.399 (17.700m RT)
EL 69.149
6.0m RT
PROP GRADE -RPIBD-
3.0m RT
EXIST GROUND
3.0m LT
EXIST GROUND
COASTAL PLAIN, DARK GRAY, BLACK AND RED-BROWN, DRY TO WET, STIFF, SANDY SILT, SANDY AND SILTY CLAY AND MED. DENSE, CLAYEY SAND
MIDDENDORF FORMATION
BIAD 07/98
Ⓐ ROADWAY EMBANKMENT, TAN-BROWN, MOIST, MEDIUM DENSE, SILTY SAND AND STIFF, SANDY SILT
Ⓑ COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND MIDDENDORF FORMATION
Ⓒ GRAY, MOIST, MEDIUM STIFF, SILTY AND SANDY CLAY
-RP1BD-


METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
49
5 0 10
88
86
84
82
80
78
76
74
72
70
68
66
64
62
60
58
56
54
52
50
48
46
44
42
40
PROP GRADE -RPIBD-
21.0m LT
3.6m RT
COASTAL PLAIN,
900 RCP
TAN AND BROWN,
DRY TO MOIST,
LOOSE TO MEDIUM
GRAY, DRY TO MOIST,
DENSE,
MED. STIFF,
SILTY, CLAYEY,
SILTY CLAY, HIGHLY
PLASTIC
AND FINE SAND
MIDDENDORF
FORMATION
5
17
30
31
6
18
7
27
DRY
07/98
A GRAY, MOIST, MEDIUM STIFF, SILTY AND SANDY CLAY
-RP1BD-
20
40
60
80
22+00
23+00
24+00

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	50

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	CL	26+00.0	0.00-0.45	A-3(0)	20	NP	51.5	39.8	5.5	3.2	100.0	72.7	11.8	-	-
SS-2	CL	26+00.0	1.07-1.52	A-2-6(0)	37	15	67.0	11.9	14.3	6.8	96.5	40.4	23.1	4.0	-
SS-3	CL	26+00.0	2.59-3.04	A-2-4(0)	22	NP	46.1	32.8	7.5	13.6	99.7	73.7	24.6	2.0	-
SS-4	CL	26+00.0	4.11-4.56	A-3(0)	25	NP	16.4	76.7	3.5	3.4	98.2	87.8	9.6	-	-
SS-5	CL	26+00.0	5.64-6.09	A-2-4(0)	28	9	79.9	5.9	8.3	5.9	76.8	21.7	13.0	6.1	-
SS-6	CL	26+00.0	7.16-7.61	A-1-b(0)	23	NP	87.4	5.0	3.4	4.2	96.2	23.9	7.7	-	-
SS-7	CL	26+00.0	8.69-9.14	A-1-b(0)	23	NP	90.1	5.8	2.0	2.1	97.5	14.5	4.6	-	-
SS-8	CL	26+00.0	10.21-10.66	A-2-4(0)	19	NP	54.6	32.4	5.4	7.6	100.0	71.6	16.0	23.3	-
SS-9	CL	26+00.0	11.73-12.18	A-2-4(0)	22	2	0.4	71.8	7.9	19.9	100.0	99.8	31.4	19.0	-
SS-10	CL	26+00.0	13.26-13.71	A-2-4(0)	24	NP	11.5	77.8	0.6	10.1	100.0	99.6	12.3	22.2	-
SS-11	CL	26+00.0	14.78-15.23	A-7-6(22)	46	26	4.5	12.7	5.3	74.2	100.0	98.2	82.8	19.1	-
SS-12	CL	26+00.0	16.31-16.76	A-7-6(21)	50	27	2.6	25.2	10.6	61.6	100.0	99.4	77.5	20.8	-
SS-13	CL	26+00.0	17.83-18.28	A-2-6(0)	31	13	45.1	29.9	0.8	24.2	98.7	69.8	25.8	9.6	-
SS-14	CL	26+00.0	19.35-19.80	A-6(9)	39	22	31.5	14.7	3.1	50.7	100.0	80.0	55.9	14.4	-
SS-15	CL	26+00.0	20.88-21.33	A-7-6(2)	57	34	62.0	7.3	1.8	29.9	92.4	41.3	29.3	11.0	-
SS-16	CL	26+00.0	22.40-22.85	A-6(5)	33	19	31.2	25.2	9.8	33.8	100.0	87.8	47.2	13.3	-
SS-17	CL	26+00.0	23.93-24.38	A-2-4(0)	32	NP	49.6	37.8	1.4	11.2	100.0	78.8	15.4	16.4	-
SS-4	2.10m LT	27+89.0	4.11-4.56	A-7-6(8)	43	18	27.1	24.7	9.4	38.8	97.7	83.1	48.6	17.8	-
SS-10	2.10m LT	27+89.0	13.26-13.71	A-7-6(12)	46	18	24.3	21.3	6.3	48.1	100.0	89.6	54.8	18.3	-
SS-14	2.10m LT	27+89.0	19.35-19.80	A-7-6(31)	51	21	2.8	3.7	36.9	56.6	100.0	98.6	93.7	26.7	-

SS-1 SS-10
SS-2 SS-11
SS-3 SS-12
SS-4 SS-13
SS-5 SS-14
SS-6 SS-15
SS-7 SS-16
SS-8 SS-17
SS-9

PROP GRADE -RPIBD-

EXIST GROUND

COASTAL PLAIN, TAN AND RED-BROWN,

DRY TO WET, VERY LOOSE TO DENSE, SILTY, CLAYEY, FINE TO COARSE SAND

MIDDENDORF FORMATION

-RPIBD- 26+17.222 EL 76.363 =
-LPIBD- 13+10.643 EL 65.672

DRY 07/98

DRY 07/98

07/98

SS-4
SS-10
SS-14

2.1m LT

-Y1- (SBL MEOP)

EXIST TANK TRAIL

GRAY, MOIST TO WET, DENSE, CLAYEY SAND

MEDIUM STIFF TO HARD, SILTY AND SANDY CLAY AND MEDIUM CAPE FEAR FORMATION

GRAY, WET, MEDIUM, DENSE, SAND

Ⓐ ROADWAY EMBANKMENT, TAN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

Ⓑ RED, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY AND MEDIUM DENSE CLAYEY SAND

Ⓒ ALLUVIAL, TAN, MOIST TO WET, LOOSE TO MEDIUM DENSE, SILTY FINE SAND

Ⓓ DARK BROWN AND GRAY, WET, SOFT, HIGHLY ORGANIC CLAYEY SILT

-RP1BD-

BIAB 10/00

20-SEP-2007 14:24
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cgaskins

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-5	1.4m RT.	28+33.0	5.64-6.09	A-2-4(0)	28	20	70.6	9.6	5.5	14.3	96.8	44.2	19.4	9.1	-
SS-9	1.4m RT.	28+33.0	11.73-12.18	A-7-6(31)	57	22	4.2	12.4	20.4	63.0	100.0	97.9	83.8	20.2	-
SS-16	1.4m RT.	28+33.0	22.40-22.85	A-7-6(20)	65	25	9.0	7.9	13.4	69.7	100.0	94.3	83.6	25.9	-
SS-21	1.4m RT.	28+33.0	30.02-30.47	A-7-6(15)	57	27	20.1	25.9	32.6	21.4	100.0	88.4	56.7	24.2	-
SS-25	1.4m RT.	28+33.0	36.11-36.56	A-2-6(0)	30	15	45.0	30.0	21.2	3.8	99.6	72.4	26.6	11.6	-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-2	CL	30+80.0	1.07-1.52	A-6(3)	34	16	35.4	26.0	13.8	24.8	99.1	78.1	42.2	10.7	-
SS-3	CL	30+80.0	2.59-3.04	A-6(3)	33	13	30.1	29.6	15.2	25.1	100.0	86.4	45.1	16.1	-
SS-4	CL	30+80.0	4.11-4.56	A-7-6(15)	44	20	11.5	24.1	23.2	41.2	100.0	92.2	74.4	31.2	-
SS-5	CL	30+80.0	5.64-6.09	A-2-4(0)	23	NP	44.5	41.3	5.7	21.4	99.0	70.5	17.5	17.6	-
SS-6	CL	30+80.0	7.16-7.61	A-2-4(0)	25	NP	39.5	39.2	10.3	3.8	94.9	78.1	22.7	19.7	-
SS-7	CL	30+80.0	8.69-9.14	A-2-4(0)	24	3	44.0	31.4	8.3	14.3	99.3	85.2	26.6	27.8	-
SS-8	CL	30+80.0	10.21-10.66	A-1-b(0)	25	NP	84.1	7.3	3.7	63.0	87.0	23.1	8.1	-	-
SS-9	CL	30+80.0	11.73-12.18	A-1-b(0)	20	NP	83.1	8.1	2.2	69.7	98.8	44.2	9.3	-	-
SS-10	CL	30+80.0	13.26-13.71	A-1-b(0)	21	3	84.2	7.9	1.1	21.4	85.7	20.0	7.4	-	-
SS-11	CL	30+80.0	14.78-15.23	A-1-b(0)	20	NP	77.0	13.7	2.2	3.8	99.0	41.5	10.1	-	-
SS-12	CL	30+80.0	16.67-16.76	A-2-4(0)	22	5	64.7	14.9	6.5	14.3	97.0	50.5	21.6	16.7	-
SS-13	CL	30+80.0	17.83-18.28	A-2-6(0)	32	12	44.6	25.2	17.7	63.0	100.0	78.9	31.1	5.7	-
SS-14	CL	30+80.0	19.35-19.80	A-2-6(1)	38	20	64.0	11.6	10.0	69.7	99.2	54.0	25.2	12.6	-
SS-15	CL	30+80.0	20.88-21.33	A-2-6(1)	31	14	51.2	16.7	16.1	16.0	98.9	68.1	32.7	6.9	-

METRIC

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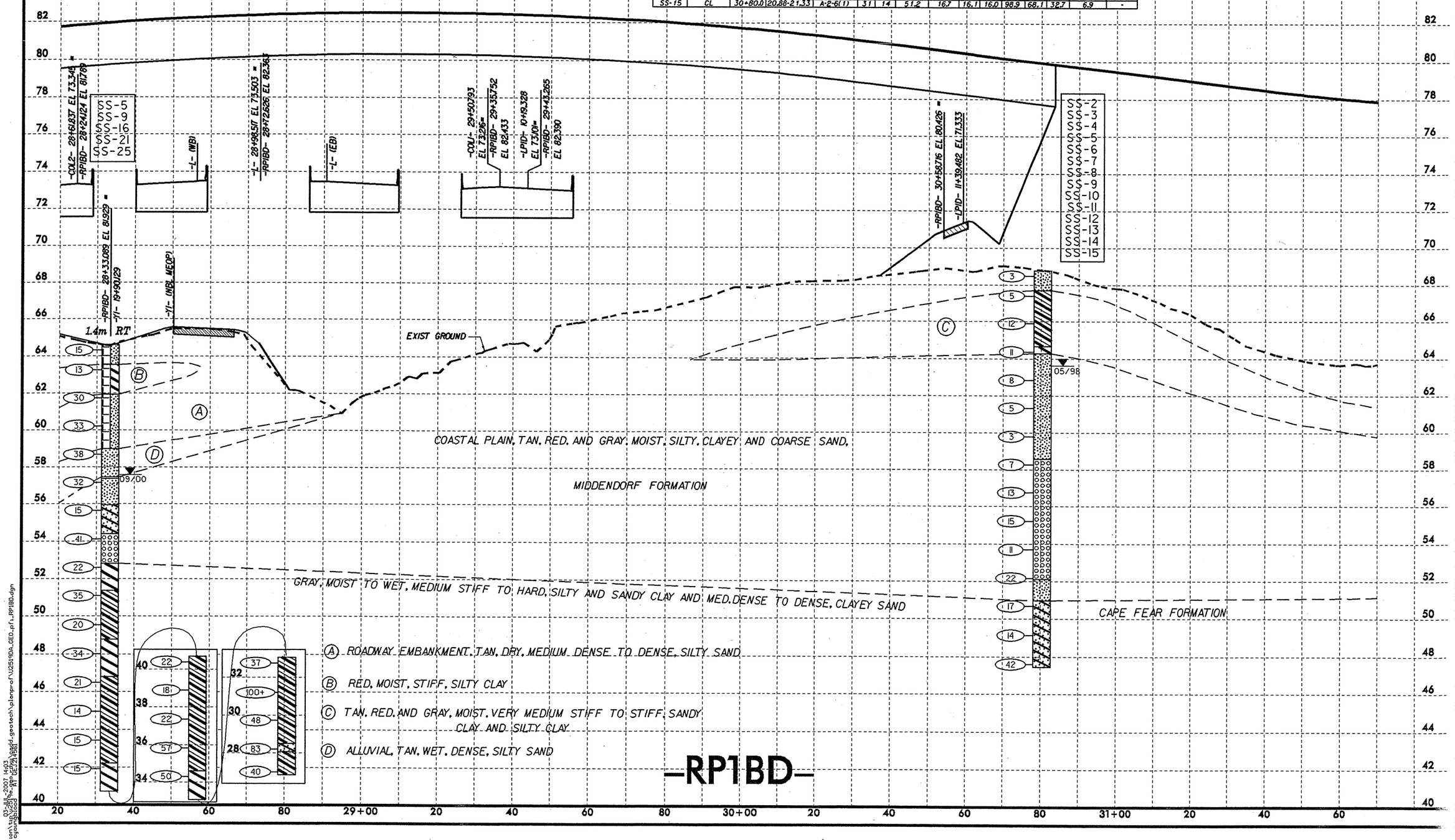
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	51



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METRIC 5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PL	I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-125	CL	32+00.0	5.78-6.23	A-7-6(15)	43	23		4.6	38.2	24.9	32.2	100.0	98.0	72.0	-	-
SS-126	CL	32+00.0	7.30-7.75	A-2-6(0)	31	12		49.1	26.6	10.3	14.1	98.0	63.0	28.0	-	-
SS-127	CL	32+00.0	8.82-9.27	A-2-6(0)	21	6		81.5	5.0	5.4	8.0	78.0	23.0	11.0	-	-
SS-128	CL	32+00.0	14.90-15.35	A-2-6(0)	29	14		48.7	26.6	6.6	18.1	100.0	68.0	26.0	-	-
SS-2	1.00m RT	34+90.0	1.07-1.52	A-2-4(0)	26	NP		45.6	36.0	0.6	17.8	99.0	74.5	18.9	8.2	-
SS-3	1.00m RT	34+90.0	2.74-3.04	A-3(0)	24	NP		51.5	40.0	3.1	5.4	94.3	55.9	8.9	-	-
SS-4	1.00m RT	34+90.0	4.11-4.56	A-4(1)	31	5		9.9	48.5	19.1	22.5	100.0	96.4	52.2	24.9	-
SS-5	1.00m RT	34+90.0	5.64-6.09	A-7-5(51)	79	47		3.2	5.4	7.8	83.6	100.0	98.4	91.9	47.7	-
SS-6	1.00m RT	34+90.0	7.16-7.61	A-2-4(0)	22	NP		38.5	50.6	3.8	7.1	100.0	86.9	14.7	25.3	-
SS-7	1.00m RT	34+90.0	8.69-9.14	A-2-4(0)	20	NP		49.7	40.0	2.1	8.2	99.2	79.0	10.8	25.3	-
SS-8	1.00m RT	34+90.0	10.51-10.66	A-7-6(9)	41	18		20.2	23.2	21.2	35.4	99.3	89.1	61.7	26.5	-
SS-9	1.00m RT	34+90.0	11.73-12.18	A-2-4(0)	28	10		66.5	12.9	5.4	15.2	99.2	50.8	21.3	26.3	-
SS-10	1.00m RT	34+90.0	13.26-13.71	A-1-b(0)	27	NP		84.3	7.3	0.6	7.8	90.6	29.1	7.9	-	-
SS-11	1.00m RT	34+90.0	14.78-15.23	A-1-b(0)	22	NP		81.2	11.2	0.9	6.7	83.7	31.4	7.0	-	-
SS-12	1.00m RT	34+90.0	16.31-16.76	A-2-4(0)	22	NP		65.2	21.6	0.2	13.0	100.0	66.4	14.0	21.3	-
SS-13	1.00m RT	34+90.0	17.83-18.28	A-1-b(0)	21	NP		77.2	7.4	3.0	12.4	91.6	26.8	14.9	-	-
SS-14	1.00m RT	34+90.0	19.68-19.80	A-6(11)	37	16		8.8	23.3	18.7	49.2	98.1	92.4	73.4	29.2	-
SS-15	1.00m RT	34+90.0	20.58-21.33	A-2-7(3)	55	30		62.8	5.6	0.4	31.2	98.6	50.5	31.8	17.9	-
SS-16	1.00m RT	34+90.0	22.40-22.85	A-7-6(20)	48	25		9.8	15.7	17.9	56.6	100.0	94.3	78.9	24.3	-

-RPIBD- 33+21.938
-RPIBD- 14+86.961 3.600m RT

PROP GRADE -RPIBD-

SS-125
SS-126
SS-127
SS-128

EXIST GROUND

12/05

12.0m RT

11/98

-COU- 34+25.491 EL 69.625
-RPIBD- 34+21.044 EL 79.023

SS-2 SS-9
SS-3 SS-10
SS-4 SS-11
SS-5 SS-12
SS-6 SS-13
SS-7 SS-14
SS-8 SS-15
SS-16

1.0m RT

6.0m RT

DRY 08/98 BIAD

06/98

12/05

COASTAL PLAIN, TAN, MOIST TO WET, LOOSE TO DENSE, FINE TO SILTY SAND MIDDENDORF FORMATION

COASTAL PLAIN, WHITE, MOIST TO WET, MED. STIFF TO V. STIFF, SILTY CLAY AND SANDY SILT

RED, TAN, GRAY AND

RED-BROWN, TAN AND GRAY, WET, SOFT, SILTY CLAY

COASTAL PLAIN, TAN, RED, AND GRAY, MOIST TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, FINE AND COARSE SAND AND CLAYEY SAND

MIDDENDORF FORMATION

COASTAL PLAIN, TAN-GRAY, MOIST, VERY STIFF TO HARD. SILTY CLAY, AND DENSE, CLAYEY SAND CAPE FEAR FORMATION

(A) ALLUVIAL, BLACK, SATURATED, VERY SOFT, CLAYEY SILT AND SILTY CLAY

(B) TAN, RED, AND GRAY, MOIST, VERY SOFT TO MEDIUM STIFF, SANDY CLAY AND SILTY CLAY

-RP1BD-

32+00 33+00 34+00 35+00

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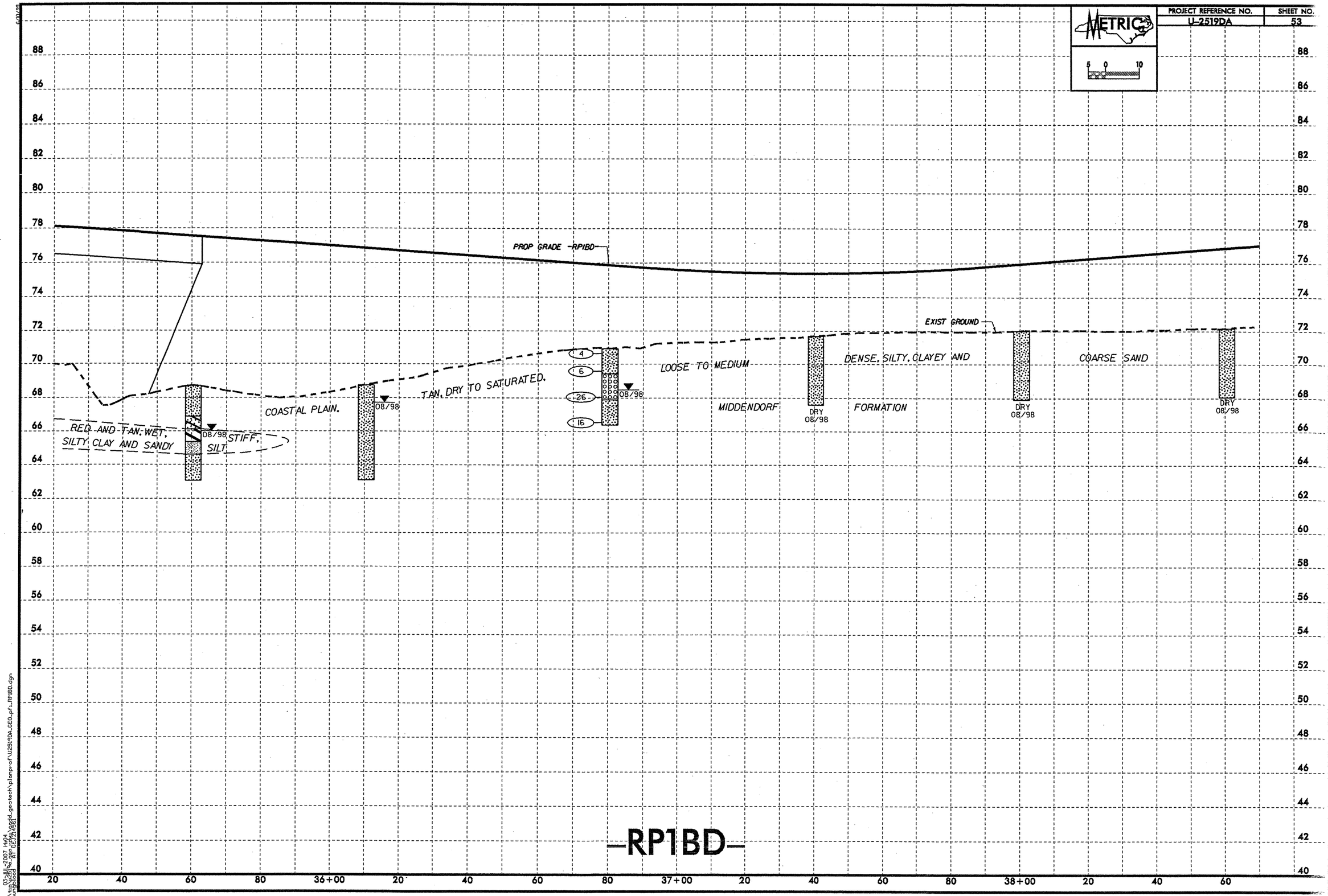

METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
53
5 0 10
PROP GRADE -RP1BD-
EXIST GROUND
RED AND TAN, WET, SILTY CLAY AND SANDY SILT
STIFF,
COASTAL PLAIN.
TAN, DRY TO SATURATED.
LOOSE TO MEDIUM
DENSE, SILTY, CLAYEY AND
COARSE SAND
MIDDENDORF
FORMATION
08/98
DRY 08/98
4
6
26
16
-RP1BD-
88
86
84
82
80
78
76
74
72
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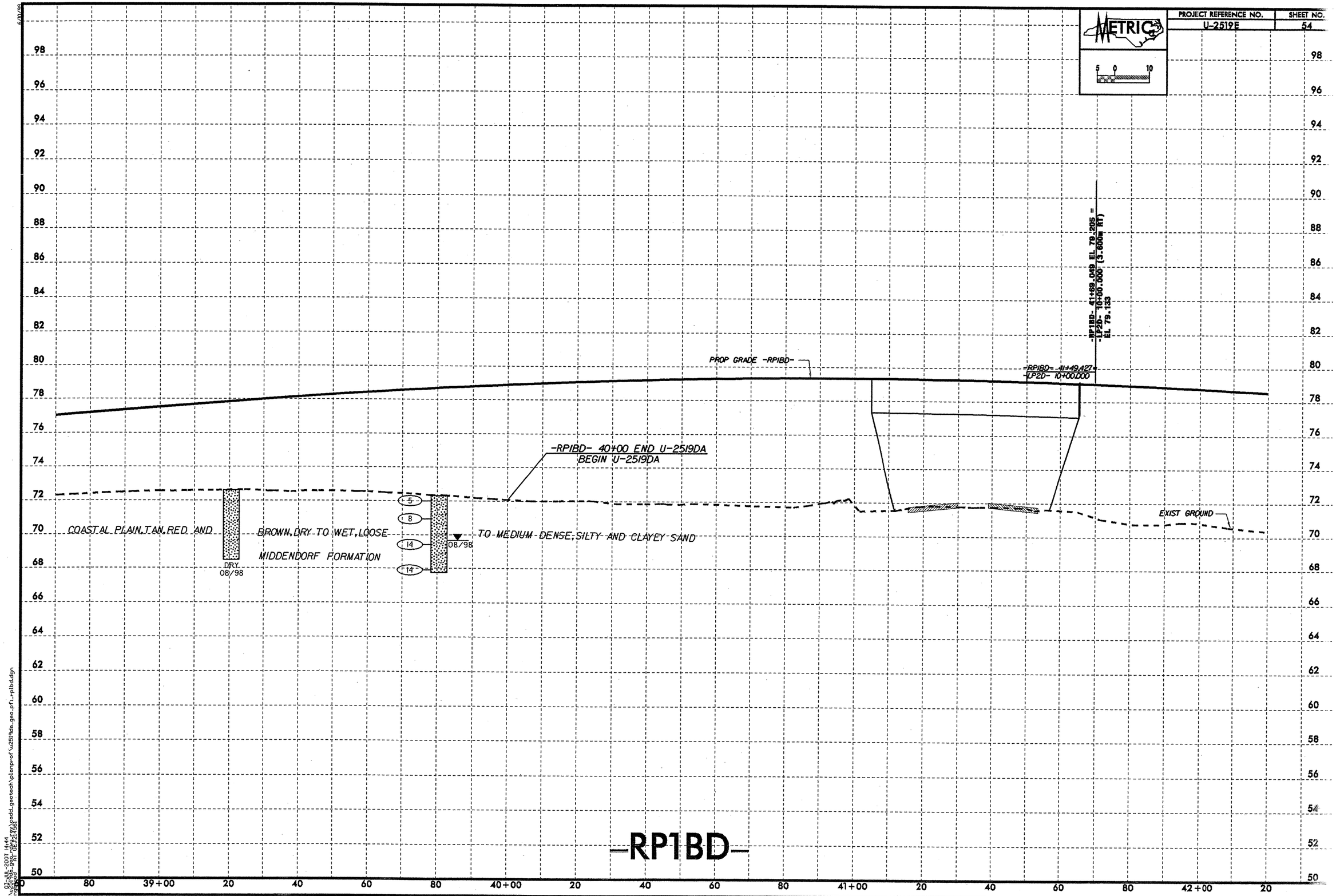
40
20
40
60
80
36+00
37+00
38+00



METRIC
PROJECT REFERENCE NO.
U-2519E
SHEET NO.
54
5 0 10
PROP GRADE -RP1BD-
-RP1BD- 41+69.049 EL 79.205 =
-LP2D- 10+00.000 (3.600m RT)
EL 79.133
-RP1BD- 41+49.427 =
-LP2D- 10+00.000
-RP1BD- 40+00 END U-2519DA
BEGIN U-2519DA
EXIST GROUND
COASTAL PLAIN, TAN, RED AND
BROWN, DRY TO WET, LOOSE
MIDDENDORF FORMATION
TO MEDIUM DENSE, SILTY AND CLAYEY SAND
DRY
08/98
5
8
14
14
08/98
-RP1BD-
98
96
94
92
90
88
86
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76
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58
56
54
52
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39+00
20
40
60
80
40+00
20
40
60
80
41+00
20
40
60
80
42+00
20

METRIC 5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
ST-1	11.40m LT.	12+20.8	0.91-1.52	A-2-4(0)	24	7	61.8	18.6	3.4	16.2	97.0	74.0	20.0	-	-
ST-2(1)	11.40m LT.	12+20.8	2.59-3.20	A-7-6(20)	53	31	25.5	4.2	26.1	44.2	95.0	75.0	68.0	-	-
ST-2(2)	11.40m LT.	12+20.8	2.59-3.20	A-2-4(0)	24	7	75.5	9.8	6.6	8.0	87.0	35.0	14.0	-	-
ST-2(3)	11.40m LT.	12+20.8	2.59-3.20	A-7-6(25)	46	24	4.8	5.6	39.4	50.2	100.0	96.0	94.0	-	-

BEGIN GRADE EL 68.943
-RP1A- 10+66.264 (7.200m LT) =
-COL2- 32+49.806

SEE -COL2- CROSS-SECTIONS FOR -RP1A- ELEVATIONS

ST-1
ST-2(1)
ST-2(2)
ST-3(3)

EXIST GROUND

2.5m LT. | 19.9m LT. | 11.4m LT. | 19.6m LT.

3 7 5 15 9 16 27 33 33 21 26 13 12 46 100+

08/98

Ⓐ COASTAL PLAIN, GRAY, TAN, RED AND WHITE, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, CLAYEY SAND AND FINE TO COARSE SAND, MIDDENDORF FORMATION

12/98

10 10 46

6 8 6 9 35

08/98

RED, GRAY AND TAN, MOIST, MEDIUM STIFF, SANDY AND SILTY CLAY

08/98

COASTAL PLAIN, GRAY, TAN AND YELLOW-BROWN, MOIST, DENSE TO VERY DENSE, CLAYEY SAND AND STIFF TO HARD, SANDY AND SILTY CLAY

CAPE FEAR FORMATION

Ⓐ ALLUVIAL, TAN TO GRAY, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND AND SILTY SAND

-RP1A-

80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30

10+00 20 40 60 80 11+00 20 40 60 80 12+00 20 40 60 80 13+00 20

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METRIC 5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	8.7m RT.	16+46.4	0.00-0.45	A-2-4(0)	18	NP	36.2	42.4	10.8	10.6	98.8	80.3	26.5	4.1	-
SS-2	8.7m RT.	16+46.4	1.07-1.52	A-2-7(0)	42	19	52.5	22.8	2.5	22.2	98.9	68.7	26.0	10.7	-
SS-3	8.7m RT.	16+46.4	2.59-3.35	A-7-6(13)	47	27	16.4	30.7	15.4	37.5	100.0	90.3	57.8	19.2	-
SS-4	8.7m RT.	16+46.4	4.11-4.56	A-6(14)	36	14	3.4	15.8	49.2	31.6	100.0	97.7	95.1	29.7	-
SS-5	8.7m RT.	16+46.4	5.64-6.09	A-7-6(25)	63	36	18.2	13.2	14.8	53.8	100.0	95.1	69.5	36.1	-
SS-6	8.7m RT.	16+46.4	7.16-7.61	A-3(0)	20	NP	73.4	21.0	1.6	4.0	100.0	62.7	6.0	-	-

BEGIN BRIDGE

END BRIDGE

PROP GRADE -RPIA-

1.5:1

1.5:1

EXIST GROUND

ALLUVIAL

20.0m LT.

3.7m LT.

8.7m RT.

SS-1
SS-2
SS-3
SS-4
SS-5
SS-6

(3) (17) (19) (25) (17) (19) (27) (15) (9) (16) (23) (14) (28) (48) (24)

08/98

COASTAL PLAIN, RED, MOIST, VERY SILTY SAND

TAN, GRAY AND LOOSE TO MEDIUM DENSE, MIDDENDORF FORMATION

TAN AND GRAY, STIFF, COASTAL PLAIN, GRAY, TAN AND YELLOW-BROWN, MOIST TO SATURATED, LOOSE TO CLAYEY SAND AND STIFF TO VERY STIFF, SANDY AND SILTY CLAY, CAPE FEAR FORMATION

GRAY, WET TO SATURATED, DENSE, SILTY SAND

GRAY, RED AND YELLOW-BROWN, WET TO SATURATED, VERY STIFF, SANDY CLAY

(11) (19) (18) (5) (4) (16)

DRY 10/98

DRY 10/98

COASTAL PLAIN, RED-BROWN TO MEDIUM DENSE, SILTY TAN, DRY TO WET, LOOSE TO TO FINE, SAND MIDDENDORF FORMATION

Ⓑ

Ⓑ RED-BROWN, GRAY AND TAN, DRY TO WET, MEDIUM DENSE TO LOOSE, CLAYEY SAND AND STIFF TO MEDIUM STIFF, SANDY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC

-RP1A-

80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40 38 36 34 32 30

20 40 60 80 14+00 20 40 60 80 15+00 20 40 60 80 16+00 20 40 60 80

6/00/39

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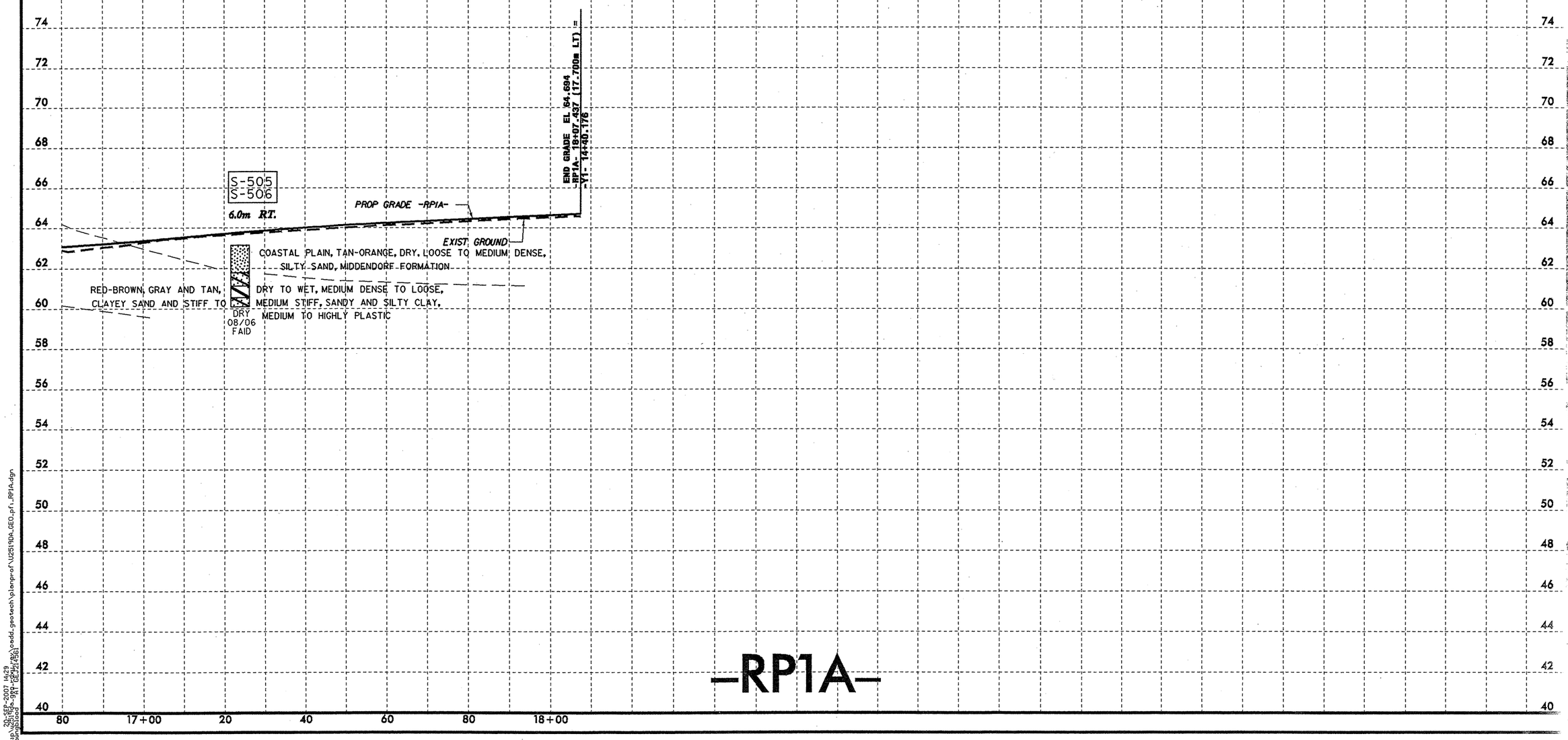
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	57

METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
S-505	6.00m RT.	17+24.0	1.10-1.70	A-2-7(2)	42	23	56.0	18.0	3.8	22.2	93.0	56.0	27.0	-	-
S-506	6.00m RT.	17+24.0	2.10-2.40	A-7-6(10)	42	22	28.9	18.0	18.8	34.3	100.0	78.0	58.0	-	-



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cdczalka AT GEJ226176

METRIC

5 0 10

SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-10
SS-11
SS-12
SS-13
SS-14
SS-15
SS-16
SS-17

BEGIN GRADE EL 65.509
-RP1C- 10+00.000 (3.600m RT) =
-COL1- 24+28.347

PROP GRADE -RP1C-

BEGIN BRIDGE

1.5:1

EXIST GROUND

5.0m LT.

1.6m RT.

2.6m LT.

3.3m RT.

07/98

DRY 07/98

TAN, RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY SAND, CLAYEY SAND, AND FINE TO COARSE SAND, MIDDENDORF FORMATION

COASTAL PLAIN, GRAY TO TAN, WET, VERY SOFT, SANDY CLAY

ALLUVIAL

COASTAL PLAIN, GRAY TO TAN AND RED, DRY TO MOIST, STIFF TO HARD, SANDY AND SILTY CLAY, LOW TO HIGH PLASTICITY

CAPE FEAR FORMATION

COASTAL PLAIN, GRAY TO RED TAN, DRY TO MOIST, MEDIUM DENSE TO DENSE, CLAYEY SAND AND VERY STIFF TO HARD, SILTY CLAY, CAPE FEAR FORMATION

-RP1C-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
ST-2	3.8m RT.	12.40.4	7.68-8.29	A-6(6)	31	14	18.6	26.0	10.5	44.9	99.9	89.3	59.9	22.4	-
ST-1	3.3m RT.	12.41.2	7.16-7.77	A-7-6(19)	46	26	5.6	22.5	17.2	54.7	100.0	97.3	76.0	18.3	-
SS-2	3.3m RT.	12+41.4	1.07-1.52	A-1-b(0)	20	NP	74.5	16.3	3.6	5.6	96.5	49.5	9.6	-	-
SS-3	3.3m RT.	12+41.4	2.59-3.04	A-2-4(0)	21	NP	59.7	28.4	1.8	10.1	100.0	86.4	12.5	20.8	-
SS-4	3.3m RT.	12+41.4	4.11-4.56	A-3(0)	23	NP	71.8	24.8	0.5	2.9	99.4	70.4	4.0	-	-
SS-5	3.3m RT.	12+41.4	5.64-6.09	A-1-b(0)	24	4	74.4	6.5	1.4	17.7	84.1	30.6	16.7	-	-
SS-6	3.3m RT.	12+41.4	7.16-7.61	A-6(11)	38	20	12.3	25.3	17.8	44.6	100.0	92.8	67.0	20.4	-
SS-7	3.3m RT.	12+41.4	8.69-9.14	A-2-6(1)	33	17	22.6	43.2	2.6	31.6	100.0	94.4	35.4	18.1	-
SS-8	3.3m RT.	12+41.4	10.21-10.66	A-7-6(38)	62	37	3.7	5.9	13.0	77.4	100.0	98.0	91.8	22.7	-
SS-9	3.3m RT.	12+41.4	11.73-12.18	A-7-6(7)	43	26	36.8	18.7	0.7	43.8	100.0	91.6	45.1	14.8	-
SS-10	3.3m RT.	12+41.4	13.26-13.71	A-6(13)	37	26	13.2	29.8	13.6	43.4	100.0	93.3	62.5	15.1	-
SS-11	3.3m RT.	12+41.4	14.78-15.23	A-6(4)	28	17	33.5	22.8	11.9	31.8	99.0	78.5	46.4	13.9	-
SS-12	3.3m RT.	12+41.4	16.31-16.76	A-7-6(50)	72	51	2.8	9.3	14.9	73.0	100.0	99.0	89.7	25.8	-
SS-13	3.3m RT.	12+41.4	17.83-18.28	A-6(4)	31	15	26.0	30.8	12.3	30.9	99.9	86.1	47.7	10.8	-
SS-14	3.3m RT.	12+41.4	19.35-19.80	A-7-6(4)	48	23	49.4	13.2	14.1	23.3	99.8	65.4	39.1	14.2	-
SS-15	3.3m RT.	12+41.4	20.88-21.33	A-7-6(22)	60	31	14.2	20.4	23.2	42.2	100.0	92.1	69.4	21.6	-
SS-16	3.3m RT.	12+41.4	22.40-22.85	A-7-6(5)	45	23	43.5	16.8	11.3	28.4	100.0	74.1	41.5	14.2	-
SS-17	3.3m RT.	12+41.4	23.93-24.38	A-2-4(0)	40	9	20.0	53.7	12.6	13.7	100.0	98.2	31.0	22.9	-

(A) GRAY, MOIST TO WET, VERY STIFF, SANDY CLAY

(B) GRAY-YELLOW, DRY TO MOIST, DENSE, SILTY SAND

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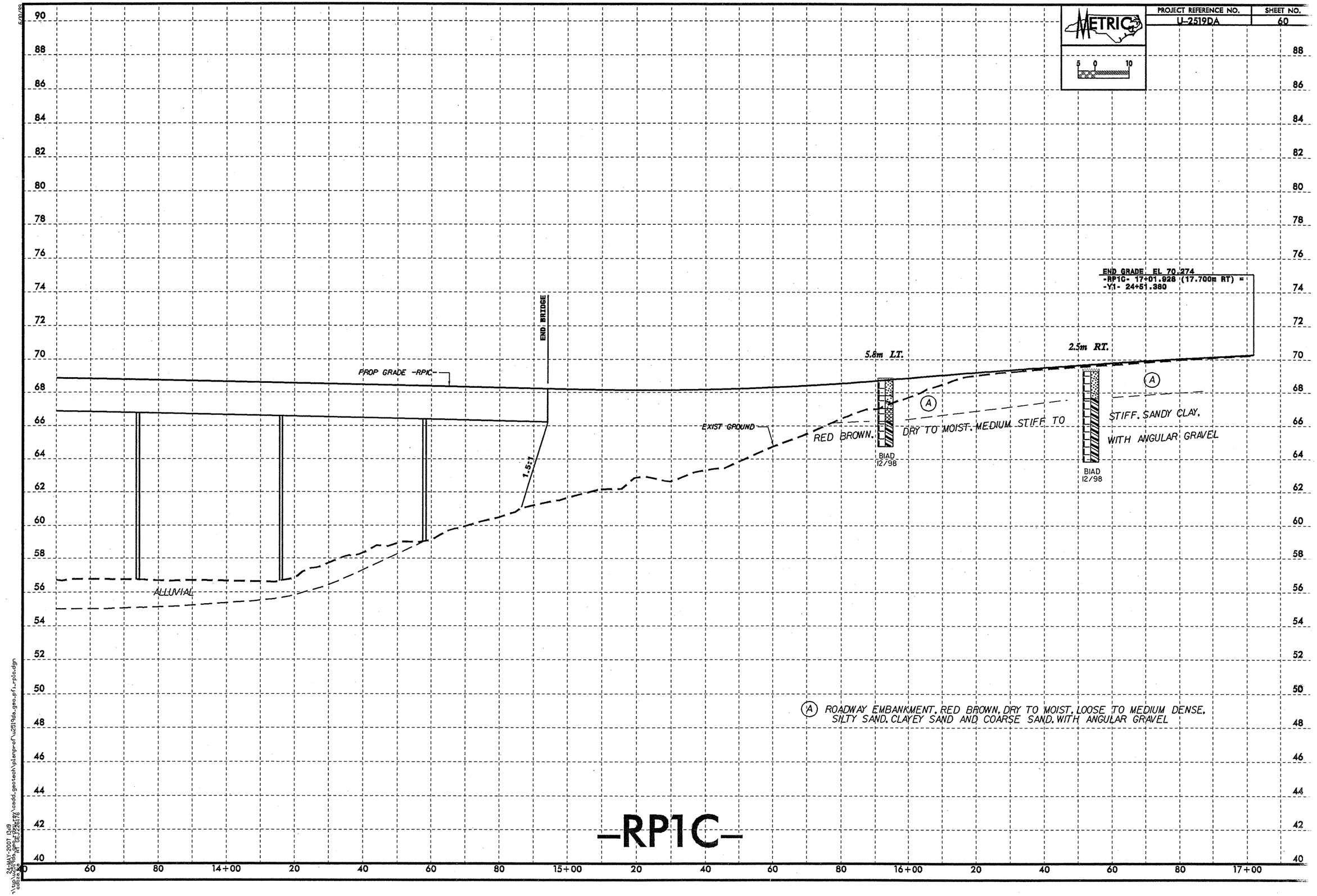

METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
60
END GRADE EL 70.274
-RP1C- 17+01.928 (17.700m RT) =
-Y1- 24+51.380
END BRIDGE
PROP GRADE -RP1C-
5.8m LT.
2.5m RT.
EXIST GROUND
RED BROWN, DRY TO MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY, WITH ANGULAR GRAVEL
BIAD 12/98
BIAD 12/98
1.5:1
ALLUVIAL
A ROADWAY EMBANKMENT, RED BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND, CLAYEY SAND AND COARSE SAND, WITH ANGULAR GRAVEL
-RP1C-

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	61

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-121	CL	10+00.0	1.00-1.45	A-3(0)	22	NP	19.0	72.9	2.0	6.0	100.0	95	9	-	-
SS-122	CL	10+80.0	7.29-7.74	A-3(0)	22	NP	34.0	56.9	3.0	6.0	100	90	10	-	-
SS-123	CL	10+80.0	10.33-10.78	A-7-6(29)	51	26	1.0	6.8	23.7	68.4	100	100	96	-	-

BEGIN GRADE EL 73.720
-RP1D- 10+00.000 (3.600m RT) =
-RP1BD- 12+80.000

PROP GRADE -RP1D-

EXIST GROUND

S-121
3.6m RT.
DRY 12/05

SS-122
SS-123

600 RCP

COASTAL PLAIN, TAN, ORANGE AND PINK, DRY TO WET.
VERY LOOSE TO MEDIUM DENSE, FINE SAND.
MIDDENDORF FORMATION
GRAY AND BROWN, MOIST, MEDIUM STIFF, SILTY CLAY

(2) (4) (10) (10) (19) (12) (11) (5)
12/05

(A) 11/98

COASTAL PLAIN, TAN, RED AND GRAY, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY SAND, FINE TO COARSE SAND AND CLAYEY SAND
MIDDENDORF FORMATION
TAN TO GRAY, MOIST, SANDY CLAY CAPE FEAR STIFF TO HARD, FORMATION

(4) (21) (20) (5) (2) (2) (2) (1) (WOR) (48) (16) (10) (33)
11/98

(A) ARTIFICIAL FILL, TAN, DRY, MEDIUM DENSE, SILTY SAND AND FINE SAND, WITH ANGULAR GRAVEL
(B) GRAY, RED AND TAN, DRY TO MOIST, VERY STIFF, SILTY CLAY, HIGHLY PLASTIC

-RP1D-

10+00 20 40 60 80 11+00 20 40 60 80 12+00 20 40 60 80 13+00 20 40

90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46 44 42 40

6/10/99

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METRIC

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-129	CL	13+80.0	2.74-3.19	A-7-6(34)	66	40	13.1	14.5	10.1	62.4	100	92	80	-	-
SS-130	CL	13+80.0	4.26-4.71	A-2-4(0)	22	NP	44.5	46.1	0.3	9.1	100	79	12	-	-
SS-131	CL	13+80.0	5.78-6.23	A-2-4(0)	20	NP	49.5	40.2	0.2	10.1	98	77	11	-	-
SS-132	CL	13+80.0	7.30-7.75	A-6(6)	32	13	14.9	35.0	11.9	38.2	99	92	61	-	-
SS-133	CL	13+80.0	8.82-9.27	A-1-b(0)	22	NP	80.9	9.4	0.6	9.1	96	36	10	-	-
SS-134	CL	13+80.0	10.34-10.79	A-2-6(0)	24	14	84.7	5.5	0.7	9.1	85	23	9	-	-
SS-135	CL	13+80.0	11.86-12.31	A-2-4(0)	22	NP	67.2	18.5	0.2	14.1	99	71	15	-	-
SS-136	CL	13+80.0	13.38-13.83	A-1-b(0)	20	NP	89.7	5.1	0.1	5.0	100	36	5	-	-

HAND TOOLS

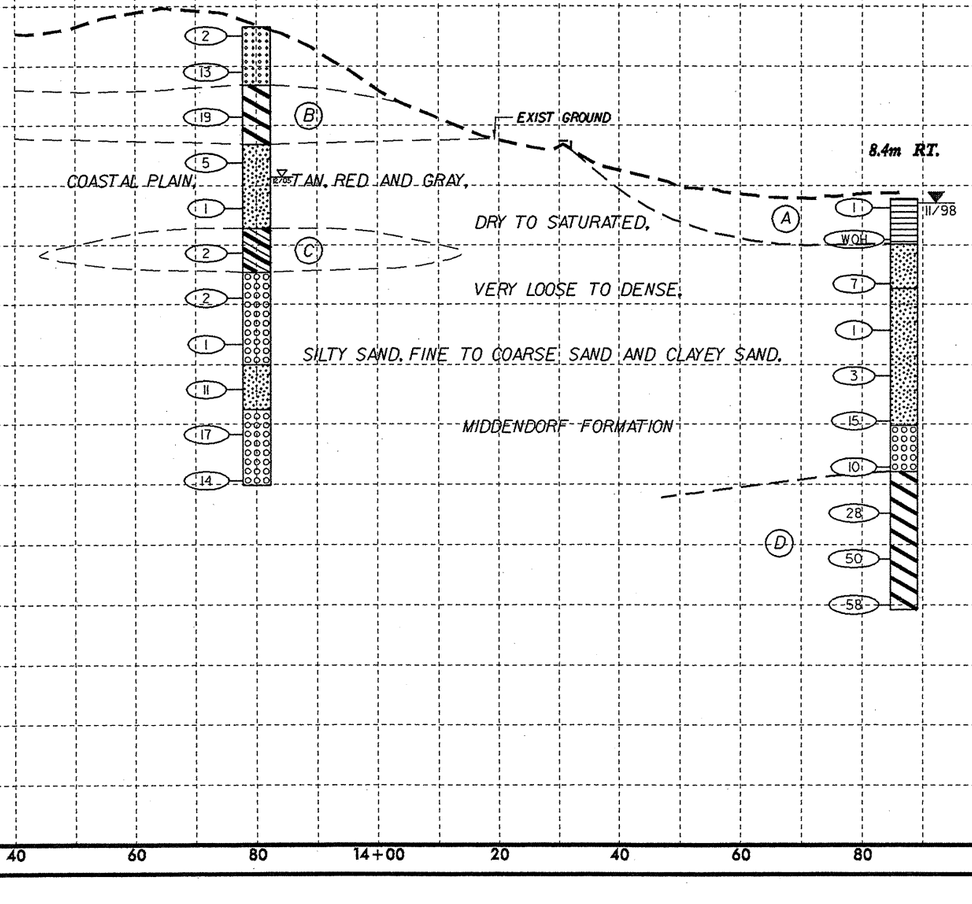
*METRIC TONS

TEST NO.	STATION (RPID)	OFFSET	DEPTH INTERVAL	N_C	SHEAR STRENGTH *(T/M²)	SOIL TYPE
VST-14	14+55.0	12.00m LT.	0.30		287	MUCK
	14+55.0	12.00m LT.	0.46		41	MUCK
	14+55.0	12.00m LT.	0.61		123	MUCK
	14+55.0	12.00m LT.	0.76		451	CLAY
	14+55.0	12.00m LT.	0.91		410	CLAY
	14+55.0	12.00m LT.	1.06		1066	SAND
VST-15	14+82.0	20.00m RT	0.30		41	MUCK
	14+82.0	20.00m RT	0.46		328	MUCK
	14+82.0	20.00m RT	0.61		635	SDY. MUCK
	14+82.0	20.00m RT	0.76		1066	SAND
	14+82.0	20.00m RT	0.91		922	SDY. CLAY
	14+82.0	20.00m RT	1.06		1045	SAND
	14+82.0	20.00m RT	1.22		1394	SAND

END GRADE EL 77.570
-RP1D- 14+86.961 (3.600m RT) =
-RP1BD- 33+21.838

PROP GRADE -RPID-

SS-129
SS-130
SS-131
SS-132
SS-133
SS-134
SS-135
SS-136



(A) ALLUVIAL, BLACK, SATURATED, ORGANIC, VERY SOFT, CLAYEY SILT AND SILTY CLAY
(B) COASTAL PLAIN, GRAY, RED AND TAN, DRY TO MOIST, VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
(C) RED AND WHITE, WET, VERY SOFT, SANDY CLAY
(D) TAN, GRAY, MOIST, VERY STIFF TO HARD, SILTY CLAY, CAPE FEAR FORMATION

-RP1D-

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-2	12.4m LT.	11+47.6	1.07-1.52	A-1-b(0)	20	NP	86.3	7.1	4.9	1.7	98.2	26.1	7.0	-	-
SS-3	12.4m LT.	11+47.6	2.59-3.04	A-2-4(0)	24	2	58.2	24.1	8.2	9.5	98.2	60.8	27.0	9.4	-
SS-4	12.4m LT.	11+47.6	4.11-4.56	A-2-4(0)	24	NP	23.8	66.1	2.3	7.8	100.0	91.9	11.7	19.0	-
SS-5	12.4m LT.	11+47.6	5.64-6.09	A-2-4(0)	22	3	65.9	16.0	7.7	10.4	96.2	52.9	19.5	16.1	-
SS-6	12.4m LT.	11+47.6	7.16-7.61	A-2-4(0)	24	4	64.1	17.3	8.8	9.8	96.9	54.3	21.1	14.3	-
SS-7	12.4m LT.	11+47.6	8.69-9.14	A-1-b(0)	19	NP	88.6	6.6	2.8	2.0	98.0	22.8	5.5	-	-
SS-8	12.4m LT.	11+47.6	10.21-10.66	A-1-b(0)	23	NP	85.0	8.0	1.6	5.4	83.4	18.1	6.4	-	-
SS-9	12.4m LT.	11+47.6	11.73-12.18	A-2-4(0)	21	NP	5.9	81.4	1.1	11.6	100.0	99.4	13.5	18.9	-
SS-10	12.4m LT.	11+47.6	13.26-13.71	A-3(0)	23	NP	69.0	25.2	3.8	2.0	99.0	66.1	6.1	-	-
SS-11	12.4m LT.	11+47.6	14.78-15.23	A-1-b(0)	25	NP	89.1	5.8	3.1	2.0	99.0	21.0	5.6	-	-
SS-12	12.4m LT.	11+47.6	16.31-16.76	A-2-7(3)	43	23	50.4	14.2	1.2	34.2	97.5	66.1	35.1	16.6	-
SS-13	12.4m LT.	11+47.6	17.83-18.28	A-7-6(23)	47	25	4.7	10.2	22.8	62.3	100.0	97.3	87.7	17.9	-
SS-14	12.4m LT.	11+47.6	19.35-19.80	A-6(3)	36	20	53.9	9.5	4.3	32.3	100.0	72.7	37.6	14.6	-
SS-15	12.4m LT.	11+47.6	20.88-21.33	A-6(2)	31	18	32.5	30.9	10.4	26.2	99.6	83.1	38.6	12.4	-
SS-16	12.4m LT.	11+47.6	22.40-22.85	A-2-6(0)	36	19	68.2	9.9	3.4	18.5	98.2	54.1	22.0	18.7	-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	12.8m LT.	13+06.2	0.00-0.45	A-3(0)	20	NP	51.5	39.8	5.5	3.2	100.0	72.7	11.8	-	-
SS-2	12.8m LT.	13+06.2	1.07-1.52	A-2-6(0)	37	15	67.0	11.9	14.3	6.8	96.5	40.4	23.1	4.0	-
SS-3	12.8m LT.	13+06.2	2.59-3.04	A-2-4(0)	22	NP	46.1	32.8	7.5	13.6	99.7	73.7	24.6	2.0	-
SS-4	12.8m LT.	13+06.2	4.11-4.56	A-3(0)	25	NP	16.4	76.7	3.5	3.4	98.2	87.8	9.6	-	-
SS-5	12.8m LT.	13+06.2	5.64-6.09	A-2-4(0)	28	9	79.9	5.9	8.3	5.9	76.8	21.7	13.0	6.1	-
SS-6	12.8m LT.	13+06.2	7.16-7.61	A-1-b(0)	23	NP	87.4	5.0	3.4	4.2	96.2	23.9	7.7	-	-
SS-7	12.8m LT.	13+06.2	8.69-9.14	A-1-b(0)	23	NP	90.1	5.8	2.0	2.1	97.5	14.5	4.6	-	-
SS-8	12.8m LT.	13+06.2	10.21-10.66	A-2-4(0)	19	NP	54.6	32.4	5.4	7.6	100.0	71.6	16.0	23.3	-
SS-9	12.8m LT.	13+06.2	11.73-12.18	A-2-4(0)	22	2	0.4	71.8	7.9	19.9	100.0	99.8	31.4	19.0	-
SS-10	12.8m LT.	13+06.2	13.26-13.71	A-2-4(0)	24	NP	11.5	77.8	0.6	10.1	100.0	99.6	12.3	22.2	-
SS-11	12.8m LT.	13+06.2	14.78-15.23	A-7-6(22)	46	26	4.5	12.7	5.3	74.2	100.0	98.2	82.8	19.1	-
SS-12	12.8m LT.	13+06.2	16.31-16.76	A-7-6(21)	50	27	2.6	25.2	10.6	61.6	100.0	99.4	77.5	20.8	-
SS-13	12.8m LT.	13+06.2	17.83-18.28	A-2-6(0)	31	13	45.1	29.9	0.8	24.2	98.7	69.8	25.8	9.6	-
SS-14	12.8m LT.	13+06.2	19.35-19.80	A-6(9)	39	22	31.5	14.7	3.1	50.7	100.0	80.0	55.9	14.4	-
SS-15	12.8m LT.	13+06.2	20.88-21.33	A-7-6(2)	57	34	62.0	7.3	1.8	29.9	92.4	41.3	29.3	11.0	-
SS-16	12.8m LT.	13+06.2	22.40-22.85	A-6(5)	33	19	31.2	25.2	9.8	33.8	100.0	87.8	47.2	13.3	-
SS-17	12.8m LT.	13+06.2	23.93-24.38	A-2-4(0)	32	NP	49.6	37.8	1.4	11.2	100.0	78.8	15.4	16.4	-

METRIC

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PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	63

-RP1DB- 19+22.722 EL 79.840 =
-LP1B- 11+36.348 EL 70.582

SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10 SS-11 SS-12 SS-13 SS-14 SS-15 SS-16

BEGIN GRADE EL 72.510
-LP1B- 10+00.000 (3.600m LT) =
-COL2- 28+07.243

PROP GRADE -LP1B-

1.5:1

EXIST GROUND

12.4m LT.

3 9 13 8 5 8 16 17 4 2 18 29 19 23 18 19

06/98

COASTAL PLAIN, GRAY TO TAN AND RED-BROWN, DRY TO WET, VERY LOOSE TO DENSE, CLAYEY, SILTY AND FINE TO COARSE SAND, MIDDENDORF FORMATION

TAN TO GRAY AND YELLOW-BROWN, DRY TO WET, AND SILTY CLAY, AND MEDIUM DENSE.

COASTAL PLAIN.

2.7m RT.

DRY 08/98

-RP1BD- 26+13.383 EL 76.256 =
-LP1B- 13+09.681 EL 65.229 =

SS-1 SS-9
SS-2 SS-10
SS-3 SS-11
SS-4 SS-12
SS-5 SS-13
SS-6 SS-14
SS-7 SS-15
SS-8 SS-16
SS-17

12.8m LT.

1 17 13 7 5 9 17 10 48 34 14 43 14 49 31 25 27

07/98

STIFF TO HARD, SANDY CLAYEY SAND. CAPE FEAR FORMATION

GRAY, MOIST, MEDIUM DENSE, SILTY SAND

-LP1B-

10+00 20 40 60 80 11+00 20 40 60 80 12+00 20 40 60 80 13+00 20 40

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PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	64

METRIC

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-4	5.9m RT.	14+65.2	4.11-4.56	A-2-4	22	15	60.5	19.4	2.1	18.0	99.5	61.0	20.1	12.3	-
SS-8	5.9m RT.	14+65.2	10.21-10.66	A-5	-	-	-	-	-	-	-	-	-	155.9	-
SS-9	5.9m RT.	14+65.2	11.73-12.18	A-5(1)	41	31	32.5	27.5	28.7	11.3	99.3	80.7	40.0	70.7	-
SS-16	5.9m RT.	14+65.2	22.40-22.85	A-7-6(32)	60	16	11.0	14.3	17.0	57.7	99.8	93.6	74.8	29.6	-

SS-4
SS-8
SS-9
SS-16

END GRADE EL 64.981
-LP1B- 14+68.808 (17.700m RT) =
-Y1- 18+15.641

9.6m RT.

PROP GRADE
-LP1B-

5.9m RT.

EXIST GROUND

ROADWAY EMBANKMENT, RED, ORANGE AND WHITE TO TAN, MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND

DRY
08/98

ALLUVIAL, TAN, SATURATED, VERY LOOSE, SILTY SAND

COASTAL PLAIN, TAN, LIGHT GRAY AND BROWN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION

Ⓐ

COASTAL PLAIN,
LIGHT GRAY TO BROWN, MOIST TO WET,
STIFF TO HARD, SANDY AND SILTY CLAY,
CAPE FEAR FORMATION

BIAD
10/00

Ⓐ DARK GRAY AND BROWN, MOIST TO WET, SOFT TO MEDIUM STIFF, ORGANIC CLAYEY SILT

-LP1B-

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Kit 08.22.08

METRIC

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-2	15.7m LT.	11+52.7	1.07-1.52	A-6(3)	34	16	35.4	26.0	13.8	24.8	99.1	78.1	42.2	10.7	-
SS-3	15.7m LT.	11+52.7	2.59-3.04	A-6(3)	33	13	30.1	29.6	15.2	25.1	100.0	86.4	45.1	16.1	-
SS-4	15.7m LT.	11+52.7	4.11-4.56	A-7-6(15)	44	20	11.5	24.1	23.2	41.2	100.0	92.2	74.4	31.2	-
SS-5	15.7m LT.	11+52.7	5.64-6.09	A-2-4(0)	23	NP	44.5	41.3	5.7	8.5	99.0	70.5	17.5	17.6	-
SS-6	15.7m LT.	11+52.7	7.16-7.61	A-2-4(0)	25	NP	39.5	39.2	10.3	11.0	94.9	78.1	22.7	19.7	-
SS-7	15.7m LT.	11+52.7	8.69-9.14	A-2-4(0)	24	3	44.0	31.4	8.3	16.3	99.3	85.2	26.6	27.8	-
SS-8	15.7m LT.	11+52.7	10.21-10.66	A-1-b(0)	25	NP	84.1	7.3	3.7	4.9	87.0	23.1	8.1	-	-
SS-9	15.7m LT.	11+52.7	11.73-12.18	A-1-b(0)	20	NP	83.1	8.1	2.2	6.6	98.8	44.2	9.3	-	-
SS-10	15.7m LT.	11+52.7	13.26-13.71	A-1-b(0)	21	3	84.2	7.9	1.1	6.8	85.7	20.0	7.4	-	-
SS-11	15.7m LT.	11+52.7	14.78-15.23	A-1-b(0)	20	NP	77.0	13.7	2.2	7.1	99.0	41.5	10.1	-	-
SS-12	15.7m LT.	11+52.7	16.67-16.76	A-2-4(0)	22	5	64.7	14.9	6.5	13.9	97.0	50.5	21.6	16.6	-
SS-13	15.7m LT.	11+52.7	17.83-18.28	A-2-6(0)	32	12	44.6	25.2	17.7	12.5	100.0	78.9	31.1	5.7	-
SS-14	15.7m LT.	11+52.7	19.35-19.80	A-2-6(1)	38	20	64.0	11.6	10.0	14.4	99.2	54.0	25.2	12.6	-
SS-15	15.7m LT.	11+52.7	20.88-21.33	A-2-6(1)	31	14	51.2	16.7	16.1	16.0	98.9	68.1	32.7	6.9	-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-2	13.8m LT.	12+97.5	1.07-1.52	A-2-6(0)	31	12	43.5	29.6	3.1	23.8	93.2	66.7	27.9	18.0	-
SS-3	13.8m LT.	12+97.5	2.59-3.04	A-3(0)	22	NP	66.5	26.7	2.9	3.9	100.0	55.0	7.6	-	-
SS-4	13.8m LT.	12+97.5	4.11-4.56	A-3(0)	25	NP	54.0	42.6	1.5	1.9	100.0	53.5	4.0	-	-
SS-5	13.8m LT.	12+97.5	5.64-6.09	A-4(0)	24	2	16.3	54.5	12.8	16.4	98.4	88.9	36.2	23.9	-
SS-6	13.8m LT.	12+97.5	7.16-7.61	A-3(0)	24	NP	26.9	68.9	1.1	3.1	100.0	92.1	11.6	-	-
SS-7	13.8m LT.	12+97.5	8.69-9.14	A-1-b(0)	22	NP	75.8	16.9	4.5	2.8	99.2	44.8	8.4	-	-
SS-8	13.8m LT.	12+97.5	10.21-10.66	A-2-4(0)	22	NP	44.2	41.4	2.9	11.5	100.0	80.6	15.6	24.5	-
SS-9	13.8m LT.	12+97.5	11.73-12.18	A-2-4(0)	23	NP	46.0	35.8	5.5	12.7	95.0	74.6	19.7	21.9	-
SS-10	13.8m LT.	12+97.5	13.26-13.71	A-2-4(0)	22	1	61.7	21.3	4.0	13.0	99.0	67.6	17.6	24.9	-
SS-11	13.8m LT.	12+97.5	14.96-15.23	A-6(3)	29	13	11.9	43.3	8.1	36.7	99.5	94.5	47.7	29.1	-
SS-12	13.8m LT.	12+97.5	16.31-16.76	A-1-b(0)	24	NP	86.7	8.1	2.1	3.1	99.8	38.3	5.8	-	-
SS-13	13.8m LT.	12+97.5	17.83-18.28	A-6(14)	35	15	1.5	18.3	37.4	42.8	100.0	99.1	90.8	29.9	-
SS-14	13.8m LT.	12+97.5	19.35-19.80	A-1-b(0)	27	NP	83.3	9.8	0.8	6.1	99.9	35.0	7.7	-	-
SS-15	13.8m LT.	12+97.5	20.88-21.33	A-7-6(26)	51	29	4.7	13.9	15.2	66.2	100.0	97.9	84.2	27.0	-
SS-16	13.8m LT.	12+97.5	22.40-22.85	A-2-4(0)	20	10	44.0	26.7	1.7	27.6	100.0	81.5	30.6	24.2	-
SS-17	13.8m LT.	12+97.5	23.93-24.37	A-7-6(17)	51	30	23.4	15.8	7.6	53.2	100.0	87.1	63.1	16.8	-
ST-2	14.84m LT.	13+05.5	17.83-18.44	A-7-6(20)	42	19	0.6	15.0	35.7	48.7	100.0	99.5	94.2	25.8	-

-RP1BD- 29+43.265 EL 82.390 =
-LP1D- 10+19.328 EL 73.369

-RP1BD- 30+58.716 EL 80.426 =
-LP1D- 11+39.482 EL 71.102

-RP1DB- 14+83.329 EL 78.856 =
-LP1D- 13+16.819 EL 67.146

BEGIN GRADE EL 73.509
-LP1D- 10+00.000 (3.600m RT) =
-COL1- 29+37.991

PROP GRADE -LP1D-

EXIST GROUND

12.7m LT.

DRY
08/98

SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10 SS-11 SS-12 SS-13 SS-14 SS-15

15.7m LT.

SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10 SS-11 SS-12 SS-13 SS-14 SS-15 SS-16 SS-17

13.8m LT.

ARTIFICIAL FILL, TAN TO RED-BROWN, MOIST, LOOSE, SILTY AND CLAYEY SAND

COASTAL PLAIN, GRAY AND TAN TO RED-BROWN, MOIST TO GRAY AND TAN TO RED-BROWN AND BLACK, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY SILT AND SANDY TO SILTY CLAY

SATURATED, VERY LOOSE TO VERY DENSE, CLAYEY, SILTY AND FINE TO COARSE SAND, MIDDENDORF FORMATION

Ⓐ GRAY TO RED, MOIST TO SATURATED, VERY SOFT TO MEDIUM STIFF, SANDY TO SILTY CLAY

COASTAL PLAIN, GRAY TO RED, MOIST, HARD, SILTY CLAY, CAPE FEAR FORMATION

5/98

05/98

-LP1D-

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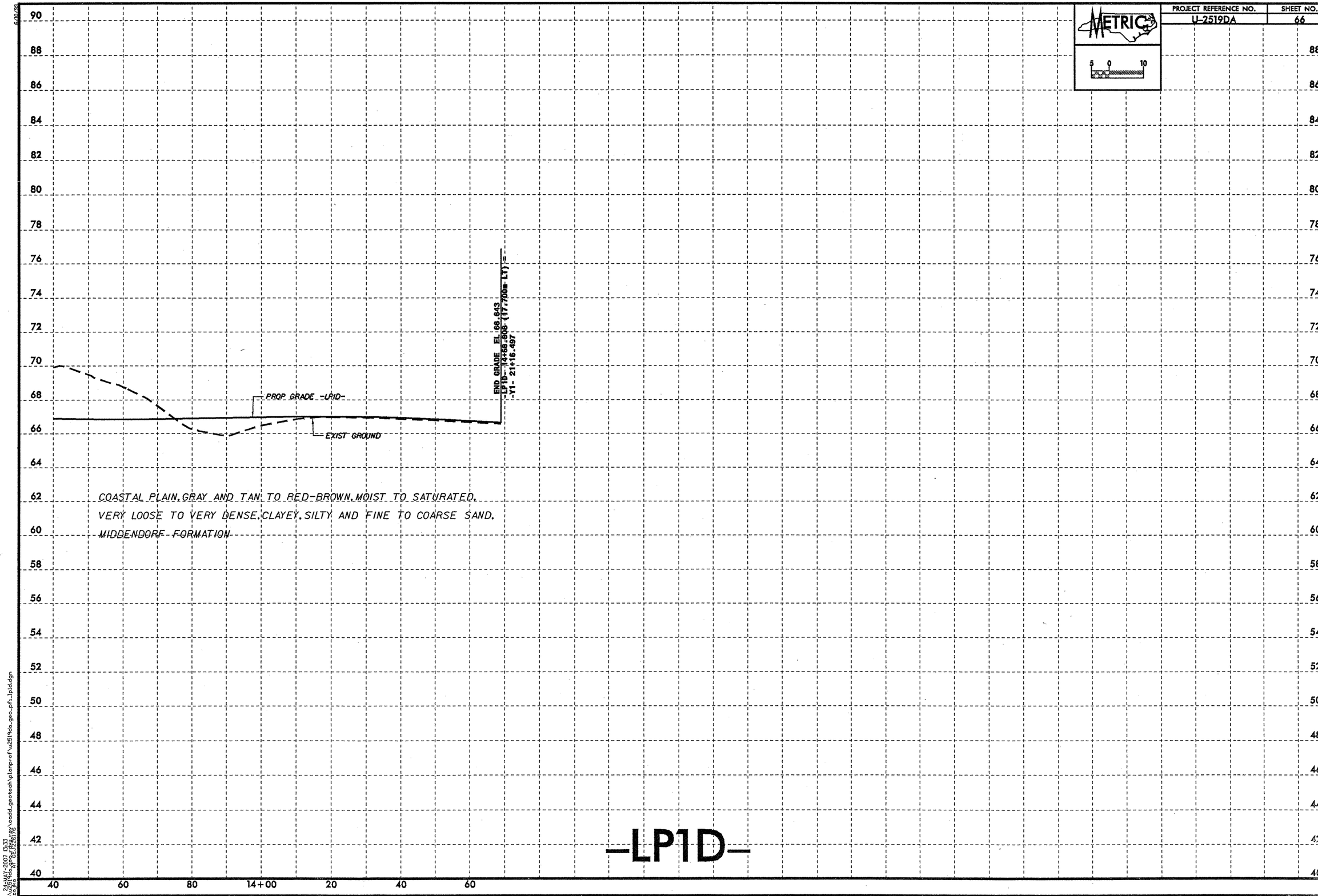

PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
66
METRIC
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42
40
END GRADE EL 66.643
-LP1D- 14+68.808 (17.700m LT) =
-Y1- 21+16.497
PROP GRADE -LP1D-
EXIST GROUND
COASTAL PLAIN, GRAY AND TAN TO RED-BROWN, MOIST TO SATURATED,
VERY LOOSE TO VERY DENSE, CLAYEY, SILTY AND FINE TO COARSE SAND.
MIDDENDORF FORMATION
-LP1D-
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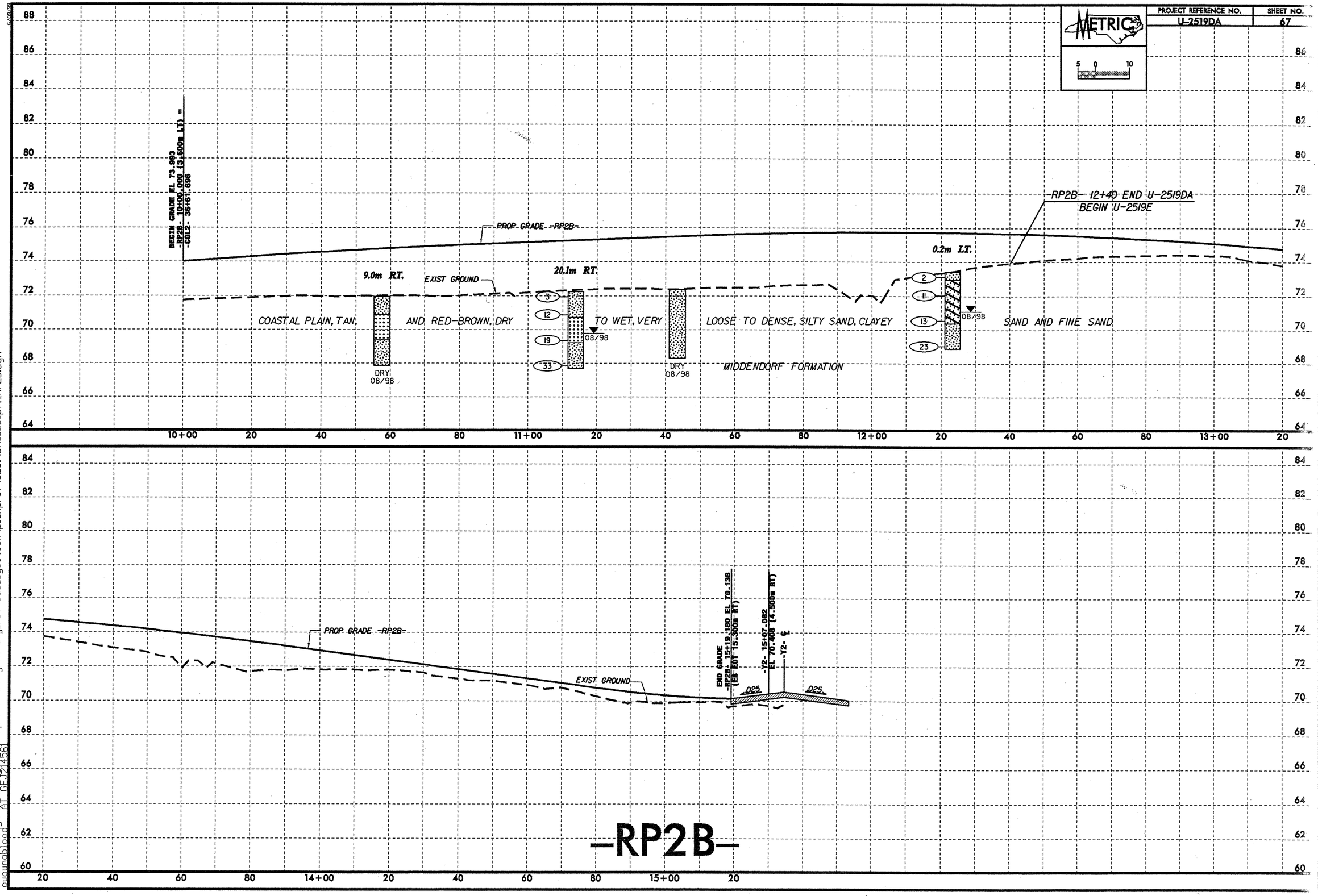
60
80
14+00
20
40
60



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cuoungblood AT GEJ214561

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	68

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
S-187	13.0m LT	12+00.0	0.00-0.45	A-2-6(0)	26	11	45.3	29.7	5.8	19.3	92	64	27	-	-
S-188	13.0m LT	12+00.0	0.50-0.80	A-6(10)	37	21	15.0	32.6	11.9	40.5	100	94	60	-	-
S-189	13.0m LT	12+00.0	0.90-1.30	A-2-4(0)	21	NP	26.5	56.8	6.5	10.1	100	90	27	-	-
S-190	8.0m LT	13+00.0	2.40-2.80	A-6(2)	27	11	20.9	45.0	17.9	16.2	100	91	47	-	-

BEGIN GRADE
-RP3C- 10+00.000 (17.700m RT) =
-Y1- 32+82.000

EXIST GROUND

S-187
S-188
S-189
13.0m LT

PROP GRADE -RP3C-

8.0m LT

ORANGE-BROWN TO TAN, FINE SAND

DRY 01/06

MOIST TO DRY, MEDIUM DENSE TO LOOSE, SILTY SAND AND GRAY AND PINK TO ORANGE-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY

DRY 01/06

(A) ROADWAY EMBANKMENT, ORANGE-BROWN, MOIST, LOOSE TO DENSE, CLAYEY SAND

(B) COASTAL PLAIN, GRAY AND PINK, MOIST, STIFF, SANDY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION

10+00 20 40 60 80 11+00 20 40 60 80 12+00 20 40 60 80 13+00 20 40 60

END GRADE EL. 79.606
-RP3C- 14+40.000

PROP GRADE -RP3C-

8.0m LT

EXIST GROUND

S-190

DRY 01/06

GRAY AND PINK TO ORANGE-BROWN, MOIST, MEDIUM STIFF, SANDY CLAY

(C) COASTAL PLAIN, ORANGE-BROWN TO TAN, MOIST TO DRY, MEDIUM DENSE TO LOOSE, SILTY SAND AND FINE SAND, MIDDENDORF FORMATION

60 80 14+00 20 40 60 80 15+00

-RP3C-

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cwoundblood AT GEJ14561

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	69

METRIC

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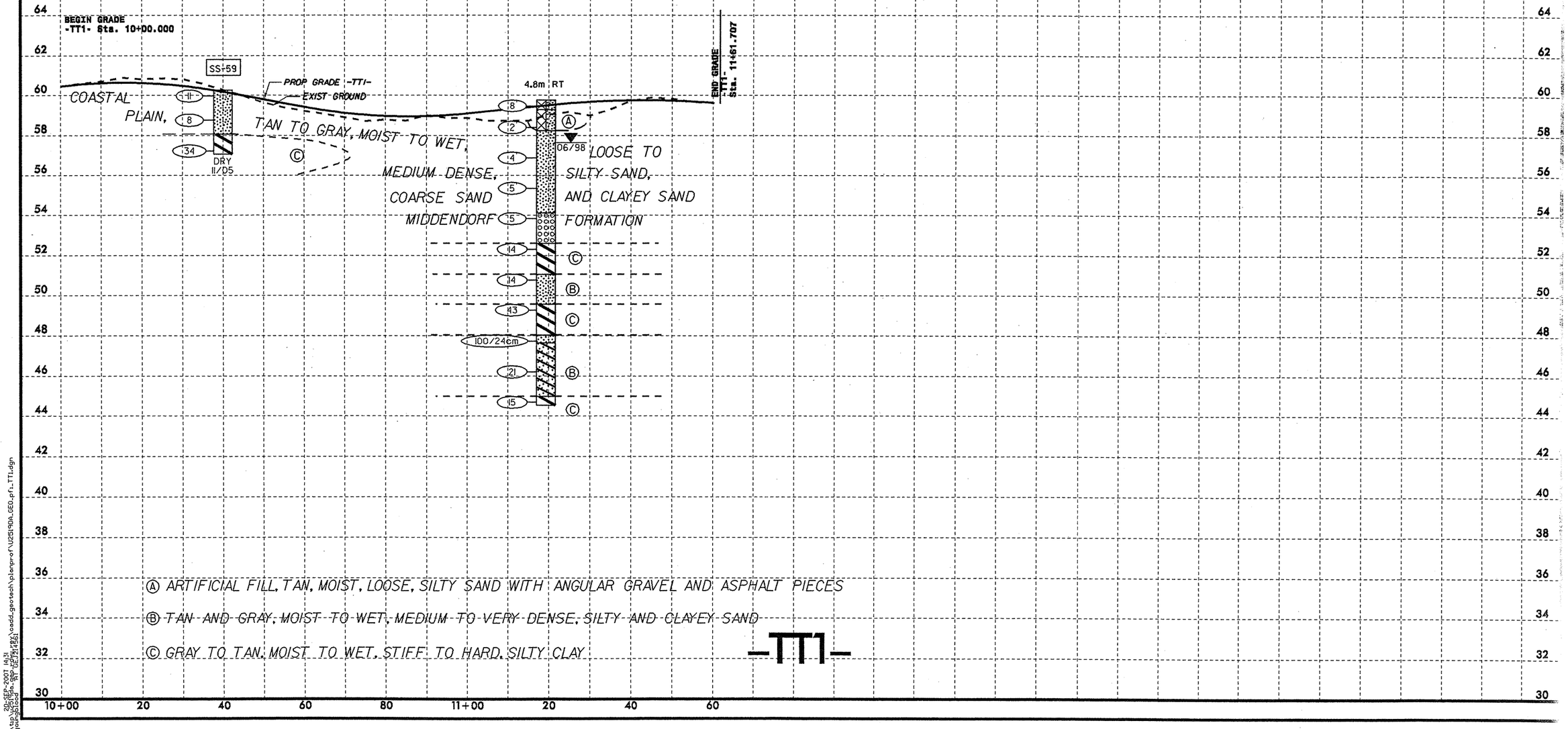
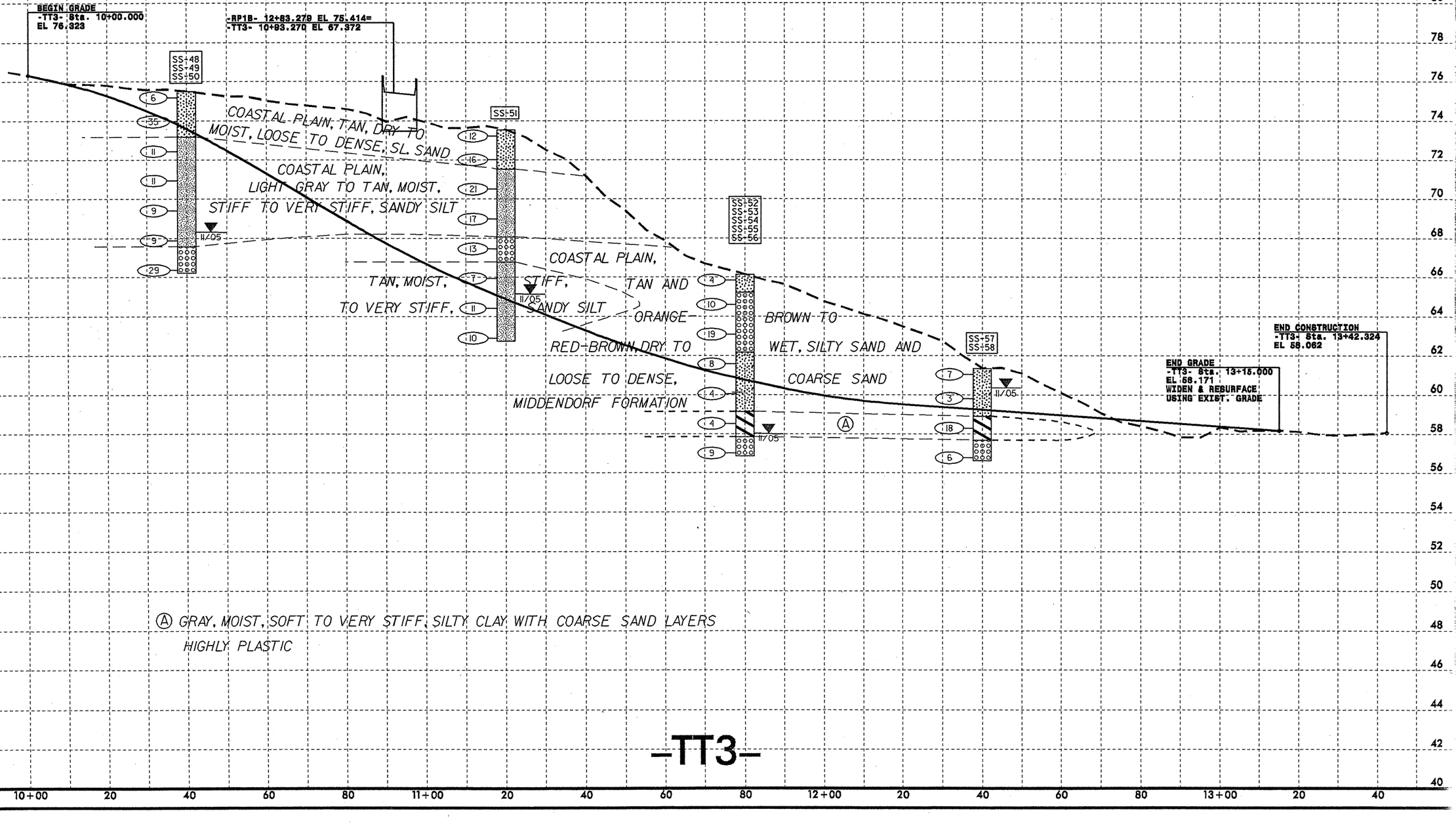
SOIL TEST RESULTS

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-59	CL	10+40.0	2.74-3.19	A-7-6(17)	42	24	9.8	26.3	23.7	40.2	100	94	75	-	-



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-48	CL	10+40.0	1.22-1.67	A-2-4(0)	27	6	44.9	36.7	2.3	16.1	99	77	21	-	-
SS-49	CL	10+40.0	2.74-3.19	A-4(0)	26	5	7.2	58.6	12.0	22.1	100	97	48	-	-
SS-50	CL	10+40.0	8.82-9.27	A-1-b(0)	23	NP	64.7	29.6	2.7	3.0	91	37	7	-	-
SS-51	CL	11+20.0	5.79-6.23	A-4(0)	29	7	26.9	48.4	10.6	14.1	99	78	37	-	-
SS-52	CL	11+80.0	1.22-1.67	A-1-b(0)	22	NP	87.4	7.0	0.5	5.0	89	20	6	-	-
SS-53	CL	11+80.0	4.26-4.71	A-2-4(0)	12	NP	40.9	46.0	4.1	9.0	100	84	16	-	-
SS-54	CL	11+80.0	5.78-6.23	A-2-4(0)	22	NP	26.7	58.5	4.7	10.0	97	85	18	-	-
SS-55	CL	11+80.0	7.30-7.75	A-7-5(30)	58	27	6.8	1.0	27.9	64.3	100	94	93	-	-
SS-56	CL	11+80.0	8.82-9.27	A-1-b(0)	21	NP	84.6	8.6	0.7	6.0	98	22	7	-	-
SS-57	CL	12+40.0	1.22-1.67	A-2-4(0)	17	NP	45.7	39.4	4.9	10.0	95	69	20	-	-
SS-58	CL	12+40.0	2.74-3.19	A-7-6(12)	41	22	1.6	36.9	15.3	46.2	100	100	66	-	-



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rjoundjblood

METRIC

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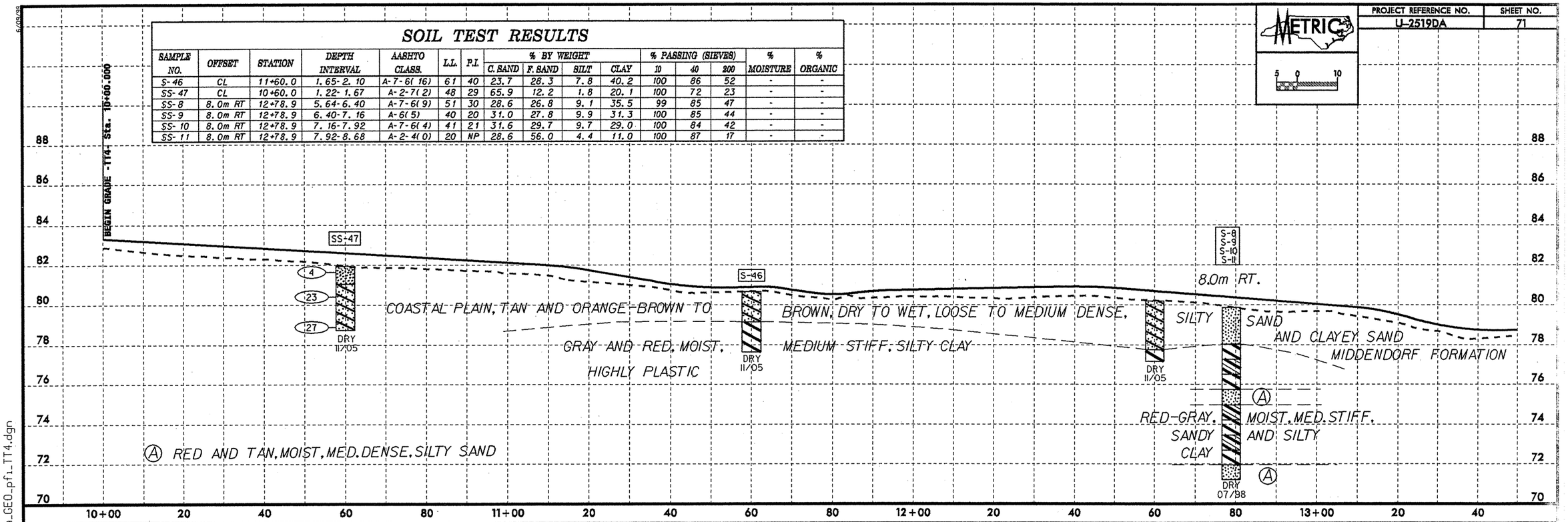
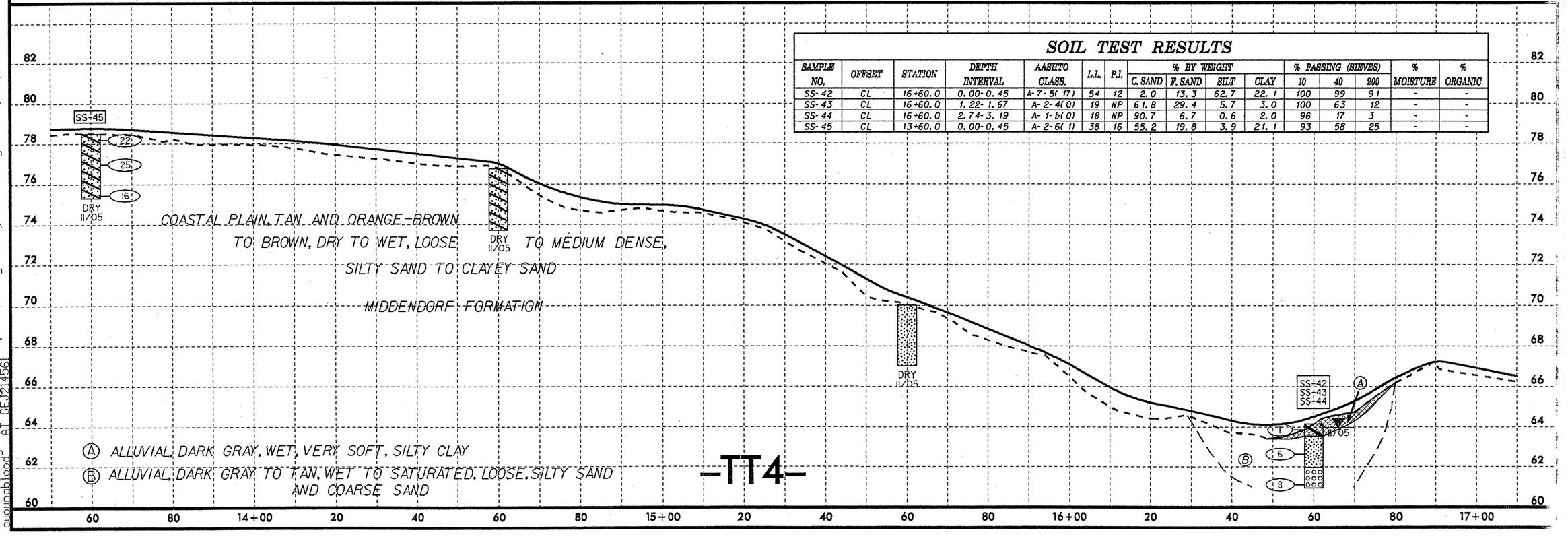
SOIL TEST RESULTS

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
S-46	CL	11+60.0	1.65-2.10	A-7-6(16)	61	40	23.7	28.3	7.8	40.2	100	86	52	-	-
SS-47	CL	10+60.0	1.22-1.67	A-2-7(2)	48	29	65.9	12.2	1.8	20.1	100	72	23	-	-
SS-8	8.0m RT	12+78.9	5.64-6.40	A-7-6(9)	51	30	28.6	26.8	9.1	35.5	99	85	47	-	-
SS-9	8.0m RT	12+78.9	6.40-7.16	A-6(5)	40	20	31.0	27.8	9.9	31.3	100	85	44	-	-
SS-10	8.0m RT	12+78.9	7.16-7.92	A-7-6(4)	41	21	31.6	29.7	9.7	29.0	100	84	42	-	-
SS-11	8.0m RT	12+78.9	7.92-8.68	A-2-4(0)	20	NP	28.6	56.0	4.4	11.0	100	87	17	-	-



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-42	CL	16+60.0	0.00-0.45	A-7-5(17)	54	12	2.0	13.3	62.7	22.1	100	99	91	-	-
SS-43	CL	16+60.0	1.22-1.67	A-2-4(0)	19	NP	61.8	29.4	5.7	3.0	100	63	12	-	-
SS-44	CL	16+60.0	2.74-3.19	A-1-b(0)	18	NP	90.7	6.7	0.6	2.0	96	17	3	-	-
SS-45	CL	13+60.0	0.00-0.45	A-2-6(1)	38	16	55.2	19.8	3.9	21.1	93	58	25	-	-



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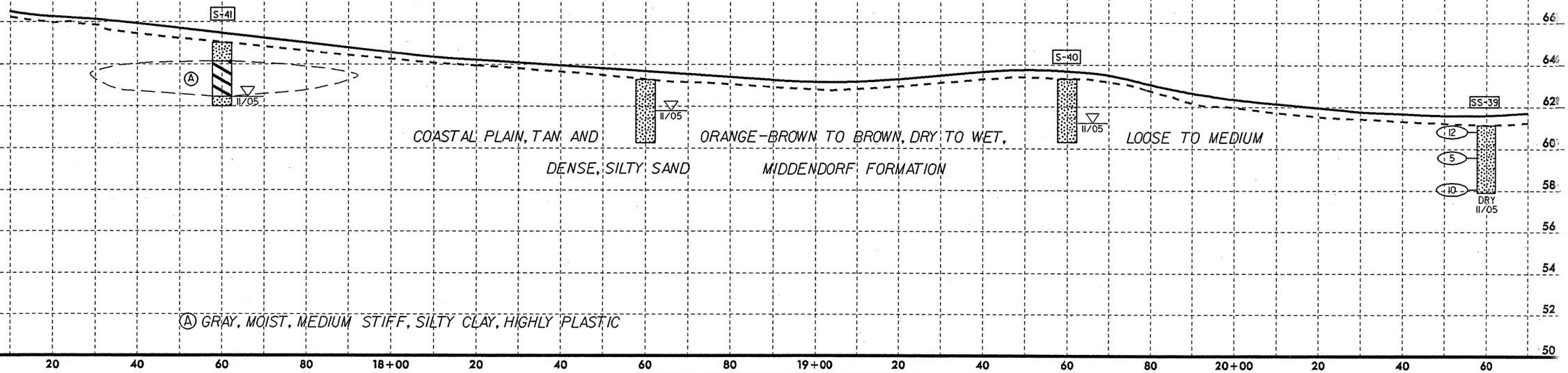
cwoungblood AT GEO214561

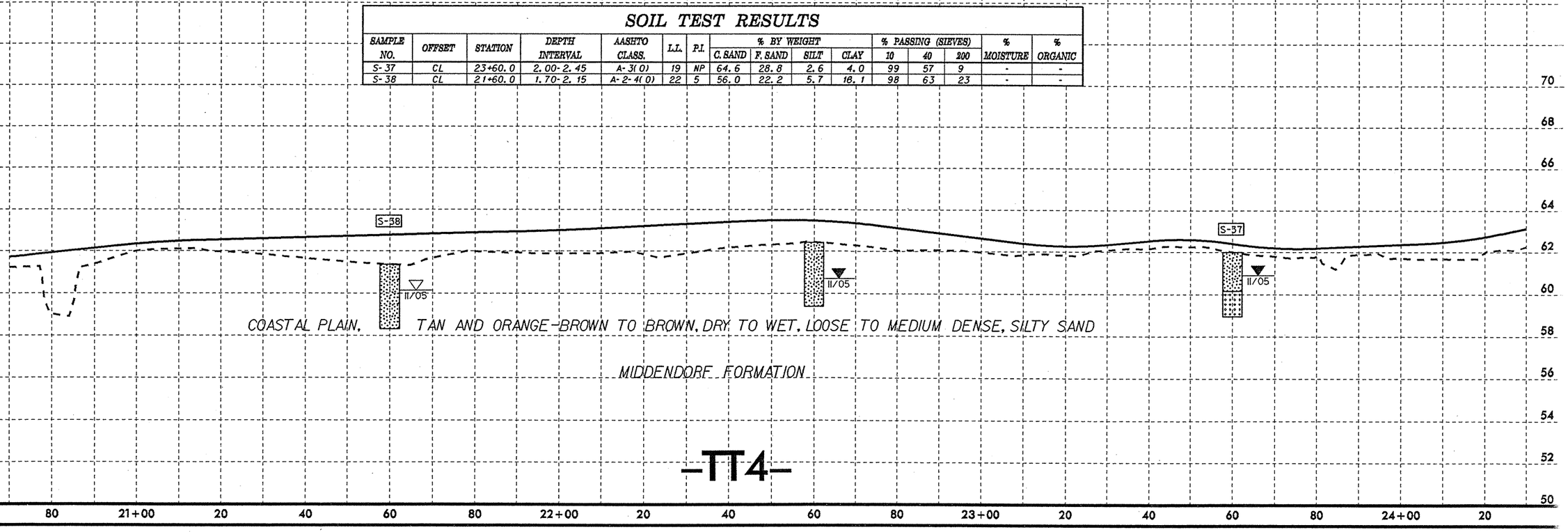
SOIL TEST RESULTS

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
S-39	CL	20+60.0	1.22-1.67	A-2-4(0)	22	NP	52.5	36.5	4.9	6.0	100	70	16	-	-
S-40	CL	19+60.0	2.42-2.97	A-2-4(0)	24	5	40.5	39.3	4.2	16.1	100	73	23	-	-
S-41	CL	17+60.0	1.00-1.45	A-7-6(11)	41	22	18.1	26.5	17.3	38.2	99	88	61	-	-



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
S-37	CL	23+60.0	2.00-2.45	A-3(0)	19	NP	64.6	28.8	2.6	4.0	99	57	9	-	-
S-38	CL	21+60.0	1.70-2.15	A-2-4(0)	22	5	56.0	22.2	5.7	18.1	98	63	23	-	-



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PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	73

METRIC

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78 76 74 72 70 68 66 64 62 60

40 60 80 25+00 20 40 60 80 26+00 20 40 60 80 27+00 20 40 60 80

1 5 9 DRY II/05

DRY II/05

DRY II/05

DRY II/05

COASTAL PLAIN, TAN AND ORANGE-BROWN TO BROWN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY SAND

MIDDENDORF FORMATION

82 80 78 76 74 72 70 68 66 64 62 60

28+00 20 40 60 80 29+00 20 40 60 80 30+00 20 40 60 80 31+00 20 40

5 9 18 DRY II/05

DRY II/05

DRY II/05

COASTAL PLAIN, TAN AND ORANGE-BROWN TO BROWN, DRY TO WET,

LOOSE TO MEDIUM DENSE, SILTY SAND

MIDDENDORF FORMATION

(A) RED, ORANGE AND GRAY, MOIST, VERY STIFF, SILTY CLAY, HIGHLY PLASTIC

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PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	74

METRIC

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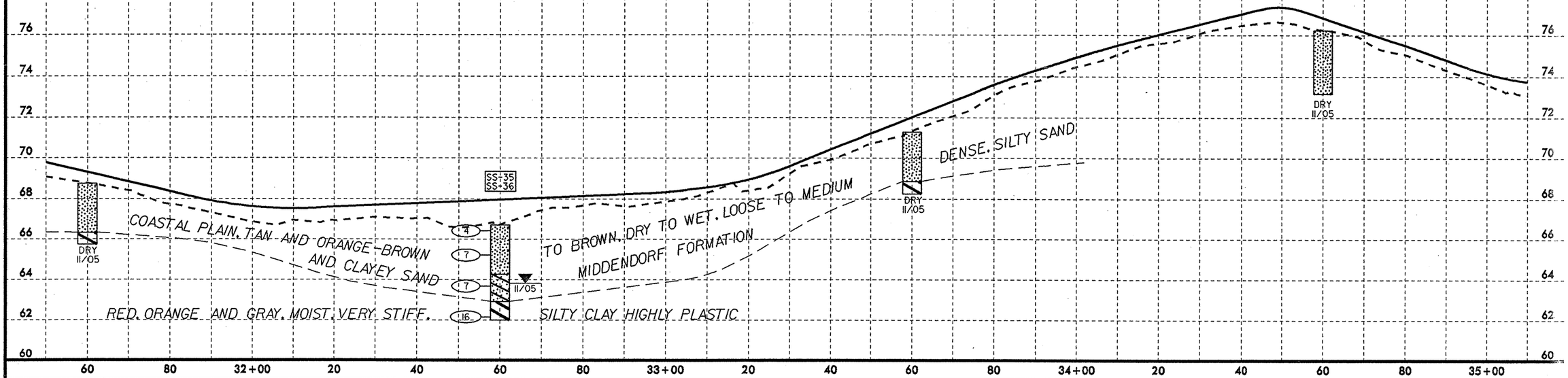
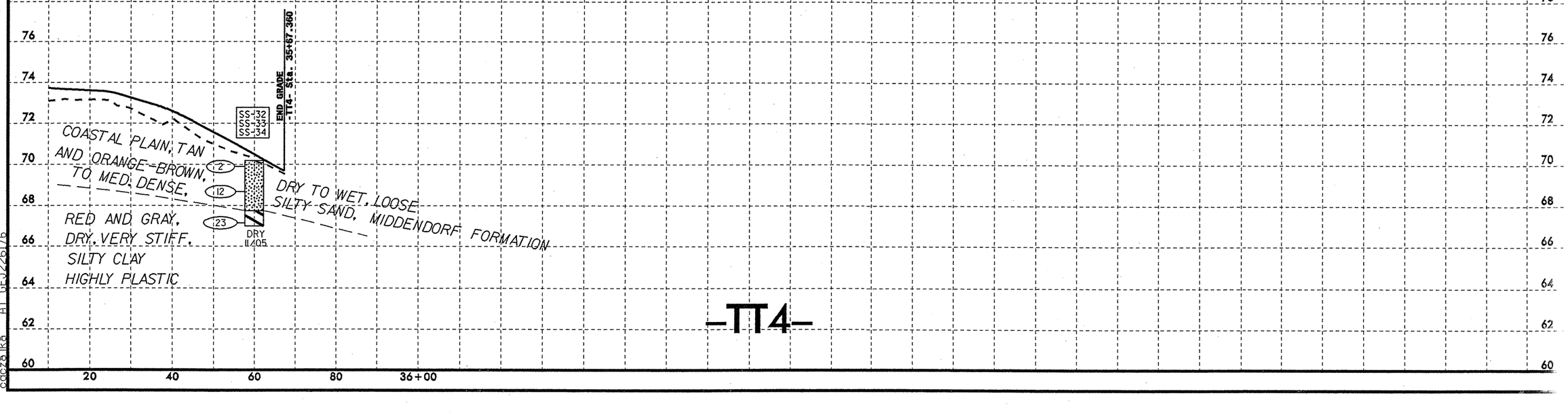
SOIL TEST RESULTS

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-35	CL	32+60.0	2.74-3.19	A-2-6(2)	39	21	47.2	22.3	10.4	20.1	100	69	34	-	-
SS-36	CL	32+60.0	4.26-4.71	A-7-6(64)	82	56	0.4	4.0	27.3	68.3	100	100	98	-	-



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-32	CL	35+60.0	0.00-0.45	A-2-4(0)	19	NP	35.9	55.1	5.0	4.0	100	87	14	-	-
SS-33	CL	35+60.0	1.22-1.67	A-2-4(0)	23	5	41.5	37.2	3.3	18.0	98	78	25	-	-
SS-34	CL	35+60.0	2.74-3.19	A-7-6(27)	51	29	0.4	19.0	20.4	60.1	100	100	88	-	-



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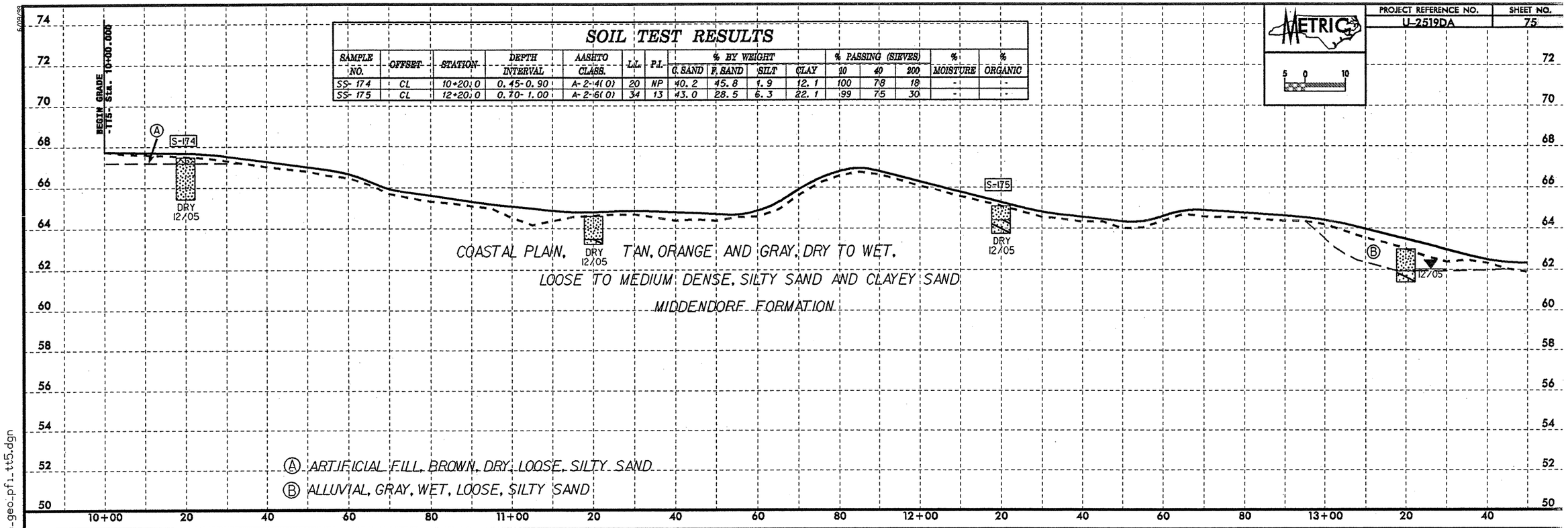
cdczalka AT GEJ226176

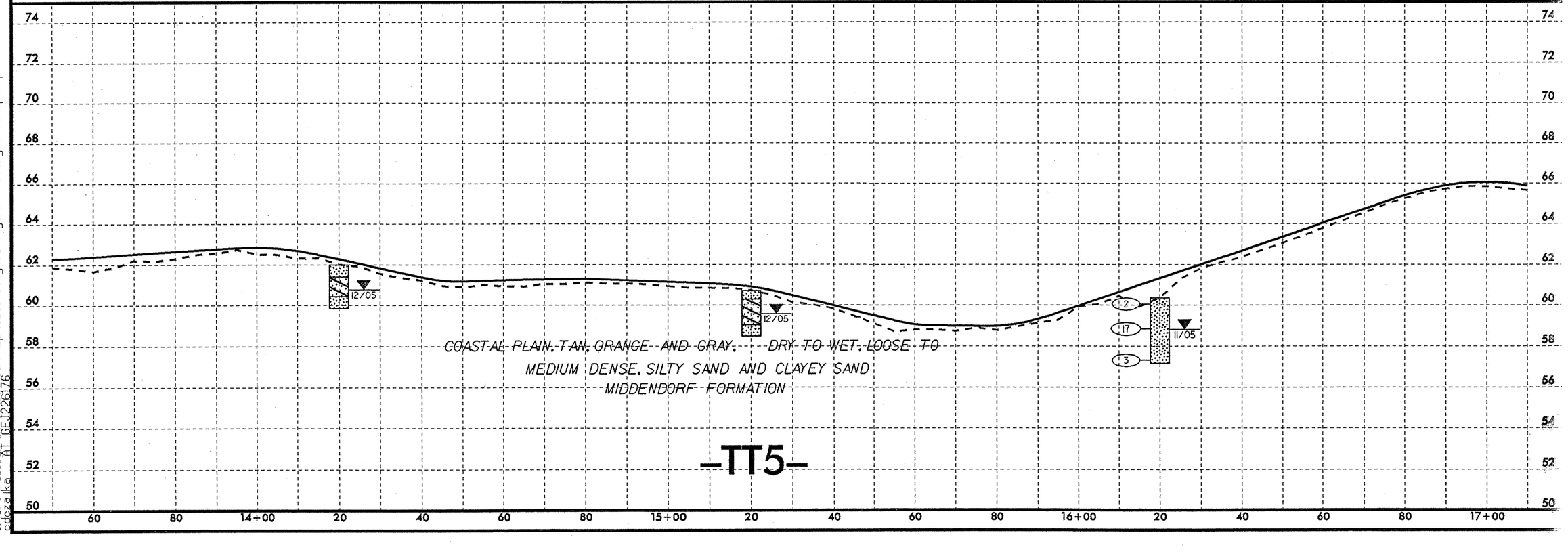
METRIC

5 0 10

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC
SS-174	CL	10+20.0	0.45-0.90	A-2-4(0)	20	NP	40.2	45.8	1.9	12.1	100	78	18	-	-
SS-175	CL	12+20.0	0.70-1.00	A-2-6(0)	34	13	43.0	28.5	6.3	22.1	99	75	30	-	-





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5/09/08

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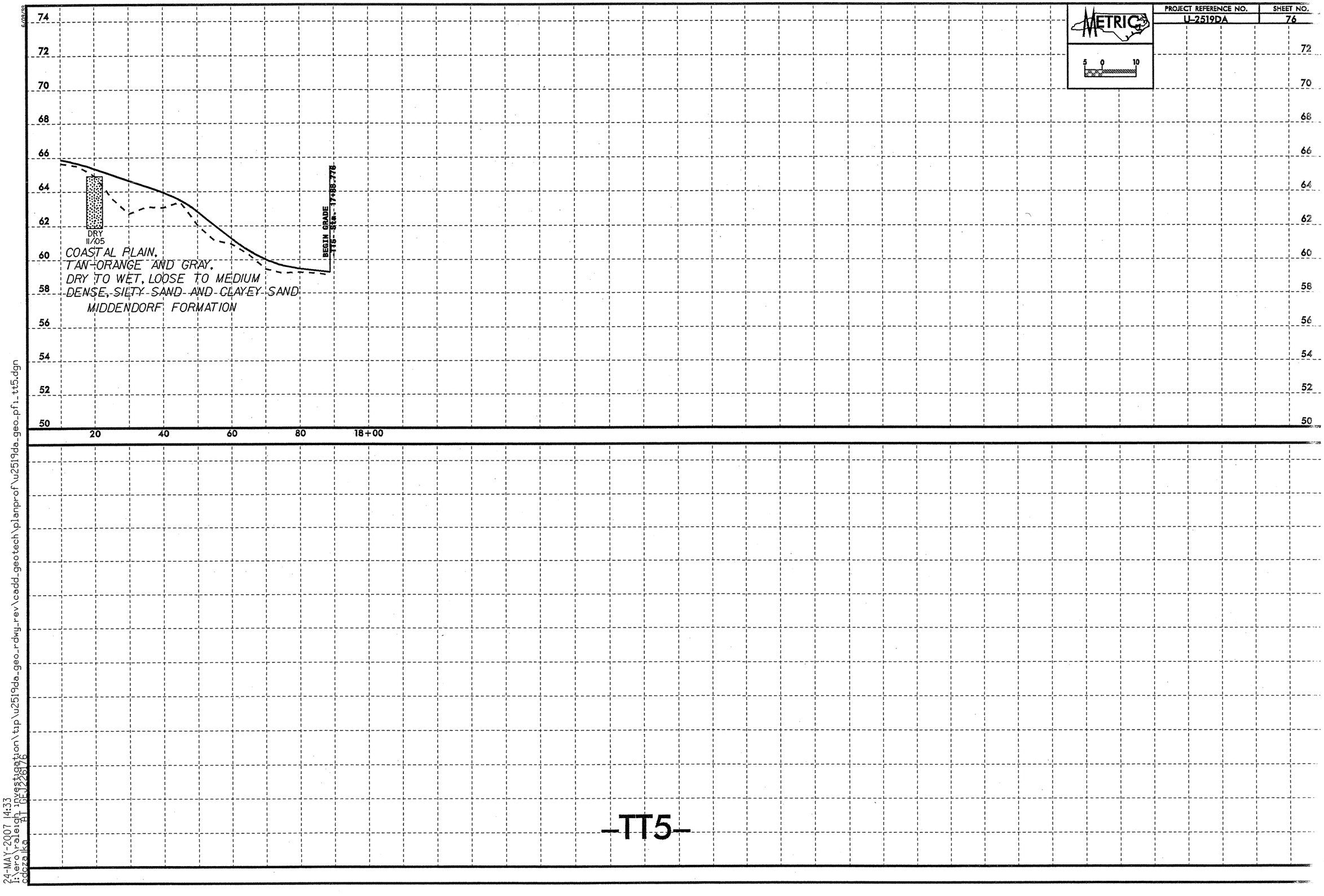

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cdczalka AT GEJ226176

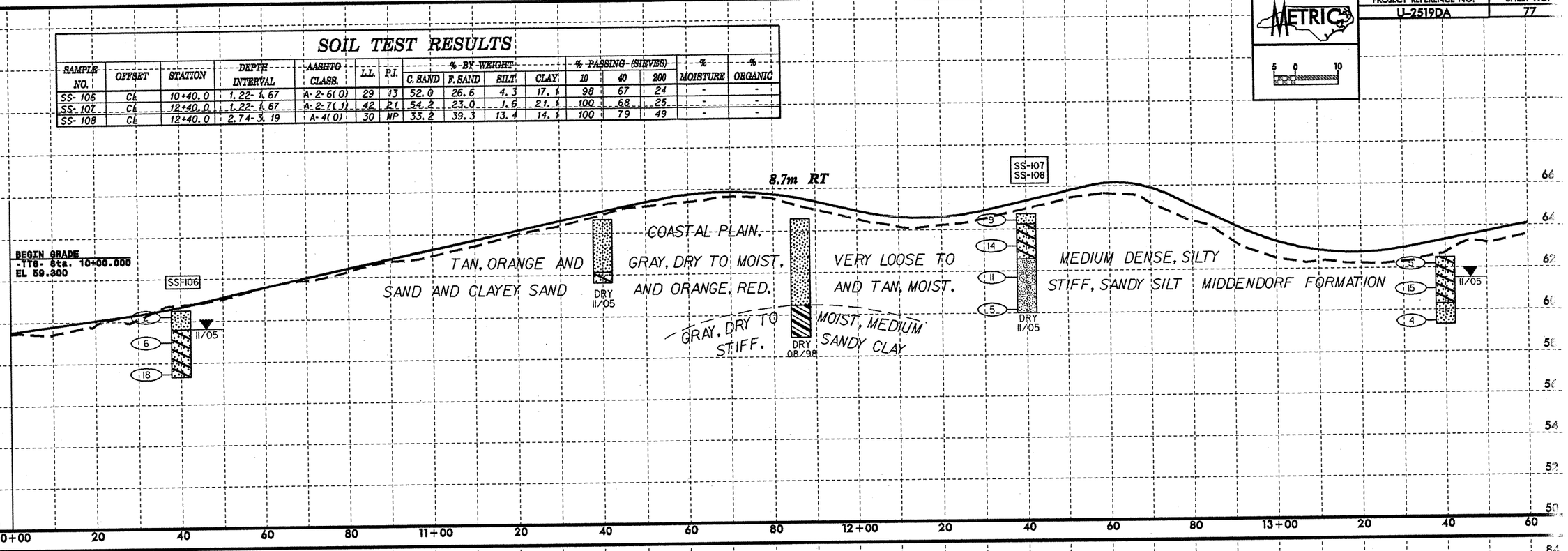
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	77

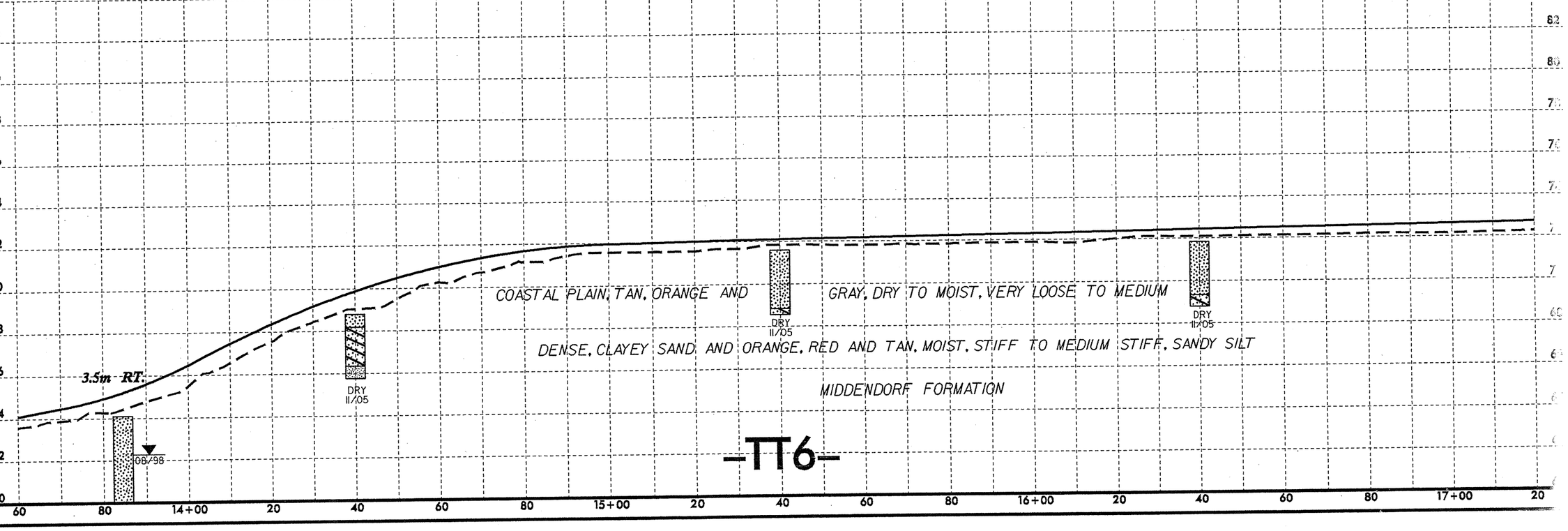
METRIC

5 0 10

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-106	CL	10+40.0	1.22-1.67	A-2-6(0)	29	13	52.0	26.6	4.3	17.1	98	67	24	-	-
SS-107	CL	12+40.0	1.22-1.67	A-2-7(1)	42	21	54.2	23.0	1.6	21.1	100	68	25	-	-
SS-108	CL	12+40.0	2.74-3.19	A-4(0)	30	NP	33.2	39.3	13.4	14.1	100	79	49	-	-





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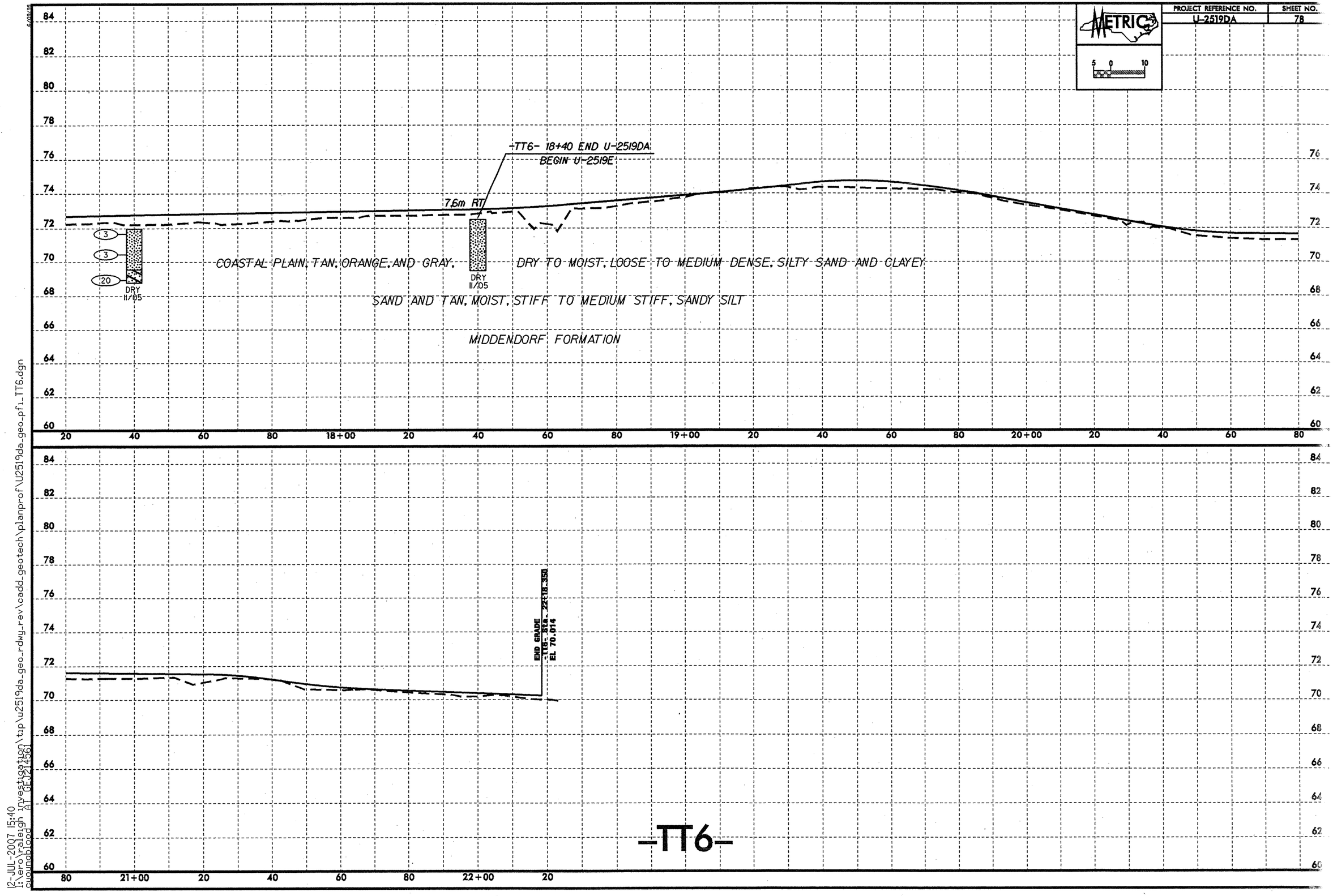
groundhood



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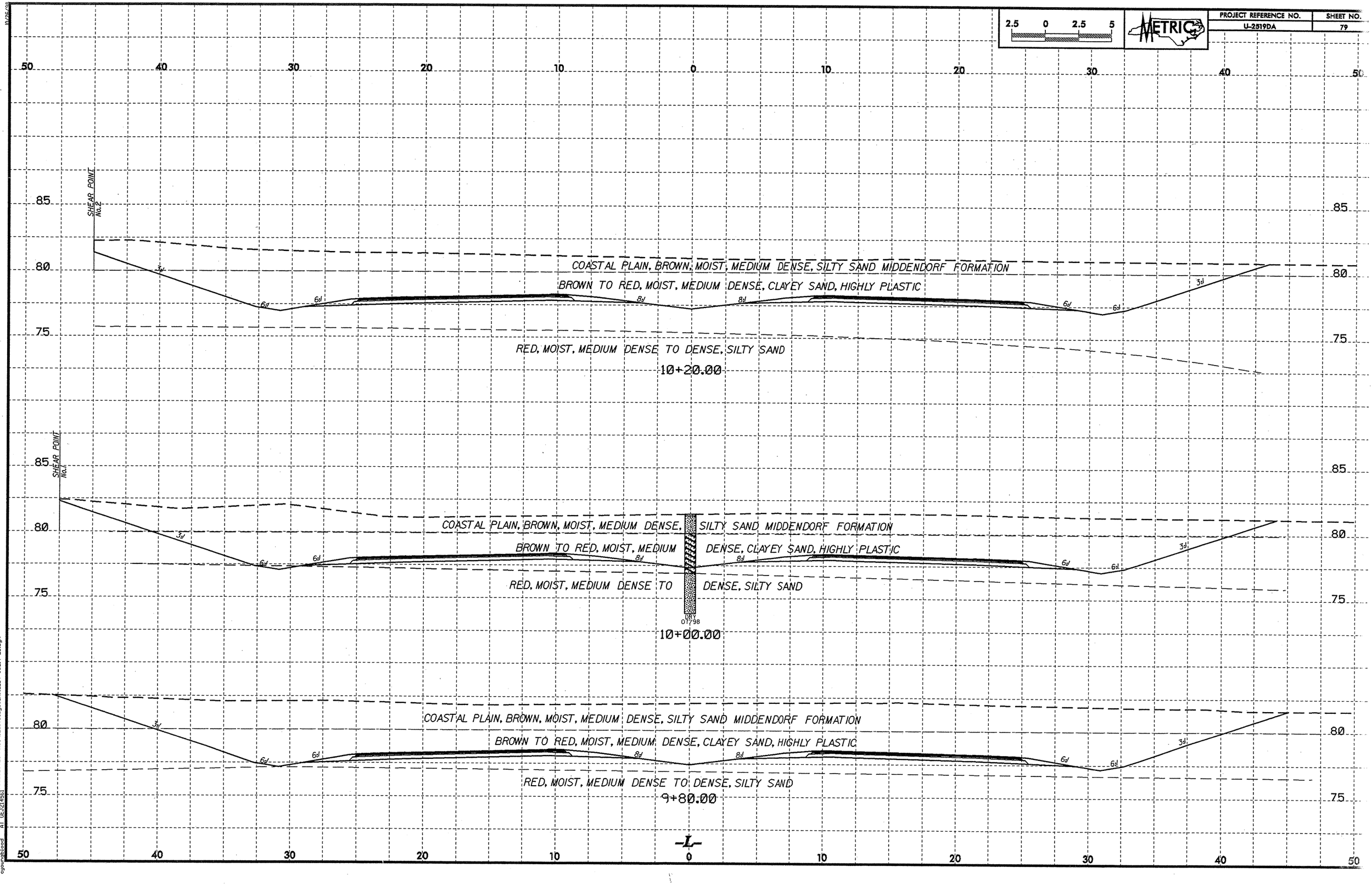
cyoungblood AT GEJ214561



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
79
SHEAR POINT No.2
COASTAL PLAIN, BROWN, MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION
BROWN TO RED, MOIST, MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC
RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
10+20.00
SHEAR POINT No.1
COASTAL PLAIN, BROWN, MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION
BROWN TO RED, MOIST, MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC
RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
DRY 07/98
10+00.00
COASTAL PLAIN, BROWN, MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION
BROWN TO RED, MOIST, MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC
RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
9+80.00
-L-

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	80

2.5 0 2.5 5

METRIC

50 40 30 20 10 0 10 20 30 40 50

85 80 75 70

SHEAR POINT No.4

3:1 6:1 6:1 8:1 8:1 6:1 6:1 3:1

BROWN, RED, AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND

Ⓐ

STIFF, SANDY SILT, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC

RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND

Ⓑ

Ⓒ

10+60.00

Ⓐ COASTAL PLAIN, RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND MIDDENDORF FORMATION

Ⓑ COASTAL PLAIN, BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION

Ⓒ TAN TO ORANGE-BROWN, GRAY AND RED, DRY TO MOIST, MEDIUM DENSE, SILTY SAND

SHEAR POINT No.3

3:1 6:1 6:1 8:1 8:1 6:1 3:1

COASTAL PLAIN, BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION

BROWN, RED, AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND

STIFF, SANDY SILT, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC

RED, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND

10+40.00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	% MOISTURE	% ORGANIC
S-1	32.0m RT	10+40.0	0.03-1.07	A-2-4(0)	26	8	37.4	33.1	13.2	16.3	100.0	80.3	33.6	9.4	-
S-2	32.0m RT	10+40.0	1.07-1.83	A-7-6(3)	47	18	38.2	25.5	11.7	24.6	99.8	79.2	39.1	16.8	-
S-3	32.0m RT	10+40.0	1.83-2.59	A-2-7(2)	45	21	43.9	23.7	8.2	24.2	99.8	75.0	35.1	14.9	-
S-4	32.0m RT	10+40.0	2.59-3.35	A-2-7(4)	58	35	50.8	18.2	7.3	23.7	99.0	63.9	33.2	15.0	-
S-5	32.0m RT	10+40.0	3.35-4.11	A-2-6(0)	36	16	43.8	30.6	8.1	17.5	99.8	75.0	28.5	13.8	-
S-6	32.0m RT	10+40.0	4.11-4.88	A-7-6(10)	42	19	11.8	31.5	15.6	41.1	100.0	94.8	60.9	23.4	-
S-7	32.0m RT	10+40.0	4.88-5.64	A-6(3)	33	14	22.1	40.3	13.2	24.4	99.9	89.0	43.2	18.6	-

SS-1 thru SS-7

DRY 07/98

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10/26/98

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jgoulding1000
ATTACHED REFERENCES:

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cyoungblood AT GEJ214561

2.5 0 2.5 5

METRIC

50 40 30 20 10 0 10 20 30 40 50

85

80

75

SHEAR POINT No.8

3:1 6:1 6:1 8:1 8:1 6:1 6:1 3:1

COASTAL PLAIN, RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND MIDDENDORF FORMATION

COASTAL PLAIN, BROWN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND AND STIFF, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC

BROWN TO RED, MOIST, MEDIUM DENSE, SILTY SAND

11+40.00

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	% MOISTURE	% ORGANIC
S-1	CL	11+20.0	0.00-1.07	A-2-4(0)	25	5	48.7	27.2	9.1	15.0	98.9	71.7	26.2	8.1	-
S-2	CL	11+20.0	1.07-1.83	A-2-7(3)	49	24	43.6	22.1	7.0	27.3	99.0	72.8	36.1	13.8	-
S-3	CL	11+20.0	1.83-2.59	A-7-6(12)	62	33	33.3	21.3	6.4	39.0	100.0	81.0	48.3	17.3	-
S-4	CL	11+20.0	2.59-3.35	A-2-7(4)	48	29	42.5	25.3	8.8	23.4	100.0	76.0	34.6	15.3	-
S-5	CL	11+20.0	3.35-4.11	A-2-7(4)	45	25	34.3	32.8	4.6	28.3	100.0	83.0	36.6	16.7	-
S-6	CL	11+20.0	4.11-4.88	A-2-6(1)	34	15	41.0	30.9	5.3	22.8	99.7	79.0	31.9	13.6	-
S-7	CL	11+20.0	4.88-5.64	A-2-4(0)	27	5	27.0	45.5	6.1	21.4	100.0	81.9	33.2	14.4	-
S-8	CL	11+20.0	5.64-6.40	A-4(2)	33	10	15.3	45.5	12.7	26.5	99.3	91.1	45.6	22.8	-
S-9	CL	11+20.0	6.40-7.16	A-7-6(16)	55	30	18.3	25.1	12.6	44.0	100.0	91.0	59.9	26.5	-
S-10	CL	11+20.0	7.16-7.92	A-7-6(12)	53	30	28.7	20.2	13.6	37.5	99.8	84.1	51.7	24.1	-

85

80

75

SHEAR POINT No.7

Ⓑ COASTAL PLAIN, BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION

3:1 6:1 6:1 8:1 8:1 6:1 6:1 3:1

COASTAL PLAIN, RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND MIDDENDORF FORMATION

COASTAL PLAIN, BROWN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND AND STIFF, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC

Ⓑ

RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SANDY SILT AND SILTY CLAY

S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8 S-9 S-10

DRY 07795

11+20.00

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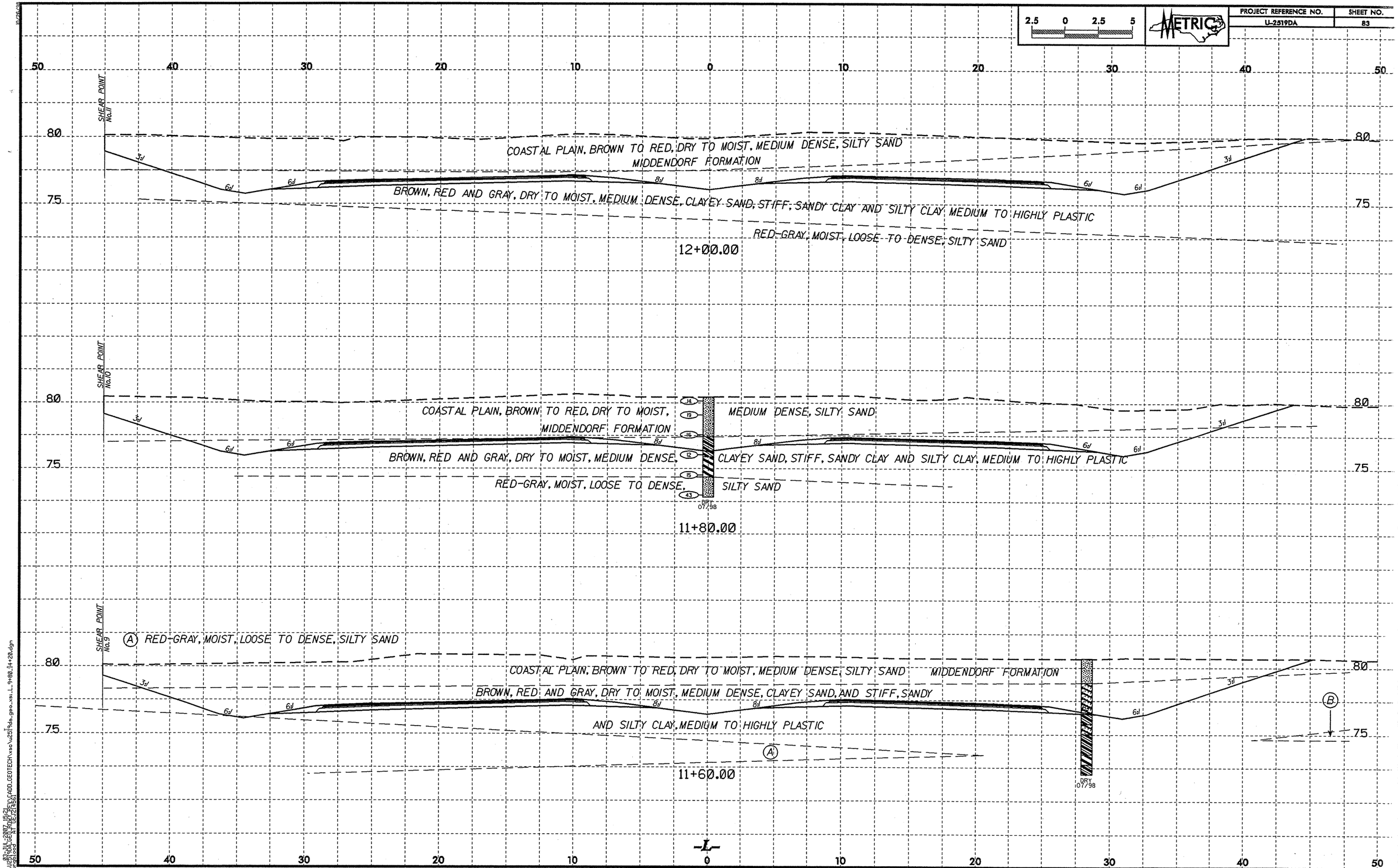

PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
83
METRIC
2.5 0 2.5 5
SHEAR POINT No.11
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
BROWN, RED AND GRAY, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND, STIFF, SANDY CLAY AND SILTY CLAY MEDIUM TO HIGHLY PLASTIC
RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND
12+00.00
SHEAR POINT No.10
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
BROWN, RED AND GRAY, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND, STIFF, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC
RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND
DRY 07/98
11+80.00
SHEAR POINT No.9
A RED-GRAY, MOIST, LOOSE TO DENSE, SILTY SAND
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
BROWN, RED AND GRAY, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND, AND STIFF, SANDY
AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC
B
A
11+60.00
DRY 07/98
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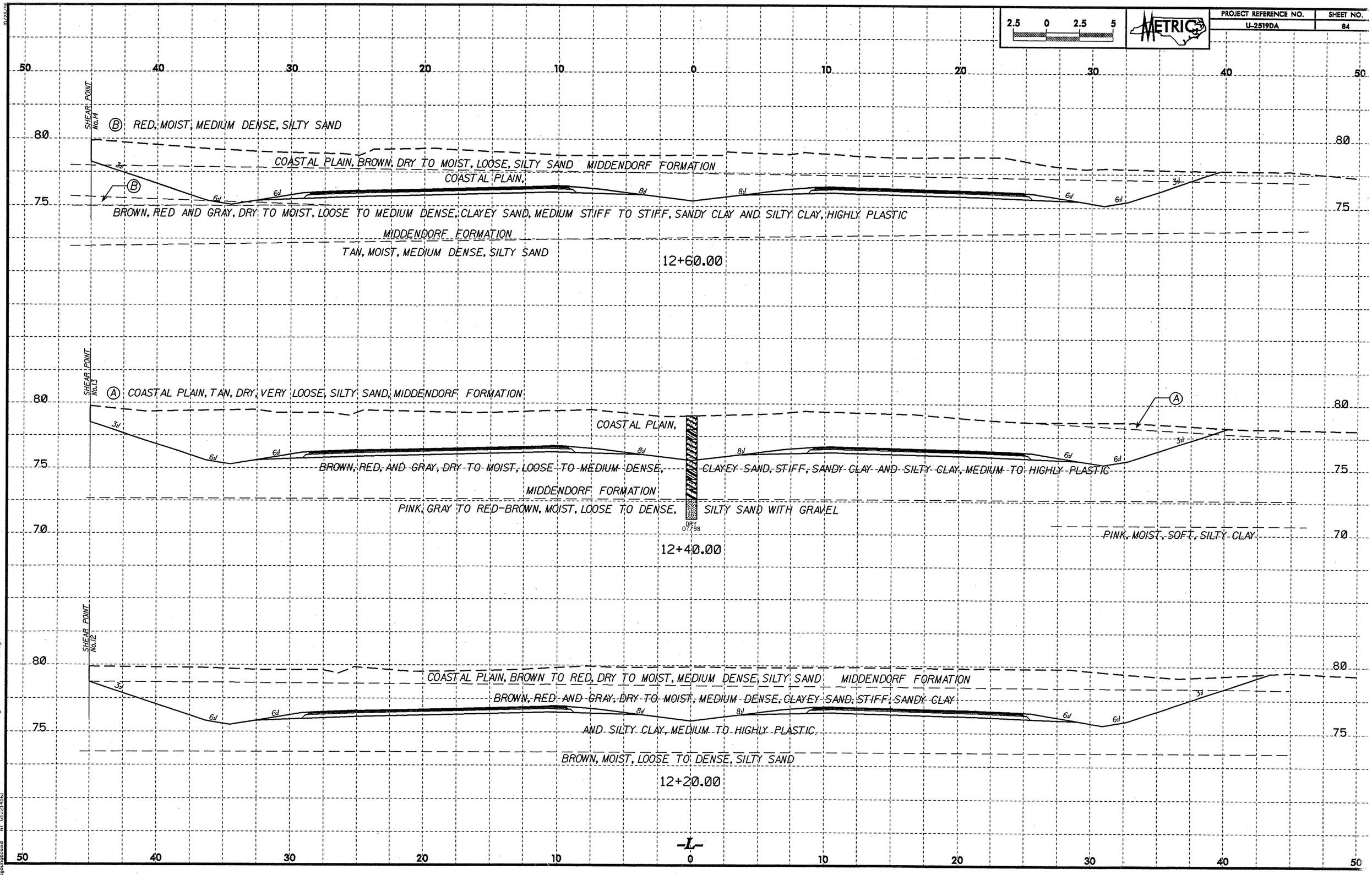

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
84
SHEAR POINT No.14
(B) RED, MOIST, MEDIUM DENSE, SILTY SAND
COASTAL PLAIN, BROWN, DRY TO MOIST, LOOSE, SILTY SAND MIDDENDORF FORMATION
COASTAL PLAIN,
BROWN, RED AND GRAY, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND, MEDIUM STIFF TO STIFF, SANDY CLAY AND SILTY CLAY, HIGHLY PLASTIC
MIDDENDORF FORMATION
TAN, MOIST, MEDIUM DENSE, SILTY SAND
12+60.00
SHEAR POINT No.13
(A) COASTAL PLAIN, TAN, DRY, VERY LOOSE, SILTY SAND, MIDDENDORF FORMATION
COASTAL PLAIN,
BROWN, RED, AND GRAY, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND, STIFF, SANDY CLAY AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC
MIDDENDORF FORMATION
PINK, GRAY TO RED-BROWN, MOIST, LOOSE TO DENSE, SILTY SAND WITH GRAVEL
DRY 07/98
PINK, MOIST, SOFT, SILTY CLAY
12+40.00
SHEAR POINT No.12
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION
BROWN, RED AND GRAY, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND, STIFF, SANDY CLAY
AND SILTY CLAY, MEDIUM TO HIGHLY PLASTIC
BROWN, MOIST, LOOSE TO DENSE, SILTY SAND
12+20.00
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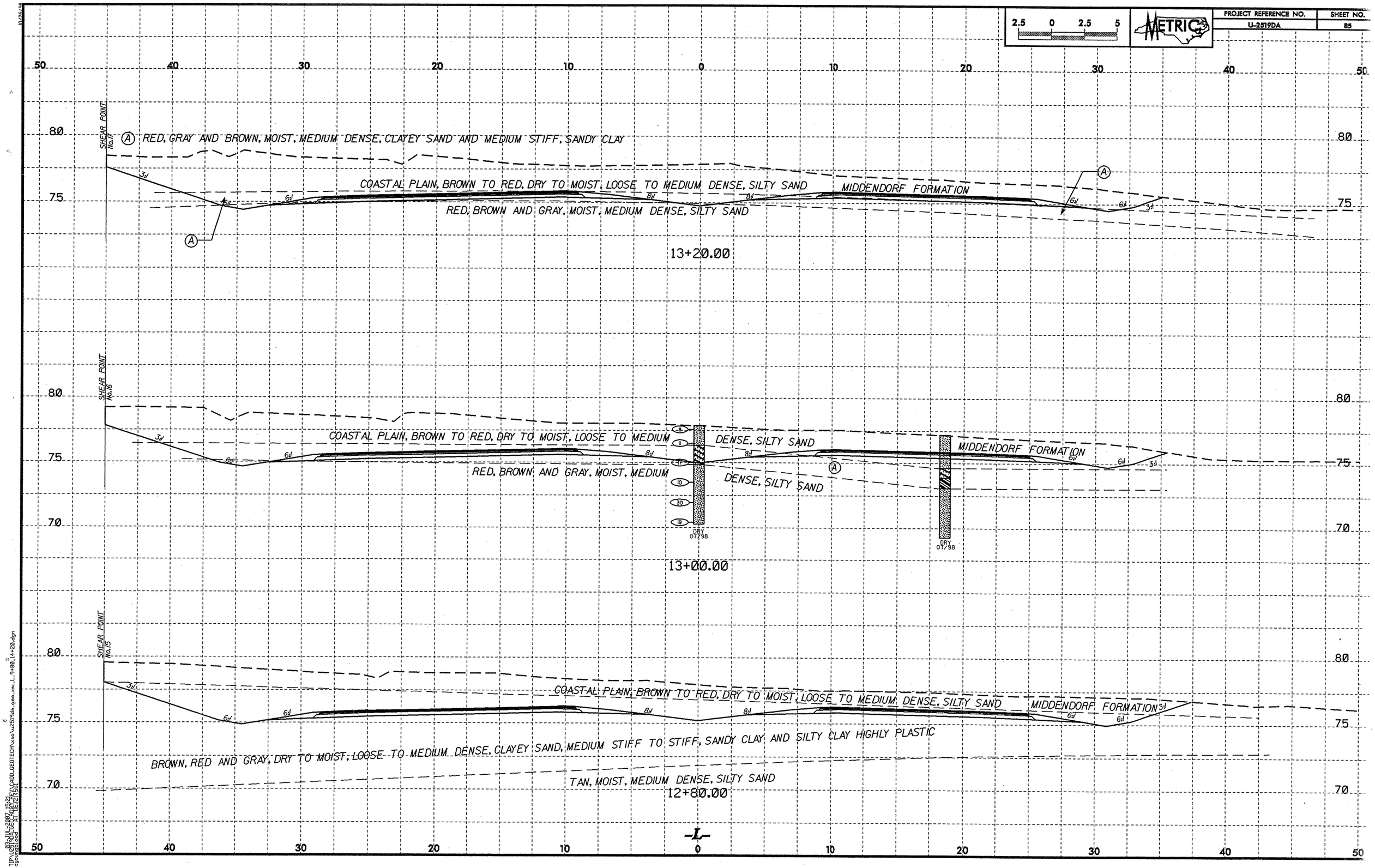
80 75 70



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
85
SHEAR POINT No.17
RED, GRAY AND BROWN, MOIST, MEDIUM DENSE, CLAYEY SAND AND MEDIUM STIFF, SANDY CLAY
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
RED, BROWN AND GRAY, MOIST, MEDIUM DENSE, SILTY SAND
13+20.00
SHEAR POINT No.16
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
RED, BROWN AND GRAY, MOIST, MEDIUM DENSE, SILTY SAND
DRY 07/98
DRY 07/98
13+00.00
SHEAR POINT No.15
COASTAL PLAIN, BROWN TO RED, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
BROWN, RED AND GRAY, DRY TO MOIST, LOOSE TO MEDIUM DENSE, CLAYEY SAND, MEDIUM STIFF TO STIFF, SANDY CLAY AND SILTY CLAY HIGHLY PLASTIC
TAN, MOIST, MEDIUM DENSE, SILTY SAND
12+80.00
-L-

50 40 30 20 10 0 10 20 30 40 50

80
75
70

SHEAR POINT No.20

3:1 6:1 6:1 8:1 8:1 3:1 6:1 3:1

COASTAL PLAIN, RED-GRAY TO TAN, DRY TO MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY, MIDDENDORF FORMATION

RED, GRAY AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND AND MEDIUM STIFF TO STIFF, SANDY SILT, SANDY AND SILTY CLAY, LOW TO HIGHLY PLASTIC

13+80.00

SHEAR POINT No.19

3:1 6:1 6:1 8:1 8:1 6:1 6:1 3:1

COASTAL PLAIN, RED-GRAY TO TAN, DRY TO MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY, MIDDENDORF FORMATION

COASTAL PLAIN, RED, GRAY AND TAN, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND, MIDDENDORF FORMATION

RED, GRAY AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAEYEY SAND AND MEDIUM STIFF TO STIFF, SANDY SILT, SANDY AND SILTY CLAY, LOW TO HIGHLY PLASTIC

DRY 07/98

13+60.00

SHEAR POINT No.18

3:1 6:1 6:1 8:1 8:1 6:1 6:1 3:1

COASTAL PLAIN, RED-GRAY TO TAN, DRY TO MOIST, MEDIUM STIFF TO STIFF, SANDY CLAY, MIDDENDORF FORMATION

COASTAL PLAIN, RED, GRAY AND TAN, DRY TO MOIST, LOOSE TO DENSE, SILTY SAND FORMATION

07/98

RED, GRAY AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAEYEY SAND AND MEDIUM STIFF TO STIFF, SANDY SILT, SANDY AND SILTY CLAY, LOW TO HIGHLY PLASTIC

13+40.00

-L-

50 40 30 20 10 0 10 20 30 40 50

10/28/08
09 JUL 2007 15:21
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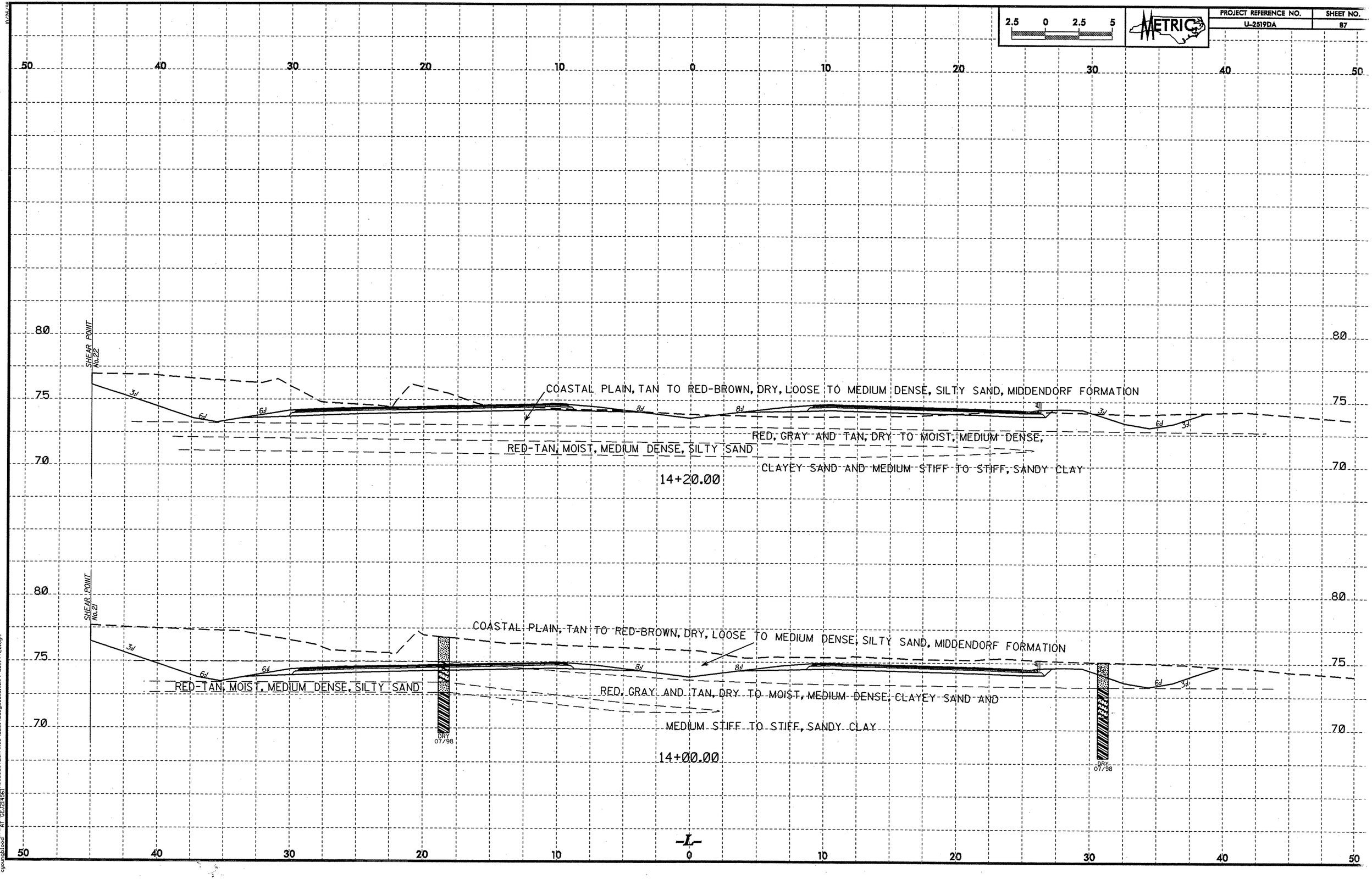
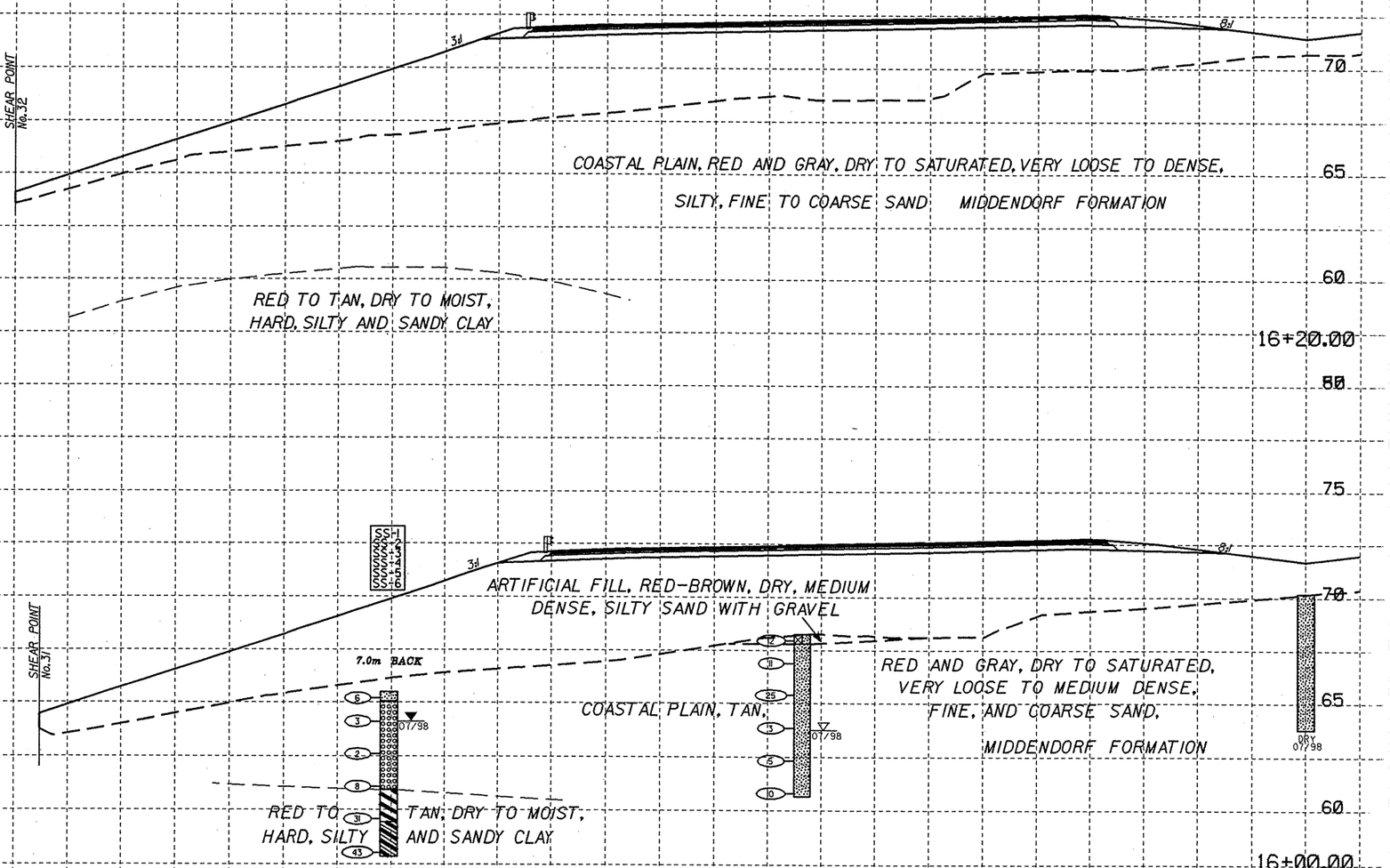


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
87
50 40 30 20 10 0 10 20 30 40 50
80
75
70
SHEAR POINT No.22
COASTAL PLAIN, TAN TO RED-BROWN, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
RED, GRAY AND TAN, DRY TO MOIST, MEDIUM DENSE,
RED-TAN, MOIST, MEDIUM DENSE, SILTY SAND
CLAYEY SAND AND MEDIUM STIFF TO STIFF, SANDY CLAY
14+20.00
SHEAR POINT No.21
COASTAL PLAIN, TAN TO RED-BROWN, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
RED-TAN, MOIST, MEDIUM DENSE, SILTY SAND
RED, GRAY AND TAN, DRY TO MOIST, MEDIUM DENSE, CLAYEY SAND AND
MEDIUM STIFF TO STIFF, SANDY CLAY
DRY 07/98
DRY 07/98
14+00.00
-L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL I	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	19.0m LT.	15+93.0	0.00-0.45	A-2-4(0)	22	NP	52.8	32.5	0.9	13.8	86	58	15	4.7	-
S-2	19.0m LT.	15+93.0	1.07-1.52	A-1-b(0)	15	NP	78.5	11.7	0.9	8.9	99	38	11	-	-
S-3	19.0m LT.	15+93.0	2.59-3.04	A-1-b(0)	18	NP	83.2	8.4	1.7	6.7	77	18	7	-	-
S-4	19.0m LT.	15+93.0	4.11-4.56	A-1-b(0)	23	NP	90.0	4.8	0.8	4.4	81	14	5	-	-
S-5	19.0m LT.	15+93.0	5.64-6.09	A-7-6(37)	61	35	2.8	6.5	16.7	74.0	100	98	92	20.5	-
S-6	19.0m LT.	15+93.0	7.16-7.61	A-6(4)	30	13	22.9	29.4	10.5	37.2	100	83	55	13.6	-



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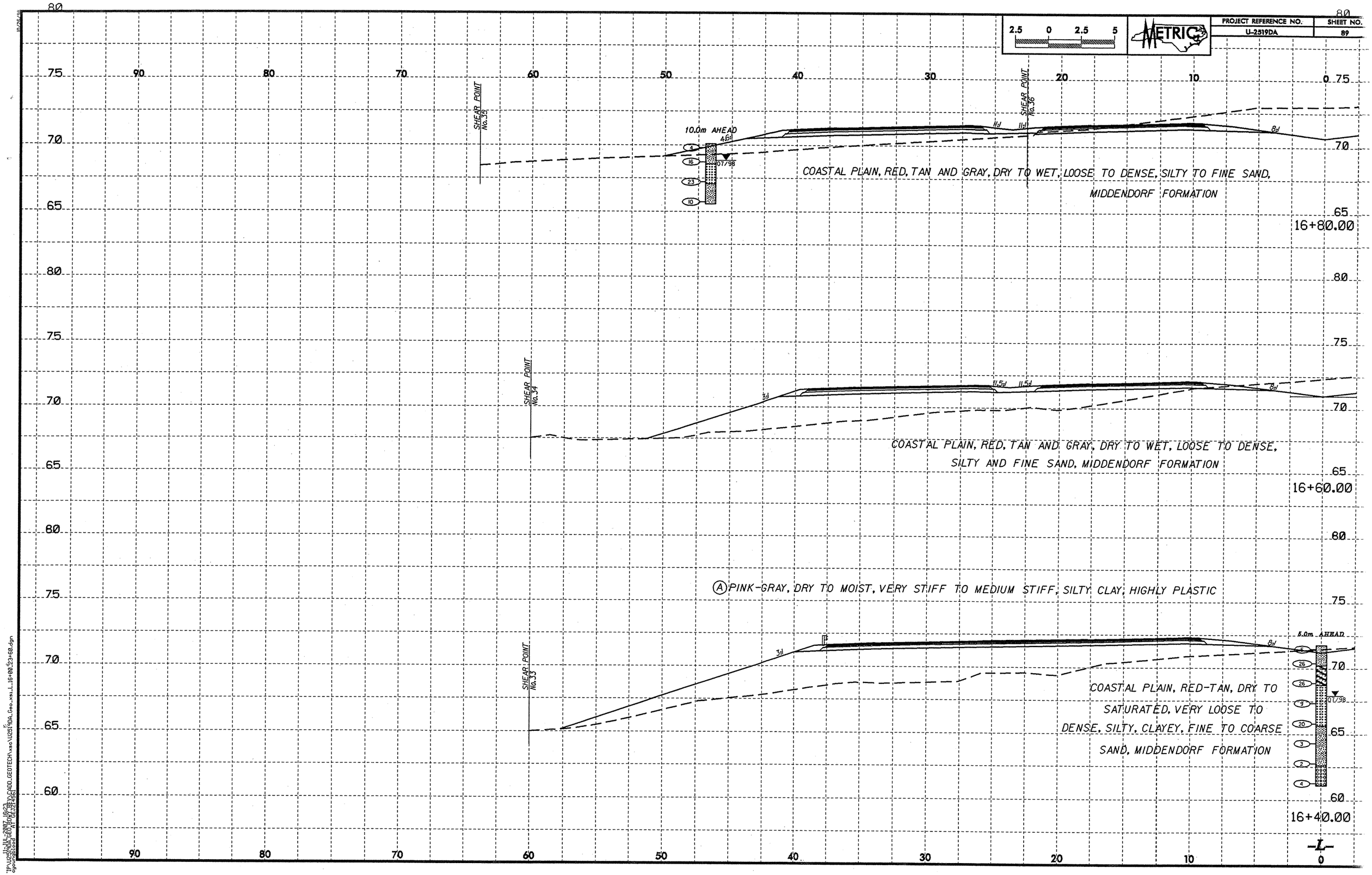
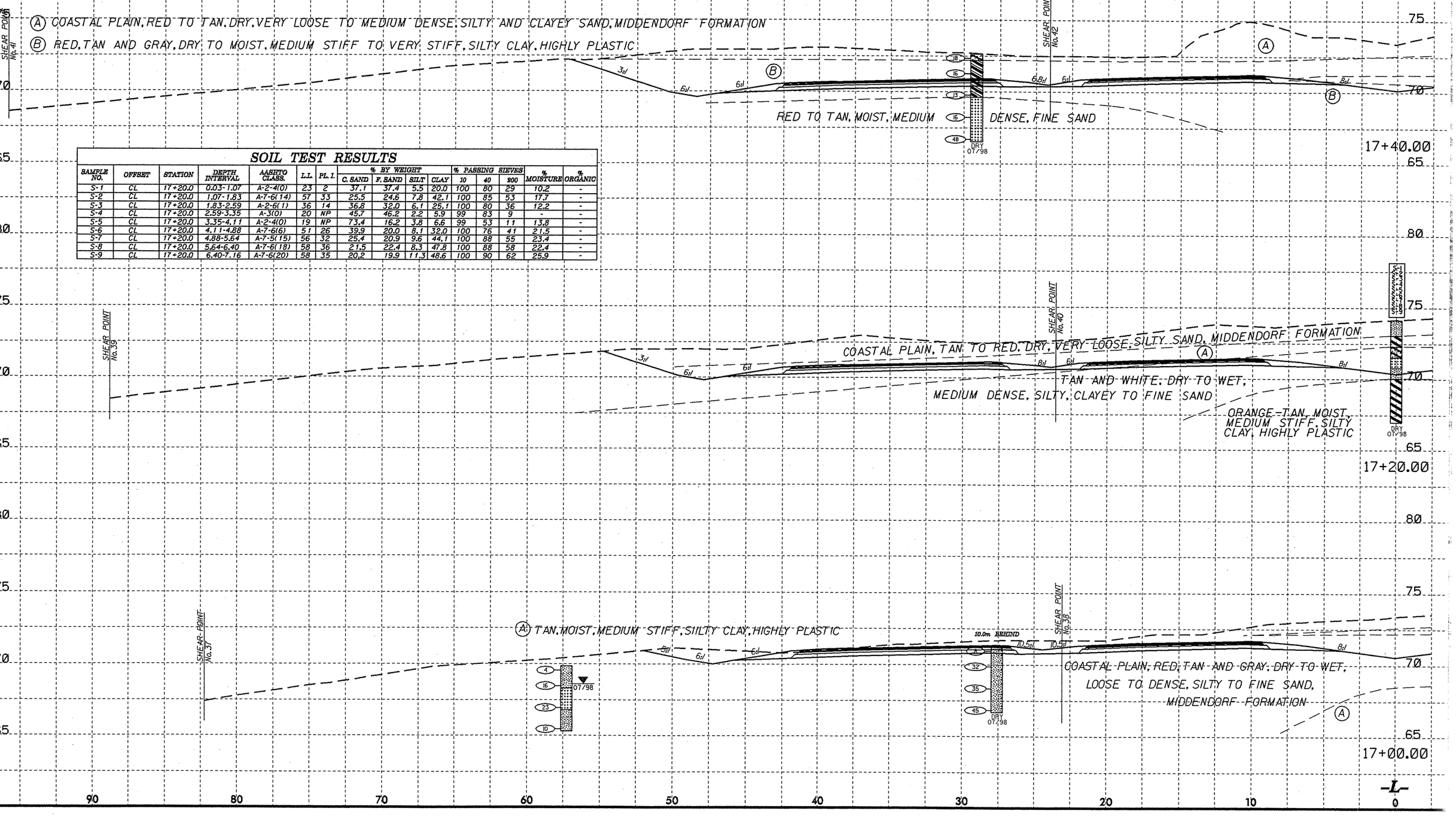


PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
89
METRIC
2.5 0 2.5 5
SHEAR POINT No.35
SHEAR POINT No.36
10.0m AHEAD
4.6:1
11:1
11:1
8:1
4
16
23
10
07/98
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO WET, LOOSE TO DENSE, SILTY TO FINE SAND, MIDDENDORF FORMATION
16+80.00
SHEAR POINT No.34
3:1
11.5:1
11.5:1
8:1
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO WET, LOOSE TO DENSE, SILTY AND FINE SAND, MIDDENDORF FORMATION
16+60.00
Ⓐ PINK-GRAY, DRY TO MOIST, VERY STIFF TO MEDIUM STIFF, SILTY CLAY, HIGHLY PLASTIC
SHEAR POINT No.33
3:1
8:1
5.0m AHEAD
6
26
26
9
20
3
2
4
07/98
COASTAL PLAIN, RED-TAN, DRY TO SATURATED, VERY LOOSE TO DENSE, SILTY, CLAYEY, FINE TO COARSE SAND, MIDDENDORF FORMATION
16+40.00
-L-
90 80 70 60 50 40 30 20 10 0
80 75 70 65 60

2.5 0 2.5 5

METRIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
S-1	CL	17+20.0	0.03-1.07	A-2-4(0)	23	2	37.1	37.4	5.5	20.0	100	80	29	10.2	-
S-2	CL	17+20.0	1.07-1.83	A-7-6(14)	57	33	25.5	24.6	7.8	42.1	100	85	53	17.7	-
S-3	CL	17+20.0	1.83-2.59	A-2-6(1)	36	14	36.8	32.0	6.1	25.1	100	80	36	12.2	-
S-4	CL	17+20.0	2.59-3.35	A-3(0)	20	NP	45.7	46.2	2.2	5.9	99	83	9	-	-
S-5	CL	17+20.0	3.35-4.11	A-2-4(0)	19	NP	73.4	16.2	3.8	6.6	99	53	11	13.8	-
S-6	CL	17+20.0	4.11-4.88	A-7-6(6)	51	26	39.9	20.0	8.1	32.0	100	76	41	21.5	-
S-7	CL	17+20.0	4.88-5.64	A-7-5(15)	56	32	25.4	20.9	9.6	44.1	100	88	55	23.4	-
S-8	CL	17+20.0	5.64-6.40	A-7-6(18)	58	36	21.5	22.4	8.3	47.8	100	88	58	22.4	-
S-9	CL	17+20.0	6.40-7.16	A-7-6(20)	58	35	20.2	19.9	11.3	48.6	100	90	62	25.9	-

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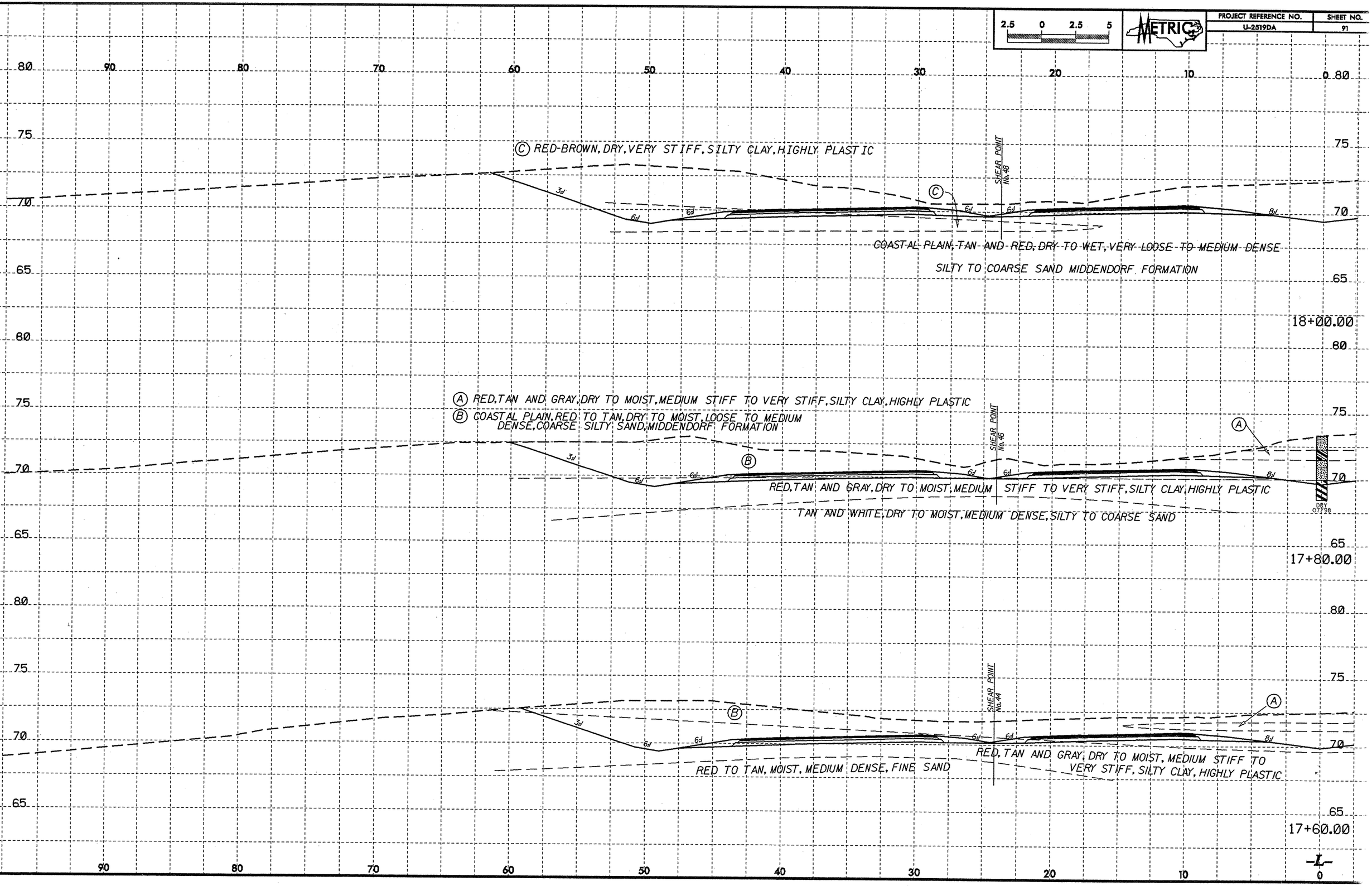
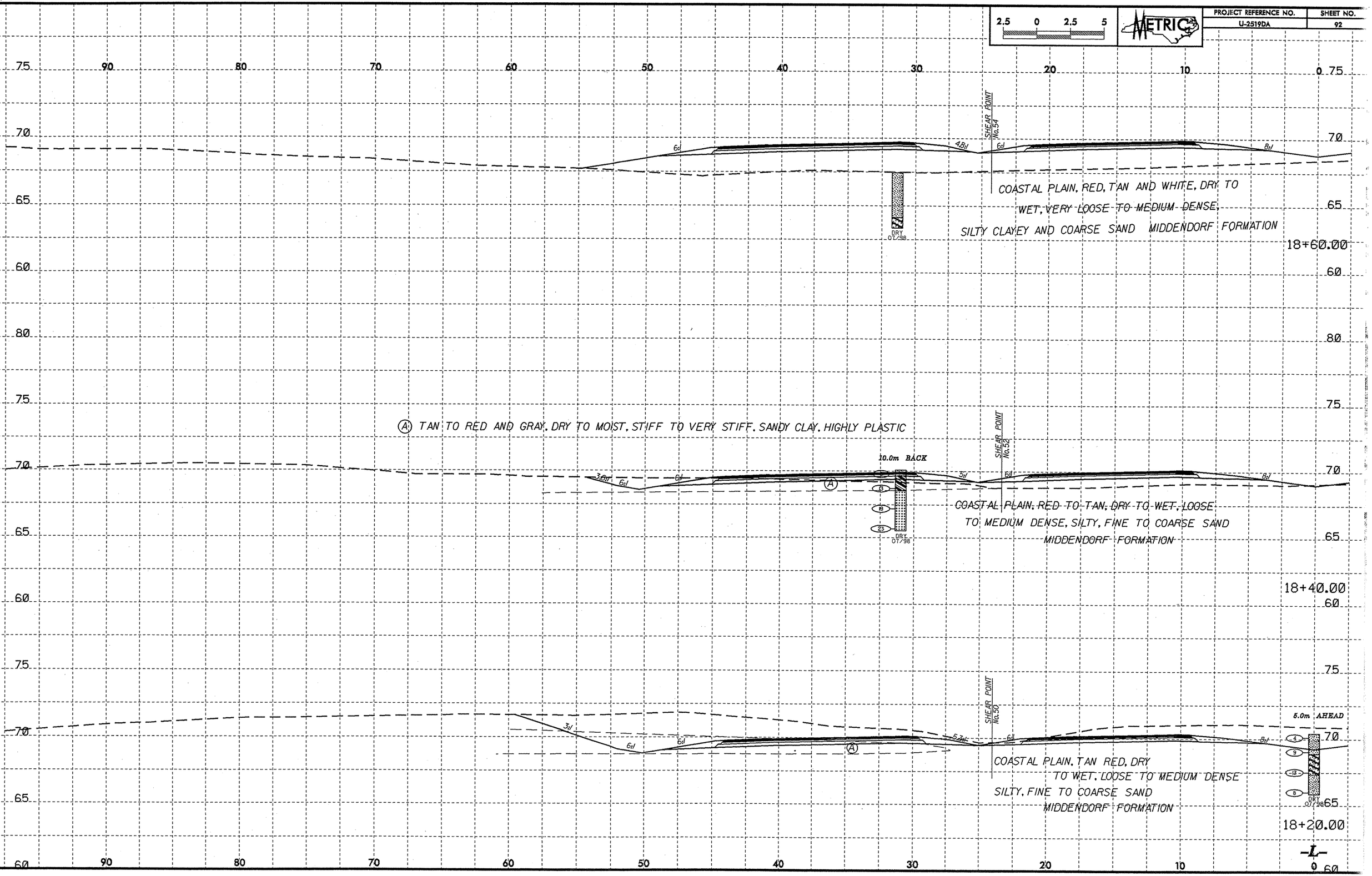
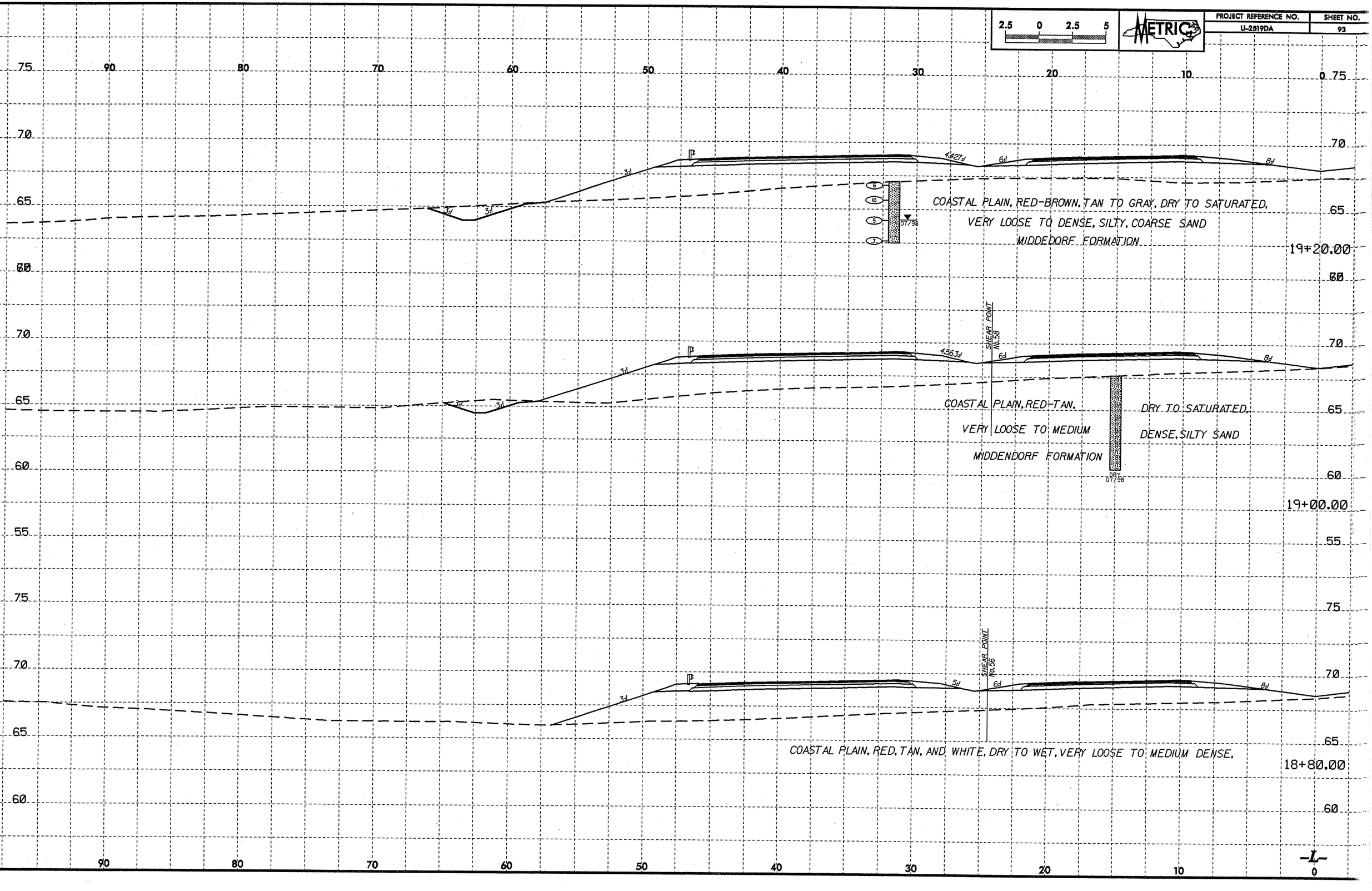
geopakuser



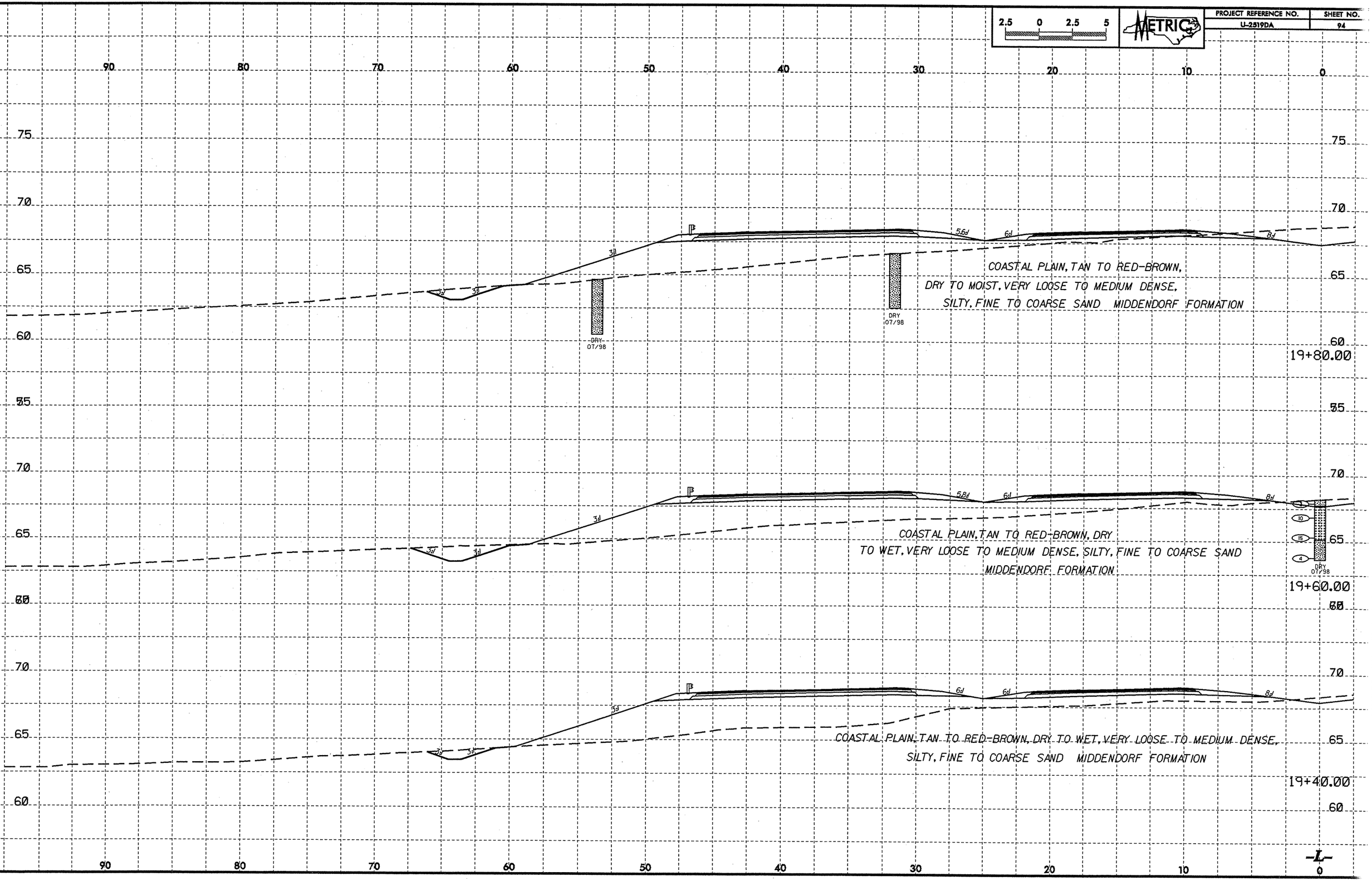
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
91
Ⓒ RED-BROWN, DRY, VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
SHEAR POINT No. 48
COASTAL PLAIN, TAN AND RED, DRY TO WET, VERY LOOSE TO MEDIUM DENSE
SILTY TO COARSE SAND MIDDENDORF FORMATION
18+00.00
Ⓐ RED, TAN AND GRAY, DRY TO MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
Ⓑ COASTAL PLAIN, RED TO TAN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, COARSE SILTY SAND, MIDDENDORF FORMATION
SHEAR POINT No. 46
RED, TAN AND GRAY, DRY TO MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
TAN AND WHITE, DRY TO MOIST, MEDIUM DENSE, SILTY TO COARSE SAND
DRY 07/98
17+80.00
SHEAR POINT No. 44
RED TO TAN, MOIST, MEDIUM DENSE, FINE SAND
RED, TAN AND GRAY, DRY TO MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
17+60.00
-L-



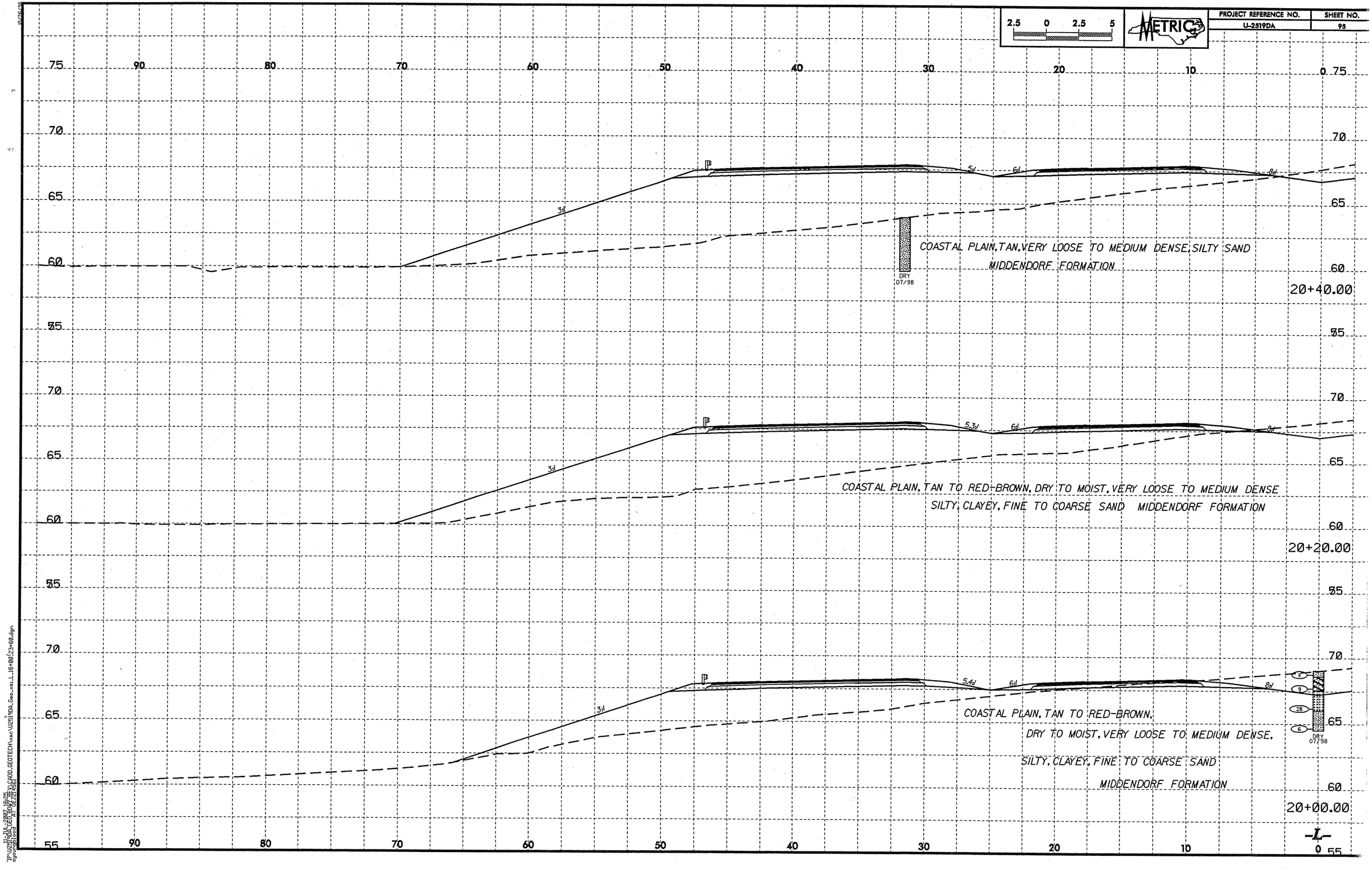
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
92
SHEAR POINT No.54
COASTAL PLAIN, RED, TAN AND WHITE, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY CLAYEY AND COARSE SAND MIDDENDORF FORMATION
DRY 07/98
18+60.00
(A) TAN TO RED AND GRAY, DRY TO MOIST, STIFF TO VERY STIFF, SANDY CLAY, HIGHLY PLASTIC
SHEAR POINT No.52
10.0m BACK
COASTAL PLAIN, RED TO TAN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
DRY 07/98
18+40.00
SHEAR POINT No.50
5.0m AHEAD
COASTAL PLAIN, TAN RED, DRY TO WET, LOOSE TO MEDIUM DENSE SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
DRY 07/98
18+20.00
-L-



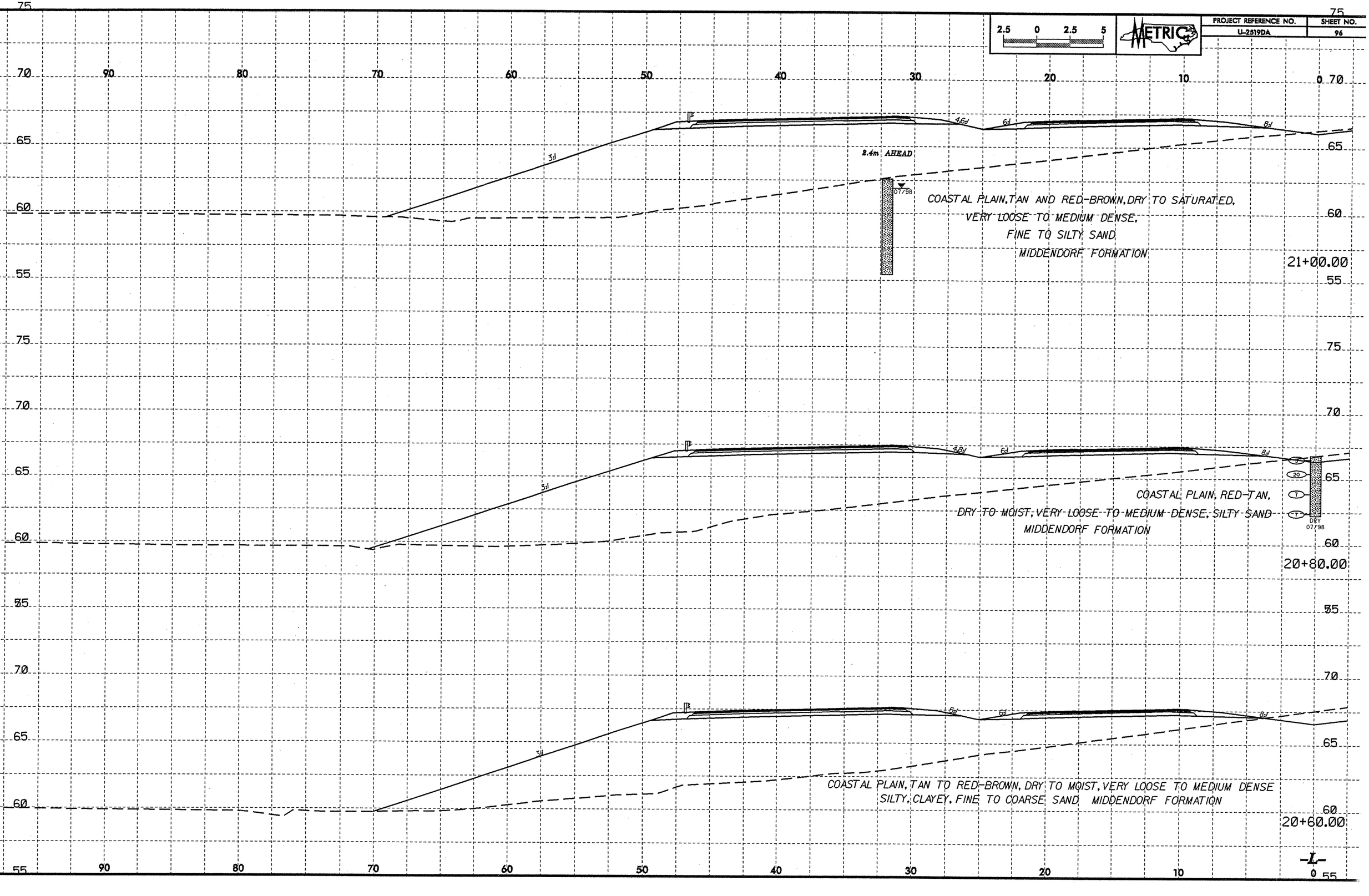
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
93
COASTAL PLAIN, RED-BROWN, TAN TO GRAY, DRY TO SATURATED,
VERY LOOSE TO DENSE, SILTY, COARSE SAND
MIDDEDORF FORMATION
19+20.00
SHEAR POINT No.58
COASTAL PLAIN, RED-TAN,
VERY LOOSE TO MEDIUM
MIDDENDORF FORMATION
DRY TO SATURATED,
DENSE, SILTY SAND
19+00.00
SHEAR POINT No.56
COASTAL PLAIN, RED, TAN, AND WHITE, DRY TO WET, VERY LOOSE TO MEDIUM DENSE,
18+80.00
-L-



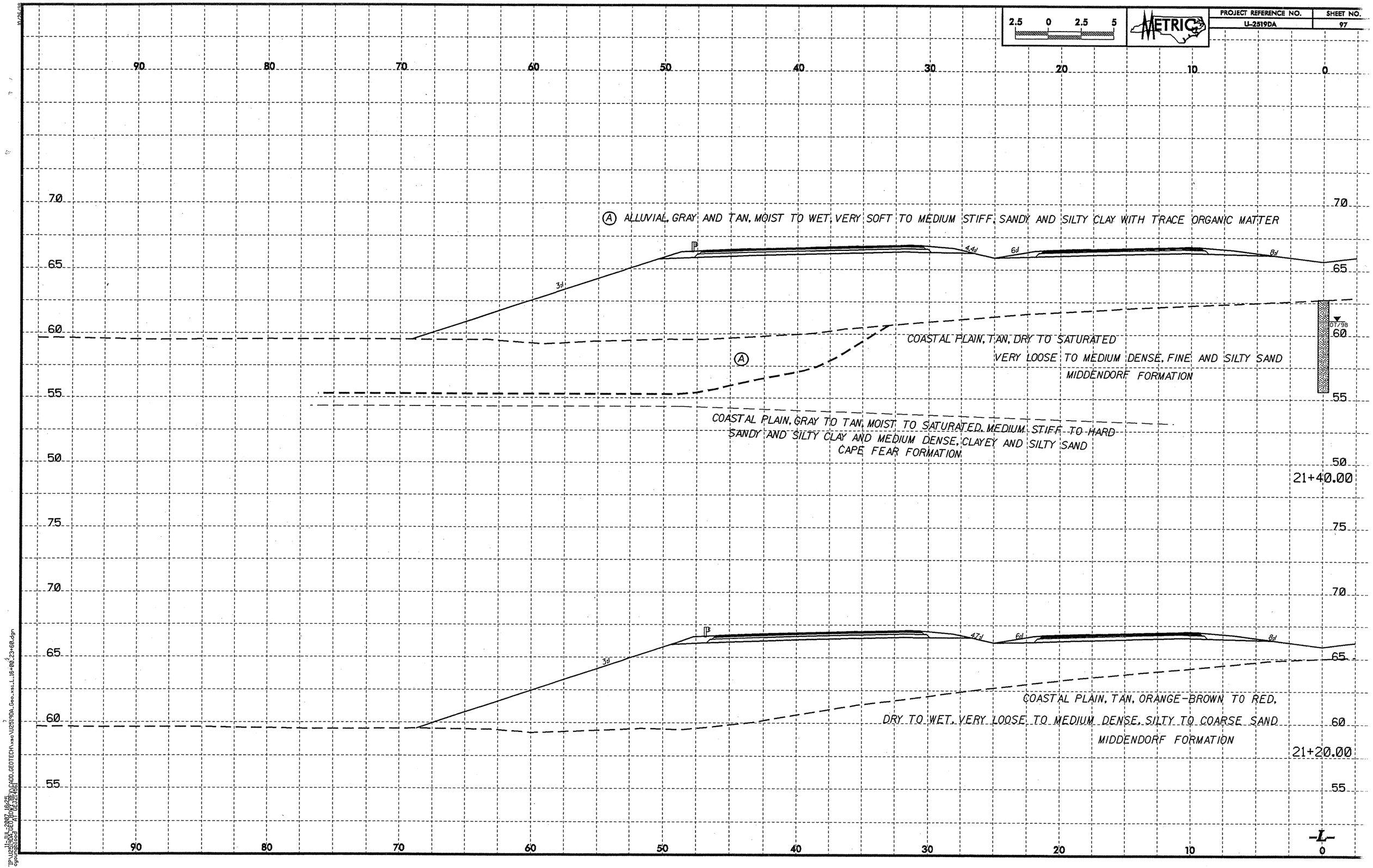
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
94
90 80 70 60 50 40 30 20 10 0
75
70
65
60
55
5.6:1
6:1
8:1
3:1
DRY 07/98
COASTAL PLAIN, TAN TO RED-BROWN,
DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE,
SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
19+80.00
5.8:1
COASTAL PLAIN, TAN TO RED-BROWN, DRY
TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY, FINE TO COARSE SAND
MIDDENDORF FORMATION
19+60.00
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE,
SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
19+40.00
-L-



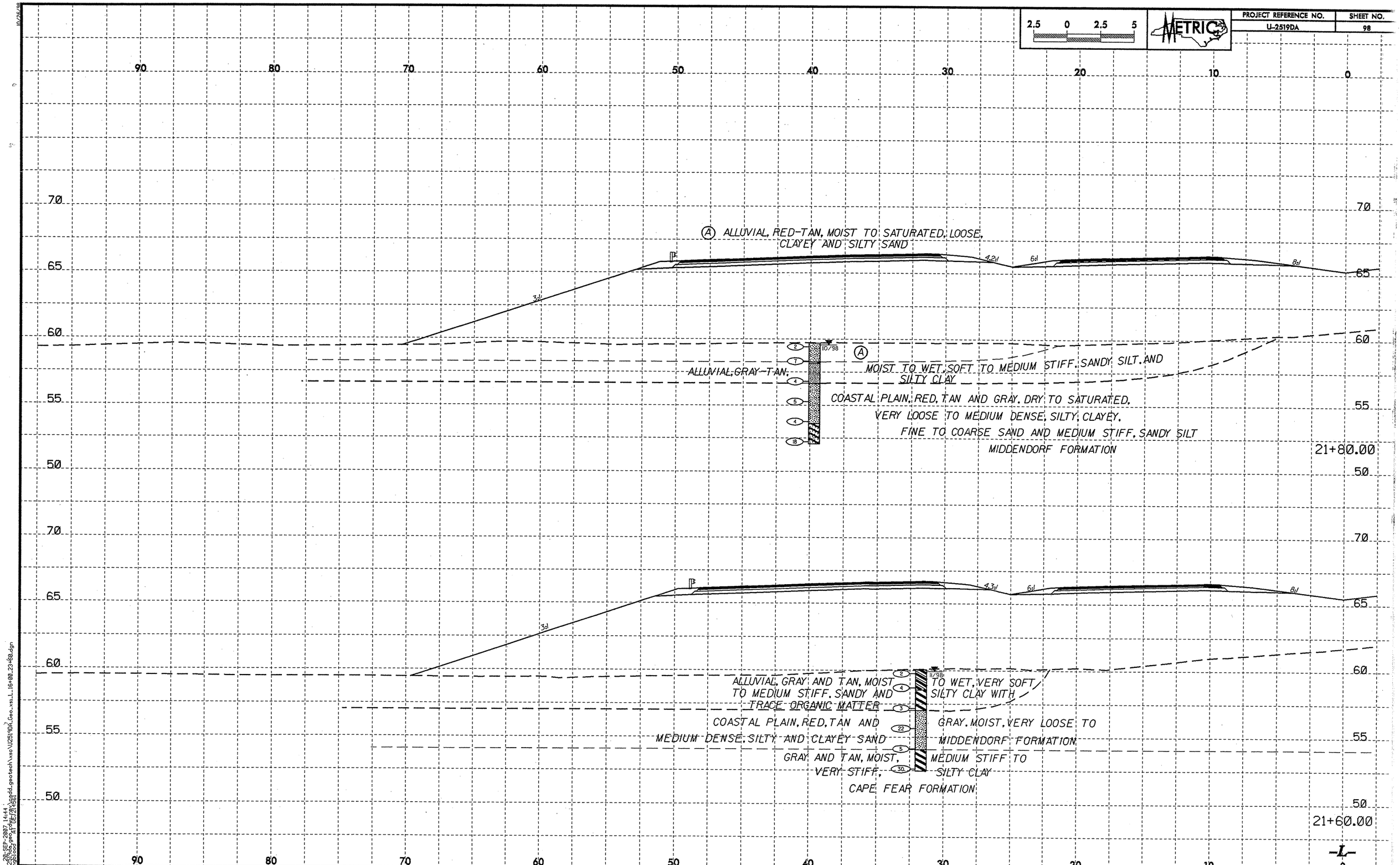
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
95
COASTAL PLAIN, TAN, VERY LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
DRY 07/98
20+40.00
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
SILTY, CLAYEY, FINE TO COARSE SAND MIDDENDORF FORMATION
20+20.00
COASTAL PLAIN, TAN TO RED-BROWN,
DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE,
SILTY, CLAYEY, FINE TO COARSE SAND
MIDDENDORF FORMATION
DRY 07/98
20+00.00
-L-



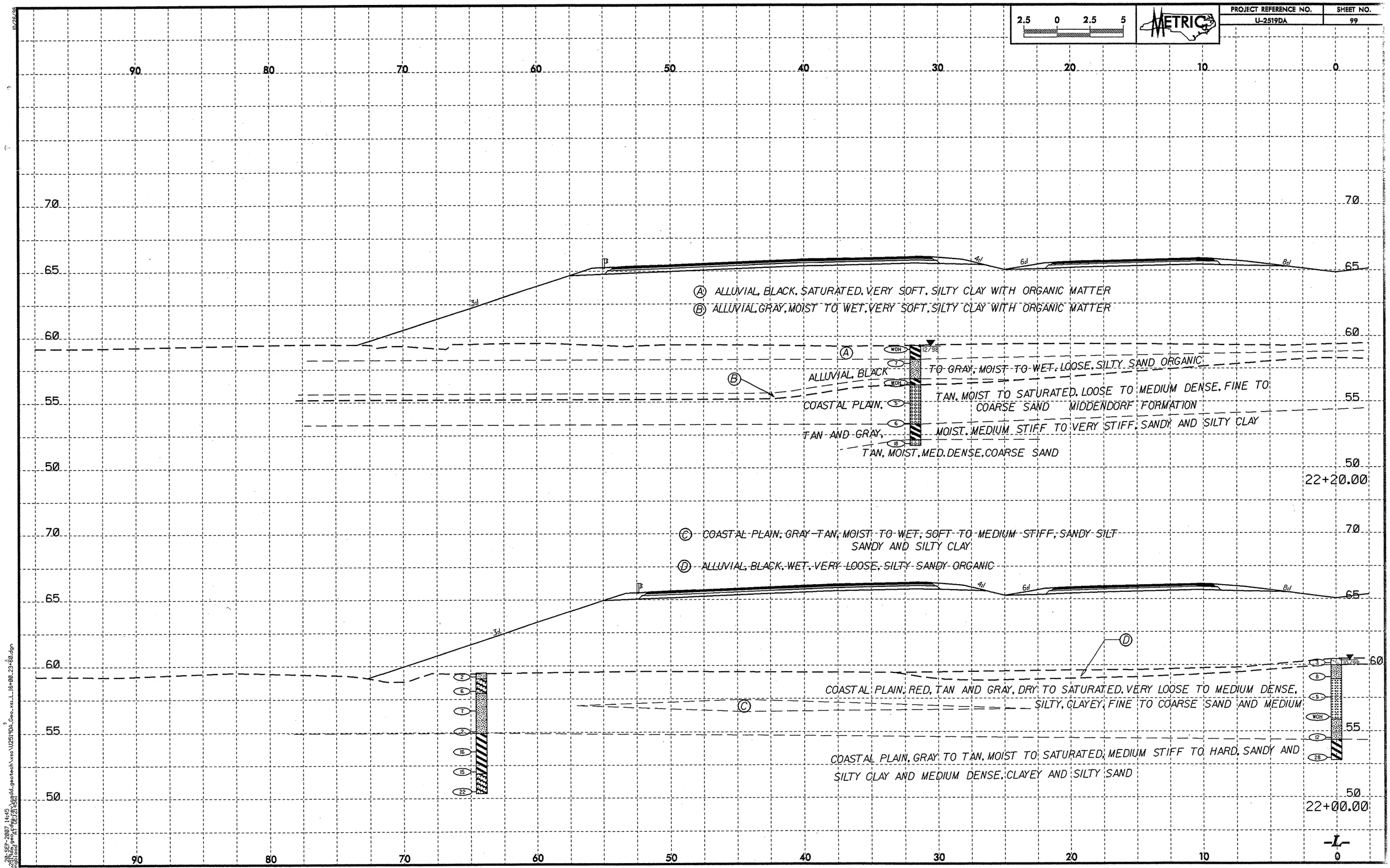
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
96
2.4m AHEAD
07/98
COASTAL PLAIN, TAN AND RED-BROWN, DRY TO SATURATED,
VERY LOOSE TO MEDIUM DENSE,
FINE TO SILTY SAND
MIDDENDORF FORMATION
21+00.00
COASTAL PLAIN, RED-TAN,
DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
DRY
07/98
20+80.00
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
SILTY, CLAYEY, FINE TO COARSE SAND MIDDENDORF FORMATION
20+60.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
97
90 80 70 60 50 40 30 20 10 0
70 65 60 55 50 75 70 65 60 55
Ⓐ ALLUVIAL, GRAY AND TAN, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, SANDY AND SILTY CLAY WITH TRACE ORGANIC MATTER
3:1
4.4:1
6:1
8:1
COASTAL PLAIN, TAN, DRY TO SATURATED
VERY LOOSE TO MEDIUM DENSE, FINE AND SILTY SAND
MIDDENDORF FORMATION
Ⓐ
COASTAL PLAIN, GRAY TO TAN, MOIST TO SATURATED, MEDIUM STIFF TO HARD
SANDY AND SILTY CLAY AND MEDIUM DENSE, CLAYEY AND SILTY SAND
CAPE FEAR FORMATION
21+40.00
3:1
4.7:1
6:1
8:1
COASTAL PLAIN, TAN, ORANGE-BROWN TO RED,
DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY TO COARSE SAND
MIDDENDORF FORMATION
21+20.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
98
90 80 70 60 50 40 30 20 10 0
70 65 60 55 50
Ⓐ ALLUVIAL, RED-TAN, MOIST TO SATURATED, LOOSE, CLAYEY AND SILTY SAND
3:1
4.2:1
6:1
8:1
10/98
Ⓐ
ALLUVIAL, GRAY-TAN, MOIST TO WET, SOFT TO MEDIUM STIFF, SANDY SILT, AND SILTY CLAY
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY, CLAYEY, FINE TO COARSE SAND AND MEDIUM STIFF, SANDY SILT
MIDDENDORF FORMATION
21+80.00
4.3:1
11/98
ALLUVIAL, GRAY AND TAN, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, SANDY AND SILTY CLAY WITH TRACE ORGANIC MATTER
COASTAL PLAIN, RED, TAN AND GRAY, MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND
MIDDENDORF FORMATION
GRAY AND TAN, MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY
CAPE FEAR FORMATION
21+60.00
-L-



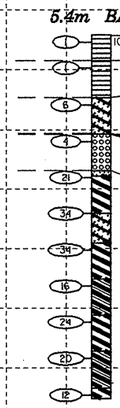
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
99
90 80 70 60 50 40 30 20 10 0
70 65 60 55 50
3:1
4:1
6:1
8:1
Ⓐ ALLUVIAL, BLACK, SATURATED, VERY SOFT, SILTY CLAY WITH ORGANIC MATTER
Ⓑ ALLUVIAL, GRAY, MOIST TO WET, VERY SOFT, SILTY CLAY WITH ORGANIC MATTER
WOH
12/98
ALLUVIAL, BLACK TO GRAY, MOIST TO WET, LOOSE, SILTY SAND ORGANIC
COASTAL PLAIN, TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, FINE TO COARSE SAND MIDDENDORF FORMATION
TAN AND GRAY, MOIST, MEDIUM STIFF TO VERY STIFF, SANDY AND SILTY CLAY
TAN, MOIST, MED. DENSE, COARSE SAND
22+20.00
Ⓒ COASTAL PLAIN, GRAY-TAN, MOIST TO WET, SOFT TO MEDIUM STIFF, SANDY SILT SANDY AND SILTY CLAY
Ⓓ ALLUVIAL, BLACK, WET, VERY LOOSE, SILTY SANDY ORGANIC
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY, CLAYEY, FINE TO COARSE SAND AND MEDIUM
COASTAL PLAIN, GRAY TO TAN, MOIST TO SATURATED, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY AND MEDIUM DENSE, CLAYEY AND SILTY SAND
22+00.00
-L-

90 80 70 60 50 40 30 20 10 0

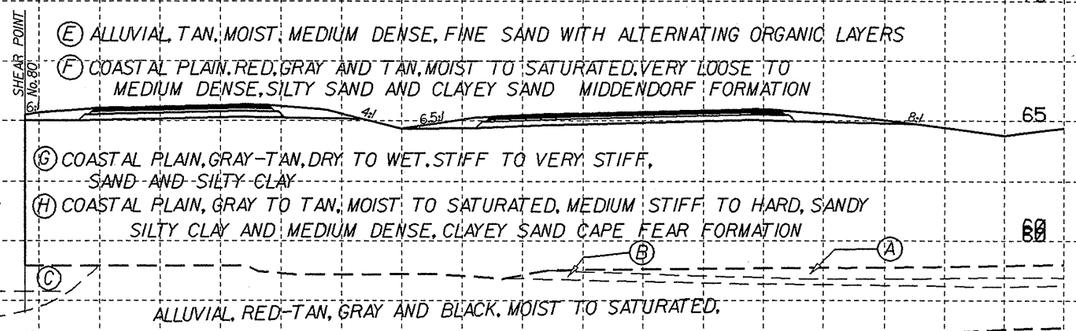
70 65 60 55 50 45

(A) ALLUVIAL, GRAY, WET TO SAT., VERY SOFT, SANDY AND SILTY CLAY
(B) ALLUVIAL, BLACK, WET TO SAT., VERY SOFT TO SOFT, ORGANIC, SANDY SILT
(C) ALLUVIAL, BLACK AND GRAY, SAT., VERY SOFT, SILTY CLAY, HIGHLY ORGANIC
(D) ALLUVIAL, GRAY-TAN, MOIST TO WET, VERY SOFT TO MEDIUM STIFF, SANDY AND SILTY CLAY

5.4m BACK



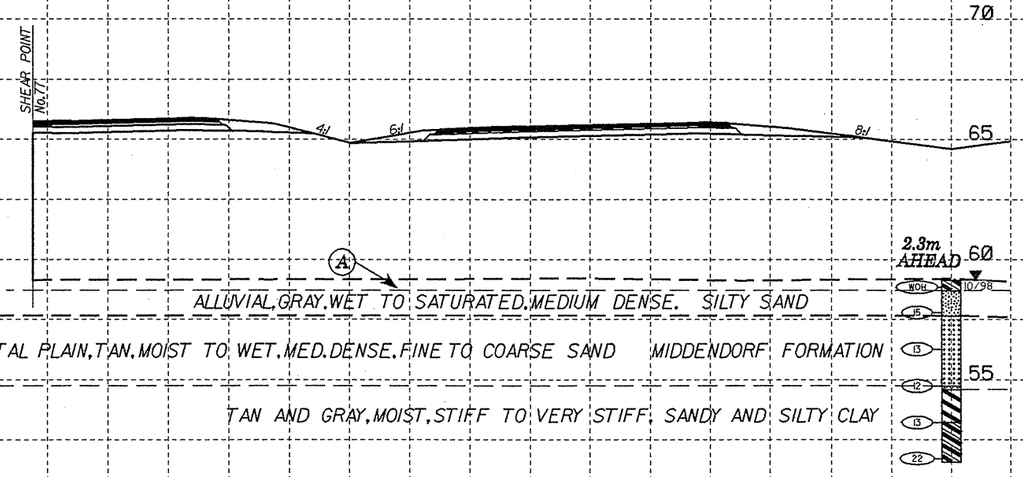
(E) ALLUVIAL, TAN, MOIST, MEDIUM DENSE, FINE SAND WITH ALTERNATING ORGANIC LAYERS
(F) COASTAL PLAIN, RED, GRAY AND TAN, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY SAND AND CLAYEY SAND MIDDENDORF FORMATION
(G) COASTAL PLAIN, GRAY-TAN, DRY TO WET, STIFF TO VERY STIFF, SAND AND SILTY CLAY
(H) COASTAL PLAIN, GRAY TO TAN, MOIST TO SATURATED, MEDIUM STIFF TO HARD, SANDY SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND CAPE FEAR FORMATION



ALLUVIAL, RED-TAN, GRAY AND BLACK, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY SILTY AND FINE SAND WITH GRAVEL

GRAY, TAN AND RED, DRY TO WET, VERY LOOSE TO DENSE, SILTY, FINE TO COARSE SAND WITH GRAVEL

22+60.00



ALLUVIAL, GRAY, WET TO SATURATED, MEDIUM DENSE, SILTY SAND

COASTAL PLAIN, TAN, MOIST TO WET, MED. DENSE, FINE TO COARSE SAND MIDDENDORF FORMATION

TAN AND GRAY, MOIST, STIFF TO VERY STIFF, SANDY AND SILTY CLAY

22+40.00

-L-

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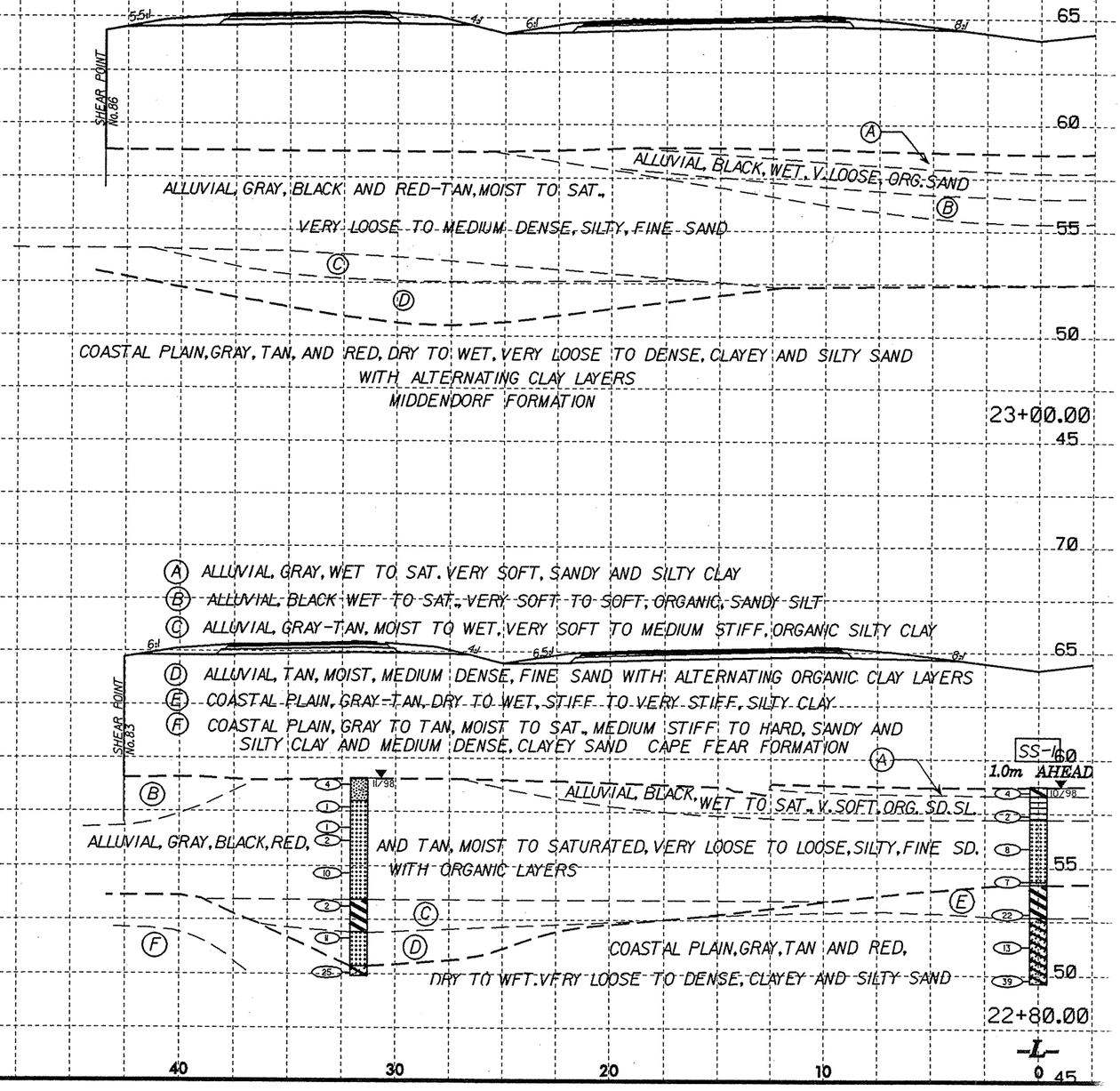
ground cond per Arcadis GEU 2/14/61



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11:16:08 2307 08:27
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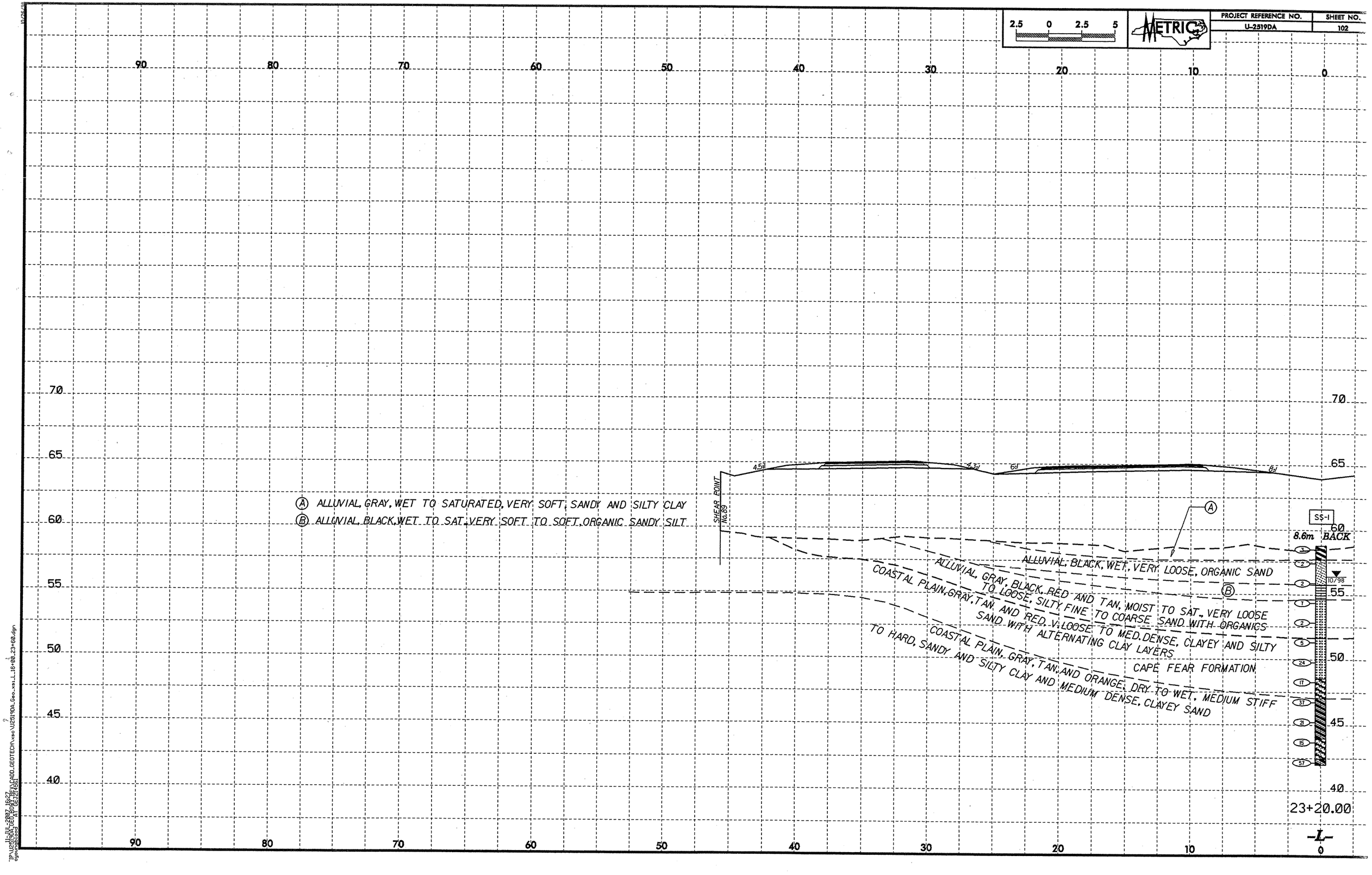
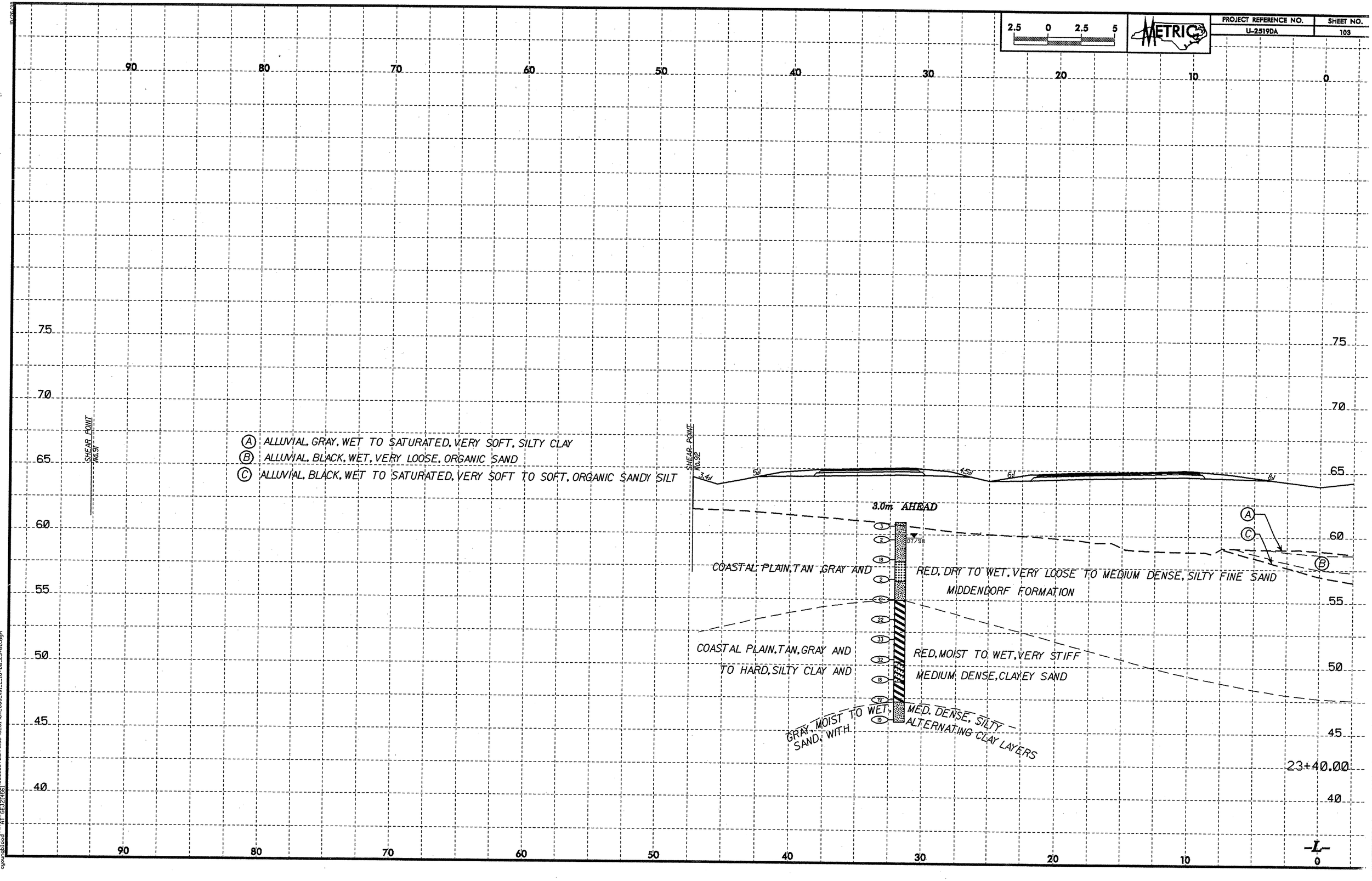
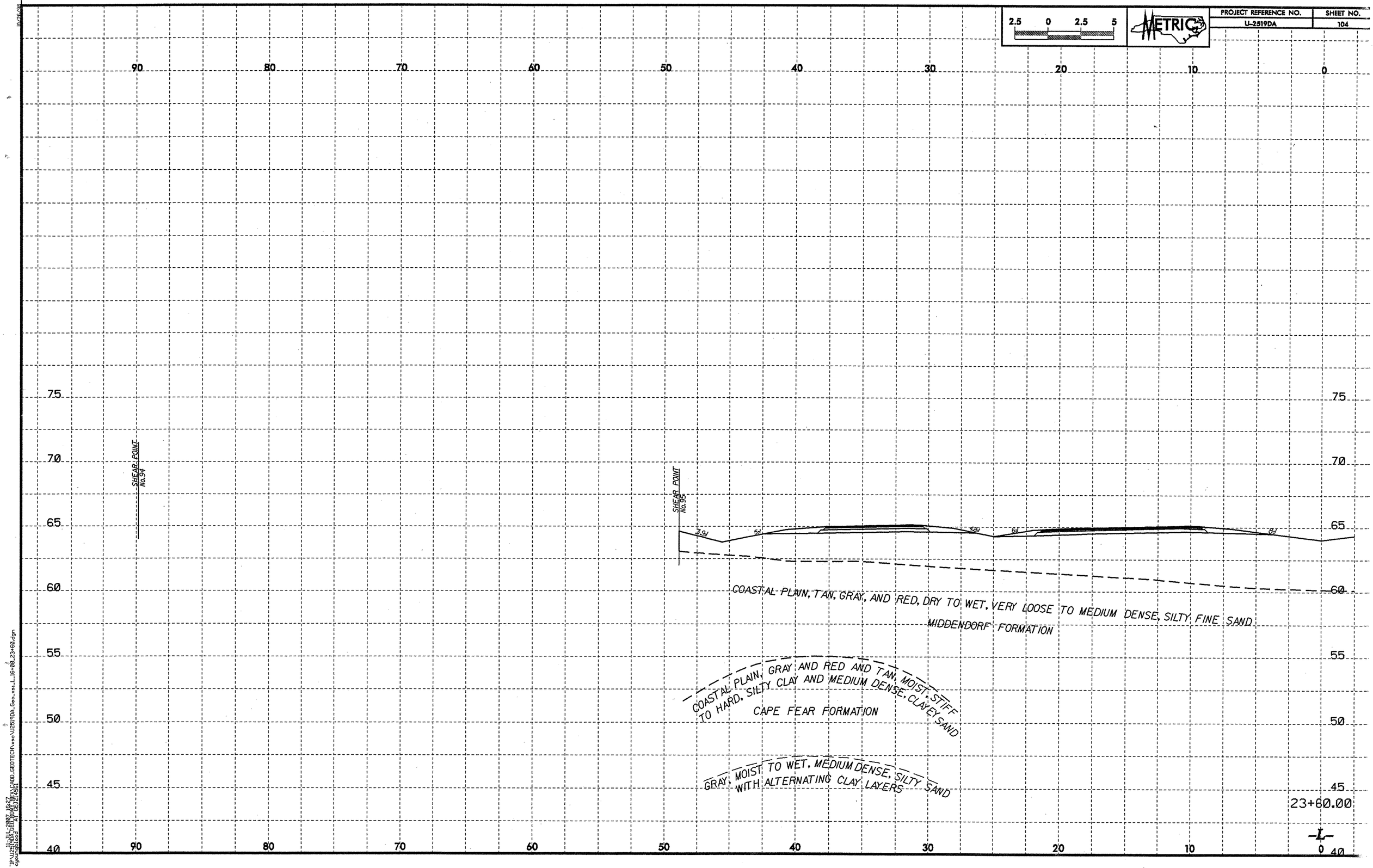
Geotechnical Engineering Unit



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
102
90 80 70 60 50 40 30 20 10 0
70 65 60 55 50 45 40
Ⓐ ALLUVIAL, GRAY, WET TO SATURATED, VERY SOFT, SANDY AND SILTY CLAY
Ⓑ ALLUVIAL, BLACK, WET TO SAT., VERY SOFT TO SOFT, ORGANIC SANDY SILT
SHEAR POINT No.89
4.5:1
4.3:1
6:1
8:1
SS-1
8.6m BACK
10/98
ALLUVIAL, BLACK, WET, VERY LOOSE, ORGANIC SAND
ALLUVIAL, GRAY, BLACK, RED AND TAN, MOIST TO SAT., VERY LOOSE TO LOOSE, SILTY FINE TO COARSE SAND WITH ORGANICS
COASTAL PLAIN, GRAY, TAN AND RED, V. LOOSE TO MED. DENSE, CLAYEY AND SILTY SAND WITH ALTERNATING CLAY LAYERS
CAPE FEAR FORMATION
COASTAL PLAIN, GRAY, TAN, AND ORANGE, DRY TO WET, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
23+20.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
103
90 80 70 60 50 40 30 20 10 0
75 70 65 60 55 50 45 40
SHEAR POINT No.91
SHEAR POINT No.92
Ⓐ ALLUVIAL, GRAY, WET TO SATURATED, VERY SOFT, SILTY CLAY
Ⓑ ALLUVIAL, BLACK, WET, VERY LOOSE, ORGANIC SAND
Ⓒ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC SANDY SILT
3.4:1
5:1
4.5:1
6:1
8:1
3.0m AHEAD
07/98
COASTAL PLAIN, TAN, GRAY AND RED, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY FINE SAND
MIDDENDORF FORMATION
COASTAL PLAIN, TAN, GRAY AND RED, MOIST TO WET, VERY STIFF
TO HARD, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
GRAY, MOIST TO WET, MED. DENSE, SILTY
SAND, WITH ALTERNATING CLAY LAYERS
23+40.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
104
90 80 70 60 50 40 30 20 10 0
75 70 65 60 55 50 45 40
SHEAR POINT No.94
SHEAR POINT No.95
COASTAL PLAIN, TAN, GRAY, AND RED, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY FINE SAND
MIDDENDORF FORMATION
COASTAL PLAIN, GRAY AND RED AND TAN, MOIST, STIFF TO HARD, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
CAPE FEAR FORMATION
GRAY, MOIST TO WET, MEDIUM DENSE, SILTY SAND WITH ALTERNATING CLAY LAYERS
23+60.00
-L-

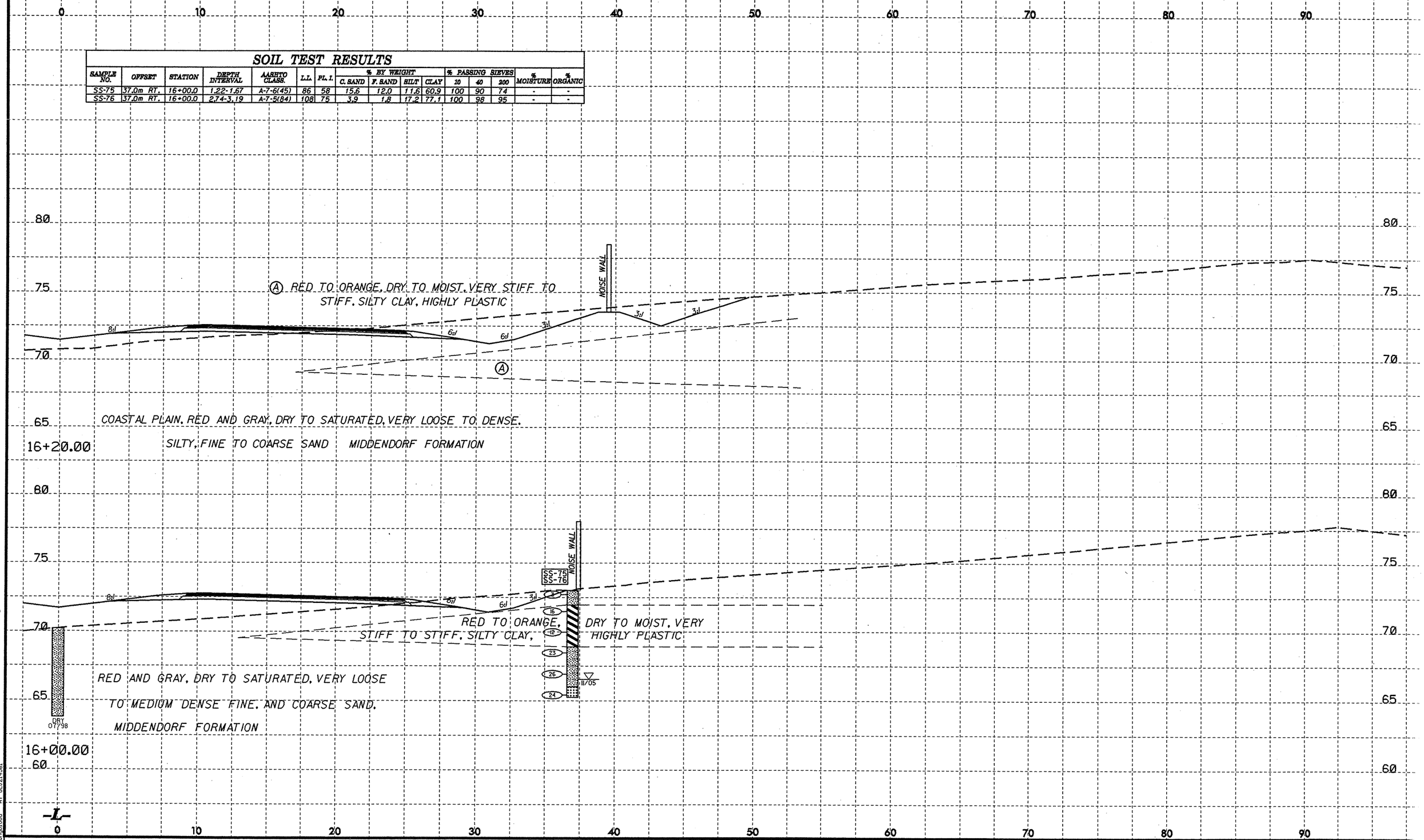
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	105

METRIC

2.5 0 2.5 5

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. 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-75	37.0m RT.	16+00.0	1.22-1.67	A-7-6(45)	86	58	15.6	12.0	11.6	60.9	100	90	74	-	-
SS-76	37.0m RT.	16+00.0	2.74-3.19	A-7-5(84)	108	75	3.9	1.8	17.2	77.1	100	98	95	-	-



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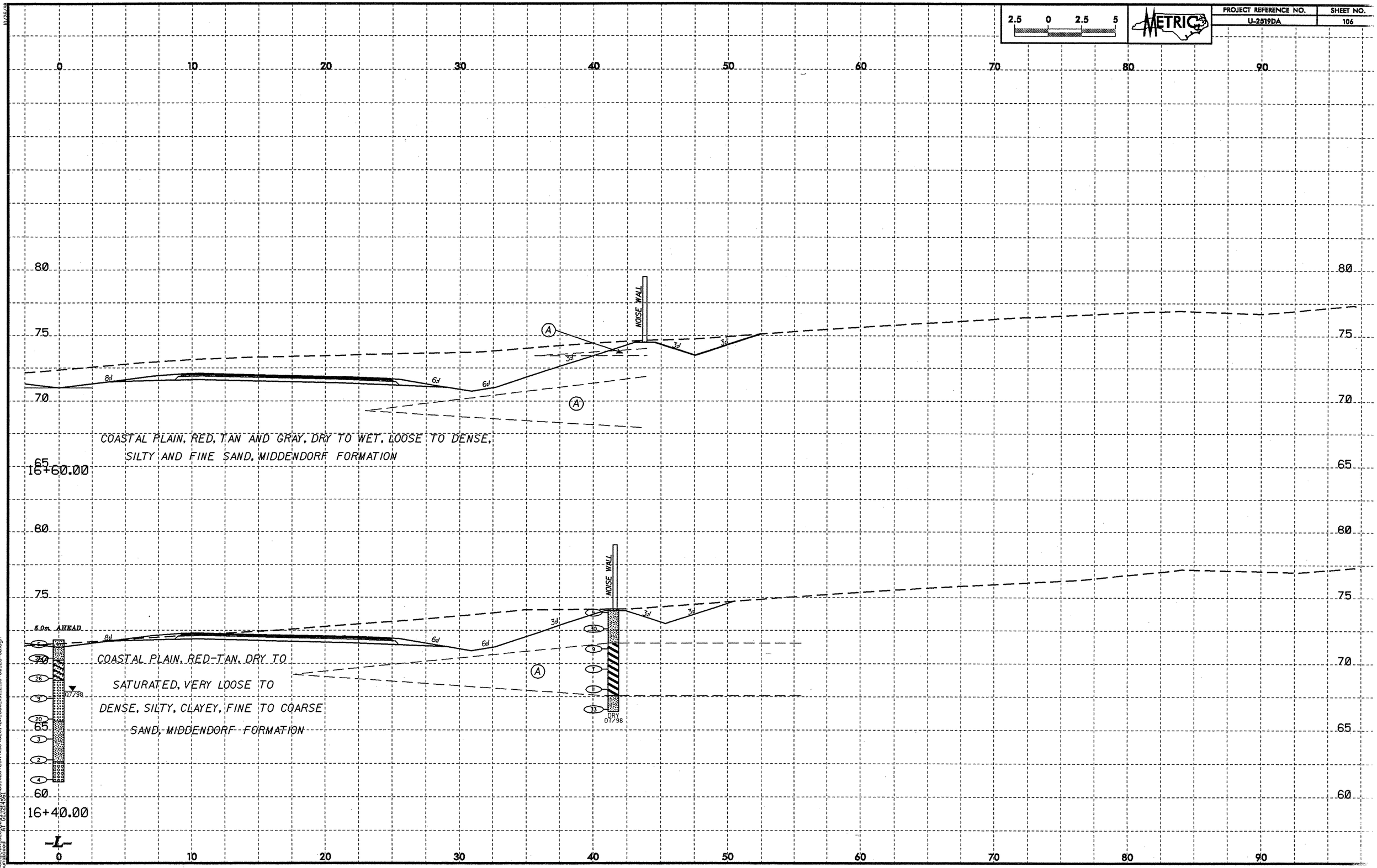
tip\u2519da_geo_rdwy_rev\cadd_geotech\xsc\u2519da_geo_xsi_1_16+00_23+60.dgn
cjoungblood AT 0EJ214561



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
106
0 10 20 30 40 50 60 70 80 90
80
75
70
65
60
NOISE WALL
A
8:1
6:1
3:1
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO WET, LOOSE TO DENSE,
SILTY AND FINE SAND, MIDDENDORF FORMATION
16+60.00
5.0m AHEAD
COASTAL PLAIN, RED-TAN, DRY TO
SATURATED, VERY LOOSE TO
DENSE, SILTY, CLAYEY, FINE TO COARSE
SAND, MIDDENDORF FORMATION
07/98
DRY
07/98
16+40.00
-L-

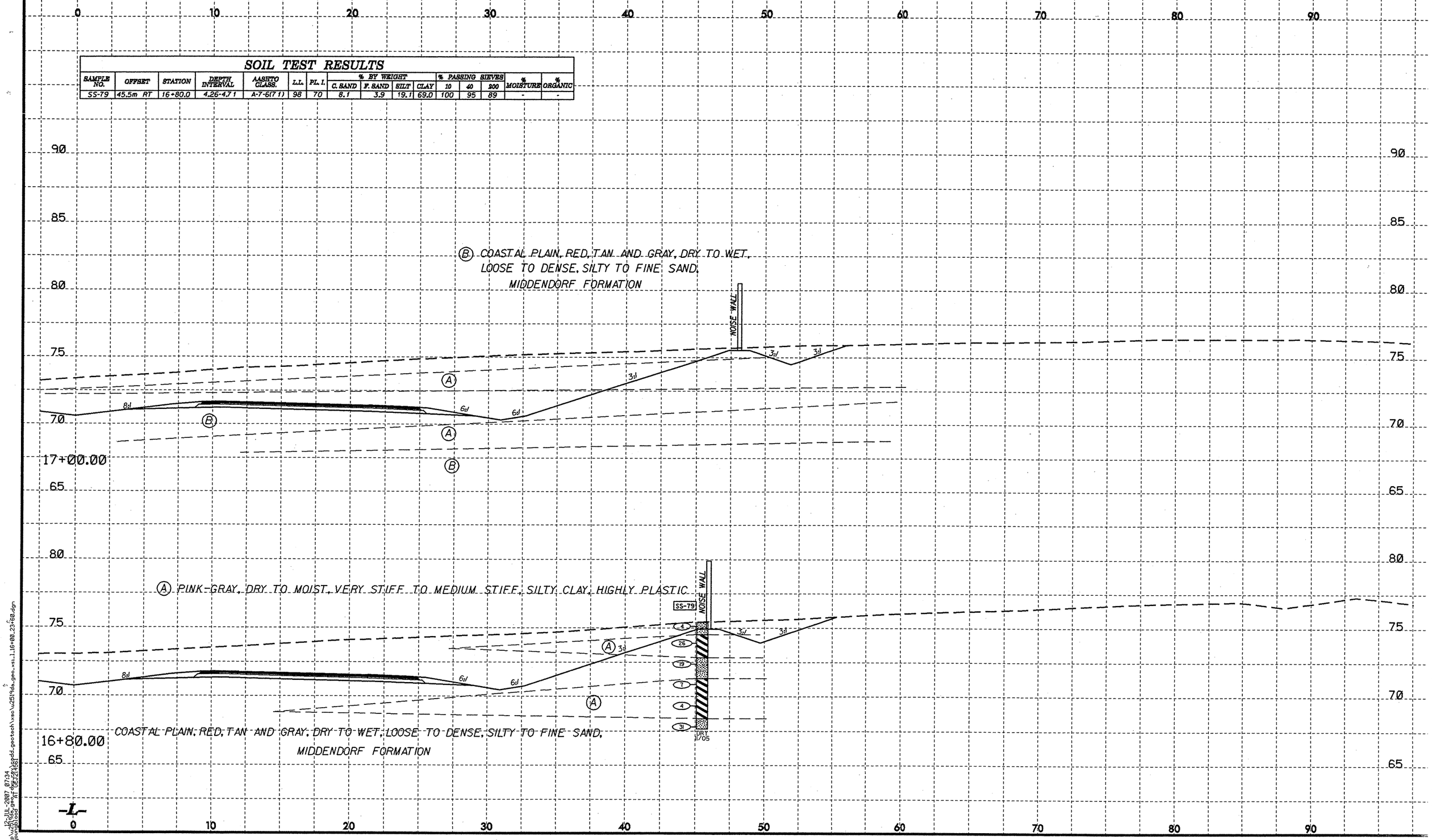
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	107

METRIC

2.5 0 2.5 5

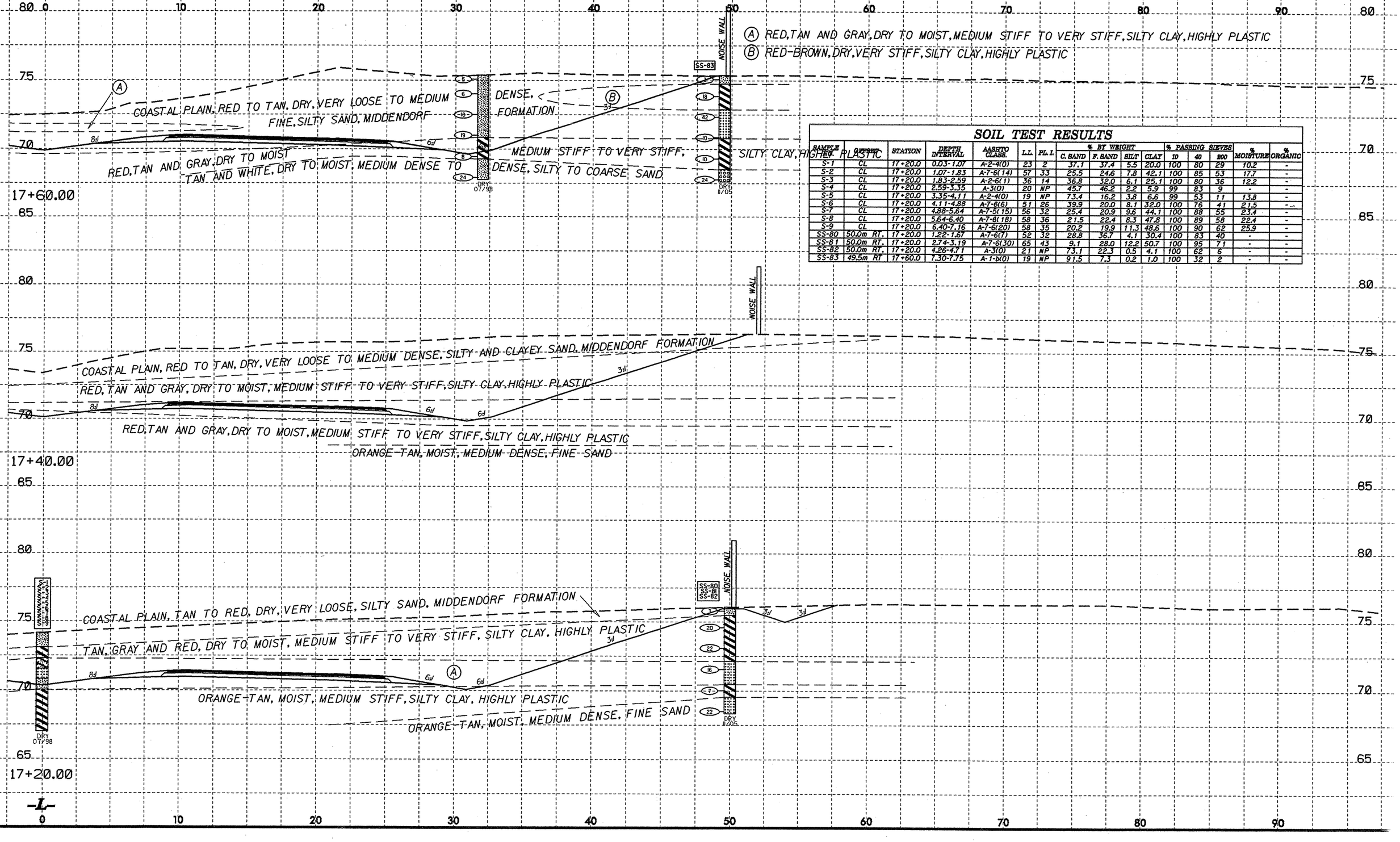
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. 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-79	45.5m RT	16+80.0	4.26-4.71	A-7-6(7.1)	98	70	8.1	3.9	19.1	69.0	100	95	89	-	-



2.5 0 2.5 5

METRIC



SOIL TEST RESULTS

SAMPLE	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
S-1	CL	17+20.0	0.03-1.07	A-2-4(0)	23	2	37.1	37.4	5.5	20.0	100	80	29	10.2	-
S-2	CL	17+20.0	1.07-1.83	A-7-6(14)	57	33	25.5	24.6	7.8	42.1	100	85	53	17.7	-
S-3	CL	17+20.0	1.83-2.59	A-2-6(1)	36	14	36.8	32.0	6.1	25.1	100	80	36	12.2	-
S-4	CL	17+20.0	2.59-3.35	A-3(0)	20	NP	45.7	46.2	2.2	5.9	99	83	9	-	-
S-5	CL	17+20.0	3.35-4.11	A-2-4(0)	19	NP	73.4	16.2	3.8	6.6	99	53	11	13.8	-
S-6	CL	17+20.0	4.11-4.88	A-7-6(6)	51	26	39.9	20.0	8.1	32.0	100	76	41	21.5	-
S-7	CL	17+20.0	4.88-5.64	A-7-5(15)	56	32	25.4	20.9	9.6	44.1	100	88	55	23.4	-
S-8	CL	17+20.0	5.64-6.40	A-7-6(18)	58	36	21.5	22.4	8.3	47.8	100	89	58	22.4	-
S-9	CL	17+20.0	6.40-7.16	A-7-6(20)	58	35	20.2	19.9	11.3	48.6	100	90	62	25.9	-
SS-80	50.0m RT.	17+20.0	1.22-1.67	A-7-6(7)	52	32	28.8	36.7	4.1	30.4	100	83	40	-	-
SS-81	50.0m RT.	17+20.0	2.74-3.19	A-7-6(30)	65	43	9.1	28.0	12.2	50.7	100	95	71	-	-
SS-82	50.0m RT.	17+20.0	4.26-4.71	A-3(0)	21	NP	73.1	22.3	0.5	4.1	100	62	6	-	-
SS-83	49.5m RT	17+60.0	1.30-1.75	A-1-b(0)	19	NP	91.5	7.3	0.2	1.0	100	32	2	-	-

TRAVIS-PIC-2007-16.dgn
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TRAVIS-PIC-2007-16.dgn
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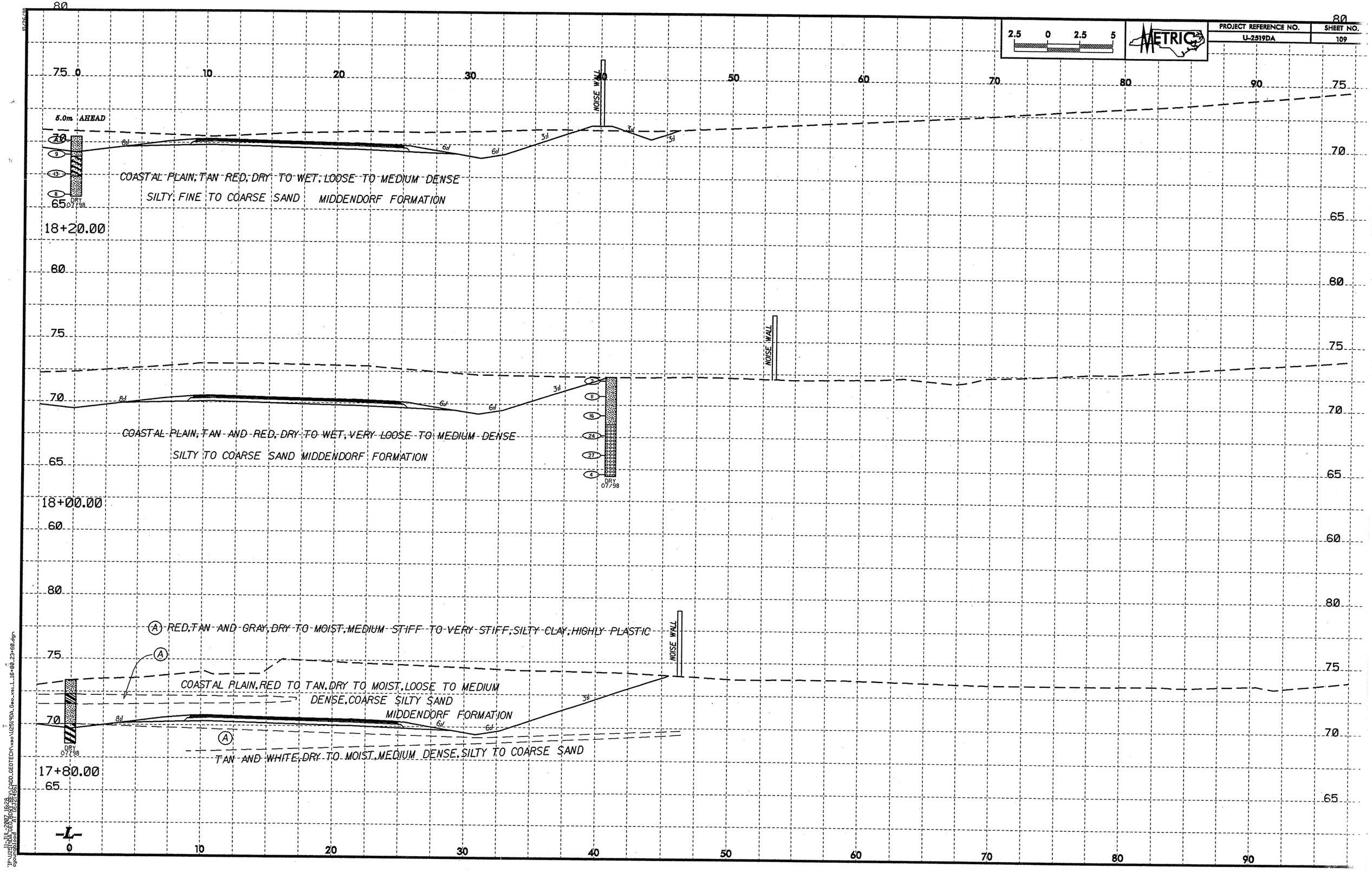

METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
109
2.5 0 2.5 5
5.0m AHEAD
NOISE WALL
COASTAL PLAIN, TAN RED, DRY TO WET, LOOSE TO MEDIUM DENSE
SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
DRY 07/98
18+20.00
COASTAL PLAIN, TAN AND RED, DRY TO WET, VERY LOOSE TO MEDIUM DENSE
SILTY TO COARSE SAND MIDDENDORF FORMATION
18+00.00
A RED, TAN AND GRAY, DRY TO MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY, HIGHLY PLASTIC
COASTAL PLAIN, RED TO TAN, DRY TO MOIST, LOOSE TO MEDIUM
DENSE, COARSE SILTY SAND
MIDDENDORF FORMATION
TAN AND WHITE, DRY TO MOIST, MEDIUM DENSE, SILTY TO COARSE SAND
17+80.00
-L-

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	110

METRIC

Scale: 2.5 0 2.5 5

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-85	40.0m RT	18+40.0	5.78-6.23	A-2-4(0)	29	7	46.5	30.0	7.4	16.1	100	60	35	-	-
SS-86	30.0m RT	18+80.0	1.22-1.67	A-7-6(42)	77	54	13.5	16.7	13.4	56.4	100	94	75	-	-

11-JUL-2007 16:32
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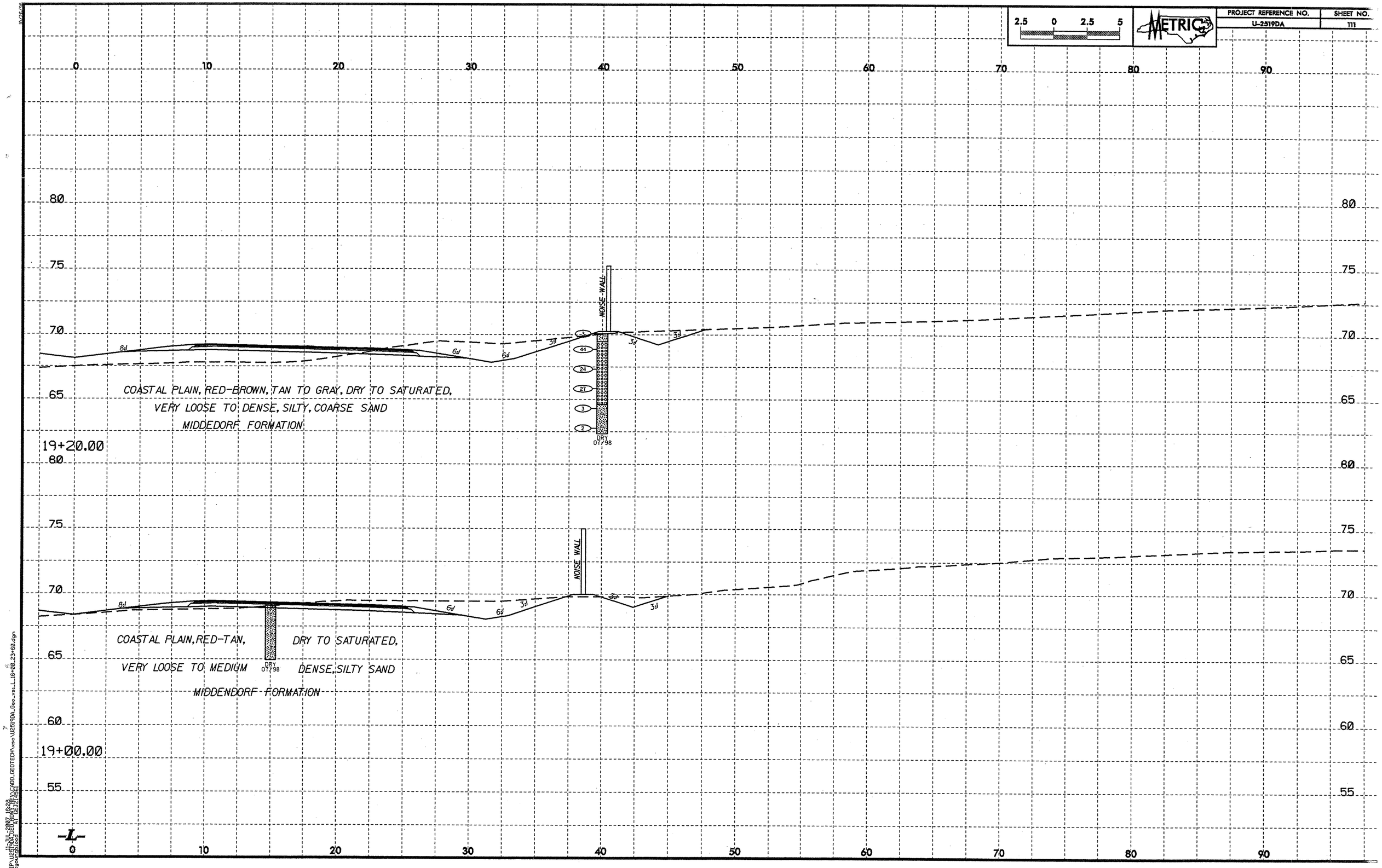
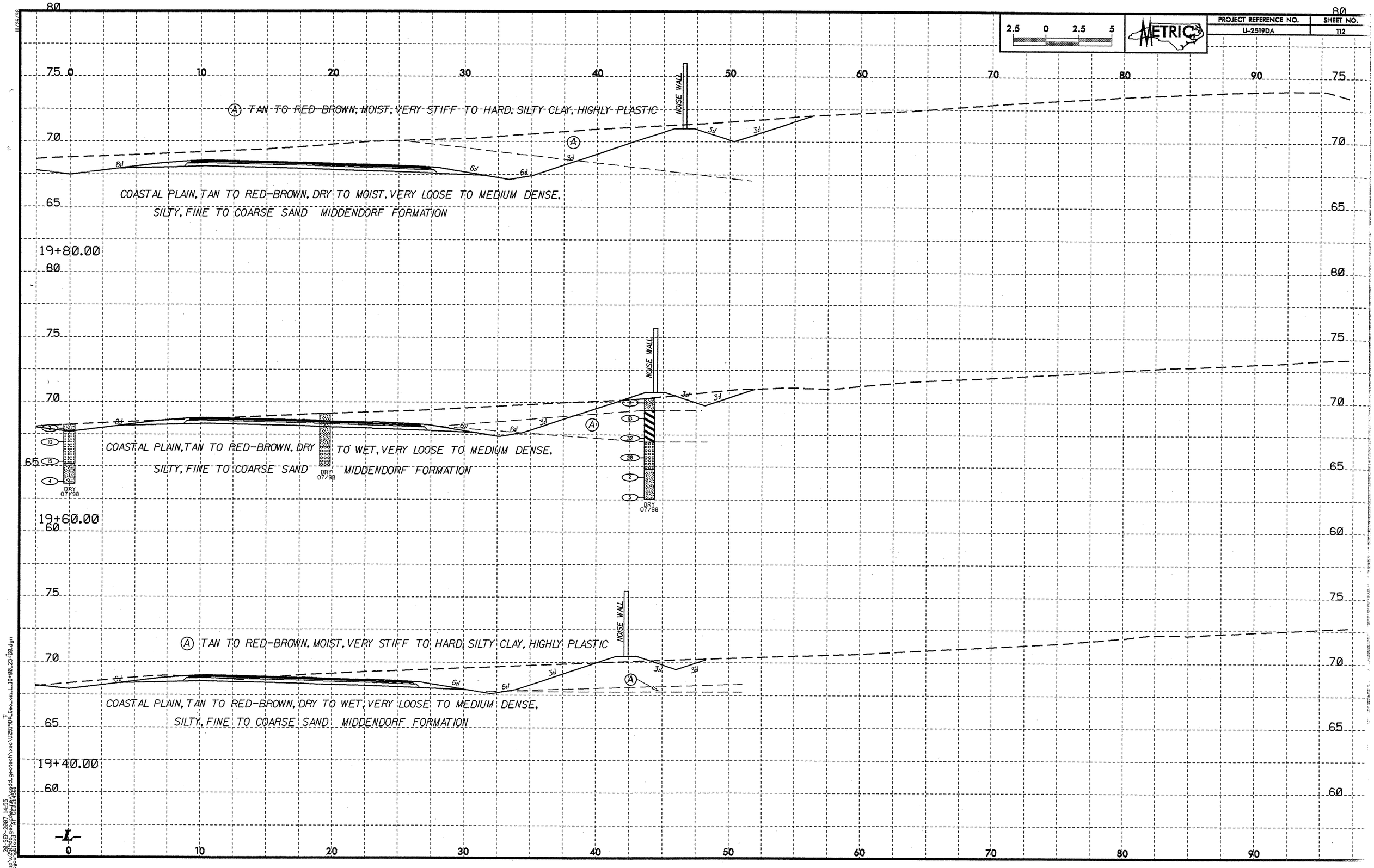
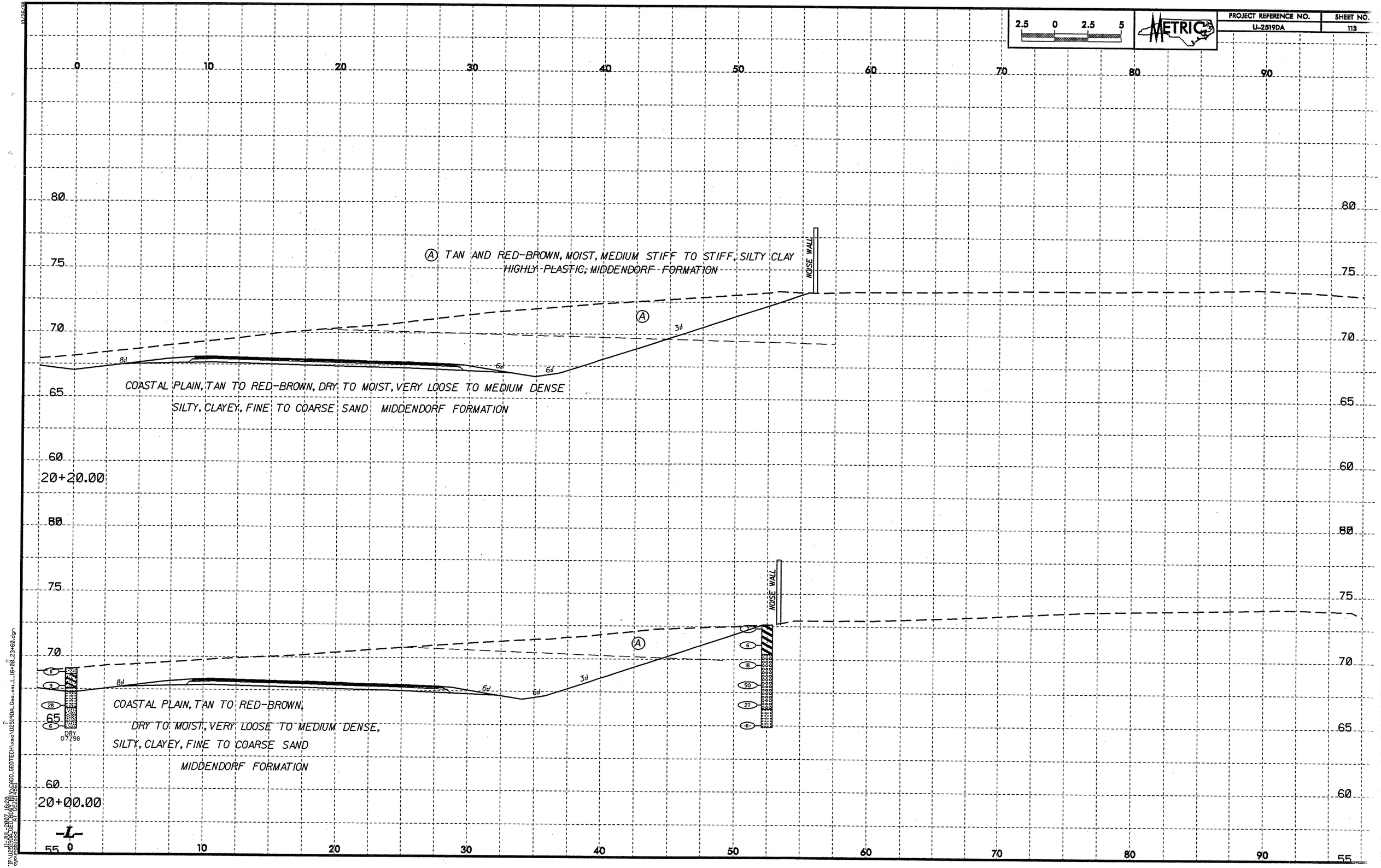
cyoungblood AT GEJ214561



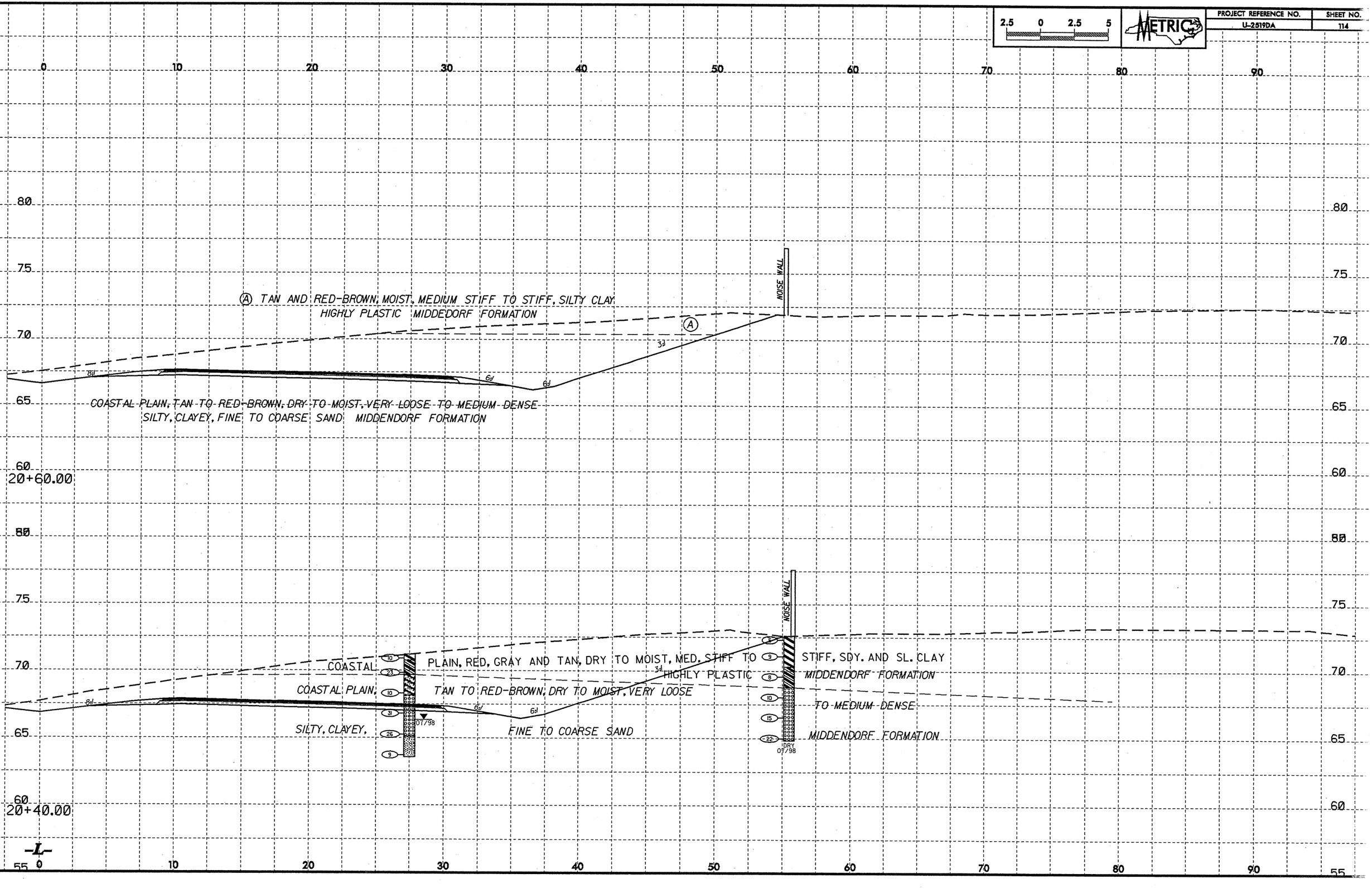
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
111
0 10 20 30 40 50 60 70 80 90
80 75 70 65 60 55
NOISE WALL
8:1
6:1
3:1
3
44
24
27
3
2
DRY 07/98
COASTAL PLAIN, RED-BROWN, TAN TO GRAY, DRY TO SATURATED,
VERY LOOSE TO DENSE, SILTY, COARSE SAND
MIDDEDORF FORMATION
19+20.00
COASTAL PLAIN, RED-TAN, DRY TO SATURATED,
VERY LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
19+00.00
-L-



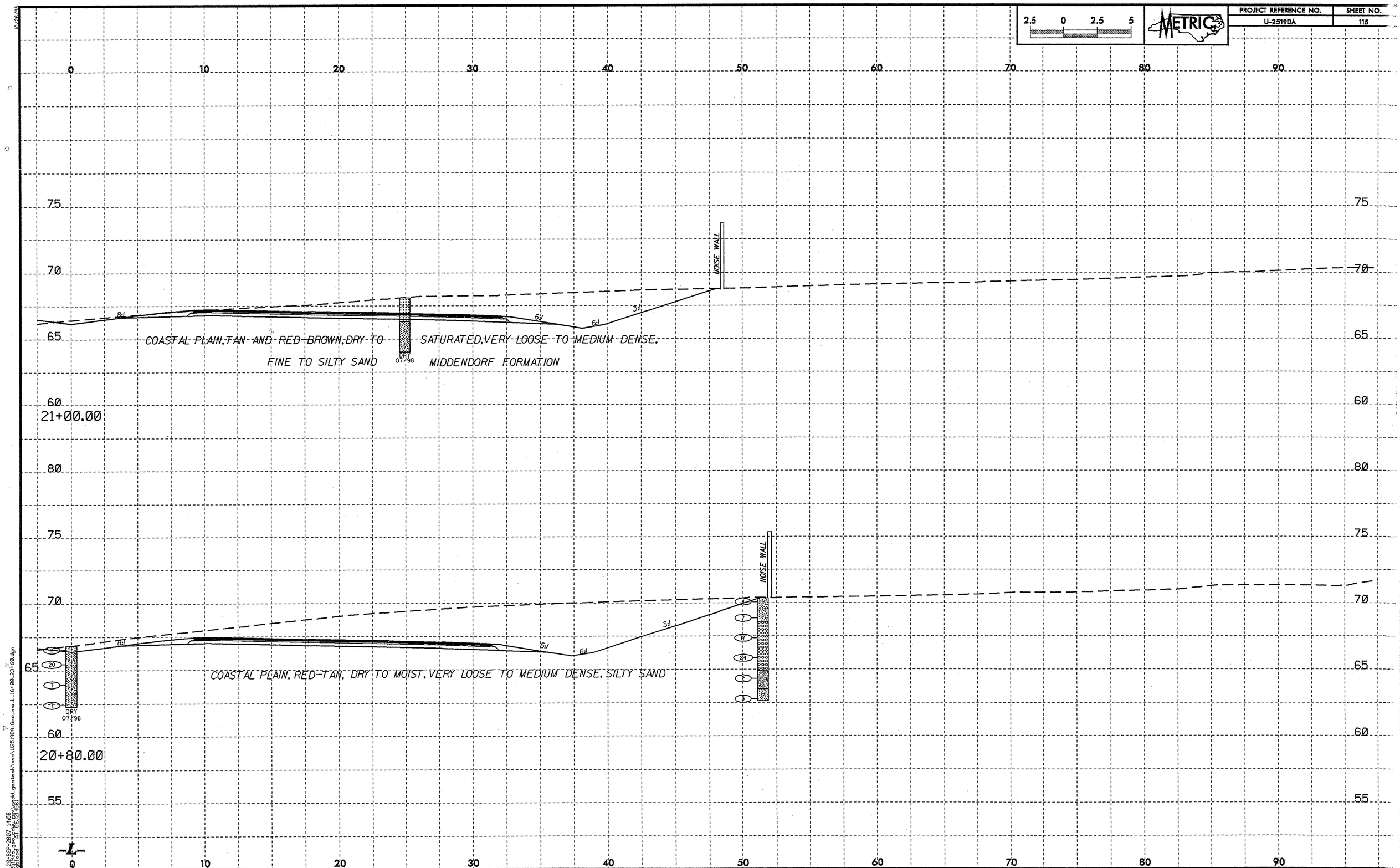
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
112
METRIC
2.5 0 2.5 5
TAN TO RED-BROWN, MOIST, VERY STIFF TO HARD, SILTY CLAY, HIGHLY PLASTIC
NOISE WALL
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
19+80.00
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
DRY 07/98
19+60.00
TAN TO RED-BROWN, MOIST, VERY STIFF TO HARD, SILTY CLAY, HIGHLY PLASTIC
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY, FINE TO COARSE SAND MIDDENDORF FORMATION
19+40.00
-L-



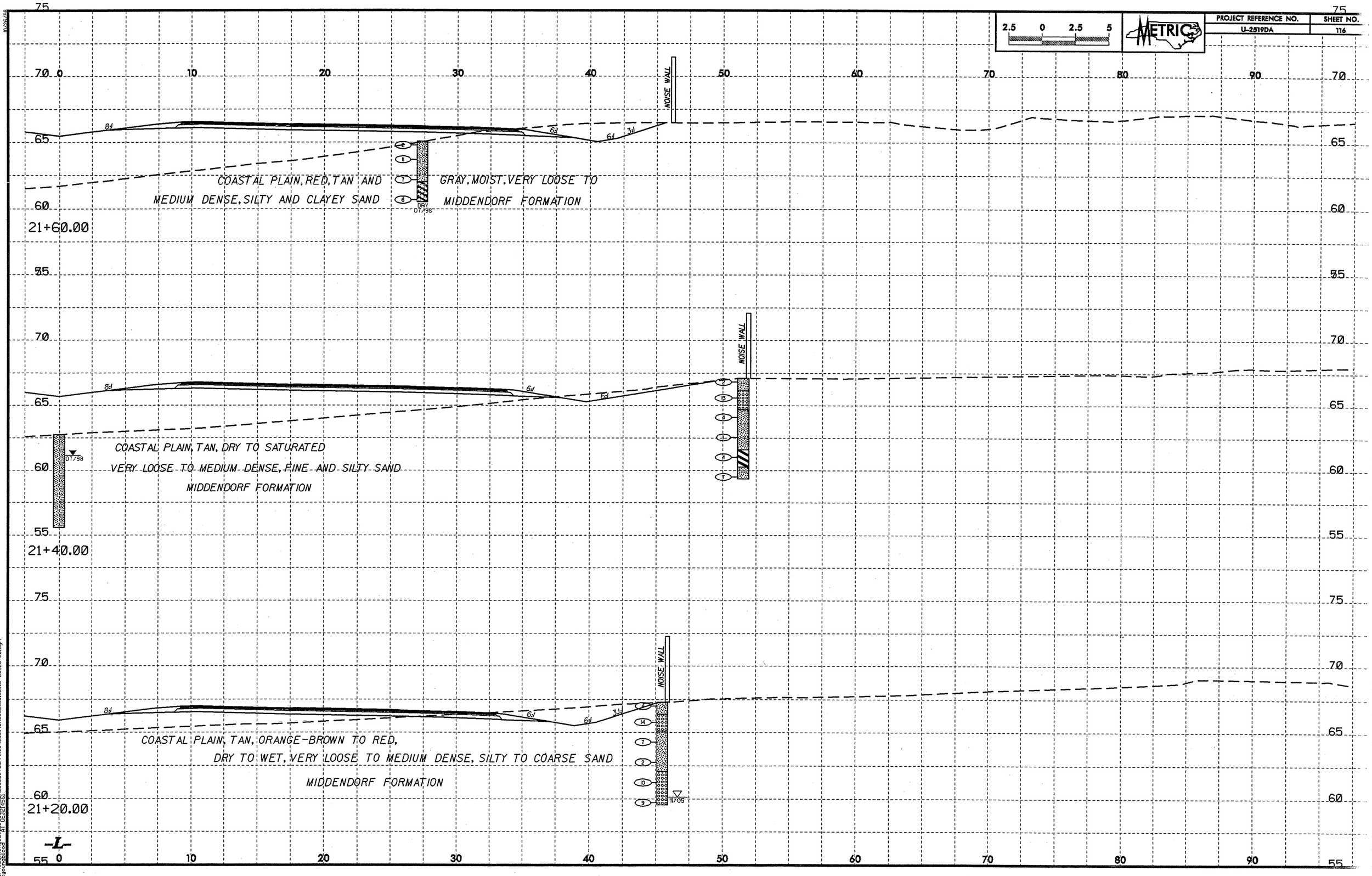
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
113
0 10 20 30 40 50 60 70 80 90
80
75
70
65
60
55
20+20.00
20+00.00
-L-
Ⓐ TAN AND RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY
HIGHLY PLASTIC, MIDDENDORF FORMATION
NOISE WALL
Ⓐ
8:1
6:1
6:1
3:1
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
SILTY, CLAYEY, FINE TO COARSE SAND MIDDENDORF FORMATION
NOISE WALL
Ⓐ
8:1
6:1
6:1
3:1
11
9
28
6
DRY
07/98
7
6
18
50
27
11
COASTAL PLAIN, TAN TO RED-BROWN,
DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE,
SILTY, CLAYEY, FINE TO COARSE SAND
MIDDENDORF FORMATION



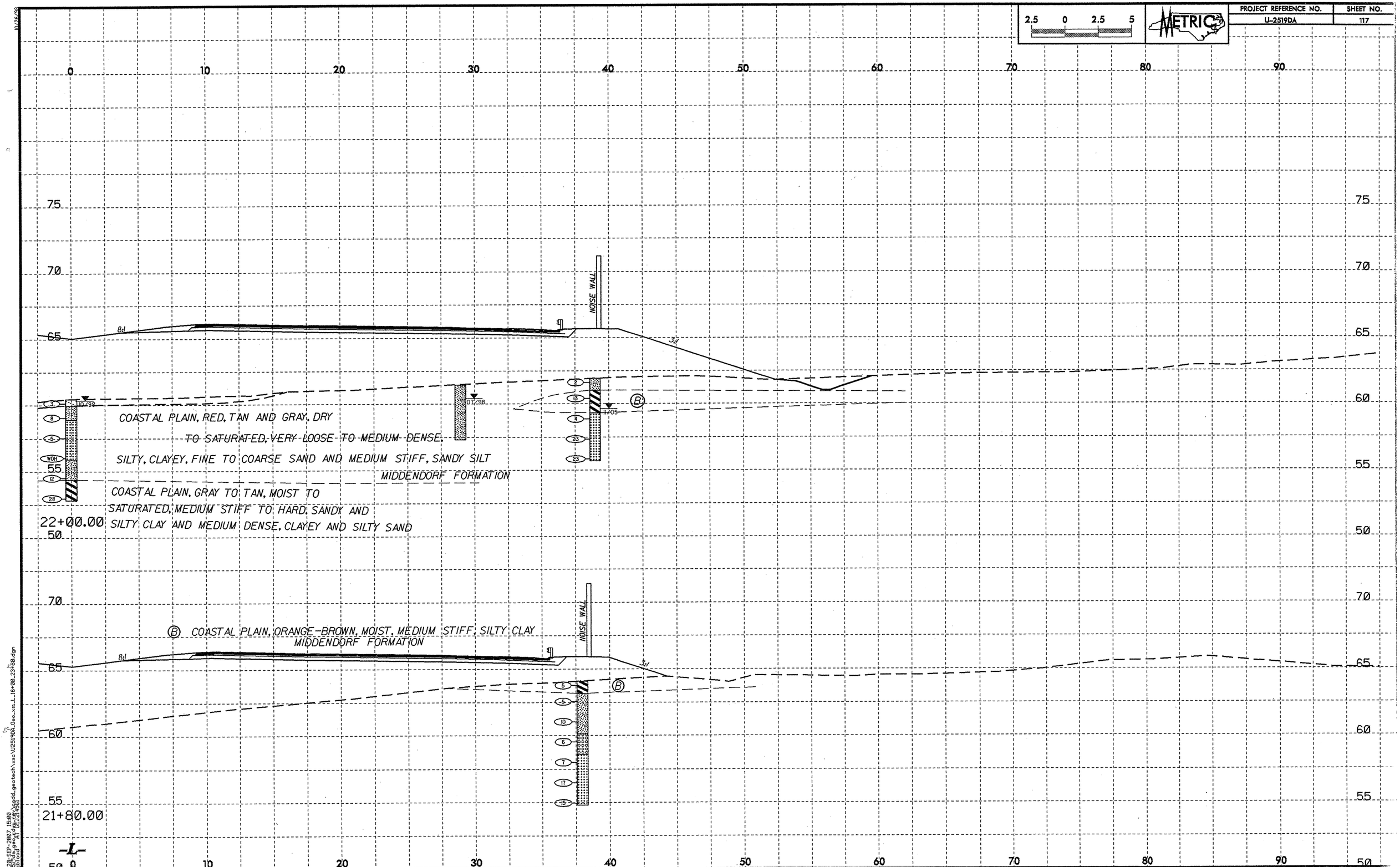
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
114
0 10 20 30 40 50 60 70 80 90
80 75 70 65 60
20+60.00
20+40.00
55
Ⓐ TAN AND RED-BROWN, MOIST, MEDIUM STIFF TO STIFF, SILTY CLAY
HIGHLY PLASTIC MIDDEDORF FORMATION
NOISE WALL
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
SILTY, CLAYEY, FINE TO COARSE SAND MIDDENDORF FORMATION
COASTAL PLAIN, RED, GRAY AND TAN, DRY TO MOIST, MED. STIFF TO STIFF, SDY. AND SL. CLAY
HIGHLY PLASTIC MIDDENDORF FORMATION
COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE
SILTY, CLAYEY, FINE TO COARSE SAND MIDDENDORF FORMATION
07/98
DRY 07/98
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
115
0 10 20 30 40 50 60 70 80 90
75
70
65
60
21+00.00
80
75
70
65
60
20+80.00
55
NOISE WALL
8:1
6:1
6:1
3:1
COASTAL PLAIN, TAN AND RED-BROWN, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE,
FINE TO SILTY SAND
MIDDENDORF FORMATION
DRY
07/98
NOISE WALL
8:1
6:1
6:1
3:1
COASTAL PLAIN, RED-TAN, DRY TO MOIST, VERY LOOSE TO MEDIUM DENSE, SILTY SAND
DRY
07/98
-L-



PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
116
METRIC
2.5 0 2.5 5
NOISE WALL
COASTAL PLAIN, RED, TAN AND GRAY, MOIST, VERY LOOSE TO
MEDIUM DENSE, SILTY AND CLAYEY SAND MIDDENDORF FORMATION
DRY 07/98
21+60.00
COASTAL PLAIN, TAN, DRY TO SATURATED
VERY LOOSE TO MEDIUM DENSE, FINE AND SILTY SAND
MIDDENDORF FORMATION
07/98
21+40.00
COASTAL PLAIN, TAN, ORANGE-BROWN TO RED,
DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY TO COARSE SAND
MIDDENDORF FORMATION
11/05
21+20.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
117
0 10 20 30 40 50 60 70 80 90
75
70
65
60
55
50
NOISE WALL
8:1
3:1
COASTAL PLAIN, RED, TAN AND GRAY, DRY
TO SATURATED, VERY LOOSE TO MEDIUM DENSE,
SILTY, CLAYEY, FINE TO COARSE SAND AND MEDIUM STIFF, SANDY SILT
MIDDENDORF FORMATION
COASTAL PLAIN, GRAY TO TAN, MOIST TO
SATURATED, MEDIUM STIFF TO HARD, SANDY AND
SILTY CLAY AND MEDIUM DENSE, CLAYEY AND SILTY SAND
22+00.00
B COASTAL PLAIN, ORANGE-BROWN, MOIST, MEDIUM STIFF, SILTY CLAY
MIDDENDORF FORMATION
21+80.00
-L-

2.5 0 2.5 5 METRIC

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-156	41.0m RT	22+30.0	1.16-1.61	A-4(0)	19	NP	9.5	62.2	12.2	6.0	100	99	41	-	-
SS-157	41.0m RT	22+30.0	4.20-4.65	A-1-b(0)	20	NP	83.7	8.1	2.2	40.4	99	27	9	-	-
SS-158	41.0m RT	22+30.0	5.72-6.17	A-6(5)	33	19	16.3	38.5	4.7	18.1	100	96	48	-	-
SS-159	41.0m RT	22+30.0	8.76-9.21	A-2-6(0)	33	19	72.2	7.6	2.0	3.0	95	44	20	-	-

0 10 20 30 40 50 60 70 80 90

75 70 65 60 55 50

SHEAR POINT No.78 — NOISE WALL — 8:1 — 13.4:1 — 13.4:1 — 3:1

SS-156
SS-157
SS-158
SS-159

2.3m AHEAD — 10.0m BACK — 3.0m AHEAD

(A) ALLUVIAL, BLACK, SATURATED, VERY SOFT, SILTY CLAY, ORGANIC

(B) ALLUVIAL, GRAY, WET TO SATURATED, MEDIUM DENSE, SILTY SAND

WOH 5 13 12 13 22 — 10/98 — 12/05 — WOR 6 4 11 19 28 — 10/98

(B) ALLUVIAL, GRAY, MOIST, MEDIUM STIFF TO STIFF, SANDY SILT

COASTAL PLAIN, TAN, MOIST TO WET, MED. DENSE, FINE TO COARSE SAND — MIDDENDORF FORMATION

TAN AND GRAY, MOIST, STIFF TO VERY STIFF, SANDY AND SILTY CLAY

TAN, WET, MED. DENSE, CLAYEY SAND

22+40.00

SHEAR POINT No.76 — NOISE WALL — 8:1 — 12.5:1 — 14:1 — 3:1

(A) ALLUVIAL, BLACK, SATURATED, VERY SOFT, SILTY CLAY, ORGANIC

(B) ALLUVIAL, BLACK TO GRAY, MOIST TO WET, LOOSE, SILTY SAND-ORGANIC

ALLUVIAL, GRAY, MOIST, STIFF TO MEDIUM STIFF, SANDY SILT

COASTAL PLAIN,
TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, FINE TO COARSE SAND — MIDDENDORF FORMATION

TAN AND GRAY, MOIST, MEDIUM STIFF TO VERY STIFF, SANDY AND SILTY CLAY

TAN, WET, MEDIUM DENSE, CLAYEY SAND

22+20.00

-L-

0 10 20 30 40 50 60 70 80 90

20-SEP-2007 15:01
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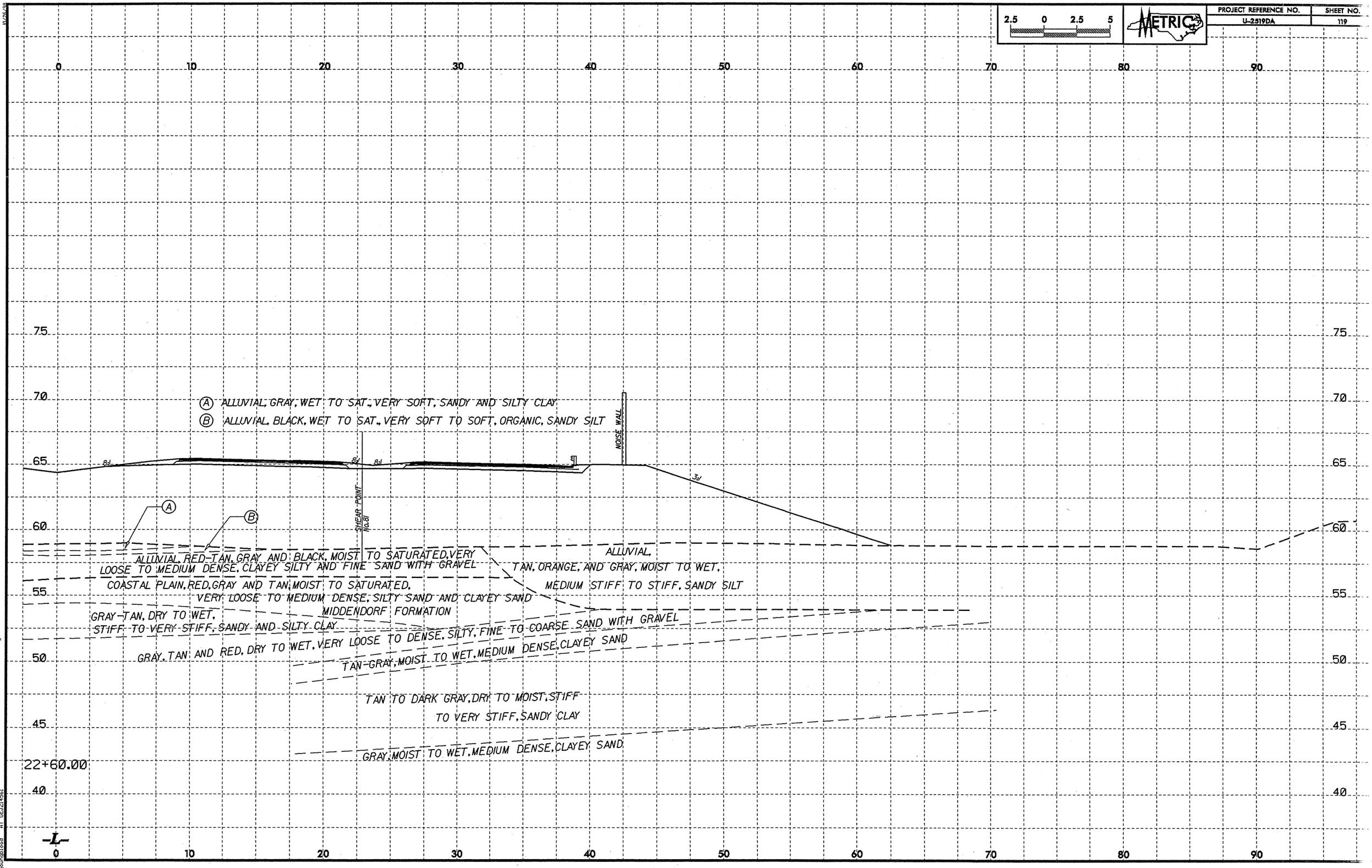
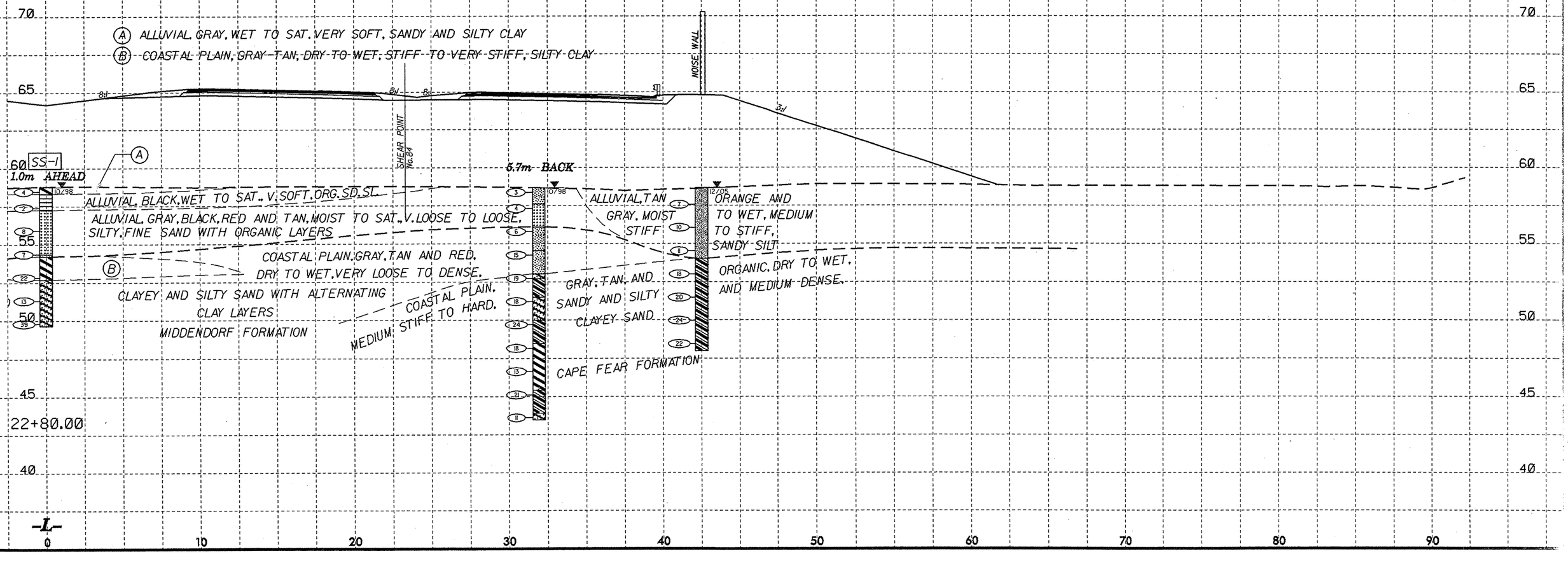


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
119
0 10 20 30 40 50 60 70 80 90
75
70
65
60
55
50
45
40
Ⓐ ALLUVIAL, GRAY, WET TO SAT., VERY SOFT, SANDY AND SILTY CLAY
Ⓑ ALLUVIAL, BLACK, WET TO SAT., VERY SOFT TO SOFT, ORGANIC, SANDY SILT
NOISE WALL
SHEAR POINT No.81
8:1
8:1
8:1
3:1
Ⓐ
Ⓑ
ALLUVIAL, RED-TAN, GRAY AND BLACK, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY SILTY AND FINE SAND WITH GRAVEL
ALLUVIAL, TAN, ORANGE, AND GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY SILT
COASTAL PLAIN, RED, GRAY AND TAN, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY SAND AND CLAYEY SAND
MIDDENDORF FORMATION
GRAY-TAN, DRY TO WET, STIFF TO VERY STIFF, SANDY AND SILTY CLAY
GRAY, TAN AND RED, DRY TO WET, VERY LOOSE TO DENSE, SILTY, FINE TO COARSE SAND WITH GRAVEL
TAN-GRAY, MOIST TO WET, MEDIUM DENSE, CLAYEY SAND
TAN TO DARK GRAY, DRY TO MOIST, STIFF TO VERY STIFF, SANDY CLAY
GRAY, MOIST TO WET, MEDIUM DENSE, CLAYEY SAND
22+60.00
-L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	CL	22+81.0	0.00-0.45	A-7-5(18)	56	22	16.1	9.1	16.7	58.1	100	95	75	-	-



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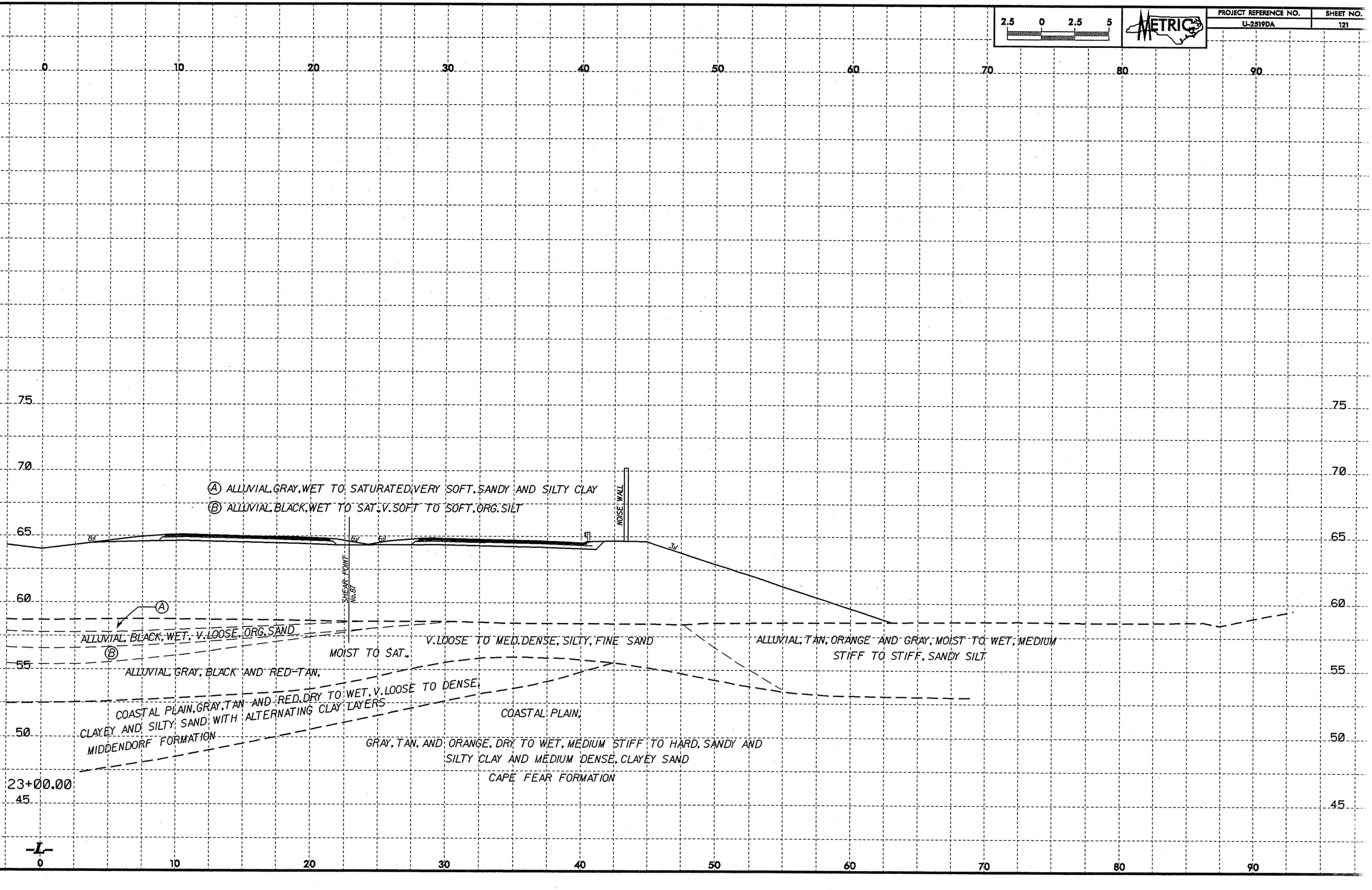
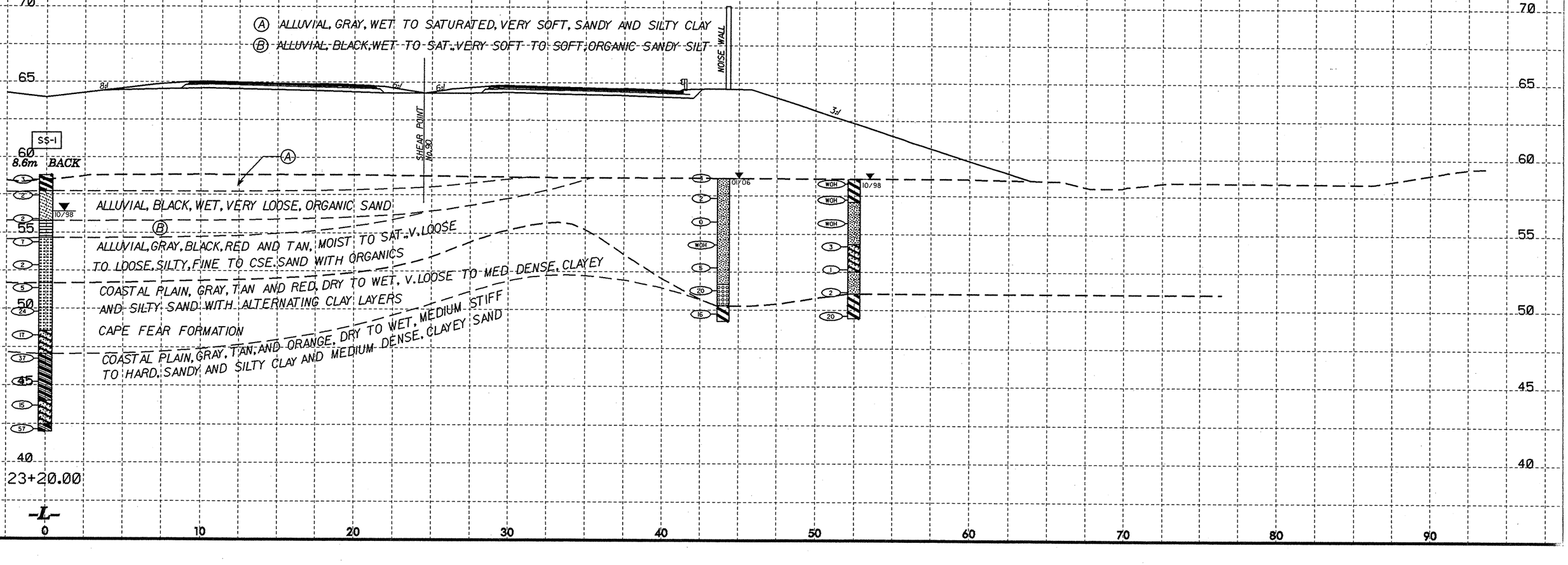


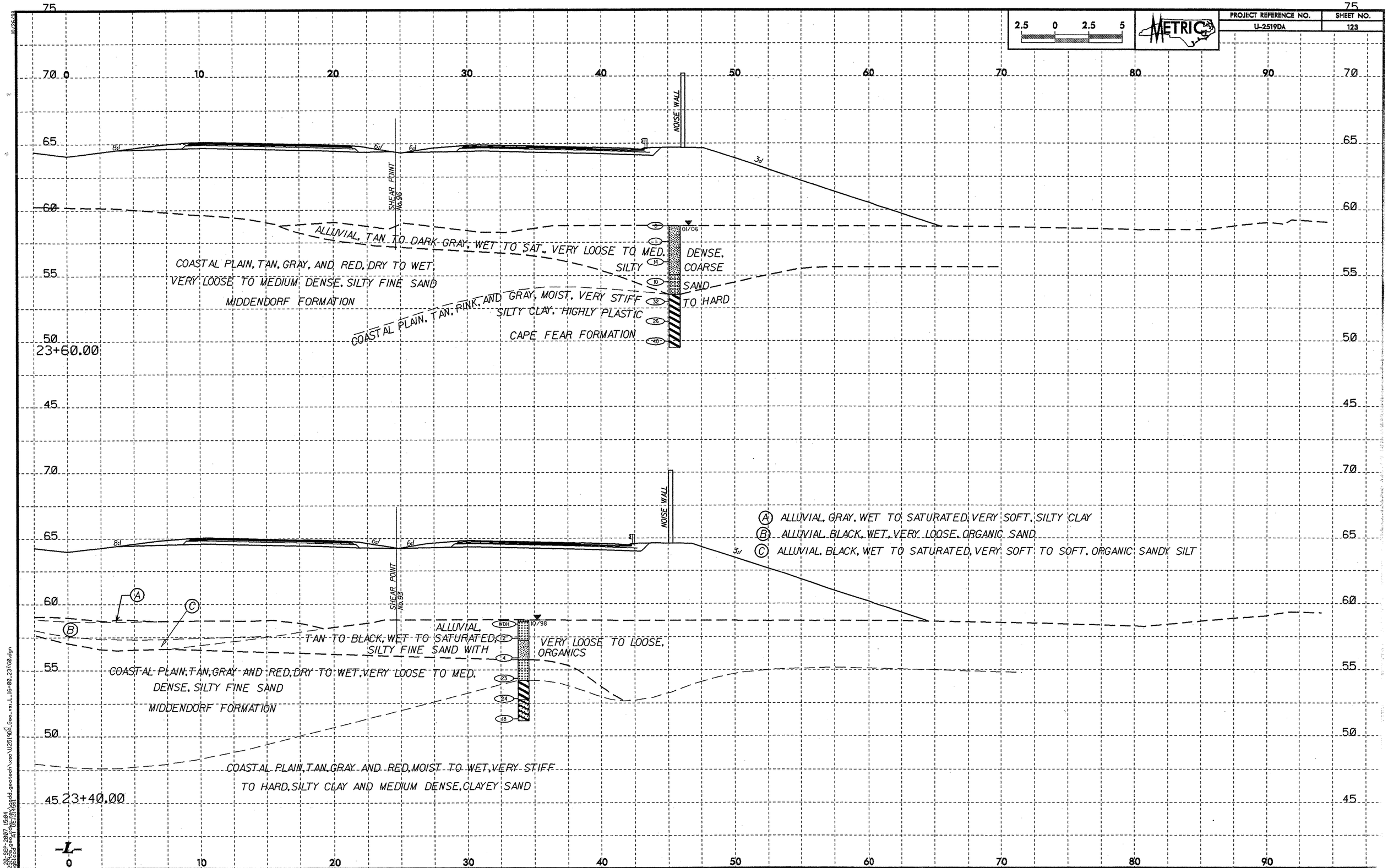
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
121
0 10 20 30 40 50 60 70 80 90
75 70 65 60 55 50 45
Ⓐ ALLUVIAL, GRAY, WET TO SATURATED, VERY SOFT, SANDY AND SILTY CLAY
Ⓑ ALLUVIAL, BLACK, WET TO SAT., V.SOFT TO SOFT, ORG. SILT
NOISE WALL
SHEAR POINT No.87
8:1
6:1
6:1
3:1
Ⓐ
ALLUVIAL, BLACK, WET, V.LOOSE, ORG. SAND
Ⓑ
MOIST TO SAT.,
V.LOOSE TO MED. DENSE, SILTY, FINE SAND
ALLUVIAL, TAN, ORANGE AND GRAY, MOIST TO WET, MEDIUM STIFF TO STIFF, SANDY SILT
ALLUVIAL, GRAY, BLACK AND RED-TAN,
COASTAL PLAIN, GRAY, TAN AND RED, DRY TO WET, V.LOOSE TO DENSE, CLAYEY AND SILTY SAND WITH ALTERNATING CLAY LAYERS
MIDDENDORF FORMATION
COASTAL PLAIN,
GRAY, TAN, AND ORANGE, DRY TO WET, MEDIUM STIFF TO HARD, SANDY AND SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
CAPE FEAR FORMATION
23+00.00
-L-

SOIL TEST RESULTS

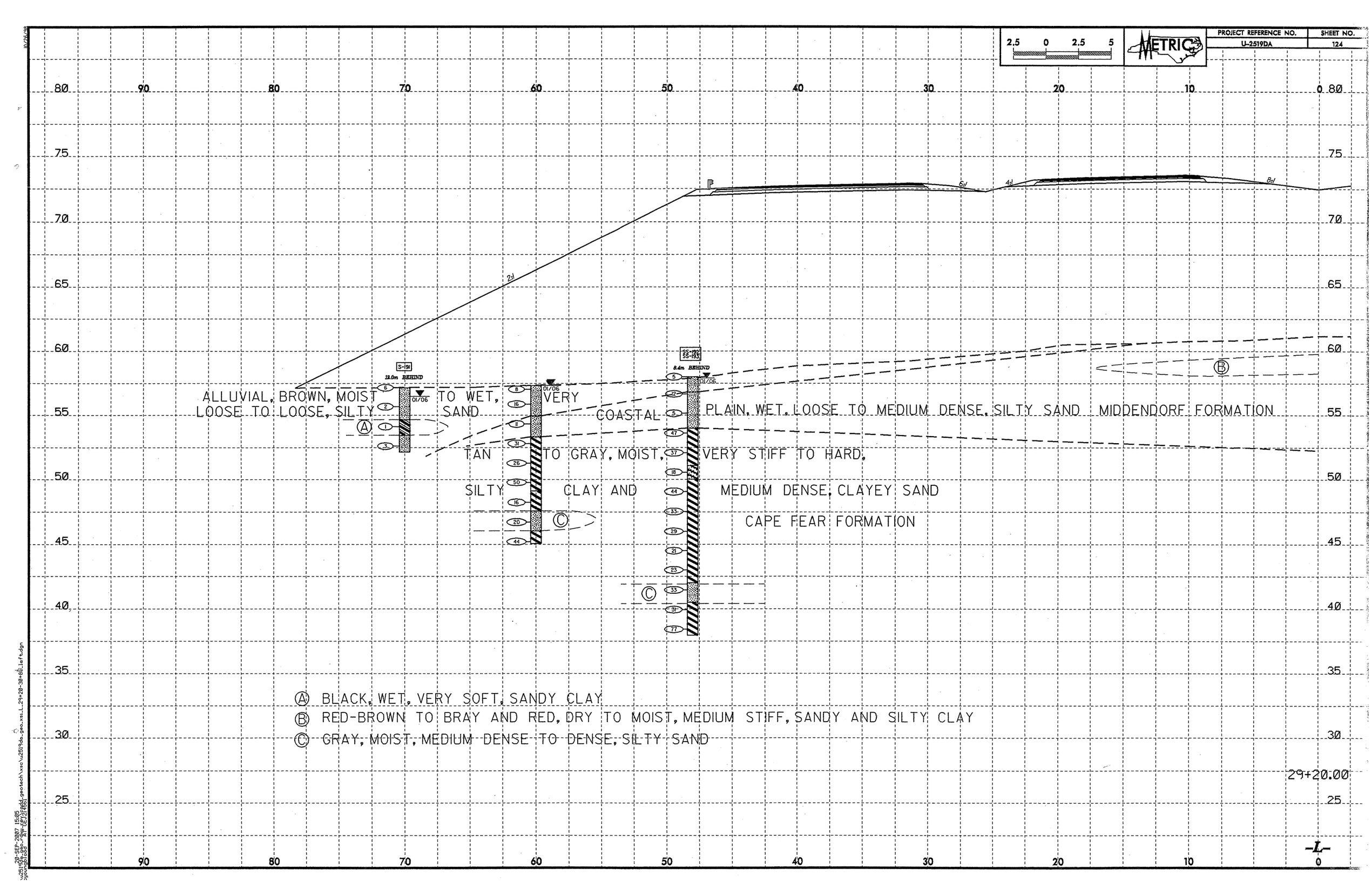
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	CL	22+81.0	0.00-0.45	A-7-5(18)	56	22	16.1	9.1	16.7	58.1	100	95	75	-	-



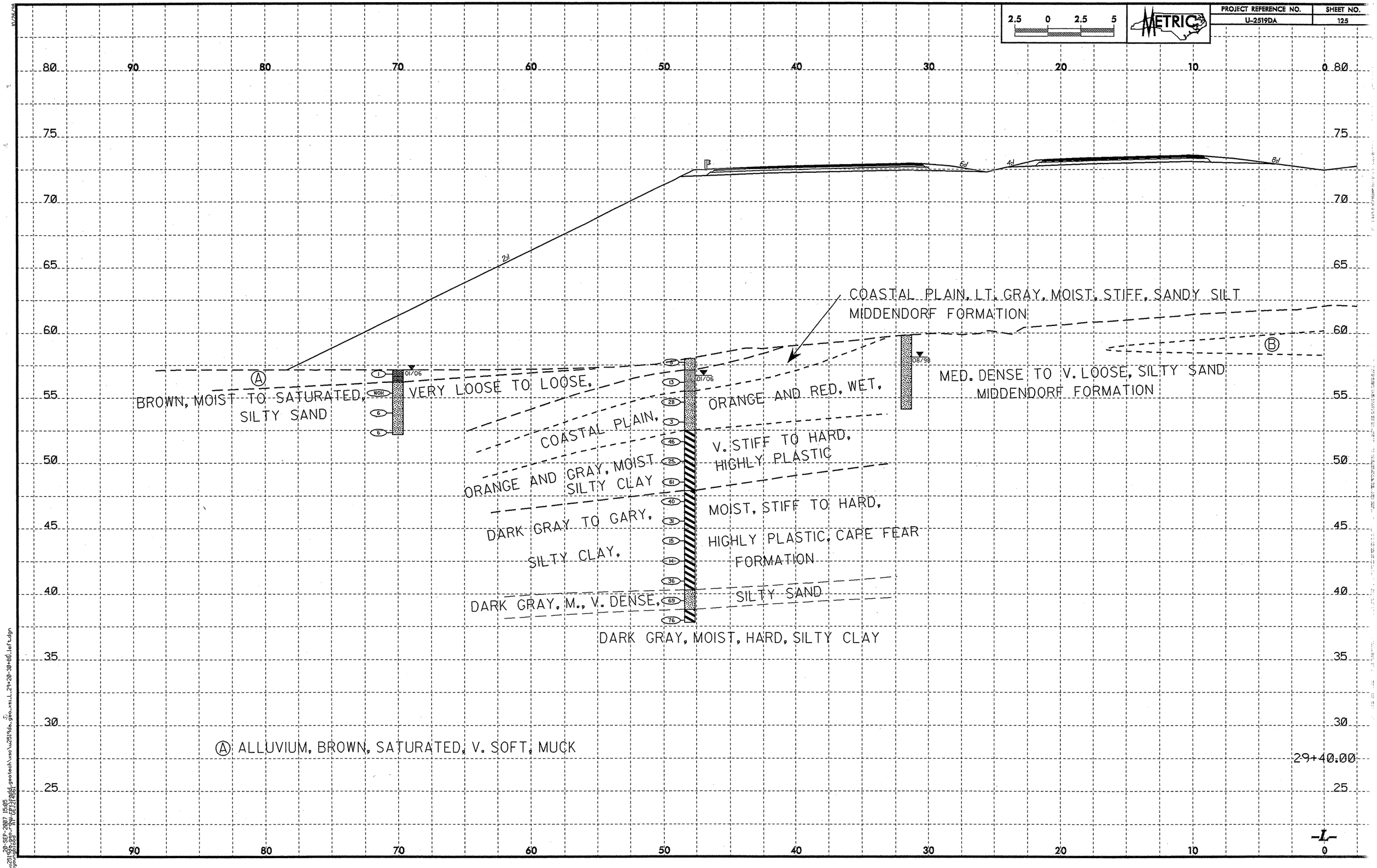
11-JUL-2007 16:32
\\PW2K1\DGN\GEOTECH\jwilson\U2519DA_GEOTECH.dgn
\\PW2K1\DGN\GEOTECH\vsc\U2519DA_Geo_xss_L_16+00.23+60.dgn



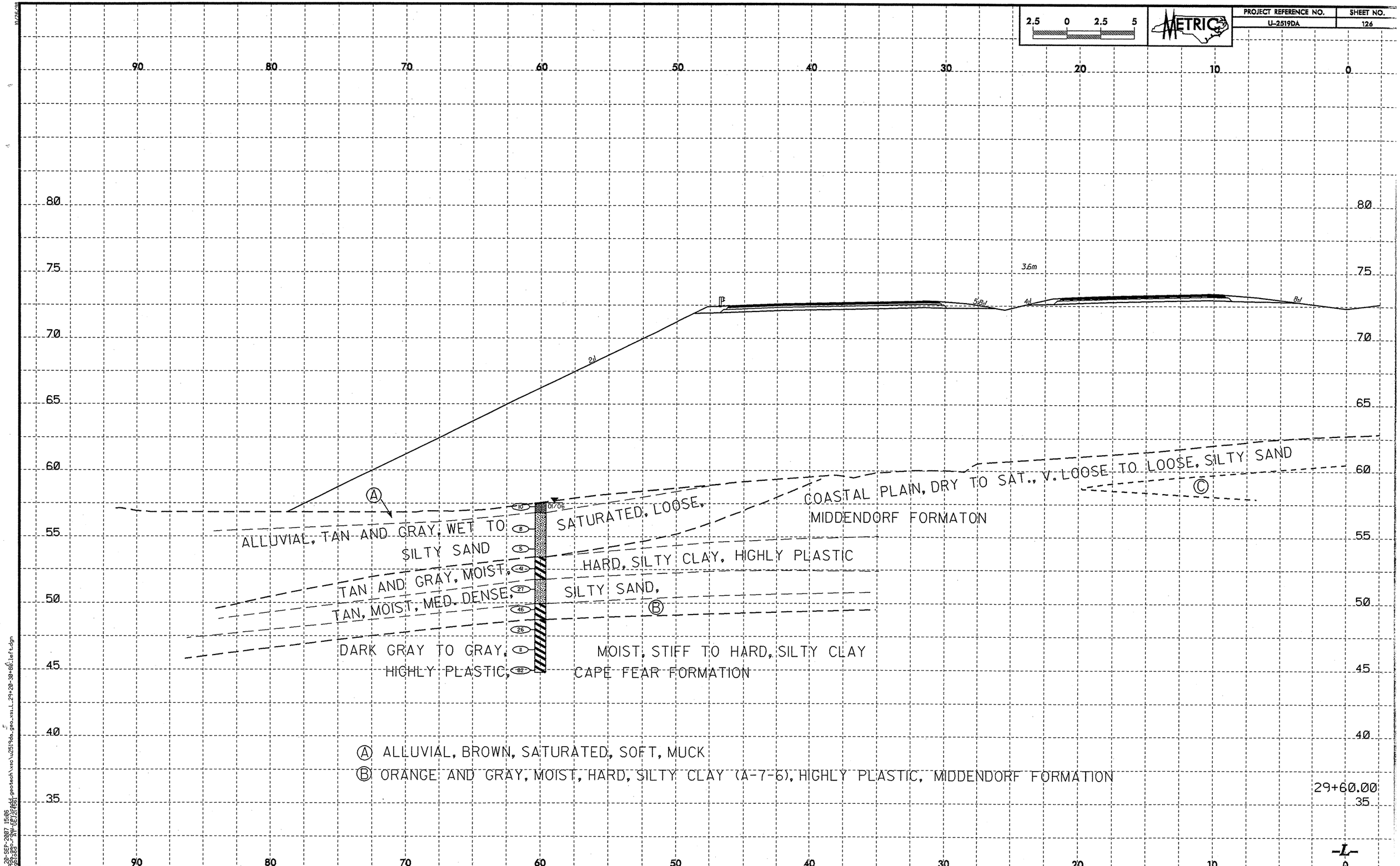
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
123
METRIC
2.5 0 2.5 5
NOISE WALL
SHEAR POINT No.96
ALLUVIAL, TAN TO DARK GRAY, WET TO SAT., VERY LOOSE TO MED. DENSE, SILTY COARSE SAND TO HARD
COASTAL PLAIN, TAN, GRAY, AND RED, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY FINE SAND
MIDDENDORF FORMATION
COASTAL PLAIN, TAN, PINK, AND GRAY, MOIST, VERY STIFF SILTY CLAY, HIGHLY PLASTIC
CAPE FEAR FORMATION
23+60.00
NOISE WALL
SHEAR POINT No.93
(A) ALLUVIAL, GRAY, WET TO SATURATED, VERY SOFT, SILTY CLAY
(B) ALLUVIAL, BLACK, WET, VERY LOOSE, ORGANIC SAND
(C) ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC SANDY SILT
ALLUVIAL, TAN TO BLACK, WET TO SATURATED, SILTY FINE SAND WITH VERY LOOSE TO LOOSE, ORGANICS
COASTAL PLAIN, TAN, GRAY AND RED, DRY TO WET, VERY LOOSE TO MED. DENSE, SILTY FINE SAND
MIDDENDORF FORMATION
COASTAL PLAIN, TAN, GRAY AND RED, MOIST TO WET, VERY STIFF TO HARD, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
23+40.00
-L-



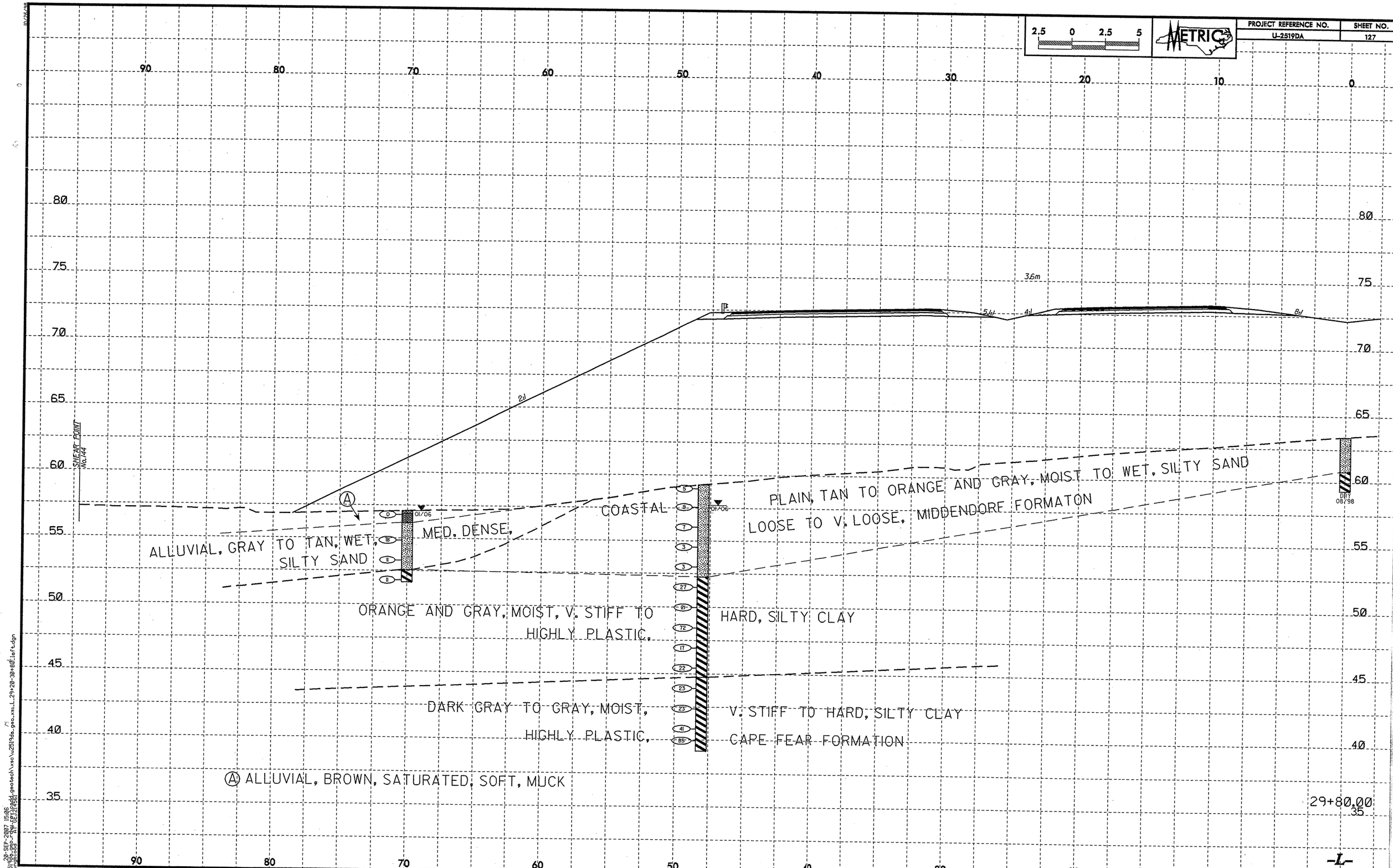
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
124
METRIC
2.5 0 2.5 5
S-191
12.0m BEHIND
SS-192
SS-193
8.4m BEHIND
01/06
ALLUVIAL, BROWN, MOIST TO WET, VERY
LOOSE TO LOOSE, SILTY SAND
COASTAL PLAIN, WET, LOOSE TO MEDIUM DENSE, SILTY SAND MIDDENDORF FORMATION
TAN TO GRAY, MOIST, VERY STIFF TO HARD,
SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
CAPE FEAR FORMATION
Ⓐ BLACK, WET, VERY SOFT, SANDY CLAY
Ⓑ RED-BROWN TO BRAY AND RED, DRY TO MOIST, MEDIUM STIFF, SANDY AND SILTY CLAY
Ⓒ GRAY, MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
29+20.00
-L-



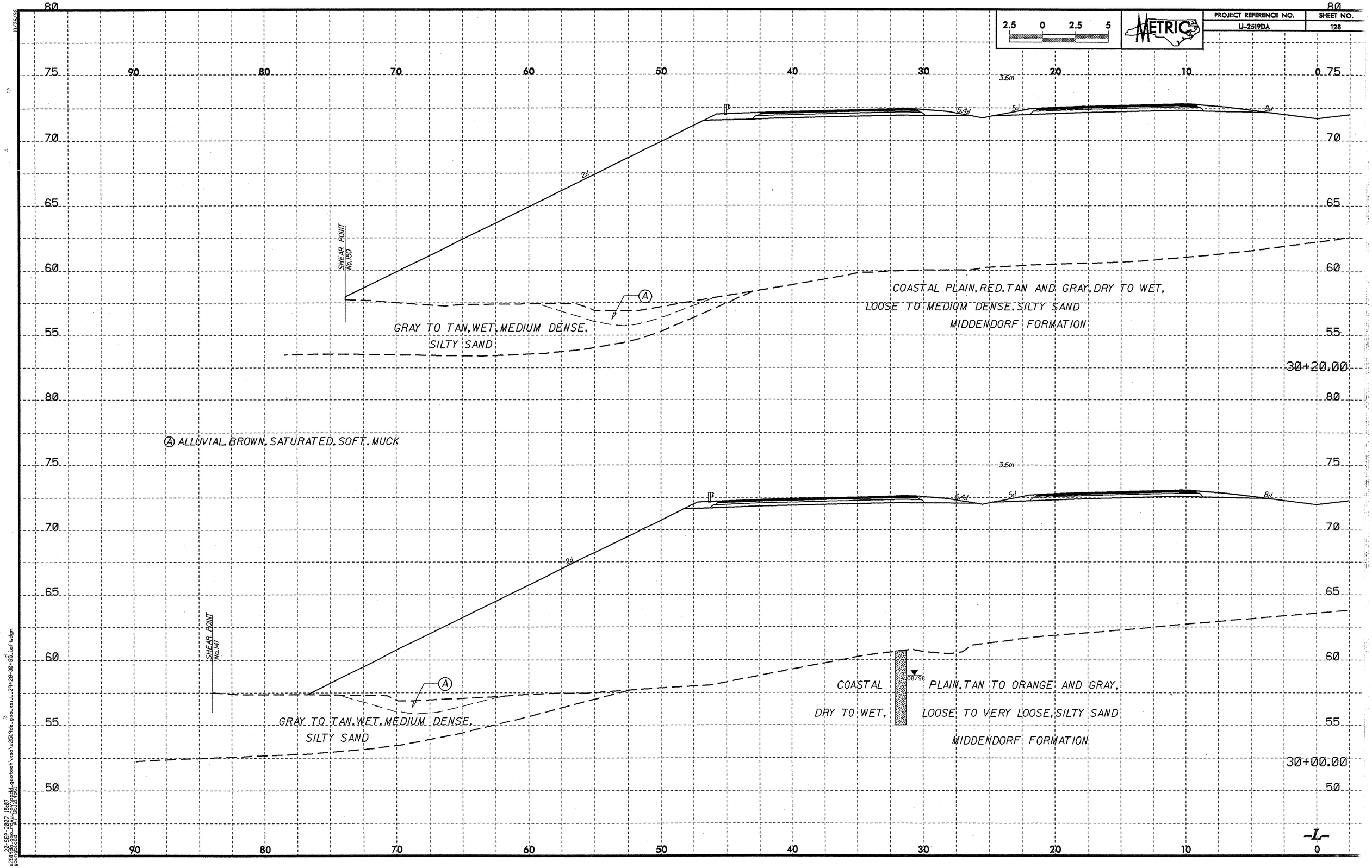
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
125
METRIC
2.5 0 2.5 5
COASTAL PLAIN, LT. GRAY, MOIST, STIFF, SANDY SILT
MIDDENDORF FORMATION
MED. DENSE TO V. LOOSE, SILTY SAND
MIDDENDORF FORMATION
BROWN, MOIST TO SATURATED,
SILTY SAND
VERY LOOSE TO LOOSE,
ORANGE AND RED, WET,
COASTAL PLAIN,
V. STIFF TO HARD,
HIGHLY PLASTIC
ORANGE AND GRAY, MOIST
SILTY CLAY
MOIST, STIFF TO HARD,
HIGHLY PLASTIC, CAPE FEAR
FORMATION
DARK GRAY TO GARY,
SILTY CLAY,
SILTY SAND
DARK GRAY, M., V. DENSE,
DARK GRAY, MOIST, HARD, SILTY CLAY
Ⓐ ALLUVIUM, BROWN, SATURATED, V. SOFT, MUCK
29+40.00
-L-



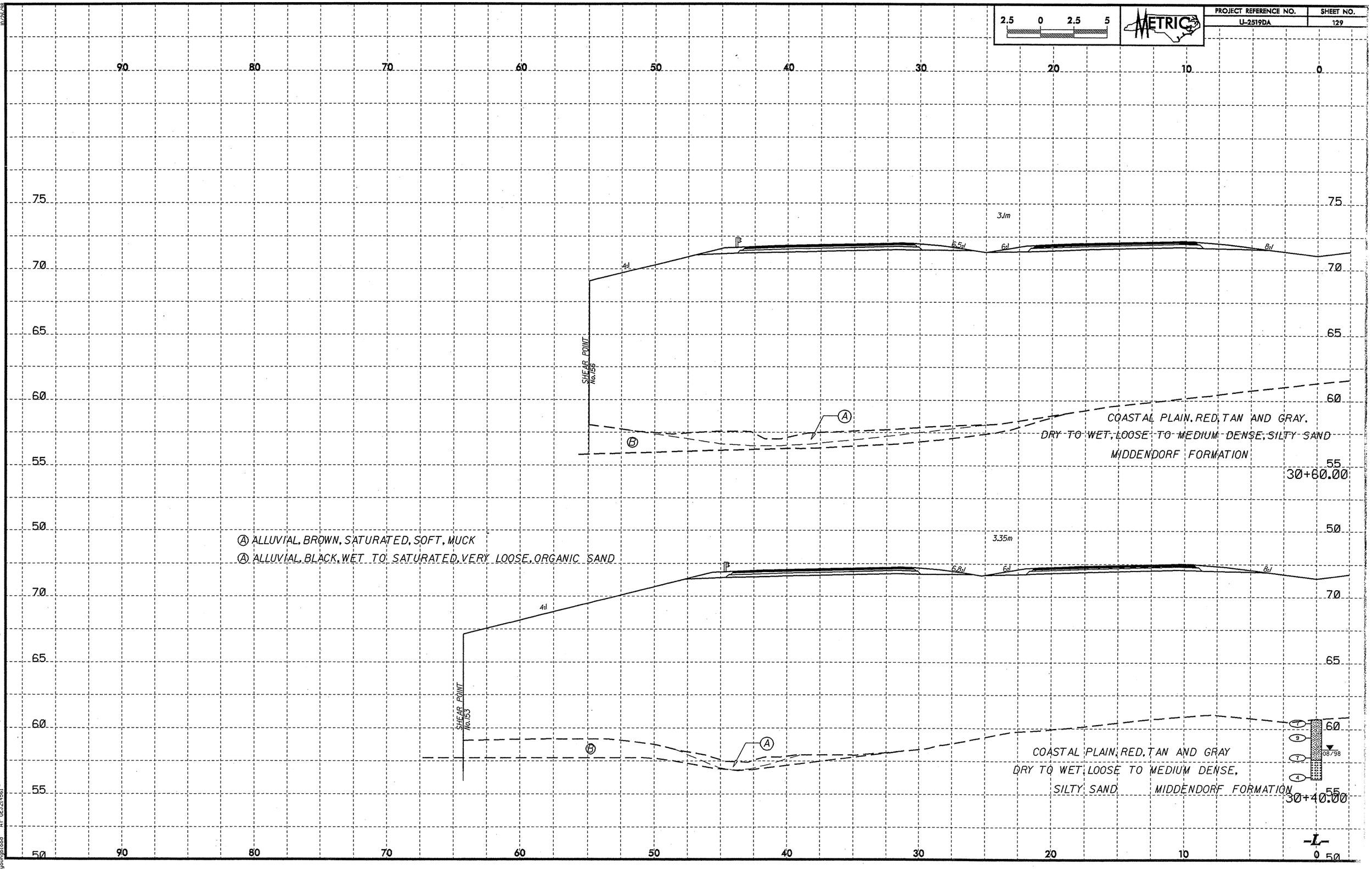
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
126
90 80 70 60 50 40 30 20 10 0
80 75 70 65 60 55 50 45 40 35
3.6m
5.8:1
4:1
8:1
2:1
01/06
10
8
5
41
27
46
26
11
82
A
B
C
ALLUVIAL, TAN AND GRAY, WET TO SILTY SAND
SATURATED, LOOSE,
COASTAL PLAIN, DRY TO SAT., V. LOOSE TO LOOSE, SILTY SAND
MIDDENDORF FORMATON
HARD, SILTY CLAY, HIGHLY PLASTIC
TAN AND GRAY, MOIST,
TAN, MOIST, MED. DENSE,
SILTY SAND,
DARK GRAY TO GRAY, HIGHLY PLASTIC,
MOIST, STIFF TO HARD, SILTY CLAY
CAPE FEAR FORMATION
A ALLUVIAL, BROWN, SATURATED, SOFT, MUCK
B ORANGE AND GRAY, MOIST, HARD, SILTY CLAY (A-7-6), HIGHLY PLASTIC, MIDDENDORF FORMATION
29+60.00
-L-



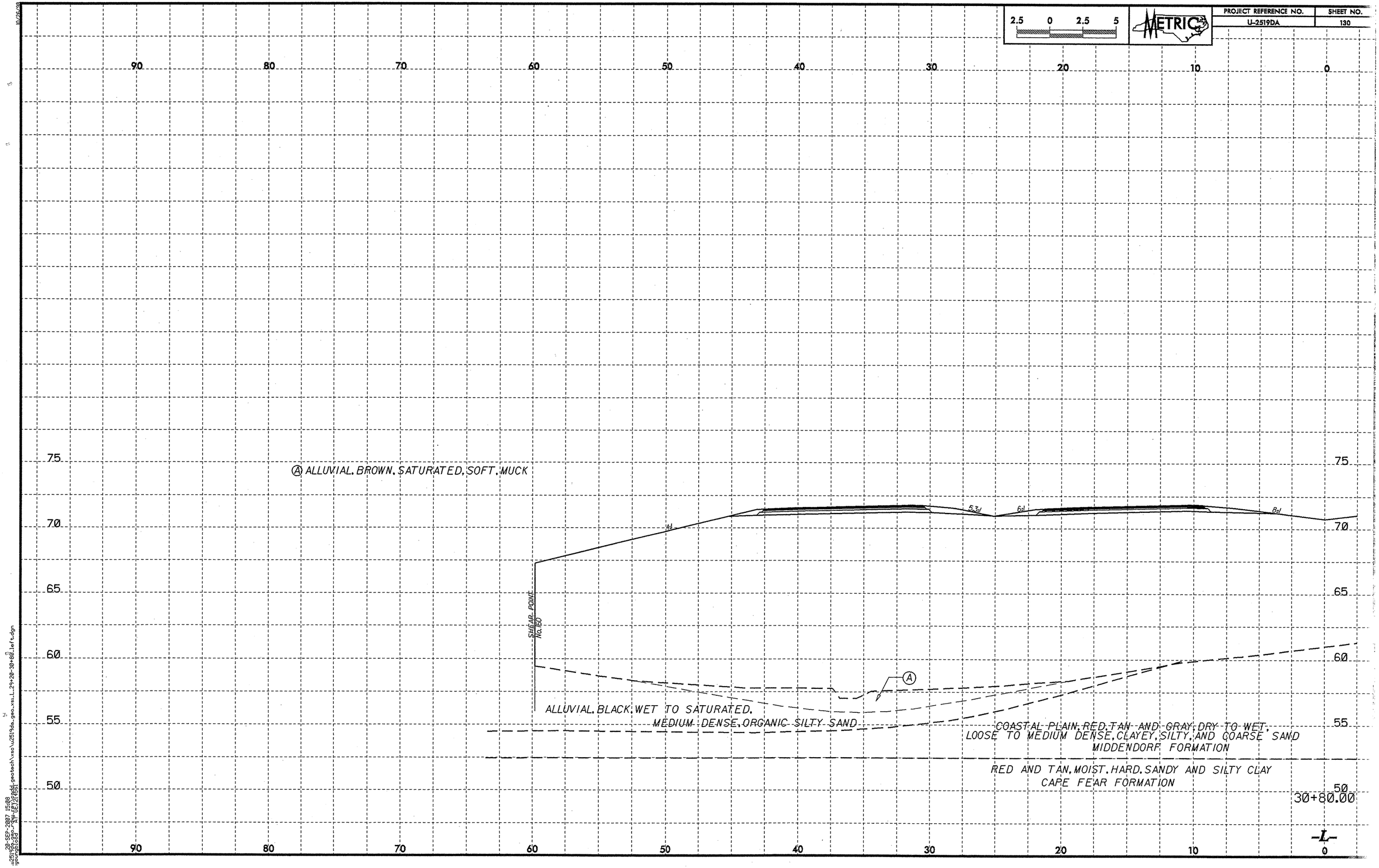
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
127
90 80 70 60 50 40 30 20 10 0
80 75 70 65 60 55 50 45 40 35
SHEAR POINT No.144
3.6m
5:1
4:1
8:1
2:1
A
ALLUVIAL, GRAY TO TAN, WET, SILTY SAND
MED. DENSE,
COASTAL
PLAIN, TAN TO ORANGE AND GRAY, MOIST TO WET, SILTY SAND
LOOSE TO V. LOOSE, MIDDENDORF FORMATON
ORANGE AND GRAY, MOIST, V. STIFF TO HIGHLY PLASTIC,
HARD, SILTY CLAY
DARK GRAY TO GRAY, MOIST, HIGHLY PLASTIC,
V. STIFF TO HARD, SILTY CLAY
CAPE FEAR FORMATION
A ALLUVIAL, BROWN, SATURATED, SOFT, MUCK
DRY 08/98
29+80.00
-L-



PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
128
METRIC
2.5 0 2.5 5
SHEAR POINT No.150
SHEAR POINT No.147
GRAY TO TAN, WET, MEDIUM DENSE, SILTY SAND
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
30+20.00
Ⓐ ALLUVIAL, BROWN, SATURATED, SOFT, MUCK
GRAY TO TAN, WET, MEDIUM DENSE, SILTY SAND
COASTAL PLAIN, TAN TO ORANGE AND GRAY, DRY TO WET, LOOSE TO VERY LOOSE, SILTY SAND
MIDDENDORF FORMATION
30+00.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
129
90 80 70 60 50 40 30 20 10 0
75 70 65 60 55 50
3.1m
4:1
6.5:1
6:1
8:1
SHEAR POINT No.156
A
B
COASTAL PLAIN, RED, TAN AND GRAY.
DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
30+60.00
Ⓐ ALLUVIAL, BROWN, SATURATED, SOFT, MUCK
Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND
3.35m
4:1
6.8:1
6:1
8:1
SHEAR POINT No.153
A
B
COASTAL PLAIN, RED, TAN AND GRAY
DRY TO WET, LOOSE TO MEDIUM DENSE,
SILTY SAND MIDDENDORF FORMATION
08/98
30+40.00
-L-



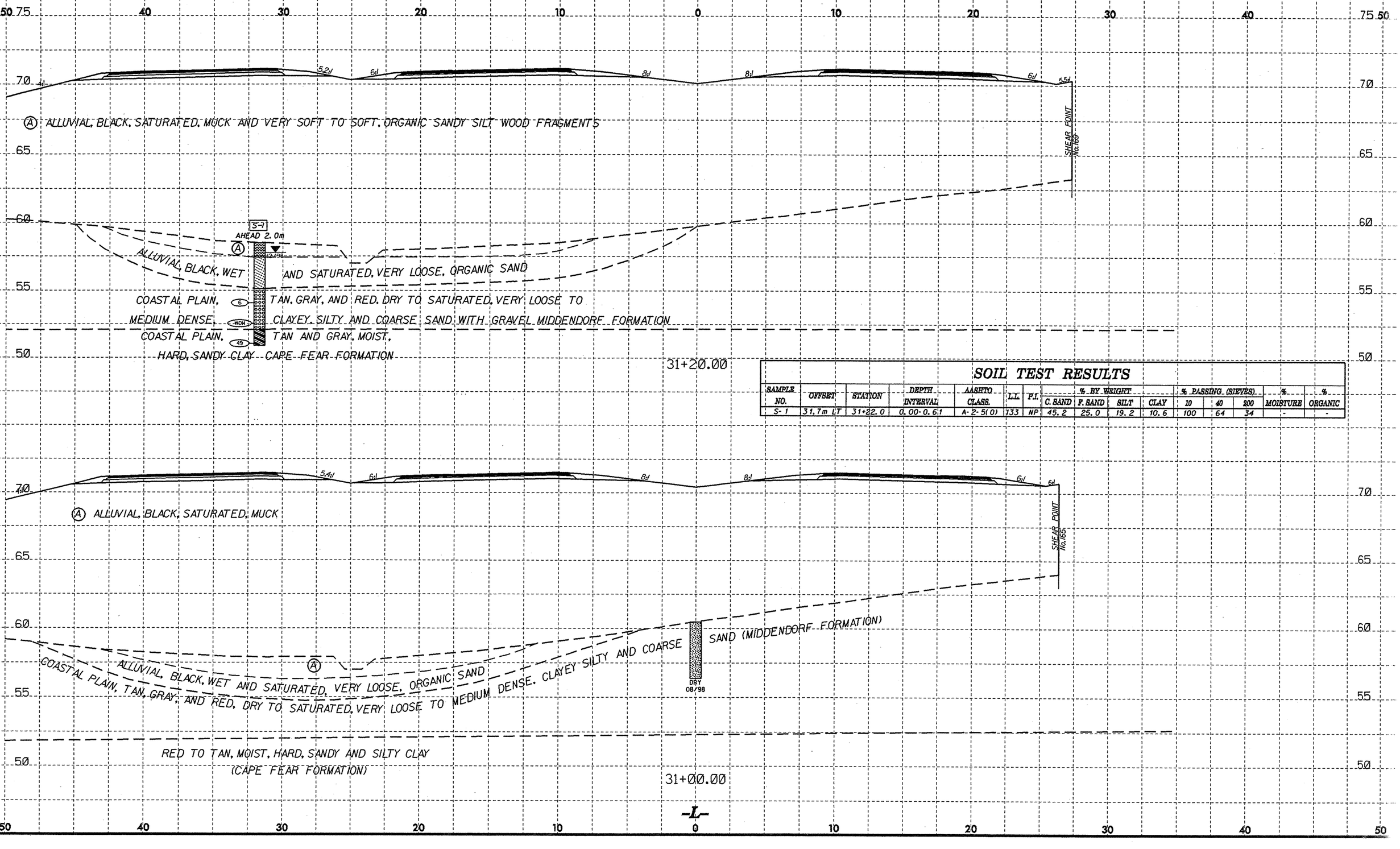
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
130
90 80 70 60 50 40 30 20 10 0
75 70 65 60 55 50
Ⓐ ALLUVIAL, BROWN, SATURATED, SOFT, MUCK
4:1
5.3:1
6:1
8:1
SHEAR POINT No.160
Ⓐ
ALLUVIAL, BLACK, WET TO SATURATED, MEDIUM DENSE, ORGANIC SILTY SAND
COASTAL PLAIN, RED, TAN AND GRAY, DRY TO WET, LOOSE TO MEDIUM DENSE, CLAYEY, SILTY, AND COARSE SAND
MIDDENDORF FORMATION
RED AND TAN, MOIST, HARD, SANDY AND SILTY CLAY
CAPE FEAR FORMATION
30+80.00
-L-

10/25/98

2.5 0 2.5 5

METRIC

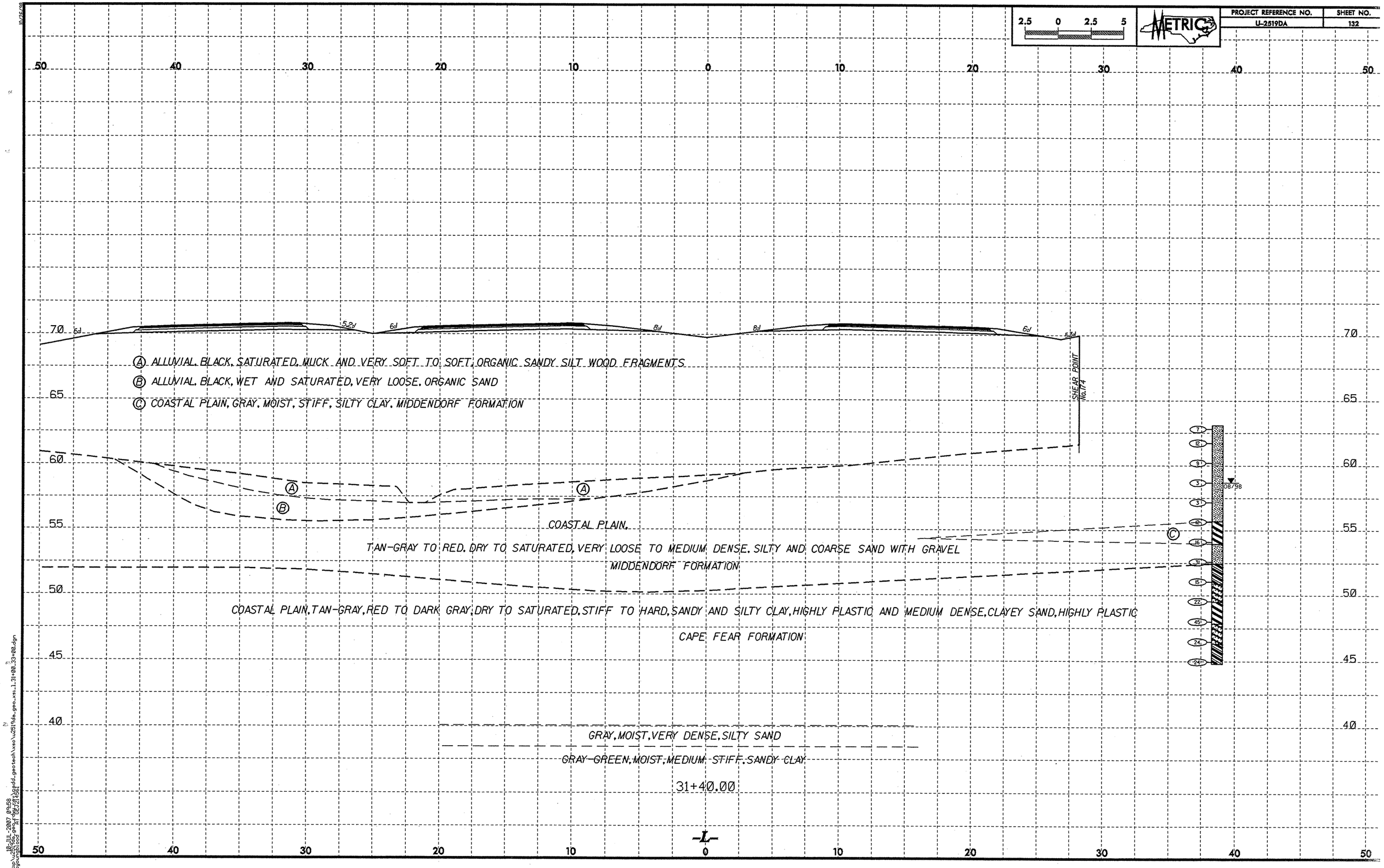
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	131



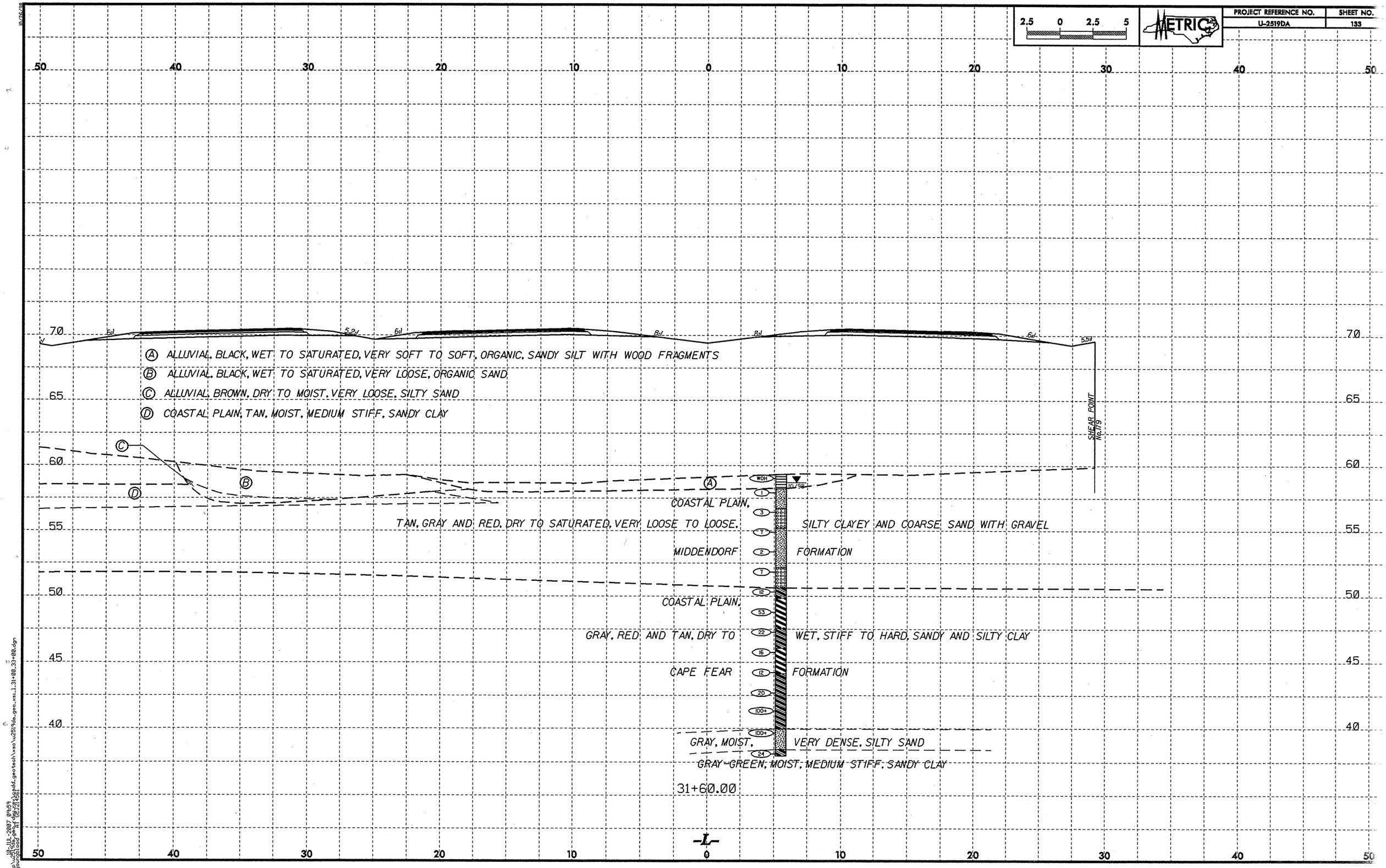
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
S-1	31.7m LT	31+22.0	0.00-0.61	A-2-5(0)	133	NP	45.2	25.0	19.2	10.6	100	64	34	-	-

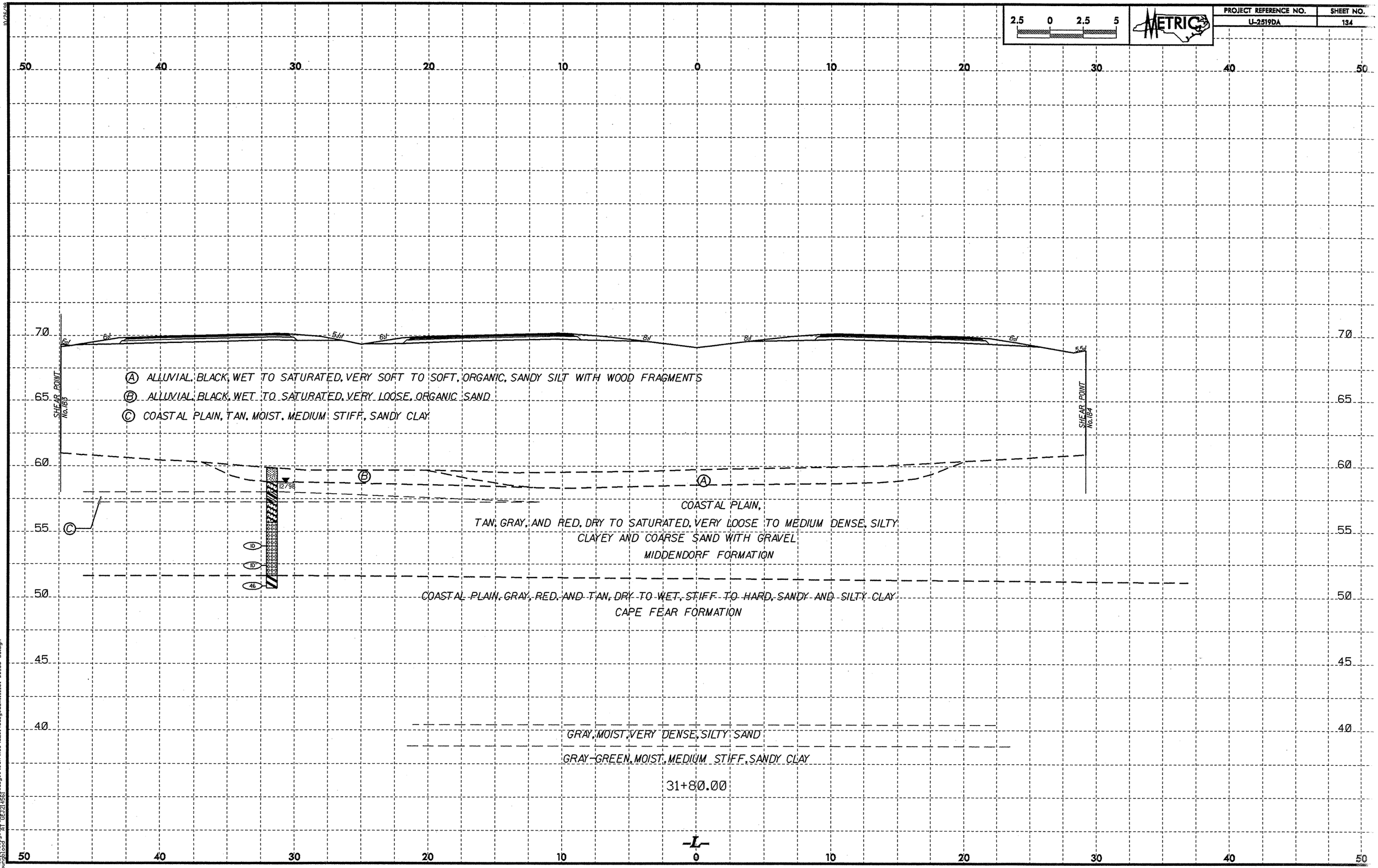
18-JUL-2007 07:58
tap\vdgn\projects\geotech\vso\u2519da_geo_xs_1.31+00.33+00.dgn
djoundblood



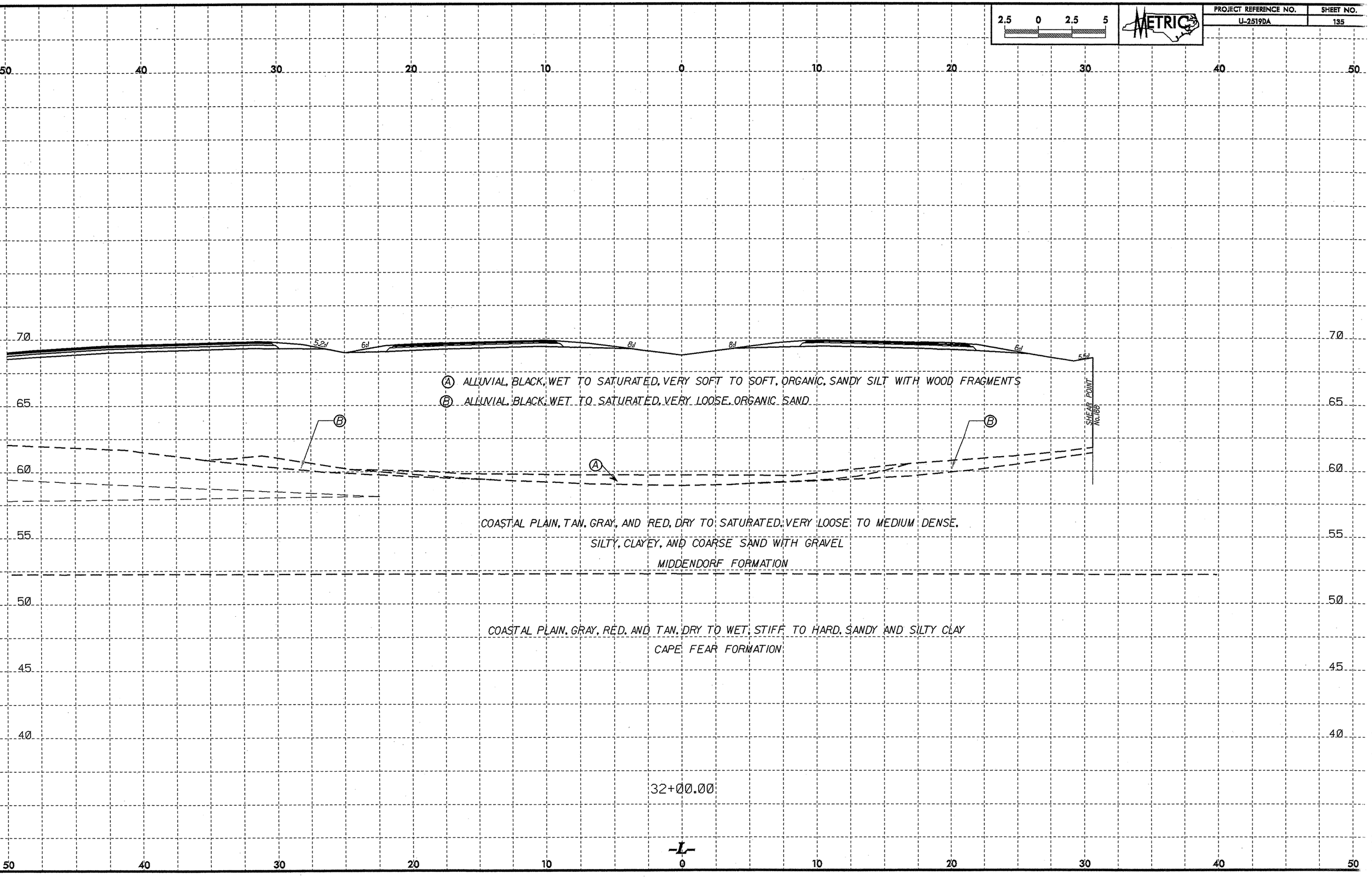
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
132
50 40 30 20 10 0 10 20 30 40 50
70 65 60 55 50 45 40
6:1
5.2:1
6:1
8:1
8:1
6:1
5.3:1
SHEAR POINT No.174
Ⓐ ALLUVIAL, BLACK, SATURATED, MUCK AND VERY SOFT TO SOFT, ORGANIC SANDY SILT WOOD FRAGMENTS
Ⓑ ALLUVIAL, BLACK, WET AND SATURATED, VERY LOOSE, ORGANIC SAND
Ⓒ COASTAL PLAIN, GRAY, MOIST, STIFF, SILTY CLAY, MIDDENDORF FORMATION
Ⓐ
Ⓑ
Ⓐ
Ⓒ
COASTAL PLAIN,
TAN-GRAY TO RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY AND COARSE SAND WITH GRAVEL
MIDDENDORF FORMATION
COASTAL PLAIN, TAN-GRAY, RED TO DARK GRAY, DRY TO SATURATED, STIFF TO HARD, SANDY AND SILTY CLAY, HIGHLY PLASTIC AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC
CAPE FEAR FORMATION
GRAY, MOIST, VERY DENSE, SILTY SAND
GRAY-GREEN, MOIST, MEDIUM STIFF, SANDY CLAY
31+40.00
08/98
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
133
50 40 30 20 10 0 10 20 30 40 50
70
65
60
55
50
45
40
6:1
5.2:1
6:1
8:1
8:1
6:1
5.5:1
Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT WITH WOOD FRAGMENTS
Ⓑ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND
Ⓒ ALLUVIAL, BROWN, DRY TO MOIST, VERY LOOSE, SILTY SAND
Ⓓ COASTAL PLAIN, TAN, MOIST, MEDIUM STIFF, SANDY CLAY
SHEAR POINT No.179
WOH
10/98
1
3
7
2
7
12
53
22
16
12
20
100+
100+
24
COASTAL PLAIN,
TAN, GRAY AND RED, DRY TO SATURATED, VERY LOOSE TO LOOSE, SILTY CLAYEY AND COARSE SAND WITH GRAVEL
MIDDENDORF FORMATION
COASTAL PLAIN,
GRAY, RED AND TAN, DRY TO WET, STIFF TO HARD, SANDY AND SILTY CLAY
CAPE FEAR FORMATION
GRAY, MOIST, VERY DENSE, SILTY SAND
GRAY-GREEN, MOIST, MEDIUM STIFF, SANDY CLAY
31+60.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
134
50 40 30 20 10 0 10 20 30 40 50
70
65
60
55
50
45
40
SHEAR POINT No.183
SHEAR POINT No.184
6:1
5.5:1
Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT WITH WOOD FRAGMENTS
Ⓑ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND
Ⓒ COASTAL PLAIN, TAN, MOIST, MEDIUM STIFF, SANDY CLAY
12/98
10
10
46
COASTAL PLAIN,
TAN, GRAY, AND RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY
CLAYEY AND COARSE SAND WITH GRAVEL
MIDDENDORF FORMATION
COASTAL PLAIN, GRAY, RED, AND TAN, DRY TO WET, STIFF TO HARD, SANDY AND SILTY CLAY
CAPE FEAR FORMATION
GRAY, MOIST, VERY DENSE, SILTY SAND
GRAY-GREEN, MOIST, MEDIUM STIFF, SANDY CLAY
31+80.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
135
50 40 30 20 10 0 10 20 30 40 50
70
65
60
55
50
45
40
5.2:1
6:1
8:1
8:1
6:1
5.5:1
Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT WITH WOOD FRAGMENTS
Ⓑ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND
SHEAR POINT No.188
COASTAL PLAIN, TAN, GRAY, AND RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY, CLAYEY, AND COARSE SAND WITH GRAVEL
MIDDENDORF FORMATION
COASTAL PLAIN, GRAY, RED, AND TAN, DRY TO WET, STIFF TO HARD, SANDY AND SILTY CLAY
CAPE FEAR FORMATION
32+00.00
-L-

10/26/98

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	136

2.5 0 2.5 5

METRIC

50 40 30 20 10 0 10 20 30 40 50

70 65 60 55

5.8d 6d 8d 8d 4.7d 4.8d

SHEAR POINT No.186

Ⓑ Ⓐ Ⓓ

12.5b

COASTAL PLAIN, TAN, GRAY, AND RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY, CLAYEY, AND COARSE SAND WITH GRAVEL

MIDDENDORF FORMATION

COASTAL PLAIN, GRAY, RED AND TAN, DRY TO WET, STIFF TO HARD, SANDY AND SILTY CLAY

CAPE FEAR FORMATION

32+40.00

75 70 65 60 55 50

Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT WITH WOOD FRAGMENTS

Ⓑ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND

Ⓒ ALLUVIAL, GRAY-TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND

Ⓓ COASTAL PLAIN, TAN, MOIST, MEDIUM STIFF, SANDY CLAY

5.5d 6d 8d 8d 5.2d 5.8d

SHEAR POINT No.192

Ⓑ Ⓐ Ⓓ

COASTAL PLAIN, TAN, GRAY, AND RED, DRY TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY, CLAYEY, AND COARSE SAND WITH GRAVEL

MIDDENDORF FORMATION

COASTAL PLAIN, GRAY, RED AND TAN, DRY TO WET, STIFF TO HARD, SANDY AND SILTY CLAY

CAPE FEAR FORMATION

32+20.00

-L-

50 40 30 20 10 0 10 20 30 40 50

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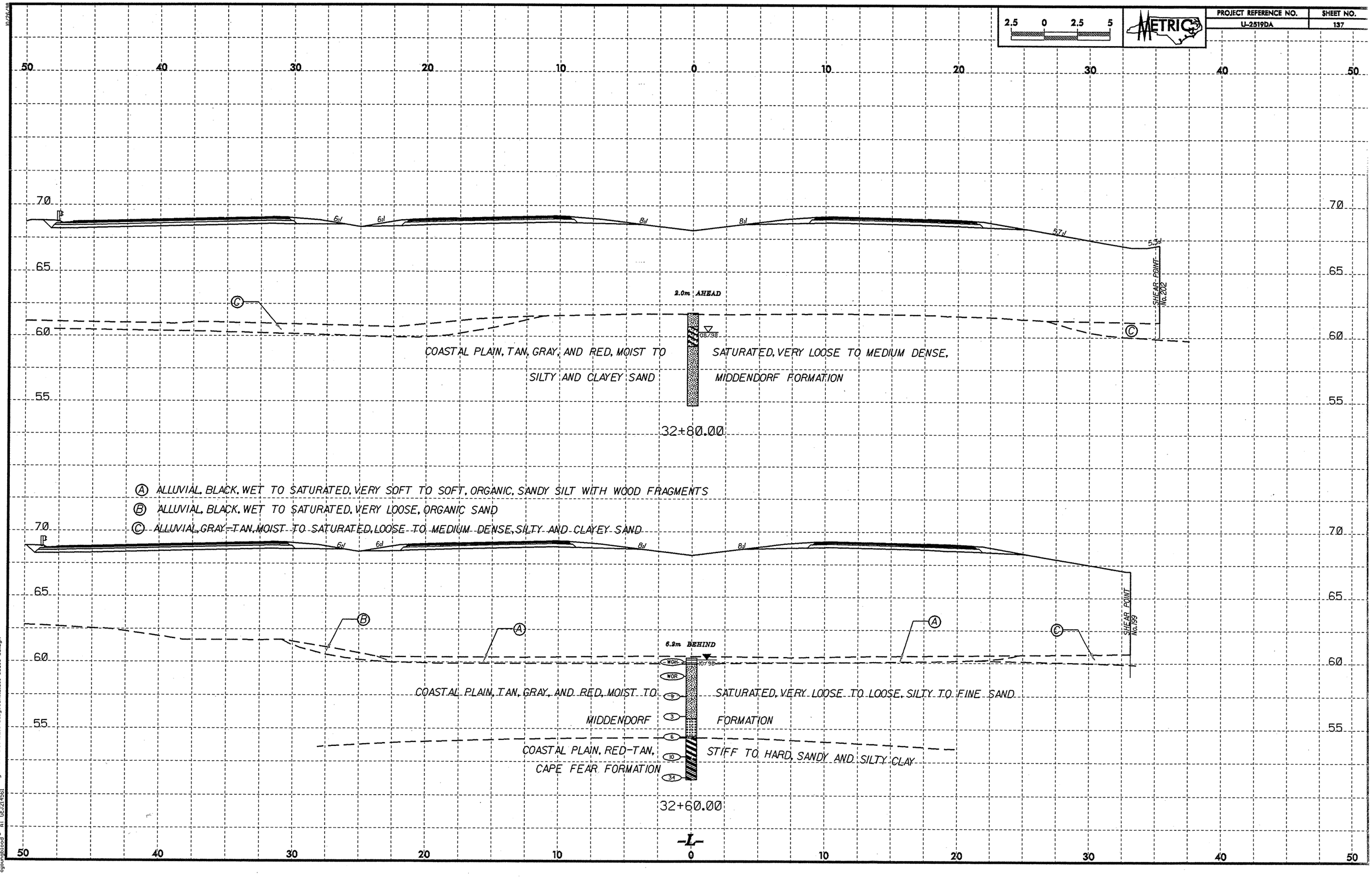


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
137
50 40 30 20 10 0 10 20 30 40 50
70
65
60
55
6:1
6:1
8:1
8:1
5.7:1
5.3:1
SHEAR POINT No.202
2.0m AHEAD
08/98
COASTAL PLAIN, TAN, GRAY, AND RED, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND MIDDENDORF FORMATION
32+80.00
Ⓐ ALLUVIAL, BLACK, WET TO SATURATED, VERY SOFT TO SOFT, ORGANIC, SANDY SILT WITH WOOD FRAGMENTS
Ⓑ ALLUVIAL, BLACK, WET TO SATURATED, VERY LOOSE, ORGANIC SAND
Ⓒ ALLUVIAL, GRAY-TAN, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND
SHEAR POINT No.199
6.2m BEHIND
10/98
WOH
WOR
9
3
6
10
34
COASTAL PLAIN, TAN, GRAY, AND RED, MOIST TO SATURATED, VERY LOOSE TO LOOSE, SILTY TO FINE SAND MIDDENDORF FORMATION
COASTAL PLAIN, RED-TAN, STIFF TO HARD, SANDY AND SILTY CLAY CAPE FEAR FORMATION
32+60.00
-L-

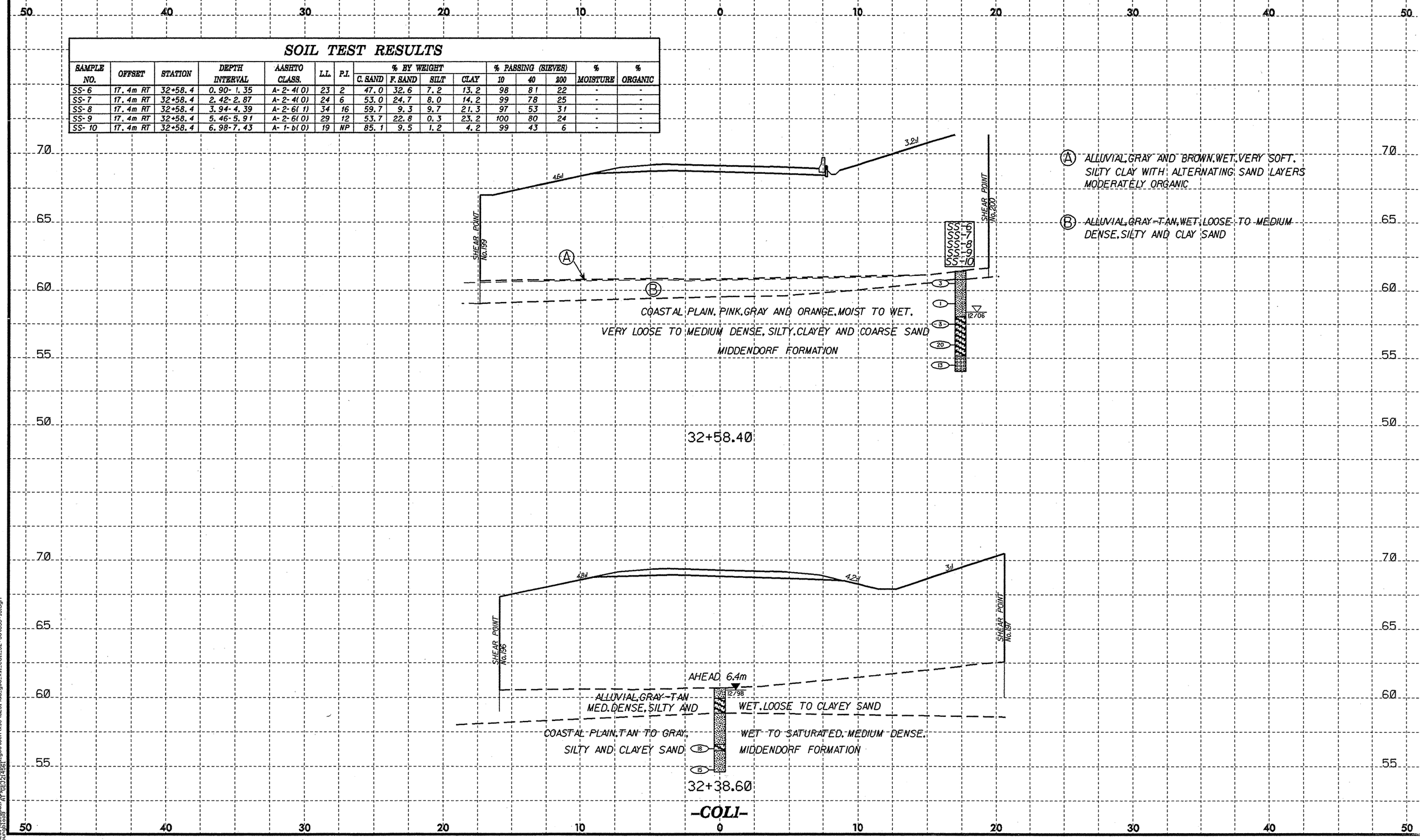
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	138

2.5 0 2.5 5

METRIC

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-6	17.4m RT	32+58.4	0.90-1.35	A-2-4(0)	23	2	47.0	32.6	7.2	13.2	98	81	22	-	-
SS-7	17.4m RT	32+58.4	2.42-2.87	A-2-4(0)	24	6	53.0	24.7	8.0	14.2	99	78	25	-	-
SS-8	17.4m RT	32+58.4	3.94-4.39	A-2-6(1)	34	16	59.7	9.3	9.7	21.3	97	53	31	-	-
SS-9	17.4m RT	32+58.4	5.46-5.91	A-2-6(0)	29	12	53.7	22.8	0.3	23.2	100	80	24	-	-
SS-10	17.4m RT	32+58.4	6.98-7.43	A-1-b(0)	19	NP	85.1	9.5	1.2	4.2	99	43	6	-	-



(A) ALLUVIAL, GRAY AND BROWN, WET, VERY SOFT, SILTY CLAY WITH ALTERNATING SAND LAYERS MODERATELY ORGANIC

(B) ALLUVIAL, GRAY-TAN, WET, LOOSE TO MEDIUM DENSE, SILTY AND CLAY SAND

-COL1-

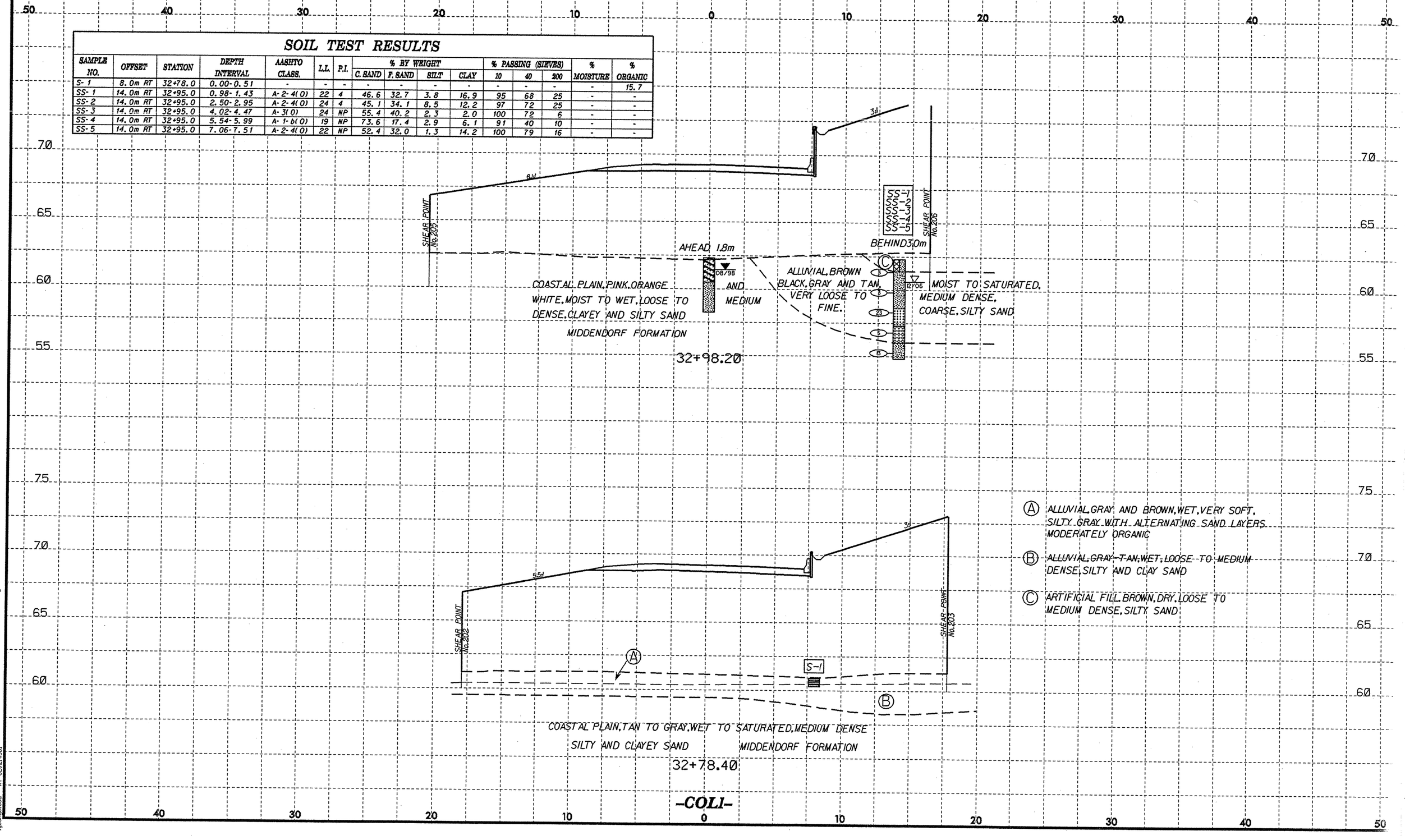
10/26/98

10-JUL-2007 10:43
a:\u2519da_geo_rdwy_rev\geodd_geotech\xsc\u2519da_geo_xsi_coll_32+38to33+18.dgn
ayoungblood AT GEO2145S1

PROJECT REFERENCE NO. U-2519DA | SHEET NO. 139

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
S-1	8.0m RT	32+78.0	0.00-0.51	-	-	-	-	-	-	-	-	-	-	-	15.7
SS-1	14.0m RT	32+95.0	0.98-1.43	A-2-4(0)	22	4	46.6	32.7	3.8	16.9	95	68	25	-	-
SS-2	14.0m RT	32+95.0	2.50-2.95	A-2-4(0)	24	4	45.1	34.1	8.5	12.2	97	72	25	-	-
SS-3	14.0m RT	32+95.0	4.02-4.47	A-3(0)	24	NP	55.4	40.2	2.3	2.0	100	72	6	-	-
SS-4	14.0m RT	32+95.0	5.54-5.99	A-1-b(0)	19	NP	73.6	17.4	2.9	6.1	91	40	10	-	-
SS-5	14.0m RT	32+95.0	7.06-7.51	A-2-4(0)	22	NP	52.4	32.0	1.3	14.2	100	79	16	-	-

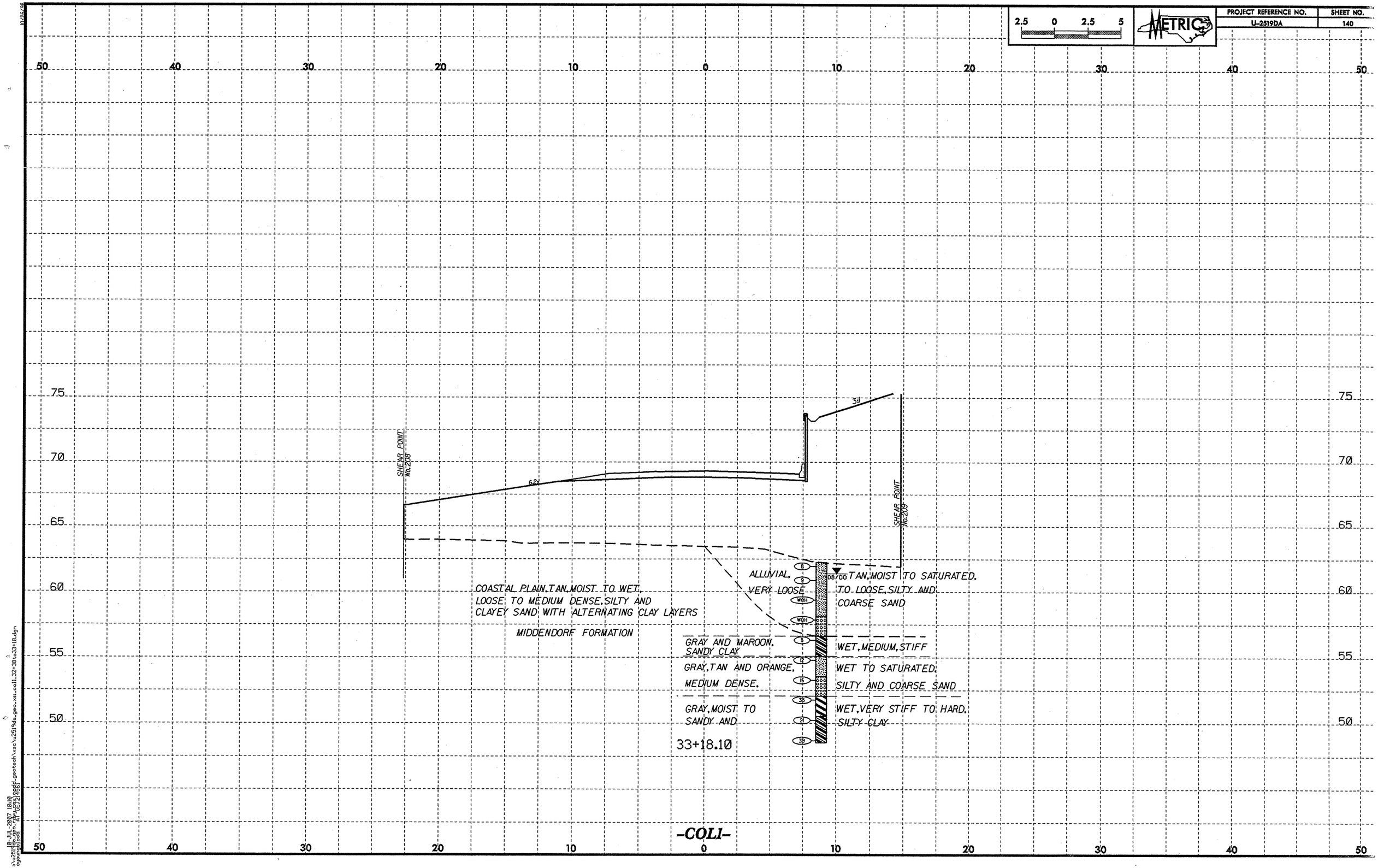


Ⓐ ALLUVIAL, GRAY AND BROWN, WET, VERY SOFT, SILTY GRAY WITH ALTERNATING SAND LAYERS MODERATELY ORGANIC

Ⓑ ALLUVIAL, GRAY-TAN, WET, LOOSE TO MEDIUM DENSE, SILTY AND CLAY SAND

Ⓒ ARTIFICIAL FILL, BROWN, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND

-COL1-



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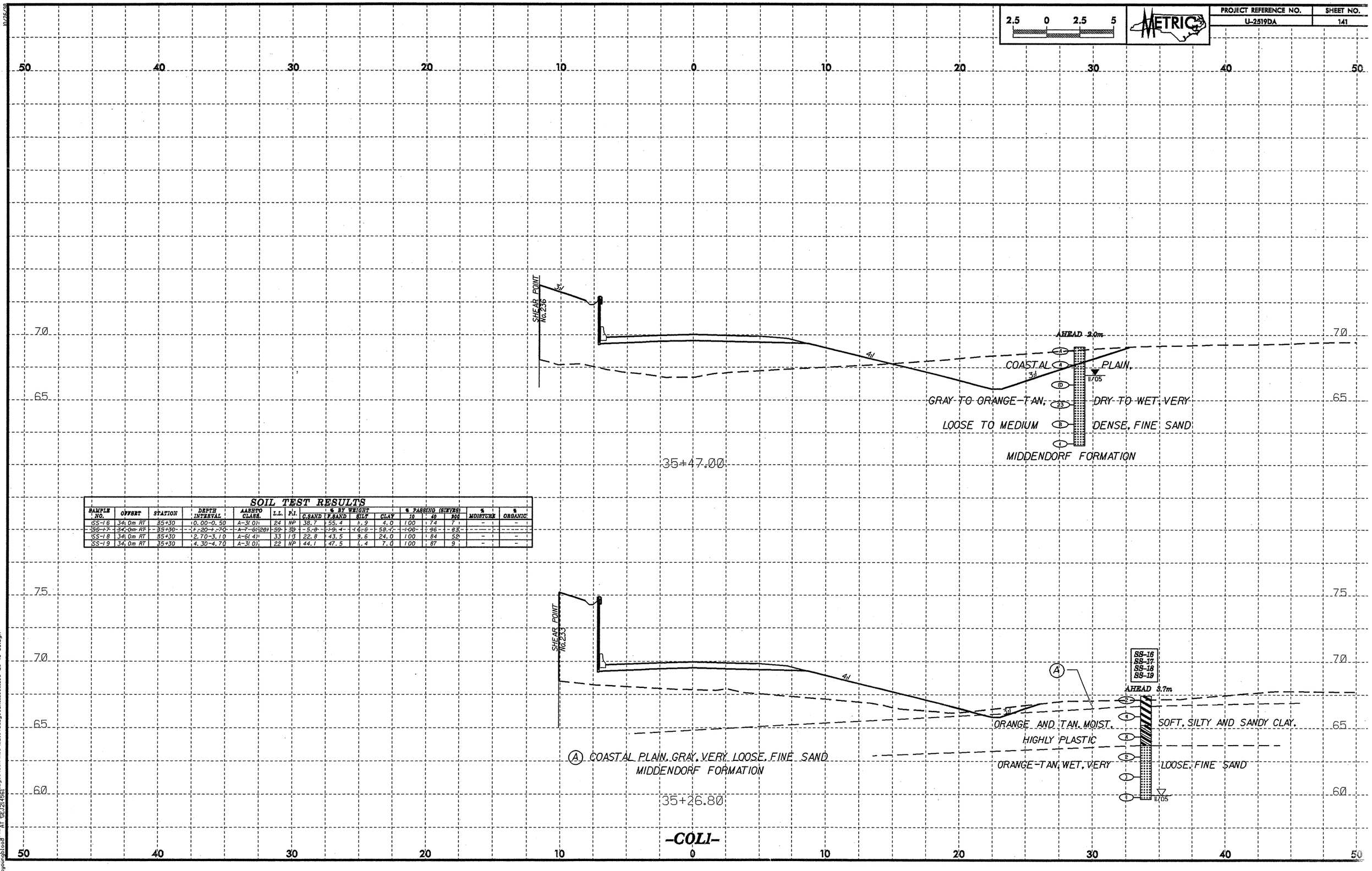
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
140
50 40 30 20 10 0 10 20 30 40 50
75
70
65
60
55
50
SHEAR POINT No.208
SHEAR POINT No.209
3:1
6:1
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND WITH ALTERNATING CLAY LAYERS
MIDDENDORF FORMATION
ALLUVIAL, VERY LOOSE
08/00
TAN, MOIST TO SATURATED, TO LOOSE, SILTY AND COARSE SAND
GRAY AND MAROON, SANDY CLAY
WET, MEDIUM, STIFF
GRAY, TAN AND ORANGE, MEDIUM DENSE.
WET TO SATURATED, SILTY AND COARSE SAND
GRAY, MOIST TO SANDY AND
WET, VERY STIFF TO HARD, SILTY CLAY
33+18.10
-COL1-

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	141

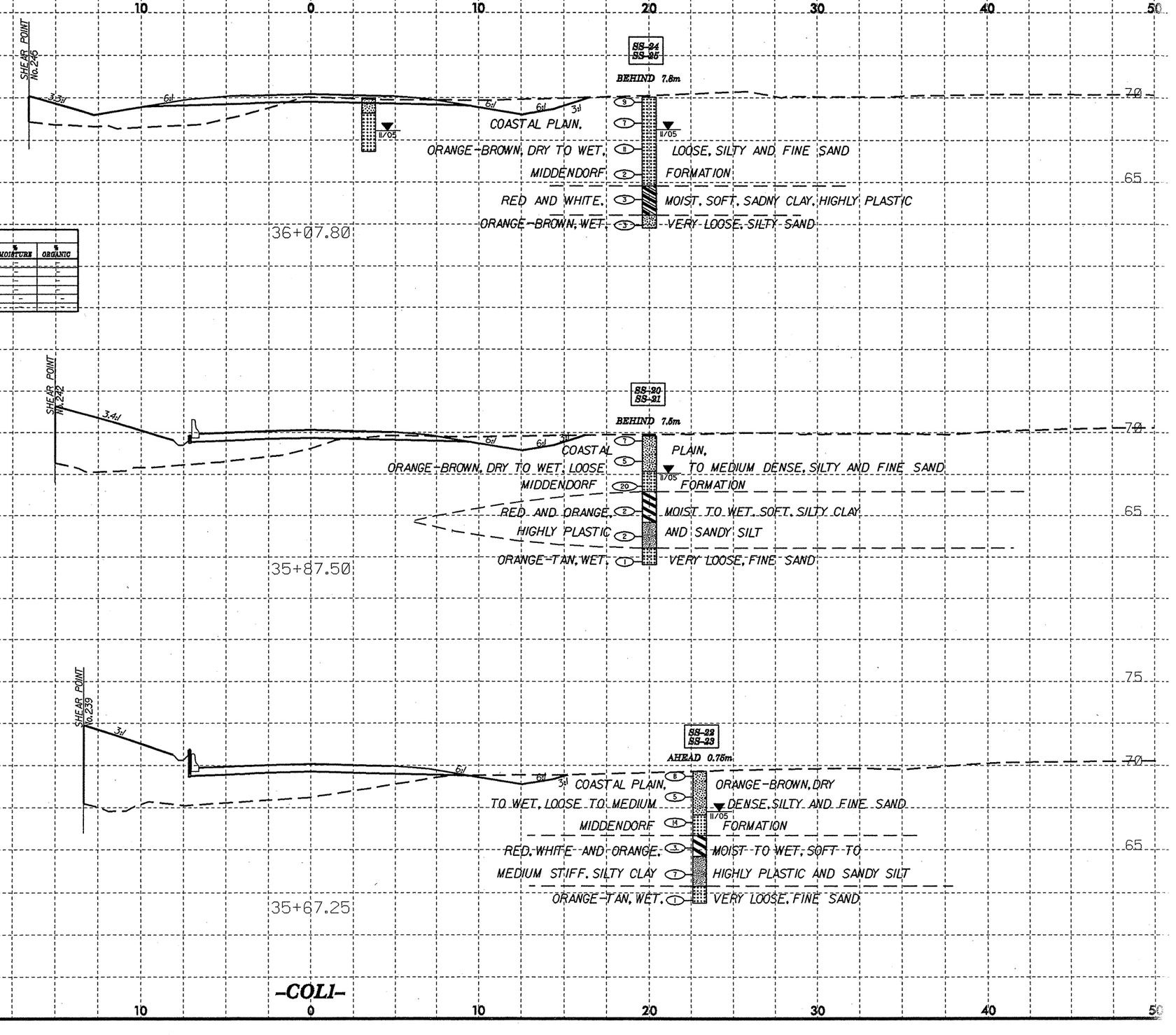


SOIL TEST RESULTS

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-16	34.0m RT	35+30	0.00-0.50	A-3(0)	24	NP	38.7	55.4	1.9	4.0	100	74	7	-	-
SS-17	34.0m RT	35+30	1.20-1.70	A-7-6(20)	59	30	5.8	19.4	16.6	58.1	100	96	83	-	-
SS-18	34.0m RT	35+30	2.70-3.10	A-6(4)	33	13	22.8	43.5	9.6	24.0	100	84	52	-	-
SS-19	34.0m RT	35+30	4.30-4.70	A-3(0)	22	NP	44.1	47.5	1.4	7.0	100	87	9	-	-

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-20	20.0m RT.	35+80	4.26-4.71	A-7-6(25)	60	34	8.8	22.8	12.2	56.1	100	95	72	-	-
SS-21	20.0m RT.	35+80	5.78-6.23	A-4(0)	24	NP	12.2	65.2	10.5	12.0	100	91	51	-	-
SS-22	23.0m RT.	35+68	4.40-4.70	A-7-6(18)	51	30	9.6	28.7	11.6	50.1	100	95	66	-	-
SS-23	23.0m RT.	35+68	5.80-6.20	A-4(0)	24	NP	11.0	62.5	10.4	16.0	100	91	55	-	-
SS-24	20.0m RT.	36+00	5.80-6.20	A-6(16)	39	21	5.2	33.7	15.0	46.1	100	96	81	-	-
SS-25	20.0m RT.	36+00	7.30-7.80	A-2-4(0)	30	NP	39.1	50.4	2.5	8.0	100	67	13	-	-



-COLI-

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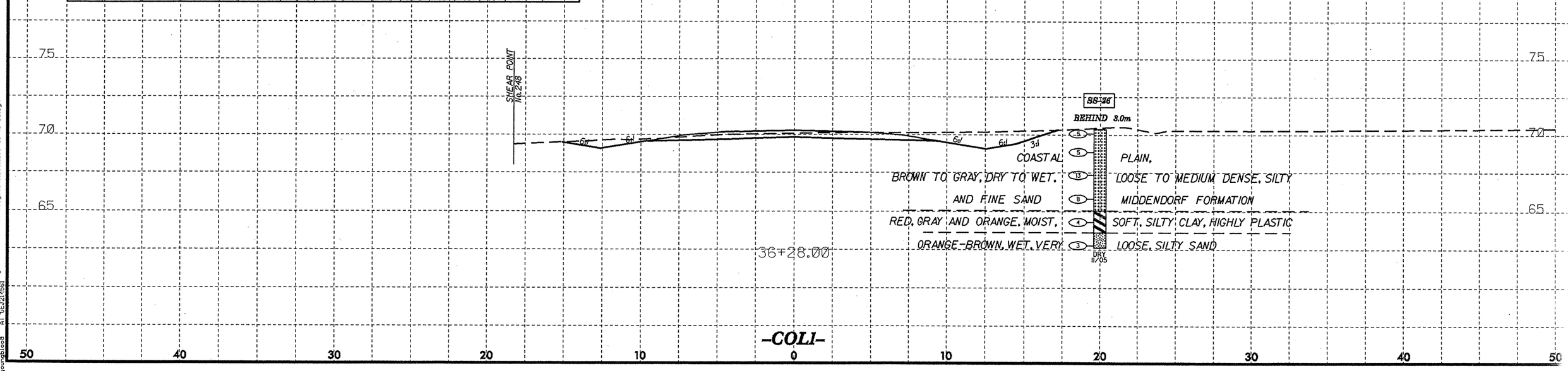
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	143

2.5 0 2.5 5

METRIC

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	20.0m RT	36+25	5.80-6.20	A-7-5(46)	73	42	3.2	5.4	9.2	82.2	100	98	93	-	-



-COLI-

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ayoungblood AT UE121456

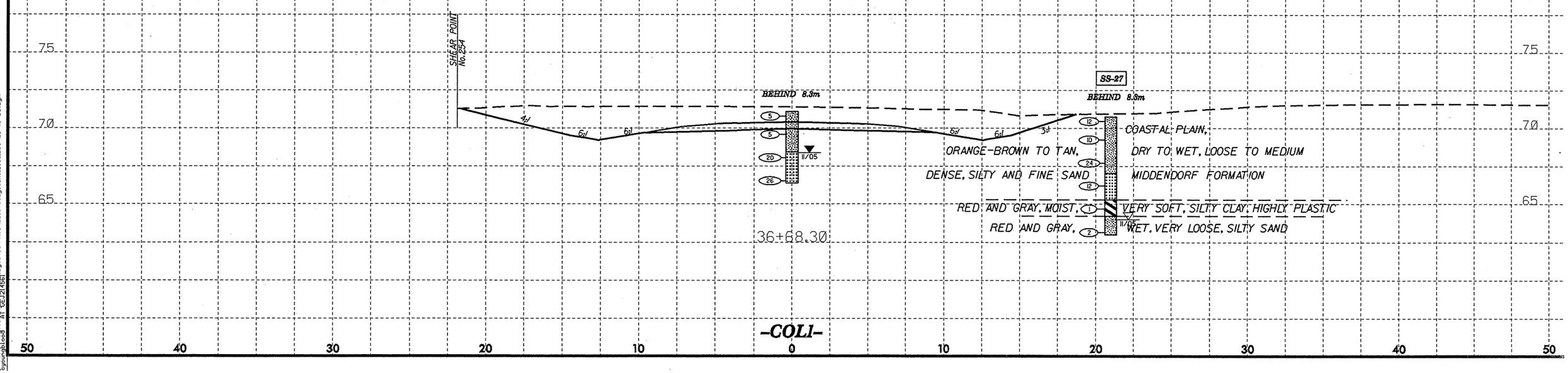
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	144

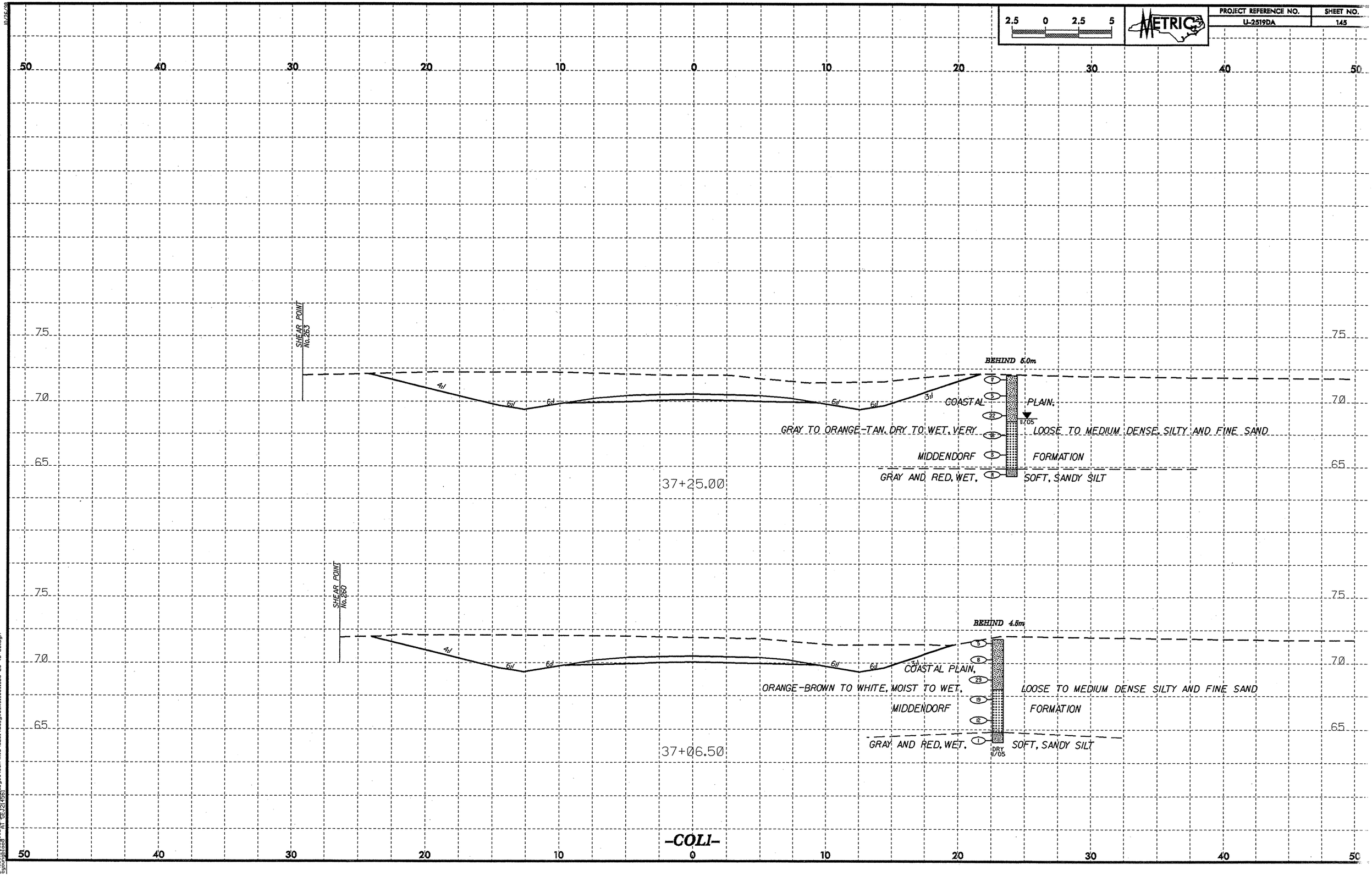
2.5 0 2.5 5

METRIC

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-27	21.0m RT	36+60	5.80-6.20	A-7-6(36)	61	38	2.2	22.0	17.6	58.1	100	98	87	-	-





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METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
145
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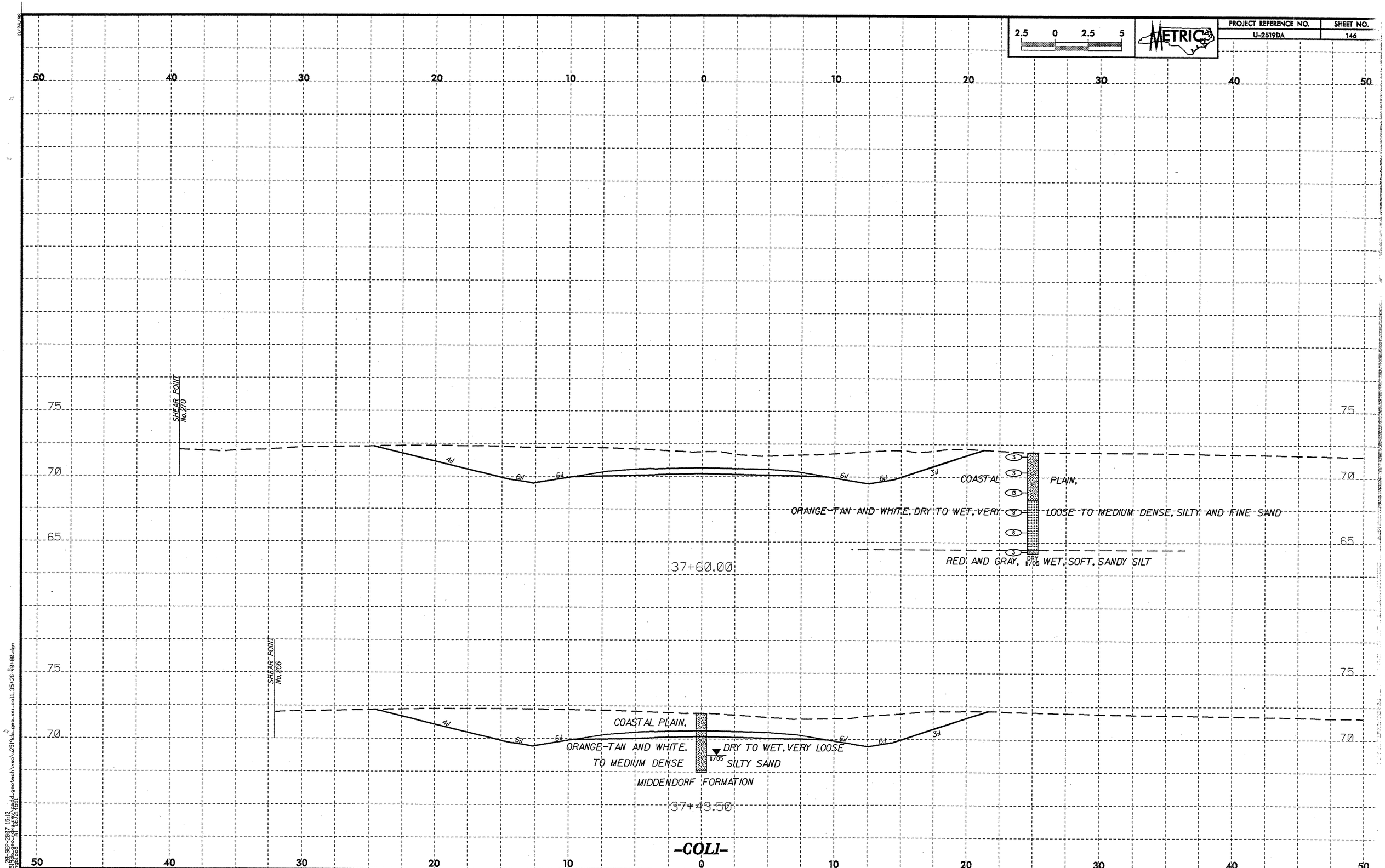
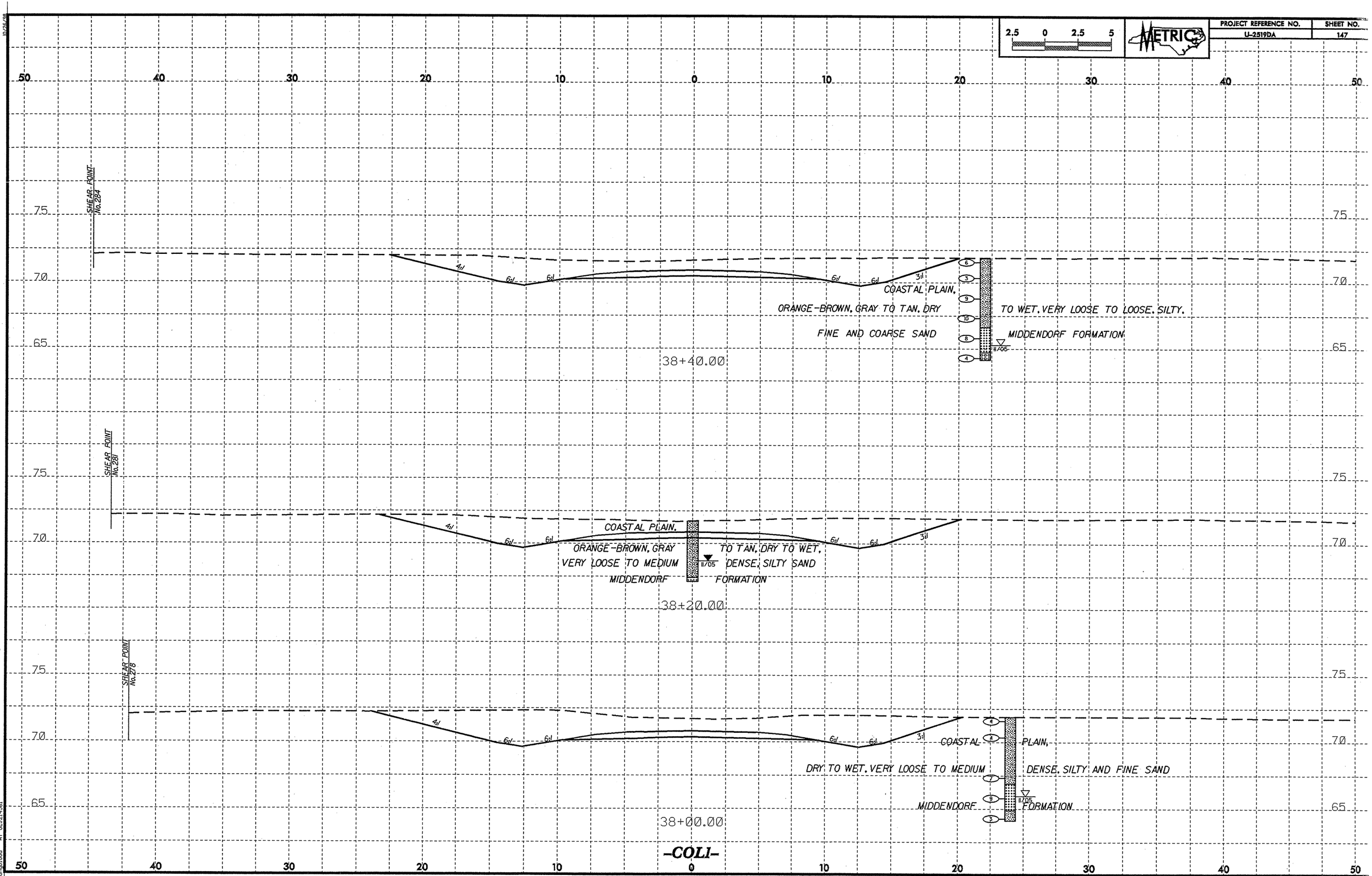
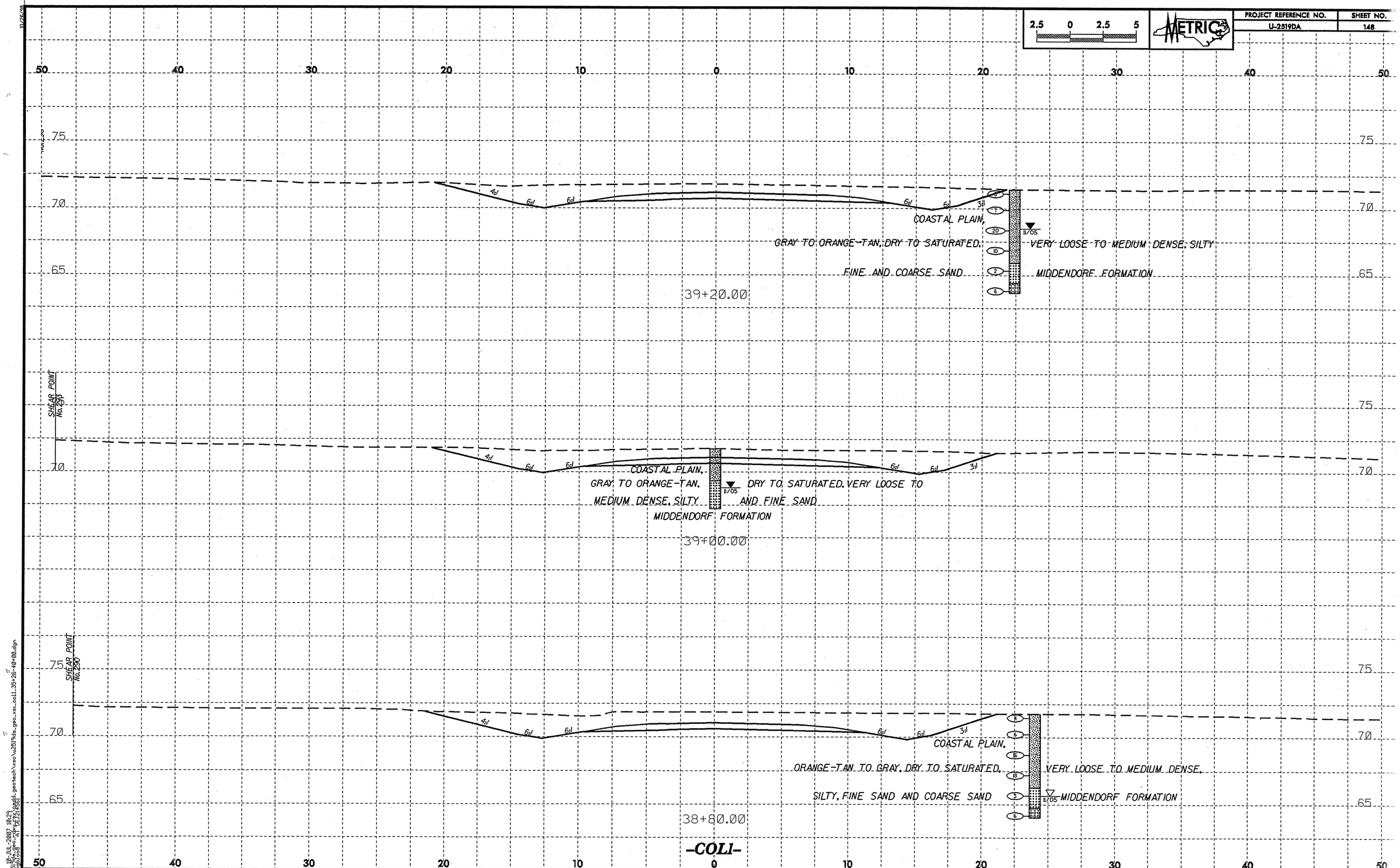
75
70
65
SHEAR POINT No.263
BEHIND 5.0m
4:1
6:1
6:1
6:1
6:1
3:1
COASTAL PLAIN,
GRAY TO ORANGE-TAN, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY AND RED, WET, SOFT, SANDY SILT
37+25.00
SHEAR POINT No.260
BEHIND 4.5m
COASTAL PLAIN,
ORANGE-BROWN TO WHITE, MOIST TO WET, LOOSE TO MEDIUM DENSE SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY AND RED, WET, SOFT, SANDY SILT
DRY 11/05
37+06.50
-COLI-



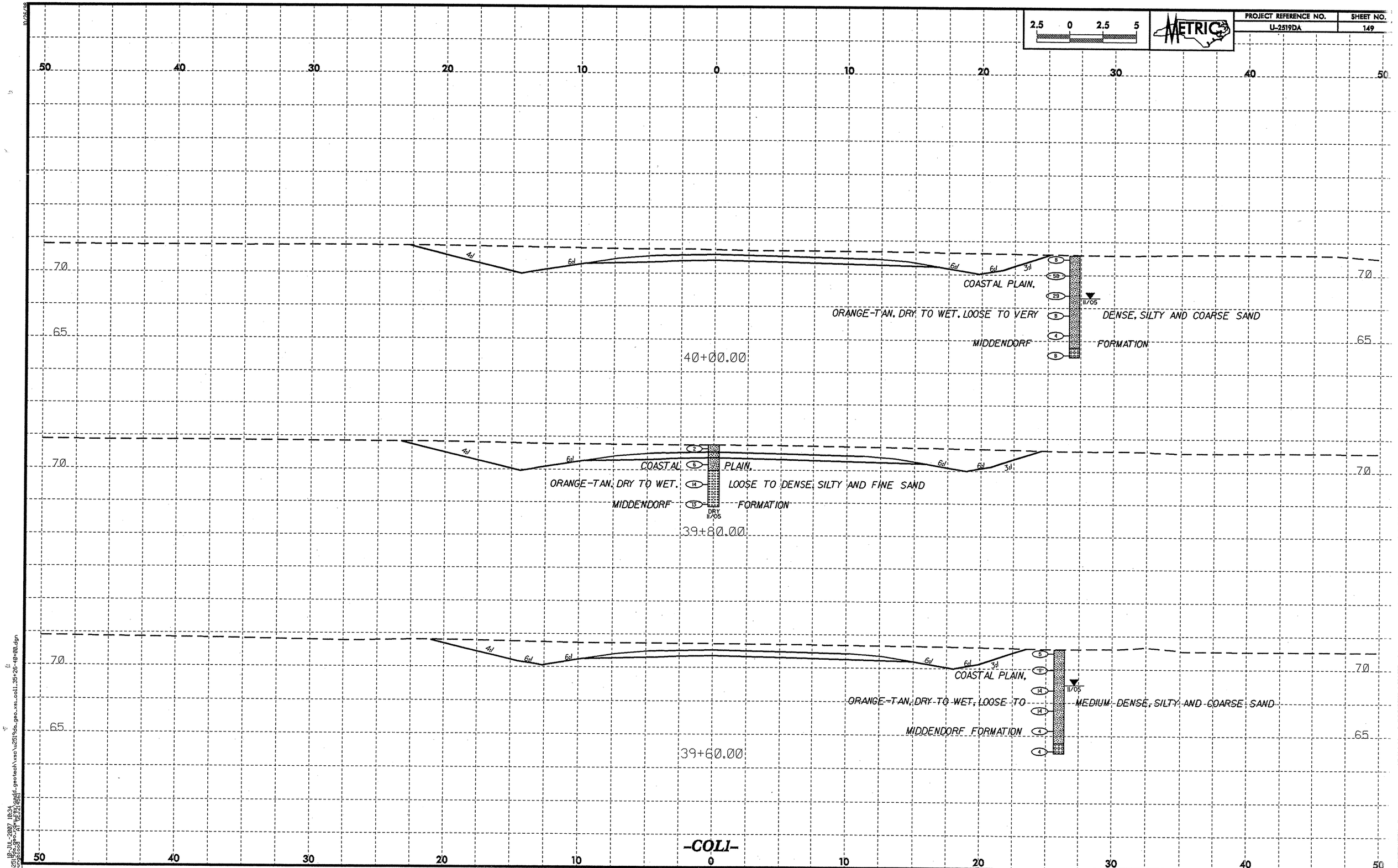
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
146
50 40 30 20 10 0 10 20 30 40 50
75
70
65
SHEAR POINT No.270
4:1
6:1
6:1
6:1
6:1
3:1
COASTAL PLAIN,
ORANGE-TAN AND WHITE, DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
RED AND GRAY, DRY 11/05 WET, SOFT, SANDY SILT
37+60.00
SHEAR POINT No.266
COASTAL PLAIN,
ORANGE-TAN AND WHITE, TO MEDIUM DENSE
DRY TO WET, VERY LOOSE
11/05
SILTY SAND
MIDDENDORF FORMATION
37+43.50
-COLI-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
147
SHEAR POINT No.284
COASTAL PLAIN,
ORANGE-BROWN, GRAY TO TAN, DRY TO WET, VERY LOOSE TO LOOSE, SILTY,
FINE AND COARSE SAND MIDDENDORF FORMATION
38+40.00
SHEAR POINT No.281
COASTAL PLAIN,
ORANGE-BROWN, GRAY TO TAN, DRY TO WET,
VERY LOOSE TO MEDIUM DENSE, SILTY SAND
MIDDENDORF FORMATION
38+20.00
SHEAR POINT No.278
COASTAL PLAIN,
DRY TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
38+00.00
-COL1-



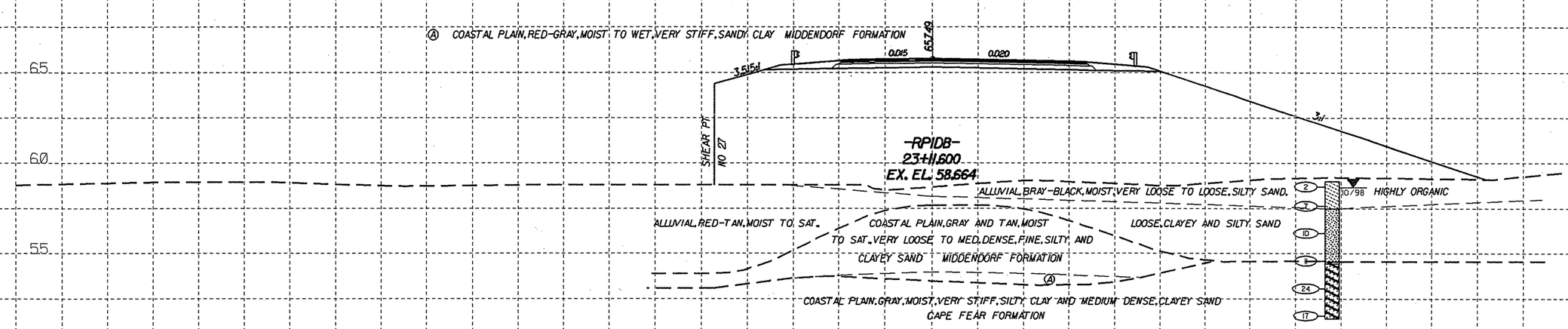
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
148
50 40 30 20 10 0 10 20 30 40 50
75
70
65
4:1
6:1
6:1
6:1
6:1
3:1
COASTAL PLAIN,
GRAY TO ORANGE-TAN, DRY TO SATURATED,
VERY LOOSE TO MEDIUM DENSE, SILTY
FINE AND COARSE SAND
MIDDENDORF FORMATION
11/05
39+20.00
SHEAR POINT No.293
COASTAL PLAIN,
GRAY TO ORANGE-TAN,
DRY TO SATURATED, VERY LOOSE TO
MEDIUM DENSE, SILTY
AND FINE SAND
MIDDENDORF FORMATION
39+00.00
SHEAR POINT No.290
COASTAL PLAIN,
ORANGE-TAN TO GRAY, DRY TO SATURATED,
VERY LOOSE TO MEDIUM DENSE,
SILTY, FINE SAND AND COARSE SAND
MIDDENDORF FORMATION
38+80.00
-COL1-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
149
50 40 30 20 10 0 10 20 30 40 50
70
65
4:1
6:1
3:1
COASTAL PLAIN,
ORANGE-TAN, DRY TO WET, LOOSE TO VERY DENSE, SILTY AND COARSE SAND
MIDDENDORF FORMATION
11/05
40+00.00
COASTAL PLAIN,
ORANGE-TAN, DRY TO WET, LOOSE TO DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
DRY 11/05
39+80.00
COASTAL PLAIN,
ORANGE-TAN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY AND COARSE SAND
MIDDENDORF FORMATION
39+60.00
-COL1-

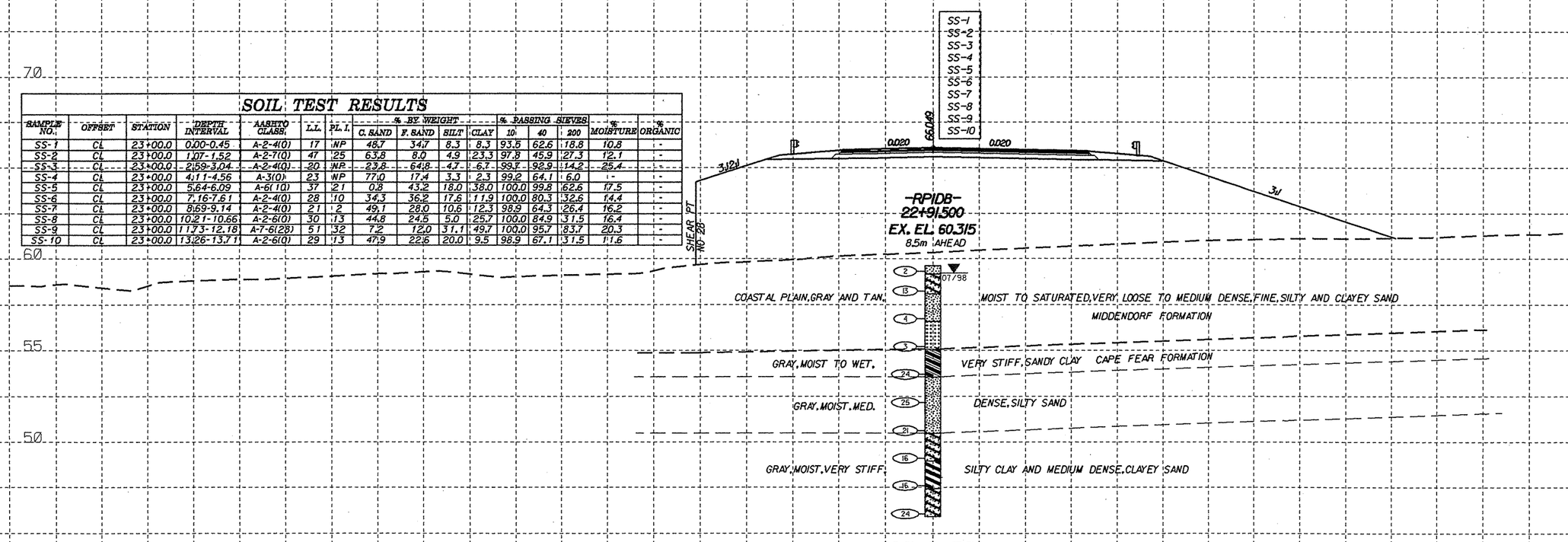
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	150

2.5 0 2.5 5 METRIC



SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
							C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-1	CL	23+00.0	0.00-0.45	A-2-4(0)	17	NP	48.7	34.7	8.3	8.3	93.5	62.6	18.8	10.8	-
SS-2	CL	23+00.0	1.07-1.52	A-2-7(0)	47	25	63.8	8.0	4.9	23.3	97.8	45.9	27.3	12.1	-
SS-3	CL	23+00.0	2.59-3.04	A-2-4(0)	20	NP	23.8	64.8	4.7	6.7	99.7	92.9	14.2	25.4	-
SS-4	CL	23+00.0	4.11-4.56	A-3(0)	23	NP	77.0	17.4	3.3	2.3	99.2	64.1	6.0	-	-
SS-5	CL	23+00.0	5.64-6.09	A-6(10)	37	21	0.8	43.2	18.0	38.0	100.0	99.8	62.6	17.5	-
SS-6	CL	23+00.0	7.16-7.61	A-2-4(0)	28	10	34.3	36.2	17.6	11.9	100.0	80.3	32.6	14.4	-
SS-7	CL	23+00.0	8.69-9.14	A-2-4(0)	21	2	49.1	28.0	10.6	12.3	98.9	64.3	26.4	16.2	-
SS-8	CL	23+00.0	10.21-10.66	A-2-6(0)	30	13	44.8	24.5	5.0	25.7	100.0	84.9	31.5	16.4	-
SS-9	CL	23+00.0	11.73-12.18	A-7-6(28)	51	32	7.2	12.0	31.1	49.7	100.0	95.7	83.7	20.3	-
SS-10	CL	23+00.0	13.26-13.71	A-2-6(0)	29	13	47.9	22.6	20.0	9.5	98.9	67.1	31.5	11.6	-



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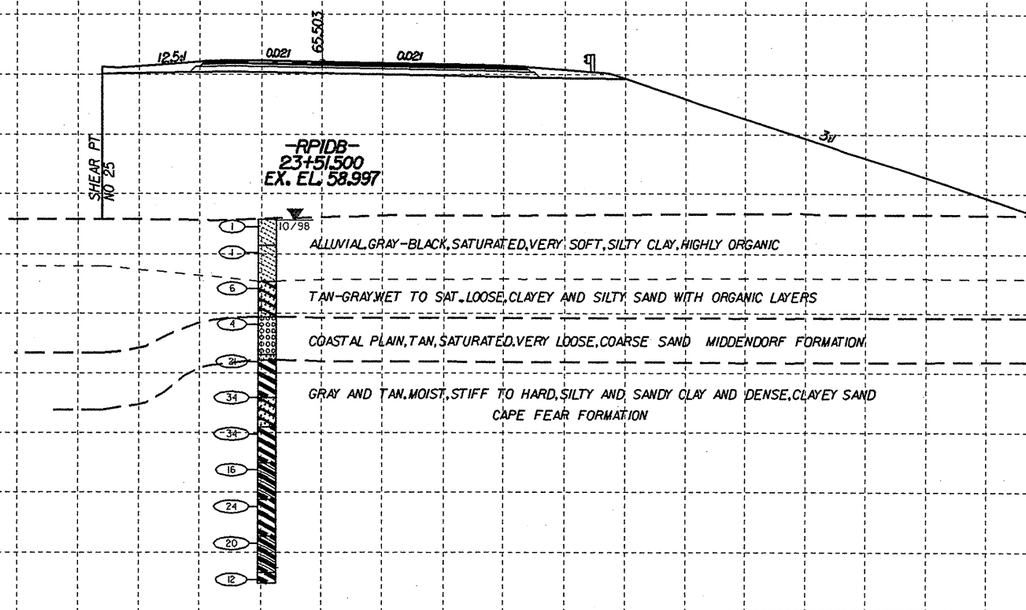
grounds1cad "APPROVED"

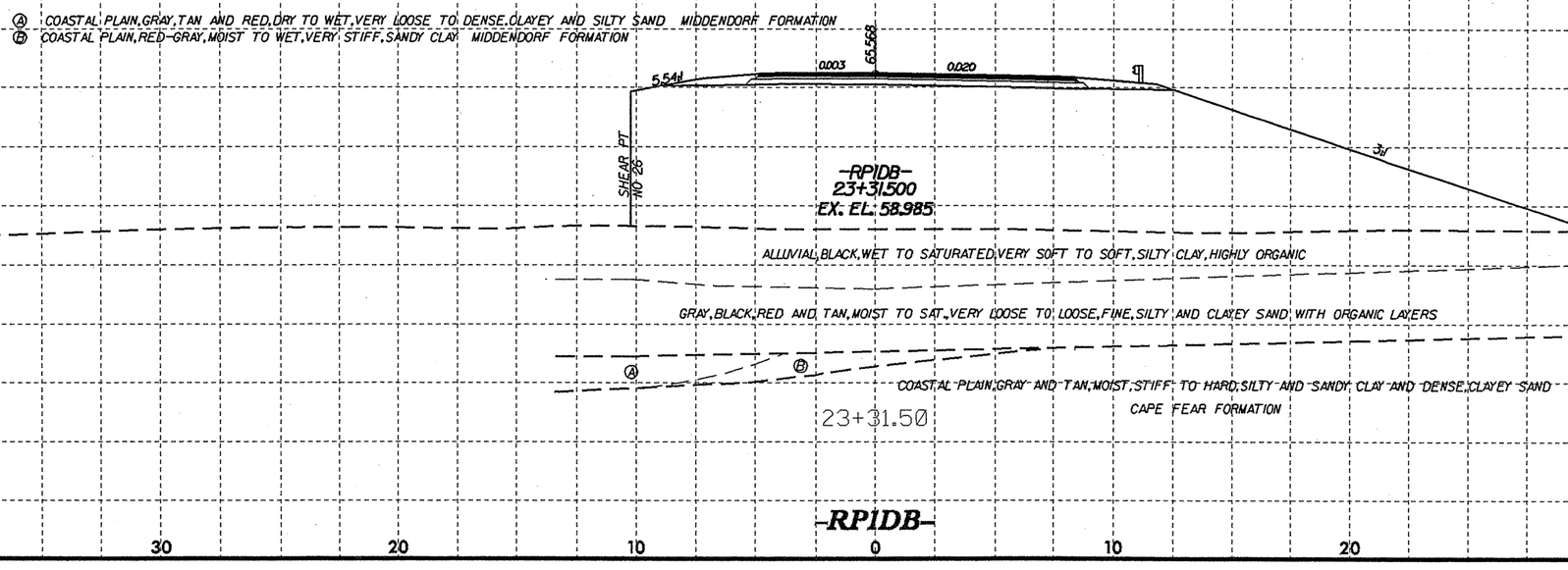
2.5 0 2.5 5

METRIC

50 40 30 20 10 0 10 20 30 40 50

65 60 55 50 45





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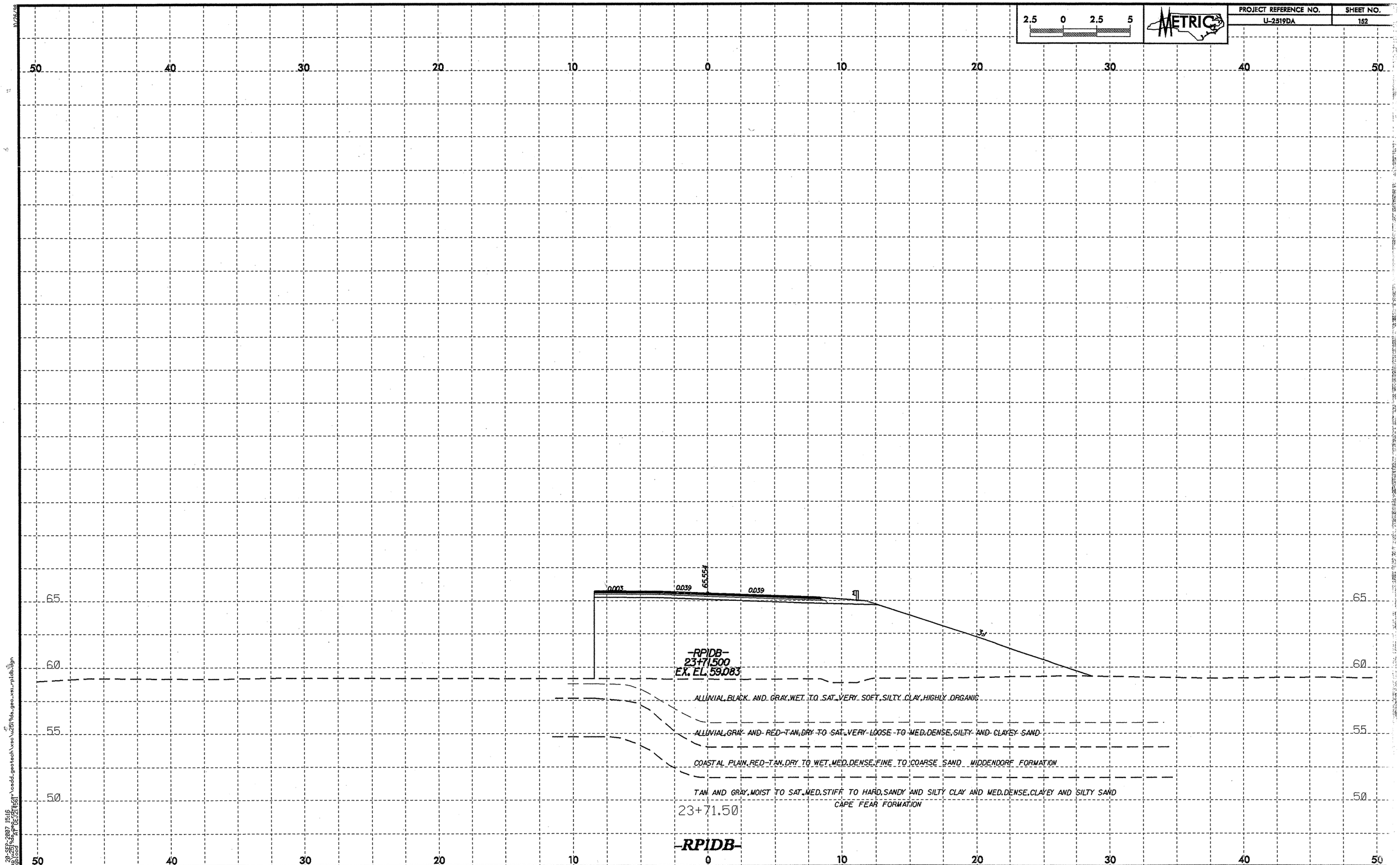
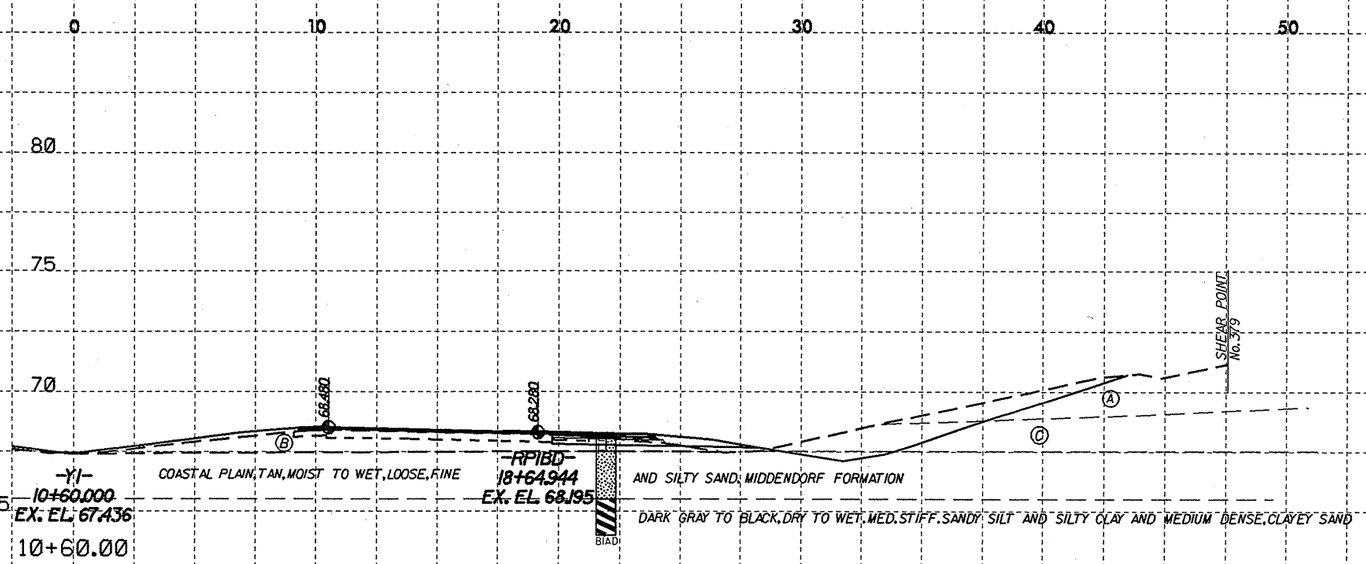
jsmallwood
PT CENTER 58.997



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
152
50 40 30 20 10 0 10 20 30 40 50
65
60
55
50
0.003
0.039
65.554
0.039
3:1
-RP1DB-
23+71.500
EX. EL. 59.083
ALLUVIAL, BLACK AND GRAY, WET TO SAT., VERY SOFT, SILTY CLAY, HIGHLY ORGANIC
ALLUVIAL, GRAY AND RED-TAN, DRY TO SAT., VERY LOOSE TO MED. DENSE, SILTY AND CLAYEY SAND
COASTAL PLAIN, RED-TAN, DRY TO WET, MED. DENSE, FINE TO COARSE SAND MIDDENDORF FORMATION
TAN AND GRAY, MOIST TO SAT., MED. STIFF TO HARD, SANDY AND SILTY CLAY AND MED. DENSE, CLAYEY AND SILTY SAND
CAPE FEAR FORMATION
23+71.50
-RP1DB-

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	153

2.5 0 2.5 5 METRIC



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21-SEP-2007 09:20
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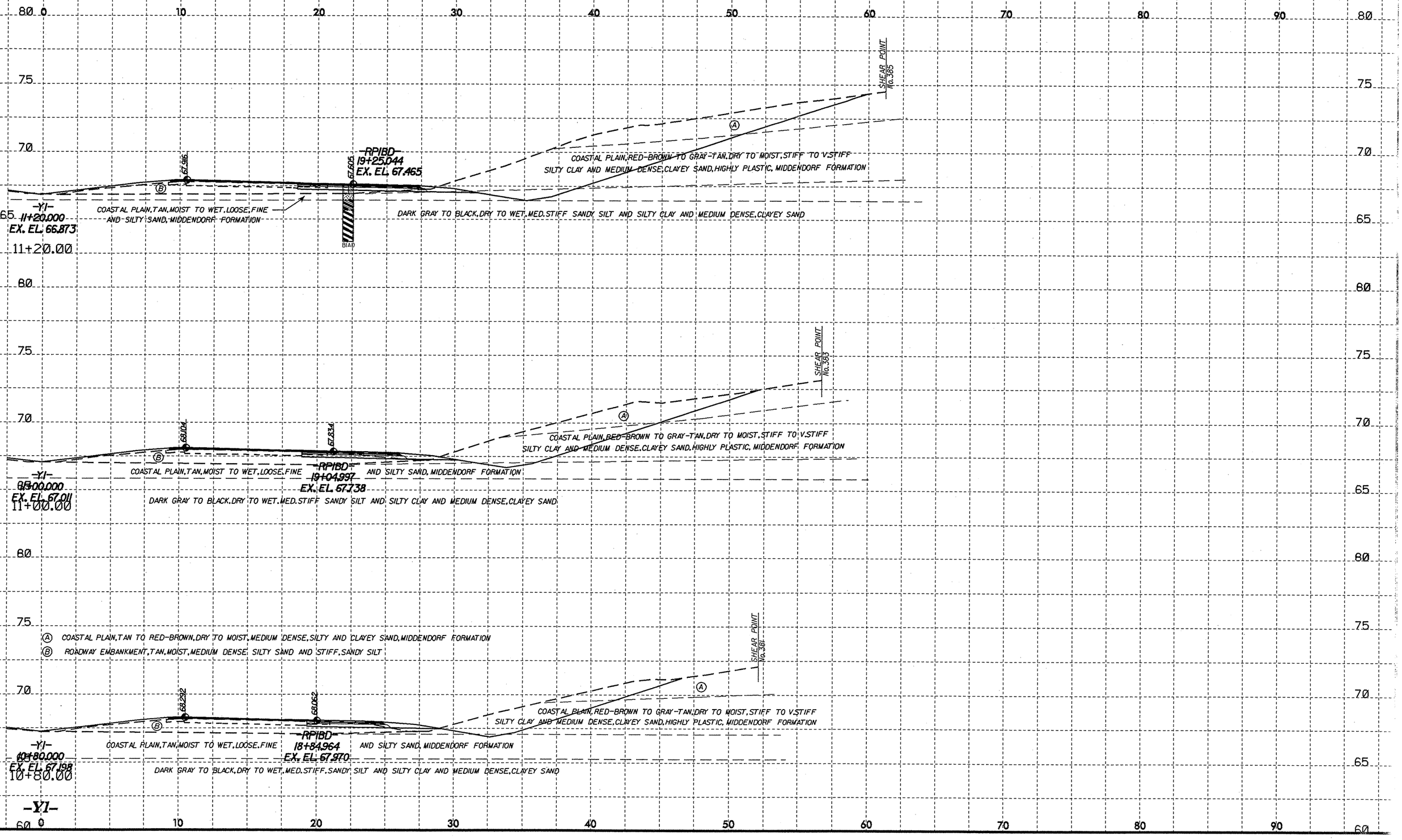
jgonsalves

2.5 0 2.5 5

METRIC



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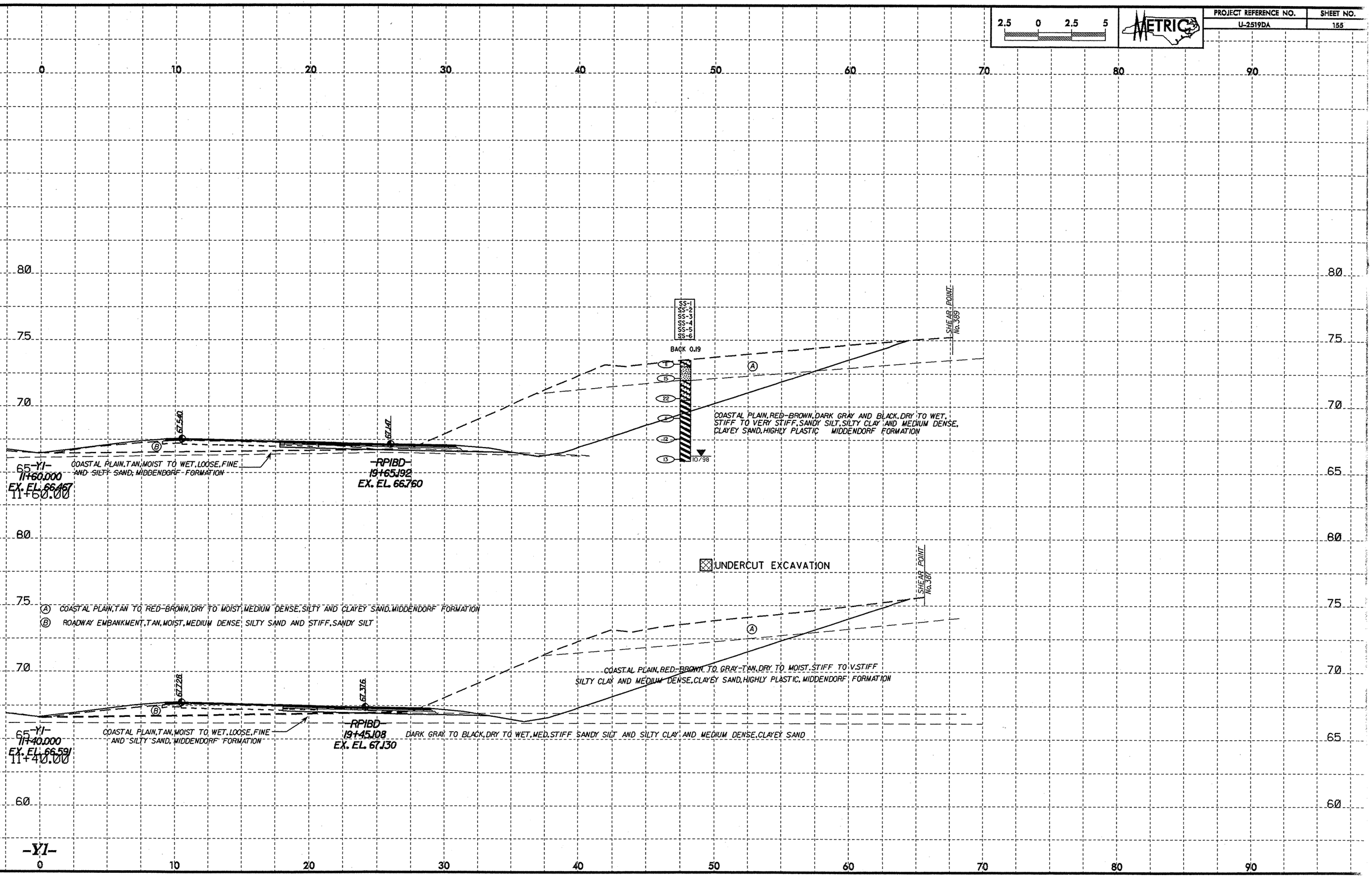
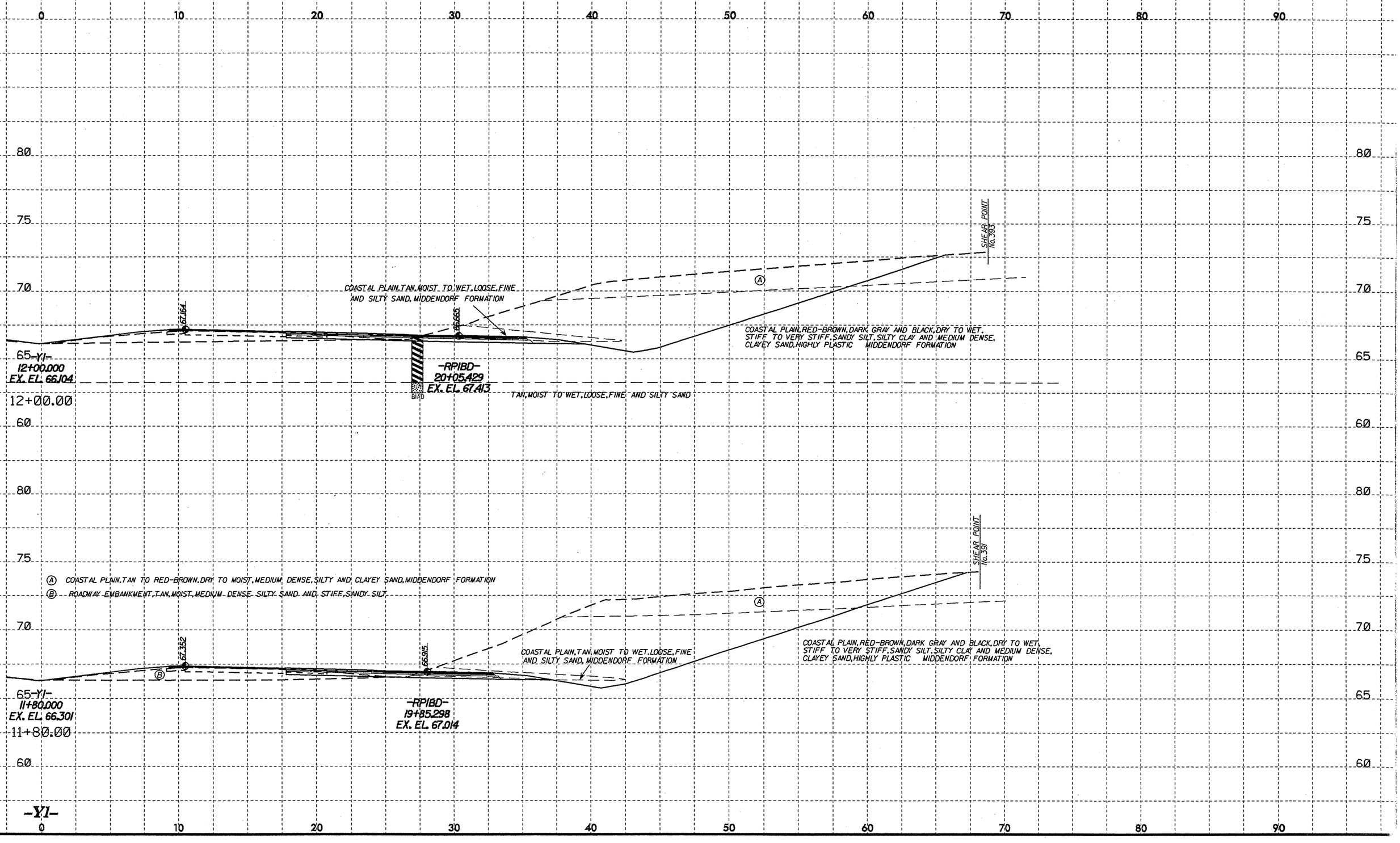
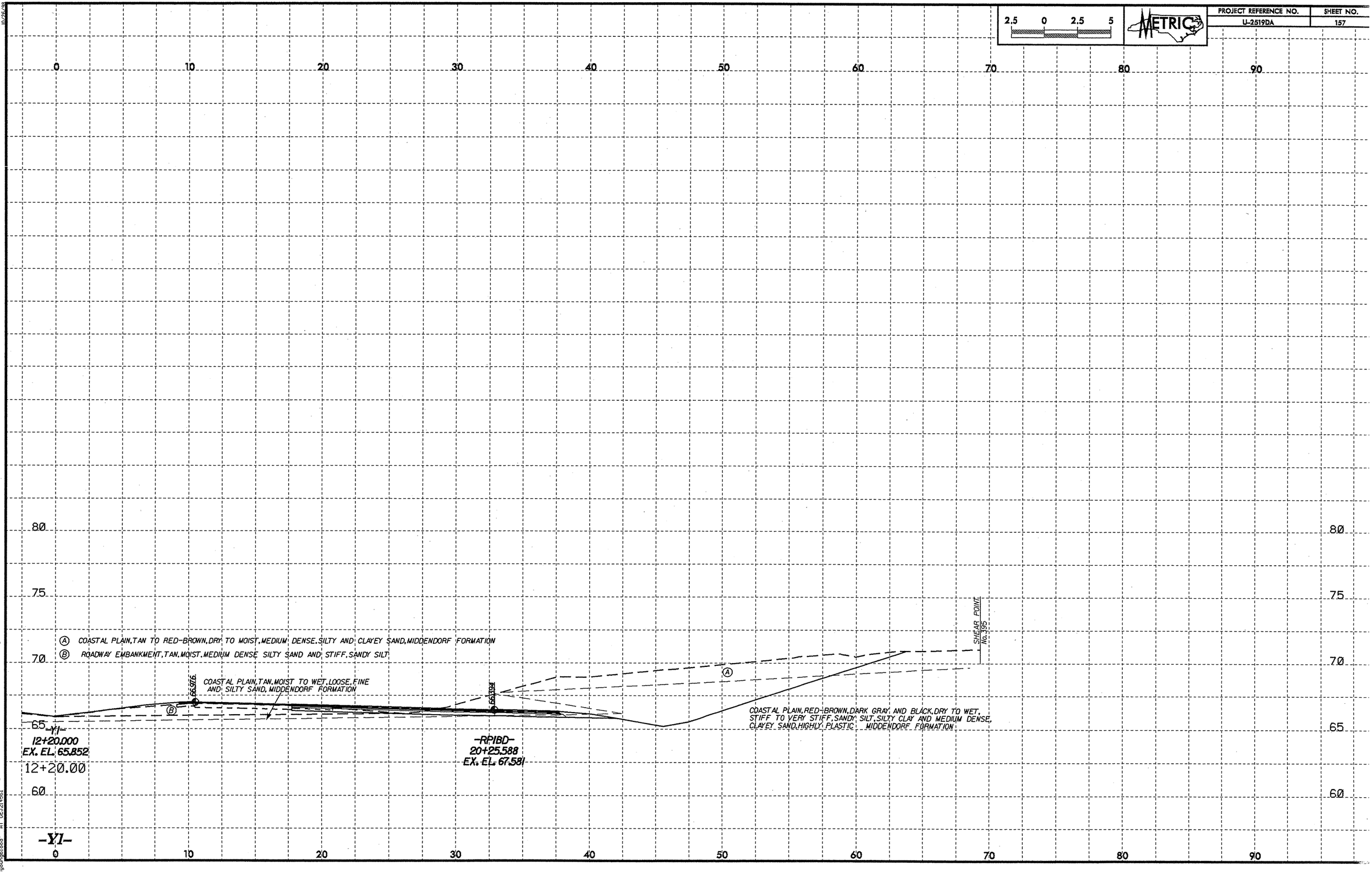


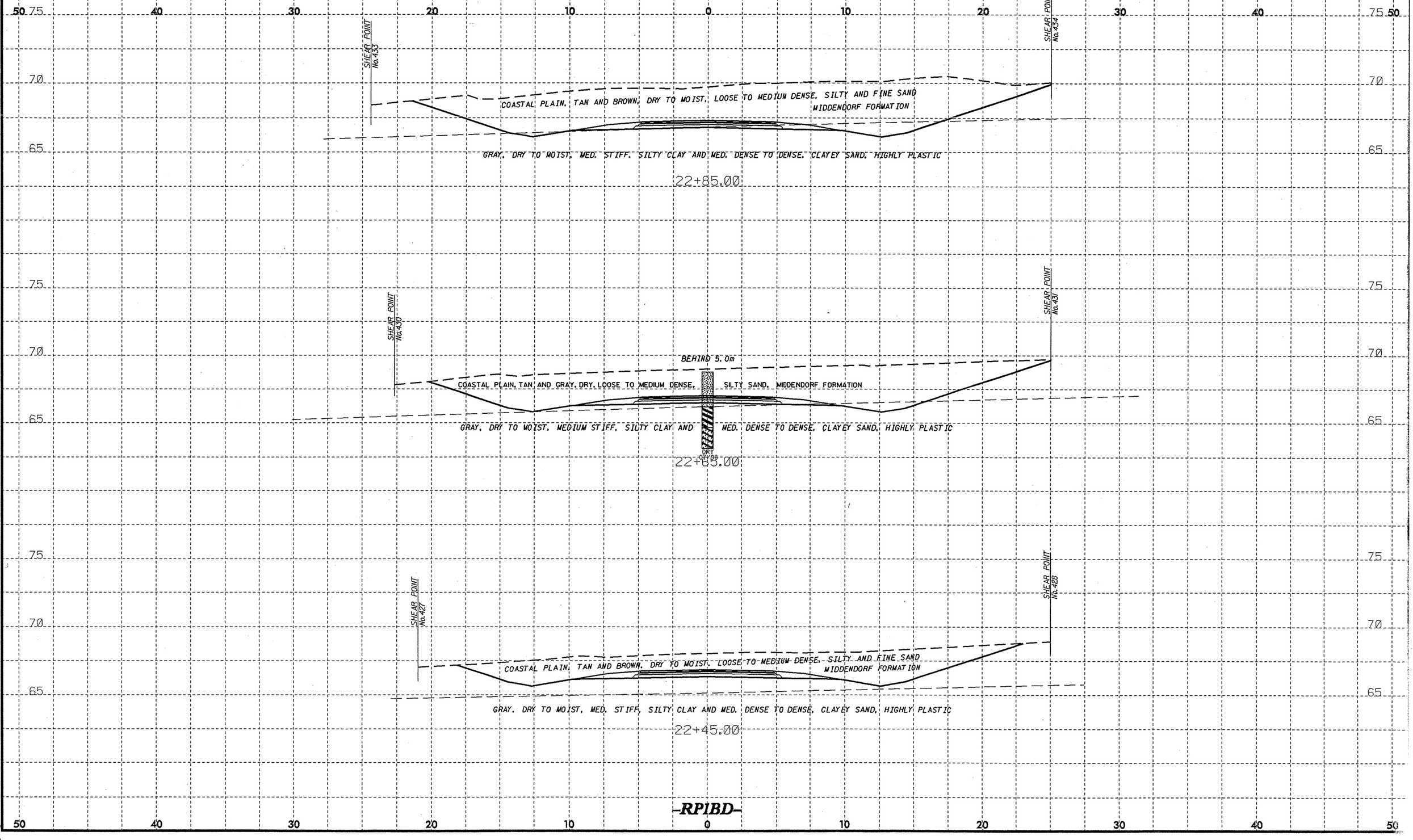
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
155
0 10 20 30 40 50 60 70 80 90
80
75
70
65
60
SS-1
SS-2
SS-3
SS-4
SS-5
SS-6
BACK 0.19
11
15
22
11
12
13
10/98
SHEAR POINT No.389
A
COASTAL PLAIN, RED-BROWN, DARK GRAY AND BLACK, DRY TO WET, STIFF TO VERY STIFF, SANDY SILT, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC MIDDENDORF FORMATION
67.540
67.147
B
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND, MIDDENDORF FORMATION
-Y1-
11+60.000
EX. EL. 66.467
11+60.00
-RPIBD-
19+65.192
EX. EL. 66.760
UNDERCUT EXCAVATION
SHEAR POINT No.387
A COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY AND CLAYEY SAND, MIDDENDORF FORMATION
B ROADWAY EMBANKMENT, TAN, MOIST, MEDIUM DENSE SILTY SAND AND STIFF, SANDY SILT
COASTAL PLAIN, RED-BROWN TO GRAY-TAN, DRY TO MOIST, STIFF TO V.STIFF SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC, MIDDENDORF FORMATION
67.728
67.376
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND, MIDDENDORF FORMATION
-Y1-
11+40.000
EX. EL. 66.591
11+40.00
-RPIBD-
19+45.108
EX. EL. 67.130
DARK GRAY TO BLACK, DRY TO WET, MED. STIFF SANDY SILT AND SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND
-Y1-



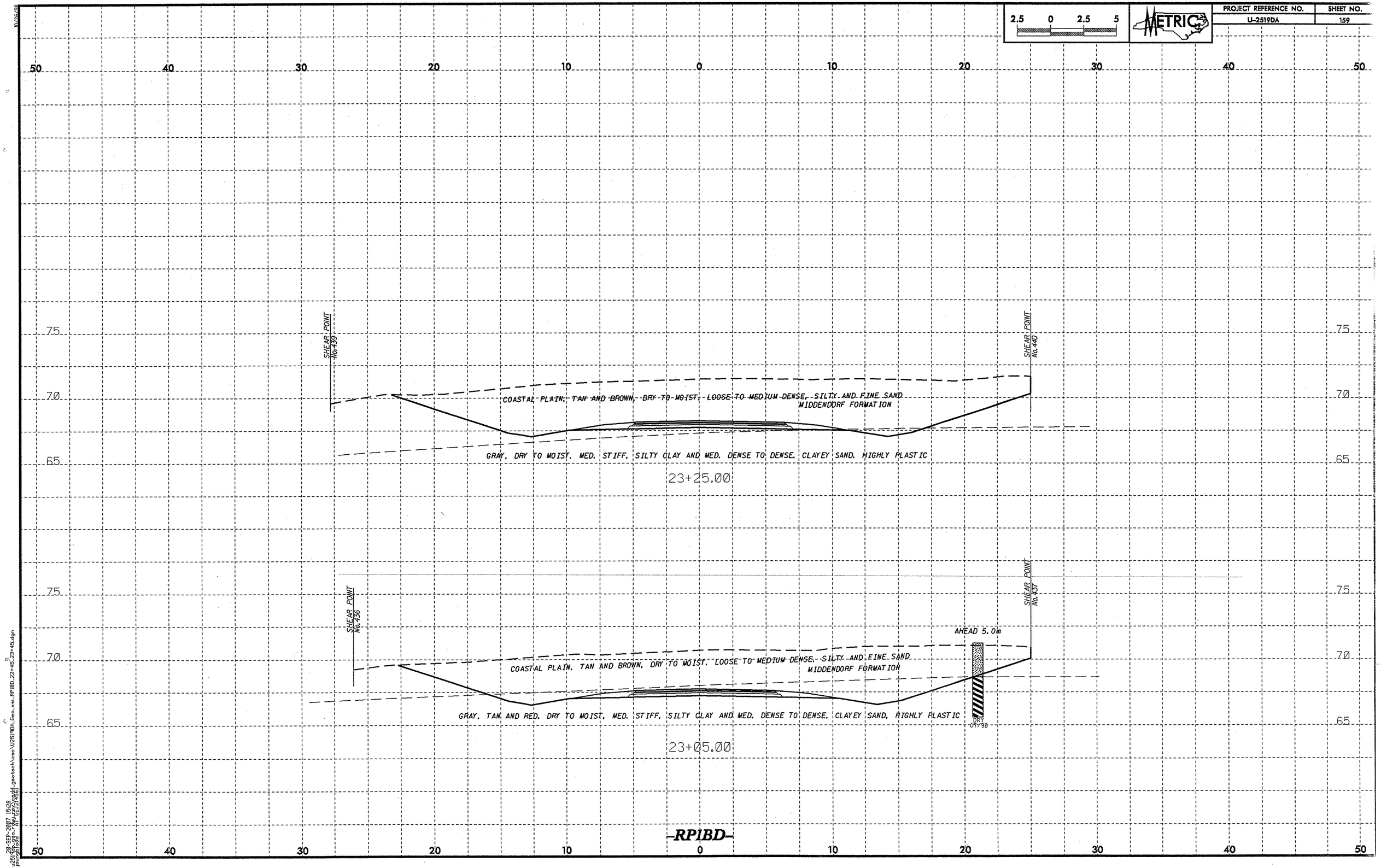
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
156
0 10 20 30 40 50 60 70 80 90
80
75
70
65
60
-Y1-
12+00.000
EX. EL. 66.104
12+00.00
67.164
66.665
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND, MIDDENDORF FORMATION
-RPIBD-
20+05.429
EX. EL. 67.413
BIAD
TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND
COASTAL PLAIN, RED-BROWN, DARK GRAY AND BLACK, DRY TO WET, STIFF TO VERY STIFF, SANDY SILT, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC MIDDENDORF FORMATION
SHEAR POINT No. 393
Ⓐ
Ⓐ COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY AND CLAYEY SAND, MIDDENDORF FORMATION
Ⓑ ROADWAY EMBANKMENT, TAN, MOIST, MEDIUM DENSE SILTY SAND AND STIFF, SANDY SILT
67.352
66.915
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND, MIDDENDORF FORMATION
COASTAL PLAIN, RED-BROWN, DARK GRAY AND BLACK, DRY TO WET, STIFF TO VERY STIFF, SANDY SILT, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC MIDDENDORF FORMATION
SHEAR POINT No. 391
-Y1-
11+80.000
EX. EL. 66.301
11+80.00
-RPIBD-
19+85.298
EX. EL. 67.014
-Y1-



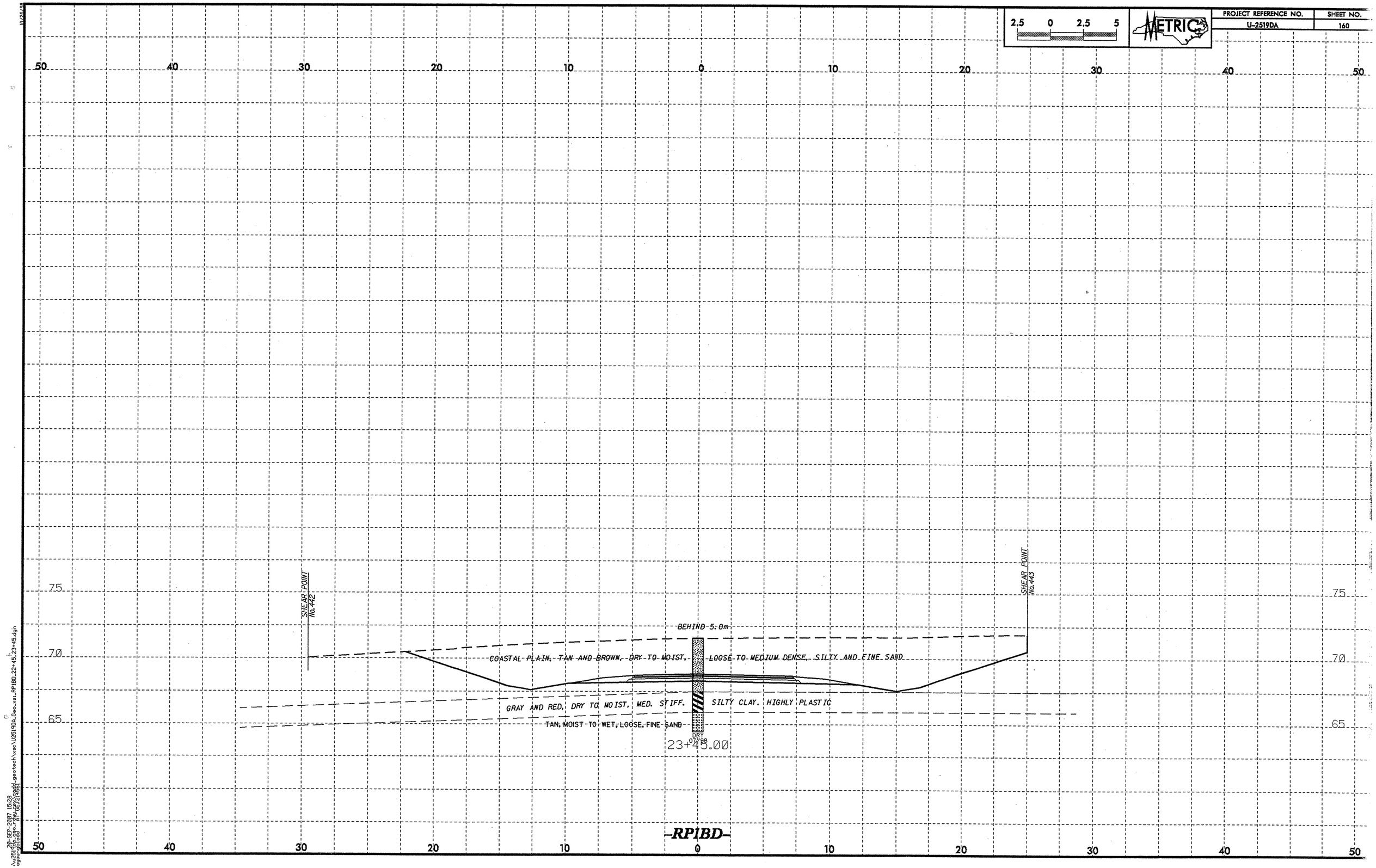
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
157
0 10 20 30 40 50 60 70 80 90
80
75
70
65
60
Ⓐ COASTAL PLAIN, TAN TO RED-BROWN, DRY TO MOIST, MEDIUM DENSE, SILTY AND CLAYEY SAND, MIDDENDORF FORMATION
Ⓑ ROADWAY EMBANKMENT, TAN, MOIST, MEDIUM DENSE SILTY SAND AND STIFF, SANDY SILT
66.976
COASTAL PLAIN, TAN, MOIST TO WET, LOOSE, FINE AND SILTY SAND, MIDDENDORF FORMATION
66.394
SHEAR POINT No. 395
COASTAL PLAIN, RED-BROWN, DARK GRAY AND BLACK, DRY TO WET, STIFF TO VERY STIFF, SANDY SILT, SILTY CLAY AND MEDIUM DENSE, CLAYEY SAND, HIGHLY PLASTIC MIDDENDORF FORMATION
-Y1-
12+20.000
EX. EL. 65.852
12+20.00
-RPIBD-
20+25.588
EX. EL. 67.581
-Y1-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
158
SHEAR POINT No.433
SHEAR POINT No.434
COASTAL PLAIN, TAN AND BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY, DRY TO MOIST, MED. STIFF, SILTY CLAY AND MED. DENSE TO DENSE, CLAYEY SAND, HIGHLY PLASTIC
22+85.00
SHEAR POINT No.430
SHEAR POINT No.431
BEHIND 5.0m
COASTAL PLAIN, TAN AND GRAY, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
GRAY, DRY TO MOIST, MEDIUM STIFF, SILTY CLAY AND MED. DENSE TO DENSE, CLAYEY SAND, HIGHLY PLASTIC
DRY
22+65.00
SHEAR POINT No.427
SHEAR POINT No.428
COASTAL PLAIN, TAN AND BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY, DRY TO MOIST, MED. STIFF, SILTY CLAY AND MED. DENSE TO DENSE, CLAYEY SAND, HIGHLY PLASTIC
22+45.00
-RP1BD-

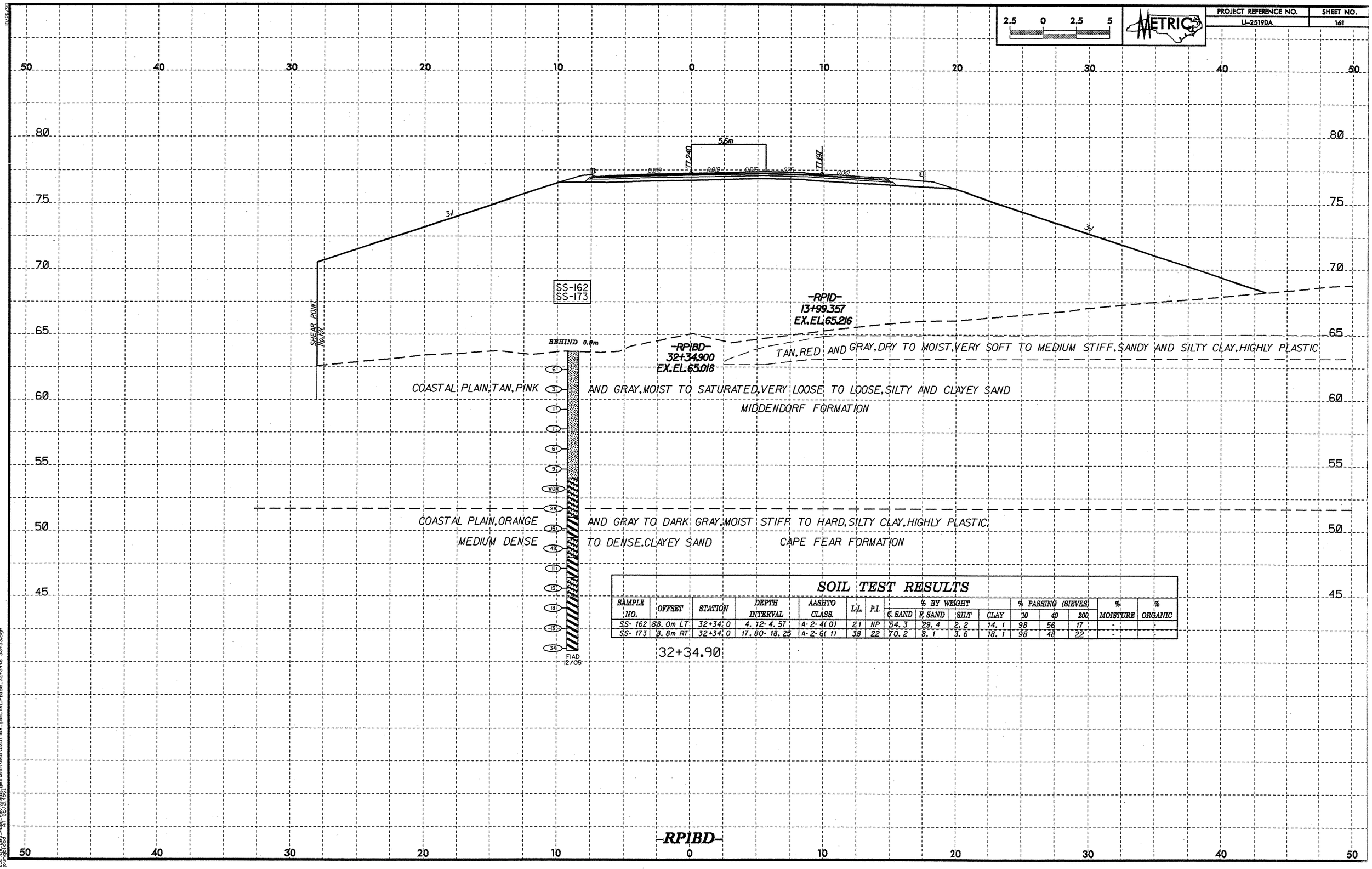


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
159
50 40 30 20 10 0 10 20 30 40 50
75
70
65
SHEAR POINT No.439
SHEAR POINT No.440
COASTAL PLAIN, TAN AND BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY, DRY TO MOIST, MED. STIFF, SILTY CLAY AND MED. DENSE TO DENSE, CLAYEY SAND, HIGHLY PLASTIC
23+25.00
SHEAR POINT No.436
SHEAR POINT No.437
AHEAD 5.0m
COASTAL PLAIN, TAN AND BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
MIDDENDORF FORMATION
GRAY, TAN AND RED, DRY TO MOIST, MED. STIFF, SILTY CLAY AND MED. DENSE TO DENSE, CLAYEY SAND, HIGHLY PLASTIC
DRY 07/98
23+05.00
-RP1BD-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
160
50 40 30 20 10 0 10 20 30 40 50
75
70
65
SHEAR POINT No.442
SHEAR POINT No.443
BEHIND 5.0m
COASTAL PLAIN, TAN AND BROWN, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND FINE SAND
GRAY AND RED, DRY TO MOIST, MED. STIFF. SILTY CLAY. HIGHLY PLASTIC
TAN, MOIST TO WET, LOOSE, FINE SAND
DRY
23+45.00
-RP1BD-

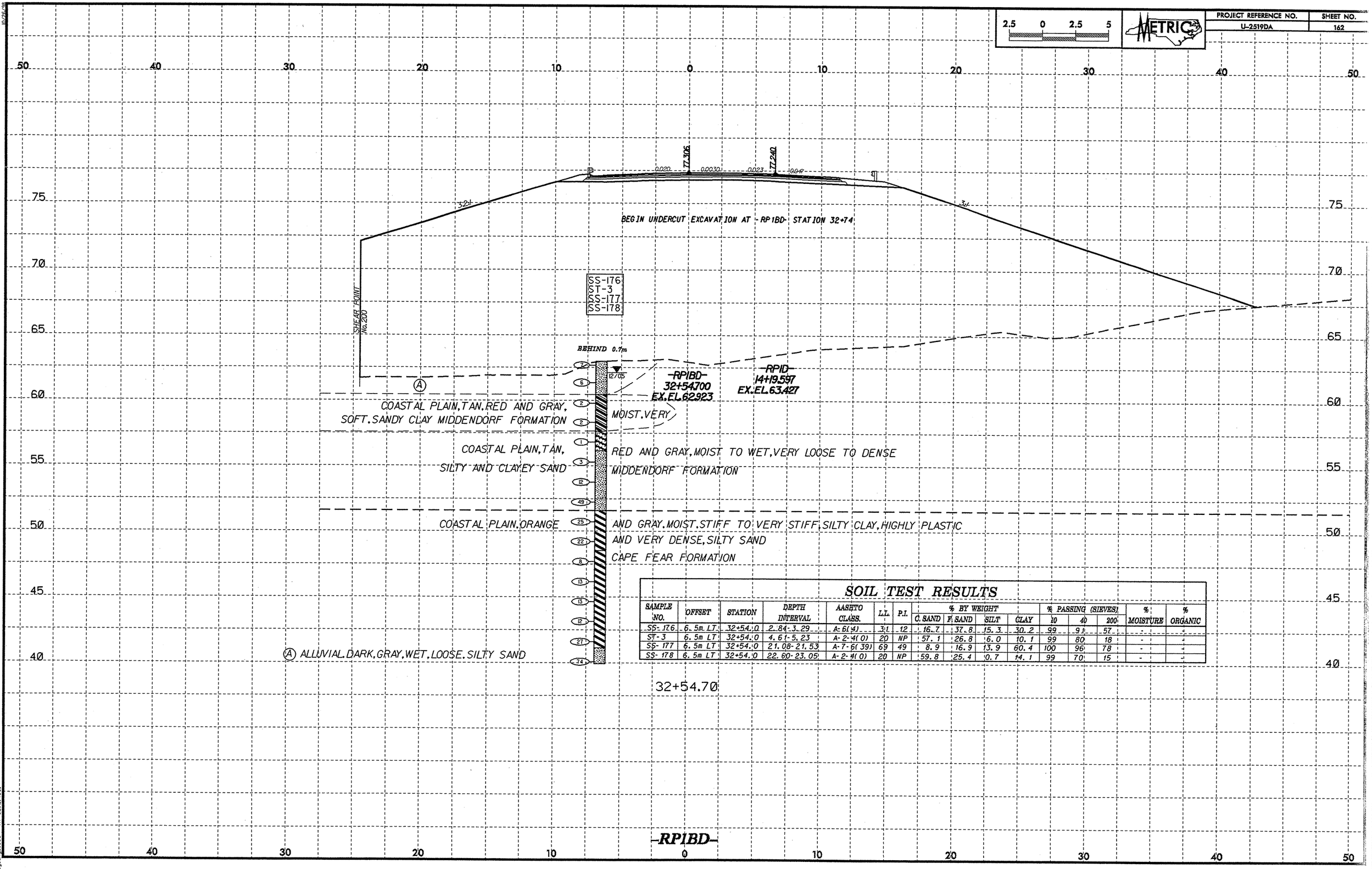
2.5 0 2.5 5 METRIC



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-162	88.0m LT	32+34.0	4.12-4.57	A-2-4(0)	21	NP	54.3	29.4	2.2	14.1	98	56	17	-	-
SS-173	8.8m RT	32+34.0	17.80-18.25	A-2-6(1)	38	22	70.2	8.1	3.6	18.1	98	48	22	-	-

20-SEP-2007 15:37
2519da_pro_rpv1.dgn
jonguldoss
d:\projects\geotech\xsls\u2519da_geo_xsl_rp1bd_32+34to 33+33.dgn



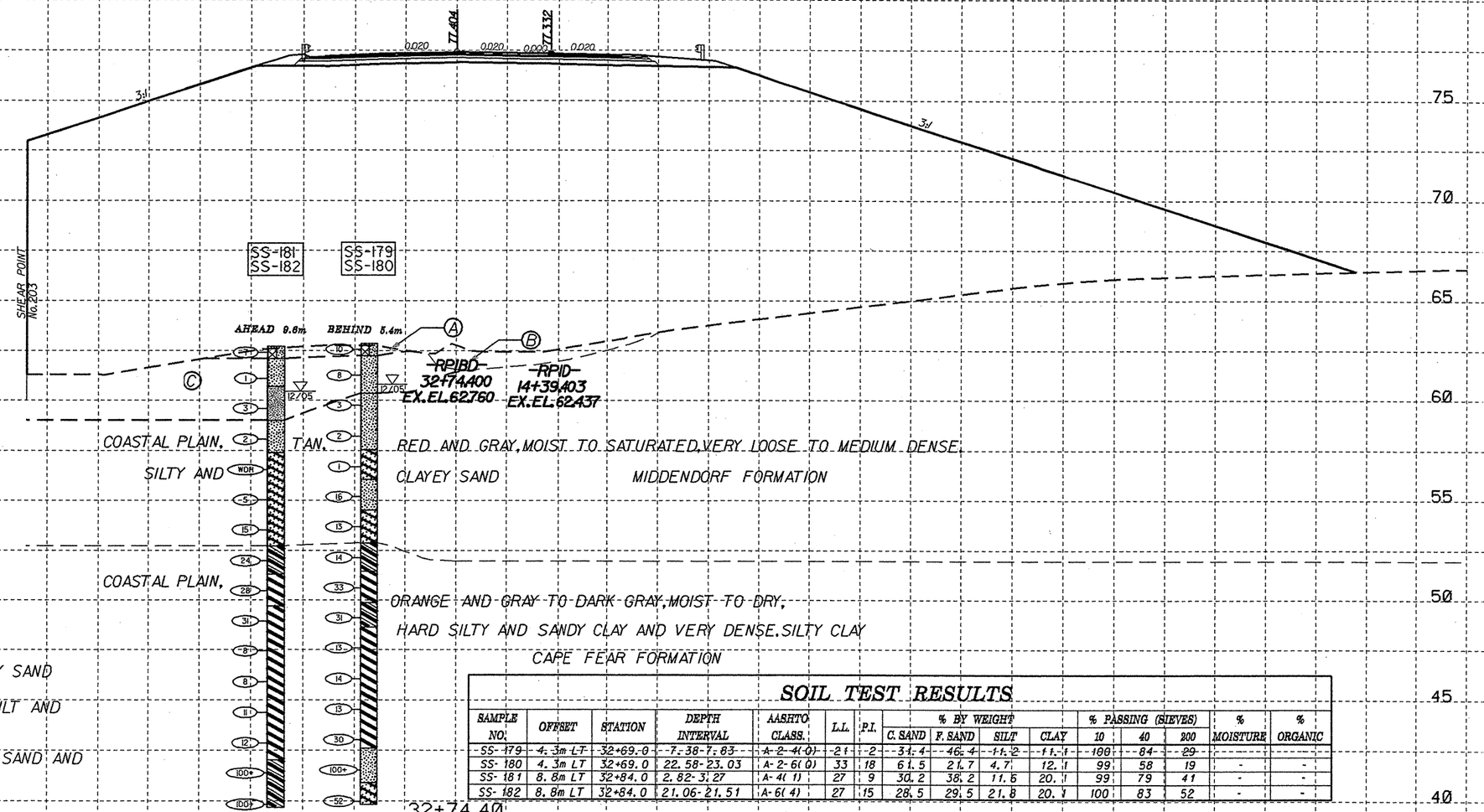
SOIL TEST RESULTS

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-176	6.5m LT	32+54.0	2.84-3.29	A-6(4)	31	12	16.7	37.8	15.3	30.2	99	91	57	-	-
ST-3	6.5m LT	32+54.0	4.61-5.23	A-2-4(0)	20	NP	57.1	26.8	6.0	10.1	99	80	18	-	-
SS-177	6.5m LT	32+54.0	21.08-21.53	A-7-6(39)	69	49	8.9	16.9	13.9	60.4	100	96	78	-	-
SS-178	6.5m LT	32+54.0	22.60-23.05	A-2-4(0)	20	NP	59.8	25.4	0.7	14.1	99	70	15	-	-

20-SEP-2007 15:31
u2519dgn_soil_profile_geotech\xsec\u2519da_geo_xs1_rp1bd_32+54o 33+33.dgn
ayoung3@dot.state.nc.us

2.5 0 2.5 5 METRIC

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	163



Ⓐ ARTIFICIAL FILL, ORANGE-BROWN, MOIST, LOOSE, SILTY SAND

Ⓑ ALLUVIAL, BLACK, SATURATED, VERY SOFT, CLAYEY SILT AND SILTY CLAY, MODERATELY ORGANIC

Ⓒ ALLUVIAL, GRAY, WET, VERY LOOSE TO LOOSE SILTY SAND AND SOFT SANDY SILT

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-179	4.3m LT	32+69.0	7.38-7.83	A-2-4(0)	21	2	31.4	46.4	11.2	11.1	100	84	29	-	-
SS-180	4.3m LT	32+69.0	22.58-23.03	A-2-6(0)	33	18	61.5	21.7	4.7	12.1	99	58	19	-	-
SS-181	8.8m LT	32+84.0	2.82-3.27	A-4(1)	27	9	30.2	38.2	11.6	20.1	99	79	41	-	-
SS-182	8.8m LT	32+84.0	21.06-21.51	A-6(4)	27	15	28.5	29.5	21.8	20.1	100	83	52	-	-

20-SEP-2007 15:32
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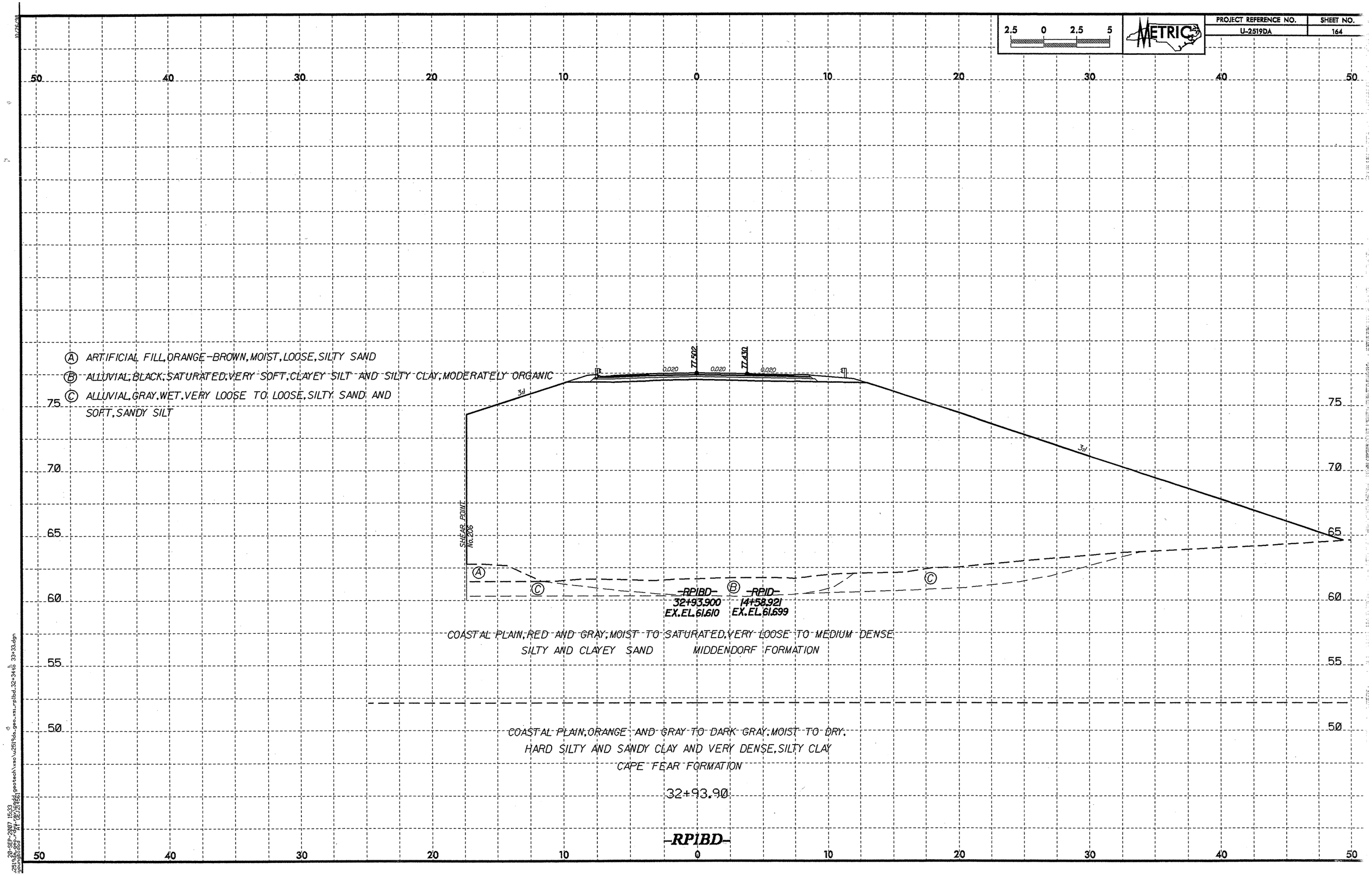
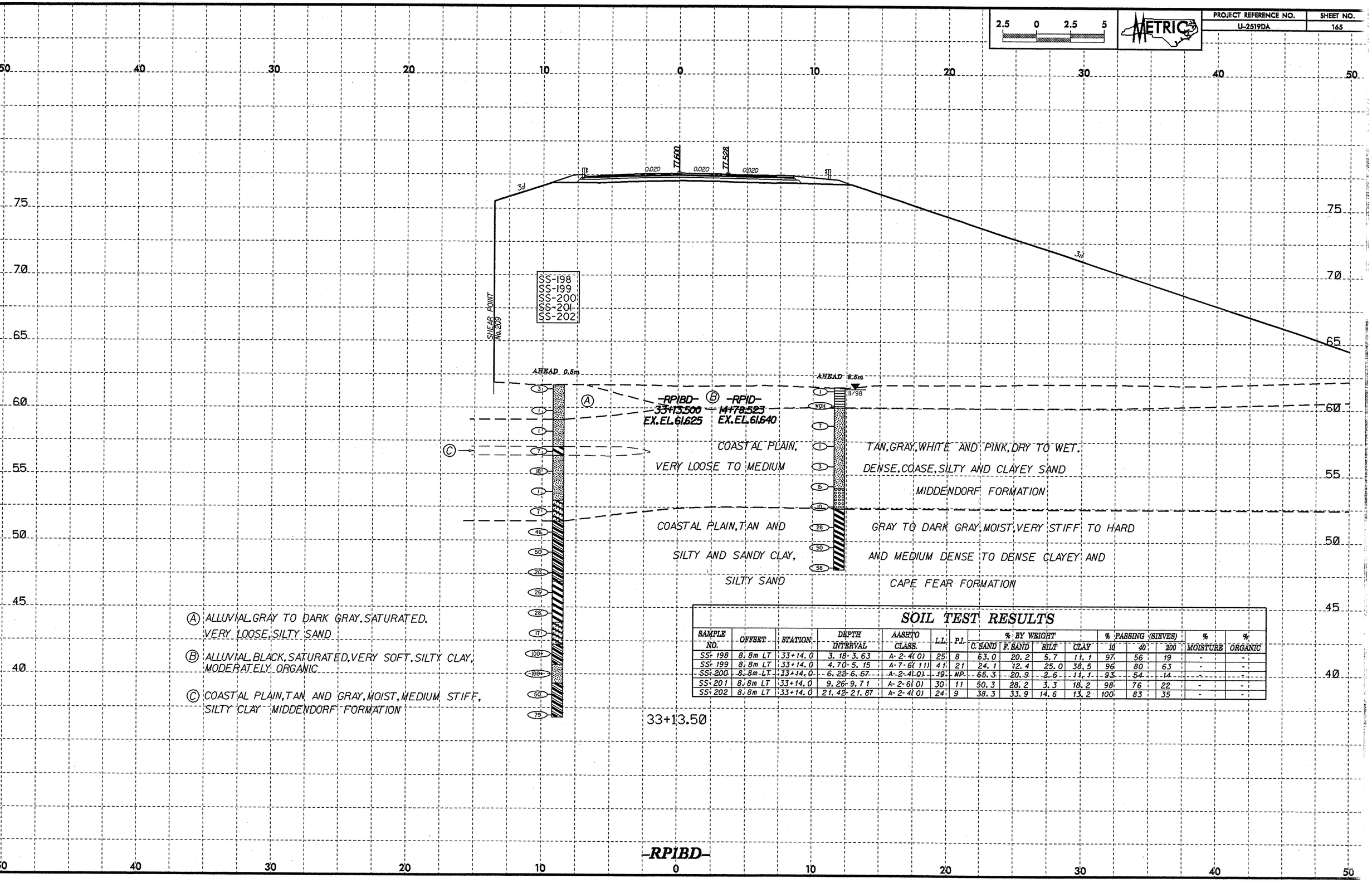
cpjoungblood



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
164
50 40 30 20 10 0 10 20 30 40 50
Ⓐ ARTIFICIAL FILL, ORANGE-BROWN, MOIST, LOOSE, SILTY SAND
Ⓑ ALLUVIAL, BLACK, SATURATED, VERY SOFT, CLAYEY SILT AND SILTY CLAY, MODERATELY ORGANIC
Ⓒ ALLUVIAL, GRAY, WET, VERY LOOSE TO LOOSE, SILTY SAND AND SOFT, SANDY SILT
77.502
77.430
0.020
0.020
0.020
3:1
3:1
SHEAR POINT No.206
75
70
65
60
55
50
-RPIBD-
32+93.900
EX.EL.61.610
-RPID-
14+58.921
EX.EL.61.699
COASTAL PLAIN, RED AND GRAY, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE
SILTY AND CLAYEY SAND MIDDENDORF FORMATION
COASTAL PLAIN, ORANGE AND GRAY TO DARK GRAY, MOIST TO DRY,
HARD SILTY AND SANDY CLAY AND VERY DENSE, SILTY CLAY
CAPE FEAR FORMATION
32+93.90
-RPIBD-

2.5 0 2.5 5

METRIC



Ⓐ ALLUVIAL, GRAY TO DARK GRAY, SATURATED. VERY LOOSE, SILTY SAND

Ⓑ ALLUVIAL, BLACK, SATURATED, VERY SOFT, SILTY CLAY, MODERATELY ORGANIC

Ⓒ COASTAL PLAIN, TAN AND GRAY, MOIST, MEDIUM STIFF, SILTY CLAY MIDDENDORF FORMATION

SOIL TEST RESULTS

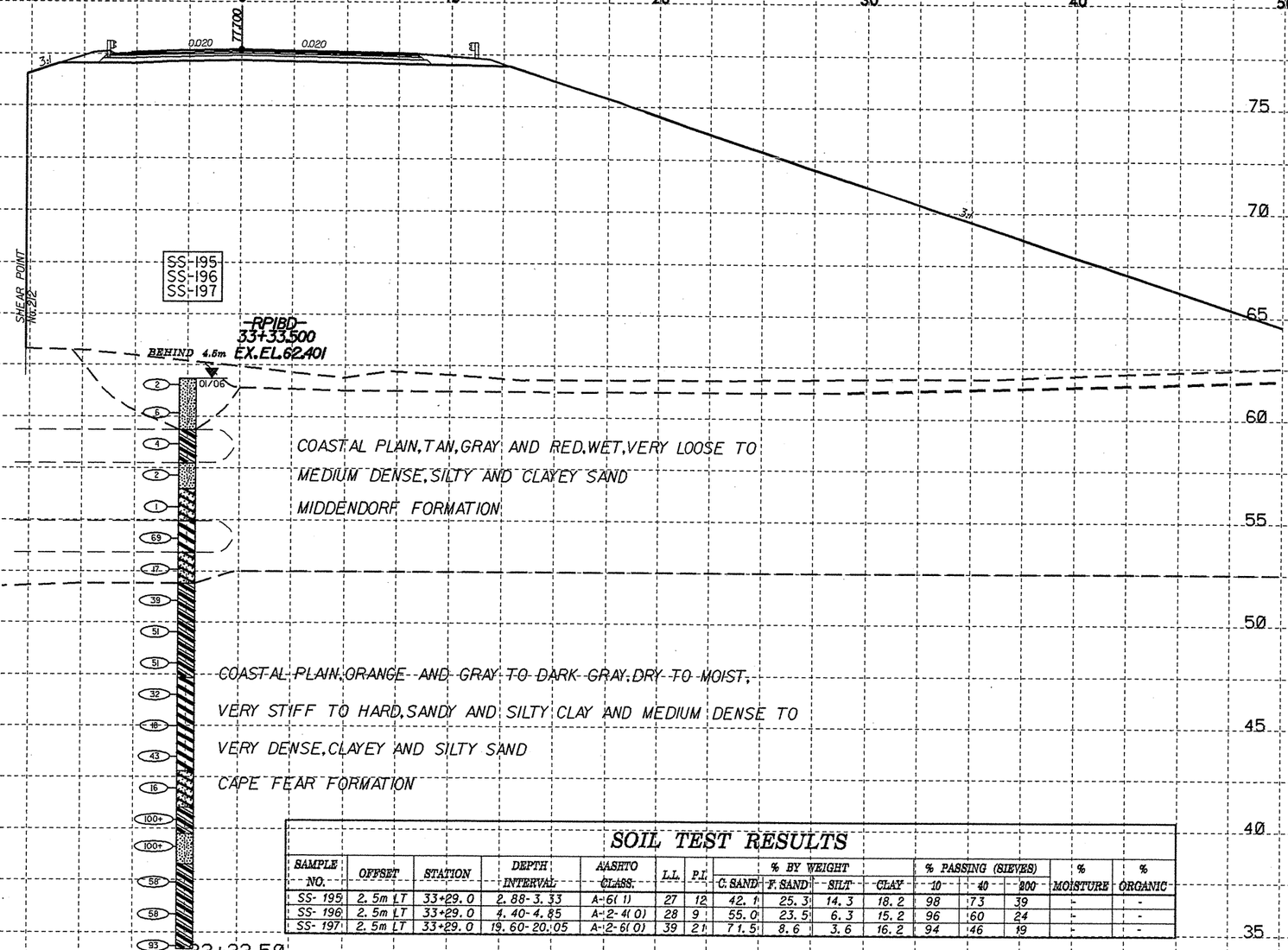
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	% BY WEIGHT F. SAND	% BY WEIGHT SILT	% BY WEIGHT CLAY	% PASSING (SIEVES) 10	% PASSING (SIEVES) 40	% PASSING (SIEVES) 200	% MOISTURE	% ORGANIC
SS-198	8.8m LT	33+14.0	3.18-3.63	A-2-4(0)	25	8	63.0	20.2	5.7	11.1	97	56	19	-	-
SS-199	8.8m LT	33+14.0	4.70-5.15	A-7-6(11)	41	21	24.1	12.4	25.0	38.5	96	80	63	-	-
SS-200	8.8m LT	33+14.0	6.22-6.67	A-2-4(0)	19	NP	65.3	20.9	2.6	11.1	93	54	14	-	-
SS-201	8.8m LT	33+14.0	9.26-9.71	A-2-6(0)	30	11	50.3	28.2	3.3	18.2	98	76	22	-	-
SS-202	8.8m LT	33+14.0	21.42-21.87	A-2-4(0)	24	9	38.3	33.9	14.6	13.2	100	83	35	-	-

20-SEP-2007 15:33
u2519da_geo_rpibd_geotech\xse\u2519da_geo_xs1_rpibd_32+34 33+33.dgn
groundsbed

2.5 0 2.5 5

METRIC

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	166



COASTAL PLAIN, TAN, GRAY AND RED, WET, VERY LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND MIDDENDORF FORMATION

COASTAL PLAIN, ORANGE AND GRAY TO DARK GRAY, DRY TO MOIST, VERY STIFF TO HARD, SANDY AND SILTY CLAY AND MEDIUM DENSE TO VERY DENSE, CLAYEY AND SILTY SAND CAPE FEAR FORMATION

Ⓐ ALLUVIAL, GRAY, MOIST TO SATURATED, VERY LOOSE TO LOOSE, SILTY SAND

Ⓑ ALLUVIAL, BLACK, SATURATED, VERY SOFT, SILTY SAND, MODERATELY ORGANIC

Ⓒ COASTAL PLAIN, TAN, GRAY AND RED, DRY TO WET, VERY LOOSE, SILTY SAND MIDDENDORF FORMATION

Ⓓ COASTAL PLAIN, GRAY, WET, SOFT, SANDY CLAY MIDDENDORF FORMATION

Ⓔ COASTAL PLAIN, TAN AND PINK, MOIST, HARD, SILTY CLAY MIDDENDORF FORMATION

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-195	2.5m LT	33+29.0	2.88-3.33	A-6(1)	27	12	42.1	25.3	14.3	18.2	98	73	39	-	-
SS-196	2.5m LT	33+29.0	4.40-4.85	A-2-4(0)	28	9	55.0	23.5	6.3	15.2	96	60	24	-	-
SS-197	2.5m LT	33+29.0	19.60-20.05	A-2-6(0)	39	21	71.5	8.6	3.6	16.2	94	46	19	-	-

U2519DA_GEO_REVISED_GEOTECH\vse\u2519da_geo_xs1_rpibd_32+34to 33+33.dgn
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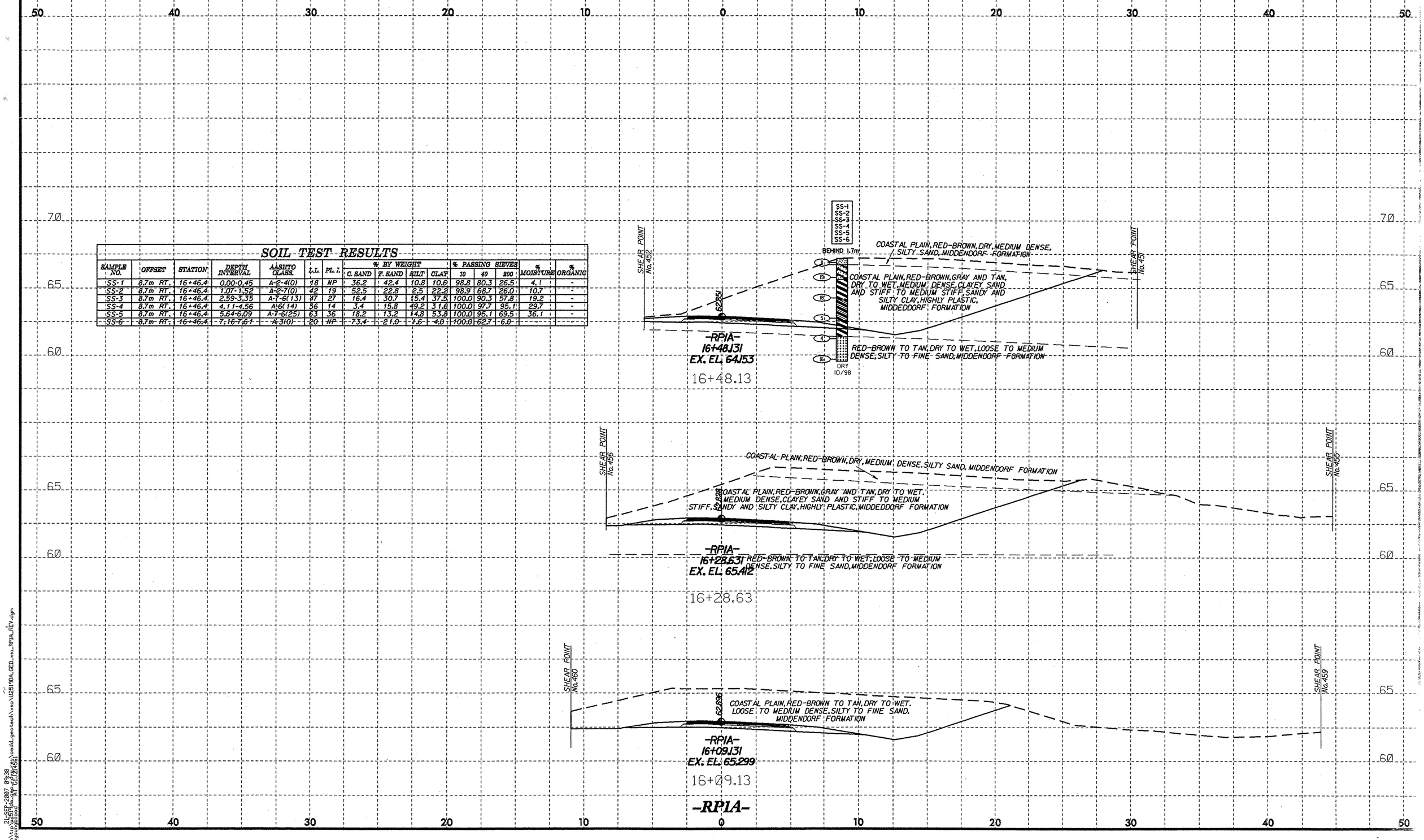
PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	167

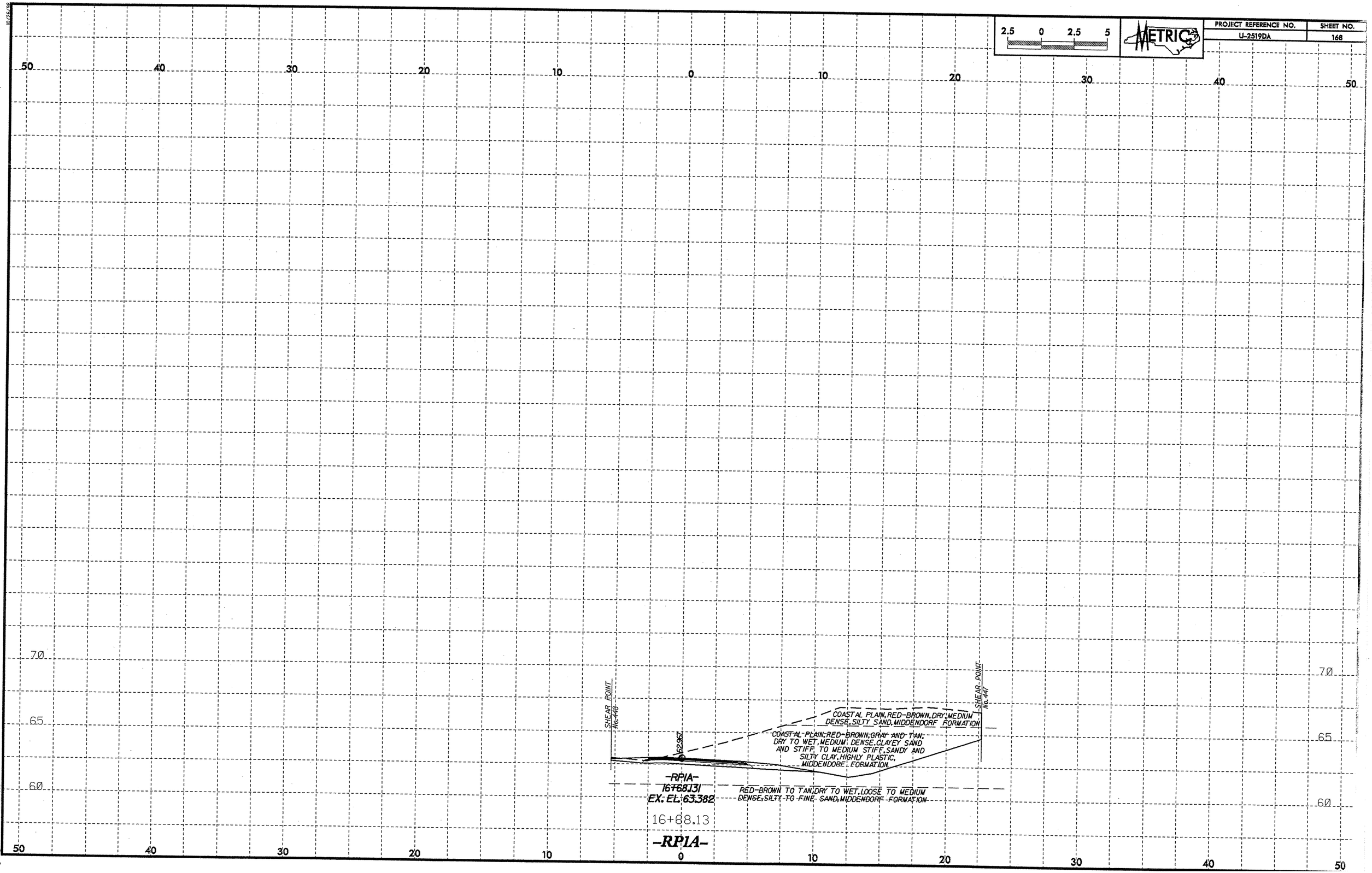
2.5 0 2.5 5

METRIC

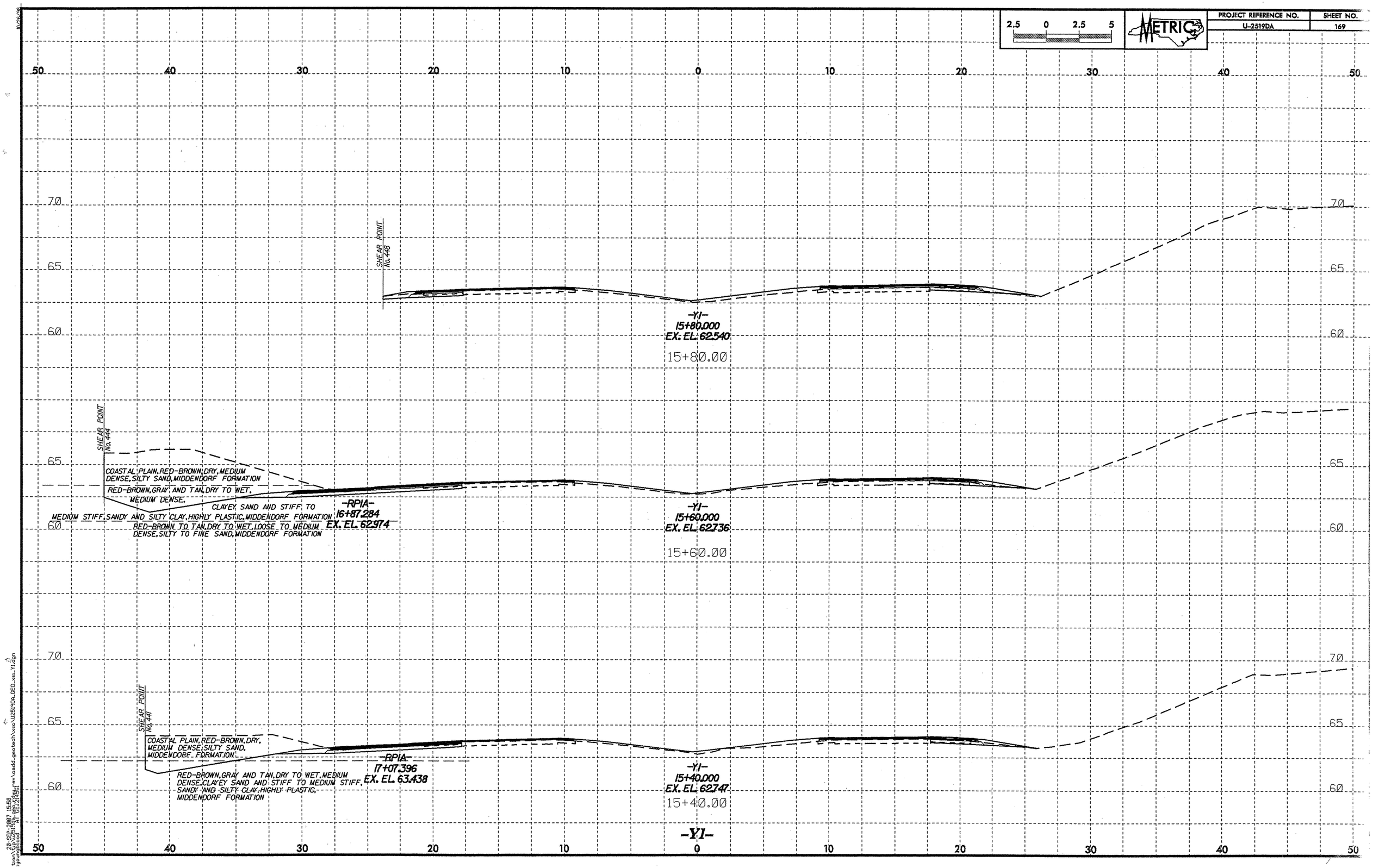
SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-1	8.7m RT.	16+46.4	0.00-0.45	A-2-4(0)	18	NP	36.2	42.4	10.8	10.6	98.8	80.3	26.5	4.1	-
SS-2	8.7m RT.	16+46.4	1.07-1.52	A-2-7(0)	42	19	52.5	22.8	2.5	22.2	98.9	68.7	26.0	10.7	-
SS-3	8.7m RT.	16+46.4	2.59-3.35	A-7-6(13)	47	27	16.4	30.7	15.4	37.5	100.0	90.3	57.8	19.2	-
SS-4	8.7m RT.	16+46.4	4.11-4.56	A-6(14)	36	14	3.4	15.8	49.2	31.6	100.0	97.7	95.1	29.7	-
SS-5	8.7m RT.	16+46.4	5.64-6.09	A-7-6(25)	63	36	18.2	13.2	14.8	53.8	100.0	96.1	69.5	36.1	-
SS-6	8.7m RT.	16+46.4	7.16-7.61	A-3(0)	20	NP	73.4	21.0	1.6	4.0	100.0	62.7	6.0		





2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
168
50 40 30 20 10 0 10 20 30 40 50
70
65
60
SHEAR POINT No.448
SHEAR POINT No.447
62.967
COASTAL PLAIN, RED-BROWN, DRY, MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
COASTAL PLAIN, RED-BROWN, GRAY AND TAN, DRY TO WET, MEDIUM DENSE, CLAYEY SAND AND STIFF TO MEDIUM STIFF, SANDY AND SILTY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION
RED-BROWN TO TAN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY TO FINE SAND, MIDDENDORF FORMATION
-RP1A-
16+68.131
EX. EL. 63.382
16+68.13
-RP1A-

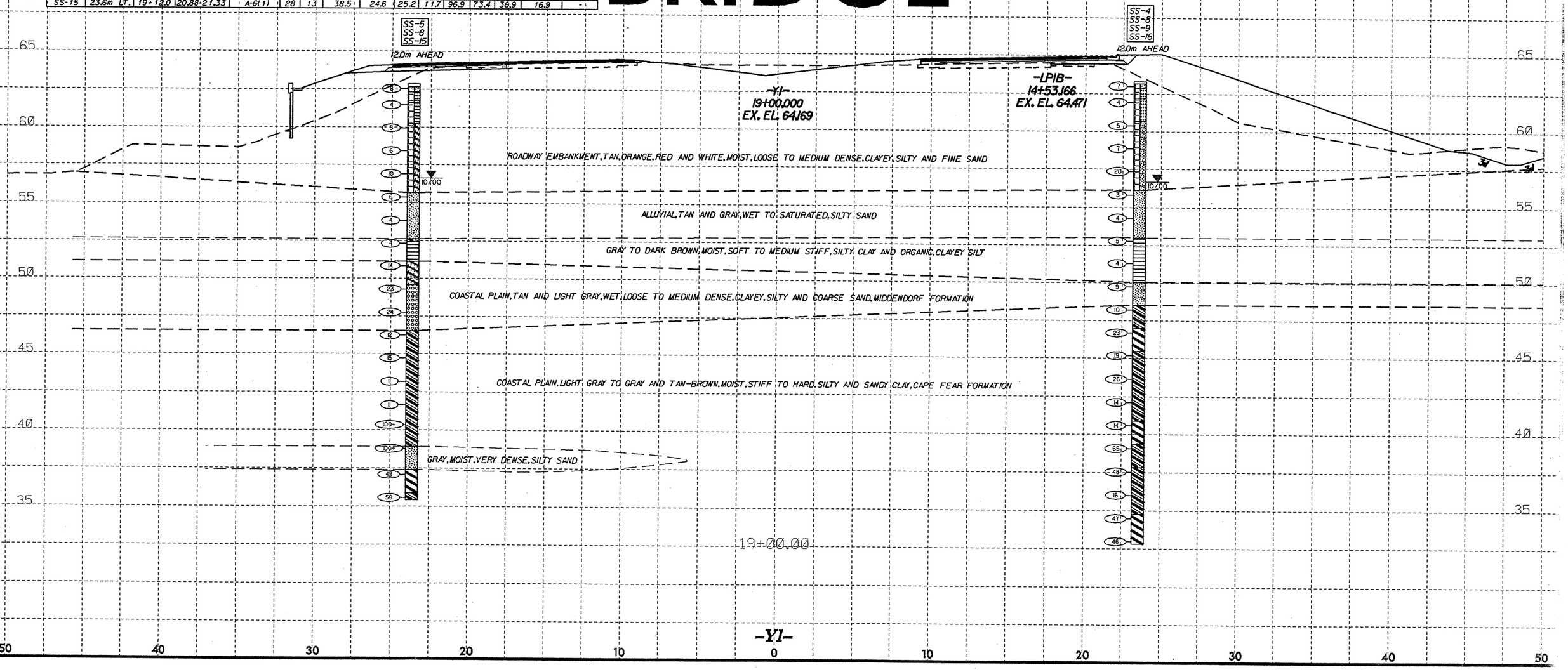


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
169
50 40 30 20 10 0 10 20 30 40 50
70
65
60
SHEAR POINT No. 448
-Y1-
15+80.000
EX. EL. 62.540
15+80.00
SHEAR POINT No. 444
COASTAL PLAIN, RED-BROWN, DRY, MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
RED-BROWN, GRAY AND TAN, DRY TO WET, MEDIUM DENSE, CLAYEY SAND AND STIFF TO MEDIUM STIFF, SANDY AND SILTY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION
RED-BROWN TO TAN, DRY TO WET, LOOSE TO MEDIUM DENSE, SILTY TO FINE SAND, MIDDENDORF FORMATION
-RPIA-
16+87.284
EX. EL. 62.974
-Y1-
15+60.000
EX. EL. 62.736
15+60.00
SHEAR POINT No. 441
COASTAL PLAIN, RED-BROWN, DRY, MEDIUM DENSE, SILTY SAND, MIDDENDORF FORMATION
RED-BROWN, GRAY AND TAN, DRY TO WET, MEDIUM DENSE, CLAYEY SAND AND STIFF TO MEDIUM STIFF, SANDY AND SILTY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION
-RPIA-
17+07.396
EX. EL. 63.438
-Y1-
15+40.000
EX. EL. 62.747
15+40.00
-Y1-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES #10	#40	#200	% MOISTURE	% ORGANIC
SS-4	23.6m RT.	19+12.0	4.11-4.56	A-2-4	22	15	60.5	19.4	2.1	18.0	99.5	61.0	20.1	12.3	-
SS-8	23.6m RT.	19+12.0	10.21-10.66	-	-	-	-	-	-	-	-	-	-	155.9	-
SS-9	23.6m RT.	19+12.0	11.73-12.18	A-5(1)	41	31	32.5	27.5	28.7	11.3	99.3	80.7	40.0	70.7	-
SS-16	23.6m RT.	19+12.0	22.40-22.85	A-7-6(32)	60	16	11.0	14.3	17.0	57.7	99.8	93.6	74.8	29.6	-
SS-5	23.6m LT.	19+12.0	5.64-6.09	A-2-6(0)	32	18	58.0	16.6	5.6	19.8	99.1	64.3	25.4	15.7	-
SS-8	23.6m LT.	19+12.0	10.21-10.66	-	-	-	-	-	-	-	-	-	-	121.8	-
SS-15	23.6m LT.	19+12.0	20.88-21.33	A-6(1)	28	13	38.5	24.6	25.2	11.7	96.9	73.4	36.9	16.9	-

BRIDGE



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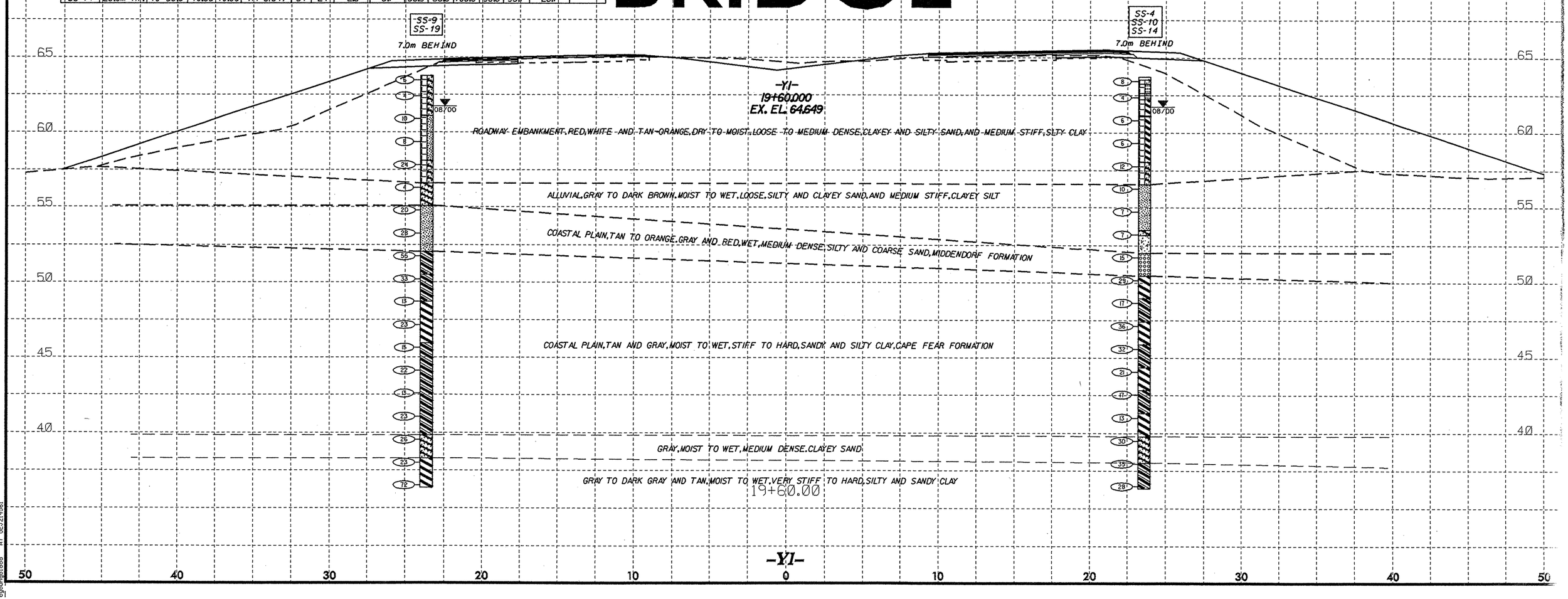
2.5 0 2.5 5

METRIC

BRIDGE

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL	PI	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-9	23.6m LT.	19+53.0	11.73-12.18	A-6(13)	38	17	10.8	20.1	24.5	44.6	100.0	94.1	69.7	14.1	-
SS-19	23.6m LT.	19+53.0	26.97-27.42	A-7-6(20)	53	27	8.6	19.9	40.8	30.7	100.0	95.4	74.1	26.1	-
SS-4	23.6m RT.	19+53.0	4.11-4.56	A-7-6(8)	43	18	27.1	24.7	9.4	38.8	97.7	83.1	48.6	17.8	-
SS-10	23.6m RT.	19+53.0	13.26-13.71	A-7-6(12)	46	18	24.3	21.3	6.3	48.1	100.0	89.6	54.8	18.3	-
SS-14	23.6m RT.	19+53.0	19.35-19.80	A-7-6(31)	51	21	2.8	3.7	36.9	56.6	100.0	98.6	93.7	26.7	-



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groundboard

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	172

2.5 0 2.5 5

METRIC

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	LL.	PL. I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING SIEVES 10	40	200	% MOISTURE	% ORGANIC
SS-5	1.0m RT.	19+90.9	5.64-6.09	A-2-4(0)	28	20	70.6	9.6	5.5	14.3	96.8	44.2	19.4	9.1	-
SS-9	1.0m RT.	19+90.9	11.73-12.18	A-7-6(31)	57	22	4.2	12.4	20.4	63.0	100.0	97.9	83.8	20.2	-
SS-16	1.0m RT.	19+90.9	22.40-22.85	A-7-6(20)	65	25	9.0	7.9	13.4	69.7	100.0	94.3	83.6	25.9	-
SS-21	1.0m RT.	19+90.9	30.02-30.47	A-7-6(15)	57	27	20.1	25.9	32.6	21.4	100.0	88.4	56.7	24.2	-
SS-25	1.0m RT.	19+90.9	36.11-36.56	A-2-6(0)	30	15	45.0	30.0	21.2	3.8	99.6	72.4	26.6	11.6	-

-Y1-
20+00.000
EX. EL. 64.696

SS-5
SS-9
SS-16
SS-21
SS-25

9.1m BEHIND

ROADWAY EMBANKMENT, TAN, ORANGE AND RED, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY SAND AND STIFF SILTY CLAY

ALLUVIAL, TAN AND RED, MOIST, DENSE, SILTY AND COARSE SAND

09/00

COASTAL PLAIN, TAN, LIGHT GRAY AND ORANGE, MOIST TO WET, MEDIUM DENSE TO DENSE, CLAYEY, SILTY AND COARSE SAND, MIDDENDORF FORMATION

COASTAL PLAIN, TAN, ORANGE AND GRAY, MOIST, STIFF TO HARD, SANDY AND SILTY CLAY AND DENSE, CLAYEY SAND, CAPE FEAR FORMATION

15 13 30 33 38 32 15 41 22 35 20 34 21 14 15 15 22 18 22 57 50 37 100/1" 48 83 40

20+00.00

-Y1-

50 40 30 20 10 0 10 20 30 40 50

70 65 60 55 50 45 40 35 30

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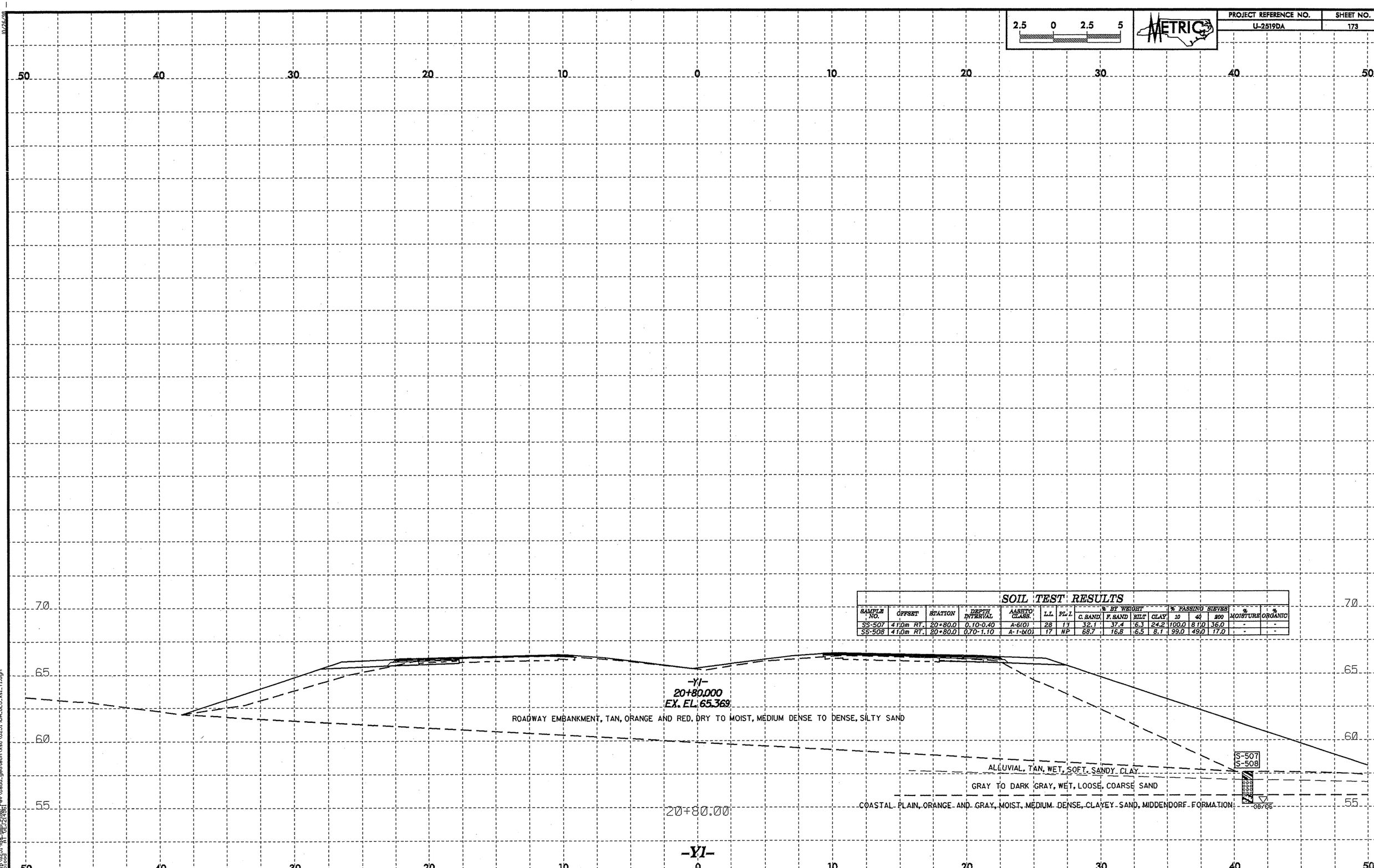
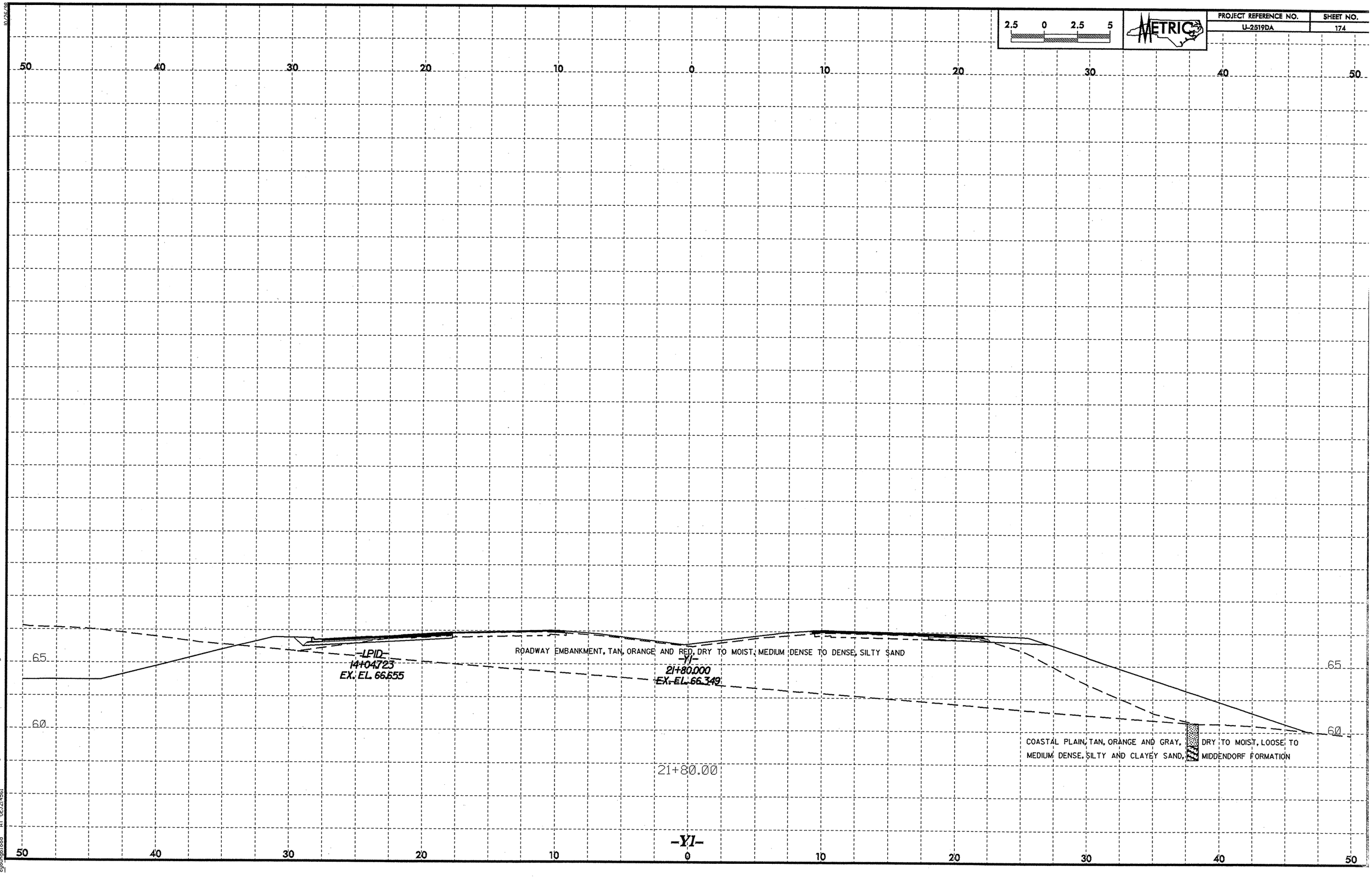
A1 DEV2(ABS)
groundbo.osd

PROJECT REFERENCE NO.	SHEET NO.
U-2519DA	173

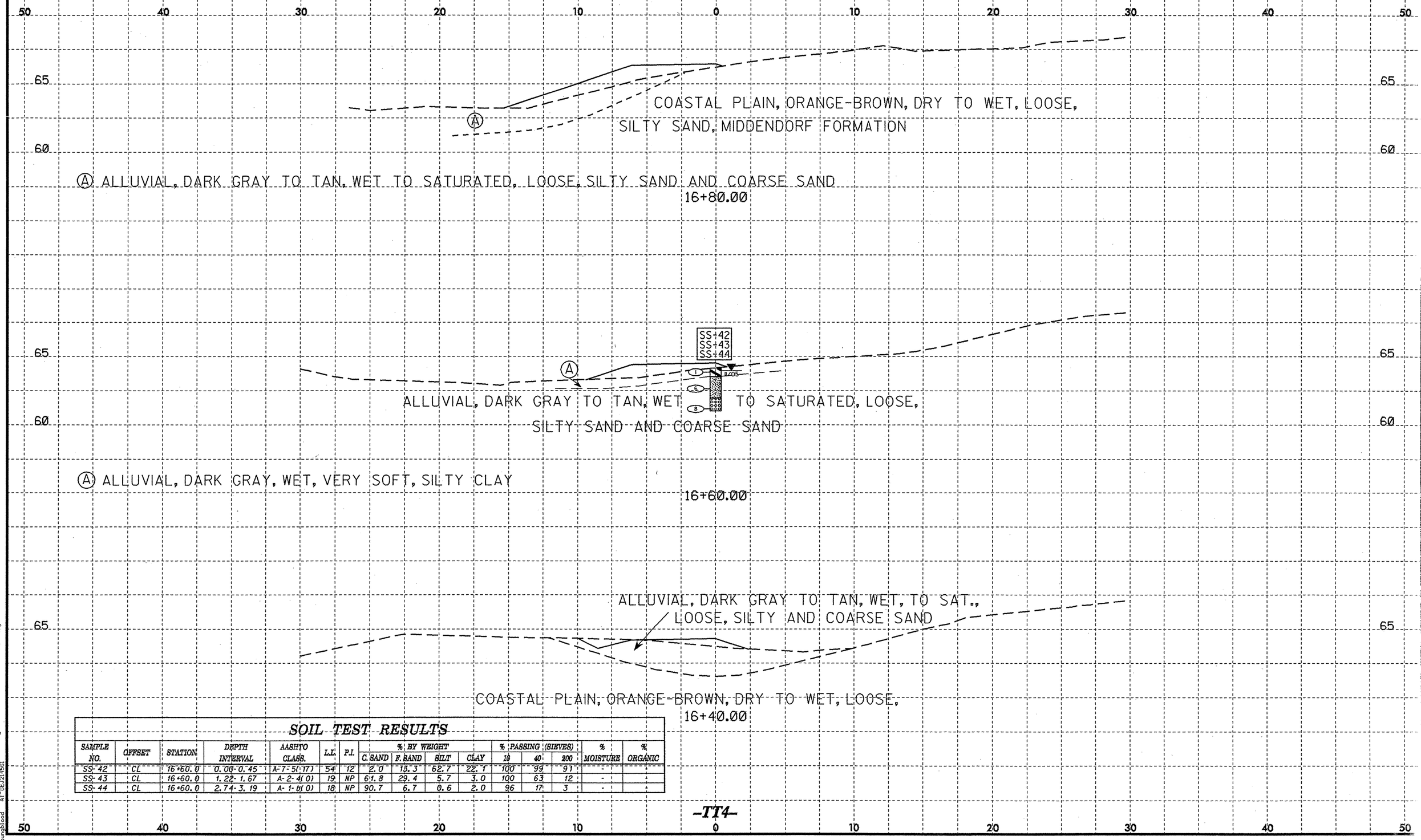


SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL.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-507	41.0m RT.	20+80.0	0.10-0.40	A-6(0)	28	11	32.1	37.4	6.3	24.2	100.0	81.0	36.0	-	-
SS-508	41.0m RT.	20+80.0	0.70-1.10	A-1-b(0)	17	NP	68.7	16.8	6.5	8.1	99.0	49.0	17.0	-	-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
U-2519DA
SHEET NO.
174
50 40 30 20 10 0 10 20 30 40 50
65
60
-LPID-
14+04.723
EX. EL. 66.655
ROADWAY EMBANKMENT, TAN, ORANGE AND RED, DRY TO MOIST, MEDIUM DENSE TO DENSE, SILTY SAND
-Y1-
21+80.000
EX. EL. 66.349
COASTAL PLAIN, TAN, ORANGE AND GRAY, DRY TO MOIST, LOOSE TO MEDIUM DENSE, SILTY AND CLAYEY SAND, MIDDENDORF FORMATION
21+80.00
-Y1-



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-42	CL	16+60.0	0.00-0.45	A-7-5(17)	54	12	2.0	13.3	62.7	22.1	100	99	91	-	-
SS-43	CL	16+60.0	1.22-1.67	A-2-4(0)	19	NP	61.8	29.4	5.7	3.0	100	63	12	-	-
SS-44	CL	16+60.0	2.74-3.19	A-1-b(0)	18	NP	90.7	6.7	0.6	2.0	96	17	3	-	-

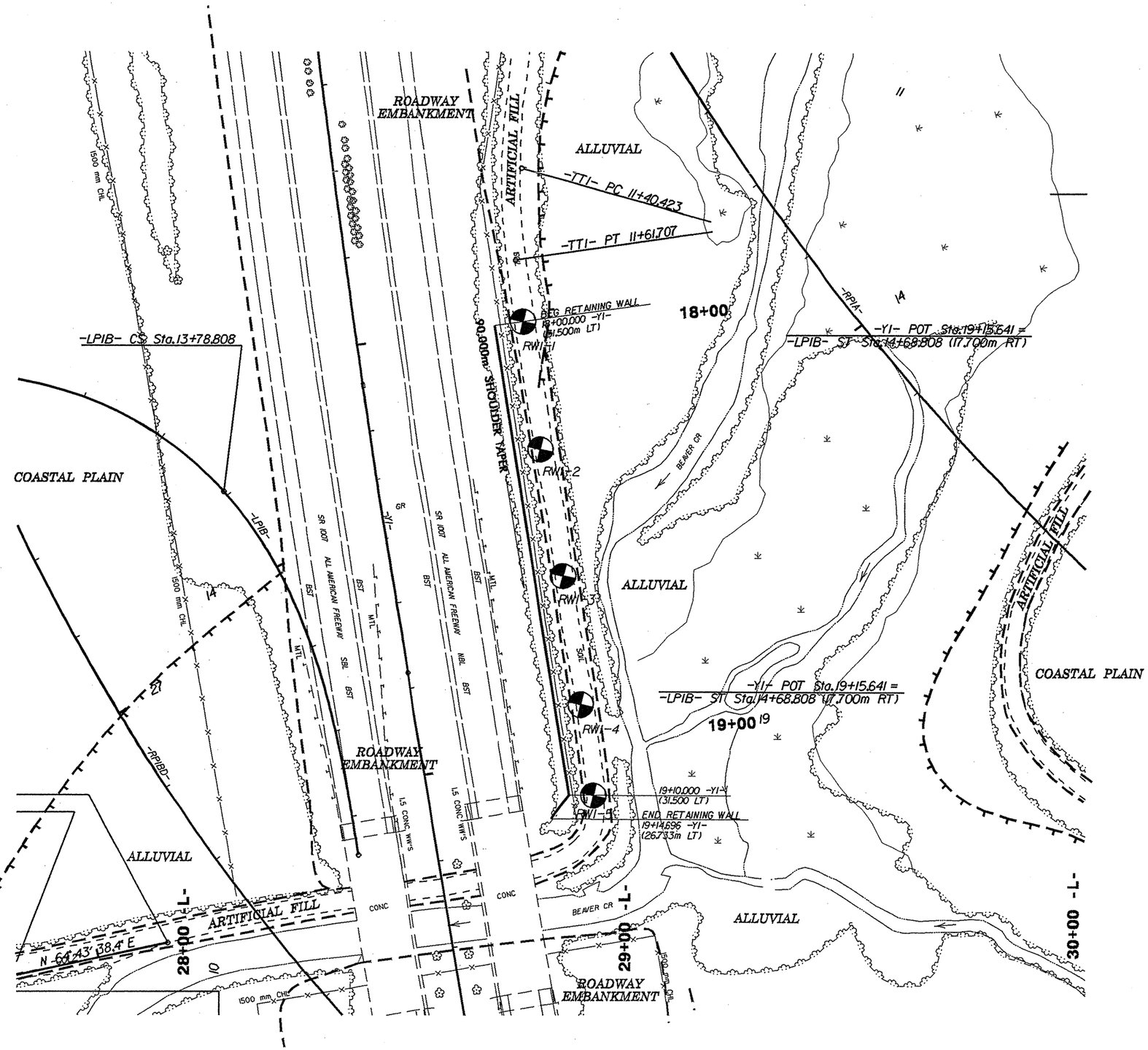
PROJECT REFERENCE NO.	SHEET
34817.1.2 (U-2519DA)	176

SITE PLAN

0 20 40

METERS

RETAINING WALL 1



METRIC

0 10 20
METERS
VE = 2

PROJECT REFERENCE NO.	SHEET
34817.1.2 (U-2519DA)	177

RETAINING WALL 1

-Y1-
STA. 18+00
38.0m LT

-Y1-
STA. 18+30
37.7m LT

-Y1-
STA. 18+60
38.3m LT

-Y1-
STA. 18+90
37.5m LT

-Y1-
STA. 19+11.9
37.0m LT

BEGIN WALL -RWY1-
-Y1- 18+00.000
(31.500m LT)

END WALL -RWY1-
-Y1- 19+14.696
(26.733m LT)

EXISTING GROUND

SS-105
RW1-1

SS-104
RW1-2
RW1-3

SS-103
RW1-4

RW1-5
SS-99
SS-100
SS-101
SS-102

ARTIFICIAL FILL, BROWN TO RED-BROWN, MOIST, LOOSE TO MEDIUM DENSE, SILTY SAND

COASTAL PLAIN, TAN AND PINK TO RED, MOIST TO SATURATED, LOOSE TO MEDIUM DENSE, CLAYEY AND FINE SAND

ALLUVIAL, BROWN, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, CLAYEY AND SILTY SAND

MIDDENDORF FORMATION

DARK GRAY, VERY SOFT TO MOIST, SOFT, SILTY CLAY

FIAD

11/05

(A) BLACK, MOIST TO WET, VERY SOFT, HIGHLY ORGANIC, MUCK

(B) GRAY AND ORANGE, MOIST, MEDIUM STIFF TO VERY STIFF, SILTY CLAY, HIGHLY PLASTIC

70
68
66
64
62
60
58
56
54
52
50
48

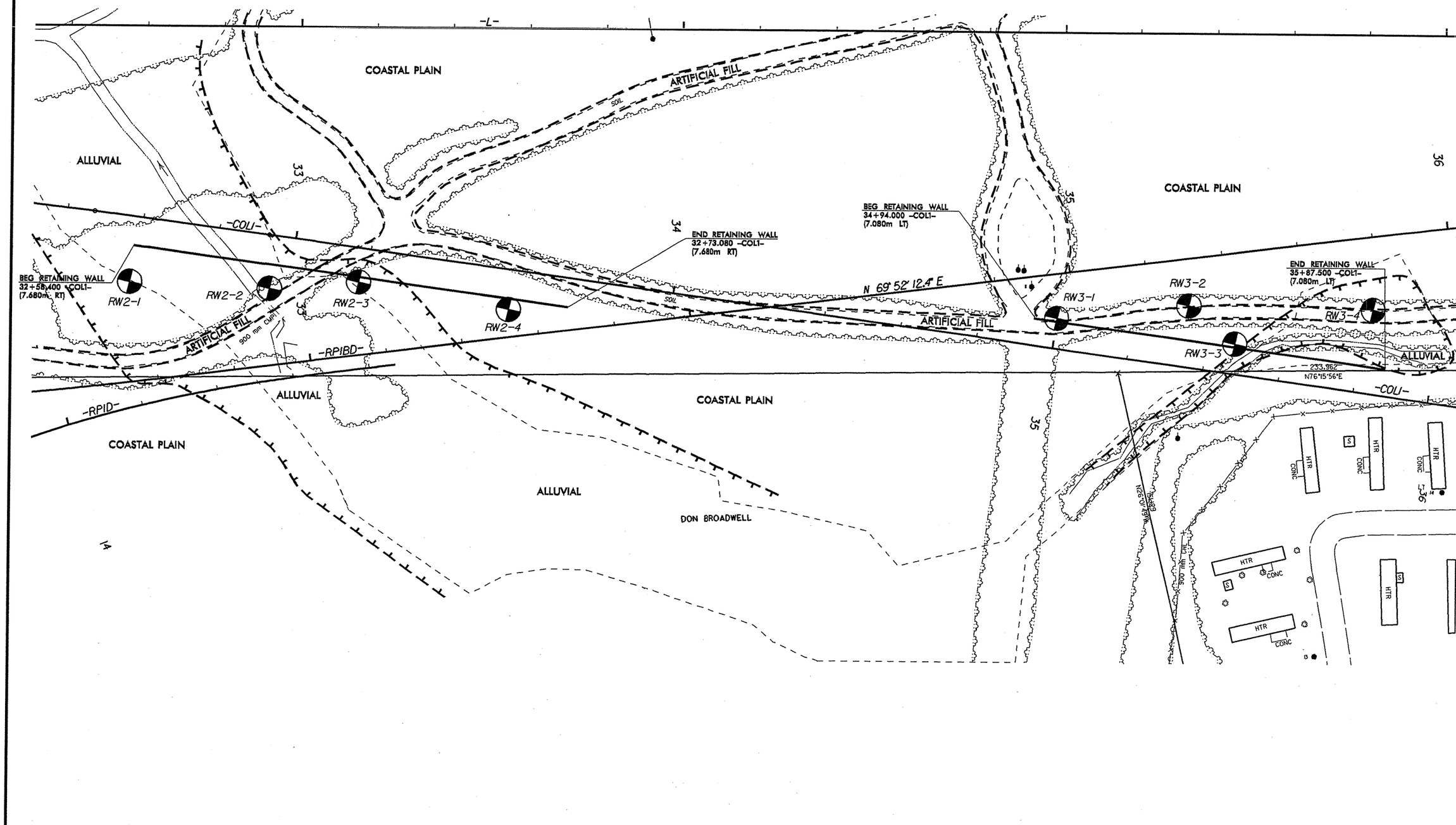
17+80 18+00 18+20 18+40 18+60 18+80 19+00 19+20 19+40

PROJECT REFERENCE NO.	SHEET
34817.1.2 (U-2519DA)	178

SITE PLAN

0 20 40
METERS

RETAINING WALL 2
RETAINING WALL 3



METRIC

0 10 20
METERS
VE = 5

PROJECT REFERENCE NO.	SHEET
34817.1.2 (U-2519DA)	179

RETAINING WALL 2

-COL1-
STA. 32+58.4
17.4m RT

-COL1-
STA. 32+95.0
14.0m RT

-COL1-
STA. 33+18.0
8.9m RT

-COL1-
STA. 33+58.0
10.5m RT

BEGIN WALL
-COL1- 32+58.400
(7.680m RT)

END WALL
-COL1- 33+73.060
(7.680m RT)

SS-6
SS-7
SS-8
SS-9
SS-10

SS-1
SS-2
SS-3
SS-4
SS-5

RW2-1

RW2-2

RW2-3

RW2-4

ALLUVIAL TAN TO DARK BROWN, VERY LOOSE TO MEDIUM DENSE, SILTY TO COARSE SAND

GRAY AND ORANGE, MOIST TO SATURATED, COASTAL PLAIN, ORANGE, PINK AND GRAY, MOIST TO SATURATED, VERY LOOSE TO MEDIUM DENSE, CLAYEY, SILTY AND COARSE SAND, MIDDENDORF FORMATION

COASTAL PLAIN, TAN TO ORANGE AND MAROON, DRY TO WET, LOOSE, CLAYEY, SILTY AND FINE SAND, MIDDENDORF FORMATION

COASTAL PLAIN, TAN, LIGHT GRAY AND MAROON, WET, VERY SOFT TO MEDIUM STIFF, SANDY, CLAY

TAN, LIGHT GRAY AND MAROON, WET TO SATURATED, VERY LOOSE, TO MEDIUM DENSE, SILTY AND COARSE SAND

GRAY AND MAROON, MOIST, STIFF TO HARD, SANDY AND SILTY CLAY, CAPE FEAR FORMATION

(A) ARTIFICIAL FILL, BROWN, DRY, LOOSE TO MEDIUM DENSE, SILTY SAND

85 80 75 70 65 60 55 50 45 40 35 30

32+40 32+60 32+80 33+00 33+20 33+40 33+60 33+80 34+00

METRIC

0 8 16
METERS
VE = 5

PROJECT REFERENCE NO.	SHEET
34817.1.2 (U-2519DA)	180

RETAINING WALL 3

-COL1-
STA. 35+00.0
8.0m LT

-COL1-
STA. 35+33.9
16.3m LT

-COL1-
STA. 35+47.0
8.0m LT

-COL1-
STA. 35+82.0
22.2m LT

BEGIN WALL -COL1- 34+94.000 (7.680m LT)

END WALL -COL1- 35+87.500 (7.980m LT)

SS-148
SS-149
SS-150
SS-151
SS-152

SS-165
SS-166
SS-167
ST-1
SS-168

RW3-1 RW3-2 RW3-3 RW3-4

12 12 23 27 8 1 1 WOH 1 10 43

08/00

ORANGE AND RED, DRY TO SATURATED, COASTAL PLAIN, WHITE TO GRAY, TAN TO

(D)

5 28 17 6 1 0 1 2 4 25 10 25

12/05

VERY LOOSE TO DENSE, COARSE TO CLAYEY SAND

MIDDENDORF FORMATION

3 3 4 15 2 2 6

08/00

6 2 4 2 3 2 2 3 4 11 25 6 28 39

12/05

(A) (B) (C) (D)

ST-1 4.50-5.11m

COASTAL PLAIN, GRAY, MOIST, VERY STIFF, SILTY CLAY, CAPE FEAR FORMATION

COASTAL PLAIN, GRAY, MOIST, DENSE, CLAYEY SAND, CAPE FEAR FORMATION

84 80 76 72 68 64 60 56 52 48 44 40

35+00 35+40 35+80

(A) ROADWAY FILL, ORANGE-BROWN, MOIST, LOOSE, SILTY SAND

(B) ALLUVIAL, GRAY TO DARK GRAY, MOIST TO WET, SOFT, CLAYEY SILT

(C) GRAY TO DARK GRAY, MOIST TO WET, LOOSE, SILTY SAND

(D) COASTAL PLAIN, LIGHT GRAY, ORANGE AND RED, MOIST TO WET, SOFT TO VERY STIFF, SANDY AND SILTY CLAY

NOISE WALL PLAN & PROFILE -WALL N1-

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

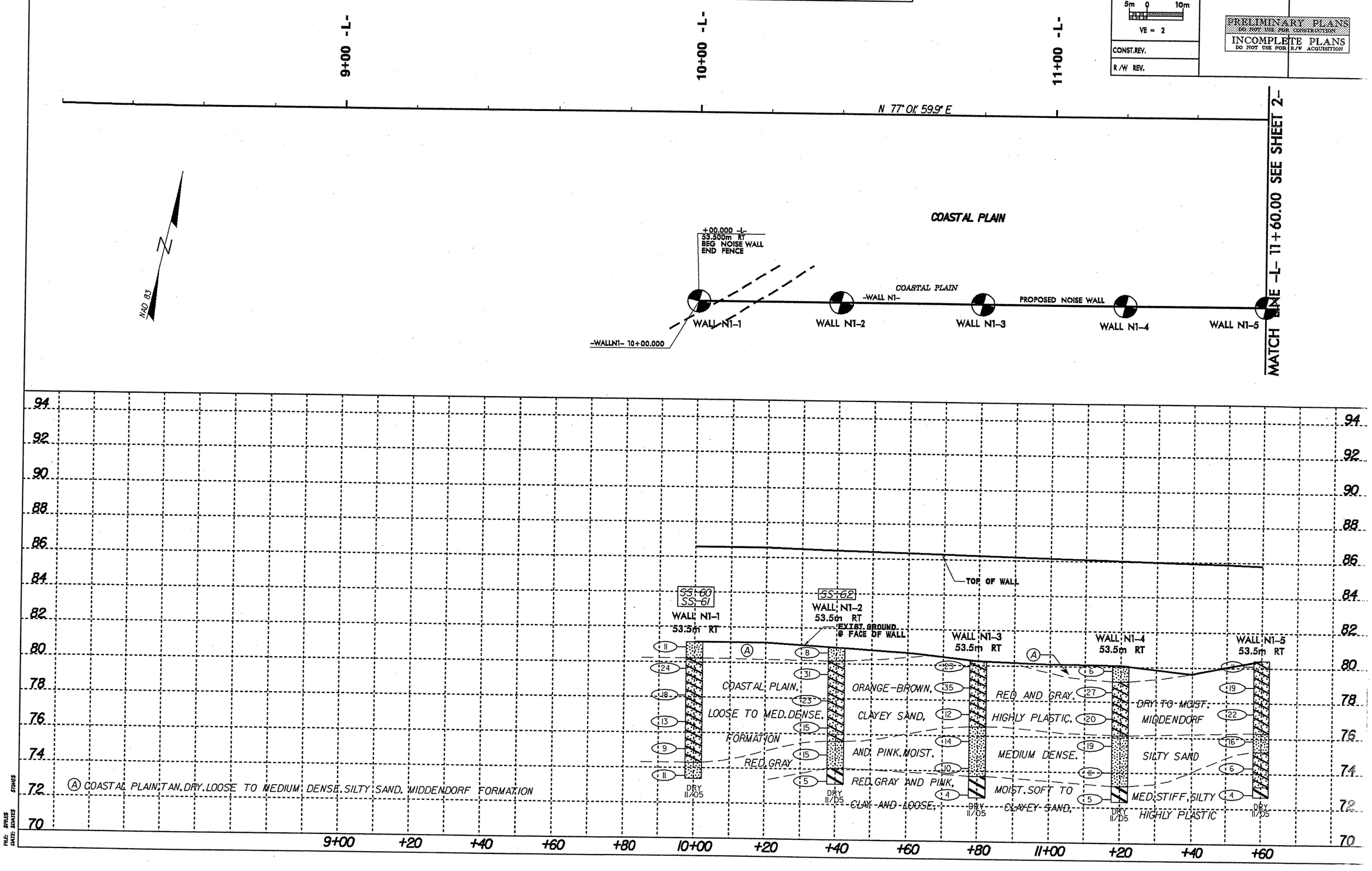
METRIC

PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	181
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5m 0 10m
VE = 2

CONST.REV.
R/W REV.

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



FILE: SFILES
DATE: SDATES
STIMES

6/09/99

NOISE WALL PLAN & PROFILE –WALL N1–

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 470
RALEIGH, NC 27607

METRIC

5m 0 10m
VE = 2

CONST.REV.

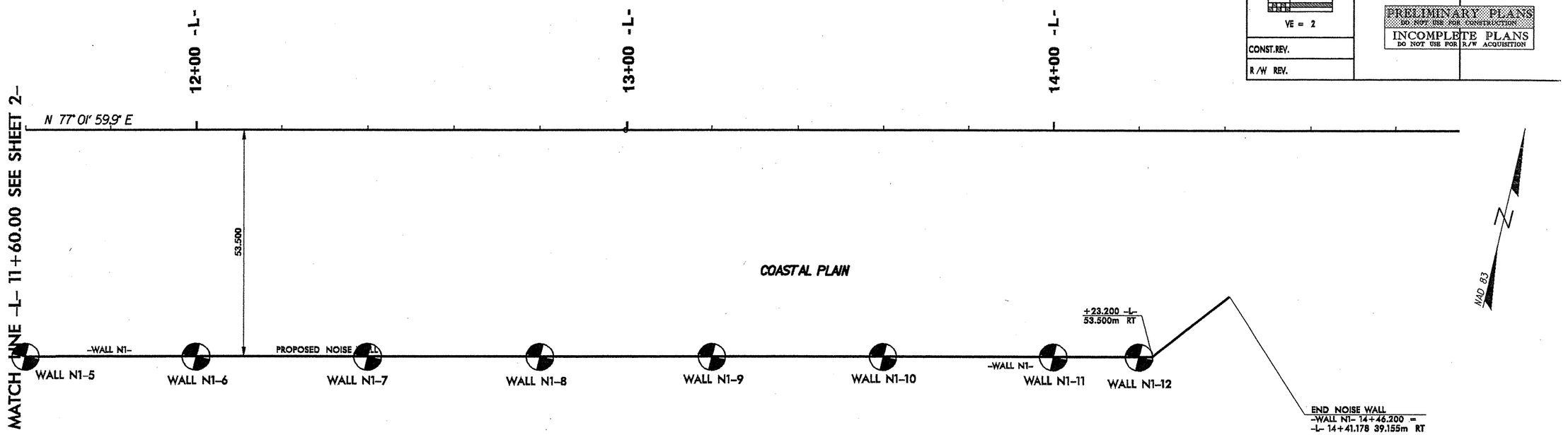
R /W REV.

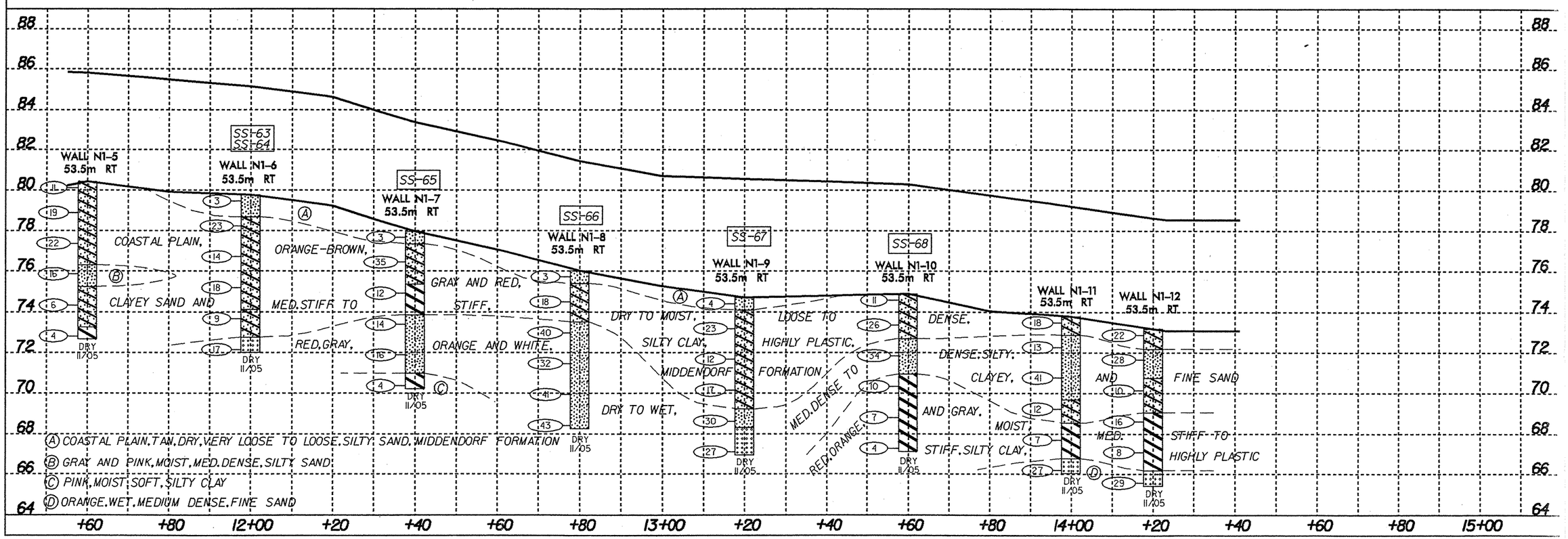
PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	182
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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





6/09/99

NOISE WALL PLAN & PROFILE –WALL N2–

PLANS PREPARED BY:
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 476
RALEIGH, NC 27607

METRIC

5m 0 10m

VE = 2

PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	183
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

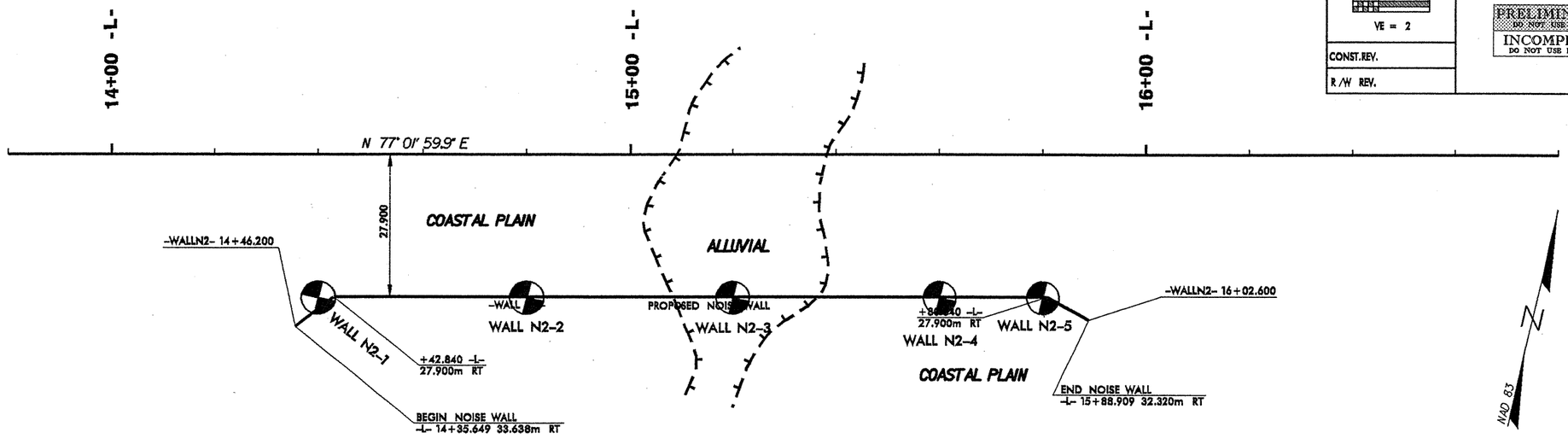
HYDRAULICS ENGINEER

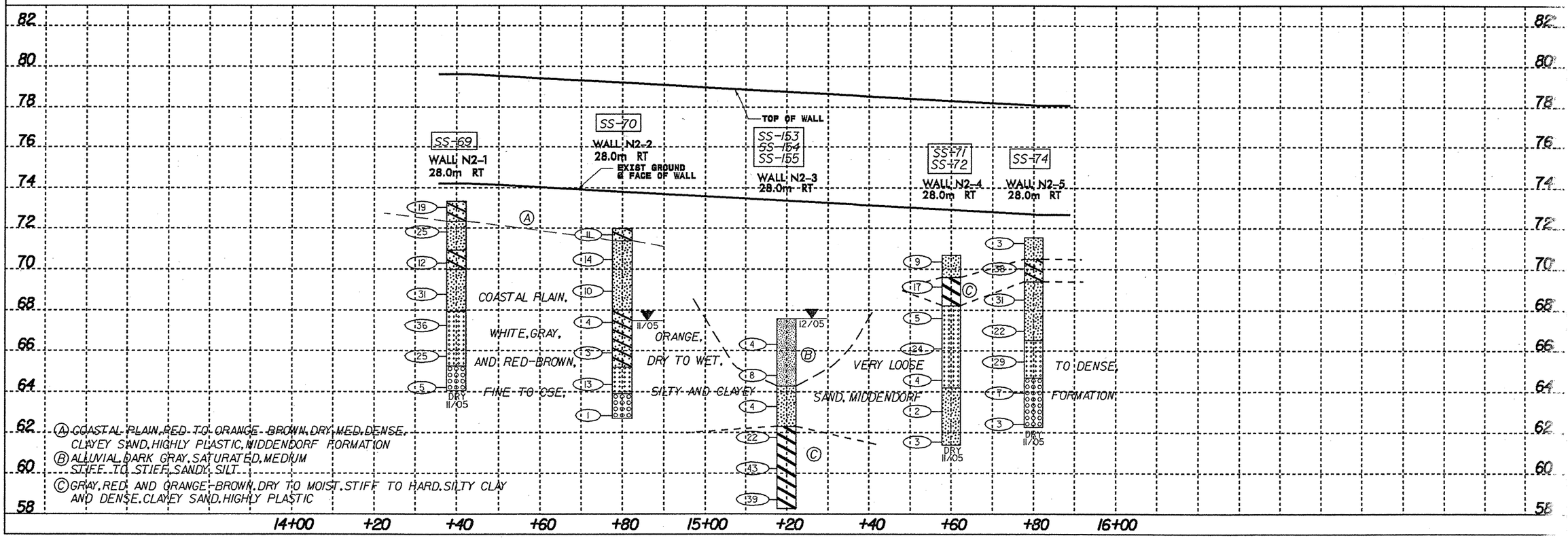
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

CONST.REV.

R/W REV.





6/19/99

NOISE WALL PLAN & PROFILE –WALL N3–

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD, SUITE 470
RALEIGH, NC 27607

METRIC

5m 0 10m
VE = 2

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	184
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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

16+00 -L-

17+00 -L-

18+00 -L-

N 77° 01' 59.9" E

MATCH LINE -L- 18+80.00 SEE SHEET 2–

NAD 83

–WALLN3– 16+02.600

BEGIN NOISE WALL
-L- 15+89.167 27.900m RT
+05.305 -L-
36.739m RT

WALL N3–1

WALL N3–2

–WALL N3–

WALL N3–3

PROPOSED NOISE WALL

WALL N3–4

+47.024 -L-
52.566m RT

COASTAL PLAIN

WALL N3–5

COASTAL PLAIN

WALL N3–6

+19.540 -L-
39.983m RT

–WALL N3–
PROPOSED NOISE WALL

WALL N3–7

WALL N3–8

–WALL N3–
PROPOSED NOISE WALL

84 82 80 78 76 74 72 70 68 66 64 62 60

TOP OF WALL

SS+75
SS+76
WALL N3–1
37.0m RT.

SS+78
WALL N3–2
41.5m RT.

EXIST GROUND @ FACE OF WALL

SS+79
WALL N3–3
45.5m RT.

SS+80
SS+81
SS+82
WALL N3–4
50.0m RT.

SS+83
WALL N3–5
49.5m RT.

TOP OF WALL

SS+84
WALL N3–6
41.0m RT.

SS+85
WALL N3–7
40.0m RT.

EXIST GROUND @ FACE OF WALL

SS+86
WALL N3–8
38.0m RT.

RED, PINK TO ORANGE, SILTY CLAY,

DRY TO MOIST, HIGHLY PLASTIC

COASTAL PLAIN

RED, BROWN, PINK AND GRAY, DRY, V. STIFF, SILTY CLAY, HIGHLY PLASTIC

ORANGE, RED, GRAY AND WHITE, MED. STIFF TO STIFF,

VERY LOOSE SILTY SAND, TO DENSE, FINE SAND AND COARSE SAND

MIDDENDORF FORMATION

DRY
11/05

Ⓐ COASTAL PLAIN, RED BROWN, ORANGE AND GRAY, DRY TO MOIST, V. STIFF, SILTY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION

+80 16+00 +20 +40 +60 +80 17+00 +20 +40 +60 +80 18+00 +20 +40 +60 +80

FILE: SFILES
DATE: $DATES

$TIMES

NOISE WALL PLAN & PROFILE -WALL N3-

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

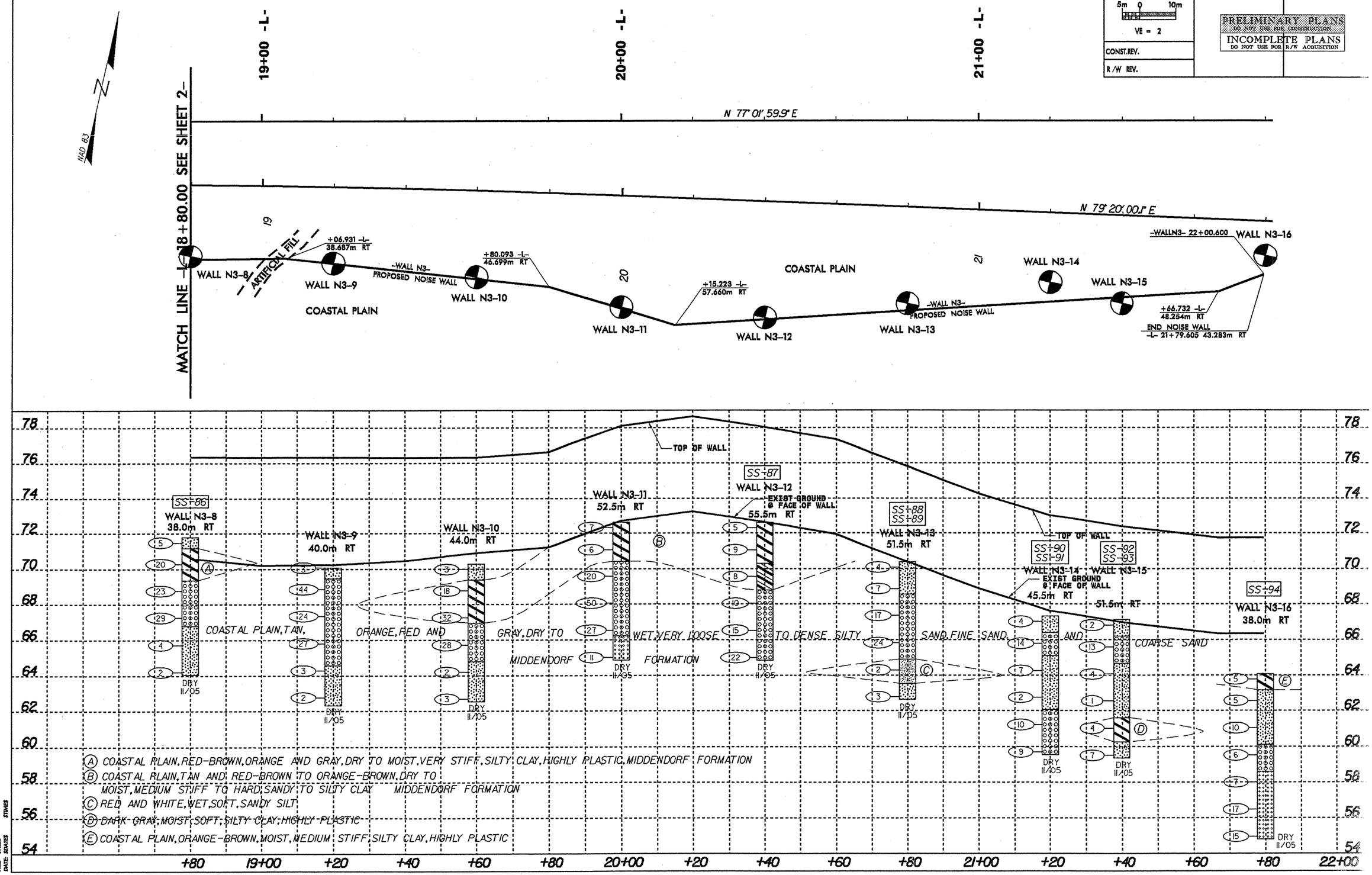
METRIC

PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	185
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

5m 0 10m
VE = 2

CONST.REV.
R/W REV.



(A) COASTAL PLAIN, RED-BROWN, ORANGE AND GRAY, DRY TO MOIST, VERY STIFF, SILTY CLAY, HIGHLY PLASTIC, MIDDENDORF FORMATION
(B) COASTAL PLAIN, TAN AND RED-BROWN TO ORANGE-BROWN, DRY TO MOIST, MEDIUM STIFF TO HARD, SANDY TO SILTY CLAY MIDDENDORF FORMATION
(C) RED AND WHITE, WET, SOFT, SANDY SILT
(D) DARK GRAY, MOIST, SOFT, SILTY CLAY, HIGHLY PLASTIC
(E) COASTAL PLAIN, ORANGE-BROWN, MOIST, MEDIUM STIFF, SILTY CLAY, HIGHLY PLASTIC

FILE: $FILES
DATE: $DATES
$TIMES

NOISE WALL PLAN & PROFILE -WALL N4-

PLANS PREPARED BY:
FLORENCE & HUTCHESON, INC.
CONSULTING ENGINEERS
4020 WESTCHASE BLVD., SUITE 475
RALEIGH, NC 27607

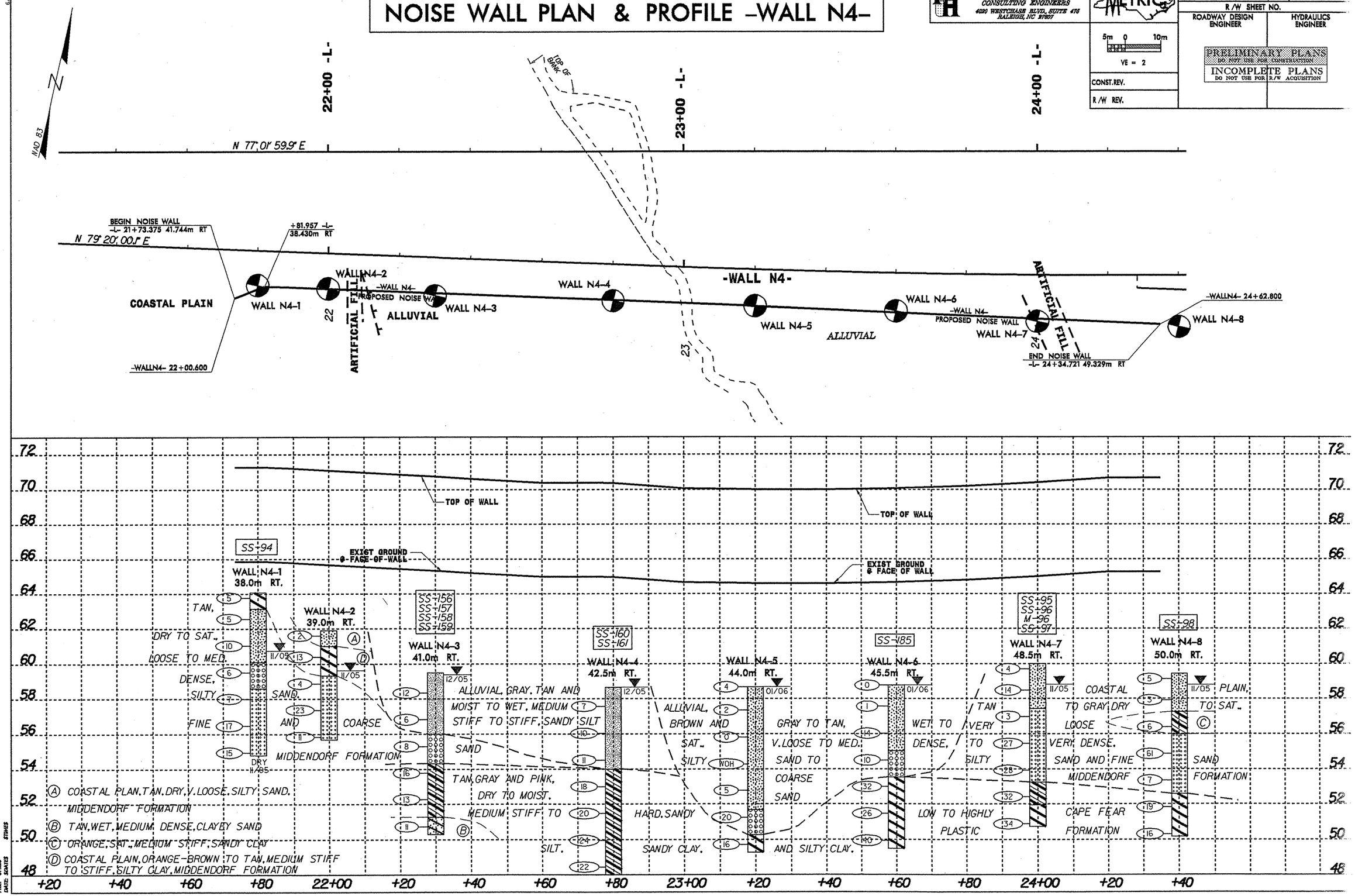
METRIC

PROJECT REFERENCE NO.	SHEET NO.
34817.1.2 (U-2519DA)	186
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5m 0 10m
VE = 2

CONST. REV.
R/W REV.

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



FILE: $FILES
DATE: $DATES
$TIMES

RW1-1

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-105	38.0M LT	18+00	2.7-3.2	A-7-6(33)	59	31	4.6	2.8	32.2	60.4	100	96	93	-	-

RW1-3

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-104	38.3M RT	18+60	4.3-4.7	A-2-6(0)	28	15	66.7	13.7	4.5	15.1	92	47	20	-	-

RW1-4

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-103	37.5M LT	18+90	0.0-0.5	A-2-4(0)	24	10	43.1	29.9	6.9	20.1	92	68	29	-	-

RW1-5

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-99	37.0M RT	19+11.9	1.2-1.7	A-2-6(0)	28	11	58.5	23.4	3.0	15.1	94	62	19	-	-
SS-100	37.0M LT	19+11.9	2.7-3.2	A-2-4(0)	19	NP	52.5	30.8	4.6	12.1	97	68	20	-	-
SS-101	37.0M LT	19+11.9	4.3-4.7	A-7-5(31)	117	39	7.1	23.6	41.9	27.4	84	81	64	-	-
SS-102	37.0M LT	19+11.9	5.8-6.2	A-7-5(15)	49	18	4.8	27.6	33.4	34.2	100	98	75	-	-

RW2-1

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-6	17.4M RT	32+58.4	0.9-1.4	A-2-4(0)	23	2	47.0	32.6	7.2	13.2	98	81	22	-	-
SS-7	17.4M RT	32+58.4	2.4-2.9	A-2-4(0)	24	6	53.0	24.7	8.0	14.2	99	78	25	-	-
SS-8	17.4M RT	32+58.4	3.9-4.4	A-2-6(1)	34	16	59.7	9.3	9.7	21.3	97	53	31	-	-
SS-9	17.4M RT	32+58.4	5.5-5.9	A-2-6(0)	29	12	53.7	22.8	0.3	23.2	100	80	24	-	-
SS-10	17.4M RT	32+58.4	7.0-7.4	A-1-b(0)	19	NP	85.1	9.5	1.2	4.2	99	43	6	-	-

RW2-2

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	14.0M RT	32+95.0	1.0-1.4	A-2-4(0)	22	4	46.6	32.7	3.8	16.9	95	68	25	-	-
SS-2	14.0M RT	32+95.0	2.5-3.0	A-2-4(0)	24	4	45.1	34.1	8.5	12.2	97	72	25	-	-
SS-3	14.0M RT	32+95.0	4.0-4.5	A-3(0)	24	NP	55.4	40.2	2.3	2.0	100	72	6	-	-
SS-4	14.0M RT	32+95.0	5.5-6.0	A-1-b(0)	19	NP	73.6	17.4	2.9	6.1	91	40	10	-	-
SS-5	14.0M RT	32+95.0	7.1-7.5	A-2-4(0)	22	NP	52.4	32.0	1.3	14.2	100	79	16	-	-

RW3-2

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-148	16.3M LT	35+33.9	2.8-3.2	A-2-4(0)	21	NP	37.8	47.7	0.4	14.1	100	83	21	-	-
SS-149	16.3M LT	35+33.9	4.3-4.8	A-6(5)	30	13	21.5	34.3	4.0	40.2	100	89	59	-	-
SS-150	16.3M LT	35+33.9	5.8-6.3	A-3(0)	20	NP	40.8	50.5	0.6	8.0	100	84	10	-	-
SS-151	16.3M LT	35+33.9	13.4-13.9	A-2-4(0)	21	6	21.5	49.1	1.2	28.2	100	83	32	-	-
SS-152	16.3M LT	35+33.9	16.5-16.9	A-7-6(27)	59	37	14.5	15.9	1.4	68.3	100	90	73	-	-

RW3-4

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-165	22.2M RT	35+82.0	1.2-1.7	A-5(5)	50	10	23.0	25.4	27.3	24.2	98	83	53	-	-
SS-166	22.2M RT	35+82.0	2.7-3.2	A-2-4(0)	19	NP	44.2	38.3	1.3	16.1	97	73	23	-	-
SS-167	22.2M RT	35+82.0	4.2-4.8	A-7-6(23)	47	24	4.2	20.8	12.4	62.6	100	97	88	-	-
ST-1	22.2M RT	35+82.0	4.50-5.11	A-7-9(13)	52	26	20.5	12.0	15.0	52.4	84	71	59	-	-
SS-168	22.2M RT	35+82.0	17.9-18.4	A-2-6(0)	29	13	48.2	22.6	0.9	28.3	98	67	31	-	-

WALLN1

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-60	53.5m RT	10+00.0	4.26-4.71	A-2-6(0)	29	11	40.6	35.1	4.2	20.1	100	76	29	-	-
SS-61	53.5m RT	10+00.0	7.30-7.75	A-2-4(0)	22	NP	50.2	34.3	3.4	12.0	100	73	21	-	-
SS-62	53.5m RT	10+40.0	7.30-7.75	A-7-6(7)	41	20	9.4	50.4	12.0	28.1	100	94	50	-	-
SS-63	53.5m LT	12+00.0	4.26-4.71	A-2-7(4)	51	33	43.5	27.6	3.6	25.4	100	74	32	-	-
SS-64	53.5m LT	12+00.0	7.30-7.75	A-3(0)	21	NP	39.6	53.8	1.5	5.1	100	80	9	-	-
SS-65	53.5m LT	12+40.0	2.74-3.19	A-7-6(24)	56	33	15.4	15.6	16.2	52.7	100	91	73	-	-
SS-66	53.5m LT	12+80.0	2.74-3.19	A-2-4(0)	21	NP	73.1	15.5	1.2	10.1	97	56	12	-	-
SS-67	53.5m LT	13+20.0	7.30-7.75	A-3(0)	24	NP	75.9	21.8	0.3	2.0	96	57	4	-	-
SS-68	53.5m LT	13+60.0	4.26-4.71	A-7-6(76)	102	73	7.1	2.8	19.1	71.0	100	95	91	-	-

WALLN2

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-69	28.0m RT	14+40.0	8.82-9.27	A-1-b(0)	24	4	61.8	24.7	4.4	9.1	95	49	20	-	-
SS-70	28.0m RT	14+80.0	4.26-4.71	A-2-6(1)	31	15	42.5	31.4	2.7	23.3	100	78	29	-	-
SS-153	28.0m RT	15+20.0	1.27-1.72	A-4(0)	32	3	31.3	37.5	17.1	14.1	98	74	37	-	-
SS-154	28.0m RT	15+20.0	4.31-4.76	A-2-4(0)	21	NP	18.2	69.4	0.3	12.1	92	82	15	-	-
SS-155	28.0m RT	15+20.0	5.83-6.28	A-7-6(36)	61	34	2.8	8.3	16.2	72.7	100	98	92	-	-
SS-71	28.0m RT	15+60.0	1.22-1.67	A-7-5(91)	111	80	2.4	2.2	12.2	83.2	100	98	96	-	-
SS-72	28.0m RT	15+60.0	7.30-7.75	A-2-4(0)	26	NP	16.0	75.3	1.6	7.1	95	84	12	-	-
SS-74	28.0m RT	15+80.0	1.22-1.67	A-2-7(5)	66	37	54.2	13.3	0.1	32.5	100	69	34	-	-

WALLN3

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-75	37.0m T	16+00.0	1.22-1.67	A-7-6(45)	86	58	15.6	12.0	11.6	60.9	100	90	74	-	-
SS-76	37.0m T	16+00.0	2.74-3.19	A-7-5(84)	108	75	3.9	1.8	17.2	77.1	100	98	95	-	-
SS-78	41.5m RT	16+40.0	4.26-4.71	A-7-6(71)	91	64	1.8	3.9	23.3	71.0	100	99	96	-	-
SS-79	45.5m RT	16+80.0	4.26-4.71	A-7-6(71)	98	70	8.1	3.9	19.1	69.0	100	95	89	-	-
SS-80	50.0m RT	17+20.0	1.22-1.67	A-7-6(7)	52	32	28.8	36.7	4.1	30.4	100	83	40	-	-
SS-81	50.0m RT	17+20.0	2.74-3.19	A-7-6(30)	65	43	9.1	28.0	12.2	50.7	100	95	71	-	-
SS-82	50.0m RT	17+20.0	4.26-4.71	A-3(0)	21	NP	73.1	22.3	0.5	4.1	100	62	6	-	-
SS-83	49.5m RT	17+60.0	7.30-7.75	A-1-b(0)	19	NP	91.5	7.3	0.2	1.0	100	32	2	-	-
SS-84	41.0m RT	18+00.0	2.74-3.19	A-2-4(0)	24	5	51.8	31.5	3.6	13.1	100	72	20	-	-
SS-85	40.0m RT	18+40.0	5.78-6.23	A-2-4(0)	29	7	46.5	30.0	7.4	16.1	100	60	35	-	-
SS-86	38.0m RT	18+80.0	1.22-1.67	A-7-6(42)	77	54	13.5	16.7	13.4	56.4	100	94	75	-	-
SS-87	55.5m RT	20+40.0	2.74-3.19	A-6(4)	34	16	13.1	51.7	11.1	24.1	100	94	47	-	-
SS-88	51.5m RT	20+80.0	5.78-6.23	A-4(5)	31	8	11.7	53.3	14.9	20.1	100	93	75	-	-
SS-89	51.5m RT	20+80.0	7.30-7.75	A-2-4(0)	23	NP	24.2	62.2	2.5	11.1	100	91	17	-	-
SS-90	45.5m RT	21+20.0	2.74-3.19	A-2-4(0)	24	NP	38.3	44.1	5.5	12.1	100	73	26	-	-
SS-91	45.5m RT	21+20.0	4.26-4.71	A-2-4(0)	23	NP	20.1	63.3	4.5	12.1	100	91	21	-	-
SS-92	51.5m RT	21+40.0	4.26-4.71	A-2-4(0)	22	NP	20.7	53.5	5.6	20.1	100	90	34	-	-
SS-93	51.5m RT	21+40.0	5.79-6.23	A-7-6(23)	55	29	18.7	6.4	18.5	56.3	100	86	77	-	-
SS-94	38.0m RT	21+80.0	4.26-4.71	A-1-b(0)	20	NP	71.4	15.4	4.1	9.1	95	50	14	-	-

WALLN4

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-94	38.0m RT	21+80.0	4.26-4.71	A-1-b(0)	20	NP	71.4	15.4	4.1	9.1	95	50	14	-	-
SS-156	41.0m RT	22+30.0	1.16-1.61	A-4(0)	19	NP	9.5	62.2	12.2	16.1	100	99	41	-	-
SS-157	41.0m RT	22+30.0	4.20-4.65	A-1-b(0)	20	NP	83.7	8.1	2.2	6.0	99	27	9	-	-
SS-158	41.0m RT	22+30.0	5.72-6.17	A-6(5)	33	19	16.3	38.5	4.7	40.4	100	96	48	-	-
SS-159	41.0m RT	22+30.0	8.76-9.21	A-2-6(0)	33	19	72.2	7.6	2.0	18.1	95	44	20	-	-
SS-160	42.5m RT	22+80.0	1.10-1.55	A-4(0)	20	NP	30.3	17.7	49.0	3.0	96	79	51	-	-
SS-161	42.5m RT	22+80.0	5.66-6.11	A-6(4)	29	14	9.1	47.0	7.6	36.3	100	93	51	-	-
SS-185	45.5m RT	23+60.0	5.78-6.23	A-7-6(41)	63	41	1.8	13.6	31.9	52.7	100	99	91	-	-
SS-95	48.5m RT	24+00.0	1.22-1.67	A-2-4(0)	21	NP	16.6	68.6	5.7	9.1	100	98	22	-	-
SS-96	48.5m LT	24+00.0	7.30-7.75	A-6(10)	34	16	0.8	35.6	25.4	38.2	100	100	75	19.6	-
SS-97	48.5m LT	24+00.0	8.82-9.27	A-7-6(18)	42	21	0.4	23.9	27.4	48.3	100	100	84	-	-
SS-98	50.0m RT	24+40.0	7.30-7.75	A-7-6(18)	44	23	4.2	23.7	21.7	50.3	100	98	78	-	-