STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5788	1	16

REFERENCE: U-5788

PROJECT: 44360

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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LINE	STATION	PLAN
-L-	15+27 to 16+85	4
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APPENDICES

APPENDIX	TITLE	SHEETS
A	LABORATORY TESTING SUMMARY	16

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY *BRUNSWICK*

PROJECT DESCRIPTION *REALIGNMENT OF WALL STREET (NON-SYSTEM) AT US 17 BUSINESS (MAIN STREET) AND SHALLOTTE AVENUE (NON-SYSTEM) INTERSECTION*

INVENTORY

CAUTION NOTICE

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

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

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

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

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DATE *NOVEMBER 2018*

11/6/18
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NORTH CAROLINA PROFESSIONAL SEAL 040231 ENGINEER MATTHEW J. ALEXANDER

11/6/18

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5788	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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

SOIL LEGEND AND AASHTO CLASSIFICATION

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

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

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

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

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

SOIL MOISTURE - CORRELATION OF TERMS

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

PLASTICITY

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

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

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

ANGULARITY OF GRAINS

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

MINERALOGICAL COMPOSITION

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

COMPRESSIBILITY

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

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

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

MISCELLANEOUS SYMBOLS

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

RECOMMENDATION SYMBOLS

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

ABBREVIATIONS

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

SAMPLE ABBREVIATIONS

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

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] GEOPROBE 6625
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [X] 3¼" SOLID STEM AUGER
- [X] 4" THIN WALL BIT

HAMMER TYPE:
- [ ] AUTOMATIC [ ] MANUAL

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

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

ROCK DESCRIPTION

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

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

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

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

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

TERMS AND DEFINITIONS

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

AQUIFER - A WATER BEARING FORMATION OR STRATA.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: N/A

ELEVATION: N/A FEET

NOTES:

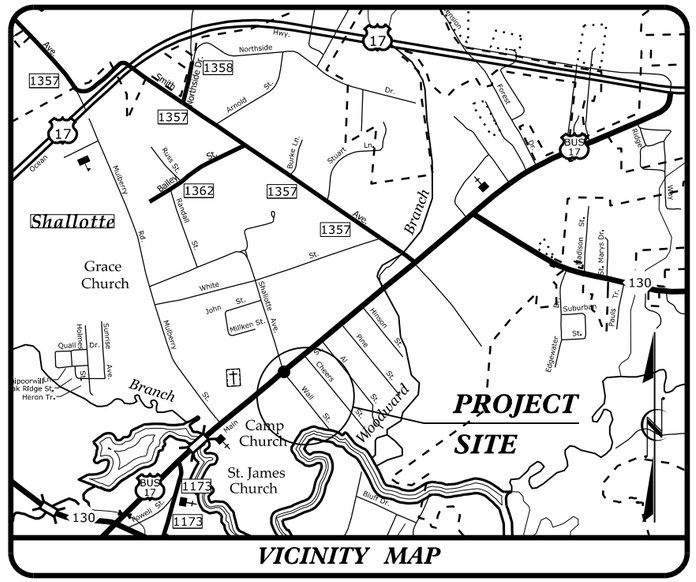
FIAD - FILLED IMMEDIATELY AFTER DRILLING

REPORT PREPARED USING PROVIDED PROJECT TIN FILE:
u5788_ls_tin_160222.tin

6/8/2018

TIP PROJECT: U-5788

CONTRACT:



VICINITY MAP

25% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

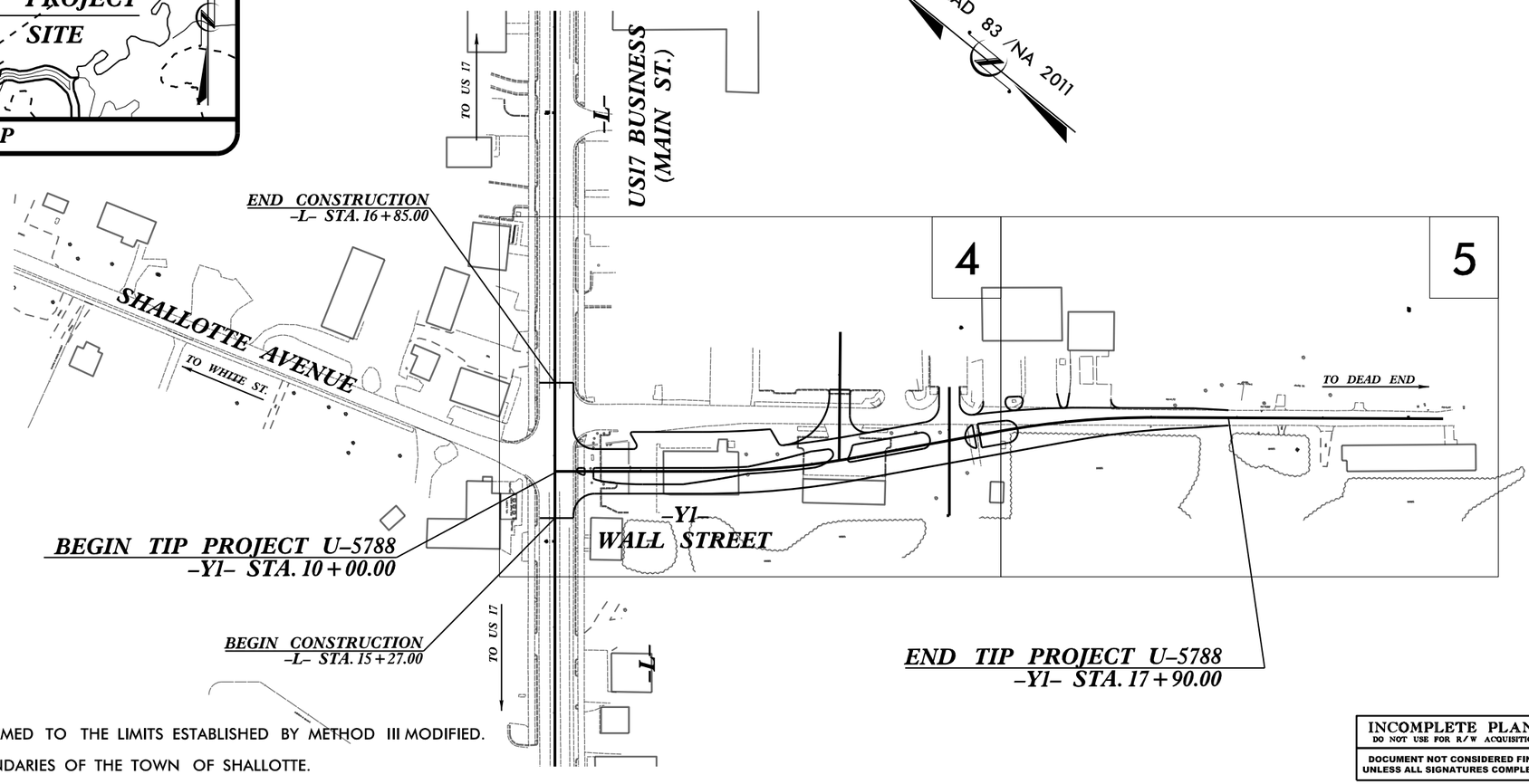
BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5788	3	16

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44360.1.1	N/A	PE, UTIL., R/W
		CONST.

LOCATION: *REALIGNMENT OF WALL STREET (NON-SYSTEM) AT US 17 BUSINESS (MAIN STREET) AND SHALLOTTE AVENUE (NON-SYSTEM) INTERSECTION*

TYPE OF WORK: *GRADING, DRAINAGE, CURB & GUTTER, SIGNAL, RESURFACING, & PAVING*



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF SHALLOTTE.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 20 10 0 20 40

PROFILE (HORIZONTAL): 20 10 0 20 40

PROFILE (VERTICAL): 4 2 0 4 8

DESIGN DATA

ADT 2019 = 1,500
ADT 2040 = 2,300
K = 12 %
D = 60 %
T = 3 % *
V = 40 MPH
* TTST = 1% DUAL = 2%
FUNC. CLASS = URBAN LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5788 = 0.150 MILES

TOTAL LENGTH TIP PROJECT U-5788 = 0.150 MILES

NOTE: -Y1- USED FOR PROJECT LENGTH

Prepared in the Office of:
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Busc 919 851 8077
Faxc 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

Prepared for:
DIVISION OF HIGHWAYS DIVISION 3
5501 Barbados Boulevard Castle Hayne NC, 28249

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 2, 2018

LETTING DATE: AUGUST 15, 2019

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: DAVID LEONARD, PE
DIVISION 3 DDC ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PROJECT REFERENCE NO.	SHEET NO.
U-5788	3A

Date: November 2018
WBS Number: 44360.1.1
TIP Number: U-5788
County: Brunswick
Description: Realignment of Wall Street (Non-System) at US 17 Business (Main Street) and Shallotte Avenue (Non-System) Intersection

Subject: Roadway Geotechnical Report - Inventory

Project Description

The project is located along the new alignment of Wall Street (-Y1-) at the existing intersection of US 17 Business / Main Street (-L-) and Shallotte Avenue in Shallotte, North Carolina. The project will consist of overlaying -L- near the intersection of Shallotte Avenue and realigned -Y1-. The realignment of -Y1- begins on -L- where Shallotte Avenue currently intersects and continues approximately 790 feet southeast to tie-in with existing Wall Street. Parking spaces and driveways will be provided for Town of Shallotte buildings along the north side of the -Y1- alignment including a fire station. The proposed realigned section of -Y1- will be one lane in each direction with left turn lanes at the intersection with -L- and planned driveways. There is a landscaped median planned to separate each direction on the realigned portion of -Y1-. The realigned section will tie-in to the existing two-lane section of Wall Street. The project corridor is in an urban setting.

A Roadway Geotechnical Inventory Report was provided in November 2016 describing the investigation previously performed for the realignment of Shallotte Avenue. During that investigation the pavement and subgrade of -L- were investigated. The geotechnical subsurface investigation of -L- was performed in September of 2016. The existing pavements at Station 16+00 and 17+00 -L- were cored with a truck mounted HILTI-DD200 electric coring machine using a 4-inch inside diameter, diamond impregnated, thin walled core barrel. The pavement subgrades and subsurface soils along the -L- alignment were evaluated with a dual-mass dynamic cone penetrometer (DCP). The results of the DCP testing and California Bearing Ratio (CBR) correlations were submitted under a separate cover. Soil samples were obtained during the pavement and subgrade investigation by advancing solid stem augers with a GeoProbe 6625CPT drill rig. Representative soil samples were collected in the field for visual classification and selected samples were submitted for analysis by Terracon's soil testing laboratory. Laboratory testing was performed in accordance with the AASHTO Soil Classification System.

The geotechnical subsurface investigation of -Y1- was performed in September 2018. Soil samples were obtained using a hand auger. Representative soil samples were collected in the field for visual classification and selected samples were submitted for analysis by Terracon's soil testing laboratory. Laboratory testing was performed in accordance with the AASHTO Soil Classification System. The site was revisited and offset borings were advanced near the locations of our September 2018 hand auger borings. These borings remained open for 24 hours for the specific purpose of obtaining 24 hour water levels.

The following alignments were investigated by soil testing and visual reconnaissance:

Alignment	Stations
-L-	15+27 to 16+85
-Y1-	10+00 to 17+90

Physiography and Geology

The site is located within the Inner Coastal Plain Physiographic and Geologic Province of North Carolina in Brunswick County. The Coastal Plain Province is characterized by flat, low-lying, subdued topographic features. The existing elevations along the investigated corridor range from approximately 23 feet to 12 feet. In general, the topography at this site slopes gently to the southeast toward the unnamed stream and surrounding wetland.

The project is located in the Coastal Plain Physiographic Province with geology consisting of a wedge of unconsolidated sands, silt, marl, and other clays interbedded with occasional limestone strata, which rests atop crystalline basement rocks. Based on previous mapping (N.C. Geologic Map 1985) and our knowledge of the local geology, the site falls within the Tertiary age Waccamaw Formation. However, based on our site visit and subsurface conditions encountered, the near surface soils appear to be recent Undivided Coastal Plain deposits of alluvial origin and are consistent with interbedded sands, clayey sands and clays. These near surface soils overlie the blue-gray to tan, loosely consolidated, fossiliferous sand with silt and clay of the Waccamaw Formation.

Soil Properties

Soils encountered during this investigation were artificial fill, roadway embankment, and Undivided Coastal Plain deposited soils.

Artificial fill is present at the surface on -Y1- near the proposed intersection with -L-. This material appears to be associated with development of the store and parking lot currently located on the south corner of Main Street and Wall Street. The artificial fill consists of loose, moist, silty fine sand (A-2-4).

Roadway embankment soils are present beneath the existing pavement on -L- and -Y1-. It appears the -L- alignment was undercut and replaced during construction of the existing roadway. Roadway embankment fill was placed to raise grades of existing Wall Street near the southeast end of the project. The roadway embankment soils can be generalized as loose to medium dense, moist, silty fine sand (A-2-4) that extends to 4 to 5 feet below existing site grades.

Undivided Coastal Plain deposits are present at the surface along most of the corridor. The Undivided Coastal Plain soils can be generalized as alternating layers of clay, silt, and sand extending to the boring termination depths of 4 to 6 feet below existing site grades. The soils along the -Y1- alignment consist of 1 to 4 feet of loose to medium dense, dry to saturated, silty fine sand (A-2-4), soft to medium stiff, moist to wet, fine sandy silt (A-4), and loose to medium dense, moist, clayey fine sand (A-2-6). A layer of medium

stiff, wet, sandy to silty clay (A-6 and A-7-5, respectively) was encountered beneath the near surface Undivided Coastal Plain sand and silts along a majority of the -Y1- alignment. Based on laboratory testing, the sandy clay is moderately plastic with indices ranging from 23 to 24.

Groundwater

In general, the site drains to the unnamed jurisdictional stream and wetlands just southeast of the corridor near the end of existing Wall Street. Groundwater was encountered at depths ranging from 1.5 to 4 feet below existing site grades in the hand augers performed along the -Y1- alignment. In our opinion, the groundwater encountered in the hand auger borings along -Y1- is perched. Water infiltrating the near surface sands likely becomes trapped over the less permeable clay underlying a majority of the corridor. Groundwater was not encountered along the -L- alignment above the 4.5 feet boring termination depths at the time of drilling. These borings were performed within existing pavement sections and were filled immediately after drilling (FIAD) and patched. The depth of groundwater, beneath the ground surface, will fluctuate with seasonal precipitation and may occur a higher levels at other times of the year above less permeable clayey soils.

Areas of Special Geotechnical Interest

1) Plastic Soils – Slightly to moderately plastic Undivided Coastal Plain soils with plastic indices (PI) of 16 and greater were encountered at the following locations:

Alignment	Stations
-Y1-	10+23 to 16+25±

A discussion of these plastic soils is located above in the section titled “Soil Properties.”

2) Artificial Fill - Artificial fill was encountered at the following locations:

Alignment	Stations
-Y1-	10+23 to 10+48±

A discussion of the artificial fill is located above in the section titled “Soil Properties.”

3) Shallow Groundwater - Shallow perched groundwater was encountered within 6 feet of proposed grades at the following locations:

Alignment	Stations
-Y1-	10+23 to 17+90±

A discussion of the shallow groundwater is located above in the section titled “Groundwater.”

BULK SAMPLES

No bulk samples were taken for this project.

Sincerely,
Terracon Consultants, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 040231 ENGINEER MATTHEW J. ALEXANDER

11/6/18

Matthew J. Alexander, PE
Senior Geotechnical Engineer

11/6/18

Andrew A. Nash, PE
Geotechnical Department Manager

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U–5788	4

NC GRID
NAD 83 NA 2011

BRITT AND HEWETT INC
DB 577 PG 1085

WILLIAM D MILLIGAN
DB 1522 PG 800

EDWARD M & CAROLYN SWEATT
DB 541 PG 649
DB 612 PG 1088
DB 1725 PG 609
PB 02.5 PG 224

TOWN OF SHALLOTTE
DB 3656 PG 892
PB 90 PG 38

TOWN OF SHALLOTTE
DB 3517 PG 1296
PB 83 PG 50

TOWN OF SHALLOTTE
DB 513 PG 667
PB 02.5 PG 224

SHALLOTTE CITY HALL
DB 408 PG 212
PB 02.5 PG 224

TOWN OF SHALLOTTE
DB 2649 PG 897
PB 52 PG 54

SHALLOTTE ABC BOARD
DB 1867 PG 53
PB 02.5 PG 224

TOWN OF SHALLOTTE
DB 3509 PG 314
PB 2.5 PG 224

TOWN OF SHALLOTTE
DB 3491 PG 68
PB 02.5 PG 224

TOWN OF SHALLOTTE
DB 3491 PG 82
PB 81 PG 96

TOWN OF SHALLOTTE
DB 479 PG 785

GENE G & GRACIE EVANS
DB 647 PG 328

GENE G & GRACIE EVANS
DB 647 PG 332

ROADWAY EMBANKMENT

ARTIFICIAL FILL

UNDIVIDED COASTAL PLAIN

US17-2

US17-1

B-1

B-2

B-3

B-4

B-5

B-6

END CONSTRUCTION
END MILLING
AND RESURFACING
–L– STA. 16+85.00

BEGIN TIP PROJECT U–5788
–Y1– POT STA. 10+00.00 =
–L– POT STA. 15+81.50

–DR1– POT Sta. 11+50.00

END CONSTRUCTION
END MILLING
AND RESURFACING
–Y2– STA. 11+50.00

END CONSTRUCTION
–DR1– STA. 10+82.50

–Y2– POT Sta.11+50.00

–Y2– POT Sta.10+00.00

–DR1– POT Sta.10+00.00 =
–Y1– POT Sta.13+32.17

–Y2– POT Sta.10+87.58 =
–Y1– POT Sta.14+62.78

BEGIN CONSTRUCTION
BEGIN MILLING AND RESURFACING
–L– STA. 15+27.00

MATCHLINE STA. 15+00 -Y1- SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-5788	5

NC GRID
NAD 83 NA 2011

CONC. MON DISTURBED

1.5SBK FIRE STATION & EMS

TOWN OF SHALLOTTE
DB 1564 PG 420
PB 52 PG 68

TOWN OF SHALLOTTE
DB 2933 PG 785
PB 60 PG 4

1SBK G

TOWN OF SHALLOTTE
DB 3509 PG 314
PB 2.5 PG 224

TOWN OF SHALLOTTE
DB 3190 PG 889
PB 11PG 33

TOWN OF SHALLOTTE
DB 3098 PG 933
PB 67 PG 24

TOWN OF SHALLOTTE
DB 3658 PG 314
PB 89 PG 74

END TIP PROJECT U-5788
-Y1- STA. 17+90.00

MATCHLINE STA. 15+00 -Y1- SEE SHEET 4

WET WELL
BST
CONC
LANDSCAPE AREA
INV-19.38'
EXISTING R/W
15" HDPE
18" RCP
15" RCP
DI
SS Water
WALL STREET VARIABLE WIDTH BST
ROADWAY EMBANKMENT
B-8
B-7
FSS
EIP
SOIL
12" RCP
WOODS
UNDIVIDED COASTAL PLAIN
1S MTL BUS
1SBK BUS

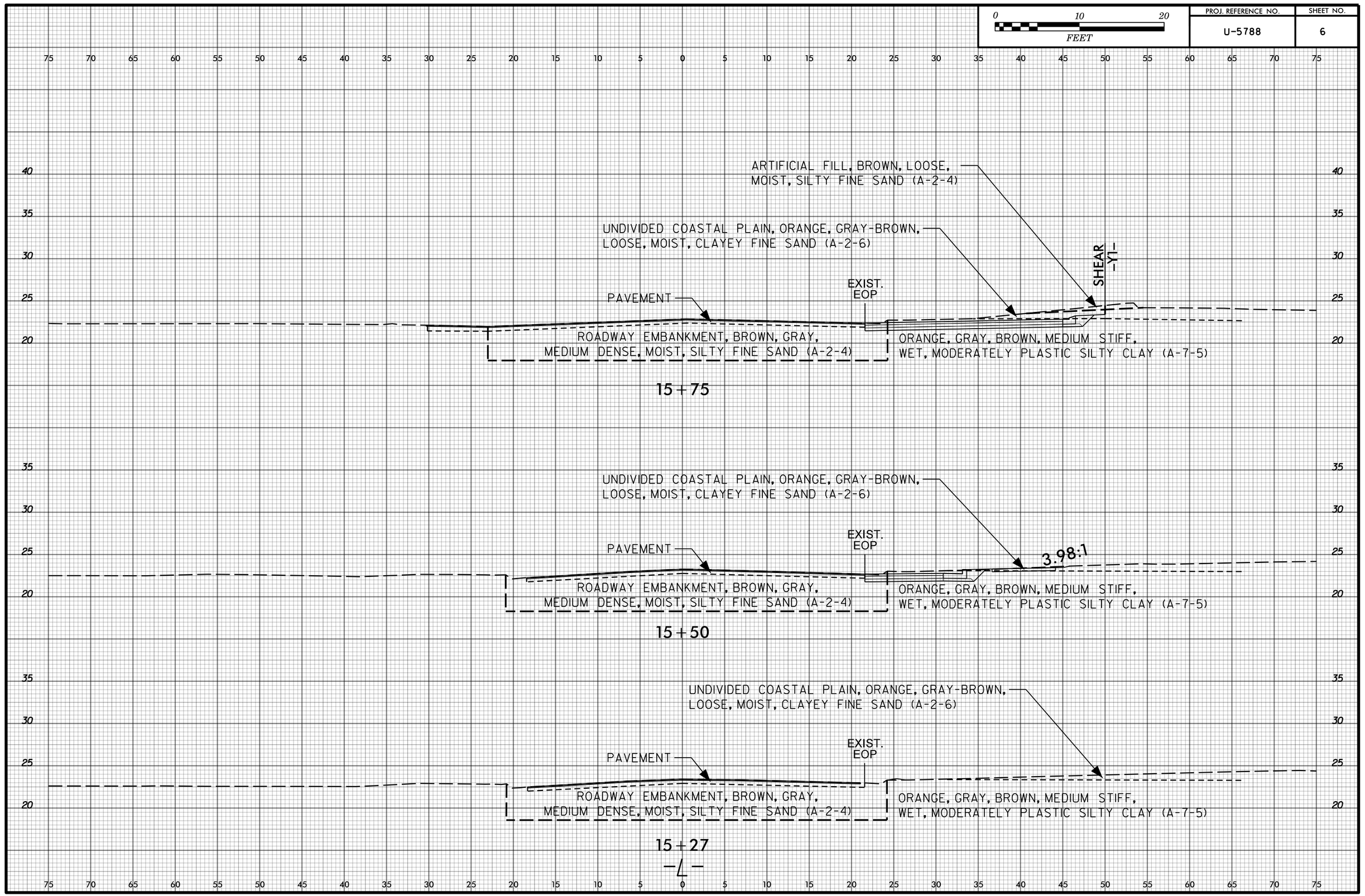
TOWN OF SHALLOTTE
DB 3245 PG 198
PB 02.5 PG 224

TOWN OF SHALLOTTE
DB 3485 PG 1083
PB 81PG 54

TOWN OF SHALLOTTE
DB 3492 PG 1036
PB 81PG 54

20

0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	6



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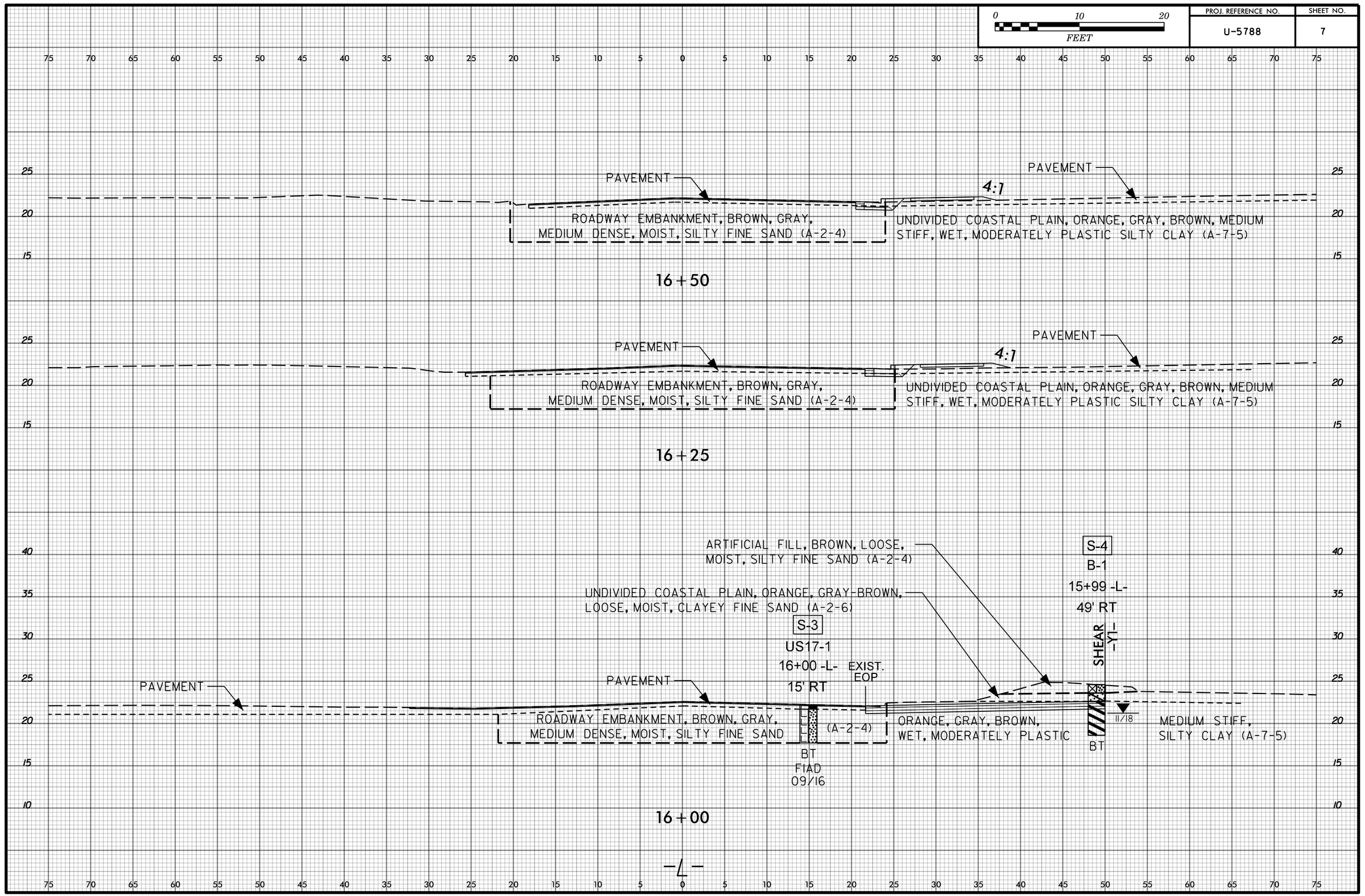
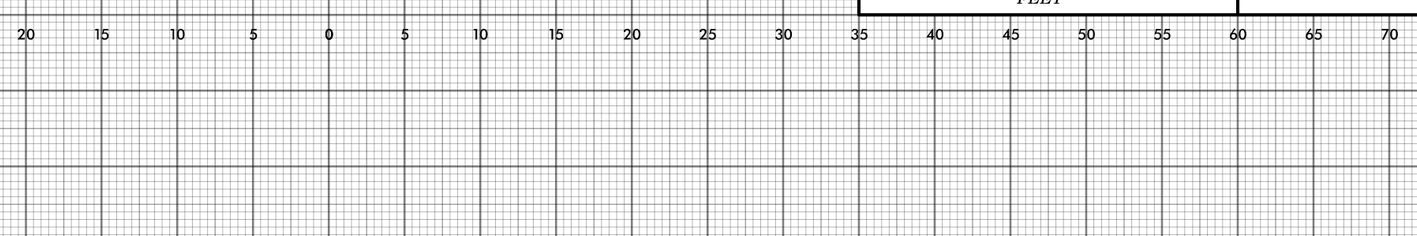
	U-5788	7

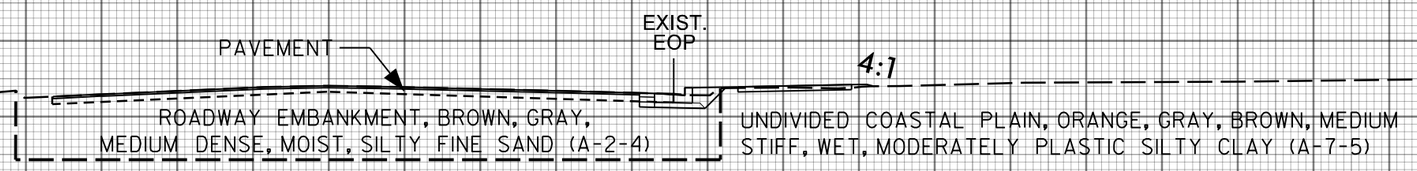


0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	8

US17-2
17+00 -L-
CL



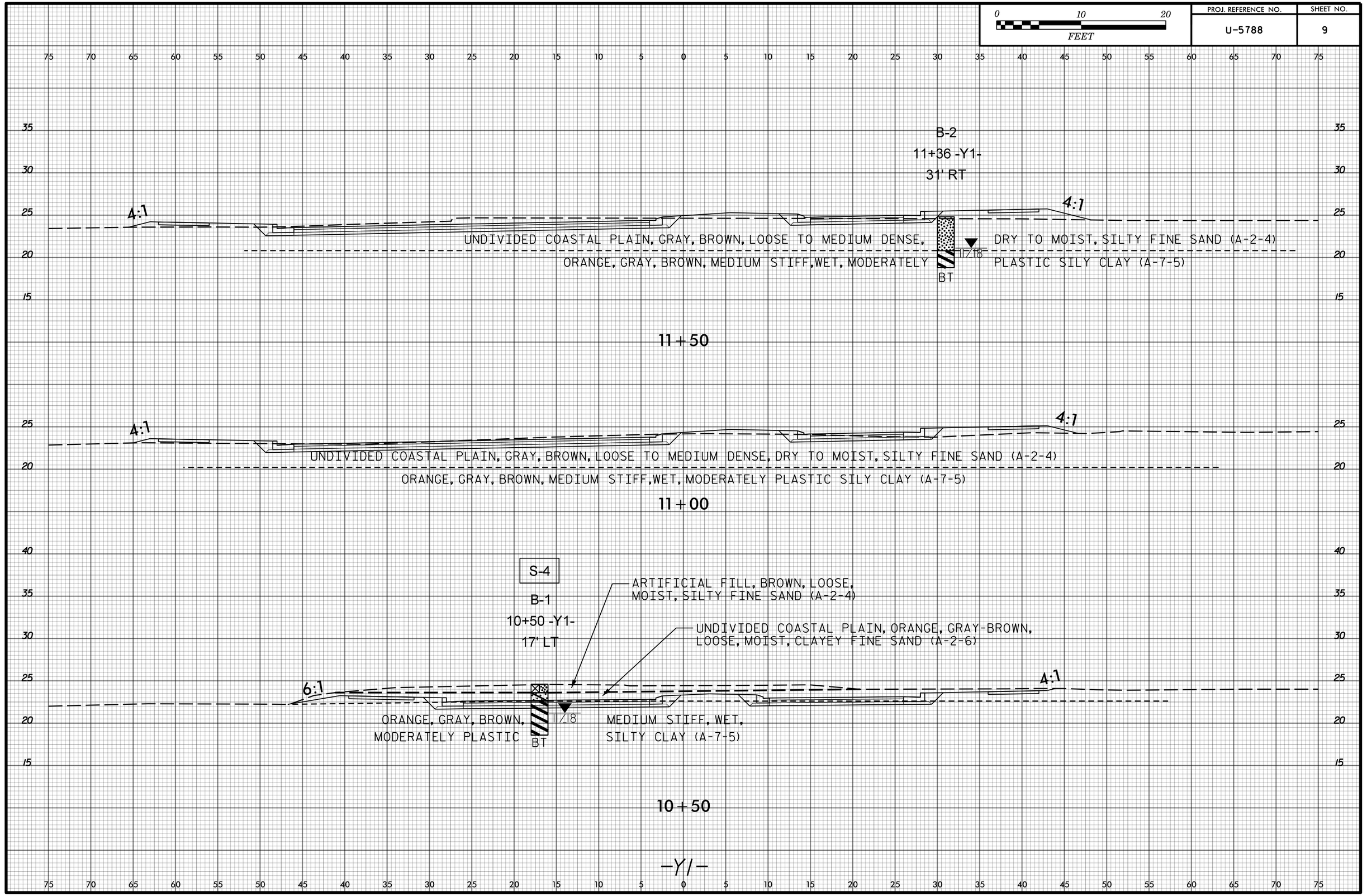
16+85



16+75

-L-

0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	9



0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	10

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

30 25 20 15

SHEAR -DR1-

4:1

UNDIVIDED COASTAL PLAIN, GRAY, BROWN, LOOSE TO MEDIUM DENSE, DRY TO SATURATED, SILTY FINE SAND (A-2-4)

ORANGE-BROWN, MEDIUM STIFF, WET, FINE SANDY CLAY, SILTY CLAY, MODERATELY PLASTIC (A-7-5, A-6)

13+00

40 35 30 25 20 15

S-5

B-3
12+40 -Y1-
24' LT

B-4
12+65 -Y1-
15' RT

4:1 4:1

UNDIVIDED COASTAL PLAIN, GRAY, BROWN, LOOSE TO MEDIUM DENSE, DRY TO SATURATED, SILTY FINE SAND (A-2-4)

ORANGE-BROWN, MEDIUM STIFF, WET, FINE SANDY CLAY, SILTY CLAY, MODERATELY PLASTIC (A-7-5, A-6)

11/18 BT 11/18 BT

12+50

25 20

3.91:1 4:1

UNDIVIDED COASTAL PLAIN, GRAY, BROWN, LOOSE TO MEDIUM DENSE, DRY TO MOIST, SILTY FINE SAND (A-2-4)

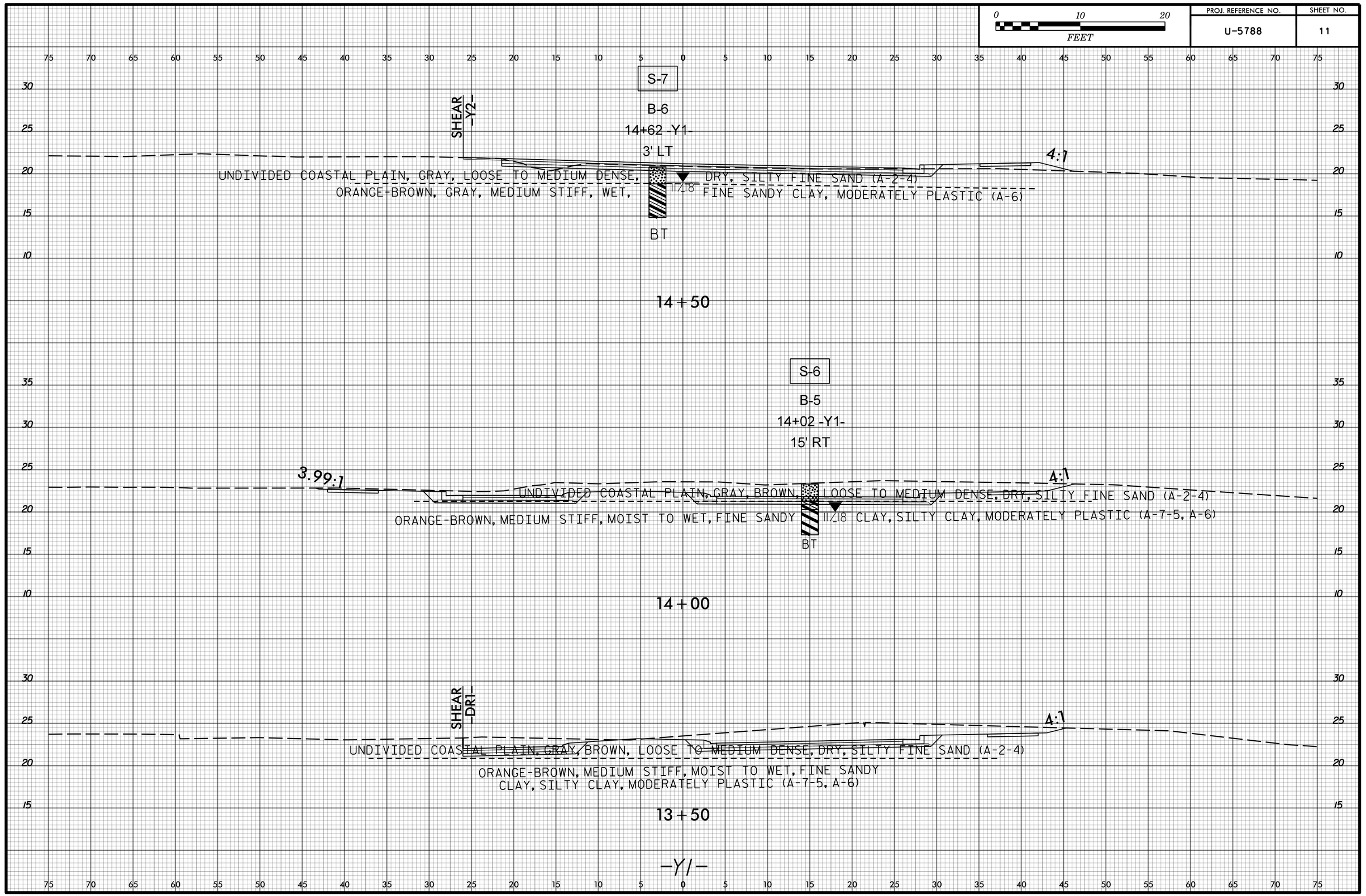
ORANGE, GRAY, BROWN, MEDIUM STIFF, WET, MODERATELY PLASTIC SILY CLAY (A-7-5)

12+00

-Y1-

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

0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	11



0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	12

UNDIVIDED COASTAL PLAIN, GRAY, BROWN, LOOSE TO MEDIUM DENSE, MOIST TO SATURATED, SILTY FINE SAND (A-2-4)

4:1

4:1

ORANGE, GRAY, MEDIUM STIFF, WET, SILTY CLAY, MODERATELY PLASTIC (A-7-5)

16+00

S-8
S-9

B-7

15+29 -Y1-

21' RT

UNDIVIDED COASTAL PLAIN, GRAY, SOFT TO MEDIUM STIFF, MOIST, FINE SANDY SILT (A-4)

GRAY, BROWN, LOOSE TO MEDIUM DENSE, MOIST TO SATURATED, SILTY FINE SAND (A-2-4)

4:1

WD

ORANGE, GRAY, MEDIUM STIFF, WET, SILTY CLAY, MODERATELY PLASTIC (A-7-5)

BT

15+50

4:1

4:1

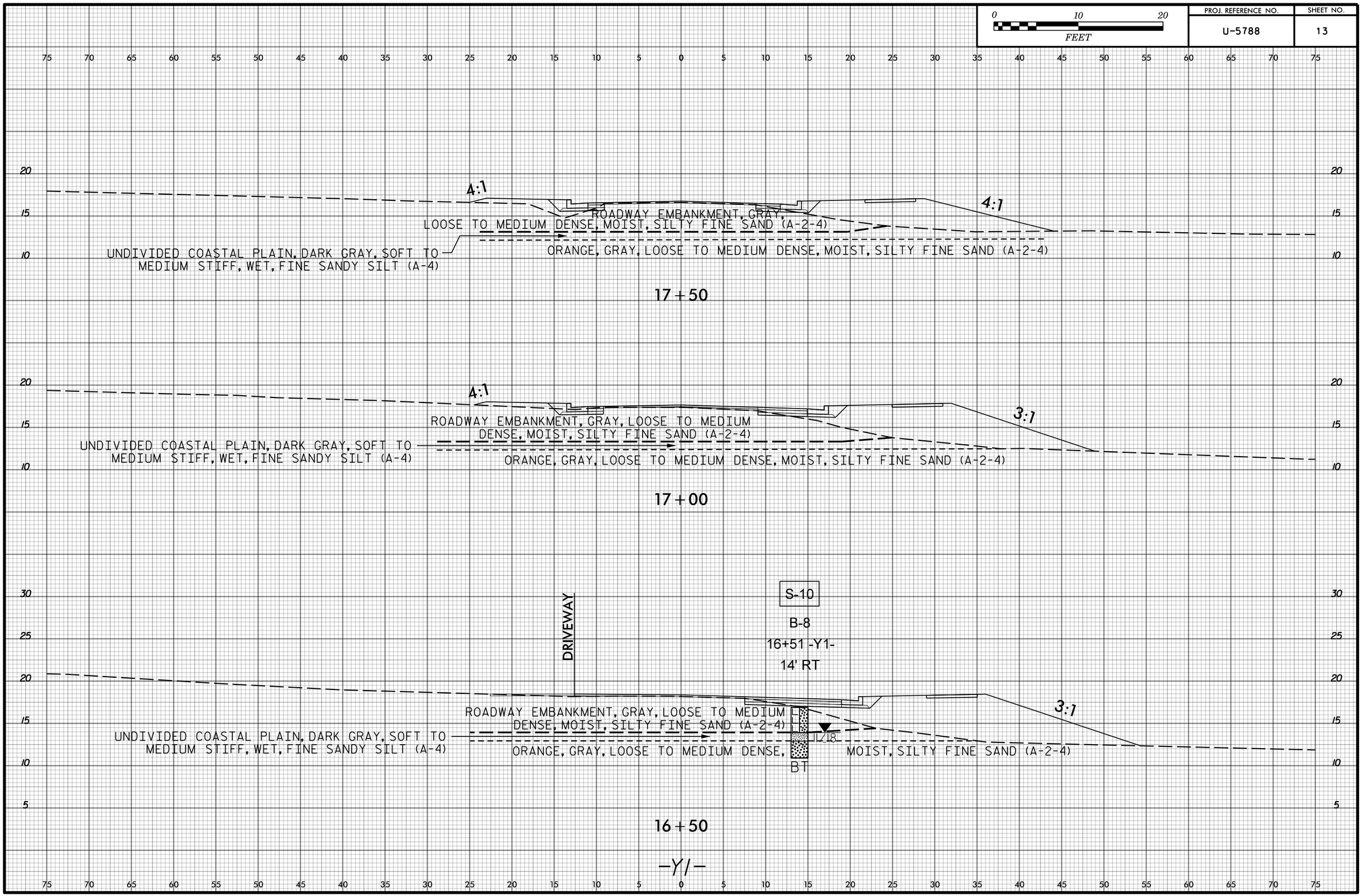
UNDIVIDED COASTAL PLAIN, GRAY, LOOSE TO MEDIUM DENSE, DRY, SILTY FINE SAND (A-2-4)

ORANGE-BROWN, GRAY, MEDIUM STIFF, WET, FINE SANDY CLAY, MODERATELY PLASTIC (A-6)

15+00

-Y1-

0 10 20 FEET	PROJ. REFERENCE NO.	SHEET NO.
	U-5788	13



0 10 20
FEET

PROJ. REFERENCE NO.	SHEET NO.
U-5788	14

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ROADWAY EMBANKMENT, GRAY, LOOSE TO MEDIUM DENSE, MOIST, SILTY FINE SAND (A-2-4)

UNDIVIDED COASTAL PLAIN, DARK GRAY, SOFT TO MEDIUM STIFF, WET, FINE SANDY SILT (A-4)

ORANGE, GRAY, LOOSE TO MEDIUM DENSE, MOIST, SILTY FINE SAND (A-2-4)

20
15
10

17+90

-Y1-

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–5788	15	16

REFERENCE: U–5788

PROJECT: 44360

APPENDIX A

LABORATORY TESTING SUMMARY

LABORATORY TESTING SUMMARY

PROJECT NUMBER: 44360.1.1 **TIP:** U-5788 **COUNTY:** Brunswick

DESCRIPTION: Realignment of Wall Street at US 17 Business (Main Street) and Shallotte Avenue

Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
S-3	-L-	16+00	15 RT	0.5 - 3.5	A-2-4 (0)	25	9	7.8	64.0	6.7	21.5	0	100	98	31	--	--
S-4	-Y1-	10+50	17 LT	2.0 - 3.0	A-2-6 (1)	33	17	1.7	67.1	4.6	26.6	0	100	100	33	--	--
S-5	-Y1-	12+40	24 LT	3.0 - 4.0	A-2-4 (0)	17	NP	3.9	80.1	7.9	8.1	0	100	99	20	--	--
S-6	-Y1-	14+02	15 RT	2.0 - 3.0	A-6 (6)	38	24	2.4	54.0	10.0	33.6	0	100	100	45	18.4	--
S-7	-Y1-	14+62	3 LT	2.0 - 3.0	A-6 (4)	38	23	2.4	60.8	8.1	28.7	0	100	99	40	20.9	--
S-8	-Y1-	15+29	21 RT	0.0 -1.0	A-4 (0)	24	NP	5.1	52.5	29.0	13.4	0	99	98	44	28.5	--
S-9	-Y1-	15+29	21 RT	2.0 - 3.0	A-2-4 (0)	14	NP	3.6	71.6	17.1	7.7	0	100	99	29	--	--
S-10	-Y1-	16+51	14 RT	3.0 - 4.0	A-4 (0)	22	5	5.1	56.6	18.4	19.9	0	100	98	40	30.0	--

Stephanie H. Huffman

Certified Lab Technician Signature

114-01-1203

Certification Number