

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5751	1	90

CAUTION NOTICE

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NOTES:

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- 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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NC REGISTERED ENGINEERING FIRM: F-0869
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02/19/21

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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-RAB-	10+00 - 14+71.24	6	
-RCD-	10+00 - 14+71.23	6	
-Y1A-	16+00 - 34+84.45	6, 9 - 10	
-Y1B-	34+84.45 - 41+15.33	6	
-Y1C-	41+15.33 - 59+00	6, 11 - 12	
-Y1RPA-	10+00 - 26+67.80	6 - 7	
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-Y1B-	35+60 - 40+40	6	13

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LINE	STATION	SHEETS
-L-	16+00 - 17+50	14 - 15
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-L-	35+50 - 37+00	19 - 20
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ROADWAY
SUBSURFACE INVESTIGATION

COUNTY ROBESON
PROJECT DESCRIPTION UPGRADE OF AT-GRADE
INTERSECTIONS AT US 74 /NC 72 AND US 74 /NC
130 TO INTERCHANGE

INVENTORY

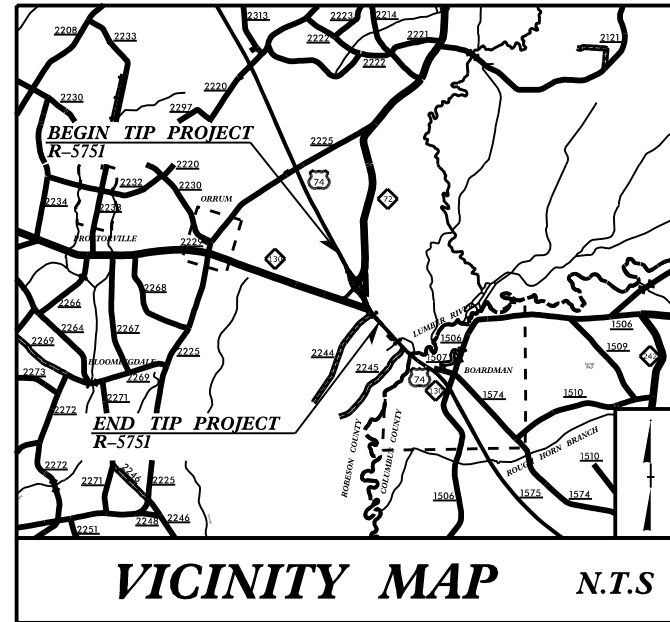
REFERENCE: R-5751

PROJECT: 53087

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																													
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, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										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.										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:										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 DISLOGGED 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 (SROD) - 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.																													
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.																													
MINERALOGICAL COMPOSITION										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 YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.																			
COMPRESSION										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																													
PERCENTAGE OF MATERIAL										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.																			
GROUND WATER										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.																			
MISCELLANEOUS SYMBOLS										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																			
RECOMMENDATION SYMBOLS										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										VERY SOFT										CAN BE GROVED OR GOUGED 0.25 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. 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.																			
TEXTURE OR GRAIN SIZE										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.									
CONSISTENCY OR DENSENESS										SOIL SYMBOL										SOIL SYMBOL										SOIL SYMBOL										SOIL SYMBOL																			
SOIL MOISTURE - CORRELATION OF TERMS										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT										ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT																			
PLASTICITY										INFERRED SOIL BOUNDARY										INFERRED SOIL BOUNDARY										INFERRED SOIL BOUNDARY										INFERRED SOIL BOUNDARY																			
COLOR										INFERRED ROCK LINE										INFERRED ROCK LINE										INFERRED ROCK LINE										INFERRED ROCK LINE																			
ABBREVIATIONS										ALLUVIAL SOIL BOUNDARY										ALLUVIAL SOIL BOUNDARY										ALLUVIAL SOIL BOUNDARY										ALLUVIAL SOIL BOUNDARY																			
EQUIPMENT USED ON SUBJECT PROJECT										UNDERCUT										UNDERCUT										UNDERCUT										UNDERCUT																			
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FIAD - FILLED IMMEDIATELY AFTER DRILLING										CL - CLAY										CL - CLAY										CL - CLAY										CL - CLAY																			
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PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										DMT - DILATOMETER TEST										DMT - DILATOMETER TEST										DMT - DILATOMETER TEST										DMT - DILATOMETER TEST																			
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PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										PMT - PRESSUREMETER TEST										PMT - PRESSUREMETER TEST										PMT - PRESSUREMETER TEST										PMT - PRESSUREMETER TEST																			
PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										SAP. - SAPROLITIC										SAP. - SAPROLITIC										SAP. - SAPROLITIC										SAP. - SAPROLITIC																			
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PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										SLI. - SLIGHTLY										SLI. - SLIGHTLY										SLI. - SLIGHTLY										SLI. - SLIGHTLY																			
PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										TCR - TRICONE REFUSAL										TCR - TRICONE REFUSAL										TCR - TRICONE REFUSAL										TCR - TRICONE REFUSAL																			
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PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										WEA. - WEATHERED										WEA. - WEATHERED										WEA. - WEATHERED										WEA. - WEATHERED																			
PAVEMENT DESIGN INVESTIGATION TEST LOCATION AND CORE										WU - UNIT WEIGHT										WU - UNIT WEIGHT										WU - UNIT WEIGHT										WU - UNIT WEIGHT																			
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TIP PROJECT: R-5751



25% APPROVED PLANS

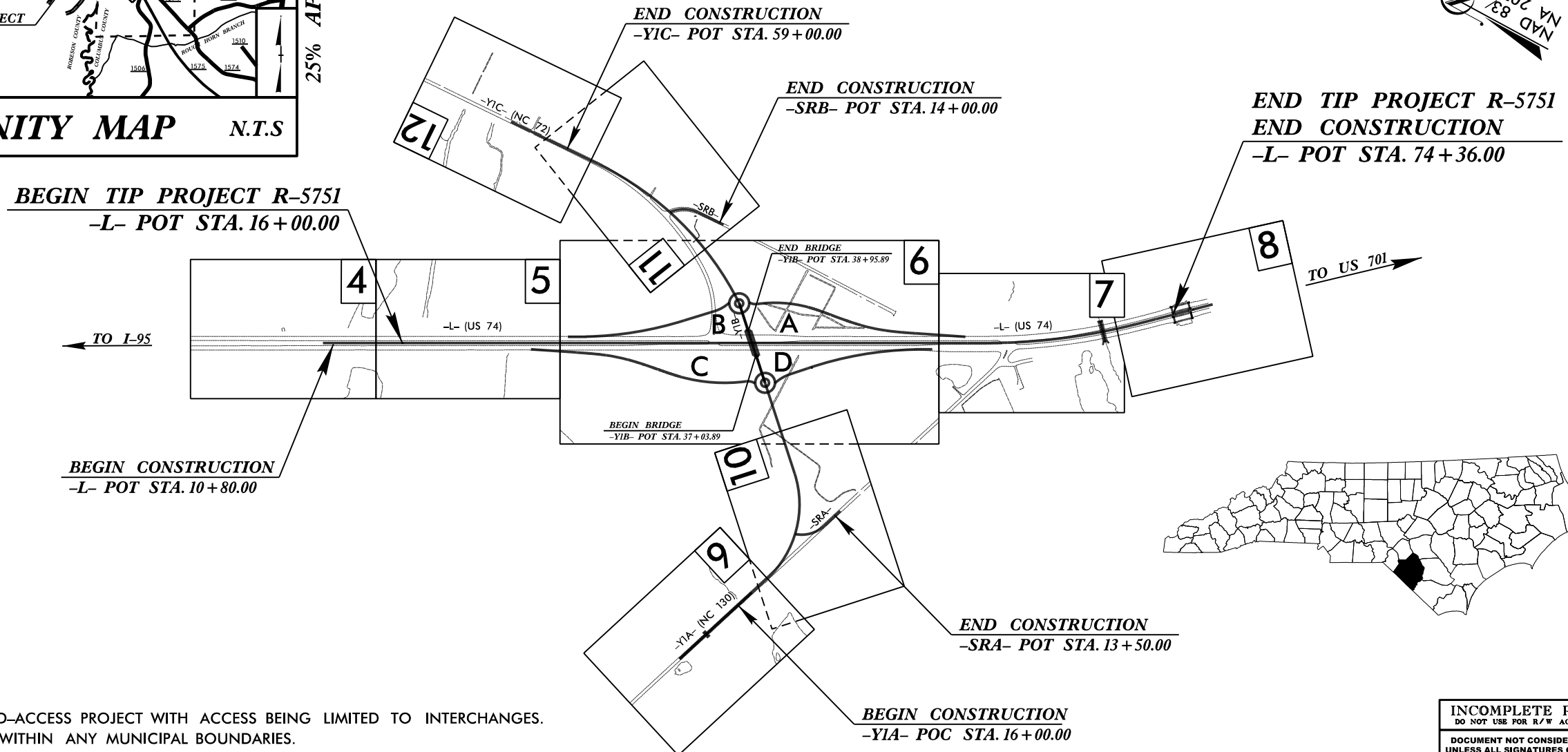
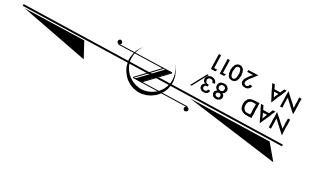
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

LOCATION: US 74 AT NC 72 / NC 130
CONVERT INTERSECTION TO INTERCHANGE

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

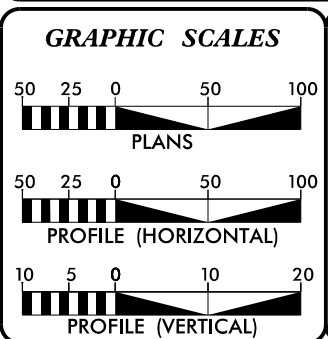
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5751	3	90
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
53087.1.1	NHP-0074(203)	PE	



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

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

CONTRACT:



DESIGN DATA

ADT 2022 =	20,300
ADT 2042 =	30,000
K =	8 %
D =	55 %
T =	19 % *
V =	75 MPH
*(TTST=12% + DUAL=7%)	
FUNC CLASS =	FUTURE INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5751	=	1.105 MILES
TOTAL LENGTH TIP PROJECT R-5751	=	1.105 MILES

PREPARED IN THE OFFICE OF:
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 24, 2020

LETTING DATE:
JANUARY 18, 2022

PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 6
558 Gillespie St.
Fayetteville, NC 28301
910-364-0603

JARED BOND, PE
PROJECT ENGINEER

SEAN KANE, EI
PROJECT DESIGN ENGINEER

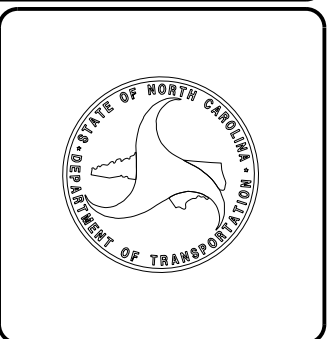
ALEX HENDERSON
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



Date: January 29, 2021
 WBS Number: 53087.1.1
 TIP Number: R-5751
 County: Robeson
 Description: Upgrade of at-grade intersections at US 74/NC 72 and US 74/NC 130 to interchange

-Y1PRD- 10+00 to 22+30
 -SRA- 10+00 to 14+02
 -SRB- 10+00 to 14+34

Subject: Roadway Geotechnical Report - Inventory

Project Description

The project is located near the Town of Orrum in Robeson County, North Carolina and consists of the addition of two roundabouts, four ramps, and a bridge over US 74 (-L-). The project reroutes NC 72 (-Y1C-) and NC 130 (-Y1A-) and combines them into a single interchange for access to US 74 (-L-).

The length of the project is about 1.1 miles along -L-, 1.1 miles combined along -Y1A-, -Y1B-, and -Y1C-, and 1.1 miles combined along the ramp alignments (-Y1RPA-, -Y1RPB-, -Y1RPC-, and -Y1RPD-). There are two roundabouts (-RAB-, -RCD-) located along the overpass combined alignment (-Y1A-, -Y1B, and -Y1C-) on either side of US 74. Realignment of two services roads (-SRA-, -SRB-) less than 0.1 miles long will be included in the project. The project corridor is in a rural setting with mostly vegetation and farm land along each alignment, with some areas of delineated wetlands.

The geotechnical subsurface investigation was performed in June and July of 2019 and supplemental hand augers performed in January 2021. The site was investigated with 42 standard penetration test (SPT) borings that were advanced using a Diedrich D-50 track mounted rotary drill rig equipped with a calibrated automatic hammer. The SPT borings were advanced with hollow stem augers to depths of 10 to 12 feet beneath the ground surface and with mud rotary to depths of 19 to 84 feet beneath the ground surface. Representative soil samples were collected in the field for visual classification and selected samples were submitted for laboratory analysis by Terracon's soil testing laboratory. Laboratory testing was performed in accordance with the NCDOT laboratory testing standards. The hand augers were performed to identify groundwater depths in the wet season and included 14 hand augers at previous boring locations and 11 hand augers at new locations. The hand augers ranged in depth from 2 to 6 feet.

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

<u>Alignment</u>	<u>Stations (±)</u>
-L-	10+80 to 74+36
-RAB-	10+00 to 14+71
-RCD-	10+00 to 14+71
-Y1A-	10+00 to 34+84
-Y1B-	34+84 to 41+15
-Y1C-	41+15 to 59+00
-Y1RPA-	10+00 to 26+68
-Y1RPB-	10+00 to 22+58
-Y1RPC-	10+00 to 27+26

Physiography and Geography

The site is located in the Lumber River basin and primarily consists of Duplin Formation soils with recent alluvial soils in the low lying swampy areas as discussed below. The existing elevations along the investigated corridor range from approximately 76 feet to 86 feet. The western portion of the project is located in the White Oak Swamp. Based on the presence of several rivers and creeks and the surrounding very flat terrain, the site appears to be located in a flood prone and swampy area.

Soil Properties

Soils encountered during this investigation are separated into four categories based on their origin. The soils encountered consist of roadway embankment, artificial fill, alluvial deposit and coastal plain soils. We anticipate that roadway embankments were constructed to elevate roads through low-lying swampy areas and areas prone to flooding. Artificial fill was encountered in isolated areas outside the roadway embankments to raise those locations above the surrounding swampy areas. Alluvial deposits were identified within the limits of the delineated wetlands area. Coastal plain soils are found at the surface in some areas and below the surficial roadway embankment, artificial fill and alluvial soil across the entire.

In general, the roadway embankment soils generally consist of very loose to medium dense silty sand and clayey sand to fine sands (A-2-4, A-2-6, A-3) and stiff sandy silt and sandy clay (A-4, A-6), and the artificial fill soils consist of medium dense silty sand and sand with clay (A-2-4, A-2-6). Alluvial deposits consist of very loose to loose, clayey sand, silty sand, and sand with clay (A-1-b, A-2-4, A-2-5, A-2-6), very soft silty and sandy clay and sandy silt (A-6, A-7, A-4) and very soft silty clay with trace organics to highly organic (ORG1, ORG2, A-6). Coastal plain (Duplin Formation) soils encountered consist of very soft to hard sandy silts and sandy to silty clays and clay with sand (A-4, A-6, A-7), very loose to very dense fine to coarse sands (A-1, A-3), and very loose to dense silty to clayey sands (A-2-4, A-2-6).

Groundwater Properties

The Lumber River passes near the site to the east, running approximately perpendicular to -L-. Tributary creeks can also be found east of the site, one crossing -L- through a culvert, and tie into the Lumber River. The majority of the west portion and some of the east portion of the project are within the limits of White Oak Swamp. Groundwater was encountered during our explorations from depths of 1 to 6 feet beneath the ground surface. Surface water was observed at several boring locations within the delineated wetlands, in ditches and in other low areas at the time of our investigation.

The depth of groundwater, beneath the ground surface, will fluctuate with seasonal precipitation and may occur at higher levels at other times of the year above less permeable clayey soils.



Areas of Special Geotechnical Interest

1) Very soft to soft and wet soils were encountered at the following approximate locations:

<u>Alignment</u>	<u>Stations (±)</u>
-L-	32+00 to 33+00, 36+50 to 37+00
-Y1A-	19+00 to 29+00, 30+50 to 31+50, 32+50 to 33+50
-Y1C-	47+50 to 48+50
-Y1PRB-	17+50 to 18+50, 19+50 to 21+00
-Y1PRC-	15+80 to 16+80, 18+75 to 19+75, 23+75 to 24+75
-Y1RPD-	19+50 TO 20+50

2) Near surface soils with little to moderate organics requiring remediation were encountered at the following approximate locations:

<u>Alignment</u>	<u>Stations (±)</u>
-Y1A-	19+00 to 24+50

3) Groundwater was encountered within 6 feet of proposed pavement subgrade at the following approximate locations:

<u>Alignment</u>	<u>Stations (±)</u>
-Y1RPA-	15+00 TO 18+00
-Y1A-	19+00 TO 25+50
-Y1RPC-	10+00 TO 18+50
-Y1RPB-	10+00 TO 14+50

BULK SAMPLES

The following bulk samples were taken for tests to determine the engineering properties of the soil.

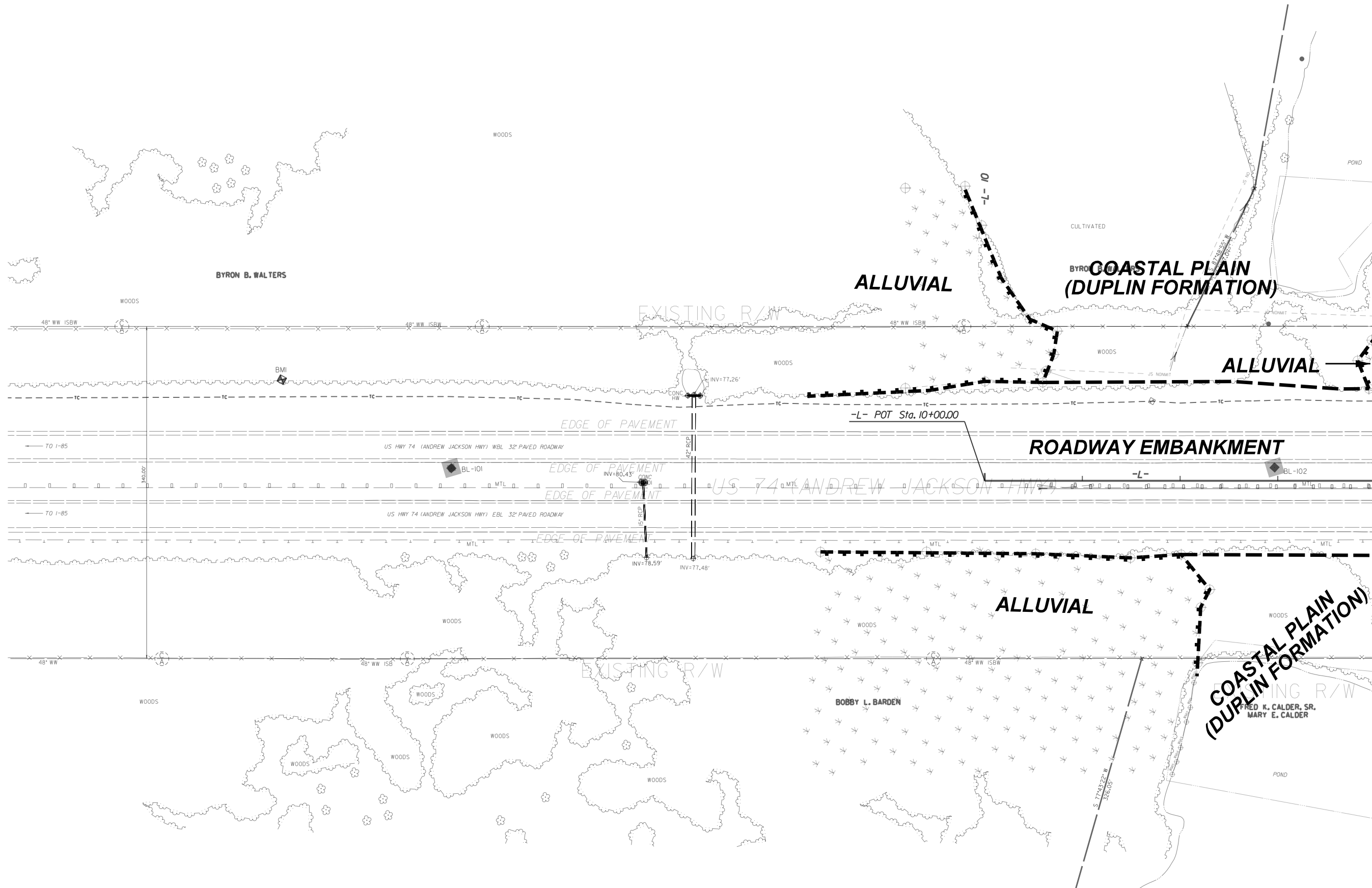
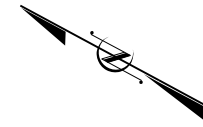
<u>Sample No.</u>	<u>Location</u>	<u>Depth (ft.)</u>	<u>Test</u>
CBR-1	12+00 -Y1RPD-, 70' RT	0.5 – 1.5	Proctor and CBR
CBR-2	13+00 -Y1RPA-, 68' LT	0.5 – 1.5	Proctor and CBR
CBR-4	16+20 -Y1RPC-, CL	0.5 – 1.5	Proctor and CBR

Closing

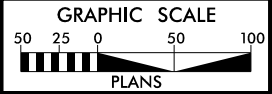
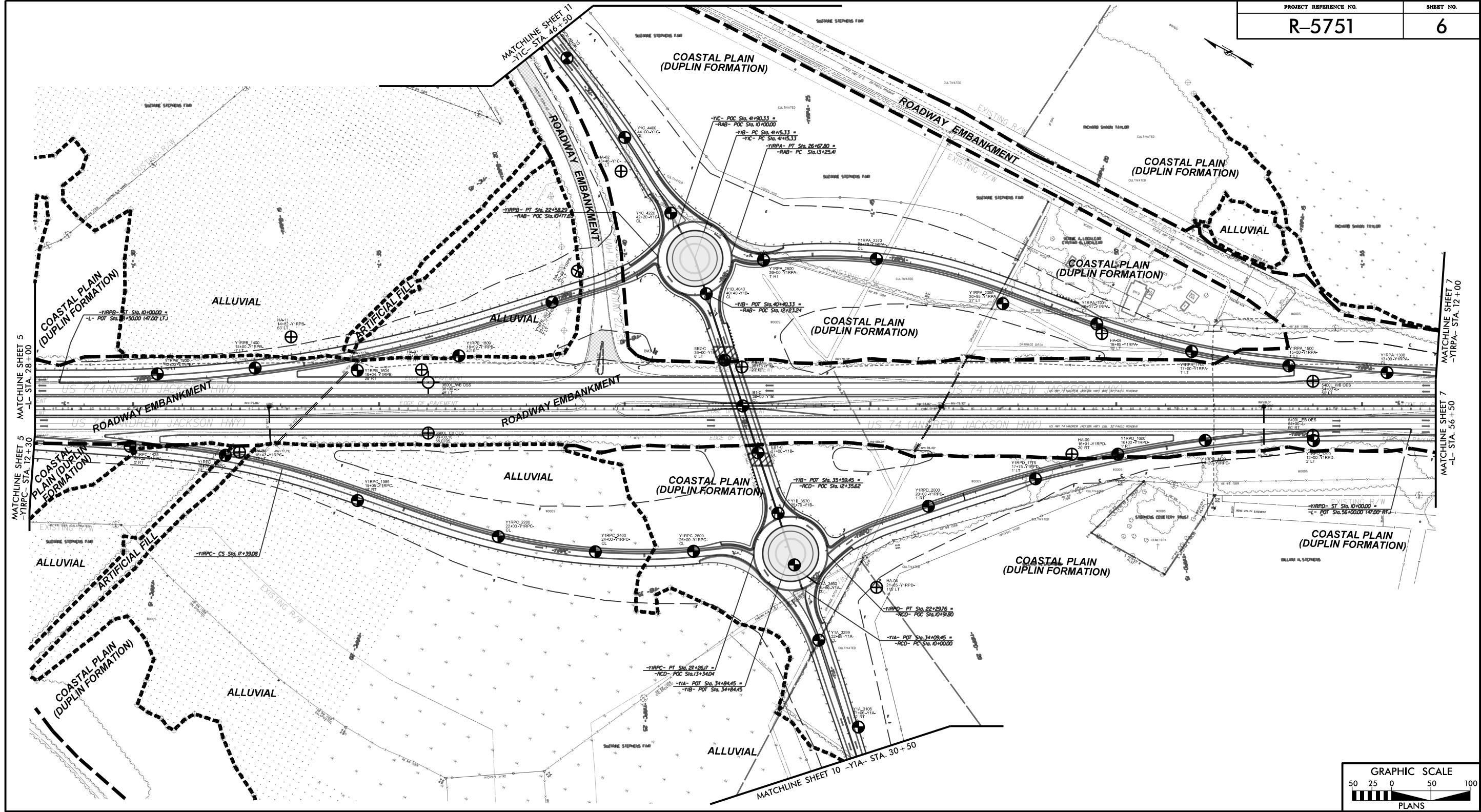
We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us at your convenience.

Sincerely,
Terracon Consultants, Inc.

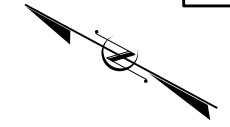
Jonathan P. Manke, PE
Senior Geotechnical Engineer



MATCHLINE SHEET 5 -L- STA. 14+00



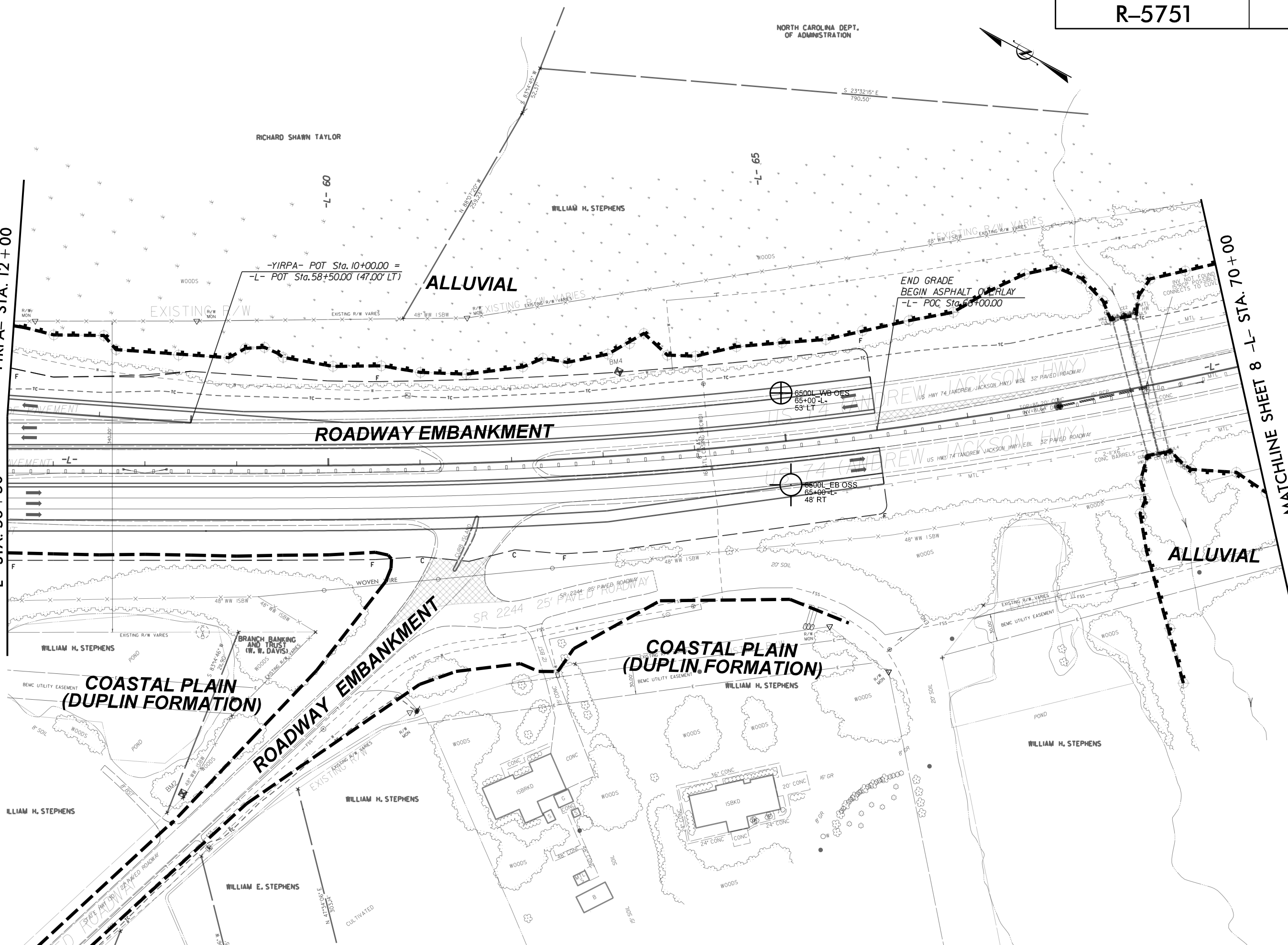
NORTH CAROLINA DEPT. OF ADMINISTRATION



MATCHLINE SHEET 6
-YIRPA- STA. 12+00

MATCHLINE SHEET 6
-L- STA. 56+50

MATCHLINE SHEET 8 -L- STA. 70+00



SUZANNE STEPHENS FAIR

WILLIAM H. STEPHENS

JULIA F. SMITH
ANNE F. RICH

JULIA F. SMITH
ANNE F. RICH

ALLUVIAL

-YIA- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-YIA- POC Sta. 16+00.00

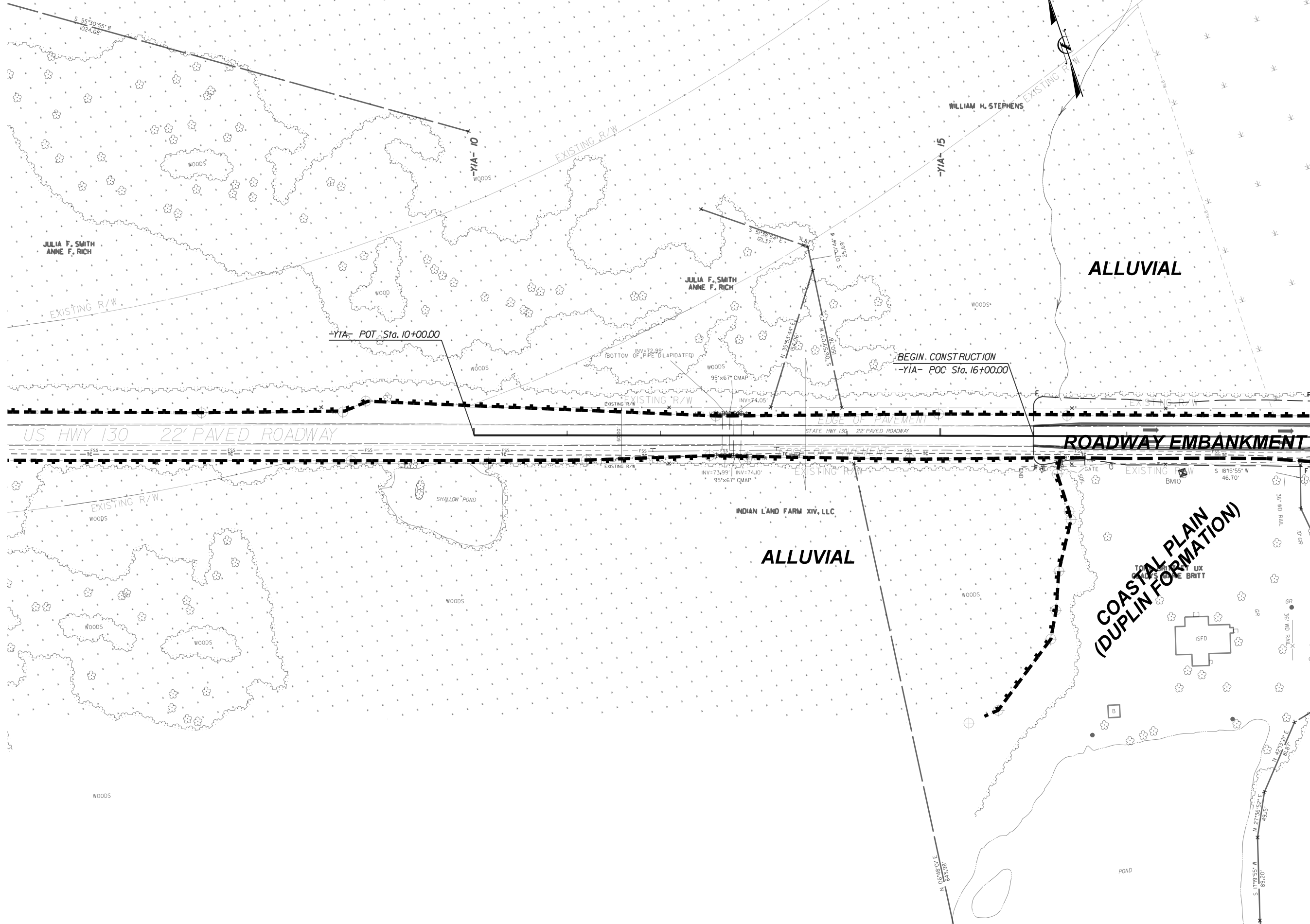
US HWY 130 22' PAVED ROADWAY

ROADWAY EMBANKMENT

INDIAN LAND FARM XIV, LLC

ALLUVIAL

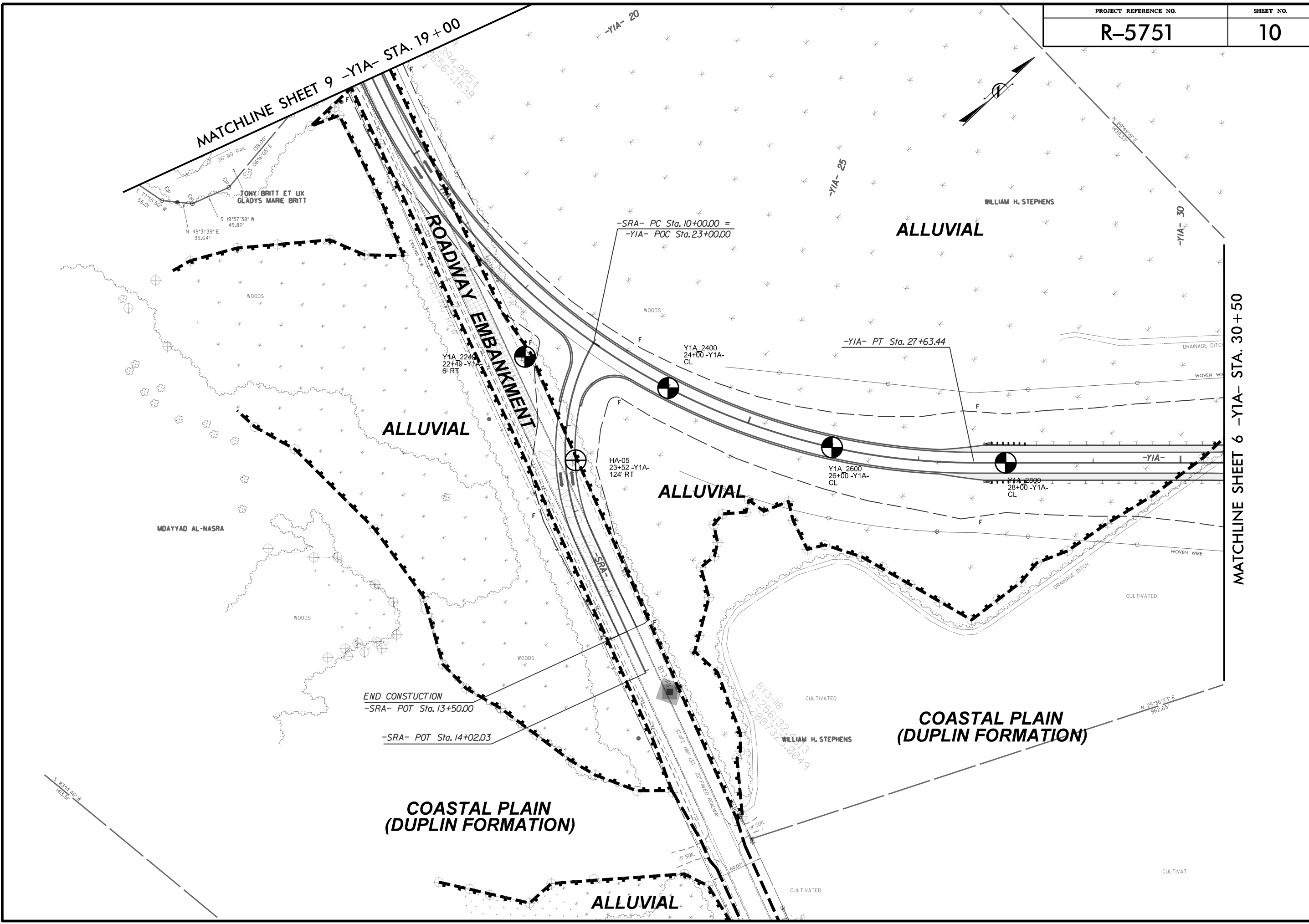
COASTAL PLAIN
(DUPLIN FORMATION)



MATCHLINE SHEET 10 -YIA- STA. 19+00

MATCHLINE SHEET 9 -Y1A- STA. 19+00

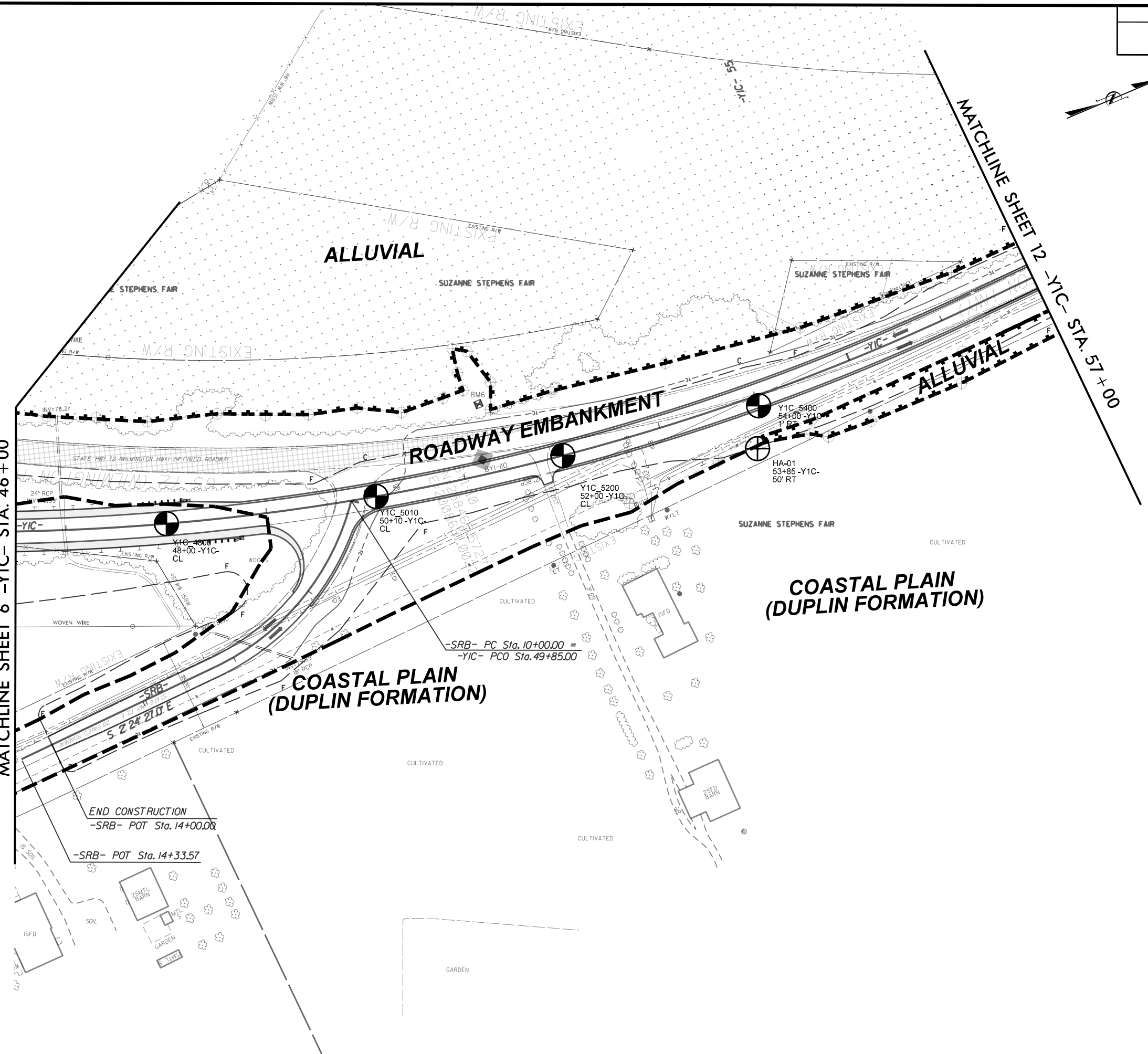
MATCHLINE SHEET 6 -Y1A- STA. 30+50





MATCHLINE SHEET 6 -YIC- STA. 46+00

MATCHLINE SHEET 12 -YIC- STA. 57+00



ALLUVIAL

COASTAL PLAIN (DUPLIN FORMATION)

COASTAL PLAIN (DUPLIN FORMATION)

ROADWAY EMBANKMENT

ALLUVIAL

STEPHENS FAIR

SUZANNE STEPHENS FAIR

SUZANNE STEPHENS FAIR

SUZANNE STEPHENS FAIR

CULTIVATED

CULTIVATED

CULTIVATED

CULTIVATED

GARDEN

ISFD

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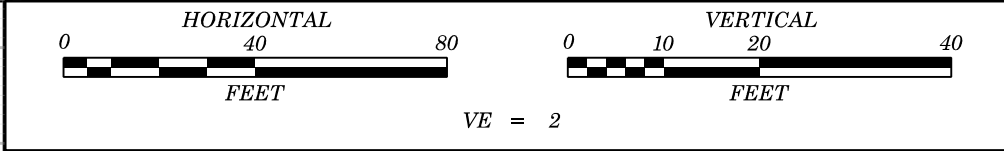
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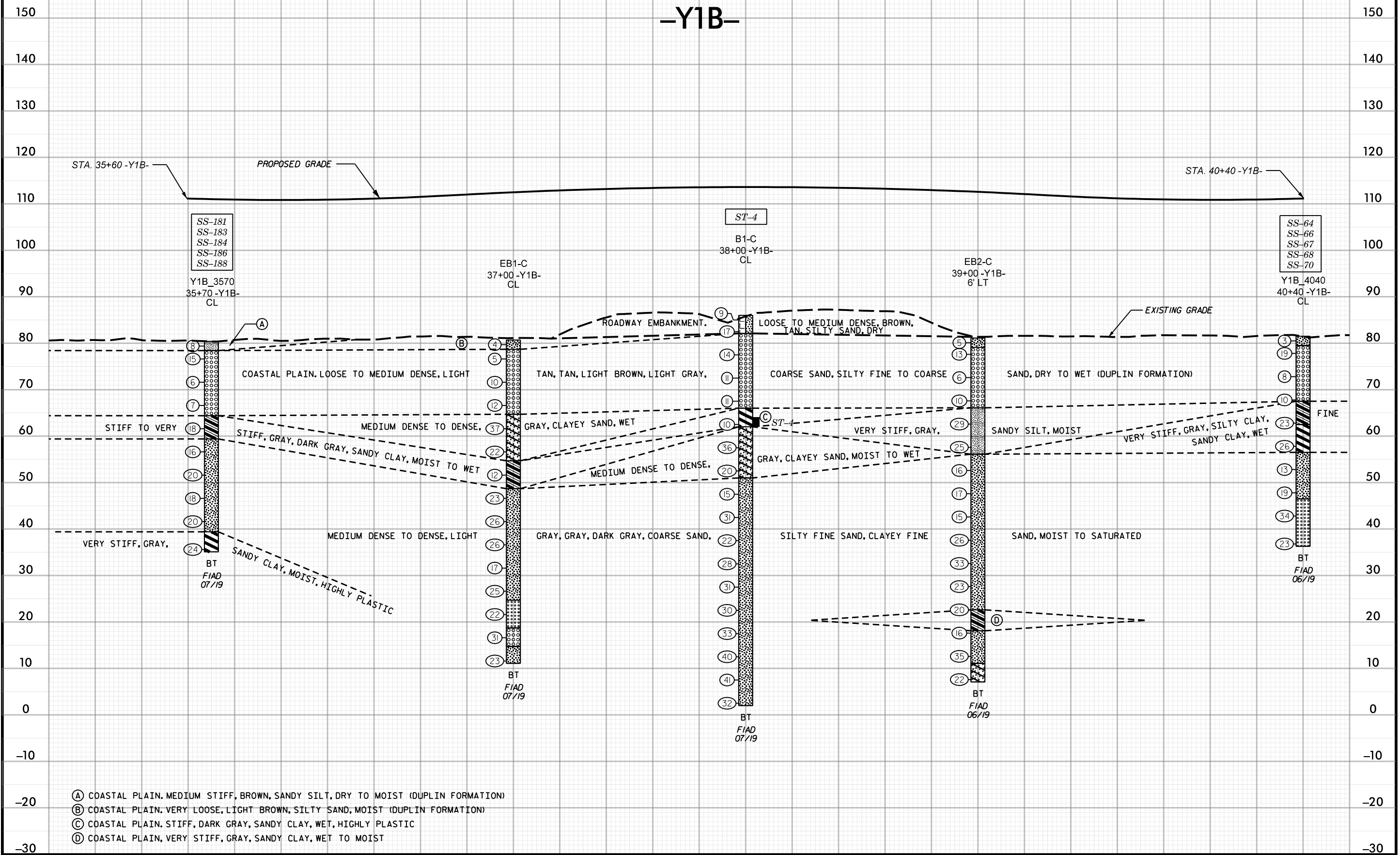
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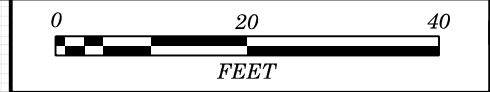
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PROJECT REFERENCE NO.	SHEET NO.
R-5751	13
CENTERLINE PROFILE ALONG -Y1B- ACROSS US 74	

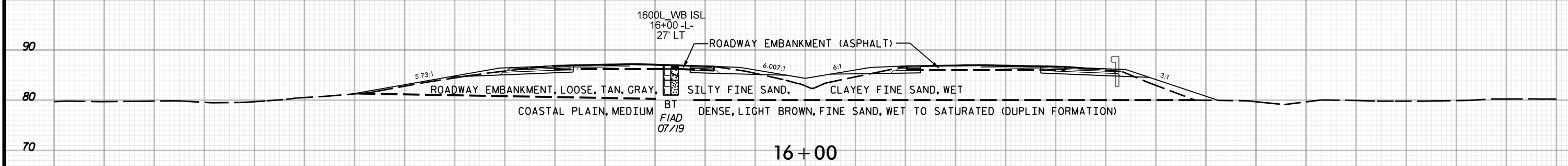
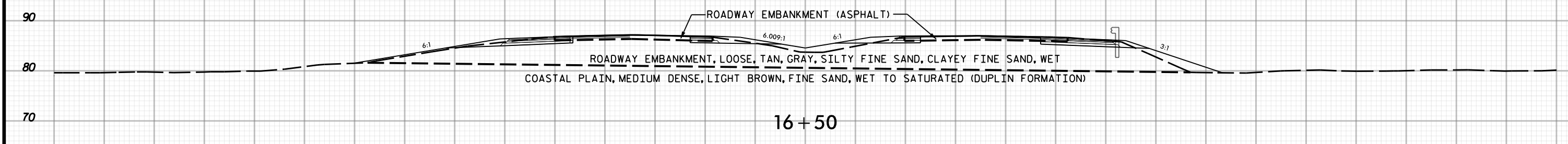
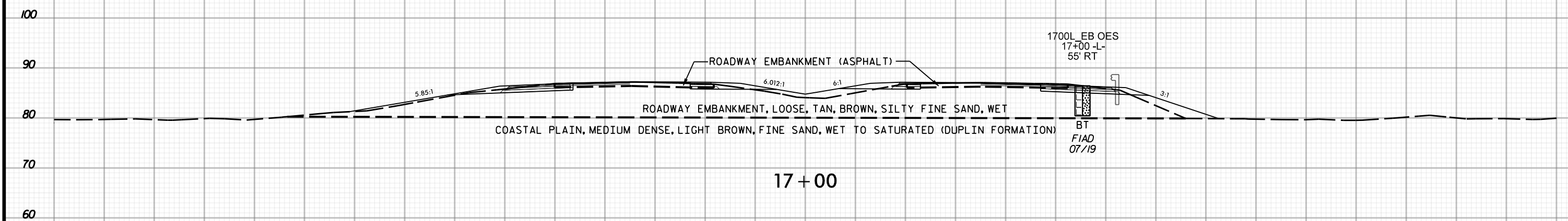


35+00 36+00 37+00 38+00 39+00 40+00 -Y1B-

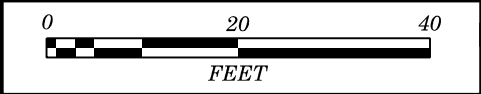


PROJ. REFERENCE NO.	SHEET NO.
R-5751	14

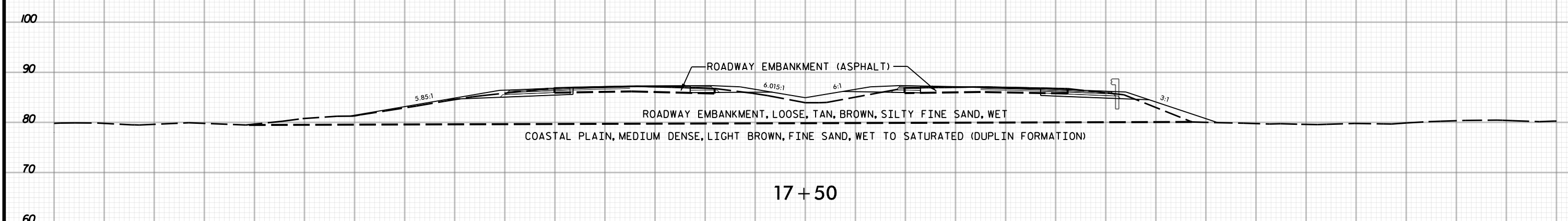
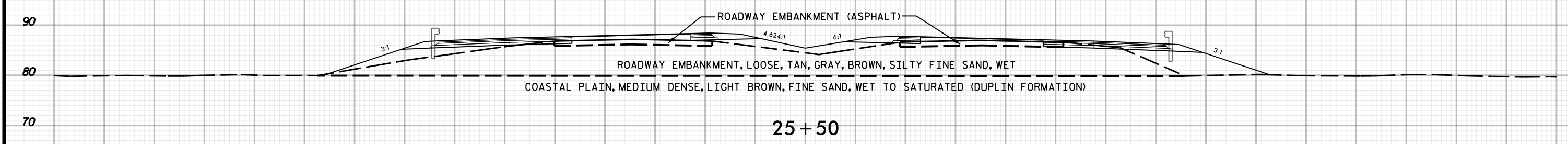
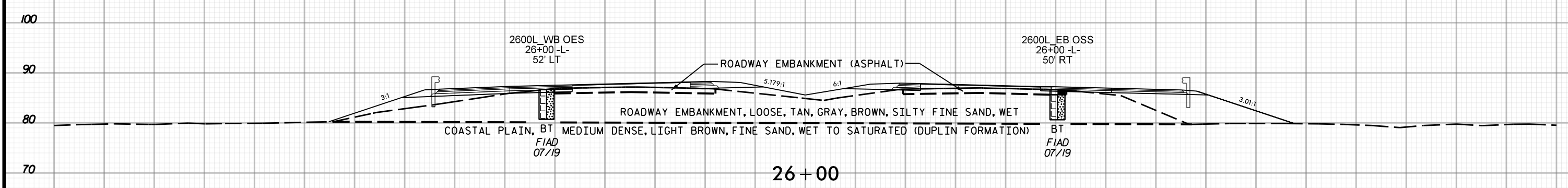
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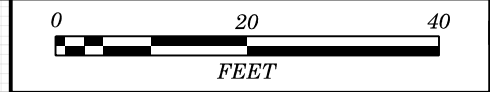
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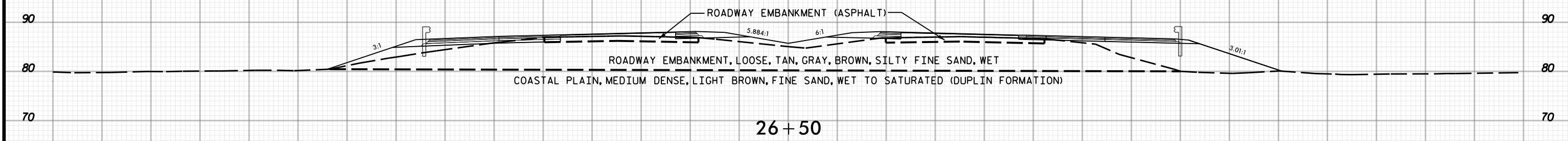
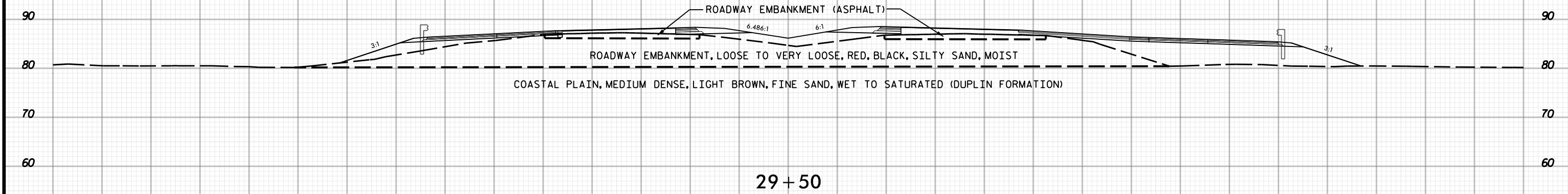
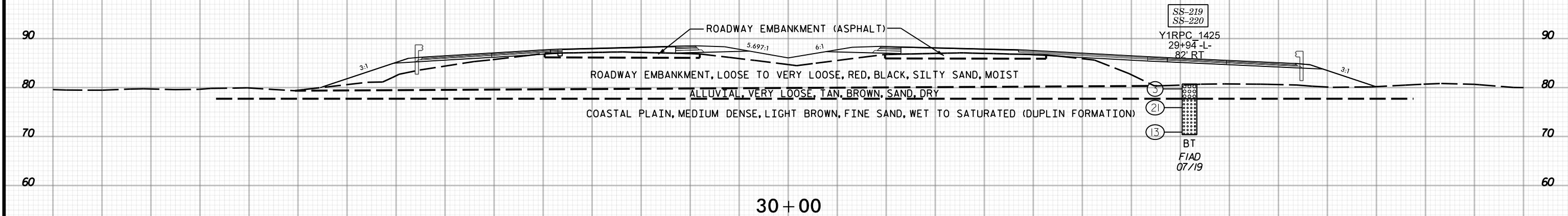
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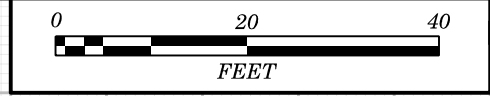
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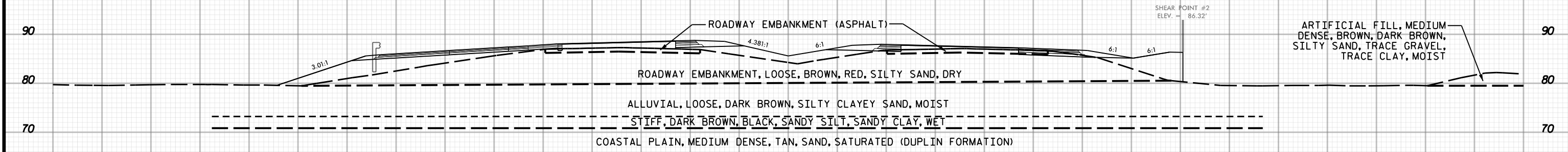
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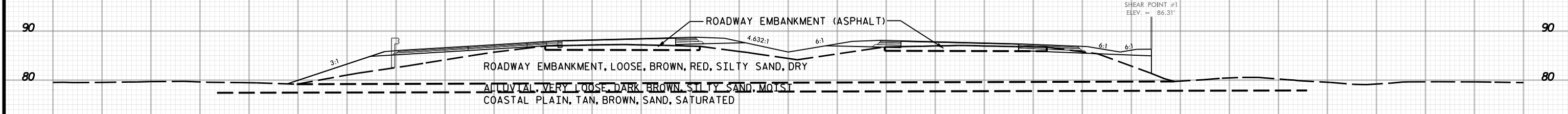
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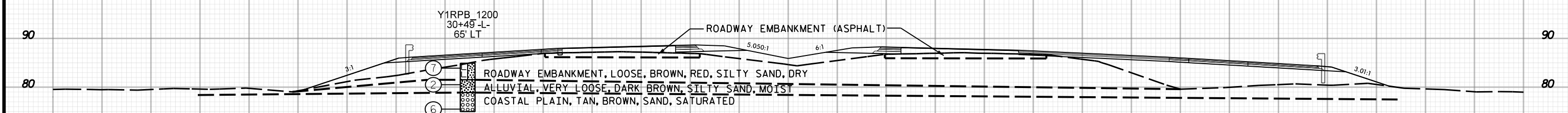
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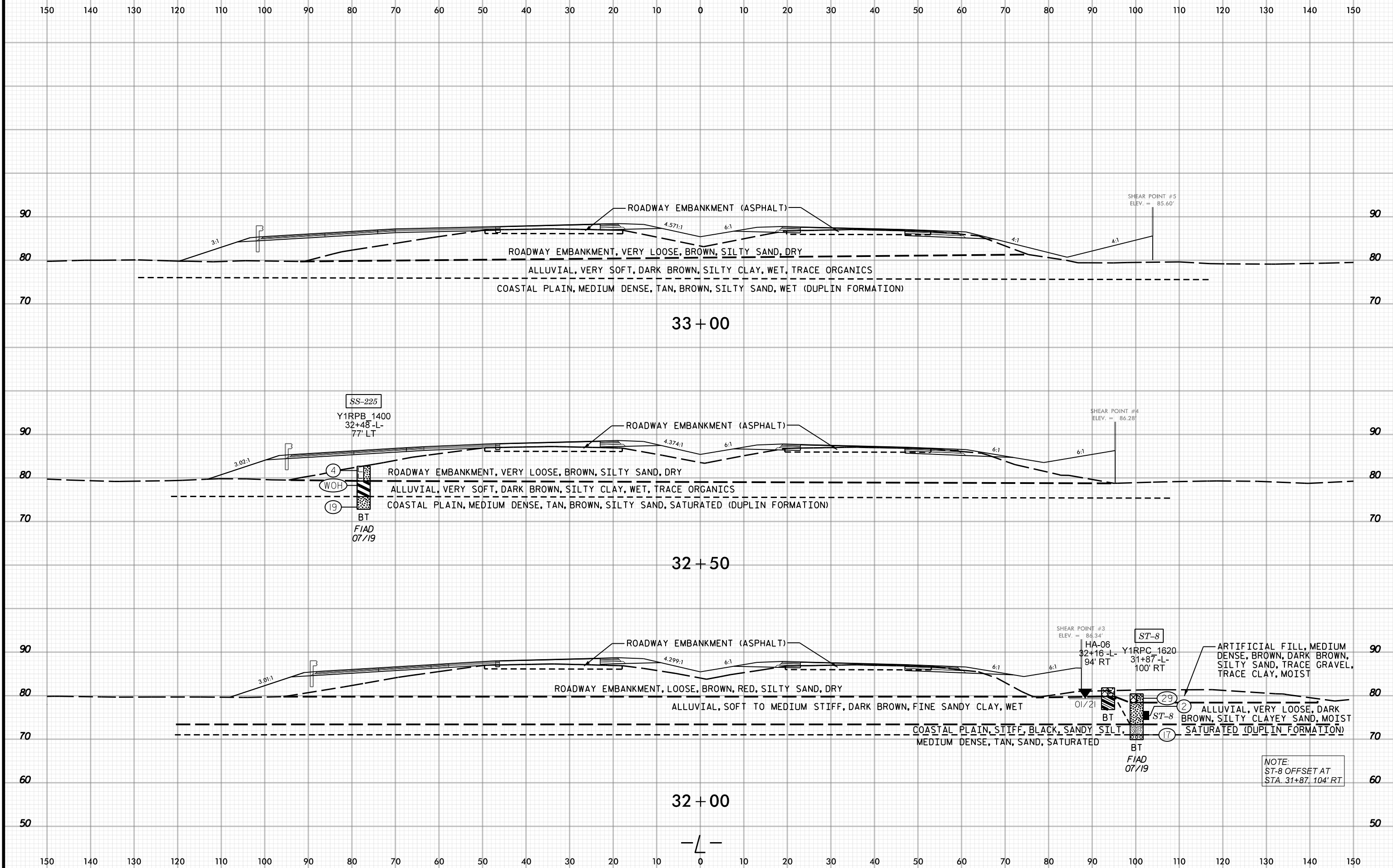
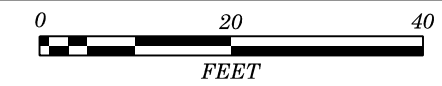


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30 + 50

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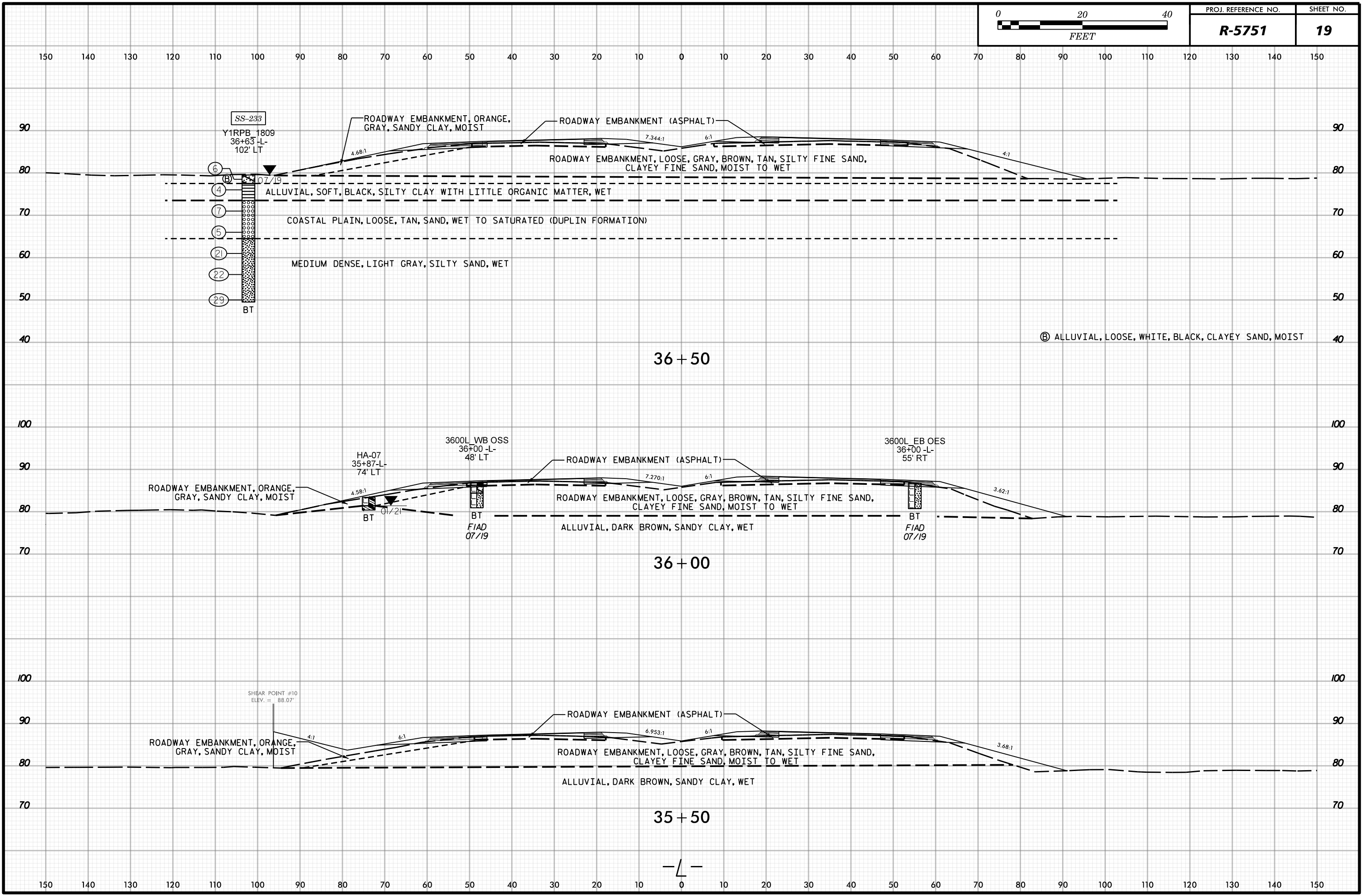
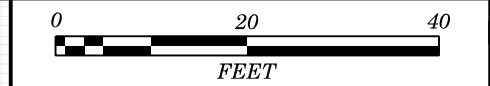


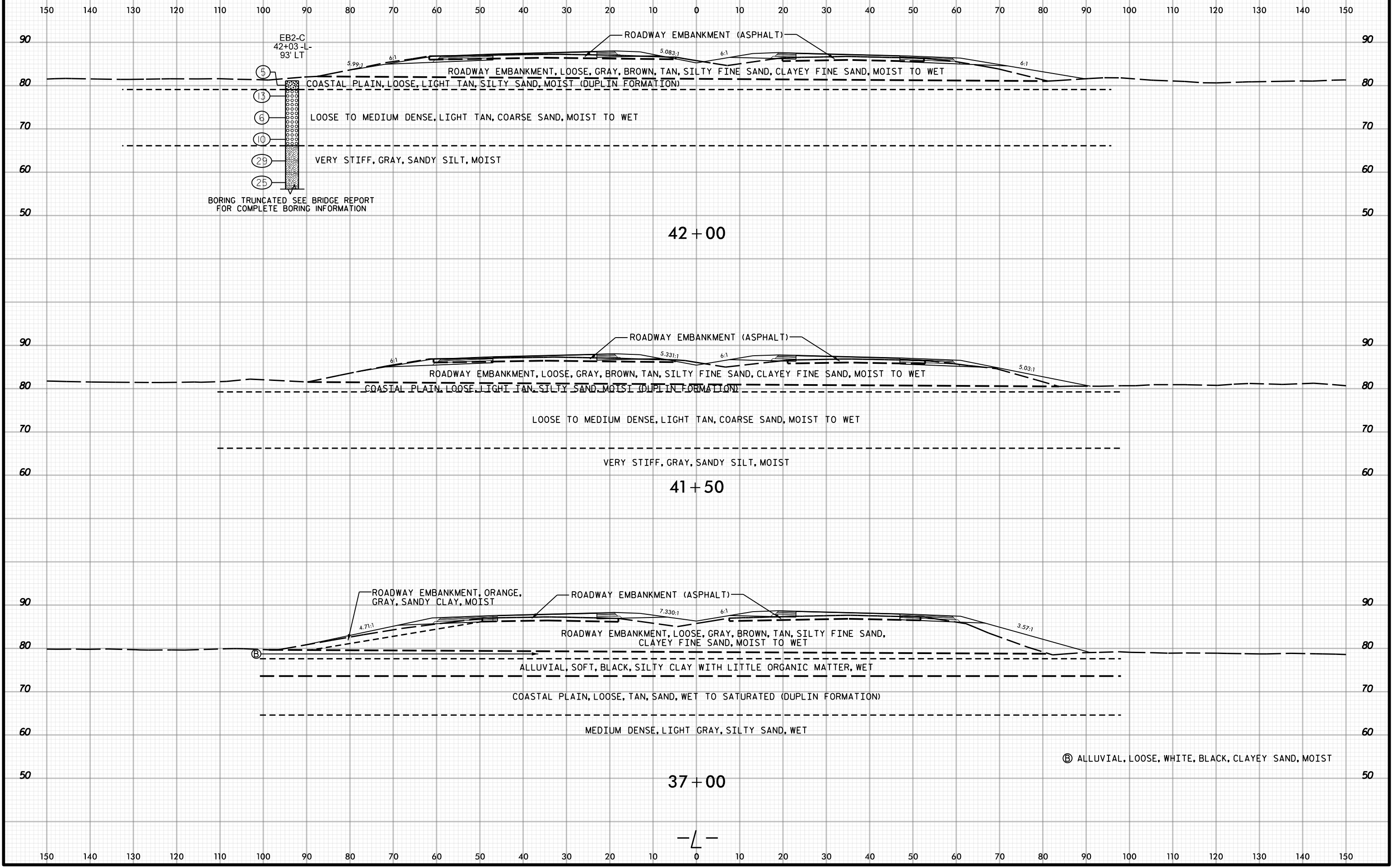
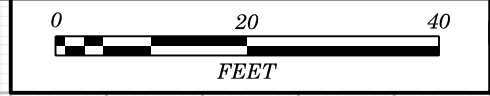
33 + 00

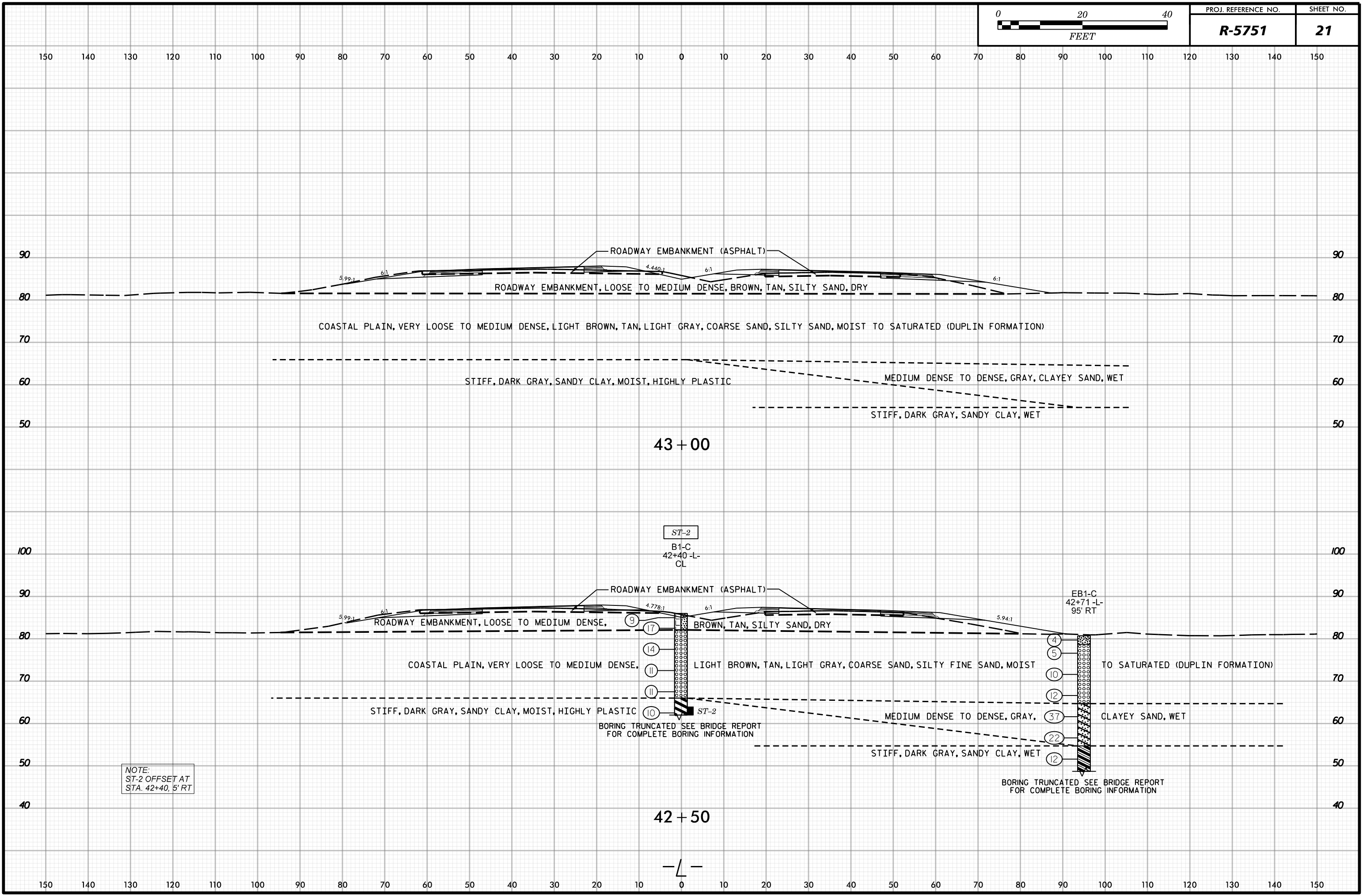
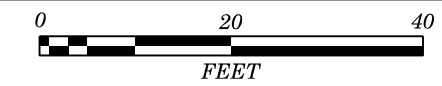
32 + 50

32 + 00

NOTE:
ST-8 OFFSET AT
STA. 31+87, 104' RT



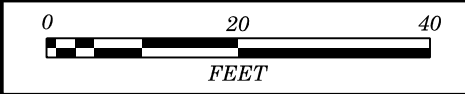




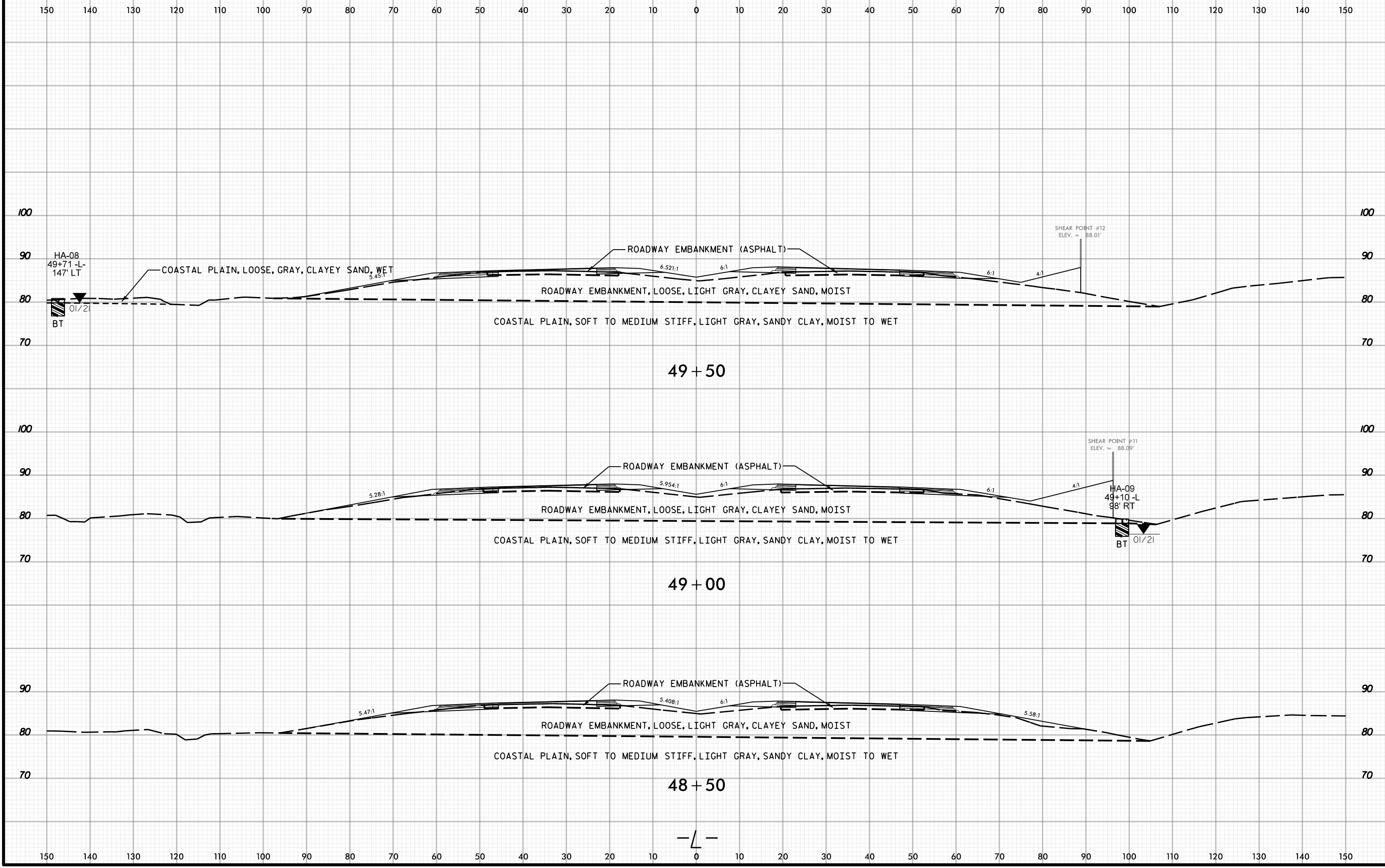
NOTE:
ST-2 OFFSET AT
STA. 42+40, 5' RT

BORING TRUNCATED SEE BRIDGE REPORT
FOR COMPLETE BORING INFORMATION

BORING TRUNCATED SEE BRIDGE REPORT
FOR COMPLETE BORING INFORMATION



PROJ. REFERENCE NO.	SHEET NO.
R-5751	22

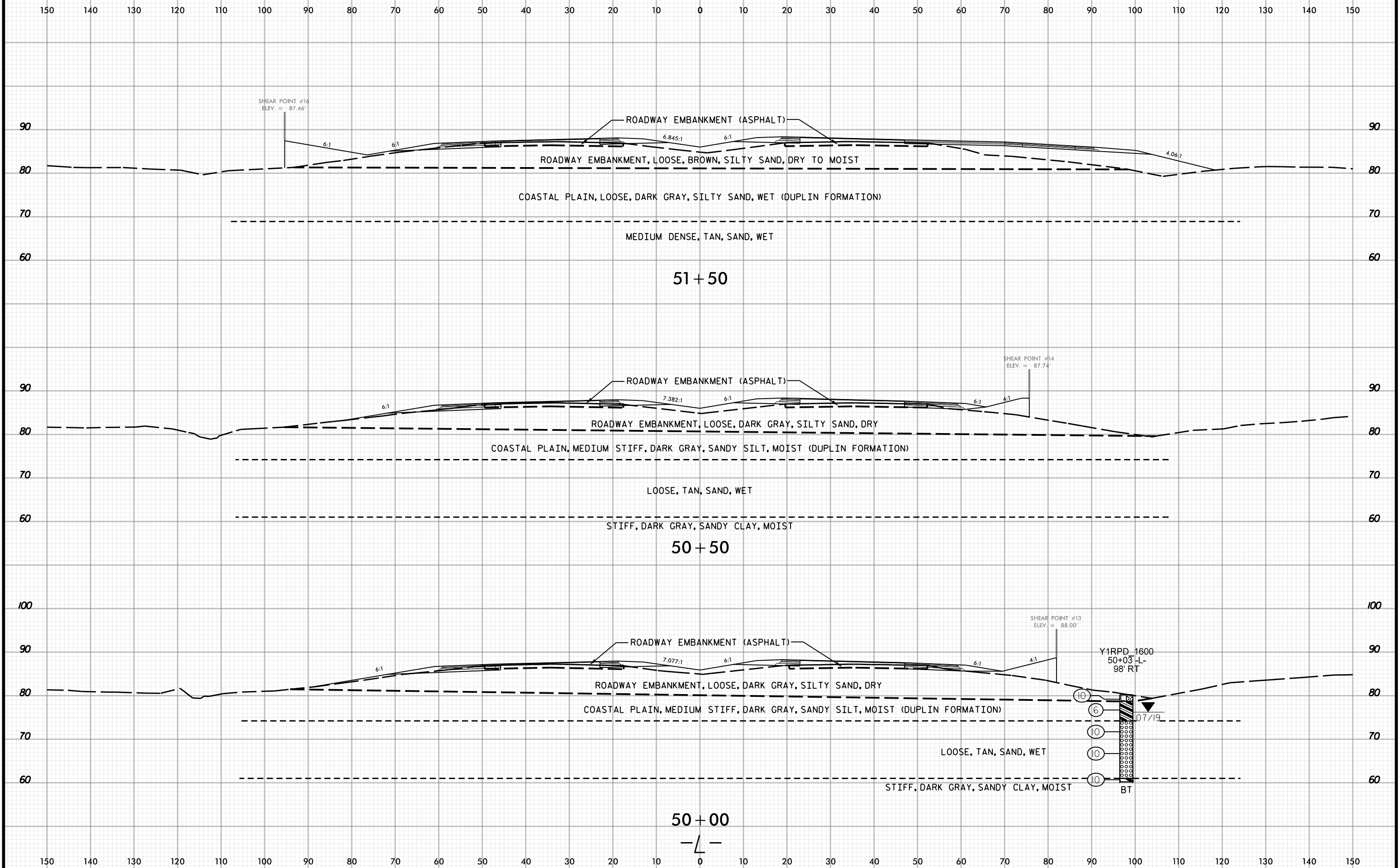
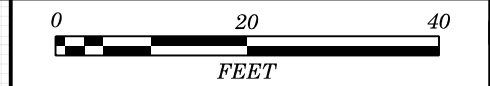


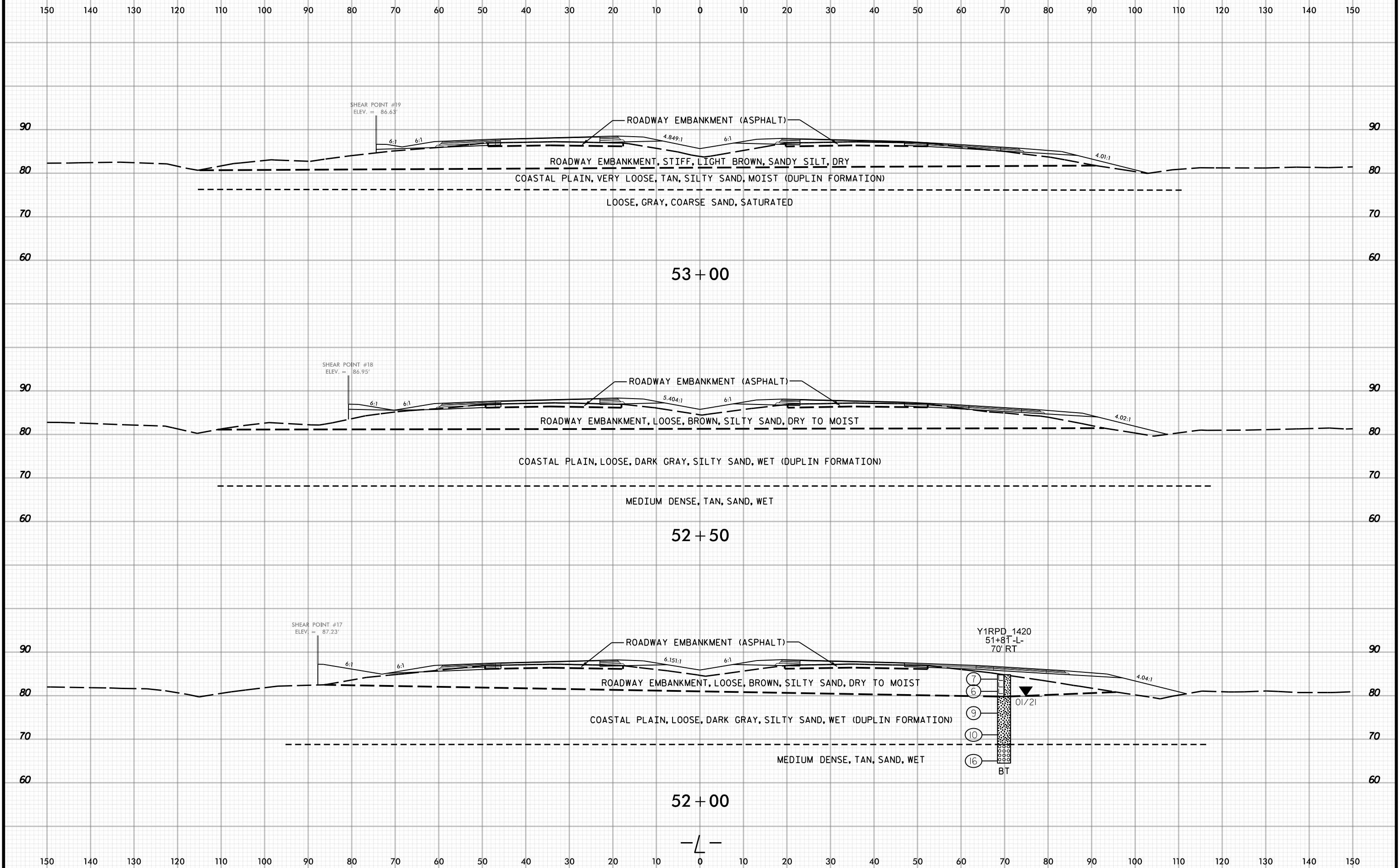
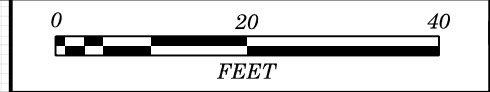
49 + 50

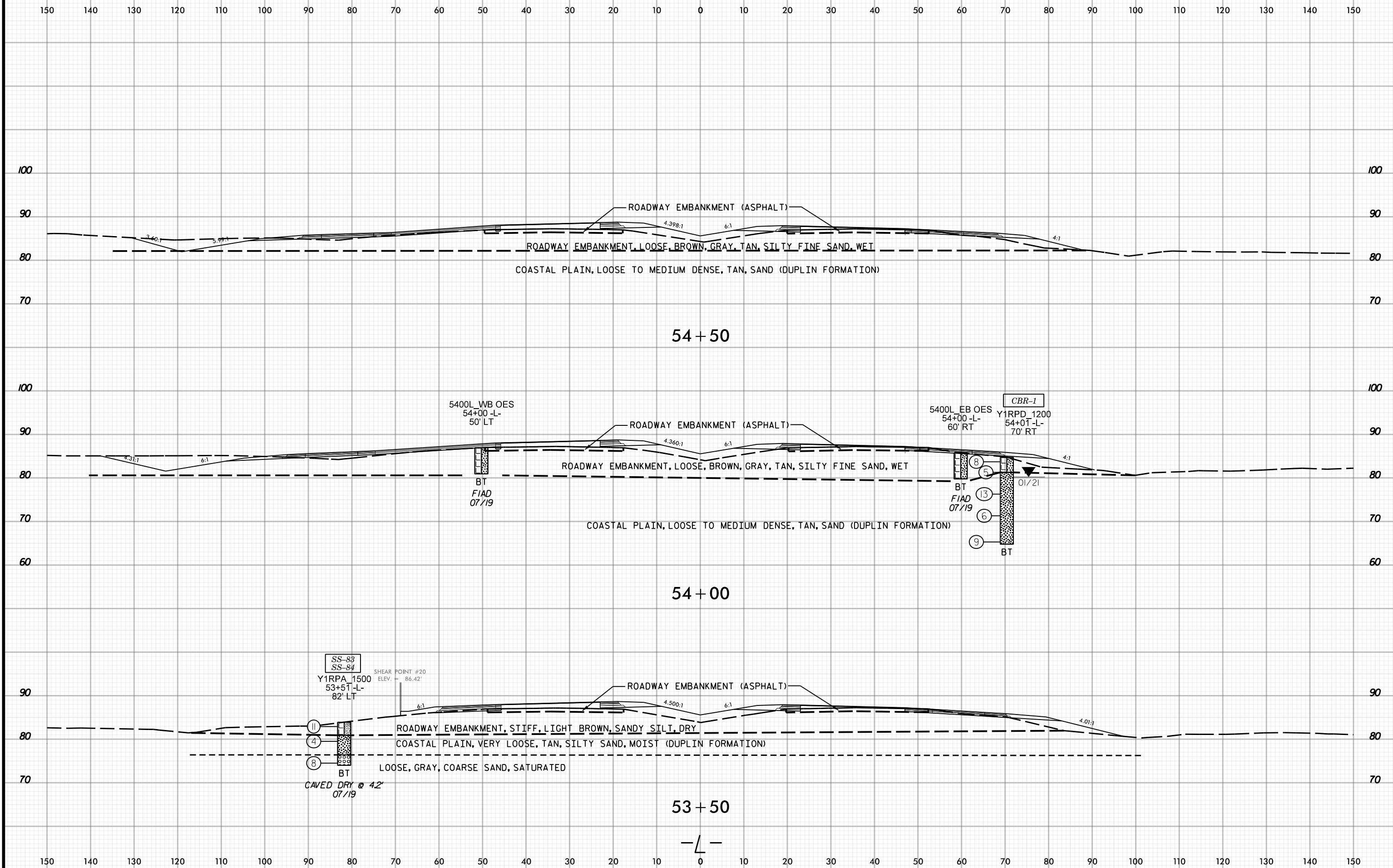
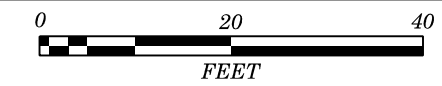
49 + 00

48 + 50

— L —





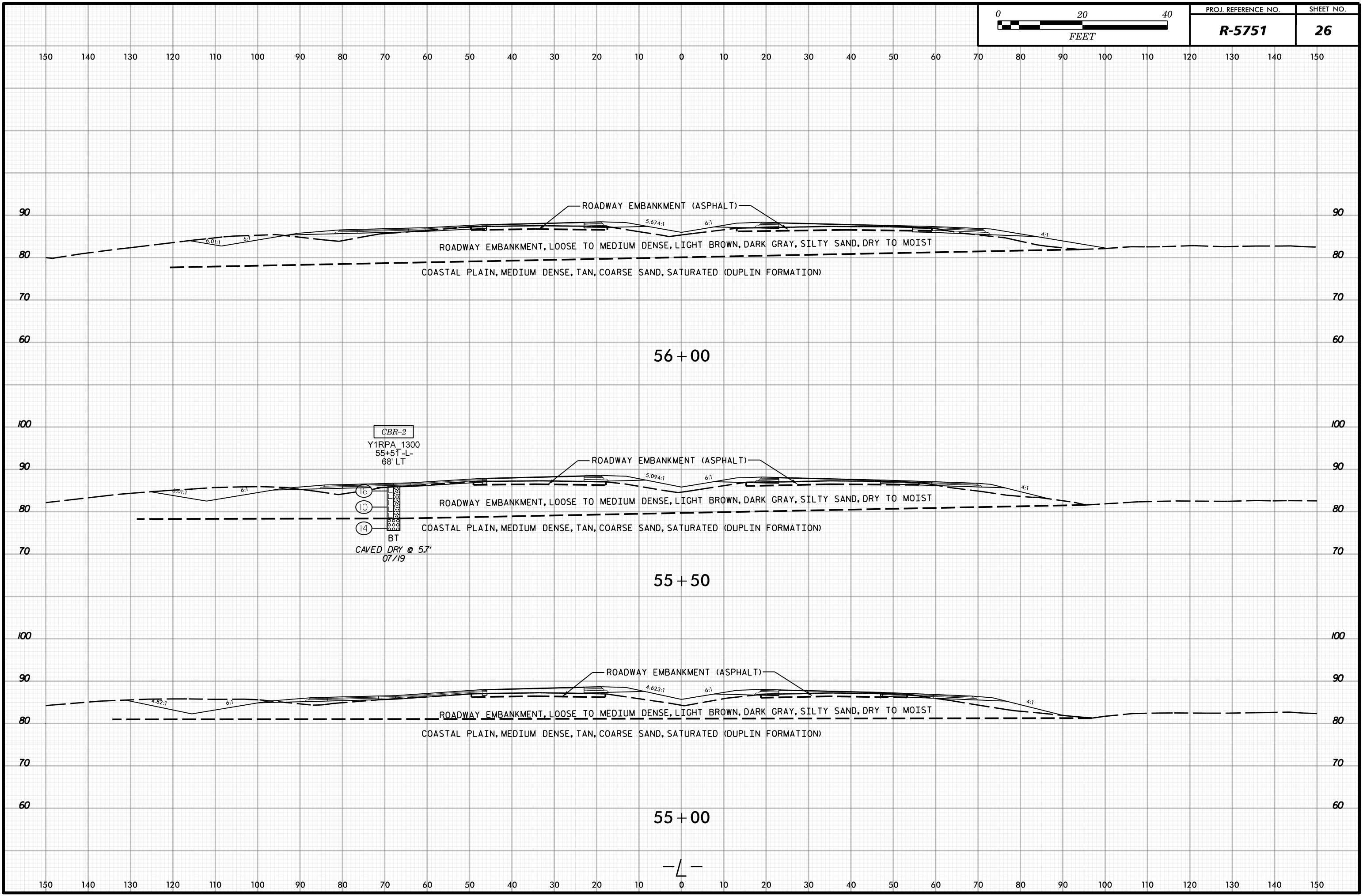
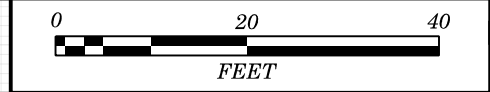


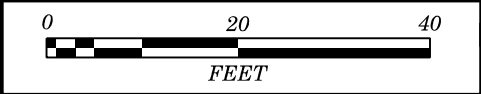
54 + 50

54 + 00

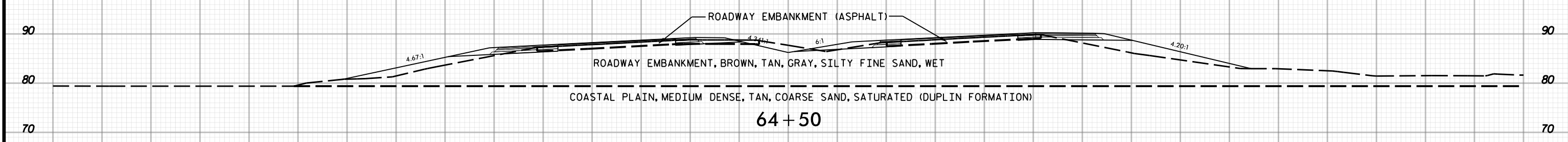
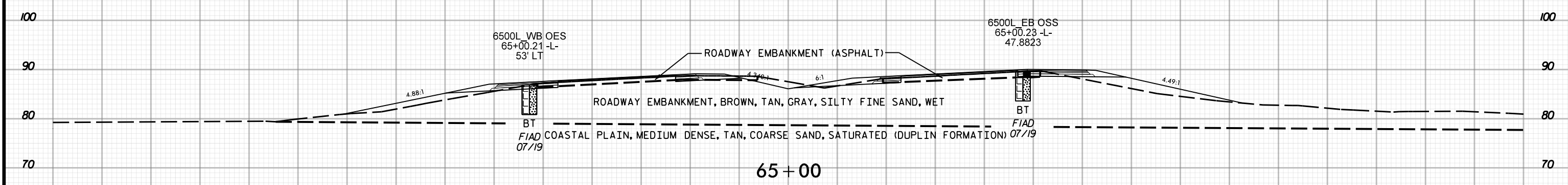
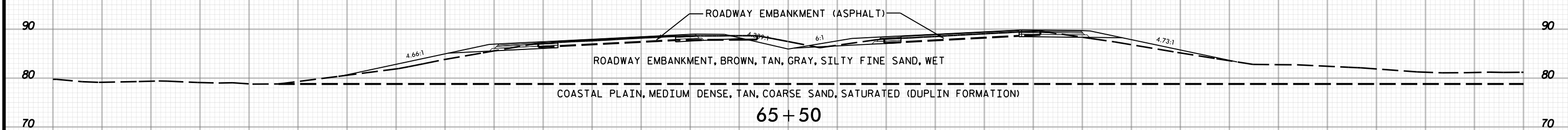
53 + 50



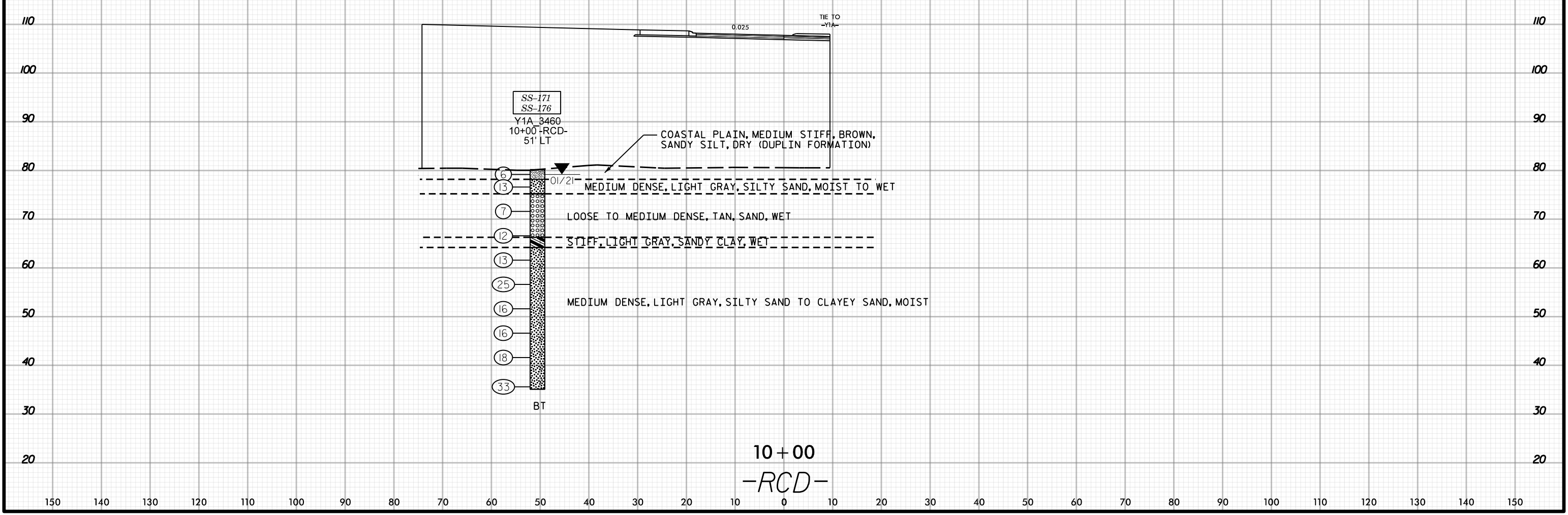
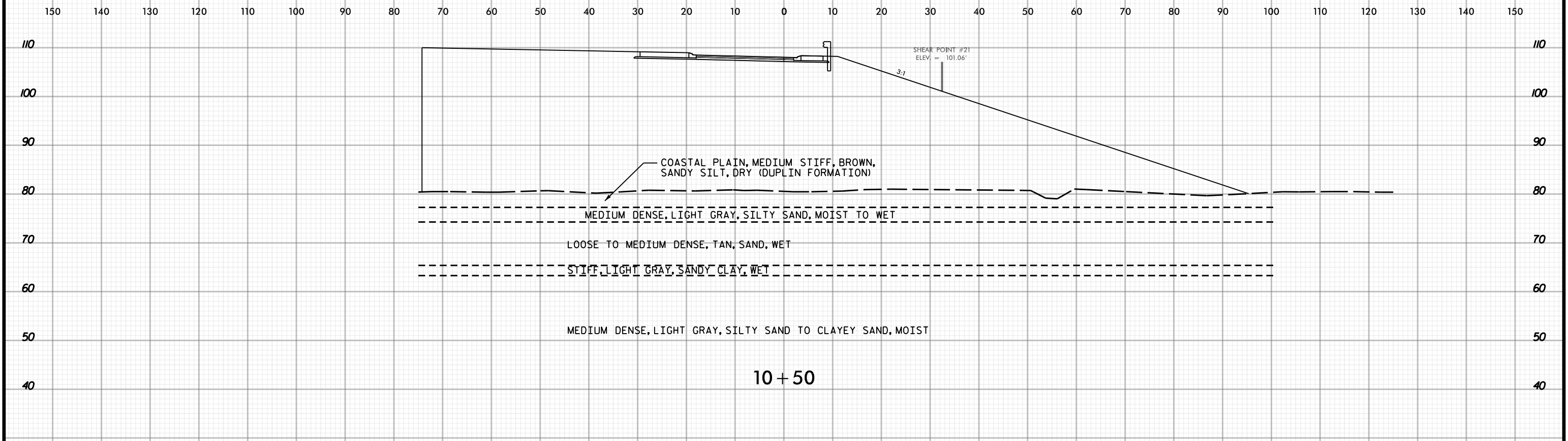
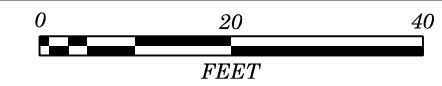


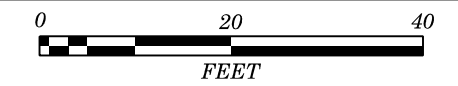


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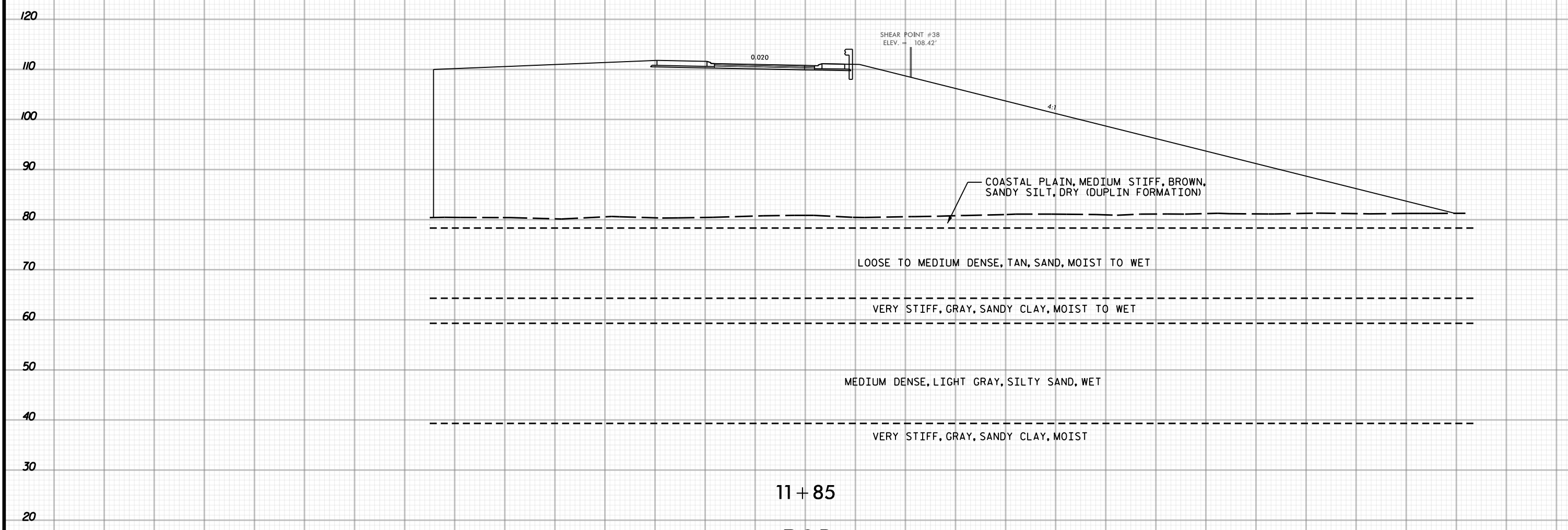


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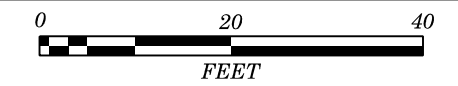


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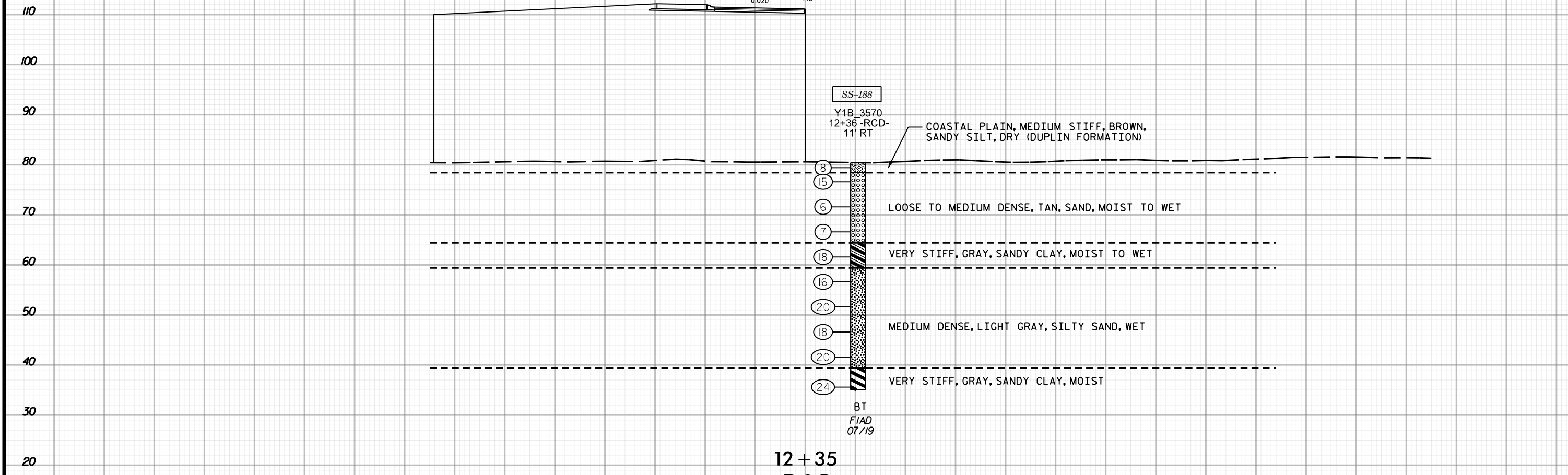


11 + 85
-RCD-

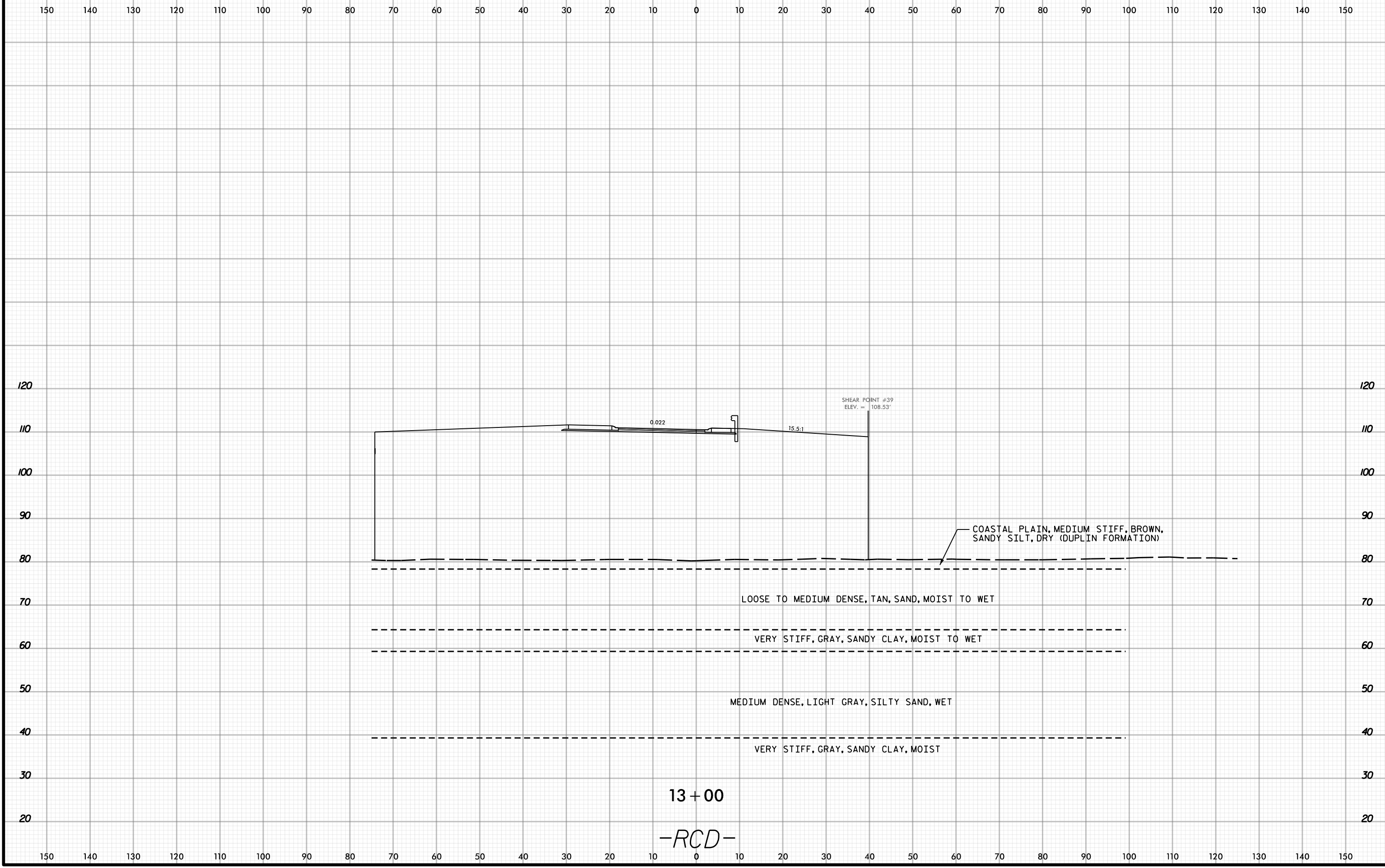
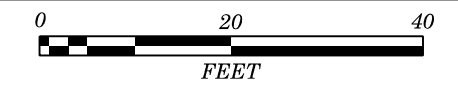
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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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



SHEAR POINT #39
ELEV. = 108.53'

0.022

15.5:1

COASTAL PLAIN, MEDIUM STIFF, BROWN,
SANDY SILT, DRY (DUPLIN FORMATION)

LOOSE TO MEDIUM DENSE, TAN, SAND, MOIST TO WET

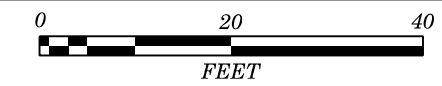
VERY STIFF, GRAY, SANDY CLAY, MOIST TO WET

MEDIUM DENSE, LIGHT GRAY, SILTY SAND, WET

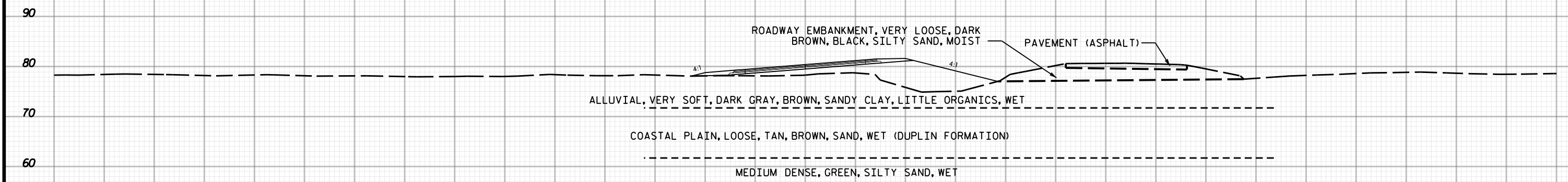
VERY STIFF, GRAY, SANDY CLAY, MOIST

13+00

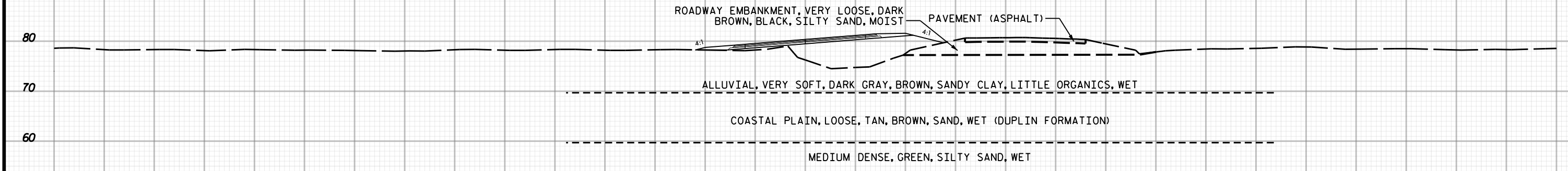
-RCD-



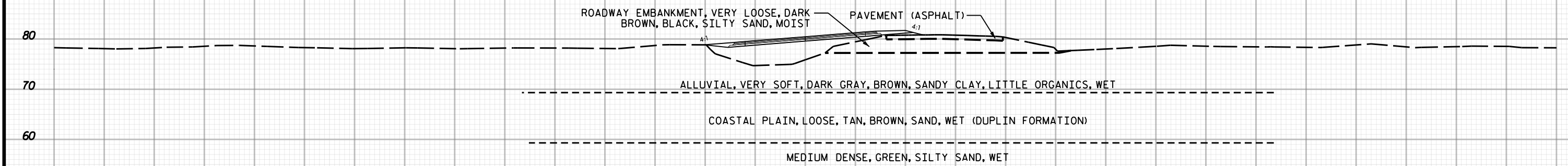
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22 + 00



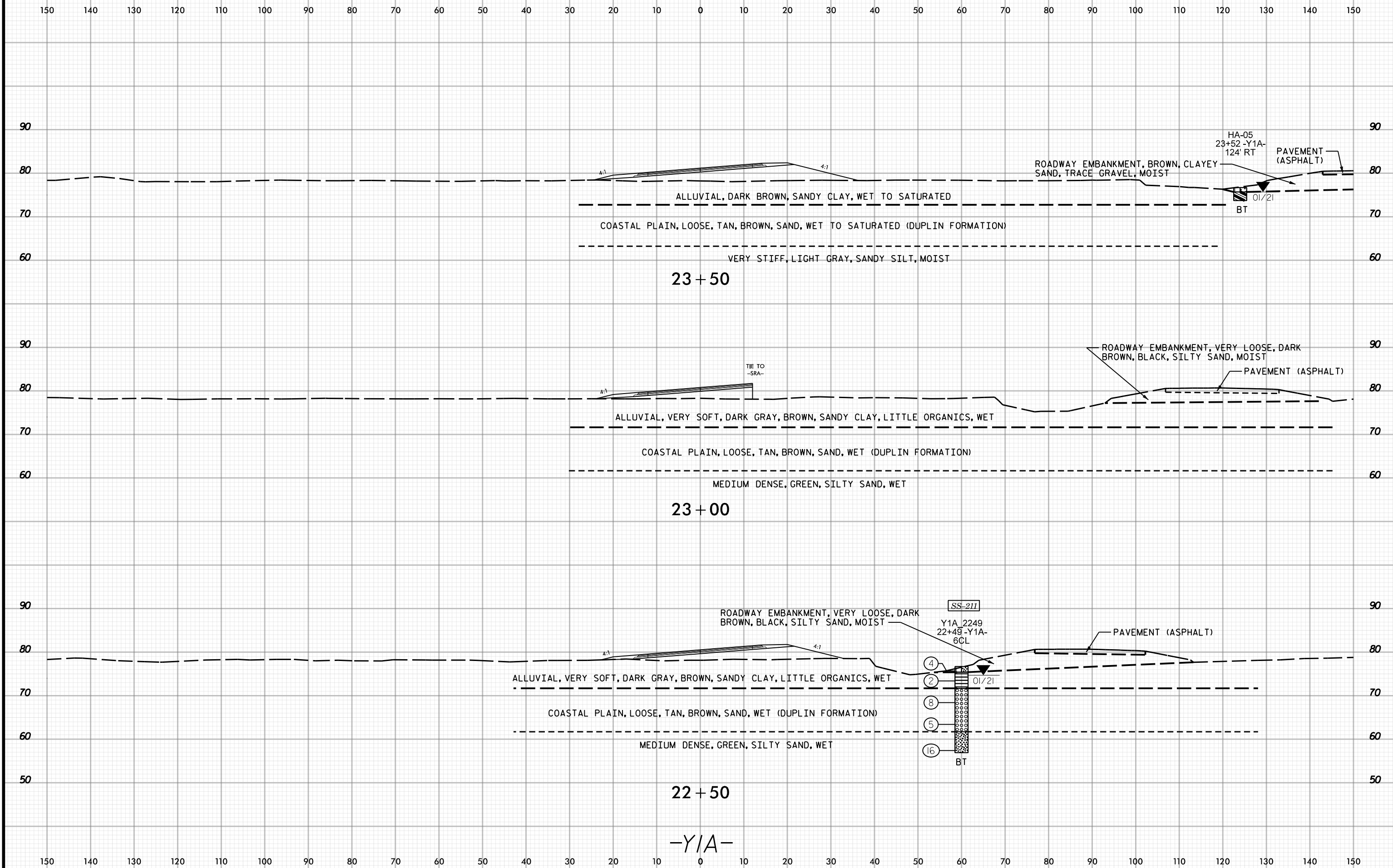
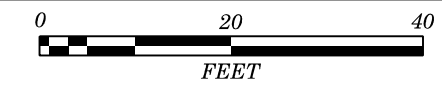
21 + 50

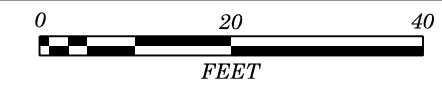


21 + 00

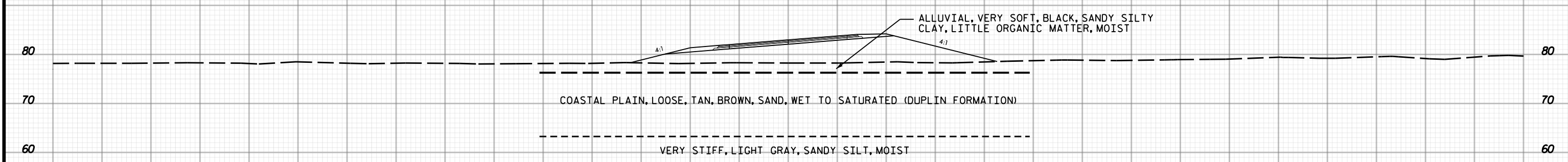
-Y/A-

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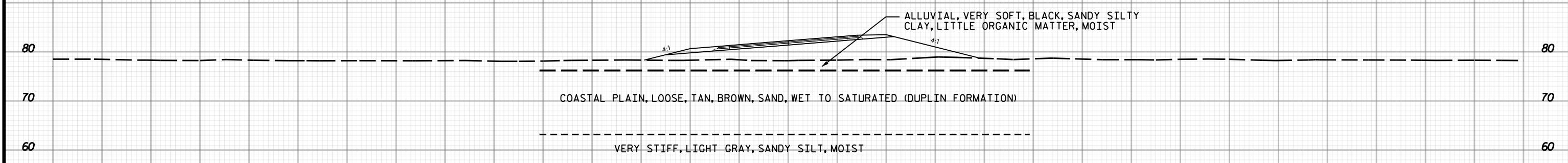




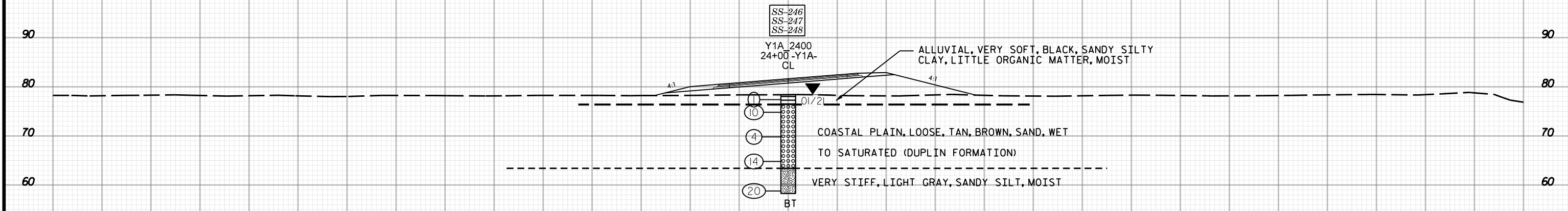
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25 + 00



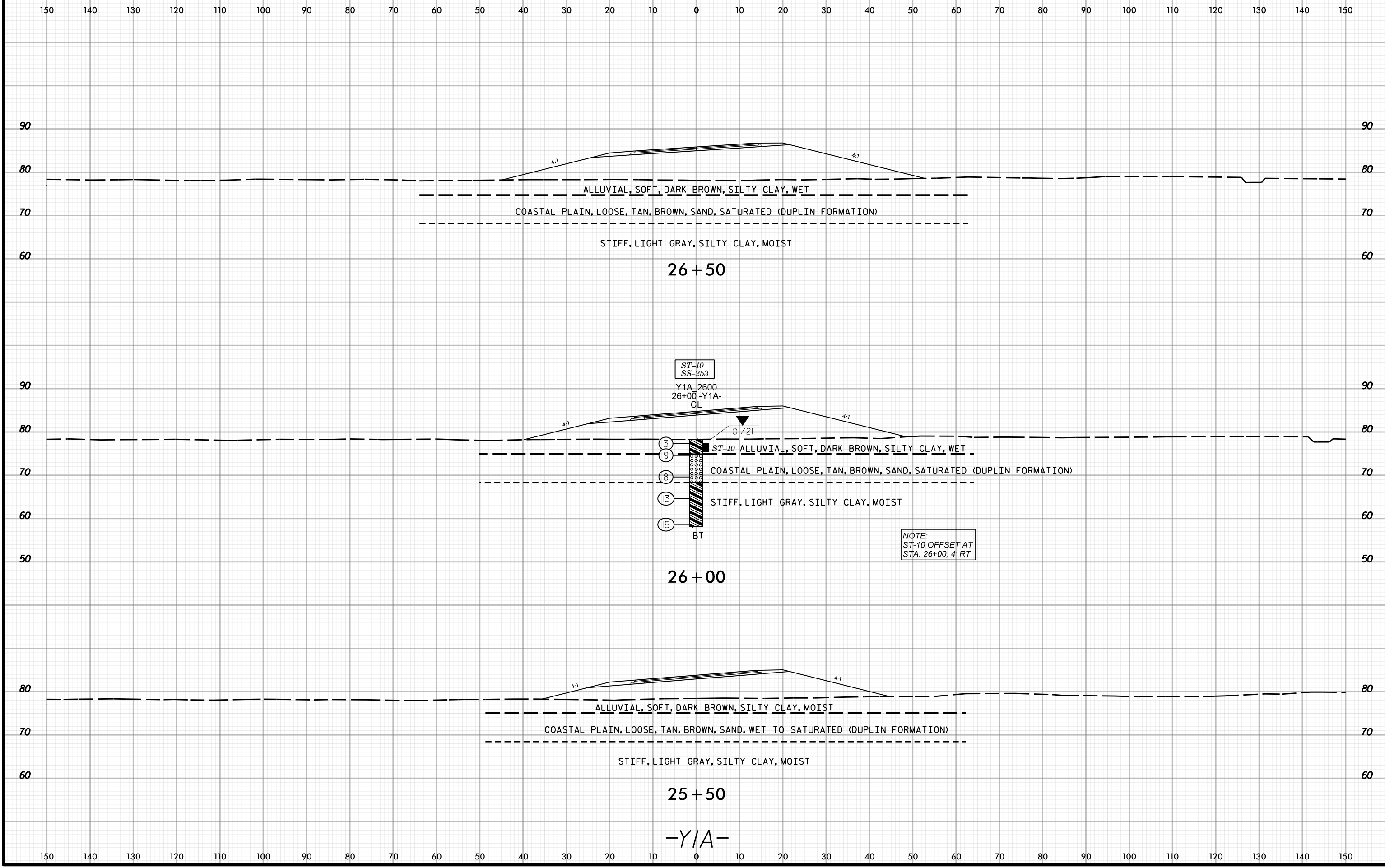
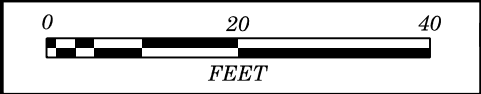
24 + 50

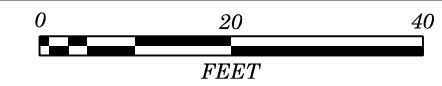


24 + 00

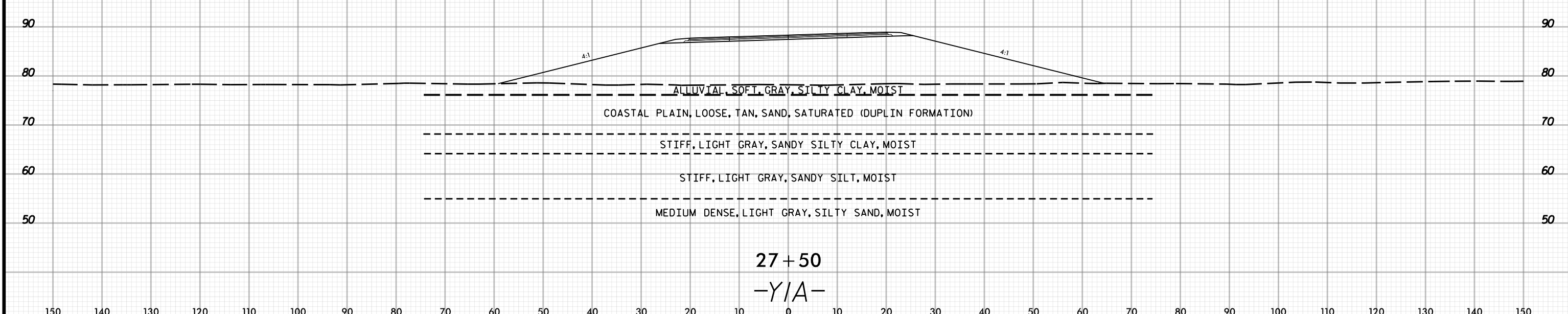
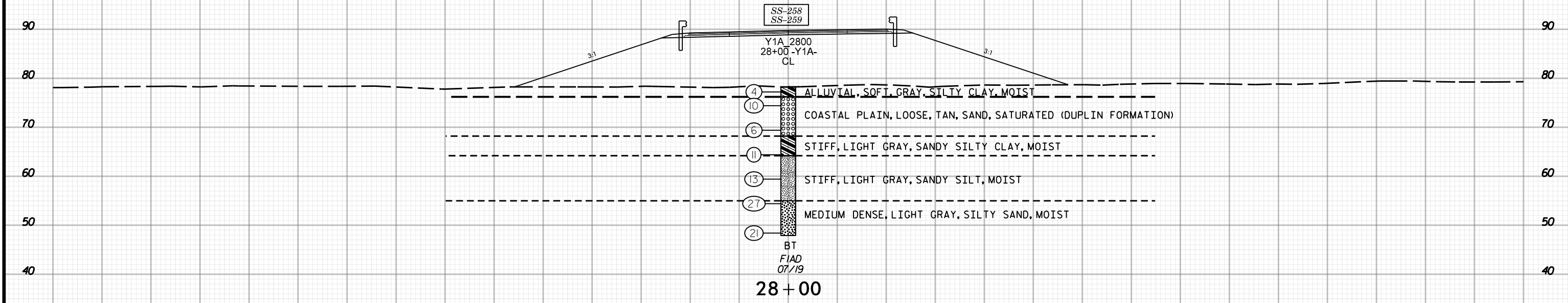
-Y/A-

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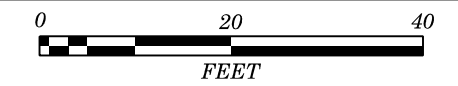




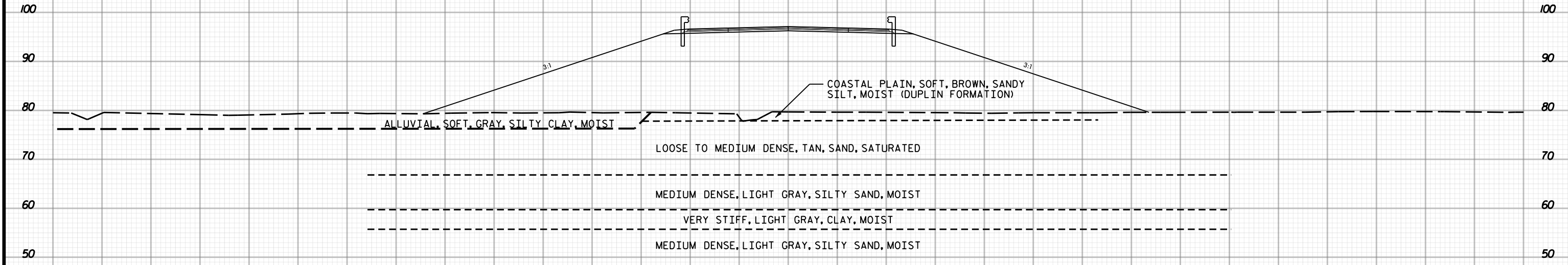
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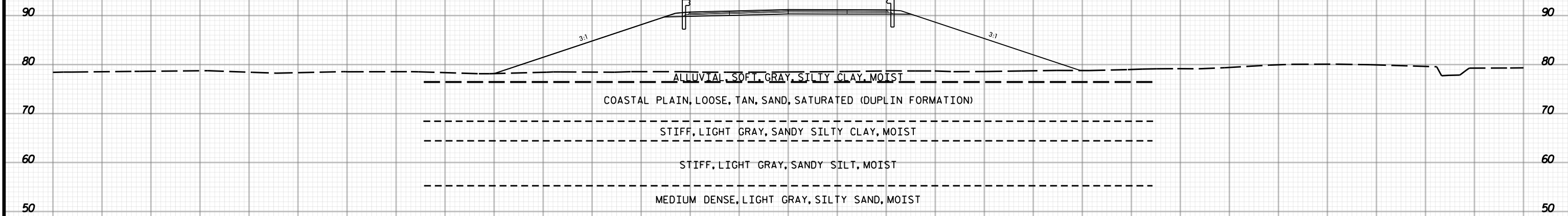
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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



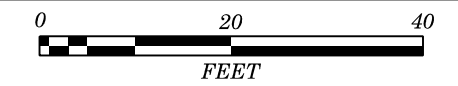
30 + 50



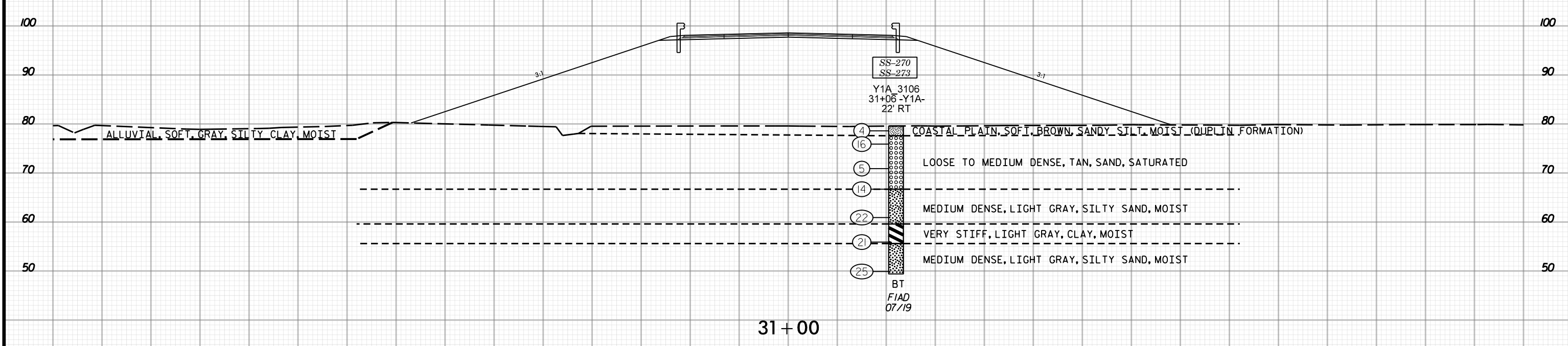
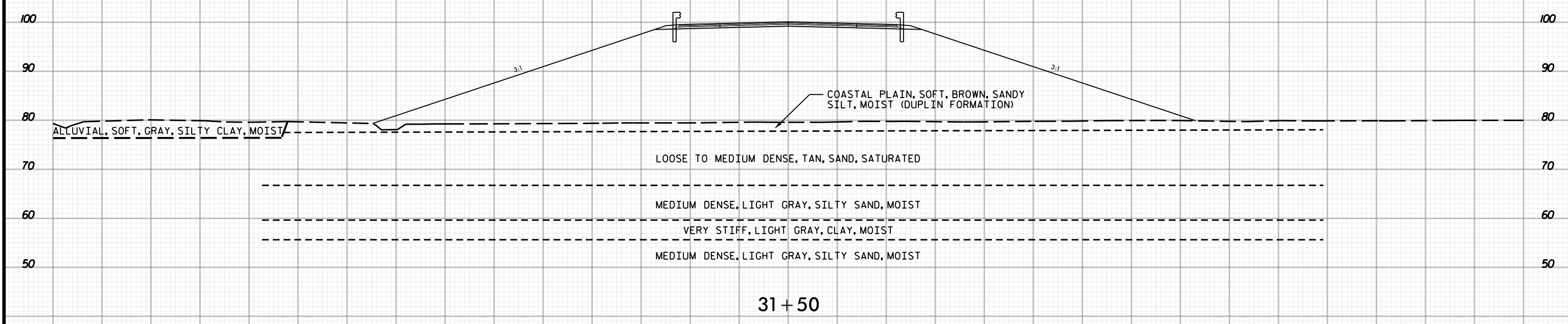
28 + 50

-Y/A-

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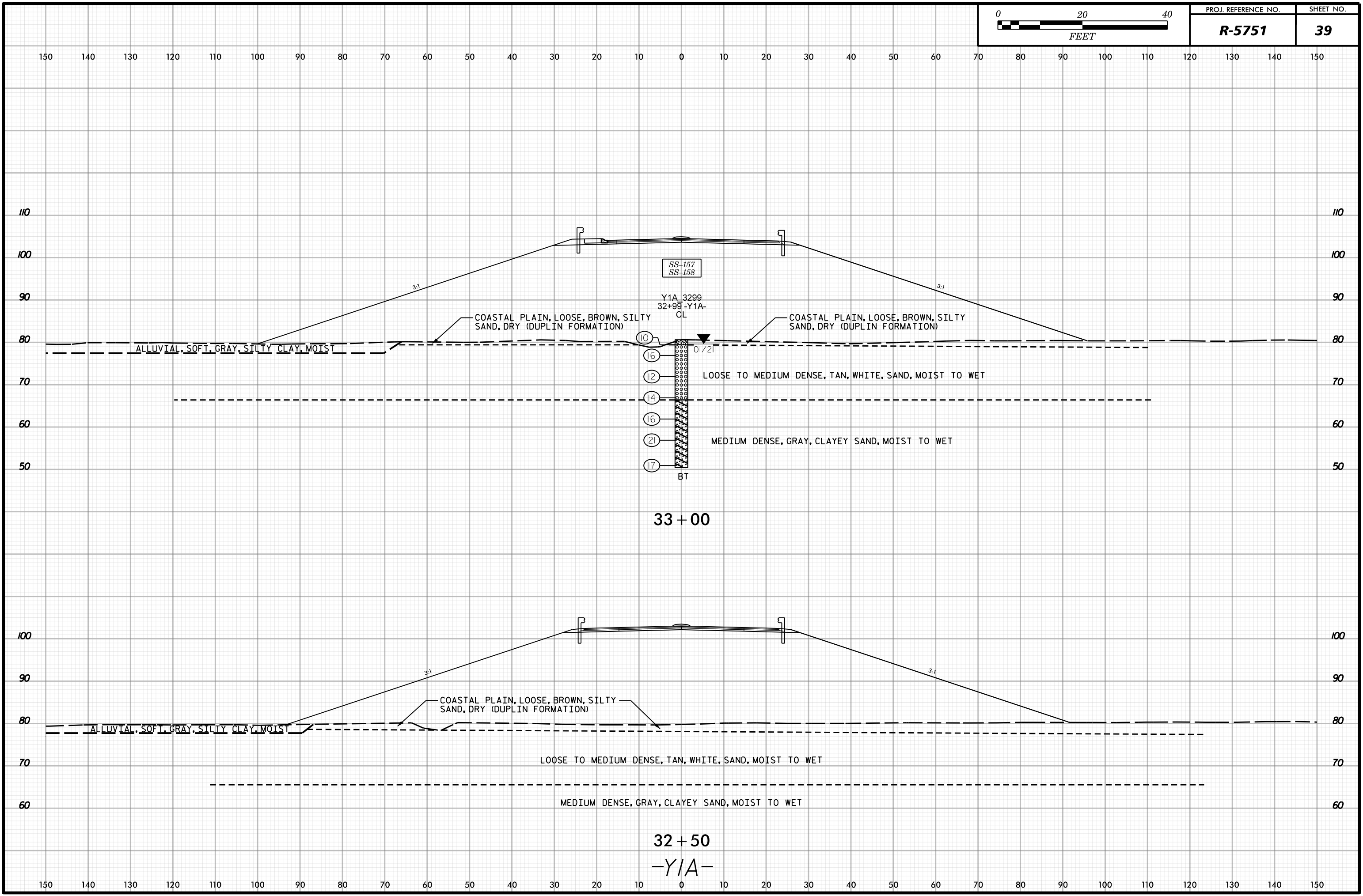
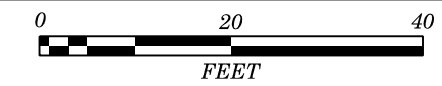


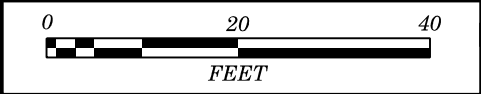
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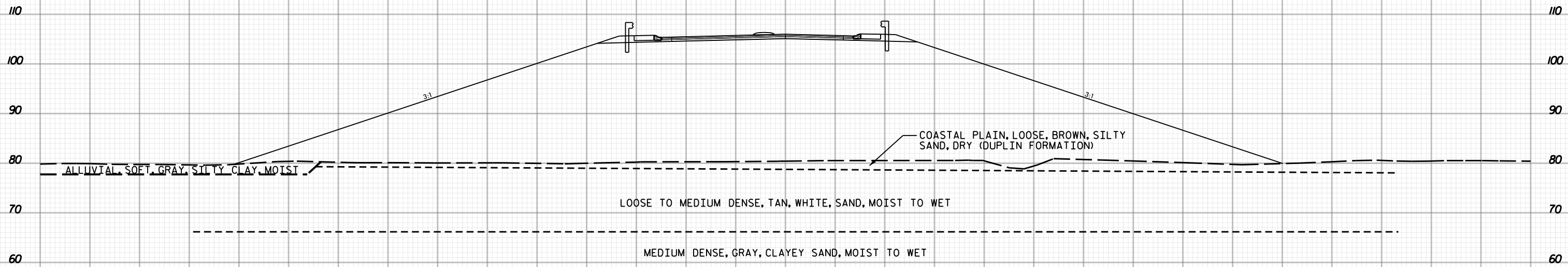
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-Y/A-





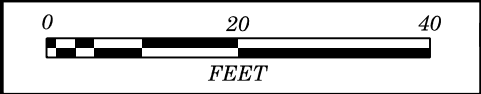
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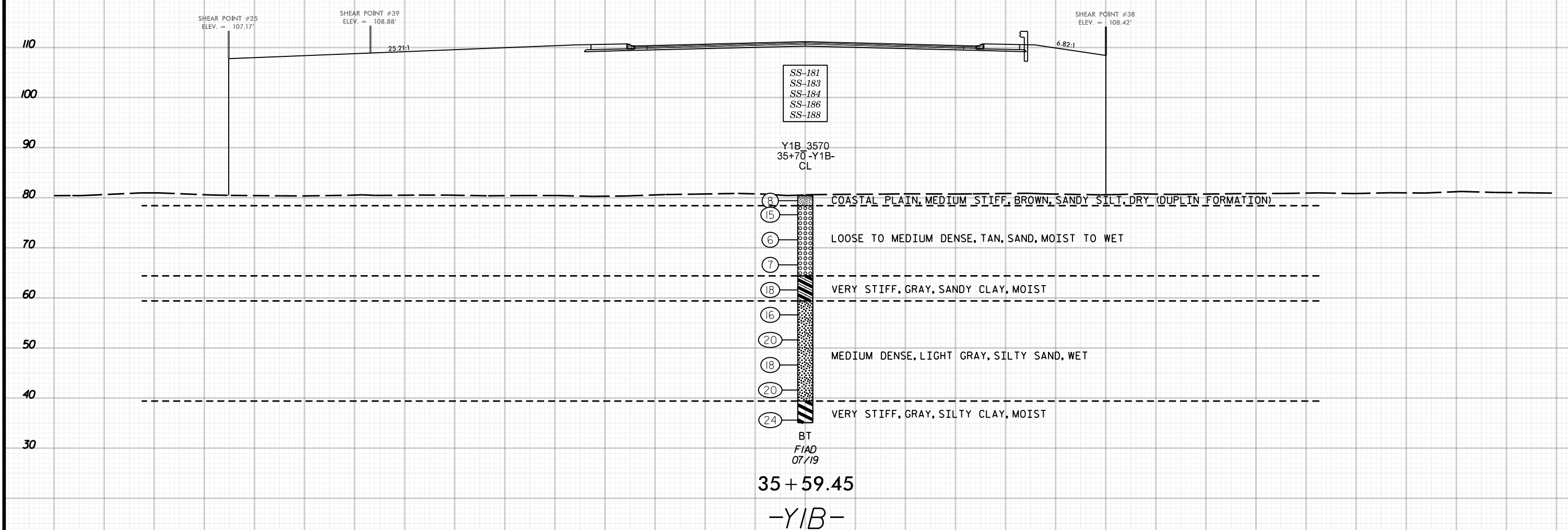
33 + 50

-Y/A-

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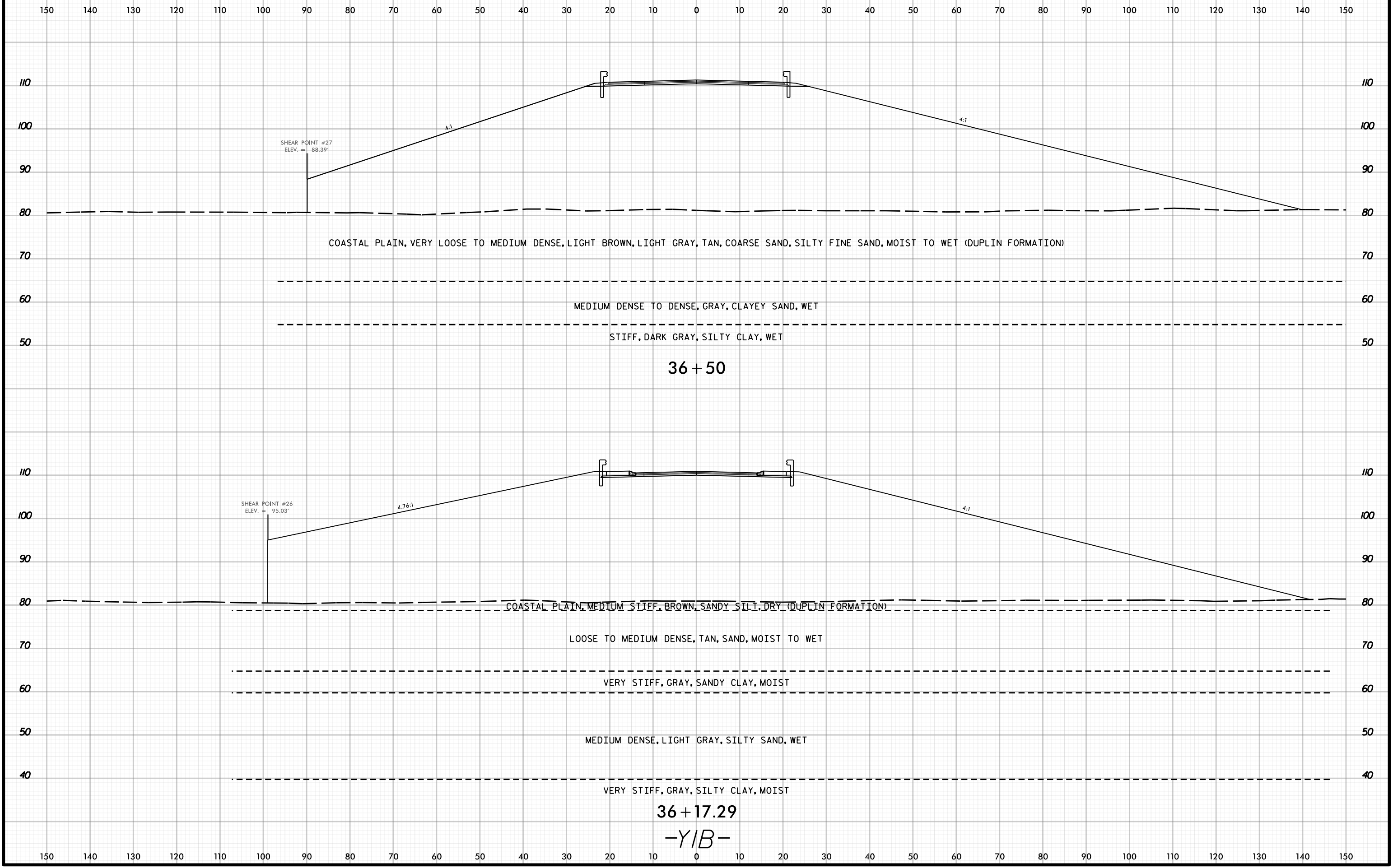
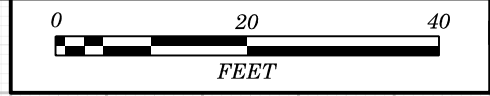


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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

35 + 59.45
-Y1B-



SHEAR POINT #27
ELEV. = 88.39'

SHEAR POINT #26
ELEV. = 95.03'

COASTAL PLAIN, VERY LOOSE TO MEDIUM DENSE, LIGHT BROWN, LIGHT GRAY, TAN, COARSE SAND, SILTY FINE SAND, MOIST TO WET (DUPLIN FORMATION)

MEDIUM DENSE TO DENSE, GRAY, CLAYEY SAND, WET

STIFF, DARK GRAY, SILTY CLAY, WET

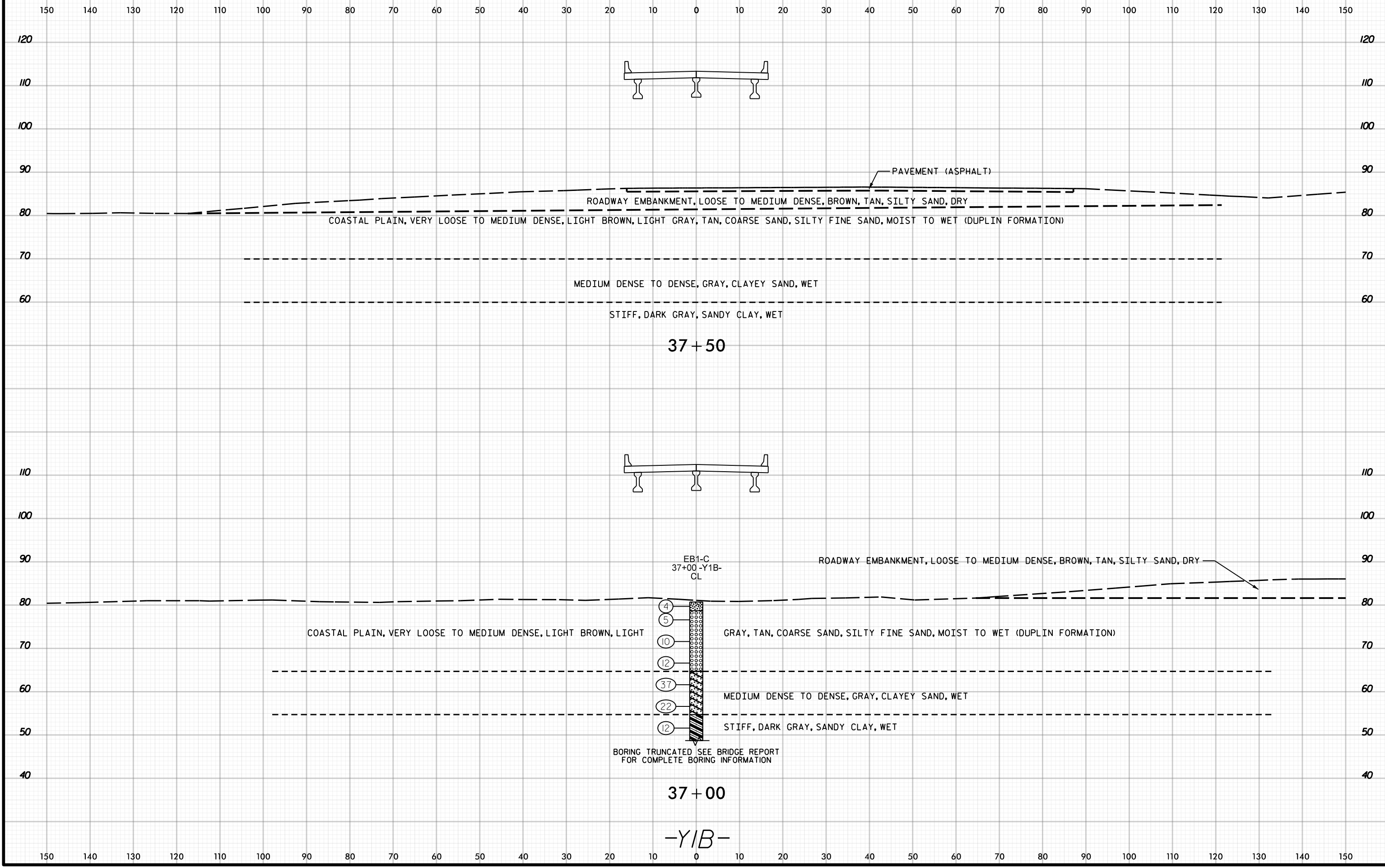
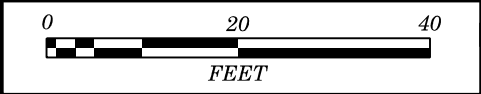
COASTAL PLAIN, MEDIUM STIFF, BROWN, SANDY SILT, DRY (DUPLIN FORMATION)

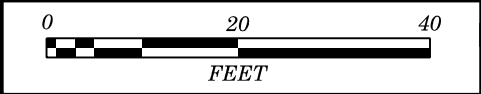
LOOSE TO MEDIUM DENSE, TAN, SAND, MOIST TO WET

VERY STIFF, GRAY, SANDY CLAY, MOIST

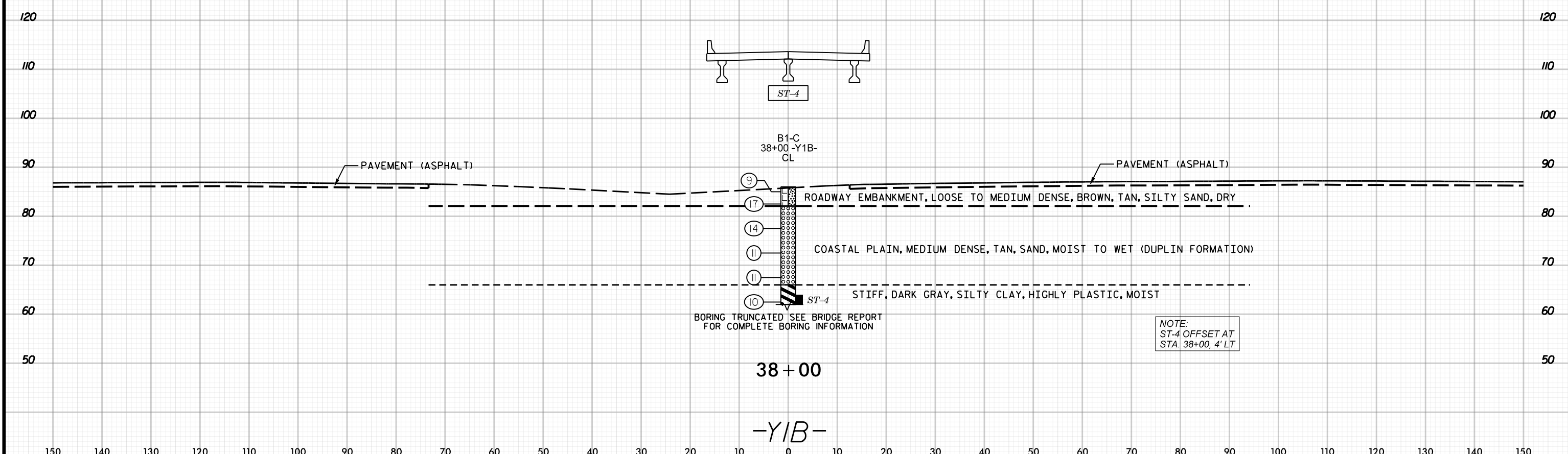
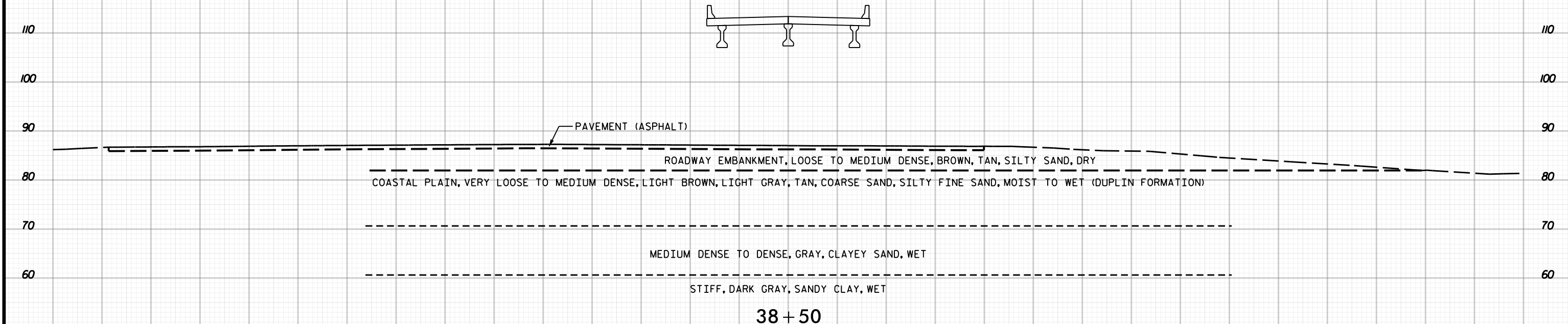
MEDIUM DENSE, LIGHT GRAY, SILTY SAND, WET

VERY STIFF, GRAY, SILTY CLAY, MOIST

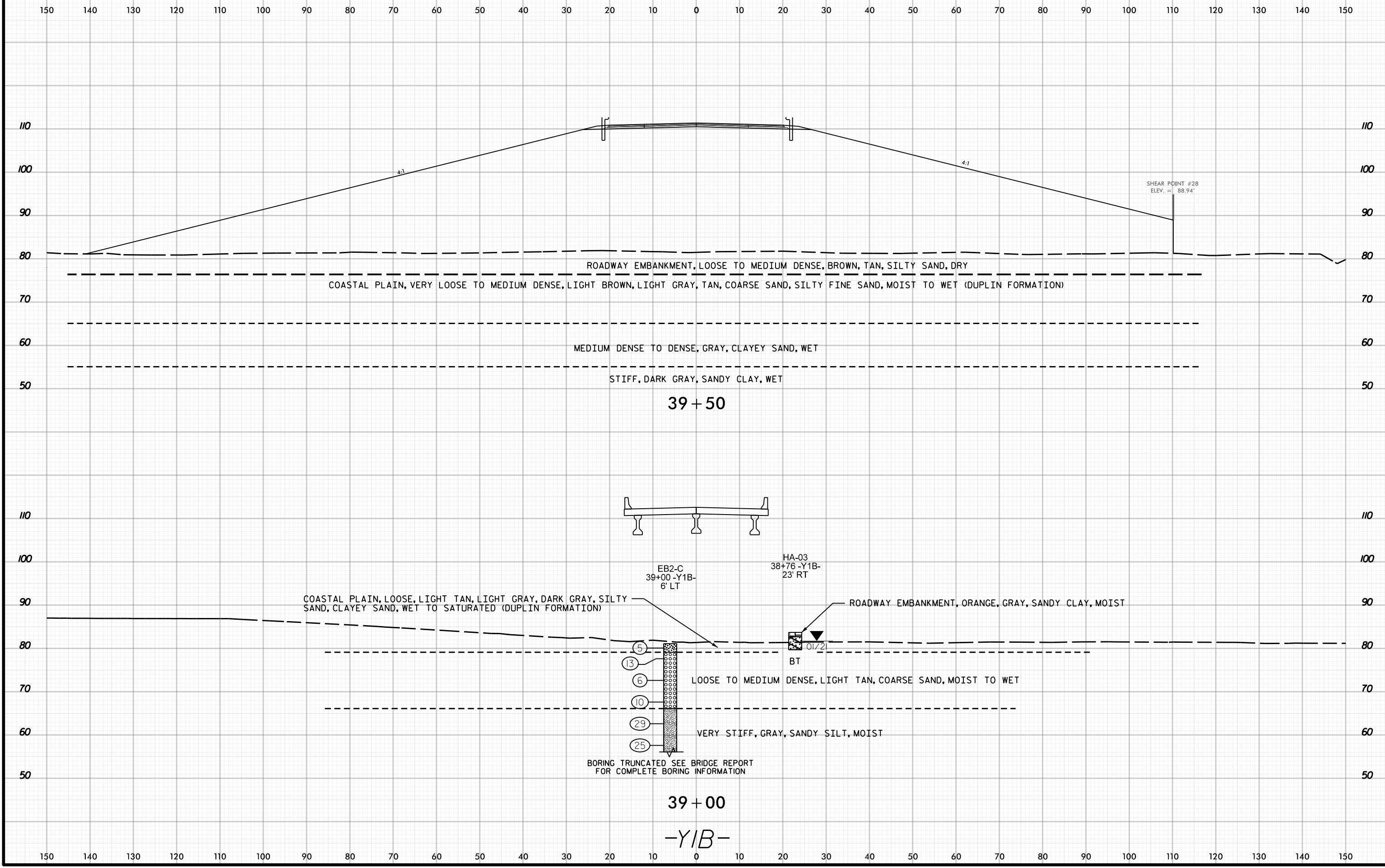
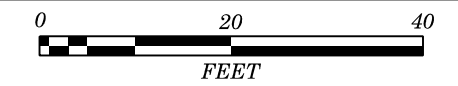




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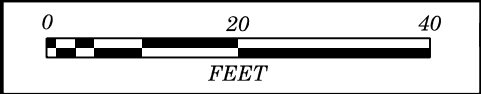
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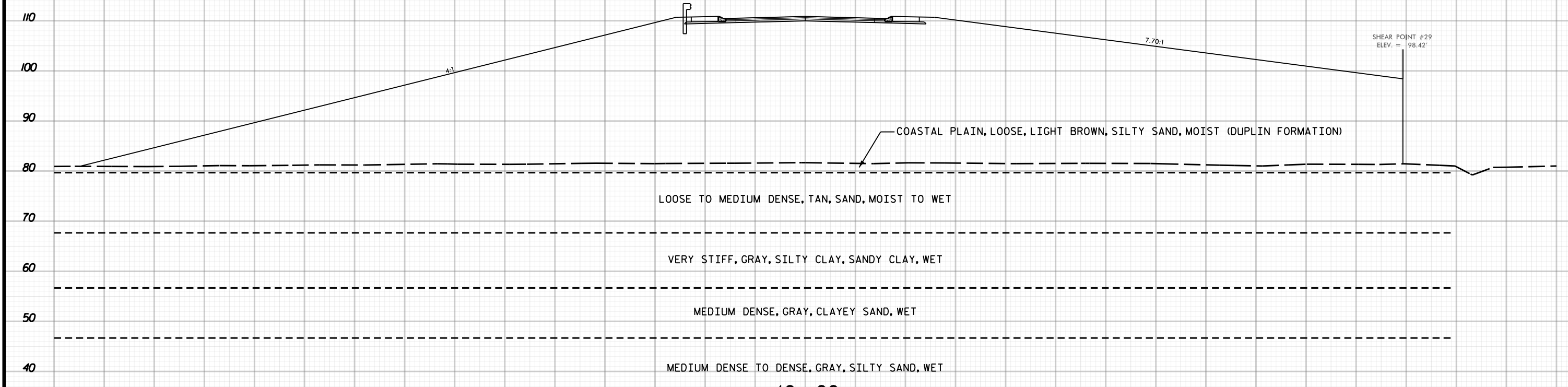
39 + 50

39 + 00

-Y1B-

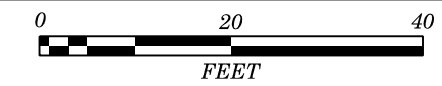


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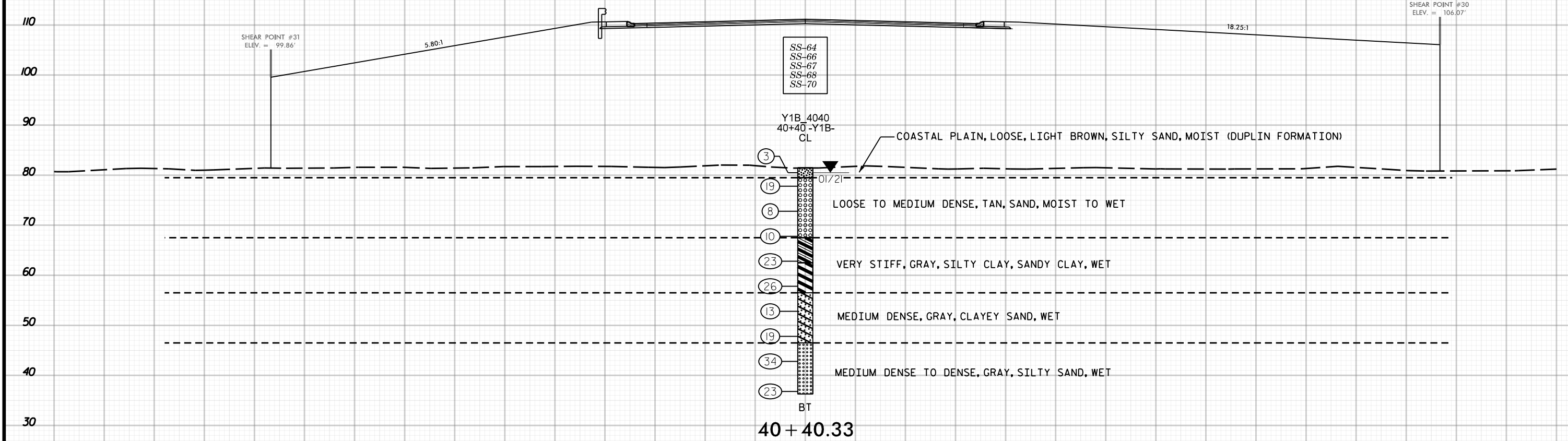


40 + 00
-YIB-

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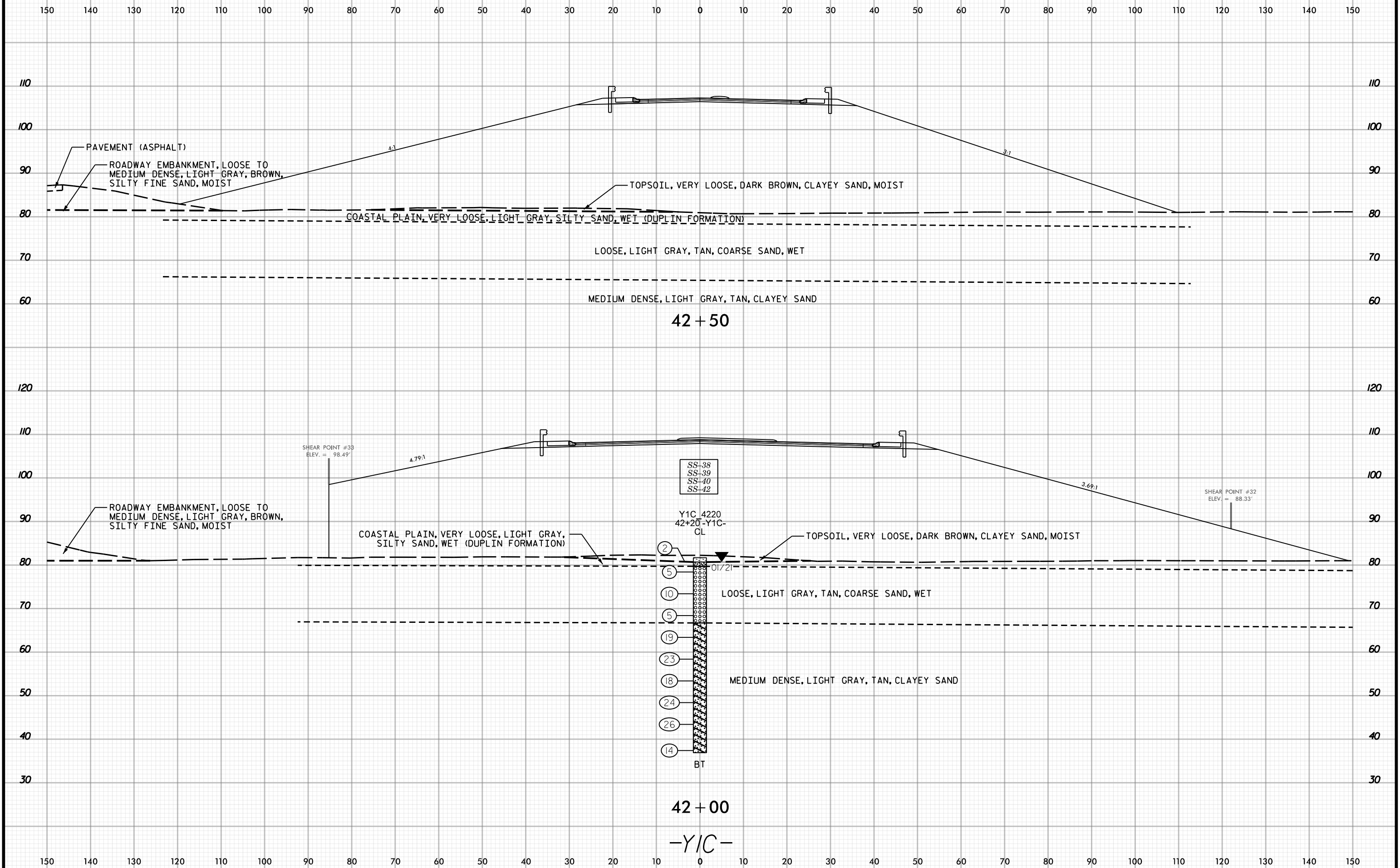
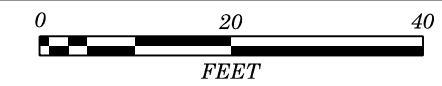


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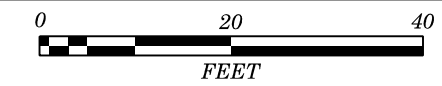
-Y1B-



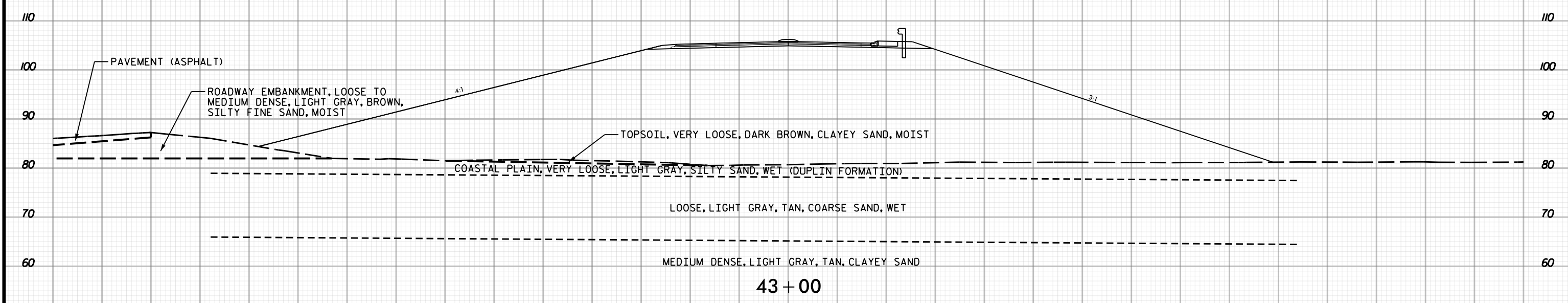
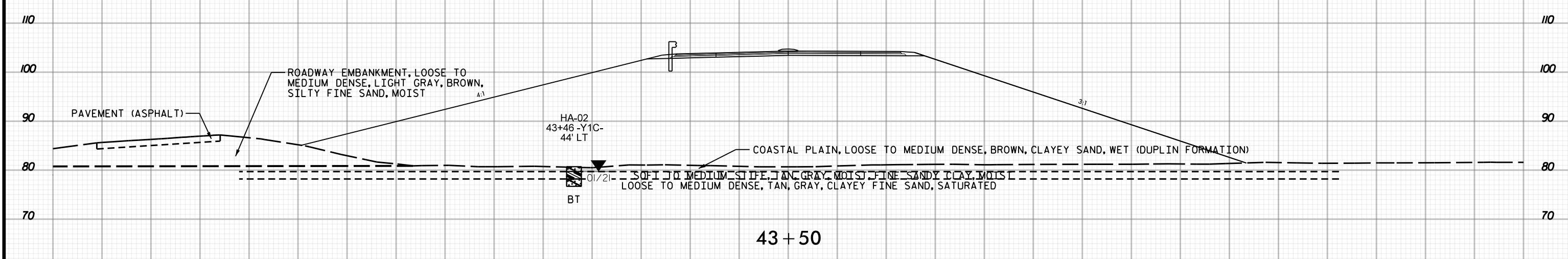
42 + 50

42 + 00

-Y1C-

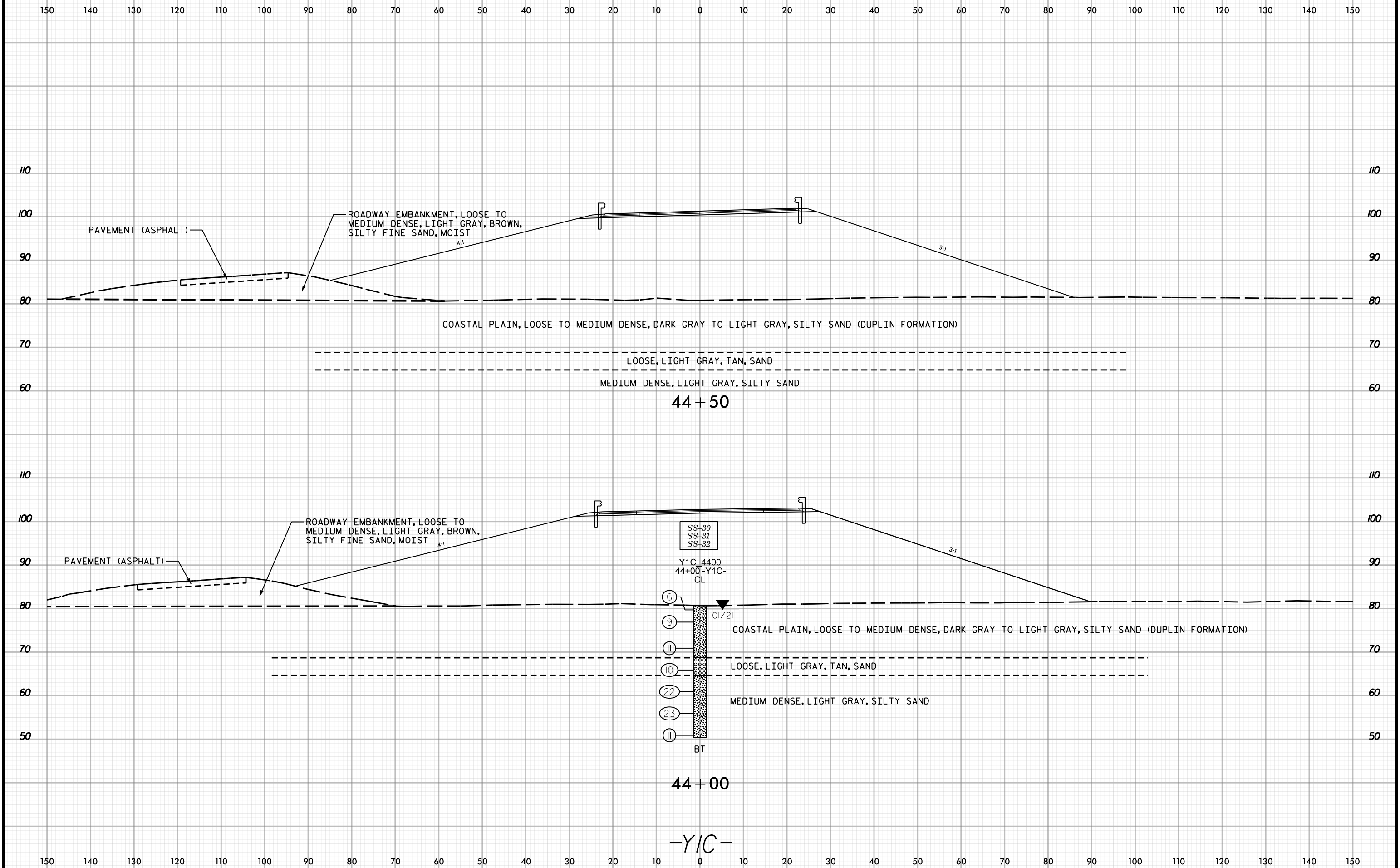
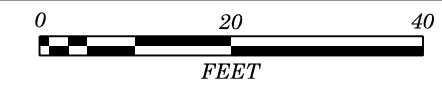


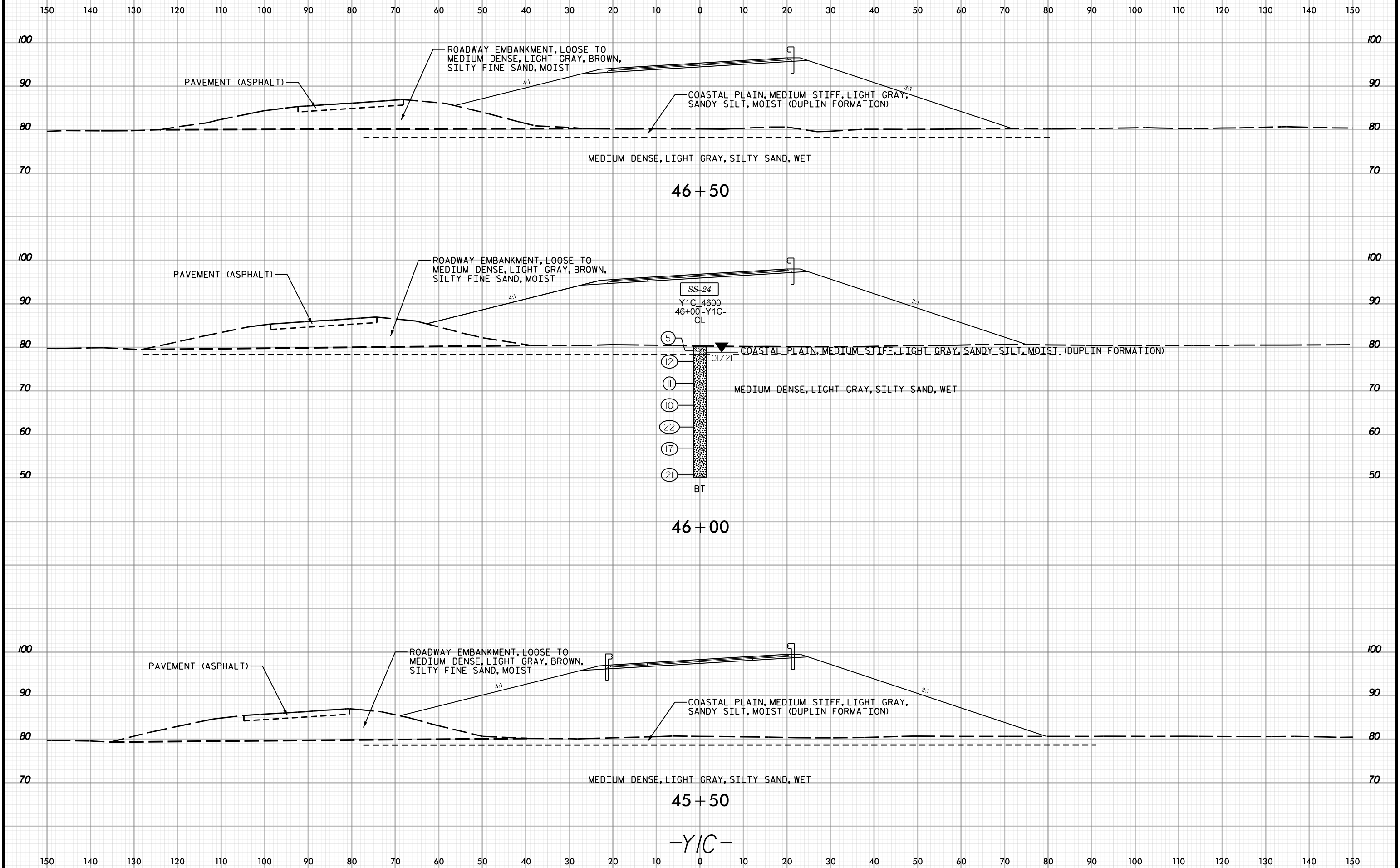
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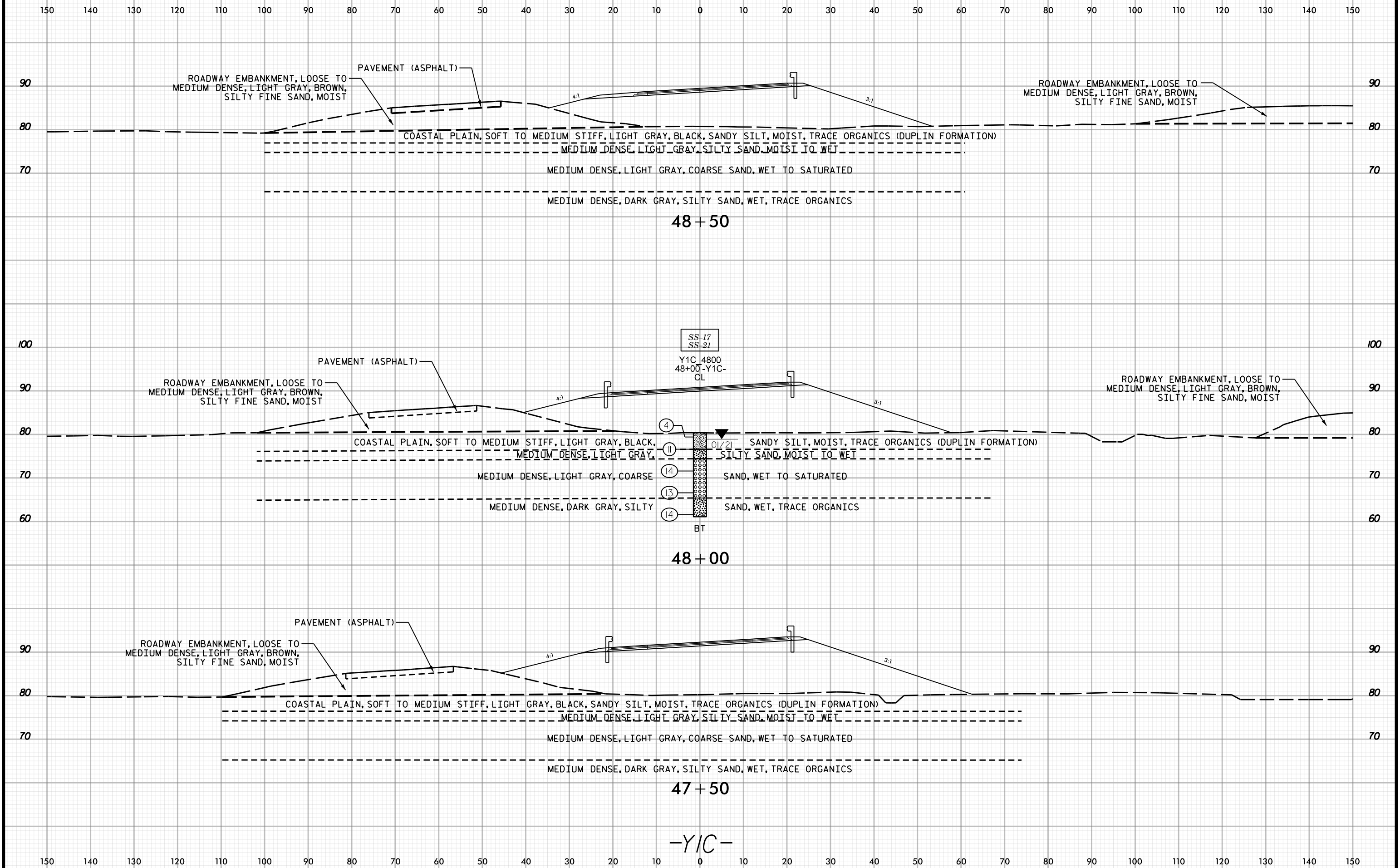
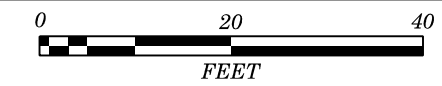


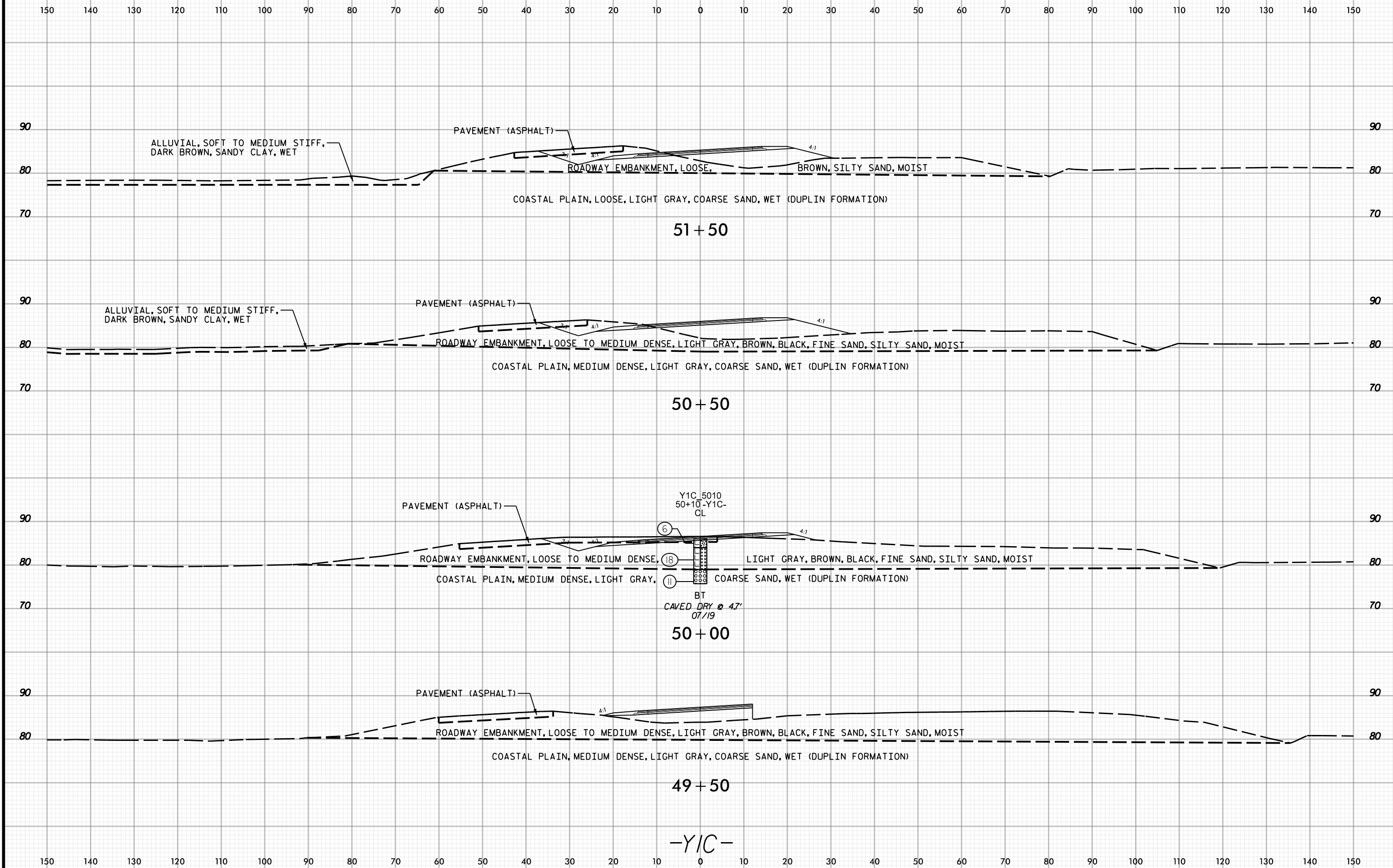
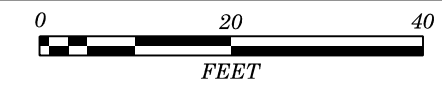
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-Y1C-

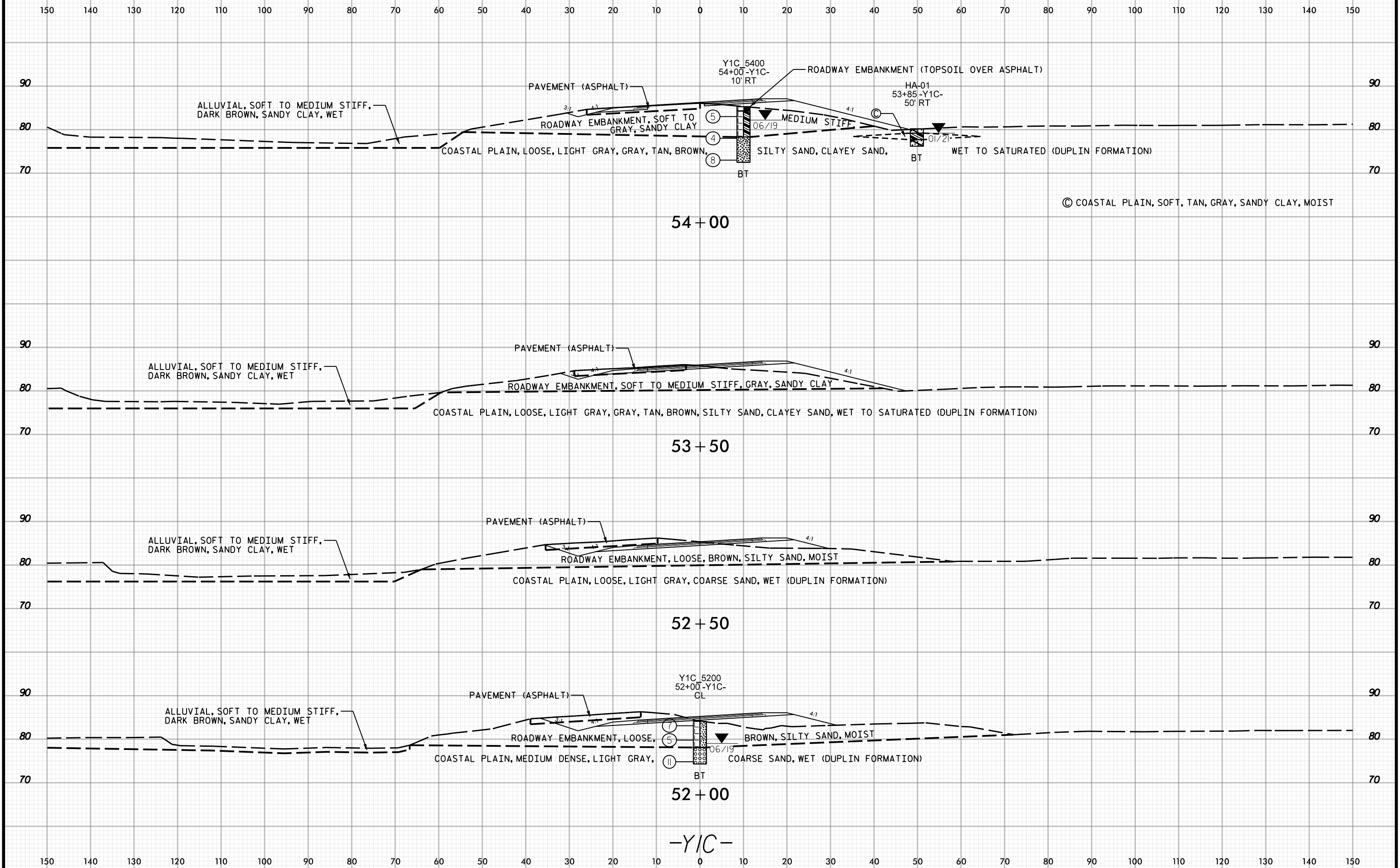
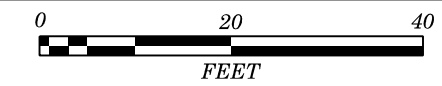


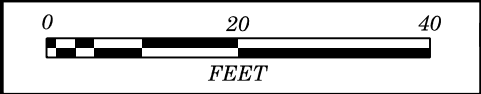




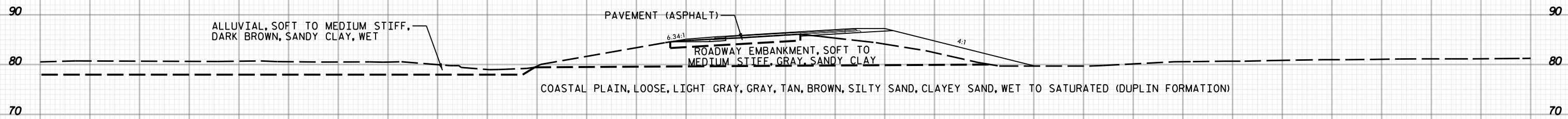


-Y1C-



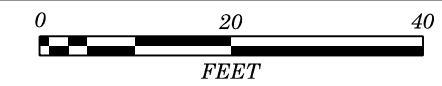


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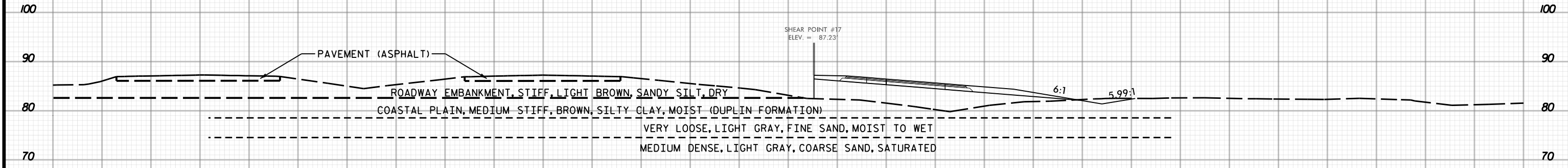


54+50
-YIC-

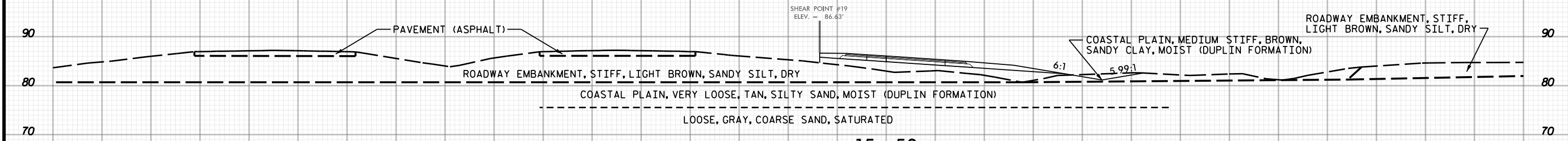
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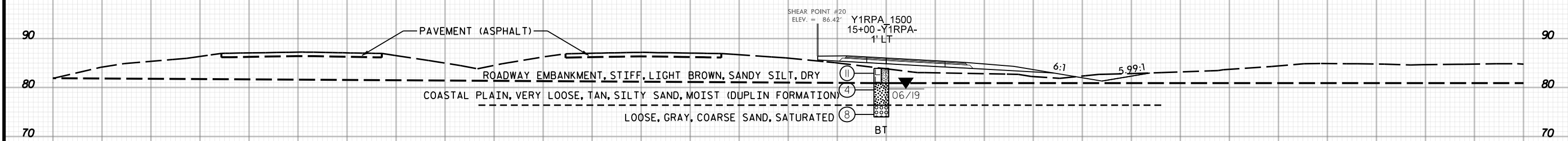
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16+50



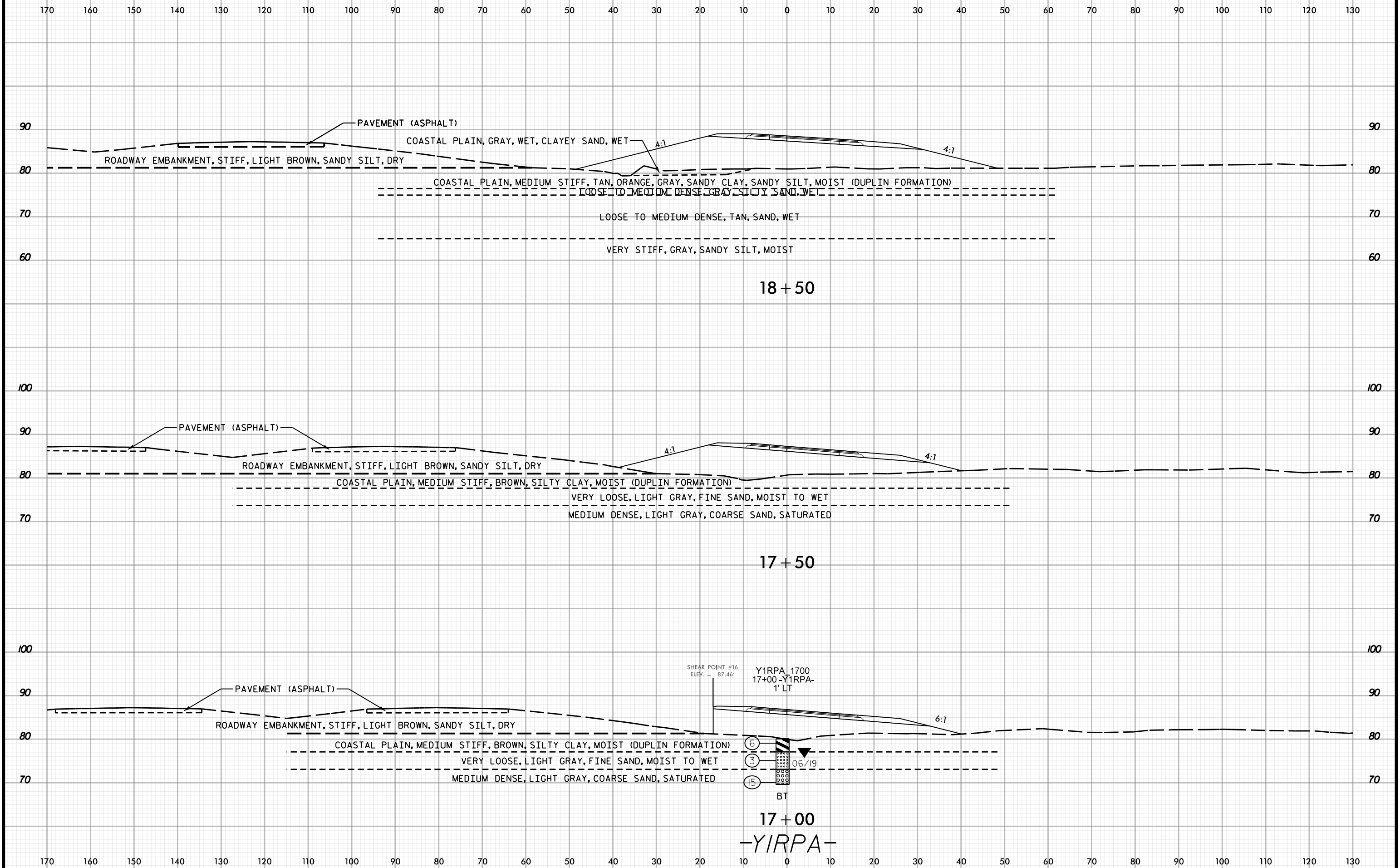
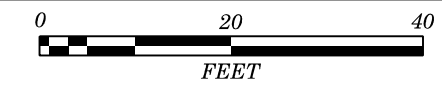
15+50

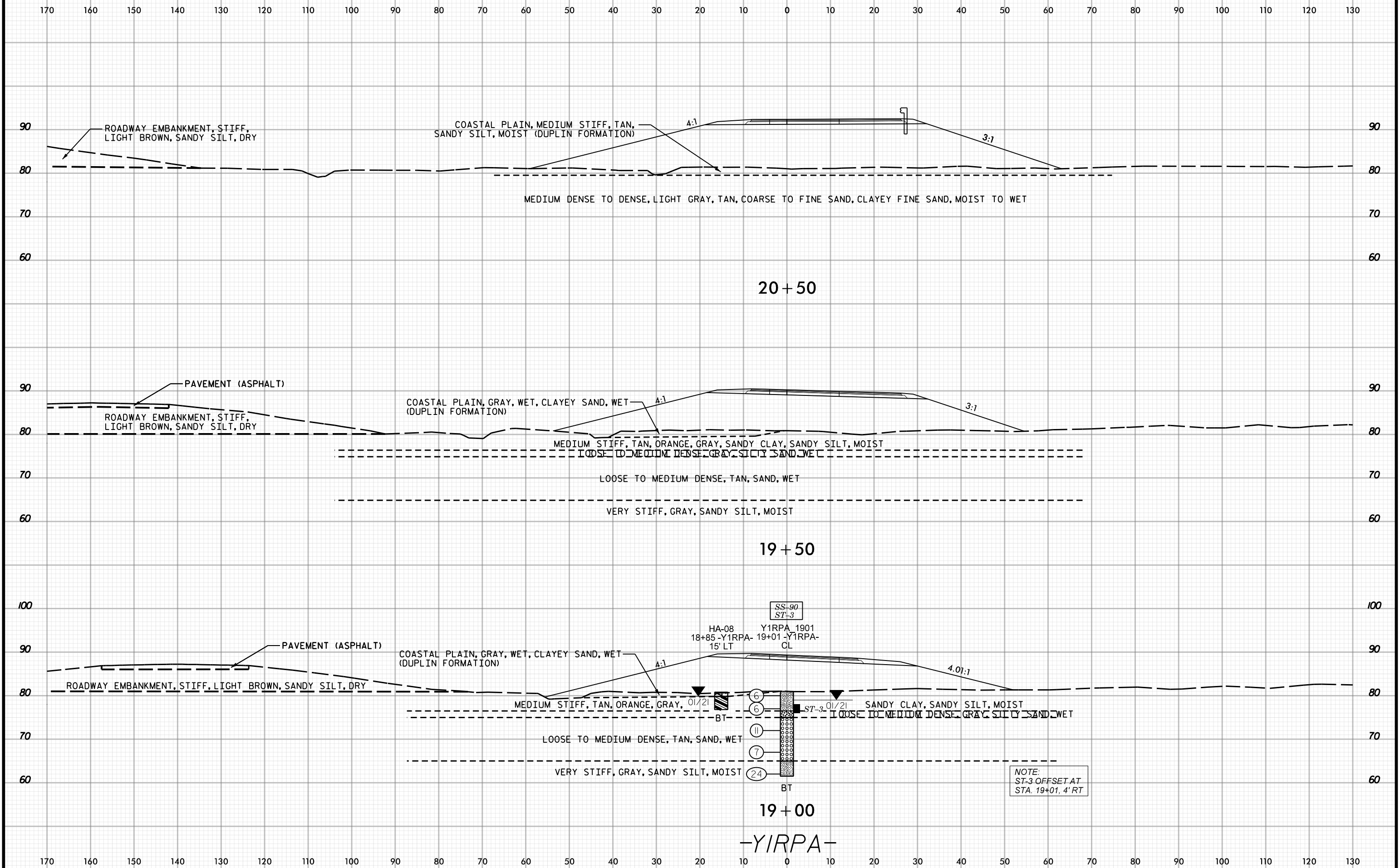
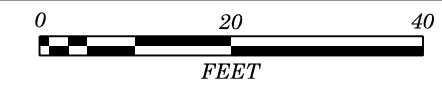


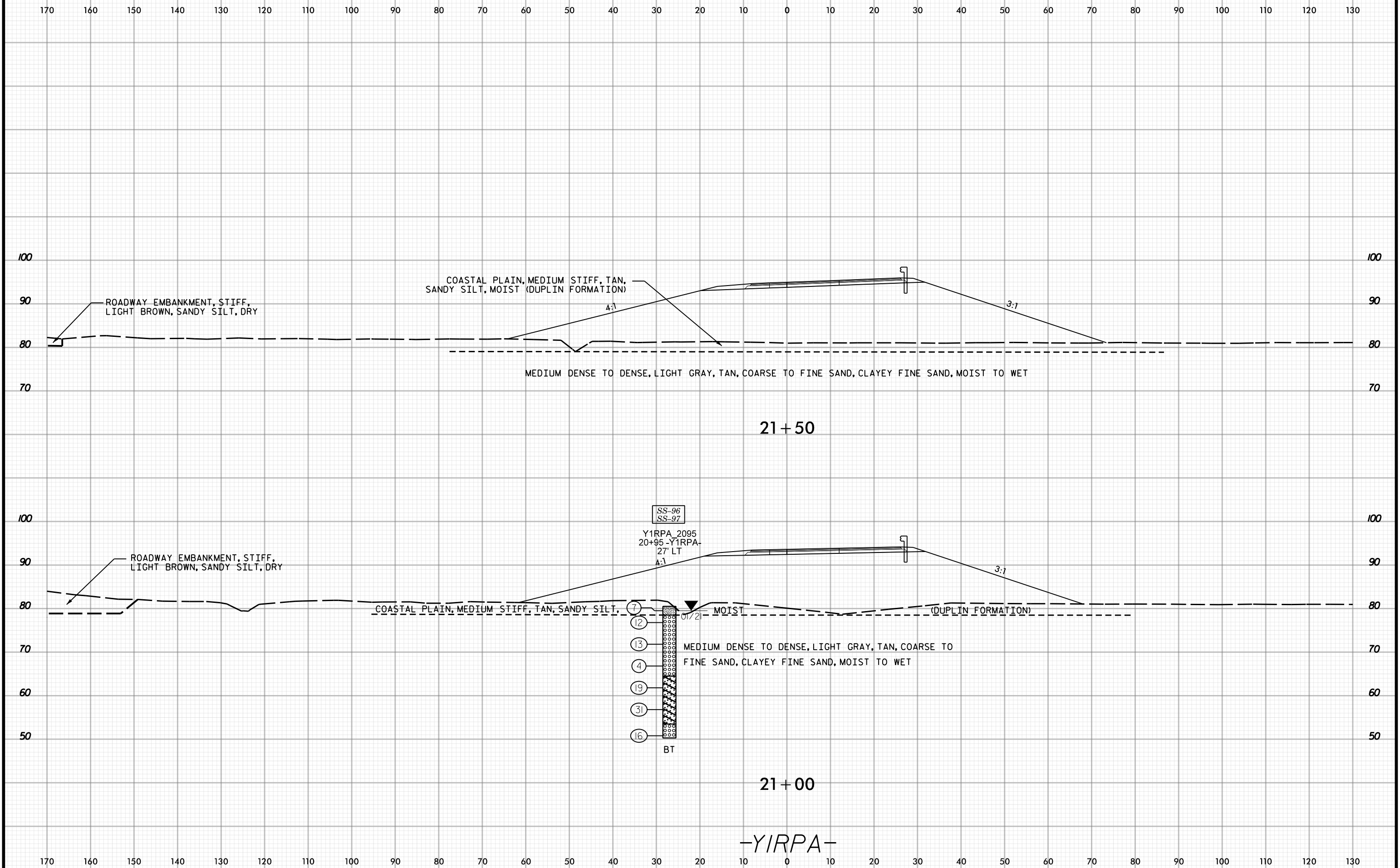
15+00

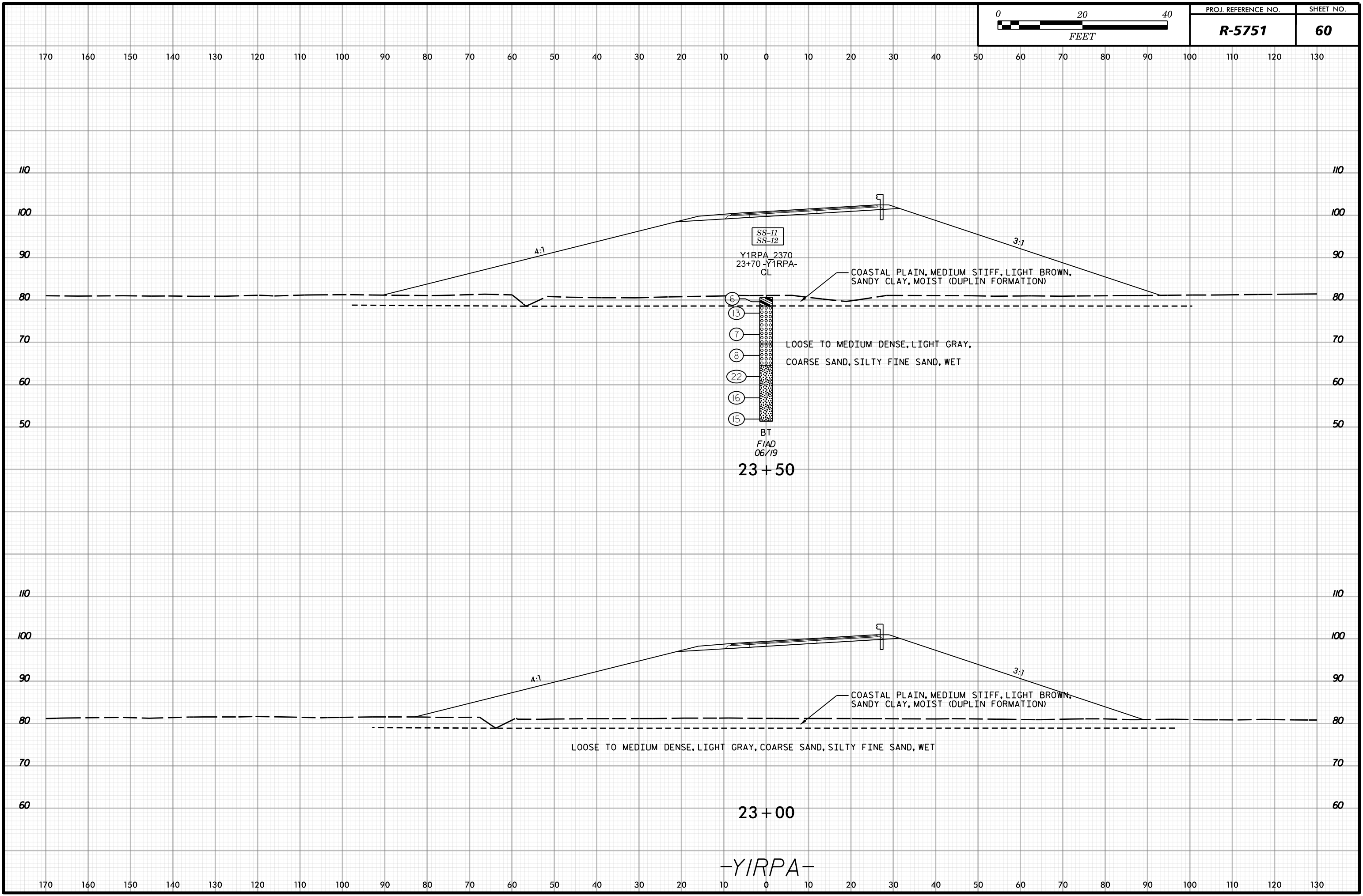
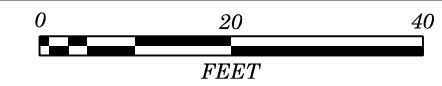
-Y1RPA-

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130









SS-11
SS-12

Y1RPA 2370
23+70 -Y1RPA-
CL

COASTAL PLAIN, MEDIUM STIFF, LIGHT BROWN,
SANDY CLAY, MOIST (DUPLIN FORMATION)

- 6
- 13
- 7
- 8
- 22
- 16
- 15

LOOSE TO MEDIUM DENSE, LIGHT GRAY,
COARSE SAND, SILTY FINE SAND, WET

BT
FIAD
06/19

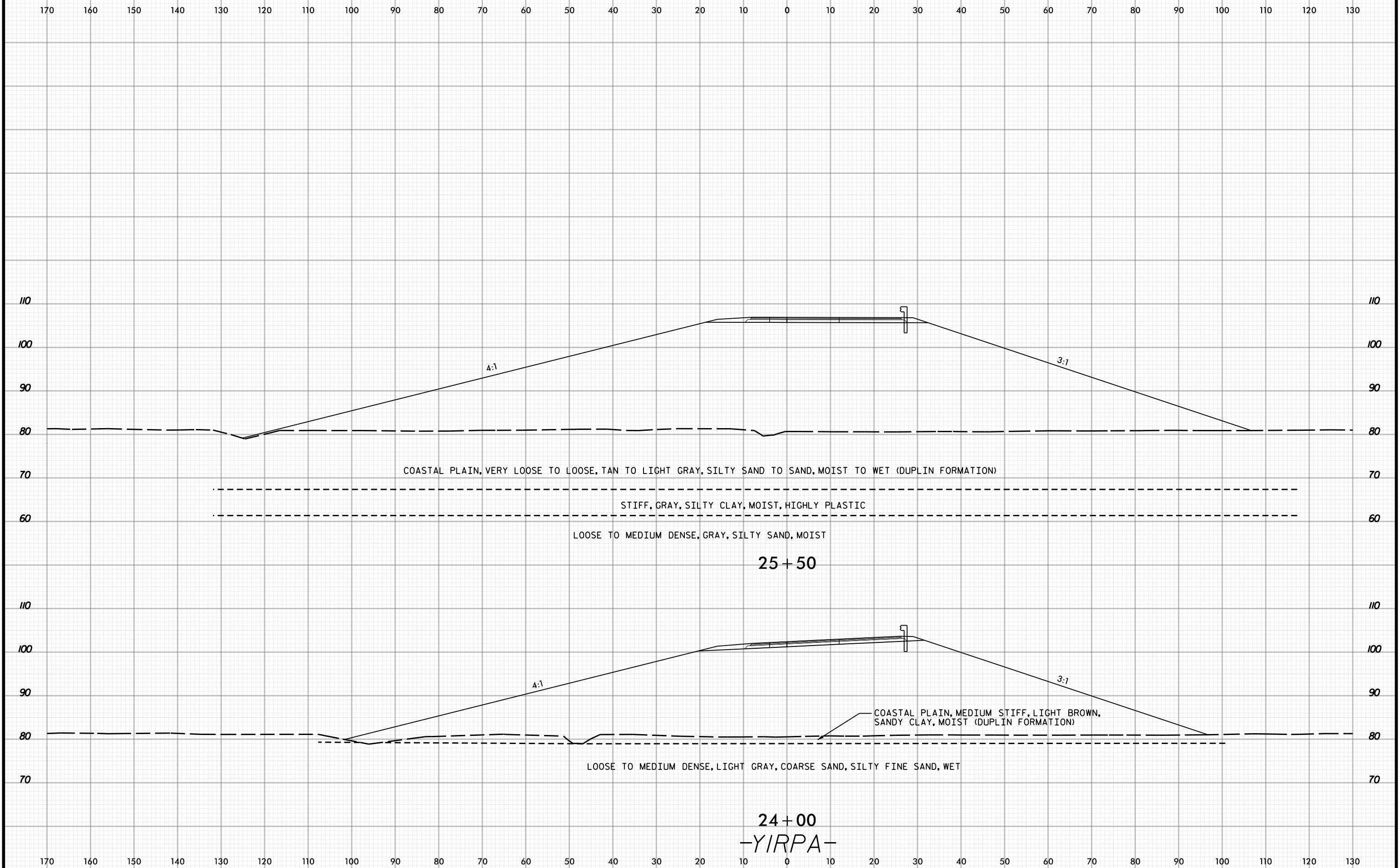
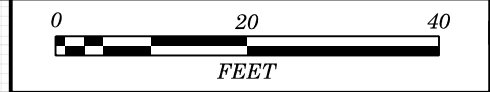
23+50

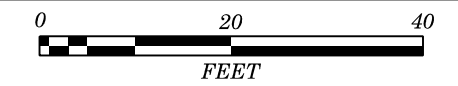
COASTAL PLAIN, MEDIUM STIFF, LIGHT BROWN,
SANDY CLAY, MOIST (DUPLIN FORMATION)

LOOSE TO MEDIUM DENSE, LIGHT GRAY, COARSE SAND, SILTY FINE SAND, WET

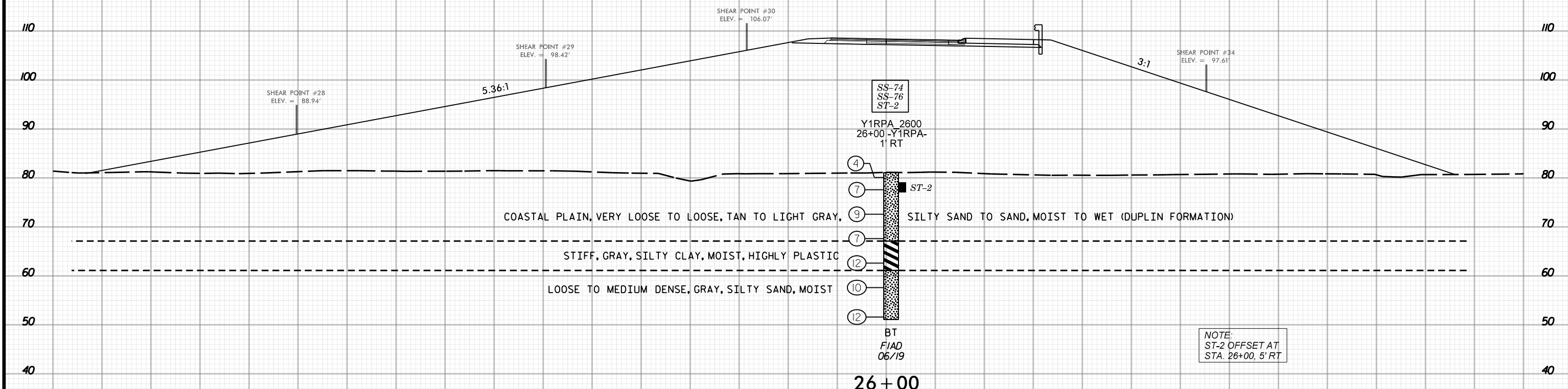
23+00

-Y1RPA-





170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130



SHEAR POINT #28
ELEV. = 88.94'

SHEAR POINT #29
ELEV. = 98.42'

SHEAR POINT #30
ELEV. = 106.07'

SHEAR POINT #34
ELEV. = 97.61'

SS-74
SS-76
ST-2

Y1RPA 2600
26+00 -Y1RPA-
1' RT

(4)

(7)

(9)

(7)

(12)

(10)

(12)

BT

FIAD

06/19

26 + 00

COASTAL PLAIN, VERY LOOSE TO LOOSE, TAN TO LIGHT GRAY,

SILTY SAND TO SAND, MOIST TO WET (DUPLIN FORMATION)

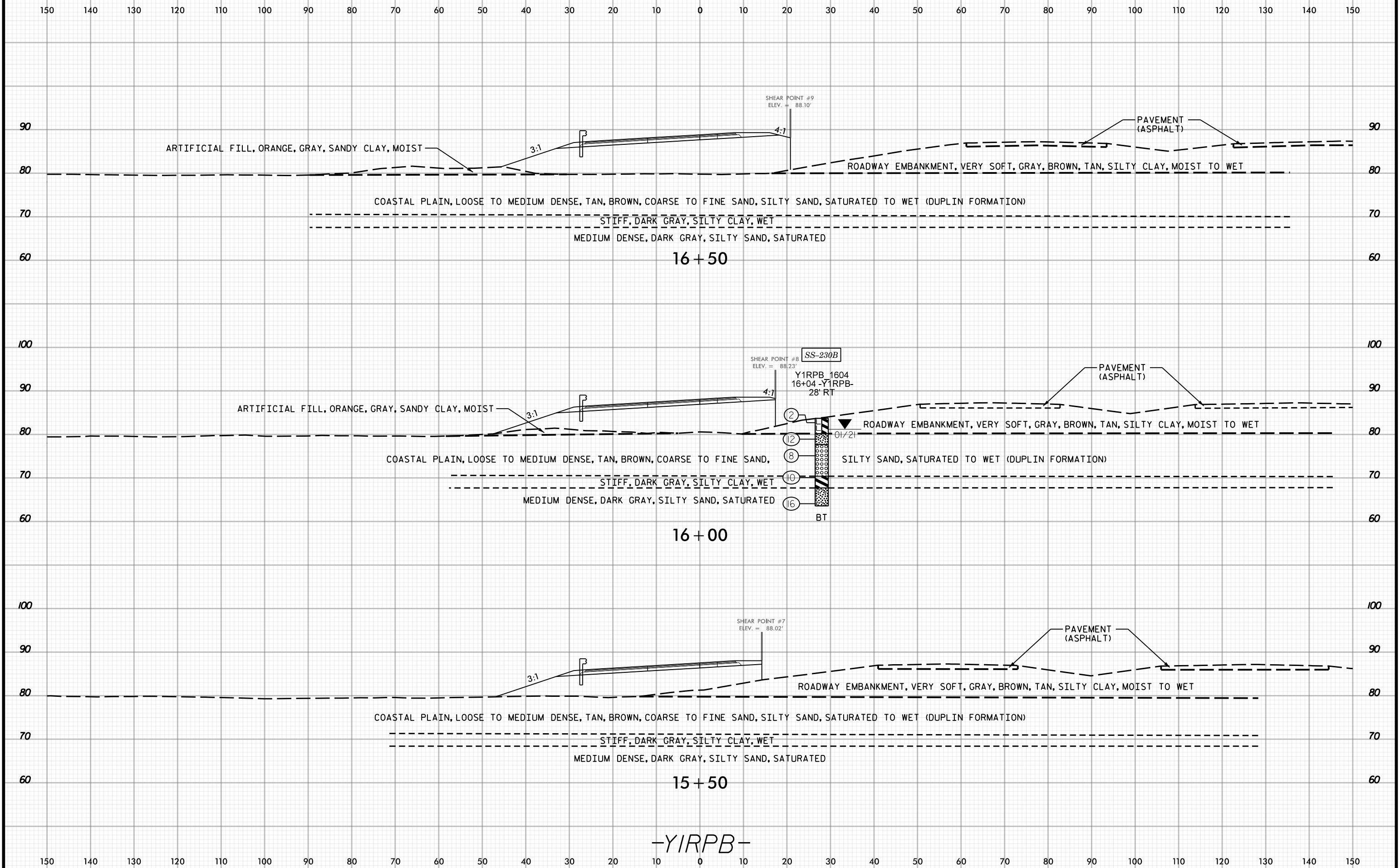
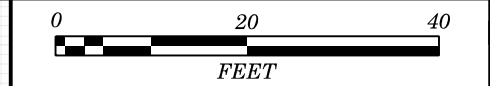
STIFF, GRAY, SILTY CLAY, MOIST, HIGHLY PLASTIC

LOOSE TO MEDIUM DENSE, GRAY, SILTY SAND, MOIST

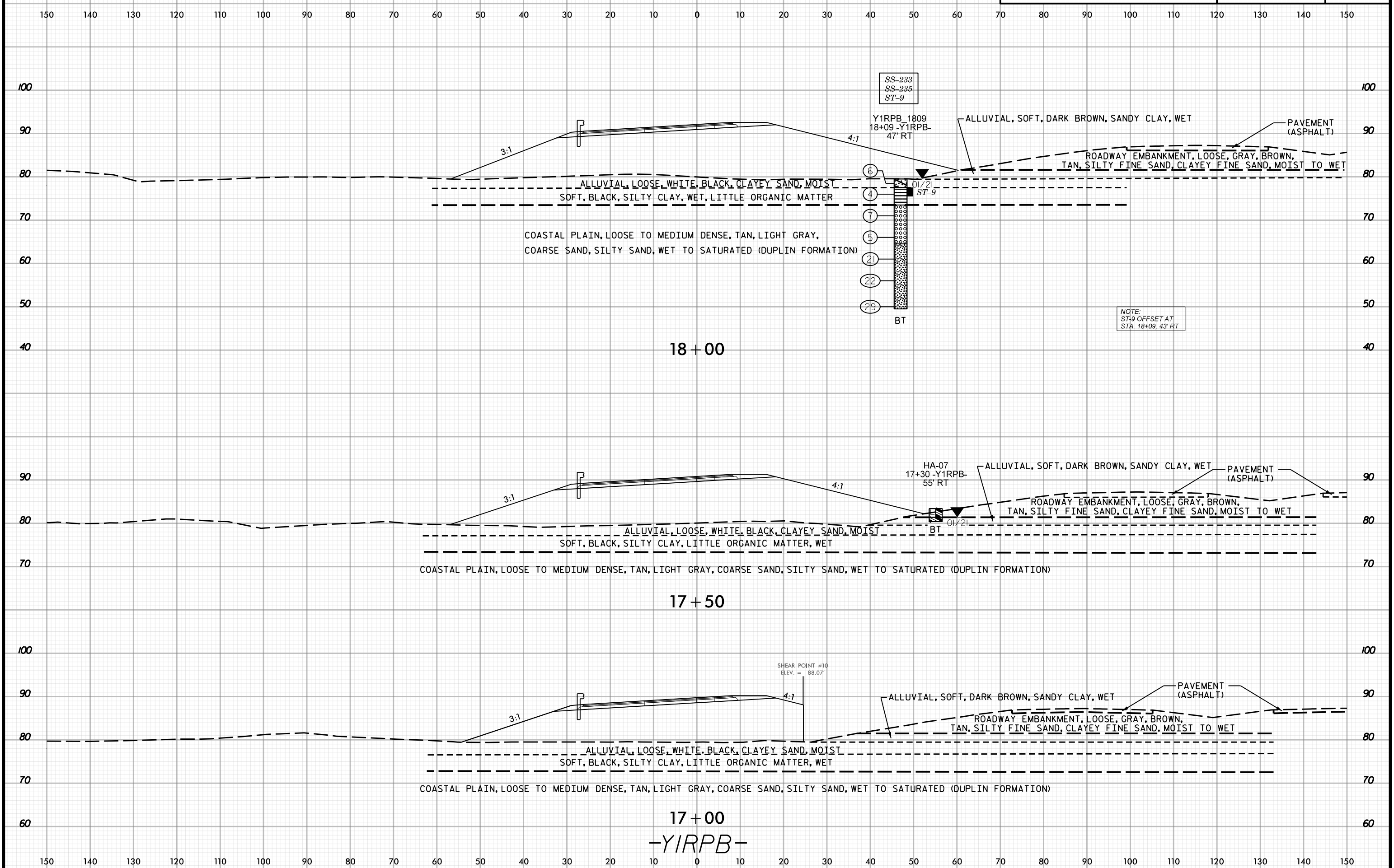
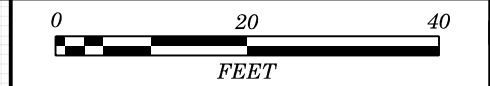
NOTE:
ST-2 OFFSET AT
STA. 26+00, 5' RT

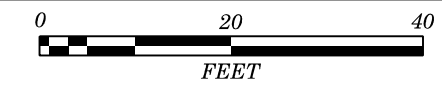
-Y1RPA-

170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130

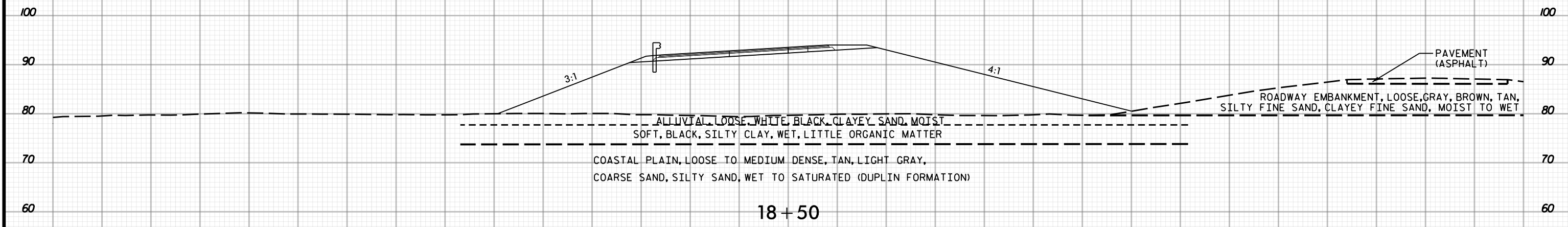
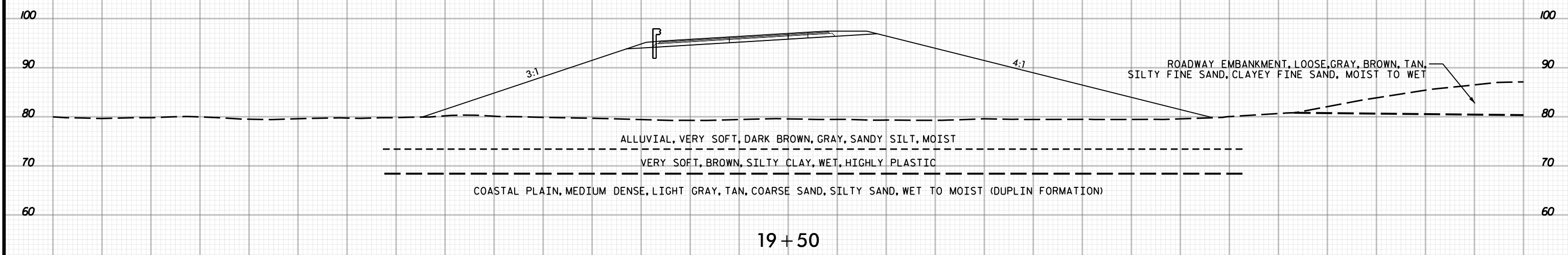


-YIRPB-



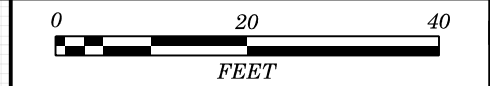


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

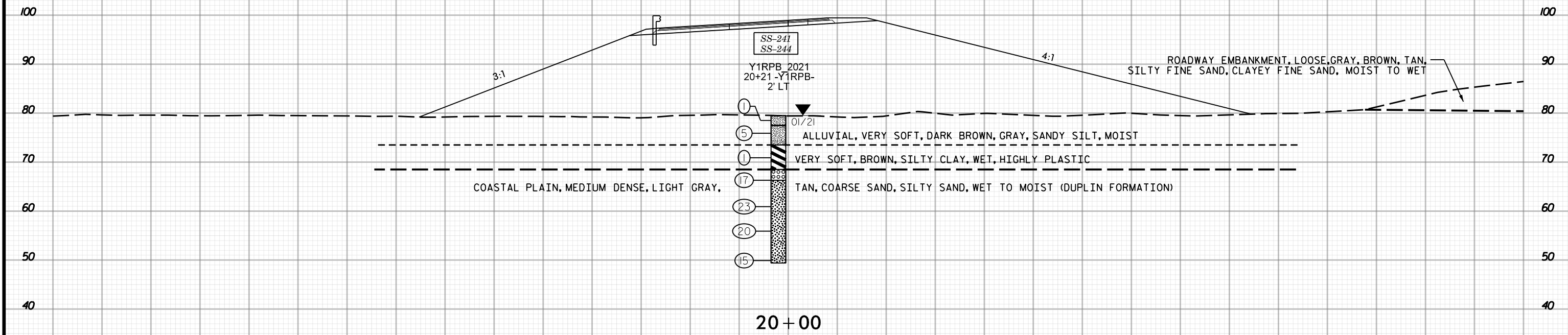
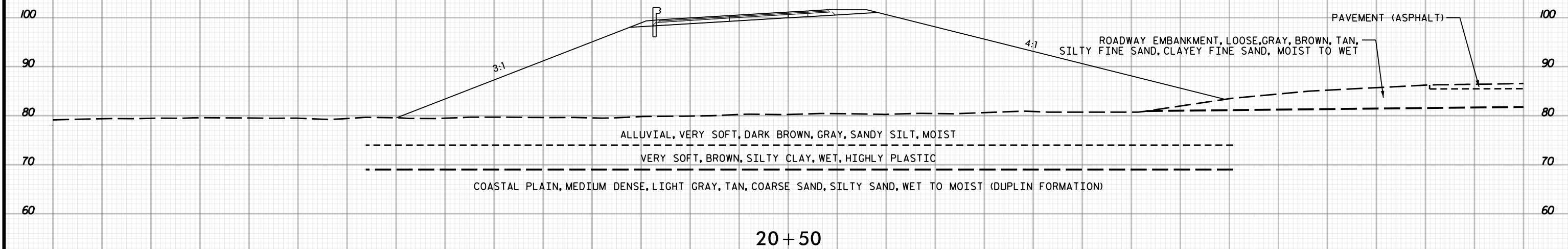


-YIRPB-

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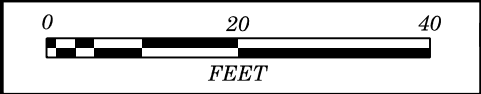


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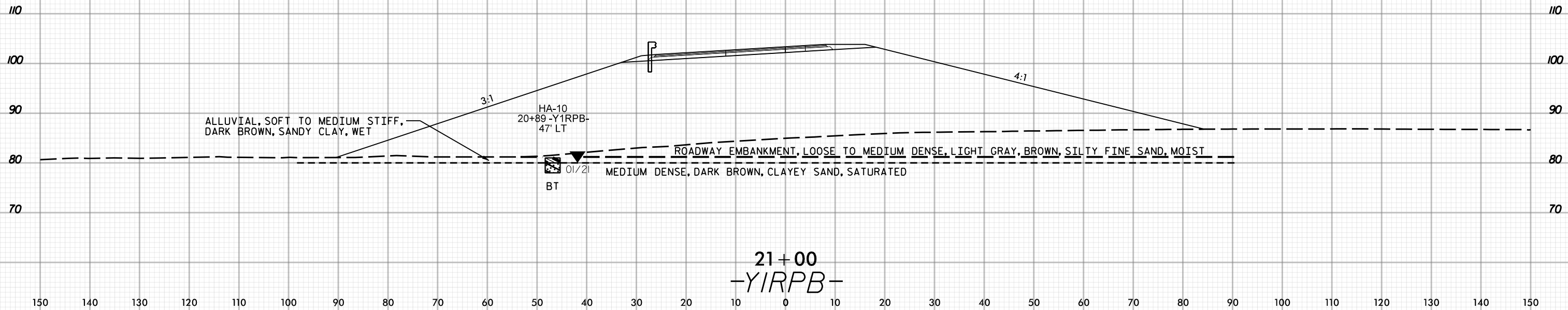


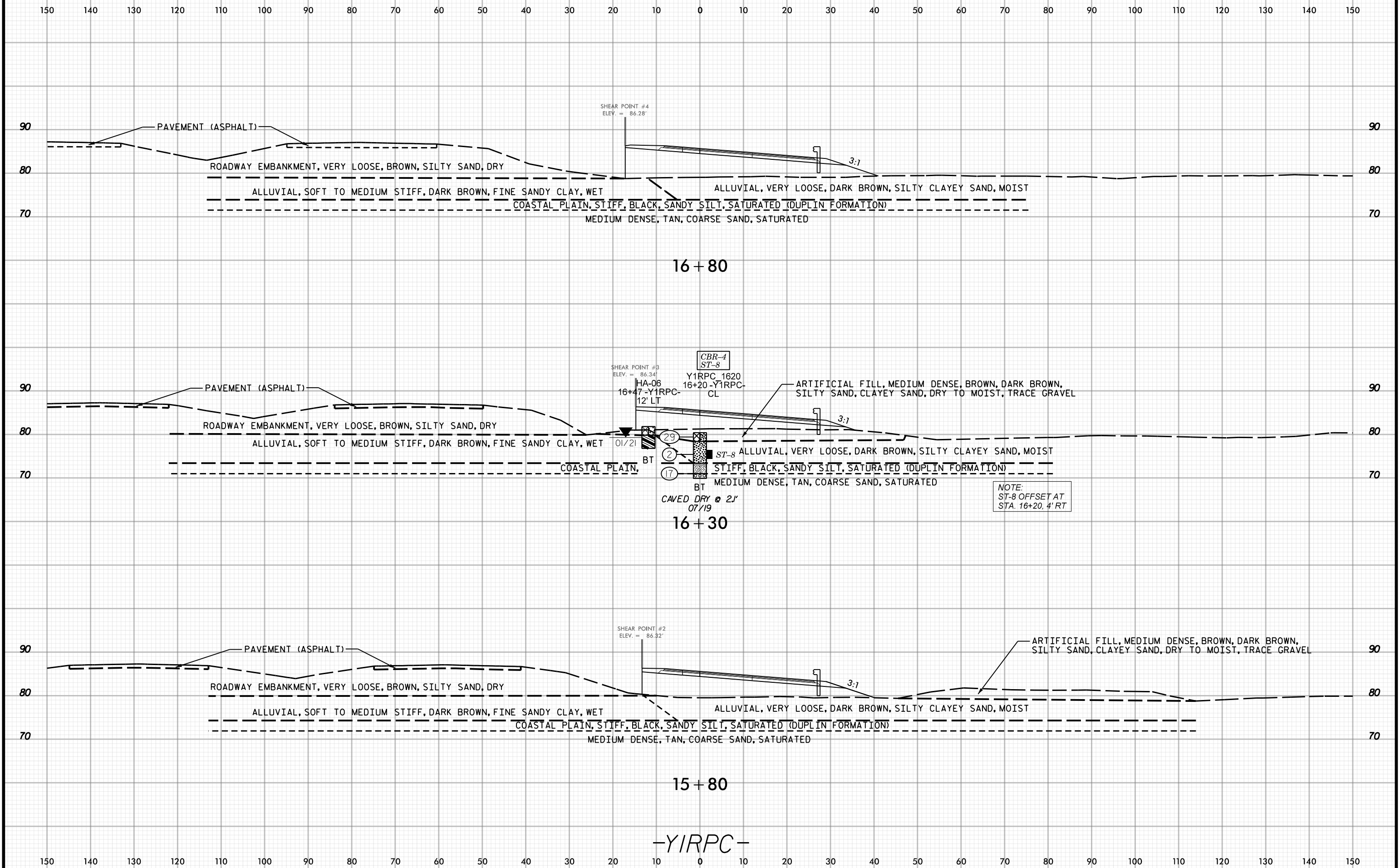
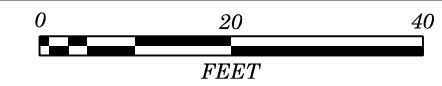
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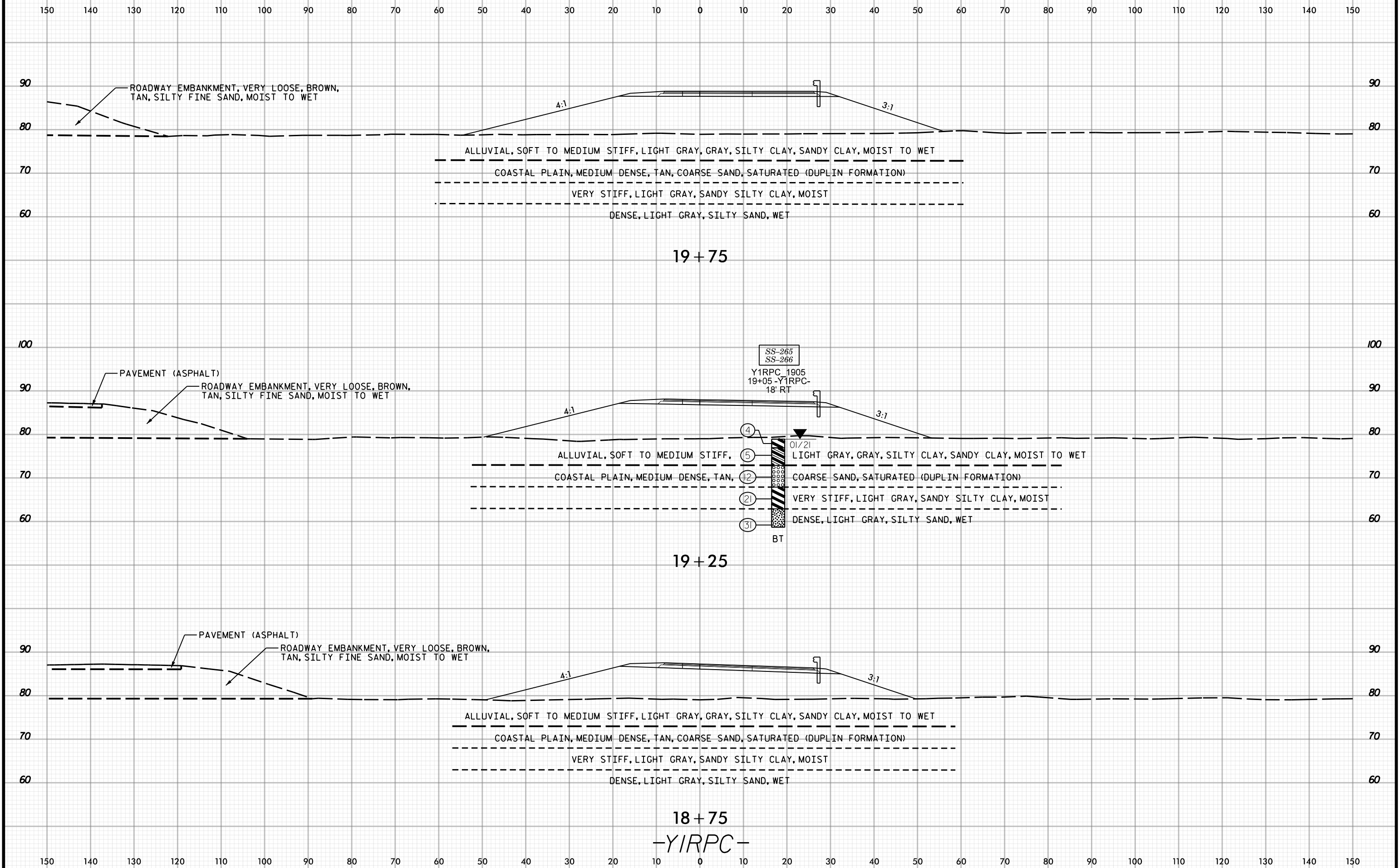
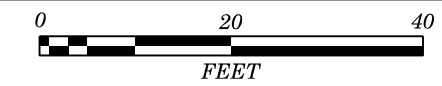
-Y1RPB-



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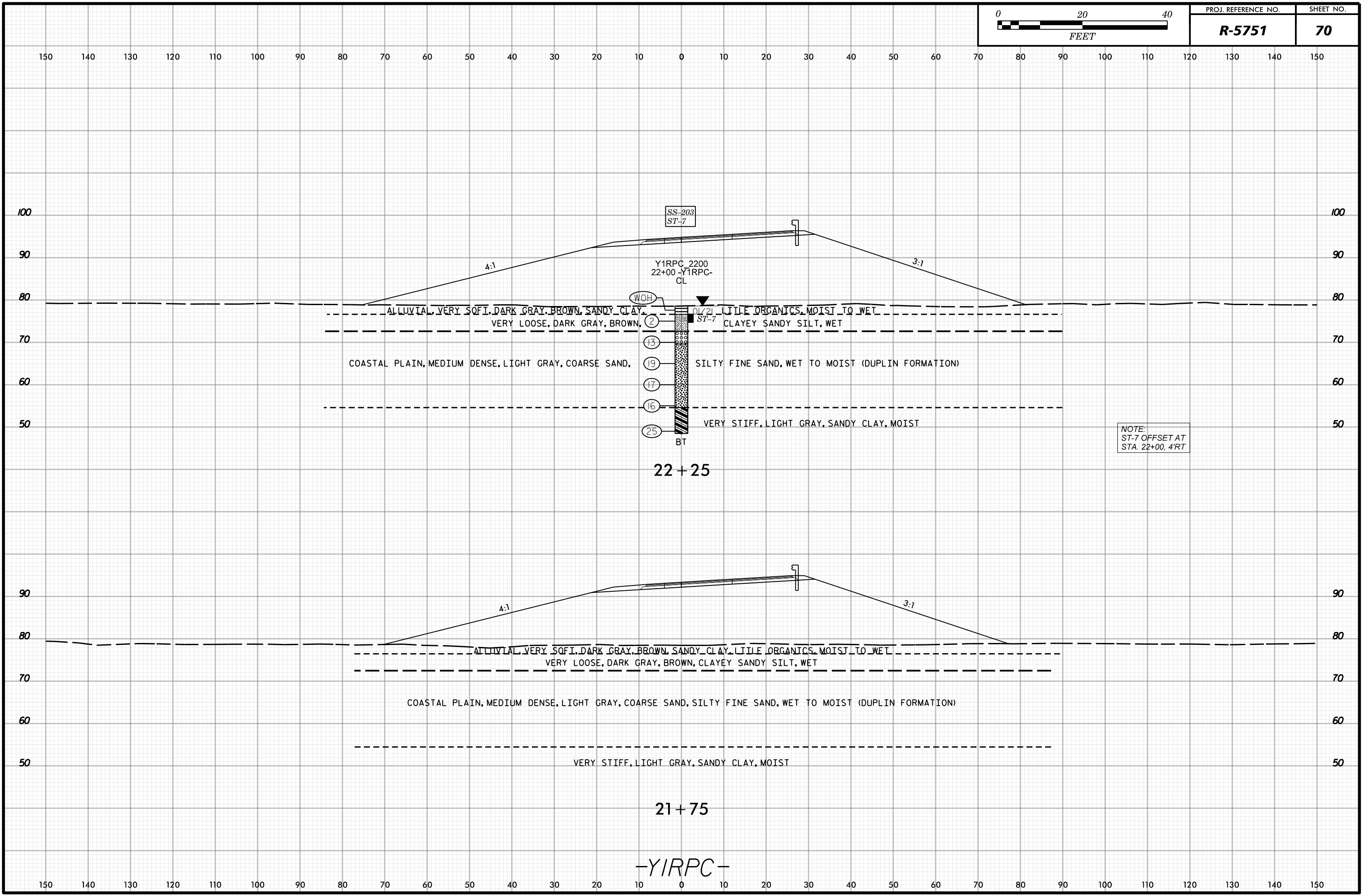
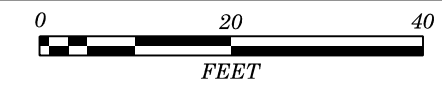


19 + 75

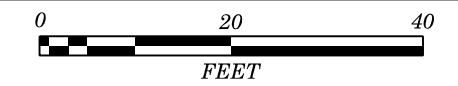
19 + 25

18 + 75

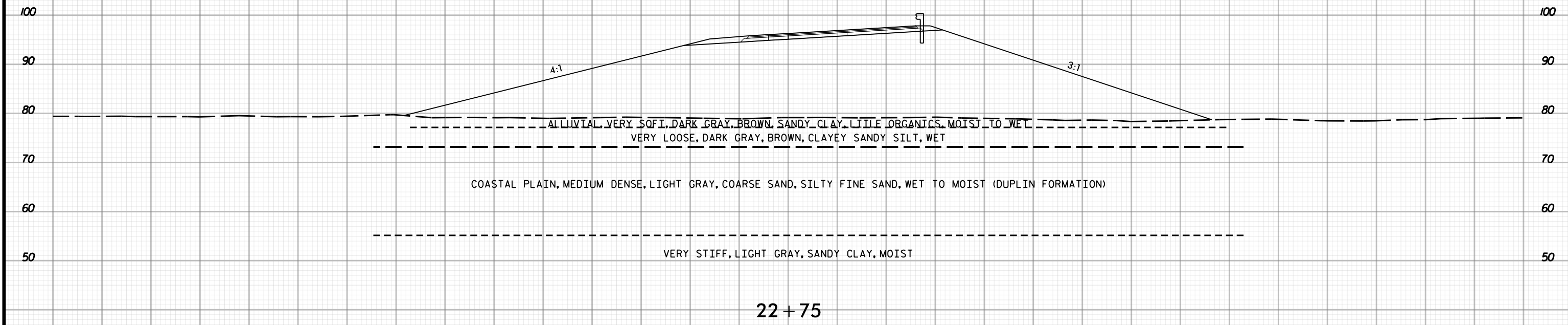
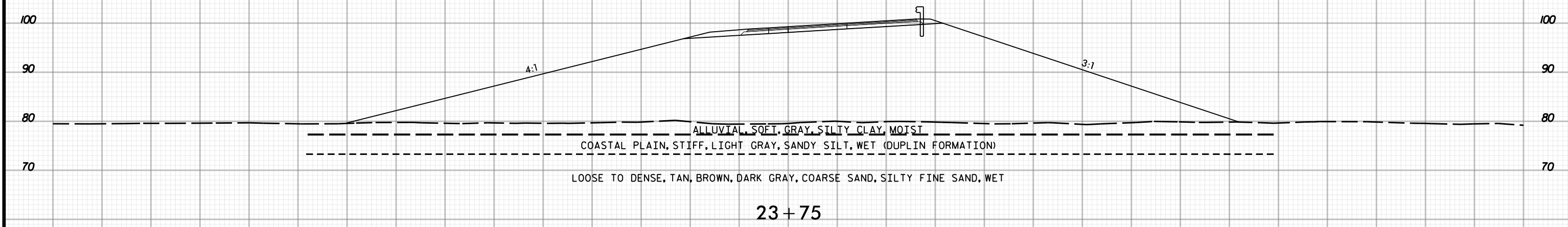
-YIRPC-



-Y1RPC-

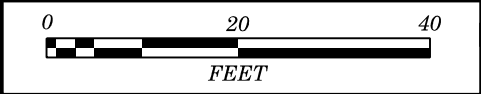


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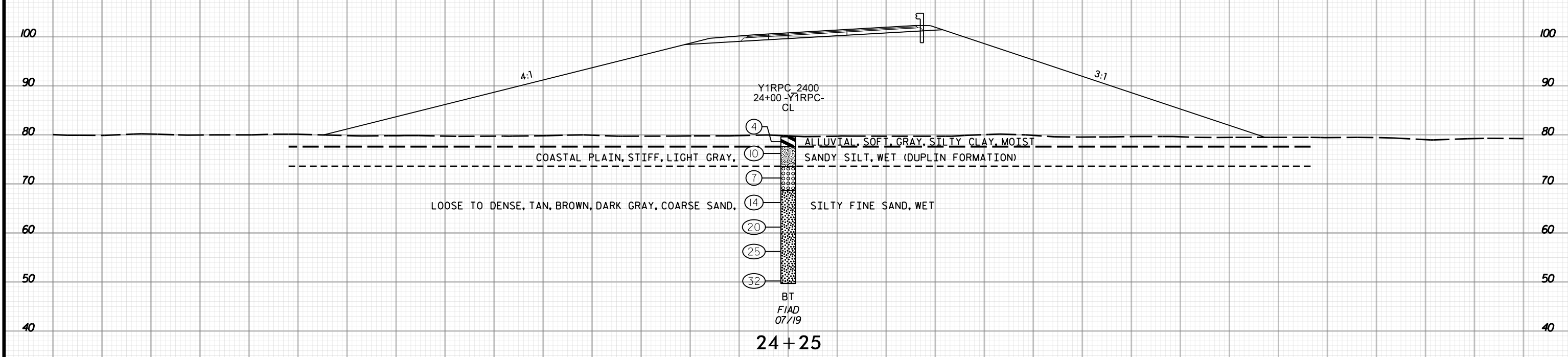


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-YIRPC-

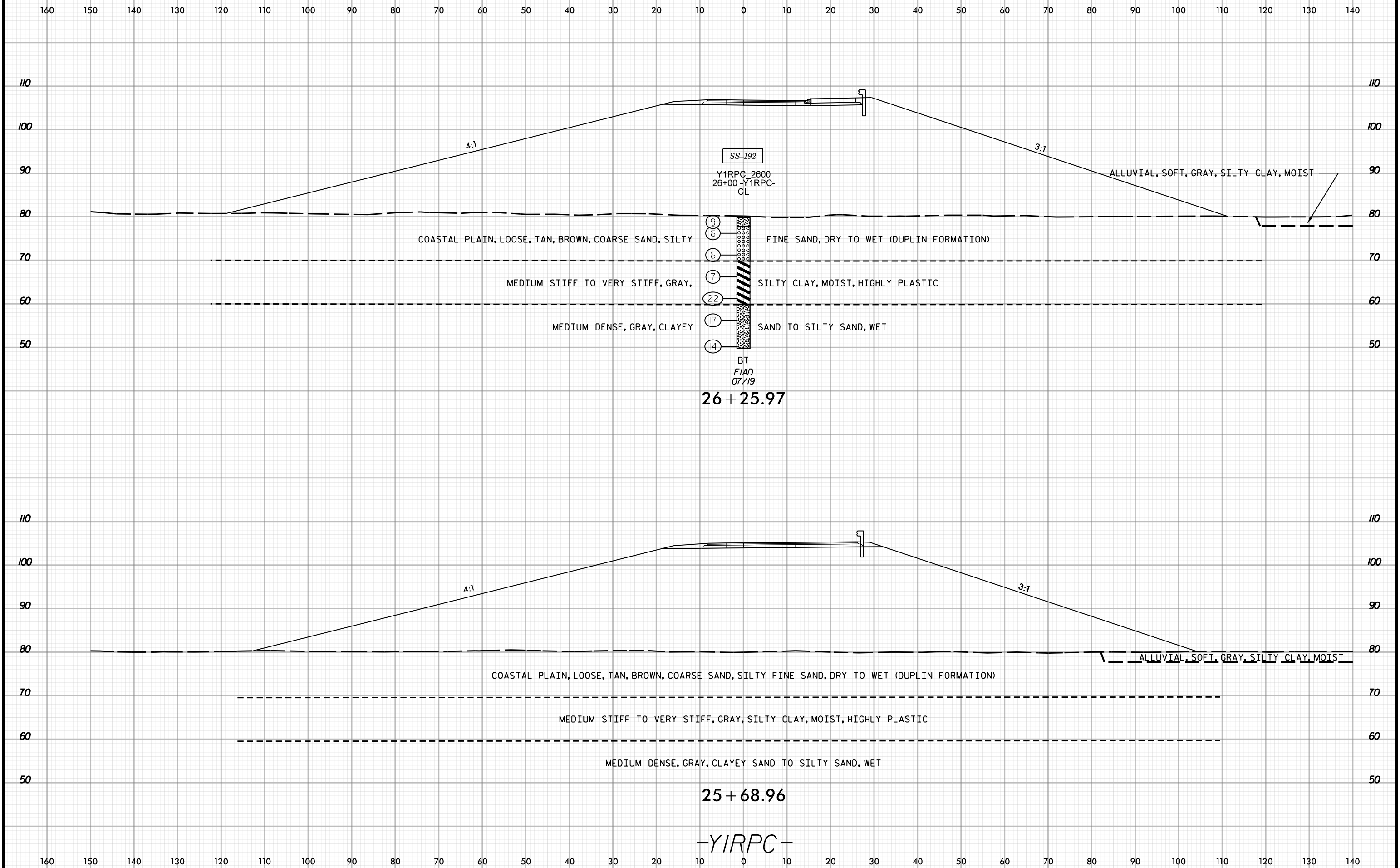
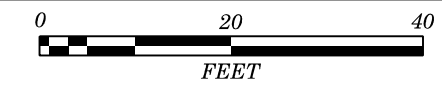


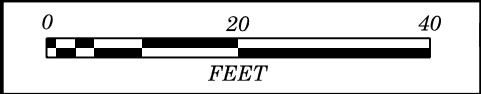
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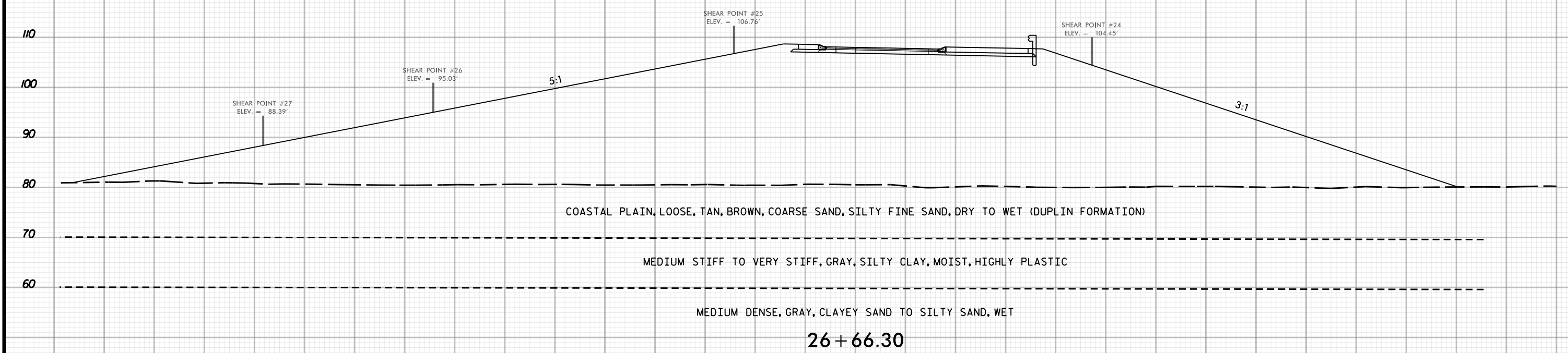
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-Y1RPC-





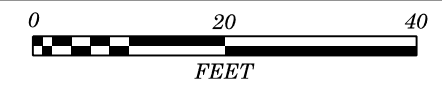
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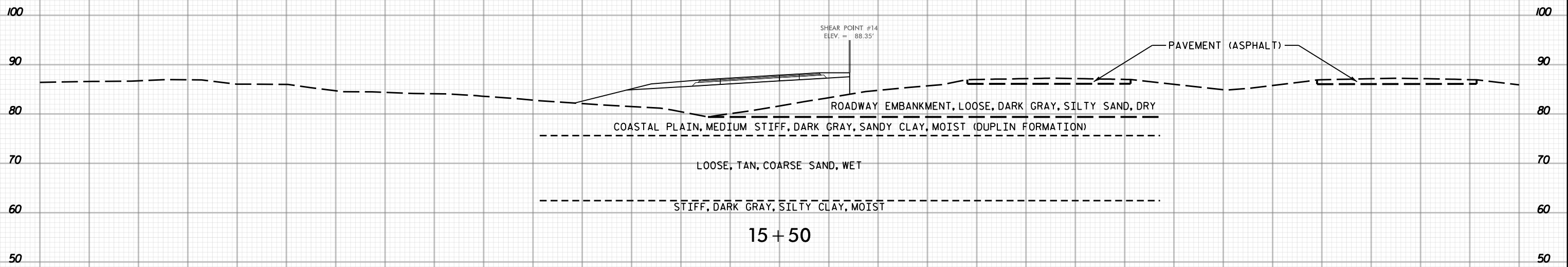
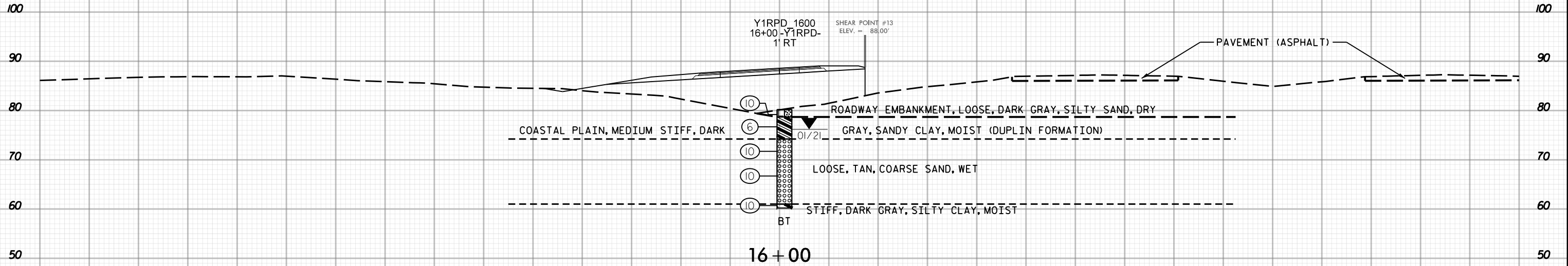
26 + 66.30

-YIRPC-

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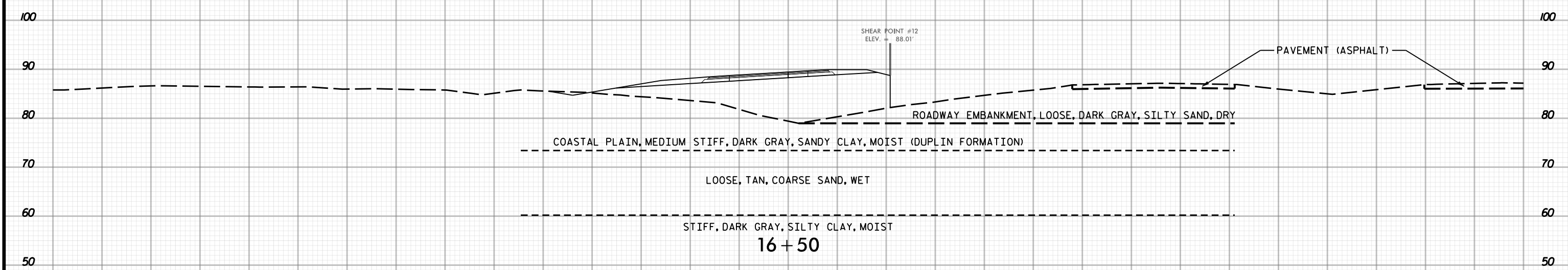
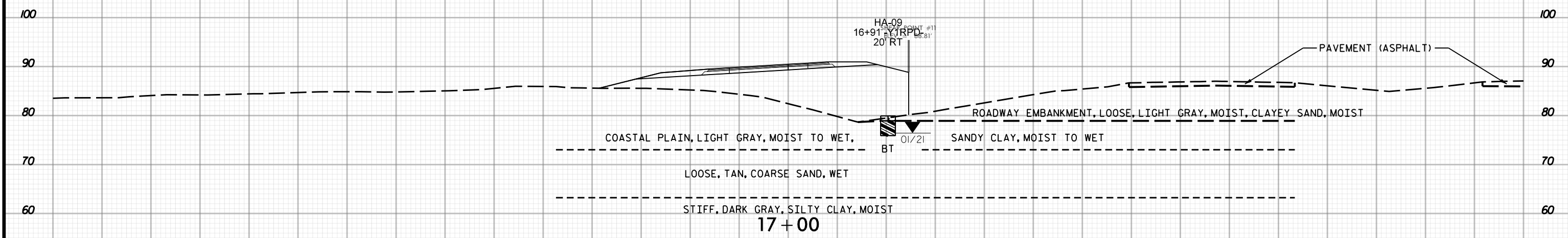


-Y1RPD-

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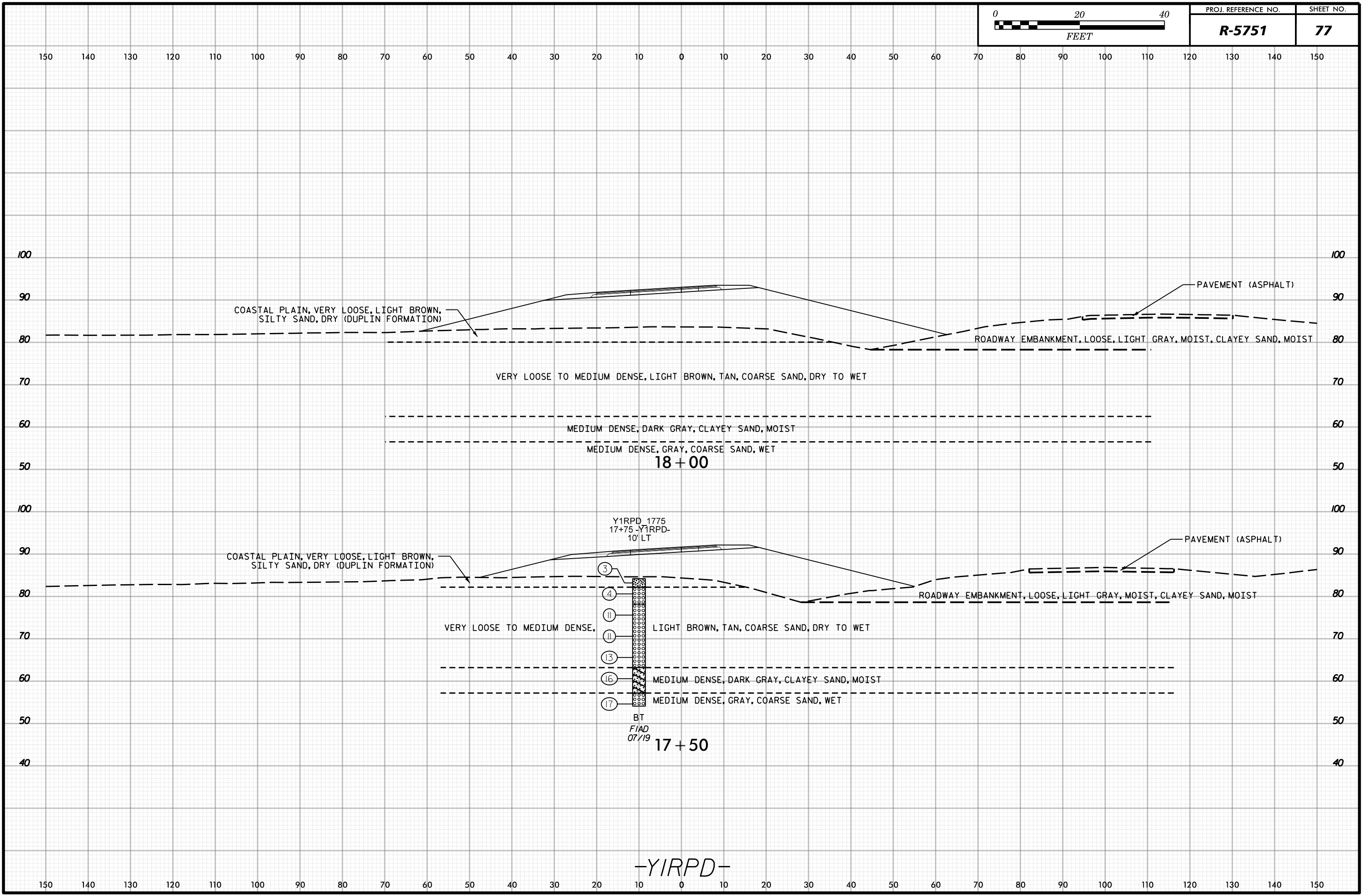


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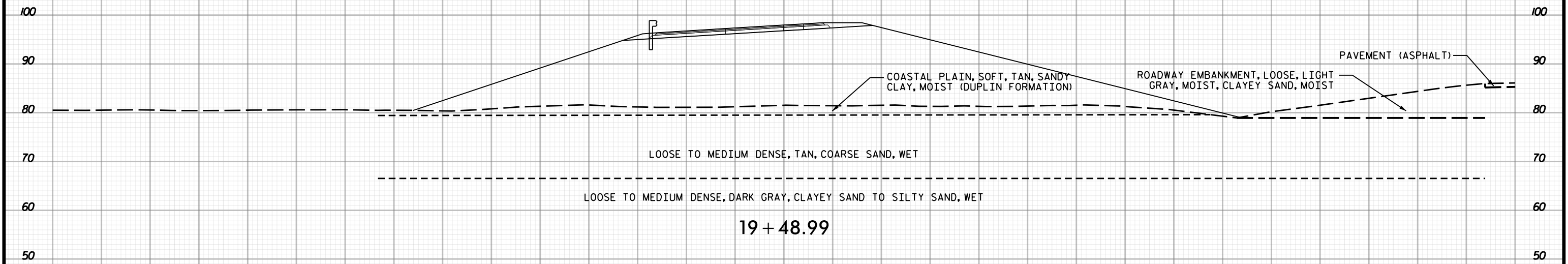
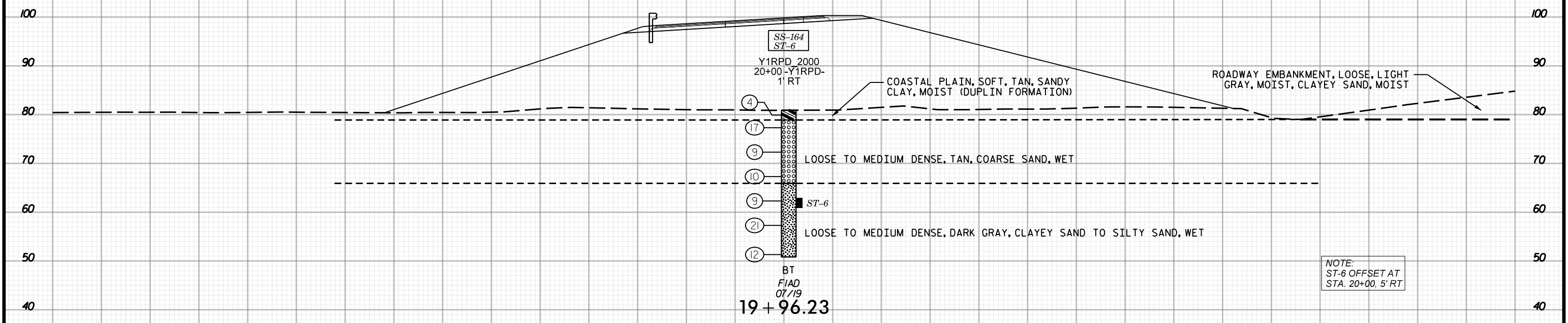
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-YIRPD-



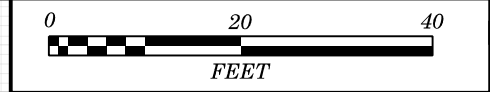


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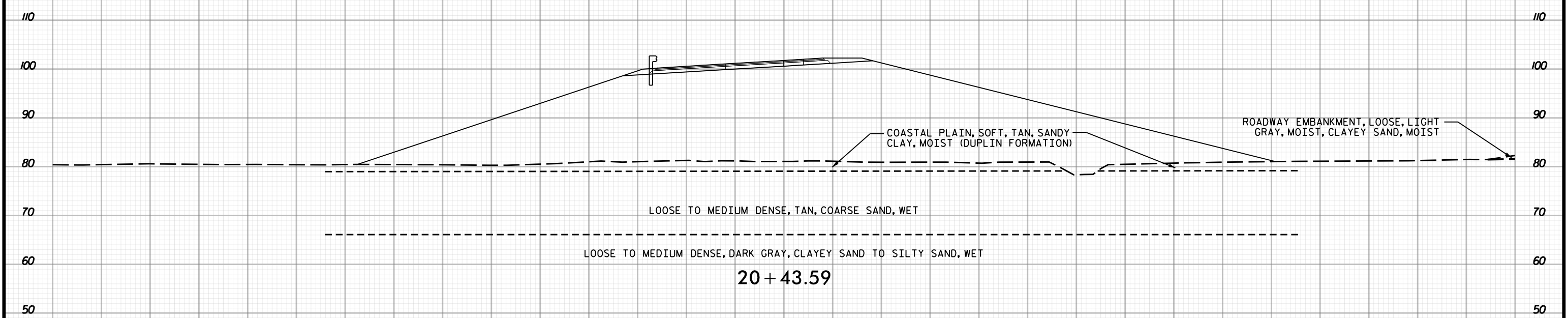
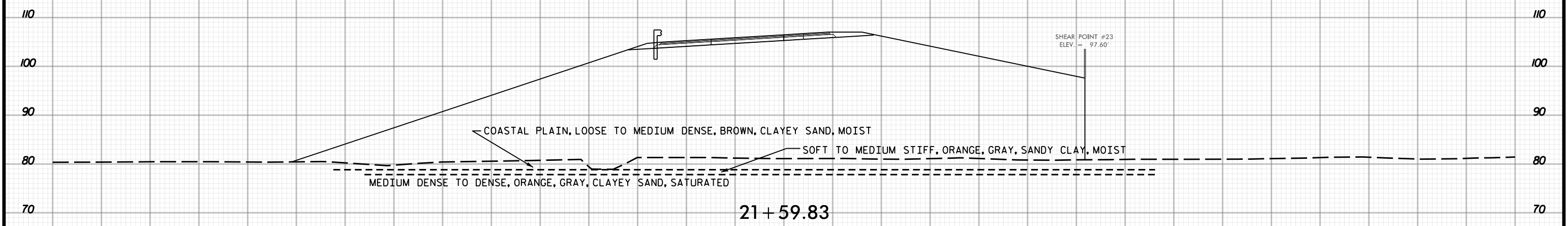


-Y1RPD-

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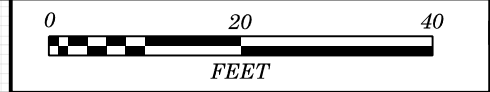


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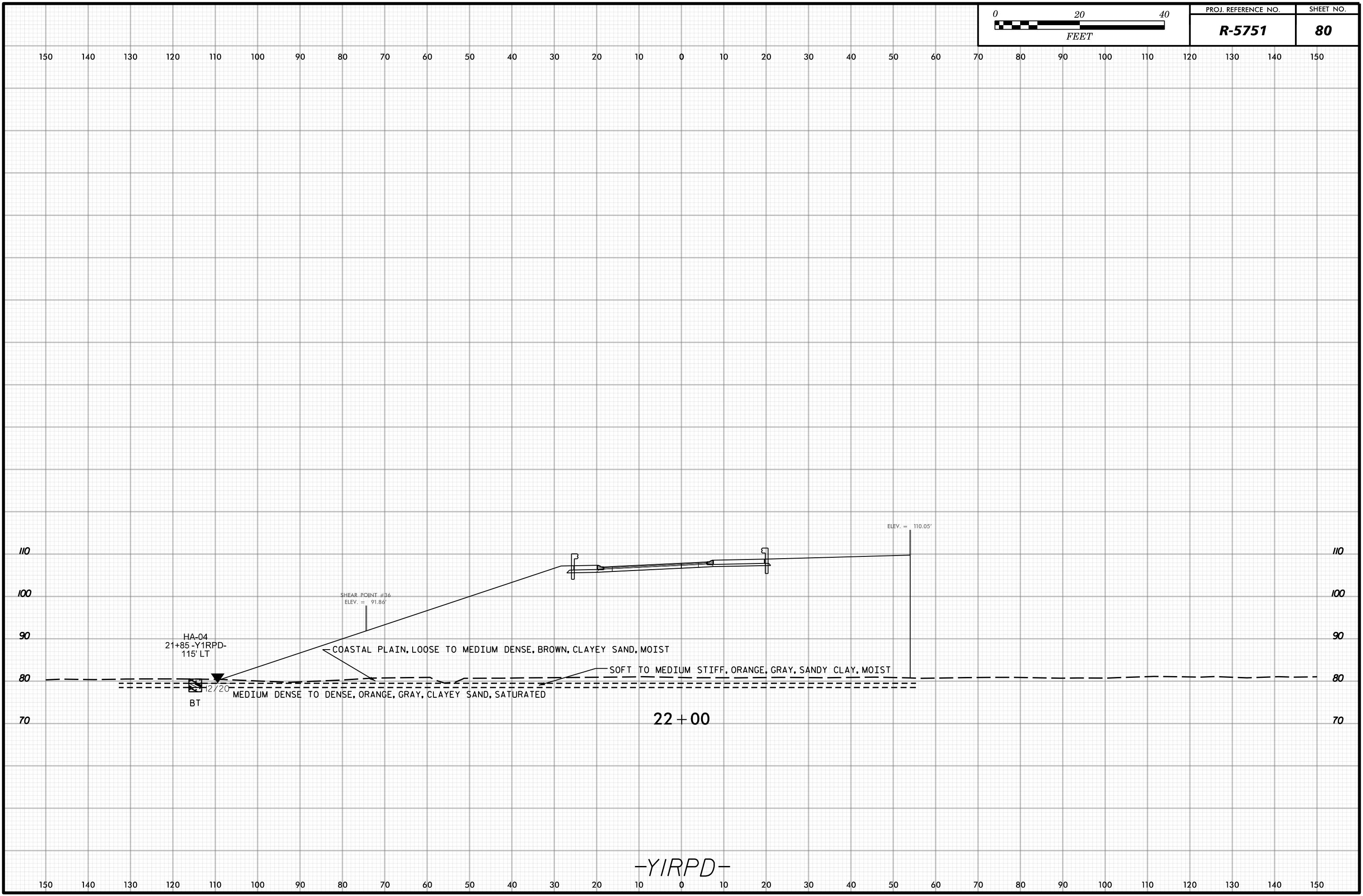


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

-YIRPD-



PROJ. REFERENCE NO.	SHEET NO.
R-5751	80



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION

APPENDIX A

LABORATORY TESTING SUMMARY
CONSOLIDATION TEST RESULTS
CBR - PROCTOR TEST RESULTS

REFERENCE: R-5751

PROJECT: 53087.1.1

Prepared in the Office of:

Terracon
Consulting Engineers and Scientists

2701 WESTPORT ROAD 28208
CHARLOTTE, NORTH CAROLINA
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NCDOT LABORATORY TESTING SUMMARY

PROJECT NUMBER: 53087.1.1

TIP: R-5751

COUNTY: Robeson

DESCRIPTION: US 74 from NC 72/NC 130 Upgrade At-Grade Intersection to Interchange

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		
SS-11	-Y1RPA-	23+70	CL	2.7-4.2	-	-	-	-	-	-	-	-	-	-	-	18.5	-
SS-12	-Y1RPA-	23+70	CL	7.7-9.2	-	-	-	-	-	-	-	-	-	-	-	20.6	-
SS-17	-Y1C-	48+00	CL	0.0-1.5	A-4(1)	23	8	20.3	40.5	18.9	20.3	0	100	89	45	20.3	2.8
SS-21	-Y1C-	48+00	CL	17.8-19.3	A-2-4(0)	NP	NP	76.8	12.5	6.4	4.3	7	95	55	11	24.7	1.3
SS-24	-Y1C-	46+00	CL	7.6-9.1	-	-	-	-	-	-	-	-	-	-	-	17.9	-
SS-30	-Y1C-	44+00	CL	2.8-4.3	-	-	-	-	-	-	-	-	-	-	-	19.6	-
SS-31	-Y1C-	44+00	CL	8.8-10.3	-	-	-	-	-	-	-	-	-	-	-	20.1	-
SS-32	-Y1C-	44+00	CL	13.8-15.3	A-1-b(0)	NP	NP	83.5	14.0	2.0	0.5	3	91	35	3	19.8	-
SS-38	-Y1C-	42+20	CL	7.3-8.8	-	-	-	-	-	-	-	-	-	-	-	17.4	-
SS-39	-Y1C-	42+20	CL	12.3-13.8	A-1-b(0)	NP	NP	93.0	5.5	1.4	0.5	1	99	42	2	22.8	-
SS-40	-Y1C-	42+20	CL	17.3-18.8	-	-	-	-	-	-	-	-	-	-	-	20.3	-
SS-42	-Y1C-	42+20	CL	27.3-28.8	A-2-6(0)	4	26	57.1	19.3	19.3	9.6	14	1	99	24	20.4	-
SS-64	-Y1B-	40+40	CL	7.7-9.2	A-1-b(0)	NP	NP	83.1	11.4	3.5	2.0	1	95	35	6	20.1	-
SS-66	-Y1B-	40+40	CL	17.7-19.2	A-6(11)	40	23	22.3	22.2	32.6	22.9	0	100	87	59	22.5	-
SS-67	-Y1B-	40+40	CL	22.7-24.2	A-7-6(4)	41	24	40.6	25.7	27.4	6.3	2	97	72	37	20.9	-
SS-68	-Y1B-	40+40	CL	27.7-29.2	A-2-4(0)	NP	NP	51.0	31.0	7.0	11.0	0	99	83	19	28.4	-
SS-70	-Y1B-	40+40	CL	37.7-29.2	A-3(0)	NP	NP	67.0	24.0	5.4	4.0	1	93	93	10	22.3	-
SS-74	-Y1RPA-	26+00	1 RT	7.5-9.0	-	-	-	-	-	-	-	-	-	-	-	16.7	-
SS-76	-Y1RPA-	26+00	1 RT	17.5-19.0	A-7-6(28)	54	37	3.9	23.6	24.9	47.6	0	97	96	76	49.0	-
SS-83	-Y1RPA-	15+00	1 LT	3.4-4.9	-	-	-	-	-	-	-	-	-	-	-	10.6	-
SS-84	-Y1RPA-	15+00	1 LT	8.4-9.9	-	-	-	-	-	-	-	-	-	-	-	19.1	-
SS-90	-Y1RPA-	19+01	CL	8-9.5	-	-	-	-	-	-	-	-	-	-	-	24.9	-
SS-96	-Y1RPA-	20+95	27 LT	12.7-14.2	-	-	-	-	-	-	-	-	-	-	-	25.3	-
SS-97	-Y1RPA-	20+95	27 LT	17.7-19.2	-	-	-	-	-	-	-	-	-	-	-	20.5	-
SS-157	-Y1A-	32+99	CL	7.7-9.2	-	-	-	-	-	-	-	-	-	-	-	23.9	-
SS-158	-Y1A-	32+99	CL	12.7-14.2	A-1-b(0)	NP	NP	90.2	8.0	1.0	0.8	0	98	29	2	21.8	-
SS-164	-Y1RPD-	20+00	1 RT	7.6-9.1	A-1-b(0)	NP	NP	82.0	15.7	1.6	0.7	0	90	32	2	18.4	-
SS-171	-RCD-	10+00	51 LT	7.6-9.1	A-1-b(0)	NP	NP	83.9	11.6	2.7	1.8	1	94	38	5	20.2	-
SS-176	-RCD-	10+00	51 LT	32.6-34.1	A-2-4(0)	28	8	34.3	43.5	8.2	14.0	0	96	71	26	21.7	-
SS-181	-Y1B-	35+70	CL	7.8-9.3	A-1-b(0)	NP	NP	88.3	11.4	0.3	0.0	0	95	36	1	21.1	-
SS-183	-Y1B-	35+70	CL	17.8-19.3	A-6(5)	36	23	35.1	24.2	16.4	24.3	0	95	78	41	22.6	-
SS-184	-Y1B-	35+70	CL	22.8-24.3	A-2-4(0)	25	5	9.6	66.2	12.2	12.0	0	100	97	27	25.1	-
SS-186	-Y1B-	35+70	CL	32.8-34.3	A-6(5)	33	15	8.5	44.0	26.3	21.2	0	99	96	54	34.4	-
SS-188	-Y1B-	35+70	CL	43.8-45.3	A-7-6(15)	48	32	21.7	24.1	19.4	34.8	0	99	89	59	15.1	-
SS-192	-Y1RPC-	26+00	CL	17.6-19.1	A-7-6(21)	57	34	16.9	15.0	32.2	35.9	0	88	78	66	38.8	-
SS-203	-Y1RPC-	22+00	CL	0.0-1.5	A-6(3)	30	13	32.0	22.1	27.2	18.7	1	96	78	47	39.9	5.9
SS-211	-Y1A-	22+49	60 RT	2.3-3.8	A-6(3)	34	12	24.0	32.8	25.3	17.9	0	100	89	47	45.0	5.8
SS-219	-Y1RPC-	14+25	5 RT	3.8-5.3	-	-	-	-	-	-	-	-	-	-	-	17.6	-
SS-220	-Y1RPC-	14+25	5 RT	8.8-10.3	-	-	-	-	-	-	-	-	-	-	-	18.8	-
SS-225	-L-	32+48	77 LT	3.4-4.9	A-7-6(7)	46	17	33.3	14.0	23.9	28.8	0	100	84	54	50.8	-

NP - NON-PLASTIC

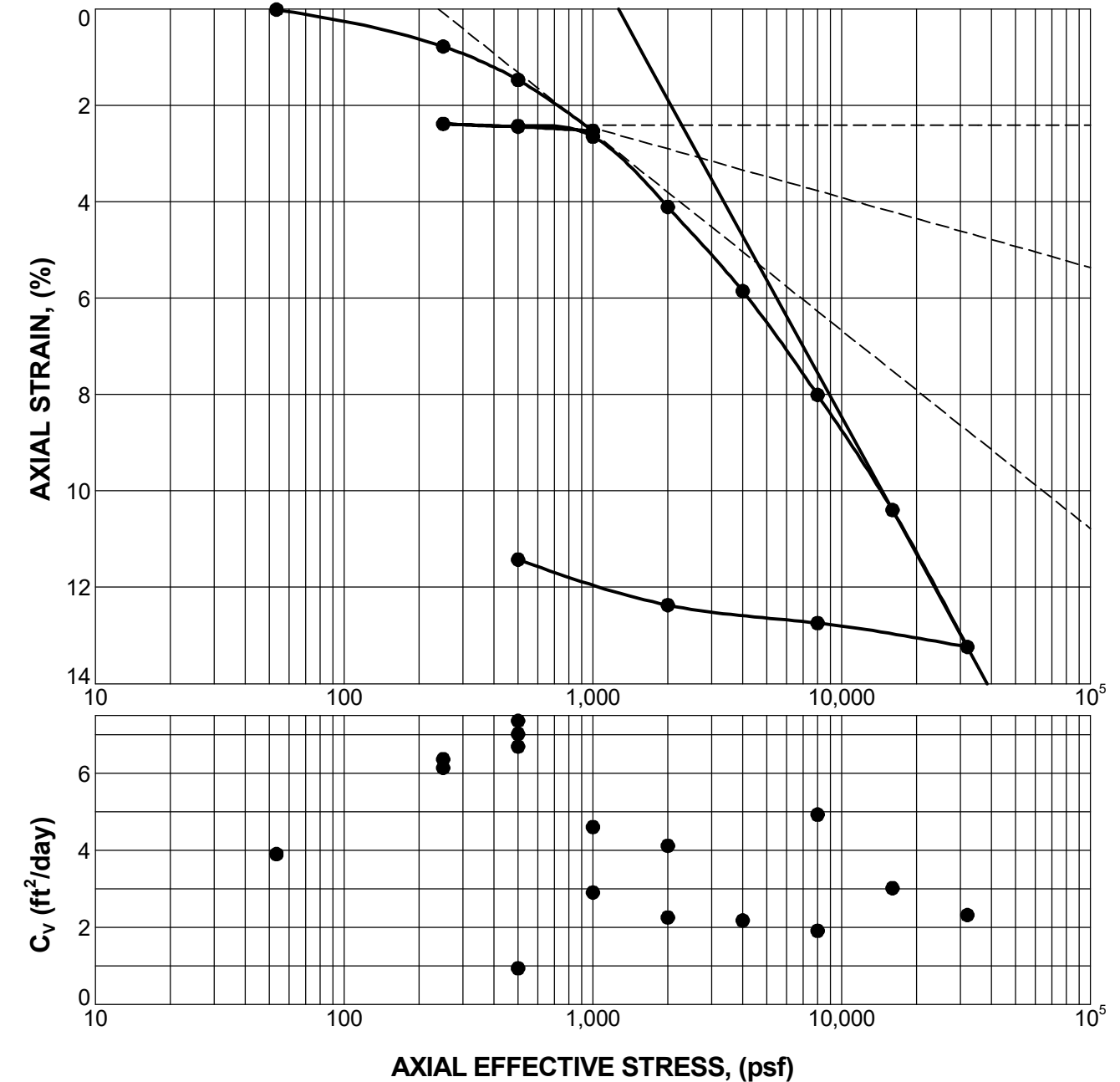
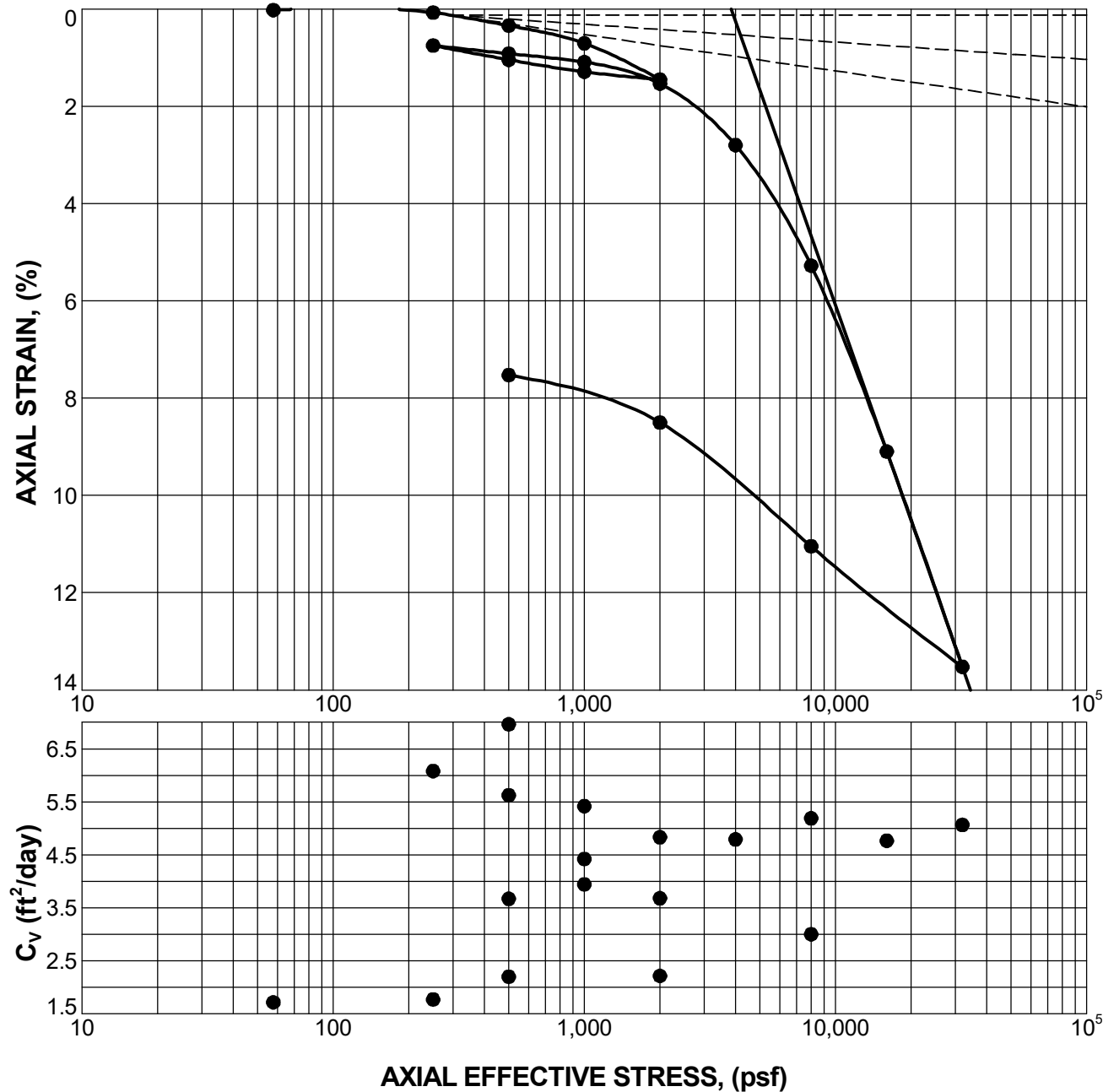
Certified Lab Technician Signature

126-01-0910

Certification Number

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CONS_LOAD_DEF_PROP_STRESS-STRAIN_CV_R5751_GEO_TERRACONLIBRARY.GPJ TERRACON_DATATEMPLATE.GDT_4/13/20

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Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
90.1 %	44.9 %	72.1	60	42	2.72			14.713	0.779	1.358

MATERIAL DESCRIPTION USCS AASHTO
 Gray fat CLAY CH A-7-6

NOTES: Percent Passing #200 Sieve= 89.3%

ST-4, STA. 38+00 -Y1B-, OFFSET 4' LT
 Borehole: B1-C Depth: 22 ft Specimen #: 4

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-1

Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
92.8 %	29.3 %	91.6	26	11	2.74			9.444	0.240	0.865

MATERIAL DESCRIPTION USCS AASHTO
 SANDY LEAN CLAY CL A-6

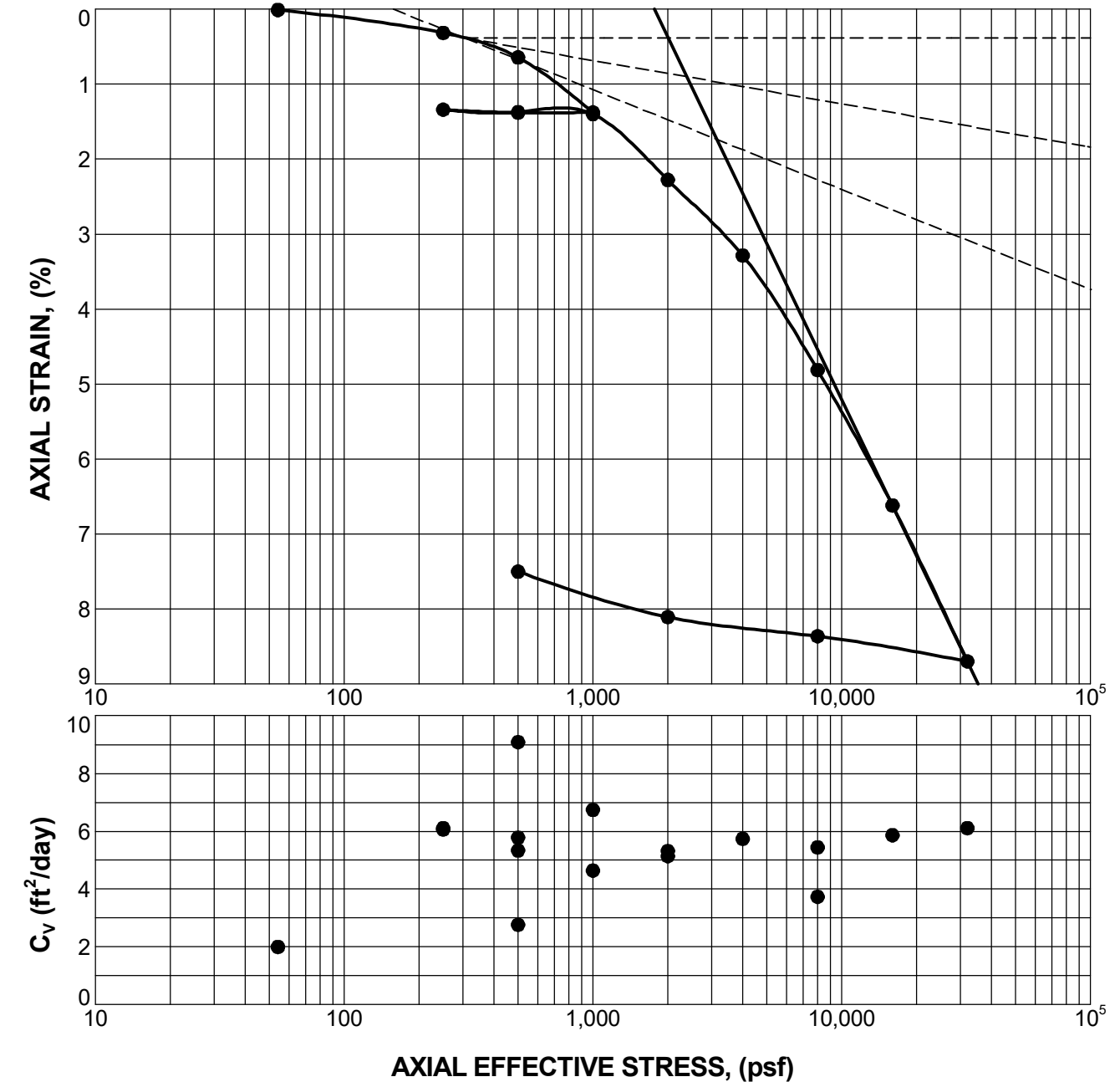
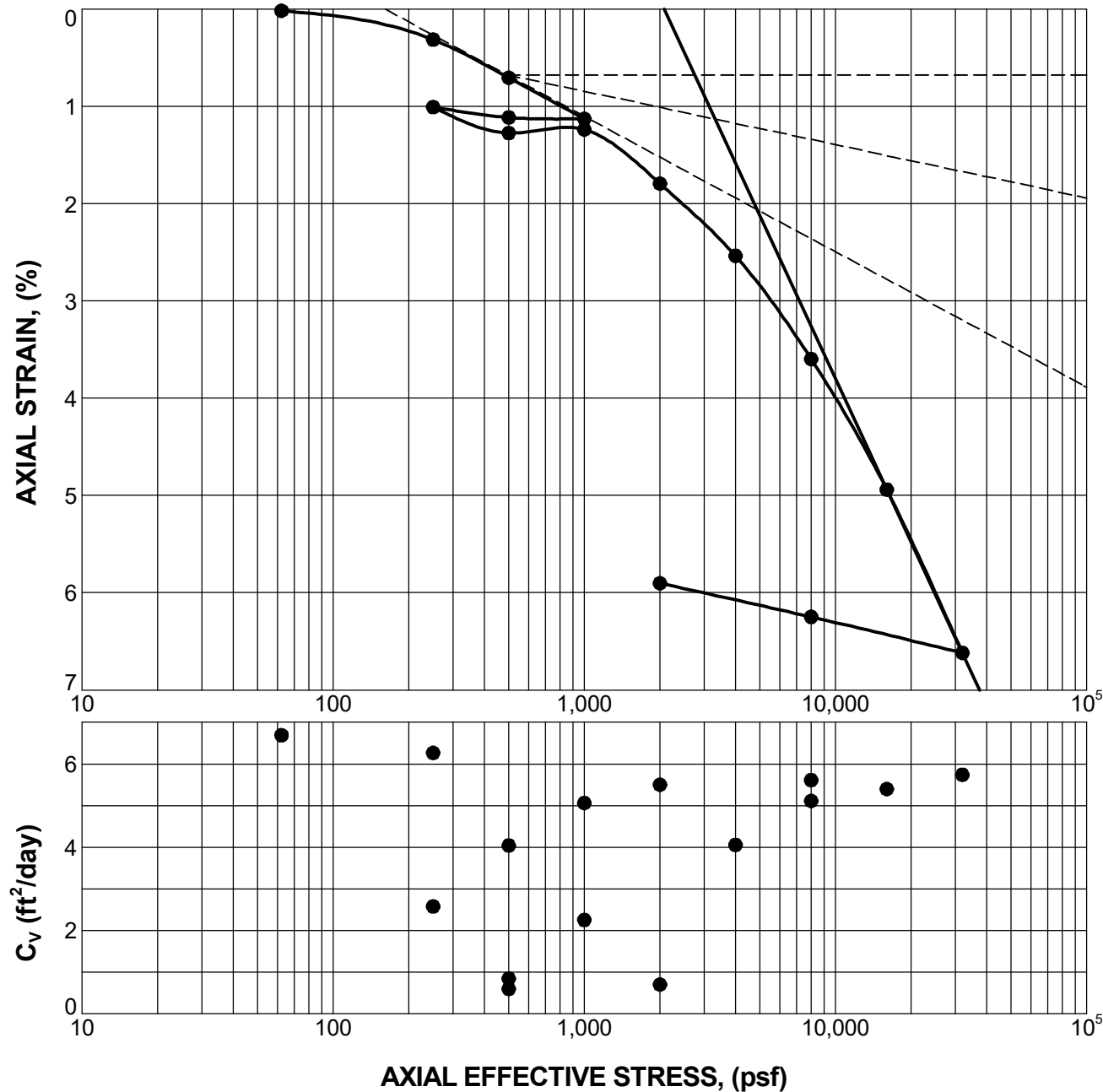
NOTES:

ST-10, STA. 26+00 -Y1A-, OFFSET 4' RT
 Borehole: Y1A_2600 Depth: 1 ft Specimen #: 10

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-2

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CONS_LOAD_DEF_PROP_STRESS-STRAIN_CV_R5751_GEO_TERRACONLIBRARY.GPJ TERRACON_DATATEMPLATE.GDT 4/13/20



Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
81.0 %	19.8 %	100.8	NP	NP	2.67			5.578	0.201	0.654

Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
80.8 %	13.3 %	114.9	20	8	2.64			6.914	0.059	0.435

MATERIAL DESCRIPTION								USCS	AASHTO
SILTY SAND								SM	A-2-4

MATERIAL DESCRIPTION								USCS	AASHTO
CLAYEY SAND								SC	A-2-4

NOTES:
ST-3, STA. 19+01 -Y1RPA-, OFFSET 4' RT
Borehole: Y1RPA_1901 Depth: 3 ft Specimen #: 3

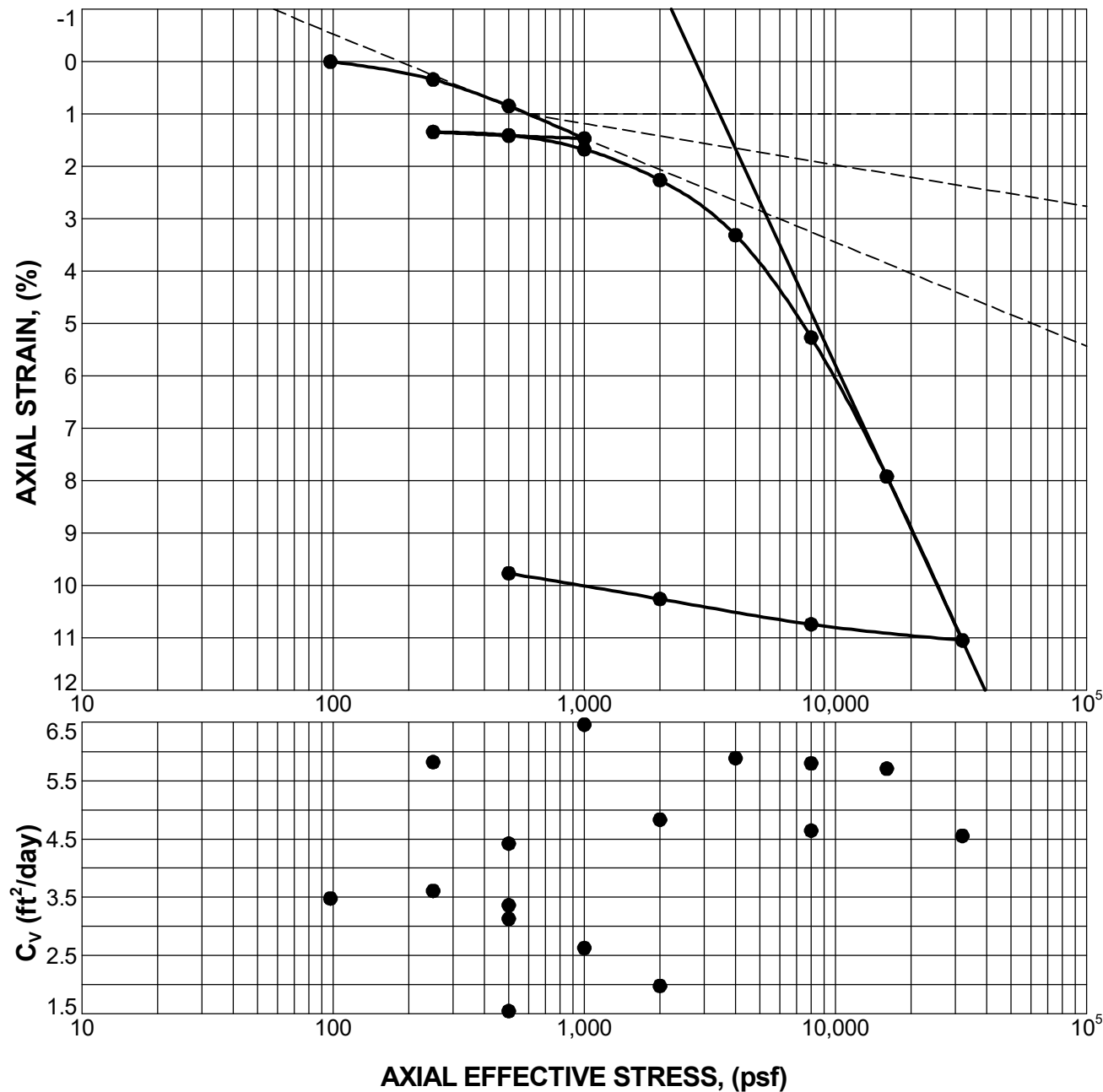
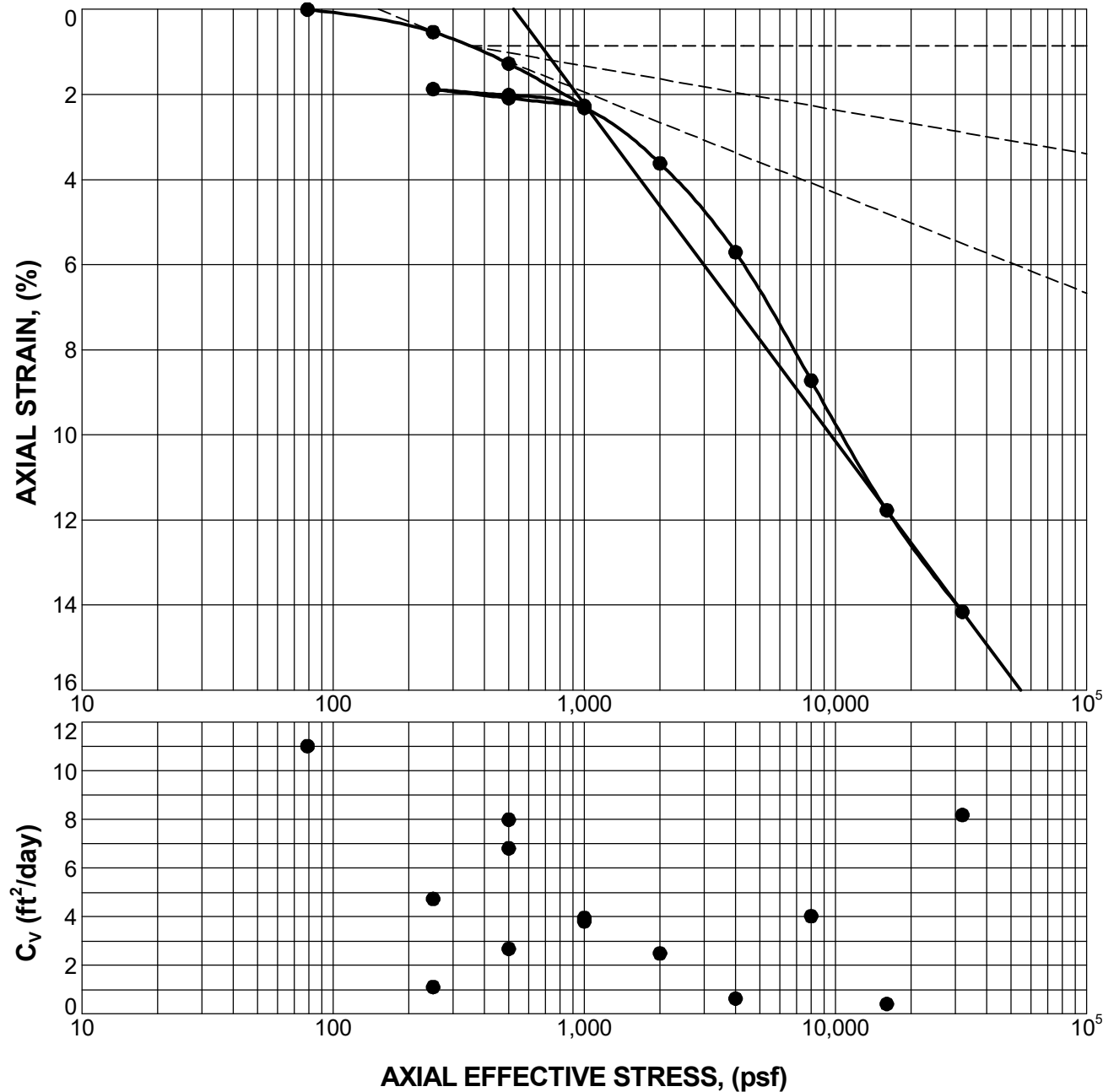
NOTES:
ST-2, STA. 26+00 -Y1PA-, OFFSET 5' RT
Borehole: Y1RPA_2600 Depth: 2 ft Specimen #: 2

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-3

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CONS_LOAD_DEF_PROP_STRESS-STRAIN_CV_R5751_GEO_TERRACONLIBRARY.GPJ_TERRACON_DATATEMPLATE.GDT_4/13/20

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Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
93.4 %	32.3 %	85.8	38	19	2.62			7.929	0.656	0.904

MATERIAL DESCRIPTION								USCS	AASHTO
SANDY LEAN CLAY								CL	A-6

NOTES:
 ST-9, STA. 18+09 -Y1RPB-, OFFSET 43' RT
 Borehole: Y1RPB_1809 Depth: 2 ft Specimen #: 9

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-5

Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
92.2 %	25.9 %	92.8	24	6	2.55			10.397	0.205	0.716

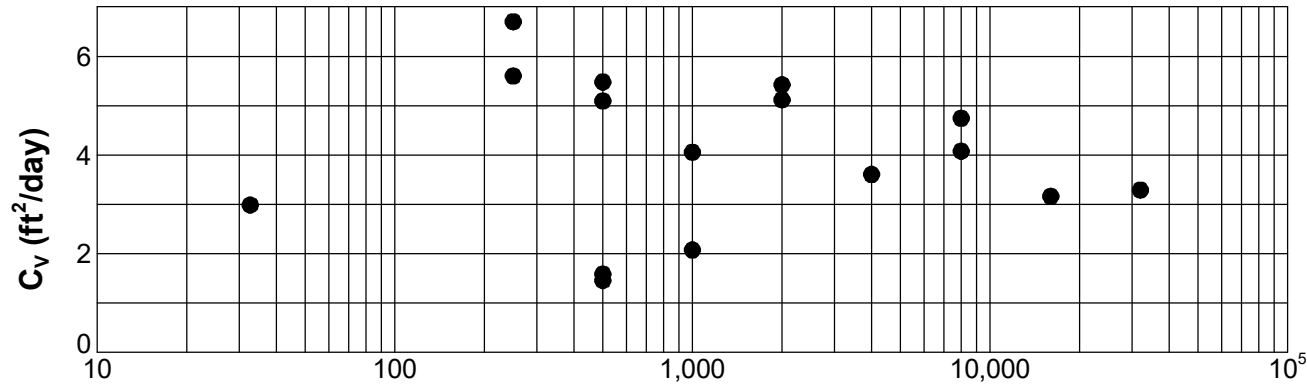
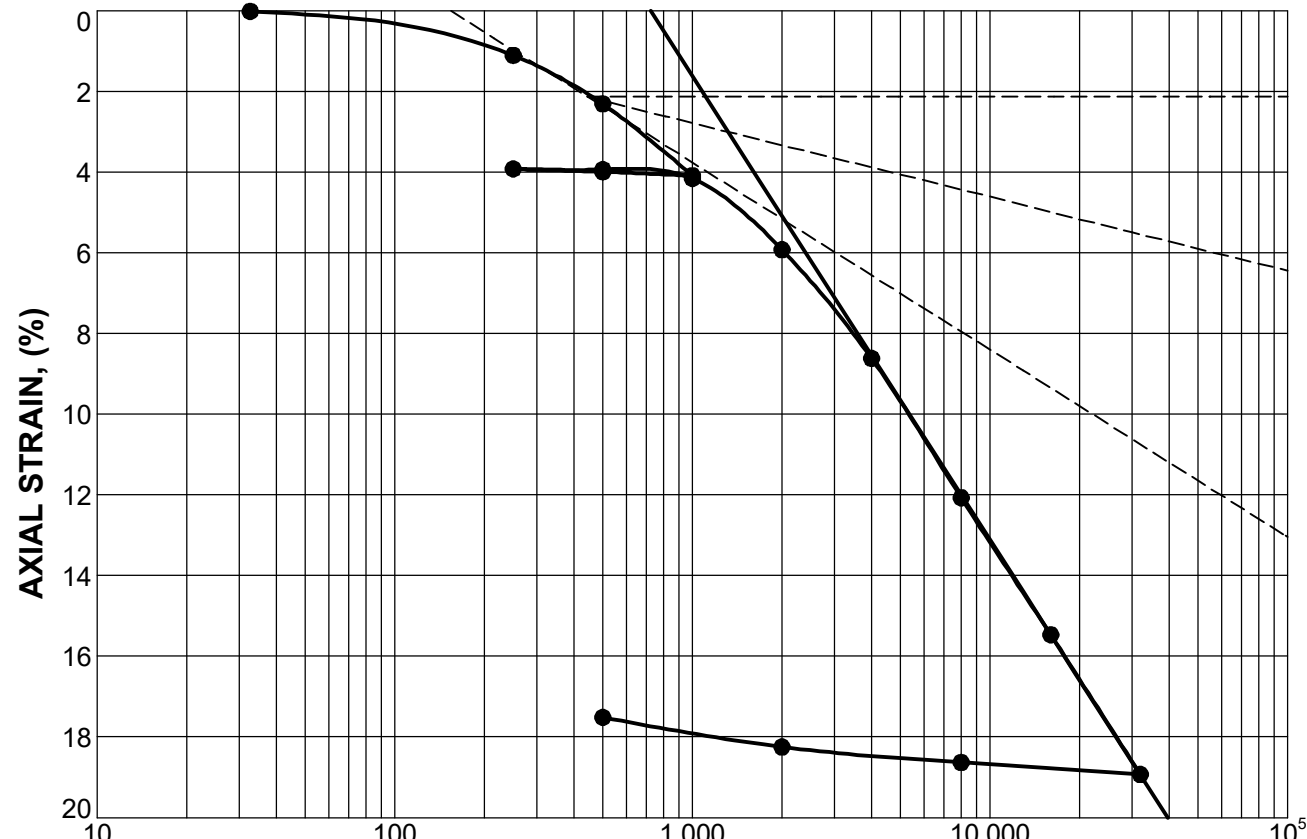
MATERIAL DESCRIPTION								USCS	AASHTO
SILTY, CLAYEY SAND								SC-SM	A-2-4

NOTES:
 ST-8, STA. 16+20 -Y1RPC-, OFFSET 4' RT
 Borehole: Y1RPC_1620 Depth: 4 ft Specimen #: 8

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-6

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CONS_LOAD_DEF_PROP_STRESS-STRAIN_CV_R5751_GEO_TERRACONLIBRARY.GPJ_TERRACON_DATATEMPLATE.GDT_4/13/20

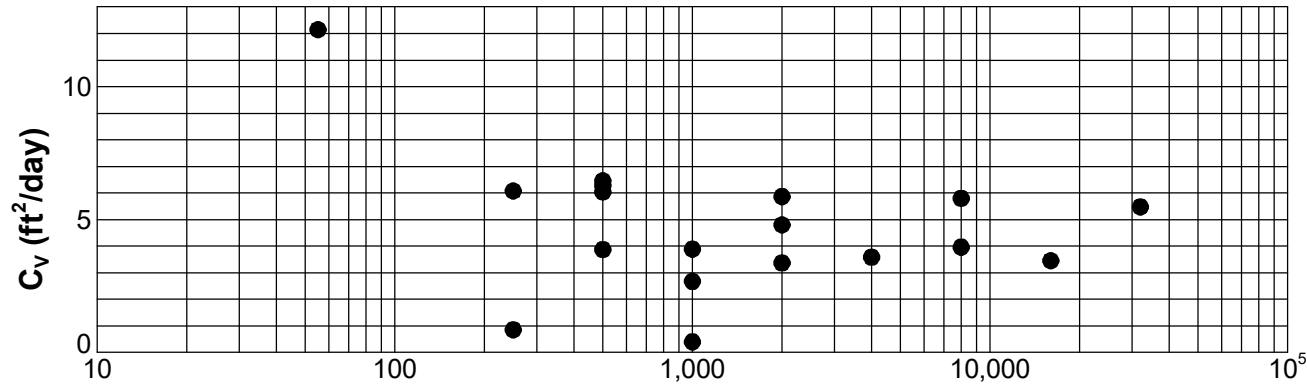
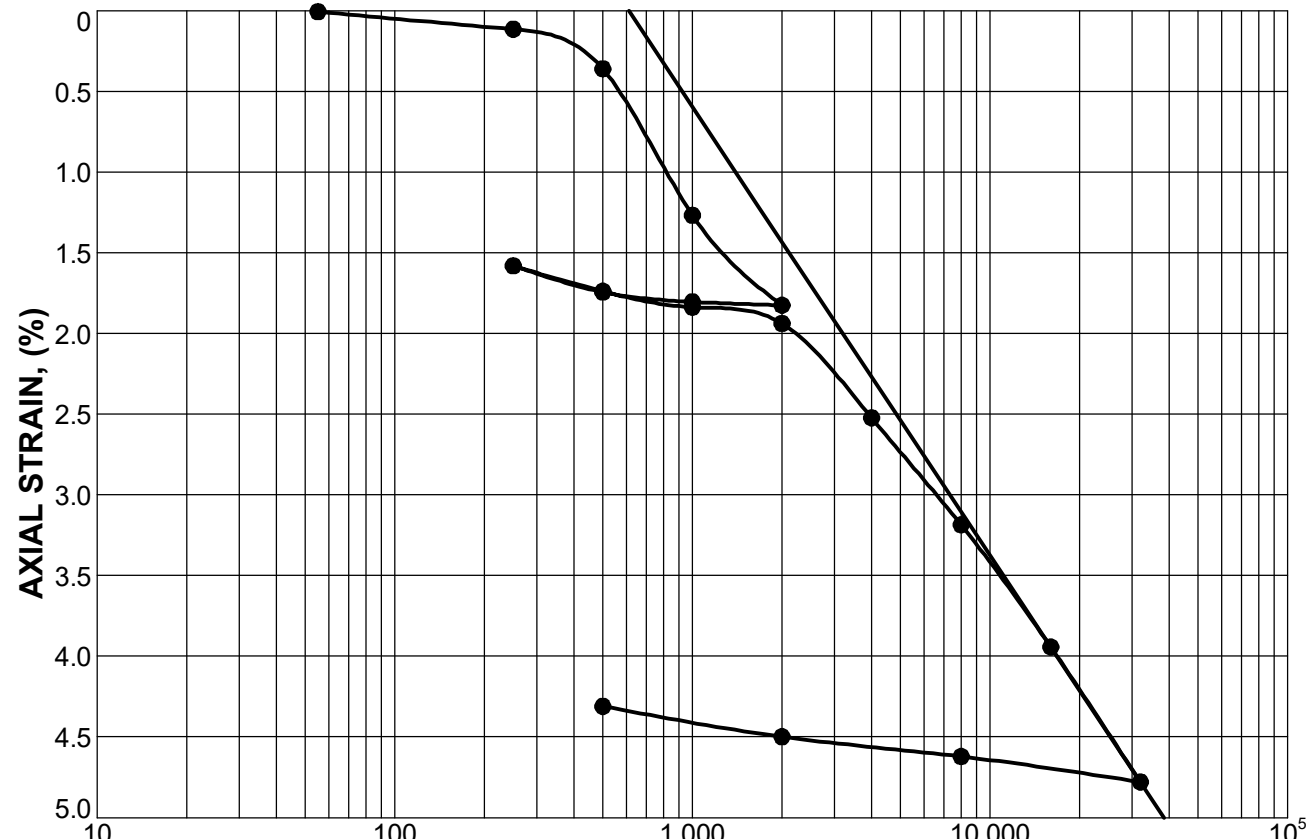


Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
82.4 %	27.6 %	86.8	25	7	2.60			11.513	0.278	0.870

MATERIAL DESCRIPTION								USCS	AASHTO
SILTY, CLAYEY SAND								SC-SM	A-4

NOTES:
 ST-7, STA. 22+00-Y1RPC-, OFFSET 4' RT
 Borehole: Y1RPC-2200 Depth: 2 ft Specimen #:7

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-7



Natural		Initial Dry Density (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P _c (psf)	C _c (%/log stress)	C _r (%/log stress)	Initial Void Ratio
Saturation	Moisture									
89.3 %	22.7 %	98.8	NP	NP	2.65			2.781	0.264	0.673

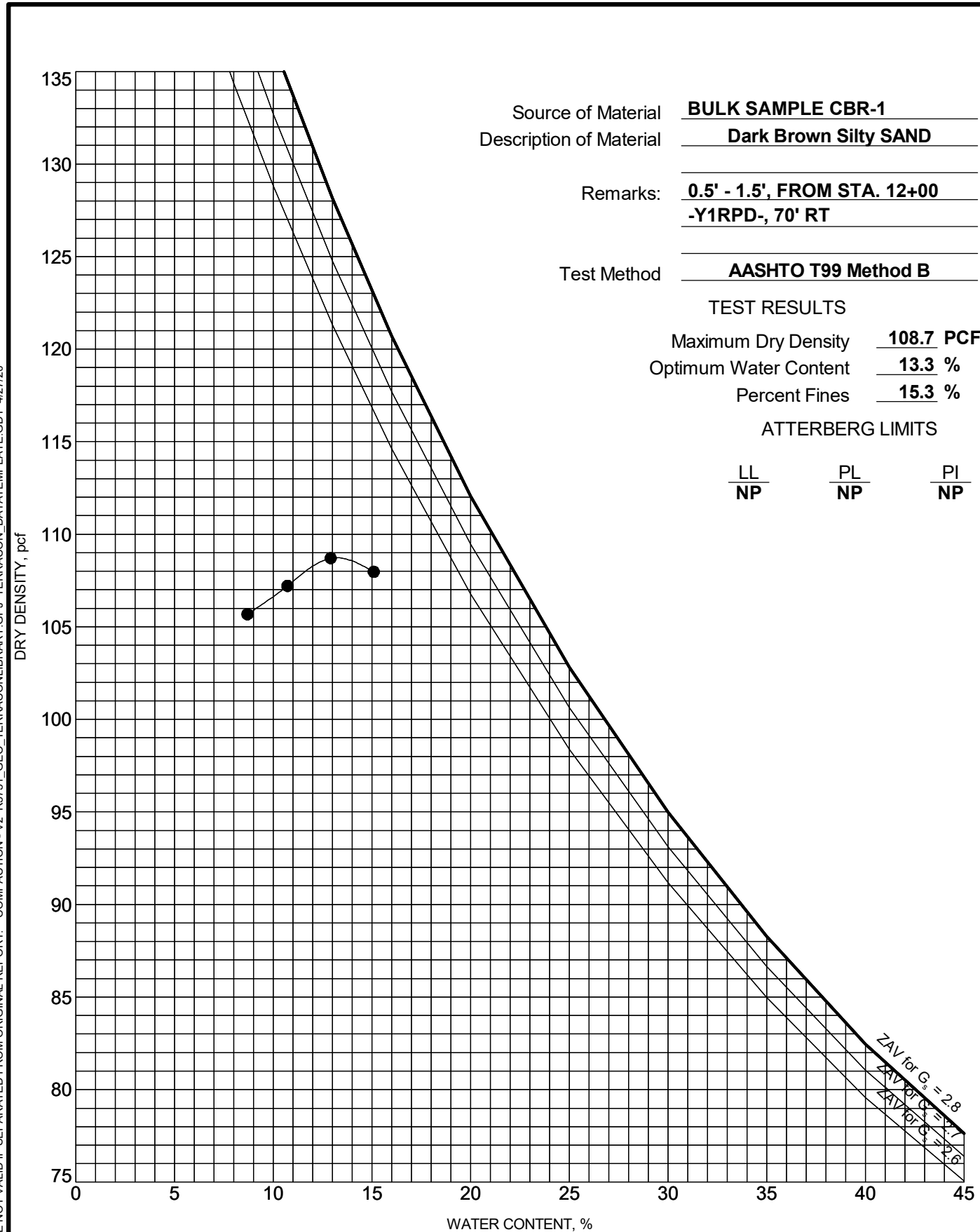
MATERIAL DESCRIPTION								USCS	AASHTO
SILTY SAND								SM	A-2-4

NOTES:
 ST-6, 20+00 -Y1RPD-, OFFSET 5' RT
 Borehole: Y1RPD_2000 Depth: 18 ft Specimen #: 6

PROJECT: ORRUM	 2701 Westport Rd Charlotte, NC	PROJECT NUMBER: 71195028
SITE: Robeson County Orrum, NC		CLIENT: NCDOT Charlotte, NC
		EXHIBIT: B-8

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



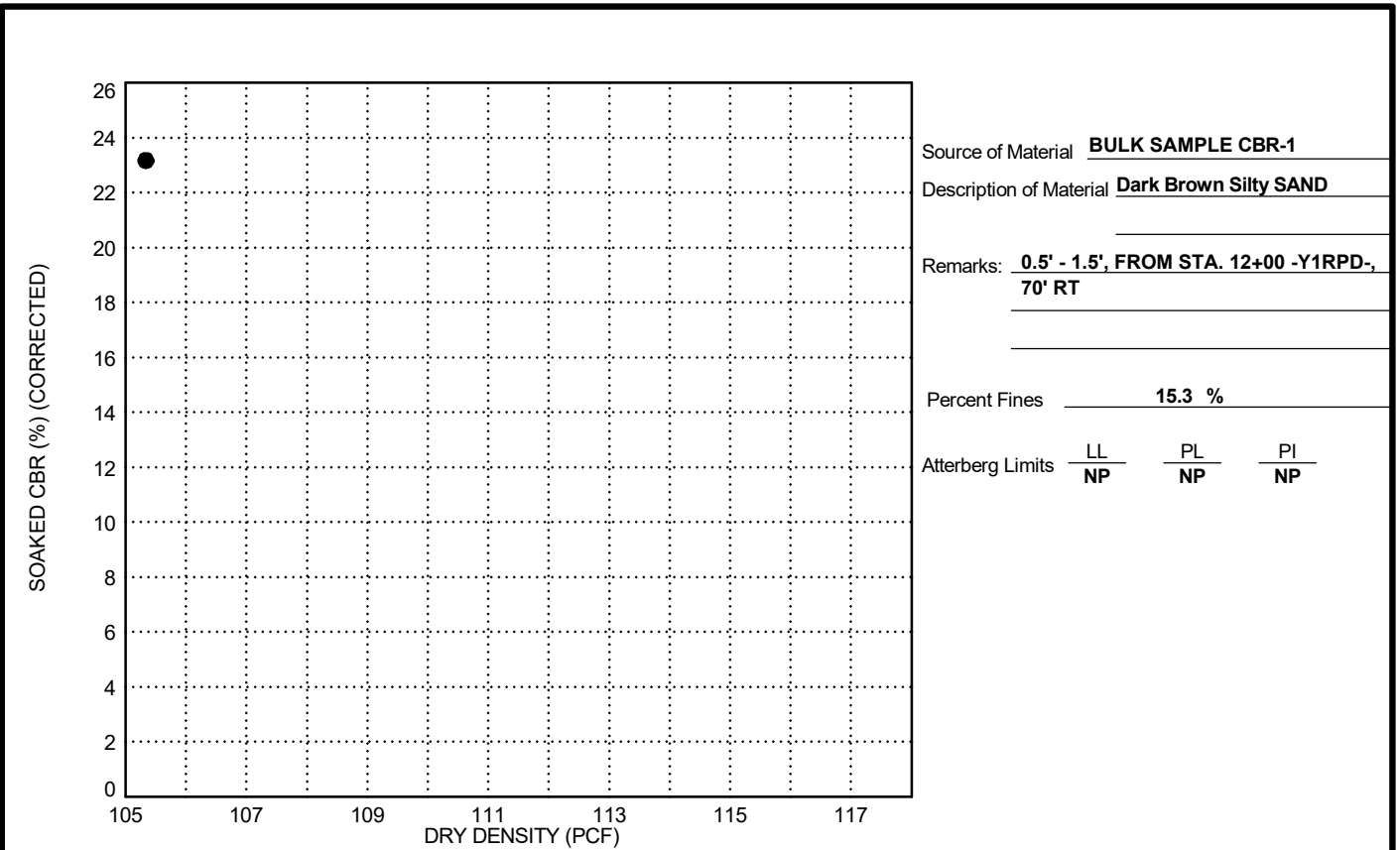
Source of Material **BULK SAMPLE CBR-1**
 Description of Material **Dark Brown Silty SAND**
 Remarks: **0.5' - 1.5', FROM STA. 12+00 -Y1RPD-, 70' RT**
 Test Method **AASHTO T99 Method B**

TEST RESULTS
 Maximum Dry Density **108.7 PCF**
 Optimum Water Content **13.3 %**
 Percent Fines **15.3 %**
ATTERBERG LIMITS

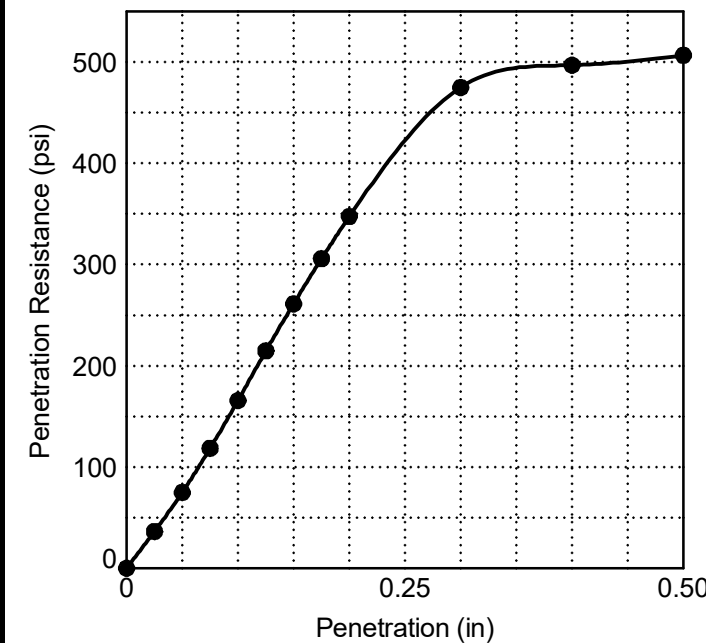
LL	PL	PI
NP	NP	NP

CALIFORNIA BEARING RATIO

ASTM D1883-07²



Source of Material **BULK SAMPLE CBR-1**
 Description of Material **Dark Brown Silty SAND**
 Remarks: **0.5' - 1.5', FROM STA. 12+00 -Y1RPD-, 70' RT**
 Percent Fines **15.3 %**
 Atterberg Limits **LL NP PL NP PI NP**



Sample No.	1
Sample Condition	Soaked
Compaction Method	AASHTO T99B
Maximum Dry Density, (pcf)	108.7
Optimum Moisture Content, (%)	13.3
Dry Density before Soaking, (pcf)	105.34
Moisture Content, (%)	
After Compaction	12.7
Top 1" After Soaking	15.5
Surcharge, (lbs)	10.00
Swell, (%)	0.44
Bearing Ratio, (%)	23.2

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LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CBR 1 PT REPORT R5751_GEO_TERRACONLIBRARY.GPJ TERRACON_DATATEMPLATE.GDT 4/27/20

PROJECT: ORRUM

SITE: Robeson County
Orrum, NC



PROJECT NUMBER: 71195028

CLIENT: NCDOT
Charlotte, NC

EXHIBIT: B-1

PROJECT: ORRUM

SITE: Robeson County
Orrum, NC



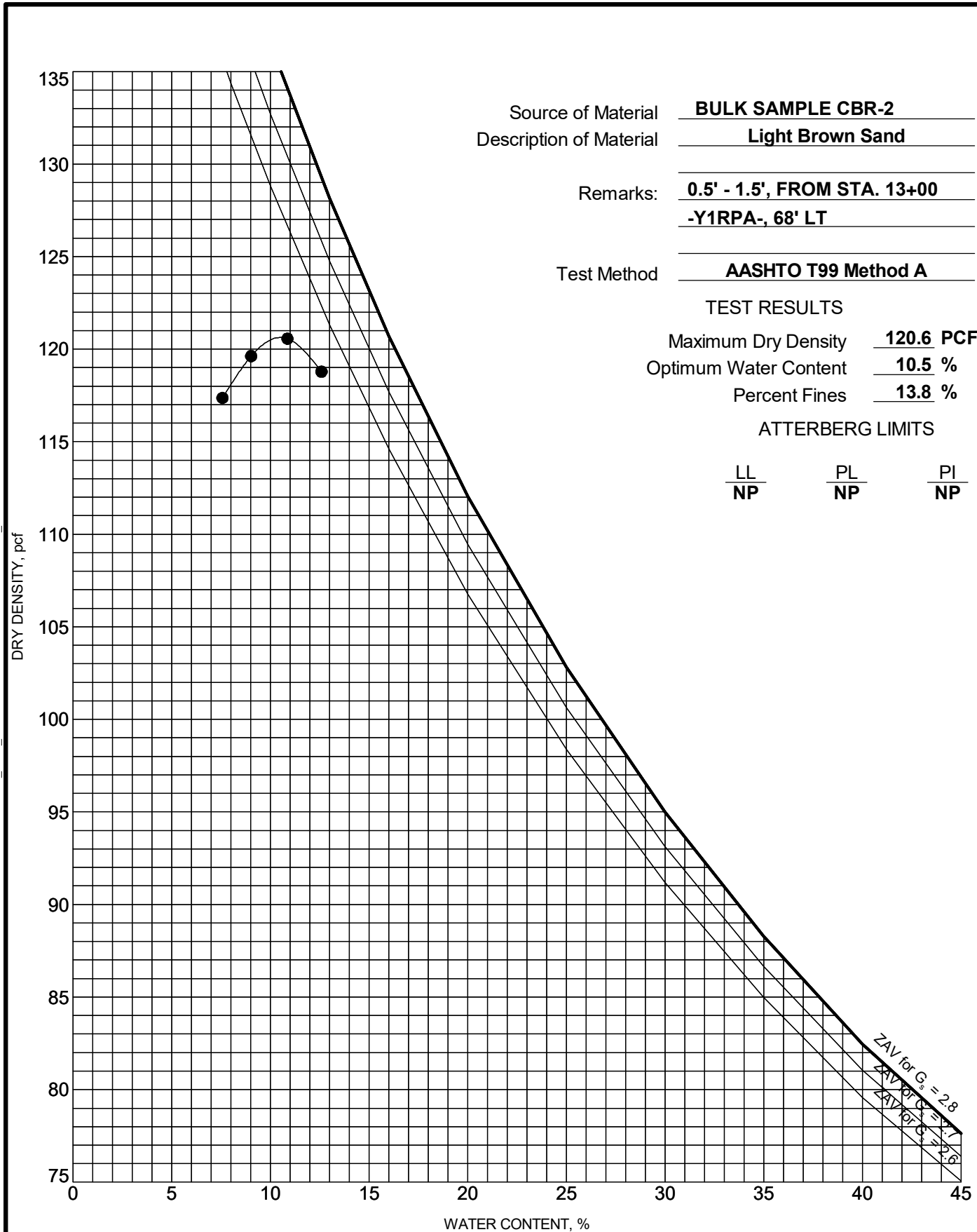
PROJECT NUMBER: 71195028

CLIENT: NCDOT
Charlotte, NC

EXHIBIT: B-1

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

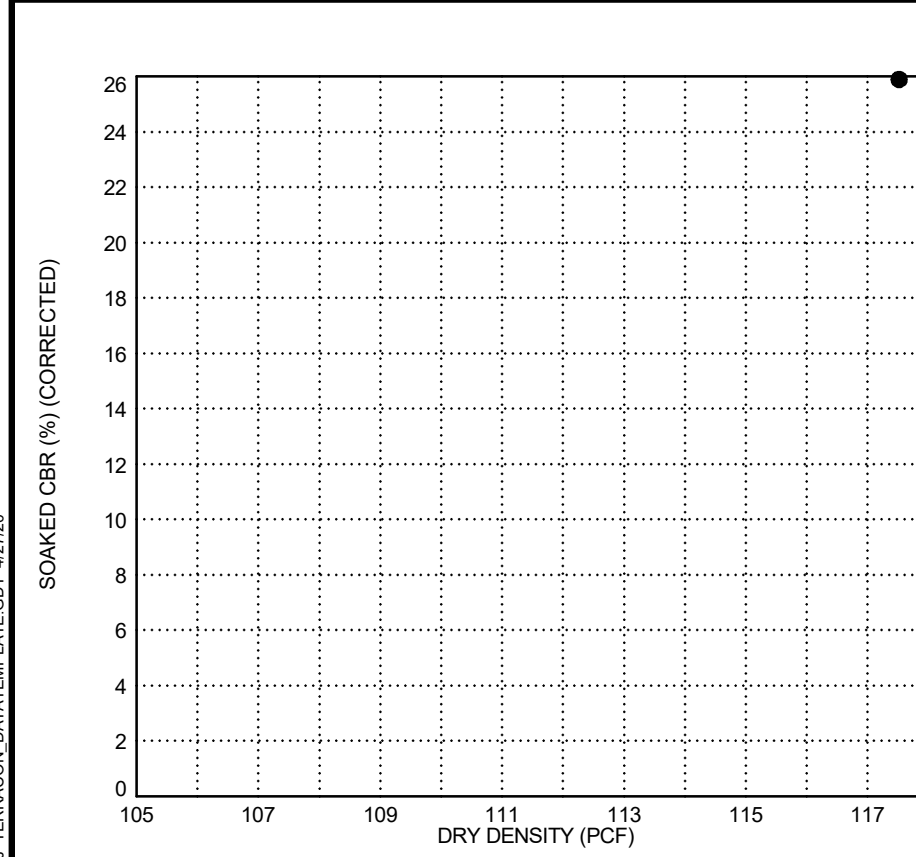


Source of Material **BULK SAMPLE CBR-2**
 Description of Material **Light Brown Sand**
 Remarks: **0.5' - 1.5', FROM STA. 13+00 -Y1RPA-, 68' LT**
 Test Method **AASHTO T99 Method A**

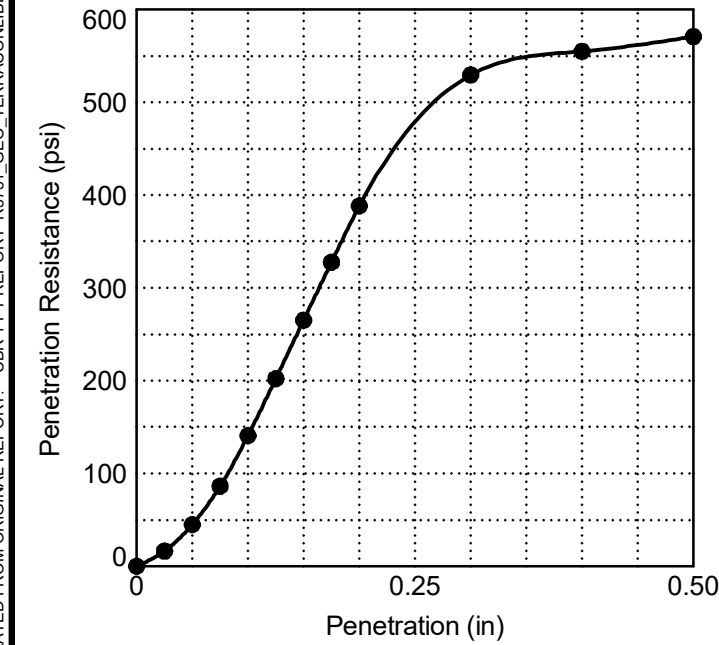
TEST RESULTS
 Maximum Dry Density **120.6 PCF**
 Optimum Water Content **10.5 %**
 Percent Fines **13.8 %**
ATTERBERG LIMITS
 LL **NP** PL **NP** PI **NP**

CALIFORNIA BEARING RATIO

ASTM D1883-07²



Source of Material **BULK SAMPLE CBR-2**
 Description of Material **Light Brown Sand**
 Remarks: **0.5' - 1.5', FROM STA. 13+00 -Y1RPA-, 68' LT**
 Percent Fines **13.8 %**
 Atterberg Limits **LL NP PL NP PI NP**



Sample No.	1
Sample Condition	Soaked
Compaction Method	AASHTO T99A
Maximum Dry Density, (pcf)	120.6
Optimum Moisture Content, (%)	10.5
Dry Density before Soaking, (pcf)	117.52
Moisture Content, (%)	
After Compaction	10.2
Top 1" After Soaking	12.1
Surcharge, (lbs)	10.00
Swell, (%)	0.04
Bearing Ratio, (%)	25.9

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PROJECT: ORRUM
 SITE: Robeson County
 Orrum, NC



PROJECT NUMBER: 71195028
 CLIENT: NCDOT
 Charlotte, NC
 EXHIBIT: B-2

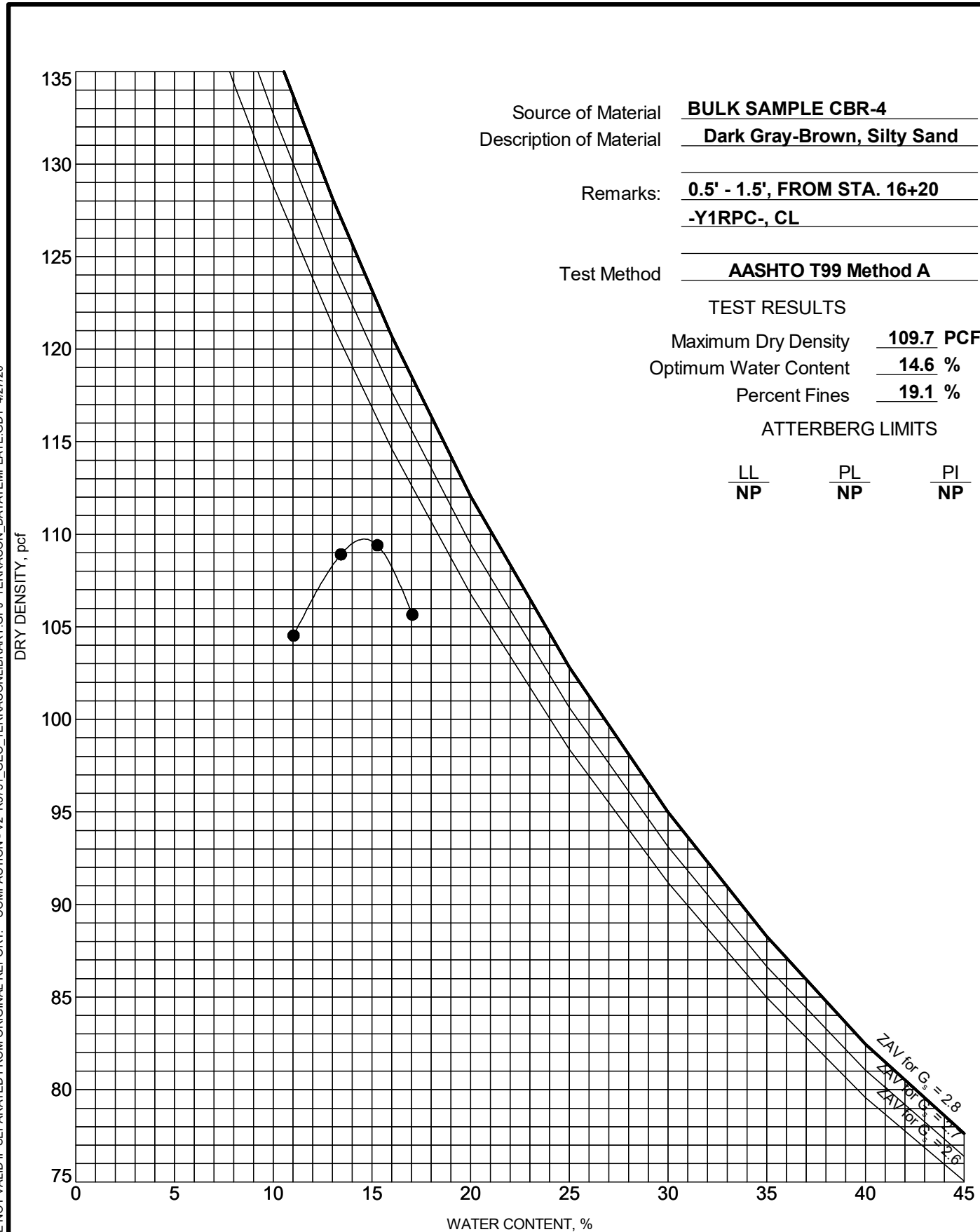
PROJECT: ORRUM
 SITE: Robeson County
 Orrum, NC



PROJECT NUMBER: 71195028
 CLIENT: NCDOT
 Charlotte, NC
 EXHIBIT: B-2

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material **BULK SAMPLE CBR-4**
 Description of Material **Dark Gray-Brown, Silty Sand**
 Remarks: **0.5' - 1.5', FROM STA. 16+20 -Y1RPC-, CL**
 Test Method **AASHTO T99 Method A**

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PROJECT: ORRUM

SITE: Robeson County
Orrum, NC



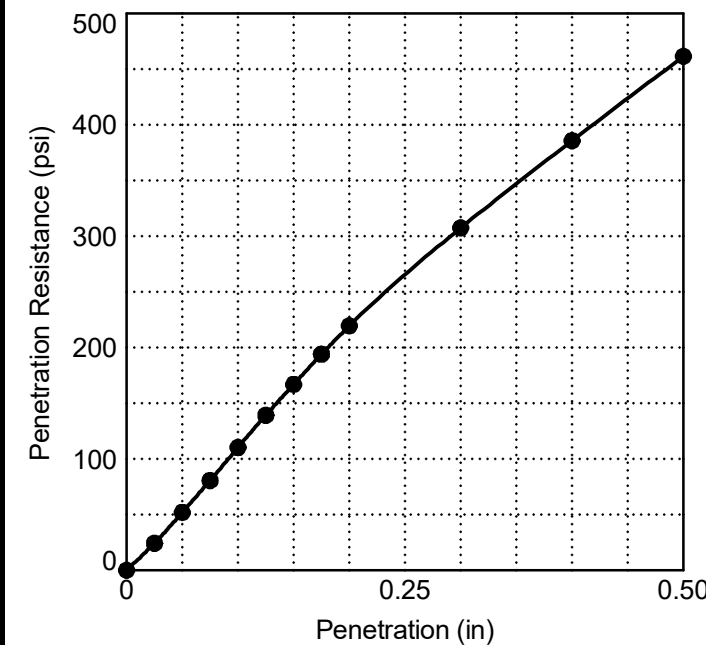
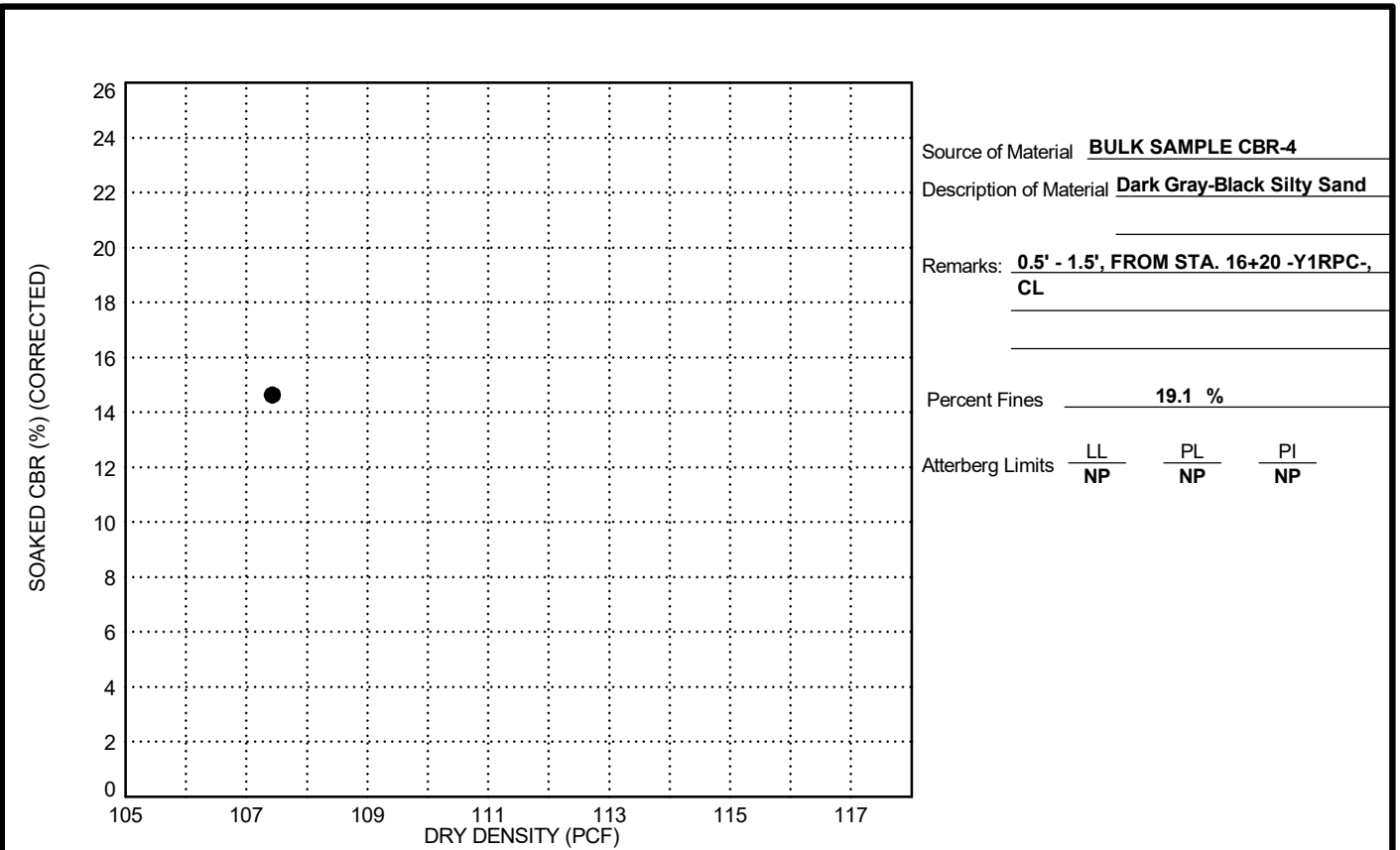
PROJECT NUMBER: 71195028

CLIENT: NCDOT
Charlotte, NC

EXHIBIT: B-3

CALIFORNIA BEARING RATIO

ASTM D1883-07²



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PROJECT: ORRUM

SITE: Robeson County
Orrum, NC



PROJECT NUMBER: 71195028

CLIENT: NCDOT
Charlotte, NC

EXHIBIT: B-3