

REFERENCE: HL-00081

PROJECT: 49367

SEE SHEET 3 FOR PLAN SHEET LAYOUT
AT TIME OF INVESTIGATION

CONTENTS

<u>LINE</u>	<u>STATION</u>	<u>PLAN</u>	<u>PROFILE</u>
-L-	10+00.00 - 54+14.00	4-7	NA
-Y1-	10+50.00 - 17+04.48	5	NA
-Y1A-	10+11.00 - 12+25.00	5	NA
-Y2-	12+50.00 - 14+54.98	6	NA
-Y3-	10+40.00 - 12+40.00	7	NA
-DR1-	10+15.00 - 12+28.59	5	NA
-DR2-	10+38.56 - 11+71.37	7	NA

CROSS SECTIONS

<u>LINE</u>	<u>STATION</u>	<u>SHEETS</u>
-L-	10+00.00 - 53+00.00	8-27
-Y1-	10+50.00 - 17+00.00	28-31
-Y1A-	10+50.00 - 12+25.00	32
-Y2-	12+50.00 - 14+50.00	33-34
-Y3-	10+50.00 - 12+00.00	35
-DR1-	10+00.00 - 12+00.00	36-37
-DR2-	10+94.91 - 11+45.44	26

APPENDICES

<u>APPENDIX</u>	<u>TITLE</u>	<u>SHEETS</u>
A	LABORATORY TEST RESULTS	38-40

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

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY WAKE
PROJECT DESCRIPTION WIDENING SR 1006 (OLD STAGE
ROAD) FROM SR 2736 (ROCK SERVICE STATION
ROAD) TO SR 3884 (ROLLING MEADOWS DRIVE)

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-00081	1	

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 PERFORM INDEPENDENT SUBSURFACE INVESTIGATIONS AND MAKE INTERPRETATIONS AS NECESSARY TO CONFIRM CONDITIONS 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:
- 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.
 - 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.

PERSONNEL

K. HAVEN

M. DANIELS, GIT

B. WORLEY, PG

M. G. MOSELEY

J. MOSELEY

INVESTIGATED BY SUMMIT DES

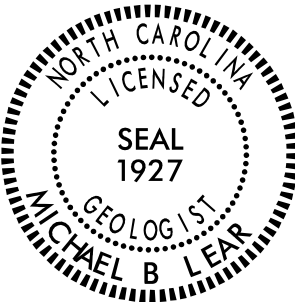
DRAWN BY M. LEAR, PG

CHECKED BY M. DANIELS, GIT

SUBMITTED BY M. LEAR, PG

DATE JUNE, 2024

Prepared in the Office of:



DocuSigned by:

Michael B. Lear

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SIGNATURE

7/18/2024

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

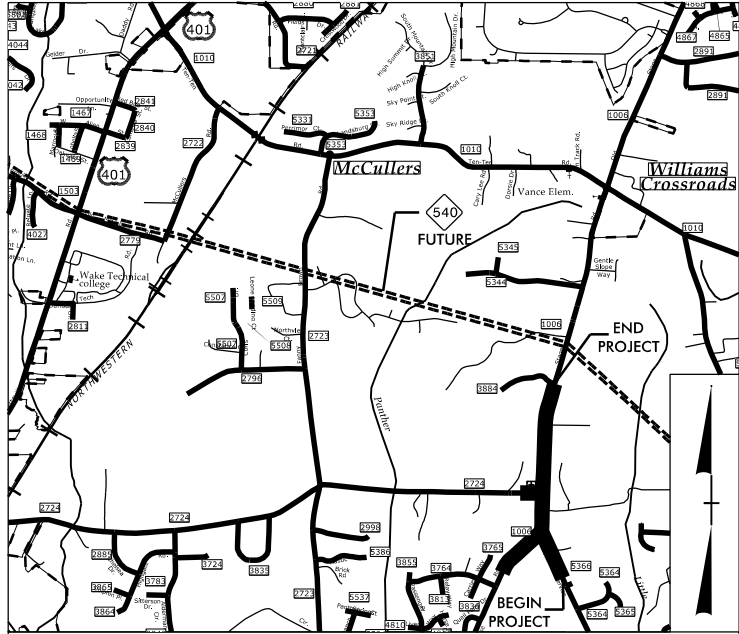
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

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: 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 YIELD 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.										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 (ROD) - 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										MINERALOGICAL COMPOSITION										WEATHERING																			
GENERAL CLASS.										MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.										FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.																			
GROUP CLASS.																				VERY SLIGHT (V SL.) 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.																			
SYMBOL																				SLIGHT (SL.) 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.																			
%										SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE										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.																			
MATERIAL PASSING #40 LL PI										PERCENTAGE OF MATERIAL										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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i>																			
GROUP INDEX										GROUND WATER										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. <i>IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF</i>																			
USUAL TYPES OF MAJOR MATERIALS										MISCELLANEOUS 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. <i>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</i>																			
GEN. RATING AS SUBGRADE										RECOMMENDATION SYMBOLS										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.																			
PI OF A-7-5 SUBGROUP IS ≤ LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30										ABBREVIATIONS										ROCK HARDNESS																			
CONSISTENCY OR DENSENESS										EQUIPMENT USED ON SUBJECT PROJECT										FRACTURE SPACING																			
PRIMARY SOIL TYPE										DRILL UNITS:										BEDDING																			
COMPACTNESS OR CONSISTENCY										ADVANCING TOOLS:										TERM																			
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)										HAMMER TYPE:										THICKNESS																			
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)										CORE SIZE:																													
N/A										HAND TOOLS:																													
< 0.25										POST HOLE DIGGER																													
0.25 TO 0.5										HAND AUGER																													
0.5 TO 1.0										SOUNDING ROD																													
1 TO 2										VANE SHEAR TEST																													
2 TO 4										PORTABLE HOIST																													
> 4																																							
TEXTURE OR GRAIN SIZE										COLOR																													
U.S. STD. SIEVE SIZE OPENING (MM)										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.																													
BOULDER (BLDR.)																																							
COBBLE (COB.)																																							
GRAVEL (GR.)																																							
COARSE SAND (CSE. SD.)																																							
FINE SAND (F SD.)																																							
SILT (SL.)																																							
CLAY (CL.)																																							
GRAIN SIZE																																							
SOIL MOISTURE - CORRELATION OF TERMS																																							
SOIL MOISTURE SCALE (ATTERBERG LIMITS)																																							
FIELD MOISTURE DESCRIPTION																																							
GUIDE FOR FIELD MOISTURE DESCRIPTION																																							
LL - LIQUID LIMIT																																							
PL - PLASTIC LIMIT																																							
OM - OPTIMUM MOISTURE																																							
SL - SHRINKAGE LIMIT																																							
PLASTICITY																																							
NON PLASTIC																																							
SLIGHTLY PLASTIC																																							
MODERATELY PLASTIC																																							
HIGHLY PLASTIC																																							
INDURATION																																							
FRIABLE																																							
MODERATELY INDURATED																																							
INDURATED																																							
EXTREMELY INDURATED																																							

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mikelear AT GEOLAP12024

TIP PROJECT: HL-00081

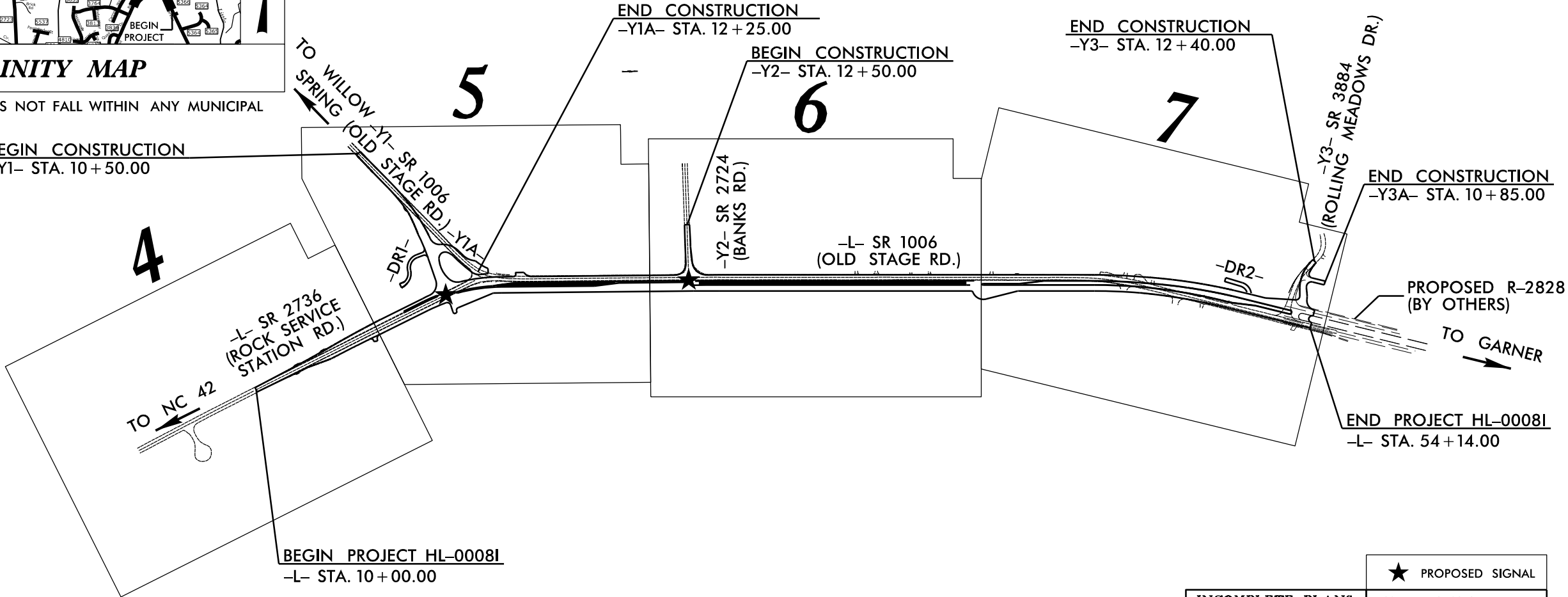
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VICINITY MAP

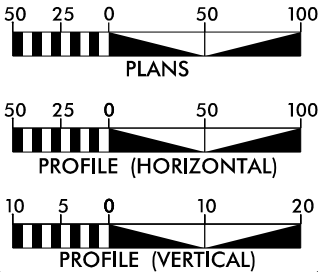
NOTE: THIS PROJECT DOES NOT FALL WITHIN ANY MUNICIPAL BOUNDARIES.

BEGIN CONSTRUCTION
-Y1- STA. 10 + 50.00



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

GRAPHIC SCALES



DESIGN DATA

ADT 2022 = 15,400
ADT 2045 = 28,900
V = 50 MPH
FUNC MINOR
CLASS = ARTERIAL

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT HL-00081 = 0.814 MILES
TOTAL LENGTH TIP PROJECT HL-00081 = 0.814 MILES

NCDOT CONTACT:

DENA SNEAD, PE
PROJECT MANAGER, DIVISION 5



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2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 22, 2023

LETTING DATE:
MARCH 18, 2025

BRANDON W. JOHNSON, PE
PROJECT ENGINEER

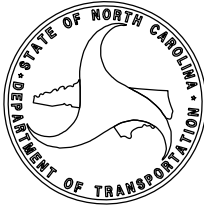
FAITH E. JAHNKE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: WIDENING SR 1006 (OLD STAGE ROAD) FROM
SR 2736 (ROCK SERVICE STATION ROAD) TO
SR 3884 (ROLLING MEADOWS DRIVE)
TYPE OF WORK: GRADING, DRAINAGE, PAVING & SIGNAL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-00081	3	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49367.1.9	NA	PE	
49367.2.10	NA	ROW	
49367.2.27	NA	UTILITIES	

ROW PLANS





320 Executive Court, Hillsborough, NC 27278
Phone // 919.732.3883 Web // www.summitde.com

June 19, 2024

WBS Number: 49367.1.9
TIP Number: HL-0008I
County: Wake
Description: Widening of SR 1006 (Old Stage Road) from SR 2736 (Rock Service Station Road) to SR 3884 (Rolling Meadows Drive)
SUBJECT: Geotechnical Report - Roadway Subsurface Inventory

Project Description

The proposed 0.814-mile-long project is located approximately seven miles southeast of the town of Garner, in Wake County, North Carolina. The core of the project involves the widening of SR 1006 (Old Stage Road) from SR 2736 (Rock Service Station Road) to SR 3884 (Rolling Meadows Drive) from a two-lane road to a four-lane divided roadway. The proposed widening will be primarily to the east side of the existing Old Stage Road at the start of the project and will shift widening to the west side of the existing roadway at the north end of the proposed alignment. Improvements will be made at intersecting secondary roadways to accommodate the planned widening and will include realignment of the intersection of Old Stage Road and Rock Service Station Road and the intersection of Rolling Meadows Drive and Old Stage Road. Proposed signals will be added at the intersection of Old Stage Road and Rock Service Station Road and at the intersection of Old Stage Road and Banks Road. In general, the proposed earthworks are minor throughout the project corridor, with the proposed grade located within a few feet of the existing grade of Old Stage Road and other intersecting secondary roads and access driveways. The proposed roadway alignment passes through sparsely wooded residential areas and open fields with few commercial facilities.

The geotechnical investigation for this project was primarily conducted during late October and early November of 2023. Twenty-eight (28) total borings were advanced using 3.25-inch hollow stem auger and hand auger drilling methods to depths ranging from 6.1-feet to 15.0-feet. Most of the borings were advanced using a CME-550X ATV drill rig equipped with an automatic hammer. Standard Penetration Tests (SPT) were performed at approximately 2.5-foot to 5.0-foot intervals at these locations to provide subsurface information for roadway foundation and slope design/construction. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis.

All borings were advanced by North Carolina Licensed Drillers (Certified Well Contractors - CWC). All borings were logged by a North Carolina Licensed Geologist (LG/PG), Geologist in Training (GIT), Engineer Intern (EI), or other professional geotechnical field staff deemed qualified by NCDOT. All investigations and reporting were performed in accordance with the NCDOT Geotechnical Engineering Unit's 2021 "Geotechnical Investigation and Recommendations Manual."

Where possible, borings were left open for a minimum of twenty-four (24) hours to collect groundwater data. In some instances, the 0-hour measurements were used in lieu of the 24-hour measurements due to borings being

backfilled immediately after drilling when near active roadways or per property owner request. A total of forty (40) soil samples were submitted to Summit's soils laboratory for classification and moisture content testing. Based on the subsurface conditions encountered within the project corridor, no bulk samples or undisturbed samples were deemed necessary to obtain and submit to the laboratory for testing.

The following alignments, totaling approximately 0.814 miles, were explored. Subsurface cross sections of these alignments are included in this report.

Alignment	Station (±)
-L-	10+00.00 – 54+14.00
-Y1-	10+50.00 – 1704.48
-Y1A-	10+11.00 – 12+25.00
-Y2-	12+50.00 – 14+54.98
-Y3-	10+40.00 – 12+40.00
-DR1-	10+15.00 – 12+28.59
-DR2-	10+38.56 – 11+71.37

Physiography, Geography, and Geology

The project area is located along the eastern margin of the Piedmont Physiographic Province. The topography within this province is best characterized as gently rolling, well-rounded hills and long low ridges with a few hundred feet of elevation difference between the hills and valleys. The topography within the project corridor is best described as flat to gently rolling. A relative topographic low of approximately 370 feet above sea level occurs within the south end of the project corridor near the intersection of Old Stage Road/Rock Service Road (-L-) and Old Stage Road (-Y1-). From this area, the project ascends gently in both directions to a relative topographic high of 397 feet above sea level at the north end of the project corridor near the intersection with Rolling Meadows Drive (-Y3-). The ultimate topographic low of approximately 360 feet above sea level can be found at approximate -L- station 24+00 between the intersections of Old Stage Road/Rock Service Station Road and Old Stage Road/Banks Road (-Y2-).

The project area is located within the Neuse River Basin, between the drainages for Panther Branch and Little Creek. Panther Branch and Little Creek flow to the south into Middle Creek, which continues southeast and eventually empties into the Neuse River. Surface drainage within the project corridor would be expected to follow the slightly rounded peak-shaped terrain, mostly flowing from the topographic highs near the middle of the project alignment to the developed drainages west and east of the project corridor.

The project area is located within the Raleigh Belt. A geological belt is a typically fault-bounded fragment of Earth's crust that shares a common geologic history distinguishing it from surrounding belts or areas. The Raleigh Belt consists of mostly metamorphosed igneous rocks. These rocks were once part of a large chain of ancient volcanic islands. More specifically, in the deeper subsurface, the project corridor is primarily underlain by Biotite Gneiss and Schist, which has been repeatedly intruded by numerous dikes and sills of Granite. This rock unit has been mapped by the North Carolina Geological Survey (NCGS) as "Biotite Gneiss and Schist (Map Symbol: CZbg)." At the project site, the surface and shallow subsurface sediments belong to the Inner Coastal Plain Province. According to the Geologic Map of North Carolina, these sediments belong to the Cretaceous aged Middendorf Formation (Map Symbol: Km) characterized by laterally discontinuous beds of unconsolidated sand,



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sandstone, clay, and mudstone. These Coastal Plain sediments overlie the Piedmont residual soils and bedrock of the Raleigh Belt within the subsurface.

Soil Properties

Soils encountered during this geotechnical investigation have been divided into two categories based on origin, including Roadway Embankment and Undivided Coastal Plain sediments.

Roadway Embankment soils are present in limited quantities along the project corridor, at the north end of the project alignment and appear to be related to the recent and on-going roadway widening and construction of the adjacent NCDOT project (I-540 interchange at Old Stage Road). Where encountered, these soils consist of ±2 feet of red, moist, soft, silty clay (A-7).

Undivided Coastal Plain sediments were found throughout the project corridor at the surface and in the subsurface to the depths investigated. The surficial Undivided Coastal Plain sediments consist mostly of brown and orange, dry to moist (locally saturated), very loose to medium dense, silty and clayey, fine to coarse sand (A-2-4, A-2-6, A-2-7), occasionally with trace organics such as root fragments; and locally consist of red, orange, and tan, dry to moist, slightly to moderately plastic (locally highly plastic), stiff to very stiff, fine to coarse sandy and silty clay (A-6, A-7-6), and brown and orange, moist, non-plastic, medium stiff, fine to coarse sandy silt (A-4), occasionally with trace gravel. Within the subsurface the Undivided Coastal Plain sediments consist of thinly to very thickly interbedded, red, orange, gray, brown, and tan, dry to moist, slightly to moderately plastic (locally highly plastic), medium stiff to hard, fine to coarse sandy and silty clay (A-6, A-7-5, A-7-6), locally with trace gravel; tan, red, orange, and gray, dry to moist, medium stiff to very stiff, non-plastic, sandy silt (A-4); and red, brown, orange, gray, and tan, dry to saturated, very loose to very dense, silty and clayey, fine to coarse sand (A-2-4, A-2-6), locally with trace gravel. The interbedded Undivided Coastal Plain sediments do not appear to be laterally continuous over more than few hundred feet in any one direction. In general, apparent weathering decreases with depth and soil consistency or denseness increases with depth. All Undivided Coastal Plain sediments showed signs of oxidation and traces of iron staining.

Laboratory Testing

Laboratory testing was conducted on collected Undivided Coastal Plain soil samples located near and above the proposed grade throughout the project corridor. In total, forty (40) samples were submitted to Summit’s laboratory. Of those, seventeen (17) were AASHTO classified as either A-7-5 or A-7-6. In general, A-7 classified soils are composed of clay with moderate amounts of fine to coarse sand. They may be highly elastic and may have moderate to high plasticity indexes. The table below provides a summary of the results of the laboratory testing for the A-7 classified soils:

	Liquid Limit (L.L.)	Plastic Limit (P.L.)	Plasticity Index (P.I.)	Natural Moisture	Passing # 200 Sieve
LOW	41	22	15	14.0%	42%
HIGH	77	53	39	26.9%	80%
AVERAGE	51	29	22	19.9%	58%

Seven (7) of the forty tested samples of Undivided Coastal Plain soil were AASHTO classified as A-6. In general, A-6 classified soils are composed of silt and clay with moderate amounts of fine to coarse sand. The table below provides a summary of the results of the laboratory testing for the A-6 classified soils:

	Liquid Limit (L.L.)	Plastic Limit (P.L.)	Plasticity Index (P.I.)	Natural Moisture	Passing # 200 Sieve
LOW	29	15	12	10.5%	37%
HIGH	40	26	20	16.7%	78%
AVERAGE	35	20	15	14.3%	50%

Three (3) of the forty tested samples of Undivided Coastal Plain soil were AASHTO classified as A-4. In general, A-4 classified soils are composed of fine to coarse sand with moderate amounts of silt and clay. The table below provides a summary of the results of the laboratory testing for the A-4 classified soils:

	Liquid Limit (L.L.)	Plastic Limit (P.L.)	Plasticity Index (P.I.)	Natural Moisture	Passing # 200 Sieve
LOW	16	12	4	10.8%	38%
HIGH	25	21	5	19.3%	46%
AVERAGE	20	16	4	15.1%	41%

The remaining thirteen (13) tested samples of Undivided Coastal Plain soil were classified as non-cohesive or granular materials. The AASHTO results for these samples were as follows: ten (10) samples were classified as A-2-4, and three (3) samples were classified as A-2-6/A-2-7. The results showed that most of the granular soils within the project corridor contain silt and clay binder materials. For additional laboratory information on these samples and all samples tested within the project corridor, please refer to Appendix A “Laboratory Test Results” sheets 38-40 of this report.

Groundwater Properties

The geotechnical investigation was conducted during a period of average rainfall. Groundwater was encountered in six (6) of the borings, with most of the borings showing as dry 24 hours after boring completion. Where encountered, groundwater depths ranged from 0.5 feet to 12.2 feet below existing ground surface and elevations ranged from 359.9 feet to 368.4 feet above sea level. Areas that showed wet to saturated soils and shallow groundwater were typically adjacent to existing ponds along the project alignment. Approximate locations where groundwater may be present within six feet of proposed grade are noted in the section, “Areas of Special Geotechnical Interest.”

A visual reconnaissance of springs, seeps, ponds, or lakes was also conducted. In addition, a visual reconnaissance for water wells was conducted throughout the project corridor. This was used in conjunction with the final survey file to attempt to identify water wells within or immediately adjacent to the proposed right of way of the project. Some water well locations are well hidden, and it is possible that some wells were missed or misidentified by the final survey and/or visual reconnaissance. Approximate locations of ponds and wells present close to or within the proposed right of way are noted in the section, “Areas of Special Geotechnical Interest.”

Areas of Special Geotechnical Interest

Highly Plastic Soils – The following areas contain highly plastic soils within areas of proposed cut or proposed subgrade which have the potential to cause embankment/subgrade and/or slope stability problems during construction:



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Alignment	Station (±)	Offset
-L-	25+75.00 – 27+75.00	Right

High Groundwater - During the geotechnical investigation, wet to saturated soils and/or shallow groundwater was encountered in a few areas of the project corridor and adjacent to existing ponds along the proposed alignment. The following approximate locations listed below show areas where groundwater is believed to be present within six (6) feet of proposed grades:

Alignment	Station (±)	Offset
-L-	15+25.00 – 18+25.00	Right
-L-	23+60.00 – 25+75.00	Left

Ponds – Three ponds occur within proximity to the proposed right of way on this project at the following locations:

Alignment	Station (±)	Offset
-L-	14+98 to 18+36	47' to 175' Right
-L-	23+47 to 23+96	23' to 101' Right
-L-	23+98 to 25+64	60' to 230' Left

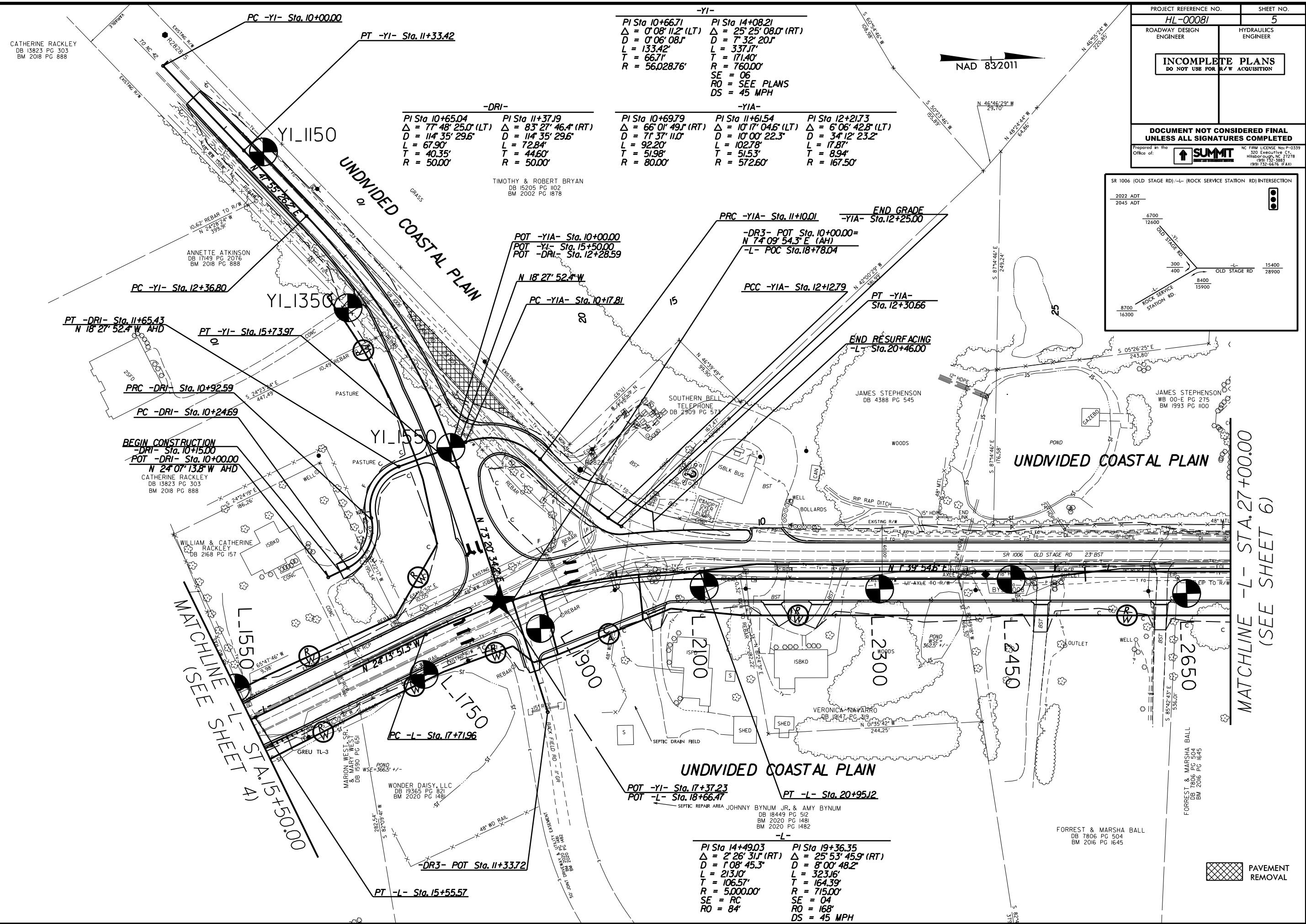
Wells – Residential water supply wells were observed close to or within the proposed right of way on this project at the following locations:

Alignment	Station (±)	Offset
-L-	25+93	78' Right
-L-	28+03	59' Right
-L-	49+06	24' Left

Respectfully Submitted,

A handwritten signature in dark ink, appearing to read "Michael B. Lear".

Michael B. Lear, PG
Senior Geologist
Summit Design and Engineering Services, PLLC
NC License # 1927



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SHEET NO.
6

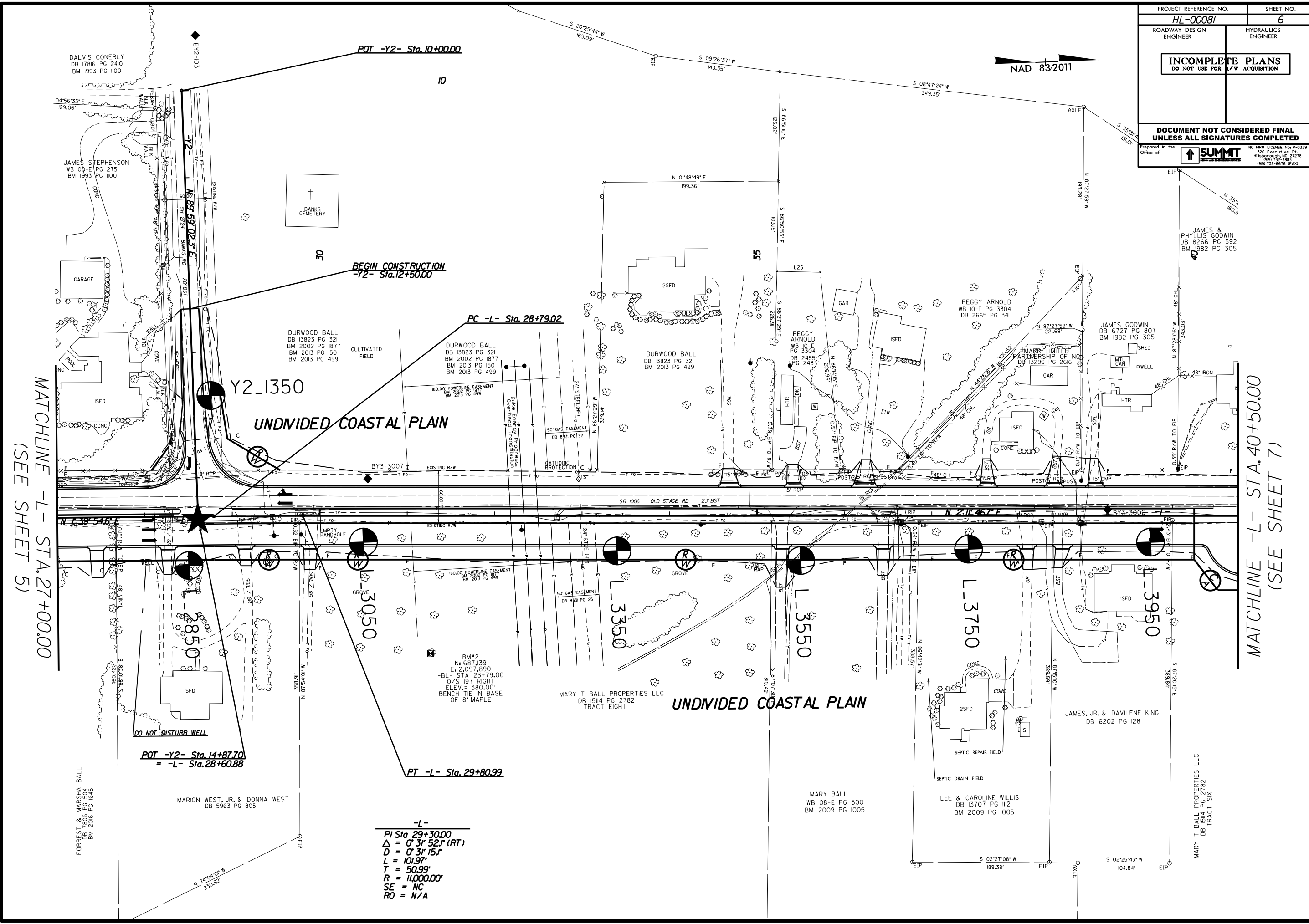
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ENGINEER

HYDRAULICS
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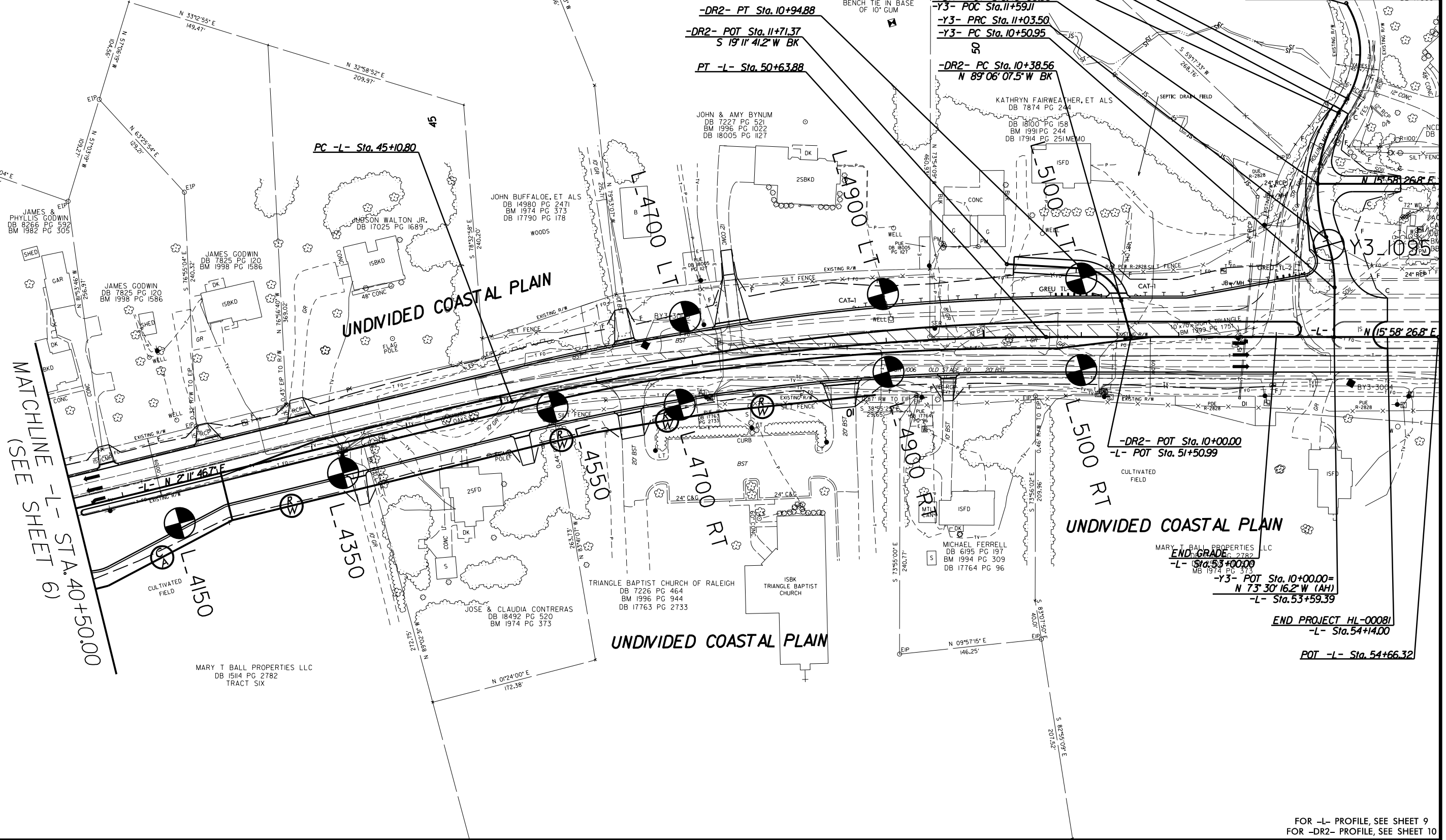


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-L-	-DR2-
PI Sta 47+88.68 $\Delta = 13^{\circ} 46' 40.1''$ (RT) $D = 2^{\circ} 29' 28.0''$ $L = 553.08'$ $T = 277.88'$ $R = 2,300.00'$ $SE = 03$ $RO = 126'$	PI Sta 10+71.08 $\Delta = 71^{\circ} 42' 11.4''$ (LT) $D = 127^{\circ} 19' 26.2''$ $L = 56.32'$ $T = 32.52'$ $R = 45.00'$
-Y3-	
PI Sta 10+77.50 $\Delta = 20^{\circ} 04' 19.6''$ (LT) $D = 38^{\circ} 11' 49.9''$ $L = 52.55'$ $T = 26.55'$ $R = 150.00'$	PI Sta 11+74.38 $\Delta = 50^{\circ} 35' 12.0''$ (RT) $D = 38^{\circ} 11' 49.9''$ $L = 132.44'$ $T = 70.88'$ $R = 150.00'$
PI Sta 13+10.38 $\Delta = 63^{\circ} 12' 10.0''$ (LT) $D = 61^{\circ} 23' 53.1''$ $L = 102.94'$ $T = 57.41'$ $R = 93.32'$	



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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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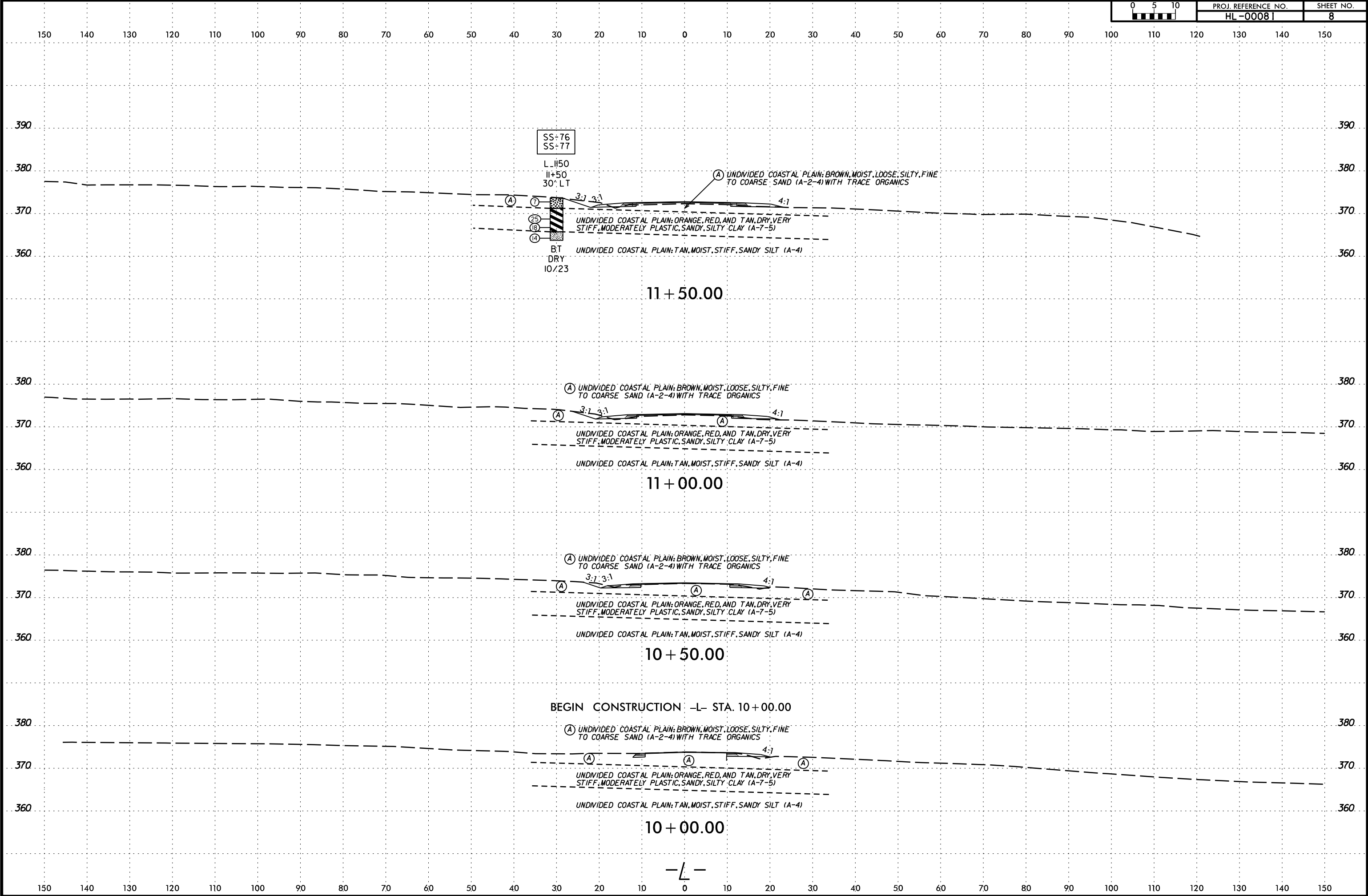
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FOR -L- PROFILE, SEE SHEET 9
FOR -DR2- PROFILE, SEE SHEET 10

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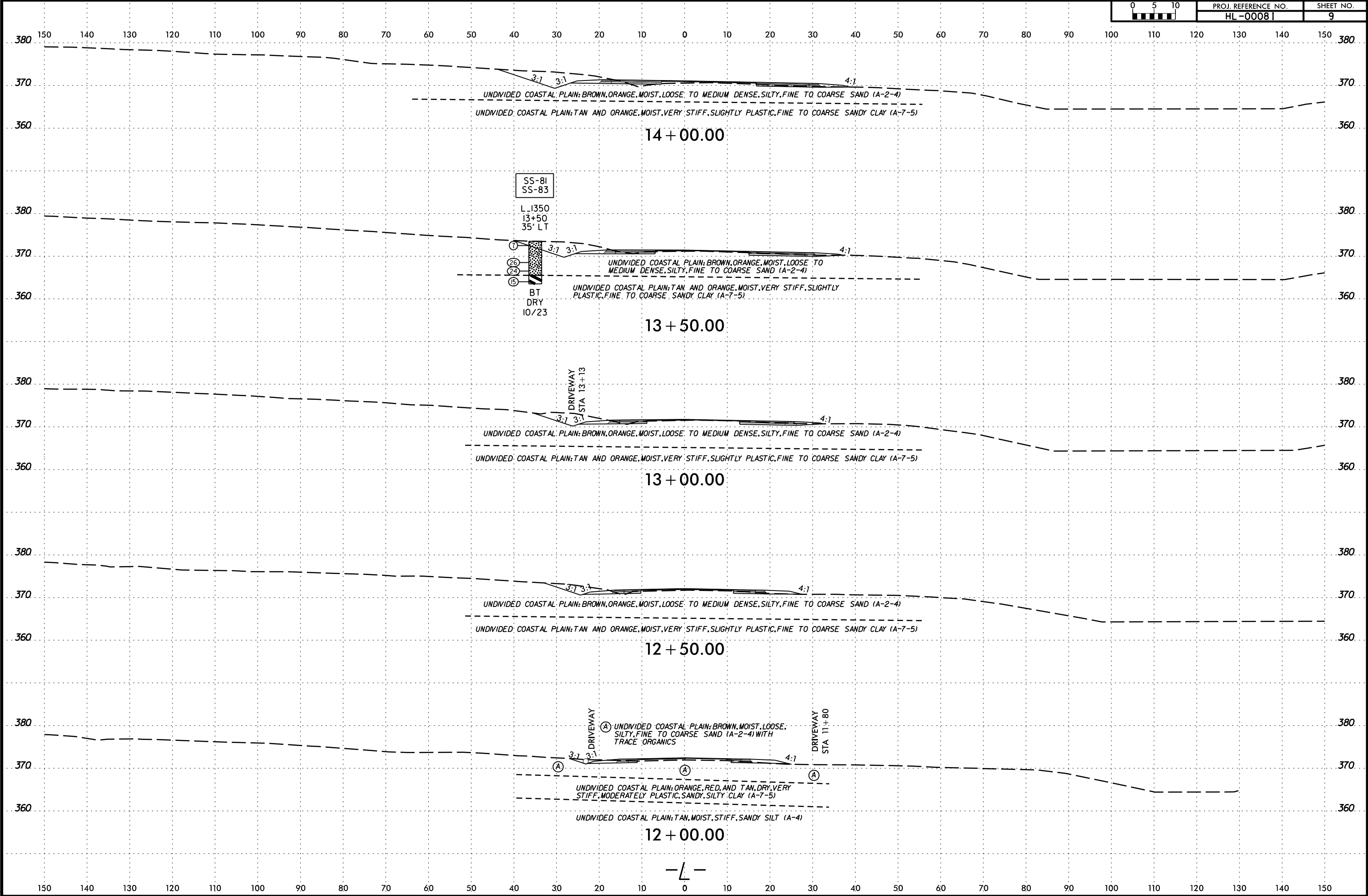
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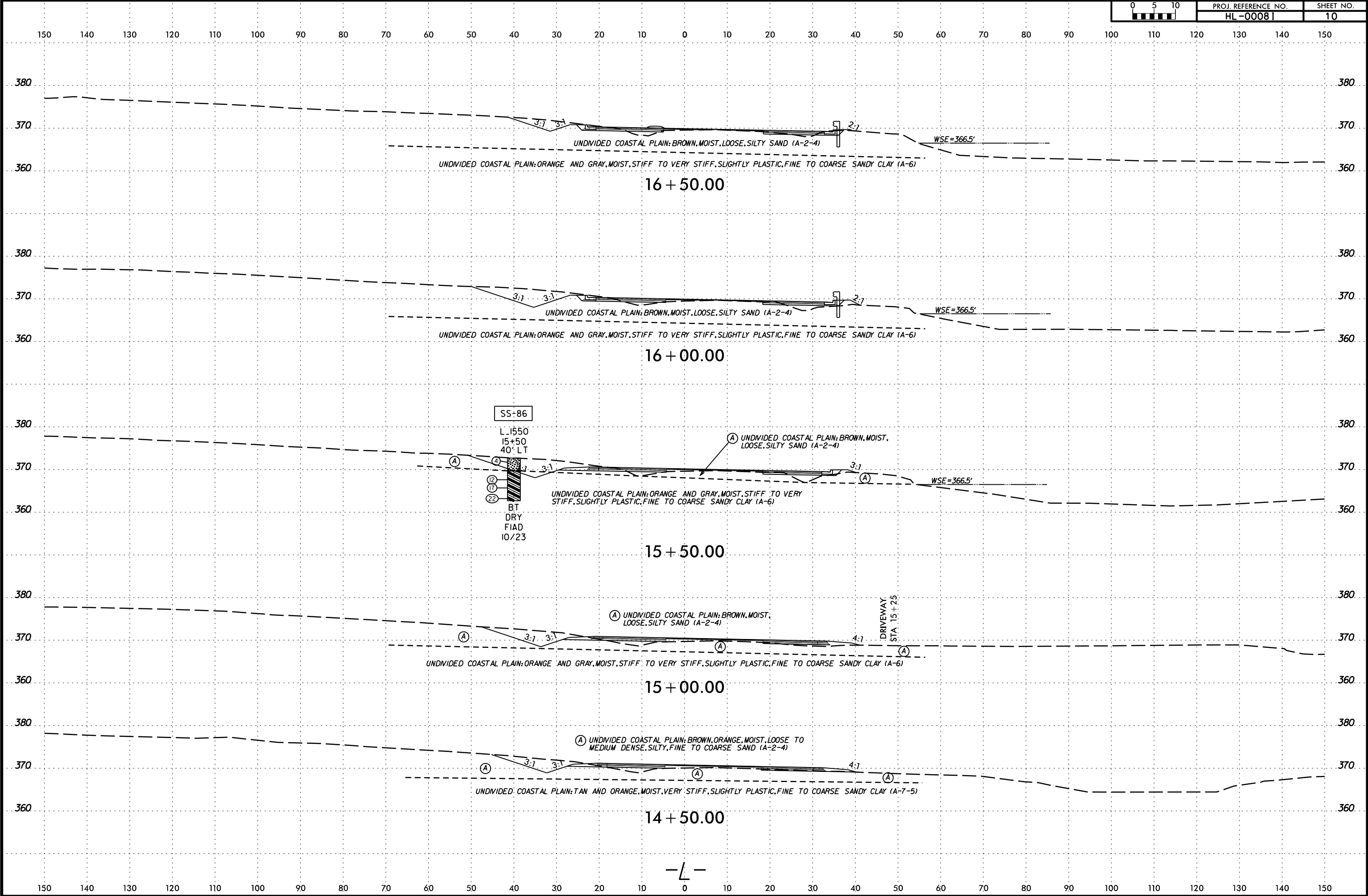
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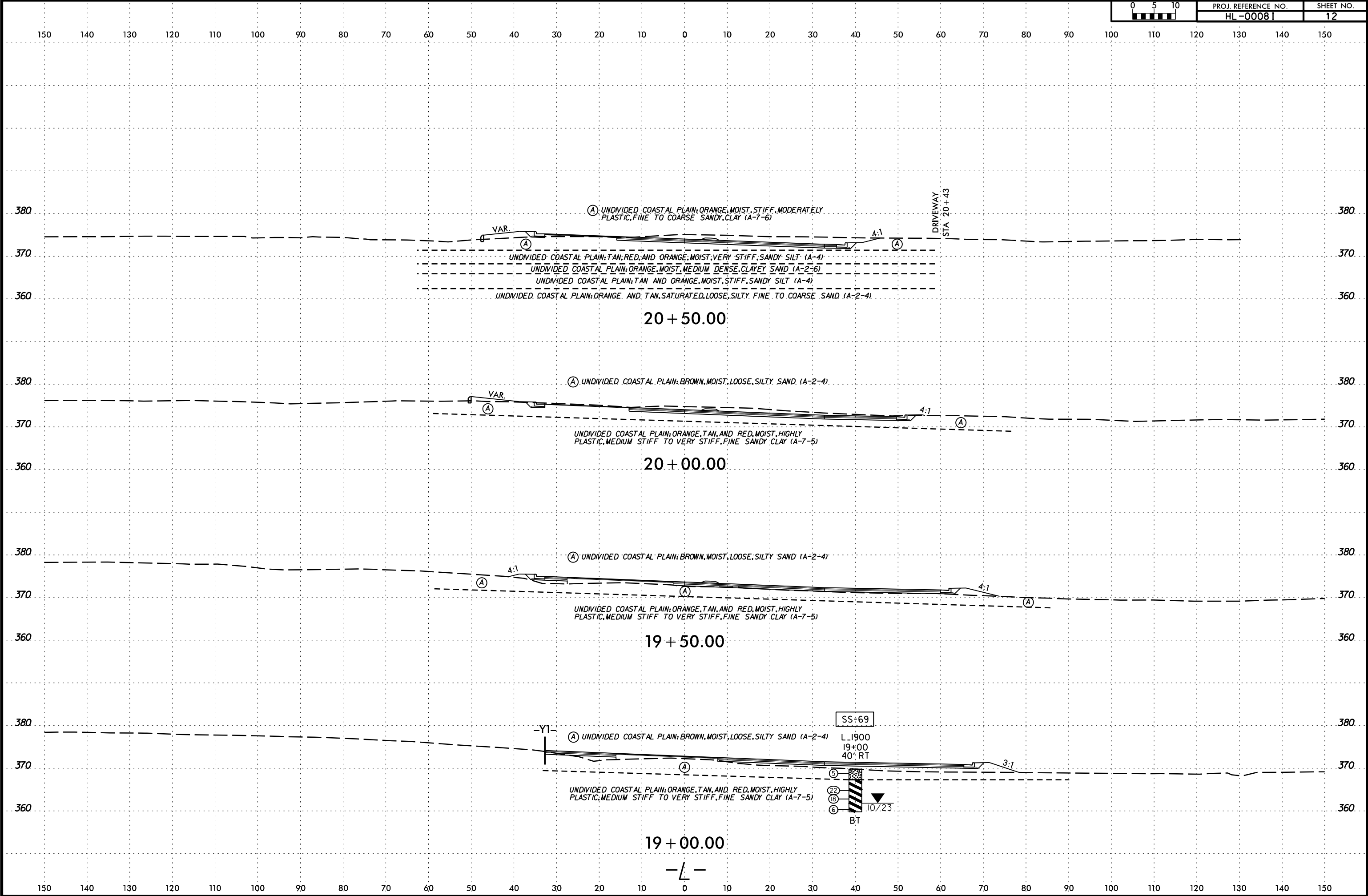
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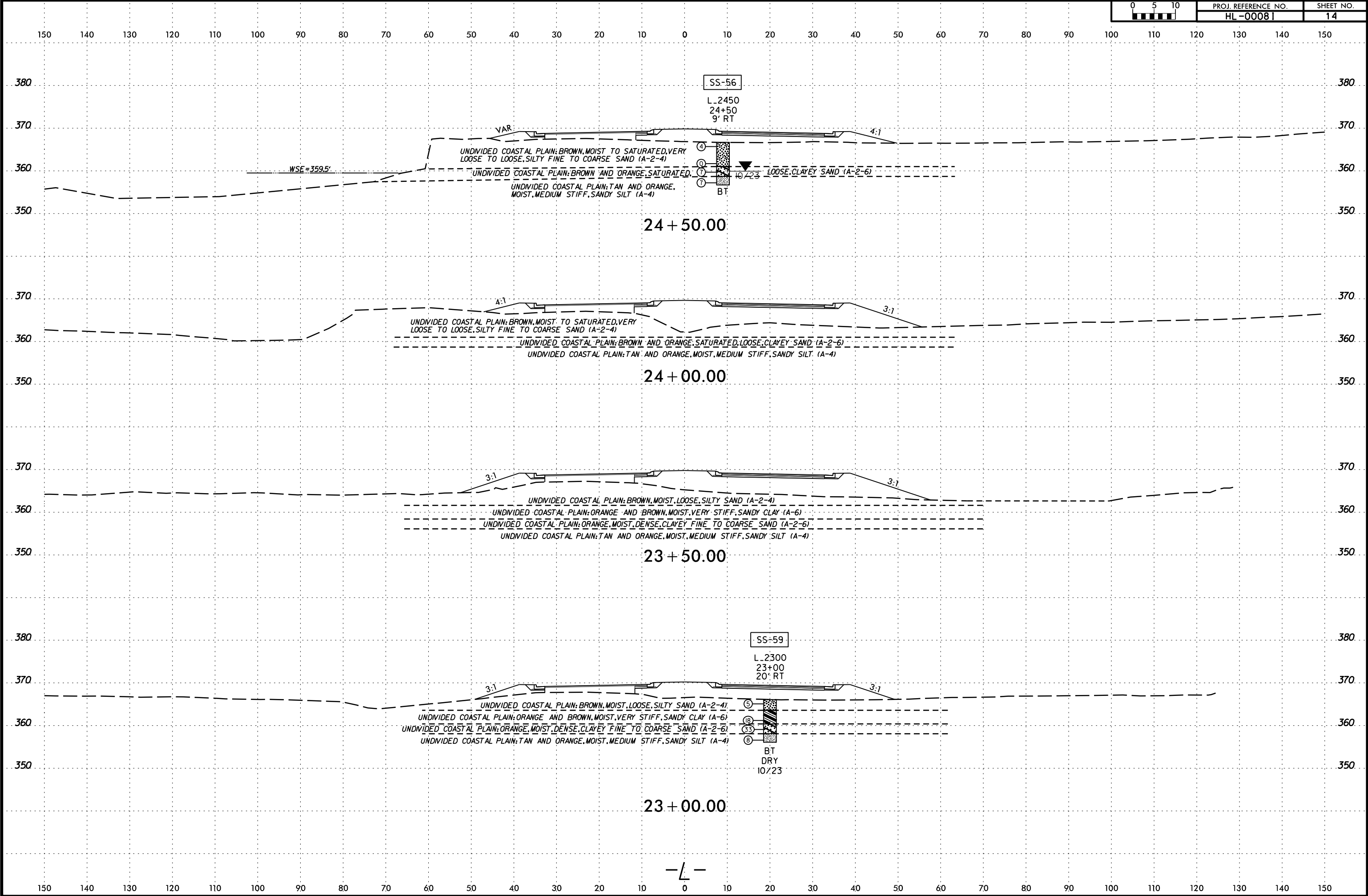
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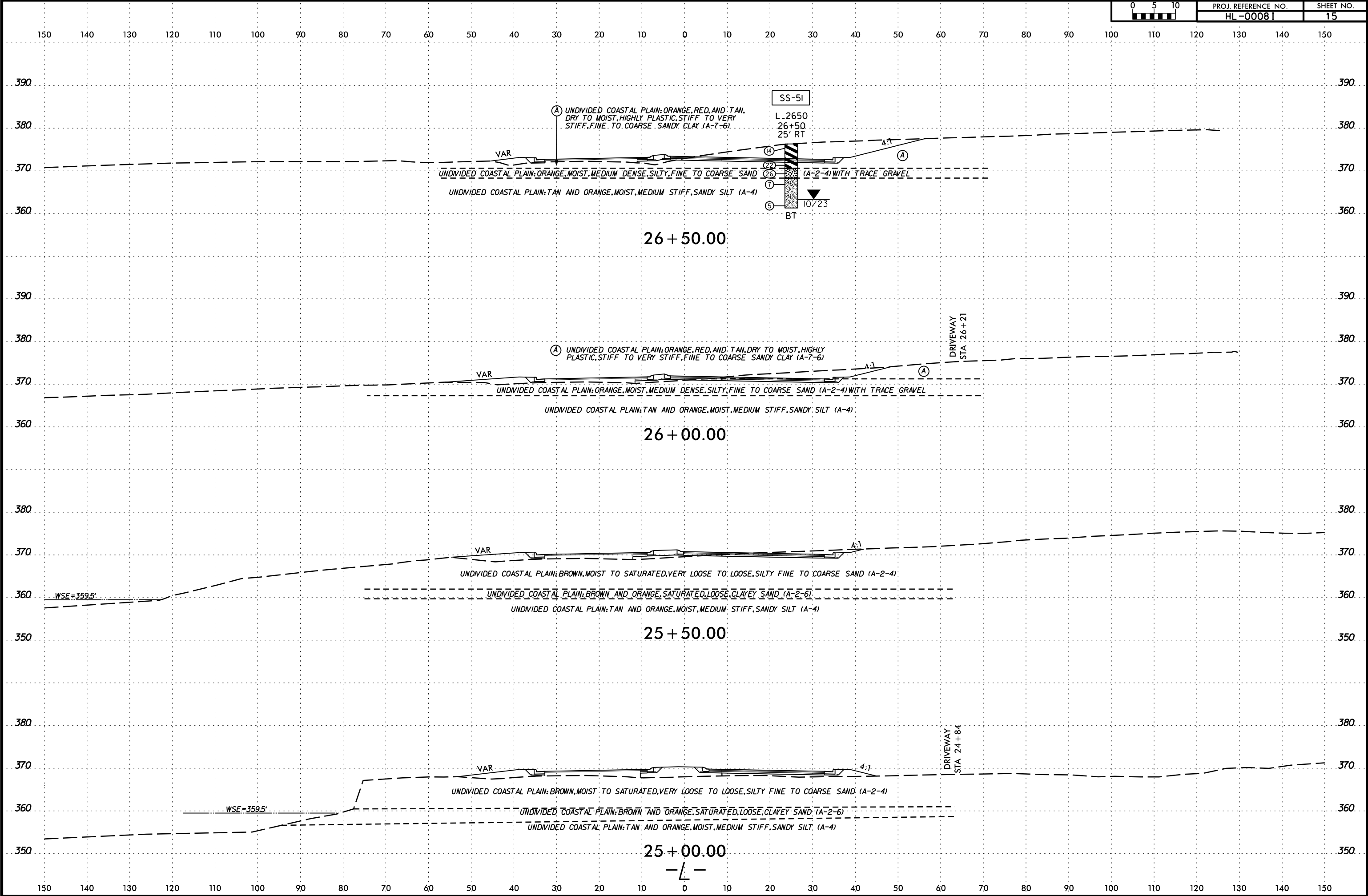
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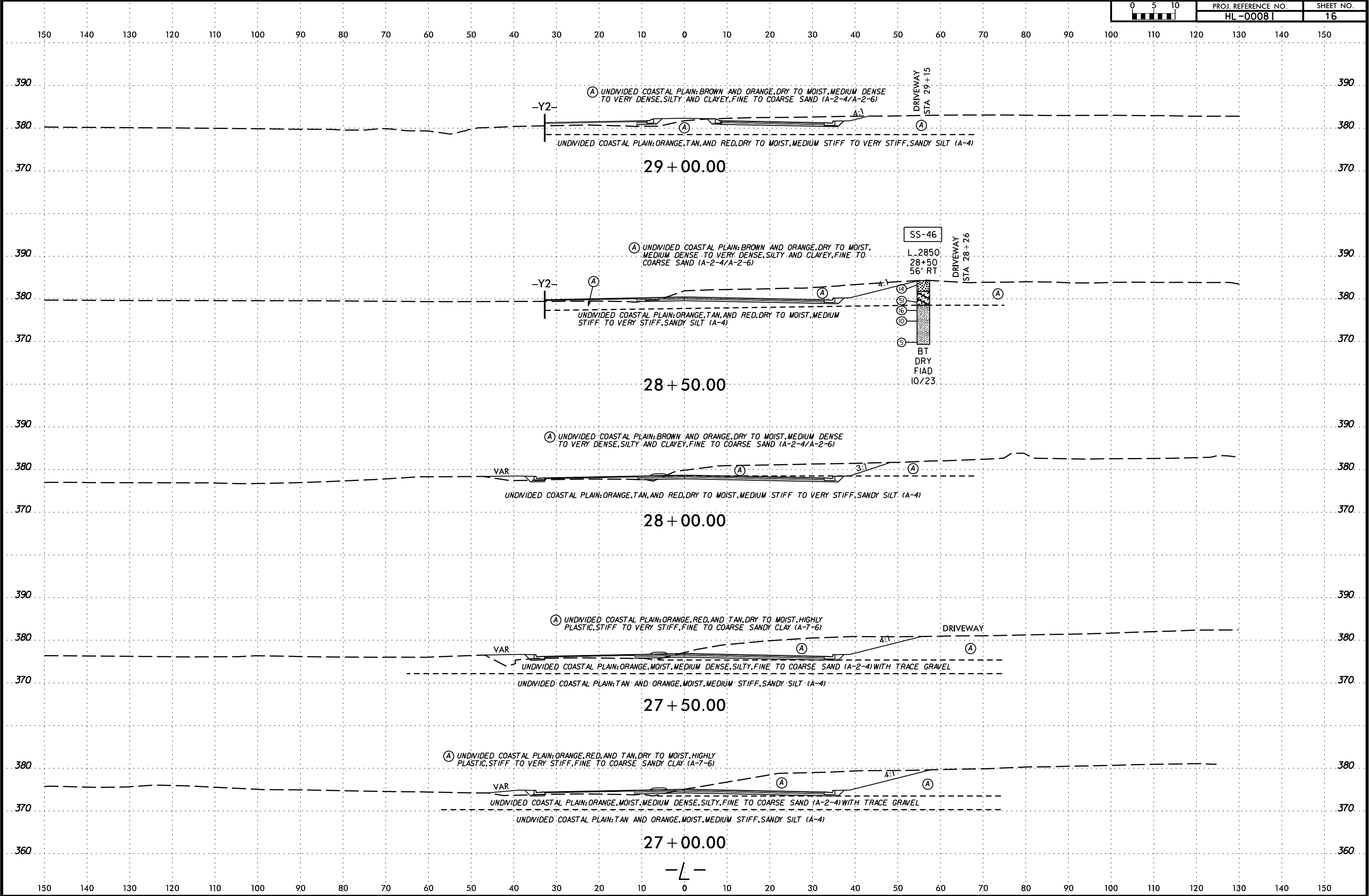
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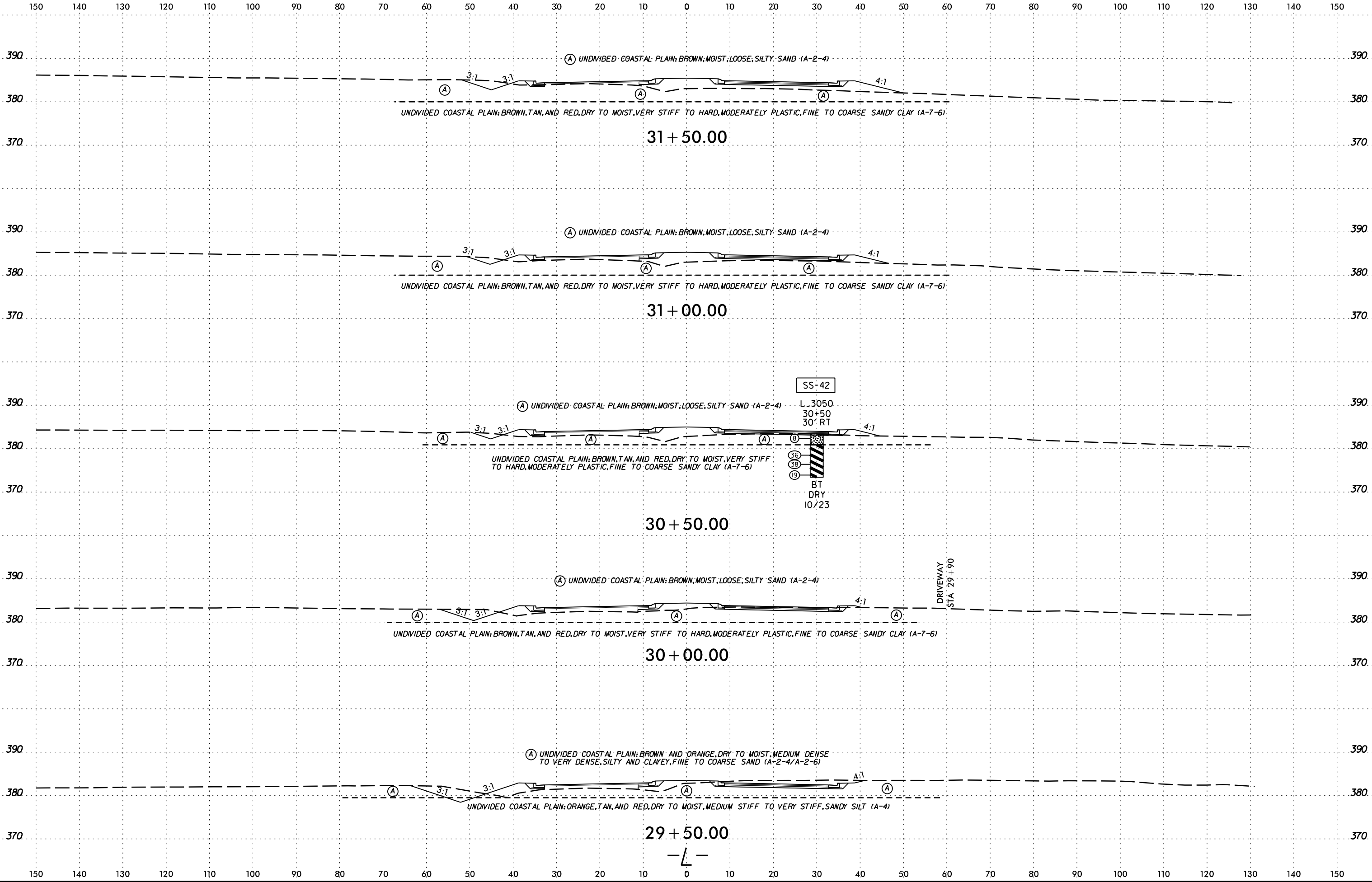
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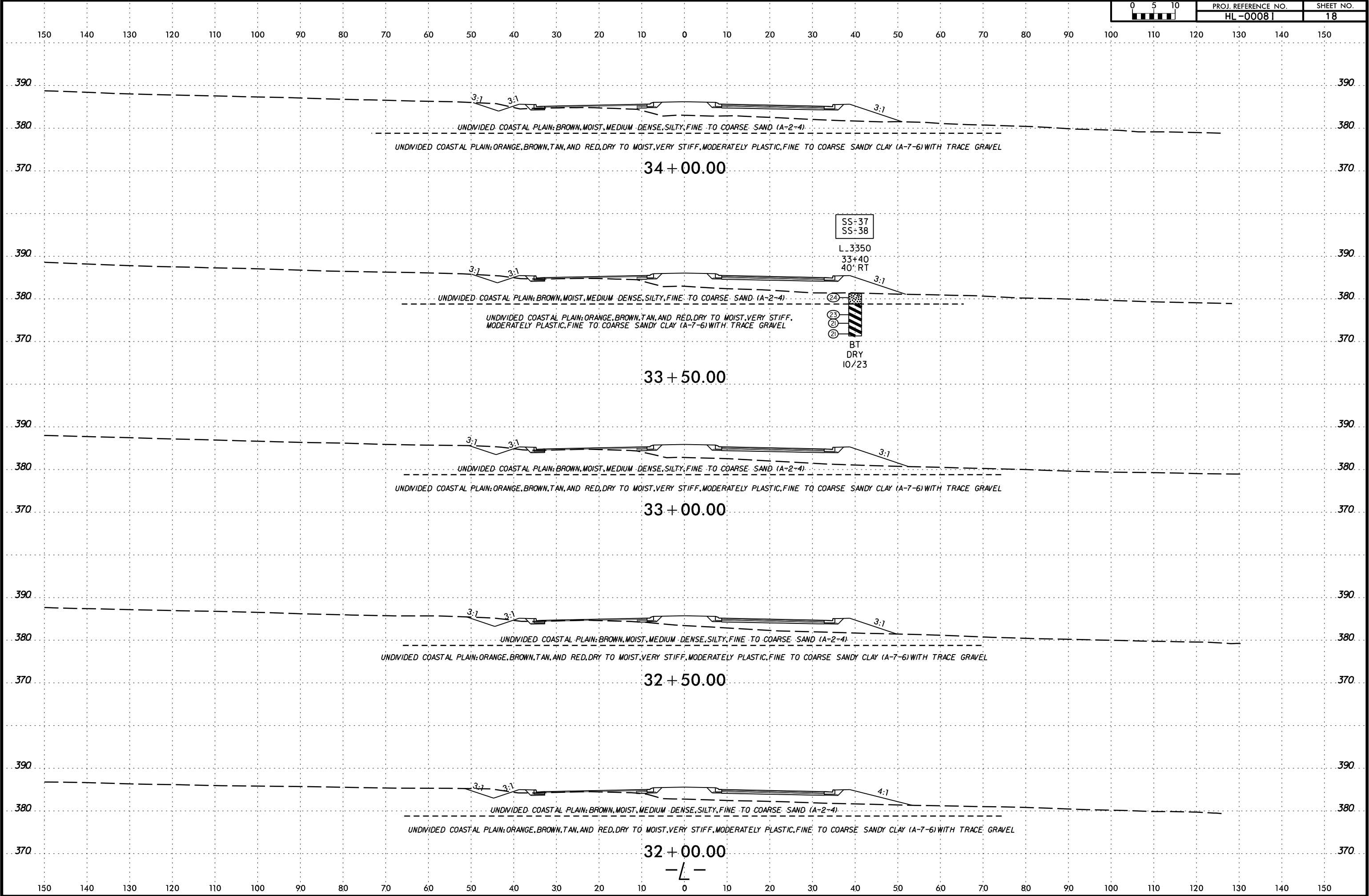
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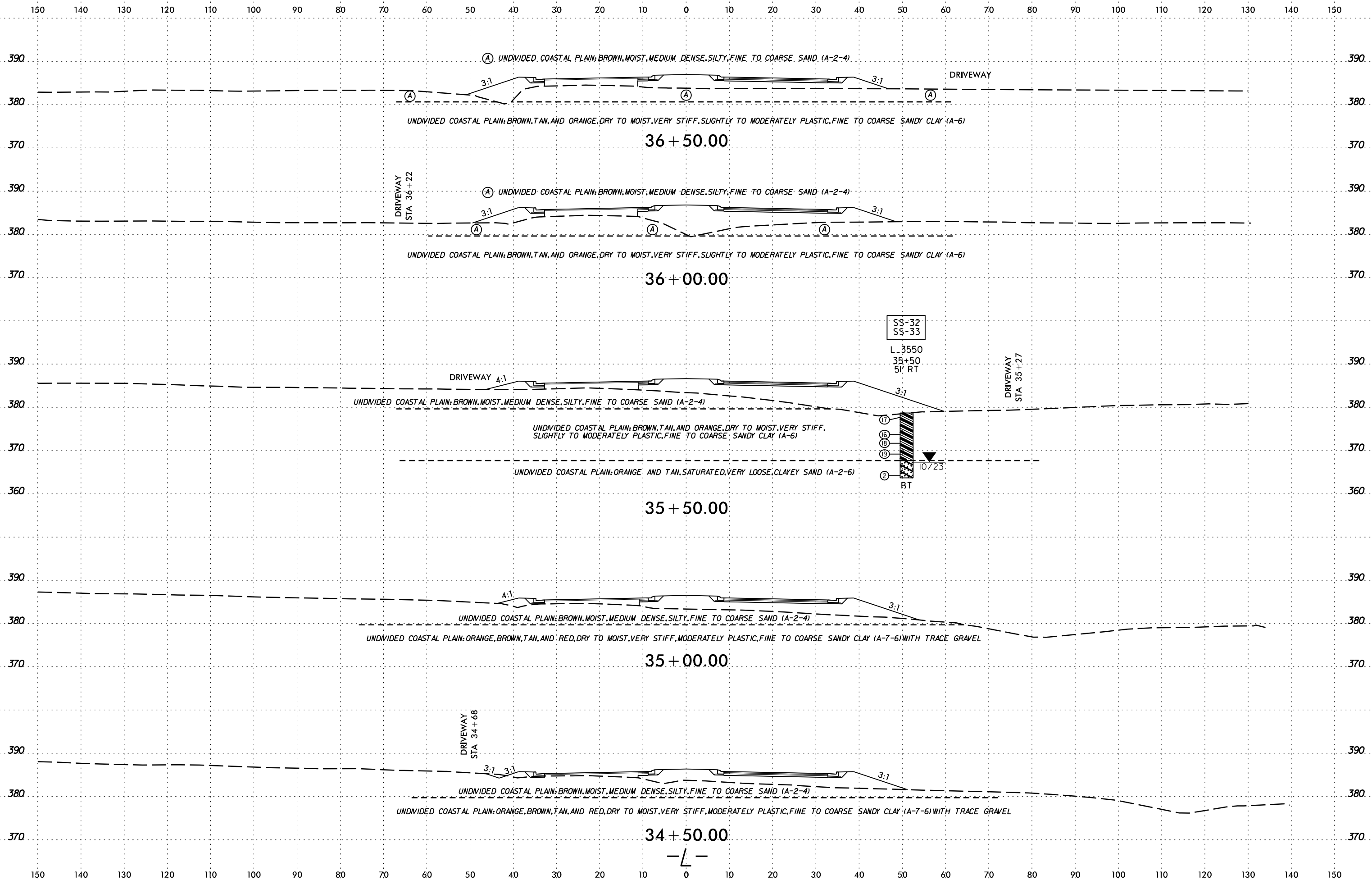
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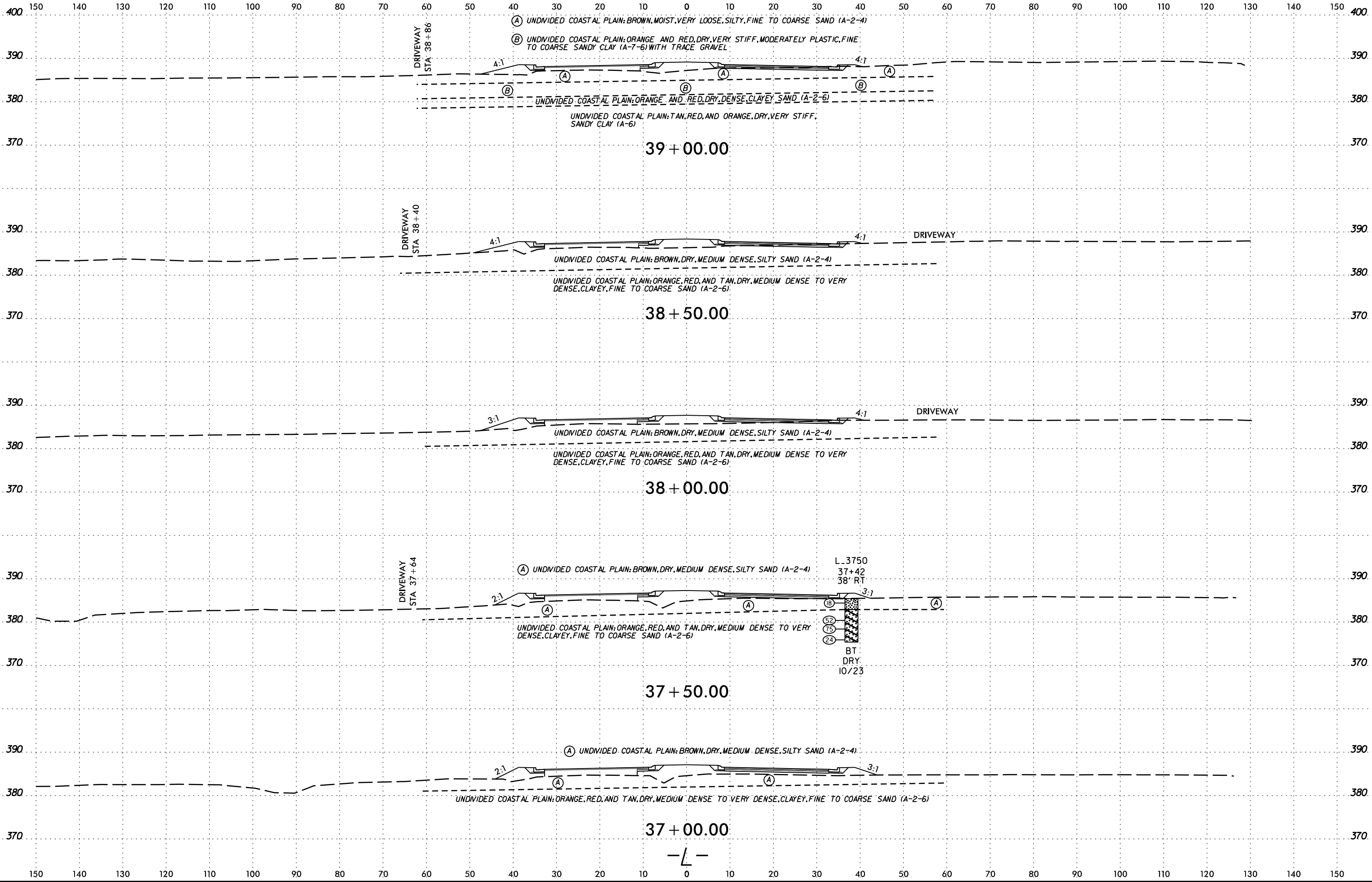
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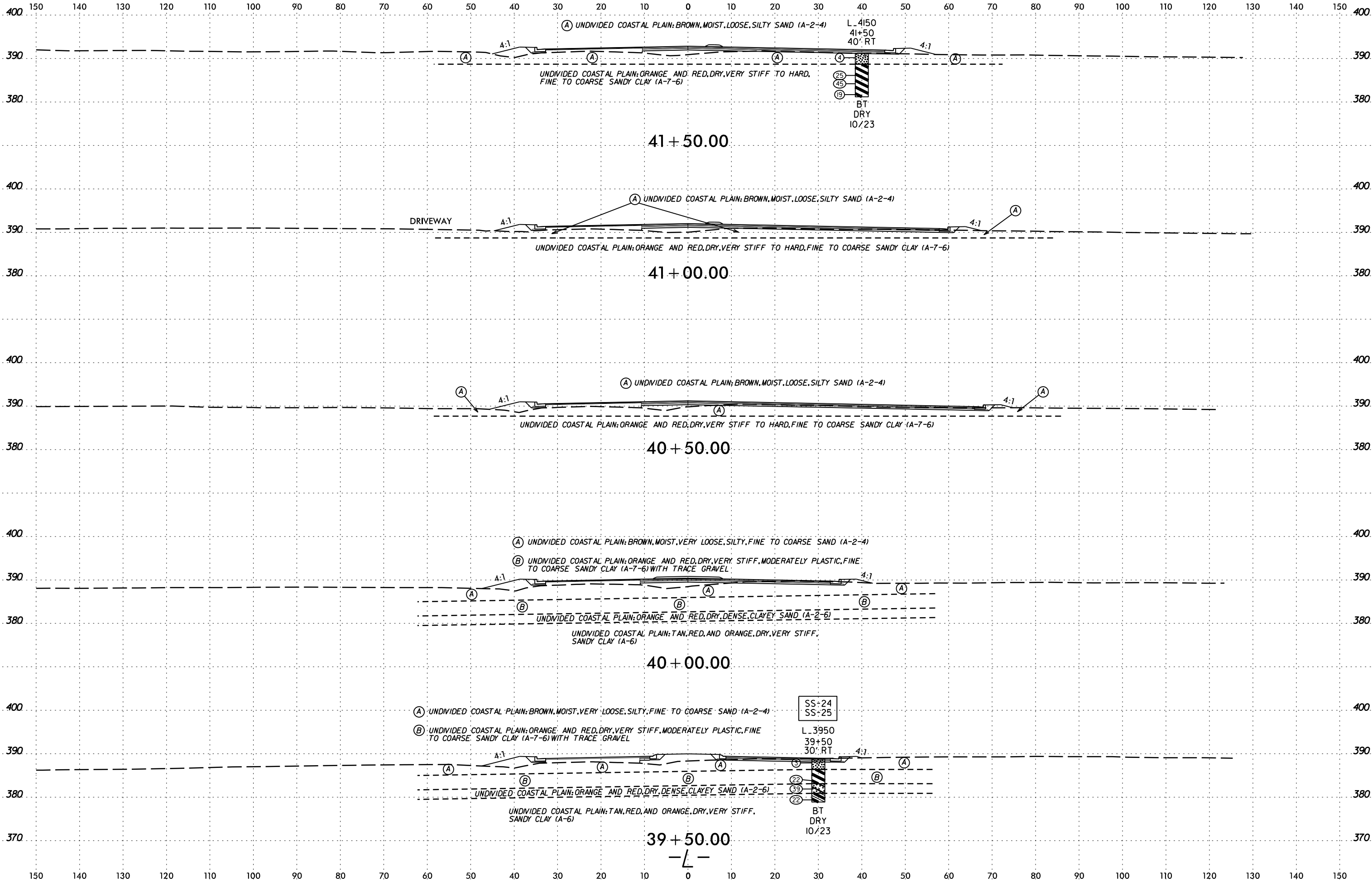
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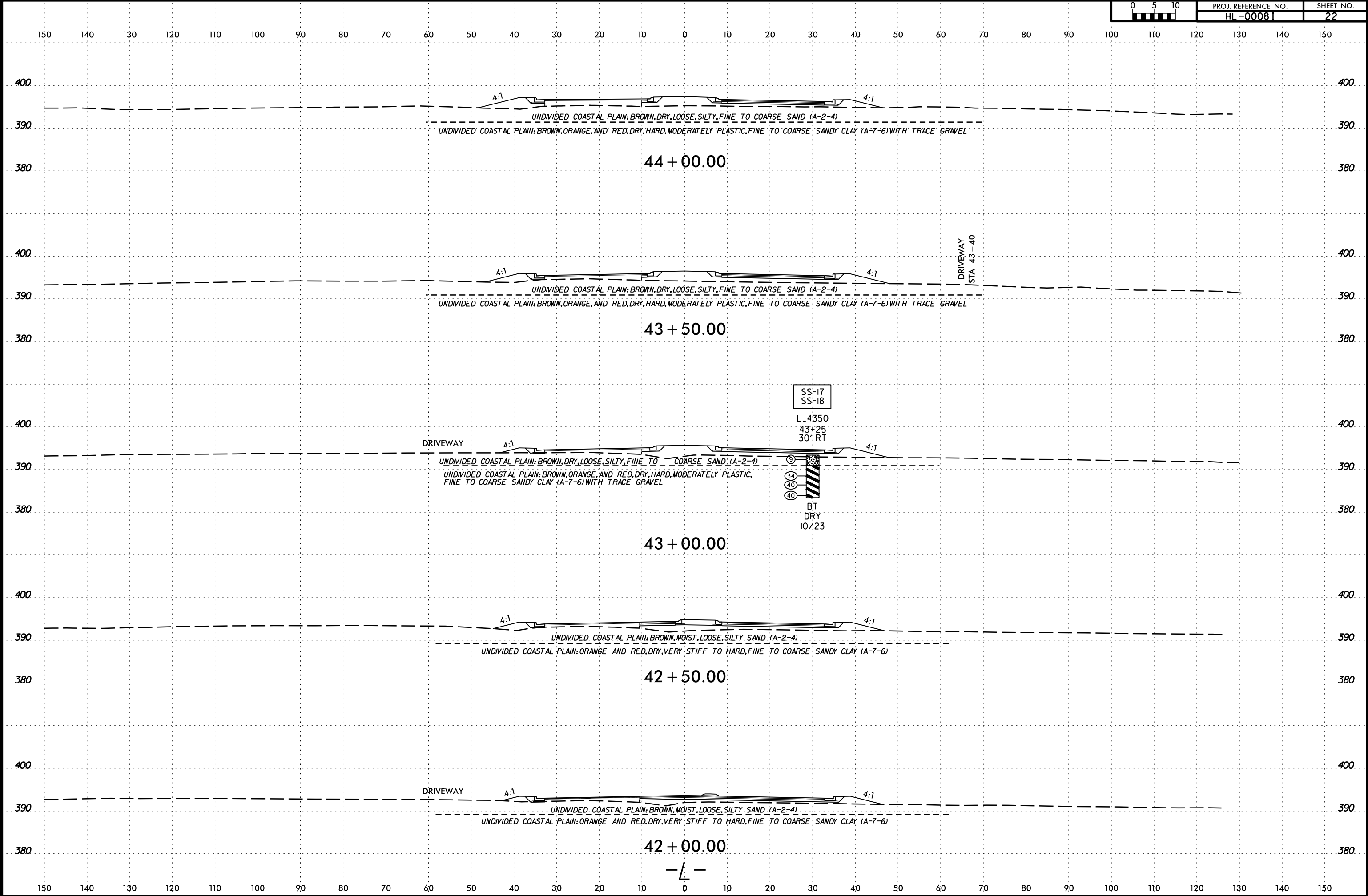
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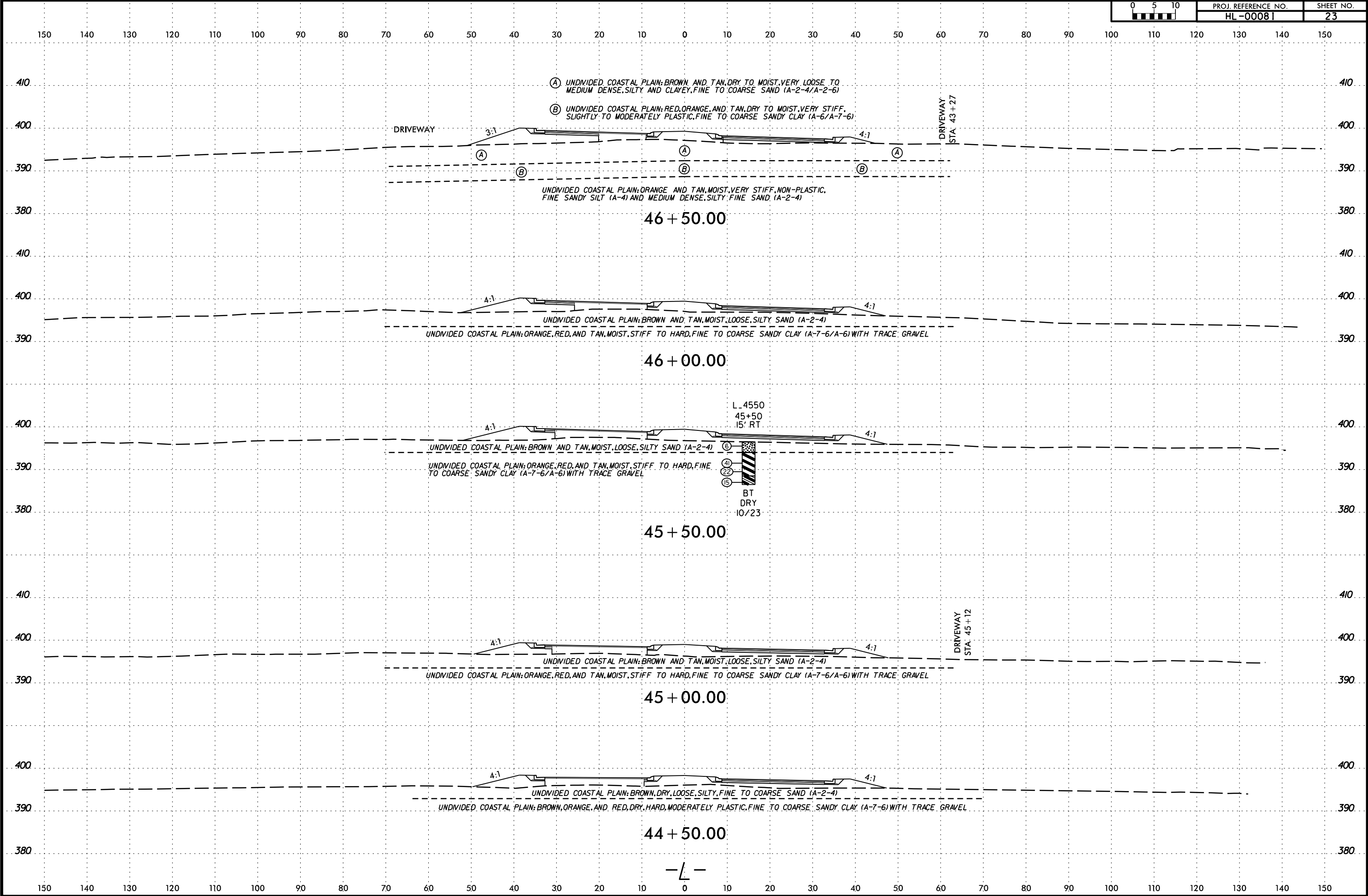
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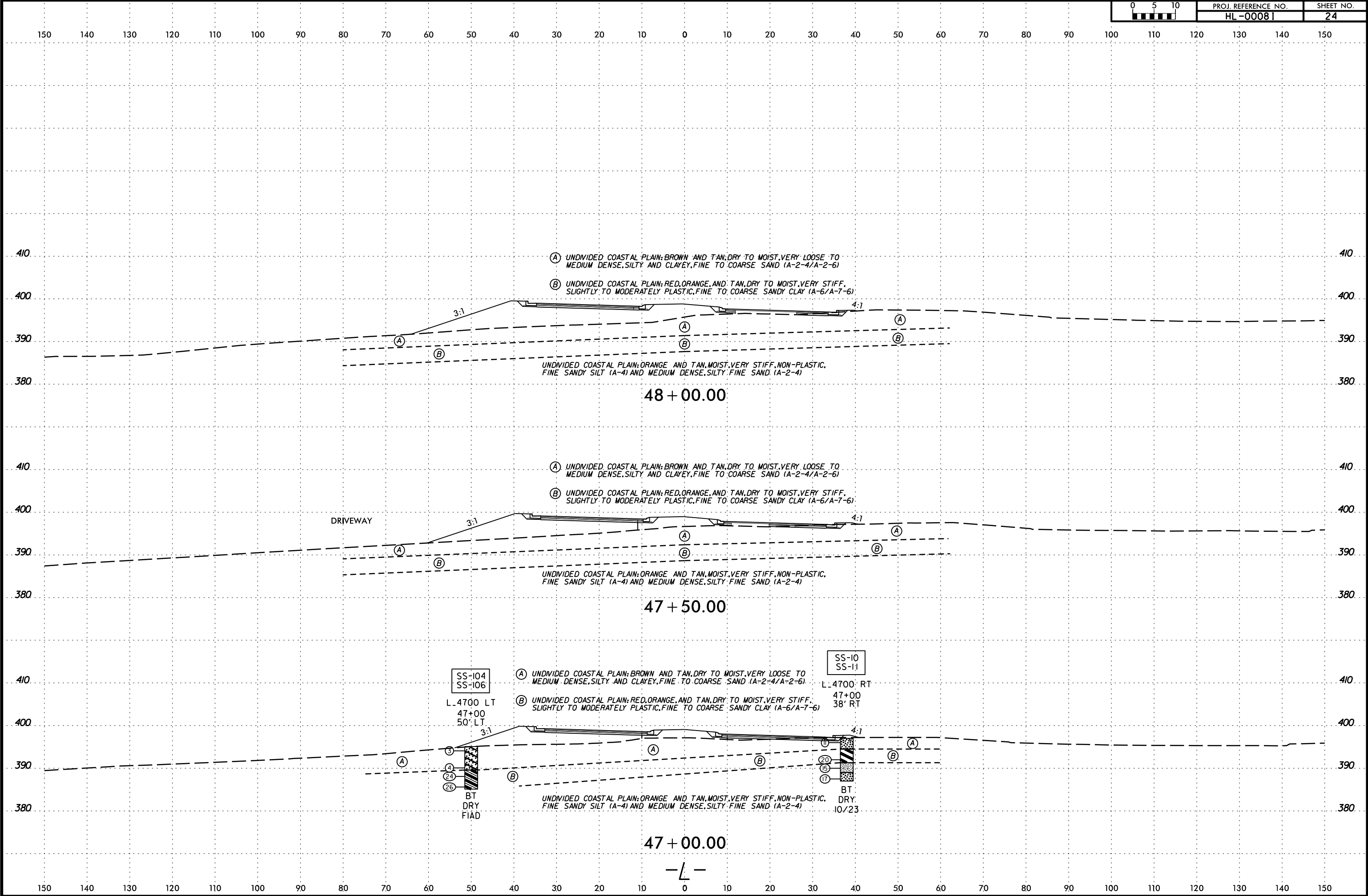


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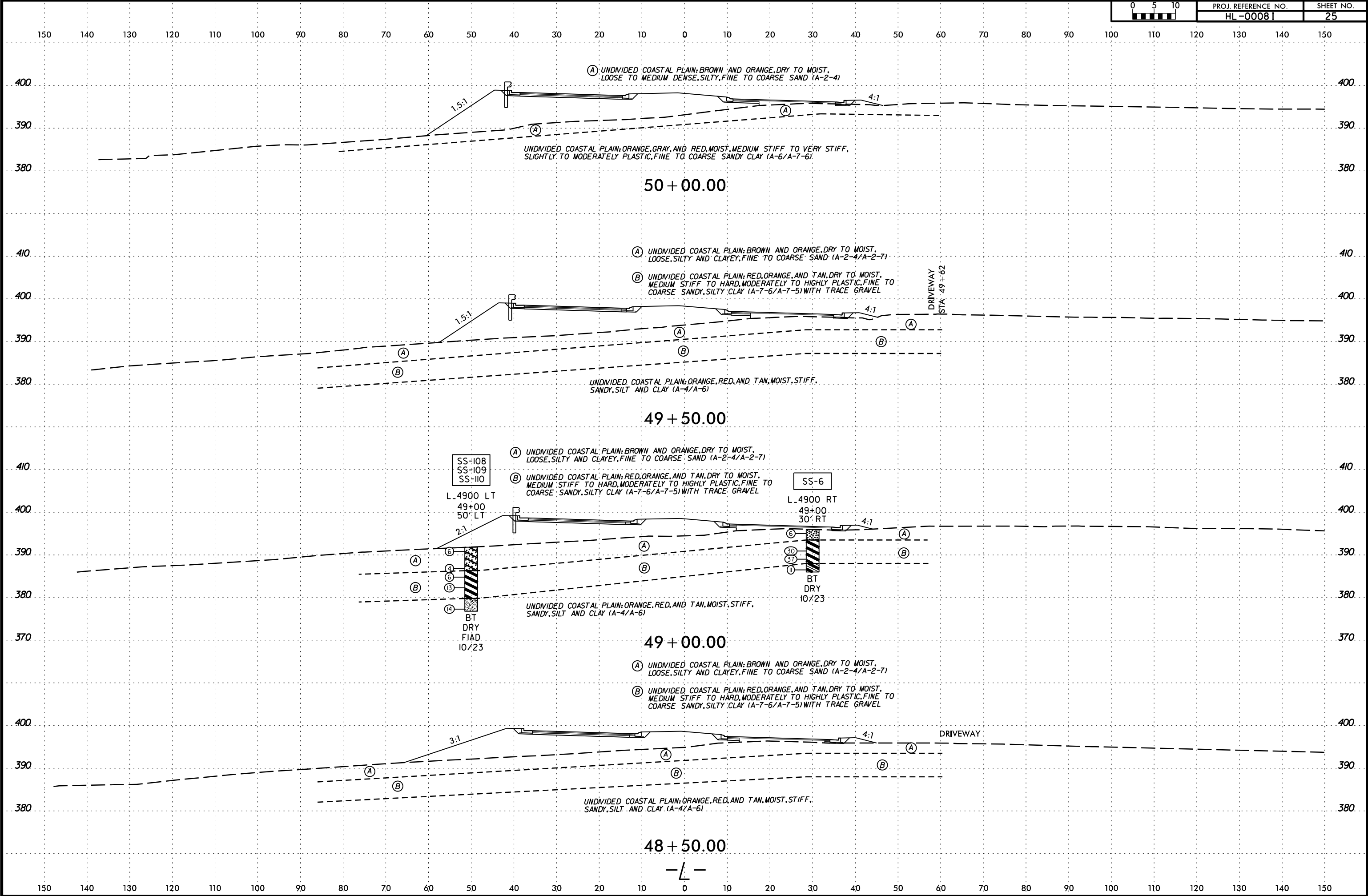
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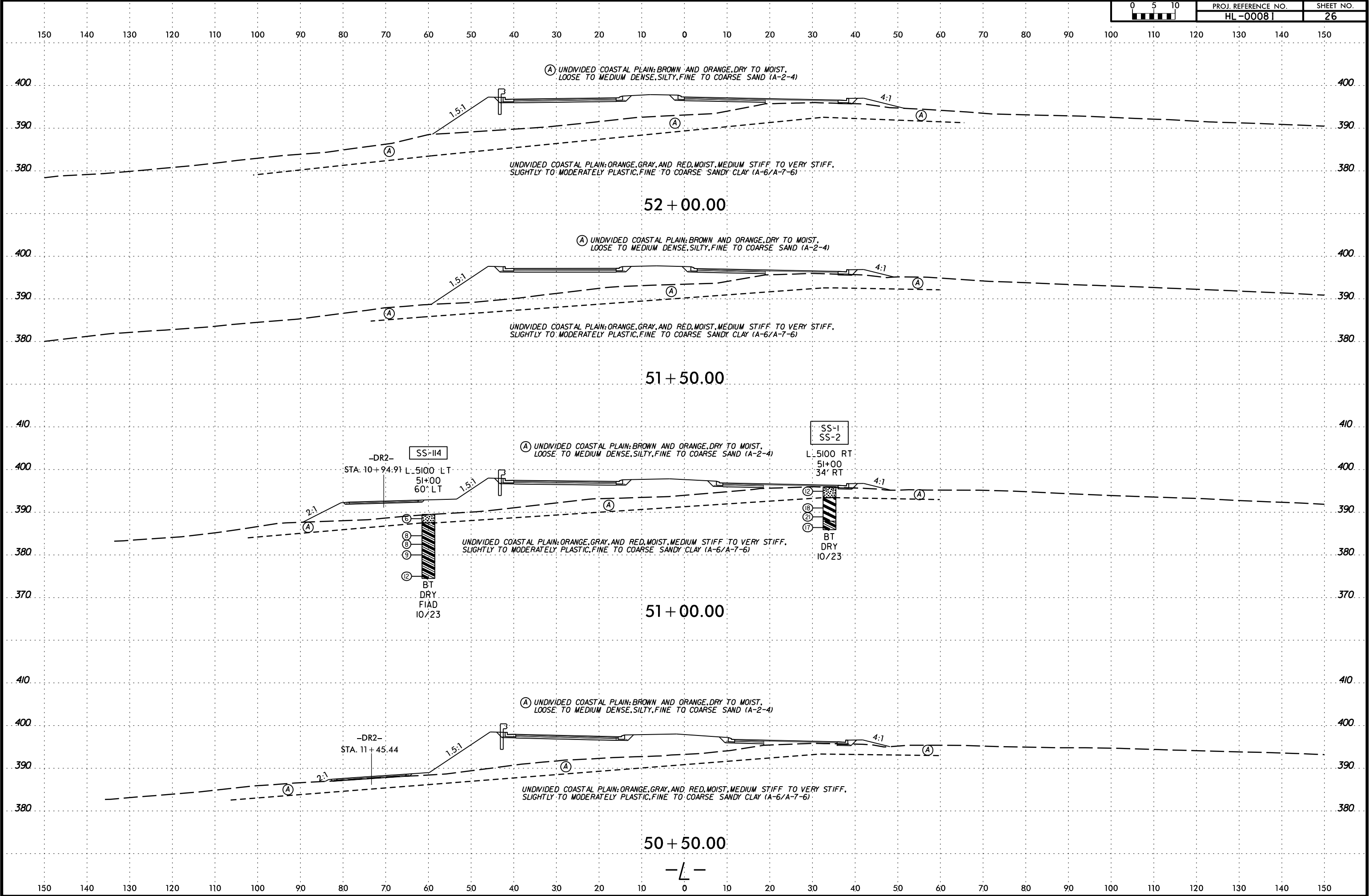
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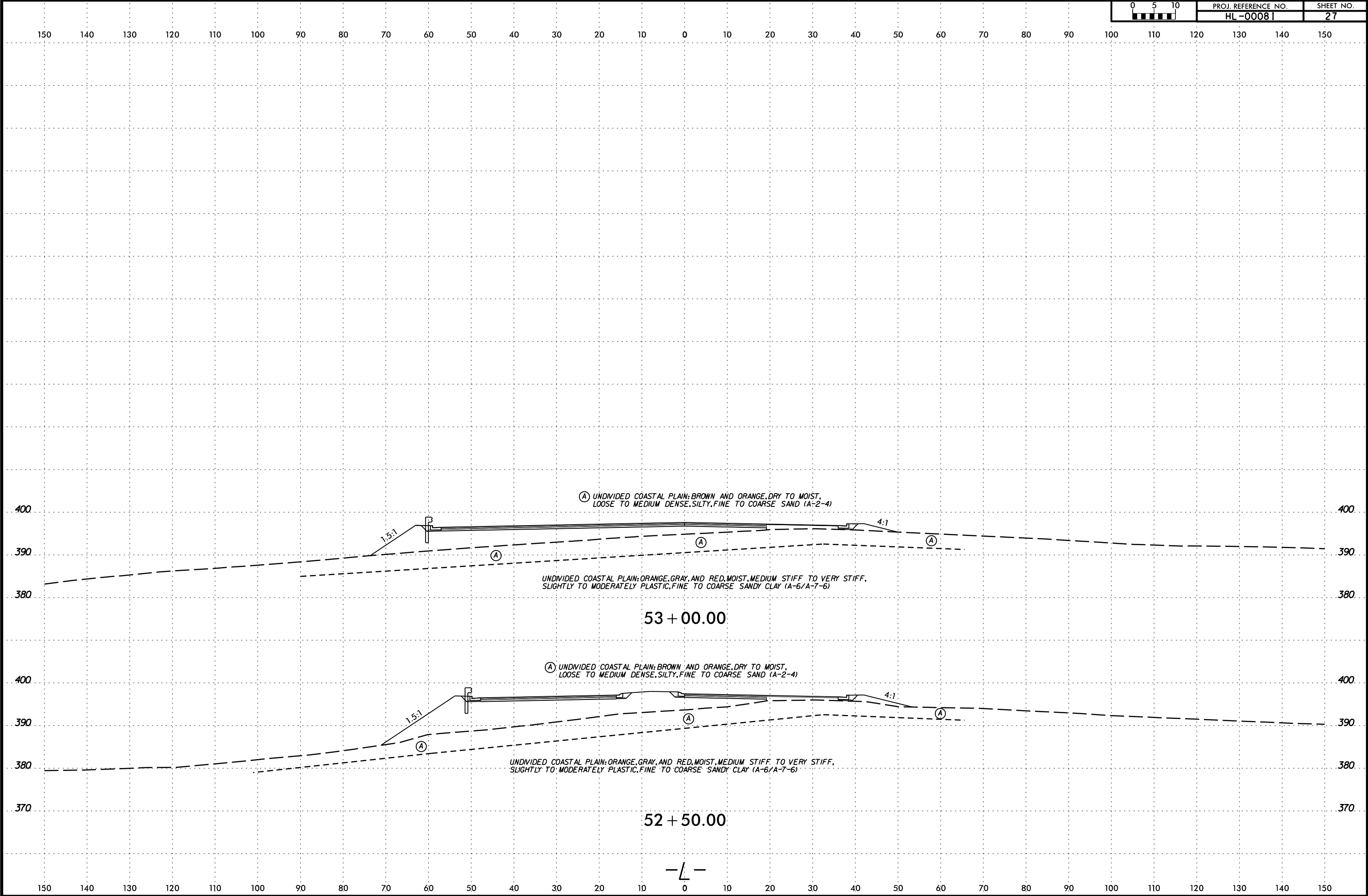
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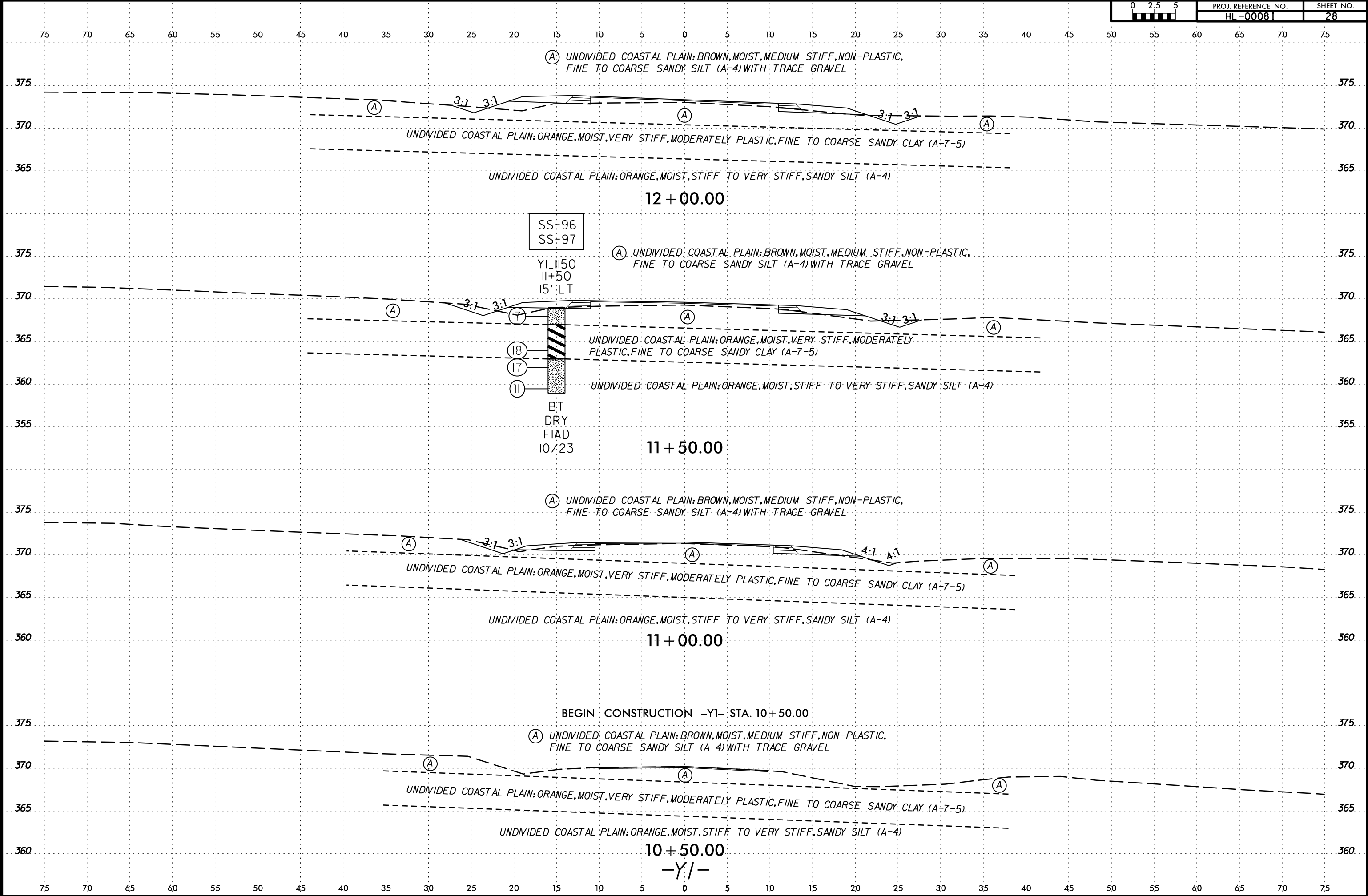
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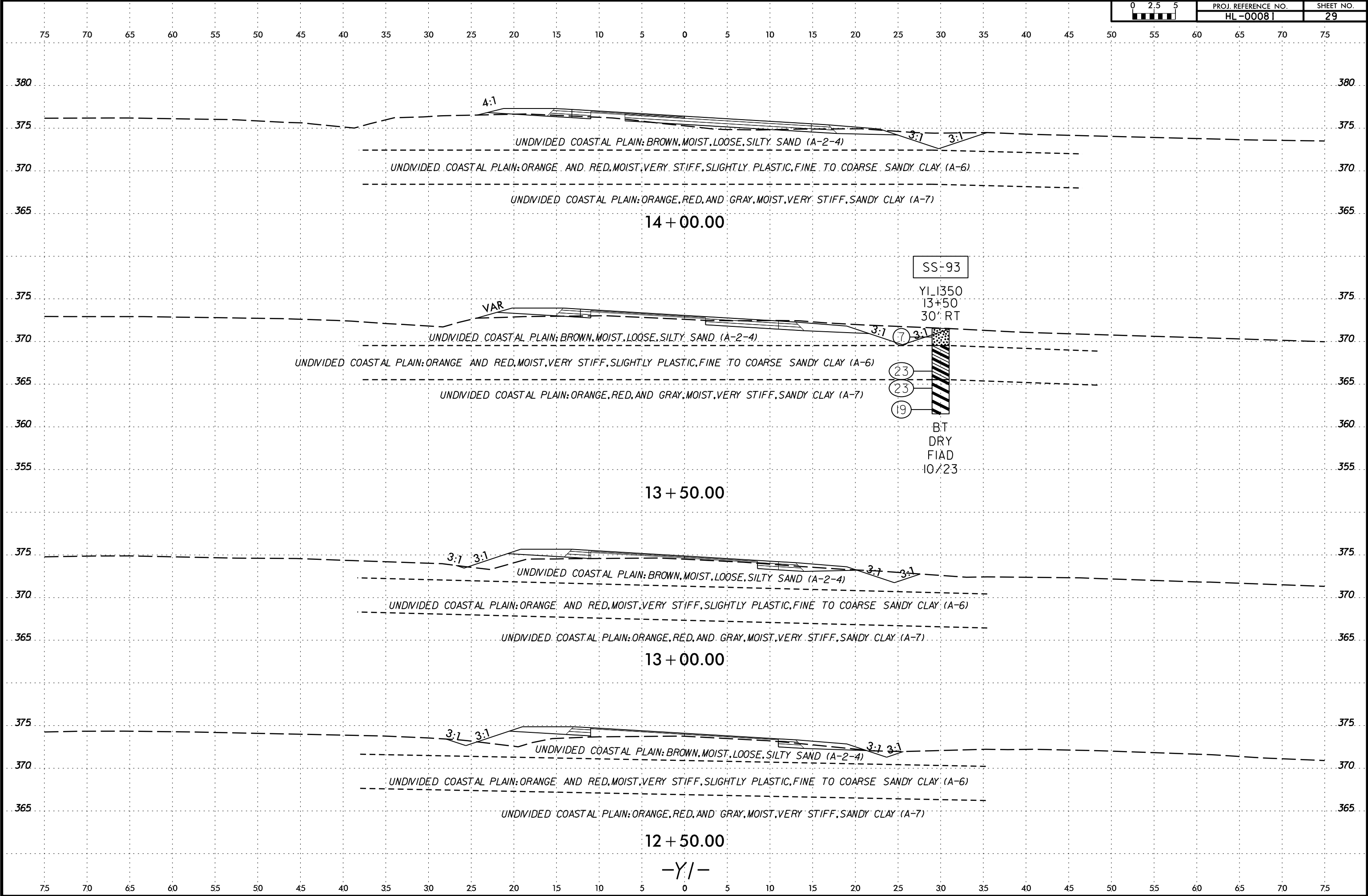
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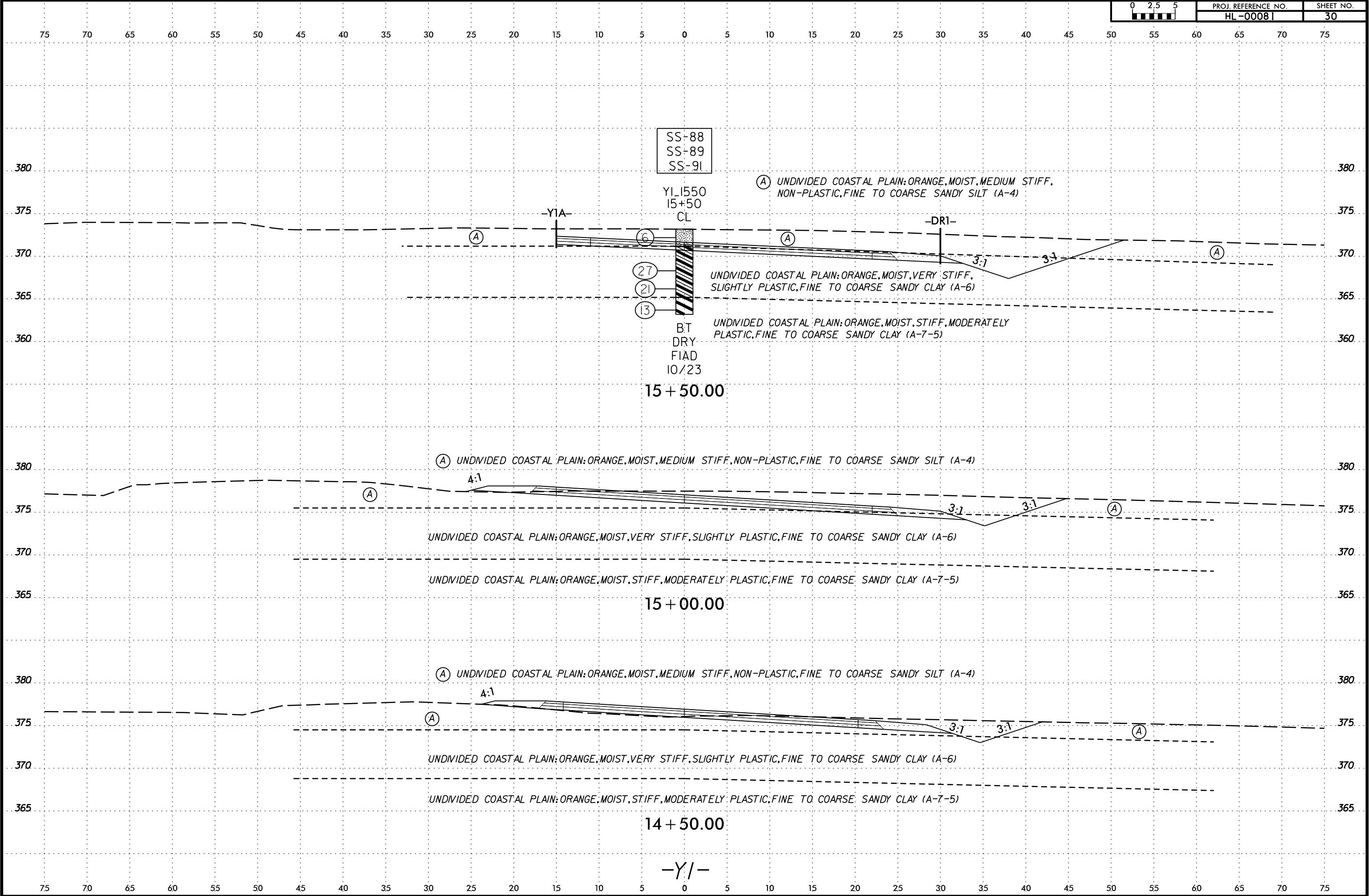
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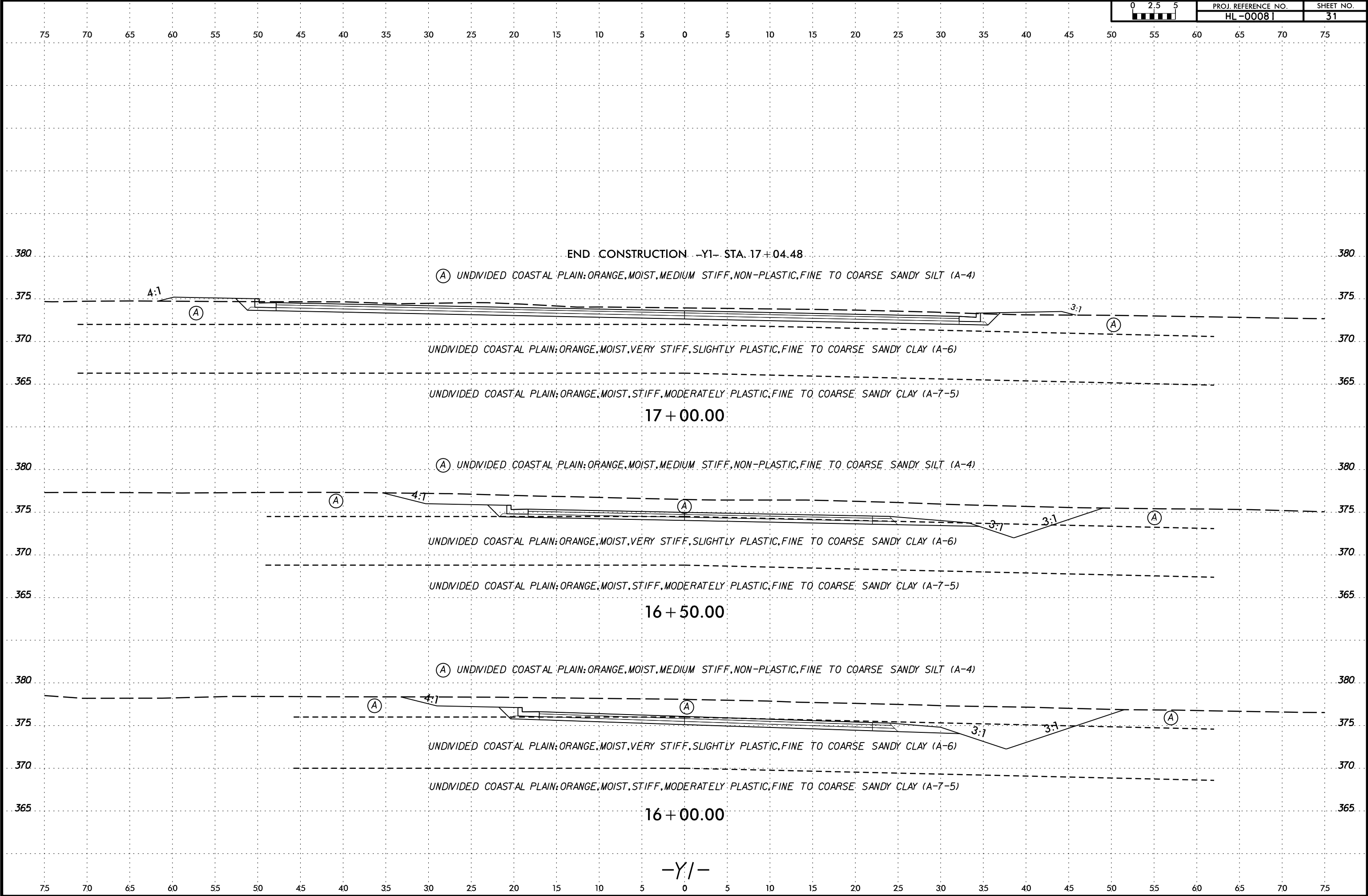


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-Y1A-

(A) UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, MEDIUM STIFF, FINE TO COARSE SANDY SILT (A-4)

(A)

(A)

UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, VERY STIFF, FINE TO COARSE SANDY CLAY (A-6)

(A) UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, MEDIUM STIFF, FINE TO COARSE SANDY SILT (A-4)

(A)

(A)

UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, VERY STIFF, FINE TO COARSE SANDY CLAY (A-6)

(A) UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, MEDIUM STIFF, FINE TO COARSE SANDY SILT (A-4)

(A)

(A)

UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, VERY STIFF, FINE TO COARSE SANDY CLAY (A-6)

(A) UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, MEDIUM STIFF, FINE TO COARSE SANDY SILT (A-4)

(A)

(A)

UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, VERY STIFF, FINE TO COARSE SANDY CLAY (A-6)

(A) UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, MEDIUM STIFF, FINE TO COARSE SANDY SILT (A-4)

(A)

(A)

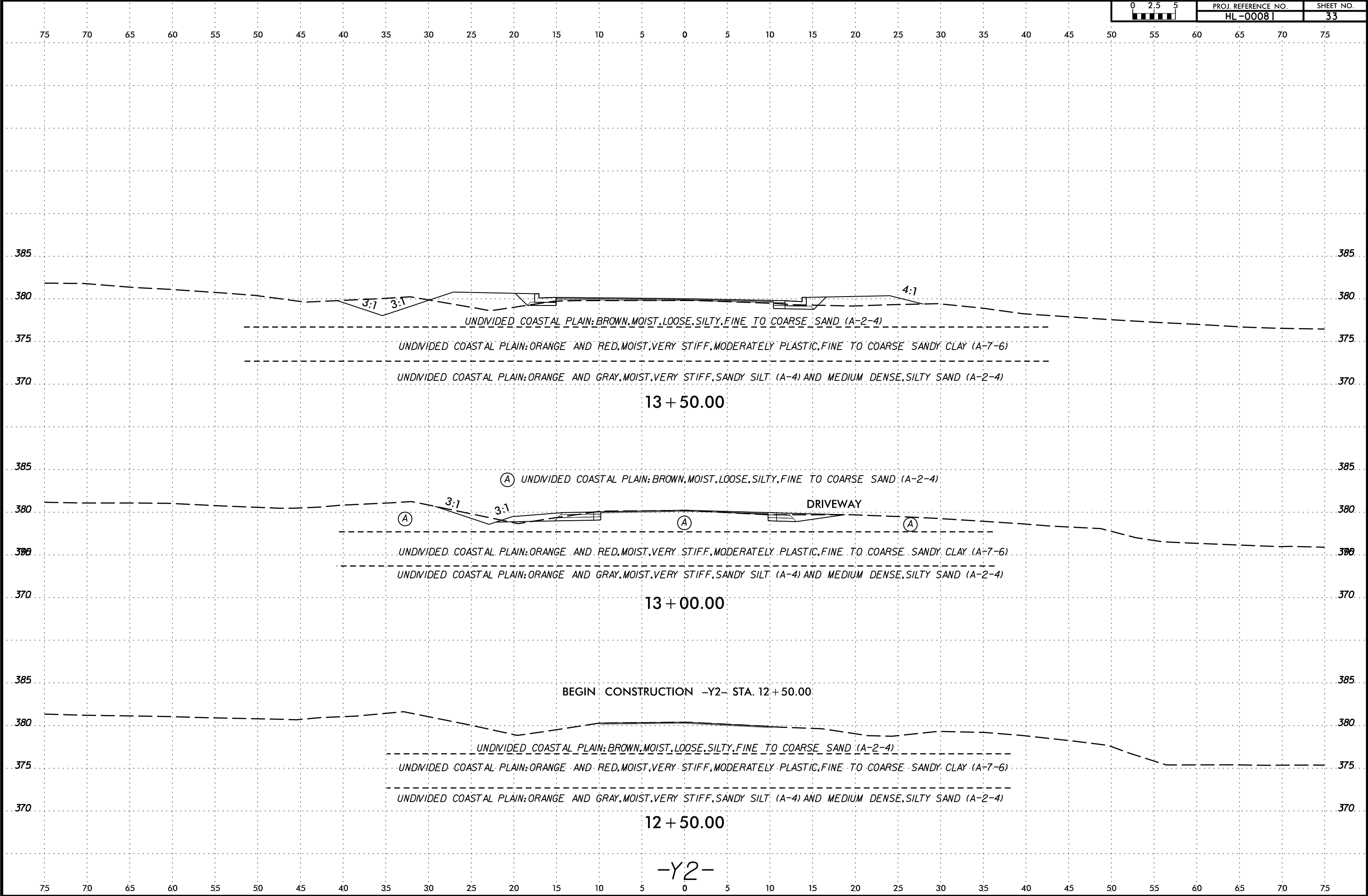
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UNDIVIDED COASTAL PLAIN: ORANGE, MOIST, VERY STIFF, FINE TO COARSE SANDY CLAY (A-6)

6/23/16

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	HL-00081	33



-Y2-

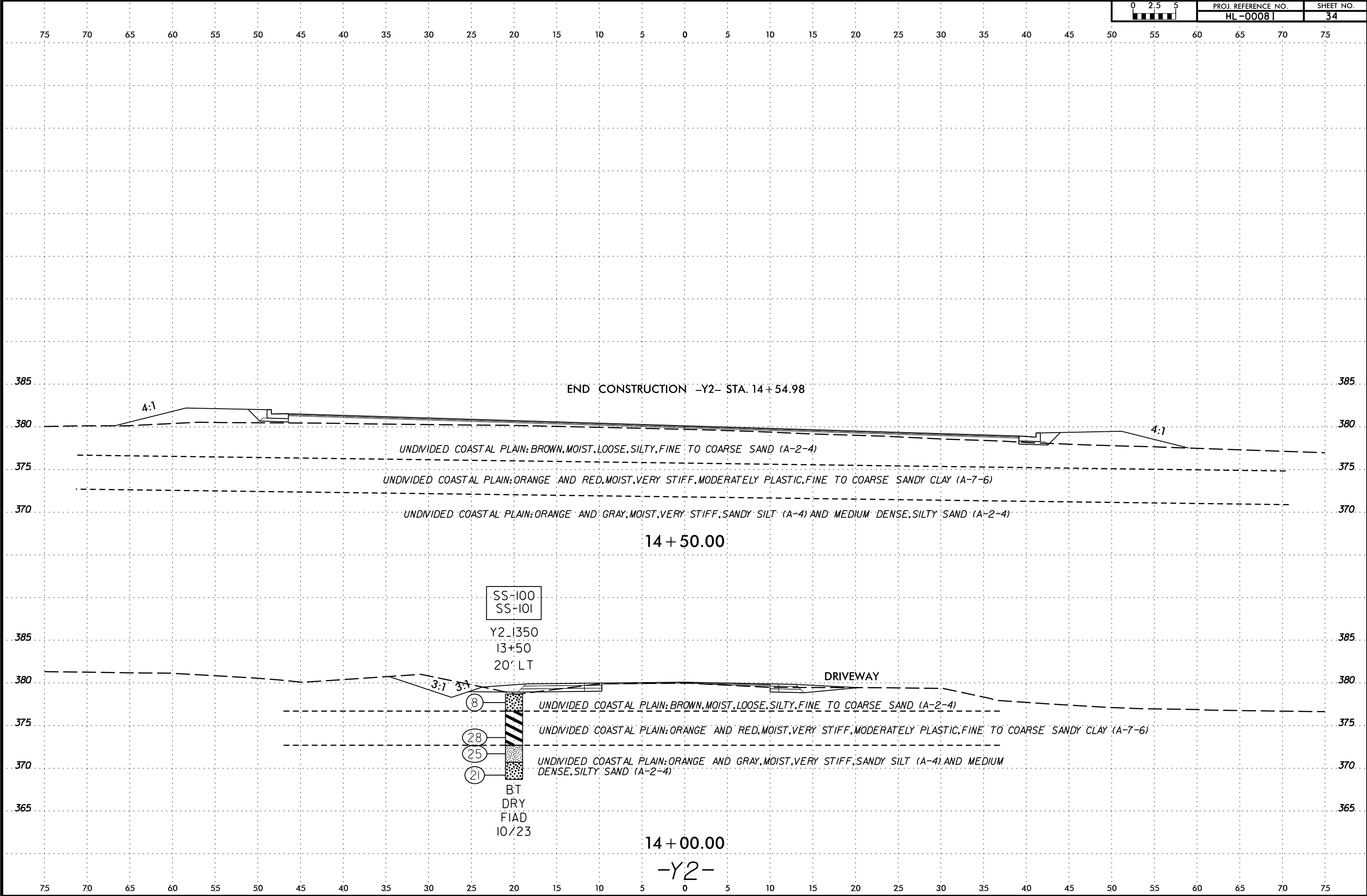
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mike.leer AT GEOL45112021A



PROJ. REFERENCE NO.
HL-00081

SHEET NO.
35

END CONSTRUCTION -Y3- STA. 12+40.00

(A) UNDIVIDED COASTAL PLAIN: BROWN, MOIST, SOFT, SANDY SILT (A-4)

4:1

(A)

(A)

(A)

UNDIVIDED COASTAL PLAIN: ORANGE AND RED, MOIST, SOFT, SANDY CLAY (A-6)

12+00.00

4:1

4:1

UNDIVIDED COASTAL PLAIN: BROWN, MOIST, SOFT, SANDY SILT (A-4)

UNDIVIDED COASTAL PLAIN: ORANGE AND RED, MOIST, SOFT, SANDY CLAY (A-6)

11+50.00

ROADWAY EMBANKMENT: RED, MOIST, SOFT, SILTY CLAY (A-7)

Y3_I095

10+95

CL

(A) UNDIVIDED COASTAL PLAIN: BROWN, MOIST, SOFT, SANDY SILT (A-4)

4:1

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UNDIVIDED COASTAL PLAIN: ORANGE AND RED, MOIST, SOFT, SANDY CLAY (A-6)

BT

DRY

FIAD

03/24

11+00.00

4:1

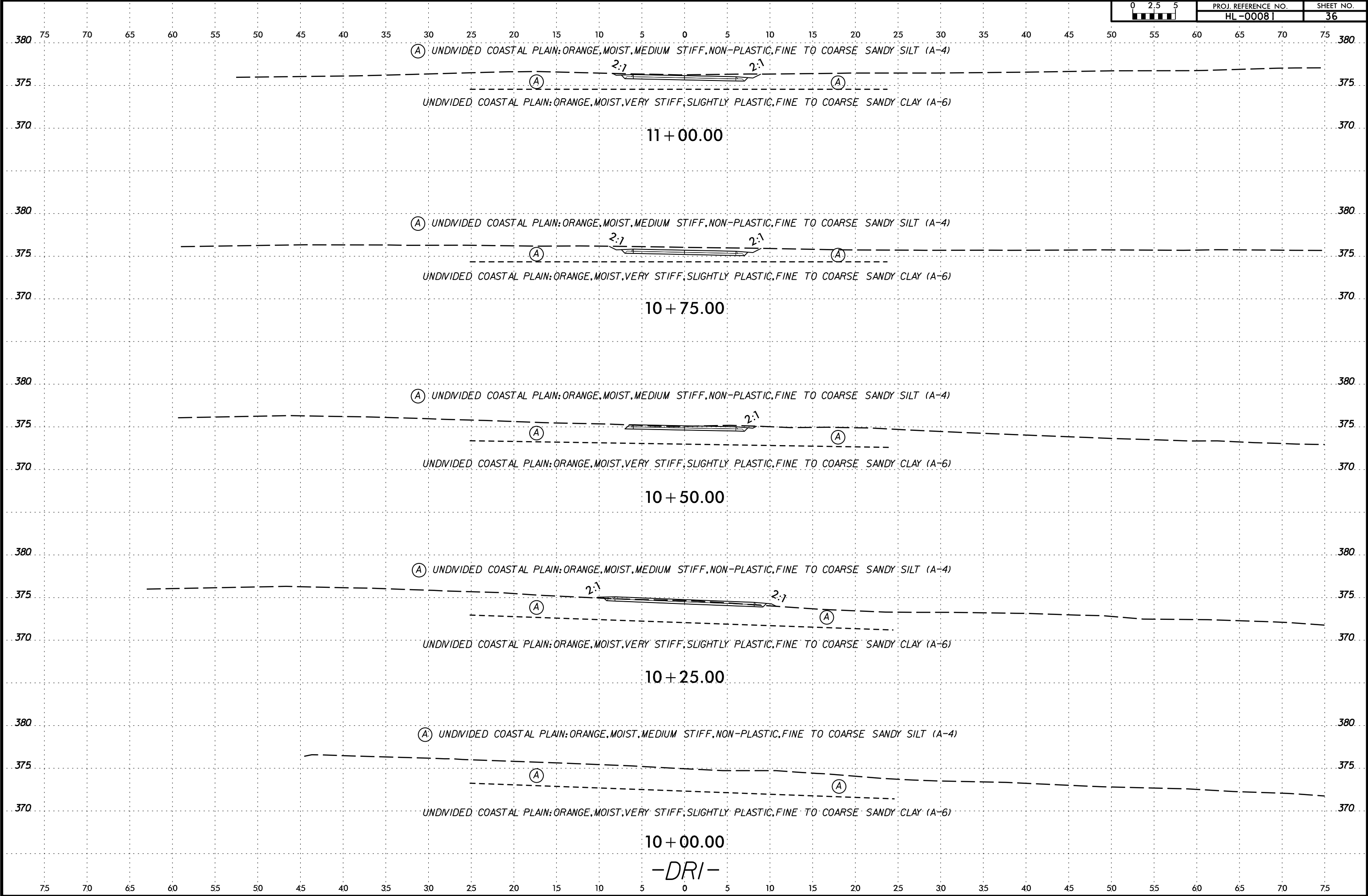
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UNDIVIDED COASTAL PLAIN: BROWN, MOIST, SOFT, SANDY SILT (A-4)

UNDIVIDED COASTAL PLAIN: ORANGE AND RED, MOIST, SOFT, SANDY CLAY (A-6)

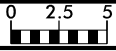
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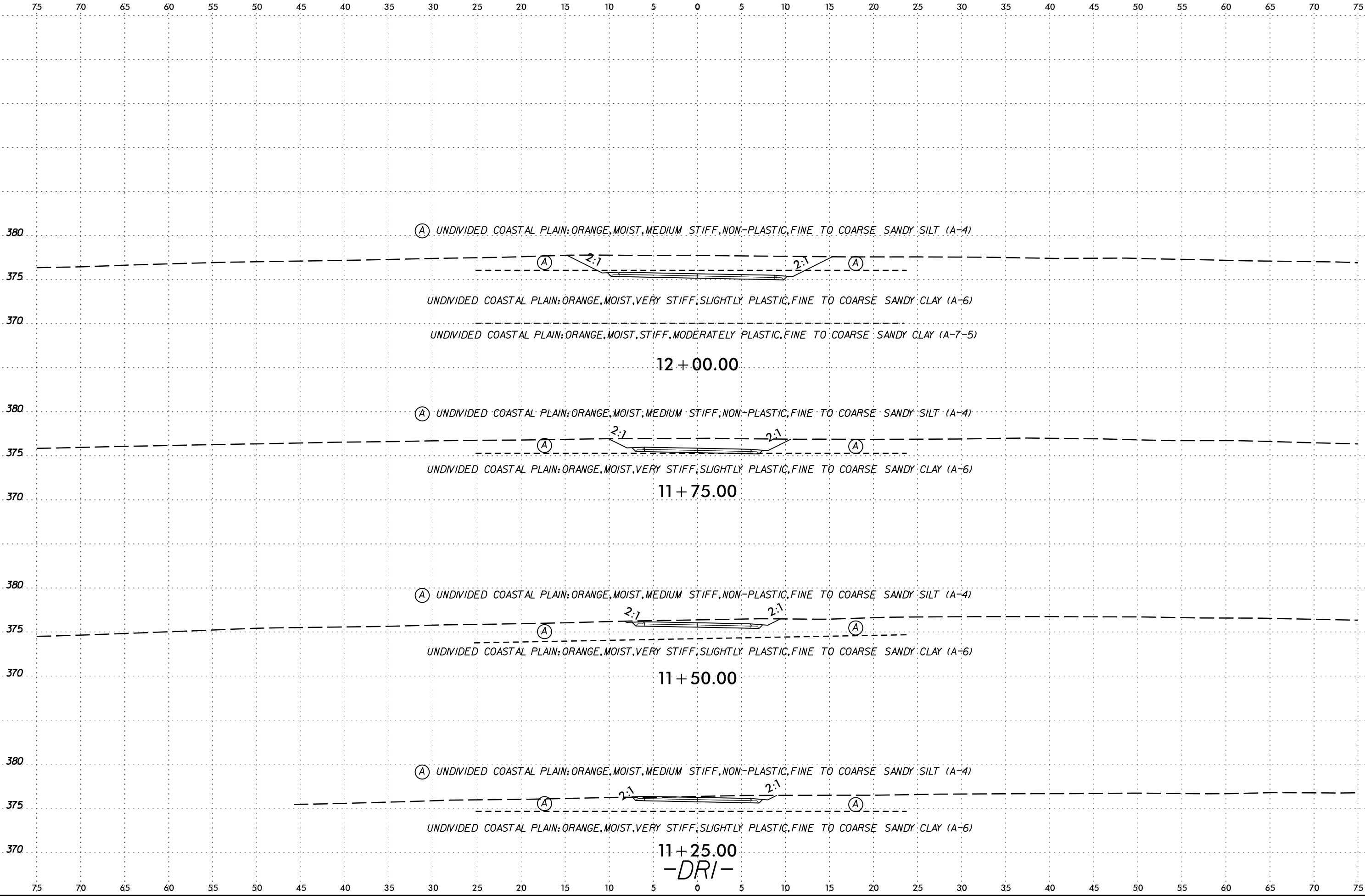
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mke.leer

	PROJ. REFERENCE NO.	SHEET NO.
	HL-00081	37



PROJECT: 49367 REFERENCE: HL-00081

PROJECT REFERENCE NO.	SHEET NO.
HL-00081	38

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
APPENDIX A
LABORATORY TEST RESULTS

SUMMARY OF LABORATORY DATA

WBS Number: 49367.1.9
TIP Number: HL-0008I
County: WAKE
Description: Widening of SR 1006 (Old Stage Road) From SR 2736 (Rock Station Service Road) to SR 3884 (Rolling Meadows Drive)



SOIL TEST RESULTS																			
SAMPLE NO.	BORING	NORTH	EAST	ALIGNMENT	STATION	OFFSET	DEPTH INTERVAL (ft)	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
											C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-76	L_1150	685224	2097999	-L-	11+50	30' LT	0.0-1.5	A-2-4(0)	16	2	41.8	30.1	9.4	18.7	99	75	30	11.9	-
SS-77	L_1150	685224	2097999	-L-	11+50	30' LT	4.0-5.5	A-7-5(15)	50	16	9.4	14.8	20.5	55.3	97	90	79	25.2	-
SS-81	L_1350	685401	2097909	-L-	13+50	35' LT	4.0-5.5	A-2-4(0)	23	0	42.7	34.0	4.7	18.6	100	80	26	16.1	-
SS-83	L_1350	685401	2097909	-L-	13+50	35' LT	8.5-10.0	A-7-5(9)	48	15	20.6	21.3	9.3	48.8	100	89	64	23.0	-
SS-86	L_1550	685581	2097818	-L-	15+50	40' LT	6.0-7.5	A-6(4)	33	15	25.2	29.7	10.7	34.4	100	85	52	14.4	-
SS-73	L_1750	685796	2097809	-L-	17+50	40' RT	3.7-5.2	A-2-4(0)	16	1	50.4	36.0	5.5	8.1	99	70	19	17.3	-
SS-69	L_1900	685930	2097760	-L-	19+00	40' RT	4.0-5.5	A-7-5(35)	72	39	9.4	16.7	19.4	54.5	97	90	80	23.7	-
SS-63	L_2100	686119	2097718	-L-	21+00	17' RT	0.0-1.5	A-7-6(7)	45	21	31.7	18.4	7.4	42.5	95	75	51	18.6	-
SS-59	L_2300	686318	2097726	-L-	23+00	20' RT	0.0-1.5	A-2-4(0)	15	0	47.0	38.2	5.0	9.8	98	72	20	5.3	-
SS-56	L_2450	686469	2097720	-L-	24+50	9' RT	4.0-5.5	A-2-4(0)	14	0	56.1	33.0	3.2	7.7	94	64	13	15.8	-
SS-51	L_2650	686668	2097742	-L-	26+50	25' RT	4.0-5.5	A-7-6(7)	53	28	41.6	15.2	7.9	35.3	95	75	43	16.4	-
SS-46	L_2850	686867	2097778	-L-	28+50	56' RT	4.1-5.6	A-2-6(1)	37	16	52.1	16.0	4.1	27.8	99	74	33	11.6	-
SS-42	L_3050	687068	2097759	-L-	30+50	30' RT	3.9-5.4	A-7-6(9)	49	21	27.6	19.6	4.0	48.8	98	83	55	18.2	-
SS-37	L_3350	687357	2097780	-L-	33+40	40' RT	0.0-1.5	A-2-4(0)	13	0	39.9	39.4	6.9	13.8	99	80	26	5.2	-
SS-38	L_3350	687357	2097780	-L-	33+40	40' RT	4.0-5.5	A-7-6(5)	41	19	34.7	23.5	3.1	38.7	100	80	45	14.1	-
SS-32	L_3550	687566	2097799	-L-	35+50	51' RT	0.0-1.5	A-6(2)	29	14	33.7	27.5	6.2	32.6	98	79	42	10.5	-
SS-33	L_3550	687566	2097799	-L-	35+50	51' RT	4.0-5.5	A-6(4)	40	20	39.0	22.4	4.0	34.6	99	77	41	16.7	-
SS-24	L_3950	687967	2097794	-L-	39+50	30' RT	0.0-1.5	A-2-4(0)	15	3	35.7	34.3	9.8	20.2	97	80	34	9.1	-
SS-25	L_3950	687967	2097794	-L-	39+50	30' RT	4.1-5.6	A-7-6(8)	47	22	29.3	22.1	6.7	41.9	98	85	51	19.3	-
SS-17	L_4350	688342	2097808	-L-	43+25	30' RT	0.0-1.5	A-2-4(0)	14	0	46.4	28.3	5.9	19.4	99	72	29	6.5	-
SS-18	L_4350	688342	2097808	-L-	43+25	30' RT	3.9-5.4	A-7-6(11)	48	22	24.9	19.2	7.4	48.5	98	85	58	18.7	-
SS-104	L_4700 LT	688723	2097751	-L-	47+00	50' LT	0.0-1.5	A-2-6(2)	35	19	35.4	29.6	1.1	33.9	91	75	35	16.8	-
SS-106	L_4700 LT	688723	2097751	-L-	47+00	50' LT	6.0-7.5	A-6(2)	39	18	45.1	19.1	3.9	31.9	99	65	37	14.8	-
SS-10	L_4700 RT	688693	2097836	-L-	46+80	38' RT	4.0-5.5	A-7-6(9)	42	15	15.5	28.1	9.9	46.5	94	84	66	18.2	-
SS-11	L_4700 RT	688693	2097836	-L-	46+80	38' RT	6.0-7.5	A-4(0)	25	4	9.3	63.7	7.9	19.1	100	99	46	15.2	-
SS-108	L_4900 LT	688924	2097784	-L-	49+00	50' LT	0.0-1.5	A-2-7(4)	51	29	35.4	27.7	ND	ND	88	74	35	16.8	-
SS-109	L_4900 LT	688924	2097784	-L-	49+00	50' LT	6.0-7.5	A-7-5(19)	62	32	22.9	16.9	8.4	51.8	93	79	62	17.3	-
SS-110	L_4900 LT	688924	2097784	-L-	49+00	50' LT	8.5-10.0	A-7-6(15)	47	24	22.2	26.7	15.0	36.1	97	82	66	20.4	-
SS-6	L_4900 RT	688908	2097862	-L-	49+00	30' RT	4.1-5.6	A-7-6(6)	45	22	33.4	20.2	9.0	37.4	93	74	46	19.7	-
SS-114	L_5100 LT	689124	2097825	-L-	51+00	60' LT	6.0-7.5	A-6(9)	38	12	10.2	41.8	12.4	35.6	99	91	78	16.7	-
SS-1	L_5100 RT	689099	2097915	-L-	51+00	34' RT	0.0-1.5	A-2-4(0)	13	0	36.1	42.2	10.0	11.7	97	79	29	7.0	-
SS-2	L_5100 RT	689099	2097915	-L-	51+00	34' RT	3.9-5.4	A-7-6(5)	42	17	31.0	24.3	4.7	40.0	97	80	48	17.6	-
SS-96	Y1_1150	685631	2097208	-Y1-	11+50	15' LT	0.0-1.5	A-4(0)	20	5	36.6	28.1	7.5	27.8	95	73	38	10.8	-
SS-97	Y1_1150	685631	2097208	-Y1-	11+50	15' LT	4.0-5.5	A-7-5(22)	77	24	15.2	17.7	6.4	60.7	98	89	72	26.7	-
SS-93	Y1_1350	685772	2097388	-Y1-	13+50	30' RT	4.0-5.5	A-6(5)	33	14	21.5	32.9	13.6	32.0	99	86	54	12.3	-
SS-88	Y1_1550	685834	2097551	-Y1-	15+50	CL	0.0-1.5	A-4(0)	16	4	39.0	25.3	7.9	27.8	95	74	38	19.3	-
SS-89	Y1_1550	685834	2097551	-Y1-	15+50	CL	3.9-5.4	A-6(4)	35	14	27.2	29.9	9.0	33.9	98	81	48	14.6	-
SS-91	Y1_1550	685834	2097551	-Y1-	15+50	CL	8.5-10.0	A-7-5(15)	58	23	21.3	16.1	9.6	53.0	100	88	65	26.9	-

SUMMARY OF LABORATORY DATA

WBS Number: 49367.1.9
TIP Number: HL-0008I
County: WAKE
Description: Widening of SR 1006 (Old Stage Road) From SR 2736 (Rock Station Service Road) to SR 3884 (Rolling Meadows Drive)



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SAMPLE NO.	BORING	NORTH	EAST	ALIGNMENT	STATION	OFFSET	DEPTH INTERVAL (ft)	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING SIEVES			% MOISTURE	% ORGANIC
											C. SAND	F. SAND	SILT	CLAY	10	40	200		
SS-100	Y2_1350	686900	2097585	-Y2-	13+50	20' LT	0.0-1.5	A-2-4(0)	14	0	43.6	36.6	11.3	8.5	99	76	25	7.9	-
SS-101	Y2_1350	686900	2097585	-Y2-	13+50	20' LT	4.1-5.6	A-7-6(5)	46	21	48.5	11.0	5.7	34.8	99	64	42	14.0	-

ND = NOT DETERMINED

Jonathan Pope	120-08-0107	
Technician Name	NCDOT Cert. Number	Signature