

REFERENCE: HL-0008Q

PROJECT: 49367

SEE SHEET 3 FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

ROADWAY SUBSURFACE INVESTIGATION

COUNTY WAKE PROJECT DESCRIPTION -L-, SR 1390 (OPTIMIST FARM RD) AND -Y-, SR 1386 (BELLS LAKE RD.)

INVENTORY

CONTENTS

Table with columns: LINE, STATION, PLAN. Rows: -L-, 14+50 TO 26+40, 4-5; -Y-, 101+10 TO 117+00, 4, 6-7

CROSS SECTIONS

Table with columns: LINE, STATION, X-SECTION. Rows: -L-, 14+50 TO 26+40, 8-24; -Y-, 102+00 TO 117+00, 25-42

Table with columns: STATE, STATE PROJECT REFERENCE NO., SHEET NO., TOTAL SHEETS. Values: N.C., HL-0008Q, 1, 42

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.

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

PERSONNEL

N.O. MOORE C.M. WALKER

INVESTIGATED BY N.O. MOORE DRAWN BY J.L. LOVE CHECKED BY N.T. ROBERSON SUBMITTED BY J.L. LOVE DATE MARCH 2024



DocuSigned by: Jaime L. Love 03/05/2024 B93571039B884B5... SIGNATURE 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

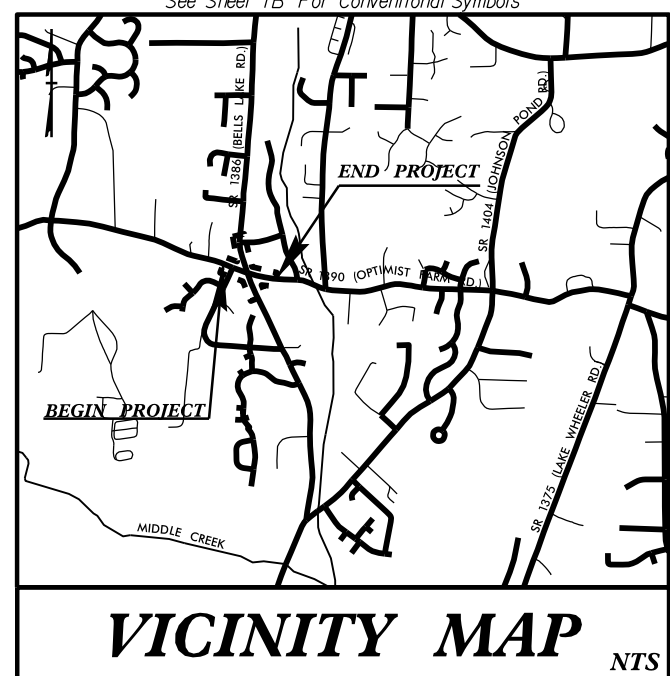
Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. It contains detailed technical specifications, classification charts, and symbols for geotechnical engineering.

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TIP PROJECT: HL-0008Q

CONTRACT:

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



VICINITY MAP
NTS

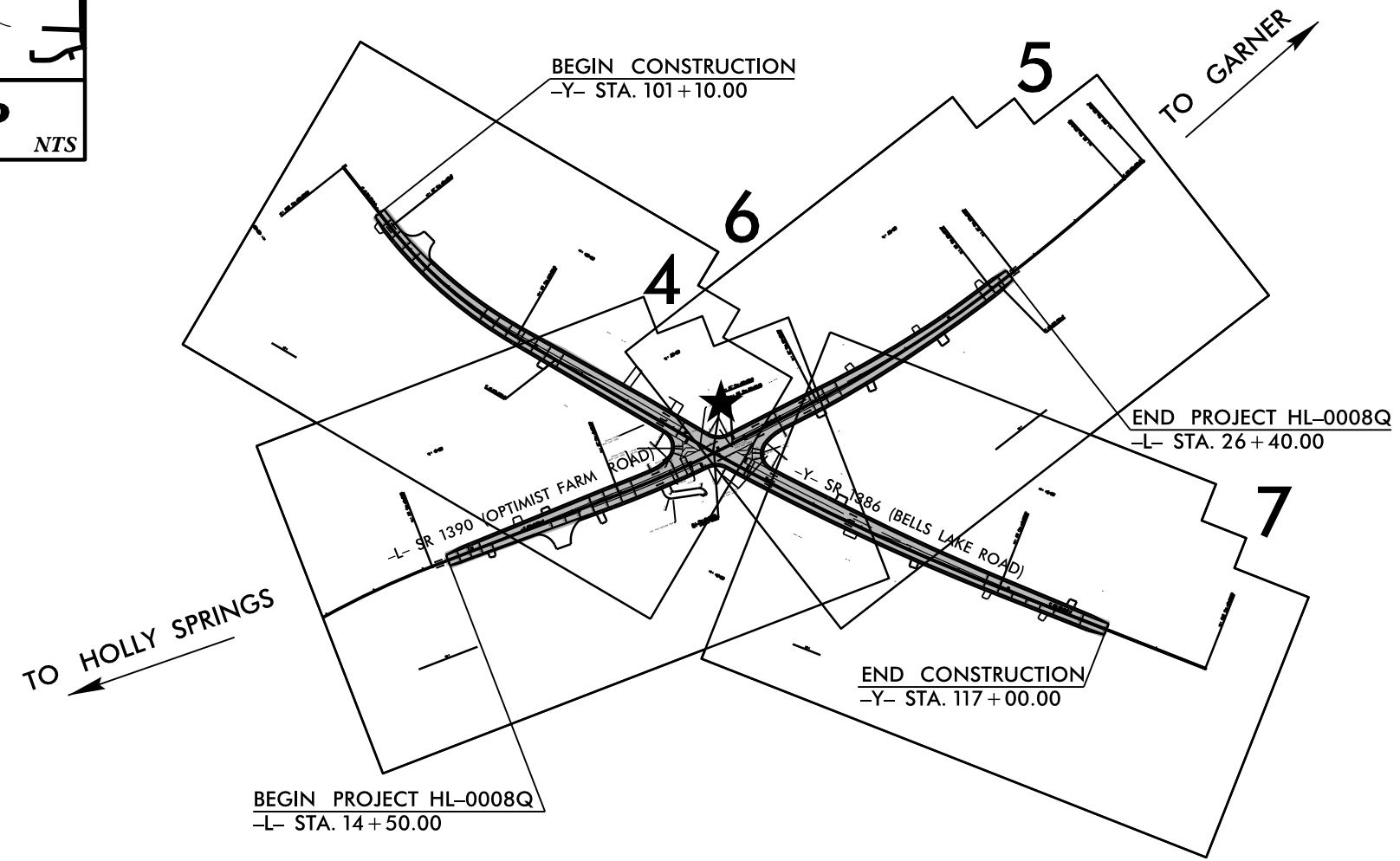
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

LOCATION: SR 1390 (OPTIMIST FARM ROAD) & SR 1386 (BELLS LAKE ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, & SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HL-0008Q	3	42
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49367.1.1	N/A	PE	
49367.2.12	4936712	RW	
49367.3.11	N/A	UTIL	
49367.2.22	N/A	CONST	

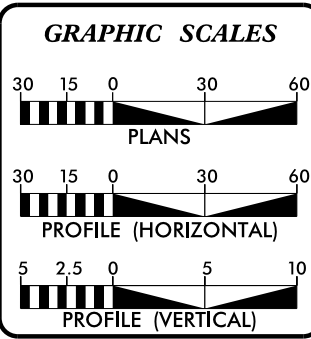
DOCUMENT NOT CONSIDERED FINAL
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PROPOSED SIGNAL

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

SUBMITTAL: ROW PLANS
DATE: 10/2/2023



DESIGN DATA

-L- ADT 2025 = 7,800
-L- ADT 2045 = 10,500
-Y- ADT 2025 = 12,000
-Y- ADT 2045 = 18,000

V = 50 MPH

FUNCTIONAL CLASS:
MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY PROJECT HL-0008Q = 0.225 MILES

NC DOT CONTACT: TYDIRA INGRAM
PROJECT ENGINEER

Prepared in the Office of:
Infrastructure Consulting Services, Inc.

RKA
RAMEY KEMP ASSOCIATES

2024 STANDARD SPECIFICATIONS

OCTOBER 2, 2023
RIGHT OF WAY DATE:
APRIL 9, 2025
LETTING DATE:

KAYLA M. POULOS, PE
PROJECT ENGINEER

MIKAYLA M. LINDSEY, EI
PROJECT DESIGNER

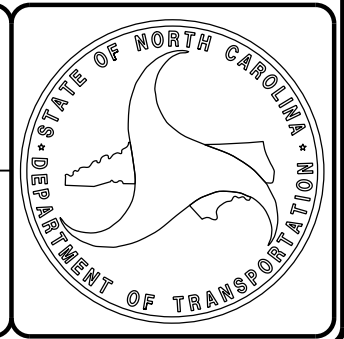
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE:
ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE:





STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JOEY HOPKINS
SECRETARY

March 1, 2024

STATE PROJECT: 49367.2.12 (HL-0008Q)
FEDERAL PROJECT: N/A
COUNTY: WAKE

DESCRIPTION: -L- (SR 1390, Optimist Farm Rd.) at -Y- (SR 1386, Bells Lake Rd.)
Intersection left turn lanes at all legs improvements

SUBJECT: Geotechnical Report – Inventory

The Geotechnical Engineering Unit has completed a subsurface investigation for this project and presents the following inventory.

Project Description

This project consists of adding left turn lanes at the intersection of SR 1390 (Optimist Farm Rd.) and SR 1386 (Bells Lake Rd.) in all directions.

A geotechnical investigation was conducted during December of 2023. Fifteen hand-auger borings were performed by the Geotechnical Engineering Unit. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit.

The following alignments, totaling 0.225 miles, were investigated. Subsurface plans and cross sections of these alignments are included in this report.

<u>Line</u>	<u>Stations</u>
-L-	14+50 to 26+40
-Y-	101+10 to 117+00

Physiography and Geology

The project is located outside the city limits of Raleigh and is within the Coastal Plain province of North Carolina. The project area is comprised of Coastal Plain sandy clays and silty sands. The topography is flat to gently rolling. The widening project is in primarily a residential area.

Soils Properties

Soils encountered during this investigation are Roadway Embankment and Undivided Coastal Plain.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

Telephone: 919-707-6850
Fax: 919-250-4237
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

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

Roadway embankment soils are present along the existing roadways. These soils consist of brown, gray, and orange, loose to medium dense, silty sand (A-2-4) with trace gravel and medium stiff to stiff, highly plastic, silty clay (A-7).

Undivided Coastal Plain soils are also present along the entire project. These soils consist of orange, brown, red and gray, medium stiff to stiff, sandy clay (A-6) and highly plastic, silty clay (A-7). Some lessor amounts of red and gray, stiff, clayey silt (A-5). The plastic index for the clays ranges from 14-32.

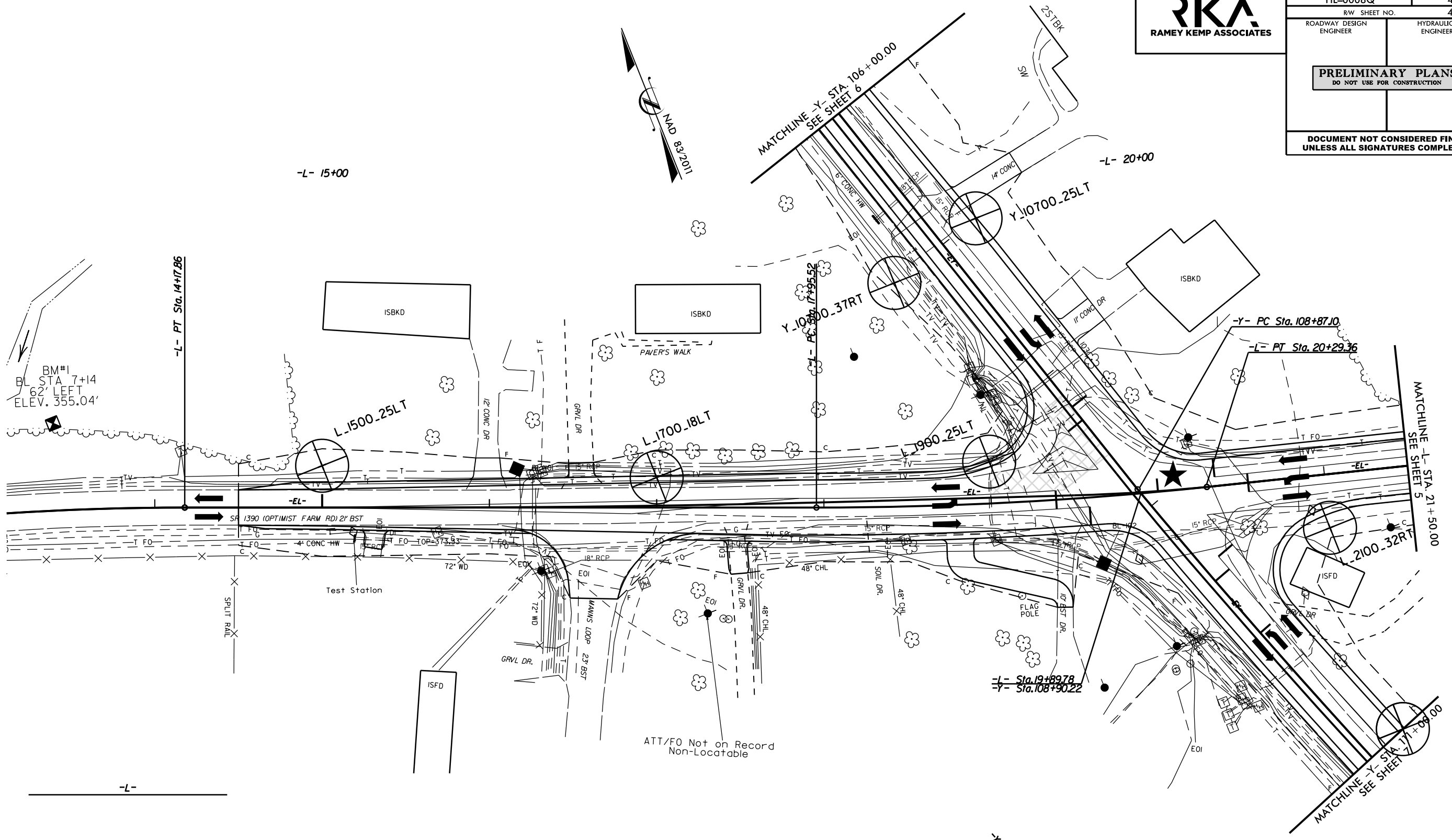
Groundwater

Groundwater measurements were taken in December of 2023 during average rainfall conditions. Groundwater is present in several borings and ranges from 1.6 to 3.7 feet from the ground surface.

8/17/99



PROJECT REFERENCE NO. HL-0008Q	SHEET NO. 4
RW SHEET NO. 4	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



REVISIONS

BM#1
BL STA 7+14
62' LEFT
ELEV. 355.04'

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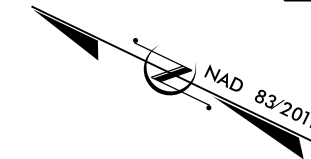
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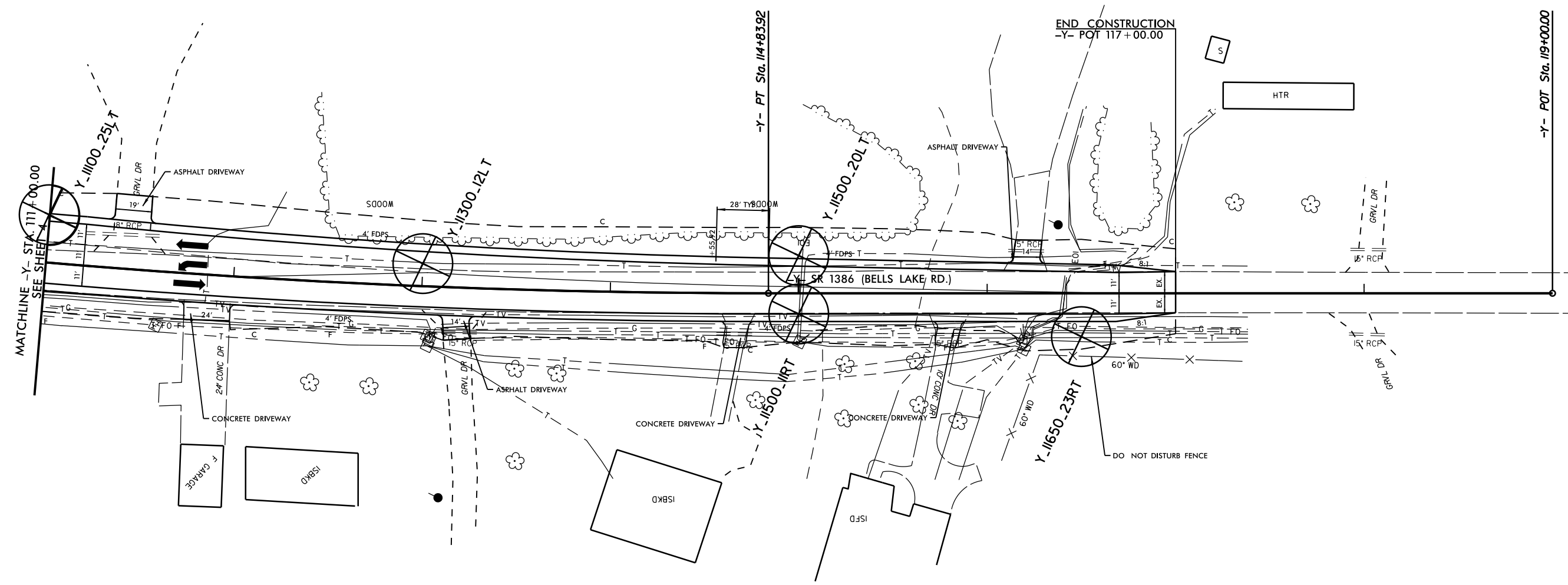
MATCHLINE -L- STA. 21+50.00
SEE SHEET 5

MATCHLINE -Y- STA. 11+00.00
SEE SHEET 7

PROJECT REFERENCE NO. HL-0008Q	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-Y- 115+00



MATCHLINE -Y- STA. 111+00.00
SEE SHEET

END CONSTRUCTION
-Y- POT 117+00.00

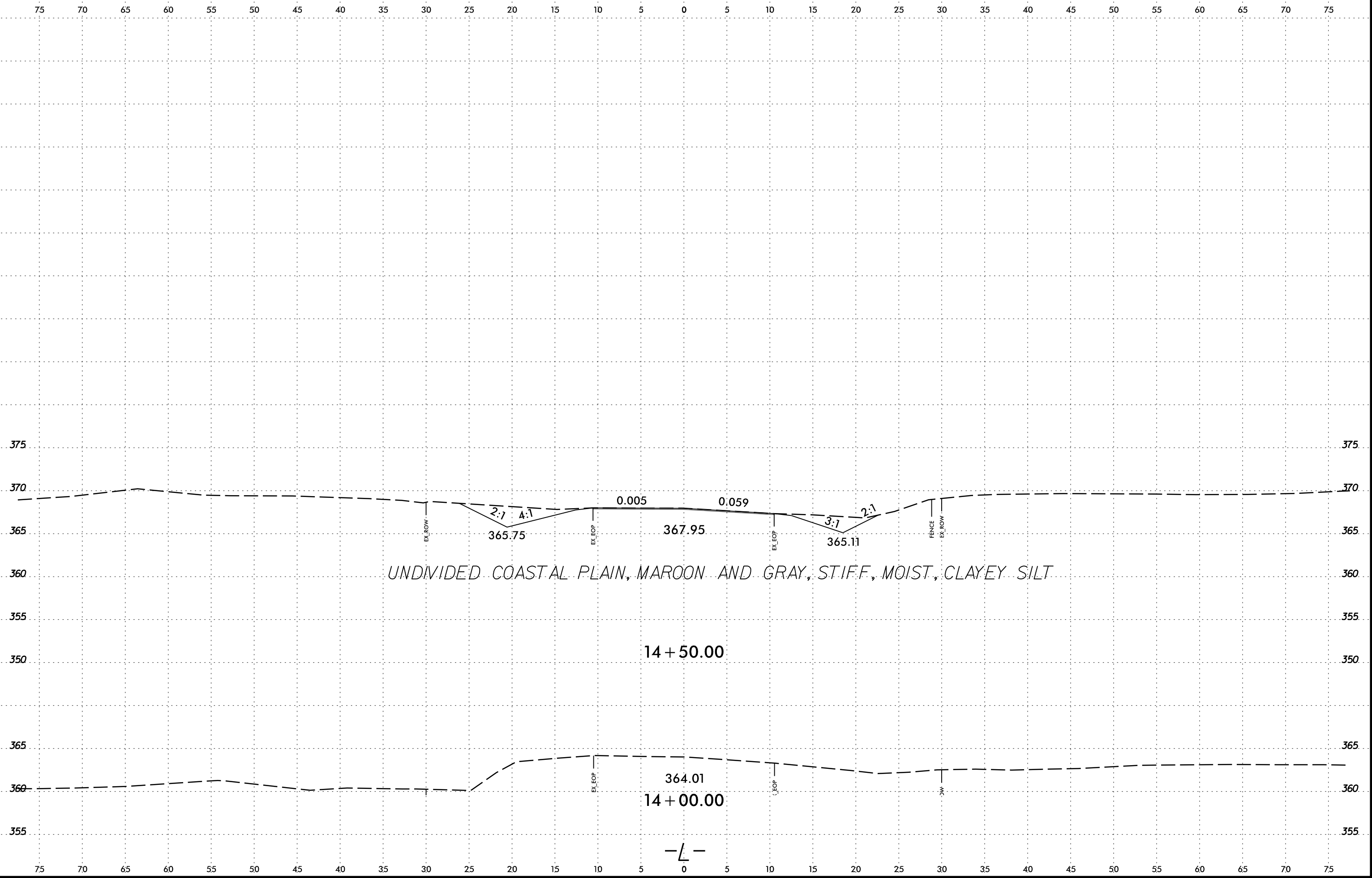
-Y- POT Sta. 119+00.00

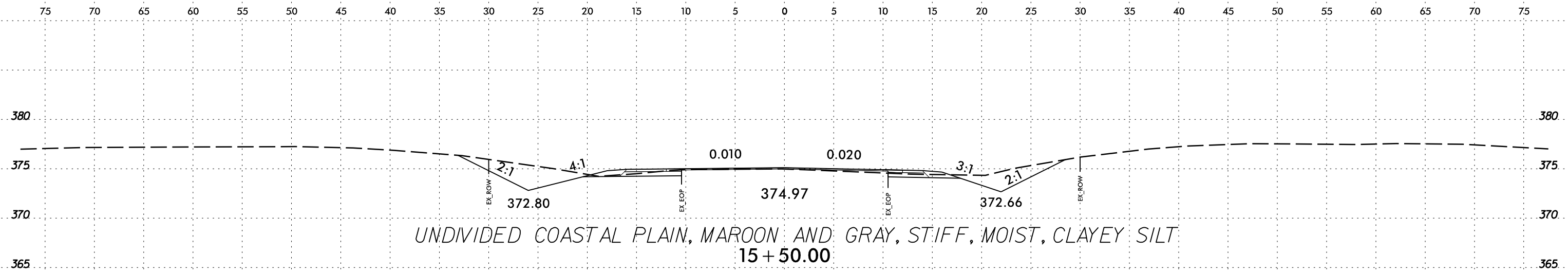
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REVISIONS

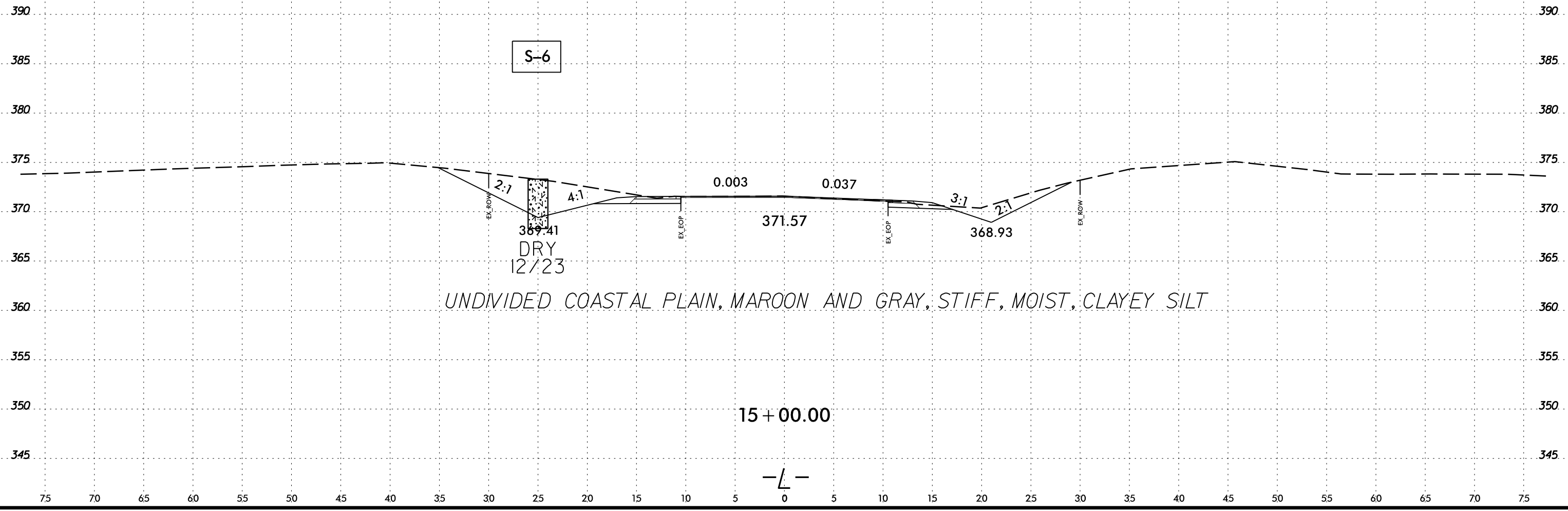
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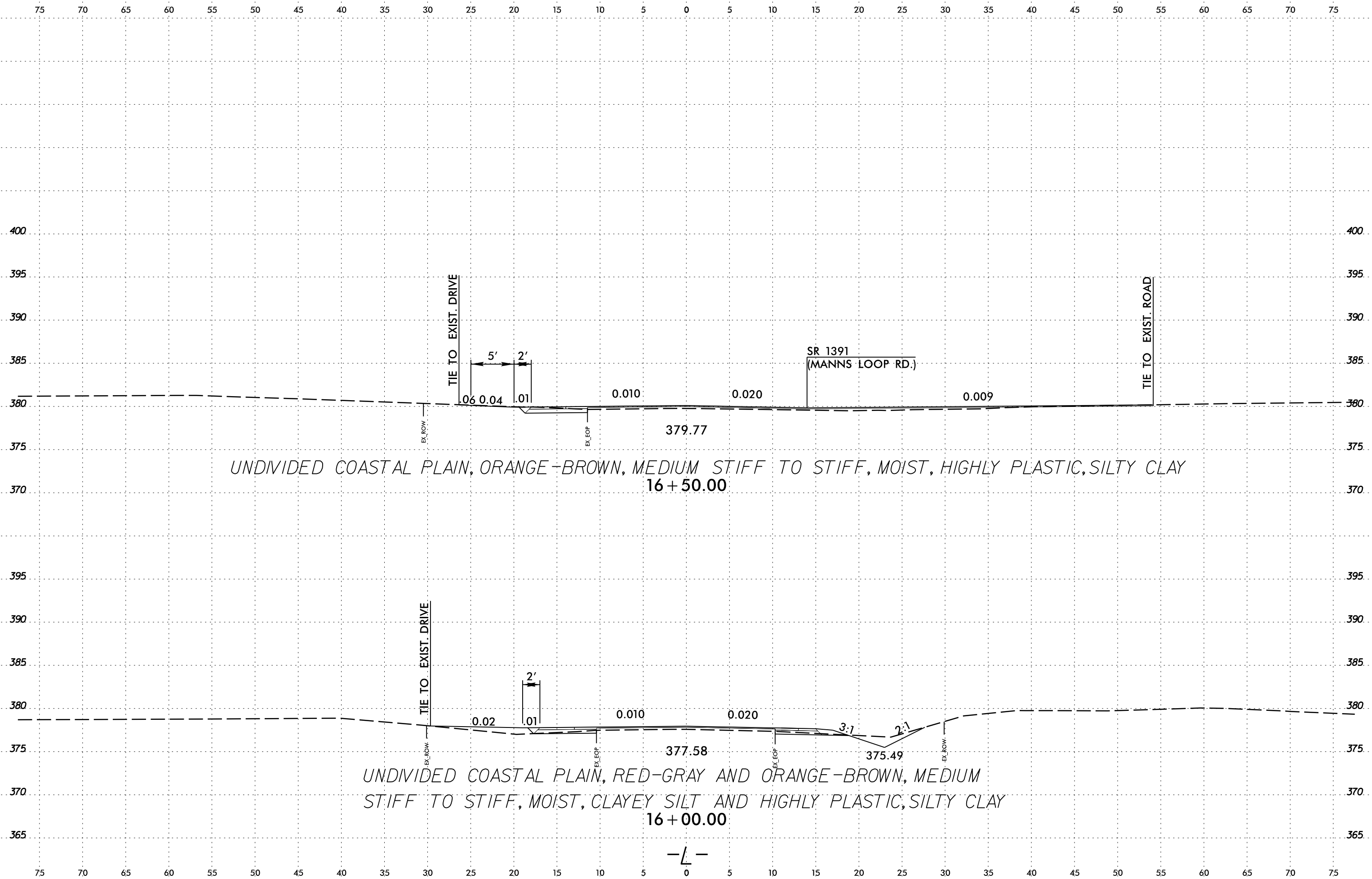
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-6	25 LT	15+00	1.5-2.0	A-5(4)	43	1	1.8	29.4	56.7	12.1	100	99	82	-	-

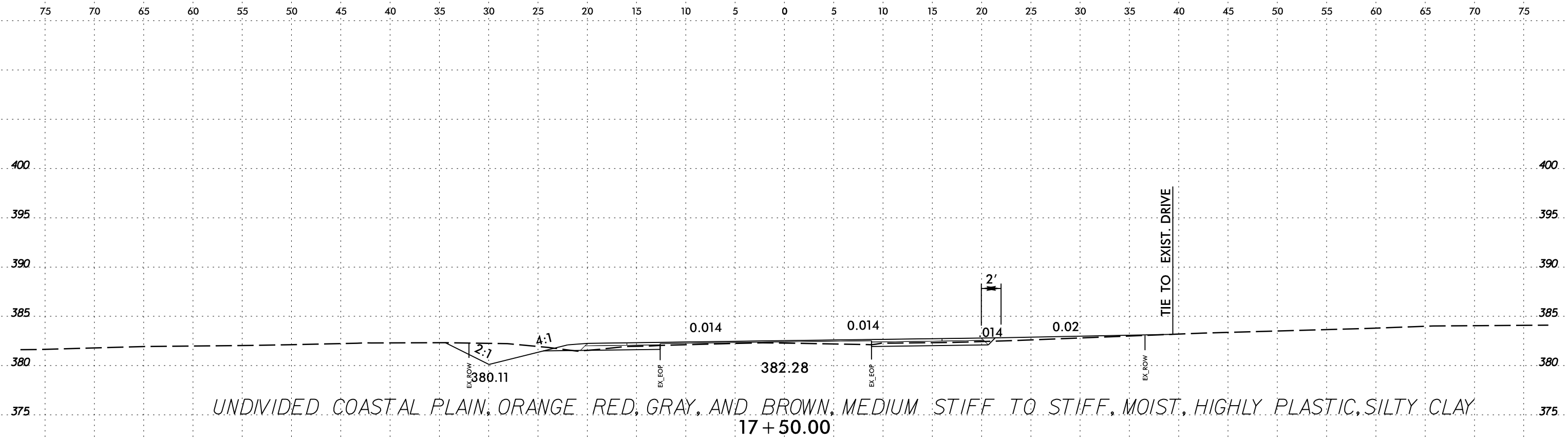




UNDIVIDED COASTAL PLAIN, ORANGE-BROWN, MEDIUM STIFF TO STIFF, MOIST, HIGHLY PLASTIC, SILTY CLAY
 16+50.00

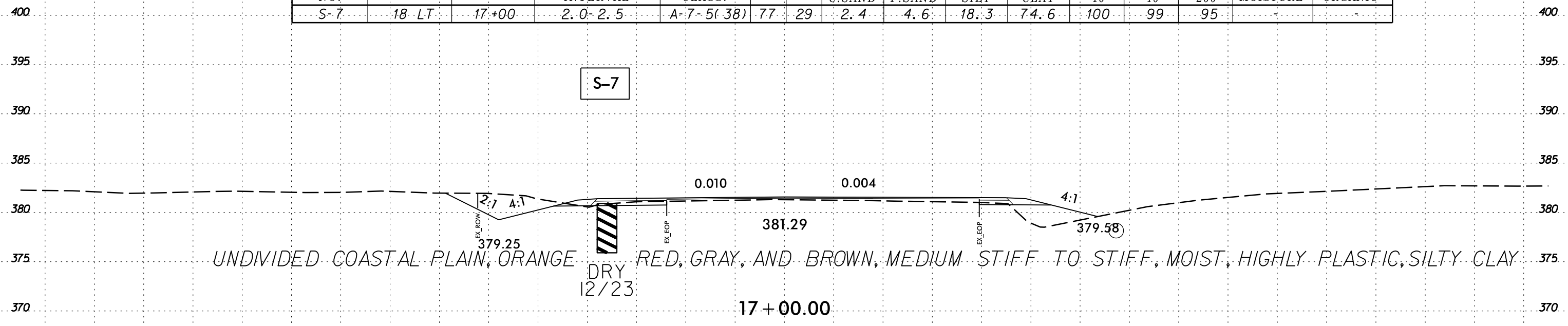
UNDIVIDED COASTAL PLAIN, RED-GRAY AND ORANGE-BROWN, MEDIUM STIFF TO STIFF, MOIST, CLAYEY SILT AND HIGHLY PLASTIC, SILTY CLAY
 16+00.00

-L-

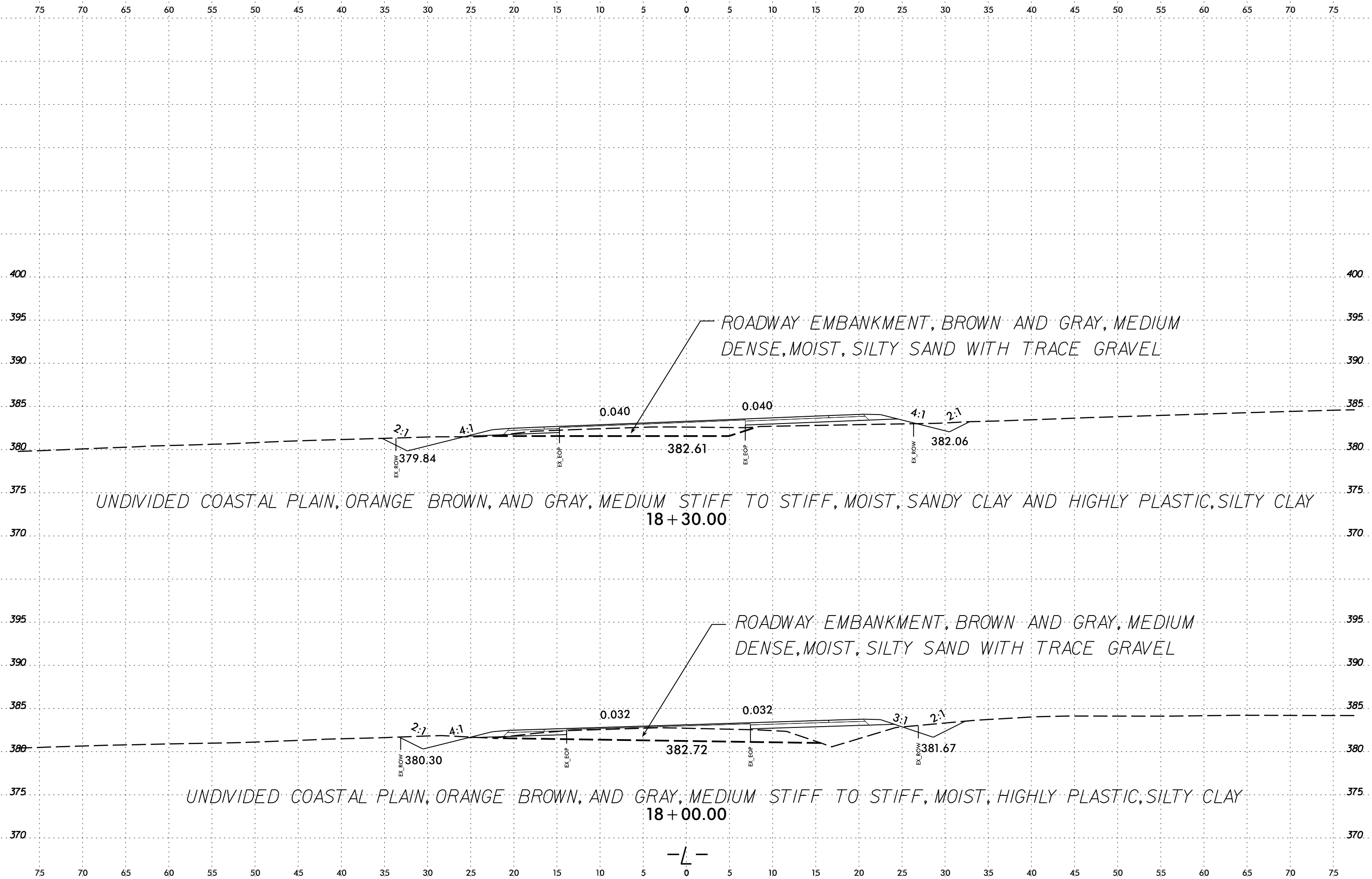


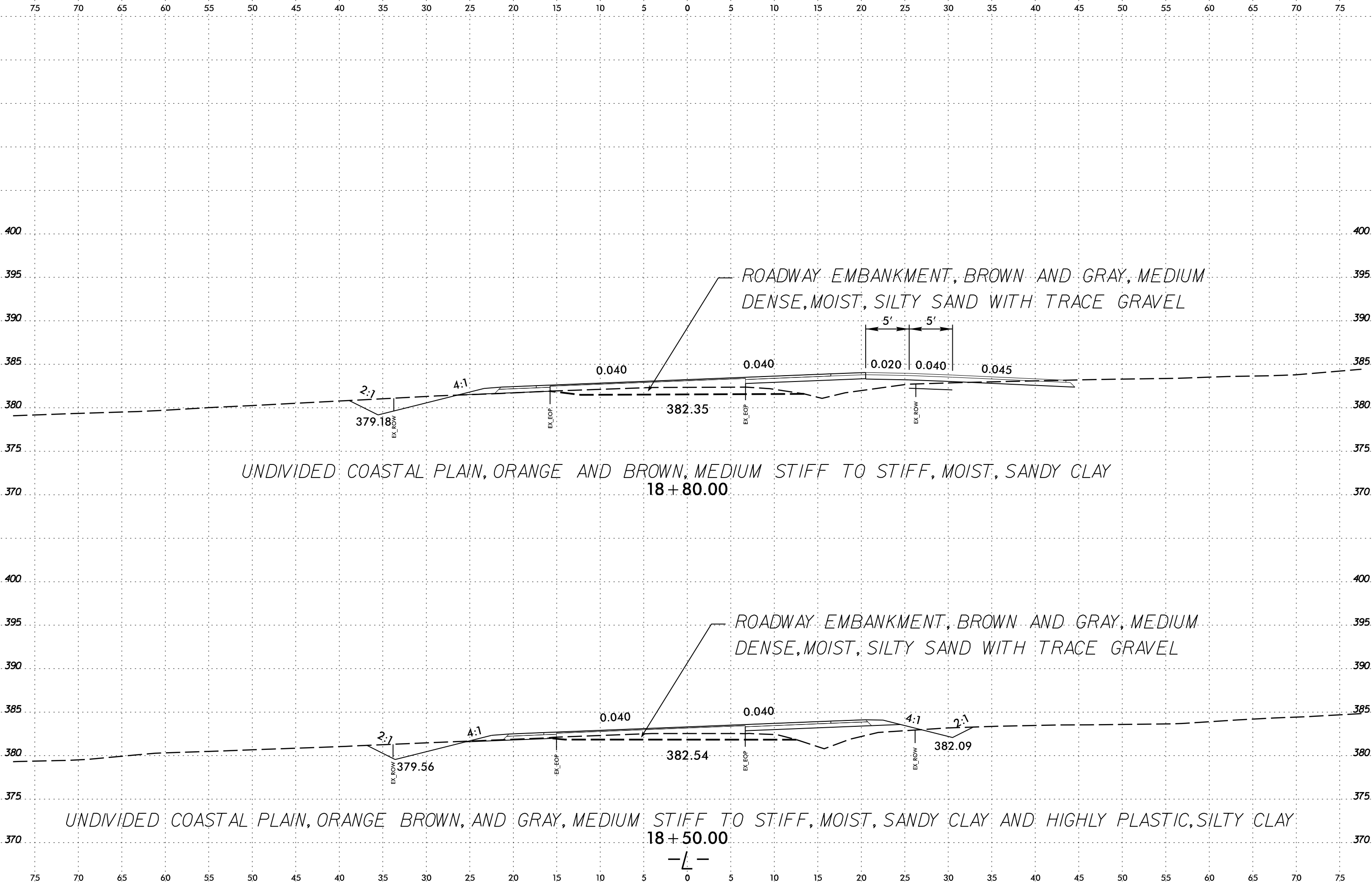
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							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-7	18 LT	17+00	2.0-2.5	A-7-5(38)	77	29	2.4	4.6	18.3	74.6	100	99	95		

S-7



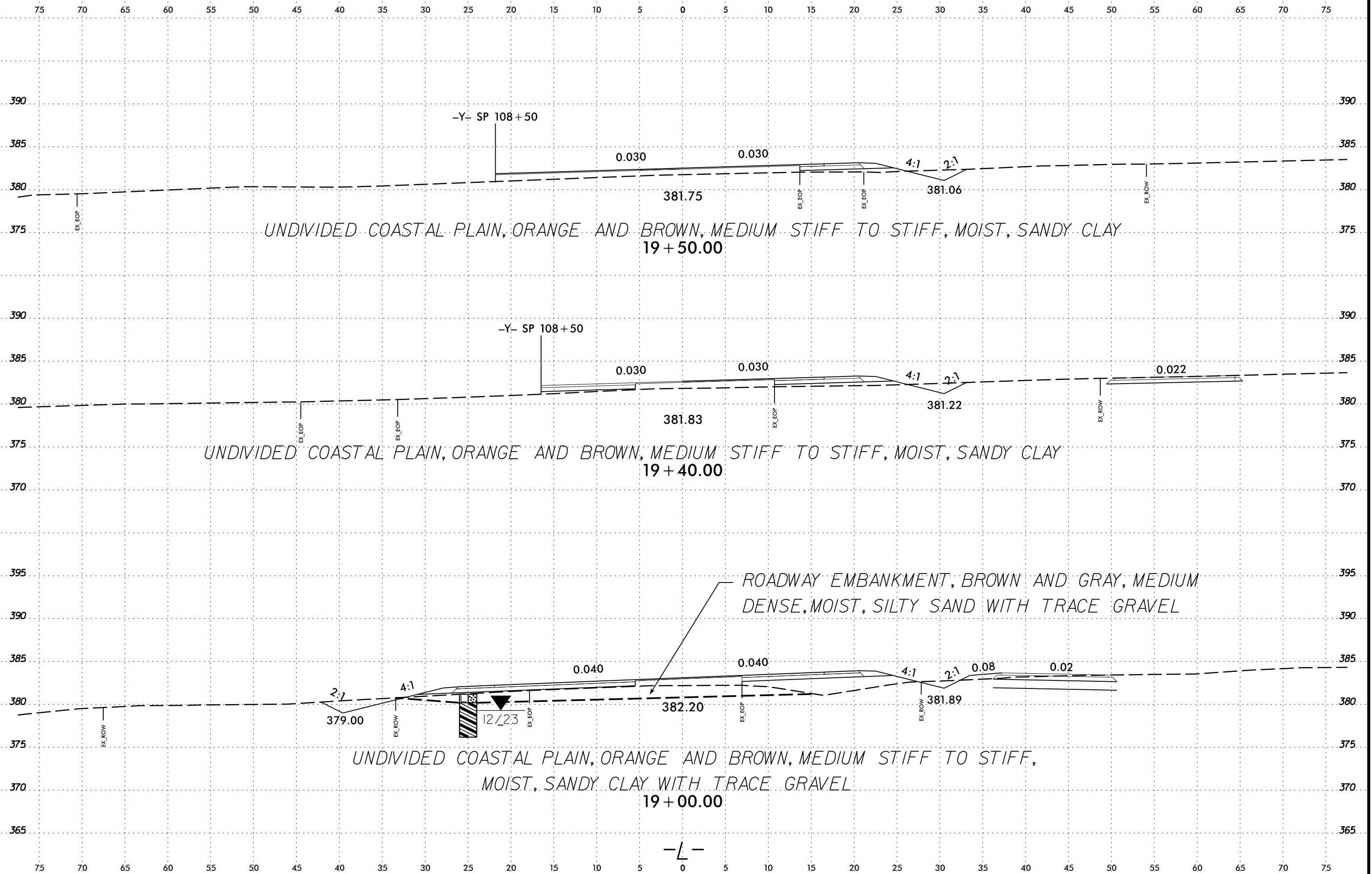
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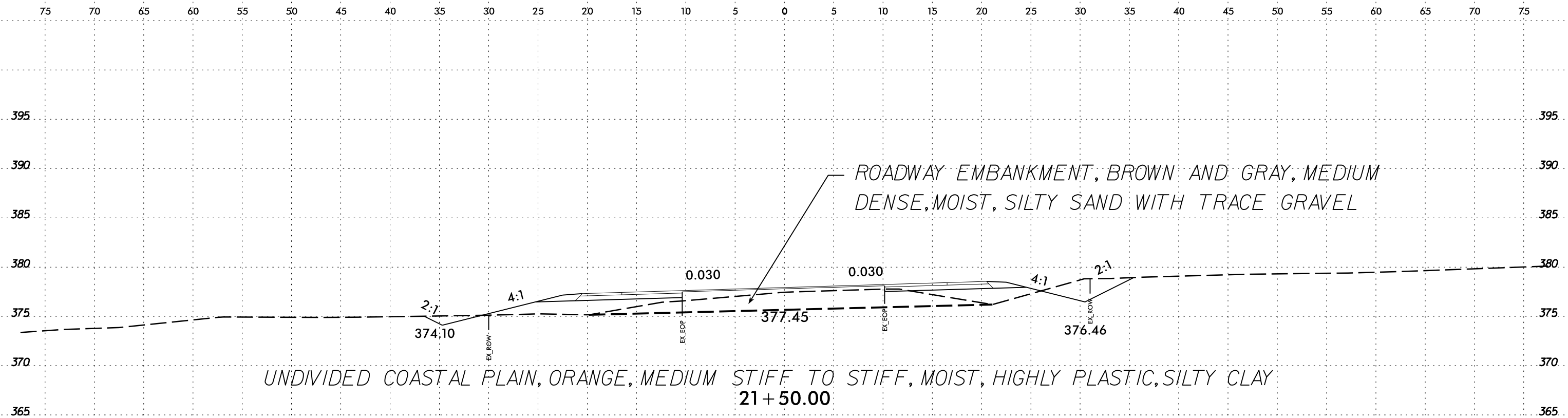




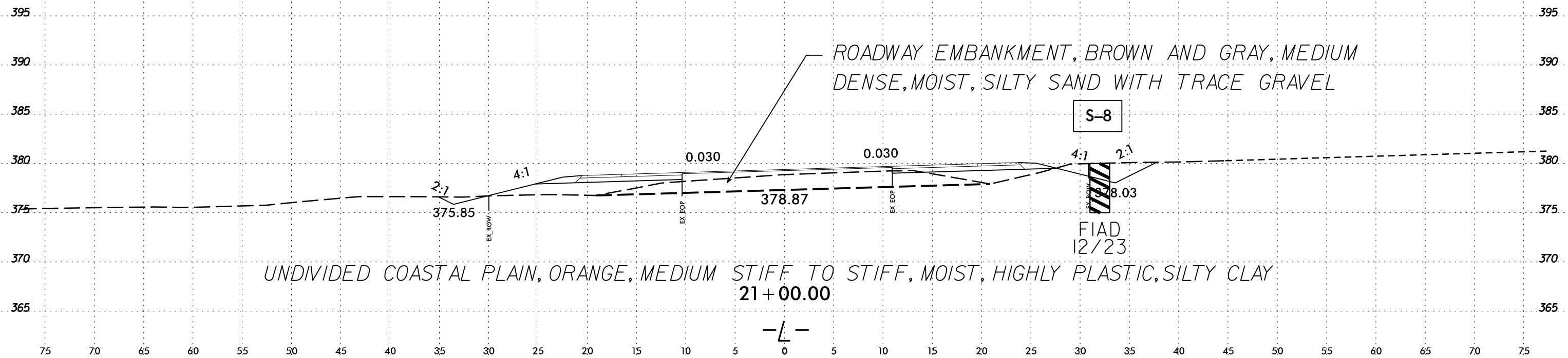
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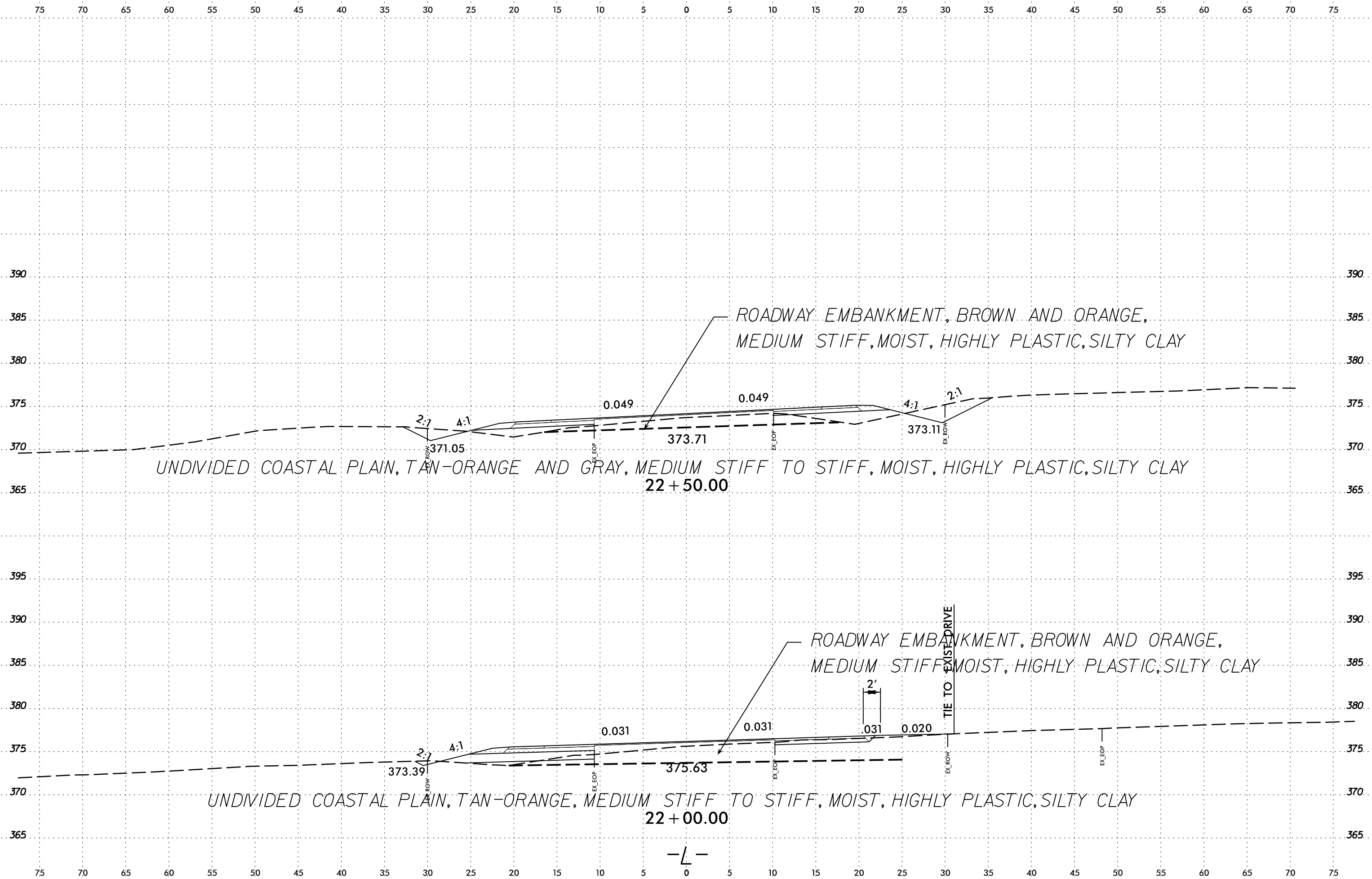




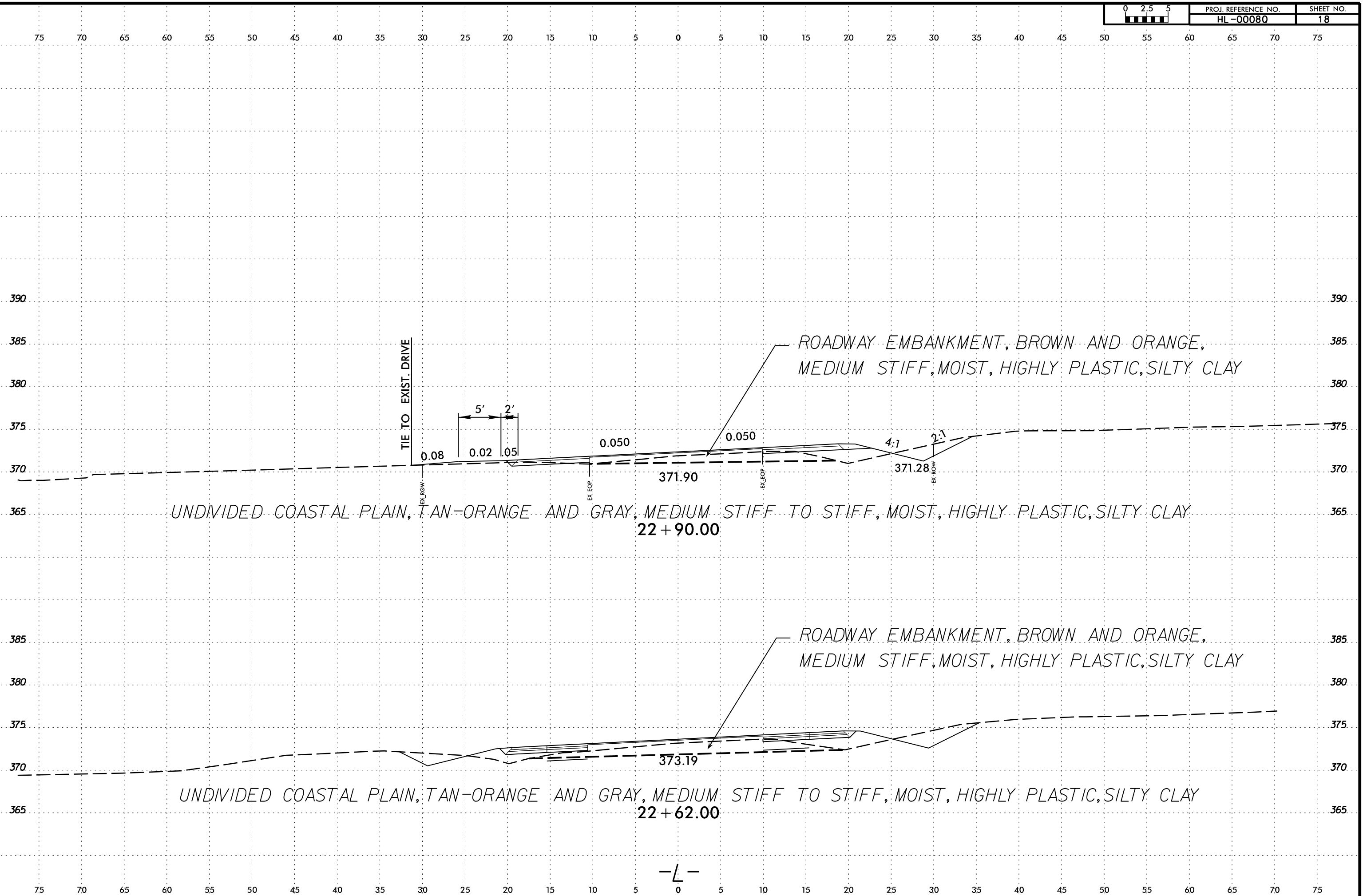
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							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-8	32 RT	21+00	1.0-1.5	A-7-5(18)	60	29	13.1	13.1	15.3	58.5	82	74	64	-	-



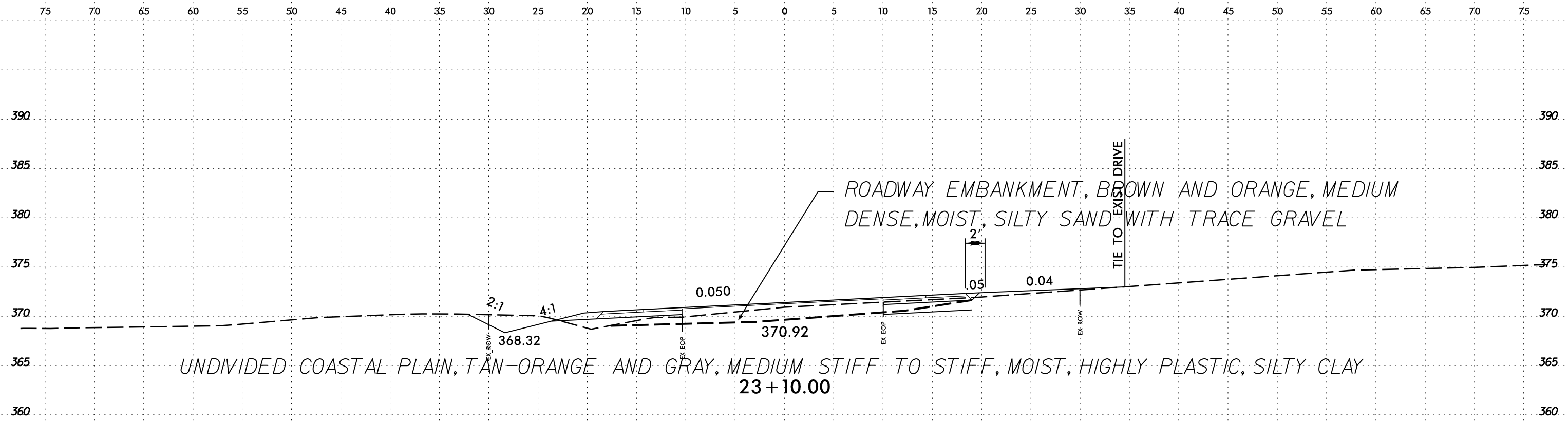
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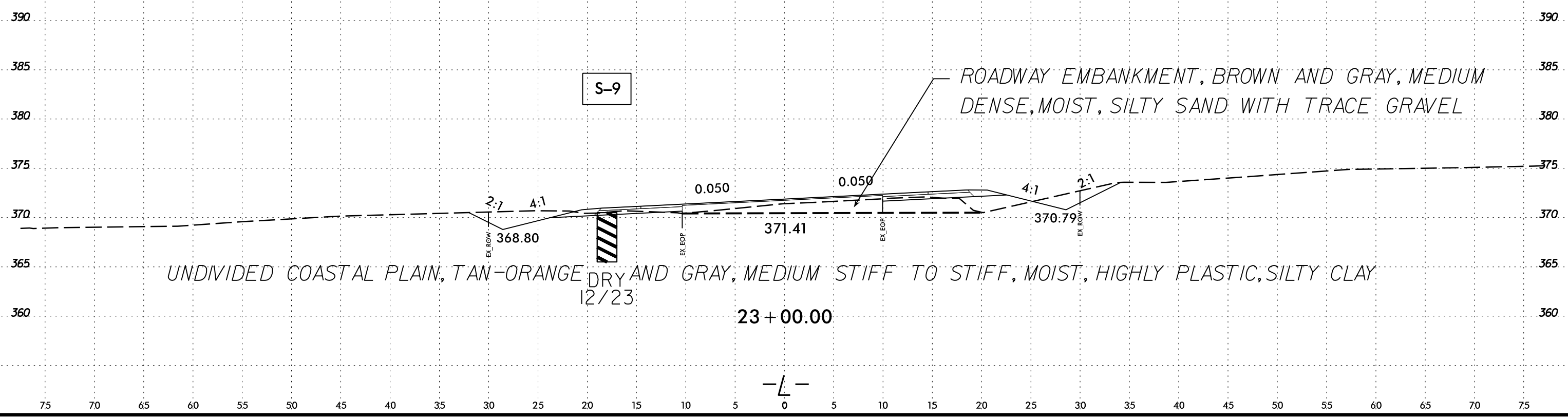
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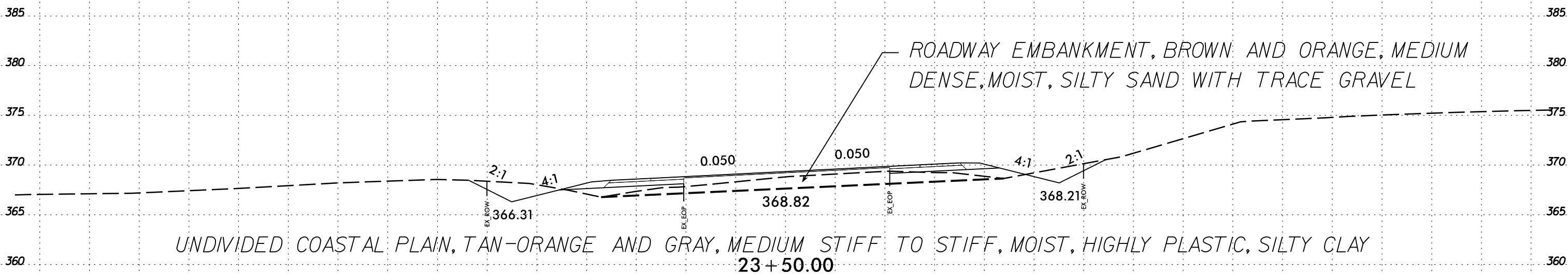
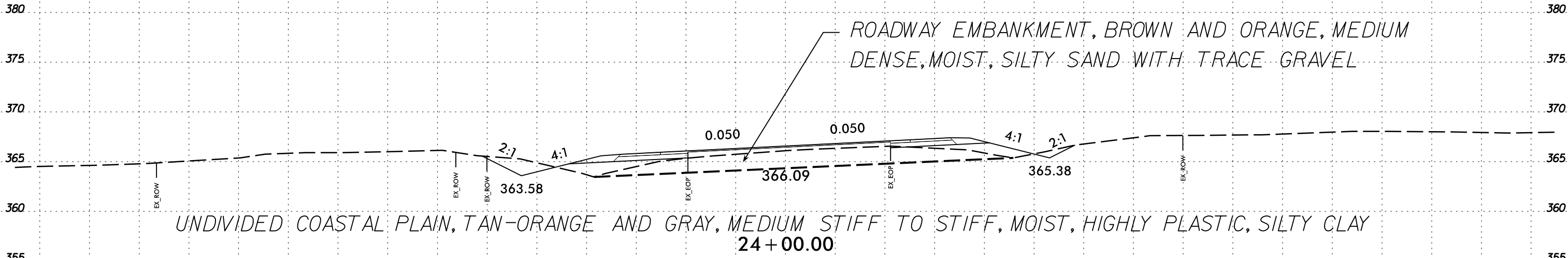
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							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-9	18 LT	23+00	1.5-2.0	A-7-5(39)	77	32	2.8	8.1	20.6	68.5	100	98	93	-	-

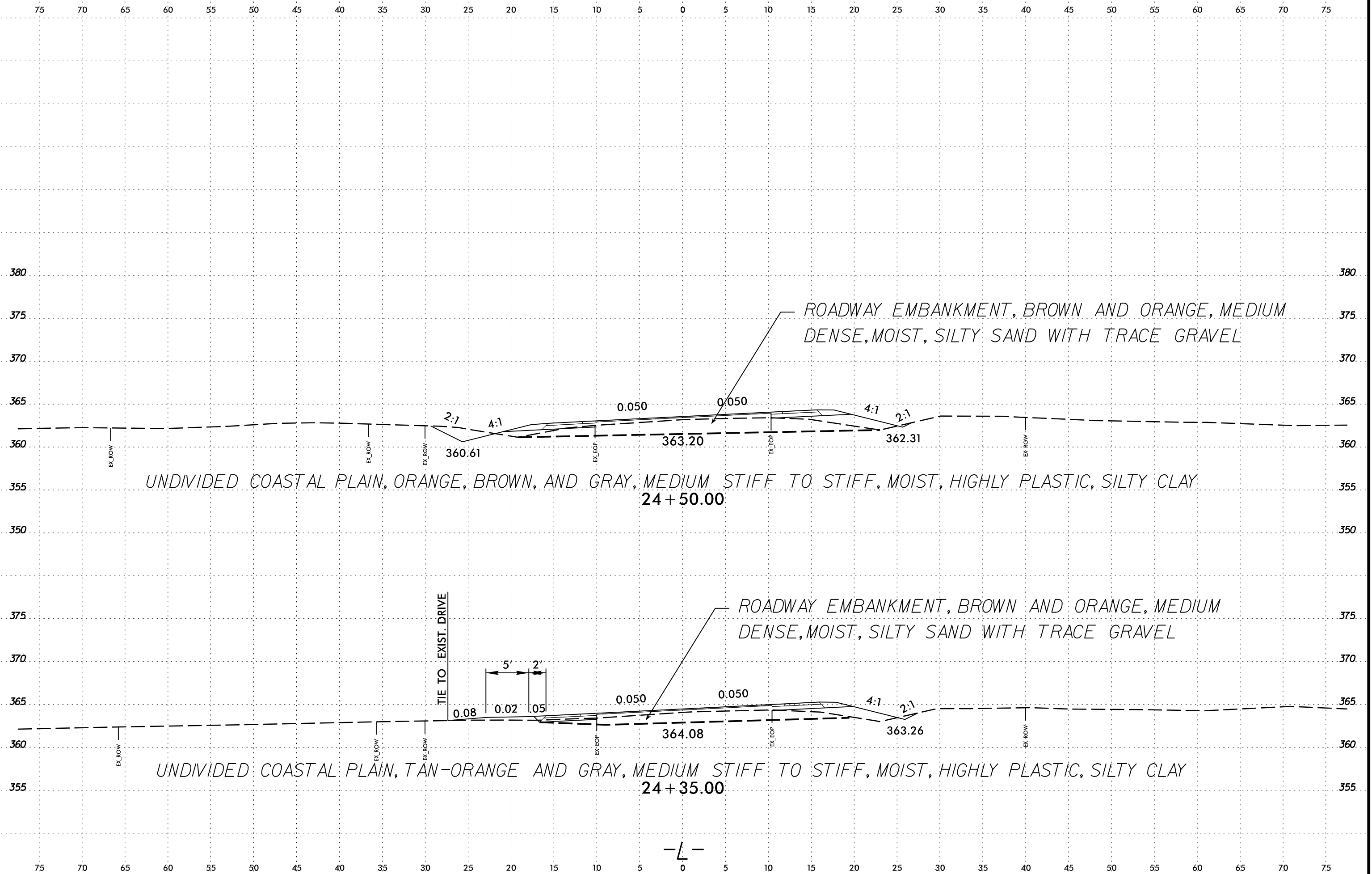


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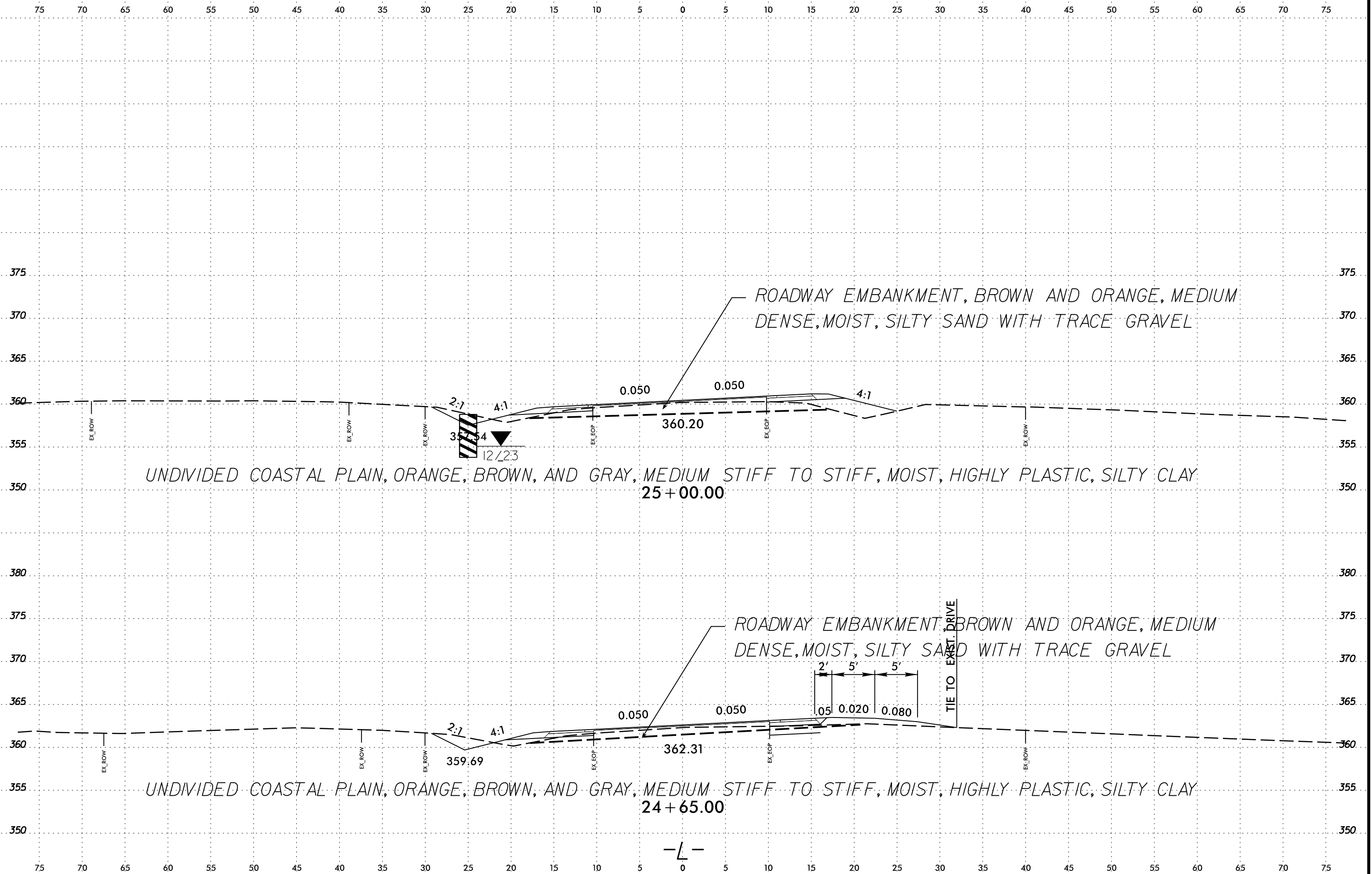
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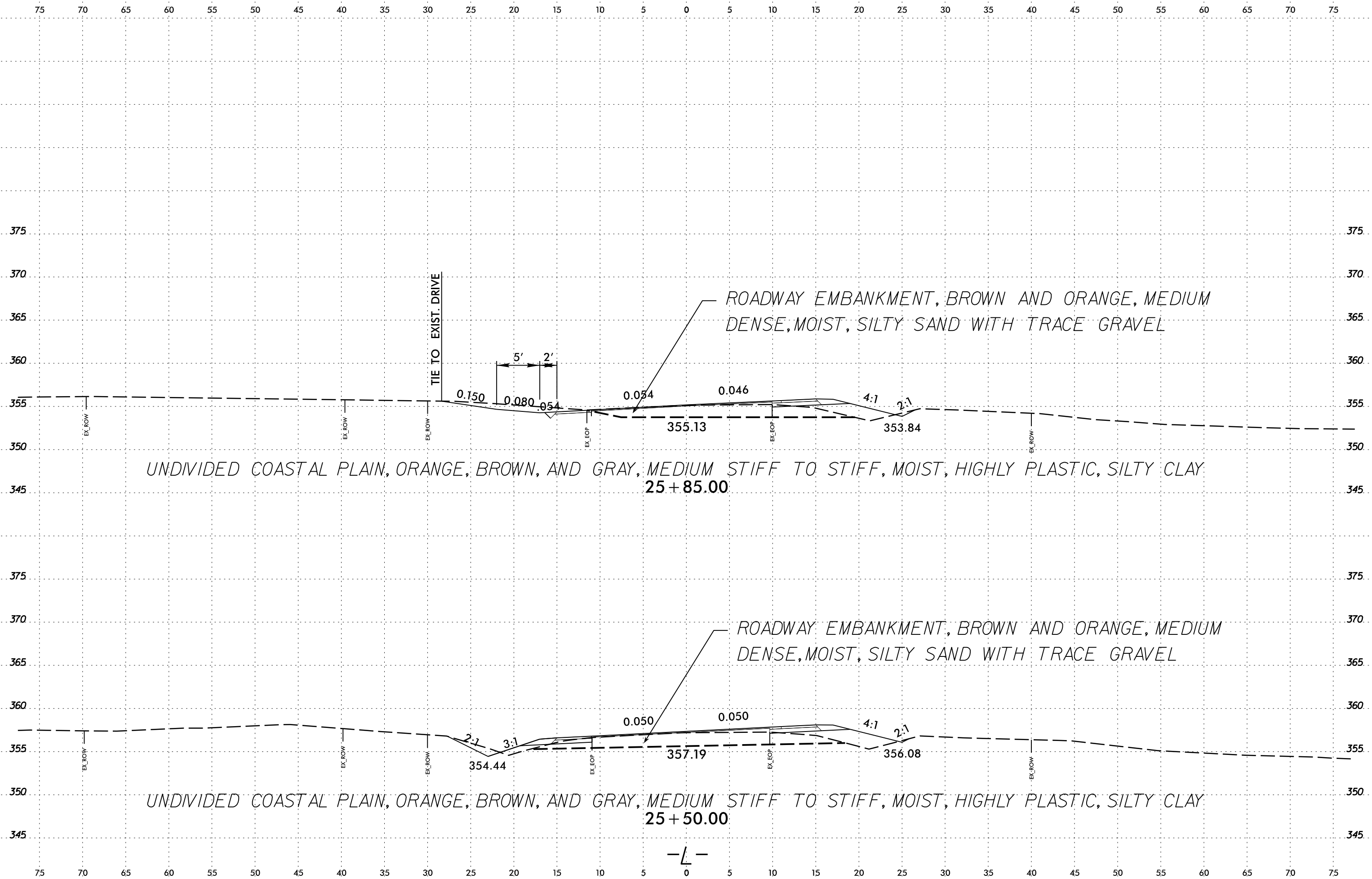
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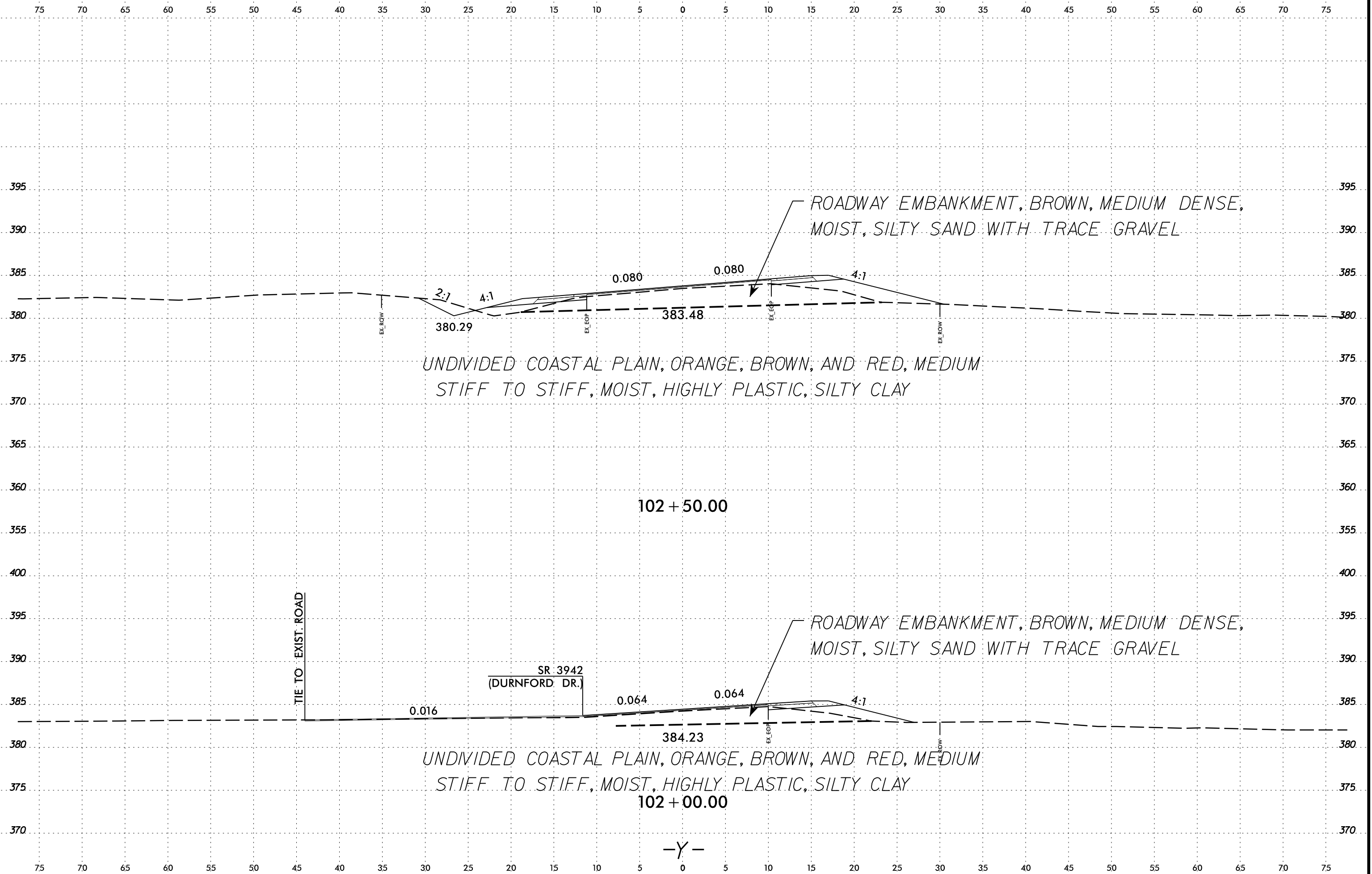
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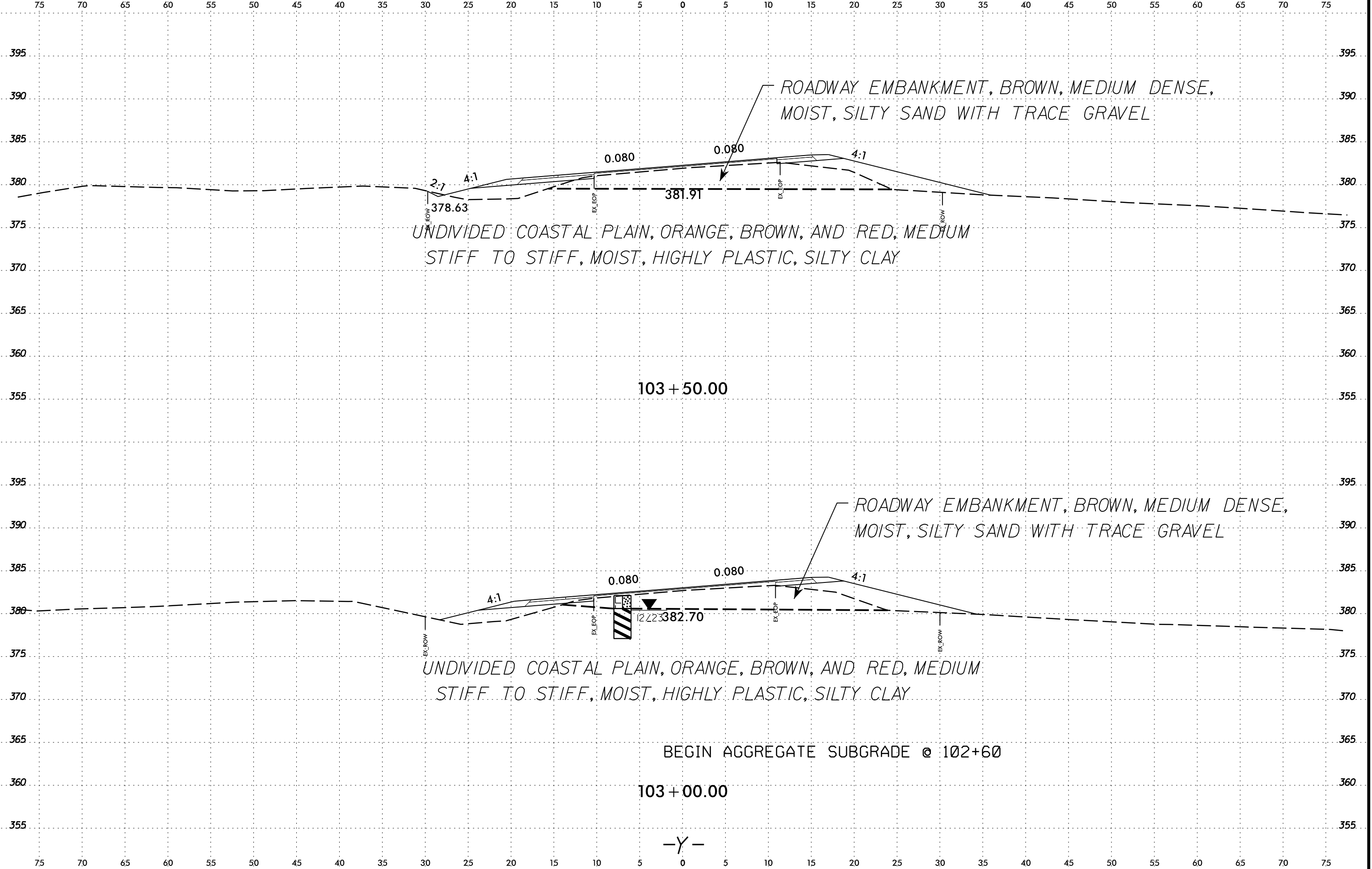


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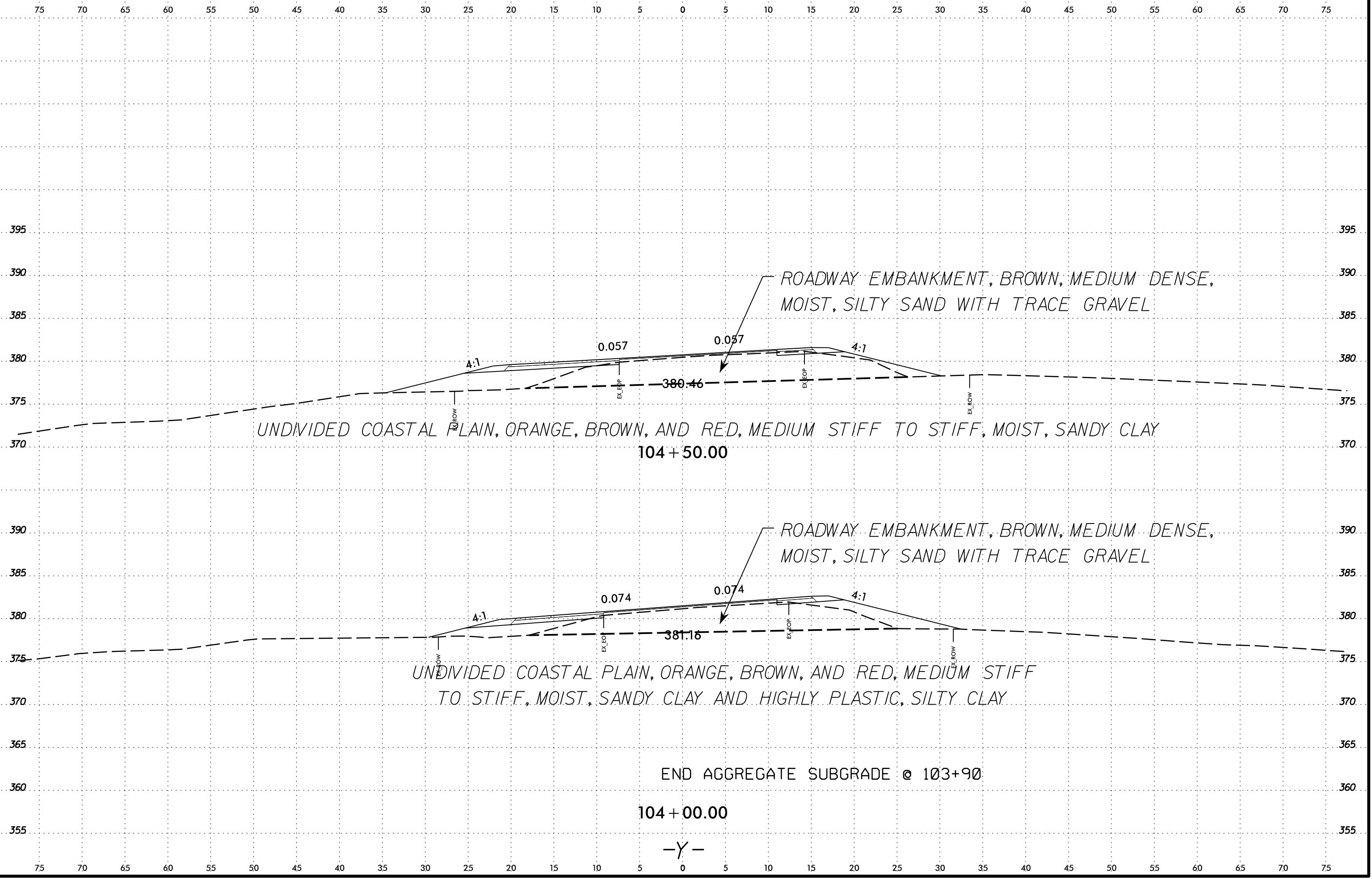
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UNDIVIDED COASTAL PLAIN, ORANGE, BROWN, AND RED, MEDIUM STIFF TO STIFF, MOIST, SANDY CLAY

ROADWAY EMBANKMENT, BROWN, MEDIUM DENSE, MOIST, SILTY SAND WITH TRACE GRAVEL

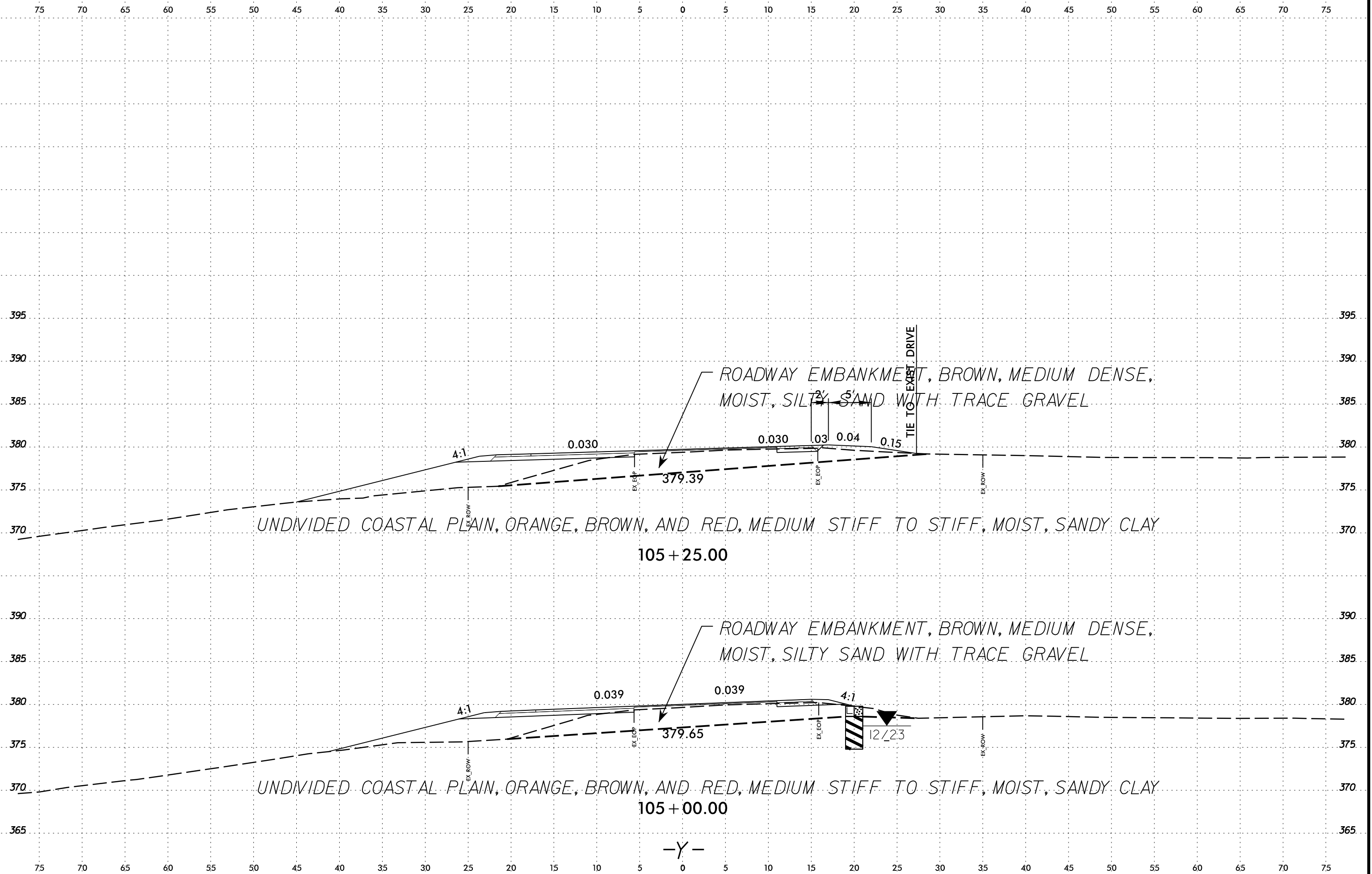
UNDIVIDED COASTAL PLAIN, ORANGE, BROWN, AND RED, MEDIUM STIFF TO STIFF, MOIST, SANDY CLAY AND HIGHLY PLASTIC, SILTY CLAY

ROADWAY EMBANKMENT, BROWN, MEDIUM DENSE, MOIST, SILTY SAND WITH TRACE GRAVEL

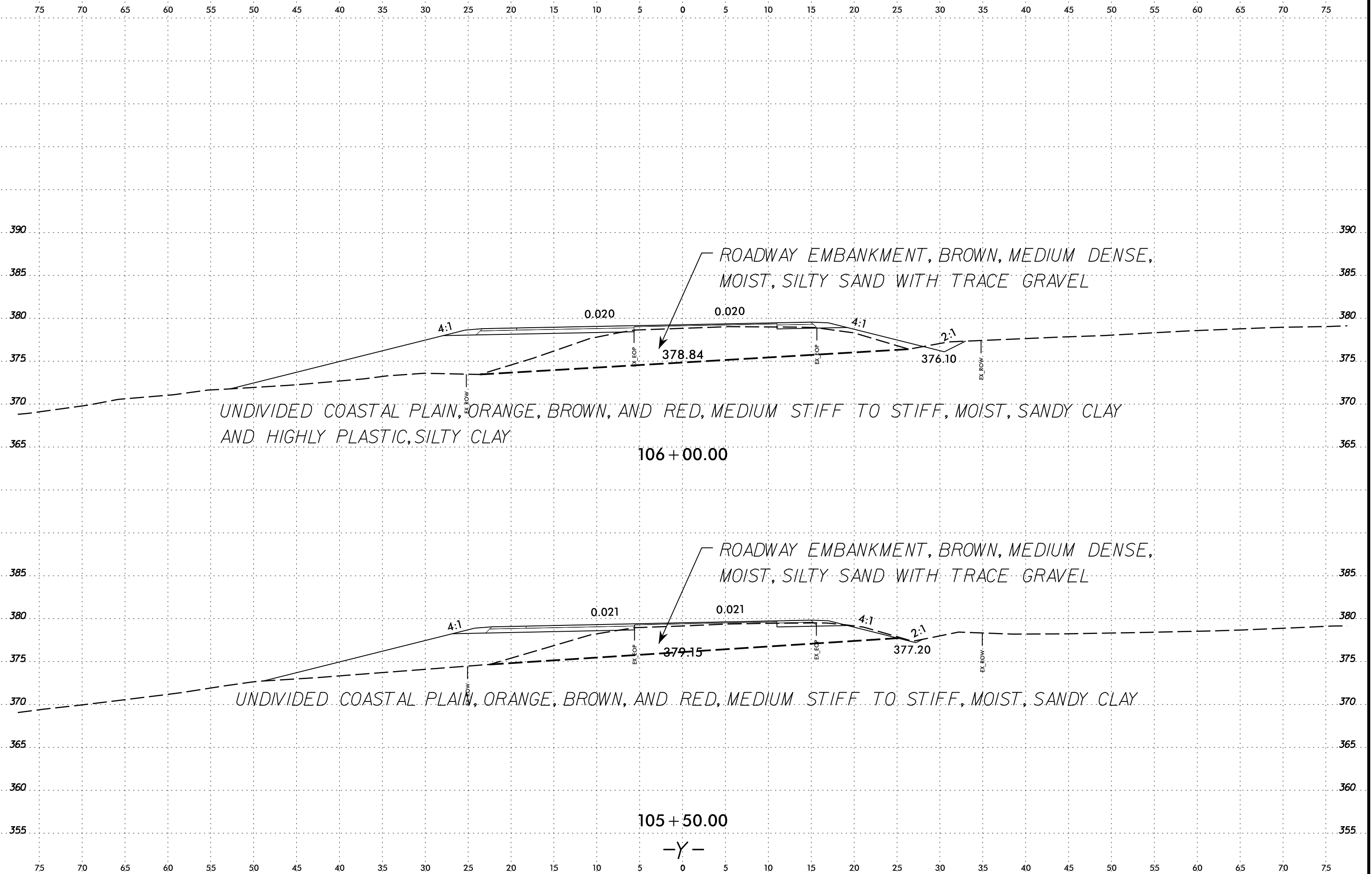
END AGGREGATE SUBGRADE @ 103+90

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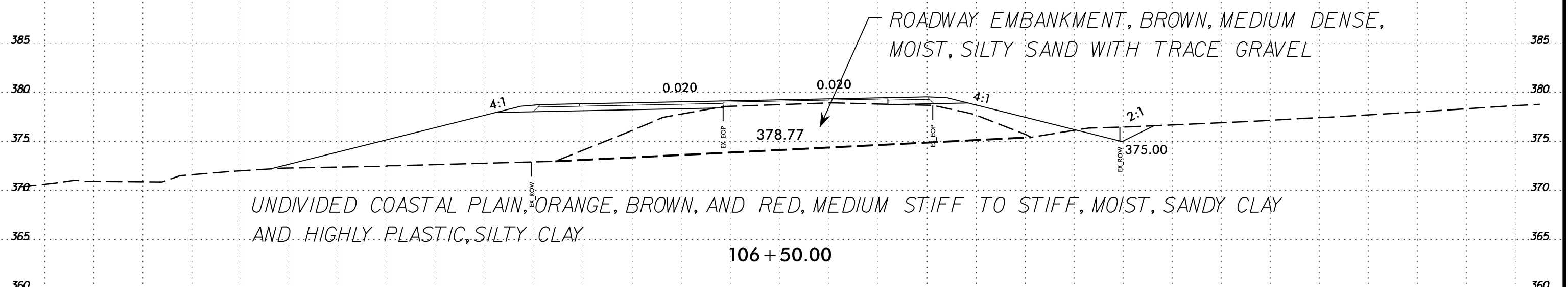
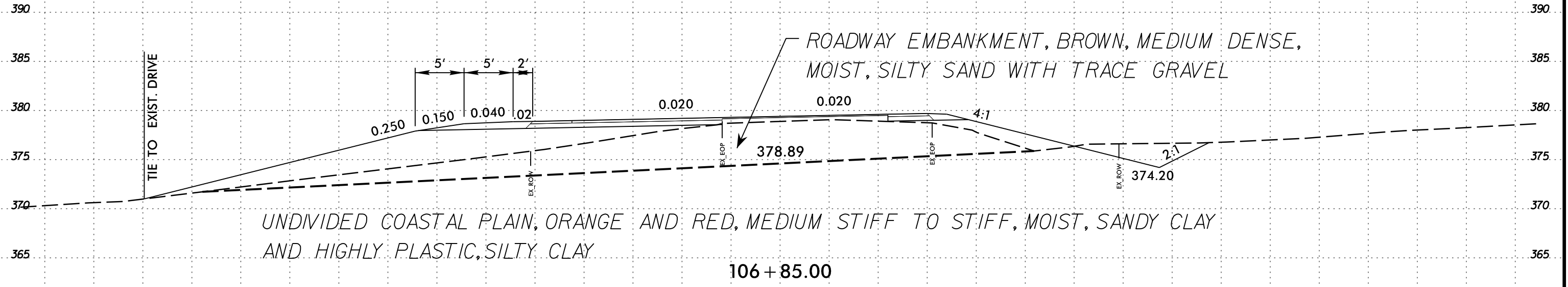


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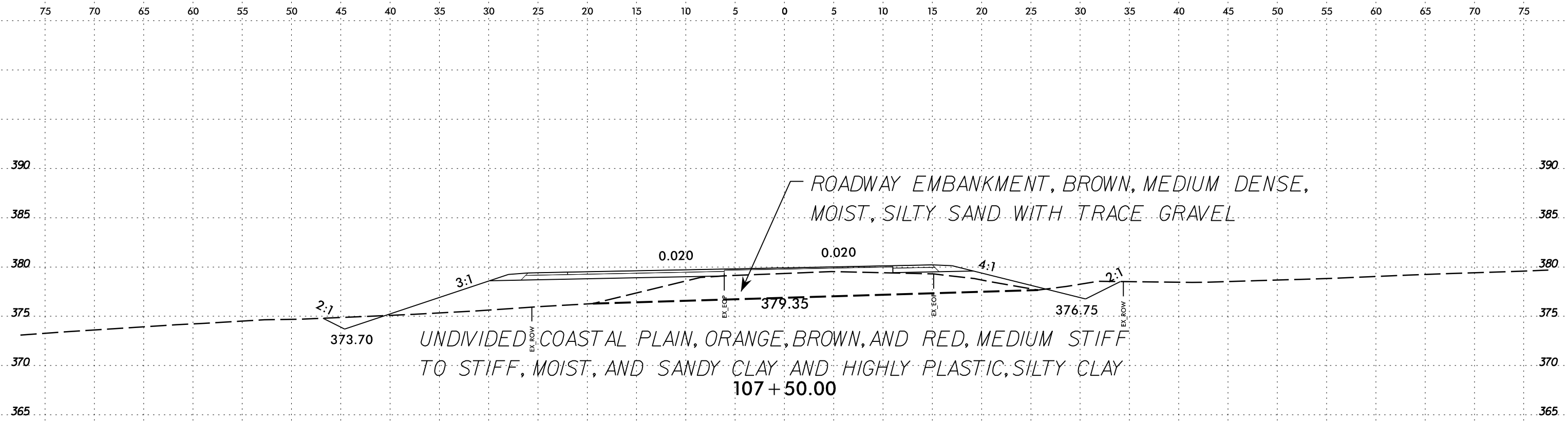
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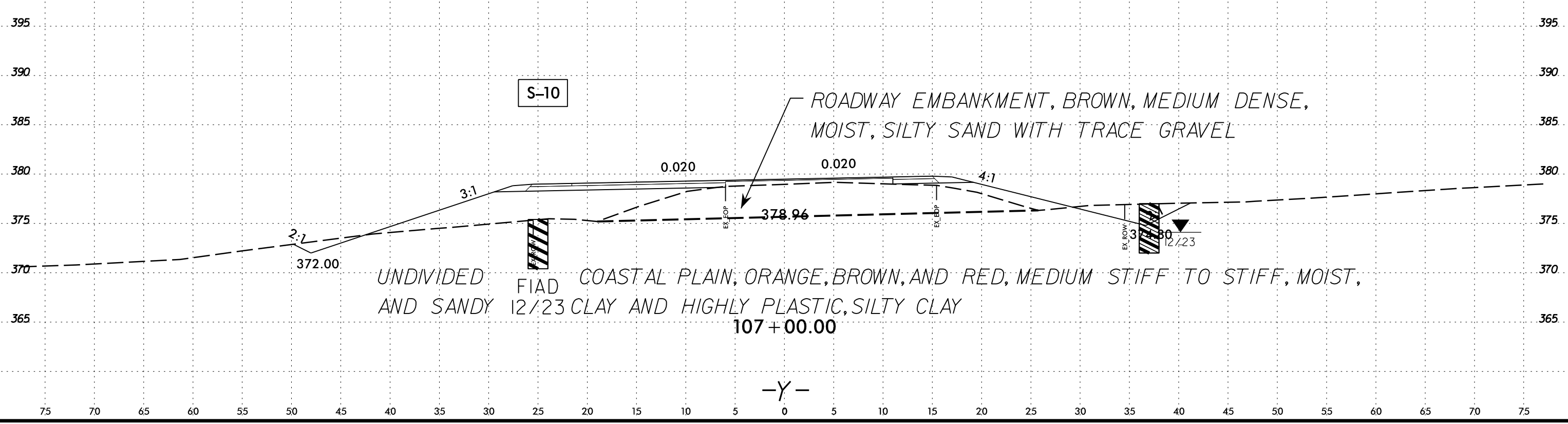


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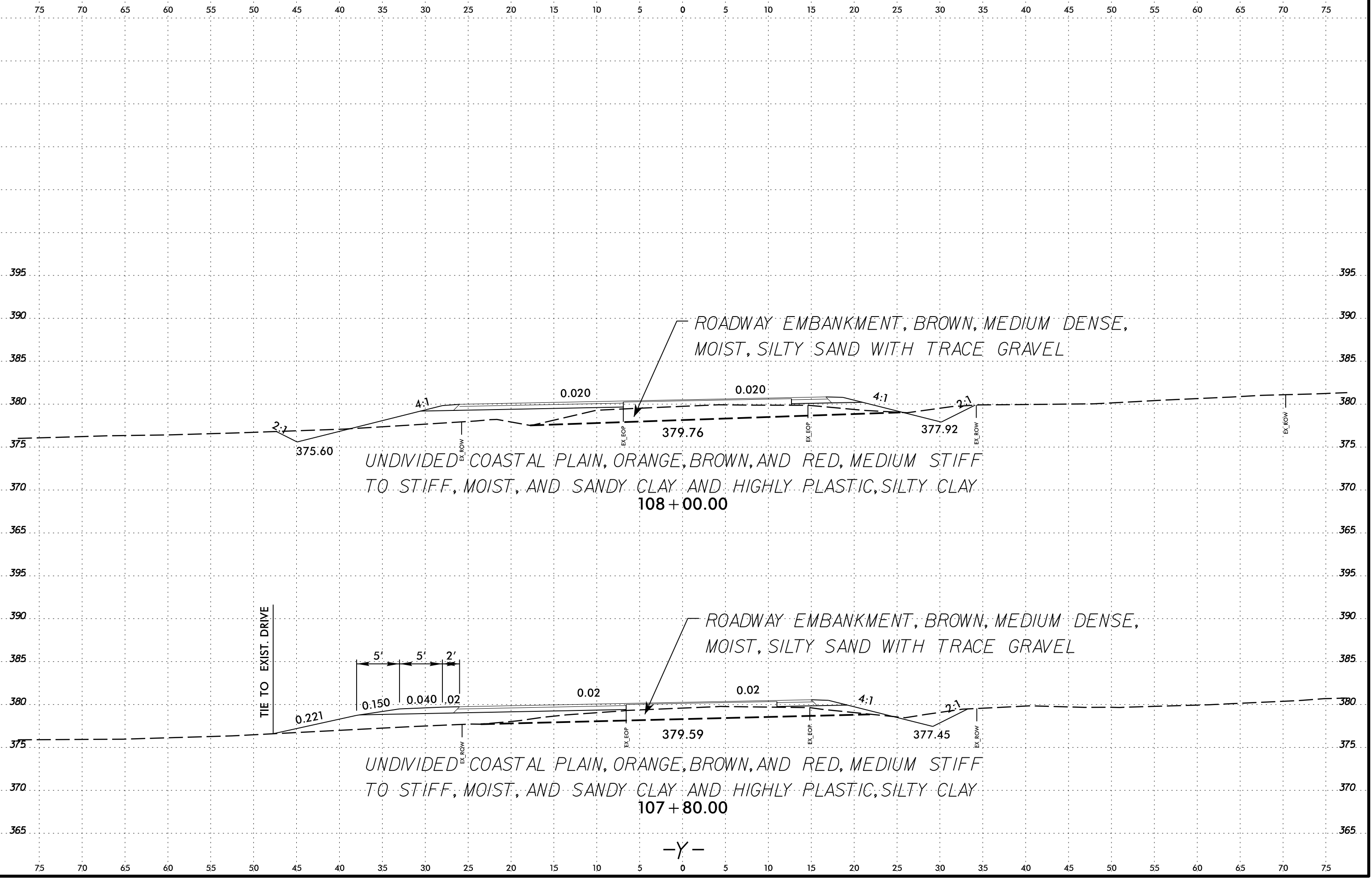


SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-10	25 LT	107+00	2.0-2.5	A-7-5(24)	63	27	8.7	11.5	17.3	62.5	92	86	78	-	-



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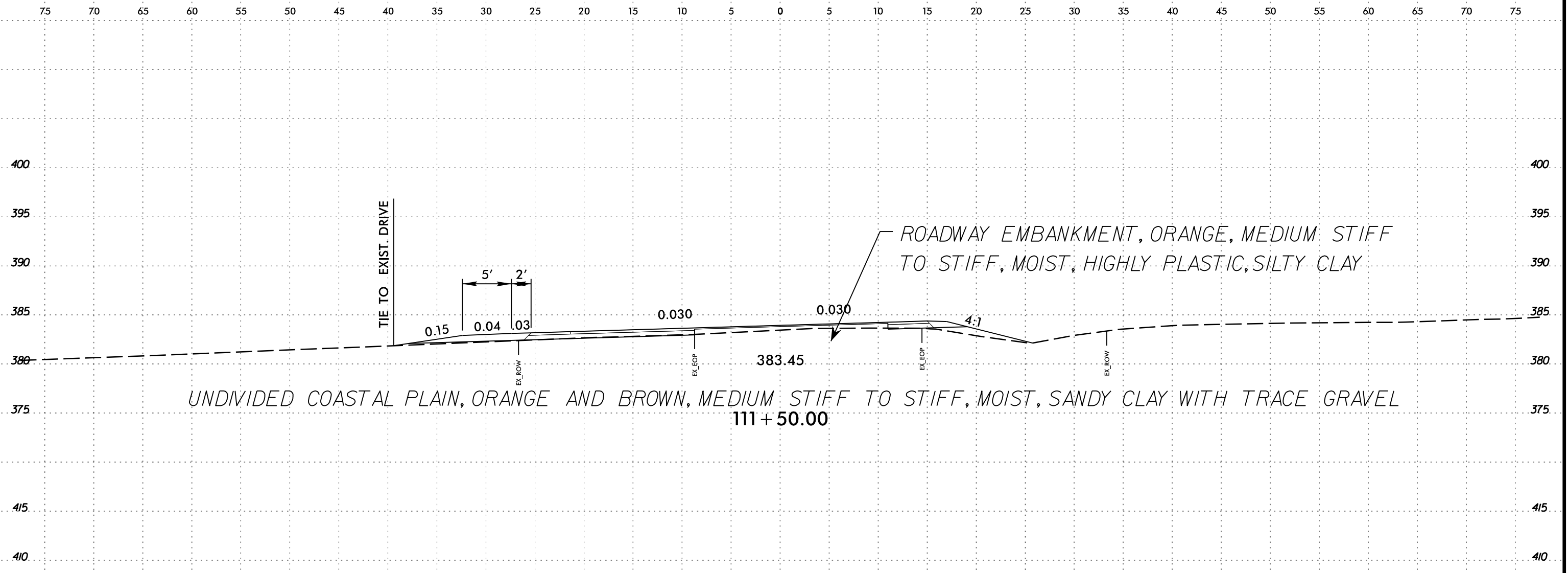
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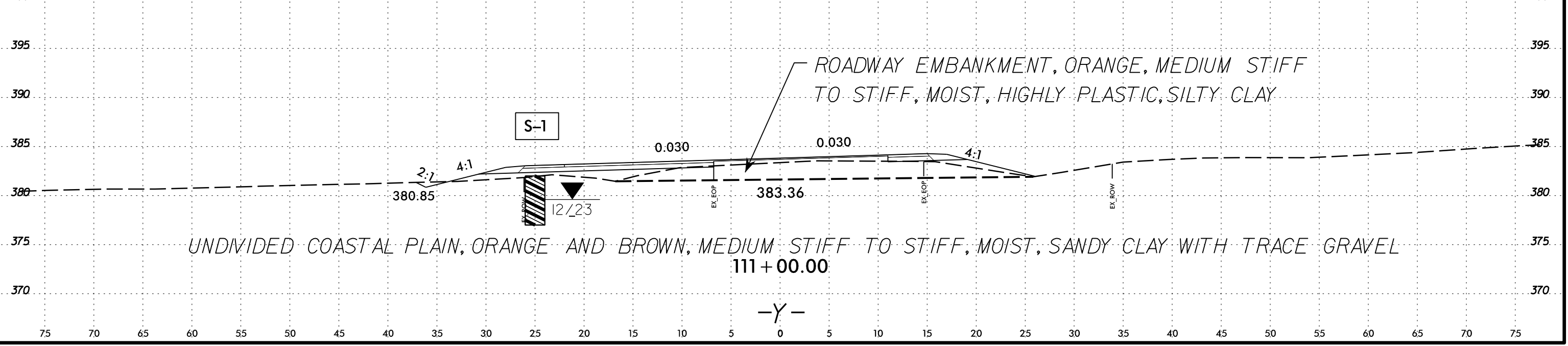
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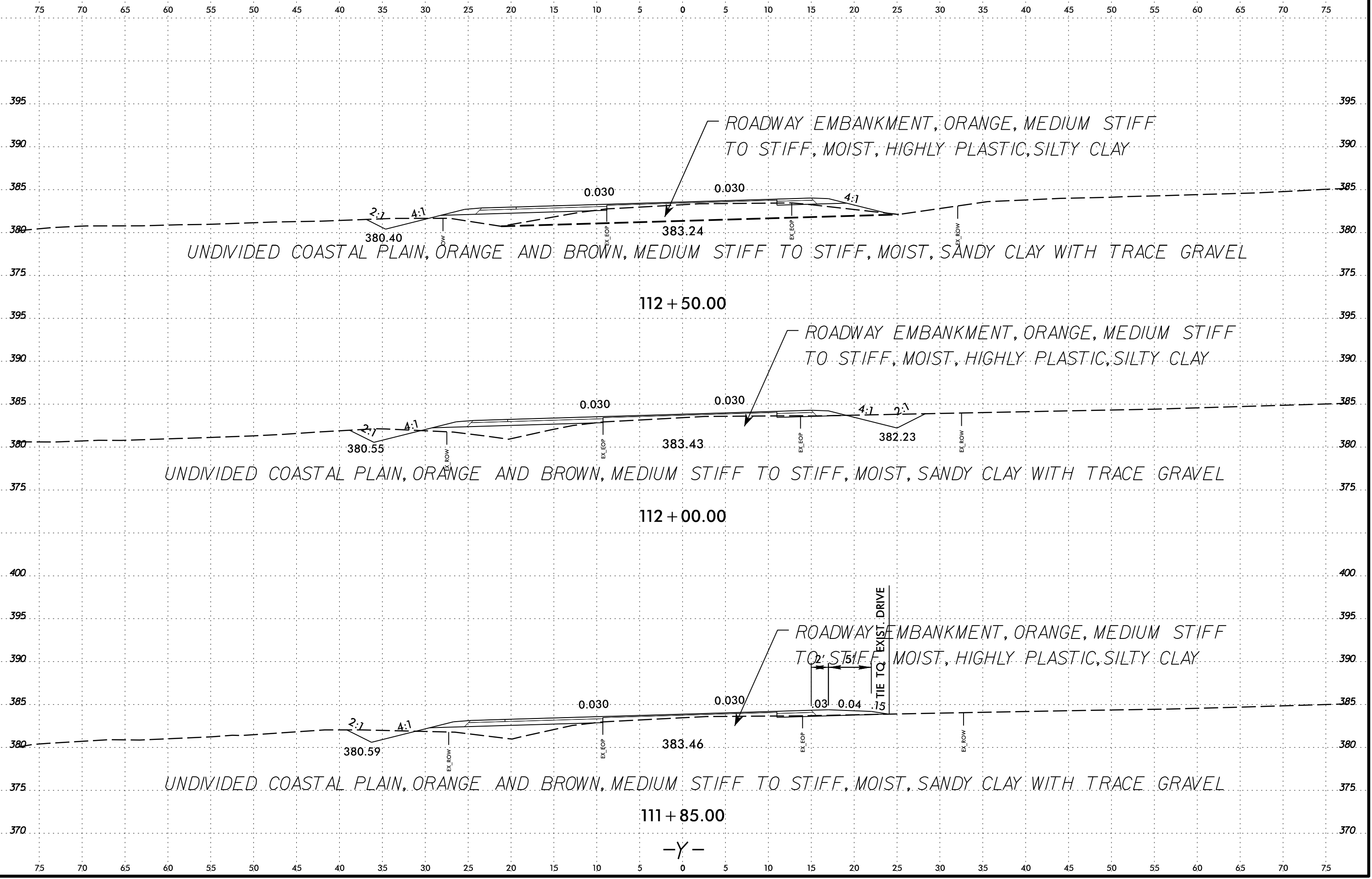


SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-1	25 LT	111+00	1.0-2.0	A-6(8)	34	14	16.5	20.0	23.2	40.3	97	87	67	24	-



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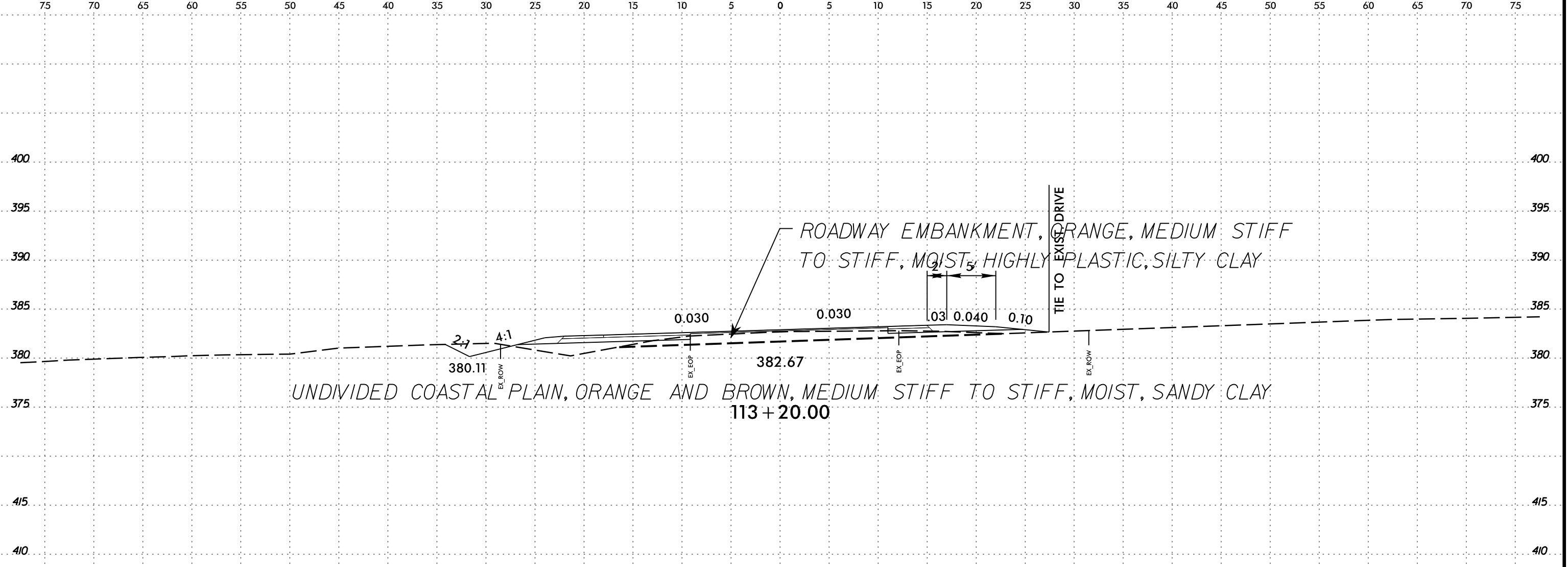
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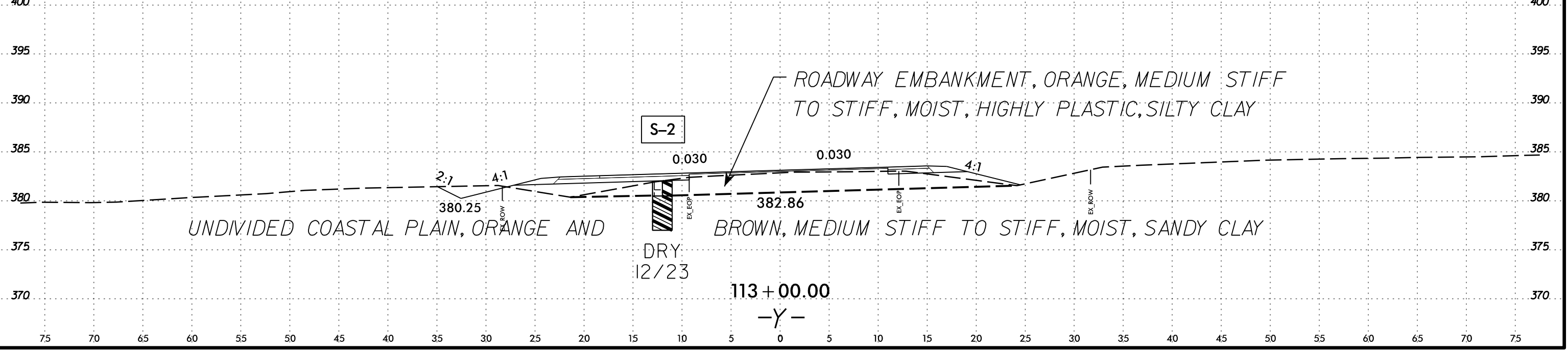
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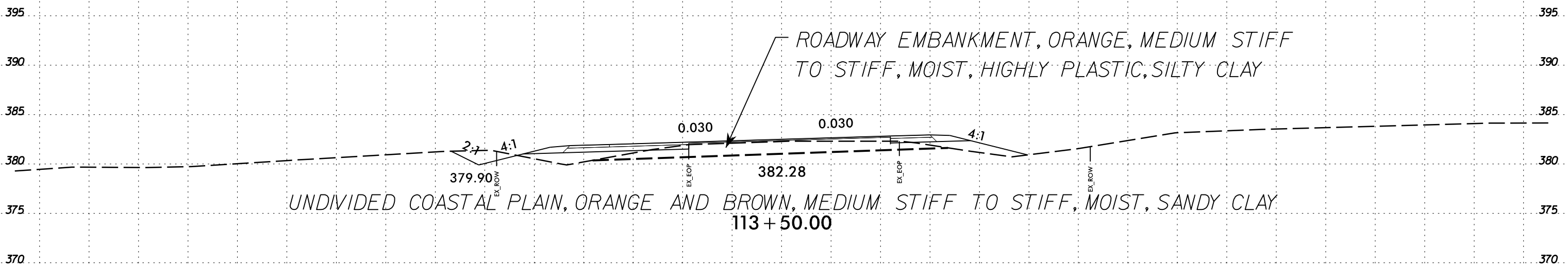
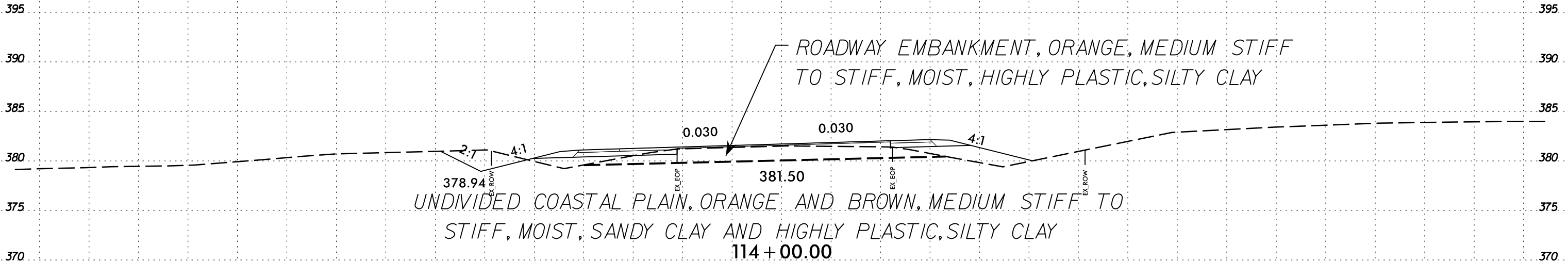
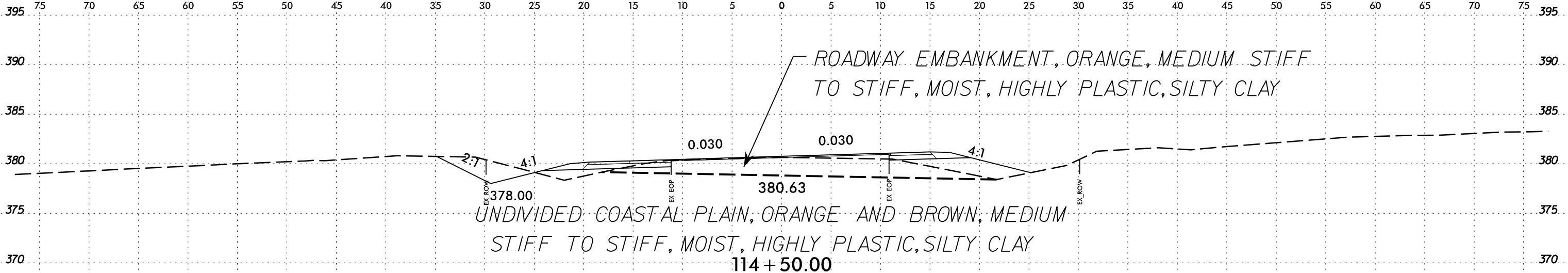
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SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-2	12 LT	113+00	0.5- 1.0	A-7-5(43)	80	38	3.8	6.9	10.7	78.6	98	96	90	-	-

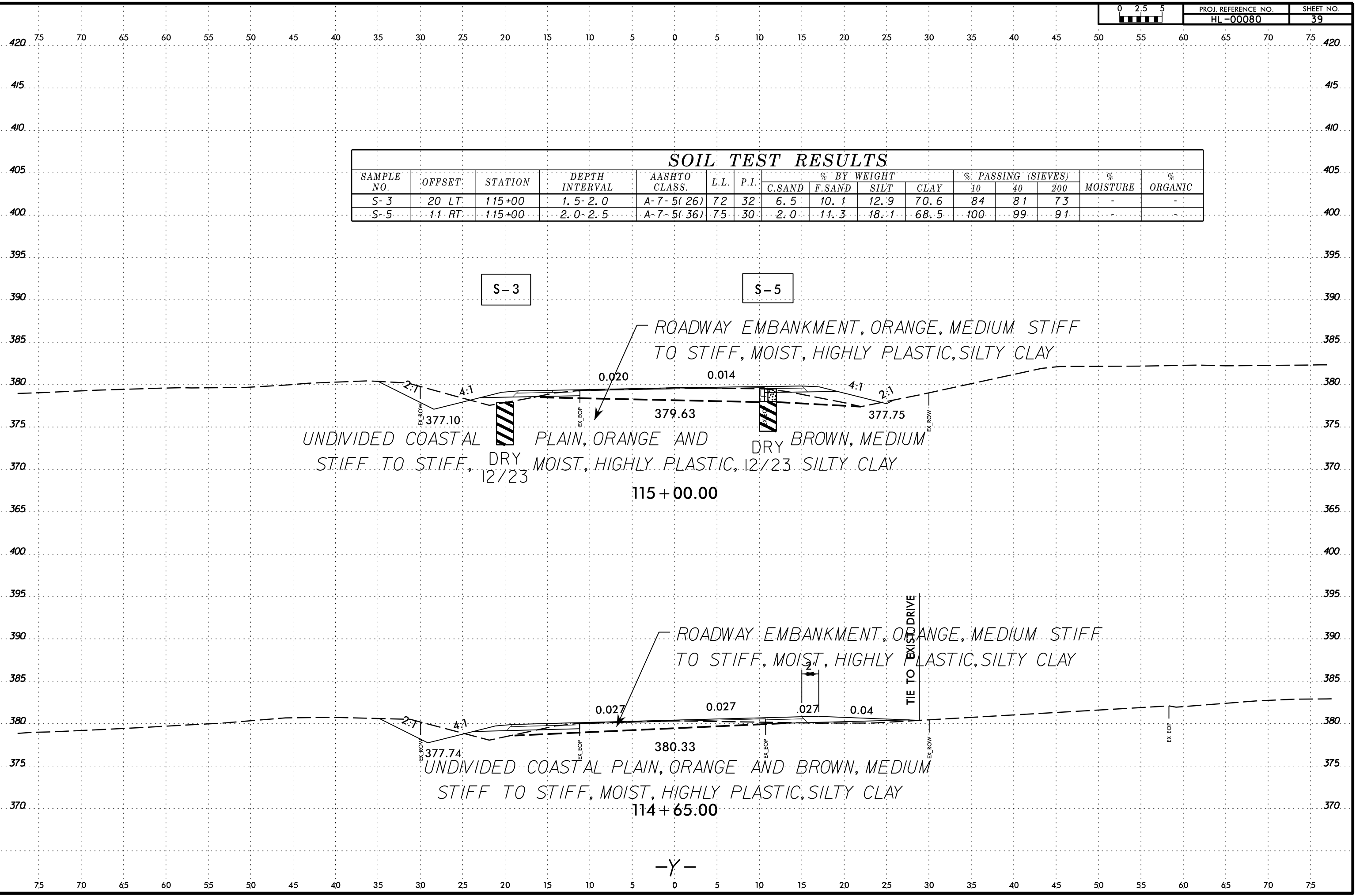




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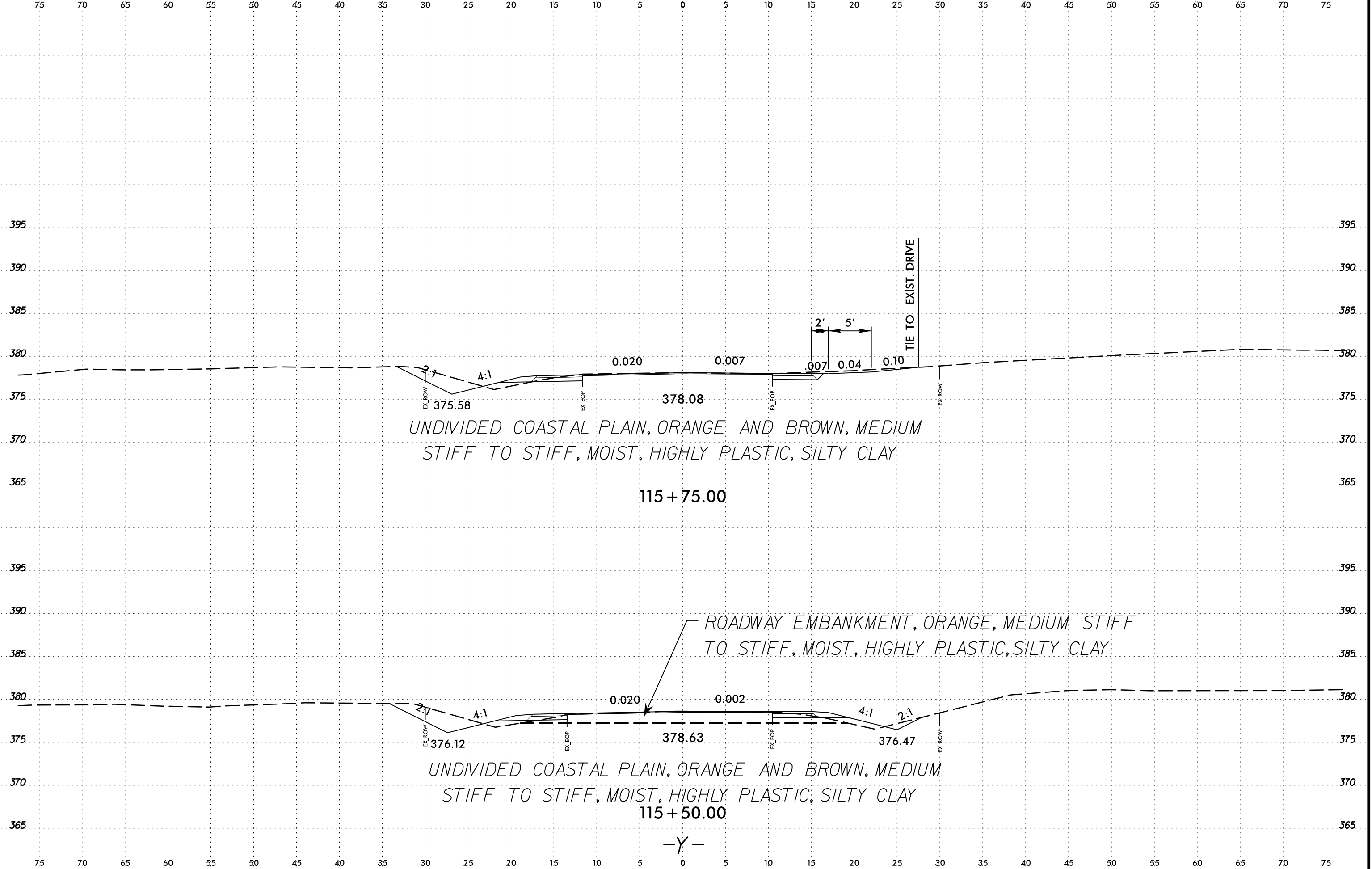
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SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT			% PASSING (SIEVES)			% MOISTURE	% ORGANIC	
							C.SAND	F.SAND	SILT	10	40	200			
S-3	20 LT.	115+00	1.5-2.0	A-7-5(26)	72	32	6.5	10.1	12.9	70.6	84	81	73	-	-
S-5	11 RT.	115+00	2.0-2.5	A-7-5(36)	75	30	2.0	11.3	18.1	68.5	100	99	91	-	-



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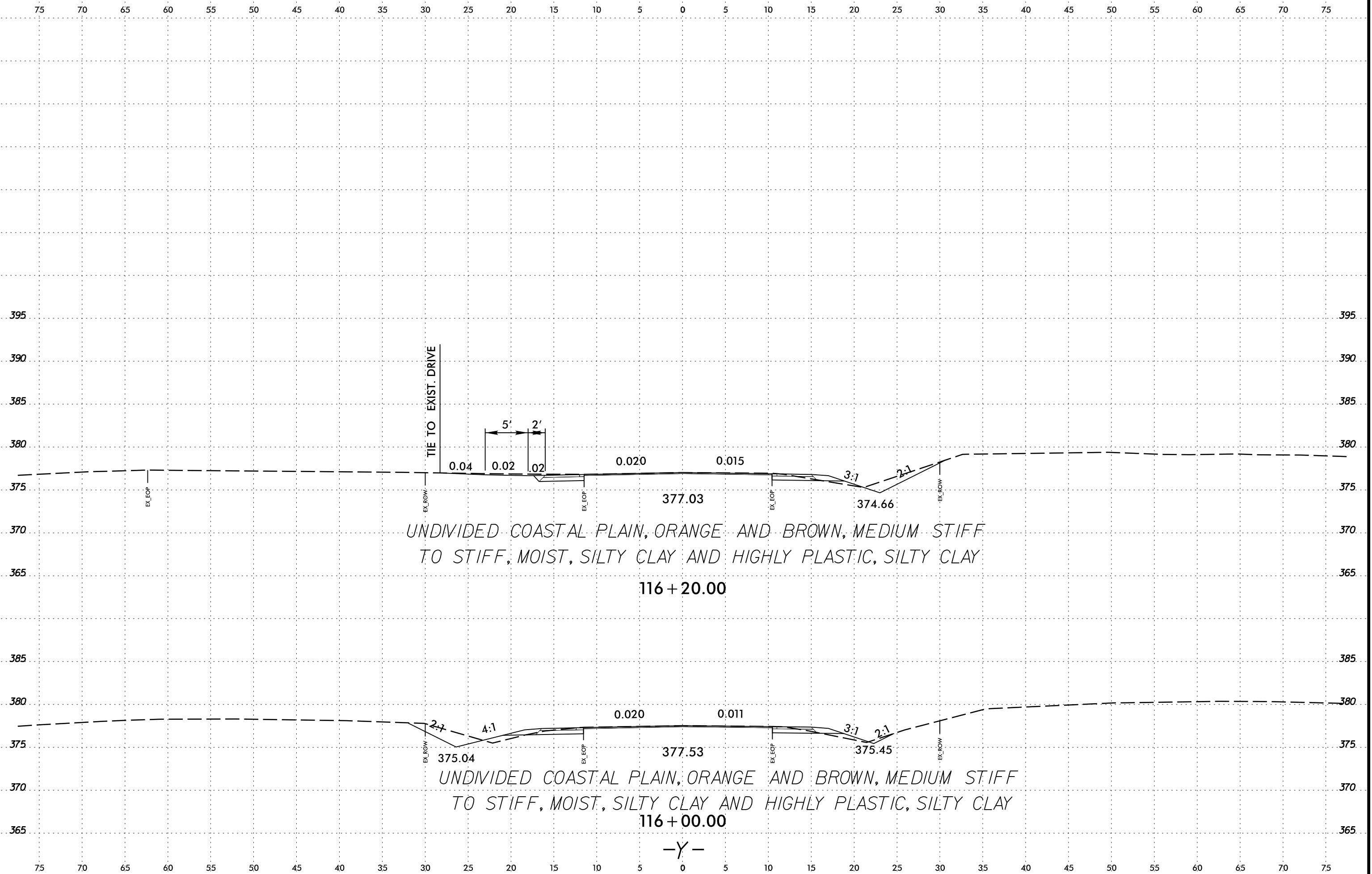
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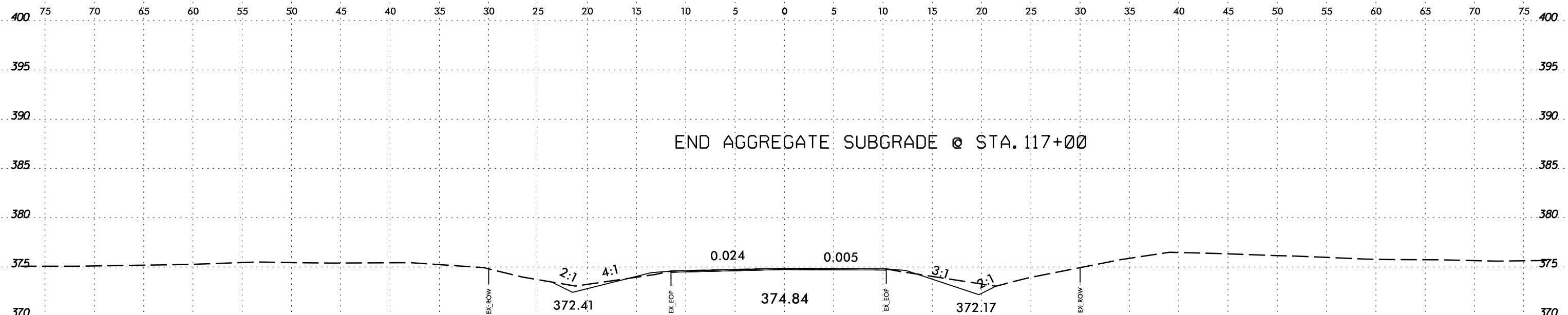


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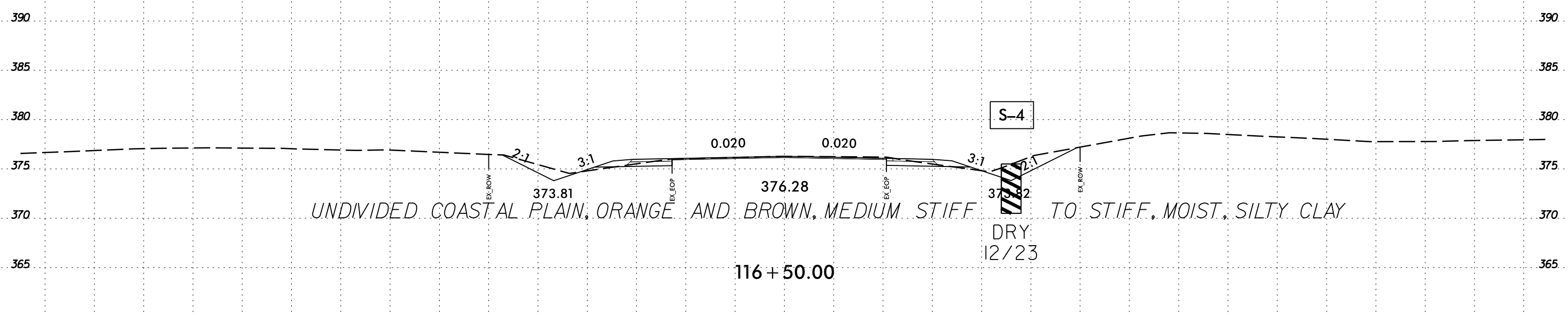
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UNDIVIDED COASTAL PLAIN, ORANGE AND BROWN, MEDIUM STIFF TO STIFF, MOIST, SILTY CLAY
117 + 00.00

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
S-4	23 RT	116+50	2.5-3.0	A-7-5(19)	59	22	9.1	17.3	27.2	46.4	92	86	74	-	-



UNDIVIDED COASTAL PLAIN, ORANGE AND BROWN, MEDIUM STIFF TO STIFF, MOIST, SILTY CLAY

S-4

DRY
12/23

116 + 50.00

-Y-