

I-10 MOBILE RIVER BRIDGE

RETAINING WALL JUSTIFICATION REPORT PERMANENT WALLS 1 THROUGH 4

AUGUST 22, 2023

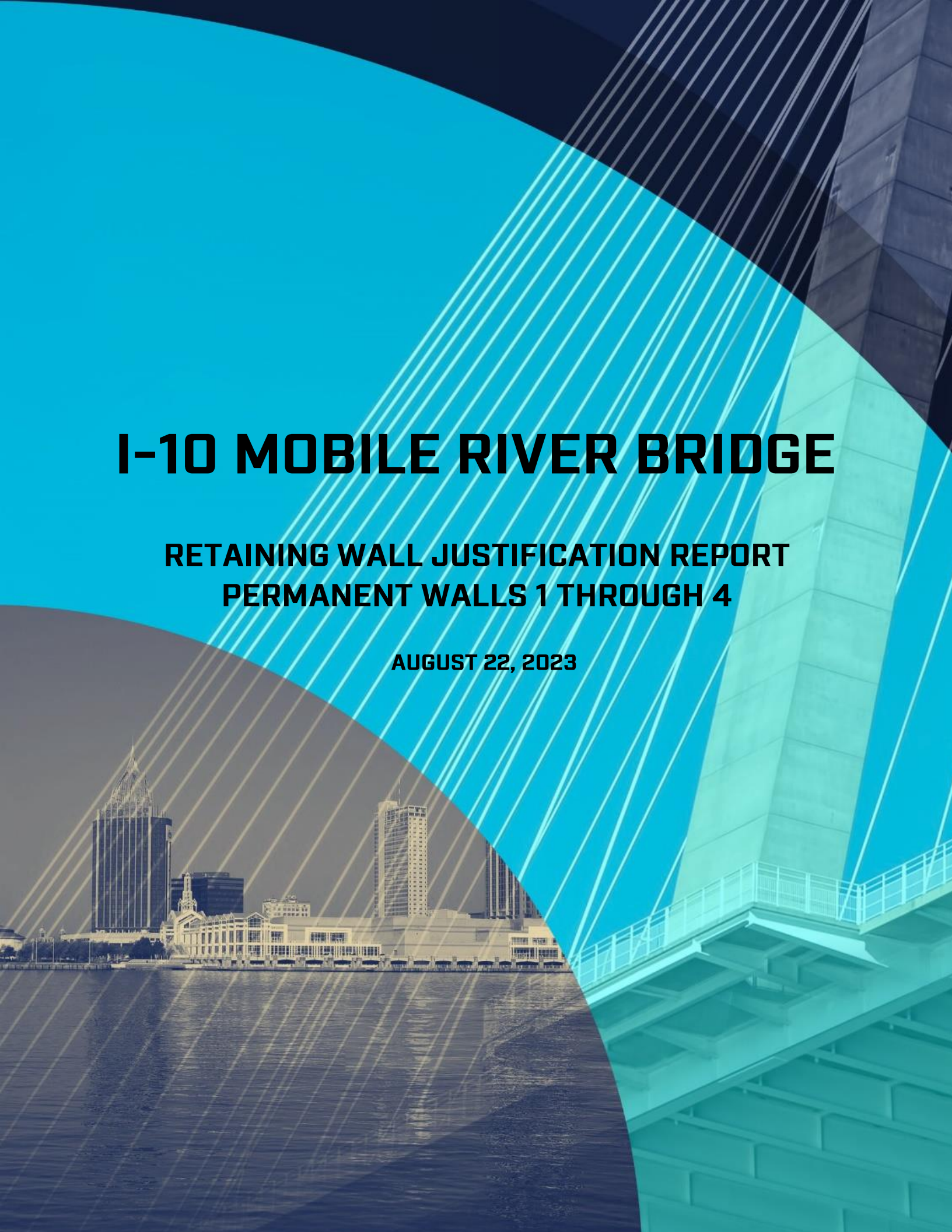




TABLE OF CONTENTS

SECTION 1.00 - Purpose 1

SECTION 2.00 - Justification 1

List of Appendices

- Appendix A – Wall Matrix
- Appendix B – Wall Plan, Boring Location and Soil Profiles

SECTION 1.00 - PURPOSE

Per Section 12.3.5.2 of the Technical Provisions for the I-10 Mobile River Bridge (MRB) project, a Retaining Wall Justification Report is required for each permanent or temporary retaining wall. This document presents our justification for the four permanent retaining walls on the MRB project. Specifically, it summarizes information for Walls 1 through 4 on the West Segment of the MRB project. No walls are needed on the East Segment.

SECTION 2.00 - JUSTIFICATION

Details for Walls 1 through 4, including stationing, heights, lengths, areas, etc. are presented in Table 1 of Appendix A. All four walls are within fill areas and their maximum heights range from 12 to 22 ft. Only preliminary subsurface exploration data are currently available, but foundation soils generally consist of loose to medium dense sand with some soft to firm clay layers. The distribution of boreholes near the proposed walls and the corresponding soil profiles are shown in Appendix B. Feasible wall types include concrete retaining walls, gravity walls, and mechanically-stabilized-earth (MSE) walls. In general, MSE walls are faster to construct, more tolerant of settlement, and more economical than gravity walls and concrete retaining walls. Considering the wall heights, lengths, and subsurface conditions, Walls 1 through 4 are planned to be MSE Walls.

This document is based solely on client provided information at the time of drafting and assumes reliance on available 30% design documents, boring, and laboratory information. For more details of the MSE wall stability and settlement analyses and corresponding results, refer to the “West Segment Geotechnical Design Report”.

APPENDIX A

Wall Matrix

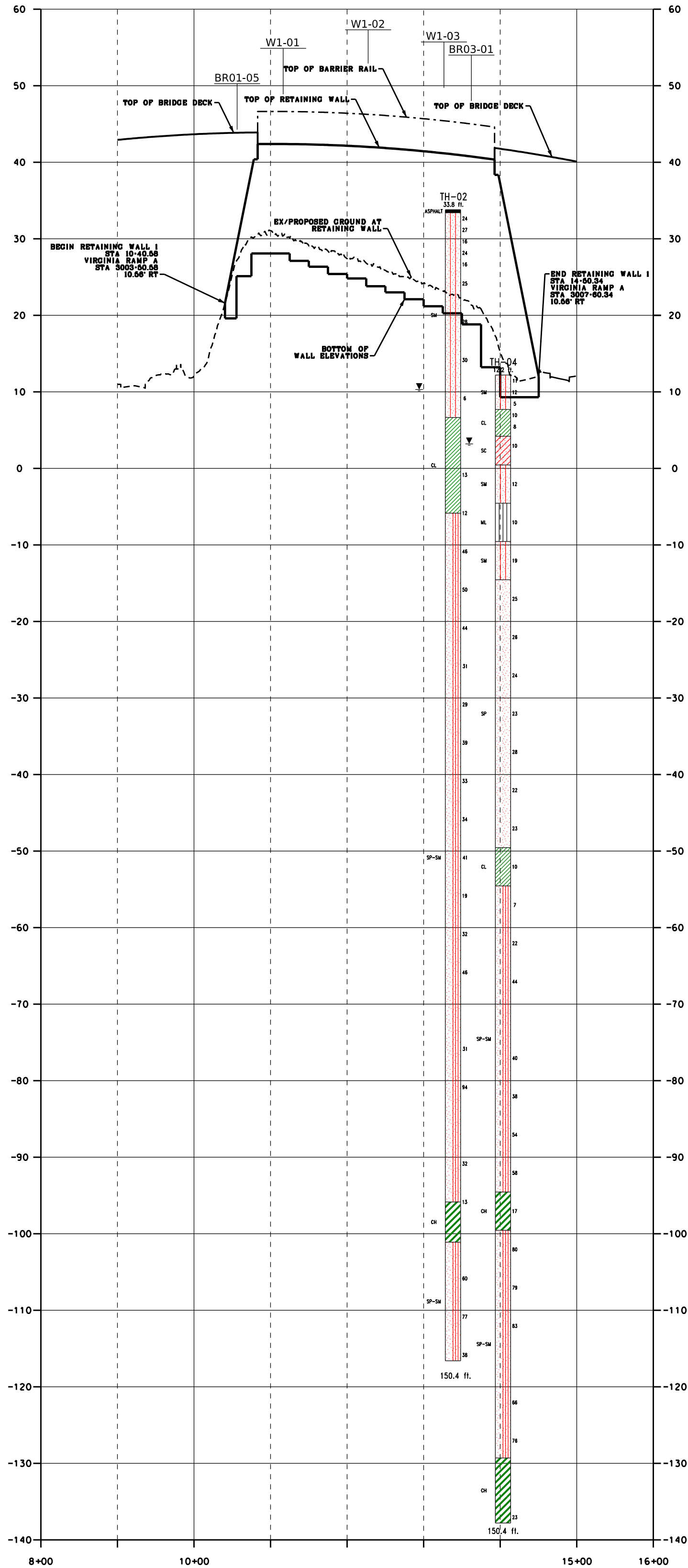
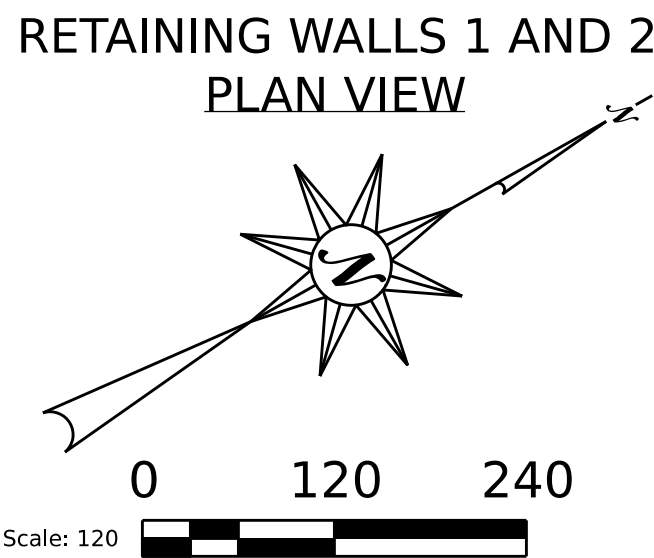
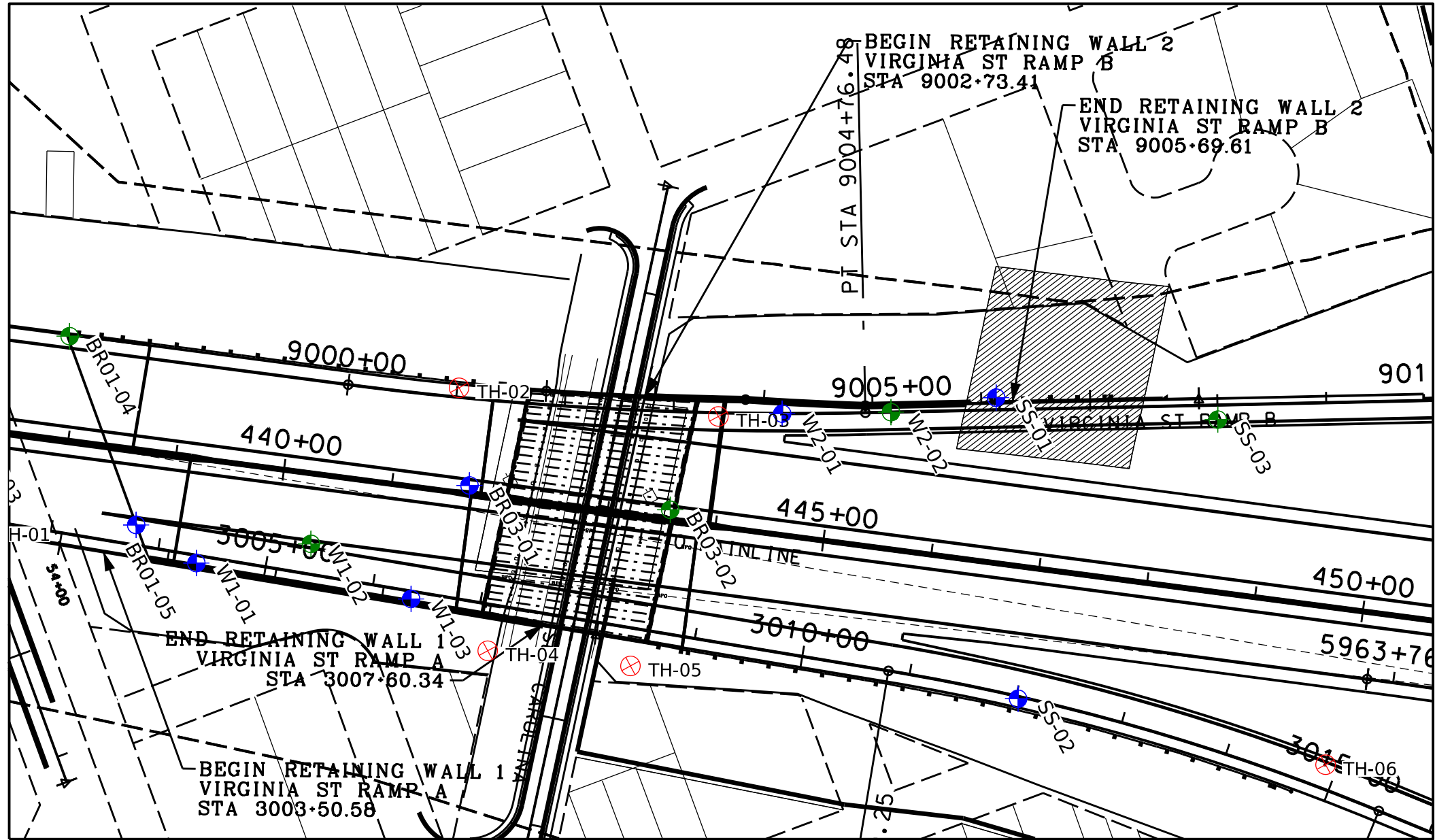
Table 1: Summary Matrix – West Walls 1 through 4

					Begin Wall			End Wall						MSE Wall						
Wall ID	Wall Type	Justification for Selected Wall Type	Cut / Fill / Noise	Station Alignment	Station No.	Offset (ft)	LT/ RT	Station No.	Offset (ft)	LT/ RT	Wall Length (feet)	Max. Height (feet)	Area (sq ft)	Min. Embed. Depth (feet)	Max. Wall Fore-slope	Max. Wall Back-slope	Geogrid Length (ft)	Ratio of Geogrid Length to Wall Height	Special Subgrade Preparation	Selected Wall Boring(s)
WALL 1	MSE	Settlement Tolerance	FILL	Virginia Street RAMP A	3003+51	10.56	RT	3007+60	10.56	RT	409.76	22	7000.14	5	NA	NA	22	1	Stone Columns	TH-1, TH-4
WALL 2	MSE	Settlement Tolerance	FILL	Virginia Street RAMP B	9002+73	12.56	LT	9005+70	6.56	LT	295.63	12	2611.72	5	NA	NA	12	1	Not Required	TH-3
WALL 3	MSE	Settlement Tolerance	FILL	Water Street Ramp B	6003+78	34.56	LT	6012+56	88.12	LT	880.4	12	9544.29	5	NA	NA	12	1	Not Required	B-53, W-24, B-54
WALL 4	MSE	Settlement Tolerance	FILL	I-10 BUS WB	6009+65	10.56	LT	6013+25	10.56	LT	359.94	17	4737.91	5	NA	NA	17	1	Not Required	B-8

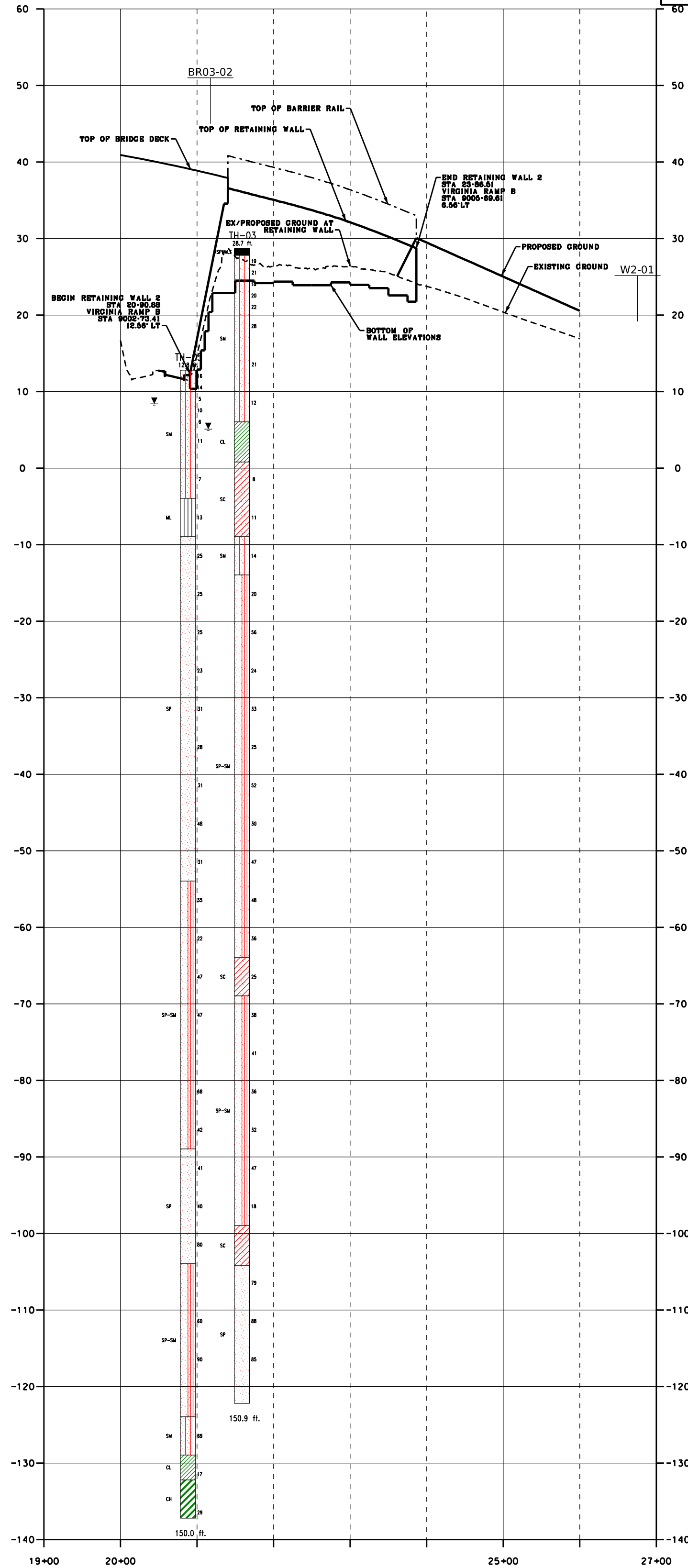
APPENDIX B

Wall Plan, Boring Location and Soil Profiles

REFERENCE PROJECT NO	FISCAL YEAR	SHEET NO
ACIM-XXXX(XXX)	2023	



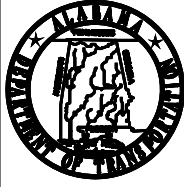
RETAINING WALL 1
PROFILE VIEW



RETAINING WALL 2
PROFILE VIEW



- LEGEND
- BR03-01 — PLANNED BORING
 - W1-02 — EXISTING BORING 2014
 - TH-02 — EXISTING BORING 2017
 - TH-02 — BORING IDENTIFIER
 - BORING ELEVATION
 - N-VALUE
 - USCS SOIL CLASSIFICATION
 - WATER LEVEL IDENTIFIER



ALABAMA
DEPARTMENT OF
TRANSPORTATION

REV. NO.	BY	DATE	DESCRIPTION OF REVISION

PLAN SUBMITTAL

RETAINING WALLS 1 AND 2
BORINGS PLAN AND PROFILES

ROUTE

SHEET TITLE

