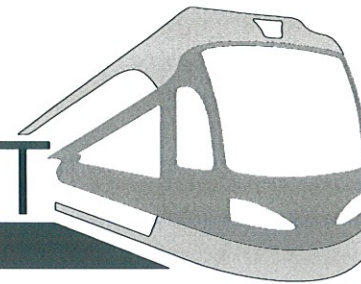




METROPOLITAN
C O U N C I L

Green Line LRT Extension



VOLUME 4A

BRIDGES

THE PROPOSED SOUTHWEST LRT PROJECT IS NOT FINAL BUT IS STILL UNDER ENVIRONMENTAL REVIEW AND THE PROJECT IS SUBJECT TO CHANGE. THESE PLANS ARE NOT FINAL.

THE COUNCIL, THROUGH THE DEVELOPMENT OF THESE PLANS, DOES NOT INTEND THAT THEY WILL PREJUDICE OR COMPROMISE ANY STATE OR FEDERAL ENVIRONMENTAL REVIEW OR OTHER LEGAL REQUIREMENTS. THESE PLANS DO NOT LIMIT THE PROJECT DESIGN ALTERNATIVES OR MITIGATIVE MEASURES THAT THE COUNCIL MAY UNDERTAKE IF THE PROPOSED SWLRT PROJECT PROCEEDS TO CONSTRUCTION.

THE COUNCIL WILL NOT TAKE FINAL ACTION ON THIS MATTER UNLESS THE COUNCIL PROCEEDS WITH THE PROJECT AFTER THE FTA'S RECORD OF DECISION AND THE COUNCIL'S DETERMINATION OF ADEQUACY.

WARNING: THIS RECORD MAY CONTAIN SENSITIVE SECURITY INFORMATION THAT IS CONTROLLED UNDER 49 CFR PARTS 15 AND 1520. NO PART OF THIS RECORD MAY BE DISCLOSED TO PERSONS WITHOUT A "NEED TO KNOW", AS DEFINED IN 49 CFR PARTS 15 AND 1520, EXCEPT WITH THE WRITTEN PERMISSION OF THE ADMINISTRATOR OF THE TRANSPORTATION SECURITY ADMINISTRATION OR THE SECRETARY OF TRANSPORTATION. UNAUTHORIZED RELEASE MAY RESULT IN CIVIL PENALTY OR OTHER ACTION. FOR U.S. GOVERNMENT AGENCIES, PUBLIC DISCLOSURE IS GOVERNED BY 5 U.S.C. 552 AND 49 CFR PARTS 15 AND 1520.

60% SUBMISSION
DATE : 09/28/15

AECOM

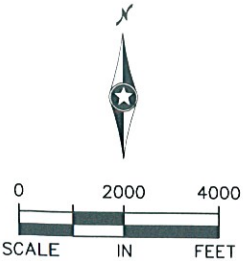
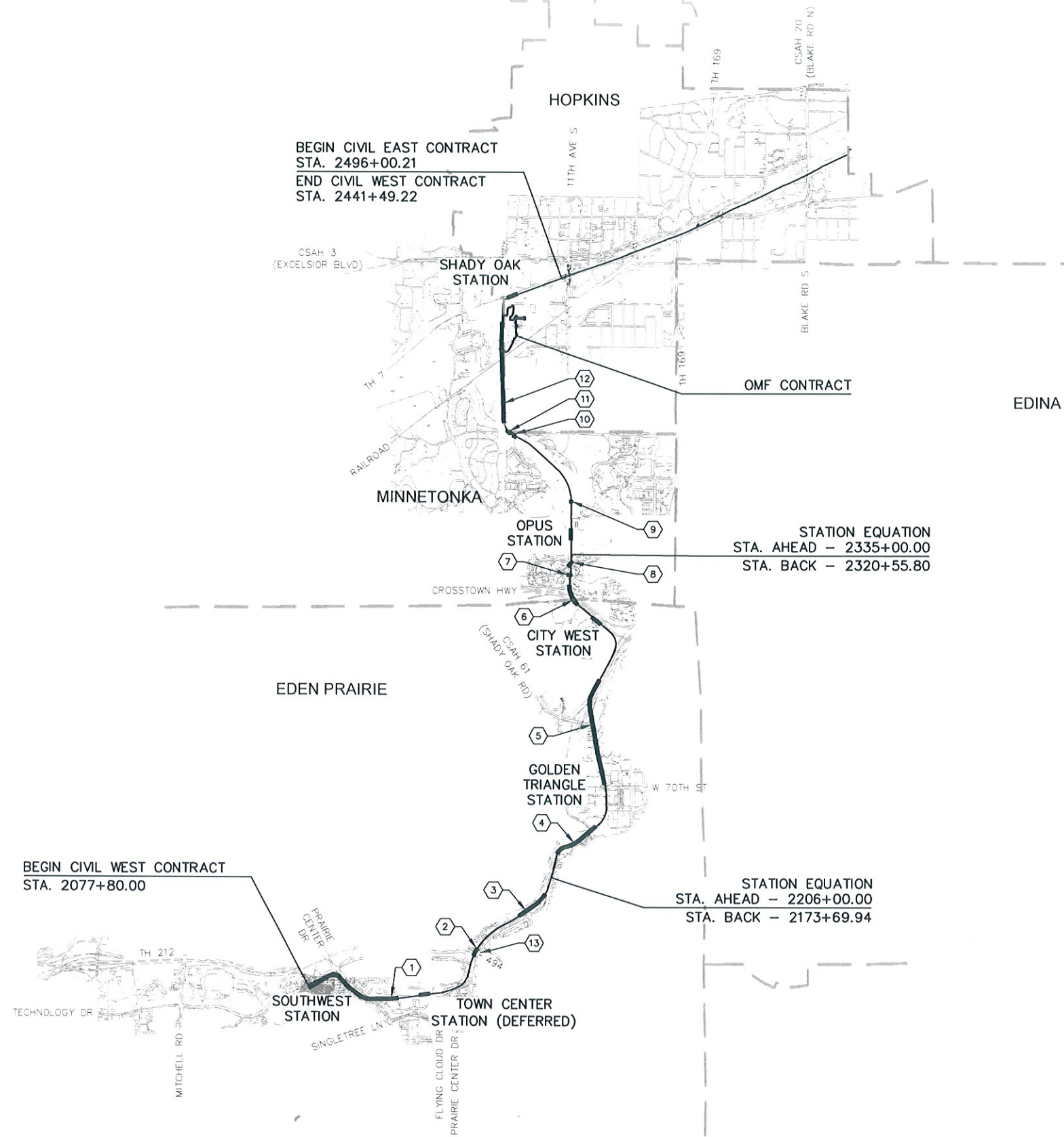
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SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV	SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV	SHT #	SHEET NAME		SHEET DESCRIPTION		STATION	STATION	REV		
VOLUME 4A - BRIDGES						65	W2-STU-BRID-T212-PIER2_27		PIER 27							138	W2-STU-BRID-T212-SUR5-1		BRIDGE SURVEY PROFILE (SHEET 1)						
1	W0-BRGA-CVR-001		COVER SHEET					66	W2-STU-BRID-T212-PIER2_28A		PIER 28					139	W2-STU-BRID-T212-SUR5-2		BRIDGE SURVEY PROFILE (SHEET 2)						
2	W0-BRG-IDX-001		VOLUME INDEX OF PLAN SHEETS SHEET 1					67	W2-STU-BRID-T212-PIER2_28		PIER 28					140	W2-STU-BRID-T212-SUR5-3		BRIDGE SURVEY PROFILE (SHEET 3)						
3	W0-BRG-IDX-002		VOLUME INDEX OF PLAN SHEETS SHEET 2					68	W2-STU-BRID-T212-PIER2_29A		PIER 29					141	W2-STU-BRID-T212-SUR5-4		BRIDGE SURVEY PROFILE (SHEET 4)						
4	W0-GEN-KEY-001		GENERAL KEY MAP					69	W2-STU-BRID-T212-PIER2_29		PIER 29					142	W2-STU-BRID-T212-SUR5-5		BRIDGE SURVEY PROFILE (SHEET 5)						
5	W0-GEN-NTS-001		GENERAL LEGEND AND ABBREVIATIONS SHEET 1					70	W2-STU-BRID-T212-PIER2_30A		PIER 30					143	W2-STU-BRID-T212-SUR5-6		BRIDGE SURVEY PROFILE (SHEET 6)						
6	W0-GEN-NTS-002		GENERAL LEGEND AND ABBREVIATIONS SHEET 2					71	W2-STU-BRID-T212-PIER2_30		PIER 30					144	W2-STU-BRID-T212-SUR5-7		BRIDGE SURVEY PROFILE (SHEET 7)						
BRIDGE 27R34 - SOR 212						72	W2-STU-BRID-T212-SUP1-1		FRAMING PLAN (SHEET 1)							145	W2-STU-BRID-T212-SUR5-8		BRIDGE SURVEY PROFILE (SHEET 8)						
						73	W2-STU-BRID-T212-SUP1-2		FRAMING PLAN (SHEET 2)							146	W2-STU-BRID-T212-SUR5-9		BRIDGE SURVEY PROFILE (SHEET 9)						
						74	W2-STU-BRID-T212-SUP1-3		FRAMING PLAN (SHEET 3)							147	W2-STU-BRID-T212-SUR5-10		BRIDGE SURVEY PROFILE (SHEET 10)						
BRIDGE # 27R33- VALLEY VIEW ROAD						75	W2-STU-BRID-T212-SUP1-4		FRAMING PLAN (SHEET 4)							148	W2-STU-BRID-T212-SUR5-11		BRIDGE SURVEY PROFILE (SHEET 11)						
						76	W2-STU-BRID-T212-SUP1-5		FRAMING PLAN (SHEET 5)																
						77	W2-STU-BRID-T212-SUP2		SPANS 26-28 FRAMING PLAN																
1	W2-STU-BRID-T212-BL01-60		KEY PLAN				1	W1-STU-BRG-FCVV-BL01		KEY PLAN															
2	W2-STU-BRID-T212-BL02		SCHEDULE OF QUANTITIES				2	W1-STU-BRG-FCVV-GE01_1		GENERAL PLAN & ELEVATION															
3	W2-STU-BRID-T212-GE01-1		GENERAL PLAN AND ELEVATION (SHEET 1)				3	W1-STU-BRG-FCVV-GE01_2		GENERAL PLAN & ELEVATION															
4	W2-STU-BRID-T212-GE01-2		GENERAL PLAN AND ELEVATION (SHEET 2)				4	W1-STU-BRG-FCVV-TYP1		TRANSVERSE SECTION & LOADING DIAPGRAM															
5	W2-STU-BRID-T212-GE01-3		GENERAL PLAN AND ELEVATION (SHEET 3)				5	W1-STU-BRG-FCVV-WPTS01_1		BRIDGE LAYOUT															
6	W2-STU-BRID-T212-GE01-4		GENERAL PLAN AND ELEVATION (SHEET 4)				6	W1-STU-BRG-FCVV-WPTS01_2		BRIDGE LAYOUT															
7	W2-STU-BRID-T212-GE01-5		GENERAL PLAN AND ELEVATION (SHEET 5)				7	W1-STU-BRG-FCVV-WPTS		BRIDGE LAYOUT															
8	W2-STU-BRID-T212-TYP2-2		TRANSV SECTION SPANS 1-6				8	W1-STU-BRG-FCVV-AES1		AESTHETIC DETAILS															
9	W2-STU-BRID-T212-TYP2-1		TRANSV SECTION SPANS 7-18				9	W1-STU-BRG-FCVV-AES2		AESTHETIC DETAILS															
10	W2-STU-BRID-T212-TYP1		TRANSV SECTION & LOADING DIAGRAM				10	W1-STU-BRG-FCVV-FRAM1-1		FRAMING PLAN															
11	W2-STU-BRID-T212-TYP2-3		UNIT 1 DETAILS				11	W1-STU-BRG-FCVV-FRAM1-2		FRAMING PLAN															
12	W2-STU-BRID-T212-WPTS-1		BRIDGE LAYOUT				12	W1-STU-BRG-FCVV-FRAM1-3		FRAMING PLAN															
13	W2-STU-BRID-T212-WPTS-2		BRIDGE LAYOUT				13	W1-STU-BRG-FCVV-FRAM1-4		FRAMING PLAN															
14	W2-STU-BRID-T212-WPTS-3		BRIDGE LAYOUT				14	W1-STU-BRG-FCVV-FRAM1-5		FRAMING PLAN DETAILS															
15	W2-STU-BRID-T212-WPTS-4		BRIDGE LAYOUT				15	W1-STU-BRG-FCVV-BDTL-Figure 5-397_531		82MW PRESTRESSED CONCRETE BEAM (PRETENSIONED) 82MW - VARIES															
16	W2-STU-BRID-T212-WPTS-5		BRIDGE LAYOUT				16	W1-STU-BRG-FCVV-SUP1-1		SUPERSTRUCTURE (SHEET 1)															
17	W2-STU-BRID-T212-WPTS-6		BRIDGE LAYOUT				17	W1-STU-BRG-FCVV-SUP1-2		SUPERSTRUCTURE (SHEET 2)															
18	W2-STU-BRID-T212-WPTS-7		BRIDGE LAYOUT				18	W1-STU-BRG-FCVV-SUP1-3		SUPERSTRUCTURE (SHEET 3)															
19	W2-STU-BRID-T212-WPTS-8		BRIDGE LAYOUT				19	W1-STU-BRG-FCVV-SUP1-4		SUPERSTRUCTURE (SHEET 4)															
20	W2-STU-BRID-T212-AES1-2		AESTHETIC DETAILS (SHEET 1)				20	W1-STU-BRG-FCVV-SUP1-5		SUPERSTRUCTURE (SHEET 5)															
21	W2-STU-BRID-T212-AES1-1		AESTHETIC DETAILS (SHEET 2)				21	W1-STU-BRG-FCVV-BDTL-001_101-201		BRIDGE DETAILS															
22	W2-STU-BRID-T212-AES1-3		AESTHETIC DETAILS (SHEET 3)				22	W1-STU-BRG-FCVV-BDTL-002_303-905		BRIDGE DETAILS															
23	W2-STU-BRID-T212-ABT-1		NORTH ABUTMENT DETAILS				23	W1-STU-BRG-FCVV-BDTL-003_310-311		BRIDGE DETAILS															
24	W2-STU-BRID-T212-ABT-2		NORTH ABUTMENT DETAILS				24	W1-STU-BRG-FCVV-BDTL-004_412		BRIDGE DETAILS															
25	W2-STU-BRID-T212-ABT-3		NORTH ABUTMENT DETAILS				25	W1-STU-BRG-FCVV-BDTL-005_553-702		BRIDGE DETAILS															
26	W2-STU-BRID-T212-ABT-4		NORTH ABUTMENT DETAILS				26	W1-STU-BRG-FCVV-BDTL-007_814c-910		BRIDGE DETAILS															
27	W2-STU-BRID-T212-ABT-5		NORTH ABUTMENT DETAILS				27	W1-STU-BRG-FCVV-BDTL-Figure 5-397_119_mod		WIRE FENCE															
28	W2-STU-BRID-T212-S.ABUT		SOUTH ABUTMENT				28	W1-STU-BRG-FCVV-BDTL-Figure 5-397_627		WATERPROOF EXPANSION DEVICE															
29	W2-STU-BRID-T212-PIER-1		PIER 1				29	W1-STU-BRG-FCVV-BDTL-Figure 5-397_630		WATERPROOF EXPANSION DEVICE															
30	W2-STU-BRID-T212-PIER-2		PIER 2				30	W1-STU-BRG-FCVV-BDTL-Figure 5-397_900		AS-BUILT BRIDGE DATA															
31	W2-STU-BRID-T212-PIER-3		PIER 3				31	W1-STU-BRG-FCVV-SUR1		BRIDGE SURVEY															
32	W2-STU-BRID-T212-PIER-4		PIER 4				32	W1-STU-BRG-FCVV-SUR2		BRIDGE SURVEY															
33	W2-STU-BRID-T212-PIER-5		PIER 5				33	W1-STU-BRG-FCVV-SUR6		BRIDGE SURVEY															
34	W2-STU-BRID-T212-PIER-6		PIER 6				34	W1-STU-BRG-FCVV-SUR4-1		BRIDGE SURVEY PLAN (SHEET 1)															
35	W2-STU-BRID-T212-PIER-7		PIER 7				35	W1-STU-BRG-FCVV-SUR4-2		BRIDGE SURVEY PLAN (SHEET 2)															
36	W2-STU-BRID-T212-PIER-8		PIER 8				36	W1-STU-BRG-FCVV-SUR5-1		BRIDGE SURVEY PROFILE (SHEET 1)															
37	W2-STU-BRID-T212-PIER-9		PIER 9				37	W1-STU-BRG-FCVV-SUR5-2		BRIDGE SURVEY PROFILE (SHEET 2)															
38	W2-STU-BRID-T212-PIER-10		PIER 10				BRIDGE 27W32 - BRIDGE OVER I-494																		
39	W2-STU-BRID-T212-PIER-11		PIER 11																						
40	W2-STU-BRID-T212-PIER-12		PIER 12																						
41	W2-STU-BRID-T212-PIER-13		PIER 13				1	CBR27W32-BRG-GPE-001		GENERAL PLAN & ELEVATION		2138+89		2140+86											
42	W2-STU-BRID-T212-PIER-14		PIER 14				2	CBR27W32-BRG-GPE-002		TRANSVERSE SECTION & LOADING DIAGRAM															
43	W2-STU-BRID-T212-PIER-15		PIER 15				3	CBR27W32-BRG-WPTS		BRIDGE LAYOUT															
44	W2-STU-BRID-T212-PIER-16		PIER 16				4	CBR27W32-BRG-ABUT-001		WEST ABUTMENT DETAILS 1															
45	W2-STU-BRID-T212-PIER-17		PIER 17				5	CBR27W32-BRG-ABUT-002		WEST ABUTMENT DETAILS 2															
46	W2-STU-BRID-T212-PIER2_18A		PIER 18				6	CBR27W32-BRG-ABUT-003		WEST ABUTMENT DETAILS 3															
47	W2-STU-BRID-T212-PIER_18		PIER 18				7	CBR27W32-BRG-ABUT-004		WEST ABUTMENT DETAILS 4															
48	W2-STU-BRID-T212-PIER2_19A		PIER 19				8	CBR27W32-BRG-ABUT-011		EAST ABUTMENT DETAILS 1															
49	W2-STU-BRID-T212-PIER_19		PIER 19				9	CBR27W32-BRG-ABUT-012		EAST ABUTMENT DETAILS 2															
50	W2-STU-BRID-T212-PIER2_20A		PIER 20				10	CBR27W32-BRG-ABUT-013		EAST ABUTMENT DETAILS 3															
51	W2-STU-BRID-T212-PIER_20		PIER 20																						
52	W2-STU-BRID-T212-PIER2_21A		PIER 21																						
53	W2-STU-BRID-T212-PIER_21		PIER 21																						
54	W2-STU-BRID-T212-PIER2_22A		PIER 22																						
55	W2-STU-BRID-T212-PIER_22		PIER 22																						
56	W2-STU-BRID-T212-PIER2_23A		PIER 23																						
57	W2-STU-BRID-T212-PIER_23		PIER 23																						
58	W2-STU-BRID-T212-PIER2_24A		PIER 24																						
59	W2-STU-BRID-T212-PIER_24		PIER 24																						
60	W2-STU-BRID-T212-PIER2_25A		PIER 25																						
61	W2-STU-BRID-T212-PIER_25		PIER 25																						
62	W2-STU-BRID-T212-PIER2_26A		PIER 26																						
63	W2-STU-BRID-T212-PIER_26		PIER 26																						
64	W2-STU-BRID-T212-PIER2_27A		PIER 27																						

NO.				DATE				BY				CHECK DESIGN REVISION / SUBMITTAL				<div><div>AECOM</div><div><div><div></div><div>METROPOLITAN</div><div>C O U N C I L</div></div><div><div>SOUTHWEST</div><div>Green Line LRT Extension</div><div></div></div></div></div> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td><td colspan="4" rowspan="2">CIVIL WEST - VOLUME 4A BRIDGES VOLUME INDEX OF PLAN SHEETS SHEET 1</td><td colspan="2" rowspan="2">SHEET 2 OF 342</td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td><td colspan="4">DISCIPLINE:</td><td colspan="4">SHEET NAME:</td></tr> <tr><td colspan="4"></td><td colspan="4"></td><td colspan="4"></td><td colspan="4">GENERAL</td><td colspan="4">W0-BRG-IDX - 001</td></tr>																																																																												CIVIL WEST - VOLUME 4A BRIDGES VOLUME INDEX OF PLAN SHEETS SHEET 1				SHEET 2 OF 342																										DISCIPLINE:				SHEET NAME:																GENERAL				W0-BRG-IDX - 001			
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CIVIL WEST						CIVIL WEST						CIVIL WEST													
SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV	SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV	SHT #	SHEET NAME	SHEET DESCRIPTION	STATION	STATION	REV								
VOLUME 4A - BRIDGES (cont'd)						7	CBR27C08-BRG-ABT-004	SOUTH ABUTMENT DETAILS				48	CBR27C06-BRG-BOR-020	BRIDGE SURVEY PROFILE 8											
11	CBR27W32-BRG-ABUT-014	EAST ABUTMENT DETAILS 4				8	CBR27C08-BRG-ABT-005	SOUTH ABUTMENT DETAILS				49	CBR27C06-BRG-BOR-021	BRIDGE SURVEY PROFILE 9											
12	CBR27W32-BRG-ABUT-015	EAST ABUTMENT DETAILS 5				9	CBR27C08-BRG-ABT-006	NORTH ABUTMENT DETAILS				50	CBR27C06-BRG-BOR-022	BRIDGE SURVEY PROFILE 10											
13	CBR27W32-BRG-PIR-001	PIER DETAILS				10	CBR27C08-BRG-ABT-007	NORTH ABUTMENT DETAILS																	
14	CBR27W32-BRG-FRAM-001	FRAMING PLAN				11	CBR27C08-BRG-ABT-008	NORTH ABUTMENT DETAILS																	
15	CBR27W32-Figure 5-397_509	MN63 PRESTRESSED CONCRETE BEAM				12	CBR27C08-BRG-ABT-009	NORTH ABUTMENT DETAILS																	
16	CBR27W32-BRG-SUP-001	SUPERSTRUCTURE DETAILS				13	CBR27C08-BRG-ABT-010	NORTH ABUTMENT DETAILS																	
17	Figure 5-397_119 mod	ORNAMENTAL METAL RAILING				14	CBR27C08-BRG-SUP-001	FRAMING PLAN																	
18	CBR27W32 B101 & B201	DETAILS				15	CBR27C08-BRG-PCB-001	18" RECTANGULAR PRESTRESSED CONCRETE BEAM																	
19	CBR27W32 B303 & B910	DETAILS				16	CBR27C08-BRG-SUP-002	SUPERSTRUCTURE DETAILS																	
20	CBR27W32 B310 & B311	DETAILS				17	CBR27C08-BRG-SUP-003	SUPERSTRUCTURE DETAILS																	
21	CBR27W32 B403 & B814	DETAILS				18	CBR27C08-BRG-SUP-004	SUPERSTRUCTURE DETAILS																	
22	CBR27W32 B905	DETAILS				19	CBR27C08-BRG-SUP-005	SUPERSTRUCTURE DETAILS																	
23	CBR27W32-BRG-SUR-001	BRIDGE SURVEY				20	CBR27C08-BRG-SUP-006	SUPERSTRUCTURE DETAILS																	
24	CBR27W32-BRG-SUR-002	BRIDGE SURVEY				21	CBR27C08-BRG-SUP-007	CORNER DETAILS																	
25	CBR27W32-BRG-SUR-003	BRIDGE SURVEY				22	CBR27C08-BRG-AES	AESTHETICS																	
26	CBR27W32-BRG-BOR-001	BORINGS - PLAN				23	CBR27C08-BRG-DTL-001	CONCRETE BARRIER (TYPE F, TL-4)																	
27	CBR27W32-BRG-BOR-002	BORINGS - ELEVATION				24	CBR27C08-BRG-DTL-002	B-DETAILS																	
28	CBR27W32-BRG-ACSD	CONSTRUCTION DETAILS				25	CBR27C08-BRG-DTL-003	B-DETAILS																	
29	CBR27W32-BRG-ARCH	AESTHETICS				26	CBR27C08-BRG-DTL-004	B-DETAILS																	
		BRIDGE 27C09 - SMETANA BRIDGE				27	CBR27C08-BRG-DTL-013	AS-BUILT BRIDGE DATA																	
1	CBR27C09-BRG-GPE-001	GENERAL PLAN AND ELEVATION	58+21.7	58+89.0		28	CBR27C08-BRG-SUR	BRIDGE SURVEY																	
2	CBR27C09-BRG-GPE-002	TRANSVERSE SECTION				29	CBR27C08-BRG-BOR-001	BRIDGE SURVEY PLAN																	
3	CBR27C09-BRG-SUP-001	BRIDGE LAYOUT				30	CBR27C08-BRG-BOR-002	BRIDGE SURVEY PROFILE																	
4	CBR27C09-BRG-ABT-001	WEST ABUTMENT DETAILS						BRIDGE 27C06 - PRAIRIE CENTER DRIVE																	
5	CBR27C09-BRG-ABT-002	WEST ABUTMENT DETAILS				1	CBR27C06-BRG-KEY	KEY PLAN	2081+50.4	2108+37.1															
6	CBR27C09-BRG-ABT-004	WEST ABUTMENT DETAILS				2	CBR27C06-BRG-GPE-001	GENERAL PLAN AND ELEVATION 1																	
7	CBR27C09-BRG-ABT-021	WEST ABUTMENT DETAILS				3	CBR27C06-BRG-GPE-002	GENERAL PLAN AND ELEVATION 2																	
8	CBR27C09-BRG-ABT-005	WEST ABUTMENT REINFORCEMENT				4	CBR27C06-BRG-GPE-003	GENERAL PLAN AND ELEVATION 3																	
9	CBR27C09-BRG-ABT-006	WEST ABUTMENT REINFORCEMENT				5	CBR27C06-BRG-GPE-004	GENERAL PLAN AND ELEVATION 4																	
10	CBR27C09-BRG-ABT-007	WEST ABUTMENT REINFORCEMENT				6	CBR27C06-BRG-GPE-005	GENERAL PLAN AND ELEVATION 5																	
11	CBR27C09-BRG-ABT-003	WEST ABUTMENT REINFORCEMENT				7	CBR27C06-BRG-GPE-006	GENERAL PLAN AND ELEVATION 6																	
12	CBR27C09-BRG-ABT-010	EAST ABUTMENT DETAILS				8	CBR27C06-BRG-GPE-007	GENERAL PLAN AND ELEVATION 7																	
13	CBR27C09-BRG-ABT-011	EAST ABUTMENT DETAILS				9	CBR27C06-BRG-TRN-001	CONSTRUCTION NOTES & QUANTITIES																	
14	CBR27C09-BRG-ABT-014	EAST ABUTMENT DETAILS				10	CBR27C06-BRG-TRN-003	TRANSVERSE SECTION 2																	
15	CBR27C09-BRG-ABT-022	EAST ABUTMENT DETAILS				11	CBR27C06-BRG-TRN-004	TRANSVERSE SECTION 3																	
16	CBR27C09-BRG-ABT-012	EAST ABUTMENT DETAILS				12	CBR27C06-BRG-SUP-001	BRIDGE LAYOUT 1																	
17	CBR27C09-BRG-ABT-015	EAST ABUTMENT REINFORCEMENT				13	CBR27C06-BRG-SUP-002	BRIDGE LAYOUT 2																	
18	CBR27C09-BRG-ABT-016	EAST ABUTMENT REINFORCEMENT				14	CBR27C06-BRG-SUP-003	BRIDGE LAYOUT 3																	
19	CBR27C09-BRG-ABT-017	EAST ABUTMENT REINFORCEMENT				15	CBR27C06-BRG-SUP-004	BRIDGE LAYOUT 4																	
20	CBR27C09-BRG-ABT-018	EAST ABUTMENT REINFORCEMENT				16	CBR27C06-BRG-PIR-001	PIER DETAILS - PIERS 1A - 6A																	
21	CBR27C09-BRG-SUP-002	FRAMING PLAN				17	CBR27C06-BRG-PIR-002	PIER DETAILS - PIERS 1A - 6A																	
22	CBR27C09-BRG-PCB-001	27M PRESTRESSED CONCRETE BEAM				18	CBR27C06-BRG-PIR-003	PIER DETAILS - PIERS 8A, 9A, 10A, 2, 3, 5, 6, 7																	
23	CBR27C09-BRG-SUP-004	SUPERSTRUCTURE DETAILS				19	CBR27C06-BRG-PIR-004	PIER DETAILS - PIERS 8A, 9A, 10A, 2, 3, 5, 6, 7																	
24	CBR27C09-BRG-SUP-003	SUPERSTRUCTURE DETAILS				20	CBR27C06-BRG-PIR-027	PIER DETAILS - PIERS 19, 20, 22, 23, 25, 26, 28&29																	
25	CBR27C09-BRG-SUP-007	CORNER DETAILS				21	CBR27C06-BRG-PIR-028	PIER DETAILS - PIERS 19, 20, 22, 23, 25, 26, 28&29																	
26	CBR27C09-BRG-DTL-003	WIRE FENCE				22	CBR27C06-BRG-SUP-008	FRAMING PLAN 1																	
27	CBR27C09-BRG-DTL-001	CONCRETE BARRIER (TYPE F, TL-4)				23	CBR27C06-BRG-SUP-009	FRAMING PLAN 2																	
28	CBR27C09-BRG-DTL-002	CONCRETE PARAPET (TYPE P-1)				24	CBR27C06-BRG-SUP-010	FRAMING PLAN 3																	
29	CBR27C09-BRG-DTL-009	WATERPROOF EXPANSION DEVICE				25	CBR27C06-BRG-SUP-011	FRAMING DETAILS 4																	
30	CBR27C09-BRG-DTL-010	WATERPROOF EXPANSION DEVICE				26	CBR27C06-BRG-SUR-001	BRIDGE SURVEY 1																	
31	CBR27C09-BRG-DTL-011	WATERPROOF EXP DEVICE SNOW PLOW PROTEC				27	CBR27C06-BRG-SUR-002	BRIDGE SURVEY 2																	
32	CBR27C09-BRG-DTL-004	BRIDGE DETAILS				28	CBR27C06-BRG-SUR-003	BRIDGE SURVEY 3																	
33	CBR27C09-BRG-DTL-005	BRIDGE DETAILS				29	CBR27C06-BRG-SUR-004	BRIDGE SURVEY 4																	
34	CBR27C09-BRG-DTL-006	BRIDGE DETAILS				30	CBR27C06-BRG-BOR-001	BRIDGE SURVEY PLAN 1																	
35	CBR27C09-BRG-DTL-007	CONDUIT SYSTEM (LIGHTING)				31	CBR27C06-BRG-BOR-002	BRIDGE SURVEY PLAN 2																	
36	CBR27C09-BRG-DTL-008	BRIDGE DETAILS				32	CBR27C06-BRG-BOR-003	BRIDGE SURVEY PLAN 3																	
37	CBR27C09-BRG-DTL-012	BRIDGE DETAILS				33	CBR27C06-BRG-BOR-004	BRIDGE SURVEY PLAN 4																	
38	CBR27C09-AS-BUILT BRIDGE DATA	AS-BUILT BRIDGE DATA				34	CBR27C06-BRG-BOR-005	BRIDGE SURVEY PLAN 5																	
39	CBR27C09-BRG-SUR-001	BRIDGE SURVEY				35	CBR27C06-BRG-BOR-006	BRIDGE SURVEY PLAN 6																	
40	CBR27C09-BRG-SUR-002	BRIDGE SURVEY PLAN				36	CBR27C06-BRG-BOR-007	BRIDGE SURVEY PLAN 7																	
41	CBR27C09-BRG-SUR-003	BRIDGE SURVEY PROFILE				37	CBR27C06-BRG-BOR-008	BRIDGE SURVEY PLAN 8																	
42	CBR27C09-BRG-ABT-020	AESTHETICS				38	CBR27C06-BRG-BOR-009	BRIDGE SURVEY PLAN 9																	
		BRIDGE 27C08 - FELTL ROAD				39	CBR27C06-BRG-BOR-010	BRIDGE SURVEY PLAN 10																	
1	CBR27C08-BRG-GPE-001	GENERAL PLAN AND ELEVATION	24+73.4	25+18.0		40	CBR27C06-BRG-BOR-012	BRIDGE SURVEY PROFILE 1																	
2	CBR27C08-BRG-GPE-002	TRANSVERSE SECTION & QUANTITIES				41	CBR27C06-BRG-BOR-013	BRIDGE SURVEY PROFILE 2 (1 of 2)																	
3	CBR27C08-BRG-GPE-003	BRIDGE LAYOUT				42	CBR27C06-BRG-BOR-014	BRIDGE SURVEY PROFILE 2 (2 of 2)																	
4	CBR27C08-BRG-ABT-001	SOUTH ABUTMENT DETAILS				43	CBR27C06-BRG-BOR-015	BRIDGE SURVEY PROFILE 3																	
5	CBR27C08-BRG-ABT-002	SOUTH ABUTMENT DETAILS				44	CBR27C06-BRG-BOR-016	BRIDGE SURVEY PROFILE 4																	
6	CBR27C08-BRG-ABT-003	SOUTH ABUTMENT DETAILS				45	CBR27C06-BRG-BOR-017	BRIDGE SURVEY PROFILE 5																	
						46	CBR27C06-BRG-BOR-018	BRIDGE SURVEY PROFILE 6																	
						47	CBR27C06-BRG-BOR-019	BRIDGE SURVEY PROFILE 7																	
NO. DATE BY CHECK DESIGN REVISION / SUBMITTAL						<div><div>AECOM</div><div>60% SUBMISSION - 09/28/15</div></div>						<div><div><div><div></div><div>METROPOLITAN C O U N C I L</div></div><div><div>SOUTHWEST</div><div>Green Line LRT Extension</div></div></div><div></div></div>						<div><div>CIVIL WEST - VOLUME 4A BRIDGES VOLUME INDEX OF PLAN SHEETS SHEET 2</div><div>DISCIPLINE: GENERAL SHEET NAME: W0-BRG-IDX - 002</div></div>						<div>SHEET 3 OF 342</div>	

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REF	BRIDGE DESCRIPTION	BRIDGE NUMBER
1	PRAIRIE CENTER DRIVE BRIDGE	27C06
2	I-494 BRIDGE	27W32
3	VALLEY VIEW RD BRIDGE	27R33
4	NINE MILE CREEK BRIDGE	27C07
5	TH 212 / SHADY OAK ROAD BRIDGE	27R34
6	HWY 62 TUNNEL	27W33
7	PEDESTRIAN UNDERPASS #2	27J63
8	PEDESTRIAN UNDERPASS #1	27J62
9	PEDESTRIAN UNDERPASS #5	R0715
10	FELTL ROAD BRIDGE	27C08
11	SMETANA ROAD BRIDGE	27C09
12	MINNETONKA / HOPKINS LRT BRIDGE	R0686
13	FLYING CLOUD DRIVE BRIDGE MODIFICATIONS	27762 BA

BA - BID ALTERNATE

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
GENERAL
KEY MAP

DISCIPLINE: GENERAL SHEET NAME: W0-GEN-KEY - 001

SHEET
4
OF
342

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TRACK LINETYPES

- ROADWAY CL
- TRACK CL (LRT)
- TRACK CL (FRT)
- RETAINING WALL
- BALLAST CURB
- TUNNEL WALL
- FENCE
- EX ROW
- PROP ROW
- PROP TCE
- PROP PE
- FENCE / RAILING
- ID ID INTRUSION DETECTION

CIVIL LINETYPES

- ROADWAY CL
- TRACK CL (LRT)
- TRACK CL (FRT)
- RETAINING WALL
- BALLAST CURB
- TUNNEL WALL
- CONCRETE CURB AND GUTTER
- TRAIL
- SIDEWALK
- DRIVEWAY
- BRIDGE
- SAWCUT
- FENCE
- DELINEATED WETLAND
- WATER EDGE
- EX ROW
- PROP ROW
- PROP TCE
- PROP PE
- CROSSWALK
- STOP BAR
- MEDIAN NOSE

TRACK SYMBOLS

- PROPOSED DIRECTIONAL LANE USE
- EXISTING DIRECTIONAL LANE USE
- PEDESTRIAN FLASHER
- AUTOMATIC GATE
- RAIL TURNOUT
- RAIL CROSSOVER (DOUBLE)
- RAIL CROSSOVER (SINGLE)
- POINT OF SWITCH (PS)
- OCS POLE FOUNDATION
- RAIL LUBRICATOR
- POINT OF INTERSECTION (PI) OF TURNOUT (TO)
- RAILROAD CURVE NUMBER

NOTE:
ALL TURNOUTS AND CROSSOVERS TO BE EQUIPPED WITH POWER SWITCH MACHINES AND SWITCH HEATERS

CIVIL SYMBOLS

- ACCESSIBLE PEDESTRIAN CURB RAMP (DESIGN VARIES)
- PROPOSED DIRECTIONAL LANE USE
- EXISTING DIRECTIONAL LANE USE
- AUTOMATIC GATE
- HANDICAP PARKING STALL
- TACTILE WARNING STRIP
- TPSS BUILDING (TPSS-SW###)
- SIGNAL OR INTERMEDIATE OR PLATFORM OR XING OR TUNNEL HOUSE OR ANY COMBINATION OF THESE

SURVEY NOTES

- THE HORIZONTAL DATUM OF THIS MAP IS BASED ON THE HENNEPIN COUNTY COORDINATE SYSTEM WHICH IS RELATED TO THE MINNESOTA STATE PLANE COORDINATE SYSTEM NAD 83 (2007) ADJUSTMENT SOUTH ZONE.
- THE PLANIMETRIC FEATURES SHOWN ON THIS MAP ARE AS PREPARED BY AERO-METRIC, INC. FROM AERIAL DATA AND IMAGERY COLLECTED IN APRIL 2012, AS SUPPLEMENTED BY FIELD SURVEYS COMPLETED BY RANI ENGINEERING.
- HORIZONTAL POSITIONAL ACCURACY: USING THE NATIONAL STANDARD FOR SPATIAL DATA ACCURACY, THE DATA SET TESTED 0.14 FEET HORIZONTAL ACCURACY AT A 95% CONFIDENCE LEVEL.
- VERTICAL POSITIONAL ACCURACY: USING THE NATIONAL STANDARD FOR SPATIAL DATA ACCURACY, THE DATA SET TESTED 0.10 FEET VERTICAL ACCURACY AT 95% CONFIDENCE LEVEL.

NO.	DATE	BY	CHECK DESIGN	REVISION / SUBMITTAL



AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN
COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
GENERAL
LEGEND AND ABBREVIATIONS
SHEET 1

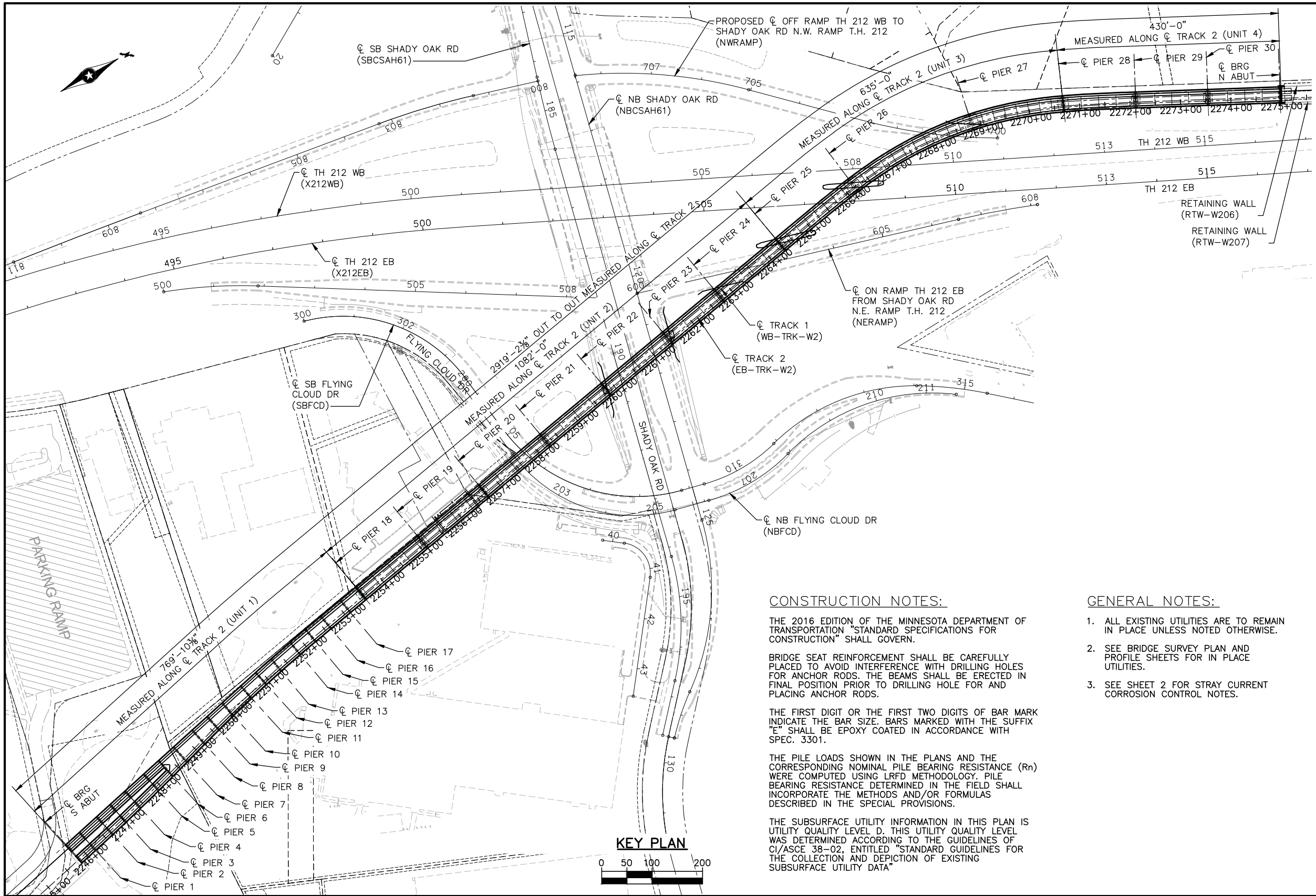
DISCIPLINE: GENERAL

SHEET NAME: W0-GEN-NTS - 001

AD	ALGEBRAIC DIFFERENCE
AVE	AVENUE
BGN	BEGIN
BP	BEGINNING POINT
BVCE	BEGINNING VERTICAL CURVE ELEVATION
BVCS	BEGINNING VERTICAL CURVE STATION
BLVD	BOULEVARD
BNSF	BURLINGTON NORTHERN SANTA FE RAILWAY
C&G	CURB AND GUTTER
C	CENTERLINE
CIR	CIRCLE
CP	CANADIAN PACIFIC
CPRAIL	CANADIAN PACIFIC RAILWAY
CS	CURVE TO SPIRAL
CSAH	COUNTY STATE AID HIGHWAY
D&U	DRAINAGE AND UTILITY
DF	DIRECT FIXATION
DR	DRIVE
DTL	DETAIL
DWY	DRIVEWAY
E	EAST
Ea	ACTUAL SUPERELEVATION (INCHES)
EB	EAST BOUND
EL or ELEV	ELEVATION
EP	END POINT
ESMT	EASEMENT
Eu	UNBALANCED SUPERELEVATION (INCHES)
EVCE	ENDING VERTICAL CURVE ELEVATION
EVCS	ENDING VERTICAL CURVE STATION
EX	EXISTING
HCRRRA	HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
LH	LEFT HAND
LN	LANE
LRT	LIGHT RAIL TRANSIT
Lc	CURVE LENGTH (FEET)
Ls	SPIRAL LENGTH (FEET)
MIN	MINIMUM
MPH	MILES PER HOUR
MPLS	CITY OF MINNEAPOLIS
MPRB	MINNEAPOLIS PARK AND RECREATION BOARD
N	NORTH
NB	NORTH BOUND
NIC	NOT IN CONTRACT
NO	NUMBER
OMF	OPERATIONS AND MAINTENANCE FACILITY
OCS	OVERHEAD CONTACT SYSTEM
OH	OVERHEAD
PC	POINT OF CURVE
PE	PERMANENT EASEMENT
PITO	POINT OF INTERSECTION OF TURNOUT
PKWY	PARKWAY
POT	POINT ON TANGENT
PROP	PROPOSED
PS	POINT OF SWITCH
PT	POINT OF TANGENT
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS (FEET)
RD	ROAD
RL	RAIL LUBRICATOR
r	RATE OF CHANGE VERTICAL CURVE
RH	RIGHT HAND
ROW	RIGHT OF WAY
S	SOUTH
SB	SOUTH BOUND
SC	SPIRAL TO CURVE
SIG-COMM	SIGNAL COMMUNICATION
ST	STREET
ST	SPIRAL TO TANGENT
STA	STATION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TH	TRUNK HIGHWAY
THRU	THROUGH
TOR	TOP OF RAIL
TPSS	TRACTION POWER SUBSTATION
TRK	TRACK
TS	TANGENT TO SPIRAL
TYP	TYPICAL
UG	UNDERGROUND
V	DESIGN VELOCITY (MPH)
VC	VERTICAL CURVE
W	WEST
WB	WEST BOUND

<u>ABBREVIATED NAME</u>	<u>FULL NAME / LOCATION</u>
TRAIL 1	UNDER RED CIRCLE DR, LRT, AND YELLOW CIRCLE DR
TRAIL 2	FROM TRAIL 1 TO GREEN CIRCLE DR
TRAIL 3	OPUS STATION ACCESS FROM BREN RD E
TRAIL 4	FROM BREN RD W TO TRAIL 5
TRAIL 5	FROM OPUS STATION TO GREEN CIRCLE DR
TRAIL 6	FROM TRAIL 5 TO SMETANA RD
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/FROM SHADY OAK STATION TO 11TH AVE
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL TRAIL/WEST OF EXCELSIOR
CEDAR LAKE TRAIL	CEDAR LAKE LRT REGIONAL LRT TRAIL/BETWEEN EXCELSIOR AND KENILWORTH TRAIL CONNECTION
MIDTOWN GREENWAY	MIDTOWN GREENWAY/EAST OF KENILWORTH TRAIL CONNECTION
TRAIL A	KENILWORTH TRAIL (SECONDARY)/BETWEEN CEDAR-ISLES CHANNEL AND 21ST STREET STATION
TRAIL B	KENILWORTH TRAIL (SECONDARY)/BETWEEN 21ST STREET STATION AND PENN STATION
TRAIL B	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL C	10' CONNECTOR TRAIL FROM CEDAR LAKE LRT REGIONAL TRAIL TO TYLER AVE.
TRAIL D	10' CONNECTOR TRAIL/BELTLINE STATION TO CEDAR LAKE LRT REGIONAL TRAIL
KENILWORTH TRAIL	KENILWORTH TRAIL (MAIN)/W LAKE ST TO PENN STATION
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/PENN STATION TO TH 394
TRAIL E	KENILWORTH TRAIL (SECONDARY)/EAST OF W LAKE ST
TRAIL F	KENILWORTH TRAIL (SECONDARY)/WEST OF CEDAR LAKE PKWY
TRAIL G	KENILWORTH TRAIL (SECONDARY)/WEST OF PENN STATION
TRAIL G	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL H	10' CONNECTOR TRAIL/EAST OF PENN STATION TO KENWOOD PKWY
TRAIL I	NOT USED
CEDAR LAKE TRAIL	CEDAR LAKE TRAIL (MAIN)/AT-GRADE CROSSING AT PENN STATION
TRAIL J	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL K	CEDAR LAKE TRAIL (SECONDARY)/NORTHWEST OF PENN STATION
TRAIL L	CEDAR LAKE TRAIL (SECONDARY)/EAST OF PENN STATION
TRAIL M	NOT USED
TRAIL N	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO EDGEBROOK DRIVE
TRAIL O	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO W LAKE STREET
TRAIL P	8' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO LOUISIANA AVE
TRAIL Q	10' CONNECTOR TRAIL FROM CEDAR LAKE TRAIL TO TH 7 SERVICE ROAD
TRAIL R	20' CONNECTOR TRAIL FROM VAN WHITE STATION TO CEDAR LAKE TRAIL
TRAIL S	NOT USED
TRAIL T	8' CONNECTOR TRAIL FROM VAN WHITE STATION TO VAN WHITE MEMORIAL BLVD
TRAIL U	10' TRAIL PARALLEL TO CEDAR LAKE PKWY
LUCE LINE TRAIL	LUCE LINE REGIONAL TRAIL/ON BRIDGE OVER LIGHT RAIL
TRAIL V	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL
TRAIL W	CONNECTOR TRAIL TO LUCE LINE REGIONAL TRAIL WEST OF LIGHT RAIL

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DESIGN DATA

2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 7TH EDITION AND CURRENT INTERIMS
SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)
LOAD AND RESISTANCE FACTOR DESIGN METHOD
LRV & MV LOAD DIAGRAM SHOWN ON SHEET 15
MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI
PRESTRESSED CONCRETE:
f'c = 9000 PSI n = 1
fpu = 270 ksi FOR 0.6"Ø LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS
STRUCTURAL STEEL:
fy = 50 ksi SPEC 3309 PAINTED
DESIGN SPEED: OVER = 40 MPH (LRT)
UNDER = 45 MPH (FLYING CLOUD DRIVE)
UNDER = 30 MPH (SHADY OAK ROAD)
UNDER = 60 MPH (TH 212)
DECK AREA 97,904 SQ. FT.

LIST OF SHEETS

NO.	DESCRIPTION
1	KEY PLAN
2	SCHEDULE OF QUANTITIES
3-7	GENERAL PLAN AND ELEVATION
8-11	TRANSVERSE SECTION & LOADING DIAGRAMS
12-19	BRIDGE LAYOUT & CORNER DETAILS
19-22	AESTHETIC DETAILS
-	NORTH ABUTMENT DETAILS
-	SOUTH ABUTMENT AND PIER DETAILS
-	FRAMING PLAN
-	96MW PRESTRESSED CONCRETE BEAM DETAILS
-	82MW PRESTRESSED CONCRETE BEAM DETAILS
-	120" PLATE GIRDER BEAM DETAILS
-	SUPERSTRUCTURE DETAILS AND REINFORCEMENT
-	BRIDGE DETAILS
-	FENCING
-	SLOPE PAVING CONCRETE
-	EXPANSION DEVICE
-	AS-BUILT DATA
-	BRIDGE SURVEY
-	BRIDGE SURVEY PLAN
-	BRIDGE SURVEY PROFILE

BRIDGE NO. 27R34

SOUTHWEST LRT OVER SHADY OAK ROAD & TH 212
0.1 MI. NORTH OF JCT. T.H. 212 AND SHADY OAK ROAD
IN EDEN PRAIRIE
UNIT 1: 36'-46'-36', 5 @ 40'-50'-40'
UNIT 2: 159'-158'-158'-158'-158.5'-132.5'-158'
UNIT 3: 186.25'-263.75'-185'
UNIT 4: 143.33'-143.33'-143.33'
CIP CONCRETE SLAB SPANS - UNIT 1
PRESTRESSED CONCRETE BEAM SPANS - UNIT 2 & 4
VARIABLE ROADWAY (18'-6" MIN)
0'-0'-0" SKEW
BRIDGE I.D. NO. 209 - UNIT 1
BRIDGE I.D. NO. 501 - UNIT 2 & 4
BRIDGE I.D. NO. 401 - UNIT 3

KEY PLAN

SEC 1 T 116 N R 22 W
CITY OF EDEN PRAIRIE HENNEPIN COUNTY

APPROVED: _____ STATE BRIDGE ENGINEER DATE _____

CONSTRUCTION NOTES:

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLE FOR AND PLACING ANCHOR RODS.
THE FIRST DIGIT OR THE FIRST TWO DIGITS OF BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.
THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (Rn) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA"

GENERAL NOTES:

- ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS NOTED OTHERWISE.
- SEE BRIDGE SURVEY PLAN AND PROFILE SHEETS FOR IN PLACE UTILITIES.
- SEE SHEET 2 FOR STRAY CURRENT CORROSION CONTROL NOTES.

KEY PLAN



JOB NO. T9N635

STATE PROJECT NO. 9909-01

MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL
DRAWN BY: SWH
CHECKED BY: MJC
DATE: 8/24/2015



60% SUBMISSION - 9/28/15



DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-BL01-60

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
KEY PLAN

SHEET
1
OF
148

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SCHEDULE OF QUANTITIES			
SPEC. SECTION (3)	COMPONENT ITEM	UNIT	QUANTITY
-	BR 27R34	LUMP SUM	LS

COMPONENT ITEM SUMMARY (BRIDGE 27R34)			
SPEC. SECTION (3)	COMPONENT ITEM	UNIT (2)	QUANTITY (2)
MNDOT 2401	SUPERSTRUCTURE EXCAVATION CLASS E (4)	CU YD	XXXX
MNDOT 2401	SUPERSTRUCTURE CONCRETE (1A43)	CU YD	XXXX
MNDOT 2401	SUPERSTRUCTURE CONCRETE (3Y43)	CU YD	XXXX
MNDOT 2401	SUPERSTRUCTURE CONCRETE (3Y46)	CU YD	XXXX
MNDOT 2401	REINFORCEMENT BARS	POUND	XXXX
MNDOT 2401	REINFORCEMENT BARS (EPOXY COATED)	POUND	XXXX
MNDOT 3741	ELASTOMERIC BEARING PAD	EA	XXXX
MNDOT 2402	POT-TYPE BEARING ASSEMBLY TYPE E2	EA	XXXX
MNDOT 2402	POT-TYPE BEARING ASSEMBLY TYPE E3	EA	XXXX
MNDOT 2402	POT-TYPE BEARING ASSEMBLY TYPE F2	EA	XXXX
MNDOT 2402	POT-TYPE BEARING ASSEMBLY TYPE F3	EA	XXXX
MNDOT 2402	STRUCTURAL STEEL (3309)	POUND	XXXX
MNDOT 2402	EXPANSION JOINT DEVICES TYPE 5	LIN FT	XXXX
MNDOT 2402	MODULAR BRIDGE JOINT SYSTEM TYPE 6	LIN FT	XXXX
MNDOT 2402	FIXED BEARING ASSEMBLY TYPE F1	EA	XXXX
MNDOT 2402	EXPANSION BEARING ASSEMBLY TYPE E1	EA	XXXX
MNDOT 2405	PRESTRESSED CONCRETE BEAMS 82MW	LF	XXXX
MNDOT 2405	PRESTRESSED CONCRETE BEAMS 96MW	LF	XXXX
MNDOT 2405	DIAPHRAGM FOR TYPE 82MW PRESTRESSED BEAMS	LF	XXXX
MNDOT 2405	DIAPHRAGM FOR TYPE 96MW PRESTRESSED BEAMS	LF	XXXX
MNDOT 2411	ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD)	SF	XXXX
MNDOT 2411	ARCHITECTURAL CONCRETE TEXTURE (TYPE 1)	SF	XXXX
MNDOT 2452	C.I.P.CONCRETE PILING DELIVERED 16"	LF	XXXX
MNDOT 2452	C.I.P.CONCRETE PILING DRIVEN 16"	LF	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 60 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 65 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 70 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 75 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 80 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 85 FT LONG 16"	EA	XXXX
MNDOT 2452	C.I.P.CONCRETE TEST PILE 90 FT LONG 16"	EA	XXXX

SCHEDULE OF QUANTITIES AND COMPONENT ITEM SCHEDULE NOTES

- (1) A BENCH MARK IS REQUIRED. LOCATED AT THE SOUTHEAST CORNER OF THE BRIDGE. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.
- (2) QUANTITIES LISTED FOR THE COMPONENT ITEMS OF BR 27R34 ARE FOR INFORMATIONAL PURPOSES. ANY ADDITIONAL ITEMS OR CHANGES IN QUANTITIES REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.
- (3) MEASUREMENT AND PAYMENT FOR COMPONENT ITEMS SHALL BE PART OF THE LUMP SUM PAYMENT FOR BR 27R34. REFER TO MNDOT STANDARD SPECIFICATION OR SPECIAL PROVISION FOR TECHNICAL SPECIFICATION REQUIREMENTS FOR ALL PROVISIONS OTHER THAN MEASUREMENT & PAYMENT REQUIREMENTS.
- (4) STRUCTURE EXCAVATIONS INCLUDES TEMPORARY SUPPORT EXCAVATION.

STRAY CURRENT CORROSION CONTROL FOR UNIT 1 PORTION OF BRIDGE 27R34 CONSTRUCTION (SOUTH ABUTMENT THROUGH PIER 18)



1. ELECTRICALLY CONTINUOUS BLACK BAR SHALL BE USED.
2. ALL LAPS SPLICES IN LONGITUDINAL REBARS IN BOTH LAYERS OF INVERT SLAB SHALL BE WELDED PER DETAIL ON SHEETS E0-SYS-CORR-DTL-001 AND 002.
3. BOND CABLES AND BONDING NOTCHES SHALL BE INSTALLED ACROSS ALL EXPANSION/CONTRACTION TYPE JOINTS IN SLABS PER DETAILS ON SHEET E0-SYS-CORR-DTL-001. INSTAL TWO BOND CABLE/NOTCHES PER TRACKWAY IN THE INVERT SLAB.
4. ADDITIONAL TRANSVERSE REBARS SHALL BE INSTALLED ON EACH SIDE OF EXPANSION/CONTRACTION TYPE JOINTS IN INVERT SLABS PER DETAILS ON SHEET E0-SYS-CORR-DTL-001.
5. TEST STATION AS SHOWN ON SHEET E0-SYS-CORR-DTL-009 SHALL BE INSTALLED AT THE LOCATIONS SHOWN.
6. ALL REBAR AND PILES IN S. ABUTMENT THROUGH PIER 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

STRAY CURRENT CORROSION CONTROL FOR UNIT 2, 3, & 4 PORTION OF BRIDGE 27R34 CONSTRUCTION PIERS 19 THROUGH 30)



1. EPOXY COATED REBAR SHALL BE USED FOR PIERS 19 THROUGH 30, IN THE NORTH ABUTMENT AND IN THE TRACK SLAB FOR SPANS 19 THROUGH 31. NO SPECIAL MEASURES ARE REQUIRED FOR THE PILES IN PIERS 19 THROUGH 31 OR THE NORTH ABUTMENT.
2. ELECTRICAL CONTINUITY ACROSS EXPANSION JOINTS AT PIERS 20, 22, 24, 25, 28 AND AT THE NORTH ABUTMENT IS NOT REQUIRED.
3. A 1/0 AWG UNINSULATED COPPER STRAY CURRENT COLLECTOR CABLE SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL ALONG SPANS 19 THROUGH 31. THE CABLE SHALL BE POSITIONED IN THE DECK SUCH THAT IT DOES NOT INTERFERE WITH INSTALLATION OF PLINTH ANCHOR INSERTS.
4. AT PIER 18 THE TWO UNINSULATED STRAY CURRENT COLLECTOR CABLES FOR TRACKS 1 AND 2 SHALL BE TERMINATED IN STRAY CURRENT JUNCTION BOXES FOR THE WELDED REBAR IN TRACK INVERT TO THE SOUTH.
5. AT THE NORTH ABUTMENT THE TWO UNINULATED STRAY CURRENT COLLECTOR CABLES FOR TRACKS 1 AND 2 SHALL BE TERMINATED IN STRAY CURRENT JUNCTION BOXES THAT ALSO CONTAIN 1/0 AWG INSULATED CABLES THAT TERMINATE AT GROUND RODS DRIVEN NEAR THE ABUTMENT FOOTING.
6. SUFFICIENT SLACK SHALL BE PROVIDED IN EACH OF THE UNINSULATED 1/0 AWG STARY CURRENT COLLECTOR CABLES AT EXPANSION JOINTS TO ALLOW FOR MOVEMENT BETWEEN THE DECK SPANS.
7. ALL BEARINGS SHALL PROVIDE ELECTRICAL INSULATION OF EMBEDDED STEEL ELEMENTS LOCATED ABOVE THE BEARING ASSEMBLIES FROM EMBEDDED STEEL ELEMENTS LOCATED BELOW THE BEARING ASSEMBLIES.

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DRAWN BY: SWH		DATE: 8/24/2015	



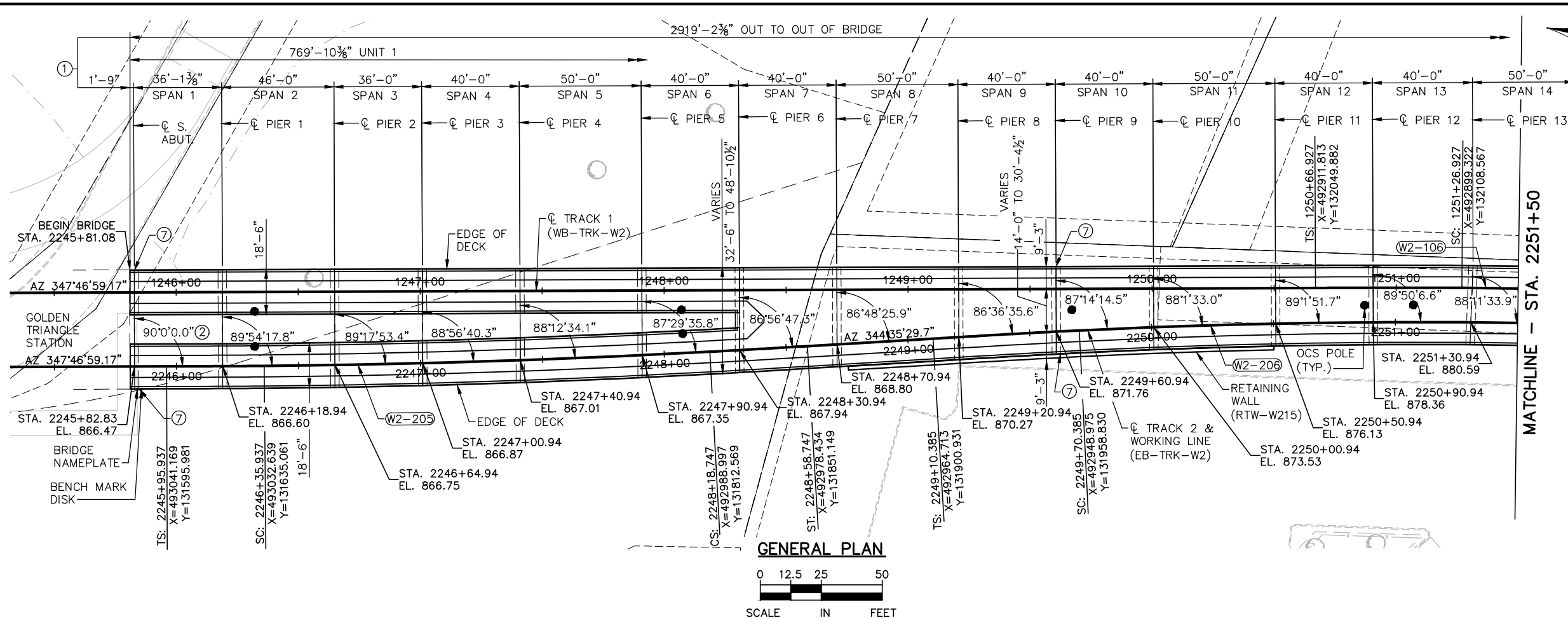
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SCHEDULE OF QUANTITIES	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-BL02

SHEET
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148

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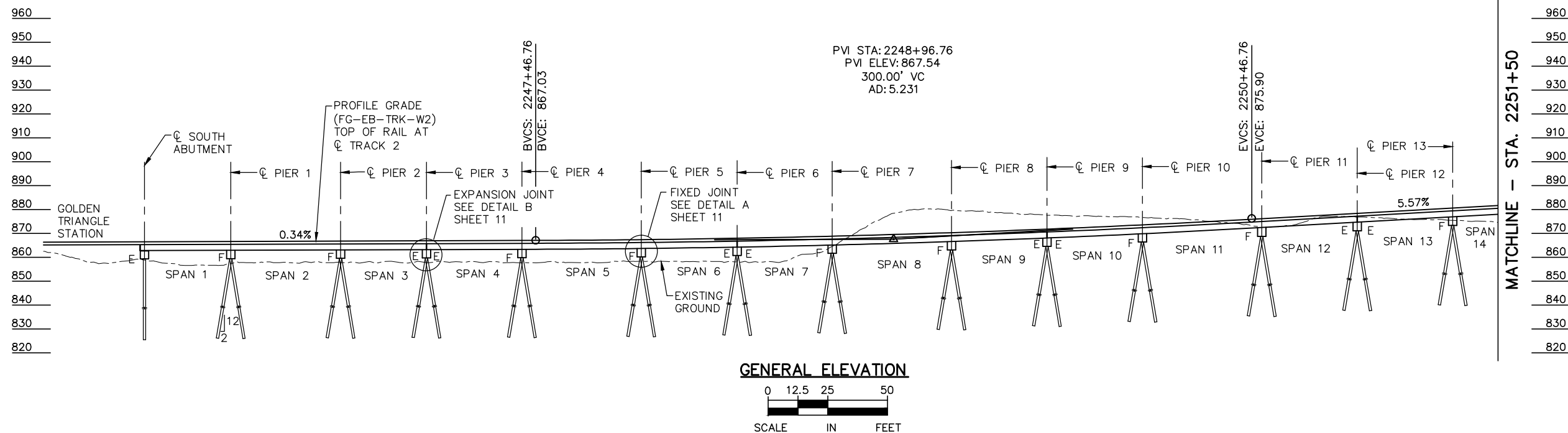
NOTES:

- ① ALL DIMENSIONS ARE MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- ② TYP. UNLESS SHOWN OTHERWISE
3. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
4. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
5. SEE BORING SHEETS FOR INPLACE UTILITIES.
6. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- ⑦ STRAY CURRENT BONDING JUNCTION BOX. SEE SYSTEM PLANS.

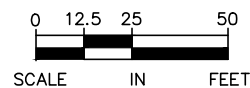
CURVE NO. W2-106
R = 2850.00'
Lc = 61.71'
Ls = 60.00'
Ea = 1.00"
Eu = 1.22"
V = 40 MPH

CURVE NO. W2-205
R = 4000.00'
Lc = 182.81'
Ls = 40.00'
Ea = 0.75"
Eu = 0.83"
V = 40 MPH

CURVE NO. W2-206
R = 2850.00'
Lc = 220.46'
Ls = 60.00'
Ea = 1.00"
Eu = 1.22"
V = 40 MPH



GENERAL ELEVATION



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DESIGNED BY: DDL
DRAWN BY: SWH
CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

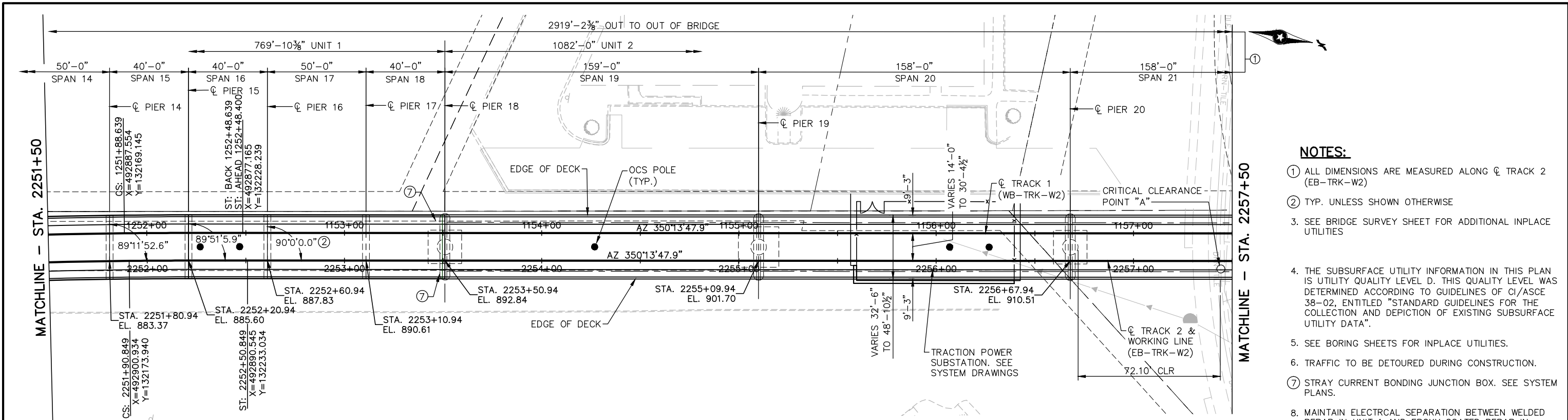
60% SUBMISSION - 9/28/15



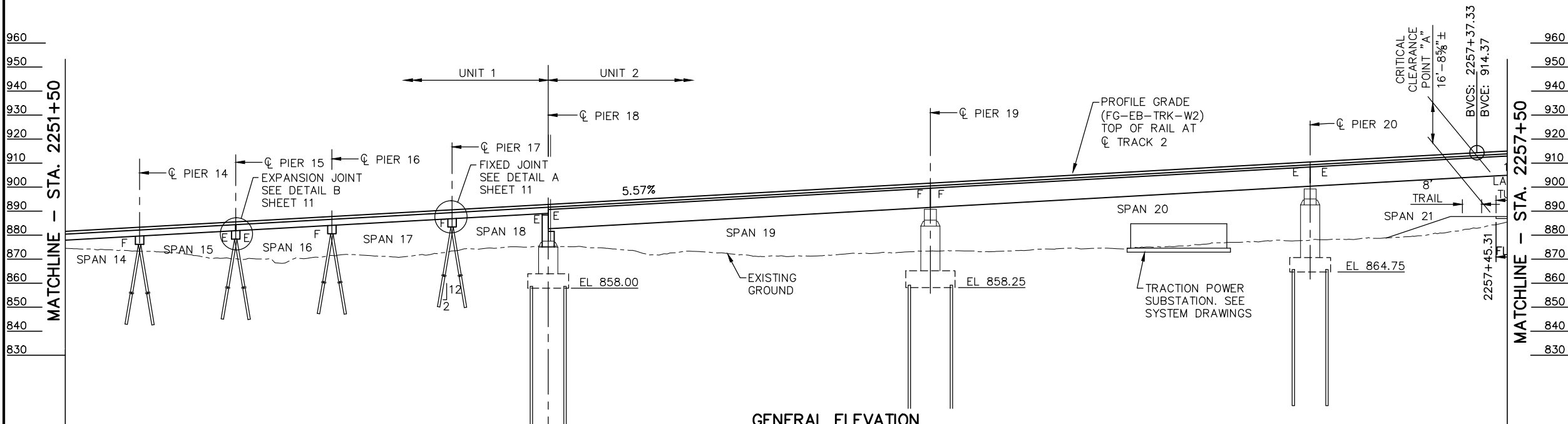
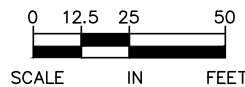
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 1)
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-GE01-1

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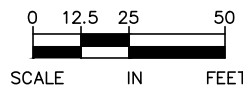
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GENERAL PLAN



GENERAL ELEVATION



NOTES:

- ① ALL DIMENSIONS ARE MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- ② TYP. UNLESS SHOWN OTHERWISE
3. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
4. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
5. SEE BORING SHEETS FOR INPLACE UTILITIES.
6. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- ⑦ STRAY CURRENT BONDING JUNCTION BOX. SEE SYSTEM PLANS.
8. MAINTAIN ELECTRICAL SEPARATION BETWEEN WELDED REBAR IN UNIT 1 AND EPOXY COATED REBAR IN UNIT 2.
9. STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE SYSTEM PLANS.

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DESIGNED BY: DDL
DRAWN BY: SWH
CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

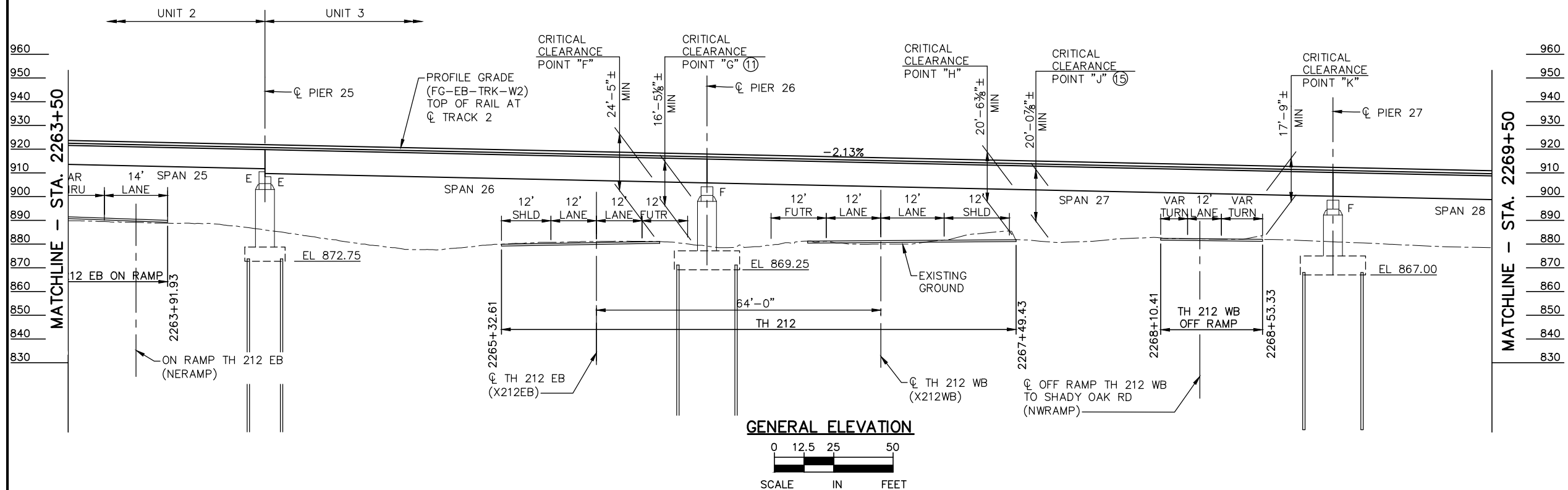
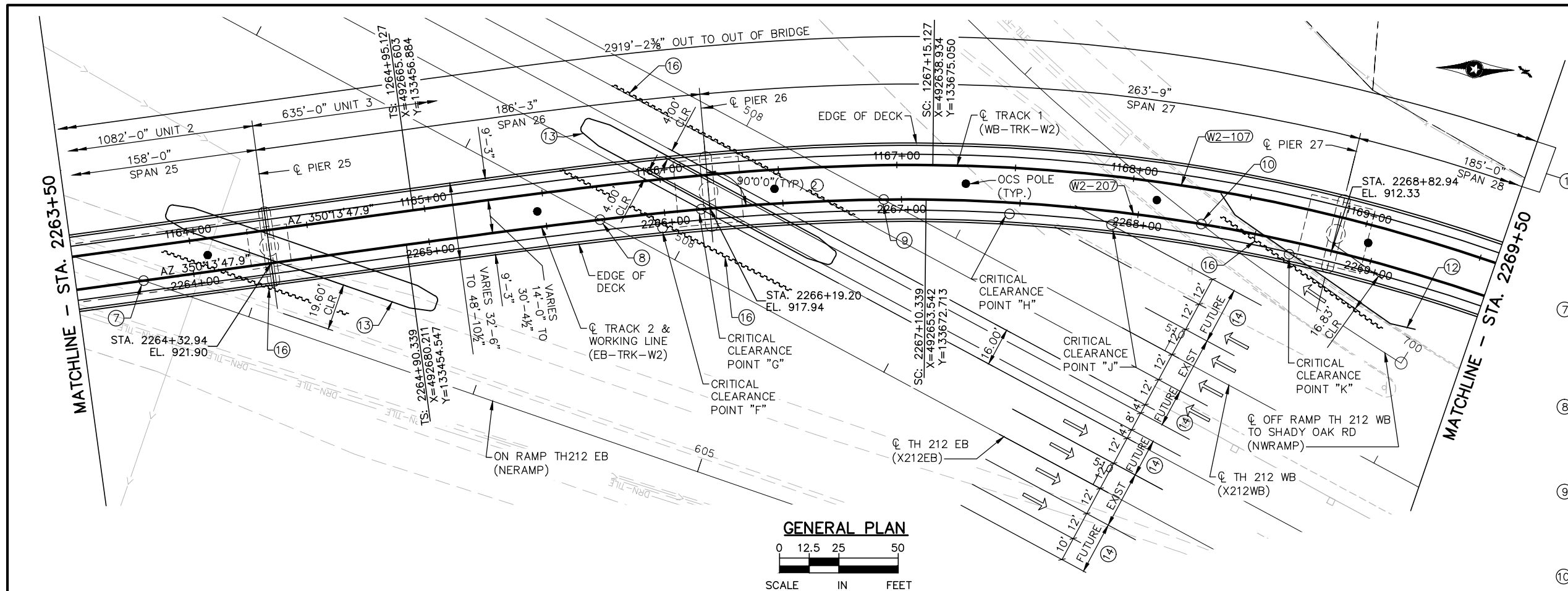
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 2)
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-GE01-2

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NOTES:

- ALL DIMENSIONS ARE MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- TYP. UNLESS SHOWN OTHERWISE
- SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- SEE BORING SHEETS FOR INPLACE UTILITIES.
- TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W2) P.O.T. STA 2263+78.63
 ϕ ON RAMP TH212 EB (NERAMP) P.O.C. STA 602+53.18
X = 492699.168
Y = 133344.454
ANGLE: 26°48'3.8" TTC
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W2) P.O.T. STA 2265+72.64
 ϕ TH 212 EB (X212EB) P.O.C. STA 507+64.26
X = 492666.801
Y = 133535.744
ANGLE: 35°1'23.0" TTC
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W2) P.O.T. STA 2266+92.48
 ϕ TH 212 WB (X212WB) P.O.C. STA 508+65.52
X = 492654.174
Y = 133654.868
ANGLE: 28°55'55.8" TTC
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W2) P.O.T. STA 2268+26.85
 ϕ TH 212 WB OFF RAMP (NWRAMP) P.O.C. STA 701+02.55
X = 492659.804
Y = 133788.941
ANGLE: 28°37'14.9" TTC
- CLEARANCE SHOWN AT TH212 FUTURE WIDENING TO UNDERSIDE OF CAP
- THREE BEAM GUARDRAIL, SEE CIVIL PLANS
- THREE BEAM BULLNOSE GUARDRAIL, SEE CIVIL PLANS
- POTENTIAL FUTURE WIDENING
- CLEARANCE SHOWN AT TH 212 FUTURE WIDENING.
- SUPPORT OF EXCAVATION (SOE) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN. OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.
- STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE SYSTEM PLANS.

CURVE NO. W2-107	CURVE NO. W2-207
R = 750.00'	R = 750.00'
Lc = 273.78'	Lc = 273.78'
Ls = 220.00'	Ls = 220.00'
Ea = 4.00"	Ea = 4.00"
Eu = 4.45"	Eu = 4.45"
V = 40 MPH	V = 40 MPH

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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/2015

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60% SUBMISSION - 9/28/15

METROPOLITAN
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SOUTHWEST
Green Line LRT Extension

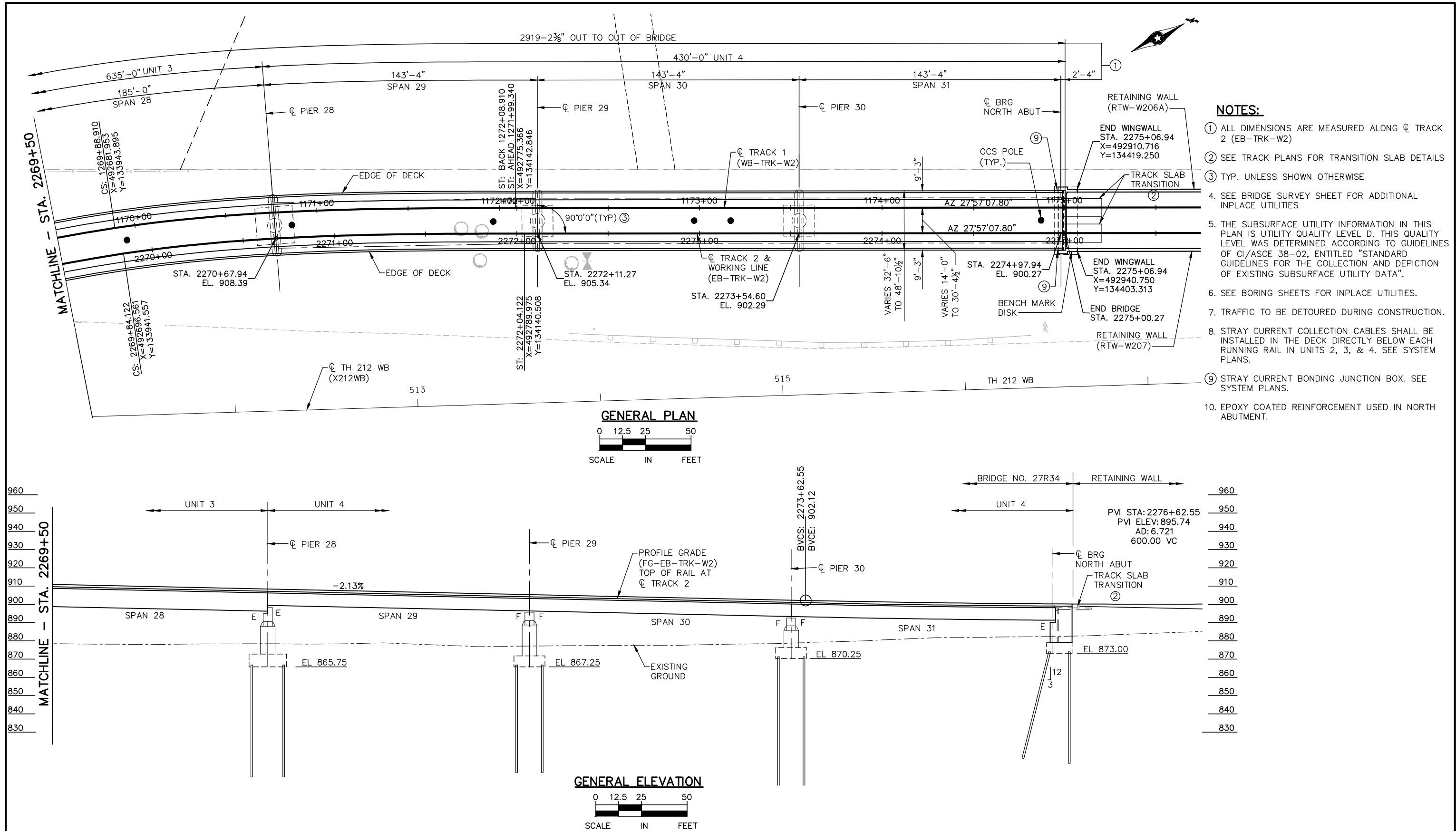
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 4)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-GE01-4

SHEET 6 OF 148

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- NOTES:**
- ALL DIMENSIONS ARE MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
 - SEE TRACK PLANS FOR TRANSITION SLAB DETAILS
 - TYP. UNLESS SHOWN OTHERWISE
 - SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
 - THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
 - SEE BORING SHEETS FOR INPLACE UTILITIES.
 - TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
 - STRAY CURRENT COLLECTION CABLES SHALL BE INSTALLED IN THE DECK DIRECTLY BELOW EACH RUNNING RAIL IN UNITS 2, 3, & 4. SEE SYSTEM PLANS.
 - STRAY CURRENT BONDING JUNCTION BOX. SEE SYSTEM PLANS.
 - EPOXY COATED REINFORCEMENT USED IN NORTH ABUTMENT.

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SOUTHWEST
Green Line LRT Extension

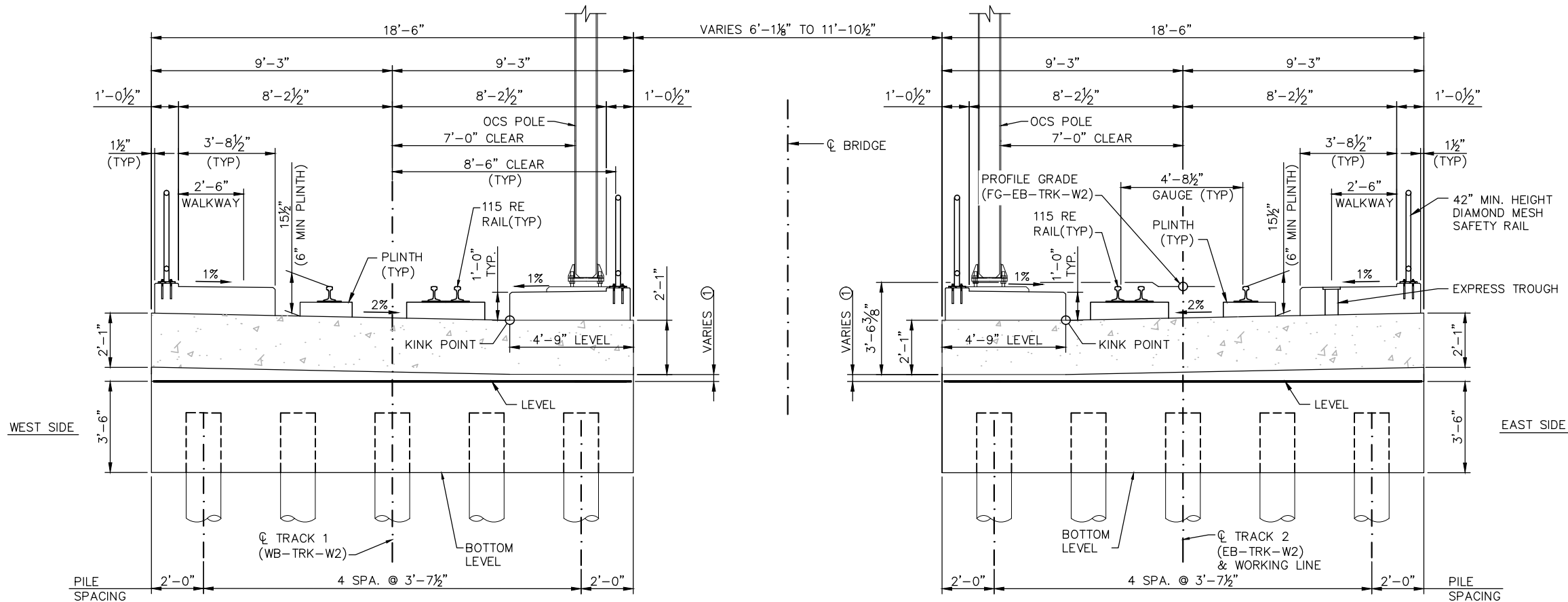
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
GENERAL PLAN AND ELEVATION (SHEET 5)

DISCIPLINE: **STRUCTURES**
SHEET NAME: **W2-STU-BRID-T212-GE01-5**

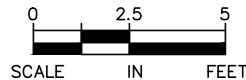
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TRANSVERSE SECTION SPANS 1-6



NOTES:

- ① 3" MIN. AT FIXED PIER
4" MIN. EXPANSION PIER
2. ALL REBAR AND PILES IN SOUTH ABUTMENT THROUGH PIER 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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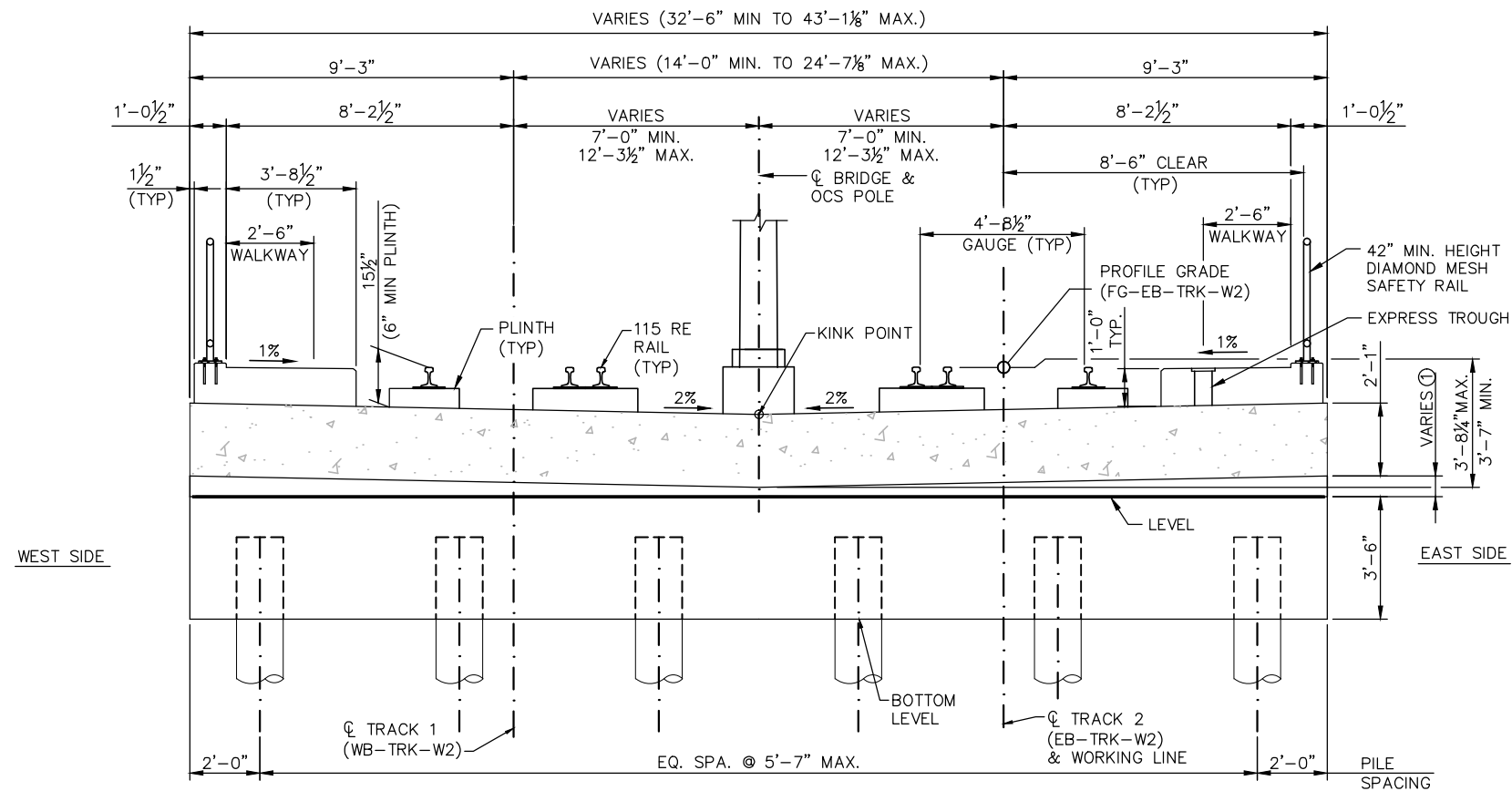
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**METROPOLITAN COUNCIL**

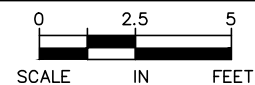
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 TRANSV SECTION SPANS 1-6	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-TYP2-2

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TRANSVERSE SECTION SPANS 7-18




NOTES:

- ① 3" MIN. AT FIXED PIER
4" MIN. EXPANSION PIER
2. ALL REBAR AND PILES IN SOUTH ABUTMENT THROUGH PIER 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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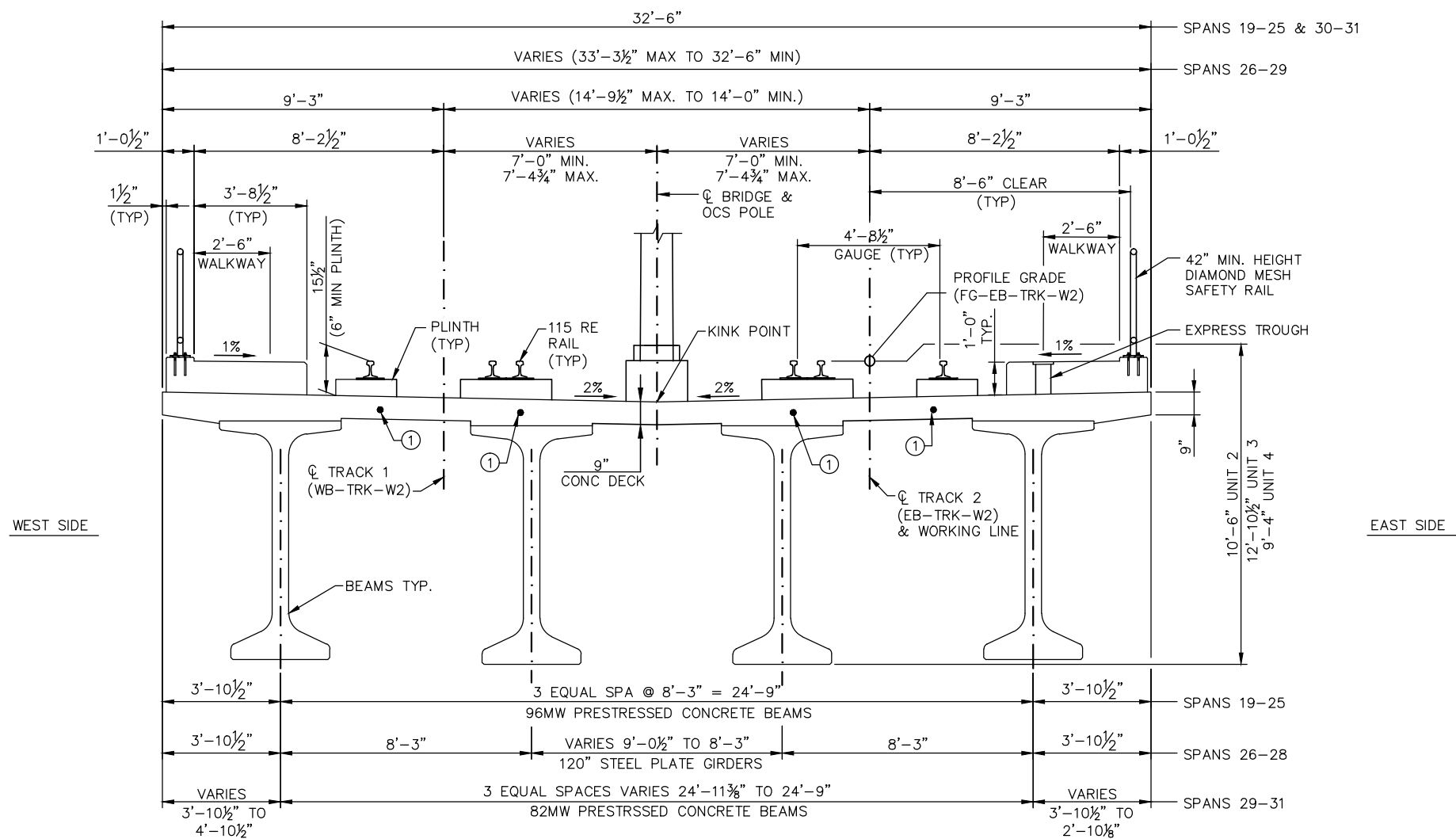
60% SUBMISSION - 9/28/15



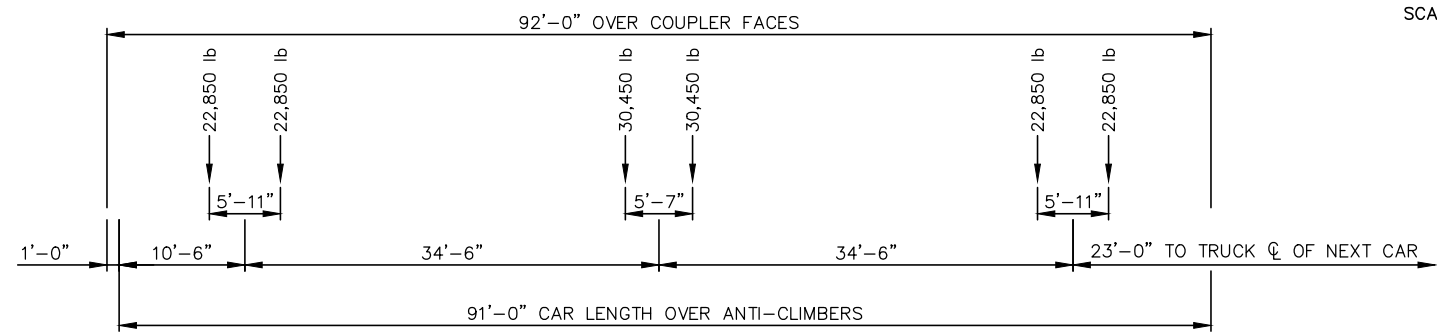
CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 TRANSV SECTION SPANS 7-18	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-TYP2-1

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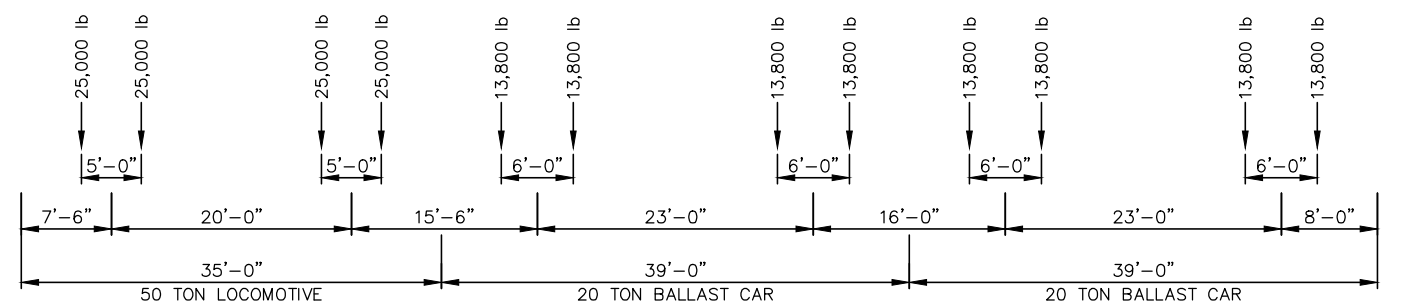
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NOTES:
① STRAY CURRENT COLLECTOR CABLE. SEE SYSTEM PLANS.



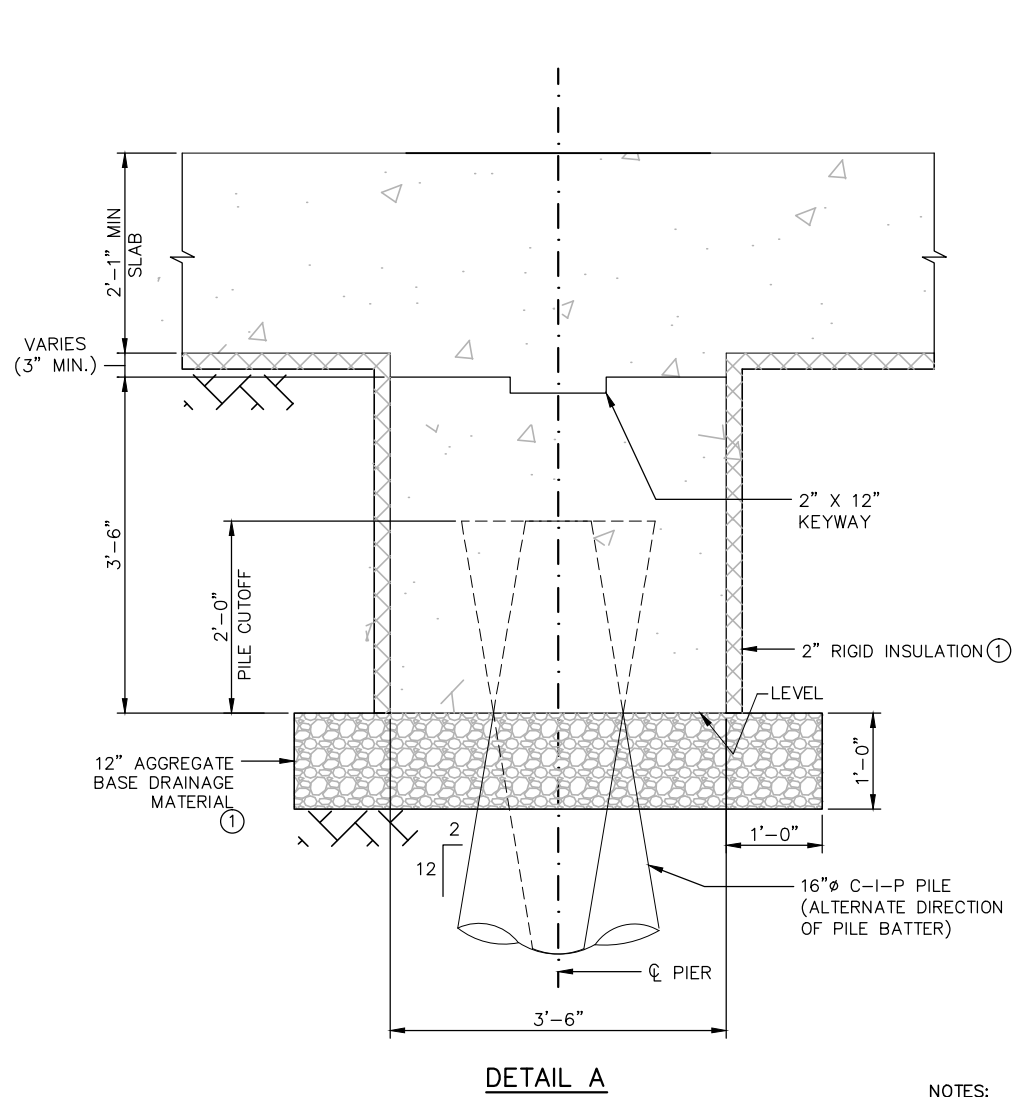
NOTES:
1. THE LRT TRAIN SHALL CONSIST OF EITHER ONE, TWO OR THREE CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.



NOTES:
1. THE MAINTENANCE TRAIN SHALL CONSIST OF ONE LOCOMOTIVE AND ONE, TWO, THREE OR FOUR BALLAST CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
2. WEIGHT OF EMPTY BALLAST CAR IS 15,000 POUNDS.

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AECOM PARSONS BRINCKERHOFF					
METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension					
60% SUBMISSION - 9/28/15					
CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 TRANSV SECTION & LOADING DIAGRAM					
DISCIPLINE: STRUCTURES			SHEET NAME: W2-STU-BRID-T212-TYP1		
SHEET 10 OF 148					

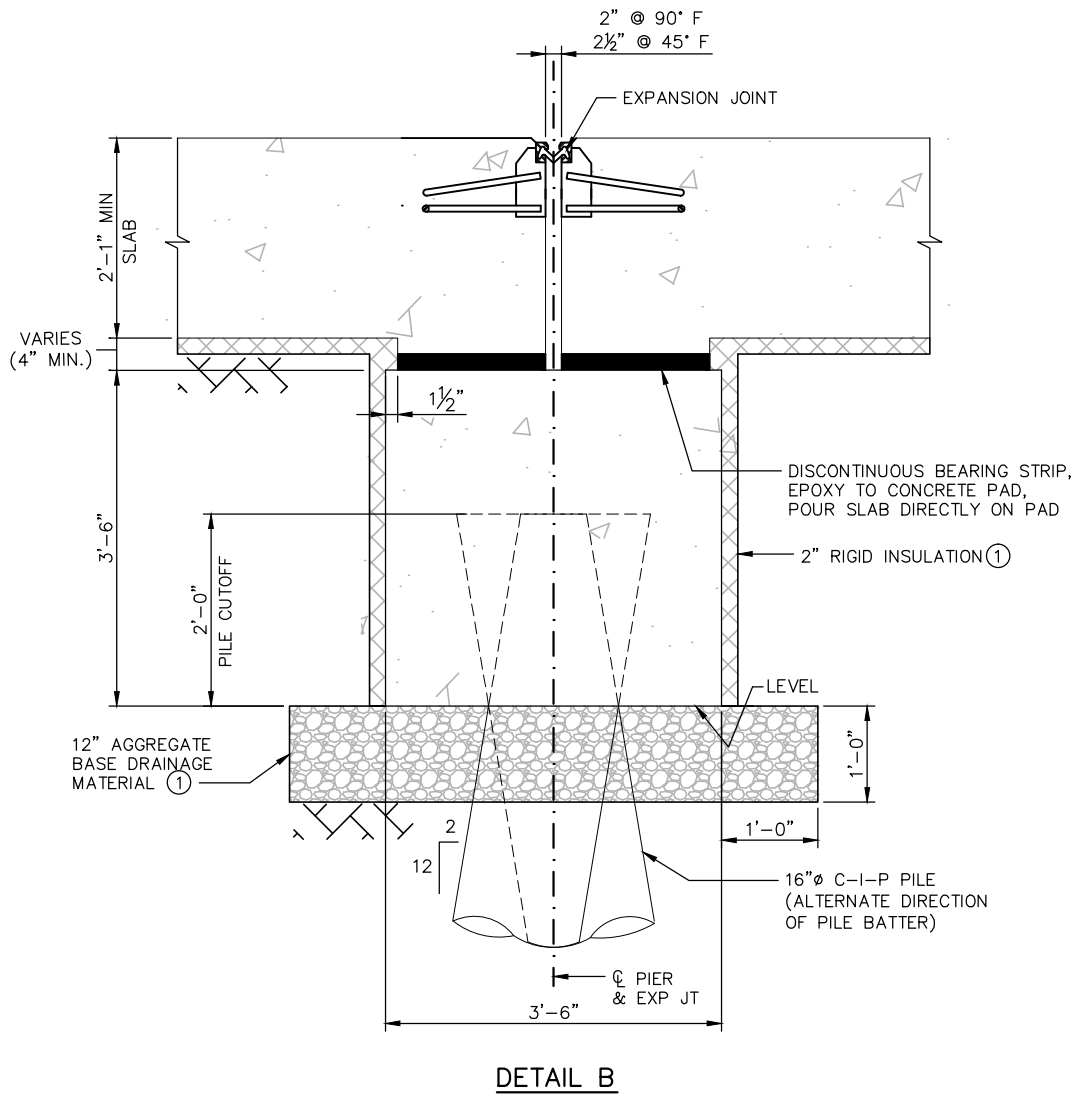
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DETAIL A

NOTES:

- ① PROVIDE ONLY AT LOCATIONS WHERE PILE CAP AND OR SLAB IS IN CONTACT WITH GROUND LINE.



DETAIL B

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PARSONS BRINCKERHOFF

60% SUBMISSION - 9/28/15

**METROPOLITAN COUNCIL**

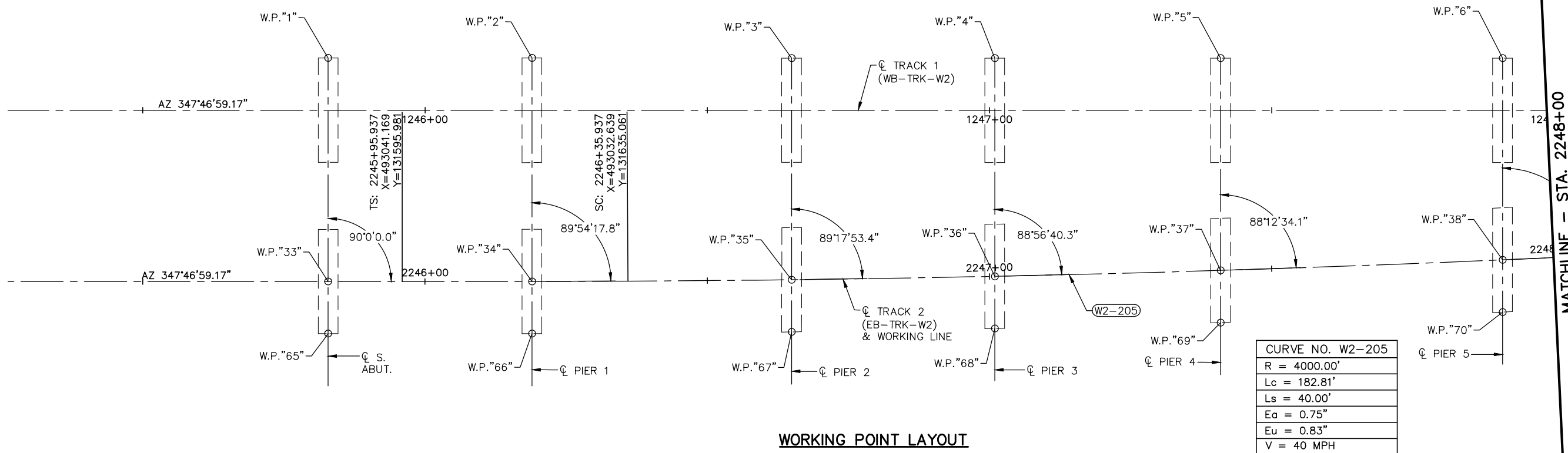
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 UNIT 1 DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-TYP2-3

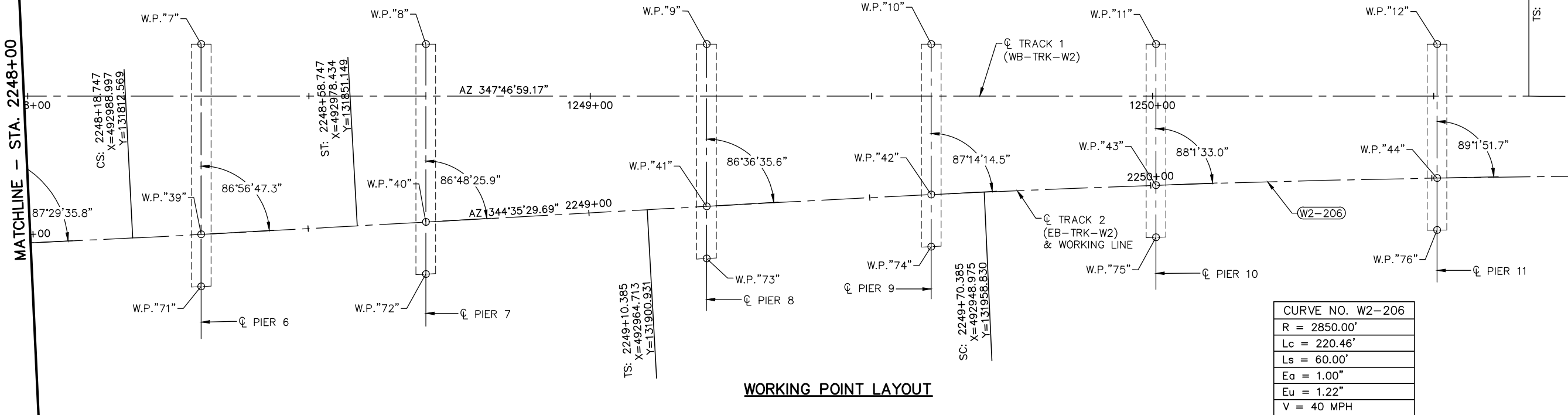
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NOTE: SEE ALIGNMENT TABULATION SHEETS 18-19
FOR HORIZONTAL GEOMETRY.



NOTE: SEE ALIGNMENT TABULATION SHEET XXX
FOR HORIZONTAL GEOMETRY.



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60% SUBMISSION - 9/28/15

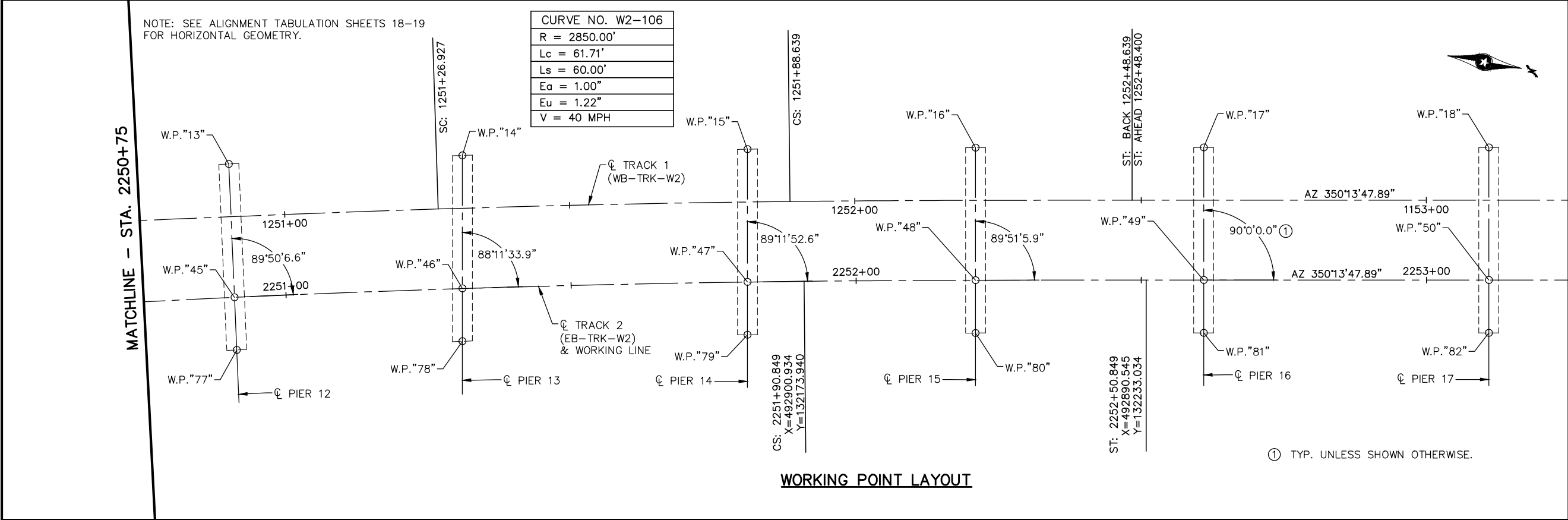
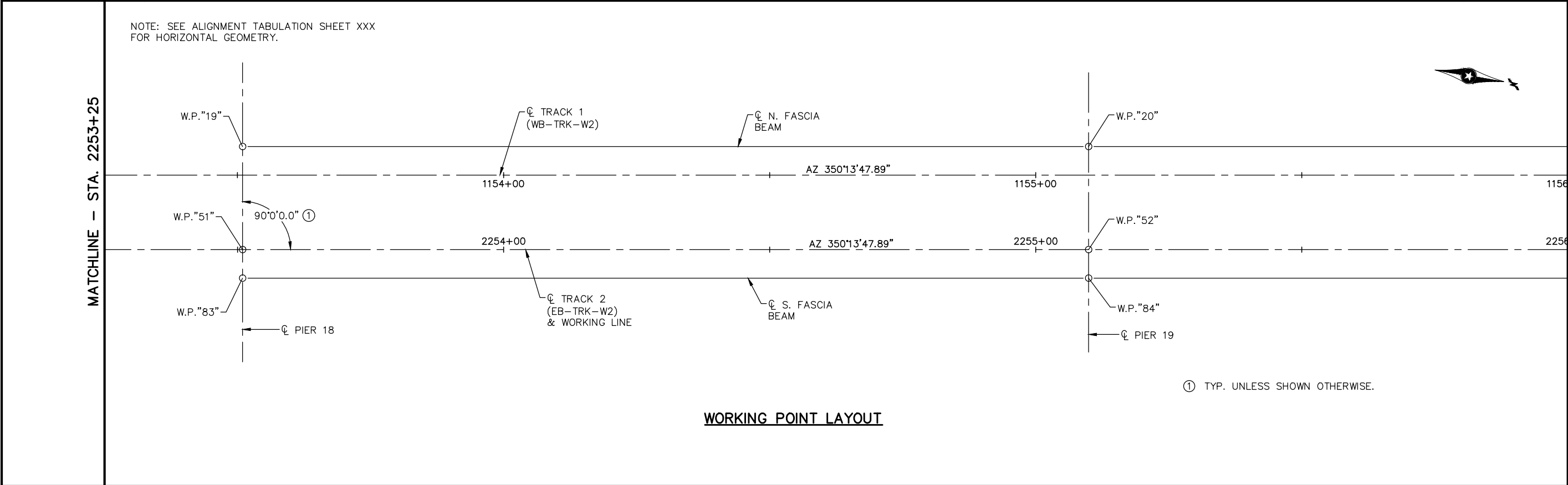
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-WPTS-1

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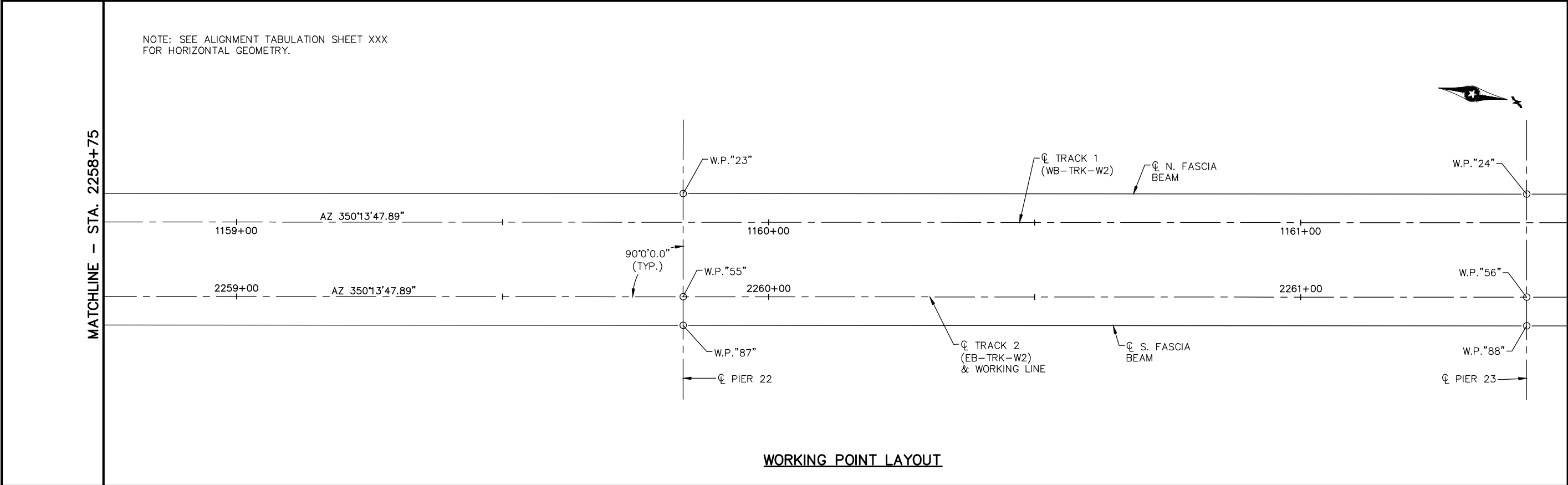
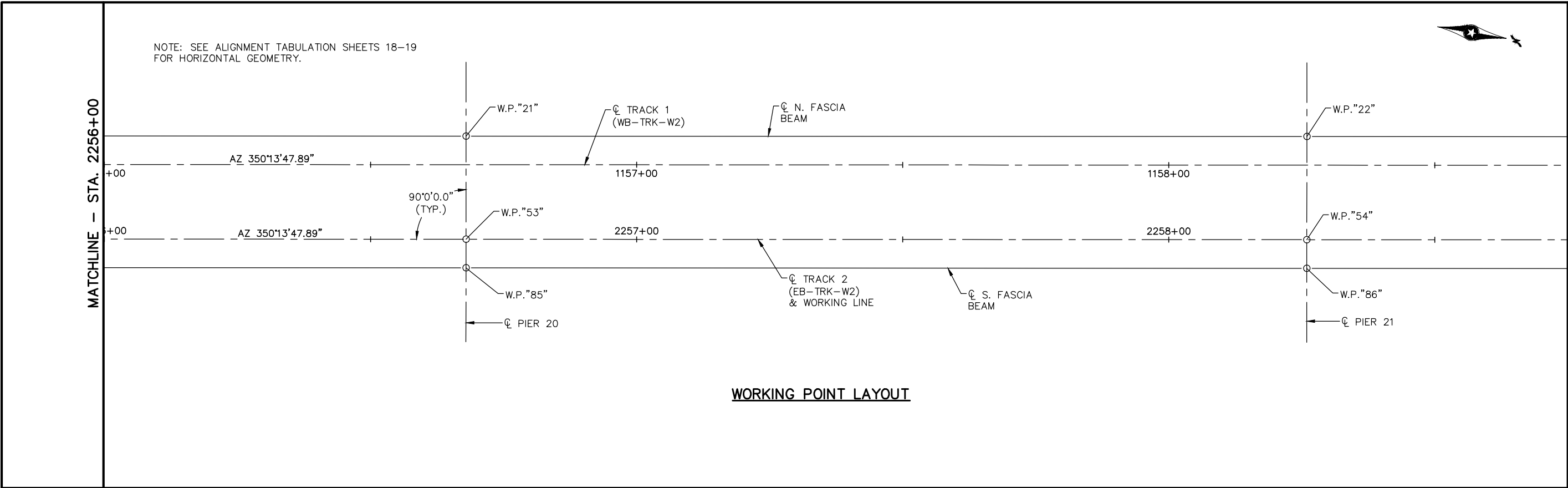


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

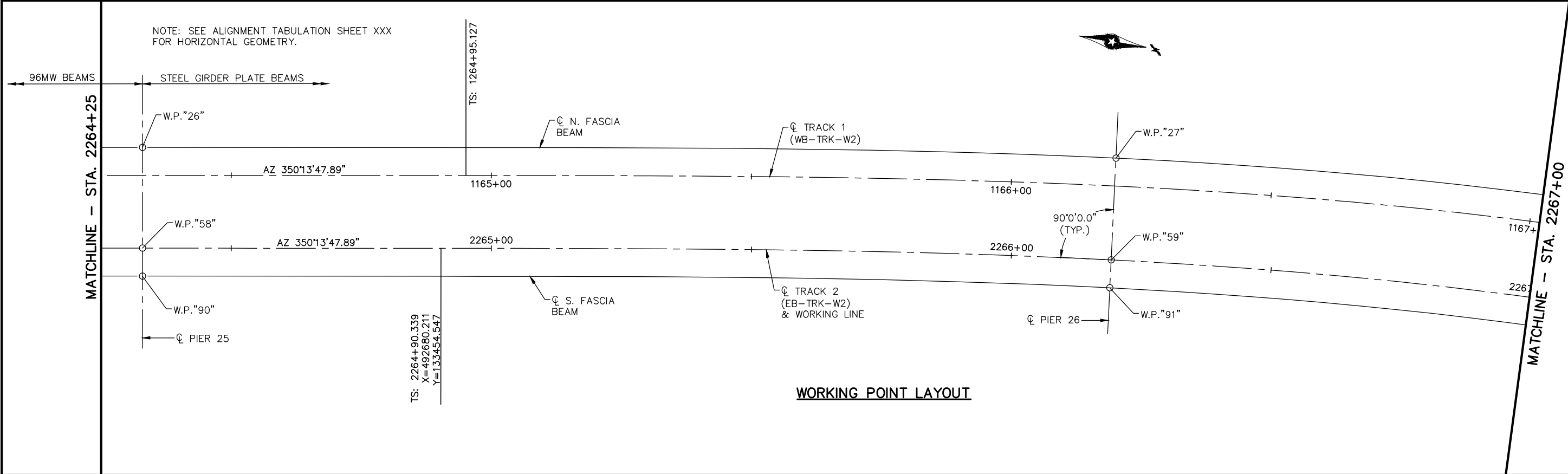
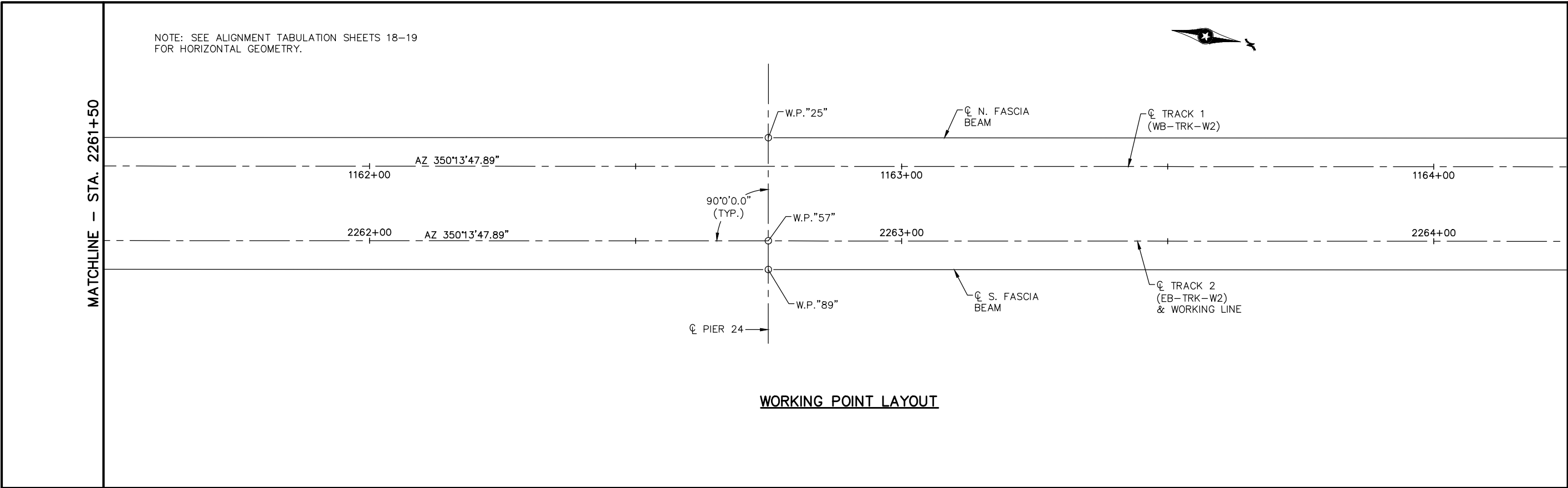
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60% SUBMISSION - 9/28/15

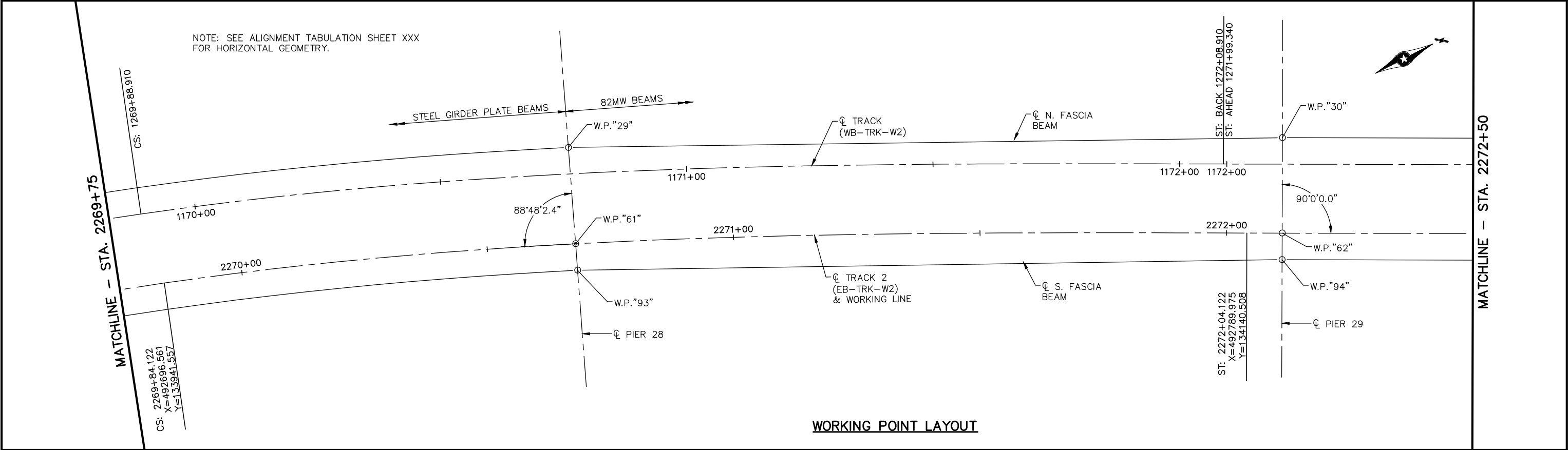
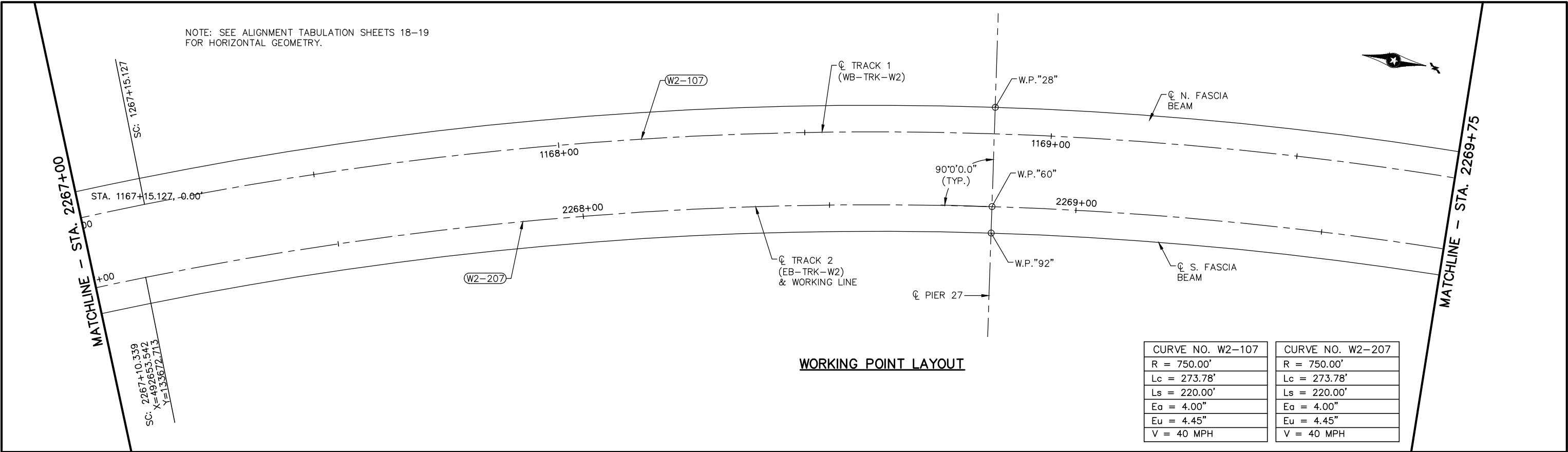


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-WPTS-4

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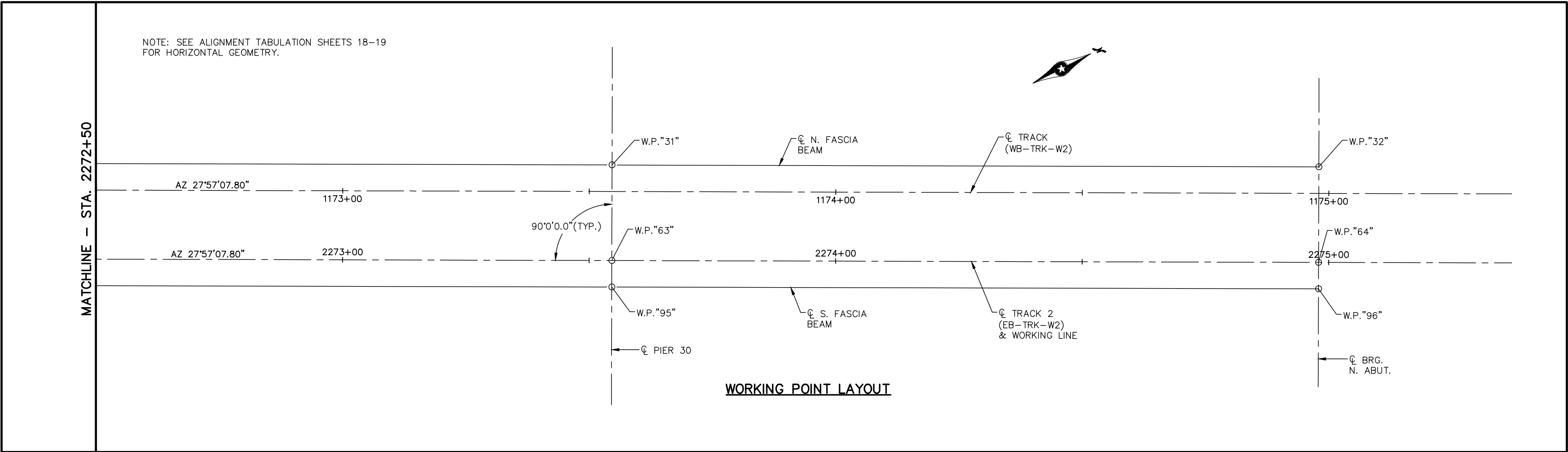
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-WPTS-5

SHEET 16 OF 148

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60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**





**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE LAYOUT		SHEET 17 OF 148
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-WPTS-6	

DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																									ELEVATIONS				
POINT	STATION	X-COORDINATE	Y-COORDINATE	1	2	3	4	5	6	7	33	34	35	36	37	38	39	65	66	67	68	69	70	71	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT	
1	2245+82.821	493005.216	131574.777		36.11						39.63	53.60	91.04						60.76	95.40					-	-	-	1	
2	2246+18.995	492997.575	131610.071			46.00					53.61	39.61	60.51	90.68				60.77		66.89	94.99				-	-	-	2	
3	2246+65.420	492987.841	131655.029				36.00				91.17	60.71	39.31	52.86	84.80			95.56	67.11		59.97	89.30			-	-	-	3	
4	2247+01.769	492980.223	131690.214					39.99				91.07	53.30	38.70	54.92	96.81			95.45	60.45		61.64	100.60		-	-	-	4	
5	2247+42.126	492971.761	131729.294						49.96				85.55	55.65	37.66	61.46	96.07			90.18	62.44		67.27	99.71	-	-	-	5	
6	2247+92.518	492961.188	131778.127							39.95				97.92	62.57	35.78	52.35				101.94	68.53		58.77	-	-	-	6	
7	2248+32.748	492952.733	131817.175												97.48	53.63	33.83					101.42	60.21		-	-	-	7	
33	2245+82.821	493043.944	131583.163									36.11						9.25	37.27	82.60					-	-	-	33	
34	2246+18.932	493036.290	131618.453										46.00					37.28	9.25	46.86	82.42				-	-	-	34	
35	2246+64.933	493026.259	131663.347											36.01				82.67	46.98	9.25	37.02	76.37			-	-	-	35	
36	2247+00.939	493018.051	131698.404												40.00				82.63	37.32	9.25	40.82	90.17		-	-	-	36	
37	2247+40.939	493008.564	131737.262													50.00				76.76	41.29	9.25	50.51	90.08	-	-	-	37	
38	2247+90.939	492996.158	131785.699														40.00				90.77	51.19	9.26	40.62	-	-	-	38	
39	2248+30.939	492985.801	131824.334																			90.86	41.49	9.26	-	-	-	39	
65	2245+82.821	493052.985	131585.120																36.11						-	-	-	65	
66	2246+18.917	493045.331	131620.410																	46.00					-	-	-	66	
67	2246+64.820	493035.300	131665.305																		36.00				-	-	-	67	
68	2247+00.742	493027.094	131700.362																			40.00			-	-	-	68	
69	2247+40.650	493017.609	131739.221																				50.00		-	-	-	69	
70	2247+90.535	493005.207	131787.658																					40.00	-	-	-	70	
71	2248+30.446	492994.854	131826.294																						-	-	-	71	

DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																											ELEVATIONS				
POINT	STATION	X-COORDINATE	Y-COORDINATE	7	8	9	10	11	12	13	39	40	41	42	43	44	45	71	72	73	74	75	76	77	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT			
7	2248+32.748	492952.733	131817.175		39.94						33.83	50.95	94.38						57.16	97.61					-	-	-	7			
8	2248+72.699	492944.282	131856.209			49.92					52.34	31.63	57.66	93.76				58.76		62.81	96.81				-	-	-	8			
9	2249+22.531	492933.718	131905.001				39.94				96.02	59.10	28.85	48.07	83.76			99.66	64.53		53.78	86.98			-	-	-	9			
10	2249+62.222	492925.265	131944.041					39.97				95.27	49.27	26.74	47.19	93.04			98.73	55.21		52.69	95.83		-	-	-	10			
11	2250+01.795	492916.808	131983.102					49.98					84.96	48.09	25.09	55.36	92.98			88.53	53.79		59.92	95.72	-	-	-	11			
12	2250+51.338	492906.231	132031.953						40.00					93.84	55.93	23.80	46.34				96.89	60.64		51.64	-	-	-	12			
13	2250+91.005	492897.779	132071.047												93.41	46.54	23.39					96.31	51.88		-	-	-	13			
39	2248+30.939	492985.801	131824.334									40.00						9.26	40.56	89.96					-			39			
40	2248+70.939	492975.194	131862.902										50.00					41.55	9.26	50.34	89.97				-			40			
41	2249+20.939	492961.911	131911.106											40.00				90.99	51.36	9.26	40.58	80.10			-			41			
42	2249+60.939	492951.403	131949.701												40.00				90.97	41.53	9.26	40.68	90.17		-			42			
43	2250+00.939	492941.326	131988.410													50.00				80.96	41.43	9.26	50.61	90.30	-			43			
44	2250+50.939	492929.494	132036.989														40.00				90.77	51.08	9.25	40.97	-			44			
45	2250+90.939	492920.643	132075.998																			90.64	41.15	9.25	-				45		
71	2248+30.446	492994.854	131826.294																40.00						-	-	-	71			
72	2248+70.423	492984.249	131864.863																	50.00					-	-	-	72			
73	2249+20.425	492970.965	131913.066																		40.00				-	-	-	73			
74	2249+60.491	492960.454	131951.660																			40.00			-	-	-	74			
75	2250+00.619	492950.372	131990.369																				50.00		-	-	-	75			
76	2250+50.782	492938.536	132038.947																					40.00	-	-	-	76			
77	2250+90.912	492929.683	132077.955																						-	-	-	77			

DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 1)																									ELEVATIONS					
POINT	STATION	X-COORDINATE	Y-COORDINATE	13	14	15	16	17	18	19	45	46	47	48	49	50	51	77	78	79	80	81	82	83	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT		
13	2250+91.005	492897.779	132071.047		41.00						23.39	46.42	93.28						51.43	95.76					—	—	—	13		
14	2251+31.668	492889.348	132111.167			50.00					47.08	23.33	54.69	92.61				52.25		59.05	95.22				—	—	—	14		
15	2251+81.262	492879.789	132160.243				40.00				93.63	55.63	23.26	46.13	83.23				60.27		51.37	86.24				—	—	—	15	
16	2252+21.000	492872.728	132199.614					40.00				93.31	46.42	23.25	46.26	92.95			96.18	51.74		51.53	95.68			—	—	—	16	
17	2252+60.939	492865.920	132239.031						50.00				83.40	46.28	23.25	55.14	92.95			86.47	51.56		59.63	94.44		—	—	—	17	
18	2253+10.939	492857.436	132288.306							40.19				92.96		55.14	23.25	46.27			95.70	59.63		49.19		—	—	—	18	
19	2253+50.939	492854.467	132328.383												92.06	44.45	19.38					94.44	49.19			—	—	—	19	
45	2250+90.939	492920.643	132075.998									40.00						9.25	40.71	90.20						—			45	
46	2251+30.939	492912.340	132115.126										50.00					41.02	9.26	50.64	90.32					—			46	
47	2251+80.939	492902.736	132164.194											40.00				90.35	51.05	9.25	40.99	80.49				—			47	
48	2252+20.939	492895.647	132203.561												40.00				90.62	41.12	9.25	41.05	90.47			—			48	
49	2252+60.939	492888.833	132242.976													50.00				41.06	9.25	50.85	90.16			—			49	
50	2253+10.939	492880.349	132292.251														40.00				90.48	50.85	9.25	40.36			—			50
51	2253+50.939	492873.561	132331.671																			90.47	41.06	5.37			—			51
77	2250+90.912	492929.683	132077.955																39.60							—	—		—	77
78	2251+30.646	492921.461	132116.697																	50.00						—	—		—	78
79	2251+80.809	492911.853	132165.764																		40.00					—	—		—	79
80	2252+20.908	492904.763	132205.131																			40.00				—	—		—	80
81	2252+60.939	492897.949	132244.546																				50.00			—	—		—	81
82	2253+10.939	492889.464	132293.821																					40.19		—	—		—	82
83	2253+50.939	492878.858	132332.583																							—	—		—	83

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	DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNIT 2)																													ELEVATIONS				
POINT	STATION	X-COORDINATE	Y-COORDINATE	19	20	21	22	23	24	25	26	51	52	53	54	55	56	57	58	83	84	85	86	87	88	89	90	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT			
19	2253+50.939	492854.467	132328.383		159.00							19.38	160.18	317.59							160.91	317.97						-	-	-	19			
20	2255+09.938	492827.493	132485.077			158.00						160.18	19.38	159.18	316.59					160.91	159.93	316.97						-	-	-	20			
21	2256+67.938	492800.680	132640.785				158.00					317.59	159.18	19.38	159.18	316.59				317.96	159.93	159.93	316.97	316.97				-	-	-	21			
22	2258+25.938	492773.868	132796.494					158.00					316.59	159.18	19.38	159.18	317.09				316.97	159.93	159.93	159.93	317.47			-	-	-	22			
23	2259+83.938	492747.055	132952.202						158.50					316.59	159.18	19.38	159.68	291.64				316.97	159.93		160.42	292.05		-	-	-	23			
24	2261+42.438	492720.154	133108.404							132.50					317.09	159.68	19.38	133.91	291.14				317.47	160.42	134.79	291.55		-	-	-	24			
25	2262+74.938	492697.670	133238.982								158.00					291.64	133.91	19.38	159.18					292.05	134.79	159.93		-	-	-	25			
26	2264+32.938	492670.858	133394.690													291.14	159.18	19.38						291.55	159.93		-	-	-	26				
51	2253+50.939	492873.561	132331.671										159.00							5.38	159.09	317.05					-	-	-	51				
52	2255+09.938	492846.579	132488.365											158.00						159.09	5.38	158.09	316.05				-	-	-	52				
53	2256+67.938	492819.768	132644.073												158.00					317.05	158.09	5.38	158.09	316.05			-	-	-	53				
54	2258+25.938	492792.956	132799.782													158.00					316.05	158.09	5.38	158.09	316.55		-	-	-	54				
55	2259+83.938	492766.145	132955.490														158.50					316.04	158.09	5.38	158.59	291.05	-	-	-	55				
56	2261+42.438	492739.248	133111.692															132.50					316.55	158.59	5.38	132.61	290.55	-	-	-	56			
57	2262+74.938	492716.764	133242.270																158.00					291.05	132.61	5.38	158.09	-	-	-	57			
58	2264+32.938	492689.952	133397.978																						290.55	158.09	5.38	-	-	-	58			
83	2253+50.939	492878.858	132332.583																		159.00						-	-	-	83				
84	2255+09.938	492851.877	132489.277																			158.00					-	-	-	84				
85	2256+67.938	492825.065	132644.986																				158.00				-	-	-	85				
86	2258+25.938	492798.253	132800.694																					158.00			-	-	-	86				
87	2259+83.938	492771.442	132956.402																						158.50		-	-	-	87				
88	2261+42.438	492744.545	133112.604																							132.50	-	-	-	88				
89	2262+74.938	492722.061	133243.182																							158.00	-	-	-	89				
90	2264+32.938	492695.249	133398.891																								-	-	-	90				

	DIMENSIONS BETWEEN WORKING POINTS (FT.) (UNITS 3 & 4)																								ELEVATIONS				
POINT	STATION	X-COORDINATE	Y-COORDINATE	26	27	28	29	30	31	32	58	59	60	61	62	63	64	90	91	92	93	94	95	96	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT	
26	2264+32.938	492670.858	133394.690		187.15						19.38	187.47	449.53						187.91	448.43					-	-	-	26	
27	2266+19.196	492641.039	133579.451			269.04					187.95	19.59	266.26	448.20				188.52		265.77	447.09				-	-	-	27	
28	2268+82.939	492649.508	133848.362				188.63				452.20	266.72	20.15	188.05	331.30			451.79	266.33		188.25	331.14			-	-	-	28	
29	2270+67.487	492710.424	134026.886					144.82				447.81	187.26	19.62	145.80	288.64			446.59	187.26		146.52	289.01		-	-	-	29	
30	2272+11.271	492776.211	134155.905						143.33				329.54	144.96	19.38	144.64	287.32			328.92	145.46		145.45	287.74	-	-	-	30	
31	2273+54.604	492843.396	134282.517							143.34				287.46	144.64	19.38	144.64				287.50	145.45		145.46	-	-	-	31	
32	2274+97.941	492910.583	134409.132												287.32	144.64	19.38					287.74	145.46		-	-	-	32	
58	2264+32.938	492689.952	133397.978									186.24						5.38	186.13	445.40					-			58	
59	2266+19.196	492660.480	133581.869										262.49					186.25	5.38	261.62	441.10				-			59	
60	2268+82.939	492669.229	133844.215											184.59				446.08	261.70	5.38	184.21	326.58			-			60	
61	2270+67.939	492728.414	134019.055												143.31				440.99	184.02	5.38	143.32	286.64		-			61	
62	2272+11.271	492793.326	134146.823													143.33				326.14	143.09	5.38	143.43	286.72	-			62	
63	2273+54.604	492860.511	134273.435														143.34				286.32	143.43	5.38	143.44	-			63	
64	2274+97.941	492927.698	134400.050																			286.72	143.44	5.38	-			64	
90	2264+32.938	492695.249	133398.891																185.99						-	-	-	90	
91	2266+19.196	492665.814	133582.533																	260.72					-	-	-	91	
92	2268+82.933	492674.489	133843.109																		183.49				-	-	-	92	
93	2270+68.042	492733.344	134016.909																			142.90			-	-	-	93	
94	2272+11.271	492798.074	134144.304																				143.33		-	-	-	94	
95	2273+54.604	492865.259	134270.916																					143.34	-	-	-	95	
96	2274+97.941	492932.446	134397.531																						-	-	-	96	

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DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15

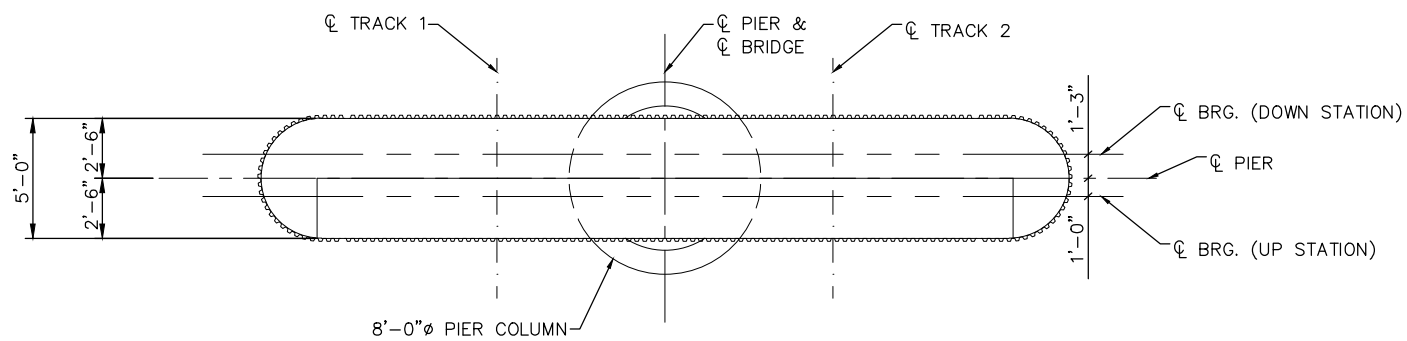


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE LAYOUT

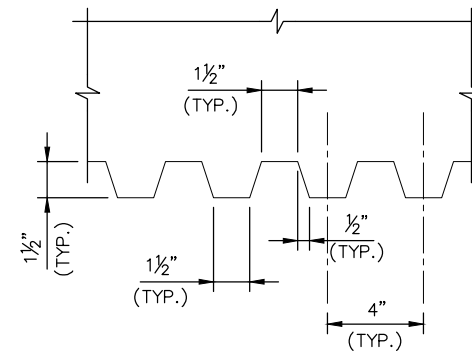
DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-WPTS-8

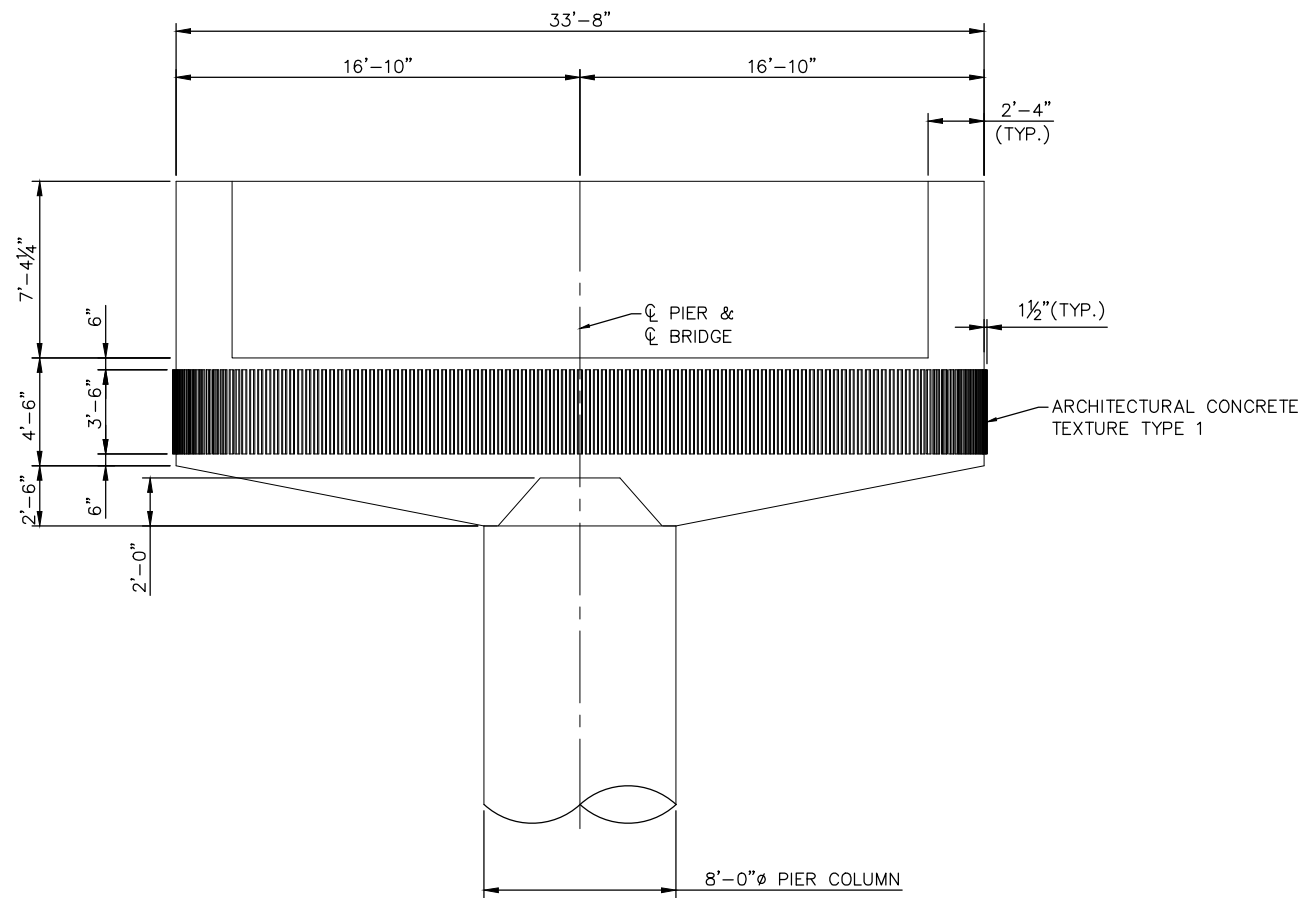
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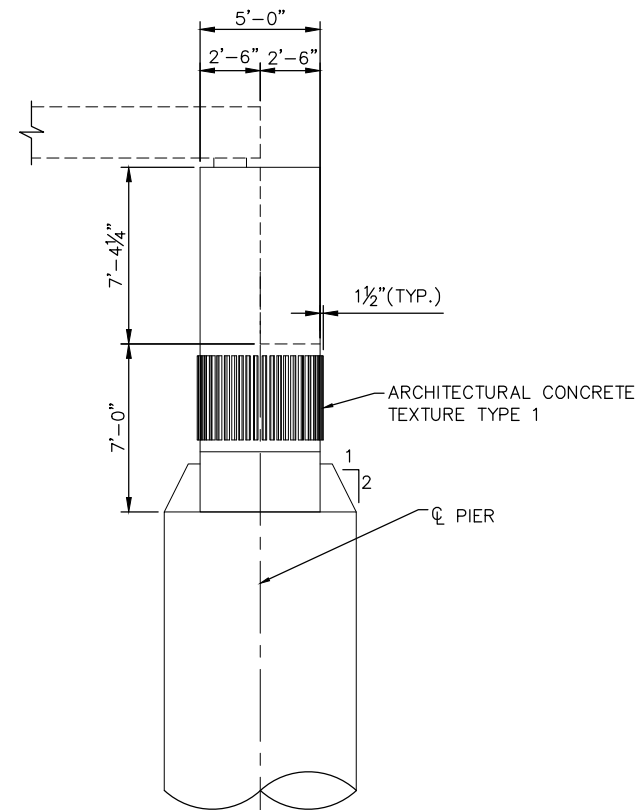
PLAN (PIER 18)



ARCHITECTURAL CONCRETE TEXTURE TYPE 1



ELEVATION (PIER 18)



SECTION (PIER 18)

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DRAWN BY: SWH	DATE: 8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

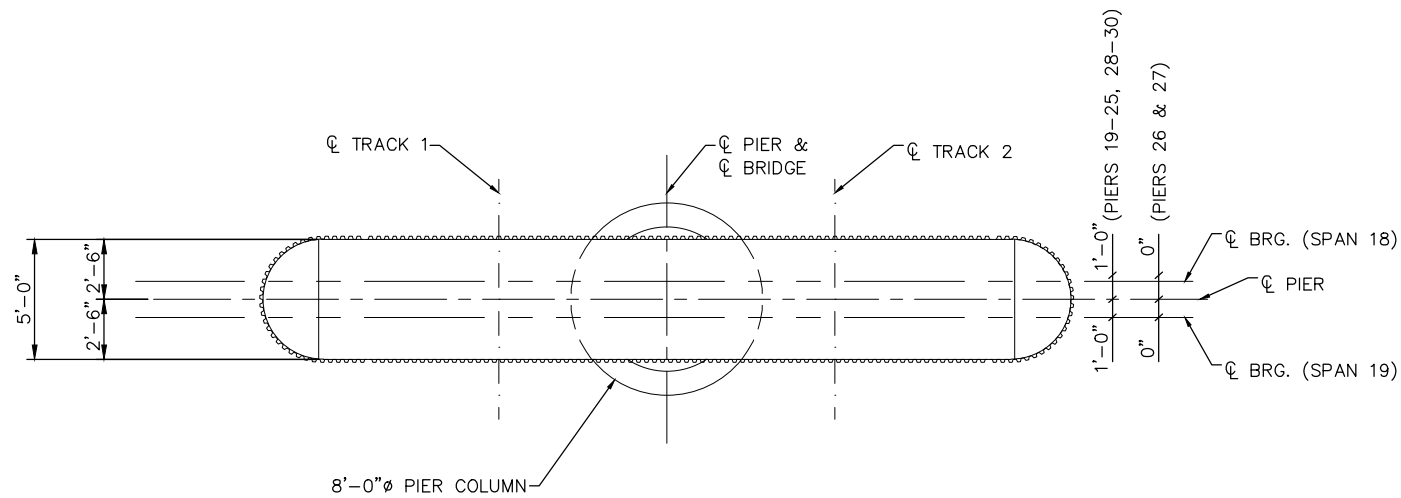
60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

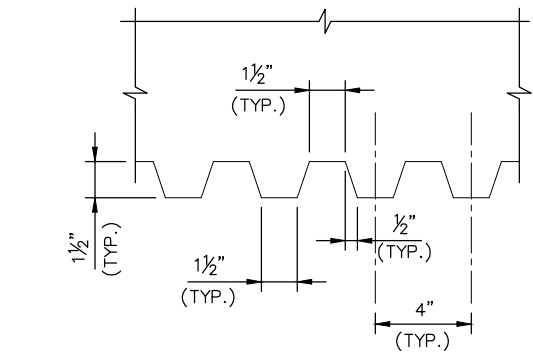
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 AESTHETIC DETAILS (SHEET 1)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-AES1-2

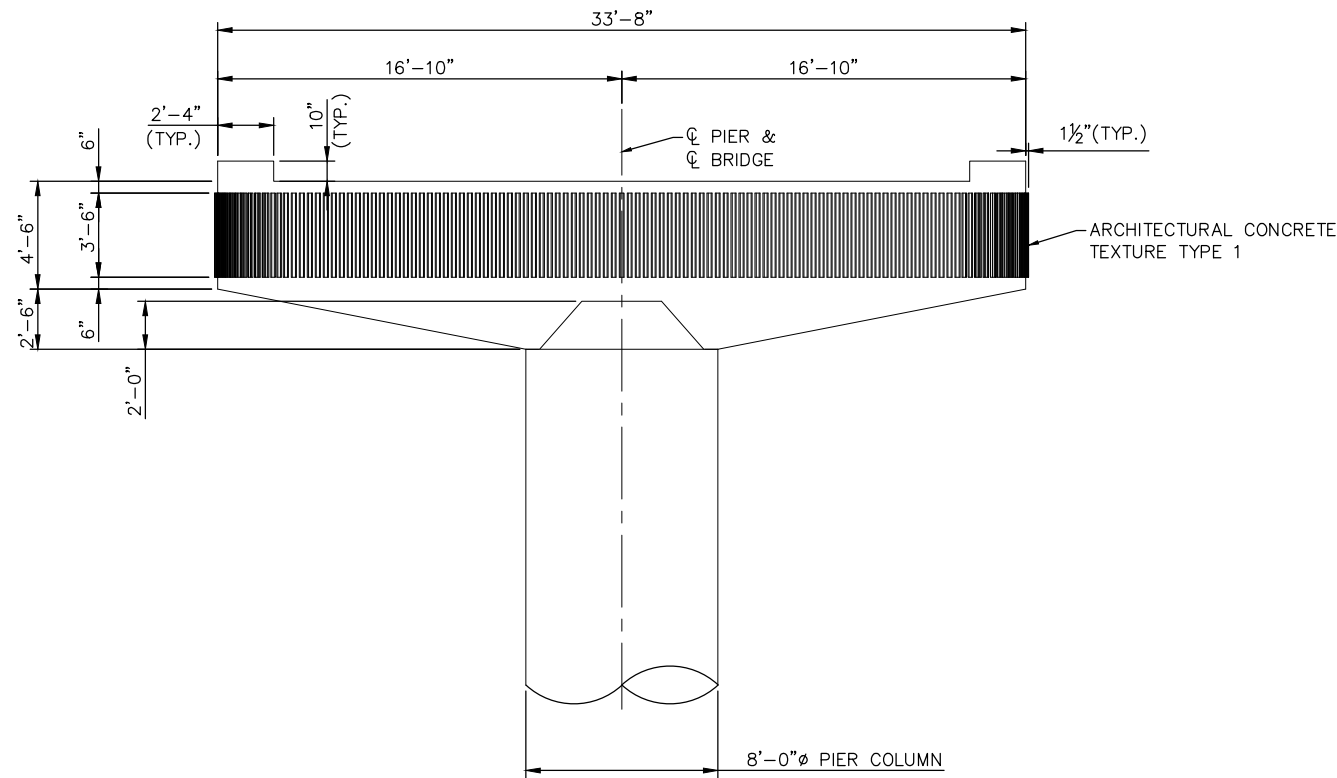
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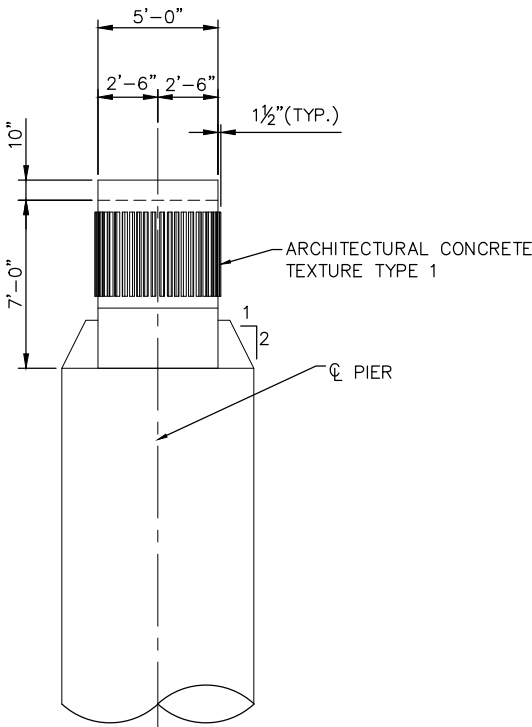
PLAN (PIER 19-30)



ARCHITECTURAL CONCRETE TEXTURE TYPE 1




ELEVATION (PIER 19-30)



SECTION (PIER 19-30)

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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/2015

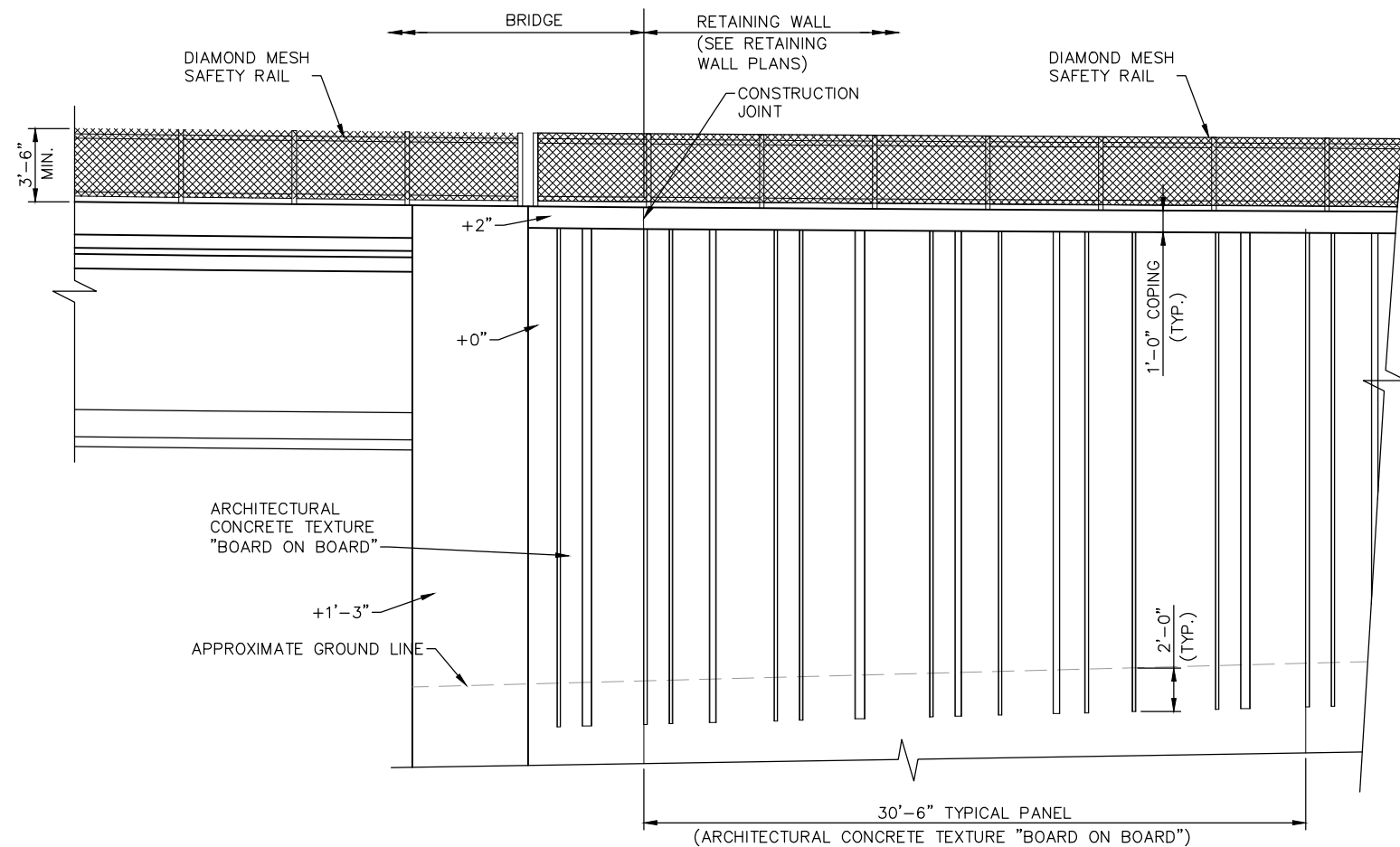


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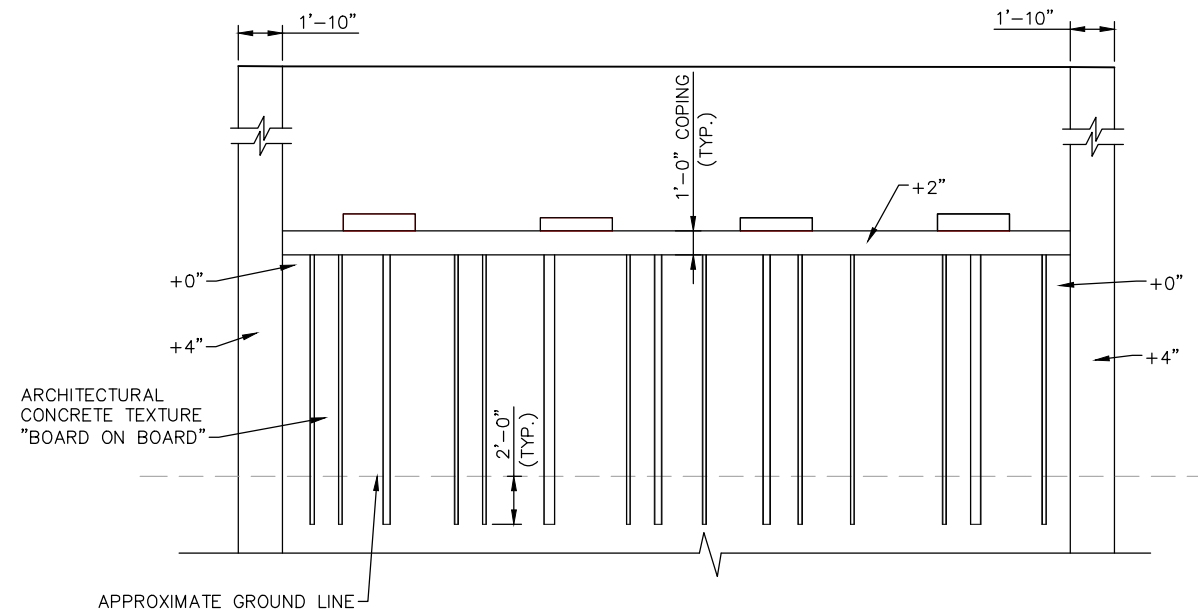


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 AESTHETIC DETAILS (SHEET 2)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-AES1-1

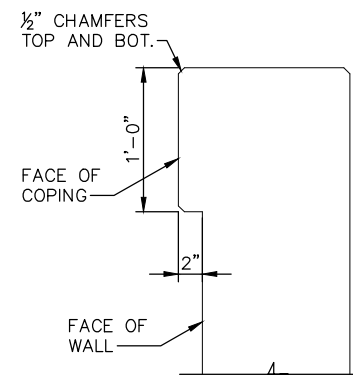
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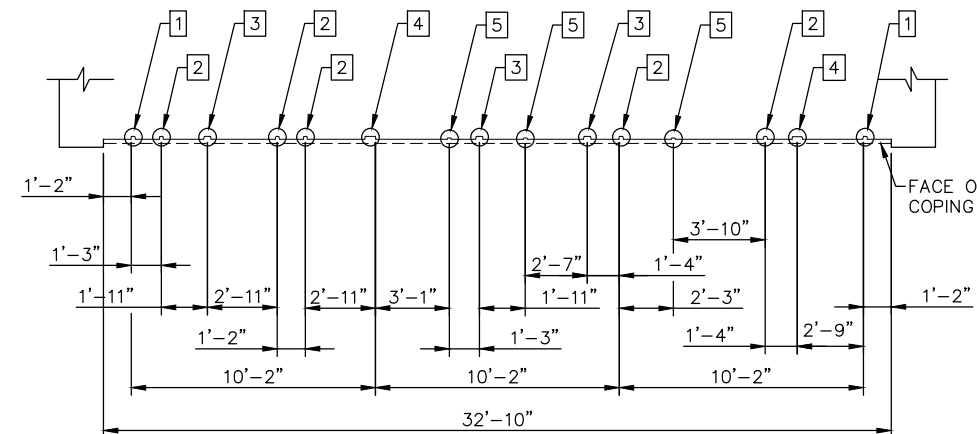
ABUTMENT WINGWALL ELEVATION



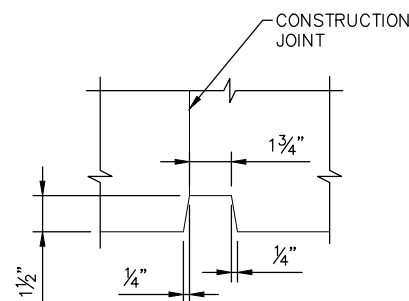
ABUTMENT FRONT FACE



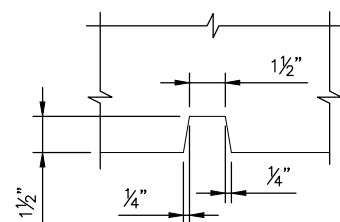
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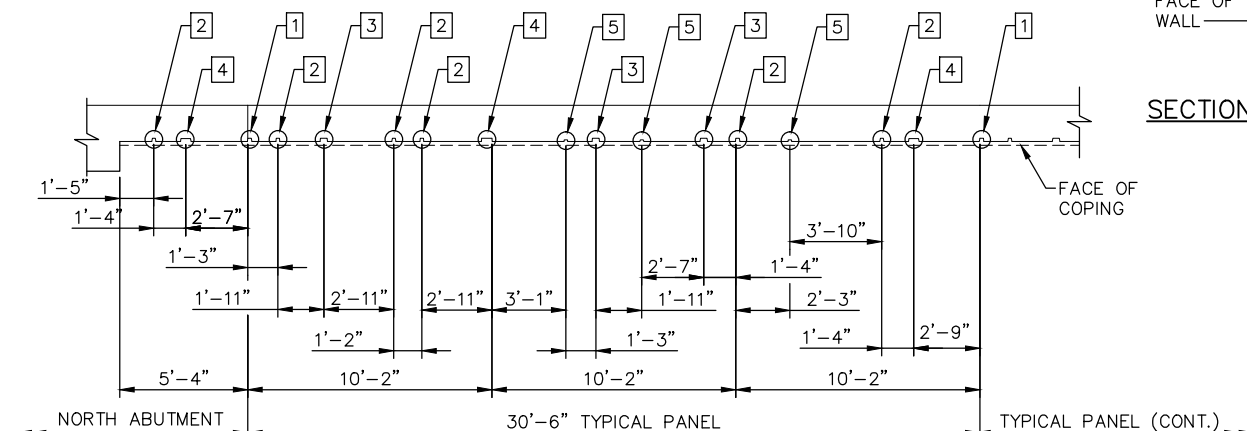
ABUTMENT FRONT FACE PLAN



DETAIL 1

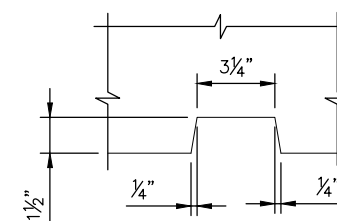


DETAIL 2

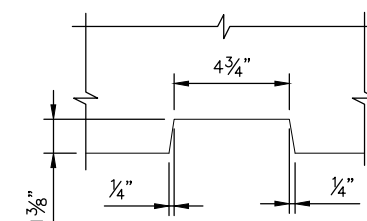


ARCHITECTURAL CONCRETE TEXTURE "BOARD ON BOARD"

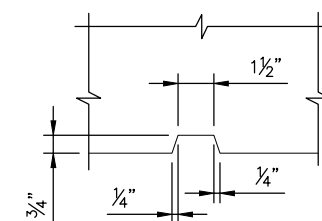
NOTES:
ANTI-GRAFFITI COATING SHALL BE APPLIED
TO ALL EXPOSED FACES OF ABUTMENTS
AND WINGWALLS FROM THE TOP OF FOOTING
TO THE TOP OF THE ABUTMENT AND
WINGWALLS.



DETAIL 3



DETAIL 4



DETAIL 5

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CHECKED BY: MJC
DATE: 8/24/2015

AECOM
PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
AESTHETIC DETAILS (SHEET 3)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-AES1-3

SHEET 22 OF 148

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NORTH ABUTMENT COMPUTED PILE LOAD – TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	100.6
FACTORED LIVE LOAD	20.7
*FACTORED DESIGN LOAD	121.3

*BASED ON STRENGTH I LOAD COMBINATION.

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n – TONS/PILE		
FIELD CONTROL METHOD	φ _{dyn}	*R _n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{A_{PIT}}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	242.6
PDA	0.65	186.6

*R_n = (FACTORED DESIGN LOAD)/φ_{dyn}

PILE NOTES

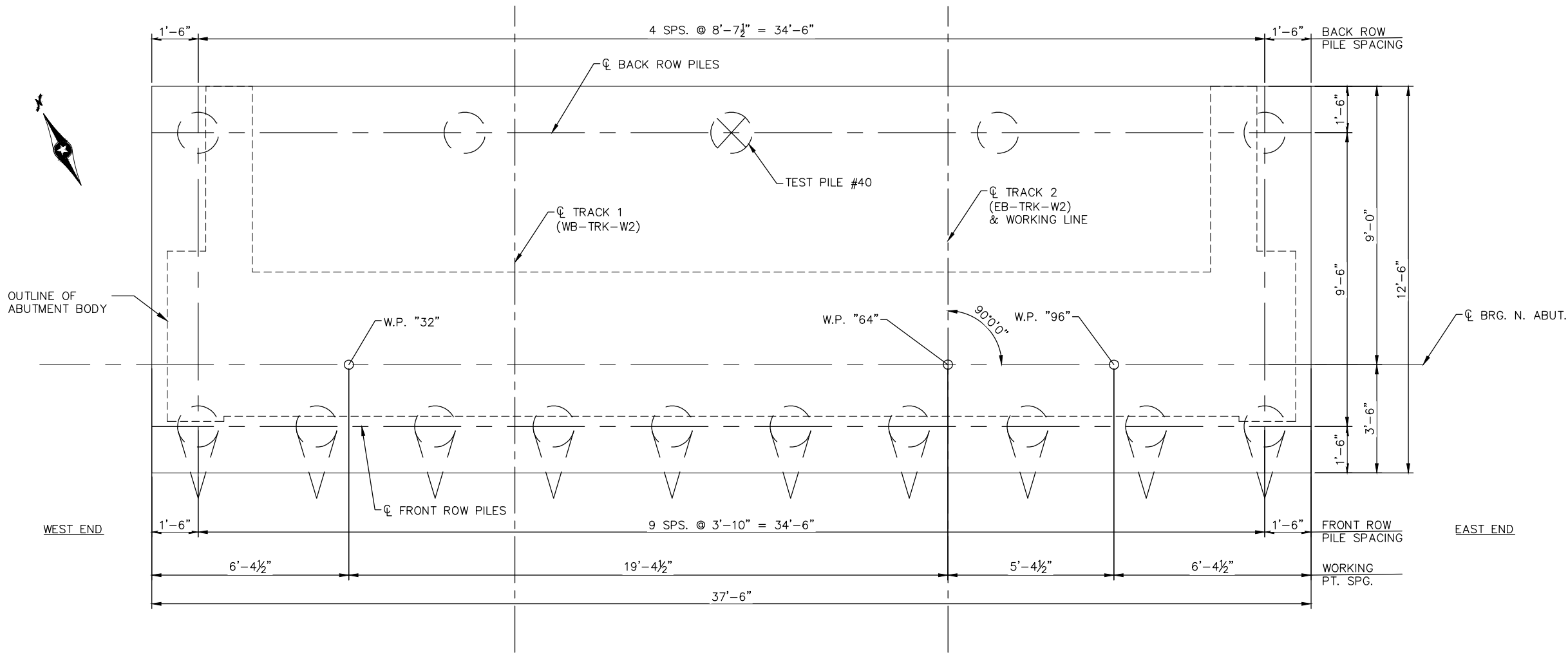
- 1 CAST-IN-PLACE CONC. TEST PILES 75 FT. LONG
- 14 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
- 15 CAST-IN-PLACE CONC. PILES REQ'D FOR SOUTH ABUTMENT

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS  TO BE BATTERED 3" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16".


FOR PILE SPLICE DETAILS SEE DETAIL B201.



FOOTING PLAN & PILE LAYOUT

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 NORTH ABUTMENT DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-ABT-1

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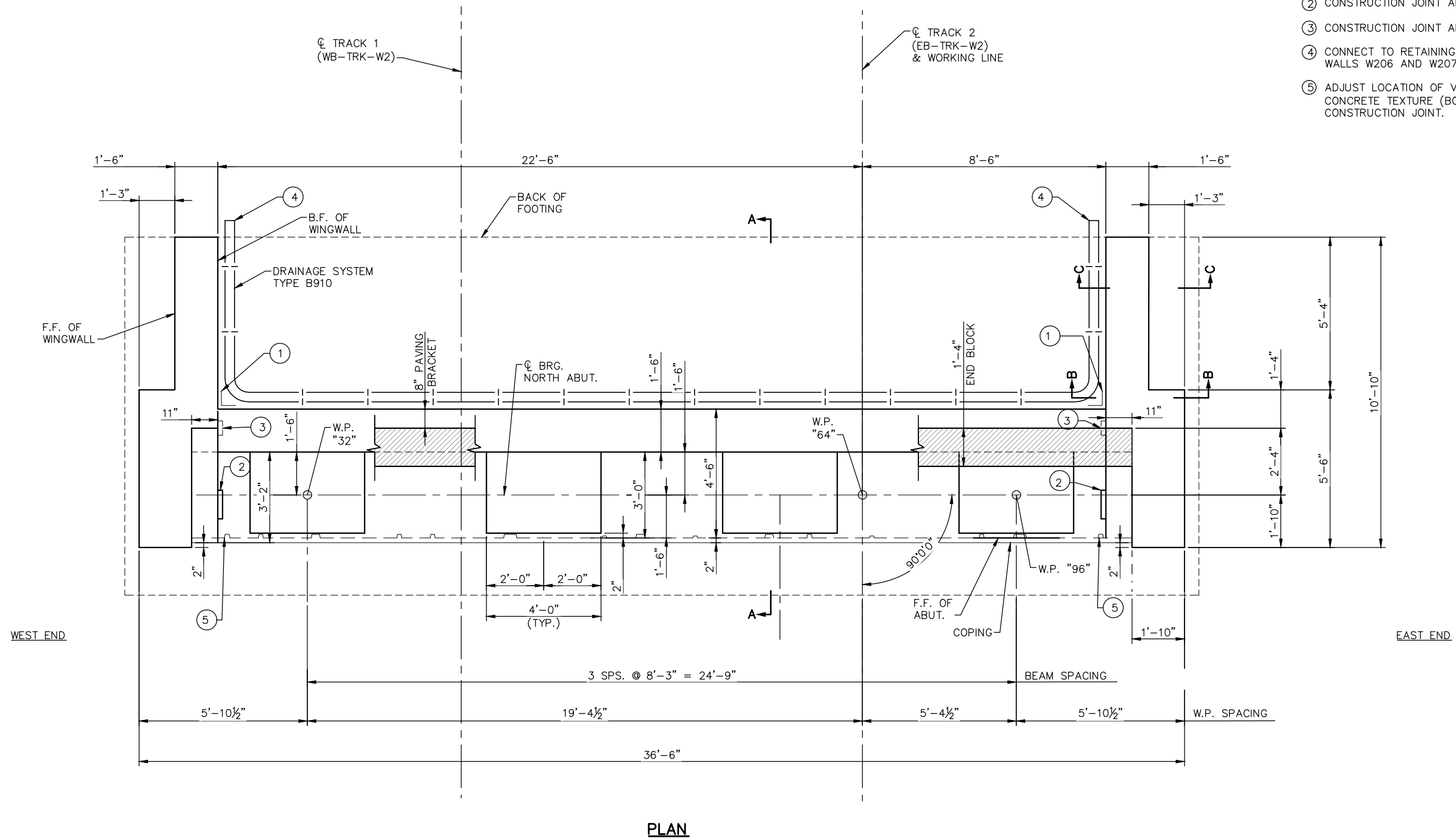
NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

FOR SECTIONS A-A, B-B AND C-C, SEE SHEET XX.


FOR DRAINAGE SYSTEM DETAILS SEE SHEET X.

- ① MEMBRANE WATERPROOFING SYSTEM PER MnDOT SPEC. 2481.38. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO STRUCTURAL CONCRETE (3Y43).
- ② CONSTRUCTION JOINT AND 2" X 12" KEYWAY IN STEM (TYP.).
- ③ CONSTRUCTION JOINT AND 2" X 6" KEYWAY IN BACKWALL (TYP.).
- ④ CONNECT TO RETAINING WALL DRAINAGE SYSTEM. SEE RETAINING WALLS W206 AND W207.
- ⑤ ADJUST LOCATION OF VERTICAL REVEAL IN ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD) TO ALIGN WITH CONSTRUCTION JOINT.



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DRAWN BY: MJY	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS

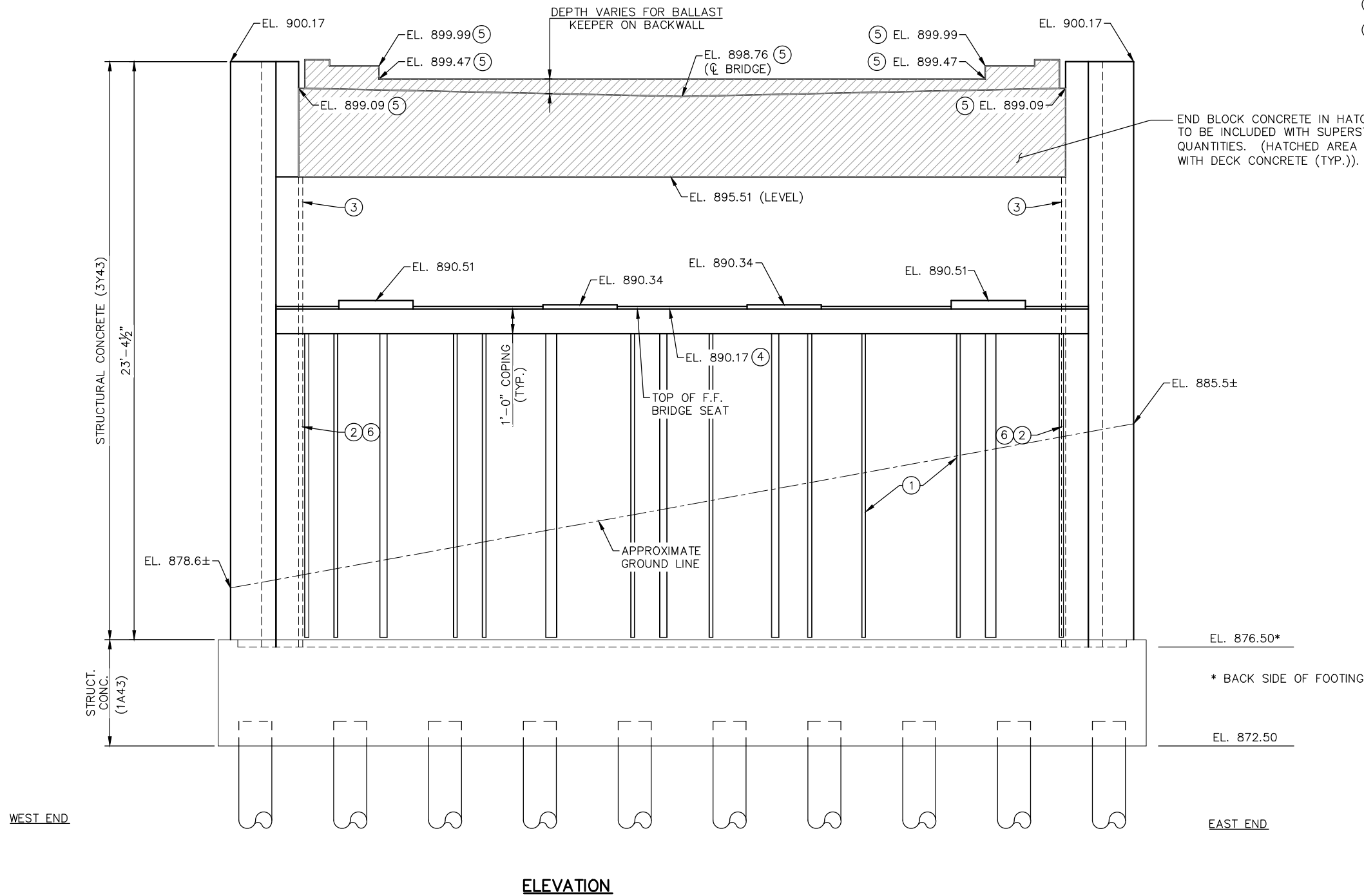
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-ABT-2

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NOTES:

SEE SHEET XX FOR AESTHETIC DETAILS.

- ① APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD) (TYP.) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION
- ② CONSTRUCTION JOINT AND 2" X 12" KEYWAY IN STEM (TYP.).
- ③ CONSTRUCTION JOINT AND 2" X 6" KEYWAY IN BACKWALL (TYP.).
- ④ ELEVATIONS GIVEN ARE ALONG FRONT FACE OF ABUTMENT SEAT.
- ⑤ ELEVATIONS AT FRONT FACE OF PAVING BRACKET.
- ⑥ ADJUST LOCATION OF VERTICAL REVEAL IN ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD) TO ALIGN WITH CONSTRUCTION JOINT



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AECOM **PARSONS BRINCKERHOFF**

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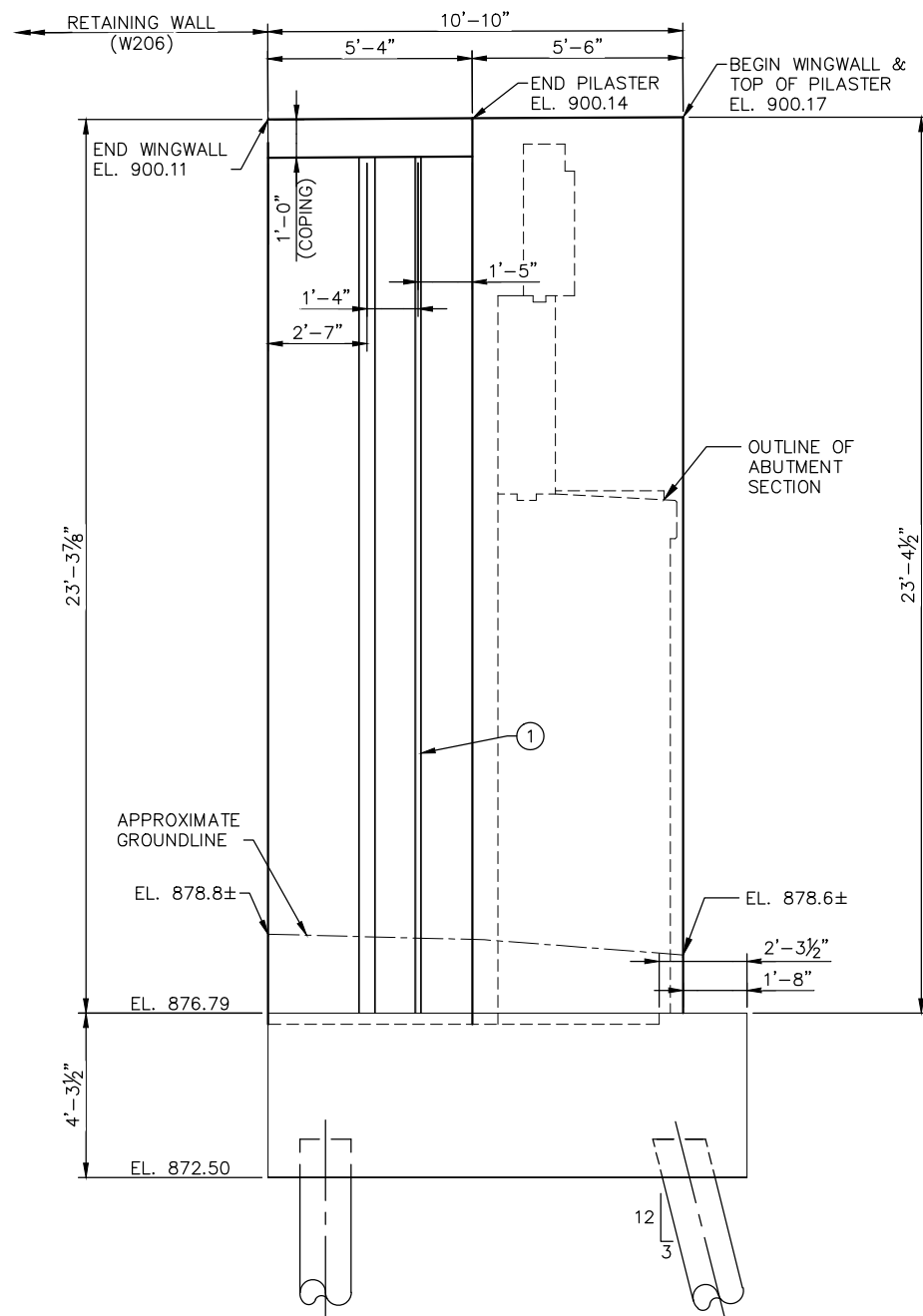


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 NORTH ABUTMENT DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-ABT-3

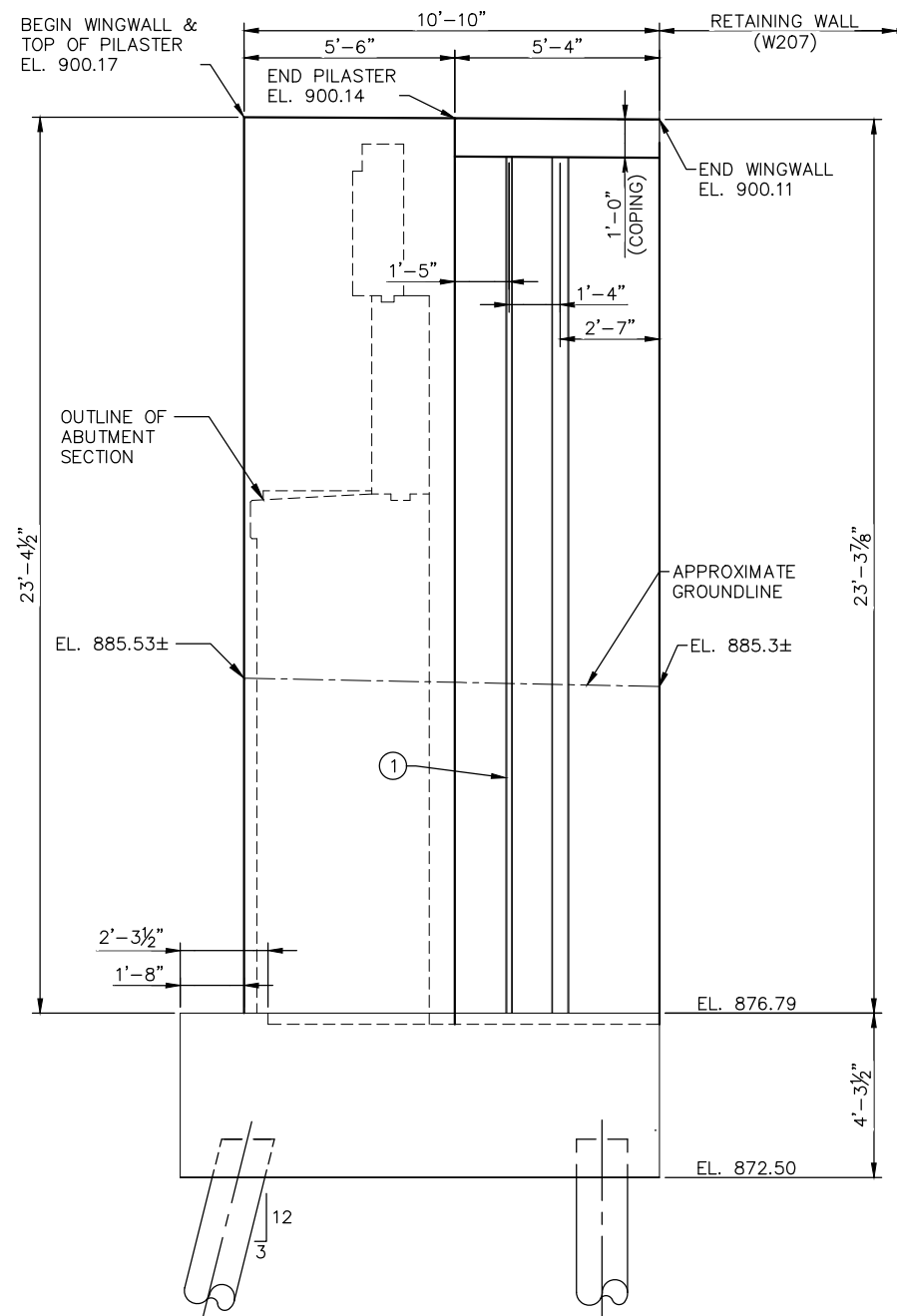
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- NOTES:**
- ① APPLY ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD) TO TOP OF FOOTING FOR FUTURE GROUNDLINE CONFIGURATION. SEE SHEET XX FOR AESTHETIC DETAILS INCLUDING REVEAL LOCATIONS AND DIMENSIONS.



NORTHWEST WINGWALL ELEVATION



NORTHEAST WINGWALL ELEVATION

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DRAWN BY: MJY	DATE: 8/24/2015

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PARSONS BRINCKERHOFF

60% SUBMISSION - 9/28/15

**METROPOLITAN COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

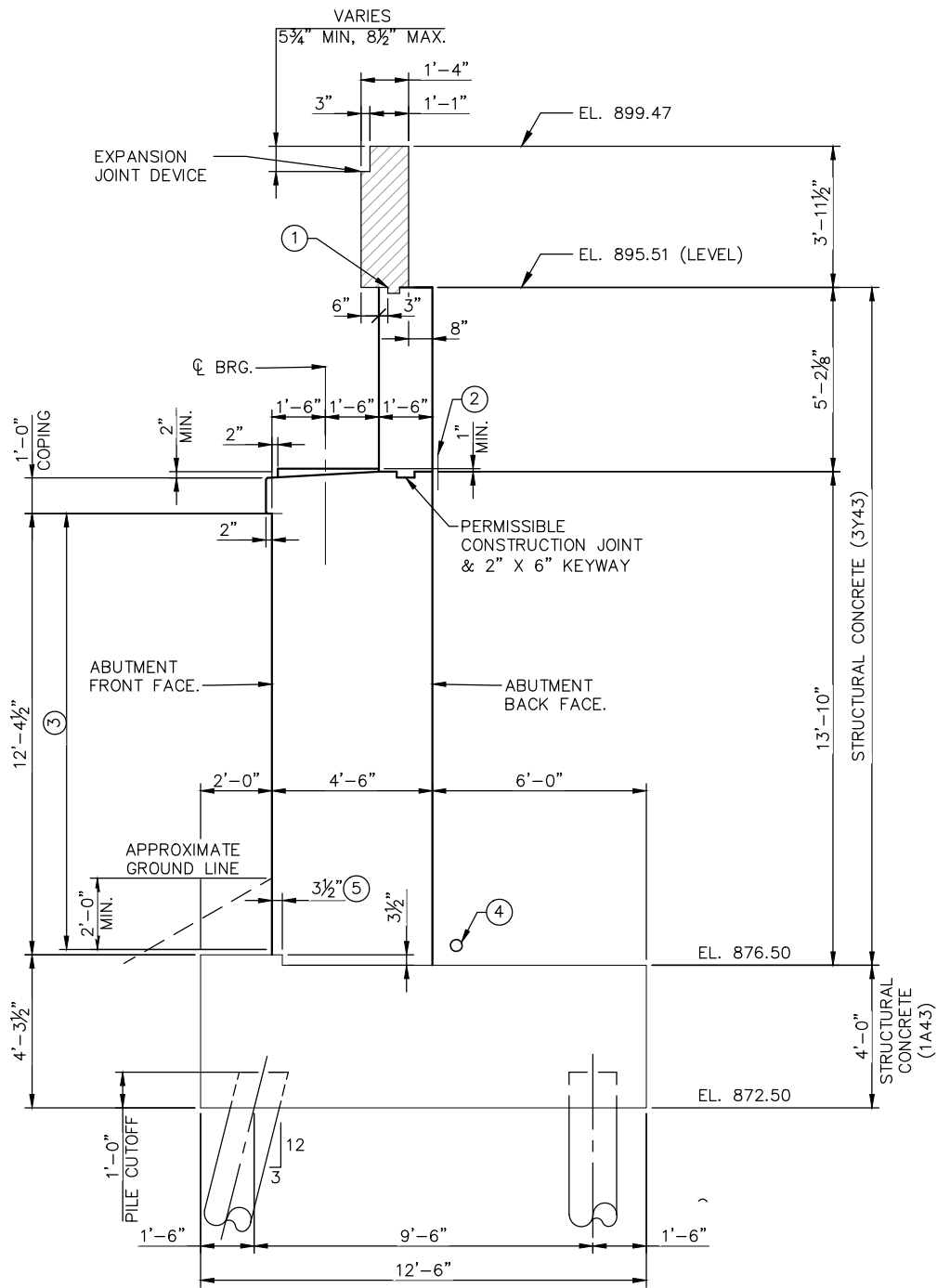
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
NORTH ABUTMENT DETAILS

DISCIPLINE: STRUCTURES

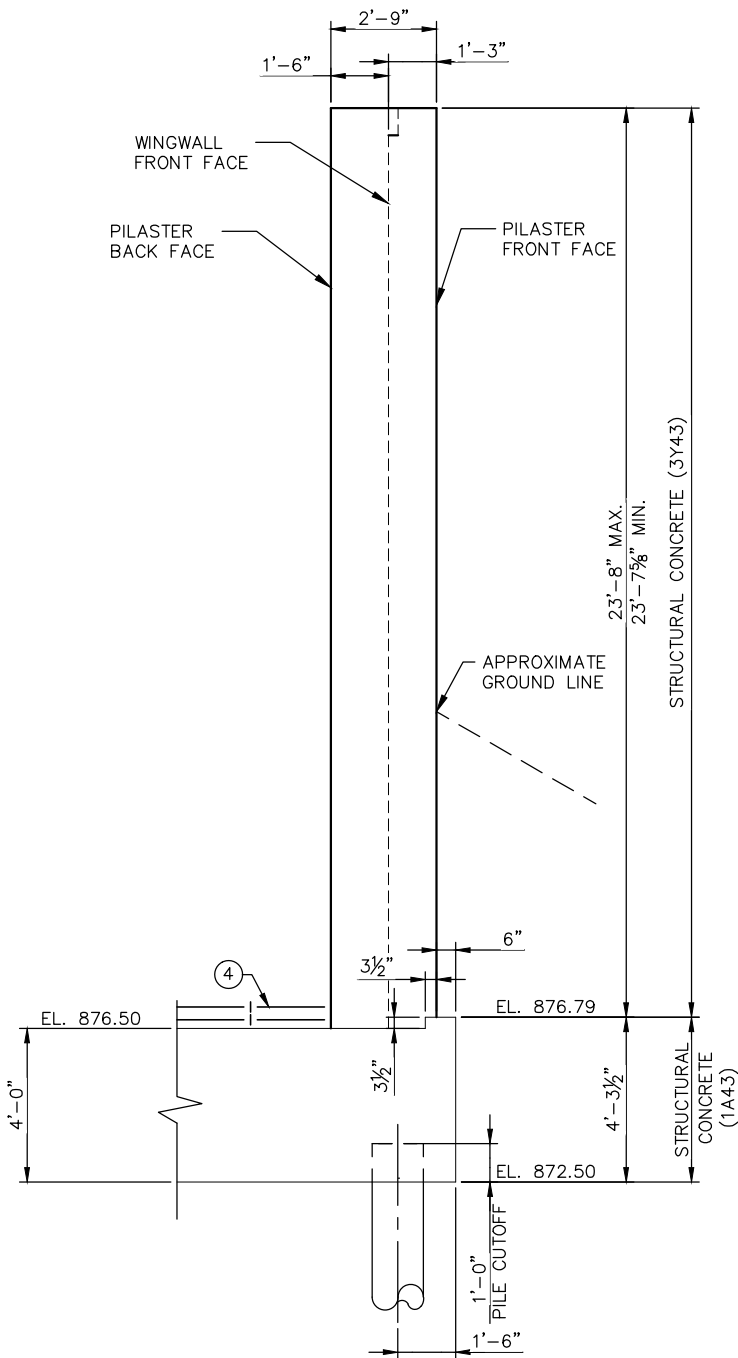
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SHEET 26 OF 148

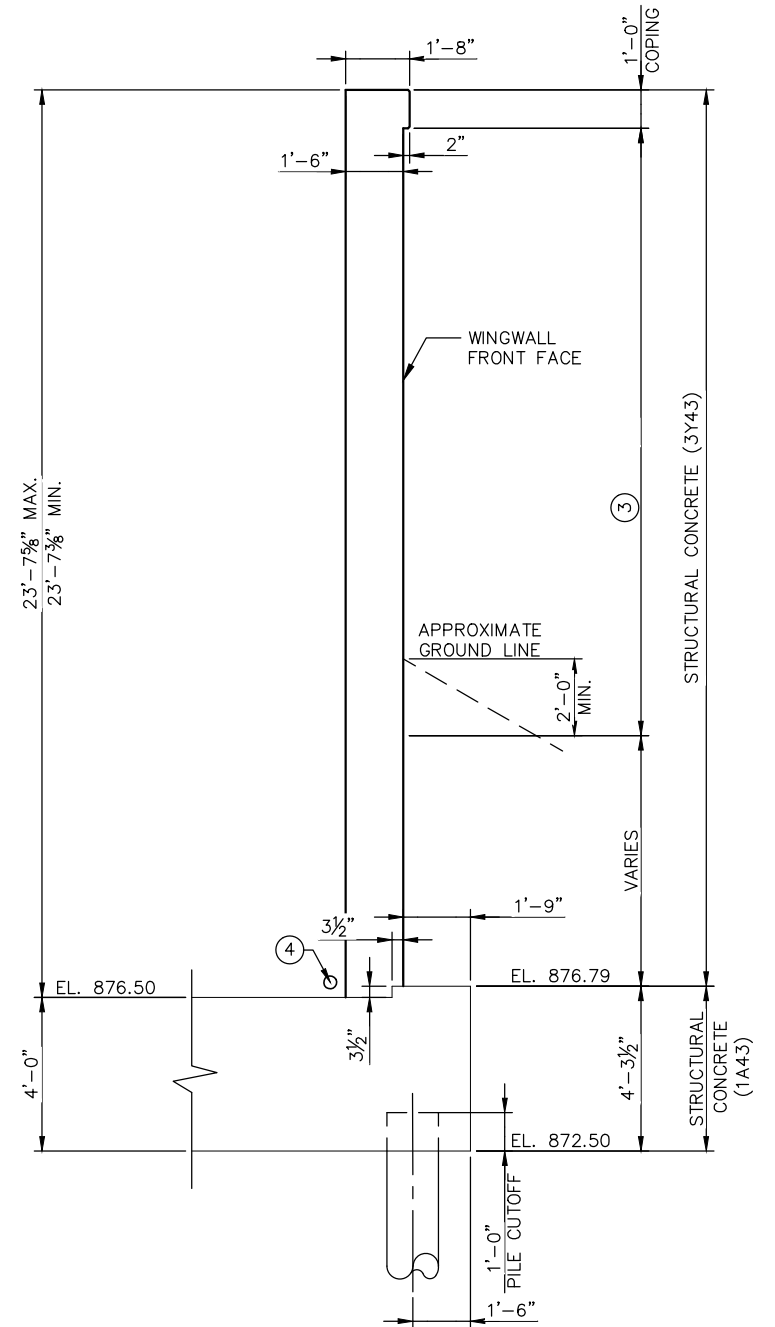
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SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

- ① CONSTRUCTION JOINT & 2" X 4" KEYWAY.
- ② MEMBRANE WATERPROOFING SYSTEM PER SPEC.2481.3B IF JOINT IS USED
- ③ ARCHITECTURAL CONCRETE TEXTURE (BOARD ON BOARD)
- ④ 4" DIA. PERFORATED PIPE INCLUDED IN "DRAINAGE SYSTEM TYPE (B910)".
- ⑤ KEYWAY DIMENSION MAY BE ADJUSTED SLIGHTLY TO FACILITATE FORM WORK.

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AECOM **PARSONS BRINCKERHOFF**

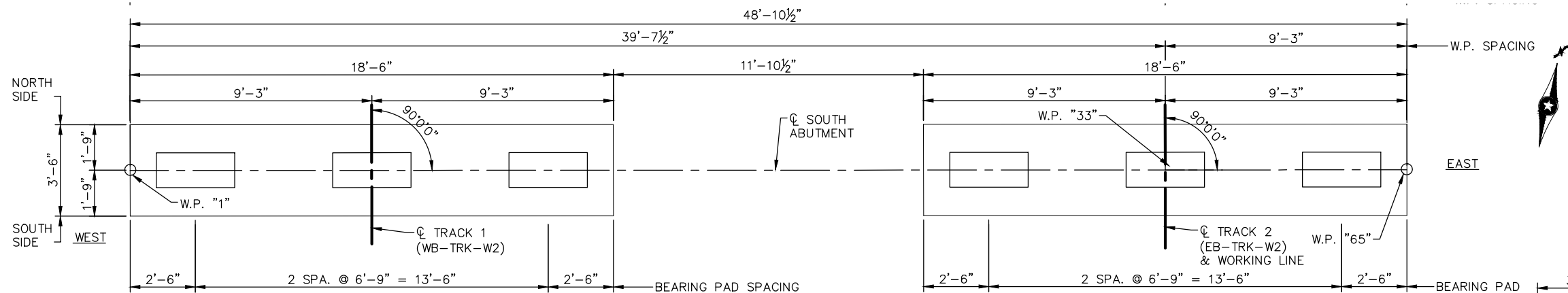
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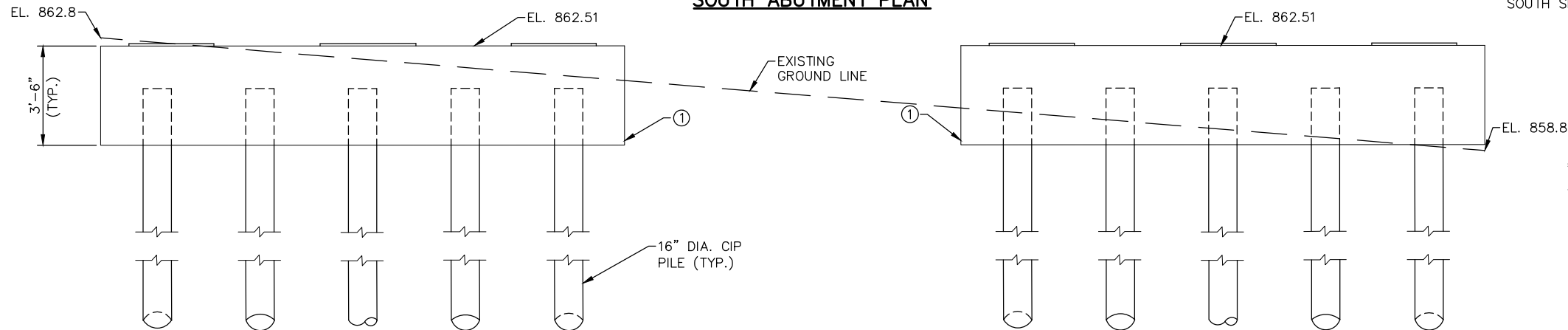
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DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-ABT-5

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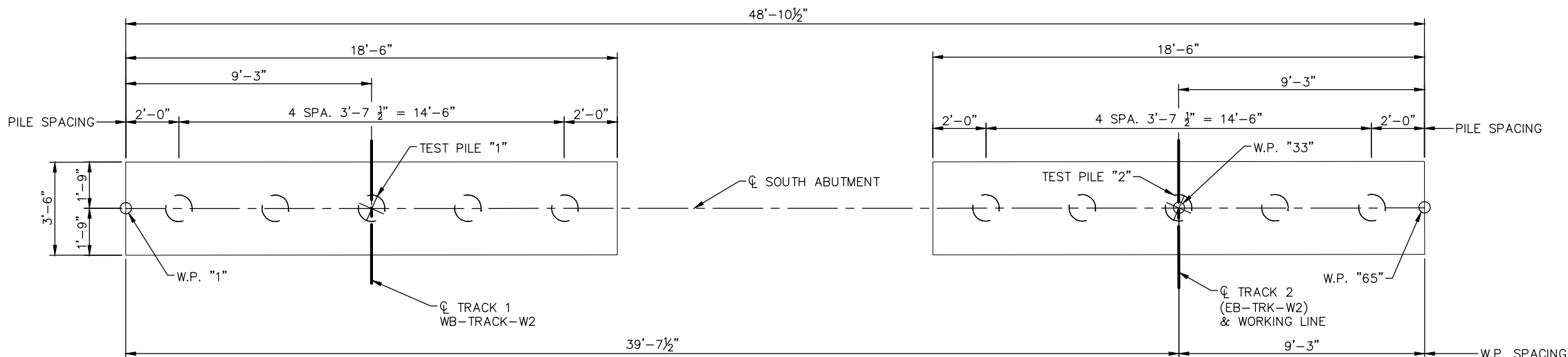
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SOUTH ABUTMENT PLAN



SOUTH ABUTMENT ELEVATION



SOUTH ABUTMENT PILE LAYOUT

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n — TONS/PILE		
FIELD CONTROL METHOD	φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) R _n =20√ ₁₀₀₀ xlog(¹⁰⁰⁰ ₁₀)	0.50	---
PDA	0.65	---

* R_n = (FACTORED DESIGN LOAD) / φ_{dyn}

SOUTH ABUTMENT COMPUTED PILE LOAD — TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 80 FT. LONG
- 8 CAST-IN-PLACE CONC. PILES EST. LENGTH 70 FT.
- 10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SOUTH ABUTMENT

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-S.ABUT

SHEET

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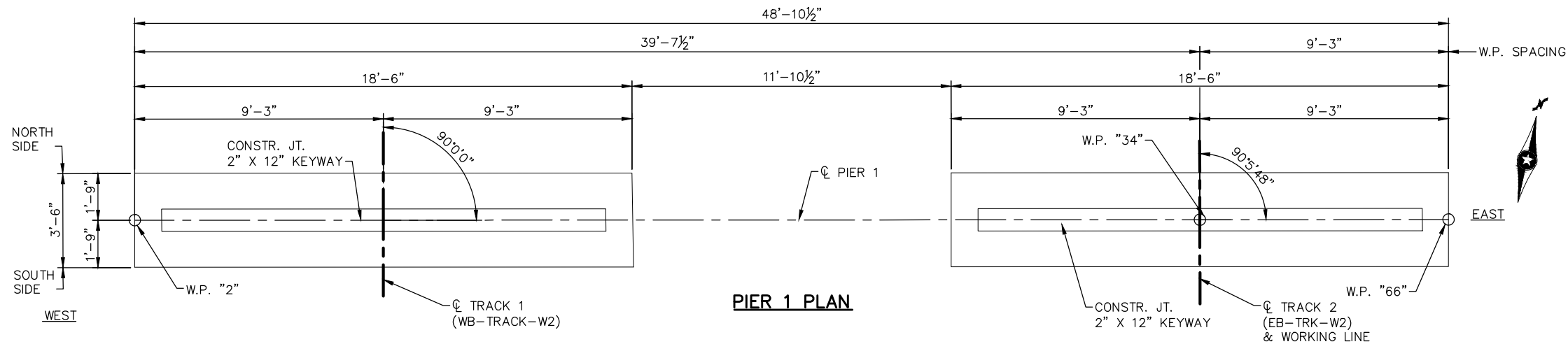
AECOM PARSONS
BRINCKERHOFF



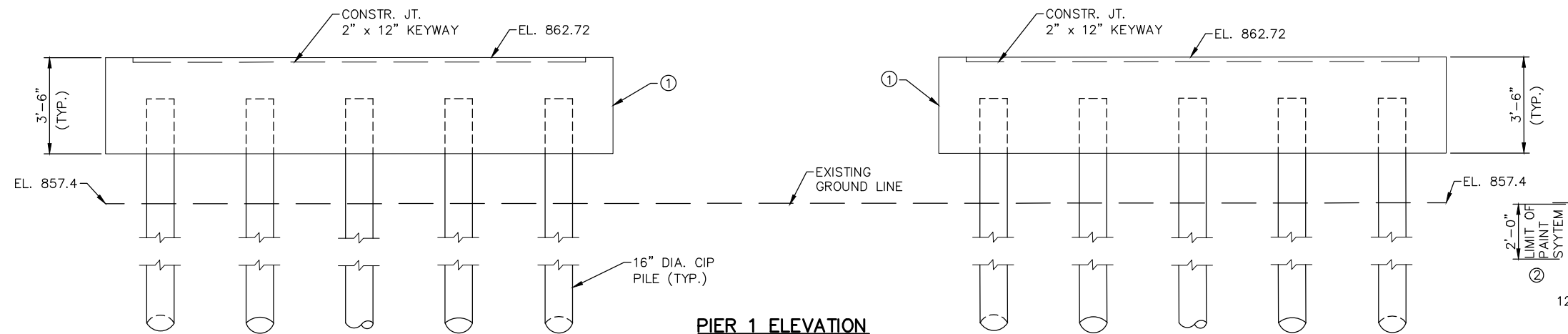
60% SUBMISSION - 9/28/15

DESIGNED BY: DDL
DRAWN BY: SBM
CHECKED BY: MJC
DATE: 8/24/2015

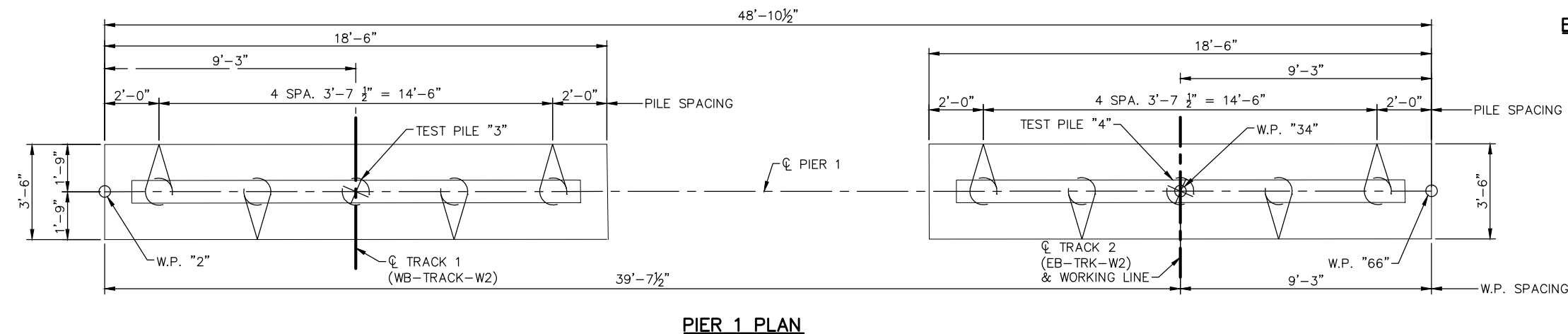
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PIER 1 PLAN



PIER 1 ELEVATION



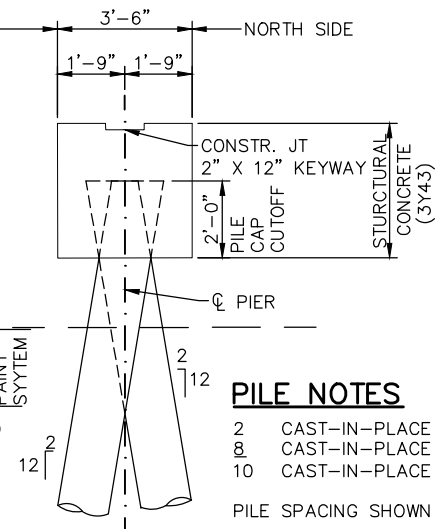
PIER 1 PLAN

PIER 1 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{P}{S}\right)$	0.50	---
PDA	0.65	---

$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 1 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION



END VIEW

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 80 FT. LONG
- 8 CAST-IN-PLACE CONC. PILES EST. LENGTH 70 FT.
- 10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS \odot SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXX. SEE SPEC. SB 2401.
- EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	DDL	MJC	SBM	60% SUBMISSION - 9/28/15
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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SBM	DATE: 8/24/2015

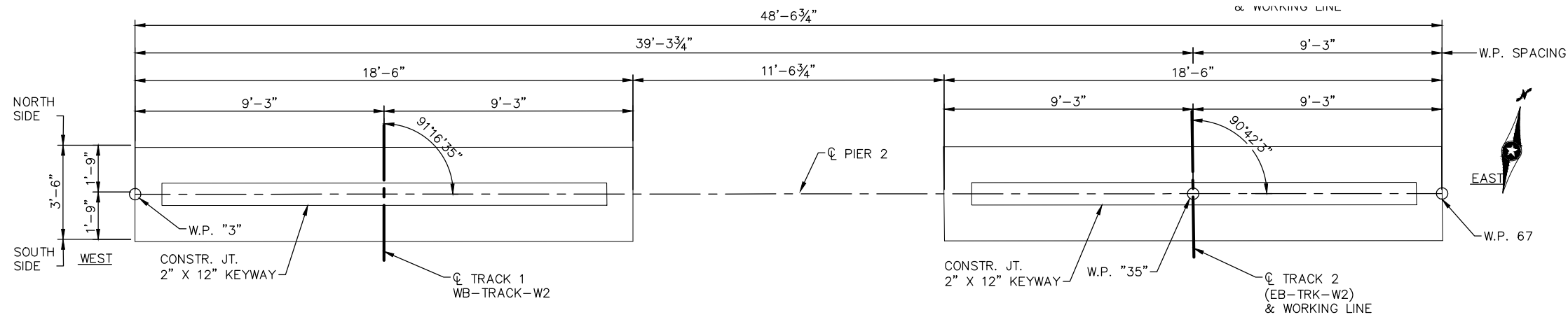
AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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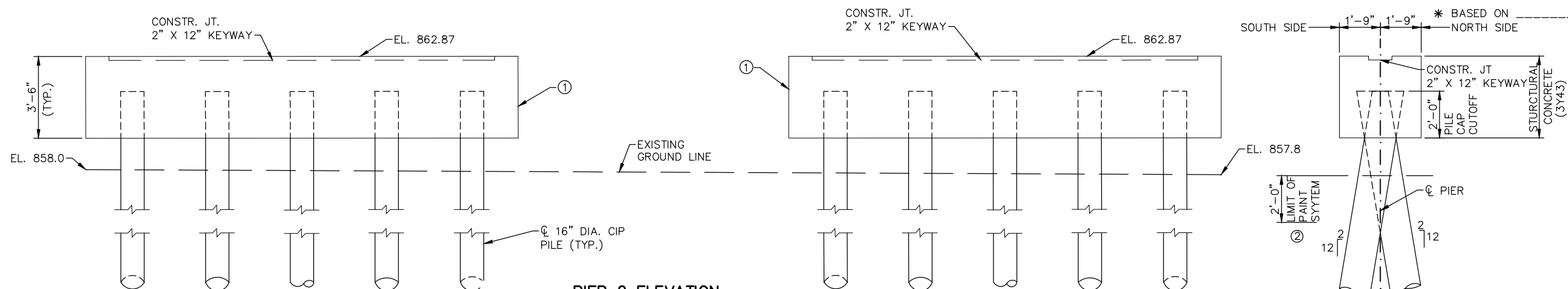
CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 1	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER-1

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OF
148

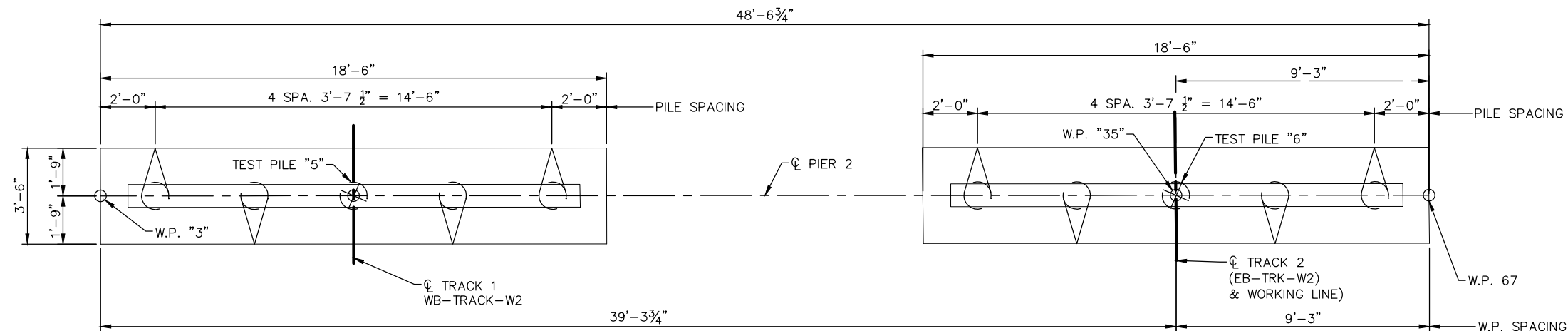
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PIER 2 PLAN



PIER 2 ELEVATION

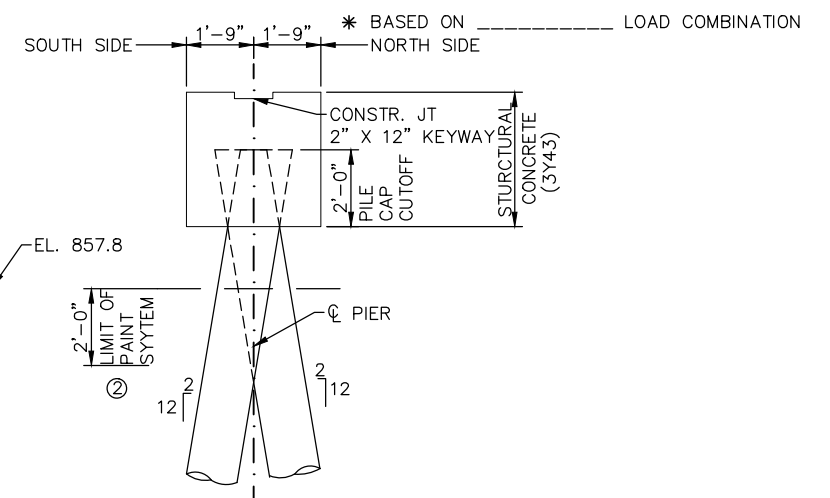


PIER 2 PILE LAYOUT

PIER 2 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{W}{L}} \log(\frac{L}{D})$	0.50	---
PDA	0.65	---

$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 2 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---



END VIEW

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 8 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	DDL	MJC	SBM	60% SUBMISSION - 9/28/15
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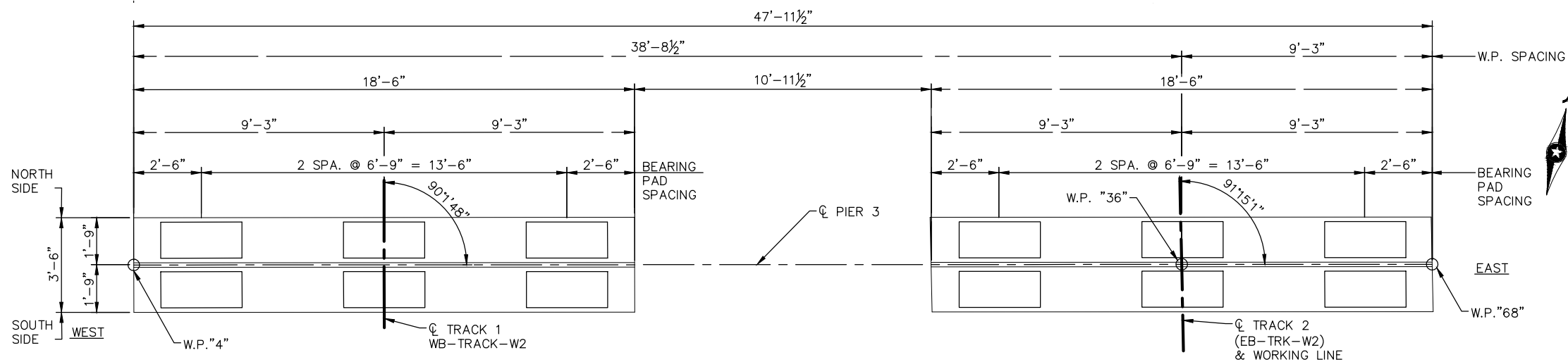
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DRAWN BY: SBM	DATE: 8/24/2015

AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 2		SHEET 30 OF 148
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER-2	

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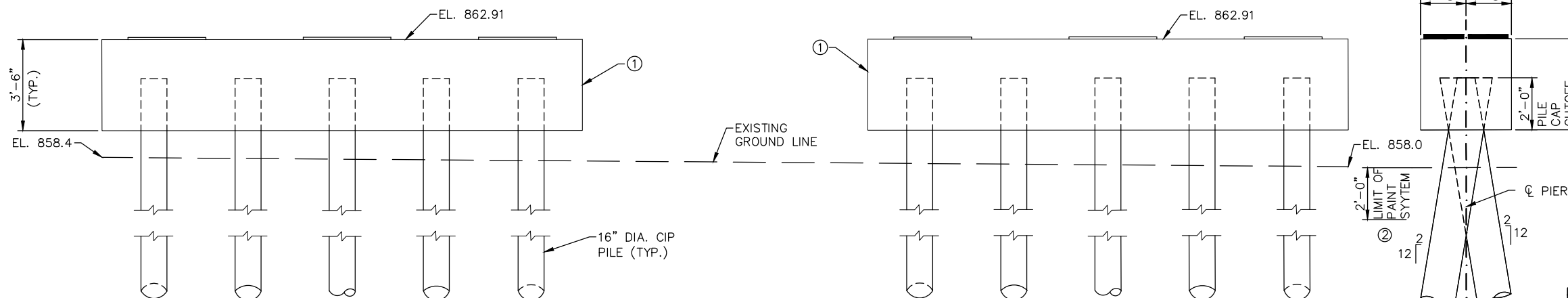
PIER 3 PLAN

PIER 3 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{EA}{1000}} \times \log\left(\frac{10}{\phi}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 3 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON ----- LOAD COMBINATION



PIER 3 ELEVATION

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 8 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS \odot SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

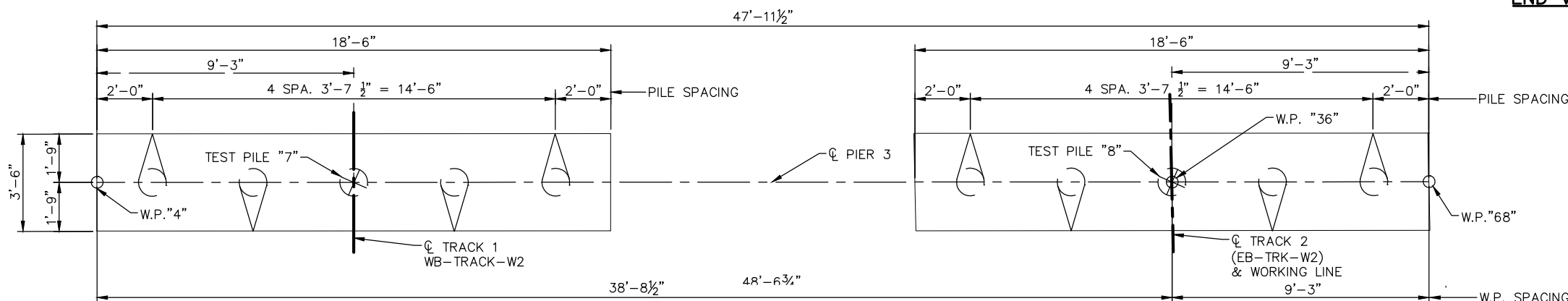
NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.



PIER 3 PILE LAYOUT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	DDL	MJC	SBM	60% SUBMISSION - 9/28/15
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DESIGNED BY: DDL
DRAWN BY: SBM
CHECKED BY: MJC
DATE: 8/24/2015

AECOM PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

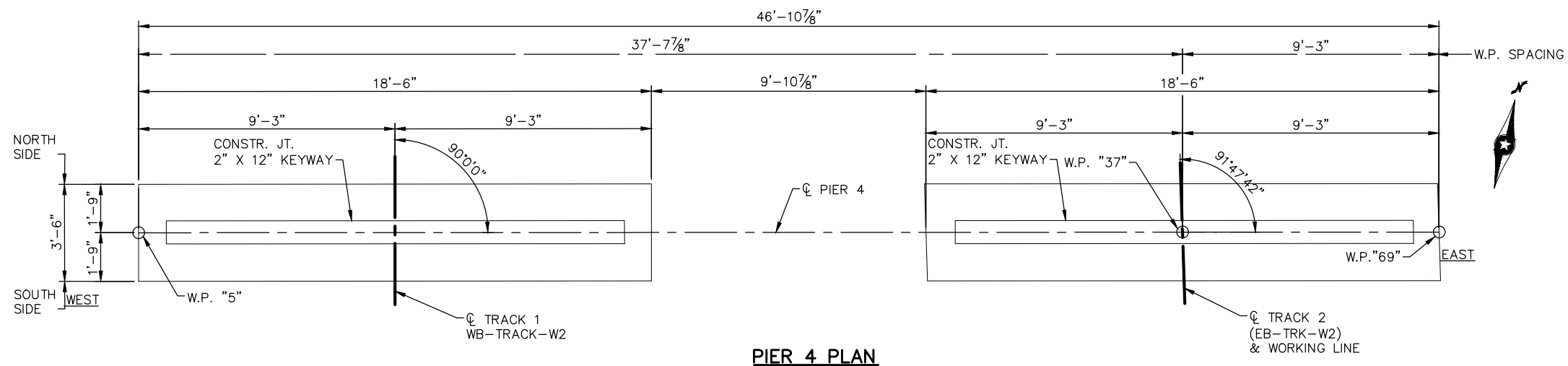


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 3

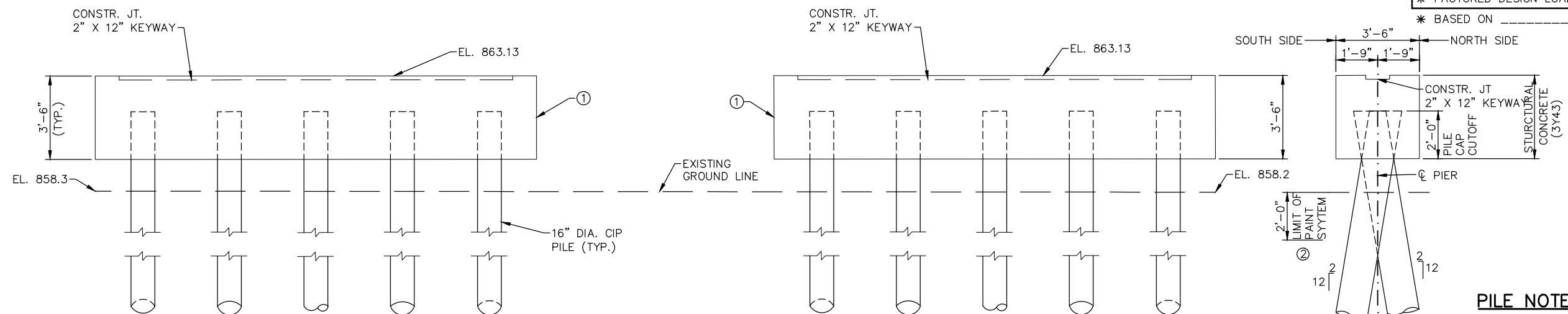
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SHEET NAME: W2-STU-BRID-T212-PIER-3

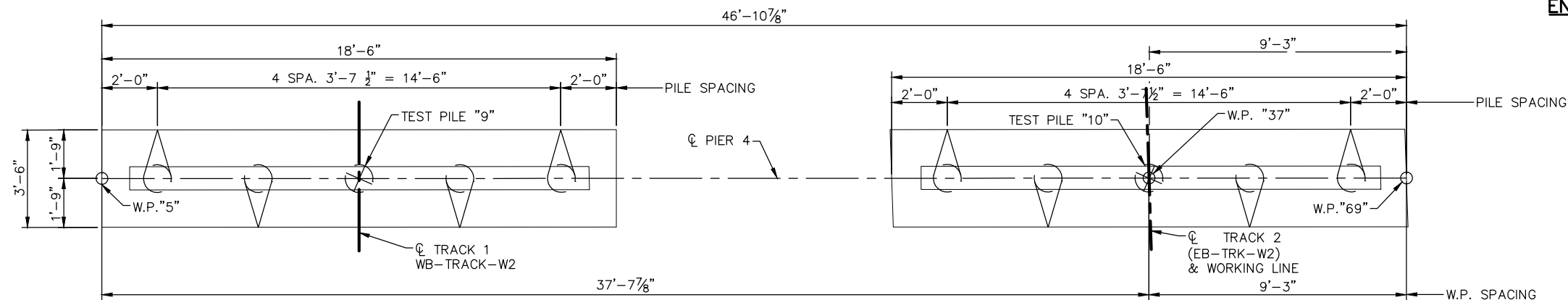
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PIER 4 PLAN



PIER 4 ELEVATION



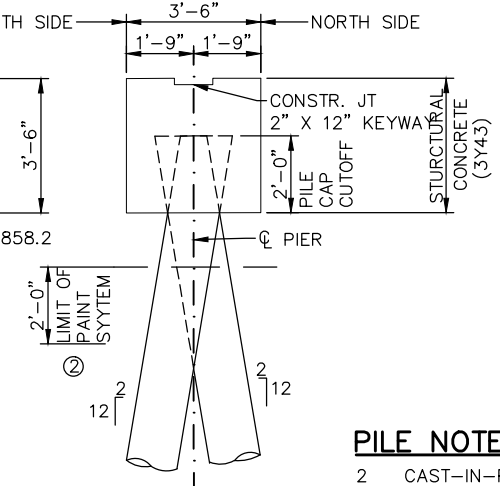
PIER 4 PILE LAYOUT

PIER 4 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n– TONS/PILE		
FIELD CONTROL METHOD	Φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{W_{tip}}{1000}} \times \log\left(\frac{10}{\delta}\right)$	0.50	— —
PDA	0.65	— —

$$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$$

<div style="text-align: center;"> PIER 4 COMPUTED PILE LOAD – TONS/PILE </div>	
FACTORED DEAD LOAD	___' __
FACTORED LIVE LOAD	___' __
FACTORED OVERTURNING	___' __
* FACTORED DESIGN LOAD	___' __

* BASED ON _____ LOAD COMBINATION



END VIEW

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
8 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.

- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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AECOM **PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 4**

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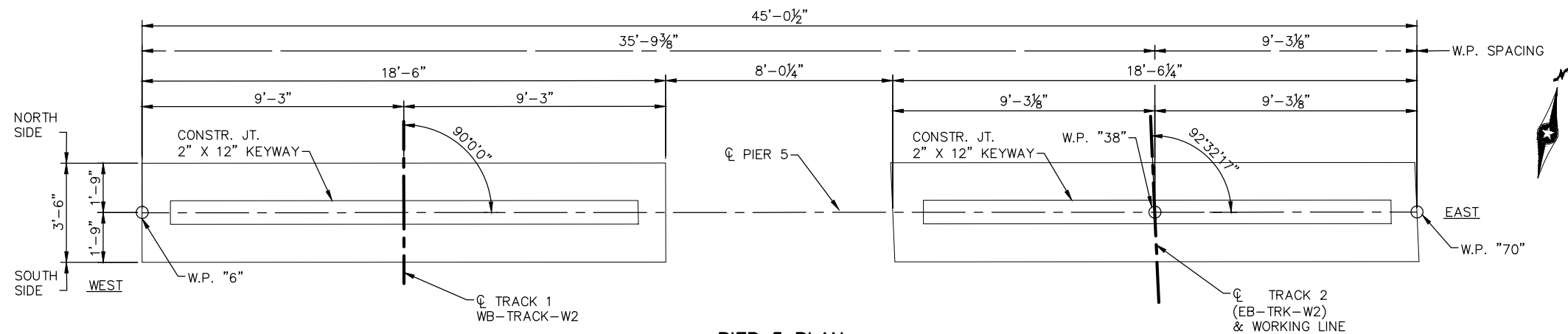
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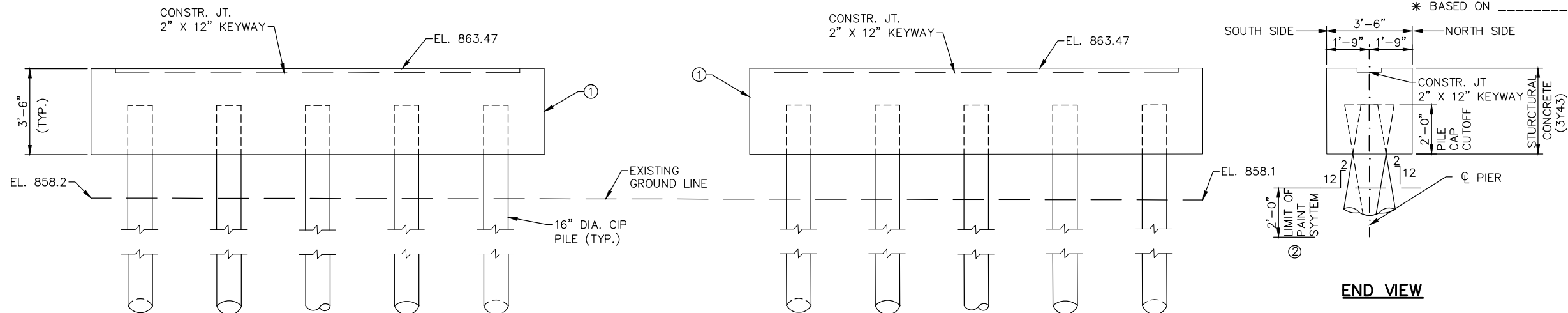
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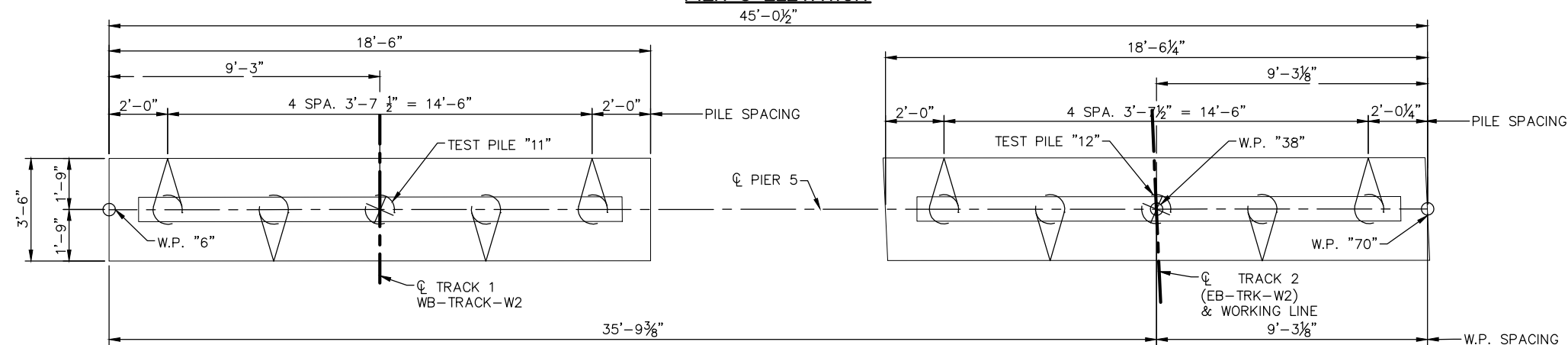
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PIER 5 PLAN



PIER 5 ELEVATION



PIER 5 PILE LAYOUT

PIER 5
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{L}{1000}} \times \log\left(\frac{L}{10}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 5
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

END VIEW

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
- 8 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
- 10 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXX. SEE SPEC. SB 2401.
- EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DESIGNED BY: DDL
DRAWN BY: SBM
CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15



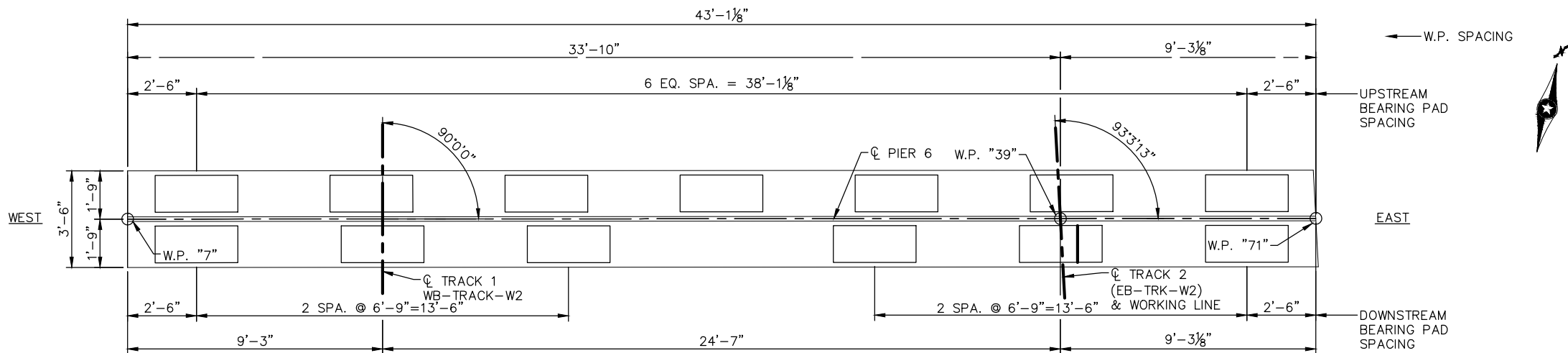
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 5

DISCIPLINE: STRUCTURES

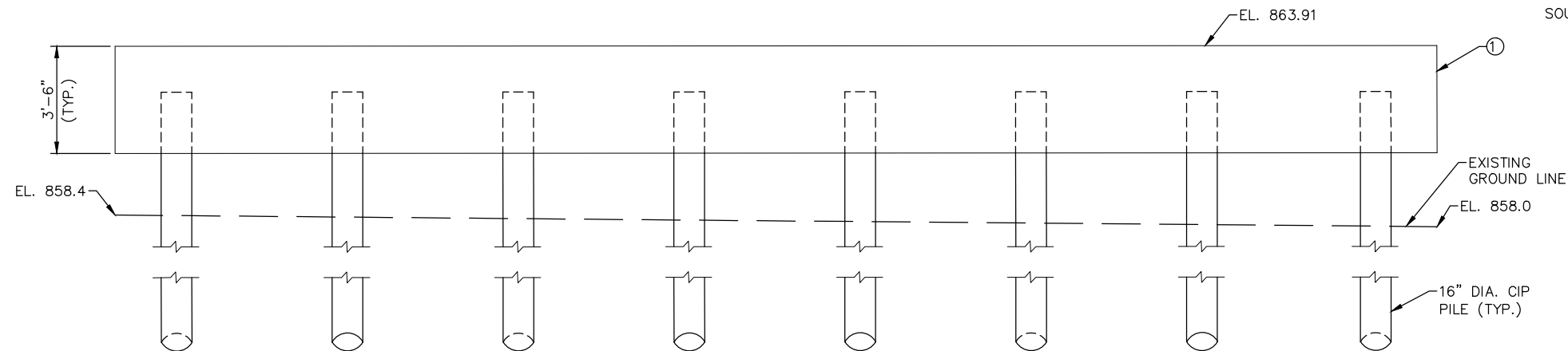
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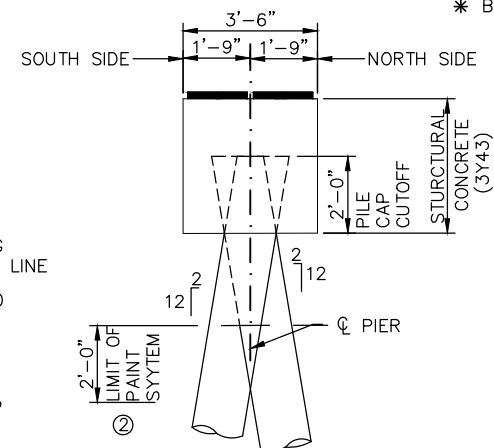
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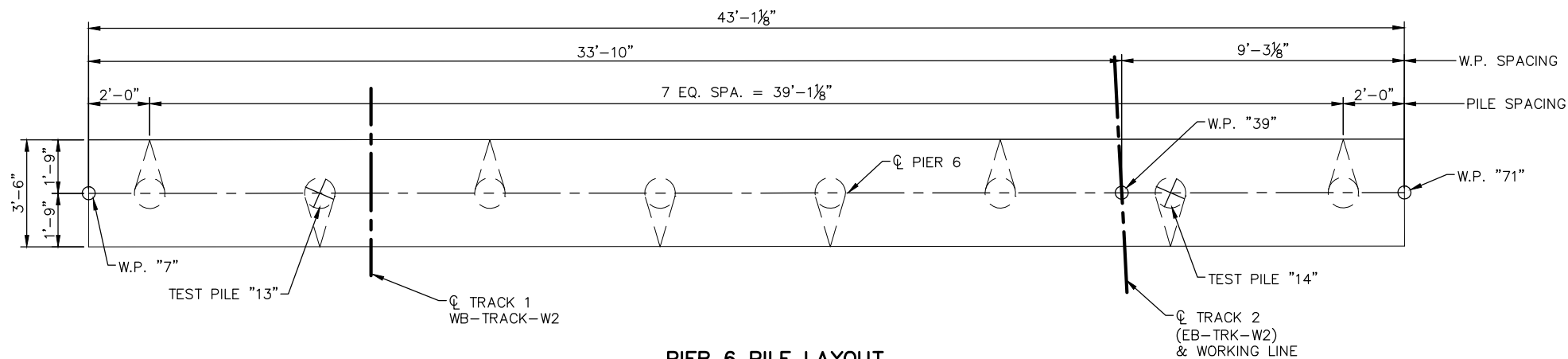
PIER 6 PLAN



PIER 6 ELEVATION



END VIEW



PIER 6 PILE LAYOUT

PIER 19
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n — TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{E_p A_p}{1000}} \times \log\left(\frac{1}{\phi}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 19
COMPUTED PILE LOAD — TONS/PILE

FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
- 7 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
- 9 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CETERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DESIGNED BY: DDL
DRAWN BY: SBM
CHECKED BY: MJC
DATE: 8/24/2015

AECOM PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 6

DISCIPLINE:
STRUCTURES

SHEET NAME:
W2-STU-BRID-T212-PIER-6

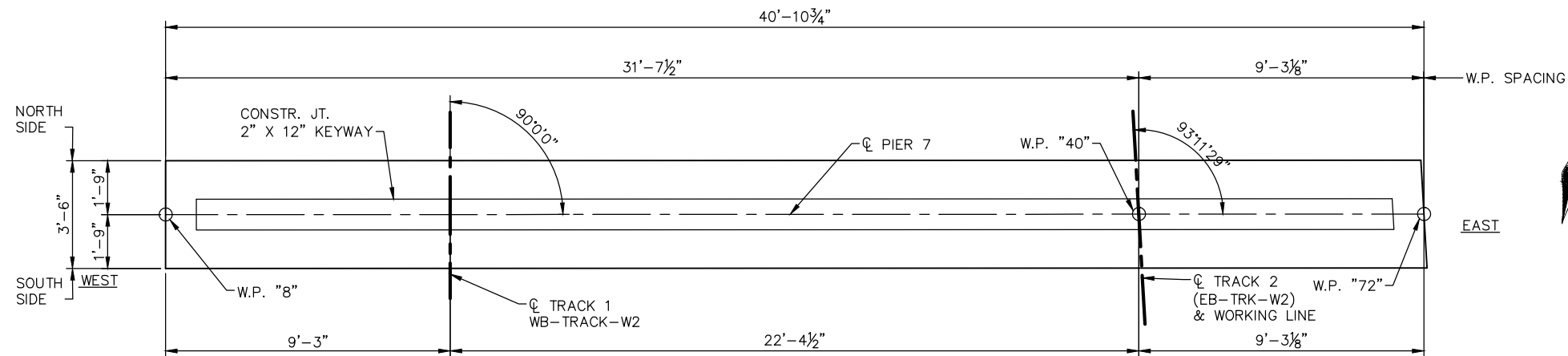
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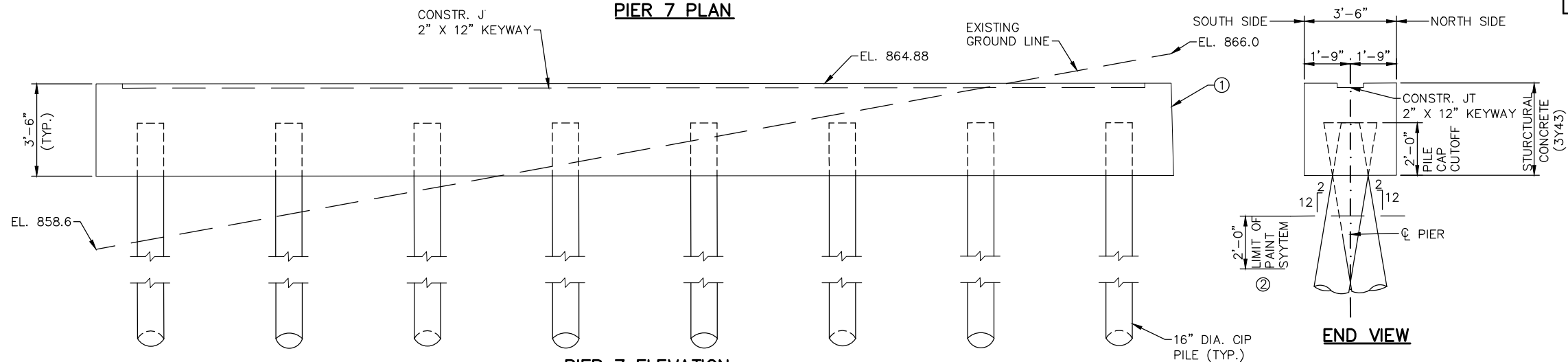
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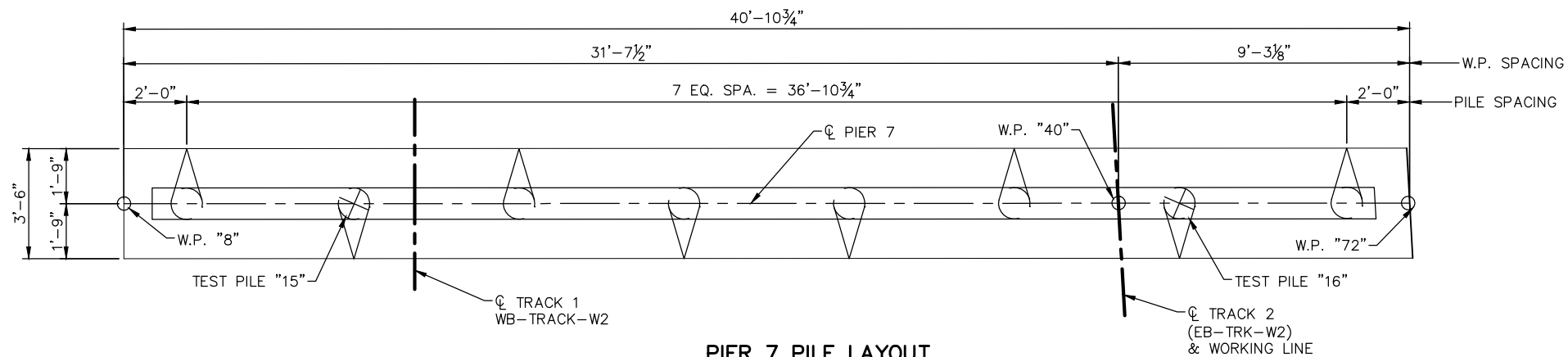
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PIER 7 PLAN



PIER 7 ELEVATION



PIER 7 PILE LAYOUT

PIER 7 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{1000}{L}} \times \log\left(\frac{10}{L}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 7
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
- Z CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
- 9 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DESIGNED BY: DDL
DRAWN BY: SBM
CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



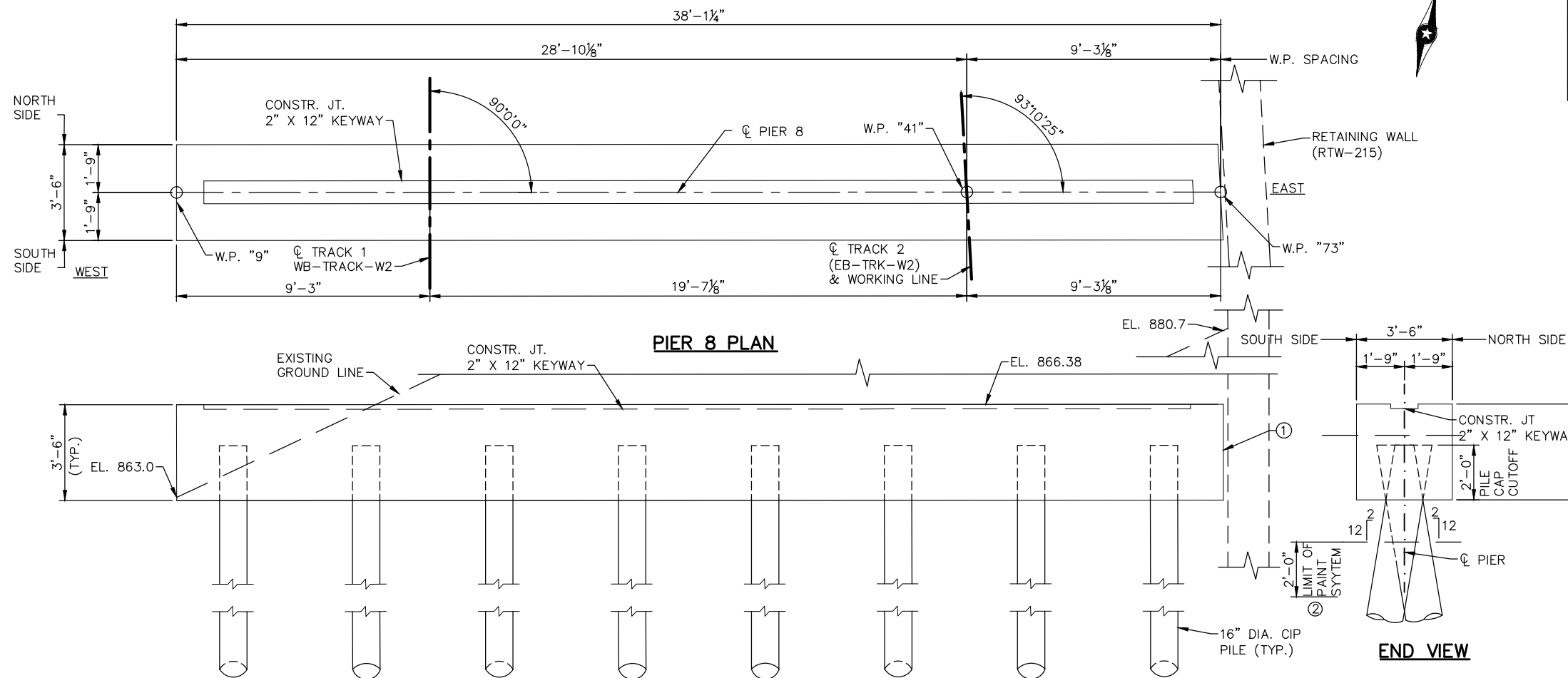
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 7

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-PIER-7**

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PIER 8 PLAN

PIER 8 ELEVATION

PIER 8 PILE LAYOUT

PIER 8 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt[4]{\frac{P}{1000}} \times \log\left(\frac{L}{10}\right)$	0.50	---
PDA	0.65	---

$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 8
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 2 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 8 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DESIGNED BY: DDL
DRAWN BY: SBM

CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15



**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 8**

DISCIPLINE:
STRUCTURES

SHEET NAME:
W2-STU-BRID-T212-PIER-8

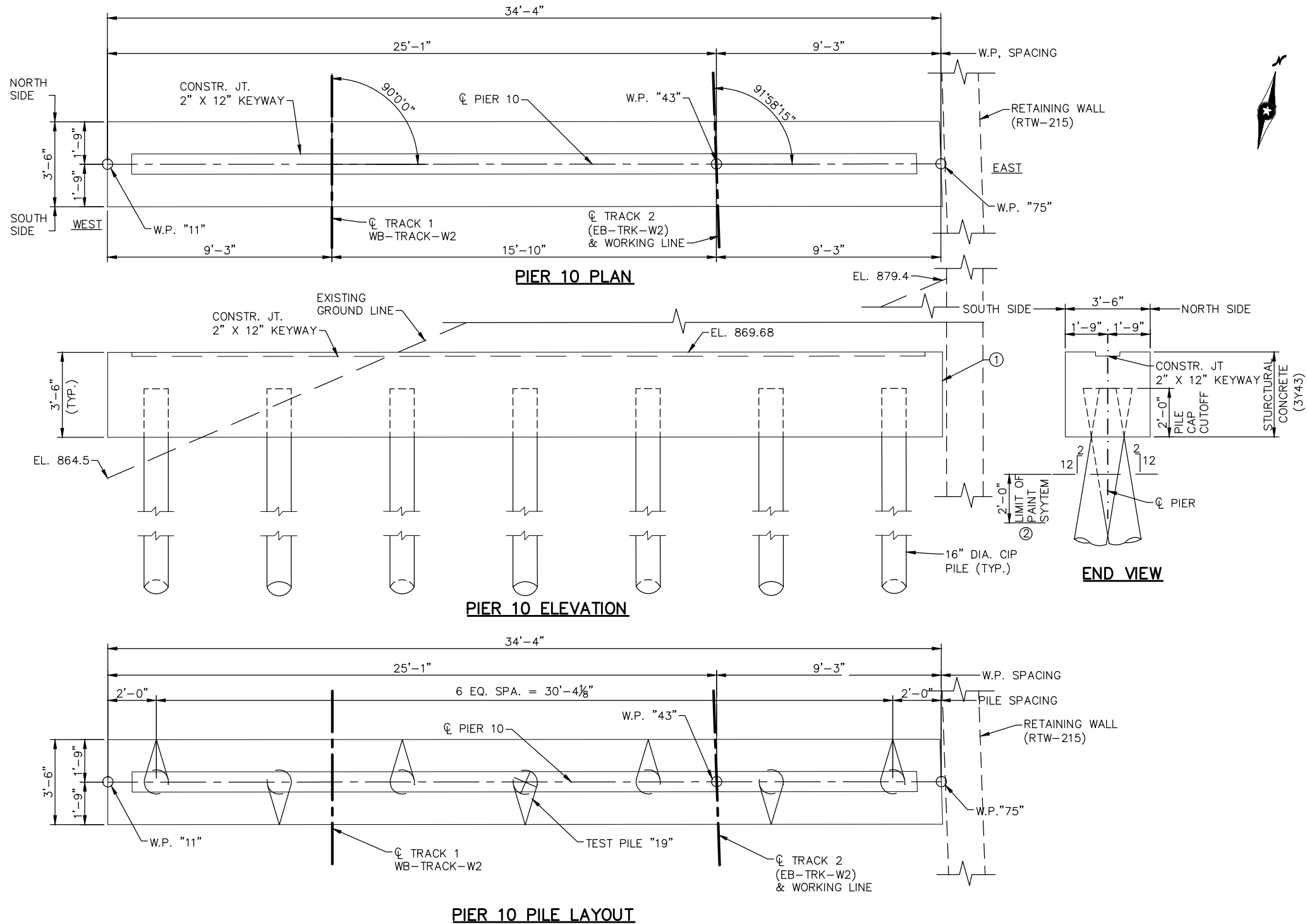
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PIER 10
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n - TONS/PILE

FIELD CONTROL METHOD	Φ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{E_p A_p}{1000}} \times \log\left(\frac{10}{s}\right)$	0.50	— — —
PDA	0.65	— — —

$$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$$

PIER 10
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	_____
FACTORED LIVE LOAD	_____
FACTORED OVERTURNING	_____
* FACTORED DESIGN LOAD	_____

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- | | | |
|---|---------------------|----------------------------|
| 1 | CAST-IN-PLACE CONC. | TEST PILE 75 FT. LONG |
| 6 | CAST-IN-PLACE CONC. | PILES EST. LENGTH 65 FT. |
| 7 | CAST-IN-PLACE CONC. | PILES REQ'D FOR WEST ABUT. |

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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AECOM **PARSONS
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60% SUBMISSION - 9/28/15



**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 10**

DISCIPLINE:

STRUCTURES

SHEET NAME:

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W2-STU-BRID-T212-PIER-10

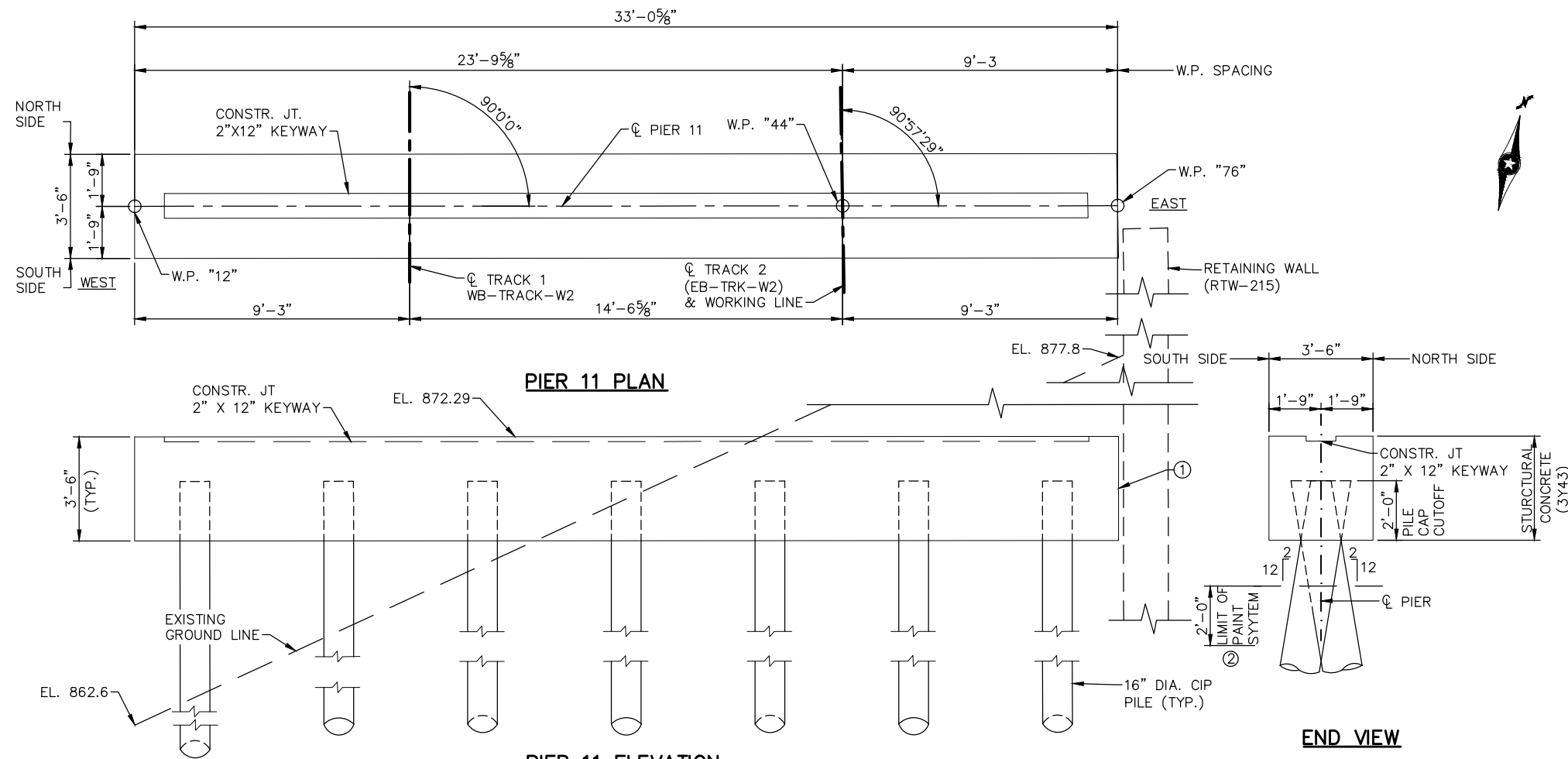
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PIER 11 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n — TONS/PILE		
FIELD CONTROL METHOD	Φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) R _n =20√ ^{W_p} / ₁₀₀₀ xlog(^{L_p} / ₁₀)	0.50	— —
PDA	0.65	— —

* R_n = (FACTORED DESIGN LOAD) / Φ_{dyn}

PIER 11 COMPUTED PILE LOAD — TONS/PILE	
FACTORED DEAD LOAD	— —
FACTORED LIVE LOAD	— —
FACTORED OVERTURNING	— —
* FACTORED DESIGN LOAD	— —

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
- 6 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
- 7 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS EO-SYS-CORR-DTL-001 AND 008.

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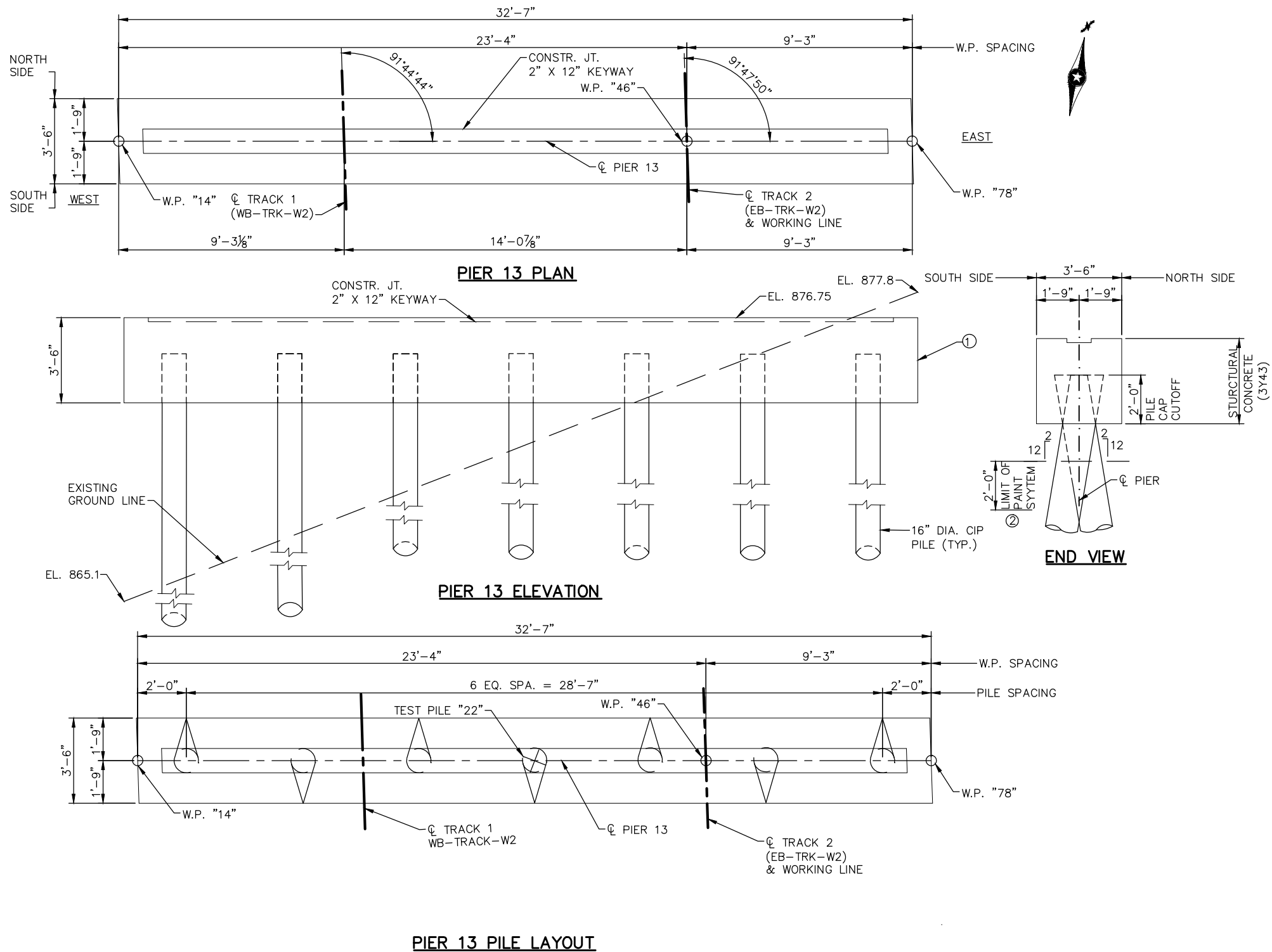
AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 11	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER-11

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PIER 13 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n — TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{10}{P}\right)$	0.50	— —
PDA	0.65	— —

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 13 COMPUTED PILE LOAD — TONS/PILE	
FACTORED DEAD LOAD	— —
FACTORED LIVE LOAD	— —
FACTORED OVERTURNING	— —
* FACTORED DESIGN LOAD	— —

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
- 6 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
- 7 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DRAWN BY: SBM

CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS
BRINCKERHOFF**

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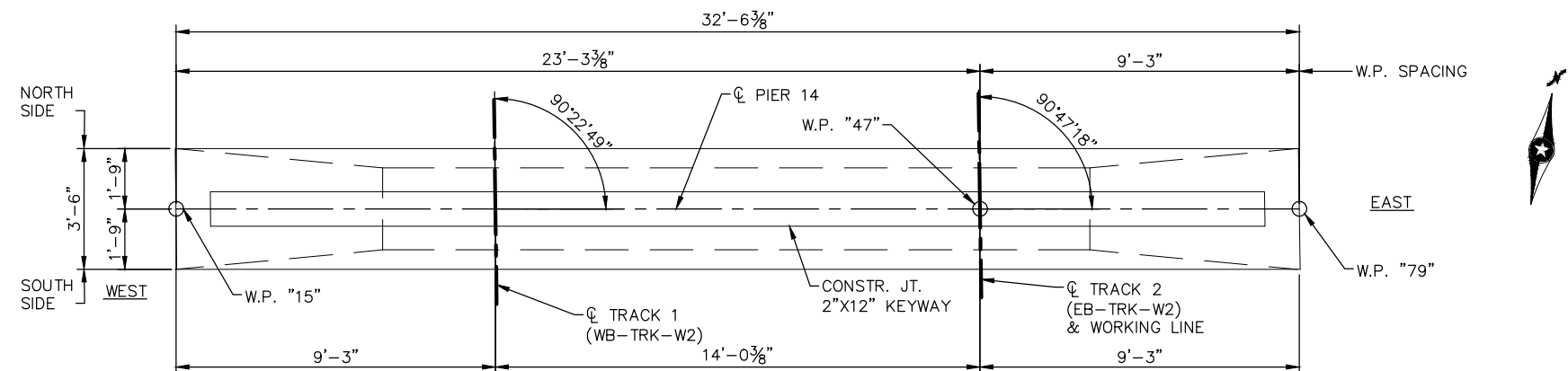


**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 13**

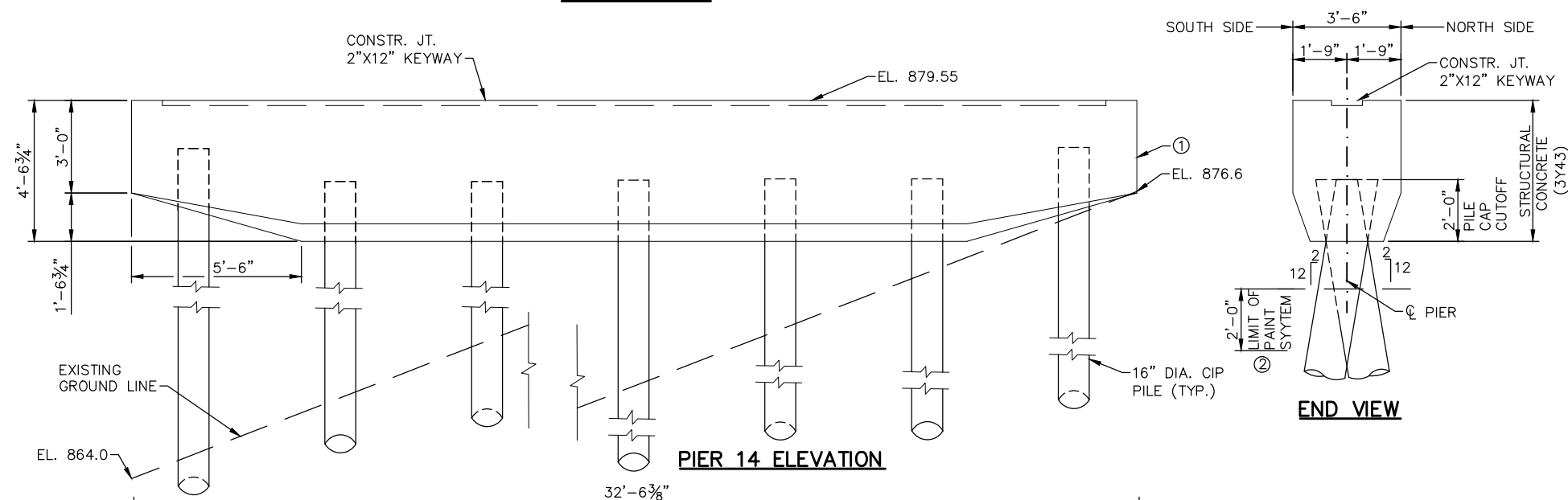
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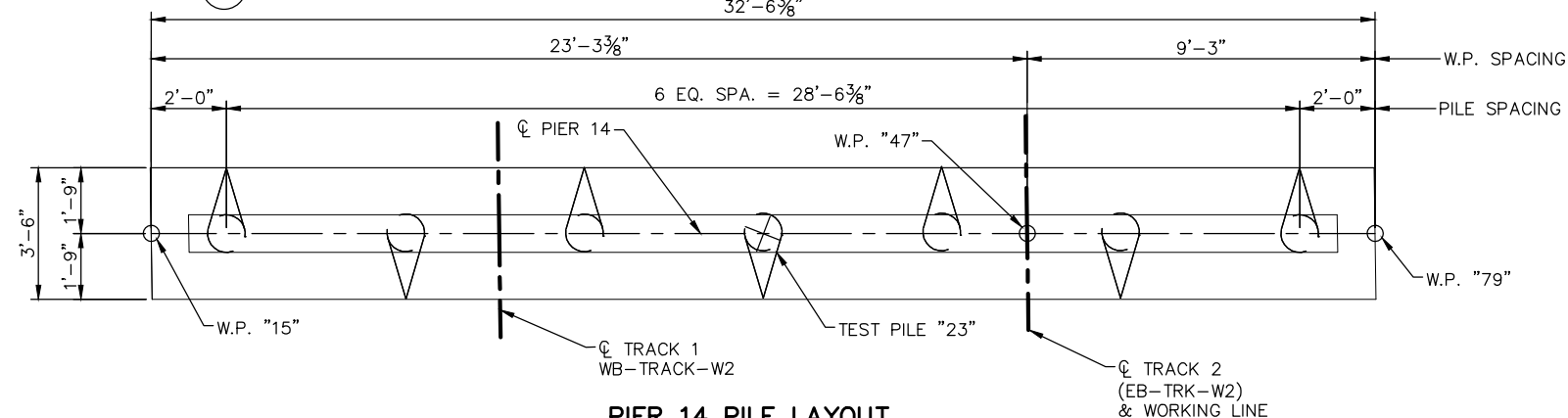
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PIER 14 PLAN



END VIEW



PIER 14 PILE LAYOUT

<div>PIER 14</div> <div>REQUIRED NOMINAL PILE BEARING</div> <div>RESISTANCE FOR CIP PILES R_n— TONS/PILE</div>		
FIELD CONTROL METHOD	ϕ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{P}{S}\right)$	0.50	— —
PDA	0.65	— —

$$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$$

<div style="text-align: center;"> PIER 14 COMPUTED PILE LOAD – TONS/PILE </div>	
FACTORED DEAD LOAD	—'—'
FACTORED LIVE LOAD	—'—'
FACTORED OVERTURNING	—'—'
* FACTORED DESIGN LOAD	—'—'

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- | | | |
|---|---------------------|----------------------------|
| 1 | CAST-IN-PLACE CONC. | TEST PILE 70 FT. LONG |
| 6 | CAST-IN-PLACE CONC. | PILES EST. LENGTH 60 FT. |
| 7 | CAST-IN-PLACE CONC. | PILES REQ'D FOR WEST ABUT. |

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS EO-SYS-CORR-DTL-001 AND 008.

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DRAWN BY: SBM	DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 14**

DISCIPLINE: **STRUCTURES**

SHEET NAME:
W2-STU-BRID-T212-PIER-14

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ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

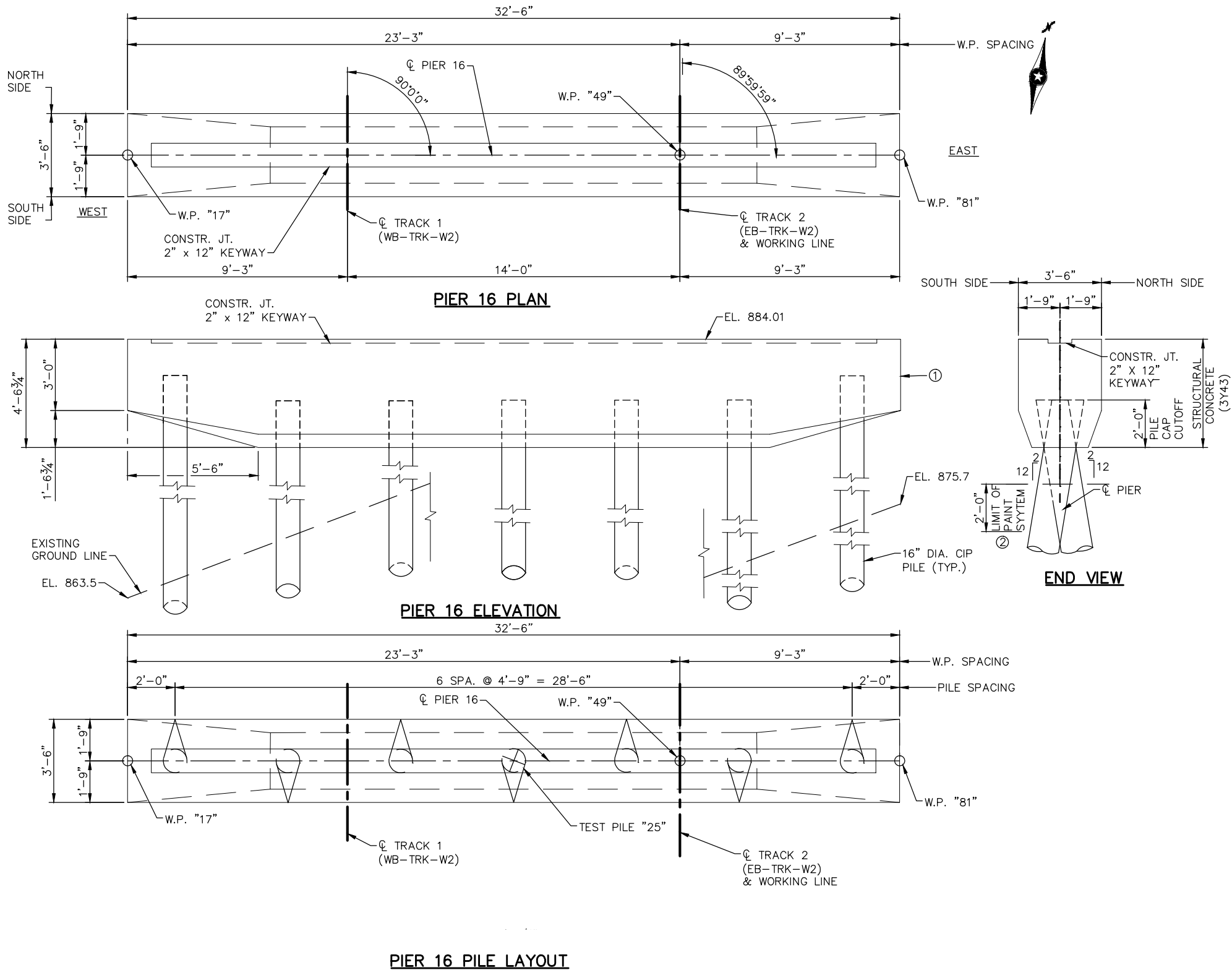
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SOUTHWEST
Green Line LRT Extension

SHEET NAME:	W2-STU-BRID-T212-PIER-15
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PIER 16 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{P}{10}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$


PIER 16 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 6 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 7 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS  SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.

ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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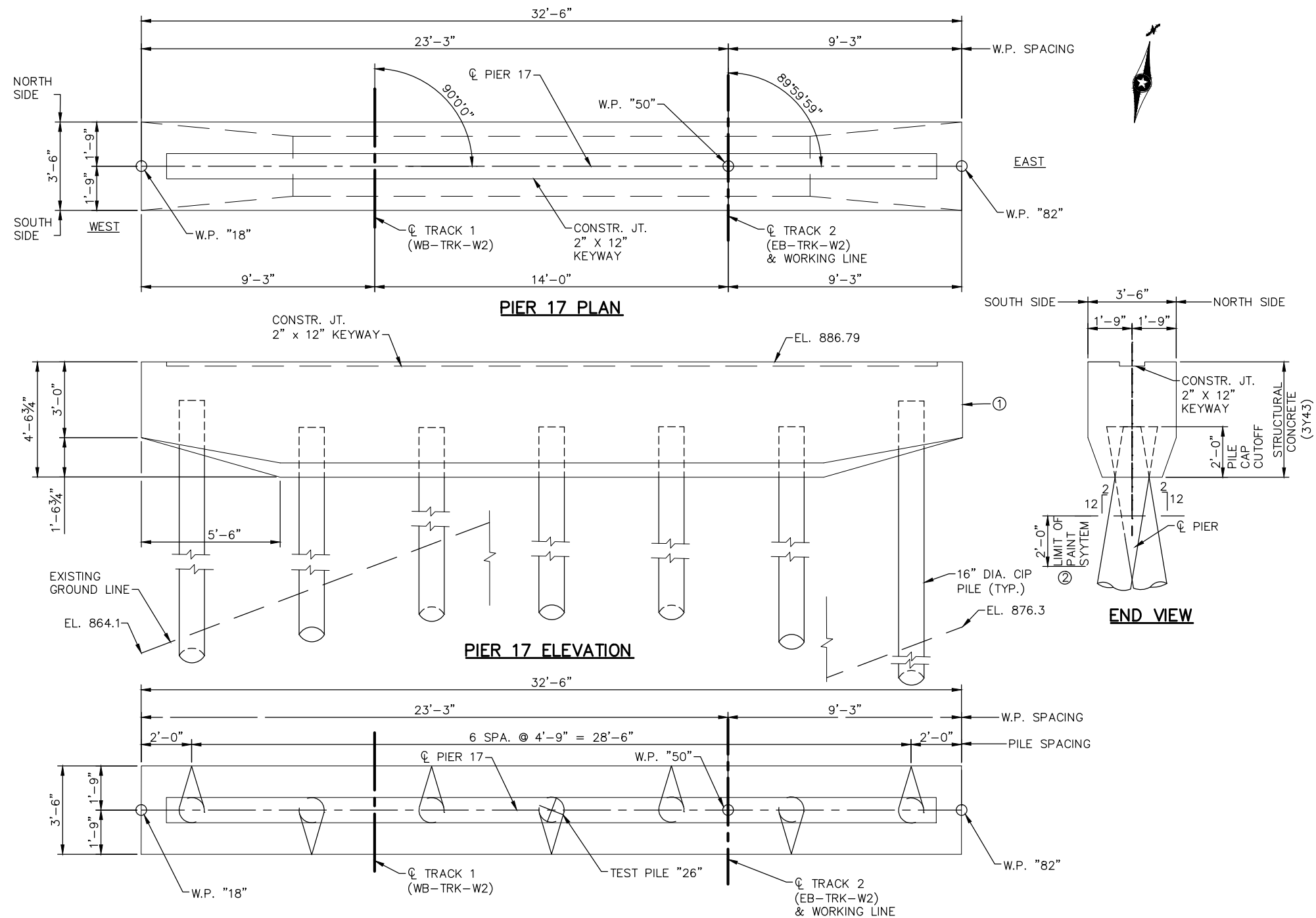
AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 16	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER-16

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PIER 19 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{10}{P}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 19 COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD	---
FACTORED LIVE LOAD	---
FACTORED OVERTURNING	---
* FACTORED DESIGN LOAD	---

* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 90 FT. LONG
- 6 CAST-IN-PLACE CONC. PILES EST. LENGTH 80 FT.
- 7 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF PILE CAP.

PILES MARKED THUS SHALL BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② EXPOSED PILES SHALL BE PAINTED AN "ORGANIC ZINC-RICH PAINT SYSTEM" IN ACCORDANCE WITH MNDOT SPECIFICATION 2452.


ALL DIMENSIONS ALONG CENTERLINE OF CAP.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DRAWN BY: SBM	DATE: 8/24/2015



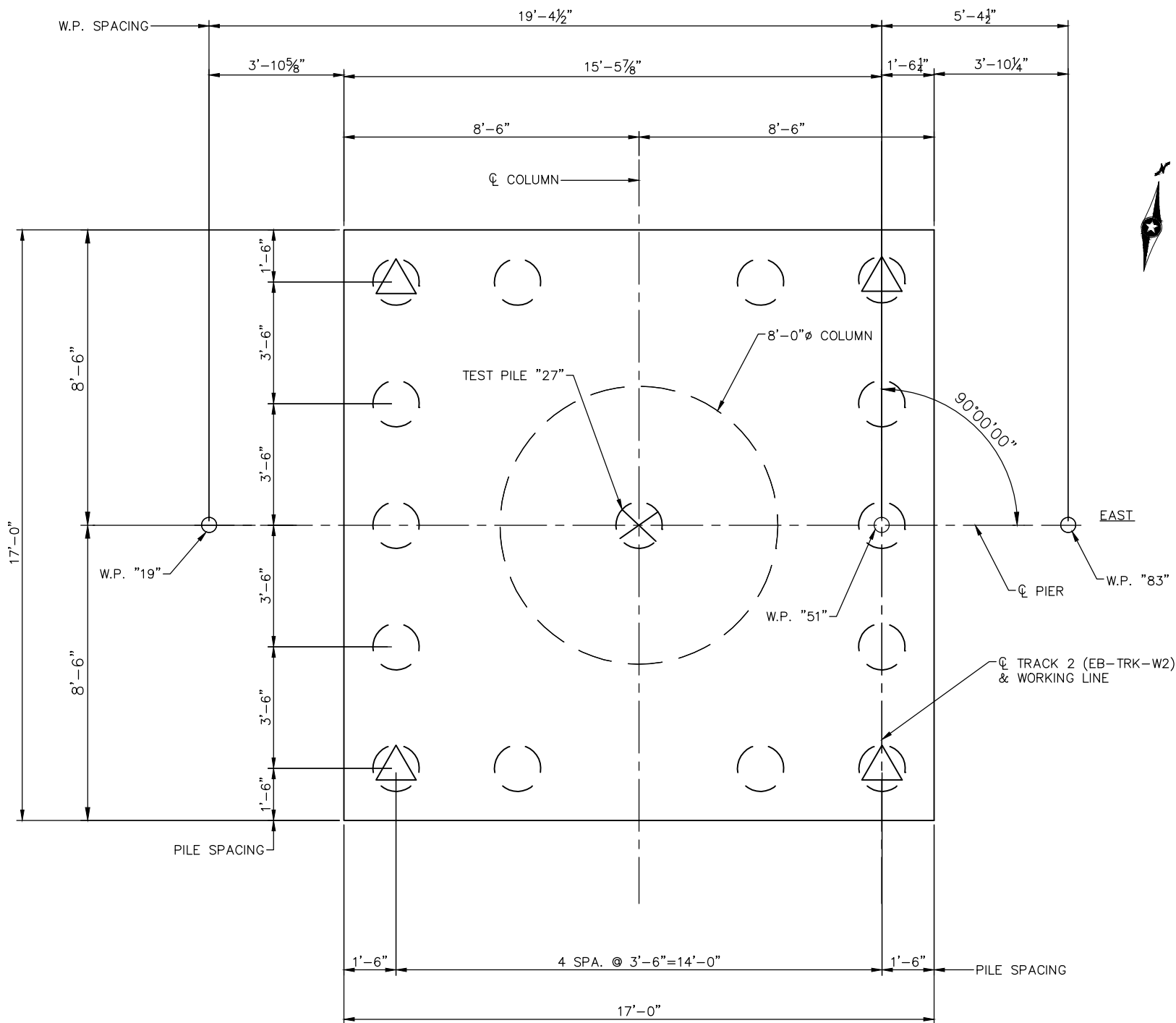
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 17	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER-17

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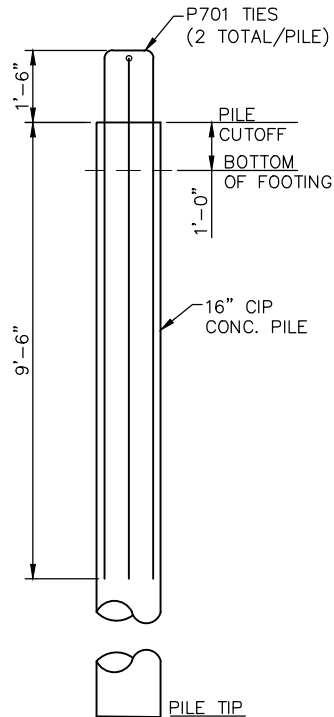


PIER 18 PILE LAYOUT

PIER 18 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	---
PDA	0.65	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 18 COMPUTED PILE LOAD - TONS/PILE		
FACTORED DEAD LOAD	---	---
FACTORED LIVE LOAD	---	---
FACTORED OVERTURNING	---	---
FACTORED DESIGN LOAD	---	N/A. --
FACTORED DESIGN UPLIFT	N/A. --	---
LOAD COMBINATION	---	---



PILE ANCHORAGE DETAIL

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 65 FT. LONG
- 14 CAST-IN-PLACE CONC. PILES EST. LENGTH 55 FT.
- 15 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 18.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊙ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:


SEE GENERAL AND ELEVATION SHEETS FOR ANY REQUIRED TEMPORARY SHORING.

NON-EPOXY COATED REINFORCING SHALL BE USED FOR SOUTH ABUTMENT AND PIERS 1 TO 18.

ALL REBAR AND PILES IN THE SOUTH ABUTMENT AND PIERS 1 TO 18 SHALL BE WELDED PER DETAILS ON SHEETS E0-SYS-CORR-DTL-001 AND 008.

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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

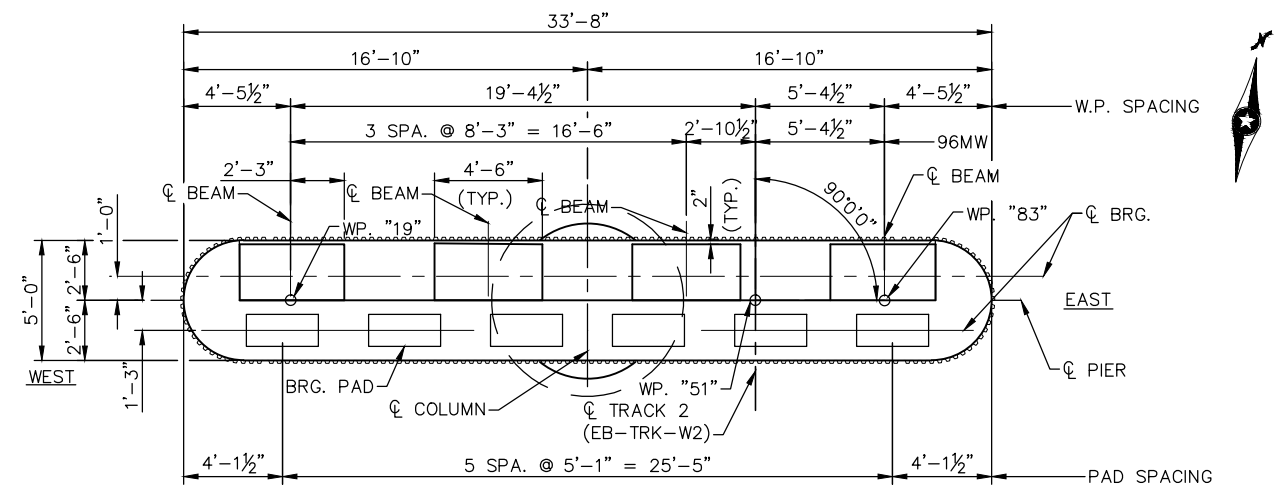


60% SUBMISSION - 9/28/15

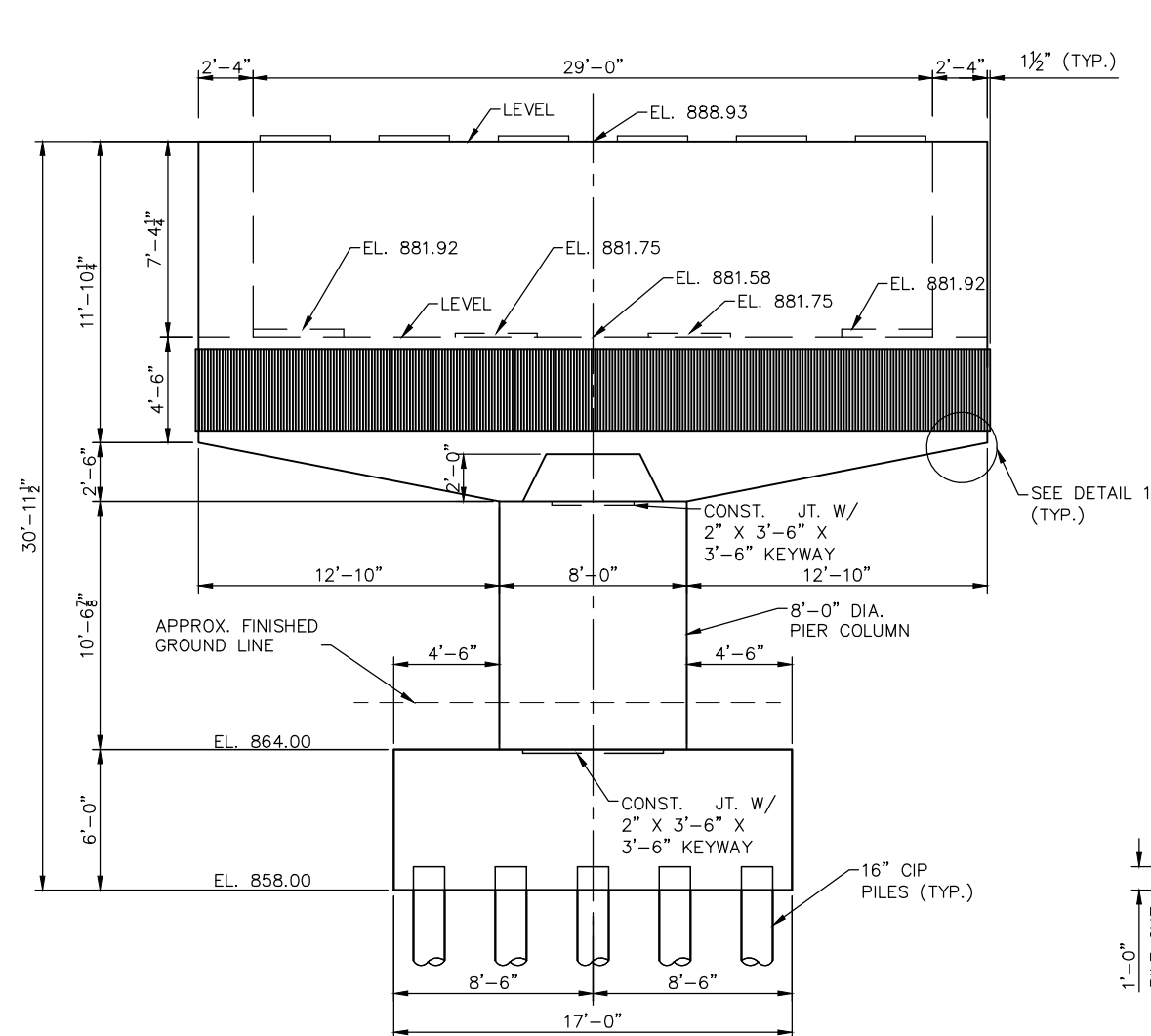


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 18	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_18a

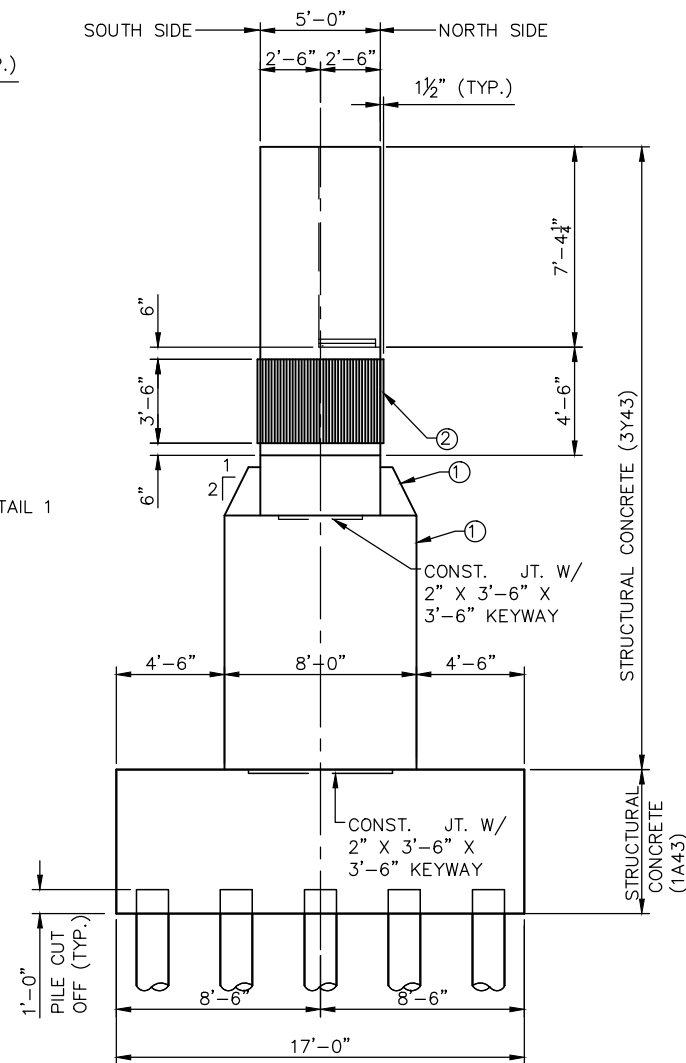
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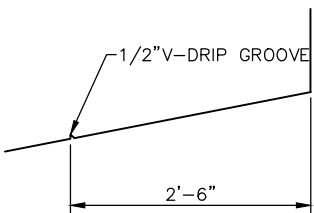
PIER 18 PLAN



PIER 18 ELEVATION



PIER 18 END VIEW



DETAIL 1

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② ARCHITECTURAL CONCRETE TEXTURE, TYPE 1

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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

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**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

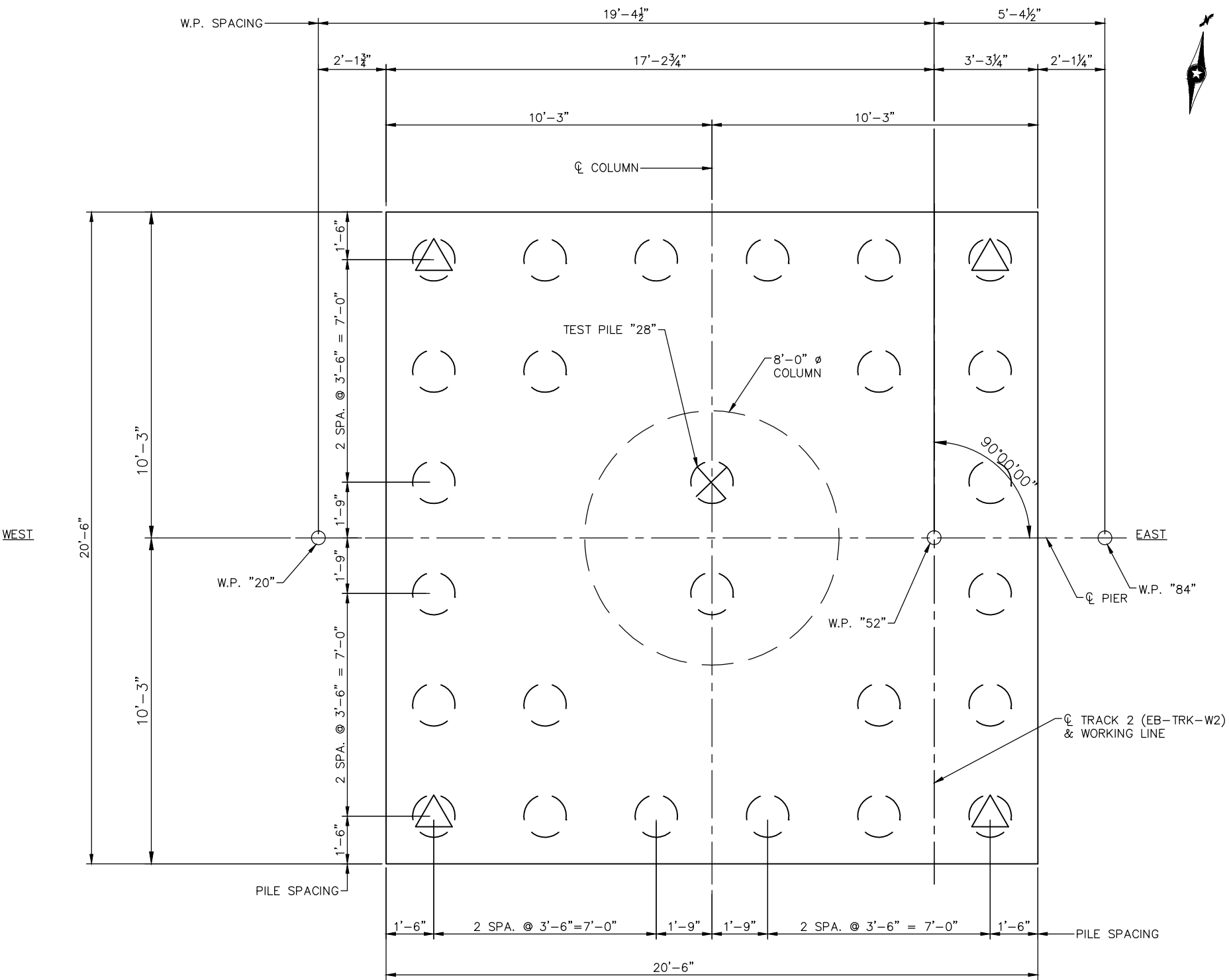
**METROPOLITAN
COUNCIL**

**SOUTHWEST
Green Line LRT Extension**

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 18	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER_18

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PIER 19 PILE LAYOUT

PIER 19
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n — TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{E_p}{1000}} \times \log\left(\frac{L}{S}\right)$	0.50	— — —
PDA	0.65	— — —

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 19
COMPUTED PILE LOAD — TONS/PILE

FACTORED DEAD LOAD	— — —	— — —
FACTORED LIVE LOAD	— — —	— — —
FACTORED OVERTURNING	— — —	— — —
FACTORED DESIGN LOAD	— — —	N/A —
FACTORED DESIGN UPLIFT	N/A —	— — —
LOAD COMBINATION	— — —	— — —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
- 25 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
- 26 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 19.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.



⊙ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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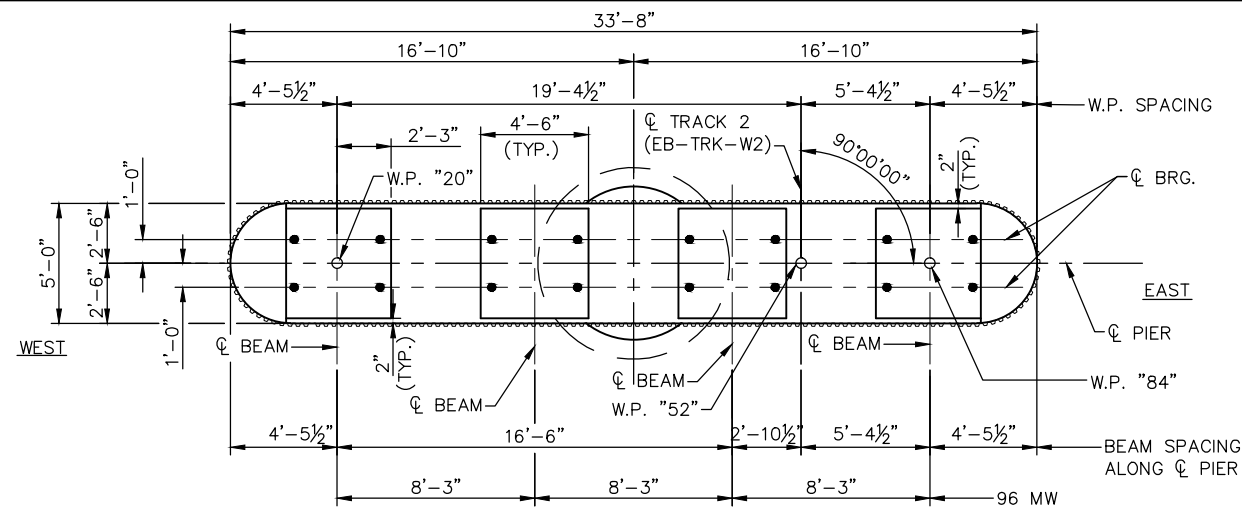


60% SUBMISSION - 9/28/15

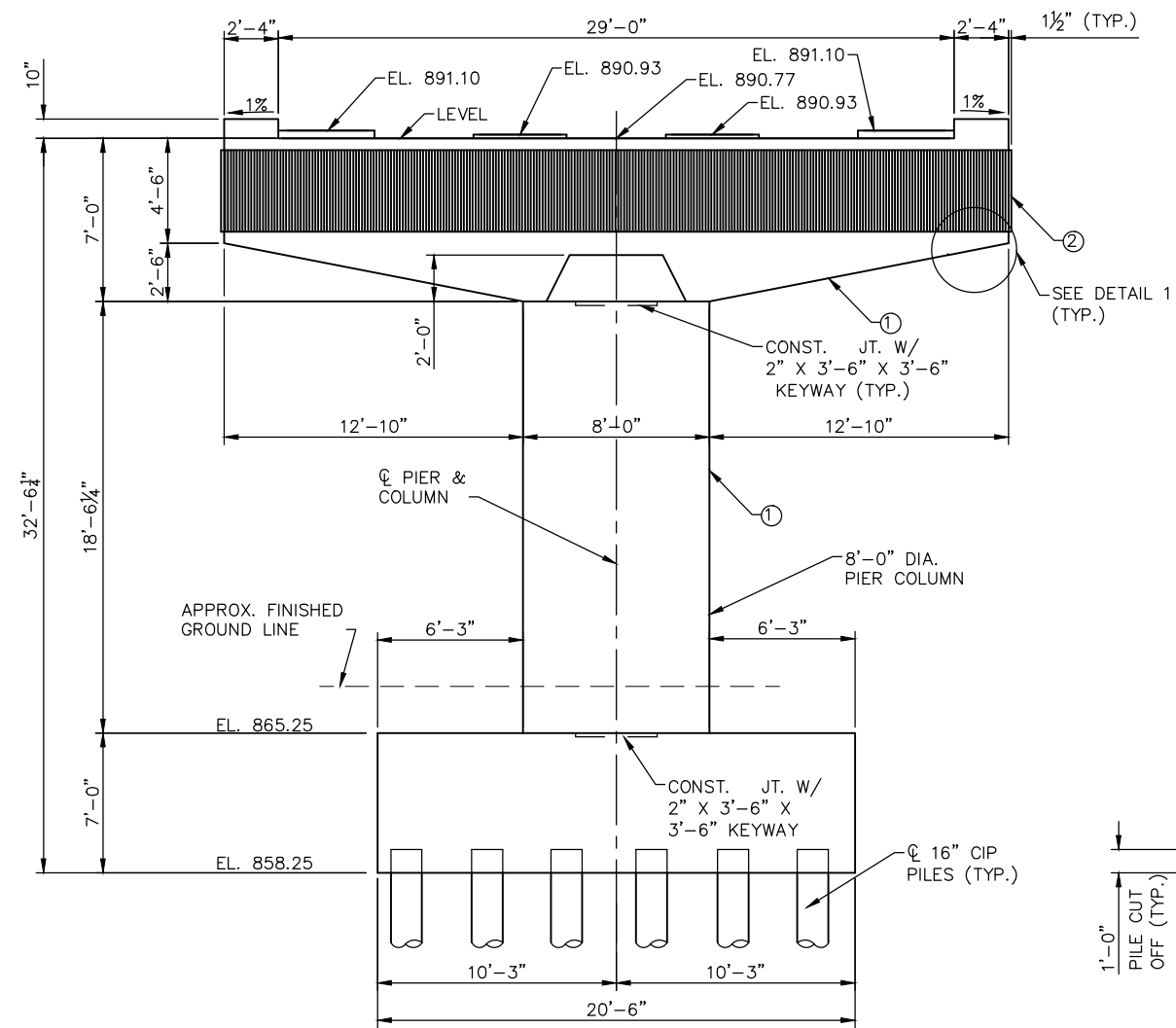


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 19	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_19a

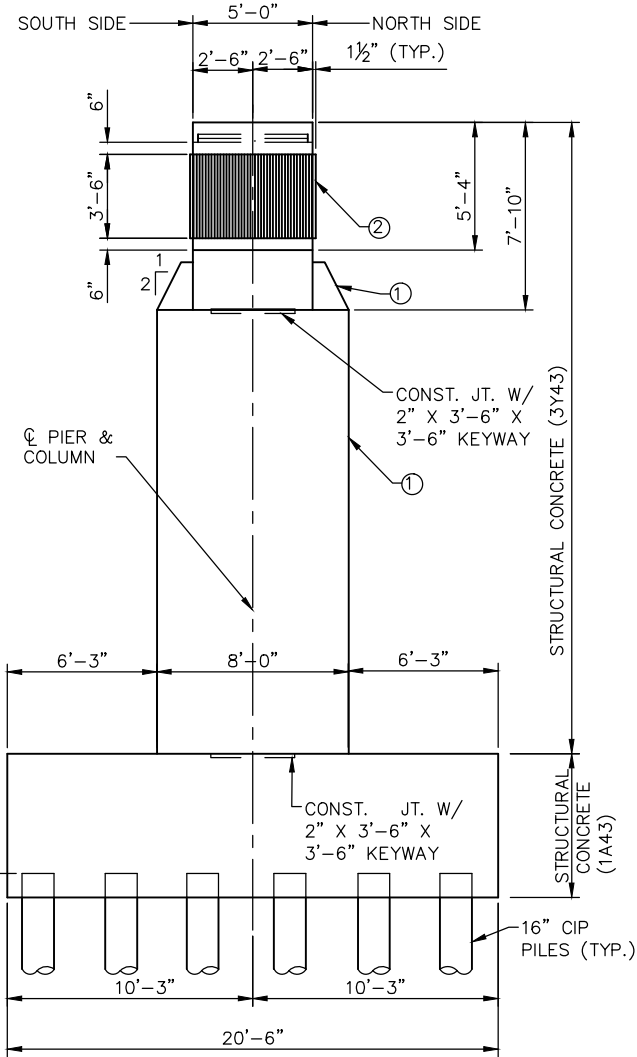
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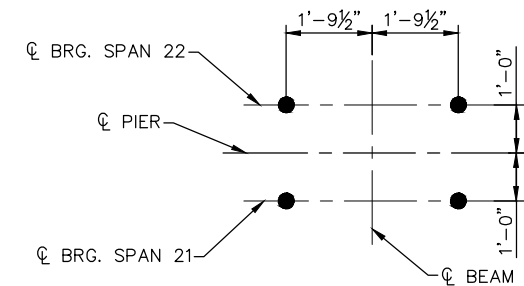
PIER 19 PLAN



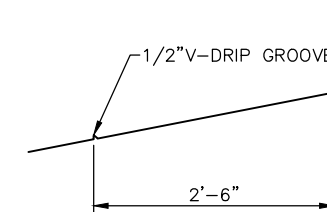
PIER 19 ELEVATION



PIER 19 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② ARCHITECTURAL CONCRETE TEXTURE, TYPE 1.

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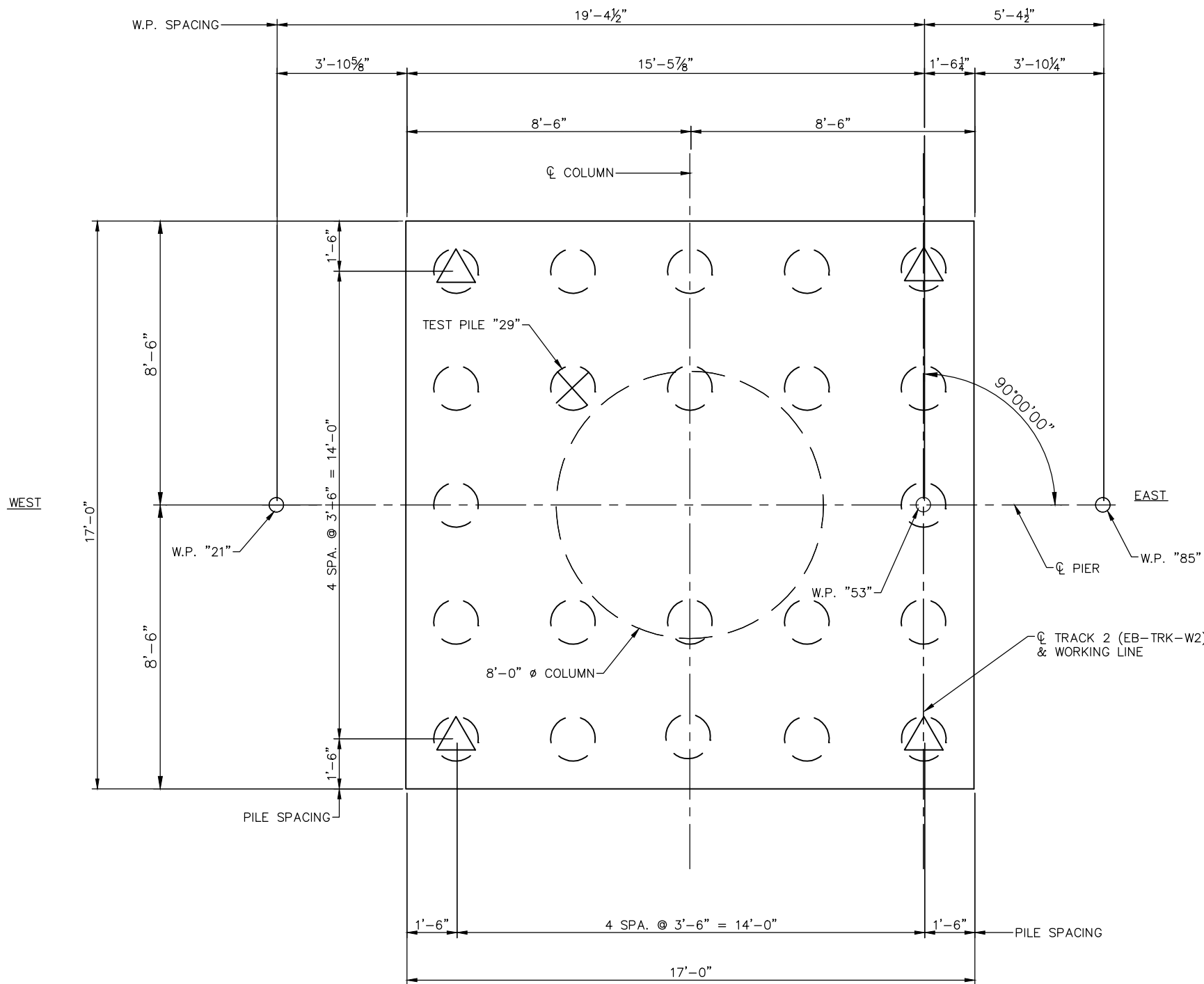
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DRAWN BY: SBM	DATE: 8/24/2015

60% SUBMISSION - 9/28/15

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 19	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER_19

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PIER 20
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P}{1000}} \times \log\left(\frac{L}{10}\right)$	0.50	---
PDA	0.65	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 20
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD	---	---
FACTORED LIVE LOAD	---	---
FACTORED OVERTURNING	---	---
FACTORED DESIGN LOAD	---	N/A
FACTORED DESIGN UPLIFT	N/A	---
LOAD COMBINATION	---	---

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 21 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 22 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 20.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

PIER 20 PILE LAYOUT

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DATE: 8/24/2015



60% SUBMISSION - 9/28/15

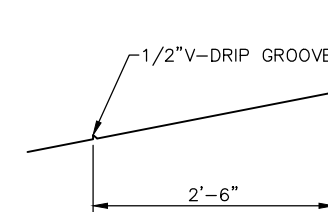
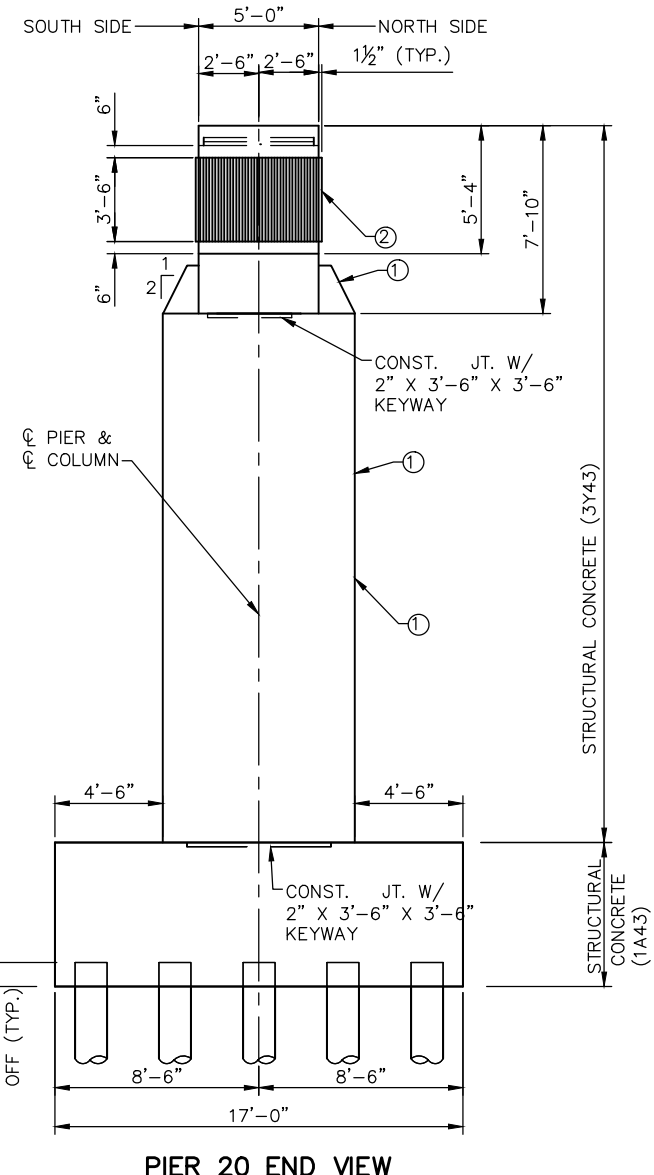
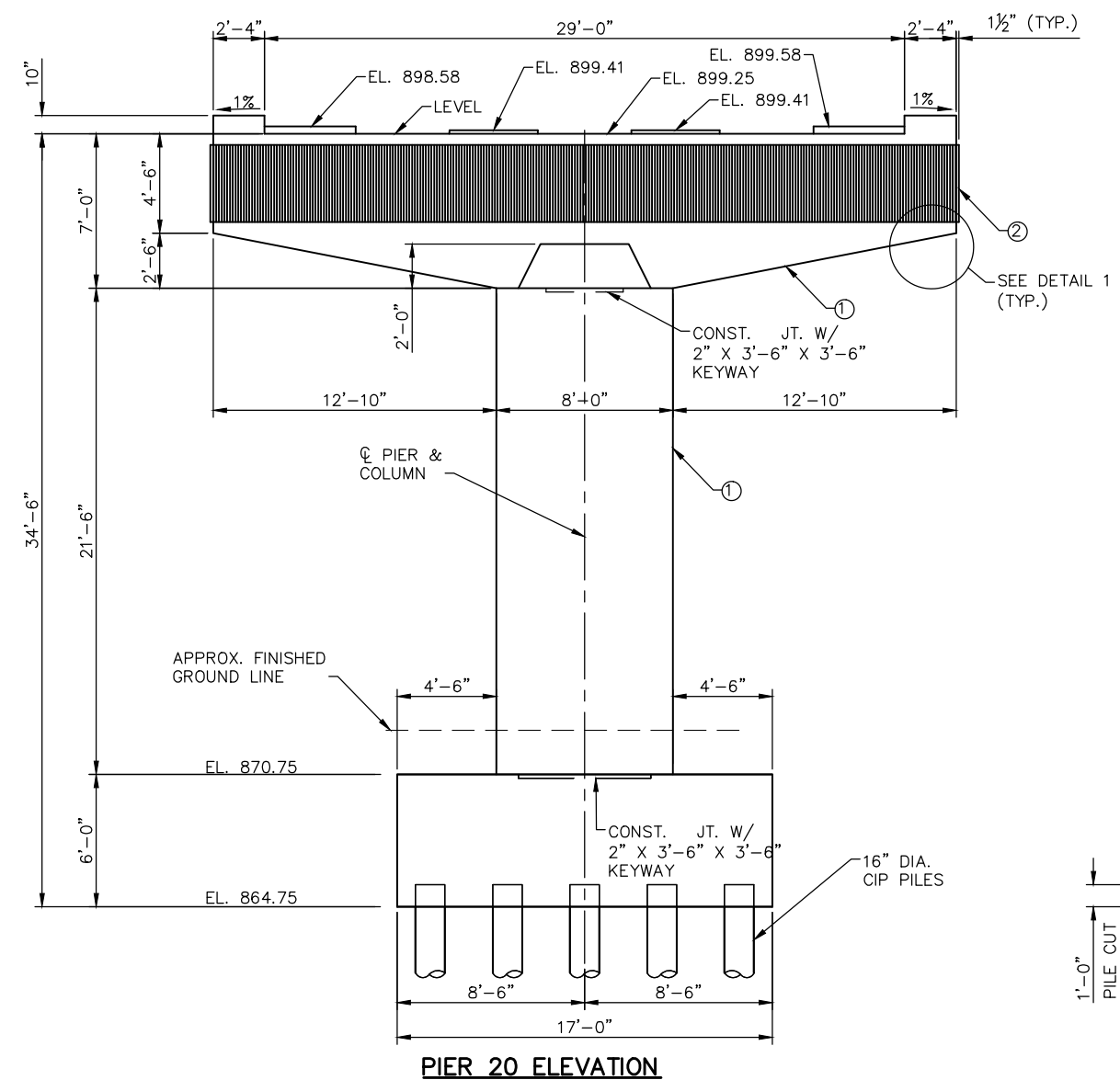
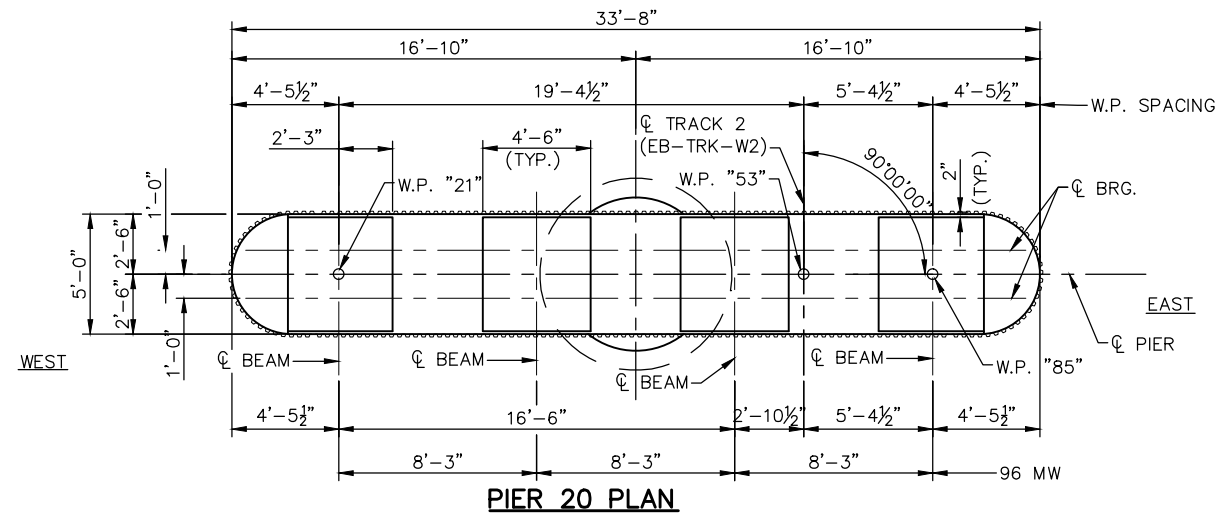


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 20

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_20a

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DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURE, TYPE 1.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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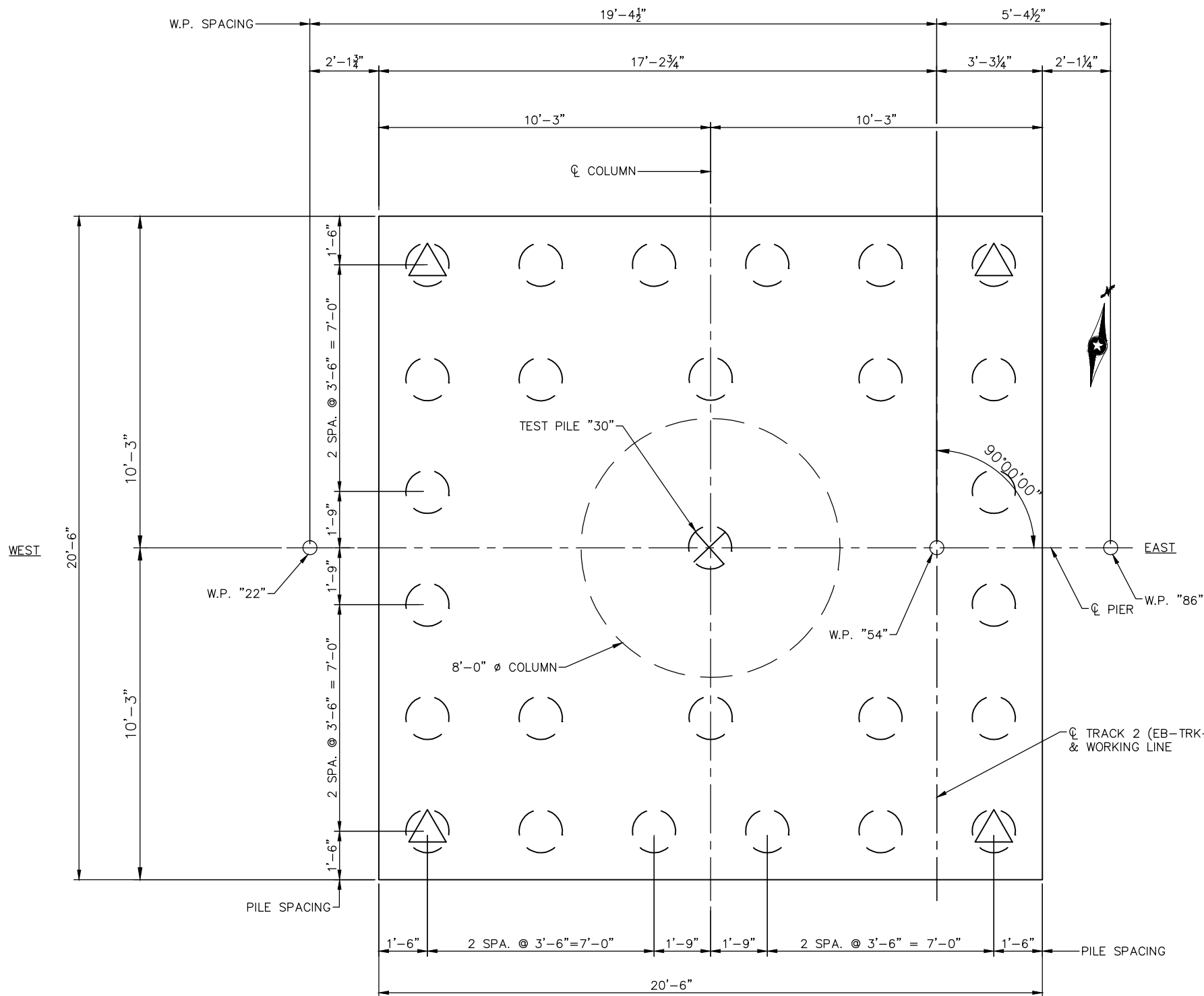


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 20	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER_20

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PIER 21 PILE LAYOUT

PIER 21
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n — TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{F_{tip}}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	— —
PDA	0.65	— —

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 21
COMPUTED PILE LOAD — TONS/PILE

FACTORED LIVE LOAD	— —	— —
FACTORED LIVE LOAD	— —	— —
FACTORED OVERTURNING	— —	— —
FACTORED DESIGN LOAD	— —	N/A. —
FACTORED DESIGN UPLIFT	N/A. —	— —
LOAD COMBINATION	— —	— —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 60 FT. LONG
26 CAST-IN-PLACE CONC. PILES EST. LENGTH 50 FT.
27 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 21.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.



⊠ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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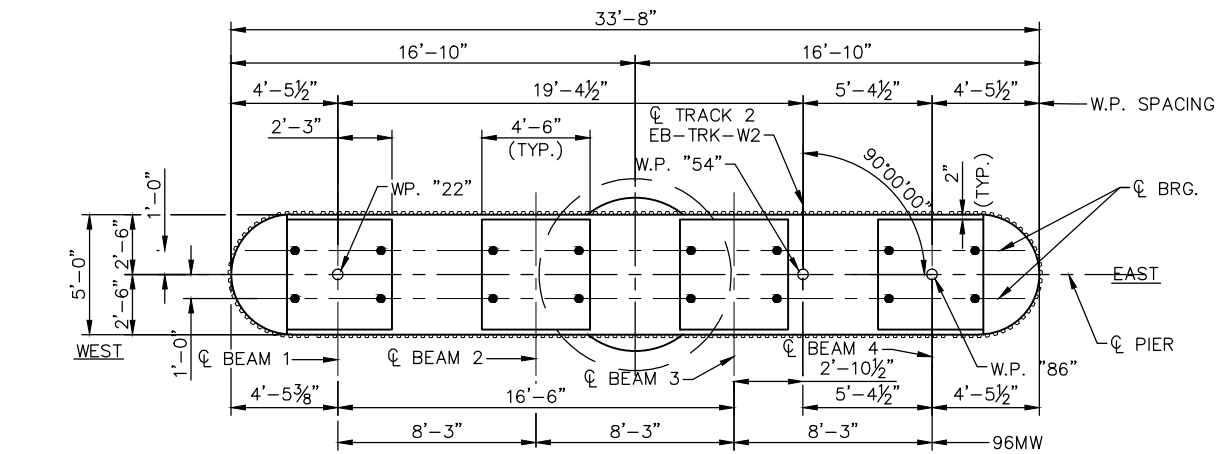
60% SUBMISSION - 9/28/15



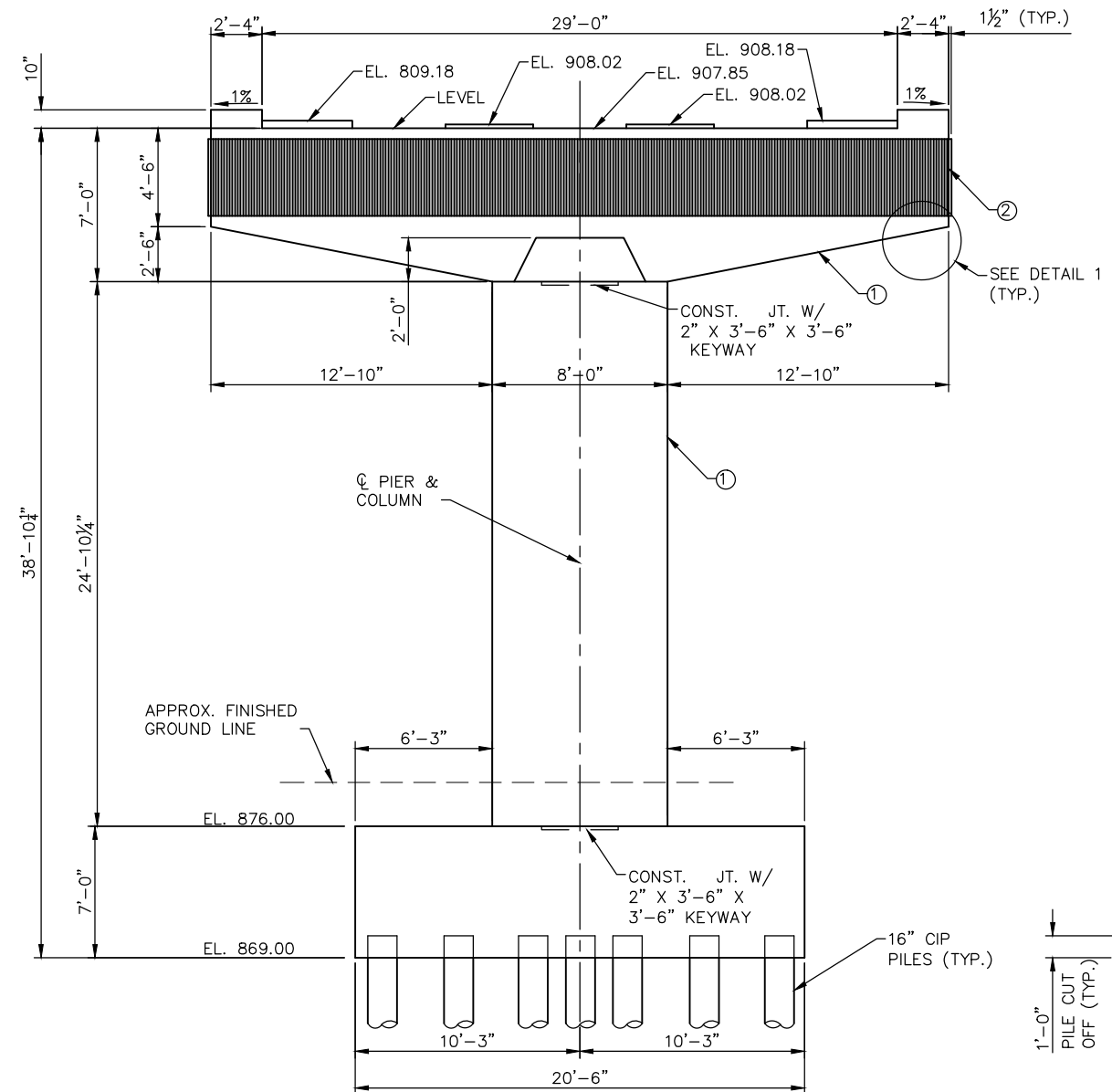
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DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_21a

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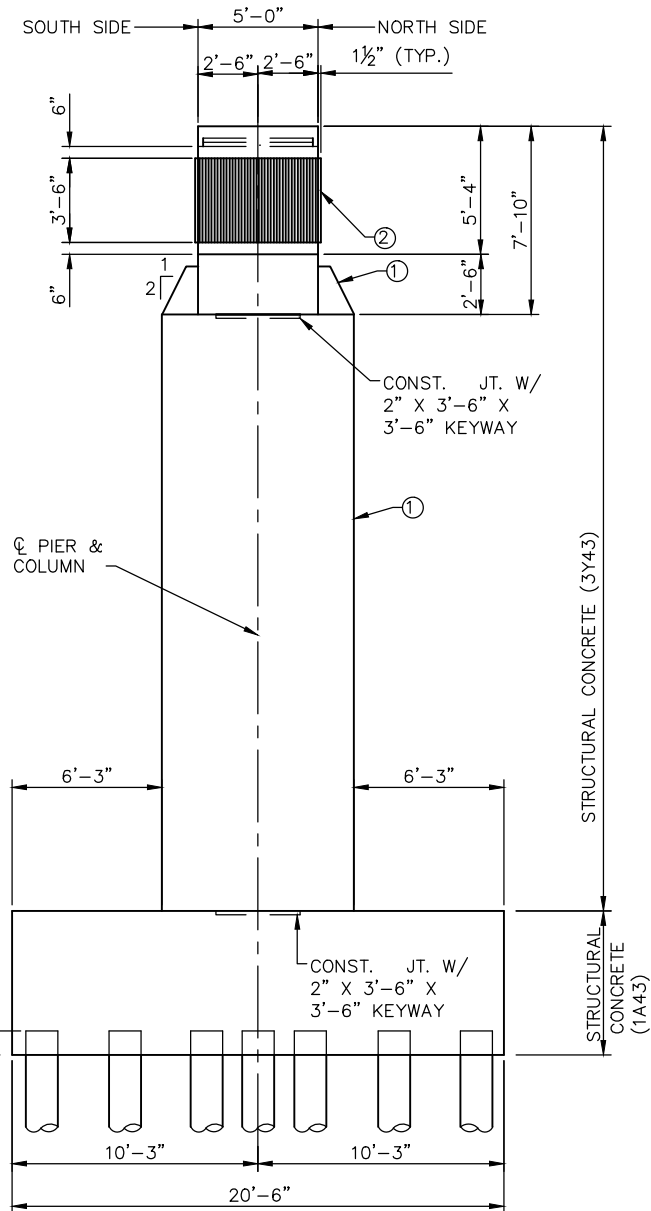
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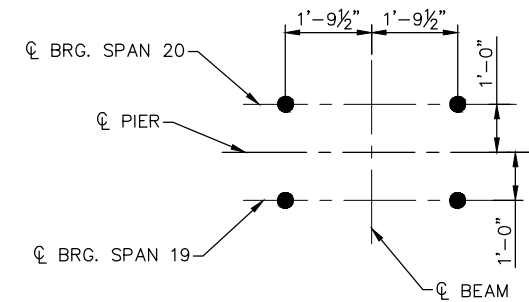
PIER 21 PLAN



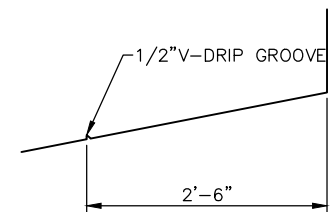
PIER 21 ELEVATION



PIER 21 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURE, TYPE 1.

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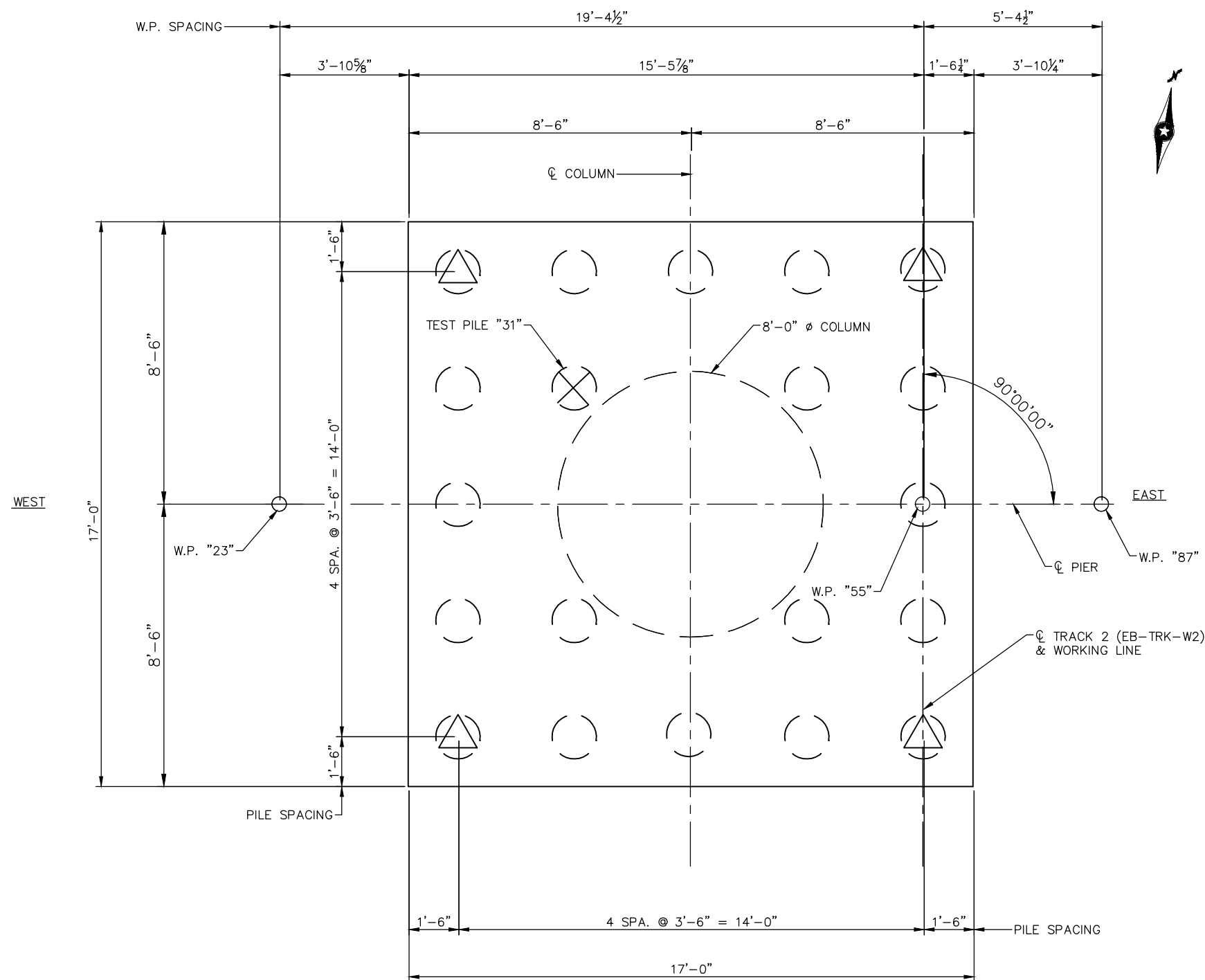
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AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 21		SHEET 53 OF 148
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER_21	

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PIER 22 PILE LAYOUT

PIER 22 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n — TONS/PILE		
FIELD CONTROL METHOD	Φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{L}{1000}} \times \log\left(\frac{L}{10}\right)$	0.50	— — —
PDA	0.65	— — —

* R_n = (FACTORED DESIGN LOAD) / Φ_{dyn}

PIER 22 COMPUTED PILE LOAD — TONS/PILE		
FACTORED DEAD LOAD	— — —	— — —
FACTORED LIVE LOAD	— — —	— — —
FACTORED OVERTURNING	— — —	— — —
FACTORED DESIGN LOAD	— — —	N/A. —
FACTORED DESIGN UPLIFT	N/A. —	— — —
LOAD COMBINATION	— — —	— — —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 80 FT. LONG
- 19 CAST-IN-PLACE CONC. PILES EST. LENGTH 70 FT.
- 20 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 22

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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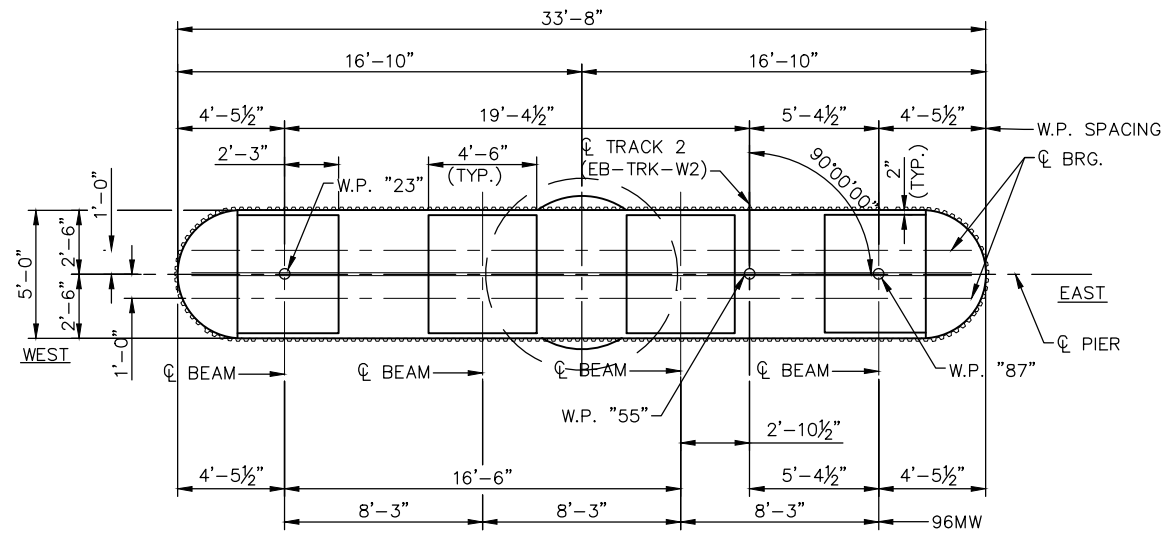


60% SUBMISSION - 9/28/15

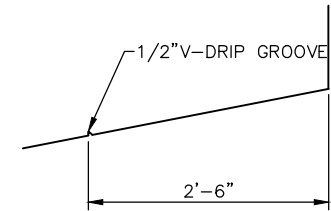


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 22	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_22a

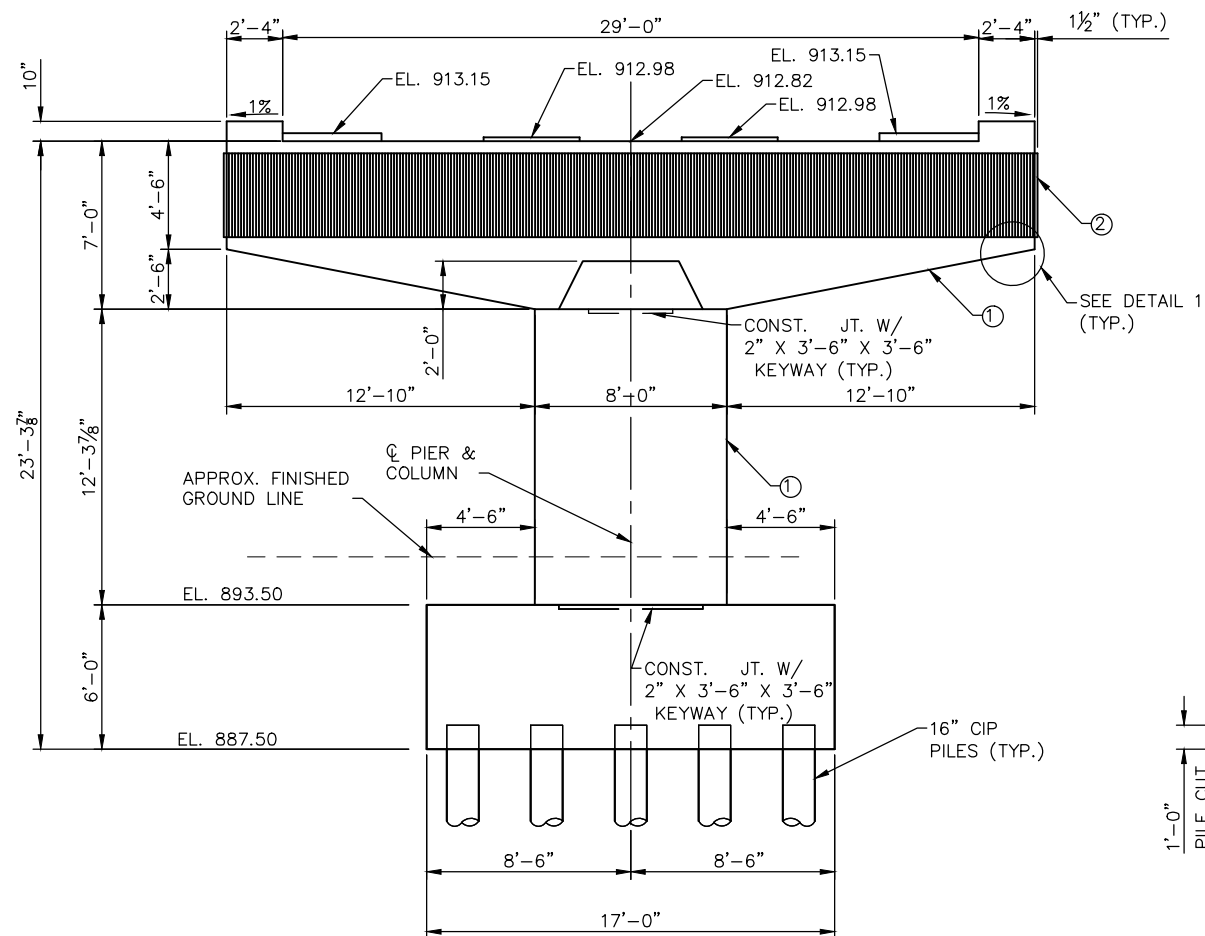
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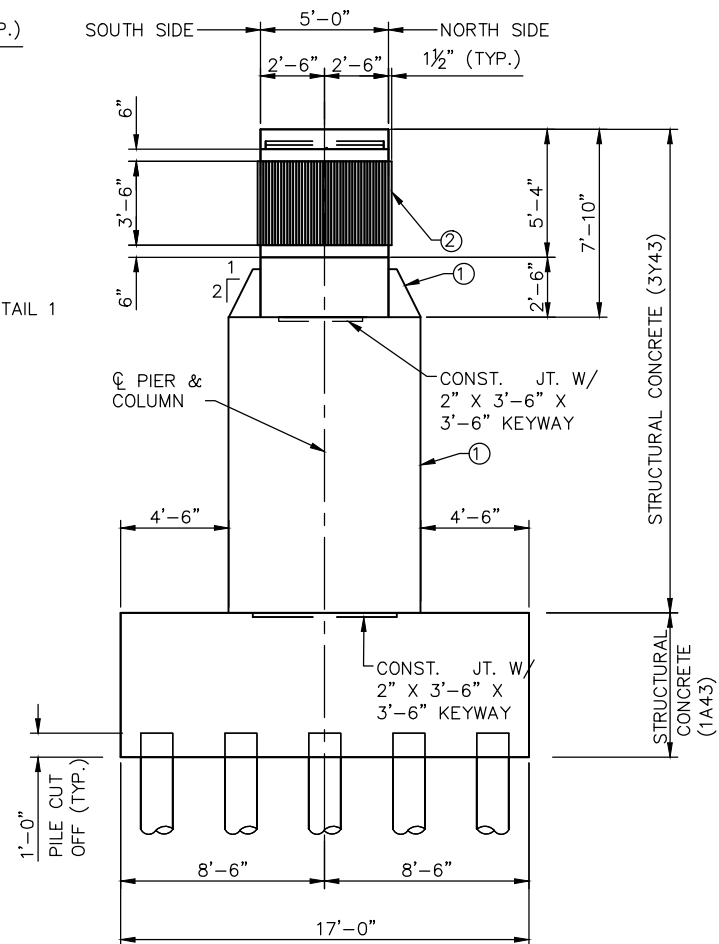
PIER 22 PLAN



DETAIL 1



PIER 22 ELEVATION



PIER 22 END VIEW

NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXX. SEE SPEC. SB 2401.
- ② ARCHITECTURAL CONCRETE TEXTURE, TYPE 1.

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AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



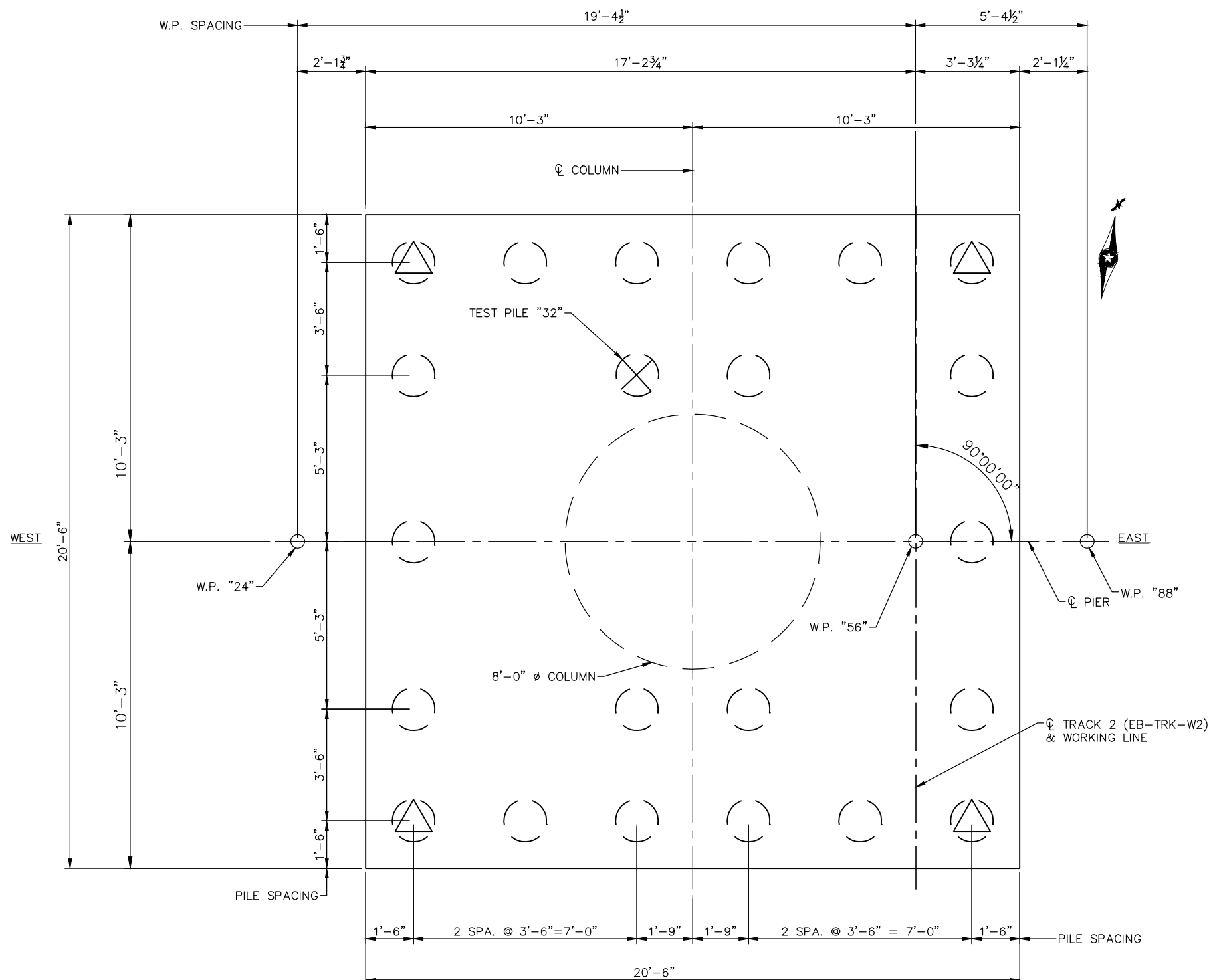
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 22

DISCIPLINE:
STRUCTURES

SHEET NAME:
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PIER 23 PILE LAYOUT

PIER 23 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n - TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{L}{1000}} \times \log\left(\frac{10}{\phi}\right)$	0.50	---
PDA	0.65	---

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 23 COMPUTED PILE LOAD - TONS/PILE		
FACTORED DEAD LOAD	---	---
FACTORED LIVE LOAD	---	---
FACTORED OVERTURNING	---	---
FACTORED DESIGN LOAD	---	N/A
FACTORED DESIGN UPLIFT	N/A	---
LOAD COMBINATION	---	---

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 21 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 22 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 23.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.


⊙ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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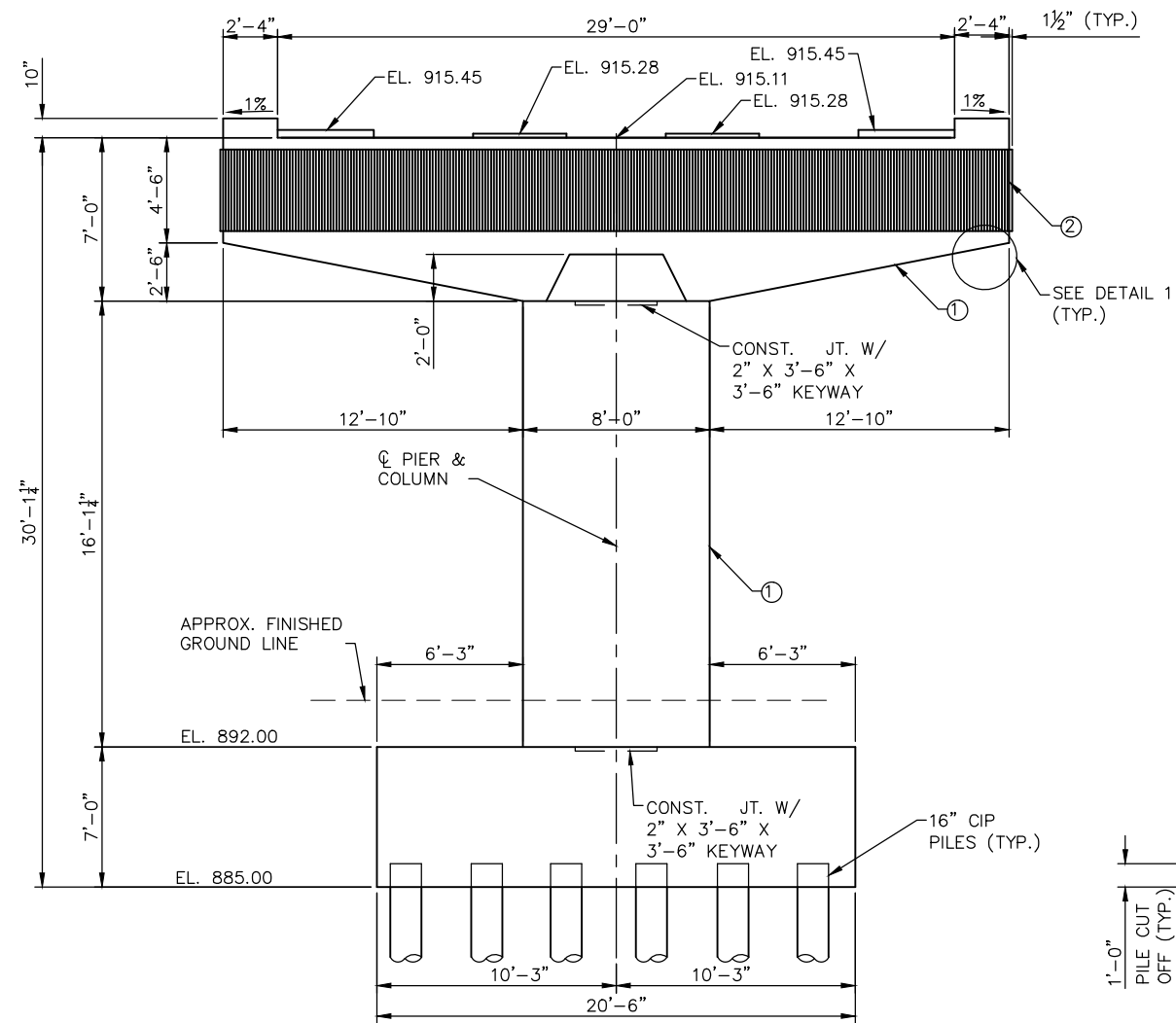
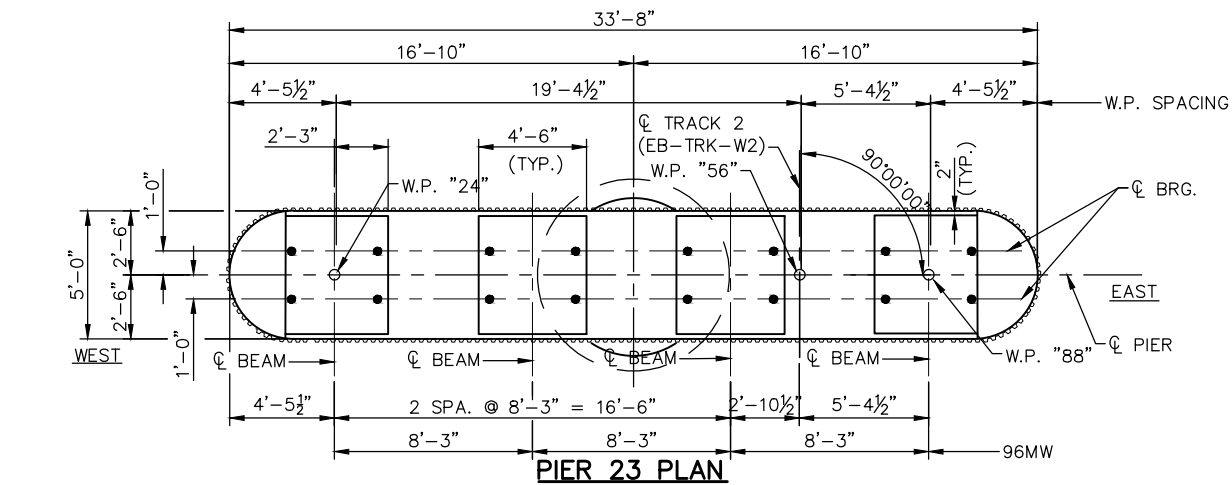


60% SUBMISSION - 9/28/15

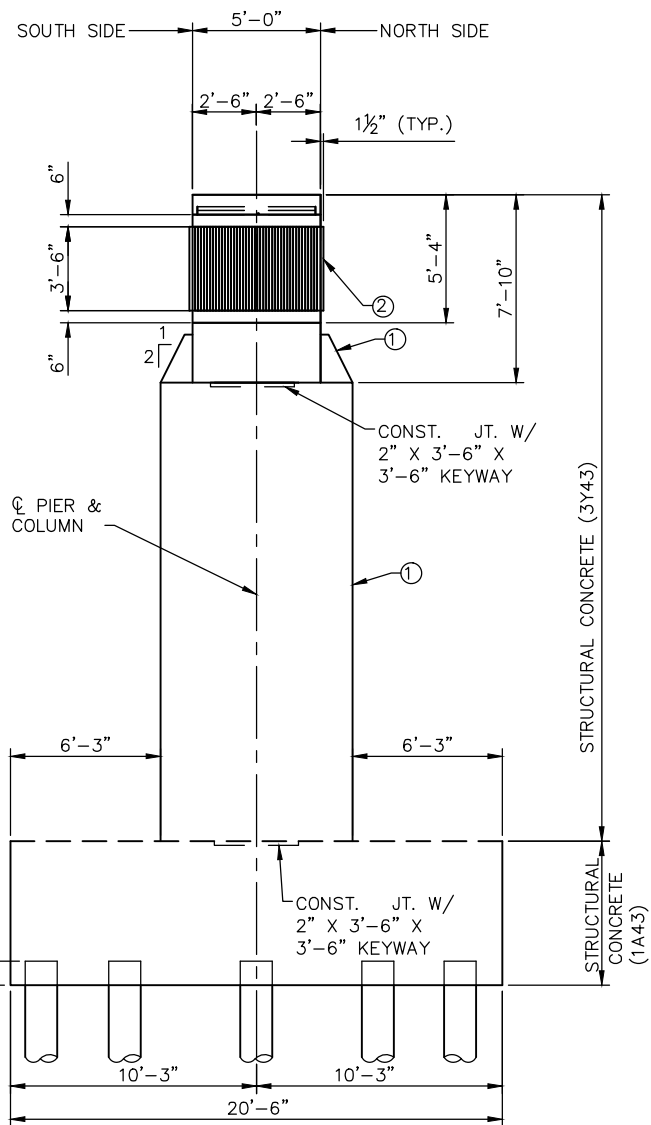


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 23	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_23a

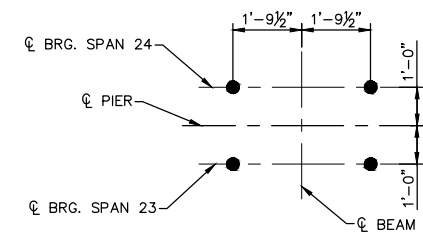
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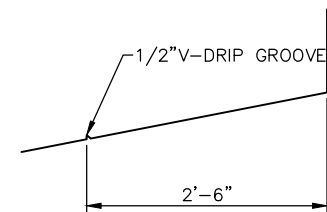
PIER 23 ELEVATION



PIER 23 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.

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DRAWN BY: SBM
CHECKED BY: DDL
DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 23

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-PIER_23**

SHEET
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OF
148

PIER 24 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n – TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	$* R_n$
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{q_{tip}}{1000}} \times \log\left(\frac{10}{s}\right)$	0.50	— — —
PDA	0.65	— — —

$$* R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$$

<div style="text-align: center;"> PIER 24 COMPUTED PILE LOAD – TONS/PILE </div>		
FACTORED DEAD LOAD	___ _	___ _
FACTORED LIVE LOAD	___ _	___ _
FACTORED OVERTURNING	___ _	___ _
FACTORED DESIGN LOAD	___ _	N/A. _
FACTORED DESIGN UPLIFT	N/A. _	___ _
LOAD COMBINATION	___ _	___ _

PILE NOTES

- | | |
|-----------|--|
| 1 | CAST-IN-PLACE CONC. TEST PILE 65 FT. LONG |
| <u>24</u> | CAST-IN-PLACE CONC. PILES EST. LENGTH 55 FT. |
| 25 | CAST-IN-PLACE CONC. PILES REQ'D FOR PILE 24. |

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊙ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

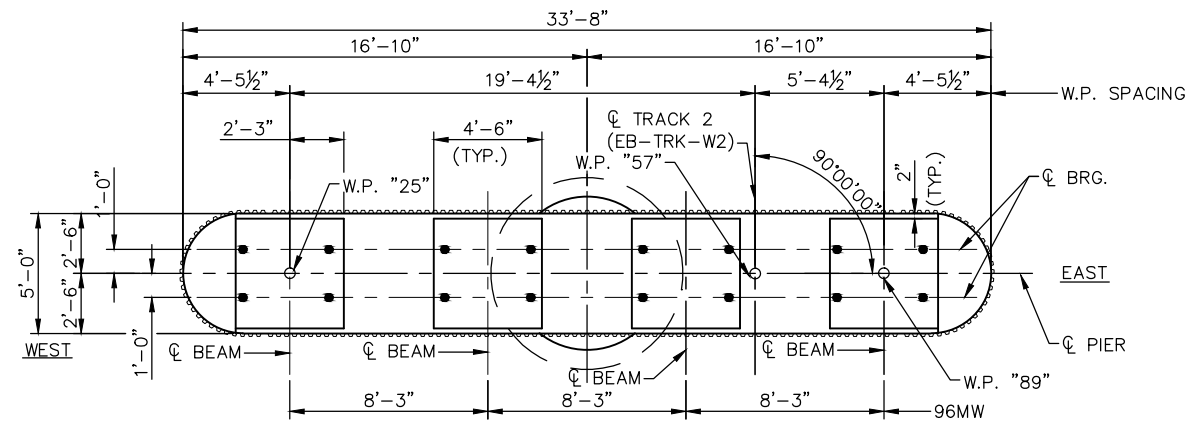
NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

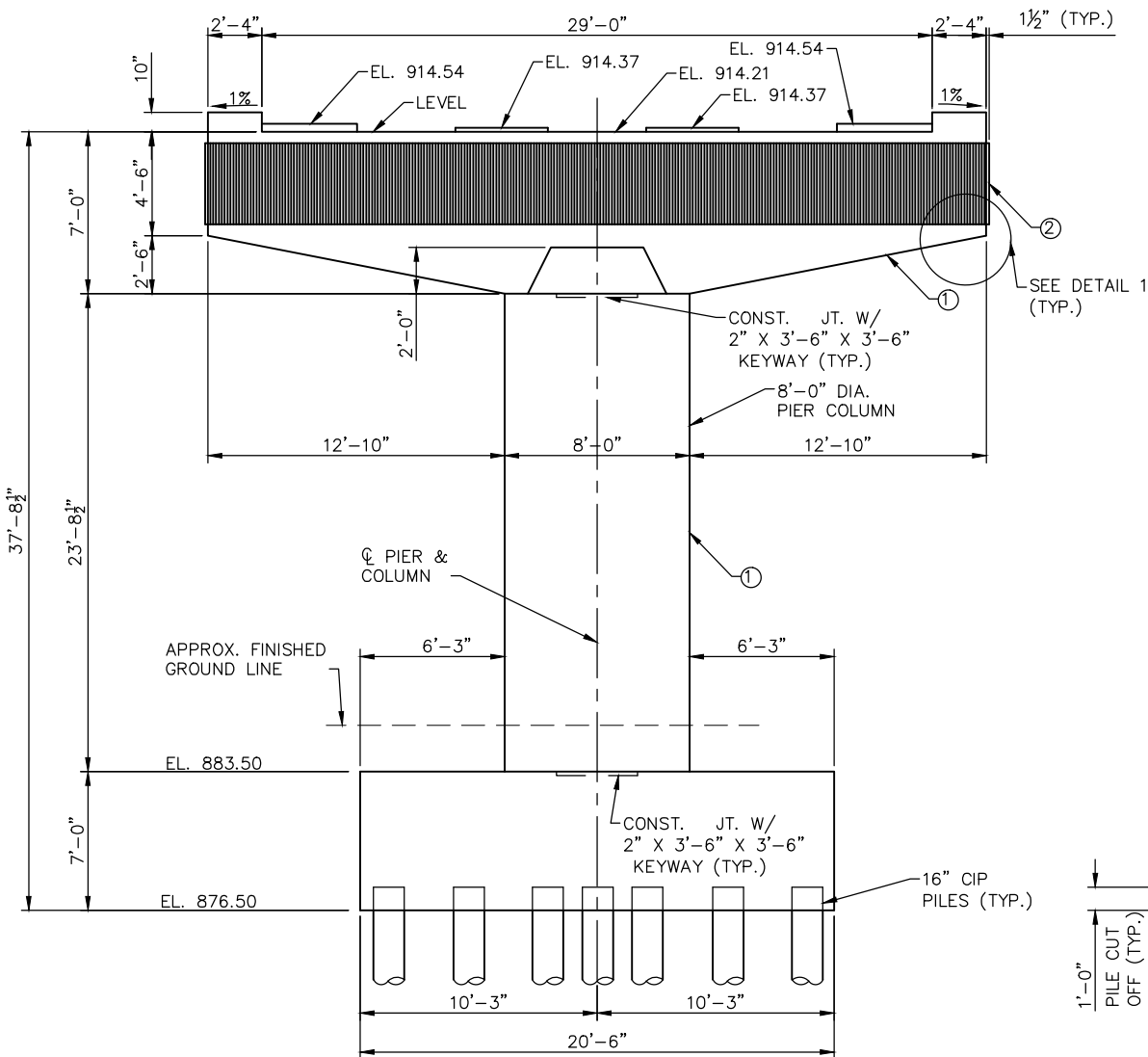
PIER 24 PILE LAYOUT

NO.	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SUBMITTAL	<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div></div></div></div> 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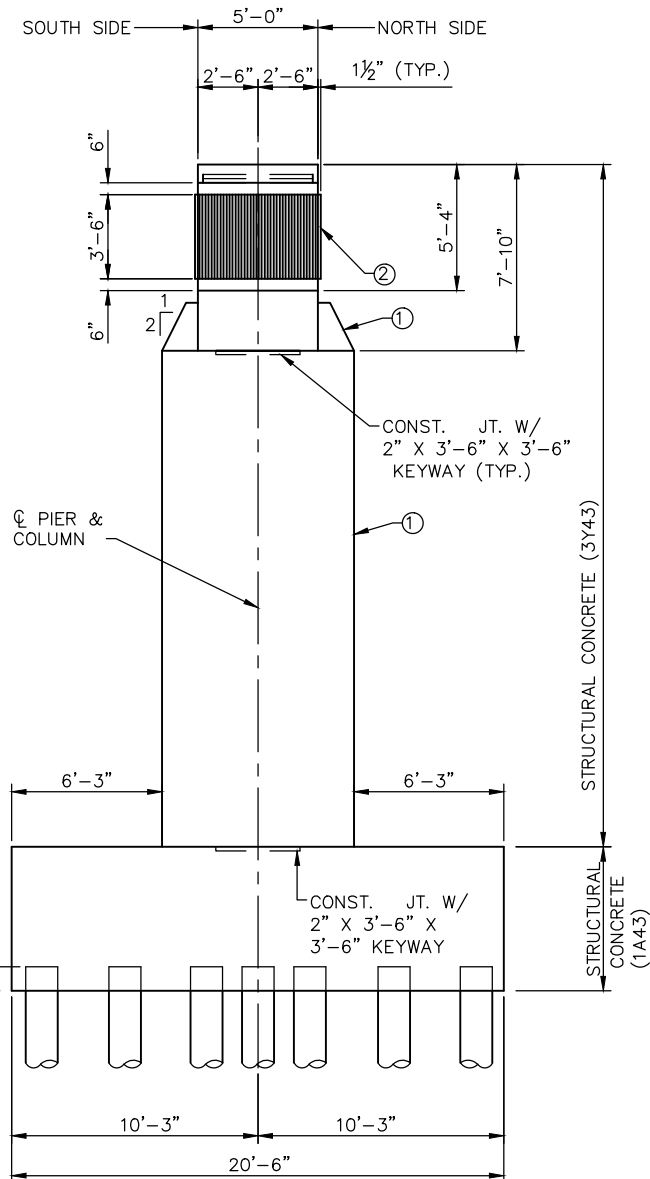
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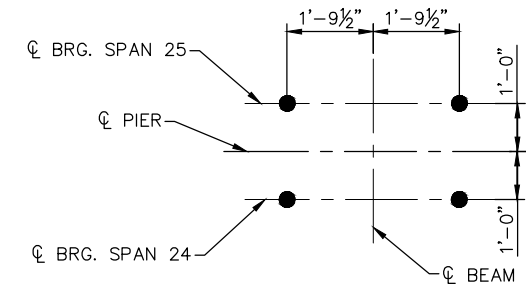
PIER 24 PLAN



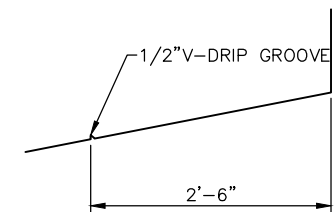
PIER 24 ELEVATION



PIER 24 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- ④ SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ⑥ ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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8					
9					
10					

DESIGNED BY: MJC
DRAWN BY: SBM
CHECKED BY: DDL
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15



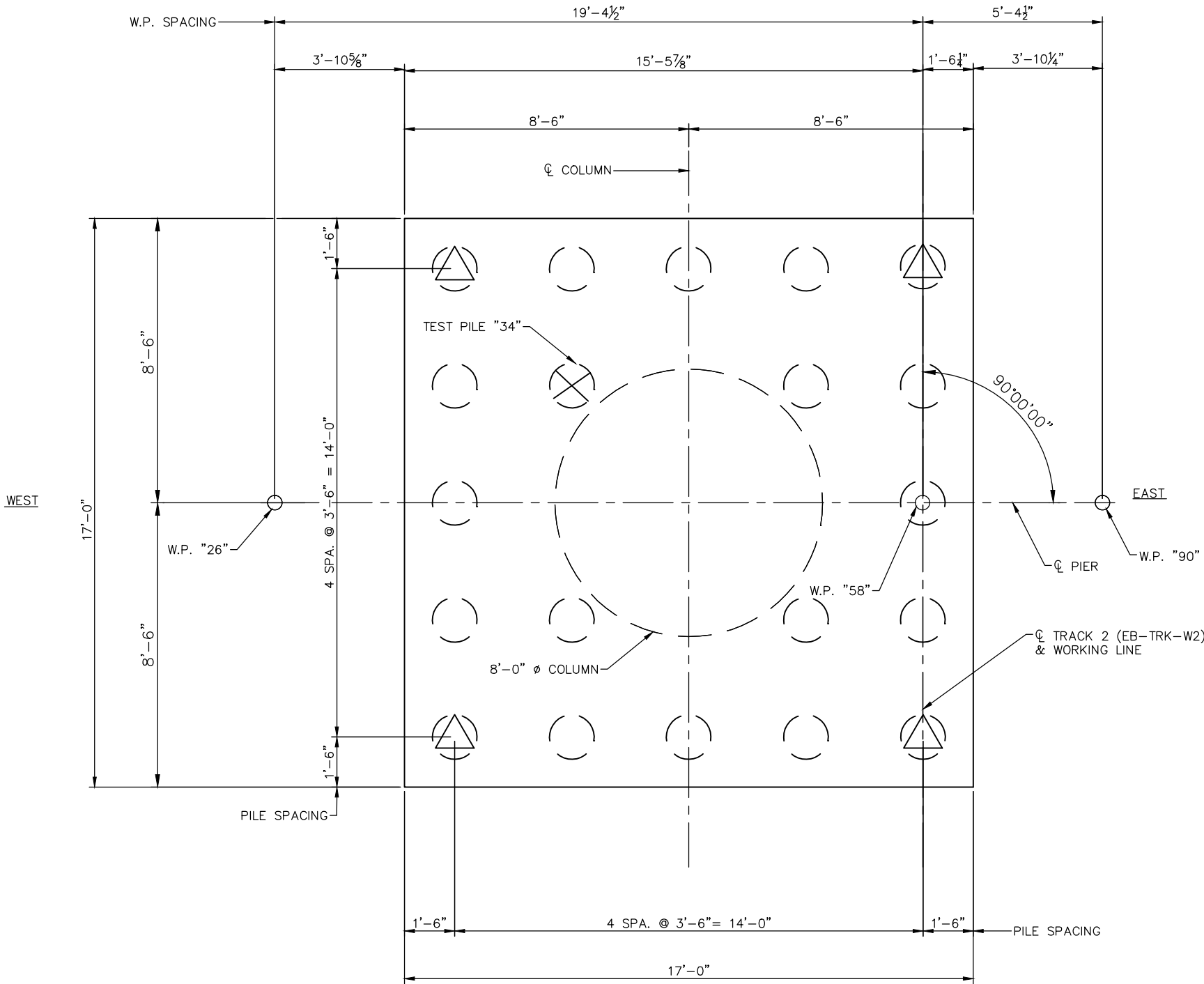
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 24

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-PIER_24**

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OF
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PIER 25 PILE LAYOUT

PIER 25 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n — TONS/PILE		
FIELD CONTROL METHOD	Φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) R _n =20√ ¹⁰⁰⁰ ₁₀₀₀ x log(¹⁰ ₅)	0.50	— —
PDA	0.65	— —

* R_n = (FACTORED DESIGN LOAD) / Φ_{dyn}

PIER 25 COMPUTED PILE LOAD — TONS/PILE		
FACTORED DEAD LOAD	— —	— —
FACTORED LIVE LOAD	— —	— —
FACTORED OVERTURNING	— —	— —
FACTORED DESIGN LOAD	— —	N/A. —
FACTORED DESIGN UPLIFT	N/A. —	— —
LOAD COMBINATION	— —	— —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 85 FT. LONG
- 19 CAST-IN-PLACE CONC. PILES EST. LENGTH 75 FT.
- 20 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 25.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM

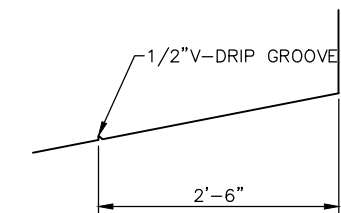
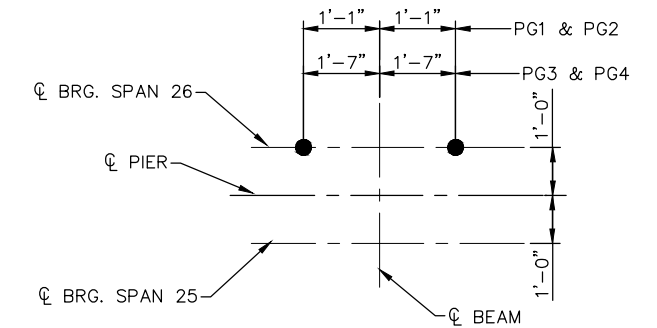
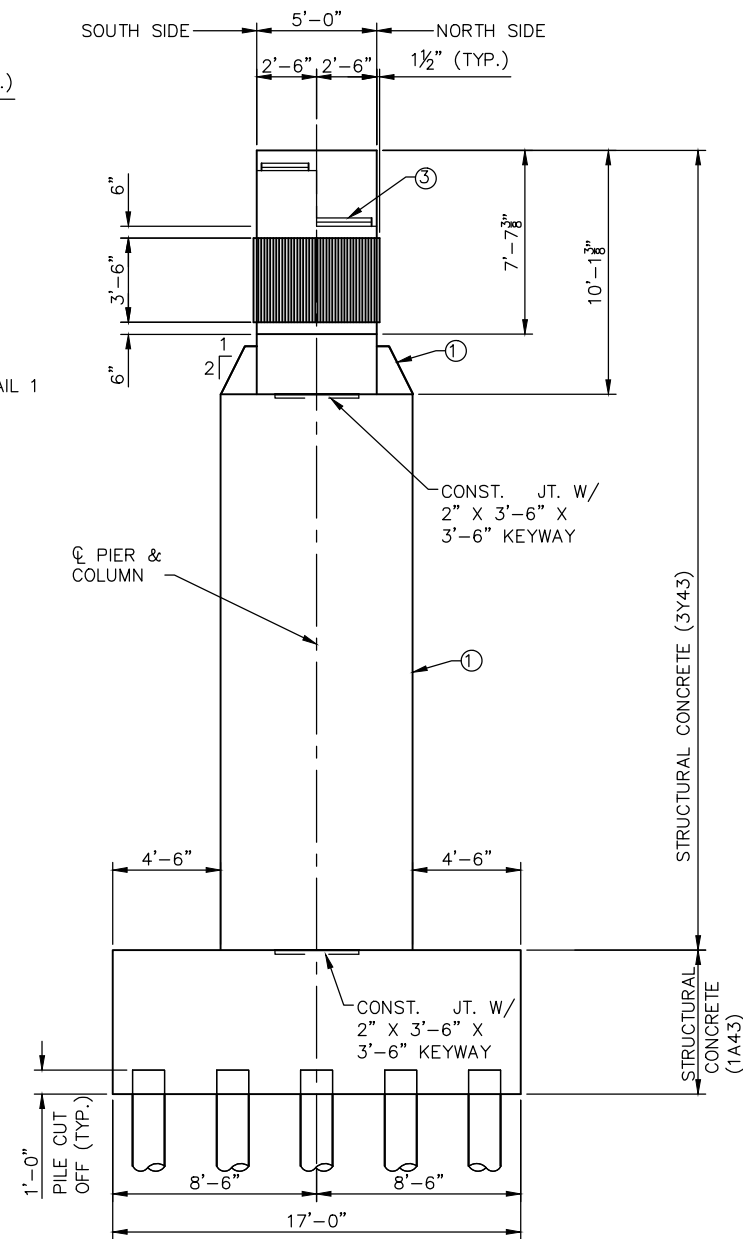
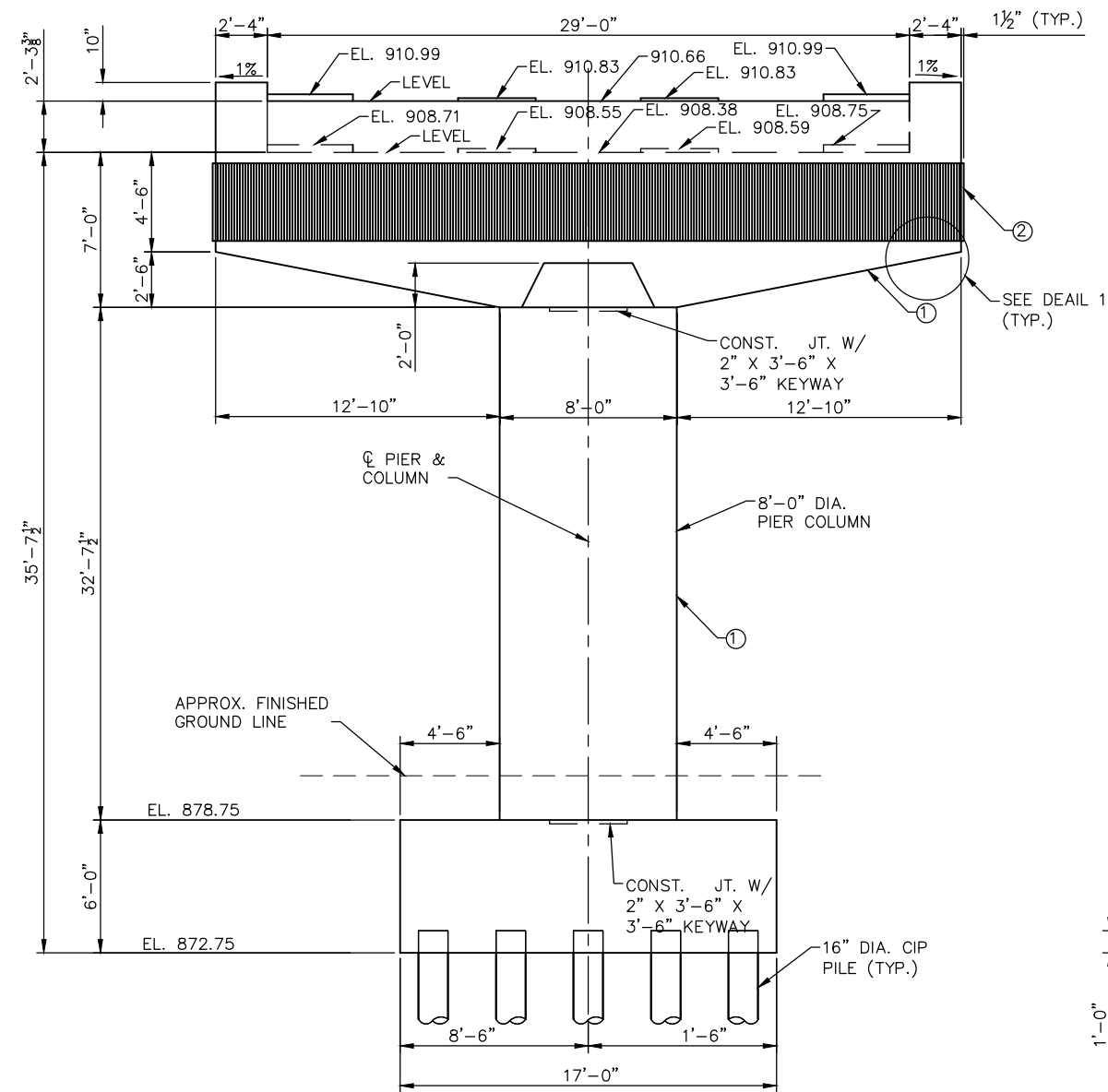
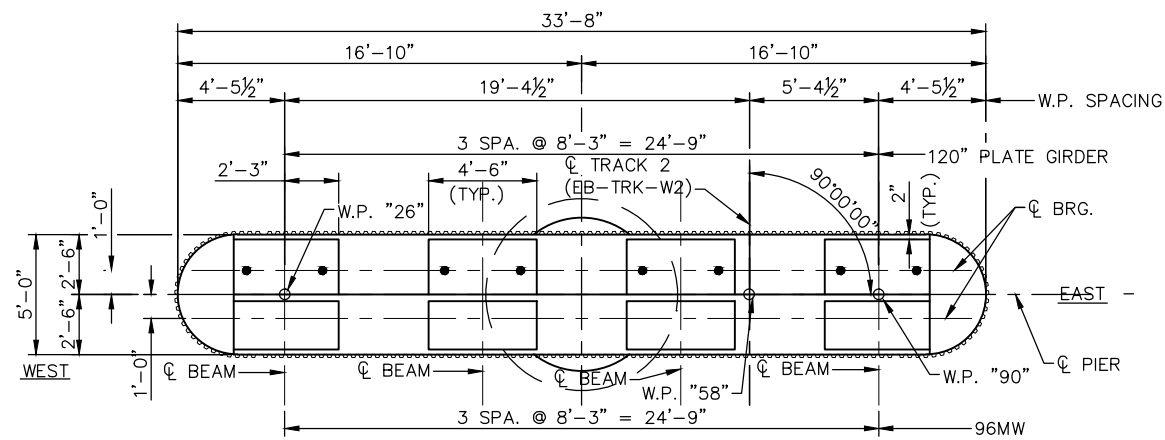
**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 25	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_25a



NOTES:

- ① SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ② ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.
- ③ THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

[illegible]

DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15

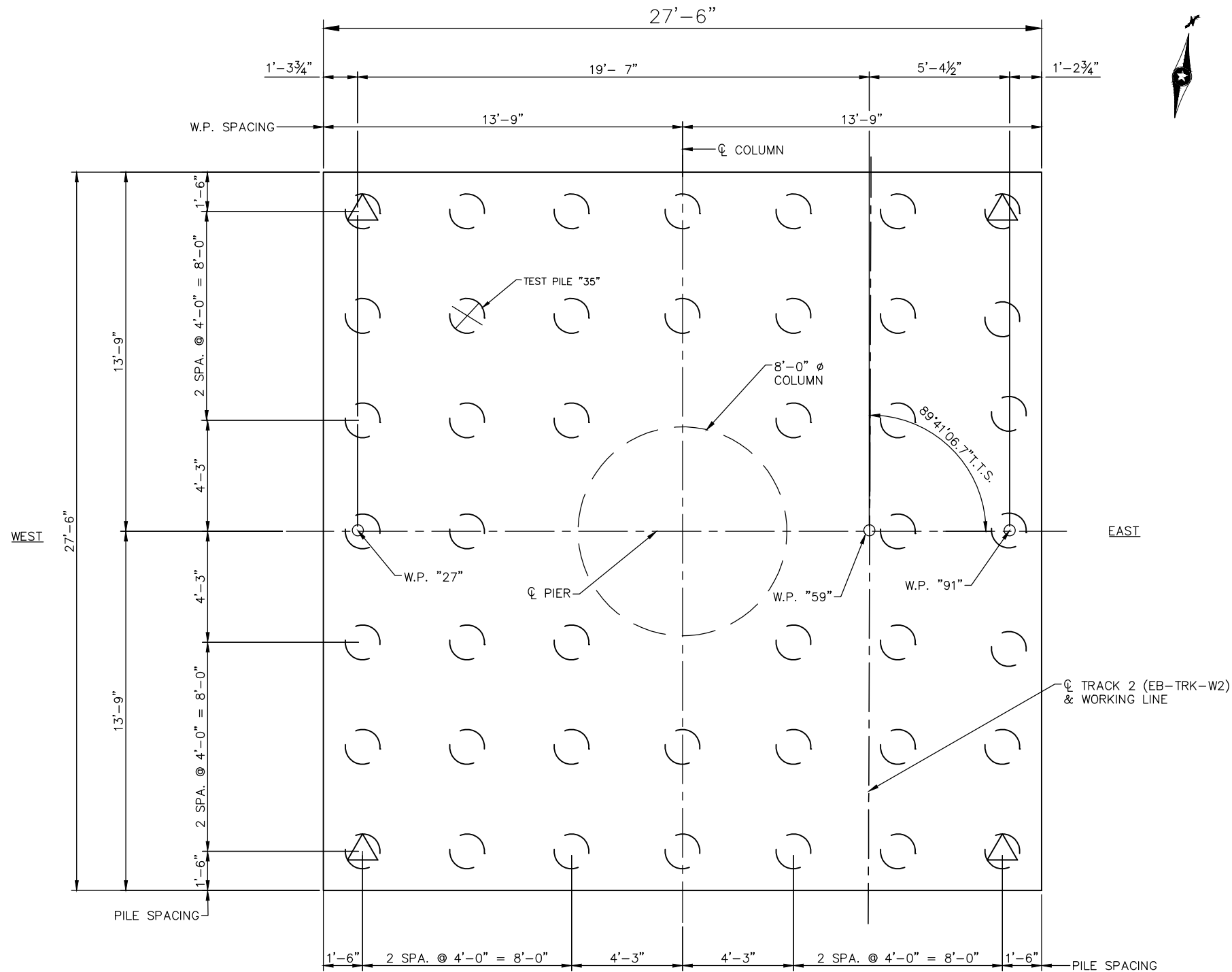
**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 25**

DISCIPLINE: **STRUCTURES**

SHEET NAME:	W2-STU-BRID-T212-PIER 25
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PIER 26 PILE LAYOUT

PIER 26 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n — TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{EA}{1000}} \times \log\left(\frac{L}{d}\right)$	0.50	— —
PDA	0.65	— —

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 26 COMPUTED PILE LOAD — TONS/PILE		
FACTORED LIVE LOAD	— —	— —
FACTORED LIVE LOAD	— —	— —
FACTORED OVERTURNING	— —	— —
FACTORED DESIGN LOAD	— —	N/A —
FACTORED DESIGN UPLIFT	N/A —	— —
LOAD COMBINATION	— —	— —

PILE NOTES

1. CAST-IN-PLACE CONC. TEST PILE 60 FT. LONG
43. CAST-IN-PLACE CONC. PILES EST. LENGTH 50 FT.
44. CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 26.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.



⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/28/2015

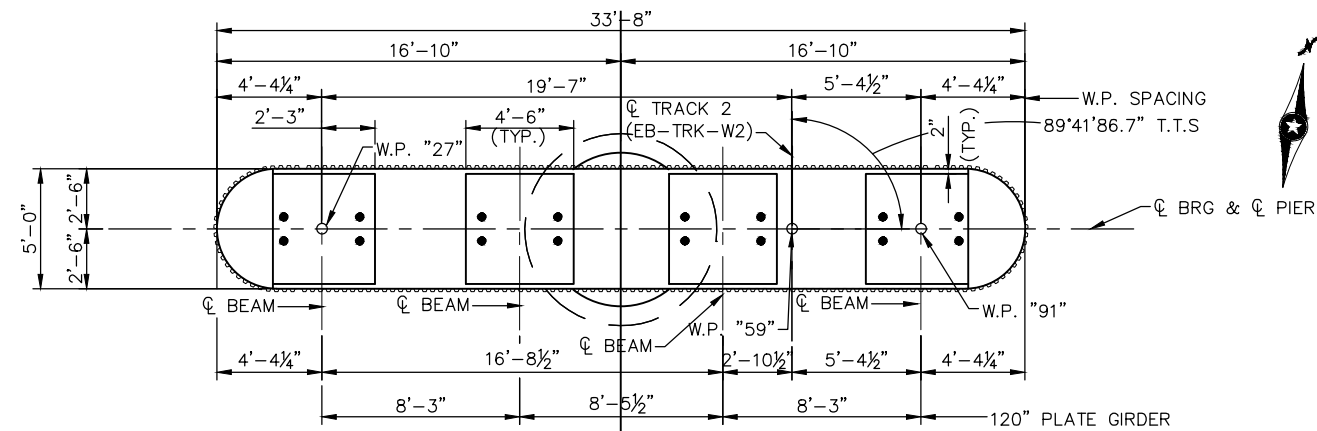


60% SUBMISSION - 9/28/15

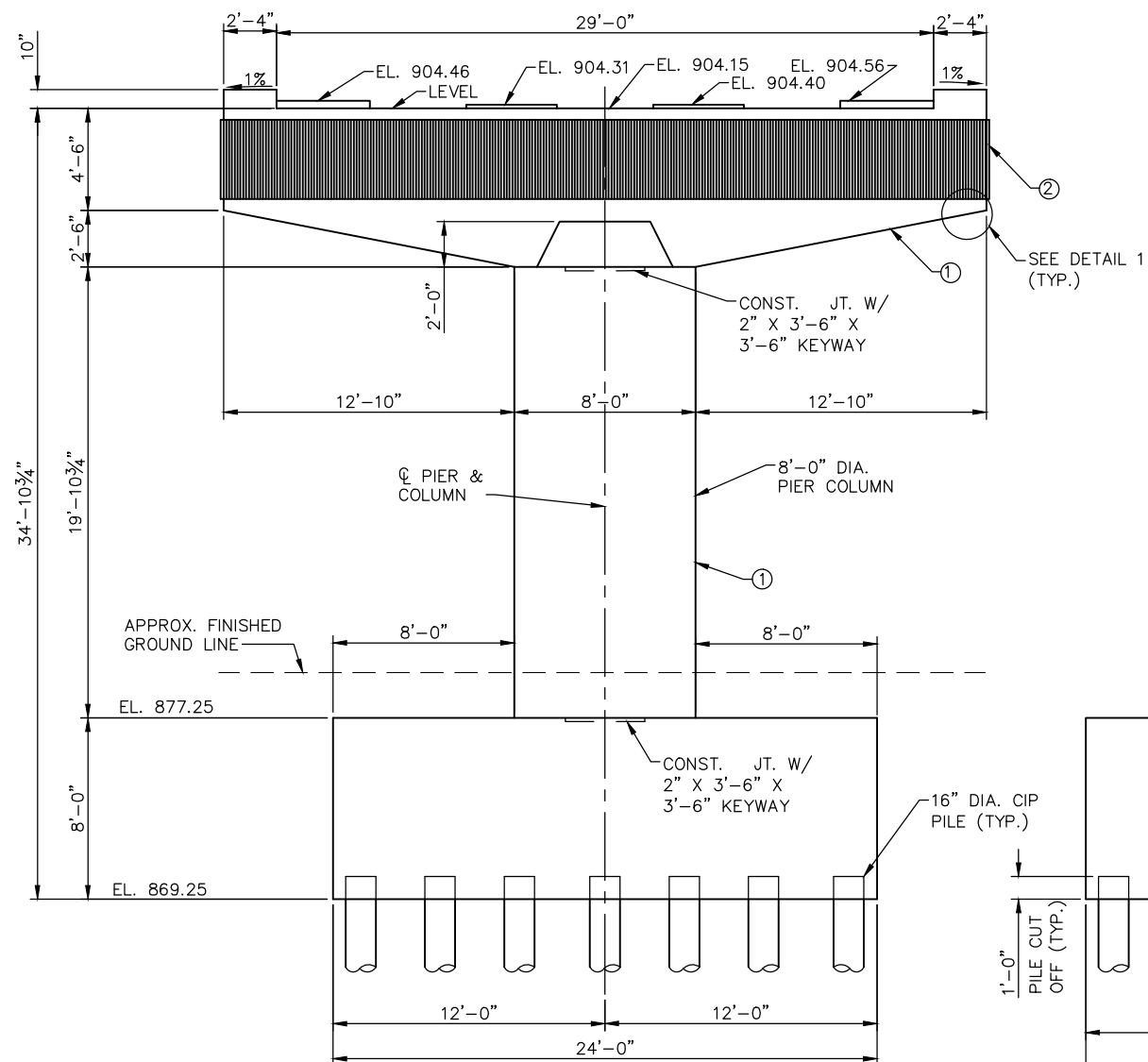


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 26	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_26a

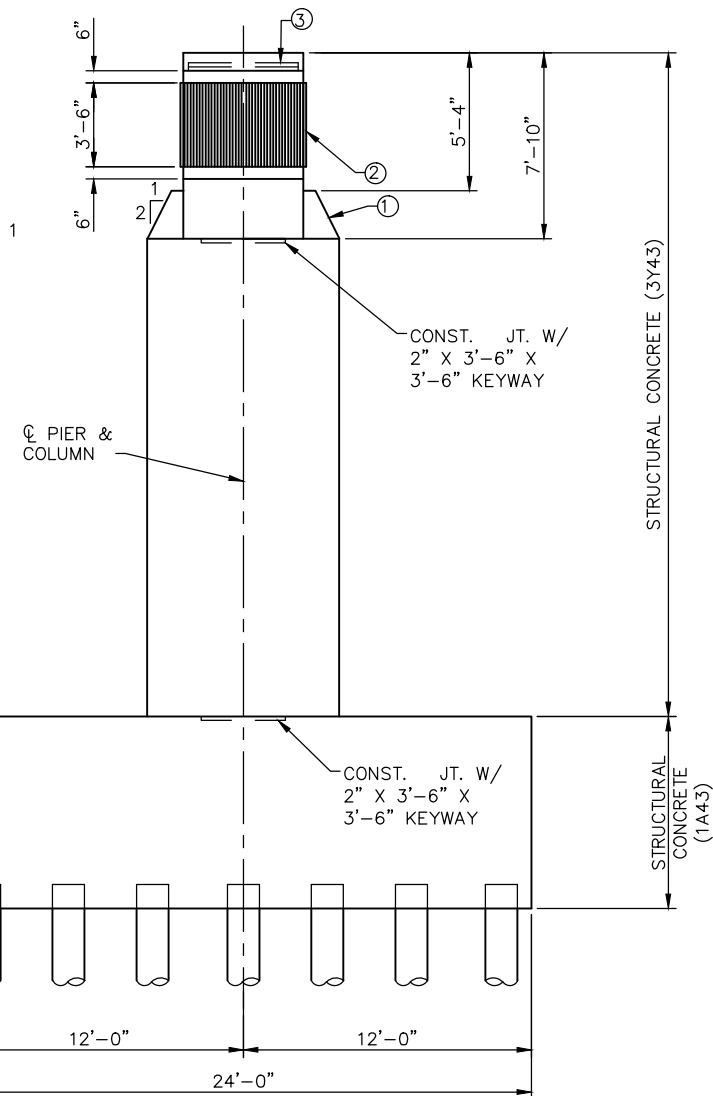
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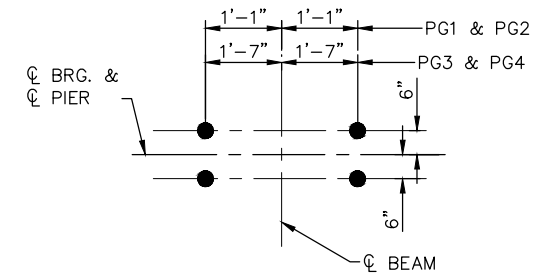
PIER 26 PLAN



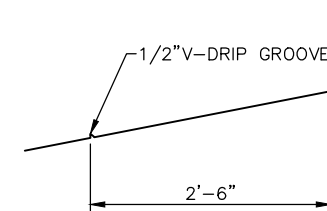
PIER 26 ELEVATION



PIER 26 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.
- THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

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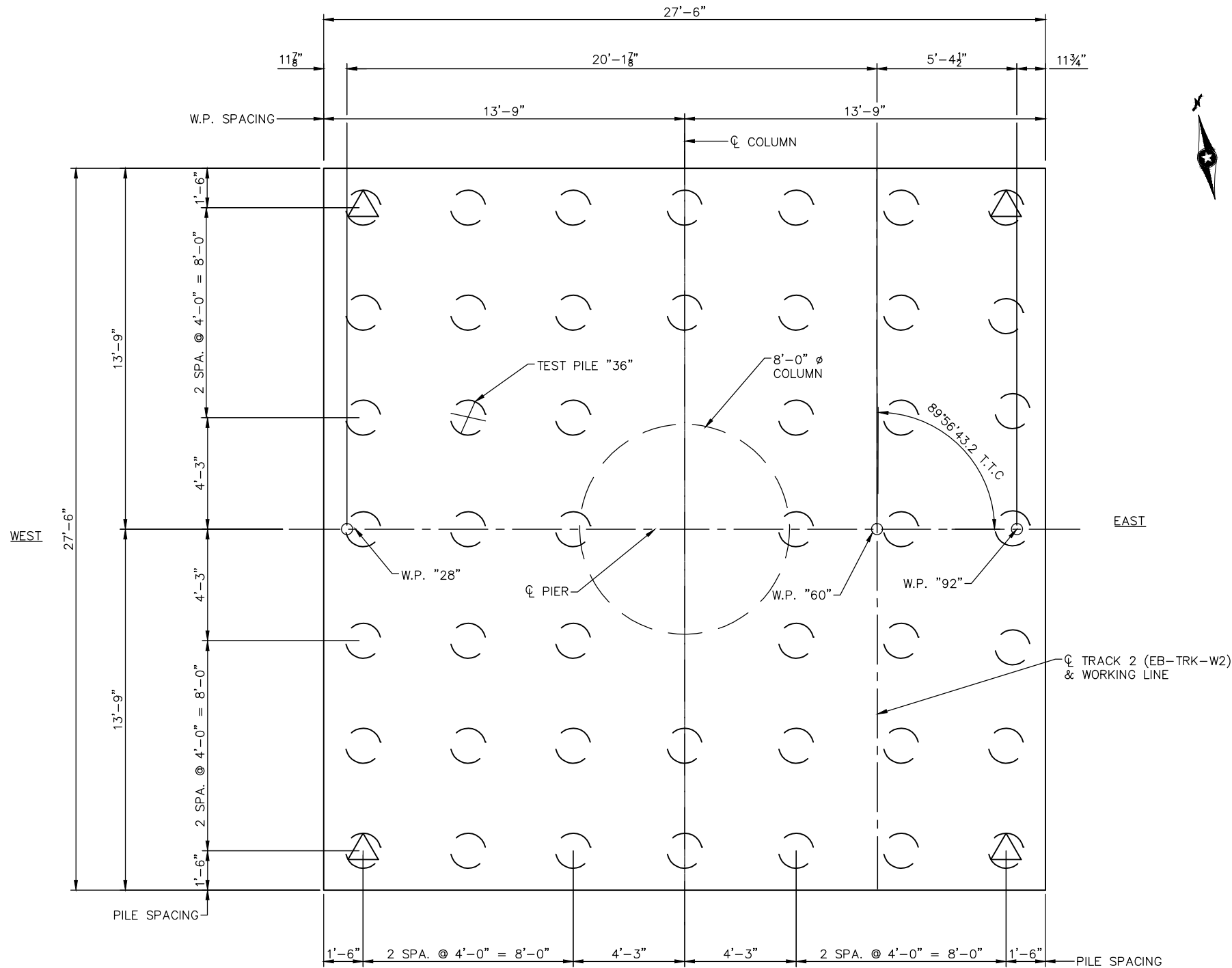
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DRAWN BY: SBM	DATE: 07/27/2015

AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

METROPOLITAN COUNCIL	SOUTHWEST Green Line LRT Extension
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 26		SHEET 63 OF 148
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER_26	

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PIER 27 PILE LAYOUT

PIER 27 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n - TONS/PILE		
FIELD CONTROL METHOD	ϕ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) R _n =20√ ¹⁰⁰⁰ ₁₀₀₀ x log(¹⁰ ₁₀)	0.50	---
PDA	0.65	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 27 COMPUTED PILE LOAD - TONS/PILE		
FACTORED DEAD LOAD	---	---
FACTORED LIVE LOAD	---	---
FACTORED OVERTURNING	---	---
FACTORED DESIGN LOAD	---	N/A. _
FACTORED DESIGN UPLIFT	N/A. _	---
LOAD COMBINATION	---	---

PILE NOTES

1 CAST-IN-PLACE CONC. TEST PILE 65 FT. LONG
45 CAST-IN-PLACE CONC. PILES EST. LENGTH 55 FT.
46 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 27.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 07/27/2015

AECOM

**PARSONS
BRINCKERHOFF**

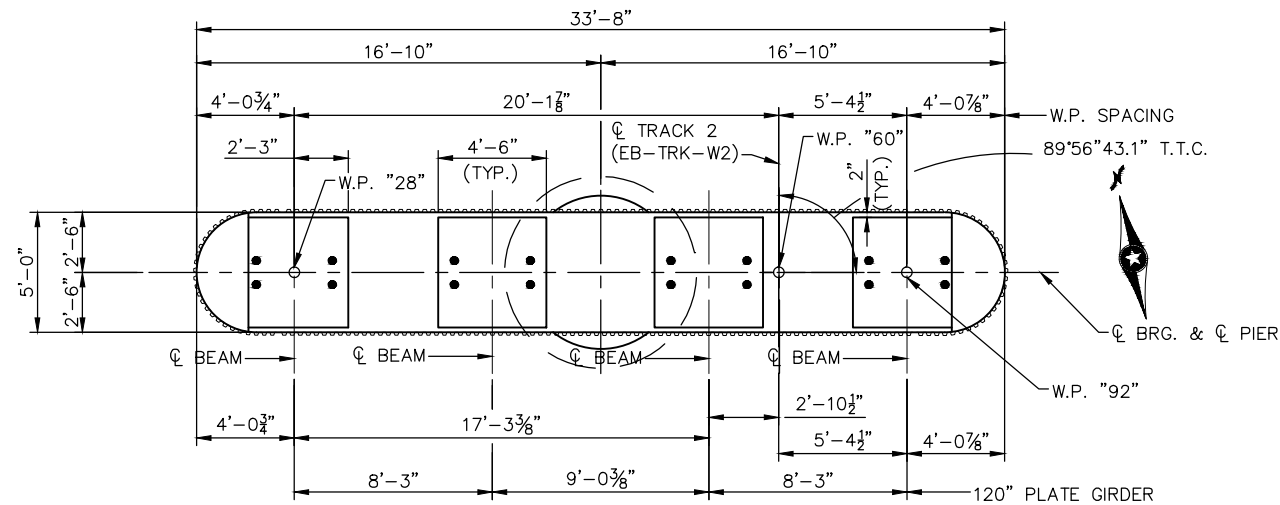
60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

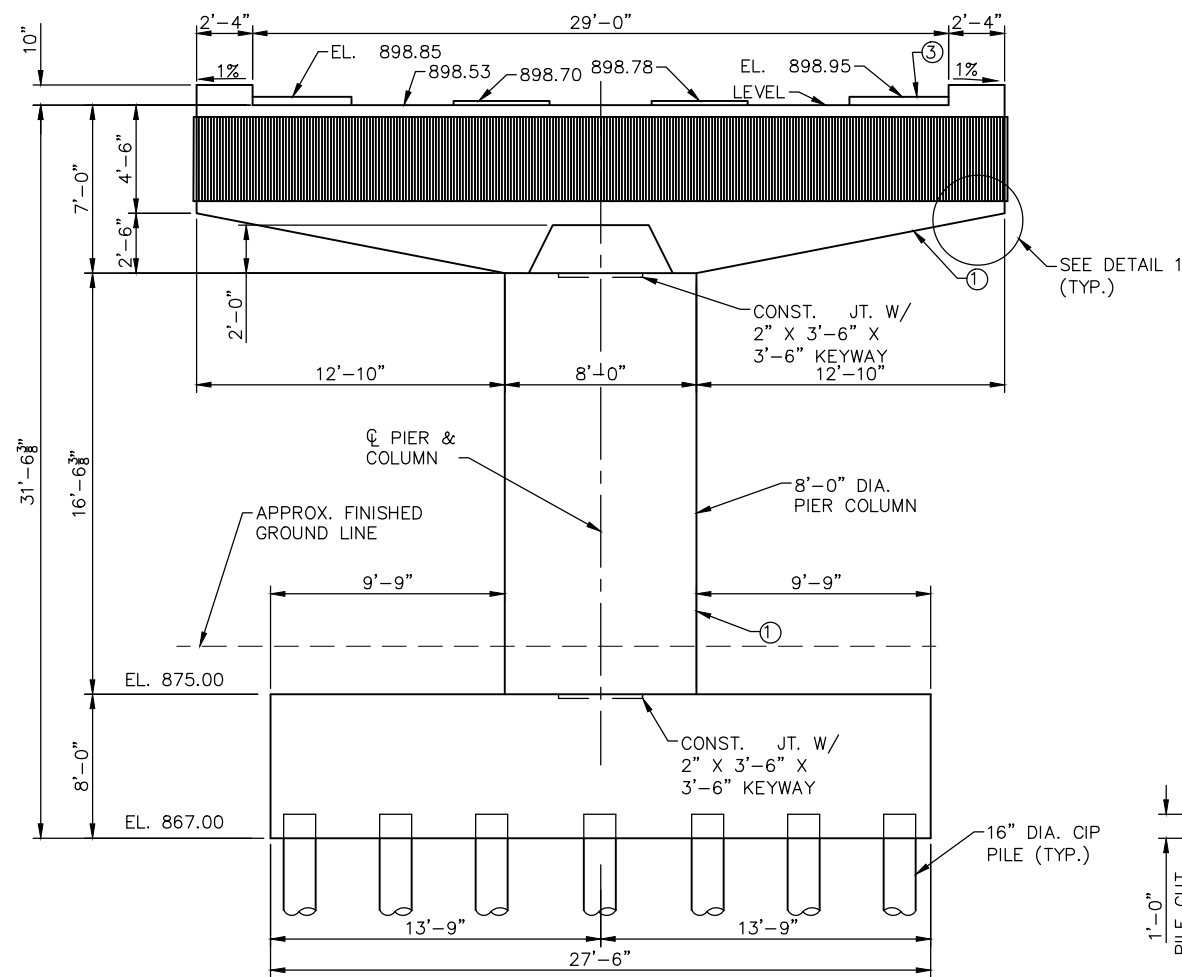
**SOUTHWEST
Green Line LRT Extension**

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 27	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_27a

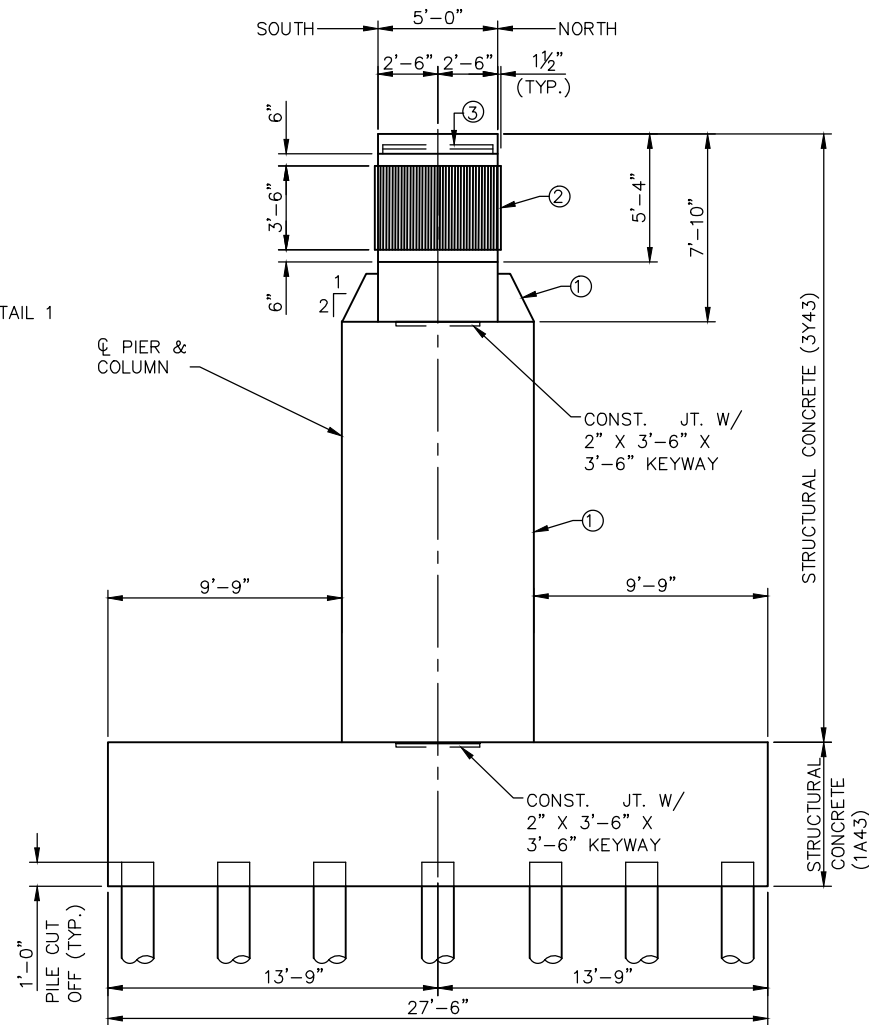
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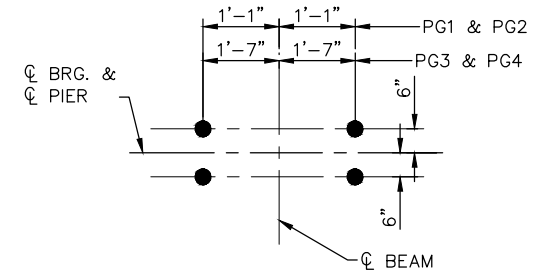
PIER 27 PLAN



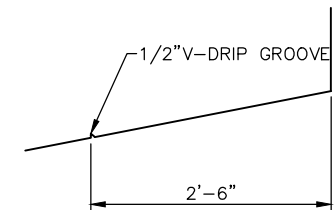
PIER 27 ELEVATION



PIER 27 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.
- THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	MJC	DDL	DDL	60% SUBMISSION - 9/28/15
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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM
PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
COUNCIL

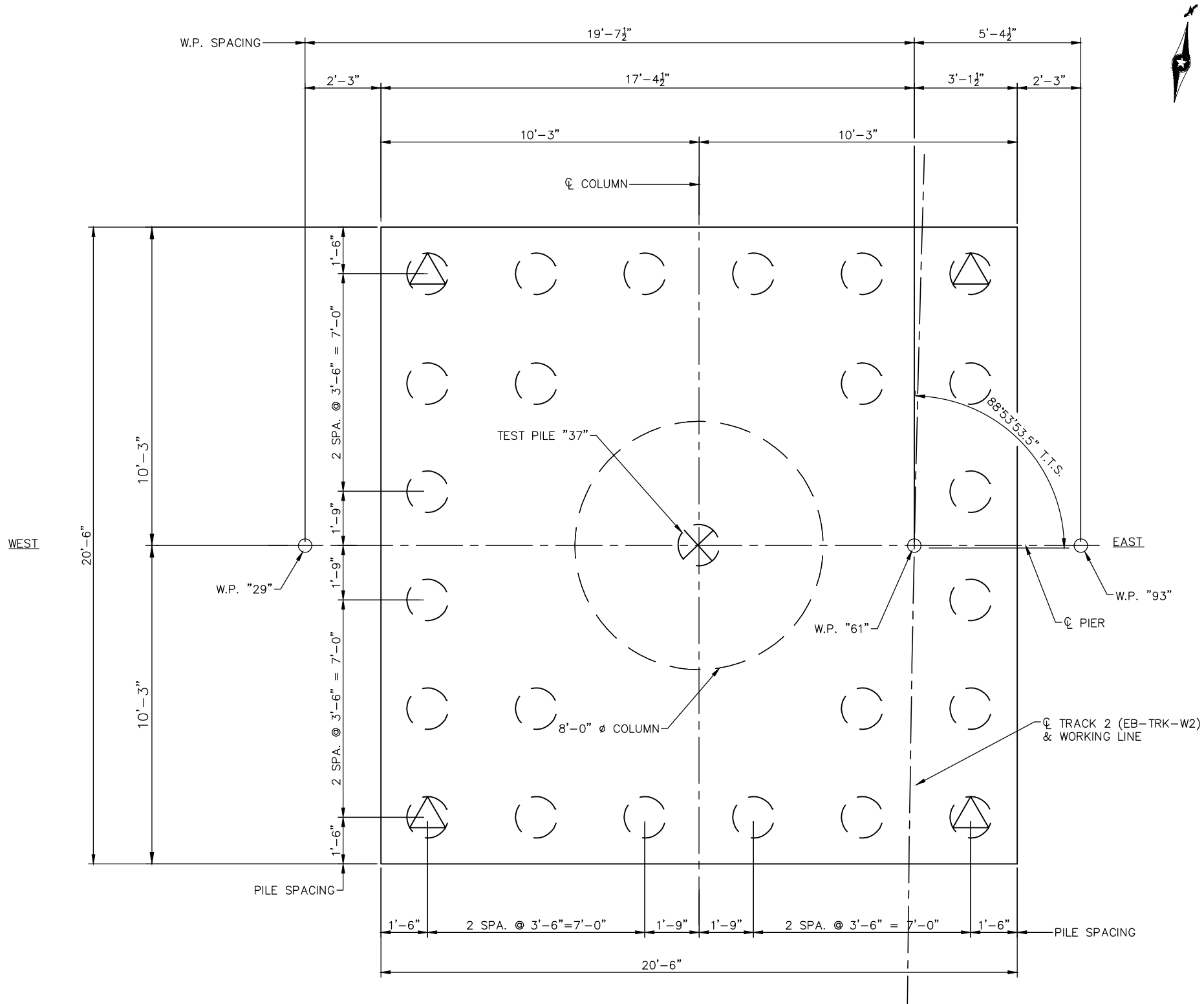
SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 27

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_27

SHEET 65 OF 148

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PIER 28 PILE LAYOUT

PIER 28
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR CIP PILES R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{q_{tip}}{1000}} \times \log\left(\frac{10}{S}\right)$	0.50	---
PDA	0.65	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIER 28
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD	---	---
FACTORED LIVE LOAD	---	---
FACTORED OVERTURNING	---	---
FACTORED DESIGN LOAD	---	N/A
FACTORED DESIGN UPLIFT	N/A	---
LOAD COMBINATION	---	---

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 70 FT. LONG
24 CAST-IN-PLACE CONC. PILES EST. LENGTH 60 FT.
25 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 28.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.



⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

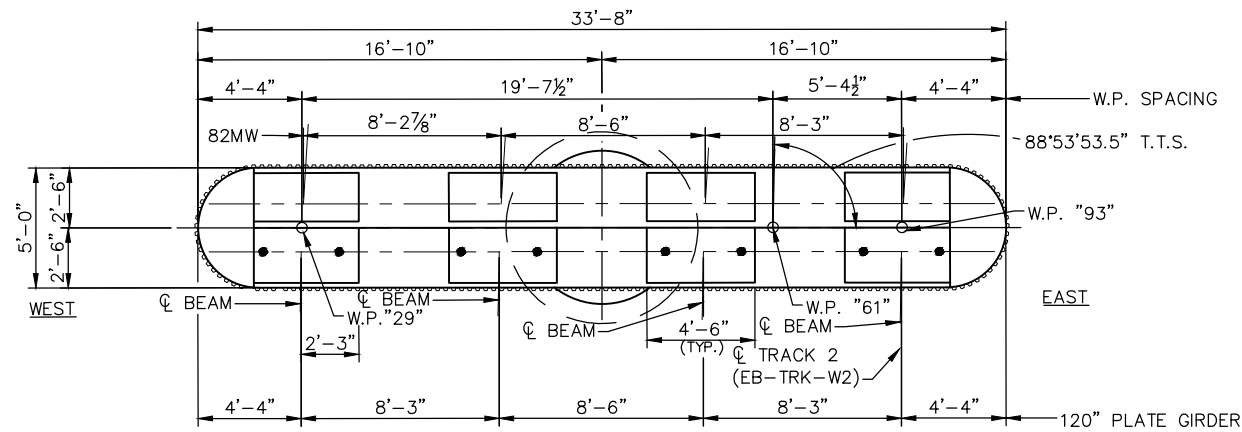


60% SUBMISSION - 9/28/15

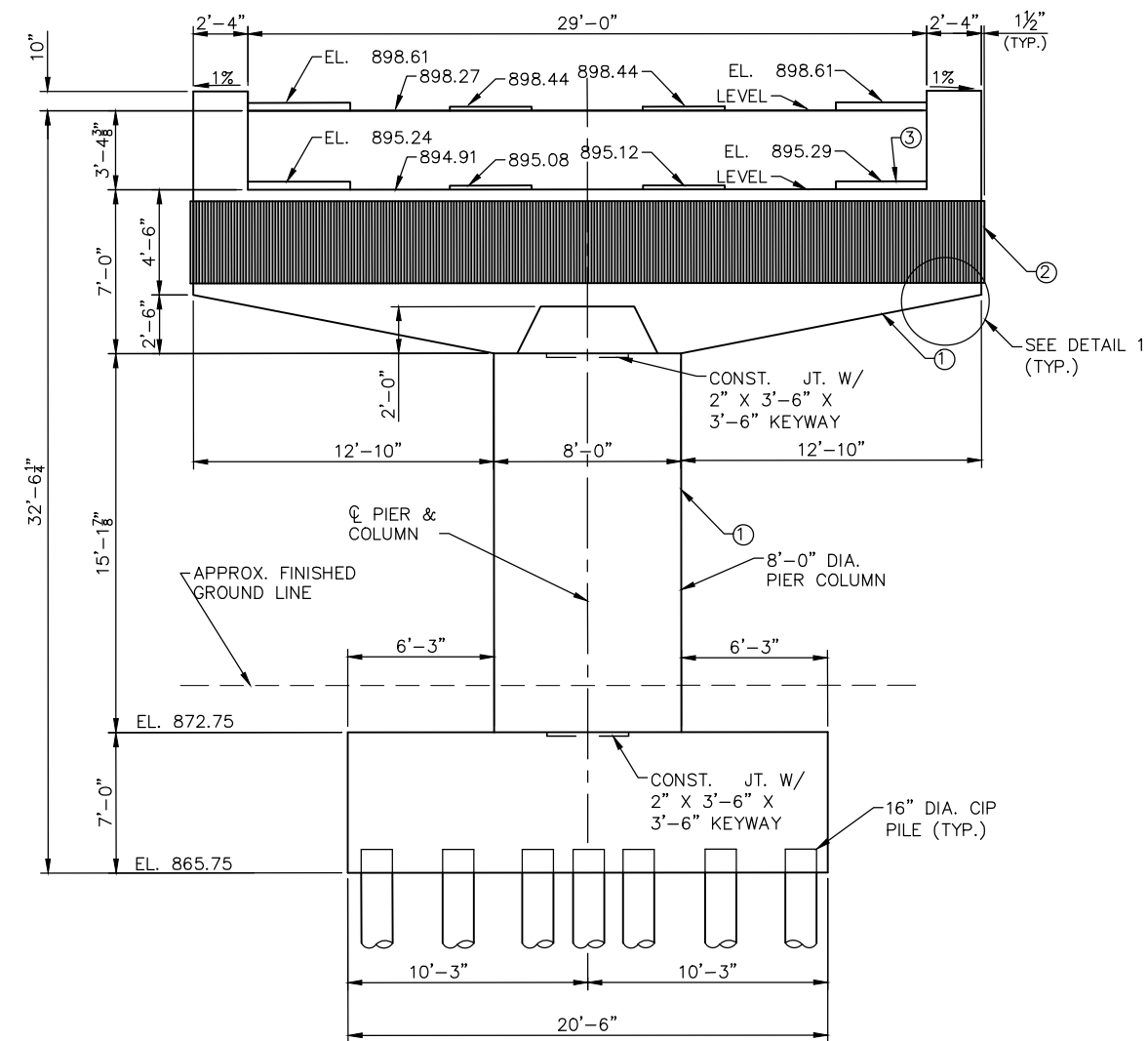


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 28	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_28a

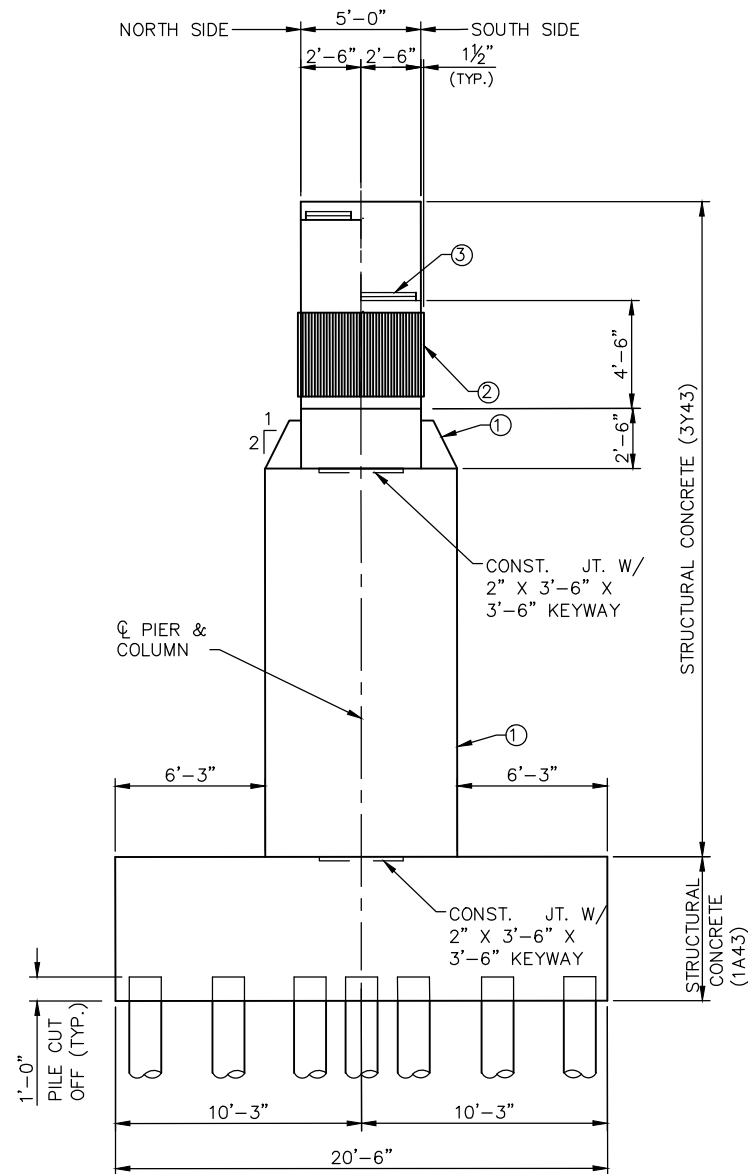
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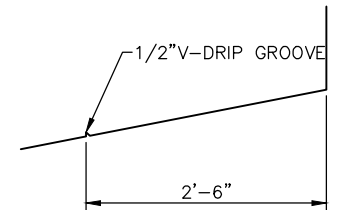
PIER 28 PLAN



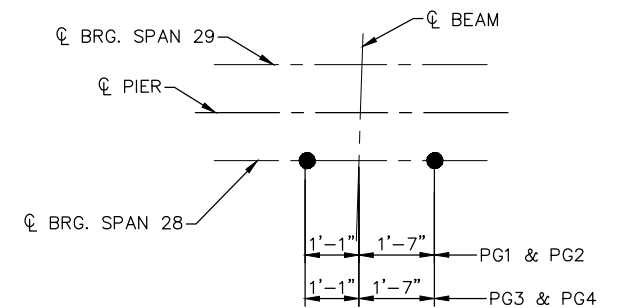
PIER 28 ELEVATION



PIER 28 END VIEW



DETAIL 1



ANCHOR ROD LAYOUT

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.
- THE CONSTRUCTION ELEVATIONS FOR BRIDGE SEATS SHALL BE DETERMINED BASED ON THE ACTUAL HEIGHT OF THE POT BEARING ASSEMBLIES FURNISHED BY THE CONTRACTOR. ANY REQUIRED ADJUSTMENT OF SEAT ELEVATIONS SHALL BE MADE BY THE CONTRACTOR. THE CONCTRACOR SHALL SUBMIT REVISED BEARING SEAT ADJUSTMENTS FOR APPROVAL.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	9/28/15	MJC	DDL	SBM	60% SUBMISSION - 9/28/15
2					
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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM
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BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
COUNCIL

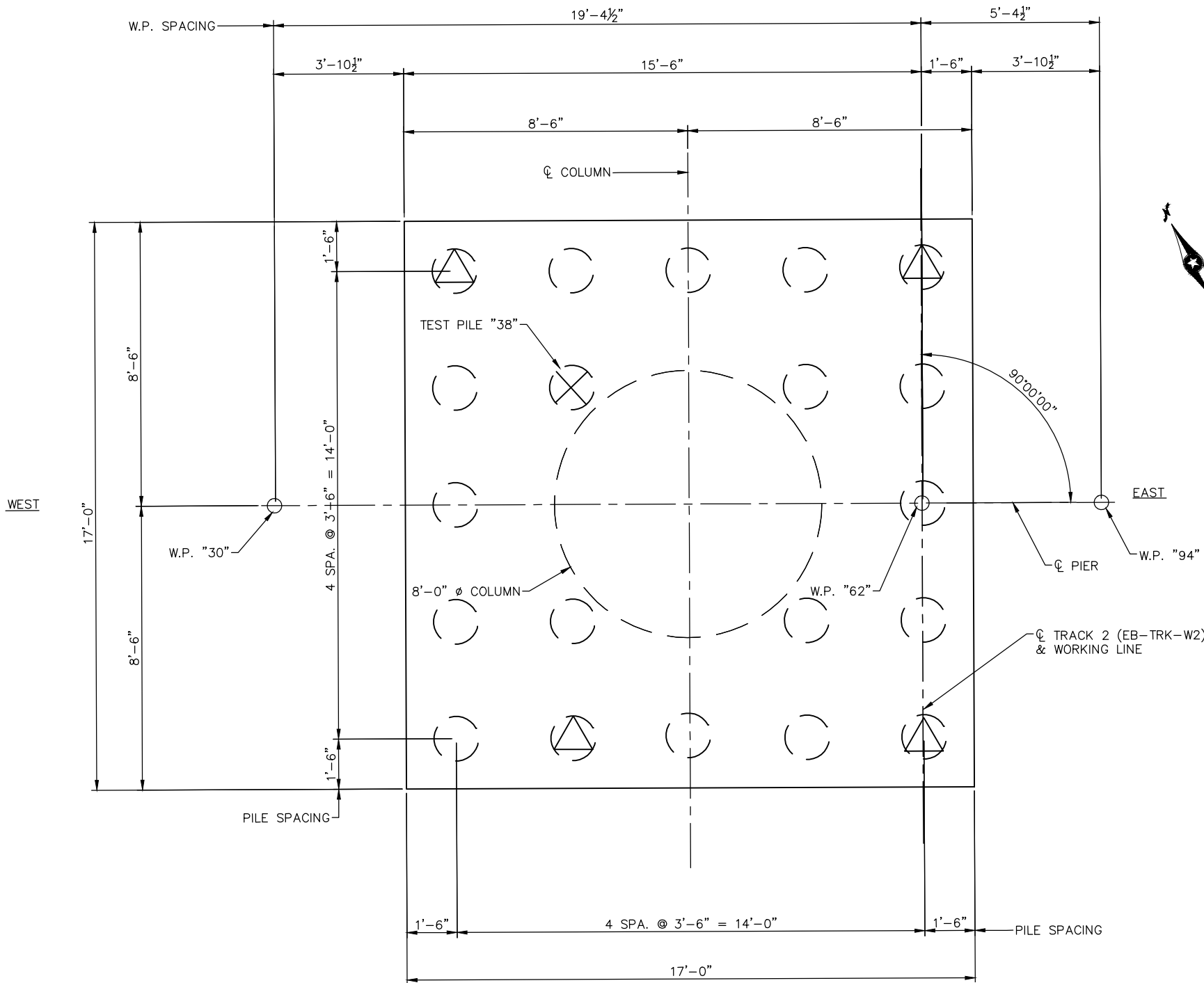
SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
PIER 28

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-PIER2_28

SHEET 67 OF 148

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PIER 29 PILE LAYOUT

PIER 29 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R _n — TONS/PILE		
FIELD CONTROL METHOD	Φ _{dyn}	* R _n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{q_{tip}}{1000}} \times \log\left(\frac{10}{\frac{q_{tip}}{1000}}\right)$	0.50	— — —
PDA	0.65	— — —

* R_n = (FACTORED DESIGN LOAD) / Φ_{dyn}

PIER 29 COMPUTED PILE LOAD — TONS/PILE		
FACTORED DEAD LOAD	— — —	— — —
FACTORED LIVE LOAD	— — —	— — —
FACTORED OVERTURNING	— — —	— — —
FACTORED DESIGN LOAD	— — —	N/A. —
FACTORED DESIGN UPLIFT	N/A. —	— — —
LOAD COMBINATION	— — —	— — —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
- 19 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
- 20 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 29.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.



⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: MJC	CHECKED BY: DDL
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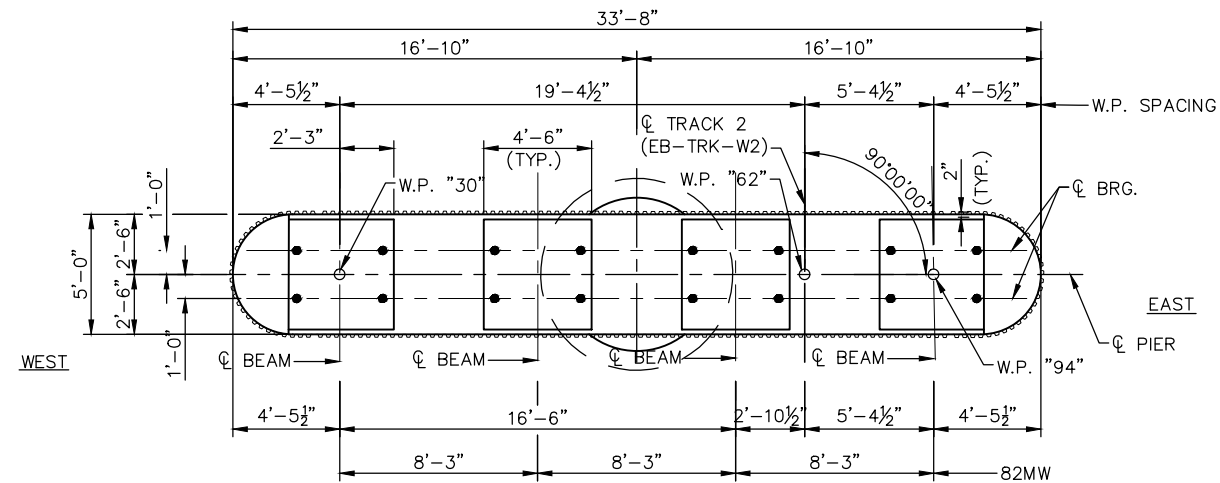


60% SUBMISSION - 9/28/15

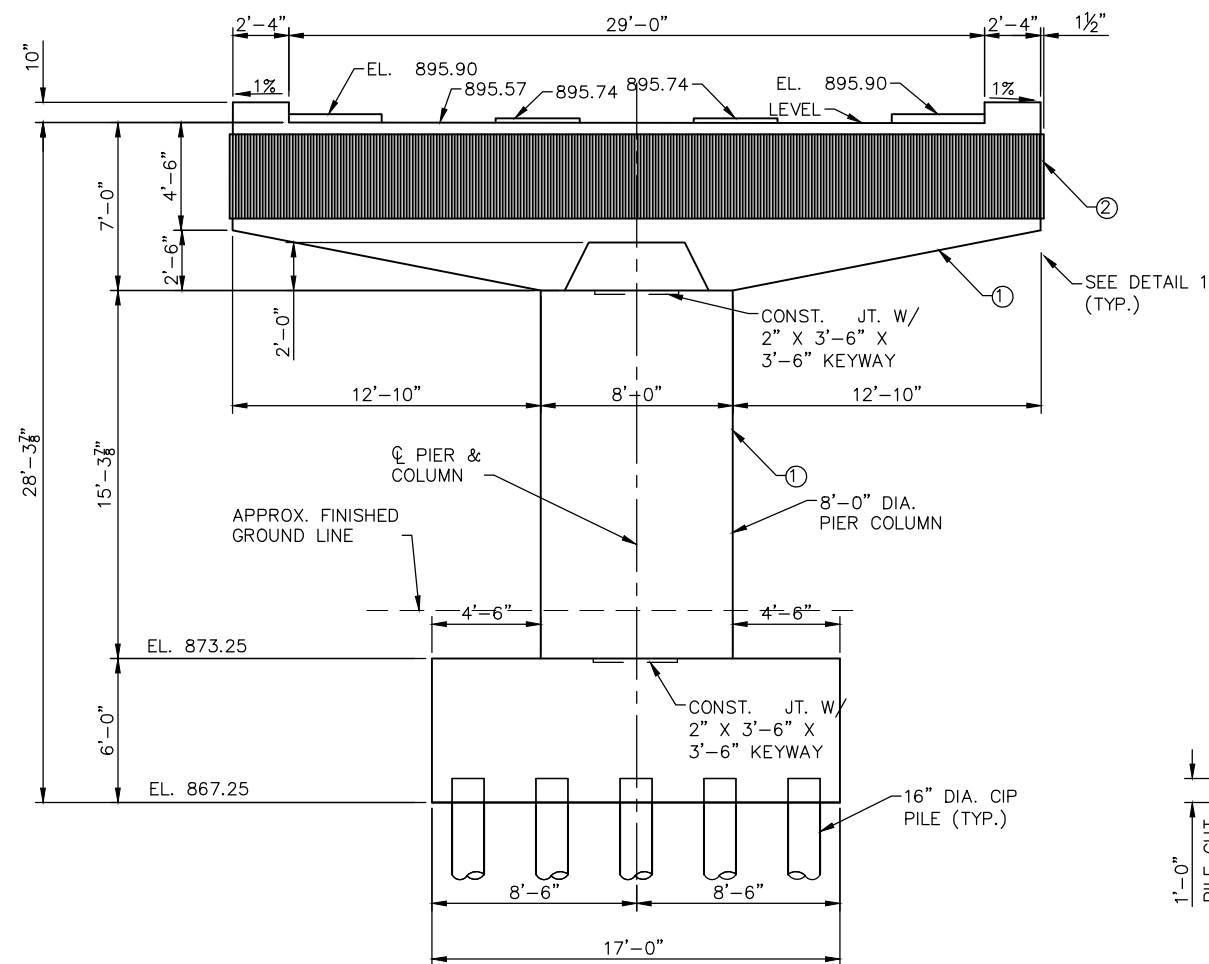


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 29	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_29a

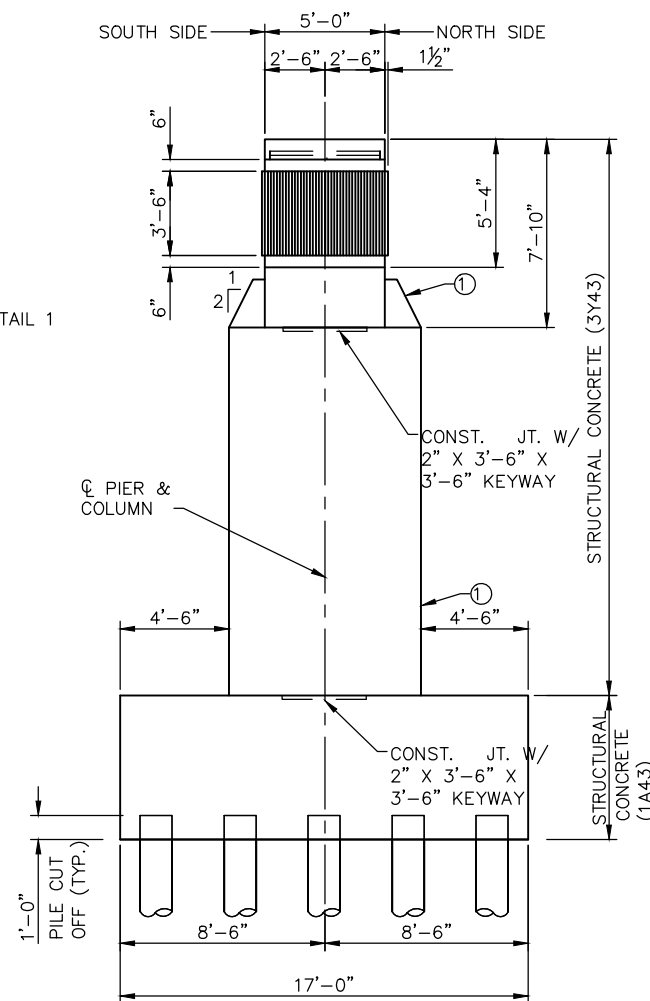
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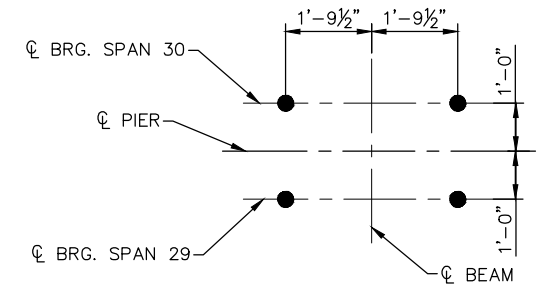
PIER 29 PLAN



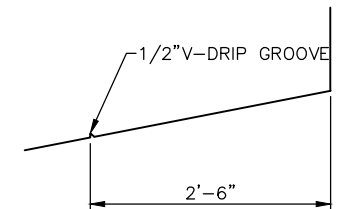
PIER 29 ELEVATION



PIER 29 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	SBM	DDL	DDL	60% SUBMISSION - 9/28/15
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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM
PARSONS BRINCKERHOFF

60% SUBMISSION - 9/28/15

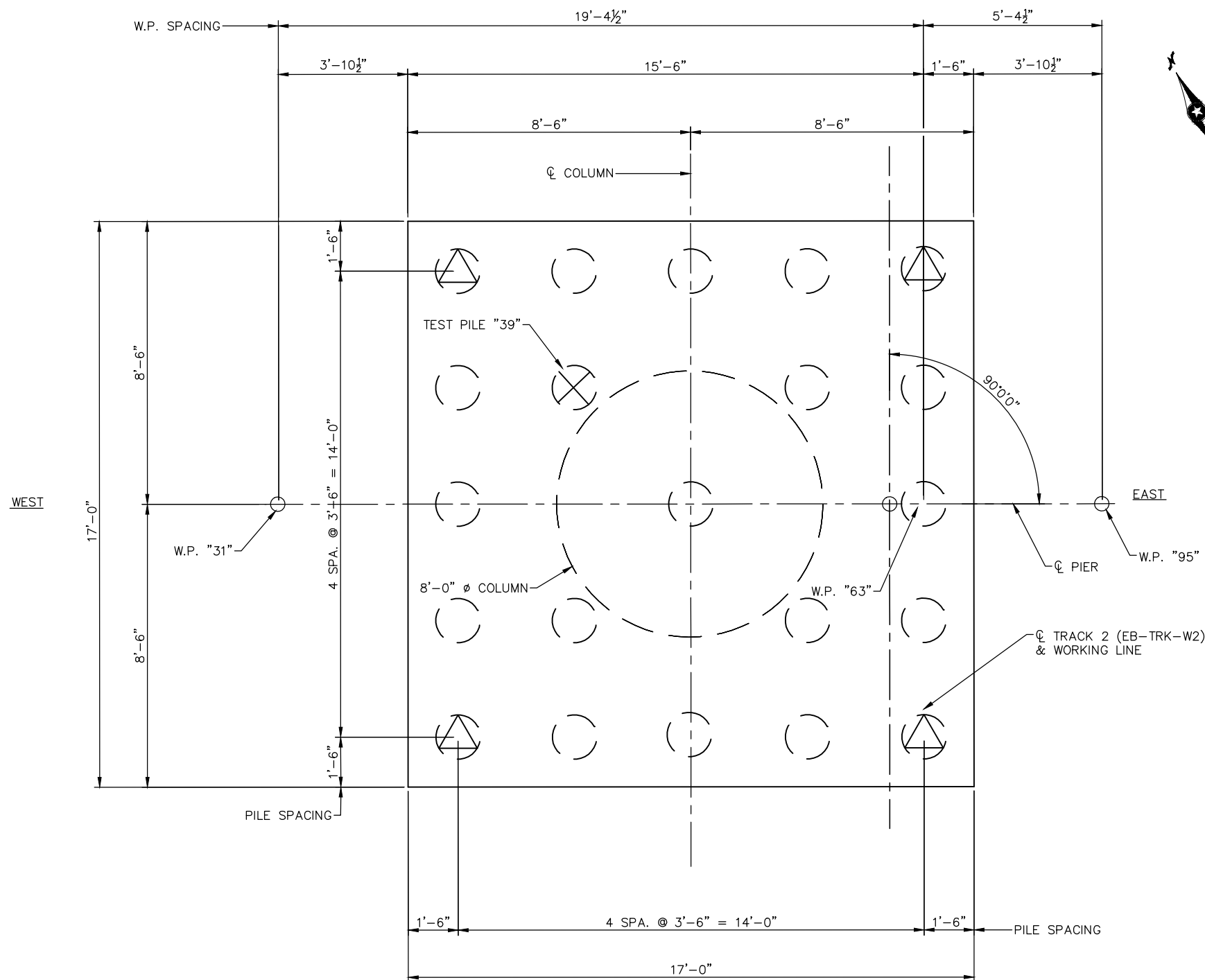
METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 29	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_29

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PIER 30 PILE LAYOUT

PIER 30 REQUIRED NOMINAL PILE BEARING RESISTANCE FOR CIP PILES R_n — TONS/PILE		
FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT PILE FORMULA 2012 (MPF12) $R_n = 20 \sqrt{\frac{P_{ULT}}{1000}} \times \log\left(\frac{L}{10}\right)$	0.50	— —
PDA	0.65	— —

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER 30 COMPUTED PILE LOAD — TONS/PILE		
FACTORED DEAD LOAD	— —	— —
FACTORED LIVE LOAD	— —	— —
FACTORED OVERTURNING	— —	— —
FACTORED DESIGN LOAD	— —	N/A —
FACTORED DESIGN UPLIFT	N/A —	— —
LOAD COMBINATION	— —	— —

PILE NOTES

- 1 CAST-IN-PLACE CONC. TEST PILE 75 FT. LONG
- 20 CAST-IN-PLACE CONC. PILES EST. LENGTH 65 FT.
- 21 CAST-IN-PLACE CONC. PILES REQ'D FOR PIER 30.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES TO HAVE A NOMINAL DIAMETER OF 16"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

⊕ INDICATES TENSION PILE. SEE PILE ANCHORAGE DETAIL

NOTES:

SEE GENERAL AND ELEVATION SHEETS FOR ANY
REQUIRED TEMPORARY SHORING.

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DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

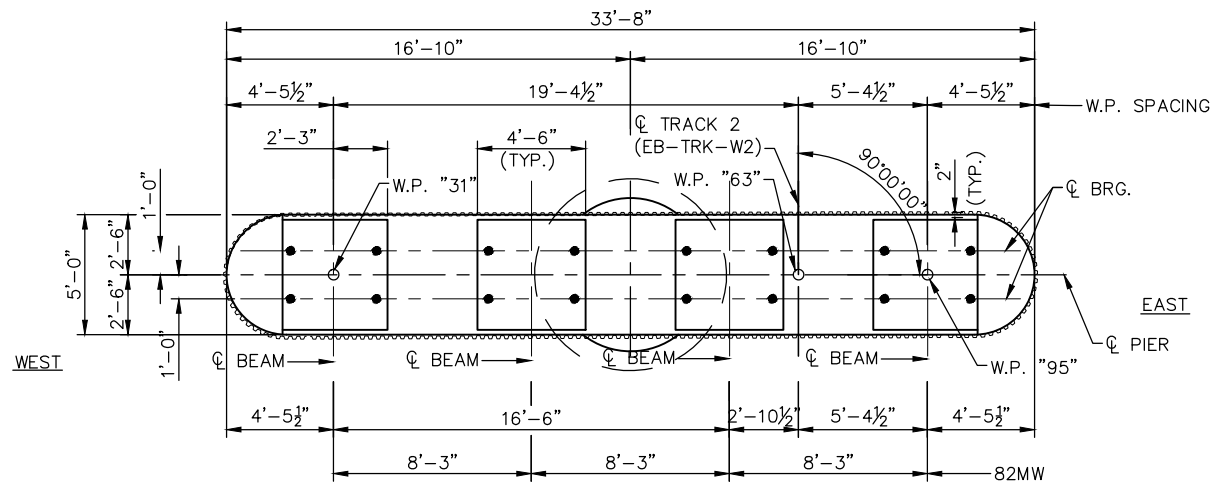
60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

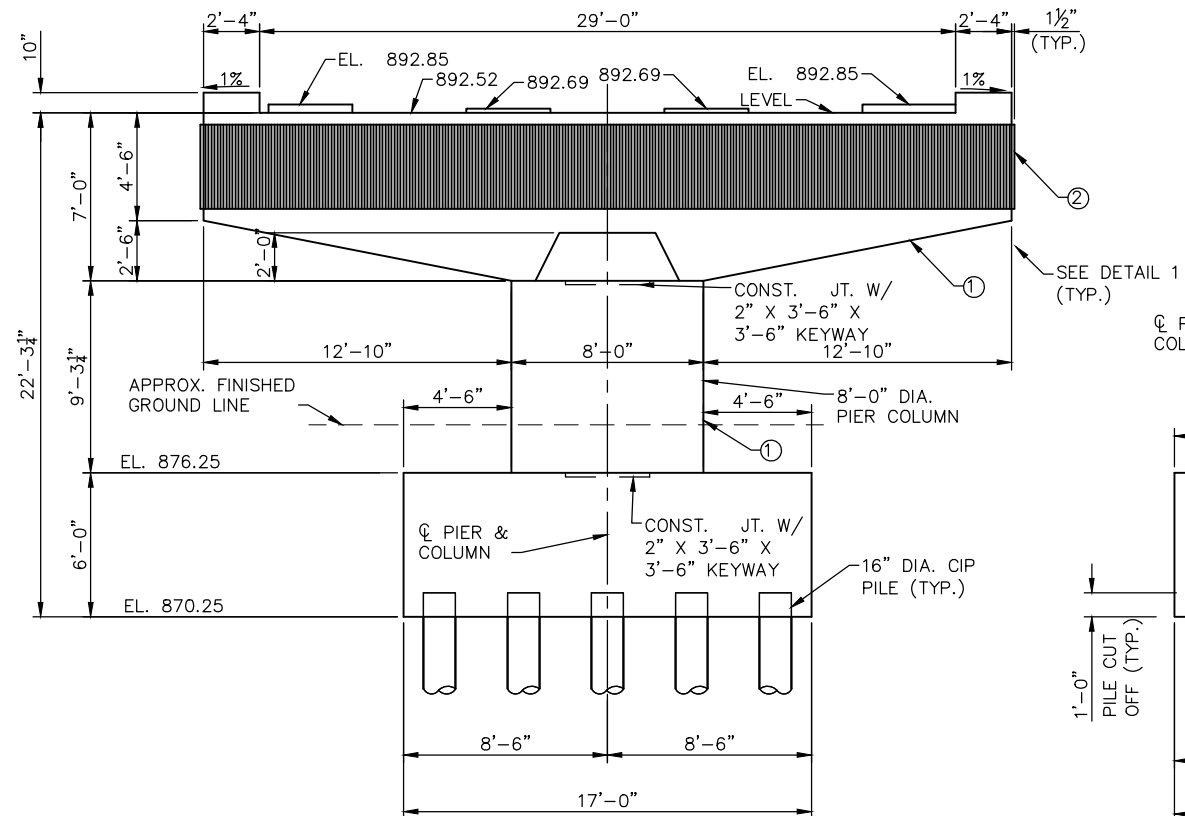
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 30	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_30a

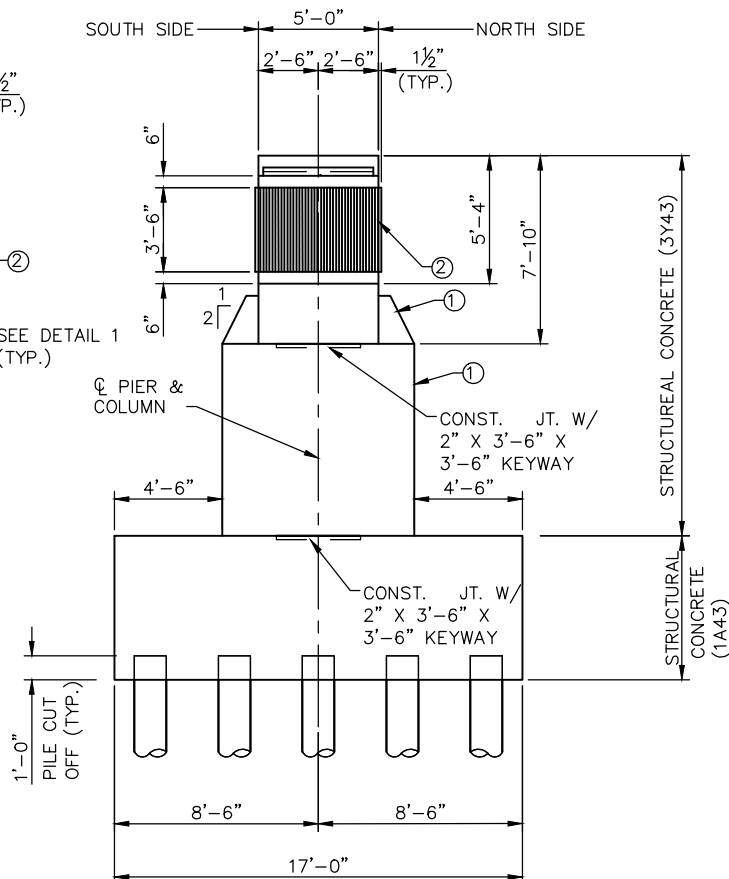
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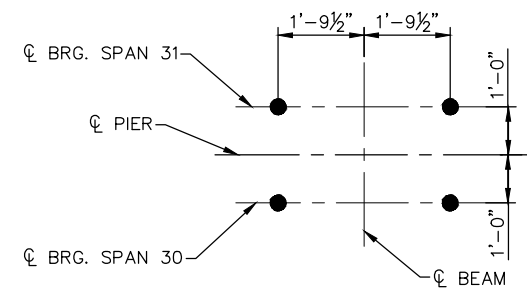
PIER 26 PLAN



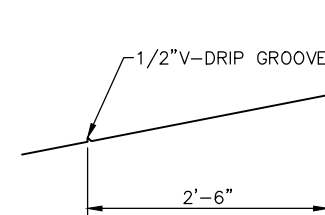
PIER 30 ELEVATION



PIER 30 END VIEW



ANCHOR ROD LAYOUT



DETAIL 1

NOTES:

- SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ARCHITECTURAL CONCRETE TEXTURING, TYPE 1.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	MJC	DDL	SBM	DESIGNED BY: MJC
2	8/24/2015	SBM	DDL	SBM	CHECKED BY: DDL
3	8/24/2015	SBM	DDL	SBM	DRAWN BY: SBM
4	8/24/2015	SBM	DDL	SBM	DATE: 8/24/2015
5	8/24/2015	SBM	DDL	SBM	
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8	8/24/2015	SBM	DDL	SBM	
9	8/24/2015	SBM	DDL	SBM	
10	8/24/2015	SBM	DDL	SBM	

DESIGNED BY: MJC	CHECKED BY: DDL
DRAWN BY: SBM	DATE: 8/24/2015

AECOM
PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

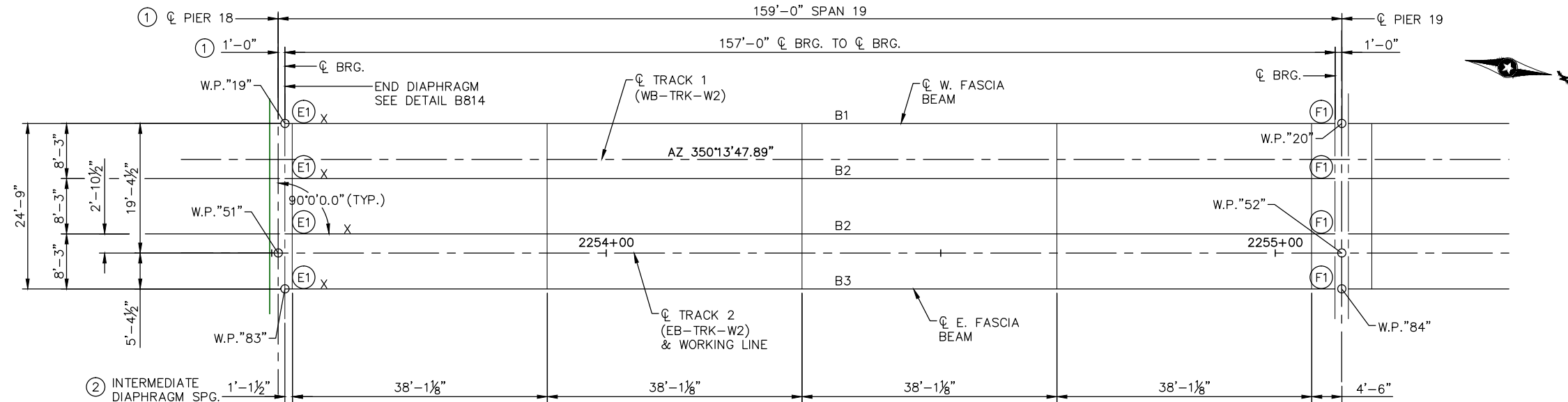
METROPOLITAN
COUNCIL

SOUTHWEST
Green Line LRT Extension

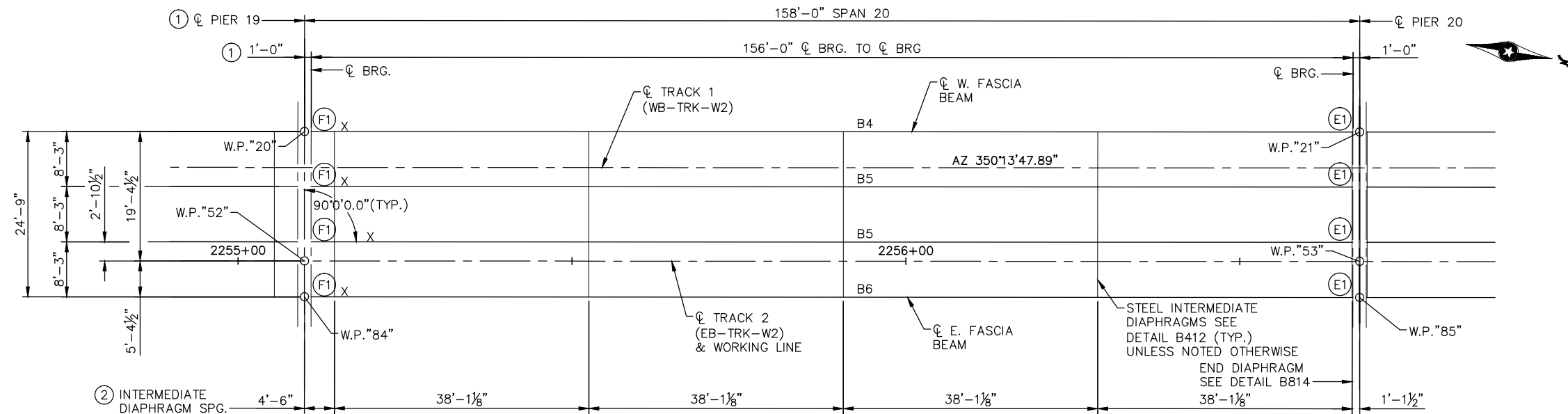
CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PIER 30	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-PIER2_30

SHEET
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148

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FRAMING PLAN - SPAN 19



FRAMING PLAN - SPAN 20

NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- X = DENOTES MARKED END OF BEAM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	MJC	SWH	EEM	60% SUBMISSION - 9/28/15
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DESIGNED BY: MJC	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15

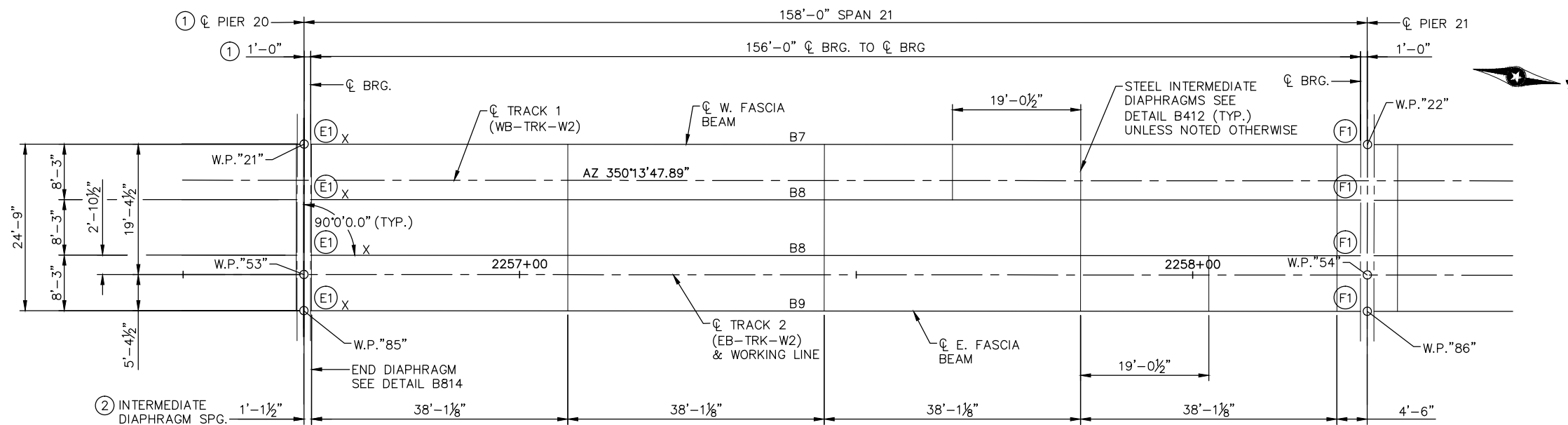


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SHEET 1)

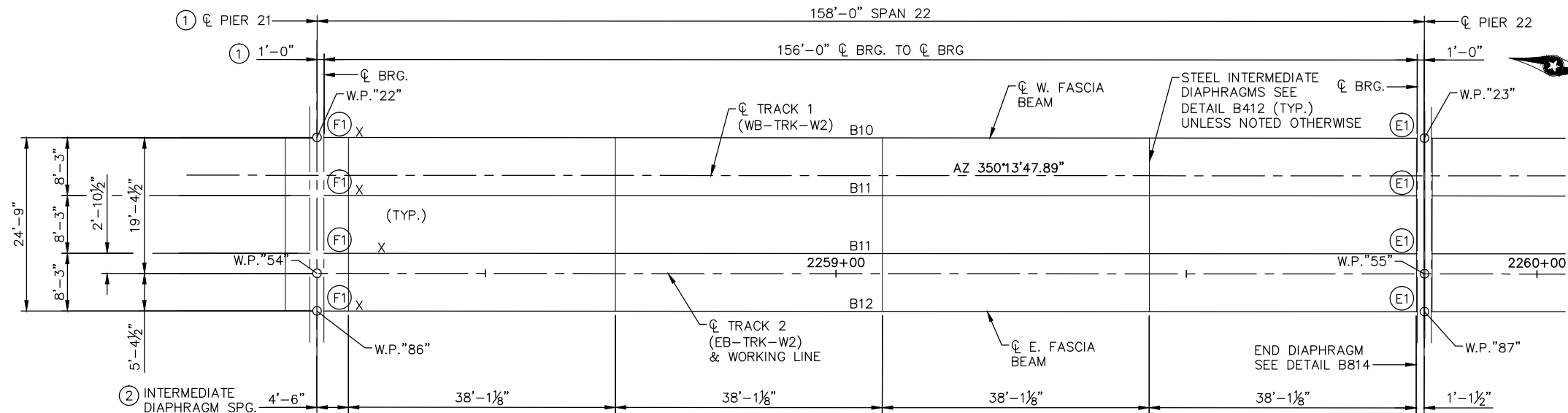
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SHEET NAME: W2-STU-BRID-T212-SUP1-1

SHEET 72 OF 148

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FRAMING PLAN – SPAN 21



FRAMING PLAN – SPAN 22

NOTES:

- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- X DENOTES MARKED END OF BEAM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: MJC
DRAWN BY: SWH
CHECKED BY: EEM
DATE: 8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

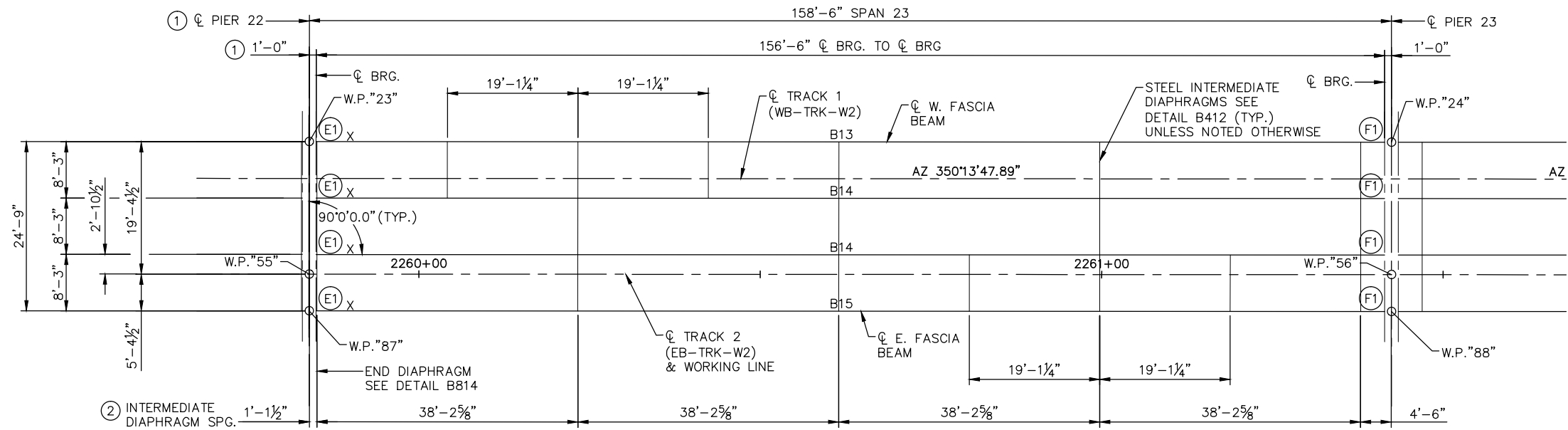
**SOUTHWEST**
Green Line LRT Extension

**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SHEET 2)**

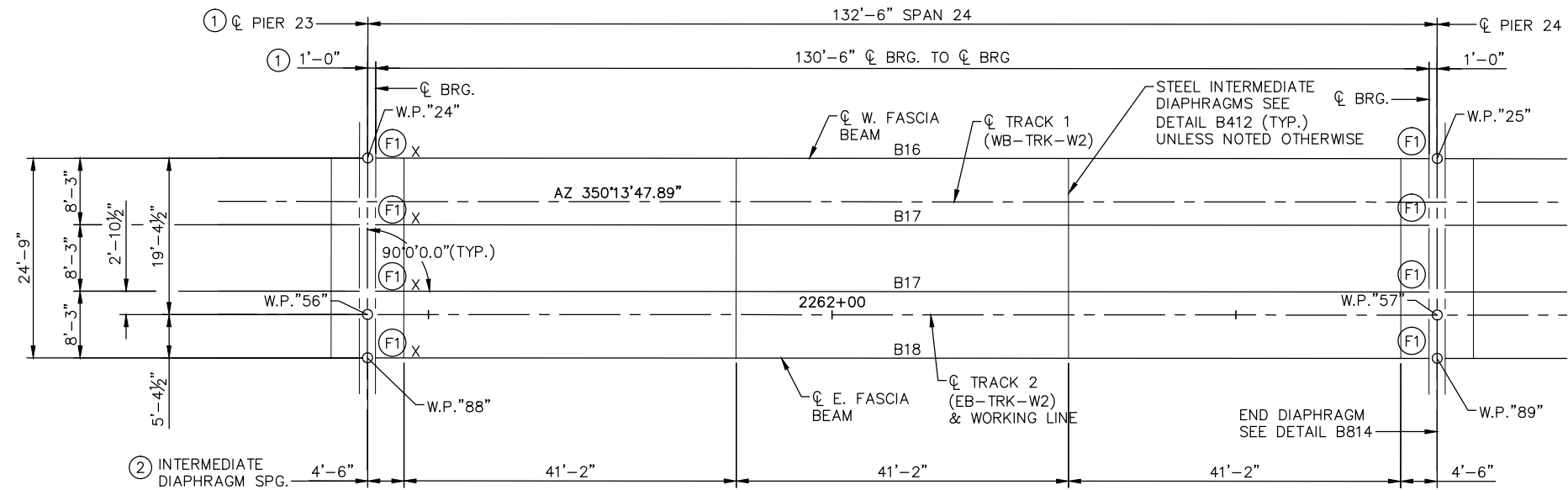
DISCIPLINE: **STRUCTURES**
SHEET NAME: **W2-STU-BRID-T212-SUP1-2**

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FRAMING PLAN - SPAN 23



FRAMING PLAN - SPAN 24

NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W2)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W2)
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- X = DENOTES MARKED END OF BEAM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: MJC
DRAWN BY: SWH
CHECKED BY: EEM
DATE: 8/24/2015

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**PARSONS
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**METROPOLITAN
COUNCIL**

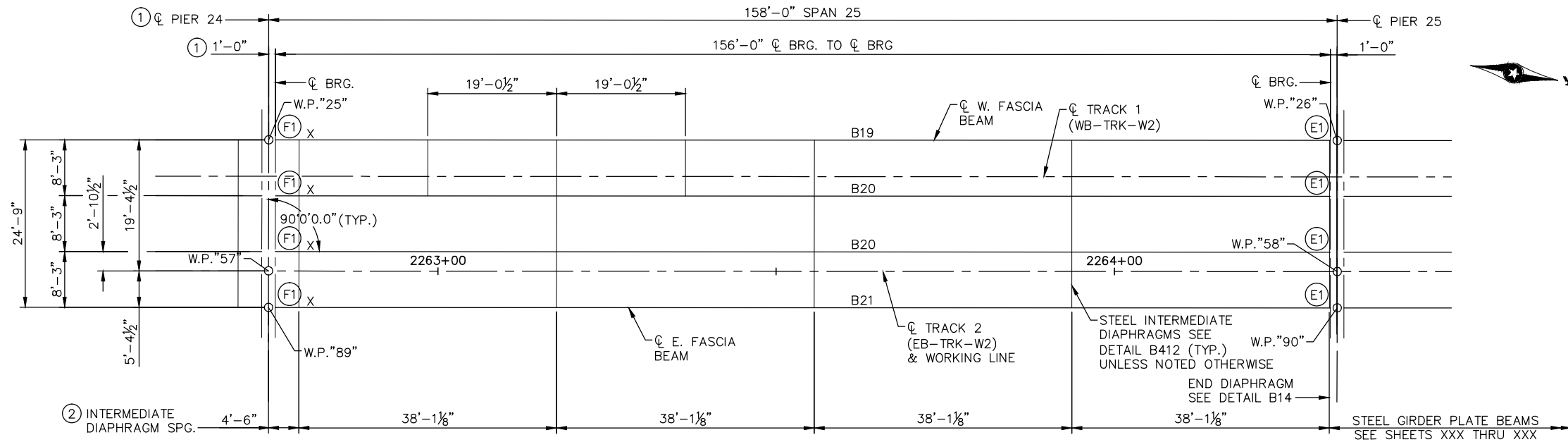
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SHEET 3)

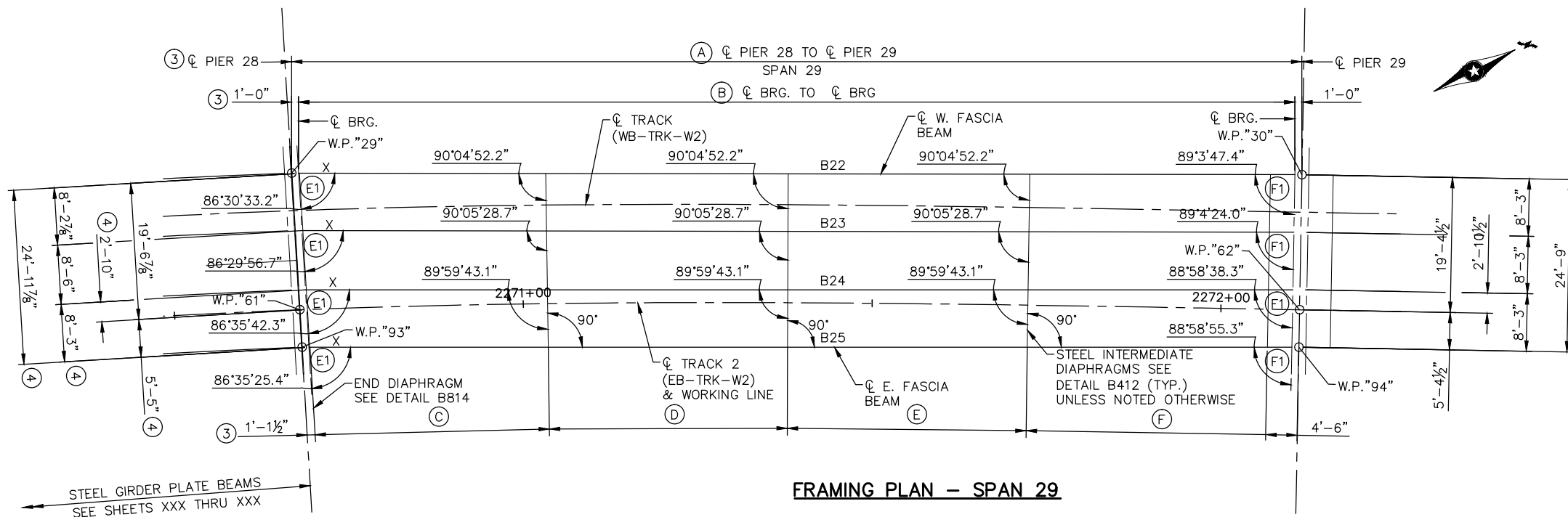
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SHEET NAME: **W2-STU-BRID-T212-SUP1-3**

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FRAMING PLAN - SPAN 25



FRAMING PLAN - SPAN 29

BEAM DIMENSIONS ③						
BEAM	(A)	(B)	(C)	(D)	(E)	(F)
B22	144'-9 7/8"	142'-9 7/8"	35'-6 3/8"	34'-0 3/4"	34'-0 3/4"	34'-6 1/8"
B23	144'-2 1/4"	142'-2 1/4"	35'-0 3/4"	34'-0 3/4"	34'-0 3/4"	34'-4 3/8"
B24	143'-6 3/8"	141'-6 3/8"	34'-6 3/4"	34'-0 3/4"	34'-0 3/4"	34'-2 5/8"
B25	142'-10 3/4"	140'-10 3/4"	34'-0 3/4"	34'-0 5/8"	34'-0 5/8"	34'-0 5/8"

NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
- ③ MEASURED ALONG CL BEAM
- ④ MEASURED ALONG CL BEARING
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- X = DENOTES MARKED END OF BEAM

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	08/24/2015	MJC	SWH	EEM	60% SUBMISSION - 9/28/15
2					
3					
4					
5					
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7					
8					
9					
10					

DESIGNED BY: MJC	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15

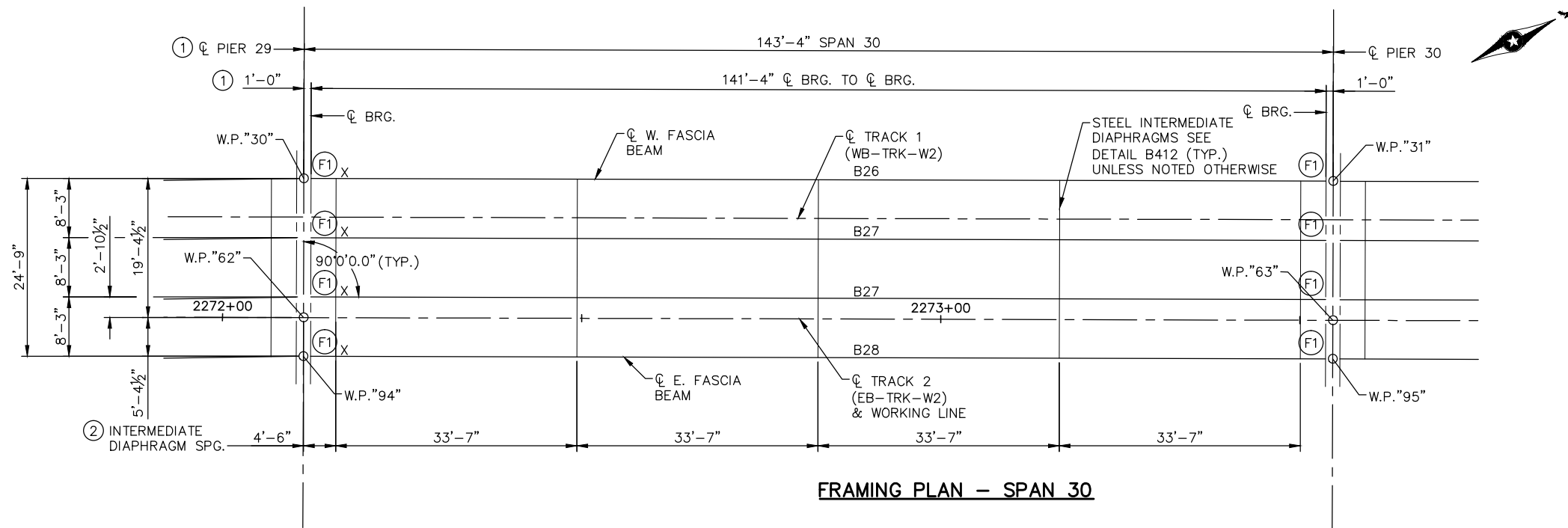


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SHEET 4)

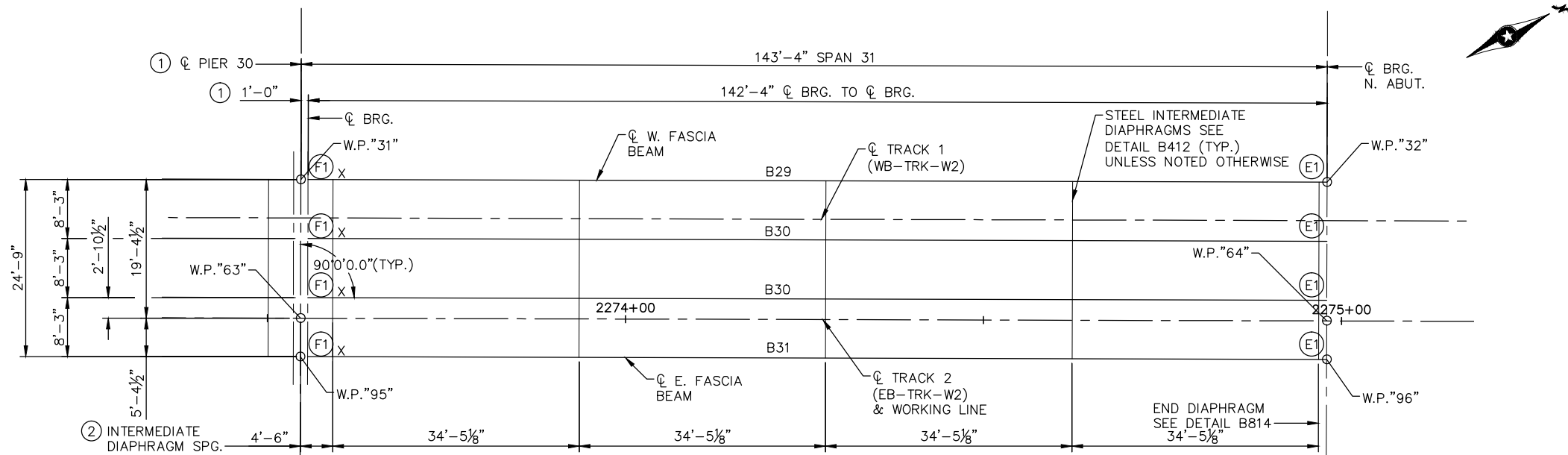
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP1-4

SHEET 75 OF 148

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FRAMING PLAN - SPAN 30



FRAMING PLAN - SPAN 31

NOTES:

- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
- X DENOTES MARKED END OF BEAM

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DESIGNED BY: MJC
DRAWN BY: SWH
CHECKED BY: EEM
DATE: 8/24/2015

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**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

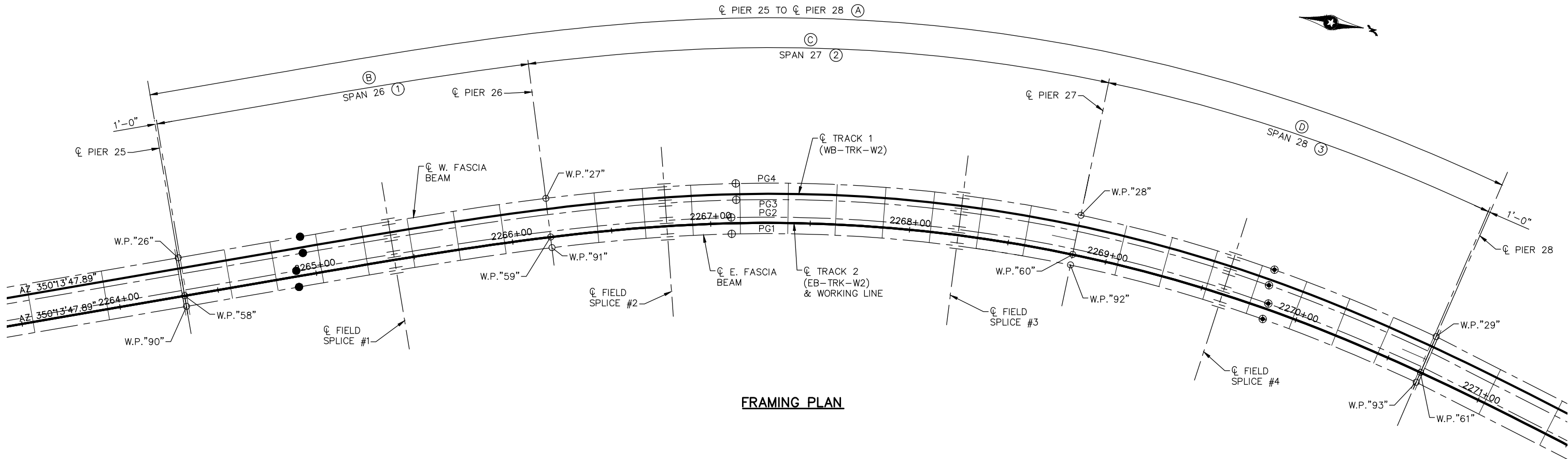
**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
FRAMING PLAN (SHEET 5)

DISCIPLINE: **STRUCTURES**
SHEET NAME: **W2-STU-BRID-T212-SUP1-5**

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FRAMING PLAN

SPAN LENGTHS (DIMENSIONS ARE ALONG ϕ BEAM)

	BEAM	TS STA ●	●OFFSET	SC STA ⊕	⊕OFFSET	RADIUS	CS STA ⊙	⊙OFFSET	Ⓐ	Ⓑ	Ⓒ	Ⓓ
④	PG1	2264+90.34	5.375' RT	2267+10.34	5.375' RT	744'-7½"	2269+84.12	5.375' RT	631'-10½"	185'-0⅛"	261'-11½"	182'-10⅞"
④	PG2	2264+90.34	2.875' LT	2267+10.34	2.875' LT	752'-10½"	2269+84.12	2.875' LT	636'-8"	185'-4¾"	264'-8¼"	184'-7"
⑤	PG3	1264+95.12	2.875' RT	1267+15.12	2.875' RT	747'-1½"	1269+88.90	2.875' RT	641'-9⅝"	185'-9⅜"	267'-7⅝"	186'-4⅝"
⑤	PG4	1264+95.12	5.375' LT	1267+15.12	5.375' LT	755'-4½"	1269+88.90	5.375' LT	646'-7⅞"	186'-2"	270'-4⅜"	188'-0¾"

LEGEND:

- DENOTES TS STA. SEE TABLE FOR STATION AND OFFSET.
- ⊕ DENOTES SC STA. SEE TABLE FOR STATION AND OFFSET.
- ⊙ DENOTES CS STA. SEE TABLE FOR STATION AND OFFSET.

NOTES:

- ① ϕ BRG. PIER 25 TO ϕ PIER 26
- ② ϕ PIER 26 TO ϕ PIER 27
- ③ ϕ PIER 27 TO ϕ BRG. PIER 28
- ④ TRACK 2 (EB-TRK-W2) ALIGNMENT
- ⑤ TRACK 1 (WB-TRK-W2) ALIGNMENT

STRUCTURAL STEEL NOTES:

ALL STEEL SHALL CONFORM TO MN/DOT SPEC. 3309 UNLESS OTHERWISE NOTED.

SHEAR STUDS ON THE TOP FLANGE OF THE GIRDER SHALL BE INSTALLED IN THE FIELD

FOR WELDED FLANGE SPLICES, SEE SPEC. 2471.3F1a.

FULL ASSEMBLY WILL BE REQUIRED PER SPEC. 2471.3H1b AND 2471.3J2.

WEB PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS AND WIDTHS WITH A MINIMUM NUMBER OF WEB SPLICES. LOCATION OF SPLICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND SHALL BE A MINIMUM OF 1'-0" FROM STIFFENERS OR FLANGE SPLICES.

BEARING STIFFENERS AT PIER 25 AND PIER 28 SHALL BE VERTICAL. BEARING STIFFENERS AT PIERS 26 AND 27 SHALL BE PERPENDICULAR TO FLANGE. ENDS OF BEAMS SHALL BE VERTICAL.

ROWS OF SHEAR CONNECTORS SHALL BE ALIGNED PARALLEL TO THE TRANSVERSE SLAB REINFORCEMENT BARS.

SHEAR CONNECTORS TO PROJECT A MINIMUM OF 2" INTO DECK STRUCTURAL SLAB. IN NO CASE SHALL SHEAR CONNECTORS PROJECT CLOSER THAN 1" TO TOP OF DECK STRUCTURAL SLAB. ENGINEER TO FIELD VERIFY BEAM ELEVATION AND AUTHORIZE STUD LENGTH.

SHEAR CONNECTORS TO BE INCLUDED IN WEIGHT OF STRUCTURAL STEEL (3309) AND CONFORM TO SPEC. 3391.

FLANGE PLATES FOR BEAMS SHALL BE CUT TO PROPER CURVATURE.


ALL BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER A325 BOLTS, EXCEPT AS NOTED.

ELEVATIONS GIVEN AT FIELD SPLICES ARE TAKEN AT TOP OF TOP FLANGE SPLICE PLATE.

ELEVATIONS SHOWN AT FIELD SPLICES ARE THEORETICAL. ELEVATIONS FURNISHED AS A GUIDE FOR ERECTION. DEFLECTIONS FROM WEIGHT OF BEAM AND DIAPHRAGM ARE INCLUDED.

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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SPANS 26-28 FRAMING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP2

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SEMI-INTEGRAL ABUTMENT
SEE SUPERSTRUCTURE DETAILS AND
REINFORCEMENT FOR DIAPHRAGM DETAILS.

(SEE DETAIL B412 FOR DIAPHRAGM DETAILS)

96MW PRESTRESSED CONCRETE BEAM TABLE																										
	BEAM DIMENSIONS			SHEAR REINFORCEMENT			HOLD DOWN	PRESTRESS LOSSES			CAMBER															WEIGHT OF BEAM
BEAM ID	"A"	"B"	SLOPED LENGTH①	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"					"K"	"L"					"M"				
											30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS		30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS					
B1 & B3	158'-8"	157'-3"	YES	66	66'-0"	0'-2"	15'-10½"	18.34	20.17	38.51						2¾"						98.5				
B2	158'-8"	157'-3"	YES	66	66'-0"	0'-2"	15'-10½"	18.34	20.17	38.51						2⅞"						98.5				
B4 & B6	157'-8"	156'-3"	YES	65	65'-0"	0'-8"	15'-9"	18.43	20.17	38.60						2¾"						98				
B5	157'-8"	156'-3"	YES	65	65'-0"	0'-8"	15'-9"	18.43	20.17	38.60						2¾"						98				
B7 & B9	157'-7⅝"	156'-2⅝"	YES	65	65'-0"	0'-7¾"	15'-9"	18.43	20.17	38.60						2¾"						98				
B8	157'-7⅝"	156'-2⅝"	YES	65	65'-0"	0'-7¾"	15'-9"	18.43	20.17	38.60						2¾"						98				
B10 & B12	157'-6"	156'-1"	YES	65	65'-0"	0'-7"	15'-9"	18.43	20.17	38.60						2¾"						98				
B11	157'-6"	156'-1"	YES	65	65'-0"	0'-7"	15'-9"	18.43	20.17	38.60						2¾"						98				
B13 & B15	157'-11"	156'-6"	NO	65	65'-0"	0'-9½"	15'-9"	18.38	20.17	38.56						2¾"						98				
B14	157'-11"	156'-6"	NO	65	65'-0"	0'-9½"	15'-9"	18.38	20.17	38.56						2⅞"						98				
B19 & B21	157'-5"	156'-0"	NO	65	65'-0"	0'-6½"	15'-9"	18.43	20.17	38.60						2¾"						98				
B20	157'-5"	156'-0"	NO	65	65'-0"	0'-6½"	15'-9"	18.43	20.17	38.60						2¾"						98				

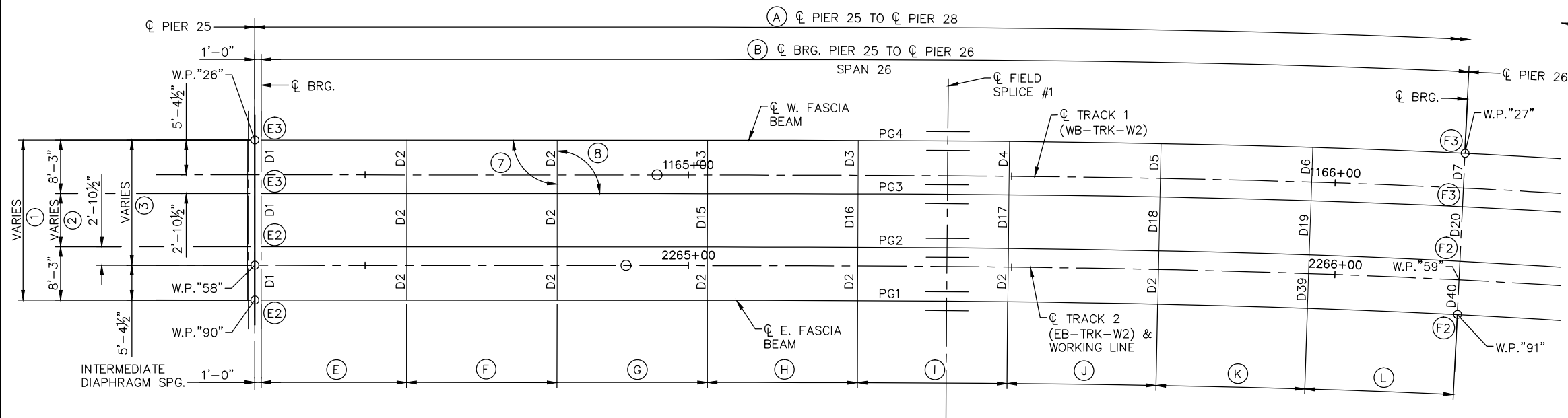
82MW PRESTRESSED CONCRETE BEAM TABLE																										
BEAM ID	BEAM DIMENSIONS			SHEAR REINFORCEMENT			HOLD DOWN	PRESTRESS LOSSES			CAMBER															WEIGHT OF BEAM
	"A"	"B"	SLOPED LENGTH①	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"					"K"	"L"					"M"				
											30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS		30 DAYS	60 DAYS	90 DAYS	120 DAYS	180 DAYS					
B22	144'-2⅞"	142'-9⅞"	NO	60	60'-0"	0'-5½"	14'-5"	20.07	21.12	41.19						2⅞"						82.5				
B23	143'-7¼"	142'-2¼"	NO	59	59'-0"	1'-1⅝"	14'-4½"	20.11	21.12	41.23						2¾"						82				
B24	142'-11⅜"	141'-6⅜"	NO	59	59'-0"	0'-9¾"	14'-3½"	20.15	21.12	41.28						2¾"						82				
B25	142'-3¾"	140'-10¾"	NO	59	59'-0"	0'-5⅞"	14'-3"	20.20	21.12	41.32						2½"						81.5				
B26 & B28	142'-9"	141'-4"	NO	59	59'-0"	0'-8½"	14'-3½"	19.33	20.66	39.99						2⅝"						82				
B27	142'-9"	141'-4"	NO	59	59'-0"	0'-8½"	14'-3½"	19.33	20.66	39.99						2¾"						82				
B29 & B31	143'-9"	142'-4"	NO	60	60'-0"	0'-2½"	14'-4½"	19.23	20.66	39.89						2¾"						82.5				
B30	143'-9"	142'-4"	NO	60	60'-0"	0'-2½"	14'-4½"	19.23	20.66	39.89						2¾"						82.5				

NOTES:

① "YES" INDICATES BEAM DIMENSION SHOWN ARE MEASURED ALONG SLOPE
"NO" INDICATES BEAM DIMENSION SHOWN ARE MEASURED HORIZONTALLY

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 PRESTRESSED CONCRETE BEAM DETAILS		SHEET 82 OF 148

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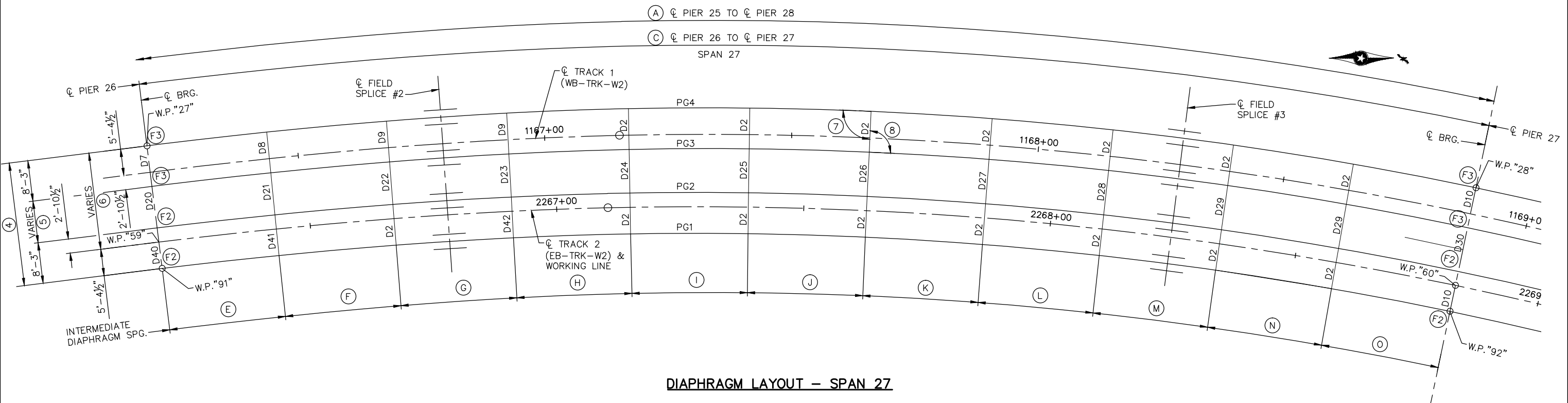
DIAPHRAGM LAYOUT - SPAN 26

NOTES:

- ① VARIES 24'-9" TO 24'-11½"
- ② VARIES 8'-3" TO 8'-5½"
- ③ VARIES 19'-4½" TO 19'-7"
- ④ VARIES 24'-11½" TO 25'-6¾"
- ⑤ VARIES 8'-5½" TO 9'-0¾"
- ⑥ VARIES 19'-7" TO 20'-1⅞"

SEE SHEET 84 FOR DIAPHRAGM SPACING AND DIMENSIONS TABLE

SEE SHEET 84 FOR TABULATION OF ⑦ AND ⑧



DIAPHRAGM LAYOUT - SPAN 27

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/15	DDL	MJC	SWH	DESIGNED BY: DDL
2					CHECKED BY: MJC
3					DRAWN BY: SWH
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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/15

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**SOUTHWEST**
Green Line LRT Extension

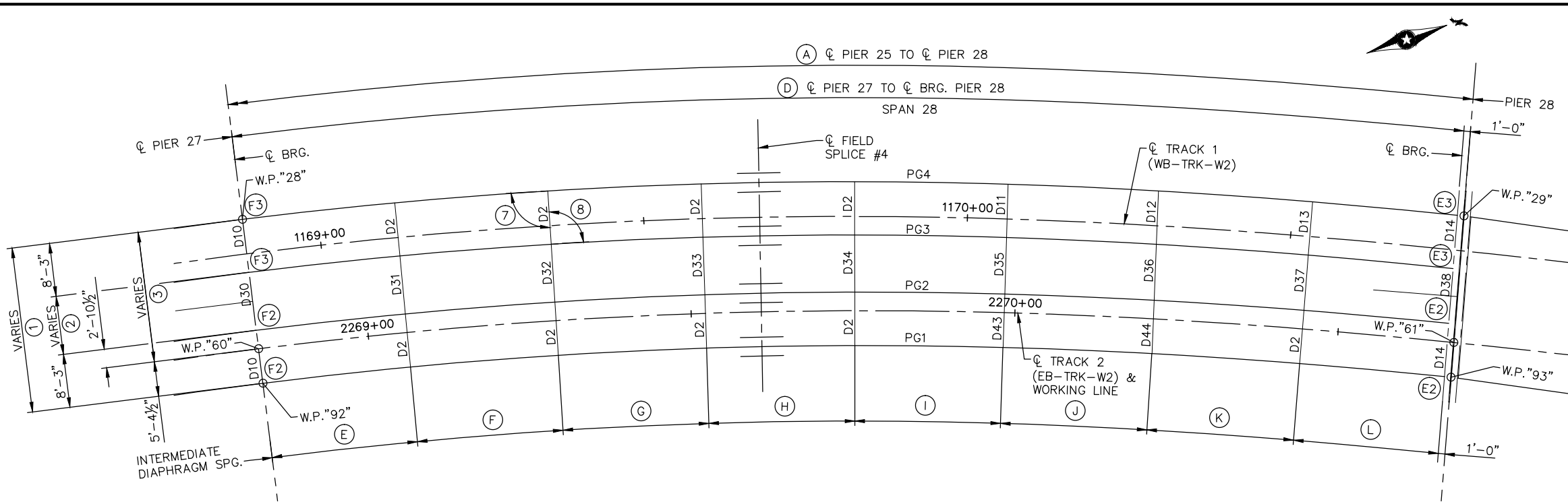
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM LAYOUT SPAN 26 & 27

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-SUP3-1**

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NOTES:

- ① VARIES 25'-6 $\frac{3}{8}$ " TO 25'-0 $\frac{1}{8}$ "
② VARIES 9'-0 $\frac{3}{8}$ " TO 8'-6 $\frac{1}{8}$ "
③ VARIES 20'-1 $\frac{1}{8}$ " TO 19'-7 $\frac{5}{8}$ "

BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF BEAM WEB.

DIAPHRAGM LAYOUT – SPAN 28

INTERMEDIATE DIAPHRAGM LENGTHS						
DIAPH. ID	SPAN	NO.	LENGTH	DIAPH. TYPE	ANGLE	
					WEST END ⑦	EAST END ⑧
D1	26	3	8'-3"	2	90°00'00"	90°00'00"
D2	26,27,28	34	8'-3"	1	90°00'00"	90°00'00"
D3	26	2	8'-3"	1	89°59'58.9"	89°59'58.9"
D4	26	1	8'-3"	1	89°51'35.2"	89°51'35.2"
D5	26	1	8'-3"	1	89°48'26.3"	89°48'26.3"
D6	26	1	8'-3"	1	89°59'30.3"	89°59'30.3"
D7	27	1	8'-3"	3	89°59'58.9"	89°59'58.9"
D8	27	1	8'-3"	1	89°34'16.6"	89°34'16.6"
D9	27	2	8'-3"	1	89°59'58.9"	89°59'58.9"
D10	28	2	8'-3"	3	90°00'00"	90°00'00"
D11	28	1	8'-3"	1	90°3'14.5"	90°3'14.5"
D12	28	1	8'-3"	1	90°55'36.9"	90°55'36.9"
D13	28	1	8'-3"	1	90°23'5.1"	90°23'5.1"
D14	28	2	8'-3"	2	91°6'6.5"	91°6'6.5"
D15	26	1	8'-3"	1	89°59'58.9"	90°00'00"
D16	26	1	8'-3 $\frac{1}{8}$ "	1	89°59'58.9"	90°00'00"
D17	26	1	8'-3 $\frac{1}{2}$ "	1	89°51'35.2"	90°00'00"
D18	26	1	8'-4 $\frac{1}{8}$ "	1	89°48'26.3"	90°00'00"
D19	26	1	8'-4 $\frac{3}{4}$ "	1	89°59'30.3"	89°59'31.4"
D20	26	1	8'-5 $\frac{1}{2}$ "	3	89°59'58.9"	90°18'53.3"
D21	27	1	8'-6 $\frac{5}{8}$ "	1	89°34'16.6"	89°56'19.8"
D22	27	1	8'-7 $\frac{1}{2}$ "	1	89°59'58.9"	90°00'00"
D23	27	1	8'-8 $\frac{5}{8}$ "	1	89°59'58.9"	90°29'22.9"
D24	27	1	8'-9 $\frac{3}{4}$ "	1		

INTERMEDIATE DIAPHRAGM LENGTHS (CONT.)						
DIAPH. ID	SPAN	NO.	LENGTH	DIAPH. TYPE	ANGLE	
					WEST END ⑦	EAST END ⑧
D25	27	1	8'-10 $\frac{5}{8}$ "	1	90°00'00"	90°00'00"
D26	27	1	8'-11 $\frac{3}{8}$ "	1	90°00'00"	90°00'00"
D27	27	1	8'-11 $\frac{1}{8}$ "	1	90°00'00"	90°00'00"
D28	27	1	9'-0 $\frac{1}{4}$ "	1	90°00'00"	90°00'00"
D29	27	2	9'-0 $\frac{1}{2}$ "	1	90°00'00"	90°00'00"
D30	28	1	9'-0 $\frac{3}{8}$ "	3	90°00'00"	90°00'00"
D31	28	1	9'-0"	1	90°00'00"	90°00'00"
D32	28	1	8'-11 $\frac{1}{2}$ "	1	90°00'00"	90°00'00"
D33	28	1	8'-10 $\frac{3}{4}$ "	1	90°00'00"	90°00'00"
D34	28	1	8'-9 $\frac{7}{8}$ "	1	90°00'00"	90°00'00"
D35	28	1	8'-8 $\frac{3}{4}$ "	1	90°3'14.5"	90°3'14.5"
D36	28	1	8'-7 $\frac{7}{8}$ "	1	90°55'36.9"	90°55'36.9"
D37	28	1	8'-6 $\frac{7}{8}$ "	1	90°23'5.1"	90°00'00"
D38	28	1	8'-6 $\frac{1}{8}$ "	2	91°6'6.5"	91°6'6.5"
D39	26	1	8'-3"	1	89°59'31.4"	89°59'31.4"
D40	27	1	8'-3"	3	90°18'53.3"	90°18'53.3"
D41	27	1	8'-3"	1	89°56'19.8"	89°56'19.8"
D42	27	1	8'-3"	1	90°29'22.9"	90°29'22.9"
D43	28	1	8'-3"	1	90°3'14.5"	90°3'14.5"
D44	28	1	8'-3"	1	90°55'36.9"	90°55'36.9"

DIAPGRAGM SPACING – SPAN 26											
BEAM	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
PG1	22'-6 $\frac{1}{8}$ "	23'-3"	23'-3"	23'-2 $\frac{7}{8}$ "	23'-2 $\frac{1}{2}$ "	23'-2 $\frac{3}{8}$ "	23'-2 $\frac{1}{4}$ "	23'-2"	-----	-----	-----
PG2	22'-6 $\frac{1}{8}$ "	23'-3"	23'-3"	23'-3 $\frac{1}{8}$ "	23'-3 $\frac{1}{4}$ "	23'-3 $\frac{3}{8}$ "	23'-3 $\frac{1}{2}$ "	23'-3 $\frac{1}{2}$ "	-----	-----	-----
PG3	22'-6 $\frac{1}{8}$ "	23'-3"	23'-3"	23'-3 $\frac{3}{8}$ "	23'-4"	23'-4 $\frac{1}{4}$ "	23'-4 $\frac{1}{2}$ "	23'-5"	-----	-----	-----
PG4	22'-6 $\frac{1}{8}$ "	23'-3"	23'-3 $\frac{1}{8}$ "	23'-3 $\frac{5}{8}$ "	23'-4 $\frac{1}{8}$ "	23'-5 $\frac{1}{8}$ "	23'-5 $\frac{3}{4}$ "	23'-6 $\frac{3}{8}$ "	-----	-----	-----

DIAPGRAGM SPACING – SPAN 27											
BEAM	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
PG1	23'-9 $\frac{3}{8}$ "	23'-9 $\frac{3}{8}$ "	23'-9 $\frac{1}{2}$ "	23'-8 $\frac{5}{8}$ "	23'-9"	23'-9"	23'-9"	23'-9"	23'-9"	23'-9"	24'-4 $\frac{3}{4}$ "
PG2	23'-11 $\frac{1}{8}$ "	23'-11 $\frac{5}{8}$ "	23'-11 $\frac{7}{8}$ "	24'-0 $\frac{1}{4}$ "	24'-0 $\frac{1}{8}$ "	24'-0 $\frac{1}{8}$ "	24'-0 $\frac{1}{8}$ "	24'-0 $\frac{1}{8}$ "	24'-0 $\frac{1}{8}$ "	24'-0 $\frac{1}{8}$ "	24'-8 $\frac{1}{8}$ "
PG3	24'-2 $\frac{1}{4}$ "	24'-1 $\frac{3}{4}$ "	24'-2 $\frac{1}{4}$ "	24'-4 $\frac{1}{4}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "	24'-3 $\frac{1}{2}$ "
PG4	24'-4 $\frac{5}{8}$ "	24'-4"	24'-4 $\frac{5}{8}$ "	24'-7 $\frac{7}{8}$ "	24'-6 $\frac{5}{8}$ "	24'-6 $\frac{5}{8}$ "	24'-6 $\frac{3}{4}$ "	24'-6 $\frac{3}{4}$ "	24'-6 $\frac{3}{4}$ "	24'-6 $\frac{3}{4}$ "	25'-3 $\frac{1}{8}$ "

DIAPGRAGM SPACING – SPAN 28											
BEAM	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
PG1	22'-11 $\frac{1}{8}$ "	22'-11"	22'-11"	22'-11"	22'-10 $\frac{1}{4}$ "	23'-0 $\frac{1}{2}$ "	22'-10 $\frac{1}{2}$ "	22'-5 $\frac{1}{2}$ "	-----	-----	-----
PG2	23'-2"	23'-2"	23'-2"	23'-2"	23'-1 $\frac{3}{4}$ "	23'-1 $\frac{1}{4}$ "	23'-2 $\frac{3}{8}$ "	22'-5 $\frac{1}{2}$ "	-----	-----	-----
PG3	23'-5 $\frac{1}{4}$ "	23'-5 $\frac{3}{8}$ "	23'-5 $\frac{3}{8}$ "	23'-5 $\frac{3}{8}$ "	23'-5 $\frac{3}{8}$ "	23'-2 $\frac{1}{4}$ "	23'-6 $\frac{1}{4}$ "	22'-5 $\frac{1}{2}$ "	-----	-----	-----
PG4	23'-8 $\frac{1}{4}$ "	23'-8 $\frac{3}{8}$ "	23'-8 $\frac{3}{8}$ "	23'-8 $\frac{3}{8}$ "	23'-8 $\frac{3}{4}$ "	23'-3"	23'-10"	22'-5 $\frac{1}{2}$ "	-----	-----	-----

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DRAWN BY: SWH	DATE: 8/24/15

AECOM

**PARSONS
BRINCKERHOFF**

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**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM LAYOUT SPAN 28 & TABLE

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUP3-2

Elevation view of a steel beam. The beam is supported by PIER 27 on the left and PIER 28 on the right. The beam is divided into several segments with the following dimensions:

- Segment 1: 38'-0" (Q)
- Segment 2: 19'-0"
- Segment 3: 61'-0" (R)
- Segment 4: 30'-0" (S)
- Segment 5: 40'-0" (T)
- Segment 6: VARIES (U)
- Segment 7: 8"

 The beam has a 10'-0" WEB (TYP.) and a FIELD SPLICE #4. The beam is labeled with callouts A, D, Q, R, S, T, U, and 4. The beam is supported by a SOLE PLATE, SEE BEARING ASSEMBLY DETAIL SHEET (TYP.).

(5) SEE SHEET XX FOR SPLICE DETAILS.

[illegible][illegible]

SOUTHWEST
Green Line LRT Extension

**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BEAM ELEVATION ~ PG1-PG4**

DISCIPLINE: **STRUCTURES**

SHEET NAME:	W2-STU-BRID-T212-SUP3-3
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BEAM DIMENSIONS							
BEAM	(A)	(B)	(C)	(D)	(1)	(2)	(3)
PG1	631'-10½"	185'-0⅞"	261'-11½"	182'-10⅞"	35'-0⅞"	55'-11½"	32'-10⅞"
PG2	636'-8"	185'-4¾"	264'-8¼"	184'-7"	35'-4¾"	58'-8⅜"	34'-7"
PG3	641'-9⅝"	185'-9⅜"	267'-7⅝"	186'-4⅝"	35'-9⅜"	61'-7⅝"	36'-4⅝"
PG4	646'-7⅞"	186'-2"	270'-4⅜"	188'-0¾"	36'-2"	64'-4⅜"	38'-0¾"

FIELD SPLICE ELEVATION				
BEAM	FIELD SPLICE #1	FIELD SPLICE #2	FIELD SPLICE #3	FIELD SPLICE #4
PG1	XXX.XX	XXX.XX	XXX.XX	XXX.XX
PG2	XXX.XX	XXX.XX	XXX.XX	XXX.XX
PG3	XXX.XX	XXX.XX	XXX.XX	XXX.XX
PG4	XXX.XX	XXX.XX	XXX.XX	XXX.XX

AREA "A"				
BEAM	(KK)	(LL)	(MM)	(NN)
PG1	XX'-XX"	XX'-XX"	XX'-XX"	XX'-XX"
PG2	XX'-XX"	XX'-XX"	XX'-XX"	XX'-XX"
PG3	XX'-XX"	XX'-XX"	XX'-XX"	XX'-XX"
PG4	XX'-XX"	XX'-XX"	XX'-XX"	XX'-XX"

BEAM DIMENSIONS																
BEAM		(E)	(F)	(G)	(H)	(J)	(K)	(L)	(M)	(N)	(P)	(Q)	(R)	(S)	(T)	(U)
PG1	FLANGE WIDTH TOP	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	FLANGE WIDTH BOTTOM	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	PLATE TOP	1"	1"	1"	1½"	2"	1¾"	1"	1"	1"	1¾"	2"	1½"	1"	1"	1"
	PLATE BOTTOM	1"	1¼"	1"	1½"	2"	1¾"	1"	1½"	1"	1¾"	2"	1½"	1¼"	1¼"	1"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	1⅜"	1⅜"	1⅜"	⅞"	⅞"	⅞"	1⅜"	1⅜"	1⅜"	⅞"	⅞"	⅞"	1⅜"	1⅜"	1⅜"
PG2	FLANGE WIDTH TOP	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	FLANGE WIDTH BOTTOM	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"
	PLATE TOP	1"	1"	1"	1½"	2"	1¾"	1"	1"	1"	1¾"	2"	1½"	1"	1"	1"
	PLATE BOTTOM	1"	1¼"	1"	1½"	2"	1¾"	1"	1½"	1"	1¾"	2"	1½"	1"	1¼"	1"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	1⅜"	1⅜"	1⅜"	⅞"	⅞"	⅞"	1⅜"	1⅜"	1⅜"	⅞"	⅞"	⅞"	1⅜"	1⅜"	1⅜"
PG3	FLANGE WIDTH TOP	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"	30"
	FLANGE WIDTH BOTTOM	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
	PLATE TOP	1¼"	1¼"	1½"	2½"	3"	2¾"	1½"	2¾"	1½"	2¾"	3"	2½"	1½"	1¼"	1¼"
	PLATE BOTTOM	1½"	1¾"	1¾"	2½"	3"	2¾"	1¾"	3¼"	1¾"	2¾"	3"	2½"	1¾"	1¾"	1½"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	1⅜"	1⅜"	1⅜"	1"	1"	1"	1⅜"	1⅜"	1⅜"	1"	1"	1"	1⅜"	1⅜"	1⅜"
PG4	FLANGE WIDTH TOP	30"	30"	30"	30"	30"	30"	36"	36"	36"	30"	30"	30"	30"	30"	30"
	FLANGE WIDTH BOTTOM	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"	36"
	PLATE TOP	1¼"	1¼"	1¾"	2¾"	3¼"	3"	1¾"	2¾"	1¾"	3"	3¼"	2¾"	1¾"	1¼"	1¼"
	PLATE BOTTOM	1½"	1¾"	1¾"	2¾"	3¼"	3"	2"	3½"	2"	3"	3¼"	2¾"	2"	1¾"	1½"
	WEB DEPTH	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"	120"
	WEB THICKNESS	1⅜"	1⅜"	1⅜"	1"	1"	1"	1⅜"	1⅜"	1⅜"	1"	1"	1"	1⅜"	1⅜"	1⅜"

SHEAR CONNECTOR SPACING									
BEAM	(AA)	(BB)	(CC)	(DD)	(EE)	(FF)	(GG)	(HH)	(JJ)
PG1	XX SPA @ X" = XX'-XX"	X'-XX"	XX SPA @ X" = XX'-XX"	XX SPA @ X" = XX'-XX"	XX SPA @ X" = XX'-XX"	XX SPA @ X" = XX'-XX"	XX SPA @ X" = XX'-XX"	X'-XX"	XX SPA @ X" = XX'-XX"
PG2									
PG3									
PG4									

NOTES:
BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF BEAM WEB.

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DETAILS

10'-0"

1'-8"

7'-5"

11"

LOW SIDE

8'-3" MIN.

10" x 1 3/4" x 8'-0"

W24x55

7/8" Ø SHEAR STUD @ 12" O.C.

TIGHT FIT. WELD BOTH SIDES

BEARING STIFFENER

3" MIN.

7 3/8"

L6" x 6" x 5/8"

1/2" FILL PL

2 - L5" x 5" x 1/2"

MILL TO BEAR. WELD BOTH SIDES

Technical drawing illustrating the details of a steel beam-to-column connection. The drawing shows a cross-section of the joint with various dimensions and component labels.

Dimensions:

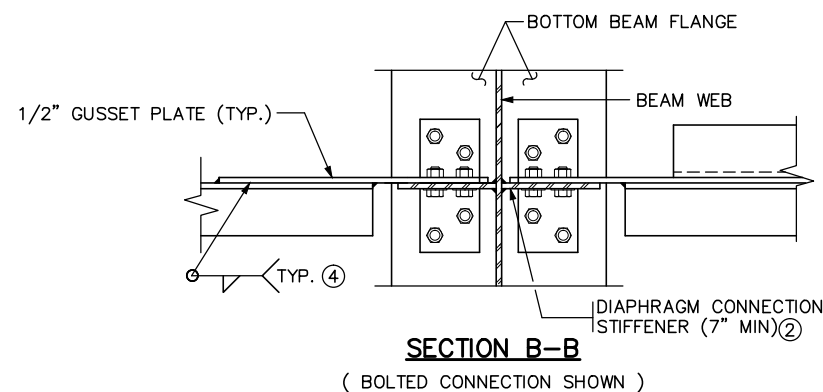
- Total height: 10'-0"
- Clearance above top flange: 1'-1"
- Clearance below bottom flange: 11"
- Beam depth: 8'-0"
- Column width: 7³/₈"
- Minimum gap between beam flanges: 3" MIN.
- Bottom flange thickness: 11"
- Overall width: 8'-3" MIN.

Components and Labels:

- TIGHT FIT. WELD BOTH SIDES
- PL 10"x 1³/₄"x 8'-0"
- 2 - L5"x 5"x 1/2"
- L6"x 6"x 1"
- BEARING STIFFENER
- 1/2" FILL PL
- MILL TO BEAR. WELD BOTH SIDES
- LOW SIDE

SECTION A-A

SECTION A-A



SECTION B-B

(BOLTED CONNECTION SHOWN)

- ① DIAPHRAGMS SHALL BE PLACED LEVEL.
- ② SEE BRIDGE FRAMING PLAN AND GIRDER ELEVATIONS FOR ADDITIONAL INFORMATION.
- ③ MILL TO BEAR AT BEARING STIFFENERS.
- ④ MINIMUM TOTAL WELD LENGTH EQUAL TO 4 TIMES NOMINAL ANGLE SIZE.

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DRAWN BY: SWH	DATE: 8/24/2015

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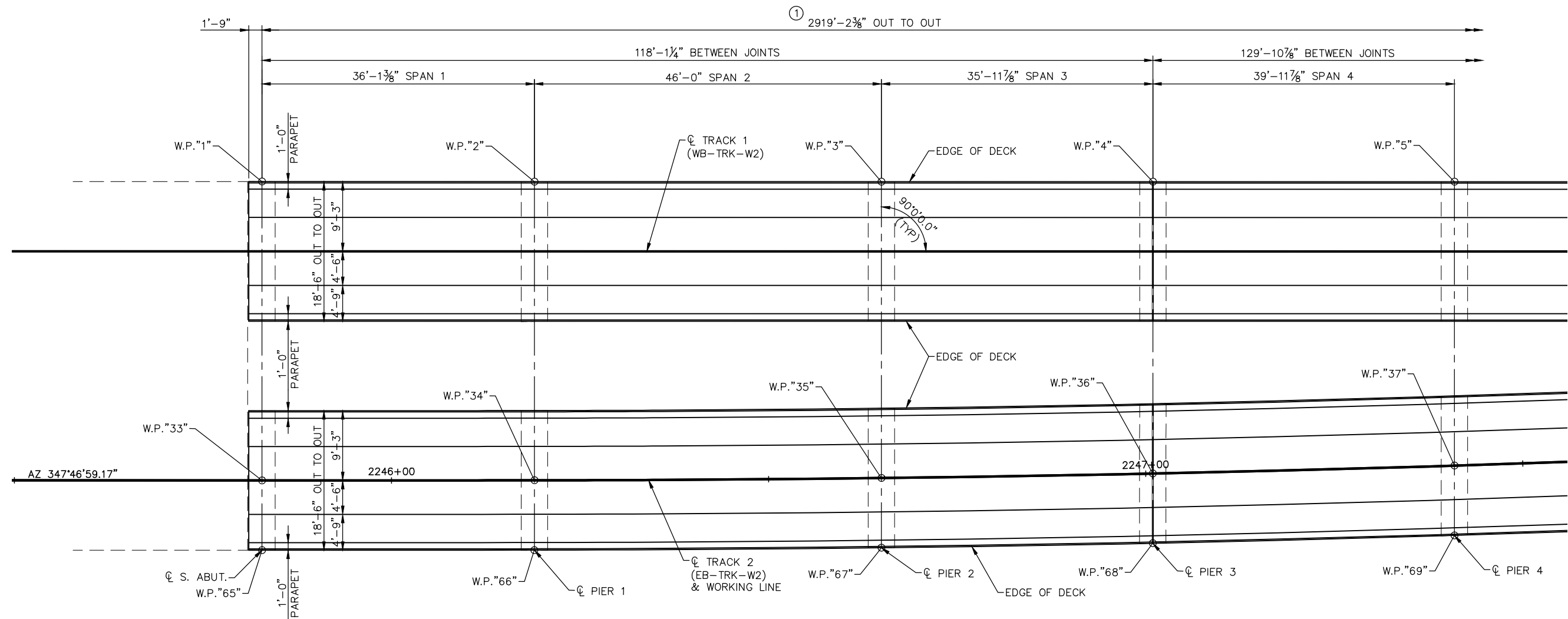
**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
DIAPHRAGM DETAILS**

DISCIPLINE: **STRUCTURES**

SHEET NAME:	W2-STU-BRID-T212-SUP4
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SHEET
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PARTIAL DECK PLAN - SPAN 1 TO 4

NOTES:

① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)

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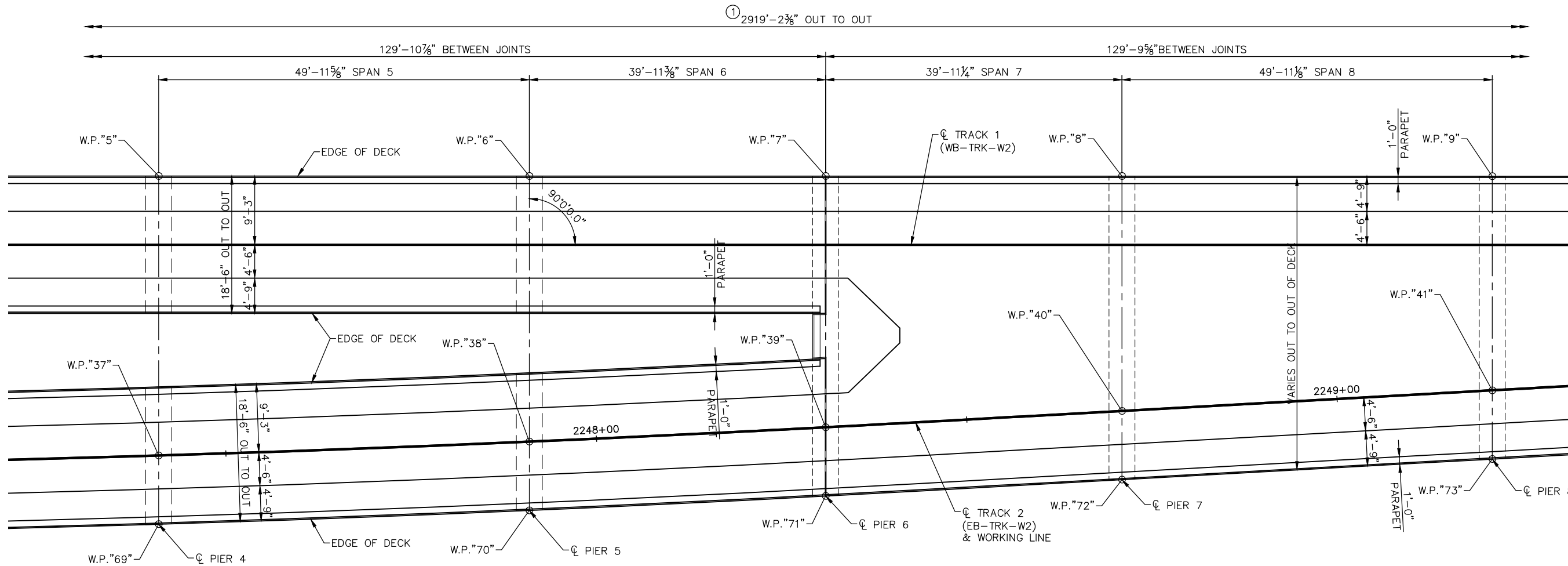
**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 1)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP11_1

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NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W2)

PARTIAL DECK PLAN – SPAN 5 TO SPAN 8

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DATE: 8/24/2015



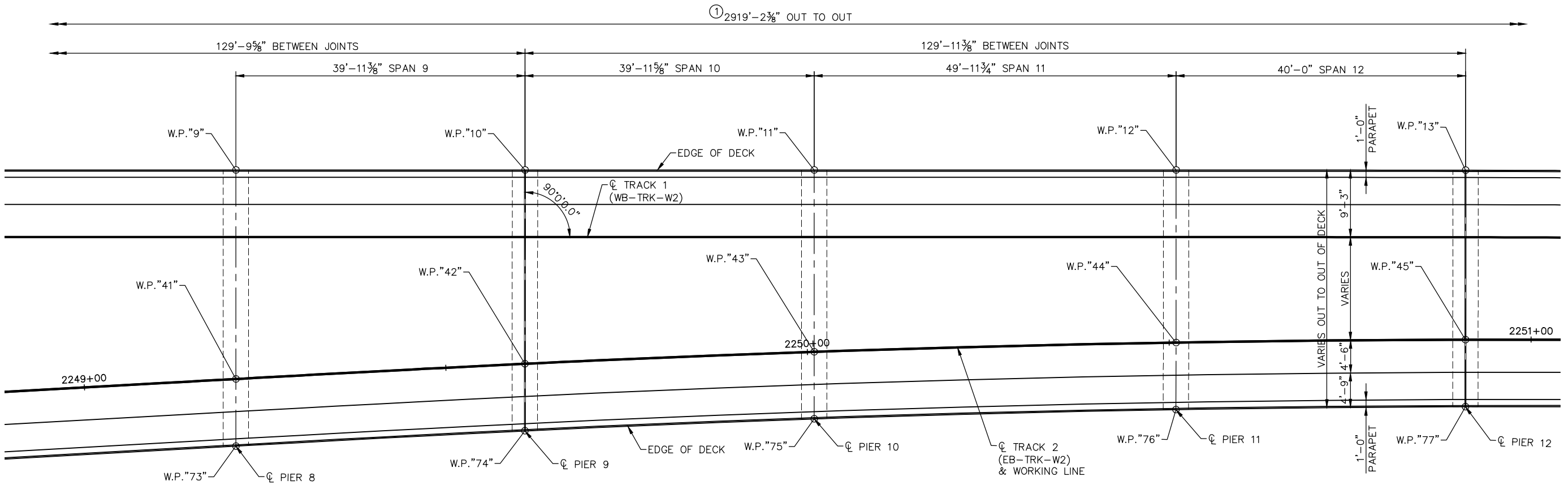
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CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SHEET 2)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP11_2

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PARTIAL DECK PLAN – SPAN 9 TO SPAN 12

NOTES:
① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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**PARSONS
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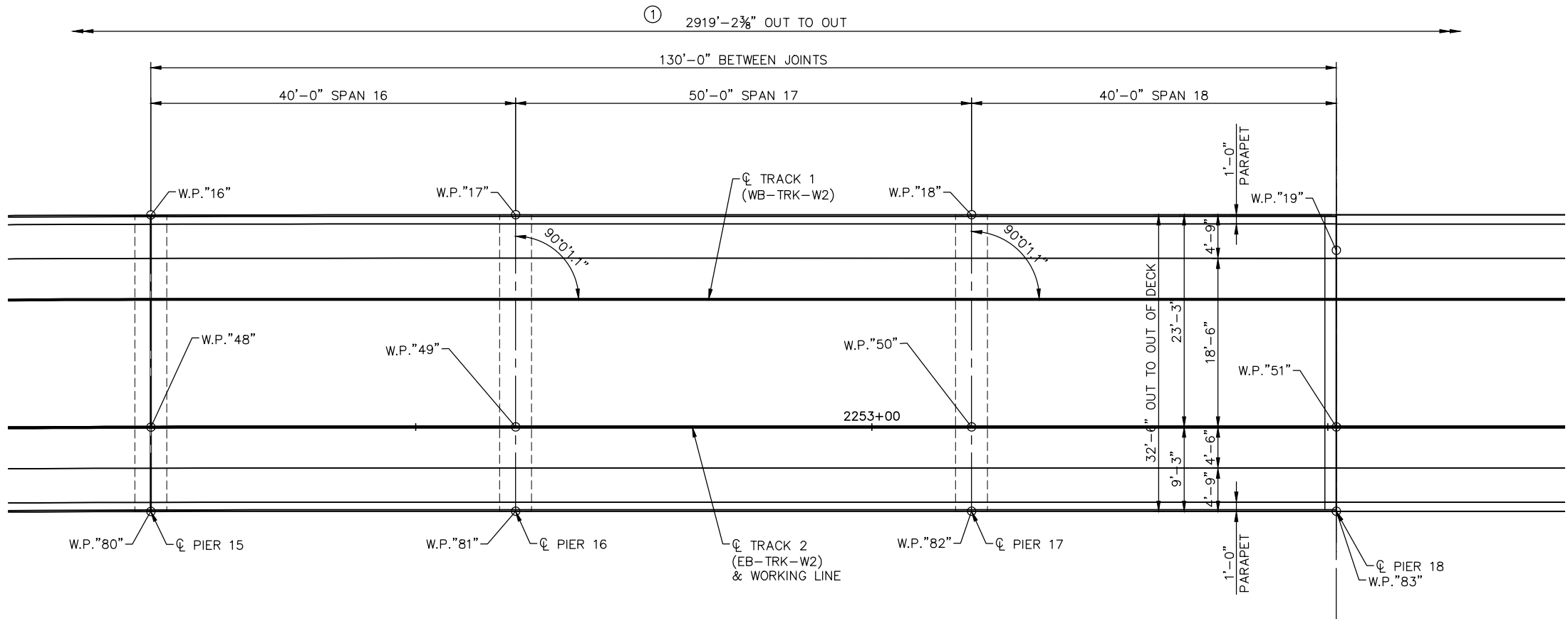
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COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SHEET 3)

DISCIPLINE: **STRUCTURES**
SHEET NAME: **W2-STU-BRID-T212-SUP11_3**

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NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W2)
- ② VARIES 32'-6" TO 32'-8½"
- ③ VARIES 23'-3" TO 23'-5½"
- ④ VARIES 18'-6" TO 18'-8½"

PARTIAL DECK PLAN – SPAN 16 TO SPAN 18

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DRAWN BY: MJY	DATE: 8/24/2015

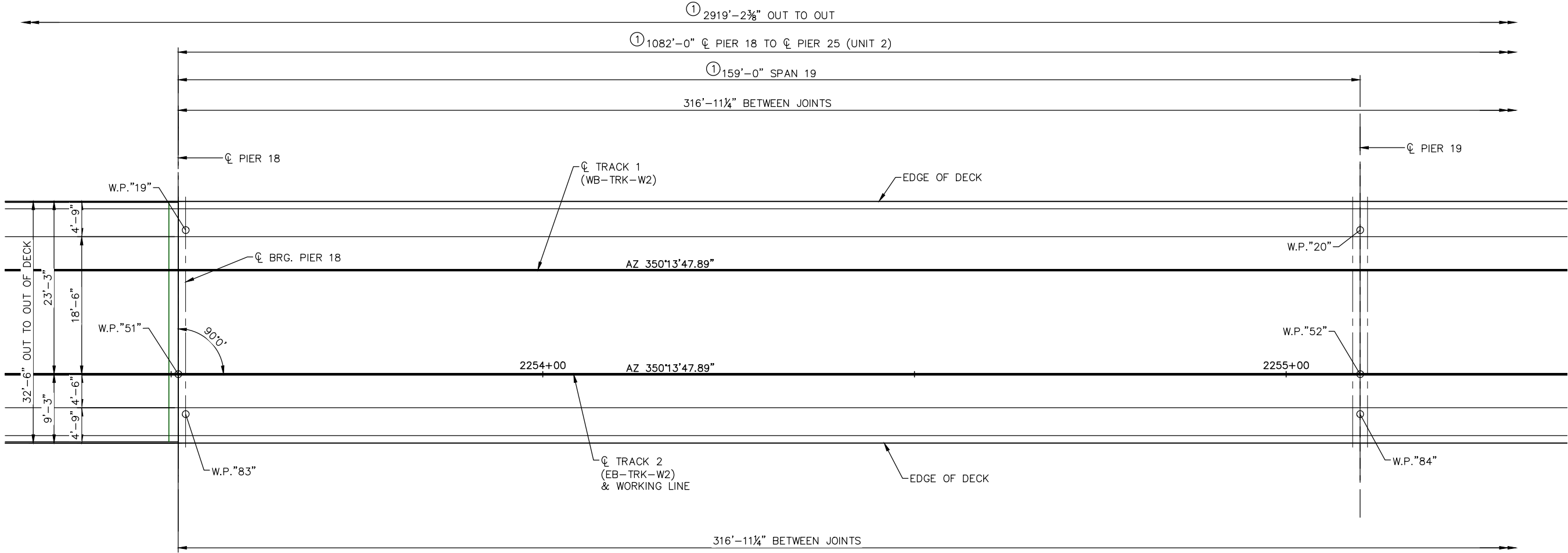


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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 5)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP11_5

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PARTIAL DECK PLAN – SPAN 19

NOTES:

① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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DRAWN BY: MJY	DATE: 8/24/2015

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**PARSONS
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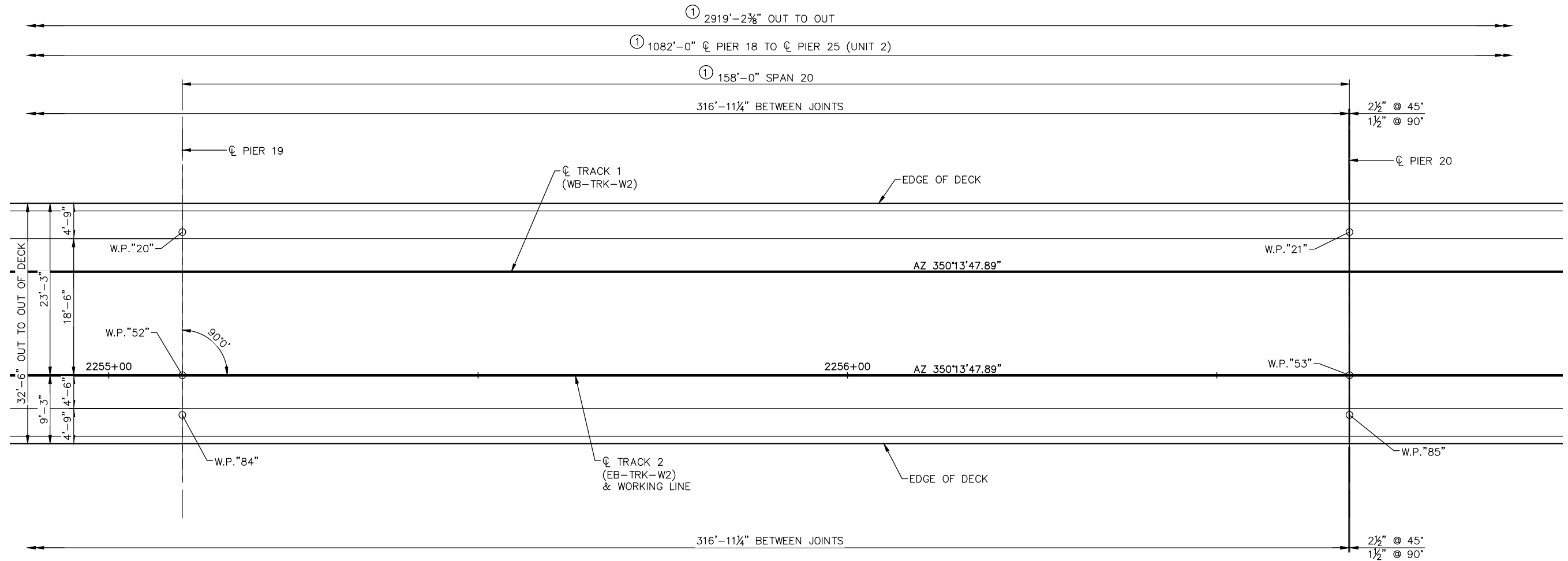
**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 6)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-19

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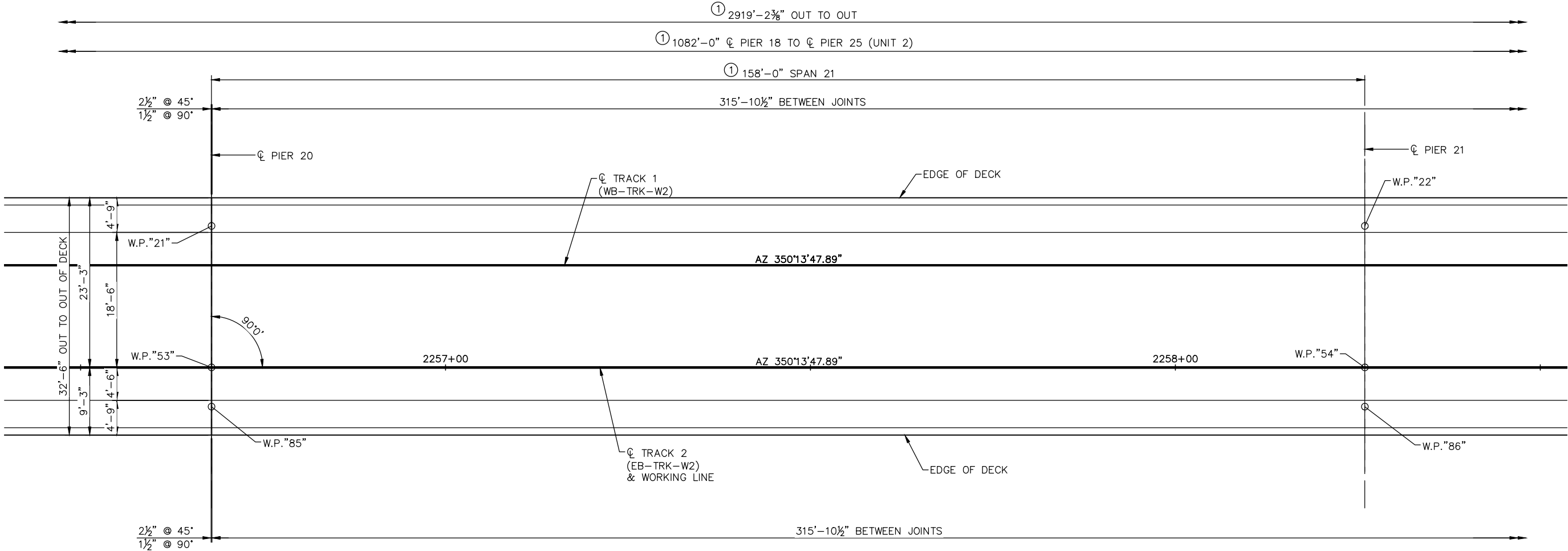
PARTIAL DECK PLAN - SPAN 20

NOTES:

- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)

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.	DESIGNED BY: DDL	CHECKED BY: EEM			
.	DRAWN BY: MJY	DATE: 8/24/2015	60% SUBMISSION - 9/28/15		
								DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-20	

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PARTIAL DECK PLAN – SPAN 21

NOTES:

① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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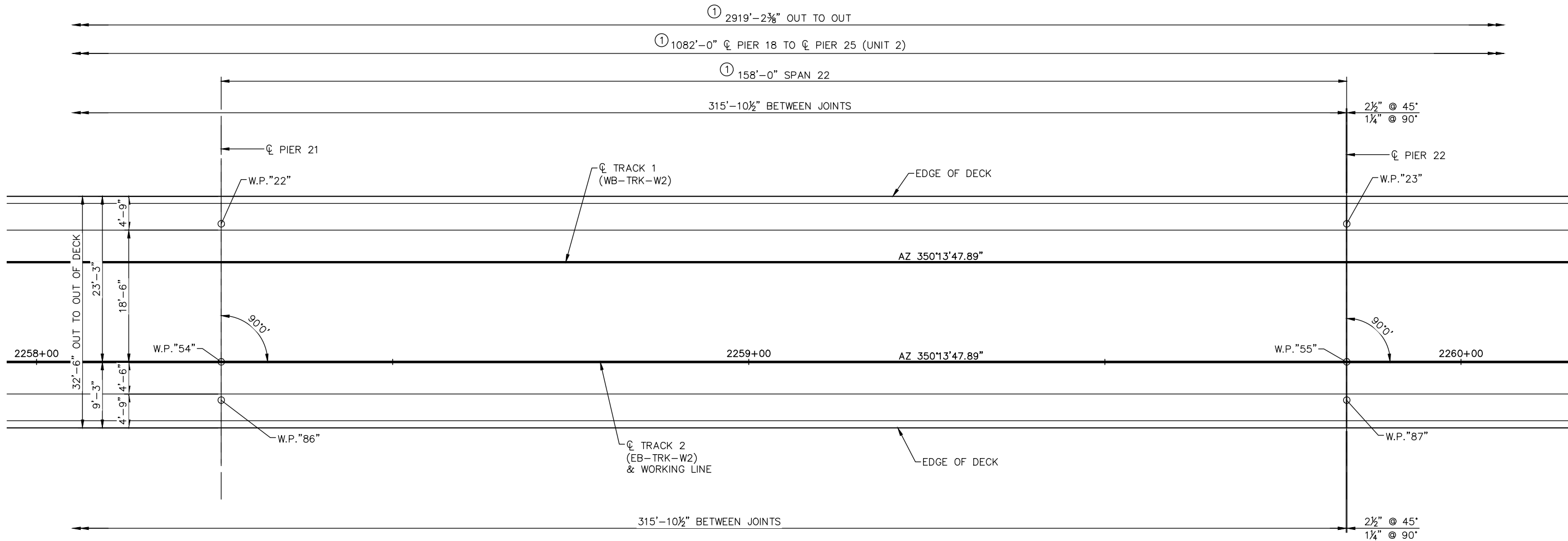
DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015

60% SUBMISSION - 9/28/15

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 8)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-21

SHEET
95
OF
148

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PARTIAL DECK PLAN – SPAN 22

NOTES:
① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)

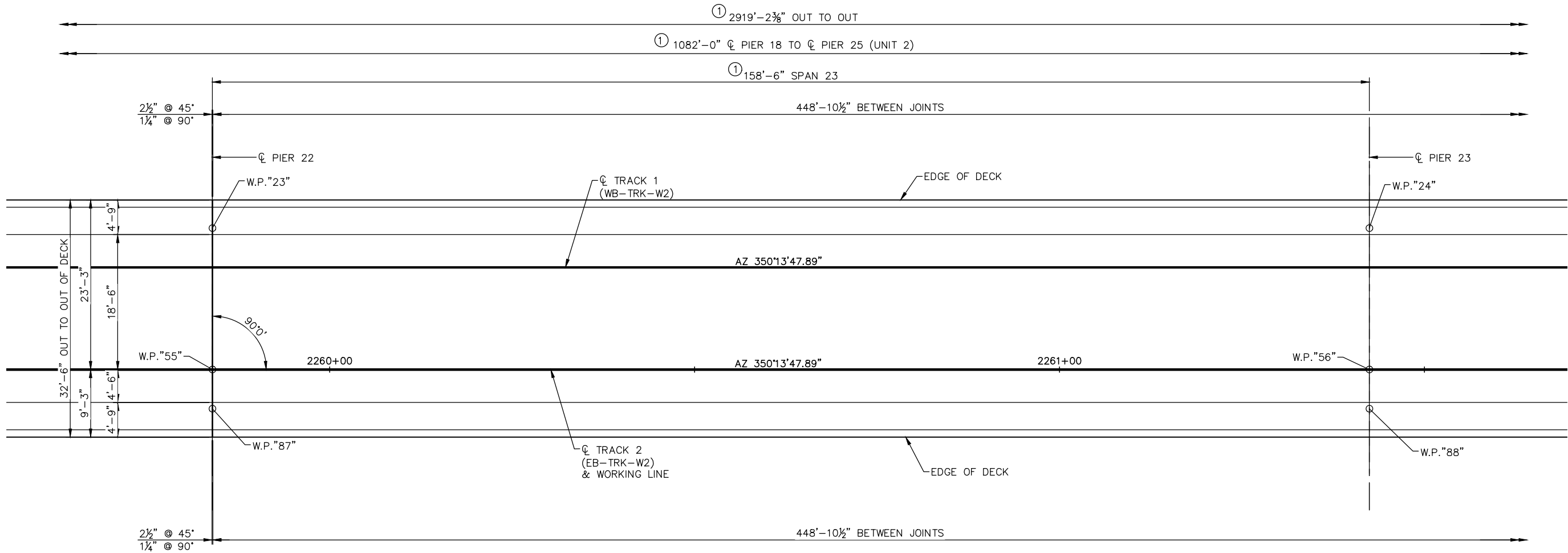
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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015

60% SUBMISSION - 9/28/15

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 9)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-22

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PARTIAL DECK PLAN – SPAN 23

NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015



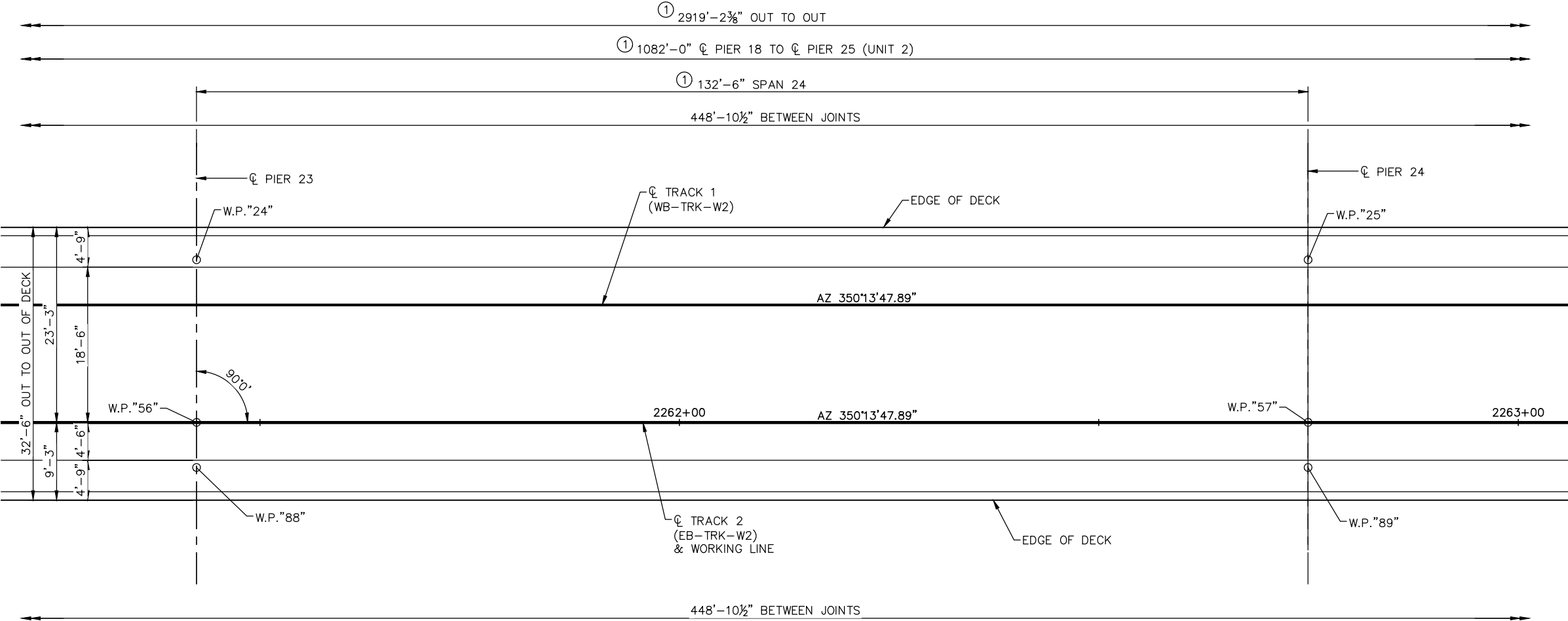
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 10)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-23

SHEET
97
OF
148

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PARTIAL DECK PLAN – SPAN 24

NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015



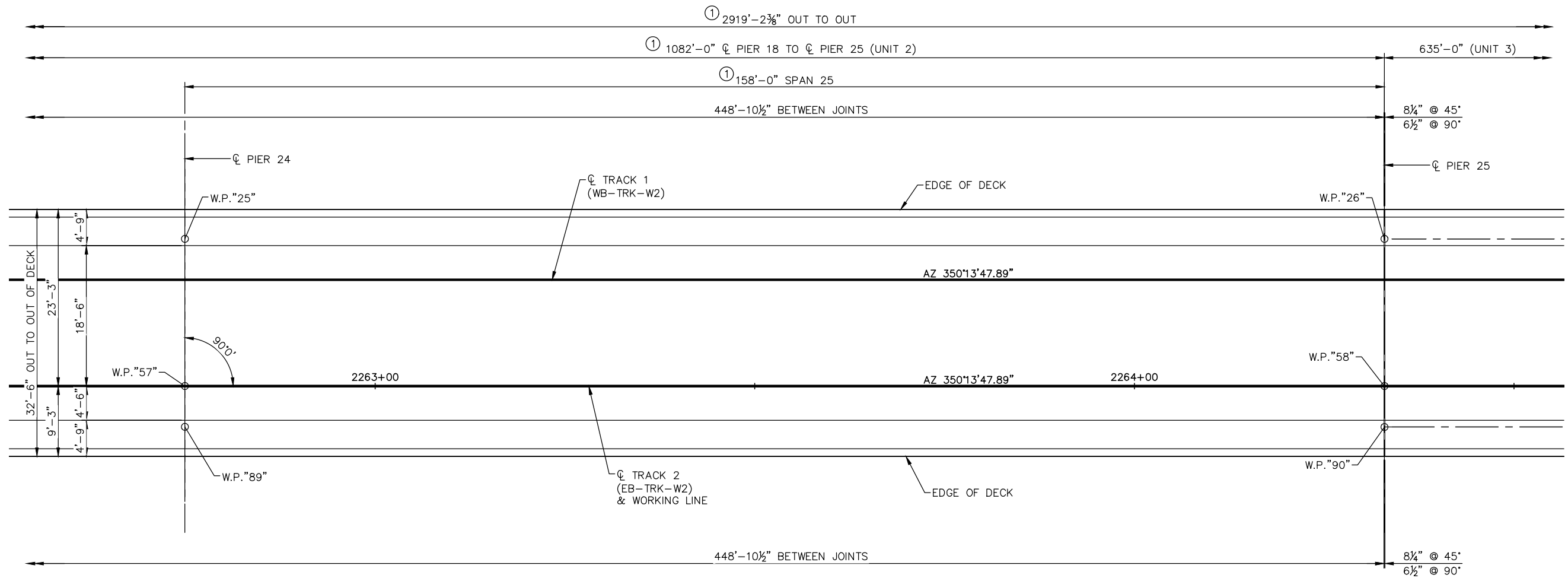
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 11)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-24

SHEET
98
OF
148

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PARTIAL DECK PLAN – SPAN 25

NOTES:
① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015



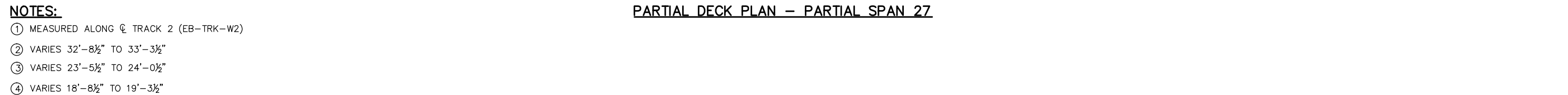
60% SUBMISSION - 9/28/15




CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 12)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-25

SHEET
99
OF
148

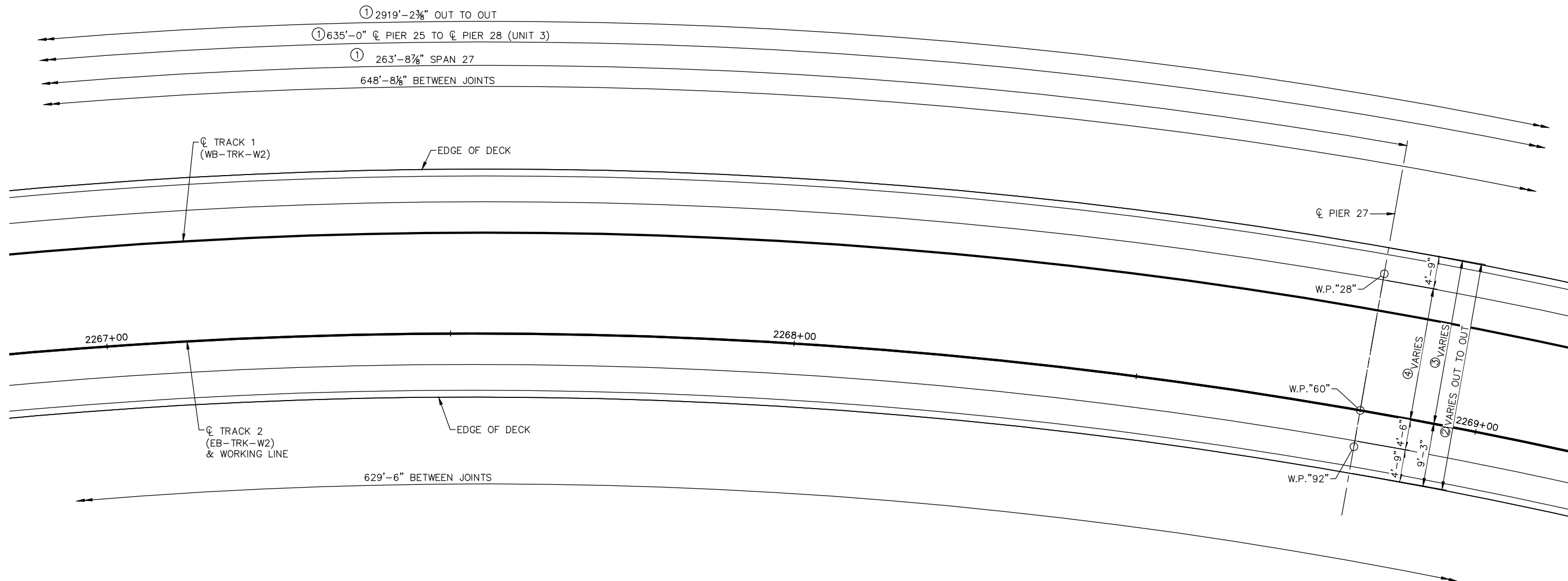




PARTIAL DECK PLAN – PARTIAL SPAN 27

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	<div><div><div><div><div></div></div><div>AECOM</div></div><div><div><div>PARSONS</div><div>BRINCKERHOFF</div></div></div></div></div>	<div><div><div><div></div></div><div>METROPOLITAN</div><div>C O U N C I L</div></div><div><div><div>SOUTHWEST</div><div>Green Line LRT Extension</div></div><div></div></div></div>	<div>CIVIL WEST - VOLUME 4A</div> <div>SHADY OAK ROAD</div> <div>BRIDGE 27R34</div> <div>SUPERSTRUCTURE (SHEET 14)</div>		<div>SHEET</div> <div>101</div> <div>OF</div> <div>148</div>
<div>DESIGNED BY: DDL</div> <div>CHECKED BY: EEM</div> <div>DRAWN BY: MJY</div> <div>DATE: 8/24/2015</div>						60% SUBMISSION - 9/28/15	<div>DISCIPLINE:</div> <div>STRUCTURES</div>		<div>SHEET NAME:</div> <div>W2-STU-BRID-T212-SUP9-27A</div>	

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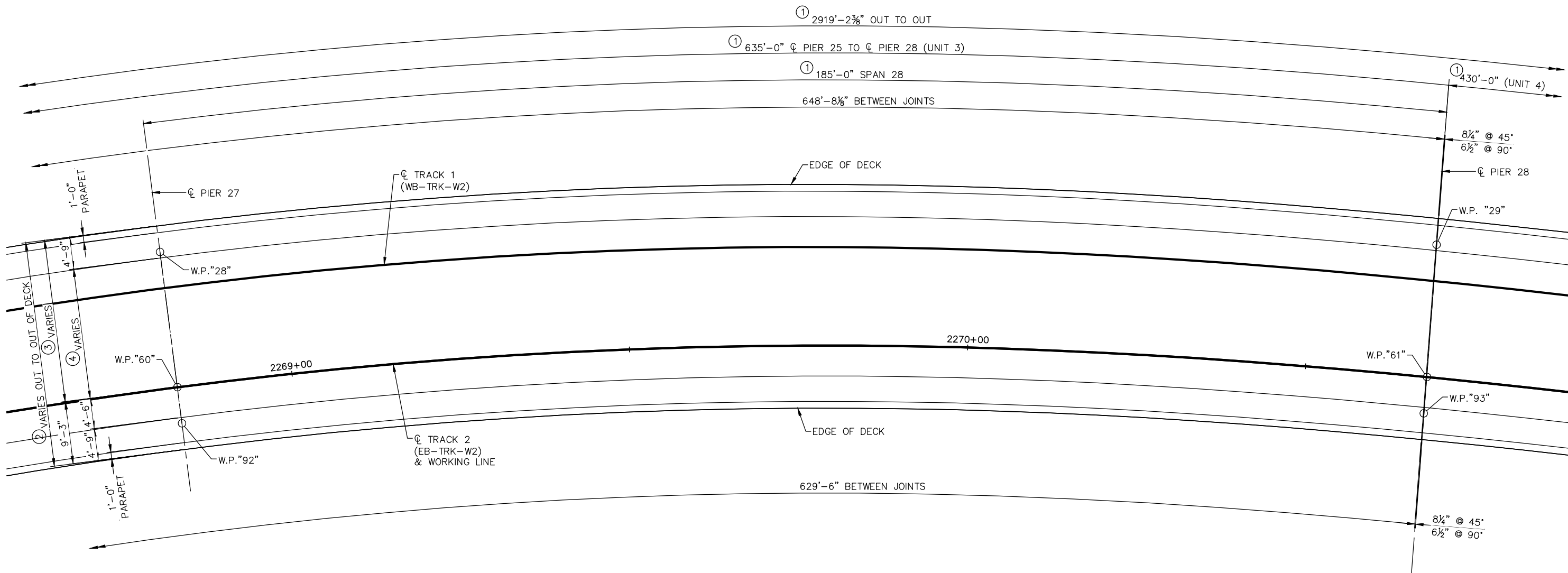
NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)
- ② VARIES 32'-8 1/2" TO 33'-3 1/2"
- ③ VARIES 23'-5 1/2" TO 24'-0 1/2"
- ④ VARIES 18'-8 1/2" TO 19'-3 1/2"

PARTIAL DECK PLAN - PARTIAL SPAN 27

NO.						DATE		BY		CHECK/DESIGN		REVISION / SUBMITTAL	

Sep. 02 2015 08:50 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP9.dwg By: hills



NOTES:

- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W2)
- ② VARIES 33'-3 1/2" TO 32'-9"
- ③ VARIES 24'-0 1/2" TO 23'-6"
- ④ VARIES 19'-3 1/2" TO 18'-9"

PARTIAL DECK PLAN - SPAN 28

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DESIGNED BY: DDL
DRAWN BY: MJY

CHECKED BY: EEM
DATE: 8/24/2015

AECOM **PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

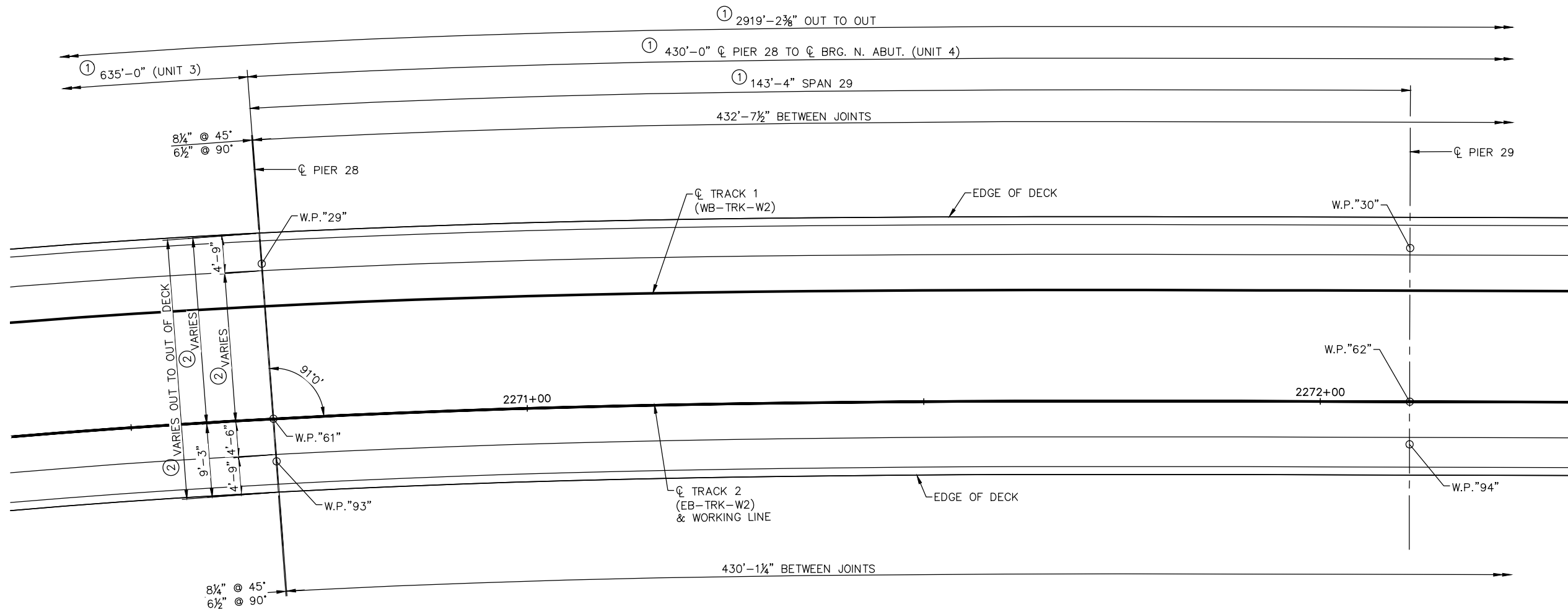


**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SHEET 16)**

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP9-28

SHEET
103
OF
148

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NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W2)
- ② VARIES 32'-9" TO 33'-3 1/2"
- ③ VARIES 23'-6" TO 24'-0 1/2"
- ④ VARIES 18'-9" TO 19'-3 1/2"

PARTIAL DECK PLAN - SPAN 29

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DESIGNED BY: DDL	CHECKED BY: EEM
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**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

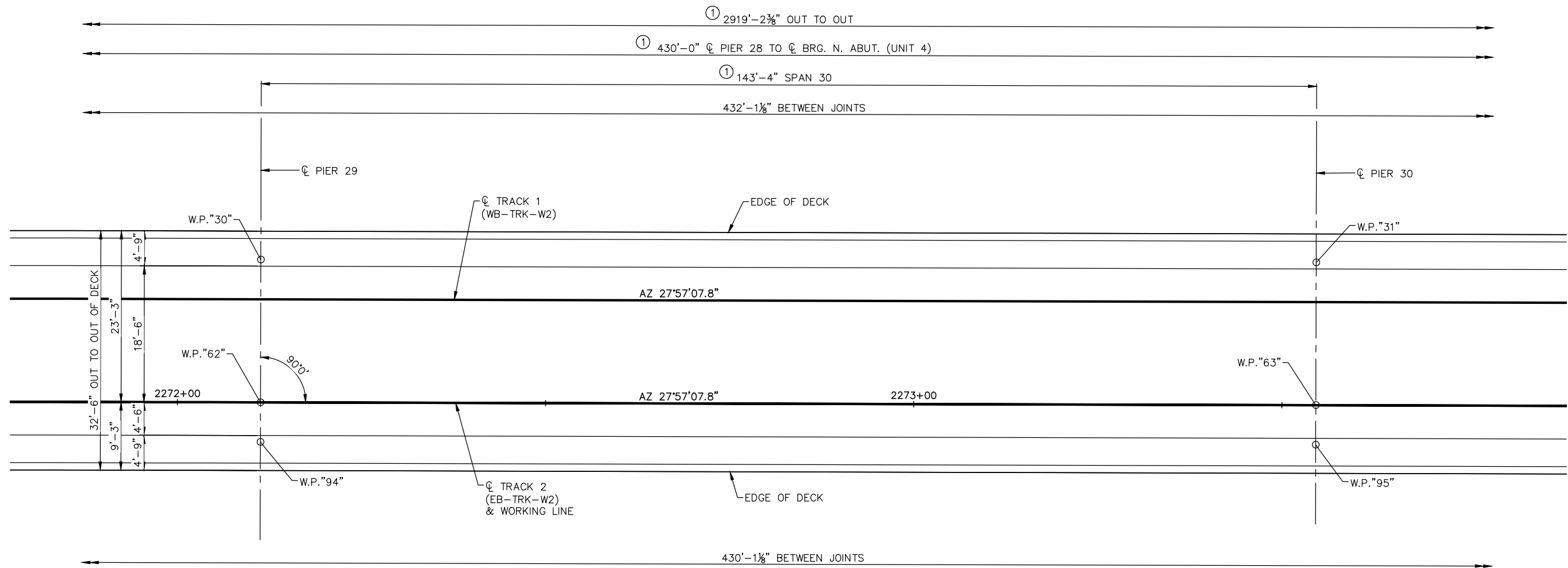
**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 17)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-29

SHEET
104
OF
148

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PARTIAL DECK PLAN – SPAN 30

NOTES:

① MEASURED ALONG CL TRACK 2 (EB-TRK-W2)

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DRAWN BY: MJY	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 18)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP9-30



① MEASURED ALONG \mathbb{C} TRACK 2 (EB-TRK-W2)

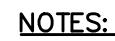
AECOM **PARSONS
BRINCKERHOFF**



**CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE (SHEET 19)**

DISCIPLINE:	SHEET NAME:
STRUCTURES	W2-STU-BRID-T212-SUP9-31

SHEET
106
OF
148




ADDITIONAL REINFORCEMENT AT NORTH END BLOCK

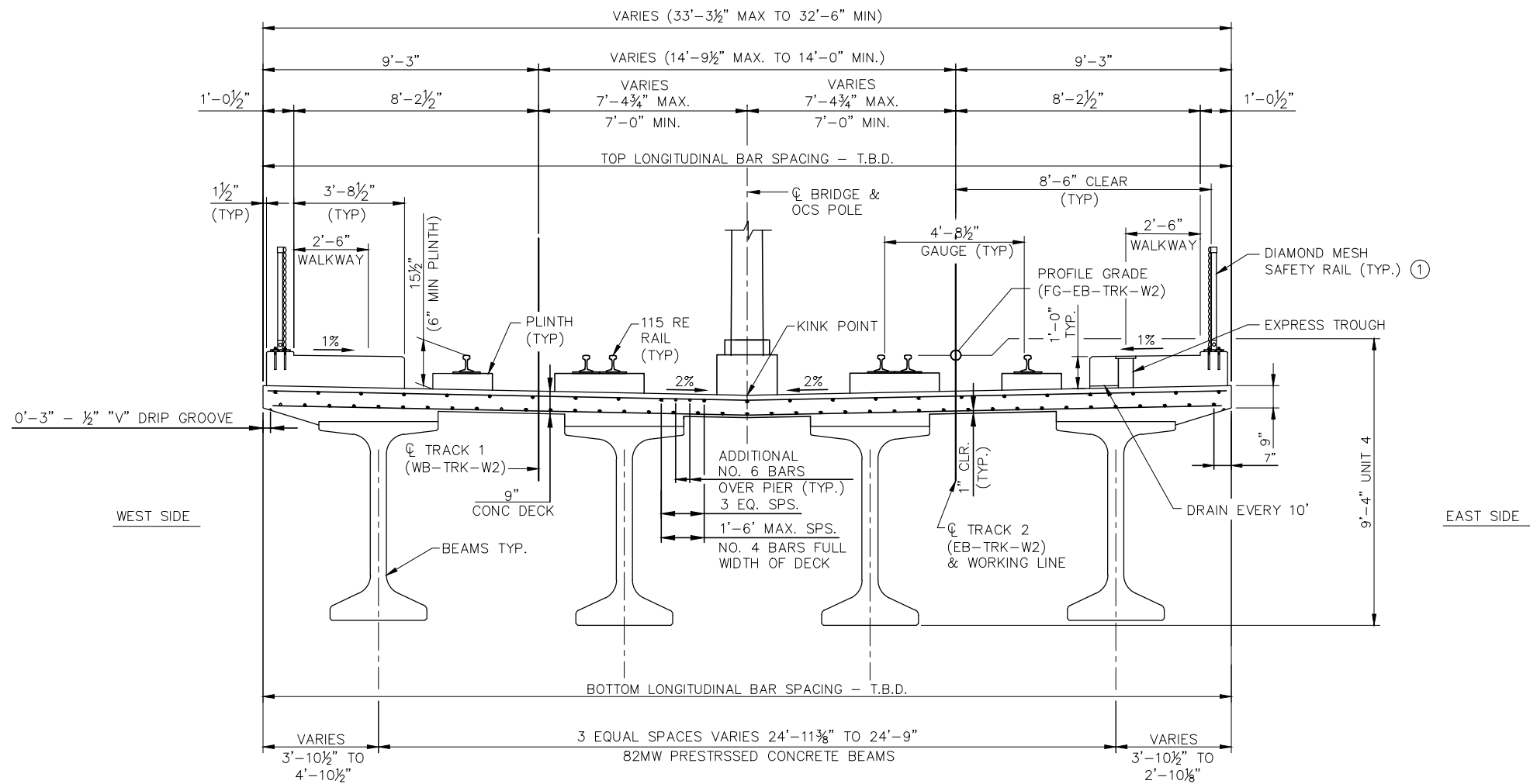
NO. DATE BY CHECK DESIGN REVISION / SUBMITTAL						<div><div><div>AECOM</div><div>PARSONS BRINCKERHOFF</div></div><div><div><div><div></div><div>METROPOLITAN COUNCIL</div></div><div><div><div>SOUTHWEST</div><div>Green Line LRT Extension</div></div><div><div></div><div></div></div></div></div></div></div>		CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE (SHEET 20)		SHEET	
									107	OF	148

NOTES:

① DIAMOND MESH SAFETY RAIL. SEE WIRE FENCE RAILING SHEETS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	<div><div><div><div><div></div></div><div>AECOM</div></div><div><div><div>PARSONS</div><div>BRINCKERHOFF</div></div></div></div></div>	<div><div><div><div></div></div><div>METROPOLITAN</div><div>COUNCIL</div></div><div><div><div>SOUTHWEST</div><div>Green Line LRT Extension</div></div><div></div></div></div>	CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE DETAILS (SHEET 2)		SHEET 109 OF 148
<div><div>DESIGNED BY: DDL</div><div>CHECKED BY: EEM</div></div> <div><div>DRAWN BY: MJY</div><div>DATE: 8/24/2015</div></div>						60% SUBMISSION - 9/28/15		<div>DISCIPLINE: STRUCTURES</div> <div>SHEET NAME: W2-STU-BRID-T212-SUP10-2</div>		

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TRANSVERSE SECTION THRU DECK - SPAN 29

NOTES:

- ① DIAMOND MESH SAFETY RAIL. SEE WIRE FENCE RAILING SHEETS.

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015

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**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

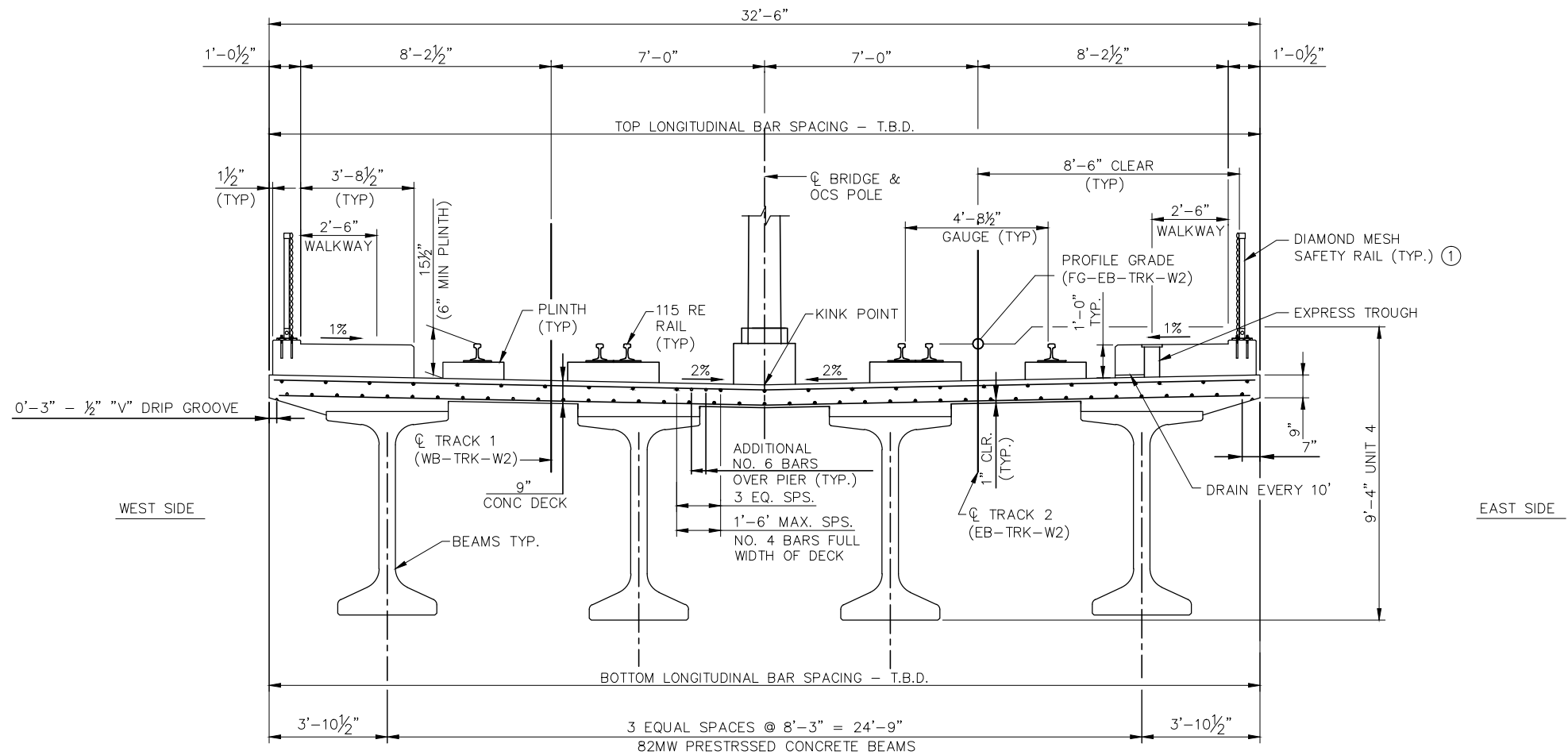
**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE DETAILS (SHEET 3)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP10-3

SHEET
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OF
148

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TRANSVERSE SECTION THRU DECK - SPANS 30-31

NOTES:

- ① DIAMOND MESH SAFETY RAIL. SEE WIRE FENCE RAILING SHEETS.

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DRAWN BY: MJY
CHECKED BY: EEM
DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

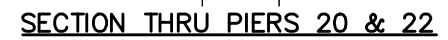
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
SUPERSTRUCTURE DETAILS (SHEET 4)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUP10-4

SHEET
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148

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015

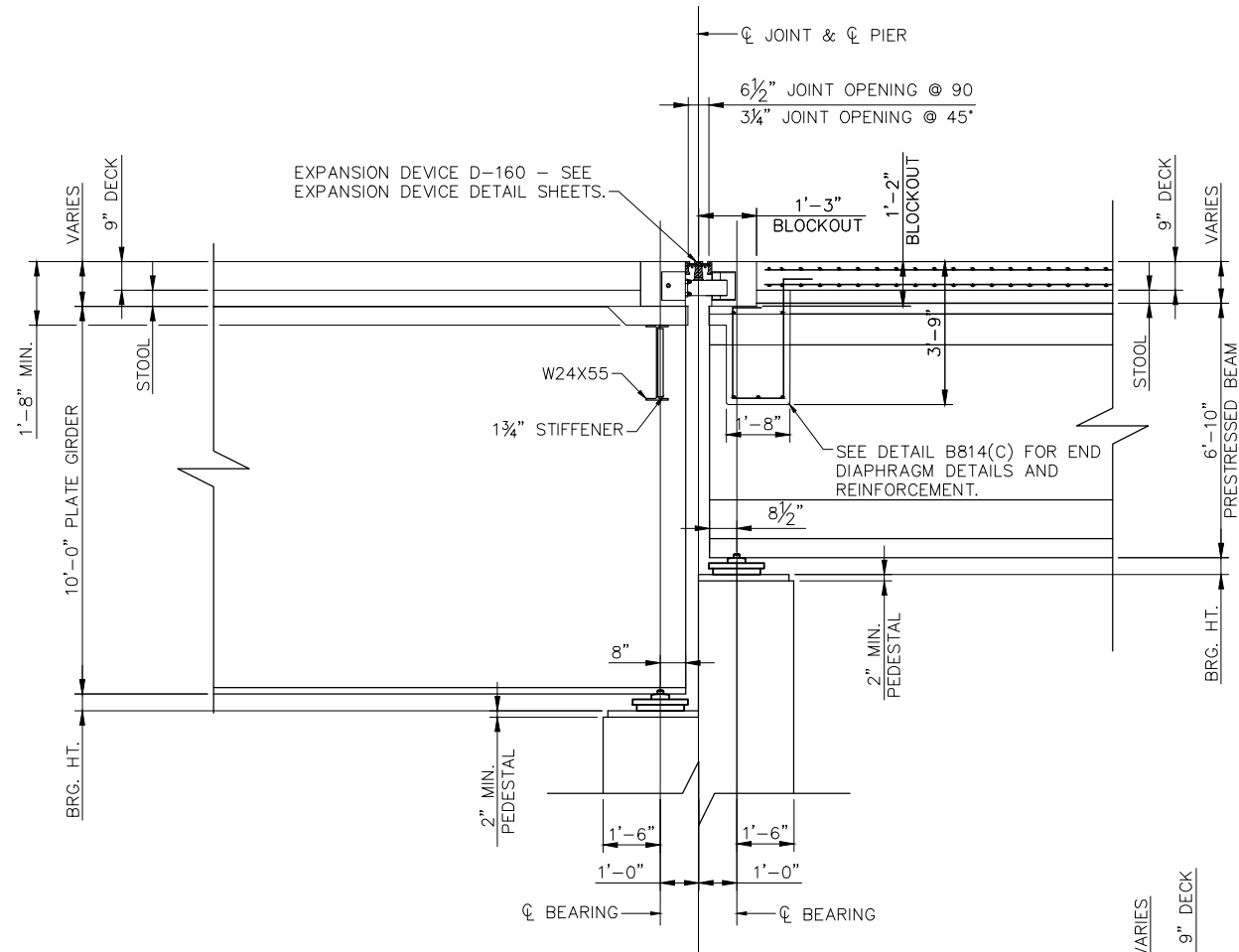
AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15

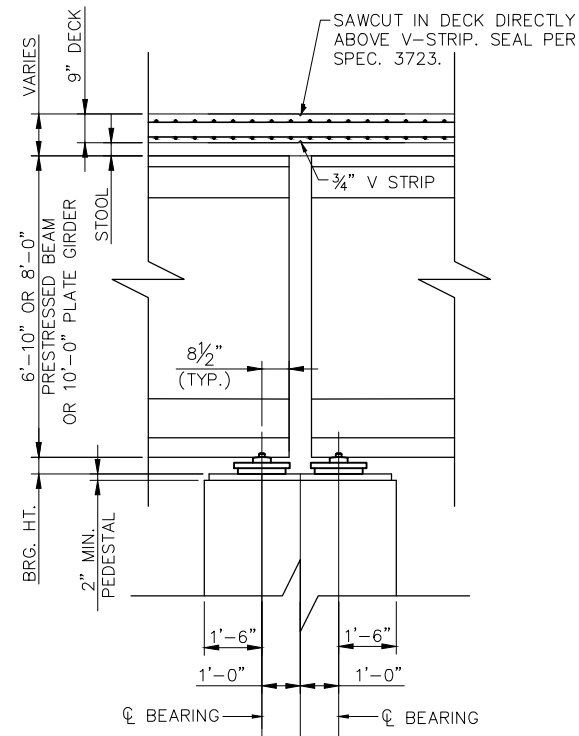


CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE DETAILS (SHEET 5)	
DISCIPLINE:	SHEET NAME:
STRUCTURES	W2-STU-BRID-T212-SUP10-5

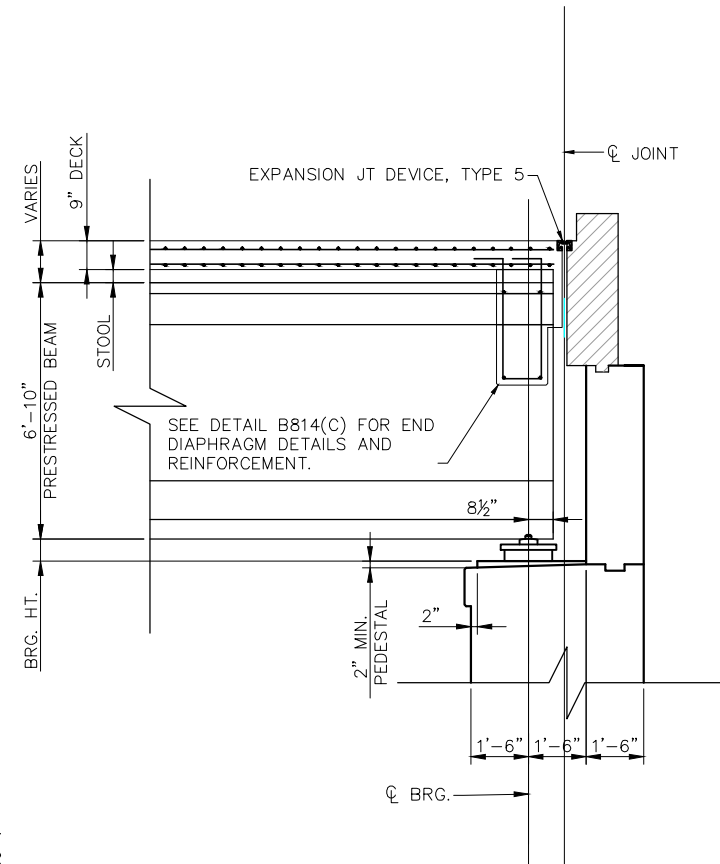
Sep. 02 2015 08:51 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP10.dwg By: hills



SECTION THRU PIER 28



SECTION THRU PIER - FIXED
82MW CONCRETE PRESTRESSED BEAMS SHOWN



SECTION THRU N. ABUTMENT

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: MJY	DATE: 8/24/2015

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PARSONS BRINCKERHOFF

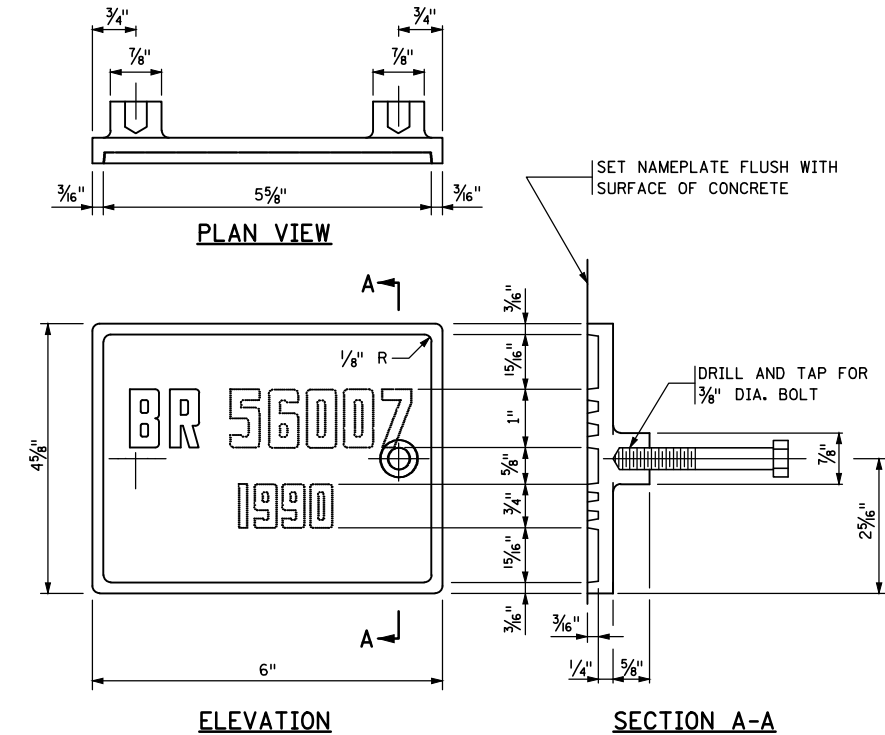
60% SUBMISSION - 9/28/15

**METROPOLITAN COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 SUPERSTRUCTURE DETAILS (SHEET 6)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP10-6

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THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 27R34
YEAR 2017

1234567890

NUMBERS FOR NAMEPLATE

NOTES:

MATERIAL SHALL COMPLY WITH SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".

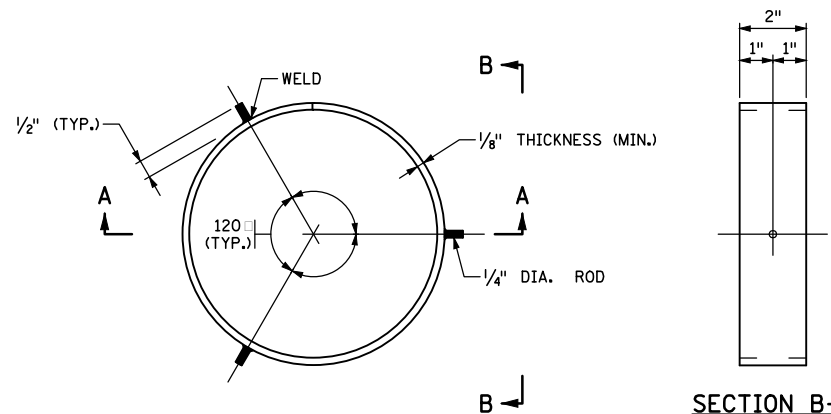
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

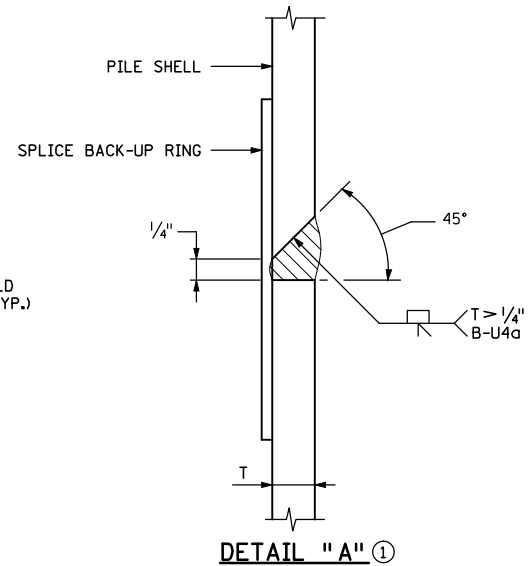
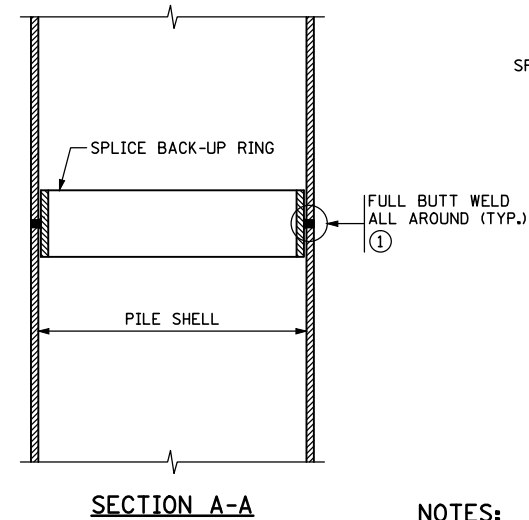
FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.

ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 09-11-2014	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101



PILE NOT SHOWN



NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT 1/4" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.

WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0°F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32°F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70°F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

① FOR PILE SHELL THICKNESSES GREATER THAN 1/4", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	PILE SPLICE (CAST-IN-PLACE CONCRETE PILES)		B201

NO.	DATE	BY	CHECK/DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015

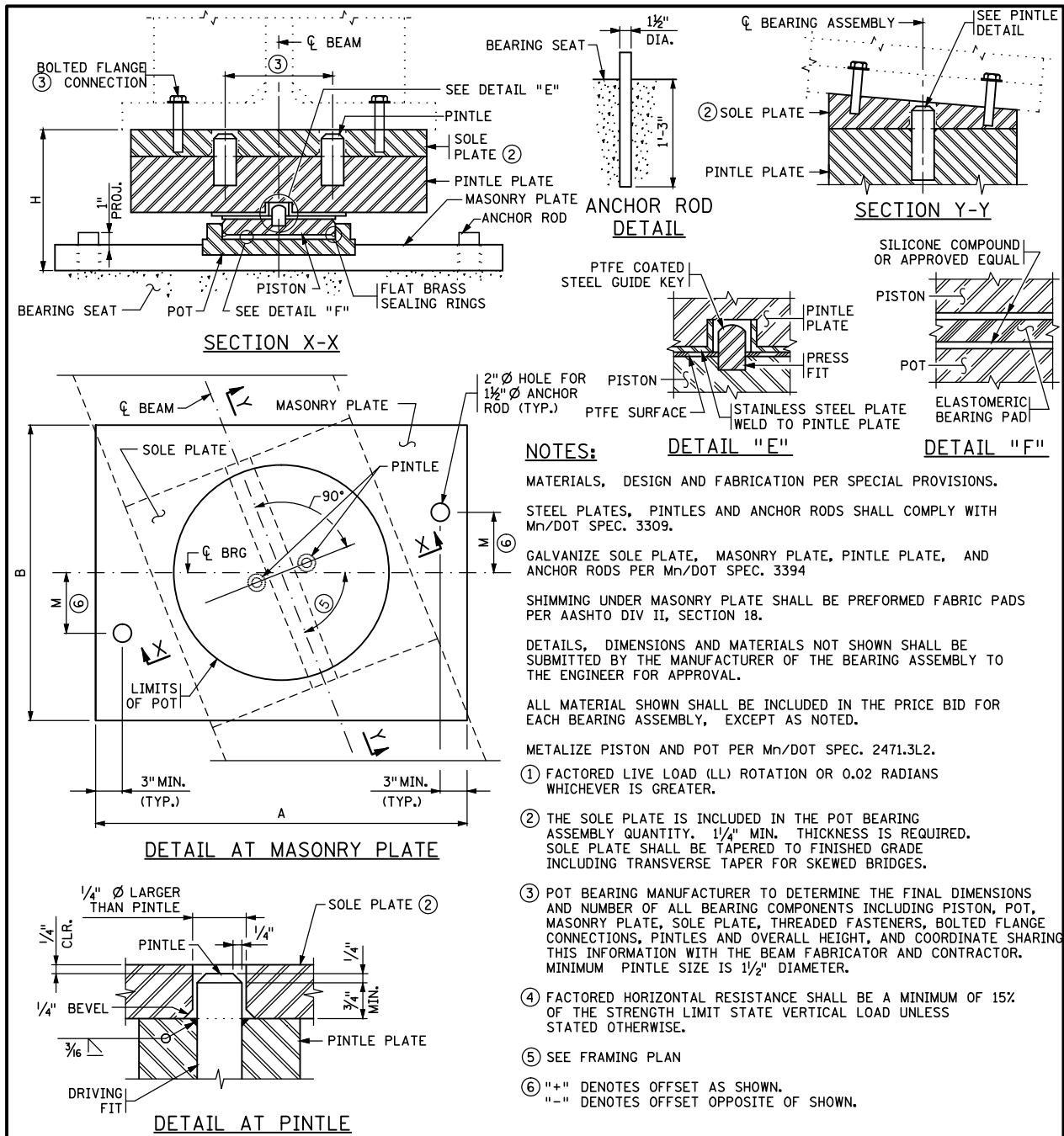
AECOM
PARSONS BRINCKERHOFF




60% SUBMISSION - 9/28/15

METROPOLITAN COUNCIL

SOUTHWEST

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP5_101-201



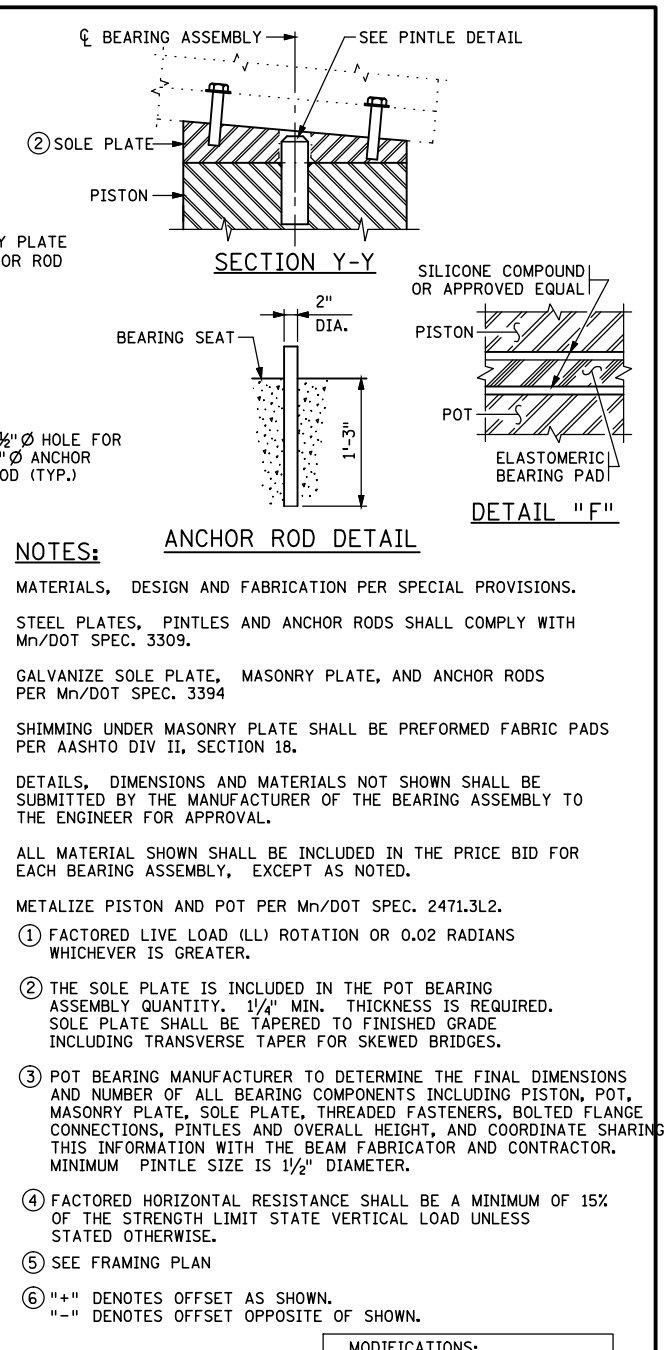
BEARING ASSEMBLY TABLE														
ASSEMBLY TYPE	LOCATION	FACTORED LL ROTATION ① (RAD)	TOTAL MOVEMENT (INCHES)	MASONRY PLATE ③		ANCHOR ROD OFFSET		ASSUMED HEIGHT "H" ③	BOTTOM FLANGE WIDTH	DESIGN LOADS (KIPS)				
				A	B	+/- ⑥	M			SERVICE LIMIT STATE		STRENGTH LIMIT STATE		
										VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL ④	
E2	PR 25.28	--	4½"	33"	20"		0"	7½"	24"	272	69	350	58	
E3	PR 25.28	--	4½"	45"	20"		0"	7½"	36"	325	69	420	63	
APPROVED: SEPTEMBER 18, 2007				STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION							REVISION 12-17-2008		DETAIL NO.	
<div> STATE BRIDGE ENGINEER</div>				POT BEARING ASSEMBLY (STEEL BEAMS) (GUIDED EXPANSION)									B314 MOD.	

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DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015

AECOM **PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15



BEARING ASSEMBLY TABLE												
ASSEMBLY TYPE	LOCATION	FACTORED LL ROTATION ① (RAD)	MASONRY PLATE ③		ANCHOR ROD OFFSET		ASSUMED HEIGHT "H" ③	BOTTOM FLANGE WIDTH	DESIGN LOADS (KIPS)			
			A	B	+/- ⑥	M			SERVICE LIMIT STATE		STRENGTH LIMIT STATE	
									VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL ④
F2	PR 26,27	--	33"	24"	11"	6"	9½"	24"	943	169	1206	181
F3	PR 26,27	--	45"	36"	11"	6"	9½"	36"	1309	199	1673	251

APPROVED: SEPTEMBER 18, 2007  STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION POT BEARING ASSEMBLY (STEEL BEAMS) (FIXED)	REVISION 12-17-2008	DETAIL NO. B316 MOD.
--	--	------------------------	--------------------------------

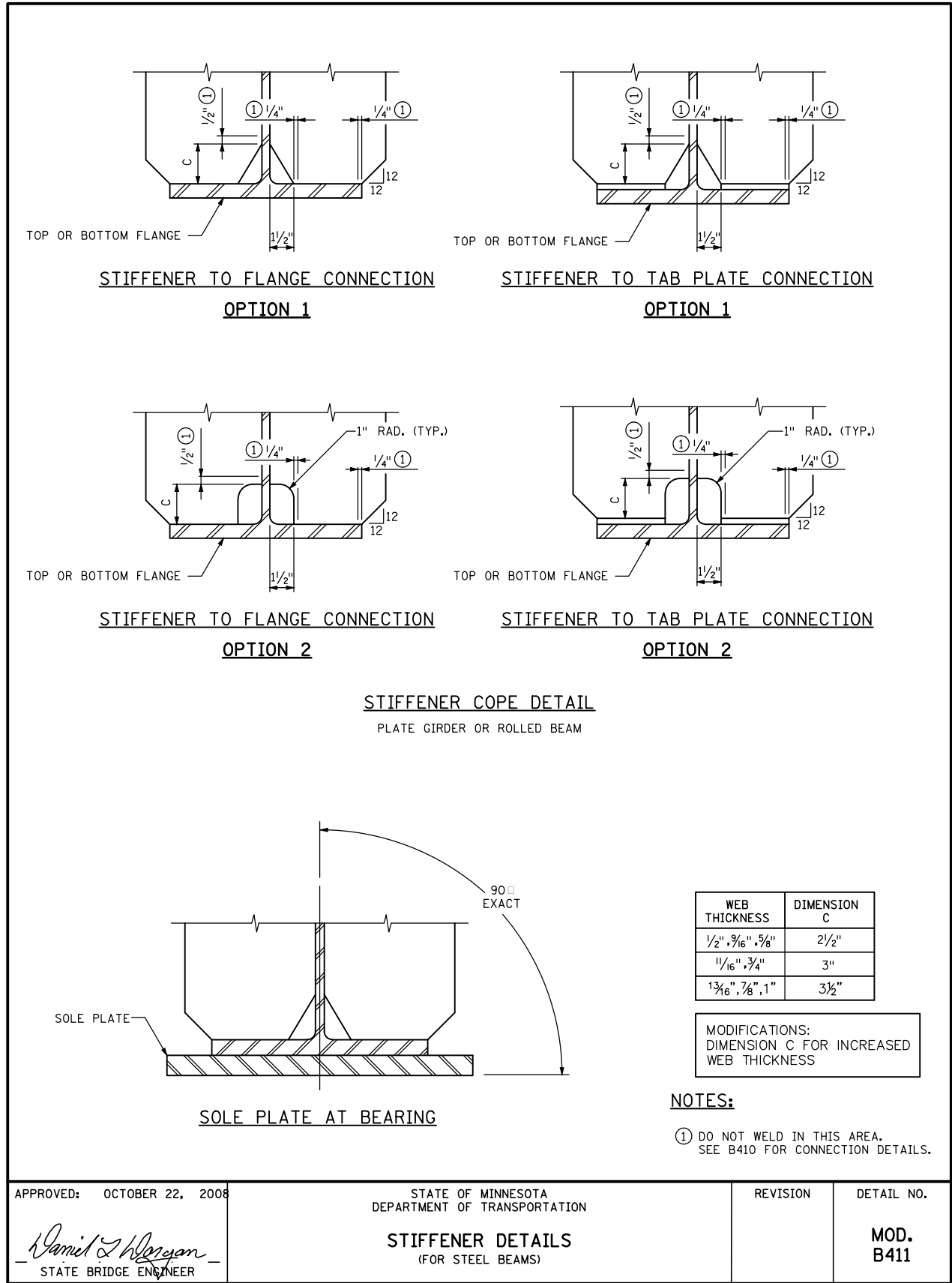
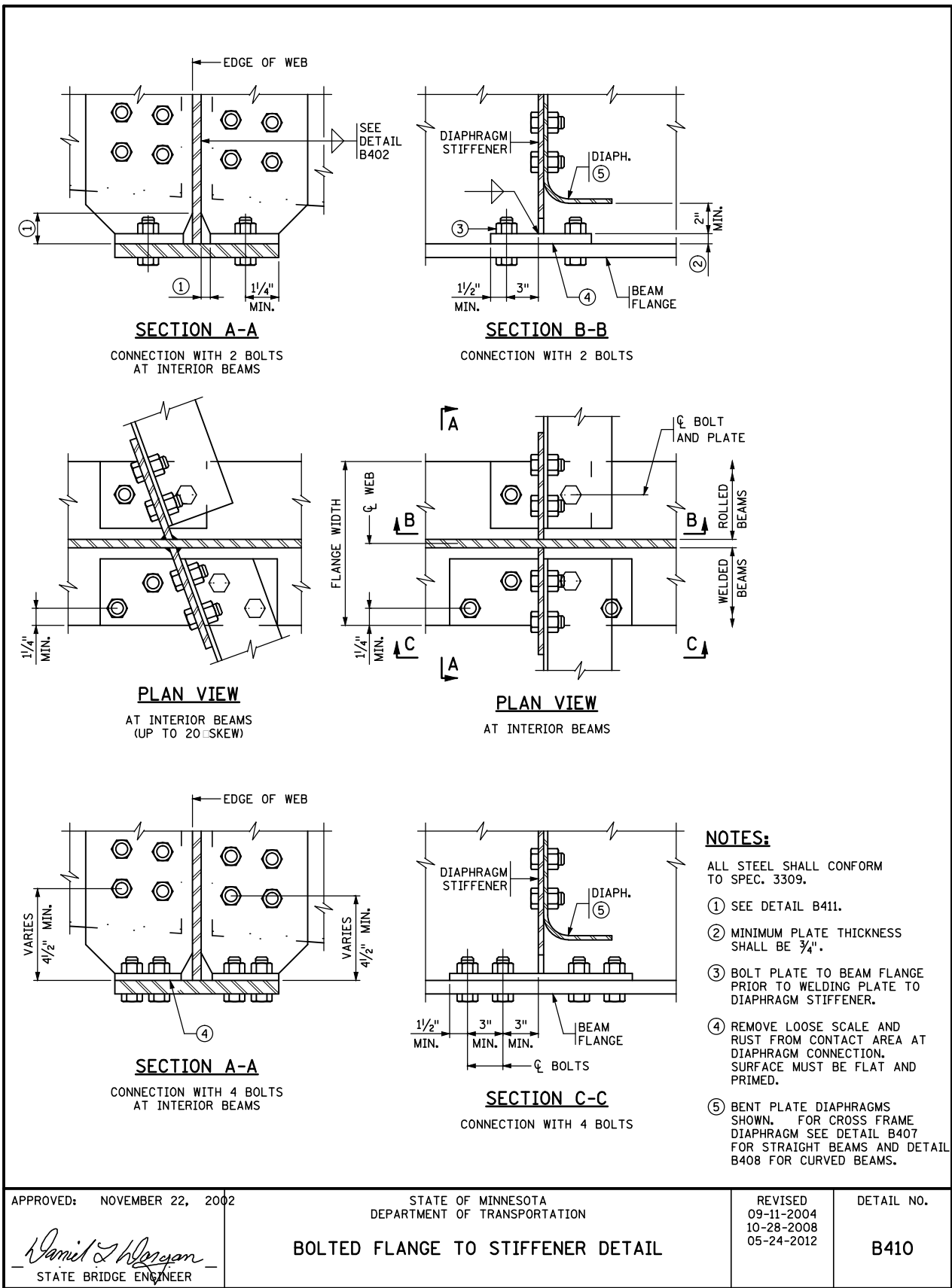
MODIFICATIONS:
MODIFIED ANCHOR BOLT SIZE
AND NUMBER.

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE DETAILS

DISCIPLINE: **STRUCTURES**

SHEET NAME:
W2-STU-BRID-T212-SUP7 314-316

Sep. 18 2015 12:09 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUP8_410-411.dwg By: hills



NO.	DATE	BY	CHECK/DESIGN	REVISION / SUBMITTAL

DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015

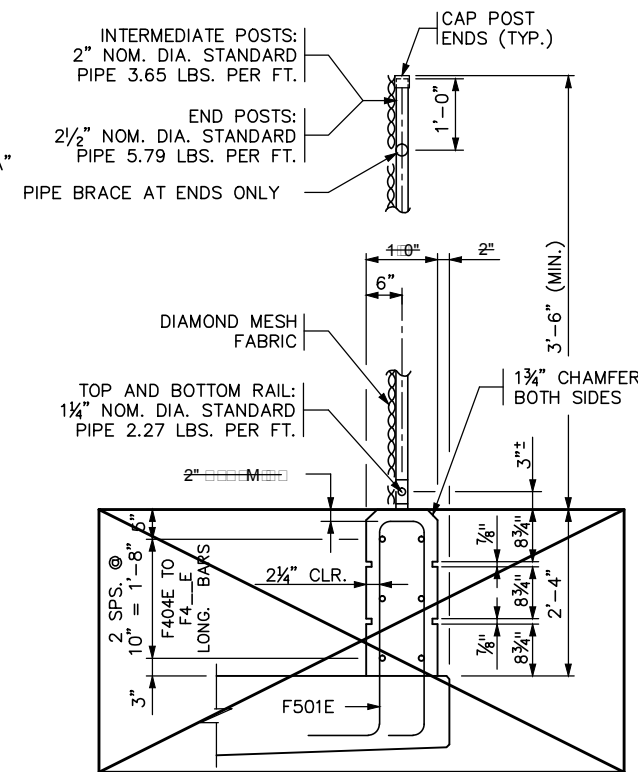
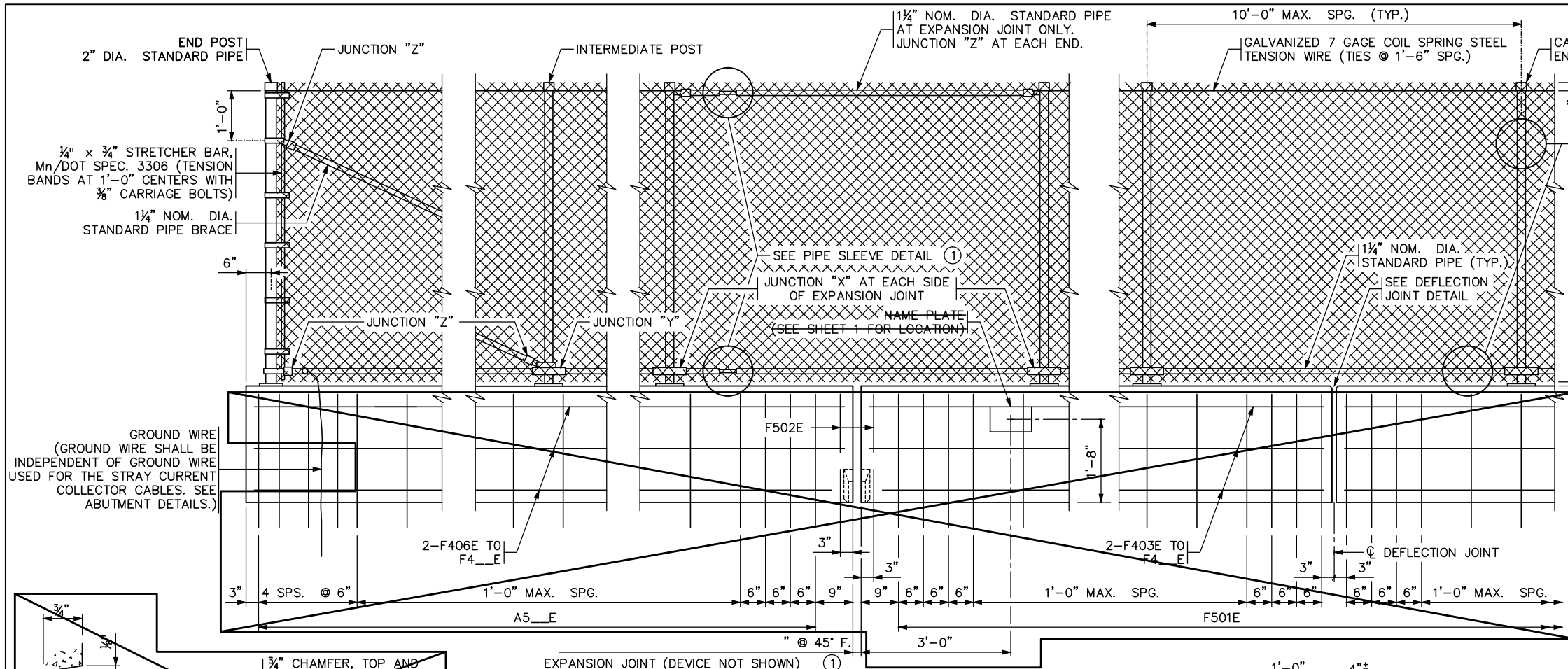
AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15

METROPOLITAN COUNCIL **SOUTHWEST**

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUP8_410-411

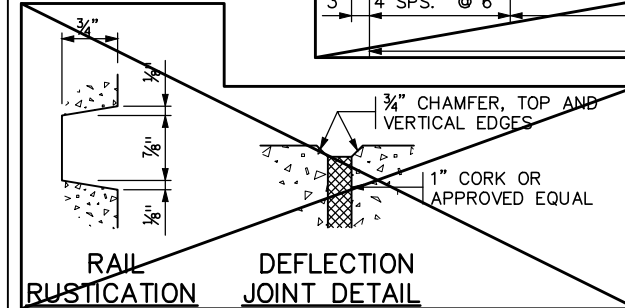
Sep. 18 2015 01:35 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-DT102.dwg By: hills



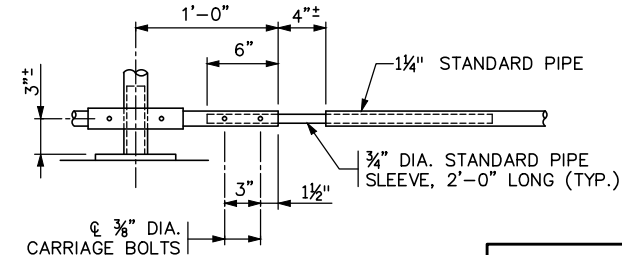
TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
① DENOTES MODIFICATION TO STANDARD SHEET



① INSIDE ELEVATION OF RAILING



GENERAL NOTES

SEE CONCRETE PARAPET TYPE P-1 SHEET FOR PARAPET DIMENSION, REINFORCEMENT AND NOTES.

LENGTH OF "TYPE P-1 RAILING CONCRETE (3Y46 OR 3Y46A)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAIL.

"DIAMOND MESH SAFETY RAIL"

① LENGTH OF "WIRE FENCE DESIGN 48V-9322" FOR PAYMENT SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS.

CONCRETE RAILING = 350 LBS./FT. (0.086 CU. YDS./FT.)

FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905 "FENCE POST ANCHORAGE".

MAXIMUM SPACING OF DEFLECTION JOINTS SHALL BE 20 FT. FOR SPACING OF FENCE POST, JOINTS AND ELECTRICAL GROUNDS, SEE SUPERSTRUCTURE SHEETS.

FENCE POSTS AND FENCE POST ANCHORAGES SHALL BE SET VERTICAL, UNLESS OTHERWISE NOTED.

② OF FENCE POST ANCHORAGE SHALL BE A MINIMUM OF 6" FROM JOINTS.

END POSTS AND BRACING SHALL BE AT 500 FT. MAXIMUM INTERVALS.

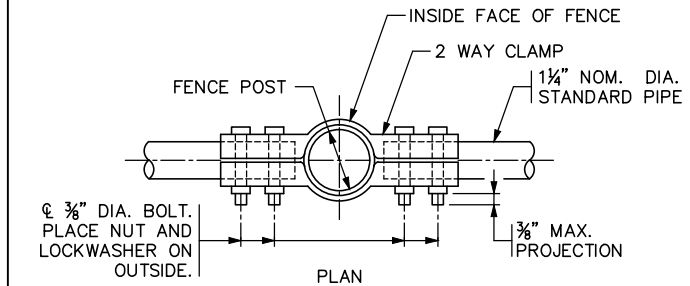
ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.

WIRE TIES MAY BE 9 GAGE GALVANIZED STEEL OR 0.179" MIN. ALUMINUM ALLOY CONFORMING TO A.S.T.M. B211, ALLOY 1100-H18. USE 12 1/2 GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.

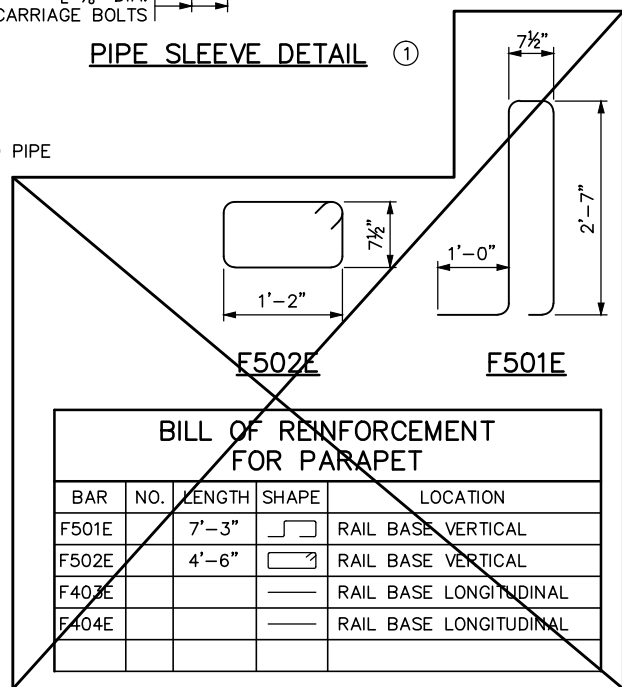
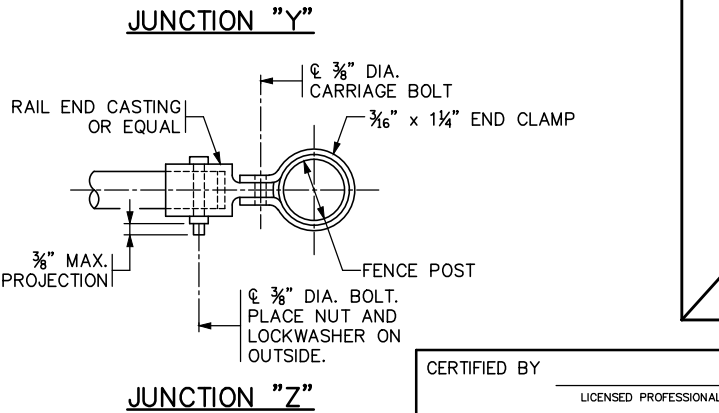
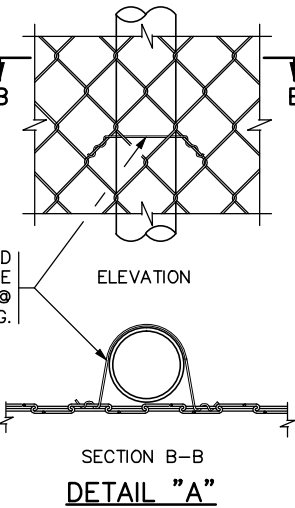
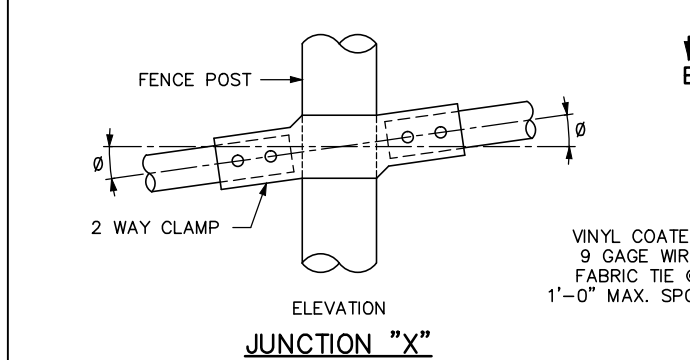
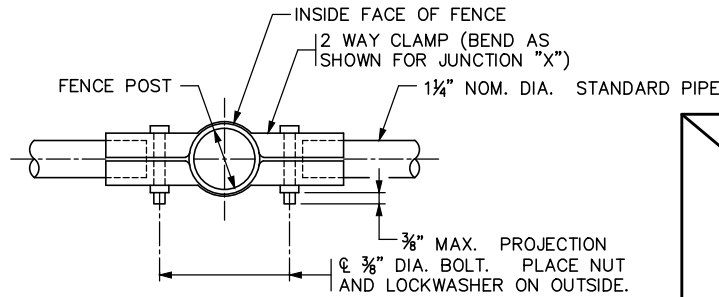
ALL MATERIAL IN THE CONCRETE BASE AND END POST IS INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET AND FOR BASIS OF PAYMENT.

① PROVIDE PIPE SLEEVE IN SPAN BETWEEN THE VERTICAL POSTS AT EXPANSION JOINT. SEE SUPERSTRUCTURE SHEETS FOR LOCATION.



2 WAY CLAMP BENDING TABLE		
GRADE OF FENCE	Ø	
0' TO 2'	0'	
2' TO 6'	4'	
6' TO 10'	8'	



REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003

Samuel A. Hargan

STATE BRIDGE ENGINEER

CERTIFIED BY _____

LICENSED PROFESSIONAL ENGINEER

DATE _____

NAME: _____

LIC. NO. _____

TITLE: ~~WIRE FENCE (DESIGN W-1) AND~~

~~DIAMOND MESH SAFETY RAIL~~

(WITH INTEGRAL END POST)

DES: DDL

DR: SWH

CHK: EEM

CHK: EEM

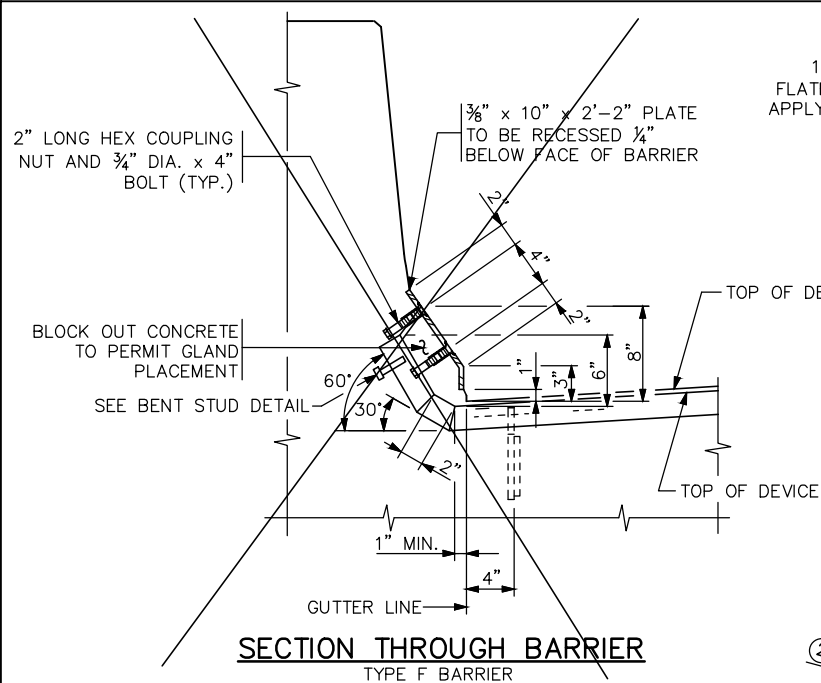
APPROVED: _____

SHEET NO. 118 OF 148 SHEETS

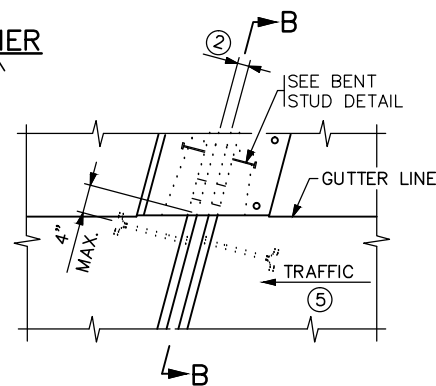
BRIDGE NO. 27R34

FIG. 5-397.119 (MOD.)

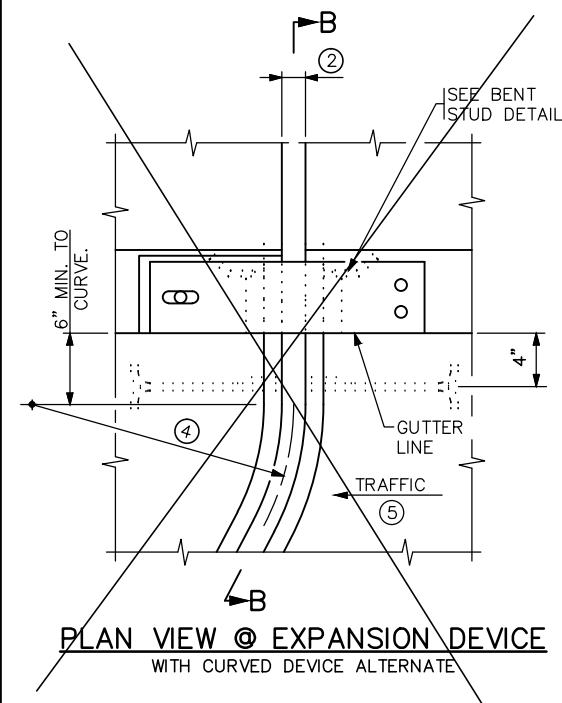
Sep. 18 2015 01:35 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-EXP01.dwg By: hills



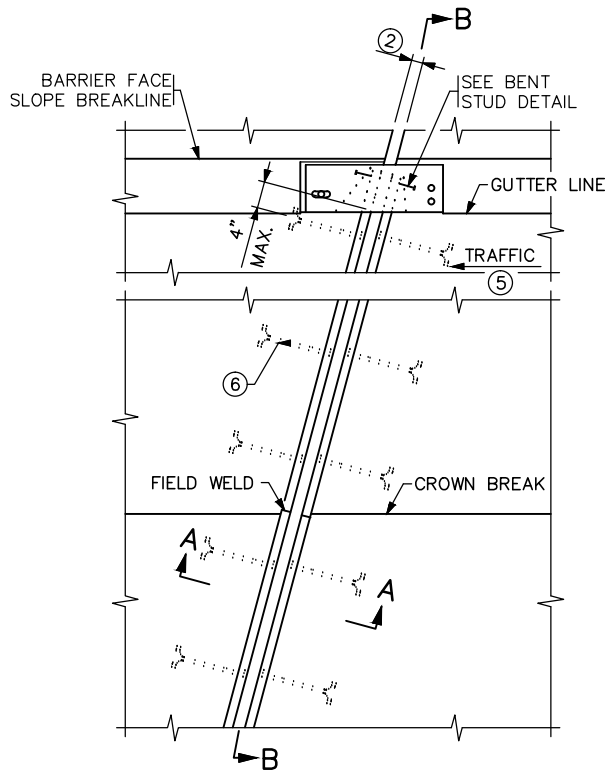
SECTION THROUGH BARRIER
TYPE F BARRIER



PLAN VIEW @ EXPANSION DEVICE
SIDEWALK ALTERNATE

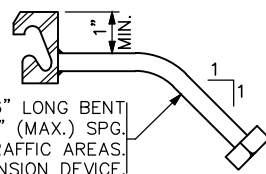


PLAN VIEW @ EXPANSION DEVICE
WITH CURVED DEVICE ALTERNATE



PLAN VIEW @ EXPANSION DEVICE
WITH STRAIGHT DEVICE

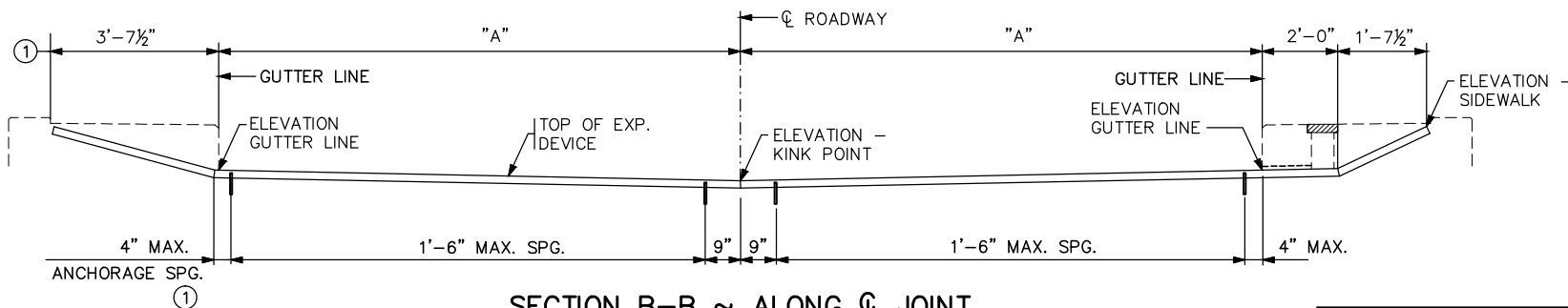
BARRIER ELEVATION



BENT STUD DETAIL

TABLE OF ELEVATIONS

	(TYPE)	ELEVATION GUTTER LINE	ELEVATION - CENTER LINE (KINK POINT)	ELEVATION SIDEWALK	"A"	②	
						@ 45° F	@ 90° F
SOUTH ABUTMENT	TYPE 5	-	-	-	-	-	-
PIER 3	TYPE 5	-	-	-	-	-	-
PIER 6	TYPE 5	-	-	-	-	-	-
PIER 9	TYPE 5	-	-	-	-	-	-
PIER 12	TYPE 5	-	-	-	-	-	-
PIER 15	TYPE 5	-	-	-	-	-	-
PIER 18	TYPE 5	-	-	-	-	-	-
PIER 20	TYPE 5	-	-	-	-	-	-
PIER 22	TYPE 5	-	-	-	-	-	-
PIER 25	(MOD)TYPE 6	-	-	-	-	-	-
PIER 28	(MOD)TYPE 6	-	-	-	-	-	-
NORTH ABUTMENT	TYPE 5	-	-	-	-	-	-



SECTION B-B ~ ALONG Q JOINT

NOTE: SEE "TABLE OF ELEVATIONS" ABOVE.

CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: **WATERPROOF
EXPANSION DEVICE**
(WITH TYPE F BARRIER)

DES: **DDL** DR: **SWH**
CHK: **EEM** CHK: **EEM**
SHEET NO. **119 OF 148 SHEETS**

FIG. 5-397.627

BRIDGE NO.
27R34

GENERAL NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

JOINTS IN EXTRUSION SHALL BE LOCATED AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED. JOINTS SHALL BE CLOSE FIT AND WELDED. REPAIR AFTER WELDING AS PER SPEC. 2471.3L.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF 1/8" IN 10 FT.

3/4" DIA. X 1 1/2" FLATHEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/8" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

LENGTH OF PAYMENT FOR DEVICE IS FROM OUTER END TO OUTER END OF EXTRUSION ALONG CENTERLINE OF JOINT. REFER TO THE SPECIAL PROVISIONS FOR MORE SPECIFIC PAYMENT INFORMATION.

① DIMENSIONS ARE ALONG CENTERLINE OF JOINT.

② __ AT 45° F; __ AT 90° F. 2" AT ALL TEMPS.

③ 1/8" (1/4" MAX.).
1/2" (3/8" MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15' AND LESS THAN 50'.

④ SEE SUPERSTRUCTURE DETAILS FOR RADIUS.

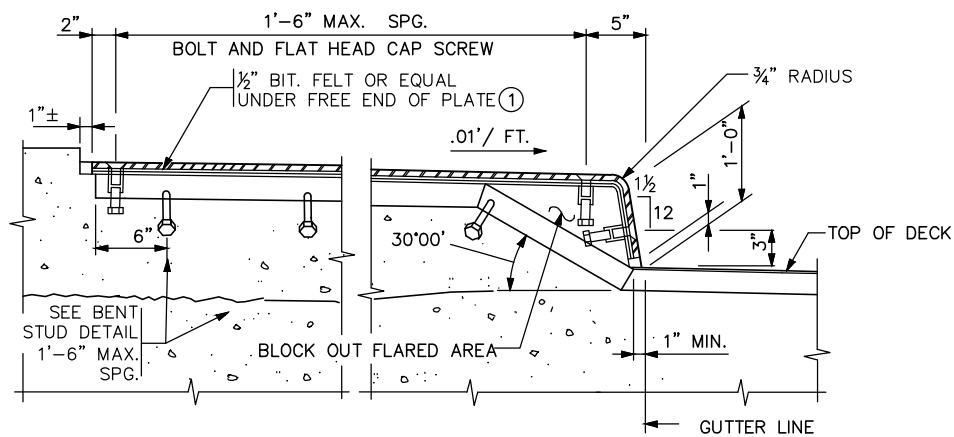
⑤ SEE SHEET NO. __ FOR DIRECTION OF TRAFFIC.

⑥ PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15' AND LESS THAN 50' BEND RODS PARALLEL TO Q ROADWAY.

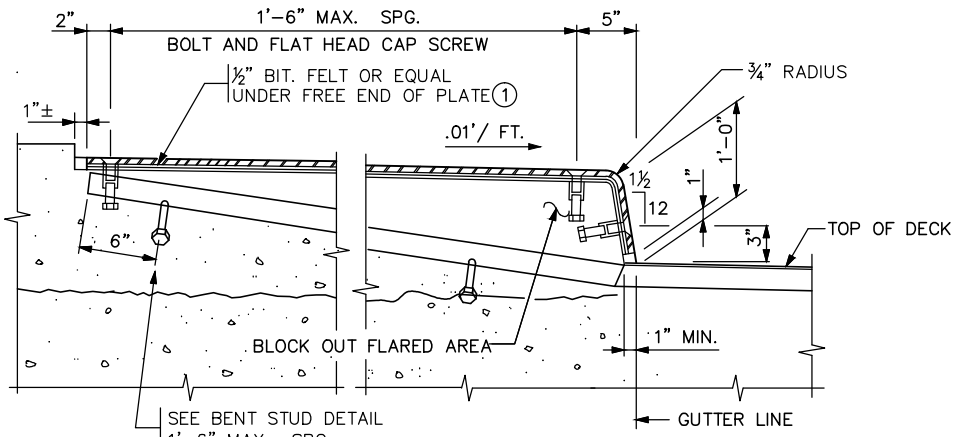
⑦ USE THE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

REVISION: 09-11-2014
APPROVED: NOVEMBER 6, 1995
Donald L. Manning
STATE BRIDGE ENGINEER

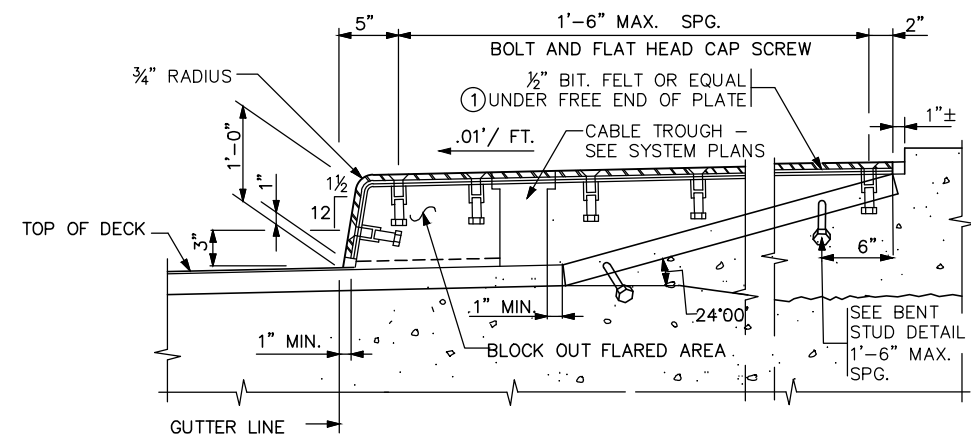
Sep. 18 2015 01:36 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-EXP02.dwg By: hills



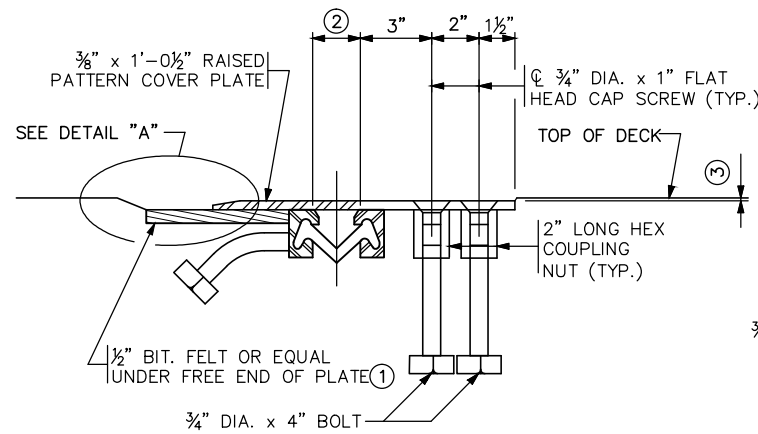
SECTION THROUGH LEFT SIDEWALK - OPTION 1
(LOOKING UPSTATION)



SECTION THROUGH LEFT SIDEWALK - OPTION 2
(LOOKING UPSTATION)

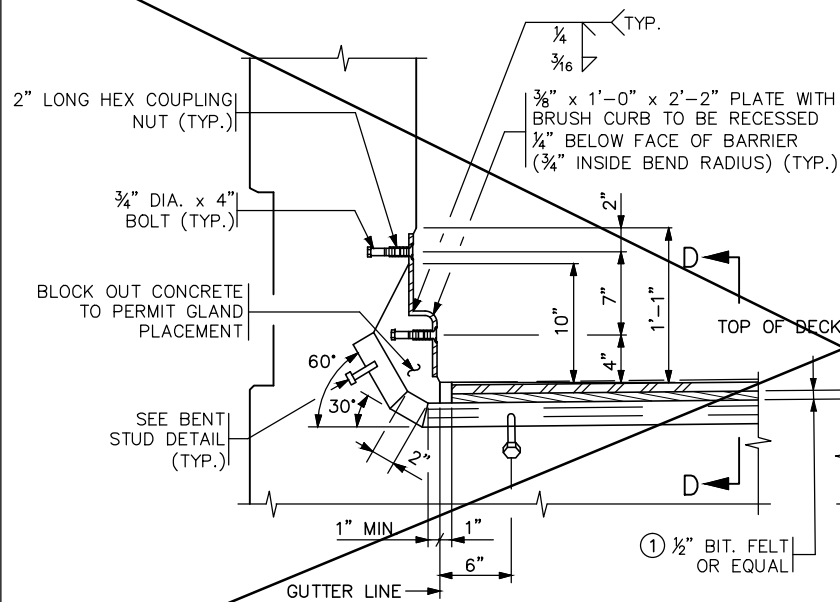


SECTION THROUGH RIGHT SIDEWALK
(LOOKING UPSTATION, AT EXPANSION JOINT WITH CABLE TROUGH)

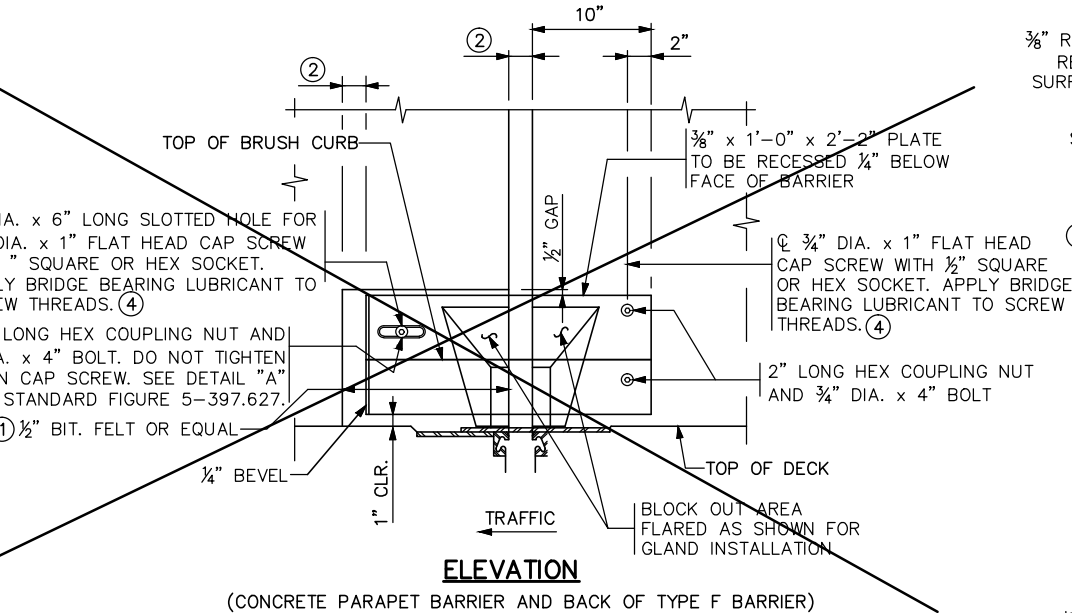


SECTION D-D
(TYPE 5 JOINT SHOWN)

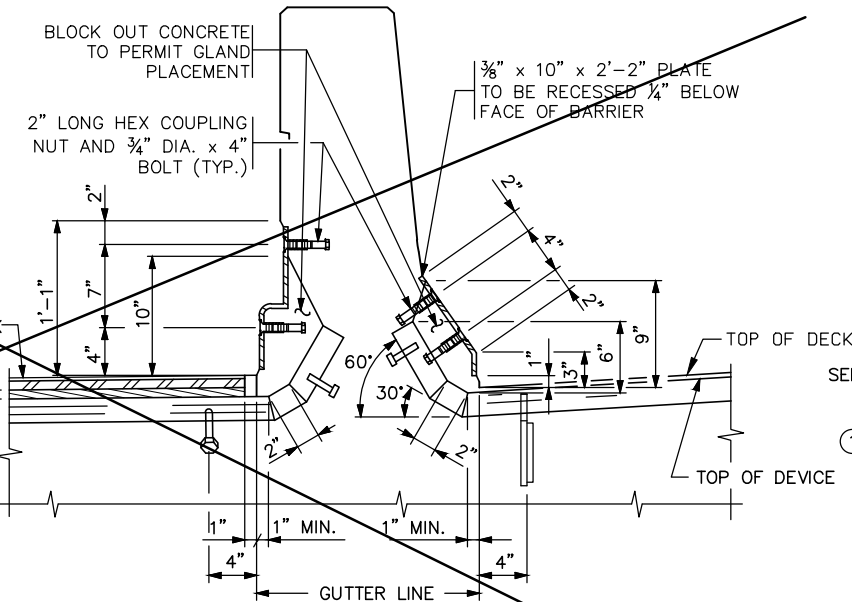
NOTE:
TRANSVERSE DECK REINFORCEMENT MAY BE
SHIFTED THE MINIMUM DISTANCE REQUIRED
FOR EXPANSION DEVICE PLACEMENT



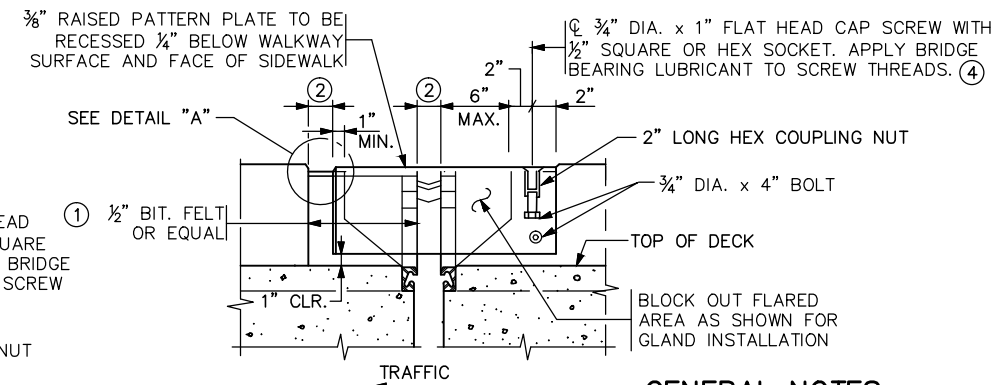
CONCRETE PARAPET BARRIER



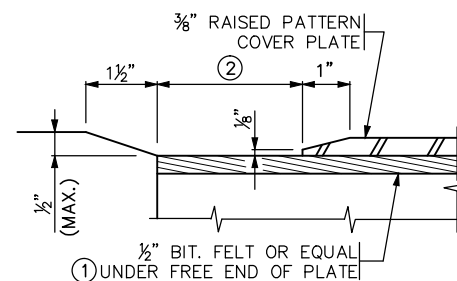
ELEVATION
(CONCRETE PARAPET BARRIER AND BACK OF TYPE F BARRIER)



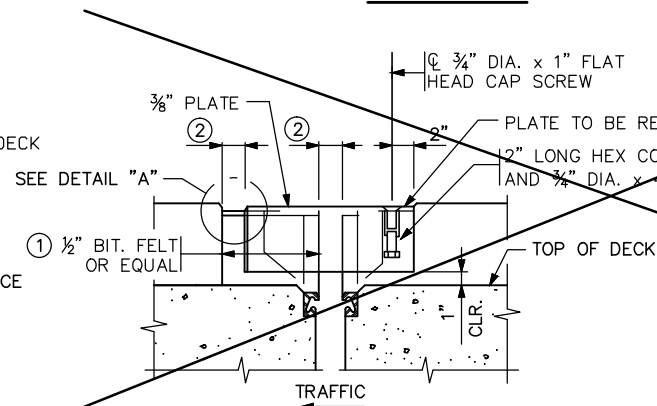
TYPE F BARRIER



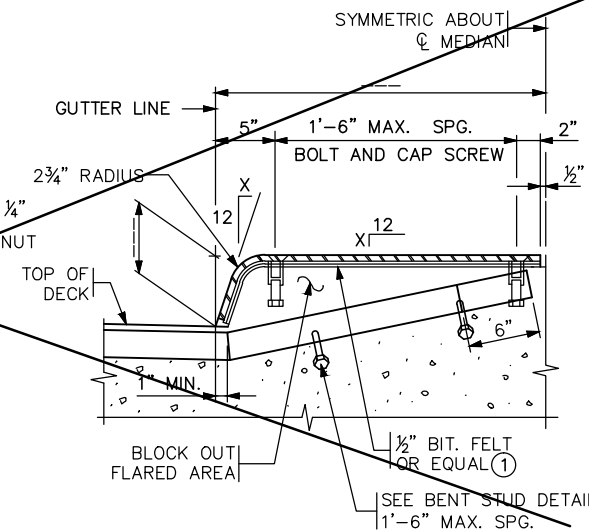
ELEVATION
RAISED SIDEWALK DETAILS



DETAIL "A"



MEDIAN ELEVATION



MEDIAN SECTION

FIG. 5-397.630

REVISION: 11-06-2013
APPROVED: SEPTEMBER 26, 2003
David A. Hargan
STATE BRIDGE ENGINEER

SECTION THROUGH BARRIERS - INTEGRAL SIDEWALK

CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER
NAME: _____ LIC. NO. _____

TITLE: **WATERPROOF
EXPANSION DEVICE**
(RAISED MEDIAN OR SIDEWALK WITH PARAPET)

DES: **DDL** DR: **SWH**
CHK: **EEM** CHK: **EEM**
SHEET NO.120 OF 148 SHEETS

APPROVED: _____
**BRIDGE NO.
27R34**

PAINT SYSTEM

OTHER ITEMS ①

Mn/DOT SPECIFICATION NUMBER _____ 2478 OR 2479 OR OTHER _____

MANUFACTURER _____ NAME AND ADDRESS (CITY, STATE) _____

PRIME COAT _____ Mn/DOT MATERIAL SPECIFICATION NUMBER _____

INTERMEDIATE COAT _____ Mn/DOT MATERIAL SPECIFICATION NUMBER _____

FINISH COAT _____ Mn/DOT MATERIAL SPECIFICATION NUMBER _____ COLOR _____

[illegible]

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION.
BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS.
SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD.
(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT.

This image shows a single page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines, and the page is completely blank except for the lines themselves.

SYSTEM: _____ COLOR: _____

COMMENTS: _____

NUMBER OF BRIDGE
SUPPLEMENTAL AGREEMENTS: _____ COST: \$ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

INSPECTOR(S) SIGNATURE	DATE
CHECKED BY: PROJECT ENGINEER/SUPERVISOR SIGNATURE	DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE – ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

FIG. 5-397.900

REVISION: 10-28-2008

APPROVED: SEPTEMBER 26, 2003

Daniel J. Ingram
STATE BRIDGE ENGINEER

[illegible]

DESIGNED BY: DDL	CHECKED BY: EEM
DRAWN BY: SWH	DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



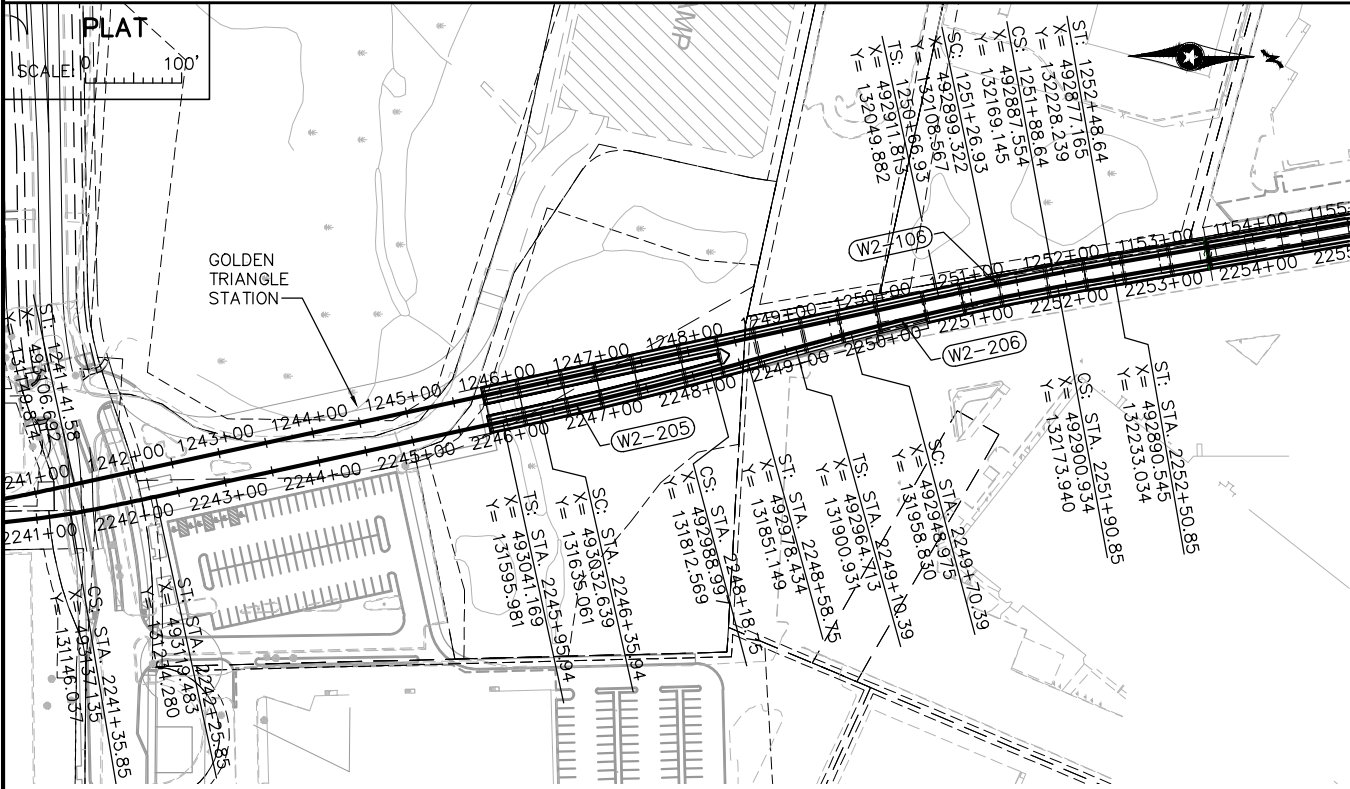
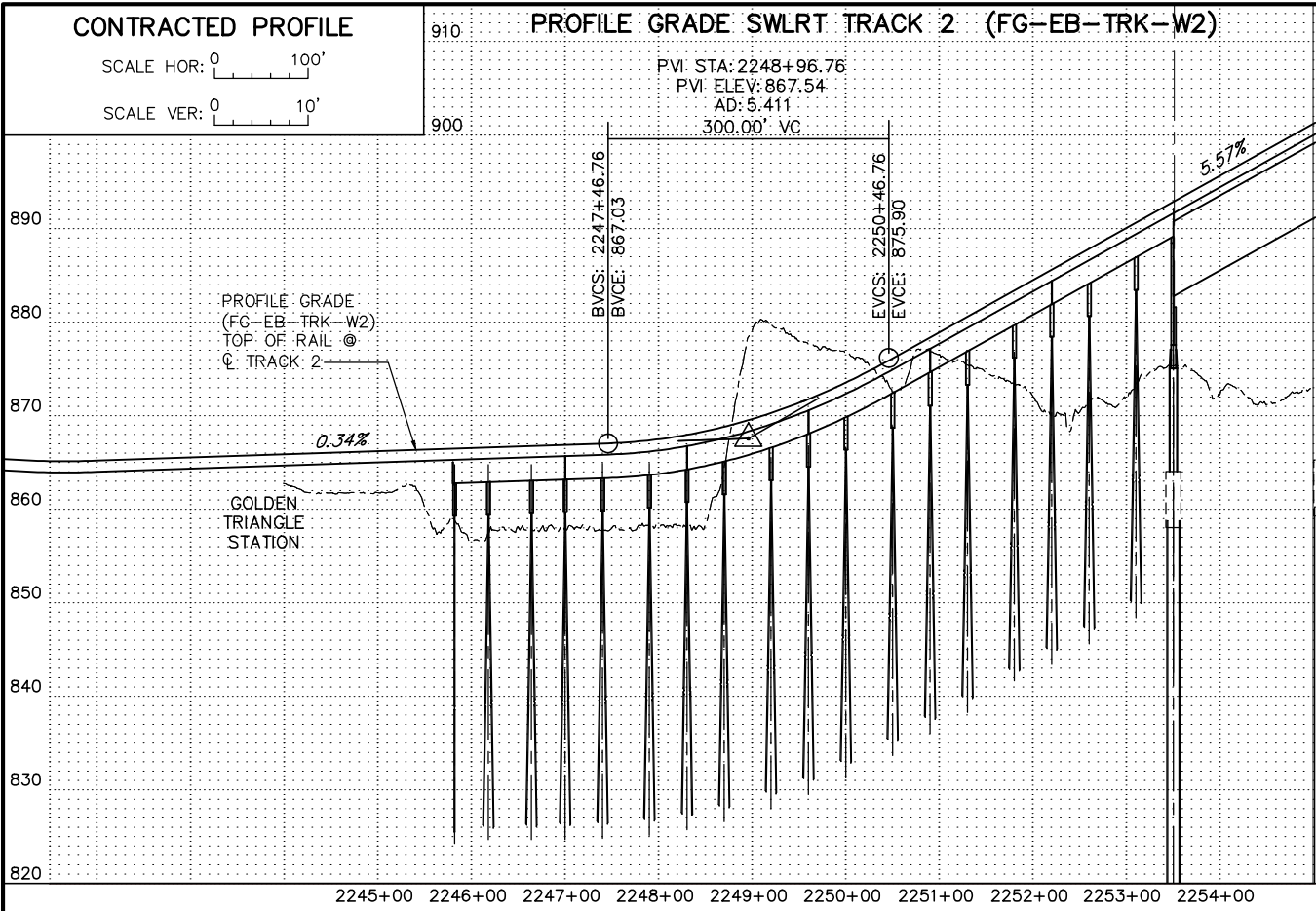
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
AS-BUILT BRIDGE DATA

DISCIPLINE: **STRUCTURES**

SHEET NAME:	W2-STU-BRID-T212-DTL03
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SHEET
121
OF
148

Sep. 02 2015 09:37 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR1.dwg By: hills



CURVE NO. W2-106
R = 2850.00'
Lc = 61.71'
Ls = 60.00'
Ea = 1.00"
Eu = 1.22"
V = 40 MPH

CURVE NO. W2-205
R = 4000.00'
Lc = 182.81'
Ls = 40.00'
Ea = 0.75"
Eu = 0.83"
V = 40 MPH

CURVE NO. W2-206
R = 2850.00'
Lc = 220.46'
Ls = 60.00'
Ea = 1.00"
Eu = 1.22"
V = 40 MPH

NOTE:
ALL ELEVATIONS ARE TOP OF RAIL.

NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY) : GIVEN LOCATION,TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION _____ OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

MAX FLOOD ON RECORD: XXX C.F.S. (XX-XX-XX)

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

DESIGN FLOOD (XX TR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
TOTAL STAGE INCREASE: XX FT.
LOW MEMBER AT OR ABOVE ELEVATION: XXX.X FT

WATERWAY AREA REQUIRED BELOW ELEV. XXX.X = XXX SQ. FT. AT RIGHT ANGLES TO CHANNEL

BASIC FLOOD (100 YR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
TOTAL STAGE INCREASE: X.X FT.
MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR OT YR.FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR OT YR. FREQ.)
SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY = SHEETS MADE FROM 2015 SURVEYS

1ST BENCH MARK
MNDOT NAME: 2763 C 1
APPROX. NORTHING (HEN. COUNTY COORDINATES): 133037.136
APPROX. EASTING (HEN. COUNTY COORDINATES): 492530.677
BENCHMARK ELEVATION (NAVD88): 899.073

2ND BENCH MARK
MNDOT NAME: 2773 F
APPROX. NORTHING (HEN. COUNTY COORDINATES): 135659.858
APPROX. EASTING (HEN. COUNTY COORDINATES): 493993.897
BENCHMARK ELEVATION (NAVD88): 954.066

BRIDGE SURVEY (SHEET 1)

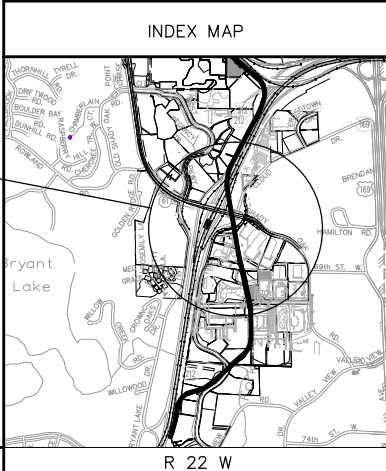
0.1 MI NORTH OF JCT. T.H. 212
AND SHADY OAK ROAD
IN EDEN PRAIRIE

SOUTHWEST LRT OVER FLYING CLOUD DRIVE,
SHADY OAK ROAD & TH 212

SEC 1 T 116 N R 22 W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27R34



STATE PROJECT NO. 9909-01

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: DDL
DRAWN BY: SWH

CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15



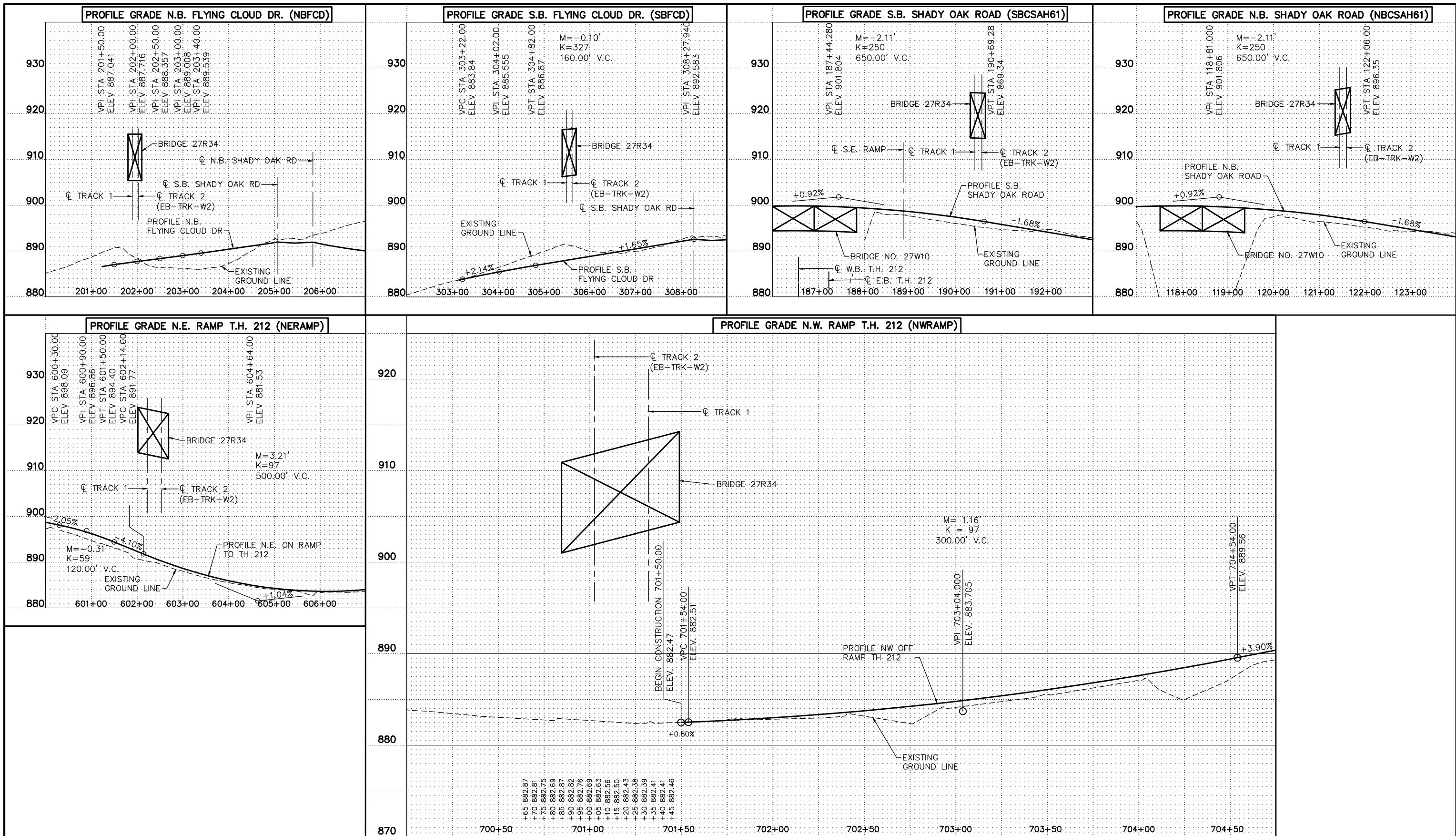
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY (SHEET 1)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR1-1

SHEET
122
OF
148

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DESIGNED BY: DDL
DRAWN BY: SWH

CHECKED BY: MJC
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15



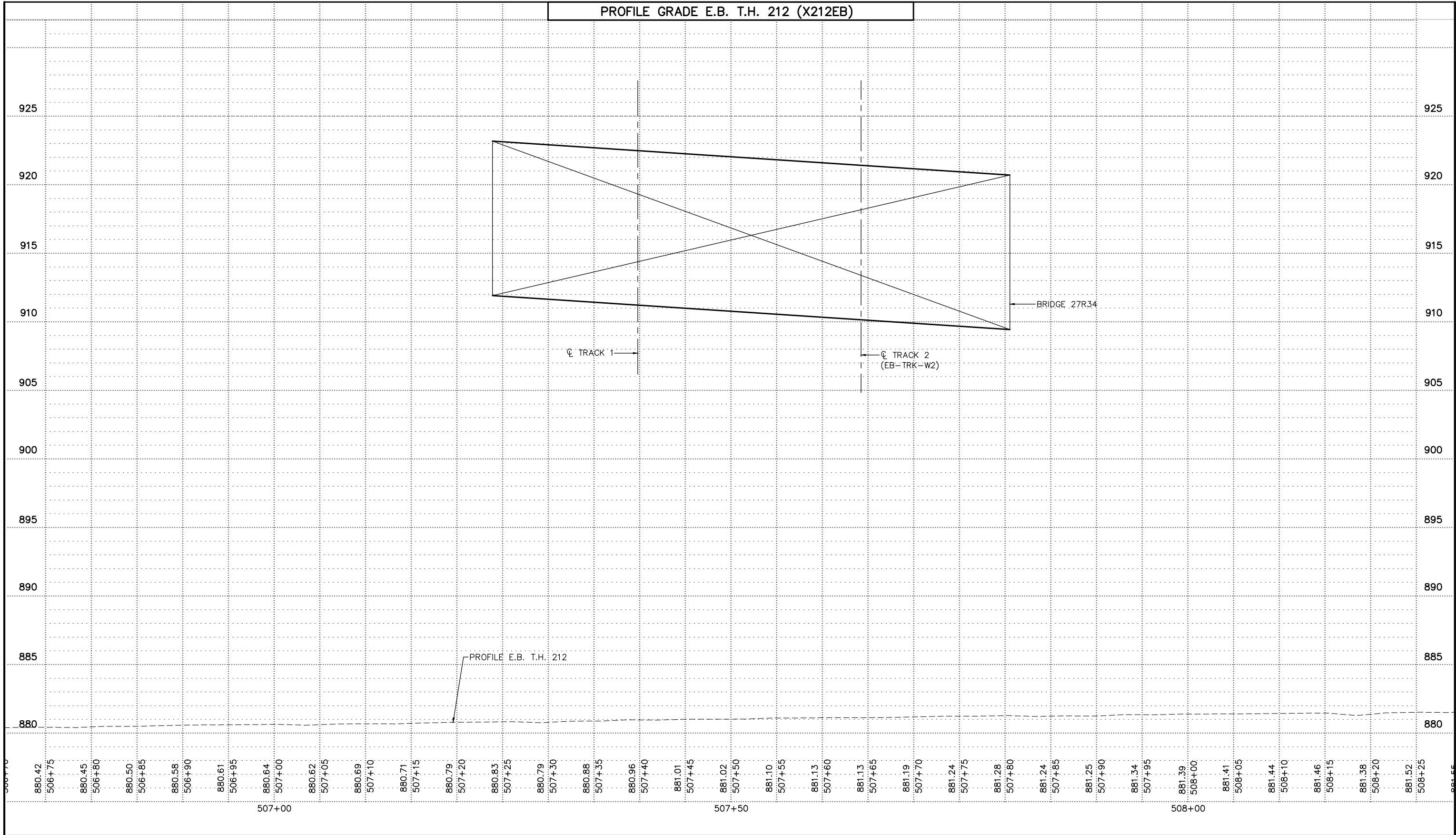
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY (SHEET 3)

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-SUR2**

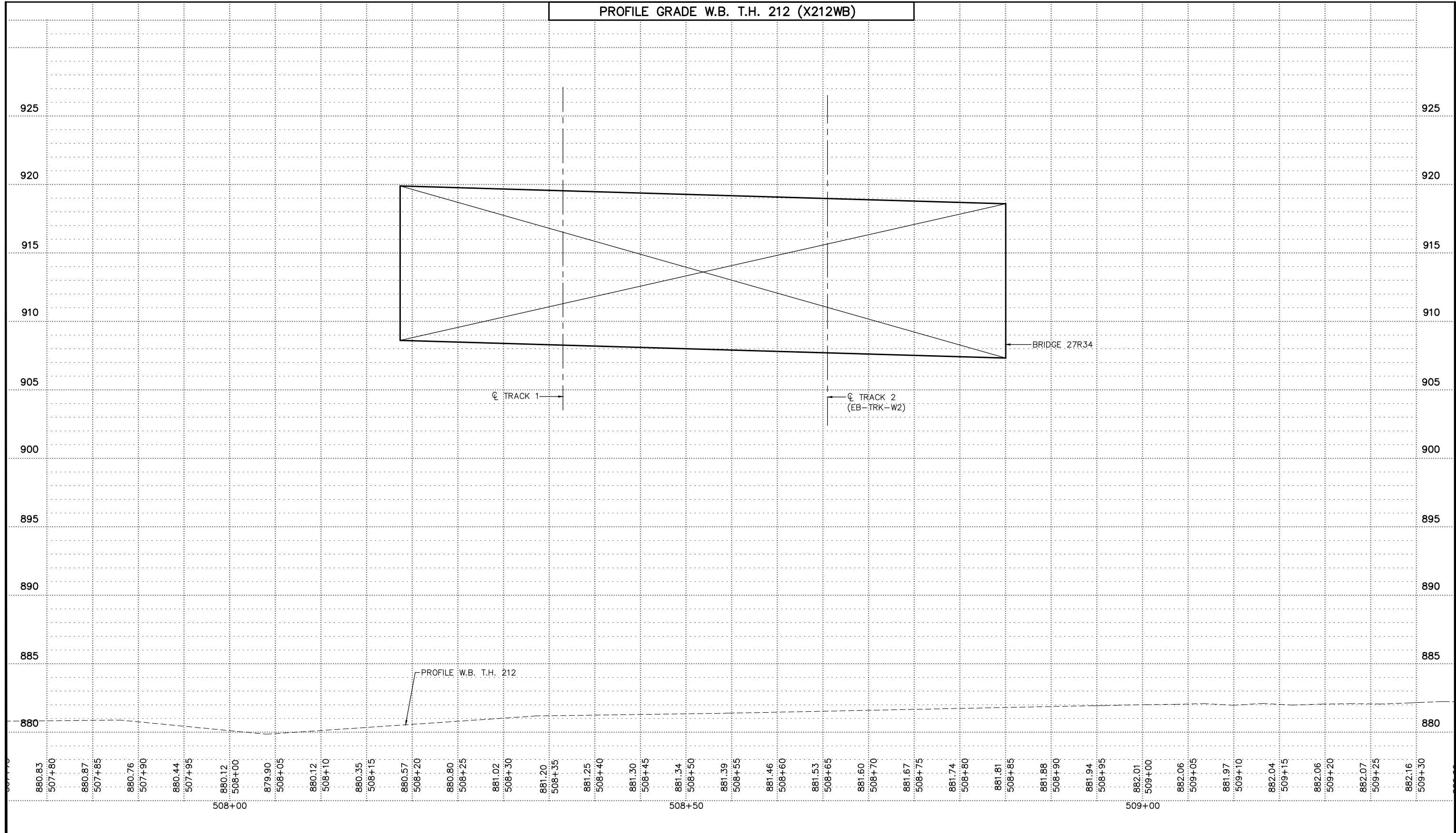
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OF
148

Sep. 02 2015 09:40 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR4.dwg By: hills



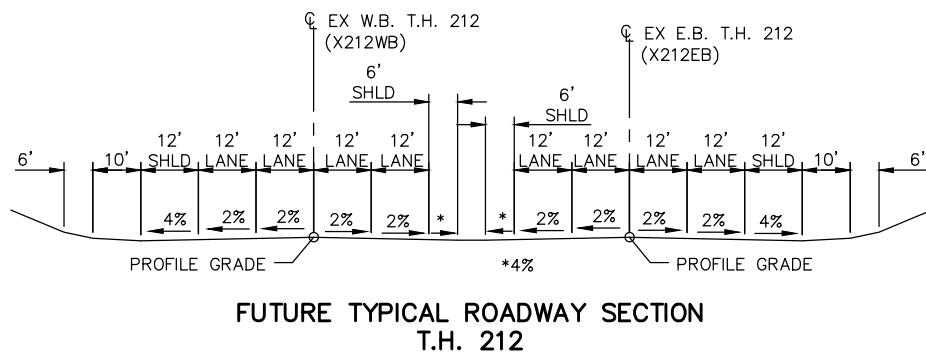
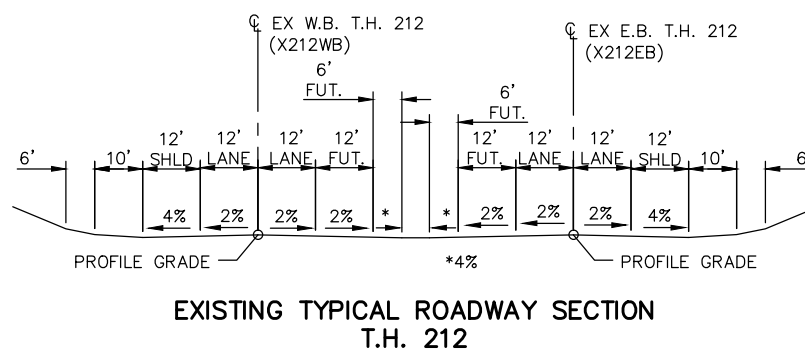
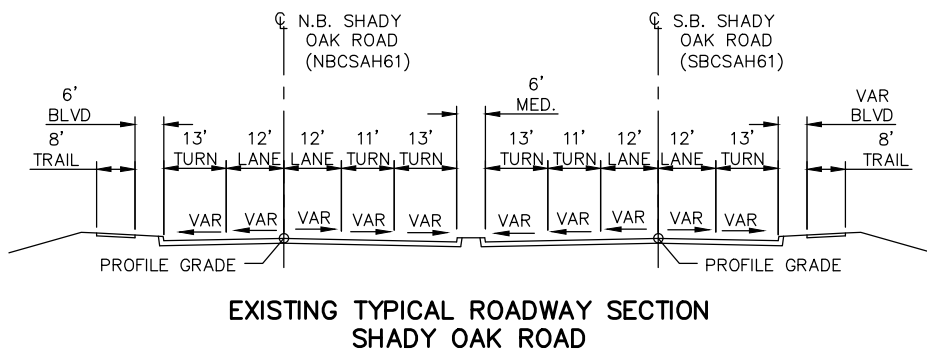
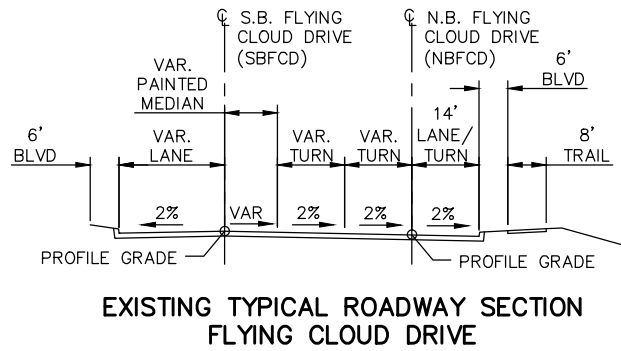
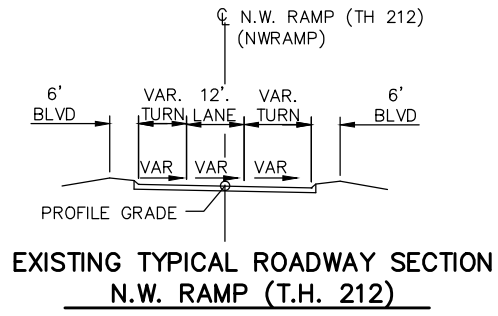
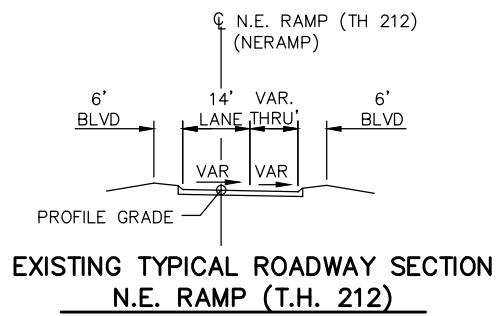
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DRAWN BY: SWH	DATE: 8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

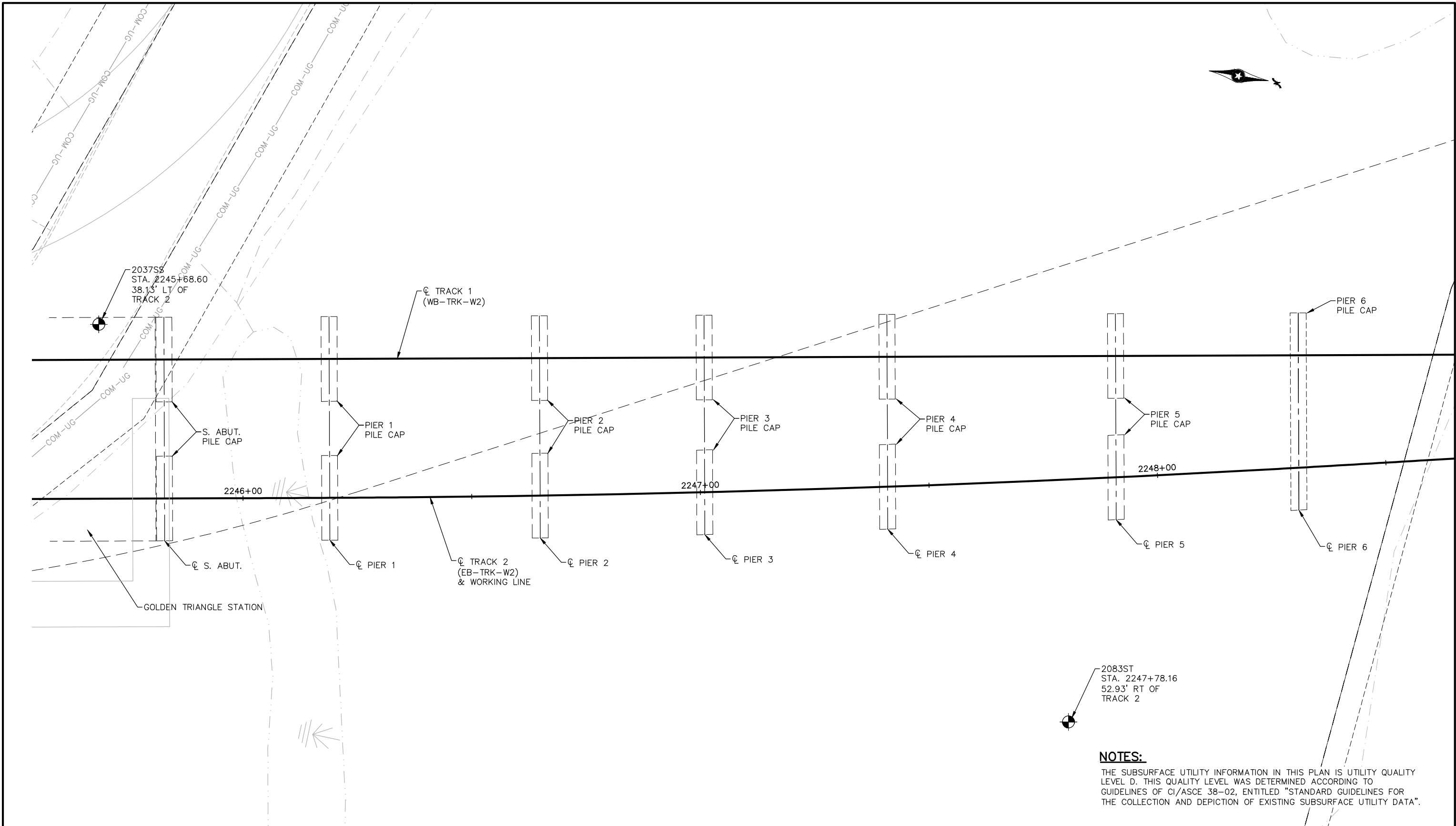
60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE SURVEY (SHEET 6)		SHEET 127 OF 148
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUR8	

Sep. 02 2015 09:42 pm v:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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DRAWN BY:	SWH	DATE:	8/24/2015



60% SUBMISSION - 9/28/15



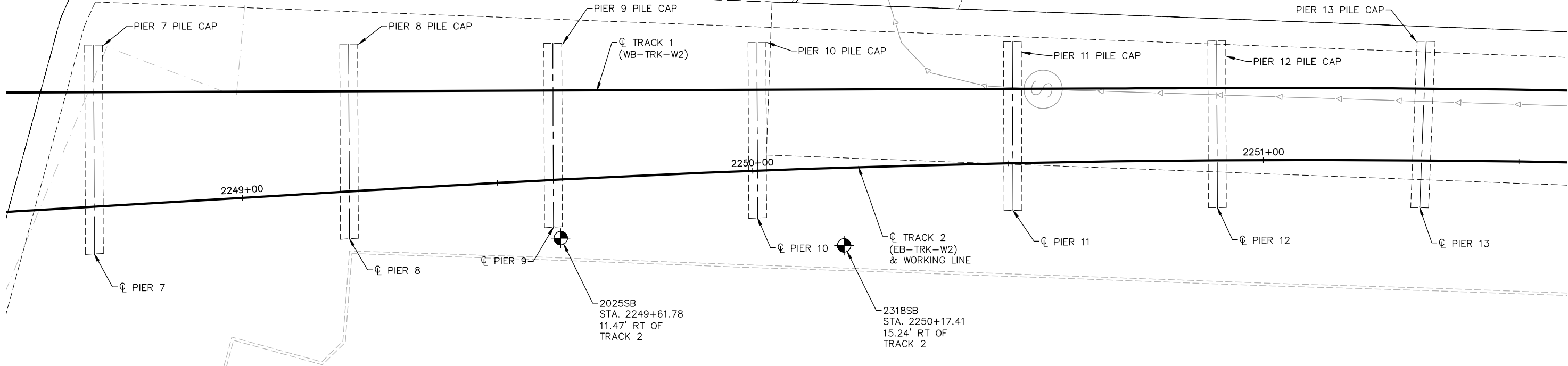
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN (SHEET 1)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-1

SHEET 128 OF 148



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NOTES:
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60% SUBMISSION - 9/28/15



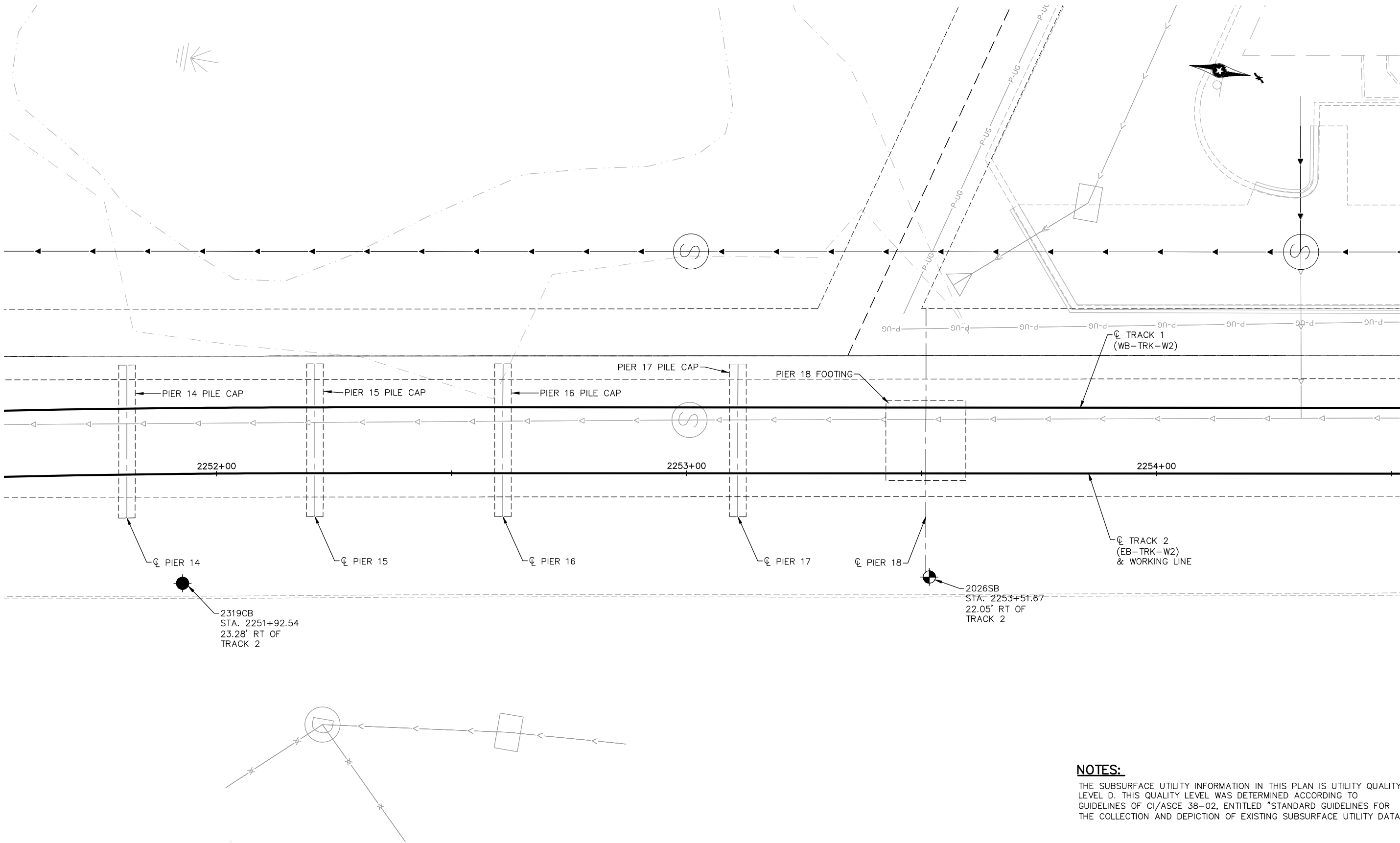
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN (SHEET 2)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR3-2

SHEET
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OF
148



Sep. 02 2015 09:43 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR3.dwg By: hills



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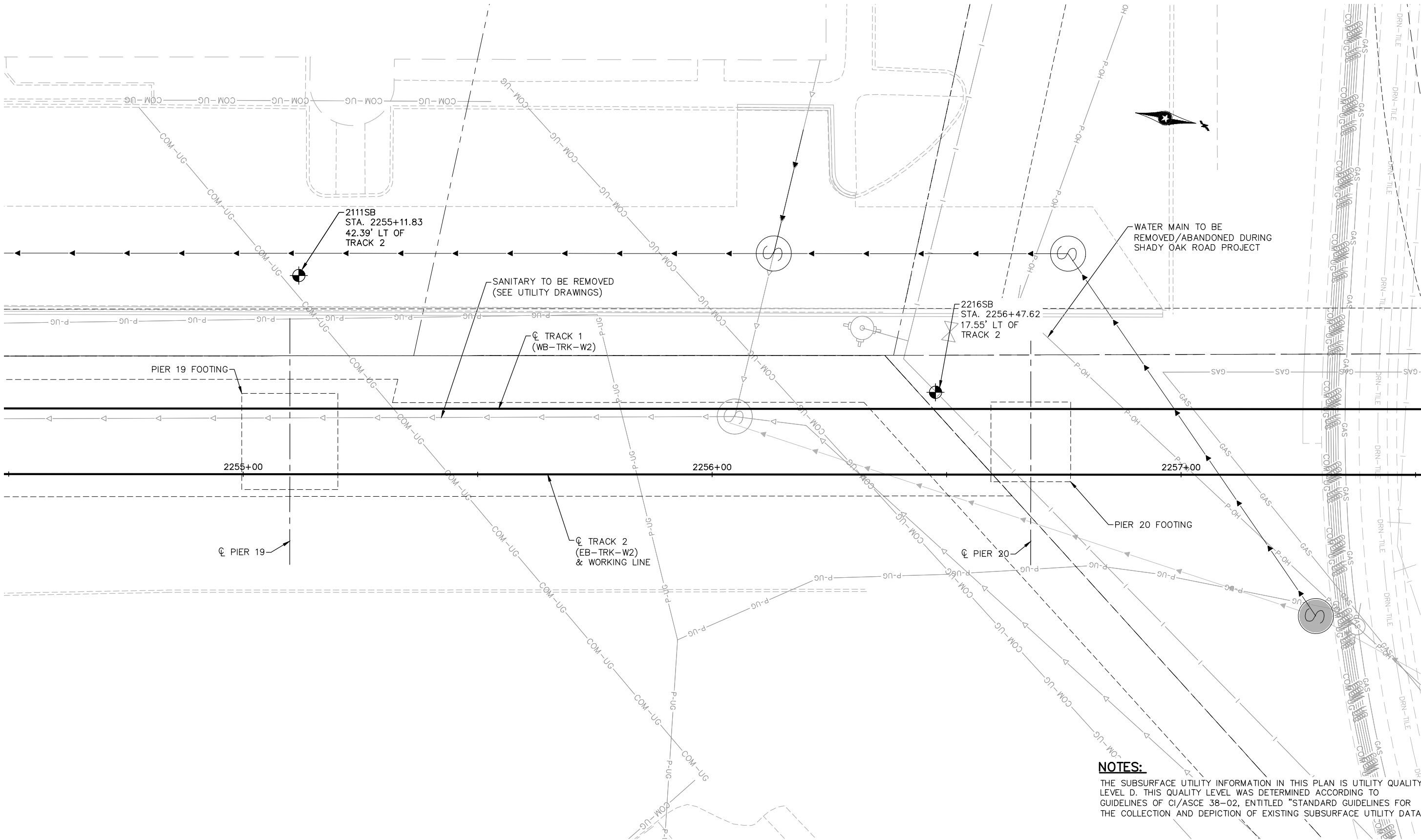


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN (SHEET 3)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR3-3

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OF
148



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NOTES:
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE SURVEY PLAN (SHEET 4)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUR3-4

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OF
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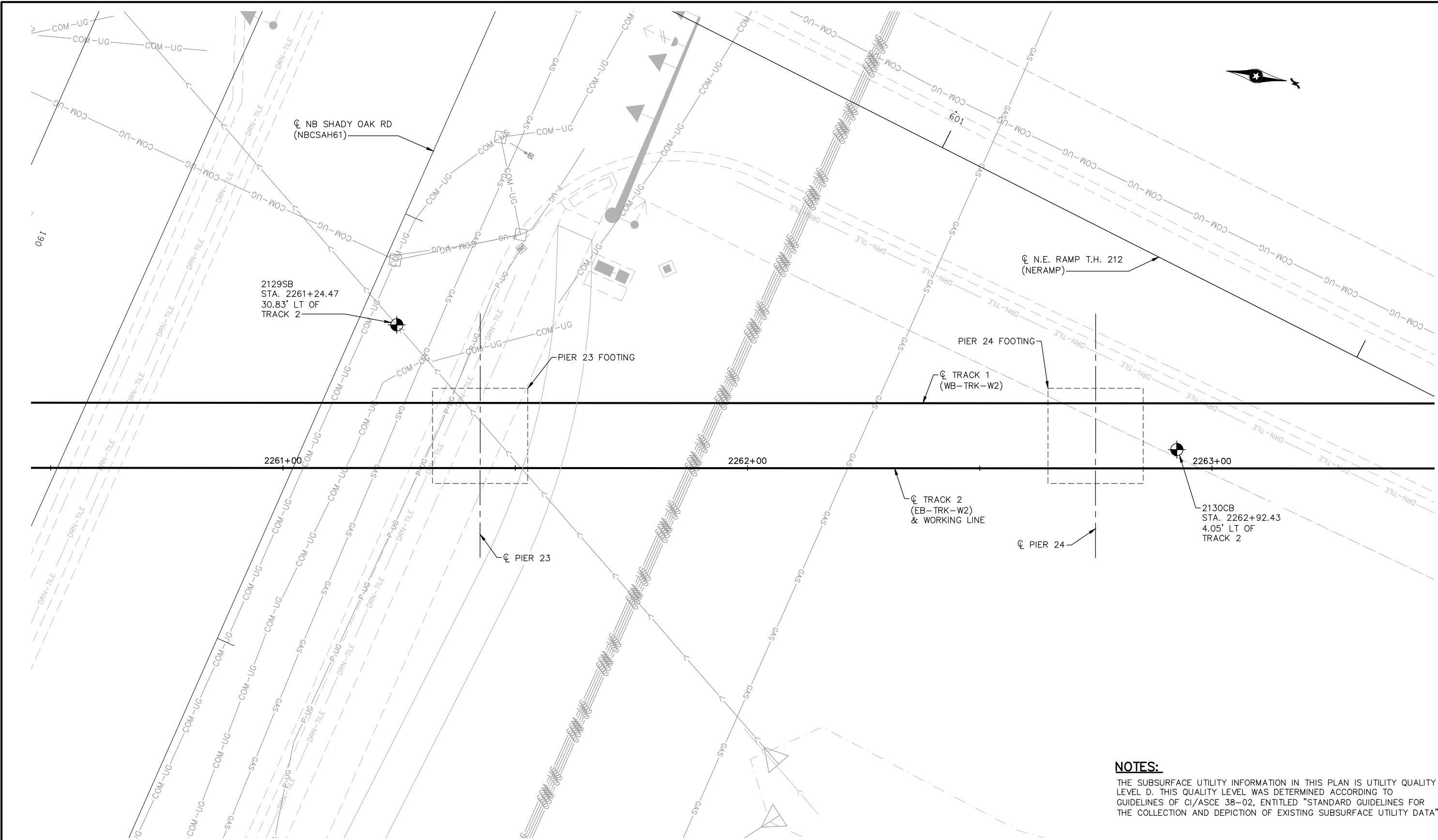
AECOM **PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15



<p align="center">CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE SURVEY PLAN (SHEET 5)</p>	
<p>DISCIPLINE: STRUCTURES</p>	<p>SHEET NAME: W2-STU-BRID-T212-SUR3-5</p>

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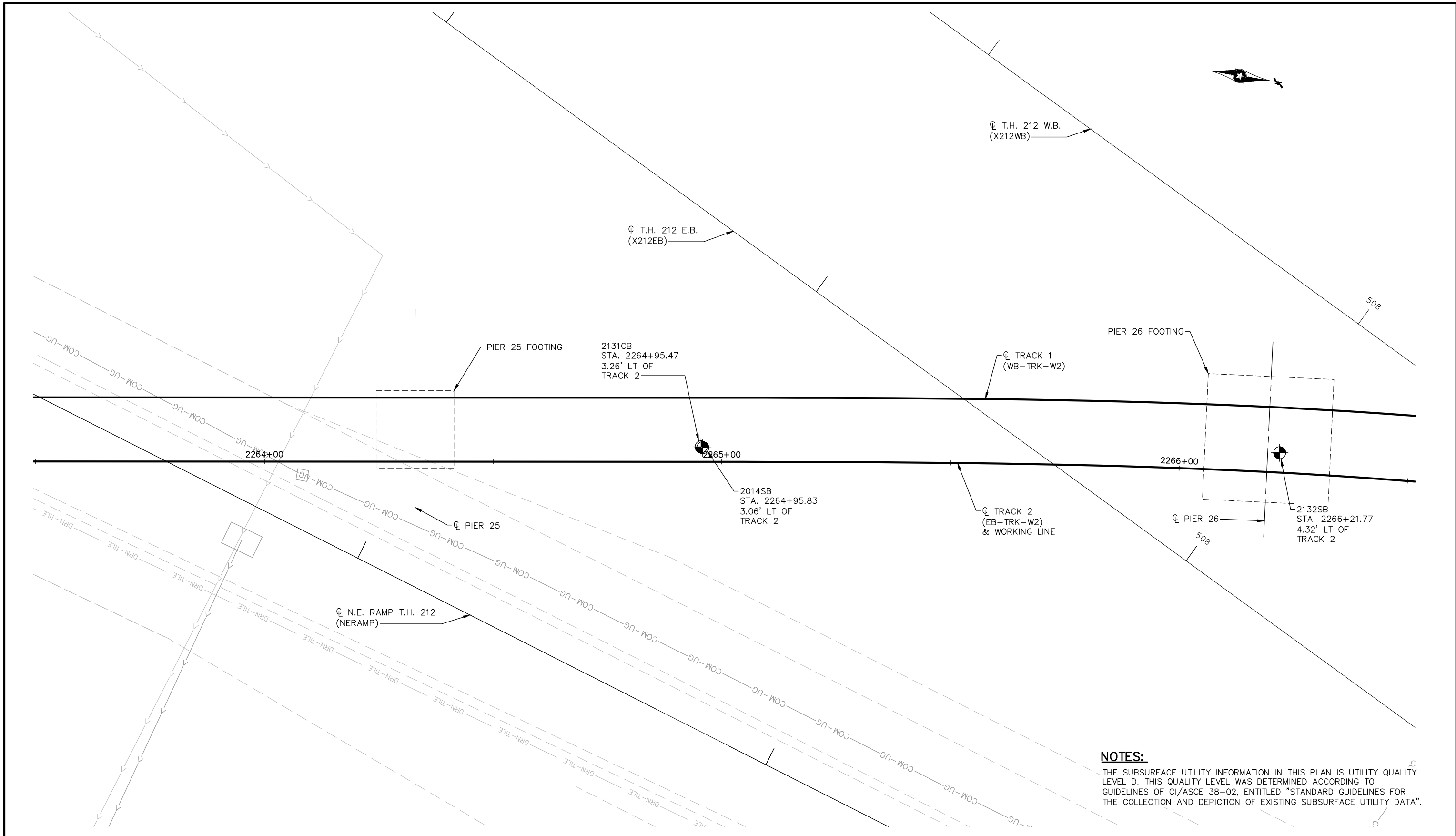
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE SURVEY PLAN (SHEET 6)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUR3-6

SHEET
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OF
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**PARSONS
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60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

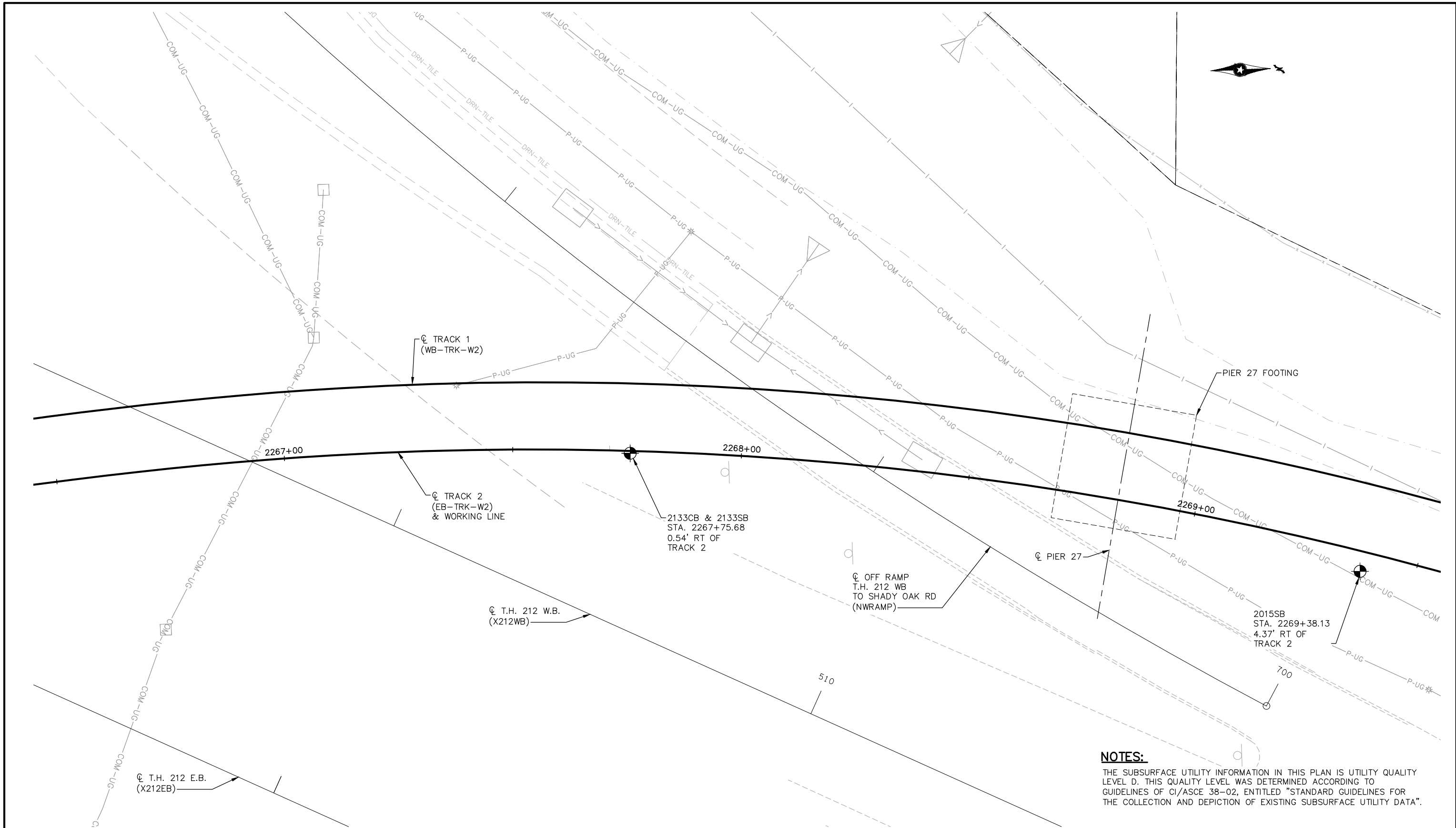
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN (SHEET 7)

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-SUR3-7**

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NOTES:
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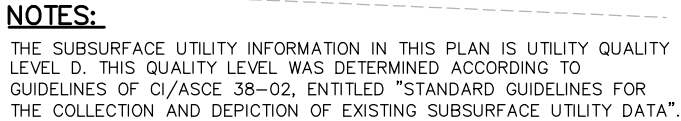


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PLAN (SHEET 8)

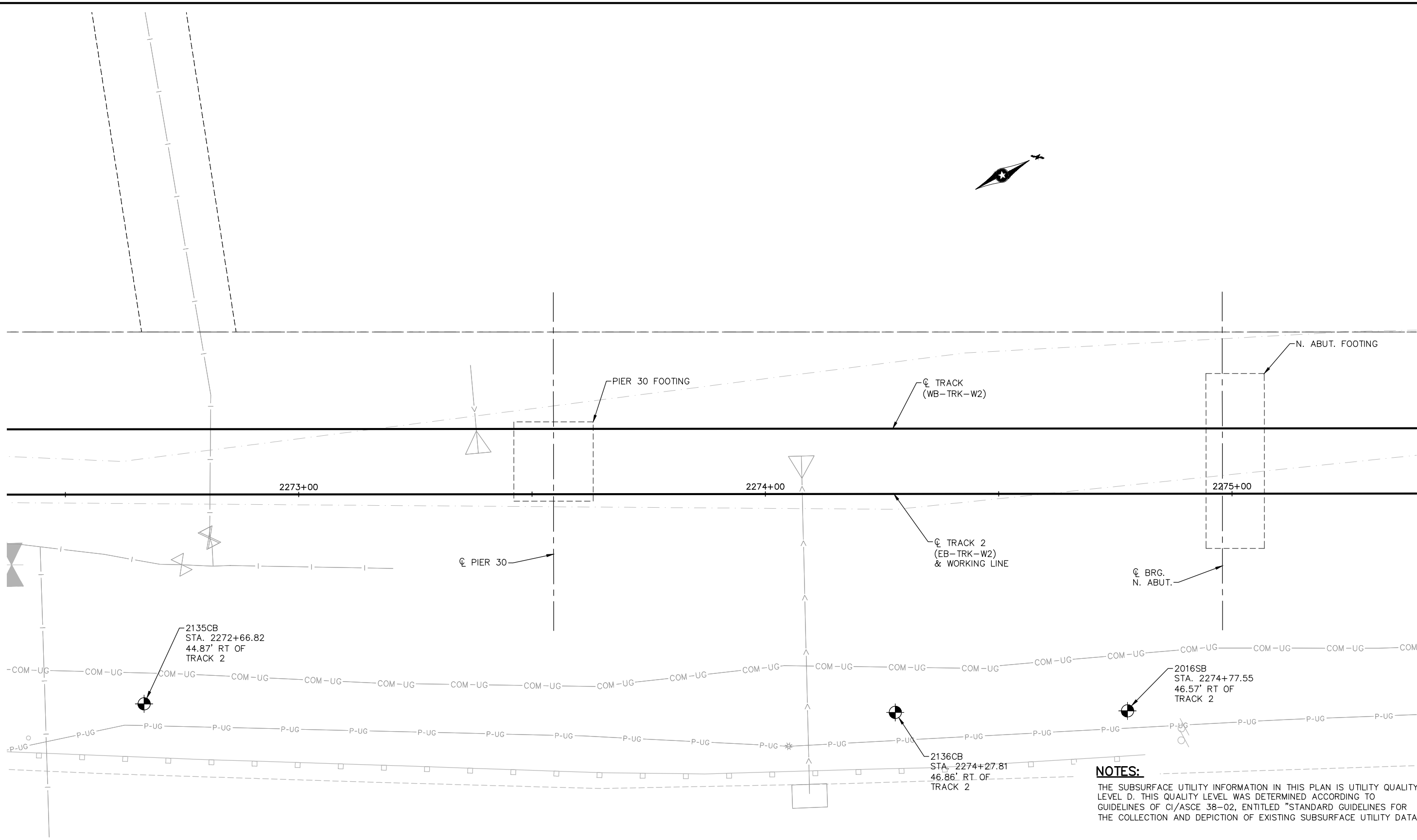
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SHEET NAME: W2-STU-BRID-T212-SUR3-8

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NOTES:
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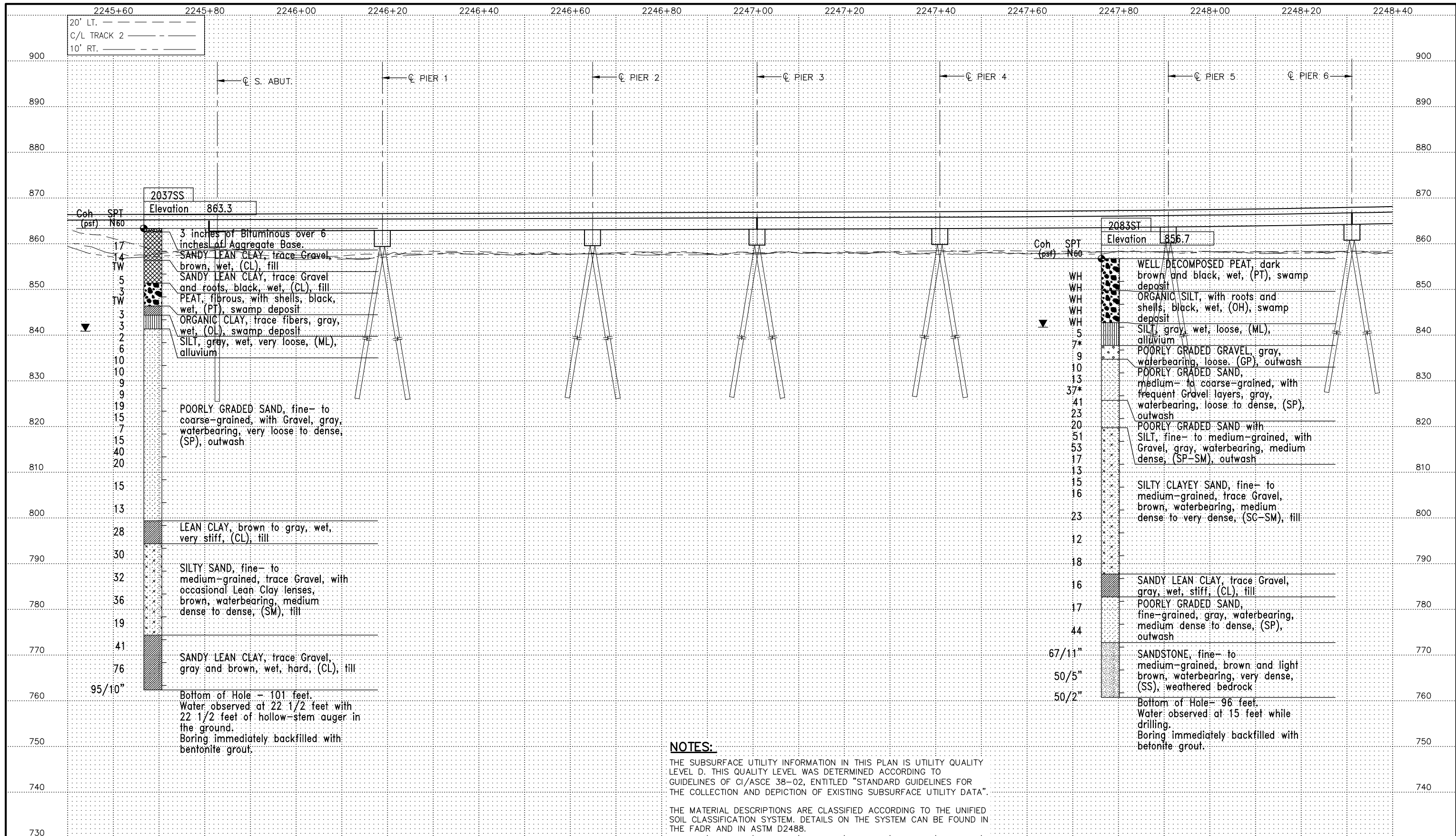
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CIVIL WEST - VOLUME 4A SHADY OAK ROAD BRIDGE 27R34 BRIDGE SURVEY PLAN (SHEET 10)	
DISCIPLINE: STRUCTURES	SHEET NAME: W2-STU-BRID-T212-SUR3-10

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BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
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Green Line LRT Extension

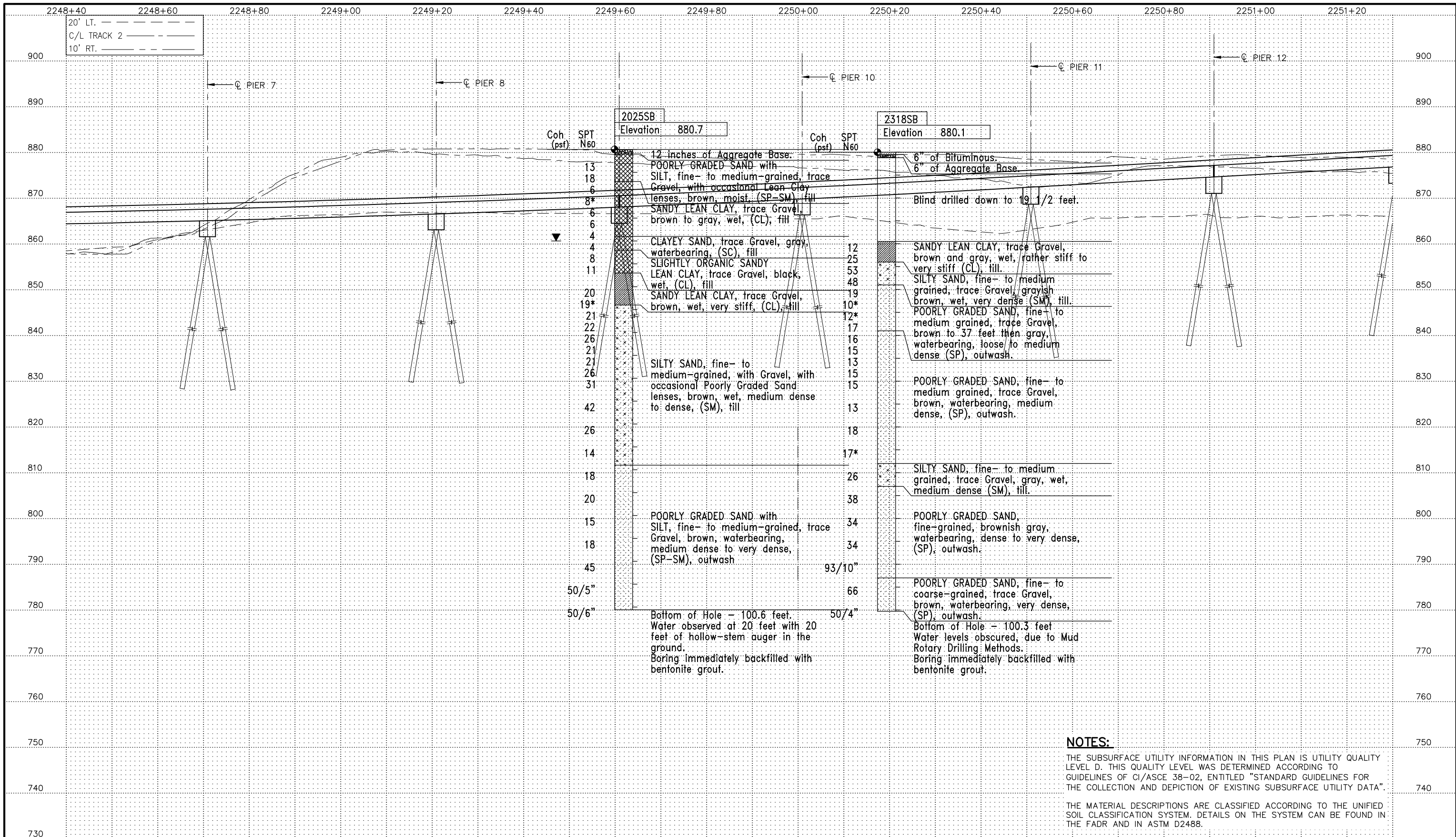
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 1)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRD-T212-SUR5-1

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NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM D2488.

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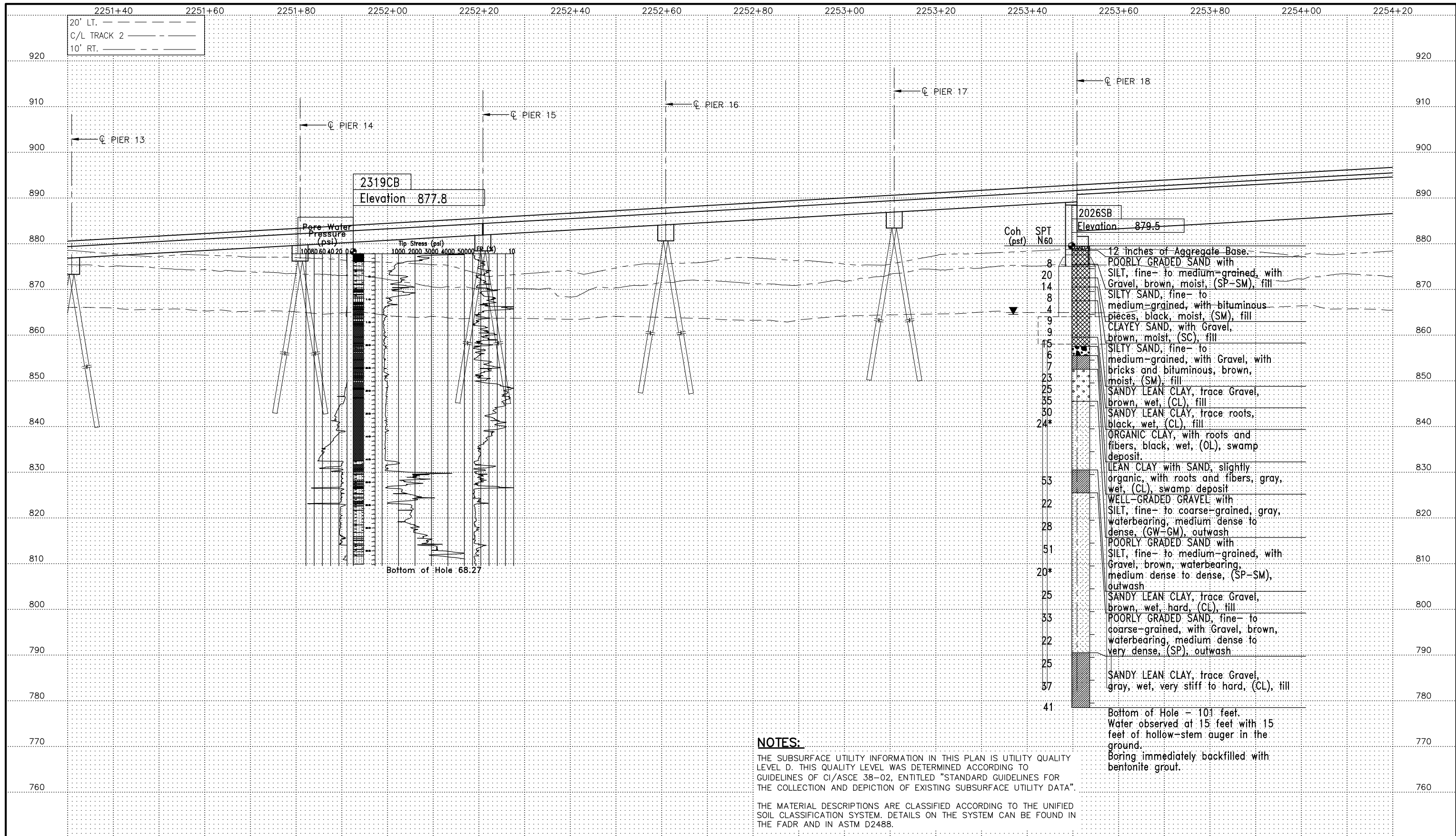


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 2)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-2

SHEET 139 OF 148

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PARSONS BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

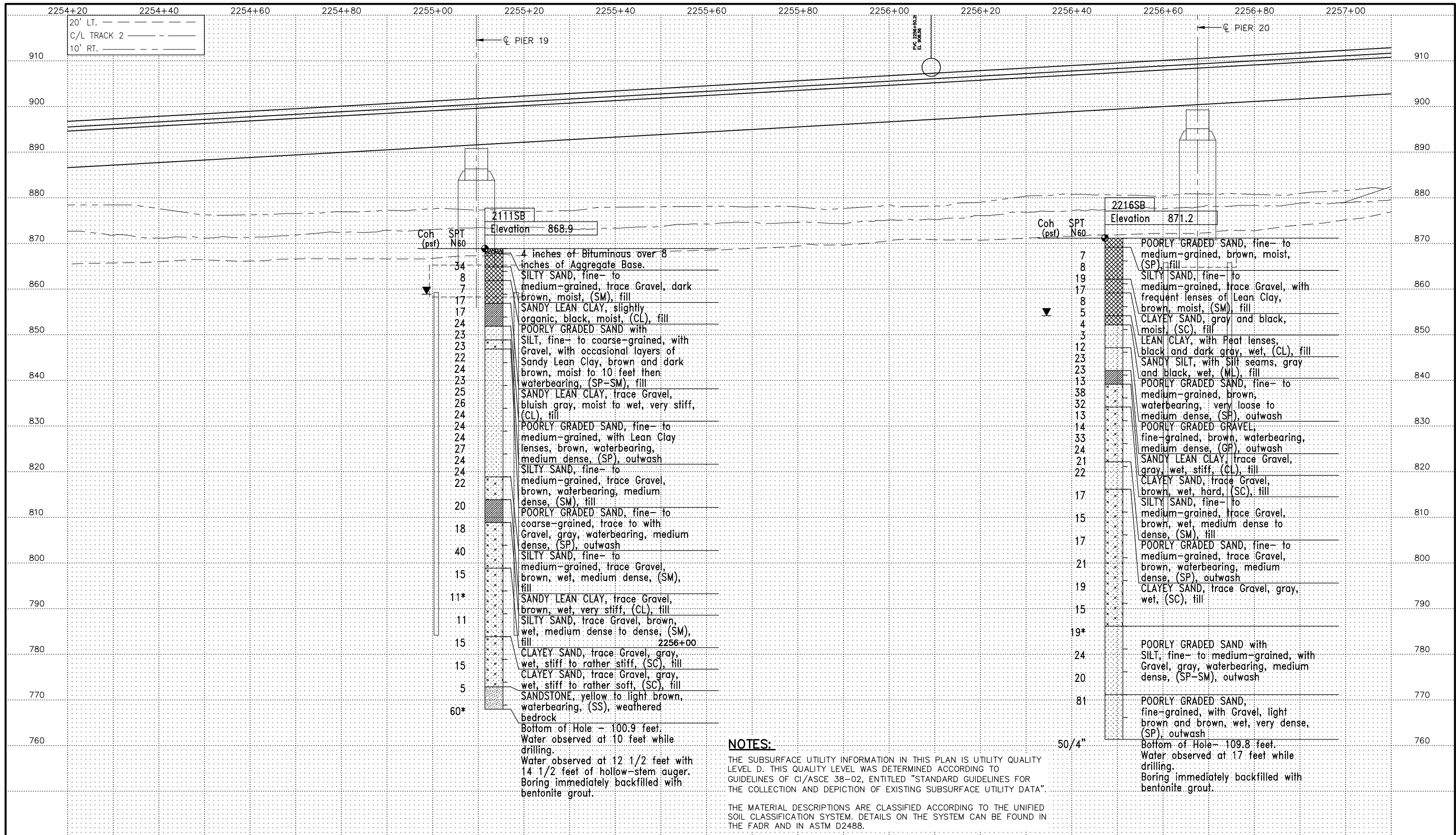
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 3)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR5-3

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AECOM**PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15

METROPOLITAN COUNCIL

SOUTHWEST
Green Line LRT Extension

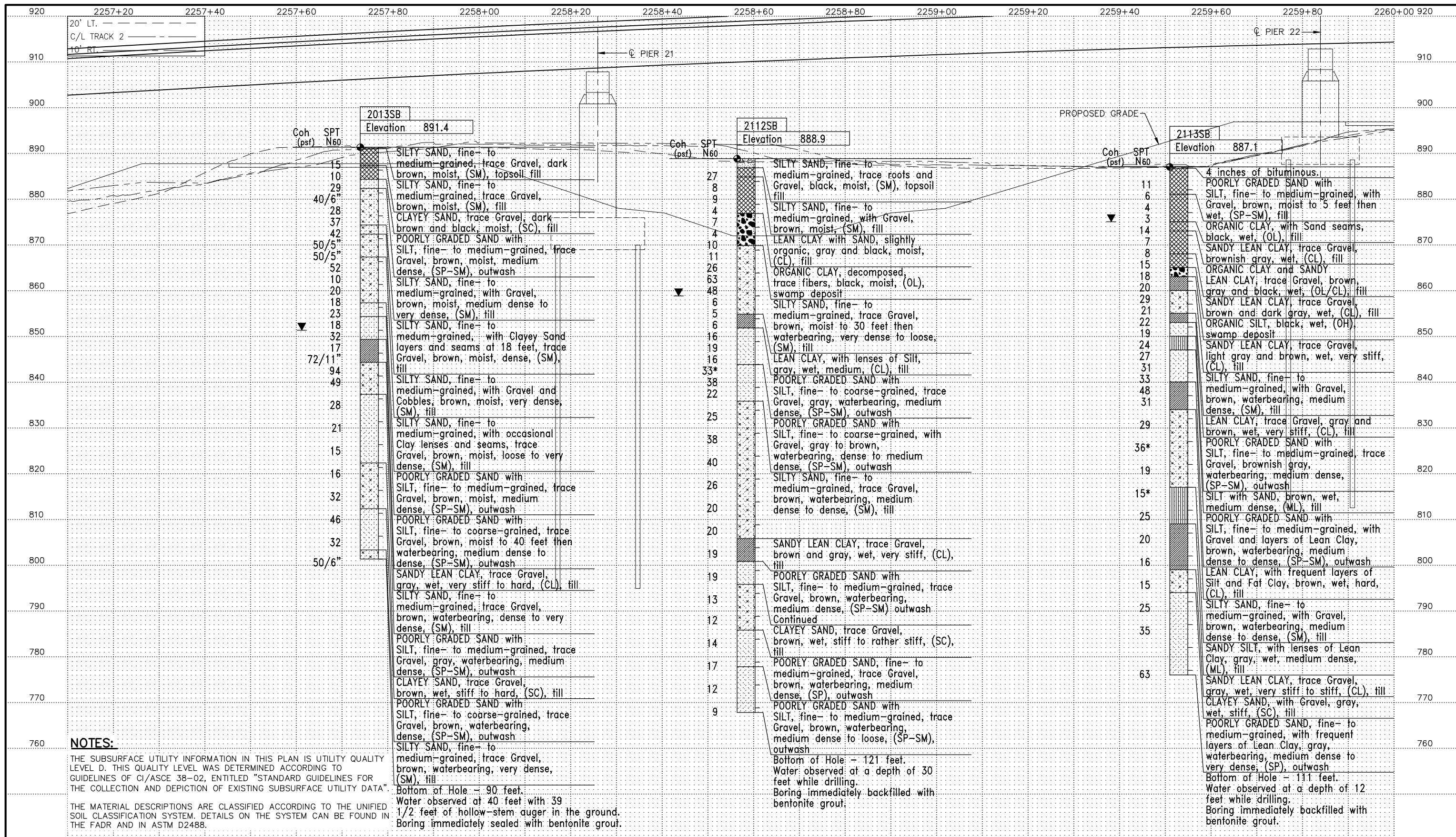
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 4)

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W2-STU-BRID-T212-SUR5-4**

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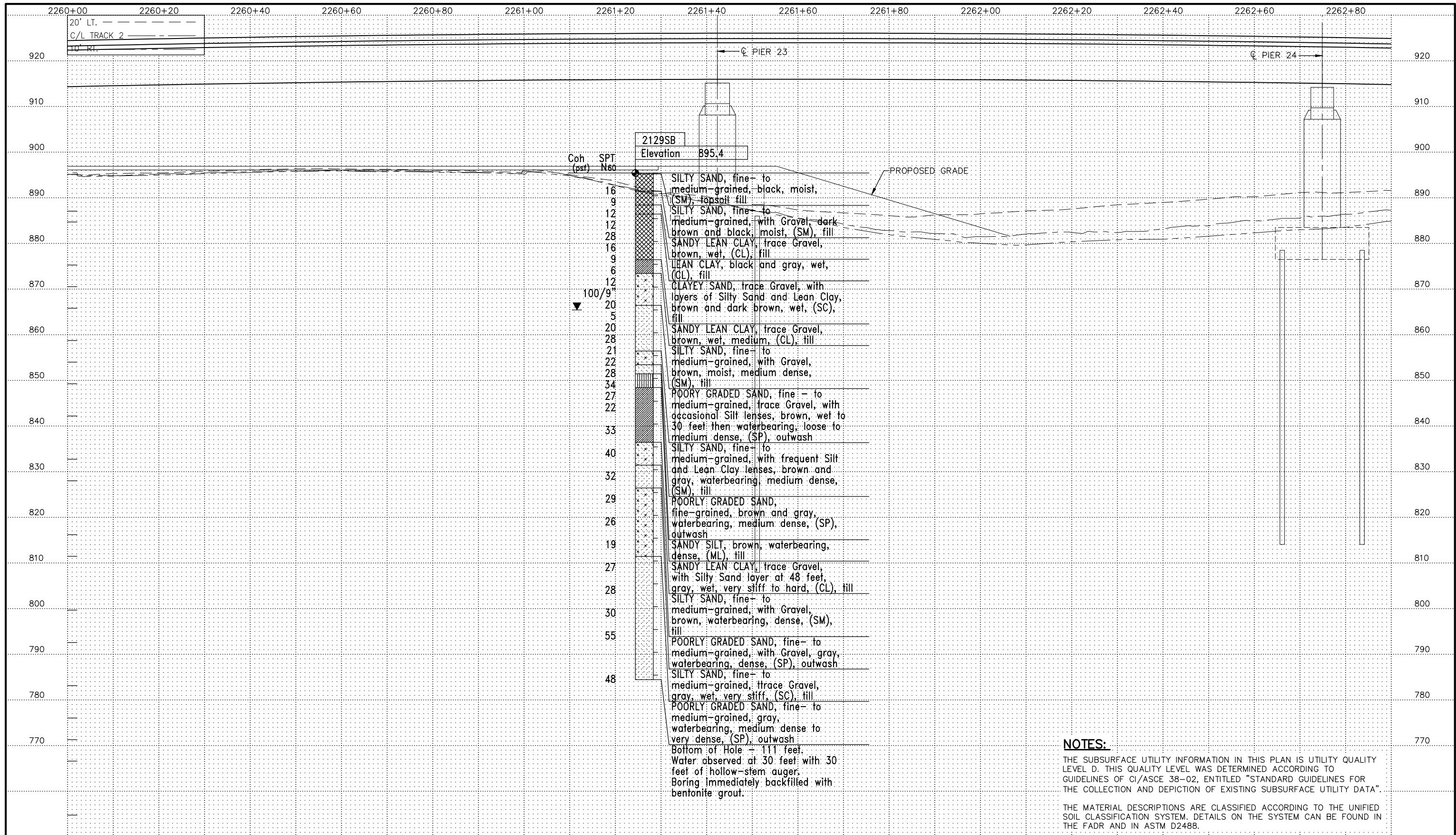
60% SUBMISSION - 9/28/15

CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 5)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-5

SHEET 142 OF 148



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60% SUBMISSION - 9/28/15



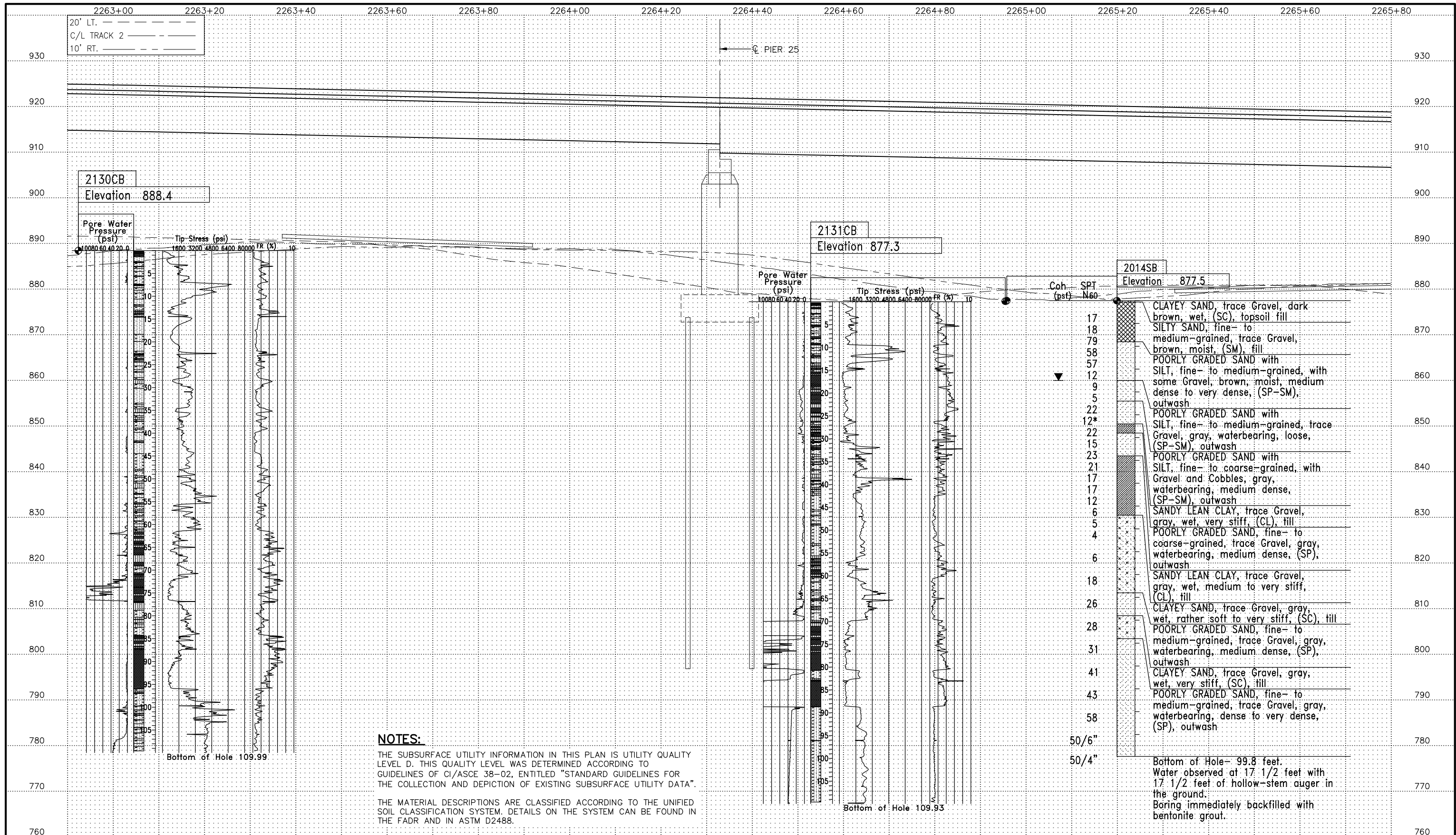
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVET PROFILE (SHEET 6)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR5-6

SHEET 143 OF 148

Sep. 02 2015 09:51 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



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DRAWN BY: SWH	DATE: 8/24/2015

AECOM**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

SOUTHWEST
Green Line LRT Extension

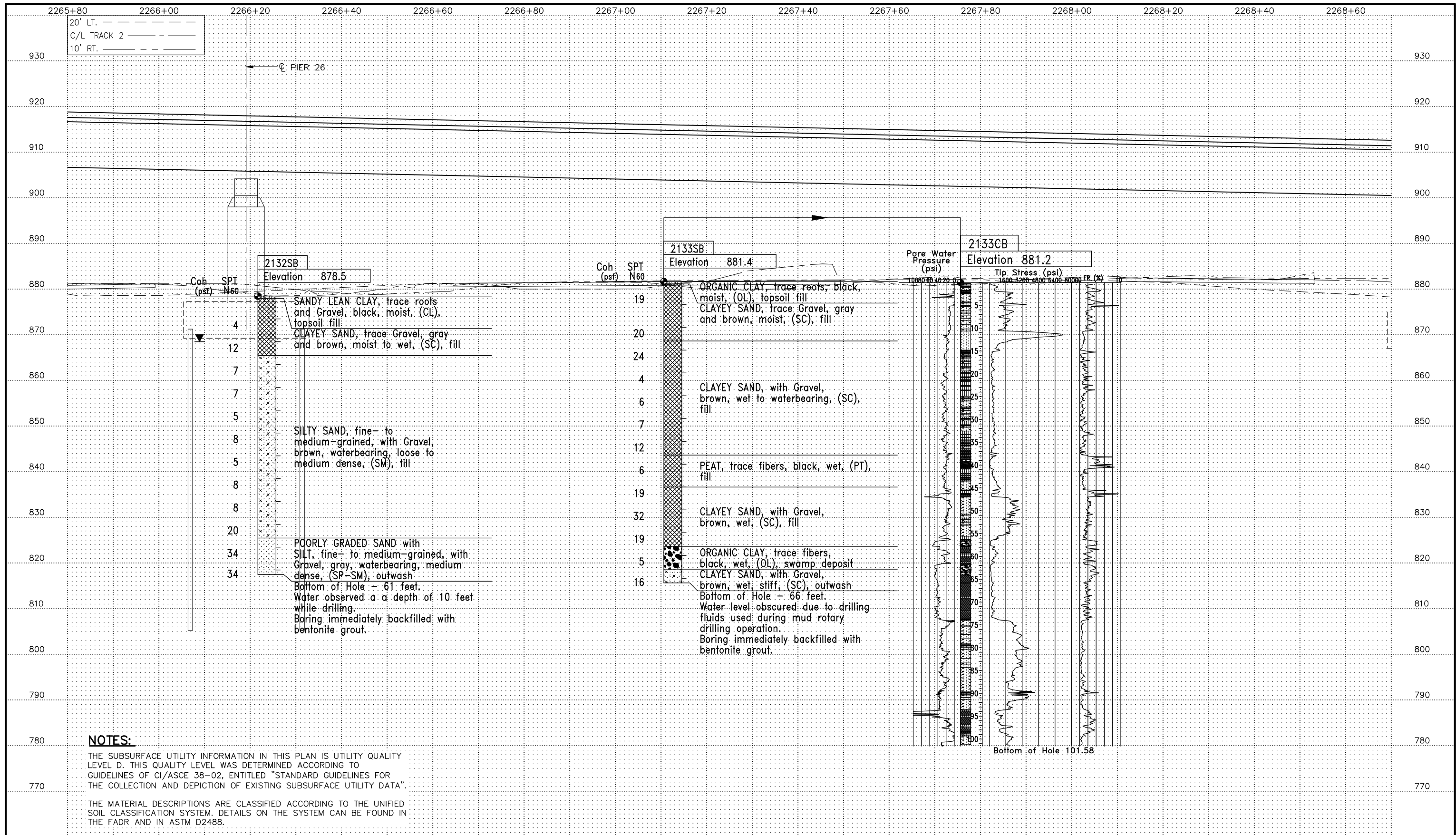
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 7)

DISCIPLINE: STRUCTURES

SHEET NAME: W2-STU-BRID-T212-SUR5-7



SHEET 144 OF 148

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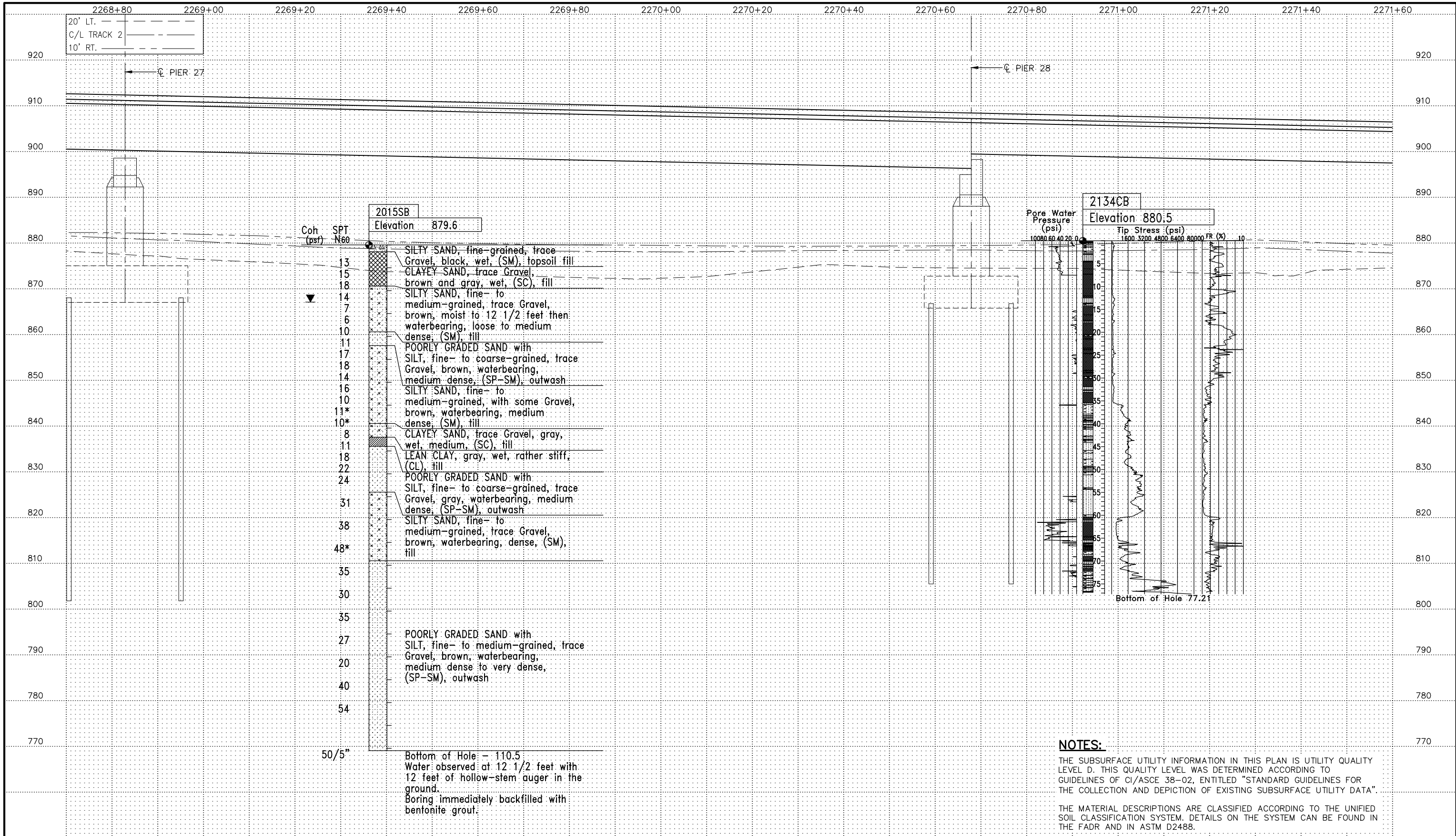


CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 8)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-8

SHEET 145 OF 148

Sep. 02 2015 09:51 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills





NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM D2488.

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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



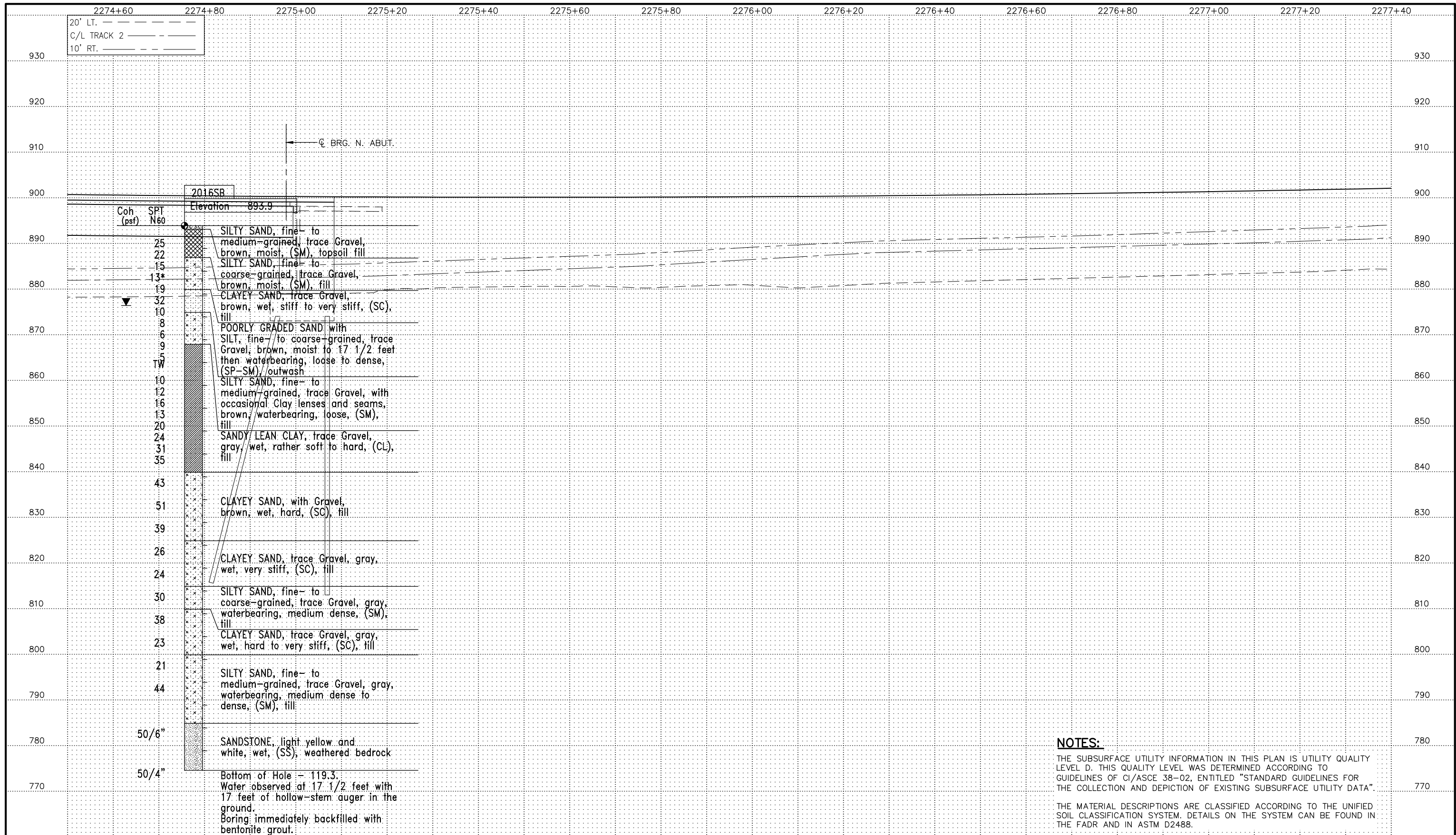
CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 9)

DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-9

SHEET 146 OF 148

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL



Sep. 02 2015 09:52 pm V:\3400_ADC\CAD\SEGMENT W2\PLAN SHEETS\STRUCTURES\BR27R34\W2-STU-BRID-T212-SUR5.dwg By: hills



NOTES:
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM D2488.

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DESIGNED BY: DDL	CHECKED BY: MJC
DRAWN BY: SWH	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
SHADY OAK ROAD
BRIDGE 27R34
BRIDGE SURVEY PROFILE (SHEET 11)

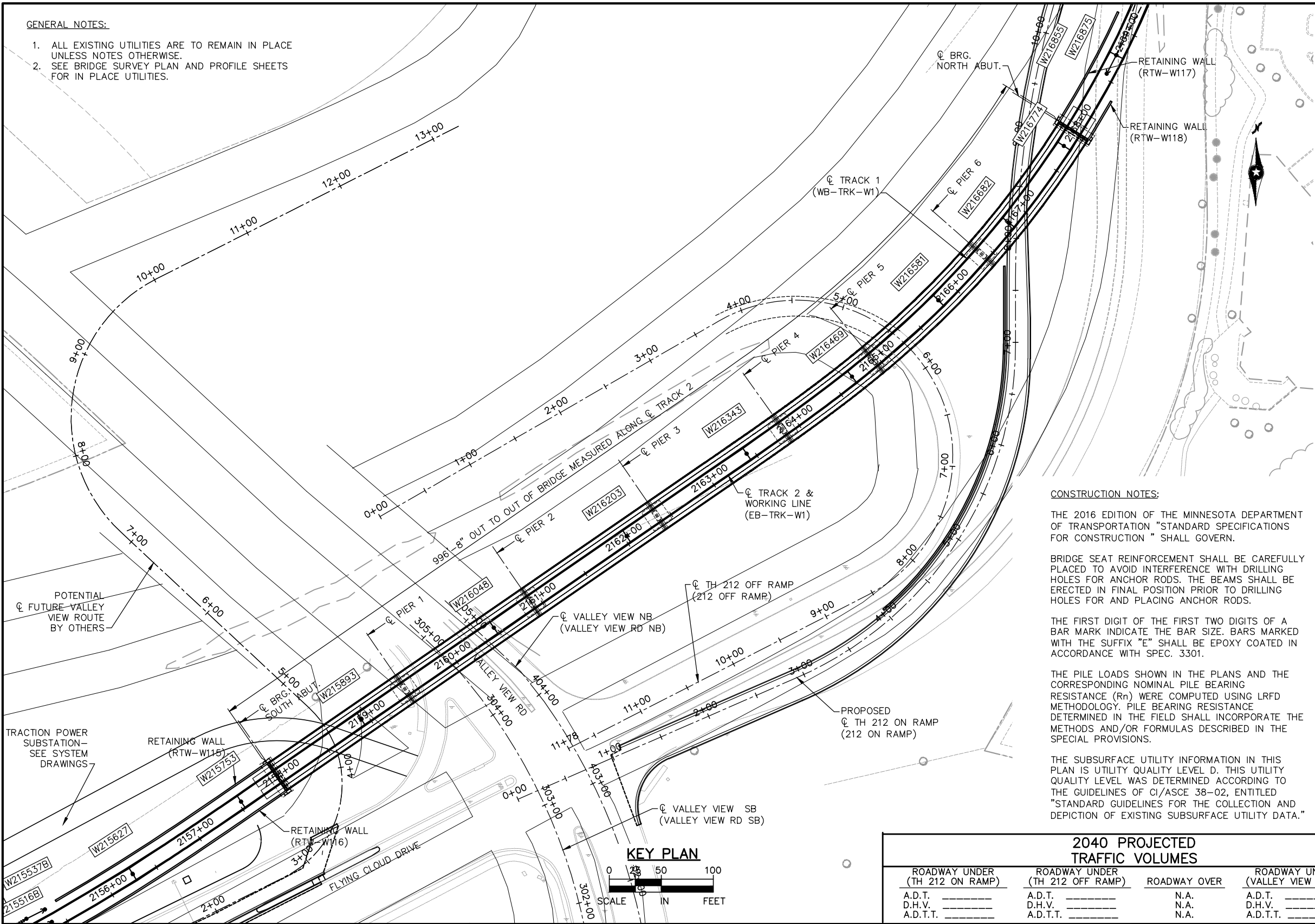
DISCIPLINE: STRUCTURES
SHEET NAME: W2-STU-BRID-T212-SUR5-11

SHEET 148 OF 148

Sep. 09 2015 04:47 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\01_W1-STU-BRG-FCVV-BL01.dwg By: macke

GENERAL NOTES:

1. ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS NOTES OTHERWISE.
2. SEE BRIDGE SURVEY PLAN AND PROFILE SHEETS FOR IN PLACE UTILITIES.



CONSTRUCTION NOTES:

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION " SHALL GOVERN.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS.

THE FIRST DIGIT OF THE FIRST TWO DIGITS OF A BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (Rn) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

2040 PROJECTED TRAFFIC VOLUMES

ROADWAY UNDER (TH 212 ON RAMP)	ROADWAY UNDER (TH 212 OFF RAMP)	ROADWAY OVER	ROADWAY UNDER (VALLEY VIEW ROAD)
A.D.T. _____	A.D.T. _____	N.A.	A.D.T. _____
D.H.V. _____	D.H.V. _____	N.A.	D.H.V. _____
A.D.T.T. _____	A.D.T.T. _____	N.A.	A.D.T.T. _____


JOB NO. T9N635

STATE PROJECT NO. 9909-01

MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	RCK	DATE:	8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
KEY PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BL01

SHEET 1 OF 37

DESIGN DATA

2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 7TH EDITION AND CURRENT INTERIMS
SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0)
LOAD AND RESISTANCE FACTOR DESIGN METHOD
LRV & MV LOAD DIAGRAM SHOWN ON SHEET 4
MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4000 PSI n = 8
fy = 60000 PSI
PRESTRESSED CONCRETE:
f'c = 9000 PSI n = 1
fpu = 270 ksi FOR 0.6"Ø LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS
DESIGN SPEED: OVER = N/A MPH (LRT)
UNDER = XX MPH (VALLEY VIEW ROAD)
UNDER = XX MPH (TH 212 OFF RAMP)
UNDER = XX MPH (TH 212 ON RAMP)
DECK AREA 32,422 SQ. FT.

LIST OF SHEETS

NO.	DESCRIPTION
1	KEY PLAN
2-3	GENERAL PLAN AND ELEVATION
4	TRANSVERSE SECTION & LOADING DIAGRAMS
5-7	BRIDGE LAYOUT
8-9	AESTHETIC DETAILS
10-14	FRAMING PLANS
15	82MW PRESTRESSED CONCRETE BEAM
16-20	PARTIAL DECK PLANS
21-26	BRIDGE DETAILS
27	WIRE FENCE
28-29	WATERPROOF EXPANSION JOINT
30	AS-BUILT BRIDGE DATA
31-33	BRIDGE SURVEY
34-35	BRIDGE SURVEY PLAN
36-37	BRIDGE SURVEY PROFILE

60% SUBMISSION

BRIDGE NO. 27R33

SOUTHWEST LRT OVER VALLEY VIEW ROAD, TH 212 OFF RAMP & TH 212 ON RAMP 0.1 MI. WEST OF FLYING CLOUD DRIVE AND VALLEY VIEW ROAD IN EDEN PRAIRIE
4@ 147' - 110' - 147' PRESTRESSED CONCRETE BEAM SPANS
VARIABLE ROADWAY (32'-6" MIN)
0'-0"-0" SKEW

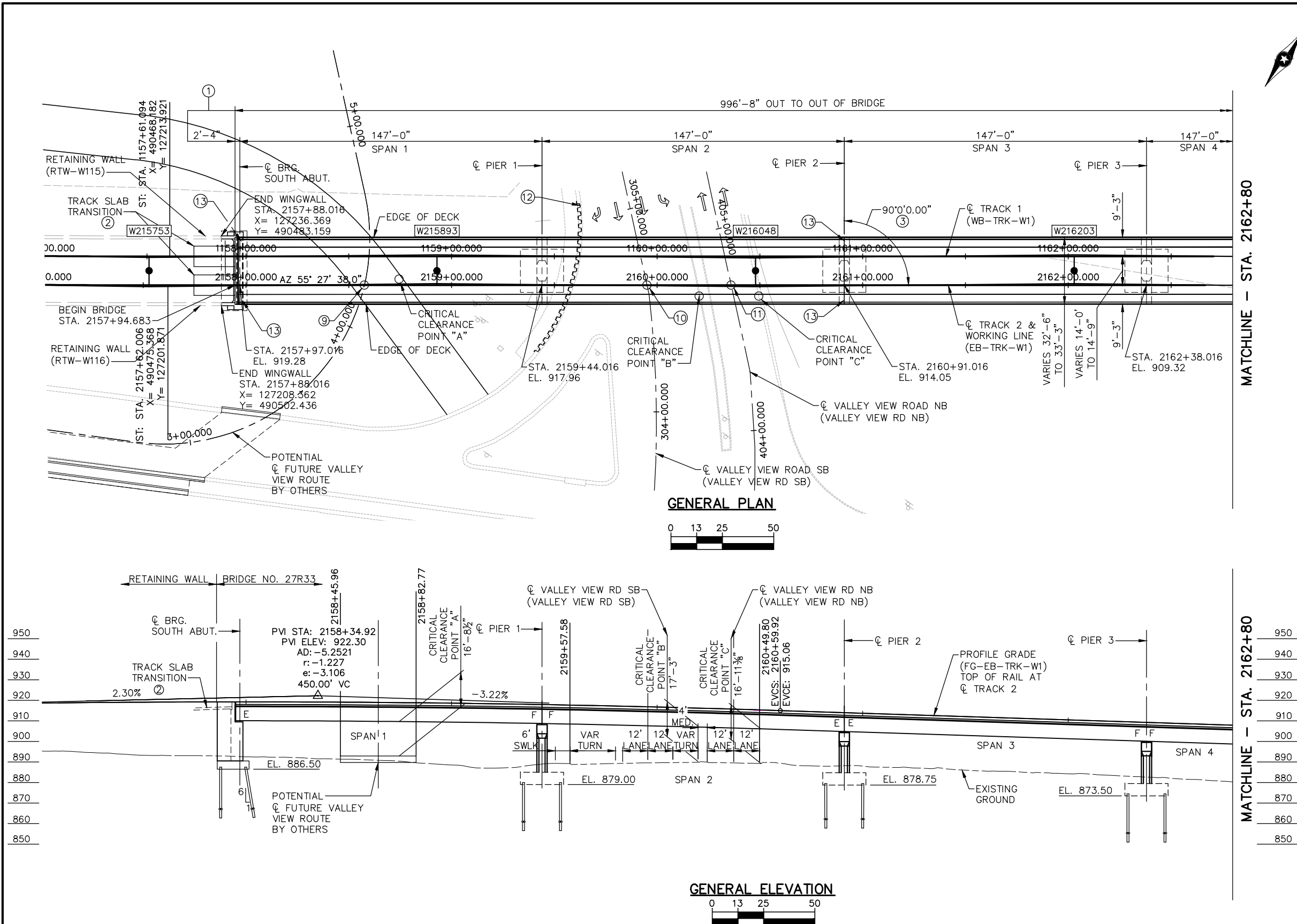
BRIDGE I.D. NO. 501

KEY PLAN

SEC 11 & 12 T 116 N R 22 W
CITY OF EDEN PRAIRIE HENNEPIN COUNTY

APPROVED: _____ STATE BRIDGE ENGINEER DATE _____

Sep. 09 2015 04:48 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\02-03_W1-STU-BRG-FCVV-GE01.dwg By: macke



NOTES:

- ① ALL DIMENSIONS ARE MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1)
- ② SEE TRACK PLANS FOR TRANSITION SLAB DETAILS
- ③ TYP. UNLESS SHOWN OTHERWISE
4. SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
6. SEE BORING SHEETS FOR INPLACE UTILITIES.
7. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
8. VERTICAL CLEARANCE BASED ON SURVEY DATA.
- ⑨ CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W1) P.O.T. STA 2158+57.62
 ϕ PROP. FUTURE VALLEY VIEW ROUTE
P.O.C. STA 4+21.53
X = 490554.098
Y = 127256.060
ANGLE: 76°55'12.7" TTC
- ⑩ CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W1) P.O.T. STA 2159+95.05
 ϕ SB VALLEY VIEW RD (VALLEY VIEW RD SB)
P.O.C. STA 304+61.93
X = 490667.310
Y = 127333.984
ANGLE: 82°54'13" TTC
- ⑪ CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W1) P.O.T. STA 2160+36.00
 ϕ NB VALLEY VIEW RD (VALLEY VIEW RD NB)
P.O.C. STA 404+71.82
X = 490701.037
Y = 127357.198
ANGLE: 77°40'24.1" TTC
- ⑫ TEMPORARY SHORING SYSTEM TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SHORING SYSTEMS MAY BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.
- ⑬ STRAY CURRENT BONDING JUNCTION BOX. SEE SYSTEM PLANS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	RCK	DATE:	8/24/2015

AECOM
PARSONS BRINCKERHOFF

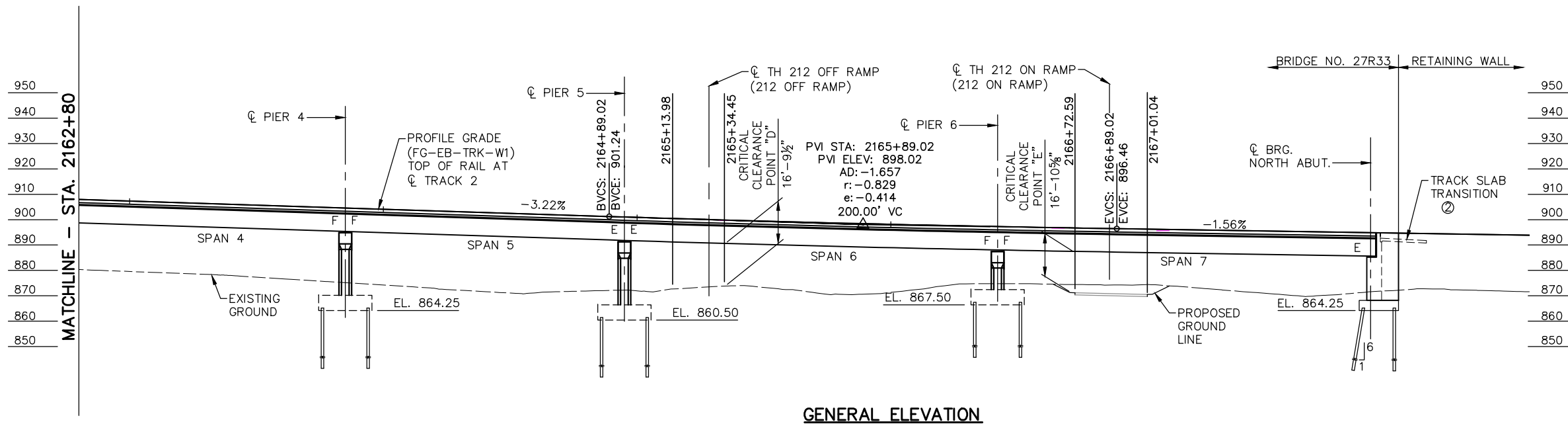
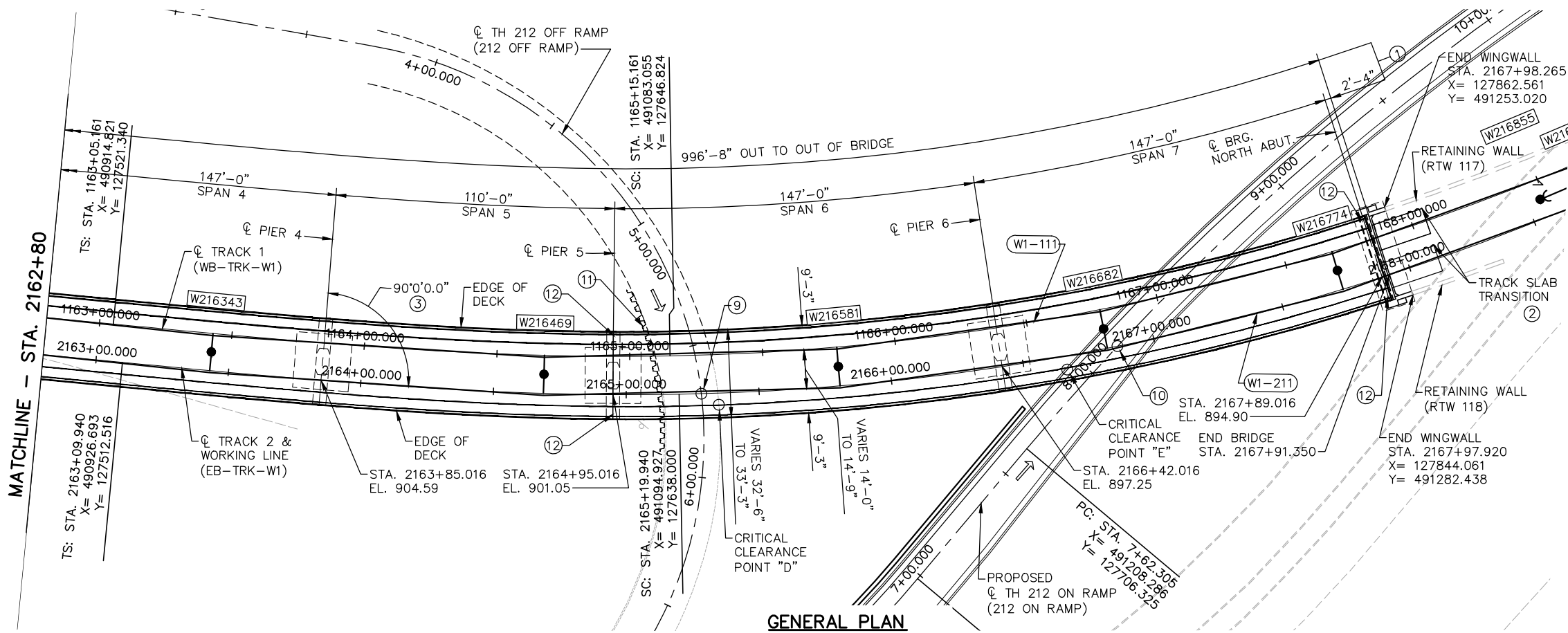
60% SUBMISSION - 9/28/15

METROPOLITAN
Green Line LRT Extension

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 GENERAL PLAN & ELEVATION	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-GE01-1

Sep. 09 2015 04:49 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\02-03_W1-STU-BRG-FCVV-GE01.dwg By: macke



CURVE NO. W1-211
R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH



CURVE NO. W1-111
R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH

NOTES:

- ALL DIMENSIONS ARE MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1)
- SEE TRACK PLANS FOR TRANSITION SLAB DETAILS
- T.C.C. TYP. UNLESS SHOWN OTHERWISE
- SEE BRIDGE SURVEY SHEET FOR ADDITIONAL INPLACE UTILITIES
- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- SEE BORING SHEETS FOR INPLACE UTILITIES.
- TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- VERTICAL CLEARANCE BASED ON SURVEY DATA.
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W1) P.O.T. STA 2165+28.30
 ϕ TH 212 OFF RAMP
P.O.C. STA 5+68.382
X = 491101.207
Y = 127643.525
ANGLE: 76°55'12.7" TTC
- CONTROL POINT
 ϕ TRACK 2 (EB-TRK-W1) P.O.T. STA 2166+86.12
 ϕ TH 212 ON RAMP P.O.C. STA 8+13.89
X = 491209.679
Y = 127757.886
ANGLE: 35°28'36" TTC
- TEMPORARY SHORING SYSTEM TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SHORING SYSTEMS MAY BE UTILIZED AT THE CONTRACTOR'S OPTION. SEE SPECIAL PROVISIONS.
- STRAY CURRENT BONDING JUNCTION BOX. SEE SYSTEM PLANS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV
DRAWN BY: RCK
CHECKED BY: ECM
DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
GENERAL PLAN & ELEVATION

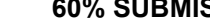
DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-GE01-2

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DESIGNED BY: APV		CHECKED BY: ECM	
DRAWN BY: RCK		DATE: 8/24/2015	

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<p align="center">CIVIL WEST - VOLUME 4A</p> <p align="center">VALLEY VIEW ROAD</p> <p align="center">BRIDGE 27R33</p> <p align="center">BRIDGE LAYOUT</p>	
<p>DISCIPLINE:</p> <p align="center">STRUCTURES</p>	<p>SHEET NAME:</p> <p align="center">W1-STU-BRG-FCVV-WPTS01_1</p>

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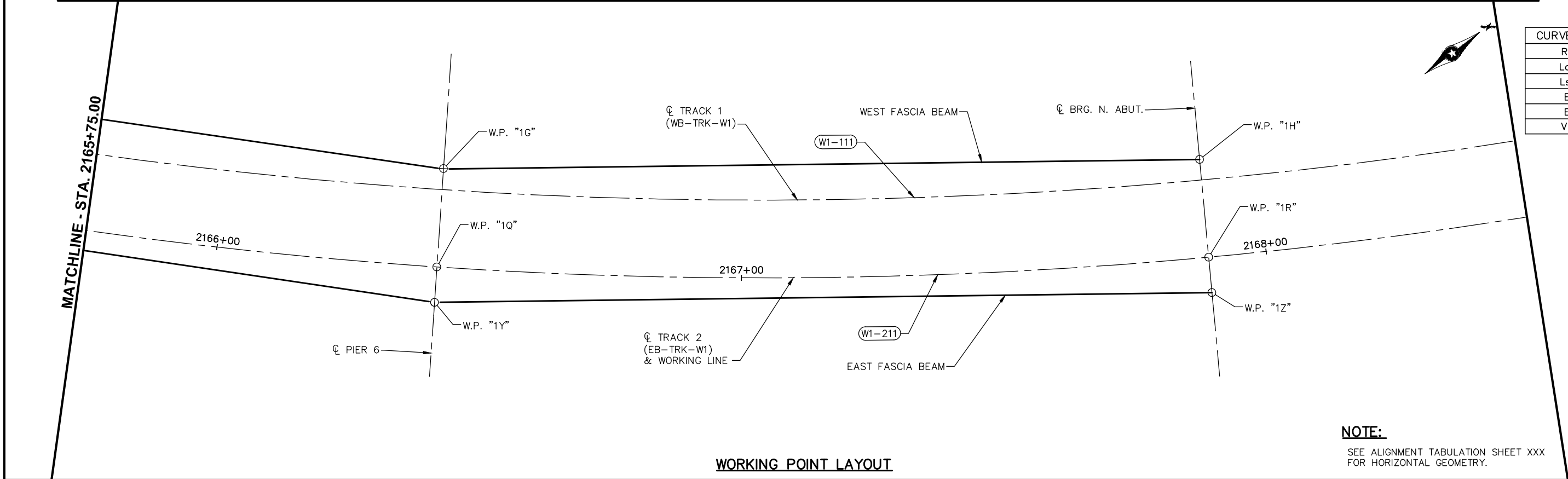
MATCHLINE - STA. 2163+00.00

MATCHLINE - STA. 2165+75.00

CURVE NO. W1-111
R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH

MATCHLINE - STA. 2165+75.00

CURVE NO. W1-211
R = 920.00'
Lc = 395.00'
Ls = 210.00'
Ea = 4.50"
Eu = 4.22"
V = 45 MPH



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DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	RCK	DATE:	8/24/2015

AECOM
PARSONS BRINCKERHOFF

60% SUBMISSION - 9/28/15

**METROPOLITAN COUNCIL**

**SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE LAYOUT

DISCIPLINE: **STRUCTURES**



SHEET NAME: **W1-STU-BRG-FCVV-WPTS01_2**

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	DIMENSIONS BETWEEN WORKING POINTS (FT.)																											ELEVATIONS			
POINT	STATION	X-COORDINATE	Y-COORDINATE	1A	1B	1C	1D	1E	1F	1G	1H	1J	1K	1L	1M	1N	1P	1Q	1R	1S	1T	1U	1V	1W	1X	1Y	1Z	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT
1A	2157+97.016	490493.194	127237.662		147.00							19.38	148.27	294.64							149.07	295.04									1A
1B	2158+44.016	490614.284	127321.007			147.00						148.27	19.37	148.27	294.64					149.07		149.07	295.04								1B
1C	2160+91.016	490735.373	127404.352				147.00					294.64	148.27	19.37	148.27	294.61				295.04	149.07		149.07	295.11							1C
1D	2162+38.016	490856.462	127487.697					146.75					294.64	148.27	19.37	148.22	257.23				295.04	149.07		149.14	258.28						1D
1E	2163+85.044	490977.345	127570.900						108.55					294.39	148.02	19.01	110.98	255.12				294.79	148.82		112.62	256.59					1E
1F	2164+94.994	491064.249	127635.945							143.95					256.31	110.70	18.29	146.57	290.45				256.86	111.98		148.09	292.01				1F
1G	2166+42.016	491167.347	127736.401								143.86					254.59	146.54	18.67	146.54					255.65	148.06		148.08				1G
1H	2167+89.016	491253.403	127851.689														290.37	146.54	18.67						291.92	148.08					1H
1J	2157+97.016	490504.180	127221.702										147.00							5.37	147.10	294.05									1J
1K	2158+44.016	490625.269	127305.047											147.00						147.10	5.38	147.10	294.05								1K
1L	2160+91.016	490746.358	127388.392												147.00					294.05	147.10	5.38	147.10	294.12							1L
1M	2162+38.016	490867.447	127471.737													147.00					294.05	147.10	5.37	147.17	257.46						1M
1N	2163+85.016	490988.328	127555.382														109.98					294.05	147.11	5.74	110.47	257.33					1N
1P	2164+95.02	491075.931	127621.871															146.84					257.09	110.32	6.74	147.53	293.90				1P
1Q	2166+42.016	491181.365	127724.077																146.84					257.01	147.52	6.75	147.54				1Q
1R	2167+89.016	491269.208	127841.750																						293.88	147.54	6.75				1R
1S	2157+97.016	490507.227	127217.274																		147.00										1S
1T	2158+44.016	490628.316	127300.620																			147.00									1T
1U	2160+91.016	490749.405	127383.965																				147.00								1U
1V	2162+38.016	490870.495	127467.310																					147.07							1V
1W	2163+85.008	490991.644	127550.697																						110.46						1W
1X	2164+95.024	491080.236	127616.679																							147.90					1X
1Y	2166+42.016	491186.435	127719.621																								147.92				1Y
1Z	2167+89.016	491274.922	127838.157																												1Z

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DESIGNED BY: ECM	CHECKED BY: APV
DRAWN BY: BLM	DATE: 8/24/2015



60% SUBMISSION - 09/28/15

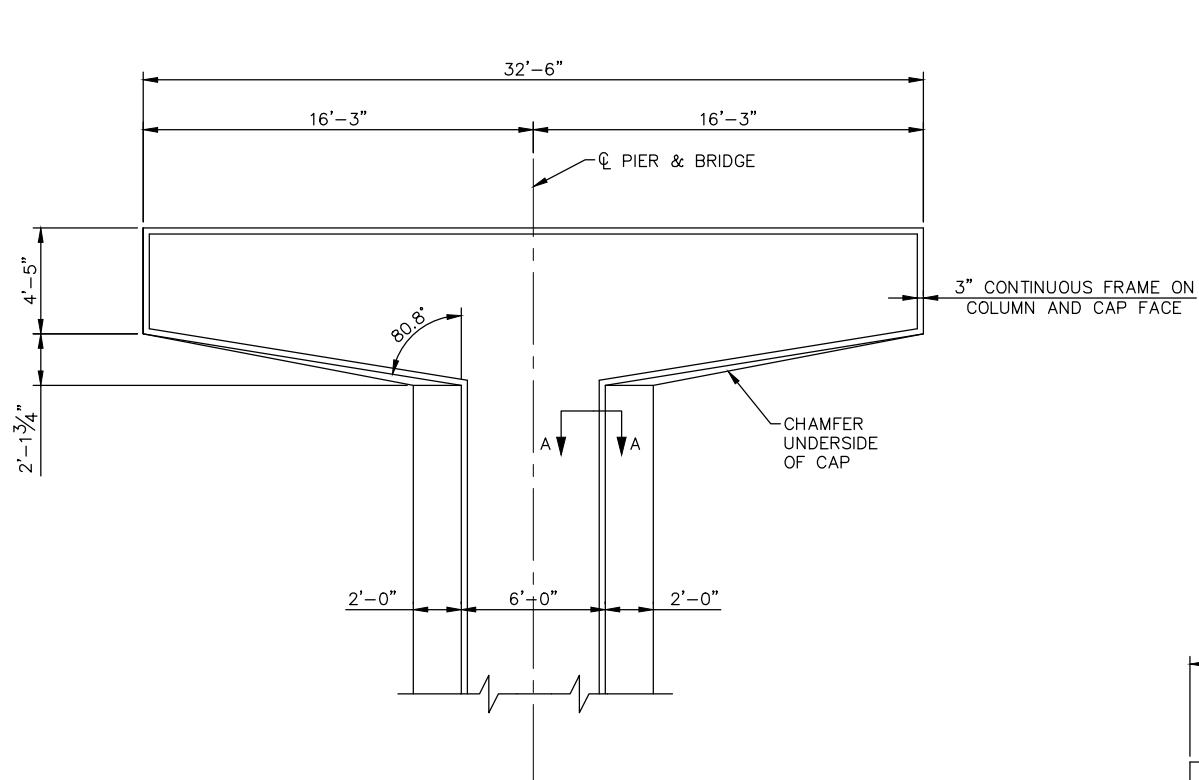


CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE LAYOUT

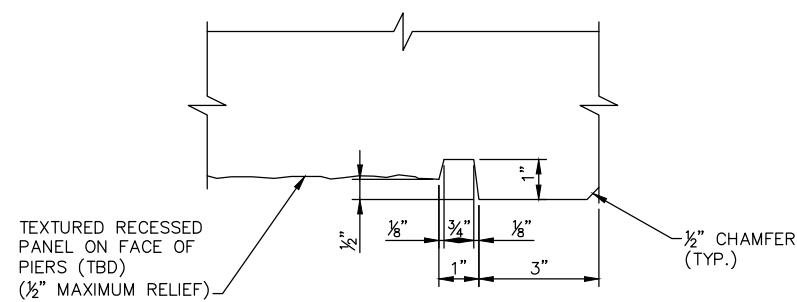
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SHEET NAME: W1-STU-BRG-FCVV-WPTS

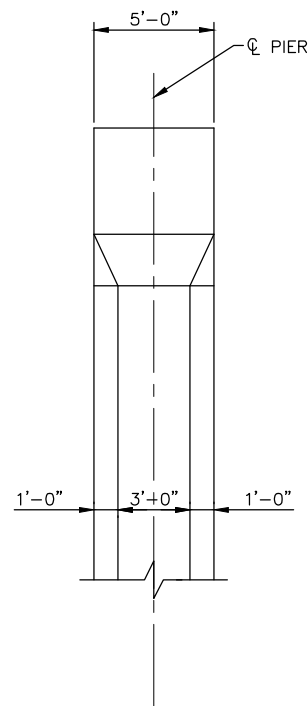
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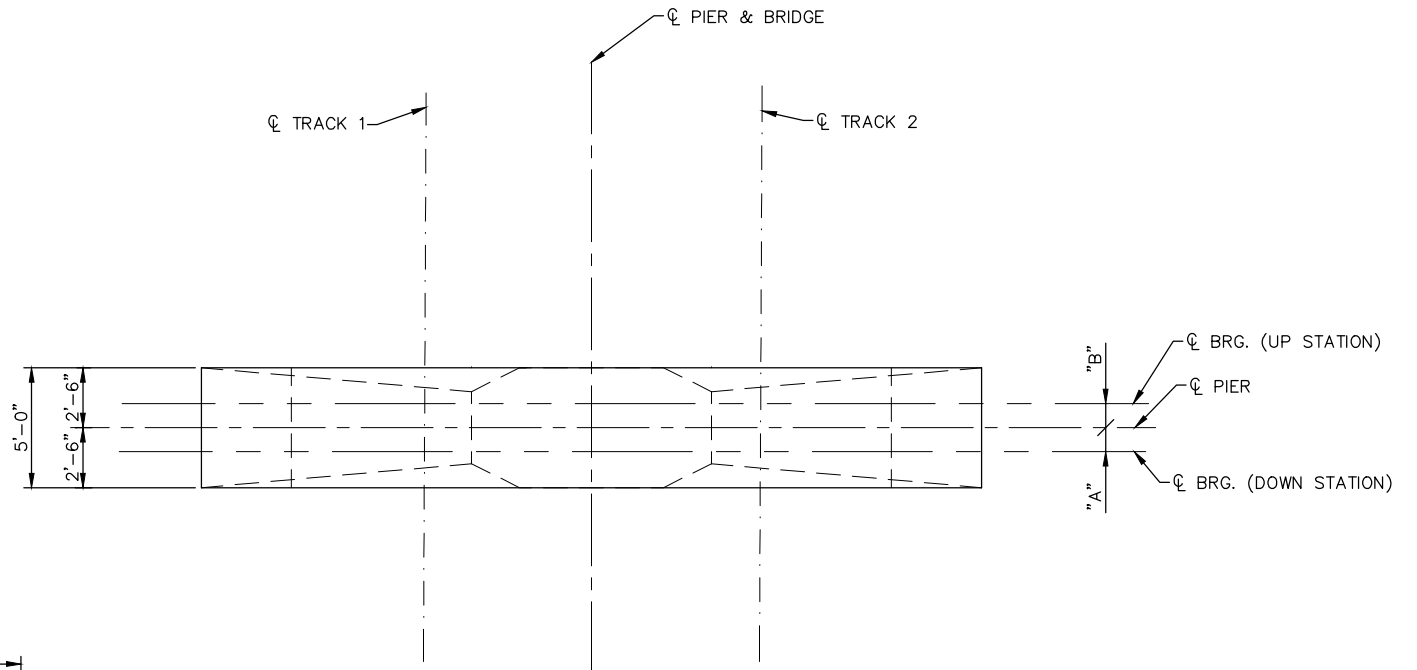
PIER ELEVATION



SECTION A-A



PIER SECTION



PIER PLAN

CL BEARING OFFSETS		
PIER	A	B
1	1'-0"	1'-0"
2	1'-0"	1'-0"
3	1'-0"	1'-0"
4	1'-1"	1'-1"
5	1'-1"	1'-1"
6	1'-1"	1'-1"

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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: RCK	DATE: 8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

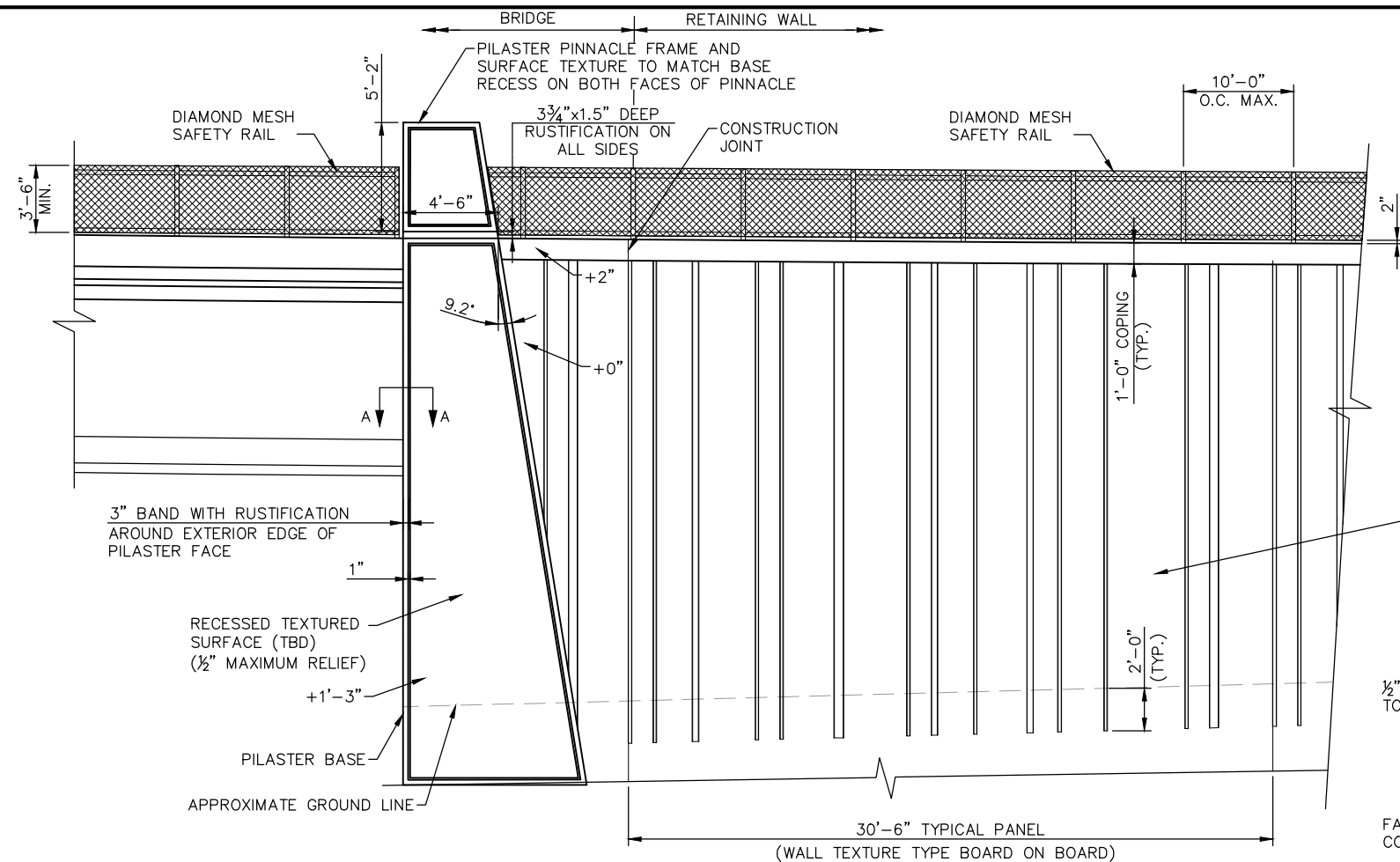
**SOUTHWEST**

CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
AESTHETIC DETAILS

DISCIPLINE: **STRUCTURES**
SHEET NAME: **W1-STU-BRG-FCVV-AES1**

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Sep. 09 2015 04:50 pm V:\19140A_MN_Valley_View_Road_Bridge_3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\37_W1-STU-BRG-FCVV-AES2.dwg By: macke



ABUTMENT WINGWALL ELEVATION

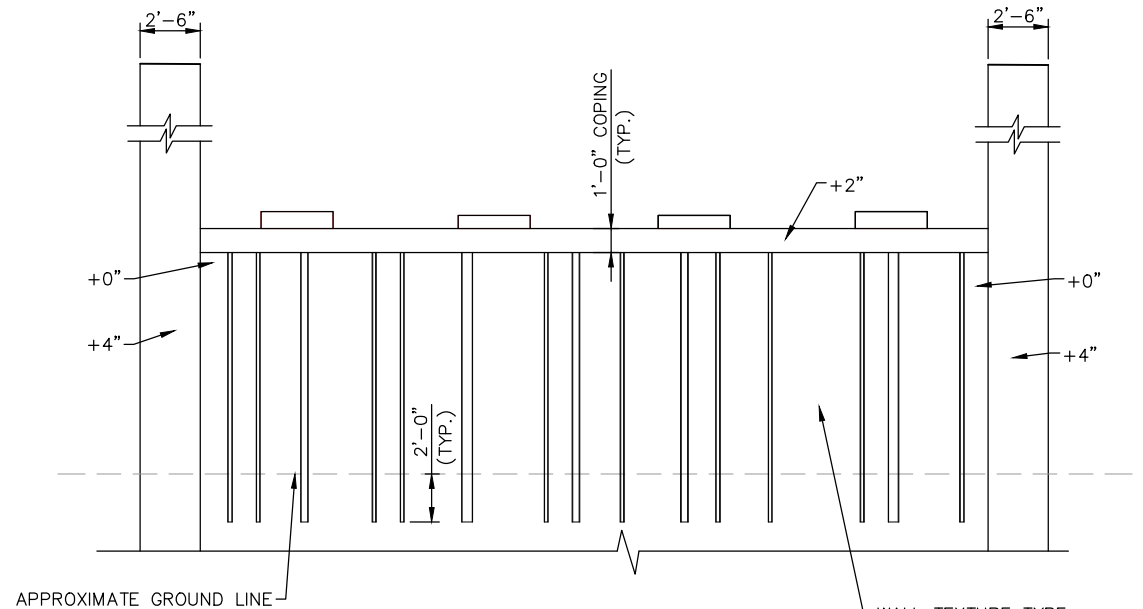
WALL TEXTURE TYPE BOARD ON BOARD

1/2" CHAMFERS TOP AND BOT.

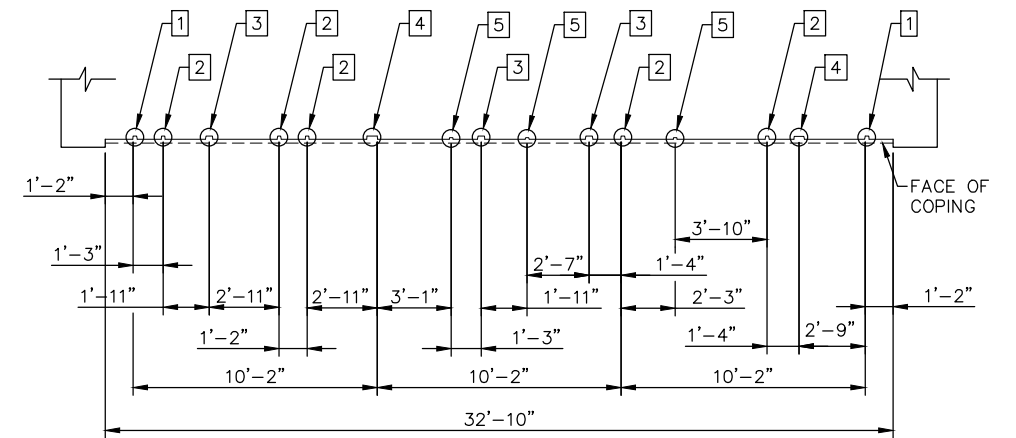
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FACE OF WALL

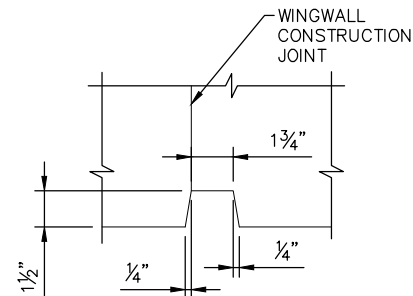
SECTION THRU COPING



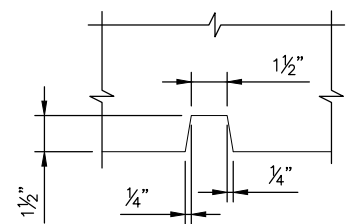
ABUTMENT FRONT FACE



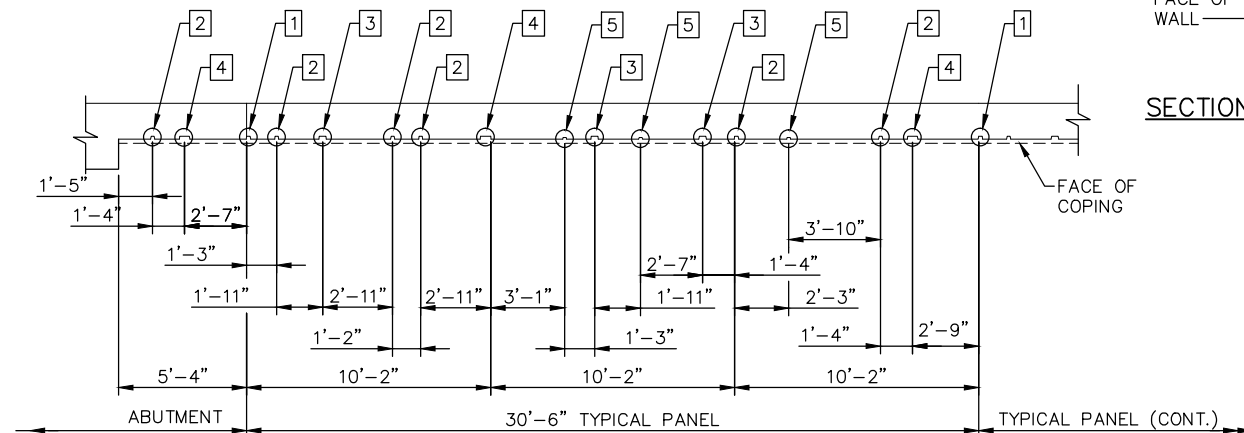
ABUTMENT FRONT FACE PLAN



DETAIL 1



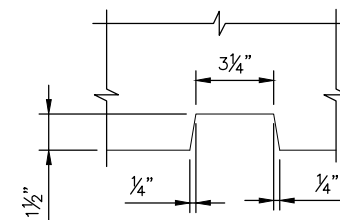
DETAIL 2



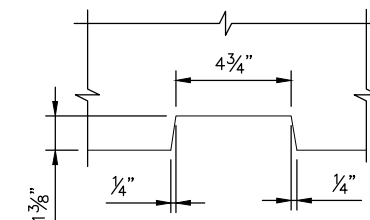
WALL TEXTURE TYPE BOARD ON BOARD PLAN

NOTES:

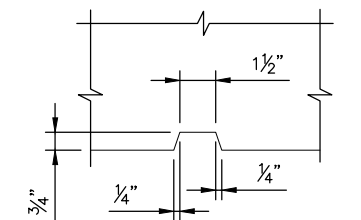
- ANTI-GRAFFITI COATING SHALL BE APPLIED TO ALL EXPOSED FACES OF ABUTMENTS AND WINGWALLS FROM THE TOP OF FOOTING TO THE TOP OF THE ABUTMENT AND WINGWALLS.
- SEE SHEET 12 FOR SECTION A-A.



DETAIL 3



DETAIL 4





DETAIL 5

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DESIGNED BY:	ECM	CHECKED BY:	APV
DRAWN BY:	KHN	DATE:	8/24/2015

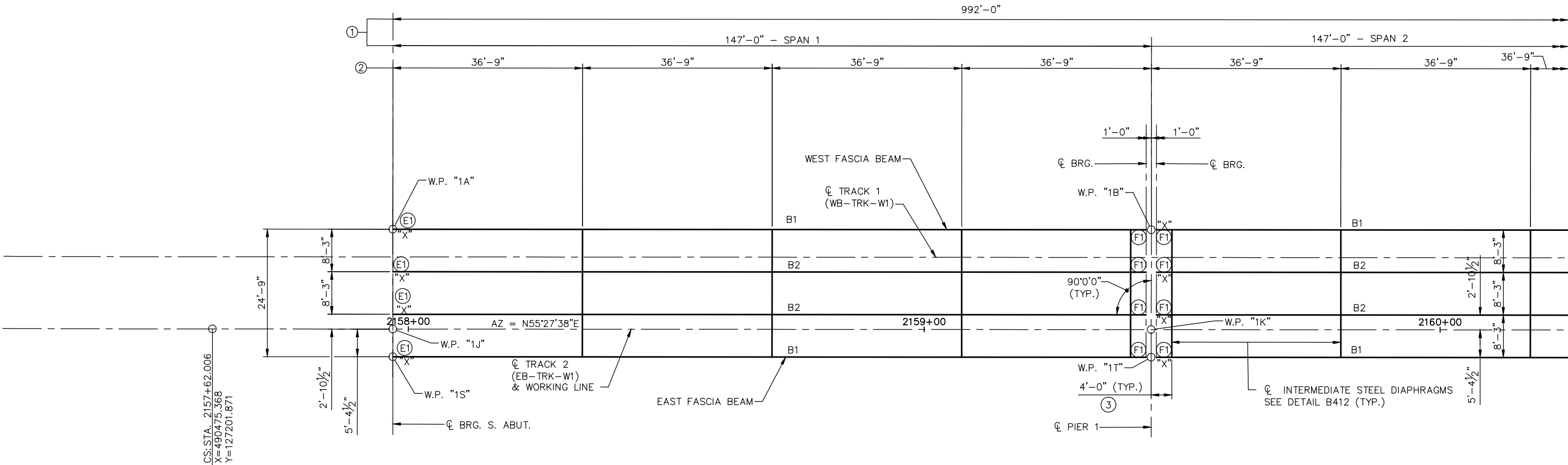
AECOM	PARSONS BRINCKERHOFF
60% SUBMISSION - 9/28/15	

 METROPOLITAN COUNCIL	 SOUTHWEST
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CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 AESTHETIC DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-AES2

SHEET
9
OF
37

Sep. 09 2015 04:50 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\08-12_W1-STU-BRG-FCVV-FRAM1.dwg By: macke




FRAMING PLAN

NOTES:

- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1)
 - ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1)
 - ③ FROM ϕ PIER TO ϕ DIAPHRAGM (ALONG BEAM LINE)
- "X" = MARKS END OF BEAM
E1 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)
F1 = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)

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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: KHN	DATE: 8/24/2015



60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 FRAMING PLAN	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-FRAM1-1

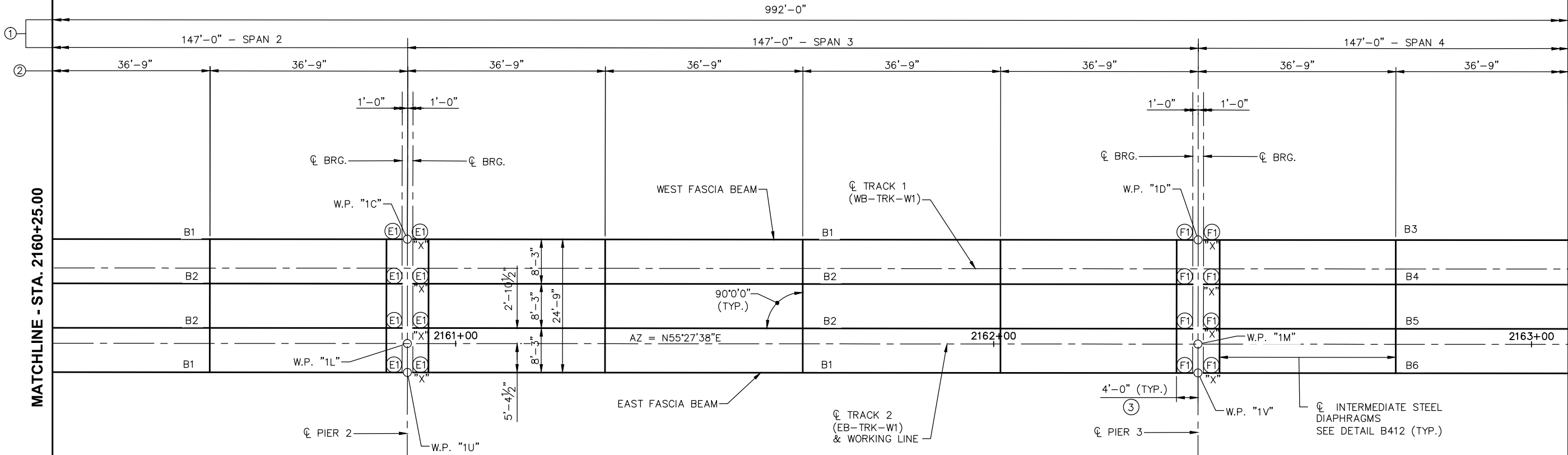
MATCHLINE - STA. 2160+25.00

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MATCHLINE - STA. 2160+25.00

MATCHLINE - STA. 2163+50.07



FRAMING PLAN

NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W1)

② INTERMEDIATE DIAPH. SPG. MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W1)


③ FROM \varnothing PIER TO \varnothing DIAPHRAGM (ALONG BEAM LINE)
- "X" = MARKS END OF BEAM


(E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)

(F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)

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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: KHN	DATE: 8/24/2015





60% SUBMISSION - 9/28/15



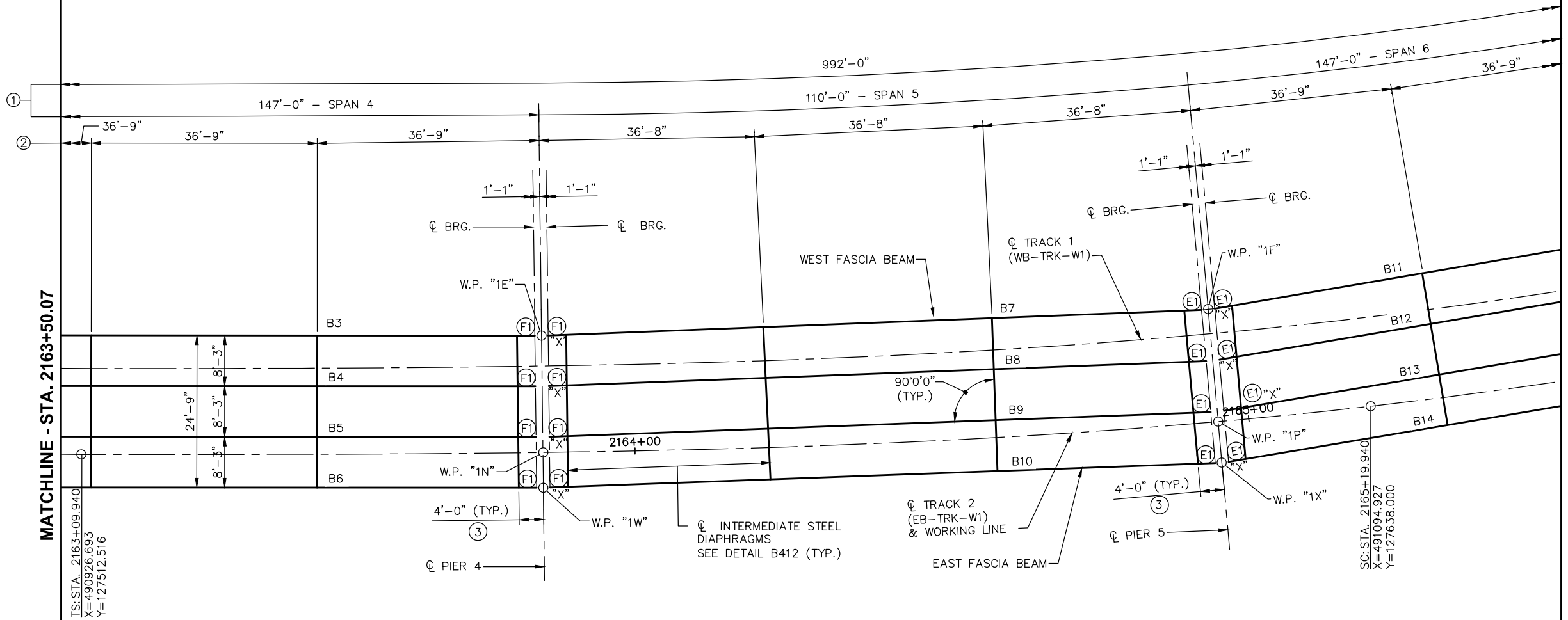
CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN

DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-FRAM1-2

SHEET	11
OF	37

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FRAMING PLAN

- NOTES:**
- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1) "X" = MARKS END OF BEAM
 - ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1) (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)
 - ③ FROM ϕ PIER TO ϕ DIAPHRAGM (ALONG BEAM LINE) (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)

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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: KHN	DATE: 8/24/2015





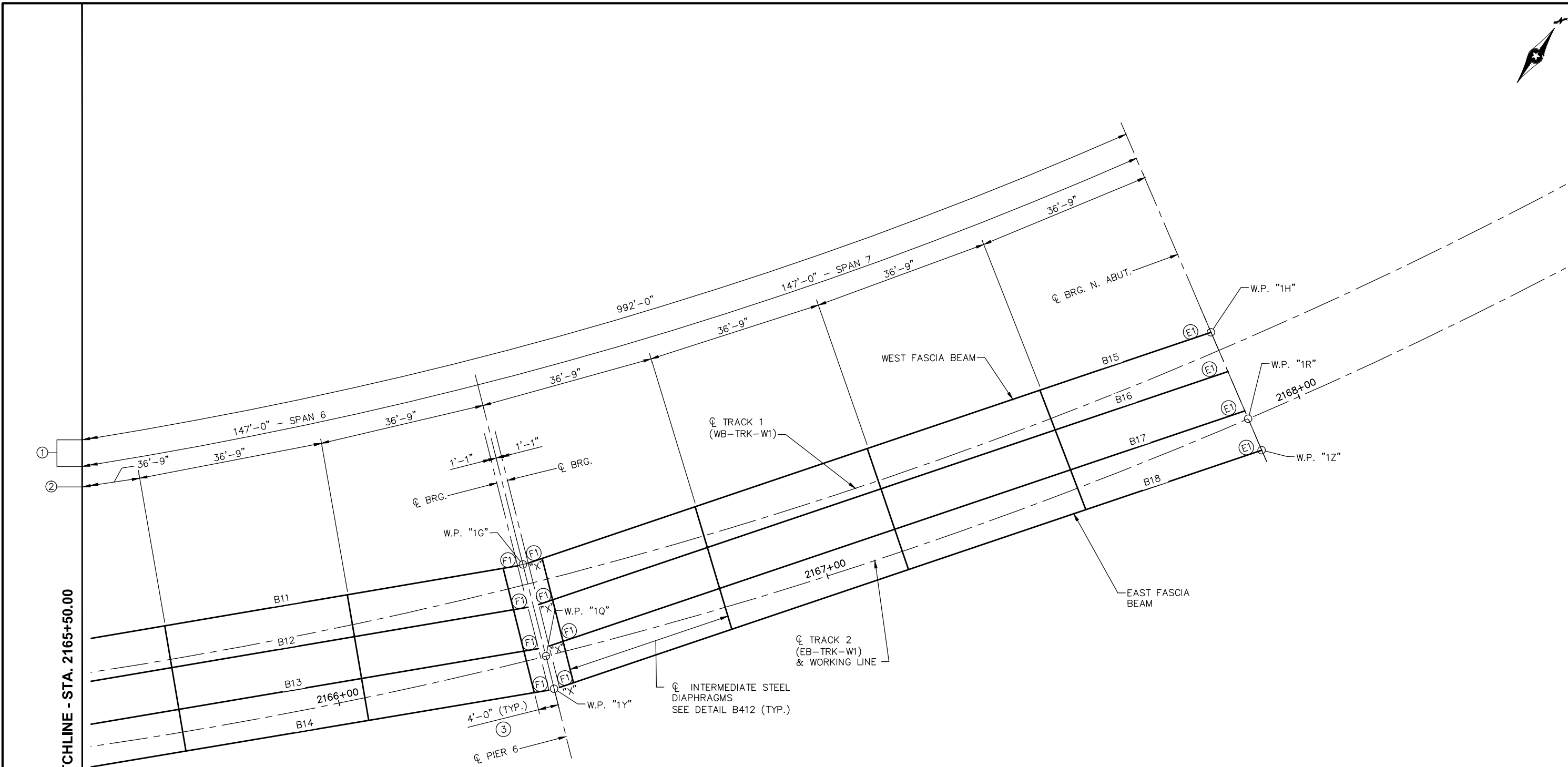
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN

DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-FRAM1-3
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FRAMING PLAN

NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W1)
- ② INTERMEDIATE DIAPH. SPG. MEASURED ALONG CL TRACK 2 (EB-TRK-W1)
- ③ FROM CL PIER TO CL DIAPHRAGM (ALONG BEAM LINE)
- "X" = MARKS END OF BEAM
- (E1) = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE 1 (4 REQUIRED)
- (F1) = FIXED CURVED PLATE BEARING ASSEMBLY, TYPE 1 (8 REQUIRED)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DRAWN BY: KHN	DATE: 8/24/2015



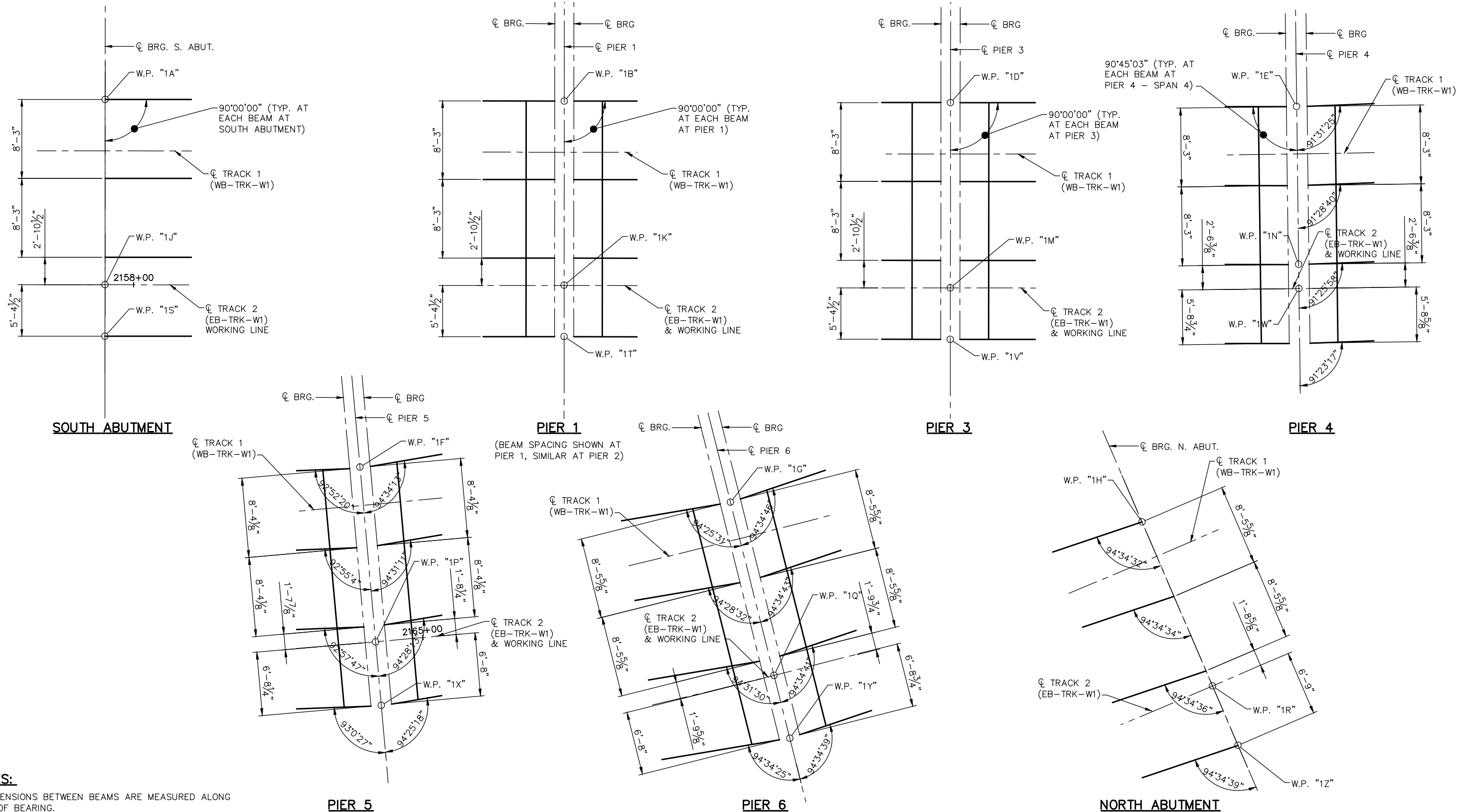
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-FRAM1-4

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NOTES:

1. DIMENSIONS BETWEEN BEAMS ARE MEASURED ALONG ϕ OF BEARING.
2. ANGLES SHOWN ARE FROM ϕ BEAM TO ϕ PIER OR ϕ BEARING OF ABUTMENT.

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DESIGNED BY: APV
DRAWN BY: KHN
CHECKED BY: ECM
DATE: 8/24/2015

AECOM **PARSONS**
BRINCKERHOFF

60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
FRAMING PLAN DETAILS

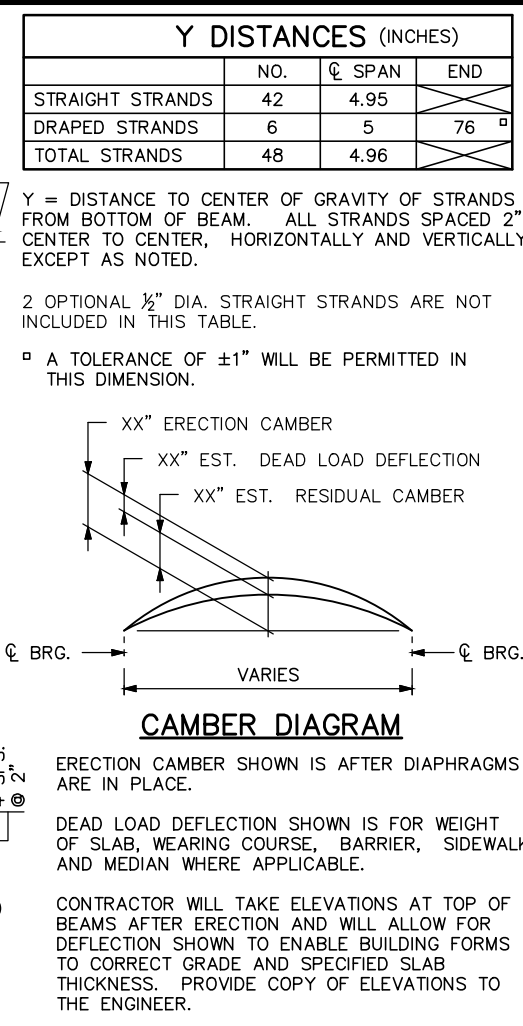
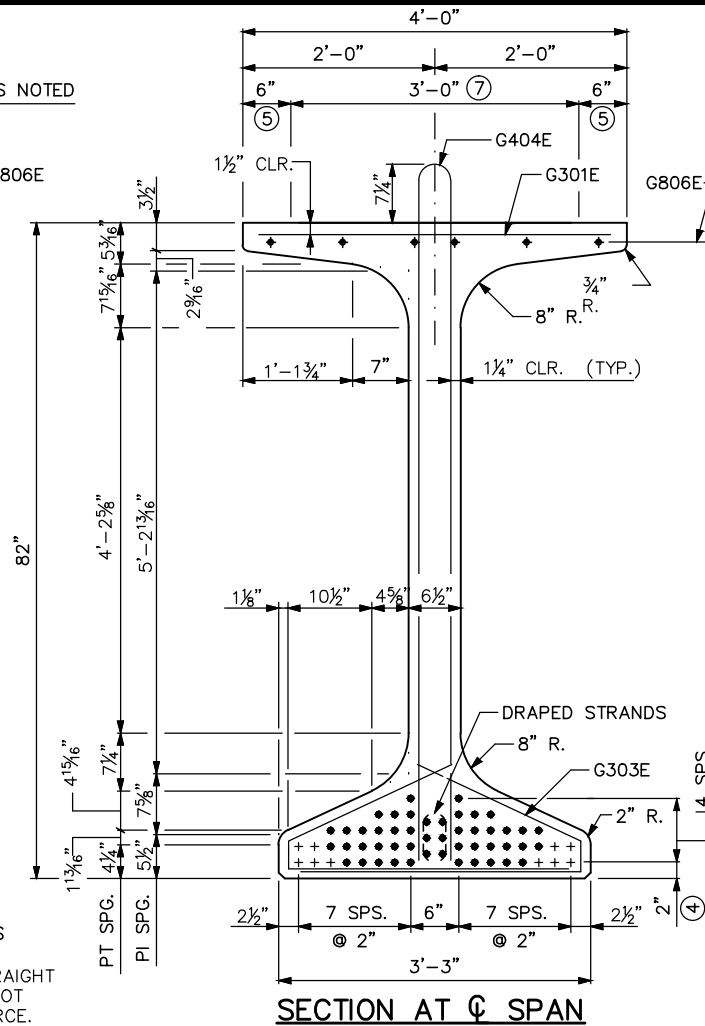
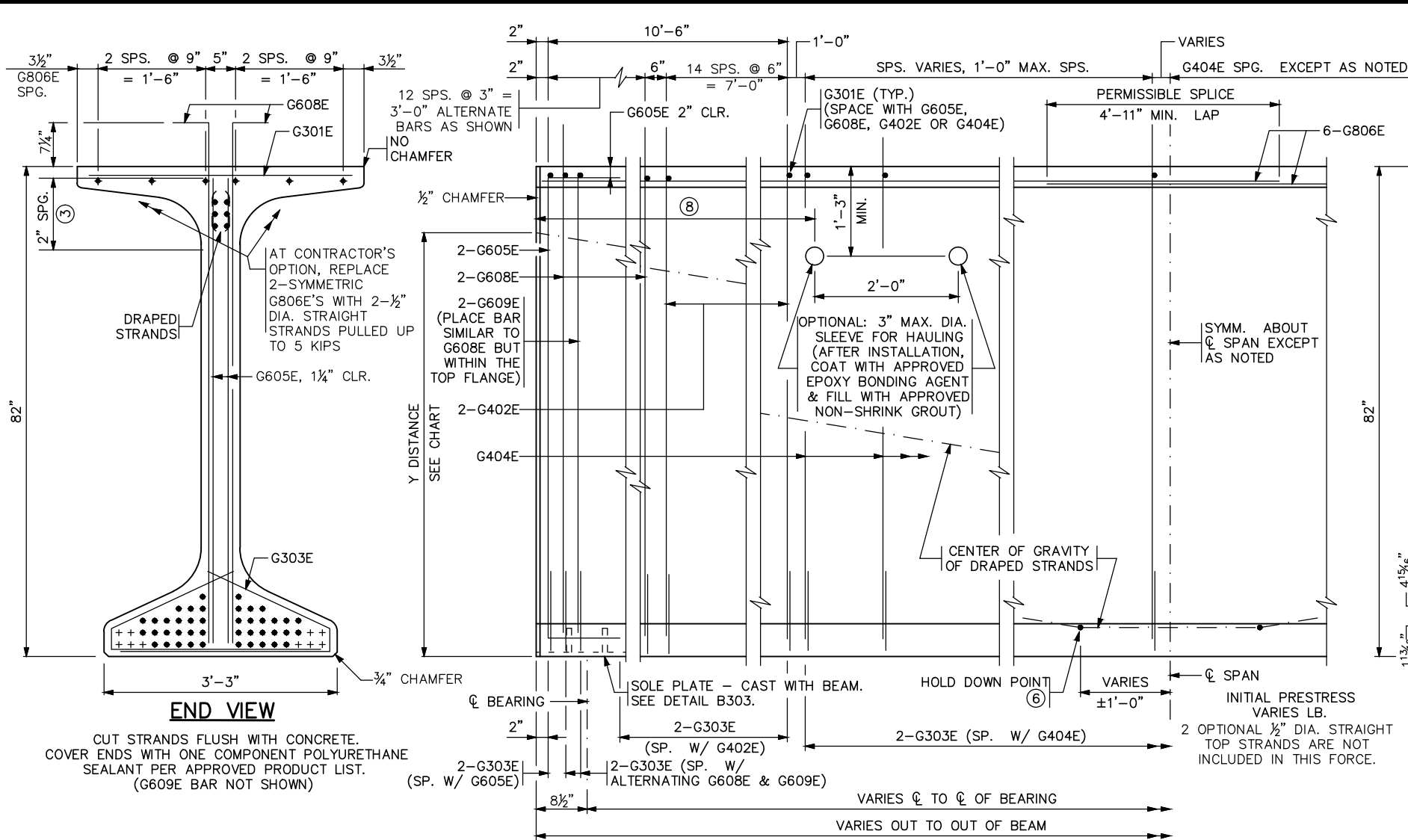
DISCIPLINE:
STRUCTURES

SHEET NAME:
W1-STU-BRG-FCVV-FRAM1-5

SHEET
14
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FILENAME: \$\$\$@FILENAME@\$\$\$

TIME : \$\$\$@TIME@\$\$
PLOTTED : \$\$\$@DATE@\$\$\$
PATH & FILENAME: \$\$\$@PATH@FILENAME@\$\$\$



GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILLED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WEIGHT OF BEAM IS VARIES TONS.

AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF VARIES KIPS PER ANCHORAGE.

PRESTRESSING STRANDS SHALL BE 0.6" DIAMETER, 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.

APPLY AN APPROVED SEALER TO THE SIDES OF THE BEAM NEAR EACH END PER THE SPECIAL PROVISIONS.

- MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- DRAPED STRANDS.
- STRAIGHT STRANDS.
- STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.
- CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.
- ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3D.
- DIMENSION DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.

BEAM ELEVATION

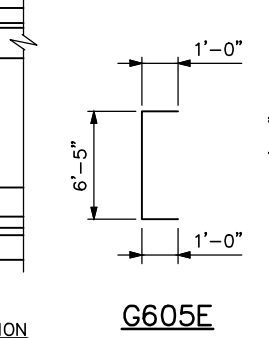
CONTRACTOR SHALL VERIFY STABILITY OF FASCIA BEAMS FROM OVERTURNING DUE TO DECK PLACEMENT OPERATIONS. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING.

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	VARIES KSI
LONG TERM LOSSES	VARIES KSI
TOTAL LOSSES	VARIES KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7 KSI	9 KSI

DETAIL "A"

CL 1 1/2" DIA. HOLE (INTERIOR BEAM) OR 7/8" DIA. BOLT ANCHORAGE (FASCIA BEAMS)



CONCRETE END DIAPHRAGM

PARAPET ABUTMENT (SEE DETAIL B814 FOR DIAPHRAGM DETAILS)

REVISID:

APPROVED: JANUARY 13, 2015

STATE BRIDGE ENGINEER

SEMI-INTEGRAL ABUTMENT SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.

STEEL INTERMEDIATE DIAPHRAGM (SEE DETAIL B412 FOR DIAPHRAGM DETAILS)

CERTIFIED BY

NAME:

LIC. NO.

DATE

TITLE:

82MW PRESTRESSED CONCRETE BEAM (PRETENSIONED) 82MW- VARIES

DES: APV DR: EMB

CHK: ECM CHK: ECM

APPROVED:

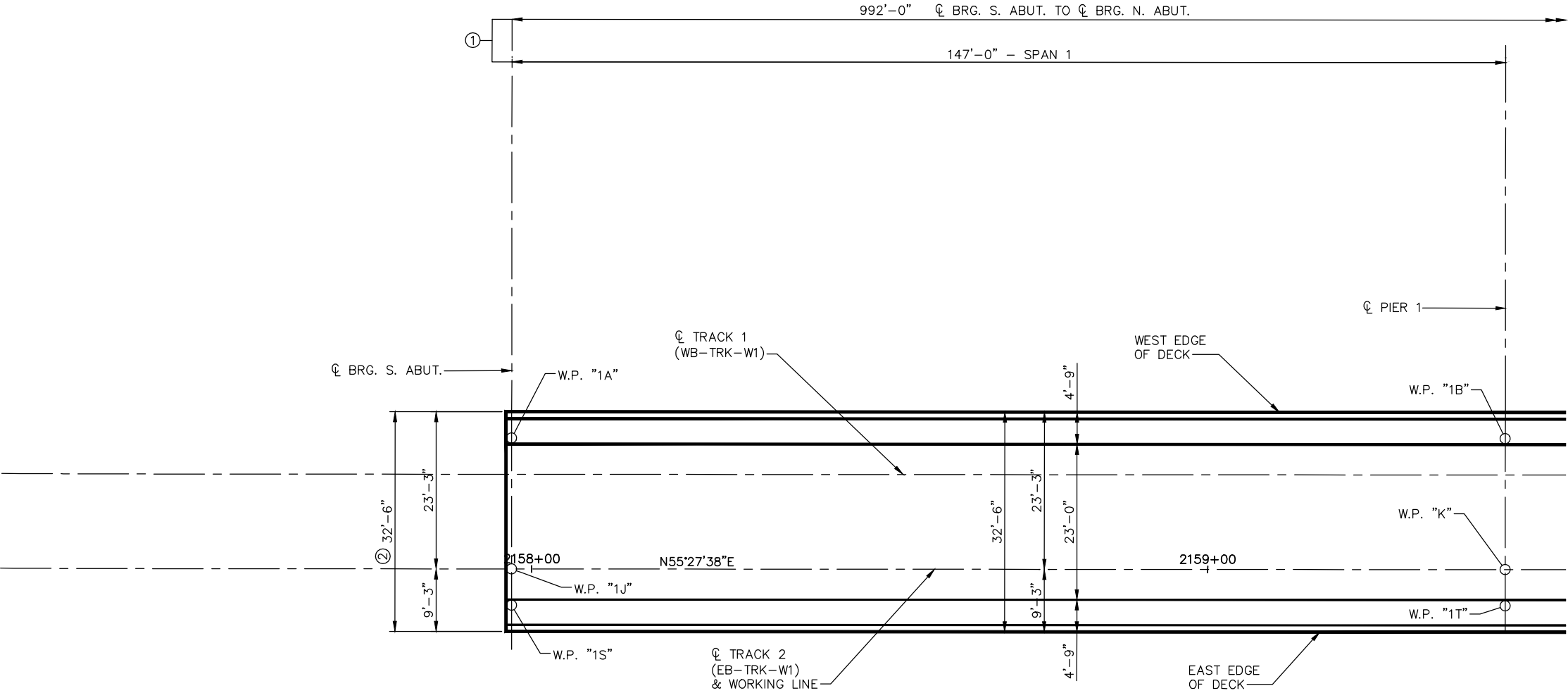
SHEET NO. 15 OF 37 SHEETS

BRIDGE NO. 27R33

FIG. 5-397.531

BEAMS 1-18

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PARTIAL DECK PLAN – SPAN 1

NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W1)
- ② OUT TO OUT DECK MEASURED ALONG \varnothing BRG. S. ABUTMENT

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DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	KHN	DATE:	8/24/2015

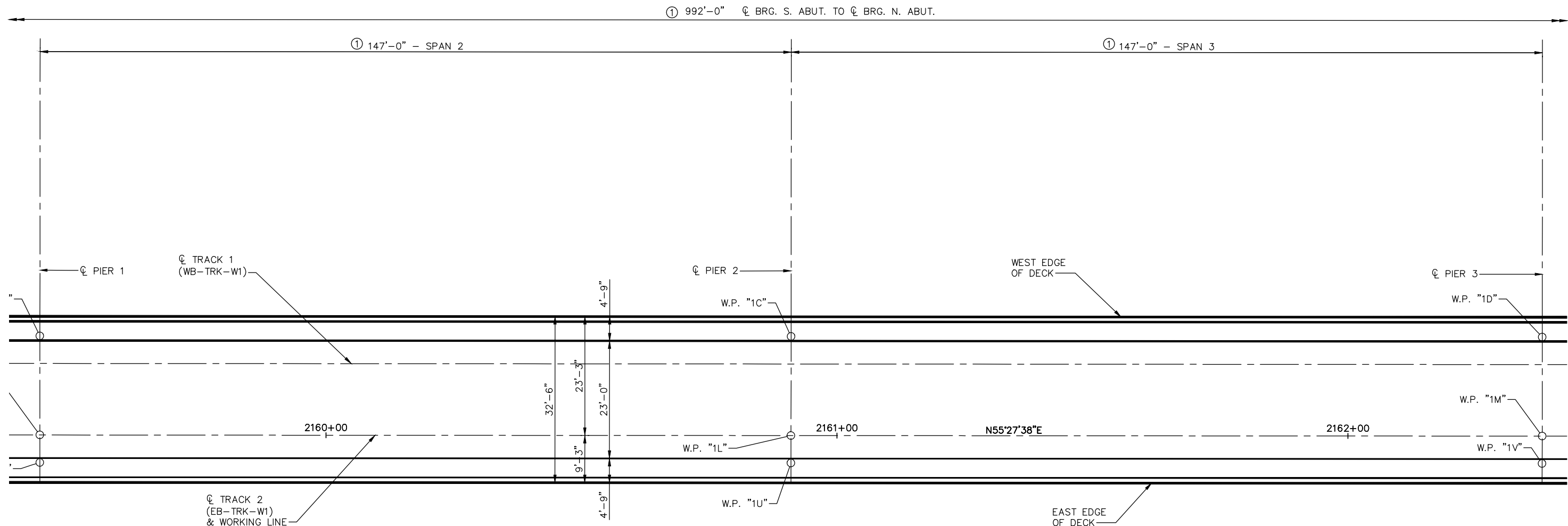


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 SUPERSTRUCTURE (SHEET 1)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUP1-1

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PARTIAL DECK PLAN - SPANS 2 & 3

NOTES:
① MEASURED ALONG CL TRACK 2 (EB-TRK-W1)

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DRAWN BY:	KHN	DATE:	8/24/2015

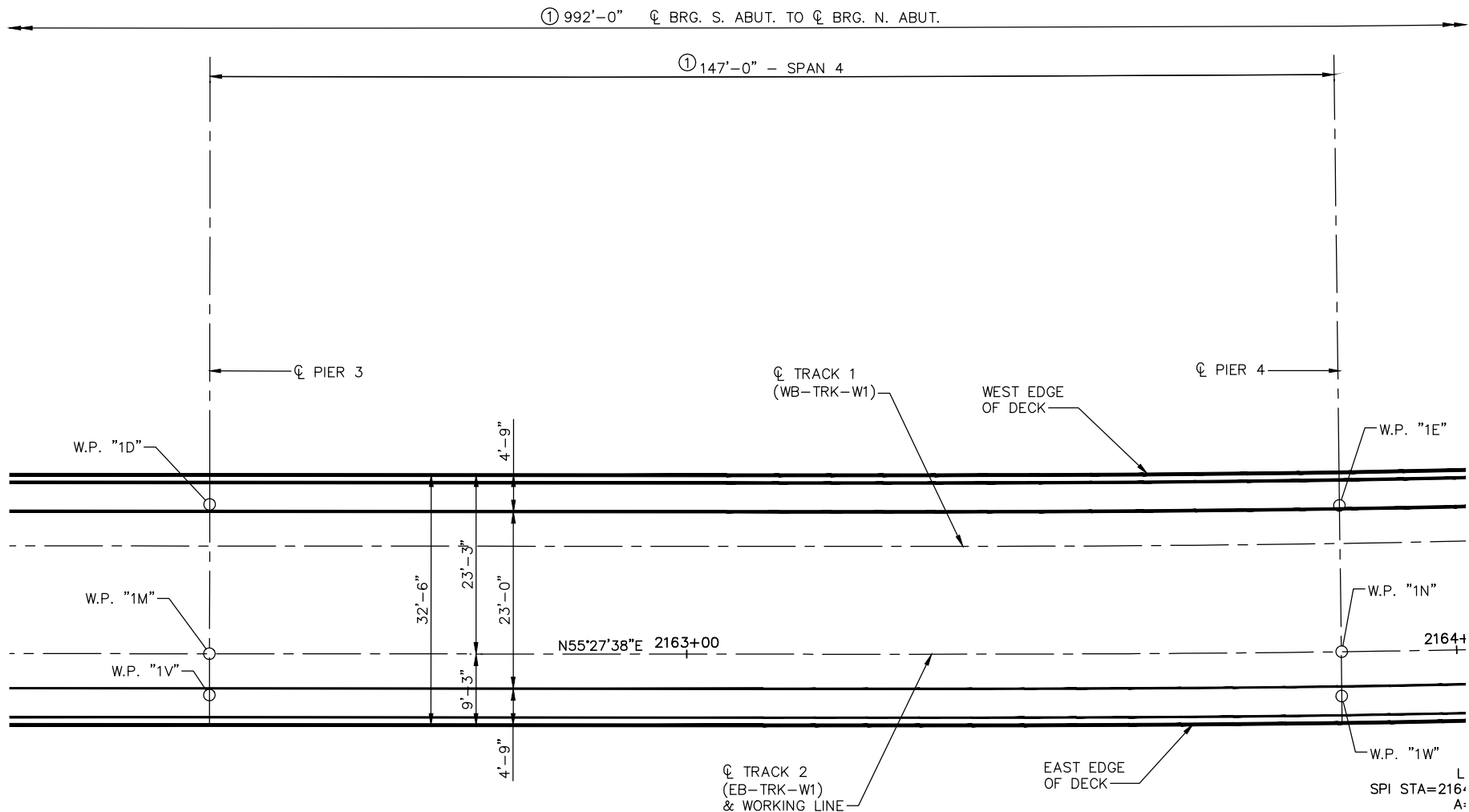


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 SUPERSTRUCTURE (SHEET 2)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVW-SUP1-2

Sep. 09 2015 04:51 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\14-18_W1-STU-BRG-FCVV-SUP1.dwg By: macke





NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W1)

PARTIAL DECK PLAN - SPAN 4

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DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	KHN	DATE:	8/24/2015

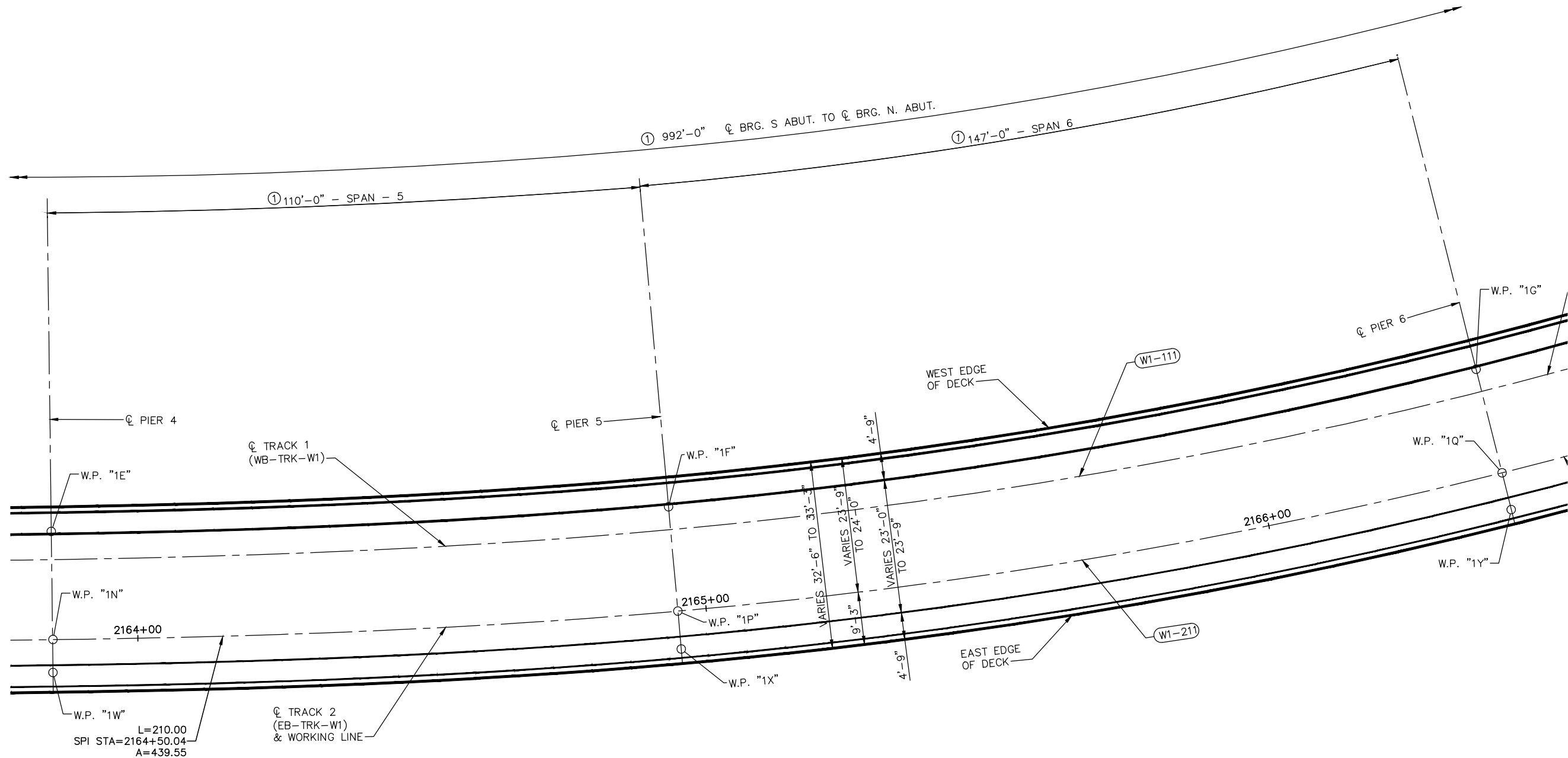


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 SUPERSTRUCTURE (SHEET 3)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUP1-3

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NOTES:

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W1)

PARTIAL DECK PLAN - SPANS 5 & 6

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DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	KHN	DATE:	8/24/2015

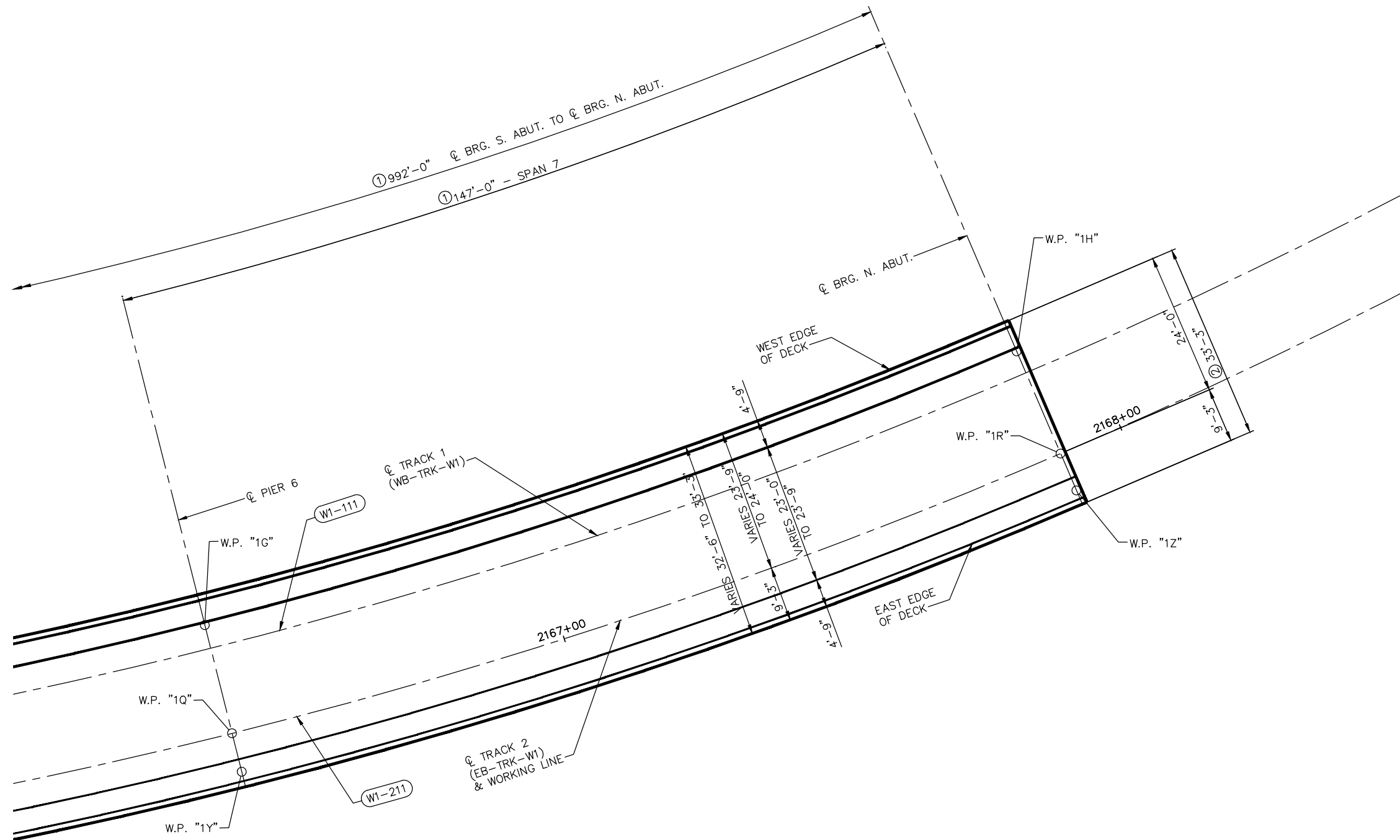


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 SUPERSTRUCTURE (SHEET 4)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUP1-4

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NOTES:

- ① MEASURED ALONG \varnothing TRACK 2 (EB-TRK-W1)
- ② OUT TO OUT DECK MEASURED ALONG THE \varnothing BRG. N. ABUTMENT

PARTIAL DECK PLAN - SPAN 7

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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: KHN	DATE: 8/24/2015

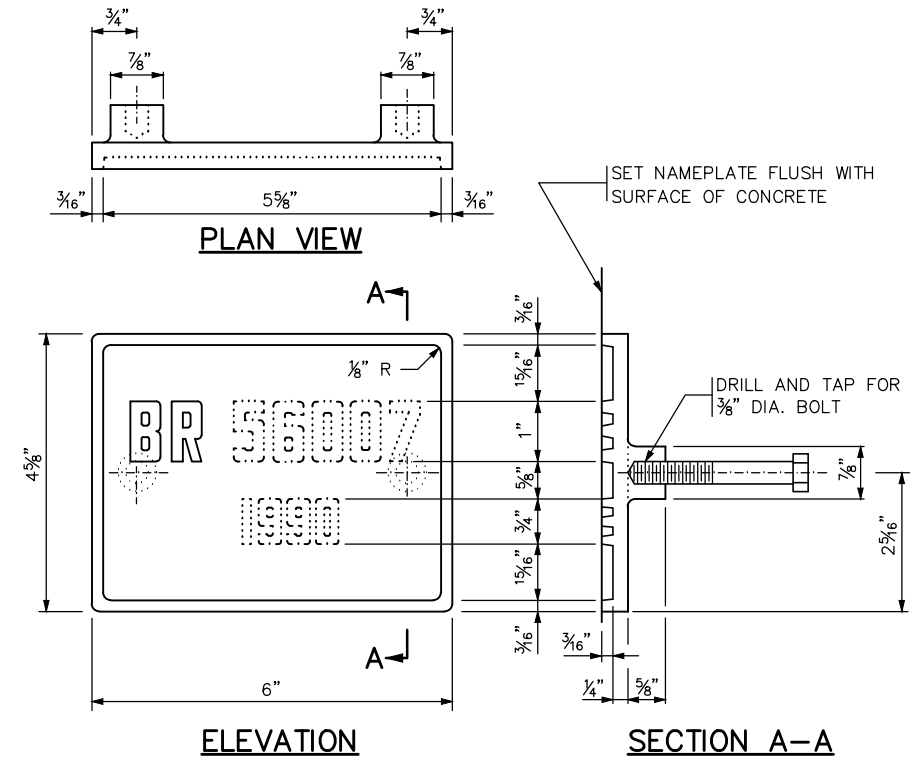


60% SUBMISSION - 9/28/15



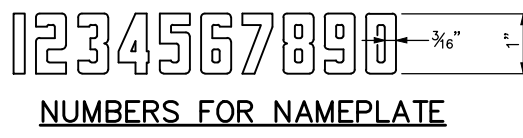
CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 SUPERSTRUCTURE (SHEET 5)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUP1-5

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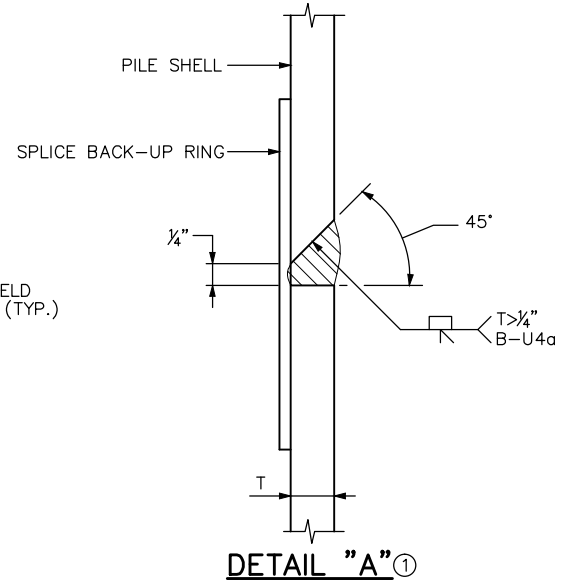
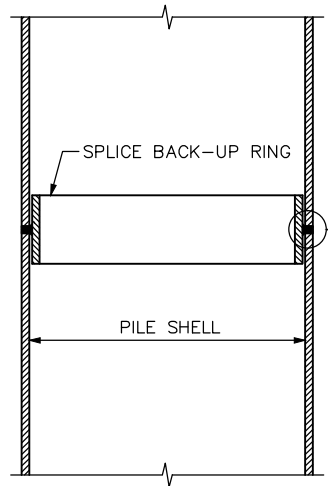
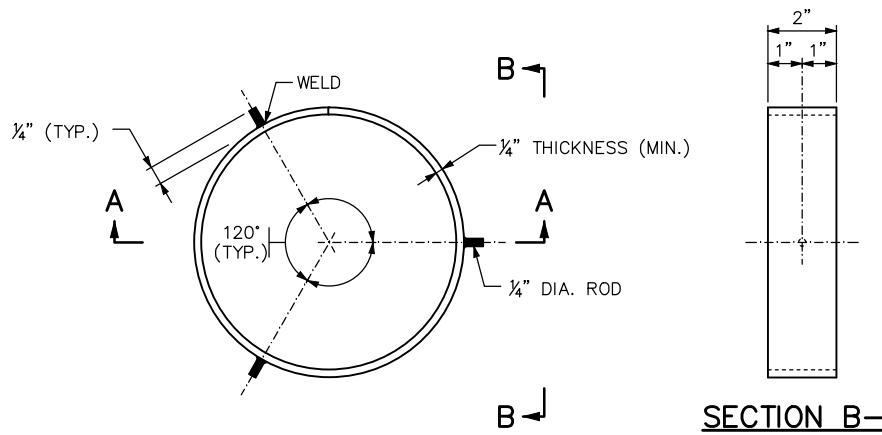


THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
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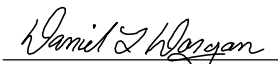
BRIDGE _____
YEAR _____




NOTES:
MATERIAL SHALL COMPLY WITH SPEC. 3327.
LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.





NOTES:
APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT 1/4" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.
WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.
ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.
WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0°F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32°F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70°F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.
① FOR PILE SHELL THICKNESSES GREATER THAN 1/4", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 09-11-2014	DETAIL NO.
 STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101


APPROVED NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION: 11-06-2013	DETAIL NO.
 STATE BRIDGE ENGINEER	PILE SPLICE (CAST-IN-PLACE CONCRETE PILES)		B201

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: EMB	DATE: 8/24/15



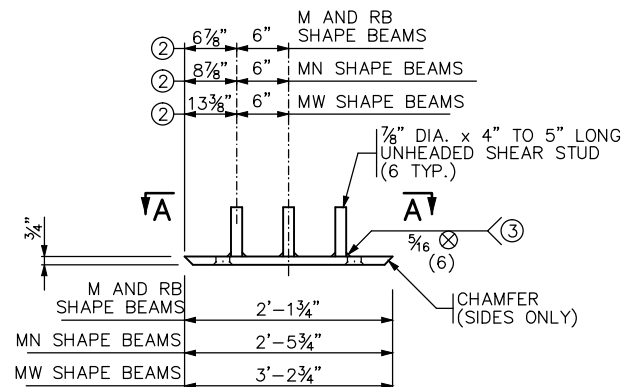
60% SUBMISSION - 09/28/15



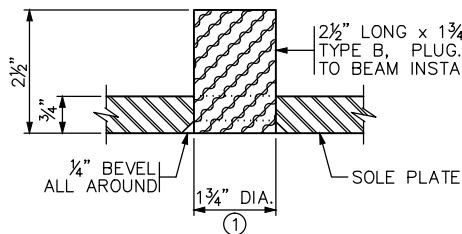
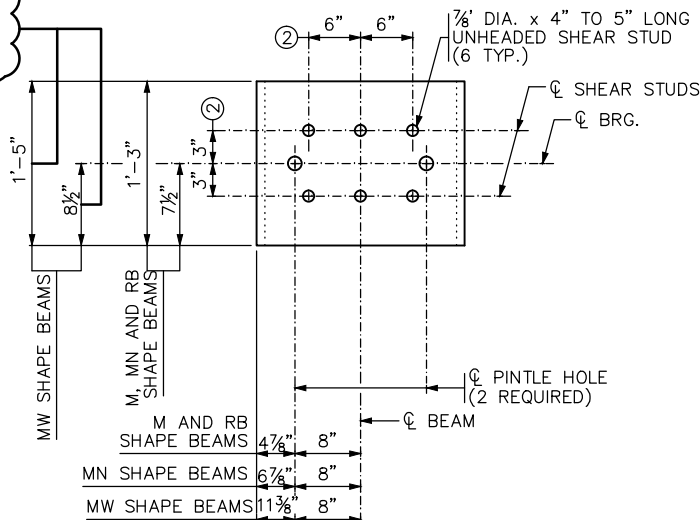
CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 (LRT) BRIDGE DETAILS	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-BDTL-001_101-201

SHEET
21
OF
37

Sep. 09 2015 04:51 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\20_W1-STU-BRG-FCVV-BDTL-002_303-905.dwg By: macke



DESIGNER NOTE (REMOVE PRIOR TO PLOTTING FINAL PLAN):
ADJUST THIS DIMENSION FOR LARGE MOVEMENT BEARINGS AND CONSIDER THE EFFECTS ON THE BEARINGS AND PORTION OF THE BEAM THAT CANTILEVERS BEYOND THE BEARING.



NOTES:

- MATERIAL TO BE STRUCTURAL STEEL PER MnDOT SPEC. 3306.
- WELDED STUDS TO BE WELDABLE CARBON STEEL PER MnDOT SPEC. 3391.2D.
- SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER MnDOT SPEC. 3394 AFTER FABRICATION.
- PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.
- SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.
- ① FOR 1 1/2" DIA. PINTLES.
- ② THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.
- ③ THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.1.

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISED

DETAIL NO.

Nancy J. Soubenberger
STATE BRIDGE ENGINEER

SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

B303

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV
DRAWN BY: EMB

CHECKED BY: ECM
DATE: 8/24/15

60% SUBMISSION - 9/28/15

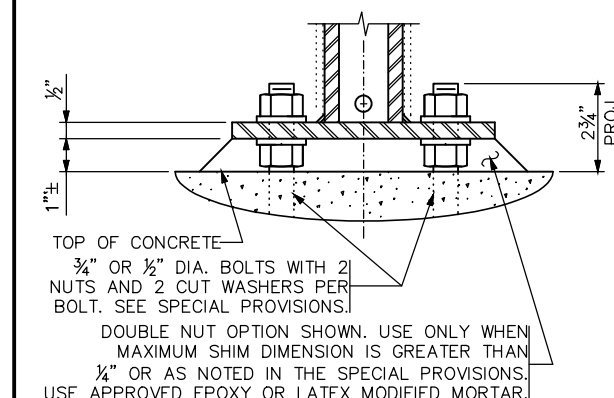
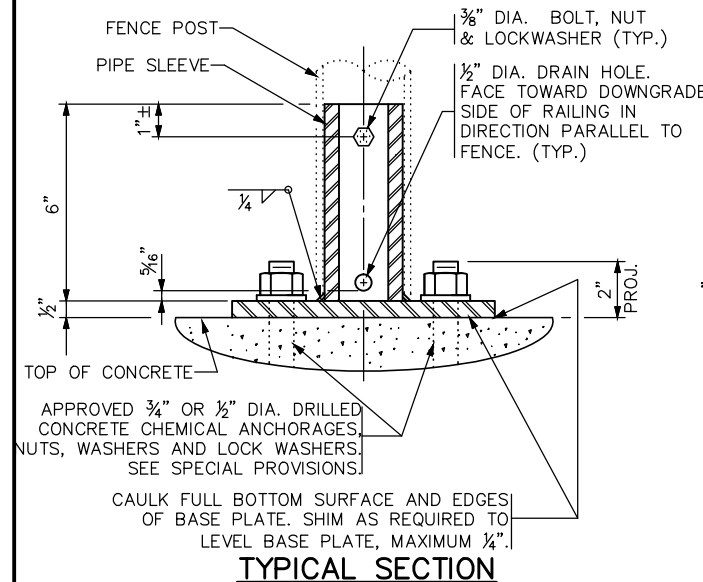
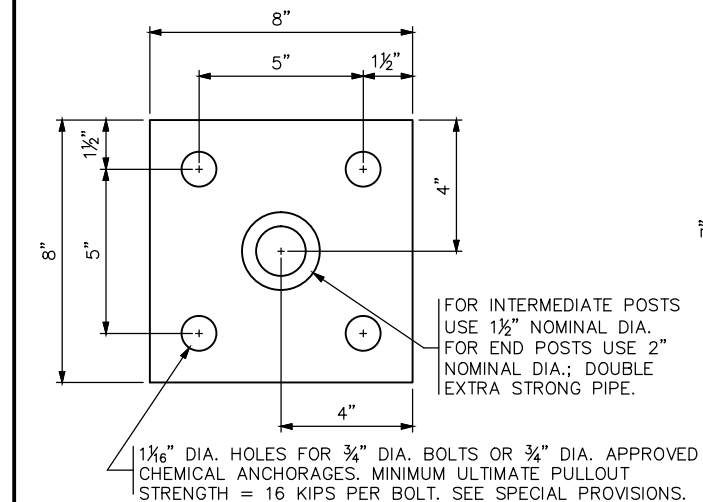
AECOM PARSONS
BRINCKERHOFF



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33 (LRT)
BRIDGE DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-BDTL-002_303-905

SHEET
22
OF
37



APPROVED: NOVEMBER 22, 2002

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

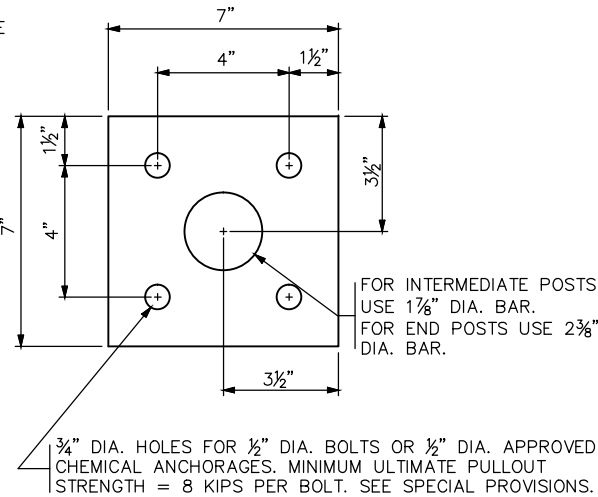
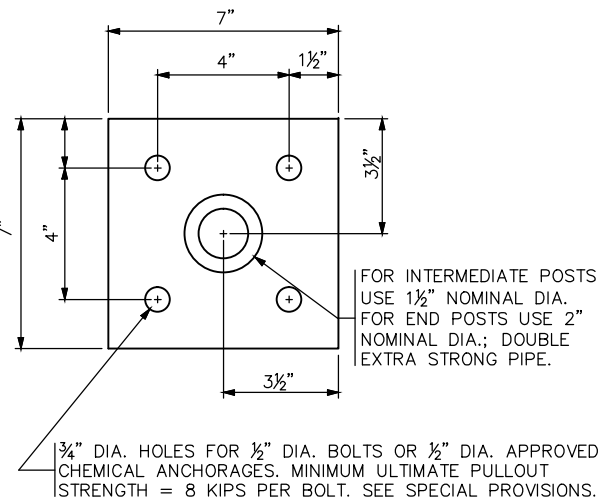
REVISION

DETAIL NO.

Daniel J. Morgan
STATE BRIDGE ENGINEER

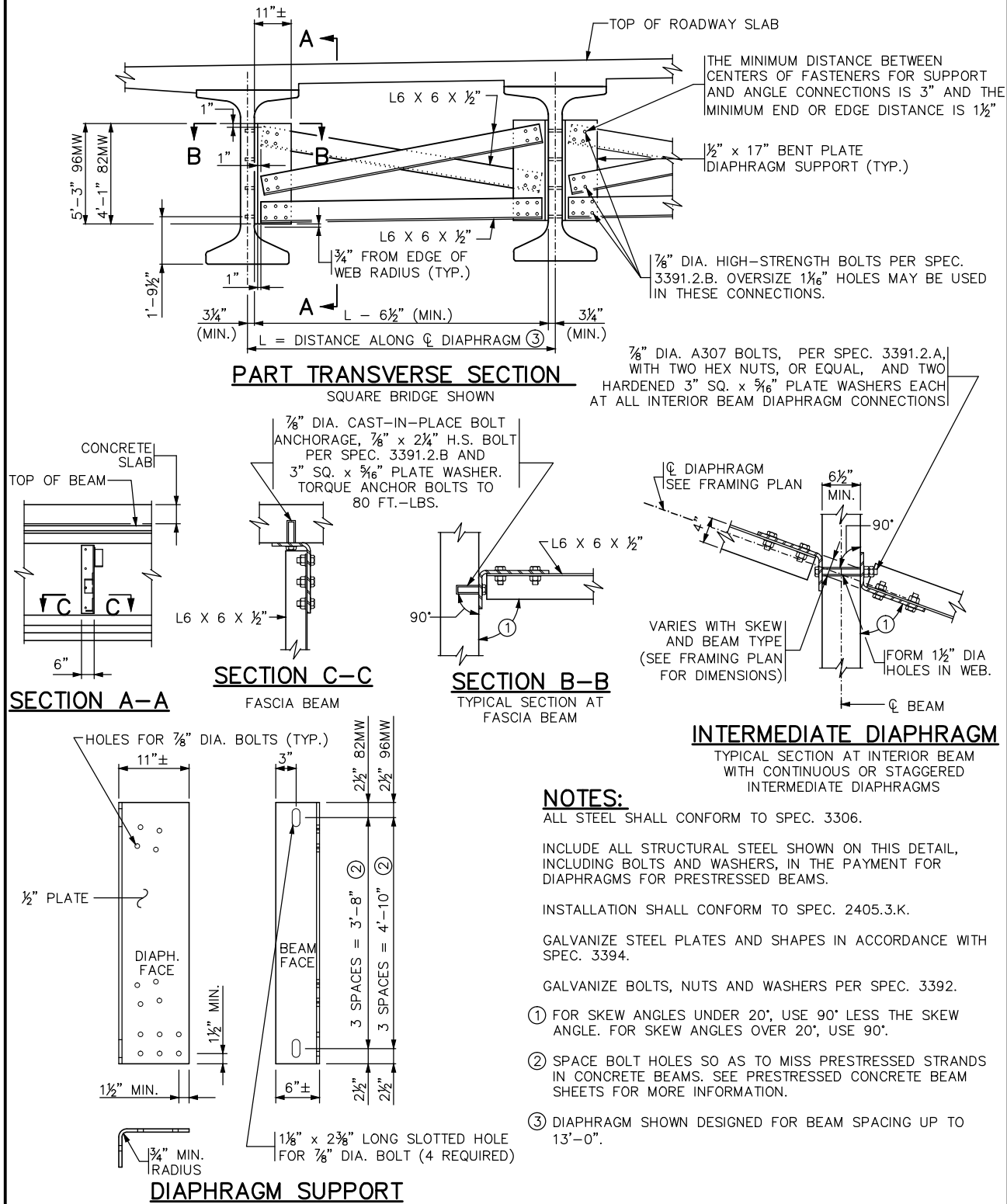
FENCE POST ANCHORAGE

B905



NOTES:

- STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.
- STRUCTURAL PIPE PER Mn/DOT SPEC. 3362.
- GALVANIZE THE FENCE POST ANCHORAGE AFTER FABRICATION PER Mn/DOT SPEC. 3394. GALVANIZE THE FASTENERS PER Mn/DOT SPEC. 3392.
- DOUBLE EXTRA STRONG PIPE WEIGHTS:
1/2" NOMINAL DIA. = 6.41 LBS./FT.
2" NOMINAL DIA. = 9.03 LBS./FT.



APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 09-11-2014	DETAIL NO.
<i>Nancy Dubenberger</i> STATE BRIDGE ENGINEER	STEEL INTERMEDIATE BOLTED DIAPHRAGM (ALL MW PRESTRESSED CONCRETE BEAMS)		B412

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: EMB	DATE: 8/24/15

AECOM**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

SOUTHWEST
Green Line LRT Extension

**CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33 (LRT)
BRIDGE DETAILS**

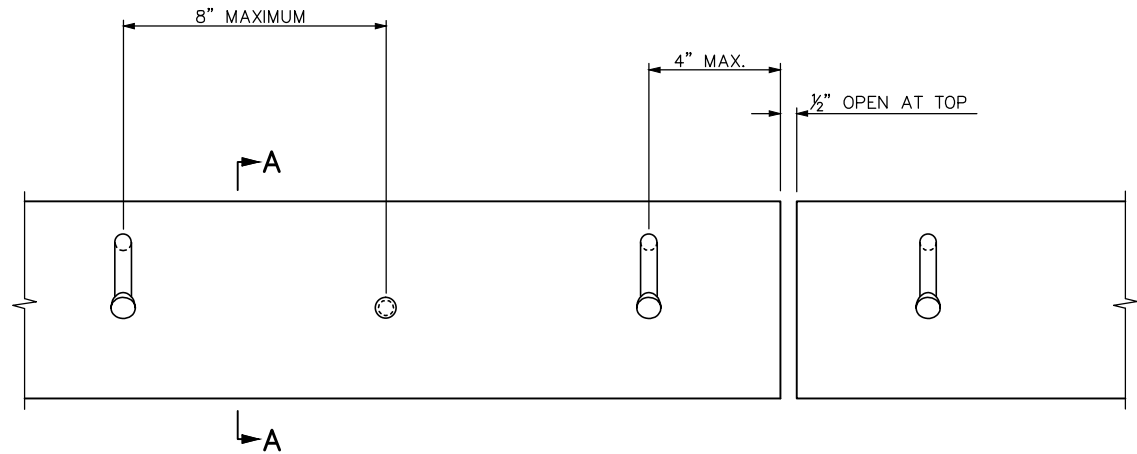
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SHEET NAME: **W1-STU-BRG-FCVV-BDTL-004_412**

**SHEET
24
OF
37**

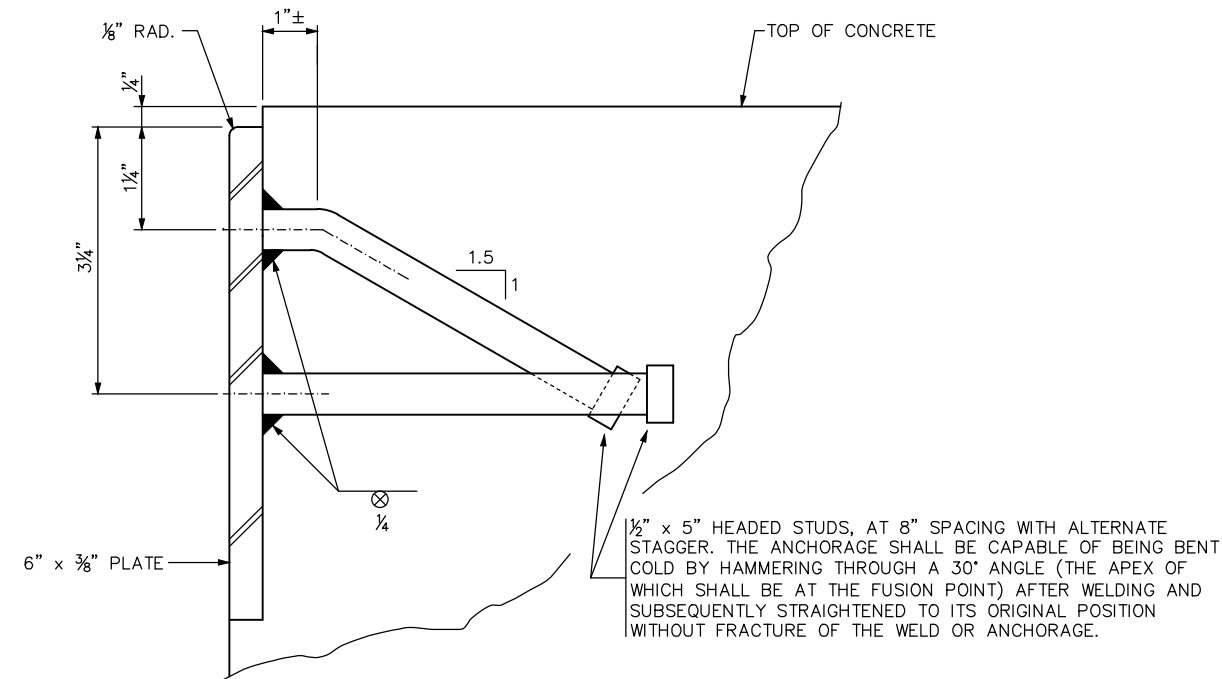
Sep. 09 2015 04:51 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\22_W1-STU-BRG-FCVV-BDTL-004_412.dwg By: macke

Sep. 09 2015 04:52 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\23_W1-STU-BRG-FCVV-BDTL-005_533-702.dwg By: macke



ELEVATION

CONCRETE NOT SHOWN



SECTION A-A

NOTES:

PLATES SHALL EXTEND FULL WIDTH OF ROADWAY BETWEEN GUTTER LINES WITH A 1/2" OPEN JOINT AT EACH BREAK IN CROWN PROFILE. MAX. LENGTH 22 FT.

MATERIALS: STRUCTURAL STEEL PER Mn/DOT SPEC. 3306. GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394

SET PLATE TO PROPER GRADE AND CROWN.

APPROVED: NOVEMBER 22, 2002

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISION

DETAIL NO.

Daniel J. Morgan
STATE BRIDGE ENGINEER

PROTECTION PLATE
(FOR END OF SLAB)

B553

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: **APV** CHECKED BY: **ECM**
DRAWN BY: **EMB** DATE: **8/24/15**

60% SUBMISSION - 9/28/15

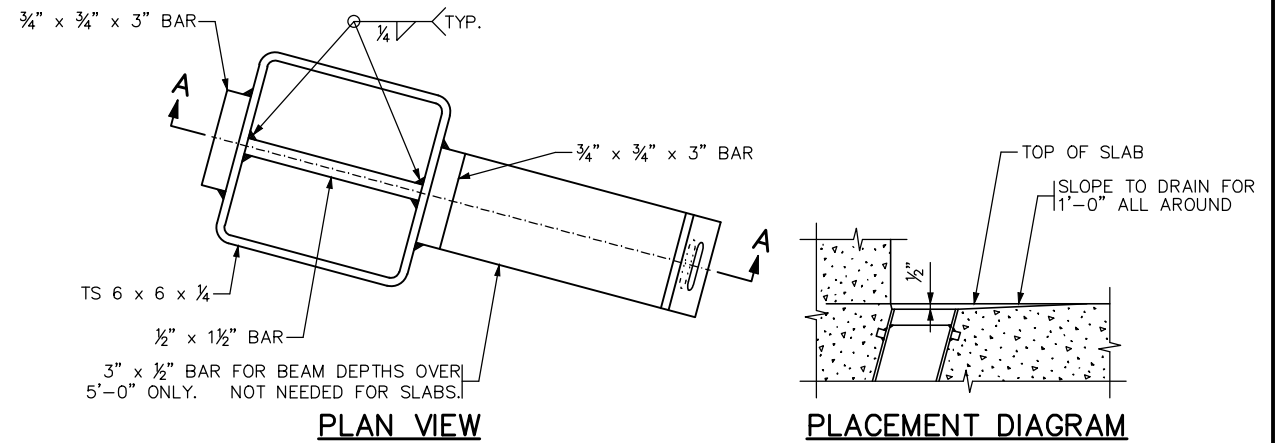
AECOM **PARSONS**
BRINCKERHOFF



CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33 (LRT)
BRIDGE DETAILS

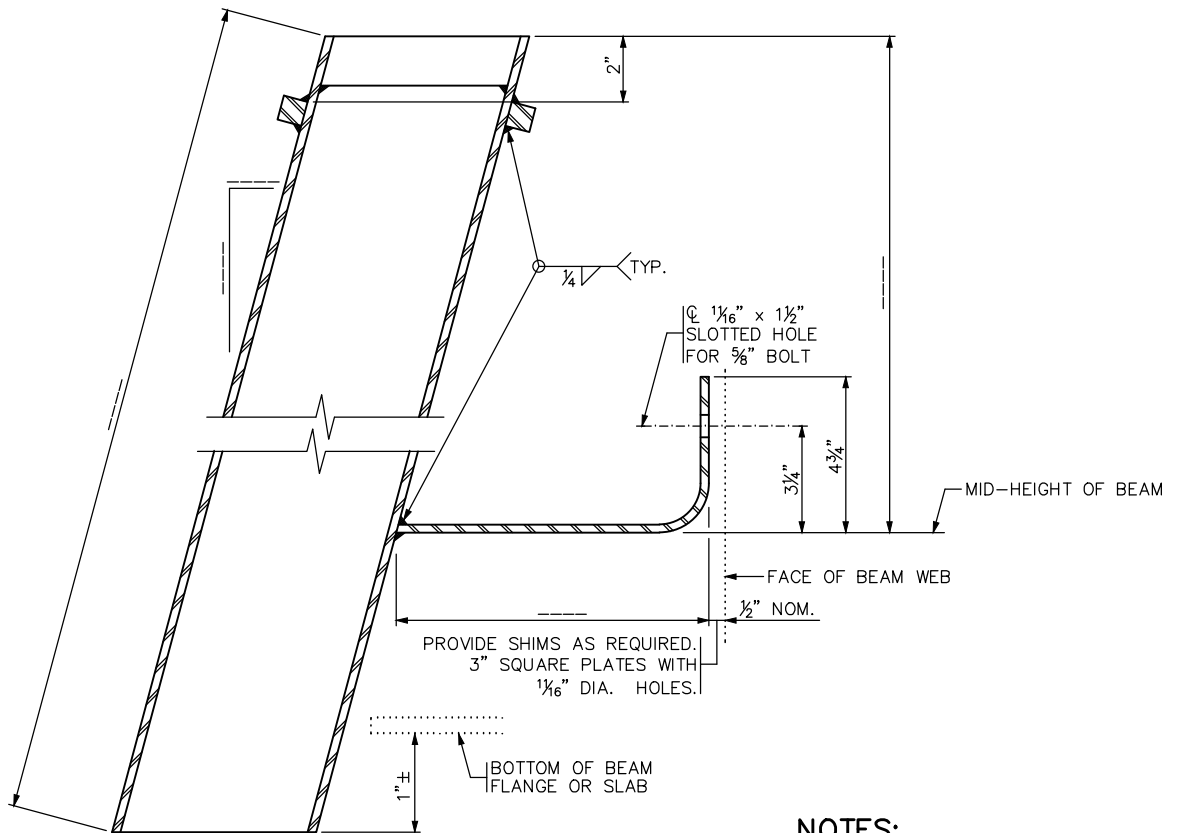
DISCIPLINE: **STRUCTURES** SHEET NAME: **W1-STU-BRG-FCVV-BDTL-005_533-702**

SHEET
25
OF
37



PLAN VIEW

PLACEMENT DIAGRAM



SECTION A-A

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

GALVANIZE BOLTS AND WASHER PER Mn/DOT SPEC. 3392.

GALVANIZE OTHER MATERIALS PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

PAYMENT FOR FLOOR DRAIN TYPE _____ SHALL INCLUDE ALL MATERIAL SHOWN ON THIS DETAIL.

APPROVED: NOVEMBER 22, 2002

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISED
01-13-2004

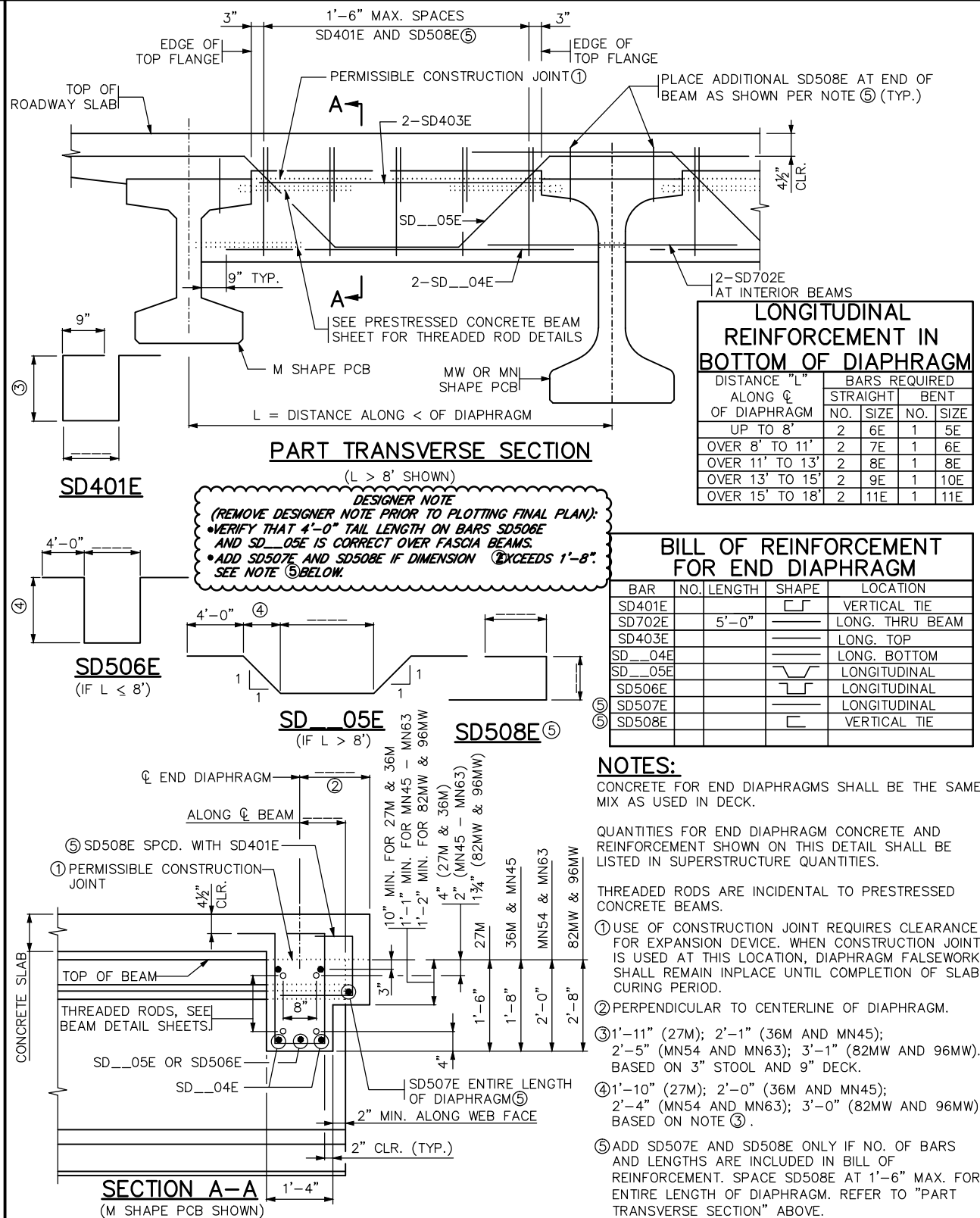
DETAIL NO.

Daniel J. Morgan
STATE BRIDGE ENGINEER

BRIDGE FLOOR DRAIN
(STRUCTURAL TUBE)

B702

Sep. 09 2015 04:52 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\24_W1-STU-BRG-FCVV-BDTL-007_814c-910.dwg By: macke

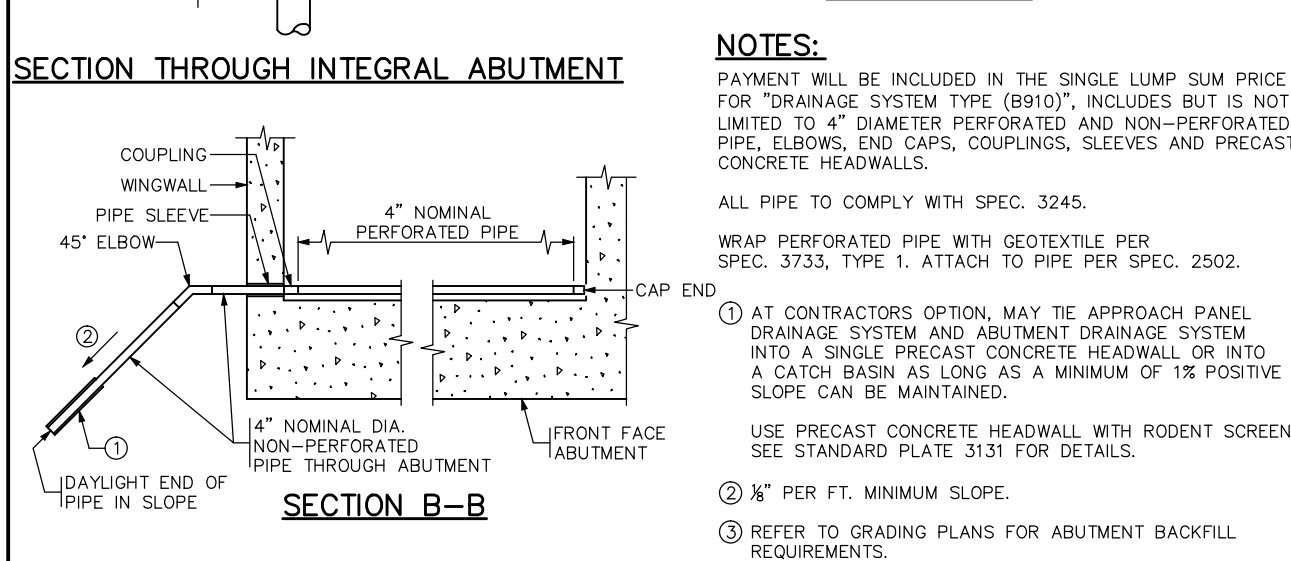
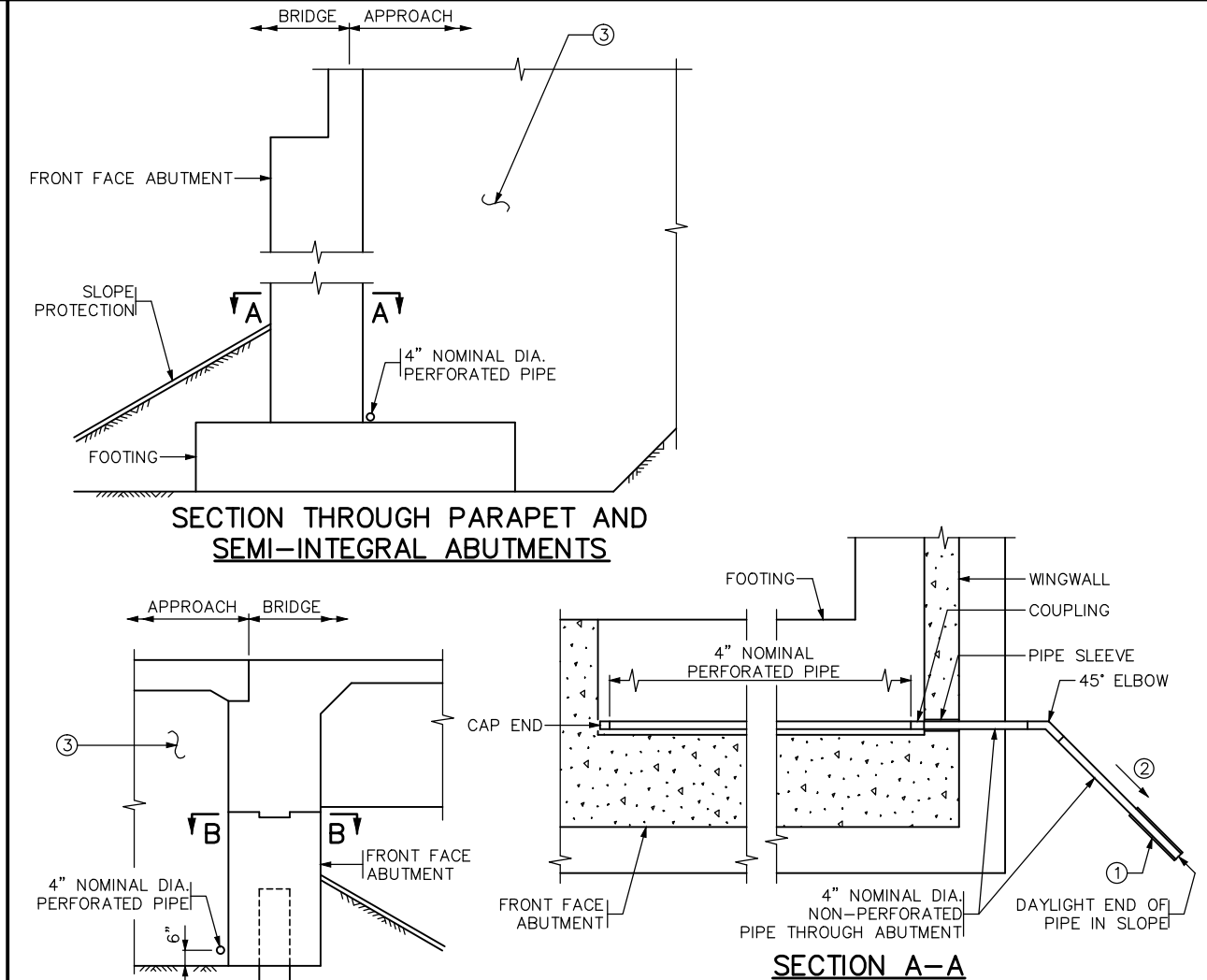


APPROVED: SEPTEMBER 22, 2011
Nancy Dubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
CONCRETE END DIAPHRAGM
(27M & 36M, MN45 - MN63, 82MW & 96MW
PRESTRESSED CONCRETE BEAMS)
(PARAPET ABUTMENT)

REVISED
04-17-2013
11-06-2013

DETAIL NO.
B814



APPROVED: JANUARY 13, 2015
Nancy Dubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
DRAINAGE SYSTEM

REVISED

DETAIL NO.
B910

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: **APV**
DRAWN BY: **EMB**

CHECKED BY: **ECM**
DATE: **8/24/15**

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15

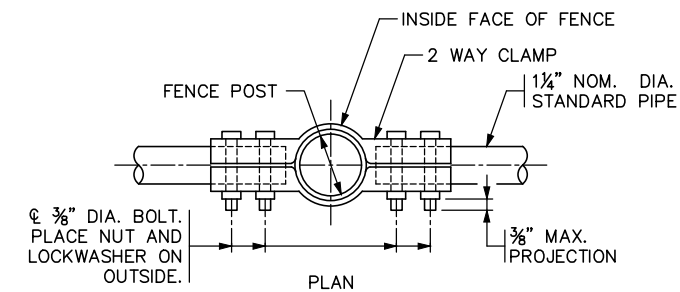
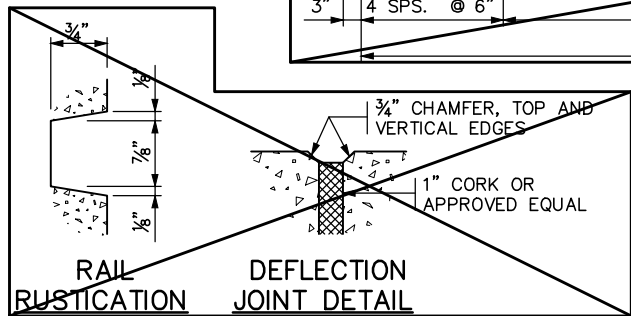
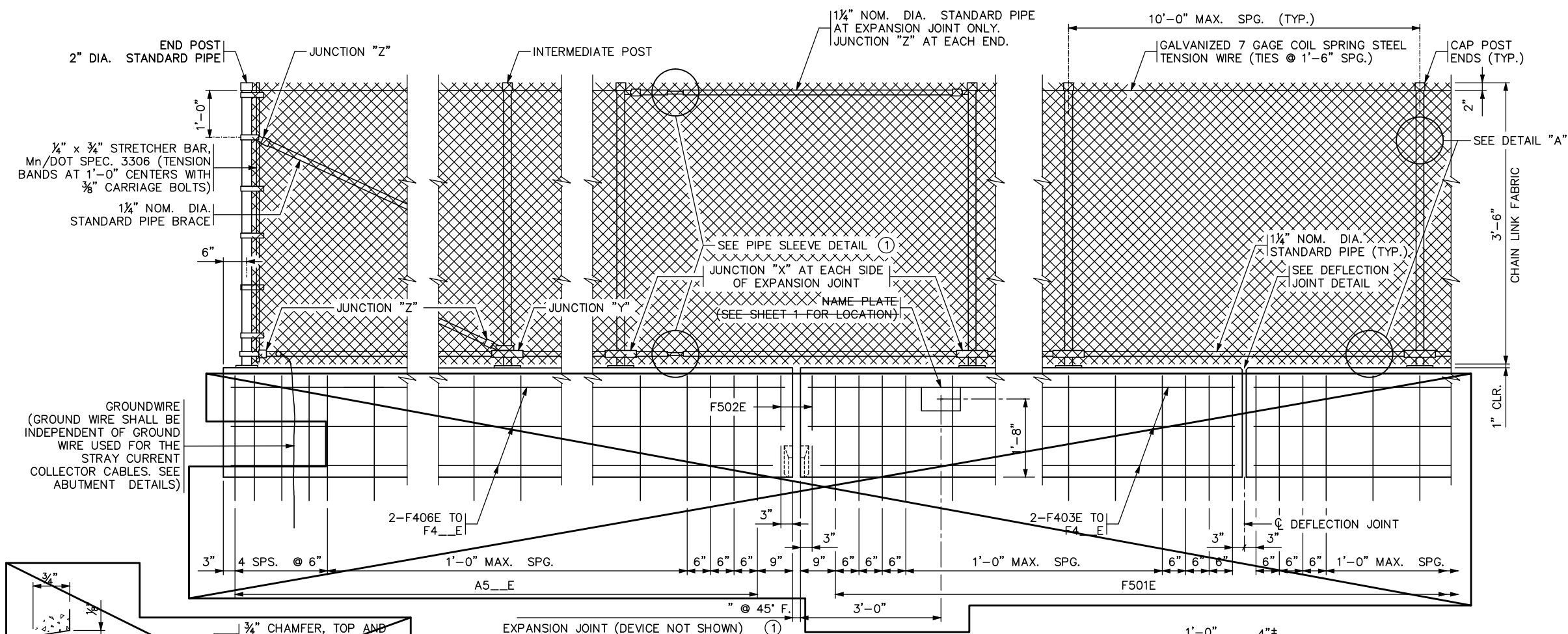
METROPOLITAN COUNCIL **SOUTHWEST**
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33 (LRT)
BRIDGE DETAILS

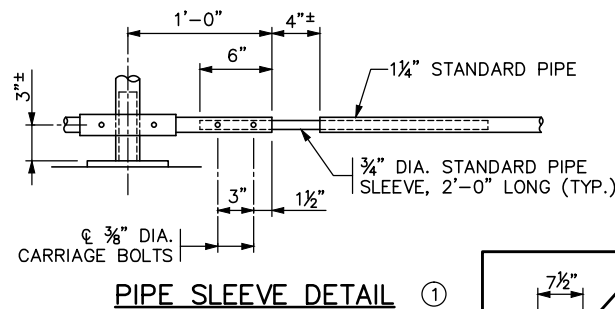
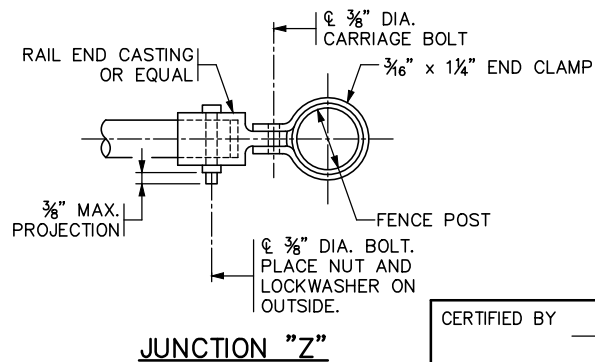
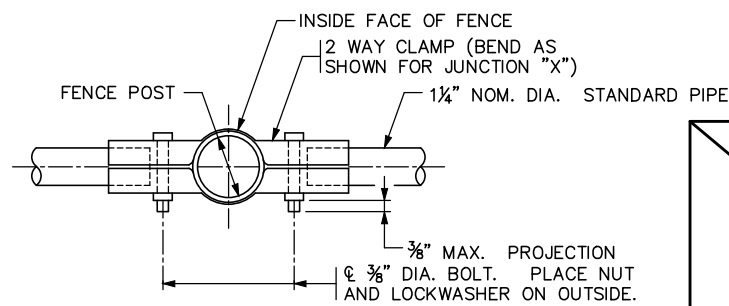
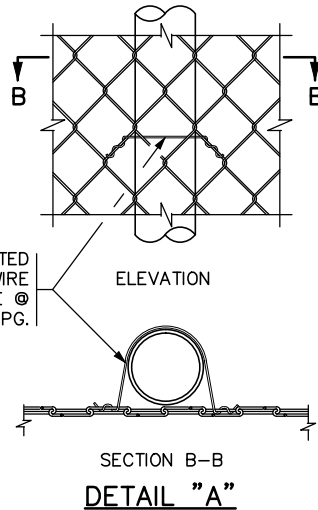
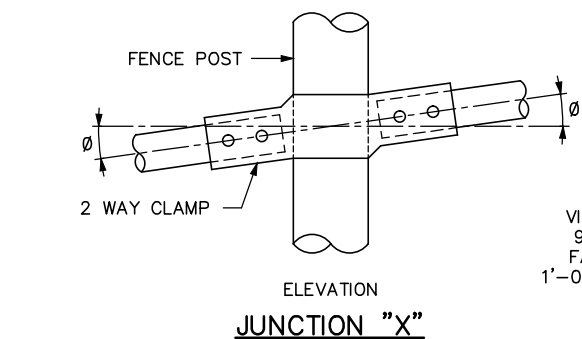
DISCIPLINE: **STRUCTURES**

SHEET NAME: **W1-STU-BRG-FCVV-BDTL-007_814c-910**

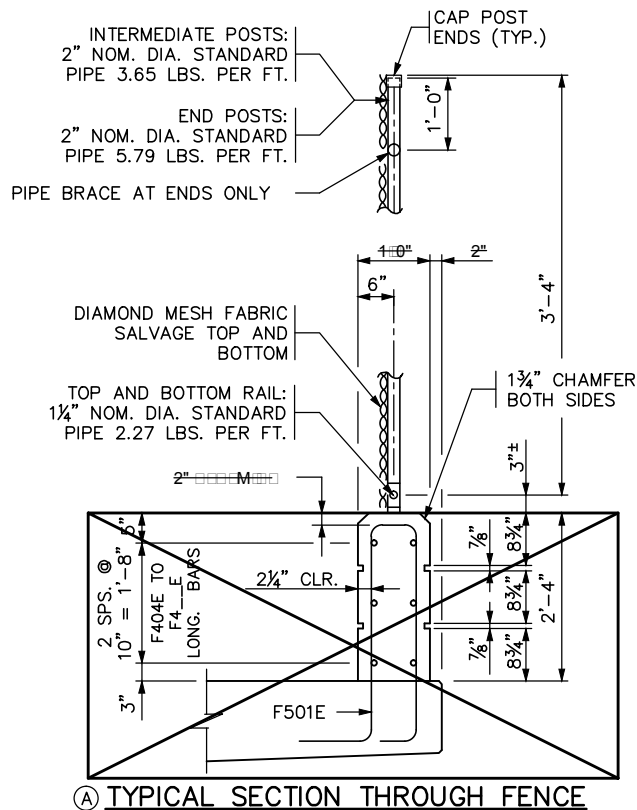
Sep. 09 2015 04:52 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W\PLAN SHEETS\STRUCTURES\60% submittal\25_W1-STU-BRG-FCVW-BD7L-Figure 5-397.119_mod.dwg By: macke



2 WAY CLAMP BENDING TABLE		
GRADE OF FENCE	Ø	
0' TO 2'	Ø	
2' TO 6'	4"	
6' TO 10'	8"	



BILL OF REINFORCEMENT FOR PARAPET				
BAR	NO.	LENGTH	SHAPE	LOCATION
F501E		7'-3"	U	RAIL BASE VERTICAL
F502E		4'-6"	U	RAIL BASE VERTICAL
F403E			—	RAIL BASE LONGITUDINAL
F404E			—	RAIL BASE LONGITUDINAL



① TYPICAL SECTION THROUGH FENCE

INTERMEDIATE POST SHOWN

SHEET MODIFICATION:
① DENOTES MODIFICATION TO STANDARD SHEET

GENERAL NOTES

- ① SEE CONCRETE PARAPET TYPE P-1 SHEET FOR PARAPET DIMENSION, REINFORCEMENT AND NOTES.

LENGTH OF "TYPE P-1 RAILING CONCRETE (3Y46 OR 3Y46A)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAIL.

- ① LENGTH OF "WIRE FENCE DESIGN 48V-9322" FOR PAYMENT SHALL BE MEASURED BETWEEN THE CENTERS OF END RAILPOSTS.

CONCRETE RAILING — 350 LBS./FT. (0.086 CU. YDS./FT.)

FENCE POST ANCHORAGES SHALL BE TYPE A. SEE DETAIL B905 "FENCE POST ANCHORAGE".

MAXIMUM SPACING OF DEFLECTION JOINTS SHALL BE 20 FT. FOR SPACING OF FENCE POST, JOINTS AND ELECTRICAL GROUNDS, SEE SUPERSTRUCTURE SHEETS.

FENCE POSTS AND FENCE POST ANCHORAGES SHALL BE SET VERTICAL, UNLESS OTHERWISE NOTED.

Ø OF FENCE POST ANCHORAGE SHALL BE A MINIMUM OF 6" FROM JOINTS.

END POSTS AND BRACING SHALL BE AT 500 FT. MAXIMUM INTERVALS.

ALL POSTS SHALL HAVE A MEANS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR THE REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP WIRE.

WIRE TIES MAY BE 9 GAGE GALVANIZED STEEL OR 0.179" MIN. ALUMINUM ALLOY CONFORMING TO A.S.T.M. B211, ALLOY 1100-H18. USE 12 1/2 GAGE GALVANIZED HOG RINGS FOR TENSION WIRE TIES.

ALL MATERIAL IN THE CONCRETE BASE AND END POST IS INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET AND FOR BASIS OF PAYMENT.

- ① PROVIDE PIPE SLEEVE IN SPAN BETWEEN THE VERTICAL POSTS AT EXPANSION JOINT. SEE SUPERSTRUCTURE SHEETS FOR LOCATION.

REVISED: 04-17-2013

APPROVED: DECEMBER 18, 2003

Samuel A. Harrison
STATE BRIDGE ENGINEER

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER

DATE

NAME:

LIC. NO.

TITLE: WIRE FENCE (DESIGN W-1) AND CONCRETE PARAPET (TYPE P-1) (WITH INTEGRAL END POST)

DES: APV

DR: EMB

CHK: ECM

CHK: EMC

SHEET NO. 27 OF 37 SHEETS

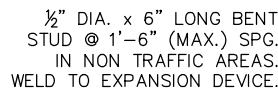
FIG. 5-397.119 (MOD.)

APPROVED:

BRIDGE NO. 27R33

PATH & FILENAME: \$\$\$@PATHFILENAME@\$\$\$

PLOTTED : \$\$\$@DATE@\$\$\$



GALVANIZE STRUCTURAL STEEL AFTER FABRICATION
AS PER SPEC. 3394. GALVANIZE FASTENERS AS
PER SPEC. 3392.

JOINTS IN EXTRUSION SHALL BE LOCATED AT BREAKS
IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED.
JOINTS SHALL BE CLOSE FIT AND WELDED. REPAIR
AFTER WELDING AS PER SPEC. 2471.3L.

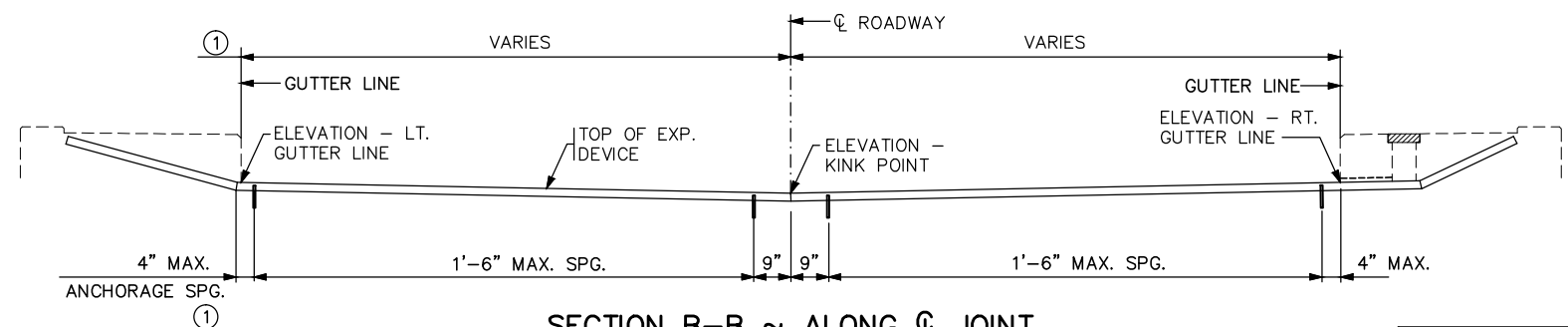
STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF $\frac{1}{8}$ " IN 10 FT.

3/4" DIA. X 1 1/2" FLATHEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

LENGTH OF PAYMENT FOR DEVICE IS FROM OUTER END TO OUTER END OF EXTRUSION ALONG CENTERLINE OF JOINT. REFER TO THE SPECIAL PROVISIONS FOR MORE SPECIFIC PAYMENT INFORMATION.

- ① DIMENSIONS ARE ALONG CENTERLINE OF JOINT.
- ② ___ AT 45° F; ___ AT 90° F. 2" AT ALL TEMPS.
- ③ $\frac{1}{8}$ " ($\frac{1}{4}$ " MAX.).
 $\frac{1}{2}$ " ($\frac{3}{8}$ " MAX.) WHEN SNOWPLOW FINGERS ARE USED.
SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER
15' AND LESS THAN 50'.
- ④ SEE SUPERSTRUCTURE DETAILS FOR RADIUS.
- ⑤ SEE SHEET NO. ___ FOR DIRECTION OF TRAFFIC.
- ⑥ PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES
AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS
WHEN SKEW IS OVER 15' AND LESS THAN 50' BEND
RODS PARALLEL TO ϕ ROADWAY.
- ⑦ USE THE LARGEST SINGLE PIECE POSSIBLE. USE OF
SMALL PIECES OR SCRAPS SECURED TOGETHER IS
PROHIBITED.



SECTION B-B ~ ALONG C JOINT

NOTE: SEE "TABLE OF ELEVATIONS" ABOVE.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER DATE _____		TITLE: WATERPROOF EXPANSION DEVICE (WITH TYPE F BARRIER)	DES: APV	DR: EMB	APPROVED: _____	BRIDGE NO. 27R33
			CHK: ECM	CHK: ECM		
NAME: _____ LIC. NO. _____			SHEET NO. 28 OF 37 SHEETS			

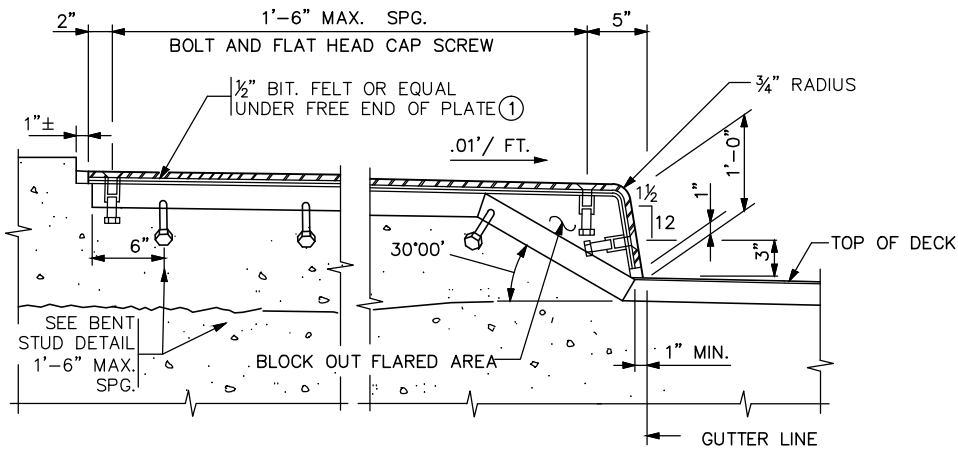
REVISION: 09-11-2014

APPROVED: NOVEMBER 6, 1995

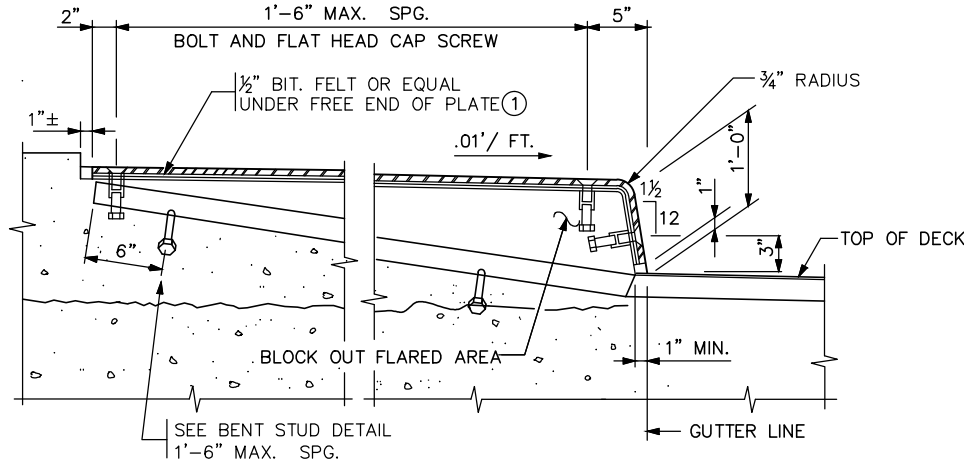
Donald J. Klemm
STATE BRIDGE ENGINEER

FILENAME: \$\$\$@FILENAME\$\$\$

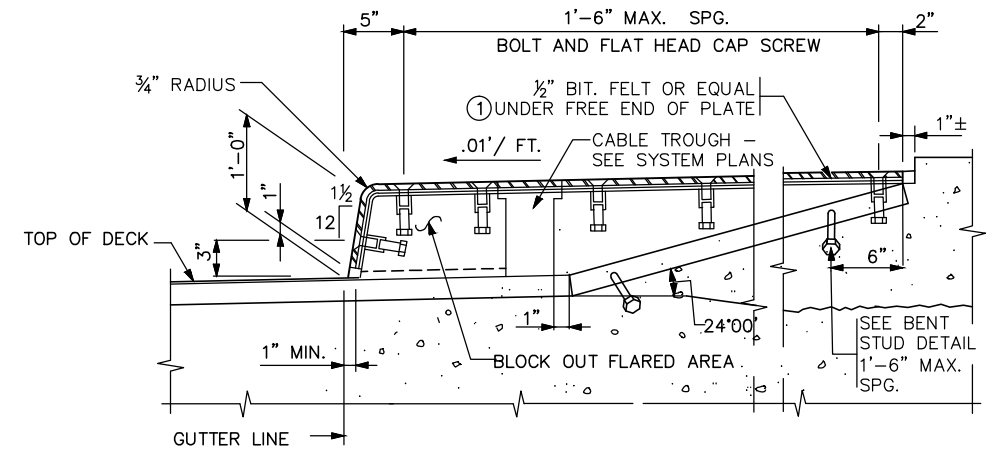
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PLOT: \$\$\$@DATE\$\$\$
PATH & FILENAME: \$\$\$@PATHFILENAME\$\$\$



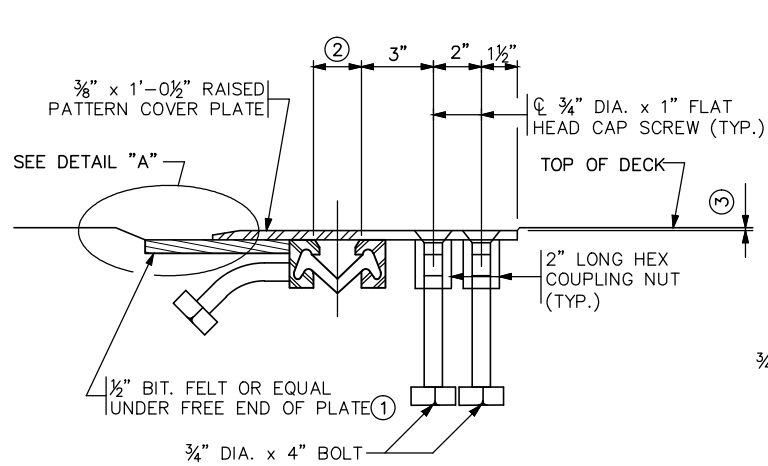
SECTION THROUGH LEFT SIDEWALK - OPTION 1
(LOOKING UPSTATION)



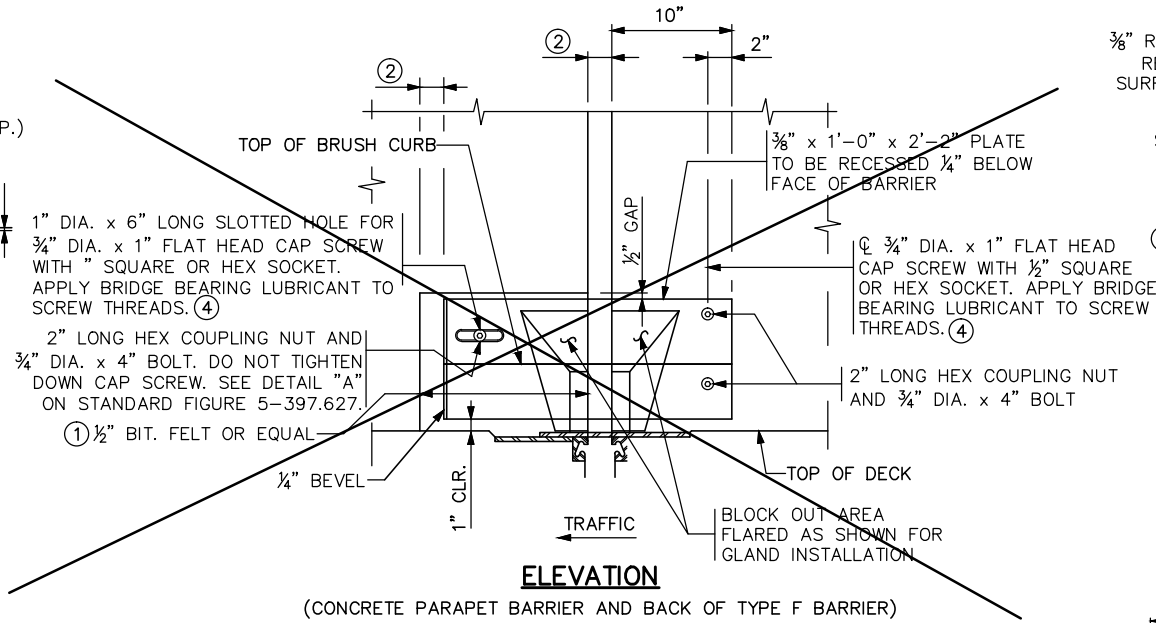
SECTION THROUGH LEFT SIDEWALK - OPTION 2
(LOOKING UPSTATION)



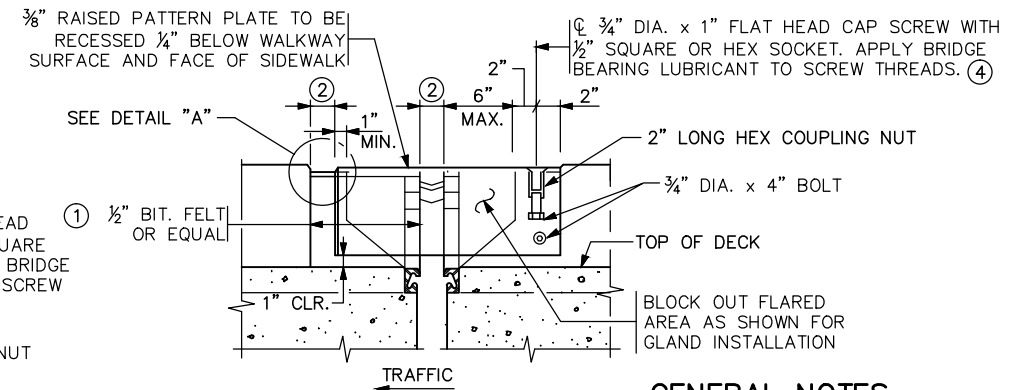
SECTION THROUGH RIGHT SIDEWALK
(LOOKING UPSTATION, AT EXPANSION JOINT WITH CABLE TROUGH)



SECTION D-D

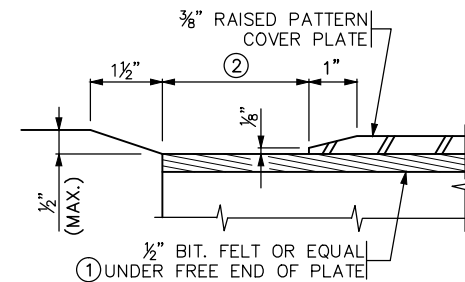


ELEVATION

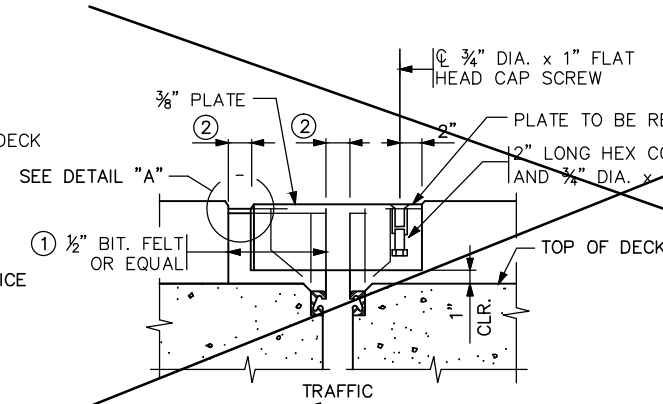


ELEVATION

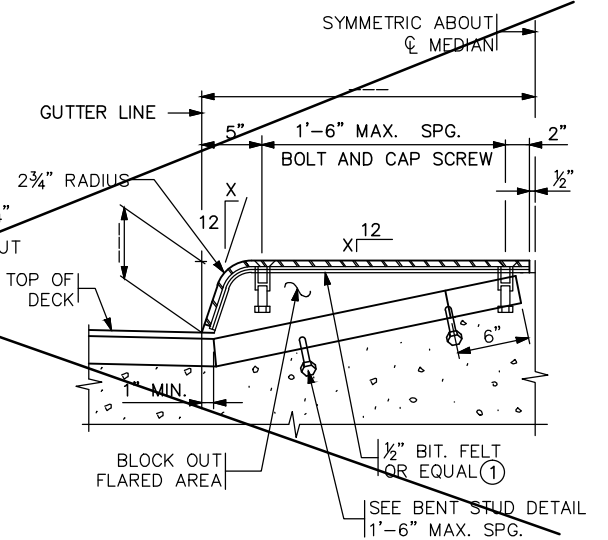
RAISED SIDEWALK DETAILS



DETAIL "A"



MEDIAN ELEVATION



MEDIAN SECTION

FIG. 5-397.630

SECTION THROUGH BARRIERS - INTEGRAL SIDEWALK

REVISION: 11-06-2013
APPROVED: SEPTEMBER 26, 2003
STATE BRIDGE ENGINEER

CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER
NAME: _____ LIC. NO. _____

TITLE: WATERPROOF EXPANSION DEVICE
(RAISED MEDIAN OR SIDEWALK WITH PARAPET)

DES: APV DR: EMB
CHK: ECM CHK: ECM
APPROVED: _____
BRIDGE NO. 27R33
SHEET NO. 29 OF 37 SHEETS

CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION

MFR'S No.	AND/OR LETTER DESIGNATION FOR JOINT USED
-----------	--

GLAND MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED _____

ELASTOMERIC BEARING PADS

PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

SYSTEM: _____ COLOR: _____

FINISHING ROADWAY FACES OF BARRIER RAILING

TYPE: _____ COLOR: _____

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

Mn/DOT SPECIFICATION NUMBER _____ 2478 OR 2479 OR OTHER _____

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____ Mn/DOT MATERIAL SPECIFICATION NUMBER _____

INTERMEDIATE COAT _____ Mn/DOT MATERIAL SPECIFICATION NUMBER _____

FINISH COAT	Mn/DOT MATERIAL SPECIFICATION NUMBER	COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____
 BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____
 SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____
 (SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE
SUPPLEMENTAL AGREEMENTS: _____ COST: \$ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

INSPECTOR(S) SIGNATURE

DATE

CHECKED BY: _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

REVISION: 10-28-2008

APPROVED: SEPTEMBER 26, 2003

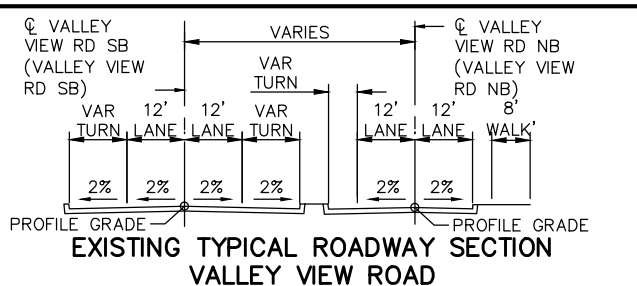
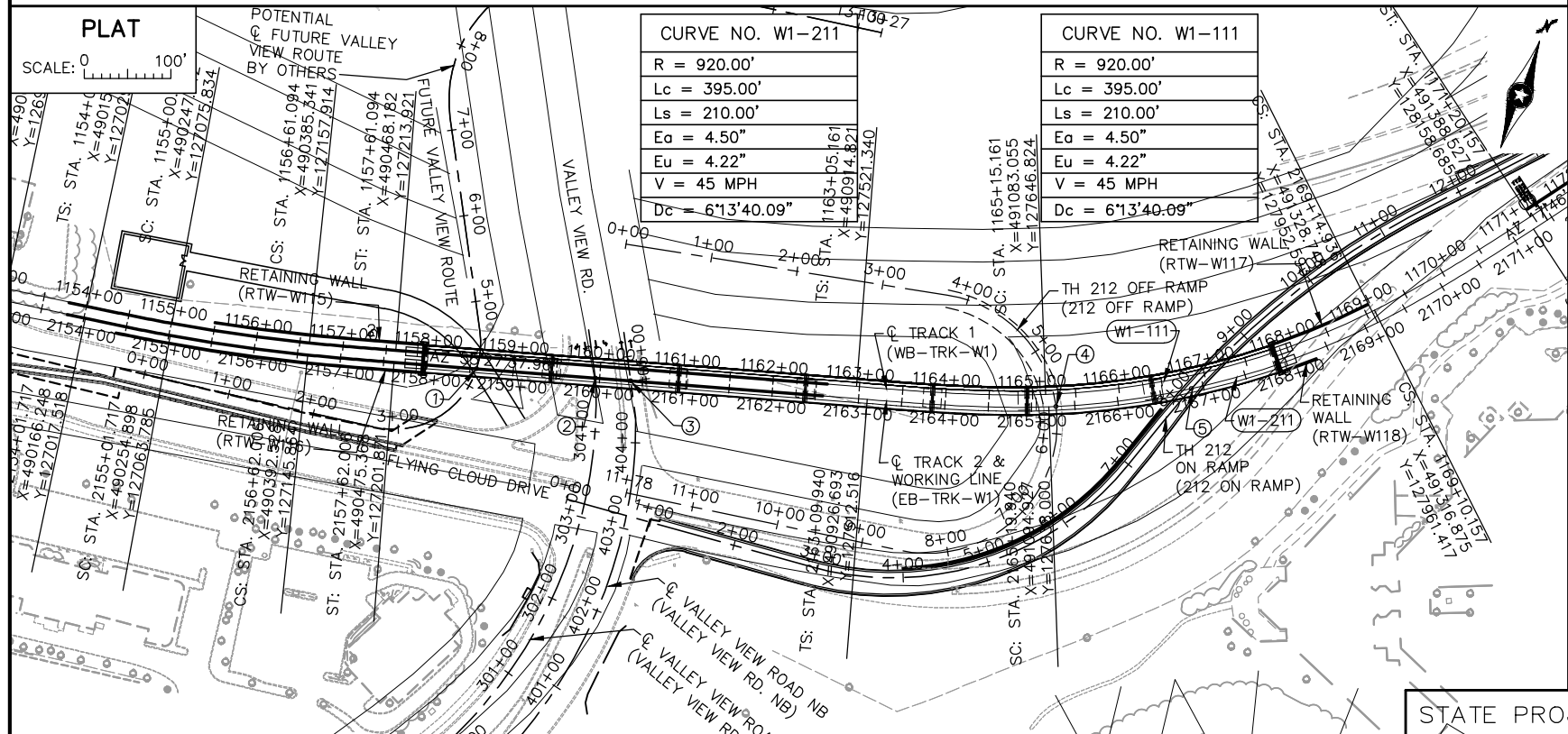
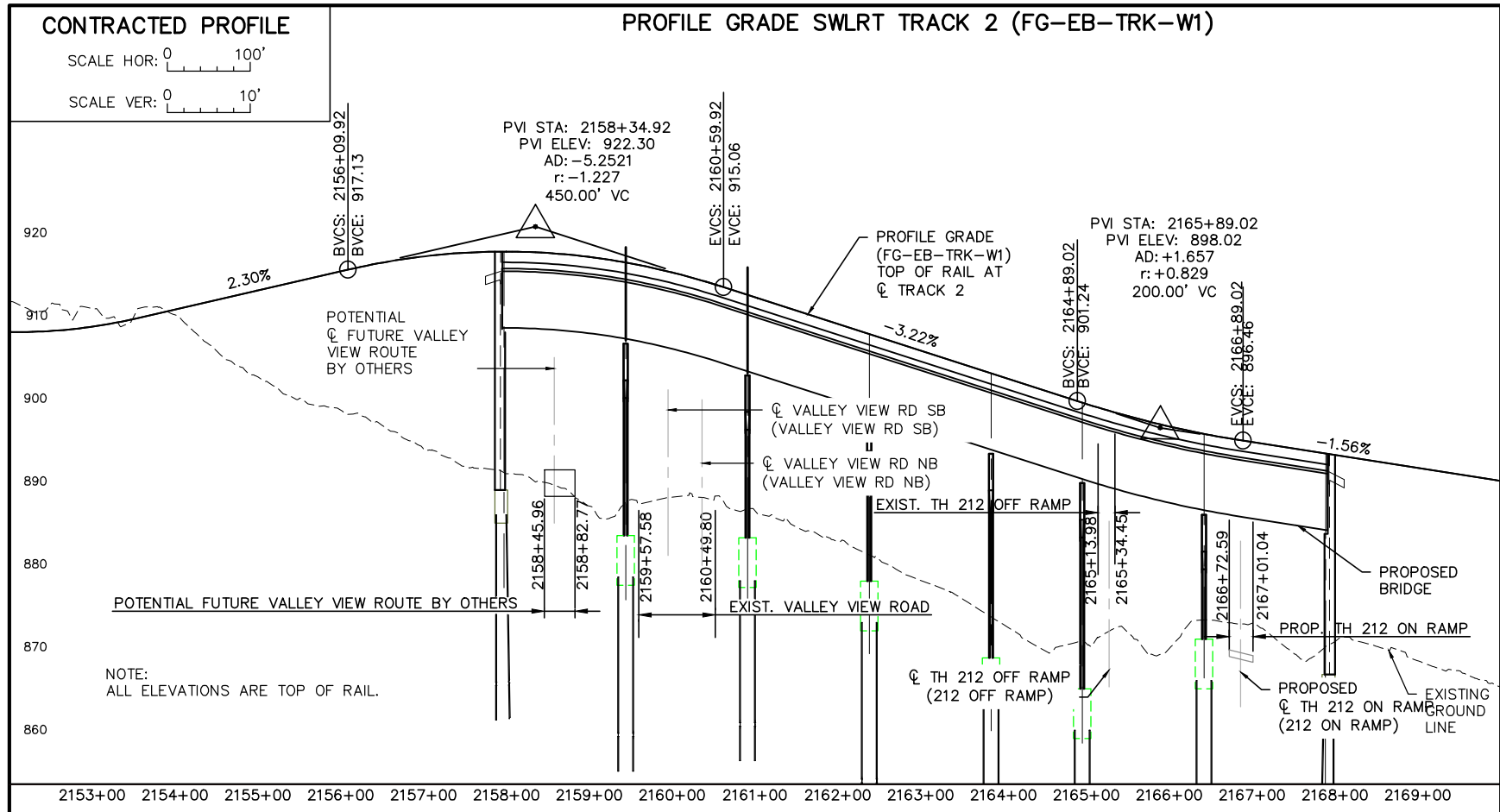
Daniel J. Horgan

STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

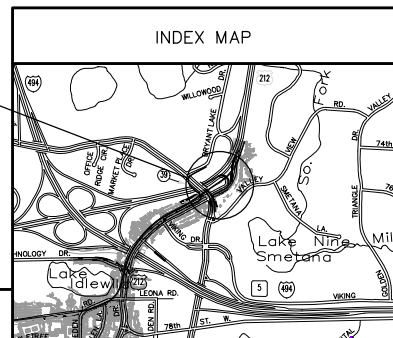
TITLE: AS-BUILT BRIDGE DATA	DES: APV	DR: EMB	APPROVED:	BRIDGE NO. 27R33
	CHK: ECM	CHK: ECM		
	SHEET NO. 30 OF 37 SHEETS			

Sep. 09 2015 05:29 pm V:\19140A_MN_Valley_View_Road_Bridge_3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\29_W1-STU-BRG-FCVV-SUR1.dwg By: macke



THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

- CONTROL POINT
CL TRACK 2 (EB-TRK-W1) P.O.T. STA. 2158+57.62
CL POTENTIAL FUTURE VALLEY VIEW ROUTE BY OTHERS
P.O.C. STA. 4+21.53
X = 490554.098
Y = 127256.060
ANGLE: 76°55'12.7" TTC
- CONTROL POINT
CL TRACK 2 (EB-TRK-W1) P.O.T. STA. 2159+95.05
CL SB VALLEY VIEW ROAD P.O.C. STA. 304+61.93
X = 490667.310
Y = 127333.984
ANGLE: 82°54'13.0" TTC
- CONTROL POINT
CL TRACK 2 (EB-TRK-W1) P.O.T. STA. 2160+36.00
CL NB VALLEY VIEW ROAD (VALLEY VIEW RD NB)
P.O.C. STA. 404+71.82
X = 490701.037
Y = 127357.198
ANGLE: 12°19'35.8" TTC
- CONTROL POINT
CL TRACK 2 (EB-TRK-W1) P.O.T. 2165+28.30
CL TH 212 OFF RAMP (212 OFF RAMP) P.O.C. STA. 5+68.382
X = 491101.207
Y = 127643.525
ANGLE: 94°54'51.8" TTC
- CONTROL POINT
CL TRACK 2 (EB-TRK-W1) P.O.T. 2166+86.12
CL TH 212 ON RAMP (212 ON RAMP) P.O.C. STA. 8+13.89
X = 491209.679
Y = 127757.886
ANGLE: 35°28'36.5" TTC



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION _____ OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

MAX FLOOD ON RECORD: XXX C.F.S. (XX-XX-XX)

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

DESIGN FLOOD (XX YR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
TOTAL STAGE INCREASE: XX FT.
LOW MEMBER AT OR ABOVE ELEVATION: XXX.X FT

WATERWAY AREA REQUIRED BELOW ELEV. XXX.X = XXX SQ. FT. AT RIGHT ANGLES TO CHANNEL

BASIC FLOOD (100 YR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
TOTAL STAGE INCREASE: X.X FT.
MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR OT YR.FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR OT YR. FREQ.)

SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY = SHEETS MADE FROM 20XX XXXXXI SURVEYS

1ST BENCH MARK
MnDOT NAME: 2763 A 1
APPROX. NORTHING (HEN. COUNTY COORDINATES): 127407.646
APPROX. EASTING (HEN. COUNTY COORDINATES): 490672.548
BENCHMARK ELEVATION (NAVD88): 888.994

2ND BENCH MARK
MnDOT NAME: 2763 A 2
APPROX. NORTHING (HEN. COUNTY COORDINATES): 127559.699
APPROX. EASTING (HEN. COUNTY COORDINATES): 490380.189
BENCHMARK ELEVATION (NAVD88): 882.531

BRIDGE SURVEY

0.1 MI. WEST OF FLYING CLOUD DRIVE AND VALLEY VIEW ROAD IN EDEN PRAIRIE

SOUTHWEST LRT OVER VALLEY VIEW ROAD

SEC 11 & 12 T 116 N R 22 W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27R33

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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2					
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5					
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7					
8					
9					
10					

DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: RCK	DATE: 8/24/2015

AECOM **PARSONS BRINCKERHOFF**

60% SUBMISSION - 9/28/15

METROPOLITAN **SOUTHWEST**

Green Line LRT Extension

CIVIL WEST - VOLUME 4A

VALLEY VIEW ROAD

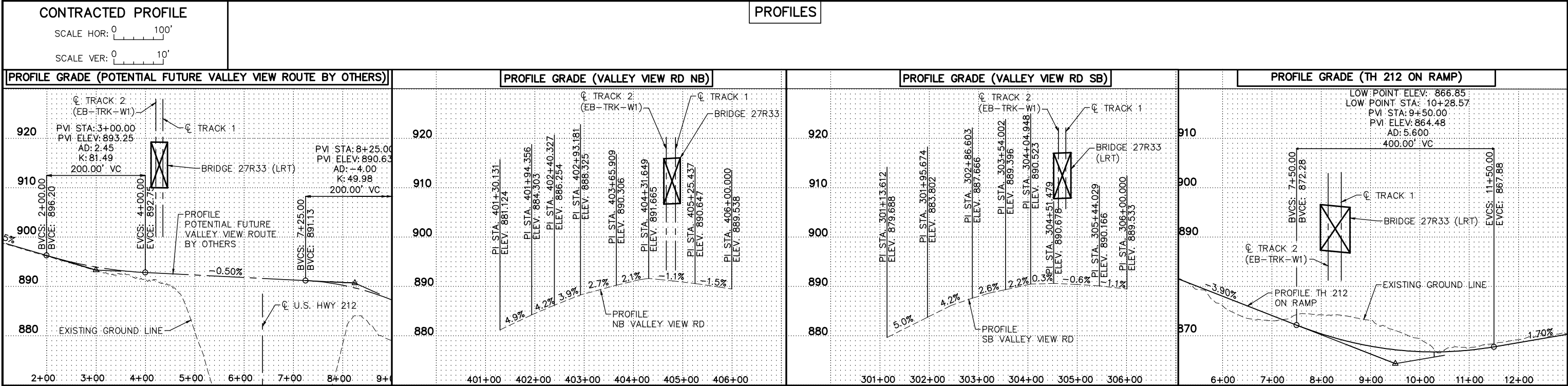
BRIDGE 27R33

BRIDGE SURVEY

DISCIPLINE: STRUCTURES SHEET NAME: W1-STU-BRG-FCVV-SUR1

SHEET 31 OF 37

Sep, 10 2015 08:15 am V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\30_W1-STU-BRG-FCVV-SUR2.dwg By: macke



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	8/24/2015	APV	RCK	ECM	60% SUBMISSION - 9/28/15
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DESIGNED BY:	APV	CHECKED BY:	ECM
DRAWN BY:	RCK	DATE:	8/24/2015

AECOM

PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
TRANSIT AUTHORITY

SOUTHWEST
Green Line LRT Extension

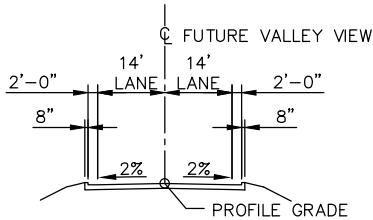


CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY

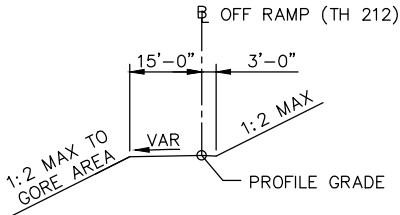
DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUR2

SHEET 32 OF 37

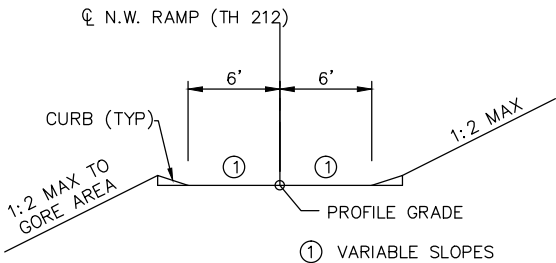
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POTENTIAL FUTURE VALLEY VIEW
ROUTE BY OTHERS



EXISTING TH212 OFF RAMP



PROPOSED TYPICAL ROADWAY
SECTION ON RAMP (T.H. 212)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: APV	CHECKED BY: ECM
DRAWN BY: RCK	DATE: 8/24/2015

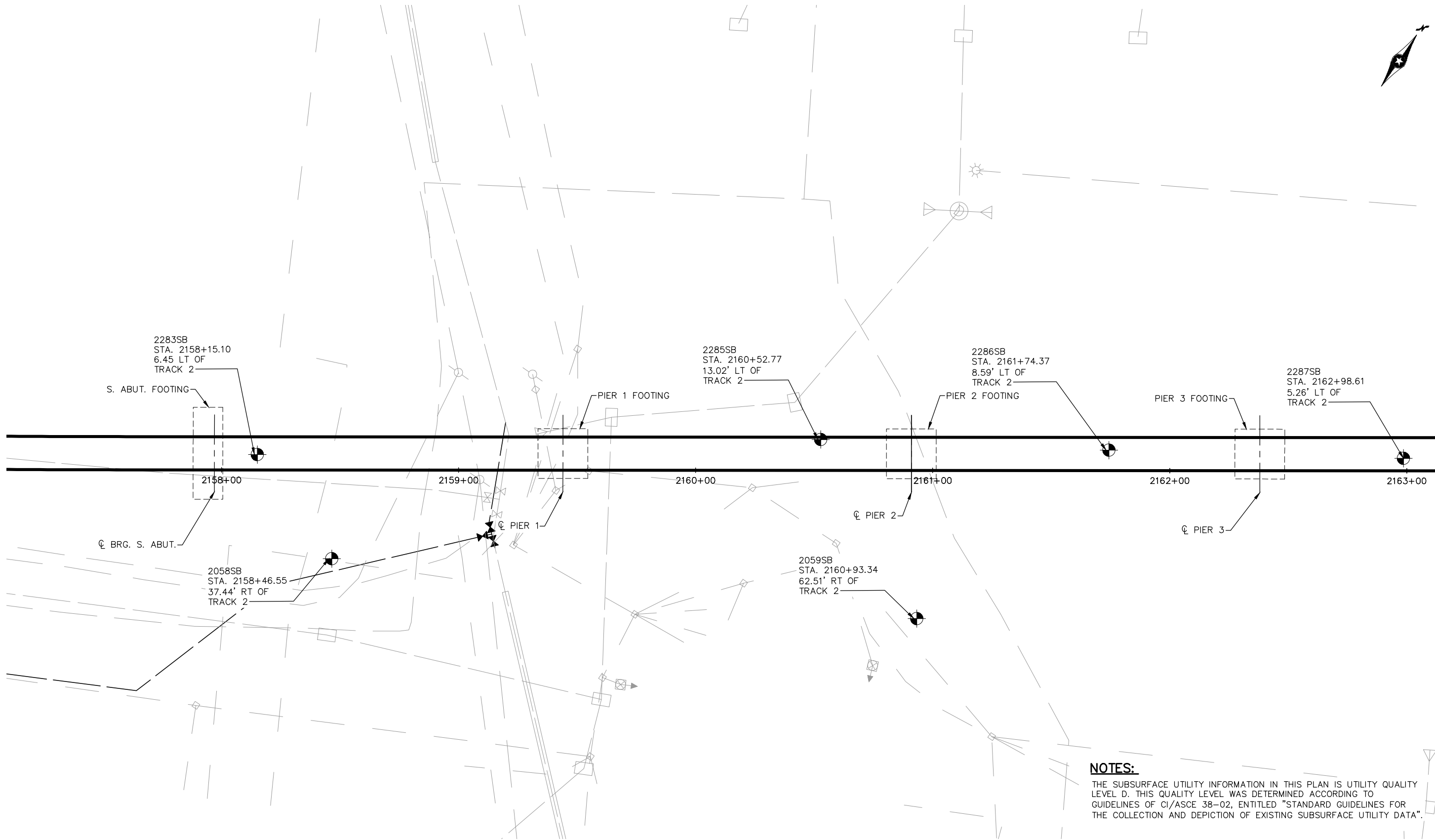


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 BRIDGE SURVEY	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUR6



Sep. 09 2015 04:59 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\32-33_W1-STU-BRG-FCVV-SUR4.dwg By: macke



NOTES:
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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DESIGNED BY:	ECM	CHECKED BY:	APV
DRAWN BY:	KHN	DATE:	8/24/2015



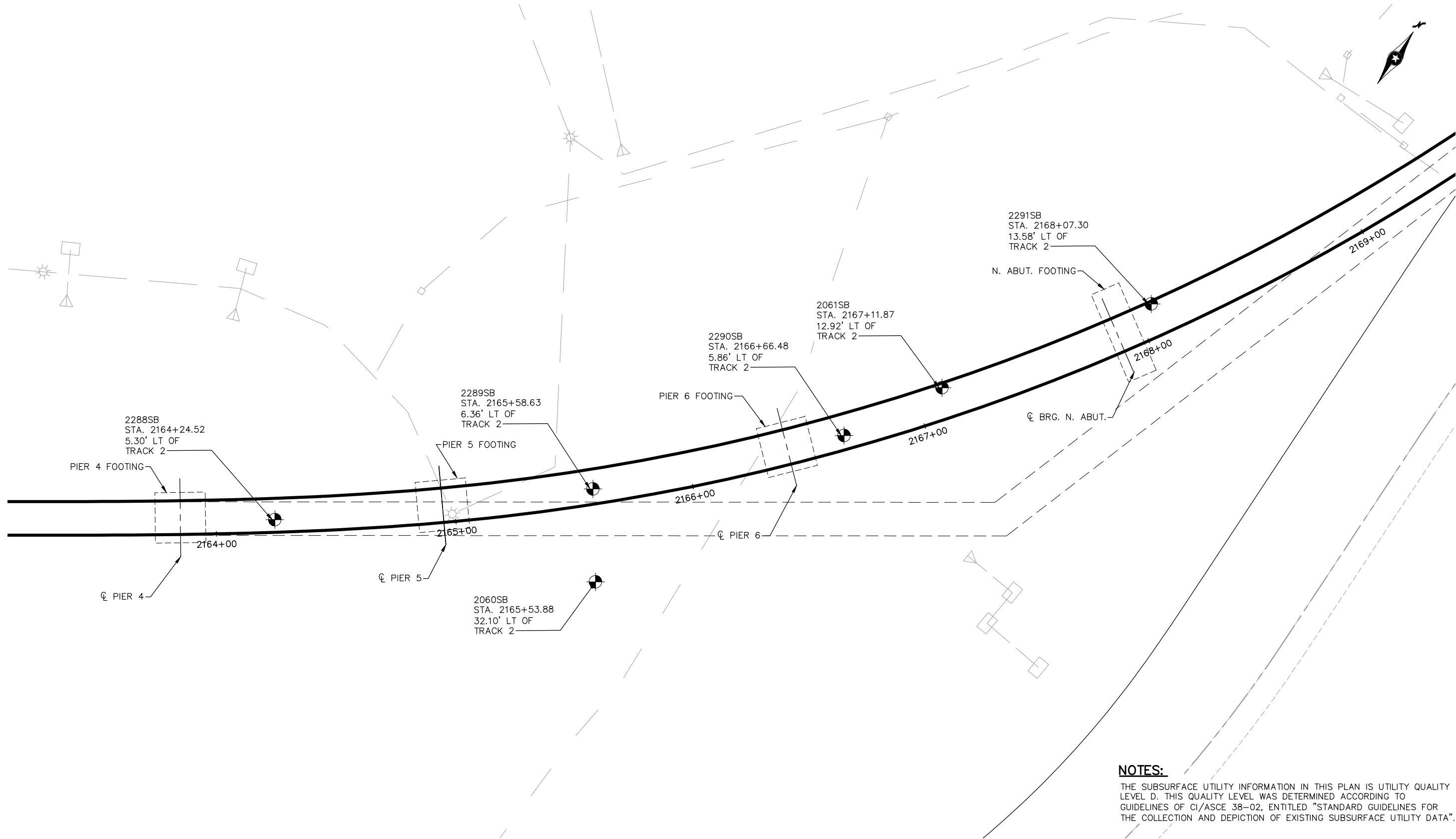
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A VALLEY VIEW ROAD BRIDGE 27R33 BRIDGE SURVEY PLAN (SHEET 1)	
DISCIPLINE: STRUCTURES	SHEET NAME: W1-STU-BRG-FCVV-SUR4-1

SHEET
34
OF
37

Sep. 09 2015 05:00 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\32-33_W1-STU-BRG-FCVV-SUR4.dwg By: macke



NOTES:
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DESIGNED BY:	ECM	CHECKED BY:	APV
DRAWN BY:	KHN	DATE:	8/24/2015

AECOM

**PARSONS
BRINCKERHOFF**

60% SUBMISSION - 9/28/15

**METROPOLITAN
COUNCIL**

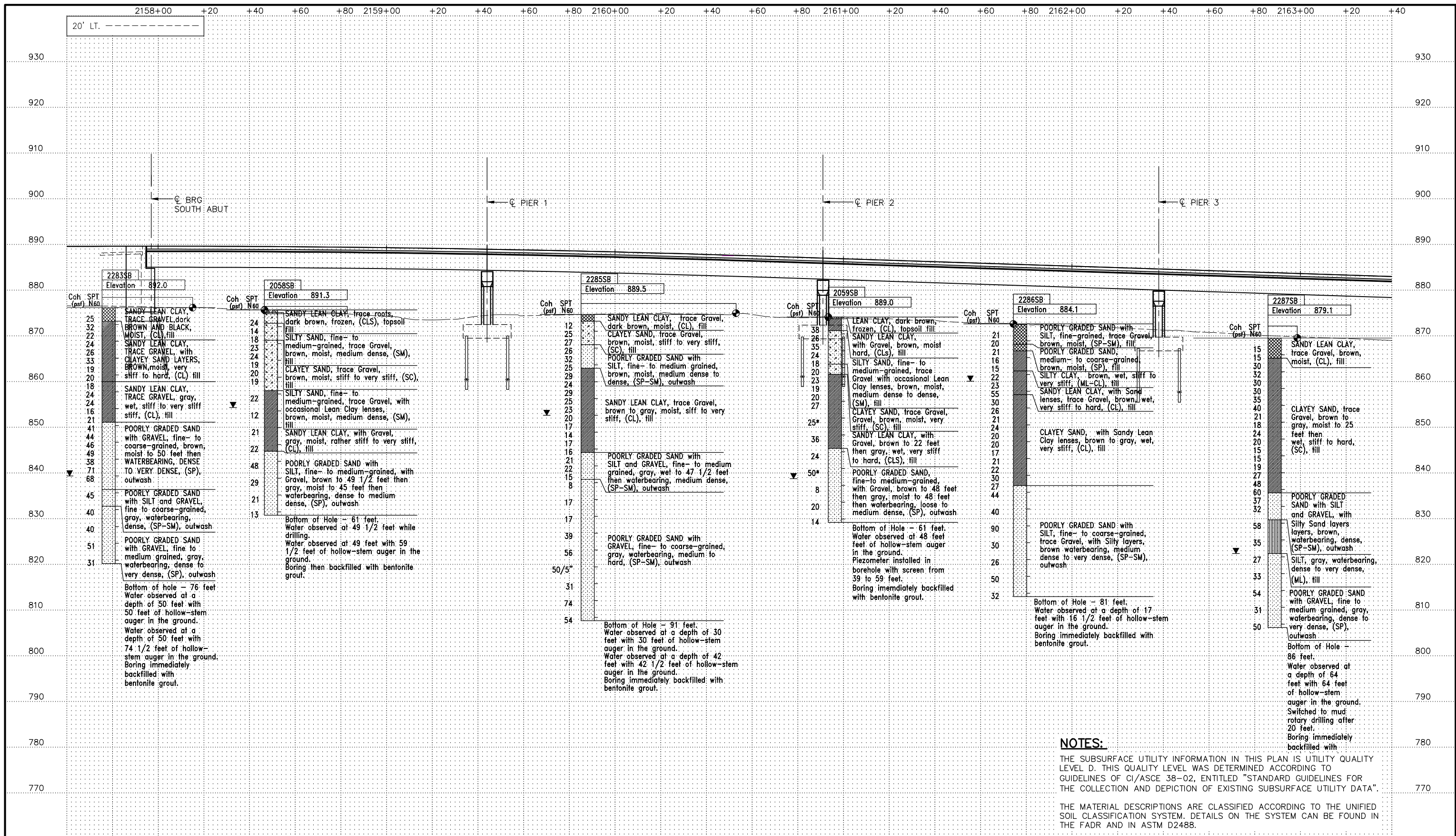
**SOUTHWEST**
Green Line LRT Extension

**CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PLAN (SHEET 2)**

DISCIPLINE: **STRUCTURES**

SHEET NAME: **W1-STU-BRG-FCVV-SUR4-2**

Sep, 09 2015 05:01 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\34-35_W1-STU-BRG-FCVV-SUR5.dwg By: macke



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM D2488.

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DESIGNED BY: ECM	CHECKED BY: APV
DRAWN BY: KHN	DATE: 8/24/2015

AECOM
PARSONS
BRINCKERHOFF

60% SUBMISSION - 9/28/15

METROPOLITAN
Green Line LRT Extension

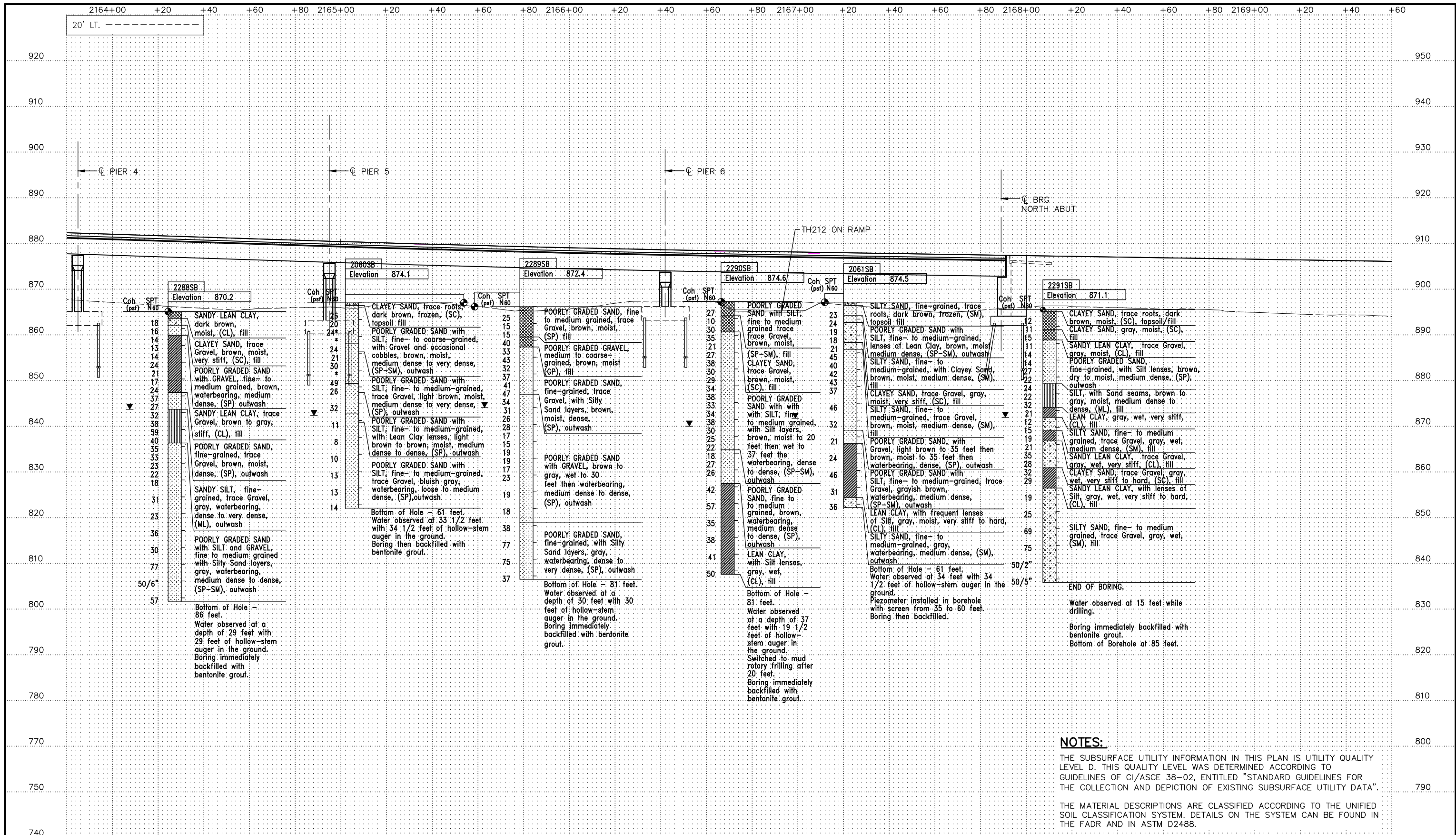
SOUTHWEST

CIVIL WEST - VOLUME 4A
VALLEY VIEW ROAD
BRIDGE 27R33
BRIDGE SURVEY PROFILE (SHEET 1)

DISCIPLINE: STRUCTURES
SHEET NAME: W1-STU-BRG-FCVV-SUR5-1

SHEET 36 OF 37

Sep. 09 2015 05:01 pm V:\19140A_MN_Valley_View_Road_Bridge\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% submittal\34-35_STU-BRG-FCVV-SUR5.dwg By: macke



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM D2488.

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DESIGNED BY: ECM	CHECKED BY: APV
DRAWN BY: KHN	DATE: 8/24/2015





60% SUBMISSION - 9/28/15

CIVIL WEST - VOLUME 4A

VALLEY VIEW ROAD

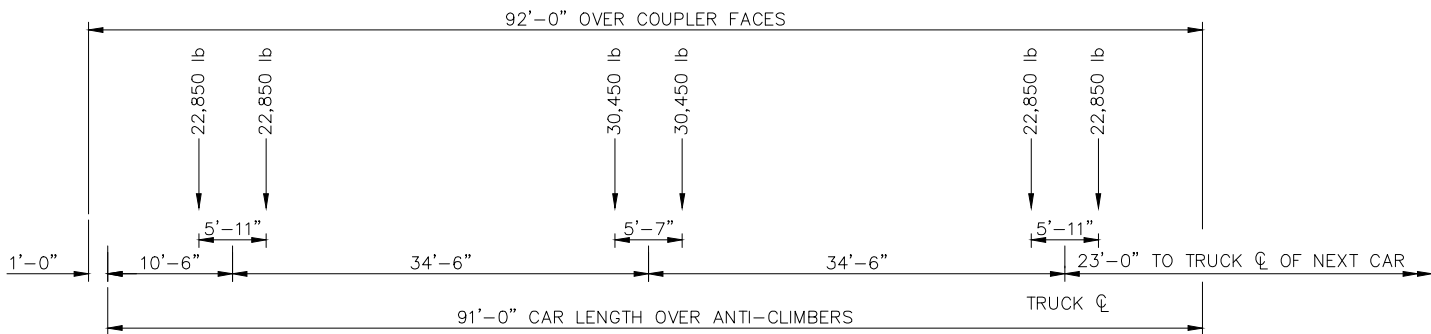
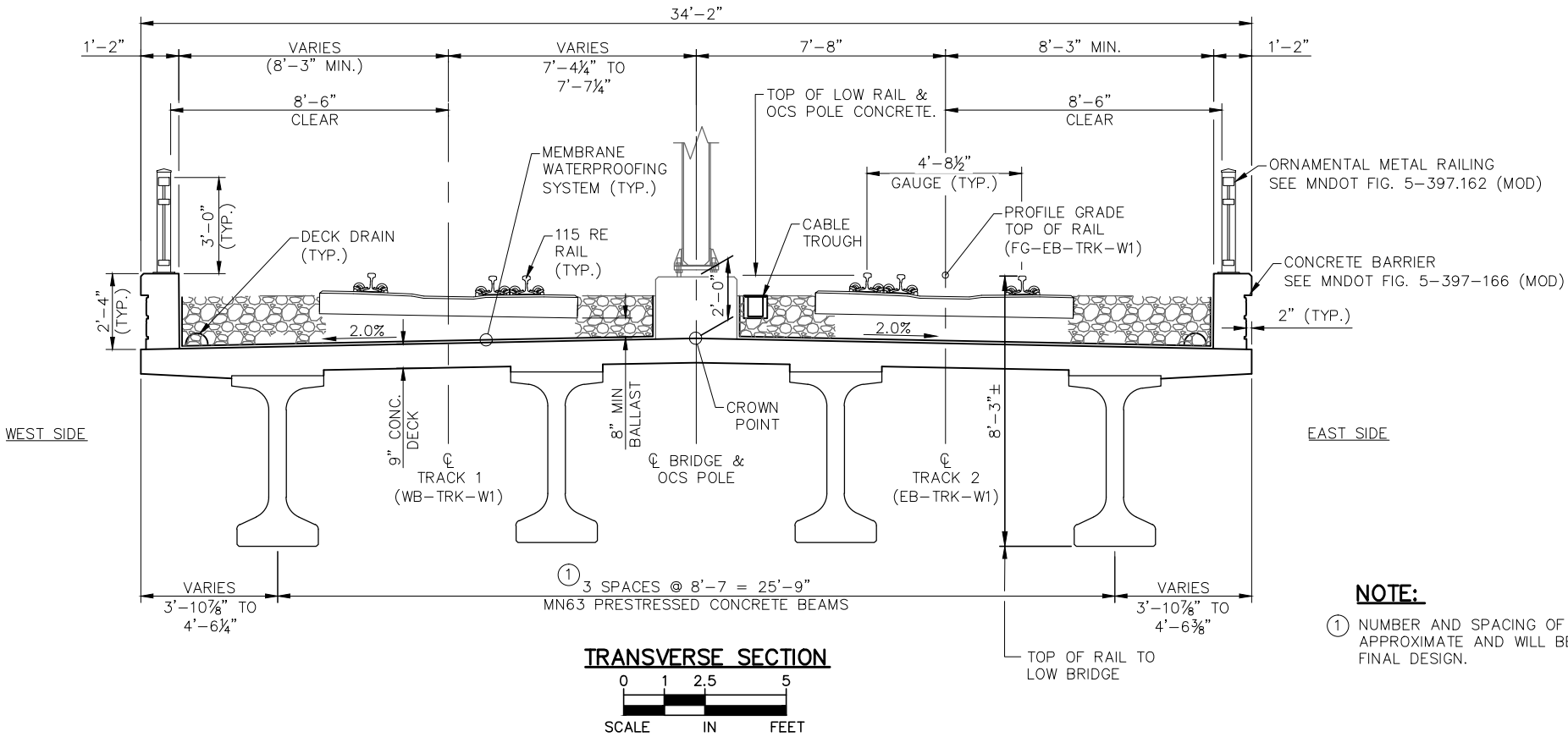
BRIDGE 27R33

BRIDGE SURVEY PROFILE (SHEET 2)

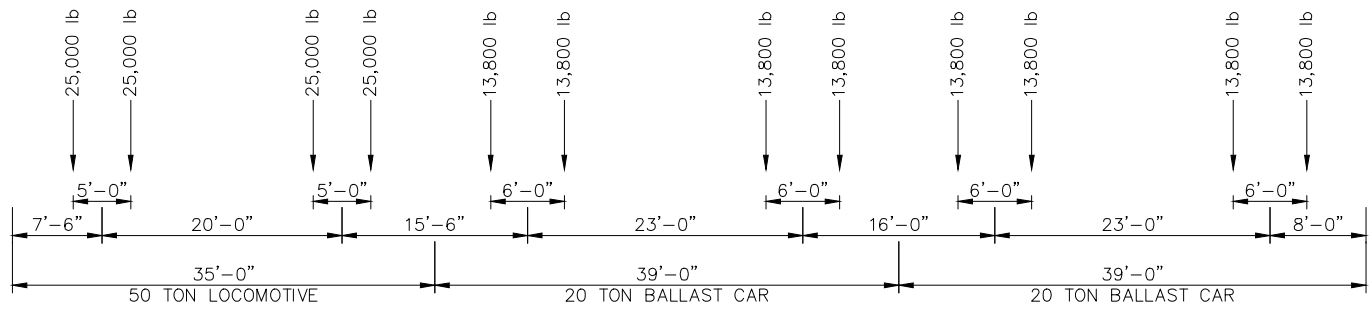
DISCIPLINE: STRUCTURES

SHEET NAME: W1-STU-BRG-FCVV-SUR5-2

SHEET 37 OF 37

[illegible]

LIGHT RAIL VEHICLE LOADING DIAGRAM



MAINTENANCE TRAIN LOADING DIAGRAM


NOTES:



1. THE LRV TRAIN SHALL CONSIST OF EITHER ONE, TWO OR THREE CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
2. AXLE LOAD IN POUNDS.
3. LOADING DIAGRAM REPRESENTS MAXIMUM LOAD AT EACH TRUCK IN ACCORDANCE WITH SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA (REVISION 4.0) FIGURE 8-2.

NOTES:

1. THE MAINTENANCE TRAIN SHALL CONSIST OF ONE LOCOMOTIVE AND ONE, TWO, THREE, OR FOUR BALLAST CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
2. AXLE LOAD IN POUNDS.
3. WEIGHT OF EMPTY BALLAST CAR IS 15,000 POUNDS.

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DESIGNED BY: AK/IGG CHECKED BY: TR					
DRAWN BY: MJK DATE: 9/21/15					



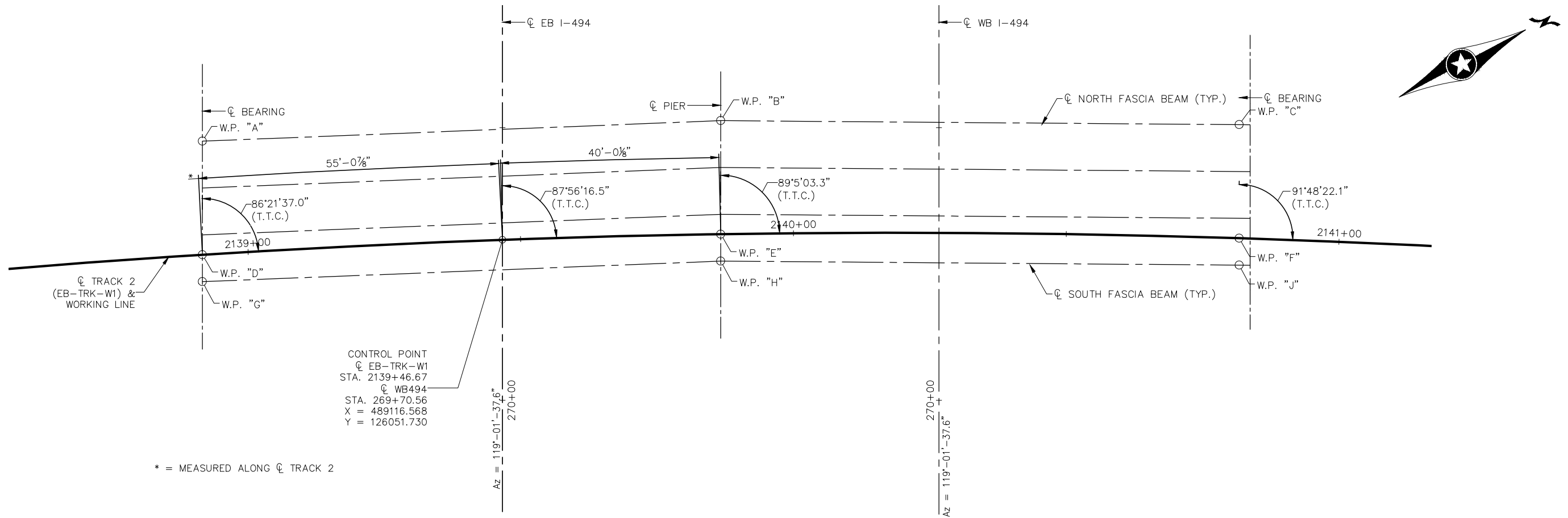


CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
TRANSVERSE SECTION & LOADING DIAGRAM

DISCIPLINE: STRUCTURES SHEET NAME: CBR27W32-BRG-GPE-002

SHEET
2
OF
29

Sep. 21 2015 09:43 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-WPTS.dwg By: Kntieremm

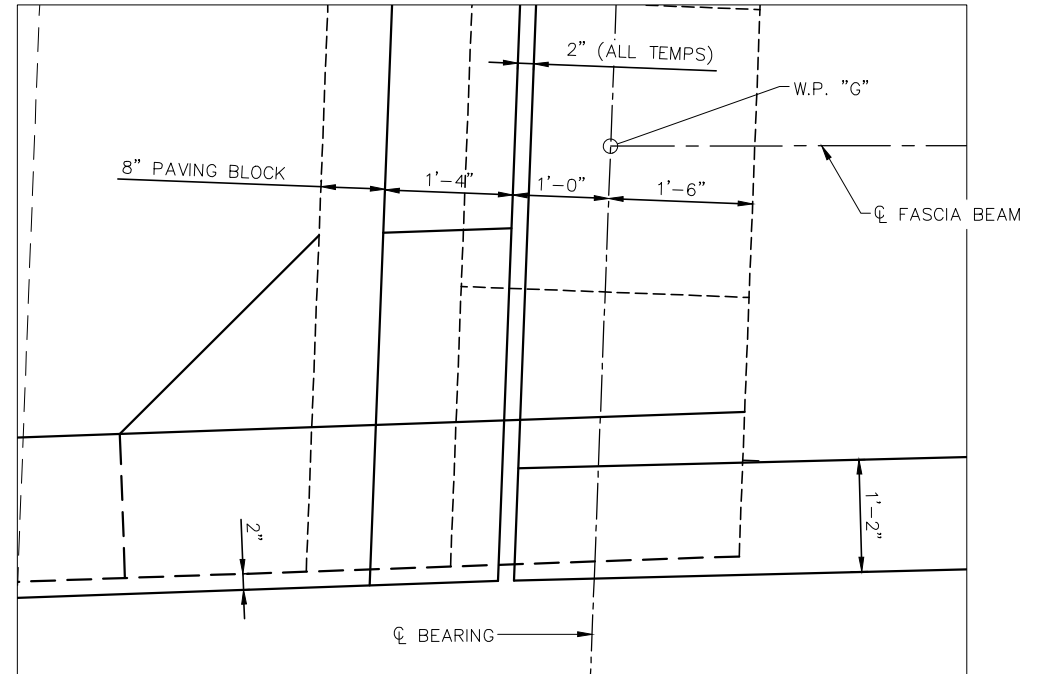


* = MEASURED ALONG CL TRACK 2

WORKING POINT LAYOUT

DIMENSIONS BETWEEN WORKING POINTS													ELEVATIONS			
POINT	STATION	X-COORDINATE	Y-COORDINATE	A	B	C	D	E	F	G	H	J	TOP OF DECK	TOP OF DECK TO BR. SEAT	BRIDGE SEAT	POINT
A	2138+92.92	489074.072	126012.411		95.07	190.02	20.82	96.52	190.83		97.52	191.35	906.38	6.72	899.66	A
B	2139+87.02	489116.876	126097.305			95.00	98.13	20.80	97.41	99.48		98.62	909.73	6.60	903.13	B
C	2140+81.06	489163.616	126179.015				191.49	97.10	20.81	192.17	98.24		911.99	6.72	905.27	C
D	2138+91.61	489092.276	126002.309					95.07	190.02	4.93	95.01	190.01				D
E	2139+86.69	489135.068	126087.210						95.00	95.40	4.95	95.17				E
F	2140+81.70	489181.810	126169.919							190.17	95.09	4.94				F
G	2138+91.24	489096.588	125999.916								95.07	190.02	906.32	6.72	899.60	G
H	2139+86.64	489139.392	126084.810									95.00	909.73	6.60	903.13	H
I	2140+81.80	489186.131	126167.520										912.01	6.72	905.29	I

TOP OF DECK TO BRIDGE SEAT						
	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL	
					INCHES	FEET
W. ABUT.	9"	4"	63"	4 5/8"	80 5/8"	6.72'
PIER	9"	4"	63"	3 1/4"	79 1/4"	6.60'
E. ABUT.	9"	4"	63"	4 5/8"	80 5/8"	6.72'



CORNER DETAIL

SE SHOWN (OTHERS SIMILAR)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15

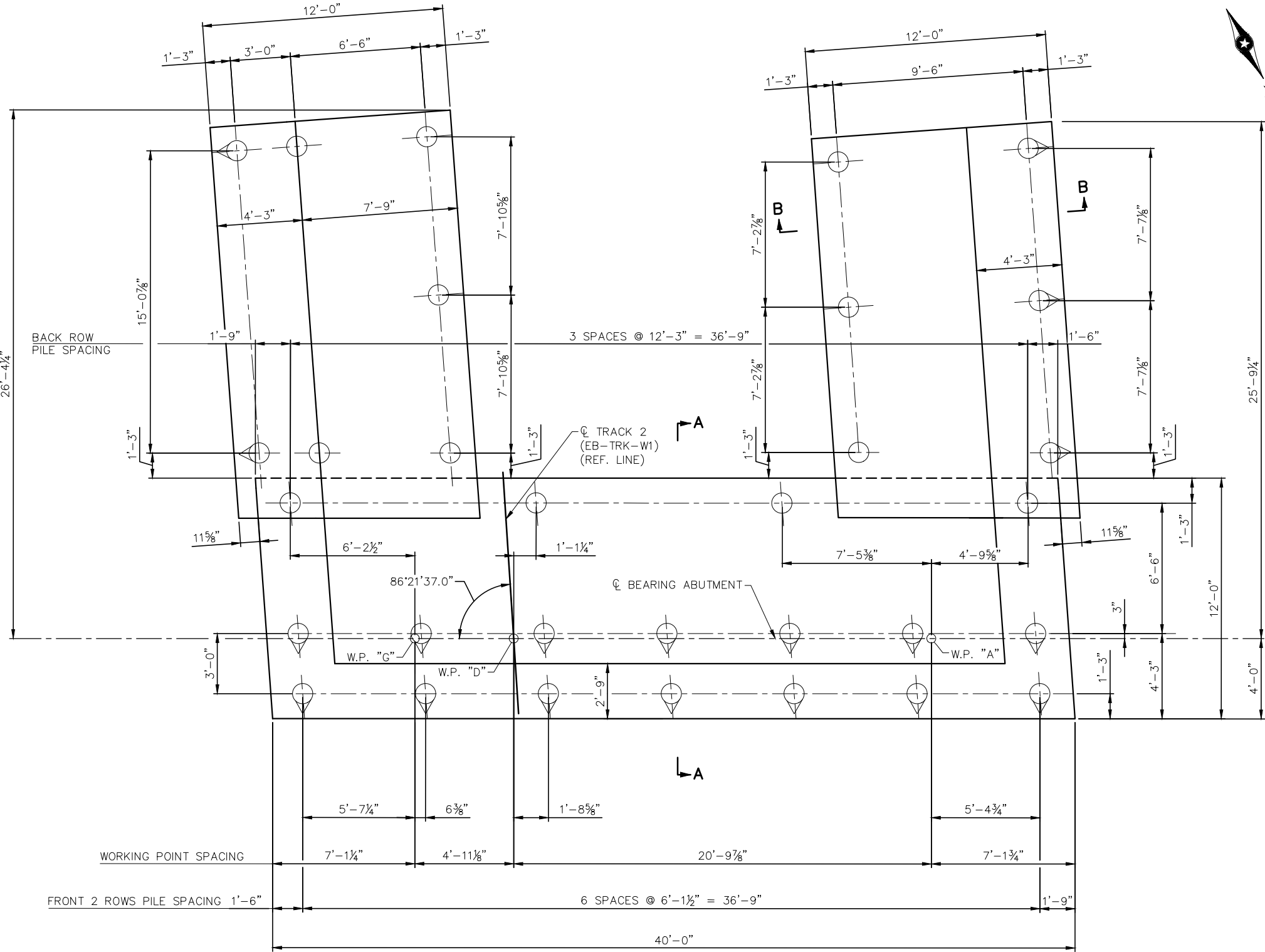


CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE LAYOUT

DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27W32-BRG-WPTS

SHEET
3
OF
29

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FOOTING PLAN


NOTES

FOR SECTIONS A-A AND B-B SEE SHEET ABUT-004.

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 40 FT. LONG
- 30 CAST-IN-PLACE CONC. PILES EST. LENGTH X FT.
- 32 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS  TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

WEST ABUTMENT
REQUIRED NOMINAL PILE BEARING
RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	215
PDA	0.65	350

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

WEST ABUTMENT
COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	123.9
FACTORED LIVE LOAD	11.9
FACTORED TOTAL LOAD	135.8
* DESIGN LOAD	135.8

* $\frac{135.8}{1.69} = 80.3$

1.69 AVERAGE LOAD FACTOR FOR STRENGTH I LOAD COMBINATION DESIGN LOAD PER AASHTO 17TH ED., TABLE 3.22.1A.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
WEST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-ABUT-001

SHEET
4
OF
29

ARCH. CONC. TEXTURE (CUT STONE)

ARCH. CONC. TEXTURE (ASHLAR STONE)

EL. 904.85

CONSTRUCTION JOINT & 2" X 6" KEYWAY

EL. 905.21

UNIFORM SLOPE

UNIFORM SLOPE

EL. 899.60

EL. 899.79

EL. 899.80

EL. 899.66

EL. 899.43

2" X 1'-0" COPING

CONSTRUCTION JOINT & 2" X 6" KEYWAY

1'-0"

ARCH. CONC. TEXTURE (ASHLAR STONE)

APPROX. FINISHED GROUNDLINE

2'-4"

CONSTRUCTION JOINT

LOWER LIMITS OF ARCH. CONC. TEXTURE

EL. 904.95

EL. 890.25

EL. 887.50

EL. 885.75

EL. 882.00

2'-9"




1'-9"

3'-9"

13'-8 3/8"

ELEVATION VIEW

NOTES
FOR SECTION A-A SEE SHEET ABUT-004.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL		 	CIVIL WEST - VOLUME 4A BRIDGE OVER I-494 BRIDGE 27W32 WEST ABUTMENT DETAILS 2		SHEET 5 OF 29	
								60% SUBMISSION - 9/28/15	DISCIPLINE: STRUCTURES	SHEET NAME: CBR27W32-BRG-ABUT-002	
<div>DESIGNED BY: AK/IGG CHECKED BY: TR</div> <div>DRAWN BY: MJK DATE: 9/21/15</div>											



FOR SECTION B-B SEE SHEET ABUT-004.

DESIGNED BY: AK/JGG		CHECKED BY: TR
DRAWN BY: MJK		DATE: 9/21/15

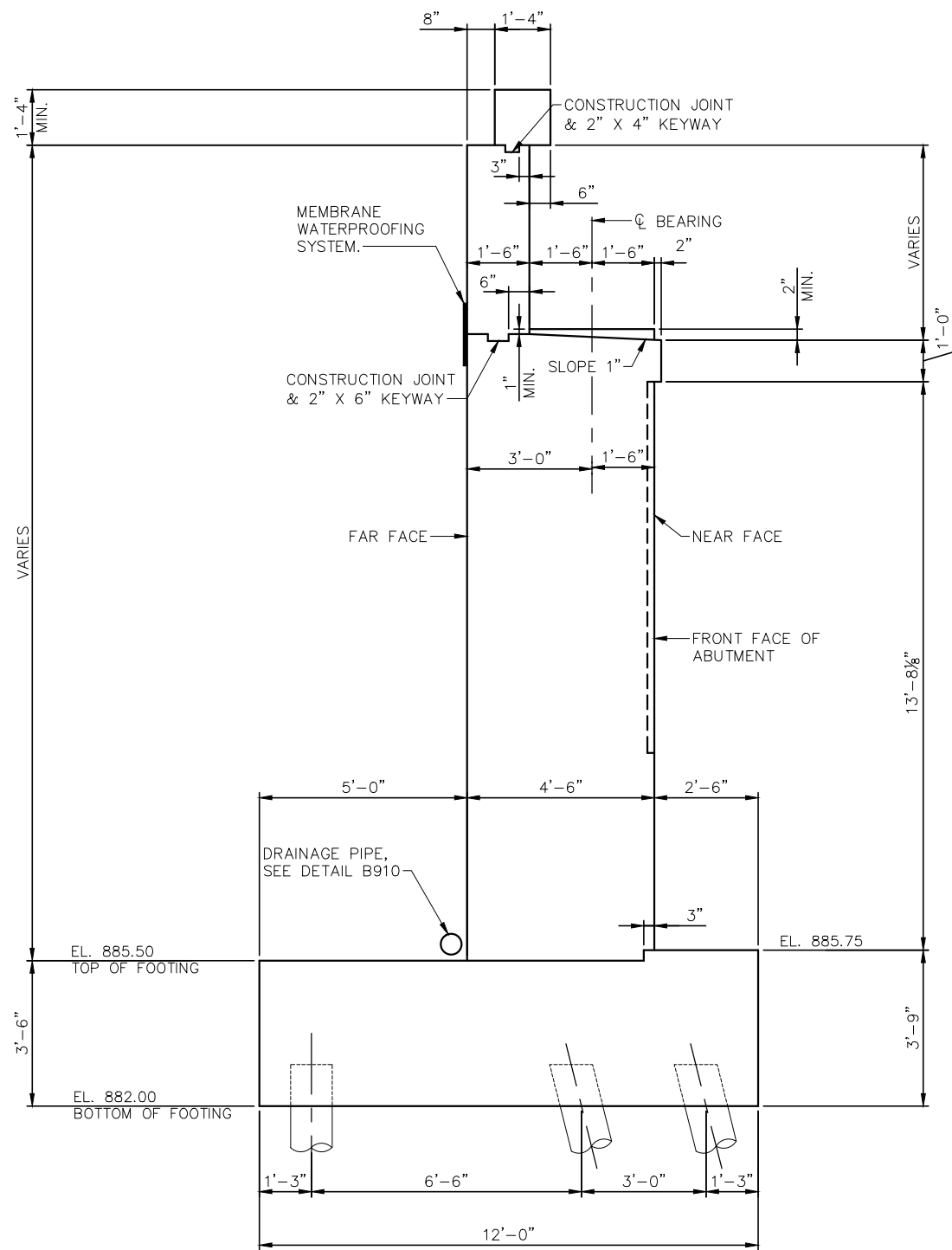
60% SUBMISSION - 9/28/15



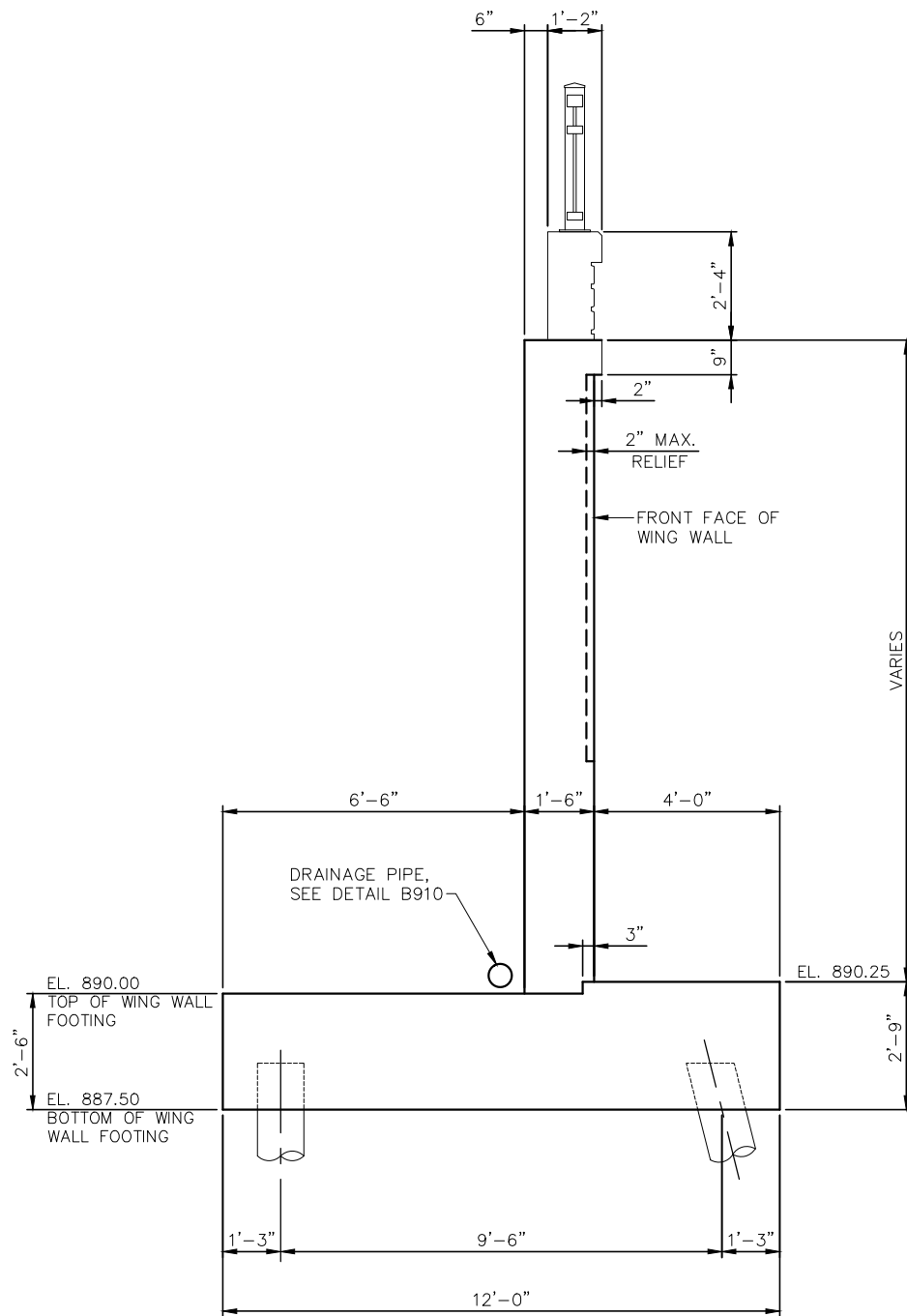
STRUCTURES

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SECTION A-A
WEST ABUTMENT



SECTION B-B
WEST WINGWALL

NOTES:

FOR ARCHITECTURAL DETAILS, SEE SHEET BRG-ARCH
FOR PILE LOADS, SEE SHEET ABUT-001

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DESIGNED BY:	AK/IGG	CHECKED BY:	TR
DRAWN BY:	MJK	DATE:	9/21/15

AECOM

60% SUBMISSION - 9/28/15



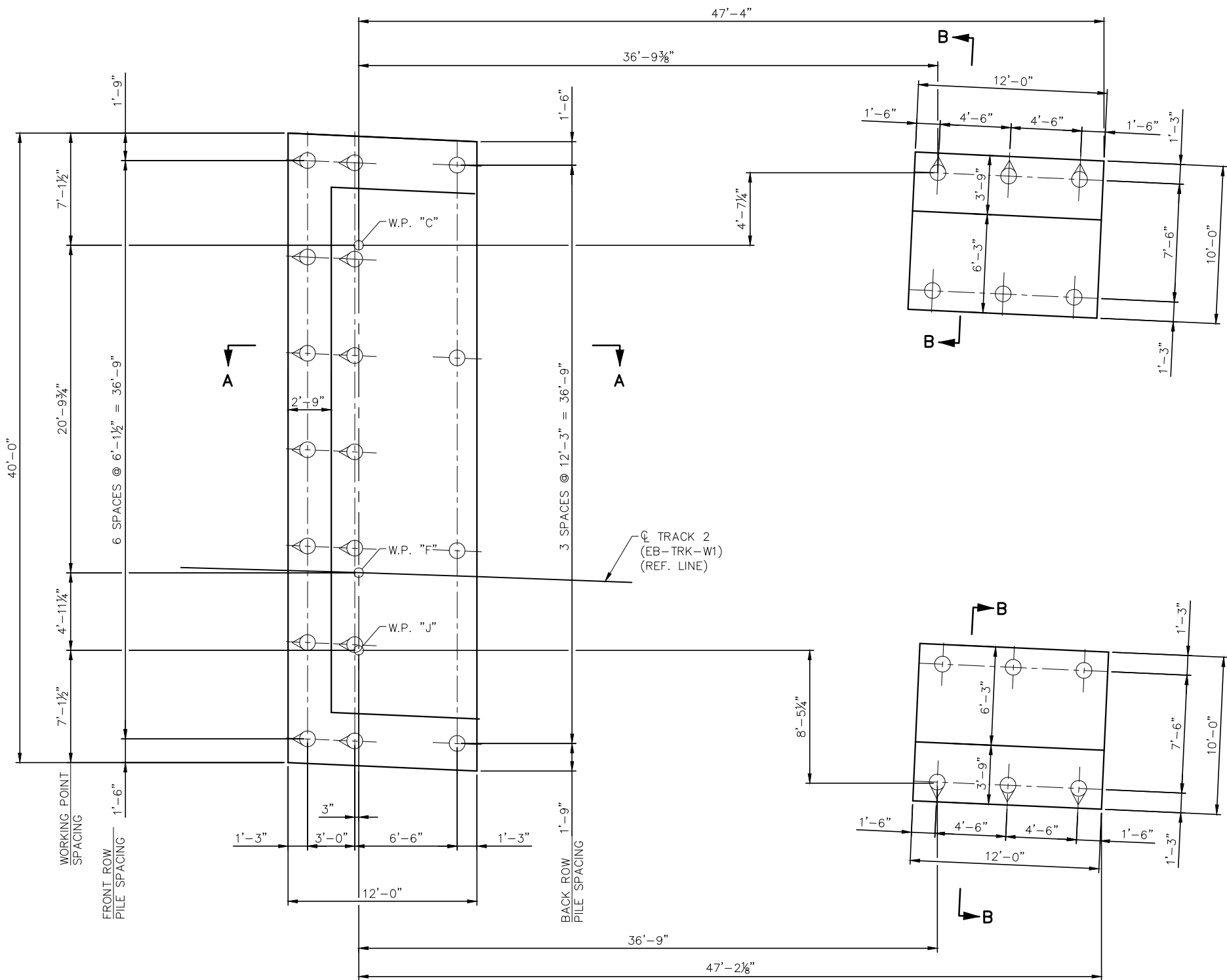
**CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
WEST ABUTMENT DETAILS 4**

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27W32-BRG-ABUT-004

**SHEET
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FOOTING PLAN




NOTES

FOR SECTIONS A-A AND B-B SEE SHEET ABUT-015.

PILE NOTES

- 2 CAST-IN-PLACE CONC. TEST PILE 45 FT. LONG
- 28 CAST-IN-PLACE CONC. PILES EST. LENGTH 35 FT.
- 30 CAST-IN-PLACE CONC. PILES REQ'D FOR WEST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

PILES MARKED THUS  TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

PILES TO HAVE A NOMINAL DIAMETER OF 12"

FOR PILE SPLICE DETAILS SEE DETAIL B201.

EAST ABUTMENT
REQUIRED NOMINAL PILE BEARING
RESISTANCE R_n — TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	215
PDA	0.65	350

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

EAST ABUTMENT
COMPUTED PILE LOAD — TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	123.9
FACTORED LIVE LOAD	11.9
FACTORED TOTAL LOAD	135.8
* DESIGN LOAD	95.4

* $\frac{135.8}{1.42} = 95.4$

1.42 AVERAGE LOAD FACTOR FOR STRENGTH I LOAD COMBINATION DESIGN LOAD PER AASHTO 17TH ED., TABLE 3.22.1A.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15



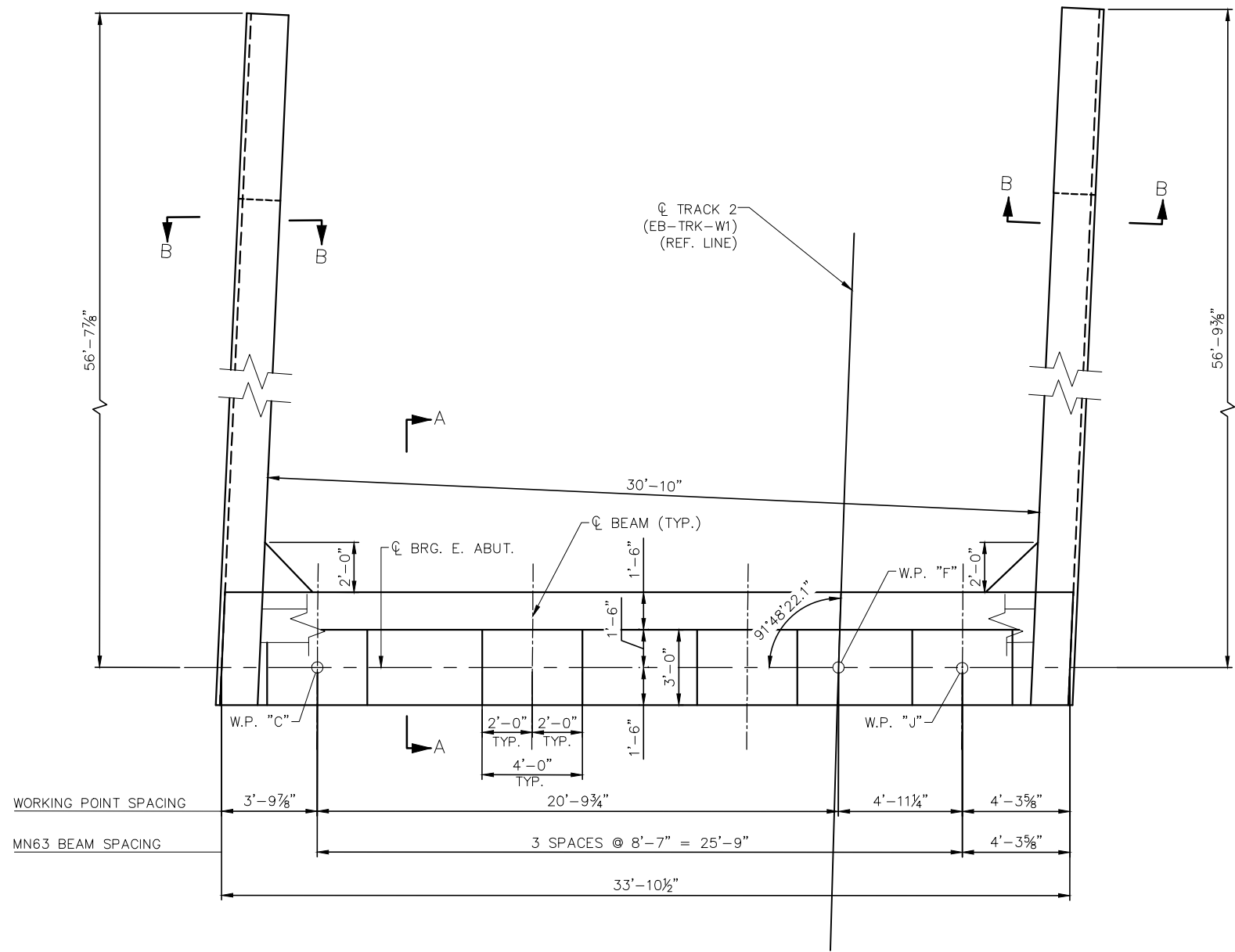
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
EAST ABUTMENT DETAILS 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32-BRG-ABUT-011

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PLAN VIEW

NOTES
FOR SECTIONS A-A AND B-B SEE SHEET ABUT-015.

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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

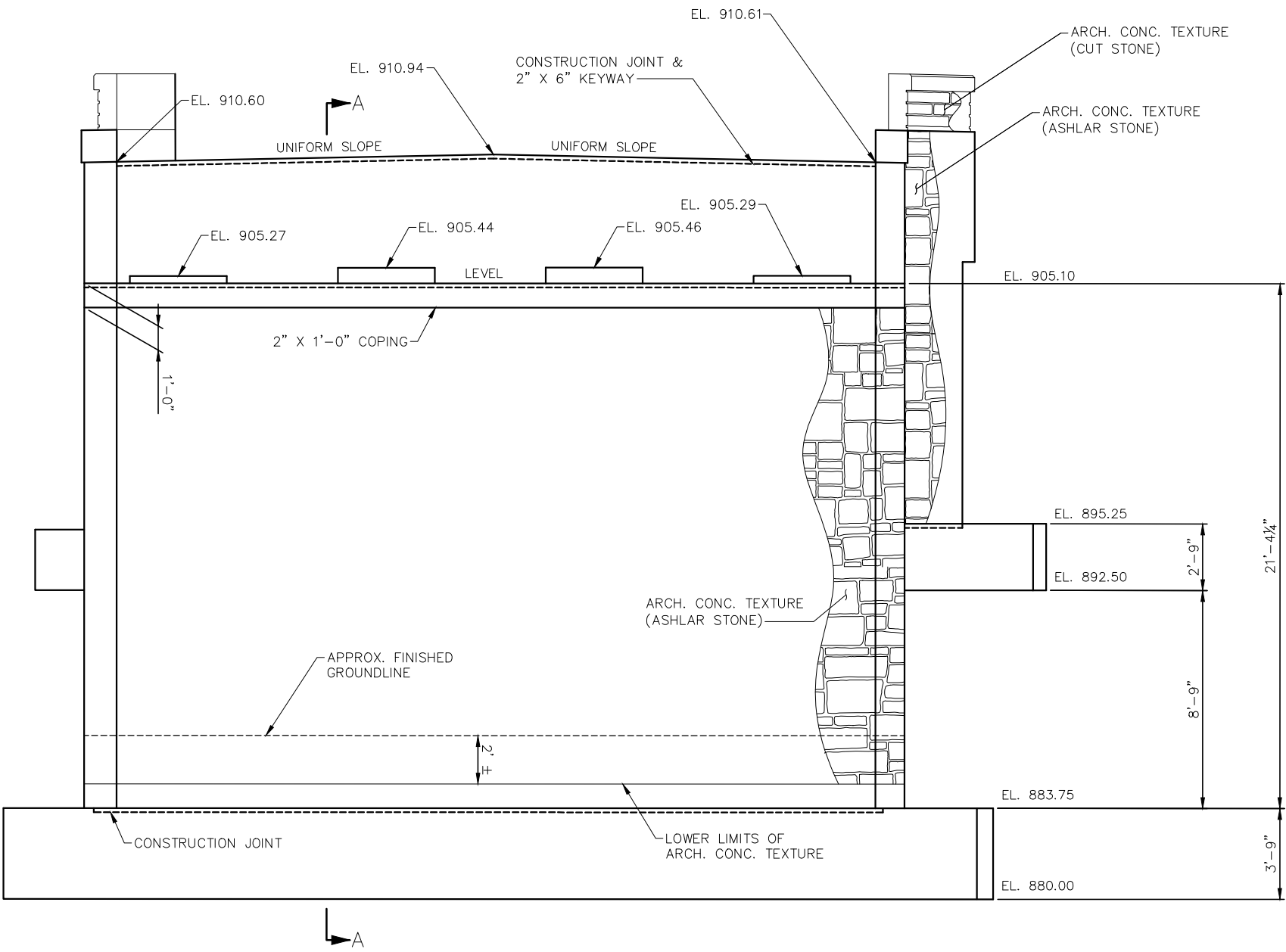


60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A BRIDGE OVER I-494 BRIDGE 27W32 EAST ABUTMENT DETAILS 2	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27W32-BRG-ABUT-012

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ELEVATION VIEW

NOTES
FOR SECTION A-A SEE SHEET ABUT-015.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	AK/IGG	CHECKED BY:	TR
DRAWN BY:	MJK	DATE:	9/21/15



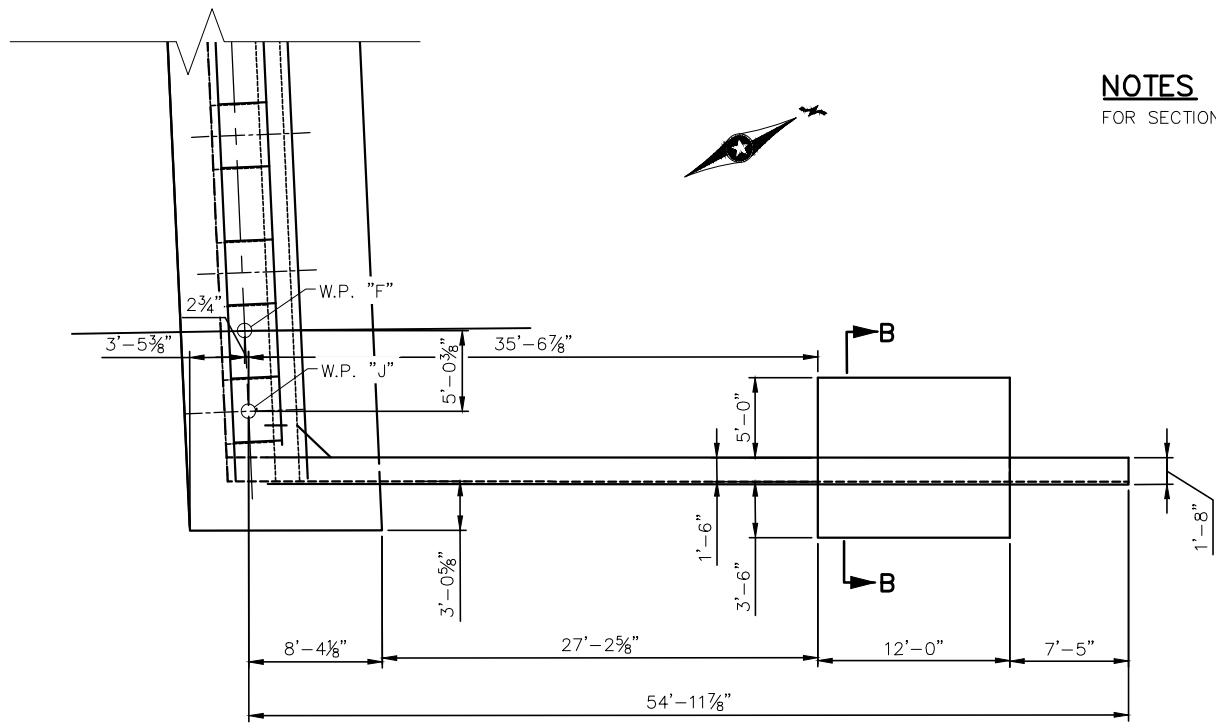
60% SUBMISSION - 9/28/15



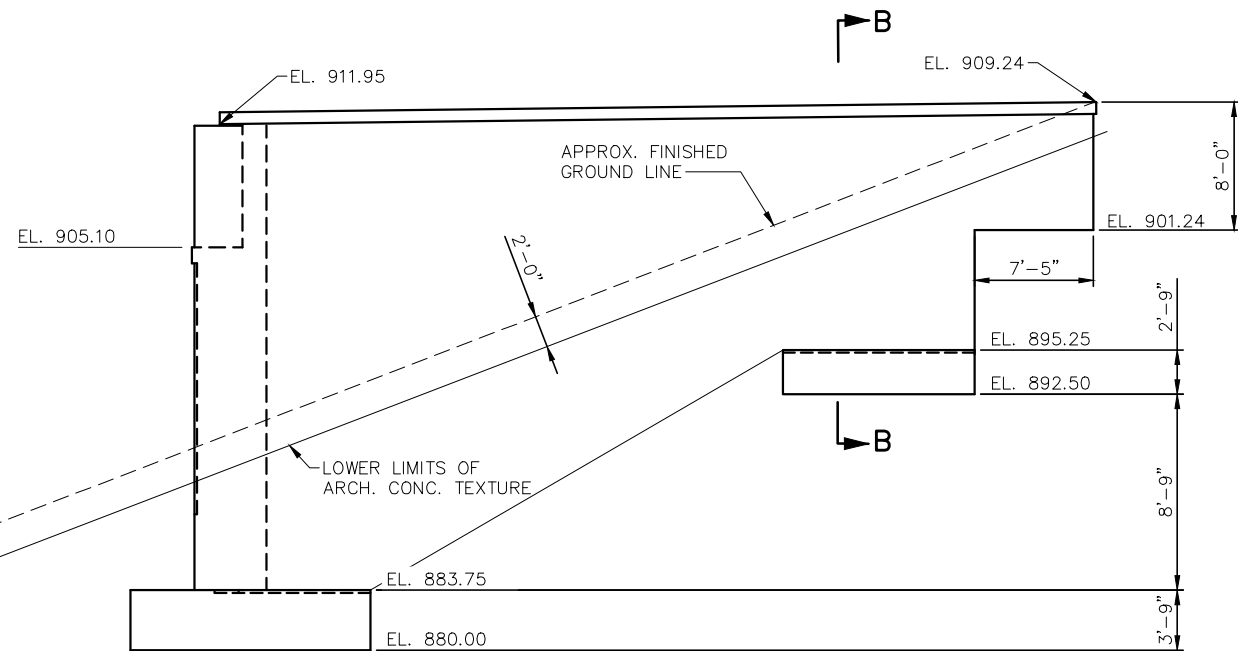
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
EAST ABUTMENT DETAILS 3

DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27W32-BRG-ABUT-013

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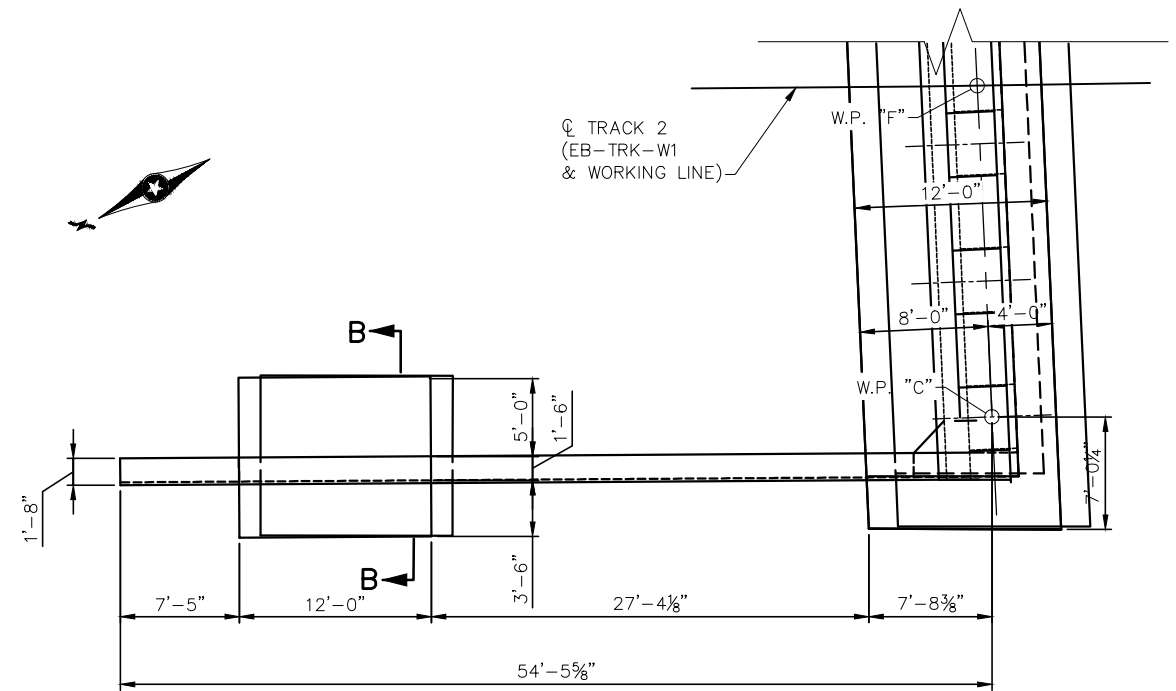
SOUTH WINGWALL PLAN



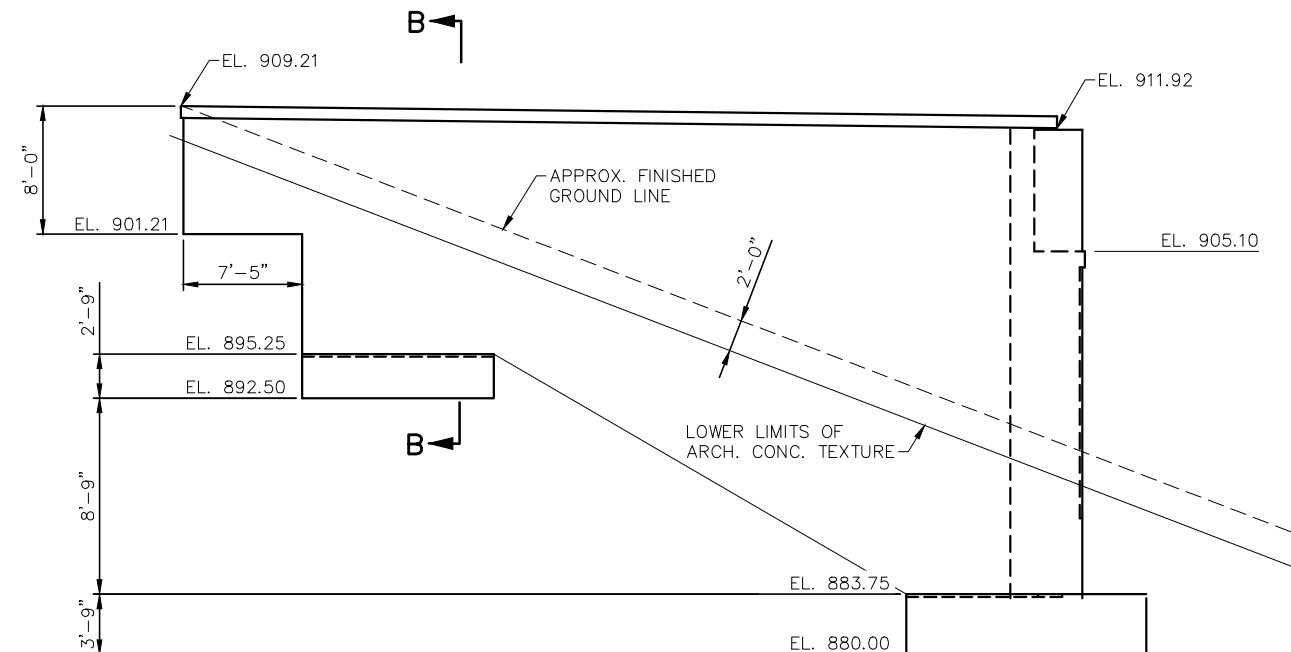
SOUTH WINGWALL ELEVATION

NOTES

FOR SECTION B-B SEE SHEET ABUT-015.



NORTH WINGWALL PLAN



NORTH WINGWALL ELEVATION

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15



**CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
EAST ABUTMENT DETAILS 4**

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27W32-BRG-ABUT-014**

**SHEET
11
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29**

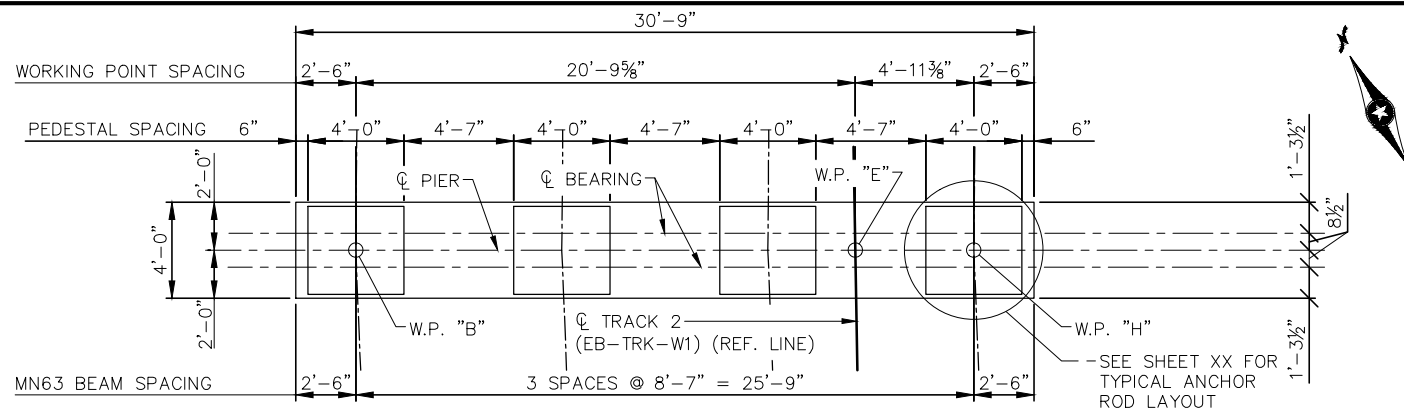
SECTION B-B
EAST WINGWALL

[illegible]

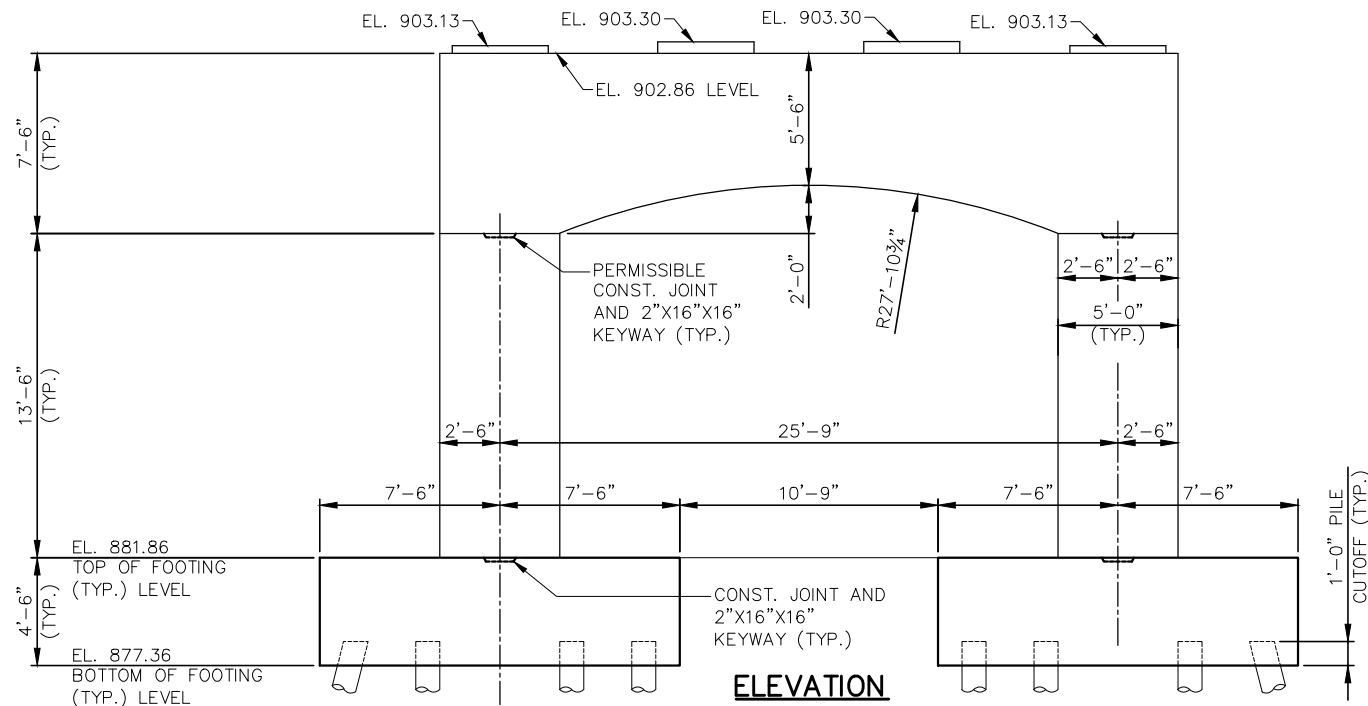
METROPOLITAN
COUNCIL

<p align="center">CIVIL WEST - VOLUME 4A</p> <p align="center">BRIDGE OVER I-494</p> <p align="center">BRIDGE 27W32</p> <p align="center">EAST ABUTMENT DETAILS 5</p>	
<p>DISCIPLINE:</p> <p align="center">STRUCTURES</p>	<p>SHEET NAME:</p> <p align="center">CBR27W32-BRG-ABUT-015</p>

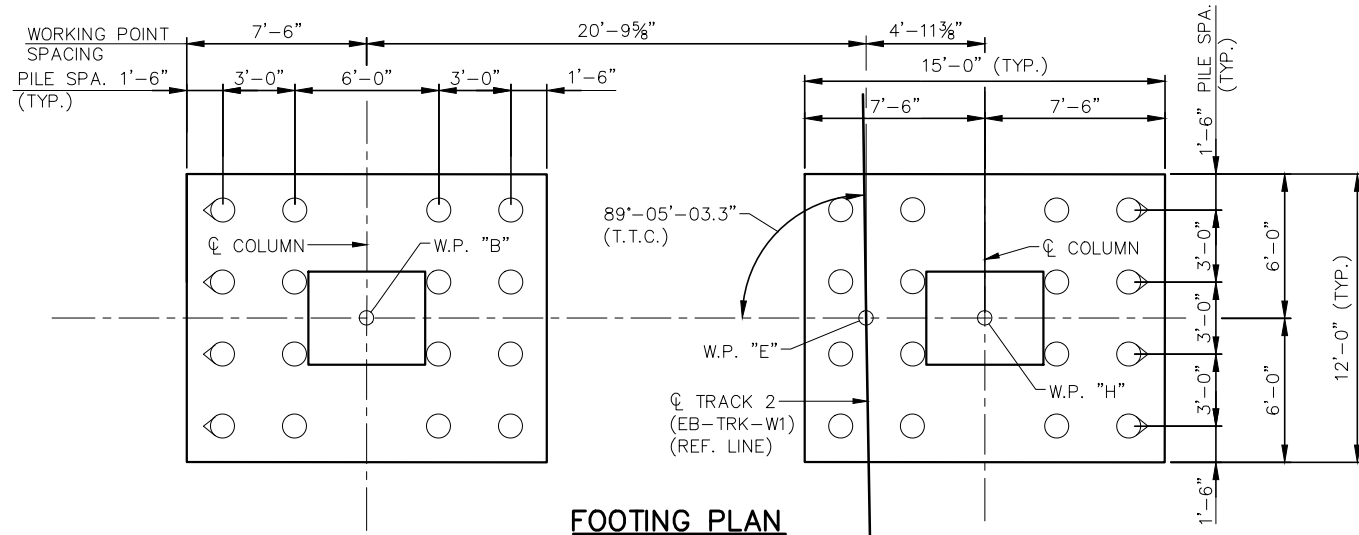
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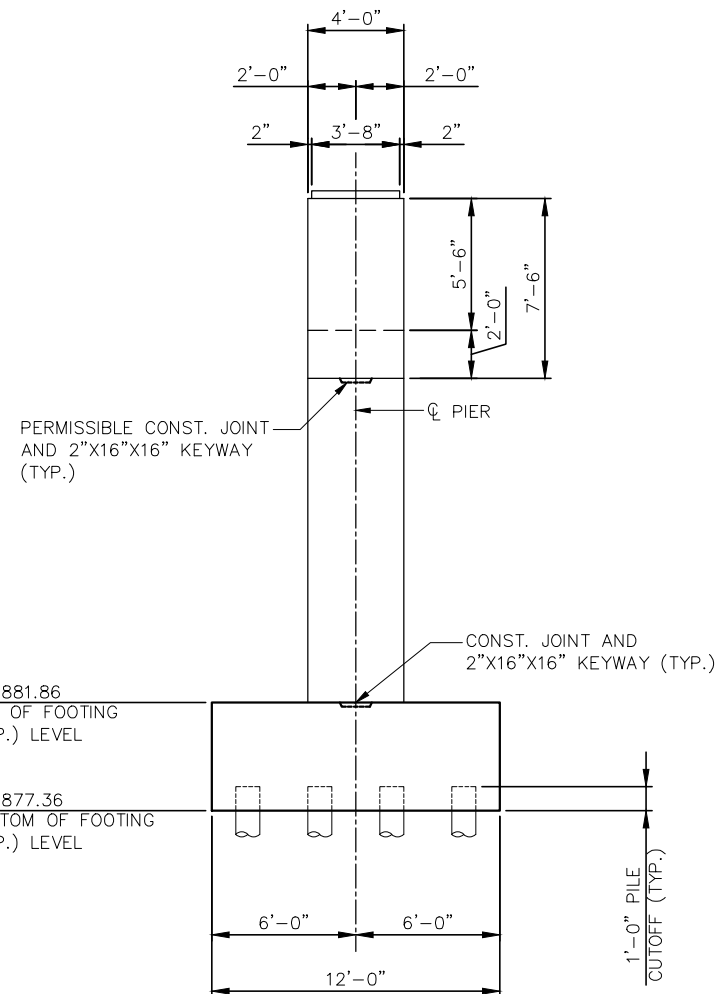
PIER CAP PLAN



ELEVATION



FOOTING PLAN



END VIEW

PIER
REQUIRED NOMINAL PILE BEARING
RESISTANCE R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	* R_n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	215
PDA	0.65	350

* $R_n = (\text{FACTORED DESIGN LOAD}) / \phi_{dyn}$

PIER
COMPUTED PILE LOAD - TONS/PILE


FACTORED DEAD LOAD + EARTH PRESSURE	55.0
FACTORED LIVE LOAD	56.8
FACTORED TOTAL LOAD	5.7
FACTORED TOTAL LOAD	117.5
* DESIGN LOAD	95.4

* $\frac{117.5}{1.30} = 90.4$

1.30 AVERAGE LOAD FACTOR FOR STRENGTH I LOAD COMBINATION DESIGN LOAD PER AASHTO 17TH ED., TABLE 3.22.1A, SERVICE.

NOTES:

FOR ARCHITECTURAL DETAILS, SEE SHEET ARCH.

PILES MARKED THUS  TO BE BATTERED 2" PER FOOT IN DIRECTION SHOWN.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15



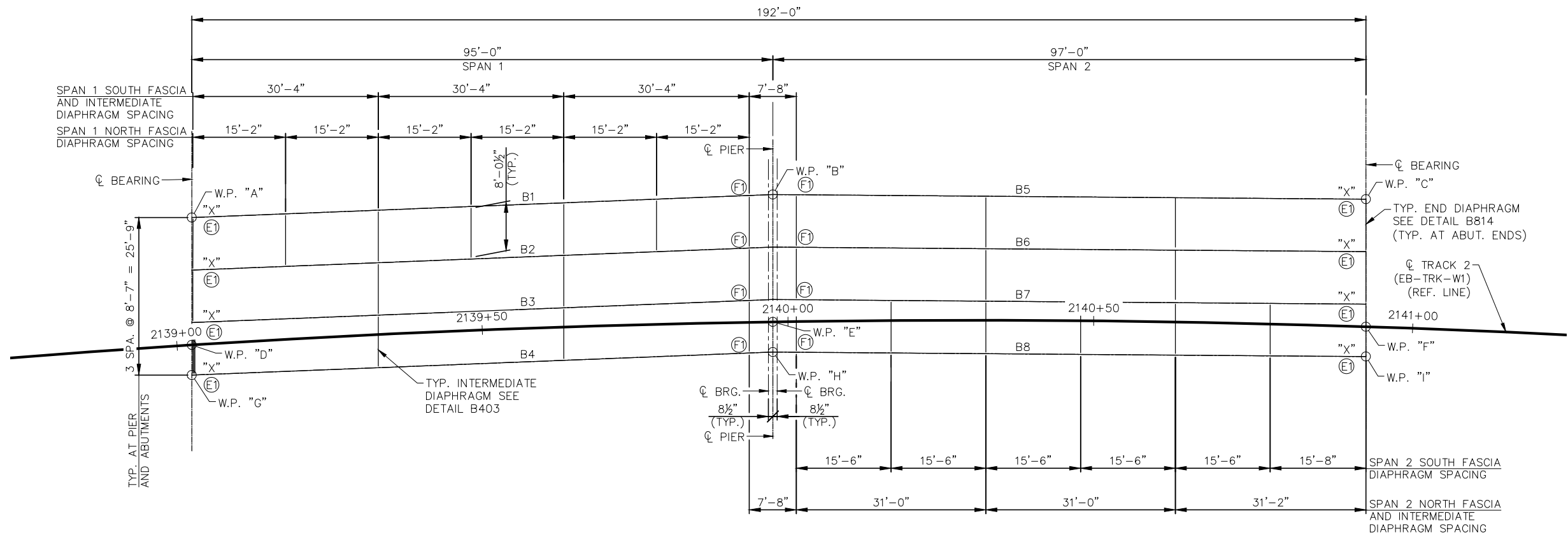
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
PIER DETAILS

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27W32-BRG-PIR-001

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FRAMING PLAN

- NOTES:**
- Ⓔ DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E1. SEE DETAIL B311.
 - Ⓕ DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE F1. SEE DETAIL B310.
 - "X" DENOTES X END OF BEAM.

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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

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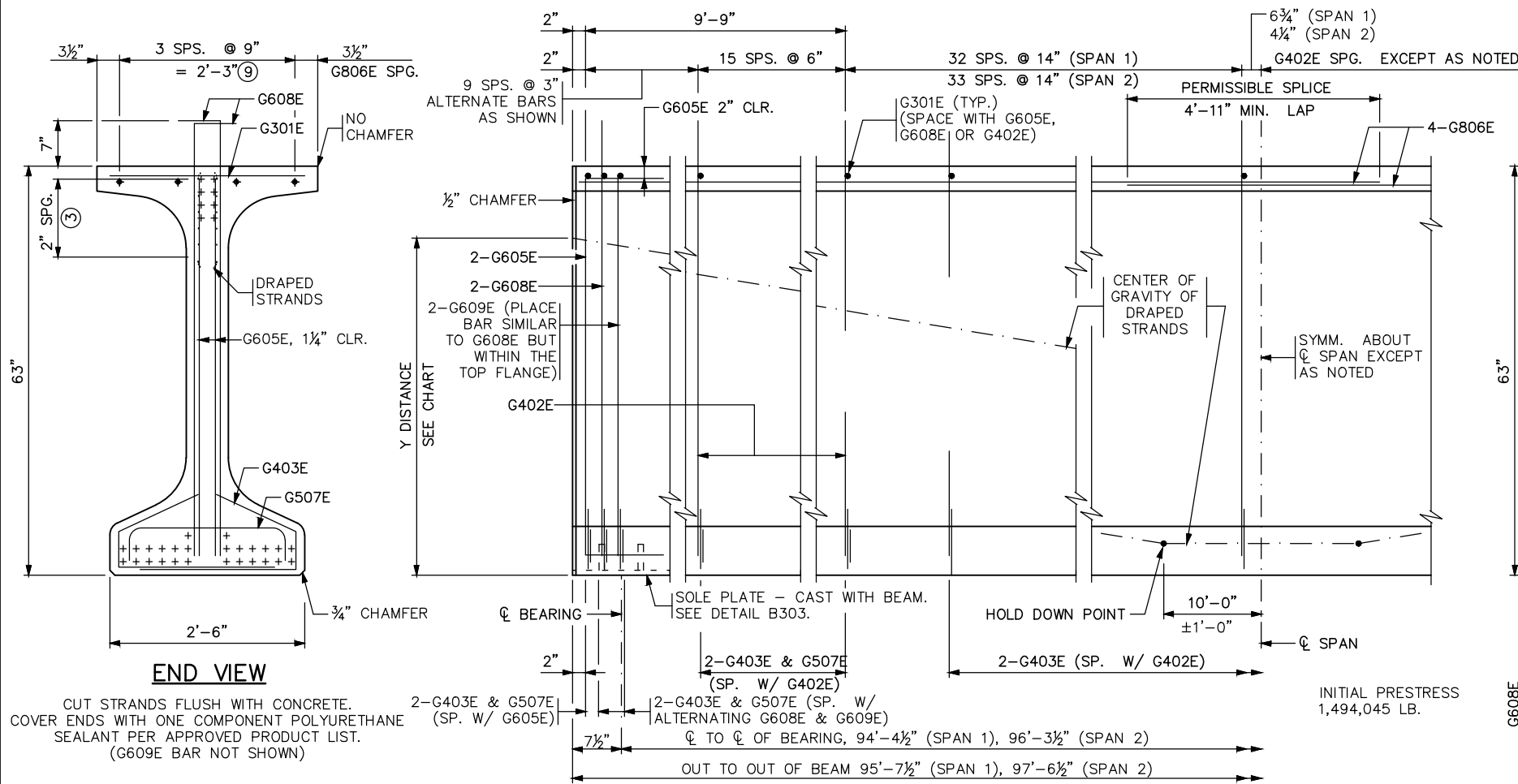
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
FRAMING PLAN

DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27W32-BRG-FRAM-001

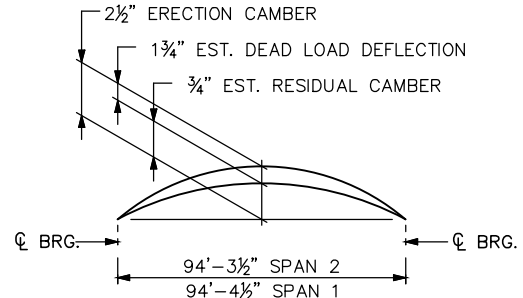
SHEET
14
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29



Y DISTANCES (INCHES)			
	NO.	CL SPAN	END
STRAIGHT STRANDS	26	3.23	
DRAPED STRANDS	8	7	56
TOTAL STRANDS	34	4.17	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

A TOLERANCE OF $\pm 1"$ WILL BE PERMITTED IN THIS DIMENSION.



CAMBER DIAGRAM

ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.

SECTION AT CL SPAN

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILLED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN. ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.

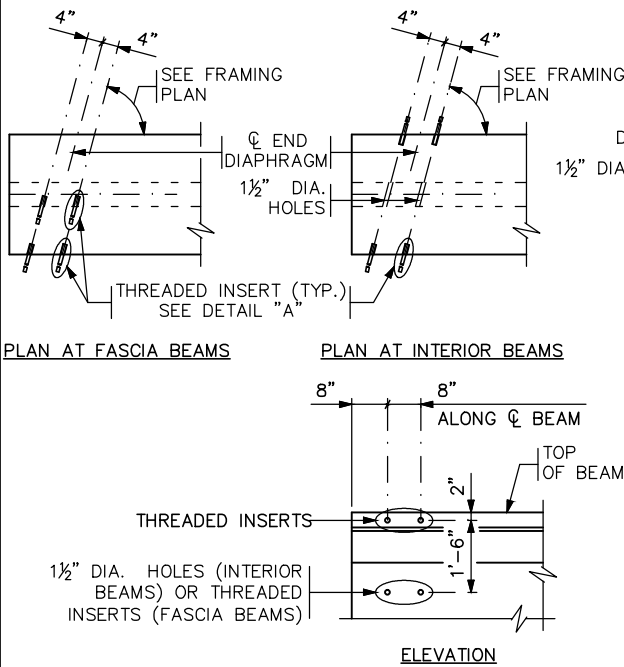
SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

APPROXIMATE WEIGHT OF BEAM IS 41.5 TONS.

AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.

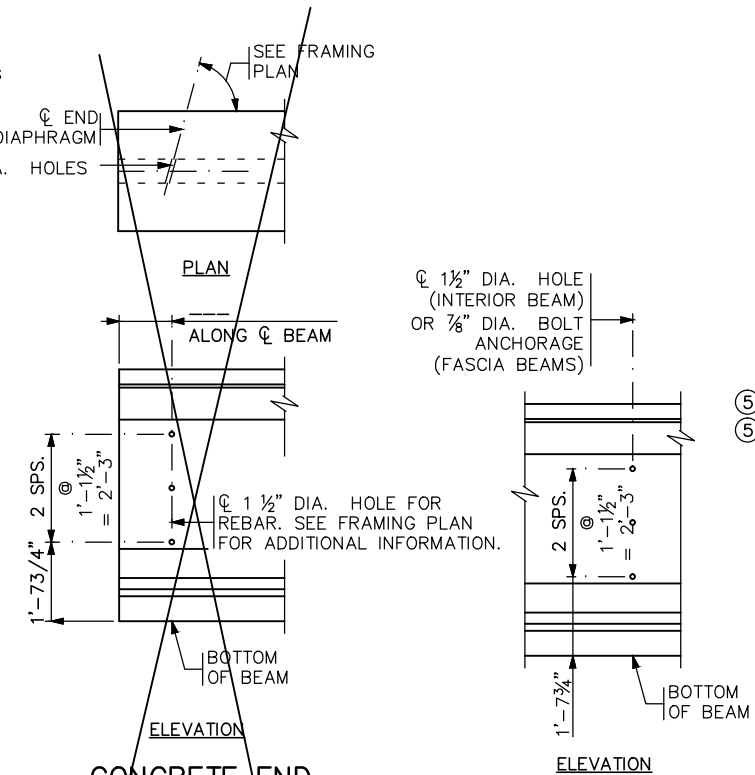
APPLY AN APPROVED SEALER TO THE SIDES OF THE BEAM NEAR EACH END PER THE SPECIAL PROVISIONS.

- MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- DRAPED STRANDS.
- STRAIGHT STRANDS.
- USE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.
- FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
- CENTER OF GRAVITY OF HOLD-DOWNS WHEN MULTIPLE HOLD-DOWNS ARE USED.
- DIMENSION DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.
- TWO INSIDE BARS MAY BE PLACED ADJACENT TO VERTICAL STIRRUP FOR TYING CONVENIENCE.
- STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.
- ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.



CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



CONCRETE END DIAPHRAGM

SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.

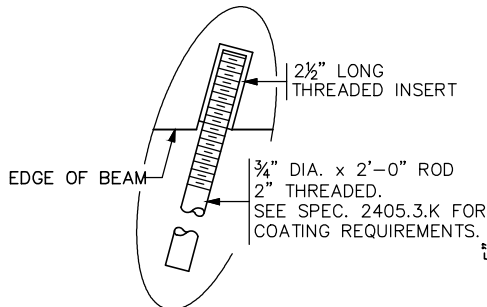
STEEL INTERMEDIATE DIAPHRAGM

(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	19.36 KSI
LONG TERM LOSSES	20.90 KSI
TOTAL LOSSES	40.25 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7 KSI	9 KSI

PRESTRESSING STRAND DIAMETER	
⑤ 1/2"	<input type="checkbox"/>
⑤ 0.60"	<input checked="" type="checkbox"/>



DETAIL "A"

CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: **MN63" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN63-**

BEAMS

DES: **AK/IGG** DR: **MJK**
CHK: **TR** CHK: **TR**

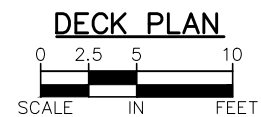
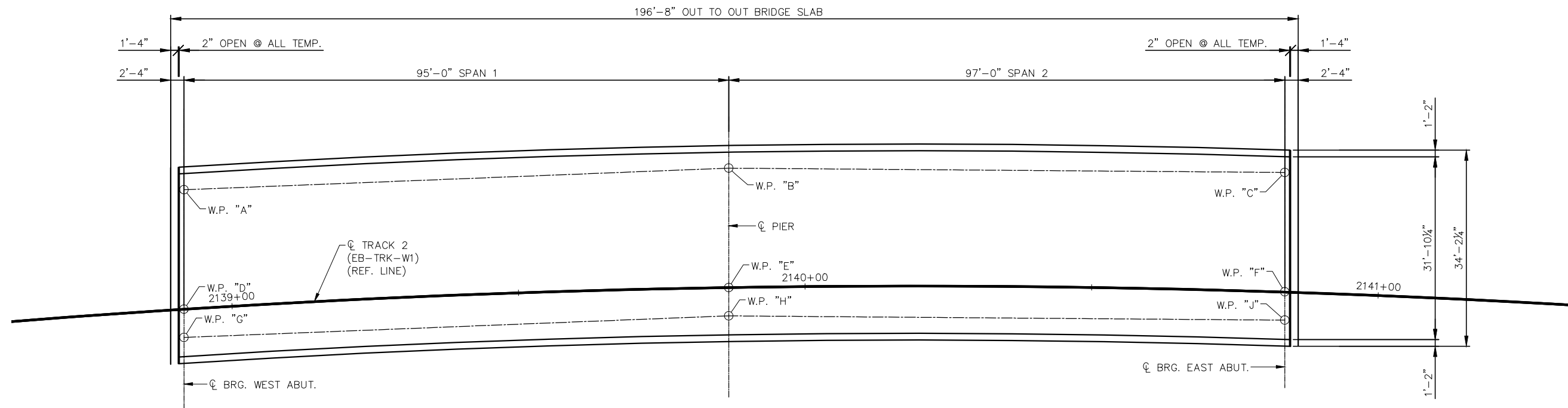
FIG. 5-397.509

APPROVED: _____
BRIDGE NO. **27W32**

REVISED: _____
APPROVED: JANUARY 13, 2015
Nancy J. Sibenberger
STATE BRIDGE ENGINEER

SHEET NO. **15** OF **29** SHEETS

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NOTES:

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DESIGNED BY: AK/IGG	CHECKED BY: TR
DRAWN BY: MJK	DATE: 9/21/15

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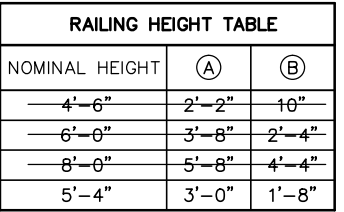
60% SUBMISSION - 9/28/15



CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
SUPERSTRUCTURE DETAILS

DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27W32-BRG-SUP-001

SHEET
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OF
29



CONTINUOUSLY GROUND ALL METAL RAILINGS; SEE THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

PAYMENT LENGTH SHALL BE MEASURED AS THE OUT TO OUT LENGTH ALONG THE CENTERLINE OF THE RAILING BETWEEN THE OUTSIDE ENDS, WITH DEDUCTIONS FOR THE LENGTH OF CONCRETE POSTS, IF PRESENT.

USE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) IN THE RAIL CONFORMING TO SPEC. 3361. FINAL CAPS SHALL BE SPEC. 3322. ALL OTHER STEEL SHALL CONFORM TO SPEC. 3306.

GALVANIZE BOLTS, NUTS, WASHERS AND ANCHORS PER SPEC. 3392.
GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC. 3394, AFTER
FABRICATION.

COAT THE GALVANIZED RAILING, BASE PLATES, AND PROTRUDING PORTION
OF BOLTS, NUTS, ANCHORS, AND WASHERS.

INSTALL RAIL POSTS AND SPINDLES [NORMAL TO GRADE OR PLUMB.]

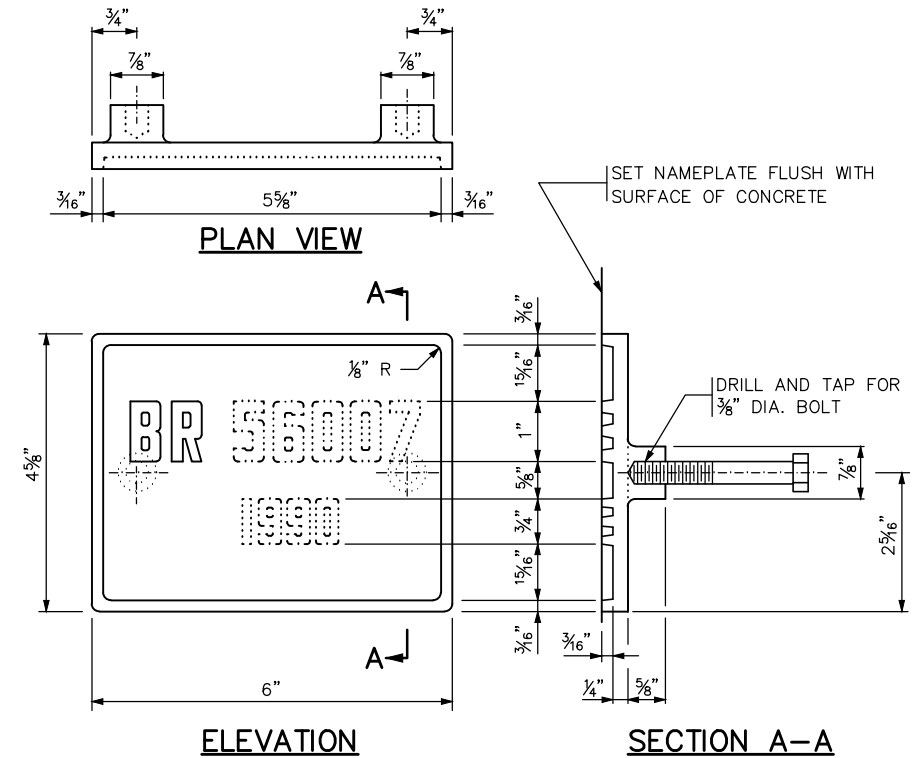
CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO THE EDGE OF SIDEWALK PROFILE.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET.

DRILL 1/2" DIA. MAX. VENT HOLES ON THE UNDERSIDE OF RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

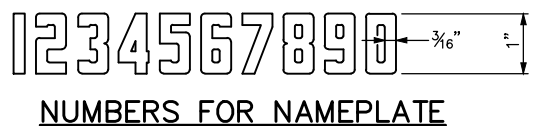
- ① DRILL VENT HOLE IN THE RAIL POST WITHIN 2" OF THE UNDERSIDE OF THE CAP, ON THE NON-TRAFFIC SIDE OF THE POST AS NECESSARY TO FACILITATE GALVANIZING. MAXIMUM HOLE SIZE IS ½" DIA.
- ② PLACE ⅔ OF END POST 12" FROM END OF CONCRETE PARAPET IF GUARDRAIL CONNECTION PLATE IS PRESENT.
- ③ IF LIGHT POLE IS MOUNTED ON BLISTER, RAILING MAY BE CONTINUOUS IN FRONT OF LIGHT POLE (SEE PARAPET & LIGHT POLE DETAILS).—
- ④ CONTRACTOR TO COORDINATE LIGHT POLE DETAILS WITH THE RAILING FABRICATOR TO ENSURE PROPER CLEARANCES AND RAILING CONFIGURATION ADJACENT TO THE POLE.
- ⑤ SEE SUPERSTRUCTURE SHEETS ~~AND STANDARD FIGURE 5-397.166~~ FOR CONTROL JOINT SPACING AND DETAILS.
- ⑥ PROVIDE A PYRAMID TOP STYLE STEEL CAP WELDED TO TOP OF POST WITH A SURFACE FINISH OF 1000 MICRO-INCH, OR SMOOTHER, PRIOR TO GALVANIZING.
- ⑦ IF TOP OF RAISED SIDEWALK, SEE SECTION D-D ON STANDARD FIGURE ~~5-397.166.~~
- ⑧ ADHESIVE ANCHORAGE WITH ⅝" DIA. ANCHOR ROD PER SPEC. 3385, TYPE A WITH HEX NUT AND WASHER. PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.5 KSI. EMBED THE ANCHORAGE NO LESS THAN 5" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT-LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. PROOF LOAD TO 6.9 KIPS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

Sep. 21 2015 09:52 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32-BRG-BDET.dwg By: Kntiermm



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE _____
YEAR _____



NOTES:

- MATERIAL SHALL COMPLY WITH SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002

Daniel J. Morgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

REVISION
09-11-2014

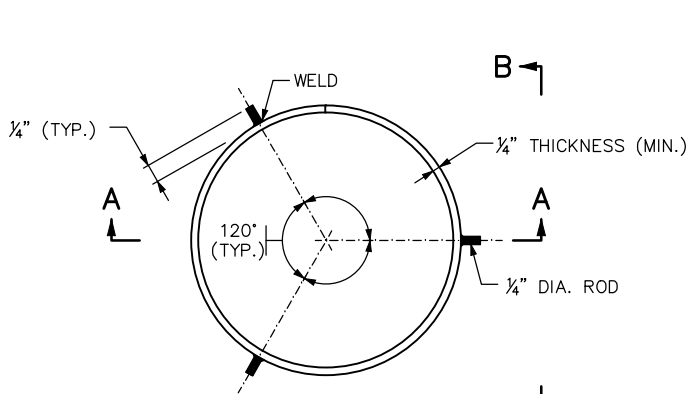
DETAIL NO.
B101

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

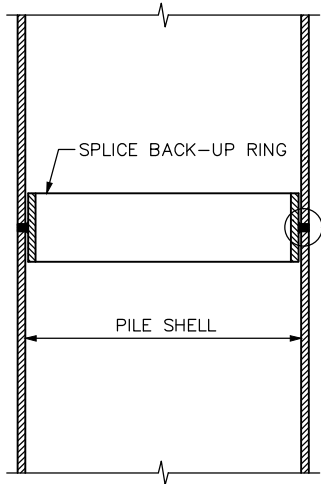
DESIGNED BY: **AK/IGG** CHECKED BY: **TR**
DRAWN BY: **MJK** DATE: **9/21/15**

AECOM

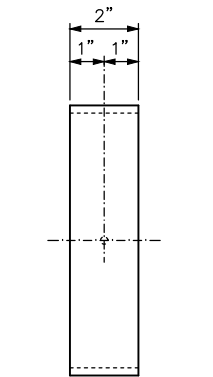
60% SUBMISSION - 9/28/15



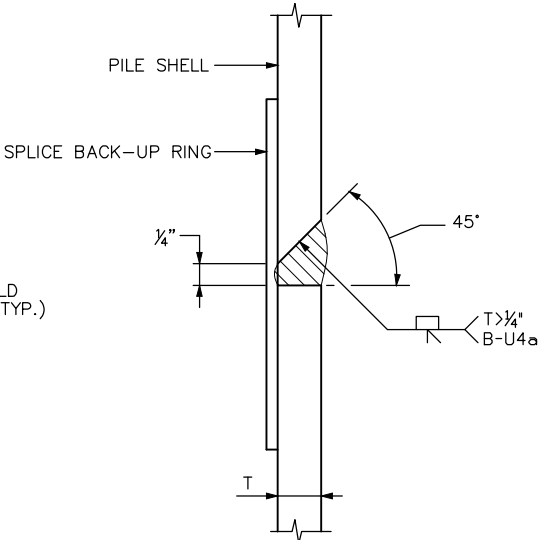
PLAN VIEW - SPLICE BACK-UP RING
PILE NOT SHOWN



SECTION A-A



SECTION B-B
PILE NOT SHOWN



DETAIL "A"

NOTES:

- APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT 1/4" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.
- WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.
- ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.
- WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0°F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32°F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70°F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.
- ① FOR PILE SHELL THICKNESSES GREATER THAN 1/4", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

APPROVED NOVEMBER 22, 2002

Daniel J. Morgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

PILE SPLICE
(CAST-IN-PLACE CONCRETE PILES)

REVISION:
11-06-2013

DETAIL NO.
B201



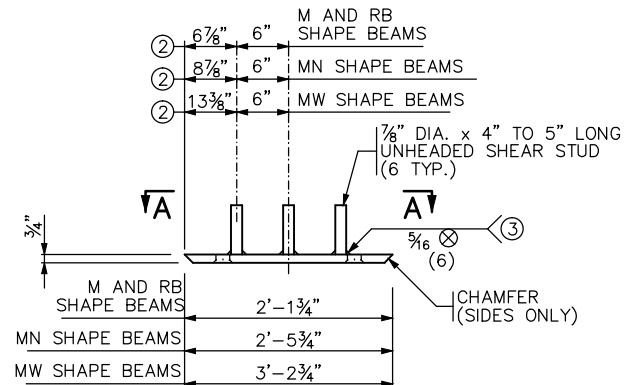
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
DETAILS

DISCIPLINE:
STRUCTURES

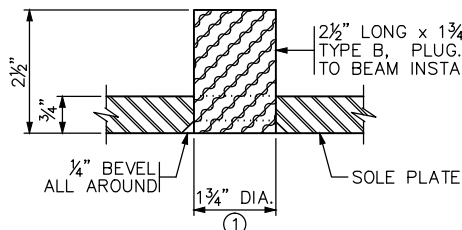
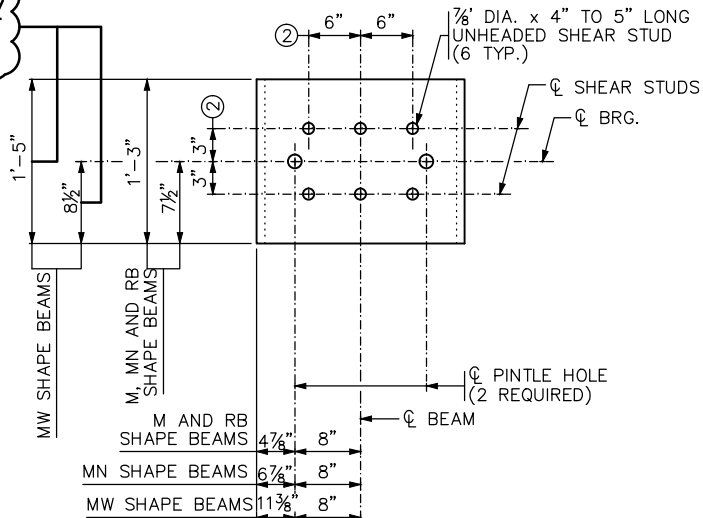
SHEET NAME:
CBR27W32 B101 & B201

SHEET
18
OF
29

Sep. 21 2015 09:52 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32-BRG-BDET.dwg By: Kntlemm



DESIGNER NOTE (REMOVE PRIOR TO PLOTTING FINAL PLAN): ADJUST THIS DIMENSION FOR LARGE MOVEMENT BEARINGS AND CONSIDER THE EFFECTS ON THE BEARINGS AND PORTION OF THE BEAM THAT CANTILEVERS BEYOND THE BEARING.



NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER MnDOT SPEC. 3306.

WELDED STUDS TO BE WELDABLE CARBON STEEL PER MnDOT SPEC. 3391.2D.

SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER MnDOT SPEC. 3394 AFTER FABRICATION.

PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.

SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① FOR 1 1/2" DIA. PINTLES.

② THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

③ THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.1.

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISED

DETAIL NO.

Nancy Dubenberger
STATE BRIDGE ENGINEER

SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

B303

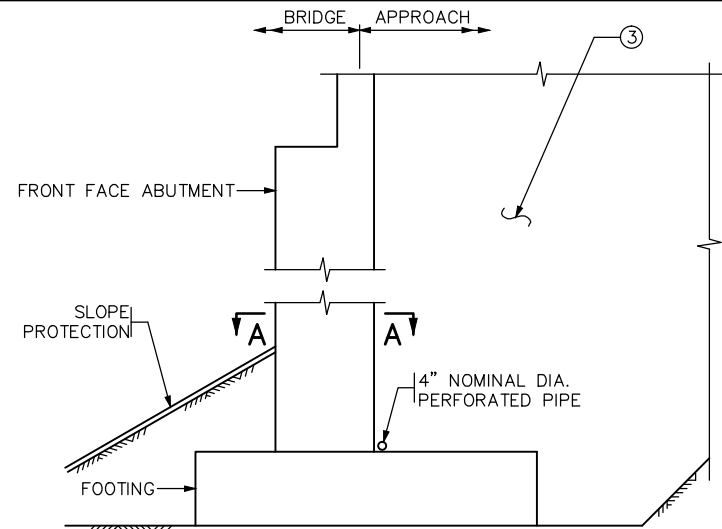
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG
DRAWN BY: MJK

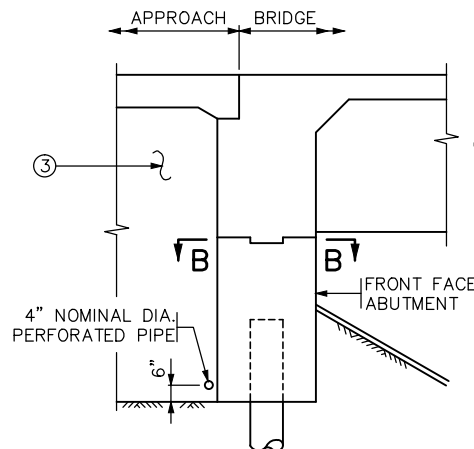
CHECKED BY: TR
DATE: 9/21/15

AECOM

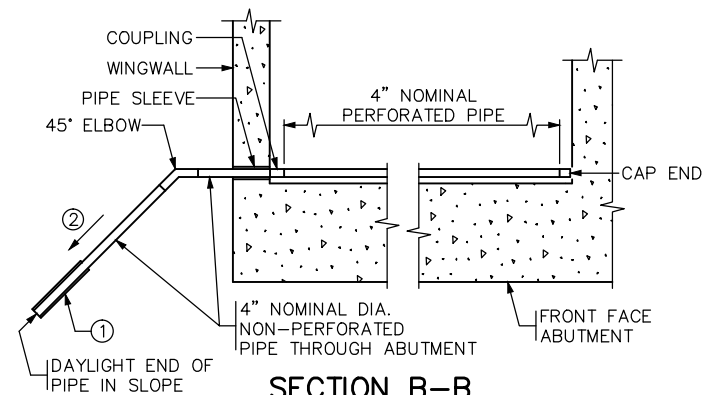
60% SUBMISSION - 9/28/15



SECTION THROUGH INTEGRAL ABUTMENT



SECTION B-B



NOTES:

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR "DRAINAGE SYSTEM TYPE (B910)", INCLUDES BUT IS NOT LIMITED TO 4" DIAMETER PERFORATED AND NON-PERFORATED PIPE, ELBOWS, END CAPS, COUPLINGS, SLEEVES AND PRECAST CONCRETE HEADWALLS.

ALL PIPE TO COMPLY WITH SPEC. 3245.

WRAP PERFORATED PIPE WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH TO PIPE PER SPEC. 2502.

① AT CONTRACTORS OPTION, MAY TIE APPROACH PANEL DRAINAGE SYSTEM AND ABUTMENT DRAINAGE SYSTEM INTO A SINGLE PRECAST CONCRETE HEADWALL OR INTO A CATCH BASIN AS LONG AS A MINIMUM OF 1% POSITIVE SLOPE CAN BE MAINTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

② 1/8" PER FT. MINIMUM SLOPE.

③ REFER TO GRADING PLANS FOR ABUTMENT BACKFILL REQUIREMENTS.

APPROVED: JANUARY 13, 2015

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISED

DETAIL NO.

Nancy Dubenberger
STATE BRIDGE ENGINEER

DRAINAGE SYSTEM

B910



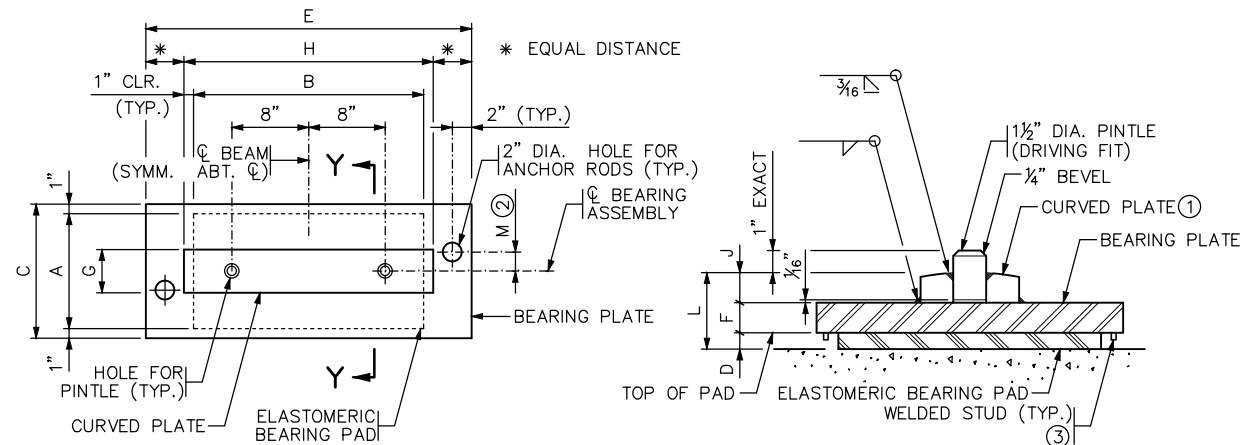
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32 B303 & B910

SHEET
19
OF
29

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PLAN

SECTION Y-Y

SECTION X-X

SIDE ELEVATION

ANCHOR ROD DETAIL

TABLE																	
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ANCHOR ROD OFFSET		ASSY. HEIGHT	CURVED PLATE	
			A	B	D		C	E	F	G	H	J	+ / - ②	M			L
			F1	PIER	M & MN		12"	24"	½"	8.0	14"	38	1½"	4½"		26"	1¼"
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___
___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___	___

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH SPEC. 3306. GALVANIZE PER SPEC. 3392.

PINTLES SHALL COMPLY WITH SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

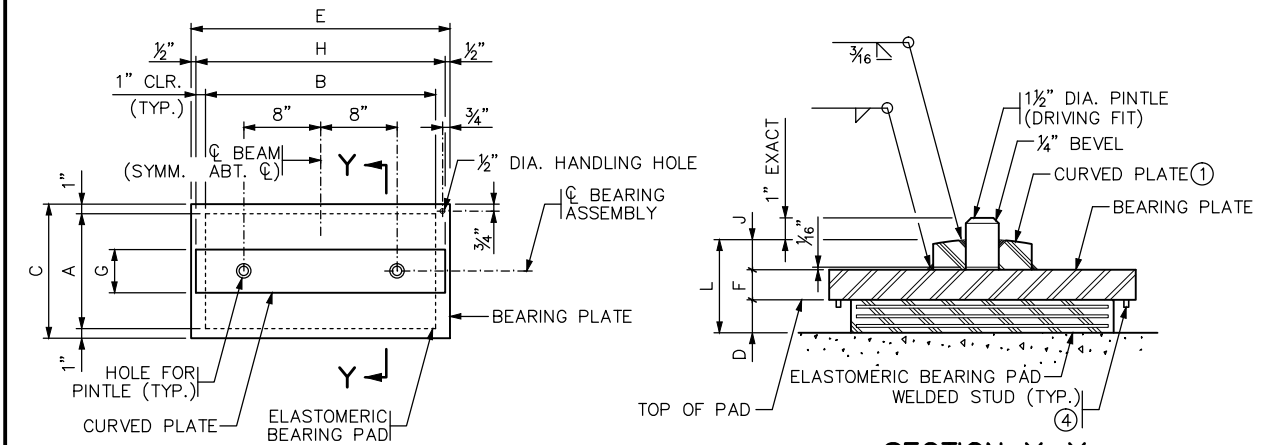
PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

- ① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.
- ② "+" DENOTES OFFSET AS SHOWN. "-" DENOTES OFFSET OPPOSITE OF SHOWN.
- ③ 5/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGNER NOTE (REMOVE PRIOR TO PLOTTING FINAL PLAN):
MINIMUM SIZE OF BEARING PAD.
12" x 24" x 1/2", IS SHOWN FOR M & MN SHAPES
16" x 36" x 1/2", IS SHOWN FOR MW SHAPES

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 11-06-2013	DETAIL NO.
<i>Nancy Dubenberger</i> STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)		B310



PLAN

SECTION Y-Y

SECTION X-X

SIDE ELEVATION

SECTION THROUGH ELASTOMERIC BEARING PAD

TABLE																				
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE			ASSY. HEIGHT	CURVED PLATE		
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H	J			L	R (1)
E1	ABUTS	M & MN	12"	24"	1 7/8"	3	1/8"	2	1/2"	8.84	14"	27"	1 1/2"	4 1/2"	26"	1 1/4"	4 5/8"	16		

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH MnDOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH MnDOT SPEC. 3306.

PINTLES SHALL COMPLY WITH MnDOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER MnDOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

- ① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.
- ② DO NOT GALVANIZE THESE PLATES.
- ③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.
- ④ 5/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGNER NOTE (REMOVE PRIOR TO PLOTTING FINAL PLAN):
MINIMUM SIZE OF BEARING PAD.
12" x 24" x 1/2", IS SHOWN FOR M & MN SHAPES
16" x 36" x 1/2", IS SHOWN FOR MW SHAPES

DESIGN DATA:
MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

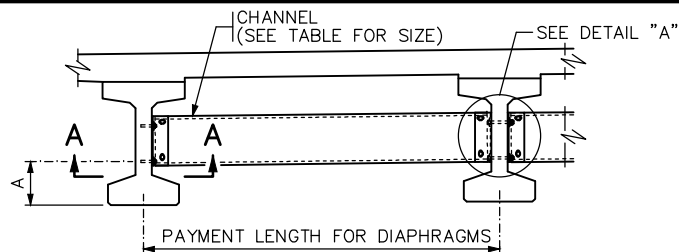
APPROVED: SEPTEMBER 22, 2011	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED	DETAIL NO.
<i>Nancy Dubenberger</i> STATE BRIDGE ENGINEER	CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)		B311



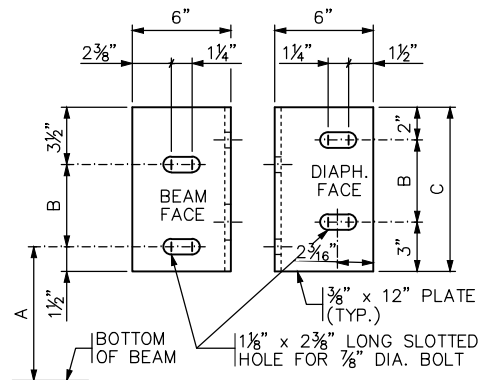
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
DETAILS

DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27W32 B310 & B311

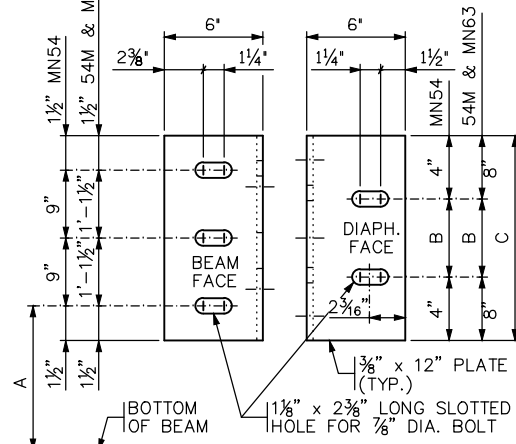
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PART TRANSVERSE SECTION AT DIAPHRAGM

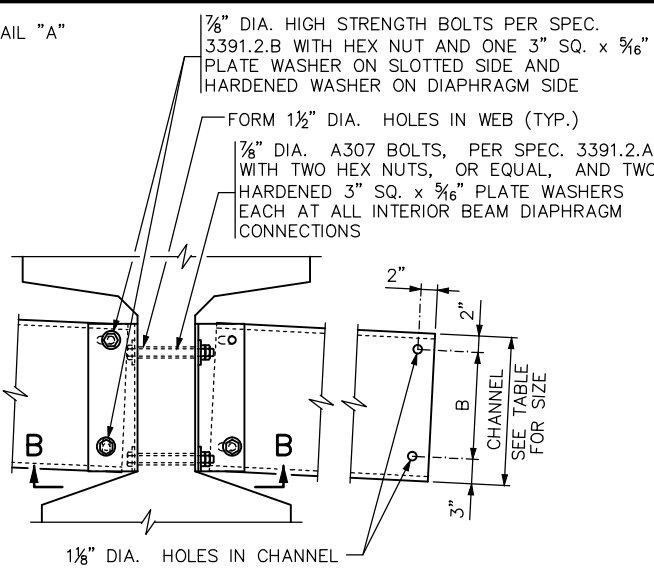


DIAPHRAGM CONNECTION FOR 36M, 45M AND MN45 BEAMS



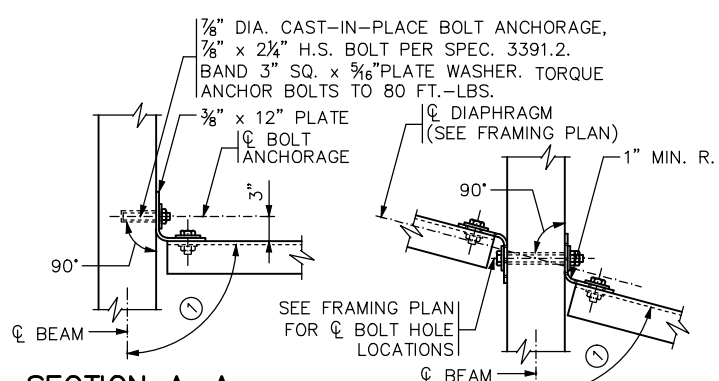
DIAPHRAGM CONNECTION FOR 54M, MN54 AND MN63 BEAMS

BEAM HEIGHT	DISTANCE			CHANNEL SIZE
	A	B	C	
MN63	1'-7 3/4"	1'-1"	2'-6"	MC18x42.7



DETAIL "A"

INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



SECTION A-A

TYPICAL SECTION AT ALL FASCIA BEAMS

SECTION B-B

TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS

NOTES:

ALL STEEL SHALL CONFORM TO SPEC. 3306.

INSTALLATION SHALL CONFORM TO SPEC. 2405.3.K.

SHOP BEND THE LEG OF THE 12" PLATE TO CONFORM TO THE DIAPHRAGM. A 3/8" x 6" x 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.

INCLUDE ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, IN UNIT PRICE BID FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.

BENT PLATES MAY BE USED IN PLACE OF CHANNELS. THE BENT PLATES MUST BE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, BE 3/16" IN THICKNESS, AND HAVE LEGS 5" LONG.

GALVANIZE STEEL PLATES AND SHAPES IN ACCORDANCE WITH SPEC. 3394.

GALVANIZE BOLTS, NUTS AND WASHERS PER SPEC. 3392.

① FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

APPROVED: OCTOBER 26, 2005

Samuel J. Morgan
STATE BRIDGE ENGINEER

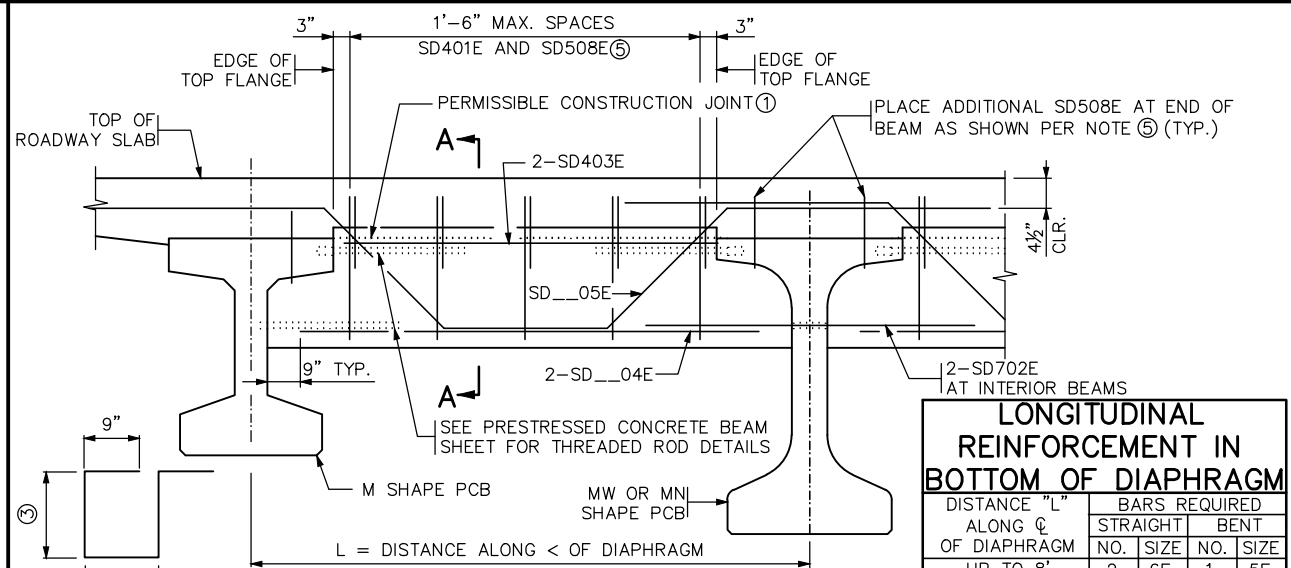
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

STEEL INTERMEDIATE DIAPHRAGM
(FOR 36M - 54M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)

REVISED
06-14-2006
10-22-2009
09-11-2014

DETAIL NO.

B403



PART TRANSVERSE SECTION

(L > 8' SHOWN)

SD401E

SD506E
(IF L ≤ 8')

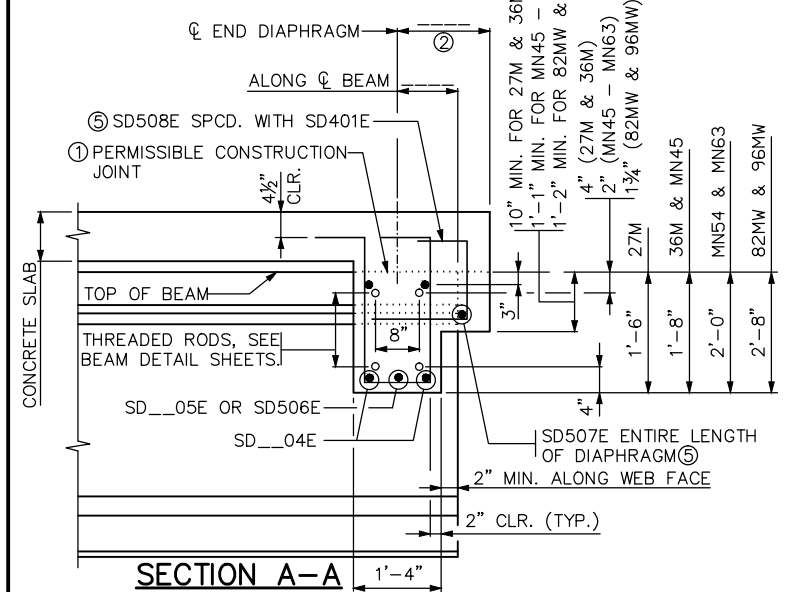
DESIGNER NOTE
(REMOVE DESIGNER NOTE PRIOR TO PLOTTING FINAL PLANS)
• VERIFY THAT 4'-0" TAIL LENGTH ON BARS SD506E AND SD_05E IS CORRECT OVER FASCIA BEAMS.
• ADD SD507E AND SD508E IF DIMENSION ② EXCEEDS 1'-8". SEE NOTE ⑤ BELOW.

SD506E

SD_05E

SD_05E
(IF L > 8')

SD508E ⑤



SECTION A-A
(M SHAPE PCB SHOWN)

APPROVED: SEPTEMBER 22, 2011

Nancy Dubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
CONCRETE END DIAPHRAGM
(27M & 36M, MN45 - MN63, 82MW & 96MW
PRESTRESSED CONCRETE BEAMS)
(PARAPET ABUTMENT)

REVISED
04-17-2013
11-06-2013

DETAIL NO.

B814

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM					
DISTANCE "L" ALONG CL OF DIAPHRAGM	BARS REQUIRED	STRAIGHT NO.	SIZE	BENT NO.	SIZE
UP TO 8'	2	6E	1	5E	
OVER 8' TO 11'	2	7E	1	6E	
OVER 11' TO 13'	2	8E	1	8E	
OVER 13' TO 15'	2	9E	1	10E	
OVER 15' TO 18'	2	11E	1	11E	

BILL OF REINFORCEMENT FOR END DIAPHRAGM

BAR	NO.	LENGTH	SHAPE	LOCATION
SD401E				VERTICAL TIE
SD702E		5'-0"		LONG. THRU BEAM
SD403E				LONG. TOP
SD_04E				LONG. BOTTOM
SD_05E				LONGITUDINAL
SD506E				LONGITUDINAL
SD507E				LONGITUDINAL
SD508E				VERTICAL TIE

NOTES:

CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAME MIX AS USED IN DECK.

QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.

THREADED RODS ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN IN PLACE UNTIL COMPLETION OF SLAB CURING PERIOD.

② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

③ 1'-11" (27M); 2'-1" (36M AND MN45); 2'-5" (MN54 AND MN63); 3'-1" (82MW AND 96MW). BASED ON 3" STUOL AND 9" DECK.

④ 1'-10" (27M); 2'-0" (36M AND MN45); 2'-4" (MN54 AND MN63); 3'-0" (82MW AND 96MW). BASED ON NOTE ③.

⑤ ADD SD507E AND SD508E ONLY IF NO. OF BARS AND LENGTHS ARE INCLUDED IN BILL OF REINFORCEMENT. SPACE SD508E AT 1'-6" MAX. FOR ENTIRE LENGTH OF DIAPHRAGM. REFER TO "PART TRANSVERSE SECTION" ABOVE.

AECOM

METROPOLITAN
C O U N C I L

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27W32 B403 & B814

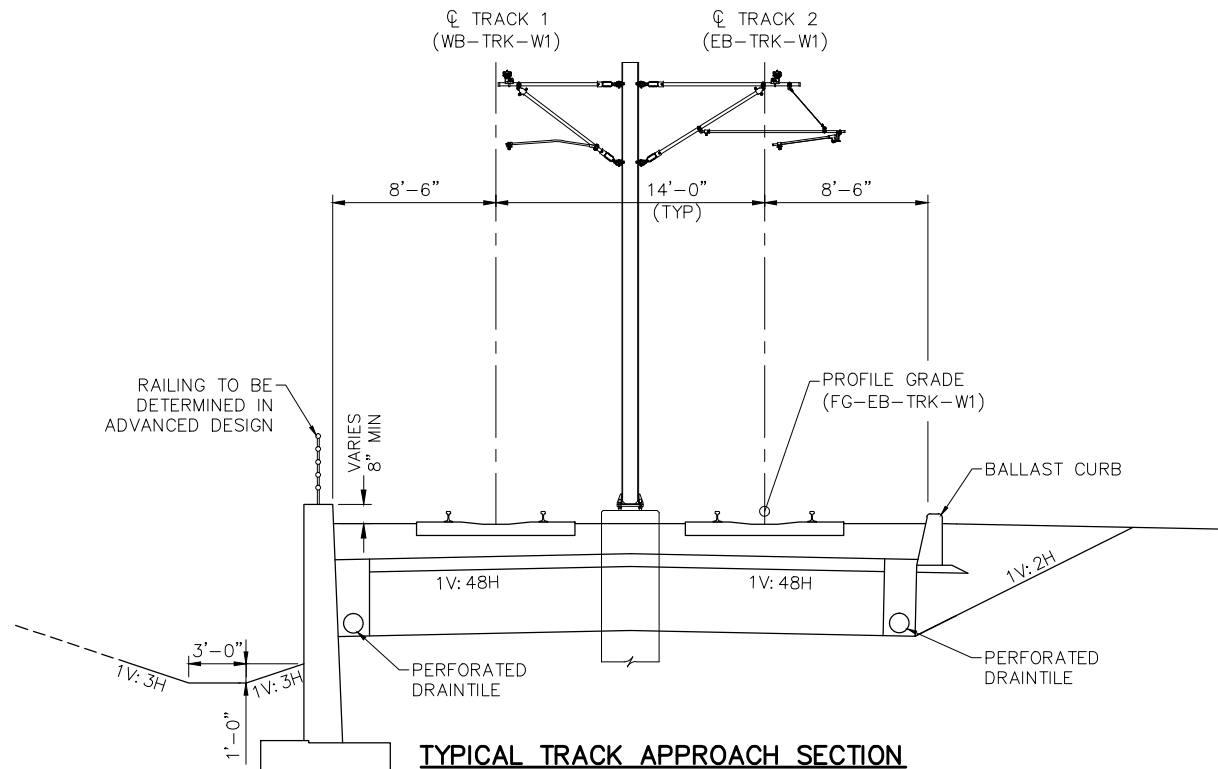
SHEET
21
OF
29

DESIGNED BY: AK/IGG
DRAWN BY: MJK

CHECKED BY: TR
DATE: 9/21/15

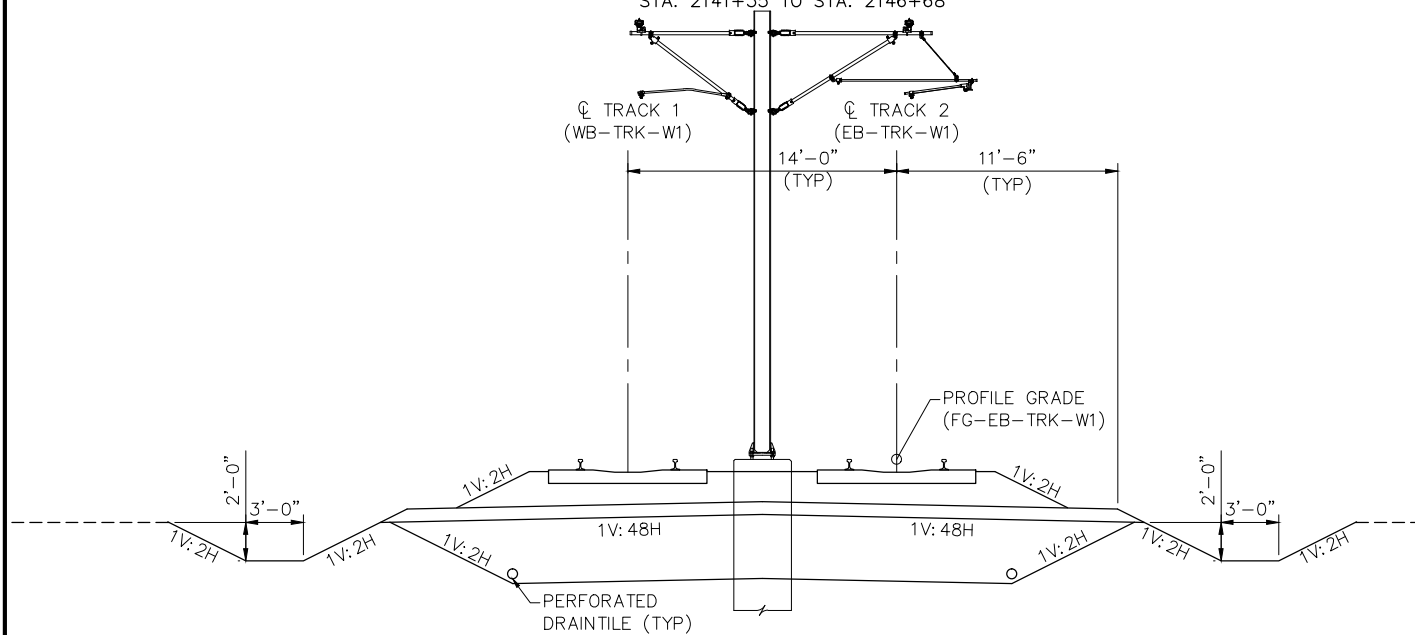
60% SUBMISSION - 9/28/15

Sep. 21 2015 09:56 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\CBR27W32\CBR27W32-BRG-SUR.DWG By: Kntierennm



TYPICAL TRACK APPROACH SECTION

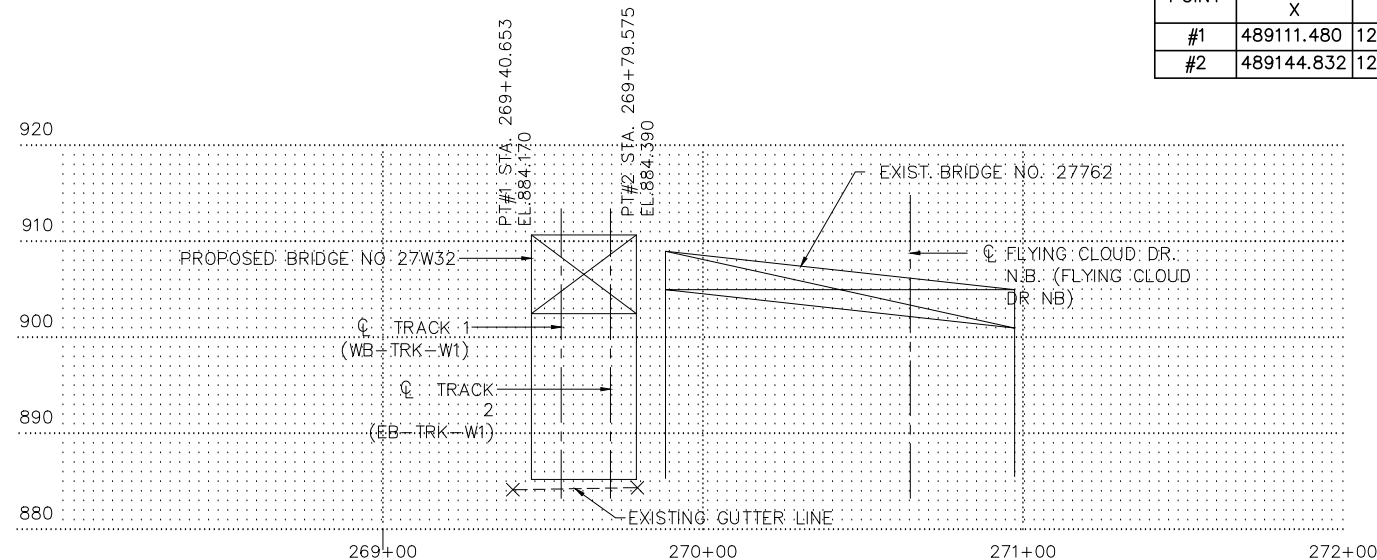
STA. 2141+35 TO STA. 2146+68



TYPICAL TRACK APPROACH SECTION

STA. 2136+70 TO STA. 2138+60

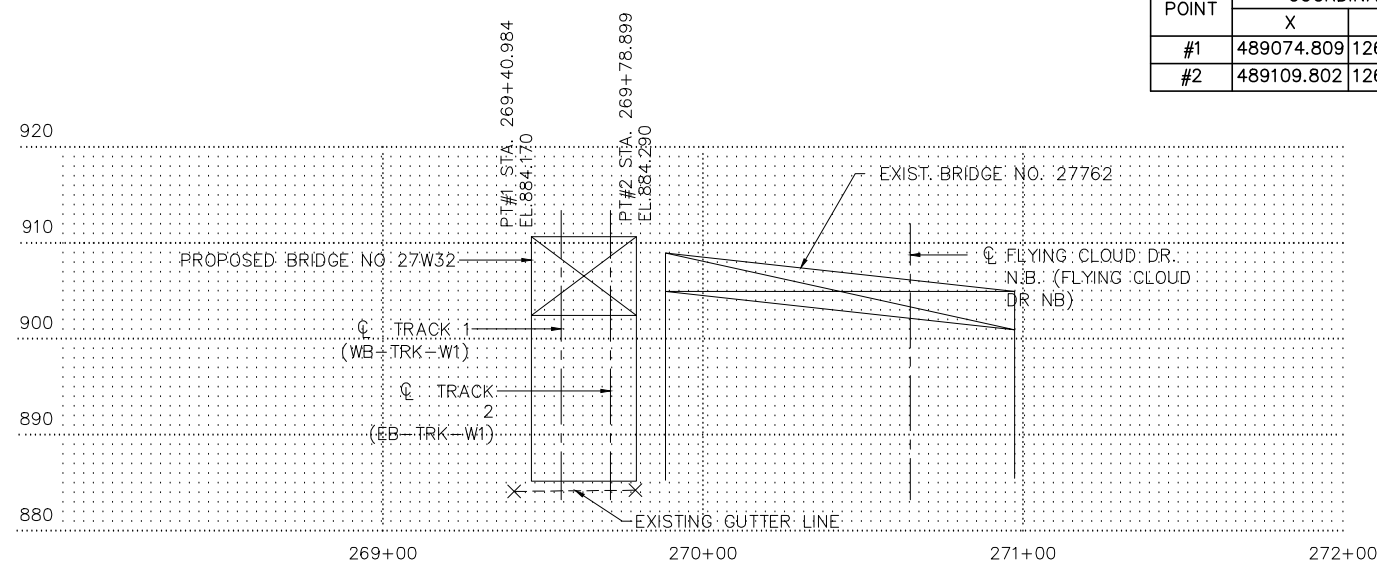
GUTTER LINE @ WB I-494 SHOULDER (WB-T494-CURB)



SURVEY POINTS WB

POINT	COORDINATES		ELEVATIONS
	X	Y	
#1	489111.480	126103.344	884.170
#2	489144.832	126085.481	884.390

GUTTER LINE @ EB I-494 SHOULDER (EB-T494-CURB)



SURVEY POINTS EB

POINT	COORDINATES		ELEVATIONS
	X	Y	
#1	489074.809	126038.116	884.170
#2	489109.802	126020.960	884.290

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY:	AK/IGG	CHECKED BY:	TR
DRAWN BY:	MJK	DATE:	9/21/15

AECOM

60% SUBMISSION - 9/28/15



SOUTHWEST
Green Line LRT Extension






CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
BRIDGE SURVEY



DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27W32-BRG-SUR-002**

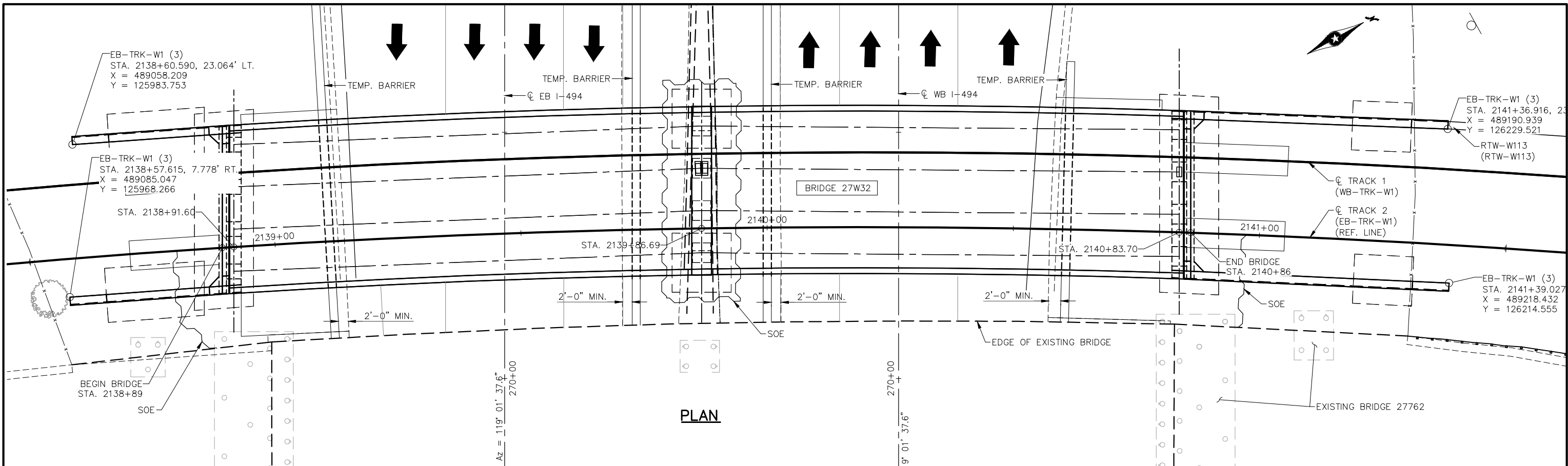
SHEET
24
OF
29

① DIMENSIONS ARE TAKEN ALONG THE WEST AND EAST EDGE OF BRIDGE DECK.

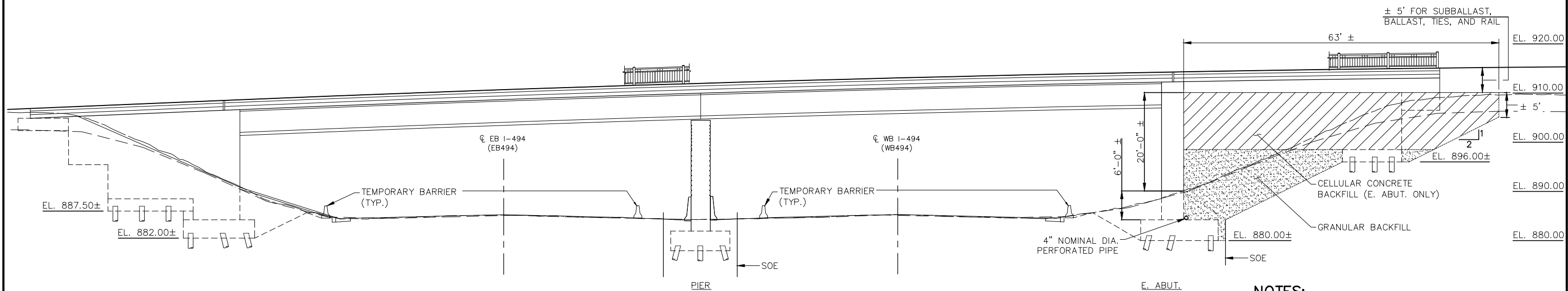
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL					 		CIVIL WEST - VOLUME 4A BRIDGE OVER I-494 BRIDGE 27W32 BRIDGE SURVEY		SHEET
														25
														OF
														29

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							CIVIL WEST - VOLUME 4A BRIDGE OVER I-494 BRIDGE 27W32 BORINGS - PLAN		SHEET
								AECOM						26
														OF
						DESIGNED BY: AK/IGG DRAWN BY: MJK		CHECKED BY: TR DATE: 9/21/15		60% SUBMISSION - 9/28/15		DISCIPLINE: STRUCTURES SHEET NAME: CBR27W32-BRG-BOR-001		29

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PLAN



ELEVATION

NOTES:

SEE TRAFFIC CONTROL PLANS FOR TEMPORARY BARRIER LAYOUT.

SUPPORT OF EXCAVATION (SOE) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG
DRAWN BY: MJK
CHECKED BY: TR
DATE: 9/21/15

AECOM

60% SUBMISSION - 9/28/15



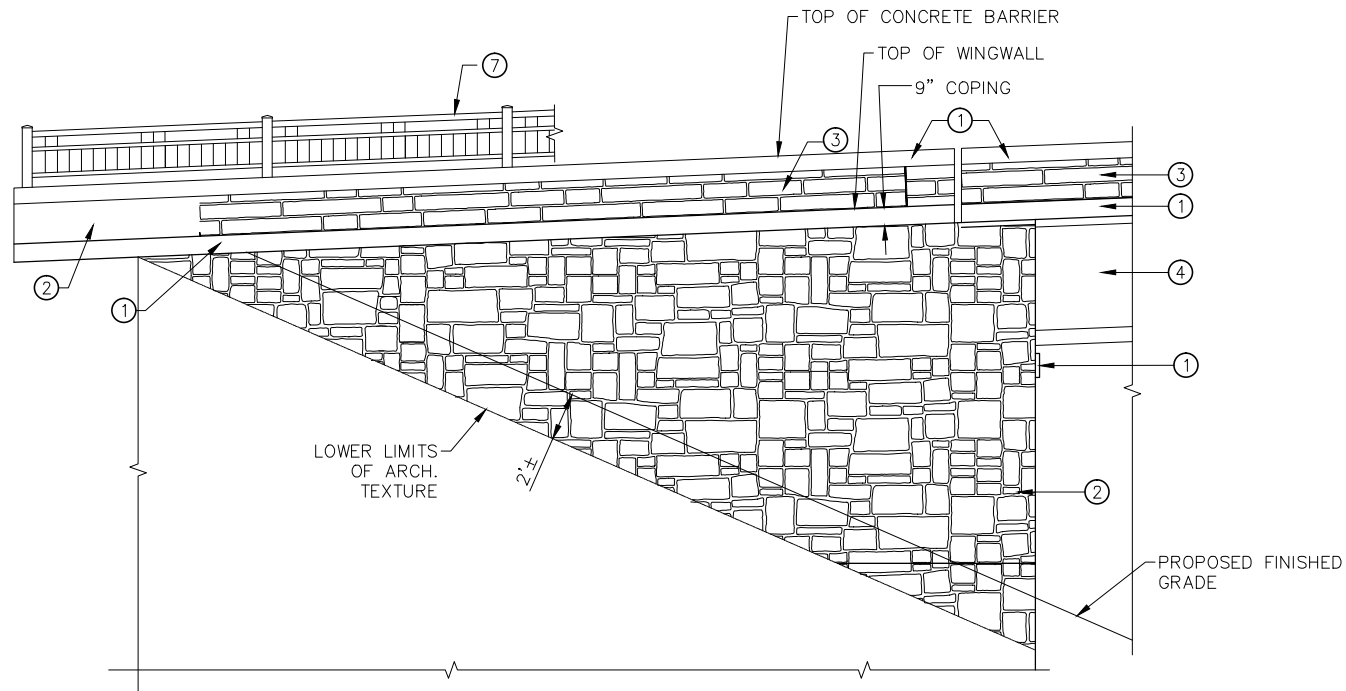
CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
CONSTRUCTION DETAILS

DISCIPLINE: STRUCTURES

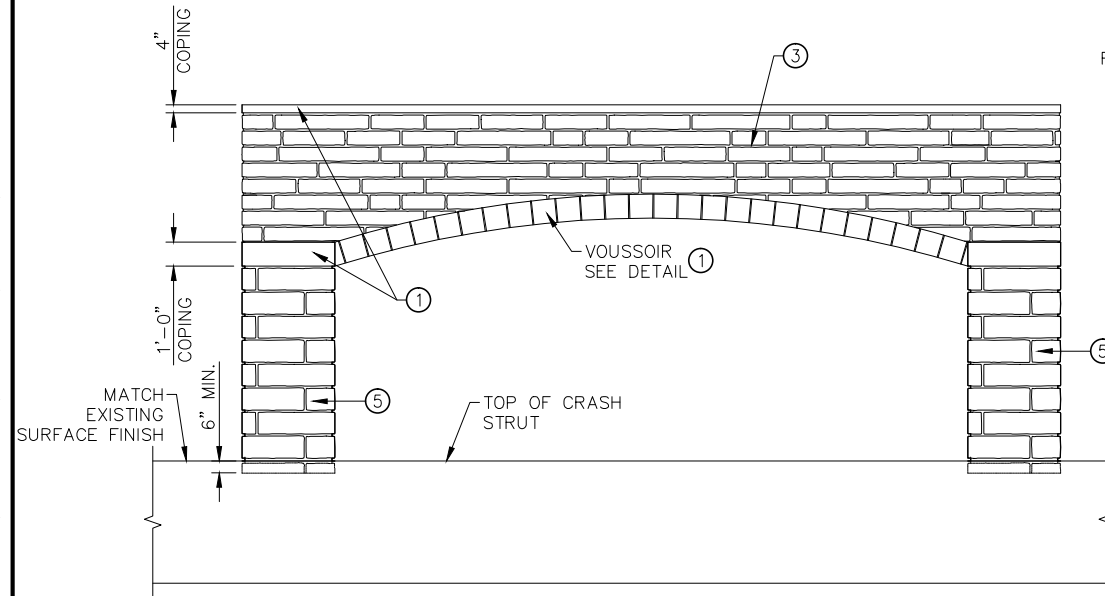
SHEET NAME: CBR27W32-BRG-ACSD

SHEET
28
OF
29

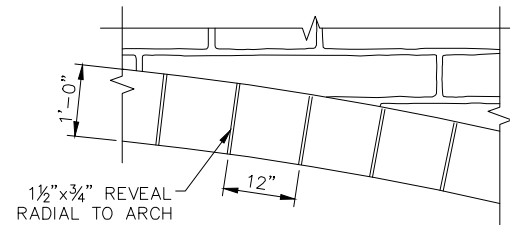
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WINGWALL ELEVATION

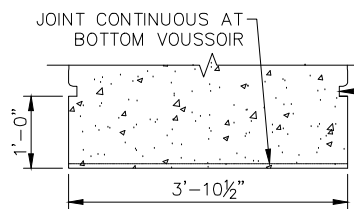


PIER ELEVATION



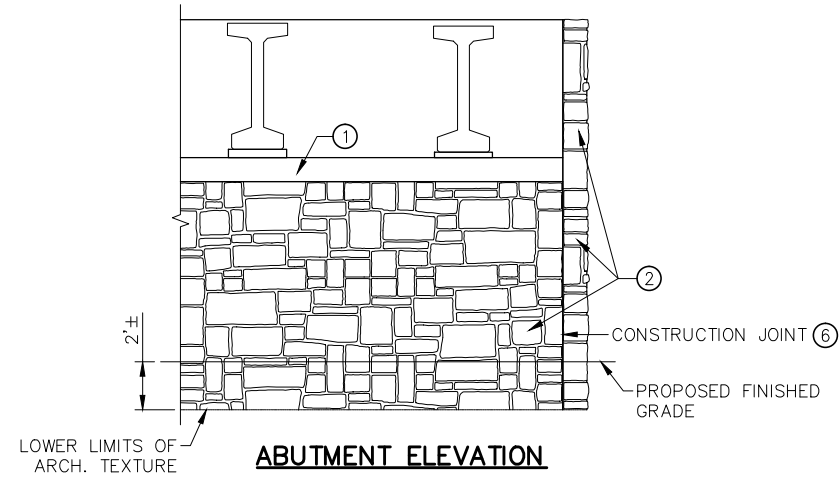
VOUSSOIR DETAIL

ARCH WITH SIMULATED VOUSSOIR
(SPECIAL SURFACE FINISH TREATMENT)

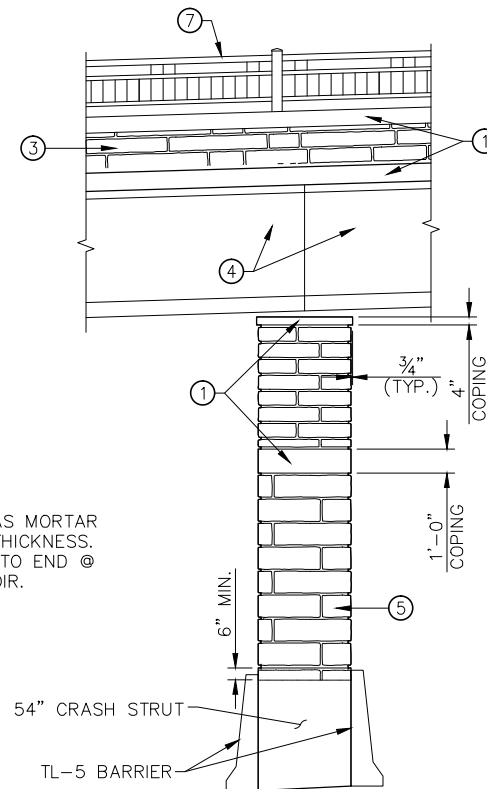


VOUSSOIR SECTION

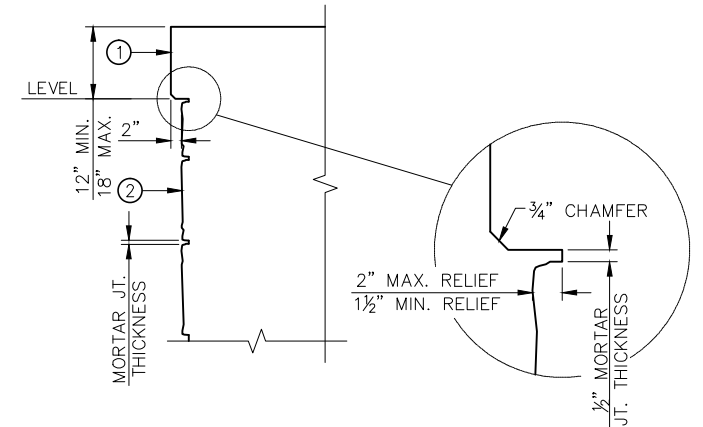
SAME AS MORTAR
JOINT THICKNESS.
STONE TO END @
VOUSSOIR.



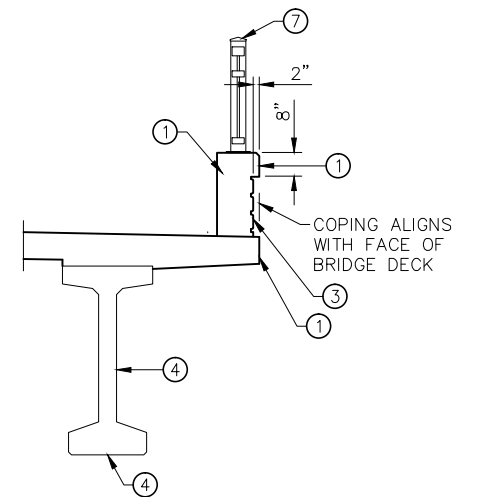
ABUTMENT ELEVATION



PIER COLUMN ELEVATION



ABUTMENT SECTION



PARAPET DETAIL AT BRIDGE

NOTES:

- 1 SPECIAL SURFACE FINISH SHALL BE PER SB 2401, EXCEPT MNDOT GRAY MODIFIED COLOR SHALL BE USED.
- 2 ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
- 3 ARCHITECTURAL CONCRETE TEXTURE (CUT STONE) (SMALL), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
- 4 SPECIAL SURFACE FINISH SHALL BE APPLIED TO OUTSIDE FACE OF FASCIA GIRDERS AND THE BOTTOM FLANGE OF ALL GIRDERS. COLOR SHALL BE FEDERAL STD. COLOR 595C, COLOR 33522 (BEIGE). SEE SPEC. SB 2401.
- 5 ARCHITECTURAL CONCRETE TEXTURE (CUT STONE) (LARGE), ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
- 6 MATCH ALL ARCH. CONC. TEXTURE PATTERN ACROSS JOINTS AND AROUND CORNERS.
- 7 ORNAMENTAL METAL RAILING (MNDOT FIG. 5-397-162 MOD). PAINT TO A COLOR MATCHING FEDERAL STANDARD 595C COLOR NO. 10075 (BROWN) WITH GLOSS FINISH. PAINTING SHALL CONFORM TO SB-2478 (SHOP OR FIELD APPLIED ZINC-RICH PAINT SYSTEM) OF THE SPECIAL PROVISIONS, EXCEPT THAT THE BROWN COLOR SHALL BE USED.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: AK/IGG
DRAWN BY: MJK
CHECKED BY: TR
DATE: 9/21/15

AECOM

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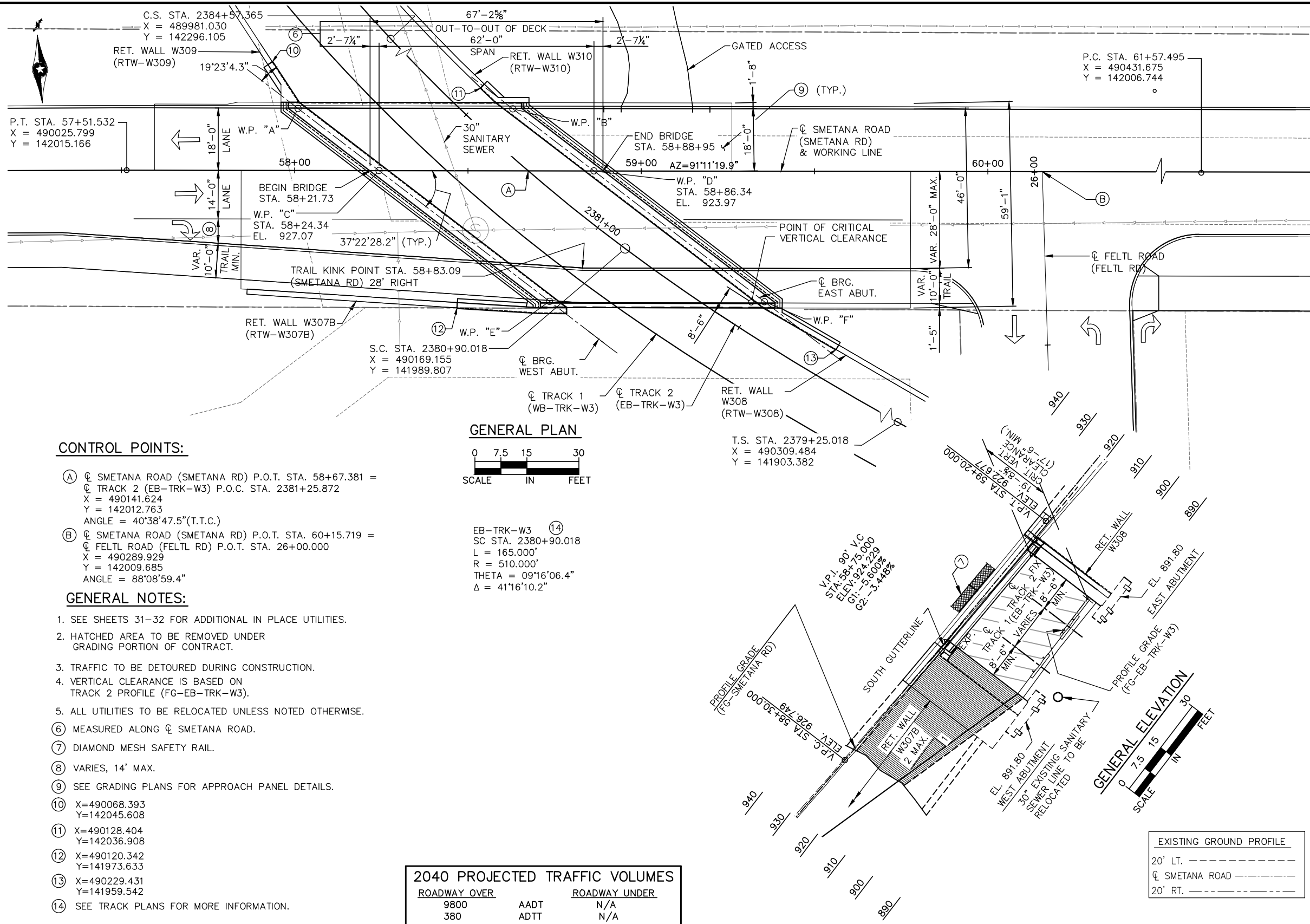


CIVIL WEST - VOLUME 4A
BRIDGE OVER I-494
BRIDGE 27W32
AESTHETICS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27W32-BRG-ARCH

SHEET
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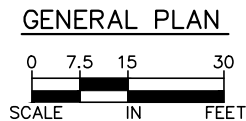


CONTROL POINTS:

- (A) ϕ SMETANA ROAD (SMETANA RD) P.O.T. STA. 58+67.381 =
 ϕ TRACK 2 (EB-TRK-W3) P.O.C. STA. 2381+25.872
X = 490141.624
Y = 142012.763
ANGLE = 40°38'47.5" (T.T.C.)
- (B) ϕ SMETANA ROAD (SMETANA RD) P.O.T. STA. 60+15.719 =
 ϕ FELTL ROAD (FELTL RD) P.O.T. STA. 26+00.000
X = 490289.929
Y = 142009.685
ANGLE = 88°08'59.4"

GENERAL NOTES:

- SEE SHEETS 31-32 FOR ADDITIONAL IN PLACE UTILITIES.
- HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.
- TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- VERTICAL CLEARANCE IS BASED ON TRACK 2 PROFILE (FG-EB-TRK-W3).
- ALL UTILITIES TO BE RELOCATED UNLESS NOTED OTHERWISE.
- MEASURED ALONG ϕ SMETANA ROAD.
- DIAMOND MESH SAFETY RAIL.
- VARIES, 14' MAX.
- SEE GRADING PLANS FOR APPROACH PANEL DETAILS.
- X=490068.393
Y=142045.608
- X=490128.404
Y=142036.908
- X=490120.342
Y=141973.633
- X=490229.431
Y=141959.542
- SEE TRACK PLANS FOR MORE INFORMATION.



EB-TRK-W3 (14)
SC STA. 2380+90.018
L = 165.000'
R = 510.000'
THETA = 09°16'06.4"
 Δ = 41°16'10.2"

2040 PROJECTED TRAFFIC VOLUMES		
ROADWAY OVER	AADT	ROADWAY UNDER
9800	N/A	N/A
380	ADTT	N/A

JOB NO: T9N635

STATE PROJECT NO: 9909-01

MNDOT REVIEW: JOE NIETFELD

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
GENERAL PLAN AND ELEVATION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-GPE-001

SHEET
1
OF
42

DESIGN DATA

2014 AND CURRENT INTERIM AASHTO LRFD
BRIDGE DESIGN SPECIFICATIONS

METRO LIGHT RAIL TRANSIT DESIGN CRITERIA
(REVISION 4.0)

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL 93 LIVE LOAD

DEAD LOAD INCLUDES 20 PSF ALLOWANCE FOR
FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
 f'_c = 4 K.S.I., n = 8
 f_y = 60 K.S.I.
PRESTRESSED CONCRETE:
 f'_c = 9 K.S.I., n = 1
 f_{pu} = 270 K.S.I.
0.6" DIA. LOW RELAXATION STRAND
0.75 f_{pu} FOR INITIAL PRESTRESS

DESIGN SPEED:
OVER = 30 MPH
UNDER(LRT) = N.A. MPH

APPROXIMATE DECK AREA = 4,264 SQ. FT.

HL-93 LRFR BRIDGE OPERATING RF = 2.50

LIST OF SHEETS

SHEET NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION
3	BRIDGE LAYOUT
4-11	WEST ABUTMENT DETAILS
8-10	WEST ABUTMENT REINFORCEMENT
12-16	EAST ABUTMENT DETAILS
17-20	EAST ABUTMENT REINFORCEMENT
21	FRAMING PLAN
22	27M PRESTRESSED CONCRETE BEAM
23-24	SUPERSTRUCTURE DETAILS
25	CORNER DETAILS
26	DIAMOND MESH SAFETY RAIL DETAILS
27-28	CONCRETE BARRIER DETAILS
29-31	WATERPROOF EXPANSION DETAILS
32-37	DETAILS
38	AS-BUILT BRIDGE DATA
39	BRIDGE SURVEY
40	BRIDGE SURVEY PLAN
41	BRIDGE SURVEY PROFILE
42	AESTHETICS

BRIDGE NO. 27C09

SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
0.33 MI. EAST OF THE JUNCTION OF C.S.A.H. 61 AND
SMETANA ROAD IN MINNETONKA

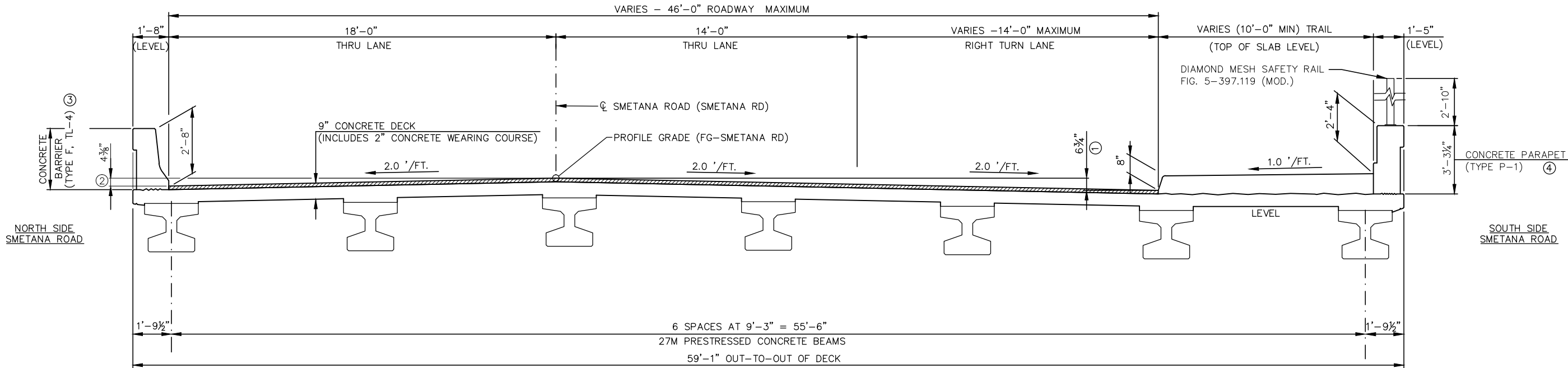
62'-0" PRESTRESSED CONCRETE BEAM SPAN
CONC. BARRIER (TYPE F, TL-4) 46'-0" ROADWAY
52°37'32" SKEW RT. AHEAD
DIAMOND MESH SAFETY RAIL,
PARAPET MOUNT.
IDENTIFICATION NO. 501

GENERAL PLAN AND ELEVATION

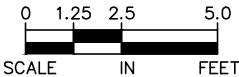
SEC. 25 TWP. 117 N R 22 W
CITY OF MINNETONKA HENNEPIN COUNTY

APPROVED: _____
STATE BRIDGE ENGINEER

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TRANSVERSE SECTION THRU BRIDGE DECK



CONSTRUCTION NOTES

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE. THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.

BARS MARKED WITH A SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (R_n) WERE COMPUTED USING LRFD METHODOLOGY. ULTIMATE PILE CAPACITY DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

SEE MnDOT LRFD BRIDGE DESIGN MANUAL (MAY 2015), APPENDIX 2-C, AND CIVIL PLANS FOR LISTS OF STANDARD ABBREVIATIONS UNLESS NOTED OTHERWISE.

THE GIRDERS HAVE BEEN DESIGNED AND DETAILED WITHOUT DIAPHRAGMS. THE CONTRACTOR'S ENGINEER SHALL DESIGN, AND THE CONTRACTOR SHALL CONSTRUCT A TEMPORARY BRACING SYSTEM AND/OR A DECK FALSEWORK/FORMWORK SYSTEM. THE SYSTEM SHALL PROVIDE LATERAL AND ROTATIONAL STABILITY OF THE GIRDERS TO RESIST UNSYMMETRICAL CONCRETE AND CONSTRUCTION LOADS UNTIL THE DECK CONCRETE HAS ATTAINED A MINIMUM STRENGTH OF 2800 PSI.

NOTES:

- ① PROFILE GRADELINE TO LOW GUTTERLINE.
- ② PROFILE GRADELINE TO HIGH GUTTERLINE.
- ③ SEE SHEET 24 FOR DETAILS.
- ④ SEE SHEET 23 FOR DETAILS.

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
2401.501	CONCRETE BARRIER (TYPE F, TL-4)	1152	LF
2401.501	CONCRETE PARAPET (TYPE P-1)	352	LF
2401.515	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	352	LF
2401.513	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2401.513	CONCRETE PARAPET (TYPE P-1)	352	LF
2401.541	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2401.541	CONCRETE PARAPET (TYPE P-1)	352	LF
2401.601	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	352	LF
2401.618	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2402.591	CONCRETE PARAPET (TYPE P-1)	352	LF
2402.595	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2404.501	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	352	LF
2405.502	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2411.618	CONCRETE PARAPET (TYPE P-1)	352	LF
2411.618	CONCRETE BARRIER (TYPE F, TL-4)	352	LF
2411.618	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	352	LF
2452.507	CONCRETE BARRIER (TYPE F, TL-4)	12	LF
2452.508	CONCRETE PARAPET (TYPE P-1)	12	LF
2452.519	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	65	LF
2452.519	CONCRETE BARRIER (TYPE F, TL-4)	80	LF
2502.502	CONCRETE PARAPET (TYPE P-1)	910	LF
2545.509	CONCRETE BARRIER (TYPE F, TL-4)	1	LF
2557.501	CONCRETE DECK (INCLUDES 2" CONCRETE WEARING COURSE)	1	LF

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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JULY 27, 2015

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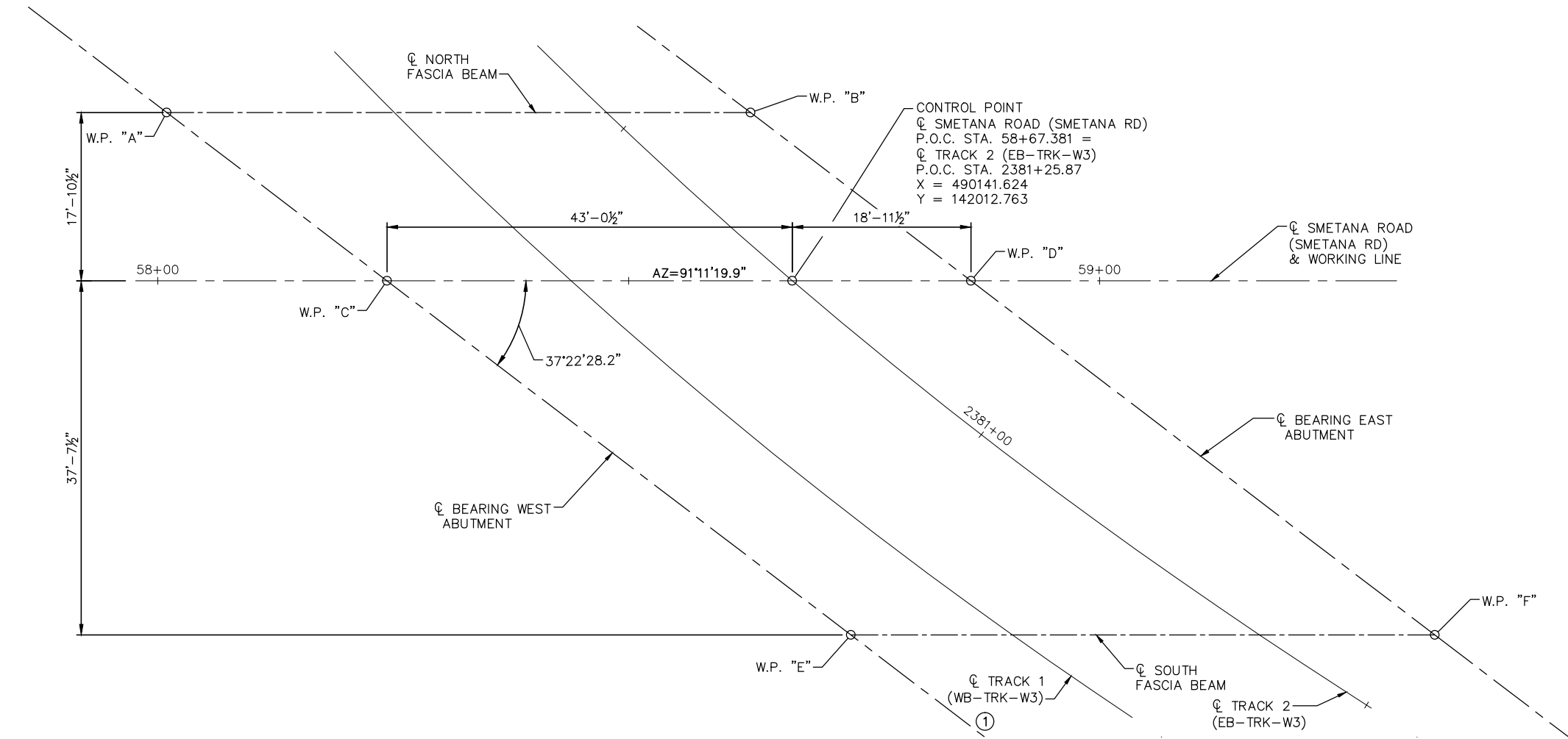


CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
TRANSVERSE SECTION

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-GPE-002

SHEET
2
OF
42

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WORKING POINT LAYOUT

NOTES:

- ① TRACK 1 STATIONING NOT SHOWN FOR CLARITY.
SEE TRACK PLANS FOR MORE INFORMATION.

MATERIALS										QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QTY	PRICE	TOTAL	UNIT	QTY	PRICE	TOTAL	UNIT	QTY	PRICE	TOTAL
1	CONCRETE	CU YD	62.00	29.45	87.25	CU YD	29.45	56.51	145.65	CU YD	927.99	3.71	924.28
2	STEEL	TON				TON				TON	924.68	3.59	921.08
3	WOOD	CU YD				CU YD	62.00	61.98	117.45	CU YD			
4	PAVEMENT	CU YD				CU YD			61.98	CU YD			
5	GRASS	CU YD				CU YD			62.00	CU YD	923.81	3.54	920.27
6	SOIL	CU YD				CU YD				CU YD	921.41	3.43	917.99

DIMENSIONS						
ITEM NO.	DESCRIPTION	UNIT	QTY	PRICE	TOTAL	UNIT
1	9"		3 7.8"	27"	4 5.8"	44 1.2"
2	9"		3 7.8"	27"	3 1.4"	43"

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

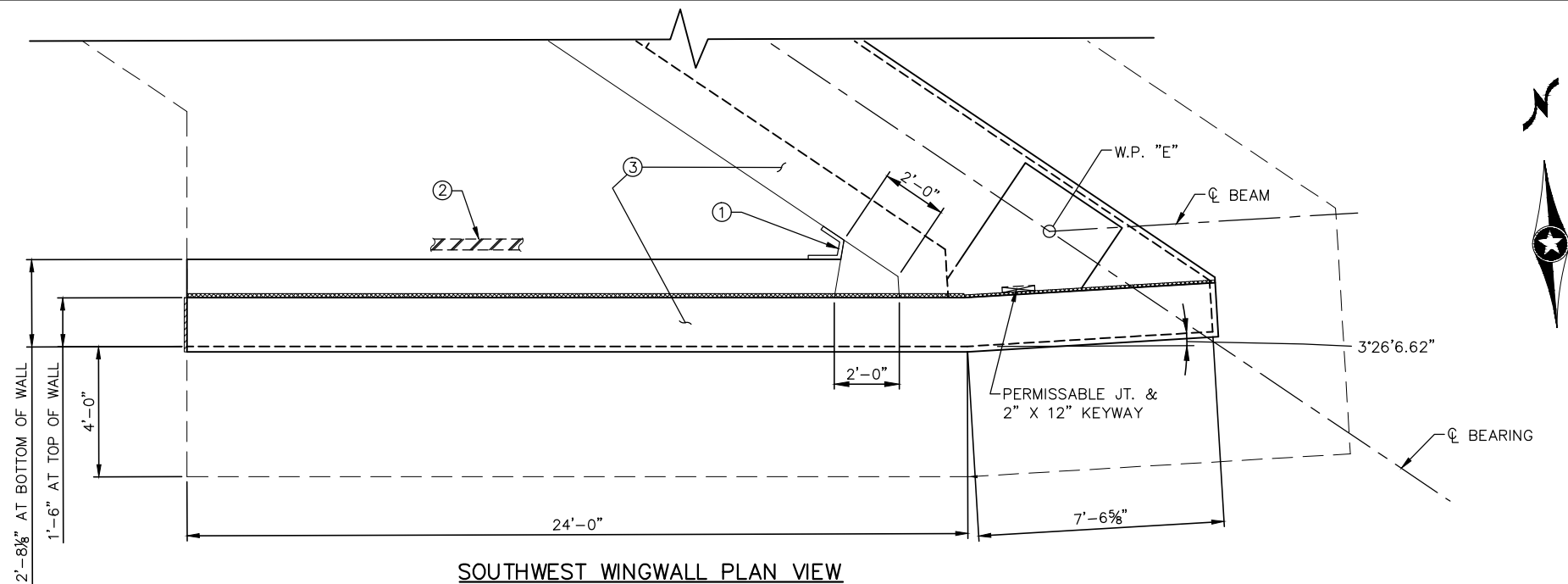
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ALB	JULY 27, 2015

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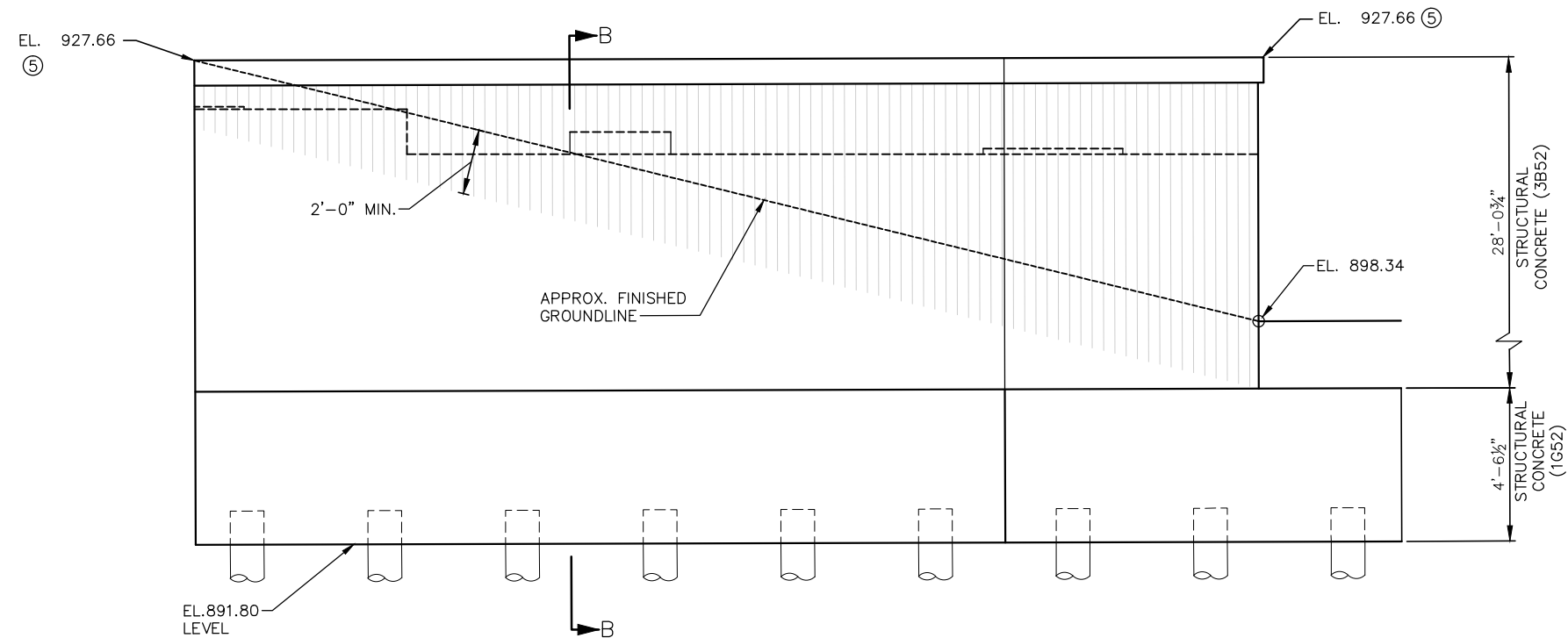
CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-SUP-001

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SOUTHWEST WINGWALL PLAN VIEW



SOUTHWEST WINGWALL ELEVATION VIEW

NOTES:

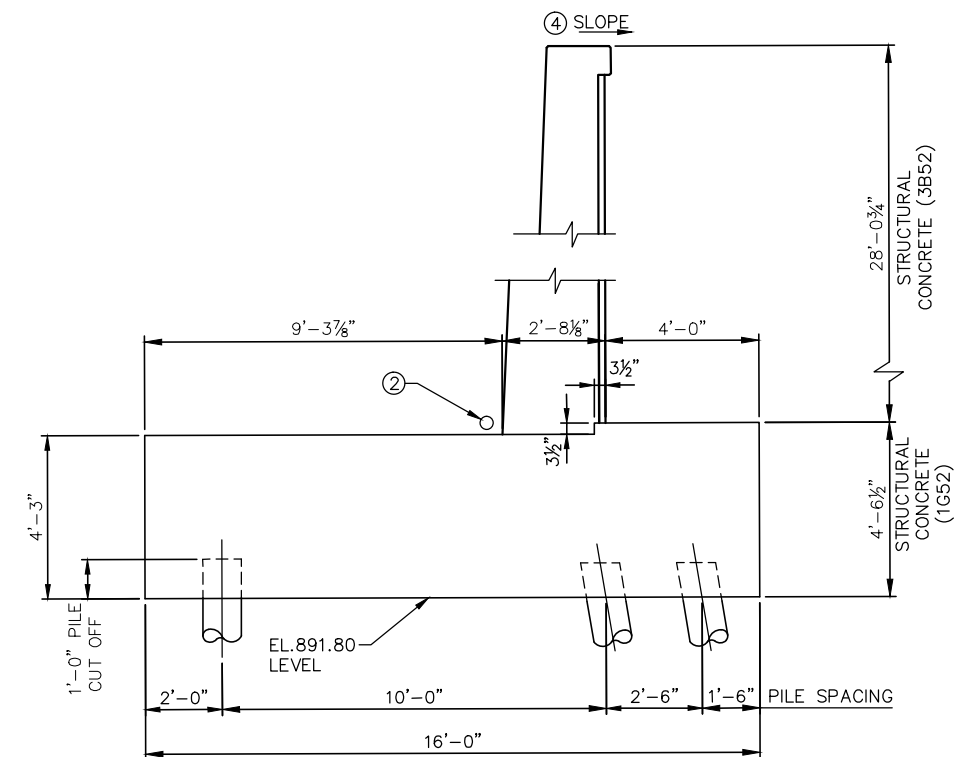
B.F. DENOTES BACK FACE

F.F DENOTES FRONT FACE

FOR MEMBRANE DETAILS SEE SHEET X & X.

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROPRIATE FINISHED GROUNDLINE.

- ① MEMBRANE WATERPROOFING SYSTEM PER MN/DOT 2184.3B TO BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE (EB32).
- ② PERFORATED PIPE, SEE DETAIL B910 FOR DRAINAGE DETAILS.
- ③ THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- ④ SLOPE 1% + DOWN TOWARDS FRONT FACE
- ⑤ ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).



SECTION B-B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15

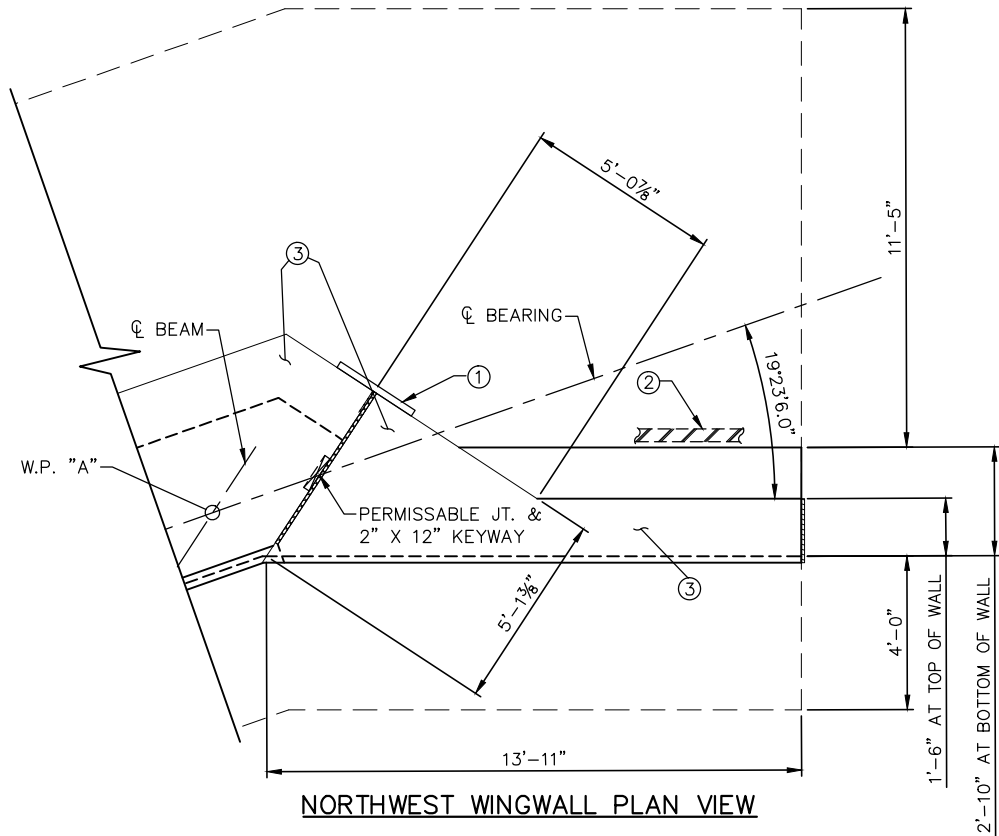


CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
WEST ABUTMENT DETAILS

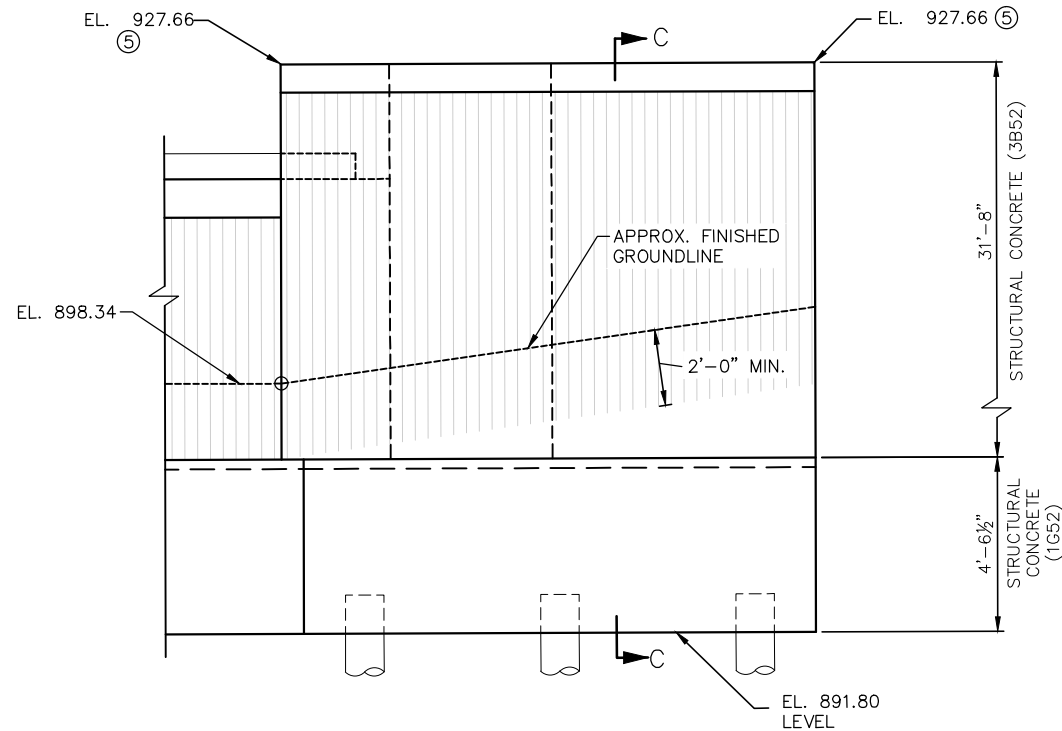
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SHEET NAME: CBR27C09-BRG-ABT-004

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42

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NORTHWEST WINGWALL PLAN VIEW



NORTHWEST WINGWALL ELEVATION VIEW

NOTES:

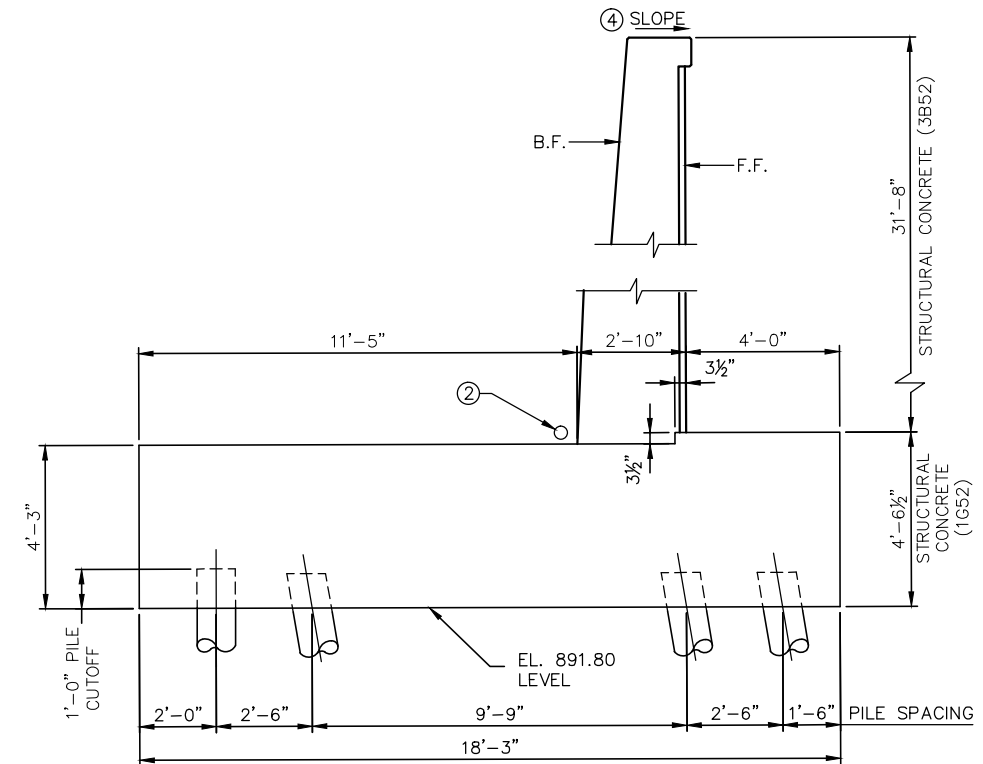
B.F. DENOTES BACK FACE

F.F. DENOTES FRONT FACE

FOR MEMBRANE DETAILS SEE SHEET X & X.

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROPRIATE FINISHED GROUNDLINE.

- ① MEMBRANE WATERPROOFING SYSTEM PER MN/DOT 2184.3B TO BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE (EB32).
- ② PERFORATED PIPE, SEE DETAIL B910 FOR DRAINAGE DETAILS.
- ③ THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- ④ SLOPE 1% + DOWN TOWARDS FRONT FACE
- ⑤ ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).



SECTION C-C

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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JULY 27, 2015

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60% SUBMISSION - 09/28/15



CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
WEST ABUTMENT DETAILS

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C09-BRG-ABT-021**

SHEET
7
OF
42



FOOTING DOWEL PLAN

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JULY 27, 2015

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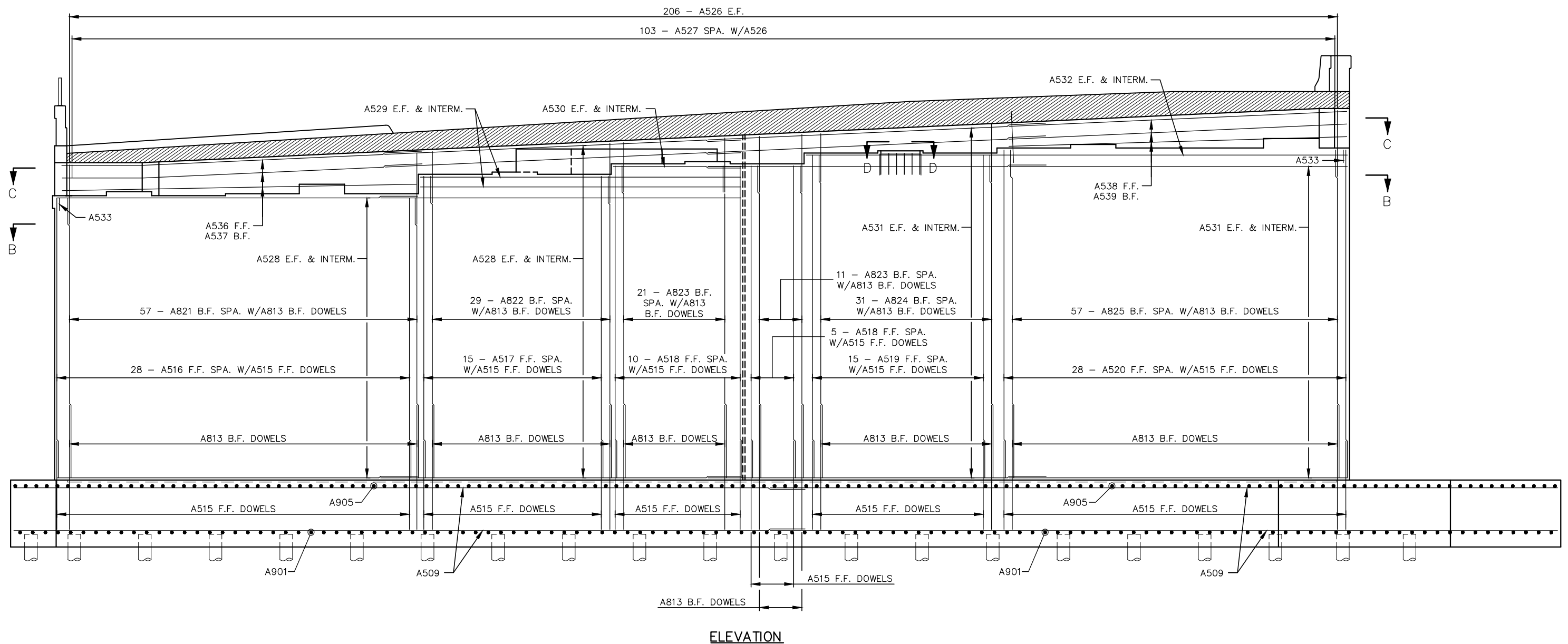
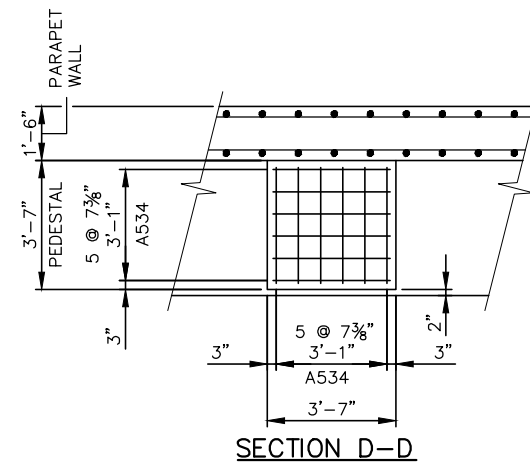


CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
WEST ABUTMENT REINFORCEMENT

DISCIPLINE:	STRUCTURES	SHEET NAME:	CBR27C09-BRG-ABT-005
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SHEET
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42

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ALB
JULY 27, 2015

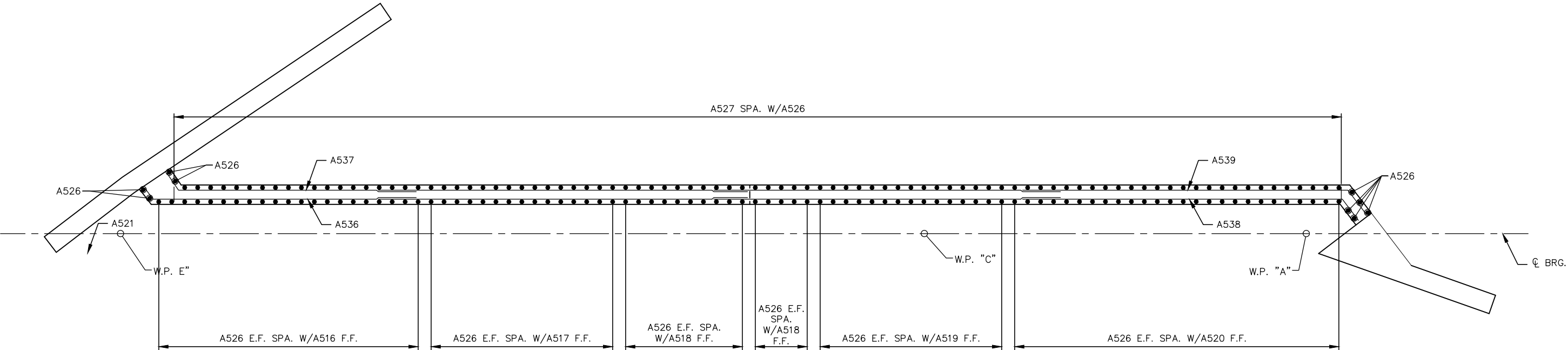
60% SUBMISSION - 09/28/15

CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
WEST ABUTMENT REINFORCEMENT

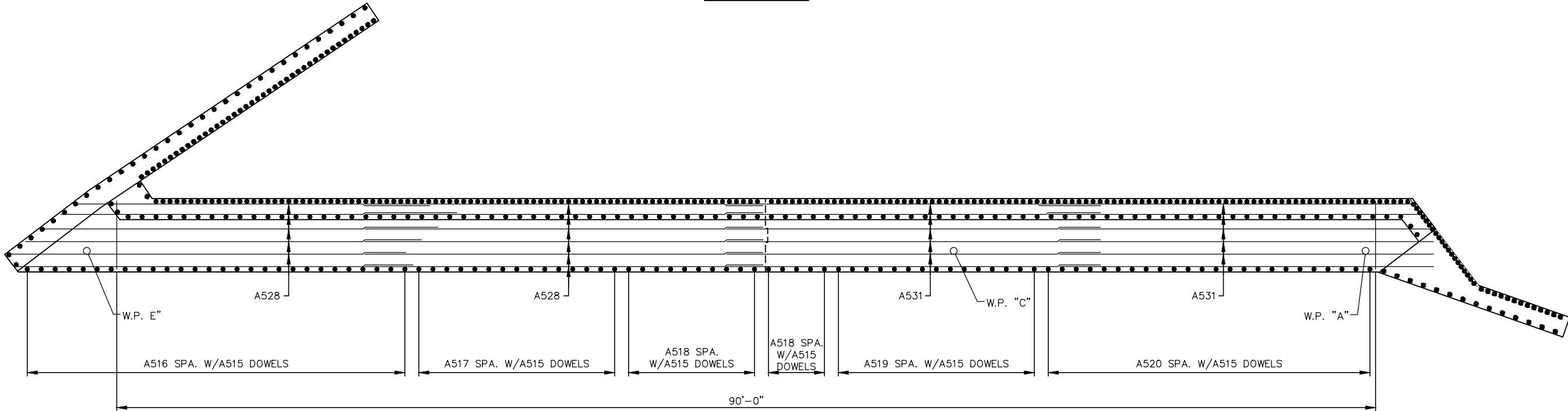
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-ABT-006

SHEET
9
OF
42

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SECTION C-C




SECTION B-B

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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ALB	JULY 27, 2015



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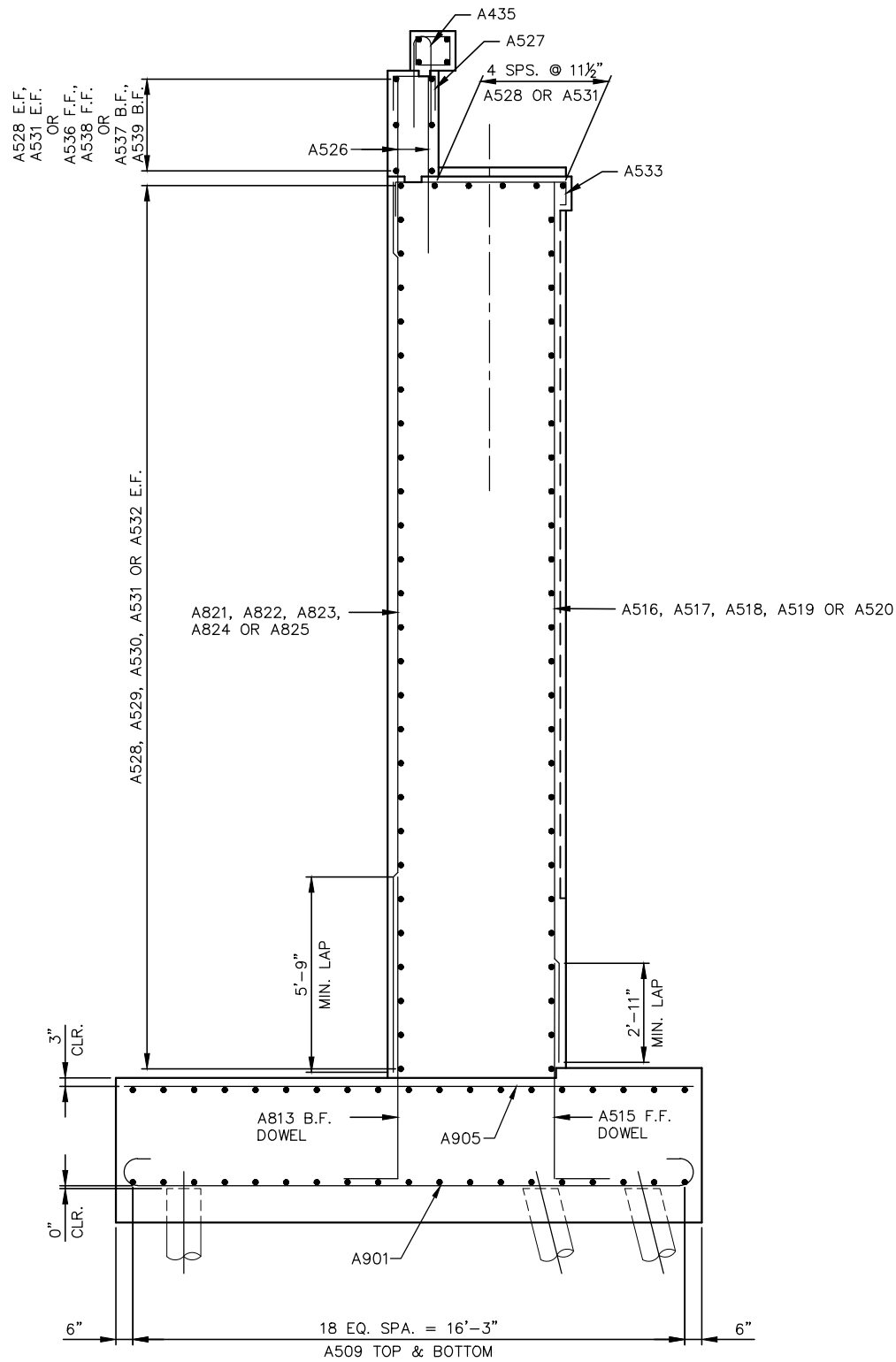


CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
WEST ABUTMENT REINFORCEMENT

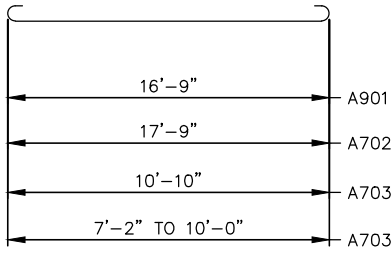
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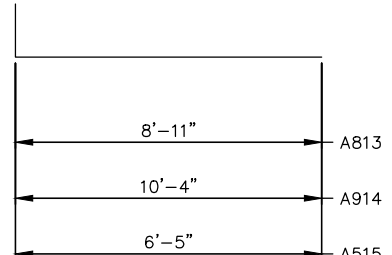
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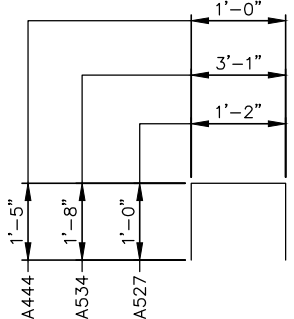
SECTION A-A



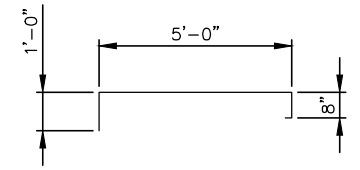
A901, A702, A703, A704



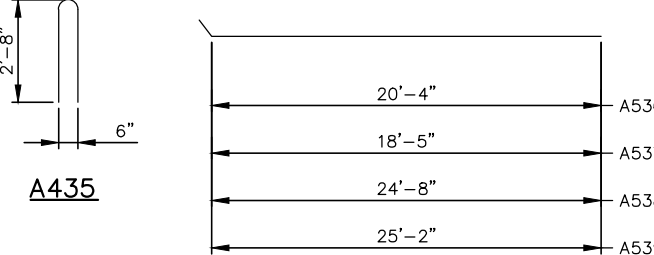
A813, A914, A515



A527, A534, A444



A533



A536, A537, A538, A539

BILL OF REINFORCEMENT FOR WEST ABUTMENT				
BAR	NO.	LENGTH	SHAPE	LOCATION
A901	94	19'- 3"	—	TRANSVERSE FOOTING BOTTOM
A702	14	19'- 5"	—	TRANSVERSE FOOTING BOTTOM
A703	31	12'- 9"	—	TRANSVERSE FOOTING BOTTOM
A704	5	9'-1" TO 11'-8"	—	TRANSVERSE FOOTING BOTTOM
A905	113	16'- 9"	—	TRANSVERSE FOOTING TOP
A906	27	17'- 9"	—	TRANSVERSE FOOTING TOP
A807	52	10'- 10"	—	TRANSVERSE FOOTING TOP
A808	9	7'-2" TO 10'-6"	—	TRANSVERSE FOOTING TOP
A509	72	48'- 3"	—	LONGITUDINAL FOOTING
A510	38	13'- 2"	—	LONGITUDINAL FOOTING
A511	8	34'- 11"	—	LONGITUDINAL FOOTING
A512	4	29'-2" TO 33'-7"	—	LONGITUDINAL FOOTING
A813	177	10'- 8"	—	FOOTING DOWELS B.F.
A914	83	12'- 7"	—	FOOTING DOWELS B.F.
A515	144	7'- 2"	—	FOOTING DOWELS F.F.
A516	28	22'- 1"	—	ABUTMENT VERTICAL F.F.
A517	15	23'- 9"	—	ABUTMENT VERTICAL F.F.
A518	15	24'- 8"	—	ABUTMENT VERTICAL F.F.
A819	15	25'- 6"	—	ABUTMENT VERTICAL F.F.
A520	24	25'- 11"	—	ABUTMENT VERTICAL F.F.
A821	57	22'- 1"	—	ABUTMENT VERTICAL B.F.
A822	29	23'- 9"	—	ABUTMENT VERTICAL B.F.
A823	32	24'- 8"	—	ABUTMENT VERTICAL B.F.
A824	31	25'- 6"	—	ABUTMENT VERTICAL B.F.
A825	57	25'- 11"	—	ABUTMENT VERTICAL B.F.
A526	206	5'- 6"	—	BACKWALL VERTICAL E.F.
A527	103	3'- 2"	—	BACKWALL VERTICAL TIES
A528	64	28'- 6"	—	ABUTMENT HORIZONTAL
A529	8	25'- 2"	—	ABUTMENT HORIZONTAL
A530	6	10'- 0"	—	ABUTMENT HORIZONTAL
A531	118	26'- 9"	—	ABUTMENT HORIZONTAL
A532	6	42'- 9"	—	ABUTMENT HORIZONTAL
A533	91	6'- 10"	—	BRIDGE SEAT TIE
A534	84	6'- 5"	—	PEDESTAL TIE
A435	103	6'- 0"	—	END BLOCK TIE
A536	3	21'- 6"	—	BACKWALL HORIZONTAL F.F.
A537	3	20'- 0"	—	BACKWALL HORIZONTAL B.F.
A538	3	26'- 9"	—	BACKWALL HORIZONTAL F.F.
A539	3	27'- 6"	—	BACKWALL HORIZONTAL B.F.
A540	32	27'- 8"	—	SW WINGWALL VERTICAL F.F.
A941	39	27'- 8"	—	SW WINGWALL VERTICAL B.F.
A542	28	31'- 0"	—	SW WINGWALL LONGITUDNAL F.F.
A543	28	19'- 0"	—	SW WINGWALL LONGITUDINAL B.F.
A444	32	3'- 10"	—	SW WINGWALL VERTICAL TIES
A545	14	31'- 5"	—	NW WINGWALL VERTICAL F.F.
A946	15	31'- 5"	—	NW WINGWALL VERTICAL B.F.
A847	64	13'- 8"	—	NW WINGWALL LONGITUDINAL

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CIVIL WEST – VOLUME 4A

SMETANA ROAD OVER SOUTHWEST LIGHT RAIL

BRIDGE 27C09

WEST ABUTMENT REINFORCEMENT

DISCIPLINE:

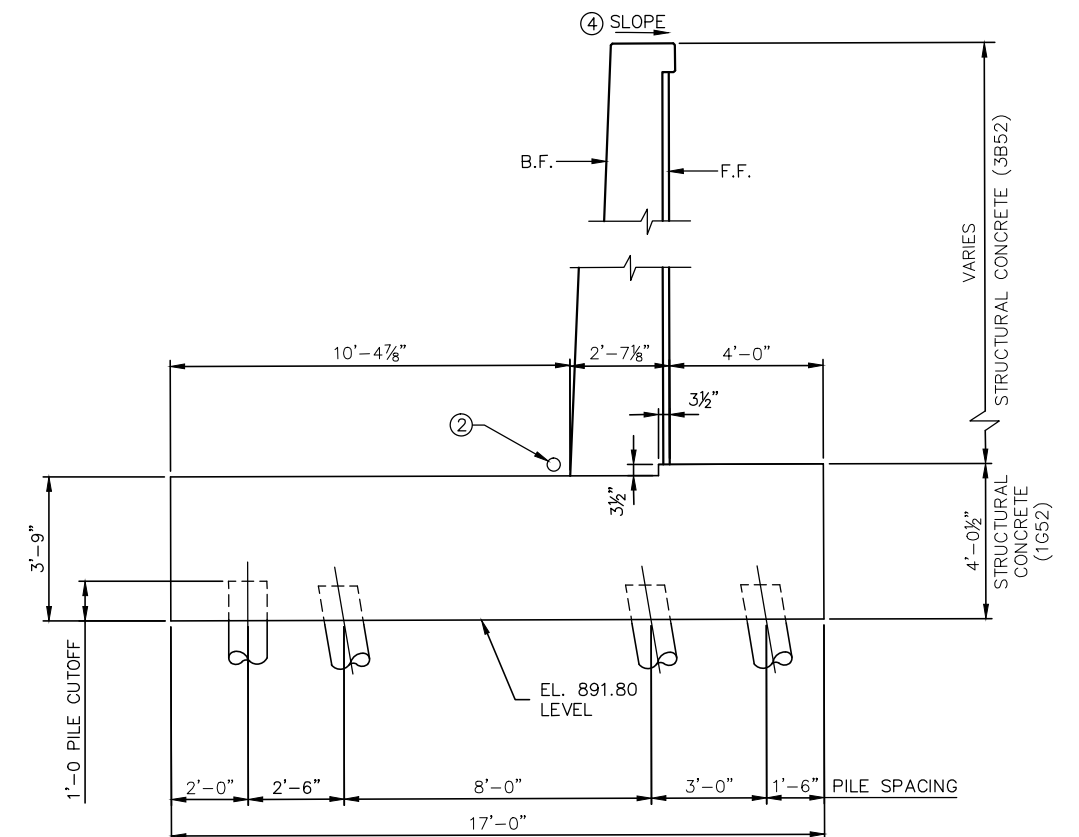
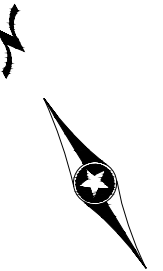
STRUCTURES

SHEET NAME:

CBR27C09-BRG-ABT-003

SOUTHEAST WINGWALL ELEVATION VIEW

- ① MEMBRANE WATERPROOFING SYSTEM PER MN/DOT 2184.3B TO BE INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE (EB32).
- ② PERFORATED PIPE, SEE DETAIL B910 FOR DRAINAGE DETAILS.
- ③ THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- ④ SLOPE 1% + DOWN TOWARDS FRONT FACE
- ⑤ ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).



SECTION B-B

[illegible]**AECOM**

METROPOLITAN
COUNCIL



SOUTHWEST
Green Line LRT Extension

CIVIL WEST – VOLUME 4A

SMETANA ROAD OVER SOUTHWEST LIGHT RAIL BRIDGE 27C09

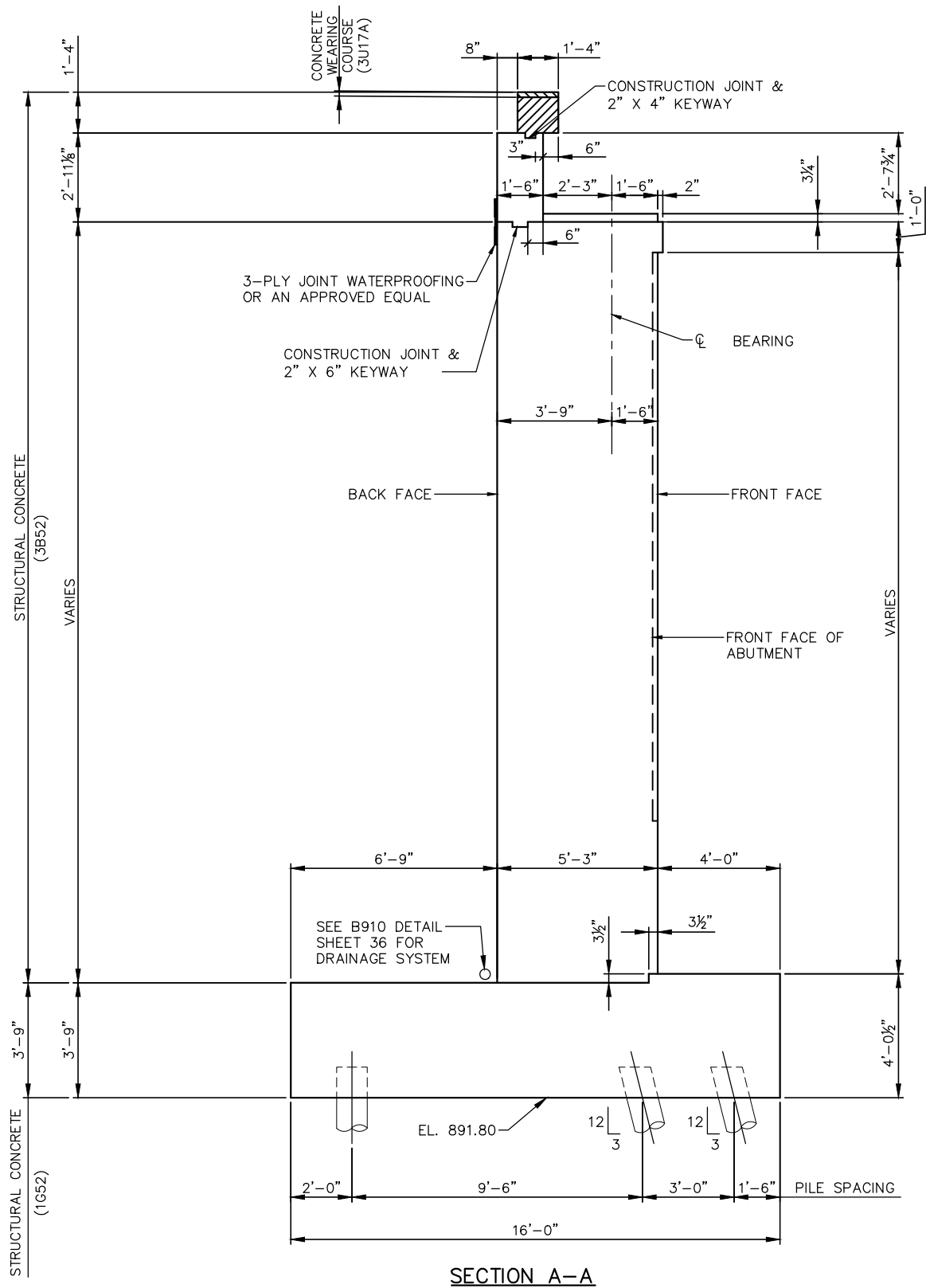
EAST ABUTMENT DETAILS

DISCIPLINE: **STRUCTURES**

SHEET NAME:	
CBR27C09-BRG-ABT-022	

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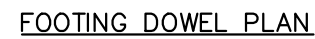
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CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
EAST ABUTMENT DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-ABT-012

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OF
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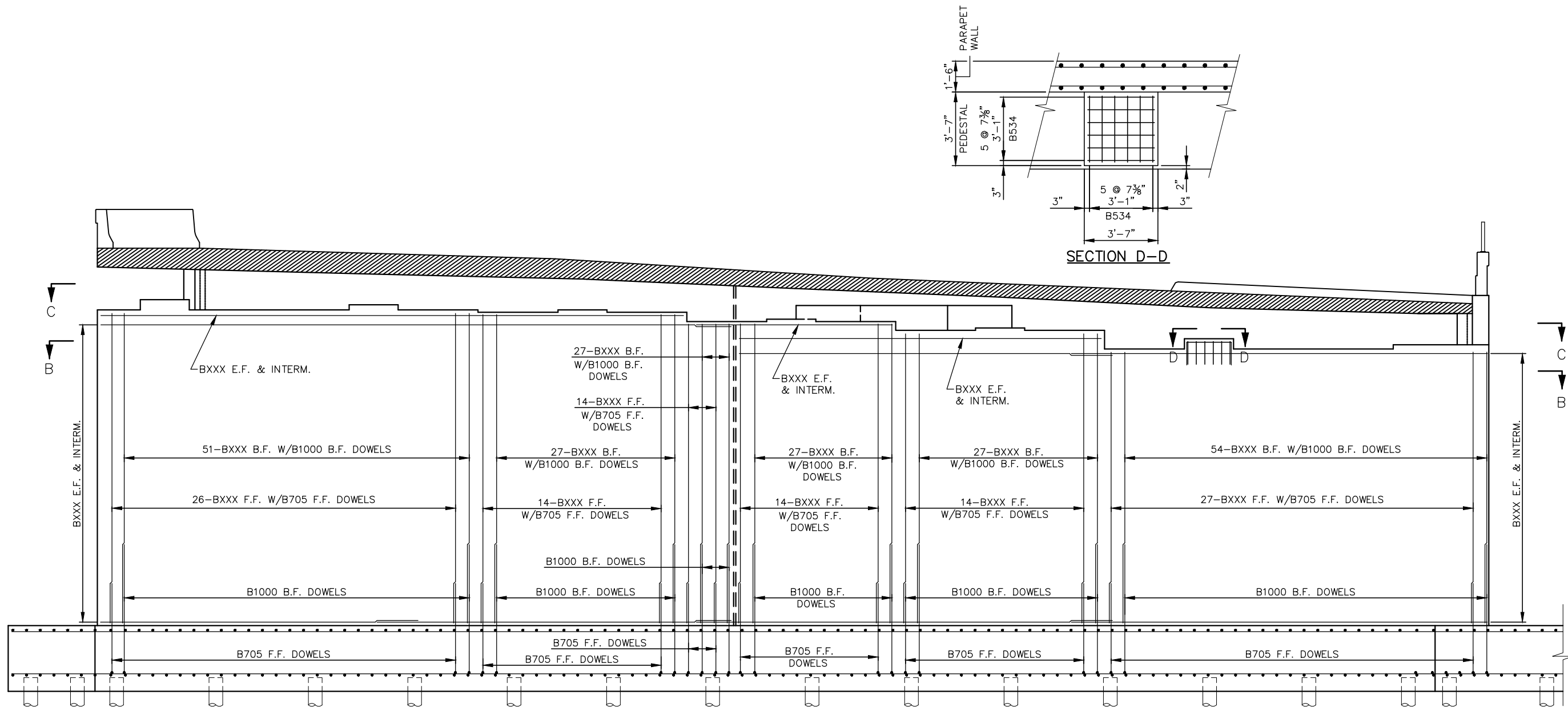
Trial	Control	MCI	AD
1	85	75	65
2	88	78	68
3	90	80	70
4	92	82	72
5	95	85	75

60% SUBMISSION - 09/28/15

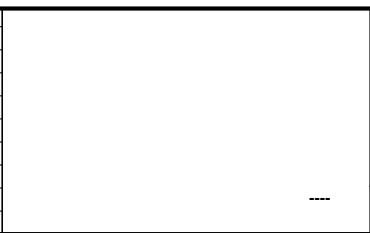
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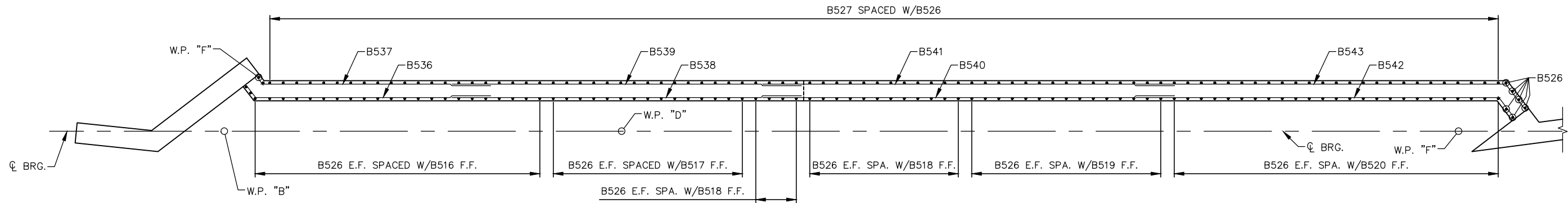


CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
EAST ABUTMENT REINFORCEMENT

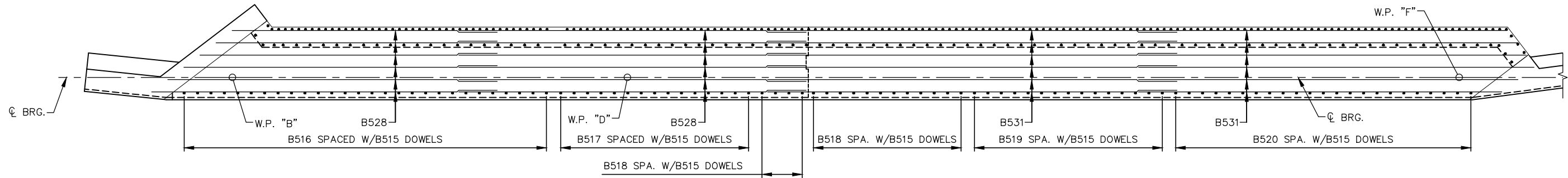
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OF
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SECTION C-C



SECTION B-B

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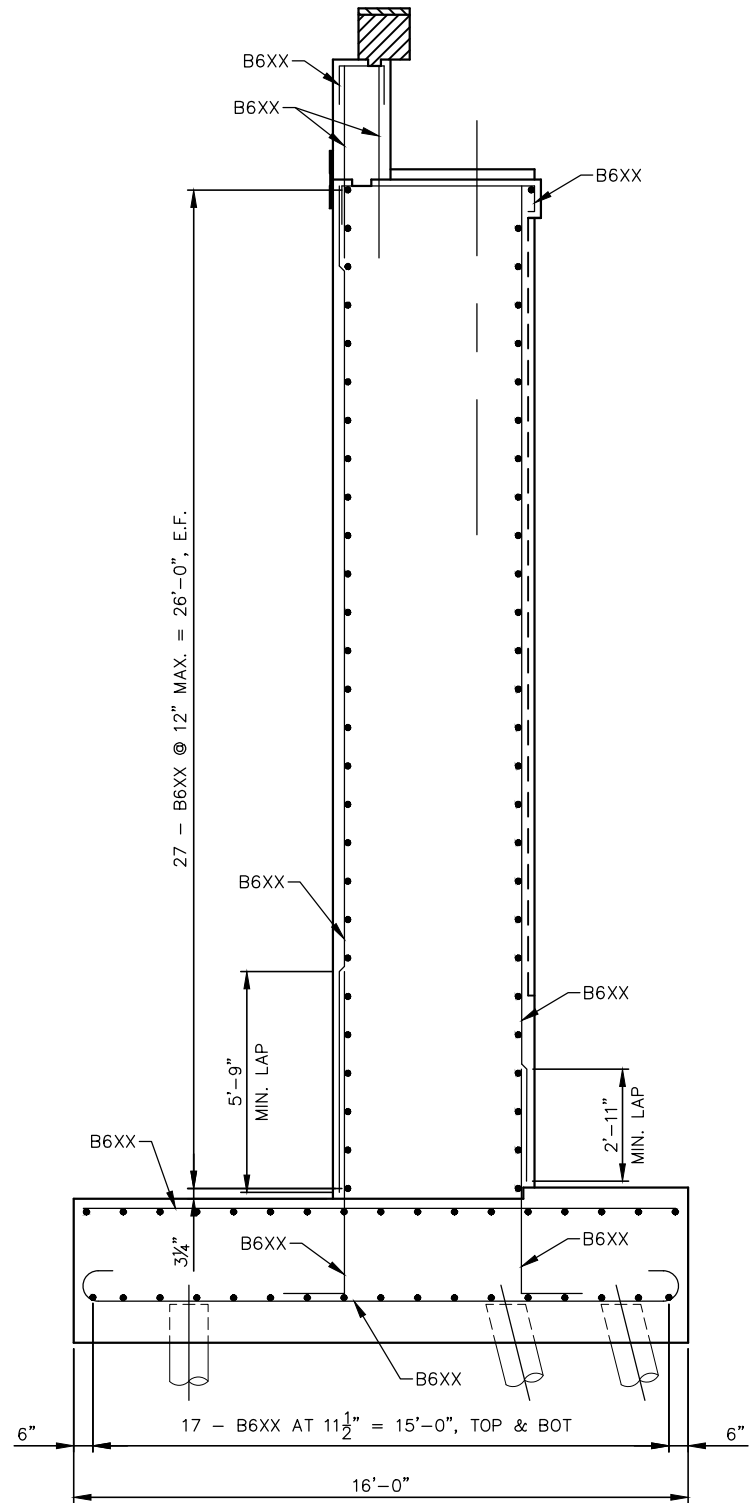


CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
EAST ABUTMENT REINFORCEMENT

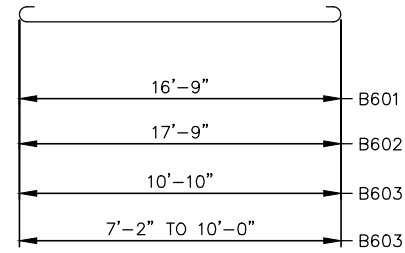
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OF
42

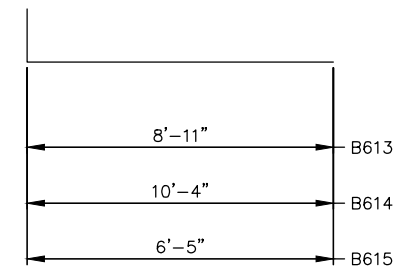
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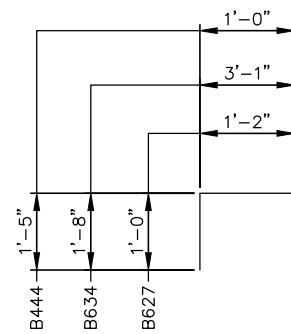
SECTION A-A



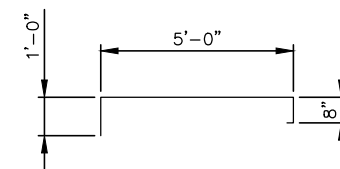
B601, B602, B603, B604



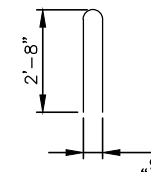
B613, B614, B615



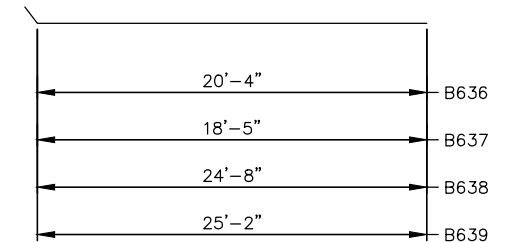
B627, B634, B444



B633

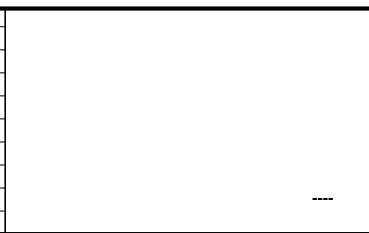


B435



B636, B637, B638, B639

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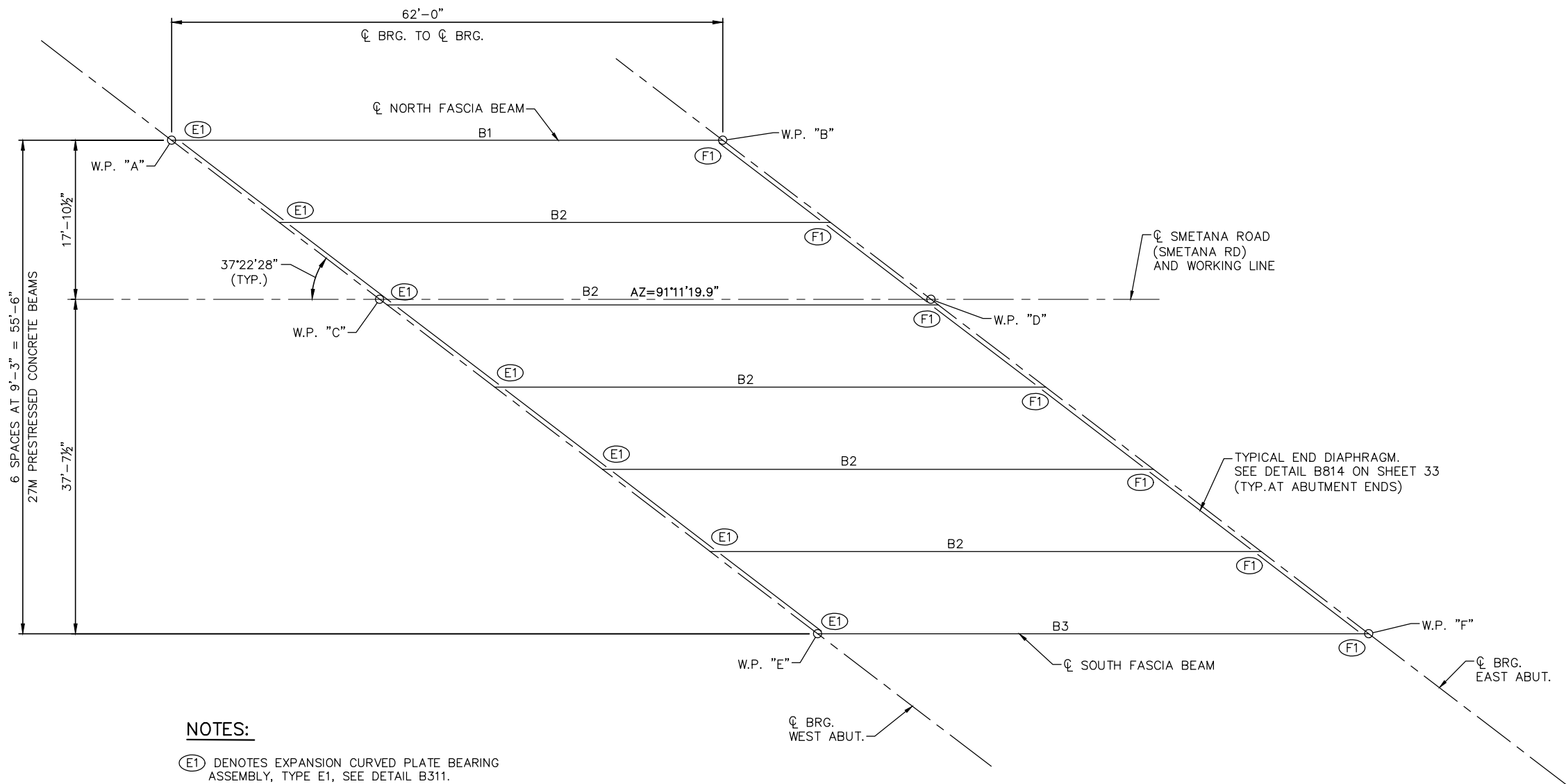
60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
EAST ABUTMENT REINFORCEMENT
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-ABT-018

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NOTES:

- (E1) DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E1, SEE DETAIL B311.
- (F1) DENOTES FIXED CURVE PLATE BEARING ASSEMBLY, TYPE F1, SEE DETAIL B310.
- x DENOTES WHICH END OF THE BEAM IS TO BE MARKED WITH AND "X".

FRAMING PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

ALB JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15

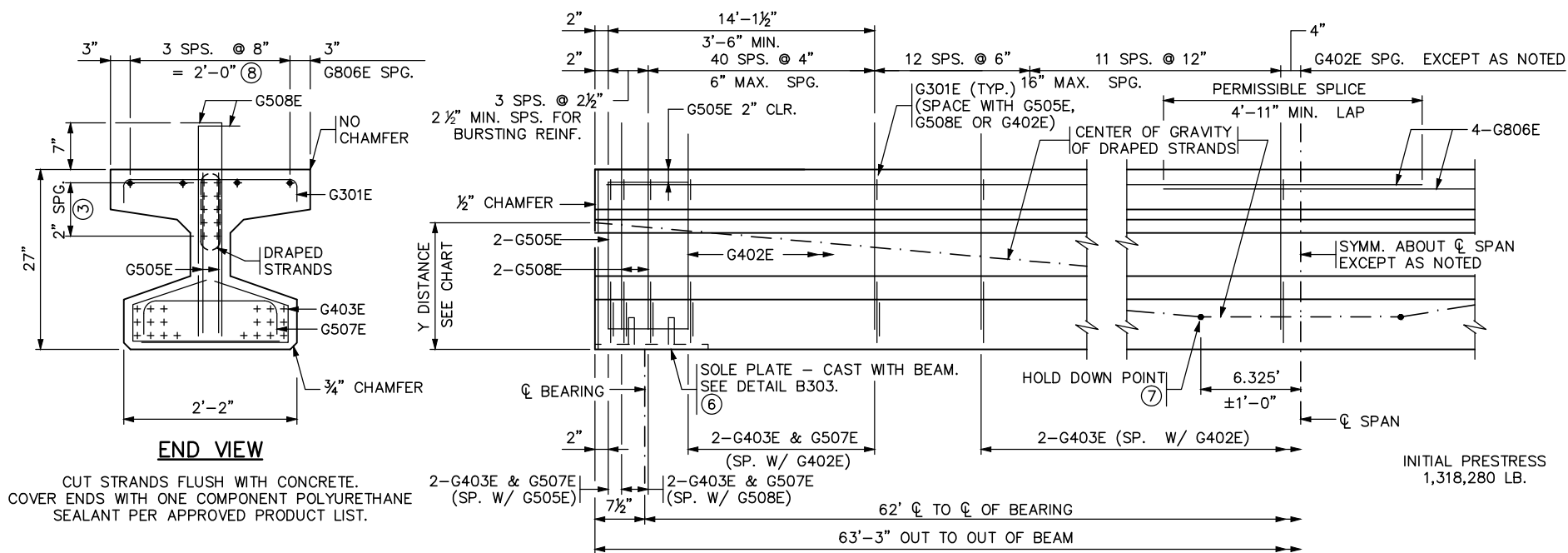


CIVIL WEST – VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
FRAMING PLAN

DISCIPLINE: **STRUCTURES**

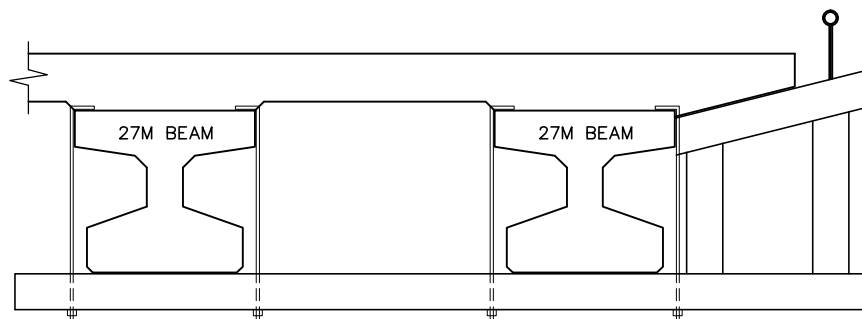
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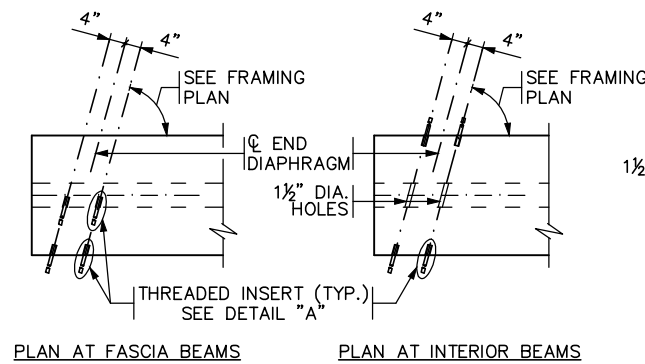


END VIEW

CUT STRANDS FLUSH WITH CONCRETE. COVER ENDS WITH ONE COMPONENT POLYURETHANE SEALANT PER APPROVED PRODUCT LIST.

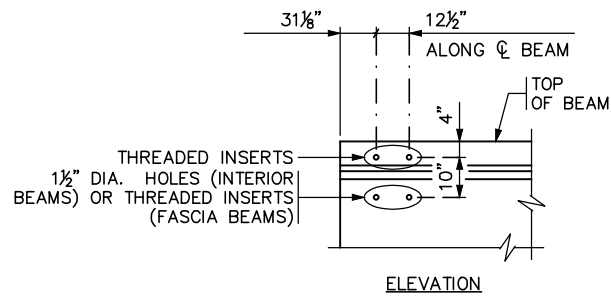


SEE THE "CONSTRUCTION NOTES" ON FRONT PORTION OF THE BRIDGE PLANS. THIS CONCEPT HAS BEEN USED SUCCESSFULLY ON PREVIOUS PROJECTS. CONTRACTORS MAY CONSIDER THIS OR ANOTHER SYSTEM AT THEIR DISCRETION.



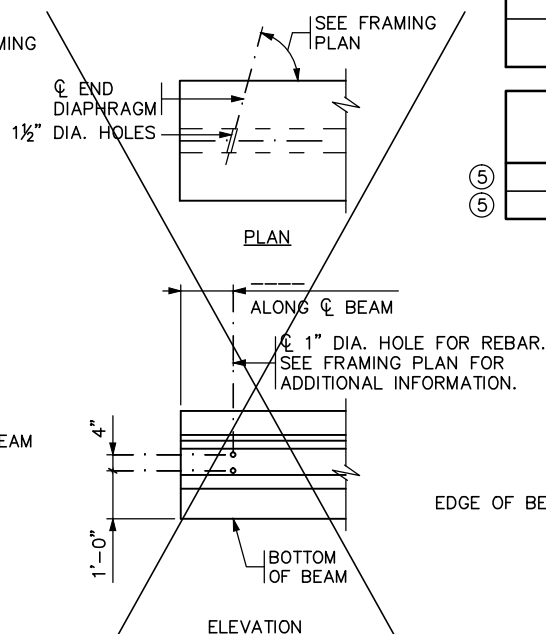
PLAN AT FASCIA BEAMS

PLAN AT INTERIOR BEAMS



CONCRETE END DIAPHRAGM

PARAPET ABUTMENT (SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



CONCRETE END DIAPHRAGM

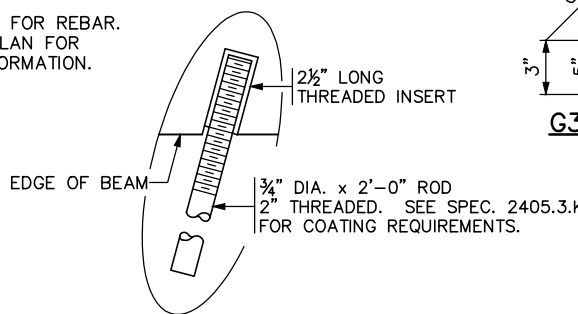
SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.

CONTRACTOR SHALL VERIFY STABILITY OF FASCIA BEAMS FROM OVERTURNING (NO PERMANENT BEAM DIAPHRAGMS ARE PRESENT). CONTRACTOR SHALL PROVIDE TEMPORARY BRACING.

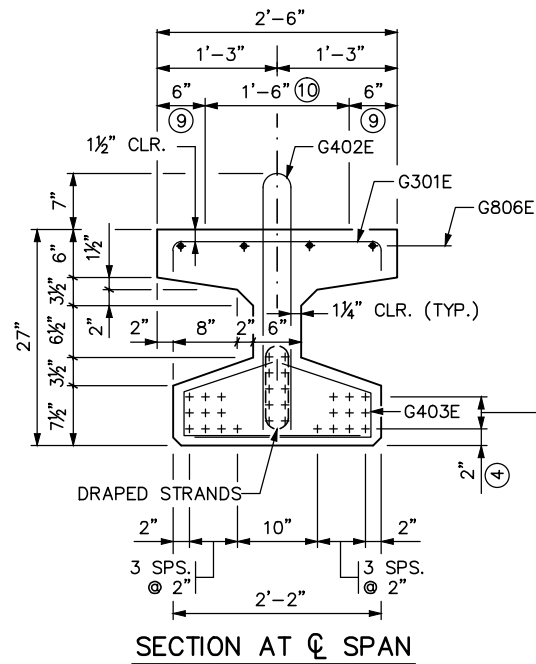
CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	23.28 KSI
LONG TERM LOSSES	23.82 KSI
TOTAL LOSSES	47.10 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'ci	② f'c
7.5 KSI	9 KSI

PRESTRESSING STRAND DIAMETER	
⑤ 1/2" □	
⑤ 0.60" ☒	



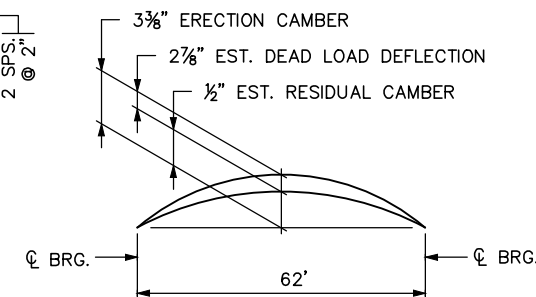
DETAIL "A"



Y DISTANCES (INCHES)			
	NO.	C. SPAN	END
STRAIGHT STRANDS	20	3.8	20.0 □
DRAPED STRANDS	10	7.0	
TOTAL STRANDS	30	4.87	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

□ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE. DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE. CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILLED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X".

APPROXIMATE WEIGHT OF BEAM IS 17.55 TONS.

AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.

APPLY AN APPROVED SEALER TO THE SIDES OF THE BEAM NEAR EACH END PER THE SPECIAL PROVISIONS.

- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ DRAPED STRANDS.
- ④ STRAIGHT STRANDS.
- ⑤ USE 7-WIRE LOW RELAXATION PRESTRESSING STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
- ⑦ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.
- ⑧ TWO INSIDE BARS MAY BE PLACED ADJACENT TO VERTICAL STIRRUP FOR TYING CONVENIENCE.
- ⑨ STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.
- ⑩ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.

REVISED:

APPROVED: JANUARY 13, 2015

Nancy Subenberger
STATE BRIDGE ENGINEER

CONCRETE END DIAPHRAGM

PARAPET ABUTMENT (SEE DETAIL B814 FOR DIAPHRAGM DETAILS)

CONCRETE END DIAPHRAGM

SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: **27" PRESTRESSED CONCRETE BEAM (PRETENSIONED) 27M-62**

BEAMS B1-B3

FIG. 5-397.504

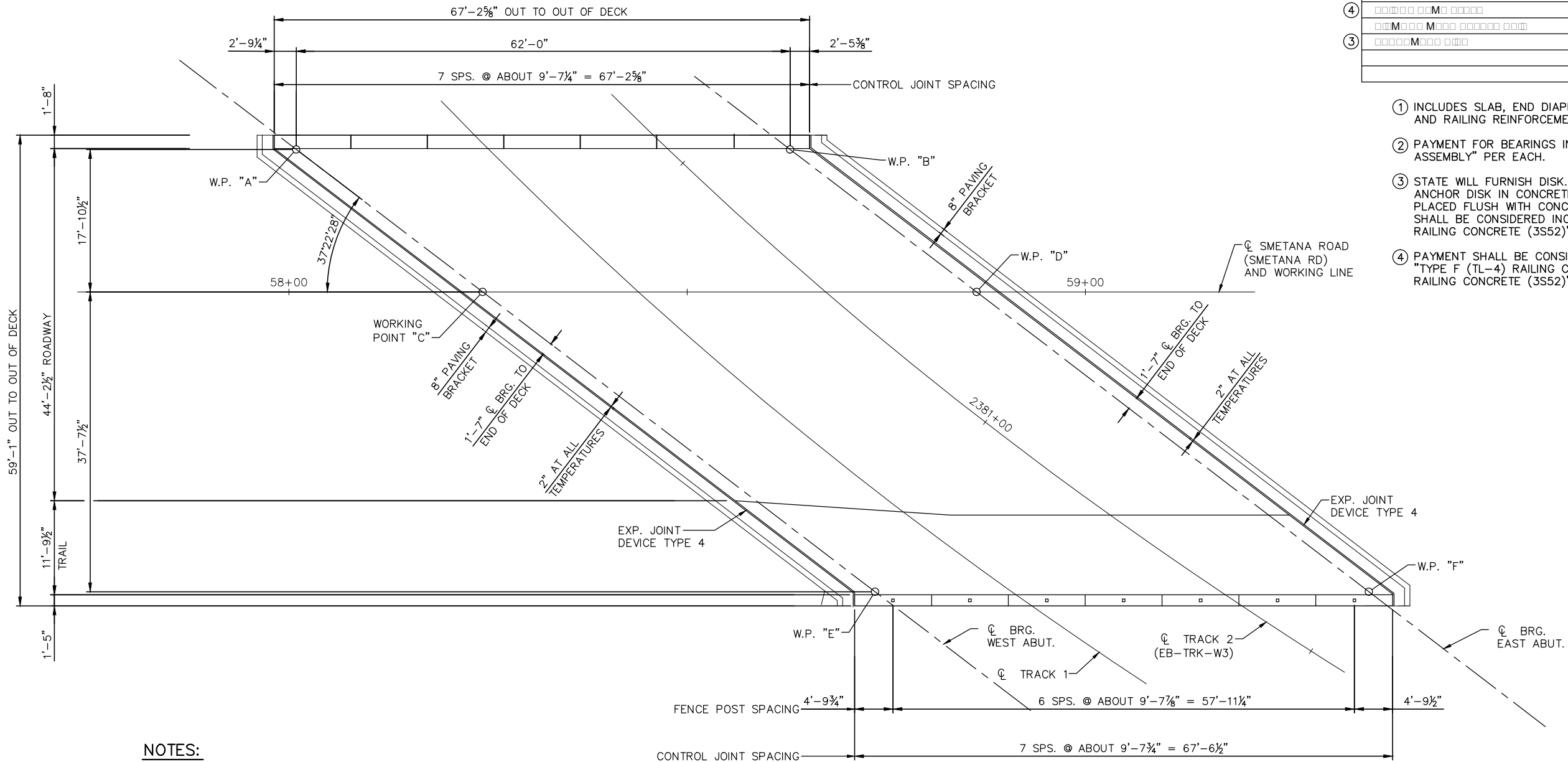
DES: **RJH** DR: **ALB**
CHK: **ATN** CHK: **XXXX**

APPROVED:

BRIDGE NO. **27C09**

SHEET NO. **22** OF **42** SHEETS

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NOTES:
FOR CORNER DETAILS SEE SHEET XX.
FOR TRANSVERSE BAR STEEL REINFORCEMENT LAYOUT DETAILS SEE SHEET XX.

**SUMMARY OF QUANTITIES
FOR SUPERSTRUCTURE**

	QTY	UNIT
1. CONCRETE SLAB, END DIAPHRAGM, SIDEWALK, AND RAILING REINFORCEMENT	3.17	CU YD
2. PAYMENT FOR BEARINGS INCLUDED IN ITEM "BEARING ASSEMBLY" PER EACH	4	EA
3. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)".	3.52	CU YD
4. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)" AND "TYPE P-1 RAILING CONCRETE (3S52)".	3.52	CU YD
1. INCLUDES SLAB, END DIAPHRAGM, SIDEWALK, AND RAILING REINFORCEMENT.	3.52	CU YD
2. PAYMENT FOR BEARINGS INCLUDED IN ITEM "BEARING ASSEMBLY" PER EACH.	4	EA
3. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)".	3.52	CU YD
4. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)" AND "TYPE P-1 RAILING CONCRETE (3S52)".	3.52	CU YD

- ① INCLUDES SLAB, END DIAPHRAGM, SIDEWALK, AND RAILING REINFORCEMENT.
- ② PAYMENT FOR BEARINGS INCLUDED IN ITEM "BEARING ASSEMBLY" PER EACH.
- ③ STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)".
- ④ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE F (TL-4) RAILING CONCRETE (3S52)" AND "TYPE P-1 RAILING CONCRETE (3S52)".

DECK PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
1	09/28/15	RJH	ALB		
2					
3					
4					
5					
6					
7					
8					
9					
10					

RJH	----
ALB	JULY 27, 2015

AECOM
60% SUBMISSION - 09/28/15

 METROPOLITAN COUNCIL	 SOUTHWEST Green Line LRT Extension
---	--

CIVIL WEST – VOLUME 4A SMETANA ROAD OVER SOUTHWEST LIGHT RAIL BRIDGE 27C09 SUPERSTRUCTURE DETAILS		SHEET 23 OF 42
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C09-BRG-SUP-004	

[illegible]

SEE SHEET NO. 22 FOR "SUMMARY OF QUANTITIES FOR SUPER STRUCTURE"

- ① BRIDGE CONCRETE SLAB (3YHPC-S)
② ROUGH FINISH BETWEEN DOWELS. SEE SHEET 26 FOR DETAILS.
③ ROUGH FINISH BETWEEN DOWELS. SEE SHEET 27 FOR DETAILS.

Sep. 21 2015 07:52 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-SUP-007.dwg By: V-ShrestBA



NOTES:

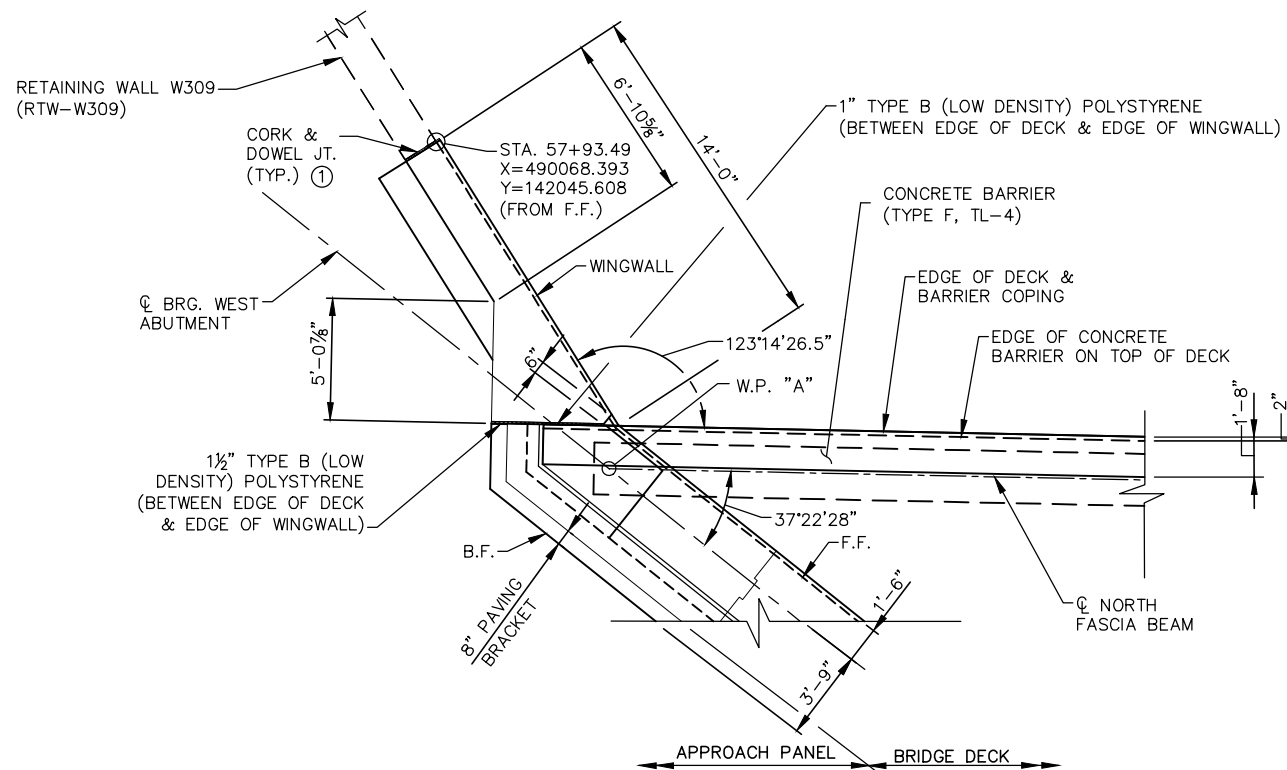
B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

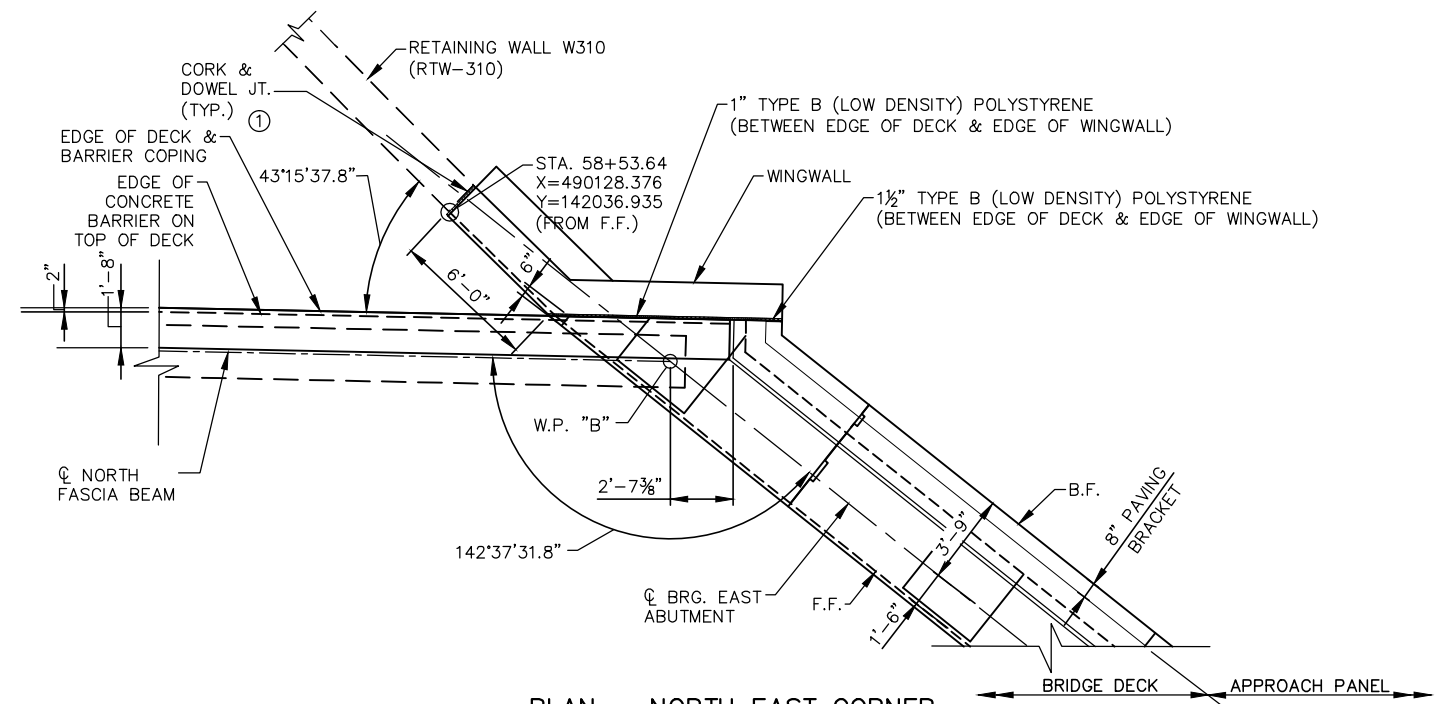
W.P. DENOTES WORKING POINT.

C.I.P. DENOTES CAST IN PLACE.

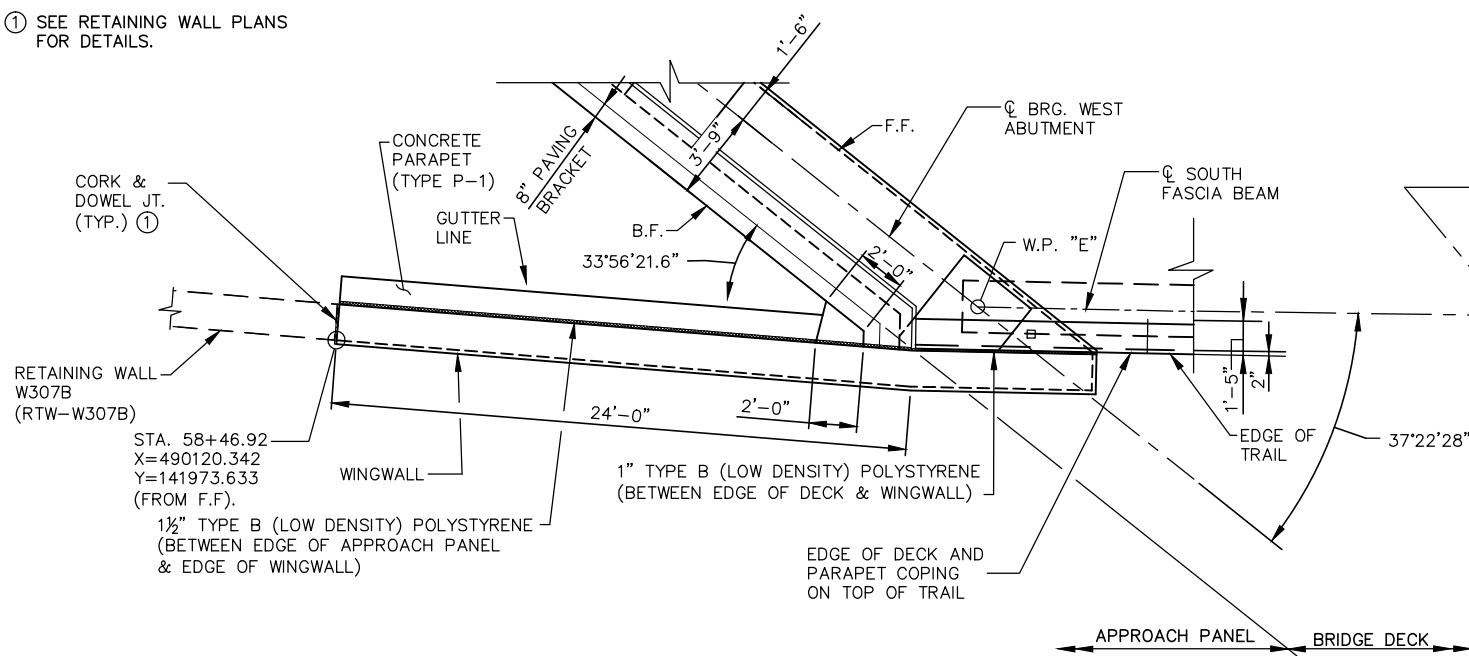
① SEE RETAINING WALL PLANS FOR DETAILS.



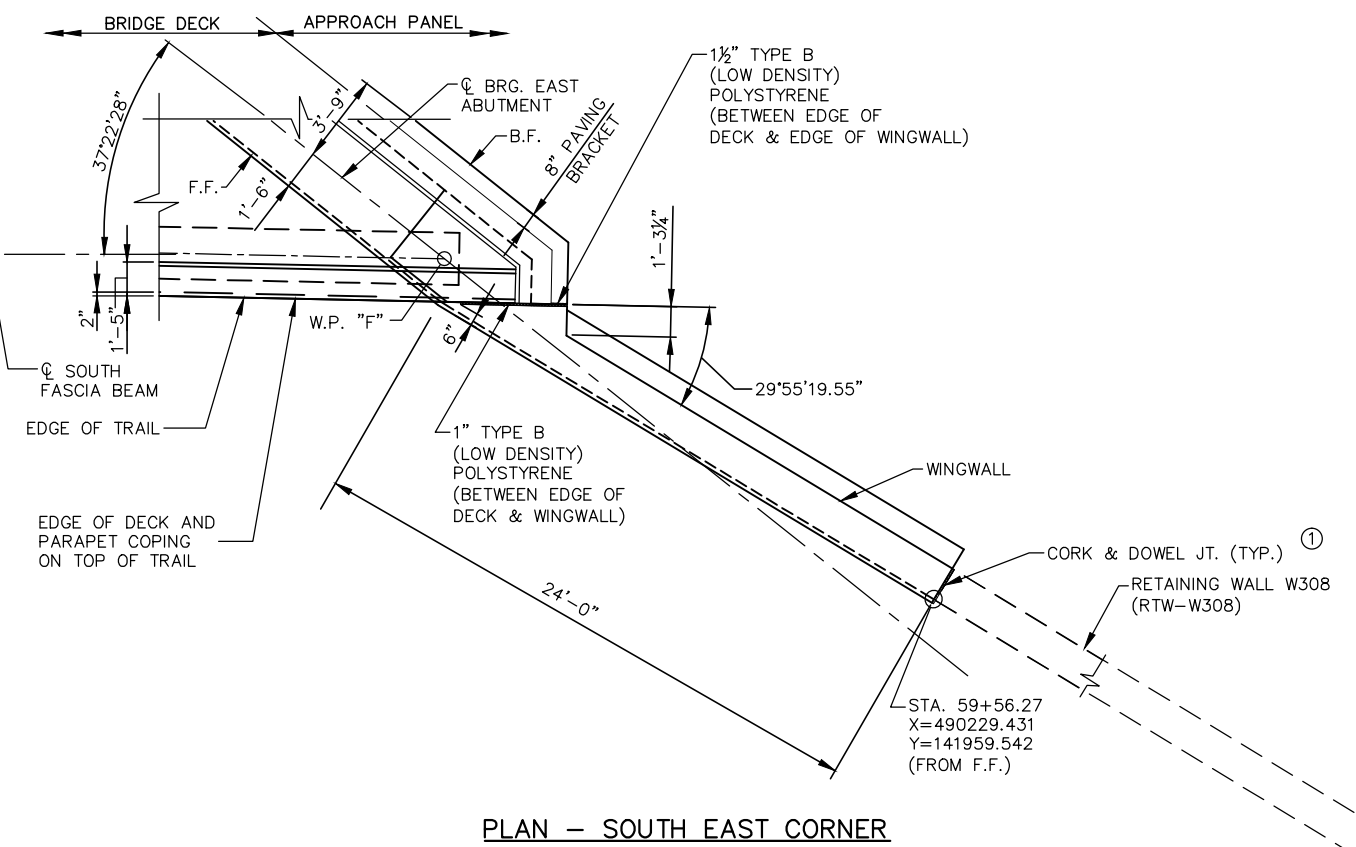
PLAN - NORTH WEST CORNER



PLAN - NORTH EAST CORNER



PLAN - SOUTH WEST CORNER



PLAN - SOUTH EAST CORNER

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB

JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
CORNER DETAILS

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C09-BRG-SUP-007**

SHEET
25
OF
42

DESIGNER NOTE
(REMOVE PRIOR TO PLOTTING FINAL PLANS):
FOR BRIDGES WITH SUPERELEVATION EXCEEDING 2%, SHOW THE BARRIER
FRONT FACE DIMENSIONS AS INDICATED ON THIS SHEET, AND ALSO CALCULATE
AND SHOW THE BARRIER BACK FACE DIMENSIONS. ALSO VERIFY THAT BAR R501E
HAS 10" MIN. PROJECTION WHEN CROSS SLOPE VARIES FROM NORMAL 0.02 FT/FT

EXPANSION JOINT NOT SHOWN

CONCRETE WEARING COURSE NOT SHOWN
(7'-0" BARRIER ON APPROACH SHOWN)

BARRIER MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350

Technical drawing of a concrete curb cross-section. The drawing includes the following dimensions and details:

- Overall Width:** 1'-8"
- Top Flange Dimensions:**
 - 7 1/2" (from left edge to start of vertical face)
 - 1'-0 1/2" (from 7 1/2" mark to right edge)
 - 5" (from left edge to start of vertical face)
 - 2 1/2" (from 5" mark to right edge)
- Vertical Dimensions:**
 - 2" CLR. (from top edge to top of vertical face)
 - 1'-10" (from top edge to bottom of vertical face)
 - 7" (from bottom of vertical face to bottom of curb)
 - 5" (from bottom of curb to bottom of concrete wearing course)
 - 1'-0" (from top of vertical face to top of curb)
 - 2 EQUAL SPS. (from top of vertical face to top of curb)
 - 10" PROJ. (from top of vertical face to top of curb)
 - 8" (from bottom of curb to bottom of concrete wearing course)
- Curbside Details:**
 - 10" R (radius of the outer curve)
 - 2" CLR. (MIN.) (clearance from the curb to the adjacent surface)
 - NO CHAMFER (indicated on the bottom edge of the curb)
 - 1/2" CHAMFER (TYP.) (indicated on the top edge of the curb)
 - 3" CLR. (clearance from the curb to the adjacent surface)
 - 2" (dimension from the curb to the adjacent surface)
- Construction and Materials:**
 - CONCRETE WEARING COURSE (bottom layer)
 - R501E (reinforcement bar, indicated by a circled E)
 - CONSTRUCTION JOINT ROUGH FINISH (indicated on the bottom edge of the curb)
 - R503E (reinforcement bar, indicated by a circled E)

BILL OF REINFORCEMENT FOR BARRIER					
BAR	NO.	LENGTH	SHAPE	LOCATION	
R501E	___	5'-3"		BARRIER	DOWEL
R502E	___	5'-5"		BARRIER	DOWEL
R503E	___	6'-6"		BARRIER	VERTICAL
R504E	___	4'-8"		BARRIER	VERTICAL
R505E	___	6'-0"		BARRIER	VERTICAL
R506E	___	5'-10"		BARRIER	VERTICAL
R707E	___	6'-6"		BARRIER	VERTICAL
R4__E	___	___	---	BARRIER	LONGIT.
R4__E	___	___	---	BARRIER	LONGIT.
R4__E	___	___	---	BARRIER	LONGIT.
R4__E	___	___	---	BARRIER	LONGIT.
R4__E	___	___	---	BARRIER	LONGIT.

MEASURE PAYMENT LENGTH BETWEEN THE OUTSIDE
FACES OF THE BARRIER.

CONCRETE BARRIER = 502 LBS./FT. (0.124 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER AND END POST WITH 1/2" CHAMFER,
EXCEPT WHERE OTHERWISE NOTED.

SPACE OF CONTROL JOINTS AT BE 10 FT. MAXIMUM.
SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306.

GUARDRAIL CONNECTION AND NAME PLATE TO BE CONSIDERED
INCIDENTAL TO BARRIER.

BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

- ① PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.
- ② JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST
- CRACK AND JOINT MATERIALS - SILICONE JOINT SEALERS.

[illegible]

(REINFORCEMENT NOT SHOWN)
TRIM GUARDRAIL BOLTS SUCH THAT
NO MORE THAN 1½" PROTRUDES
FROM BACK FACE OF BARRIER.
☆ DIMENSIONS INCLUDE ¾" PLATE

GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 23 LBS

CONTRACTOR OPTION 1

CONTRACTOR OPTION 2

WHEN USING SLIP FORM METHOD TO PLACE THE CONCRETE,
CUT JOINT 3 INCHES DEEP USING MARGIN TROWEL OR
SIMILAR MEANS IMMEDIATELY AFTER CONCRETE PLACEMENT
(TYP. THREE SIDES)

REVISION:

APPROVED: JANUARY 13, 2015

Nancy Dubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY _____
 _____ LICENSED PROFESSIONAL ENGINEER _____ DATE _____
 NAME: _____ LIC. NO. _____

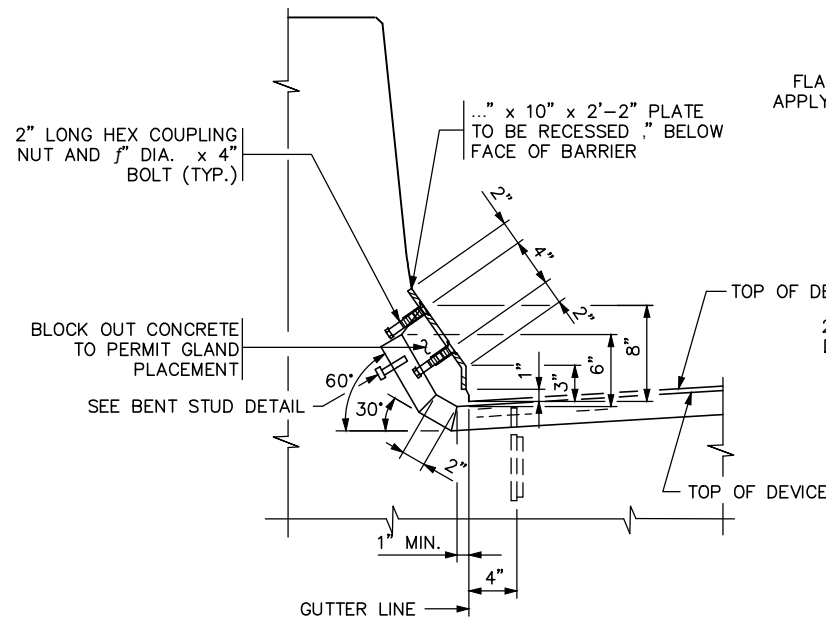
TITLE: **CONCRETE BARRIER (TYPE F, TL-4)**
PARAPET ABUTMENT WITH INTEGRAL END POST
(WITH CONCRETE WEARING COURSE)

DES: RJH	DR: ALB	APPROVED:	BRIDGE NO. 27C09
CHK: ---	CHK: XXXX		
SHEET NO. 27 OF 42 SHEETS			

FIG. 5-397.117(B)

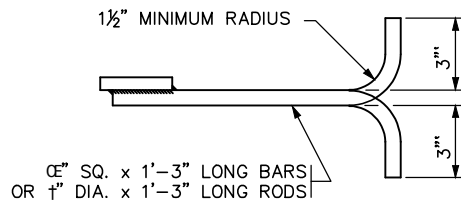
BRIDGE NO.	27C09
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Sep. 21 2015 07:53 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-009.dwg By: V-Shrestha

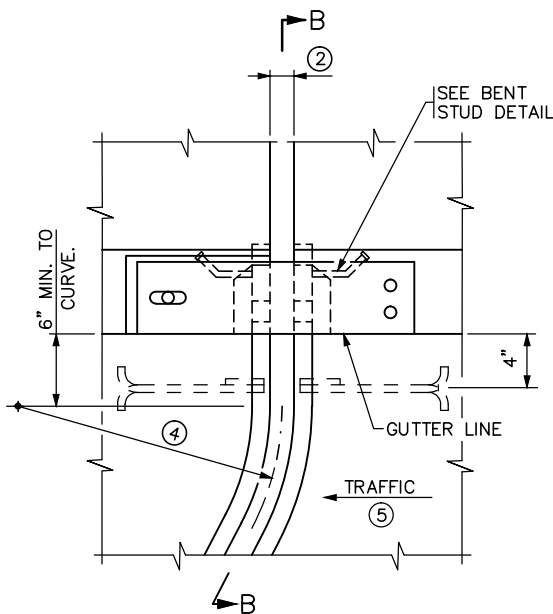


SECTION THROUGH BARRIER

TYPE F BARRIER



BAR-ROD DETAIL



PLAN VIEW @ EXPANSION DEVICE

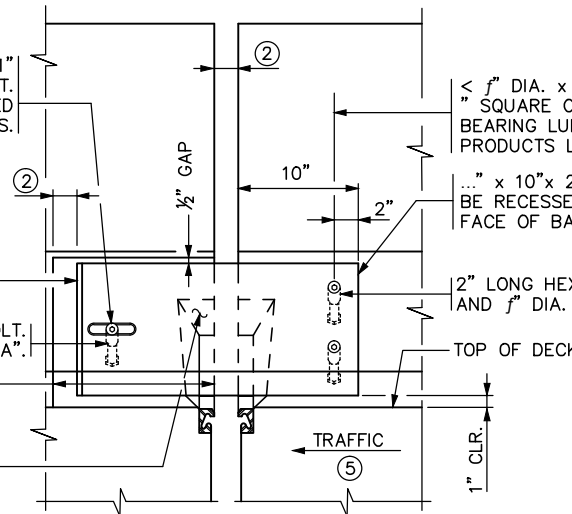
WITH CURVED DEVICE ALTERNATE

1" DIA. x 6" LONG SLOTTED HOLE FOR 1/2" DIA. x 1" FLATHEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS.

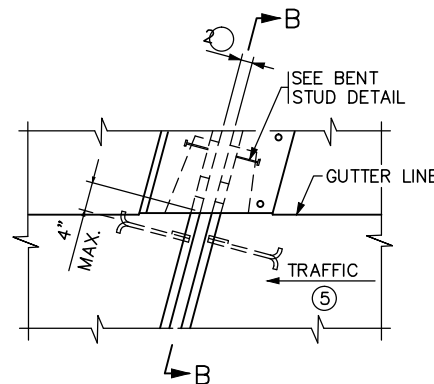
2" LONG HEX COUPLING NUT AND 1/2" DIA. x 4" BOLT. DO NOT TIGHTEN DOWN CAP SCREW. SEE DETAIL "A".

7 1/2" BIT. FELT OR EQUAL

BLOCK OUT FLARED AREA AS SHOWN FOR GLAND INSTALLATION

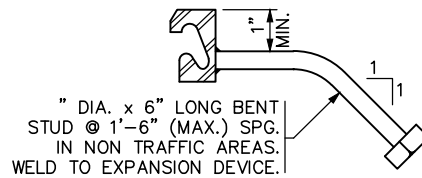


BARRIER ELEVATION

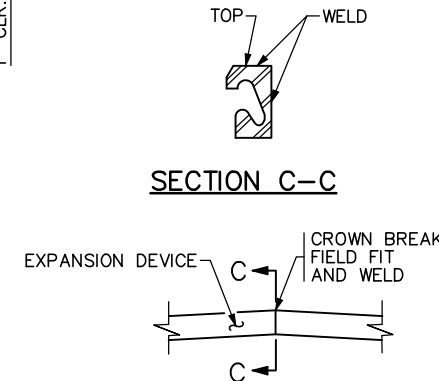


PLAN VIEW @ EXPANSION DEVICE

MEDIAN OR SIDEWALK ALTERNATE

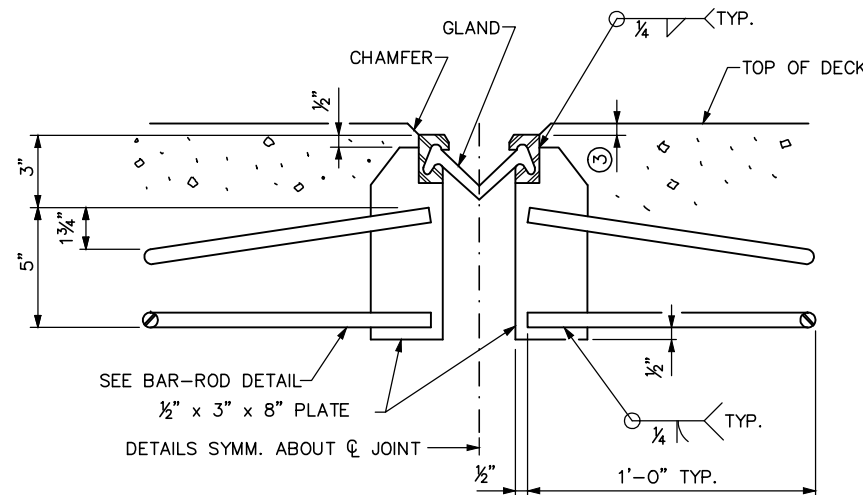


BENT STUD DETAIL



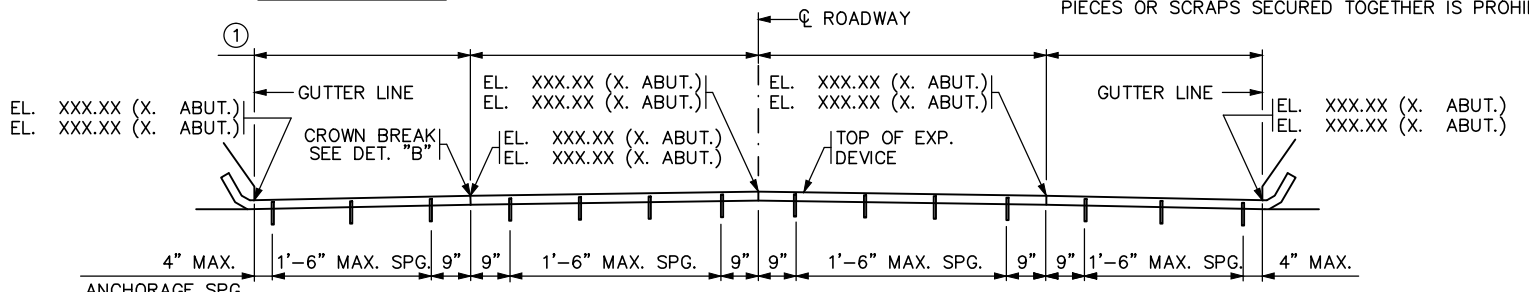
SECTION C-C

DETAIL "B"



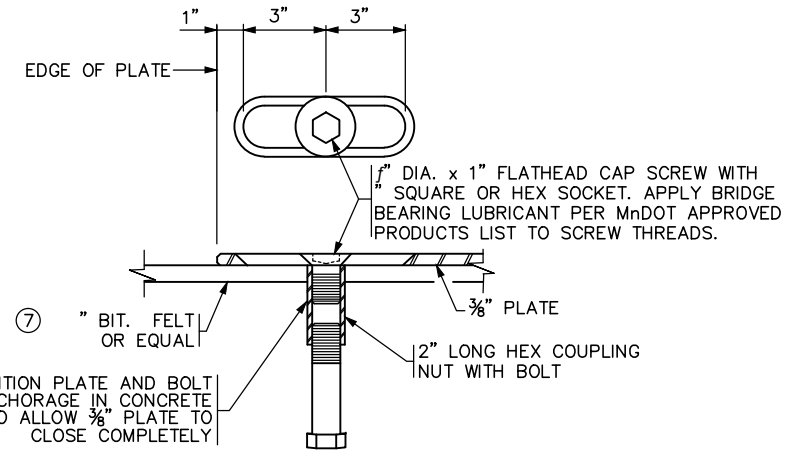
SECTION A-A

DESIGNER NOTE: CHOOSE ONE JOINT OPENING NOTE AND DELETE OTHER.



SECTION B-B ~ ALONG JOINT

ELEVATIONS SHOWN ARE 1/8" BELOW TOP OF SLAB @ JOINT
ELEVATIONS SHOWN ARE 1/2" BELOW TOP OF SLAB @ JOINT



DETAIL "A"

GENERAL NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER SPEC. 3394. GALVANIZE FASTENERS AS PER SPEC. 3392.

JOINTS IN EXTRUSION SHALL BE LOCATED AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED. JOINTS SHALL BE CLOSE FIT AND WELDED. REPAIR AFTER WELDING AS PER SPEC. 2471.3L.

STRUCTURAL STEEL SHALL COMPLY WITH SPEC. 3306 OR SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF 1/8" IN 10 FT.

1/2" DIA. X 1" FLATHEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE COUNTERSUNK 1/2" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS

LENGTH OF PAYMENT FOR DEVICE IS FROM OUTER END TO OUTER END OF EXTRUSION ALONG CENTERLINE OF JOINT. REFER TO THE SPECIAL PROVISIONS FOR MORE SPECIFIC PAYMENT INFORMATION.

① DIMENSIONS ARE ALONG CENTERLINE OF JOINT.

② ___ AT 45° F; ___ AT 90° F. 2" AT ALL TEMPS.

③ 1/2" (1/2" MAX.)
1/2" (1/2" MAX.) WHEN SNOWPLOW FINGERS ARE USED. SNOWPLOW FINGERS ARE REQUIRED FOR SKEWS OVER 15° AND LESS THAN 50°.

④ SEE SUPERSTRUCTURE DETAILS FOR RADIUS.

⑤ SEE SHEET NO. ___ FOR DIRECTION OF TRAFFIC.

⑥ PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO < ROADWAY.

⑦ USE THE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

REVISION: 09-11-2014

APPROVED: NOVEMBER 6, 1995

Donald J. Manning
STATE BRIDGE ENGINEER

PLAN VIEW @ EXPANSION DEVICE

WITH STRAIGHT DEVICE

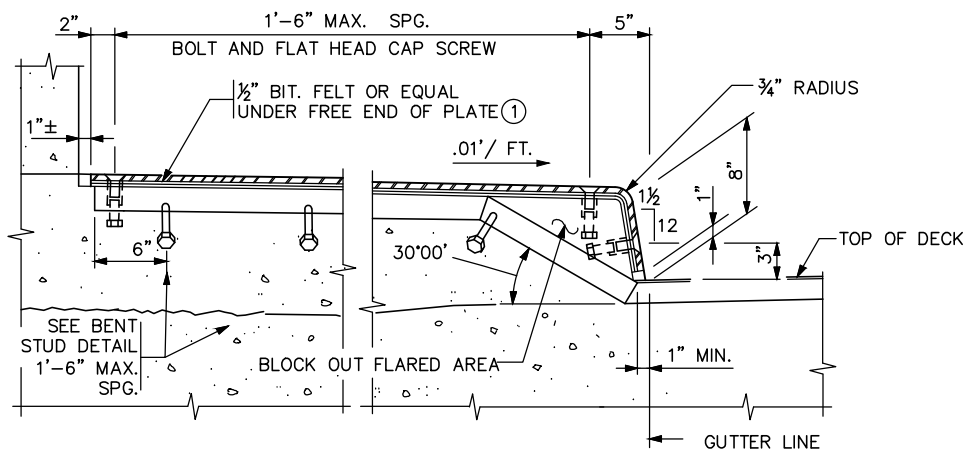
CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: WATERPROOF
EXPANSION DEVICE
(WITH TYPE F BARRIER)

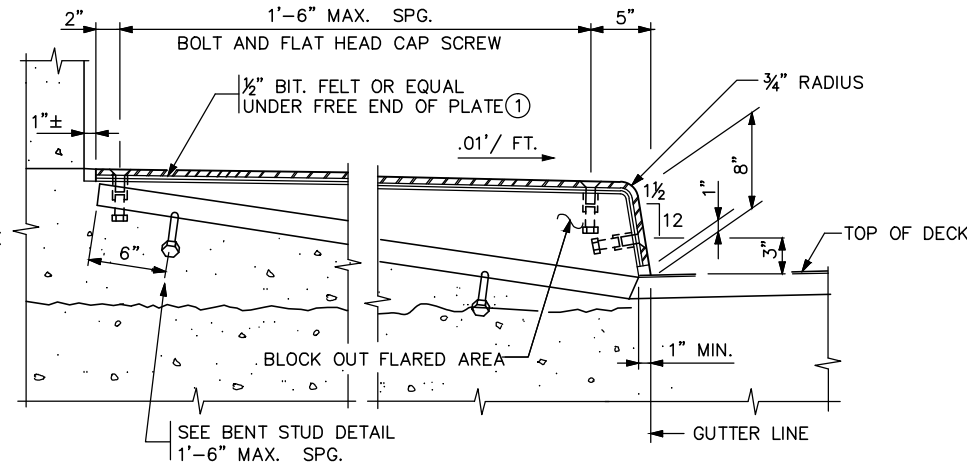
DES: RJH DR: ALB
CHK: --- CHK: XXXX
SHEET NO. 29 OF 42 SHEETS
APPROVED: BRIDGE NO. 27C09

FIG. 5-397.627

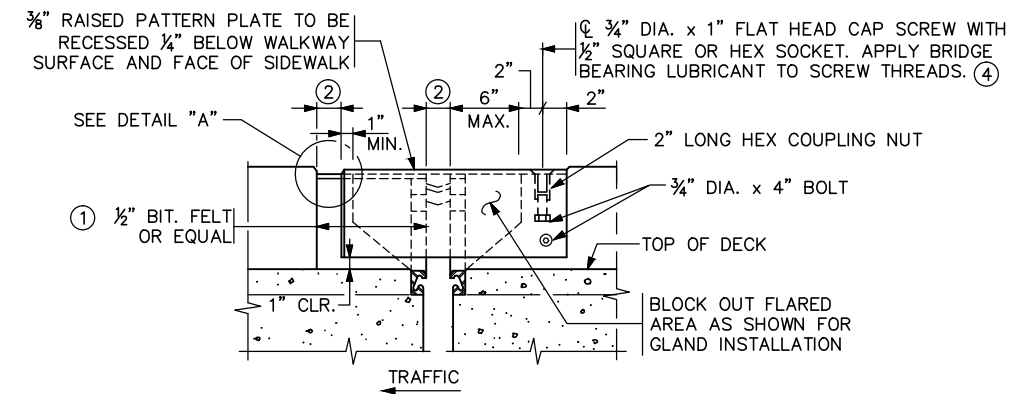
Sep. 21 2015 07:53 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-010.dwg By: V-Shrestha



SECTION THROUGH RAISED SIDEWALK - OPTION 1

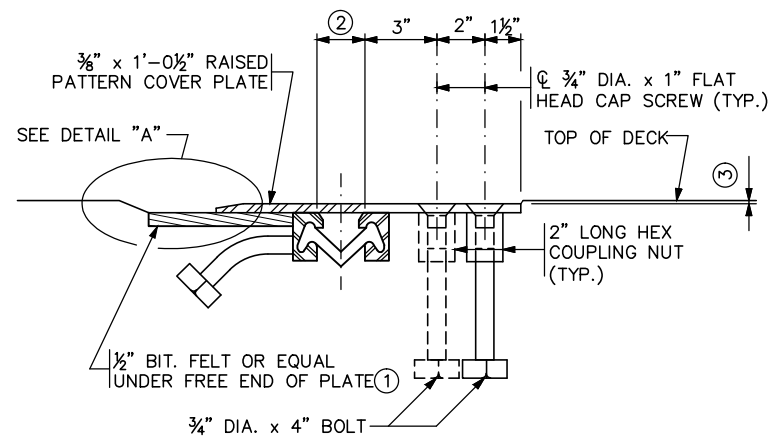


SECTION THROUGH RAISED SIDEWALK - OPTION 2



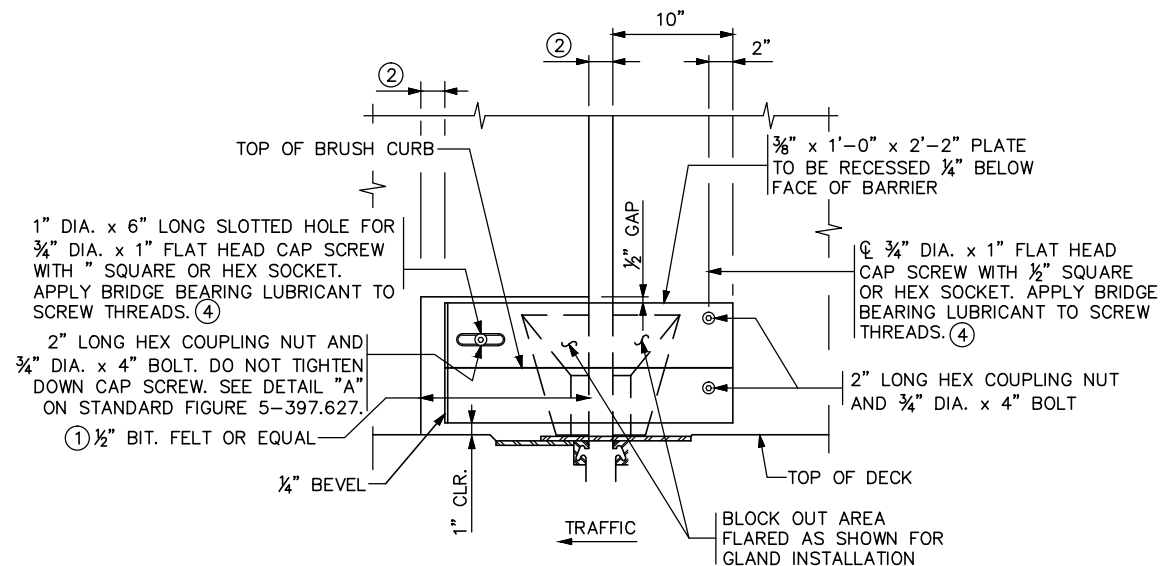
ELEVATION

RAISED SIDEWALK DETAILS



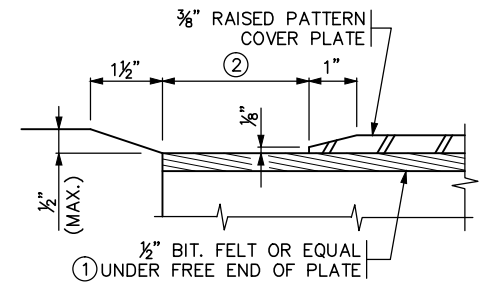
SECTION D-D

NOTE:
TRANSVERSE DECK REINFORCEMENT MAY BE
SHIFTED THE MINIMUM DISTANCE REQUIRED
FOR EXPANSION DEVICE PLACEMENT



ELEVATION

(CONCRETE PARAPET BARRIER AND BACK OF TYPE F BARRIER)



DETAIL "A"

GENERAL NOTES

SEE STANDARD FIGURE 5-397.627 FOR ADDITIONAL
DETAILS AND NOTES.

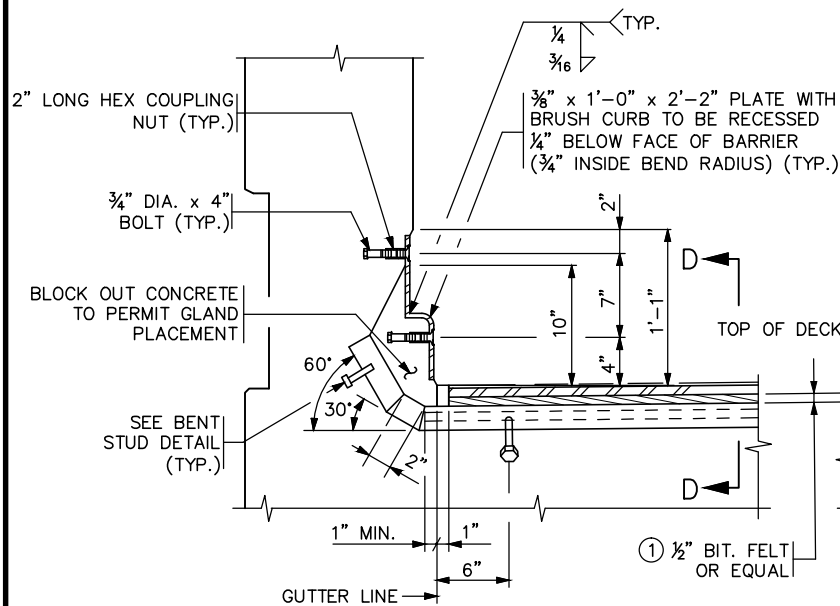
3/4" DIA. X 1" FLAT HEAD CAP SCREW WITH 1/2" SQUARE OR
HEX SOCKET PER SPEC 3391. CAP SCREWS SHALL BE
COUNTERSUNK 1/8" BELOW TOP OF PLATE. APPLY BRIDGE
BEARING LUBRICANT TO SCREW THREADS. ④

① USE LARGEST SINGLE PIECE POSSIBLE. USE OF SMALL
PIECES OR SCRAPS SECURED TOGETHER IS PROHIBITED.

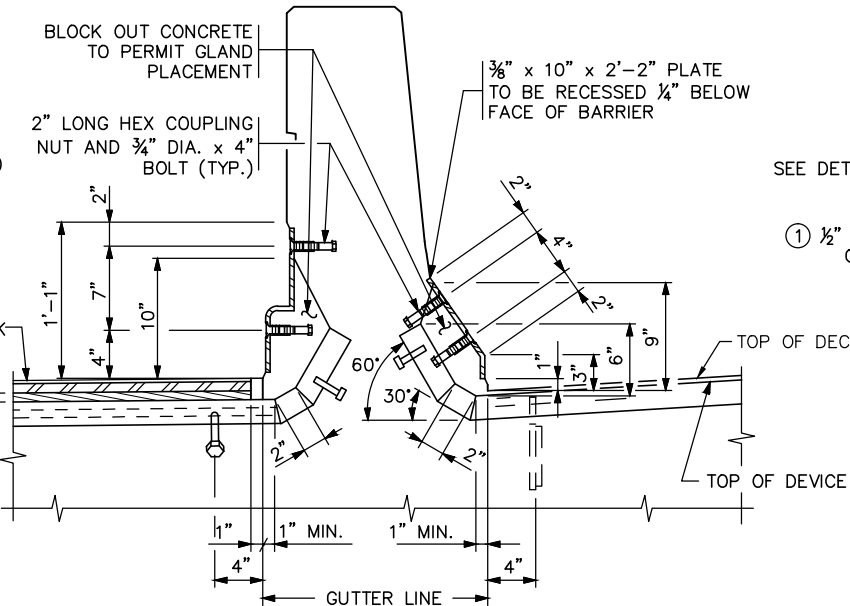
② SEE NOTE ② ON STANDARD FIGURE 5-397.627.

③ 1/8" (1/4" MAX.).

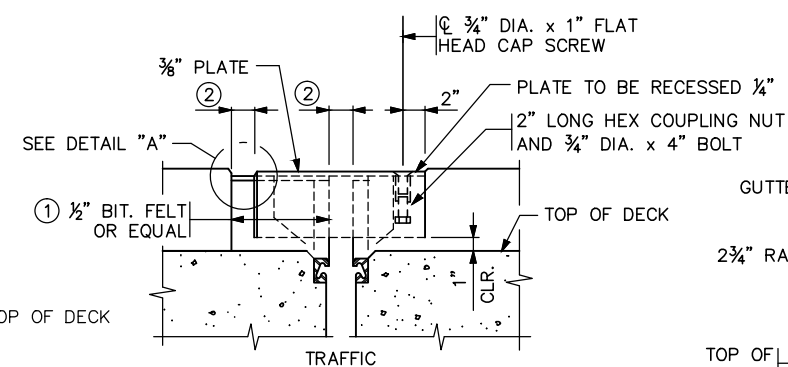
④ LUBRICANT PER MnDOT APPROVED/QUALIFIED PRODUCTS
LIST: BRIDGE - BRIDGE BEARING LUBRICANT.



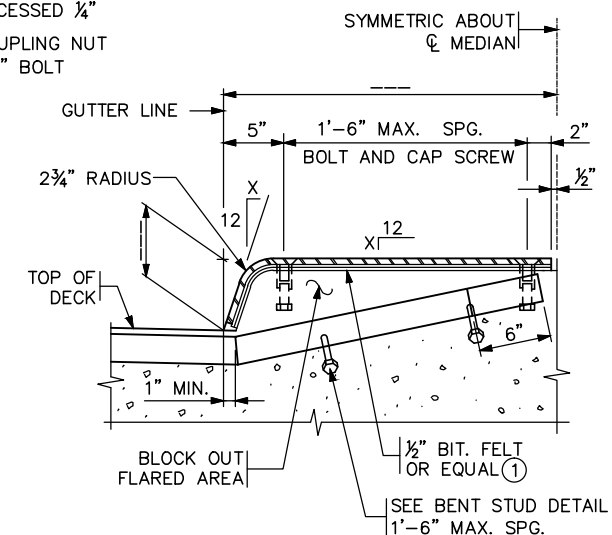
CONCRETE PARAPET BARRIER



TYPE F BARRIER



MEDIAN ELEVATION



MEDIAN SECTION

FIG. 5-397.630

REVISION: 11-06-2013
APPROVED: SEPTEMBER 26, 2003
Samuel A. Morgan
STATE BRIDGE ENGINEER

SECTION THROUGH BARRIERS - INTEGRAL SIDEWALK

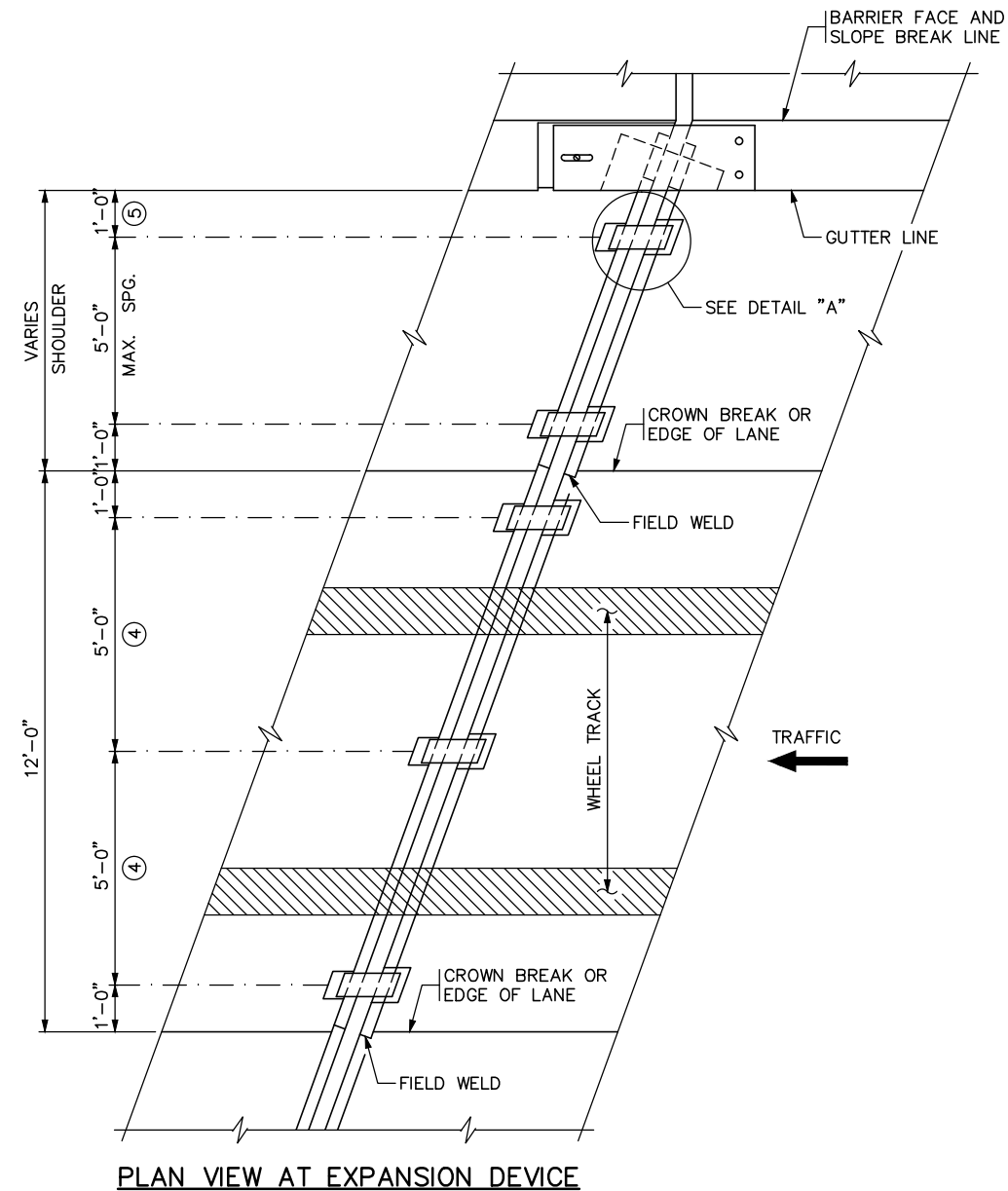
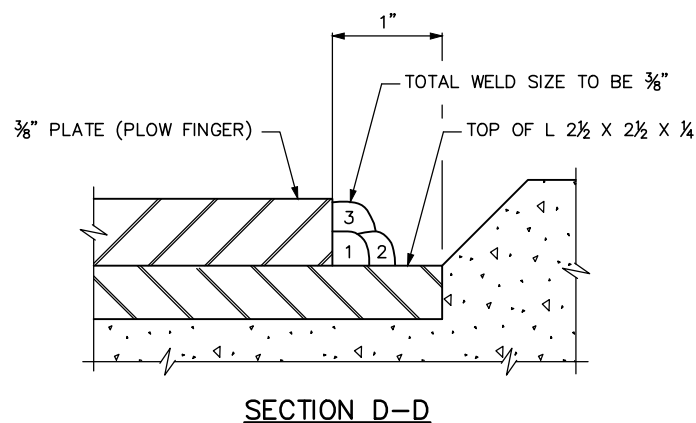
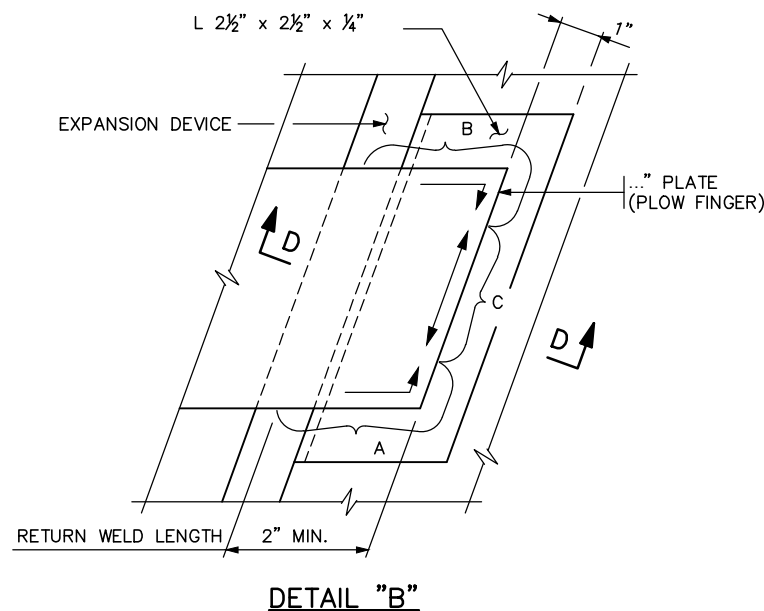
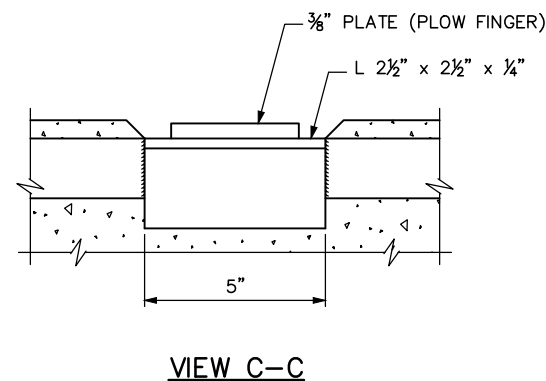
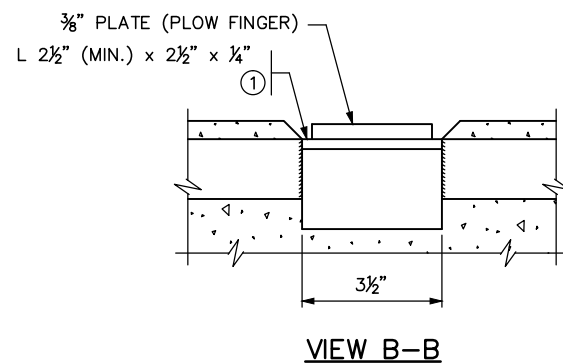
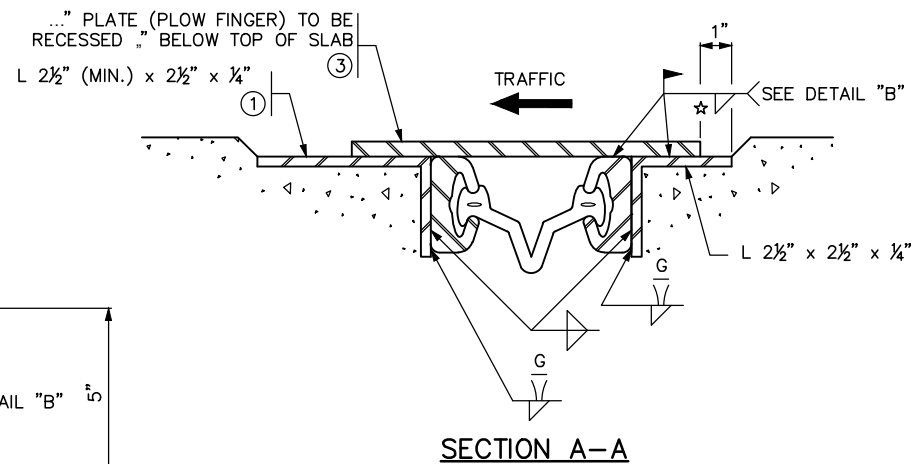
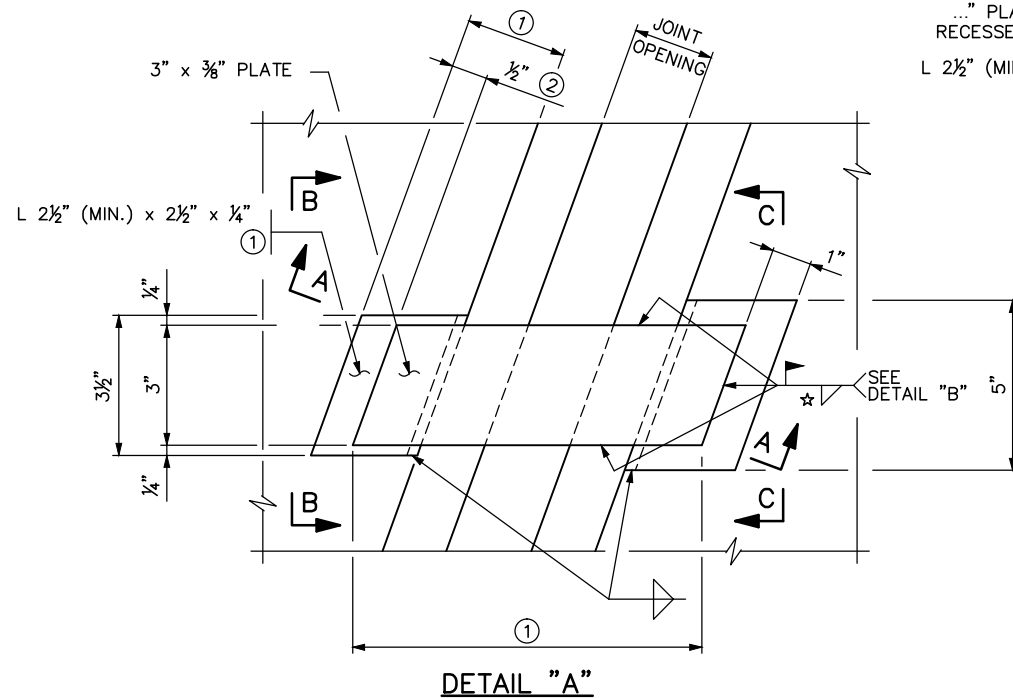
CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: **WATERPROOF
EXPANSION DEVICE**
(RAISED MEDIAN OR SIDEWALK WITH PARAPET)

DES: **RJH** DR: **ALB**
CHK: **---** CHK: **XXXX**
SHEET NO. **30** OF **42** SHEETS

BRIDGE NO.
27C09

Sep. 21 2015 07:53 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-011.dwg By: V-ShrestBA



☆ WELDING PROCEDURE FOR PLOW FINGERS

- I. ALL WELDING SHALL BE DONE WITH 1/8" DIAMETER LOW HYDROGEN SMAW ELECTRODES TYPE E7016 OR E7018.
- II. PRIOR TO WELDING, REMOVE THE GALVANIZED COATING IN THE WELD AREA BY GRINDING.
- III. WELD PASS ONE IN AREAS A AND B FIRST, THEN AREA C, FOLLOW WITH PASSES TWO AND THREE IN SAME ORDER, AS SHOWN IN DETAIL "B".
- IV. REMOVE ALL WELD SLAG AND OTHER RESIDUE BETWEEN PASSES.
- V. ALLOW AT LEAST 5 MINUTES COOLING TIME BETWEEN EACH OF THE NINE WELDING PASSES.

GENERAL NOTES

- DO NOT GALVANIZE PLOW FINGERS.
- ① VARIES WITH SKEW AND EXPANSION OPENING.
 - ② MINIMUM IN CLOSED POSITION.
 - ③ EVERY SNOW PLOW FINGER SHALL HAVE FULL AND DIRECT BEARING ON THE PLATE THAT IS LOCATED UNDER THE MOVEMENT SIDE OF THE FINGER. NO CLICKING NOISE WILL BE ALLOWED.
 - ④ MODIFY IF LANE WIDTH DIFFERS FROM 12 FT.
 - ⑤ OMIT LAST PLOW FINGER ON DEVICE WITH CURVED END.

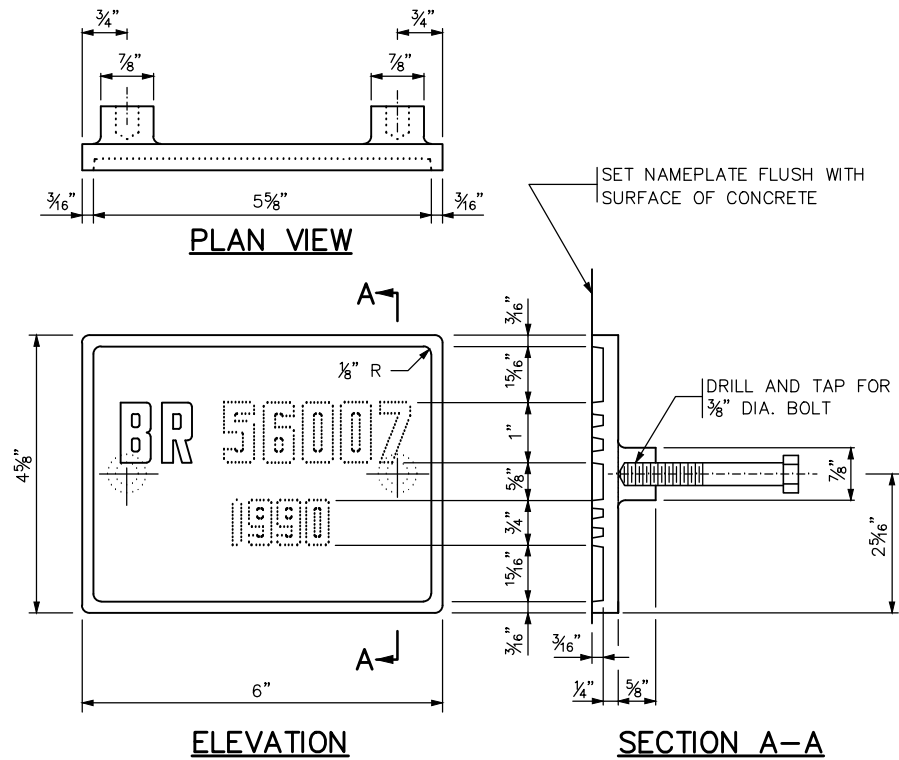
REVISION: 11-06-2013
APPROVED: SEPTEMBER 26, 2003
<i>Samuel A. Morgan</i> STATE BRIDGE ENGINEER

CERTIFIED BY	DATE
LICENSED PROFESSIONAL ENGINEER	
NAME: _____	LIC. NO. _____

TITLE
WATERPROOF EXPANSION DEVICE SNOW PLOW PROTECTION (USE ON SKEWS OVER 15' AND LESS THAN 50')

DES: RJH	DR: ALB	APPROVED:	FIG. 5-397.628
CHK: ----	CHK: XXXX		BRIDGE NO. 27C09
SHEET NO. 31 OF 42 SHEETS			

Sep. 21 2015 07:53 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-004.dwg By: V-ShrestBA



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 27C09
YEAR

1234567890
NUMBERS FOR NAMEPLATE

NOTES:

- MATERIAL SHALL COMPLY WITH SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002

Samuel A. Morgan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

REVISION
09-11-2014

DETAIL NO.
B101

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



APPROVED: SEPTEMBER 22, 2011

Nancy A. Subenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

REVISED

DETAIL NO.

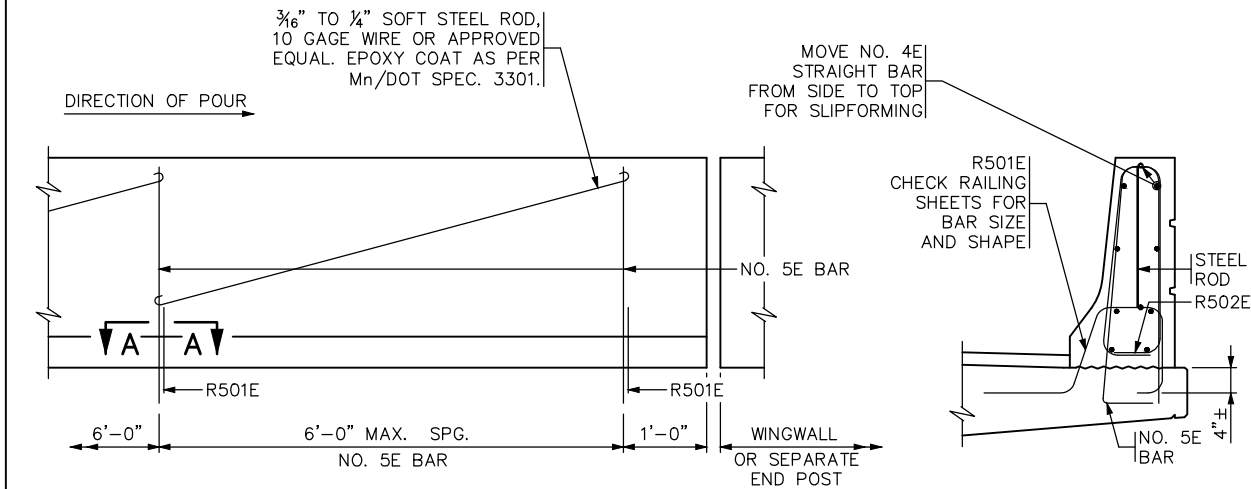
B303

CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C09-BRG-DTL-004

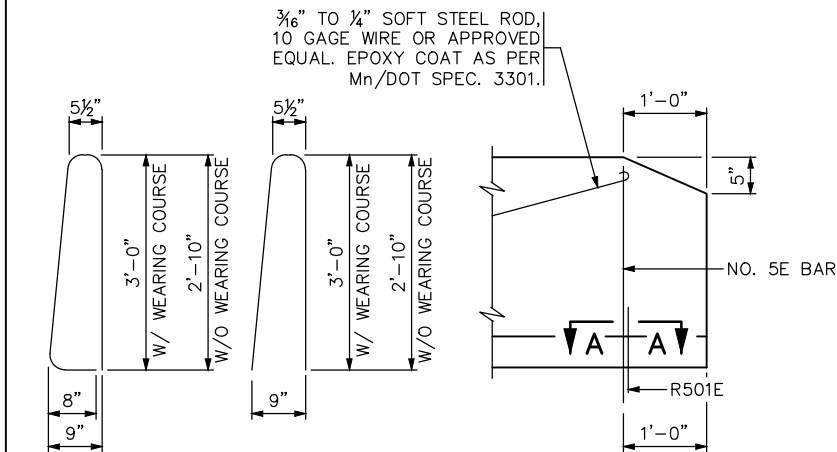
SHEET
32
OF
42

Sep. 21 2015 07:54 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-006.dwg By: V-Shrestha



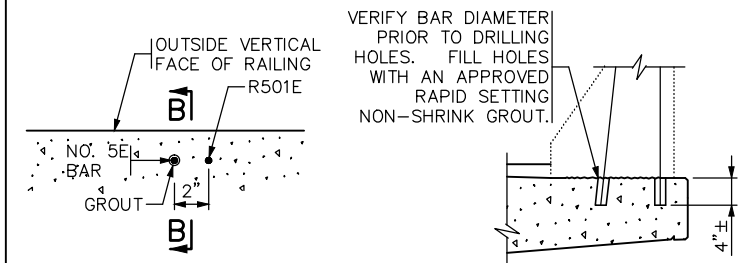
INSIDE ELEVATION OF RAILING

RAILING SECTION



NO. 5E BAR NO. 5E BAR INSIDE ELEVATION OF RAILING

DRILLED IN ALTERNATE AT END OF WINGWALL



SECTION A-A SECTION B-B
INSTALLATION DETAILS
FOR NO. 5E (DRILLED IN ALTERNATE)

NOTES:
CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.
FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.
FORM RAIL FOR A MINIMUM OF 2' ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.
PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.
USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

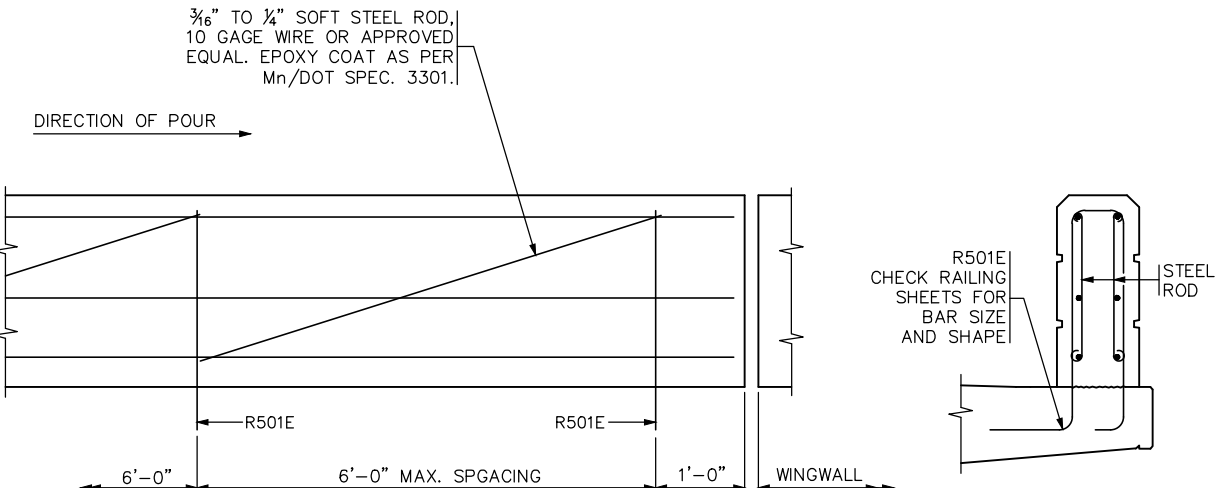
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 4-17-2013	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	CONCRETE RAILING (TYPE F) (SLIPFORM ALTERNATE)		B830

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

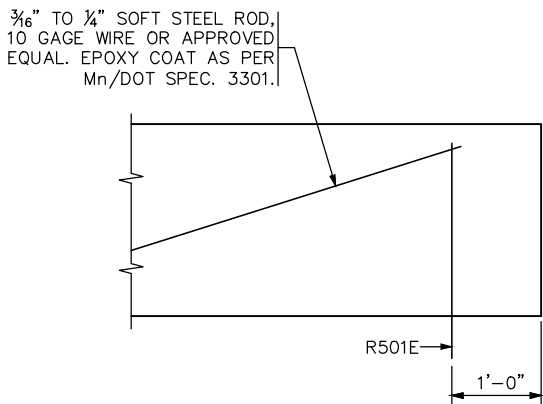
60% SUBMISSION - 09/28/15



INSIDE ELEVATION OF RAILING

RAILING SECTION

FENCE NOT SHOWN



INSIDE ELEVATION OF RAILING

AT END OF WINGWALL

NOTES:
CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.
FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.
FORM RAIL FOR A MINIMUM OF 2' ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.
PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.
USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

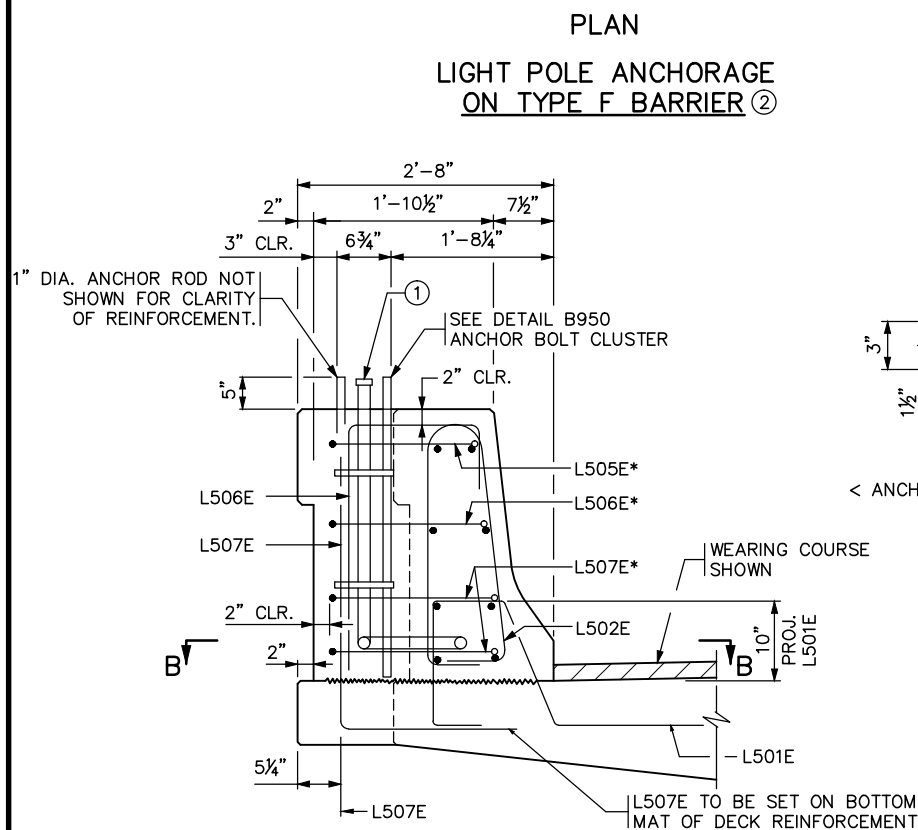
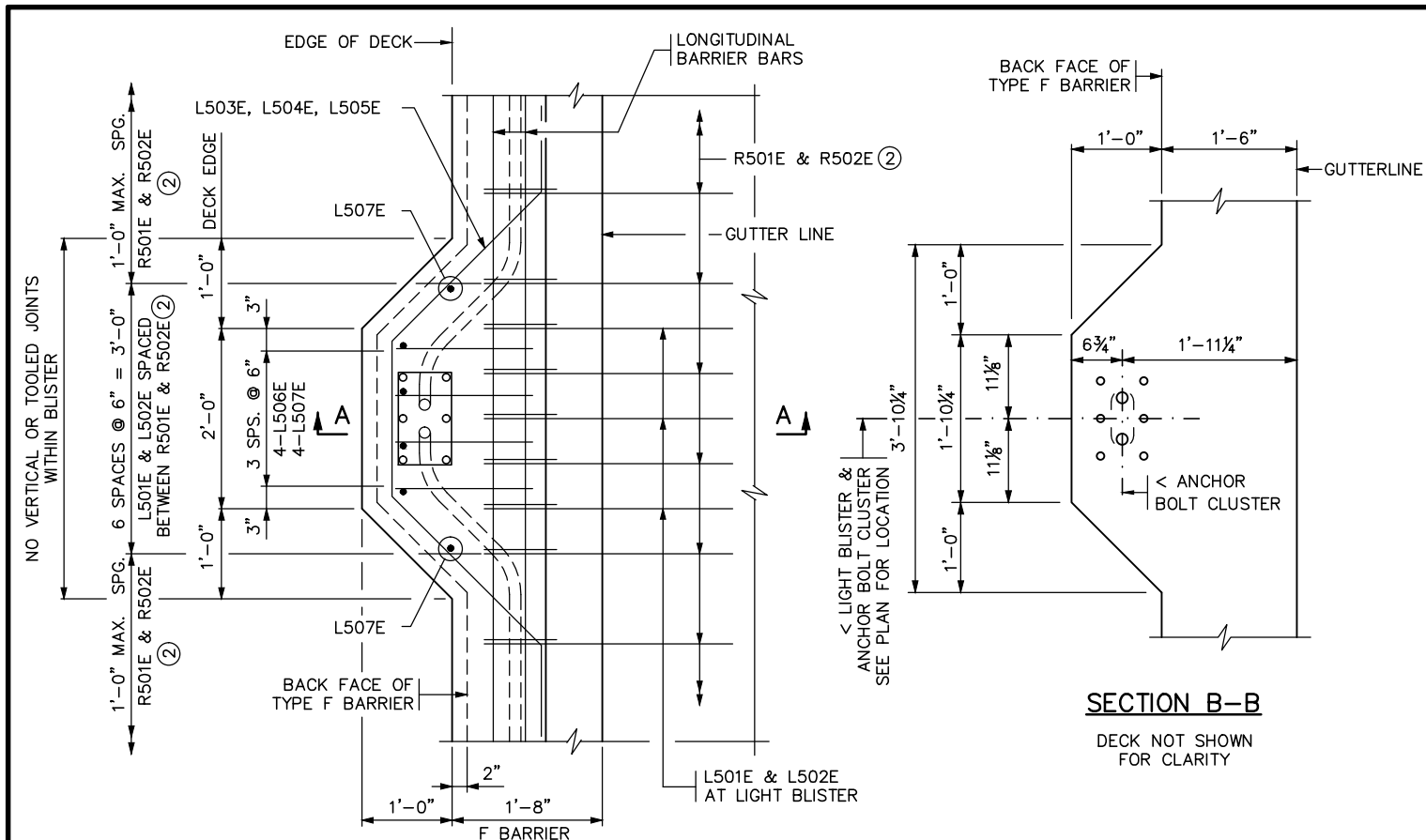
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 4-17-2013	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	CONCRETE PARAPET RAILING (SLIPFORM ALTERNATE)		B831



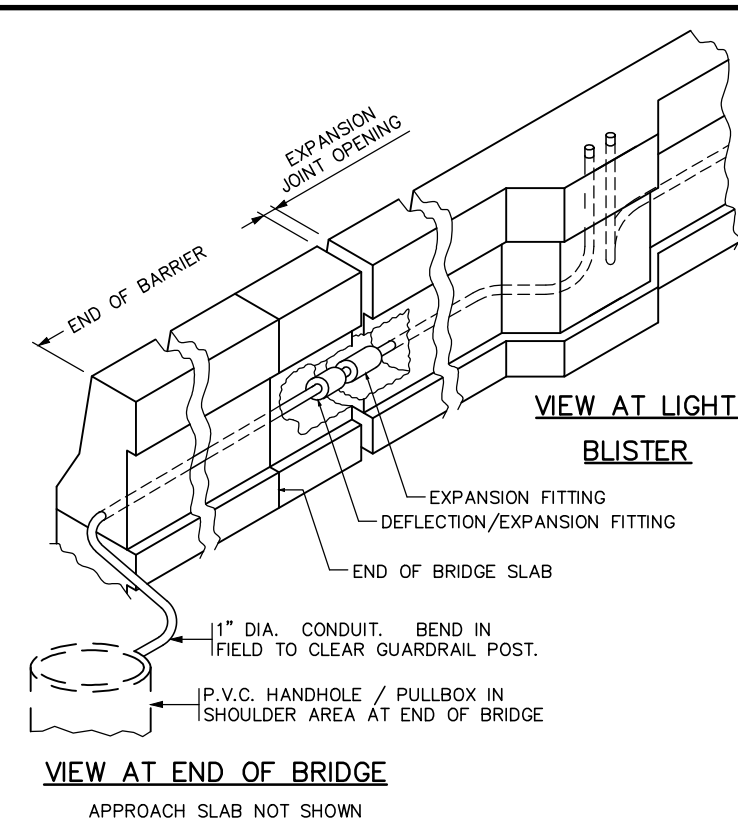
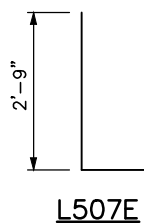
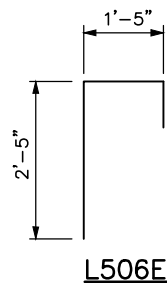
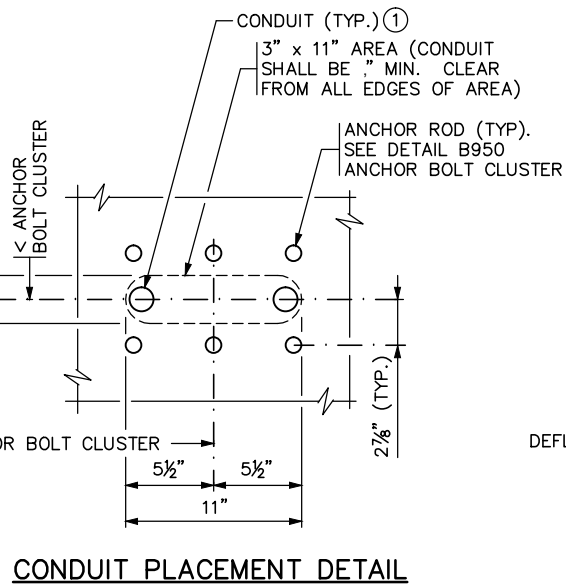
CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE DETAILS

DISCIPLINE: **STRUCTURES** SHEET NAME: **CBR27C09-BRG-DTL-006**

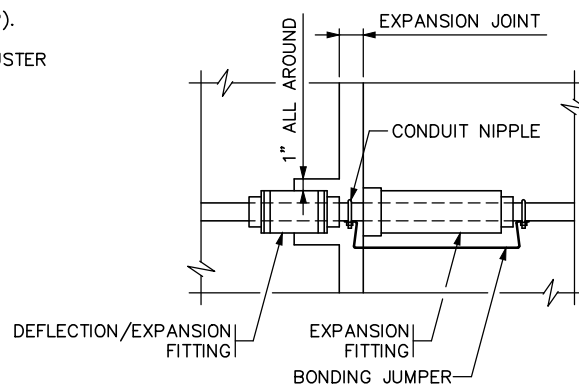
SHEET
34
OF
42



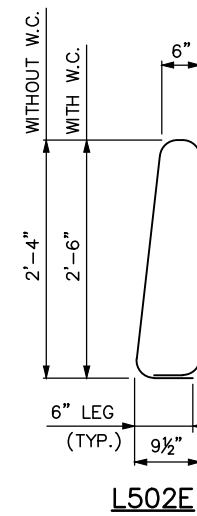
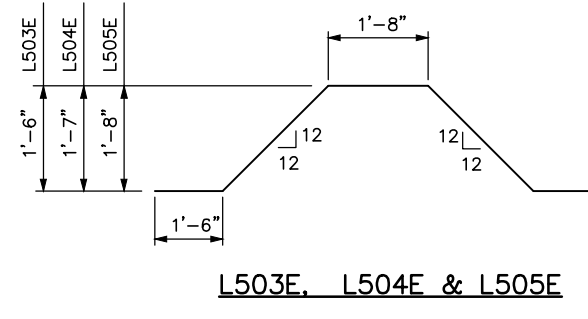
* L505E, L506E, L507E ARE SPACED WITH
BARRIER LONGITUDINAL REINFORCEMENT.
SEE CONCRETE BARRIER SHEET FOR SPACING.



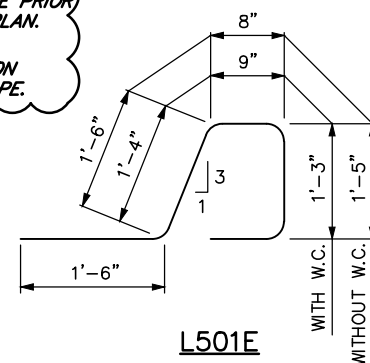
TEXT IN ITALICS ARE DESIGNER NOTES. REMOVE PRIOR TO PLOTTING FINAL PLAN.
DON'T SHOW EXPANSION/DEFLECTION FITTING OR EXPANSION JOINT OPENING
IN BARRIER FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENT BRIDGES.
ADD THE FOLLOWING NOTE TO EACH OF THE CONCRETE BARRIER SHEETS IN THE
PLAN.....REFER TO THE "CONDUIT SYSTEM (LIGHTING) SHEET" FOR DETAILS AND
ADDITIONAL REINFORCING FOR LIGHT BLISTERS.



TEXT IN ITALICS ARE DESIGNER NOTES.
REMOVE PRIOR TO PLOTTING FINAL PLAN.
INSERT THE REQUIRED LENGTH IN THE BILL OF
REINFORCEMENT FOR L501E AND L502E.
L501E WITH WEARING COURSE = 5'-5"
L501E WITHOUT WEARING COURSE = 5'-7"
L502E WITH WEARING COURSE = 6'-7"
L502E WITHOUT WEARING COURSE = 6'-3"



TEXT IN ITALICS ARE
DESIGNER NOTES. REMOVE PRIOR
TO PLOTTING FINAL PLAN.
STRIKE OUT THE
OPTION NOT USED ON
L501E & L502E SHAPE.



SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (LIGHTING) ③		
ANCHOR BOLT CLUSTER	---	EACH
1 1/2" DIA. R.S.C.	---	LIN. FT.
1 1/2" DIA. END CAPS	---	EACH
COMBINATION DEFLECTION/EXPANSION FITTING	---	EACH
REINFORCEMENT BARS (EPOXY COATED)	---	POUND
P.V.C. HANDHOLE / PULLBOX (STD. PLATE 8114)	---	EACH

ADDITIONAL BARRIER AND DECK CONCRETE REQUIRED TO CONSTRUCT
THE LIGHT POLE ANCHORAGE IS INCIDENTAL TO THE CONCRETE
BARRIER AND DECK CONCRETE PAY ITEMS, RESPECTIVELY.

ALL MATERIAL LISTED ABOVE IS INCLUDED IN PRICE BID FOR
"CONDUIT SYSTEM (LIGHTING)"

GENERAL NOTES

BOND AND GROUND THE CONDUIT SYSTEM (LIGHTING) IN ACCORDANCE
WITH THE APPLICABLE PORTIONS OF Mn/DOT SPEC 2545.3R.

- THE 1" DIA. CONDUIT SHALL EXTEND 3" ABOVE THE RAILING
AND BE CAPPED.
- SEE CONCRETE BARRIER SHEETS FOR TYPICAL BARRIER
REINFORCEMENT.
- QUANTITIES LISTED ARE FOR INFORMATIONAL PURPOSES, ANY
ADDITIONAL MINOR ITEMS OR CHANGES IN QUANTITIES
REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO
ADDITIONAL COMPENSATION.
- BARS SHOWN ARE FOR ONE LIGHT BLISTER.

BILL OF REINFORCEMENT FOR BARRIER AT ONE LIGHT POLE ④				
BAR	NO.	LENGTH	SHAPE	LOCATION
L501E	3			BARRIER DOWEL
L502E	3			BARRIER VERTICAL
L503E	1	8'-11"		LONGITUDINAL TIE
L504E	1	9'-2"		LONGITUDINAL TIE
L505E	2	9'-4"		LONGITUDINAL TIE
L506E	4	4'-8"		VERTICAL TIE
L507E	6	4'-7"		VERTICAL DOWEL

TOTAL REINFORCEMENT PER LIGHT POLE LOCATION
IS 125 LBS.

REVISED: 04-17-2013

APPROVED: MAY 24, 2011

Nancy Subenberger
STATE BRIDGE ENGINEER

CERTIFIED BY

LICENSED PROFESSIONAL ENGINEER DATE

NAME: LICENSE NO.

TITLE:

CONDUIT SYSTEM (LIGHTING)
TYPE F CONCRETE BARRIER BLISTER,
WITH OR WITHOUT WEARING COURSE

DES: RJH

DR: ALB

CHK: ---

CHK: XXXX

APPROVED:

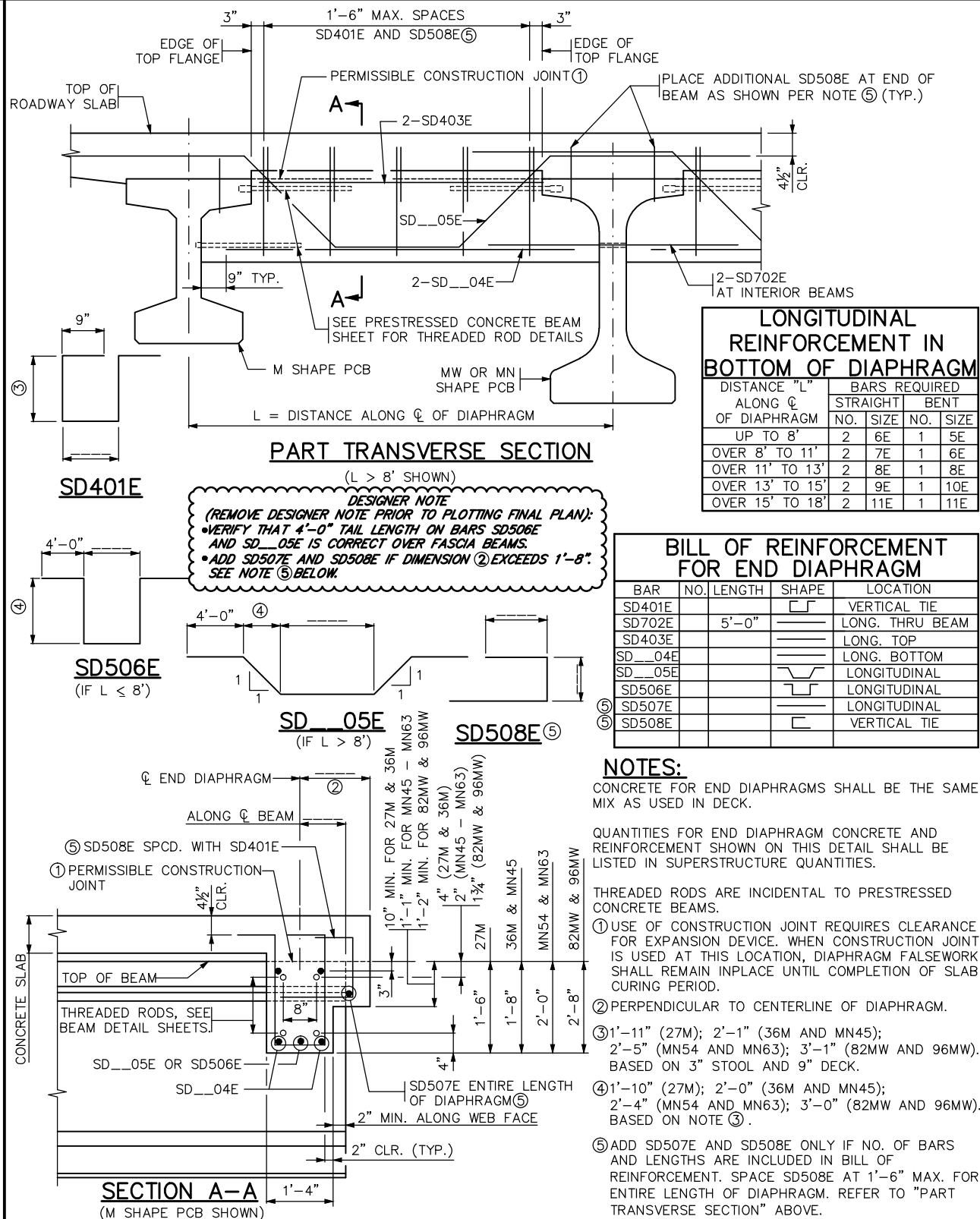
BRIDGE NO.

27C09

SHEET NO. 35 OF 42 SHEETS

FIG. 5-397.406

Sep. 21 2015 07:54 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-008.dwg By: V-Shrestha

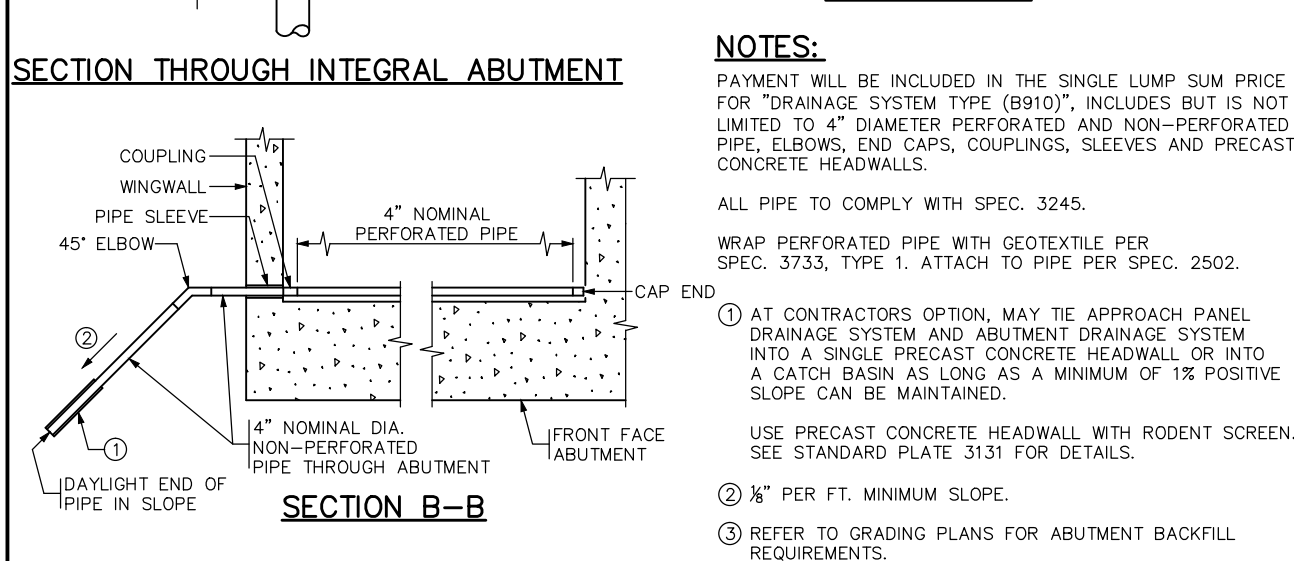
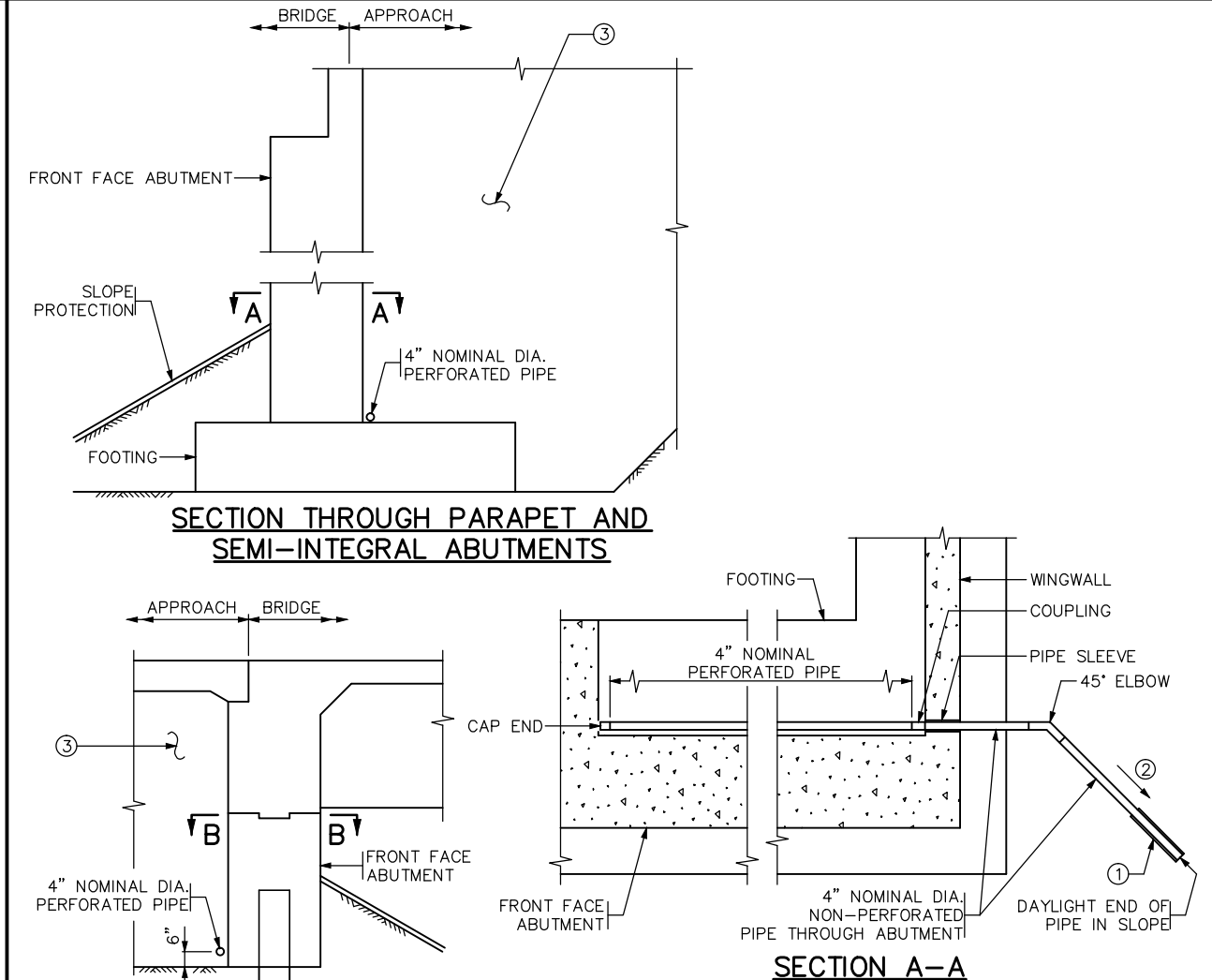


APPROVED: SEPTEMBER 22, 2011
Nancy Dubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
CONCRETE END DIAPHRAGM
(27M & 36M, MN45 - MN63, 82MW & 96MW
PRESTRESSED CONCRETE BEAMS)
(PARAPET ABUTMENT)

REVISED
04-17-2013
11-06-2013

DETAIL NO.
B814



APPROVED: JANUARY 13, 2015
Nancy Dubenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
DRAINAGE SYSTEM

REVISED

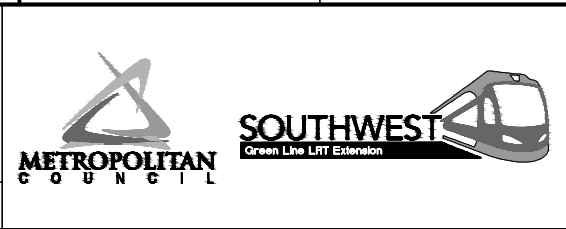
DETAIL NO.
B910

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



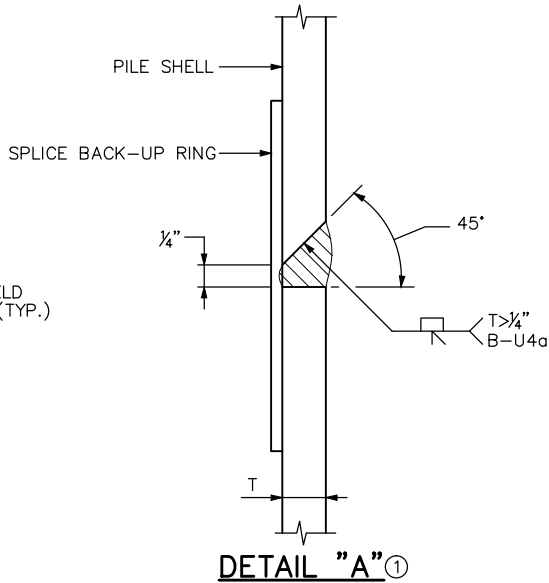
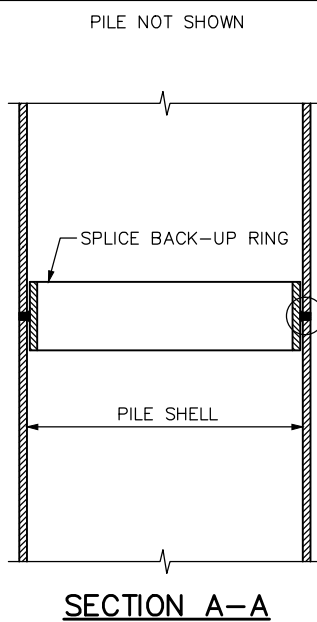
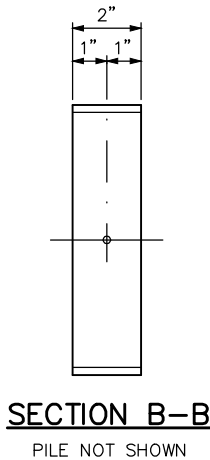
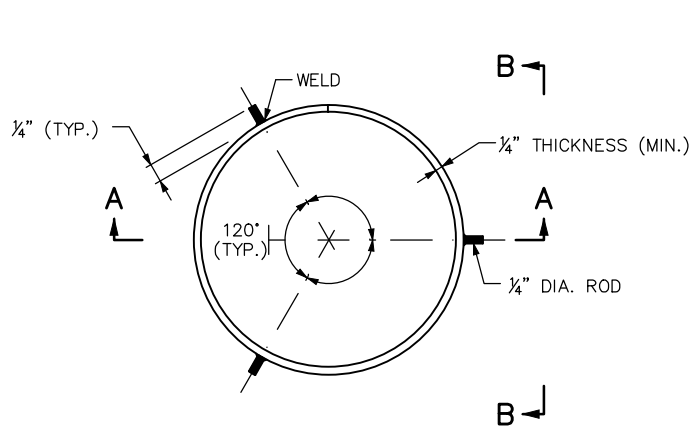
CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE DETAILS

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C09-BRG-DTL-008**

SHEET
36
OF
42

Sep. 21 2015 07:55 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-DTL-012.dwg By: V-ShrestBA



NOTES:

APPROVED COMMERCIAL PILE SPLICE BACK-UP RING MAY BE USED IN LIEU OF THE TYPE DETAILED, PROVIDED THAT 1/4" ROOT IS MAINTAINED. BACK-UP RING SHALL HAVE A TIGHT FIT.

WELDING ELECTRODES SHALL BE CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0°F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32°F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70°F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

1 FOR PILE SHELL THICKNESSES GREATER THAN 1/4", USE A B-U4a WELD CONFIGURATION. SEE DETAIL "A".

APPROVED NOVEMBER 22, 2002

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISION:
11-06-2013

DETAIL NO.

Samir A. Shrestha
STATE BRIDGE ENGINEER

PILE SPLICE
(CAST-IN-PLACE CONCRETE PILES)

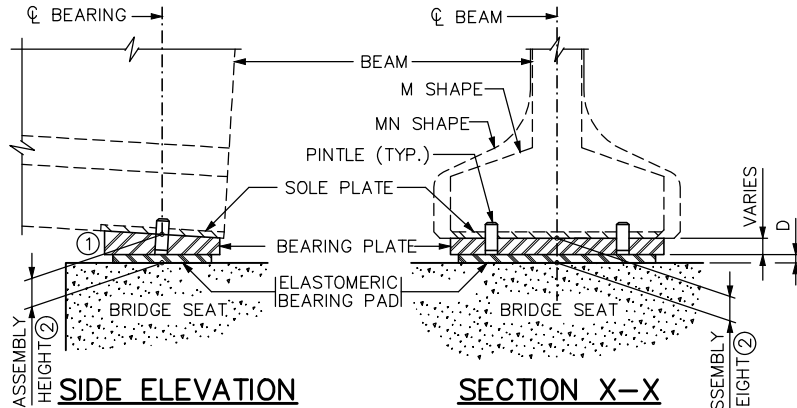
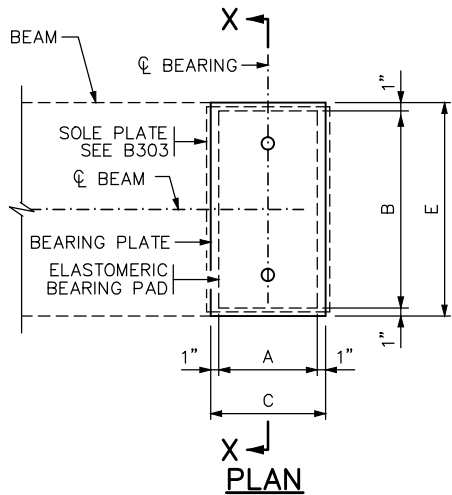
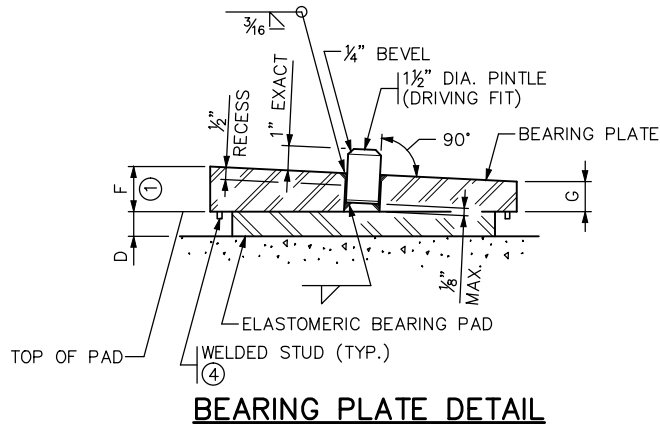
B201

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



DESIGNER NOTE
(REMOVE DESIGNER NOTE PRIOR TO PLOTTING FINAL PLAN):

USE TAPERED PLATE FOR GRADES EXCEEDING 3%. MAINTAIN SAME TAPERED PLATE THICKNESS WITHIN 2% SLOPE INCREMENTS, I.E. 3-5% OR 4-6%.

MINIMUM THICKNESS OF TAPERED PLATE IS 1/2". ROUND ASSEMBLY HEIGHT TO NEAREST 1/8". MODIFY FRAMING PLAN PER NOTE 1.

USE 1/2" UNREINFORCED PAD WITH CONTINUITY DIAPHRAGMS OR INTEGRAL ABUTMENTS.

TABLE											
ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE				ASSEMBLY HEIGHT
			A	B	D ③		C	E	F	G	
----	----	----	12	24	½"	8.0	14"	26"	----	----	----
----	----	----	----	----	----	----	----	----	----	----	----
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NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306.

PINTLES SHALL COMPLY WITH SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394. AREAS WELDED SHALL BE REPAIRED PER SPEC. 2471.3L.

PAYMENT FOR "TAPERED BEARING PLATE ASSEMBLY" IS PER EACH, AND SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

1 MARK THICKER SIDE OF SLOPED PLATES WITH AN "H" FOR PLACEMENT. SEE FRAMING PLAN SHEET NO. ____.

2 BEARING PAD AND BEARING PLATE THICKNESS AT CL BEARING.

3 "D" INDICATES THE THICKNESS OF THE BEARING PAD.

4 3/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

APPROVED: FEBRUARY 27, 2013

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISION

DETAIL NO.

Nancy J. Dauterberg
STATE BRIDGE ENGINEER

TAPERED BEARING PLATE ASSEMBLY
(FOR INTEGRAL ABUTMENTS OR PIERS WITH CONTINUITY DIAPHRAGMS)

B309



CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE DETAILS

DISCIPLINE: **STRUCTURES** SHEET NAME: **CBR27C09-BRG-DTL-012**

SHEET
37
OF
42

<h2 style="margin: 0;"><u>CONCRETE WEARING COURSE</u></h2>	
<input type="checkbox"/> LOW SLUMP	
<input type="checkbox"/> OTHER _____	TYPE OR MANUFACTURER _____
<h2 style="margin: 0;"><u>EXPANSION JOINTS</u></h2>	
JOINT MANUFACTURER _____	
MANUFACTURER'S IDENTIFICATION _____	MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED _____
GLAND MANUFACTURER _____	NAME AND ADDRESS (CITY, STATE) _____
SIZE OF GLAND _____	
MANUFACTURER'S IDENTIFICATION _____	MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED _____
<h2 style="margin: 0;"><u>ELASTOMERIC BEARING PADS</u></h2>	
PAD MANUFACTURER _____	NAME AND ADDRESS (CITY, STATE) _____
<h2 style="margin: 0;"><u>SPECIAL SURFACE FINISH</u></h2>	
SYSTEM: _____	COLOR: _____
<h2 style="margin: 0;"><u>FINISHING ROADWAY FACES OF BARRIER RAILING</u></h2>	
TYPE: _____	COLOR: _____
<h2 style="margin: 0;"><u>ANTI-GRAFFITI COATING</u></h2>	
MANUFACTURER _____	NAME AND ADDRESS (CITY, STATE) _____
PRODUCT NAME: _____	LOCATION: _____

<h2><u>PAINT SYSTEM</u></h2>	
Mn/DOT SPECIFICATION NUMBER _____	_____ 2478 OR 2479 OR OTHER _____
MANUFACTURER _____	NAME AND ADDRESS (CITY, STATE) _____
PRIME COAT _____	Mn/DOT MATERIAL SPECIFICATION NUMBER _____
INTERMEDIATE COAT _____	Mn/DOT MATERIAL SPECIFICATION NUMBER _____
FINISH COAT _____	Mn/DOT MATERIAL SPECIFICATION NUMBER _____ COLOR _____
<h2><u>PLAN QUALITY</u></h2>	
RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)	
DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____ BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____ SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____ (SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____ _____	
COMMENTS: _____	

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS: _____ COST: \$ _____	
LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.	

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES:
YES ☐
NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

<h2 style="margin: 0;"><u>BRIDGE REMOVAL / BRIDGE OPENING</u></h2>	
NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):	
BRIDGE NUMBER _____	DATE REMOVED _____
DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____	
NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557	

AS-BUILT DETAILS
(AS NEEDED)

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ INSPECTOR(S) SIGNATURE	_____ DATE
CHECKED BY: _____ PROJECT ENGINEER/SUPERVISOR SIGNATURE	_____ DATE

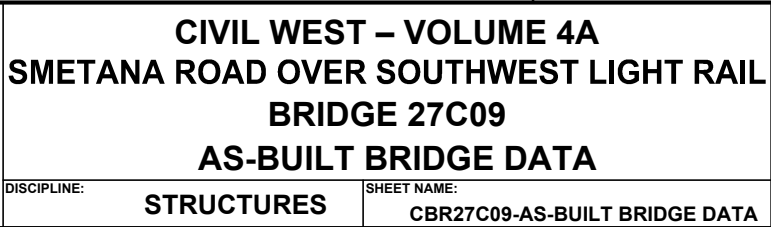
AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE – ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

FIG. 5–397.900

[illegible]

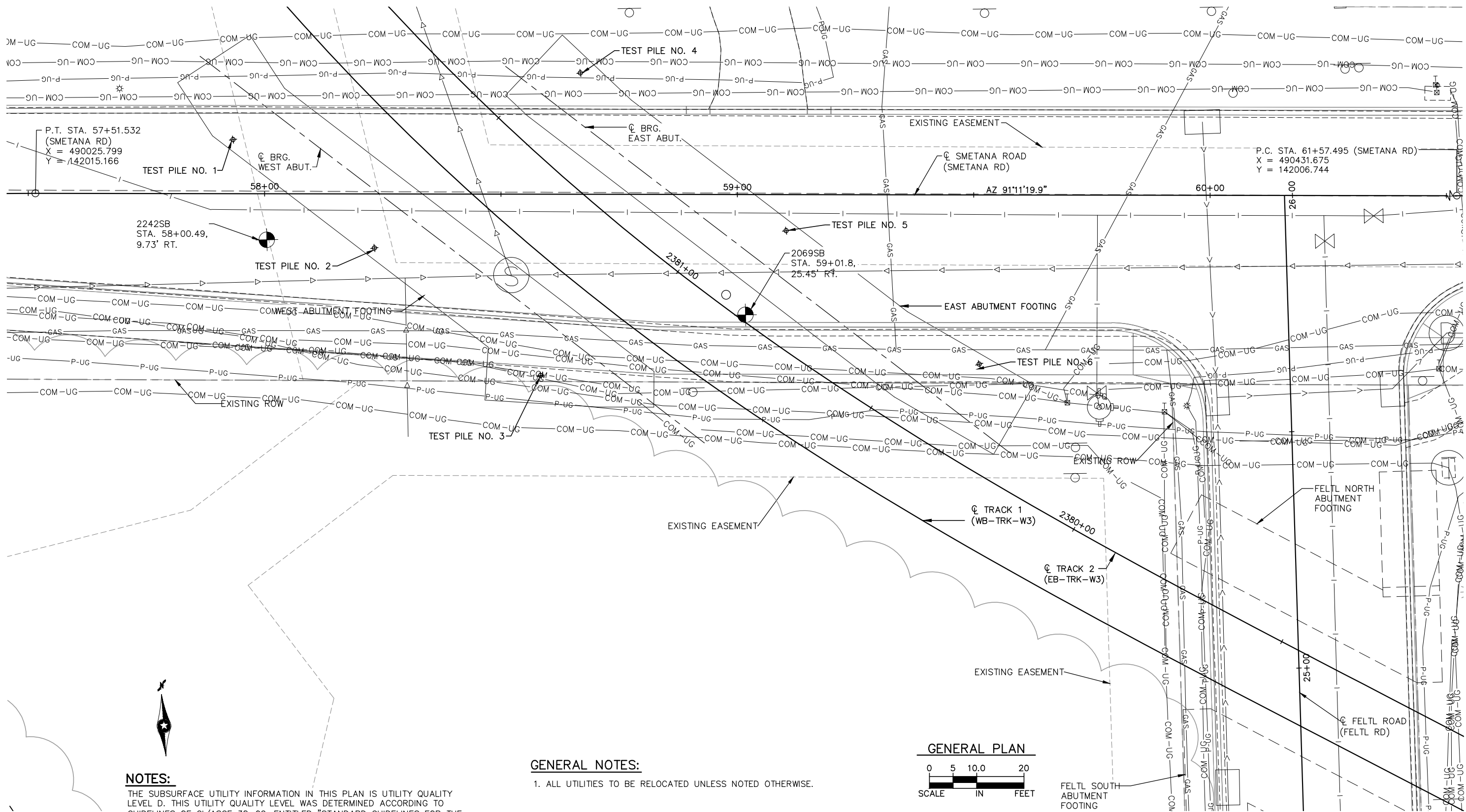
AECOM

60% SUBMISSION - 09/28/15



SHEET
38
OF
42

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NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15

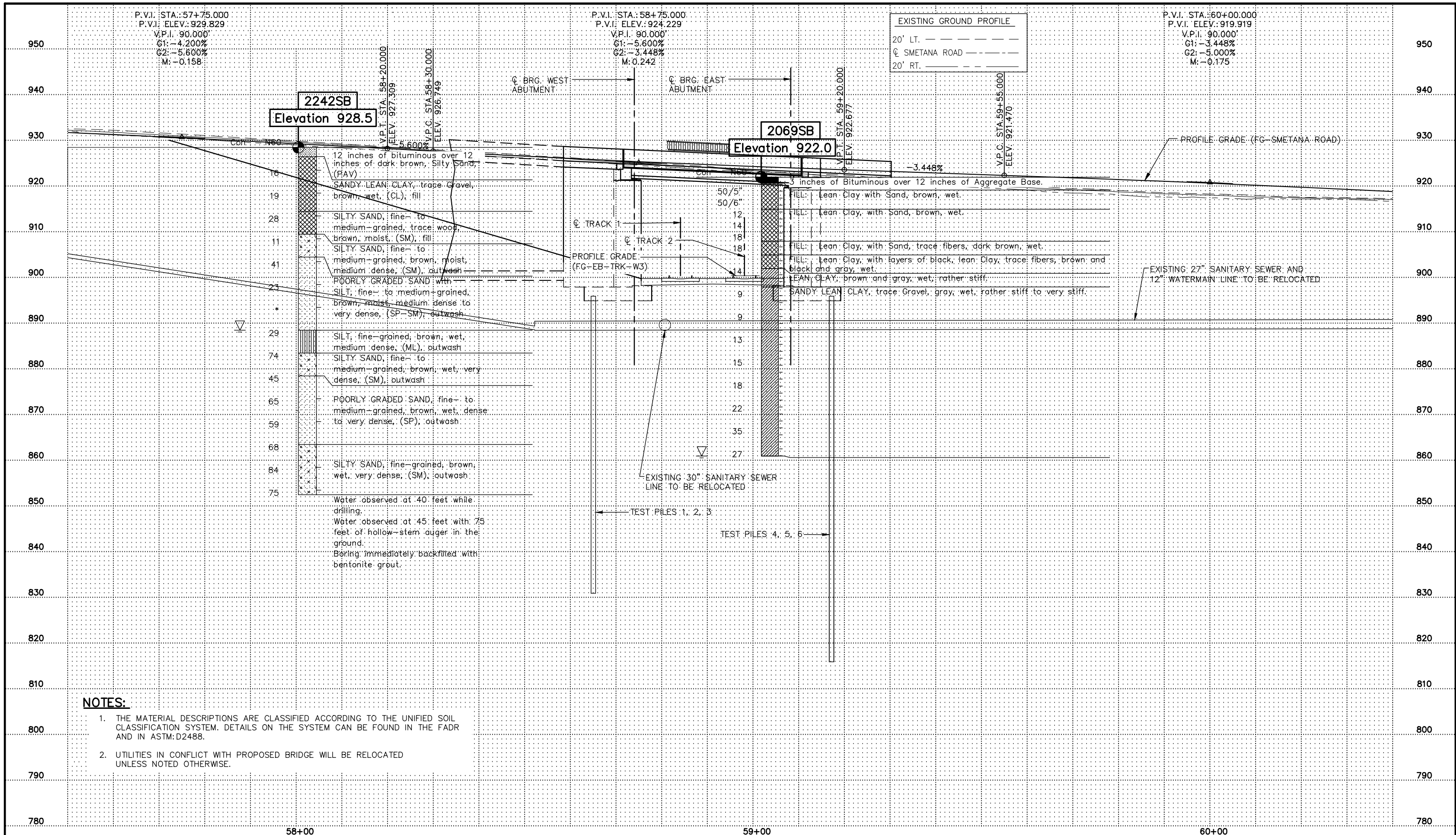


CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE SURVEY PLAN

DISCIPLINE: **STRUCTURES**
SHEET NAME: **CBR27C09-BRG-SUR-002**

SHEET
40
OF
42

Sep. 21 2015 08:04 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-SUR-003.dwg By: V-Shrestha



NOTES:

1. THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM: D2488.
2. UTILITIES IN CONFLICT WITH PROPOSED BRIDGE WILL BE RELOCATED UNLESS NOTED OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

60% SUBMISSION - 09/28/15



SOUTHWEST
Green Line Light Extension

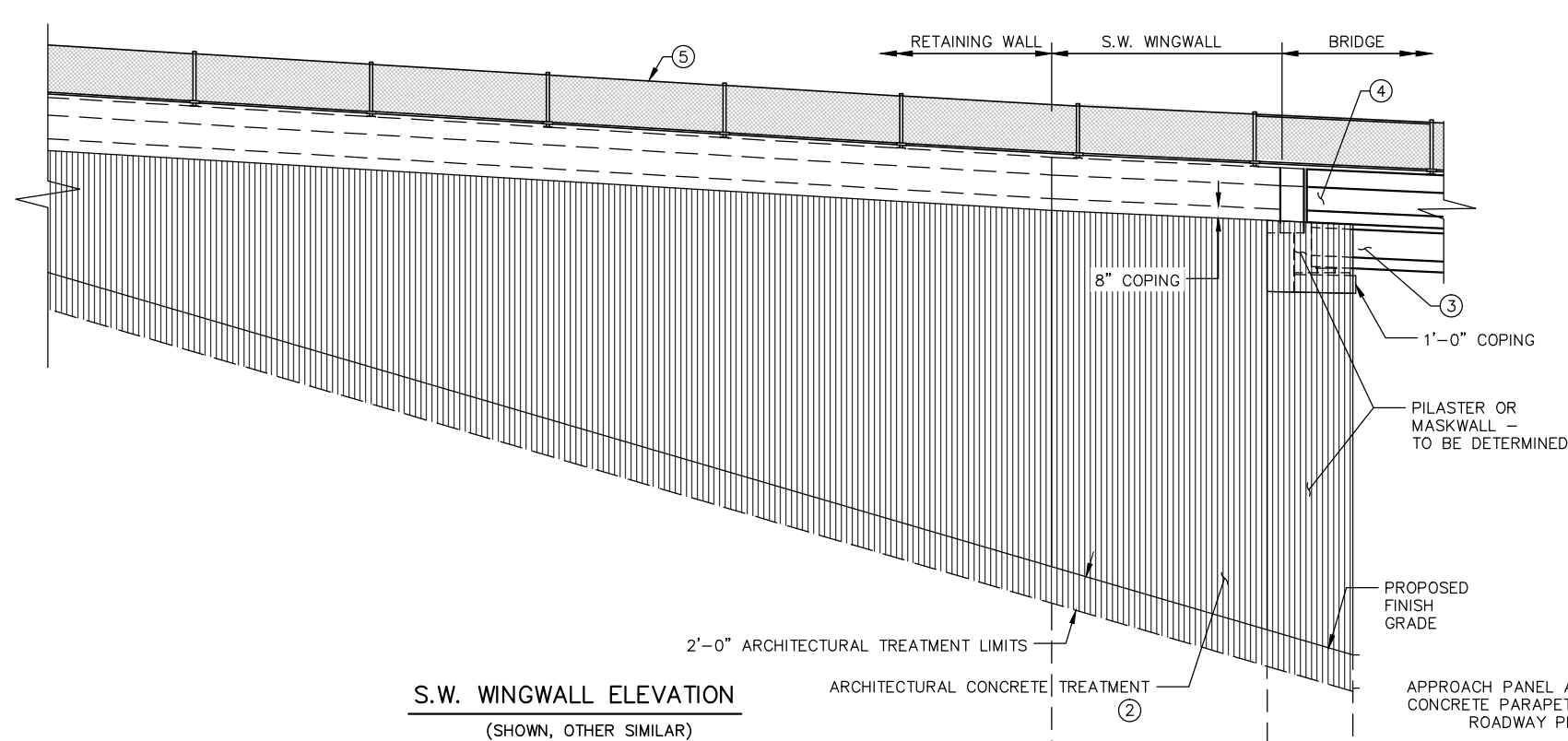


CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
BRIDGE SURVEY PROFILE

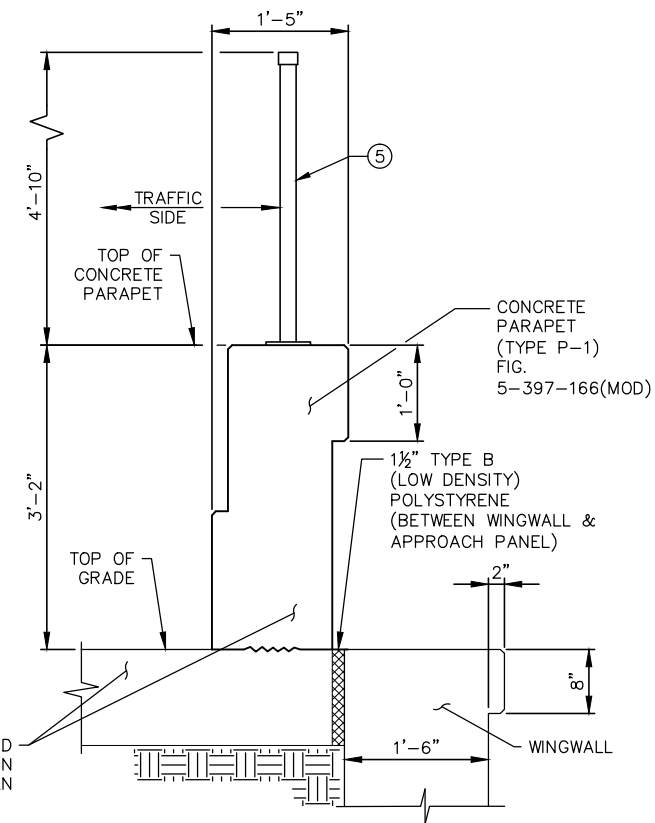
DISCIPLINE: **STRUCTURES**
SHEET NAME: **CBR27C09-BRG-SUR-003**

SHEET
41
OF
42

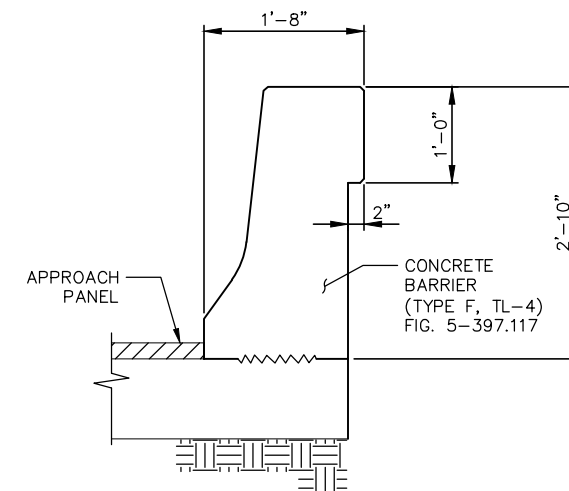
Sep. 21 2015 08:04 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C09-BRG-ABT-020.dwg By: V-Shrestha



S.W. WINGWALL ELEVATION
(SHOWN, OTHER SIMILAR)



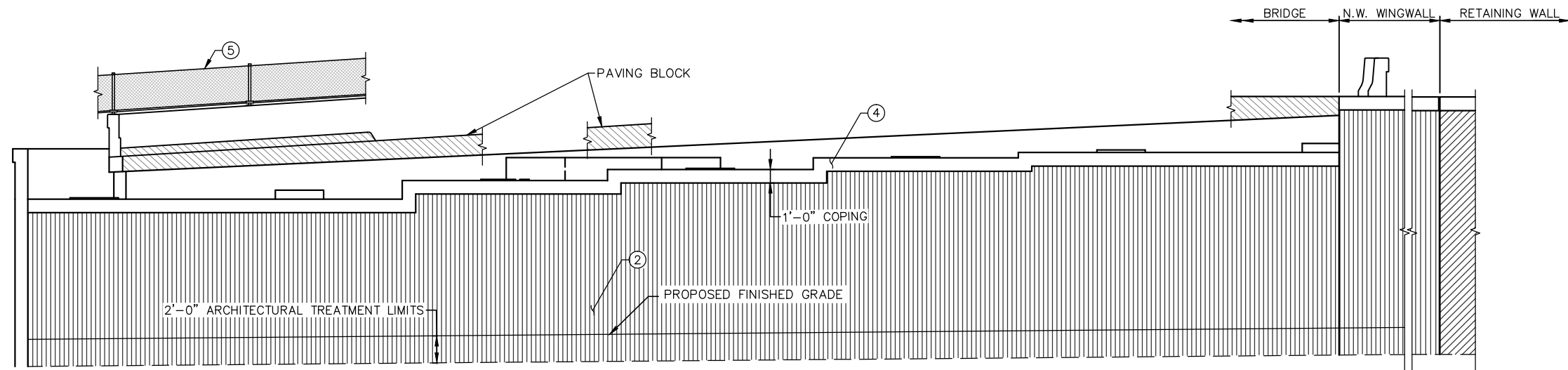
SECTION AT TRAIL



SECTION AT ROADWAY

NOTES:

1. ABUTMENT, ABUTMENT WINGWALL, AND RETAINING WALL TO HAVE ARCHITECTURAL TREATMENT.
2. ARCHITECTURAL CONCRETE TREATMENT AND TEXTURE (US FORMLINER 2/42 NAAB).
3. SPECIAL SURFACE FINISH SHALL BE APPLIED TO OUTSIDE FACE OF FASCIA GIRDERS AND THE BOTTOM OF ALL GIRDERS. COLOR SHALL BE FEDERAL STD. COLOR XXX, XXX.
4. SPECIAL SURFACE FINISH PER SB 2401.11 MnDOT XXX COLOR SHALL BE USED.
5. DIAMOND MESH SAFETY RAIL.
6. CONCRETE BARRIER AND APPROACH PANEL IN GRADING PLAN.



WEST ABUTMENT ELEVATION
(SHOWN, OTHER SIMILAR)

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

RJH
ALB
JULY 27, 2015

AECOM

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CIVIL WEST - VOLUME 4A
SMETANA ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C09
AESTHETICS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C09-BRG-ABT-020

SHEET
42
OF
42

(A) $\text{CL FELTL ROAD (FELTL RD) P.O.T. STA. } 25+03.742 =$
 $\text{CL TRACK 2 (EB-TRK-W3) P.O.C. STA. } 2379+46.024$
 $X = 490291.040$
 $Y = 141913.434$
 $\text{ANGLE} = 60^{\circ}40'50.5'' \text{ TTC}$

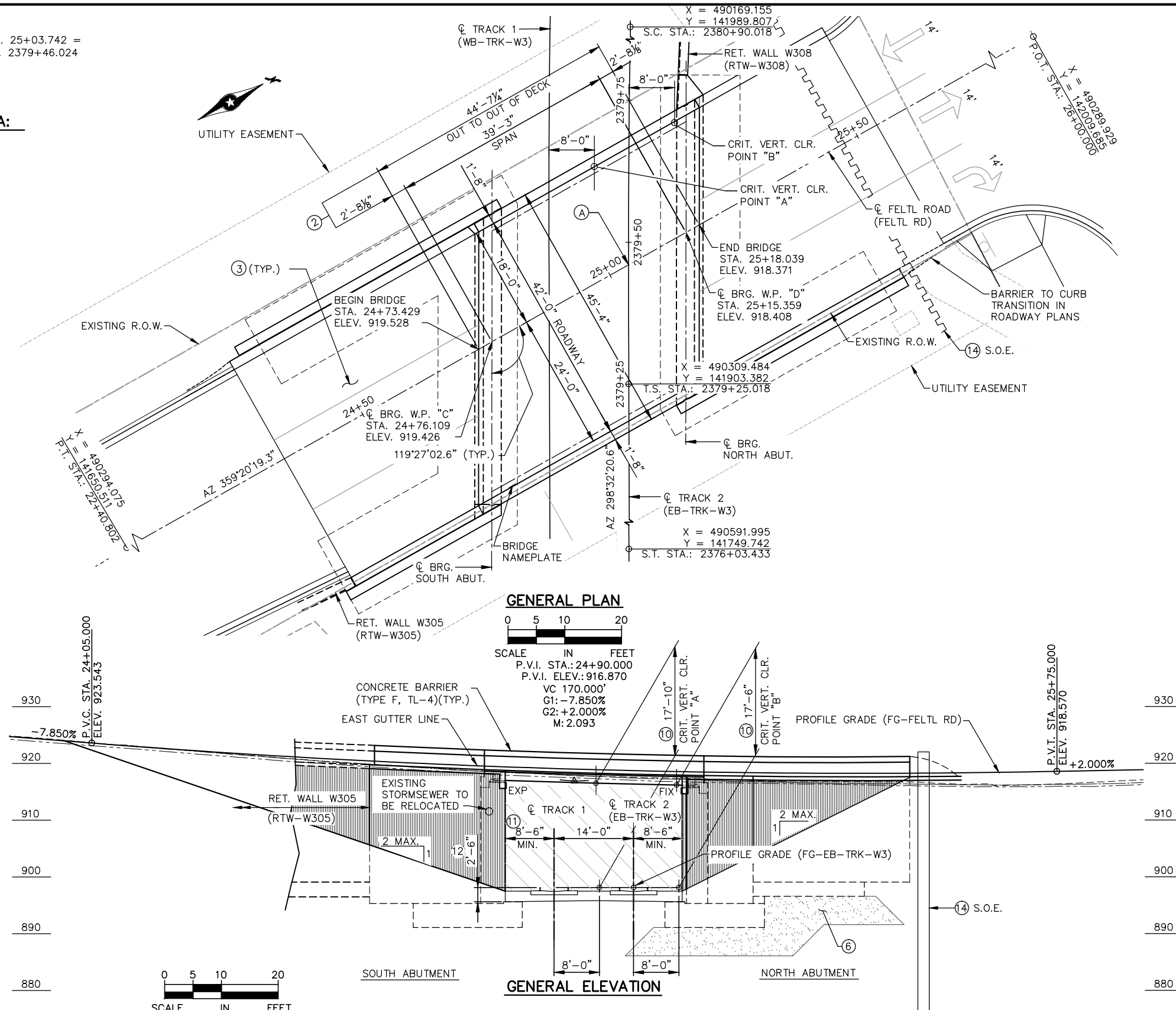
♣ FELTL ROAD (FELTL RD):
 P.T. STA. 22+40.802
 X = 490294.075
 Y = 141650.511

 P.O.T. STA. 26+00.000
 X = 490289.929
 Y = 142009.685

 ♣ TRACK 2 (EB-TRK-W3):
 T.S. STA. 2379+25.018
 X = 490309.484
 Y = 141903.382

 S.C. STA. 2380+90.018
 X = 490169.155
 Y = 141989.807

1. SEE BORING SHEETS FOR ADDITIONAL IN PLACE UTILITIES.
- ② MEASURED ALONG CL FELTL ROAD.
- ③ SEE GRADING PLANS FOR APPROACH PANEL DETAILS.
4. HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.
5. TRAFFIC TO BE DETOURED DURING CONSTRUCTION.
- ⑥ 5'-0 SUBCUT AND REPLACE WITH GRANULAR FILL (NORTH ABUTMENT ONLY).
7. VERTICAL CLEARANCE IS BASED ON TRACK 2 PROFILE (FG-EB-TRK-W3).
9. ALLOW FOR 1/2" FORM LINER IN THE ABUTMENT FACE AND WINGWALLS.
- ⑩ MINIMUM VERTICAL CLEARANCE REQUIRED IS 17'-6".
- ⑪ MINIMUM HORIZONTAL CLEARANCE IS 8'-6".
- ⑫ 4'-6" MIN. TO BOTTOM OF FOOTING.
13. ADDITIONAL WINGWALL INFORMATION SHOWN ON "CORNER DETAILS" SHEET.
- ⑬ SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION.



2014 AND CURRENT INTERIM AASHTO LRFD BRIDGE
DESIGN SPECIFICATIONS

SOUTHWEST LIGHT RAIL TRANSIT DESIGN CRITERIA
(REVISION 4.0)

LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL93 LIVE LOAD

DEAD LOAD INCLUDES 20 PSF ALLOWANCE FOR
FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
 $f'c = 4 \text{ k.s.i.}$, $n = 8$
 $f_y = 60 \text{ k.s.i.}$ REINFORCEMENT
PRESTRESSED CONCRETE:
 $f'c = 7.8 \text{ k.s.i.}$, $n = 1$
 $f_{pu} = 270 \text{ k.s.i.}$
0.6" DIA. LOW RELAXATION STRAND
0.75 f_{pu} FOR INITIAL PRESTRESS

DESIGN SPEED:
OVER = 30 MPH
UNDER(LRT) = 45 MPH

DECK AREA = 2,022 SQ. FT.

HL-93 LRFR BRIDGE OPERATING FACTOR, $RF=1.85$

SHEET NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION & QUANTITIES
3	BRIDGE LAYOUT
4-8	SOUTH ABUTMENT DETAILS
9-13	NORTH ABUTMENT DETAILS
14	FRAMING PLAN
15	RB-18 PRESTRESSED CONCRETE BEAM
16-20	SUPERSTRUCTURE DETAILS
21	CORNER DETAILS
22	AESTHETICS
23	CONCRETE BARRIER (TYPE F TL-4)
24-26	B-DETAILS
27	AS-BUILT BRIDGE DATA
28	BRIDGE SURVEY
29	BRIDGE SURVEY PLAN
30	BRIDGE SURVEY PROFILE

ROADWAY OVER		ROADWAY UNDER	
3000	AADT	N/A	
120	ADTT	N/A	

FELTL ROAD OVER SOUTHWEST LIGHT RAIL
0.35 MI. EAST OF THE JUNCTION OF C.S.A.H. 61 AND
SMETANA ROAD IN MINNETONKA
39'-3" PRESTRESSED CONCRETE BEAM SPAN
CONC. BARRIER (TYPE F, TL-4) 42'-0" ROADWAY
29'27" 02.6" SKEW LT. AHEAD

IDENTIFICATION NO. 501

GENERAL PLAN AND ELEVATION

SEC 25 AND 36 T 117 N R 22 W
CITY OF MINNETONKA HENNEPIN COUNTY

APPROVED: _____ STATE BRIDGE ENGINEER

MNDOT REVIEW: **JOE NIETTFELD**[illegible]

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: ALB	DATE: 7-24-15

60% SUBMISSION - 09/28/15



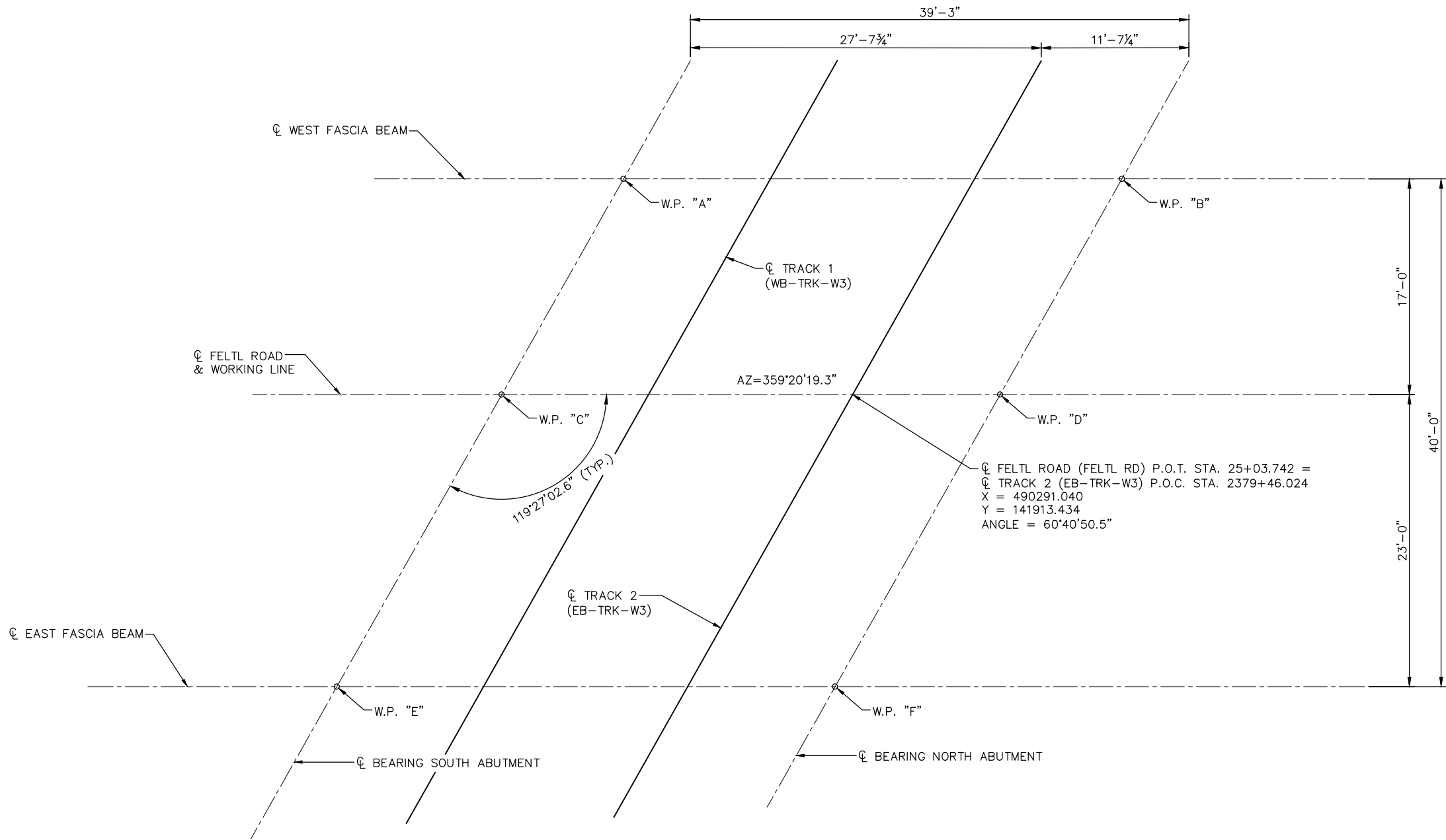
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
GENERAL PLAN AND ELEVATION

DISCIPLINE: **STRUCTURES**

SHEET NAME:	CBR27C08-BRG-GPE-001
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	SHEET
-	1
	OF
	30

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WORKING POINT LAYOUT

DIMENSIONS BETWEEN WORKING POINTS										ELEVATIONS			POINT
POINT	STATION	X-COORDIN	Y-COORDIN	A	B	C	D	E	F	TOP OF ROADWAY	TOP OF RDWY TO BR. SEAT	BRIDGE SEAT	
A	24+85.714	490274.249	141895.204		39.25	19.52	34.18		43.33	918.75	2.88	915.87	A
B	25+24.958	490273.796	141934.452			51.72	19.52	73.65		917.95	2.83	915.12	B
C	24+76.109	490291.359	141885.802				39.25	26.41	34.91				C
D	25+15.359	490290.906	141925.050					57.08	26.41				D
E	24+63.117	490314.507	141873.082						39.25	919.50	2.88	916.62	E
F	25+02.367	490314.054	141912.329							918.19	2.83	915.36	F

TOP OF ROADWAY TO BRIDGE SEAT						
	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL	
					INCHES	FEET
S. ABUT	9"	3 3/4"	18"	3 7/8"	34 5/8"	2.88
N. ABUT	9"	3 3/4"	18"	3 1/4"	34"	2.83

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
BRIDGE LAYOUT

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C08-BRG-GPE-003

Sep. 03 2015 11:04 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08\CBR27C08-BRG-ABT-001.dwg By: bodenc

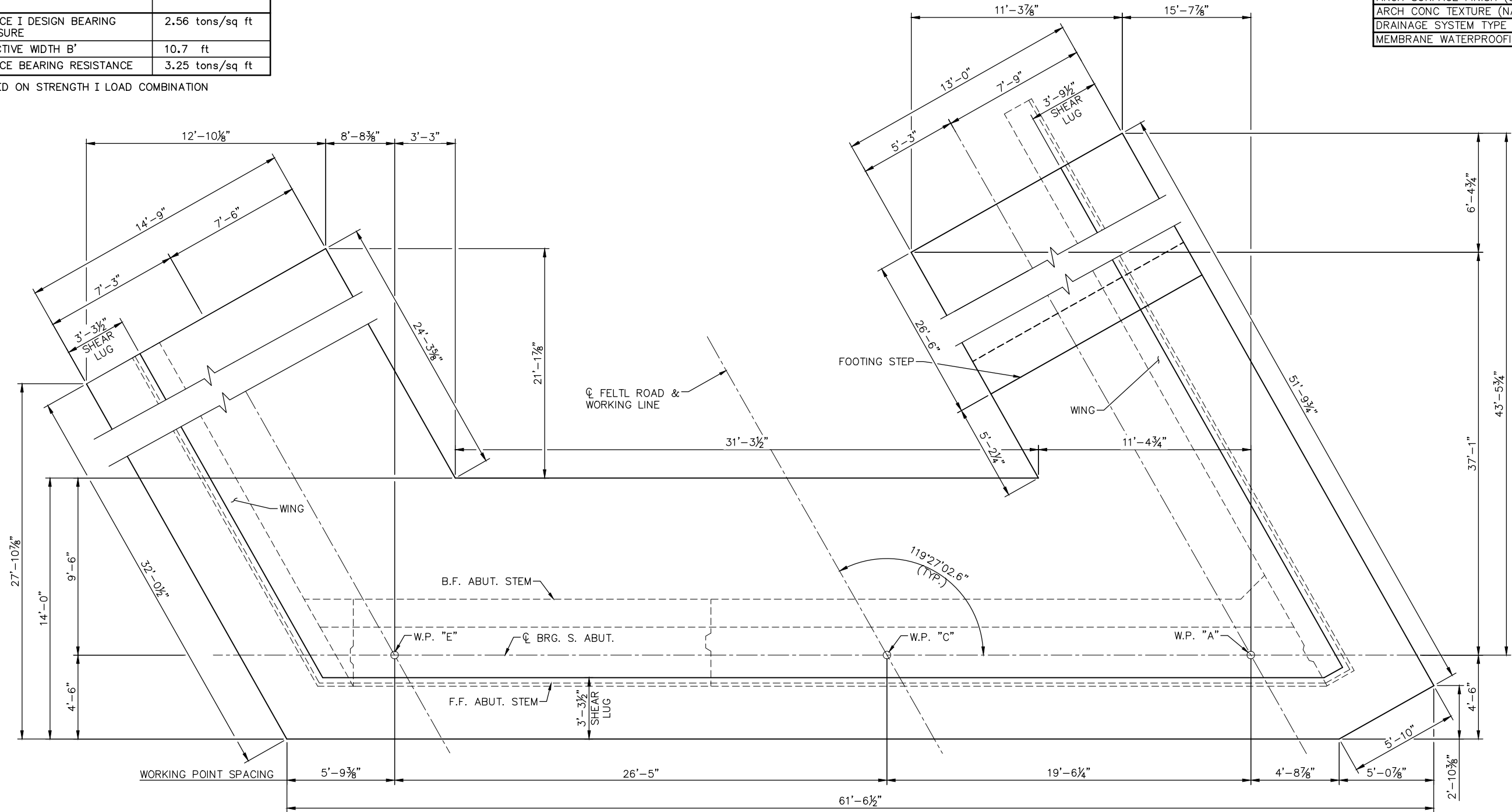
SOUTH ABUTMENT SPREAD
FOOTING LOAD DATA

* FACTORED DESIGN BEARING PRESSURE	3.28 tons/sq ft
EFFECTIVE WIDTH B'	11.0 ft
FACTORED BEARING RESISTANCE, $\phi_b \cdot q_n$	3.60 tons/sq ft
SERVICE I DESIGN BEARING PRESSURE	2.56 tons/sq ft
EFFECTIVE WIDTH B'	10.7 ft
SERVICE BEARING RESISTANCE	3.25 tons/sq ft

* BASED ON STRENGTH I LOAD COMBINATION

SUMMARY OF QUANTITIES
FOR SOUTH ABUTMENT

STRUCTURAL CONCRETE (1G52)	CU. YD.
STRUCTURAL CONCRETE (3B52)	CU. YD.
REINFORCEMENT BARS	POUND
REINFORCEMENT BARS (EPOXY COATED)	POUND
STRUCTURE EXCAVATION	LUMP SUM
ARCH SURFACE FINISH (SINGLE COLOR)	SQ. FT.
ARCH CONC TEXTURE (NAAB)	SQ. FT.
DRAINAGE SYSTEM TYPE (B910)	LUMP SUM
MEMBRANE WATERPROOFING SYSTEM	LIN. FT.



SOUTH EAST CORNER

FOOTING PLAN

SOUTH WEST CORNER

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

AECOM

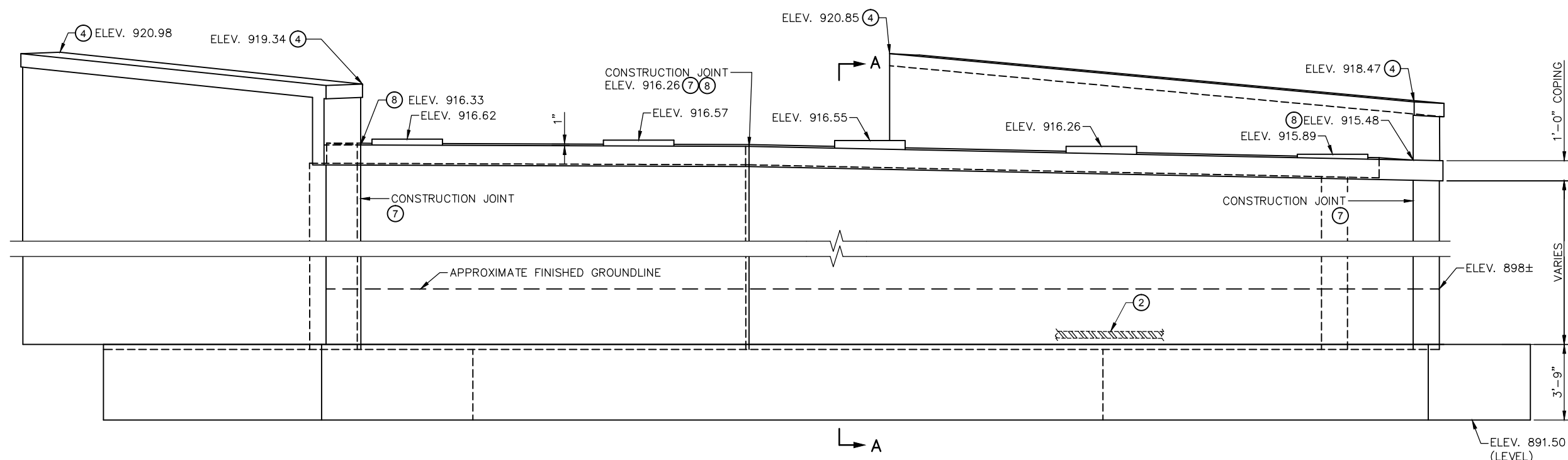
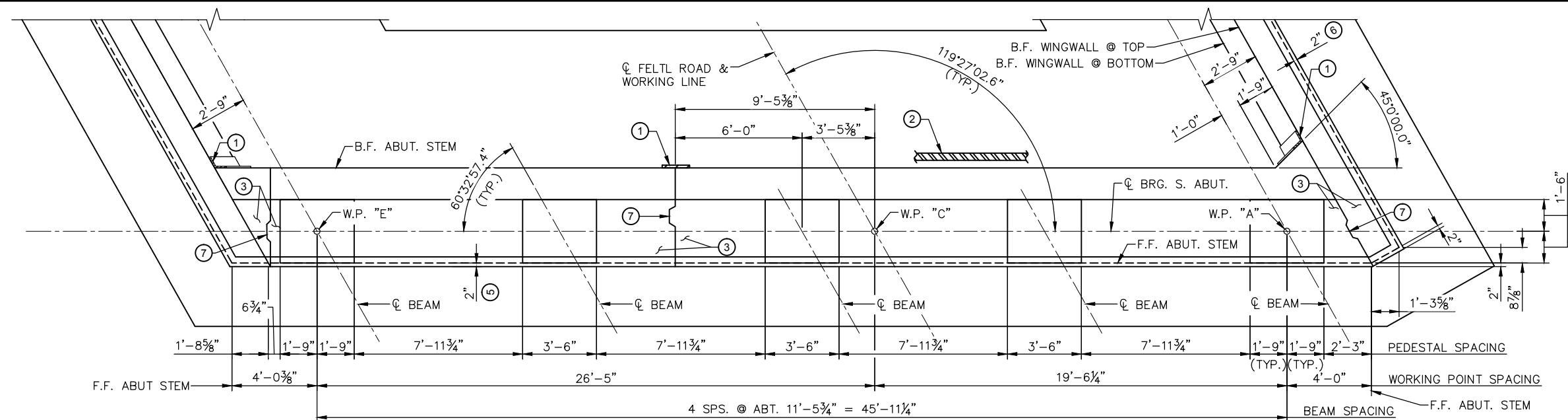
60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SOUTH ABUTMENT DETAILS

DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C08-BRG-ABT-001
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SHEET
4
OF
30



NOTES

FOR WINGWALL DETAILS SEE SHEET NO'S 6
& 7. SEE SHEET 8 FOR SECTION A-A.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- ① MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2184.3B.
- ② PERFORATED PIPE. SEE DETAIL B910 FOR DRAINAGE DETAILS.
- ③ THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTIONS JOINTS.
- ④ ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).
- ⑤ 1'-0" X 2" ABUTMENT STEM COPING. SEE AESTHETIC DETAILS AND SECTION DETAILS.
- ⑥ 8" X 2" WINGWALL COPING. SEE AESTHETIC DETAILS AND SECTION DETAILS.
- ⑦ 2" X 12" KEYWAY.
- ⑧ ELEVATIONS ARE AT F.F. OF ABUTMENT STEM.

[illegible]

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



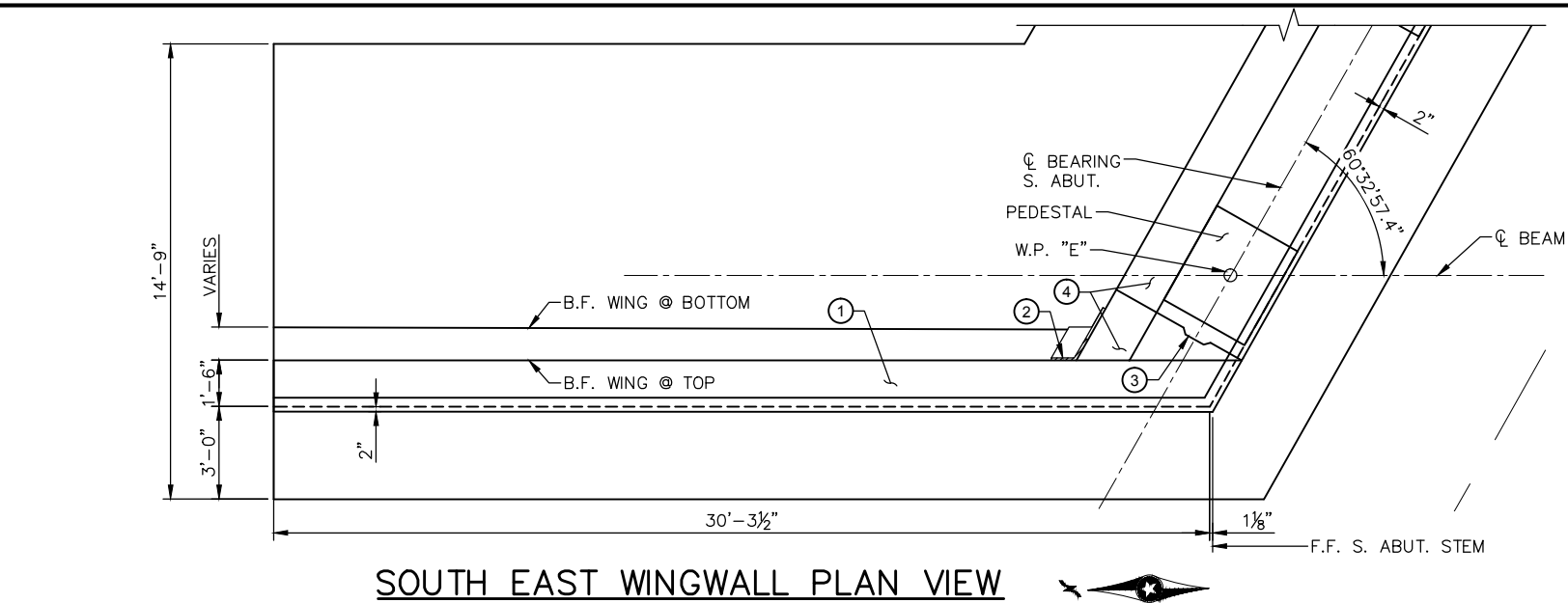
<p align="center"> CIVIL WEST - VOLUME 4A FELTL ROAD OVER SOUTHWEST LIGHT RAIL BRIDGE 27C08 SOUTH ABUTMENT DETAILS </p>	S
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DISCIPLINE: **STRUCTURES**

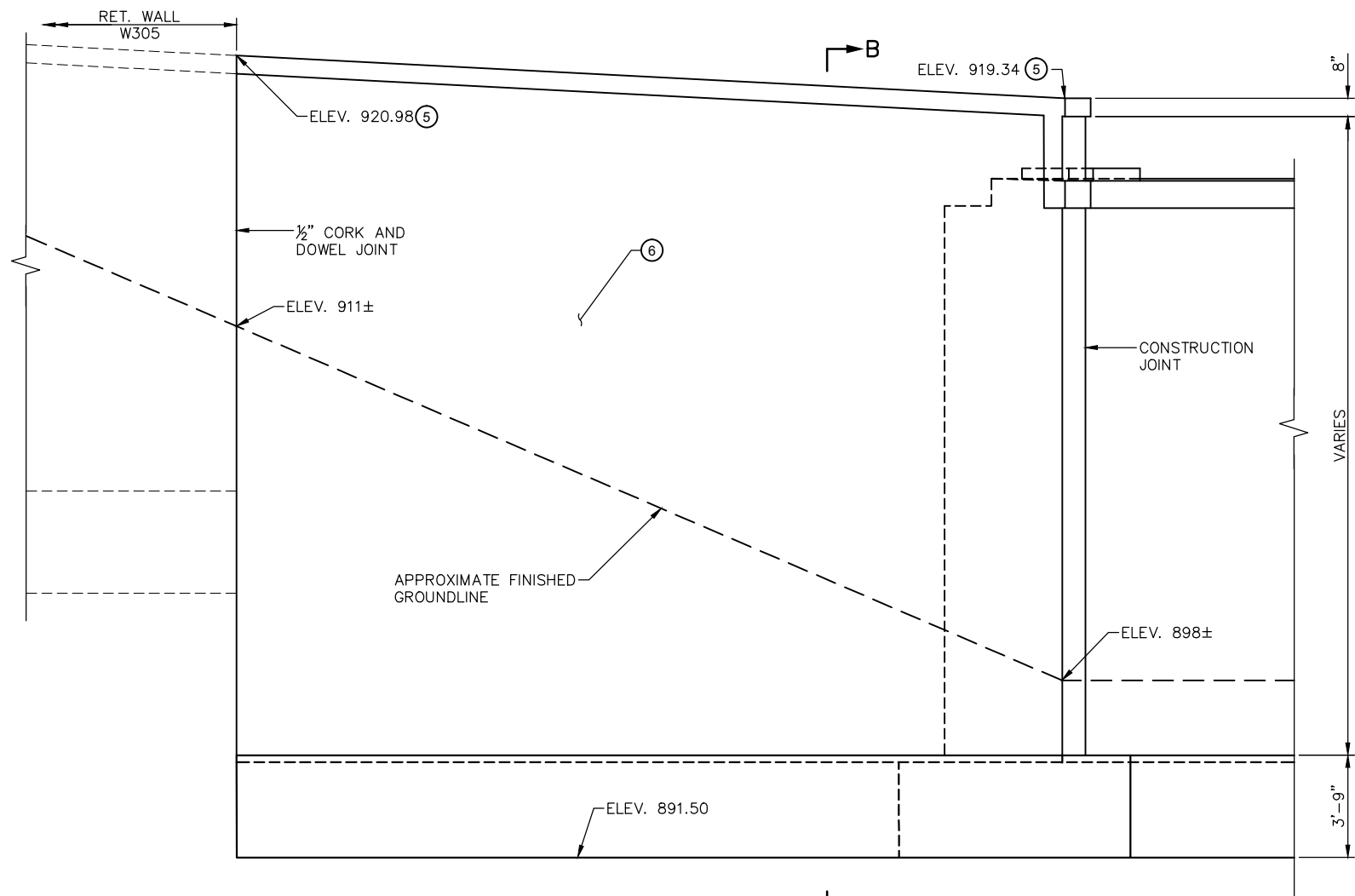
SHEET NAME:	CBR27C08-BRG-ABT-002
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HEET
5
OF
30

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SOUTH EAST WINGWALL PLAN VIEW



SOUTH EAST WINGWALL ELEVATION

NOTES

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROXIMATE FINISHED GROUNDLINE.

SEE SHEET 8 FOR SECTION B-B.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- (1) SLOPE 1% ± DOWN TOWARDS FRONT FACE.
- (2) MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2184.3B.
- (3) PERMISSIBLE CONSTRUCTION JOINT & 2" X 12" KEYWAY.
- (4) THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- (5) ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).
- (6) SEE SHEET 22 FOR AESTHETIC INFORMATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

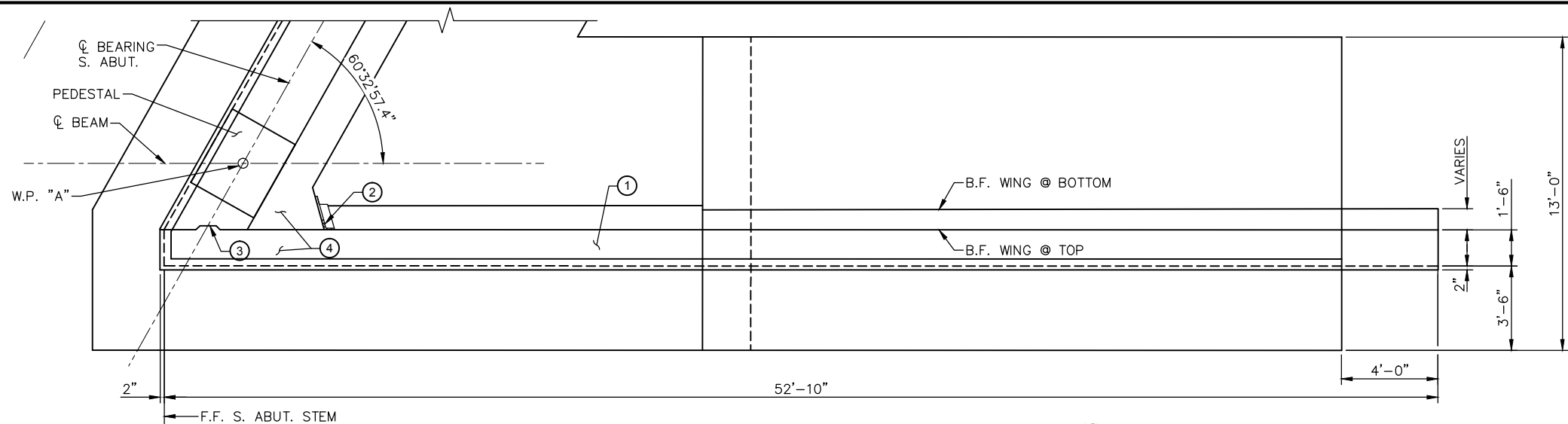
DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15

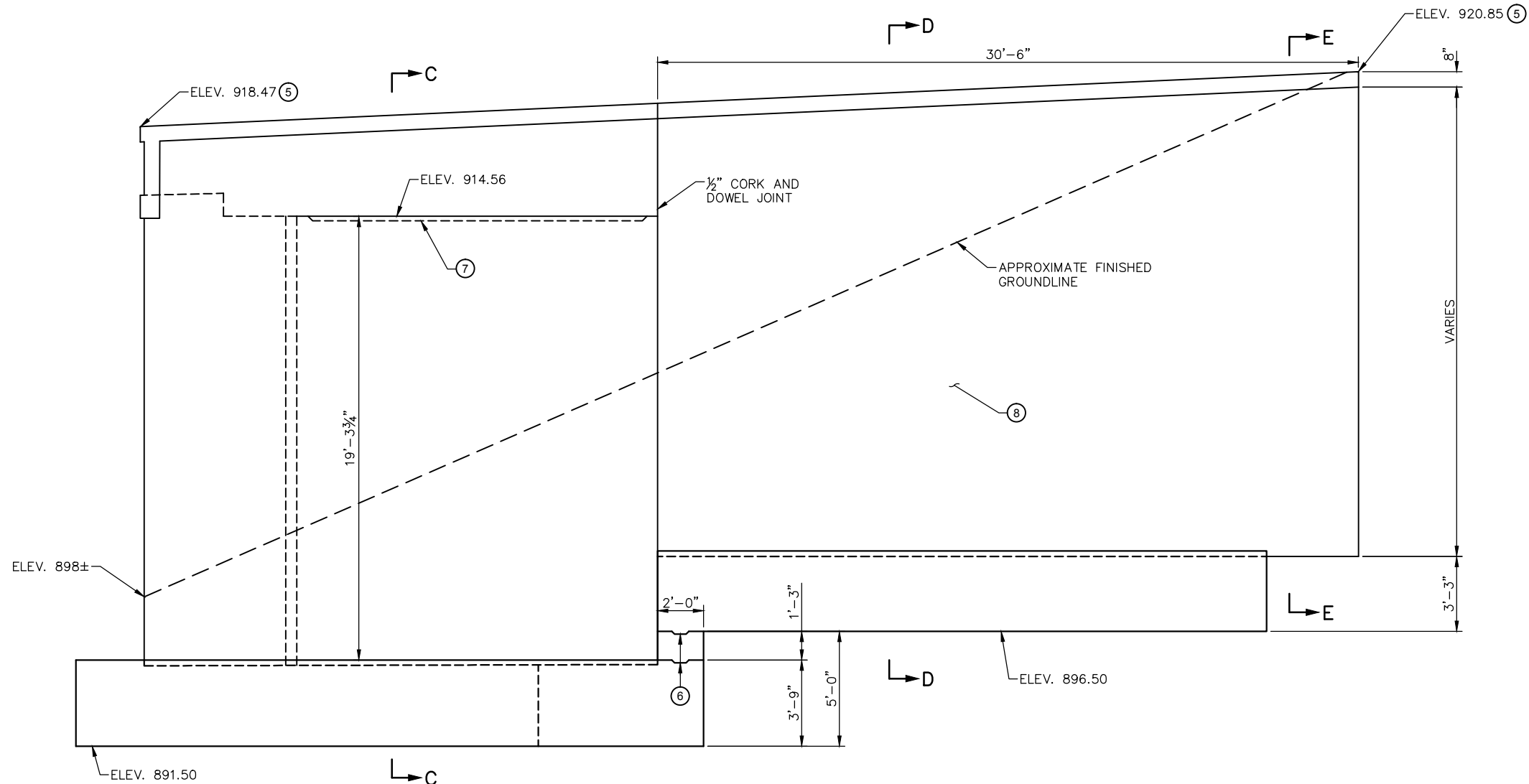
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SOUTH ABUTMENT DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C08-BRG-ABT-003

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SOUTH WEST WINGWALL PLAN VIEW



SOUTH WEST WINGWALL ELEVATION

NOTES

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROXIMATE FINISHED GROUNDLINE.

SEE SHEET 8 FOR SECTIONS C-C, D-D, AND E-E.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- ① SLOPE 1% ± DOWN TOWARDS FRONT FACE.
- ② MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2184.3B.
- ③ PERMISSIBLE CONSTRUCTION JOINT & 2" X 12" KEYWAY.
- ④ THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- ⑤ ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).
- ⑥ PERMISSIBLE CONSTRUCTION JOINT & 2" X 8" KEYWAY.
- ⑦ PERMISSIBLE CONSTRUCTION JOINT & 2' X 6" KEYWAY.
- ⑧ SEE SHEET 22 FOR AESTHETIC INFORMATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

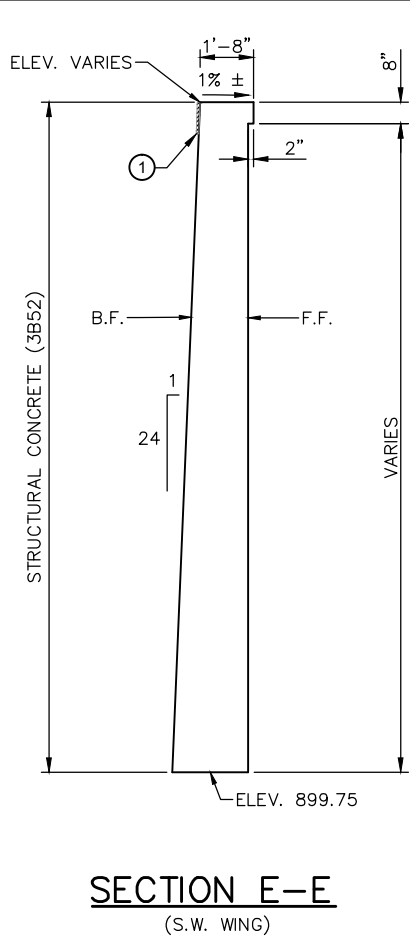
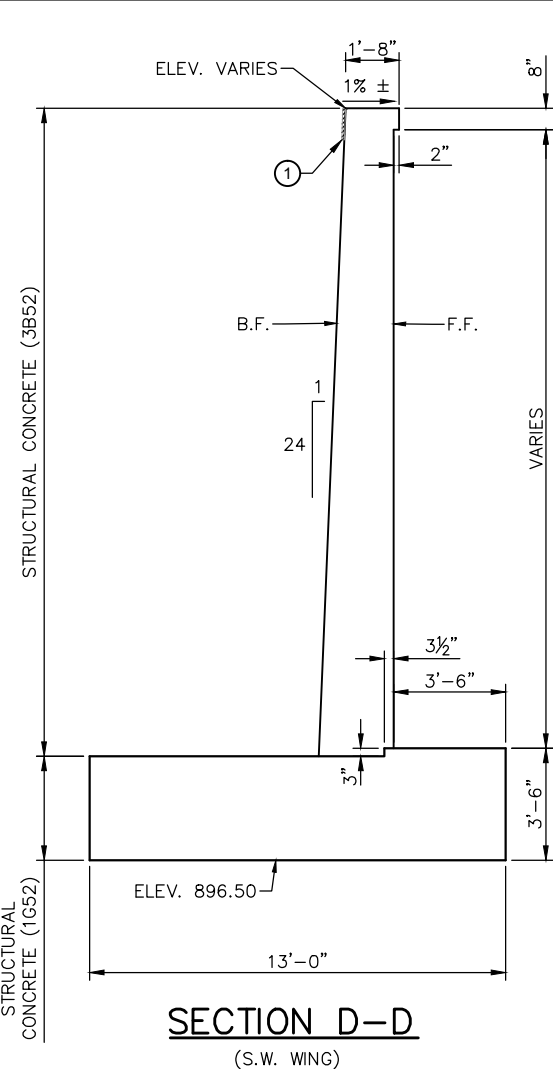
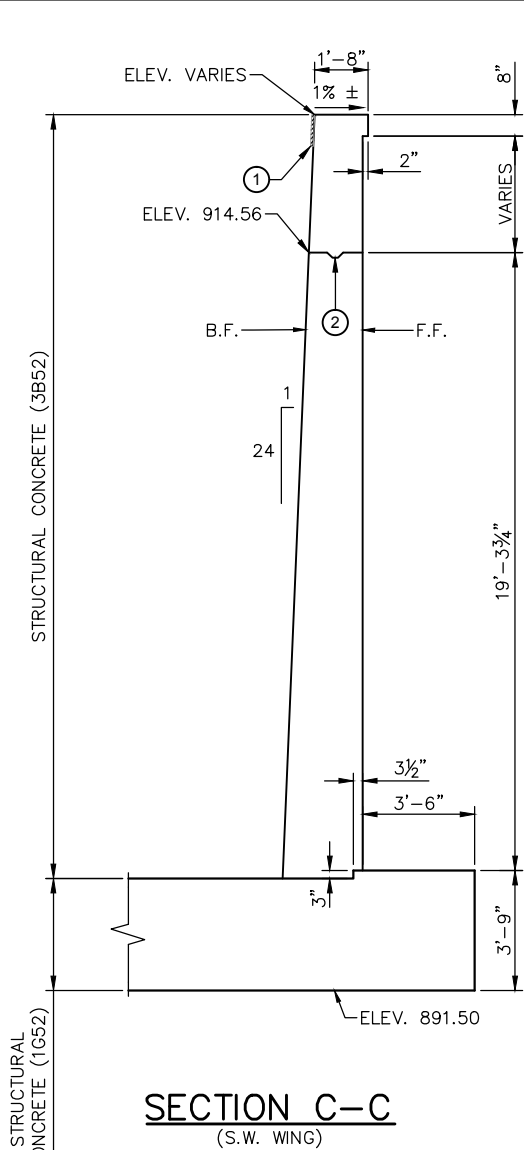
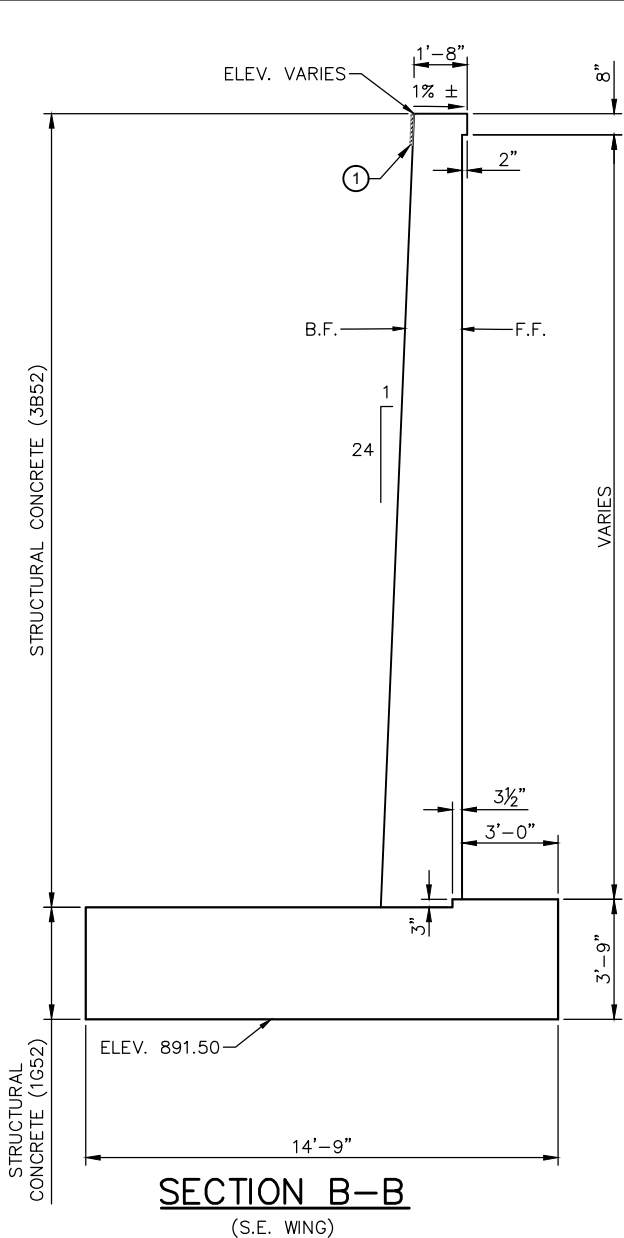
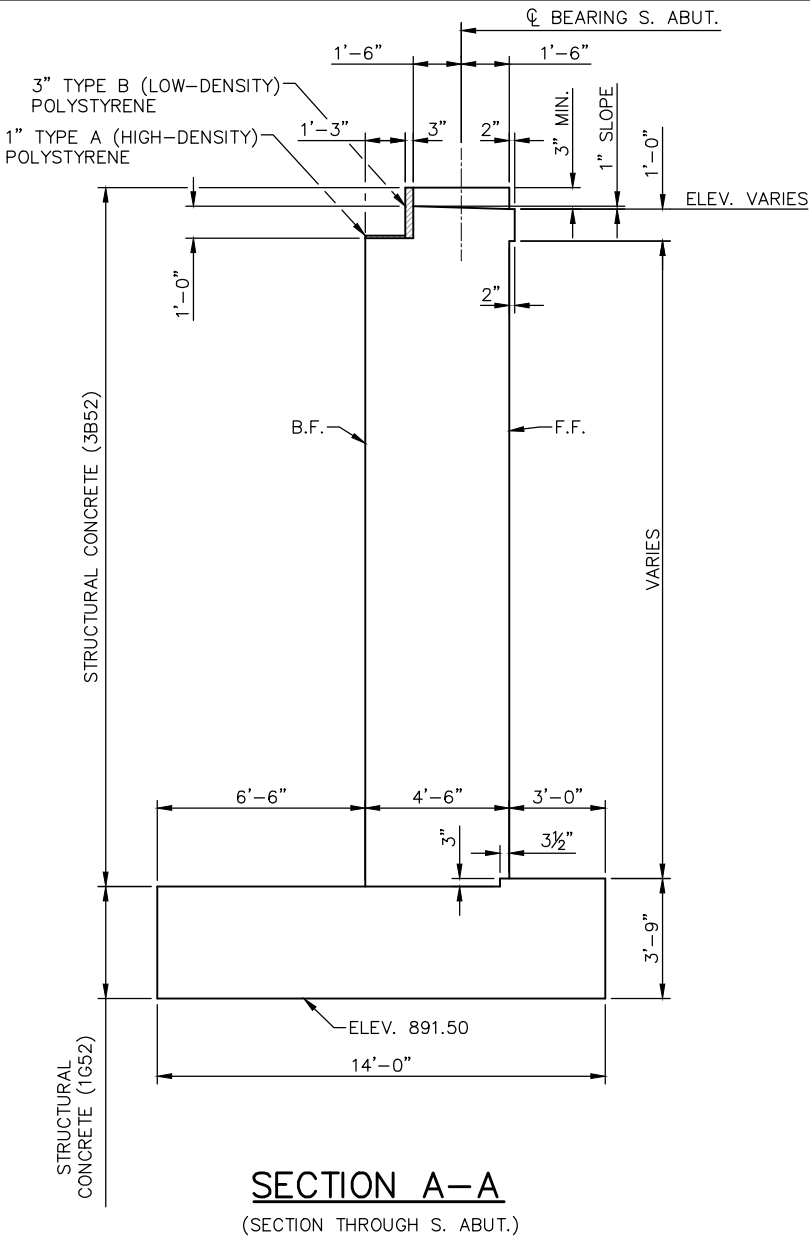
DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SOUTH ABUTMENT DETAILS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C08-BRG-ABT-004

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NOTES

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROXIMATE FINISHED GROUNDLINE.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- 1" TYPE B (LOW DENSITY) POLYSTYRENE BETWEEN EDGE OF DECK AND WINGWALL. 1½" TYPE B (LOW DENSITY) POLYSTYRENE BETWEEN EDGE OF APPROACH SLAB AND WINGWALL. (INCLUDED IN GRADING PLANS.)
- PERMISSIBLE CONSTRUCTION JOINT & 2" X 6" KEYWAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

AECOM
60% SUBMISSION - 09/28/15

METROPOLITAN C O U N C I L	SOUTHWEST Green Line Light Extension
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<div>CIVIL WEST - VOLUME 4A FELTL ROAD OVER SOUTHWEST LIGHT RAIL BRIDGE 27C08 SOUTH ABUTMENT DETAILS</div>	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C08-BRG-ABT-005

SHEET
8
OF
30

* FACTORED DESIGN BEARING PRESSURE	3.11 tons/sq ft
EFFECTIVE WIDTH B'	11.3 ft
FACTORED BEARING RESISTANCE, $\phi_b \cdot q_n$	4.61 tons/sq ft
SERVICE I DESIGN BEARING PRESSURE	2.43 tons/sq ft
EFFECTIVE WIDTH B'	11.0 ft
SERVICE BEARING RESISTANCE	3.40 tons/sq ft

**** ASSUMES 5-FT SUBCUT AND REPLACEMENT WITH GRANULAR BASE FILL. SEE SPECIAL PROVISIONS.**

STRUCTURAL CONCRETE (1G52)	CU. YD.
STRUCTURAL CONCRETE (3B52)	CU. YD.
REINFORCEMENT BARS	POUND
REINFORCEMENT BARS (EPOXY COATED)	POUND
STRUCTURE EXCAVATION	LUMP SUM
ARCH SURFACE FINISH (SINGLE COLOR)	SQ. FT.
ARCH CONC TEXTURE (NAAB)	SQ. FT.
DRAINAGE SYSTEM TYPE (B910)	LUMP SUM
MEMBRANE WATERPROOFING SYSTEM	LIN. FT.



NORTH EAST CORNER

[illegible]

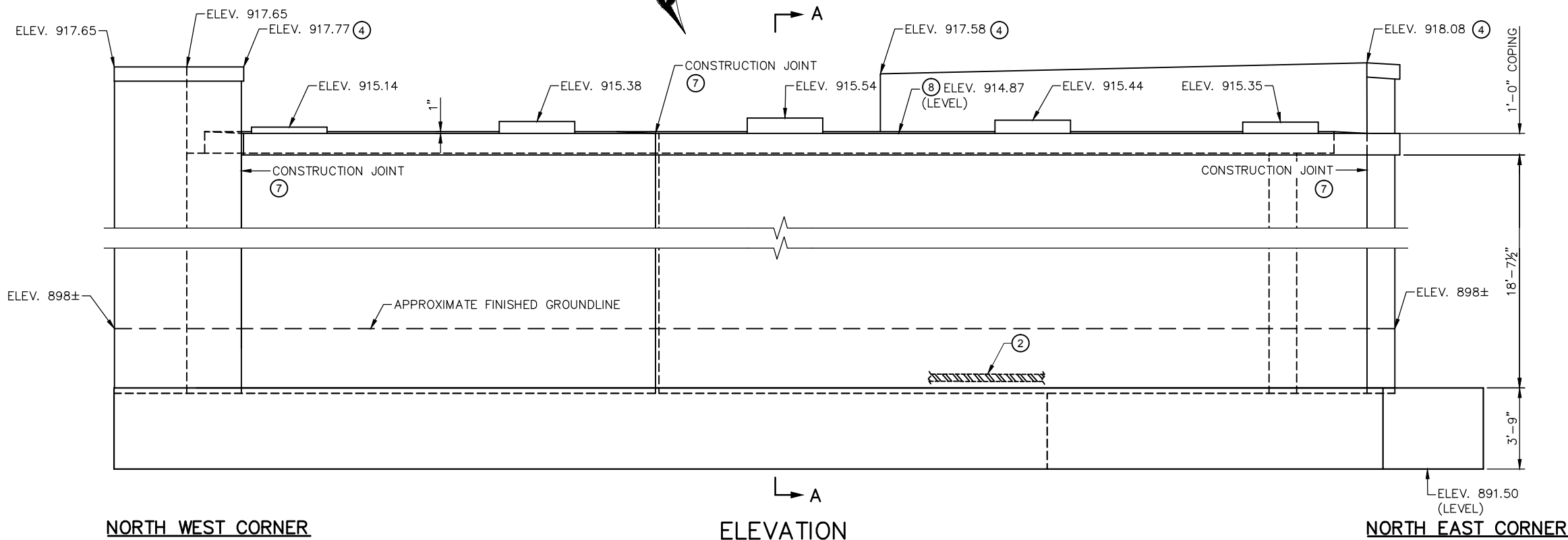
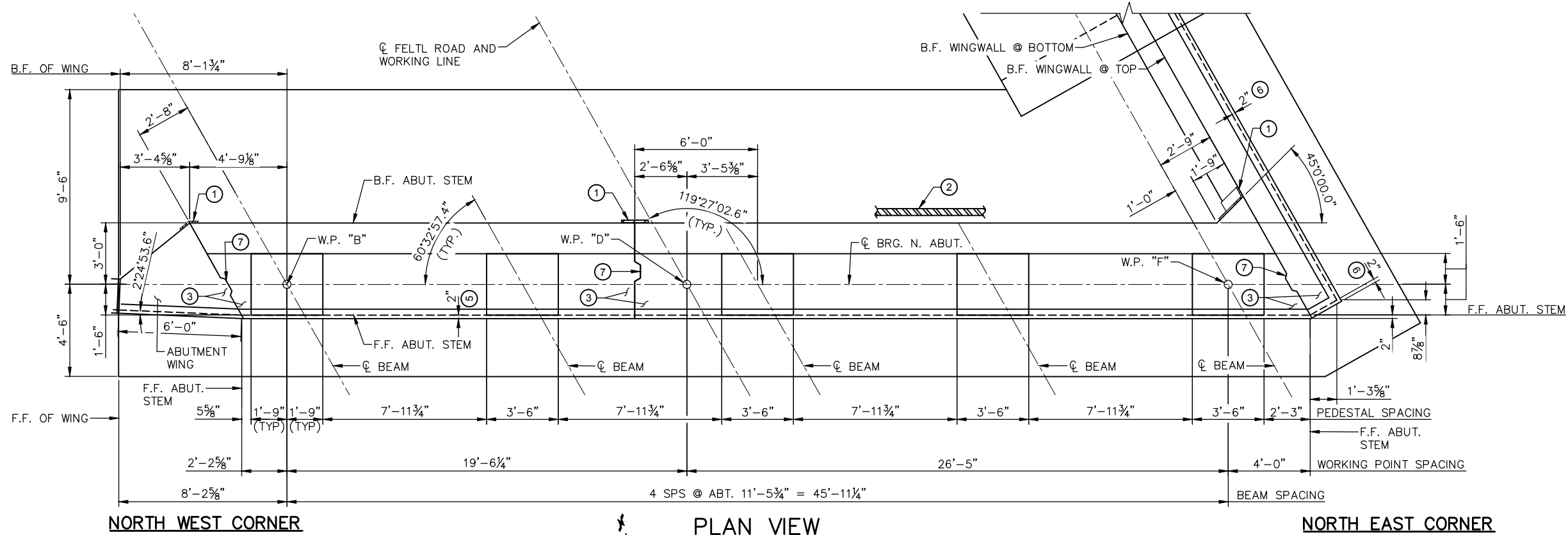
METROPOLITAN
COUNCIL



DISCIPLINE: **STRUCTURES**

SHEET
9
OF
30

Sep. 03 2015 11:17 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-ABT-013.dwg By: bodenc



NOTES

FOR WINGWALL DETAILS SEE SHEET NO'S 11 & 12.
SEE SHEET 13 FOR SECTION A-A.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2184.3B.
- PERFORATED PIPE. SEE DETAIL B910 FOR DRAINAGE DETAILS.
- THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTIONS JOINTS.
- ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).
- 1'-0 X 2" ABUTMENT STEM COPING. SEE AESTHETIC DETAILS AND SECTION DETAILS.
- 8" X 2" WINGWALL COPING. SEE AESTHETIC DETAILS AND SECTION DETAILS.
- PERMISSIBLE CONSTRUCTION JOINT AND 2" X 12" KEYWAY.
- ELEVATION IS AT F.F. OF ABUTMENT STEM.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR
DRAWN BY: CRVB
CHECKED BY: MPC
DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



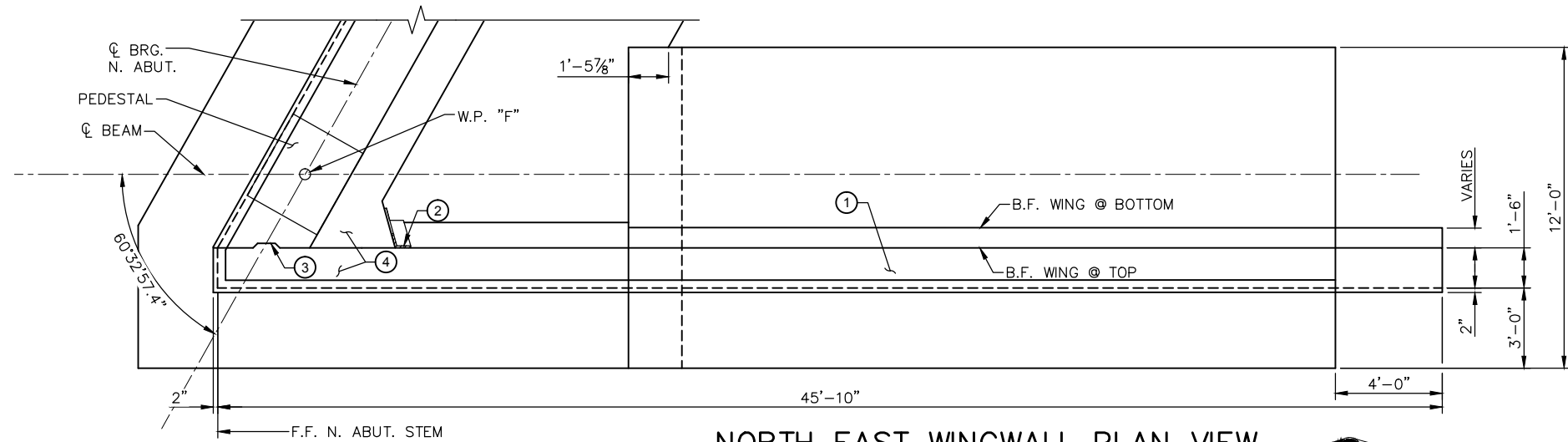
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
NORTH ABUTMENT DETAILS

DISCIPLINE:
STRUCTURES

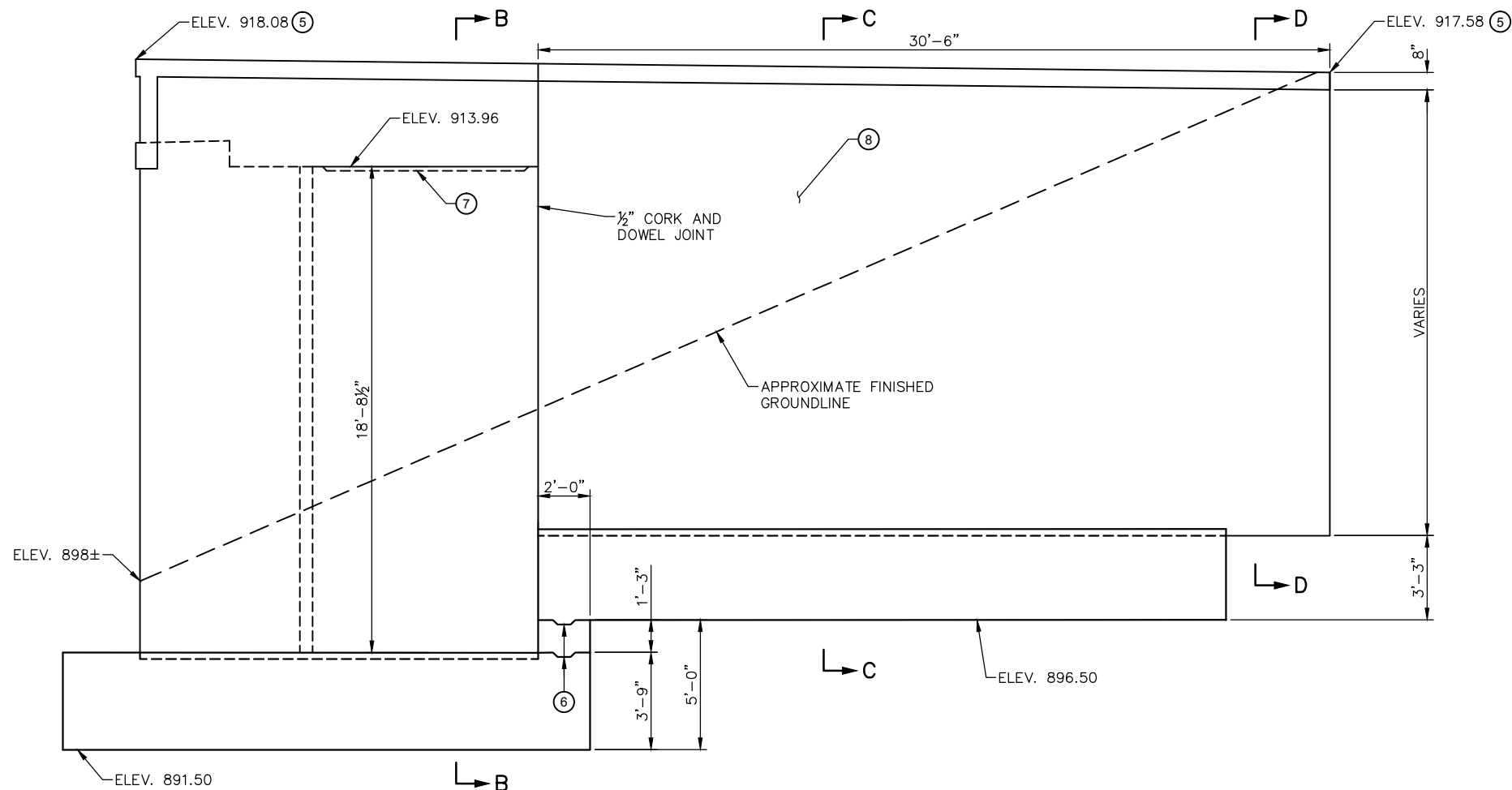
SHEET NAME:
CBR27C08-BRG-ABT-007

SHEET
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NORTH EAST WINGWALL PLAN VIEW



NORTH EAST WINGWALL ELEVATION

NOTES

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROXIMATE FINISHED GROUNDLINE.

SEE SHEET 13 FOR SECTIONS B-B, C-C, AND D-D.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

- (1) SLOPE 1% ± DOWN TOWARDS FRONT FACE.
- (2) MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2184.3B.
- (3) PERMISSIBLE CONSTRUCTION JOINT & 2" X 12" KEYWAY.
- (4) THERE SHALL BE A 72 HOUR MINIMUM DELAY BETWEEN CONCRETE POURS OF ADJACENT ABUTMENT SECTIONS THAT HAVE VERTICAL CONSTRUCTION JOINTS.
- (5) ELEVATIONS ARE AT THE BACK FACE OF WINGWALL (POLYSTYRENE JOINT).
- (6) PERMISSIBLE CONSTRUCTION JOINT & 2" X 8" KEYWAY.
- (7) PERMISSIBLE CONSTRUCTION JOINT & 2" X 6" KEYWAY.
- (8) SEE SHEET 22 FOR AESTHETIC INFORMATION.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR
DRAWN BY: CRVB
CHECKED BY: MPC
DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



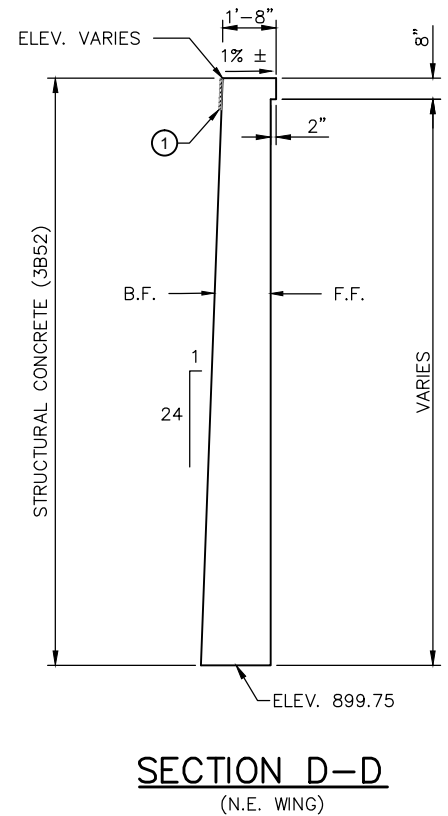
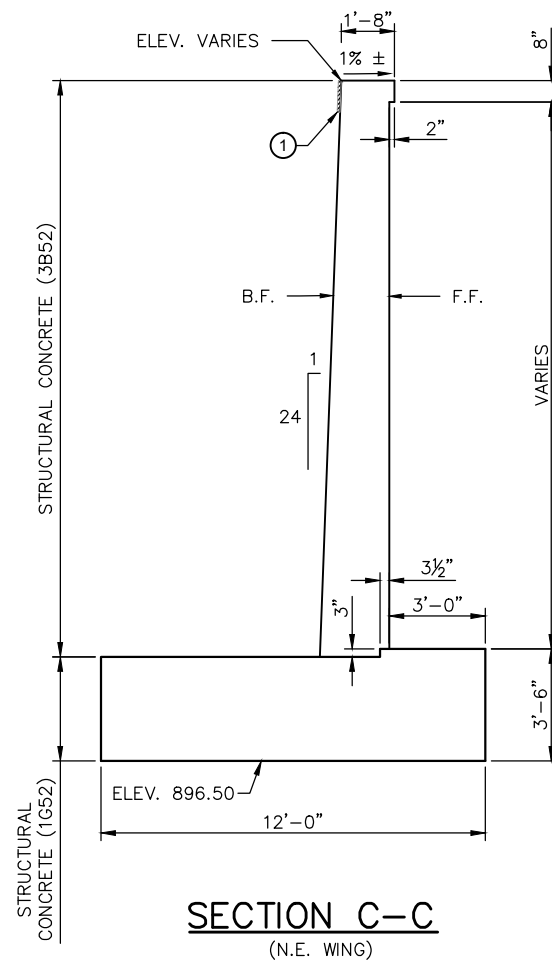
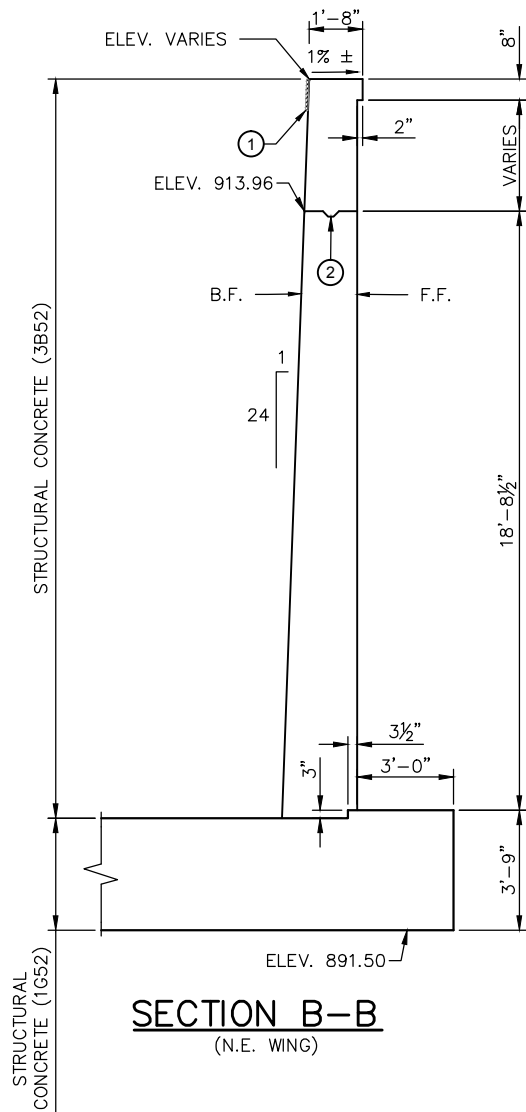
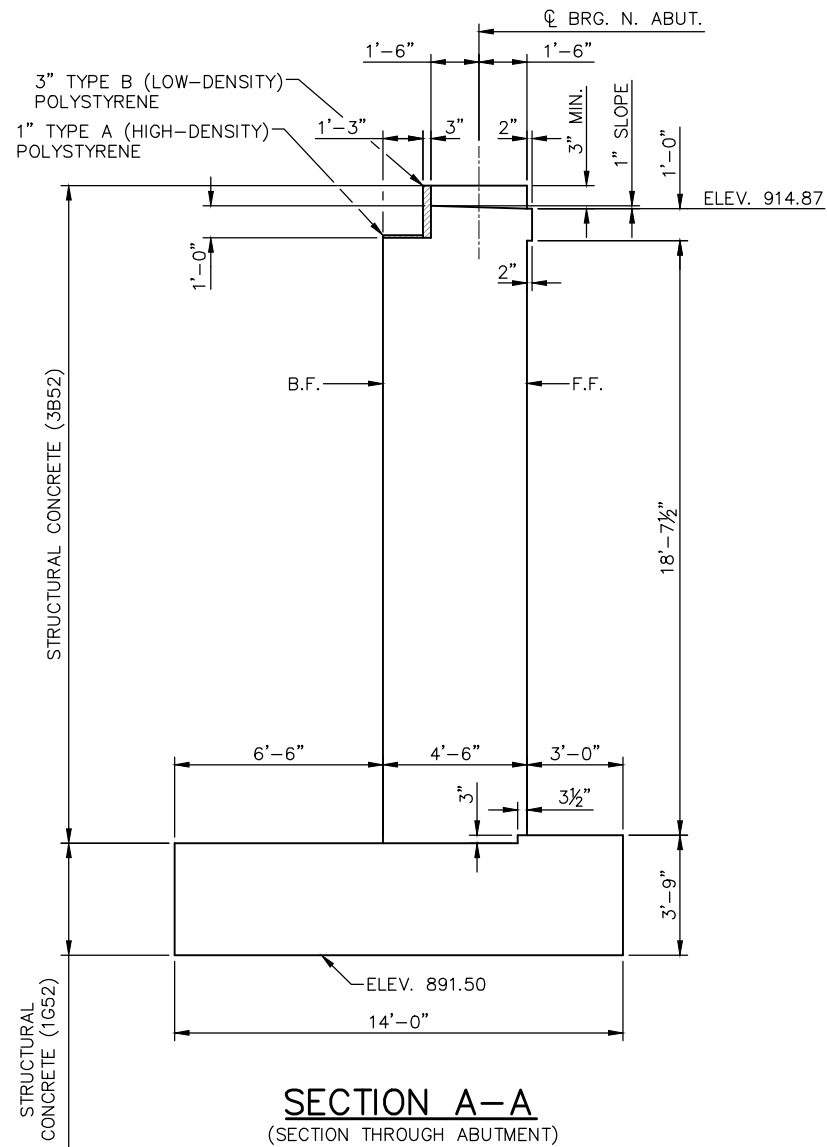
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
NORTH ABUTMENT DETAILS

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27C08-BRG-ABT-008

SHEET
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NOTES

CONTRACTOR SHALL PLACE BACKFILL BEHIND THE WINGWALLS AND IN FRONT OF THE WINGWALLS IN ALTERNATING LIFTS SUCH THAT THE DIFFERENCE IN TOP-OF-SOIL ELEVATIONS DOES NOT EXCEED FIVE FEET, UP TO THE APPROXIMATE FINISHED GROUNDLINE.

B.F. DENOTES BACK FACE.

F.F. DENOTES FRONT FACE.

① 1" TYPE B (LOW DENSITY) POLYSTYRENE BETWEEN EDGE OF DECK AND WINGWALL. 1½" TYPE B (LOW DENSITY) POLYSTYRENE BETWEEN EDGE OF APPROACH SLAB AND WINGWALL. (INCLUDED IN GRADING PLANS).

② PERMISSIBLE CONSTRUCTION JOINT & 2" X 6" KEYWAY.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



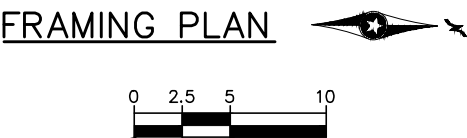
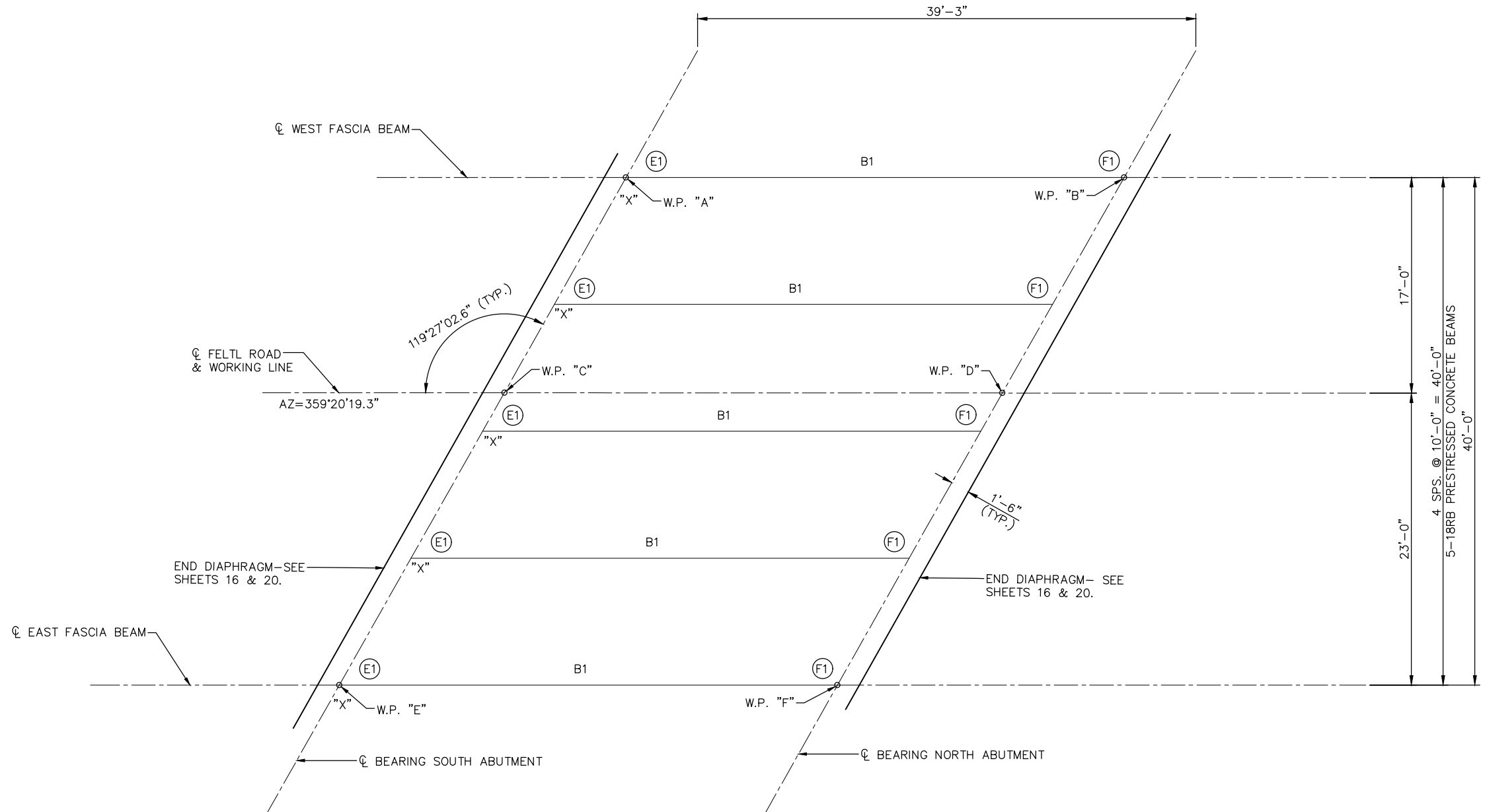
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
NORTH ABUTMENT DETAILS

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27C08-BRG-ABT-010

SHEET
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- NOTES**
- (E1) DENOTES EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE E1, SEE DETAIL B311.
 - (F1) DENOTES FIXED CURVED PLATE BEARING ASSEMBLY, TYPE F1, SEE DETAIL B310.
 - "X" DENOTES BEAM END

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

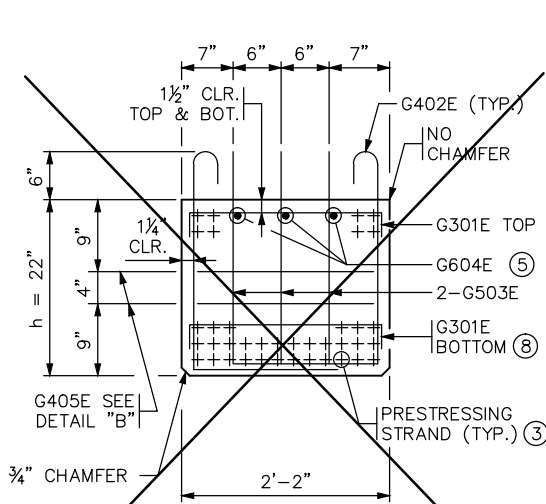
DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A FELTL ROAD OVER SOUTHWEST LIGHT RAIL BRIDGE 27C08 FRAMING PLAN	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C08-BRG-SUP-001

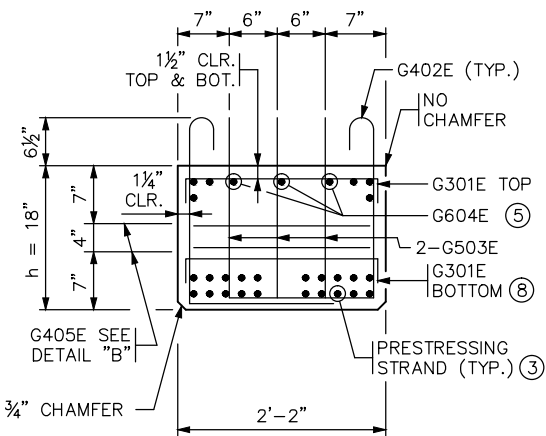
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Sep. 03 2015 11:29 am v:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-PCB.dwg By: bodenc



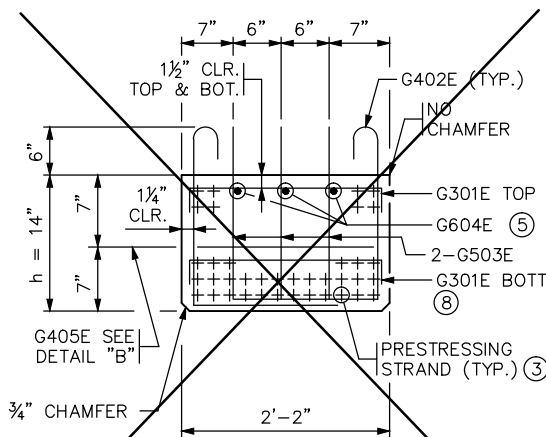
END VIEW - 22" RB

CUT STRANDS FLUSH WITH CONCRETE.
COVER ENDS WITH ONE COMPONENT POLYURETHANE
SEALANT PER APPROVED PRODUCT LIST.



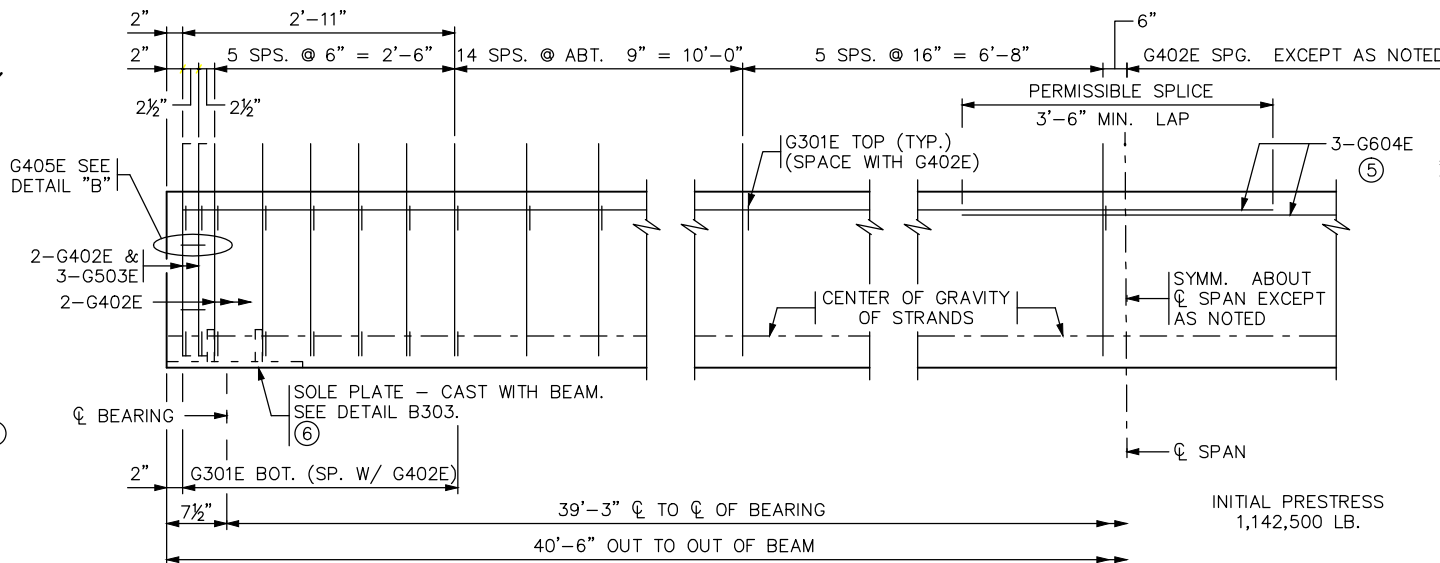
END VIEW - 18" RB

CUT STRANDS FLUSH WITH CONCRETE.
COVER ENDS WITH ONE COMPONENT POLYURETHANE
SEALANT PER APPROVED PRODUCT LIST.

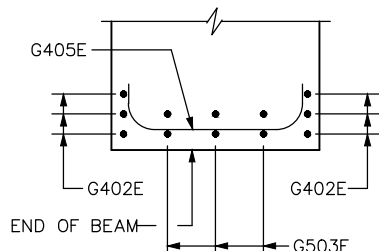


END VIEW - 14" RB

CUT STRANDS FLUSH WITH CONCRETE.
COVER ENDS WITH ONE COMPONENT POLYURETHANE
SEALANT PER APPROVED PRODUCT LIST.

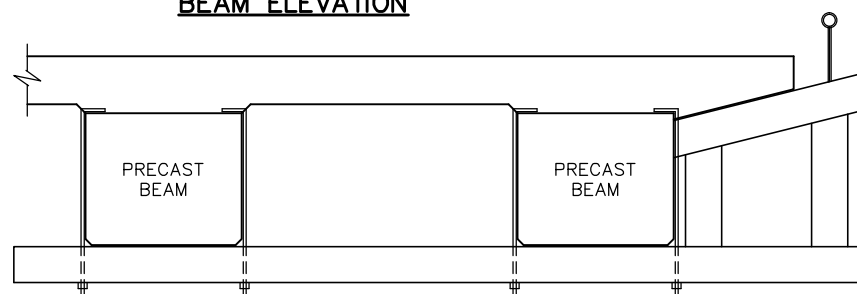


BEAM ELEVATION



DETAIL "B"

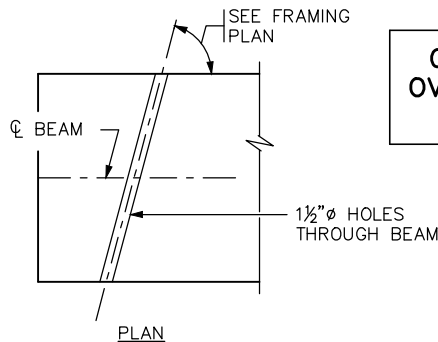
PLAN VIEW SHOWING
PLACEMENT OF G405E BAR



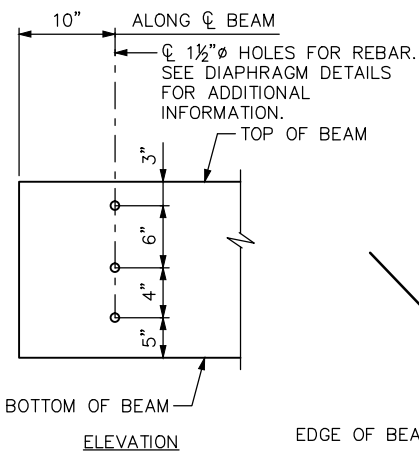
OVERHANG SUPPORT CONCEPT SKETCH

SEE THE "CONSTRUCTION NOTES" ON FRONT PORTION OF THE BRIDGE PLANS.
THIS CONCEPT HAS BEEN USED SUCCESSFULLY ON PREVIOUS PROJECTS.
CONTRACTORS MAY CONSIDER THIS OR ANOTHER SYSTEM AT THEIR DISCRETION.

CONTRACTOR SHALL VERIFY STABILITY OF FASCIA BEAMS FROM
OVERTURNING (NO PERMANENT BEAM DIAPHRAGMS ARE PRESENT).
CONTRACTOR SHALL PROVIDE TEMPORARY BRACING.



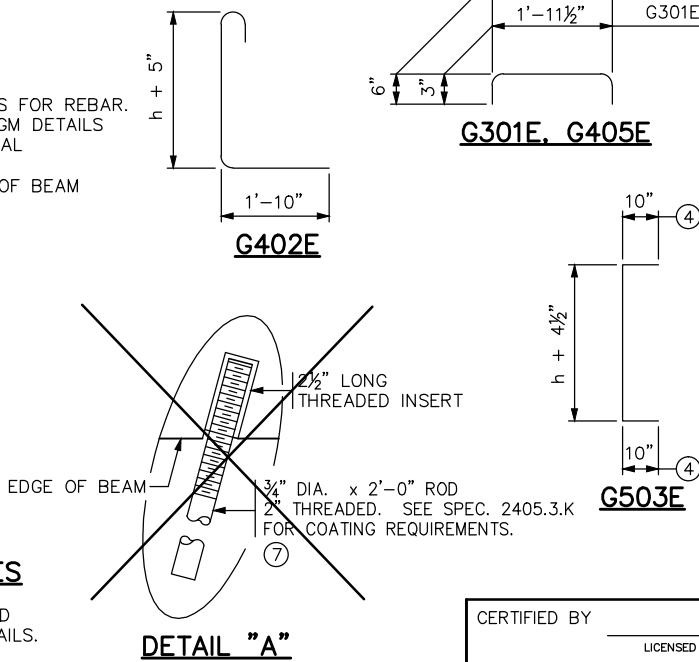
PLAN



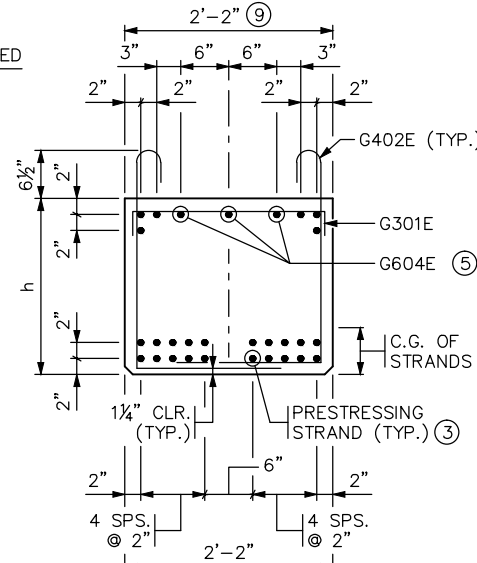
ELEVATION

CONCRETE END
DIAPHRAGM ANCHORAGES

SEE SUPERSTRUCTURE DETAILS AND
REINFORCEMENT FOR DIAPHRAGM DETAILS.



DETAIL "A"

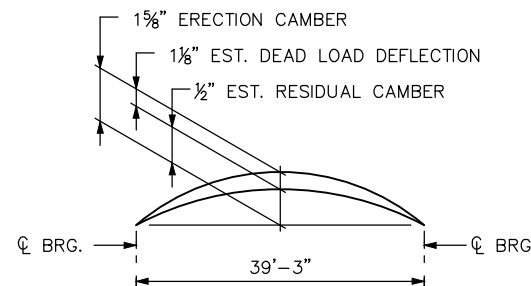


SECTION AT ϕ SPAN

STRAND ARRANGEMENT	
LOCATION	NO. OF STRANDS
TOP ROW	4
2ND ROW FROM TOP	2
3RD ROW FROM BOTTOM	-
2ND ROW FROM BOTTOM	10
BOTTOM ROW	10
TOTAL	26
C.G. OF STRANDS = 5.85 INCHES	

C.G. = DISTANCE TO CENTER OF GRAVITY OF ALL STRANDS
FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2"
CENTER TO CENTER, HORIZONTALLY AND VERTICALLY,
EXCEPT AS NOTED.

ALL STRAIGHT STRAND.



CAMBER DIAGRAM

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB,
WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE
APPLICABLE.

CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER
ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE
BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB
THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.

GENERAL NOTES

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL
IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END,
SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN
CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE
STENCILLED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT
PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X".

APPROXIMATE WEIGHT OF BEAM IS 11 TONS.

AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR
MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR
APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF
15 KIPS PER ANCHORAGE.

- MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- USE 7-WIRE LOW RELAXATION PRESTRESSING STRAND, CONFORMING TO ASTM A416, GRADE 270.
- MAY STAGGER BARS TO AVOID INTERFERENCE.
- PROVIDE 2" CLEARANCE AT ENDS OF BEAM.
- FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
- FOR INSERTS IN THE OUTSIDE OF FASCIA BEAM, ADJUST THE ROD LENGTH ACCORDING TO THE OVERHANG DIMENSION.
- PLACE G301E BAR ON TOP OF THE TOP ROW OF PRESTRESSING STRANDS IN THE BOTTOM OF THE BEAM.
- ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.

SECTION HEIGHT "h"	
14" <input type="checkbox"/>	18" <input checked="" type="checkbox"/>
22" <input type="checkbox"/>	

AN "X" IN THE BOX
INDICATES THE SECTION HEIGHT.

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	17.71 KSI
LONG TERM LOSSES	23.81 KSI
TOTAL LOSSES	41.52 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'_{ci}	② f'_c
7.25 KSI	7.75 KSI

PRESTRESSING STRAND DIAMETER	
③ $\frac{1}{2}$ " <input type="checkbox"/>	④ $\frac{3}{4}$ " <input checked="" type="checkbox"/>
③ 0.60" <input type="checkbox"/>	④ <input type="checkbox"/>

MODIFIED CONCRETE END DIAPHRAGM
ANCHORAGES.

CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

TITLE: **18" RECTANGULAR
PRESTRESSED CONCRETE BEAM
(PRETENSIONED) 18RB-41**

DES: PLR DR: CRVB APPROVED: _____
CHK: MPC CHK: 7-24-15
SHEET NO. 15 OF 30 SHEETS

BEAM B1

FIG. 5-397.550 MOD

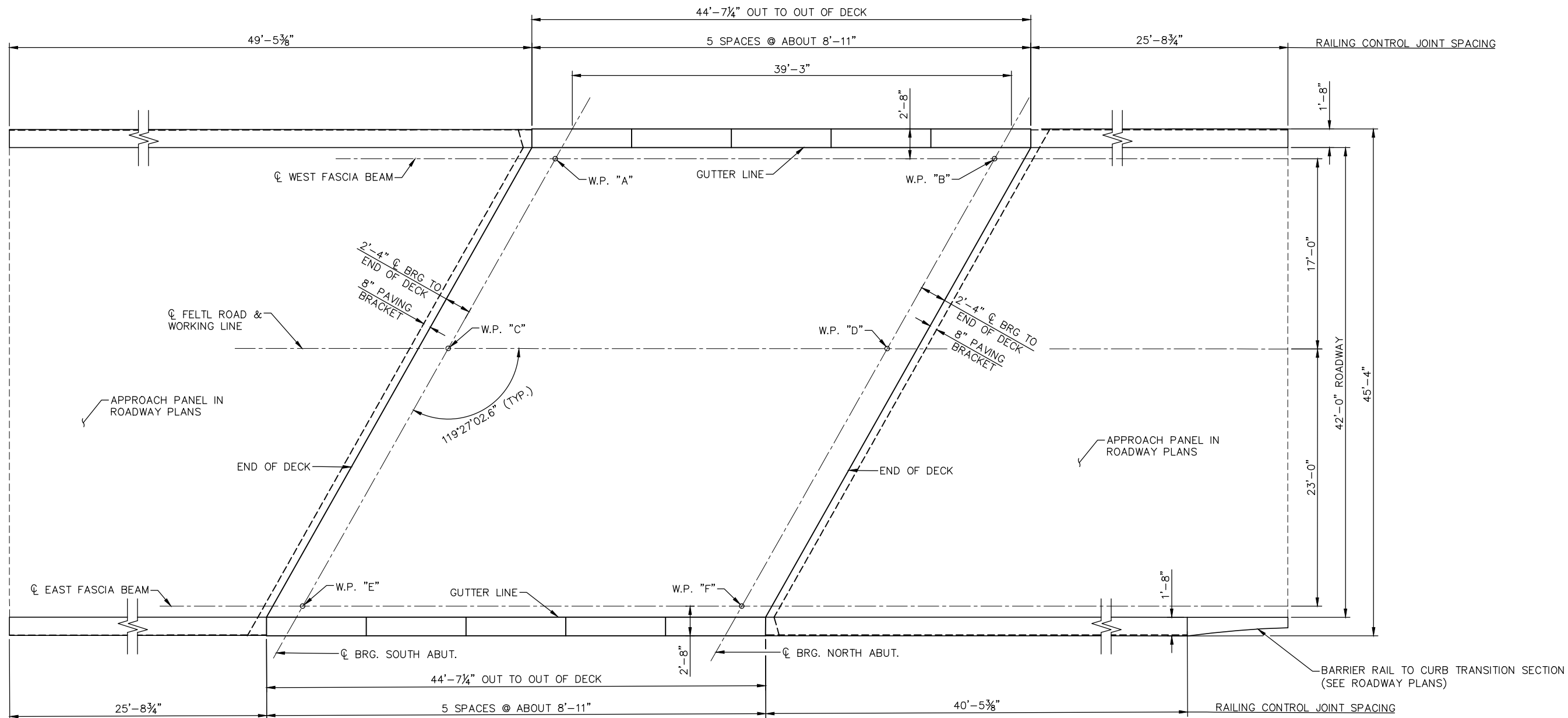
BRIDGE NO.
27C08

REVISED:

APPROVED: JANUARY 13, 2015

Nancy Dubenberger
STATE BRIDGE ENGINEER

Sep. 03 2015 11:31 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-SUP-003.dwg By: bodenc



DECK PLAN

PART BARRIER ELEVATION

NOTES

- FOR CORNER DETAILS SEE SHEET 21.
- FOR END DIAPHRAGM DETAILS SEE SHEETS 16 & 20.
- FOR TRANSVERSE (TOP & BOTTOM) BAR SPACING SEE SHEET NO. 18.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: ----
DRAWN BY: CRVB	DATE: 7-24-15



60% SUBMISSION - 09/28/15

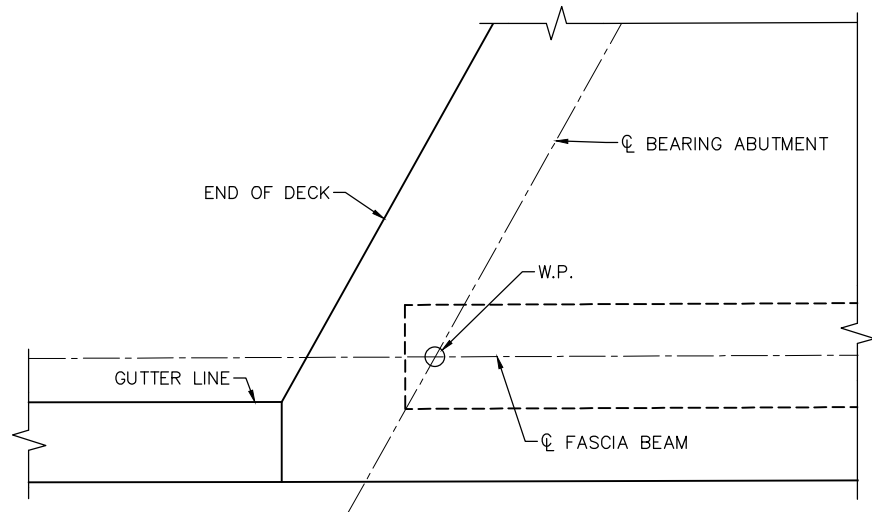


CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SUPERSTRUCTURE DETAILS

DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C08-BRG-SUP-003
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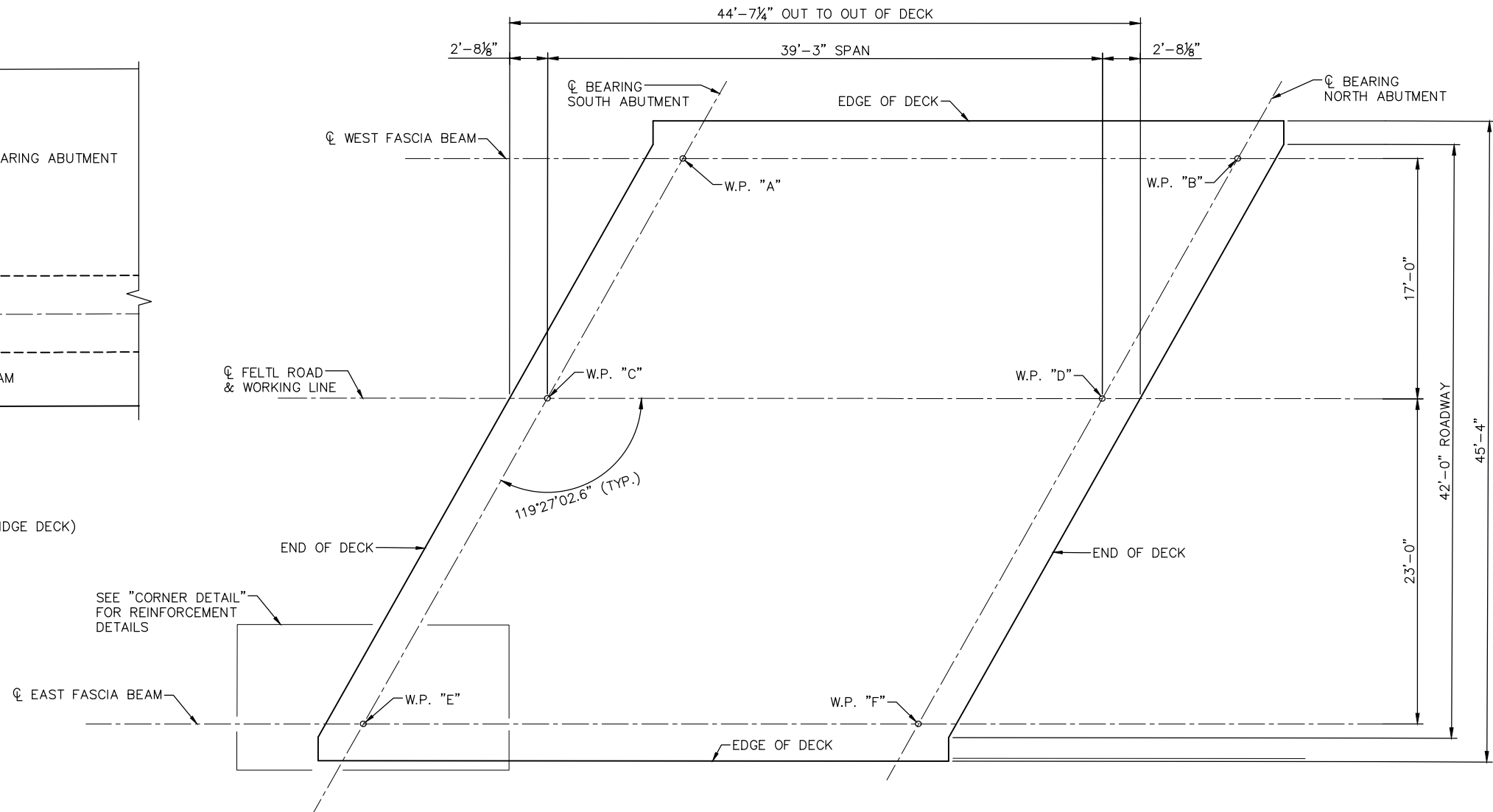
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CORNER DETAIL

(TYP. AT NORTH WEST & SOUTH EAST CORNERS OF BRIDGE DECK)



DECK PLAN

(SHOWING TRANSVERSE BAR STEEL
REINFORCEMENT LAYOUT DETAILS)



NOTES

- FOR CORNER DETAILS SEE SHEET 21.
- FOR END DIAPHRAGM DETAILS SEE SHEETS 16 & 20.
- FOR LONGITUDINAL (TOP & BOTTOM) BAR SPACING SEE SHEET NO. 17.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: ----
DRAWN BY: CRVB	DATE: 7-24-15



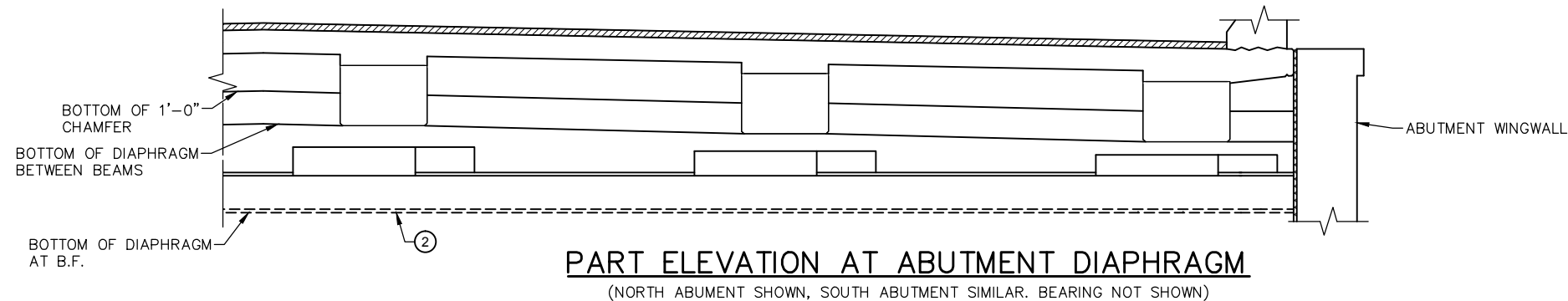
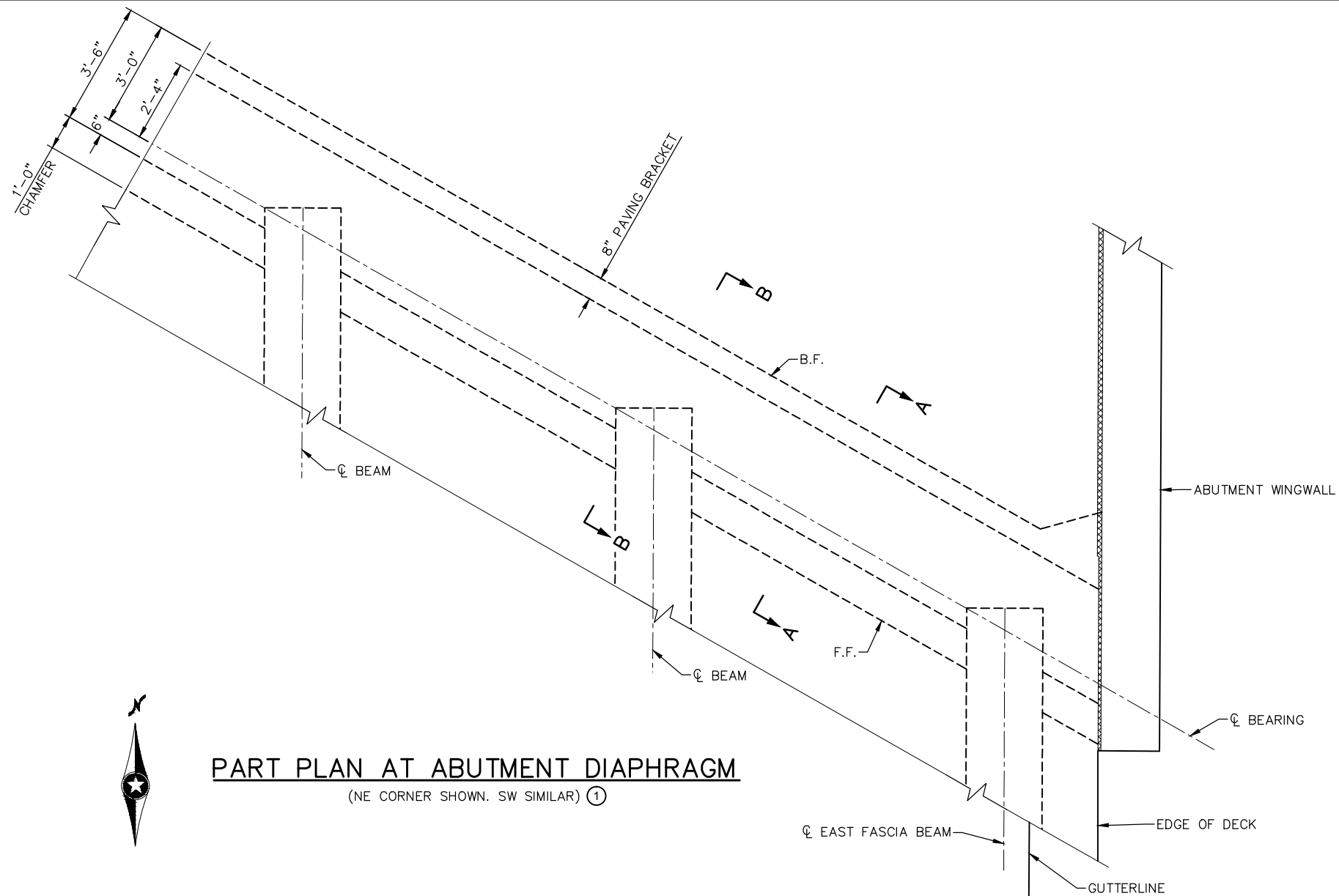
60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SUPERSTRUCTURE DETAILS

DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C08-BRG-SUP-004
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- NOTES**
- FOR CORNER DETAILS SEE SHEET 21.
 - SEE SHEET 20 FOR SECTIONS A-A & B-B.
 - B.F. DENOTES BACK FACE.
 - F.F. DENOTES FRONT FACE.
 - ① CONCRETE PEDESTAL NOT SHOWN.
 - ② 1" HIGH DENSITY POLYSTYRENE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: ----
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
SUPERSTRUCTURE DETAILS

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C08-BRG-SUP-005

[illegible]

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE		
	TYPE F (TL-4) RAILING CONCRETE (3S52)	LIN. FT.
⑦	REINFORCEMENT BARS (EPOXY COATED)	POUND
	REINFORCEMENT BARS (STAINLESS-60KSI)	POUND
	BRIDGE SLAB CONCRETE (3YHPC-S)	CU. YD.
	CONCRETE WEARING COURSE (3U17A)	SQ. FT.
	PRESTRESSED CONCRETE BEAMS 18RB	LIN. FT.
	ARCH SURFACE FINISH (SINGLE COLOR)	SQ. FT.
	CONDUIT SYSTEM (SIGNALS)	LUMP SUM
⑧	EXP. CURVED PLATE BEARING ASSEMBLY TYPE E1	EACH
⑧	FIXED CURVED PLATE BEARING ASSEMBLY TYPE F1	EACH
⑨	BRIDGE NAME PLATE	EACH
⑩	½" X 7" BITUMINOUS FELT	LIN. FT.
⑩	1" TYPE A (HIGH DENSITY) POLYSTYRENE	SQ. FT.
⑩	1½" TYPE B (LOW-DENSITY) POLYSTYRENE	SQ. FT.
⑩	1" TYPE B (LOW-DENSITY) POLYSTYRENE	SQ. FT.
⑩	3" TYPE B (LOW DENSITY) POLYSTYRENE	SQ. FT.
⑩	MEMBRANE WATERPROOFING	LIN. FT.
⑦	INCLUDES DECK, END DIAPHRAGM AND RAILING REINFORCEMENT.	
⑧	PAYMENT FOR BEARINGS INCLUDED IN ITEM "BEARING ASSEMBLY" PER EACH.	
⑨	INCLUDED IN BID PRICE FOR "TYPE F (TL-4) RAILING CONCRETE (3S52)".	
⑩	INCLUDED IN BID PRICE FOR "BRIDGE SLAB CONCRETE (3YHPC-S)".	

[illegible]

Technical drawing showing a cross-section of a bridge deck joint detail. The drawing includes dimensions and callouts for various components:

- Dimensions:**
 - Overall width: 3'-6"
 - Top section width: 8" (left), 2'-4" (middle), 6" (right)
 - Vertical dimension: 1'-4"
 - Horizontal dimension: 4"
 - Bottom section width: 1'-3" (left), 1'-6" (middle), 1'-6" (right)
 - Overall bottom width: 3'-0"
- Callouts and Materials:**
 - SAW CUT AND SEAL WITH CONCRETE JOINT SEALER PER MnDOT SPEC. 3723
 - 7" x 1/2" BIT. FELT
 - B.F. (Bottom Flange)
 - 4 1/2" CHAMFER
 - TOP OF DECK
 - F.F. (Finish Floor)
 - SEE DETAIL 'A'
 - CL BEARING
- Notes:**
 - VARIES (vertical dimension)

B.F. DENOTES BACK FACE.
F.F. DENOTES FRONT FACE.

SEE SHEET 19 FOR LOCATIONS OF SECTION A-A AND B-B.

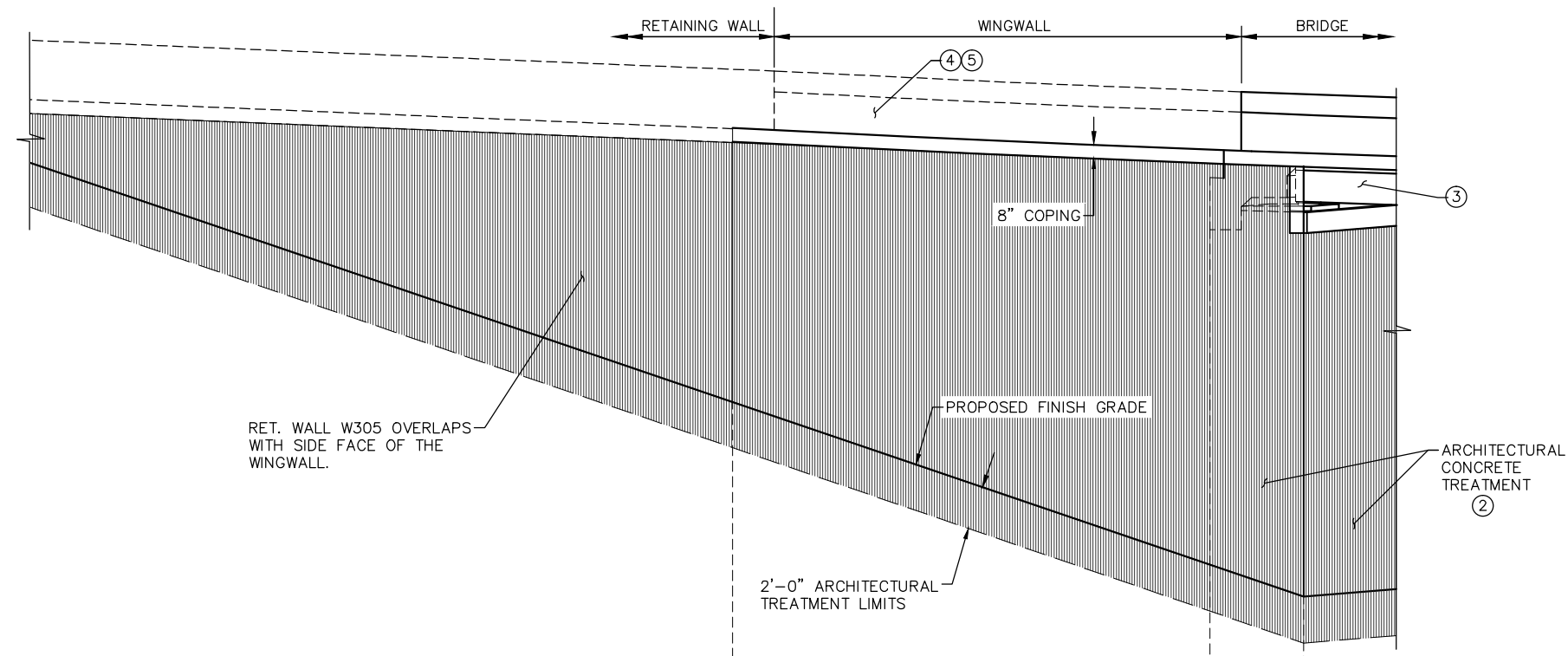
- ① DIMENSIONS ARE MEASURED PERPENDICULAR TO \angle OF BEARING.
- ② 1" HIGH DENSITY POLYSTYRENE.
- ③ 3" LOW DENSITY POLYSTYRENE.
- ④ SEE SHEET 16 FOR DETAIL 'A'. MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2481.3B EXCEPT THE STRIP SHALL BE 24" WIDE TO ALLOW MOVEMENT.
- ⑤ END DIAPHRAGM SHALL BE CAST WITH THE DECK.
- ⑥ BRIDGE DECK CONCRETE (3YHPC-S)

[illegible]**AECOM**

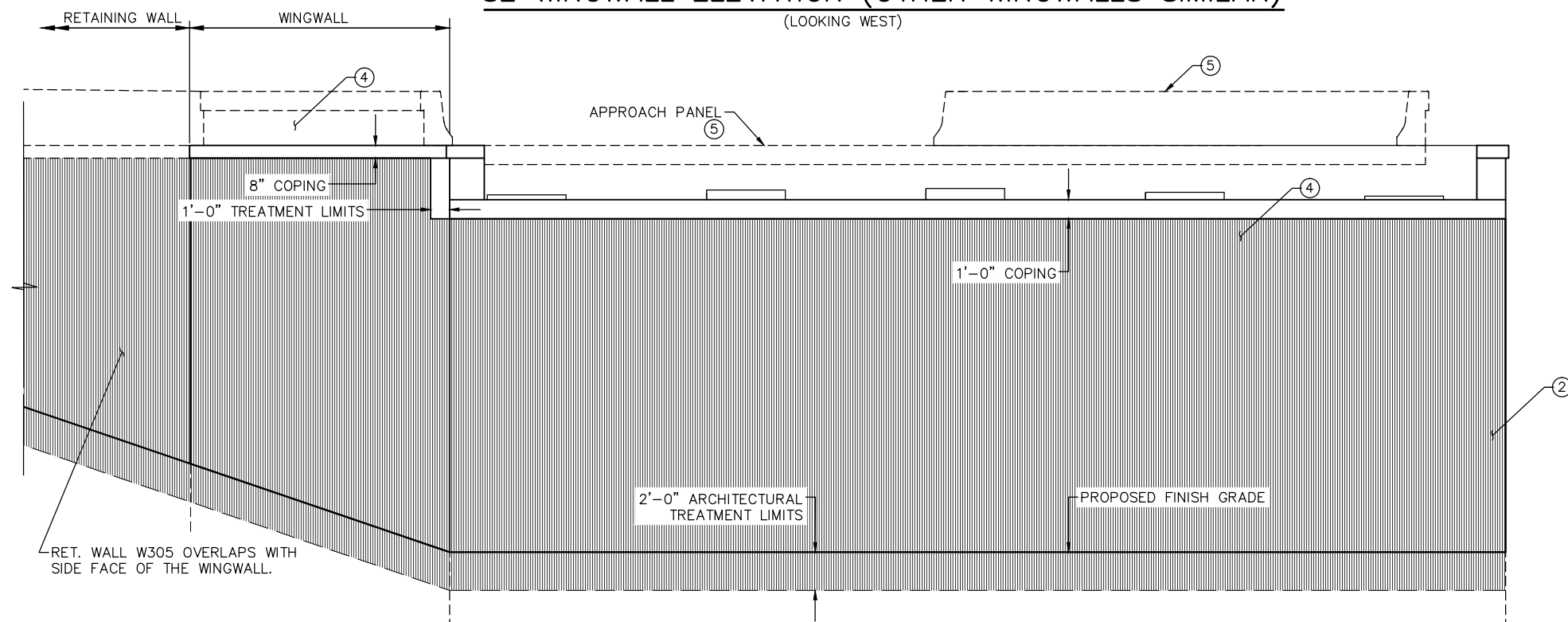
DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27C08-BRG-SUP-006

HEET
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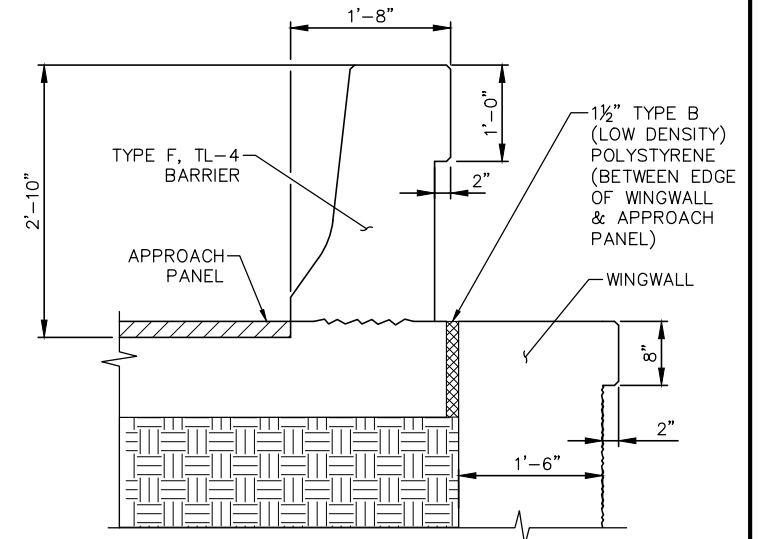
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SE WINGWALL ELEVATION (OTHER WINGWALLS SIMILAR)
(LOOKING WEST)



SOUTH ABUTMENT ELEVATION
(LOOKING SOUTH)



SECTION AT ROADWAY
(TYPICAL FOR SW, SE AND NE WINGWALLS)

NOTES

1. BOTH ABUTMENTS, ALL ABUTMENT WINGWALLS, AND RETAINING WALLS TO HAVE ARCHITECTURAL TREATMENT.
2. ARCHITECTURAL CONCRETE TREATMENT AND TEXTURE (US FORMLINER 2/42 NAAB).
3. SPECIAL SURFACE FINISH SHALL BE APPLIED TO OUTSIDE FACE OF FASCIA GIRDERS AND THE BOTTOM OF ALL GIRDERS. COLOR SHALL BE FEDERAL STD. COLOR XXX, XXX.
4. SPECIAL SURFACE FINISH PER SB 2401.11 MnDOT XXX COLOR SHALL BE USED.
5. CONCRETE BARRIER AND APPROACH PANEL IN GRADING PLANS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR
DRAWN BY: ALB
CHECKED BY: ---
DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15

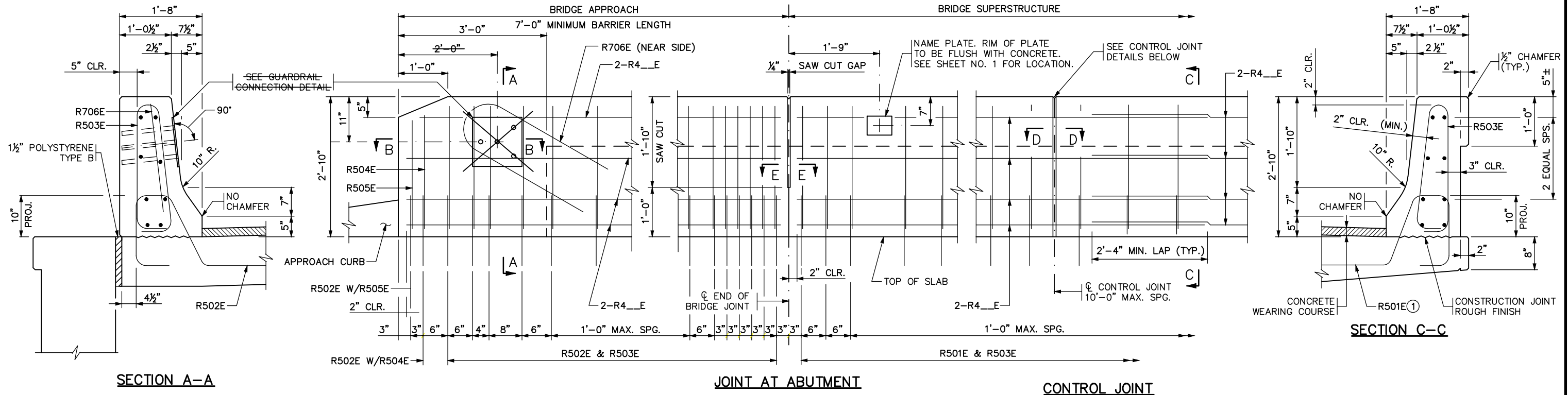


CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
AESTHETICS

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C08-BRG-AES

SHEET
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OF
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BILL OF REINFORCEMENT FOR BARRIER				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E		5'-3"		BARRIER DOWEL
R502E		5'-5"		BARRIER DOWEL
R503E		6'-6"		BARRIER VERTICAL
R504E		6'-0"		BARRIER VERTICAL
R505E		5'-10"		BARRIER VERTICAL
R706E		6'-6"		BARRIER VERTICAL
R4__E				BARRIER LONGIT.
R4__E				BARRIER LONGIT.
R4__E				BARRIER LONGIT.
R4__E				BARRIER LONGIT.
R4__E				BARRIER LONGIT.
R4__E				BARRIER LONGIT.

GENERAL NOTES

MEASURE PAYMENT LENGTH BETWEEN THE OUTSIDE FACES OF THE BARRIER.

CONCRETE BARRIER = 502 LBS./FT. (0.124 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER AND END POST WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

SPACE OF CONTROL JOINTS AT 10 FT. MAXIMUM. SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

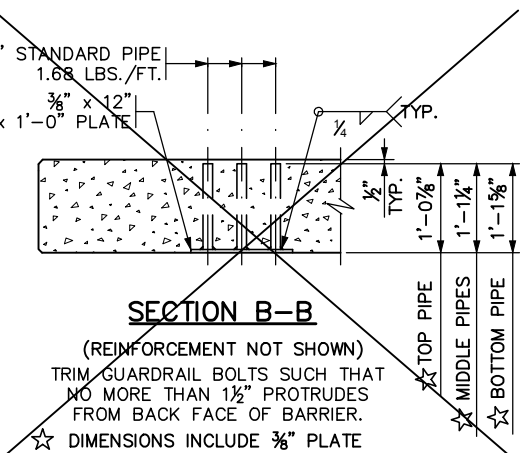
GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, SPEC. 3306.

GUARDRAIL CONNECTION AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO BARRIER.

BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

① PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.

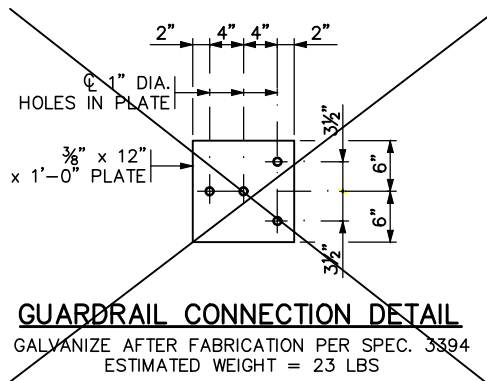
② JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST - CRACK AND JOINT MATERIALS - SILICONE JOINT SEALERS.



SECTION B-B

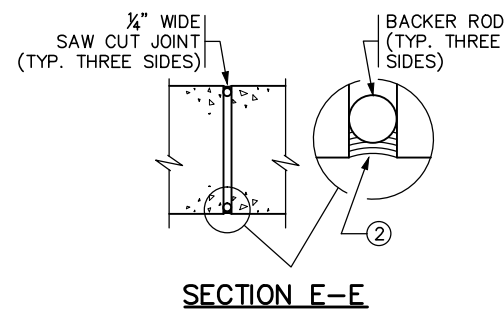
(REINFORCEMENT NOT SHOWN)
TRIM GUARDRAIL BOLTS SUCH THAT NO MORE THAN 1/2" PROTRUDES FROM BACK FACE OF BARRIER.

☆ DIMENSIONS INCLUDE 3/8" PLATE

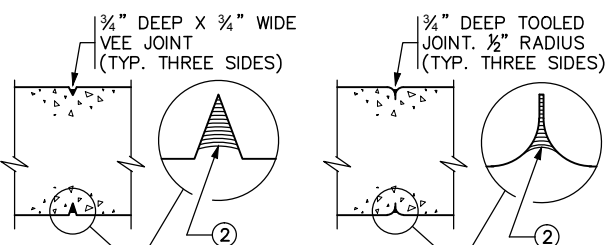


GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER SPEC. 3394
ESTIMATED WEIGHT = 23 LBS

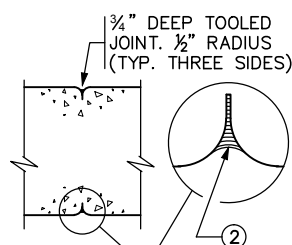


SECTION E-E



SECTION D-D

CONTRACTOR OPTION 1



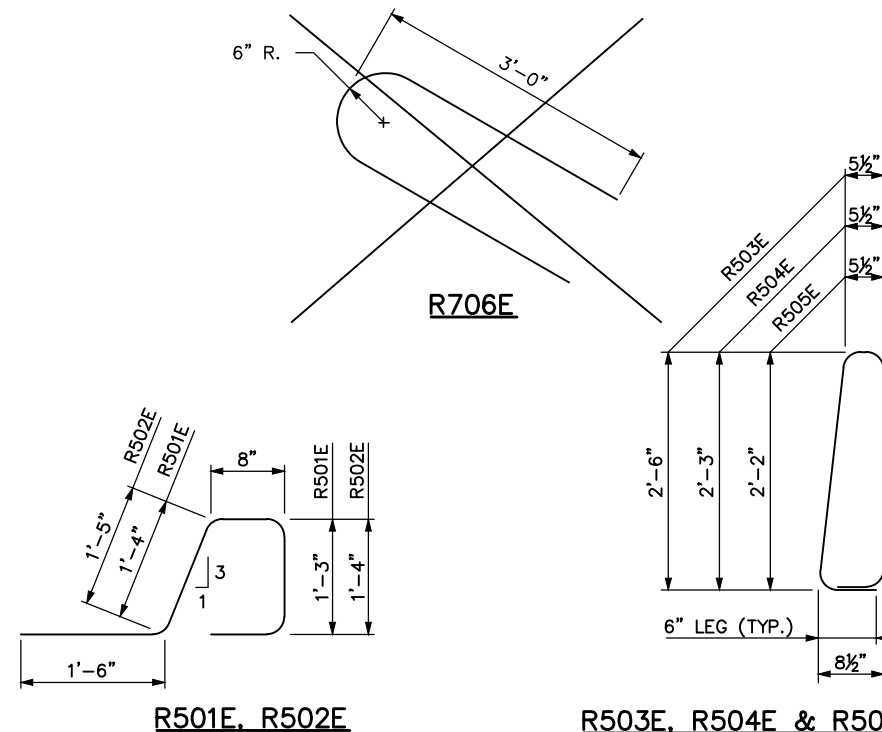
SECTION D-D

CONTRACTOR OPTION 2

CONTROL JOINT DETAILS

WHEN USING SLIP FORM METHOD TO PLACE THE CONCRETE, CUT JOINT 3 INCHES DEEP USING MARGIN TROWEL OR SIMILAR MEANS IMMEDIATELY AFTER CONCRETE PLACEMENT (TYP. THREE SIDES)

BARRIER MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350



R501E, R502E

R503E, R504E & R505E

REVISION:

APPROVED: JANUARY 13, 2015

Nancy Dubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY _____
LICENSED PROFESSIONAL ENGINEER DATE _____
NAME: _____ LIC. NO. _____

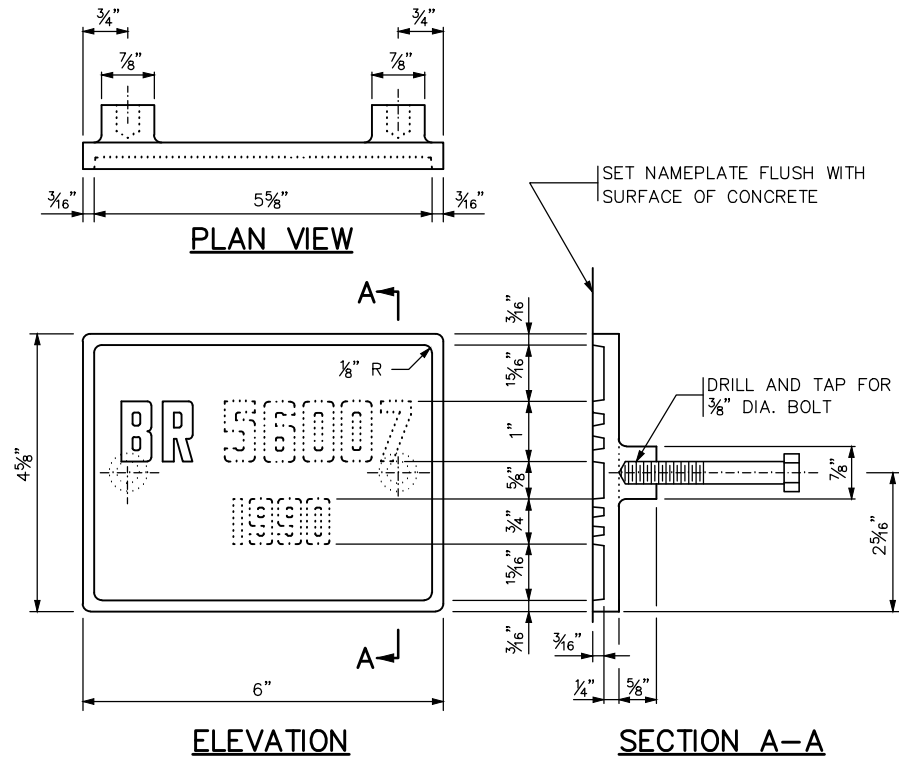
TITLE: CONCRETE BARRIER (TYPE F, TL-4)
INTEGRAL OR SIME-INTEGRAL ABUTMENT WITH INTEGRAL
END POST (WITH CONCRETE WEARING COURSE)

MODIFIED GUARDRAIL CONNECTION, NOT USED.

FIG. 5-397.117(A) MOD

DES: PLR	DR: CRVB	APPROVED:	BRIDGE NO. 27C08
CHK: ----	CHK: 7-24-15		
SHEET NO. 23 OF 30 SHEETS			

Sep. 03 2015 11:38 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08\CBR27C08-BRG-DTL-002-006.dwg By: bodenc



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 27C08
YEAR 2016

1234567890
NUMBERS FOR NAMEPLATE

NOTES:

- MATERIAL SHALL COMPLY WITH SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISION
09-11-2014

DETAIL NO.

Samuel J. Morgan
STATE BRIDGE ENGINEER

BRIDGE NAMEPLATE
(FOR NEW BRIDGES)

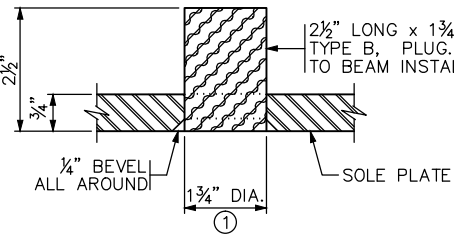
B101

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR
DRAWN BY: CRVB
CHECKED BY: ---
DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



PINTLE HOLE DETAIL

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

REVISED

DETAIL NO.

Nancy Dubenberger
STATE BRIDGE ENGINEER

SOLE PLATE
(PRESTRESSED CONCRETE BEAMS)
(FOR BEARINGS WITH PINTLES)

B303

METROPOLITAN
C O U N C I L

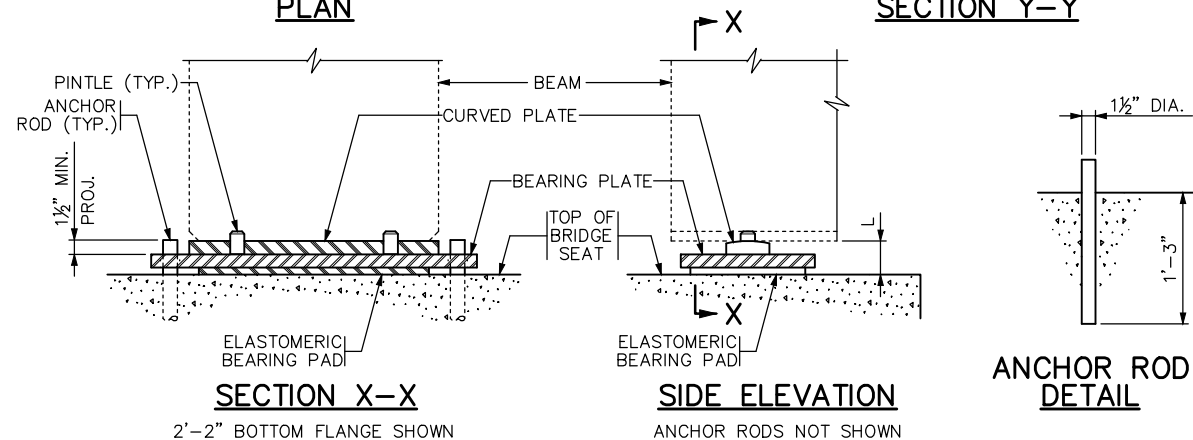
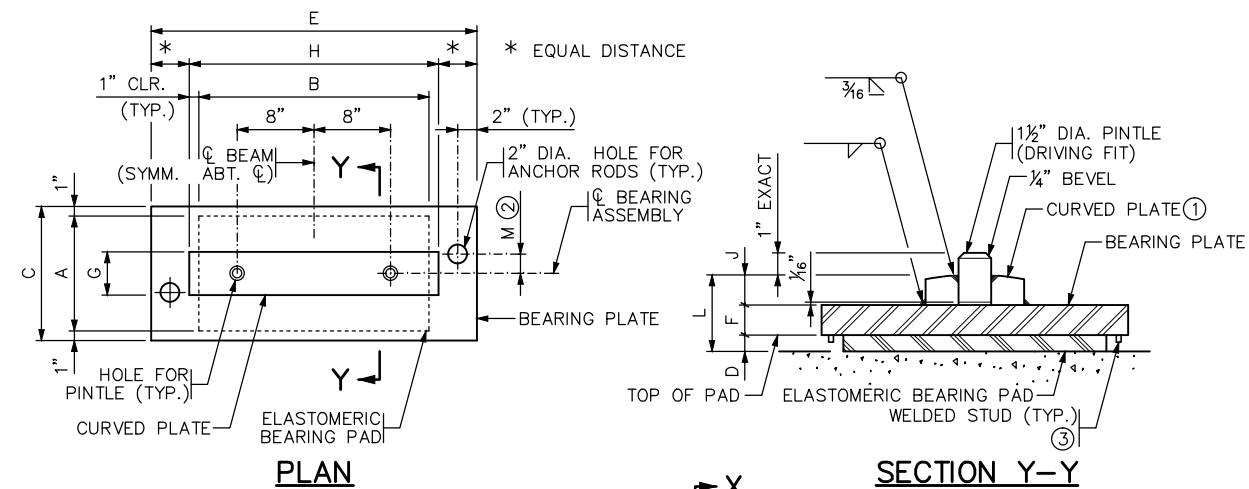
SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
B-DETAILS

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27C08-BRG-DTL-002

SHEET
24
OF
30

[illegible]

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH SPEC. 3306.

ANCHOR RODS SHALL COMPLY WITH SPEC. 3306.
GALVANIZE PER SPEC. 3392.

PINTLES SHALL COMPLY WITH SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION
PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

- ① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE $\frac{1}{16}$ " LESS THAN SHOWN.
- ② "+" DENOTES OFFSET AS SHOWN.
"-" DENOTES OFFSET OPPOSITE OF SHOWN.
- ③ $\frac{5}{16}$ " DIA. x $\frac{3}{8}$ " KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = $\frac{1}{2}$ ". MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2"

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS
70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (FIXED)

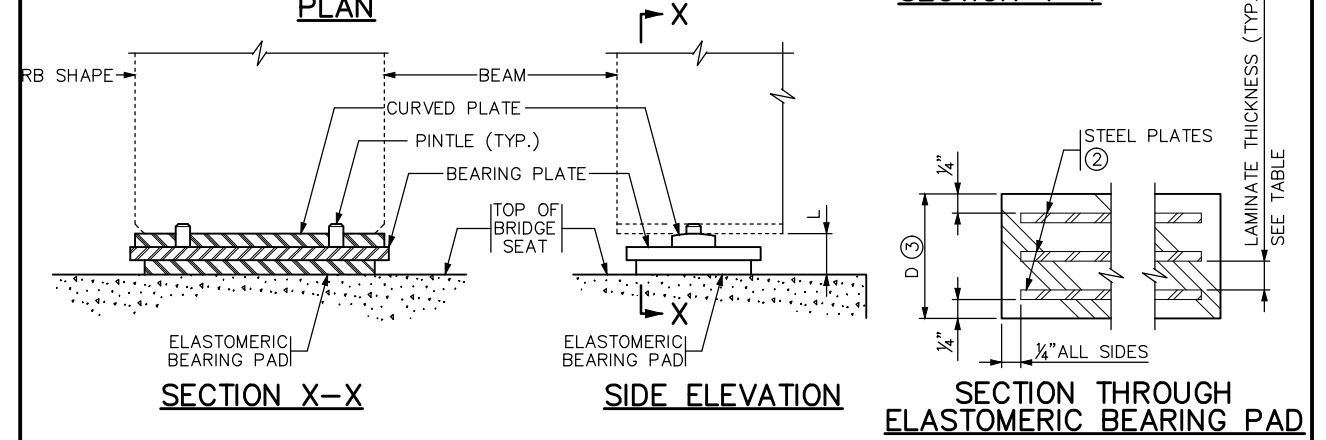
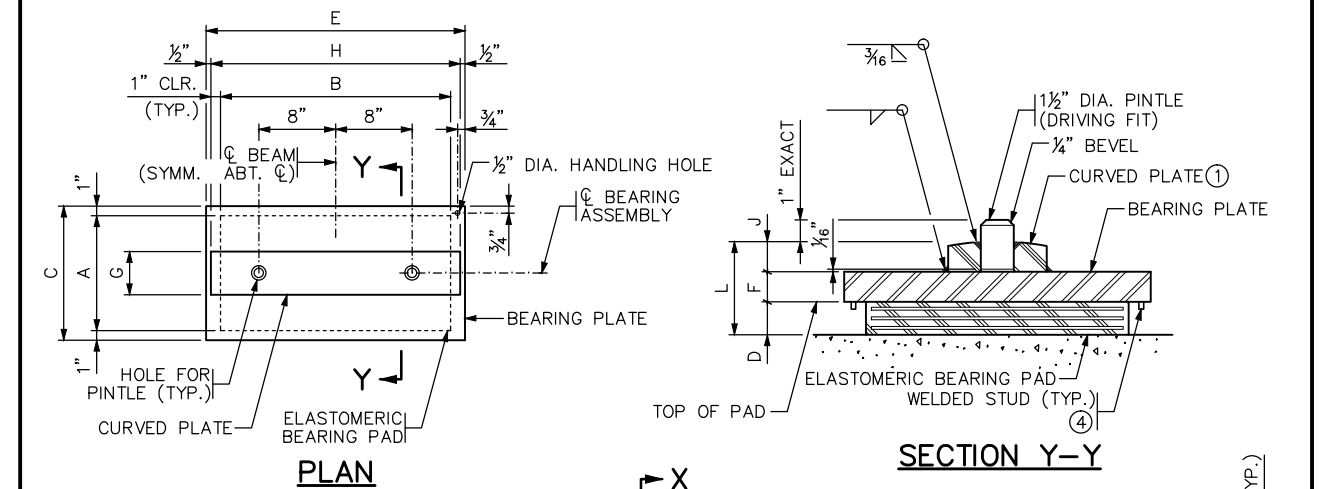
REVISED
11-06-2013

DETAIL NO.

B310

[illegible]

DESIGNED BY: PLR	CHECKED BY: ----
DRAWN BY: CRVB	DATE: 7-24-15

60% SUBMISSION - 09/28/15**AECOM**[illegible]

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH MnDOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH MnDOT SPEC. 3306.

PINTLES SHALL COMPLY WITH MnDOT SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER
FABRICATION PER MnDOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

- ① THE MIN. RADIUS SHALL BE 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS SHALL BE 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE $\frac{1}{16}$ " LESS THAN SHOWN.
- ② DO NOT GALVANIZE THESE PLATES.
- ③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.
- ④ $\frac{5}{16}$ " DIA. $\times \frac{3}{8}$ " KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = $\frac{1}{2}$ ", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

DESIGN DATA:

MAXIMUM HORIZONTAL LOAD IS
70 KIPS FOR 1½" PINTLES.

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CURVED PLATE BEARING ASSEMBLY (PRESTRESSED CONCRETE BEAMS) (EXPANSION)

REVISÉD

DETAIL NO.

B311



METROPOLITAN
COUNCIL



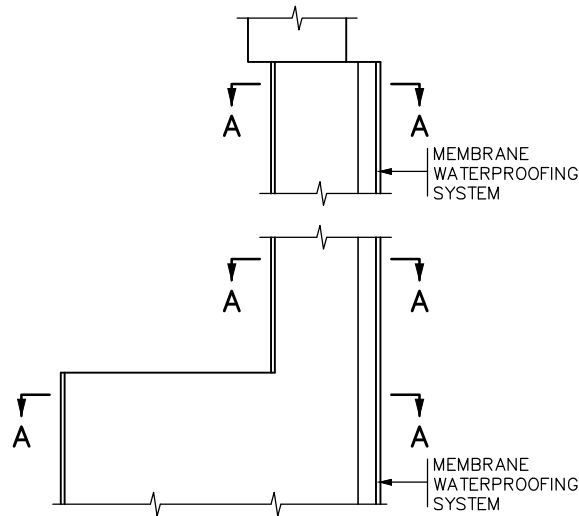
CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
B-DETAILS

DISCIPLINE: **STRUCTURES**

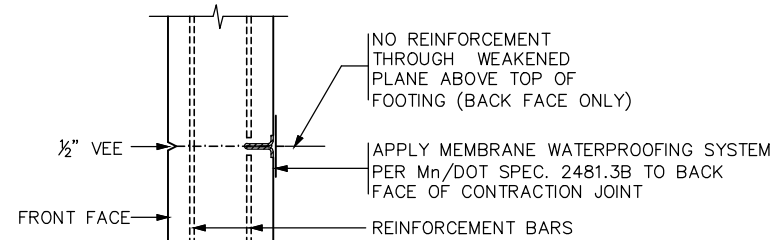
SHEET NAME:	CBR27C08-BRG-DTL-003
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HEET
25
OF
30

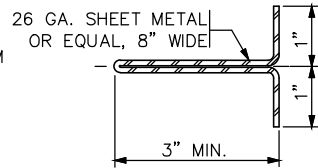
Sep. 03 2015 11:38 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-DTL-002-006.dwg By: bodenc



PART SECTION THROUGH
ABUTMENT AT JOINT



SECTION A-A



BACK STRIP

NOTES:

THE METHODS AND MATERIALS INDICATED ON THIS SHEET SHALL BE CONSIDERED AS SUGGESTED ONLY. VARIATIONS WILL BE PERMITTED, SUBJECT TO APPROVAL BY THE ENGINEER, BUT MUST PROVIDE DUMMY JOINTS OF A DEPTH SHOWN. THE SEPARATION OF THE HORIZONTAL REINFORCEMENT BARS IN THE BACK OF THE PARAPET AND BACK FACE OF THE ABUTMENT SHALL NOT BE LESS THAN 1 1/2" NOR MORE THAN 3", CENTERED AS SHOWN, REGARDLESS OF THE PROCEDURE USED FOR FORMING THE DUMMY JOINT.

THE BACK STRIP MAY BE GALVANIZED METAL, A SUITABLE PLASTIC, OR OTHER DURABLE MATERIAL SATISFACTORY TO THE ENGINEER. THE BACK STRIP SHALL REMAIN IN PLACE AFTER THE FORMS ARE REMOVED.

THE COST OF FORMING THE JOINT SHALL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS.

APPROVED: NOVEMBER 22, 2002

Daniel J. Hagan
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONTRACTION JOINT

REVISION
03-30-2010

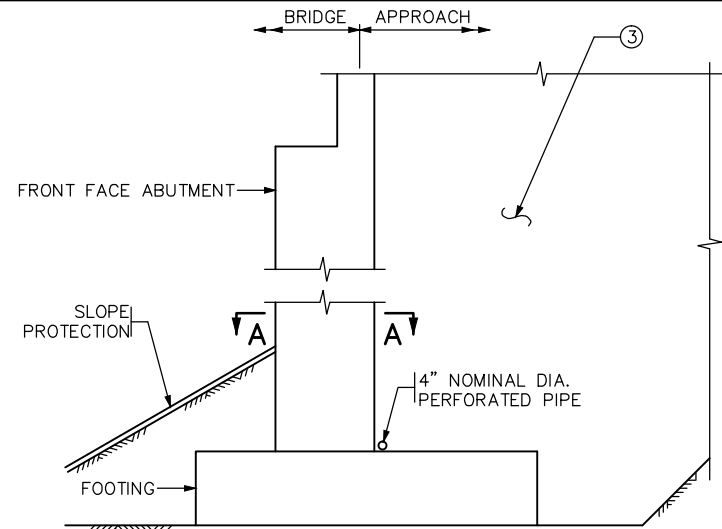
DETAIL NO.

B801

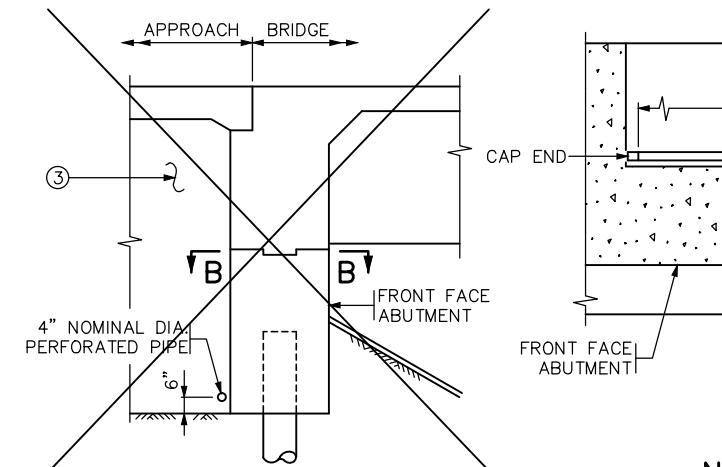
AECOM

DESIGNED BY: PLR
DRAWN BY: CRVB
CHECKED BY: ---
DATE: 7-24-15

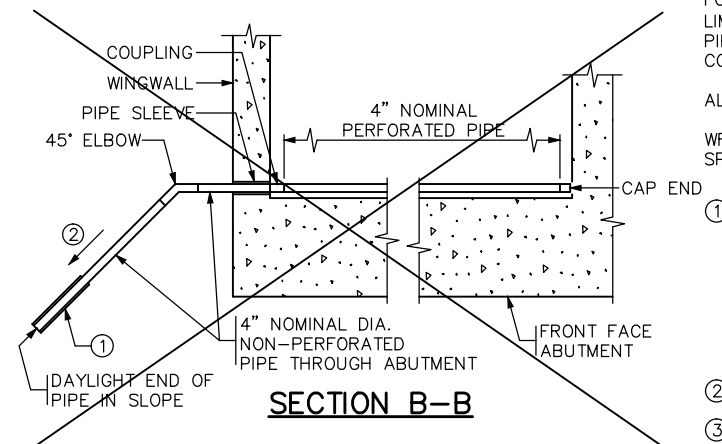
60% SUBMISSION - 09/28/15



SECTION THROUGH PARAPET AND
SEMI-INTEGRAL ABUTMENTS



SECTION THROUGH INTEGRAL ABUTMENT



SECTION B-B

APPROVED: JANUARY 13, 2015

Nancy J. Subenberger
STATE BRIDGE ENGINEER

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

DRAINAGE SYSTEM

**SUMMARY OF QUANTITIES
FOR DRAINAGE SYSTEM**

NOTES:

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR "DRAINAGE SYSTEM TYPE (B910)", INCLUDES BUT IS NOT LIMITED TO 4" DIAMETER PERFORATED AND NON-PERFORATED PIPE, ELBOWS, END CAPS, COUPLINGS, SLEEVES AND PRECAST CONCRETE HEADWALLS.

ALL PIPE TO COMPLY WITH SPEC. 3245.

WRAP PERFORATED PIPE WITH GEOTEXTILE PER SPEC. 3733, TYPE 1. ATTACH TO PIPE PER SPEC. 2502.

① AT CONTRACTORS OPTION, MAY TIE APPROACH PANEL DRAINAGE SYSTEM AND ABUTMENT DRAINAGE SYSTEM INTO A SINGLE PRECAST CONCRETE HEADWALL OR INTO A CATCH BASIN AS LONG AS A MINIMUM OF 1% POSITIVE SLOPE CAN BE MAINTAINED.

USE PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

② 1/8" PER FT. MINIMUM SLOPE.

③ REFER TO GRADING PLANS FOR ABUTMENT BACKFILL REQUIREMENTS.

REVISED

DETAIL NO.

B910

**CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
B-DETAILS**

DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27C08-BRG-DTL-004

SHEET

26

OF

30



<h2 style="margin: 0;"><u>CONCRETE WEARING COURSE</u></h2>	
<input type="checkbox"/> LOW SLUMP <input type="checkbox"/> OTHER _____	_____ TYPE OR MANUFACTURER
<h2 style="margin: 0;"><u>EXPANSION JOINTS</u></h2>	
JOINT MANUFACTURER _____	
MANUFACTURER'S IDENTIFICATION _____	_____ MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED
GLAND MANUFACTURER _____	_____ NAME AND ADDRESS (CITY, STATE)
SIZE OF GLAND _____	
MANUFACTURER'S IDENTIFICATION _____	_____ MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED
<h2 style="margin: 0;"><u>ELASTOMERIC BEARING PADS</u></h2>	
PAD MANUFACTURER _____	
_____ NAME AND ADDRESS (CITY, STATE)	
<h2 style="margin: 0;"><u>SPECIAL SURFACE FINISH</u></h2>	
SYSTEM: _____	COLOR: _____
<h2 style="margin: 0;"><u>FINISHING ROADWAY FACES OF BARRIER RAILING</u></h2>	
TYPE: _____	COLOR: _____
<h2 style="margin: 0;"><u>ANTI-GRAFFITI COATING</u></h2>	
MANUFACTURER _____	
_____ NAME AND ADDRESS (CITY, STATE)	
PRODUCT NAME: _____	LOCATION: _____

<u>PAINT SYSTEM</u>	
Mn/DOT SPECIFICATION NUMBER _____	2478 OR 2479 OR OTHER _____
MANUFACTURER _____	NAME AND ADDRESS (CITY, STATE) _____
PRIME COAT _____	MnDOT MATERIAL SPECIFICATION NUMBER _____
INTERMEDIATE COAT _____	MnDOT MATERIAL SPECIFICATION NUMBER _____
FINISH COAT _____	<div style="display: flex; justify-content: space-between;"> MnDOT MATERIAL SPECIFICATION NUMBER _____ COLOR _____ </div>
<u>PLAN QUALITY</u>	
RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)	
DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION.	_____
BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS.	_____
SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD.	_____
(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT.	_____
COMMENTS: _____	

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS: _____	COST: \$ _____
LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.	

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

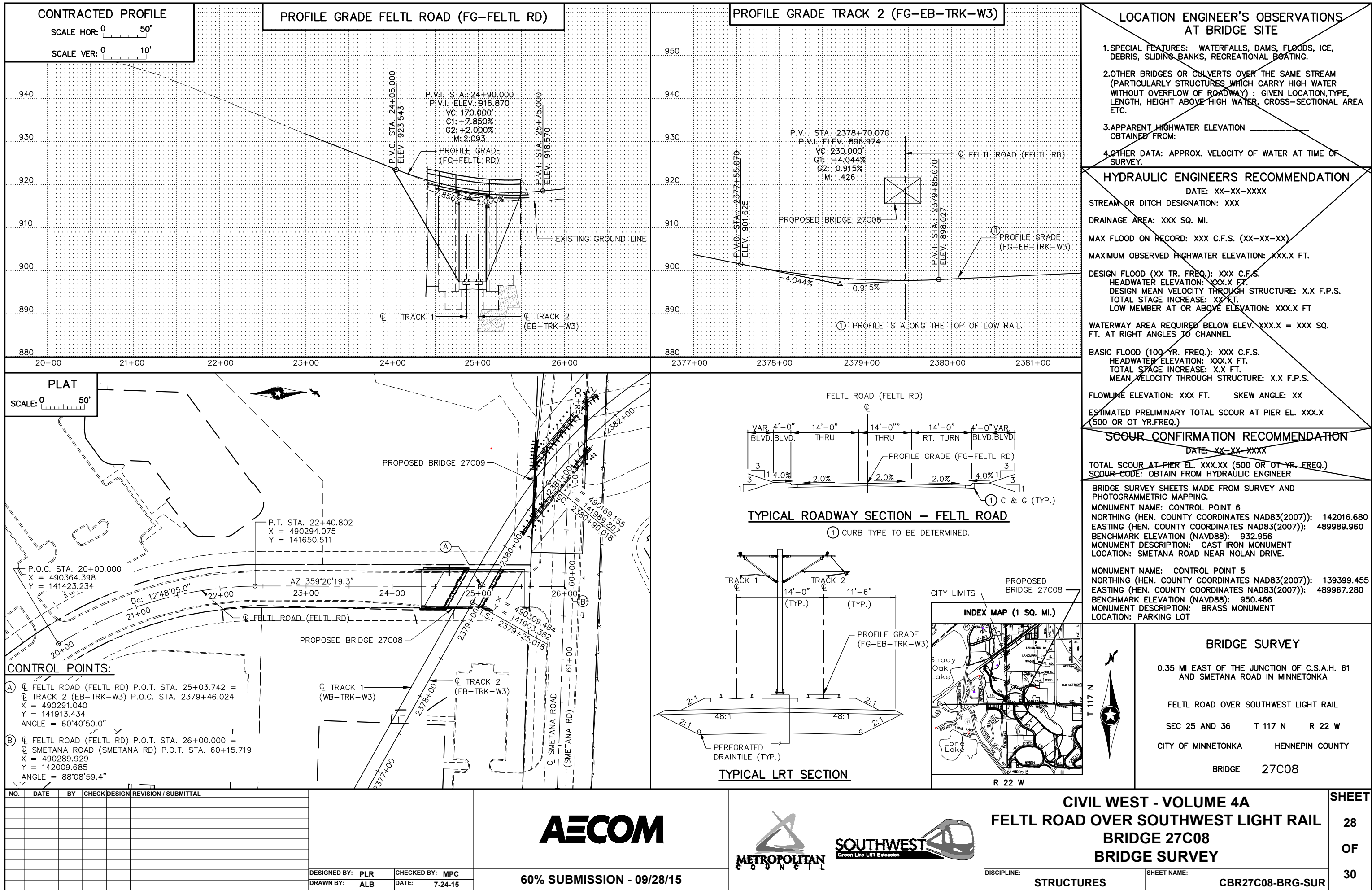
FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES:
YES ☐
NO ☐

**SUMMARY OF SIGNIFICANT
AS-BUILT CHANGES**

[illegible]

<u>THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:</u>	
_____ INSPECTOR(S) SIGNATURE	_____ DATE
CHECKED BY: _____ PROJECT ENGINEER/SUPERVISOR SIGNATURE	_____ DATE
AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE – ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).	

Sep. 03 2015 11:42 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-SUR.dwg By: bodenc



Sep. 03 2015 11:49 am V:\3400_ADC\CAD\SEGMENT W3\PLAN SHEETS\STRUCTURES\CBR27C08-BRG-BOR.dwg By: bodenc

GENERAL NOTES

1. ALL UTILITIES TO BE RELOCATED UNLESS NOTED OTHERWISE.

NOTES

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: PLR	CHECKED BY: MPC
DRAWN BY: CRVB	DATE: 7-24-15

AECOM

60% SUBMISSION - 09/28/15



SOUTHWEST
Green Line LRT Extension

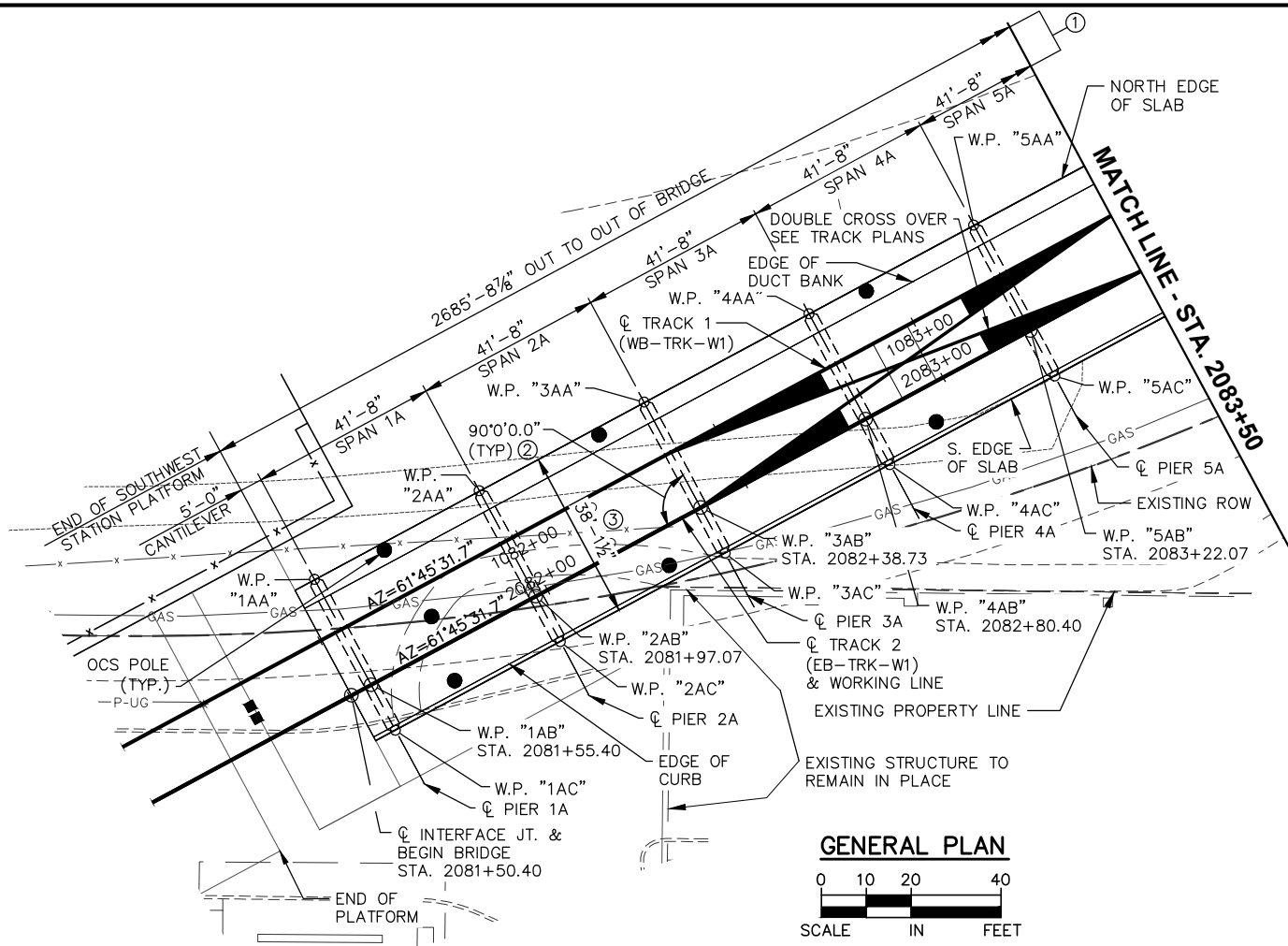


CIVIL WEST - VOLUME 4A
FELTL ROAD OVER SOUTHWEST LIGHT RAIL
BRIDGE 27C08
BRIDGE SURVEY PLAN

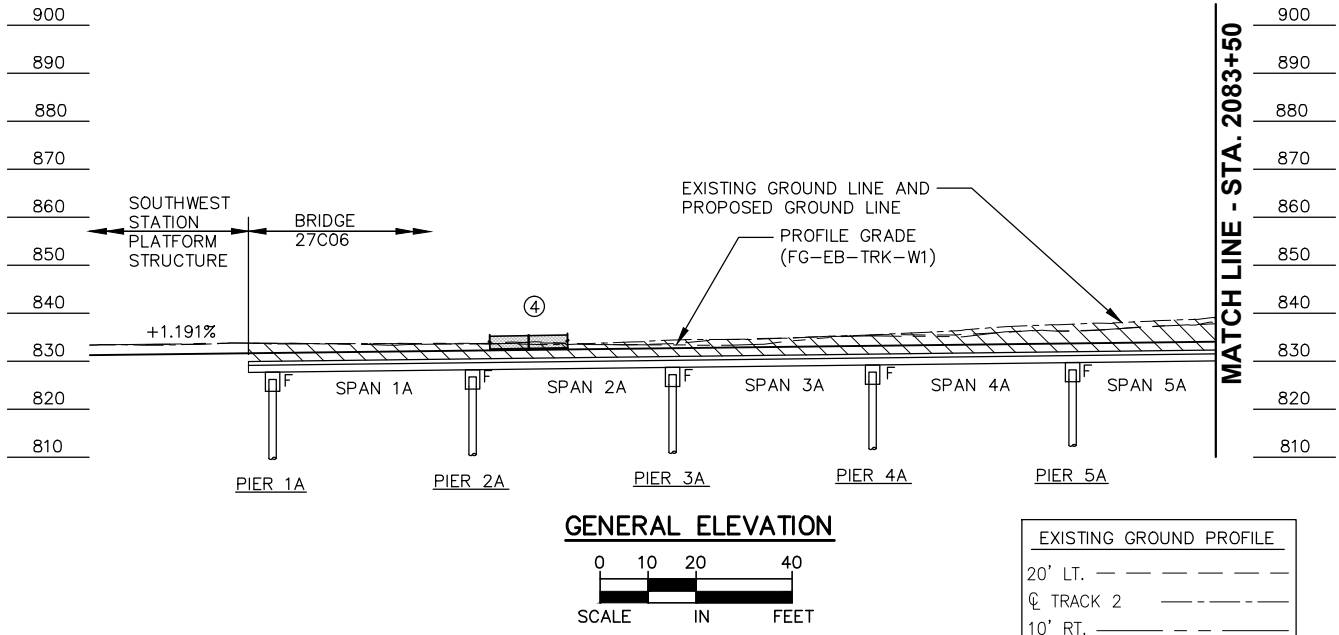
DISCIPLINE:
STRUCTURES

SHEET NAME:
CBR27C08-BRG-BOR-001

SHEET
29
OF
30



- NOTES:**
SEE BORING SHEET FOR ADDITIONAL IN PLACE UTILITIES.
- HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.
- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1).
 - ② T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.
 - ③ BRIDGE WIDTH 38'-1 1/2" SPANS 1A - 7A.
 - ④ 3'-6" DIAMOND MESH SAFETY RAIL. SEE DIAMOND MESH SAFETY RAIL DETAILS ON SHEET XX.



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL




DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

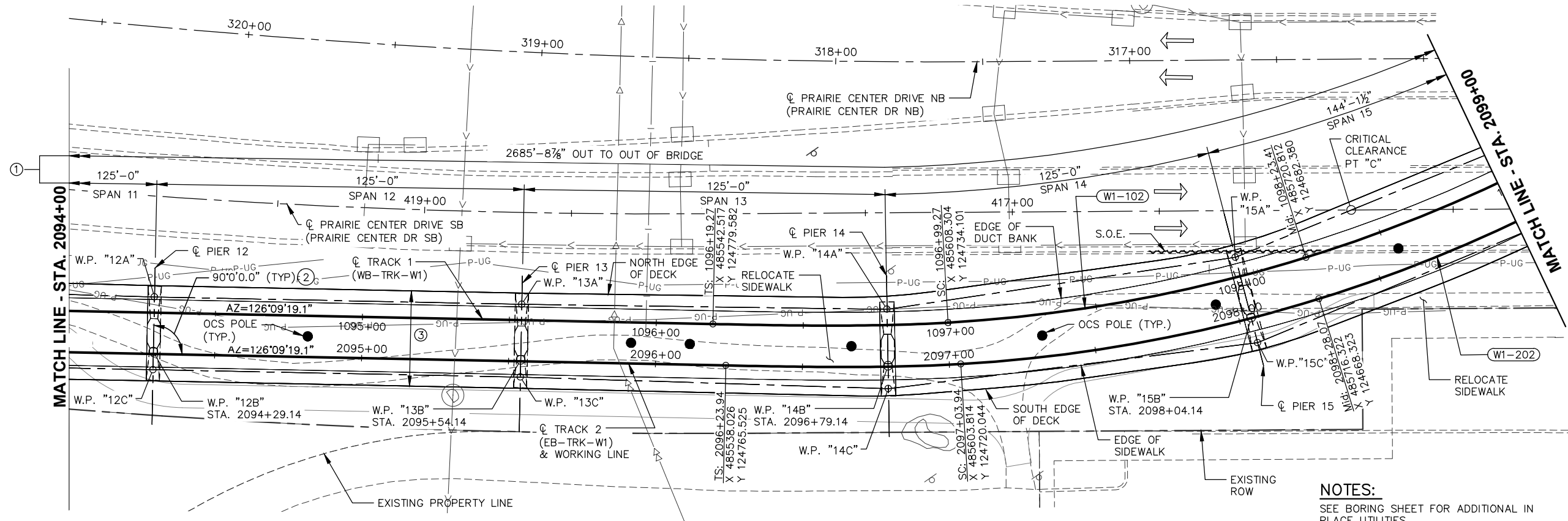
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
GENERAL PLAN AND ELEVATION 1

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C06-BRG-GPE-001

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL		 	<div>CIVIL WEST - VOLUME 4A</div> <div>PRAIRIE CENTER DRIVE</div> <div>BRIDGE 27C06</div> <div>GENERAL PLAN AND ELEVATION 2</div>		SHEET 3 OF 50
<div>DESIGNED BY: ATN</div> <div>DRAWN BY: ALB</div>						<div>CHECKED BY: ---</div> <div>DATE: 08/24/15</div>	60% SUBMISSION - 09/28/15		<div>DISCIPLINE:</div> <div>STRUCTURES</div>	<div>SHEET NAME:</div> <div>CBR27C06-BRG-GPE-002</div>

Sep. 18 2015 10:52 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-S12-005.dwg By: butterfield



CURVE NO. W1-102	
R =	510'
Lc =	248.27'
Ls =	80'
Ea =	2.25"
Eu =	2.60"
V =	25 MPH

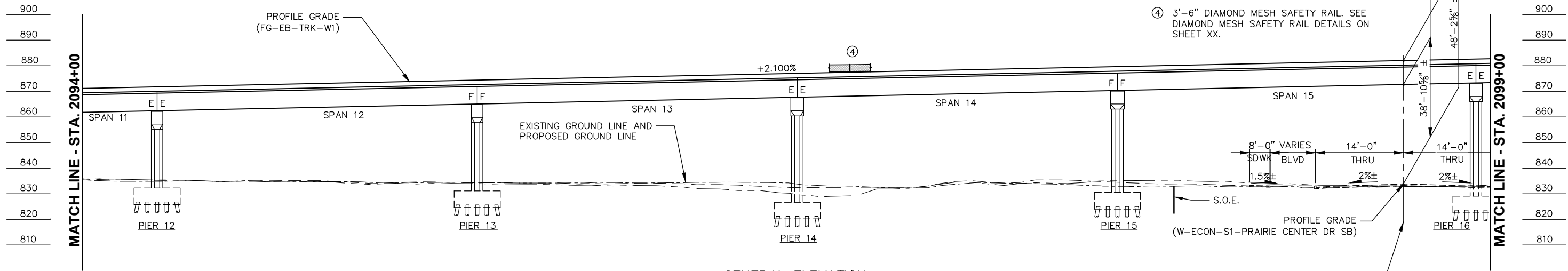
CURVE NO. W1-202	
R =	510'
Lc =	248.27'
Ls =	80'
Ea =	2.25"
Eu =	2.60"
V =	25 MPH

NOTES:

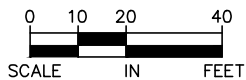
SEE BORING SHEET FOR ADDITIONAL IN PLACE UTILITIES.

SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. STEEL SHEET PILING SHOWN, OTHER SYSTEMS MAYBE UTILIZED AT THE CONTRACTORS OPTION. SEE SPECIAL PROVISIONS.

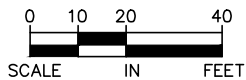
- MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1).
- T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.
- BRIDGE WIDTH 32'-6" MIN/ 37'-11" MAX.
- 3'-6" DIAMOND MESH SAFETY RAIL. SEE DIAMOND MESH SAFETY RAIL DETAILS ON SHEET XX.



GENERAL PLAN



GENERAL ELEVATION



EXISTING GROUND PROFILE	
20' LT.	-----
ϕ TRACK 2	-----
10' RT.	-----

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15



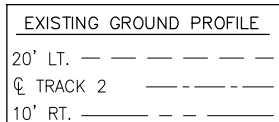
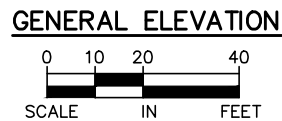
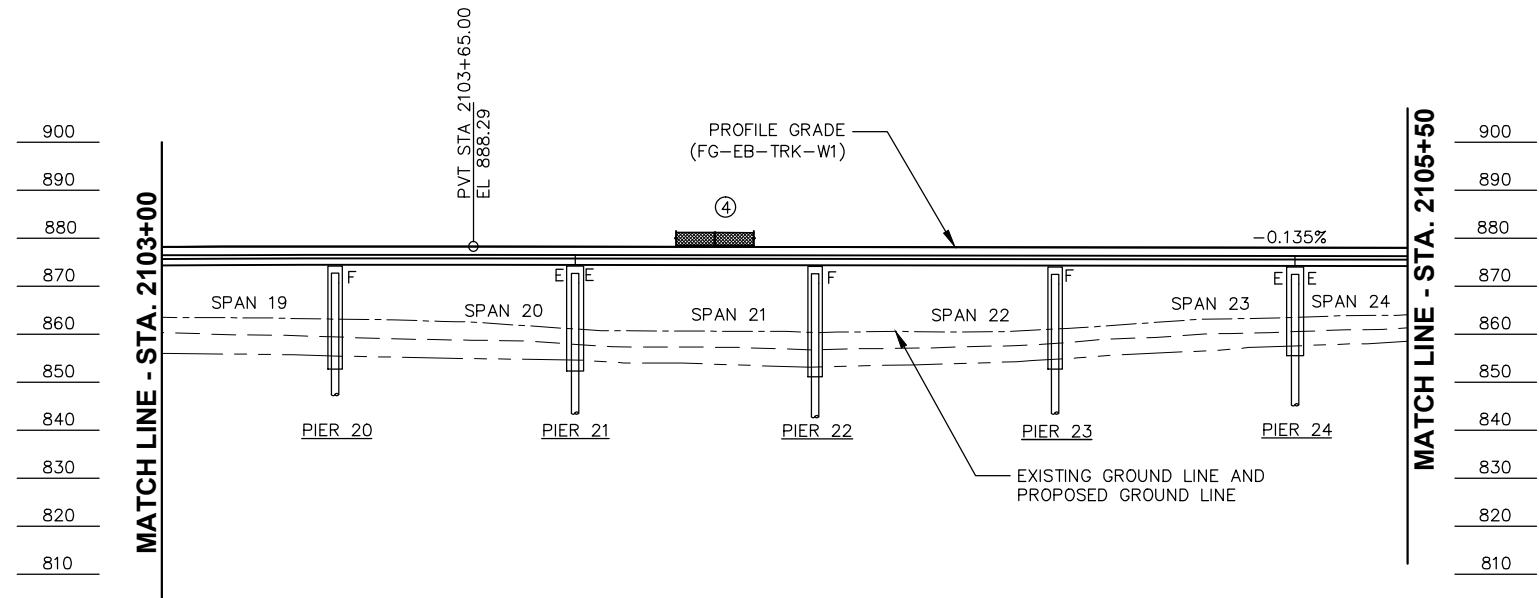
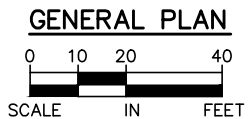
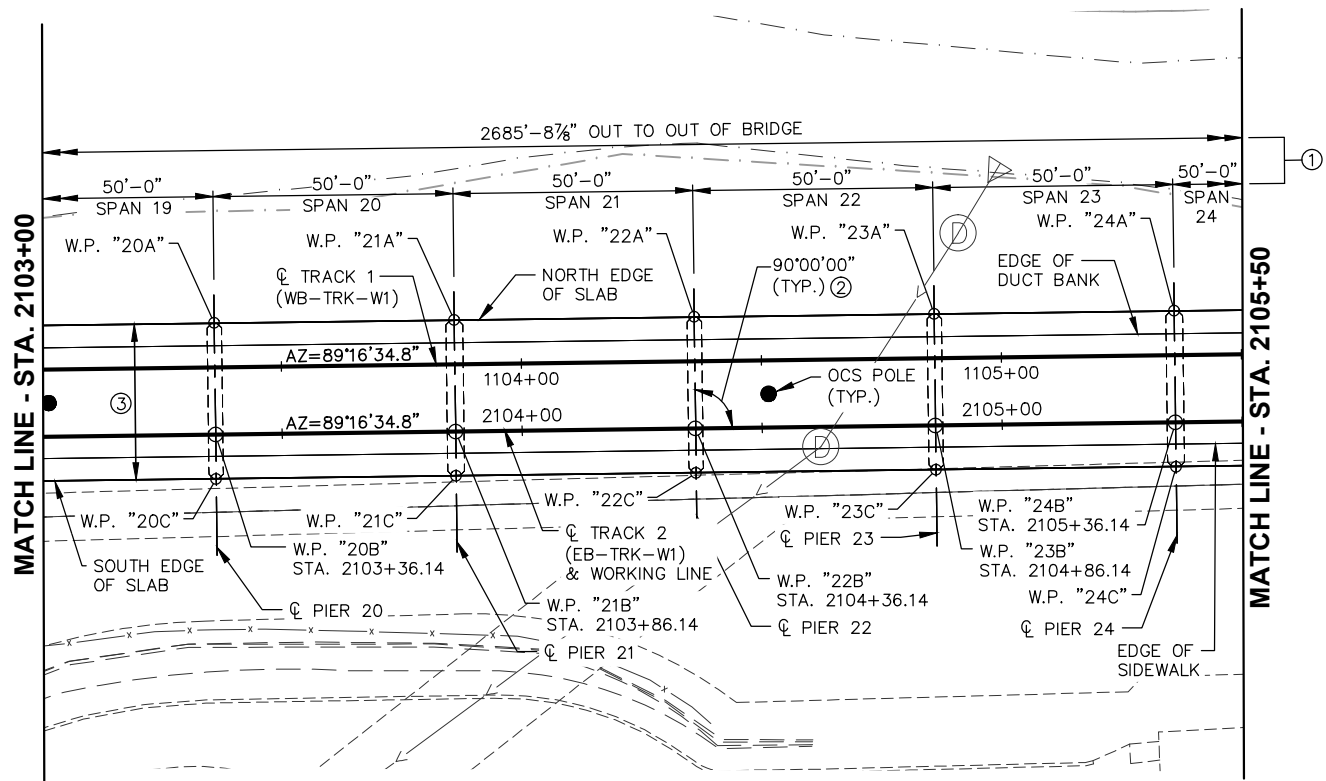
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
GENERAL PLAN AND ELEVATION 4

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-GPE-004**

SHEET
5
OF
50

SHEET
6
OF
50



NOTES:

SEE BORING SHEET FOR ADDITIONAL IN PLACE UTILITIES.

- ① MEASURED ALONG CL TRACK 2 (EB-TRK-W1).
- ② T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.
- ③ BRIDGE WIDTH 32'-6" MIN/ 37'-11" MAX.
- ④ 3'-6" DIAMOND MESH SAFETY RAIL. SEE DIAMOND MESH SAFETY RAIL DETAILS ON SHEET XX.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

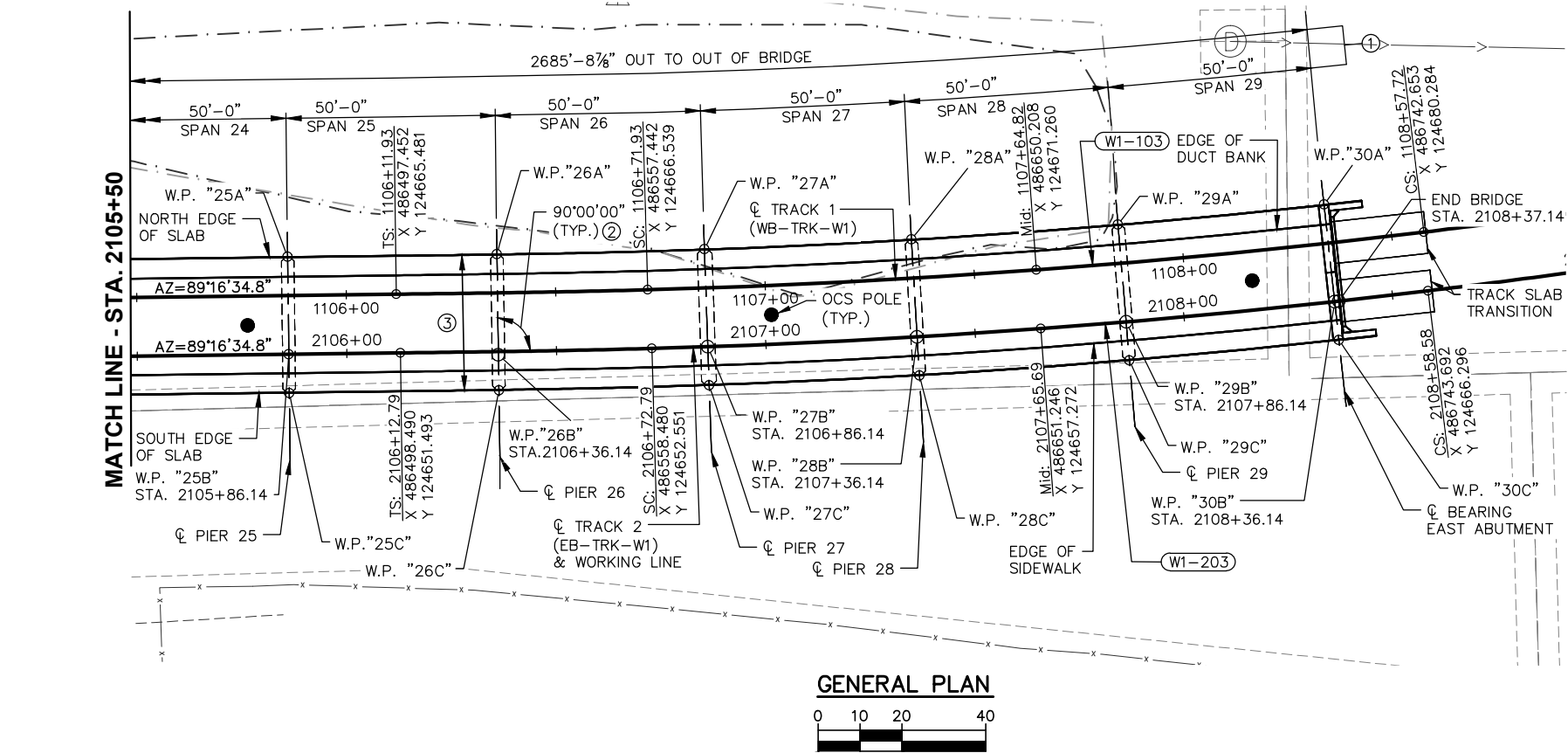
60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
GENERAL PLAN AND ELEVATION 6

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-GPE-006**

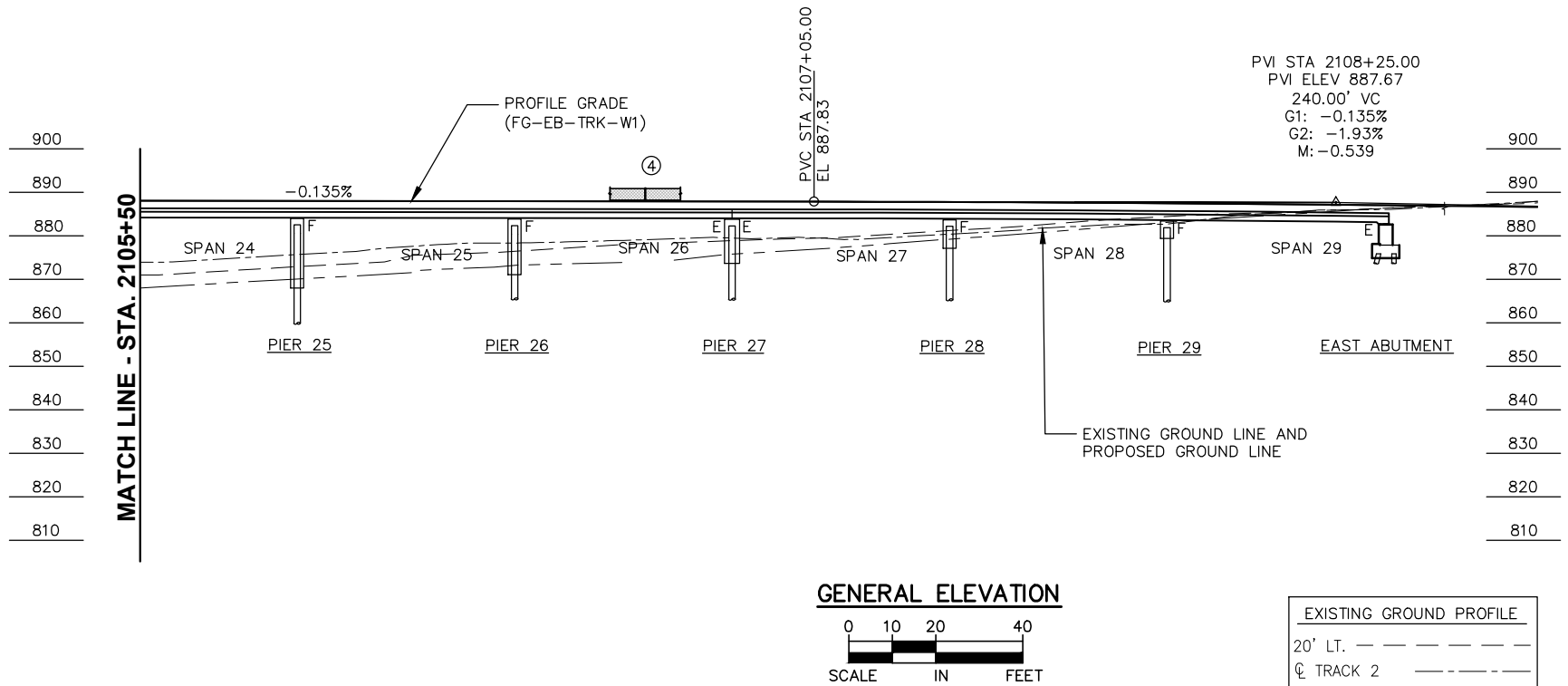
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CURVE NO. W1-103
R = 2000.00'
Lc = 185.79'
La = 60'
Ea = 1.00"
Eu = 1.43"
V = 35 MPH

CURVE NO. W1-203
R = 2000.00'
Lc = 185.79'
La = 60'
Ea = 1.00"
Eu = 1.43"
V = 35 MPH

- NOTES:**
- SEE BORING SHEET FOR ADDITIONAL IN PLACE UTILITIES.
- ① MEASURED ALONG ϕ TRACK 2 (EB-TRK-W1).
- ② T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.
- ③ BRIDGE WIDTH 32'-6" MIN / 38'-1 1/2" MAX.
- ④ 3'-6" DIAMOND MESH SAFETY RAIL. SEE DIAMOND MESH SAFETY RAIL DETAILS ON SHEET XX.
- ⑤ SEE TRACK PLANS FOR TRANSITION SLAB DETAILS.



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
GENERAL PLAN AND ELEVATION 7

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C06-BRG-GPE-007

Sep. 18 2015 09:53 am V: \\3400_ADC\CAD\segemnt w1\plan sheets\structures\60% submittal 09-18-2015\CBR27C06-BRG-TRN-001.dwg By: butterfielda

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE			
ITEM NO.	ITEM	UNIT	QUANTITY
2401.501	STRUCTURAL CONCRETE (1G52)	CU. YD.	(P)
2401.501	STRUCTURAL CONCRETE (3B52)	CU. YD.	(P)
2401.515	SIDEWALK CONCRETE (3S52)	SQ. FT.	(P)
2401.513	TYPE P-1 (TL-2) RAILING CONC (3S52)	CU. YD.	(P)
2401.513	TYPE F (TL-4) RAILING CONCRETE (3S52)	LIN. FT.	(P)
2401.541	REINFORCEMENT BARS	POUND	(P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	(P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
2401.618	BRIDGE SLAB CONCRETE (3YHPC-S)	SQ. FT.	(P)
2402.591	EXPANSION JOINT DEVICES	LIN. FT.	(P)
2402.595	BEARING ASSEMBLY	EACH	
2404.501	CONCRETE WEARING COURSE (3U17A)	SQ. FT.	(P)
2405.502	PRESTRESSED CONCRETE BEAMS 27M	LIN. FT.	(P)
2411.618	ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	SQ. FT.	(P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (NAAB)	SQ. FT.	(P)
2411.618	ANTI-GRAFFITI COATING	SQ. FT.	(P)
2452.507	C-I-P CONCRETE PILING DELIVERED 12"	LIN. FT.	
2452.508	C-I-P CONCRETE PILING DRIVEN 12"	LIN. FT.	
2452.519	C-I-P CONCRETE TEST PILE 60 FT LONG 12"	EACH	
2452.519	C-I-P CONCRETE TEST PILE 65 FT LONG 12"	EACH	
2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1
2557.501	DIAMOND MESH SAFETY RAIL	LIN. FT.	(P)

CONSTRUCTION NOTES:

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS.

THE FIRST DIGIT OF A THREE DIGIT BAR MARK OR THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (R_n) WERE COMPUTED USING LRFD METHODOLGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

CONSTRUCTION OF ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION AND ALLOWED TO SETTLE. TIME DELAY FOR SETTLEMENT OF EMBANKMENTS DEPENDS ON THE VERTICAL DRAIN/SURCHARGE INSTALLATION OPTION TO BE DETERMINED BY THE GEOTECHNICAL ENGINEER.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

		DESIGNED BY: ATN	CHECKED BY: ---
		DRAWN BY: ALB	DATE: 08/24/15

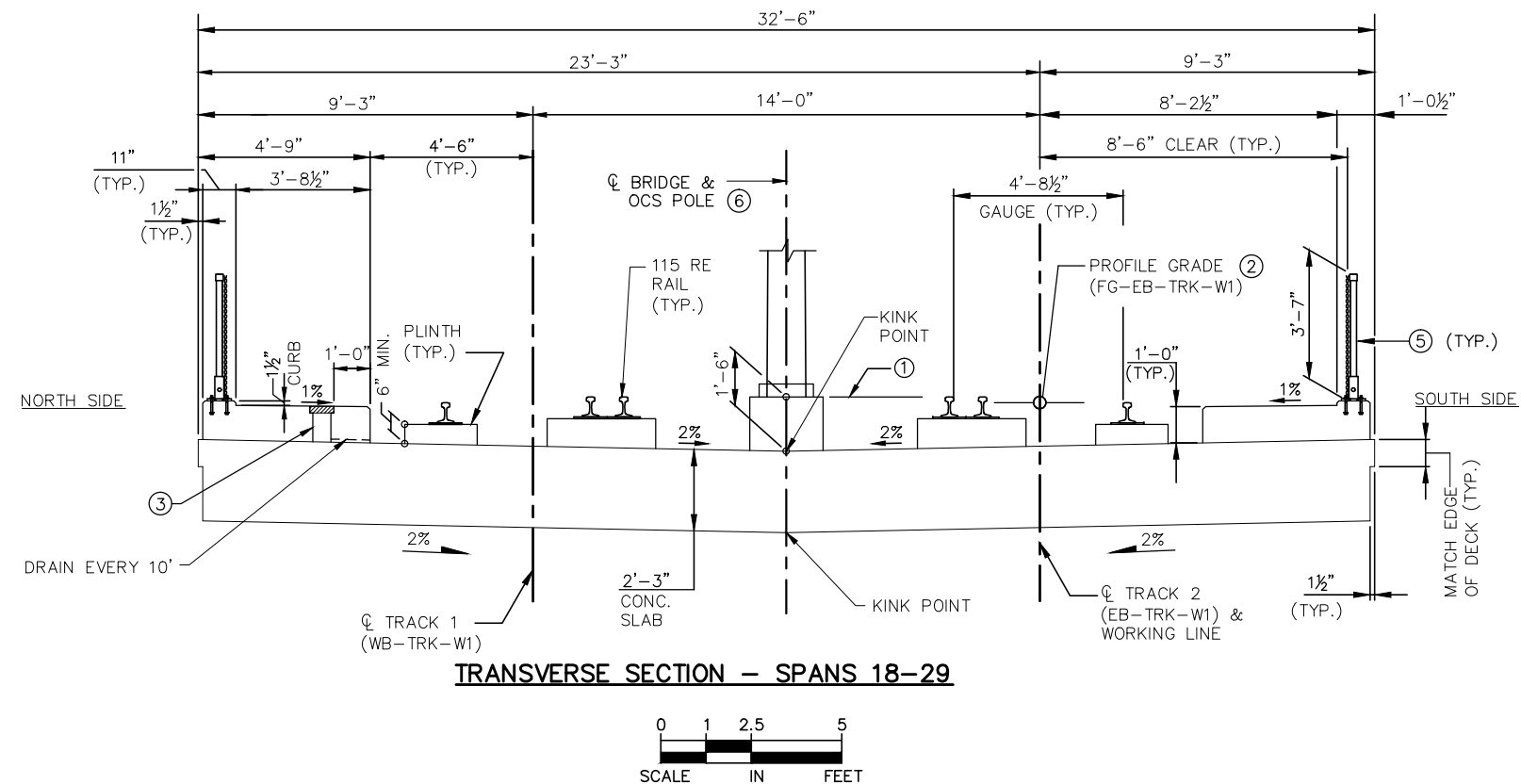


60% SUBMISSION - 09/28/15

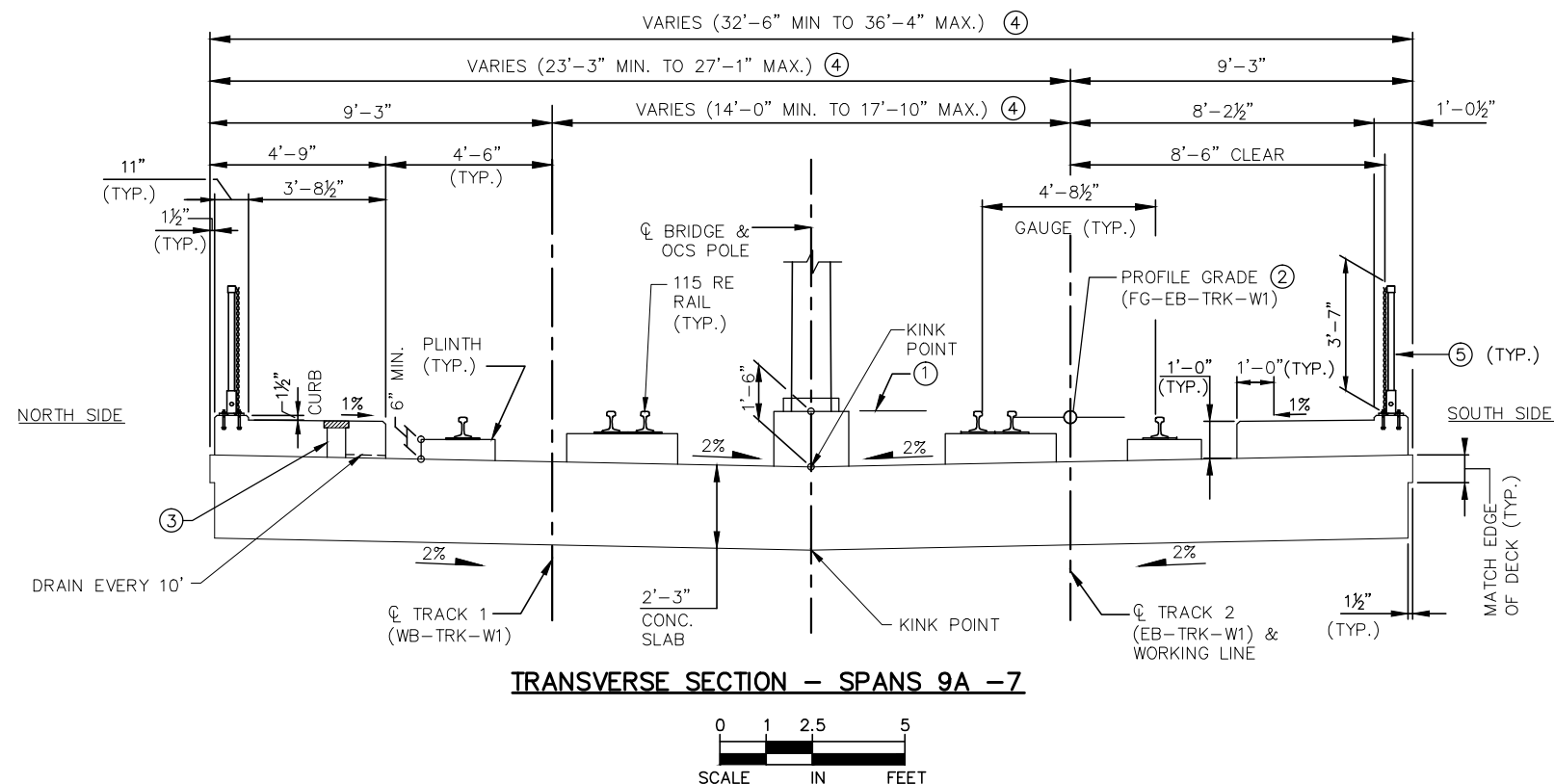


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
CONSTRUCTION NOTES & QUANTITIES

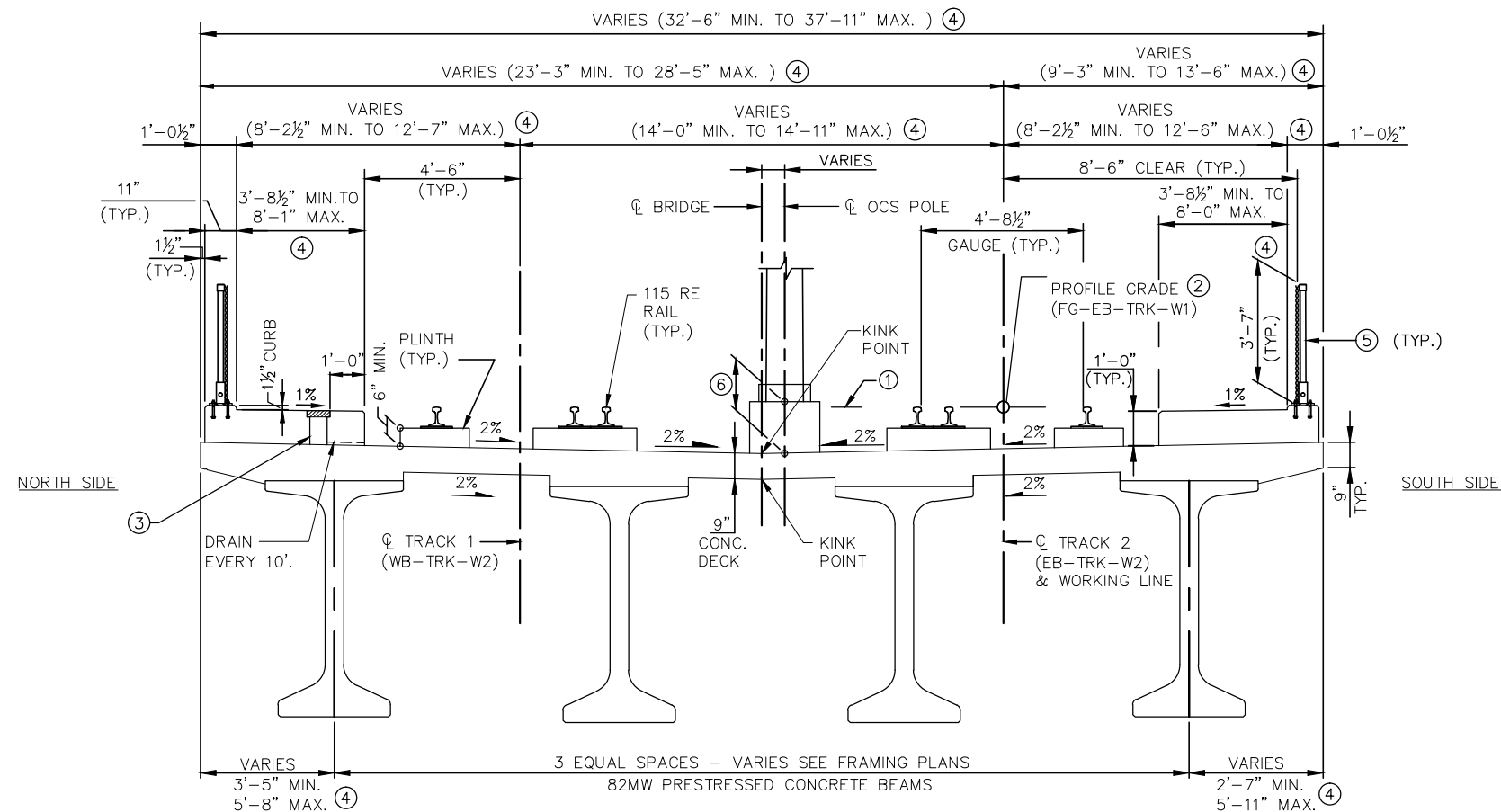
DISCIPLINE:	SHEET NAME:
STRUCTURES	CBR27C06-BRG-TRN-001



- ### NOTES:
- ① 1'-6" MEASURED TO TOP OF LOW RAIL.
 - ② PROFILE GRADE LINE TRANSITIONS TO LOW RAIL IN SUPER ELEVATED CURVES.
 - ③ CABLE TROUGH WITH HIGH DENSITY POLYMER COVER. SEE SYSTEM PLANS.
 - ④ SEE SUPERSTRUCTURE DETAILS ON SHEETS XX TO XX.
 - ⑤ DIAMOND MESH SAFETY RAIL FIG. 5-397.119 (MOD) WIRE FENCE.
 - ⑥ OCS POLE VARIES LOCATION IN SPANS 1A-8A. SEE SHEET 2, SHEET 3 AND SYSTEM PLANS.

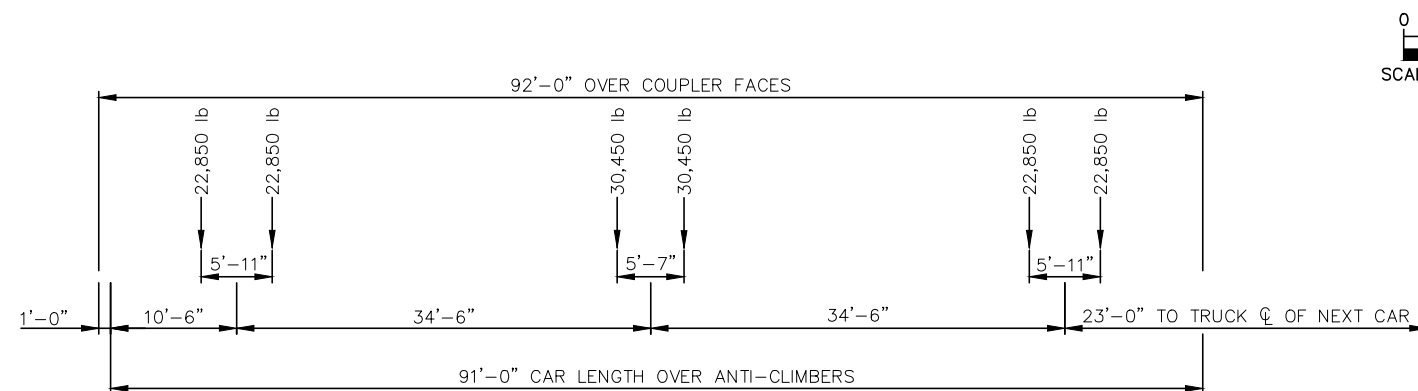


	NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	AECOM 60% SUBMISSION - 09/28/15	METROPOLITAN COUNCIL SOUTHWEST Green Line LRT Extension	CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 TRANSVERSE SECTION 2	SHEET NO. OF TOTAL SHEETS
							DESIGNED BY: ATN DRAWN BY: ALB	CHECKED BY: --- DATE: 08/24/15	DISCIPLINE: STRUCTURES	10 OF 50
									SHEET NAME: CBR27C06-BRG-TRN-003	



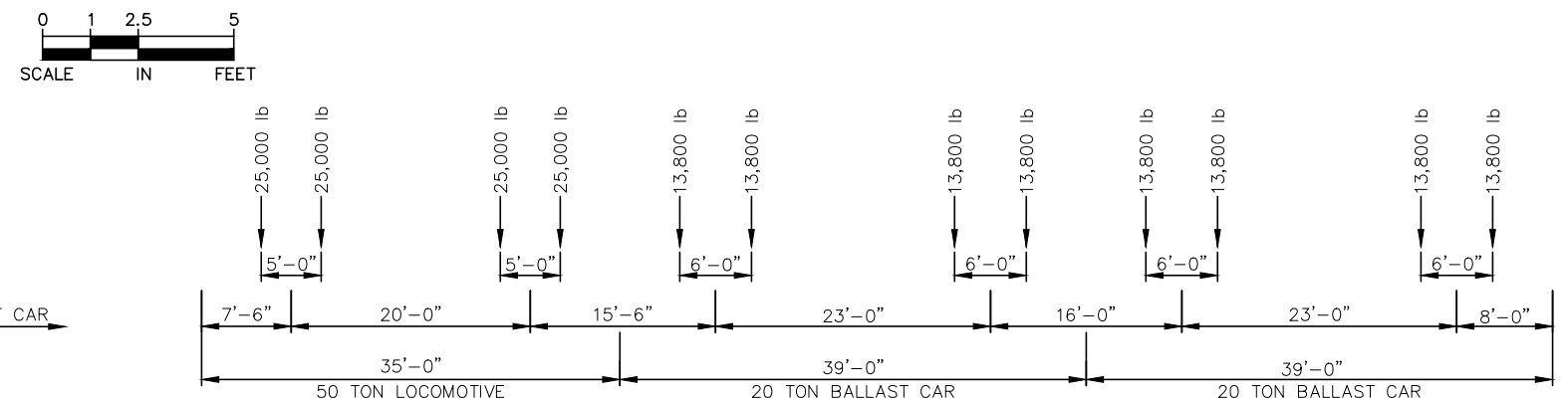
- ## NOTES:
- ① MEASURED TO TOP OF LOW RAIL.
 - ② PROFILE GRADE LINE TRANSITIONS TO LOW RAIL IN SUPERELEVATED CURVES.
 - ③ CABLE TROUGH WITH HIGH DENSITY POLYMER COVER. SEE SYSTEM PLANS.
 - ④ SEE SUPERSTRUCTURE DETAILS ON SHEETS XX TO XX.
 - ⑤ DIAMOND MESH SAFETY RAIL
FIG. 5-397.119 (MOD) WIRE FENCE.
 - ⑥ VARIES. 1'-6" MAXIMUM WHEN OCS POLE IS AT $\frac{1}{2}$ OF BRIDGE.

TRANSVERSE SECTION – SPANS 8-17






LIGHT RAIL VEHICLE LOADING DIAGRAM

- NOTES:**
1. THE LRT TRAIN SHALL CONSIST OF EITHER ONE, TWO OR THREE CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.

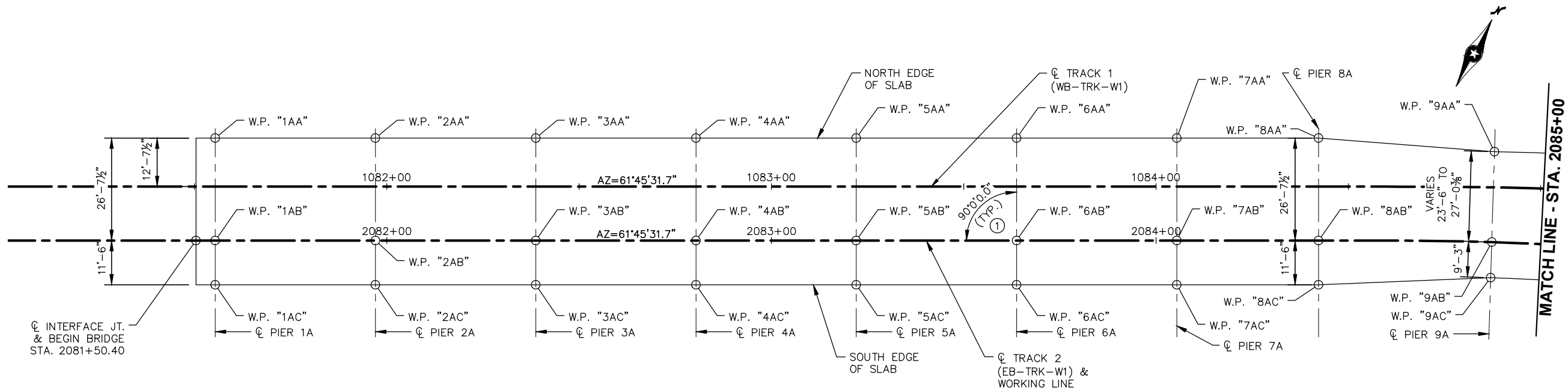


MAINTENANCE TRAIN LOADING DIAGRAM

- NOTES:**
1. THE MAINTENANCE TRAIN SHALL CONSIST OF ONE LOCOMOTIVE AND ONE, TWO, THREE OR FOUR BALLAST CARS, WHICHEVER PRODUCES THE MAXIMUM LOAD FOR THE ELEMENT UNDER CONSIDERATION.
 2. WEIGHT OF EMPTY BALLAST CAR IS 15,000 POUNDS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL							 		CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 TRANSVERSE SECTION 3		SHEET
																11
																OF
																50
						DESIGNED BY: ATN	CHECKED BY: ---	60% SUBMISSION - 09/28/15				DISCIPLINE:	STRUCTURES		SHEET NAME:	CBR27C06-BRG-TRN-004
						DRAWN BY: ALB	DATE: 08/24/15									

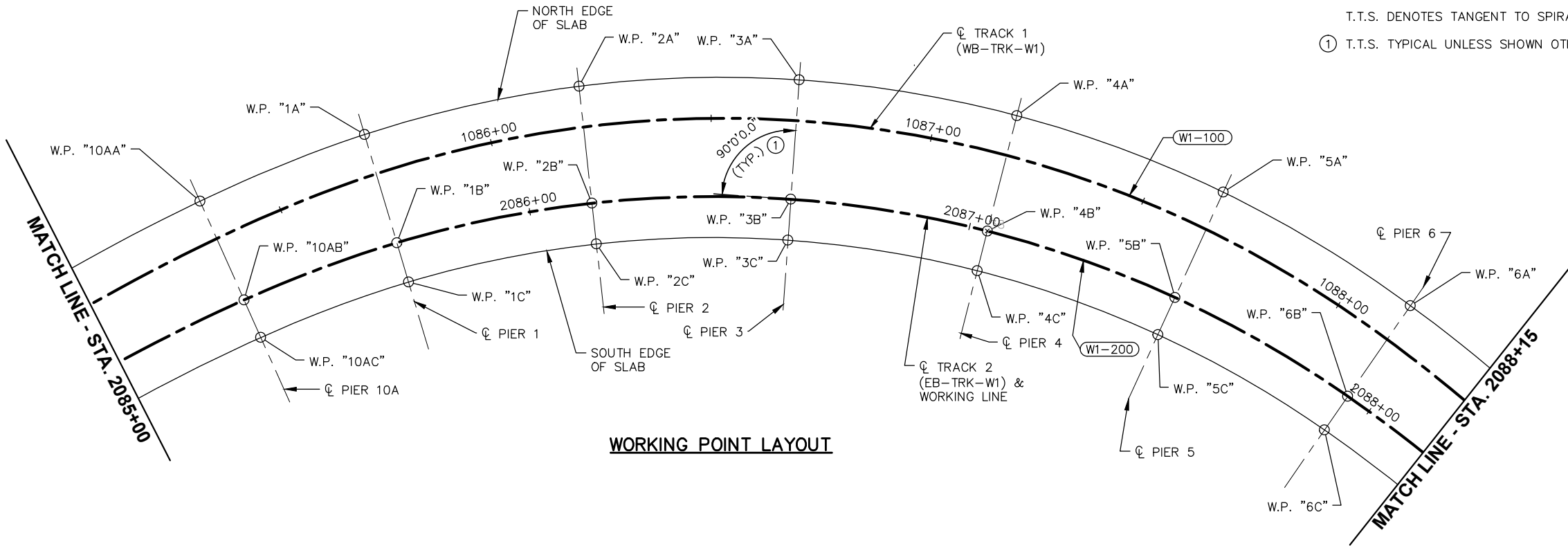
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WORKING POINT LAYOUT

CURVE NO. W1-100
R = 250.00'
Lc = 213.11'
Ls = 120.00'
Ea = 3.50"
Eu = 2.84"
V = 20 MPH

CURVE NO. W1-200
R = 250.00'
Lc = 213.11'
Ls = 120.00'
Ea = 3.50"
Eu = 2.84"
V = 20 MPH



WORKING POINT LAYOUT

NOTES:

T.T.S. DENOTES TANGENT TO SPIRAL.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



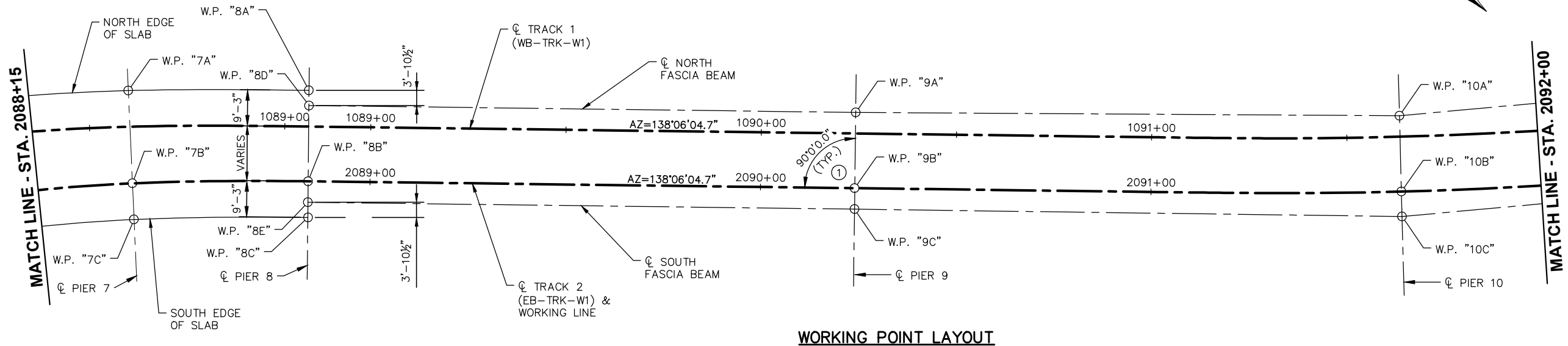
60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE LAYOUT 1	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-SUP-001

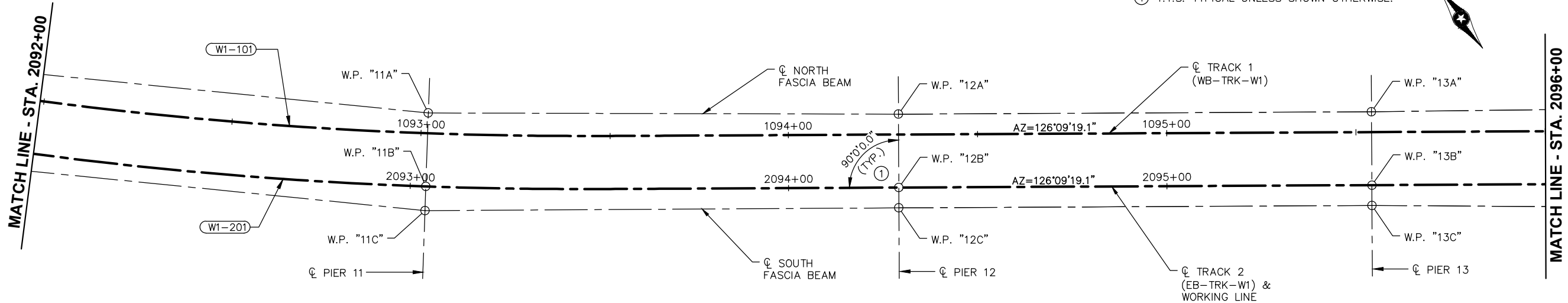
SHEET
12
OF
50

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WORKING POINT LAYOUT

CURVE NO. W1-101
R = 1080'
Lc = 185.18'
Ls = 40'
Ea = 1.00"
Eu = 1.29"
V = 25 MPH



WORKING POINT LAYOUT

CURVE NO. W1-201
R = 1080'
Lc = 185.18'
Ls = 40'
Ea = 1.00"
Eu = 1.29"
V = 25 MPH

NOTES:

T.T.S. DENOTES TANGENT TO SPIRAL.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15

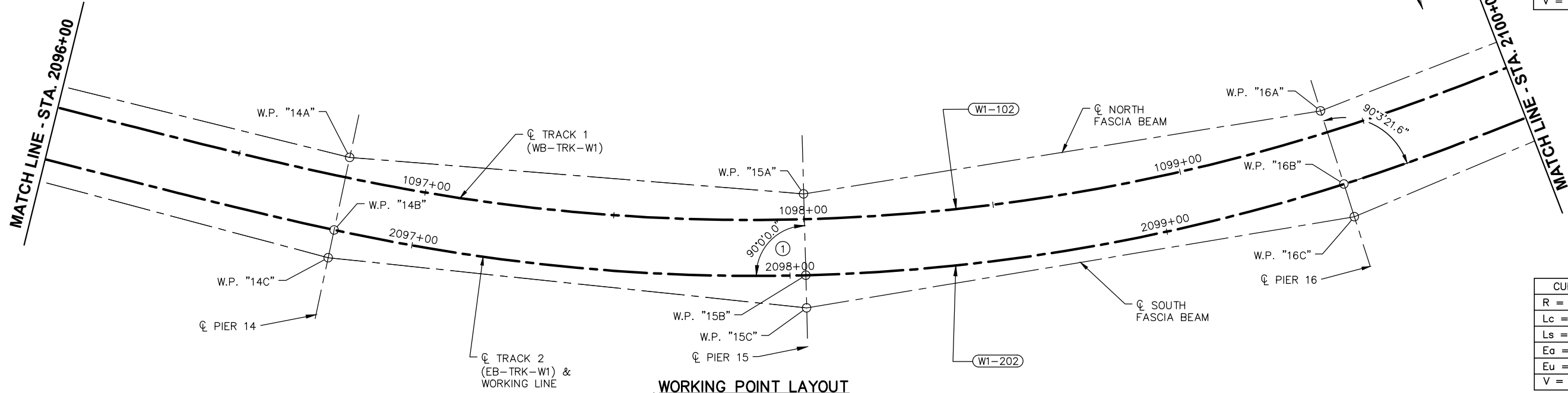


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE LAYOUT 2

DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-SUP-002
------------------------	----------------------------------

SHEET
13
OF
50

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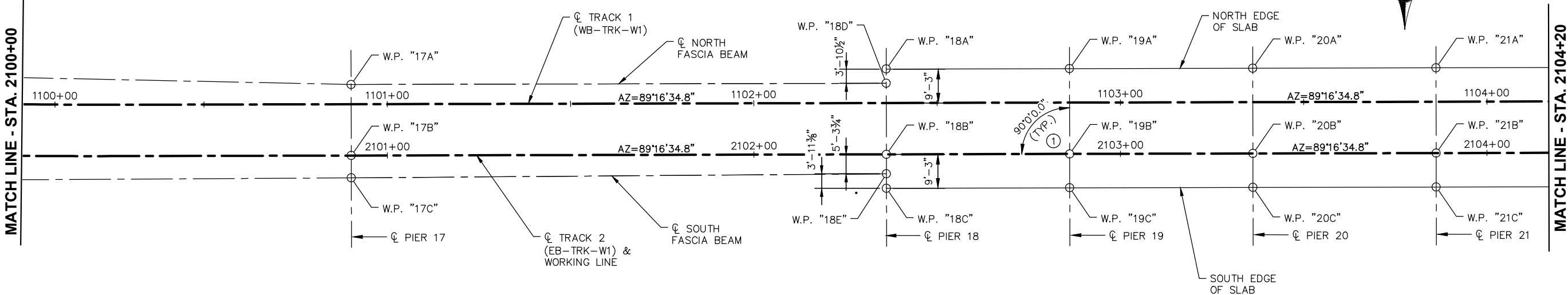
CURVE NO. W1-102
R = 510'
Lc = 248.27'
Ls = 80'
Ea = 2.25"
Eu = 2.60"
V = 25 MPH

CURVE NO. W1-202
R = 510'
Lc = 248.27'
Ls = 80'
Ea = 2.25"
Eu = 2.60"
V = 25 MPH

NOTES:

T.T.S. DENOTES TANGENT TO SPIRAL.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.



WORKING POINT LAYOUT

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15

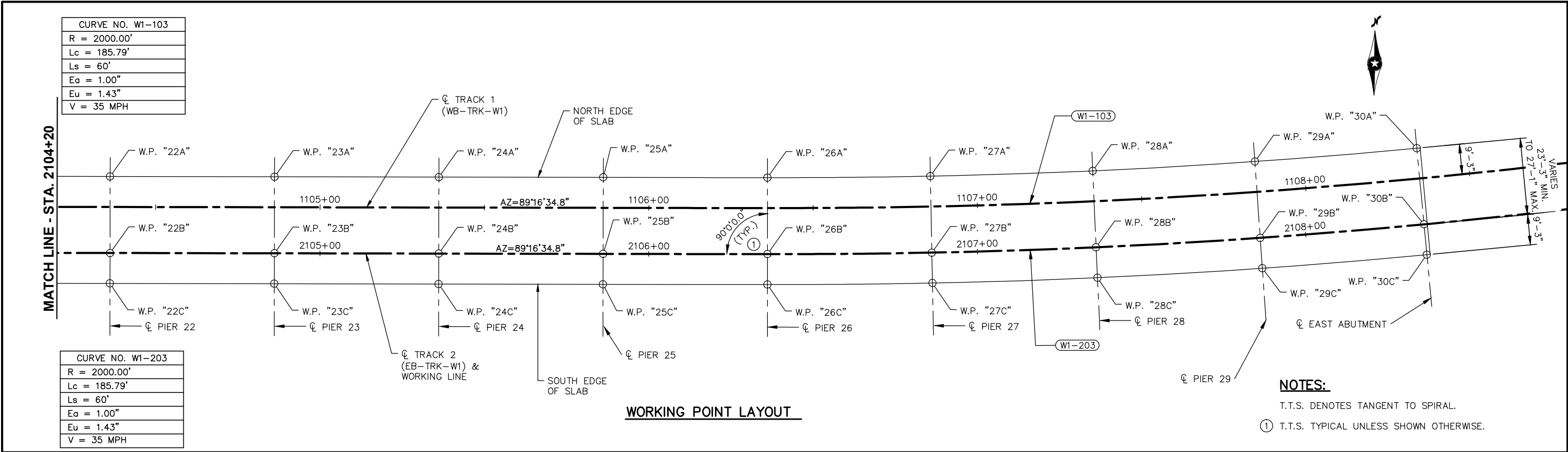


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE LAYOUT 3

DISCIPLINE: STRUCTURES

SHEET NAME:
CBR27C06-BRG-SUP-003

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Sep. 18 2015 10:34 am V:\3400_ADC\CAD\segemnt w\plan sheets\structures\60% submittal 09-18-2015\CBR27C06-BRG-PIR-001.dwg By: butterfielda

PIERS 1A – 6A
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR C-I-P PILES
 R_n – TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	PIER 1A	PIER 2A	PIER 3A	PIER 4A	PIER 5A	PIER 6A
		* R_n	* R_n	* R_n	* R_n	* R_n	* R_n
MnDOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{WxH}{1000}} \times \log(\frac{10}{S})$	0.50	---	---	---	---	---	---
PDA	0.65	---	---	---	---	---	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIERS 1A – 6A
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	PIER 1A	PIER 2A	PIER 3A	PIER 4A	PIER 5A	PIER 6A
	---	---	---	---	---	---
FACTORED LIVE LOAD	---	---	---	---	---	---
* FACTORED DESIGN LOAD	---	---	---	---	---	---

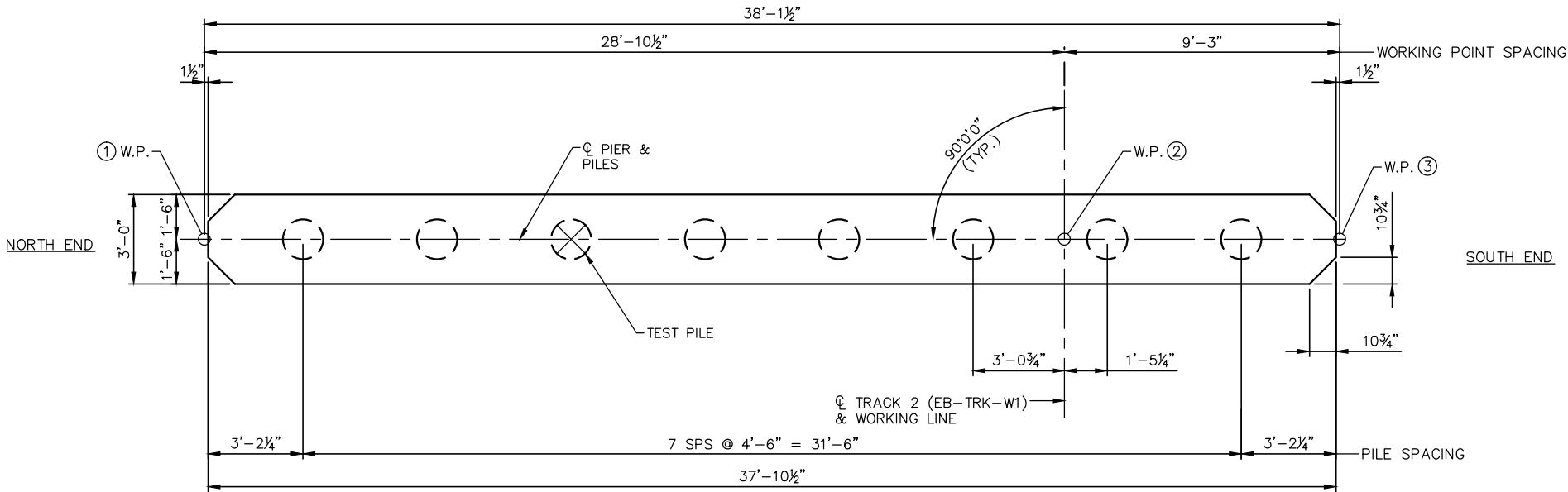
* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONCRETE TEST PILE XX FT. LONG
- 7 CAST-IN-PLACE CONCRETE PILES EST. LENGTH X FT.
- 8 CAST-IN-PLACE CONCRETE PILES REQ'D FOR EACH PIER
- PILES TO HAVE A NOMINAL DIAMETER OF 16"
- FOR PILE SPLICE DETAILS SEE DETAIL B201.
- PILE SPACING IS SHOWN AT BOTTOM OF WALL PIER.

NOTES:

SEE SHEET XX FOR WORKING POINT TABLE.



WALL PIER PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 PIER DETAILS - PIERS 1A - 6A	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-PIR-001

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PIERS 8A, ,9A, 10A, 2, 3, 5, 6, 7
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR C-I-P PILES
 R_n – TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	PIER 8A	PIER 9A	PIER 10A	PIER 2	PIER 3	PIER 5	PIER 6	PIER 7
		* R_n	* R_n	* R_n	* R_n	* R_n	* R_n	* R_n	* R_n
MnDOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{WxH}{1000}} \times \log(\frac{10}{S})$	0.50	---	---	---	---	---	---	---	---
PDA	0.65	---	---	---	---	---	---	---	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIERS 8A, 9A, 10A, 2, 3, 5, 6, 7
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	PIER 8A	PIER 9A	PIER 10A	PIER 2	PIER 3	PIER 5	PIER 6	PIER 7
	---	---	---	---	---	---	---	---
FACTORED LIVE LOAD	---	---	---	---	---	---	---	---
* FACTORED DESIGN LOAD	---	---	---	---	---	---	---	---

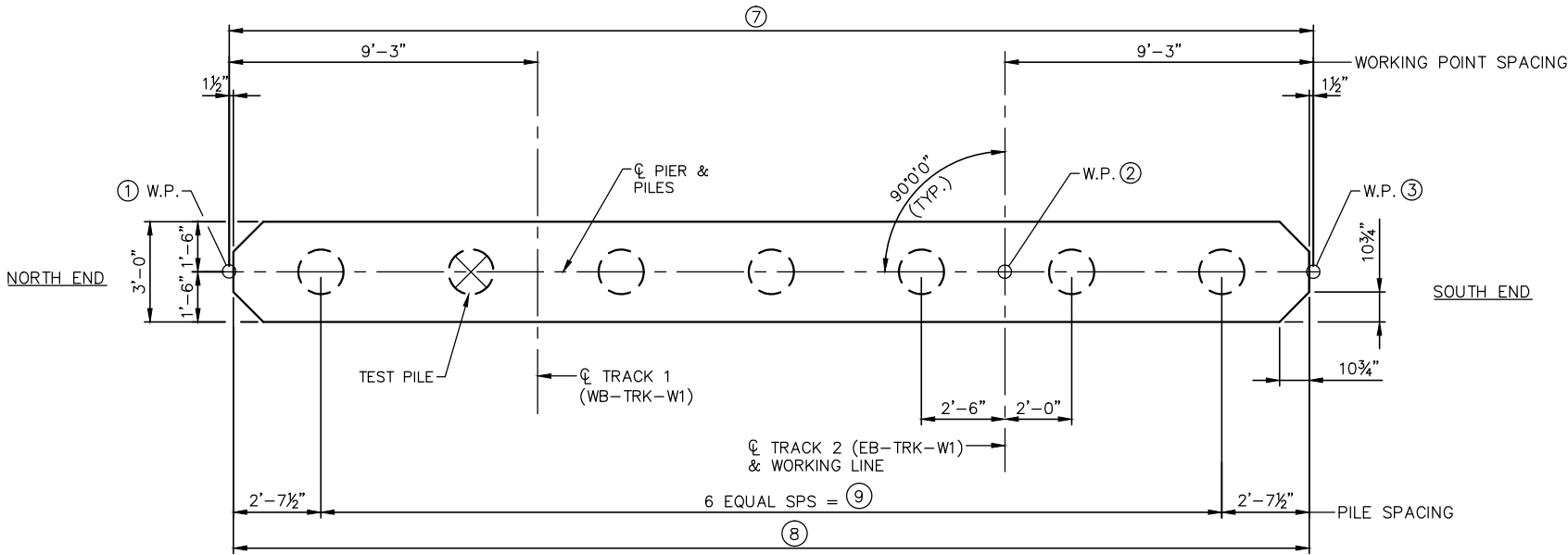
* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONCRETE TEST PILE XX FT. LONG
- 6 CAST-IN-PLACE CONCRETE PILES EST. LENGTH X FT.
- 7 CAST-IN-PLACE CONCRETE PILES REQ'D FOR EACH PIER
- PILES TO HAVE A NOMINAL DIAMETER OF 16"
- FOR PILE SPLICE DETAILS SEE DETAIL B201.
- PILE SPACING IS SHOWN AT BOTTOM OF WALL PIER.

NOTES:

SEE SHEET XX FOR WORKING POINT TABLE.



WALL PIER PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
PIER DETAILS - PIERS 8A, 9A, 10A, 2, 3, 5, 6, 7

DISCIPLINE: STRUCTURES

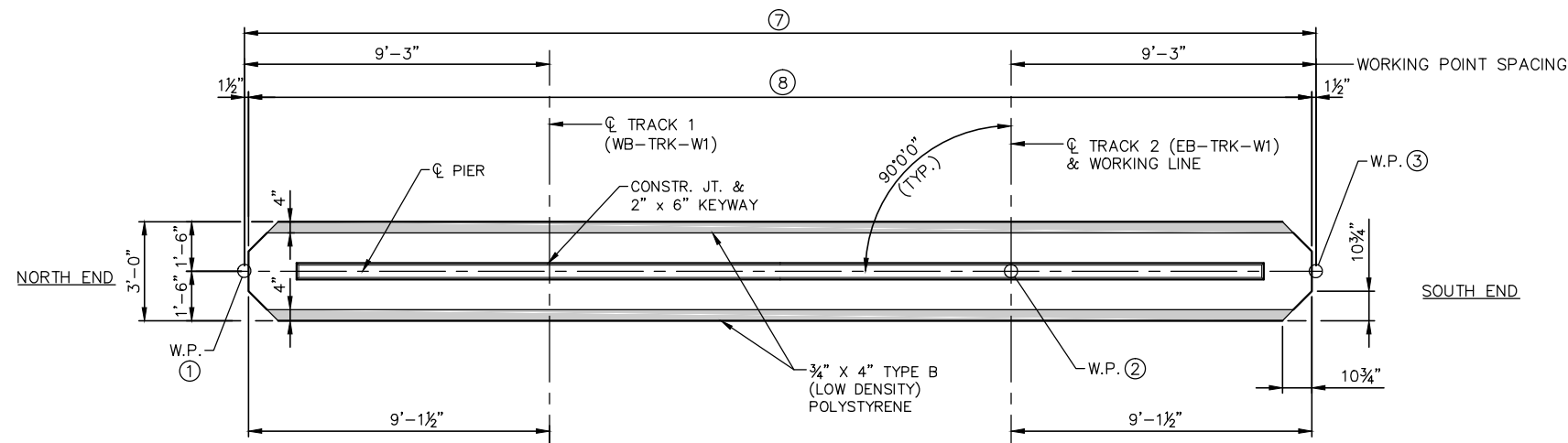
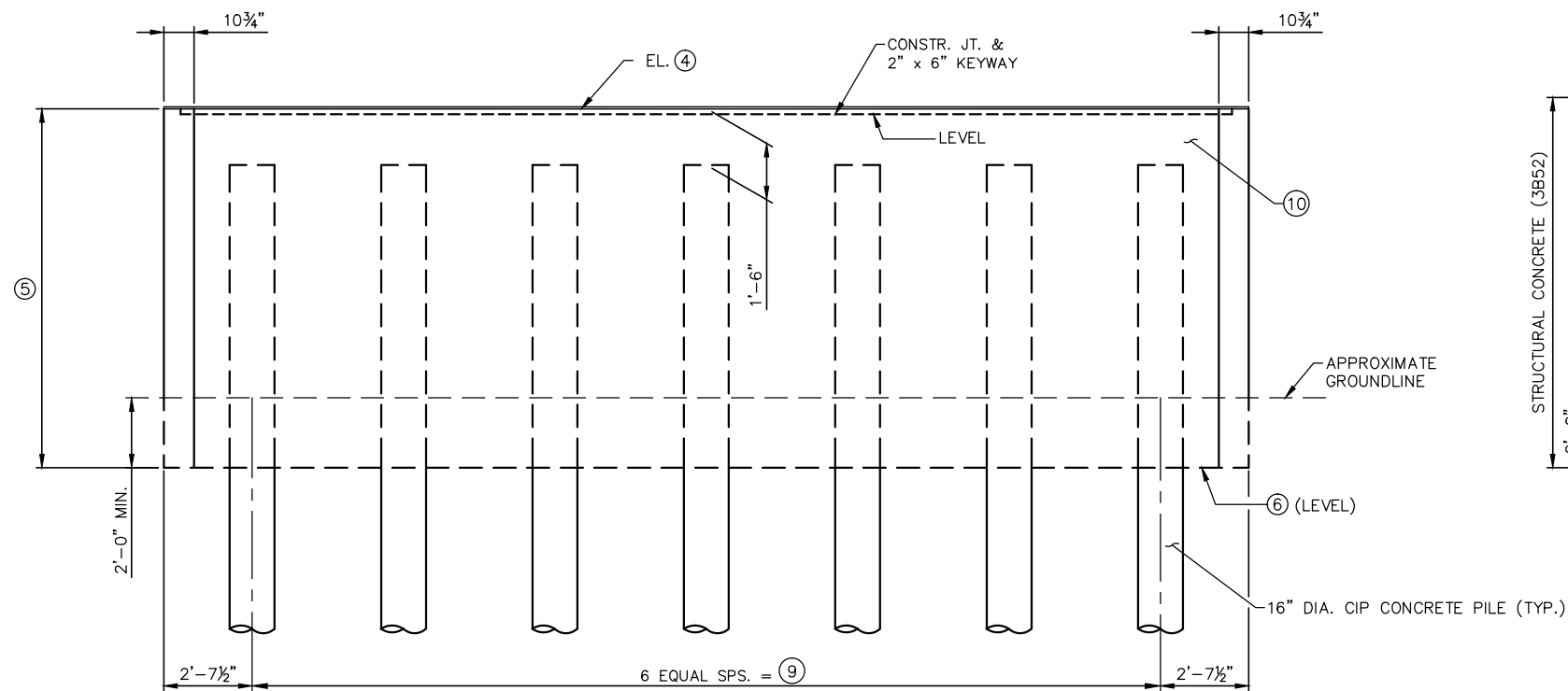
SHEET NAME: CBR27C06-BRG-PIR-003

WORKING POINT TABLE

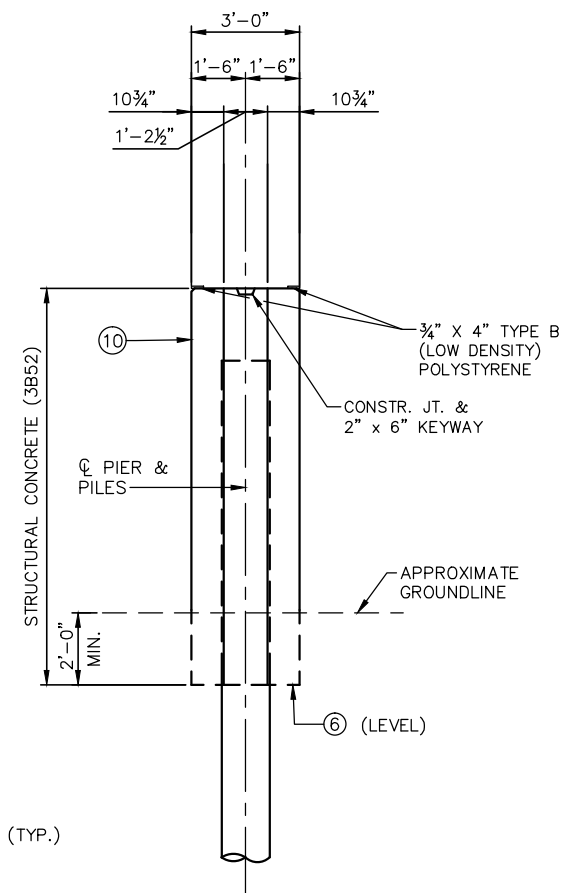
	WORKING POINT ①	WORKING POINT ②	WORKING POINT ③
PIER 8A	"8AA"	"8AB"	"8AC"
PIER 9A	"9A"	"9B"	"9C"
PIER 10A	"10AA"	"10AB"	"10AC"
PIER 2	"2A"	"2B"	"2C"
PIER 3	"3A"	"3B"	"3C"
PIER 5	"5A"	"5B"	"5C"
PIER 6	"6A"	"6B"	"6C"
PIER 7	"7A"	"7B"	"7C"

PIER ELEVATION TABLE (11)

	KINK POINT ELEV. ④	TOTAL PIER HEIGHT ⑤	BOTTOM OF PIER ELEV. ⑥	WORKING POINT SPACING ⑦	PIER WIDTH ⑧	⑨
PIER 8A	831.14	4'-0"	827.14	38'-1 1/2"	37'-1 1/2"	32'-7 1/2"
PIER 9A	832.36	4'-0"	828.36	32'-9"	32'-6"	27'-3"
PIER 10A	834.26	4'-0"	830.26	33'-8 1/8"	32'-8 1/8"	28'-2 1/8"
PIER 2	838.08	4'-2 1/8"	833.90	35'-9 3/4"	34'-9 3/4"	30'-3 3/4"
PIER 3	840.17	5'-5 3/4"	834.70	36'-3 3/8"	35'-3 3/8"	30'-9 3/8"
PIER 5	844.37	8'-2"	836.20	35'-4 3/4"	34'-4 3/4"	29'-10 3/4"
PIER 6	846.47	10'-11 "	835.55	34'-1 1/2"	33'-10 1/2"	28'-7 1/2"
PIER 7	848.56	12'-6 3/4"	836.00	33'-0 1/8"	32'-0 1/8"	27'-6 1/8"

WALL PIER PLAN

WALL PIER ELEVATION



END VIEW

NOTES:

- ⑩ SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ⑪ ELEVATIONS WERE DETERMINED AT $\frac{1}{4}$ OF PIER.

[illegible]

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

AECOM

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**CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
PIER DETAILS - PIERS 8A, 9A, 10A, 2, 3, 5, 6, 7**

SHEET
19
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PIERS 19, 20, 22, 23, 25, 26, 28, 29
REQUIRED NOMINAL PILE BEARING
RESISTANCE FOR C-I-P PILES
 R_n – TONS/PILE

FIELD CONTROL METHOD	ϕ_{dyn}	PIER 19	PIER 20	PIER 22	PIER 23	PIER 25	PIER 26	PIER 28	PIER 29
		* R_n	* R_n	* R_n	* R_n	* R_n	* R_n	* R_n	* R_n
MnDOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{WxH}{1000}} \times \log(\frac{10}{S})$	0.50	---	---	---	---	---	---	---	---
PDA	0.65	---	---	---	---	---	---	---	---

* R_n = (FACTORED DESIGN LOAD) / ϕ_{dyn}

PIERS 19, 20, 22, 23, 25, 26, 28, 29
COMPUTED PILE LOAD – TONS/PILE

FACTORED DEAD LOAD	PIER 19	PIER 20	PIER 22	PIER 23	PIER 25	PIER 26	PIER 28	PIER 29
	---	---	---	---	---	---	---	---
FACTORED LIVE LOAD	---	---	---	---	---	---	---	---
* FACTORED DESIGN LOAD	---	---	---	---	---	---	---	---

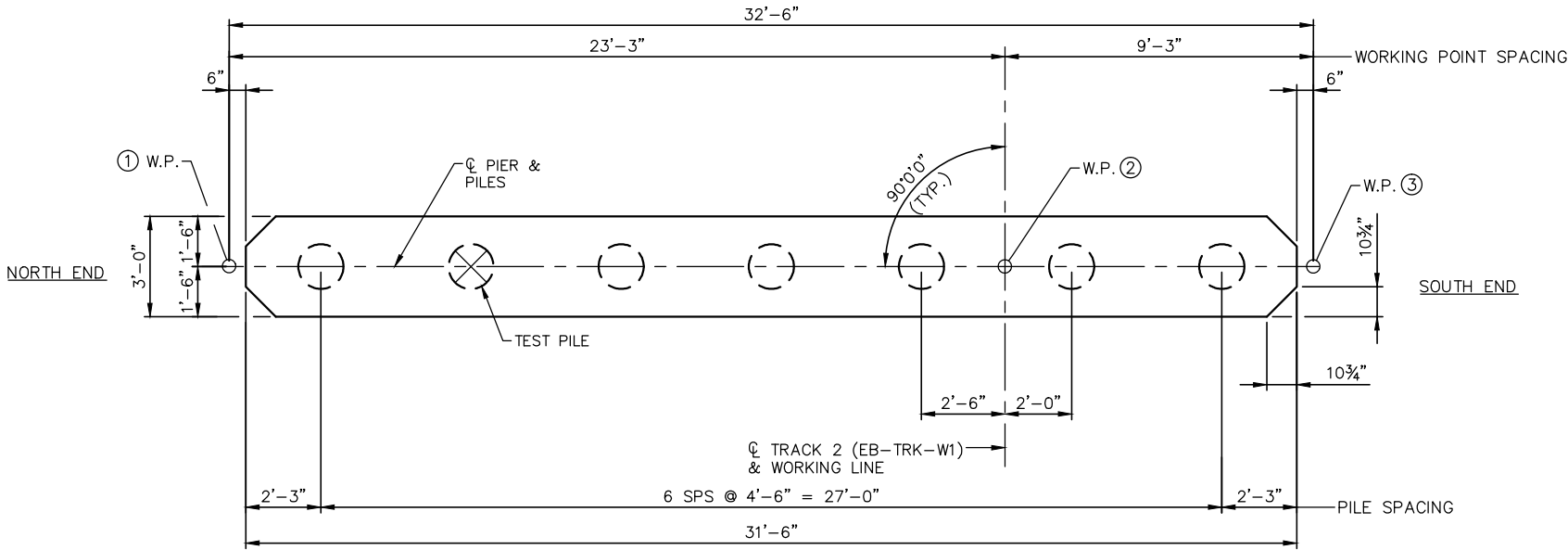
* BASED ON _____ LOAD COMBINATION

PILE NOTES

- 1 CAST-IN-PLACE CONCRETE TEST PILE XX FT. LONG
- 6 CAST-IN-PLACE CONCRETE PILES EST. LENGTH X FT.
- 7 CAST-IN-PLACE CONCRETE PILES REQ'D FOR EACH PIER
- PILES TO HAVE A NOMINAL DIAMETER OF 16"
- FOR PILE SPLICE DETAILS SEE DETAIL B201.
- PILE SPACING IS SHOWN AT BOTTOM OF WALL PIER.

NOTES:

SEE SHEET XX FOR WORKING POINT TABLE.



WALL PIER PLAN

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

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CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
PIER DETAILS - PIERS 19,20,22,23,25,26,28 & 29

DISCIPLINE: STRUCTURES

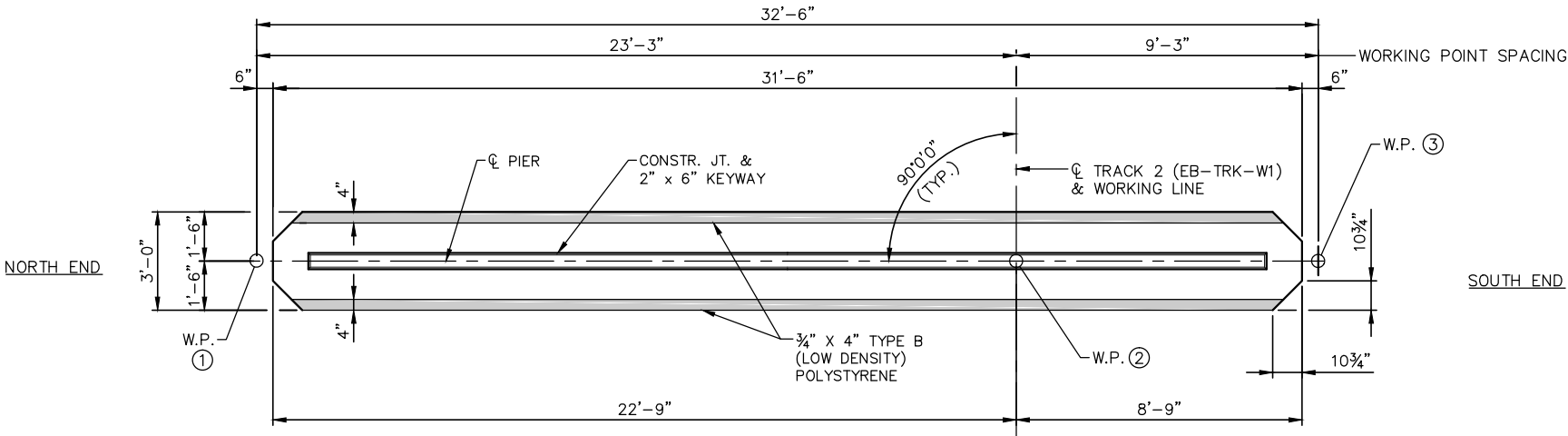
SHEET NAME: CBR27C06-BRG-PIR-027

WORKING POINT TABLE

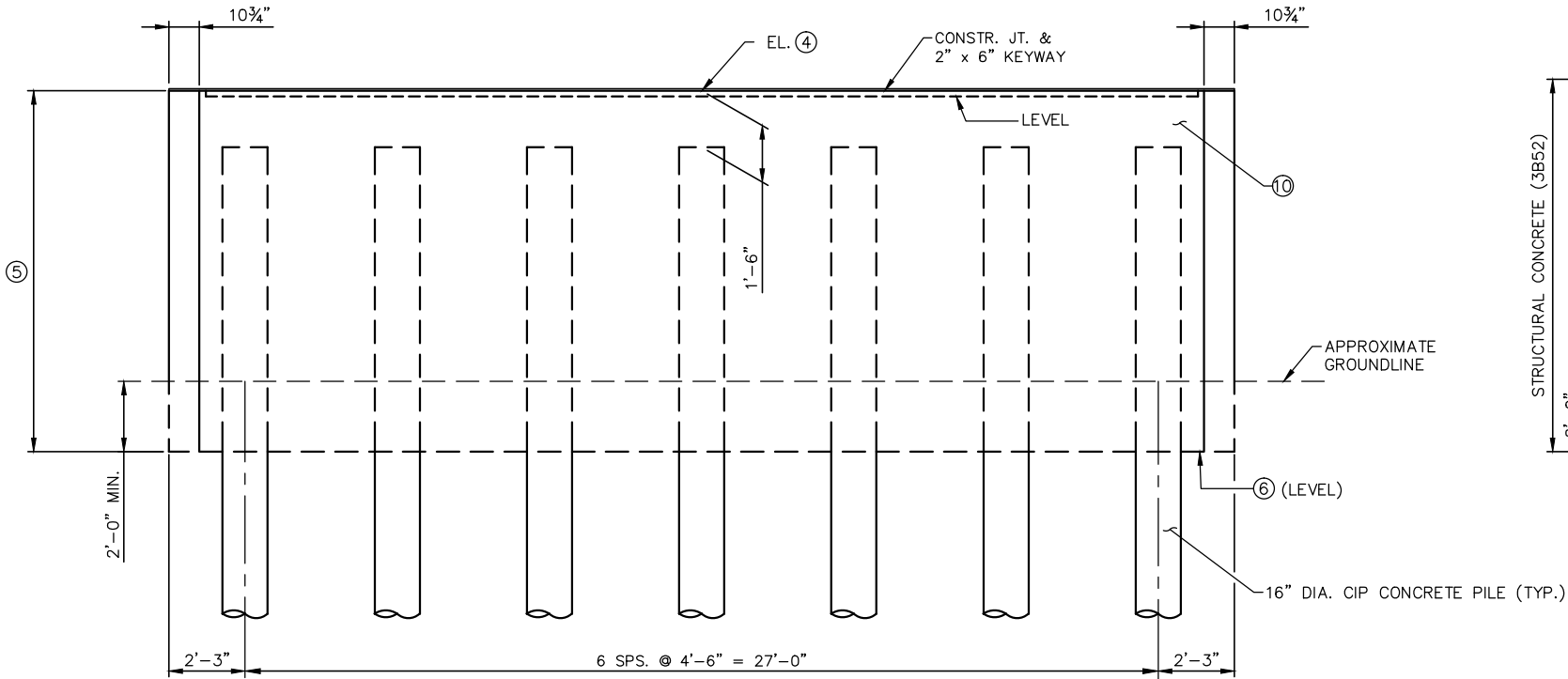
	WORKING POINT ①	WORKING POINT ②	WORKING POINT ③
PIER 19	"19A"	"19B"	"19AC"
PIER 20	"20A"	"20B"	"20C"
PIER 22	"22A"	"22B"	"22C"
PIER 23	"23A"	"23B"	"23C"
PIER 25	"25A"	"25B"	"25C"
PIER 26	"26A"	"26B"	"26C"
PIER 28	"28A"	"28B"	"28C"
PIER 29	"29A"	"29B"	"29C"

PIER ELEVATION TABLE ⑪

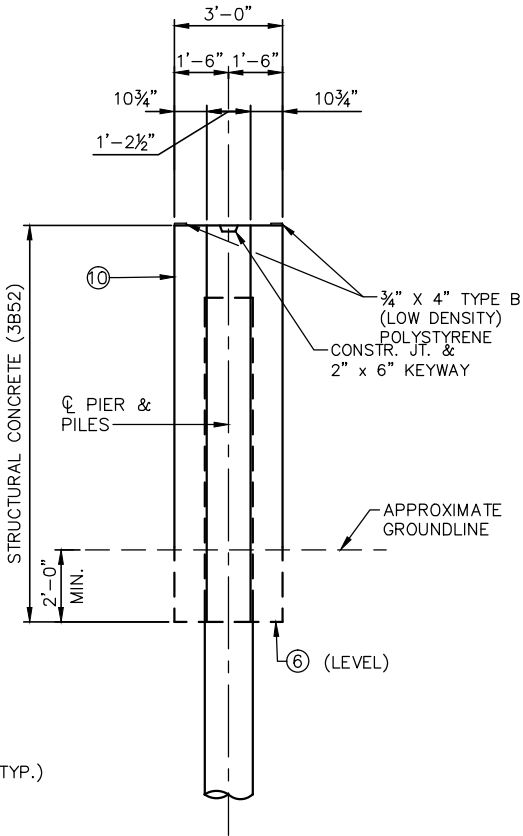
	KINK POINT ELEV. ④	TOTAL PIER HEIGHT ⑤	BOTTOM OF PIER ELEV. ⑥	WORKING POINT SPACING ⑦	PIER WIDTH ⑧	⑨
PIER 19	884.07	19'-8 "	864.40	32'-6"	31'-6"	27'-0"
PIER 20	884.21	21'-6 1/8"	862.70	32'-6 "	31'-6 "	27'-0 "
PIER 22	884.11	23'-0 1/8"	861.10	32'-6 "	31'-6 "	27'-0 "
PIER 23	884.05	21'-4 1/8"	862.70	32'-6 "	31'-6 "	27'-0 "
PIER 25	883.91	15'-10 7/8"	868.00	32'-6 "	31'-6 "	27'-0 "
PIER 26	883.84	12'-4 1/8"	871.50	32'-6"	31'-6"	27'-0"
PIER 28	883.71	6'-2 1/2"	877.50	32'-6 1/4"	31'-6 1/4"	27'-0 1/4"
PIER 29	883.64	4'-4 1/8"	879.30	32'-6 1/4"	31'-6 1/4"	27'-0 1/4"



WALL PIER PLAN



WALL PIER ELEVATION



END VIEW

NOTES:

- ⑩ SPECIAL SURFACE FINISH SHALL BE APPLIED TO THE PIER CAP AND PILES. COLOR SHALL BE FEDERAL STANDARD COLOR XXXX, COLOR XXXXX. SEE SPEC. SB 2401.
- ⑪ ELEVATIONS WERE DETERMINED AT CL OF PIER.

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DRAWN BY: ALB	DATE: 08/24/15

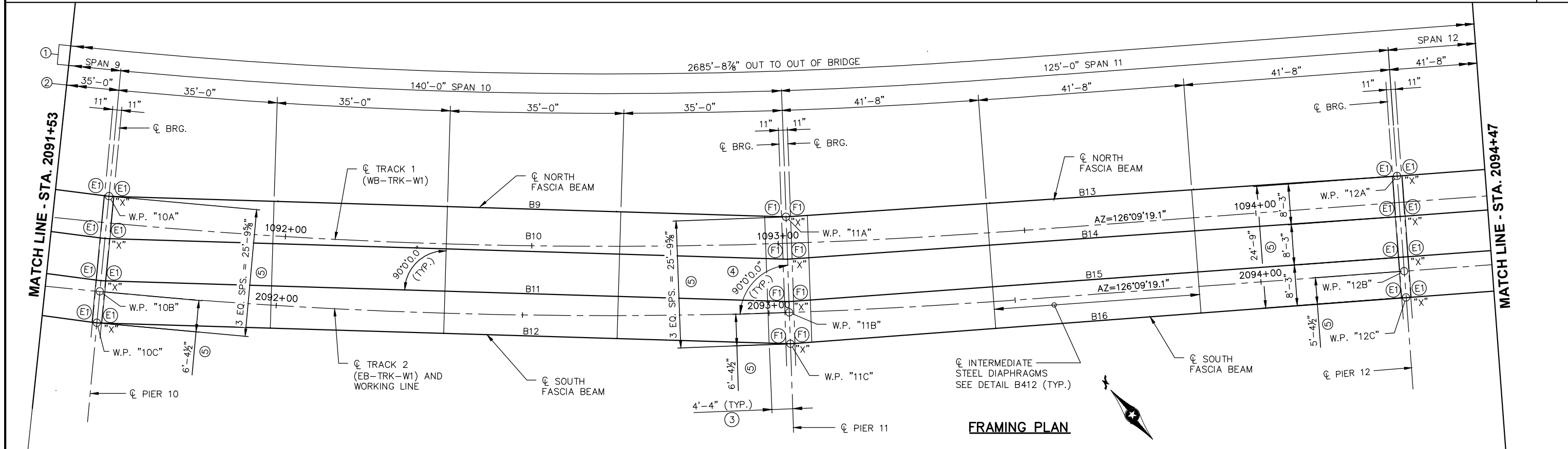
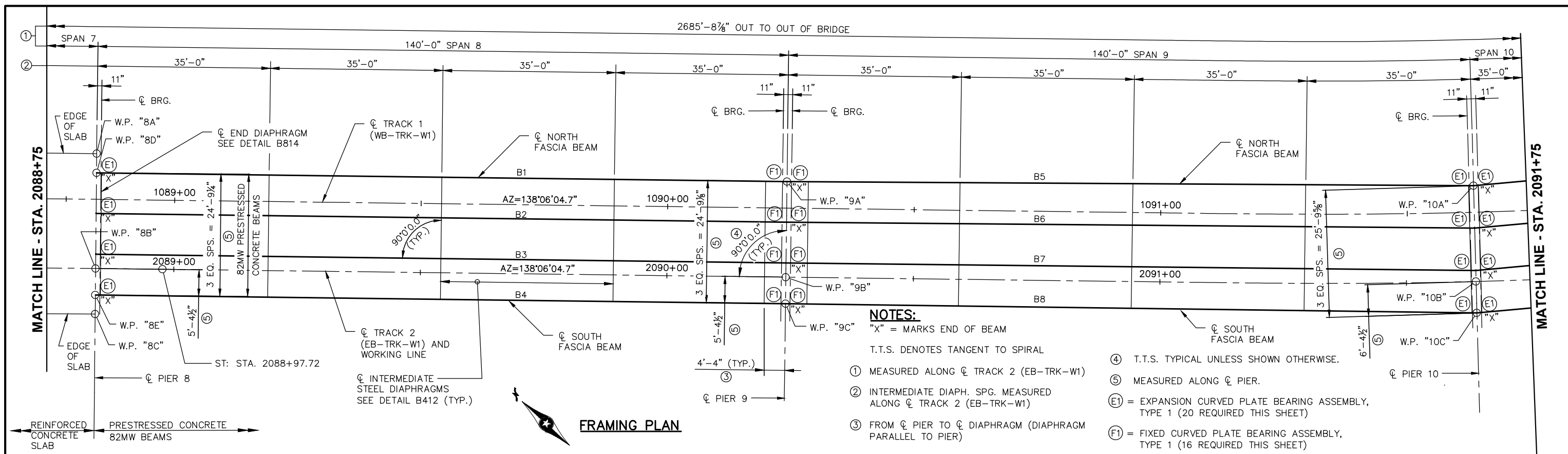
AECOM
60% SUBMISSION - 09/28/15

 METROPOLITAN COUNCIL	 SOUTHWEST Green Line LRT Extension
---	--

CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 PIER DETAILS - PIERS 19,20,22,23,25,26,28 & 29	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-PIR-028

SHEET
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DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

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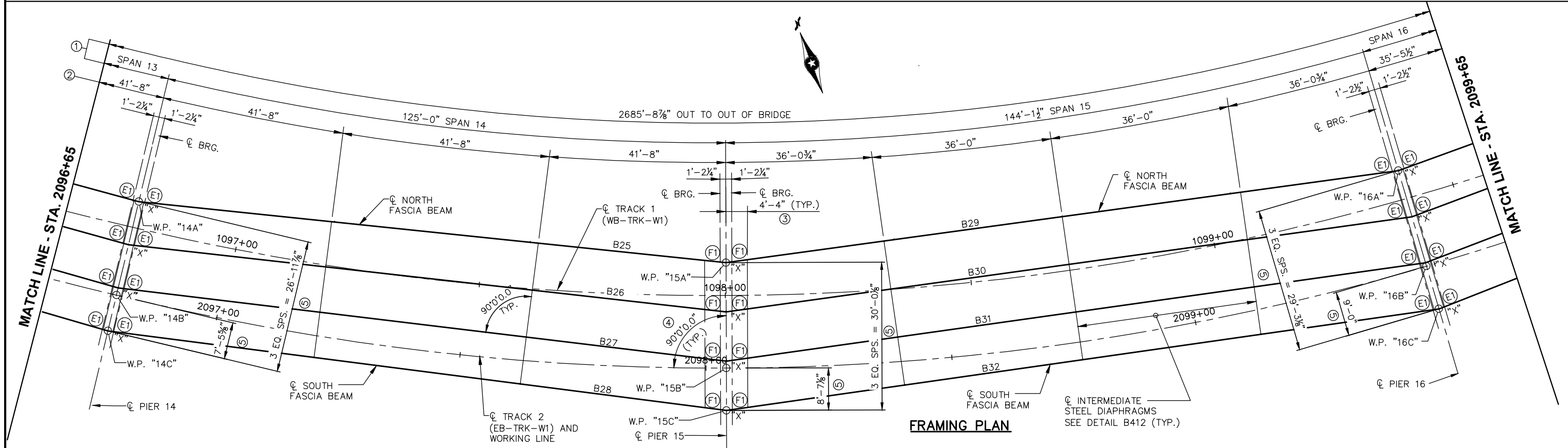
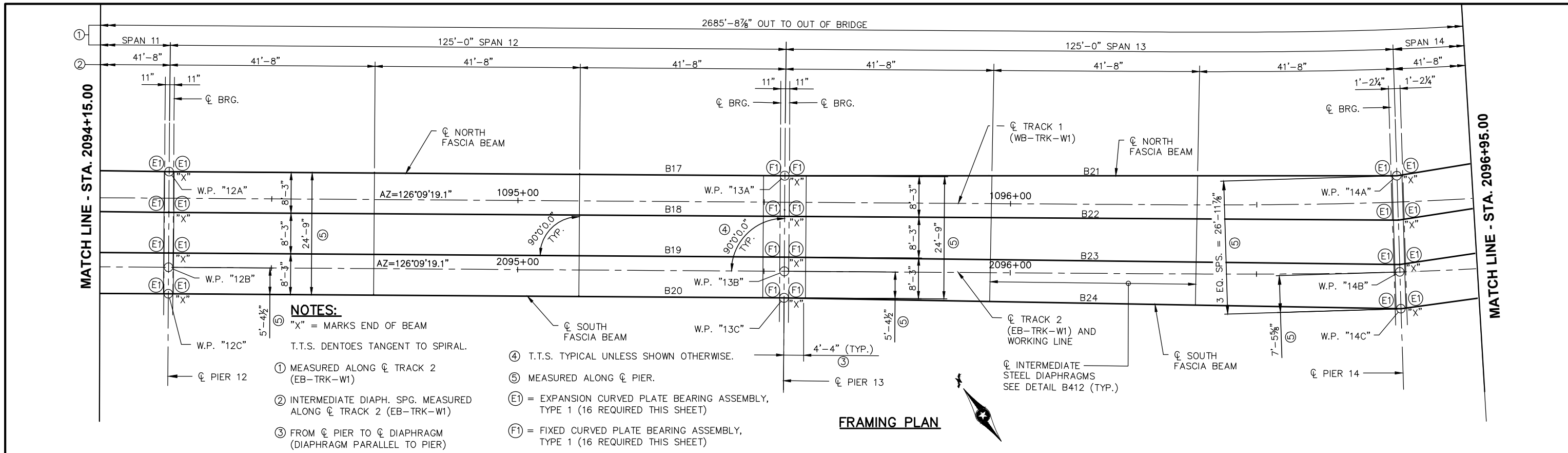
METROPOLITAN
C O U N C I L

SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
FRAMING PLAN 1

DISCIPLINE: **STRUCTURES** SHEET NAME: **CBR27C06-BRG-SUP-008**

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DRAWN BY: ALB	DATE: 08/24/15

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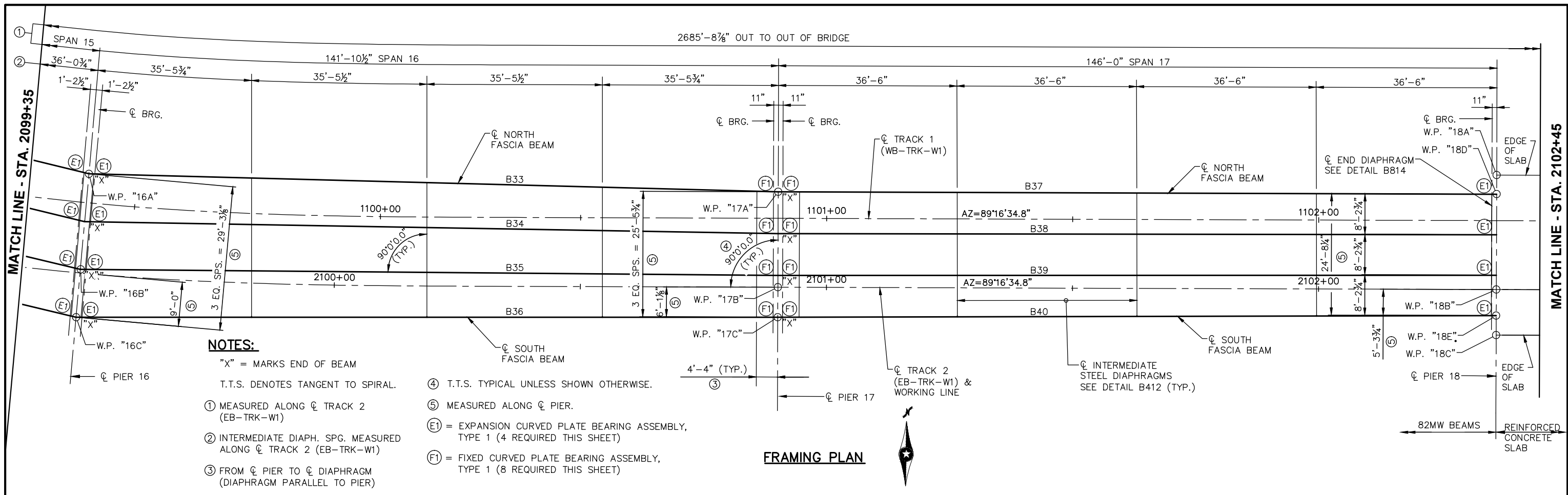
**CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
FRAMING PLAN 2**

DISCIPLINE: **STRUCTURES**

SHEET NAME:	CBR27C06-BRG-SUP-009
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DRAWN BY: ALB	DATE: 08/24/15

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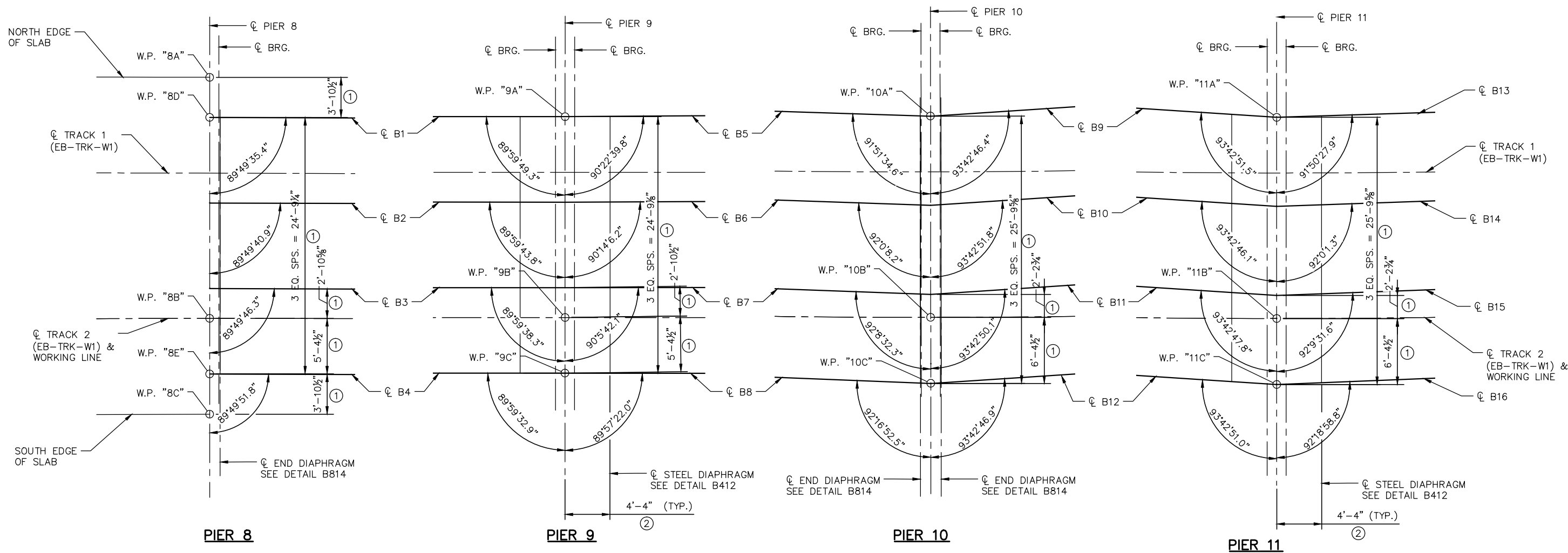
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
FRAMING PLAN 3

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C06-BRG-SUP-010

SHEET 24 OF 50

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NOTES:

DIMENSIONS BETWEEN BEAMS ARE ALONG ϕ OF BEARING.

ANGLES SHOWN ARE FROM ϕ BEAM TO ϕ OF BEARING.

① MEASURED ALONG ϕ PIER.

② FROM ϕ PIER TO ϕ DIAPHRAGM (DIAPHRAGM PARALLEL TO PIER).

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15



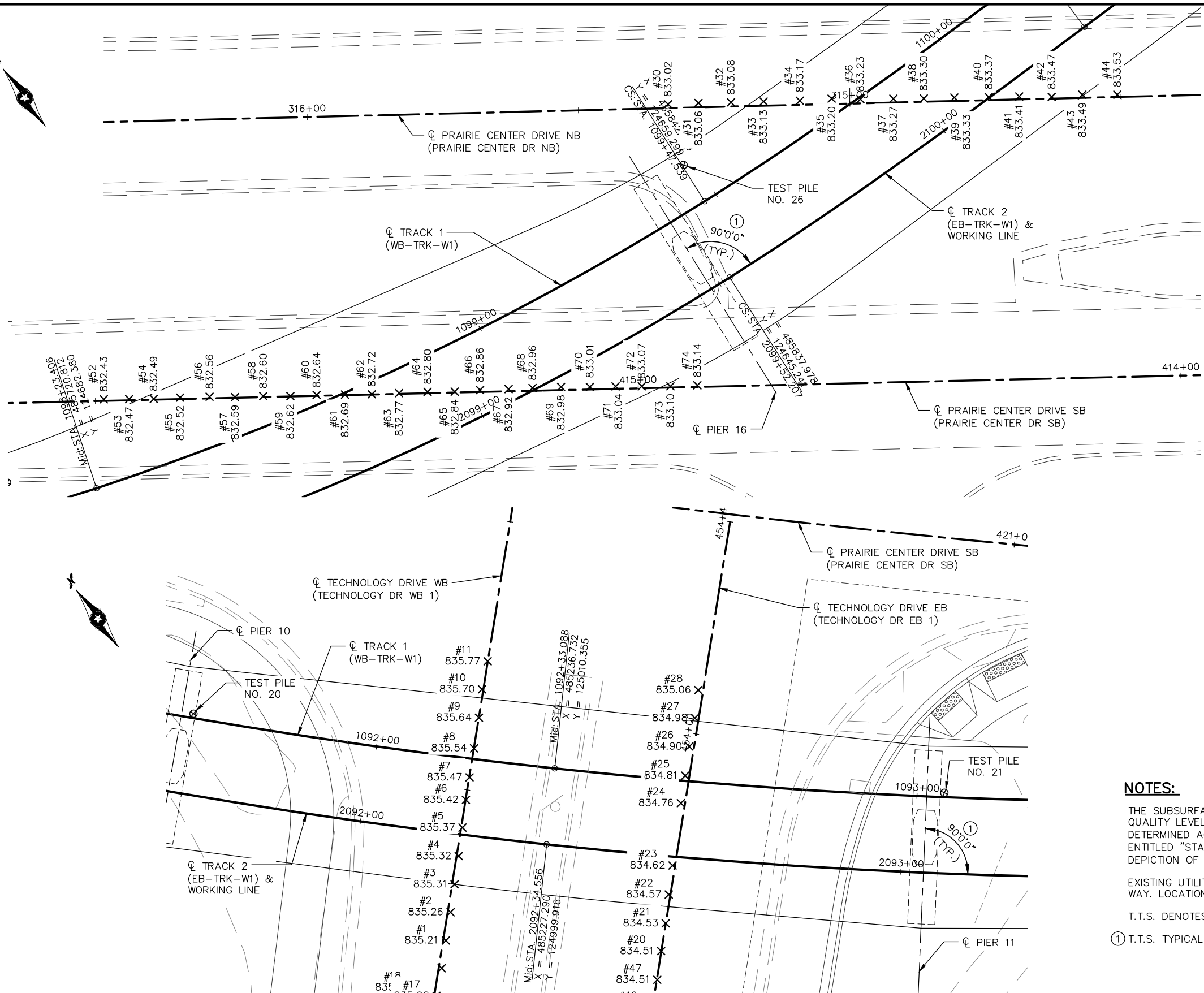
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
FRAMING DETAILS 4

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-SUP-011**

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NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY. LOCATION TO BE DETERMINED IN ADVANCED DESIGN.

T.T.S. DENOTES TANGENT TO SPIRAL.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

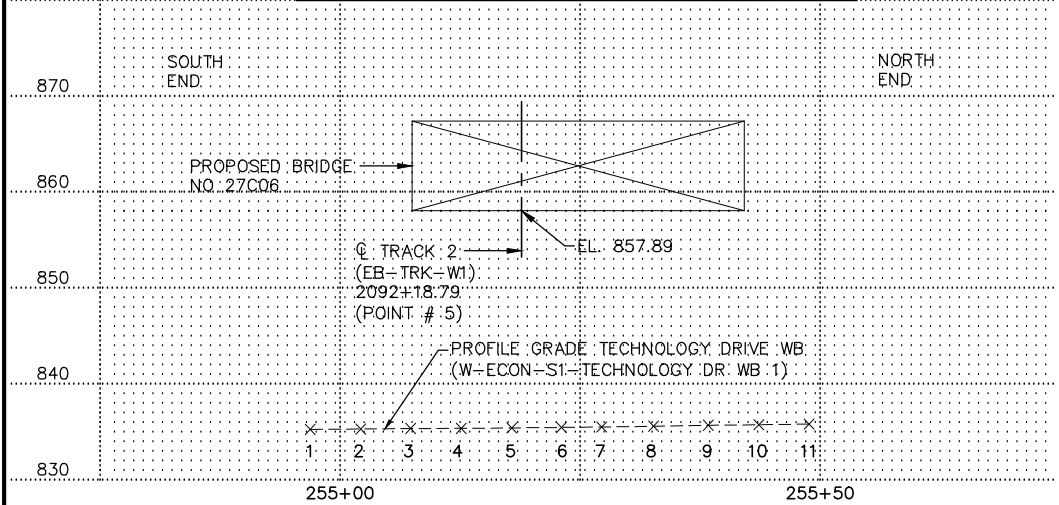
60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY 2	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-SUR-002

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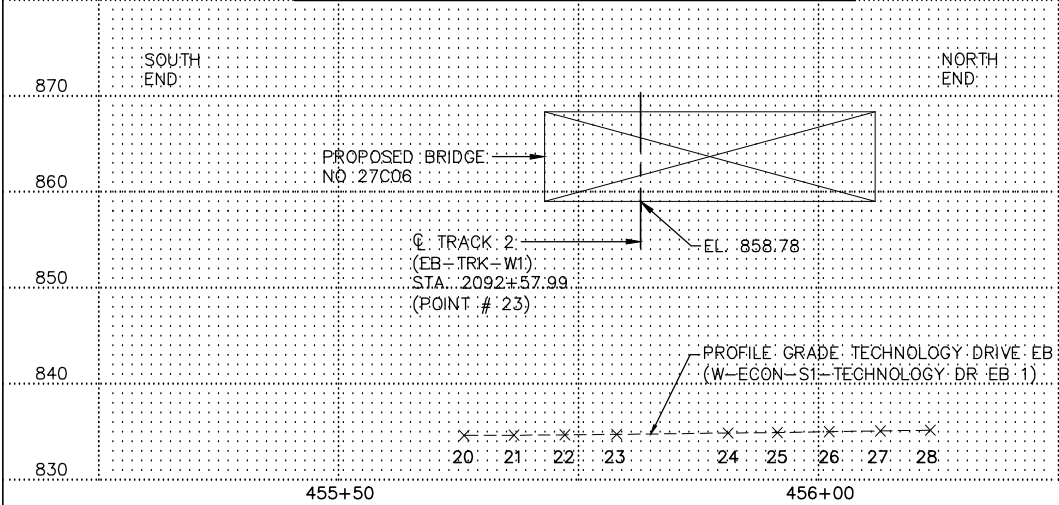
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PROFILE GRADE TECHNOLOGY DRIVE WB
(W-ECON-S1-TECHNOLOGY DR WB 1)



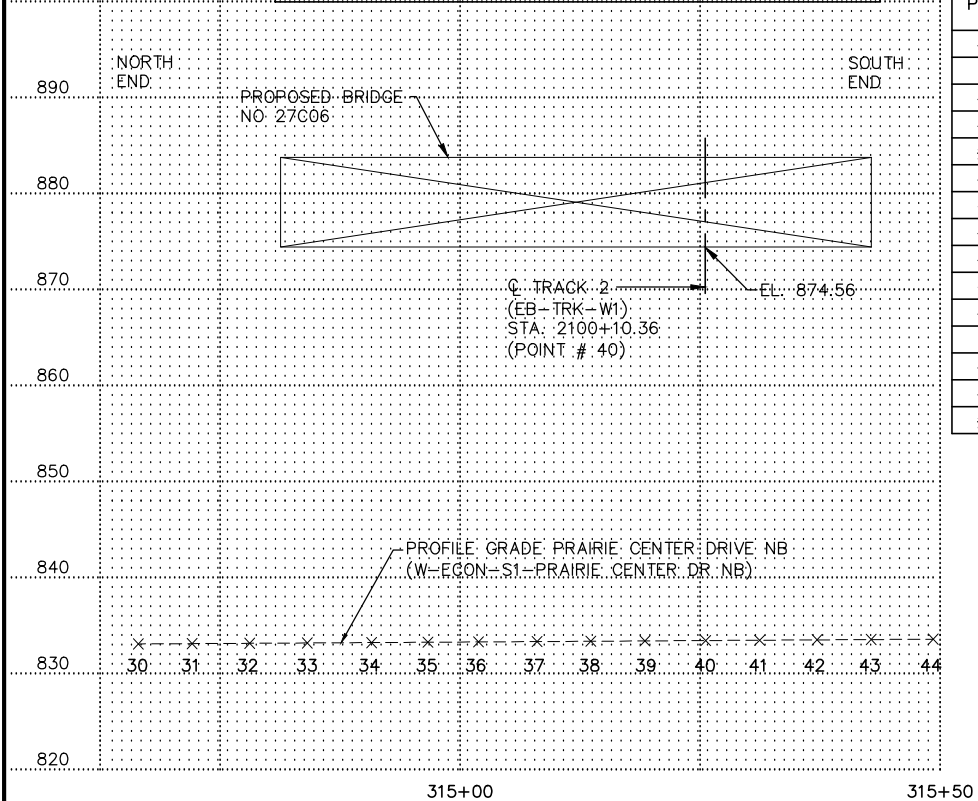
POINT	COORDINATES		ELEVATIONS
	X	Y	
#1	485201.861	124996.528	835.209
#2	485205.625	125000.216	835.255
#3	485209.238	125003.946	835.309
#4	485212.914	125007.704	835.324
#5	485216.554	125011.527	835.369
#6	485220.081	125015.289	835.416
#7	485223.058	125018.25	835.469
#8	485226.876	125022.099	835.539
#9	485230.91	125026.107	835.637
#10	485234.447	125030.012	835.701
#11	485238.304	125033.575	835.766

PROFILE GRADE TECHNOLOGY DRIVE EB
(W-ECON-S1-TECHNOLOGY DR EB 1)



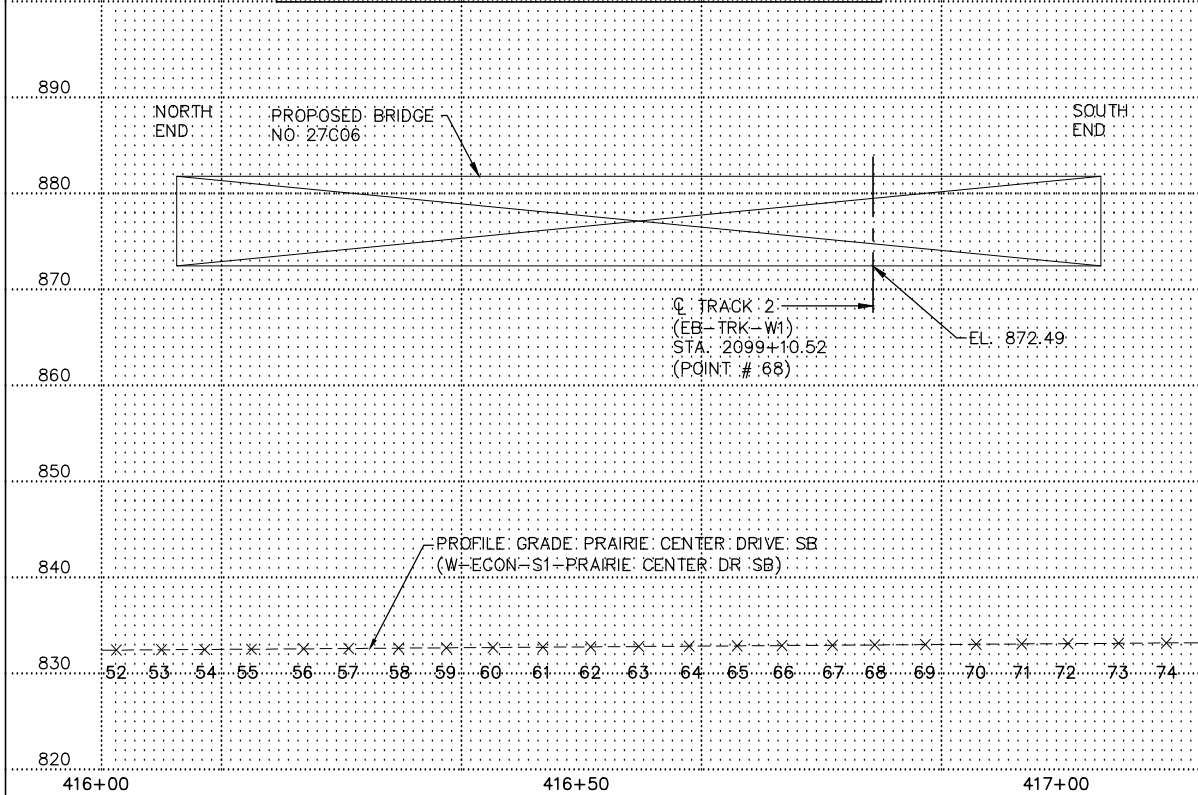
POINT	COORDINATES		ELEVATIONS
	X	Y	
#20	485232.812	124971.618	834.514
#21	485236.487	124975.276	834.528
#22	485240.056	124979.23	834.572
#23	485243.768	124983.144	834.624
#24	485251.772	124991.529	834.764
#25	485255.375	124995.17	834.812
#26	485259.129	124999.05	834.901
#27	485263.032	125002.689	834.978
#28	485266.591	125006.483	835.057

PROFILE GRADE PRAIRIE CENTER DRIVE NB
(W-ECON-S1-PRAIRIE CENTER DR NB)



POINT	COORDINATES		ELEVATIONS
	X	Y	
#30	485847.531	124677.732	833.022
#31	485852.206	124674.618	833.056
#32	485857.122	124671.185	833.081
#33	485862.063	124667.788	833.129
#34	485867.557	124663.987	833.166
#35	485872.193	124660.79	833.202
#36	485876.74	124657.64	833.234
#37	485881.708	124654.152	833.269
#38	485886.266	124650.899	833.299
#39	485890.937	124647.715	833.332
#40	485896.101	124644.066	833.371
#41	485900.708	124640.846	833.409
#42	485905.51	124637.283	833.468
#43	485910.314	124634.291	833.488
#44	485915.517	124630.499	833.53

PROFILE GRADE PRAIRIE CENTER DRIVE SB
(W-ECON-S1-PRAIRIE CENTER DR SB)



POINT	COORDINATES		ELEVATIONS
	X	Y	
#52	485731.511	124694.854	832.431
#53	485735.317	124692.143	832.466
#54	485738.984	124689.494	832.493
#55	485743.073	124686.842	832.522
#56	485747.543	124683.773	832.561
#57	485751.312	124680.979	832.591
#58	485755.616	124678.06	832.6
#59	485759.644	124675.126	832.617
#60	485763.694	124672.449	832.643
#61	485767.955	124669.452	832.687
#62	485771.984	124666.583	832.722
#63	485776.174	124663.796	832.766
#64	485780.566	124660.919	832.796
#65	485784.632	124658.005	832.836
#66	485788.564	124655.49	832.859
#67	485792.927	124652.538	832.918
#68	485796.601	124650.112	832.959
#69	485800.998	124647.176	832.985
#70	485805.289	124644.065	833.009
#71	485809.154	124641.357	833.045
#72	485813.094	124638.547	833.067
#73	485817.353	124635.435	833.1
#74	485821.465	124632.661	833.135

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN
DRAWN BY: ALB
CHECKED BY: ---
DATE: 08/24/15

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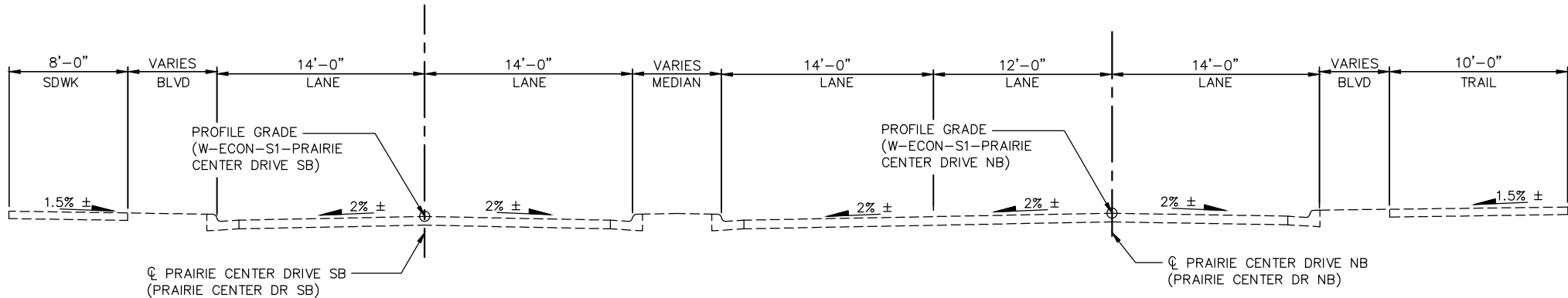


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY 3

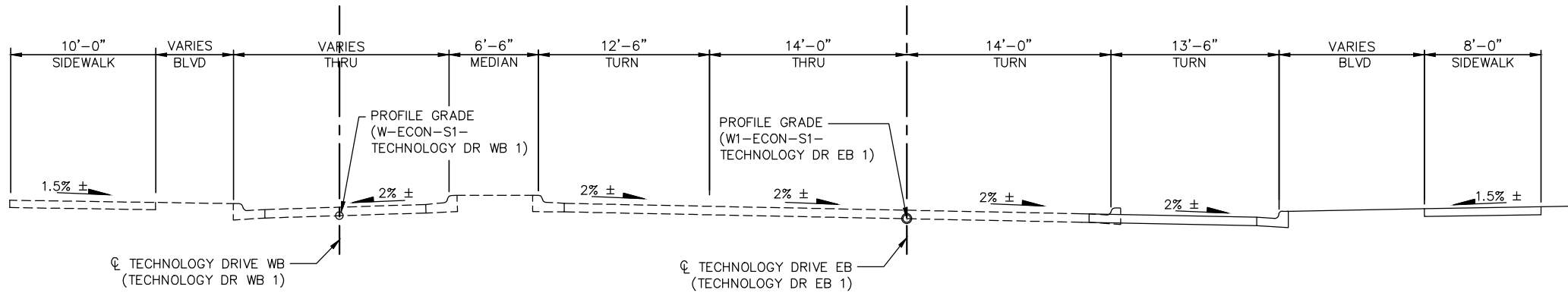
DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C06-BRG-SUR-003

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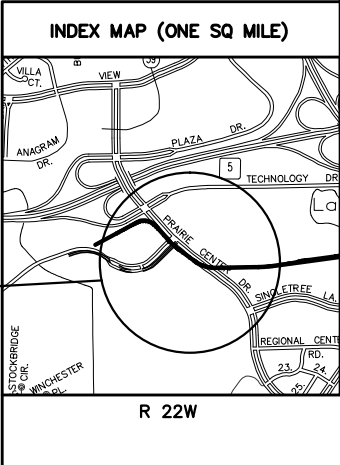
EXISTING TYPICAL APPROACH SECTION PRAIRIE CENTER DRIVE



EXISTING TYPICAL APPROACH SECTION TECHNOLOGY DRIVE

NOTES:

PROFILE GRADES SHOWN AT LOCATION OF SURVEY SHOTS.



LOCATION ENGINEER'S OBSERVATIONS
AT BRIDGE SITE

1.SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.

2.OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY) : GIVEN LOCATION,TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.

3.APPARENT HIGHWATER ELEVATION _____ OBTAINED FROM:

4.OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: XX-XX-XXXX

STREAM OR DITCH DESIGNATION: XXX

DRAINAGE AREA: XXX SQ. MI.

MAX FLOOD ON RECORD: XXX C.F.S. (XX-XX-XX)

MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.

DESIGN FLOOD (XX TR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
TOTAL STAGE INCREASE: XX FT.
LOW MEMBER AT OR ABOVE ELEVATION: XXX.X FT

WATERWAY AREA REQUIRED BELOW ELEV. XXX.X = XXX SQ. FT. AT RIGHT ANGLES TO CHANNEL

BASIC FLOOD (100 YR. FREQ.): XXX C.F.S.
HEADWATER ELEVATION: XXX.X FT.
TOTAL STAGE INCREASE: X.X FT.
MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.

FLOWLINE ELEVATION: XXX FT. SKEW ANGLE: XX

ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR OT YR.FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE: XX-XX-XXXX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR OT YR. FREQ.)

SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY = SHEETS MADE FROM SURVEY AND PHOTOGRAMMETRIC MAPPING

MnDOT NAME: 2701S BENCH MARK ELEVATION 829.569 FEET (NAVD88) LOCATION STAMPED 2701 S 1993 -IN EDEN PRAIRIE, 1.0 MILE WEST ALONG TH 5 FROM JUNCTION OF TH 5 AND INTERSTATE HIGHWAY 494, AT TH 5 MILEPOINT 49.75, IN SOUTHEAST CORNER OF TH 5 BOX CULVERT, 56.0 FEET SOUTH OF EASTBOUND TH 5, 0.5 FOOT WEST OF SOUTHEAST CORNER OF BOX CULVERT.

2ND MnDOT NAME: 2744N BENCH MARK ELEVATION 885.113 FEET (NAVD88) LOCATION STAMPED 2744 N 1980 - IN EDEN PRAIRIE, 0.5 MILE SOUTHWEST OF JUNCTION OF TH 212 AND INTERSTATE HIGHWAY 494, AT TH 212 MILEPOINT 158.9, 250 FEET SOUTH OF ENTRANCE TO EDEN PRAIRIE CENTER, 47.8 FEET SOUTHEAST OF SOUTHEAST CURB OF TH 212, 42.9 FEET NORTHEAST OF NORTH CURB ON ACCESS ROAD, 1.2 FEET NORTH OF WEST COLUMN OF SIGN (EDEN PRAIRIE CENTER) NOTHING ON SIGN AT PRESENT, IN WEST BASE OF SIGN.

BRIDGE SURVEY

0.1 MI SOUTHEAST OF THE INTERSECTION OF TH 212 AND PRAIRIE CENTER DRIVE IN EDEN PRAIRIE

SOUTHWEST LIGHT RAIL OVER PRAIRIE CENTER DRIVE AND TECHNOLOGY DRIVE

SEC 14/15 T 116N R 22W

CITY OF EDEN PRAIRIE HENNEPIN COUNTY

BRIDGE 27C06

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL
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DRAWN BY: ALB	DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15

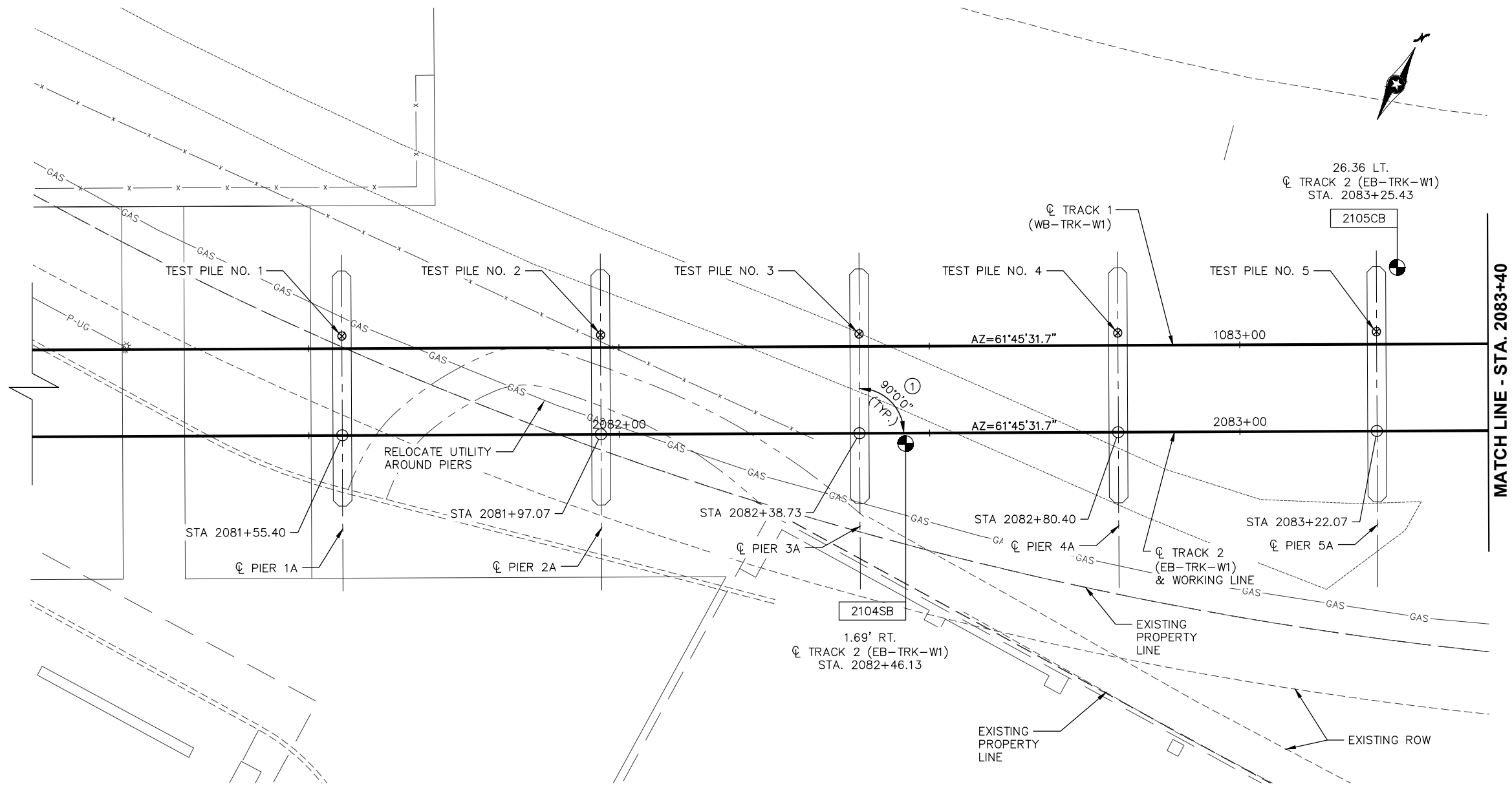
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY 4

DISCIPLINE: STRUCTURES

SHEET NAME: CBR27C06-BRG-SUR-004

SHEET 29 OF 50

Sep. 18 2015 10:12 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-004.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.


① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15



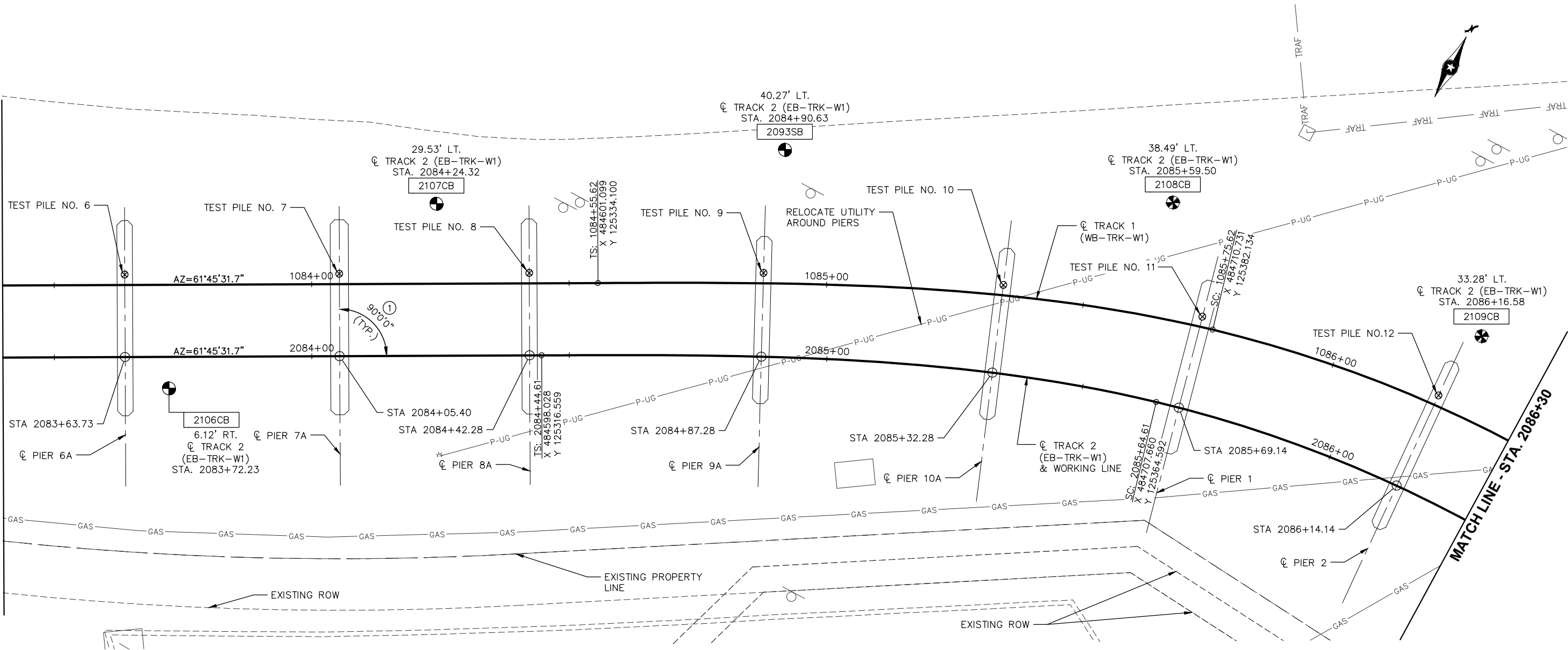
CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 1

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-BOR-001**

Sep. 18 2015 10:13 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-005.dwg By: mayert

MATCH LINE - STA. 2083+40



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS OTHERWISE NOTED.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15

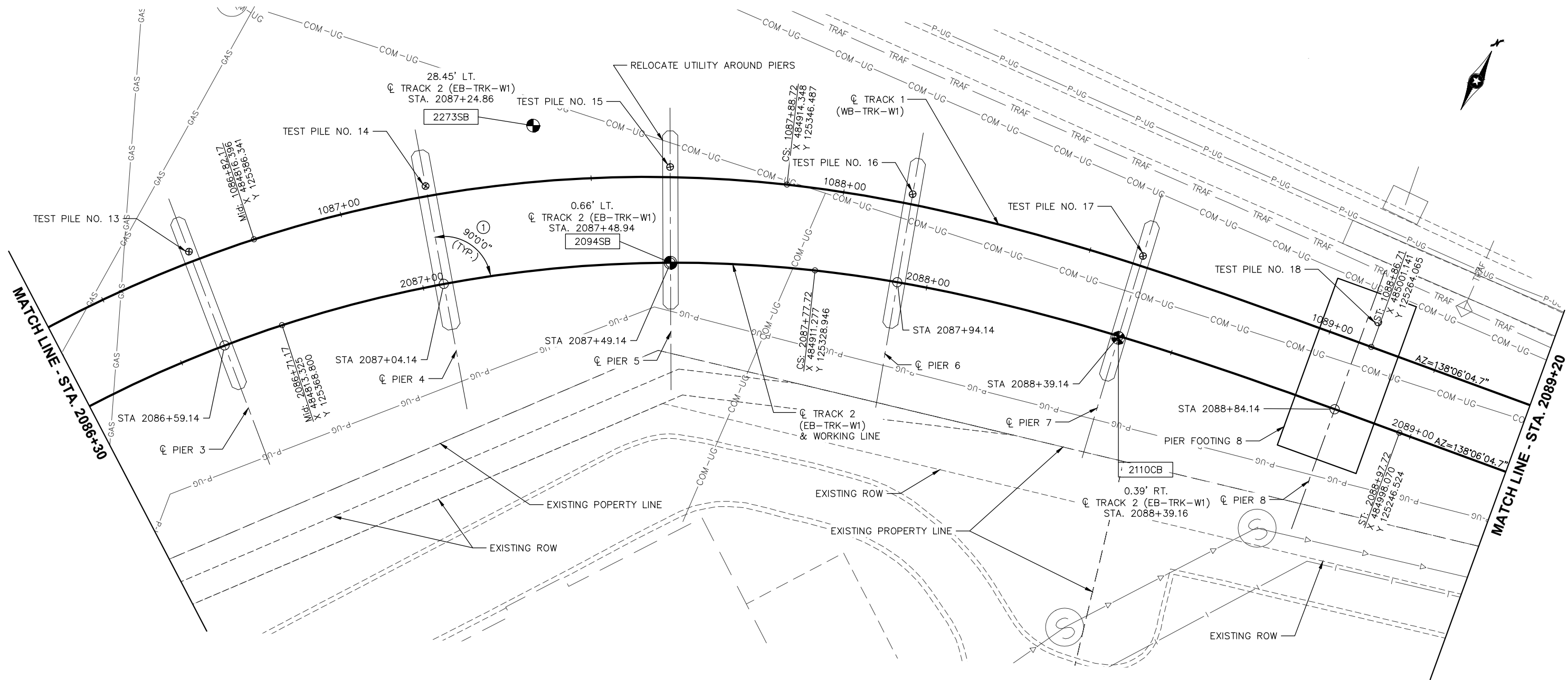


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 2

DISCIPLINE: **STRUCTURES**

SHEET NAME:
CBR27C06-BRG-BOR-002

Sep. 18 2015 10:14 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-006.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS OTHERWISE NOTED.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.



① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15

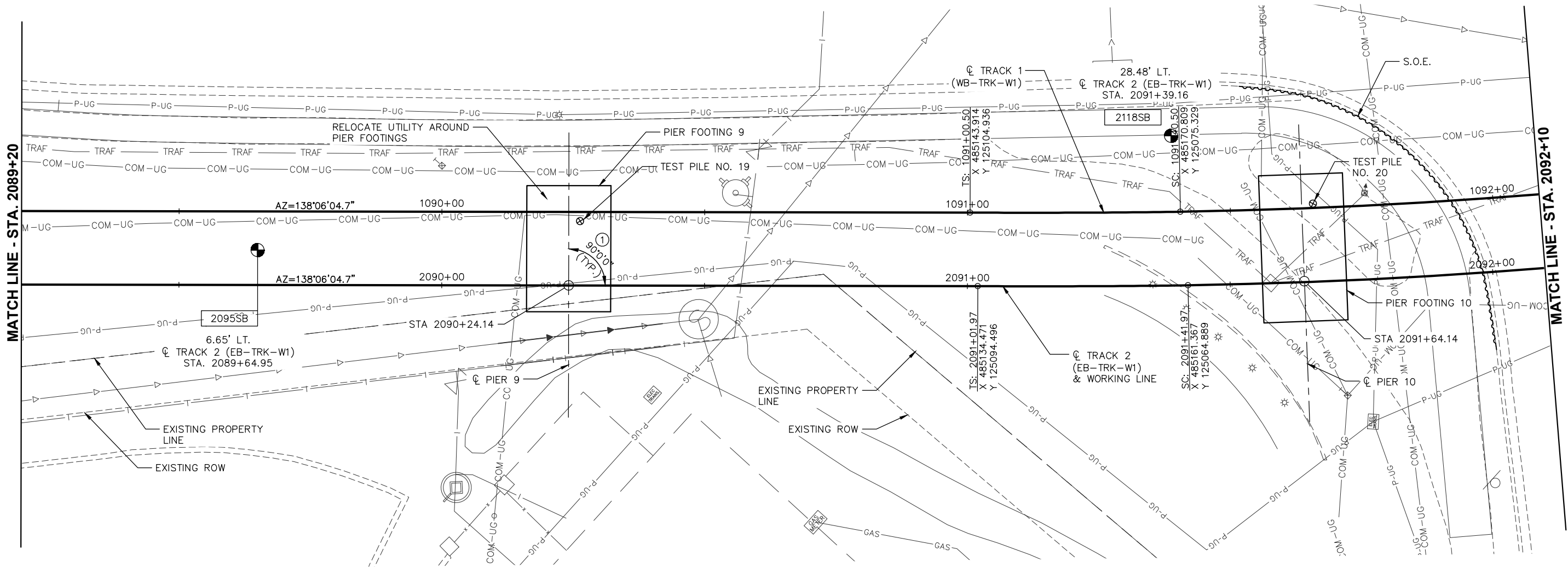


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 3

DISCIPLINE: **STRUCTURES** SHEET NAME: **CBR27C06-BRG-BOR-003**

SHEET
32
OF
50

Sep. 18 2015 10:15 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-007.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION. SEE SPECIAL PROVISIONS.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



60% SUBMISSION - 09/28/15

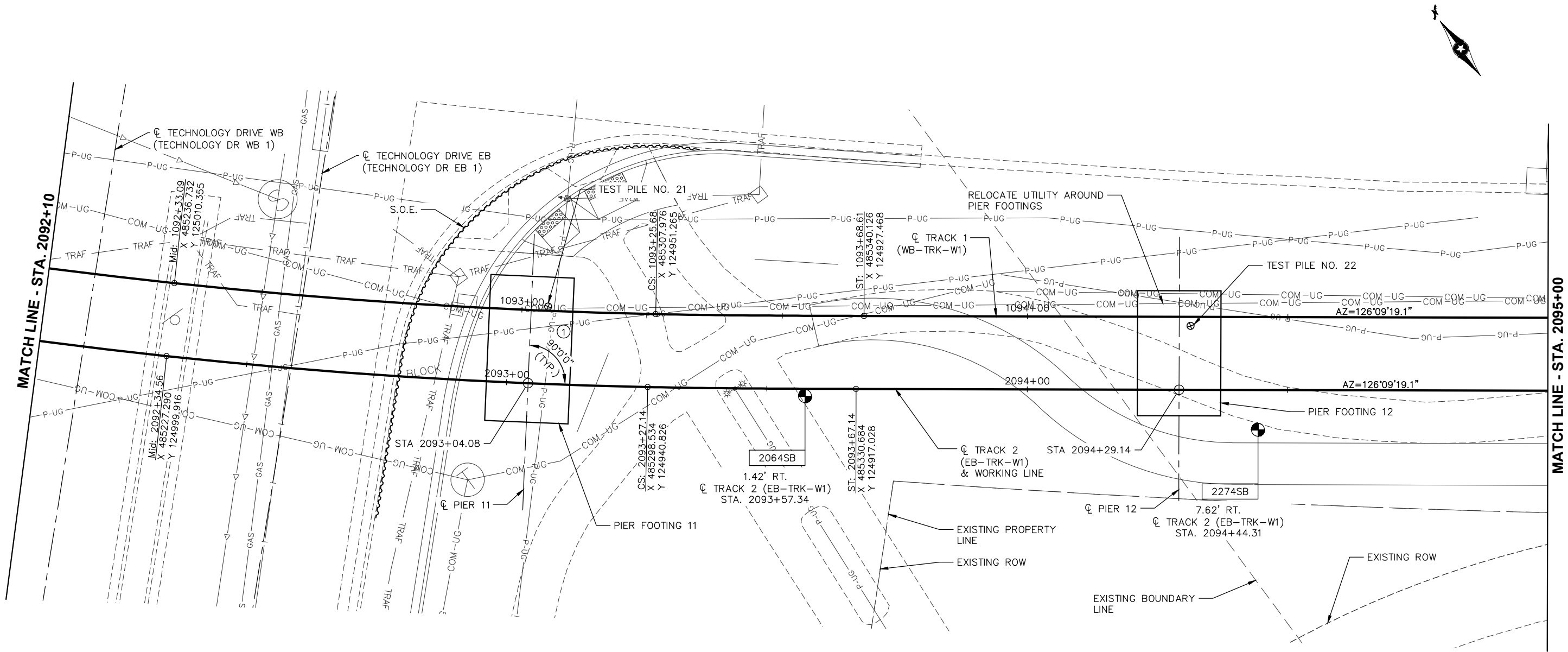


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 4

DISCIPLINE: STRUCTURES

SHEET NAME:
CBR27C06-BRG-BOR-004

Sep. 18 2015 10:16 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-008.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION. SEE SPECIAL PROVISIONS.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

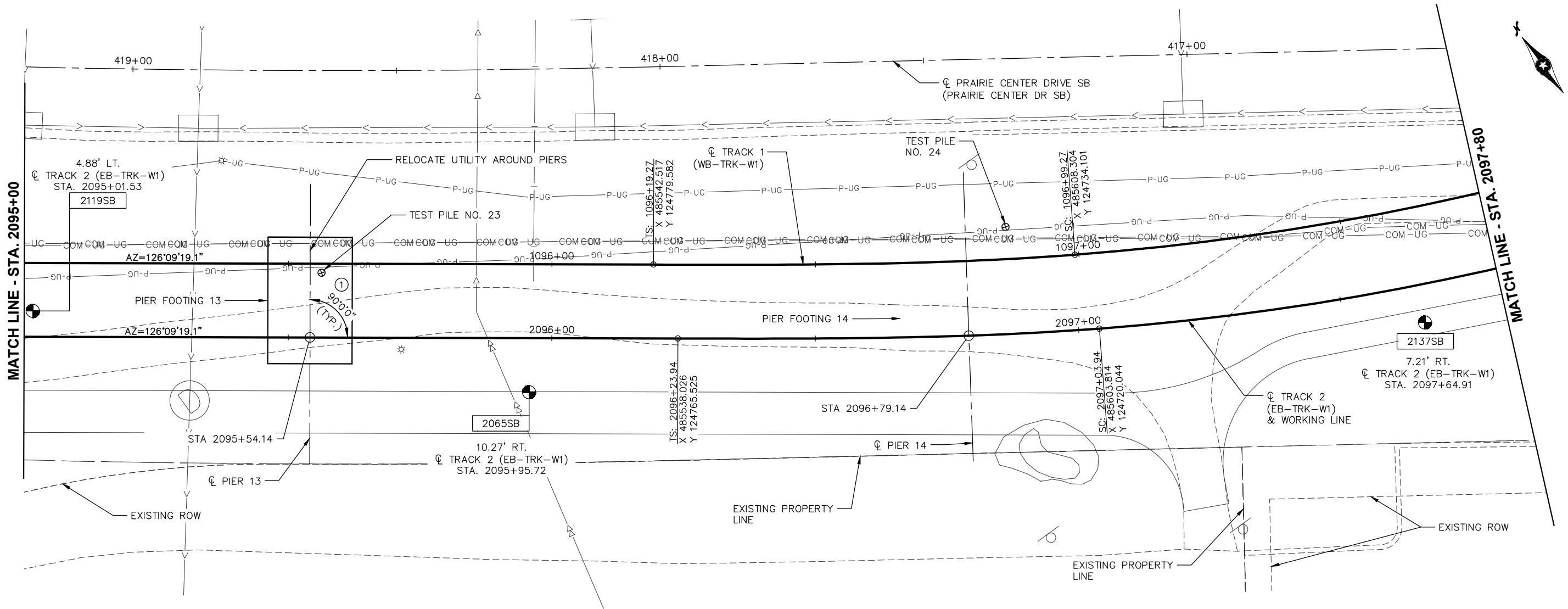
DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PLAN 5	
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-BOR-005

SHEET
34
OF
50

Sep. 18 2015 10:17 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-009.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.



① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN
DRAWN BY: ALB
CHECKED BY: ---
DATE: 08/24/15



60% SUBMISSION - 09/28/15

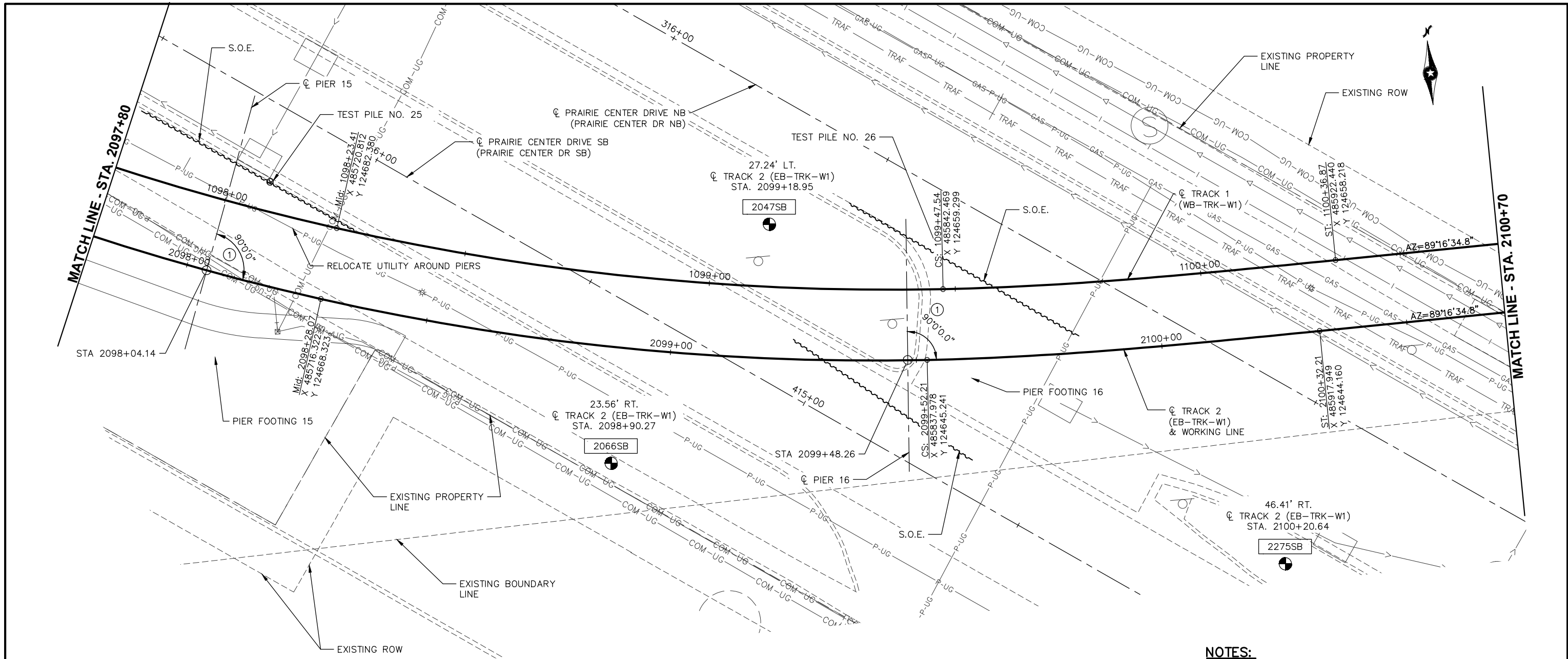


CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 6

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C06-BRG-BOR-006

SHEET
35
OF
50

Sep. 18 2015 10:18 am V:\3400_ADC\CAD\SEGEMNT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-010.dwg By: mayert



NOTES:

- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.
- T.T.S. DENOTES TANGENT TO SPIRAL.
- SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.
- SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION. SEE SPECIAL PROVISIONS.
- ① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 7

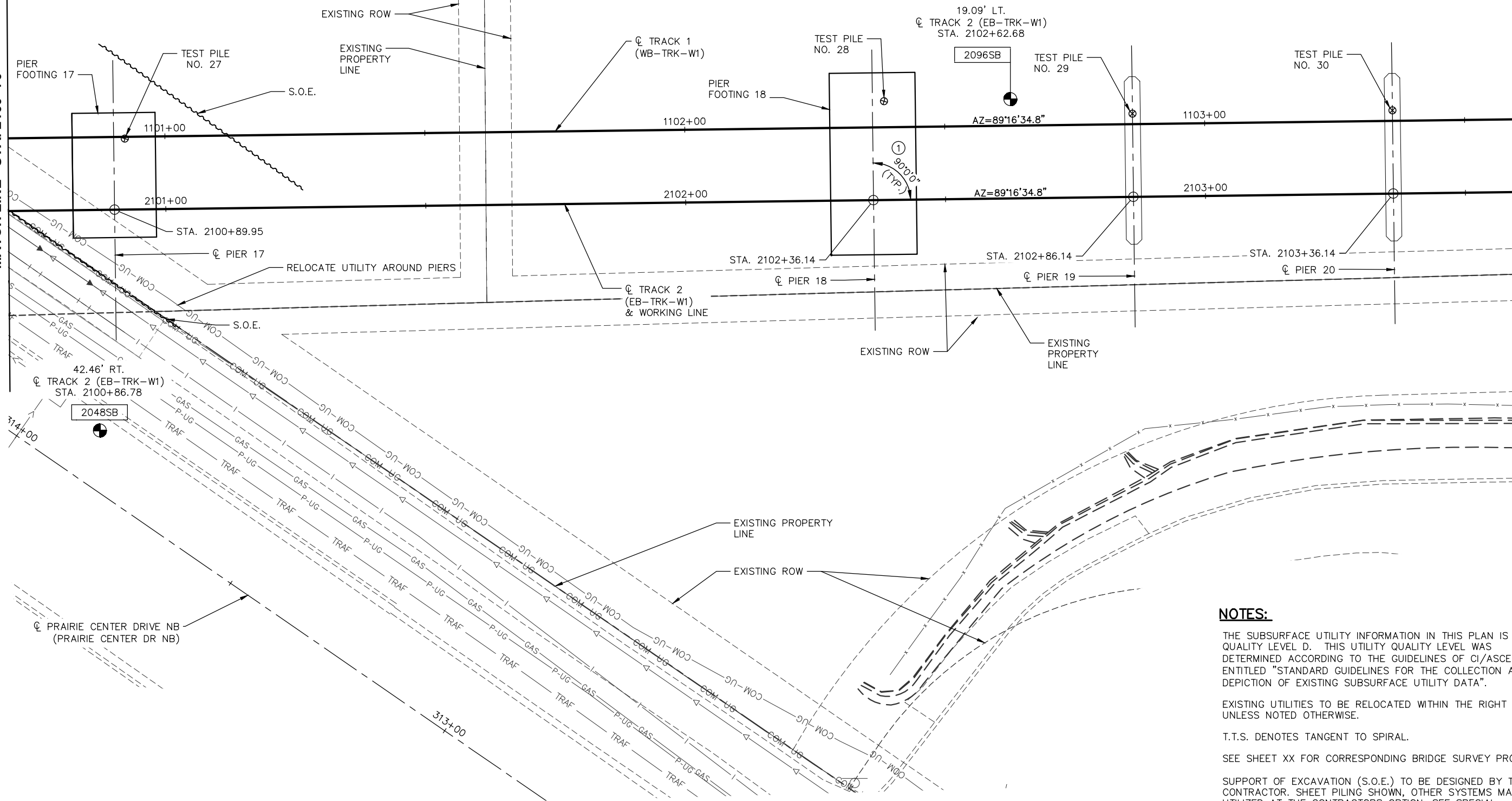
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SHEET NAME: CBR27C06-BRG-BOR-007

SHEET 36
OF 50

Sep. 18 2015 10:20 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-011.dwg By: mayert

MATCH LINE - STA. 2100+70

MATCH LINE - STA. 2103+60



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY UNLESS NOTED OTHERWISE.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

SUPPORT OF EXCAVATION (S.O.E.) TO BE DESIGNED BY THE CONTRACTOR. SHEET PILING SHOWN, OTHER SYSTEMS MAY BE UTILIZED AT THE CONTRACTORS OPTION. SEE SPECIAL PROVISIONS.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN
DRAWN BY: ALB
CHECKED BY: ---
DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15



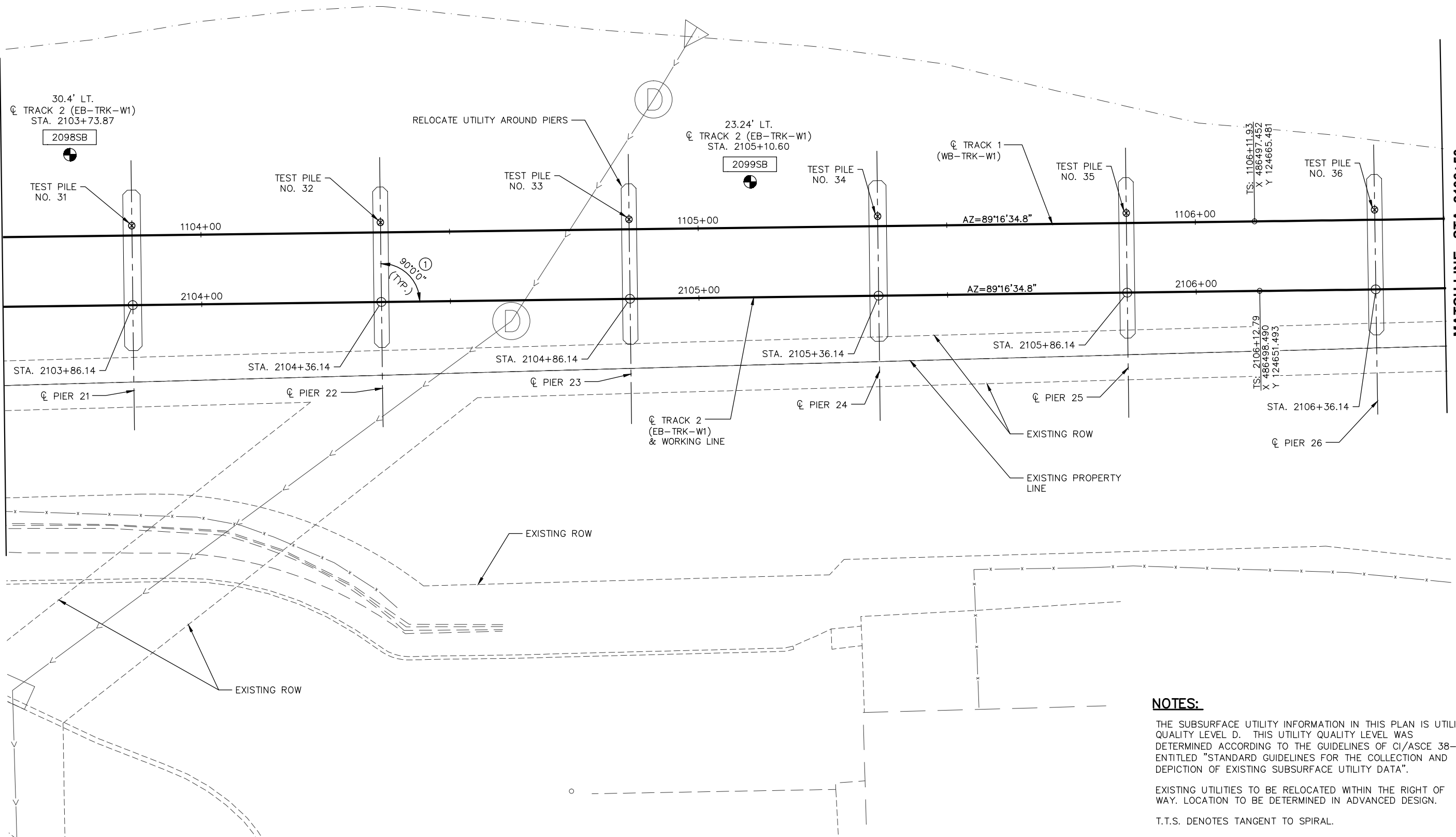
**CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 8**

DISCIPLINE: **STRUCTURES**
SHEET NAME: **CBR27C06-BRG-BOR-008**

**SHEET
37
OF
50**

Sep. 18 2015 10:21 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-012.dwg By: mayert

MATCH LINE - STA. 2103+60



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY. LOCATION TO BE DETERMINED IN ADVANCED DESIGN.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN
DRAWN BY: ALB
CHECKED BY: ---
DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15



SOUTHWEST
Green Line LRT Extension



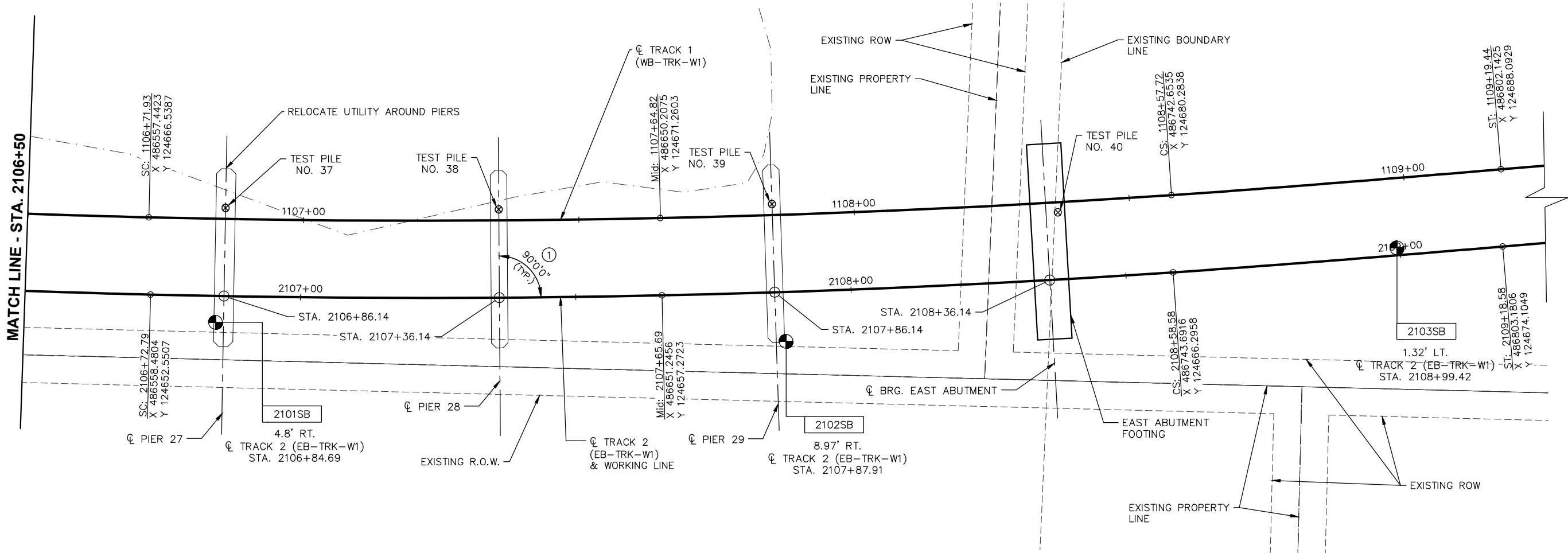
**CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 9**

DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-BOR-009**

**SHEET
38
OF
50**

Sep. 18 2015 10:22 am V:\3400_ADC\CAD\SEGEMNT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-013.dwg By: mayert



NOTES:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

EXISTING UTILITIES TO BE RELOCATED WITHIN THE RIGHT OF WAY. LOCATION TO BE DETERMINED IN ADVANCED DESIGN.

T.T.S. DENOTES TANGENT TO SPIRAL.

SEE SHEET XX FOR CORRESPONDING BRIDGE SURVEY PROFILE.

① T.T.S. TYPICAL UNLESS SHOWN OTHERWISE.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15



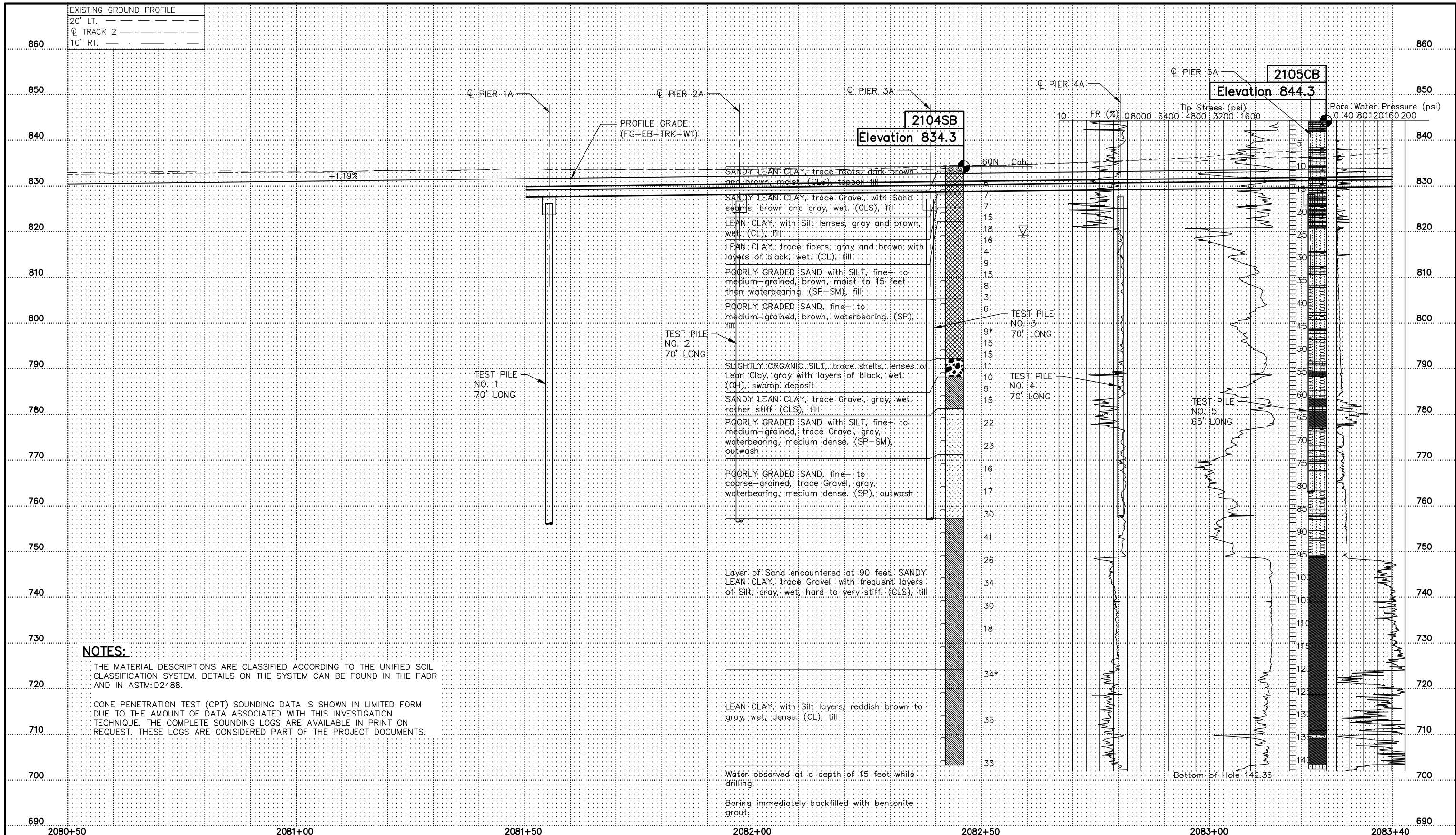
60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PLAN 10

DISCIPLINE:	STRUCTURES
SHEET NAME:	CBR27C06-BRG-BOR-010

Sep. 18 2015 09:44 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-014.dwg By: mayert



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN
Green Line LRT Extension




SOUTHWEST
Green Line LRT Extension

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PROFILE 1

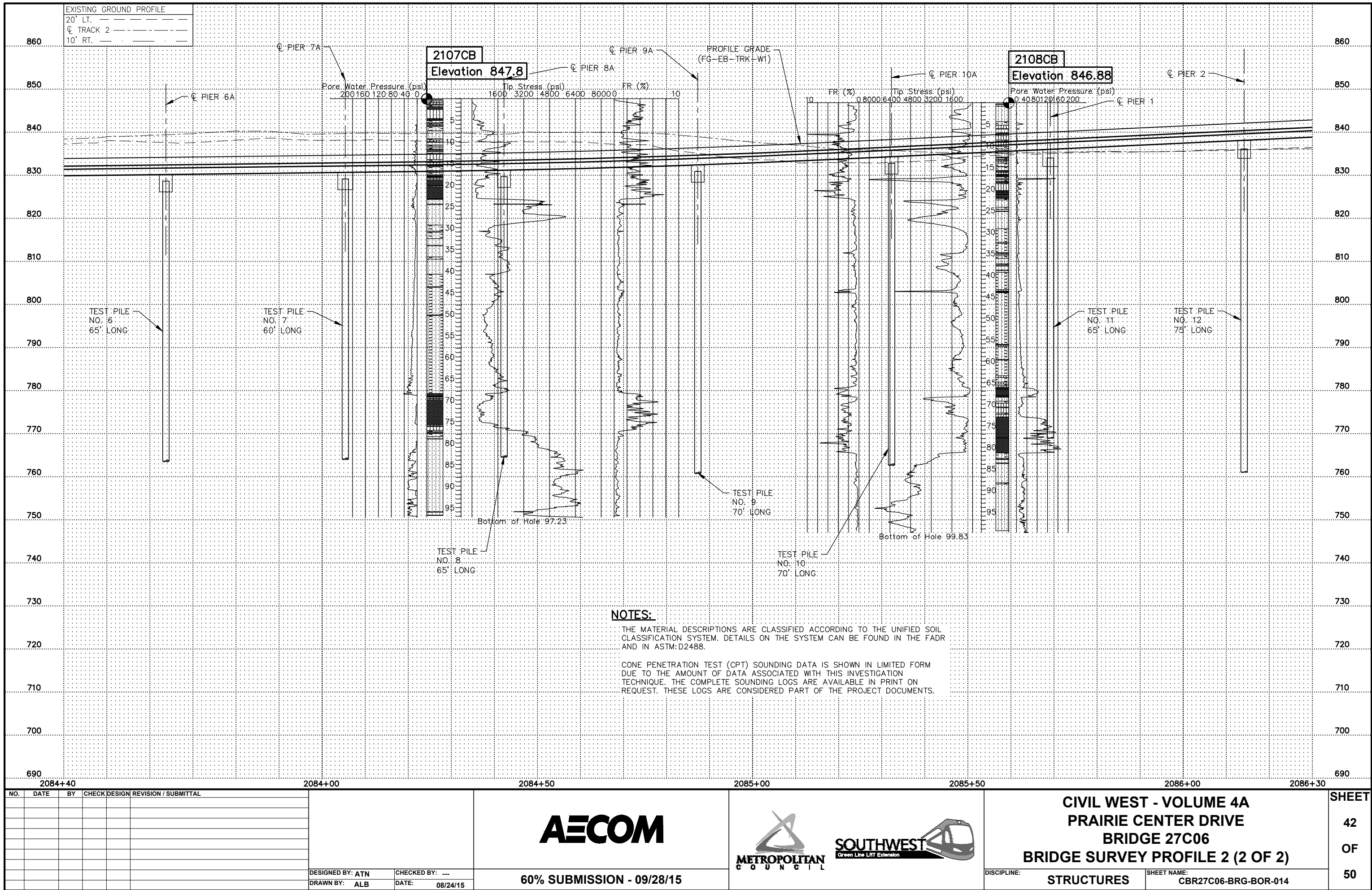
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SHEET NAME: **CBR27C06-BRG-BOR-012**




SHEET 40 OF 50

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	<div></div>	<div></div>	<div>CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PROFILE 2 (1 OF 2)</div>		SHEET 41 OF 50
<div>DESIGNED BY: ATN DRAWN BY: ALB</div>						<div>CHECKED BY: --- DATE: 08/24/15</div>	60% SUBMISSION - 09/28/15	DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-BOR-013	

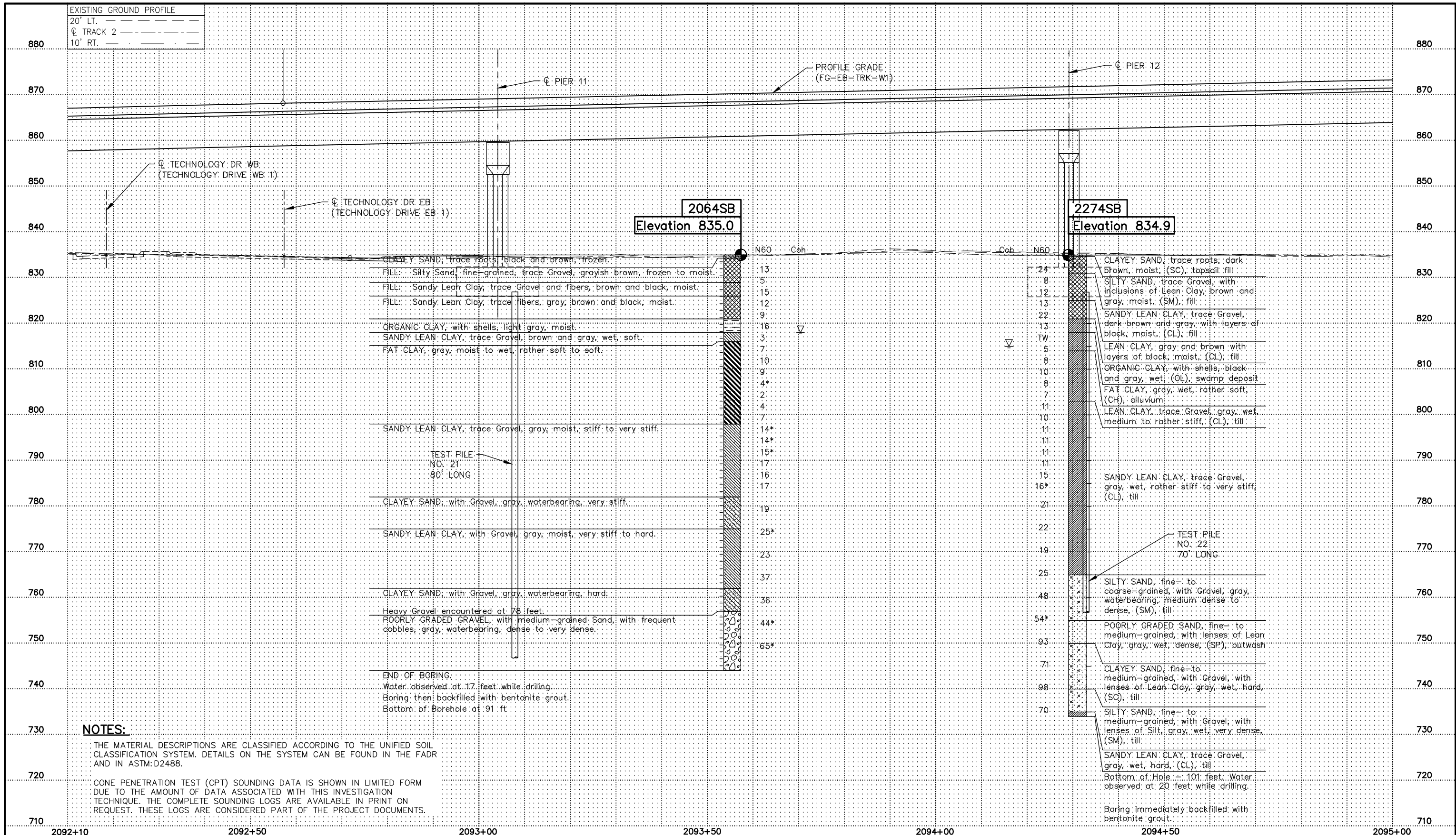
Sep. 18 2015 09:46 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-016.dwg By: mayert



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL		 	CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PROFILE 3		SHEET 43 OF 50
DESIGNED BY: ATN DRAWN BY: ALB						CHECKED BY: --- DATE: 08/24/15	60% SUBMISSION - 09/28/15	DISCIPLINE:	SHEET NAME:	STRUCTURES CBR27C06-BRG-BOR-015

2089+20						2089+50						2090+00						2090+50						2091+00						2091+50						2092+00						2092+10					
NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL	<div></div>												<div></div>												CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PROFILE 4												SHEET 44 OF 50					
						DESIGNED BY: ATN						CHECKED BY: ---						60% SUBMISSION - 09/28/15												DISCIPLINE: STRUCTURES						SHEET NAME: CBR27C06-BRG-BOR-016											
						DRAWN BY: ALB						DATE: 08/24/15																																			

Sep. 18 2015 09:49 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-019.dwg By: mayert



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN
DRAWN BY: ALB

CHECKED BY: ---
DATE: 08/24/15

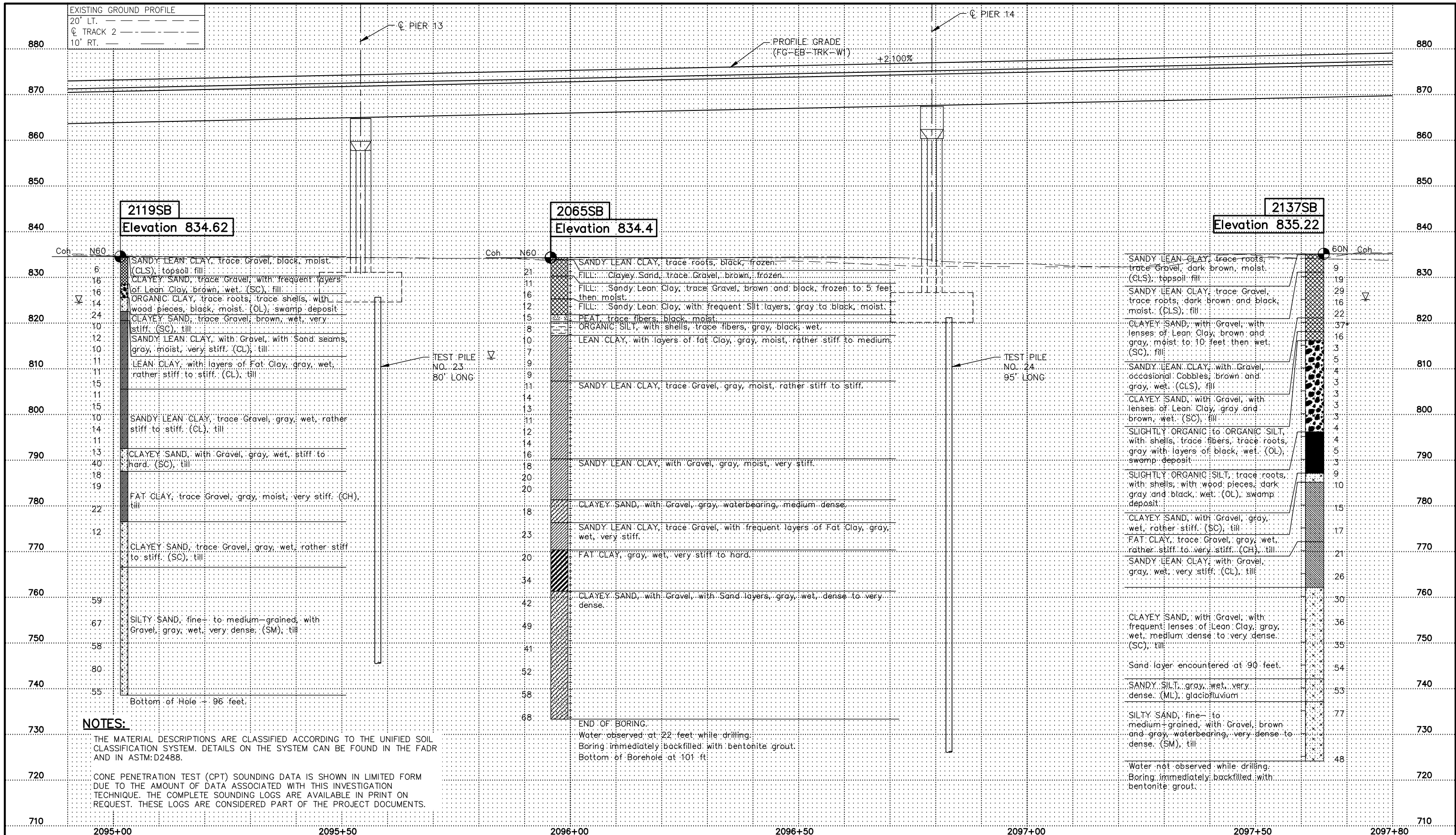
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60% SUBMISSION - 09/28/15



CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PROFILE 5		SHEET 45 OF 50
DISCIPLINE: STRUCTURES	SHEET NAME: CBR27C06-BRG-BOR-017	

Sep. 18 2015 09:49 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-020.dwg By: mayert



NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

AECOM

60% SUBMISSION - 09/28/15

METROPOLITAN
GOVERNMENT


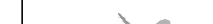

SOUTHWEST
Green Line Light Extension

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PROFILE 6

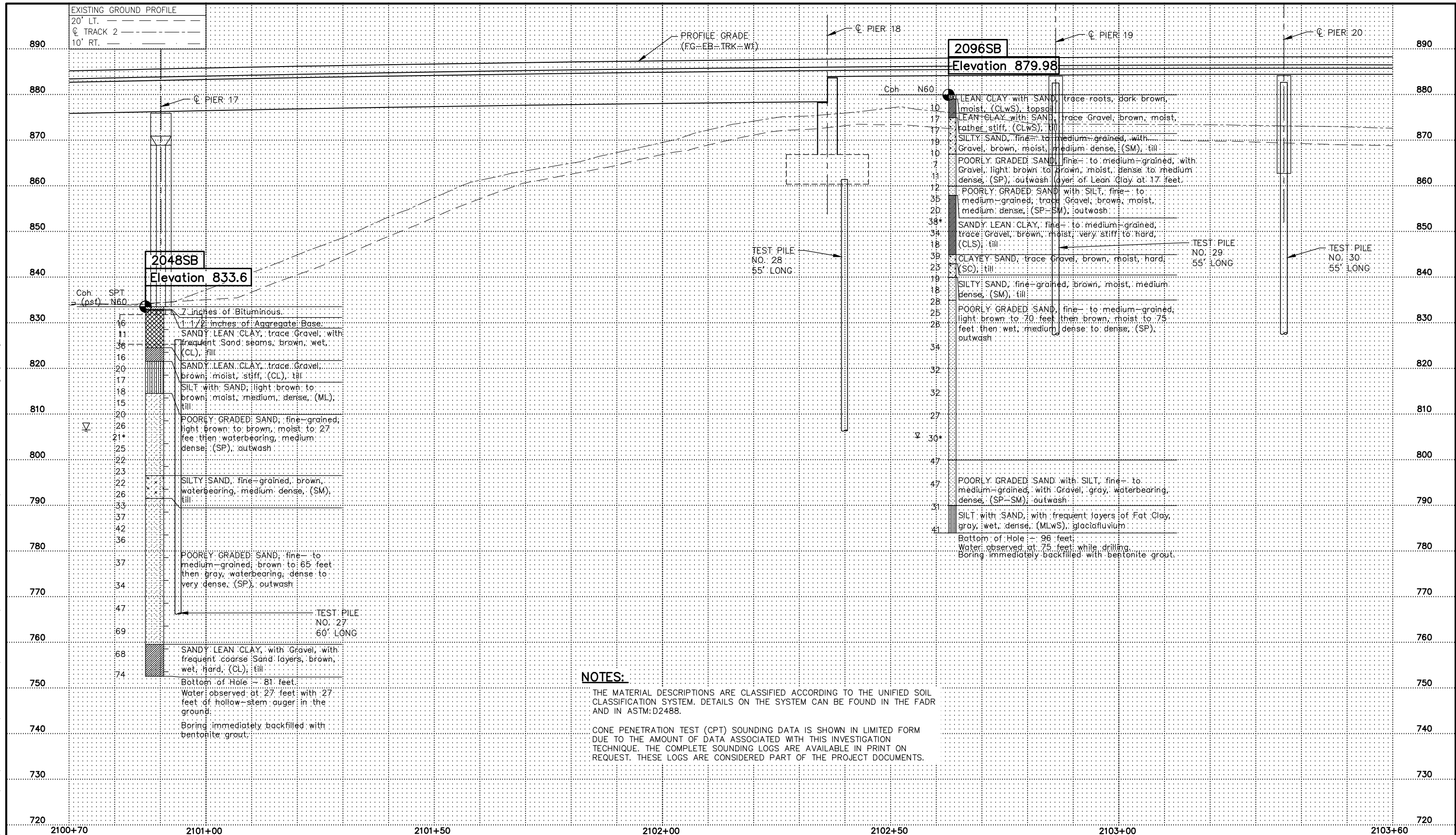
DISCIPLINE: **STRUCTURES**

SHEET NAME: **CBR27C06-BRG-BOR-018**

SHEET
46
OF
50

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL			 		CIVIL WEST - VOLUME 4A PRAIRIE CENTER DRIVE BRIDGE 27C06 BRIDGE SURVEY PROFILE 7		SHEET 47 OF 50
DESIGNED BY: ATN DRAWN BY: ALB						CHECKED BY: --- DATE: 08/24/15		60% SUBMISSION - 09/28/15		DISCIPLINE: STRUCTURES		SHEET NAME: CBR27C06-BRG-BOR-019

Sep. 18 2015 09:51 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-022.dwg By: mayert



NOTES:

THE MATERIAL DESCRIPTIONS ARE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM. DETAILS ON THE SYSTEM CAN BE FOUND IN THE FADR AND IN ASTM:D2488.

CONE PENETRATION TEST (CPT) SOUNDING DATA IS SHOWN IN LIMITED FORM DUE TO THE AMOUNT OF DATA ASSOCIATED WITH THIS INVESTIGATION TECHNIQUE. THE COMPLETE SOUNDING LOGS ARE AVAILABLE IN PRINT ON REQUEST. THESE LOGS ARE CONSIDERED PART OF THE PROJECT DOCUMENTS.

NO.	DATE	BY	CHECK	DESIGN	REVISION / SUBMITTAL

DESIGNED BY: ATN	CHECKED BY: ---
DRAWN BY: ALB	DATE: 08/24/15

60% SUBMISSION - 09/28/15

CIVIL WEST - VOLUME 4A
PRAIRIE CENTER DRIVE
BRIDGE 27C06
BRIDGE SURVEY PROFILE 8

DISCIPLINE: STRUCTURES
SHEET NAME: CBR27C06-BRG-BOR-020

SHEET 48 OF 50

Sep. 18 2015 09:52 am V:\3400_ADC\CAD\SEGMENT W1\PLAN SHEETS\STRUCTURES\60% SUBMITTAL 09-18-2015\CBR27C06-BRG-SUR-023.dwg By: mayert

